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# OFFICIAL GAZETTE UNITED STATES PATENT OFFICE

VOL. 64

JULY - SEPT.

1893

MICRO PHOTO INC.
CLEVELAND, OHIO

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# OFFICIAL GAZETTE

OF THE

# UNITED STATES PATENT OFFICE.

VOLUME LXIV

JULY 4 TO SEPTEMBER 26, INCLUSIVE,

1893.

WASHINGTON:

GOVERNMENT PRINTING OFFICE.

1893.

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# ERRATA.

**500,828**, page 112, strike out number and heading and insert 500,928, *Dress-Shield. Herman Moschcowitz, New York, N. Y. Filed June* 7, 1892. *Serial No.* 435,889. (*No model.*)

**501,715**, page 374, in heading, residence of assignee, for "of England" read *of Great Britain.*

**501,716**, page 374, in heading, residence of assignee, for "of England" read *of Great Britain.*

**502,691**, page 705, strike out title, drawings, and claims and insert CANCELED.

**502,837**, page 767, in heading, foreign patents, after "No. 59,883," insert *in France September* 4, 1891, *No.* 215,920; *in Belgium September* 5, 1891, *No.* 96,282; *in Switzerland December* 4, 1891, *No.* 4,226; *in Cape Colony December* 29, 1891, *No.* 729; *in Italy December* 31, 1891, *XXVI*, 30,879, *and LXI*, 73; *in Victoria January* 9, 1892, *No.* 9,371; *in South Australia January* 13, 1892, *No.* 2,151; *in Transvaal January* 13, 1892, *No.* 313; *in Spain January* 21, 1892, *No.* 12,814; *in New Zealand January* 23, 1892, *No.* 5,395; *in Brazil January* 30, 1892, *No.* 1,389; *in Straits Settlements March* 25, 1892; *in Austria-Hungary May* 8, 1892, *No.* 42,619 *and No.* 15,802, *and in Canada May* 12, 1892, *No.* 38,934.

**503,088**, page 841, in heading, name of assignee, for "Jacob Q. Stewart" read *Jacob R. Stewart.*

**503,441**, page 958, claim 7, line 3, for "chamber" read *member.*

**503,763**, page 1073, in heading, name of assignee, for "James B. Shea" read *James P. Shea.*

**503,883**, page 1104, in heading, in assignment, residence of assignee, for "Marion, Illinois" read *Marion, Indiana.*

**504,802**, page 1436, thirteenth claim, line 5, for "points *t t* and *t' t'*" read *ports l l and l' l'.*

**504,926**, page 1476, in heading, name of assignee, for "Harry M. Isaackson" read *Harry M. Isaacson.*

**504,990**, page 1497, in heading, name of assignee, for "Patrick Shonolin" read *Patrick Shouvlin.*

**505,112**, page 1549, in heading, in assignment, for "trustees" read *trustee.*

**505,302**, page 1604, in heading, name of patentee, for "Peter Stander" read *Peter Stauder.*

**505,600**, page 1718, in heading, name of assignee, for "The Wainwright Manufacturing Company" read *The Wainwright Manufacturing Company of Massachusetts.*

**505,689**, page 1747, ninth claim, line 3, for "an" read *its.*

**505,690**, page 1747, seventh claim, line 2, strike out semicolon after the word "of" and insert the same after the word "knife," same line.

**505,708**, page 1753, claim 2, line 5, the reference-letters "*d' d' c' e' d'*" should read *d' e' c' e' d'*, and in line 6 of same claim the reference-letter "K" should read *k'*.

**22,779**, design, page 1528, in heading, name of assignee, for "William H. Durgire" read *William B. Durgin.*

Changes in classification, page 863, first column, line 18 from bottom of page, for "Division XXII" read *Division XII.*

Commissioner's Decisions, page 560, first column, line 52, for "46 O. G., 1029" read 40 *O. G.*, 1029.

Commissioner's Decisions, page 1132, second column, line 28, for "35 O. G." read 55 *O. G.*

Commissioner's Decisions, page 1266, Bragg Manufacturing Co. *v.* City of Hartford, insert, after syllabus, *Mr. Arthur v. Briesen for the complainant. Mr. Francis T. Chambers for the defendants.*

Commissioner's Decisions, page 1537, Aerated Fuel Co. *v.* Woodbury Glass Co., names of counsel, for "Messrs. Eaton, Lewis & Burdett" read *Messrs. Eaton & Lewis and Mr. Charles L. Burdett*, and for "Mr. J. E. Steele and Mr. A. W. Walker" read *Mr. T. E. Steele and Mr. A. H. Walker.*



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# OFFICIAL GAZETTE

OF THE

# UNITED STATES PATENT OFFICE.

JULY–SEPTEMBER, 1893.

THE

# OFFICIAL GAZETTE

OF THE

# United States Patent Office.

[BY AUTHORITY OF CONGRESS.]

VOL. 64.—No. 1. TUESDAY, JULY 4, 1893. PRICE—$5 per year.

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### The Official Gazette.

THE OFFICIAL GAZETTE is published every Tuesday, simultaneously with the weekly issue of patents. From January 1, 1872, (the commencement of its publication,) to June 30, 1883, it was published and bound in semi-annual volumes; since July 1, 1883, in quarterly volumes. All subscriptions must commence with the beginning of a volume; none taken for less than three months. Terms: To all subscribers within the United States and Canada, $5 per annum; to foreign subscribers, $7; single copies, 10 cents; bound semi-annual volumes, (prior to June 30, 1883,) full sheep, $4 per volume; bound quarterly volumes, (subsequent to July 1, 1883,) full sheep, $2.75 per volume. No club rates. *Payment in advance.* All orders should be addressed to "The Commissioner of Patents, Washington, D. C."

### Oaths of Applicants in Foreign Countries.

(ORDER No. 822.)

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
*Washington, D. C., June 10, 1893.*

It is hereby directed that oaths accompanying applications for patents made within the following named foreign countries must be taken before a minister, chargé d'affaires, consul, or commercial agent holding commission under the Government of the United States:

Austria-Hungary.
Argentine Republic.
Belgium.
Brazil.
Costa Rica.
Denmark.
Haiti.
Honduras.
Italy.
Mexico.
Netherlands.
Norway.
Peru.
Portugal.
Russia.
San Salvador.
Servia.
Sweden.
Switzerland.

Applications filed in this Office presenting oaths not executed in compliance with this order will be treated as incomplete.

JOHN S. SEYMOUR,
*Commissioner.*

### Amended Rules of Practice.

Rule 25 and the first paragraph of Rule 122 of the Rules of Practice (edition of April 1, 1892) of the United States Patent Office are hereby amended to read as follows:

Rule 25. In case of the death of the inventor, the application will be made by and the patent will issue to his executor or administrator. In such case the oath required by Rule 46 will be made by the executor or administrator. In case of the death of the inventor during the time intervening between the filing of his application and the granting of a patent thereon, the Letters Patent will issue to *the executor or administrator upon proper intervention by him.*

Rule 122. Motions to dissolve an interference upon the ground that no interference in fact exists, or that there has been such irregularity in declaring the same as will preclude a proper determination of the question of priority, or which deny the patentability of an applicant's claim, or his right to make the claim, should, if possible, be made not later than the twentieth day after the statements of the parties have been received and approved. Such motions *should be noticed for hearing upon a day certain before the Examiner of Interferences upon the question of transmission to the Primary Examiner*, and when in proper form will be transmitted by the Examiner of Interferences, with the files and papers, to the proper Primary Examiner for his determination, *who will thereupon fix a day certain when the said motion will be heard before him upon the merits, and give notice thereof to all the parties. If a stay of proceedings is desired, a motion therefor should accompany the motion for transmission.*

### Construction of Statutes Relating to the Registration of "Prints" and "Labels."—Amended.

In the publication of this Office entitled "United States Statutes Concerning the Protection and Registration of Trade-Marks and Labels, with the Rules of the Patent Office Relating Thereto, Edition of January 4, 1892," the following matter on page 17 is hereby canceled:

The words "prints" and "labels," as used in this act, so far as it relates to registration in the Patent Office, are construed as synonymous, and are defined as any device, picture, word or words, figure, or figures (not a trade-mark) impressed or stamped directly upon the articles of manufacture, or upon a slip or piece of paper or other material to be attached in any manner to manufactured articles, or to bottles, boxes, and packages containing them, to indicate the contents of the package, the name of the manufacturer, or the place of manufacture, the quality of goods, directions for use, etc.

By the words "articles of manufacture" (to which such print or label is applicable by this act) is meant all vendible commodities produced by hand, machinery, or art.

But no such print or label can be registered unless it properly belongs to an article of commerce, and be as above defined; nor can the same be registered as such print or label when it amounts to a lawful trade-mark, or when its use in connection with the article to which it is applied is arbitrary or fanciful.

And the following is substituted therefor:

These sections of statute (referring to sections 3, 4, and 5 of the act of Congress relating to patents, trade-marks, and copyrights, approved June 18, 1874, 18 Statutes at Large, p. 78) are construed as authorizing the registry of "prints" and "labels." A label is a device or representation borne by an article of manufacture or vendible commodity. A print is a device or representation not borne by an article of manufacture or vendible commodity, but in some fashion pertaining thereto—such, for instance, as a pictorial advertisement thereof. A label cannot be registered if it bear a device capable of sequestration as a trade-mark until after such device is registered as a trade-mark. Both labels and prints, in order to be entitled to registry, must be intellectual productions in the degree required by the copyright law.

The note on page 19 is canceled.

## Price of Printed Copies of Patents.

Attention is called to the fact that under date of May 14, 1891, the price of uncertified printed copies of patents was fixed at the *uniform price of ten cents each*, whether purchased singly or in quantities.

## Notice.

It is hereby directed that in the printing of claims of applications for patents the punctuation of the claims as made by applicants be strictly followed, and that the punctuation of the specification made by applicants be not departed from except to cure a manifest absurdity.

## Issue of July 4, 1893.

| | | |
|---|---|---|
| Patents | 503 | No. 500,544 to No. 501,046, inclusive. |
| Designs | 18 | No. 24,878 to No. 22,595, inclusive. |
| Trade-Marks | 44 | No. 23,282 to No. 23,325, inclusive. |
| Labels | None. | |
| Prints | None. | |
| Reissue | 1 | No. 11,349. |
| Total issue | 566 | |

TO CITIZENS OF THE UNITED STATES.

| States. | Patents and Designs. | Trade-Marks and Labels. | States. | Patents and Designs. | Trade-Marks and Labels. |
|---|---|---|---|---|---|
| Alabama | | | Nevada | 1 | |
| Arizona Territory | 1 | | New Hampshire | 2 | |
| Arkansas | 2 | | New Jersey | 18 | 1 |
| California | 16 | 2 | New York | 76 | 14 |
| Colorado | 3 | | North Carolina | 3 | |
| Connecticut | 23 | 1 | North Dakota | 1 | |
| Delaware | 1 | | Ohio | 31 | |
| District of Columbia | 4 | | Oklahoma Territory | | |
| Florida | 2 | | Oregon | 5 | |
| Georgia | 6 | | Pennsylvania | 45 | 5 |
| Idaho | | | Rhode Island | 3 | |
| Illinois | 36 | 6 | South Carolina | | |
| Indian Territory | 1 | | South Dakota | 1 | 1 |
| Indiana | 9 | 1 | Tennessee | 4 | |
| Iowa | 5 | | Texas | 2 | |
| Kansas | 8 | | Utah Territory | 3 | |
| Kentucky | 3 | | Vermont | 1 | |
| Louisiana | 1 | | Virginia | 3 | 1 |
| Maine | 4 | | Washington | 1 | |
| Maryland | 7 | | West Virginia | | |
| Massachusetts | 49 | | Wisconsin | 11 | 1 |
| Michigan | 21 | | Wyoming | | |
| Minnesota | 10 | 7 | U. S. Army | | |
| Mississippi | | | U. S. Navy | | |
| Missouri | 19 | 2 | | | |
| Montana | 1 | | Total to citizens of the United States | 447 | 42 |
| Nebraska | 4 | | | | |

TO CITIZENS OF FOREIGN COUNTRIES.

| Countries. | Patents and Designs. | Trade-Marks and Labels. | Countries. | Patents and Designs. | Trade-Marks and Labels. |
|---|---|---|---|---|---|
| Argentine Republic | | | Mexico | | |
| Austria-Hungary | 6 | | Netherlands | | 1 |
| Belgium | 1 | | Newfoundland | | |
| Bermuda | | | New South Wales | 1 | |
| Brazil | | | New Zealand | 1 | |
| Canada | 6 | | Norway | 1 | |
| Chile, Republic of | | | Peru | | |
| Cuba | | | Russia | 1 | |
| Denmark | | | Scotland | | |
| Egypt | | | S. African Republic | | |
| Ecuador | | | South Australia | 1 | |
| England | 32 | | Sweden | 3 | |
| France | 10 | 1 | Uruguay | 1 | |
| Germany | 14 | | Victoria | 2 | |
| Hawaii | | | | | |
| Ireland | | | Total to citizens of foreign countries | 74 | 2 |
| Italy | 4 | | | | |

## APPLICATIONS UNDER EXAMINATION.

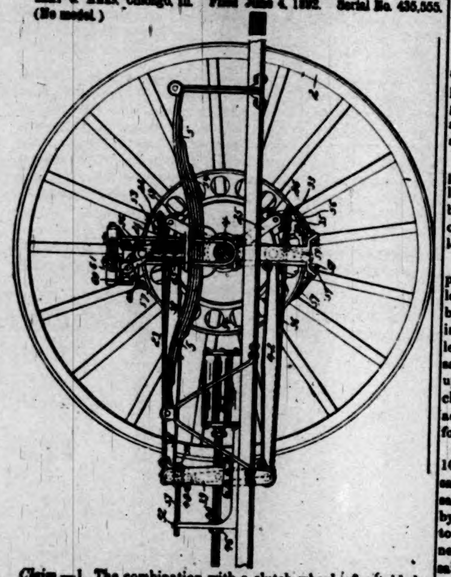
*Condition at Close of Business June 27, 1893.*

| Division No. | Subjects of invention. | Oldest new application and oldest action by applicant awaiting office action. New. | Amended | No. of applications awaiting action. |
|---|---|---|---|---|
| | *In arrears.—Under one month.* | | | |
| 2 | Farm Stock, Products, etc | June 6 | June 26 | 56 |
| 31 | Gas, Painting, Hides, Skins, and Leather, Alcohol, Oils, Fats, and Glue, etc. | June 17 | June 24 | 27 |
| 30 | Lamps, Gas-Fittings, Linotyping, Matrix Making Machines, and Type-Writing Machines. | May 27 | June 17 | 133 |
| | *Between one and two months.* | | | |
| 13 | Metal-Working, Arms and Projectiles, Nails and Spikes, Needles and Pins, etc. | May 1 | June 27 | 108 |
| 14 | Metal-Bending, Wire-Working, Coin Controlled Apparatus, Farriery, Nut and Bolt Locks, etc. | May 1 | June 26 | 129 |
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| 27 | Brushing and Scrubbing, Grinding and Polishing, Laundry, etc. | May 9 | June 21 | 132 |
| 11 | Boots and Shoes, Clasps, Buckles, and Buttons, Harness, Hose and Belting, and Leather-Working Machinery. | Apr. 28 | June 20 | 255 |
| 8 | Furniture, Toilet, Umbrellas and Canes, etc. | Apr. 29 | June 17 | 334 |
| 12 | Mechanical Engineering, Stores-Service, etc. | Apr. 28 | June 17 | 213 |
| 10 | Carriages and Wagons and Railway-Cars. | Apr. 28 | June 17 | 391 |
| 16 | Telegraphy, Telephony, Electric Lighting and Signaling. | May 18 | June 15 | 88 |
| 24 | Sewing-Machines, Crinoline and Corsets, and Apparel. | May 1 | June 12 | 146 |
| 6 | Chemistry, Explosives, Medicines, Fertilizers, Preserving, Photography, Sugar and Salt, etc. | May 5 | June 10 | 141 |
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| 32 | Advertising, Aeration and Bottling, Baggage, Packing and Storing Vessels, etc. | Mar. 28 | June 21 | 358 |
| 7 | Harvesters, Games and Toys, and Velocipedes. | Apr. 1 | June 18 | 451 |
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| 17 | Paper-Manufactures and Printing. | Apr. 6 | June 6 | 262 |
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| 22 | Fire-Arms, Fishing and Trapping, Navigation, Signals, etc. | Mar. 6 | June 9 | 316 |
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# PATENTS

## GRANTED JULY 4, 1893.

**500,544. DRIVING MECHANISM FOR ROAD-VEHICLES.** ALBERT C. ABEL, Chicago, Ill. Filed June 4, 1892. Serial No. 435,555. (No model.)



*Claim.*—1. The combination with a clutch wheel, of suitable levers 10 and $10^a$ mounted concentrically with the clutch wheel, clutching devices carried by said levers and adapted to engage the clutch wheel, and means for operating said levers, substantially as described.

2. The combination with a clutch wheel, of levers as 10 and $10^a$ mounted concentrically with the clutch wheel and provided with pivoted arms, clutch shoes pivotally connected with said arms and adapted to engage the clutch wheel, a reciprocating cross-head, and means for connecting the cross-head with said levers, substantially as described.

3. The combination with a clutch-wheel, of levers as 10 and $10^a$ mounted concentrically with the clutch wheel, beveled clutch shoes connected with and carried by said levers and adapted to clutch said wheel on opposite sides thereof when moved in one direction, a reciprocating cross-head, and connecting rods between said cross-head and levers, substantially as described.

4. The combination with a clutch wheel, of levers as 10 and 10 mounted concentrically with the clutch wheel, beveled clutch shoes connected with and carried by said levers and adapted to clutch said wheel on opposite sides thereof when moved in one direction, and reciprocating mechanism connected with the levers, substantially as described.

5. The combination with a clutch wheel having a hub, of levers as 10 and 10 mounted concentrically with said hub and provided with pivoted arms, clutch shoes carried by said arms and adapted to engage the opposite sides of the clutch wheel, means for actuating said levers, and means for reversing the clutches, substantially as described.

6. The combination with a clutch wheel, of levers as 10 and 10 mounted concentrically with the clutch wheel and provided with pivoted arms, beveled clutch shoes pivotally connected with said arms, a reciprocating cross-head, rods connecting said cross head and levers, a rock bar carried by the cross-head, and means for connecting said rock bar with the clutch shoes, substantially as described.

7. The combination with a clutch wheel having a hub, of levers as 10 and 10 mounted concentrically with said hub and provided with pivoted arms, clutch shoes carried by said arms and adapted to engage the opposite sides of the clutch wheel, a cross-head for actuating said levers, and means for reversing the clutches, substantially as described.

8. The combination with a clutch wheel, having a hub, a lever 10 pivotally mounted upon said hub, and means for reciprocating said lever, of an arm 11 pivotally connected to said lever, a clutch carried by said arm 11 and adapted to clutch said clutch wheel when moved in one direction, and means for adjusting the angle of said arm 11 to the lever 10, substantially as described.

9. The combination with a clutch wheel, having a hub, a lever 10 pivotally mounted upon said hub, and means for reciprocating said lever, of an arm 11 pivotally connected to said lever, a clutch carried by said arm 11 and adapted to clutch said clutch wheel when moved in one direction, means for adjusting the angle of said arm 11 to the lever 10, a lever $10^a$ mounted upon said hub, devices for reciprocating said lever $10^a$ uniformly with said lever 10, arm 25 pivotally mounted upon said lever $10^a$, clutch carried by said arm 25 and adapted to clutch said clutch wheel when moved in one direction, and means for adjusting the angle of said arm 25 to said lever $10^a$, substantially as and for the purpose specified.

10. The combination with a clutch wheel having a hub, a lever 10 pivoted upon said hub, a cross-head 39, means for reciprocating said cross-head, and connecting rod 38 connecting said cross-head to said lever 10, of an arm 11 pivoted to said lever 10, a clutch carried by said arm, said clutch having an ear 53, rocking bar 47 connected to said cross-head 39, means for rocking said bar, rods 23 and 18 connecting said rocking bar to said ear 53, and springs mounted upon said rod 18 at opposite sides of said ear, substantially as and for the purpose specified.

11. The combination with a clutch wheel, a hub carried thereby, levers 10 and $10^a$ pivoted upon said hub, arms 11 and 25 pivoted to said levers 10 and $10^a$ respectively, and clutches carried by said arms, of a cross-head 39, means for reciprocating said cross-head, rocking bar 47 pivotally connected to said cross-head, said rocking bar having a segmental rack at one end, worm intermeshing with the teeth of said rack, means for rotating said worm to rock said bar, connecting rods connecting said cross-head to said levers 10 and 10, and means for adjusting the angle of the arms 11 and 25 to the respective levers, substantially as and for the purpose specified.

12. The combination with a clutch wheel having a V-shaped periphery, of beveled clutch shoes adapted to separately engage the opposite sides of the clutch wheel, levers mounted concentrically with said clutch wheel and adapted to support and carry the clutch shoes, devices for holding the shoes together, and means for operating said levers, substantially as described.

13. The combination with a clutch wheel, of levers as 10 and $10^a$ mounted concentrically with the clutch wheel and provided with pivoted arms, clutch shoes pivotally connected with said arms and adapted to engage the clutch wheel, means for adjusting said clutch shoes, and reciprocating mechanism for actuating the clutch carrying levers, substantially as described.

14. The combination with a cylinder, and a piston rod, of a cross-head connected to said piston rod, trucks 43 and 44 carried by said cross-head, and a bar 45 adapted to serve as a track for said trucks, substantially as described.

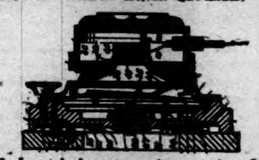
15. The combination with a brake wheel 54, brake straps 56 and 57 encircling said wheel, and lever 60 connected to said brake straps,

of means for rocking said lever to cause said brake straps to bind or release said brake wheel, substantially as described.

16. The combination with a brake wheel 54, brake straps 56 and 57 embracing said wheel, and lever 60 connected to said brake straps, of means for rocking said lever to cause said brake straps to bind or release said brake wheel, shaft 61 supporting said lever 60, lever 62 mounted upon said shaft, spring 67 wound around said shaft and adapted to return said shaft to its normal position, cylinder 65, piston 66 mounted in said cylinder, connecting rod 63 connecting said lever 62 to said piston, pipe 68 adapted to conduct steam into the bottom of said cylinder, and means for supplying steam to said pipe, substantially as described.

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500,545. TELEPHONE SYSTEM. GEORGE L. ANDERS, London, England, assignor of three-fourths to Walther Kottgen, same place. Filed Dec. 1, 1892. Serial No. 453,703. (No model.)



*Claim.*—1. In a telephone transmitter, a microphone formed of or containing a loose mass of separated carbonized fibers, such as carbonized cotton fibers, substantially as described.

2. In a telephone transmitter, a microphone comprising hard carbon blocks, with cup-shaped interior surfaces, between which is placed a mass of loose carbonized fiber, substantially as described.

3. In a telephone transmitter a microphone formed of or containing a carbonized fiber such as carbonized cotton fiber with an admixture of plumbago or other finely divided carbon substantially as described.

4. In a telephone receiver and in combination with the magnets coil and diaphragm, a base plate, the case such as 43, ring such as 42, adapted to maintain the coils and magnet at a determined distance from the diaphragm, the mouthpiece and clamping means, such as the ring 44, for securing the parts together substantially as described.

5. In combination, a receiver, a transmitter, a ringing key, a ring such as 9 connected with same, holes in said ring, holes in the body of the instrument, a switch board carrying a number of contact plates with holes therein, means for normally holding the ring so that the holes in same will be out of line with the others, a plug adapted to shift the ring and make contact with the plates of the switch board and studs carried by the ring and by the switchboard adapted to be moved from contact with each other when the plug is in substantially as described.

6. In a combined telephone transmitter receiver ringing key and switchboard a pivoted block such as 13 a metallic strip carried by said block terminal blocks such as E F ring 9 adapted to rock the block 13 to cause the strip to make contact with one or other of the blocks E F, means for rocking the ring, a stud 12 carried by the ring, a contact plate 5ª on the switchboard stud 45 on said plate normally in contact with the said stud 12 and means for breaking such contact substantially as described.

7. The combination with the case or body 2, having a central opening, of a plate secured to the case, a rear microphone block secured to the plate and extending through the opening in the case, a diaphragm mounted on the case and a front microphone block secured to the diaphragm, substantially as described.

8. The combination with a yoke as 37 having beveled sides of a receiver having a corresponding beveled mouth piece said receiver adapted to slide into the yoke and a switch adapted to be operated by the wedging action of the receiver substantially as described.

9. In combination a circular intercommunicating switchboard a circular sliding ring a rocking block operated by the same for connecting earth or battery to line and means for operating the sliding ring substantially as described.

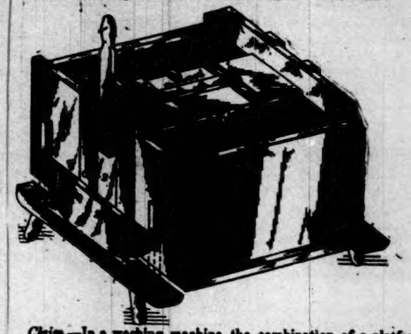
10. In combination, the ring 9, strip 18 and key 19 connected thereto ringing key 21 bars or switch board, stud 5 and block 4 substantially as described.

11. In combination, the key 19, switch 23 normally in contact therewith, stud 5 with which the key can make contact, strip 23 with which the switch is adapted to make contact, nose 24 carried by the switch and yoke 37 with which the nose of the switch can make contact substantially as described.

12. The combination with a telephone apparatus of a rocking device a wire to which normally all the instruments are connected and a battery wire, the rocking device acting to disconnect the apparatus desiring to call another station from that pole of the battery to which it is normally connected and to connect it to the opposite pole so that the use of a third wire is dispensed with substantially as described.

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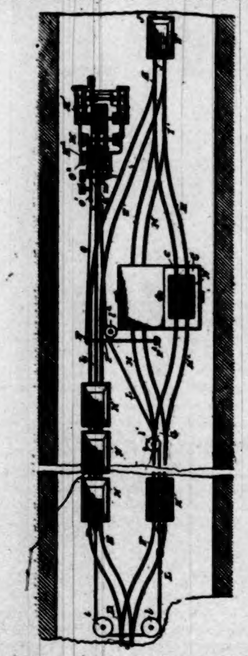
500,546. WASHING-MACHINE. ANDERS P. ANDERSON, Kansas, Mont. Filed Aug. 11, 1892. Serial No. 442,753. (No model.)



*Claim.*—In a washing machine, the combination of a platform having side bars and provided intermediate of the ends of the same with vertically disposed triangular projections, a body, vertical cleats secured to opposite sides of the body and arranged parallel segmental rockers secured to the vertical cleats and arranged at the sides of the body, said cleats and rockers forming spaces to receive the triangular projections, and stop bars pivoted to the ends of the rockers and adapted to be turned down in engagement with the platform, substantially as described.

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500,547. HANDLING COAL-CARS IN MINES. JAMES A. ANDERSON, Bedford, Ohio. Filed Nov. 2, 1892. Serial No. 450,754. (No model.)



*Claim.*—1. In apparatus for handling cars in a mine or similar place, the combination with a main track and elevator cages, of a siding connected to said main track and having switch tracks crossing said cages and inclined downward after crossing the latter, an upwardly inclined track-section connected to the downwardly inclined ends of said switch tracks, and a siding connected to said inclined section and to said main track, substantially as set forth.



2. In apparatus for handling cars in a mine or similar place, the combination with a main track and elevator cages, of a siding having a permanently open switch connection from said main track and divided into switch tracks crossing said cages and inclined downward after crossing the latter, an upwardly inclined track-section connected to the downwardly inclined ends of said switch tracks, and a siding passing around the cages and having permanently open switch connection from the inclined track-section and into the main track at its opposite ends, substantially as set forth.

3. In apparatus for handling cars in a mine or similar place, the combination of a siding for the loaded cars, a siding for the empty cars, a cable along said sidings, an engine driving said cable, and mechanism constructed to automatically stop said engine at predetermined periods, substantially as set forth.

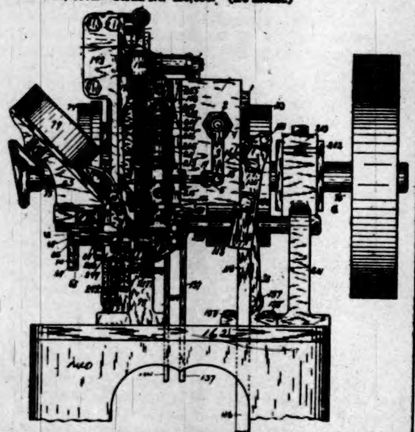
4. In apparatus for handling cars in a mine or similar place, the combination of a siding for the loaded cars, a siding for the empty cars, a cable along said sidings, an engine driving said cable, a connection to the throttle valve of said engine having a catch for holding said valve open, and a trip upon the cable-driving part of said engine engaging and releasing said catch, substantially as set forth.

5. In apparatus for handling cars in a mine or similar place, the combination of a siding for loaded cars, a siding for empty cars, a cable traveling along said sidings, an engine driving said cable, a hand-lever, a throttle valve having a spring which closes it, a flexible connection between said lever and throttle valve provided with a catch portion, a catch engaging said portion, and a trip upon a pulley of the engine engaging and releasing said catch, substantially as set forth.

6. In apparatus for handling cars in a mine or similar place, the combination of a main track, elevator cages, a siding connected to said main track and having switch-tracks crossing said cages and inclined downward after crossing the latter, an upwardly inclined track section connected to the inclined ends of the switch-track, a siding connected to said inclined section and to the main track, a cable passing along the sidings, an engine driving said cable, a hand-lever near the cages, connection between said lever and the throttle valve of the engine and provided with a catch for holding said valve open, and a trip upon the cable-driving part of the engine engaging and releasing said catch, substantially as set forth.

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500,548. LASTING-MACHINE. JOHN T. AVERY, St. Louis, Mo., assignor to the Avery Lasting Machine Company, same place. Filed Mar. 18, 1892. Serial No. 425,030. (No model.)



*Claim.*—1. In a lasting machine, the combination, with mechanism for gripping and drawing the upper over the last securing mechanism, comprising the tack-race and its supporting block for the reciprocating separator, at the end of the tack race a reciprocating separator, slidingly mounted in the block, means for reciprocating the separator and a tack-deliverer mounted in an inclined way and adapted to receive the tack from the separator and deposit it at a point below the plane where it received it: substantially as, and for the purpose described.

2. In a lasting machine, the combination with the mechanism for gripping and drawing the upper over the last, of the upper securing mechanism comprising the tack race, the tack separator at the end of the race, tack delivering jaws mounted in an inclined way, a folder arm below the delivering jaws, and a plunger: substantially as and for the purpose described.

3. In a lasting machine, the combination with the mechanism for gripping and drawing the upper over the last, of a tack deliverer for delivering tacks upon the upper, an anti-friction roller in the lower forward end of said deliverer adapted to rest against a folder arm when in position for delivery, a folder arm, and a plunger, substantially as and for the purposes described.

4. In a lasting machine, the combination with the mechanism for drawing the upper over the last, of a tack deliverer for delivering the tacks upon the upper, a roller in the lower forward end of said deliverer adapted to rest against the folder arm when in position, a spring for holding said roller in position, a folder arm, and a plunger, substantially as and for the purposes described.

5. In a lasting machine, the combination, with a reciprocating folder-arm, of a rocking way therefor, and means for rocking said way substantially as, and for the purposes described.

6. In a lasting machine, the combination, with the folder-arm, of a rocking guide-way therefor, and means for rocking the guide-way and reciprocating the folder arm substantially as, and for the purposes described.

7. In a lasting machine, the combination, with the folder-arm, of a rocking guide-way in which said folder-arm is slidingly secured, means for rocking said guide-way and reciprocating the folder-arm, and a spring for returning the guide-way to its normal position after actuation: substantially as, and for the purposes described.

8. In a lasting machine, the combination with a gripper shaft and gripper jaws, of a projection on the gripper shaft, a rocking arm, and a connection between the rocking arm and projection, whereby when the arm is rocked, the gripper jaws are rotated; substantially as and for the purposes described.

9. In a lasting machine, the combination, with a head-stock, of a gripper-shaft mounted therein, and gripper jaw on the shaft a bifurcated lever, extending from the shaft and adapted to rotate the same, a rock-arm, a rod having a sliding connection with the bifurcated lever and its other end connected to the rock-arm, and a slidingly-adjustable block mounted on the head-stock, and encircling the connecting rod: substantially as, and for the purposes described.

10. In a lasting machine, the combination, with the laterally-movable head-stock, of a pivoted gripper-carrier mounted therein and adapted to swing outward and return, a gripper-shaft mounted in said carrier, an extension on the gripper-shaft, a rock-arm, and a swiveled connection between the rock-arm and extension on the gripper-shaft; substantially as, and for the purposes described whereby, when the rock arm is actuated, it communicates a rotary movement to the gripper shaft through the medium of its connection therewith; substantially as and for the purposes described.

11. In a lasting machine, the combination, with a head-stock, of a gripper-carrier, a gripper-shaft mounted therein, a bifurcated arm, extending therefrom, a connecting rod, provided with a stud, or pin, in its end, a grooved roller mounted on said pin, the groove in which affording reception for the prongs of the bifurcated arm, and a rocking-arm: substantially as, and for the purposes described.

12. In a lasting machine, the combination, with means for adjustably rotating the gripper-shaft, of a cam for actuating said means, a controlling lever, for controlling said means, and a yielding connection between the controlling lever and cam-actuated lever: substantially as, and for the purposes described.

13. In a lasting machine, the combination, with the gripper shaft, of an extension thereon, a rocking arm, a connection between the rocking-arm and extension, a cam-actuated lever, intermediate connections between said lever and rocking-arm, for communicating a rotary movement to the gripper shaft and a yielding controlling lever, connected to the cam-actuated lever, for controlling the movement of the same: substantially as, and for the purposes described.

14. In a lasting machine, the combination with the gripper jaw, for drawing the upper over the last, and their actuating mechanism, of a controlling device for said actuating mechanism, comprising a stirrup, a rod passing through said stirrup and provided with a cap on its end, a compression spring interposed between the cap and stirrup, and a foot-lever, to which the stirrup is secured: substantially as, and for the purposes described.

15. In a lasting machine, the combination, with the gripper jaws for drawing the upper over the last and their actuating mechanism, of means for controlling the movement of said mechanism, comprising a controlling rod 154, a lever 153, to which the same is pivoted, a strap or stirrup, a compression spring mounted in the stirrup and bearing against the lever, a foot-lever, strap or stirrup pivoted thereto, a rod passing through the stirrup provided with a cap on its end and a compression spring, interposed between the cap and stirrup substantially as, and for the purposes described.

16. In a lasting machine, the combination, with a vertically-movable gripper-shaft, of an independently operated restraining bar for controlling the upward movement of said shaft: substantially as, and for the purposes described

17 In a lasting machine the combination, with gripper-shaft and jaws, of mechanism for closing said jaws, and an independently operated restraining bar, the free end of which bears against the upper end of the gripper shaft for holding the shaft against longitudinal movement while the jaws are being closed substantially as, and for the purposes described.

18. In a lasting machine, the combination, with the head-stock, of a gripper-carrier pivoted therein, actuating mechanism for moving the head-stock laterally, and a connection between said actuating mechanism and the gripper-carrier, for moving the said gripper-carrier backward and forward simultaneously with the lateral movement of the head-stock substantially as, and for the purposes described.

19. In a lasting machine, the combination, with a laterally-movable head-stock and means for moving said head-stock laterally, of a swinging gripper-carrier pivotally mounted in said head-stock, and an adjustable connection between the gripper-carrier and actuating mechanism for the laterally-movable head-stock for moving the gripper carrier backward and forward simultaneously with the lateral movement of the head-stock: substantially as, and for the purposes described.

20. In a lasting machine, the combination, with a laterally-movable head-stock and means for moving the head-stock laterally, of a swinging gripper-carrier mounted in the head-stock, means for swinging said gripper-carrier forward and backward, and a controlling lever for adjusting the stroke of the laterally movable head-stock: substantially as, and for the purposes described.

21. In combination, with the gripper-carrier, its gripper jaws and actuating mechanism, of a plunger adapted to actuate the gripper carrier being provided with a slot, a pin passing through said slot, a compression-spring for receiving motion from the plunger, a connecting rod secured in the plunger, bell-crank lever for actuating said rod and plunger, and means for actuating the bell-crank: substantially as, and for the purposes described.

22. In a lasting machine, the combination, with a gripper-carrier, its gripper jaws and actuating mechanism therefor, in which is included a cam-operated rock-arm, a rod swiveled to said rock arm, a head slidingly mounted on said rod, a compressed spring bearing against the head, adjusting nuts and a connection between the sliding head and gripper-carrier: substantially as, and for the purposes described.

23. In a lasting machine, the combination with a laterally movable head-stock, of a swinging gripper carrier pivoted therein, cam operated lever arms for receiving and transmitting the lateral movement to the head stock, and a sliding connection between one of said arms and the gripper carrier, whereby the thrust of the gripper carrier is made yielding, and its return positive; substantially as and for the purposes described.

24. In a lasting machine, the combination with a laterally movable head stock, of a swinging gripper carrier pivoted therein, cam operated lever arms for moving the head stock laterally, a plunger in the gripper carrier, and a connection between one of said cam operated lever arms and the plunger, comprising a sliding connection, a spring, and adjustable abutting nuts for the sliding connection, whereby the gripper carries is yieldingly thrust forward, and positively returned; substantially as and for the purposes described.

25. In a lasting machine, the combination with a laterally-movable head-stock, a gripper-carrier mounted in said head-stock so as to be movable independently thereof, and gripper jaws of means substantially as described herein for moving said gripper-carrier, consisting in a cam-operated lever-arm, connections between the free end of the lever-arm and said gripper-carrier, said intermediate connections having included therein a sliding connection, adjustable abutting nuts and a compression spring, whereby the forward movement of said lever-arm is positively transmitted an adjustable amount to the intermediate connecting parts, and the reverse movement of said lever-arm is transmitted to the said intermediate connecting parts through the said compression spring substantially in the manner described, and for the purposes specified

26. In a lasting machine, the combination with a laterally movable head stock carrying the gripper shaft and gripper jaws, of a rocking lever for moving the head stock laterally, said lever being provided with a slotted member, a slotted rock arm, a controlling rod provided with a sliding pivot for adjusting the intersection of the longitudinal axis of the two slotted arms, and a yielding lever for actuating said controlling lever substantially as and for the purposes described

27. In a lasting machine the combination, with the head stock, gripper shaft, and gripper jaws, of means for controlling the movement of said gripper jaws, comprising a controlling rod 137, a pivoted lever, to which the same is connected, a rod connected to the opposite end of said lever, a cap on the end of the rod, a stirrup, pivoted on a bell-crank lever, a compression spring interposed between the cap on the rod and stirrup and means for actuating the bell-crank lever substantially as, and for the purposes described.

28. In a lasting machine, the combination with the head stock gripper shaft and gripper jaws, of means for controlling the movement of said jaws, comprising a controling rod, a bell-crank lever for actuating said rod, a rod for actuating the bell-crank lever provided with a notch or recess to limit its movement, and a knee-pad on the outer end of the rod substantially as, and for the purposes described.

29. In a lasting machine, the combination with the head stock, gripper shaft and gripper jaws, of means for controlling the movement of the gripper-jaws, comprising a bell-crank lever, a yielding connection between the bell-crank lever and controlling rod 137, a rod 116 for controlling the throw of the head-stock, connected to the bell-crank lever and means for actuating the bell-crank lever: substantially as, and for the purposes described.

30. In a lasting machine, the combination, with the laterally movable head-stock, of a gripper-shaft provided with gripper-jaws and mechanism for actuating the several parts, rods for controlling the movements of the head-stock and gripper-jaws, and means for actuating the rods simultaneously whereby, at the same time of the shortening of the throw of the head stock, the gripper jaws are rotated: substantially as, and for the purposes described.

31. In a lasting machine, the combination, with the laterally movable head-stock, of a gripper-shaft, provided with gripping-jaws rods for controlling the movements of the head-stock, and gripper-jaws, a bell-crank lever, to which said rods are connected, an actuating rod for the bell-crank lever, and a knee-pad on said rod: substantially as, and for the purposes described.

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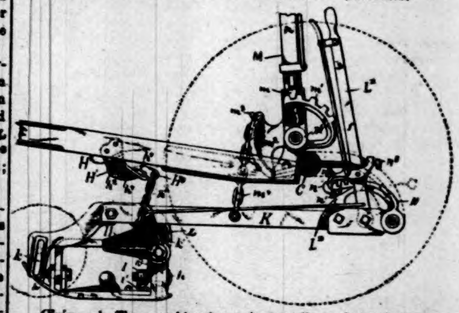
**500,549.** ANTISEPTIC COMPOUND. LEO H. BAEKELAND, New York, N. Y. Filed June 27, 1892. Serial No. 438,193. (No specimens.)

*Claim.*—1. As a preservative for meat and fish, a mixture of fluorid of sodium and chlorid of sodium, substantially as herein set forth.

2. As a preservative for meat and fish, a mixture of fluorid of sodium, fluorid of potassium and chlorid of sodium, substantially as set forth.

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**500,550.** MOWER. WILLIAM R. BAKER, Chicago, Ill., assignor to the McCormick Harvesting Machine Company, same place. Original application filed Mar. 12, 1887, Serial No. 230,569. Divided and this application filed July 15, 1889. Serial No. 317,618. (No model.)



*Claim.*—1 The combination substantially as hereinbefore set forth, of the carrying-wheels, the axle, the main-frame, the floating coupling-frame, the counterbalancing spring connecting said finger bar with the coupling frame the hinged finger-bar, the draft-tongue, the pin secured to the draft-tongue, the lever-arm pivoted to said pin, and having a series of lateral projections, the spring coiled about the pin and bearing at one end upon the tongue and at the other upon one of the lateral projections, and the flexible connection between said arm and the coupling-frame.

2. The combination substantially as hereinbefore set forth, of the forked coupling-arm, the finger-bar, the pivot-pins hinging said finger-bar to the forks of the coupling-arm, and the spring coiled about one of said pivot-pins and bearing at one end against the inner edge of one of the forks and at the other against the heel of the finger-bar to depress said heel and raise the outer end of the finger-bar.

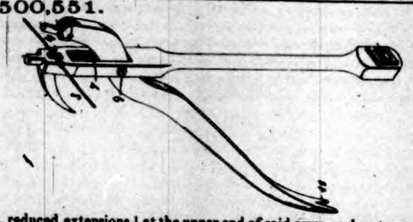
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**500,551.** COMBINATION-TOOL. JAMES D. BARNETT, Logan, Ia. Filed Aug. 22, 1892. Serial No. 443,793. (No model.)

*Claim.*—A combination tool, comprising an arm having a longitudinally extending opening therein, an arm pivoted within said opening, reduced extensions 1 at the upper end of said arms, and rectangular recesses in the lower end of one of said arms, and a longitudinally extending recess, in the inner edge or face of one of said arms, and a transverse groove in said arm communicating with said longitudinally extending recess, and a cutting plate carried by the opposite arm or lever and adapted to register with the said longitudinally arranged recess, substantially as set forth.

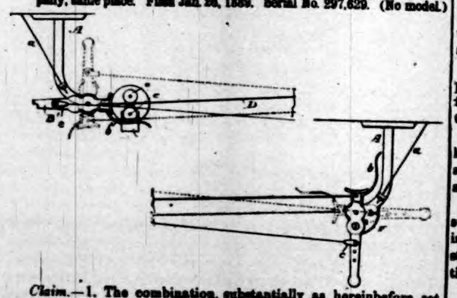


**500,551.**



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**500,552.** CASH-CARRIER APPARATUS. SAMUEL W. BARR, Mansfield, Ohio, assignor to the Barr Cash and Package Carrier Company, same place. Filed Jan. 26, 1889. Serial No. 297,629. (No model.)



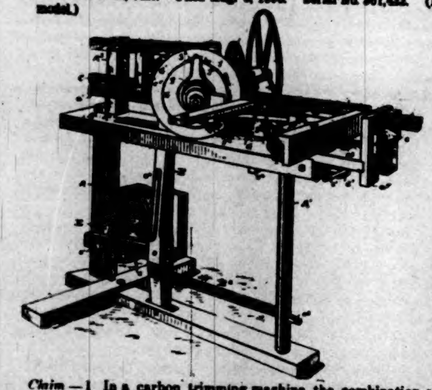
*Claim.*—1. The combination, substantially as hereinbefore set forth, of the carrier, the upper and lower track wires, and reversing levers for said wires arranged to carry the lower wire alternately to the top past the upper wire or wires.

2. The combination, substantially as hereinbefore set forth, of the carrier, the upper and lower track wires and the reversely set levers arranged to carry the wires past each other and reverse their position.

3. The combination, substantially as hereinbefore set forth, of the two parallel top track-wires, the bottom wire arranged as described to play therebetween, and the reversing levers acting to carry the single wire past the two parallel wires and to the opposite side thereof for each vibration.

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**500,553.** CARBON-TRIMMING MACHINE. CHARLES O. BARTLETT, Cleveland, Ohio. Filed Aug. 8, 1890. Serial No. 361,422. (No model.)



*Claim.*—1 In a carbon trimming machine, the combination of a carbon feeding device, with a trimmer arranged adjacent and at an acute angle to the path of said feeding device, substantially as set forth

2 In a carbon trimming machine, the combination of a carbon carrier, a carbon gripping device, a trimmer located adjacent to the path of said carrier, and means to move the carrier into operative relation to said trimmer, substantially as set forth.

3. In a carbon trimming machine, the combination with a carbon carrier, of an intermittently movable trimmer, adjacent to the path of said carrier, substantially as set forth.

4. In a carbon trimming machine, the combination of a carbon carrier, a carbon holder, carbon trimming mechanism located adjacent to the plane of movement of said carrier, and conjoint driving connections connected with said carrier and trimming mechanism, and adapted to operate the same at different intermitting periods, substantially as set forth.

5. In a carbon trimming machine, the combination of a reciprocating carbon carrier, a gravitating carbon stop, and an arm or block operatively connected with the said carrier to raise said stop, substantially as set forth.

6. In a carbon trimming machine, the combination of a reciprocating carbon carrier, a carbon stop upon said carrier, a carrier moving arm, and a carbon gripper upon the carrier and operatively connected with said arm, substantially as set forth.

7. In a carbon trimming machine, the combination of a carbon carrier, a carbon trimmer adjacent to the path of said carrier, a carrier moving arm, and a carbon gripping device connected to be operated by the same, substantially as set forth.

8. In a carbon trimming machine, the combination of a carbon carrier, a base for said carrier, a carrier moving arm, a trimmer and trimmer feeding mechanism operatively connected with said arm, substantially as set forth.

9. In a carbon trimming machine, the combination of radially pivoted arms, rotary trimming knives upon such arms, and oscillatory feeding mechanism adjacent to said knives and in operative relation thereto, substantially as set forth.

10. In a carbon trimming machine, the combination of pivoted knife-carrying arms, a base, a threaded bolt inserted through said arms and base, and yielding washers upon said bolt between said arms and base, substantially as set forth.

11. In a carbon trimming machine, the combination of a bed plate, supporting standards, a machine base upon the standards, a thrust rod in one of said standards, knife supporting arms pivoted upon said standard, and knife feeding mechanism upon said arms, and in operative relation to the thrust rod, substantially as set forth.

12. In a carbon trimming machine, the combination with a carbon carrier, a two membered gripping device and carrier actuating mechanism, one of the gripping members in operative relation to the carrier; said member being adapted to move the other member and hold the carbon upon the said carrier, substantially as set forth.

13. In a carbon trimming machine, the combination of a two sectioned carbon gripping device, provided with inclined contiguous slots in said sections and rollers in said slots, said rollers adapted to separate the sections as one or the other is moved, substantially as set forth.

14. In a carbon trimming machine, the combination of a knife bearing, a reciprocating thrust rod, connected, oscillating arms pivoted upon said bearing, one of said arms operative to move the knife, while the other is operated upon by said reciprocating thrust rod, substantially as set forth.

15. In a carbon trimming machine, the combination of trimming knives, oscillating arms and gripping mechanism adapted to rotate the knives as the said arms are intermittently moved, substantially as set forth.

16. In a carbon trimming machine, the combination of a carbon carrier, a carrier guide, a guide support, and adjustable connections intermediate of the guide support, substantially as set forth.

17. In a carbon trimming machine, the combination of a carbon carrier, a carrier guide, carrier actuating mechanism, and a rocking block operatively connected with the latter, said block being adapted to intermittently raise the carrier in said guide, substantially as set forth.

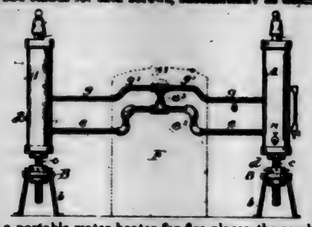
18. In a carbon trimming machine, the combination of a carbon carrier, standards upon said carrier adapted to guide the carrier in its reciprocations, a two membered gripper in such standards, contiguous to the said carrier, one of said members being pivoted, said standards being provided with slots to receive the gripper, separating rollers interposed between said members, and carrier actuating mechanism in operative relation to the loose member, substantially as set forth.

19. In a carbon trimming machine, the combination of a two membered gripper, cross-heads for said gripper, a pivotal bearing in one of said cross-heads for such gripper, and a yielding support in the other of said cross-heads for the gripper, substantially as set forth.

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**500,554.** FIREPLACE WATER-HEATER. ALEXANDER BRESSOLA, Louisville, Ky. Filed Mar. 17, 1892. Serial No. 425,092. (No model.)

*Claim.*—1 A portable water heater for fire places consisting of two vertical water reservoirs, pipes uniting said reservoirs, said pipes being bent laterally into said fire place, screws under said reservoirs, with nuts and stands for said screws, substantially as described.



2. In a portable water heater for fire places, the combination of two vertical water reservoirs having a feeding pipe on top thereof, and a bell-shaped cover for said pipe, pipes uniting said reservoirs, and screws supporting said reservoirs, with nuts and stands for said screws substantially as described.

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500,555. DEFLECTOR AND VENTILATOR FOR PASSENGER-CARS. CHARLES H BERRY, Cambridge, Mass. Filed Oct. 6, 1890. Serial No. 367,158. (No model.)



*Claim.*—1. The deflector and ventilator herein described consisting of the vertical bar *a*, top rail *b*, and bottom rail *c*, constituting the supporting frame, vertical plates *d*, *e*, secured to said frame with a slot or passage between them, and a plate *f* arranged obliquely at the rear side of device and covering the said slot or passage, one edge of said plate *f* abutting against the outer edge of the plate *d*, substantially as described.

2. The deflector and ventilator herein described consisting of the perpendicular plates *e* and *f*, the latter being arranged obliquely to the former and overlapping one edge of the same, and separated therefrom to leave a passage or opening between said plates the inner edge of plate *f* being in the plane of the plate *e*, and a supporting frame for said plates, substantially as described.

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500,556. SEWING-NEEDLE. ERLEN A. BLANCHARD, New York, N. Y. Filed June 2, 1892. Serial No. 435,270. (No model.)



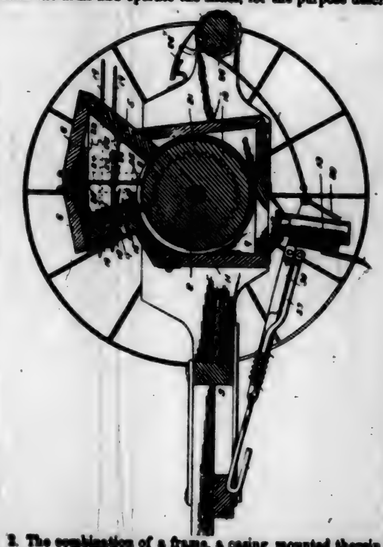
*Claim.*—1. A sewing needle having a spring latch secured at its upper end to the shank of the needle, its lower or free end being normally open or sprung away from said shank, and a shoulder or projection extending entirely across the space or opening between the shank and the free end of said latch when the latter is open to form a thread receiving notch or recess, substantially as described.

2. A sewing needle provided with a laterally movable latch connected at its upper end with the shank of the needle, the free end of said latch being provided with a shoulder or projection extending entirely across the space or opening between it and the shank of the needle when the said latch is open, the shank of the needle being provided with a recess to receive said shoulder or projection, substantially as described.

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500,557. FERTILIZER-DISTRIBUTER AND GRAIN-DRILL. LEVI I. BRUNSWANER and JAMES M. BRUNSWANER, Kernersville, N. C. Filed Sept. 10, 1892. Serial No. 445,694. (No model.)

*Claim.*—1 The combination of a frame, a casing mounted therein, feed spouts leading from said casing, a drum in the casing having channels, a hopper having compartments and having feed openings communicating with the channels of the drum, a shaft mounted in the hopper and carrying agitators, guides or cleats in the hopper, slides having reduced portions movable in the cleats and broadened ends for closing communication between the hopper and drum, pins connected to said slides, rock-arms having one end connected to said pins, and a longitudinal bar connected to the other end of said arms to rock the arms and operate the slides, for the purpose described.



2. The combination of a frame, a casing mounted therein, feed spouts leading from the casing, a drum in the casing for conducting the material to the spouts, a hopper communicating with the casing and drum, a shaft in the hopper having agitators, tubes surrounding the feed spouts and carrying drill points, the drag bars having the stop bars and having their forward ends connected to the frame and their inner ends connected to the said tubes, the bars having their inner ends also connected to the tubes and their outer ends passing through said stop bars, springs surrounding the extended ends of the bars, the flexible connections leading from the rear of the tubes, and the drum with pawl and ratchet for winding said flexible connections thereon, for the purpose described.

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500,558. PRINTING ANILINE-BLACK. JOHN BRADWELL, North Adams, Mass. Filed Mar. 27, 1893. Serial No. 467,803. (No specimens.)

*Claim.*—1. The process of producing and fixing on cotton fabrics or fibers colored patterns with aniline black grounds, which consists in first padding or covering the fabric or fiber with an aniline black mixture, and then printing with a color mixture consisting of an aniline black discharge, a coal tar color, and an alumina hydrate as mordant for the color, and then steaming or aging at such degree as that the aniline black and the color pattern are simultaneously developed and fixed substantially as described.

2. The color mixture for printing on aniline black grounds adapted to be developed and fixed by the same amount of heat and moisture as the aniline black, which consists of an aniline black discharge, a coal tar color, and an alumina hydrate, the insoluble salts of which have an affinity for both said color and cotton fiber, whereby said heat and moisture will cause said mixture to discharge the aniline black on the fiber, and to deposit in place thereof the insoluble double salt of the alumina and color substantially as described.

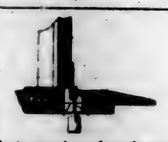
3. The color mixture for printing on aniline black grounds adapted to be developed and fixed by the same amount of heat and moisture as the aniline black, which consists of an aniline black discharge, an aluminum hydrate, and an alizarine color, whereby said heat and moisture will cause said mixture to discharge the aniline black on the fiber and to deposit in place thereof an insoluble aluminum alizarate substantially as described.

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500,559. WEATHER-STRIP. MCDUFFIE BRADFORD, Dundee, Tex. Filed July 19, 1892. Serial No. 440,517. (No model.)

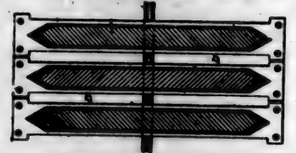
*Claim.*—The combination of a door, a door-frame provided in the sill with a longitudinal drain opening extending through the floor to permit water to fall beneath the same, a hinged weather strip consisting of a flat plate connected between its side edges to the inner side of the drain opening of the sill and forming a narrow flange extending down into the drain opening when the weather strip is in a vertical position, a weight arranged beneath the sill and of a size to play in the drain opening, and the link 7 hingedly connected to the weather strip and to the weight and depending from the former and arranged in the drain opening, substantially as described.





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500,560. COTTON-GIN SAW. WALTER M. BROWN, Albany, N. Y. Filed May 24, 1892. Serial No. 434,215. (No model.)



*Claim.*—1. A cotton gin saw, having two or more rows of teeth, said teeth being arranged to produce a beveled or sloping surface on their peripheries, for the purposes described.

2. A cotton gin saw, composed of two or more sections, each section having teeth upon its periphery, said sections being set side by side and held securely in a mass; the teeth on the sections being arranged to produce a beveled surface on their peripheries, for the purposes described.

3. A cotton gin saw, composed of two or more sections, each section having teeth, said sections being set side by side and held securely as in a mass, and having grooves, openings or gutters in or on the outer sections, and cylinders or shafts having collars fitting in said grooves, openings or gutters, whereby the named sections may be held securely, for the purposes described.

4. Sections for a saw, having their bottoms or feet divided or separated, the portions of the feet or bottoms made by this division being sprung away from the body of the section, in combination with a cylinder or shaft having collars between which the bottoms or feet of each of such sections with their divided parts may be securely held, and arranged so that the portions of said sections thus sprung away from the body of the sections shall re-act upon the collars when so securely held, for the purposes described.

5. Sections for a saw, having their feet or bottoms divided or separated, the portions made by this division being turned over, forming offsets to the bodies of the sections, in combination with a shaft having collars between which said sections may be securely held, and arranged so that the offset shall catch upon said collars, preventing the sections from being drawn from between them, for the purposes described.

6. Sections for a saw, having a portion of their blades turned, forming an offset to the blades, in combination with a shaft having collars between which the sections may be securely held, the offset arranged to catch upon the collars, for the purposes described.

7. In combination with the collars of a driving shaft, a saw composed of sections, each section having a projection on its face formed by turning or forcing up a portion of the material of the section, said projection being arranged to lie over or upon the periphery of the collars, and prevent the sections from dropping or being forced down between the collars, for the purposes described.

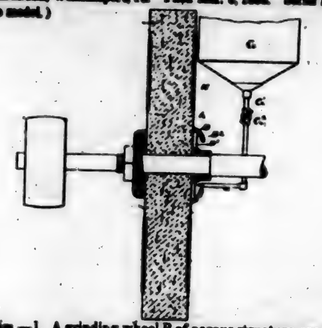
8. In combination with the collars of a driving shaft, a saw composed of sections, each section having an offset at or near its base, formed by turning or forcing up a portion of the blade arranged to lap under or catch upon the collar, and an offset above the one at or near the base, and formed by forcing or turning up a portion of the blade, and arranged to lap over or catch upon the collar and arranged to keep the sections between the collars, for the purposes described.

9 In combination with the collars of a driving shaft, a saw composed of sections set between the collars, each of said sections having a portion of its blade standing out from the face of the saw, said portions so standing out being resilient, for the purposes described.

10. A saw composed of sections, each section having rigidly connected therewith, when separated from the saw as a whole, refractory bodies standing out from the faces of the sections, in combination with section holding devices attached to the driving shaft, said refractory bodies being arranged to hold the sections firmly to the section holding devices by coming in contact with the outer surfaces of said holding devices for the purposes described.

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500,561. BERRY-WHEEL. JOSEPH R. CARPENTER and ADAM M. CARPENTER, Williamsport, Pa. Filed Mar. 9, 1893. Serial No. 465,326. (No model.)

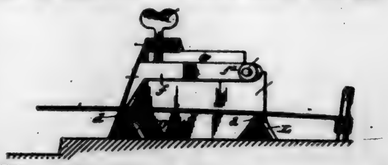


*Claim.*—1. A grinding wheel B of porous structure, mounted on a shaft with driving means adapted to give it a high velocity, in combination with a pipe G' containing water under pressure and presenting it against the surface of the wheel near the axis without chambering or boring, so that the water may be received into the interstices of the wheel near the center, and shall be moved outward through such interstices by the centrifugal force and discharged at the periphery, as herein specified.

2. The grinding wheel B of porous structure, a ring H of varnish or other impervious material applied on its end of face but leaving an annular portion A near the center of its end in an absorbent condition, such wheel being mounted on a shaft with driving means adapted to give it a high velocity, in combination with a pipe G' containing water under pressure and presenting it against the surface A, as herein specified.

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500,562. ADAPTER FOR PIANOS. GARRETT J. GUNNELL, Chicago, Ill. Filed Sept. 26, 1892. Serial No. 446,865. (No model.)



*Claim.*—1. The combination with a bridge over which the strings are adapted to pass, of a jaw for clamping the strings upon said bridge, substantially as set forth.

2. The combination with the strings and the wrest pins by which they are tightened, of a clamp adapted to hold said strings against endwise movement, substantially as set forth.

3. The combination with the strings, of the bridge having a reduced edge over which the strings pass, and a jaw having a reduced edge arranged to pinch the strings upon said bridge, substantially as set forth.

4. The combination with the strings of a unison, a bridge over which said strings pass, and a jaw having a reduced edge extending across all of said strings of the unison, and adapted to bind them upon the bridge, substantially as set forth.

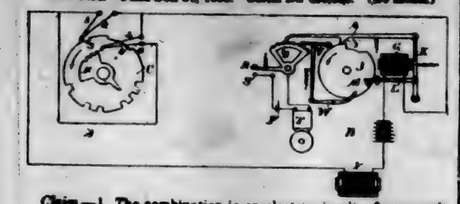
5. The combination with the strings, and a bridge over which said strings pass, of a pivoted jaw or dog arranged to rest upon said strings above said bridge, and a set-screw for causing said jaw to impinge the strings, substantially as set forth.

6. The combination with the strings, of the bridges D, I, over which the strings pass, the wrest pins to which the strings are secured, and a gripping jaw arranged over one of said bridges, substantially as set forth.

7. The combination with a bridge over which the strings are adapted to pass, a movable dog arranged above said bridge, a cross-bar arranged above said dog and a set screw passing through said cross bar and adapted to impinge said dog, substantially as set forth.

8. The combination with the strings, of a bridge over which said strings pass, the side pieces H, I, rising from said bridge between said strings, a gripping dog or jaw arranged between said side pieces and being journaled therein, a cross-bar extending across said side-pieces, a set screw passing through said cross-bar and adapted to impinge said dog or jaw, for gripping the strings between the bridge and jaw, substantially as set forth.

**500,563. SIGNALING SYSTEM.** WILLIAM B. BENNOT, Boston, Mass., assignor to the Gamewell Fire Alarm Telegraph Company, of New York. Filed Dec. 31, 1892. Serial No. 456,892. (No model.)



*Claim.*—1. The combination in an electric circuit, of a transmitter, a magnet, a circuit closer in a local circuit actuated thereby, a second circuit closer in said local circuit, a locking device for the first circuit closer, and an automatic releasing mechanism acting to release said first circuit closer.

2. The combination in a signaling system, of a transmitter adjustable for sending different signals, and at the receiving station a magnet, a circuit closer actuated thereby, and a mechanical stop permitting the magnet to act upon the circuit closer at a definite time, a locking device for the circuit closer, and an automatic releasing mechanism for said device acting to unlock the circuit closer at a definite period.

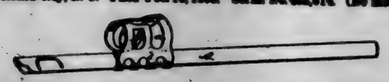
3. The combination in a signaling system, of a transmitter adjustable for sending different signals, and at the receiving station a magnet, a circuit closer actuated thereby, and controlling a local bell circuit, and a mechanical stop permitting the magnet to act upon the circuit closer at a definite time, a locking device for the circuit closer, and an automatic releasing mechanism for said device acting to unlock the circuit closer at a definite period.

4. The combination in a signaling system, of a transmitter adjustable for sending different signals, and at the receiving station a magnet, a circuit closer actuated thereby, a time stop and train therefor controlled by the said magnet and adapted to permit the magnet to act upon the circuit closer at a definite time, a locking device for the said circuit closer for releasing the circuit closer and controlled by the said train.

5. The combination in a signaling system, of a transmitter adjustable for sending different signals, and at the receiving station a magnet, a local circuit controlled thereby during a limited period, a time train, a circuit closer in the local circuit controlled by the time train, and a locking device therefor.

6. The combination in a signaling system, of a transmitter adjustable for sending out different signals, and at the receiving station a magnet, a local circuit controlled thereby for a limited period, a time train, a circuit closer in a local circuit controlled by said train, and a locking mechanism for holding the local circuit closed when acted upon by the magnet, adapted to be automatically released at a definite period.

**500,564. GUARD FOR PENHOLDERS.** HENRY DEELAND, Long Island City, N. Y. Filed Feb. 16, 1893. Serial No. 462,614. (No model.)



*Claim.*—A guard for penholders consisting of a plate bent from a longitudinal axis in opposite directions so that the outer edges of the two bent portions approach each other on the same side of the plate, one of said bent portions being adapted to receive the pen and the other the finger, each of said portions having slots or holes stamped out thereof in the direction of the bend, but said slots not extending to the outer edges thereof, substantially as described.

**500,565. LACING-HOOK.** WILLIAM B. H. DOWNE, Newton, Mass. Filed Nov. 4, 1892. Serial No. 450,941. (No model.)



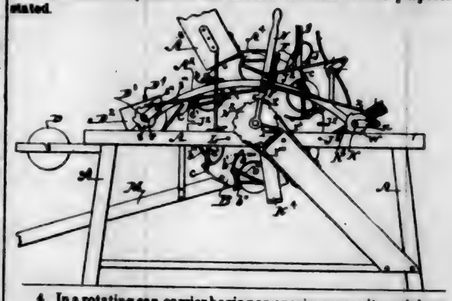
*Claim.*—A lacing hook or fastener, in one piece, having a central spiral attachment provided with barbs substantially as described.

**500,566. CAR-LABELING MACHINE.** WILBUR A. DUNN and FRANK H. DUNN, Newton, Iowa. Filed Apr. 20, 1891. Serial No. 389,703. (No model.)

*Claim.*—1. In a can-labeling machine, the combination of a rotating cylindrical can-carrier, having transverse openings in its periphery adapted to receive and retain cans and can-clasping plates hinged in said openings, and an open-ended tube mounted in a vertical position, and adapted to contain cans and to drop them successively into the said openings of the rotating carrier, in the manner set forth.

2. In a machine for labeling cans a rotating cylinder and can-carrier, having concave openings adapted to admit cans, and concave spring actuated plates hinged in the said openings to clasp a can in the manner set forth for the purposes stated.

3. In a can-labeling machine the plate *b* hinged in the transverse can-receiving opening in the periphery of a rotating can-carrier, the lever *b'* and the spring *b''* and means for actuating said lever, arranged and combined to operate in the manner set forth for the purposes stated.



4. In a rotating can-carrier having an opening across its periphery to admit a can, a plate *c* hinged to the edge of said opening and a spring *c'* fixed to the plate and to the can-carrier to span across the opening, and means for automatically and alternately reversing the position of the plate relative to said opening in the rotating can-carrier.

5. The cutter F pivoted to the post $F^3$ the spring *g* and the rotating shaft H having arms $H^3$, arranged and combined with the rotating can-carrier having transverse openings or can-receptacles and slots, $J^3$, in the periphery, to operate in the manner set forth.

6. The rotating shaft K carrying brushes $K^3$ and frames $K^4$, in combination with a rotating can carrier having transverse openings to admit cans, and hinged plates *c*, substantially as shown and described for the purposes stated.

7. The cutter F carrying a hook J, and the plate *c* hinged to the can-carrier B, arranged and combined with a rotating can-carrier having transverse openings $J^3$ to operate in the manner set forth for the purposes stated.

8. A can-labeling machine comprising a rotating can-carrier having transverse openings in its periphery to admit cans and can clamping devices in said openings, a paper holding plate hinged to the edge of each of said transverse openings, a can-holding tube having an open bottom for delivering cans into the opening of the carrier, a roller for supporting a roll of labels in a continuous sheet, a paste receptacle for distributing paste on the top surface of the connected labels, a cutter for severing the labels, a rotating brush for pressing the labels on the cans and means for actuating the operating devices in concert, arranged and combined with a frame to operate in the manner set forth for the purposes stated.

**500,567. TOY.** OTIS S. EDWARDS, Centropolis, Mo. Filed Sept. 3, 1892. Serial No. 444,902. (No model.)



*Claim.*—1. A toy or game comprising a box having one or more hooks secured to the inner side or bottom thereof, and one or more fish having a loop secured thereto to be caught upon the hook, substantially as described.

2. In a toy or game having a box provided with a transparent cover, and a picture or representation of a body of water, and objects thereon, in the bottom of the box, the combination of a hook secured to the inner side or bottom of said box, with a number of miniature fish having loops, adapted to engage the hook in the bottom of the box, substantially as set forth.

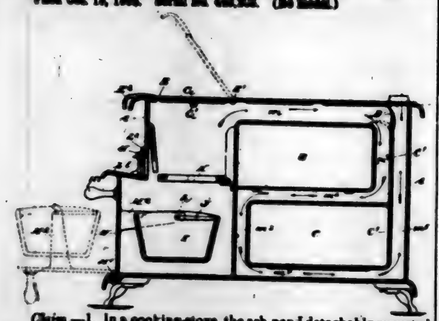


**500,568. WATER BANDAGE.** GEORGE F. ELLS, Binghamton, N. Y. Filed Nov. 6, 1892. Serial No. 451,402. (No model.)

*Claim.*—1. In a water bandage the combination of a suitably coiled rubber tube, a backing of textile material, and felt secured to the backing between the coils of the tube substantially as described.

2. In a water bandage, the combination of a coiled rubber tube a textile backing for said tube, felt retained between the coils of the tube, and a spiral wire connected with said tube substantially as described.

**500,569. COOKING-STOVE.** THEODORE FULLER, Glens Falls, N. Y. Filed Oct. 18, 1892. Serial No. 449,203. (No model.)



*Claim.*—1. In a cooking-stove, the ash-pan I detachably mounted on pivots *j* carried on arms or brackets $H^3$ on the hinged front H', and adapted to be moved outward and inward by simply turning such front on its hinges, as herein specified.

2. In a cooking-stove, an ash-pan having a bail J with arms extended to form pivots *j* in combination with the front H turning on hinges H' at its base, and notched arms or brackets $H^3$, and with a removable hearth L having supporting arms L' engaging under ledges A' on the stove body, all arranged for joint operation as herein specified.

**500,570. INTERSECTING MITER.** MATTHIAS GATH, Wichita, Kans., assignor, by direct and mesne assignments, to Jonathan R. Snively, same place, and Alfred H. Flower and Robert H. Gross, Boston, Mass. Filed July 16, 1892. Serial No. 440,249. (No model.)



*Claim.*—1. The combination with the two-part-frame provided with the parallel face flanges; and with the semi-circular side slot, and clamping screw; of the sealed quadrant, provided with the cross-guide bar, and the blade provided with the longitudinal side channel, substantially as and for the purpose set forth.

2. The intersecting miter-bevel comprising the two-part flanged frame having a flange of each part beveled and provided with pitch graduating marks and with the rabbet scale marks; the compound sliding protractor arranged in a semi-circular slot of one frame part, and provided with a guide bar extending between the frame parts, and the graduated blade provided with the longitudinal side channel arranged between said frame parts, guided by said bar, and arranged with one edge intersecting the center of said semi-circular slot, and a clamping screw for holding the blade, when adjusted, substantially as and for the purpose specified.

3. The herein described intersecting miter-bevel provided with the adjustable blade, and with the opposite beveled flanges, substantially as set forth.

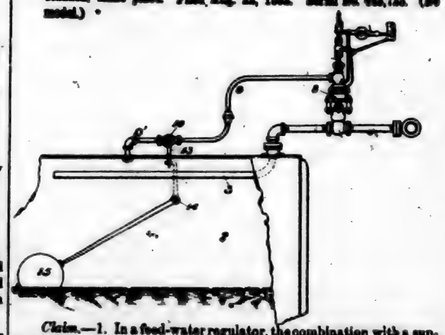
4. The herein described intersecting miter-bevel provided with the adjustable blade, and with the opposite beveled flanges and pitch graduating marks arranged, substantially as set forth.

5. The herein described intersecting miter-bevel provided with the adjustable blade, with the opposite face flanges extending each way from the intersecting edge of the blade, and provided with the rabbet scale marks, substantially as set forth.

6. The herein described intersecting miter-bevel provided with the adjustable blade, and with the sliding compound protractor arranged to be adjusted jointly with the blade, with the opposite face flanges, and with the square and bevel sides of said flanges, substantially as set forth.

7. The herein described intersecting miter-bevel, provided with the parallel faces, with the sliding quadrant provided with the compound protractor, and with the adjustable intersecting blade, arranged to be adjusted jointly with said quadrant, substantially as set forth.

**500,571. FEED-WATER REGULATOR.** CHARLES H. GRESTON, Homestead, Pa., assignor of two-thirds to James A. Burns and George Gladden, same place. Filed Aug. 22, 1892. Serial No. 443,733. (No model.)

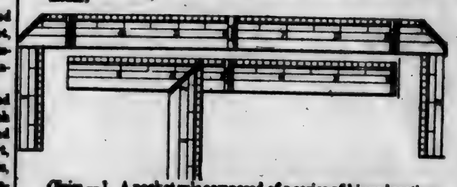


*Claim.*—1. In a feed-water regulator, the combination with a supply-pipe, of a check-valve therein arranged to be opened automatically by the pressure of the feed water, a piston connected therewith, a pipe supplying steam to operate said piston, a valve controlling said pipe, and a float operated by the water-level in the boiler and connected with the valve; substantially as and for the purposes described.

2. In a feed-water regulator, the combination with a supply pipe, of a check-valve therein arranged to be opened automatically by the pressure of the feed-water, a piston connected therewith, a pipe supplying steam to operate said piston, a valve controlling said pipe, and a float operated by the water-level in the boiler and connected with the valve; said last named valve controlling an exhaust-port and a steam-port, and being movable by said float to connect said ports with the piston; substantially as and for the purposes described.

3. In a feed-water regulator, the combination with a supply-pipe, of a check-valve therein arranged to be opened automatically by the pressure of the feed-water, a float operated by the water level in the boiler, and means connected with said float and arranged to force the valve to its seat when the water level rises in the boiler; substantially as and for the purposes described.

**500,572. POCKET-RULE.** ROBERT J. GILLHAM, Orlando, Fla., assignor, by direct and mesne assignments, to Mahlon Gore and Charles W. Jenckes, same place. Filed Sept. 9, 1892. Serial No. 445,438. (No model.)

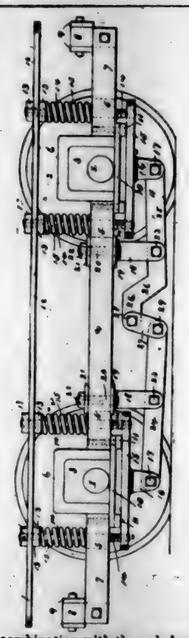


*Claim.*—1. A pocket rule composed of a series of hinged sections, the two outer sections of the rule, and the adjacent ends of the next sections having miter ends substantially as and for the purpose set forth.

2. A pocket rule composed of sections connected together by straight and diagonal hinged joints, substantially as set forth.

**500,573. EQUALIZING DEVICE FOR GEARS.** JOHN GOSSET, Wilmington, Del., assignor to John A. Brill, Philadelphia, Pa. Filed Feb. 22, 1892. Serial No. 422,926. (No model.)

500,573.



*Claim.*—1. The combination with the axle box pedestals adapted to move with the car springs, of articulated devices secured to and moved by, and extending between the pedestals and fulcrumed from a stationary portion of the truck frame, substantially as described.

2. The combination with the axle box pedestals, of levers fulcrumed to a stationary part of the truck and supported between said pedestals, the power end of said levers being connected to said pedestals, substantially as described.

3. The combination with the axle box pedestals, of levers of the first order secured at their "power" ends to the axle box pedestals, a stationary fulcrum for said levers, and means for operatively connecting the "weight" ends of said levers, substantially as described.

4. The combination with the upper chord, or car body, of the spring posts secured thereto, axle box yokes, springs between the car body, or upper chord and the yokes, and surrounding the spring post, a tie bar uniting the spring post, and articulated levers extending between the said tie bars and pivotally supported by the yokes, substantially as described.

5. The combination in a truck, of the upper chord, or car body, and the axle box frame, of the axle box pedestals, the jaw bolts depending from the axle box frame and between the pedestals, and levers secured to said pedestals and fulcrumed to the jaw bolts, and having a connecting link uniting their inner ends, substantially as described.

6. The combination with the axle box pedestals, of the tie bars 15 having the bifurcated bosses 16, the side bars 4 having the bifurcated jaw bolt 18 depending therefrom, the lever 24 secured to the boss 16 and fulcrumed in the jaw bolt 18, the lever 26 having the goose neck 26 supported in like manner, the goose neck rising above the lever 24, and an inclined link 27 extending between the two levers, substantially as described.

7. The combination with a truck of an axle box frame and an upper chord, or car, the upper chord being movable in relation to the axle box frame, axle box pedestals and articulated levers secured at their power ends to the axle box pedestals, fulcrumed on the axle box frame, and lying below said frame and between the axle box pedestals, substantially as described.

8. The combination with the levers 24, 25 united by the link 27, of the stud 30 on the lever 24 lying below the end of the lever 25, substantially as described.

500,574. CLOTHES-PIN. HIRAM C. GRIFFIN, IRA H. H., assignor of one-half to Charles F. ADAMS, same place. Filed Oct. 22, 1892. Serial No. 449,033. (No model.)



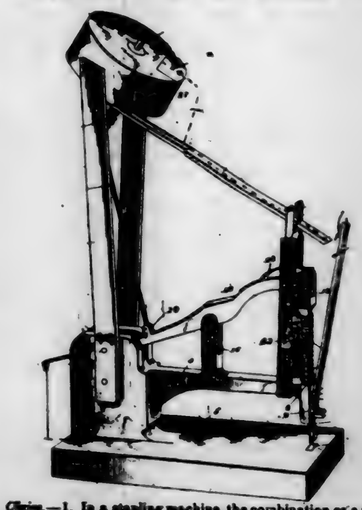
*Claim.*—A clothes-pin constructed of wood and having a slot forming the prongs and provided above the slot at right angles thereto with a bore having enlarged orifices conically tapering from the ends toward the center to within a short distance of the same, said pin being provided with a solid rivet arranged within the bore and constructed of soft metal and having its ends conically expanded to fit the enlarged orifices of the bore, said ends terminating short of the sides of the pin, substantially as described.

500,575. DRAWER-SLIDE AND EXTENSION-SUPPORT. VALMER R. HARVEY, Watertown, N. Y. Filed Apr. 5, 1893. Serial No. 469,536. (No model.)



*Claim.*—The combination with a drawer and its guide having side flanges, a longitudinal slot and a vertical shoulder at the front end, of a bar passed through an opening in the back end of the drawer, a strip at right angles to and on said bar and having a lug to travel in the slot of the guide, a guide on the inner face of the drawer through which the bar loosely passes, and a lug on the bar between said guide and the rear end of the drawer, all substantially as shown and described.

500,576. STAPLING-MACHINE. GILBERT HAY, Fayette, Mo. Filed Aug. 26, 1892. Serial No. 444,141. (No model.)



*Claim.*—1. In a stapling machine, the combination of a punch or staple driver, a vertically movable slide in which said punch has movement, a feeding chute communicating with said slide, a lever for operating said punch or staple driver, a plate with an opening therein supported by said lever and having other plates secured thereto on opposite sides thereof and having slots therein which are reversely arranged, a feed slide extending through the said plate with an opening therein, a trough connected to the upper end of the said slide, and a box or chamber having an opening in the bottom thereof with which the said trough communicates, substantially as described.

2. In a stapling machine, the combination of a punch or staple driver, a lever for operating said punch or staple driver, chutes for directing the staple to the said punch or staple driver, a box or chamber for receiving the staples having a trough extending from the bottom thereof, a feed slide connected to said trough, a vertically movable plate supported by said lever and having an opening therein through which the said feed slide passes, and other plates secured to opposite sides of the aforesaid plates and having slots therein arranged in opposite positions, substantially as described and for the purposes specified.

3. In a stapling machine, the combination with a punch or staple driver and means for directing the staples thereto including a feed slide, of a plate vertically movable and having an opening therein through which said feed slide passes, and other plates arranged on opposite sides thereof at the upper and lower portions of the same respectively and formed with slots which are reversely positioned, substantially as described.

4. A box or receptacle for receiving staples, having a shaft extending therethrough, brush-arms diametrically arranged on said shaft and oscillatable therewith and provided with brush-sections separated by intervening spaces extending transversely of the said arms, combined with a fully-cut gear-wheel on the lower end of the said shaft, gear-wheel meshing with the aforesaid gear-wheel and having teeth in the periphery thereof that extend only partially over the circumference of the same, a pitman eccentrically connected to the said latter gear at the upper end thereof, an operating-lever to which the lower end of said pitman is attached, a chute and a punch or staple-driver pivotally connected to and operated by the front end of said operating lever, substantially as described.

5. In a stapling machine, the combination of a spring actuated punch or staple driver, a lever secured to the upper portion thereof and having a spring projecting over the upper front portion of the same and movable therewith, a vertically movable slide in which said punch or staple driver has movement, a feeding chute communicating with said slide, a box or receptacle for receiving staples having a trough extending from the bottom thereof, a feed slide connected with said trough and partially covered by a guard, and a vertically movable plate having an opening therein through which the said feed slide passes and provided with slotted plates secured to opposite sides thereof and in reversed position, substantially as described.



500,577. CASKET-TOP FASTENER. SHERMAN H. HIBBS, Springfield, Ohio, assignor of two-thirds to Edgar H. Leeder and Chas. H. Hibbs, same place. Filed Nov. 15, 1892. Serial No. 452,296. (No model.)



*Claim.*—1. In a casket top fastener, the combination with a supporting plate having a stationary hook-shaped spur or projection on one side thereof and formed on the other side with open bearings and adjacent malleable spurs or lugs, a catch lever formed integral with projecting trunnions at one end and a hook-shaped catch at the other end, and an elevated bearing projection on one side between said trunnions and said hook-shaped catch, said hook-shaped catch lever being further provided with a lateral downwardly projecting thumb piece, a spring for operating said lever, said spring being adapted to rest at one end against the bearing projection on said lever and at the other between the projecting spurs on said plate and be held by bending said spurs down against said spring, which thus holds all the respective parts together without other means of fastening, substantially as specified.

2. In a casket top fastener, the spring actuated catch lever and an engaging plate, said plate being provided with an opening to receive said catch lever, perforations adjacent to said opening, a covering for said plate, and a staple adapted to be driven through said covering and perforations, so as to hold and protect said covering adjacent to the edge of said opening, substantially as specified.

3. The combination with the spring actuated catch lever and the stationary plate having an engaging opening for said catch lever, a flexible covering for said plate, a recess adjacent to said opening having perforations at each end thereof which pass through said plate, and a staple adapted to pass through said perforations and draw the flexible covering into said recess and stand flush with the top of the said plate and the side of said opening, substantially as specified.

500,578. WHEEL. FRANKLIN C. HOCKENSMITH, Irwin, Pa. Filed July 21, 1892. Serial No. 440,702. (No model.)



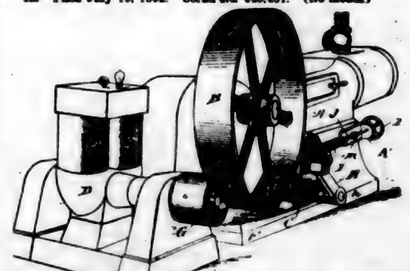
*Claim.*—1. A wheel having an annular reservoir surrounding its hub, an annular cover having a hub band, and hook bolts arranged to secure the cover to webs in the reservoir; substantially as and for the purposes described.

2. A wheel, having a hub with a concave exterior surface, an annular reservoir surrounding the same, and a conduit leading from the reservoir at a point removed from the level of the base of the concavity to the axle; substantially as described.

3. A wheel, having an annular reservoir surrounding its hub, a hub having concave exterior surfaces, an inclined oil-tube leading from the face of the wheel into the space formed by the concavity, the mouth of the tube in the chamber being on a line substantially parallel with the level of the fluid in the space, and a conduit leading from the reservoir to the axle; substantially as described.

4. A wheel, having a hub with a concave exterior surface, an annular reservoir surrounding said hub, a series of webs dividing a portion of the reservoir into separated spaces, radial fins arranged to hold a filling in these spaces, and a removable cover for the reservoir; substantially as and for the purposes described.

500,579. POWER TRANSMISSION. ALBERT L. IDE, Springfield, Ill. Filed July 19, 1892. Serial No. 440,481. (No model.)



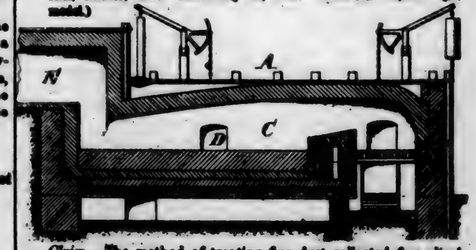
*Claim.*—1. In means for transmitting power, the combination with an engine and its driving pulley, of an idler pulley mounted upon the base of the engine, with its rim arranged in a plane intersecting the plane of the rim of the driving pulley and a belt carried over the idler and adapted to be driven by the frictional contact of the driver with a strand thereof, substantially as described.

2. The combination, with an engine and its driving pulley, of a frame pivotally mounted upon the engine base, and an idler pulley carried by said frame, substantially as described.

3. The combination with an engine and its driving pulley, of a swinging frame mounted upon the engine base and an idler pulley mounted in said frame, and adapted to be moved into such position that the plane of the rim of the idler pulley will intersect the plane of the rim of the driving pulley the frame being yieldingly sustained against the pull of the belt, substantially as described.

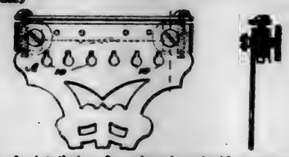
4. The combination with an engine and its driving pulley, of an idler pulley mounted upon the base of the engine, a driven pulley and a belt passing over the driven pulley and the idler and with one strand thereof in contact with the rim of the driver, the said several pulleys being so arranged that the plane of the driving pulley intersects the planes of the driven pulley and the idler whereby to secure suitable contact of the driving pulley upon the belt, substantially as described

500,580. PROCESS OF TREATING FLUE-DUST. MALVERN W. ILES, Denver, Colo. Filed July 20, 1892. Serial No. 440,506. (No model.)



*Claim.*—The method of treating flue dust collected from lead smelting furnaces which consists in charging said dust into a fusion furnace, subjecting it to quick fusion therein, collecting the lead fume in screens connected with the furnace and running the fused dust into receptacles wherein it can cool

**500,581. ADJUSTABLE TAIL-PIECE FOR GUITARS.** FRANK A. ROSSWELL, New York, N. Y. Filed Dec. 26, 1892. Serial No. 456,581. (No model.)



*Claim.*—1. A tail piece for stringed musical instruments provided with a laterally adjustable bridge bar constituting a portion of the tail piece, and vertically adjusting devices, whereby the tail piece may be raised or lowered, as and for the purpose specified.

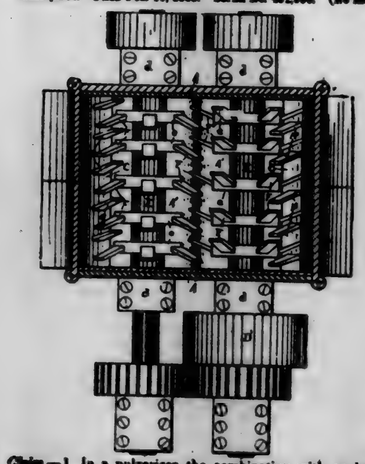
2. The combination, with the tail piece for stringed musical instruments, of a bridge bar, an adjusting mechanism connecting the bridge bar with the tail piece, and adjusting devices carried by the tail piece, whereby the latter may be vertically adjusted, as and for the purpose set forth.

3. The combination, with a tail piece for stringed musical instruments, and adjusting screws located in the inner edge of the said tail piece near its ends, the said adjusting screws being provided with a reduced unthreaded section at the rear of their heads, of a bridge bar slotted to receive the reduced portions of the screws, as and for the purpose set forth.

4. The combination, with a tail piece for stringed musical instruments, of adjusting screws located in the forward face thereof near its ends, of a bridge bar supported and carried by the said horizontal adjusting screws and vertical adjusting screws located in the body section, the lower ends of the adjusting screws having buttons swiveled thereon, as and for the purpose specified.

5. In a stringed musical instrument, the combination, with a tail piece, of adjusting screws located near the forward or inner edge thereof, and disks or buttons swiveled upon the lower ends of said screws, whereby the tail piece may be raised or lowered by the manipulation of the said screws, as and for the purpose specified.

**500,582. ORE OR FEED PULVERIZER.** JOHN M. JONES, Omaha, Nebr., assignor of one-half to Charles L. Wright and George R. Leabury, same place. Filed Feb. 11, 1893. Serial No. 461,998. (No model.)



*Claim.*—1. In a pulverizer, the combination with an incasing shell, interiorly provided with two partially cylindrical chambers and a hopper, a hooded exhaust extending from each of said chambers, a valve panel within said exhaust adapted to be intermittently opened and closed, interchangeable tooth racks within said chambers, interchangeable teeth removably secured within said racks, extending at an angle to said racks, two connected operative shafts within said shell having intermeshing gears, and a system of teeth hubs upon said shafts, provided with extending angle teeth, all arranged substantially as and for the purpose set forth.

2. In a pulverizer, the combination with an incasing shell, interiorly provided with two partially cylindrical chambers and a hopper, a hooded exhaust extending from each of said chambers, a valve panel within said exhaust, interchangeable teeth racks within said chambers, interchangeable teeth secured within said racks, extending at an angle to said racks, and provided with a supporting stem, two connected operating shafts within said shell having intermeshing gears, flanged teeth hubs keyed upon said shafts, and having key ways, adapted to removably hold a series of interchangeable angle teeth, said teeth in revolving passing one another and between said rack teeth, all substantially as and for the purpose set forth.

3. In a pulverizer, the combination with an incasing shell, interiorly provided with two partially cylindrical chambers and a hopper, a hooded exhaust extending from each of said chambers, a valve panel within said exhaust adapted to be opened or closed, interchangeable tooth racks within said chambers, having concave-convex body-portions and the seatings—and stem openings—, interchangeable teeth secured within said racks, extending at an angle to said racks, and provided with a supporting stem, two connected operating shafts within said shell having intermeshing gears, flanged teeth hubs keyed upon said shafts, and having drift ways, adapted to removably hold a series of interchangeable angle teeth, said teeth in revolving passing one another and between said rack teeth, an automatic feeder within said hopper, provided with the shaft I, the sliding gear i upon said shaft, the stub power shaft M supported by means of the bracket L, and being provided with the speed pulley M', mutilated gear m, and gear m', the gear N meshing with said gear m, and the rods p, connected to the valve panel—within the hoods B, so that said feeder and exhaust may be intermittently and alternately operated, all substantially as and for the purposes set forth.

**500,583. ICE-VELOCIPEDE.** AXEL KARLSON, Duluth, Minn. Filed Jan. 13, 1893. Serial No. 458,204. (No model.)



*Claim.*—1. In an ice or snow velocipede, the combination of suitable runners, a supporting frame, a propelling axle provided with traction fingers, a supporting housing, and tension springs arranged in said housing above and below the hub box of the axle, substantially as described.

2. In an ice or snow velocipede, the combination of suitable runners, a supporting frame, a propelling axle provided with traction fingers, a supporting housing, tension springs arranged in said housing above and below the hub box of the axle, and means for regulating the tension of the springs upon said hub box, substantially as described.

3. In an ice or snow velocipede, the combination of suitable runners, a supporting frame, a propelling axle provided with traction fingers, a supporting housing, tension springs arranged in said housing, and a spring tension regulating device comprising rods arranged on the outside of the supporting housing, stops connected with said rods and nuts adapted to be screwed up or down on the rods and cause a stop to compress or relax said springs, substantially as described.

4. In an ice or snow velocipede, the combination of suitable runners, a supporting frame, a propelling axle provided with traction fingers, a supporting housing, tension springs arranged in said housing, a lever pivoted to the auxiliary seat and connected with a rod secured to the axle, and a standard having notches adapted to receive and hold the handle of the lever, whereby the axle and traction fingers connected therewith may be raised or lowered at will and held in such position, substantially as described.

5. A traction device comprising an axle provided with a suitable number of comparatively long serpentine shaped spring fingers, substantially as described

**500,584. MECHANICAL MOVEMENT.** EDWIN H. KELLOGG, Delavan, Wis. Filed May 21, 1892. Serial No. 433,393. (No model.)

*Claim.*—1. The combination, substantially as hereinbefore set forth, of the pivoted lever slotted longitudinally at one end and having cross-slots at the other end, a double-crank provided with a wrist-pin working in the longitudinal cross-slot, a driving-shaft over which the vertical (and curved) cross-slot takes, a shaft provided with crank and wrist-pin playing in the longitudinal slot at the opposite end and a link connecting the outer arm of the double crank with said wrist-pin.

2. The combination, substantially as hereinbefore set forth, of the pivoted lever having a longitudinal slot at one end and cross slots at the other end, a driving-shaft with double-crank, a double-crank from one arm of which a wrist-pin takes into the longitudinal portion of the cross-slots, an internal annular gear having a wrist-pin taking into the longitudinal slot at the opposite end of the lever, a link connecting said wrist-pin with the outer arm of the double crank and a pinion on a shaft engaging with the annular gear and driven by the action of said lever and link.



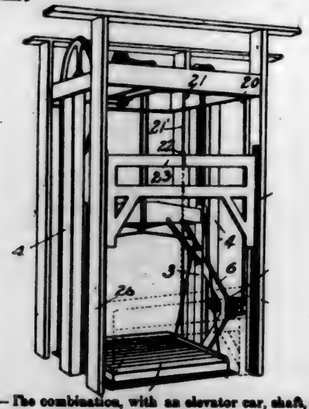
3. The combination, substantially as hereinbefore set forth, of a pivoted lever having a longitudinal slot at one end and cross slots at the other end, one being longitudinal, a driving-shaft having treadles, one of said treadles being provided with a double crank, a wrist-pin from one arm of the double crank taking into the longitudinal slot of said lever at the cross end, an annular gear provided with a wrist pin which takes into the opposite longitudinal slot, a link connecting said wrist-pin with the outer wrist-pin or journal, of the double crank treadle, an axle and a pinion thereon engaging with the annular gear.



**500,585. LIQUID MATERIAL FOR THE MANUFACTURE OF FINE EARTHENWARE.** JOSEF KLIEBER, Neustitl, assignor to Carl Ostz, Carlsbad, Austria-Hungary. Filed Jan. 6, 1892. Serial No. 417,948. (No specimens.)

*Claim.*—A composition to be used in a liquefied slip for earthenware consisting of clay and a dissolvent composed of an aqueous solution of carbonate or bicarbonate of soda, substantially as specified.

**500,586. ELEVATOR-GATE.** OLOF LAGERQUIST and ANDREW G. NELSON, Minneapolis, Minn. Filed Feb. 28, 1893. Serial No. 464,054. (No model.)

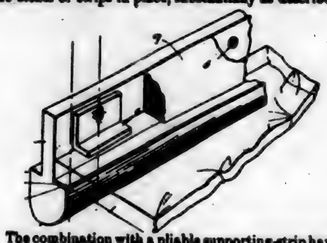


*Claim.*—The combination, with an elevator car, shaft, and vertical guides, of a bracket 6 arranged upon said car and having upper and lower inclined edges and the outer vertical edge 7, the guides 9, sheaves arranged within the inner edges thereof, a cross-head to operate in said guides, sheaves carried on said cross-head, a pulley carried on said cross head in position to be engaged by said bracket 6, a rope having one fixed end and wound about the stationary and the cross head sheaves, the other end of said rope passing upwardly and thence downwardly over a suitable pulley to a vertically movable gate or bar, whereto the upper end of said rope is attached, substantially as and for the purpose set forth.

**500,587. METALLIC SETTING FOR STAINED-GLASS WINDOWS.** GEORGE B. LEE, Providence, R. I. Filed Feb. 9, 1893. Serial No. 461,602. (No model.)

*Claim.*—1. The combination with a pliable supporting strip having a transverse web formed with holes, and also having a glass-sustaining flange, of a glass-retaining cleat or strip applied to the said web and having a portion or portions of its substance punched into one or more of the said holes whereby to hold the cleat or strip in place, substantially as described

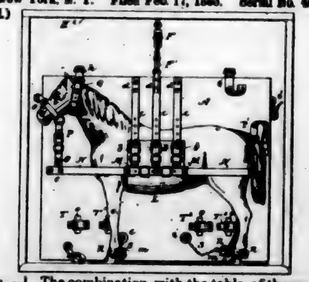
2. The combination with a pliable supporting-strip having a transverse web formed with holes, and also having lateral glass-sustaining flanges, of glass-retaining cleats or strips applied to the said web and having portions of their substance punched into said holes whereby to hold the cleats or strips in place, substantially as described.



3. The combination with a pliable supporting-strip having a transverse web formed with holes, and also having a lateral glass-sustaining flange, of a piece of glass resting on said flange, a glass-retaining cleat or strip applied to said web, bearing against the said glass, and having a portion of its substance punched into one of the said holes to hold the cleat or strip in place, and putty or cement applied to the parts and making a tight joint, substantially as described.

4. The combination with a pliable supporting strip having a transverse web formed with holes, and also having lateral glass-sustaining flanges on its opposite sides, of pieces of glass resting on said flanges, glass-retaining cleats or strips applied to said web, bearing against the glass, and having portions of their substance punched into the said holes, whereby to hold the cleats or strips in place, and putty or cement applied to the parts and making a tight joint, substantially as described.

**500,588. VETERINARY OPERATING-TABLE.** WILLIAM J. MAGEE, New York, N. Y. Filed Feb. 17, 1893. Serial No. 462,801. (No model.)



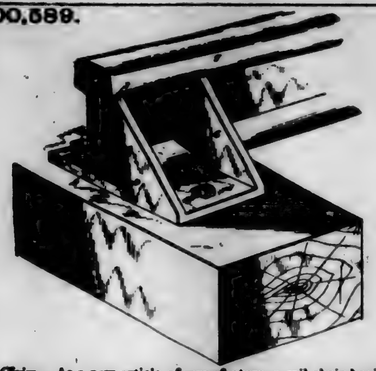
*Claim.*—1. The combination, with the table, of the apron secured at one end to the table and provided with buckles *b* at its other end and buckles M at its sides, the two straps N secured one at each end of the table and adapted to engage with the buckles M, and the straps c secured at one end to the edge of the table and adapted to engage with the buckles *b*, whereby the body of the animal is secured, substantially as set forth.

2. The combination, with the pivoted table, and means for tilting it from a vertical to a horizontal position; of hobbles adapted to hold the feet of an animal, the stationary eyes secured below the table, and the chains connected to the said hobbles, passing through holes in the table and through the said eyes and provided with crossbars, whereby the feet of the animal are automatically clamped against the table when the table is moved into its horizontal position, substantially as set forth.

3. The combination in an operating table for veterinary surgeons, of the table A provided with the apron L bolted to the table and provided with buckles at its bottom end, and straps at its top end, side buckles M M, straps to secure and hold taut the apron by means of the side buckles, the head straps O, P and Q bolted to the table, straps T, T', T'', T''', passing through slots made in the table and provided with pins at the back of the table, and hobbles R, R, R, R, provided with chains which hold the hobbles taut, when the table is in a horizontal position and release the hobbles when the table is in a vertical position, and suitable appliances for raising and lowering the table to and from a horizontal position.

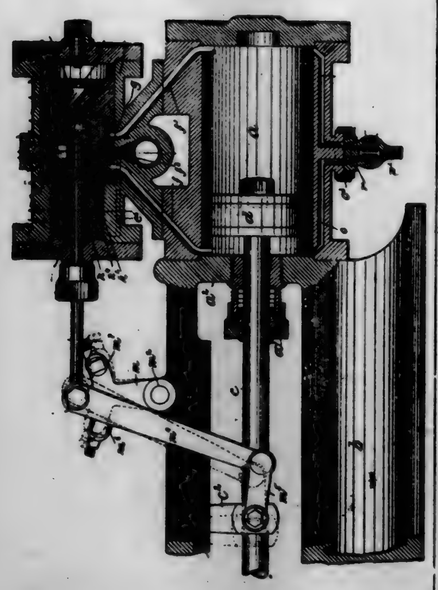
**500,589. RAIL-CHAIR.** MICHAEL MALONEY, Ironton, Ohio. Filed Apr. 26, 1892. Serial No. 431,292. (No model.)

500,589.



*Claim.*—As a new article of manufacture, a rail chair having a base-plate 2 provided with suitable spike openings, and integral vertically-disposed flanges, 6, flush with the side edges of the base-plate, extending inwardly from one end of the same and terminating at a point adjacent to the center of its length, the outer edges of said flanges being beveled or inclined and the inner edges thereof being provided with upper notches, 8, to receive the tread, under-cut lower notches, 9, to receive the flange, the lower sides of such notches being in the plane of the upper surface of the base-plate, and a vertical intermediate portion to bear against the web of the rail, substantially as specified.

500,590. STEAM-PUMP. WILLIAM B. MASON, Boston, Mass., assignor to the Mason Regulator Company, same place. Filed May 9, 1892. Serial No. 432,236. (No model.)



*Claim.*—1. The combination of the valve cylinder and differential piston therein constructed to afford an annular space or steam chest between the larger and smaller portions of said piston, and provided with a valve seat and a port leading from the steam chest to the larger end of the valve cylinder, and an exhaust port; and a controlling valve working on said seat and governing the flow of the steam through said ports, said controlling valve being carried by said differential piston without relative movement thereon while said piston is making its stroke; and a valve stem adapted to intermittingly engage with said controlling valve and move the same on its seat with relation to said differential piston, substantially as described.

2. The combination of the main cylinder and piston with a controlling valve that causes the admission of steam to said cylinder and its exhaust therefrom to be properly governed, and a valve rod and tappet arm pivotally connected therewith and also pivotally connected, with the main frame, and an actuating arm connected with the main piston rod and pivotally connected with the said tappet arm and cooperating with the tappets thereof, substantially as and for the purpose described.

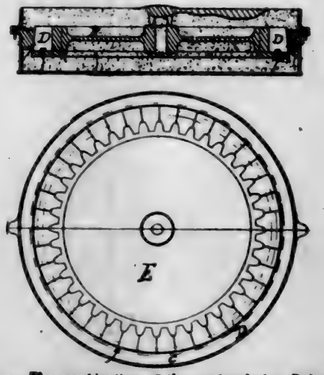
3. The combination of the main cylinder and main valve, with a valve cylinder and differential actuating piston therein, having its differential area constantly exposed to steam pressure, a port leading to the large end of the valve cylinder, and a controlling valve for said port and a pin that closes said port to cushion the valve actuating piston, when approaching the cylinder head at the large end of the valve cylinder, substantially as described

4. The combination of the valve cylinder and differential piston therein, constructed to afford an annular space or steam chest between the larger and smaller portions of said piston, a longitudinal passage leading from the small end of said piston and valve stem working therein and a controlling valve working on a seat on said piston provided with a projection passing through a slot in said piston into the longitudinal passage thereof, to be engaged by projections on said valve stem, substantially as described.

5. The combination of the valve cylinder and differential piston therein constructed to provide an annular space or steam chest between its larger and smaller portions and provided with a valve seat in said steam chest, and an exhaust port having an opening in said valve seat, and two ports leading from said valve seat to the large end of the cylinder and a controlling valve governing the admission of steam from the steam chest to said ports and having an exhaust pocket for connecting one only of said ports with the exhaust port in the valve seat, said controlling valve closing the other of said ports while the steam is being exhausted from the large end of the cylinder substantially as and for the purpose described.

6. The combination of the valve cylinder and differential piston therein constructed to provide an annular space or steam chest between its larger and smaller portions and provided with a valve seat in said steam chest, and an exhaust port having an opening in said valve seat, and two ports leading from said valve seat to the large end of the cylinder and a controlling valve governing the admission of steam from the steam chest to said ports and having an exhaust pocket for connecting one only of said ports with the exhaust port in the valve seat, and a pin for closing the other of said ports as the piston approaches the cylinder head, substantially as described

500,591. CHILL-MOLD FOR CASTING TEETH ON GEAR-WHEELS. SAMUEL R. MAXWELL, Aspinwall, Pa. Filed July 3, 1893. Serial No. 479,860. (No model.)




*Claim.*—The combination of the sectional ring D, having the taper on the outer edge and the groove H on the under side thereof, the outer cast iron ring C with the taper on the inner edge corresponding to the taper on ring D, and the under cast iron ring F, with the tongues fitting into the groove H in segments of ring D

500,592. STONE-SAW. DAVID C. MILLER, Newburg, N. Y. Filed Jan. 3, 1893. Serial No. 457,093. (No model.)

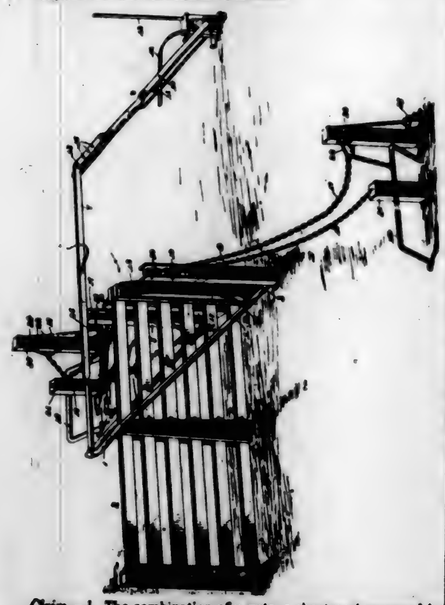
*Claim.*—A stone saw consisting of two blades fastened together each having recesses on each edge alternating with each other and extending part-way from edge to edge and the recesses in one blade alternating with those of the other blade, substantially as specified.



500,592.



500,593. GATE. WILLIAM K. MILLS, Kokomo, Ind. Filed May 20, 1892. Serial No. 433,733. (No model.)



*Claim.*—1. The combination of a gate, a short post arranged in rear of the gate and in line with the same, an oscillating frame having diverging sides and receiving the gate between them and extending above the gate, an oscillating lever arranged parallel with the oscillating frame and having its ends forked, the lower forked end being fulcrumed on the short post, a horizontal rod extending from the upper end of the oscillating frame to the top of the lever and secured in the upper fork of the latter, and an actuating and retarding device connected with the lever, substantially as and for the purpose set forth.

2. The combination of a gate, an oscillating frame hinged at its bottom and carrying the gate, an oscillating lever fulcrumed at its lower end in rear of the gate and having its upper end connected with the oscillating frame, and springs arranged on opposite sides of the lever and secured at their lower ends, and having their upper ends free and alternately engaging the lever, substantially as described.

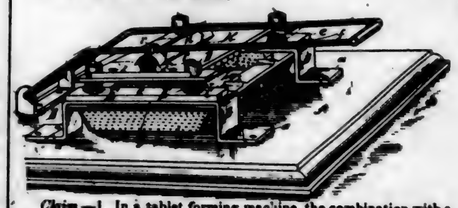
3. The combination of a gate, an oscillating frame carrying the gate and hinged at its bottom, an oscillating lever fulcrumed at its lower end in rear of the gate, a rod having one end connected to the frame and its other end adjustably secured to the lever and the springs secured at their lower ends and having their upper ends free and arranged to engage the lever, substantially as described.

4. The combination of a gate, an oscillating frame hinged at its bottom and carrying the gate, an oscillating lever fulcrumed at its lower end and arranged in rear of the gate and having its lower portion forked and provided at its upper end with a series of perforations, a roller arranged in the forked portion of the lever, a rod having its front end connected to the frame, a bolt arranged in one of the perforations of the lever and adjustably securing the rear end of the rod to the lever, and a spring arranged to engage the roller substantially as described.

5. The combination of a gate, an oscillating frame hinged at its bottom and carrying the gate, the chains extending from the gate in opposite directions and arranged in pairs and having their inner ends arranged on opposite sides of the oscillating frame, and a trip frame arranged at the outer ends of the chain and adapted to engage alternately the chains of each pair, substantially as described

6. The combination of a gate, an oscillating frame hinged at its bottom and carrying the gate, an upright arranged adjacent to the gate and provided with pulleys, a short post arranged a suitable distance from the gate, the chains 16 and 17 passing over said pulleys and having their inner ends arranged on opposite sides of the oscillating frame, the chain 16 being attached at its outer end to the short post, a trip frame connected to the chain 17, an upright 22 provided with a pulley and a rope passing over the latter and having one end attached to the chain 17 and its other end provided with a weight, substantially as described

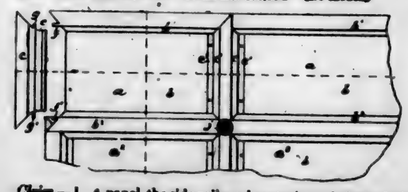
500,594. MACHINE FOR MAKING TABLETS FOR MEDICINAL PURPOSES. JOHN J. MITCHELL, Detroit, Mich. Filed Sept. 16, 1892. Serial No. 446,056. (No model.)



*Claim.*—1. In a tablet forming machine, the combination with a die supporting framework, and a die plate, of a follower supporting framework a follower plate provided with follower punches, means for pressing the punches of the follower plate into the die openings and means for lifting the follower plate away from the die plate, substantially as and for the purpose described.

2. In a machine for producing medicinal tablets, the combination with a die holding framework, of a follower holding framework slidingly secured thereto means for adjusting and securing the die plate in its framework, means for adjusting the follower plate with respect to its framework, whereby the die openings and the follower punches register, substantially as and for the purpose described.

500,595. METALLIC CEILING. CHARLES C. MOORE, Columbus, Ohio. Filed Feb. 10, 1893. Serial No. 461,834. (No model.)



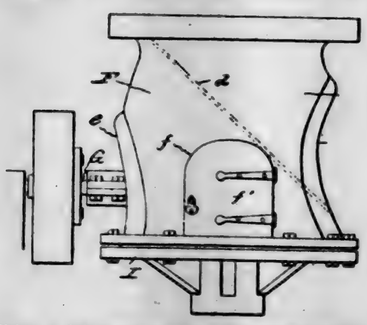
*Claim.*—1. A panel, the side rails and central panel plate of which are formed integral, said side rails having vertical faces in different horizontal planes, end rails corresponding to said side rails the ends of which are mitered to correspond with the mitered ends of said side rails, said end rails being formed at the bottom with a double fold as described, with a recess between the adjacent leaves adapted to receive the end of the central panel plate and projecting ears formed integral with the respective side and end rails, adapted to be bent over as described and to form connections between the respective parts, substantially as specified.

2. In a metal ceiling, a panel having a central panel plate and mitered side rails formed integral therewith, the central panel plate being depressed below said side rails, detached end rails corresponding to said side rails, each provided at the bottom with a double fold having an interposed recess adapted to receive the end of the panel plate, projecting lugs or ears on the respective end and side rails arranged in different horizontal planes and adapted to be bent at right-angles so as to engage the adjacent faces of the adjoining rails, substantially as specified

3. In a metallic ceiling, the combination with two or more panels, each formed with a central panel plate and side rails formed integral

and end rails adapted to be joined thereto, said side and end rails being formed with mitered ends as described and having top flanges adapted to engage with the adjacent rails of the next panels and a recess for covering the adjoining ends of said rails, substantially as specified.

## 500,596. CRUSHING-MACHINE. ROBERT MCCULLY, Philadelphia, Pa. Original application filed Aug. 20, 1888, Serial No. 283,194. Divided and this application filed Apr. 8, 1891. Serial No. 388,123. (No model.)



*Claim.*—1. In a crushing machine, the combination of a lower casing section D forming part of the machine, a chute *d* in said section having shaft opening $d^6$ and dividing the section into upper and lower chambers, exit opening *d'* for the upper chamber, gyratory shaft C, driving mechanism for said shaft located in said lower chamber, opening *e* in said lower chamber, counter-shaft passing through opening *e* and engaging with said driving mechanism, a second large or man-hole opening *f* in said lower chamber intermediate of the openings *d'* and *e* and below the chute *d*, substantially as and for the purpose set forth.

2 In a gyratory crushing machine, a lower casing section D divided by a chute *d* into an upper and a lower chamber, an opening *d'*, in the wall of said upper chamber in front of said chute, driving mechanism located within said lower chamber, an opening in the wall of the latter for a counter-shaft in gear with said driving mechanism, a second large or man-hole opening in the wall of said lower chamber intermediate of the chute and counter-shaft openings and below chute *d* to admit of direct manual oiling, inspection and adjustment of said driving mechanism while it is in motion, substantially as set forth.

3. In a gyratory crushing machine, a lower casing section D having an oblique chute or partition dividing such section into an upper and a lower chamber, an opening in the wall of the upper chamber and in front of said partition or chute, driving mechanism in said lower chamber, an opening in the wall of the latter back of said partition or chute for a counter-shaft in gear with said driving mechanism, a second large or man-hole opening with removable cover or door in the wall of said lower chamber intermediate of said chute and counter-shaft openings and below the chute or partition to admit of manual oiling, inspection and adjustment of said driving mechanism while in motion substantially as set forth.

## 500,597. CRUSHING-MACHINE. ROBERT MCCULLY, Philadelphia, Pa. Filed Dec. 22, 1891. Serial No. 416,000. (No model.)

*Claim.*—1 In a crushing machine having an eccentrically gyrating shaft, a single supporting and adjusting screw directly engaging with the top of said shaft and having a bearing located at the top of the machine substantially as shown and described.

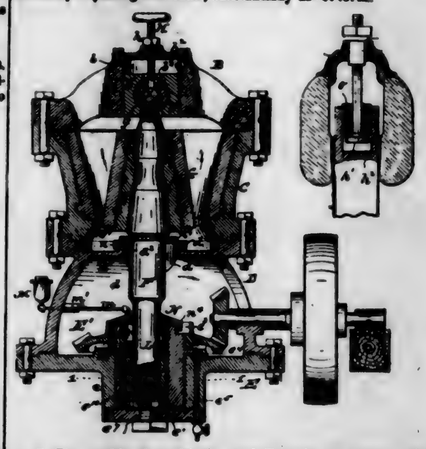
2 In a crushing machine having a gyratory shaft, a freely suspended and adjustable single supporting device H engaging with the top of the shaft, and oiling channels for the bearing surfaces of said shaft and supporting device, substantially as set forth

3 The combination with a gyratory shaft and frame, of a crushing machine, a single supporting screw located at and having a bearing on the top of said frame, and engaging directly with the top of the shaft, substantially as set forth.

4. In combination with the recessed upper end of a gyratory crusher shaft, a tubular plug *o* supporting and adjusting screw passing through and engaging with said plug, and a support or bearing for said screw, substantially as set forth

5 In combination with shaft F having recess $f^5$, tubular plug *o*, screw H having nut *y* with depending flange $r^3$ and frame top-plate having bearing for said nut substantially as set forth

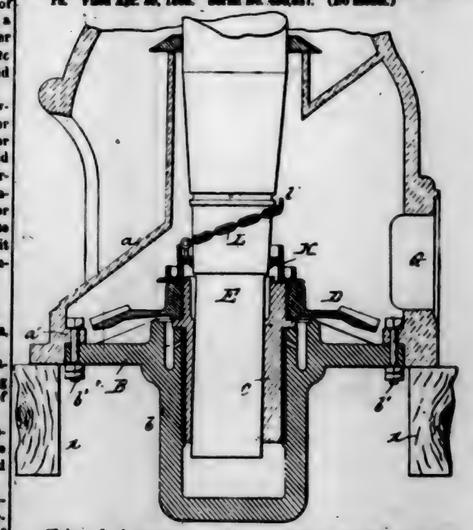
6 In a crushing machine, the combination of a gyratory shaft having a cylindrical upper end, a bore or recess in said end, a hollow tubular screw plug in said bore, and a single tubular bolt or rod, support engaging with the under side of said plug for supporting and vertically adjusting said shaft, substantially as set forth.



7. The combination with the shaft F, having top recess or bore, a tubular plug in said bore, a support H having a head *h'* in said bore and passing through said plug, top holding nuts or keys for said bolt or support and oil passages substantially as set forth.

8. In a gyratory machine, a crusher head shaft upheld from the top of the machine by a single axially located support having a direct connection with the upper end of the shaft, and mechanism on said support for vertically adjusting it and the crusher head on the shaft to take up the wear of the crushing surfaces or to alter the degree of fineness of the crushing substantially as set forth.

## 500,598. CRUSHING-MACHINE. ROBERT MCCULLY, Philadelphia, Pa. Filed Apr. 28, 1892. Serial No. 430,827. (No model.)



*Claim.*—1. A gyratory crushing machine having the actuating devices for the shaft located or supported upon the bottom plate and the latter removable from the machine without dismantling the same, substantially as set forth.

2 A gyratory crushing machine having a lower section A with inwardly projecting bottom flange, and removable bottom B secured to said flange, substantially as set forth

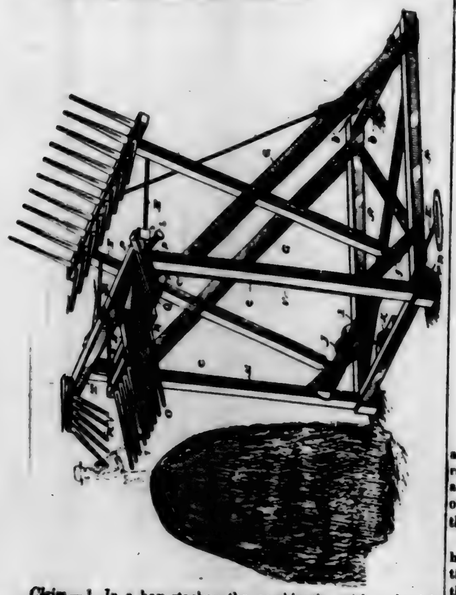
3. In a gyratory crushing machine the lower section or frame A having chute, counter-shaft and man-hole side openings, an inwardly projecting bottom flange, and a removable bottom B secured to said flange, substantially as set forth



4. A lower section for a gyratory machine having an open bottom and an inwardly projecting flange, a removable bottom plate bolted to said flange substantially as set forth.

5 In combination with a gyratory crusher shaft, working eccentric and driving wheel, a cap K having a chain or equivalent connection with said shaft substantially as set forth

## 500,599. HAY-STACKER. OLIVER C. NILSON, Joplin, Mo. Filed Feb. 6, 1893. Serial No. 461,180. (No model.)



*Claim.*—1. In a hay stacker, the combination with a derrick frame and a swinging pitching fork adapted to pitch thereover, of adjustable distributing devices arranged at the upper end and at one side of said derrick frame, substantially as set forth.

2. In a hay stacker, the combination with a derrick frame and a swinging pitching fork; of laterally movable distributing devices arranged at the upper end and at one side of the derrick frame, substantially as set forth.

3. In a hay stacker, the combination with a derrick frame and a swinging pitching fork adapted to pitch over said derrick frame; of a distributing fork pivotally connected to the upper end of said derrick frame, substantially as set forth.

4. In a hay stacker, the combination with the derrick frame and the swinging pitching fork; of a laterally movable distributing fork pivoted centrally to the upper end of said derrick frame and downwardly inclined, substantially as set forth.

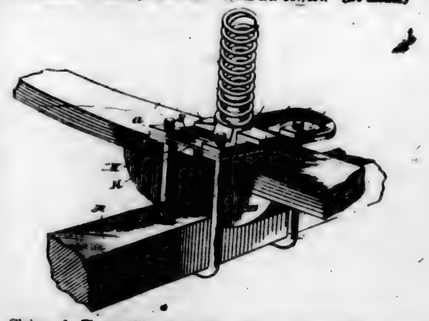
5. In a hay stacker, the combination with a derrick frame and a swinging pitching fork working adjacent thereto; of a central distributing fork connected centrally to the upper end of the derrick frame and downwardly inclined, and opposite dropping side forks connected to opposite upper ends of the derrick frame, substantially as set forth.

6. In a hay stacker, the combination with the derrick frame and the adjacent pitching fork adapted to pitch thereover; of a central downwardly inclined distributing fork pivotally connected at its inner ends to the upper end of said derrick frame, and opposite dropping spring-returned side forks pivotally connected to opposite upper ends of the derrick-frame, to each other, and said central distributing fork, substantially as set forth.

7 In a hay stacker, the combination of the derrick frame, the swinging pitching fork adapted to pitch thereover, a laterally movable distributing fork downwardly inclined and centrally pivoted at its inner end to the upper end of said derrick frame, opposite swinging fork arms pivoted to opposite upper ends of said derrick frame, dropping side distributing forks hinged to said side swinging fork arms and having their tines disposed at an angle toward the outer extremity of the central distributing fork, spring devices attached to said side fork arms and said side distributing forks to normally hold the latter in a horizontal position above the central distributing fork, and a connecting rod loosely connected at its ends to said swinging fork arms, and to the central fork, substantially as set forth

8. In a hay stacker, the combination with a derrick frame and the swinging pitching fork adjacent thereto, of a central distributing fork pivoted centrally to the upper end of the derrick frame, opposite laterally movable fork arms pivoted to opposite upper ends of the derrick frame and recessed at one side, dropping side forks hinged at their heads to said fork arms and registering with the recesses thereof, bolts loosely connected to the heads of said side forks and passing through the fork arms, springs arranged over said bolts to normally hold the side forks above the central fork, and a single connecting rod loosely connected to said fork arms and said fork, substantially as set forth.

## 500,600. SUPPORT FOR ELLIPTIC SPRINGS. WILLIAM S. HOYT, Chicago, Ill. Filed Sept. 30, 1892. Serial No. 447,407. (No model.)

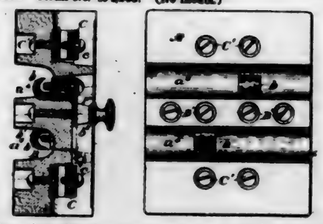


*Claim.*—1. The combination, with a vehicle spring and its axle, of a holder having a threaded post and a base provided with arms arranged in different planes, a strap-loop interposed between one set of arms and the spring, binding-plates resting upon the said loop and the other set of arms, clips passing around the axle and projecting through the said loop and the plates, and nuts on the clips.

2. The combination, with a vehicle-spring and its axle, of a holder having a base provided with arms arranged in different planes and a threaded post located centrally of the base, a coiled spring engaging the said post, a strap-loop interposed between one set of arms and the spring, binding-plates resting upon the said loop and the other set of arms, clips passing around the axle and projecting through the said loop and the plates, and nuts on the clips.

3. As a new article of manufacture, a holder for a spiral-spring consisting of a base having arms arranged in different planes and a threaded post located centrally of the arms.

## 500,601. SAFETY CUT-OUT. OLOF OFFRELL, Middletown, Conn., assignor to the Schuyler Electric Company, of Connecticut. Filed Dec. 5, 1892. Serial No. 454,205. (No model.)



*Claim.*—1. A fuse-box having a longitudinal septum dividing it into compartments, a recess at each end of each compartment, a hole in each compartment adjacent to one of said recesses, and extending through the back of the box, and a septum interposed between the hole and the adjacent recess, substantially as described

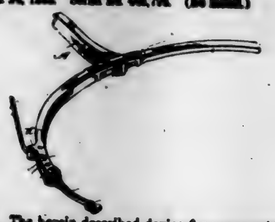
2. A fuse-box, having a longitudinal septum dividing it into compartments, a recess at each end of each compartment, two parallel grooves running across the back of the box, a hole in each compartment extending through the back of the box and intersecting one of said grooves, and a septum interposed between said hole and one of the end recesses, substantially as described.

3 A double-pole, double-branch fuse-box, having in its back two transverse grooves to receive the line wires, and in its front two separate compartments, a hole in each compartment intersecting with one of said grooves, and a recess at each end of each compartment

in combination with a branch wire terminal block in each recess, a line pole clamping block in each hole, projecting at one end into one of the transverse grooves and at the other end into its compartment, and fuses connecting each pole-block with the branch terminal blocks at each end of its compartment, substantially as described.

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**500,602. VEHICLE-POLE.** JOHN H. OMSTEAD, Union City, Ind. Filed Sept. 26, 1892. Serial No. 446,706. (No model.)



*Claim.*—1. The herein described device for use on vehicle poles, consisting of the metal part or open casting having the arm for lying on one face or side and for attachment to the pole, the socket at the inner end of said arm to receive the end of the pole and the arms or branches having the flanged edges for inclosing the sides of the circle bar, substantially as described.

2. The herein described device for use on vehicle poles, consisting of the metal part or casting having the arm for attachment to the pole, the socket to receive the inner end of pole and formed with inward extending lugs, and the two arms for securing the parts of the circle bar, substantially as described.

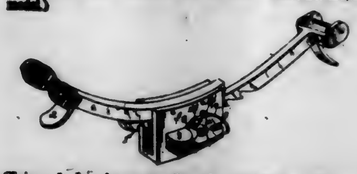
3. The herein described device for use on vehicle poles, consisting of the two plates adapted to be attached one on each side or face to the ends of the circle bar and formed with lugs forming trunnions, and the coupling bars having cupped bearings to receive said trunnions, and a single bolt passing through the trunnions and cupped bearings and forming a pivot, substantially as described.

4. The herein described device for use on vehicle poles, consisting of the plates adapted to be attached to the ends of the circle-bar and having conical lugs on their inner ends, the coupling bars having conical bearings to receive said lugs, a single bolt passing through the conical lugs and bearings to form a pivot, ears formed on the plates to receive the brace bars, and the loops or eyes on the coupling bars for connection with the draw irons or the like, substantially as described.

5. The herein described device for use on a vehicle pole, consisting of the two flanged plates having the conical trunnions and the lugs or lips, the brace bars connected to said lips, the coupling bars having the conical friction bearings, and the loops or eyes on the coupling bars, substantially as described.

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**500,603. HAME-COUPLING.** ALBERTUS A. PARSONS, Burnett, Wis. Filed Mar. 5, 1892. Renewed Jan. 16, 1893. Serial No. 458,626. (No model.)



*Claim.*—1. In a hame coupling, the combination of a fixed arm a movable arm with ratchet teeth therein, a dog adapted to engage said ratchet teeth and having a projection, and a slotted sliding key adapted to engage the projection of said dog, and control the movement of the latter reactively with the ratchet teeth of the movable arm, substantially as described.

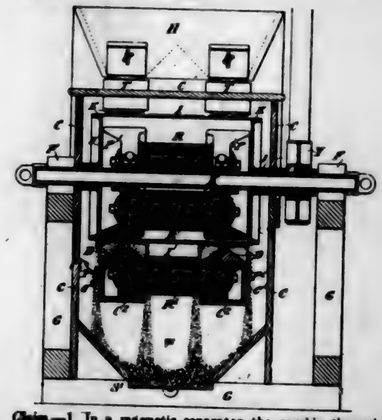
2. In a hame-coupling, the combination of a casing or box having an arm fixed thereto, an arm movably mounted in said box or casing provided with ratchet-teeth, a dog within said casing having a pin or projection extending therethrough, a slotted sliding key engaging said pin or projection of the dog, and a pin or stop on said casing against which said key has bearing, substantially as described.

3. In a hame-coupling, the combination of a box or casing having an arm fixed thereto, a movable arm mounted in said casing provided with ratchet-teeth, a dog in said casing to engage said ratchet-teeth of the movable arm, and a pin thereon extending through said casing; a slotted key to engage said pin or projection of the dog and movable on a headed stud or screw and provided with a front bevel-ed end terminating in a straight edge, and a pin or stud on the casing with which the front beveled end and straight edge are adapted to engage, substantially as described.

4. In a hame-coupling, a stationary arm, and a movable arm having ratchet-teeth thereon, a dog to engage said ratchet-teeth, a sliding key connected to said dog and having a slot to movably support said key on a headed stud or screw, said key also having a straight edge, and a stud or pin projecting from said casing adapted to engage said straight edge of the key to lock the same in its adjusted position, substantially as described.

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**500,604. METHOD OF AND APPARATUS FOR SEPARATING ORES.** CLARENCE G. PAYNE, Stamford, Conn. Filed Apr. 19, 1892. Serial No. 429,782. (No model.)



*Claim.*—1. In a magnetic separator, the combination substantially as hereinbefore set forth, the pole-pieces placed on each side of an operating screen, and electromagnet-cores for charging the same, two magnetic fields being formed on the same circuit of the lines of magnetic induction generated by the electromagnet cores, each independently available for the purpose of separation.

2. In a magnetic separator, the combination substantially as hereinbefore set forth, of an operating screen, pole-pieces on one side of the screen charged with respect to each other with magnetism of opposite polarity by means of electromagnet-cores, pole-pieces on the opposite side of the screen, separated therefrom by air-spaces and charged with respect to each other with opposite polarity by means of electromagnet-cores, each of the latter pole-pieces being respectively the reverse in polarity to each of the former and opposing pole-pieces.

3. In a magnetic separator the combination substantially as hereinbefore set forth, of a screen of suitable construction, pole-pieces on one side of the screen, suitable electromagnet-cores, whereby they are charged with respect to each other with magnetism of opposite polarity, and devices on the other side of the screen for controlling the direction and intensity of the lines of force.

4. In a magnetic separator, the combination of an operating screen and an electromagnet provided with pole-pieces, the attracting force being equalized across the widths of the two portions of the screen opposite the faces of said pole-pieces, by means of devices exterior to the electromagnet and forming part of the same magnetic circuit, substantially as described.

5. In a magnetic separator, the combination substantially as hereinbefore set forth, of an operating screen, pole-pieces on one side of the screen, charged with respect to each other with magnetism of opposite polarity by means of electromagnet-cores, and pole-pieces on the other side of the screen charged with respect to each other with magnetism of opposite polarity by suitable electromagnet-cores and separated therefrom by an air-space; the latter pole-pieces being so arranged with reference to the former pole-pieces, that the lines of force are constrained to occupy positions normal to the surfaces of the screen, and to exert a substantially uniform attraction along rectilinear elements of the screen or across the widths of the two fields at the surface of the screen.

6. In a magnetic separator, the combination substantially as hereinbefore set forth, of a rotary screen, two inner pole-pieces within said screen charged with respect to each other with magnetism of opposite polarity by suitable electromagnet-cores, and devices substantially as described without the screen, for controlling the direction and intensity of the lines of force and maintaining the positions normal along the rectilinear elements of the screen.

7. In a magnetic separator, the combination of an iron screen and an electromagnet provided with pole-pieces, a lamellar distribution of magnetism being produced in those portions of the screen opposite the faces of said pole-pieces, substantially as described.

8. In a magnetic separator, the combination substantially as hereinbefore set forth, with the pole-pieces and the electromagnet-cores for energizing the same, two unipolar fields being formed upon the same magnetic circuit, of an iron screen passing through both of said fields between the faces of the pole-pieces, a lamellar distribution of magnetism being produced in those portions of the screen opposite the faces of said pole-pieces.

9. In a magnetic separator, the combination substantially as hereinbefore set forth, in a single magnetic circuit, of a rotary iron screen on which the separation takes place, two inner and two outer pole-pieces, between which said screen rotates, magnetized by suitable electromagnet-cores; said pole-pieces being so arranged that the two magnetic fields formed in the said circuit of the lines of magnetic induction, produce a lamellar distribution of magnetism in those portions of the screen within the said fields.

10. In a magnetic separator, the combination of an electromagnet provided with pole pieces and an operating screen passing through the magnetic field opposite the faces of the pole-pieces and devices exterior to the electromagnet on the opposite side of the screen for controlling the direction and intensity of the lines of force; so constructed and arranged that a uniform attracting force is exerted along the two portions of the screen opposite the faces of said pole-pieces, for a part of each of their lengths, and a gradually diminishing attracting force is exerted throughout the remainder thereof.

11. In a magnetic separator, the combination substantially as hereinbefore set forth, of a rotary screen revolving through two unipolar magnetic fields, upon the same magnetic circuit; pole-pieces placed respectively within and without said screen, energized by suitable electromagnet-cores, said pole-pieces being so constructed and arranged with reference to the screen and to one another, that a uniform attracting force is exerted along curvilinear elements of the surface of the screen, in a portion of each field, and a gradually diminishing attracting force along curvilinear elements throughout the remainder thereof.

12. In a magnetic separator, the combination substantially as described, of an operating screen passing through two unipolar magnetic fields on the same magnetic circuit; pole-pieces energized by electromagnet-cores placed on each side of said screen and at equal distances between their opposing faces during a portion of their length and at a gradually increasing distance during the remainder.

13. In a magnetic separator, the combination substantially as hereinbefore set forth, of a rotary screen rotating through two unipolar magnetic fields, on the same magnetic circuit, two inner pole-pieces with the screen magnetised by electromagnet-cores, two outer pole-pieces magnetized by similar electromagnet-cores, the opposing faces of said inner and outer pole-pieces being placed at equal distances apart during a portion of their lengths and at a gradually increasing distance apart during the remainder thereof, so that a uniform attracting force is exerted along curvilinear elements of the surface of the screen in a portion of each field, and a gradually diminishing force during the remainder.

14. In a magnetic separator, the combination of a screen passing through unipolar fields on the same magnetic circuit formed by inner and outer pole-pieces with respect to the screen surface, and inclined deflectors or guides placed lengthwise in each field so as to occupy that portion between the neutral surface and the face of the outer pole-pieces in said fields for the purposes hereinbefore set forth.

15. In a magnetic separator, the combination in a single magnetic circuit of pole-pieces energised by suitable electromagnet-cores, a screen arranged with reference to said pole-pieces to pass through two separate unipolar fields in the said magnetic circuit, and devices substantially as described on the opposite side of the screen, for equalizing and controlling the attracting force along rectilinear elements of the surface of said screen.

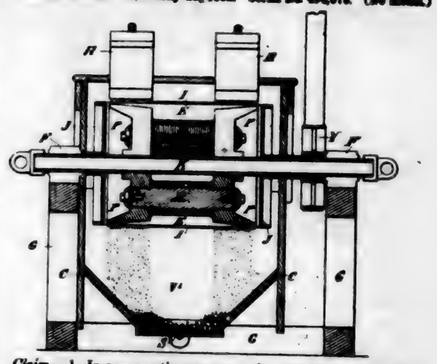
16. In a magnetic separator, the combination, substantially as hereinbefore set forth, of an electromagnet provided with pole pieces and an operating screen passing in front of the polar faces and devices exterior thereto forming a part of the same magnetic circuit, the distance between the surface of the screen and the polar faces varying in the direction of the length of the magnetic field.

17. The method of separating a crushed iron ore into heads, middlings and tailings, substantially as described, consisting first, in passing the same through a magnetic field in which a constant attracting force is maintained, and in which the tailings are removed from the ore by the combined action of centrifugal force and gravity, while the remaining particles are carried through the field and thrown off the screen by centrifugal force, and second, in passing said remaining particles through a magnetic field in which a diminishing attracting force is maintained and in which the middlings are removed by the combined action of centrifugal force and gravity, while the heads are carried through the field and are then discharged by centrifugal force.

18. The method of separating a crushed iron ore into heads, middlings and tailings, substantially as described, by passing the same through a magnetic field in a portion of which a constant attracting force is maintained whereby the tailings are eliminated, and in the remainder of which a diminishing attracting force is maintained, whereby the middlings are separated from the heads and the latter are discharged at the end of the field.

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**500,605. MAGNETIC ORE-SEPARATOR.** CLARENCE G. PAYNE, Stamford, Conn. Filed May 23, 1892. Serial No. 434,073. (No model.)



*Claim.*—1. In a magnetic separator, the combination hereinbefore described, of an electromagnet provided with pole-pieces, the faces of which lie in surfaces which make an angle with each other, and an operating screen passing through the magnetic field, opposite the faces of the pole-pieces, for the purpose set forth.

2. In a magnetic separator the combination substantially as hereinbefore described, with an electro-magnet provided with pole pieces whose polar faces are not opposed but lie in adjacent surfaces, and which make an angle with each other; and an operating screen passing through the magnetic field in front of the polar faces; of two unipolar attracting surfaces occupying those portions of the operating screen opposite said polar faces and which are at right angles to the rectilinear elements of the screen surface, substantially as described.

3. In a magnetic separator, the combination substantially as described, of an electromagnet provided with pole-pieces, an operating screen passing through the field opposite the faces of the pole-pieces, the faces of each pole-piece and the surface of the screen being so inclined with respect to each other, that a wedge shaped air gap is formed between them, substantially as described, for the purpose set forth.

4. In a magnetic separator, the combination hereinbefore set forth, of an electro-magnet provided with pole-pieces, an operating screen passing through the magnetic field opposite the faces of the pole pieces, the face of each pole piece being inclined inwardly with respect to the screen surface, so that a wedge shaped air gap is formed between them substantially as described.

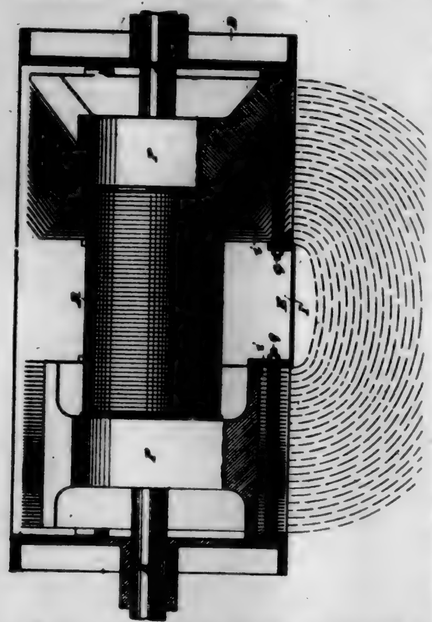
5. In a magnetic separator, the combination of an electro-magnet provided with pole pieces the faces of which lie in surfaces making an angle with each other and an operating screen passing through the magnetic field opposite the faces of the pole pieces, a uniform attracting force being exerted along the two portions of the screen opposite the faces of said pole pieces, for a part of each of their lengths, and a gradually diminishing attracting force along the remainder thereof.

6. In a magnetic separator, the combination of an operating screen and an electro-maguet provided with pole pieces, the attracting force being equalized across the widths of the two portions of the screen, opposite the faces of said pole pieces, substantially as described.

7. In a magnetic separator, the combination of an operating screen and an electro-magnet provided with pole-pieces, a uniform attracting force being exerted along the two portions of the screen opposite the faces of said pole-pieces for a part of each of their lengths, and a gradually diminishing attracting force being exerted throughout the remainder thereof.

8. The combination of an electro-magnet provided with pole-pieces, and an operating screen passing through the field opposite the polar faces, the different opposing points of the screen surface and of each polar face being at different distances apart.

**500,606. DEVICE FOR AND METHOD OF ADJUSTING AND EQUALIZING THE MAGNETIC DENSITY IN THE POLE-PIECES OF MAGNETIC SEPARATORS.** GARDNER G. FATES, Stamford, Conn. Filed May 23, 1892. Serial No. 434,052. (No model.)



*Claim.*—1. An electro-magnet provided with pole-pieces, the component parts of which electro-magnet are so subdivided and energized, that a uniform distribution of magnetic density is secured across the widths of the polar faces.

2. An electro-magnet provided with pole-pieces, across whose faces the lines of force pursue air-paths of unequal length, having its component parts so subdivided and energized, that the effect of said inequality is compensated and a uniform distribution of the magnetic density is secured across the width of the polar faces.

3. An electro-magnet, provided with pole-pieces composed partly of movable and adjustable plates, substantially as described, for adjusting and equalizing the magnetic density across the polar faces in directions coincident with the planes of the air-paths of the lines of force between the polar faces.

4. In a magnetic separator, the combination, substantially as hereinbefore set forth, of an electro-magnet provided with pole-pieces whose faces lie in the same surface, the component parts of which electro-magnet are so subdivided and energized that the magnetic density at the polar faces is adjusted and equalized across their widths, and an operating screen passing through the magnetic field in front of the faces of the pole-pieces.

5. In a magnetic separator, the combination, substantially as hereinbefore set forth, of an electro-magnet provided with suitable pole-pieces, a series of movable and adjustable plates forming a part of said pole-pieces, for adjusting and equalizing the magnetic density across the polar faces, and an operating screen passing through the magnetic field in front of the pole-pieces.

6. In a magnetic separator, the combination substantially as hereinbefore set forth, of a rotary iron screen, and an electro-magnet, provided with pole-pieces whose faces lie in the same surface, the component parts of which electro-magnet are so subdivided and energized that the magnetic density is equalized in directions coincident with the planes of the air-paths of the lines of force between the pole-pieces.

7. An electro-magnet for use in magnetic separators, provided with pole-pieces, whose faces lie in the same surface, the component parts of which electro-magnet are so subdivided and energized that a constant ratio of the magneto-motive force to the sum of the internal and external magnetic resistances of the magnetic circuit, is maintained.

8. An electro-magnet, for use in a magnetic separator, provided with pole-pieces, whose faces lie in the same surface and are partially subdivided by air spaces.

9. An electro-magnet, for use in a magnetic separator, provided with pole-pieces, whose faces lie substantially in the same surface, and which are partially subdivided by air spaces, extending in planes throughout the lengths of said polar faces and occupying positions across the same numerically in direct proportion to the normal distribution of the magnetic density across the same.

10. An electro-magnet for use in a magnetic separator, provided with pole-pieces, whose faces lie in substantially the same surfaces, and which are partially subdivided by air spaces extending across the polar faces, the depth of said air spaces being varied in direct proportion to the normal distribution of the magnetic density across the polar faces.

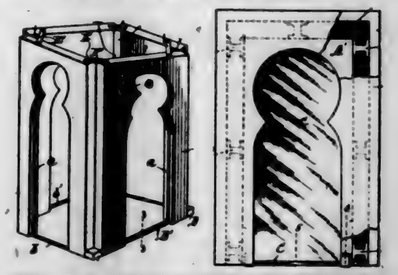
11. An electro-magnet for use in a magnetic separator, provided with pole-pieces, whose faces are approximately in the same surface, and which are composed of movable plates occupying positions numerically in an inverse proportion to the normal distribution of the magnetic density across the polar faces.

12. In a magnetic separator, the combination substantially as described, of an electro-magnet, provided with pole-pieces, the component parts of which electro-magnet are so subdivided and energized that a constant ratio is maintained of the magneto-motive force to the sum of the internal and external resistances of the magnetic circuit, for all parts of the circuit, and an operating screen passing through the magnetic field in front of the pole-pieces of the magnet.

13. The method, substantially as hereinbefore described, of adjusting and equalizing the magnetic density across the polar faces of the pole-pieces of an electro-magnet in directions coincident with the planes of the air-paths of the lines of force by varying the resistance in the path of the lines of force within the electro-magnet.

14. The method substantially as described, of adjusting and equalizing the magnetic density across the polar faces of the pole-pieces, of an electro-magnet in directions coincident with the planes of the air-paths of the lines of force joining the polar faces, by making the ratio of the sum of the internal and external magnetic resistances of the magnetic circuit to the magneto-motive force, a constant for all parts of said circuit.

**500,607. OPTICAL ILLUSION.** HOWARD B. PERRY, Chicago, Ill. Filed Apr. 8, 1893. Serial No. 469,593. (No model.)



*Claim.*—1. In a device for producing optical illusions, the combination with a number of arches or frames containing glasses, of a number of open arches or frames arranged at an angle to the first and having along their inner edges and the floor an imitation of the edges of the glass, substantially as set forth.

2. In a device for producing optical illusions, a number of open arches or frames each having a strip or sill extending from side to side at the base thereof, in combination with similar frames or arches containing glasses, and each of such glasses at its base having an imitation of such strip or sill, substantially as set forth.

3. In a device for producing optical illusions, a number of open arches or frames each having a strip or sill extending from side to side at the base thereof and being triangular in cross-section in combination with similar frames or arches containing glasses, and each of such glasses at its base having an imitation of such strip or sill, substantially as set forth.

4. In a device for producing optical illusions, a number of open arches or frames each having a strip or sill extending from side to side at the base thereof and being triangular in cross-section, in combination with similar frames or arches containing glasses and each of such glasses having at its base a strip or sill which is in imitation in size and color of one half of the said first sill divided vertically, substantially as set forth.

5. In a device for producing optical illusions, the combination of a number of individual frames representing arches or door-ways, arranged at an angle to each other, and means for securing the edges of said frames together, substantially as set forth.

6. In a device for producing optical illusions, the combination of a number of individual frames representing arches or door-ways arranged at an angle to each other, means for securing the edges of said frames together and strips or beads for concealing the cracks or joints between said frames, substantially as set forth.

7. In a device for producing optical illusions, the combination of a number of individual independent frames representing arches or door-ways, arranged at an angle to each other, base-blocks adapted to be secured to the floor and against which the edges of said frames abut, devices for securing the upper ends of said frames together, and strips or beads secured in the corners formed by said frames, substantially as set forth.

8. An arch for the purpose described, in combination with a glass mounted yieldingly therein, substantially as set forth.

9. The combination of an outer frame and an inner frame yieldingly secured to said outer frame and having a glass mounted therein, substantially as set forth.

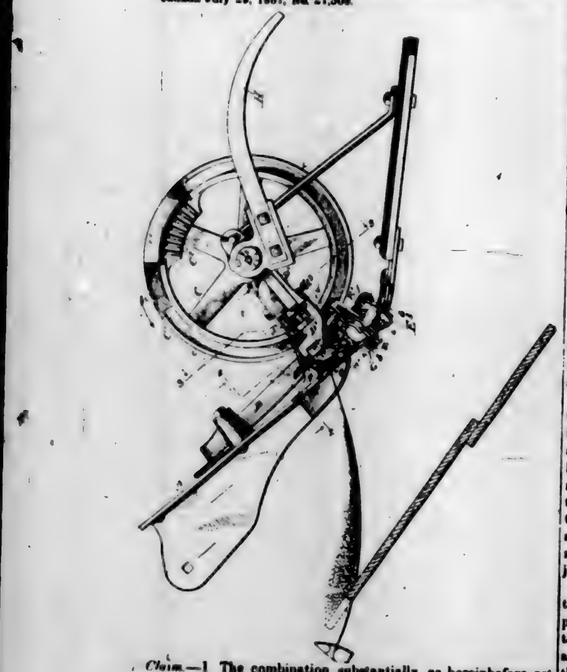
10. The combination of two frames arranged one within the other and connected together, a flexible sheeting or envelope covering said frames, and a glass mounted in the inner one, substantially as set forth.

11. The combination with a frame for the purpose described and a glass mounted therein and extending to the lower edge thereof, of the thin strips H secured to the edges of the frame and passing under the glass, substantially as set forth.

12. The combination with a frame for the purpose described having a mirror mounted therein, and being provided on its sides with a representation of objects I, of the mirrors J mounted between said objects I, substantially as set forth.



**500,608. GRAIN-BINDER.** GEORGE L. PHELPS, Chicago, Ill., assignor to the McCormick Harvesting Machine Company, same place. Filed June 11, 1885. Serial No. 168,323. (No model.) Patented in Canada July 29, 1887, No. 27,309.



*Claim.*—1 The combination substantially as hereinbefore set forth, with the knotter of a breast-plate having a stop-finger in the binder-arm slot extending thereacross and bent upward or toward the knotter out of the plane of the plate.

2 The combination substantially as hereinbefore set forth, with the cord-knotter and the cord-holder, of a breast-plate having a stop-finger extending from one side of the slot, beneath or slightly in advance of the knotter, along which finger the cord is carried or deflected in the revolution of the knotter, and a guard projection from the other side of the slot, which directs the cord upon the base of said finger and retains it thereagainst as it is carried laterally therealong.

3. The combination substantially as hereinbefore set forth, with the cord-knotter and cord-holder, of a breast-plate, provided with a guard projection and a stop-finger in the binder-arm slot extending across said slot opposite to each other, beneath or slightly in advance of the knotter, the first being bent upward or toward the knotter at its end out of the plane of the breast-plate.

4 The combination substantially as hereinbefore set forth, with the knotter and the cord-holder of a breast-plate provided with a guard projection and a stop finger in the binder-arm slot, extending across said slot opposite to each other beneath or slightly in advance of the knotter and both of them bent upward out of the plane of the breast-plate.

5 The combination substantially as hereinbefore set forth, with the knotter and with the laterally moving holder for the cord, which swings away from the binder arm slot on the side on which the knotter is located, of a guard projection and a stop-finger in said slot beneath or slightly in advance of the knotter, which projection and finger extend from opposite sides of the slot toward each other.

6 The combination substantially as hereinbefore set forth, with the knotter and with a laterally moving holder for the cord which swings away from the binder arm slot on the side on which the knotter is located, of a guard projection extending from said side of the slot toward the other and beveled or inclined on that edge which meets the cord, and a stop-finger extending from the other side of the slot at right angles thereacross and having its inner or receiving edge parallel with the contiguous or outer edge of the guard finger and in proximity thereto, so that the cord is first deflected upon the base of the stop-finger by the guard-finger, and is subsequently kept in contact with said stop-finger as it is carried therealong by the lateral movement of the holder.

7 The combination, substantially as hereinbefore set forth, with the cord-knotter which stops with its jaws pointing obliquely outward across the plane in which the cord is laid and in the general direction of the length of the slot, of a breast-plate having a slot for the play of the binder-arm, continued beyond said knotter obliquely outward and transversely to said plane, a cord arresting finger projecting from the side of the slot opposite the knotter at the re-entrant angle between the two reaches of the slot and permitting the passage of the cord-strands from the inner to the outer reach while held within the grasp of the holder, and mechanism which gives the knotter a single complete revolution to form the knot and stops it at the end of said revolution with its jaws practically parallel with the obliquely extended reach of the slot so that the pull of the cord as the sheaf is ejected will be guided in a practically straight line from the knotter-jaws.

8. The combination substantially as hereinbefore set forth, with a cord-knotter and cord-holder of a swinging arm pivoted to the shield or breast-plate which guards them, and having the holder mounted in its free end and a cam positively actuating said swinging arm to move it away from and toward the slot in said shield or breast-plate at stated intervals.

9. The combination substantially as hereinbefore set forth with a swinging arm pivoted near the head of the binder-arm slot in the breast-plate and carrying the cord-holder at its free or vibrating end, of a fixed guide or way formed upon or in the breast-plate to steady said free or vibrating end in its movements.

10. The combination substantially as hereinbefore set forth, with the cord-knotter of a swinging arm pivoted to the breast-plate near its head and on the opposite side of the slot through which the binder-arm plays from said knotter, thence extending down alongside the knotter and beneath the gear-wheel which actuates it, a cord-holder mounted in the free end of said arm beyond or outside of the knotter, and a peripheral cam-ledge upon said gear-wheel entering between lugs or rollers upon the swinging arm and actuating it to move away from the cord slot immediately before the knotter comes in mesh with its driving rack and to return it to its normal position adjacent to said slot immediately after said knotter passes out of mesh.

11 The combination substantially as hereinbefore set forth, with the knotter of holder-disks arranged in a plane parallel, or nearly parallel, with the spindle of the knotter, but trending inwardly thereto ward from the plane in which the cord is laid, and means whereby said disks are moved laterally past the knotter as it revolves, to bend the cord around it and carry it down into position to be grasped by the jaws.

12. The combination substantially as hereinbefore set forth, of the knotter the swinging arm, the holder-disks supported thereby, in a plane parallel with the knotter spindle, but trending inwardly from the plane in which the band is laid the holder-plate and shoe also supported thereby, the spring dog on the shield or breast-plate, acting upon the ratchet-face of said disks to revolve them as the arm is swung laterally, and the click on said arm, restraining them from movement as the arm is returned to its position.

13. The combination substantially as hereinbefore set forth, with the cord-knotter of the holder-disks, the holder-plate or shoe, the swinging arm or support for said disks and shoe, the beveled lug fixed

upon the shield or breast-plate between the knotter and holder, the blade carried by said lug, and the knife on the swinging arm, which severs the cord against said blade on the return movement of the arm.

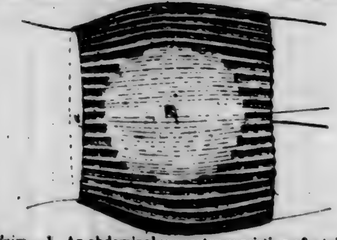
14. The combination substantially as hereinbefore set forth, with the cord-knotter of the holder-disks, the holder-plate or shoe, the swinging arm or support for said disks and shoe, the cord stop fixed upon the breast-plate between said disks and the knotter, the shear-blade supported by said cord-stop, and the knife on the swinging arm which severs the cord against said shear-blade on the return movement of the arm.

15. The combination substantially as hereinbefore set forth, with the cord knotter of the holder-disks the holder-plate or shoe, the swinging arm or support for said plate or shoe, the spring-dog which actuates the disks as the arm is swung away from the knotter, the fixed shear-blade between the knotter and holder, and the knife on the swinging arm, which severs the strands of cord against said blade as the arm returns toward the knotter.

16. The combination substantially as hereinbefore set forth, of the breast-plate, the guard projection and stop-finger extending from opposite sides of the slot therein, the tying-bill adjacent to said projection and finger, the stop-motion-gear by which said tying-bill is rotated the swinging arm pivoted near the top of the slot on the side away from the knotter, and thence passing down until its free end comes beneath the stop-motion-gear, the cam-ledge on the periphery of said gear, entering between projections from said arm to positively actuate it back and forth, the rotary cord-holder disks supported in said arm, the spring-dog upon the breast-plate, catching into a ratchet on the face of the outer one of said disks to revolve them as the arm is moved away from the knotter, the click to stop them as it is returned, the fixed shear-blade between the knotter and the holder and the knife on said arm to sever the cord as the arm is swung back and toward the tying bill.

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**500,609. ABDOMINAL SUPPORTER.** ANNA R. S. PHILLIPS, Salina, Kans. Filed Mar. 21, 1893. Serial No. 467,016. (No model.)

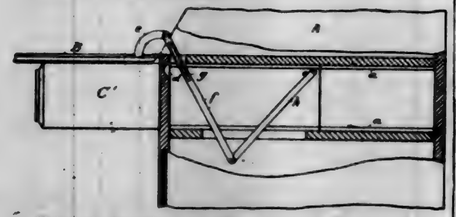


*Claim.*—1. An abdominal supporter consisting of a tubular body of vertically ribbed knitted fabric, the said ribs extending from the top to the bottom edges thereof, the front of said body being formed of plain knitted fabric, as set forth.

2. An abdominal supporter consisting of a tubular body of ribbed knitted fabric, having a plain knitted front portion and having at the back vertical reinforcing tapes and horizontal adjusting straps, connecting said tapes as set forth.

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**500,610. DEVICE FOR OPERATING THE SLIDES OR RESTS OF DESKS.** JAMES B. POOLEY, Clementon, N. J. Filed Aug. 17, 1892. Serial No. 443,301. (No model.)



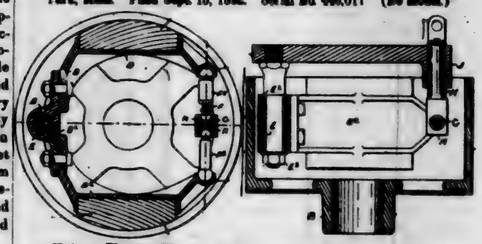
*Claim.*—1. An article of furniture provided with internal openings and recesses, a movable hinged member having brackets secured at one of their ends thereto, slides or rests afforded a range of movement, and arms for each slide or rest pivoted to each and connected at one end with one of the slides or rests and at the other with one of said brackets secured to the movable member, substantially as and for the purposes set forth.

2. An article of furniture provided with a lid or fall, slides or rests afforded a range of movement on rails, curved brackets applied to the lid or fall, pivotal arms connected with the brackets and with the slides or rests and certain of the arms slotted and pivotally connected with the internal body of the article so as to afford the same in the actuation of the lid or fall a range of movement on the pivots of the internal body, substantially as and for the purposes set forth.

3. An article of furniture provided with a lid or fall, slides or rests afforded a range of to and fro movement in channels, curved-brackets applied to the lid or fall and adapted to engage in concave recesses formed in the body of the article and to be released from the same by the movements of the lid or fall and the brackets connected with slotted and pivoted arms in connection with each other and with the slides or rests and afforded in the actuation of the lid or fall a range of sliding and reciprocating movement on the pivots of the internal body of the article, substantially as and for the purposes set forth.

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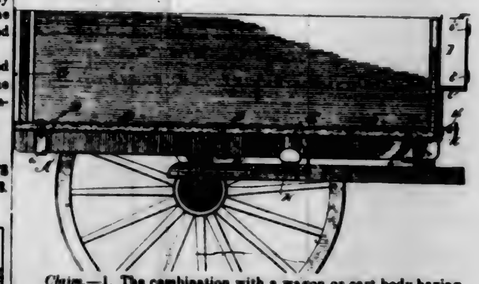
**500,611. BRAKE FOR PULLEYS.** BENJAMIN F. RADFORD, Hyde Park, Mass. Filed Sept. 15, 1892. Serial No. 446,017. (No model.)



*Claim.*—The combination with a pulley, of a brake and toggle lever mechanism, consisting of brake-shoes located to work on the wheel at opposite sides of the inner surface of its rim, a carrier for each brake-shoe and both at one end adapted to swing on a common pintle E, two toggle-arms extending between the outer ends of said brake-shoe carriers and both, at one end, having a bearing on said ends of said carriers, a block G located between the ends of the toggle levers which are toward each other, and said ends having bearings on opposite ends of said block, a rod H carrying said block G and extending therefrom in a direction axially parallel to the axis of the pulley and a stationary arm J having fixed on it, at one end the pintle E of the brake-shoe carriers and at the other end receiving and supporting the rod H, substantially as described, for the purposes specified.

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**500,612. WAGON OR CART.** WILLIAM C. READ and BEN HAGER, Salt Lake City, Utah. Filed May 13, 1892. Serial No. 432,865. (No model.)



*Claim.*—1. The combination with a wagon or cart body having communicating water spaces in its bottom and sides, of a pendent water space, a heater arranged beneath the said drum and an oil reservoir carried on the body and connected with the heater substantially as shown and described.

2. The combination with a wagon or cart body having water spaces in its sides and bottom, of an oil reservoir carried upon said body, the burner arranged beneath the body and a pipe connecting the reservoir and burner substantially as shown and described.

3. The combination with a wagon or cart body having a water space of a pendent water drum, connected with said space, and a heater arranged beneath said drum substantially as shown and described.

4. The combination with a wagon or cart body having double sides and bottom, of the pendent drum, the burner, pipe, and reservoir, the supply pipe, the discharge pipe, the vent cock and water and steam gage all arranged substantially as shown and described.

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**500,613. BERRY-PICKER.** CHARLES C. READ, Hazelnrin, Fla. Filed Sept. 6, 1892. Serial No. 445,169. (No model.)

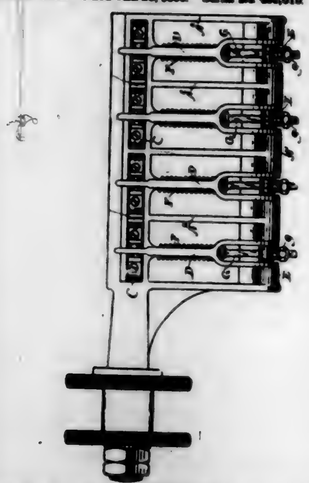


*Claim.*—1. In a fruit picker, the combination of the pivoted shear blades, a U-shaped attaching yoke pivotally connected to one of said shear blades and adapted to be held stationary over the crotch of the hand, a forefinger half-ring adapted to be clamped upon the forefinger of the hand, an operating arm or bar pivotally connected to said forefinger ring and the other shear blade, and a loop connected to said arm or bar and the adjacent blade, substantially as set forth.

2. In a fruit picker, the pivoted shear blades having angled shanks, a U-shaped attaching yoke pivotally connected to the shank of one blade and straddling the crotch of the hand, said yoke having hook ends, a flexible securing band encircling the wrist and adapted to engage the hook ends of the yoke, a forefinger half ring clamped upon the forefinger of the hand, an operating connecting arm or bar pivotally connected at one end to the shank of the other blade and at its other end to said forefinger half ring, and a link connected to said arm or bar and the adjacent blade, substantially as set forth.

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**500,614. BRUSH-HOLDER FOR DYNAMO-ELECTRIC MACHINES.** ERNST J. KERN, Lynn, Mass., assignor to the General Electric Company, of New York. Filed Jan. 23, 1893. Serial No. 460,010. (No model.)



*Claim.*—1. A brush holder comprising a front rail having one or more sockets for the brushes, a rear rail, multiple connecting cross bars and spring actuated arms carrying brushes between each pair of cross bars.

2. A brush holder comprising a socketed front rail, a rear rail, multiple connecting cross bars and spring actuated brush arms hinged to said rear rail between each pair of cross bars.

3. A brush holder comprising a front rail, a rear rail, and connecting cross bars brush arms having bifurcated rear ends hinged to the rear rail, and tension springs having adjusting screws passing between the legs of the forked arms, substantially as described.

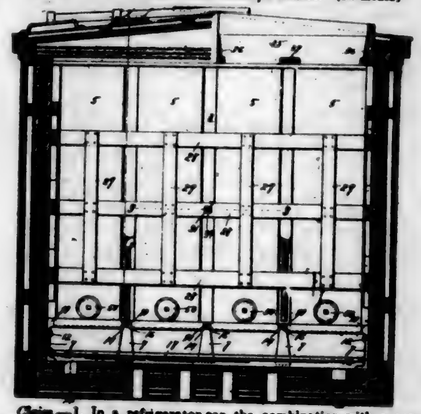
4. A brush holder comprising one or more bifurcated hinged brush arms, a rotatable block held between the legs of each arm, a tension spring having a non rotatable screw sliding through a hole in said block, and a nut resting against the back of said block, substantially as set forth.

5. The combination with a block having a cylindrical or angular surface, of a non rotatable screw sliding in a hole in said block, a nut having one end shaped to fit the surface of the block, and a spring exerting a pull upon the screw and tending to keep the nut in engagement with the block, substantially as described.

6. A brush holder comprising a hinged bifurcated brush arm, a rotatable block held between the legs of the fork, and having a curved or angular surface, a tension spring, a screw attached thereto, having a flat face and sliding in a hole of corresponding shape in the block, and a nut having one end shaped to fit the adjacent surface of the block, substantially as set forth.

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**500,615. REFRIGERATOR-CAR.** THOMAS B. ROBERTS, Kansas City, Kans. Filed Feb. 3, 1893. Serial No. 460,699. (No model.)



*Claim.*—1. In a refrigerator-car, the combination with a supporting iron bolted to the end-wall of the car and extending continuously from side to side of the car, and a number of supporting brackets secured to the floor of the car and formed with recesses in their upper ends, and a supporting iron secured in the recesses of the brackets and also extending continuously from side to side of the car, of refrigerating tanks adapted to rest upon the first mentioned supporting-iron and the iron supported by the brackets, substantially as set forth.

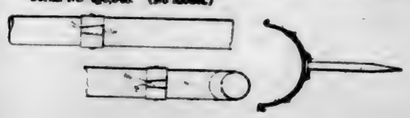
2. In a refrigerator-car, the combination with an angle iron (L-shaped in cross-section) bolted horizontally to the wall of the car, and having openings in its horizontal portion or arm, of supporting brackets resting upon the floor of the car, and each having a horizontal shoulder at its upper end, and a vertical and upwardly extending shoulder at the outer margin of the horizontal shoulder, and an opening in said vertical shoulder, and an angle iron arranged parallel with the first-named angle iron and resting on the horizontal shoulders of the brackets, and also having openings in its vertical arm registering with the openings of the vertical shoulders, and tie-bolts passing through said registering openings and having hooked ends engaging the openings of the horizontal arm of the first-named angle iron, and an opening in the end projecting through the vertical shoulder of the supporting brackets, and a wedge or pin engaging said opening, and a tank resting upon the said angle irons, substantially as set forth.

3. In a refrigerator-car, the combination with the tanks vertically supported, of a pair of retaining rails having notches in their front edges, and a frame-work removably held in said notches or recesses, and adjacent to the front faces of the tanks, substantially as set forth.

4. In a refrigerator-car, the combination of a number of tanks, supported as described, with vertical retaining rails secured to the walls of the car and having recesses or notches in their edges, and recesses or depressions extending downwardly from the rear ends of the first named recesses or notches, and a frame-work consisting of horizontal beams adapted to engage said recesses or notches and vertical beams or bars connecting said horizontal beams, and blocks secured at the inner sides of said horizontal beams and bearing against the inner or front sides of the tanks, and a tie-bolt having one end passed through the said frame-work and engaged by a retaining-cut, and its opposite end hooked, and an eye-bolt secured to the wall of the car, and engaged by the hooked end of the tie-bolt, substantially as set forth.

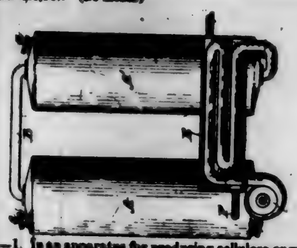
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**500,616. DEVICE FOR ATTACHING WATER-CONDUCTORS TO BUILDINGS.** OSCAR ROSENQUEST, Pittsburg, Pa. Filed June 28, 1892. Serial No. 438,343. (No model.)



*Claim.*—The herein described device for securing water-conductors to the side of a building, consisting of a curved plate having its ends tapered and bent to form hooks, a spike arranged at the center of the plate and having its head resting thereon, a washer secured to the plate and holding the spike in place thereon, and a tapered locking-plate having hooks to engage those on the first-named plate whereby to secure the device in position on the water-conductor, substantially as described.

**500,617.** METHOD OF AND APPARATUS FOR PRODUCING PAPER-STOCK. SIDNEY W. SOWELL, Albany, N. Y. Filed Mar. 3, 1892. Serial No. 423,647. (No model.)



*Claim.*—1. In an apparatus for producing cellulose or wood fiber, a digester consisting of one or more internally unobstructed circulations and digesting chambers, adapted to receive the fibrous material and the chemical liquor, and provided with means for causing a direct forced circulation together, or at the same time, of both the fibrous material and the chemical liquor, and a cooking means outside the digester, substantially as and for the purpose described.

2. The combination of one or more directly connected circulation and digesting chambers which are unobstructed internally, a pump, circulating pipes, and an external heating or cooking coil for heating the mass while in circulation from the outside of the digester, said mass consisting of fibrous material and the chemical liquor, and a steam chamber inclosing the coil, substantially as described.

3. The within described method of mixing the chemical liquor and the fibrous material within the digester, forcibly and directly circulating together the said liquor and fibrous material and heating the same by means outside the digester while in circulation, substantially as described.

**500,618.** DIE FOR FORMING METALLIC CLAMPS. CESAR C. ROBERT, Whitman, assignor to the Atlas Tack Corporation, Boston, Mass. Filed Mar. 10, 1893. Serial No. 465,962. (No model.)



*Claim.*—In dies of the character described, the lower die comprising the base B', die proper B, and gage and gage plates C, said plates extending up from the rear edge of the die and each having a passage C' formed by cutting off or across its inner lower edge, and said passages uniting behind the die proper, whereby the plates constitute a gage, and the passages provide means for the automatic advance or removal of the product, in combination with the upper die A A', substantially as set forth.

**500,619.** HORSE-BLANKET STRAP. ALVA P. RUSSELL, Janesville, Wis. Filed Mar. 7, 1893. Serial No. 464,981. (No model.)



*Claim.*—The band having a buckle at one end, a tongue-strap at the other, a body-strap applied along its length and secured at each end, and a catch provided with an inserting hook to take into the body-strap, and located adjacent to one end of said band.

**500,620.** DEVICE FOR PROTECTING UNBURNED BRICK. ARISTUS SHELDEN, and HENRY MAYER, Dunstan, Ind. Filed Sept. 1, 1891. Renewed Dec. 8, 1892. Serial No. 454,467. (No model.)



*Claim.*—1. In a device for protecting unburned brick, the frames in combination with awnings having poles, the ends of which poles engage movable hook sections, as specified.

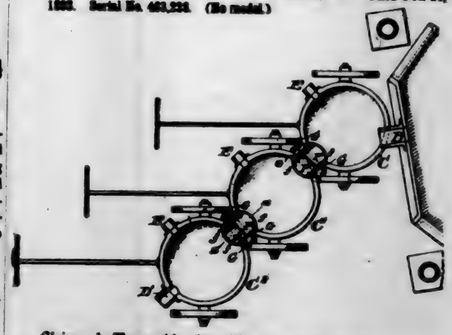
2. In a device for protecting unburned bricks from rain, the combination of the frames, the tie-rods, the awning or awnings hanging over the same at the sides of the upper ends of the frames, the operating shaft, and ropes, chains, or cords connected with the awning or awnings and operated by said shaft, substantially as set forth.

3. In a device for protecting unburned bricks from rain, the combination of the frames having V-shaped tops, the tie-rods, the awning or awnings hanging over the same at the sides of the V-shaped tops of the frames, the operating shaft, and ropes, chains or cords connected with the awning or awnings and operated by said shaft, substantially as set forth.

4. In a device for protecting unburned brick, the combination of the frames, a shaft provided with double pulleys, awning or awnings, and ropes connected to the awnings, and winding in opposite directions upon the pulleys, whereby the awning is raised upon one side of the frame while being lowered on the other, in the manner set forth.

5. In a device for protecting unburned bricks from the rain, the combination of the frames, the awning having extended poles, a shaft provided with pulleys, movable hook-sections, with the hooks of which the extended poles engage, substantially as and for the purpose set forth.

**500,621.** APPARATUS FOR SEPARATING MATTE FROM SLAG. DEREK SIDNEY and MALVERN W. ILES, Denver, Colo. Filed Feb. 21, 1893. Serial No. 463,232. (No model.)



*Claim.*—1. The combination with two or more matte pots of substantially equal height arranged on a level with each other and in series with a furnace, of a removable spout connecting two successive matte pots near but below the top edges thereof.

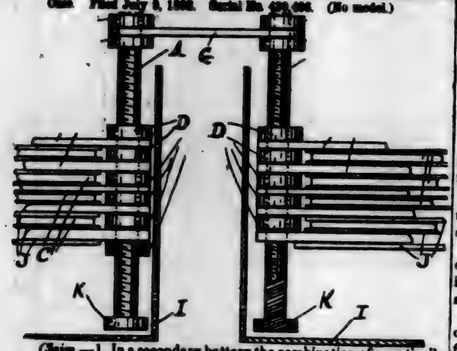
2. The combination with two or more matte pots each having notched openings as D near the top edge which are adapted to register with each other, of removable divisional spouts F, F, each adapted to fit in one of the notched openings D and having outer ends *f* adapted to register with each other as described.

3. The combination with a matte pot having a notched opening in its edge, as D, of a removable spout adapted to fit in said opening so as to extend outside of the pot in one direction, and inside the pot in the other direction to balance the outward extension of the spout.

4. The combination with two matte pots each having a notched opening D in its edge, of removable spouts F, F, adapted to fit in said openings, each spout extending in one direction inside and in the other direction outside of the pot in which it is situated, and having edges as *f* adapted to register with corresponding edges on the other spout.



**500,622.** SECONDARY BATTERY. WILLIAM L. SILVEY, Lima, Ohio. Filed July 5, 1892. Serial No. 439,026. (No model.)



*Claim.*—1. In a secondary battery the combination of a vertically placed rod, having a screw thread thereon the rod passing through horizontally placed battery plates to which they are clamped by means of nuts, and a connecting device at the upper end of the rod consisting of a strip of lead or lead alloy the rod passing through the strip to which it is clamped by means of adjustable nuts traversing the rod and pressing against the strip on both its upper and lower sides.

2. In a secondary battery the positive and negative battery plates respectively arranged alternately each plate separated from the one next adjoining it by a sheet of a porous separating medium, the positive and negative plates respectively clamped together by a series of metal nuts in combination with screw threaded battery rods having an enlargement on their lower ends and connectors for connecting the cells together, consisting of a strip of lead or lead alloy having a hole in each end the battery rod passing through the hole and adjustable nuts bearing against both the lower and upper faces of the strips as set forth.

3. In a secondary battery the combination of horizontally placed battery plates, having an interposed pervious separating medium with a cast screw rod of an alloyed metal, having lead at their base, the rod passing through the battery plates, the upper end of the rod having a connecting strip for connecting two or more cells together, the strip being clamped to the rod by means of adjustable nuts.

4. In a secondary battery a connecting device therefor, consisting of a cast metal screw of lead, the rod passing through battery plates, and having an integral head on one end the other end of the rod having a connecting strip of metal to which it is clamped by metal nuts.

**500,623.** ICE-VELOCIPEDE. DEL SMITH, Worcester, N. Y. Filed Feb. 10, 1893. Serial No. 461,830. (No model.)



*Claim.*—1. The combination with the main runner and the steering rod having a reduced portion, of a spring on the rod and bearing upon the forward end of the rear runner above the lower bearing of the rod on the runner, as set forth.

2. The combination with the main runner and its operating mechanism, of the steering rod mounted to rotate in a bearing on the runner, and provided with reduced portion and shoulders, of the spring on the rod having one end bearing on the lower bearing of the rod around the reduced portion, as set forth.

3. The combination with the main runner with guide-ways, of the slides movable in the ways, the pushers pivoted on the slides, the pedals, the gears and pivotal connections between the gears and slides, substantially as specified.

4. The combination with the slides and the gears, of the means for operating the gears, the cranks on the shaft of one of the gears, and the pivotal connections between the said cranks and the slides, as set forth.

5. The combination with the main runner and the slides carrying the pushers, of the pedals and operating means for the slides, the brake and the steering runner, all as set forth.

6. The combination with the main runner and the brake mechanism, of the spring for holding the brake in an inoperative position, as set forth.

7. The combination with the main runner and its operating means, of the steering runner and the steering rod, and the brake mechanism embodying sharpened rods to engage the ice, substantially as specified.

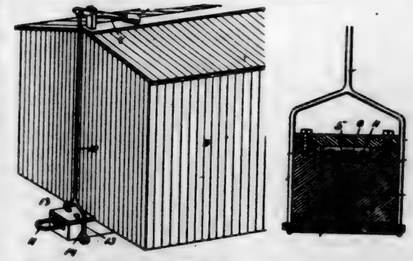
8. The combination with the main runner, of the bar secured at one end to the rear thereof and at the other end carrying a bearing for the steering rod, as set forth.

9. The combination with the main runner and the steering rod, of the bar secured at one end to the rear of the runner and at its other end carrying a bearing for the steering rod, and a seat secured to the horizontal portion of said bar, substantially as specified.

10. The combination with the main runner and its operating devices, of the brake mechanism, and the steering runner and rod, and a spring mounted on the said rod and adapted to bear down upon the front end of the main runner, substantially as and for the purpose specified.

11. The combination with the main runner and the steering rod having reduced portion and shoulders, of the curved spring having one end secured to the rod and the other end formed with an opening to embrace the rod at the reduced portion and bear upon the runner, substantially as specified.

**500,624.** CAR-COUPLING. JOSEPH L. SOWELL, Althouse, Oreg. Filed Mar. 7, 1893. Serial No. 464,957. (No model.)



*Claim.*—1. In a car coupling, the combination of a draw-head provided in the bottom of its longitudinal opening with a coupling pin perforation, a coupling pin arranged in the perforation and extending above the bottom of the longitudinal opening of the draw-head, a weighted lever connected with the coupling pin and holding the latter normally elevated, and a link guiding plate arranged in the draw-head and having its rear end connected to the upper end of the coupling pin and its lower end arranged on the bottom of the longitudinal opening of the draw-head, substantially as and for the purpose described.

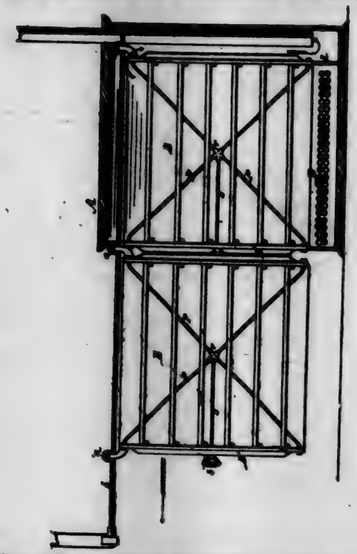
2. In a car coupling, the combination of a draw-head provided in the bottom of its longitudinal opening with a longitudinal recess and having a coupling pin perforation at the rear terminus of the recess, a coupling pin arranged in the perforation and projecting above the bottom of the opening of the draw-head, a link guiding plate having its front end arranged in said recess and its rear end hinged to the upper end of the coupling pin, a transverse bar connected to the lower end of the coupling pin and arranged beneath the draw-head, and a weighted lever connected with the transverse bar, substantially as described.

3. In a car coupling, the combination of a draw-head provided in its sides with vertical grooves and having a coupling pin perforation, a coupling pin arranged in the perforation and extending above the bottom of the longitudinal opening of the draw-head, a link guid-

ing plate having its rear end connected to the upper end of the coupling pin, a transverse bar connected to the lower end of the coupling pin and arranged beneath the draw-head, a weighted lever fulcrumed on the car, and a rod having its upper end connected to the lever and provided at its lower end with a fork having sides arranged in the grooves of the draw-head and connected to the ends of the transverse bar, substantially as described.

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**500,625. LAUNDRY DRIER.** ASHER V. H. SPRAGUE, Rochester, N. Y., assignor to the Sprague-Smeaton Manufacturing Company, of New Jersey. Filed June 10, 1892. Serial No. 436,089. (No model.)



*Claim.*—1. In a laundry drier the combination with a closet of a series of metallic drying frames B, B, adapted to be moved into and out of said closet, each having a hollow head provided with perforations at its foot in the outer wall and with perforations in its inner wall opening directly into the closet near its top and whereby air passing through said heads is heated and utilized in drying and the interior wall of the heads is kept cool to permit their being handled; substantially as set forth.

2. In a laundry drier, the combination with a closet, a series of drying frames, B, B, each having a hollow head provided with perforations at its foot in the outer wall and with perforations in its inner wall opening directly into the closet near its top, and the hollow jambs similarly perforated, whereby air passing through the heads and jambs of the drier is heated and utilized in drying and the whole front is kept cool; substantially as set forth.

3. In a metallic laundry drier, the drying frames having two or more tiers of bars, the braces situated near said bars, and each attached at one of its ends to a corner of the frame and at the other to a centrally located coupling, a rod attached to said coupling and extending through the hollow head and provided with a handle, said head having perforations for the circulation of air to cool the head and heat the air, all combined substantially as set forth, whereby the frame may be safely handled and without danger of distortion.

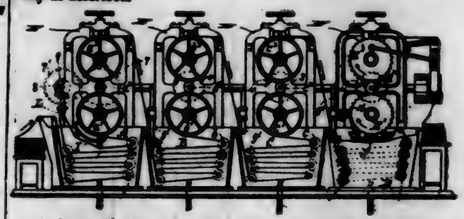
4. In a metallic laundry drier, the drying frames having two or more tiers of bars, the braces situated near said bars, and each attached at one of its ends to a corner of the frame and at the other to a centrally located coupling, a rod attached to said coupling and extended through the hollow head and provided with a handle, whereby the frame may be handled without danger of distorting the same; substantially as set forth.

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**500,626. CLOTH-SCOURING MACHINE.** JOSEPH W. STEELGOOSE, Holyoke, Mass. Filed Apr. 22, 1892. Serial No. 430,504. (No model.)

*Claim.*—1. In a cloth-cleansing machine, the combination with a vat, a series of rolls about which piece cloth is adapted to continuously travel, and a series of squeeze rolls, of one or more brushes adapted to reciprocate transversely of the cloth, and rub the surface of the latter prior to its passage between the rolls, substantially as and for the purposes set forth.

2. In a cloth-cleansing machine the combination with a series of vats, each of which is provided with a series of guide-rolls, and mechanism for positively actuating them, of a series of squeezing rolls arranged above each vat, a driving shaft, positive interconnections between said shaft and the squeezing rolls to cause the latter to rotate in unison, and a brush adapted to reciprocate transversely over the cloth, the first vat of the series having a trough with a discharge pipe and the last vat of the series having a shower pipe discharging into said vat, with a non-discharging open-topped bath-holder, substantially as described.



3. In a cloth-cleansing machine the vat A provided with the open receiver having separate discharge from the vat, and one or more reciprocating brushes above said vat, combined with the vat D having the shower-pipe *g'*, and the non-discharging open-topped bath-holder through which the cloth travels, a revolving brush, the intermediary vats B, C, said vats being equipped interiorly with guide-rolls positively actuated, and a series of squeeze rolls arranged above each vat and geared together, and positive interconnections to cause all of the said squeeze rolls to rotate in unison, substantially as stated.

4. A cloth-cleansing machine composed of the combination of a series of vats having interior guide-rolls, the first vat A of the series provided with a trough, and a discharge pipe separate from the vat, the last one D having a shower pipe and the non-discharging open-topped bath holder J, the intermediate vats B, C, a series of squeeze rolls above each vat, interconnecting mechanism which operates said rolls, in unison, one or more adjustable brushes adapted to reciprocate across the cloth, and a revolving brush, with means for actuating said brushes substantially as explained.

5. In a cloth cleansing machine, the combination with a vat a series of interior guide-rolls about which the fabric is to pass, and a series of squeeze rolls with actuating mechanism therefor of one or more reciprocating brushes, and mechanism for positively operating them composed of a counter-shaft carrying spur and miter gears, an intermediary shaft having a miter-gear and a crank-disk which operates the connecting rod to the brush, substantially as and for purposes described.

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**500,627. METHOD OF MAKING TWINE FROM PAPER.** JOHN F. STEWART, Chicago, Ill. Filed Apr. 11, 1893. Serial No. 469,972. (No specimens.)



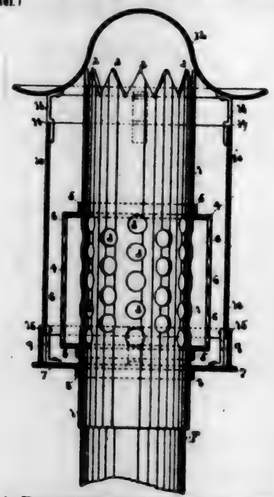


*Claim.*—1. The method of making twine consisting in cutting paper into strips, rolling the said strips into the form of disks, then, beginning with one end of the paper, drawing it in the direction of the axis of the said disk, thus causing the convolutions that were in the strip of paper when in the disk form, to produce a coiling of the said paper in a continuous direction while the tube is forming, then collapsing the said tube and twisting it, substantially as described.

2. The method of making twine consisting in, first, cutting the paper into strips, moistening the said strips and forming them into a disk, then, beginning at one end of the disk and drawing it in the direction of the axis of the said disk, thus causing the convolutions of the paper to give direction to the curvature of the paper as it is drawn therefrom and aid in forming a tube, then collapsing and twisting the tube into twine, substantially as described.

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**500,628. DEVICE FOR MAKING FIRES DRAW, &c.** CHARLES B. STUART, Boston, Mass. Filed Jan. 23, 1892. Serial No. 419,050. (No model.)



*Claim.*—1. The combination of the inner perforated cylinder, 1, the outer cylinder, 10, and the cap, 12, covering both cylinders and provided with apertures between it and cylinder 1 and an annular opening between the cap and the outer cylinder underneath the former and below the line of apertures between the inner cylinder 1 and the cap, substantially as described.

2. The combination of the inner perforated cylinder, 1, the outer cylinder, 10, surrounding the perforated portion of the inner cylinder and provided with an air draft around its lower edge, and the cap 12 having apertures between itself and cylinder 1 and covering both cylinders and arranged to afford an air draft opening between itself and the upper end of the outer cylinder and below the line of apertures between the inner cylinder 1 and the cap, substantially as described.

3. The combination of the inner perforated cylinder, 1, the outer cylinder, 10, surrounding the perforations of the same and provided with an air draft and damper, 15, at its lower end, and the cap, 12, covering the inner cylinder and arranged to form an air draft opening underneath it and around the top of the outer cylinder, substantially as described.

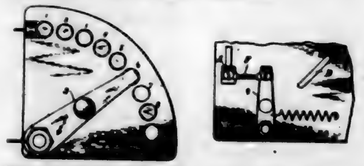
4. The combination of the inner cylinder, 1, provided with perforations, the surrounding cylinder, 4, inclosing these perforations and being itself provided with perforations, 6, 6, the outer cylinder, 10, surrounding the perforations of cylinder, 4, and the cap, 12, covering the inner cylinder and arranged to form an air draft opening between it and the upper end of the outer cylinder, substantially as described.

5. The combination of the inner perforated cylinder, 1, the perforated cylinder, 4, surrounding the perforations of cylinder 1, the outer cylinder, 10, surrounding the perforations of cylinder 4 and provided with an air draft opening at its lower end, and the cap, 12, covering the inner cylinder and arranged to leave an air draft opening between itself and the upper end of the outer cylinder, substantially as described.

6. The combination of the inner perforated cylinder, 1, the surrounding perforated cylinder, 4, the outer surrounding cylinder, 10, provided with an air draft passage at its lower end, the damper, 15, for closing the same, and the cap, 12, covering the inner cylinder, 1, and arranged to form an air draft opening between itself and the outer cylinder, 10, substantially as described.

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**500,629. ELECTRIC SWITCH.** ELIHU THOMSON, Lynn, Mass., assignor to the Thomson-Houston Electric Company, of Connecticut. Filed Apr. 20, 1893. Serial No. 362,807. (No model.)



*Claim.*—1. An electric switch or circuit breaker, having a movable part by which the circuit is opened or closed, and a number of insulated conducting pieces forming a series of breaks on the opening of the circuit which tends to prevent the continuance of an arc thereat, as described.

2. An electric switch or circuit breaker having two stationary terminals, an insulated movable part and a number of insulated conducting pieces in series adapted to form a series of breaks on the opening of the switch which will tend to prevent the continuation of an arc.

3. The combination in an electric switch or circuit breaker, of two circuit terminals, an intermediate movable part, and a number of insulated conducting pieces in series placed in the path of said movable part and adapted to form, when the switch is opened, a series of breaks tending to prevent the continuation of an arc.

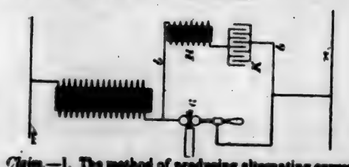
4. An electric circuit breaker having a series of insulated conducting pieces with their successive discharge points arranged out of line with one another so as to form a zig-zag series of breaks tending to prevent the continuance of an arc thereat, as set forth.

5. The combination in an electric switch or circuit breaker of two circuit terminals, an intermediate movable part and a series of insulated pieces having their adjacent points offset and adapted to form, when the switch is open, a zig-zag series of breaks tending to prevent the continuation of arcs.

6. The combination with an electric switch or circuit breaker controlled by a fuse, of a series of contact pieces between the opposite terminals of the circuit adapted to form, when the switch is open, a series of breaks tending to prevent the continuation of arcs.

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**500,630. METHOD OF AND MEANS FOR PRODUCING ALTERNATING CURRENTS.** ELIHU THOMSON, Swampscott, Mass., assignor to the Thomson-Houston Electric Company, of Connecticut. Filed July 18, 1892. Serial No. 440,926. (No model.)



*Claim.*—1. The method of producing alternating currents or discharges, consisting in establishing a circuit of high self-induction, effecting a rupture of said circuit between suitable closely approximated terminals, and diverting said current into a shunt containing a condenser, whereby the current will be again established between the aforesaid terminals, substantially as set forth.

2. The method of producing alternating currents or discharges, consisting in establishing a circuit of constant current tendency, effecting a rupture of said circuit at a spark gap, and diverting the current through a shunt containing a condenser, substantially as described.

3. The method of producing alternating currents or discharges, consisting in establishing a circuit of high self-induction and constant current tendency, rupturing said circuit at a spark gap, and shunting said current through a condenser, whereby the spark gap is again bridged by the current, substantially as set forth.

4. The method of producing alternating currents or discharges, consisting in establishing a circuit of high self-induction, rupturing said circuit at a spark gap, and diverting said current through a shunt containing a condenser and a self-inducing coil, substantially as described.

5. The method of producing alternating currents or discharges, consisting in establishing a circuit of high self-induction, rupturing said circuit at a spark gap, and shunting said current through a circuit containing a condenser and the primary coil of an inductorium, substantially as set forth.

6. The method of producing alternating currents or discharges, consisting in establishing a circuit of high self-induction, rupturing said circuit at a spark gap, and shunting said current through a condenser, and through a transformer, having translating devices in its secondary circuit, substantially as described.

7. The method of obtaining high frequency currents from continuous currents, consisting in establishing a circuit in which rapid current changes cannot easily take place, and rupturing said circuit at suitable terminals bridged by a condenser, with inductive devices or self-induction coils of wire in said bridge, the capacity and self-induction in such bridging path together with the spark gap or rupture distance being adjusted or adjustable, substantially as set forth.

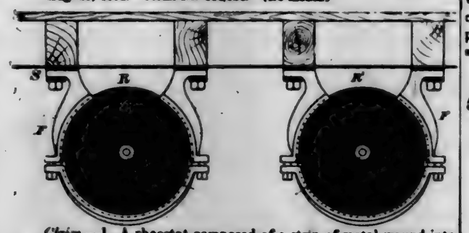
8. The method of obtaining high frequency currents from continuous currents, consisting in establishing a circuit in which rapid current changes cannot easily take place, and rupturing said circuit by a magnetic field at suitable terminals bridged by a condenser, with inductive devices in said bridge, substantantially as described.

9. The method of obtaining from continuous currents or currents tending, through self-induction or otherwise, to remain unchanged, or to resist sudden change of value, high frequency alternating currents of desired periodicity consisting in bridging by determinate capacity of condenser and a determinate self-induction coil or circuit, a spark gap in said continuous current circuit, said spark gap being adjusted and arranged so as to respond to the desired frequency, substantially as set forth.

10. The method of working translating devices demanding high frequency alternating currents of any desired potential, consisting in establishing a secondary circuit for said translating devices in inductive relation to a primary circuit or coil which is in series with the condenser as a bridge or shunt around an adjustable spark gap in a circuit tending to constancy of current flow, or possessing a high self induction for checking sudden changes of current value, as described.

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**500,631. RHEOSTAT.** Elihu Thomson, Swampscott, Mass., assignor to the Thomson-Houston Electric Company, of Connecticut. Filed Aug. 25, 1892. Serial No. 444,028. (No model.)




*Claim.*—1. A rheostat composed of a strip of metal wound into a flat plate, provided with insulating material between the turns, and rigid sides of refractory material, substantially as described.

2. An electric resistance composed of a flat spiral of metal having insulation between the turns, the whole being held between sides of rigid refractory material, substantially as set forth.

3. An electric resistance or rheostat composed of a strip wound or laid with incombustible insulating material, such as asbestos, between the convolutions, and with a refractory coating, as enamel, over the edges thereof for binding the strips in place relatively to one another and for holding the insulating material in place between the strips, substantially as described.

4. A rheostat consisting of a spiral or coiled ribbon, the turns of which are insulated by a non-combustible and comparatively infusible material, which turns are cemented together with the insulating material between the turns, by lateral coatings of enamel or other vitrifying or fusible material melted thereon, substantially as set forth.

5. A rheostat or heating resistance composed of a center terminal, a spirally wound ribbon connecting with said center terminal, a sheet or strip of asbestus, or similar heat resisting and comparatively infusible material interposed between the turns, and a coating of fusible enameling or vitrifying substance on the sides of the wound spiral for connecting the parts together and holding the insulating material between the strips in place.

6. A resistance plate or disk for rheostats or electric heaters, comprising, essentially, a strip of metal wound upon itself, with intervening strips of an incombustible, non-fusible, non-conductor, between the layers, and an outer coating on the side of the plate or disk of enamel, or vitrifying substance, fused on, which binds the strips together and coats the interposed insulating material at its edges so as to cement it in position, substantially as described.

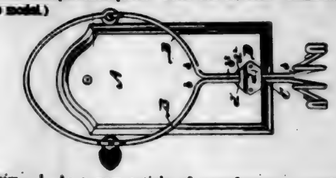
7. In a rheostat or heating resistance, a wound strip or ribbon insulated by asbestus, or similar insulating material, between its layers or convolutions, coatings of enamel applied to the sides thereof, to cement and hold the turns together, and a frame-work inclosing the whole, substantially as set forth.

8. In a rheostat a frame-work constituting one terminal of the circuit, a center annulus or metal piece constituting the other terminal of the circuit, and between the two, the enamel coated, asbestus insulated, strip or spiral, substantially as set forth.

9. A rheostat comprising a flat coil of insulated metal, having its sides coated with enamel, and provided with conductors leading off from various points of the coil to suitable contact plates, substantially as described.

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**500,632. HAT, COAT, AND UMBRELLA RACK.** Ransom W. Trout, Detroit, Mich., assignor of two-thirds to Samuel L. Jacques and Fred R. Wemple, same place. Filed Oct. 17, 1892. Serial No. 449,070. (No model.)

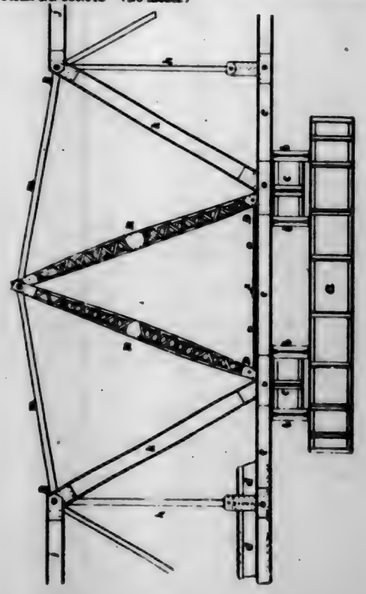


*Claim.*—1. As a new article of manufacture, a combined hat rack and umbrella holder consisting of a base board, two independent wires and means for holding them on the board, each of the said wires being bent at the top in the manner shown, to form half a hat holder, and coiled at the bottom in opposite directions in parallel coils, and adapted to receive an umbrella and clasp it at four points between the separate coils, whereby the coils are adapted to spring to a greater extent than allowed by a single coil, substantially as described.

2. In an article of manufacture, such as described, the combination of a base board, two wires independent, below the point of support, and means for holding them on said board, each of said wires being coiled at the bottom in opposite directions in parallel coils, and adapted to receive an umbrella and clasp it between the parallel coils, and each of said coils terminating in a hook for a coat support, substantially as described.

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**500,633. DRAWBRIDGE.** Claude A. P. Turner, Ashton, R. I., and Philip A. Warner, West Newton, Mass. Filed Mar 30, 1891. Serial No. 386,912. (No model.)





*Claim.*—1. In combination with the two arms of a swing draw-bridge, a pair of toggle links connecting the inner ends of the upper chords of the two arms and forming the central portion of the upper chord of the main bridge truss, a pair of movable inclined struts pivoted together and to said toggle links at the center of the bridge, and a system of mechanism substantially as described for moving the bases of said struts toward or from each other, whereby the apex of the central truss members may be raised or lowered thus moving the inner ends of upper chords of the arms toward or from each other and raising or lowering the outer ends of said arms.

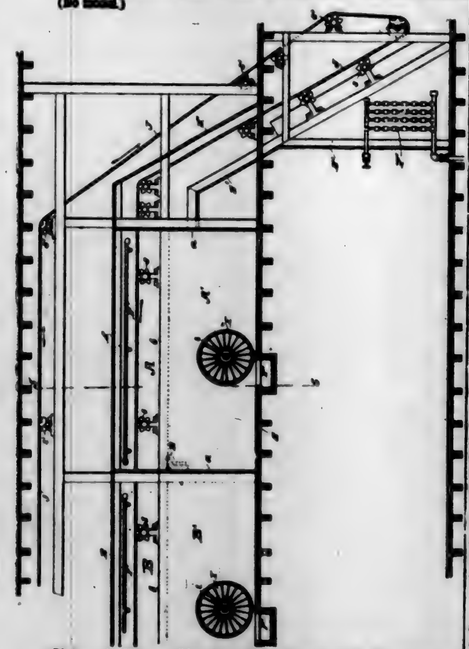
2. In combination with the two arms of a swing draw-bridge, a pair of inclined struts pivoted together at their upper ends and each pivoted at its lower end to a shoe or carriage resting upon a bed and movable thereon, a pair of toggle links connecting the inner ends of the upper chords of the two bridge arms and the upper ends of said inclined struts, and a system of screws, nuts, gears and shafting for moving said shoes and the lower ends of said struts toward and from each other, whereby the apex of said struts and toggle may be raised or lowered, the upper chords of the two arms of the bridge be moved toward or from each other and the outer end of said arms be raised or lowered.

3. In combination with the two arms of a swing draw-bridge, a pair of movable inclined struts pivoted together at their upper ends, a pair of toggle links each provided in one end with an oblong eye said links being connected together and to the pivotal connection of the said struts and each pivoted at its other end to the inner end of the upper chord of one of the arms of said bridge, and a system of screws, nuts, gear and shafting for moving the lower ends of said struts toward and from each other substantially as and for the purposes described.

4. In combination with the two arms of a swing draw-bridge a pair of inclined struts pivoted together at their upper ends and each pivoted at its lower end to a shoe, a nest of rollers interposed between said shoe and the bed support, a pair of toggle links connecting the inner ends of the upper chords of the arm trusses and the pivotal connection of said struts, and a system of mechanism substantially as described for moving said shoes and the lower ends of said struts toward and from each other as described.

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**500,634. YARN-DRYING MACHINE.** Eugene Tynberg and Louis Dumas, Yonkers, N. Y., assignors to the Alexander Smith & Sons Carpet Company, same place. Filed Jan. 30, 1891. Serial No. 379,629. (No model.)



*Claim.*—1. The combination with a plurality of drying chambers arranged horizontally end to end and communicating with each other at their upper portions, of heating apparatus arranged along the upper portions of said chambers, conveying mechanism passing through the upper portions of said chambers, yarn carriers connected to said conveying mechanism and extending beneath said heating apparatus, current producing mechanism beneath said carriers for producing a downward current of heated air through the material suspended thereon, and a circulating chamber for each of said drying chambers communicating with the upper and lower portions thereof, substantially as described.

2. The combination with a plurality of drying chambers arranged horizontally end to end and communicating with each other at their upper portions, of heating apparatus arranged along the upper portions of said chambers, conveying mechanism passing through the upper portions of said chambers, yarn carriers connected to said conveying mechanism and extending beneath said heating apparatus, current producing mechanism beneath said carriers for producing a downward current of heated air through the material suspended thereon, a circulating chamber for each of said drying chambers communicating with the upper and lower portions thereof, and exhaust ports in the bases of said circulating chambers for the escape therefrom of the more humid and heavier portions of the air admitted thereto, substantially as described.

3. The combination with a plurality of drying chambers arranged horizontally end to end and communicating with each other at their upper portions, of heating apparatus arranged along the upper portions of said chambers, conveying mechanism passing through the upper portions of said chambers, yarn carriers connected to said conveying mechanism and extending beneath said heating apparatus, current producing mechanism beneath said carriers for producing a downward current of heated air through the material suspended thereon, a circulating chamber for each of said drying chambers communicating with the upper and lower portions thereof, and heating apparatus in said circulating chambers for re-heating the air circulating through the same before its re-entry to the drying chambers, substantially as described.

4. The combination with a plurality of drying chambers arranged horizontally end to end and communicating with each other at their upper portions, of heating apparatus arranged along the upper portions of said chambers, conveying mechanism passing through the upper portions of said chambers, yarn carriers connected to said conveying mechanism and extending beneath said heating apparatus, current producing mechanism beneath said carriers for producing a downward current of heated air through the material suspended thereon, a circulating chamber for each of said drying chambers communicating with the upper and lower portions thereof, heating apparatus in said circulating chambers for re-heating the air circulating through the same before its re-entry to the drying chambers, and exhaust ports in the bases of said circulating chambers for the escape therefrom of the more humid and heavier portions of the air admitted thereto, substantially as described.

5. The combination with a plurality of drying chambers arranged horizontally end to end and communicating with each other at their upper portions, of heating apparatus arranged along the upper portions of said chambers, conveying mechanism passing through the upper portions of said chambers, tubular metallic yarn carriers connected to said conveying mechanism and extending across said chambers, each of said carriers being provided with openings for the admission of heated air from said chambers to its interior, current producing mechanism beneath said carriers for producing a downward current of heated air through the material suspended thereon, and a circulating chamber for each of said drying chambers communicating with the upper and lower portions thereof, substantially as described.

6. The combination with a plurality of drying chambers arranged horizontally end to end and communicating with each other at their upper portions, of heating apparatus arranged along the upper portions of said chambers, conveying mechanism passing through the upper portions of said chambers, tubular metallic yarn carriers connected to said conveying mechanism and extending across said chambers, each of said carriers being provided with openings for the admission of heated air from said chambers to its interior, current producing mechanism beneath said carriers for producing a downward current of heated air through the material suspended thereon, and a circulating chamber for each of said drying chambers communicating with the upper and lower portions thereof, substantially as described.

7. The combination with a drying chamber or chambers, of the sprocket chains J, J' traveling along opposite sides thereof and yarn carriers suspended between said chains, each of said carriers having a hook and eye connection at one end to one chain and a detachable connection at its other end to the other of said chains, substantially as described.

8. The combination with a drying chamber or chambers, of the sprocket chains J, J' traveling along opposite sides thereof and yarn carriers suspended between said chains, each of said carriers having a hook and eye connection at one end to one chain and a locking device at its other end for attaching it to the other of said chains, substantially as described.

9 The combination of chambers A, B, &c., arranged horizontally end to end and communicating with each other at their upper portions, circulating chambers A' B' &c., communicating with the upper and lower portions of chambers A, B, &c., respectively, coils F in the upper portions of chambers A, B, &c., blowers I between chambers A, B, &c., and A' B', &c., sprocket chains J J' passing along opposite sides of the upper portions of chambers A, B and outside said chambers, carriers suspended between said chains and sprocket wheels *s* and *s'* within and without said chambers for supporting and guiding said chains, substantially as described

10 The combination of chambers A, B, &c., arranged horizontally end to end and communicating with each other at their upper portions, circulating chambers A' B' &c. communicating with the upper and lower portions of chambers A, B, &c., respectively, coils F in the upper portions of chambers A, B, &c. blowers I between chambers A, B, &c., and A' B' &c., sprocket chains J J' passing along opposite sides of the upper portions of chambers A B and outside said chambers, carriers suspended between said chains, each of said carriers being detachably secured at one end to one of said chains and having a swinging connection at its other end to the other of said chains, and sprocket wheels *s* and *s'* within and without said chambers for supporting and guiding said chains, substantially as described.

11. The combination of chambers A, B &c. arranged horizontally end to end and communicating with each other at their upper portions, casing E' communicating with chamber A and extending downwardly therefrom, circulating chambers A' B' &c. communicating with the upper and lower portions of chambers A B &c. respectively, coils F in the upper portions of chambers A, B, &c., coils F' in the casing E', blowers I between chambers A B &c. and A' B' &c sprocket chains J J' passing along opposite sides of the upper portions of chambers A, B &c. and the casing E' and outside said chambers and casing, carriers suspended between said chains, and sprocket wheels *s* and *s'* within and without said chambers and casing for supporting and guiding said chains, substantially as described.

12. The combination of chambers A, B &c. arranged horizontally end to end and communicating with each other at their upper portions, circulating chambers A' B' &c. communicating with the upper and lower portions of chambers A B &c., respectively, coils F in the upper portions of chambers A, B, &c., blowers I between chambers A, B &c. and A' B' &c., discharge ports P in the bases of chambers A', B', &c. sprocket chains J J' passing along opposite sides of the upper portions of chambers A, B &c. and outside said chambers, carriers suspended between said chains, and sprocket wheels *s* and *s'* within and without said chambers for supporting and guiding said chains, substantially as described.

13. The combination with a conveying mechanism traveling along opposite sides of a chamber, of a carrier having a swinging connection to one side of said conveying mechanism and provided with a locking device normally spring pressed into position for locking the carrier to the opposite side of the conveying mechanism, substantially as described.

14. The combination with the chains J J', of the carrier K, the sliding bolt *e* in one end thereof engaging the chain J, the bracket *f* connected to the carrier and passing between the links of said chain, and the socket *g* in said bracket registering with the bolt *e*, substantially as described.

15. The combination with the chains J J', of the carrier K, the sliding bolt *e* in one end thereof engaging the chain J, the bracket *f* connected to the carrier and passing between the links of said chain, the socket *g* in said bracket registering with the bolt *e*, and the spring *h* for normally projecting the bolt *e* into locking position, substantially as described.

16. The combination with the chains J J', of the carrier K, the sliding bolt *e* in one end thereof engaging the chain J, the bracket *f* connected to the carrier and passing between the links of said chain, the socket *g* in said bracket registering with the bolt *e*, the spring *h* for normally projecting the bolt *e* into locking position, and the pin *l* moving in the slot *k* in the carrier for retracting the bolt from its locking position, substantially as described.

17. The combination with a conveying mechanism traveling along opposite sides of a heated drying chamber, of a tubular metallic yarn carrier suspended between the opposite sides of said conveying mechanism, and provided with an opening or openings for the admission of heated air from the drying chamber through which it passes, substantially as described.

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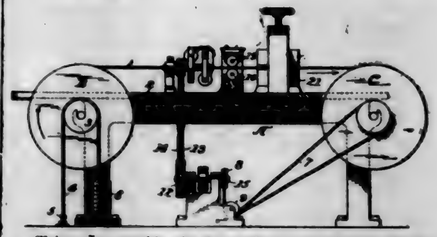
**500,635.** FENCE-POST. CHARLES H. VAN WAGENEN, Homer, Mich. Filed May 7, 1891. Serial No. 391,963. (No model.)

*Claim.*—The combination with the planks A A, the spacing blocks between the same and the casing around the lower end, of the strap on the lower end of the post forming a loop, and the anchor held in said loop, substantially as shown and described.

**500,636.**



**500,636.** MACHINE FOR MAKING DRESS-STIFFENERS. IRA DE V. WARNER, Bridgeport, Conn. Filed Sept. 22, 1892. Serial No. 446,653. (No model.)



*Claim.*—In a machine for the continuous manufacture of stiffeners the combination of supports and feeding devices for holding together and moving longitudinally a number of separate parallel fibrous bundles, separate tension devices for holding each bundle taut while feeding, a binder for binding the bundles together, means for applying cement to the bundles, and a press arranged for the passage of the bound bundles and to flatten the same, and means for heating the press, substantially as set forth.

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**500,637.** GARMENT-SUPPORTER. DE VER H. WARNER, Bridgeport, Conn. Filed Oct. 3, 1892. Serial No. 447,642. (No model.)



*Claim.*—1. In a supporter, a connecting plate having parallel slots and an inturned bent tip extending the length of the plate, combined with a non-elastic strip extending through the slots with its ends hanging downward, and with an elastic strip also extending through the slot and having its end clamped between the inturned tip and the body of the plate, substantially as described.

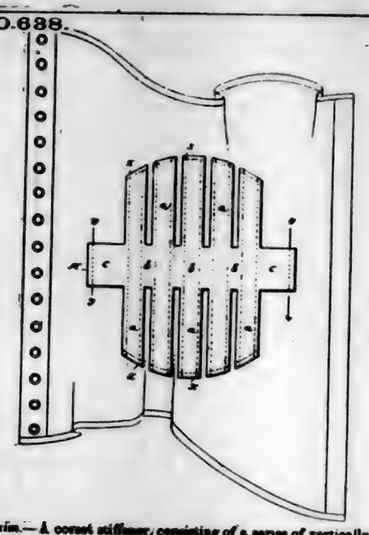
2. In a supporter a plate for uniting the strips having the parallel slots *c*, *c'*, and the bent tip *c²* provided with teeth *c³*, adapted to unite the elastic and non-elastic portions, substantially as described.

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**500,638.** CORSET-STIFFENER. DE VER H. WARNER, Bridgeport, Conn. Filed Jan. 24, 1893. Serial No. 459,562. (No model.)



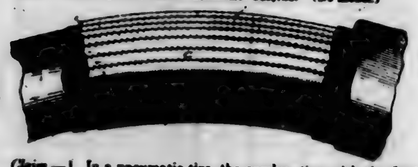
**500,638.**



*Claim.*—A corset stiffener, consisting of a series of vertically disposed resilient blades and pockets therefor, the pockets being separated from each other at their upper and lower portions and connected together at their central portions, each end pocket being provided with a tongue at its central portion; substantially as set forth.

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**500,639.** PNEUMATIC TIRE. CHARLES F. WARNER, Clearwater, Minn. Filed Sept. 23, 1892. Serial No. 446,732. (No model.)



*Claim.*—1. In a pneumatic tire, the combination with the flexible air tight sheaths, of the metal strips extending longitudinally of the tire and laced together by flexible connections along their entire length; substantially as described.

2. In a pneumatic tire, the combination with the flexible air tight sheaths, of the strips of metal extending longitudinally of the tire on the outside and united by flexible connections and the wire fabric passing around the inner side of the tire and connecting the outer metal strips; substantially as described.

3. In a pneumatic tire, the combination with the flexible air tight sheaths, of the flexible metal strips extending longitudinally of the tire and the woven wire for holding said strips in place; substantially as described.

4. In a pneumatic tire, the combination with the flexible air tight sheaths, of the flexible metal strips extending longitudinally of the tire and the diagonally woven wire sheathing for holding said strips in place; substantially as described.

5. In a pneumatic tire, the combination with the flexible air tight cell, canvas sheaths and outer elastic wearing sheathing, of the flexible metallic strips interposed between the canvas sheaths longitudinally of the tire and united by lacing and the diagonally woven wire sheathing also interposed between the canvas sheaths and connected to the flexible metallic strips; substantially as described.

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**500,640.** ADJUSTABLE COLLAR-FASTENER. JAMES V. WASHBURN, Morrison, Ill. Filed Apr. 12, 1892. Serial No. 470,093. (No model.)



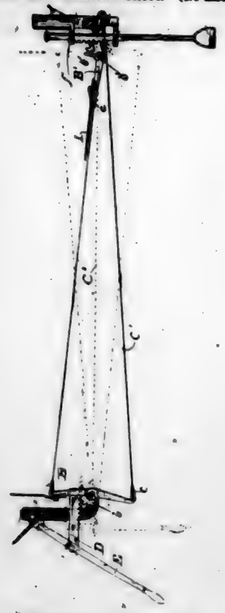
*Claim.*—1. The collar fastener A, provided with central portion B, interior downwardly extending end D, and the exterior upwardly extending end C, spring H seated between the portion B and ends C D, respectively, and the levers K seated in said fastening and adapted to bear, respectively, against the free ends of said spring, substantially as shown, and for the purpose described

2. The combination of the fastener A, provided with the exterior and interior ends C D, spring H seated therein, plate L, and the clips M seated on the ends of the latter, substantially as shown, and for the purpose described

3. In the combination of the fastener A, provided with the exterior end C and interior end D, spring H seated thereir, and the plate L provided with suitable end clips M, substantially as shown, and for the purpose described.

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**500,641.** STORE-SERVICE APPARATUS. HENRY M. WEAVER, Mansfield, Ohio, assignor to the Barr Cash and Package Carrier Company. Filed June 23, 1892. Serial No. 316,108. (No model.)



*Claim.*—1. The combination, substantially as hereinbefore set forth, of the track-wires, the pivoted track or spreading lever to the opposite ends of which said wires are attached, the pendent operating lever, and a gear connection between said operating lever and the spreading lever, whereby the latter is swung in either direction on its pivot by the to-and-fro movements of the operating lever.

2. The combination substantially as hereinbefore set forth, of the track-wires, the pivoted track or spreading lever to the opposite ends of which said wires are attached, the segment-gear secured to said lever, the horizontal rack-bar engaging with said gear and the lever whereby said rack-bar is reciprocated.

3. The combination substantially as hereinbefore set forth, of the track-wires, the track-levers at the cashier's and salesman's stations to the opposite ends of which said wires are secured, the segment-gears attached to said track-levers, the racks with which said gears engage, the pendent operating-lever at the cashier's station, and the vertical reciprocating handle-rod at the salesman's station.

4. The combination, substantially as hereinbefore set forth, with the service carriage having upper and lower wheels, and the vertically slotted bumpers projecting at each end beyond the lower wheels, of the lower track-wire playing in the slots of said bumpers and passing between the wheels, and the tubular rubber buffers on said lower track-wire.

5. The combination, substantially as hereinbefore set forth, of the vertical bracket having guides arranged vertically, a rod or bar provided with a rack, sliding in said guides, a pivoted lever having a toothed segment engaging with said rack and line wires operated by the upward and downward movements of said rod.

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**500,642.** CASH-CARRIER APPARATUS. HENRY M. WEAVER, Mansfield, Ohio, assignor to the Barr Cash and Package Carrier Company. Filed June 29, 1892. Serial No. 316,107. (No model.)

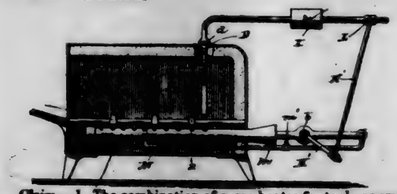
*Claim.*—1. The combination, substantially as hereinbefore set forth, in a store-service system, of supporting brackets at each station, ways in said brackets, in line with each other, reciprocating bars mounted in said ways, the track-wire stretched between said bars, spreading levers connected with said bars whereby the movement of one will operate the other, a propelling wire stretched between the ends of said levers, and hand levers whereby said bars are reciprocated and the spreading levers moved to spread or converge the propelling wire.



2. The combination, substantially as hereinbefore set forth, in a store-service system, of supporting brackets at the in and out stations, ways in said brackets in line with each other, reciprocating bars playing therein, a track-wire stretched between said bars, spreading levers pivoted to lugs from the brackets, and having segment gears engaging with the racks of said reciprocating bars, an impelling wire stretched between the ends of said levers, and hand levers fulcrumed upon ears from the bracket and pivoted to the bars, whereby the latter, with the connecting wire, may be reciprocated and impart movement to the spreading levers.

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**500,643.** VALVE-OPERATING DEVICE FOR GAS-HEATERS. ABRAHAM T. WELCH, Washington, D. C. Filed June 4, 1892. Serial No. 435,578. (No model.)



*Claim.*—1. The combination of a gas-heater for tools, an immovable rest or support for the tool and a cock for said gas-heater having the tool engaged portion of its actuating lever above the horizontal plane of said support or rest and arranged out of operative connection therewith, whereby said lever is adapted to be actuated by the tool for regulating the flow of the gas, as set forth.

2. The combination of a gas-heater for tools having a burner and a cock, and the actuating lever of said cock having an arm projecting in front of the tool as it is placed in position for heating, and an immovable rest or support for the tool, disconnected from said arm, substantially as set forth.

3. The combination of a gas-heater for tools having a burner and a cock, and the actuating lever of said cock having a vertical arm acted upon by the tool as it is placed in position over the burner for heating, and a rest or support for the tool, arranged out of operative connection with said arm, substantially as described.

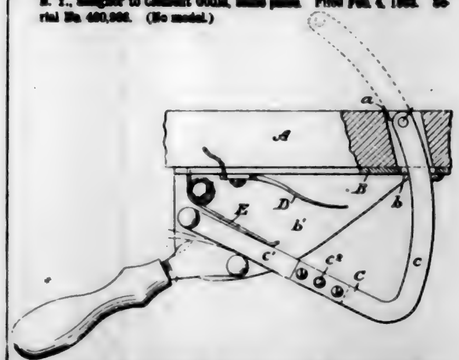
4. The combination of a gas-heater for tools having a burner and a cock, and the actuating lever of said cock having a pendent end-portion acted upon by the inner end of the tool as it is placed in position over the burner for heating, and a rest or support for the tool, arranged out of operative connection with said end-portion, substantially as described.

5. The combination of a gas-heater for tools having a burner and a cock, and the actuating lever of said cock provided with a vertical plate-like end-portion acted upon by the tool as it is placed in position over the burner for heating, and a rest or support arranged out of operative connection with said plate-like end-portion, substantially, as set forth.

6. The combination of a gas-heater for tools, having a burner and gas and air supply pipes with valves therefor, a lever operating said valves and adapted to be varied in its movement when acted upon by the tool, and adjustable connections with the arms of said valves, and a rest or support for the tool, arranged out of operative connection with said lever, substantially, as described.

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**500,644.** ELECTRIC IGNITOR. WILLIAM F. WEST, New York, N. Y., assignor to Clement Gould, same place. Filed Feb. 4, 1893. Serial No. 460,986. (No model.)



*Claim.*—1. In an electric ignitor for gas engines, the combination of two electrodes supported to move in the same direction toward the point of ignition, and means to move said electrodes together and to cause the contact point of one to overtake the contact point of the other, substantially as shown and described.

2. In an electric ignitor for gas engines, the combination of two electrodes supported to move in the same direction toward the point of ignition, and a lever having differential cam faces to cause the electrodes to move together and the contact point of one to overtake the contact point of the other, substantially as shown and described.

3. In an electric ignitor for gas engines, the combination of two elbow-levers pivoted at one end and having each at its free extremity a contact point, and means to move said levers together upon their fulcra and to cause the contact point of one to overtake the contact point of the other, substantially as shown and described.

4. In an electric ignitor for gas engines, the combination of two elbow-levers pivoted at one end and having each at its free end a contact point, and a lever disposed near the fulcrum of said elbow levers and having two differential cam faces to bear respectively against said elbow-levers, substantially as shown and described.

5. In an electric ignitor for gas engines, the combination of two electrodes supported to move in the same direction toward the point of ignition, and having each a contact point and a contact pin, yielding contact pieces supported respectively in the line of movement of said pins, and means to move said electrodes together and to cause the contact point of one electrode to overtake the other, substantially as shown and described.

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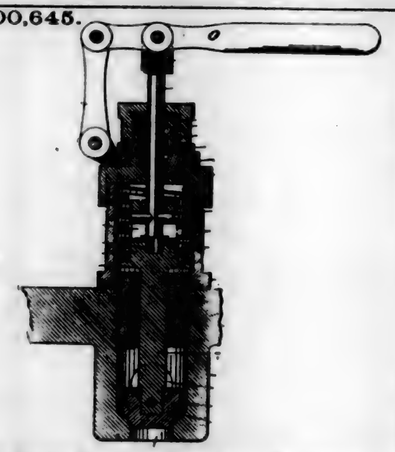
**500,645.** AUTOMATIC RELIEF-VALVE. WILLIAM F. WEST, New York, N. Y., assignor to Clement Gould, same place. Filed Feb. 4, 1893. Serial No. 460,987. (No model.)

*Claim.*—1. The combination of a valve-chamber having an inlet and outlet and a valve-seat, a plug for said chamber, a valve, a valve-stem having a close, sliding fit in an aperture through said plug, an independent chamber above said plug, a spring within said chamber to press upon said valve stem, a cap closing said chamber and having a packing-box, a spindle passing through said packing-box and having a loose connection with the valve-stem, whereby the latter is free to rise and fall independently of the spindle, and means to raise or depress said spindle, substantially as shown and described.

2. The combination of a valve-chamber having an inlet and outlet and a valve seat, a plug for said chamber, a valve, a valve-stem having a close, sliding fit in an aperture through said plug, an independent chamber above said plug, a head formed upon said valve stem within said last named chamber, said head being recessed axially and slotted longitudinally, a spring to press upon said head, a cap with a packing-box to close said chamber, a spindle passing through said packing-box and entering the recess in said head with a cross-pin engaging the slot in said head, and means to raise or depress said spindle, substantially as shown and described.

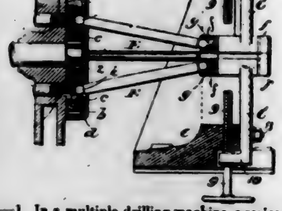


**500,645.**



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**500,646.** MULTIPLE DRILLING-MACHINE. DAVID E. WHITON and LUCIUS E. WHITON, New London, Conn., assignors to the D. E. Whiton Machine Company, same place. Filed Apr. 22, 1892. Serial No. 430,260. (No model.)



*Claim.*—1. In a multiple drilling machine, a series of rotary drill holders, held in bearings against longitudinal movement, said bearings being each connected with a radially movable slider, provided with adjusting screw and clamping bolt, and mounted in a bracket on the main frame, a second bracket, also on the main frame having a central bearing occupied by a main driving shaft A, a pinion upon the end of said shaft A, pinions *b*, on spindles D, having their bearings symmetrically arranged in the bracket about the shaft A, sockets in said spindles and yielding connections between the spindles D, and the drill holders, all substantially as described.

2. A bracket having radially moving sliders, in which are mounted rotary drill carriers, having sockets in their front ends fitted to receive the drills, and flexibly connected at their rear ends with connecting rods E, pinions mounted in a part of the frame on spindles having recesses to receive the ends of the connecting rods E, and springs arranged to press against the ends of said connecting rods, substantially as described.

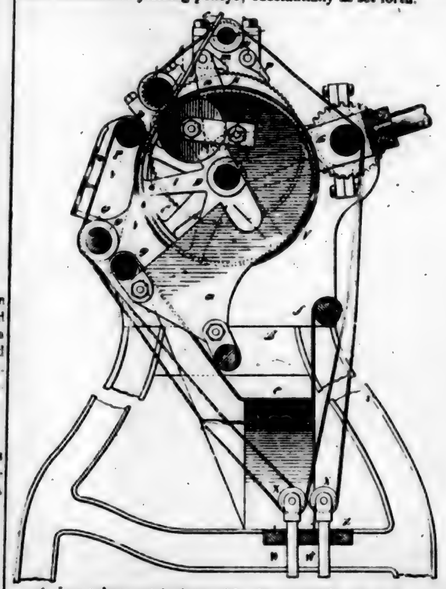
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**500,647.** TOBACCO STRIPPING AND BOOKING MACHINE. JOHN B. WILLIAMS, Newark, N. J. Filed Jan. 19, 1893. Serial No. 458,976. (No model.)

*Claim.*—1. In a tobacco stripping and booking machine the cylinders or drums and the oscillatory frame carrying the shaft of said drums, combined with the revolving cutters, and the endless belts extending around said drums to the point at which the leaves are fed inward and thence turning in a reverse direction to means for keeping them taut; substantially as set forth.

2. In a tobacco stripping and booking machine the cylinders or drums mounted on a shaft having a yielding support, combined with the revolving cutters, the endless belts extending around said drums to the point at which the leaves are fed inward and thence turning in a reverse direction and hanging downward, and the weighted pulleys suspended by said belts; substantially as set forth.

3. In a tobacco stripping and booking machine, the cylinders or drums mounted on a shaft having a yielding support, and the weight to keep the said drums normally upward, combined with the revolving cutters and the endless belts extending around said drums to the point at which the leaves are fed inward and thence turning in a reverse direction to yielding pulleys; substantially as set forth.



4. In a tobacco stripping and booking machine, the cylinders or drums, the oscillatory frame carrying the shaft of said drums and having a tension upward, and the gear wheel on said shaft, combined with the revolving cutters, the driving shaft carrying a pinion in engagement with said gear wheel, and the endless belts extending around said drums to the point at which the leaves are fed inward and thence turning in a reverse direction to means for keeping the belts taut; substantially as set forth.

5. In a tobacco stripping and booking machine, the cylinders or drums, the oscillatory frame carrying the shaft of said drums and having a tension upward, and the gear wheel on said shaft, combined with the revolving cutter mounted between the drums, the shaft having the cutters or collars engaging said revolving cutter, the pinion on said shaft, the gear wheel independent of the drums and engaging said pinion, the driving shaft having pinions in engagement with said gear wheels, and the endless belts extending around said drums to the point at which the leaves are fed inward and thence turning in a reverse direction to sustaining pulleys, substantially as set forth.

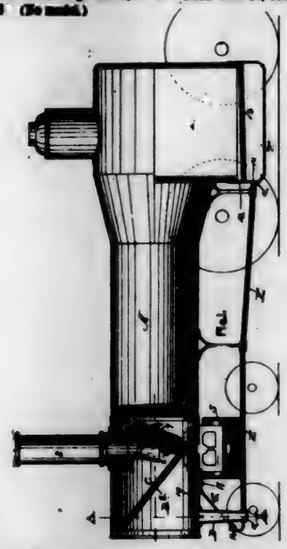
6. In a tobacco stripping and booking machine, the cylinders or drums, the revolving cutters and the hinged section in the frame of the machine, combined with the endless belts extending around said drums to the point at which the leaves are fed inward and thence turning in a reverse direction to sustaining pulleys, one part of the belts returning over the top of said hinged section, and the other part over pulleys located above said drums; substantially as set forth.

7. In a tobacco stripping and booking machine, the cylinders or drums C, C, and the revolving cutters *b* and *b'*, the former being located between the drums and the latter above said drums, combined with the shaft L above and toward the front of the drums and carrying the cutters *b'*, the rod R extending between the sides of the machine and about centrally over the drums, the shaft O in rear of the drums, the shaft P in front of the drums at the point at which the leaves are fed inward, the rod O below said shaft P, the endless belts passing around said drums and thence turning in a reverse direction over said shafts and rods, and the weighted pulleys suspended on said belts; substantially as set forth.

8. In a tobacco stripping and booking machine, the cylinders or drums C, C, and the drum-plate *a* located between the same, combined with the revolving cutters *b* and *b'* located respectively between and over said drums, the arm *c* extending downward at an angle to the hub between the cutters *b'* and serving to deflect the stems over the

upper edges of the drum plate, the endless belts extending around said drums to the point at which the leaves are fed inward and thence turning in a reverse direction, and the weighted pulleys suspended on said belts; substantially as set forth.

## 500,648. COMBINED SPARK ARRESTER AND EJECTOR. TERHAN E. ADSIT, Binghamton, N. Y. Filed Nov. 17, 1892. Serial No. 452,356. (No model.)



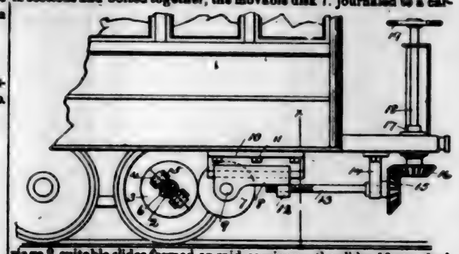
*Claim.*—1. The combination, with the boiler of a locomotive engine provided with a smoke-arch at its forward end and having an ash-pan beneath the fire-bed or grate-bars at the opposite end, of a spark-arrester having the form of a V-shaped screen arranged in said smoke-arch between the forward end of the boiler-tubes and the smoke-stack, the after side of said screen being reinforced by a heavier screen laid directly in contact with it, a cinder-pocket pendent from the lower side of the smoke-arch and having its upper end opening into the latter, a steam-blast pipe leading from the exhaust-pipe of the engine into said cinder-pocket, a cinder-pipe leading from said pocket into said ash-pan, and a steam-blast pipe leading from a steam-passage between the throttle-valve and the slide-valve of either cylinder, connected to said pocket and arranged to discharge into said cinder-pipe a current of live steam on a line corresponding to the center line of said cinder-pipe; whereby the cinders collected in said smoke-arch will be forcibly drawn from the smoke-arch and injected into the ash-pan beneath the grate-bars of the fire-box, and the discharge of steam through said steam-blast pipe will be automatically stopped by shutting the throttle-valve of the main steam-pipe, substantially as herein specified.

2. The combination, with the boiler of a locomotive engine provided with a smoke-arch at its forward end and an ash-pan at its rearward end, of a spark-arrester located in said smoke-arch and interposed between the forward end of the boiler-tubes and the smoke-stack, a cinder-pocket pendent from the lower side of the smoke-arch and having its upper end opening into the latter, a cinder-pipe attached to said pocket and having its rearmost end slightly removed from, but in line with an opening in the forward end of the said ash-pan, and a steam-blast pipe attached to said pocket directly opposite to the opening of the cinder-pipe and arranged to discharge into said cinder-pipe a current of live-steam on a line corresponding to the center line of said pipe; whereby the cinders from said smoke-arch commingled with steam and air will be injected into the ash-pan beneath the grate-bars of the fire-box, substantially as herein specified.

## 500,649. CAR-BRAKE. JOHN T. DUFF, Pittsburg, Pa. Filed Mar. 28, 1891. Serial No. 386,653. (No model.)

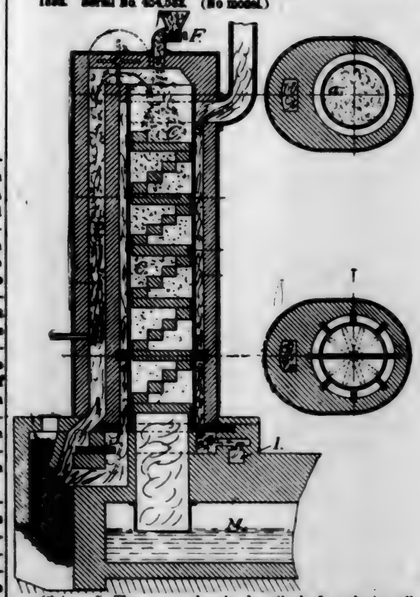
*Claim.*—1. A car brake consisting of a sectional disk attached to one of the axles of the car, a movable disk arranged in line with the said axle disk, a carriage carrying the movable disk, slides arranged to carry said carriage, a threaded shaft operating in a threaded bearing formed on said carriage, gearing for operating said shaft, and a means for operating said gearing, substantially as described.

2. In combination with a railway car 1, the disk 2, constructed in sections and bolted together, the movable disk 7, journaled to a car-



riage 8, suitable slides formed on said carriage—the slides 10 attached to the car or truck adapted to carry the said carriage, the threaded bearing 12 formed on the said carriage, a threaded shaft 13 operating in said bearing, the bearing 14 to support the forward end of the shaft 13, the bevel gear 15 meshing with another 16, attached to the lower end of a vertically arranged shaft 18, suitable bearings 17 for said shaft, and the hand wheel or other suitable means for operating the vertical shaft 18, all arranged and combined for service, substantially as and for the purpose described.

## 500,650. APPARATUS FOR AND PROCESS OF OBTAINING COMBINED NITROGEN AND FUEL GASES. THOMAS B. FOGARTY, Long Island City, assignor of one-twentieth to Rank Cowen, New York, N. Y. Filed Apr. 18, 1891. Renewed Mar. 18, 1892. Again renewed Dec. 9, 1892. Serial No. 454,583. (No model.)

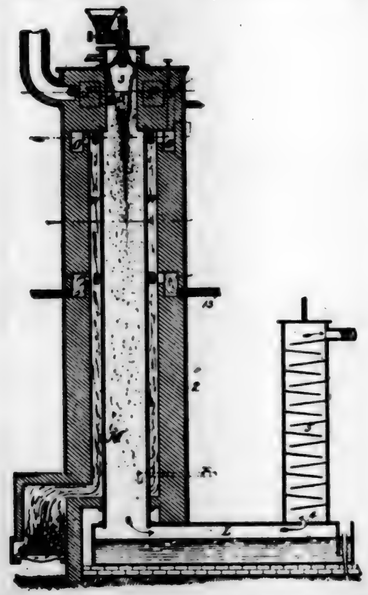


*Claim.*—1. The process herein described of producing alkaline cyanides and ammonia by burning carbonaceous matter in a limited supply of air alone or air and steam mixed, producing a generator or producer gas, consisting, chiefly, of the oxides of carbon, and free nitrogen and hydrogen, causing said gas to meet and mingle with hydrocarbon gases or vapors, and the mixed gases and vapors to pass through a heated chamber and then bringing them into admixture with a pulverized mixture of alkali and an infusible substance, as carbon and moving or falling through the chamber in the same direction as the gases, causing the hydro-carbons to be decomposed by heat into simpler and elemental products and these to combine with the nitrogen and alkali producing alkali cyanides, ammonia, and fuel gases substantially as described.

2. In an apparatus for generating alkaline cyanides, the combination of the mixing or decomposing chamber H, retort C, means for supplying hydrocarbon and a pipe arranged to conduct the said hydrocarbon to the flue or chamber H, above the point where the latter communicates with the furnace, substantially as set forth.



## 500,651. METHOD OF AND APPARATUS FOR PRODUCING CYANIDES AND AMMONIA. THOMAS B. FOGARTY, Long Island City, assignor of one-twentieth to Rank Cowen, New York, N. Y. Filed Mar. 26, 1891. Renewed Jan. 16, 1892. Again renewed Oct. 11, 1892. Serial No. 448,609. (No model.)



*Claim.*—1. The process herein described of producing cyanides and ammonia, consisting in producing a gas consisting chiefly of oxides of carbon, free hydrogen and nitrogen, passing the same into and through a suitable retort maintained at a high or incandescent temperature, passing simultaneously through the same retort and in the same direction as the before described gas, suitable volumes of hydrocarbon gas or vapor and of alkali or alkaline earth or vapor, decomposing the hydro-carbon gas or vapor by heat into acetylene and free carbon and hydrogen, and causing these to combine with nitrogen and alkali and to produce alkaline cyanides, ammonia, and fuel gas, substantially as described.

2. The process herein described of producing alkaline cyanides and ammonia consisting substantially in causing nitrogenous gas, hydro-carbon gases and vapors and a suitable alkali to pass together in the same direction through an incandescent retort whereby the hydro-carbons are decomposed into simpler and elementary bodies which combine with nitrogen and alkali and produce alkaline cyanides, ammonia and fuel gas, substantially as described.

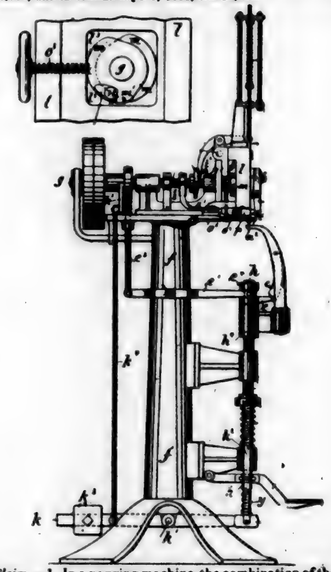
3. The hereindescribed process of producing alkaline cyanides and ammonia consisting in introducing highly heated nitrogen into a highly heated retort through which acetylene and nascent carbon and hydrogen are passing, together with an alkali or alkaline earth or vapor, whereby the acetylene, carbon, hydrogen and alkali are caused to combine with the nitrogen and the hydro-carbons are cracked producing alkaline cyanides and ammonia, substantially as set forth.

4. In an apparatus for producing alkaline cyanides, a retort combined with a supplementary combustion chamber N, N, and means for supplying the latter with gas, constructed and operated, substantially as described.

5. In an apparatus for producing alkaline cyanides, the combination of the retort furnace D, supplementary chamber N, N, and superheaters, substantially as described.

6. The hereindescribed process of producing alkaline cyanides and ammonia consisting in introducing incandescent nitrogen into an incandescent retort in which acetylene and other hydro-carbon gases and vapors are being cracked and through which such hydro-carbon gases and vapors and nascent carbon and hydrogen are passing together with an alkali or alkaline earth or vapor, causing the acetylene, nascent, carbon and hydrogen and alkali to combine with the nitrogen and to produce alkaline cyanides, substantially as described.

## 500,652. PEGGING-MACHINE. THOMAS GARE, Stockport, England. Filed July 20, 1889. Serial No. 318,062. (No model.) Patented in England Sept. 24, 1888, No. 13,751; in Belgium Apr. 1, 1889, No. 85,625; in France Apr. 4, 1889, No. 197,211; in Italy Apr. 13, 1889, XLIX, 294; in Germany Apr. 18, 1889, No. 52,386; in Switzerland May 21, 1889, No. 923; in Austria-Hungary Sept. 7, 1889, No. 17,217 and No. 31,117, and in Canada Sept. 9, 1889, No. 32,398.



*Claim.*—1. In a pegging machine, the combination of the awl slide $a^3$ and awl, the peg driver, the means for operating the said parts, the means for cutting the peg consisting of a movable knife $b^3$ and means for inclosing the said knife consisting of the horn or support having the perforation $b'$ the said knife being arranged entirely below the bearing surface of the horn and shielded thereby from contact with the material being operated on, and means for sliding the knife and holding the same against the inner side of the upper wall of the horn, consisting of the oscillating lever $c$ pivotally connected to the said knife at its upper end and the spring $b^4$ for pressing the knife against the horn, substantially as described.

2. In combination, the awl, the movable head $l$, the carrier $a^1$, the means for moving the said head and carrier step by step laterally consisting of the cam $m$ for giving the initial movement and the second cam $m'$ for completing said movement, and the means for moving the carrier step by step vertically, substantially as described.

3. In combination, the awl, the movable head $l$ the awl carrier, the means for moving the head and carrier step by step laterally, and means for moving the carrier step by step vertically including the cam surfaces $a^4$ and $a^5$ one located in rear of the other whereby they are acted upon in succession, substantially as described.

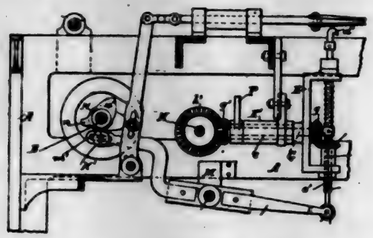
4. In combination, the awl, the movable head $l$, the awl carrier, the means for moving the said carrier step by step laterally, consisting of the cam $m$ for giving the initial movement and the second cam $m'$ for completing the said movement, the means for operating the carrier one step downward at the completion of the initial lateral movement and the means for determining and adjusting the length of the initial movement consisting of the screw $c^3$ bearing on the cam $m$ which gives the initial movement, substantially as described.

5. In combination the awl the head $l$ having the opening $l^3$ and the carrier having the cam bearing surfaces $a^4$ and $a^5$ the cam $m$ for giving the initial lateral step, the screw $c^3$ on the head for engaging the said cam to determine and adjust the said movement, the cam $m'$ for engaging the wall of the opening $l^3$ for completing the said movement and the projection $n$ on the cam $m'$ for engaging the cam surfaces $a^4$ $a^5$ to move the carrier step by step vertically, substantially as described.

6. In a pegging machine, the combination of the awl and operating mechanism therefor, the feeding mechanism the horn and its shank $h$, and the means for operating the same consisting of the lever $k$ the strong spring $i$, the loose collar $k'$ on the shank and above the spring the connection from the lever to the loose collar, the means for operating the lever $k$ and the light spring $y$, substantially as described.

**500,653. MACHINE FOR MAKING LOOM-HARNESS.** EMIL HAASE, Paterson, N. J., assignor to Franz Ulrich, same place. Filed Mar. 20, 1891. Serial No. 385,938. (No model.)

*Brief.*—An improvement upon the machine of the patent to Sladdin, No. 306,114, of October 7, 1884. The heddle eye-former has rotatory, vertically reciprocatory, and vibratory movements to form different kinds of heddles.



*Claim.*—1. In a loom harness machine, the combination, with the eye-former, and the eye-former carrier provided with a shaft; of the lever secured to the said shaft and having a roller *r*, the arm secured to the said lever and provided with a roller *s*, a revoluble cam operating the roller *r* to move the eye-former from one side position into a vertical position, and a second revoluble cam operating the roller *s* to move the eye-former from its vertical position to its correspondingly opposite side position, substantially as and for the purpose set forth.

2. In a loom harness machine, the combination, with the eye-former, and the eye-former carrier provided with a shaft; of the lever secured to the said shaft and provided with the arm S and the rollers *r* and *s*, a revoluble cam operating to raise the roller *r*, and a laterally movable cam adapted to raise the roller *s* when placed opposite to it, substantially as and for the purpose set forth.

3. In a loom harness machine, the combination, with the eye-former, and the eye-former carrier provided with a shaft; of the lever secured to the said shaft and provided with the arm S and the rollers *r* and *s*, the cam R and its revoluble shaft *g* operating to raise the roller *r*, the toothed wheel *f* secured on the shaft *g*, the movable shaft T, and the toothed wheel T' and the cam S' secured on the shaft T, said cam S' operating to raise the roller *s* when the shaft T is slid so as to place the said wheels in gear and the roller opposite the cam, substantially as and for the purpose set forth.

4. In a loom harness machine, the combination, with the eye-former, and the eye-former carrier provided with a tubular shaft, a lever secured on the said shaft, a revoluble cam adapted to raise the lever and thereby to move the eye-former from its normal side position into a vertical position, and mechanism operating to raise the eye-former spindle at intervals, to permit the formation of "standard" harness; of the shafts and the toothed wheels substantially as set forth, the toothed rack provided with a roller, and a cam adapted to engage with the said roller and thereby to impart a reciprocating rotary motion to the eye-former spindle through the said shafts and wheels, to permit the formation of "English" harness; and a disengageable cam adapted to raise the said lever after it has been raised by the aforesaid cam, thereby moving the said spindle from its vertical position to its opposite side position, to permit the formation of "French" harness; whereby "striped harness" may be made in the machine, substantially as set forth.

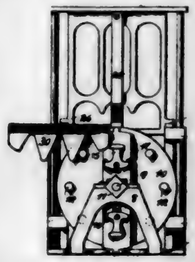
5. In a loom harness machine, the combination, with the eye-former, and the pivoted eye former carrier; of mechanism operating to raise the eye-former spindle at intervals; and driving devices, substantially as set forth, operating to oscillate the eye-former and its carrier on both sides of their vertical position, and to move them back and forth from one side to the other continuously, whereby "French" harness may be formed in the machine.

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**500,654. BRIDGE-GATE.** DOMINIC HARRINGTON and JOSEPH MARSH, Logansport, Ind., assignors of one-half to James P. Henderson and Otho A. Evans, same place. Filed Apr. 5, 1893. Serial No. 469,149. (No model.)

*Claim.*—1. In a gate operating mechanism, the combination with a series of gate sections, of a series of rotating disks, means for connecting said gate sections with said disks, so that by the rotation of said disks, said gate sections will be raised or lowered, locking latches, having their axes coincident with those of the rotating disks and engaging with the framework of the mechanism, for holding said gate sections either in their raised or lowered positions, and means connected with the bridge for unlocking said locking latches and thereupon causing the rotation of said disks, substantially as described.

2. In a gate operating mechanism, the combination with a series of gate sections, of a series of rotating disks, having formed around their circumferences a series of projecting lugs, and connected with said gate sections by links attached near their circumferences, of gear teeth placed on the bridge for engaging the said projecting lugs and causing the rotation of said disks, substantially as described.



3. In a gate operating mechanism, the combination with a series of gate sections, of a series of rotating disks having formed on their outer surfaces around their circumferences a series of projecting lugs, and connected with said gate sections by links attached near their circumferences, locking devices for holding said gate sections in their raised or lowered positions, and means placed on the bridge for unlocking said locking devices and thereupon rotating said disks, substantially as described.

4. In a gate operating mechanism, the combination with a series of gate sections, of a series of rotating disks, each of which is formed on its outer surface around its circumference with projecting lugs, and is connected to one of said gate sections by a link attached near its circumference, a locking-plate provided with a central slot through which the axis of the rotating disk passes, a pair of slots arranged on either side of said central slot, in each of which is pivoted a locking-dog whose side projecting arms engage with studs placed on the locking-plate, pointed ends to said plate, one of which engages with a locking socket formed in the frame work of the mechanism, and a section of gear teeth placed on the bridge for engaging with said locking dog, thus unlocking the locking device, and thereupon engaging the projecting lugs and causing the rotation of the disk, substantially as described.

5. In a gate operating mechanism, the combination with a series of gate sections, of a series of rotating disks, each of which is formed on its outer surface around its circumference with projecting lugs, a locking plate provided with a central slot through which the axis of the rotating disk passes, a pair of slots arranged on either side of said central slot, in each of which is pivoted a locking dog whose side projecting arms engage with studs placed on the locking plate, another pair of slots in which move pins formed integral with the rotating disk, pointed ends to said plate, one of which engages with a locking socket formed in the framework of the mechanism, a link connecting said disk and said gate section, and attached to said disk at a point in diametrical line with said slot-engaging lugs, and a series of gear teeth attached to the bridge for engaging with said locking dog, thereby unlocking the locking device, and thereupon engaging with the projecting lugs and causing the rotation of the disk, substantially as described.

6. In a gate operating mechanism, the combination with a series of gate sections having vertical guides, of a series of rotating disks having formed around their circumferences a series of projecting lugs, and connected with said gate sections by links attached near their circumferences, and gear teeth placed on the bridge for engaging the said projecting lugs and causing the rotation of said disks, substantially as described.

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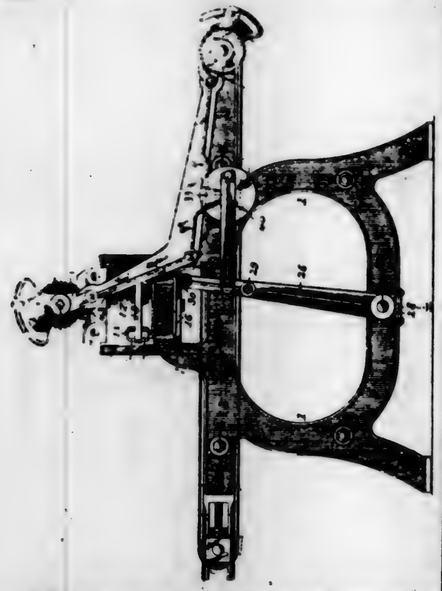
**500,655. CAKE-MACHINE.** SAMUEL I. HALL, Chicago, Ill. Filed Oct. 20, 1892. Serial No. 449,469. (No model.)

*Claim.*—1. In a cake machine, the combination with an intermittently feeding dough box and a reciprocating wire cutter adapted to move in a straight line, and cut in both directions, of a vibratory cutter carrying frame, and means for allowing limited vertical movement of the same at its point of pivotal attachment to the frame of the machine, substantially as set forth.

2. In a cake machine, the combination with an intermittently feeding dough box, and a reciprocating wire cutter adapted to move in a straight line and cut in both directions, of a vibrating cutter carrying frame, a journal shaft for the same, and a yielding cushion beneath the same, substantially as set forth.

3. In a cake machine, the combination with an intermittently feeding dough box, and a reciprocating wire cutter, of a vibrating cutter carrying frame, rollers or wheels on the upper end of the same engaging a straight track on the frame of the machine, a journal shaft, and a yielding cushion beneath the same, substantially as set forth.





4. In a cake machine, the combination with an intermittently feeding dough box, and a reciprocating wire cutter, of a vibrating cutter carrying frame, rollers or wheels on the upper end of the same engaging a straight track on the frame of the machine, a journal shaft, a yielding cushion beneath the same, an operating crank disk on the main shaft, and a pitman connection, substantially as set forth.

5. In a cake machine, the combination with the dough box having lugs 23 thereon, and a plunger working therein, of the arch bracket frame 19, carrying the feeding mechanism, and pivoted at one side to the dough box by attaching bolt 21, and at the other side provided with lugs 24, to receive set screws 22, passing through lugs 23 on the dough box, substantially as set forth.

6. In a cake machine, the combination with the dough box and its feeding mechanism, and the endless carrier belt and its feeding mechanism, of the operating lever 36, one arm of which has operative connection with the dough box mechanism, and the other arm with the endless carrier mechanism, and the operating cam 40 on the main driving shaft, substantially as set forth.

7. In a cake machine, the combination with the dough box, the endless carrier belt, and its ratchet feed mechanism, of the circularly adjustable plate 46, having sector shaped end concentric with the outer diameter of the ratchet wheel 35, and a clamping screw engaging in a concentric slot 47 in said plate, substantially as set forth.

8. In a cake machine, the combination with the dough box, and its follower or piston, the rod of which is screw-threaded, of the geared nut 29, bevel pinion 41, counter-shaft supported in the arched bracket frame 19, ratchet wheel 42, dog 43, arm 44, lever 39 having a forked end and operating cam 40, on the main driving shaft, substantially as set forth.

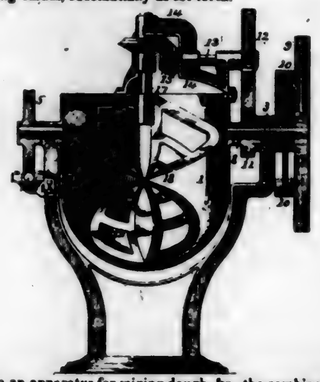
9. In a cake machine, the combination with the dough box, its follower or piston, and its ratchet feed mechanism of a circularly adjustable plate 52, having a sector shaped end concentric with the outer diameter of the ratchet wheel 42; link connection 53, lever 54, and collar or enlargement at the upper end of the piston rod 31, substantially as set forth.

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**500,656. APPARATUS FOR MIXING DOUGH.** SAMUEL I. HALL, Chicago, Ill. Filed Oct. 20, 1892. Serial No. 449,470. (No model.)

*Claim.*—1. In an apparatus for mixing dough &c., the combination of an upright mixing trough 1, the walls of which are concentric with the vertical axis, and the supporting frame or standard 4 pivotally connected to the trough, with mixing blades 18 and the operating gearing therefor, the driving gear of which has its axis of rotation on a line with the pivoted axis of the mixing trough, substantially as set forth.

2. In an apparatus for mixing dough, &c., the combination of an upright mixing trough 1, and its supporting standard 4, pivotally connected together, with the mixing blades 18, the arched supporting frame 14, composed of a main portion and a branch portion 19, having an angular arrangement therewith, and the operating gearing for the mixing blades, substantially as set forth.

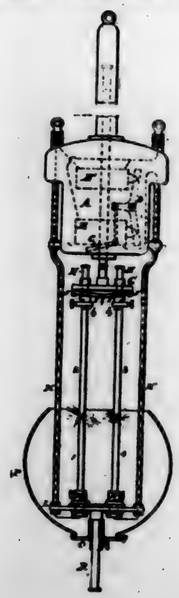


3. In an apparatus for mixing dough, &c., the combination of an upright mixing trough 1, and its supporting standard 4, pivotally connected together, with the mixing blades 18, the arched supporting frame 14, composed of a main portion and a branch portion 19 having an angular arrangement therewith, the bevel gears 15 and 16, counter shaft 13, gear wheel 12 and driving pinion 11, the axis of which is on a line with the pivotal axis of the mixing trough, substantially as set forth.

4. In an apparatus for mixing dough, &c., the combination of an upright mixing trough 1, and its supporting standard 4, pivotally connected together, the mixing blades 18, a frame or spider attached to the margin of the trough 1, and having a centrally arranged hub for the support of the shaft of the mixing blades, the bevel gears 15 and 16, counter-shaft 13 gear wheel 12, driving pinion 11, trunnion pin 2, worm sector or wheel 5, endless worm 6, and hand wheel 7, substantially as set forth.

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**500,657. ELECTRIC-ARC LAMP.** RUDOLPH M. HUNTER, Philadelphia, Pa., assignor to the Thomson-Houston Electric Company, of Connecticut. Filed Apr. 3, 1893. Serial No. 468,756. (No model.)



*Claim.*—1. In an arc lamp, the combination of two carbon holders a vertically adjustable cross head or frame, feeding mechanism for feeding said cross head or frame vertically, two independent carbon holders carried by said cross head or frame and in alignment with the first mentioned carbon holders, independent clutch devices for said carbon holders to adjust them upon the cross head or frame, and electric circuits including the carbon holders in series.

2. In an arc lamp, the combination of two carbon holders, a vertically adjustable cross head or frame, feeding mechanism for feeding said cross head or frame vertically, two independent carbon holders carried by said cross head or frame and in alignment with the first mentioned carbon holders, independent clutch devices for said carbon holders to adjust them upon the cross head or frame mechanically connected together whereby either carbon holder upon being moved upward may automatically trip the other carbon holder to permit it to become lowered, and electric circuits including the carbon holders in series.

3. In an arc lamp, the combination of two fixed carbon holders, two independently vertically adjustable carbon holders, a mechanical device connecting the two adjustable carbon holders whereby one may adjust the other automatically, and an electrically controlled regulating device for simultaneously feeding the adjustable carbon holders toward the fixed carbon holders.

4. In an arc lamp, the combination of two fixed carbon holders, two independently vertically adjustable carbon holders, a mechanical device connecting the two adjustable carbon holders whereby one may adjust the other automatically, an electrically controlled regulating device for simultaneously feeding the adjustable carbon holders toward the fixed carbon holders, and electric circuits for maintaining the said several carbon holders in series with each other.

5. In an arc lamp, the combination of four carbon holders arranged in pairs one pair of which is movable as a unit, a single electrically actuated feeding device for feeding the movable carbon holders simultaneously in the same direction, and an adjusting device controlled by the varying consumption of carbons in the several holders for causing a relative adjustment between the carbon holders of one pair.

6. In an arc lamp, the combination of four carbon holders arranged in pairs one pair of which is movable as a unit, a single electrically actuated feeding device for feeding the movable carbon holders simultaneously in the same direction, an adjusting device controlled by the varying consumption of carbons in the several holders for causing a relative adjustment between the carbon holders of one pair, and electric circuits for maintaining the electrically actuated regulator and the several carbon holders in series.

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**500,658. PNEUMATIC TIRE.** RUDOLPH W. HUBE, Chicago, Ill., assignor to Henry A. Lozier, Cleveland, Ohio. Filed Apr. 10, 1893. Serial No. 469,726. (No model.)



*Claim.*—1. A hollow or pneumatic tire having its tread reinforced by cross-threads or thread portions and fabric adapted for stretch, substantially as described.

2. A hollow or pneumatic tire having its tread reinforced by a plurality of reinforcing layers adapted to permit longitudinal elastic yield on the part of the tread, substantially as set forth.

3. A hollow or pneumatic tire having along its tread a reinforcing layer of cross threads and fabric adapted for stretch, and having its sides reinforced against longitudinal stretch, substantially as described.

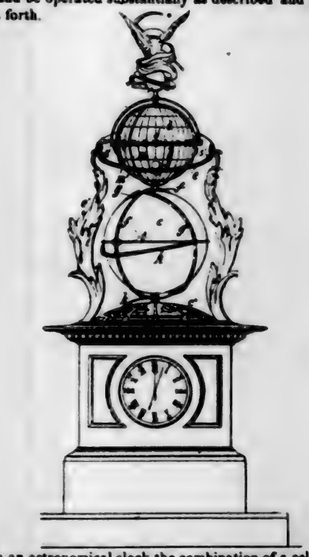
4. A hollow or pneumatic tire reinforced by a knit fabric and having its sides reinforced against longitudinal stretch, substantially as set forth.

5. A hollow or pneumatic tire having its tread reinforced by thread layers spirally wound in opposite directions, and having its sides reinforced against longitudinal stretch, substantially as described.

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**500,659. GEOGRAPHICAL CLOCK.** ARMAND G. JOURDAN, Paris, France, assignor to himself and Salomon Sylvain Lévy, same place. Filed Jan. 23, 1891. Serial No. 379,385. (No model.) Patented in France May 14, 1890, No. 203,630.

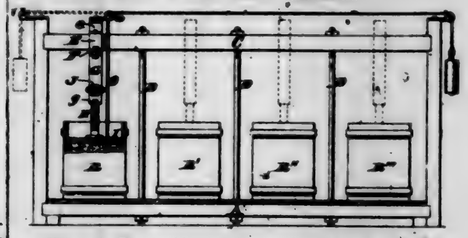
*Claim.*—1. In an astronomical clock the combination of a celestial globe, an ecliptic ring connected to said celestial globe, a terrestrial globe, and independent universal dial ring surrounding said terrestrial globe, and an independent movable meridian *m* adapted to be moved around said terrestrial globe, all said parts being adapted to operate and be operated substantially as described and for the purposes set forth.



2. In an astronomical clock the combination of a celestial globe, an ecliptic ring connected to said celestial globe, a terrestrial globe, an independent universal dial ring surrounding said terrestrial globe, an independent movable meridian *m* adapted to be moved around said terrestrial globe, and a great circle of light *d* extending around said terrestrial globe, all said parts being adapted to operate and be operated substantially as described and for the purposes set forth.

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**500,660. HAND-PRESS.** WILLIAM S. KISINGER, Bellevue, assignor to the Winchester Cotton and Tobacco Press Company, Winchester, Ky. Filed Jan. 28, 1893. Serial No. 460,006. (No model.)



*Claim.*—1. The combination, in a hand-press, of a tubular housing, a hollow rack-bar, reciprocating therein, a pinion, ratchet, and lever for operating said bar, and an internal spring, one end of which is connected to the rack-bar, while the other end of said spring is attached to said housing, for the purpose described.

2. The combination, in a hand-press, of a shiftable yoke, a laterally-swinging tubular-housing coupled to said yoke by a pair of detachable pivots, a rack-bar traversing said housing, and devices applied to it for operating said rack-bar, in the manner described.

3. The combination, in a hand-press, of a shiftable yoke, and a laterally-swinging tubular-housing coupled to said yoke by a pair of detachable pivots, for the purpose described.

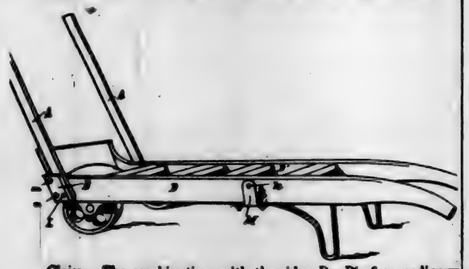
4. The combination, in a hand-press, of the yoke E, having rollers *c. c'.* an arch *c''*, and ears F. F', the laterally-swinging tubular-housing G coupled to said yoke by a pair of detachable bolts *f. f'.* a rack-bar traversing said housing, and devices for operating said bar, in the manner stated, and for the purpose described.

5. The combination, in a hand-press, of the tubular housing G, suspended from a shiftable yoke and provided on its rear side with a transverse shaft K, carrying a ratchet *j* and a pair of pinions J, J', the lever L, projecting in front of said housing and having forks *l. l'* pivoted to said shaft K, a pawl M applied to a cross bar connecting these forks, and a rack fi, traversing said housing and provided on its rear with teeth that engage with said pinions, all as herein described.



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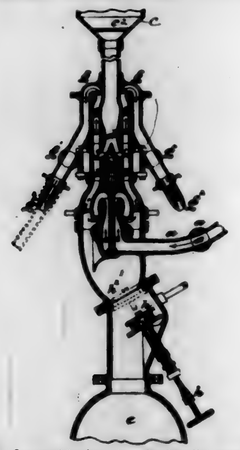
**500,661. HAND-TRUCK.** GEORGE LILLIE, Peoria, Ill. Filed Mar. 2, 1891. Renewed Dec. 9, 1892. Serial No. 454,881. (No model.)



*Claim.*—The combination, with the sides D—D' of an ordinary truck having cross braces and the other usual parts, of the plates E having the shoulders *a*, and having pivoted thereto the arms A—A each independent of the other, the clamps M provided with the small raised portions to secure the arms A—A in the lowered position, all substantially as described and set forth.

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**500,662. ORE-SEPARATOR.** WILLIAM S. LOCKHART, London, England, assignor to the Automatic Gem and Gold Separator Syndicate, Limited, same place. Filed Feb. 1, 1893. Serial No. 460,588. (No model.)



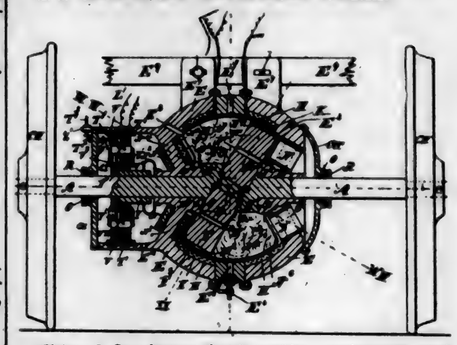
*Claim.*—1. In combination in a hydraulic separating apparatus the internal tube connected with a hopper, the conoidal distributer arranged opposite the discharge opening of said pipe and forming therewith an annular discharge channel to direct the minerals laterally from the center toward the sides of the casing, the said tube being arranged to leave an annular passage of uniform sectional area about it, a liquid supply pipe connecting with the outer annular passage said passage having an annular discharge opening, means for controlling the liquid supply and the collecting chamber, substantially as described.

2. In combination in a hydraulic separating apparatus an internal tube receiving from hopper a gravity feed of minerals, a lateral annular orifice, conoidal distributer, an exterior vertical annular passage, and an inlet for the liquid supply of carved form and with reverse mantle and control coils to steady the incoming stream substantially as described.

3. In combination in a hydraulic separating apparatus an internal tube receiving gravity feed of mineral mixed with liquid, an adjustable hopper connected thereto by screw threaded stem and gland, provided with an overflow lip and trough, an axial conoidal distributer, a lateral discharge orifice, and an exterior vertical annular passage admitting an upward controlled flowing stream of liquid, substantially as described.

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**500,663. ELECTRIC MOTOR.** JOHN MACHAPPIE, Schenectady, N. Y. Filed Oct. 5, 1891. Serial No. 408,089. (No model.)



*Claim.*—1. In a dynamo electric machine, a main rotating shaft arranged in a straight line, and pole-piece projections F carried by said shaft and extending from opposite sides thereof at an angle less than a right angle, combined with an armature and magnets, substantially as described.

2. In a dynamo-electric machine, a main rotating shaft, a boss arranged centrally thereon and pole-piece projections F extending from said boss at an angle less than a right angle to the line of the shaft and from opposite sides thereof, combined with an armature and magnets, substantially as described.

3. In a dynamo electric machine, a main rotating shaft arranged in a straight line, and disk pole piece F carried on said shaft and inclined thereto at an angle less than a right angle, combined with an armature and magnets, substantially as described.

4. In a dynamo electric machine, a main rotating shaft, a boss arranged centrally thereon and disk pole piece F extending from said boss at an angle less than a right angle to the line of the shaft combined with an armature and magnets, substantially as described.

5. In a dynamo electric machine a main shaft, a pole piece extending at an angle from the shaft less than a right angle, a hollow shell carried by said pole piece and external blades carried thereby, substantially as described.

6. In a dynamo electric machine, a rotating shaft, inclined shoulders projecting therefrom and pole pieces fitted between said shoulders, substantially as described.

7. In dynamo electric machines, the combination with a bent, cranked, or eccentric shaft or axle, of a boss or center fitted on said shaft or axle, a pole-piece made in one with or fitted on said boss or center, and of a thrust-block, substantially as hereinbefore set forth.

8. In dynamo electric machines, the combination with a bent, cranked, or eccentric shaft or axle, of a boss or center fitted on said shaft or axle, a pole-piece made in one with or fitted on said boss, and of thrust-blocks with contact or bearing faces between said blocks and said boss, substantially as hereinbefore set forth.

9. The combination with the bent, cranked, or eccentric shaft or axle A, of the boss C, pole piece F, thrust-blocks D, $D^3$, magnets N, and inclosing armature E, substantially as hereinbefore set forth.

10. The combination with the shaft or axle A, of the boss C, pole-piece F, thrust-blocks D, $D^3$, magnets N, armature E, and oil casing $N^6$, fitted within said armature, substantially as hereinbefore set forth.

11. The combination with the shaft or axle A, of the boss C, the inclined pole-piece F, thrust-blocks D, $D^3$, the side magnets N, armature E, and coils H, H on the circumference of the pole piece, substantially as hereinbefore set forth.

12. The combination with the shaft or axle A of rolls $Y^2$ carried on said shaft by means of springs Y', transposing rings T R and means for operating one or more of said rings, substantially as hereinbefore set forth.

13. In a dynamo electric machine, the combination with the main shaft, boss with pole pieces thereon, the armature, contact surfaces M', N', $M^3$, $N^3$, and means for varying the degree of contact between said surfaces, substantially as hereinbefore set forth.

14. The combination with the shaft A, of a movable thrust-block surrounding said shaft and regulating devices connected to said movable thrust-block for regulating the source or sources of power, substantially as and for the purpose hereinbefore set forth

15. The combination with the shaft A, of an extended thrust-block surrounding said shaft, and a piston G made in one with or secured to the thrust-block, said piston being inclosed in a cylinder containing fluid pressure, substantially as and for the purpose hereinbefore set forth.

16. In dynamo electric machines, the combination with a bent,

cranked, or eccentric shaft or axle, of an inclosing armature, made in two or more parts, and carried on said axle, and of a device for drawing the parts of said armature together or for thrusting them apart, substantially as hereinbefore set forth

17 The combination with the bent, cranked, or eccentric shaft or axle A, of a thrust-block fitted on said shaft or axle, of a boss C, contacts M', N', between said boss and thrust-block and teeth or cogs on the boss and thrust-block, which mesh into each other, substantially as hereinbefore se forth.

18. The combination with the bent, cranked, or eccentric shaft or axle A, of a pole-piece fitted on said shaft or axle, an inclosing or partially inclosing armature and electromagnets fitted around said shaft or axle, substantially as hereinbefore set forth.

19 The combination with the bent, cranked, or eccentric shaft or axle A, of a boss fitted thereto, one or more magnets fitted to said boss and one or more pole-pieces surmounting said magnets, substantially as hereinbefore set forth

20. The combination with the bent, cranked, or eccentric shaft or axle A, of a boss fitted thereon, one or more magnets fitted to said boss, one or more pole-pieces fitted to said magnets and electrical contacts $L^3$, substantially as hereinbefore set forth

## 500,664. METHOD OF MANUFACTURING WATERPROOF FABRICS. Goodman C Mandleberg, Manchester, England. Filed Aug. 15, 1892. Serial No. 443,161. (No specimens.) Patented in England Dec. 21, 1891, No 22,352.

*Claim.*—1 The method of manufacturing waterproof fabrics which consists in applying continuous spun or twisted threads to the proofed face of the fabric and causing said threads to adhere thereto throughout their length

2. The method of manufacturing waterproof fabrics which consists in applying continuous spun or twisted threads to the proofed face of the fabric, causing said threads to adhere thereto throughout their length and finishing the fabric by treatment with farina.

3 As an article of manufacture, a waterproof fabric having continuous spun or twisted threads on and adhering throughout their length to the proofed face of such fabric

4 As an article of manufacture, a waterproof farina finished fabric, having continuous spun or twisted threads on and adhering throughout their length to the proofed face of such fabric.

## 500,665. PROCESS OF OBTAINING PIPERAZIN. Willy Marckwald, Berlin, Germany, assignor to the Chemische Fabrik auf Actien, vormals E. Schering, same place. Filed May 26, 1892. Serial No. 434,469. (Specimens.) Patented in Luxemburg Apr. 4, 1892, No. 1,600.

*Claim.*—1 In the production of piperazin, the process of obtaining aromatic disulfo ethylene diamides, which consists in causing a suitable aromatic sulfo-compound to act upon an ethylene compound in the presence of an alkali and separating the disulfonic ethylene diamide obtained by the reaction, substantially as set forth

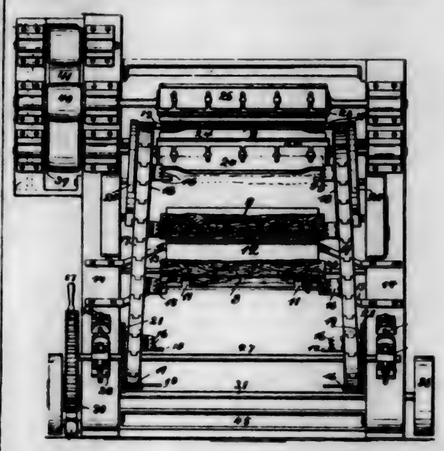
2. In the production of piperazin, the process of obtaining aromatic disulfonic piperazides, which consists in causing an ethylene compound or an aromatic amide to react upon an aromatic sulfo-compound of an amide in the presence of an alkali at a temperature above the normal and separating the aromatic disulfonic piperazide, substantially as set forth.

3. The process of obtaining piperazin, which consists in mixing water or a solution of an inorganic acid with an aromatic sulfo-compound of piperazide, heating the same, whereby the piperazin is split off in the form of an acid sulfate, separating the acid salt of piperazin, and neutralizing the same at a temperature above the normal whereby free piperazin is obtained, substantially as set forth.

4. The process of obtaining piperazin, which consists in causing a salt of ethylene or an aromatic amide to act upon an aromatic sulfo-compound of an amide in the presence of an alkali at a temperature above the normal, whereby an aromatic disulfonic piperazide is obtained, mixing the latter product with water or a solution of an inorganic acid, heating the mixture, whereby the piperazin is split off in the form of an acid sulfate, neutralizing the acid salt of piperazin at a temperature above the normal, and separating the free piperazin obtained, substantially as set forth.

5. The process of obtaining piperazin, which consists in causing an aromatic sulfo-compound to react upon an ethylene salt or compound in the presence of an alkali at a temperature above the normal whereby an aromatic disulfo ethylene diamide is obtained, causing an ethylene salt to act upon the aromatic disulfo-ethylene diamide in the presence of an alkali at a temperate above the normal, whereby an aromatic sulfo compound of piperazide is obtained, mixing the last named product with water or a solution of an inorganic acid and heating the mixture, whereby the piperazin is split off and may be separated substantially as set forth.

## 500,666. STAVE-DRESSING MACHINE. Daniel P Miller, Leroy, assignor of one-half to George V. Prosser and Walter Elrod, Somerset, Ky. Filed Aug 22, 1892. Serial No. 444,418. (No model.)



*Claim.*—1 In a stave-dressing machine, the combination of two cutter-heads, parallel with each other means to rotate them, a feed-mechanism consisting substantially of two chains which converge as they approach the cutter-heads, means on said chains which support and hold the staves while being dressed which means by reason of the convergency of the chains are caused to engage with the staves and means to support, guide and actuate the chains, all as substantially shown and described

2 In a stave-dressing machine, the combination of two cutter-heads, parallel with each other means to rotate them, a feed-mechanism consisting substantially of two chains which converge as they approach the cutter heads, means on said chains which support and hold the staves while being dressed, which means by reason of the convergency of the chains are caused to engage with the staves means to support, guide and actuate the chains and a table on which the staves are supported in a manner which enables the feed-mechanism to engage them in a position which is proper for the cutter-heads to act upon them, all as substantially shown and described

3 In a stave-dressing machine, the combination of suitable cutter-heads, means to rotate them, a feed-mechanism consisting substantially of two chains, means to support, guide and actuate them, means secured to them which support and hold the staves while being dressed and curved guides 18, which cause the staves to pass through between the cutter-heads on a circle which substantially corresponds with the circle of the package for which the staves are intended, all as substantially shown and described

4 In a stave-dressing machine, the combination of two cutter-heads, parallel with each other, means to rotate them, two chain-carriers which converge as they approach the cutter-heads, guides 18, and pulleys 19, which support the chain-carriers, means to actuate pulleys 19, and means to hold and support the staves while being dressed, which means by reason of the convergency of the chains are caused to engage with the staves all as substantially shown and described.

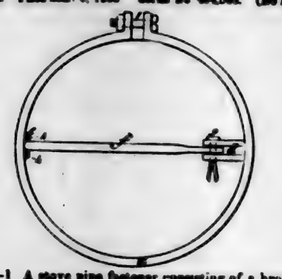
5. In a stave-dressing machine, the combination of two cutter-heads, means to rotate them, two converging chain-carriers, means to support, guide and actuate them, and grippers 16, connected to them, having fingers 15, extending beyond the teeth of the grippers, all as substantially shown and described.

6. In a stave-dressing machine, the combination of two cutter-heads, means to rotate them, two converging chain-carriers, means to support, guide and actuate them, grippers 16, connected to them and having fingers 15, extending beyond the teeth of the grippers for taking up the staves and a table which supports the staves on said fingers until the teeth of the grippers engage with them, all as substantially shown and described.

7 In a stave-dressing machine, the combination of suitable cutter-heads, means to rotate them, two chain-carriers provided with means to hold and support the staves while being dressed, means to support and actuate the chain-carriers, and curved guides 18, over and around which the former pass, said guides being closer together than the distance between the chains at the other end, whereby them latter are caused to converge, all as substantially shown and described



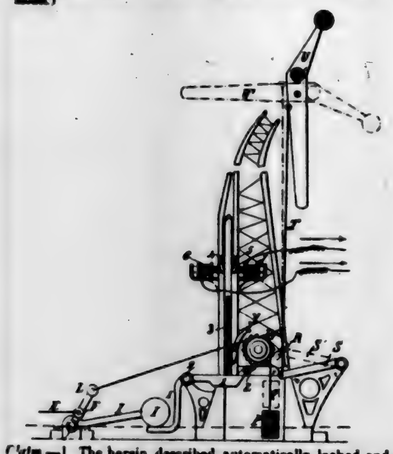
## 500,667. STOVEPIPE-FASTENER. Edward W Hennessy, Madison, Wis. Filed Mar. 3, 1893. Serial No. 464,503. (No model.)



*Claim.*—1 A stove pipe fastener consisting of a broken ring on the pipe a clamp screw through the parts of the ring near the ends, arms reaching from the ring to the walls in the pipe hole a double lug with graduated perforations upon one arm and a brace upon a pin in the perforations driven against the other arm.

2. In combination a ring clasping a stove pipe, two arms upon the ring a double lug with graduated perforations upon one arm, guides and a stop upon the other arm and a brace articulated upon a pin in the perforations and driven between the guides to the stop

## 500,668. RAILWAY SIGNAL APPARATUS. Joseph C. G. Meunier, Paris, France. Filed Oct. 19, 1892. Serial No. 449,230. (No model.)



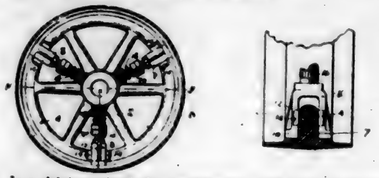
*Claim.*—1 The herein described automatically locked and released railway semaphore signal apparatus comprising a slide or weight 3 and electric contacts to which the weight serves as a closer at the proper moment, together with the treadle-mechanism acted on by the train and the intermediate parts for transmitting movement to the signal apparatus as specified

2 The herein described automatic railway signaling apparatus, consisting in the combination, with mechanism placed in proximity to the line and adapted to be acted on by the wheels of a train of the weighted lever or striker 1, F, the balanced rocker 1 the chain barrel N connected to the arm P of lever 1 F, so as to be partially rotated in a direction in opposition to a weight P and provided with a ratchet wheel W and pawls y z, a vertically sliding weight 3 serving either as a trip for pawl y or as a circuit closer, spring pressed catches 4 5 engaging with the weight to retain it in its raised position until withdrawn from engagement with the weight, electrically, substantially as herein shown and described

## 500,669. DRIVING-WHEEL. Gustaf D. Munson, Minneapolis, Minn. Filed Dec. 6, 1892. Serial No. 454,236. (No model.)

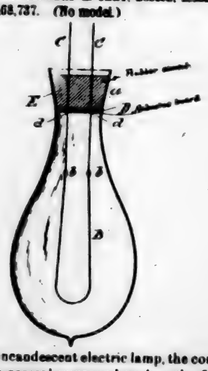
*Claim.*—1 In a driving pulley, the combination, with a fixed center, of a loose outer rim arranged thereon, a series of friction blocks arranged upon said fixed center and embracing the inner portion of said rim, and a series of adjustable springs actuating said blocks, substantially as described

2. In a driving pulley, the combination, with the fixed center having the narrow fixed rim 4, of the loose rim provided with the rib 7 of substantially the same width as the fixed rim 4, the friction blocks embracing said fixed rim and the rib 7, and adjustable springs actuating said blocks, substantially as described



3. In a driving wheel, the combination, with a fixed center, of a loose outer rim free to revolve thereon, a projecting rib on the interior of said rim, friction blocks secured upon the fixed center and embracing said rib, and a series of adjustable springs actuating said blocks, substantially as described.

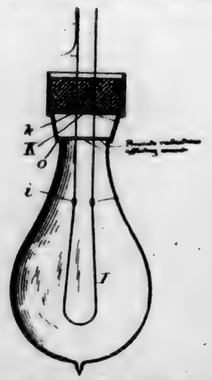
## 500,670. INCANDESCENT ELECTRIC LAMP. William E Nickerson, Cambridge, and Edward E. Cary, Boston, Mass. Filed Apr. 1, 1893. Serial No. 468,737. (No model.)



*Claim.*—1. In an incandescent electric lamp, the combination of a glass globe A, having a conical unground neck a, the filament B and leading in wires C C, with the disk D and fusible cement E, substantially as and for the purpose set forth

2. In an incandescent electric lamp, the combination of a glass globe having a conical neck, leading-in wires, a cement-supporting disk, and a filling of fusible cement adapted to make the lamp air tight and to form a support for the leading-in wires, substantially as and for the purpose set forth

## 500,671. INCANDESCENT ELECTRIC LAMP. William E Nickerson, Cambridge, Mass. Filed Apr. 3, 1893. Serial No. 468,936. (No model.)



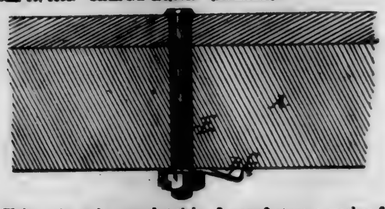
*Claim.*—1. In an incandescent electric lamp, the combination of a glass globe, the neck of which is rendered air tight by means of a fusible cement, a filament and leading-in wires; with a heat-reflecting disk located within the vacuous portion of the lamp between the filament and that part of the neck of the lamp occupied by the fusi-

ble cement, said disk being adapted to reflect the heat of the filament and prevent thereby the softening of the cement, substantially as and for the purpose set forth.

2 In an incandescent electric lamp, the combination of the glass globe H, filament I, leading-in wires J J, disk K and cement M; with the disk N, located within the vacuous portion of the lamp between the filament and the cement, said disk being adapted to reflect the heat of the filament and thereby prevent it from softening the cement, substantially as and for the purpose set forth

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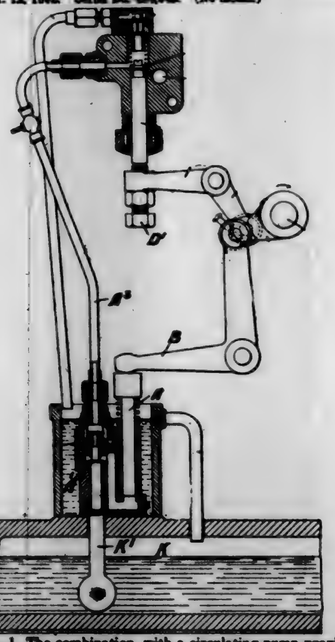
**500,672.** NUT-LOCK. BENJAMIN FORTIN, Fullerton, N. D. Filed Jan. 19, 1893. Serial No. 458,973. (No model.)



*Claim.*—As an improved article of manufacture a washer for a nut lock comprising a plate with a central bolt opening, a lip at one of its edges to engage the side of a nut, and an arm projecting from the opposite edge bent up back beyond the working face of the washer, and its free end sharpened to a point and bent so as to be adapted to be driven in the object through which the bolt passes, substantially as herein described.

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**500,673.** OIL-SUPPLYING DEVICE FOR HYDROCARBON-ENGINES. JOHN RICHARDSON and WILLIAM HORNE, Lincoln, England. Filed Mar. 12, 1892. Serial No. 424,645. (No model.)



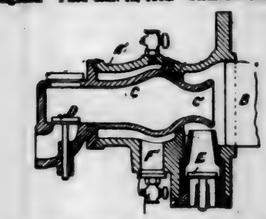
*Claim.*—1. The combination, with a circulating pump provided with a loaded return valve whereby a prearranged pressure is obtained in the oil delivery pipe, and having a relatively very small passage leading from the said delivery pipe to the combustion chamber of the engine, of a valve normally closing the said passage, and trip mechanism operating simultaneously to actuate the said pump and to lift the said valve at intervals, substantially as and for the purpose set forth.

2. The combination, with a circulating pump provided with a loaded return valve whereby a prearranged pressure is obtained in the oil delivery pipe, and having a small passage leading from the said delivery pipe to the combustion chamber of the engine, of a valve normally closing the said passage, a revolvable cam and a pivoted bell-crank lever for depressing the pump plunger, and a second revolvable cam and bell-crank lever for lifting the said valve and permitting a portion of the oil to be forced into the combustion chamber, the two said cams being set to operate simultaneously, and the said oil passage being relatively very small, whereby a substantially constant pressure is maintained in the delivery pipe, substantially as and for the purpose set forth.

3. The combination, with the main reservoir, of the reservoir H above it, the pump in reservoir H, the pipe H' connecting the two reservoirs, the oil delivery pipe $A^5$, the loaded return valve G connected thereto, the admission valve E in the delivery pipe, and the oil return pipe G' connecting the space above the return valve G with the reservoir H, substantially as set forth.

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**500,674.** COMBUSTION-CHAMBER FOR PETROLEUM OR HYDROCARBON ENGINES. JOHN RICHARDSON and WILLIAM HORNE, Lincoln, England. Filed Mar. 12, 1892. Serial No. 424,646. (No model.)

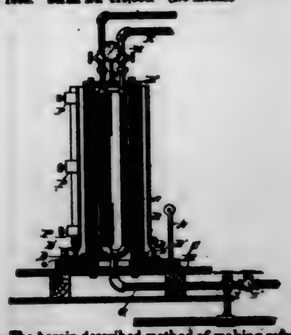


*Claim.*—1. The combination, with the casing A' adapted to be secured to the end of the cylinder, of a removable combustion chamber C provided with an enlarged middle portion and a contracted orifice C' projecting within the air space of the said casing next to the cylinder, and having its rear end secured to the rear end of the said casing leaving an air space between the said combustion chamber and the casing, and an inlet for oil arranged opposite the said enlarged middle portion of the combustion chamber, substantially as and for the purpose set forth.

2. The combination, with the casing A adapted to be secured to the rear end of the cylinder, of a removable combustion chamber C provided with an enlarged middle portion, a contracted orifice C' next to the cylinder, an inlet for oil at its middle portion and an inlet for air at its rear end, said combustion chamber having its rear end secured to the rear end of the said casing, substantially as and for the purpose set forth.

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**500,675.** APPARATUS FOR THE MANUFACTURE OF REINFORCED CEMENT PIPES. CLEMENS SCHNELL, Paterson, N. J. Filed Jan. 23, 1893. Serial No. 419,060. (No model.)



*Claim.*—The herein described method of making refractory cement pipe, consisting in forming the pipe in a mold having a hollow core, while in a cool condition, secondly heating the core and surrounding pipe to expand the core and enlarge the internal diameter of the pipe, thirdly artificially and quickly cooling the core, thereby contracting the same and reducing its external diameter, and finally, while the pipe is still in its heated and expanded state, removing the same from the core; substantially as described.

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**500,676.** CHECK-PUNCH. MILTON G. SMITH, Waverly, N. Y. Filed Feb. 4, 1891. Serial No. 380,947. (No model.)



**500,676.**



*Claim.*—A punch comprising a base 1 and arm 2, a shaft 3 movably secured to said base, a plate 4 fixed to the said shaft, a body 6 also fixed to the said shaft, dies 7 located within said body and actuated in one direction by a spring, a movable arm 13 fixed to the upper end of the arm 2 and having a depending extension 20, a coiled spring 21 interposed between the said arm 13 and body 6, a bevel gear wheel 19 fixed to the upper end of the shaft 3, a shaft 16 carried by the arm 13, a bevel gear wheel 17 keyed to the one end of the shaft 16 and meshing with the gear wheel 19, and an operating knob 18 for operating the shaft 16, substantially as set forth.

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**500,677.** INJECTOR. JAMES W. STANLEY, Oakland, Cal. Filed Jan. 19, 1893. Serial No. 458,955. (Model.)



*Claim.*—1. An injector composed of a series of independent separable nozzles, each having at its base an enlargement in a plane at right angles to the line of projection of the nozzle, forming an air chamber, said chamber having suitable valved air inlets, and a rearward projection forming a bearing or seat for the next nozzle, substantially as herein described.

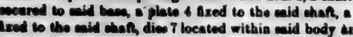
2. An injector composed of a series of independent separable nozzles, increasing in capacity of aperture from the receiving nozzle of the series to the discharging nozzle, each nozzle having at its base an enlargement in a plane at right angles to the line of projection of the nozzle forming an air chamber, said chamber having suitable valved air inlets, and a rearward projection forming a bearing or seat for the next nozzle, substantially as herein described.

3. An injector composed of a series of independent separable nozzles having suitable air chambers with an air inlet and a check valve controlling said inlet, the aperture of the several nozzles increasing in capacity from the receiving nozzle of the series to the discharging nozzle, substantially as herein described.

4. An injector composed of a series of independent separable nozzles increasing in capacity of aperture from the receiving nozzle of the series to the discharging nozzle, each nozzle having at its base an enlargement in a plane at right angles to the line of projection of the nozzle forming an air chamber, said chamber having an air inlet and a check valve controlling said inlet, and a rearward projection forming a bearing or seat for the next nozzle, substantially as herein described.

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**500,678.** PILE OR TIMBER PROTECTOR AND PRESERVER. CLEMENT R. STORY, New Orleans, La. Filed Sept. 26, 1892. Serial No. 446,954. (No model.)



*Claim.*—1. As a new article of manufacture, a pile or railway tie, embodying a wooden portion, and a casing cast or molded about the wooden portion so as to tightly embrace the same and render the use of fastening devices unnecessary, substantially as specified.

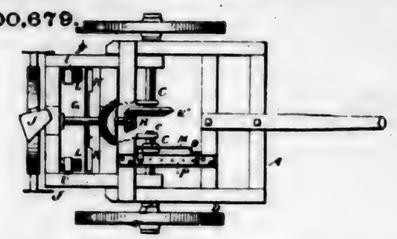
2. As a new article of manufacture, a pile or railway tie embodying a wooden portion, a compressible substance surrounding the wooden portion, and a casing cast or molded about the wooden portion and compressible substance, so as to tightly embrace the same and render the use of fastening devices unnecessary, substantially as specified.

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**500,679.** COTTON CHOPPER AND SCRAPER. WILLIAM A. TALLEY, Jonesville, assignor of one-half to James R. Fulton, Hot Springs, Ark. Filed Aug. 6, 1891. Renewed May 3, 1893. Serial No. 472,908. (No model.)

*Claim.*—The chopper frame F pivoted in front to the axle, in combination with a lever M pivoted to axle, having a bend that comes under said frame, and provided with the scrapers K, as and for the purpose set forth.

**500,679.**



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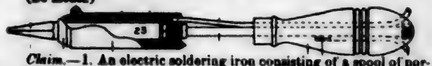
**500,680.** SHOE. BENJ. R. TILLSTON, Rockland, Mass. Filed Oct. 11, 1892. Serial No. 448,539. (No model.)



*Claim.*—A boot or shoe having a heel portion comprising the upper A provided with stitching *a*, the outer sole E provided with stitching *c*, the threads of the said stitches interlocking as described, and an elastic pad D, substantially as and for the purpose set forth.

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**500,681.** ELECTRIC SOLDERING-IRON AND HEATER. AUGUST THERMODE, Schenectady, N. Y. Filed July 11, 1892. Serial No. 439,658. (No model.)



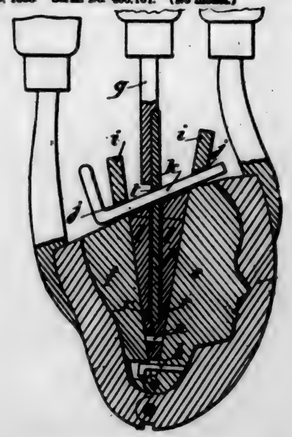
*Claim.*—1. An electric soldering iron consisting of a spool of porous, non-combustible material having wound thereon a number of turns of conducting wire, said spool being provided with a detachable metal shank placed therein to be heated.

2. In an electrical soldering iron the combination of the spool (7) having wound thereon the wire (3), a detachable shank (1) inserted in said spool, a covering or casing (8) inclosing the winding and covering or layer of enamel on said covering or casing.

3. An electric soldering iron or heater consisting of a spool of wire, said spool being hollow and having therein a shank or tip to be heated, the said spool being incased in a metal cover, the cover and spool being covered on the outside with enamel for the purpose described.

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**500,682.** APPARATUS FOR MOLDING THE HEADS OF DOLLS. LOUIS A. J. VALLEE and ADOLPHE L. G. SCHULTZ, Paris, France. Filed Mar. 20, 1893. Serial No. 466,161. (No model.)

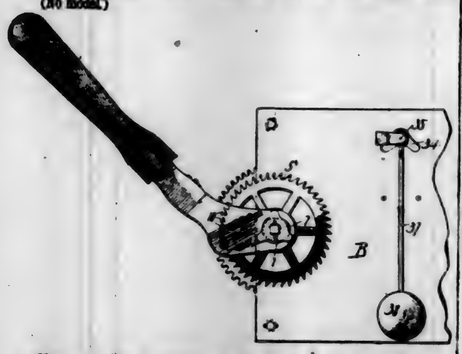


*Claim.*—1. The herein described apparatus for molding the heads of dolls in a single piece from a tube of celluloid or other material consisting in the combination with a two part hinged matrix of a four part die constructed of face and back parts hinged together, wedge shaped intermediate lateral parts hinged together at right angles to the face and back parts, and a wedge or key inserted between the lateral parts and adapted to force them outward laterally, substantially as specified.

2. In the herein described apparatus the combination with a two part hinged matrix, of a four part die constructed of face and back parts hinged together, wedge shaped intermediate lateral parts hinged together at right angles to the front and back parts, and a wedge shaped key fitting in grooves between the lateral parts, and engaging, by studs and slots, with said parts so as, by its insertion, to expand and by its withdrawal to contract said intermediate lateral parts of the die, substantially as specified.

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**500,683.** WINDING MECHANISM FOR CLOCKS. DAVID VAUTHIER, Waterbury, Conn. Filed Mar. 21, 1892. Serial No. 425,818. (No model.)



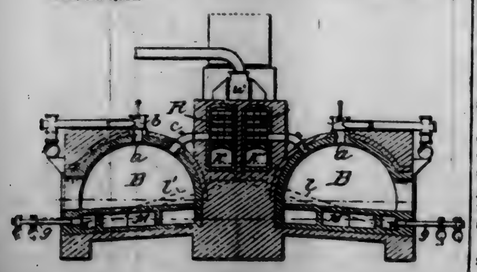
*Claim.*—1. The combination with the winding arbor of a clock, and a motor for rotating the same, of a ratchet wheel mounted on said arbor and adapted to rotate therewith, a lever mounted on the arbor and embracing the ratchet wheel, said lever being adapted to have a lateral movement relatively to the arbor, and a series of pins carried by the lever and adapted to engage the ratchet wheel, substantially as set forth.

2. The combination with the winding arbor of a clock, of a ratchet wheel mounted to rotate therewith, a lever comprising two members adapted to embrace the ratchet wheel and have a lateral movement relatively to the winding shaft or arbor, and pins carried by said lever between its members and adapted to engage the ratchet wheel and turn it when the lever is vibrated in one direction, substantially as set forth.

3. The combination with the winding arbor of a clock, of a ratchet wheel mounted to rotate therewith, disks or collars on the faces of said ratchet wheel, a lever comprising two members adapted to embrace said ratchet wheel, said members having enlarged and elongated slots into which said disks or collars project, whereby said lever will be permitted to have a lateral movement relatively to the winding arbor, and pins carried by said lever between the two members thereof and adapted to engage the teeth of the ratchet wheel substantially as and for the purpose set forth.

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**500,684.** REGENERATIVE COKE-OVEN. FRANZ WESTERHAUS, Horde, Germany. Filed Apr. 18, 1892. Serial No. 429,766. (No model.) Patented in Germany Mar. 21, 1888, No. 37,280, and in England Apr. 21, 1888, No. 5,522.



*Claim.*—1. The combination of the carrier B, having two or more grooves *c*, with the pivoted latches E E, and with the bolts F G controlled by said latches, all arranged so that the latch pertaining to one groove or set of grooves of the carrier shall be slightly higher than the latch pertaining to the remaining groove or set of grooves and so that the latches of empty grooves meeting one another may pass over one another without stopping the rotation of the carriers, substantially as described.

2. In a braiding machine, the carrier B having upright grooves *c* for the reception of the shanks of the spool-holders, shoulders *f* on each side of said grooves the shoulders *f* pertaining to one groove or set of grooves being higher than the shoulders *f* pertaining to the adjoining groove or set of grooves, latches E adapted to abut against said shoulders and locking mechanism operated by said latches, substantially as and for the purpose specified.

3. In a braiding machine, the series of carriers B B intergeared so as to turn in alternately opposite directions, each of said carriers

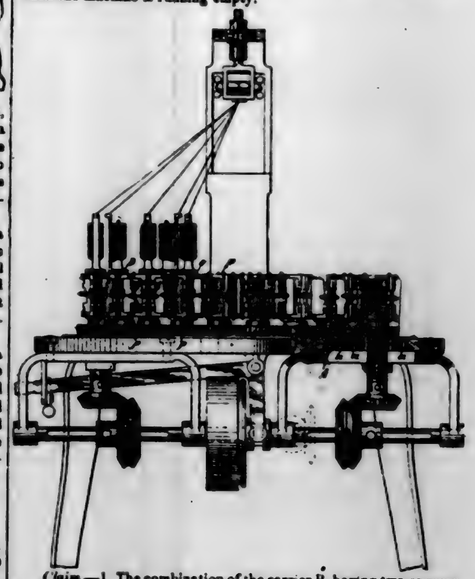
*Claim.*—1. In combination, the two series of coking chambers arranged side by side, the combustion passages N M, the two pipes G G' having a valve at *v* for supplying the said passages with gas, the two regenerators R, R', arranged intermediate of the two series of coking chambers and extending longitudinally from end to end of the series, in the upper portion of the furnace, the series of the conduits *l* extending from the regenerator R on each side of the same, to the coking chambers and the second series of conduits *l'* extending from the regenerator R' on both sides of the same to the coking chambers, substantially as described.

2. In combination, the two series of coking chambers with their independent combustion passages, the pipes G G' for supplying gas thereto, the two regenerators R R', arranged side by side and intermediate of the coking chambers and extending longitudinally from end to end of the series, the series of conduits *l l'* extending from the regenerators R R' respectively down between the separated passages M, and having lateral branches connecting the conduits with the passages and the valves in the said lateral branches, substantially as described.

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**500,685.** BRAIDING-MACHINE. ADOLPH SAYLER, New York, N. Y., assignor to Louis Raffloer, same place, and Charles H. Schott, Brooklyn, N. Y. Filed Dec. 2, 1892. Serial No. 453,815. (No model.)

*Brief.*—The bobbin-holders are provided with an apertured disk at each end and a disk intermediate the two ends. They are alternately locked to and unlocked from grooved carriers, which have latches to engage the holder-shanks near the middle disks and bolts operated by the latches for engaging the apertured end disks. The middle disk crowds down the latch, which holds it so that the latch which meets it is the higher and thus takes the holder from the first-named latch. The latches abut against shoulders on the carriers, and the shoulders of the even-numbered grooves are higher than those of the odd-numbered grooves to prevent interference of the latches when the machine is running empty.



*Claim.*—1. The combination of the carrier B, having two or more grooves *c*, with the pivoted latches E E, and with the bolts F G controlled by said latches, all arranged so that the latch pertaining to one groove or set of grooves of the carrier shall be slightly higher than the latch pertaining to the remaining groove or set of grooves and so that the latches of empty grooves meeting one another may pass over one another without stopping the rotation of the carriers, substantially as described.

2. In a braiding machine, the carrier B having upright grooves *c* for the reception of the shanks of the spool-holders, shoulders *f* on each side of said grooves the shoulders *f* pertaining to one groove or set of grooves being higher than the shoulders *f* pertaining to the adjoining groove or set of grooves, latches E adapted to abut against said shoulders and locking mechanism operated by said latches, substantially as and for the purpose specified.

3. In a braiding machine, the series of carriers B B intergeared so as to turn in alternately opposite directions, each of said carriers having upright grooves *c*, a set of bolts F G for each groove, and a pivoted latch E connected with said bolts in each groove, the latches in the alternating grooves being held by the bolt-springs in slightly different normal elevations, in combination with the shanks D of the spool-holders, said shanks having locking disks *o p* and latch-depressing disk *q*, all the parts being arranged as described, namely, so that every latch which is depressed by a disk *q* of the shank D shall thereby stand lower than every latch which is not so depressed, as set forth.

4. In a braiding machine, the combination of the carrier B with the latch E pivoted therein, said latch having perforated shank *f*, and with the bolt F having hook *i* and bolt G having hook *j*, the contact edges *m* of the latch with the hooks of the bolts being substantially knife edges as and for the purpose specified, so that the latch may swing on its pivot without straining the bolts laterally.

5. In a braiding machine, the combination of the carrier B with mechanism substantially as described for rotating it, adjoining carriers and mechanism for rotating them in opposite directions, spool-holding shanks D, having disks *o p* that are adapted to straddle and be locked on the carriers, latches E on said carriers and mechanism for actuating said latches, all arranged to permit the locking at one time of the said disks to one carrier only, substantially as described, and all as specified.

6. The spool-carrying shank D having projecting disks *o*, *p*, each disk being adapted to receive a locking bolt at two opposite places, said shank having intermediate of said disks a projecting disk or shoulder *q*, and being adapted for engagement with a series of grooved carriers B having latches E E that control the locking bolts, that engage both disks *o p* of the spool-carrying shank, substantially as and for the purpose specified.

7. The spool-carrier D having locking shoulders *o p* adapted to straddle the carriers and to receive bolts on diametrically opposite sides and having intermediate shoulder or disk *q*, and guide-pins *r*, combined with the carrier B having upright groove *c*, recesses for the guide-pins *r*, a latch adapted to enter beneath the disk *q*, and bolts controlled by said latch, as set forth.

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**500,686.** GRAVITY-HELMET. JOHN F. CORNER, Salt Lake City, Utah. Filed Aug. 10, 1892. Serial No. 442,652. (No model.)

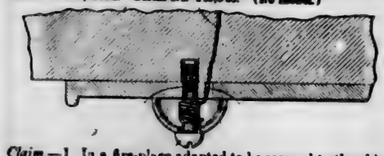


*Claim.*—1. A gravity helmet comprising weights adapted to fit upon the head, and suitable connections between said weights; substantially as described.

2. A gravity helmet comprising a set of weights shaped to fit upon the sides of the head, a bar provided with a slot projecting from one weight, and a second bar provided with a set screw adapted to work in said slot, projecting from the other weight; substantially as described.

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**500,687.** FIREPLACE-FRAME. HENRY G DAWSON, Chicago, Ill. Filed Oct. 22, 1892. Serial No. 449,546. (No model.)



*Claim.*—1. In a fire-place adapted to be secured to the chimney-breast by means of anchor wires attached to the chimney, the combination of a frame having apertures for the protrusion therethrough of the wires, with screws for securing the wires and adapted to be turned up on the front of the frame, whereby the slack of the wires is taken up, substantially as described.

2. The combination with a fire-place frame perforated for the passage through it of the anchor wires, and having screw-sockets adjacent to the wire openings, of screws adapted to fit within the screw-sockets and to serve as means of attachment for the wires in front of the frame, substantially as described.

3. The combination with a fire-place frame having perforations through which the anchor wires may project, of screws fitting within sockets in the frame adjacent to the wire openings and adapted to have the wires attached to their outer ends whereby the turning of the screws shortens the wires and secures the frame A, in position, substantially as described.

4. The combination with a fire-place frame having perforations through which the anchor wires may project and means for securing the wires upon the outside of the frame, of a cap or chambered button adapted to conceal the wire and its attachment, substantially as described.

5. The combination with a fire-place frame having perforations through which the anchor wires may project, and screws fitting within sockets in the frame adjacent to the wire openings and adapted to secure the frame in place by having the wires wound upon their outer ends, of chambered buttons mounted upon the screws and adapted to conceal the wires, substantially as described.

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**500,688.** RAILROAD-RAIL. ROBERT B. RICHARD, New York, N. Y. Filed Dec. 12, 1891. Serial No. 414,844. (No model.)



*Claim.*—1. A rail road rail vertically divided lengthwise through its head and web, forming two members, one formed with the base flange of the rail, the other at its base resting on and supported by the first named member and the two interlocking in the head as and for the purposes hereinbefore set forth.

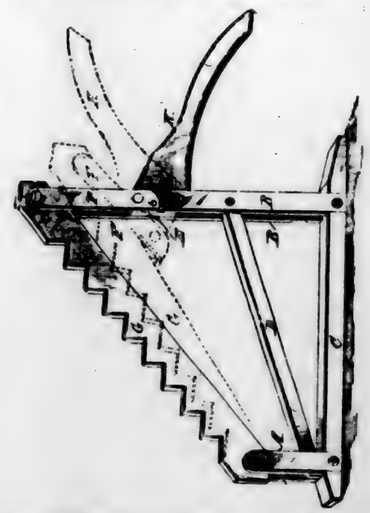
2. A grooved railroad rail, composed of two longitudinal parts or members which are secured directly together and jointly compose the tread of the rail, one of which parts is provided with a wheel-flange groove and engages with the other part by laterally projecting parts.

3. In combination with a rail having a two-part tread, a chair for supporting the rail, and a cam bolt passing through the said chair and lateral projections of the parts of the tread to secure the rail to the chair.

4. In combination with a rail having a two-part tread and being vertically slotted, a chair also vertically slotted, and a lock bolt 19 having the cam faces 22 and key slot 24, the bolt being adapted to pass through the slotted portion of the chair and rails and turned to a position to bolt and bind the parts firmly together.

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**500,689.** LIFTING-JACK. JAMES W. MAHAFFEY, Williamsport, and AQUILLA F. HALDEMAN, Turbotville, Pa. Filed Aug. 12, 1892. Renewed June 6, 1893. Serial No. 476,719. (No model.)



*Claim.*—In a lifting-jack, the standards A B having inclined braces D connected thereto, in combination with the pivoted notched bar G, the links F pivoted thereto, and the lever H pivoted to the links and to the standards as shown, said standards and links having inclined and rounded ends respectively, the end of the lever when raised forming a support for the notched bar and when depressed the ends of the links coming in contact with the ends of the standards, substantially as and for the purpose set forth.

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**500,690. FOUNTAIN-INKSTAND.** EDWARD C. MAYLOT, Rochester, N. Y. Filed Oct. 10, 1892. Serial No. 448,430. (No model.)



*Claim.*—1. The combination, in a fountain-inkstand, of the ink-reservoir, the inner tube open at its upper end, extending from the top to the bottom of the reservoir, the perforated piston arranged to reciprocate freely in the tube and carrying the funnel, and the elastic absorbent pad located in the tube below the piston, substantially as described.

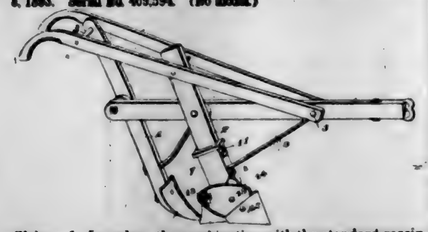
2. The combination, in a fountain-inkstand, of the ink-reservoir, the inner tube open at its upper end and extending from the top to the bottom of the reservoir, the perforated circumferentially grooved piston arranged to reciprocate freely in the tube and carrying the funnel, and the elastic tube below the piston, substantially as described.

3. The combination, in a fountain-inkstand, of the ink-reservoir, the inner tube open at its upper end and extending from the top to the bottom of the reservoir, the perforated piston arranged to reciprocate freely in the tube and carrying the funnel, and the perforated elastic absorbent pad located in the tube below the piston, substantially as described.

4. The combination, in a fountain-inkstand, of the ink-reservoir, the inner tube open at its upper end and extending from the top to the bottom of the reservoir, the perforated piston arranged to reciprocate freely in the tube, and carrying in the funnel fitted to the tube at its margin, and the elastic absorbent pad located in the tube below the piston, substantially as described.

5. The combination, in a fountain-inkstand, of the ink-reservoir, the inner tube open at its upper end and extending from the top to the bottom of the reservoir, the perforated piston, arranged to reciprocate freely in the tube, carrying the funnel and provided with a perforated downward extension, and the perforated elastic absorbent pad located in the tube below the piston, substantially as described.

**500,691. PLOW.** ALMERON S. SEELEY, Everett, Mich. Filed Apr. 8, 1893. Serial No. 469,594. (No model.)



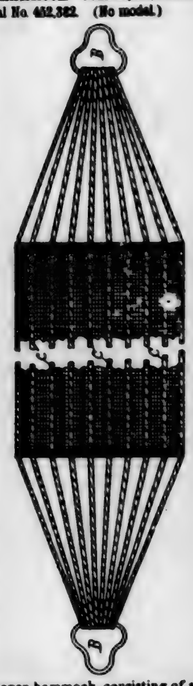
*Claim.*—1. In a plow, the combination with the standard-receiving socket terminating at its lower end in a depending web provided at one side with a wing, of a landside secured to one side of the web, a moldboard secured to the wing, a point secured to the wing under the moldboard and having its upper side provided with a tenon engaging with the mortise formed in the moldboard, and its rear edge recessed to receive the front end of the land-side and extending below the same, substantially as specified.

2. In a plow, the combination with the standard-receiving socket having a lower web or extension provided at one side with a wing, of a moldboard secured to the wing and having its upper edge abutting against the under side of the socket, its front end overlapping the front edge of the web and provided upon its under side with a mortise, a point below the moldboard secured to the wing and having its front edge extending in advance of the same and provided upon its upper side with a tenon engaging the mortise, and at its inner side near its lower edge with a recess, a recess formed in the landside face of the web, and a recessed landside secured in the recess and having a front extension taking into the rear recess of the point, substantially as specified.

3. The combination with a hollow socket having at its lower end the centrally-located depending recessed web provided at one side with a wing, of the landside bolted in the recess and likewise recessed to receive the web and provided with a front extension, the moldboard bolted to the wing and having its front end thickened to take over the front edge of the web and provided upon its under side with a mortise, and the point bolted to the wing below the moldboard and provided upon its upper side with a tenon engaging the mortise, in rear of its extreme front end with a recess-receiving the extension of the landside, and upon its inner face near its lower beveled edge with a rib receiving the under side of the wing, substantially as specified.

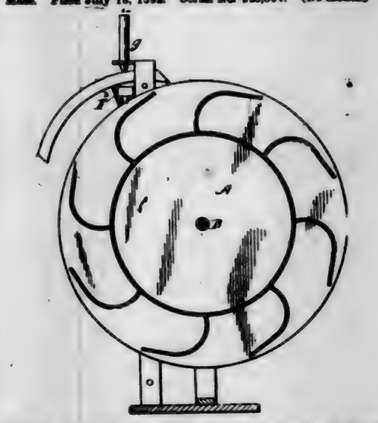
4. In a plow, the combination with the standard-receiving socket terminating at its lower end in a depending web provided at one side with a wing, of a landside secured to one side of the web, a moldboard secured to the wing, and a point secured to the wing under the moldboard and having its upper side provided with a tenon engaging with the mortise formed in the moldboard, substantially as specified.

**500,692. HAMMOCK.** JOHN SEIBS, Philadelphia, Pa. Filed Nov. 18, 1892. Serial No. 452,362. (No model.)



*Claim.*—A woven hammock, consisting of a body warp and weft, in combination with a series of interwoven cords, for suspension, substantially as shown and described.

**500,693. HEATING APPARATUS.** GEORGE L. SHOREY, Lynn, Mass. Filed July 18, 1892. Serial No. 440,397. (No model.)



*Claim.*—1. The combination of a water supply, a pipe leading from the water supply, a thermostat, a deflector actuated by the thermostat, and adapted to turn the stream proceeding from the water



supply into one or another subdivision of a tank according to the position of the thermostat, two pipes leading from the said tank, one from one sub-division, and the other from the other subdivision, and a non-reciprocating water motor which receives the water flowing from said tank, which water motor is geared to make more than one revolution to open a damper and more than one revolution to close a damper; a trough $F^2$ which receives water from the pipes $g\,g'$ proceeding from the tanks, and two shields F F' respectively adapted to divert the water from the said pipes $g\,g'$ from said trough $F^2$ when interposed between said trough and said pipes during a part, and a part only, of the revolution of the motor required to open or close a damper, and to allow all the water that passes through the thermostat to be delivered to the trough $F^2$ during the greater part of the time required for completely opening or completely closing the damper, substantially as and for the purposes described.

2 In a thermostatically operated damper operating device, a water motor supplied from said thermostat and consisting of a water wheel, a system of gearing operated by said water wheel, a damper actuating device, a distributing trough $F^2$, two induction pipes $g\,g'$, and a pair of shields F F', one of which is adapted to deflect the water from pipe $g$ from the trough $F^2$, and the other of which is adapted to deflect the water from pipe $g'$ from the trough $F^2$, which shields, are brought to and removed from their positions as deflectors by the revolution of the gearing actuated by said water wheel A, and which shields act as deflectors only during a portion of the time required for the complete opening or closing of the damper, substantially as and for the purposes described.

3. In a thermostatically actuated damper opening and closing device, a thermostatic strip I provided at its upper end with a boss $i^3$, and an arm $i$, both in fixed relation to said thermostatic strip I, the whole being in combination with the frame of the machine, and with an arm J at the opposite end of said thermostatic strip, whereby the length of said thermostatic strip is maintained constant whatever its position, substantially as and for the purposes described.

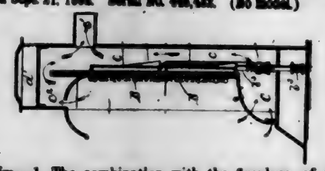
4. The combination of the frame of the thermostat, the thermostatic strip I, the boss $i^3$, the forked arm $i$, the said boss and forked arm being both in fixed relation with said thermostatic strip, the pivot pin $i^3$, the cross-head $i^4$ within the fork of said arm $i$, and the adjusting screw $k'$ $k^2$ laying hold of said cross-head, and serving to adjust the angular relation of the thermostatic strip I with the frame of the machine without changing its length, substantially as and for the purposes described.

5. The combination of the thermostatic strip I, its boss in fixed relations thereto, its pivot $i^3$ engaging with said boss, suitable means for adjusting the angle of said thermostatic strip with the frame of the machine, and the arm J carrying the pin $j$ with the shaft K, the slotted lever $k$ engaging the pin $j$, and the deflector N, said deflector and slotted lever being mounted upon said shaft K, and having fixed relations therewith, substantially as and for the purposes described.

6. The combination of the water nozzle $m^3$, the tank L, divided by the partition $l$ into two parts, the pipes $g\,g'$ leading from these two parts respectively, and the thermostatically governed deflector N adapted to guide the stream of water from said nozzle $m^3$ into one or the other of the divisions of said tank L, according to the environing temperature, substantially as and for the purposes described

7. The combination of a water supply, a pipe leading from the water supply, a thermostatically actuated deflector, a tank divided into two separate chambers, two delivery pipes $g\,g'$, a water wheel, a crank $D^3$ actuated thereby, a trough $F^2$, and two shields F F' one adapted to be interposed between said pipe $g$ and said trough $F^2$, and the other of which may be interposed between said pipe $g'$ and said trough $F^2$, one when the crank is at or close to its extreme throw in one direction, and for a part only of the subsequent movement of the crank, and the other when the crank is in its extreme throw in the other direction, and for a part only of the subsequent movement of the crank, as and for the purposes described.

**500,694. NATURAL-GAS BURNER.** WILLIAM G. TAYLOR, Hulton, assignor to the Taylor Burner Company, Limited, Pittsburg, Pa. Filed Sept. 21, 1892. Serial No. 446,482. (No model.)

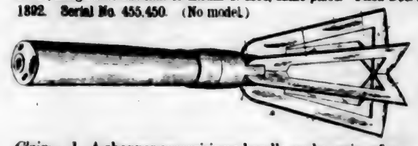


*Claim.*—1. The combination with the fireplace, of a portable fireplace gas burner consisting of a perforated plate having a gas distributing chamber at the back and supplied with a mixture of gas and air for burning at the front exposed face of the burner, said burner being arranged in the fireplace and in respect to the back flue thereof to form a main draft at the back of and underneath the burner, substantially as set forth.

2. The combination with a fireplace, of a portable gas burner provided with an exposed face, and means for heating said face, a contracted opening arranged above the burner and leading to the draft flue, and air passages beneath said gas burner leading to a flue at the back of the burner, the latter air passages being of a larger size than that above the burner to secure the main draft at the back and air from the front of the burner, substantially as set forth.

3. The combination with a fireplace, of a portable gas burner having a front exposed face with perforations leading to said face, and with a chamber or chambers at the back communicating with said perforations, of an air or gas mixer and a surrounding frame having passages below and at the back of the burner, and side passages or flues communicating with openings at the top of the burner, substantially as set forth.

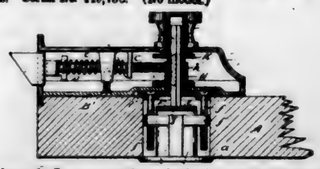
**500,695. VEGETABLE-CHOPPER.** CHAUNCEY B. TRUMBLE, Groton, N. Y., assignor of one-half to Hiram G. Moe, same place. Filed Dec. 17, 1892. Serial No. 455,450. (No model.)



*Claim.*—1. A chopper comprising a handle, and a series of spaced radial blades provided at their lower ends with cutting edges and having at their inner edges aligned openings, combining and forming a central clearing opening located within the series of blades and arranged above their cutting edges to prevent the material operated on from clinging to the blades, substantially as described.

2. A chopper comprising a handle, a straight approximately triangular blade and provided at its lower end with a continuous unbroken cutting edge and having a central opening forming a narrow cutting portion, and the opposite blades, V-shaped in horizontal section, arranged at the sides of the straight blade and having shanks at their upper ends, and provided at their lower ends with cutting edges, and having openings forming narrow cutting portions and aligning with the opening of the straight blade and forming a central clearing opening or space located above the radial cutting portions to free the same from the material operated on, substantially as described.

**500,696. LOCK.** GEORGE E. TYSON, Reading, Pa. Filed Oct. 24, 1892. Serial No. 449,758. (No model.)



*Claim.*—1. In an escutcheon lock the combination with the key hub of an operating spindle formed with an angular head on one end and loosely fixed to said hub so as to be rotated therewith by means of a cap piece perforated and recessed on its inner face to receive said angular head and permit a limited swinging movement of the spindle, substantially as set forth.

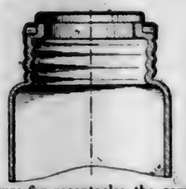
2. In a lock the combination with the latch of independent key and thumb knob mechanisms for operating it, the key operating hub or plate being rotatably mounted upon the inwardly projecting end of the thumb knob, substantially as set forth.

**500,697. PROCESS OF MAKING OXYGEN.** GEORGE WEBB, Jr., and GEORGE H. RAYNER, London, England. Filed May 18, 1892. Serial No. 433,471. (No specimens.)

*Claim.*—1. In a process of obtaining oxygen gas from atmospheric air, the herein described step which consists in rolling in powdered oxide of manganese, a compound formed from caustic soda, oxide of manganese, and manganate of soda in the manner described.

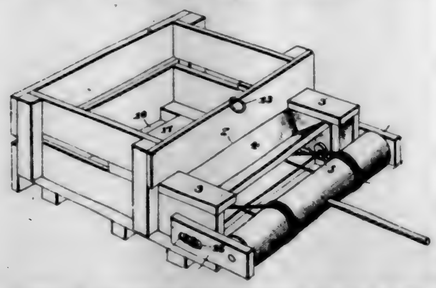
2. The herein described method of preparing a composition for use in the production of oxygen gas which consists in dissolving caustic soda in hot water, heating the mixture to about 100° centigrade then adding to the mixture oxide of manganese and manganate of soda, heating and stirring the mass until the moisture has evaporated, then heating the resultant dry mass to a temperature as described, then allowing the composition to cool, and finally breaking it into pieces.

**500,698.** MEANS FOR HERMETICALLY SEALING BOTTLES, JARS, &c. AMEILLE WEISSENTHANNER, Paris, France. Filed Jan. 7, 1893. Serial No. 457,673. (No model.) Patented in France Dec. 19, 1892, No. 210,638.



*Claim.*—In a closure for receptacles, the combination with the screw-threaded neck thereof, of a compressible sealing washer, and a vertically split screw-threaded securing and compressing-band, said band being provided as described, with a tongue and an eye, whereby the two ends thereof may be drawn together, locked and released, substantially as described.

**500,699.** HOG-PEN. BENJAMIN M. WILKINSON, Grape Vine, Tex. Filed Mar. 30, 1893. Serial No. 468,330. (No model.)



*Claim.*—1. The combination of an inclosure having an opening and provided with ways extending into and out of the same, a sliding trough mounted in the ways and provided with rollers and adapted to slide into and out of the inclosure, pulleys arranged at the inner or rear side of the trough, a roll or shaft journaled in front of the trough, ropes having their ends secured to the trough and extending rearward around the pulleys and forward around the roll or shaft, and a handle connected to the roll or shaft for turning the same, substantially as described.

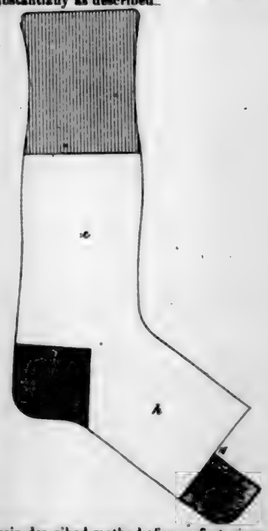
2. The combination of an inclosure having an opening and provided with ways extending into and out of the same, adjustable bearing plates secured to the outer ends of the ways, a trough mounted in the ways, pulleys arranged in rear of the trough, a roll or shaft journaled in said bearing plates, ropes having their ends secured to the trough and extending rearward around the pulleys and forward around the shaft or roll, a handle for turning the shaft or roll, and means for locking the shaft or roll against turning, substantially as described.

**500,700.** STOCKING AND METHOD OF KNITTING SAME. JAMES H. WOODWARD, Nottingham, England. Filed Jan. 6, 1893. Serial No. 457,438. (No model.)

*Brief.*—The stocking-blank is knit as a continuous flat web upon a single straight machine, and is afterward seamed together down the back and beneath the foot. The heel is formed by discontinuing the knitting on the middle section of needles and continuing to knit on the end sections a series of shortened courses, the needles thrown out of action in narrowing being those adjacent to said middle section of needles. When the first part of the heel portion has been narrowed sufficiently, all the heel-needles are thrown into action again, and a second series of shortened courses is knit in the same manner. The foot is continued upon all the needles, and the toe may be formed like the heel.

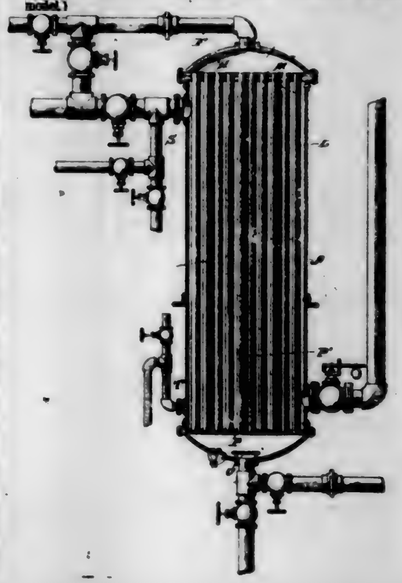
*Claim.*—1. A stocking or sock or half-hose, formed of one piece of work doubled over along its longitudinal central line, and seamed together along the edges at the side, and toe end, the leg portion of such piece of work being a flat piece, the heel portion being two side continuations of the leg piece each formed of lines or rows of work of varying length, all of which extend to the outer side edge of the piece of work, and the foot and toe portion being a flat piece of work, substantially as described.

2. A stocking or sock or half-hose formed of one piece of work, doubled over along its longitudinal central line and seamed together along its edges at the sides and toe end, the leg portion of such piece of work being a flat piece, the heel portion being two side continuations of the leg piece, each formed of lines or rows of work of varying length, all of which extend to the outer side edge of the piece of work, the foot portion being a flat piece of work, and the toe portion formed of two side continuations made in the same way as the two side pieces for the heel, substantially as described.



3. The herein-described method of manufacturing on a straight-bar knitting machine a piece of knitted work for forming the leg, heel and the foot of a stocking or sock or half-hose, which consists in forming a flat piece of work for the leg in the ordinary way, then for a time putting out of action a central section of the needles, and forming on the two end sections a number of courses of work of varying length extending inward from the two side edges and thereby producing on each of the two end sections a segment of work large enough to form one-half of the heel, and afterward again bringing into action all needles, and forming a flat piece of work for the foot, and finally forming the toe.

**500,701.** CONDENSER. DAVID S. ABBOTT and CHARLES G. REDSTONE, Olean, N. Y. Filed Apr. 15, 1892. Serial No. 429,302. (No model.)

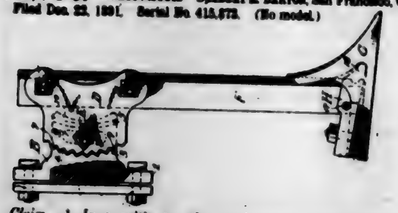




*Claim.*—1. In an apparatus of the class described, the combination of a cylinder, an upper pair of parallel combined packing and tube sheets clamped in the upper end of said cylinder and both of which are provided with smooth aligned tube openings, the same diameter throughout, registering semi-circular packing grooves at the inner meeting edges of said openings to form a wedge packing recess, and threaded perforations arranged between said openings, rounded packing rings arranged in said semi-circular packing grooves, auxiliary clamping screws engaging said threaded perforations to bind the sheets together and wedge the packing onto the said tubes, a lower tube sheet, and the vertical circulating tubes connected to the lower tube sheet and having smooth upper ends adapted to move through the aligned openings of the upper tube sheets and the packing therebetween, substantially as set forth

2. In a tan liquor heater, the combination of the cylinder having an inclosed steam space and a lower concaved or rounded head D', the vertical circulating tubes passing through said steam space and having their lower ends arranged above the lower concaved head, a tan liquor supply pipe connected centrally to the lower concaved head, and a flat circular deflecting plate arranged over the inner end of said supply pipe, substantially as set forth

**500,702.** CULTIVATOR. DELBERT R. BARTON, San Francisco, Cal. Filed Dec. 23, 1891. Serial No. 415,872. (No model.)



*Claim.*—1. In a cultivator, the combination of the cultivator beam, a clamping plate secured to the beam, and having a forwardly projecting stub, adjustable plates as D., attached to the stub, and a shovel standard secured between said plates substantially as described and shown.

2. In a cultivator, the combination of a cultivator beam, a clamping plate secured thereto, and having a forwardly projecting stub, plates as D., adjustably attached to said stub by a bolt, and curved slot, and a shovel standard and shovel, secured between said plates substantially as described and shown.

3. In a cultivator, the combination with a cultivator beam, clamping plate and adjustable plates attached to the latter of a shovel standard having its front edge formed into a double bevel, and a curved shovel fitting said bevel, and adjustable on the standard, substantially as described and shown

4. In a cultivator, the combination of a standard, a foot secured to or formed with the lower end of said standard and projecting both to front and rear, a shovel bearing upon the front edge of the standard and the front projection of the foot and extending back beneath the rear projection of the foot, and a fastening bolt passing through the rear extensions of foot and shovel, all substantially as set forth

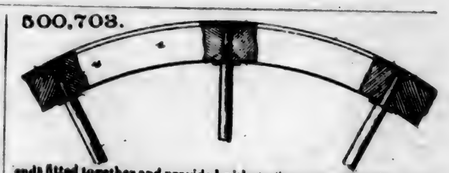
5. In a cultivator, the combination of a cultivator beam, a clamping plate secured thereto, and having toothed shoulders, adjustable plates D, having toothed edges, and registering therewith, a fastening bolt passing through a slot and a shovel standard, secured between said plates, substantially as described

6. In a cultivator, the combination of a cultivator beam, a clamping plate having a forwardly projecting stub, plates D having a shoval standard secured between them, and a tongue and groove connection between said plates and stub, substantially as set forth

7. In a cultivator, a cultivator beam formed of channel iron, in combination with a recessed and grooved clamping plate to which the shoval standard is connected, an independent plate or washer for forcing the upturned edges of the channel beam into the grooves in the clamping plate, and a fastening bolt, all substantially as described and for the purpose set forth

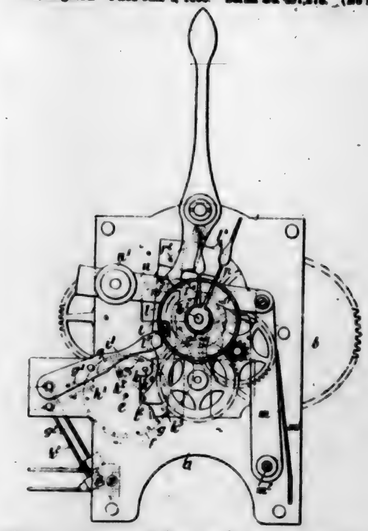
8. In a cultivator, the combination of the transverse beam thereof, clamping plate, provided with projecting stub, having concave shoulders secured thereto, standard plates adjustably secured to clamp plate, the edges thereof working within concave shoulders, and the shovel carrying standard secured between said plates

**500,703.** VEHICLE-WHEEL. MELANCTHON BENNION, St. George, Utah, assignor of one-half to John L. Smith, same place. Filed Mar. 14, 1893. Serial No. 466,269. (No model.)



*Claim.*—In a wheel, the combination of a felly having its adjacent ends fitted together and provided with similar grooves forming a tenon socket, a spoke having a tenon fitting in the grooves of the felly, a felly clip composed of a plate portion having a central opening receiving said tenon and fitting against the shoulder of the spoke and supporting the ends of the felly and the integral side portion arranged on the sides of the felly and terminating in ears, and the transverse bolt or rivet passing through the ears and the felly and located beyond the ends of the tenon, substantially as described.

**500,704.** CLOCK STRIKING MECHANISM. SPIRIDIO O. CIACCIALUPI, San Severino, Italy, assignor of one-half to Alfredo Angeli, London, England. Filed Jan. 4, 1893. Serial No. 457,278. (No model.)



*Claim.*—1. In combination with the clock mechanism an arbor driven thereby, carrying a ratchet wheel, a striking wheel mounted on the arbor carrying a pawl engaging the ratchet wheel, a weighted lever for causing the disengagement of the pawl and ratchet, and means operated by the clock mechanism for causing said pawl to engage the ratchet to strike the hour, substantially as described.

2. In combination with the clock mechanism, an arbor driven thereby carrying a ratchet wheel, a striking wheel mounted on the arbor having a pawl engaging the ratchet wheel, a weighted lever for holding the pawl normally out of engagement with the ratchet, means operated by the clock mechanism for lifting the weighted lever to permit the pawl to engage the ratchet, and a manually operated lever for independently lifting the weighted lever, substantially as described

3. In combination with the clock mechanism, an arbor driven thereby carrying a ratchet wheel, a striking wheel mounted on the arbor having a pawl for engaging said ratchet, a weighted lever for holding the pawl normally out of engagement with the ratchet, a series of levers controlled by the clock mechanism for raising the weighted lever to release the pawl to strike the hour, and a hand lever movable in one direction to lock said levers and prevent the striking of the clock and in the opposite direction to positively operate the pawl and cause the clock to repeat, substantially as described.

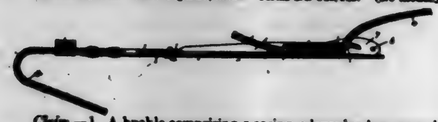
In a striking mechanism for clocks the combination of a striking wheel having a graduated series of pins on one side for striking the hours and a second graduated series of pins on the other side for striking the quarters, levers in connection with the gong-hammers adapted to be operated by said pins, and two cams, one fixed upon the sleeve carrying the hour-hand of the clock and the other

upon the arbor to which the minute hand is attached the said cams being designed to move the said levers so that they will be struck by one or more of the pins, substantially as, and for the purpose, described.

5. In a striking mechanism having a striking wheel driven by the clock spring or weight and adapted to be connected with and disconnected from the clock, the combination with the weighted lever through the medium of which a pawl upon the striking wheel is disengaged from the ratchet wheel on the arbor carrying the said striking wheel, of a series of levers such as *l*, *m*, *n* operated by a disk carrying pins, substantially as described.

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**500,705. BUCKLE.** FRANKLIN R. DERRICK and ADIE S. MOORE, Ivydland, Wis. Filed Sept. 21, 1892. Serial No. 446,445. (No model.)



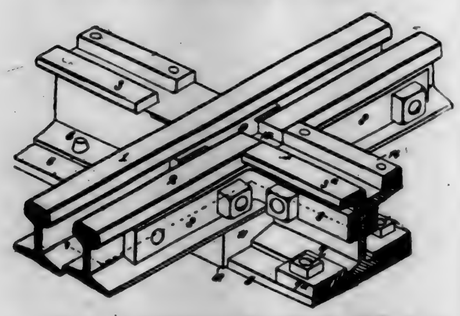
*Claim.*—1. A buckle comprising a casing, a lever having one end hinged to the casing and provided with strap openings and adapted to clamp a strap between it and the casing, and means for locking the free end of the lever to the casing, substantially as described.

2. A buckle comprising a casing, a lever having one end hinged to the casing and provided with front and rear portions arranged at different elevations and having an opening between them, the front portion being provided with a transverse opening and provided with an enlargement to bulge a strap, and a locking device for securing the free end of the lever to the casing, substantially as described.

3. A buckle comprising a casing having side flanges, a lever having perforated ears and hinged between the side flanges of the casing, and provided with strap openings, and adapted to securely clamp a strap and having at its free end a longitudinal slot, and a button pivoted to the casing and adapted to pass through the slot and to turn transversely of the same to secure the free end of the lever to the casing, substantially as described.

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**500,706. RAILROAD-CROSSING.** HENRY ELLIOT, St. Louis, Mo. Filed Aug. 6, 1892. Serial No. 442,353. (No model.)



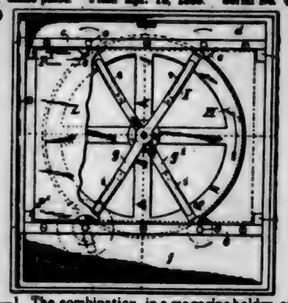
*Claim.*—1. In a railway crossing, the combination of the main rails and the guard rails of a steam car track, and the rails of a street car track; the upper surface of said street car rails being at a higher elevation than the upper surface of the steam car rails, and the said guard rails being notched and being elevated to bring their upper surfaces on line with the street car rails; substantially as and for the purpose set forth.

2. In a railway crossing, the combination of the main and guard rails of a steam car track, the rails of a street car track, plates passing beneath the rails and the guard rails of the steam car track and to which the rails of the street car track are secured, and distance blocks located between the rails and guard rails of the steam car track, and which are secured to but one of said rails, substantially as and for the purpose set forth.

3. In a railway crossing, the combination of the main and guard rails of a steam car track, the rails of a street car track, plates passing beneath the main and guard rails of the steam car track, and to which the rails of the street car track are secured and brackets connecting the rails of the street car track to the guard rails of the steam car track substantially as, and for the purpose set forth.

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**500,707. MAGAZINE-CAMERA.** EDGAR E. ELLIS, Rochester, N. Y., assignor of two-thirds to Ezra R. Andrews and August L. Lehnherr, same place. Filed Apr. 13, 1892. Serial No. 429,220. (No model.)



*Claim.*—1. The combination, in a magazine holder, of a series of parallel screws, having short threaded sections of greater diameter at their forward ends, the lead of the screws on the larger threaded sections being greater than the lead of the screws on the smaller threaded sections, means for rotating the screws simultaneously, a follower threaded on the smaller sections of the screws, and provided with a spring or springs whereby the unexposed films or carriers are pressed forward to engage with the enlarged threaded sections, substantially as described.

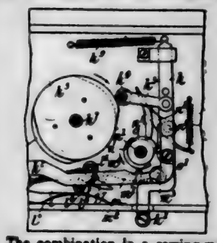
2. The combination, in a magazine holder, of the screws *a a a a*, provided with enlarged threaded sections *e*, and pinions *b*, the gear H, and the follower I, consisting of bars *g g'*, and provided with the springs *i*, substantially as described.

3. The combination, in a magazine holder, of a series of screws *a*, having enlarged threaded sections *e*, and connected to rotate simultaneously, the follower I provided with a spring or springs, and fitted to the screws *a*, and the plates *d* and *f*, carrying bars *c*, substantially as described.

4. The combination, in a magazine-holder, of a series of screws *a*, having enlarged threaded sections *e*, and connected to rotate simultaneously, the follower I provided with a spring or springs, and having threaded bosses which engage the screws *a*, and the guides *p p'*, substantially as described.

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**500,708. BUTTONHOLE SEWING-MACHINE.** WILLIAM F. FAIR, London, assignor to Isaac Lovell Berridge, Leicester, England. Filed Aug. 20, 1892. Serial No. 444,009. (No model.)



*Claim.*—1. The combination in a sewing-machine for finishing button-holes of the work-holding clamp, the clamp traversing cams, the levers intermediate such clamp and cams, the three cams *m. n. o.*, a changeable worm-wheel *p* to which they are secured, the stud *p'* which carries said wheel, and worm *p²*, upon the driving shaft of the machine, and serving to drive said wheel, all substantially as shown and described.

2. The combination with stitch-forming mechanism of the clamp traversing cams $h^0$ and $P$, the governing cams *m. n. o.*, the levers $m^2$, $o^2$, *k*, operated thereby, and the change wheel *p*, $p^2$, with the driving slot *e*, gear-pinion $h^0$ and gear $h^2$ and whereby by changing of the wheels *p*, $p^2$, the number and closeness of the stitches may be regulated substantially as described.

3. In a button-hole finishing machine, the combination with the work-holding clamp of a guide plate *k'*, a stop or guide such as *i*, moving in such plate, means substantially as set forth for moving such guide, arm $i^2$, and spring $k^3$, the combination being and operating substantially as set forth.

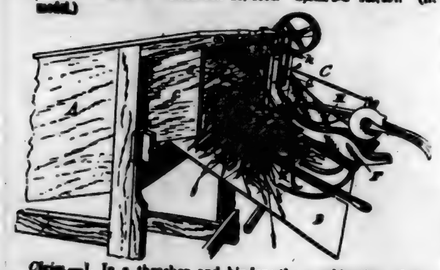
4. In a button-hole finishing machine having a work-holding clamp adapted to be moved in one direction to apply a series of long stitches, and then in another direction to apply a series of overlying stitches, the combination with the said clamp, of lever *k*, and its pivoted arm $k^4$, and operating cam $k^5$, lever *l*, its pivoted arm $l^2$, and its operating cam $l^3$, of the peripheral cams *m. n.* on worm-shaft *p'*, and whereby said arms are alternately moved into and out of contact with the main operating cam, substantially as described.

5. In a button-hole finishing machine, having a work-holding clamp applied to be operated as described, and having a sliding bar and a belt-shifting fork fixed thereto, the combination therewith of a collar, $g^6$ a cam or disk upon the main driving shaft provided with a tooth adapted when the said bar is shifted, to impinge against said collar which is at the same time thrown into the path of the said tooth, substantially as and for the purpose described.



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**500,709. COMBINED THRASHER AND BINDER.** ALBERT I. GILL, Trenton, N. J. Filed Oct. 20, 1892. Serial No. 449,487. (No model.)



*Claim.*—1. In a thrasher and binder, the combination of the thrasher elevator chute, the table or deck of the binder, an overhead crank-shaft, an oscillating feeder board connected with said shaft at its upper edge, and supported and operated entirely by the same, and means for preventing the lower free edge of the board from being pushed outward by the straw, substantially as described.

2. In a thrasher and binder, the combination of the thrasher elevator chute, the table or deck of the binder, the breast-plate overlying the deck, an overhead crank-shaft, and an oscillating feeder-board depending from the shaft and arranged to contact with the inner end of the breast-plate at its lower side, substantially as described.

3. In a thrasher and binder, the combination of the thrasher elevator chute, the table or deck of the binder, the underneath packers, the breast-plate overlying the deck and packers, an overhead crank-shaft, an oscillating feeder-board depending from and operated by the shaft and arranged to contact with the inner end of the breast-plate at its lower side, and a flexible connection between the lower part of the feeder-board and the binder frame to limit the inward movement of the board, substantially as described.

4. In a thrasher and binder, the combination of the thrasher elevator chute, the table or deck of the binder, the breast-plate overlying the deck, the overhead crank-shaft journaled at the mouth of the elevator chute, and the oscillating feeder-board depending from the shaft, said feeder-board having an opening or slot for the engagement of the inner end of the breast-plate therewith, substantially as described.

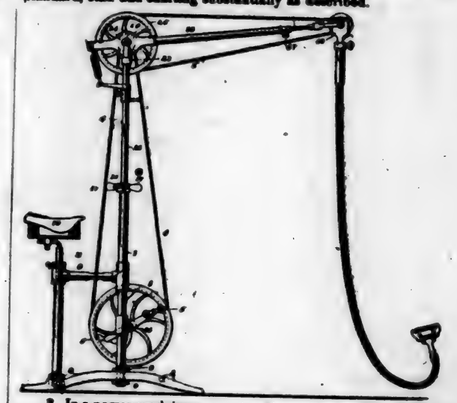
5. In a thrasher and binder, the combination of the thrasher elevator chute, the table or deck of the binder, the underneath packers, the breast-plate overlying the deck and packers, and having an inwardly extending arm, an overhead crank-shaft journaled in the thrasher framing at the mouth of the chute, an oscillating feeder-board depending from the shaft and having a slot or opening for engaging the inner arm of the breast-plate, and a flexible connection between the lower side of the feeder-board and the binder frame, substantially as described.

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**500,710. POWER-APPLYING MECHANISM.** GEORGE W. GILLETT and HOYT G. GILLETT, New York, N. Y. Filed Sept. 1, 1892. Serial No. 444,943. (No model.)

*Claim.*—1. In a foot power applying mechanism, the combination of a driving wheel and double treadle, a rotary standard and transverse handle bar for controlling the rotative position of said standard, a saddle adjacent to the standard adapted to be straddled by the operator, a staff and means for counterbalancing it upon a horizontal axis at the extremity of the rotary standard, and at the extremity of said staff a flexible shafting, together with means for imparting rotation from said driving wheel to said flexible shafting irrespective of the rotative positions of said standard, staff, and shafting, adapted as described.

2. The combination in a power applying apparatus of a standard, a driving belt wheel, a supporting staff jointed to the standard, a flexible shafting jointed to the supporting staff, and belt wheels having their axes of rotation coincident with the axes of said joints, and ... on transmitting motion irrespective of the relative positions of the ... standard, staff and shafting substantially as described.



3. In a power applying apparatus, the combination of a suitable standard and driving belt wheel, a pivoted staff, two intermediate transmitting belt sheaves on a single shaft in the axis on which the staff is pivoted, a flexible shafting depending from the extremity of the staff, a final belt wheel at the extremity of said staff rotatively connected to the said shafting, and two independent belts connecting the driving wheel with one intermediate wheel, and connecting the other intermediate wheel with the final wheel, for transmission of rotation without affecting the tension of the belts, irrespective of the relative positions of said standard, staff, and shaft.

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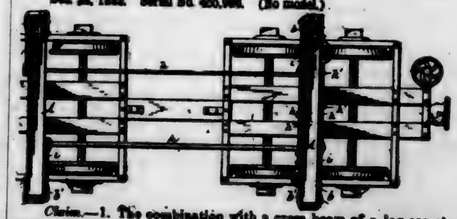
**500,711. LAST.** WILLIAM GORDON, Boston, assignor to O. A. Miller, Brockton, Mass. Filed Oct. 31, 1892. Serial No. 450,497. (No model.)



*Claim.*—The improved last, divided transversely and composed of the fore-part section having an inclined rear face; and the heel section having an inclined front face, one of said sections having an elongated socketed runner rigidly affixed to its inclined face, and the other a guide-rod or bar passing through said runner and a slot or recess behind said rod to receive and permit the movement of the runner, the ends of said slot constituting stops for the runner, whereby the heel section is permitted to slide to a limited extent in both directions on the inclined face of the fore-part section, and the inclined faces are held permanently in contact; as set forth.

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**500,712. LOG-CAR.** LAWRENCE T. JOHNSON, Austin, Pa. Filed Dec. 28, 1892. Serial No. 455,998. (No model.)



*Claim.*—1. The combination with a cross beam of a log car or other vehicle, of a vertically swinging chock block pivoted directly to said cross beam so as to remain attached thereto, and a removable brace bearing against the under side of the chock block, for supporting the free outer portion of the block above the level of the cross beam, substantially as set forth.

2. The combination with a cross beam of a log car or other vehi-

cle, of a vertically swinging chock block pivoted to said cross beam and an arm or brace pivoted to the cross beam underneath the pivoted chock block, whereby the latter is supported in an inclined position, substantially as set forth.

8 The combination with the cross beam of a log car or other vehicle, of a vertically swinging chock block pivoted to said beam, a pivoted arm or brace arranged under the chock block for supporting the same in an inclined position, and a catch whereby said brace is locked in place, substantially as set forth

4. The combination with a cross beam of a log car or other vehicle, of a chock block pivoted to the cross beam, a movable arm or brace bearing against the under side of the pivoted chock block, whereby the block is supported at an angle to the cross beam, and a shifting device whereby said arm or brace is moved aside to allow the chock block to assume a horizontal position, substantially as set forth.

5. The combination with a cross beam of a log car or other vehicle, of a vertically swinging chock block pivoted to said cross beam, a pivoted arm or brace bearing against the under side of the chock block and supporting the same in an inclined position, and a trip lever whereby the pivoted brace is released from the chock block, substantially as set forth

6 The combination with a cross beam of a log car or other vehicle, of a vertically swinging chock block pivoted to said cross beam, a pivoted arm or brace supporting the chock block in an inclined position and having a pin or projection, and a trip lever pivoted to the cross beam adjacent to said pin, whereby the brace is released from the chock block by the lever striking the pin, substantially as set forth.

7 The combination with a cross beam of a log car or other vehicle, of a vertically swinging chock block pivoted to said beam, a pivoted arm or brace supporting the block in an inclined position, a locking catch engaging with said brace, and a releasing lever whereby the locking catch is disengaged from the brace and the latter released from the chock block, substantially as set forth

8 The combination with a cross beam of a log car or other vehicle, of a vertically swinging chock block pivoted to said beam, a releasing lever, a pivoted arm or brace supporting the chock block in an inclined position and having a pin or projection, and a locking catch engaging with said brace and having a releasing lug, the lug of the catch and the projection of the brace standing in the path of the releasing lever, substantially as set forth

9 The combination with the front and rear cross beams of a log car or other vehicle, of movable chock blocks arranged at opposite ends of said beams, and independent releasing devices each connecting a pair of the front and rear chock blocks on the same side of the car or vehicle, whereby the pair of blocks on one side of the car may be released without disturbing the pair on the other side thereof, substantially as set forth

10 The combination with the front and rear cross beams of a log car or other vehicle, of movable chock blocks arranged at opposite ends of said beams, rock shafts arranged lengthwise of the car or vehicle and carrying rock arms, braces for supporting the chock blocks in an inclined position, and releasing levers for moving aside said braces, connected with the arms of said rock levers substantially as set forth.

11 The combination with the cross beam of a log car or other vehicle, of a vertically swinging chock block pivoted to said beam and provided on its under side with a shoulder, and an arm or brace pivoted at its lower end to the cross beam and adapted to bear with its upper end against said shoulder, substantially as set forth.

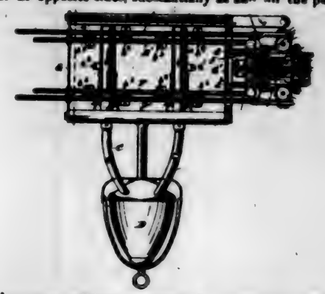
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**500,713. COW-MILKER.** CARL P. HASTRUMSEN, Spegorp, Kisfva, Sweden. Filed Feb. 20, 1892. Serial No. 422,184. (No model.) Patented in Sweden Nov. 10, 1891, No. 8,714; in France Mar. 13, 1892, No. 220,100; in Belgium Mar. 15, 1892, No. 96,846; in Norway Mar. 15, 1892, No. 2,675; in England Mar. 22, 1892, No. 5,860; in Switzerland June 1, 1892, No. 5,479; in Italy June 30, 1892, XXVI, 33,173, and LXIII, 173; in Spain July 11, 1892, No. 13,494, and in Austria-Hungary Oct. 21, 1892, No. 12,751 and No. 33,231.

*Claim.*—1 A cow-milking apparatus comprising as its essentials, mechanism substantially as described for compressing the teat, and mechanism substantially as described for sucking out the milk thus pressed from the teat, said mechanisms being adapted and arranged for alternate operation, as set forth

2. In a cow-milking apparatus, the combination with a cup adapted to receive the teat, mechanism substantially as described for alternately compressing said cup gradually from its mouth to the base thereof and then expanding it, and an intermittently acting suction pump communicating with the base of said cup the compression of the cup and the suction operation of the pump being effected alternately, as set forth

3. In a cow-milking apparatus, the combination with the cup adapted to receive the teats, of the slide rods E, F, secured to one side thereof, respectively at top and bottom, the wheel $d^3$, bearing cam-grooves in its opposite faces adapted to receive pins on the ends of said slide rods, and means, substantially as described, for rotating said wheel $d^3$, whereby said rods are reciprocated, the slide rods E, F, secured respectively to the side of cup $b$, opposite rods E', F, and mechanism, substantially as described for communicating the movement of rods E, F, to said rods E, F', whereby said cups are forced together at opposite sides, substantially as and for the purposes set forth

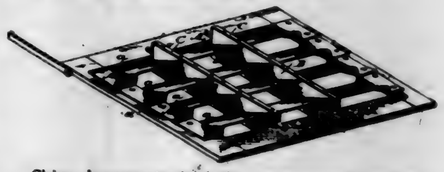


4. In a cow-milking apparatus, the combination with the cup adapted to receive the teat, of the slide rods E, F, secured to one side thereof, respectively at top and bottom, the wheel $d^3$, bearing cam-grooves in its opposite faces, adapted to receive pins on the ends of said slide rods, means, substantially as described for rotating said wheel $d^3$ whereby said rods are reciprocated, the racks secured to the ends of said slide rods, the slide rods E, F' secured respectively to the sides of cup $b$, opposite rods E', F, the racks on the ends of said rods E, F', and the pinions $g$ meshing with said racks on the ends of said slide rods, whereby said cups are forced together at opposite sides, substantially as and for the purposes set forth.

5 In a cow-milking apparatus, the combination with the cup $b$, adapted to receive the teat, of mechanism, substantially as described, for compressing said cup gradually from its mouth to the base thereof, the air-pump, mounted on the frame of the apparatus, the tube O, and its valve, said tube connecting one chamber of said pump to the base of the cup $b$, whereby said pump draws the milk and air from said cup $b$ after each compression of the latter, as set forth

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**500,714. SEPARATOR-SIEVE.** CHARLES KIRB, Friendship, Wis. Filed Nov. 7, 1892. Serial No. 451,256. (No model.)



*Claim.*—In a separator-sieve—the arrangement and combination, the metallic slats A, swaged at their ends into lateral inclines, the cross strips B—with inclined kerfs $b$—the straps C, with the frame $x$—all as, and for the purposes described

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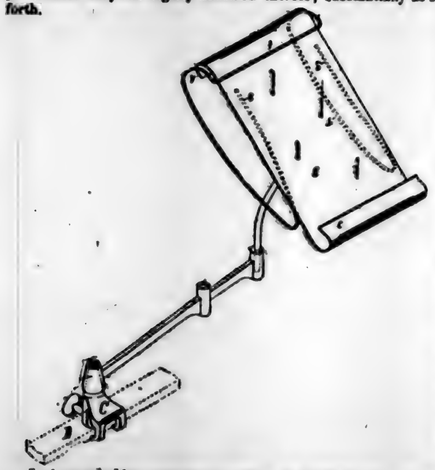
**500,715. COPY-HOLDER.** NEWTON G. LESLIE, Kalamazoo, Mich. Filed Dec. 17, 1892. Serial No. 455,495. (No model.)

*Claim.*—1 In a copy holder, a plate or support, having a spring clamp consisting of an elastic wire extending across the front face of the plate or support, near one end of same, the wires at each end of said clamp being extended into a short loop, from the rear portion of which loops the ends of the wire pass toward the other end of the plate or support, in the rear of and a little to one side of same, where the wires are bent upon themselves and from thence pass in the rear of said plate or support toward that end of the plate in front of which the clamping part of the wire passes, where they are attached to said plate, substantially as set forth

2. In a copy-holder, a plate or support, with its lower end rolled outward and upward and its upper end rolled backward and downward, having a spring clamp consisting of an elastic wire extending across the front face of the plate or support, near one end of same, the wires at each end of said clamp being extended into a short loop, from the rear portion of which loops the ends of the wire pass toward the other end of the plate or support, in the rear of and a little to one side of same, where the wires are bent upon themselves and from thence pass in the rear of said plate or support toward that end of the plate in front of which the clamping part of the wire passes, where they are attached to said plate; substantially as set forth.

3. The combination of a copy-holder, an arm for supporting said holder, said arm having at one end an inverted, funnel-shaped socket, and a clamp for attaching to a machine, being provided with an upwardly tapered projection detachably fitting into said socket; substantially as set forth

4. A copy-holder comprising a plate or support and a spring clamp consisting of an elastic wire extending across the front face of the plate or support near one end and from thence extending toward the other end of the plate or support, in the rear thereof and a little to one side of same, and terminating in the rear of the plate or support, where they are rigidly attached thereto; substantially as set forth.

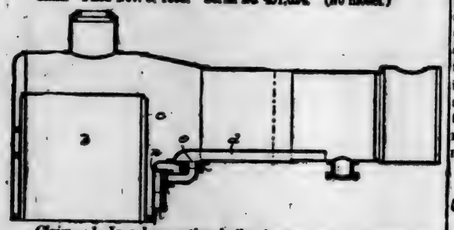


5. A copy-holder comprising a plate or support and a spring clamp consisting of an elastic wire extending across the front face of said plate or support near one end, and from thence extending at each side of the plate or support into short loops extending farther toward the end of the plate or support, and from thence extending toward the other end of the plate or support, in the rear thereof and a little to one side of same, and terminating in the rear of the plate or support, where they are rigidly attached thereto; substantially as set forth.

6. The combination with the clamp and arm having the tapered projection and inverted funnel-shaped socket for coupling together, said arm being provided at or near the other end with a series of sockets, of a copy-holder having a stem adapted to be loosely, detachably and adjustably inserted in the latter named sockets; substantially as set forth

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**500,716. LOCOMOTIVE-BOILER.** WILLIAM K. MACK, Boston, Mass. Filed Nov. 3, 1892. Serial No. 451,094. (No model.)



*Claim.*—1. In a locomotive boiler having an interior conduit, opening through the bottom of the boiler, and a water-leg having orifices in its rear, the combination of a frame secured about orifices in the water-leg, a covering-plate for said frame forming a box, and a connection between the box and the conduit opening in the boiler.

2. In a locomotive the combination of a frame secured about orifices in the water-leg, and bearing on the rear wall of the latter a covering-plate for said frame having an orifice, and a pipe connecting the orifice in the plate with one in the boiler.

3. In a locomotive boiler the combination of a frame secured about orifices in the water-leg, and bearing on the rear wall of the latter a covering-plate for said frame having an orifice, and a pipe, removably secured, for connecting the orifice in the covering-plate with one in the boiler.

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**500,717. SHIP'S BELL-CLOCK.** JOHN S. NEBON, Brooklyn, N. Y. Filed Sept. 17, 1892. Serial No. 446,150. (No model.)



*Claim.*—1. In a ship's bell clock, the combination with two hammers adapted to be struck in pairs or couples and means for operating both of said hammers at each hour and half-hour, of the detent lever operated by the disk I whereby the action of one of said hammers is rendered silent on its last stroke, and said disk, substantially as and for the purposes set forth.

2. In a ship's bell clock, the combination with two hammers adapted to be struck in pairs or couples, mechanism for operating both of said hammers at each hour and half-hour, mechanism for arresting one of said hammers at the last stroke of the last pair, the rack, provided with an arm bearing a pallet to engage the snail disk, the stop-pawl of said rack and the lifter of the rack, of the snail or snail disk I, having its periphery divided into three equal sections, and each of said sections divided into four equal steps or sub-divisions, $y, y, y, y$, substantially as set forth.

3. In a ship's bell clock, the combination with two hammers adapted to be struck in pairs or couples, and means for operating both of said hammers, the rack, its lifter and pawl, the disk I and the detent lever operated by said disk for arresting one of said hammers, of the elbow lever and means for operating said elbow lever at the last stroke of the last couple, substantially as set forth.

4. In a ship's bell clock, the combination with the two hammers, the means for operating same, the snail disk, the rack, its lifter and its stop-pawl, of the detent elbow lever K $K^x$, the upright arm of which is adapted to engage a projection on one of said hammers, the controlling lever L $L^x$, one arm of which actuates the lever K $K^x$, the spring M, the wheel J, rotating with the snail disk and operating the controlling lever, means intermediate between the rack and the lever, K $K^x$, and controlled by the rack, for holding said detent lever K $K^x$ out of engagement with the hammer, and the spring $i$, substantially as set forth.

5. In a ship's bell clock, the combination with the main hammer, the auxiliary hammer provided with a stud $e'$, means for operating said hammers, the snail disk, the rack, its lifter and stop-pawl, the detent elbow lever and its spring, the controlling lever L $L^x$ and its spring, and the wheel J, rotating with the snail disk and operating the controlling lever, of the rocking lever N and its spring, the said rocking lever having one of its arms engaged by a pin $n'$ in the rack and its other arm arranged to hold the detent lever normally out from under the stud on the auxiliary hammer, whereby the rack rocks the lever N and thus stops the auxiliary hammer when the rack moves up the last notch, as set forth.

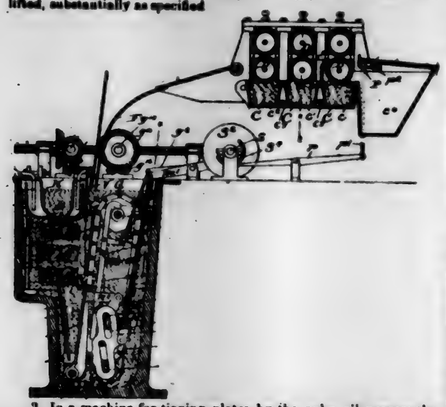
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**500,718. TINNING-MACHINE.** EDWIN HORTON and JOHN G. HODGSON, Maywood, assignors to said Edwin Horton, and Oliver W. Horton, Chicago, Ill. Filed June 22, 1892. Serial No. 437,643. (No model.)

*Claim.*—1. In a machine for tinning plates by the palm oil process the combination with a device for simultaneously drying, heating and fluxing the wet pickled sheets, of a tinning pot, an endless sheet conveyor for the sheets mounted therein and provided with a series of grippers, mechanism for closing the grippers at intervals, tinning rolls mounted in the pot, a device for moving or tilting the sheet into position under the tinning rolls, and a device for lifting the sheet into the bite of the rolls, substantially as specified.

2. In a machine for tinning plates by the palm oil process the combination with a device for simultaneously drying, heating and fluxing the wet pickled sheets, of a tinning pot, an endless sheet con-

veyer for the sheets mounted therein and provided with a series of grippers, mechanism for closing the grippers at intervals, tinning rolls mounted in the pot, a device for moving or tilting the sheet into position under the tinning rolls, a device for lifting the sheet into the bite of the rolls, and a guide box or plate N' to guide the sheet as it is lifted, substantially as specified



3. In a machine for tinning plates by the palm oil process the combination with a device for drying, heating and fluxing the wet pickled sheets, of a device for tinning the sheets, and mechanism for automatically delivering the sheets one by one and separately from the fluxing device to said tinning device, substantially as specified.

4. The combination with a tinning pot of an endless conveyer mounted therein and provided with a series of grippers, and mechanism for opening and closing the grippers at intervals automatically, substantially as specified.

5. The combination of a tinning pot, an intermittently-moving endless carrier provided with a series of grippers and mounted in said pot for conveying the sheets into the pot, mechanism for operating said carrier, means for closing said grippers, and a sheet tilting device N mounted in the pot near the lower end of the carrier and in front of which the sheet is conveyed by the carrier and by which the sheet is tilted or moved laterally out of the path of the succeeding sheet, substantially as specified.

6. The combination with a tinning pot of an intermittently moving sheet carrier furnished with grippers or devices for holding and grasping the sheet, and a cam or track for closing the grippers, substantially as specified.

7. The combination with a tinning pot of an intermitteatly moving sheet carrier furnished with grippers or devices for holding and grasping the sheet, and a cam or track for closing the grippers, said cam or track having a movable part or section to close the gripper after the sheet has been received therein, substantially as specified.

8. The combination of a tinning pot with a sheet carrier for conveying the sheets into the molten metal, tinning rolls mounted in the pot, a device for moving or tilting the sheet into position under the tinning rolls, and a device for lifting the sheet into the bite of the rolls, said carrier extending down to said sheet tilting and sheet lifting devices, and operating to deliver the sheet onto the lifting device and in front of the tilting device, substantially as specified.

9. The combination of a tinning pot with a sheet carrier furnished with a series of grippers for grasping the sheets tinning rolls mounted in the pot, a device for moving or tilting the sheet into position under the tinning rolls, and a device for lifting the sheet into the bite of the rolls, means for closing the grippers to grasp the sheets substantially as specified.

10. The combination of a tinning pot with a sheet carrier furnished with a series of grippers for grasping the sheets tinning rolls mounted in the pot, a device for moving or tilting the sheet into position under the tinning rolls, a device for lifting the sheet into the bite of the rolls, and means for automatically delivering the sheets one by one to said carrier, means for closing the grippers to grasp the sheets substantially as specified.

11. The combination of a tinning pot with a sheet carrier furnished with a series of grippers for grasping the sheets tinning rolls mounted in the pot, a device for moving or tilting the sheet into position under the tinning rolls, a device for lifting the sheet into the bite of the rolls, and a supplemental pot above the tinning rolls furnished with means for maintaining the metal therein at a lower temperature than that of the main tinning pot before mentioned means for closing the grippers to grasp the sheets substantially as specified.

12. The combination of a tinning pot with a sheet carrier furnished with a series of grippers for grasping the sheets a cam or track for closing the grippers and holding them closed, tinning rolls mounted in the pot, a device for moving or tilting the sheet into position under the tinning rolls, and a device for lifting the sheet into the bite of the rolls, substantially as specified.

13. The combination of a tinning pot, of an endless conveyer mounted thereon and provided with a series of grippers, means for closing the grippers at intervals, mechanism for communicating an intermittent motion to said conveyer, and a sheet delivery device F for delivering the sheets to said conveyor, substantially as specified.

14. The combination of a tinning pot, of an endless conveyer mounted thereon and provided with a series of grippers, means for closing the grippers at intervals, mechanism for communicating an intermittent motion to said conveyer, a sheet delivery device F for delivering the sheet to said conveyer, and a movable stop or gate I' adapted to close the sheet feed passage and prevent the feed of the sheets, except at intervals, substantially as specified.

15. The combination with a drying, heating and fluxing device, of a tinning device, means for delivering the sheets automatically from said fluxing device to said tinning device, and a stop device for closing the sheet feed passage at intervals and automatically regulating the feed of the sheets to said fluxing device, substantially as specified.

16. The combination with a drying, heating and fluxing device, of a tinning device, means for delivering the sheets automatically from said fluxing device to said tinning device, and a stop device for closing the sheet feed passage at intervals and automatically regulating the feed of the sheets to said fluxing device, said fluxing device comprising an oil or flux trough C, and a series of heated fluxing rolls D, substantially as specified.

17. The combination with a drying, heating and fluxing device, of a tinning device, means for delivering the sheets automatically from said fluxing device to said tinning device, and a stop device for closing the sheet feed passage at intervals and automatically regulating the feed of the sheets to said fluxing device, said tinning device having an automatic sheet conveyer for conveying the sheets into the bath of tin, and to which the sheets are automatically delivered substantially as specified.

18. The combination with a drying, heating and fluxing device, of a tinning device, means for delivering the sheets automatically from said fluxing device to said tinning device, and a stop device for closing the sheet feed passage at intervals and automatically regulating the feed of the sheets to said fluxing device, said fluxing device comprising an oil or flux trough C, and a series of heated fluxing rolls D, tinning rolls and devices for automatically delivering the sheets to the rolls from said conveyer, substantially as specified.

19. The combination with a tinning pot, of an endless conveyer mounted therein and provided with a series of grippers for grasping the sheet, means for closing the grippers at intervals, tinning rolls mounted in the pot, a sheet lifting device M upon which the sheet is delivered by said conveyer, and a sheet tilting or moving device N in front of which the sheet is delivered by said conveyer, substantially as specified.

20. The combination with a tinning pot, of tinning rolls mounted therein, a sheet lifter M mounted below the rolls, a sheet tilting or moving device N, an intermittently-moving endless conveyer provided with a series of grippers and extending vertically down to said lifter M so as to deliver the sheets positively thereto, and means for closing and holding closed the grippers, substantially as specified.

21. The combination with a tinning pot, of tinning rolls mounted therein, a sheet lifter M mounted below the rolls, a sheet tilting or moving device N, an intermittently moving endless conveyer provided with a series of grippers and extending vertically down to said lifter M so as to deliver the sheets positively thereto, means for closing and holding closed the grippers, wheels or pulleys G' G' upon which said endless conveyer travels, the lower one of said pulleys G' extending below the lifter M, and the sheet tilter or mover N arranged to oscillate back and forth across the path of the grippers or the sheets carried thereby, substantially as specified.

22. The combination with a tinning pot, of tinning rolls mounted therein, a sheet lifter M mounted below the rolls, a sheet tilting or moving device N, an intermittently moving endless conveyer provided with a series of grippers and extending vertically down to said lifter M so as to deliver the sheets positively thereto, means for closing and holding closed the grippers, and a guide box or plate N' co-operating with said device N to guide the sheets as they are lifted by said device M, substantially as specified.

23. The combination with a tinning pot, of tinning rolls mounted therein, a sheet lifter M mounted below the rolls, a sheet tilting or moving device N, an intermittently-moving endless conveyer provided with a series of grippers and extending vertically down to said lifter M so as to deliver the sheets positively thereto, means for closing and holding closed the grippers, and a guide box or plate N' co-operating with said device N to guide the sheets as they are lifted by said device M, said guide box or plate N' having end plates or flanges N², substantially as specified.

24. The combination with a tinning pot, of tinning rolls mounted therein, a sheet lifter M mounted below said rolls, a sheet tilting or moving device N, an intermittently-moving endless conveyer provided with a series of grippers and extending vertically down to said lifter M so as to deliver the sheets positively thereto, means for closing and holding closed the grippers, and a guide box or plate N' co-operating with said device N to guide the sheets as they are lifted by said device M, said guide box or plate N' having slots to receive the fingers of the lifter, and said lifter consisting of or being provided with a series of parallel fingers, substantially as specified.

25. The combination with a tinning pot, of tinning rolls mounted therein, a sheet lifter M mounted below the rolls, a sheet tilting or moving device N, an intermittently-moving endless conveyer provided with a series of grippers and extending vertically down to said lifter M so as to deliver the sheets positively thereto, means for closing and holding closed the grippers, and a supplemental pot K above said tinning rolls, furnished with an air jacket to maintain the same at a lower temperature than the main pot, substantially as specified.

26. The combination of a tinning pot B, sheet carrier G furnished with a series of holding devices $g$ and grippers $g'$ and a cam or track for operating the grippers, mounted upon yielding or spring supports, substantially as specified.

27. The combination of a tinning pot B, sheet carrier G furnished with a series of holding devices $g$ and grippers $g'$ and a cam or track for operating the grippers, mounted upon yielding or spring supports, said cam or track having a movable section $g^4$ to operate the grippers in the sheet receiving position, substantially as specified.

28. The combination with a tinning pot of an endless flexible or link chain sheet carrier G furnished with sheet holding devices $g\,g'$, a cam or track for operating said sheet holding devices, and a guide track for the flexible carrier G, substantially as specified.

29. The combination of a tinning pot, a sheet carrier furnished with grippers, and a device for automatically opening the grippers at the sheet receiving station, substantially as specified.

30. The combination of a fluxing pot C, drying, heating and fluxing rolls D, a sheet feed table E and a movable sheet feed regulating device P adapted to close the feed passage to prevent the sheets from being fed except at intervals, substantially as specified.

31. The combination of a fluxing pot C, drying, heating and fluxing rolls D, a sheet feed table E, a movable sheet feed regulating device, P adapted to close the feed passage to prevent the sheets from being fed except at intervals, and a cam and lever for operating said device P, substantially as specified.

32. The combination of a fluxing pot C, drying, heating and fluxing rolls D, sheet delivery device F, tinning pot B and sheet conveyer G furnished with grippers and a cam or track for operating the grippers, said sheet delivery device F being between the fluxing rolls and the tinning pot, and the conveyer G extending vertically in the tinning pot substantially as specified.

33. The combination of a fluxing pot C, drying, heating and fluxing rolls D, a sheet delivery device F, tinning pot B, sheet conveyer G furnished with grippers, and a cam or track for operating the grippers and a sheet moving or tilting device N and guide N' said sheet delivery device F being between the fluxing rolls and the tinning pot, and the conveyer G extending vertically in the tinning pot, substantially as specified.

34. The combination of a fluxing pot C, drying, heating and fluxing rolls D, a sheet delivery device F, tinning pot B, sheet conveyer G furnished with grippers and a cam or track for operating the grippers, a sheet moving or tilting device N and guide N', and a sheet lifting device said sheet delivery device F being between the fluxing rolls D and the tinning pot, and the conveyer G and tilting device N and guide N' being in the tinning pot at the lower end of said conveyer, substantially as specified.

35. The combination of a fluxing pot C, drying, heating and fluxing rolls D, a sheet delivery device F, tinning pot B, sheet conveyer G furnished with grippers and a cam or track for operating the grippers, a sheet moving or tilting device N and guide N', a sheet lifting device, M, and tinning rolls H said sheet delivery device F being between the fluxing rolls D and tinning pot and the sheet conveyer G, tilting device N, guide N', lifting device M and tinning rolls H being in the pot, and the devices M, N and N' being below the tinning rolls H, substantially as specified.

36. The combination of a fluxing pot C, drying, heating and fluxing rolls D, a sheet delivery device F, tinning pot B, sheet conveyer G furnished with grippers and a cam or track for operating the grippers, a sheet moving or tilting device N and guide N', a sheet lifting device M, tinning rolls H and supplemental tinning pot K of cooler metal said sheet delivery device F being between the fluxing rolls D and tinning pot and the sheet conveyer G, tilting device N, guide N', lifting device M and tinning rolls H being in the pot, and the devices M N and N' being below the tinning rolls H, and said supplemental pot K being above said tinning rolls and furnished with means for maintaining the metal therein at a lower temperature substantially as specified.

37. The combination of a fluxing pot C, drying, heating and fluxing rolls D, a sheet delivery device F, tinning pot B and sheet conveyer G furnished with grippers, a sheet moving or tilting device N and guide N', a sheet lifting device M, tinning rolls H, supplemental tinning pot K of cooler metal, and an automatic feed regulating device consisting of a stop adapted to close the sheet feed passage, said sheet delivery device F being between the fluxing rolls D and tinning pot and the sheet conveyer G, tilting device N, guide N', lifting device M and tinning rolls H being in the pot, and the devices M, N and N', being below the tinning rolls H, and said supplemental pot K being above said tinning rolls and furnished with means for maintaining the metal therein at a lower temperature substantially as specified.

38. The combination of a fluxing pot C, drying, heating and fluxing rolls D, a sheet delivery device F, tinning pot B and sheet conveyer G furnished with grippers, a sheet moving or tilting device N and guide N', a sheet lifting device M tinning rolls H, supplemental tinning pot K of cooler metal, an automatic feed regulating device consisting of a stop adapted to close the sheet feed passage, and mechanism substantially as shown and described for automatically operating said devices, said mechanism comprising means for communicating a revolving motion to said rolls D, means for communicating an intermittent movement to said conveyer D, means for closing said grippers, means for oscillating said tilting device N, means for reciprocating said lifting device M, means for revolving said tinning rolls H and means for vibrating said sheet feed regulating device, said sheet delivery device P being between the fluxing rolls D and tinning pot, and the sheet conveyer G, tilting device N, guide N', lifting device M and tinning rolls H being in the pot, and the devices M, N and N' being below the tinning rolls H, and said supplemental pot K being above said tinning rolls and furnished with means for maintaining the metal therein at a lower temperature substantially as specified.

39. The combination with a tinning pot B, of tinning rolls H, endless conveyer G, provided with a series of grippers and means for operating the grippers, upper and lower wheels or pulleys G G for said conveyer, a device N for moving or tilting the sheet, a sheet lifting device M, and a common removable frame T adapted to fit in said pot and to be bodily removed therefrom, and upon which all said devices are mounted so that the entire mechanism may be bodily lifted out of the pot without taking it apart, substantially as specified.

40. The combination with a tinning pot B, of tinning rolls H, endless conveyer G, provided with a series of grippers and means for operating the grippers, upper and lower wheels or pulleys G' G' for said conveyer, a device N for moving or tilting the sheet, a sheet lifting device M, and a common removable frame T adapted to fit in said pot and to be bodily removed therefrom, and upon which all said devices are mounted so that the entire mechanism may be bodily lifted out of the pot without taking it apart, and a supplemental pot K also mounted upon said movable frame T, substantially as specified.

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**500,719. BRUSH.** STEPHEN PALMER, Lansingburg, N. Y. Filed Dec. 10, 1892. Serial No. 454,701. (No model.)



*Claim.*—1. In a brush, the combination with a sheet-metal handle having an attaching cap at one end; and a longitudinal groove in the handle terminating within the periphery of the cap; of a brush-head provided on one side of its top with a lug projecting upwardly into the groove at the junction of the handle and cap; and means for securing the cap to the head, substantially as described.

2. The combination with a brush-head, of a sheet-metal cap secured to the top of the head, and a laterally projecting contracted handle integral with the cap, the handle being provided with a longitudinal groove extending past the junction of cap and handle within the periphery of the cap, whereby the contracted portion of the sheet-metal piece is strengthened at the junction of cap and handle, substantially as described.

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**500,720. FLUID-COMPRESSOR.** JULIUS ROSENWALD, Chicago, Ill. Filed Jan. 18, 1892. Serial No. 418,188. (No model.)

*Claim.*—1. In a compressor, the combination with the cylinder and the piston driving-medium, of a hollow piston in and controllably communicating with the cylinder, a supplemental piston confined in the hollow piston, the two pistons being relatively yielding under abnormal pressure, and a piston-rod connecting the pistons with the driving-medium, whereby, when the stroke of the hollow piston has carried it to a cylinder-head, any excess of the stroke that would tend to force it beyond the cylinder-head will be taken up by the piston-yield, substantially as described.

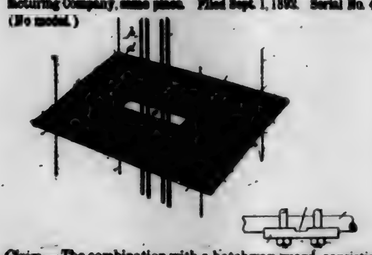


2. In a compressor, the combination with the cylinder and the piston driving-medium, of a hollow piston in and controllably communicating with the cylinder, a supplemental piston yieldingly confined in the hollow piston, and a piston-rod connecting the supplemental piston with the driving-medium and adjusted to continue the stroke of the piston-rod when the hollow piston has reached the end of its stroke, substantially as and for the purpose set forth.

3. In a compressor, the combination with the piston driving-medium of a cylinder A having valve-controlled inlets $r$, $r'$ and outlets $q$, $q'$, a hollow piston C within the cylinder and provided with valves $m$ and $l$, a supplemental piston C' yieldingly confined in the hollow piston and provided with valves $i$, $i'$, and a piston-rod D connecting the supplemental piston with the driving-medium and adjusted to continue the stroke of the supplemental piston when the hollow piston has reached the end of its stroke, substantially as and for the purpose set forth.

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**500,721. HATCHWAY-GUARD.** CHARLES J. REYNOLDS, Boston, Mass., assignor, by mesne assignments, to the Elevator Safety Manufacturing Company, same place. Filed Sept. 1, 1892. Serial No. 444,727. (No model.)



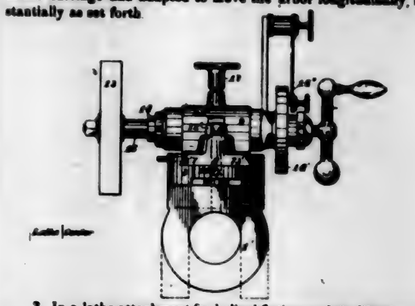
*Claim.*—The combination with a hatchway guard, consisting of a metal frame, comprising marginal portions and a woven wire covering secured to said marginal portions, of rigid bars or braces extending across the space within said marginal portions and attached to the latter, clamps secured to said bars or braces, about midway of their ends, supporting chains secured between the clamps and braces, and forked shoes affixed to the sides of the frames and adapted to embrace fixed vertical guides, substantially as described.

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**500,722. LATHE ATTACHMENT.** JEAN B. RICHARD, New York, N. Y., assignor, by mesne assignments, to John Scott, same place. Filed July 1, 1892. Serial No. 438,090. (No model.)

*Claim.*—1. In a lathe attachment, the base plate 1, provided with an apertured flange 1' for attachment to the tool post of the lathe, the plate 3, rotatably mounted on the plate 1, and provided with a dovetail keeper guide to receive a carriage for the piece to be operated on, the said carriage, means substantially as described for holding the piece on the carriage, means substantially as described for securing the carriage in the keeper when set, and a clamping mechanism for securing together the plates 1 and 3 when set, substantially as described and shown.

2. In a lathe attachment, the combination with the base plate 1, provided with an apertured flange 1' for attachment to the tool post of a lathe, the plate 3, pivotally mounted on the face of plate 1, and provided with a keeper guide to receive a carriage or holder, means for clamping the plates 1 and 3 together when adjusted the carriage 9, mounted in the keeper guide in plate 3, and means for adjusting and setting the carriage in said guide, of the slotted sleeve 14, rotatively mounted in the carriage and provided with an index plate 16', the spring finger and point for use in connection with said plate, the arbor 15, mounted in said sleeve and provided with a stud which engages the slot in the sleeve, and the collared feed screw, 16, mounted in the carriage and adapted to move the arbor longitudinally, substantially as set forth.

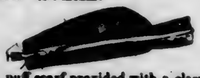


3. In a lathe attachment for helical fluting, and the like the combination with the carriage 9, having in it a longitudinal bore, of the sleeve 14, rotatively mounted in said bore and provided with a helical slot as set forth, means substantially as described for measuring the degree of rotary movement imparted to said sleeve at each setting, means substantially as described for clamping said sleeve in place in the carriage, a longitudinally sliding arbor 15, mounted in said sleeve and provided with a stud which engages the slot in the sleeve, and a feed-screw 16, collared in its bearings and engaging a female screw in the arbor, substantially as set forth.

4. In a lathe attachment, the combination with a plate, as 3, having in it a dovetail guide, of a carriage or holder comprising a plate 18, provided with a slide which engages said dovetail guide, means for clamping said slide in the guide, a plate 19, hinged to plate 18 and having slotted guides 24, means for clamping said guides to the plate 18, and adjustable, pivoted clamp jaws, 20 and 20', mounted on the plate 19 for clamping thereon the piece to be milled.

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**500,723. NECKSCARF.** THOMAS C. ROBINSON, Boston, assignor of one-third to Arthur E. Denison, Cambridge, Mass. Filed Sept. 8, 1892. Serial No. 445,364. (No model.)



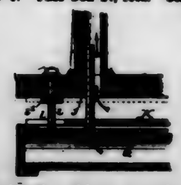
*Claim.*—1. A puff scarf provided with a clasp secured inside the puff, the said clasp having an aperture therethrough for the passage of the scarf strap, and a spring for pressing one member of the clasp against the puff portion of the scarf to distend it, substantially as described.

2. A puff scarf having secured inside inside its puff a strap-grasping clamp or jaw comprising a flat plate, or member "a," and a spring controlled member or jaw pivoted on the first mentioned member and arranged to press outward against the front portion of the puff of the scarf as set forth.

3. The improved strap-grasping device or jaw comprising the plate "a" the jaw "b" pivotally connected to said plate and provided with an arm "$b^3$" and the spring secured to one end of the plate "a" and having at its free end a slot engaged with the arm "$b^3$."

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**500,724. GAS-BURNER FOR BOILER-FURNACES.** CHARLES T. SLOAN, Buffalo, N. Y. Filed Dec. 27, 1892. Serial No. 456,302. (No model.)

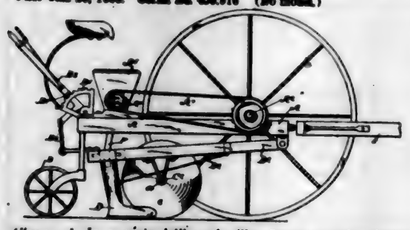


*Claim.*—The combination with a gas supply manifold, of a supporting plate or air supply manifold arranged above said gas manifold and having air apertures, a number of burners having mixing tubes resting upon said air manifold and registering respectively with the air apertures of the latter, gas nozzles extending upwardly from said gas manifolds through said apertures and into said mixing tubes, and a damper or valve plate supported in its open position upon said gas manifold and adapted to close against the under side of said air manifold, substantially as set forth.

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**500,725. GRAIN-DRILL.** JAMES A. M. TYLER, Lexington, Nebr. Filed Jan. 26, 1893. Serial No. 459,816. (No model.)



*Claim.*—1. In a grain drill or the like, furrow opening devices comprising disks each composed of two circular concavo-convex metal plates placed on a suitable shaft, spools mounted on said shaft to separate the disks and a spiral spring within each disk to engage its sides, substantially as and for the purposes stated.

2. In a seed planting device the combination of the following elements, to wit; a sharp edged disk mounted on a suitable axle and adapted to form a furrow in the ground surface and a shoe or runner D pivotally connected with a suitable support to be capable of a slight lateral movement and bifurcated at its forward end to admit the edge of said disk to thereby hold the disk and runner in approximate alignment and allow them slight lateral movement relative to each other.

3. In a seed planting device the combination of the following elements, to wit, a sharp edged disk mounted upon a suitable axle and adapted to form a furrow in the ground surface, a shoe or runner D bifurcated at its forward end to receive the edge of said disk and pivotally attached to a suitable support to be capable of a slight lateral movement, rods $D^2$ attached to the lower end portions and opposite sides of said shoe and to a suitable support in advance of the same and means for depositing seed in the bottom of said furrow.

4. In a grain drill the combination of the following elements, to wit, a suitable supporting frame, traction wheels mounted in the forward end portion of said frame and a plurality of caster wheels or furrow coverers to support the rear end of the frame, an auxiliary frame having its forward edge hinged to the under side of the said main frame, means for vertically adjusting the rear end of said auxiliary frame, a suitable axle mounted in the approximate central portion of said auxiliary frame, a plurality of sharp edged disks mounted upon said axle, a like number of shoes or runners pivotally connected with said frame to swing laterally and in the rear of said disks, and means for depositing seed in the furrows formed by the disks and shoes.

5. In a grain drill the combination of the following elements, to wit a rectangular supporting frame A having a rotatable axle $A^2$ mounted thereon and the traction wheels $A^3$ on said axle, a seed box $A^5$ mounted upon said frame containing an agitator $A^4$ operated from the traction wheels by means of the gearing $A^7$ the caster wheels or furrow coverer B mounted in the rear of said frame, two auxiliary frames $B^2$ hinged at their forward edges to the under side of the main frame for vertically adjusting the rear end portion of said frames a plurality of disks C constructed as set forth, mounted upon the axles $C^2$ which have their bearings in said frames, the spools $C^3$ for separating said disks and the coil springs $C^4$ inside of said disks the runners D pivoted to the rear of the frame $B^2$ to swing laterally and bifurcated at their forward ends to admit said disks, the rods $D^2$ attached to the shoes or runners and to the forward part of the frames $B^2$ and the hose sections F extending from the seed box to each shoe or runner, substantially in the manner set forth for the purposes stated.

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**500,726. LIGHTNING-ARRESTER.** CHARLES S. VAN HUM, New Brunswick, N. J. Filed Aug. 20, 1892. Serial No. 443,668. (No model.)



*Claim.*—1. In a lightning arrester, the combination of fusible wires 1, 2, having adjacent but electrically separated ends, a tube 4 surrounding said adjacent ends and tightly closed around the same, whereby dust and moisture are kept from such adjacent ends without inclosing the entire conductors, substantially as described.

2. A lightning arrester consisting of conductors with adjacent but electrically separated ends, said conductors being of such conductivity as to be instantly fused by a line current following a lightning discharge, whereby the lightning arrester circuit will be opened, and a closed tube surrounding said adjacent ends of the conductors, from which tube said fusible conductors extend, substantially as described.

3. A lightning arrester consisting of overlapping but electrically separated fusible conductors, the overlapping ends being curved toward and then away from each other and being secured in a fixed relative position, and a short section of tube inclosing said overlapping bent ends, substantially as described.

4. The combination of fusible wires 1, 2, binding pellets 3 for holding the wires in proper relative position, an inclosing tube, and the fillings 5 for closing the tube, substantially as described.

5. The combination, in a lightning arrester, of conductors with ends near together but electrically separated, and plugs thereon near the outer ends of said conductors, by means of which the arresters may be connected to a suitable support, substantially as described.

6. The combination in a lightning arrester, of conductors with ends near together but electrically separated, and insulating plugs thereon near the outer ends of said conductors, by means of which the arresters may be connected to a suitable support, said conductors being bent or knotted near the ends to hold said plugs in place, substantially as described.

7. The combination of a holder for lightning arresters, several lightning arresters arranged thereon, each consisting of conductors with electrically separated ends, mechanically held near together, ground and line conductors, the connection between which is interrupted at said electrically separated ends of one arrester and at similar ends as well as at outer ends of other arresters, and a movable conducting device connecting one of said other arresters at a time in operative condition, substantially as described.

8. The combination of a plate, several lightning arresters arranged in order thereon, each consisting of conductors with ends electrically separated but mechanically held near together, the outer ends of said conductors passing through said plate and terminating near but out of connection with conductors adapted to be connected to ground and to line respectively, and movable conducting devices connecting one lightning arrester at a time to said ground and line conductors, substantially as described.

9. The combination of several stationary lightning arresters one above another, ground and line conductors near to but insulated from the conductors thereof, and one or more conductors movable by gravity for connecting the arresters successively to line, substantially as described.

10. The combination of a plate having several holes therein, lightning arresters consisting of wires electrically separated but having ends near together and having insulating plugs near their free or outer ends, supported in said holes by insertion of said plugs, conductors behind said plate, near to but out of contact with which the ends of the lightning arrester conductors terminate, and movable conductors adapted to connect said lightning arrester conductors and said other conductors successively, substantially as described.

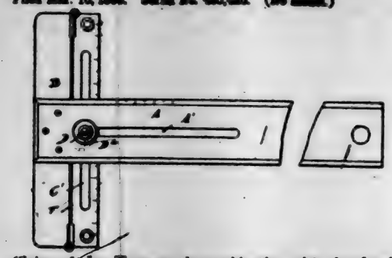
11. The combination of a grooved block or box, carbon rods or similar conductors in two grooves thereof adapted to be connected to ground and to line respectively, a cover for said grooved block or box, lightning arresters on said cover and having ends extending through the cover into proximity to said carbon rods or conductors, and movable conductors for connecting said arresters successively to the carbon rods, substantially as described.

12. The combination of a grooved block or box, carbon rods or similar conductors in two grooves thereof adapted to be connected to ground and to line respectively, a cover for said grooved block or box, lightning arresters on said cover and having ends extending through the cover into proximity to said carbon rods or conductors, and movable conductors for connecting said arresters successively to the carbon rods, there being openings to allow escape of vapors from said box, substantially as described.

13. The combination of several lightning arresters, conductors adapted to be connected to ground and to line respectively near to but out of contact with the lightning arrester wires, and wedge shaped conductors for connecting the same, substantially as described.

14. A lightning arrester consisting of sections of fusible conductor with adjacent but electrically separated ends, conductors connected or adapted to be connected to line and to ground respectively, and means having a less carrying capacity for current than the fusible conductors connecting the latter to the first mentioned conductors, whereby when a discharge occurs and a dynamo current passes over the arrester branch heat will be developed at the outer ends of the fusible conductors as well as at the central break, substantially as described.

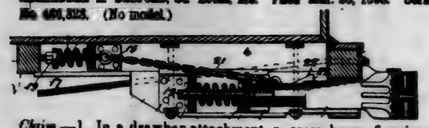
**500,727. T-SQUARE.** ALBERT WALBTOWER, Guttenberg, N. J. Filed Mar. 10, 1893. Serial No. 465,620. (No model.)



*Claim.*—1. In a T-square, the combination, with a head and blade secured thereto, of a bar adjacent to the inner edge of the blade, a link pivoted to each end of the head, the opposite end of each link being pivoted to that end of the bar opposite the end of the head to which the link is pivoted, and means for locking said bar in different positions on the blade, substantially as set forth.

2. In a T-square, the combination with a head and a longitudinally slotted blade fixed thereon at right angles, of a longitudinally slotted bar adjacent to the inner edge of the head, pivoted links connecting the ends of said bar with the opposite ends of said head, a screw passed through the slot in the head and the slot in the bar, and a nut on said screw, substantially as set forth.

**500,728. DRAWBAR ATTACHMENT.** WILLIAM J. WALKER and ALEXANDER L. BEDFORD, St. Louis, Mo. Filed Mar. 20, 1893. Serial No. 466,823. (No model.)

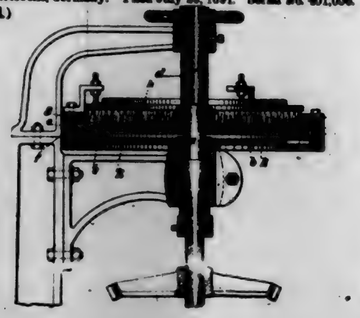


*Claim.*—1. In a drawbar attachment, a cross beam forming a part of the car, a drawbar located under the said beam and having a lug secured to the upper surface thereof adapted to come in contact only with the beam when the drawbar is released from its connections, substantially as set forth.

2. In a draw bar attachment, a cross beam forming a part of the car, a suitable frame work abutting against said beam, a drawbar confined within said frame work and attached to the same, a spring actuated bolt attached to the frame work, and a flexible connection between said bolt and drawbar, substantially as set forth.

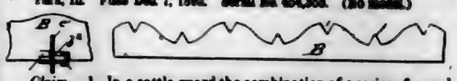
3. A drawbar attachment consisting of a cross beam 2, a suitable drawbar passed under the same, brace blocks 6, and brace beams 4 suitably united and braced, abutting against the rear face of the cross beam 2, wedges 9 located on the inner adjacent faces of the brace blocks, bars 10 movably secured between said wedges, suitable bottom supports for said bars, a bolt 12 from the drawbar passing through openings in the bars, and having a pin 13 at the rear end for securing the rear bar, a spring encircling the bolt between the bars 10, wedges 15 secured to the inner adjacent faces of the brace beams to the rear of the brace blocks, a bar 16 movable between the brace beams, a bolt passing through the bar terminating at one end in an eye and at the other in a suitable nut and washer, a coiled spring encircling said bolt between the nut and washer and the bar 16, and a chain secured to the eye and connecting the same with the drawbar, substantially as set forth.

**500,729. MACHINE FOR SPLITTING GRAINS.** JOSEF WIETER, Aschersleben, Germany. Filed July 29, 1891. Serial No. 401,056. (No model.)



*Claim.*—In a machine for splitting grains, the combination with a vertical shaft, of a disk fixed thereon, which disk is provided in its upper surface with a radial groove, a fixed ring surrounding the rotating disk and located a short distance from the rim of the same and a series of inclined blades held in said ring and projecting beyond the inner edge of the same to the rim of the rotating disk, the bottom edges of the blades being beveled to insure a sharp cut, substantially as set forth.

**500,730. CATTLE-GUARD.** BENJAMIN WOLFAUPTER, Morgan Park, Ill. Filed Dec. 7, 1892. Serial No. 454,355. (No model.)



*Claim.*—1. In a cattle guard the combination of a series of guard bars extending substantially parallel with, and adjacent to each other, said guard bars being in an inclined position, and the upper edge provided with a series of scallops, a projection on one bar over-lapping and being in transverse alignment with a depression on the next adjacent bar, substantially as described.

2. In a cattle guard the combination of a series of guard bars extending substantially parallel with each other, the upper edge of the bar being provided with enlargements or scallops and the depression between each scallop being provided with a sharp tooth, substantially as described.

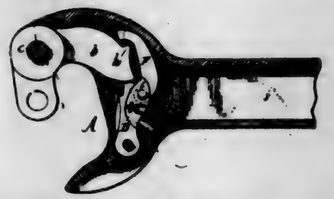
3. In a cattle guard the combination of a series of guard bars extending substantially parallel with, and adjacent to each other, said guard bars being in an inclined position, and the upper edge provided with a series of scallops, a projection on one bar over-lapping and being in transverse alignment with a depression on the next adjacent bar, the depression between each projection or scallop being provided with a sharp tooth, substantially as described.

4. In a cattle guard the combination of a series of guard bars extending substantially parallel with, and adjacent to each other, said guard bars being in an inclined position, and the upper edge provided with a series of scallops, a projection on one bar over-lapping and being in transverse alignment with a depression on the next adjacent bar, each projection or scallop being provided with a "V" shaped recess and each depression between the scallops being provided with a sharp tooth, substantially as described.

5. In a cattle guard the combination of the guard bars and cross bars, the latter having an upwardly projecting flange provided with inclined slots in which the guard bars are placed, and one or more projections on the guard bar formed by up-setting the metal to prevent longitudinal displacement of the guard bars, substantially as described

6. In a cattle guard the combination of a series of guard bars and cross bars, the latter provided with an upwardly projecting flange having slots in which the guard bars are placed, and with a horizontally projecting flange, the lower edge of the guard bars being provided with an orifice or slot and a bar or key having a flange to engage in the slot in the guard bar and to engage also the horizontal flange of the cross bar, substantially as described.

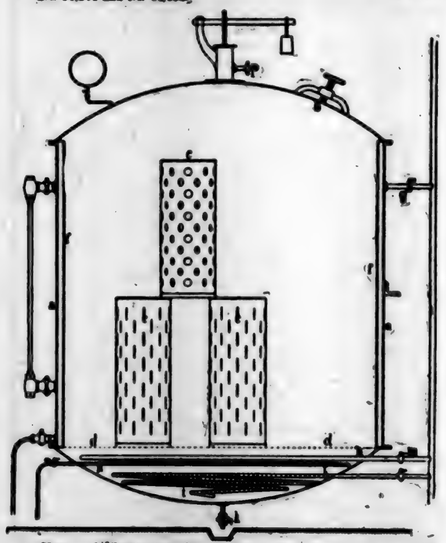
**500,731. CAR-COUPLING.** FRANK ANDERSON, Buffalo, N. Y., assignor of one-half to George S Crosby, same place. Filed July 9, 1892. Serial No. 439,536. (No model.)



*Claim.*—The combination with the draw head and the swinging coupling jaw having a locking arm, of a horizontally swinging locking pawl pivoted to the draw head and adapted to engage with its free inner end against the locking arm of the coupling jaw, and a separate shifting finger pivoted at its inner end to the free end of the horizontally-swinging locking pawl and extending from the pawl forwardly into the space between the back of said locking arm and the adjacent inner side of the draw head, whereby the coupling jaw is positively moved to its open or unlocked position upon swinging the pivoted locking pawl out of engagement with the locking arm of the coupling jaw, substantially as set forth.



**500,732. PROCESS OF TREATING COTTON.** EMILE ANTHOUARD, Roubaix, France. Filed Aug. 30, 1892. Serial No. 444,502. (No specimens.) Patented in France May 15, 1882, No. 140,950; in Belgium May 20, 1882, No. 57,977; in Germany June 13, 1886, No. 31,573; in England Aug. 14, 1882, No. 3,875, and in Austria-Hungary Nov. 10, 1882, No. 31,271 and No. 44,132.



*Claim.*—1. In the art of treating cotton preparatory to spinning, the improvement consisting in depositing the ribbon or film of sliver from the carding devices, in the form of superposed epicycloidal rings in perforated receptacles, and without disturbing the arrangement or direction of the sliver, subjecting the same to impregnation by liquids penetrating the material through the perforations in the inclosing walls of said receptacles, substantially as described.

2. The described process of treating cotton fibers, consisting in first, scouring and cleansing cotton in the form of sliver deposited loosely in the form of superposed rings in perforated receptacles, and second dyeing or bleaching the said sliver without disturbing the arrangement or direction of the fibers, substantially as described.

3. The described process of treating cotton preparatory to spinning, consisting in arranging cotton sliver in the form of superposed rings in perforated receptacles, and subjecting the same to the successive operations of cleansing, scouring or ungumming, and bleaching or dyeing without disturbing the arrangement and direction of the sliver, substantially as described.

**500,733. STEAM-BOILER.** FRANK M. ASHLEY, Hawthorne, N. J. Filed Dec. 27, 1892. Serial No. 456,331. (No model.)



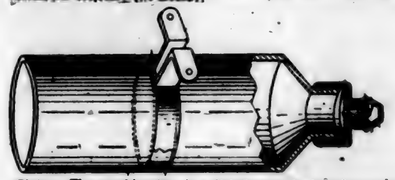
*Claim.*—1. In steam boilers, the combination with a tube provided on its end with a bead, and a tube sheet, of a collar surrounding the tube and bearing against the bead and a nut engaging with the collar and bearing against the tube sheet, whereby the tube is secured by a brace acting longitudinally

2. In steam boilers, the combination with a tube provided on its end with a bead, and a tube sheet, of a collar surrounding the tube and bearing against the bead and a nut engaging with the collar and bearing against the tube sheet, and packing interposed between the nut and collar, substantially as described.

3. The combination with a tube and a tube sheet, of a collar surrounding the tube and occupying an opening in the tube sheet, and a nut engaging with the collar and bearing against the tube sheet to tighten the joint, substantially as described.

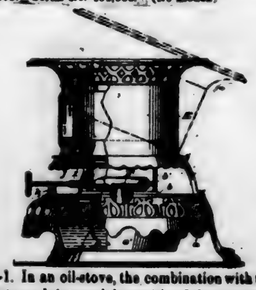
4. The combination of a tube provided with a bead at its end, a threaded collar surrounding the tube and resting at one end against the bead and provided at the other end with a flange, a tube sheet provided with an opening inclosing said flange and a nut engaging with the thread on the collar and bearing against the tube sheet and packing material inserted between the tube sheet, nut and collar.

**500,734. DISINFECTING DEVICE.** HENRY L. BENNETT, Philadelphia, Pa., assignor to Harlan Page, same place. Filed Apr. 5, 1893. Serial No. 469,052. (No model.)



*Claim.*—The combination, in a disinfectant device of an open top vessel, having a sloping bottom terminating in an integral externally threaded neck, and provided with a peripheral groove for the accommodation of the loop of a detachable bracket, a threaded thimble removably applied to said neck and provided with a nozzle, and a screw cap for regulating the rate of discharge from said nozzle, substantially as and for the purposes set forth.

**500,735. OIL-STOVE.** ISRAEL BLOCK, New York, N. Y. Filed Feb. 4, 1893. Serial No. 461,092. (No model.)



*Claim.*—1. In an oil-stove, the combination with the base having the burner-plate made integral therewith, of the reservoir arranged beneath the base, the rim having legs resting on the base, the bolts passing through said legs and securing the rim and reservoir rigidly to the base, and the cylinder arranged upon the rim, substantially as described

2. In an oil-stove, the combination with the base, the burner-plate cast integral therewith, the reservoir, the pockets or seats in the upper portion of the base at the outer edge of the burner-plate, the rim arranged above the base and having lateral extensions on its legs fitting snugly in said pockets, the bolts passing through said lateral extensions and securing the rim and reservoir rigidly to the base, and the cylinder, substantially as described.

3. In an oil-stove, the combination with the base, the burner-plate cast integral therewith, the reservoir secured beneath the base, the rim arranged above the base and rigidly secured thereto, a diaphragm in the upper portion of said rim, the wick-tubes rigid in the burner-plate and extending upward through the diaphragm, an annular seat *j* and a groove K in the rim, and the cylinder hinged on said rim and having its bottom plate fitted snugly in said annular seat and provided with a lug *k* which rests in the groove K to maintain the cylinder in a true and steady position, substantially as described.

**500,736. MEMORANDUM BOOK OR PAD.** GILMAN W. BROWN, West Newbury, Mass. Filed Jan. 14, 1893. Serial No. 458,304. (No model.)



*Claim.*—1. A memorandum book, comprising a holder or back having a key-shaped pin, a pad or block composed of superposed independent sheets each having a key-shaped orifice formed to receive said pin, and an independent cover also having a key-shaped orifice, said cover and sheets being adapted to be displaced by a swinging movement on said pin, as set forth.

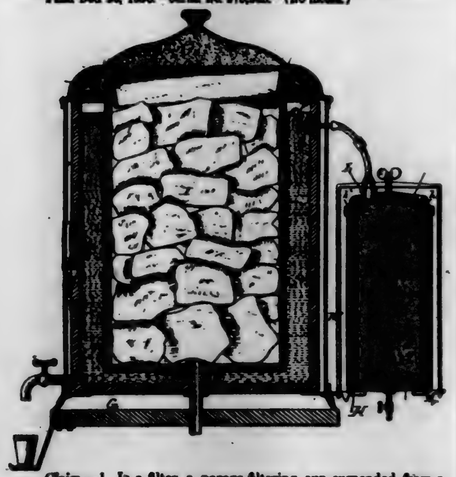
2. A memorandum book, comprising a holder or back having a rigidly-attached key-shaped pin, a pad or block of sheets perforated to engage said pin, and an independent cover having at one end a plate provided with a key-shaped orifice formed to engage said pin, as set forth.

3. A holder for a memorandum block or pad, consisting of a flat back having a key-shaped pin projecting from one of its sides near one end, and an independent cover having a key-shaped orifice formed to engage said pin, as set forth.

4. A memorandum book, comprising a back or holder, having a stud or pin projecting from one of its sides near one end, and a pad composed of a series of superposed independent sheets, each perforated to receive said pin, and additionally perforated to engage filing devices the sheets being connected in a series only by the pin, whereby each sheet is enabled to swing edgewise independently of the others, the additional perforations enabling the leaves to be filed for reference after being torn from the book, as set forth.

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**500,737. FILTER AND COOLER.** FRANK H. CADY, Auburn, N. Y. Filed Dec. 20, 1890. Serial No. 375,285. (No model.)

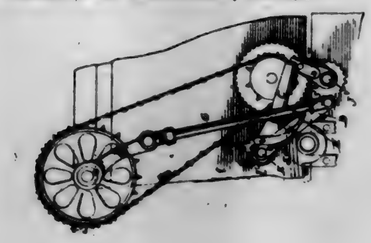


*Claim.*—1. In a filter, a porous filtering cup suspended from a cap and rigidly secured thereto, an external case around the cup having lugs thereon, in combination with a clamp to engage the lugs, and a clamp-screw to engage the cover, substantially as described.

2. In a filter, a porous filtering cup suspended from a cap and rigidly secured thereto, an external case surrounding the same forming a chamber between the cup and case, an annular groove in the cap to receive a packing, and a clamp for securing the cap to the case by pressure on the cap to form a water-tight joint, a delivery pipe leading to the filter case, and a union in the pipe leading from the interior of the filter cup, substantially as and for the purpose set forth.

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**500,738. GRAIN-BINDER.** CHARLES COLABAN, Cleveland, Ohio. Filed Dec. 26, 1888. Serial No. 294,607. (No model.)



*Claim.*—1. The binder arm shaft K the clutch tripping finger C and plate O and its stops rigidly secured on said shaft, the binder arm E and its crank D both loosely journaled on said shaft, and in certain limits admitting the partial rotation of the shaft, combined with the pitman G pivoted to and retaining said crank D in a fixed position until the binder arm shaft may be caused to rotate and move said clutch tripping finger C to admit the unclutching and starting of the binder substantially as shown and described.

2. The shaft K with the binder arm E journaled thereon, the compressor and tripping finger F pivoted to said arm, its elastic supporting spring M, plate O, having supporting lugs *o* and *o'* secured to said shaft combined with the clutch tripping finger C and the clutching pawl J and its supporting arm pivoted on the continuously running shaft J' operating to clutch and unclutch the binder substantially as set forth.

3. The shaft K, the binder arm E loosely journaled thereon, its supporting lug *o* on plate O, the compressor and tripping arm F pivoted to said binder arm, combined with the plate O having a supporting lug *o'* and secured to said shaft K and its clutching finger C secured to the binding arm shaft to admit of the unclutching and starting of the binder substantially as shown and described

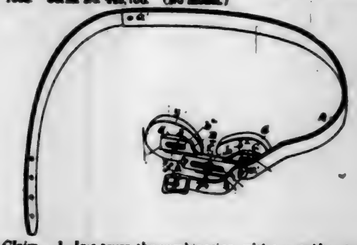
4. The binder arm shaft K, the clutch tripping finger C rigid on said shaft the lug *l* on said shaft combined with the crank arm D loosely journaled on said shaft, the projections on the hub of said crank adjusted to be engaged by the lug on the shaft the locking latch B mounted on the crank arm D and the pitman G having the lug H adapted to engage the latch B all operating substantially as and for the purposes shown and described

5. The combination of a binder arm shaft and the clutch tripping finger secured thereon, with the rigid pitman and its crank arm flexibly secured to said shaft, to admit a slight rotation of said shaft and its clutch finger for the purpose of clutching the binder without disturbing the relation of the pitman and its crank during the accumulation of grain for the formation of the bundle.

6. The combination of the pitman G and its crank arm flexibly secured to the binder arm shaft, and provided with a locking latch to secure to said shaft the crank and pitman during the opening and closing of the binder arm, and the tripping lug on said pitman for unlocking said latch when the binder is unclutched to admit the tripping action of said binder arm shaft and its clutch finger substantially as shown and described.

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**500,739. TRUSS.** WILLIAM DARE, Detroit, Mich. Filed Oct. 13, 1892. Serial No. 448,760. (No model.)



*Claim.*—1. In a truss, the combination, with a metal band, one end of which is slotted, an arm adjustably secured thereto, said arm having its ends formed into inwardly projecting ends and having its intermediate portion provided with lateral flanges, and a pad adjustably secured to each arm, and means for securing the band to the wearer, substantially as set forth.

2. In a truss, the combination, with a metal band, one end of which is slotted and provided with a retaining device at each end of the slot a pad or pads for supporting the hernia adjustably secured to one end of the band, a strap adapted to be detachably secured to either one of the retaining devices, and a second strap secured to the opposite end of the band, substantially as set forth.

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**500,740. CARRIAGE-BODY.** MARY S. BOYLE, Boston, Mass., administratrix of Luke Doyle, deceased. Filed Jan. 9, 1893. Serial No. 457,966. (No model.)

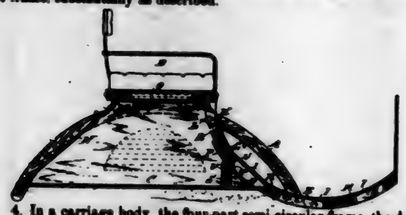
*Claim.*—1. As a new article of manufacture, a sill-less carriage body, consisting of the following instrumentalities, to wit:—a pair of semi-circular main frames, a pair of semi-circular auxiliary frames of lesser circumference, a box therein detachably secured, adapted as a luggage carrier, a series of transoms organized to unite said frames, a pair of transverse bars adapted to support said box, a series of angle irons and the nuts and bolts therefor provided, adapted to attach and confine said box in position within said frames; all combined, arranged



and constructed to embrace the structural elements of a carriage body, substantially in the manner and for the purposes herein specified and illustrated.

2. In combination with the frames A, A, and frames F, F, the box C, provided with apertures for ingress, and means substantially as hereinbefore specified, for detachably confining the same to said frames in the manner described and for the purpose set forth.

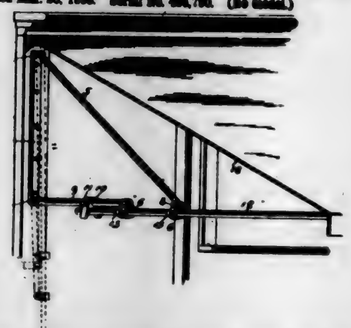
3. In a carriage body, the semi-circular frames of unequal circumference, the removable and detachable box therein inclosed, the combination therewith of a transverse grooved bar M, provided with a single ledge M', adapted to aid the support of said box, and the duplicate angle irons S, S, adapted to detachably unite the same with the frame, substantially as described.



4. In a carriage body, the four-part semi-circular frame, the detachable box therein attached, the supporting cross bar therefor provided with a ledge, and the angle irons attached to said box, in combination with a transverse single grooved transom $G^2$, the angle irons T, T, thereto attached, adapted to cooperate through the medium of the threaded bolts and nuts U, U, with the angle irons S, S, to support and confine the box to the frame, substantially as herein illustrated and described.

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**500,741. AWNING-FRAME.** HENRY GUNDELFINGER, St. Louis, Mo. Filed Mar. 30, 1893. Serial No. 468,760. (No model.)

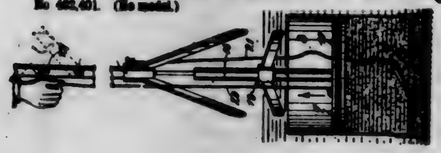


*Claim.*—1. In an awning frame, a suitable casting or fork 10 having depending prongs, a suitable opening at the juncture of the prongs thereof to provide means for passing the same over a bar of the frame, a binding screw for securing the said fork to such bar, and a sliding rod one end of which is embraced by the fork, substantially as set forth.

2. An awning frame having a suitable brace movably secured at one end to the frame of the house, a bar movably secured at one end to the house frame below the brace, suitable clamps secured to the respective opposite ends of the brace and the bar, a sliding rod capable of adjustment passing through said clamps, means for tightening said rod within said clamps, a sliding fork upon the bar between the house frame and the clamp at the end of the bar, the forks thereof embracing the inner end of the sliding rod, and means for securing the fork on the bar, substantially as set forth.

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**500,742. DEVICE FOR REMOVING SEDIMENT FROM THE BOTTOMS OF LIQUID-STORAGE VESSELS.** JAMES E. HARDER, Niles, Mich., and JOHN H. FOX, Springfield, Ohio. Filed Feb. 15, 1893. Serial No. 462,401. (No model.)



*Claim.*—1. In a device of the kind and for the purposes described, the combination of a cylinder capable of being set with its head upon the sediment accumulating at the bottoms of liquid storage receptacles, an opening in this cylinder head, a weighted foot-valve controlling passage through its opening, a piston, means to actuate it from above, means to guide the piston evenly during its movements, means to hold the foot-valve open to permit the cylinder to discharge its contents, a frame 11 connecting to cylinder 8, and forming at its upper end the socket 23, a handle capable of connection to this socket, such handle consisting of sections hinged together by thumb-screws 25, one section at each joint provided with a slot 26, adapted to engage with a thumb-screw 27 on the other section, for the purpose of rendering the joint rigid.

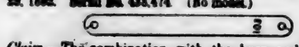
2. In a device of the kind and for the purposes described, the combination of a cylinder capable of being set with its head upon the sediment accumulating at the bottoms of liquid storage receptacles, an opening in this cylinder-head, a weighted foot-valve controlling passage through its opening, a piston, means to guide it evenly during its movements, a rope connected to it, and passing upwardly for the purpose of actuating the piston, another rope connected to the foot-valve and passing through the piston for the purpose of holding the foot-valve open, to permit the cylinder to discharge its contents, a frame 11, connecting to cylinder 8, and forming at its upper end the socket 23, and a handle capable of connection to this socket, such handle consisting of sections hinged together by thumb-screws 25, one section at each joint provided with a slot 26, adapted to engage with a thumb screw 27, on the other section, for the purpose of rendering the joint rigid.

3. In a device of the kind and for the purposes described, the combination of a cylinder capable of being set with its head upon the sediment accumulating at the bottoms of liquid storage receptacles, an opening in this cylinder-head, a weighted foot-valve controlling passage through its opening, a piston, means to actuate it from above, means to hold the foot-valve open to permit the cylinder to discharge its contents, a frame connecting to cylinder 8, consisting of parts 11, and 14, running up and inwardly and forming and supporting at their junction, the former a handle-socket 23, and the latter a guide 13, for the piston.

4. In a device of the kind and for the purposes described, the combination of a cylinder capable of being set with its head upon the sediment accumulating at the bottoms of liquid storage receptacles, an opening in this cylinder-head, a weighted foot-valve controlling passage through its opening, a piston, means to actuate it from above, a guide-rod connected to the piston, a guide 13, supported on frame 14, which receives this rod, means to hold the foot-valve open to permit the cylinder to discharge its contents, a frame 11, connecting to cylinder 8, forming and supporting at its upper end the socket 23, which latter is so located as to be in the path of the piston guide-rod, whereby said socket forms a stop to limit the upward movement of the piston

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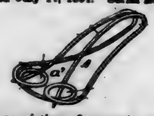
**500,743. SEAL.** JOSEPH L. HAYDEN, Boston, Mass. Filed June 29, 1892. Serial No. 438,474. (No model.)



*Claim.*—The combination, with the hasp and staple or similar means for fastening a car door, of a strip of metal bent upon itself provided with rivet openings near each of its ends, and the pin 9 one end of which is provided with a head, the other end having a shoulder and being adapted to pass through said rivet holes into the central opening of the metallic shell 14 and engage with the tongues or segments of disk 5 in such manner that said segments will be forced out and caused to pass under the shoulder of said pin, thereby preventing its withdrawal; the metallic shells 13 and 14, metallic disk 5 having tongues or segments, inclosed in the space between said shells, substantially as described.

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**500,744. DRAPERY HOOK AND PIN.** FRANKLIN S. MCKENNEY, Detroit, Mich. Filed July 17, 1891. Serial No. 399,630. (No model.)



*Claim.*—1. A pin consisting of two pointed arms and a body portion provided with a cross bearing $a^2$ folded back upon the adjacent portions of the body and looped to form a locking chamber and shields, said arms bent to form a hook, and the points thereof arranged to engage said shields, substantially as described.

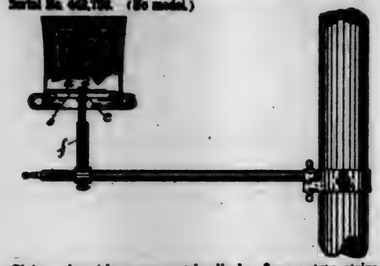
2. A pin consisting of two curved pointed arms and a body portion provided with a cross bearing "$a^2$" folded back upon the adja-

cent portion of the body and lapping across the body, forming in connection therewith marginal loops at the lateral extremities of the cross bearing, and a locking chamber, said arms bent to form a hook, substantially as described.

2. A pin consisting of two curved pointed arms and a body portion provided with a cross bearing "$a^2$" folded back upon the adjacent portion of the body and lapping across the body, forming in connection therewith marginal loops at the lateral extremities of the cross bearing, and a locking chamber, said arms bent to form a hook, and having their extremities bent inward toward said locking chamber, substantially as described.

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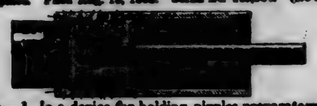
**500,745.** DISPLAY-FRAME. WOODBURY O. ROGERS, Norwich, Conn., assignor to William A. Allen, same place. Filed Oct. 13, 1892. Serial No. 448,798. (No model.)



*Claim.*—As an improvement in display frames, two strips of inflexible material longitudinally adjustable upon each other, and means as set forth for clamping said strips together; each of said strips having rigidly secured to its free end a downwardly projecting clasp, all being combined substantially as specified.

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**500,746.** DEVICE FOR HOLDING NIPPLES DURING THREADING. JAMES H. REILLY, Bridgeport, Conn., assignor to Curtis & Curtis, same place. Filed Aug. 18, 1892. Serial No. 443,307. (No model.)



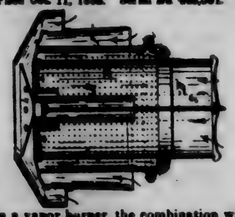
*Claim.*—1. In a device for holding nipples preparatory to final threading, the combination of the casing, the holder secured to the end thereof and incapable of rotary or longitudinal motion, and a swiveled relazable abutment against which the ends of the nipples impinge during the threading, substantially as set forth.

2. In a device for holding the previously threaded end of a nipple preparatory to the cutting of threads on the other end thereof, the combination of the casing having gates and transverse slots as described, the spindle having a thread adapted to engage with a corresponding thread in said casing, the disk swiveled to the end of said spindle, and the interiorly threaded nipple holder having laterally extending lugs, substantially as shown and described.

3. The combination of the casing, and the nipple holder detachably secured therein, with the spindle having a screw thread adapted to a corresponding thread in said casing, and the abutment disk swiveled to the end of said spindle in the immediate rear of said holder, substantially as set forth.

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**500,747.** GASOLINE OR VAPOR STOVE. HENRY REUTER, Cleveland, Ohio, assignor to the Dangler Stove and Manufacturing Company, same place. Filed Oct. 11, 1892. Serial No. 448,591. (No model.)



*Claim.*—1. In a vapor burner, the combination with an annular fuel trough, of two concentric perforated chimneys surmounting said trough a top plate having suitable openings coinciding with the annular space between said chimneys, a central chimney depending from said top plate, a funnel shaped cap resting on said top plate, an air tube below the fuel trough, a bar across the lower end of said air tube, and a screw bolt passing through said cap, central chimney and cross bar, and serving to hold all the parts together, substantially as described.

2. In a vapor burner the combination with an annular fuel trough, of two concentric perforated chimneys surmounting said trough, a top plate having openings coinciding with the annular space between said chimneys, a central chimney depending from said top plate, a funnel shaped cap resting on said top plate, an air tube below said fuel trough, a cross bar spanning the lower end of said tube, a screw bolt passing through the cap, central chimney, and cross bar, and casing suspended from the outer rim of the top plate, substantially as described.

3. In a vapor burner the combination with an annular fuel trough, of an overflow trough below the same, a circular feed pipe having nozzles delivering into said fuel trough, two continuous perforated chimneys rising from said overflow trough, the outer one intervening between the feed pipe and the fuel trough, a top plate having openings coinciding with the annular space between the said chimneys, a central chimney depending from said top plate, a lining of asbestus covering said top plate between the central and inner perforated chimneys, a funnel shaped cap resting on the top plate, an air tube below the overflow trough, a cross bar spanning the lower end of said air tube, a screw bolt passing through the cap, central chimney and cross bar, a casing surrounding the chimneys, and a frusto-conical hood surrounding the top plate and cap, substantially as described.

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**500,748.** DEVICE FOR HOLDING NIPPLES DURING THREADING. FRANCIS W. SMITH, Jr., Bridgeport, Conn., assignor to Curtis & Curtis, same place. Filed Aug. 18, 1892. Serial No. 443,308. (No model.)



*Claim.*—1. In a device for holding nipples during threading, the combination of a head, the nipple holder seated within said head and fixed to against rotation, and a relazable keeper secured to the head and provided with a flange which extends inwardly across the face of the head whereby the holder is confined, substantially as set forth.

2. A device for holding nipples during threading comprising an exteriorly threaded head having a recess, a nipple holder within said recess and incapable of rotation, and an interiorly threaded keeper-ring around said head and provided at its outer face with a flange which extends inwardly beyond the lugs of the holder, substantially as set forth.

3. The combination of the exteriorly threaded head having a recess and gates within the wall of the latter, the nipple holder adapted to seat within said recess and having laterally extending lugs, and the interiorly threaded keeper-ring provided with an inwardly extending flange at its outer face and having slots within said flange, substantially as shown and set forth.

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**500,749.** STEAM-ENGINE. RUDOLPHUS D. WERDEN, Cincinnati, Ohio. Filed Dec. 9, 1892. Serial No. 454,872. (No model.)

*Claim.*—1. In an engine, the combination with a load governor mechanism and throttle valve actuated thereby, of a variable cut off controlled by the speed.

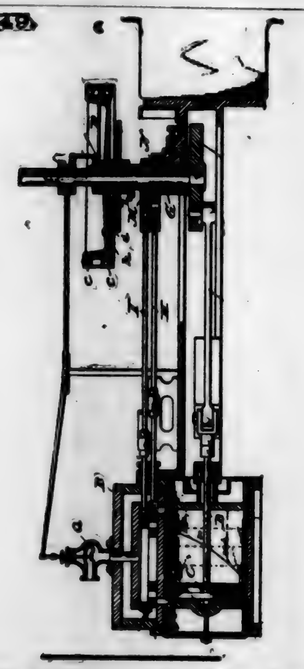
2. In an engine, a variable cut off, a speed governor mechanism, a load wheel and shaft wheel with interposed throttle valve mechanism actuated by their relative shifting, a connection between the load wheel and variable cut off, and a connection between the speed governor and variable cut off, whereby the engine is caused to run with uniform speed under varying loads, substantially as described.

3. In an engine, a variable cut off, a speed governor mechanism, a load wheel and shaft wheel with interposed throttle valve mechanism actuated by their relative shifting, an eccentric for said cut off loose on the shaft, a connection between the load wheel and eccentric, and a connection between the speed governor and eccentric, substantially as described.

4. In an engine, the combination of a slide valve, a cut off valve, a throttling valve for the steam chest, a load wheel and shaft wheel with interposed mechanism for actuating the throttling valve controlled by their relative shifting, a speed governor an eccentric loose on the shaft for the cut off valve, a connection between the load wheel and said eccentric, and a connection between the speed governor and said eccentric, substantially as described.



**500,749.**



**500,750.** PLOW. THADDEUS W. BOYLE, Harriman, Tenn. Filed June 30, 1892. Serial No. 438,530. (No model.)



*Claim.*—1. In a plow-stock the combination of the beam consisting of two metal bars divergent at the rear end, two handles having their lower ends secured to the bars of the beam, and a forked standard having the upper ends of its branches bolted to the handles and their middle portion bolted to the rear end of the beam, and united at the lower end to form a swivel seat substantially as described.

2. The combination in a plow-stock of a beam, a forked standard having its branches secured to said beam, and handles pivotally secured to the upper ends of the branches of the standard; whereby the parts are adapted to be all folded in the same horizontal plane by the removal of a single bolt substantially as described.

3. In combination with a standard having its upper end forked and the upper ends of the branches of said fork secured to the handles, a beam having its rear end bolted to said standard, and handles having their upper portion bolted to the forks of the standard, and their lower ends to the beam.

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**500,751.** OIL HEATING-STOVE. CARL BRANDT, Cedar Falls, Iowa. Filed Mar. 17, 1892. Serial No. 425,045. (No model.)

*Claim.*—1. In an oil heating stove, the combination of a burner, a dome mounted over said burner, a tube with an upper closed end fitted on said dome, a drum surrounding said tube and dome, and a coiled pipe having its upper end communicating with the upper part of the said tube and coiled around the latter downwardly, passing out of the side of the drum, to deliver the air current from the burner into a compartment, substantially as described.

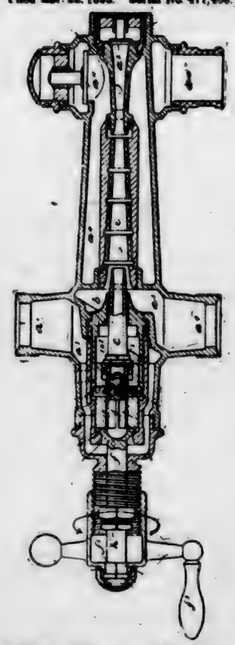
2. In an oil heating stove, the combination of a burner with a dome thereon that extends above the same, a casing surrounding said burner, a drum connected to said casing and open at the top, the lower end of said casing being open, a tube fitted to the upper end of said drum and closed at its upper end to thereby inclose the flame of the burner, and a coil of pipe communicating at its upper end with the upper part of the tube and extending around the latter downwardly and passing out the side of the said drum, substantially as described.



3. In an oil heating stove, the combination of a lower casing with an open bottom, a burner and reservoir located in said casing, a drum hinged to the upper part of said casing at one side and formed with an open top, and an opening at the lower part of one side thereof, a dome mounted on said burner and inclosing the flame, said dome having an opening in one side covered by a slide and an upper seat with an upwardly-projecting flange at the inner part thereof, a tube centrally located in and rigidly held by the said drum and having its upper end closed and its lower end open and resting on the said seat of the dome, and a spiral coil pipe having its upper end communicating and opening into the upper part of the said tube and its lower end passing out the side of the drum, the said tube being located centrally of the said coil and surrounded by the latter, substantially as described.

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**500,752.** INJECTOR. FERDINAND BRUNBAUER, Vienna, Austria-Hungary. Filed Apr. 22, 1893. Serial No. 471,406. (Model.)



*Claim.*—1. A lifting steam tube and a combining tube, in combination with a forcing steam tube centrally arranged in said tubes the outside of said forcing steam tube forming with the bore of the lifting steam tube an annular lifting steam passage and with the inside of the combining tube an annular lifting combining tube and an annular lifting delivery tube, substantially as described.

2. A lifting steam tube and a combining tube, in combination with a forcing steam tube centrally arranged in said tubes and endwise movable therein, the outside of said movable forcing steam tube forming with the bore of the lifting steam tube a variable annular lifting steam passage and with the inside of the combining tube an annular lifting combining tube and an annular lifting delivery tube both of variable sections, substantially as and for the purpose specified.

3. An annular lifting steam tube and a central forcing steam tube in combination with a combining tube, forming an annular lifting combining tube and an annular lifting delivery tube as well as a forcing combining tube, substantially as described.

4. An annular lifting steam tube and a central forcing steam tube in combination with a combining tube, provided with overflow openings and forming an annular lifting combining tube and an annular lifting delivery tube as well as a forcing combining tube, substantially, as described.

5. An annular lifting steam tube, a central forcing steam tube and a combining tube provided with overflow openings and forming an annular lifting combining tube and an annular lifting delivery tube as well as a forcing combining tube, in combination with an overflow chamber in which said overflow openings are located, substantially as described.

6. In an injector the combination substantially as hereinbefore set forth of a forcing steam nozzle, a lifting steam tube, an annular lifting combining tube, a forcing combining tube and an annular lifting delivery tube interposed between the forcing combining tube and the lifting combining tube.

7. In an injector the combination substantially as hereinbefore set forth of a forcing steam nozzle, a lifting steam tube, an annular lifting combining tube, a forcing combining tube, a forcing delivery tube and an annular lifting delivery tube interposed between the lifting-combining and forcing-combining tubes.

8. In combination with a lifting steam tube and a forcing steam tube centrally arranged and endwise movable in said lifting steam tube, the main injector steam chamber, a supplementary steam chamber containing the steam inlet ports, of said tubes, and a valve controlling the steam inlet from the main to the supplementary steam chamber, substantially as described.

9. The combination with a lifting steam tube and a forcing steam tube centrally arranged and endwise movable in said lifting tube of the main injector steam chamber, a supplemental steam chamber containing the steam inlet ports of said tubes, a valve controlling the steam admission from the main to the supplemental steam chamber, and a supplemental valve contained in said supplemental chamber for controlling the steam inlet port of the forcing steam tube, substantially as described.

10. The combination of a fixed lifting steam tube, a fixed combining tube, a longitudinally movable forcing steam tube the outside of this tube forming with the bore of the lifting steam tube a lifting steam passage of annular section and furthermore with the inside of the combined water tube a lifting combining tube and a lifting delivery tube both also of annular sections, and a spindle, the forward end of which terminates at a point within said movable tube, which tube is so proportioned and arranged in relation to the fixed tubes and spindle that the central passage in said movable tube and also the annular passages of the aforesaid tubes will be simultaneously altered by the longitudinal movement of said movable tube alone, substantially as described.

11. The combination of a fixed lifting steam tube, a fixed combining tube, a longitudinally movable forcing steam tube, the outside of this tube forming with the bore of the lifting steam tube a lifting steam passage of annular section and furthermore with the inside of the combined water tube a lifting combining tube and a lifting delivery tube both also of annular sections, said movable tube being so proportioned and arranged in relation to the fixed tubes that the annular passages of the aforesaid tubes will be simultaneously altered by the longitudinal movement of said movable tube alone, substantially as described.

12. The combination of the injector casing *c* with a set of water tubes comprising the combining tube *i*, forcing delivery tube *j*, check valve box *c'* rigidly connected together, which set is inserted into the aforesaid casing *c* and held in position by the tail piece and coupling nut belonging to the injector delivery pipe, substantially as described.

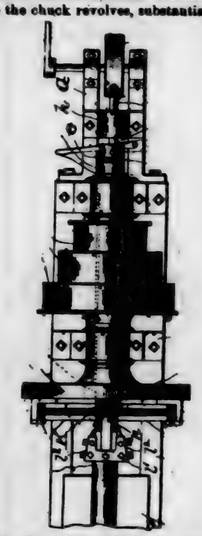
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**500,753.** METAL-TURNING LATHE. THOMAS CALDWELL, Newburg, N. Y. Filed Dec. 31, 1892. Serial No. 456,904. (No model.)

*Claim.*—1. The combination with the revolvable chuck, having its dogs provided with inwardly extending lips, and a hollow mandrel connected with said chuck, of a longitudinally movable rod lying within said mandrel, means whereby the said rod may be revolved with said mandrel or held stationary, and devices for moving said rod in a direction to clamp the work held in the chuck against the said lips, substantially as described.

2. The combination with the revolvable chuck, having its dogs provided with inwardly projecting lips and a hollow mandrel connected with said chuck, of a longitudinally movable rod lying within said mandrel and provided with a cutting tool, means whereby said rod may be revolved with said mandrel or held stationary, and devices for moving said rod longitudinally in a direction to clamp the work held in the chuck against the said lips, substantially as described.

3. The combination with the revolvable chuck having the dogs provided with inwardly projecting lips, of a hollow mandrel for said chuck, the rod extending through said mandrel provided with a tool holding socket a cam for moving said rod longitudinally within the mandrel, toward the work, and a movable stop lever having a device for engaging a part connected with said rod and holding the rod from movement while the chuck revolves, substantially as described.



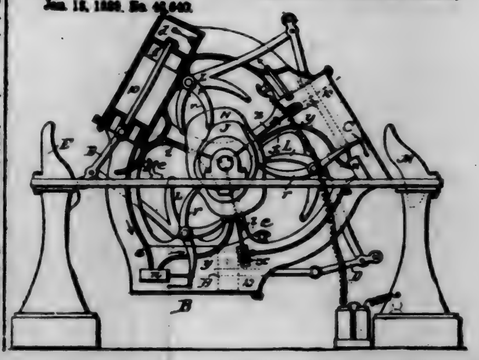
4. The combination with the hollow mandrel and the chuck having its dogs provided with the inwardly projecting lips, of a rod lying within said mandrel provided with a tool socket, a cam for moving said rod longitudinally within said mandrel toward the work and a stop lever having a stop lug for engaging a pin projecting from the said rod, substantially as described.

5. In a lathe the combination with the hollow mandrel and the revolving chuck, of a rod lying within said mandrel and provided with a device for engaging the work held in said chuck, and a tool holder adapted to support a tool for engaging the work in line with said rod, substantially as described.

6. In a lathe the combination with the hollow mandrel and the revolving chuck, of a rod lying within said mandrel and provided with a device for engaging the work held in the chuck, the movable center engaging said rod, the cam engaging said center for moving the rod toward the work and a retracting spring for said rod, substantially as described.

7. In a lathe the combination with the hollow mandrel and the revolving chuck, of a rod lying within the mandrel and having a device for engaging the work held in the chuck, a tool holder provided with drilling and planing tools for engaging the work in line with said device and means for moving said rod toward the work, substantially as described.

**500,754.** GAS-ENGINE. FEDERICO CORDEMOIS, Padua, Italy. Filed Mar. 6, 1891. Serial No. 384,054. (No model.) Patented in Germany Jan. 18, 1889. No. 48,642.





*Claim.*—1. In a rotary gas engine, the revolving frame, a series of cylinders carried thereby each having a combustion chamber and a pumping chamber separated from each other by the pistons, the valved gas supply leading to the pumping chamber of each cylinder, the pipe leading from the pumping chamber of each cylinder to the combustion chamber of the adjacent cylinder and suitable exhaust passages and igniting means, substantially as described.

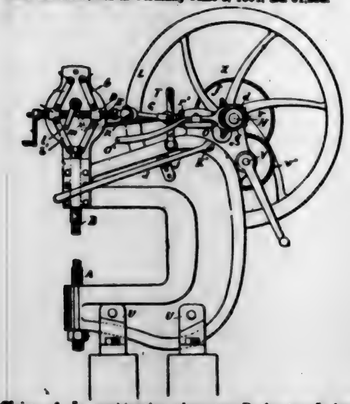
2. In a rotary gas engine, the revolving frame, a series of cylinders carried thereby each having a combustion chamber and a pumping chamber separated from each other by the pistons, the valved gas supply leading to the pumping chamber of each cylinder, the connections between each pumping chamber and the combustion chamber of the next cylinder, the exhaust conduits leading from the cylinders and the valve with positive operating means therefor for controlling the exhaust and also the supply of gas from the pumping chambers to the combustion chambers and suitable igniting devices, substantially as described.

3. In combination in a rotary gas engine, the revolving frame, a series of cylinders carried thereby and having pistons, the rods having rollers and connected to the piston rods, and projecting from the cylinders, the abutments on the stationary frame in line with the said roller rods, the means for returning the pistons after each explosion consisting of the levers in connection with the piston rods and the central cam, each cylinder being divided by the pistons into a combustion chamber and a pumping chamber, the valved gas supply leading to each pumping chamber, the pipe connections between the pumping chamber of each cylinder and the combustion chamber of the next cylinder, the exhaust pipes from the combustion chambers, the valves for controlling the said exhaust pipes and the pipes leading to the combustion chamber and the means for operating the said valve consisting of the central cam and the lever connections thereto, substantially as described.

4. In combination the rotary frame, the series of cylinders thereon the pistons, the projecting roller rods, the abutments on the stationary frame to be engaged thereby, the gas supply and exhaust connections to the cylinders and the means for returning the pistons after each explosion consisting of the central cam and the lever connections between the piston rod and the same, substantially as described.

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**500,755.** RIVETING-MACHINE. JEAN B. COURTET, Roanne, France. Filed Nov. 16, 1892. Serial No. 452,112. (No model.) Patented in France Feb. 24, 1890, No. 203,970; in Belgium Oct. 7, 1890, No. 92,230; in England Oct. 8, 1890, No. 15,982; in Switzerland June 3, 1891, No. 3,625, and in Germany June 6, 1891, No. 61,322.



*Claim.*—1. In combination, the setter B, the toggle levers connected therewith and having nuts D, between their adjacent ends adapted to rise and fall with the movements of said levers, the screw shaft E, journaled in said nuts to rise and fall therewith and the driving shaft for the screw shaft having a universal coupling connection therewith, substantially as described.

2. In combination, the movable setter, the toggle levers for operating the same, the pallet arranged between the toggle levers to be operated by the closing movement thereof, the driving mechanism for operating the toggle levers including a clutch and the connections from the pallet to the clutch, substantially as described.

3. In combination, the movable setter, the means for operating the same including the clutch, a pallet arranged to be operated by the forward movement of the parts and connections between said pallet and clutch, substantially as described.

4. In combination, the movable setter, the means for operating the same including a pinion *e*, and a latch I, to engage the revolving part, the incline N, to engage the latch, for disengaging the same, the pallet arranged to be operated by the forward movement of the driving mechanism and the connections from the said pallet to the incline, substantially as described

5. In combination, the movable setter the means for operating the same including a detachable clutch, a pallet to be operated by the forward movement of the parts and connections between said pallet and clutch, a second clutch for reversing the movement of the driving mechanism, and means for operating the same consisting of the lever *p*, the nut P, having studs to engage the opposite sides of the lever, the screw Q, and the gearing for operating the same, substantially as described.

6. In combination, the movable setter, the means for operating the same including a clutch and mechanism for disengaging said clutch automatically when the setter completes its downward movement a second clutch *g*, the lever for operating the same, the nut P, for operating the lever in both directions, the screw for operating the clutch lever and the gearing for operating the screw, substantially as described.

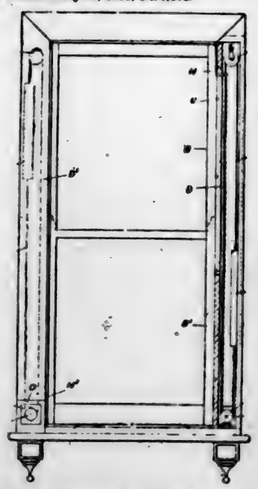
7. In combination, the movable setter, the toggle levers for moving the same, the screw engaging said toggle levers, the flexible shaft for the screw, the means for stopping the machine as the setter completes its stroke downward and the reversing clutch with operating means therefor comprising the clutch lever *p*, the nut P, the screw for operating the same and the gearing between said screw and the flexible shafting, substantially as described.

8. In combination, the movable setter, the toggle levers for the same, the screw and flexible shafting for operating the toggle levers the shaft H, extending at right angle to the flexible shafting, the pinions *e*, *d*, loose on said shaft, the gear on the end of the flexible shafting engaging said pinions, the clutch device for the pinion *e*, the pallet arranged to be operated by the toggle levers, the connections from said pallet to the clutch device, the clutch for the pinion *d*, the operating lever therefor, the nut and screw Q, for operating the said lever and the gearing for operating the screw extending to the flexible shaft, substantially as described.

9. In combination, the movable setter, the toggle levers connected therewith, the flexible screw shafting for operating the said toggles, the clutch for operating the flexible shafting, the rod *k'* and lever for operating the said clutch and the crank for turning the flexible shafting to bring the clutch opposite the operating rod, substantially as described.

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**500,756.** SASH-BALANCE. ROBERT B. COWL, South Melbourne, Victoria. Filed Jan. 28, 1893. Serial No. 459,935. (No model.) Patented in Victoria May 23, 1892, No. 9,670.

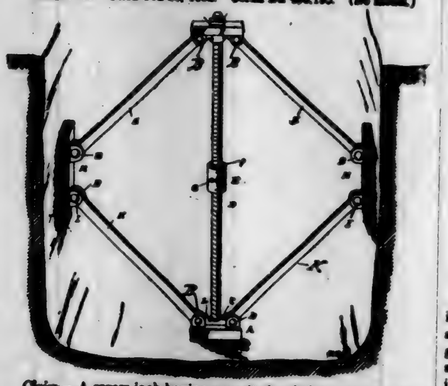


*Claim.*—1. In combination, in a sash lock the sheave and its spindle adapted to receive a key for operating the sheave, the toothed plate and the spring pawl engaging the same at its inner end and attached at its outer end to the outer end of the spindle to be pressed upon by the key and thereby withdrawn from the toothed plate, substantially as described.

2. In combination, the sash, the weight and chain, the sheave with its frame, said frame having a foot $J^3$ and the grooved base plate for receiving the said foot to permit adjustment of the frame, substantially as described.

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**500,757. SCREW-JACK.** BENJAMIN F. COX and JOHN FAERY, St. Joseph, Mo. Filed Oct. 28, 1892. Serial No. 450,195. (No model.)

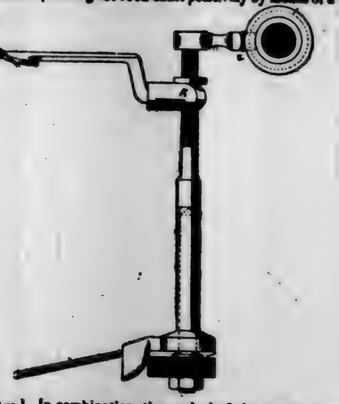


*Claim.*—A screw jack having opposite head plates, an oppositely threaded adjusting screw passing at its ends through central openings in the head-plates, removable nuts engaging the ends of the adjusting-screw and fitting in angular seats in the outer sides of the plates, the side or bearing plates, the connecting arms or links connecting the side plates to the head plates, and stops arranged upon the head plates to engage the ends of the said arms or links, substantially as specified.

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**500,758. ATTACHMENT FOR SPINNING-MACHINES.** LOUIS CROM, EDOUARD B. MERSANNE, and JEAN LAPIN, Roubaix, Belgium. Filed Nov. 16, 1892. Serial No. 452,230. (No model.) Patented in England June 11, 1892, No. 11,099, and in Belgium June 13, 1892, No. 100,096.

*Brief.*—The invention is an improvement on Patent No. 462,003, and consists in operating the rock-shaft positively by means of a worm.



*Claim.*—1. In combination, the rock shaft having the arm for engaging the thread and adapted to turn when the thread breaks the arm R also connected with the rock shaft, and the constantly operating means normally disengaged from the arm R, and arranged in line with the movement thereof to engage and operate the same upon the breaking of the thread, substantially as described.

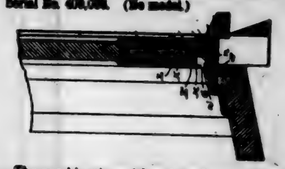
2. In combination, the rock shaft having the arm to engage the thread and adapted to turn when the thread breaks, the arm R, all so connected with the rock shaft and the positively operating worm arranged in the line of movement of the arm R, to be engaged thereby when the rock shaft turns upon the breaking of the thread, substantially as described.

3. In combination, the rock shaft having the arm to engage the thread and the arm R, the worm arranged in the line of movement of the arm R to be engaged thereby when the rock shaft turns upon the breaking of the thread said rock shaft with its arm R being longitudinally movable to disengage the arm R, from the worm, substantially as described.

4. In combination, the rock shaft, having the arm to engage the thread and the arm R, the positively operated device in the line of movement of the arm R, to be engaged thereby when the thread breaks, the said rock shaft, having a socketed lower portion, and the supporting stud P adapted to said socket portion whereby the rock shaft may be moved longitudinally to disengage the arm R, from the worm, substantially as described.

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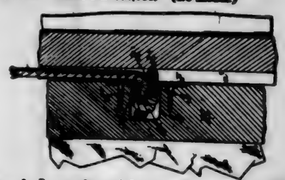
**500,759. WEATHER-STRIP.** HENRY C. FULLER, Bordentville, Ark., assignor of one-half to THOMAS A. WATSON, same place. Filed Oct. 17, 1891. Serial No. 408,998. (No model.)



*Claim.*—The combination with a door-frame, a hinged door having its under edge longitudinally recessed in rear of its front edge, and a grooved sill, of a pair of thin metal strips or leaves hinged together at their rear longitudinal edges and adapted to fold flat one against the other, the upper leaf serving as a securing-plate and seated in the bottom of the recess in the lower edge of the door and provided with an opening, a retracting spring located in a socket in the bottom of the recess of the door and having its lower end passed through the opening in the upper or securing strip or leaf and connected to the lower strip or leaf, a lug extending from one side of the lower strip or leaf, and a plate secured to the side of the door-frame and having a slot extending from its inner edge in a curved line to near its lower edge and adapted to engage said pin of the hinged leaf or strip and guide the free or front edge of the same down into the groove of the sill against the tension of the spring, substantially as specified.

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**500,760. SASH-CORD FASTENER.** LINCOLN GODDARD, Washington, D. C., assignor of one-half to HARVEY B. VARNI, same place. Filed Apr. 3, 1893. Serial No. 469,259. (No model.)



*Claim.*—1. In a sash cord fastener the combination of an annular cord retainer having a flange around the inner end of its body and a pivot-finger $d^3$ projecting from its face, with a cap plate P encircling the body of said retainer and bearing against its flange substantially as described.

2. The combination of a sash cord fastener consisting of an annular cord retainer having a flange around its inner end, a pivot-finger $d^3$ projecting from its face and a cap plate encircling the body of said retainer, with a sash carrying said sash cord fastener and a window frame having a vertical groove in its side to receive and guide the pivot-finger $d^3$ of the sash cord retainer substantially as and for the purpose described.

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**500,761. RED AZO DYE.** ARTHUR G. GREEN and THOMAS A. LAWSON, London, England, assignors to Brooke, Simpson & Spiller, Limited, same place. Filed July 12, 1892. Serial No. 439,817. (Specimens.) Patented in England Sept. 10, 1892, No. 14,304.

*Claim.*—1. The herein described process of preparing para azoxy-ortho-toluidin, which consists in the treatment with a cold solution of sodium stannite of a boiling solution of para-nitro-ortho-toluidin, substantially as described.

2. The herein described process of preparing para-azo-ortho-toluidin, which consists in the treatment with a cold solution of sodium stannite of a boiling solution of para-nitro-ortho-toluidin, then dissolving the para-azoxy-ortho-toluidin so obtained in an alcoholic solution and adding thereto a solution of sodium stannite substantially as described.

3. The herein described process of preparing azo-coloring matter



of various shades of yellow, orange and red having a substantive affinity for cotton, which consists in preparing para-azoxy-ortho-toluidin by the treatment with a cold solution of sodium stannite of a boiling solution of para-nitro-ortho-toluidin, then converting the said para-azoxy-ortho-toluidin into its tetrazo compound, and finally combining said tetrazo compound with any of the known phenols or amines or their sulfonic or carboxylic acids, such as the para-sulfonic acid of alpha-napthol, corresponding to Piria's naphthole acid, substantially as described.

4. The herein described process of preparing azo-coloring matters of various shades of yellow, orange and red, having a substantive affinity for cotton, which consists in preparing para-azoxy-ortho-toluidin by the treatment with a cold solution of sodium stannite of a boiling solution of para-nitro-ortho-toluidin, then preparing para-azo-ortho-toluidin by the treatment with a solution of sodium stannite of an alcoholic solution of the said para-azoxy-ortho-toluidin, then converting the said para-azo-ortho-toluidin into its tetrazo compound and finally combining said tetrazo compound with any of the known phenols or amines or their sulfonic or carboxylic acids, such as the para-sulfonic acid of alpha-napthol, corresponding to Piria's naphthole acid, substantially as described.

5. As a new article of manufacture, a coloring matter derived from para-azoxy-ortho-toluidin, consisting of a bronzy red powder insoluble in alcohol, (dissolving in concentrated sulfuric acid with a bluish red color) very sparingly soluble in water, but readily soluble in dilute caustic soda, which solution gives a bright bluish red precipitate, leaving a colorless fluid on subsidence or filtration, and dyes unmordanted cotton a bright scarlet, said dyed goods being unaffected by acids and standing the action of washing, substantially as described.

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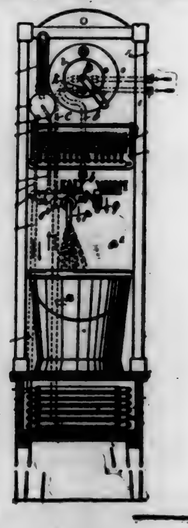
**500,762. RED AZO DYE.** ARTHUR G. GREEN and THOMAS A. LAWSON, London, England assignors to Brooke, Simpson & Spiller, Limited, same place. Filed July 14, 1892. Serial No. 439,902. (Specimens.)

*Claim.*—1. The herein described process for the preparation of a coloring matter, consisting in the treatment of azoxytoluidin of melting point 168° centigrade, with nitrous acid, and combining the tetrazo compound thus obtained with one molecule of alpha-napthol-para-sulfonic acid and one molecule of beta-napthol-di-sulfonic acid R and finally precipitating the coloring matter, substantially as described.

2. As a new article of manufacture, a coloring matter, derived from azoxytoluidin and consisting of a dark red powder, easily soluble in water but insoluble in alcohol, the addition of caustic soda or potash to such aqueous solution changing the red color to orange red, said solution not capable of precipitation by dilute acids, said color dissolving in concentrated sulfuric acid with a bluish red color, dyeing woolen goods in an acid bath a bright red, resisting the action of soap and alkali in milling and washing and not altered in color by the action of acids, substantially as described.

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**500,763. APPARATUS FOR STERILIZING WATER.** DAVID GROVE, Berlin, Germany. Filed Feb. 25, 1893. Serial No. 464,099. (No model.) Patented in England Nov. 14, 1892, No. 20,562.



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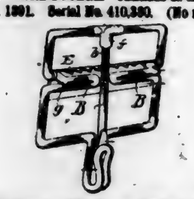
*Claim.*—1. In combination, the gas heater *d*, the pipe *c* leading thereto, the reservoir *f* connected with the gas heater for receiving the hot water, the pipe *l*, leading from the reservoir and having a branch *m*, the hot water discharge pipe *n* connected with the branch *m* and surrounding the cold water pipe, the spigot *p* on the pipe *n* for the discharge of the cold water and the spigot *q* on the branch pipe *m* for the discharge of the hot water, substantially as described.

2. In combination, the gas heater, the gas supply pipe leading thereto, the cock in said pipe, the water supply pipe extending adjacent to the gas supply pipe and having a cock near the gas cock, the hot and cold water circulating pipes, the disk on the stem of the gas cock and arranged over the stem of the water cock, said disk having a perforation adapted to align with the water cock stem when the gas cock is opened full way and the support for the parts, substantially as described.

3. In combination, with the chair having the upright back and hollow bottom, the gas heating device and reservoir *f* on the back, the gas and water supply pipes leading to the heating device, the pipe leading from the heating device to the reservoir, the hot and cold water circulating pipes extending down into the chair bottom and coiled therein, said pipes including the branch pipe *m*, the spigot *q* on said pipe for drawing off the hot water and the spigot *p* for the cold water pipe both of said spigots being arranged on the back above the chair bottom, substantially as described.

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**500,764. WIRE BUCKLE.** CHARLES R. HARRIS, Williamsport, Pa. Filed Oct. 20, 1891. Serial No. 410,380. (No model.)



*Claim.*—1. A wire buckle frame having the two ends thereof bent inward toward the center and then returned to form the bearing bars in longitudinal line with each other, bearings for the pivoted clamping plate located at or near the ends of the frame and in a plane with the bearing bars, the clamping plate carried by said bearings, a hook depending from the lower bar of said frame for the attachment for cast off, and a front bar carried from the top of the frame and extending below the lower bar of the same, substantially as set forth.

2. A wire buckle having rearwardly projecting loops and inwardly projecting arms integral with the sides of the buckle, the two members of each arm being substantially parallel as shown forming an abutment, a swinging clamping bar mounted at its ends in the rearwardly projecting loops and having a bent edge for forcing the suspender web or strap against the abutment, a hook for the attachment of the cast off and a front bar carried from the top of the frame and extending below the lower bar of said frame, substantially as set forth.

3. A wire buckle having rearwardly projecting loops and inwardly projecting arms formed integral with the sides of the buckle frame, a swinging clamping bar mounted at its ends in said rearwardly projecting loops and located in rear of said arms, a hook at the lower end of said frame, and a swinging snap carried by the top bar and having a loop at its lower end for embracing the hook, substantially as set forth.

4. A buckle frame made from wire, having the two ends of the frame bent inward toward the center and then returned to form the bearing bars in longitudinal line with each other, bearings for the pivoted clamping plate located at or near the ends of the frame and in a plane with the bearing bars and the clamping plate carried by said bearings, substantially as set forth.

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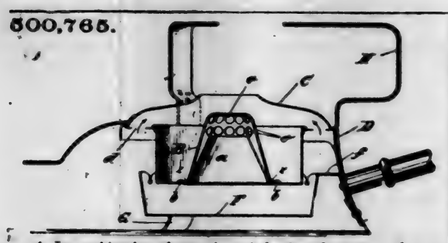
**500,765. ALCOHOL-STOVE.** JULIUS HELLER, Teplitz, Austria Hungary. Filed Jan. 21, 1893. Serial No. 458,236. (No model.) Patented in England Dec. 10, 1891, No. 21,948, and in Germany Sept. 17, 1891, No. 66,104.

*Claim.*—1. An alcohol cooking stove consisting of a receiver A provided with a hollow cone *a*, projecting into the interior part of the same a hollow cone B fitting over the first with openings *o* at its upper end, substantially as described.

2. In an alcohol cooking stove, a vessel F, a receiver within the same with an air space between, a cone *a* and a perforated cone B over the same, substantially as described.

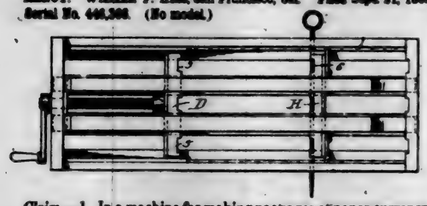
3. In an alcohol cooking stove having a burner, a dome-shaped covering cap C provided with an opening for the passage of the heating flame and the air inlets *d*, substantially as described.

500,765.



4. In combination, the receiver A having the cone *a*, the perforated removable cone B and a concentrating plate having a central opening adapted to be placed above the burner, substantially as described.

500,766. PRESS FOR PACKING BANK-NOTES OR OTHER CURRENCY. WILLIAM F. HESS, San Francisco, Cal. Filed Sept. 21, 1892. Serial No. 446,366. (No model.)



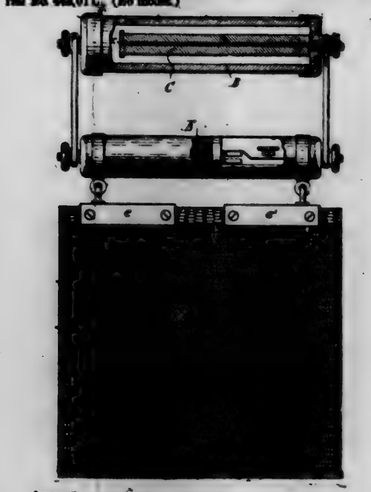
*Claim.*—1. In a machine for making packages of paper currency, a box having a compression head, a plunger or follower reciprocating therein, and removable transverse pins passing through the sides of the box, substantially as described.

2. In combination, with the box having a compression head, a plunger or follower reciprocating therein, transverse grooves in the follower, and removable pins passing through holes in the sides of the box in alignment with the grooves in the head, substantially as described.

3. A machine for making packages of paper currency consisting of a box having a slotted bottom, longitudinal racks upon the inner sides of the box, a movable follower in the box an adjustable compression head having catches to engage said racks, and vertical grooves in the head and follower registering with the slots in the box bottom, all substantially as and for the purposes set forth.

4. In combination with the box, and the movable follower working therein, the adjustable compression head having catches engaging with racks within the box so as to prevent its movement in one direction, and one or more removable transverse pins passing through the sides of the box, substantially as set forth.

500,767. ELECTRO-MEDICAL APPLIANCE. SOPHIA HUTCHINSON-CARRUTHERS, Sydney, New South Wales. Filed Oct. 6, 1892. Serial No. 448,017. (No model.)



*Claim.*—1. In an electro medical appliance, the textile fabric or towel having metallic conducting stripe or bands and the battery electrically connected with said strips said battery being also mechanically connected with the towel and adapted to be portable therewith.

2. In an electro medical appliance, the textile fabric or towel having the conducting stripe or bands, the portable battery A, at the edge of said towel and the connections *d*, *d'* between said battery and the towel, substantially as described.

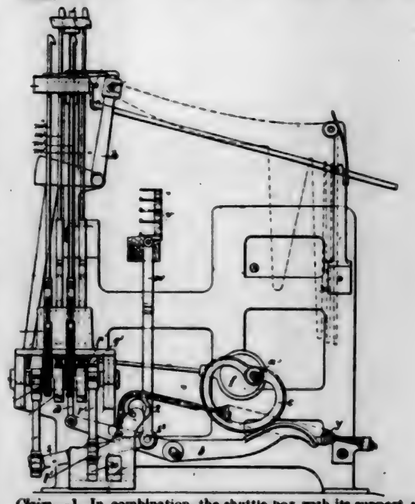
3. In combination, the textile towel having the metallic conducting means, the battery A, the induction coil E, connected to the metallic bands and the connections *d*, *d'* between the battery and the induction coil, substantially as described.

4. In combination, the towel having the metallic bands, the plates *e*, *e'*, at the edge of the towel, the battery and the connections therefrom to the plates, substantially as described.

5. In combination, the towel having the metallic conducting bands, the battery A, connected therewith comprising the carbon and zinc elements, one of said elements being arranged within the other and having a channel leading through it for the escape of gas from the interior, substantially as described.

6. In combination, the towel having the metallic conducting stripe and the battery A, of elongated form having its ends connected electrically and mechanically with the towel and portable therewith.

500,768. DROP-BOX-CHANGING MECHANISM FOR POWER-LOOMS. FRIEDRICH HOFMANN, Baraccomo, near Turin, Italy, assignor to the Maschinenfabrik Rüti, formerly Kaspar Honegger, Rüti, Canton of Zurich, Switzerland. Filed Dec. 31, 1892. Serial No. 456,910. (No model.)



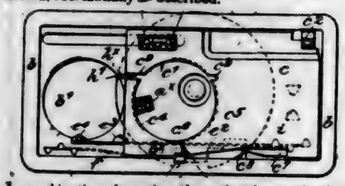
*Claim.*—1. In combination, the shuttle box with its support *w*, the lever *e* connected to said support at one end, the independent shafts $p'$ $p^3$, the two eccentrics on said shafts arranged to have independent action, the eccentric rod $r^2$ leading from one of said eccentrics to one end of the lever and the rod $r'$ leading from the other eccentric to the middle part of the lever, the pair of lifter hooks $m'$, $m^3$, the chains connecting said rods to opposite sides of the shaft $p'$, the second pair of rods $m^2$, $m^4$ with their chains connecting them in like manner to opposite sides of the shaft $p^3$ and the means for operating the lifter hooks, substantially as described.

2. In combination, the shuttle box and its support, the lever *e*, the two shafts $p'$, $p^3$ having eccentrics and drums thereon with notched projections, the eccentric rods connected to the lever *e*, the two pairs of lifter hooks, the chains connecting them to opposite sides of the chain drums, said lifter hooks being arranged when in their lowest position to engage the notched projections of the drums and act as stops and the means for operating the lifter hooks, substantially as described.

500,769. REGISTERING-RECEPTACLE FOR COINS. ERNEST A. JALBERT, London, England. Filed Nov. 11, 1892. Serial No. 451,810. (No model.)

*Claim.*—1. In combination in a coin receptacle, the casing, the registering ratchet, the spring retaining pawl for engaging the same, the sliding pusher *c*, having the driving pawl and having also the inclined piece $c^2$ arranged to withdraw the retaining pawl from the ratchet, substantially as described.

2. In combination, the casing having the sight opening the registering ratchet visible through said opening, the retaining pawl for the ratchet, the sliding pusher plate, having the driving pawl and the inclined piece for withdrawing the retaining pawl, said pusher plate being arranged to close the said sight opening when the retaining pawl is withdrawn, substantially as described.



3. In combination, the casing, the registering ratchet having the notches between its teeth one of which is deeper than the others, the spring retaining pawl engaging said notches, the sliding pusher, the driving pawl carried thereby and the piece carried by the pusher and adapted to abut against the retaining pawl only when the same engages the deep notch, substantially as described.

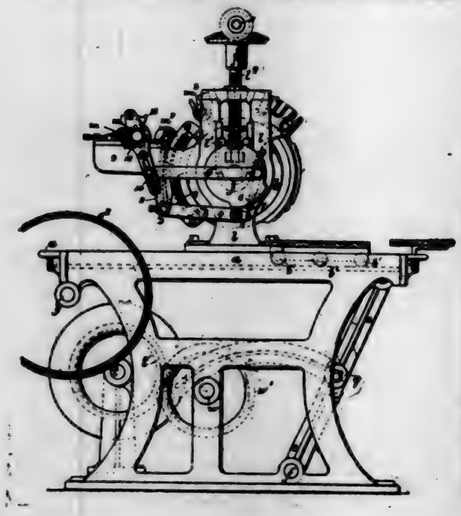
4. In combination, the casing the registering ratchet having the deep and shallow notches between its teeth, the spring retaining pawl arranged to enter said notches, the sliding pusher plate, the driving pawl carried thereby, and the inclined piece $c^2$, arranged on the pusher to engage and withdraw the retaining pawl when the same is engaging the shallow notches, said piece $c^2$ having a square nose $c^3$ to abut against the spring retaining pawl when the same is in the deep notch, substantially as described.

5. In combination the casing, the receiving plate having an opening *b'*, the pusher slide adapted to carry the coin to the said opening, and the spring stop $c^6$ adapted to yield under the action of a coin when moved by the pusher slide, said pusher slide having a projecting abutment $c^5$ adapted to strike the stop when no coin is being pushed forward by the slide, substantially as described.

6. In combination, the casing, the receiving plate having an opening *b'* for the coin, the pusher slide having an abutment $c^5$ and the spring stops $c^6$, $c^4$ arranged one behind the other and normally in line with the abutment $c^5$ on the sliding pusher, substantially as described.

7. In combination, the receiving plate having an opening *b'*, the pusher slide having an opening to receive the coin and convey it forward the inclined stop *h'* a spring blade *h*, on the receiving plate carrying the said stop, the said pusher slide having the flanges $c^7$, $c^8$ about its opening to prevent the withdrawal of the coin when inserted beyond the stop *h'*, substantially as described.

500,770. MECHANISM FOR PRINTING FOLDED FABRICS, &c. RICHARD J. LISTER, Manchester, England. Filed July 15, 1891. Serial No. 399,693. (No model.) Patented in England July 5, 1890, No. 10,048.

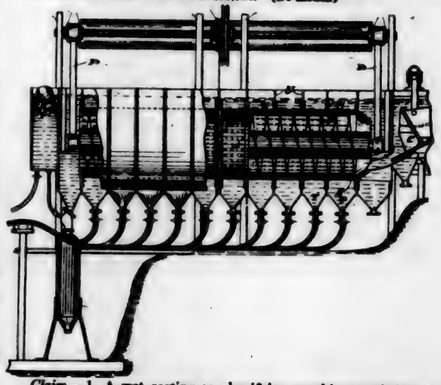


*Claim.*—1. The combination with the drum or cylindrical frame, having printed blocks thereon, and means for positively rotating the same of the reciprocating feed table adapted to engage said drum, and crank mechanism and connections for reciprocating the table including compensating means for allowing the drum and table to travel at the same surface speed, substantially as set forth.

2. The combination with the positively driven drum or cylindrical frame, having printing blocks thereon, of the rollers $m^2$ $m^3$, arms 2, the upper ends of which form bearings for roller $m^2$, shaft *f* and cam wheel 6 on said shafts, rods 4 secured at one end to the arms 2 and at the other end to spring 7, roller 5 on said rod adapted to engage the cam wheel to actuate said roller $m^3$, and rod 15 pivoted on the cam wheel for actuating the roller $m'$ substantially as set forth.

3. The combination with the positively driven printing drum, and the reciprocating feed table, of the rocking bar *c*, means for operating the same and rod *d*, of block *c* and springs *d'*, whereby said table is allowed to travel at the same surface speed as the said drum, substantially as set forth.

500,771. MACHINE FOR SORTING MATERIALS ACCORDING TO SIZE. WILLIAM S. LOCKHART, London, England, assignor to the Automatic Gem and Gold-Separator Syndicate, Limited, same place. Filed Feb. 1, 1892. Serial No. 460,587. (No model.)



*Claim.*—1. A wet sorting or classifying machine consisting, in combination, of a cylindrical or polygonal perforated screen a fixed surrounding divided tank containing water, connections for support through bearings on frame, to crank and eccentrics on first motion shaft and flexible guided chain and rope connections to axis of screen from said first motion shaft to produce a combined jigging and rotary motion upon the screen while immersed in liquid.

2. In combination, in a wet sorting or classifying machine a cylindrical or polygonal screen perforated with different sized holes in series and immersed in water tank, an internal feeding or controlling helix, suspending connecting rods, rocking levers oscillating on fixed bearings on frame, eccentrics on first motion shaft and attachments to said rocking levers, flexible connections, such as chains, about driving pulleys on first motion shaft, guiding pulleys on ends of rocking levers and driving pulley on axis of screen substantially as described.

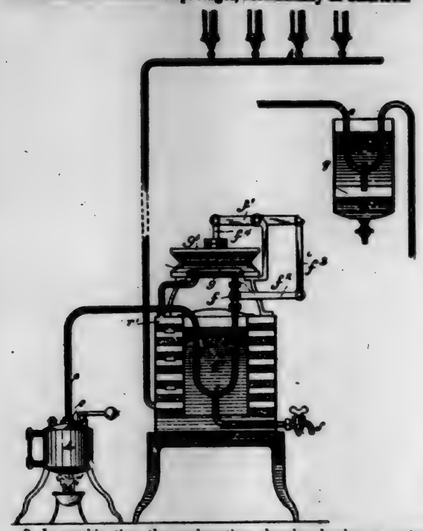
3. In a wet sorting or classifying machine, the combination with a polygonal or cylindrical screen and attachments and supports producing combined reciprocating and rotary motion therein of a tank surrounding the said screen, diaphragms fitted in said tank surrounding the screen pierced with orifices admitting of the reciprocating motion of the screen and double flanges on the periphery of the screen, loosely embracing said diaphragms to form a series of distinct chambers in tank for separate collection of separate sized minerals passing through the screen, substantially as described.

500,772. CARBURETING APPARATUS. RUDOLPH MARGO, Vienna, Austria-Hungary. Filed Nov. 8, 1892. Serial No. 451,514. (No model.)

*Claim.*—1. In combination, in a carburetor, the casing divided horizontally into a number of compartments, the central water reservoir, said compartments being in combination with each other, the outlet pipe for the carbureted air and the inlet pipe passing through the central water reservoir and thence into the casing, substantially as described.

2. In combination, the casing having a central water reservoir and a series of horizontal partitions extending thereon to form hori-

ental compartments, said compartments being in combination with each other and the vertical partition extending on one side of the central water reservoir between the same and the wall of the casing and between the conduits or passages, substantially as described.



3. In combination, the carbureting chamber having a central water reservoir therein, the air inlet pipe passing through the same, and connecting with the carbureting chamber and the regulator interposed in said inlet pipe between the reservoir and the said chamber said regulator comprising a bellows and a valve in the inlet pipe connected thereto, substantially as described.

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**500,773.** RECEPTACLE FOR CARRYING LIQUID GOODS. GIUSEPPE PEZELLI-MINETTI, Barletta, Italy. Filed Oct. 21, 1892. Serial No. 337,033. (No model.) Patented in Switzerland July 15, 1889, No. 1,203.



*Claim.*—A collapsible receptacle formed of flexible sections secured together, the rings arranged about the receptacle, the cover and the rings thereon corresponding to the rings on the receptacle, substantially as described.

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**500,774.** BLOTTING-PAD. JOHN C. MOSHER, Wellington, New Zealand. Filed Dec. 5, 1892. Serial No. 454,117. (No model.)



*Claim.*—In combination, a pair of parallel plates, a pad of blotting paper having its ends clamped between the contiguous faces of said plates and a spring encircling both the plates and interposed between one of said plates, and the blotting pad, substantially as described.

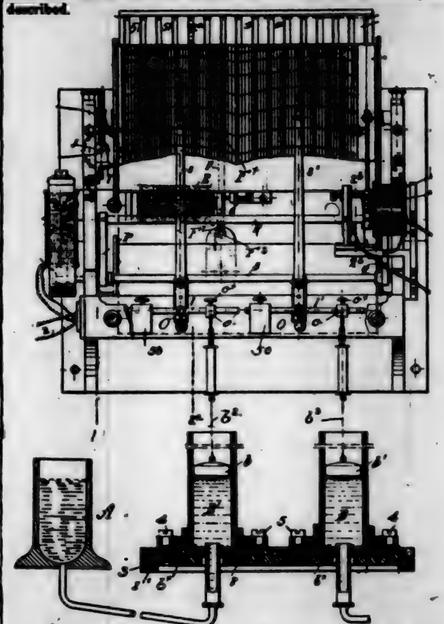
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**500,775.** APPARATUS FOR RECORDING THE FLEXURE OF BRIDGES. EMILE PARENTEAU, Paris, France. Filed July 4, 1892. Serial No. 439,439. (No model.) Patented in France Sept. 15, 1891, No. 216,161.

*Claim.*—1. In combination the movable-liquid containing vessel the stationary vessel, the pipe connections between them, the float in the stationary vessel, a recording device, and a connection from the said float extending outside the vessel to the recording device substantially as described.

2. In an apparatus for recording the flexure of a flexible structure the combination of the recording cylinder with means for moving it a recording stylus, a pivoted lever carrying the same, a float connected with said lever, a vessel containing a liquid and said float, and a second liquid-containing vessel carried by the flexible structure and connected with the vessel first mentioned, substantially as described.

3. In combination in a recorder, the stylus with operating means therefor, the cylinder, the electro magnet, the armature, the ratchet and ratchet shaft operated by the armature, the cylinder shaft having a worm wheel and the worm on the ratchet shaft, substantially as described.



4. In combination the cylinder with means for moving it, the stylus in normal engagement with the cylinder, the pivoted support for said stylus, the means for operating the same to make the record, consisting of the stationary vessel having a float connected to the pivoted support and the movable vessel having a pipe connection with the stationary vessel, the shaft and frame for moving the said stylus toward and from the cylinder, the electro magnet and armature in connection with the said shaft and frame for controlling it and the electric circuit including the said magnet whereby the operation of the stylus may be controlled from a distant point, substantially as described.

5. In combination the recording cylinder, the stylus, the lever carrying the stylus, the vessel B carrying a float, a liquid supply, a pipe connection between the said vessel and the liquid supply, the adjustable connection between the float and the stylus lever the said vessel being adjustable also, and the means for adjustably holding the said vessel substantially as described.

6. In combination, the recording cylinder, a series of styluses arranged to bear on said cylinder and extending from end to end thereof to make parallel lines longitudinally of the strip and a recording stylus supported to have movement longitudinally of the cylinder and laterally of the paper strip thereon to cross the parallel lines made by the series of styluses, and means for operating the recording stylus longitudinally of the cylinder whereby the record marks and the parallel lines crossing the same are placed simultaneously on the paper strip, substantially as described.

7. In combination the recording cylinder with means for moving it, a pair of styluses, one near each end of the said cylinder, the movable supports for said styluses, the two vessels B, B, arranged side by side containing liquids, the floats therein, the connections from the floats to the movable stylus supports, and the independent means for operating the floats adapted to be placed at different sides or portions of the flexible structure, said means consisting of the movable vessel and the flexible connections therefrom to the vessels B B, substantially as described.

8. In an apparatus for recording the flexure of bridges and like structures, the recording cylinder arranged to be placed at a distance from the structure on a stationary support, the recording stylus, the vessel B having a float connected with the said stylus the liquid vessel A adapted to be placed on the structure the conduit between the vessels A and B the said stylus being movable toward and from the cylinder and the means for moving the stylus to or from the cylinder and controlling said movement from a distant point consisting of the electro magnet and armature and the electric circuit extending therefrom to the said distant point, substantially as described.



9. In combination the cylinder, the recording stylus, the means for operating it over the surface of the cylinder, consisting of the liquid containing vessel B, the float therein connected to the stylus and the second liquid containing vessel connected to the vessel B, the numbering styles $a^n$ and the means for operating the same at the will of the attendant consisting of the electro magnet and armature and the electric circuit whereby the number of the records may be made upon the paper by the attendant from a distant point, substantially as described

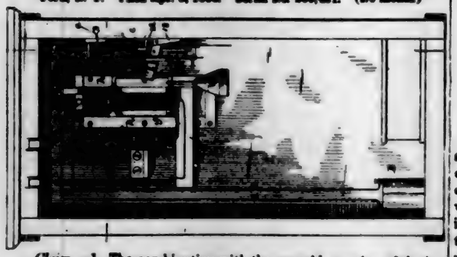
10. In combination the cylinder, the recording stylus with vibrating operating means therefor adapted to transmit the vibrations of the structure to be tested, the means for rotating the cylinder consisting of the electro magnet and armature, the operating connections between the said armature and the cylinder shaft, the electric circuit extending from the electro magnet to a distant point and the adjustable circuit breaker at said distant point whereby the rotation of the cylinder may be varied to correspond to the rapidity of the vibrations of the flexible structure, substantially as described.

11 In combination the cylinder, the electro magnet and armature with connections to the said cylinder, the electric circuit with an adjustable circuit breaker, the recording stylus with vibrating means for operating the same to make the record of vibrations of the structure to be tested, the electro magnet and armature having connections with the said stylus to regulate its position relatively to the cylinder, and the electric circuit extending to a distant point for controlling the said magnet and armature, substantially as described.

12. In combination, the cylinder, the electro magnet and armature with connections to the said cylinder, the electric circuit with an adjustable circuit breaker and the recording stylus with means for operating the same the said adjustable circuit breaker comprising the cylinder 16, with a series of conducting and non-conducting rings, the adjustable blades 17, 18, to contact with said rings and the means for operating the cylinder, substantially as described.

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**500,776.** COIN-OPERATED INDUCTION-COIL. WILLIAM B. POPE, Baltimore, Md., assignor to the National Electric Machine Company, New York, N. Y. Filed Apr. 3, 1893. Serial No. 469,621. (No model.)



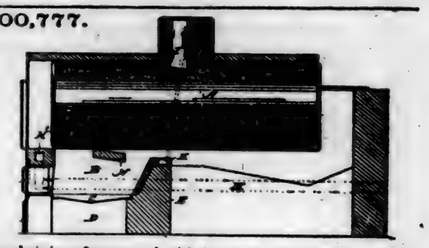
*Claim.*—1. The combination with the movable portion of the induction coil, the chute D, the circuit breaker, consisting of fixed and movable contacts at one side of the chute, and the induction coil and handles, of a movable section *c*, of said chute opposite the circuit breaker and devices for engaging said movable section frictionally with the movable portion of the induction coil, during the entire movement of said coil substantially as set forth.

2. The combination with the movable section *c*, of the chute D, and the adjustable portion of the induction coil, of a bar 21, and a friction lever J, grasping said bar and connected with the section *c*, substantially as and for the purpose set forth.

3. The combination in a coin-operated induction coil, of a case containing a battery, electro-magnet, chute, circuit breaker, handles outside the case, wires extending from said handles to contacts on the door of the case, and wires extending from the secondary circuit of the induction coil to contacts upon the case arranged to meet those upon the door when the latter is closed, substantially as and for the purpose set forth

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**500,777.** STEAM-BOILER FURNACE. CHARLES RINCK, Cincinnati, Ohio. Filed Mar. 17, 1893. Serial No. 466,493. (No model.)



*Claim.*—In a steam boiler furnace, air ducts arranged to convey or deflect the air diagonally from the sides across the fire pot, and in a direct line from the front, steam pipes opening into the air ducts, a receptacle located in the path of the flame for superheating the steam, connecting with the boiler and steam pipes, a reverberatory or deflecting arch located over the grate bars, and means for controlling the admission of steam and with it the air, substantially as and for the purpose set forth.

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**500,778.** TENSION DEVICE FOR HARVESTERS. THOMAS SAMPSON, Gawler, South Australia. Filed Dec. 6, 1892. Serial No. 454,220. (No model.) Patented in South Australia Dec. 7, 1891, No. 2,093, and in Victoria Dec. 7, 1891, No. 9,302.



*Claim.*—The herein described contrivance for adjusting the tension of the twine of harvesting machines consisting essentially of a bar or rod, upon the inner end of which is formed a screw thread and the outer end of which is provided with a loop, or is flattened and provided with a round hole, the loop or end being preferably bent inward, in combination with a bar or frame having a screw threaded hole for the inner end of the tension rod or bar and a rounded hole through which the twine passes substantially as herein described and for the purpose indicated.

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**500,779.** CHIMNEY OR SMOKE-STACK. RICHARD SAVAGE, San Francisco, Cal., assignor of one-half to Isaac L. Merrell, same place. Filed July 22, 1892. Serial No. 440,854. (No model.)



*Claim.*—1. A chimney or smoke-stack composed of an inner cylinder of copper sections set so as to leave spaces between their adjacent ends, an outer cylinder composed of abutting sections of sheet iron and a filling between the two cylinders, substantially as set forth.

2. A metallic chimney composed of inner and outer sectional shells, made respectively of copper and iron, the sections of the inner shell being flanged at one of their ends so as to leave a space between their adjacent ends, and a filling between the two shells and between the adjacent ends of the inner section, substantially as set forth.

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**500,780.** PILE-PLANTING. ADOLF SIMS, Gaden, Germany. Filed Mar. 3, 1893. Serial No. 464,828. (No model.) Patented in Germany July 20, 1891, No. 64,781, and in Belgium Apr. 11, 1892, No. 98,180.

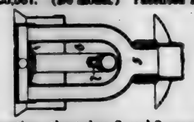
*Claim.*—1. In combination the hollow beams having slots extending longitudinally thereof and the flanged connecting irons adapted to pass through said slots with their flanges inclined by the beams, substantially as described.



2. In combination the hollow beam comprising an angle iron and its opposing part arranged to leave longitudinal slots along its sides, the transverse connecting means to hold the angle iron and its opposing part together to form the hollow slotted beam and the flanged connecting iron, the flanges of which are fitted to the space between the slotted side of the beams and the transverse connections, substantially as described.

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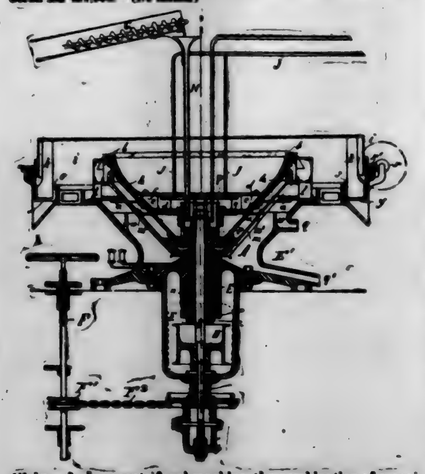
**500,781. BURNER FOR COOKING-STOVES OR SOLDERING APPARATUS.** JOHAN V. SVENSON, Stockholm, Sweden. Filed Nov. 28, 1892. Serial No. 453,387. (No model.) Patented in Sweden Feb. 25, 1892, No. 3,944.



*Claim.*—In combination, the tubes 2 and 3 crossing each other centrally and at right angles, the tubes 4 depending from the ends of the tube 2 and having their lower ends joined into an inlet 5, the tubes 6, depending from the ends of the tube 3, and having the nipple 7, at their junction above the junction of the tubes 4, substantially as described.

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**500,782. CENTRIFUGAL MACHINE.** ISAAC V. SHUKHOVSKI and GUSTAV V. PLOSTKOWSKI, Kapuscinari, Russia. Filed July 9, 1892. Serial No. 439,536. (No model.)



*Claim.*—1. In a centrifugal machine, the combination of a conical drum *a*, a perforated rim at the top thereof, means for turning the drum *a*, and with it the rim *b*, the said drum being vertically adjustable in relation to the rim, and the means for effecting said adjustment, substantially as described.

2. In a centrifugal machine the combination of a conical drum with means for rotating the same, a central collar P projecting from the bottom of the drum, a disk *c* screwed on the central collar and arranged with an opening *d* between its outer edge and the interior of the said drum, the said collar P having perforations, and the means for feeding the material into the collar, substantially as described.

3. In a centrifugal machine the combination of a rotary conical drum, a disk within the same, arranged with an opening *d* between its edge and the wall of the drum, means for introducing a liquid or gaseous material and blades *e* arranged above the disk for distributing said liquid or gaseous material, substantially as described.

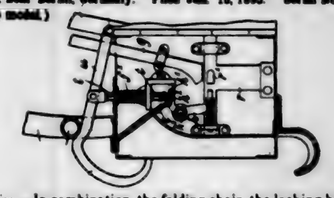
4. In a centrifugal machine the combination of a rotary conical drum, means therein for distributing a liquid or gaseous material, and a flexible covering A within the upper part of the drum, arranged to press upon the material in its passage from the drum, substantially as described.

5. In a centrifugal machine the combination of a rotary conical drum and means for rotating the same, and a flexible covering within the said drum and extending along the walls thereof to press upon the material, substantially as described.

6. In a centrifugal machine the combination of perforated rotary drum, a casing about the same, an upper rim carried by arms m outside the drum, and means for vertically adjusting the drum with relation to the rim, substantially as described.

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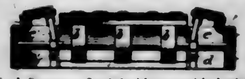
**500,783. COIN-FEED FOLDING CHAIR.** JOHN O. TOSSIN, Westend, near Berlin, Germany. Filed Jan. 18, 1893. Serial No. 458,817. (No model.)



*Claim.*—In combination, the folding chair, the locking bar *g* connected to a moving part thereof, the casing into which the locking bar extends, the locking piece or bolt arranged to engage said bar, the crank lever having a perforated end and connected with the said locking piece and means for operating the said lever when a coin is introduced consisting of the bolt *f'* arranged independently of the bar *g* and arranged to be moved by the opening of the folding chair, substantially as described.

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**500,784. CHROMATIC-PRINTING DEVICE.** THEODORE J. TUBLET, Nashville, Tenn. Filed Dec. 8, 1892. Serial No. 454,508. (No model.)



*Claim.*—1. A frame or form-holder provided with a printing form arranged to move in a right line to and above and below the printing line; in combination with a pivoted printing plate arranged in position to be acted upon by means outside of the frame, as the latter travels back and forth, and means operatively connecting the plate and form all substantially as shown and described.

2. In combination with an open frame or form-holder; a form mounted therein, and arranged to be brought to and above and below the printing line; a printing plate hinged to the frame, and means connecting the plate and form,—said plate and form being arranged in such relation to each other, that when the form assumes a type high position, the plate shall be at the printing point, all substantially as shown and described.

3. In combination with an open frame or holder; a form mounted therein, and provided with a bearing face *a*; a shaft *c*, provided with a cam or wiper *b* to engage the form, and provided also with a ratchet wheel; a pivoted plate, and a pawl carried by the plate to engage the ratchet wheel.

4. In a machine of the class described, the combination with a frame carrying a movable form or form-block; of plates C C' and intermediate connections for raising the block to, above, and below, the printing line; and rollers for inking the main form and the movable form, and also for acting upon the plates, whereby the actuation of the movable form is effected by the inking.

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**500,785. CHROMATIC-PRINTING DEVICE.** THEODORE J. TUBLET, Nashville, Tenn. Filed Dec. 12, 1892. Serial No. 454,574. (No model.)



*Claim.*—1. As an improved article of manufacture, a form-holder comprising a frame adapted to be locked up in an ordinary form or printer's chase, a rotatable form or form-block, means for rotating the latter, and an inking mechanism carried by the frame to ink the rotatable form with ordinary printer's ink and independent of the main form-inking rollers, all combined and arranged substantially as shown and described, whereby the said rotatable form is adapted to be inked and to print in a color contrasting to the impression of the main form.



2. As an improved article of manufacture, a form-holder comprising a frame adapted to be locked up in an ordinary form or printer's chase, a rotatable form or form-block, means for rotating the latter, and a removable inking mechanism carried by the frame to ink the rotatable form with ordinary printer's ink, and independent of the main form-inking rollers, all combined and arranged substantially as shown and described, whereby the said rotatable form is adapted to be inked and to print in a color contrasting to the impression of the main form.

3. In combination with the frame and the rotatable form, the ink fountain, the pivoted distributing rollers, and means for rotating the form to bring it into contact with one of the distributing rollers.

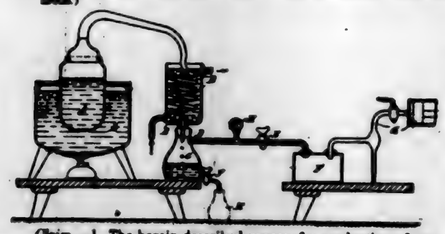
4. In combination with the frame, the rotatable form, the pivoted plate C, an ink reservoir, a feed roll therefor provided with a ratchet wheel, and a pivoted arm adapted to be struck by the plate and carrying a pawl to engage the ratchet wheel.

5. In combination with the frame, the form B journaled therein and provided with a ratchet wheel; and the pivoted plate provided with a pawl to engage the ratchet wheel.

6. In combination with the frame, the form B journaled therein and provided with a ratchet wheel, the plates C C' pivoted to the frame and geared together as shown, and a pawl carried by one of said plates to engage the ratchet wheel.

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**500,786. PROCESS OF MAKING NITRIC ACID.** CARL O. VOSS, Berlin, Germany. Filed Apr. 8, 1893. Serial No. 469,880. (No specimens.)

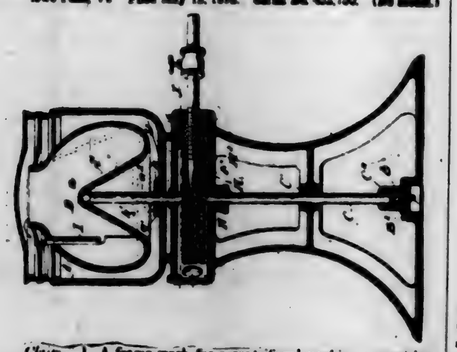


*Claim.*—1. The herein described process for production of pure and very concentrated nitric acid consisting in placing the raw materials, such as saltpeter and sulphuric acid in an air tight receptacle establishing a vacuum during the decomposition and condensing the vapor generated, substantially as described.

2. The herein described process for the production of pure nitric acid consisting in placing the raw material, such as saltpeter and sulphuric acid in a retort, heating the same to 85° Celsius, exhausting the air and condensing the generated vapors, substantially as described.

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**500,787. CENTRIFUGAL CREAMER.** NATHAN G. WILLIAMS, Bellows Falls, Vt. Filed May 13, 1892. Serial No. 432,750. (No model.)



*Claim.*—1. A frame-work for a centrifugal machine, comprising a bowl-casing, a steam motor case and an interposed closed air-chamber, substantially as specified.

2. A frame-work for a centrifugal machine, comprising a bowl-casing, a steam-motor case and an interposed air-chamber, the bowl-casing and air-chamber being detachably connected with the motor-case, substantially as specified.

3. The combination with the spindle and the bowl of a steam chamber beneath the bowl, a steam wheel fast on the spindle within the said chamber, a steam supply to said wheel, and an air-chamber between the bowl-casing and the steam chamber, substantially as specified.

The combination with a support having motor-case, bowl-casing and interposed air-chamber, of a suitably-stepped spindle a bowl loosely supported thereon on a ball bearing, a motor-wheel in the motor-case, and means for supplying a power producing medium to said wheel, as set forth.

5. The combination with the spindle and a motor-case, of a bucketed wheel on the spindl within the case, means for supplying a power-producing medium to said wheel, and a superposed bowl, bowl-casing and interposed air chamber, substantially as specified.

6. As a means for varying the density of the cream discharged from a centrifugal separator bowl, a delivery tube mounted for rotation within the bowl to receive the cream at points varying in distance from the center of the bowl, as set forth.

7. As a means for varying the density of the cream discharged from a centrifugal separator bowl, a delivery tube within the bowl adapted to be rotated and having a portion at one end at an angle to the tube as and for the purpose specified.

8. A separator bowl provided with a substantially vertical delivery tube located to enter the cream wall and having a nozzle at one end capable of rotary movement, as and for the purpose specified.

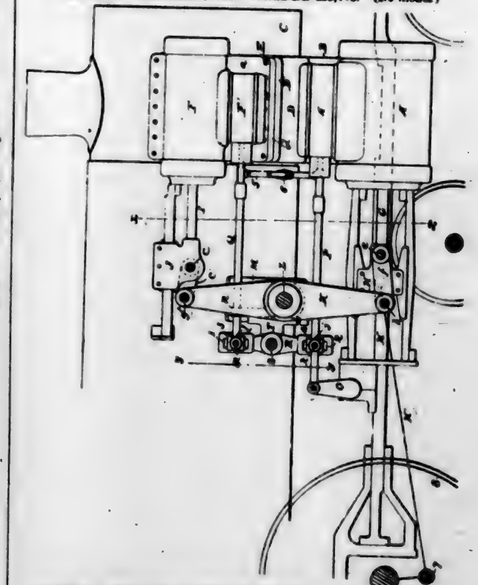
9. A separator bowl provided with a vertically disposed delivery tube having a nozzle adjustable to vary the density of the cream delivered from the tube, as set forth.

10. The combination with the bowl of a centrifugal machine, of a tube projected within the bowl and in the cream space thereof and terminating in a curved rotatable end portion, substantially as specified.

11. The combination with a bowl of a centrifugal machine, of a cream discharge tube projected into the interior of the bowl and terminating at its outer end with a rotatable bent tube, substantially as specified.

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**500,788. COMPOUND LOCOMOTIVE.** RANSOM C. WRIGHT, Philadelphia, Pa. Filed Mar. 4, 1892. Serial No. 423,776. (No model.)



*Claim.*—1. In a compound locomotive, the combination of a steam cylinder having a saddle secured to one side of the boiler, a piston within the cylinder, another steam cylinder secured to the framing and the boiler but separate from the first said cylinder, a piston therein, a piston rod and cross head for each cylinder, a coupling link for each cross head, an interposed lever fulcrumed upon a bracket on the boiler, to the opposite ends of which said links are secured, and the connecting rod which conveys power to the driving wheel, substantially as described.

2. In a compound locomotive; the combination of a steam cylinder secured to the framing and provided with a half saddle secured to the boiler, another steam cylinder having a saddle by which it is secured to the boiler, the saddle and half saddle being united, the

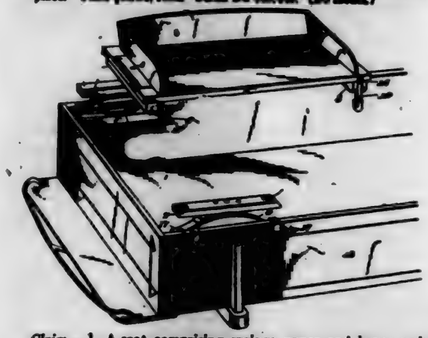
pistons and piston rods for said steam cylinder, the lever interposed between the cross heads to which it is connected by links, substantially as described.

3. In a compound locomotive, the combination of a steam cylinder A secured to the frame and provided with a half saddle secured to the boiler, another steam cylinder F having a saddle *a*, by which it is secured to the boiler, the half saddle B and the saddle *a* being united by bolts E, the pistons and piston rods for the steam cylinders, the lever K, the links connecting the piston rods, and the rod connecting said lever with the driving wheels, substantially as described.

4. In a compound locomotive the combination of a high and low pressure cylinder both arranged on the same side of the boiler and one above the other, the steam chests for the cylinders, the chest for the upper cylinder being below it and that for the lower cylinder being arranged above its cylinder, the pistons within the cylinders, a pipe leading from the high pressure steam chest to the low pressure steam chest, a cock or valve in such pipe and means for operating said cock or valve, substantially as set forth.

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**500,789. SPRING-SEAT FOR VEHICLES.** JOHN A. ALEXANDER, Ardmore, Ind. Ter., assignor of one-half to John M. Alexander, same place. Filed Oct. 20, 1892. Serial No. 449,449. (No model.)



*Claim.*—1. A seat comprising springs, upper and lower spring bars, a seat bottom having one end pivoted to one of the upper spring bars, and its other end detachably connected with the other upper spring bar, substantially as described.

2. The combination of the supporting springs, the lower spring bars, the upper spring bar 6 secured to one of the springs, the upper spring bar 7 secured to the other spring and provided with a dove-tailed groove at one end and having its other end bifurcated, a seat provided at one end with a cleat and pivotally connected thereat with a spring bar 6 and provided at its other end with a cleat having a dove-tailed lug engaging said dove-tailed groove, and a latch carried by the seat and engaging the bifurcated end of the spring bar 7, substantially as described.

3. The combination of the lower spring bars provided with clips to engage the sides of a vehicle body, the springs secured to the lower spring bars, the upper spring bars 6 and 7 secured to the springs, the spring bar 7 having one end provided with a dove-tailed groove and its other end provided with a bifurcation, a seat, the cleats 2 and 3 secured to the seat at the ends thereof, the cleat 2 being pivotally connected to the spring bar 6 and the cleat 3 being provided at one end with a dove-tailed lug to engage said dove-tailed groove and having its other end bifurcated, a latch pivoted in the bifurcation of the cleat and provided with shoulders and adapted to engage the bifurcation of the spring bar, and a spring secured to the seat and adapted to engage the heel of the latch, substantially as described.

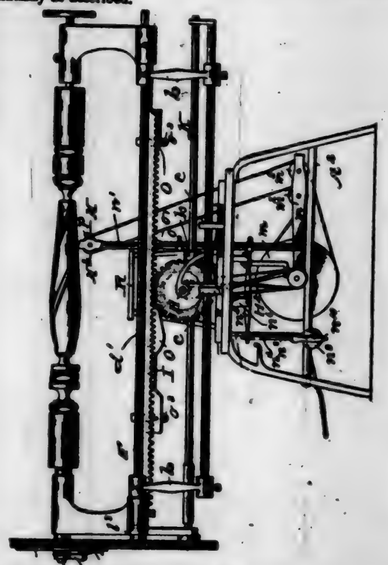
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**500,790. WOOD-MOLDING MACHINE.** HARRY P. ANDERSON, Washington, D. C. Filed Mar. 13, 1893. Serial No. 464,998. (No model.)

*Claim.*—1. In a wood molding machine the combination with a revolubie cutter-head having a horizontal shaft, vertically movable supports for said shaft, and means for adjusting the vertical position of the said supports and shaft to bring the said cutter-head into operative position above or below the work, as desired, substantially as described.

2. In a wood molding machine the combination with a revolubie cutter-head having a horizontal shaft, of vertically movable supports for the same, means for adjusting the height of the shaft to bring said cutter-head into operative position above or below the work, and a pattern mechanism controlling the position of the cutter-head in respect to the work to give the desired contour to the same, substantially as described.

3. In a wood working machine the combination of a revolubie cutter-head having a horizontal shaft, of vertically movable supports for said shaft, means for adjusting the said supports and shaft to bring the said cutter-head into operative position above or below the work, a lever connected with said supports and shaft for moving the same in a vertical direction, and a weight removably connected with said lever whereby the weight may be employed to maintain the shaft in different elevated positions or the shaft be permitted to maintain a low position by the weight of its supports and connecting parts, substantially as described.



4. In a wood molding machine the combination of a revolubie cutter-head having a horizontal shaft, of vertically movable supports for said shaft, a cross bar adjustably secured to said supports, a lever connected to said cross bar for moving said supports and shaft in a vertical direction, a weight removably connected with said lever and a reversible pattern for controlling the movement of the shaft under the influence of gravity or of the weight, substantially as described.

5. In a wood working machine the combination with the bed plate having the perforated ears, the slides F', F' movably mounted in said ears, standards adjustably secured to said slides, rods F, F, mounted in said standards, the head stock mounted on said rods and the tail stock adjustably mounted on said rods F, F, substantially as described.

6. The combination with the pivoted bed plate, the movable work carrying frame and the live spindle mounted in said work carrying frame, of a shaft mounted longitudinally in said frame and geared with said spindle, a rack mounted longitudinally in said frame, a gear mounted on said shaft to slide longitudinally of the same but to turn therewith, a shaft mounted on said bed plate transversely of the said frame, and provided with a gear engaging said rack and a gear engaging the gear on the longitudinal shaft, substantially as described.

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**500,791. CIGAR-HOLDER.** JOHANNES ANDERSEN, Christiania, Norway. Filed Dec. 13, 1892. Serial No. 454,972. (No model.) Patented in Sweden May 19, 1892, No. 3,732, in Austria-Hungary May 10, 1892, No. 82,216 and No. 13,613, and in Germany Aug. 15, 1892, No. 69,515.



*Claim.*—1. In a cigar holder the combination of the tube *b*, having a hollow perforated spike *d*, thereon, and the receptacle *c* having a socket to receive the cigar and the plug for closing said socket, substantially as described.

2. In a cigar holder, the combination of the tube *b*, the hollow perforated spike *d* thereon, the receptacle *c* having a socket for receiving the end of the cigar, and the hollow plug adapted to fit into said socket or over the spike, substantially as described.



**500,792. SOFA-BED.** PIUS F. AMER, Boston, Mass. Filed Apr. 12, 1892. Serial No. 429,092. (No model.)



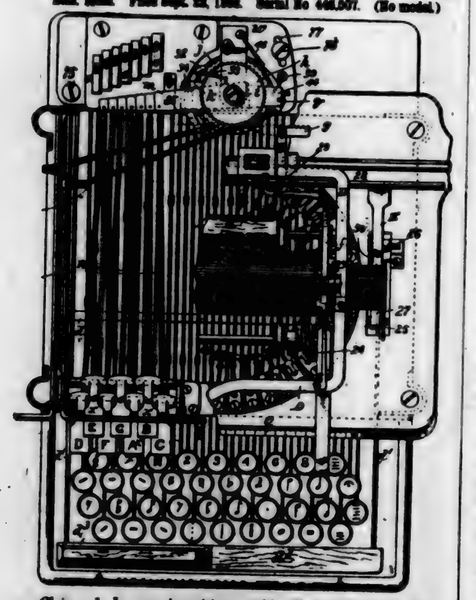
*Claim.*—1. The improved furniture consisting of a base A and a seat frame G pivoted thereto combined with blocks I, I, adapted to slide in the latter and a frame H pivoted to said sliding blocks and intermediate connecting mechanism substantially as described whereby the mattress K attached to said bed frames is automatically stretched during the unfolding of the bed as and for the purpose set forth.

2. In a chair or sofa bed, a seat frame G pivoted to the furniture base and sliding blocks I, I, in the frame G and a secondary seat frame H pivoted to said blocks combined with a link L pivoted to the frame G, a lever M pivoted to the block I and connected to the link L and frame H, substantially as and for the purpose set forth.

3. In a chair or sofa bed, a base and a seat frame G pivoted thereto and a secondary frame H pivoted to sliding blocks I, I, combined with pivoted supports N, N, on said frame H and automatic connecting mechanism to said frames and sliding blocks substantially as described for the automatic operation of said pivoted supports during the opening and closing movements of the said frame H as and for the purpose set forth.

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**500,793. MUSIC-WRITING MACHINE.** FRANK H. BOWER, Springfield, Mass. Filed Sept. 22, 1892. Serial No. 446,907. (No model.)



*Claim.*—1. In a music writing machine the combination with a series of type-bars and operating keys therefor, and a bodily and longitudinally shiftable platen, and means for feeding the paper in a direction across the platen which is in a direction at right angles to its shifting movements, of a series of position-shift keys and mechanism intervening between each and the platen whereby the operations of these keys will impose varying extents of endwise bodily movement of the platen, substantially as and for the purpose set forth.

2. In a music writing machine in combination, a series of type-bars and operating keys therefor, a platen bodily and longitudinally movable and devices for temporarily restraining it in given set positions, position-shift keys and mechanism between them and the platen for shifting the platen endwise in one direction from its given set position, and a spring applied for operative action relative to the platen for returning it to its given set position, substantially as and for the purpose set forth.

3. In a music writing machine, a series of type-bars and operating keys therefor, a platen endwise movable and means for effecting a rotational movement of the platen on the depression of any of the type-bar keys, a series of position-shift keys and mechanism between same and the platen for moving the platen endwise on operating said shift keys in varying extents, substantially as described.

4. In a music writing machine in combination, a series of type-bars and operating keys therefor, an endwise movable platen and devices for temporarily restraining it in any one of several given set positions, and a series of shift devices for moving the platen endwise into any desired one of its given set positions, substantially as described.

5. In a music writing machine in combination, a series of type-bars and operating keys therefor, a longitudinally shiftable platen and devices for temporarily restraining it in any one of several given set positions and a shift mechanism for positively moving the platen in one direction from one to a certain other of its given set positions, and a shift mechanism for positively moving the platen from one to a certain other of its given set positions in the reverse direction, substantially as and for the purposes set forth.

6. The combination with a platen of type bars having musical characters and signs, and operating keys therefor, of character position-shift-keys and mechanism between same and the platen for moving the platen in respectively varying extents, and means for retarding the platen on the release of any character-position shift-key to the position it occupied before the operation of such key, means for imparting a feed movement to the paper in a direction transversely of the platen, mechanism for shifting the platen at right angles to the line of the note-spacing feed movement and for temporarily retaining it in its newly set position, for the purposes set forth.

7. In a music writing machine the combination with a type bar having lines spaced corresponding to those of a given staff and a connected operating key for said type-bar, of a series of position-shift-keys and the platen and mechanism intervening between each and the platen whereby varying extents of endwise movement of the platen may be insured so that by the depression of the shift-keys and the key of said lined type-bar, the impression face on the latter may strike the paper on the platen relative to the staff with all its lines above or below, or with some thereof above or below, the others striking coincident with the staff lines, substantially as described.

8. In a music writing machine the combination with the platen and a support therefor which is endwise movable, of a shaft having a propelling engagement with the platen and provided with a ratchet-wheel, a pawl in engagement with the ratchet-wheel and a reciprocatory carrier for said pawl, a series of reciprocatory bars each adapted for an engagement with the said pawl-carrier, stops for the several bars so arranged relatively thereto that the bars may have movements in varying degrees, a series of position-shaft keys and connecting-rods between them and said bars, substantially as described and for the purpose set forth.

9. In a music writing machine the combination with a platen and an endwise movable support therefor provided with a rack, *g*, of the shaft, *i*, having the ratchet-wheel fixed thereon, and a retracting spring, 38, the bar, *k*, having an abutment member, 34, thereon, and the pawl 33, the series of swinging bars, *m*, the stops, *o*, having graduated positions, the position-shift keys, *x*, and the connecting-rods between them and said bars, *m*, substantially as described.

10. In a music writing machine the combination with the platen, and an endwise movable support therefor, of a shaft having a propelling engagement with the platen-support and provided with a ratchet-wheel, a suitably mounted pawl, *g*, adapted for engagement with the ratchet-wheel, the cranked rock-shaft, *r*, and connecting rod, 43, and another pawl normally in engagement with the said ratchet-wheel, substantially as described.

11. In a music writing machine the combination with the platen, and an endwise movable support therefor, of a shaft having a propelling engagement with the platen-support and provided with a ratchet-wheel, a spring, 38, connected for reaction with said ratchet-wheel, an escapement having one member thereof normally in engagement with the ratchet-wheel, and a device for operating the said escapement, substantially as and for the purpose set forth.

12. In a typewriting machine the combination with the rotatable platen having the ratchet-wheel, 23, thereon, and a supporting carriage for the platen having the lever, *f*, pivotally mounted thereon, which lever carries the pawl, 22, and the spring, 24, applied to said lever, the rocking-frame, E, pivotally mounted and having an engagement with an arm of said pawl-carrying lever, *f*, the universal-bar, and a connecting-rod between it and said frame, E, substantially as described.

13. In a typewriting machine the combination with a pair of ribbon-spools and shafts on which they are mounted provided with bevel-ed gears and the shaft, *t*, having beveled gears, and being endwise movable for a propelling connection with the one or the other of said

spool-shaft gears, and having a ratchet-wheel, 52, with which it is substantially spline-connected, the rocking-frame, E, having the arm 50, with the pawl, 53, the universal bar, *d*, and the connecting-rod 25, between it and said rocking-frame, substantially as described.

14. In a typewriting machine the combination with a series of key-levers and operating keys therefor, of the platen, one or more position-shift keys therefor, the frame having the universal bar and a bar in front of the key-board which has the elevated portion, *d*[1], opposite the shift-key or keys, substantially as and for the purposes set forth.

15. In a music writing machine the platen support or carriage having the rack, *g*, of the adjustable base, *w*, having the shaft adapted to receive interchangeable gears to mesh with said rack, and having the stops, *o*, *o*, the ratchet-wheel, *j* on said shaft, a pawl and carrier therefor the reciprocatory bars, *m*, *m*, and the position-shift keys connected to the bars, substantially as and for the purpose set forth.

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**500,794. JOURNAL-BOX.** GEORGE W. M. BOWER, Geneseo, Kans. Filed Jan. 13, 1892. Serial No. 418,152. (No model.)



*Claim.*—1. In a journal-box, the combination with the opposite opposing conical telescoping shells having their bases telescopically connected and provided at one side thereof with annular flanges having perforations, and adjusting-bolts located therein, of a central main roller bored to receive an axle and having an external configuration opposite to that of the shells, and a series of auxiliary rollers located between the main roller and shell and having an external configuration opposite to that of the shell and main roller, substantially as specified.

2. In a journal-box, the combination with opposite conical shells having their bases opposing each other and adjustably connected and at their outer ends provided with longitudinally-disposed teeth, of a central roller provided at its ends with teeth corresponding in length with those of the shells and having an external configuration opposite to that of the shells, and a series of auxiliary rollers located between the main roller and shells and having external configurations corresponding with those of the shells and provided at its ends with spur-gears for engaging the teeth of the shells and the teeth of the gears of the main roller, substantially as specified.

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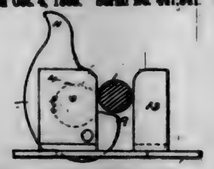
**500,795. PUZZLE.** GEORGE T. BRADLEY and MILTON E. BRADLEY, New Haven, Conn. Filed Mar. 7, 1893. Serial No. 464,905. (No model.)



*Claim.*—A puzzle consisting of a closed chamber having one or more transparent sides for exposing its interior to view, and containing one or more fixed hooks, and one or more balls located within the said chamber and free to move about therein, and each having an eye adapted to engage with one of the said hooks when brought into right relation thereto, substantially as described.

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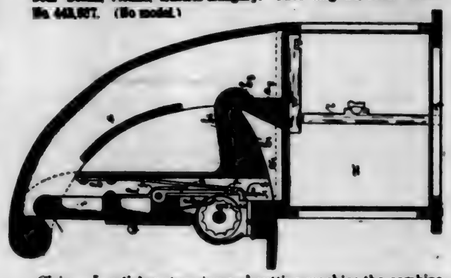
**500,796. LOCK FOR AUTOMATIC RAILWAY-SWITCHES.** GUSTAVE BROOKS, Allegheny, assignor of one-half to D. Clinton Ritter, Pittsburg, Pa. Filed Oct. 4, 1892. Serial No. 447,841. (No model.)



*Claim.*—The herein described locking device for automatic railway switches, consisting of the base plate, and means for attaching the same to the ties, the vertical bearings 4, attached to the said base plate, the locking plate 7, pivoted in the said bearings, the circular recess 10, formed in the said locking plate, the handle 11, and the guide 13, all arranged and combined for service, substantially as and for the purpose described.

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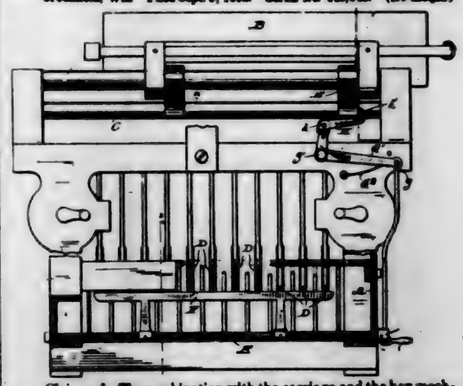
**500,797. TICKET STAMPING AND CUTTING MACHINE.** ERNST BURGL, Vienna, Austria-Hungary. Filed Aug. 24, 1892. Serial No. 443,827. (No model.)



*Claim.*—In a ticket stamping and cutting machine the combination of the main frame *a'*, and its arm *a*, of the oscillating frame *b* suspended from said arm *a* and carrying the ticket rest *c*, with the oscillating plate *i* carrying a stamping device *g* and cutter *s*, said frame *b* and plate *i* oscillating in different arcs and from different points of support, said frame *b* carrying the spring *f* and lug *n* adapted to lock and unlock said plate *i*, all arranged so that a ticket when placed upon the rest *c* and pressed inward will unlock said plate *i* and said plate *i* and frame *b* be oscillated and thus the stamping device *g* and cutter *s* be brought into contact with said ticket, substantially as and for the purpose described.

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**500,798. TYPE-WRITING MACHINE.** WILLIAM CLARK, North Greenfield, Wis. Filed Sept. 5, 1892. Serial No. 445,048. (No model.)



*Claim.*—1. The combination with the carriage and the key mechanism of a type writing machine, of a pivoted bar adapted to simultaneously engage with all of the key levers to lock the same from movement a bell crank pivotally supported upon the machine frame and provided with an arm extending into the path of the carriage and adapted for engagement therewith as the carriage approaches the limit of its movement an operative connection between the other arm of said bell crank and said pivoted bar for moving the latter into position to lock the key mechanism when the bell crank is engaged by the carriage, and means for independently actuating said bar to free the key mechanism, substantially as set forth.

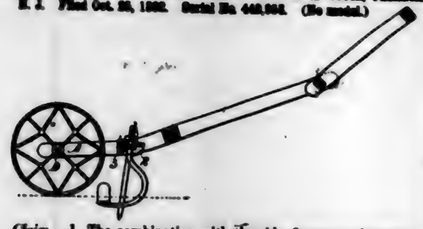
2. The combination with the carriage and the key mechanism of a type writing machine, of a pivotal bar adapted to simultaneously engage with all of the key levers to lock the same from movement, a bell crank pivotally supported upon the machine frame and provided with an arm carrying a detent arranged in the path of the carriage and adapted for engagement therewith as the carriage approaches the limit of its movement an operative connection between the other arm of said bell crank and said pivoted bar for moving the latter into position to lock the key mechanism when the bell crank is engaged by the carriage, and means for independently actuating said bar to free the key mechanism, substantially as set forth.

3. The combination with the carriage and the key mechanism of a type writing machine of a pivoted bar adapted to simultaneously engage with all of the key levers to lock the same from movement, a bell crank pivotally supported upon the machine frame and provided with an arm carrying an adjustable detent arranged in the path of the carriage and adapted for engagement therewith as the carriage approaches the limit of its movement an operative connection between the other arm of said bell crank and said pivoted bar for moving the latter into position to lock the key mechanism when the bell crank is engaged by the carriage, and means for independently actuating said bar to free the key mechanism, substantially as set forth.



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**500,799. WHEEL-CULTIVATOR.** ROWE A. COOK, Plainfield, N. J. Filed Oct. 25, 1892. Serial No. 449,964. (No model.)

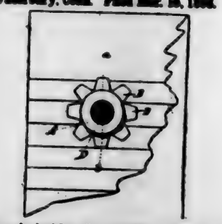


*Claim.*—1. The combination with the side frames and supporting wheel in a hand cultivator, of a rocking cross head between the frames having end flanges and pivotal clamping bolts through the flanges for connecting the cross head with the side frames and for allowing such cross head to be turned into a horizontal or an inclined position, and cultivator teeth or blades with screw threaded shanks passing through the cross head, and nuts for adjusting and clamping the same in position, substantially as set forth.

2. The combination with the side frames and wheel in a cultivator, of separate handles pivotally attached to the side frames and capable of being raised and lowered, a rocking cross head between the side frames having end flanges and clamping bolts for connecting the cross-head to the side frames and for allowing such cross-head to be swung into a horizontal or inclined position and weeding or cultivator teeth adjustably connected with the cross head, substantially as set forth.

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**500,800. HOLDER FOR SENDING COINS BY MAIL.** WILLIAM B. COULTER, Waterbury, Conn. Filed Mar. 16, 1893. Serial No. 466,091. (No model.)

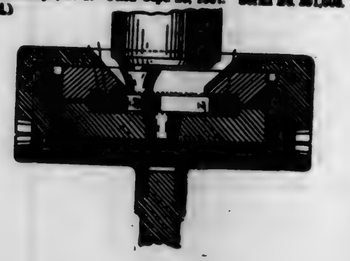


*Claim.*—1. A coin-holder for sending coins by mail in letters, having a circular depression or pocket to receive the coin, and an indented or fingered edge, the inner face of which is provided with a coating of adhesive material, substantially as described.

2. A coin-holder for sending coins by mail in letters, having a circular depression or pocket to contain the coin, and containing a sight-opening to expose the same, and an indented or fingered edge the inner face of which is furnished with a coating of adhesive material, substantially as described.

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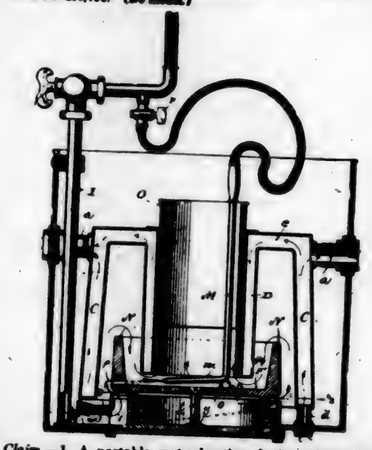
**500,801. DIE FOR MAKING TYPE-WHEELS.** FREDERIC HARRISON, Brooklyn, N. Y. Filed Sept. 30, 1887. Serial No. 251,603. (No model.)



*Claim.*—A ring-shaped die for making type wheels, the same being formed of segments with radial or nearly radial edges and with one or two type matrices in the inner faces, the segments being wider than the letters or the type wheel to be made, so as to obtain the required strength in the matrix for the latter to be pressed up, in combination with clamping ring dies recessed for the reception of the type wheel matrix segments and partially covering the inner surfaces of such matrix to confine the edges of the type wheel to the width required for the letters, substantially as specified.

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**500,802. DEVICE FOR HEATING WATER IN BATH-TUBS.** BARNEY W. FELTHOUSEN, Milwaukee, Wis. Filed Apr. 10, 1893. Serial No. 469,730. (No model.)



*Claim.*—1. A portable water-heating device, adapted for submersion in bath-tubs and analogous vessels, comprising an exterior casing, a burner in the lower part thereof having an annular channel for the line of combustion all around the same, a flanged cap above said burner, a central draft flue above said cap, a double annular water-shell within the casing, openings through the bottom of the casing communicating with said shell and outlets from said shell and a gas supply pipe supported rigidly within said casing and communicating with said burner, substantially as set forth.

2. In a portable water-heating device, the combination with a suitable casing, and water-shell supported therein, and provided with inlets and outlets extending through said casing, of a burner located in the lower part of said casing and provided with an annular gas channel decreasing in depth and width from the inlet point to a point opposite thereto, and a cap projecting over said channel, and forming an annular combustion line, substantially as set forth.

3. In a portable water-heating device, the combination with a suitable casing, and a double water-shell supported therein, and provided with inlets and outlets, extending through said casing, of a burner located in the lower part of said casing, and provided with an annular gas channel decreasing in depth and width from the inlet point to a point opposite thereto, a cap secured to said burner and projecting over said channel, and having an upright annular flange projecting up between the inner and outer portions of the said double water-shell, and a central draft flue supported above said cap, and having its lower end below the upper end of said cap-flange, substantially as set forth.

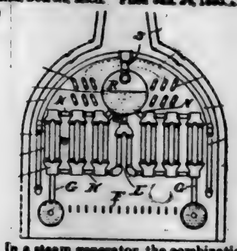
4. In a portable water heating device, the combination with a suitable casing, and a double water-shell supported therein, and provided with inlets and outlets extending through said casing, of a burner located in the lower part of said casing and provided with an annular gas channel decreasing in depth and width from the inlet point to a point opposite thereto, and a closed gas inlet, a gas supply pipe supported within said casing and having a tip or outlet projecting within the said burner inlet, a cap secured to said burner and having a beveled edge projecting over the correspondingly beveled outer wall of the described burner channel, an annular flange rising from said cap and projecting between the inner and outer portions of said double water shell, and provided with a perforation, and a central draft flue supported above said cap, substantially as set forth.

5. In a portable water-heating device, the combination with a suitable casing, and a double water-shell supported therein, and provided with inlets and outlets extending through said casing, of a burner located in the lower part of said casing and provided with a closed inlet and an open annular gas channel decreasing in depth and width from

the inlet point to a point opposite thereto, a gas supply pipe within said casing having an outlet projecting within the burner inlet, a cap secured to said burner and projecting over said channel and having an upright annular flange projecting up between the inner and outer portions of the said double water-shell, said flange having a perforation therethrough, and said cap having a step or socket in its upper face and a movable lighter pipe having a bent lower end, and a guide-lug thereon for engagement with said step, whereby the outlet of the said bent end will be in line with the said perforation in the said cap-flange, substantially as set forth.

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**500,803. STEAM-GENERATOR.** ALEXANDER W. FINLAYSON and EDWIN POPKIN, Detroit, Mich. Filed Jan. 24, 1893. Serial No. 460,555. (No model.)



*Claim.*—1. In a steam generator, the combination with a casing, of water legs at opposite ends thereof, a centrally arranged steam drum connecting the tops, and side tubes connecting the bottoms of the legs, a grate, a series of vertically disposed circulating loops above the grate connected with the side tubes and having connections at top and bottom with the drum, substantially as described.

2. In a steam generator, the combination of two end water legs, connections between the two consisting of a steam dome centrally at the top, and by tubes at each side at the bottom, connections from the side tubes to the steam dome consisting of a series of loops connected together at top and bottom, and to the dome and tubes, substantially as described.

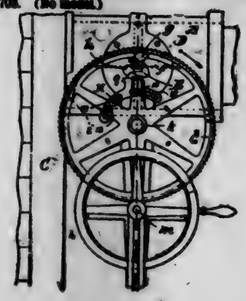
3. In a steam generator, the combination with end water legs, a steam drum and side tubes connecting the legs, a series of heating loops, a pipe connection between the loops and tubes, pipe connections between the tops and bottoms of adjacent loops and pipe connections between the top and bottom of the end loops of the series and the steam drum, substantially as described.

4. In a steam generator, the combination with the water legs at each end, a steam dome connecting the legs centrally at the top and the water tubes connecting the legs at each side at the bottom, the circulating pipes connecting the side tubes with a steam dome and superheating coils arranged outside of said circulating pipes and within the casing, and connections at opposite ends of said coils with the steam dome and the steam supply pipe respectively, substantially as described.

5. In a steam generator, the combination with the end water legs, the steam dome connecting said legs centrally at the top, and water tubes connecting said legs at the bottom, the circulating pipes connecting said tubes with the steam dome, and the feed water coils Q arranged on each side of the steam dome, and above the connecting pipes, and connected at one end to the rear ends of the connecting tubes and at the other end to the water supply pipe, substantially as described.

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**500,804. MECHANISM FOR AUTOMATICALLY OPERATING THE AIR OR CUT-OFF VALVES OF PNEUMATIC SEED-COTTON CONVEYERS.** FERDINAND C. GAMMON, Bridgewater, Mass., assignor to the Eagle Cotton Gin Company, same place. Filed Mar. 18, 1893. Serial No. 466,709. (No model.)



*Claim.*—1. The combination, with a pneumatic conveyer-tube, of an air or cut-off valve placed therein and mounted on a shaft or spindle provided outside of said tube with teeth or projections, a wheel provided with projections or teeth arranged at different distances from its center and adapted to alternately contact with the teeth or projections of the valve spindle to close and re-open the said valve with a suitable interval between said closing and re-opening of the valve, substantially as set forth.

2. The combination, with a pneumatic conveyer tube, of an air or cut-off valve placed therein and mounted on a shaft or spindle provided outside of said tube with teeth or projections; a wheel provided with projections or teeth arranged at different distances from its center and adapted to alternately contact with the teeth or projections of the valve spindle to close and re-open the said valve with a suitable interval between said closing and re-opening of the valve, and a friction or retaining device for securely holding the valve in position when open or closed, substantially as set forth.

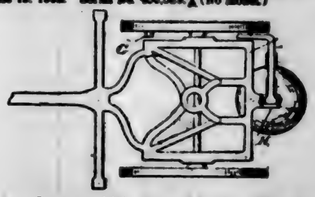
3. In a seed-cotton conveyer, the combination, with the pneumatic tube A, of an air or cut-off valve D placed therein and mounted on a shaft or spindle *f* provided outside of said tube with teeth or projections *g*, *h*, the wheel G provided with a tooth or projection *i* at or near its periphery adapted to engage the projection *g* of the valve spindle to close the valve, and a tooth or projection *q* nearer the center adapted to engage the projection *h* of the valve spindle to re-open said valve, substantially as described.

4. In a seed-cotton conveyer, the combination, with the pneumatic conveyer tube A, of an air or cut-off valve D placed therein and mounted on a shaft or spindle *f* provided outside of said tube with teeth or projections *g*, *h*, the wheel G provided at or near its periphery with a tooth or projection *i* adapted to engage the projection *g* of the valve-spindle to close the valve, and an adjustable plate H secured to the wheel G and provided with a tooth or projection *q* adapted to engage the projection *h* of the valve-spindle to open said valve; said plate H being made adjustable in the arc of a circle, whereby the relative position of the projection *q* with respect to the projection *i* may be changed to vary the time between the closing and re-opening of the valve D, substantially as described.

5. In a seed-cotton conveyer, the combination, with the pneumatic tube A, of the air or cut-off valve D placed therein and mounted on a shaft or spindle *f* provided outside of said tube with teeth or projections *g*, *h*, the wheel G provided with a tooth or projection *i* adapted to engage the projection *g* of the valve-spindle to close the valve, an adjustable plate H secured to the wheel G and provided with a tooth or projection *q* adapted to engage the projection *h* of the valve-spindle to open said valve, and a friction or retaining device for securely holding the valve in position when open or closed, said device consisting of an arm *s* secured to the valve spindle, and spring catches *t*, *u*, all constructed and arranged to operate substantially in the manner and for the purpose set forth.

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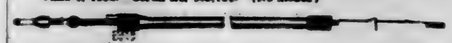
**500,805. TOY VEHICLE.** FRANK B. HARRIS, Toledo, Ohio. Filed June 13, 1892. Serial No. 436,523. (No model.)



*Claim.*—In a toy vehicle, the combination with a wheel supported frame, of an extension on the rear thereof, a bell secured to the extension, a hammer pivotally connected with the extension above the bell, an arm on the hammer extending out from a point intermediate the ends thereof, a lug on a wheel arranged to engage the arm, and a short spring on the extension projecting out below the hammer, substantially as described.

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**500,806. RAZOR-STROP.** WILLIAM C. HOWARD, Brooklyn, N. Y., assignor to the Howard Manufacturing Company, Boston, Mass. Filed June 1, 1892. Serial No. 435,141. (No model.)



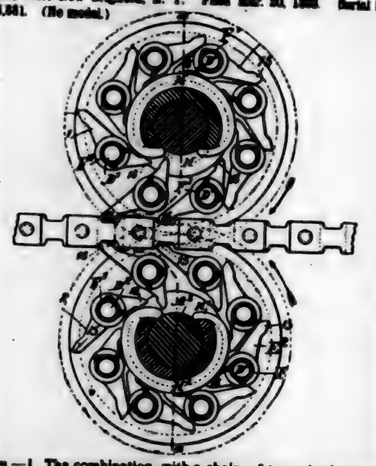
*Claim.*—1. A double swing strop having each strip provided with an elastic portion, and having its strips connected together at the handle end substantially as described.

2. A double swing strop having an eye and a handle secured in fixed positions relatively to the strips, and formed in part of elastic material, whereby the unequal lengthening of the strips is compensated for, substantially as described.

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**500,807. MEANS FOR PROPELLING CHAINS.** CHARLES T. HUNT, West New Brighton, N. Y. Filed Mar. 29, 1893. Serial No. 468,581. (No model.)



*Claim.*—1. The combination, with a chain, of two wheels and a circular series of pawls on each wheel, one at each side of the chain, the chain being between the outer ends of the pawls, so as to be acted upon by such operating pawls, substantially as set forth.

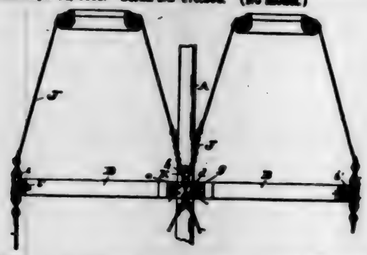
2. The combination, with a chain, of two wheels at opposite sides of the chain, a circular series of pawls upon each of such wheels, and springs acting on such pawls, the chain being between the outer ends of the operating pawls and in contact with them, substantially as set forth.

3. The combination, with a chain having recesses in the opposite sides thereof, of two wheels and a circular range of pawls on each wheel, a pivot pin for each pawl, springs for moving the ends of the pawls outwardly and cams for retracting the other ends of the pawls, substantially as set forth.

4. The combination, with a chain having recesses in the opposite sides thereof, of two wheels and a circular range of pawls on each wheel, a pivot pin for each pawl, springs for moving the ends of the pawls outwardly, and cams for retracting the outer ends of the pawls and guards connected with the cams and protecting the pawls, substantially as set forth.

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**500,808. DRAFT-EQUALIZER.** GRIFFITH JONES, Baltimore, Md. Filed Apr. 14, 1893. Serial No. 470,986. (No model.)

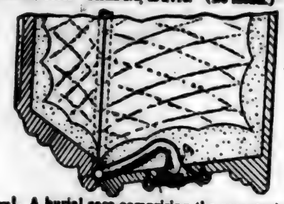


*Claim.*—1. In a draft-equalizer for two animals, the combination of the vehicle pole; a draft-bar pivoted to the pole; a pulley also secured to the pole; an equalizing tug passing over the said pulley, and connected with the harness of both animals; two hold-backs each secured at one end to an opposite end of the draft-bar and at the other end to a loop on the vehicle pole; and two back-straps also each secured at one end to an opposite end of the draft-bar and at the other end to a loop on the pole.

2. In a draft-equalizer the combination of the vehicle-pole; a collar secured to the pole; eyelets or loops secured to the collar; a pulley also secured to the collar; a downwardly projecting post secured to the collar; a draft-bar pivoted to said post; two back-bands and two hold-backs each secured at one end to the collar and at the other end to one end of the draft-bar; and an equalizing tug passing through the said pulley and connected with the harness of both animals as set forth.

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**500,809. BURIAL-CASKET.** JAMES A. LAKIN, Westfield, Mass. Filed Dec. 10, 1892. Serial No. 454,718. (No model.)

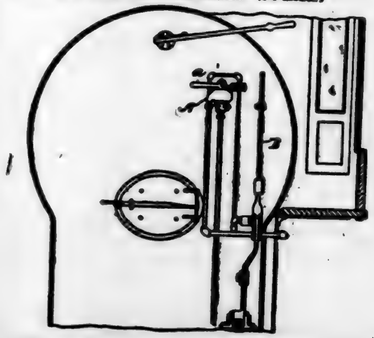


*Claim.*—1. A burial case comprising the receptacle and the lid, the end or both having a groove along the line of closure and an inflatable air-tube in the groove-constituted space, and an air-conduit leading from the exterior of the case, and communicating with the air-tube and having a check-valve, substantially as described.

2. The combination with the burial case with the lid, grooved, substantially as described, and the air-tube, of the conduit, *d*, having the flexible branches, $d^a$, $d^b$ to which the terminals of the air-tube are connected, said conduit also having the flaring extremity terminating at the exterior of the case and the bushing plate, *f*, having the opening and a check-valve thereat, substantially as and for the purpose set forth.

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**500,810. SAFETY-STOP FOR LOCOMOTIVES.** JAMES H. LAUDER, Boston, Mass., assignor of one-half to Charles W. Sherburne, same place. Filed Jan. 3, 1893. Serial No. 457,098. (No model.)



*Claim.*—1. The combination of a reversing lever, a reversing lever stop, the brake valve lever or actuating devices, and an intermediate stop-setting mechanism adapted to be actuated by the brake valve lever or device when the lever is moved to a given position, substantially as described.

2. The combination of the reversing lever, a piston chamber and piston therein, a stop actuated by the piston to be moved across the line of movement of the lever, a pipe connecting the piston chamber with an air reservoir, and a valve in said pipe adapted to be actuated by the lever of the brake valve, as and for the purposes described.

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**500,811. FOUNTAIN-PEN.** WILLIAM A. LEARY, Holyoke, Mass. Filed Feb. 4, 1893. Serial No. 460,932. (No model.)



*Claim.*—1. In a fountain pen of the class herein described in which the writing pen has a free longitudinal movement within the tip thereof, as described, the combination with said tip and the writing pen, of a cap fitting said tip, and a supplementary base for said cap against which the point of the writing pen impinges, having a free swiveling movement within said cap, substantially as set forth.

2. In a fountain pen of the class herein described in which the writing pen has a free longitudinal movement within the tip thereof, as described, the combination with said tip and the writing pen, of a cap fitting said tip having a socket in the base thereof, a supplementary base for said cap against which the writing pen impinges, having a shank thereon in which is an annular groove, freely entering said

tacked, and a pin in said cap having one end entering said groove, substantially as set forth.

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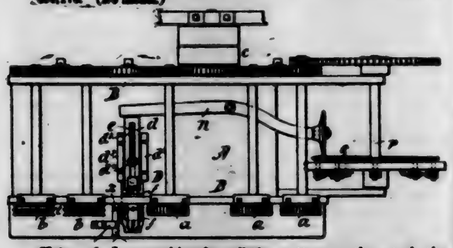
**500,812. METHOD OF MANUFACTURING LINOLEUM OR OIL FLOOR-CLOTH.** JAMES C. LYNE, Baltimore, Md. Filed Jan. 13, 1893. Serial No. 458,008. (No specimens.)

[redacted]

*Claim.*—The herein described method of manufacturing floor-coverings of the linoleum-oil-cloth type, the same consisting first in applying to both sides of a base fabric of fiber, layers of linoleum or oil-cloth composition; second, in subjecting both of said layers to an equal extent to the action of heat to dry them; and third, in applying to the outer side of each of the composition layers, an outer ornamental wearing surface of paint or pigment.

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**500,813. MACHINE FOR SPLITTING RATTAN OR OTHER STOCK.** HIRAM E. MOORE, Westfield, Mass. Filed June 27, 1892. Serial No. 438,179. (No model.)



*Claim.*—1. In a machine for splitting rattan or other stock, the combination with a cutter, and devices for carrying the stock longitudinally forward to the cutter, of a part located adjacent the cutter which is movable transversely of the direction of feed, and which carries two bearing members, and means for imparting strain for normally insuring the approach of said members but which means is adapted to permit yielding movements of said members, each away from the other, and mechanism for imparting the transverse reciprocatory movements to the part carrying said members, for the purpose set forth.

2. In a machine for splitting rattan, or other stock, the combination with a fixed knife and feed-rolls for longitudinally feeding the stock, of a transversely movable slide having thereon a pair of separable members or jaws, and springs for forcing said jaws, each toward the other, and means for imparting the transverse movement to the slide.

3. In a machine for splitting rattan, or other stock, the combination with a fixed knife, and means for longitudinally feeding the stock to the splitting action of the knife, of the slide-bar, *d*, having the fixed lower extension *d'*, and the fixed, rigid strap or bar, *g*, above and separated from said extension, the blocks or members, *f*, *f*, having sliding engagements with said extension, *d'*, the springs, *h*, *h*, for forcing said members toward each other, the equalizing lever, *k*, intermediately pivoted on said bar, *g*, and the arms, *j*, of said members, *f*, having connections with said lever, and means for imparting movements to the slide transversely of the line of feed, substantially as described.

4. In a machine for splitting rattan, &c., the combination with a suitable table having a transverse groove, *r*, of the knife-bar, with a knife, fitted in said groove, and the clamp-bar, *s*, the feed-rolls and slide device having the separable jaws and equalizing lever, substantially as and for the purpose set forth.

5. In a machine for splitting rattan or similar material, a fixed knife, separable sections or jaws for supporting the stock, and means connected to the driving mechanism for shifting the supporting jaws laterally with reference to the knife, during the movement of the work, whereby the material is split or cut in an oblique direction, all combined substantially as described.

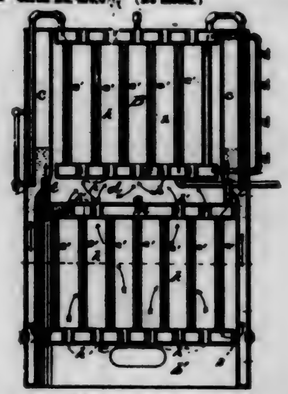
6. In a machine of the character described, the fixed splitting knife, the supporting jaws and means for traversing them laterally with reference to the knife, and a link connecting the supporting jaws to compel their relative movement in opposite directions, all combined substantially as described.

7. In a machine of the character described, the fixed splitting knife, the supporting jaws held in and moving with a carrier, means for traversing said carrier while the work is progressing, and a link connected to each jaw and pivoted to the carrier, all combined substantially as described.

8. In a machine of the character described, the fixed knife, the transversely moving carrier provided with separated jaws, the link connecting said jaws to each other and to the carrier, and a lever and operating cam for traversing the carrier, all combined substantially as described.

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**500,814. BOILER.** CHARLES B. MOORE, Hudson, N. Y. Filed Jan. 21, 1893. Serial No. 459,073. (No model.)



*Claim.*—1. An upright boiler comprising a casing, a shell within and separated unequally therefrom creating a water-leg and chamber below and a steam-chamber above, an upper water-flue section within said shell, consisting of hollow heads, tubular water-flues connecting them, smoke-flues through said heads, an inlet pipe let into the lower head, and siphon water-discharge pipes connected to the upper head and passing down through the steam chamber to a point below the lower head and below the water line in the boiler, and a lower water-flue section consisting of hollow heads, tubular water-flues connecting them, smoke-flues through said heads, inlet water-pipes connecting the lower head thereof to the water-leg, and discharge pipes from the upper head thereof opening into the water-chamber below the water line in the boiler; in combination.

2. In an upright boiler, an upper flue-section consisting of hollow heads, tubular water-flues connecting them, smoke-flues through said heads whereby the products of combustion can expand laterally around the water-flues and be retarded in the flue-section, a feed-water inlet-pipe connected to the lower head, and siphon discharge pipes connected to the upper head, and extending downward below the lower head through the surrounding steam and water chamber and opening into the latter in combination with a lower flue section consisting of hollow heads, tubular water-flues and smoke flues through said heads like the upper flue section, and a casing inclosing both sections.

3. In an upright boiler, the combination with the fire-box and combustion chamber, the inner and the outer shells, and the water-leg, water chamber and steam chamber between them, of a flue-section consisting of hollow heads, tubular water-flues connecting them, smoke flues through the lower head, whereby the products of combustion can enter the chamber around said flues between said heads, smoke-flues in less number through the upper head, whereby said products are retarded in said chamber, and are deflected from the center of the upper head, a water inlet-pipe connecting the lower head to said water-leg, and discharge pipes connected to the upper head and opening into the water chamber below the normal water-line therein.

4. In an upright boiler, the combination with the inner and outer shells, creating a water-leg, a water-chamber and a steam-chamber between them, and the upper and lower flue sections, each consisting of hollow heads, tubular water flues connecting the heads, smoke flues through said heads, and water inlet and discharge pipes connected to said heads of a smoke chamber between said flue-sections receiving the products of combustion from the lower flue section and from which they are distributed into the upper flue section.

5. In an upright boiler, an outer shell, upper and lower flue sections mounted therein with a steam and water chamber between them and the shell, each section consisting of hollow heads, tubular water flues connecting them, smoke flues through said heads, a feed water inlet pipe connected to the lower head of the upper section, and siphon discharge pipes connected to the upper head of the upper section and extending down exterior to said section below the bottom section thereof and below the normal water line, in combination.

6. In an upright boiler, the combination with the shell, and the upper and lower flue sections erected within it and detached therefrom creating a steam and water chamber between them, each section consisting of hollow heads, tubular water flues connecting the heads, smoke flues through the heads and the water inlet pipes, of the smoke chamber between said flue sections receiving the products of combustion from the lower flue section and from which they are distributed into the upper flue section, and siphon discharge pipes connected to the upper head of the upper section and extending down between it and said shell to a point below the normal water line

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**500,815. CAR-COUPLING.** JAMES MUSTON and ALEXANDER PRAHER, Maywood, Ill. Filed Dec. 12, 1892. Serial No. 454,822. (No model.)



*Claim.*—1. In an interlocking hook car coupler, the combination with a hollow draw bar having a forked head, of a knuckle pivoted to one of the forks of the draw bar, and provided with a cam projection or face, a loose locking block having a cam projection or face and fitting in the chamber of the hollow draw-bar, and a vertically sliding lifting pin extending loosely through the draw bar and locking block and furnished with upper and lower projections or pins, one to engage the draw-bar and the other to engage the locking block, said lifting pin serving both as a guide for the loose locking block and to lift the same, substantially as specified.

2. In a car coupler, the combination of draw bar B, with pivoted knuckle C, loose slotted locking block D, and sliding lifting pin F, extending loosely through said locking block and sliding in suitable guides or slots in the draw bar, substantially as specified.

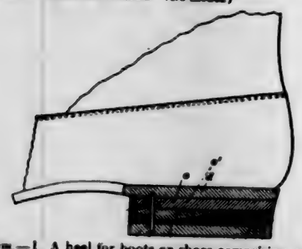
3. In a car coupler, the combination of draw bar B, with pivoted knuckle C, loose slotted locking block D, and sliding lifting pin F extending loosely through said locking block and sliding in suitable guides or slots in the draw bar, and an operating lever H and means for connecting the same with said lifting pin, substantially as specified.

4. The combination in a car coupler, of a draw bar B having forked head B' with knuckle C pivoted to one of the forks of said draw bar and provided with cam projection C' loose locking block D having cam face *d* fitting in the chamber of said hollow draw bar and provided with a guide slot or opening *d'*, sliding lifting pin F extending loosely through said slotted locking block D and through upper and lower guides or slots *b b'* with which the draw bar is provided, said lifting pin being provided with upper and lower projections or pins *f* and *f'*, substantially as specified.

5. The combination in a car coupler, of a draw bar B having forked head B' with knuckle C pivoted to one of the forks of said draw bar and provided with cam projection C' loose locking block D having cam face *d* fitting in the chamber of said hollow draw bar and provided with a guide slot or opening *d'*, sliding lifting pin F extending loosely through said slotted locking block D and through upper and lower guides or slots *b b'* with which the draw bar is provided, said lifting pin being provided with upper and lower projections or pins *f* and *f'*, and a tail pin K having head K' adapted to be inserted through said hollow draw bar, substantially as specified.

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**500,816. HEEL.** MICHAEL MURRAY, Baltimore, Md. Filed Mar. 25, 1893. Serial No. 467,904. (No model.)



*Claim.*—1. A heel for boots or shoes comprising an unyielding top-lift; a number of unyielding intermediate lifts, one of which is shorter than the others and occupies the forward end only of the heel; a rubber section fitted at the rear of said short lift between the adjoining lifts and secured thereto, and a line of nails passing through the forward ends of all the lifts, including the short lift, and wholly in front of the rubber section, substantially as described





2. A heel for boots or shoes comprising an unyielding top-lift a metallic plate secured to the inner side of the top-lift and having its forward end upturned and engaging against the front end of the heel, a number of unyielding intermediate lifts, that one of which, adjacent the metallic plate being shorter than the others and occupying the forward end only of the heel; a rubber section fitted into the heel at the rear of the short lift between the adjoining lift and the metallic plate, and secured in position therein by tangs struck up in the metallic plate, and a line of nails passing through the forward ends of all of the lifts including the short lift and wholly in front of the rubber section, substantially as described.

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**500,817. WATCH-BOW FASTENER.** LOUIS PLATHAUER, Clifton, England, assignor, by mesne assignments to the Keystone Watch Case Company, of Pennsylvania. Filed Sept. 12, 1892. Serial No. 445,738. (No model.) Patented in England Nov. 16, 1888, No. 16,628, and in Switzerland Jan. 23, 1889, No. 166



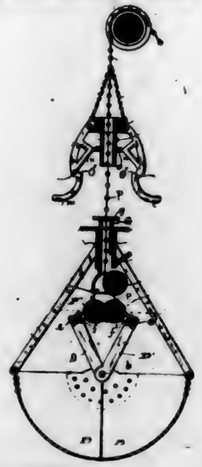
*Claim.*—1. The combination with the pendant proper of a watch case, of an outer shell adapted to cover the upper portion of the pendant proper, provided with apertures upon opposite sides, and a bow having its extremities of smaller diameter than the apertures of the outer shell passed through said apertures and fastened upon the interior of the outer shell and exterior to the pendant proper

2. The combination with the pendant of a watch case of an outer shell fitting over the pendant and provided with apertures, a bow having its extremities of smaller diameter than the apertures of the outer shell and inserted through said apertures without extending through the body of the pendant and fastened upon the inside of the outer shell.

3. The combination with the pendant of a watch case of an outer shell fitting over the pendant and provided with apertures, a bow having its ends projecting through the apertures of the outer shell, and independent fastenings for the ends of the bow between the outer shell and the body of the pendant.

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**500,818. DREDGING APPARATUS.** JAMES PRICE, Jr., San Fructuoso, Uruguay. Filed Apr. 15, 1891. Serial No. 389,105. (No model.) Patented in England June 15, 1888, No. 8,706.



*Claim.*—1. In a dredging apparatus, the hollow head piece G, with flange *g*, and trigger J, in combination with the sleeve H, with broad flange A, substantially as and for the purpose set forth.

2. In a dredging apparatus the sleeve H, with flange A, placed

around the head piece G, in combination with the hooks M, pivoted to the block $J^4$, and having curved downward extensions, and projections to support said flange substantially as and for the purpose set forth.

3. In a dredging apparatus, the tube N, with disk O, in combination with the hooks M, having acute angled projections and curved terminals and head piece G, substantially as and for the purpose set forth.

4. In a dredging apparatus the head piece G, the surrounding sleeve H, the buckets and the rods connecting the buckets with the head piece in combination with the tube N, and hooks M substantially as and for the purpose set forth.

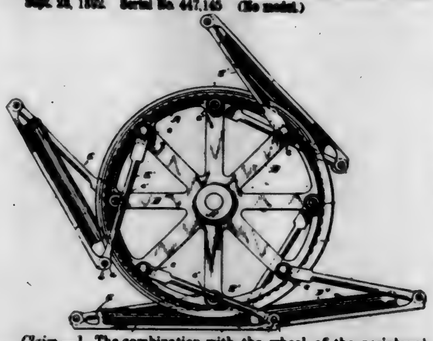
5. In a dredging apparatus, mechanism for automatically gripping and releasing the sleeve H, consisting of the hooks M, M, pivoted to block $J^4$, the disk O, on tube N, and the head piece G, substantially as and for the purpose set forth.

6. In a dredging machine and in combination with the head piece G, and trigger J, the sleeve H, with flange A, surrounding the said head piece, substantially as and for the purpose set forth.

7. In a dredging machine, the trigger J, pivoted to the head piece G, in combination with the lifting chain P, and sleeve H, substantially as and for the purpose set forth.

8. In a dredging apparatus the combination of the following parts.—a bucket B, constructed in quarter spheres C, C', hinged together at c, and provided with bow levers D, D', having pulleys F, F', and joined to head piece G, by rods S; a head piece G, with pulley I; a sleeve H, with flange A, sliding over head piece G; block $J^4$, suspended by chains K, K; a tube N, sliding in central opening of block $J^4$, and provided with disk O, the hooks M, hinged to the block $J^4$, and constructed with curved ends or wings m, and inwardly inclined parts $m^4$; a trigger J, pivoted to head piece G; and a lifting chain P, connected to $g^4$, to the head piece G, passing around the pulleys F, F', against pulley I, up through hole of the head piece G, and the tube N, over sheave R, all arranged substantially as and for the purpose set forth.

## 500,819. TRACTION-WHEEL. ARTHUR G. ROSE, Fresno, Cal. Filed Sept. 28, 1892. Serial No. 447,145. (No model.)



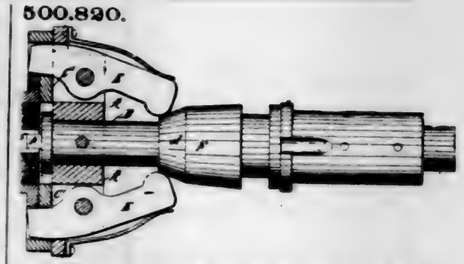
*Claim.*—1. The combination with the wheel, of the peripheral groove provided therein, of the shoe movably secured to the wheel and rotating therewith, and of the track projecting above the shoe and fitting within peripheral groove of the wheel.

2. The combination with the wheel, of the bearing shoes movably secured thereto and rotating therewith, each of said shoes having its ends cut upon an opposite incline in order to permit of each shoe making joint with advanced one during rotation and travel of the wheel.

3. The combination with the wheel, of the bearing shoes secured thereto and rotating therewith, of the rail or track projecting above the shoe and upon which the wheel bears and runs, and of the arms movably connected to the shoe and wheel.

4. The combination with the wheel, of the shoes secured thereto, of the rail or track projecting thereabove, of the ears formed at each end of the shoes, and of the arms pivotally secured within the ears and to the wheel.

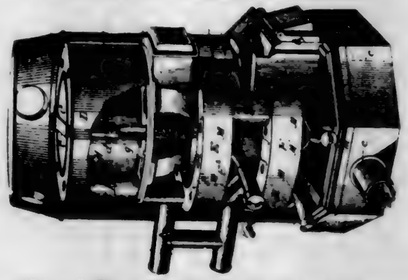
## 500,820. NIPPLE-CHUCK. LESLIE M. SAUNDERS, Yonkers, N. Y., assignor to D. Saunders' Sons, same place. Filed Dec. 7, 1892. Serial No. 453,810. (No model.)



*Claim.*—1. The combination with the gripping jaws of a nipple-chuck of a series of biting or indenting teeth, *f*, arranged with a pitch and inclination corresponding to the pitch and inclination of the grooves between the screw-threads of the nipple to be held, substantially as and for the purpose herein set forth.

2. The combination with the gripping jaws of a nipple-chuck constructed with plain gripping portions, *p*, of a series of biting or indenting teeth, *f*, arranged between the portions, *p*, and having a pitch and inclination corresponding to the pitch and inclination of the grooves between the screw-threads of the nipple to be held, substantially as and for the purpose herein set forth.

## 500,821. HOT-AIR FURNACE. CONRAD C. SOFLEIN, Woodbury, N. J. Filed July 6, 1892. Serial No. 439,178. (No model.)



*Claim.*—1. The combination with the fire pot of the crescent shaped smoke drums each provided with vertical cold-air passages, said drums being located one above the other and communicating with each other at the ends, one of said drums divided into two parts by a partition at the rear, and having draft inlet and outlet at opposite sides of said partition.

2. The combination of the ash-pit, the fire-box, and the combustion chamber, with the smoke drums surrounding said parts, the drum of the fire-pot communicating with the ash-pit and with the drum surrounding the latter, and the drum of the combustion chamber having direct connection with the outlet flue, and also a circuitous connection through the other drums, and a damper for changing or reversing said connections at will.

3. The combination with the combustion chamber, and the ash-pit, of the smoke drum D, surmounting the combustion chamber and communicating therewith, the series of air pipes extending through the smoke drum and communicating with the cold air space between the casing and the combustion chamber, the smoke drum E, communicating with the smoke drum D and surrounding the fire pot, the series of air pipes extending therethrough, the smoke drum F, surrounding the ash-pit and communicating with smoke drum E, and the series of air pipes extending through the same.

4. The smoke drum for hot air furnaces comprising a vertical annular chamber closed at the top and having through its bottom inlet and outlet smoke passages alternating with each other, vertical air pipes passing through said chamber, and smoke checks located between the smoke passages and closing the lower part of the chamber but leaving passages at the top whereby the products of combustion entering and leaving at the bottom are caused to ascend to the top of the drum in their passage therethrough.

5. In a hot-air furnace, the combination of the combustion chamber, the drum D surrounding the same, communicating therewith and provided with cold air pipes, the smoke checks in said drum, the drum E, communicating at one side with the drum D, the series of air pipes therein, the drum F, communicating at its ends with the ends of the drum E, the air pipes in said drum F, and the pipe leading from the said drum to the chimney.

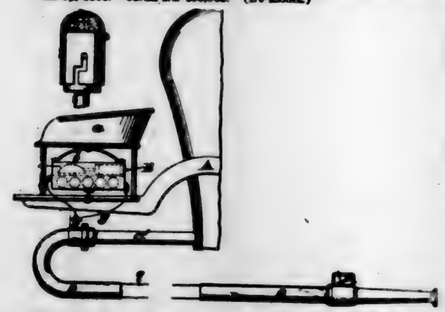
6. The combination with the smoke drum provided at intervals with the cold air pipes extending therethrough of inclined pipes extending from the under side of said drum between the cold air pipes and the horizontal pipe into which the inclined pipes lead.

7. In a hot-air furnace, the combination of the combustion chamber, the external casing, the intermediate smoke drum, the series of pipes extending therethrough and the pipe $E^3$, also extending through said drum and dividing the same into two compartments, said pipe communicating at its ends with the air space between the external casing and the combustion chamber.

8. The combination with the dust-flue and with the pipe $E^3$ open at its outer end and provided with a removable cap, of the rotatable damper-rod passing transversely through the dust flue, and the damper plate supported on said rod and removable therefrom in a direction at right angles to its axis, whereby the damper plate is adapted to be removed and replaced through the pipe $E^3$.



## 500,822. ELECTRIC HOSE-COUPLING. JOSEPH B. STRAUSS, Cincinnati, Ohio, assignor of one-half to Moe C. Weil, same place. Filed Jan. 21, 1893. Serial No. 460,365. (No model.)



*Claim.*—1. In combination with an electric hose-coupling consisting of an inner cylinder C, outer sleeve D, and intermediate non-conducting cylinder E, the pin *e*, secured at one end to said inner cylinder C and having its other end split longitudinally at *e'*, the standard F, secured to said sleeve D, the non-conducting bushing *f*, interposed between said pin and standard, a housing G, capable of being readily coupled to said standard and having a wire *g* and non-conducting cap H secured to it, and a tube I projecting from said cap and adapted to surround the split portion *e'*, of said pin, and having a wire *i* attached to it, all as herein described, and for the purpose stated.

2. The combination, in an electric hose-coupling of the thimble J, an annular groove $x'''$, in one end thereof, an annular spring R, secured at one end within said groove, as at *r*, and normally tending to fly out of said groove, the free end of said spring being provided with an outwardly-projecting contact-bearing *r'*, all as herein described, and for the purpose stated.

3. In an electric hose-coupling, a circuit closer consisting of the housing Z, insulating plate 1, shaft 2, lever 3, spring 4, arm 5, contact piece 6, and a wire 8 that communicates with the nozzle butt, as set forth.

4. In an electric hose-coupling, a male member consisting of the thimble S, insulating jacket T, sleeve V, outer cylinder W, secured to said sleeve, plugs X, X', wires *x*, *x'*, and caps *w*, *w'*, for the purpose described.

5. In an electric hose-coupling, a female member, consisting of the thimble J, insulating jacket K, intermediate cylinder L, swivel M, outer cylinder N, plugs Q Q', wires *q q'*, and caps *q'*, *q'''*, for the purpose described.

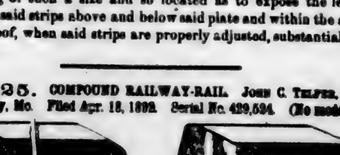
6. In an electric hose-coupling, a male member consisting of the thimble S, insulating jacket T, sleeve V, outer cylinder W, secured to said sleeve, plugs X, X', wires *x*, *x'*, and caps *w*, *w'*, in combination with a female member consisting of the thimble J, insulating jacket K, intermediate cylinder L, swivel M, outer cylinder N, plugs Q, Q', wires *q*, *q'*, and caps *q'*, *q'''*, all as herein described and for the purpose set forth.

7. A wire applied to a hose and communicating with a coupling of the same, and a chain attached to the coupling, for the purpose of preventing any elongation of the hose and breaking of the wire, substantially as herein described.

## 500,823. CIGAR-GLOSSING DEVICE. OTTO STROBERGER, Parkhurst, Minn. Filed May 24, 1892. Serial No. 434,130. (No model.)

*Claim.*—1. In a cigar glossing device, the combination, of a pan or receptacle formed with a central bottom-opening, two sliding sponge-holders arranged on each side of said opening, and springs pressing the said sliding holders toward each other; substantially as set forth.

2. The combination, of the pan formed with the central bottom opening, and having the guide-strips 3, the sliding plates having the sponges secured in them, and the spring-actuated rods secured to said plates; substantially as set forth.



3. The combination of the pan formed with the central bottom opening, and having the guide-strips 3, the sliding plates 4 having the sponges secured in them and having springs arranged to slide them toward each other, the curved upper plates, 12, having the sponges secured in them and hinged at their rear ends on the lower plates 4, springs arranged to press the free ends of plates 12 upward, and stop-pieces limiting the upward movement of said plates; substantially as set forth.

4. The combination of the pan formed with the central bottom opening and having the guide-strips, 3, and the tubes 7, the sliding plates 4 having sponges secured in them and having the projecting rods 6 fitting in the tubes 7, the spiral springs arranged in the said tubes, the upper plates 12 having the sponges secured in them and hinged at their rear ends to the lower plates 4, the springs 15 arranged as shown to press the free ends of the upper plates upward, and the removable inclined covers 17; substantially as set forth.

## 500,824. EDUCATIONAL APPLIANCE. JULIA E. VON TAUSSIG, Milwaukee, Wis. Filed Apr. 11, 1892. Serial No. 428,647. (No model.)



*Claim.*—An educational appliance, consisting of a flat frame or support, axes fixed to such frame, independently movable rollers secured on said axes, strips bearing the letters of the alphabet printed on their outer surfaces, and an independent transverse plate provided with apertures secured on the front of said frame, said plate and apertures being of such a size and so located as to expose the letters printed on said strips above and below said plate and within the apertures thereof, when said strips are properly adjusted, substantially as described.

## 500,825. COMPOUND RAILWAY-RAIL. JOHN C. TELFER, Kansas City, Mo. Filed Apr. 18, 1892. Serial No. 429,534. (No model.)



*Claim.*—1. A compound rail, comprising a top section having a head and longitudinal web pendent from the upper surface thereof, and having concave opposite sides, and a base section having upwardly projecting flanges, convex upon their inner sides and opposing the concaved outer sides of the web of the top section, substantially as described.

2. A compound rail, comprising a top section having a head and longitudinal web pendent from its under side, and having concave sides, and parallel grooves in the under side of the head at its point of union with the web, and a base section having upwardly projecting flanges, convex upon their inner sides, to fit the concave sides of the web, and with its flange margins projected into the parallel grooves, substantially as described.

3. A compound rail, comprising a top section having a head and longitudinal web pendent therefrom, having concaved opposite sides, a base section having upwardly projecting flanges convex upon their inner sides to fit the concaved faces of the web, and a longitudinal key connecting the adjacent ends of the top section between the upwardly projecting flanges of the base, substantially as described.

4. A compound railway rail, comprising a top section having a longitudinal web provided with a longitudinal recess, and a connecting piece or key inserted into said recess and arranged to enter a similar recess in the web of a succeeding top section web, substantially as set forth.

5. A connecting piece or key for compound railway rails, having its sides longitudinally serrated, substantially as set forth.

6. A connecting piece or key for compound railway-rails, provided on each side with oppositely disposed serrations each set of which extends obliquely downward and toward one end of the key, substantially as set forth.

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**500,826. OAR-PROPELLED ICE-BOAT. GEORGE H. TEACHER, Albany, N. Y. Filed Feb. 15, 1893. Serial No. 462,572. (No model.)**



*Claim.*—1. A skeleton ice-boat adapted to be propelled by means of sweeps, the same consisting of a top-frame formed by metallic bars which are connected—side-by-side—at their ends, a strut secured to said top-frame and arranged to spread said bars apart, a bow-runner fixed to the lower end of said strut, a midship-frame provided with midship-runners arranged at each side of the ice-boat; said midship-frame being secured to said top-frame and formed to spread the bars of the latter apart to their greatest distance, an open-ended trough-like midship-section containing an oarsman's seat, outriggers extending laterally from said midship-section and provided with rowlocks, a strut secured near the stern end of said top-frame, a steering-runner journaled in said strut, and independently-moving foot-boards pivoted to said midship-section and connected to said steering-runner, substantially as shown and described.

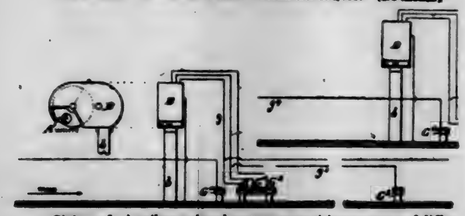
2. In an ice-boat propelled by sweeps, the combination of an oarsman's seat, a pair of foot-boards arranged to tilt independently of each other, a steering-runner having a pinion on its shaft, a quadrant-gear meshing into said pinion and provided with a cross-yoke, and connections from each end of said yoke leading to the corresponding foot-board, as and for the purpose herein specified.

3. As a means for propelling ice-boats, a sweep provided with a spring-controlled spur-piece provided with teeth which are adapted to engage in the surface of the ice; said spur-piece being fitted to slide loosely on the outer end of said sweep, as and for the purpose specified.

4. The combination of an ice-boat, a spring-actuated spurred-lever, and an operating-rod connected with said spurred-lever and provided with means—substantially as described—for holding the spurred end of said lever clear from the surface of the ice, as and for the purpose specified.

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**500,827. RAILWAY SIGNAL SYSTEM. GEORGE L. THOMAS, Brooklyn, N. Y., and EDWARD C. SEWARD, Montclair, N. J., assignors to said Thomas. Filed Mar. 6, 1893. Serial No. 464,703. (No model.)**



*Claim.*—1. A railway signal system comprising a group of different signals mounted and connected to move at all times together, signal actuating mechanism tending to move the group of signals whenever it is released and different, independent movable stops corresponding to the different signals of the group, under the control of a passing train to arrest and release the group, substantially as set forth.

2. In combination, several different signals mounted and connected to move at all times together and follow one another in succession into and out of an exposed position, signal actuating means, different, independent movable stops corresponding to the different signals for releasing and arresting the signals and electro magnets under the control of a passing train to complete the circuit and operate the stops, substantially as set forth.

3. In combination, a rotary disk provided with different signals fixed thereon, a housing covering a portion of the disk, a motor tending to rotate the disk continuously in one direction, different stops arranged to release and arrest the disk at intervals, electric circuits including electro magnets for controlling the stops and a circuit closer carried by a train along the track for completing the said electric circuit, substantially as set forth.

4. In combination, signals denoting "stop," "block clear" and "block partially clear," mounted at the beginning of a block, signal actuating mechanism, electro magnets for controlling the movements of the signals, contact plates at the beginning and end of the block and at a point intermediate of the ends of the block, the contact plate at the beginning of the block being in electric circuit with the magnet to set the signal "stop," the intermediate contact plate being in electric circuit with the magnet to set the signal "block partially clear" and the contact plate at the end being in electric circuit with the magnet to set the signal "block clear" and a circuit closer carried by a passing train in position to engage the several contact plates, substantially as set forth.

5. In combination, a railway track, a line of signals located at intervals along the track, contact plates upon opposite sides of the track, electro magnets for operating the signals, electric circuits including the contact plates and the electro magnets, one set of electric circuits including the contacts on one side of the track and the electro magnets and another set of electric circuits including the contacts upon the other side of the track and the aforesaid electro magnets and a circuit closer carried by the train in position to engage the contact plates on one side of the track when the train moves along the track in one direction and to engage the contact plates upon the opposite side of the track when the train moves along the track in the opposite direction, substantially as set forth.

6. In combination, a set of block signals located along a track and under the control of a passing train to operate them, a shunt track; and a special signal, forming a part of the block system and under the control of a train moving along the shunt track in either direction to operate it and clear the block on the main track, substantially as set forth.

7. Signaling mechanism comprising a pair of rotary disks spaced apart and having fixed thereon a set of signals, translucent sections inserted in the disks, one in each signal, a housing covering the disks so as to leave one signal only exposed at once, disk actuating mechanism and signal operating mechanism comprising a set of independent stops and means for actuating them under the control of a passing train, substantially as set forth.

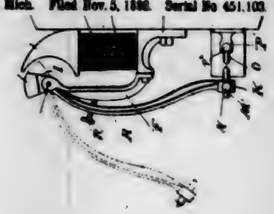
8. Signaling mechanism comprising a pair of disks spaced apart and mounted to rotate independently of each other, each disk being provided with a set of signals, a housing covering the signals so as to leave only one signal on each disk exposed at once, disk actuating mechanism and signal operating mechanism under the control of a passing train, substantially as set forth.

9. In combination, a set of signals at the side of the track, including danger and cautionary signals means for operating them, corresponding danger and cautionary signals carried by the train moving along the track and means for operating them the signals carried by the train being under the control of the signals at the side of the track to determine the signal which shall be operated on the train, substantially as set forth.

10. In combination, a set of signals at the side of a track, corresponding signals adapted to be carried by a passing train, means for operating the signals at the side of the track, signal operating mechanism carried by the train for operating the signals thereon, said signal operating mechanism being in electric circuit with contact pieces carried by the train and the signals at the side of the track being in electric circuit with the contact plates at the side of the track in position to engage the contact pieces carried by the train, the circuit to be completed by such engagement being determined by the particular signal exposed at the side of the track, substantially as set forth.

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**500,828. LIGHTNING-ARRESTER. WILLIAM A. TURNAYER, Detroit, Mich. Filed Nov. 5, 1892. Serial No. 451,103. (No model.)**





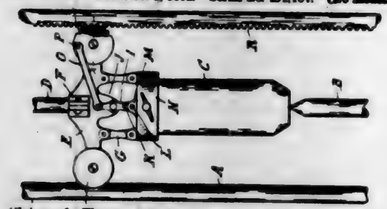
*Claim.*—1. In a lightning arrester, the combination with two stationary separated carbon points, having connection respectively with the line and the ground, a magnet in the ground circuit, a lever carrying at one end a bridge with complementary carbon points separated from the stationary points, and an armature at the upper end of the lever arranged in proximity to the magnet, substantially as described.

2. In a lightning arrester, the combination with two stationary separated carbon points, having connection respectively with the line and the ground, a magnet in the ground circuit, a lever carrying at its lower end a bridge with complementary carbon points, an adjusting screw for adjusting the break between the stationary and movable carbons, and an armature at the upper end of the lever, arranged in proximity to the magnet, substantially as described.

3. In a lightning arrester, the combination of the two separated stationary carbon points, connected respectively to the line and the ground, a magnet in the ground circuit, a bracket upon which said magnet is supported, and with which the core is formed integral, of an extension of the core having a segmental circular face, a lever pivoted on said bracket, a cross-bar on the lower end of said lever having at its ends carbon points complementary to the stationary carbons, and an armature at the upper end of the lever adapted to move across the segmental face of the core extension, substantially as described.

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**500,829. ELECTRIC-ARC LAMP. WILLIAM A. TURNAYER, Detroit, Mich. Filed Nov. 5, 1892. Serial No. 451,107. (No model.)**



*Claim.*—1. The combination in an arc lamp, of a frame, a suspended carbon holder and means for moving said holder laterally, consisting of a wheel rotated by engaging one of the standards, and a connecting rod from a crank pin on the wheel to the carbon holder, substantially as described.

2. The combination in an arc lamp, of a frame comprising vertical standards, a rack bar on one of the standards, a cross head having grooved wheels engaging the standards, teeth upon one of the wheels engaging the rack bar, a carbon holder suspended by links from the cross-head, a lever pivoted upon the cross head engaging at one end with the carbon holder, and a connecting rod at the other end extending to a crank pin on the toothed wheel, substantially as described.

3. In an arc lamp of the kind described, the combination of the stationary carbon, the frame having parallel standards, a cross-head having guide rollers engaging with the standards and correspondingly suspended from said cross-head, a lever pivoted on the cross-head and connecting to the carbon and a connecting rod between the end of said lever and the crank pin on one of the rollers, substantially as described.

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**500,830. STEAM-GAGE TUBING. CHARLES A. G. WITTKER, Somerville, assignor of one-half to the Star Brass Manufacturing Company, Boston, Mass. Filed Mar. 6, 1893. Serial No. 464,666. (No model.)**

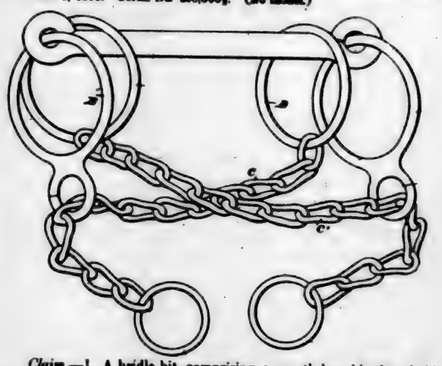


*Claim.*—1. A spring gage tube, the walls of which are of uniform thickness and the form of which is of a uniform flattened cross-section and generally, elliptic shape transversely, and which is provided upon its longer sides with shallow longitudinal corrugations of substantially the same thickness of wall as the other part of the walls of said tube, substantially as and for the purpose described.

2. The flattened Bourdon tube having a comparatively long transverse axis from A to B, a comparatively short vertical axis from G to H, and comparatively shallow corrugations upon one or more of the flattened sides of the tube, as shown, said corrugations being less deep on their interior than the measurement of the vertical axis of the tube, substantially as and for the purpose described.

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**500,831. BRIDLE-BIT. WILL C. WITTHARN, Lincoln, Nebr. Filed Feb. 1, 1893. Serial No. 460,560. (No model.)**



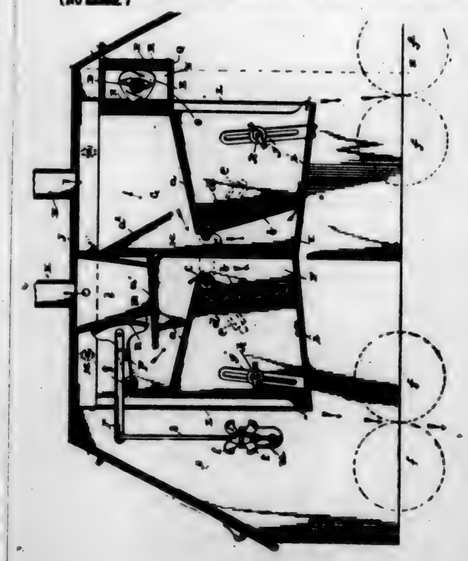
*Claim.*—1. A bridle bit, comprising a mouth bar, bit rings held at the ends of the mouth-bar, whereby they are kept a constant distance apart, cheek rings loosely fitted on the mouth bar interiorly of the bit rings and adapted to slide on the mouth bar to engage the sides of the animal's cheeks, and crossed flexible connections to unite the said cheek rings with the reins, substantially as shown and described.

2. A bridle bit, comprising a mouth bar, bit rings held at the ends of the said mouth bar, and each formed with an auxiliary ring or loop, cheek rings fitted to slide on the said mouth bar, and crossed connections attached to the said cheek rings and passing through the opposite auxiliary loop or ring in the corresponding bit ring, substantially as shown and described.

3. A bridle bit, comprising a mouth bar, bit rings held at the ends of the said mouth bar, and each formed with an auxiliary ring or loop, cheek rings fitted to slide on the said mouth bar, crossed connections attached to the said cheek rings and passing through the opposite auxiliary loop or ring in the corresponding bit ring, each connection being provided at its free end with a ring for attachment with the reins, substantially as shown and described.

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**500,832. AUTOMATIC PRESSURE-REGULATOR FOR MILLS. ABRAHAM H. WOLF, Allentown, Pa. Filed Dec. 10, 1892. Serial No. 454,723. (No model.)**



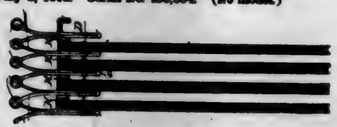
*Claim.*—1. A feed regulator comprising a frame carrying a stationary hopper, a vibrating feed box beneath the hopper, the feed box carrying a slightly declined board co-acting with and forming a bottom for the said stationary hopper, a valve co-acting with said declined board and supported independently of the said vibrating feed box, and a valve supported independently of said feed box and located below the said board and co-acting with the bottom of the said feed box, substantially as shown and described.

2. A feed regulator comprising a frame carrying a stationary hopper, a vibrating feed box beneath the hopper and carrying a slightly declined outwardly extending board which co-acts with and forms a bottom for said hopper, a slightly declined inwardly extending board beneath the outwardly extending board, and a valve supported at its upper end adjacent to the inner end of said inwardly extending board and supported independently of the feed box, and the lower free end of said valve adjacent to and co-acting with the bottom of the feed box, substantially as specified.

3. A feed regulator comprising a frame carrying a stationary hopper, a horizontally vibrating feed box carrying an outwardly extending declined board beneath co-acting with and forming a bottom for said hopper, an inwardly extending declined board carried by the feed box located beneath the outwardly extending board, the walls of the feed box having horizontal slots adjacent the inner end of the inwardly extending board, a depending valve at the inner end of said board having its lower end co-acting with the bottom of the feed box, and a support for said valve extending through the said slots and supported by the frame, substantially as shown and described.

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**500,833.** BOOKBINDER. NATHAN D. WOLFARD, Hartsville, Ind. Filed July 2, 1892. Serial No. 438,834. (No model.)



*Claim.*—1. An improved binder substantially as described, comprising the binding strips formed of a sheet of metal doubled upon itself forming the doubled portion to which the pamphlet or section may be secured and the separated edge flaps, combined with devices connecting the abutting flaps of the adjacent binding strips all substantially as set forth.

2. In a binder, substantially as described, a binding strip formed of a sheet doubled upon itself forming the doubled inner portion and the separated outer or edge flaps and beat between said doubled portion and flaps to form the spacing strip or flange, substantially as set forth.

3. An improved binder substantially as described, consisting of the plurality of strips provided at their outer edges each with separated oppositely deflected flaps and adapted at their inner edges for the connection of the pamphlets or other sections and the rings O connecting together the abutting flaps of the adjacent strips, substantially as set forth.

4. In a binder substantially as described a strip or section adapted at its inner edge to receive a pamphlet or the like and provided at its outer edge with the separated oppositely deflected flaps, the latter being perforated transversely for the passage of the connecting devices combined with the connecting devices fitting in said perforations substantially as set forth.

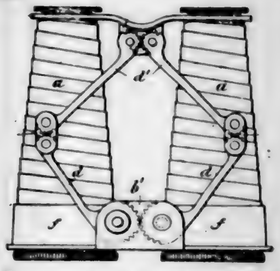
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**500,834.** TOOL-HOLDER. FRED B. YOUNG, Allegheny, Pa. Filed July 11, 1892. Serial No. 439,047. (No model.)



*Claim.*—A tool holder comprising a shank or head having a wedge hole, a holding device entering the inner end of the said hole, a tool hole extending substantially longitudinally and at an angle to the wedge hole and running thereinto at its outer end, a tool in said hole, and a wedge in the wedge hole engaged by the holding device but separate from and capable of having a longitudinal movement independent thereof by frictional contact with the tool, substantially as specified.

**500,835.** OPERA, FIELD, MARINE, OR OTHER GLASS. JAMES ATCHESON and THOMAS BRADLEY, London, England. Filed Nov. 26, 1891. Serial No. 413,094. (No model.) Patented in England Jan. 20, 1891, No. 1,016.




*Claim.*—1. In opera and other glasses, the combination with collapsible barrels carrying object glasses and eye glasses, of pivoted links or rods provided with mutilated gears for extending said barrels, substantially as described.

2. In opera and other glasses, the combination with extensible barrels carrying object glasses, and eye glasses of a plate adjacent to the object glasses, a plate adjacent to the eye glasses, links or rods pivoted in said plates, said links or rods provided with gears meshing with each other, and means for locking said bars against movement, substantially as described.

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**500,836.** TURNBUCKLE. WILLIAM H. ALBACH, Mansfield, Ohio, assignor to the Barr Cash and Package Carrier Company, same place. Original application filed Aug. 28, 1889, Serial No. 322,262. Divided and this application filed Nov. 26, 1892. Serial No. 453,190. (No model.)



*Claim.*—1. The spring turn-buckle, herein described, consisting of two coiled springs having right and left turns respectively, and a central spindle having right and left spiral flanges at its ends.

2. The turn-buckle, herein described, consisting of two coiled springs having right and left turns respectively, a central spindle having at its end right and left spiral wings or flanges screwing into the coils of said springs and terminal eye-rods having right and left spiral flanges screwing into the extreme ends of said springs.

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**500,837.** PAPER-FILE. WILLIAM H. ALBER, New York, N. Y. Filed Dec. 5, 1892. Serial No. 454,094. (No model.)





*Claim.*—1. In a paper file, the combination, with the handle and binding rods separable from each other and their connections, of cylindrical clamp-plates fixed at their backs on one rod to embrace the other rod, movable therefrom, substantially as described.

2. In a paper file, the combination, with the handle and binding rods, of a pivot-plate on which the outer end of one rod is hinged and the outer end of the other rod is laterally adjustable, and an adjustable connection between the inner ends of the rods, substantially as described.

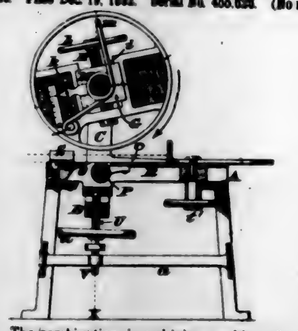
3. In a paper file, the combination, with the handle and binding rods, and the adjustable connection between their inner ends, of a slotted plate to which the outer end of one rod is hinged, and a binding screw mounted on the other rod and passing loosely through the slot in said hinging-plate, substantially as described.

4. In a paper file, the combination with the handle and binding rods and the connection between their outer ends, of a guide on the inner end of one rod, a rider on the inner end of the other rod, and an adjustable fastening for the rider and guide, substantially as described.

5. A paper file constructed with handle and binding rods, one rod of polygonal cross-section and the other rod carrying cylindrical plates to embrace the same, substantially as described.

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**500,838.** LEATHER-SKIVING MACHINE. ALFRED J. ALLEN, Essex, Canada, assignor to Silas H. Randall and James D. Randall, Wyoming, Ohio. Filed Dec. 19, 1892. Serial No. 455,638. (No model.)



*Claim.*—1. The combination, in a skiving-machine, of a knife, a shaft or bearing whose axis is parallel therewith, and, carried by said shaft, a rocking-device, the axis of which is both constantly parallel to the axis of said shaft and provided with mechanism, substantially as described for eccentric adjustment with reference thereto, said rocking-device being automatically turned by frictional contact with a piece of leather drawn between it and said knife, and thereby caused to gradually approach the latter, substantially as herein described.

2. The combination, in a skiving-machine, of a knife, a shaft or bearing whose axis is parallel with said knife and provided with mechanism, substantially as described whereby it can be adjusted either toward or away from it, and, carried by said shaft, a rocking-device, the axis of which is both constantly parallel to the axis of said shaft and capable of eccentric adjustment with reference thereto, said rocking-device being automatically turned by frictional contact with a piece of leather drawn between it and said knife, and thereby caused to gradually approach the latter, substantially as herein described.

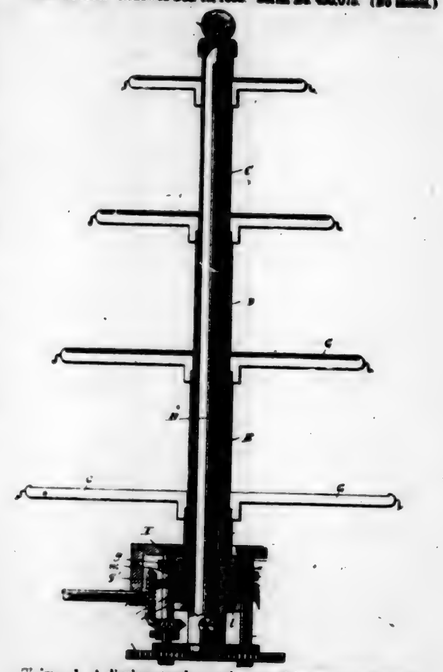
3. The combination, in a skiving-machine, of a knife, a shaft or bearing whose axis is parallel therewith, and, carried by said shaft, a rocking-device, the axis of which is both constantly parallel to the axis of said shaft and provided with mechanism, substantially as described, for eccentric adjustment with reference thereto; and a roller applied to a yielding support, said rocking-device being automatically turned by frictional contact with a piece of leather drawn between it and said knife, and thereby caused to gradually approach the latter, substantially as herein described.

4. The combination, in a skiving machine, of a fixed knife, a shaft having its axis parallel with said knife, a nut-block carried by said shaft, a drum having a bearing within which said block is fitted, and a screw engaging with the latter and turning freely within said bearing, whereby said drum is adjusted eccentrically with reference to said shaft, for the purpose described.

5. The combination in a skiving machine, of a fixed knife, a bearing having its axis parallel with said knife, a drum capable of being adjustable eccentrically upon said bearing, and a scale and pointer for indicating the eccentricity of said drum, substantially as herein described.

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**500,839.** DISPLAY-STAND. MARK ANTHONY, Berkeley, Cal. Filed Nov. 30, 1891. Renewed Dec. 13, 1892. Serial No. 455,073. (No model.)



*Claim.*—1. A display stand or rack, comprising a central, stationary vertical rod or shaft having a bearing formed on its upper end, an elongated sleeve loosely surrounding said shaft and resting on the upper bearing end thereof, a series of sleeves concentrically arranged around said inner sleeve, said sleeves terminating at their ends in different horizontal planes, means for revolving alternate sleeves in opposite directions, and display devices carried by each sleeve, substantially as specified.

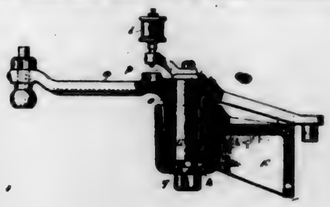
2. A display stand or rack, comprising a series of concentric sleeves, surrounding a central stationary rod or shaft upon which the inner sleeve has a loose bearing a display disk or series of arms carried by each sleeve, and means whereby alternate sleeves are revolved in opposite directions, substantially as specified.

3. A display stand, comprising a series of concentric sleeves, terminating at their ends in different horizontal planes, said sleeves having display devices carried thereby, and having each a gear wheel at its lower end, and means for engagement with said gear wheels, to effect the rotation of said sleeves, substantially as specified.

4. The display stand, comprising the stationary vertical rod or shaft, the central stationary sleeve loosely surrounding said rod, and having a bearing at its upper end thereon, a series of concentric sleeves of different lengths around said central sleeve, the display devices carried by said sleeves, a gear wheel on the lower portion of each sleeve and mechanism in engagement therewith, whereby alternate sleeves are rotated in opposite directions, substantially as specified.

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**500,840.** ROCK-ARM FOR HORIZONTAL ENGINES. EDWIN J. ARMSTRONG, Oswego, N. Y., assignor to the Ames Iron Works, same place. Filed Feb. 28, 1893. Serial No. 464,097. (No model.)



*Claim.*—1 The combination, in a horizontal steam engine, of a bracket having a cup, and a rock arm having a vertical axis adapted to be supported in said cup, substantially as described.

2. The combination, in a horizontal steam engine, of a rock arm having a vertical axis, a stationary oil cup arranged adjacent said axis, and means for oiling the outer bearing of said rock arm from said oil cup, substantially as described.

3. The combination, in a horizontal steam engine, of a rock arm having a vertical axis, a cup for pivotally supporting said arm, and means for automatically oiling the bearing of said rock arm and for returning the oil to said cup to be used again, substantially as described.

4. In a horizontal steam engine, the combination of a rock arm having a vertical bearing hub, a cup for supporting said rock arm, a pin rigidly fixed in said cup, a cap secured to said pin and having an arm projecting therefrom, an oil cup mounted on said arm, an oval oil cup formed on the rock arm, and a tube for conducting the oil from said last named oil cup to the outer end of the rock arm, substantially as described.

5. The combination, in a horizontal engine, of a rock arm having a vertical axis, an oil cup formed in one arm of said rock arm, a tube leading from said cup to the outer bearing of said arm, and a hollow eccentric rod connected to said outer bearing, whereby both ends of said eccentric rod may be oiled from said cup, substantially as described.

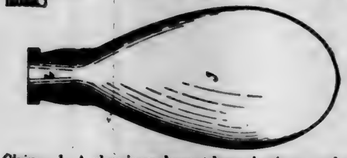
6. The combination, in a horizontal engine, of a rock arm having a vertical bearing hub formed with radial oil ducts, a cup adapted to receive said hub, a pin for supporting said hub vertically in said cup, and an oil duct for returning the oil to said cup after it has been used to lubricate the pin, substantially as described.

7. The combination, in a horizontal steam engine, of a rock arm having a vertical bearing hub formed with lateral oil ducts, an annular groove in the top of said hub and an inclined oil duct leading from said groove, a cup within which said hub has its bearing, a removable pin for supporting said hub upright, and means for preventing said hub from rising out of the cup, substantially as described.

8. In a horizontal steam engine, the combination, with a suitable support, of a rock arm having a vertical bearing hub an arm projecting horizontally from one side of said hub and an inclined arm projecting from the opposite side thereof, substantially as described.

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**500,841. INCANDESCENT-LAMP GLOBE.** THOMAS B. ATTERBURY, Pittsburg, Pa. Filed July 26, 1892. Serial No. 441,330. (No model.)



*Claim.*—1. A glass incandescent lamp, having a neck pressed to standard size within, and having a blown bulb free from mold marks, substantially as set forth.

2. A glass incandescent lamp, having a neck pressed to standard size within, and with the one half, or part, of a fastening device pressed on the outside, and having a blown bulb free from mold marks, substantially as set forth.

3. An incandescent lamp globe, having a pressed neck portion with thick sides and regular form fitted to receive a stopper, a thin blown bulb of larger diameter, and an intermediate portion having sides of tapering thickness, substantially as described.

4. An incandescent lamp globe, having a mouth with thick sides and regular form fitted to receive a stopper, a corrugation at the inner end of the mouth section, a bulb of larger diameter and thin sides, and an intermediate portion having sides of tapering thickness connecting the corrugation and the bulb, substantially as described.

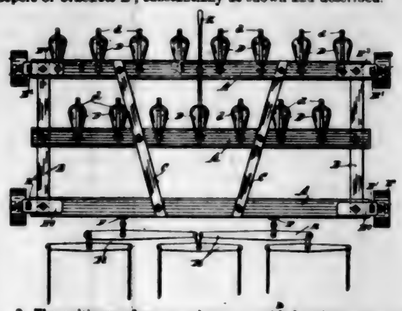
5. An incandescent lamp bulb, having a pressed neck portion with thick sides and regular form adapted to receive a stopper, a corrugation at the end of the neck, the exterior walls of the neck tapering inwardly to the base of the corrugation, and a thin blown bulb; substantially as described.

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**500,842. CULTIVATOR.** CHRISTOPHER AUGDER, Minneapolis, Minn. Filed Dec. 29, 1892. Serial No. 456,505. (No model.)

*Claim.*—1. The cultivator truck having two ranks of shovels set in a substantially horizontal plane upon curved standards, each rank being set out of line with the path of the other, substantially as shown and described.

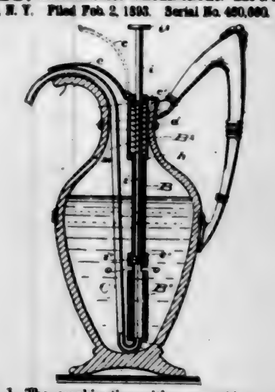
2. A rectangular cultivator frame having the main lateral bars A, the connecting bars B and the diagonal braces C, and provided at each corner with wheels E having vertical standards E' adjustable in keepers or brackets E², substantially as shown and described.



3. The cultivator frame as shown, provided at its corners with wheels having independent vertical adjustment, and having two ranks of shovels set in a substantially horizontal plane upon curved standards each rank being set out of line with the path of the other, substantially as shown and described.

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**500,843. EUCHARISTIC WATER-CRUET.** LEO C. BRANDT, Mount Vernon, N. Y. Filed Feb. 2, 1893. Serial No. 460,660. (No model.)



*Claim.*—1. The combination with a portable vessel open at its top and sealed with a lid, of a liquid-expelling device in said vessel, having a barrel, a plunger therein, and a tube adapted to discharge the liquid in drops, substantially as described.

2. The combination with a cruet having a lip at one side of its top opening, of a liquid-receiving and expelling device and a discharge pipe therefor, which will discharge a measured modicum of the liquid over the lip, substantially as described.

3. The combination with a cruet having a lip at one side of its top opening, a fixed cap piece covering a part of said opening and a hinged lid covering the lip and the other part of said opening, of a liquid receiving and expelling device in the cruet, projected above its cap-piece and also over the lip, and adapted by manipulation to discharge a modicum of liquid from the cruet by a single expulsion or by successive drops, substantially as described.

4. The combination with a cruet having a lip at one side of its top aperture, a handle opposite said lip, a fixed cap-piece covering part of the aperture, and a hinged lid over the lip, of a cylindric barrel contracted in diameter intermediately of its ends forming a liquid cylinder at its lower end and a spring casing at its upper end, and a rod guide between the cylinder and casing, a pusher rod in said barrel, a plunger head on the rod adapted to slide water-tight in the liquid cylinder, the latter being of a predetermined capacity and laterally apertured near its upper end, a spring in the case adapted by expansion to elevate the rod and its head, and a push piece on the rod above the cruet, substantially as described.

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**500,844. FASTENING FOR BARREL OR OTHER HOOPS.** ELLA W. BEARDS, Beaver, Pa. Filed Aug. 15, 1892. Serial No. 443,437. (No model.)

*Claim.*—The combination with a tub or other vessel having a hoop thereupon, of a hoop sustaining and retaining device consisting of a



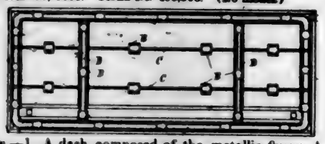
**500,844.**



flattened head 2 and a thin flat sheet metal shank 3 projecting from the center of the flattened head and formed at one edge with the inclined recess 9 and point 7, located immediately beneath the head, the shank tapering uniformly to a sharpened point 5 and the lower edge of the hoop bearing against the flat head and against the said point 7, one edge of the shank serving to raise the hoop over the said point as the shank is driven into the vessel, substantially as described.

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**500,845. VEHICLE-DASH.** CHARLES A. BEELER, Cincinnati, Ohio. Filed Mar. 30, 1893. Serial No. 468,368. (No model.)



*Claim.*—1. A dash composed of the metallic frame A, tubular cushions B inclosing said frame, corrugated metal sheets E, E, clamped upon the tubular cushions of said frame, substantially as specified.

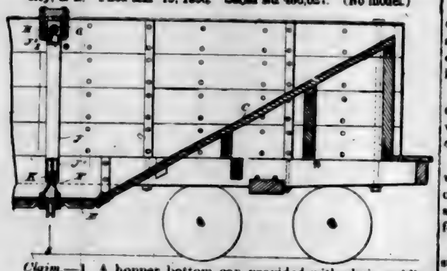
2. A metallic dash composed of the frame A, tubular cushions B, corrugated metal sheets E, E, split clamping cylinders F, secured upon the flanges *a*, *b*, outside of the frame, substantially as specified.

3. A metallic dash composed of the frame A, ribs D, tubular cushions B placed upon said frame, and ribs, corrugated metal sheets E, E, clamped upon said tubular cushions around the frame, substantially as specified.

4. A dash composed substantially of the metallic frame A, cross cords C, and tubular cushions B placed upon said frame clamped upon said cushion frame and cords, substantially as specified.

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**500,846. HOPPER-BOTTOM CAR.** RICHARD BLACKSTONE, Central City, S. D. Filed Mar. 15, 1893. Serial No. 466,027. (No model.)



*Claim.*—1. A hopper bottom car, provided with chain guiding tubes adapted to be secured to the car body and forming guideways for the passage of the chains, substantially as shown and described.

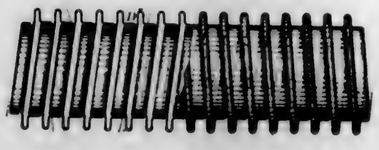
2. A hopper bottom car, provided with chain guiding tubes, each provided in its lower end with a roller, substantially as shown and described.

3. A hopper bottom car, provided with a chain guiding tube formed at its upper end with a flange for attachment to the housing of the chain beam, the lower end of the tube being bent to conform to the side flooring of the car, substantially as shown and described.

4. A hopper bottom car, provided with a chain guiding tube formed at its upper end with a flange for attachment to the housing of the chain beam, the lower end of the tube being bent to conform to the side flooring of the car, and a roller in the lower end of the said tube for guiding the entrance of the chain to the tube, substantially as shown and described.

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**500,847. FLEXIBLE METALLIC TUBING.** WILLIAM H. K. BOWLEY, London, England. Filed Mar. 28, 1893. Serial No. 468,002. (No model.)



*Claim.*—A flexible metallic tube consisting of a strip of metal helically wound on a mandrel, the said strip having a high ridge in the middle of each convolution with a border and hooked lip on each side engaged and pressed together with a corresponding border and hooked lip of the next convolution, substantially as and for the purpose set forth.

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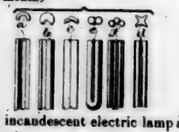
**500,848. TOY BANK.** RICHARD A. BREUL, Bridgeport, Conn. Filed Jan. 6, 1893. Serial No. 457,514. (No model.)



*Claim.*—In a sheet-metal toy-bank or money receptacle of the described type, the combination of the flanged and slotted base, end-pieces E E having lugs K, and bent roof I having slots to receive and interlock with the lugs K; said roof or roof-plate I having a slot N in its ridge or apex J and a chute, O, parallel to the under side of the slanting roof, substantially as and for the purpose shown and set forth.

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**500,849. ELECTRIC INCANDESCENT LAMP.** HENRY D. BURNETT, Lynn, and SAMUEL E. DOANE, Swampscott, Mass., assignors to the General Electric Company, of New York. Filed Oct. 28, 1892. Serial No. 450,237. (No model.)



*Claim.*—1. In an incandescent electric lamp a filament and conductor supporting its ends consisting of wires of a grooved or indented section; whereby the ends of the filament may be seated in grooves or notches therein and be held in place by its own elasticity, as set forth.

2. In an incandescent electric lamp a filament and supporting conductor for each end of the filament, each consisting of two or more wires so arranged relatively to one another as to form longitudinal open sided grooves or recesses to receive the ends of the filament.

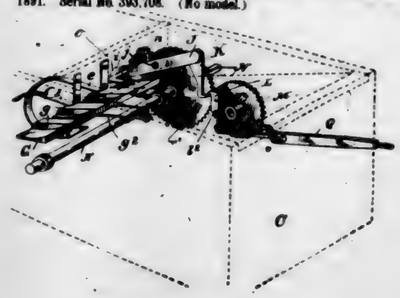
3. In an incandescent electric lamp a filament and supporting wires longitudinally grooved or recessed throughout on their sides opposite the ends of the filament, in which recesses the filament ends are seated, and carbon paste uniting the wires and filament, as set forth.

4. In an incandescent electric lamp a filament and comparatively stout conducting wires fastened to the globe but not passing through it, which wires are so shaped as to form longitudinal open sided recesses or grooves to receive the ends of the filament and hold it in place by its own elasticity.

5. In an incandescent electric lamp two pairs of filament supports, one pair being insulated and the other connected electrically so as to allow of two or more filaments being used in a single bulb, the supports having longitudinal grooves on their sides so that the filament can be held in place by its own elasticity, as set forth.

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**500,850. CANCELING AND REGISTER-ACTUATING DEVICE FOR BALLOT-BOXES.** WARREN T. BUTLER, Chelsea, Mass. Filed May 22, 1891. Serial No. 393,706. (No model.)



*Claim.*—1. In a ballot-box, the combination with an incline chute leading into the interior of the box, and driving gear actuating a feed-roller mounted near the lower end of said chute, of a hinged extension of said chute, bearing against said roller and adapted to be depressed by the passage of the ballot, and means whereby the depression of said extension effects operative connection between the driving gear and a registering mechanism, substantially as set forth.

2. In a ballot-box, the chute E and a single, peripherally-grooved feed-roller F, in combination with the hinged extension G at the foot of said chute, having ribs or raised portions *g*, extending up into the grooves of said feed roller, for the purpose set forth.

3. In a ballot-box, the combination with a driving gear, a peripherally-grooved feed-roller actuated by said gear, and a chute leading into the box, of an extension of said chute hinged across its lower end and provided with raised ribs adapted to enter the grooves of said roller, a pivoted arm connected at one end with said extension and having a hook at its other end, and means whereby the depression of said extension and the elevation of said hook effect operative connection between the driving gear and a registering mechanism, substantially as set forth.

4. In a ballot-box, the combination, with a driving gear N', a peripherally-grooved feed-roller F, and a chute E, of an extension G hinged across the lower end of said chute, and provided with raised ribs *g*, *g*, adapted to enter the grooves of the roller, a pivoted arm J connected with said extension, a hook K on the end of said arm, a hooked lever L adapted to engage the hook K, a mutilated gear M to which said lever is pivoted, said gear M having a slot *s* in its mutilated edge, in which a lug *l* on said lever moves, said lug being adapted to engage the driving gear when actuated by the hook K, thus imparting motion to the mutilated gear and bringing it in mesh with the driving gear, and means whereby a register is actuated by each rotation of said mutilated gear, substantially as set forth.

5. In a ballot-box, the driving wheel N', rotatable by the crank, and the mutilated gear M, slotted as described, in combination with the lever L pivoted on said gear M and having a tooth or lug *l* moving in said slot to engage with and disengage from the teeth of the wheel N' upon the passage of each ballot, for the purpose set forth.

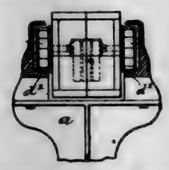
6. In a ballot-box, the combination, with the driving gear and the feed-roller actuated thereby, of a mutilated gear adapted to engage intermittently with the driving gear, but normally presenting its blank edge thereto, a registering mechanism adapted to be actuated by the rotation of said mutilated gear, and means whereby the passage of a ballot throws said mutilated gear in mesh with said driving shaft gear substantially as set forth.

7. In a ballot-box, the combination, with the driving gear and feed-roller actuated thereby, of a mutilated gear adapted to engage intermittently with said driving gear, but normally presenting its blank edge thereto, a register adapted to be actuated by each rotation of said mutilated gear, a slot in the blank edge of said gear, a lever pivoted on the side of said gear and carrying a lug adapted to move in said slot, and means whereby said lever is actuated upon the passage of each ballot and said lug made to engage the teeth of the driving gear and thereby rotate the mutilated gear until its fixed teeth mesh with said driving gear, substantially as set forth.

8. In a ballot-box, in combination with a driving gear, a feed-roller actuated thereby, a mutilated gear engaging intermittently with said driving gear, and a register actuated by each rotation of said mutilated gear, of a lever L pivoted on the inner surface of said mutilated gear and carrying a lug $l^3$ adapted to impinge upon a fixed stop X to arrest the rotation of the mutilated gear, and means whereby the passage of each ballot actuates said lever L on its pivot, to release said lug $l^3$ from contact with said stop and permit the rotation of the mutilated gear, substantially as set forth.

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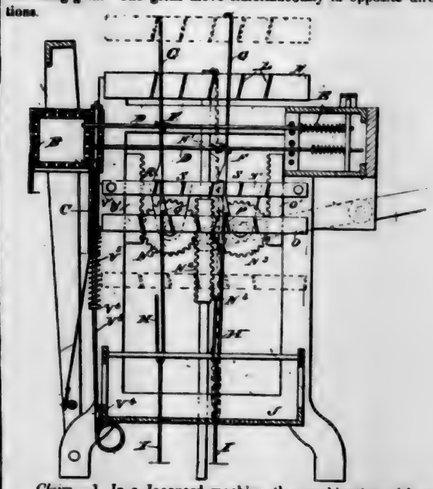
**500,851. ELECTRIC LOCOMOTIVE.** LAWRENCE W. CASE, High land Park, Conn. Filed May 9, 1891. Serial No. 392,216. (No model.)



*Claim.*—In combination with a supporting track provided with a conducting strip, a car, an electric motor supported on the car and having the ends of the armature shaft provided with commutator strips arranged to form driving wheels for the car with the terminals of the coils connected up to commutator strips on diametrically opposite sides of the commutators, all substantially as described.

**500,852. JACQUARD MECHANISM FOR LOOMS.** FRANK CRABcot, Paterson, N. J. Filed Feb. 5, 1892. Renewed Jan. 31, 1893. Serial No. 460,228. (No model.)

*Brief.*—The jacquard is provided with two moving griffs and a stationary grate whereby the desired hooks may be retained in elevated position. A plate is adapted to be interposed between the card-cylinder and the needles to prevent the engagement of the hooks with the lifting-griff. The griffs move simultaneously in opposite directions.



*Claim.*—1. In a Jacquard machine, the combination with two griffs having transversely extended knives inclined in opposite directions, the said griffs being mounted to slide simultaneously toward and from each other, of hooks each having a hook end adapted to be engaged by one of the said griffs and a wedge shaped lug secured on the said hook and adapted to be engaged by the other griff, substantially as shown and described.

2. In a Jacquard machine, the combination with a stationary grate, of two griffs, one located above the said stationary grate and the other below the same, the two griffs being mounted to slide toward and from each other, hooks each having a hook end adapted to be engaged by the uppermost griff and two wedge shaped lugs held on each hook and of which lugs one is adapted to engage the stationary grate and the other the lowermost griff, substantially as shown and described.

3. In a Jacquard machine, the combination with hooks having hook ends and each formed with two wedge shaped lugs located at opposite sides, of a stationary grate adapted to be engaged by one of the said wedge shaped lugs, and two griffs mounted to slide simultaneously toward and from each other, the uppermost griff being adapted to be engaged by the upper hook end of the hook, and the lower griff by the lowermost wedge shaped lug, substantially as shown and described.

4. In a Jacquard machine, the combination with a fixed grate provided with inclined knives, of upwardly movable hooks each having hook ends, two wedge shaped lugs, one of which is adapted to engage the knives of the said fixed grate to be seated thereon to support the hook in an uppermost position, and two griffs, of which one is located above the said fixed grate and the other below the same, the upper griff being adapted to be engaged by the upper end of the said hook and the lower one by the lowermost lug, substantially as shown and described.

5. A Jacquard machine, provided with a plate adapted to be interposed between the needles and the pattern cylinder, rods forming bearings for the said plate and formed with springs at their lower ends to permit the rods to swing longitudinally, and springs held on the said rods to press the said plate in an uppermost position, substantially as shown and described.

6. A Jacquard machine provided with a plate adapted to be interposed between the needles and the pattern cylinder, rods forming bearings for the said plate and formed with springs at their lower ends to permit the rods to swing longitudinally, springs held on the said rods to press the said plate in an uppermost position, and means for holding the said plate in a lowermost position against the tension of the springs, as set forth.

7. In a Jacquard machine, the combination with a pattern cylinder and a hook for turning the same, of a plate adapted to be interposed between the pattern cylinder and the needles, and adapted to



directly engage the said hook to hold the latter out of engagement with the cylinder, substantially as shown and described.

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**500,853. STREET-SPRINKLER.** CHARLES A. CLARK, Portland, Oreg. Filed Nov 28, 1892. Serial No. 453,285. (No model.)



*Claim.*—1. The combination with the water pipe; of the rose sprinkler B fixed thereon and having overhanging shoulder H, and inwardly and upwardly sloping and perforated sides, the subjacent block G lying beneath the shoulder of the sprinkler and holding it from being driven downwardly, and the cover or dish-shaped cover O hinged to the sprinkler and folding over and protecting the same, substantially as shown and described.

2. The combination with a series of pipes laid below the surface of the streets of a city, of a series of perforated sprinklers or spray nozzles laid in the street and having holes increasing in size from the bottom toward the top to distribute the water as and for the purposes specified.

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**500,854. SAD-IRON.** HERBERT CLAYTON, New York, N. Y. Filed Sept. 9, 1892. Serial No. 445,431. (No model.)



*Claim.*—1. A sad iron having a combustion chamber, the lower portion thereof forming an ironing surface, the upper wall having an interior cavity, a non combustible absorbent material within the cavity, and the upper and side walls having air openings, substantially as specified.

2. A sad iron having a combustion chamber the lower portion thereof forming an ironing surface, a non combustible absorbent material secured to the inner side of the upper wall, and the upper and side walls having air openings, substantially as described.

3. A sad iron having a combustion chamber, the lower portion thereof forming an ironing surface, the upper wall having an interior cavity, a non combustible absorbent material placed in the cavity, a clamping ring for said material also within the cavity, the upper and side walls having air openings, substantially as described.

4. A sad iron composed of two separable parts, one part forming an ironing surface, and the other part carrying an absorbent material upon its inner side, whereby access to said material is afforded, and air openings in the part carrying the absorbent material and the sides of the two parts, substantially as described.

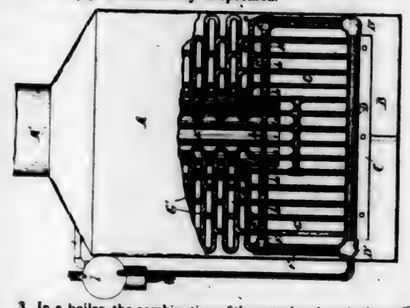
5. A sad iron having a combustion chamber, the lower portion forming an ironing surface, the upper wall having a non combustible absorbent material, and the air inlets, in the iron combined with a detachable stand or support for holding the iron in an inverted position, substantially as specified.

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**500,855. BOILER.** BASILLIA J. CULLER, Detroit, Mich. Filed Feb. 1, 1892. Serial No. 420,625. (No model.)

*Claim.*—1. In a boiler, the combination of the hollow quadrilateral base, the vertical drum having the central flue therethrough located some distance above said base, the series of vertical pipes extending from said base, the horizontal radial pipes connecting the lower end of said drum and the upper end of said vertical pipes, the sinuous pipes surrounding said drum and connected therewith at their upper ends, their lower ends being connected with said vertical pipes, substantially as set forth.

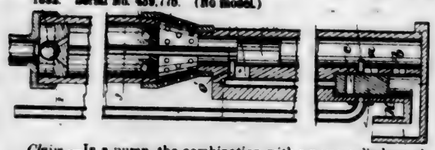
2. In a boiler, the combination of the hollow quadrilateral base, the central vertical drum located some distance above said base, the vertical pipes extending from said base, the horizontal radial pipes connecting the lower end of said drum with said vertical pipes, the sinuous pipes surrounding said drum, said pipes being connected with the upper and lower ends of said drum and with the base through said vertical pipes, substantially as specified.



3. In a boiler, the combination of the exterior sheet inclosing the fire-space, the stack extending therefrom, the drum located centrally within said sheet and extending into said stack, the hollow base, the vertical and horizontal pipes connecting said drum and base, the sinuous pipes crossing the fire-space around said drum and connected with said drum at each end.

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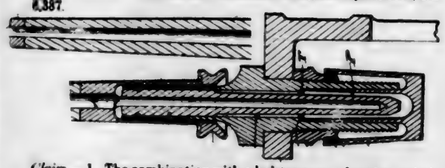
**500,856. PUMP.** CARY S. COX, Spottswood, Cal. Filed July 12, 1892. Serial No. 439,776. (No model.)



*Claim.*—In a pump, the combination with a pump cylinder and a plunger valve therein, of the auxiliary cylinder J depending from the pump cylinder and provided with the ports *a b* and slot *d*, the piston I in the auxiliary cylinder and secured to the plunger valve rod H, the chest K connected with the supply pipe L, and the slide valve N in the chest and provided with the pin $O^3$ projecting through port *a*, and the valve stem O having the pin *o* extending through the slot *d*, substantially as herein shown and described.

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**500,857. SPINNING AND DOUBLING SPINDLE.** RICHARD CRABTREE and EDWARD JILLOW, Bolton, England. Filed Feb. 2, 1892. Serial No. 420,642. (No model.) Patented in England Apr. 2, 1892, No. 6,337.

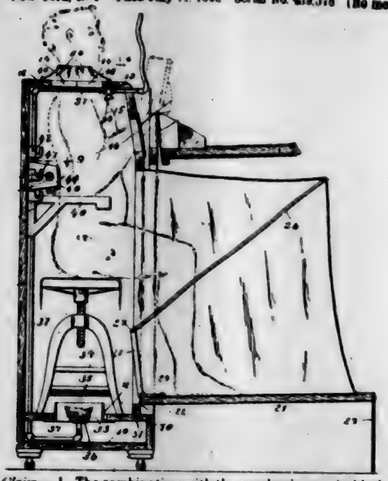


*Claim.*—1. The combination with a bolster case, a bearing or bolster, and a spindle, of an outside cover arranged at the lower end portion of the bolster case and bearing or bolster and having an inside lubricant cup extending vertically into the bolster case and provided with internal grooves, and a pliable substance interposed between the upper end of the lubricant cup and an internal part of the bolster case, substantially as described.

2. The combination with a bolster case having a recess in its lower end and provided with an internal shoulder, a bearing or bolster, and a spindle, of an outside cover having an inside tapering lubricant cup extending vertically into the recess in the bolster case and provided with internal grooves, and a pliable substance interposed between the upper end of the tapering lubricant cup and the internal shoulder of the bolster case, substantially as described.

3. The combination with a bolster case, and a bearing or bolster, of a spindle sleeve C, a spindle provided at its upper end with an attached piece Z, and a tapering piece Y loosely mounted on the upper end of the spindle between the spindle sleeve and the piece at the upper end of the spindle, substantially as described.

## 500,858. CHIFFONIER TURKISH BATH. ANDREW J. CROSS, New York, N. Y. Filed July 11, 1892. Serial No. 439,578. (No model.)



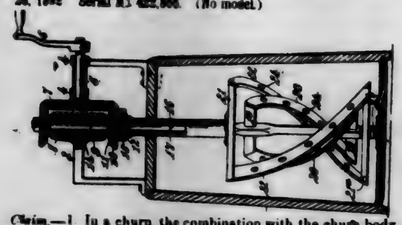
*Claim.*—1. The combination, with the case having a suitable door, an opening for the neck and heating mechanism, of a second door held to swing outward from one side of the case, and a folding, extensible hood secured to the door and to the case so as to open and close with the door, substantially as described.

2. The combination, with the case having suitable means of egress and heating mechanism within it, of a top formed of abutting parts movable in relation to each other and having an opening for the neck, and a swinging lid hinged to the back of the case and provided with side lugs which embrace the sides of the case, the lid being adapted to close the top of the case and also to swing out into a horizontal position to form a shelf, substantially as described.

3. In an apparatus of the character described, the combination with the main case having suitable means of ingress and egress, and a heater, of a swinging door, arranged in one side of the case, a flexible hood secured to the door and to the stationary portion of the case, fixed arms secured to the door, and supporting rods pivoted to the arms and connected with the upper portion of the hood, substantially as described.

4. The combination with the main case and its horizontally swinging door, of a series of hooks secured to the door, and a back rest comprising side brackets having a flexible bearing surface for the back, and cross bars connecting the brackets, one of the bars being adapted to engage the hooks on the door, substantially as described.

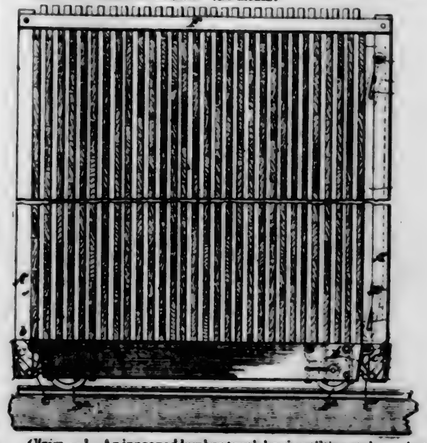
## 500,859. CHURN. JAMES L. CUTLER, Piketon, Ohio. Filed Feb. 26, 1892. Serial No. 422,866. (No model.)



*Claim.*—1. In a churn, the combination with the churn body, of dasher composed of concentric shafts, the inner shaft being stepped to the bottom of the churn body, arms provided with reversely beveled ends, inner and outer sets of spirally arranged flat arc shaped agitator blades having their ends secured flatwise to the beveled end surfaces of said arms, whereby when in action the said blades at top and bottom have their edges presented to the milk, the central portions of said blades having their flat sides presented to and adapted to coact against the milk, and means for rotating the concentric shafts and attached inner and outer sets of agitator blades in opposite directions, substantially as described.

2. In a churn, the combination with the churn body, of a dasher composed of concentric shafts, the inner shaft being stepped to the bottom of the churn body, arms provided with reversely beveled ends, inner and outer sets of agitator blades having their ends secured flatwise to the beveled end surfaces of said arms, the upper ends of the outside set of blades projecting forward of the lower ends of said blades and the lower ends of the inner set of blades projecting forward of the upper ends of said blades, whereby when a current is formed by the action of one set of blades a counter current is produced by the other set of blades, and means for rotating the shafts and blades in opposite directions, substantially as described.

## 500,860. LUMBER-TRUCK. HOWARD DANIELS, Atlanta, Ga., assignor of one-half to James H. Simonson, Fort Wayne, Ind. Filed Dec. 21, 1892. Serial No. 455,937. (No model.)



*Claim.*—1. An improved lumber truck having tilting stake sockets substantially as and for the purpose described.

2. In a lumber truck, the combination with the truck and end stakes of the self adjusting compensating boards attached to the sides of the end stakes substantially as shown and described.

3. In a lumber truck, the combination with a truck of the tilting stake sockets, and the dogs for holding and tilting said sockets substantially as shown and described.

4. In a lumber truck, the combination with the truck of the tilting stake sockets, and the stops for limiting the movement of said sockets substantially as shown and described.

5. The combination with the end pieces of the truck of the sockets pivoted thereto and the spring interposed between the end piece and socket substantially as and for the purpose described.

6. The combination with a truck and the end stakes of the boards having inclined slots and the bolts passing therethrough.

7. The combination with the end pieces of the truck of the stake sockets, hinged thereto, and provided with stops, the stop leg on the end piece and the dog pivoted to the sockets all arranged substantially as shown and described.

## 500,861. LUMBER-PILING MACHINE. HOWARD DANIELS, Atlanta, Ga., assignor of one-half to James H. Simonson, Fort Wayne, Ind. Filed Dec. 21, 1892. Serial No. 455,938. (No model.)

*Claim.*—1. In a lumber piling machine, the combination with a swinging conveyer frame, of a stake holding and distributing frame, substantially as described.

2. In a lumber piling machine, the combination with a truck of an intermittently swinging conveyer frame, and an inclined feed chute adapted to deliver the boards to the conveyer frame substantially as described.

3. In a lumber piling machine, the combination with an intermittently swinging conveyer frame, of a rocking catch lever adapted to hold the courses in position, substantially as shown and described.

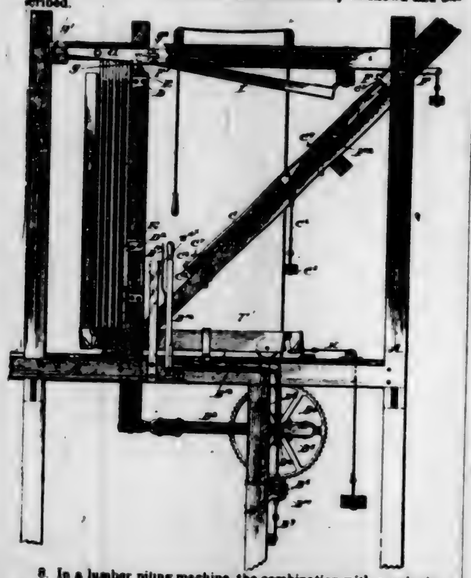
4. In a lumber piling machine, the combination with a truck, of a weighted cord connected to one end of same, the swinging conveyer frame and the rocking catch lever, all arranged substantially as shown and described.

5. In a lumber piling machine, the combination with a feed chute having a stop catch at its lower end, adapted to hold the boards in check, of a swinging conveyer frame having tripping irons at its upper end adapted to operate and depress the catch stop substantially as shown and described.

6. In a lumber piling machine, the combination with a swinging conveyer frame carrying rest and tripping blocks, of the stake carrying frame, having stops to hold the stakes, the tripping blocks being adapted to operate said stops substantially as shown and described.

7. In a lumber piling machine, the combination with the stake holding frame, comprising the followers and pivoted stops, of the swinging conveyer frame, comprising rest and tripping blocks, and the rocking catch lever, all arranged substantially as shown and described.





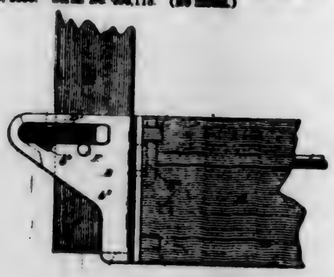
8. In a lumber piling machine, the combination with a swinging frame, of a feed chute, the pitman and gear for operating the frame, the cam wheel on shaft with gear, the intermittent pinion, clutch and lever, said lever being adapted to be operated by the cam wheel to throw the clutch out of engagement, substantially as shown and described.

9. In a lumber piling machine, the combination with a truck, of the swinging conveyer frame, mounted upon a horizontal shaft and driven intermittently by means of pitman, gear and intermittent pinion, the rest plates, tripping blocks and tripping irons upon said conveyer frame, the stake carrying frame upon the same shaft comprising the followers and pivoted stops the feed chute and catch stops, and the rocking catch lever all arranged substantially as shown and described.

10. In a stake holding frame, the combination of the side members and upper and lower sills, the face plates secured to the sills, the follower having weighted cords attached thereto, and the pivoted angular stops upon the outer sides of the frame substantially as shown and described.

11. In a lumber piling machine, the combination of the swinging frame and stake holding and distributing frame, the truck, rocking catch lever, and the stops arranged above and below said lever to limit its movement substantially as shown and described.

## 500,862. LUMBER-TRUCK. HOWARD DANIELS, Atlanta, Ga., assignor of one-half to James H. Simonson, Fort Wayne, Ind. Filed Mar. 28, 1893. Serial No. 468,113. (No model.)



*Claim.*—1. In a lumber truck, the combination, with the side beams, of the socket castings, the longitudinal rod and the nuts upon the ends of the same substantially as shown and described.

2. In a lumber truck, the combination with the side beams, of the socket castings having lugs and recesses the tie rod or bar and the nuts upon the ends and in the recesses of the castings substantially as shown and described.

3. An improved stake socket having a horizontal ledge at its bottom, and a pivoted locking device arranged between its sides near the forward upper end substantially as shown and described.

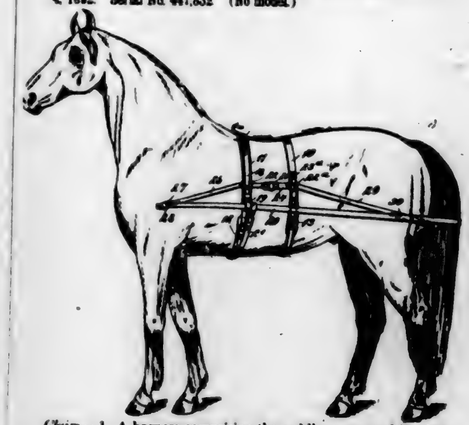
4. The combination with a stake, of a socket having a recess of greater area than the cross section of the stake, a horizontal ledge at the bottom and a pivoted locking device pivoted between the sides of the socket and adapted to bear upon the face of the stake to hold the same vertical substantially as shown and described.

5. In a lumber truck, the combination with the truck of the stake socket secured thereto, the shaft having a wing or projection and a crank handle substantially as shown and described.

6. The combination with a socket composed of a back plate side and end pieces, the bottom ledge of the shaft having a wing or projection and a crank handle substantially as shown and described.

7. The combination with a socket composed of the back plate having lugs and a ledge, the side and end pieces of the shaft having a wing or projection and a crank handle, and the stop pin in the side of the socket substantially as and for the purpose described.

## 500,863. HARNESS. ISAAC N. DARR, Monticello, Ill. Filed Oct. 4, 1892. Serial No. 447,632. (No model.)



*Claim.*—1. A harness comprising the saddle proper and its girth the rings at opposite sides of the saddle the strap or surcingle 10 in rear of the saddle and also having opposite rings transverse straps 24 adjustably connecting the two sets of rings, hold back straps extending forwardly from the forward rings and draft straps or traces extending rearwardly from the rear rings, substantially as described.

2. A harness comprising the saddle proper 11, the parallel strap or surcingle in rear thereof and having an elastic section 13, rings carried by the saddle and surcingle and the forward and rearwardly extending straps 26, 29, substantially as described.

## 500,864. VEIL-CLASP. CLARENCE M. DAY, New York, N. Y. Filed Dec. 2, 1892. Serial No. 453,801. (No model.)



*Claim.*—A clasp comprising the outer hollow section B having a flat inner face plate *e* slotted at *f*, the spring C secured within said section and projecting at its free end over the slot, the inner section A having a marginal flange to abut against the plate *e*, and provided with a contracted portion at one end extending through the slot *f* and terminating within the section B in a transverse pintle forming lip *d* pressed upon by said spring to hold the two sections closed, the pintle *b* hinged to the back of the section A, and the keeper *c* for the point of the pin, substantially as set forth.

**500,865. BED-BOTTOM.** ARTHUR W. DAY, New Britain, Conn. Filed Apr. 3, 1893. Serial No. 468,845. (No model.)



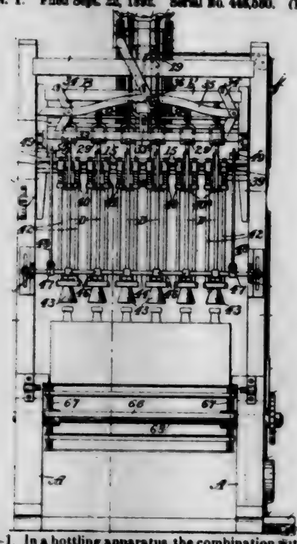
*Claim.*—1. The herein described bed bottom consisting essentially of a frame having side rails A, lower end rails B elevated above the same, the upper end rails D secured directly over said lower end rails, a lower fabric C, stretched lengthwise of the bed bottom and secured by its ends to said elevated lower end rails, and an upper fabric E secured by its ends to said elevated lower end rails and stretched lengthwise of the bed over said upper end rails, substantially as described and for the purpose specified.

2. In a bed bottom the combination of the side rails A the lower end rails B secured thereto, the arms 4 pivoted to said side rails, the upper adjustable end rails D secured to said arms, and the fabric E secured by its ends to said lower end rails B and passing lengthwise of the bed over said adjustable end rails, substantially as described and for the purpose specified.

3. In a bed bottom, the combination of the side rails A the lower end rails B secured thereto, the upper adjustable end rails D, the fabric E secured by its ends to said lower end rails B and passing over said upper adjustable end rails, the arms 4 for supporting said upper adjustable end rails, and devices for pivotally connecting to, and longitudinally adjusting said arms on said side rails, substantially as described and for the purpose specified.

4. The herein described bed bottom consisting of the frame having stretched thereon a lower fabric, the upper fabric with its ends secured to the main end rails of the frame and the adjustable end rails D pivoted by the arms 4 to the side rails of the frame substantially as described and for the purpose specified.

**500,866. BOTTLING APPARATUS.** MELVIN E. DONALLY, New York, N. Y. Filed Sept. 22, 1892. Serial No. 446,580. (No model.)



*Claim.*—1. In a bottling apparatus, the combination with a closed reservoir for the liquid to be bottled, a filling tube, means to present the filling tube to the bottle to be filled, a force pump operated by said means, and a connection from said pump to said reservoir, and independent of said filling tube whereby the pressure on the liquid in the reservoir may be maintained or increased as the apparatus is operated.

2. In a bottling apparatus, the combination with a closed reservoir for the liquid to be bottled, a filling tube, a reciprocating carrier to present the filling tube to the bottle to be filled, a force pump operated by said carrier, and a connection from said pump to said reservoir and independent of said filling tube.

3. In a bottling apparatus, the combination with a filling tube and means to present the same to the bottle to be filled, of a second tube presented with said filling tube to the bottle, and a pump to withdraw the air from the bottle through said second tube.

4. In a bottling apparatus, the combination with a filling tube and a second tube, a stopper-ring embracing said tubes and adapted to make a tight connection between the same and the bottle, and a pump connected to said second tube to withdraw the air from the bottle.

5. In a bottling apparatus, the combination of a closed reservoir for the liquid to be bottled, a filling tube and a second tube, a stopper-ring embracing said tubes and adapted to make a tight connection between the same and the bottle, a pump connected to said second tube, and a tube connecting said pump and said reservoir, whereby the air may be withdrawn from the bottle and forced into said reservoir.

6. In a bottling apparatus, the combination of a filling tube and a second tube, a stopper-ring embracing both of said tubes and adapted to make a tight connection between the same and the bottle, a reciprocating carrier to present said tubes to the bottle, and a pump operated by said carrier and connected to said second tube to withdraw the air from the bottle.

7. In a bottling apparatus, the combination of a pump having its cylinder fixed to the frame-work, a spring acting upon the piston rod of said pump to move it in one direction, a reciprocating frame to present the filling tube to the bottle a latch carried by said reciprocating frame and adapted to engage the piston rod to move it in the opposite direction, and means to release the latch from the piston rod.

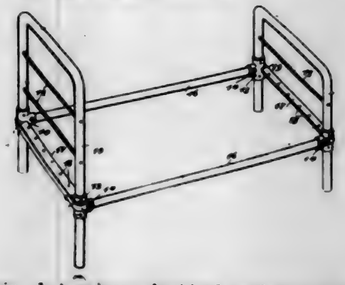
8. In a bottling apparatus, the combination of a filling tube, a reciprocating carrier to present the tube to the bottle to be filled, a pump, a spring acting upon the piston of the pump to move it in one direction, a latch supported by said carrier and adapted to engage the piston to move it in the opposite direction, a compressor or valve to prevent the flow of liquid through said pipe, and means to move said compressor or valve to permit the flow and at the same time to release the latch from the piston.

In a bottling apparatus, the combination of a series of filling tubes, a corresponding series of independent spring-pressed levers, each adapted to cut off the flow in its respective tube, a bar resting against said levers, and means to move said bar bodily to press all of said levers from the tubes.

10. In a bottling apparatus, the combination of a filling tube, a reciprocating carrier to present said tube to the bottle to be filled, a lever mounted on said carrier for cutting off the flow of liquid in said tube, a bar also mounted on said carrier to operate said device, and a cam mounted on the fixed frame whereby said bar is actuated as it is reciprocated with the carrier.

11. In a bottling apparatus, the combination of a flexible filling tube, a reciprocating carrier, a rock shaft supported on the frame-work, a tongue projecting from said shaft and adapted to compress said tube, and means operated by said carrier to rock said shaft and compress the tube when said tube is withdrawn from the mouth of the bottle.

**500,867. BEDSTEAD.** JOHN J. DUGAN, Salem, Oreg. Filed Apr. 5, 1893. Serial No. 469,184. (No model.)



*Claim.*—1. As an improved article of manufacture, an all metallic bedstead, comprising end and footboards, each formed of a single bent pipe, T-couplings secured to the posts of the bed, sideboards connecting the couplings of the head and foot posts, and angle irons connecting the head posts and also the foot posts, the angle irons terminating in end straps which are bolted to the couplings, substantially as described.

2. As an improved article of manufacture, an all metallic bedstead, comprising head and footboards, each formed of a pipe bent to an approximate U-shape, T-couplings secured to the posts of the bedstead, side bars connecting the couplings of the head and footboard, the side bars being screwed into the said couplings, angle irons extending across the head and footboard, each angle iron having end straps extending around the outer sides of the couplings, and fastening bolts extending through the straps, the couplings and the side bars, substantially as described.



**500,868. MULTIPHASE METER.** THOMAS DUNCAN, Fort Wayne, Ind. Filed Sept. 3, 1892. Serial No. 444,962. (No model.)



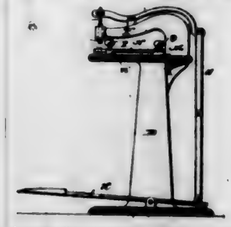
*Claim.*—1. In an electric meter or motive device, a plurality of coils in combination with a rotating closed circuit or secondary arranged in inductive relation to said coils and a magnetic diverter determining the angle of the lines of force induced by the coils, to the rotating secondary, substantially as described.

2. An electric meter or motive device, for multi-phase currents consisting of three or more coils located respectively in the three or more circuits of the system, in combination with a rotating closed circuit or secondary arranged in inductive relation to said coils and a magnetic diverter, determining the angle of the lines of force induced by the coils, to the rotating secondary, for the purpose set forth.

3. An electric meter or motive device for multi-phase currents consisting of three or more coils located respectively in the three or more circuits of the system, in combination with a rotating closed circuit or secondary arranged in inductive relation to said coils and an adjustable magnetic diverter, determining the angle of the lines of force induced by the coils, to the rotating secondary, for the purpose set forth.

4. An electric meter or motive device for multi-phase currents consisting of three or more open or solenoid coils located respectively in the three or more circuits of the system, in combination with a rotating closed circuit or secondary in the form of a cylinder, the coils being arranged around the cylinder with their axes substantially radial thereto, and inclosing the edges thereof without overlapping each other and a magnetic diverter mounted concentrically with the cylinder and adjustable to determine the direction of the magnetic flux established by the coils.

**500,869. GAGE FOR RIVETING-MACHINES.** EDGAR EASTON, Kansas City, Mo. Filed Apr. 19, 1893. Serial No. 470,891. (No model.)



*Claim.*—1. A gage for riveting machines, substantially such as herein described, consisting of a plate adapted to be fastened to a machine-bed, a single flat arm provided with a longitudinal slot at one end and a depending stop at its other end, and a clamping screw fitted in the slotted end of the arm and adapted to fasten the arm to the plate, as and for the purposes described.

2. A gage for riveting machines, substantially such as herein described, consisting of a plate, an arm provided with a depending abutment at one end and carrying a regulating screw adapted to raise or lower the free end of said arm and its abutment, and means for clamping said arm to the plate, as and for the purposes described.

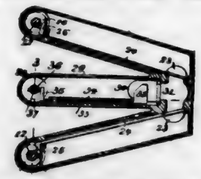
**500,870. FLOOD-GATE.** HENRY E. EATHERTON, Monticello, Ill. Filed Apr. 14, 1893. Serial No. 470,876. (No model.)

*Claim.*—1. In a flood gate, the combination with a cap stringer supported on uprights and standing across the stream, grate bars secured at their up-stream ends to an anchor sill with their bodies passing over and secured to said stringer and their down-stream ends extending beyond the same, and braces on the down-stream side of said stringer; of a gate comprising pickets rising from a weighted head, the gate being pivoted upon said braces above the center of gravity of the head, and so located as to allow the head to strike under the down-stream ends of said bars when the gate is tilted, as and for the purpose set forth.



2. In a flood gate, the combination with a cap stringer standing across the stream, grate bars passing over and secured to said stringer and their down-stream ends extending beyond the same, and inclined braces on the down-stream side of said stringer; of a gate comprising a stringer having reduced ends forming stub-shafts, pickets secured across the same, a weighted head in two members independent of the stringer and removably bolted to the pickets adjacent said stringer, and bearings for said stub-shafts supported by the braces at points to cause said head to strike under the down-stream ends of the grate-bars when the gate is tilted, as and for the purpose set forth.

**500,871. SUPPLY AND WASTE PIPE.** WILLIAM A. EBERHART, Asbury Park, N. J. Filed Aug. 12, 1892. Serial No. 442,878. (No model.)



*Claim.*—1. The combination with the fixture, of a valve-controlled supply pipe, an inlet pipe connecting the supply pipe with the fixture, a waste pipe leading from the inlet pipe, a separate valve for the waste pipe, a valve controlling the connection between the inlet pipe and waste pipe, and means for operating the said valve by the movement of the supply pipe valve stem, substantially as described.

2. The combination with the fixture inlet pipe and the supply pipe, of a branch pipe connecting the supply and inlet pipes, a vertically movable valve stem and valve controlling the supply pipe, a swinging valve arranged in the branch pipe and controlling the entrance to the fixture inlet pipe, and an operative connection between the swinging valve and the vertical movable valve whereby both may be simultaneously operated, substantially as described.

3. The combination with the waste and supply pipes arranged to have a common connection with a fixture, of a branch pipe leading from the waste pipe and connecting with the fixture inlet and supply pipe, an extension pipe leading from the branch pipe, and a valve arranged opposite the mouth of the extension pipe and arranged to close against seats on opposite sides of the mouth so as to close either end portion of the branch pipe, substantially as described.

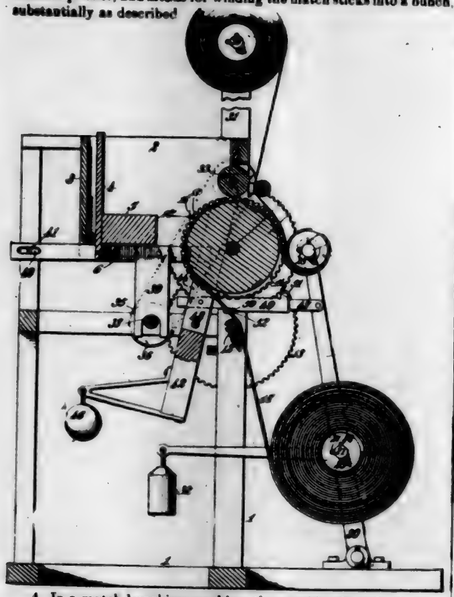
**500,872. MATCH-BUNCHING MACHINE.** EDWARD H. EISENHART, New York, N. Y. Filed Jan. 16, 1893. Serial No. 458,525. (No model.)

*Claim.*—1. In a match-bunching machine, the combination of a supporting or main frame, a hopper provided with a horizontally sliding and rising and falling bottom having slot and shaft connections with the supporting or main frame, cam-mechanism for horizontally reciprocating and raising and lowering the hopper bottom, a toothed wheel rotating in the lower portion of the hopper and taking the match sticks therefrom, and means for winding the match sticks into a bunch, substantially as described.

2. In a match-bunching machine, the combination with a supporting or main frame, of a hopper, a hopper bottom comprising side bars having slot and shaft connections with the supporting or main frame and reciprocating in vertical and horizontal planes, cam-mechanism for horizontally and vertically reciprocating the side bars of the hopper bottom, a toothed wheel revolving in the lower portion of the hopper and taking the match sticks therefrom, means for winding the match sticks into a bunch, a pivoted clearer frame having a forked end rec-

bracing the toothed wheel and between which the latter revolves mechanism for holding the forked end of the clearer frame normally inoperative, means for releasing the said holding mechanism and a device for swinging the clearer frame when the holding mechanism is released, substantially as described.

3. In a match bunching machine, the combination of a hopper having a horizontally reciprocating and rising and falling bottom portion, a toothed wheel which takes the match sticks from said bottom portion, cam-mechanism for horizontally reciprocating and raising and lowering the said hopper bottom, supporting guides for the latter, a take-up roller, and means for winding the match sticks into a bunch, substantially as described.



4. In a match bunching machine, the combination of a hopper having a horizontally reciprocating and rising and falling bottom portion, a toothed wheel which takes the match sticks from said bottom portion, a take-up roller, bands or tapes engaging the take-up roller and one of which passes over the toothed wheel, and means for rotating the toothed wheel and reciprocating and raising and lowering the hopper bottom, substantially as described.

5. In a match bunching machine, the combination of a hopper comprising suitable walls and having a reciprocating and rising and falling bottom portion composed of a wall 4, block 5 and parallel bars 6, arms 49 connected with the parallel bars, a rotary cam 38 engaging said arms, and means for taking the match sticks from the hopper bottom and bunching them, substantially as described.

6. In a match bunching machine, the combination with a hopper comprising suitable walls and a reciprocating and rising and falling bottom portion, of arms 39 secured to said hopper bottom, a rotary cam engaging said arms and operating to reciprocate and raise and lower the hopper bottom, a toothed wheel which takes the match sticks from said hopper bottom, and means for rolling the match sticks into a bunch, substantially as described.

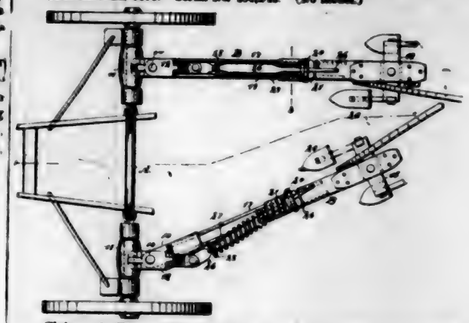
7. In a machine for bunching match sticks, the combination with a suitable hopper, a toothed wheel which takes the match sticks from the hopper, a swinging arm carrying a rotary take-up roll, and bands or tapes connected with the take-up roll, of an oscillatory clearer frame, a rod 49 connected with the clearer frame and provided with a lateral projection 51 and shoulder 50, a rod 47 connected with the swinging arm and provided with a tappet or cam 48, and a fixed locking lug 52 with which the shouldered bar engages for holding the clearer frame normally out of operative position, substantially as described.

8. In a match bunching machine, the combination with non-rotary cylindrical studs 21, 22 and 30 having projecting lugs, of the rollers 25, 26 and 29 loosely mounted on said studs and having recesses to pass over said lugs, the tapes or bands 18 and 19, the toothed wheel 7, and the hopper, substantially as described.

9. The combination with the toothed wheel and the take-up roll of a match bunching machine, each provided with a projecting pin, of the bands or tapes each having a loop 53 at one extremity for engaging the said projecting pins, substantially as described.

## 500,873. CULTIVATOR. CLYDE T. ELDREDGE, Kirkwood, Ohio.

Filed Mar. 30, 1893. Serial No. 468,948. (No model.)



*Claim.*—1. The combination with the wheeled axle provided with a vertically rocking sleeve 11, having a rearward extension provided with two sets of vertical bolt apertures one in rear of the other, of a cultivator beam pivoted by a vertical bolt extending through the forward bolt aperture to swing horizontally thereon and to swing vertically with the sleeve, a rod 26 pivoted at its forward end by a vertical bolt or pivot extending through the rear bolt apertures, an apertured bearing plate or head 24 on the beam and through the aperture in which the rod is free to slide, and a spring through which the rod passes one end of the spring bearing on the plate or head 24 and the other end bearing against a bearing at 28 on the forward end of the rod whereby the beam is free to swing vertically without bringing the spring into play and when swung horizontally the spring will retain it in whatever position it may be thrown, substantially as set forth.

2. A cultivator comprising the wheeled axle provided with a sleeve 11, having a rearward extending vertically apertured knuckle or ear 13 and a rearwardly extending arm 12 provided with a vertical bolt apertured in rear of said knuckle, the plow beam having vertically apertured knuckles 15, 16, receiving the knuckle 13 between them, a vertical bolt 14 pivotally connecting said knuckles, a longitudinally extending rod 26 pivoted at its forward end by a vertical bolt to the arm 12 in rear of the pivot bolt 14, a bearing plate or head 24 through which the rear end of rod 26 slides, clamping devices securing said plate or head to the beam, a bearing plate 28 on the forward end of the rod in rear of its pivot and a spring 27 on the rod and bearing at its ends on the plates or heads 24, 28 to hold the beam in whatever position it may be swung laterally while permitting a free vertical movement without coming into play, substantially as set forth.

## 500,874. LAND-LEVELER. WILLIAM FALCONER, Selma, Cal.

Filed Sept. 1, 1892. Serial No. 444,837. (No model.)

*Claim.*—1. In a land leveler, the frame thereof adapted to be secured on the rear wheeled-axle, said frame having at its rear end a platform, and at its forward portion the forwardly projecting shaft, and a front wheeled-frame having a bearing in which the shaft is axially mounted, substantially as herein described.

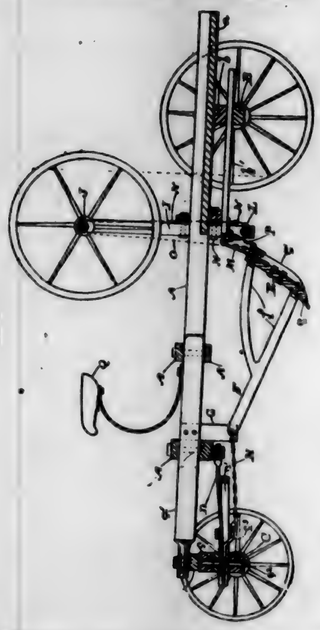
2. In a land leveler, the frame thereof adapted to be secured on the rear wheeled-axle and having at its front the forwardly extending shaft *a'*, a front wheeled-axle in which said shaft is axially mounted, a scraper carried by the frame, the draft links having forked ends secured to the scraper, and connections between said links and the king bolt of the forward axle, substantially as herein described.

3. In a land leveler, the combination of the frame mounted at its rear upon the rear wheeled-frame and having at its forward end the shaft *a'* the forward wheeled axle having the head block, the false cross-bolster secured to said head block and having a bearing in which the forwardly projecting shaft is axially mounted, a scraper carried by the frame, and the draft connections between the same and the king bolt of the forward axle, substantially as herein described.

4. In a land leveler the combination of a frame having a forwardly projecting shaft and a false cross bolster upon which the forward end of said shaft is axially pivoted, said frame being adapted at its rear end to be mounted upon a rear wheeled axle, and its false cross bolster being adapted to be mounted upon the head-block of a forward wheeled axle, a scraper carried by the frame, and draft connections between said scraper and the king bolt of the forward axle, substantially as herein described.

5. A land leveler consisting of a frame having the forwardly projecting shaft, a rear wheeled axle upon which the rear end of the frame is mounted, a forward wheeled axle with head-block and hounds, a false bolster secured to the top of said head-block and in which the forward end of the frame shaft is journaled, the limiting bar mounted upon a king-bolt and passing through between the hounds, said guide being journaled in the front of the frame, a scraper carried by the frame, and draft connections between said scraper and the king-bolt of the forward axle, substantially as herein described.





6. A land leveler consisting of a frame having the forwardly projecting shaft, a rear wheeled axle upon which the rear end of the frame is mounted, a forward wheeled axle with king-bolt and head-block upon which the frame shaft is journaled, a scraper carried by the frame, and the draft connections between said scraper and the king-bolt of the forward axle, substantially as herein described.

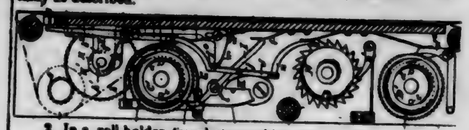
7. In a land leveler, a wheeled frame, in combination with a scraper suspended from said frame having the upwardly extending arms and the means for raising and lowering said scraper, consisting of the rotary shaft mounted on the frame above, the guide rollers below, the chains N wound upon said shaft above passing around the rollers below and connected with arms of the scraper, the scraper, and the chains O wound upon the shaft above in opposite directions to the chains N and secured below to the scraper, substantially as herein described.

8. In a land leveler, a wheeled frame and a scraper pivotally connected with said frame whereby it may be raised and lowered, said scraper having the upwardly projecting arms M in combination with the means for raising and lowering the scraper, consisting of the shaft mounted in standards rising from the frame, the hand-wheel of the shaft, the guide rollers in the lower ends of the standards, the chains N wound on the shaft passing around the guide rollers below and secured to the uprising arms of the scraper, and the chains O wound in an opposite direction on the shaft and secured below to the scraper, substantially as herein described.

9. In a land leveler, the wheeled frame and the scraper having the links pivotally connected with said frame, in combination with the rotary shaft with its hand-wheel, the oppositely wound chains N and O on said shaft and connected with the scraper below, the rollers by which the chains N are guided and the chains P secured to the scraper and to a fixed bearing for holding said scraper from lateral movement, substantially as herein described.

## 500,875. PHOTOGRAPHIC ROLL-HOLDER. XAVIER G. E. DE FAUCONPRET, Paris, France. Filed Aug. 3, 1892. Serial No. 442,073. (No model.) Patented in France July 2, 1891, No. 214,207, and in England Nov. 18, 1891, No. 20,097.

*Claim.*—1. In a roll-holder for photographic cameras, the combination with the rollers for carrying the sensitive film of the regulating tension brake G acting on the film carrying-roller throughout the winding operation, and a ratchet on disk C' and spring pawl I, the latter automatically brought into engagement with the ratchet to lock the supply roller on drawing off a negative length by mechanism actuated from a measuring roller over which the film passes, substantially as described.



2. In a roll-holder for photographic cameras, the combination with the toothed disks C', D', carrying the rollers for the sensitive film, of a pawl I adapted to engage with the roller disk C', the lever J, the hand lever and cam K adapted to disengage said pawl I, the hooked bar M engaging said lever and the cam H' actuated by the measuring roller E, substantially as described.

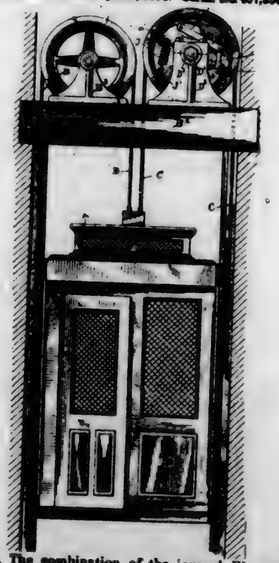
3. In a roll-holder for photographic cameras, the combination with the lever J operated by a cam or pusher K and having on it a finger $j^3$, of the hook-bar M, cam H', and notched disk H operated by the measuring roller E, the pawl I, and roller disk C', substantially as described.

4. In a roll-holder for photographic cameras, the combination of the lever J having the finger $j^3$, the hook-bar M, cam H', and notched disk H, operated by the measuring roller E and the needle-lever R jointed to the bar J, substantially as described.

5. In a roll holder for photographic cameras, the combination with the web carrying rollers C, D, and their tooth carrying disks C', D', the measuring roller E and the spindle A', operated thereby and having the cam H' and notched disk H of the levers J, R, hook-bar M, pawls I and *n* and counter N carrying a visible record of the negatives exposed, substantially as described.

6. In a roll-holder for photographic cameras, the combination of the side frame of the roll-holder formed with a pin-supporting socket, a removable center pin supported in said socket and serving as a center or pivot on which the web roller rotates, a spring adapted to hold the pin in place in its socket and permit of its removal therefrom, and adjustable means for holding the pin in contact with the roller in opposition to the action of the spring, substantially as described.

## 500,876. SAFETY DEVICE FOR ELEVATORS. NORMAN V. FITTS, Worcester, Mass. Filed Sept. 30, 1891. Serial No. 407,338. (No model.)

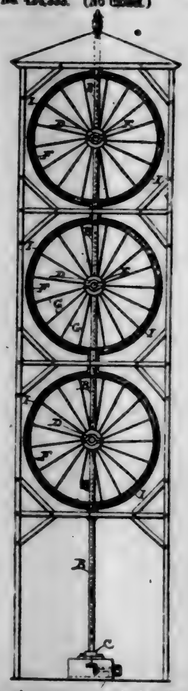


*Claim.*—1. The combination of the journal D' provided with spline I washer H, cup-bearing $D^4$, sheave D provided with the friction cone E' and the beveled hub $E^3$, beveled collar G, and pivoted weight F having a spur F' normally engaging said collar, substantially as shown and for the purpose set forth.

2. The combination with sheave D, provided with beveled hub $D^3$ and friction cone E, of journal $D'$, cup bearing $D^4$, pivoted weight $F$, $F^2$, link $F^3$, spring J, grooved collar G normally engaged by one of said weights, and rocking washer H, substantially as and for the purpose set forth.

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**500,877. AIR-MOTOR.** JOHN P. FOWLER, Verdi, Nev. Filed Mar. 8, 1892. Serial No. 424,333. (No model.)

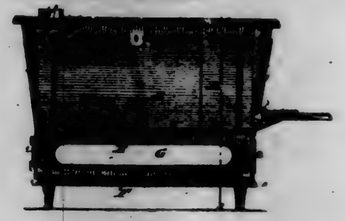


*Claim.*—1. In an air motor, a vertical hollow post turning in a step at the bottom, horizontal journal boxes projecting in pairs from opposite sides of the hollow post, wind wheels having vanes at opposite angles and fixed to independent shafts which are journaled in the boxes upon the upright tubular post, a vertical central shaft extending upwardly within the tubular post and having an independent step below, bevel gears fixed to the vertical central shaft and engaging corresponding gears upon the wheel shafts, and cylindrical casings surrounding each pair of wheels and fixed to the tubular post, substantially as herein described.

2. In an air motor, a vertical hollow post turning in a step at the bottom wind wheels with oppositely placed vanes fixed to shafts which turn in horizontal journal boxes arranged in pairs upon opposite sides of the post, chambers within the post to contain bevel gears fixed to the inner ends of the wheel shafts, a vertical central shaft extending between the wheel shafts within the post and having bevel gears fixed to it to engage with those of the wheel shafts, and a second horizontal shaft with bevel gears by which the power of several independent sets of wheels may be applied to a single shaft, substantially as herein described.

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**500,878. STOVE.** PETER FRANK, Portland, Me. Filed Mar. 27, 1893. Serial No. 467,553. (No model.)



*Claim.*—1. A stove substantially as described having below its fire box or combustion chamber a heating drum formed with upper and lower heating chambers, and flues leading to and from said drum substantially as set forth.

2. An improved stove having in communication with its fire box or combustion chambers a horizontally disposed drum having upper and lower heating chambers and an intermediate air space opening for the free circulation of air substantially as set forth.

3. A stove comprising the fire box or combustion chamber the upper flue, the drum arranged below the fire box, and the front and rear flues communicating with the said drum substantially as set forth.

4. An improved stove having the horizontally disposed drum formed with upper and lower chambers and provided at its opposite ends with doors substantially as set forth.

5. In a stove substantially as described the combination with the fire box the drum arranged below the same, and the flue above said fire box of the flue or connection leading from the fire box to the drum and the upright flues leading from the drum up along the opposite sides of the fire box and opening into the top flue substantially as set forth.

6. The improved stove herein described consisting of the fire box, the drum below the said fire box and formed with upper and lower heating chambers and an intermediate open air space, the doors at the opposite ends of the drum the upper flue, the flue or connection between the fire box and the drum and the flues leading from the drum into the upper flue all substantially as and for the purposes set forth.

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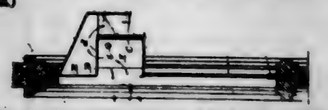
**500,879. DISPLAY-RACK.** CHARLES FRANKEL, Baltimore, Md. Filed Oct. 4, 1892. Serial No. 447,907. (No model.)



*Claim.*—A display rack formed with sections of approximately form hinged together to fold in either direction, the end section having its side arms bent parallel with the horizontal arm, one of the bent portions *c* being formed with an eye through which the portion *c'* projects, said portion *c'* having a hook at its extremity, substantially as herein described.

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**500,880. VENTILATOR FOR APARTMENTS.** JOHN FRANKHAM, New York, N. Y. Filed June 23, 1892. Serial No. 437,653. (No model.)



*Claim.*—1. The ventilator described having the perforated horizontal sheet or deck D, *d*, base B, vertical partitions or walls C, E, inclined roof G extending beyond the sheet D *d* and hinged hanging lip M hinged to the lower outer edge of the roof, all combined as shown so as to provide the triangular spaces *m* at the end which shall be always open to receive air and allow it to be inducted gently into the apartment through the angular passages provided, all arranged for joint operation substantially as herein specified.

2. The ventilator described, adapted to apply over a door or window, having the perforated horizontal sheet or deck D, *d*, base B, vertical partitions or walls C, E, roof G, hinged hanging lip M and ridge or stops C', adapted to insure a contracted passage for the air while subject to gusts or gales, all combined and arranged to serve as herein specified.

3. The ventilator described, having a crooked passage for air and a swinging lip or flap M adapted to automatically reduce the area of the passage during strong gusts or gales, and having the apertures *l* and *m* for receiving currents of air at the ends, all combined and arranged for joint operation substantially as herein specified.

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**500,881. HORSESHOE.** DAVID GINSOLD, New York, N. Y. Filed Feb. 17, 1893. Serial No. 462,708. (No model.)

*Claim.*—1. As an improved article of manufacture, a horseshoe having a central sole or guard plate, a semi-elliptical toe piece, a transverse heel piece, and transverse ribs between the toe and heel piece, substantially as specified

2. As an improved article of manufacture, a horseshoe, having a central sole or guard plate, a toe-piece with a curved front portion and a straight back portion, a transverse heel piece, a plurality of cross ribs arranged between the toe and heel pieces, and filling material held between the ribs and between the ribs and the toe and heel pieces, substantially as specified.



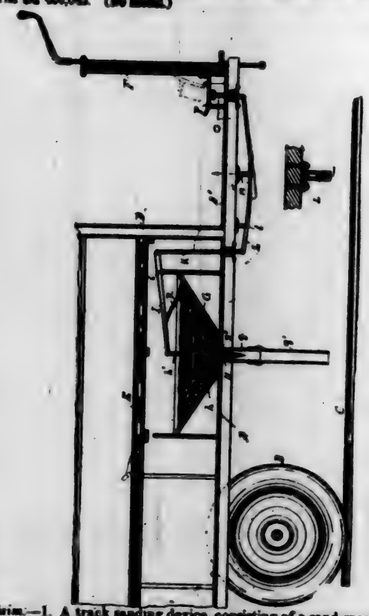


3. As an improved article of manufacture, a horseshoe, having a detachable central sole or guard plate, a semi-elliptical toe piece, a transverse heel piece, cross ribs between the toe and heel pieces, and filling material held between the ribs and between the ribs and the toe and heel pieces, substantially as specified.

4. The combination, with a horseshoe having an open central portion with a ledge extending around said central portion, of the cross ribs arranged on the under side of the shoe, and the detachable guard plate adapted to rest against the ledges and in notches at the top of the cross ribs, substantially as specified.

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**500,882. TRACK-SANDING DEVICE.** ALBERT GOLDSMITH, Salem, and EDWARD C. GOLDSMITH, Springfield, Mass. Filed Mar. 15, 1893. Serial No. 466,043. (No model.)



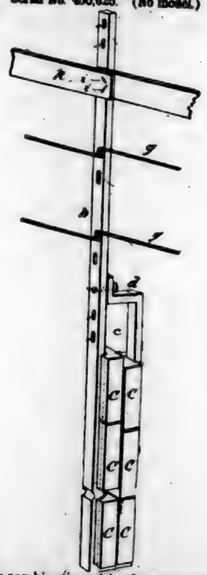
*Claim.*—1. A track sanding device, consisting of a sand receptacle G having a delivery pipe, a valve H controlling the flow of sand to the delivery pipe, a lever I pivoted between its ends and connected at one end with the valve, a link K connected to the other end of said lever, a lever L connected with the link, pivoted intermediate its ends and having a free end extending toward the front of the car platform, a pedal O extending through the car platform, and a lever N attached to the pedal, pivoted between its ends and having one end bearing against the free end of the lever D, substantially as described.

2. A track sanding device, consisting of a sand receptacle G having a delivery pipe, a valve H controlling the flow of sand to the delivery pipe, a valve-lever I pivoted between its ends and connected at one end with the valve, a lever L pivoted intermediate its ends and connected with the valve-lever and having its free extremity extending toward the front of the car platform, a forked bracket M suspended from the car platform and embracing said free end of the lever, a pedal O extending through the car platform, and a lever N attached to the pedal, pivoted between its ends to the forked bracket and having its rearwardly projecting end bearing against the free end of the lever L, substantially as described.

3. The combination with a sand receptacle having a delivery pipe, a valve for controlling the flow of sand to the delivery pipe, a pedal extending through the car platform, and connections between the pedal and the valve, of a pedal guard consisting of a pivoted case or cap adapted to cover and uncover the pedal, substantially as described.

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**500,883. FENCE-POST.** JAMES B. GOWDY, Oak Grove, Ill. Filed Nov. 1, 1892. Serial No. 450,625. (No model.)



*Claim.*—1. The combination with a fence post having a broad and vertically slotted or laterally open lower portion, of anchoring weights mounted loosely within said space, whereby the said weights will slide up with the upheaving of the ground and fall back again when the ground settles, thereby preventing any upward strain on the post, substantially as described.

2. An improved fence post, consisting of the two parallel uprights *b b'* of unequal length joined together at their lower ends and connected above by the bar *d* forming a rectangular space *c*, and the grooved bricks C arranged in pairs in the said space substantially as described.

3. The herein described fence post, consisting of the two parallel uprights *b b'* of unequal length joined together at their lower ends and connected above by the bar *a* to form a space *c*, the longer upright being provided with holes *e* and the grooved bricks C arranged in pairs back to back in the space *c*, as specified.

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**500,884. METAL BAR TO BE CALKED.** WILLIAM GRANT, Philadelphia, Pa. Filed Dec. 6, 1891. Serial No. 414,102. (No model.)



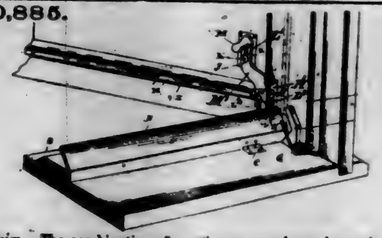
*Claim.*—1. A metal bar angular in form, with wings or flanges, having at its angle or angles a projecting portion, rolled or cast thereon, specially adapted to be calked, substantially as described.

2. A metal bar having a projecting lip or lips, rolled or cast thereon, specially adapted to be calked, substantially as described

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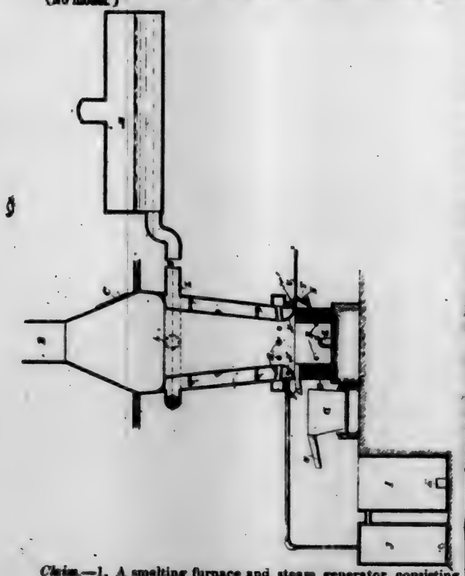
**500,885. WEATHER-STRIP.** ALBERT T. GREEN and JULIUS WEINSHOUSE, Jewell, Kans. Filed July 18, 1892. Serial No. 440,361. (No model.)

500,885.



*Claim.*—The combination of a spring-actuated weather strip extending the entire length of a threshold, checks or stops fastened adjacent to opposite ends of the said strip and having recesses on the inner surfaces thereof which correspond in shape to the contour of said strip, a door having an ordinary weather strip extending entirely across the lower part of the same, a spur comprising an upper vertically disposed slot arm with a knob, and a lower pair of angularly disposed plates fitting over the edge of the door and provided with slots, said arm being deflected to one side of the lower plates, and headed screws engaging the slots of said spur, substantially as described.

500,886. STEAM-GENERATOR AND SMELTING-FURNACE. JOSEPH L. GIROUX, Jerome, Ariz. Filed Jan. 4, 1893. Serial No. 457,881. (No model.)



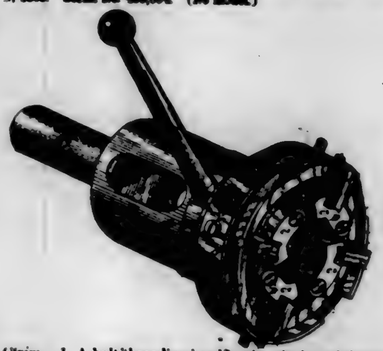
*Claim.*—1. A smelting furnace and steam generator, consisting of a water-jacketed furnace having a slag spout in its lower portion, one or more steam boilers above the level of the steam jacket and in connection therewith, a water containing receiver into which the slag spout discharges, and connections therefrom to the water-jacket whereby the heated slag is utilized to heat the water preparatory to being supplied to the furnace.

2. A smelting furnace and steam generator consisting of a furnace with a surrounding water-jacket, a means for heating water by the discharge of slag from the furnace and for conducting said water to the jacket, one or more boilers above the jacket and one or more pipes connecting the upper part of the jacket with the boilers, substantially as herein described.

3. The smelting furnace having a water jacket surrounding it, one or more boilers situated above the level of the upper part of the jacket and pipes connecting the lower parts of the boilers with the upper part of the jacket, and a water tank adapted to receive the slag discharged directly from the slag spout of the furnace or through a settling pot and overflow, whereby the slag is granulated and the water is heated preparatory to being supplied to the furnace and boiler, substantially as herein described.

4. A smelting furnace consisting of the body and crucible with slag and metal discharge gates, air blast tuyeres opening into the ore chamber, supplemental tuyeres opening into the crucibles, and Y pipes connected therewith, one branch of each of which is connected with a source of air supply, and the other has a wooden plug at its outer end, in line with the tuyere pipe, substantially as herein described.

500,887. BOLT-CUTTER. LAWRENCE S. GREENLAW, Cleveland, Ohio, assignor to the Cleveland Faucet Company, of Ohio. Filed Mar. 7, 1892. Serial No. 423,954. (No model.)



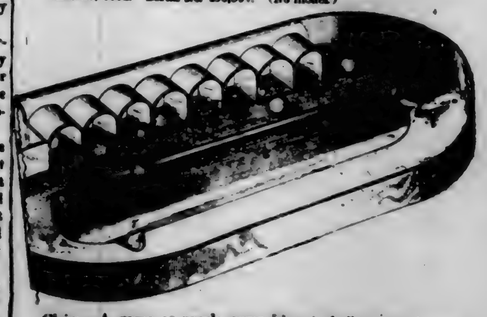
*Claim.*—1. A bolt-threading head having the barrel thereof provided with dies pivoted to its front, in combination with a circumscribing band, adapted to be rotated upon said barrel, plungers connected with said band and bearing against said dies, springs in engagement with said dies which tend to throw them outwardly about their pivoted portions, means for reciprocating said plungers and for setting the same uniformly at any point desired within the range of their reciprocation, together with appliances for actuating said band, about said barrel, substantially as shown and described.

2. A bolt-threading head, having dies pivoted to the barrel thereof, in combination with a movable band, about said barrel, provided with projections behind said dies, pins entering said projections and adapted to reciprocate therethrough, a die-ring surrounding said band having scrolled ways which severally engage with the outer ends of said pins, springs tending outwardly connected with said dies together with means for actuating said band around said barrel, substantially as shown and described.

3. A bolt-threading head having the dies pivoted to the barrel thereof, in combination with a case movable axially upon said barrel, a band adapted to be fixed, detachably, around said case, and containing projections which severally overhang said dies, reciprocating-pins, provided with channels through their outer ends, which enter said projections and are, respectively, in bearing therein with said dies, a die-ring surrounding said band, and adapted to be partially rotated thereabout, and to be set at any point within the limit of its said rotation, scrolled ways upon said die-ring, severally engaging with said outer ends within said channels; springs connected with said dies under outward tension—together with means for actuating said case axially upon the surface of said barrel substantially as shown and described.

4. In a bolt threading head, the barrel B provided with the pivots P, in combination with the movable case C, and the band A, having the projections E, and the pins O, together with the dies D, the springs S, and the sliding die-ring H—substantially as shown and described.

500,888. GAME. ALBERT M. GRUBB, Forest Grove, Oreg. Filed June 30, 1892. Serial No. 438,597. (No model.)

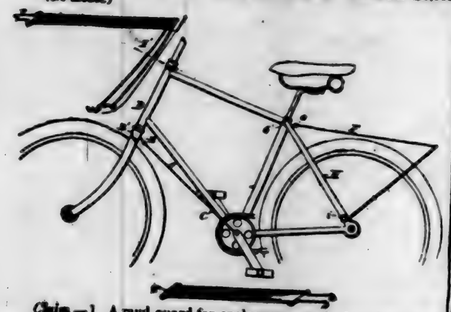


*Claim.*—A game or puzzle comprising a shallow box having



curved ends provided in its bottom with an elongated depression and a narrow notch, a longitudinally disposed stall or compartment arranged at one side of the box, a series of small stalls arranged adjacent to the long stall and disposed transversely of the box, and a series of balls adapted to roll over the surface of the box and enter the stalls, substantially as described.

500,889. MUD-GUARD FOR CYCLES. CHARLES E. HADLEY, Chicopee, Mass., assignor to the Overman Wheel Company, Chicopee Falls Mass., and Hartford, Conn. Filed Dec. 19, 1892. Serial No. 455,606. (No model.)

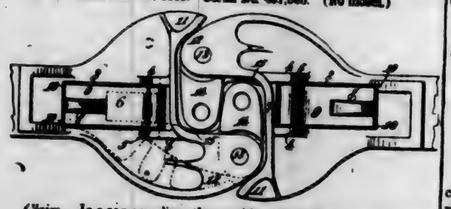


*Claim.*—1. A mud guard for cycles, composed of an elastic band or strip, provided at its ends with attaching devices, and adapted in length to be placed under tension when applied, substantially as set forth, whereby the device is held in place wholly or in part by its own tension, which also makes it self-shedding of the dirt thrown upon it, substantially as described.

2. A mud-guard for cycles, composed of an elastic band or strip provided at its ends with attaching devices made of wire, and provided with coverings of rubber or equivalent material, and adapted in length to be placed under tension when applied, substantially as set forth, whereby the device is held in place wholly or in part by its own tension, which also makes it self-shedding of the dirt thrown upon it.

3. A mud-guard for cycles, consisting of a band or strip of elastic material, provided at its ends with attaching devices, one of which is made of wire, and comprises a cross-bar for the attachment of one end of the strip, two long corresponding legs, and hooks formed at the outer end of the said legs to couple the same to the vehicle-frame, substantially as set forth.

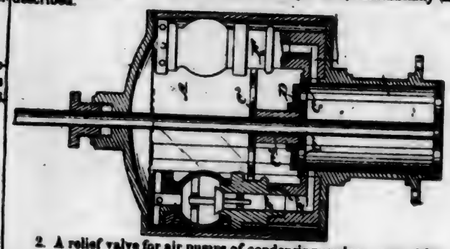
500,890. CAR-COUPLING. CORNELIUS HALPIN, North Tarrytown, N. Y. Filed Mar. 23, 1893. Serial No. 467,363. (No model.)



*Claim.*—In a car-coupling, the combination with a reversed draw-head provided with slots 2 and 3, at its top and bottom, and having abutments 7 at the forward ends of the slots 2 and 3, of bearings 4 at the forward opposite sides of the slot 2, a locking dog 6, having parallel vertical sides pivoted in said bearings and disposed and adapted to swing in the slots 2 and 3, and normally resting by gravity against the abutments 7, a laterally-swinging, pivotally-supported hooked-jaw 14 mounted in front and at one side of the draw-head, and a tail-piece 15, formed with said hooked-jaw and normally projecting across the front of the draw-head in position to be struck by the hooked-jaw on an adjacent, opposite draw-head, said tail-piece raising, and entering at one side of, the pivoted, swinging dog when struck by the hooked-jaw on an adjacent opposite draw-head, and said locking dog dropping by gravity and confining said tail-piece in such position, and means for raising said locking dog out of the way to uncouple, substantially as described.

500,891. RELIEF-VALVE. ANDREW L. HARRISON, Wilmington, N. C. Filed June 18, 1892. Serial No. 437,198. (No model.)

*Claim.*—1. A relief valve for air pumps of condensing engines, provided with a water delivery valve and one or more air outlet valves adapted to discharge the air in advance of the water, the latter being finally discharged through the said delivery valve, substantially as described.



2. A relief valve for air pumps of condensing engines, comprising a casing formed with an inlet, a water delivery valve for closing the said inlet, and one or more air valves connected with the said inlet below the said water delivery valve, substantially as shown and described.

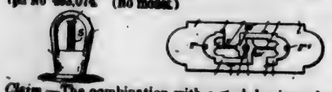
3. A relief valve for air pumps of condensing engines, comprising a casing formed with an inlet, a water delivery valve for closing the said inlet, one or more air valves connected with the said inlet below the said water delivery valve, and one or more pipes held in the said casing and extending with their upper ends above the top of the said delivery valve, substantially as shown and described.

500,892. DROPPING-STOPPER FOR BOTTLES. CARL HARTWIG, Pittsburg, Pa. Filed Jan. 31, 1893. Serial No. 460,437. (No model.)



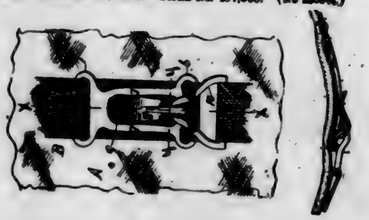
*Claim.*—The herein described attachment for bottles consisting of a tube 3 tapering to a small end and arranged through the center of the cork, 2, the opening 4 at one side of the said tube, the band 5 for covering the same, and the casing or cover 6, all arranged and combined for service substantially as and for the purpose described.

500,893. FASTENER FOR WEARING-APPAREL. THEODOR HEINZE, Brandenburg-on-the-Havel, Germany. Filed Feb. 20, 1893. Serial No. 463,074. (No model.)



*Claim.*—The combination with a stud, having a head *a*, pivoted clips *d*, and tubular shank *e*, having a projection or rim *k*, of a lock plate *c*, having a pin *l*, sliding spring-pressed locking arms *g* and *g'* moving on the lock plate, and having finger pieces *r*, *r'*, and a cover plate *m* secured to the lock plate over the sliding spring-pressed locking arms, substantially as described.

500,894. BLANKET-BUCKLE. FRANK J. HERRICK, New Britain, Conn., assignor to the North & Judd Manufacturing Company, same place. Filed Jan. 3, 1893. Serial No. 457,086. (No model.)



*Claim.*—1. The herein described blanket buckle, consisting of the buckle proper having side bars 7, 7, and hook 6 between them curved inwardly near its end to the plane of said side bars and having loops for securing it to the straps and the fastening head for use therewith having a narrow curved portion extending inwardly beyond the general plane of said head and adapted to engage said hook, substantially as described and for the purpose specified.

2. A blanket buckle in which the buckle proper consists of side bars and strap loops at each end, in combination with a fastening head adapted to be hooked and unhooked to and from said principal part, and the spring 9 on the back of the buckle proper arranged between said side bars with its bearing or holding portion for confining said head thereon lying substantially within the plane of said side bars substantially as described and for the purpose specified.

3. The herein described blanket buckle consisting of the buckle proper having side bars 7 7, end loops 6 6, the spring 9 and curved hook 8, and the fastening head for use therewith, having a narrow curved portion adapted to engage said hook, substantially as described and for the purpose specified.

4. A blanket buckle consisting essentially of side bars and strap loops in combination with a fastening head adapted to be hooked and unhooked to and from said principal part, and the spring 9 on the back part of the buckle proper with its ends extended beyond the bearing or holding portion which confines said head thereon, all combined for attaching and detaching said head by its action on said spring under endwise pressure of said head substantially as described and for the purpose specified.

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**500,895.** THILL-COUPLING. JOHN W. HODGHOUT, Ruxton Heights, Md. Filed Apr. 4, 1893. Serial No. 469,027. (No model.)



*Claim.*—1. In a thill-coupling for vehicles, the combination of the two arms secured to axle-clips; a head fitting loose between said arms; two compression springs located within recesses in the arms on opposite sides of the head, and each abutting at one end against the head and at the other against one of the arms and a shaft-iron secured to the head, as described.

2. In a thill-coupling, the combination of the two arms secured to axle-clips; a head fitting loose between said arms; compression springs within recesses in the arms on opposite sides of the head; a bolt passing through the arms and head, and longitudinally through the springs, for securing the parts in relative position; and a shaft-iron secured to the head.

3. In a thill-coupling for vehicles, the combination of the two arms secured to axle-clips; a head fitting loose between said arms; two compression springs located within recesses in the arms on opposite sides of the head, and each abutting at one end against the head and at the other against one of the arms; an extension on the head having a tapering socket; and a shaft-iron having a tapering shaft-end, secured within said tapering-socket, as described.

4. In a thill-coupling the combination of two arms secured to axle-clips and each arm having a socket; a shaft-head fitting between the arms, and having two sockets, one on a side opposite the other, each of the sockets on the head, corresponding in size and registering in position with the sockets on the arms, and said head provided with a bolt-hole; a compression spring in the socket at each side of the head; a bolt passing through the said head and the hole in the head,—said bolt being smaller than the hole in the head, thereby leaving all draft-strain on the springs; and a shaft-iron secured to the head.

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**500,896.** WITHDRAWN.

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**500,897.** SYRUP-DISPENSING APPARATUS. HERMAN HOFF, Chicago, Ill., assignor to himself, Herman Willard, and James B. Herron. Filed Feb. 8, 1892. Serial No. 461,836. (No model.)



*Claim.*—1. The combination, in a dispensing apparatus, of a syrup can, having a front, with a beveled face on each side of the front, an opening for the syrup can formed of an inner and outer frame, and a packing strip on each side of the can opening engaging the beveled side faces of the can when in its chamber, substantially as and for the purposes specified.

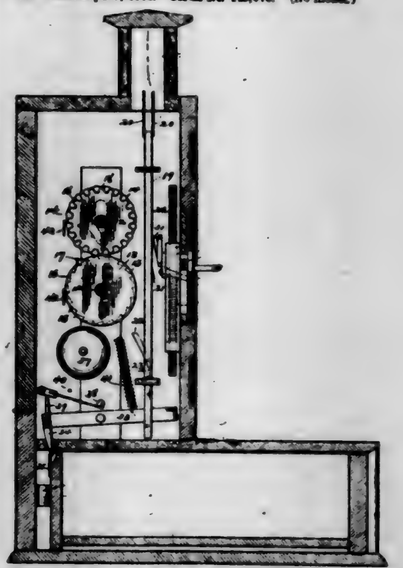
2. The combination, in a dispensing apparatus, of a syrup can having a front, with a beveled face on each side, an upward extension of the front, having a beveled inner face, an opening for the syrup can formed of an inner and an outer frame, and a packing strip projecting into the can opening at the top and on each side, and engaging the beveled side and top faces of the can when in its chamber, substantially as and for the purposes specified.

3. The combination, in a dispensing apparatus, of an inner frame, having an opening for the passage of a syrup can, an outer frame having a corresponding opening, and a packing strip between the two frames projecting into the can opening on the sides and top, substantially as and for the purposes specified.

4. The combination in a syrup dispensing apparatus of a removable syrup can whose front is composed of double walls with a dead air chamber between them and the metal margins of the chamber extending laterally at both edges thereof and at the top; and the inner portions of said margins beveled outward, and elastic strips *f* projecting inward from the front of the receptacle, and a can support at the front bottom portion whereby the gravity of the can brings strips *f* closely against said beveled portions, as and for the purpose specified.

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**500,898.** CASH-REGISTER. HARRY W. HOFFHEINER, Chicago, Ill. Filed Sept. 5, 1892. Serial No. 445,073. (No model.)



*Claim.*—1. In a cash register the combination with two series of register disks, one of which is actuated by the other, of a series of vertically sliding bars, one for each pair of disks, each bar having a dog to engage its disk, a spring controlled actuating rod adapted to be moved laterally and vertically and having a dog to engage the sliding bars and provided with an operating key whereby it may be moved to tension its spring, which upon the release of the key returns the actuating rod to its normal position and effects the partial rotation of the actuating register disk, substantially as described.

2. In a cash register the combination with two series of register disks arranged on shafts parallel to each other, the members of one series being adapted to intermittently move the corresponding members of the other series, of a series of vertically sliding bars each carrying a tablet and having a dog to engage its corresponding disk, a spring controlled actuating rod adapted to be moved laterally and vertically and having a dog to engage the tablet bars and a key whereby it may be moved opposite any of said bars and depressed to tension its spring which upon the release of the key returns the actuating rod to its normal position and effects a partial rotation of the register disk, substantially as described.

3. In a cash register the combination with a series of register disks, of a series of vertically sliding bars, one for each disk, a spring controlled actuating rod adapted to be moved laterally in position to engage any bar of the series and also to be depressed whereby to tension its spring and which rod is adapted when returned to its normal position by its spring to engage the vertically sliding bar and thereby effect a partial rotation of the register disk, and when moved laterally to disengage the sliding bar and permit it to drop substantially as described.

4. In a cash register, the combination with a series of register disks, of a series of vertically sliding bars, one for each disk, a spring controlled actuating rod adapted to be moved laterally in position to engage any bar of the series and also to be depressed whereby to tension its spring and which rod is adapted when returned to its normal position by its spring to engage the vertical sliding bar and thereby effect a partial rotation of the register disk, and when moved laterally to disengage the sliding bar and permit it to be dropped, a money drawer and a locking mechanism therefor comprising a pivoted frame having a locking dog and said frame arranged in the path of the actuating rod whereby when the latter is depressed opposite the end of the disks of the series the frame is rocked and its dog withdrawn to release the drawer and a spring whereby said drawer is projected when unlocked, substantially as described.

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**500,899.** METALLIC PACKING FOR STUFFING-BOXES. THOMAS H. HOLMES, Philadelphia, Pa. Filed Dec. 27, 1892. Serial No. 456,362. (No model.)

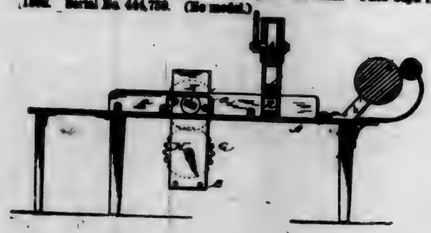


*Claim.*—1. The combination, in a stuffing box packing, of a box or casing, a series of rings, one overlapping another and each composed of a series of segments, with one or more encircling springs for pressing the rings into contact with the piston rod, and pins projecting from the segments of one ring into the spaces between the segments of the adjoining ring, so as to insure the breaking of joints and prevent the circumferential movement of one ring independently of the other, substantially as specified.

2. The combination, in the stuffing box packing, of a series of packing rings, each composed of segments, and the box or casing therefor, made in laterally separable sections, said box or casing being located wholly outside of the cylinder head or projecting boss, so that it may be applied to or removed from a rod without disturbing the latter, substantially as specified.

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**500,900.** MACHINE FOR SEAMING SHEET METAL. HENRY L. HOSMER and WILLIAM R. WILSON, Clay Centre, Kans. Filed Sept. 1, 1892. Serial No. 444,788. (No model.)



*Claim.*—1. In a metal seaming machine, the combination with a table A, of a rotatable folding bar E having grooves in its opposite sides to receive the edges of sheet metal to be joined so that by rotating the bar the edges of the sheet metal are folded together, substantially as described.

2. In a metal seaming machine, the combination with a table A, of a pair of rods *c* for holding the sheets of metal in a flat condition, and a rotatable folding bar E having grooves in its opposite sides to receive the edges of sheet metal to be joined, substantially as described.

3. The combination with a table, and suitable boxes at the opposite sides thereof, of gear wheels independently journaled in said boxes and provided with orifices, connected gear wheels meshing with said independently journaled gear wheels, and a grooved folding bar adapted to engage the orifices in the independently journaled gear wheels, substantially as described.

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**500,901.** POCKETBOOK. JOHN S. HUEY, Chicago, Ill. Filed Nov. 5, 1892. Serial No. 451,292. (No model.)



*Claim.*—In pocket books, the combination of a pocket book provided with pivoted jaws, one of which has a slotted strengthening rib, rulings along the same, and an indicator adapted to slide in said slot for the purpose of registering sums of money, substantially as described.

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**500,902.** RING-ARMATURE. CHARLES W. JEFFERSON, Schenectady, assignor to Eugene Munsell & Co., New York, N. Y. Filed Feb. 13, 1893. Serial No. 462,056. (No model.)



*Claim.*—1. An armature consisting of the combination of an iron ribbon *u* having a wider portion *u'*, all wound in convolutions whereby projections *t* are formed by the portion *u'*, a flanged annular mica disk *r* having perforations *e* through which pass said projections *t*, the flanges of the disk lapping over the interior and exterior of the ring, insulating mica tubes *v* fitted upon and cemented to the projections *t*, curved insulating mica sheets *j* applied to the interior of the ring between the spokes thereof, and a cylindrical mica covering applied to the exterior of the ring.

2. An armature consisting of the combination of a ring having end projections, circularly arranged, flanged annular mica disks applied to the ring and having perforations through which pass said projections, the flanges of the disks lapping over or under the interior and exterior of the ring, insulating mica tubes fitted upon the projections and curved insulating mica sheets applied respectively to the inner and outer surfaces of the ring.

3. An armature consisting of the combination of a laminated iron ring, annular mica disks applied to the ends of the ring, a mica covering fitting over or under the outer surface of the ring, and flanges on said disks lapping over the exterior and interior surfaces of the ring.

4. An armature consisting of the combination of an iron ring, annular mica disks applied to the ends of the ring, a mica covering fitting over the outer surface of the ring, and flanges on said disks lapping over the exterior and interior surfaces of the ring, the flanged mica disks being made in sections and fastened together with overlapped joints.

5. An armature consisting of the combination of an iron ring core, and a covering for the same, consisting of sheets of mica cemented together with overlapping edges.

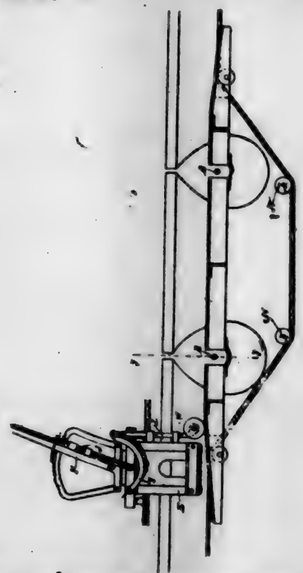
6. The combination of an armature core and an insulator covering the same, consisting of sheets of mica cemented together with overlapping edges.

7. An insulator for armature heads consisting of an annular disk, having flanges on one or both peripheries and consisting of alternately arranged and parallel layers respectively of cement and mica sheets with overlapping edges.

8. An insulator for armature heads consisting of an annular disk having flanges on one or both peripheries and consisting of alternately arranged and parallel layers respectively of cement and mica sheets with overlapping edges, the said disk being provided with perforations.

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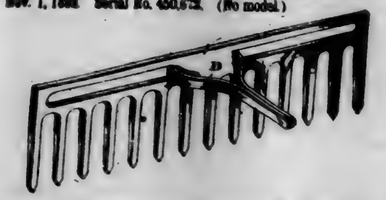
**500,903. CABLE RELEASING DEVICE AND CROSSING.** ADAM JEPPERTS, San Francisco, Cal. Filed Mar. 23, 1892. Serial No. 426,062. (No model.)



*Claim.*—In a cable railway, tubes or tunnels, with endless traveling cables crossing one above the other and supported upon carrying pulleys within the tunnels, a grip adapted to engage or be disengaged from the lowermost cable and supported from the car by a shank extending down through a slot in the top of the tunnel, a grip releasing device consisting of a rod removable upon the grip lever having the upper end pivoted to the pawl by which the grip lever is retained in position when the grip jaws are closed, a second rod connected with the first rod by an intermediate lever, and extending down through the slot in the tunnel and having a shoe upon its lower end, rollers beneath which the lowermost cable is depressed at the point where it crosses the upper cable, in combination with girders fixed within the tunnel upon each side of the line of travel inclining upward from a point below to a point above the line of travel of the grip at each side of the crossing, and an intermediate horizontal bridge extending between the two inclines above the line of the upper cable and having transverse slots for the passage of the grip shanks of the upper cables, substantially as herein described.

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**500,904. RAKE.** WILLIAM R. JENKINS, Bellefonte, Pa. Filed Nov. 1, 1892. Serial No. 450,672. (No model.)

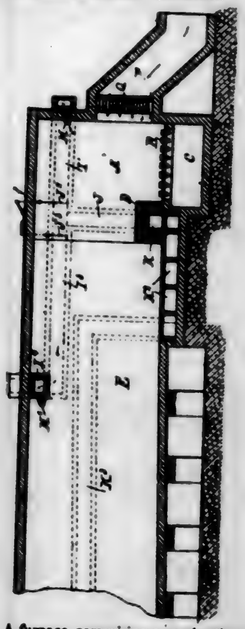


*Claim.*—1. The improved rake head consisting of the body carrying the teeth, and the attaching tang formed of tongues cut from such body, by longitudinal cuts below the upper edge thereof, so as to be connected with the same only at their inner ends, and having their unattached portions bent forward from the body and inward toward each other, so as to bring their outer portions together, substantially as and for the purpose specified.

2. The improved rake head consisting of the body carrying the teeth, and the attaching tang formed of tongues cut from such body by longitudinal cuts below the upper edge thereof, so as to be connected with the same only at their inner ends, and having their unattached portions bent forward from the body, and inward toward each other, so as to bring their outer portions in contact, and such portions welded together, substantially as and for the purpose described.

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**500,905. FURNACE.** JOHN T. JENKINS, Massillon, Ohio. Filed Nov. 22, 1892. Serial No. 453,304. (No model.)



*Claim.*—1. A furnace comprising a combustion chamber, a gas inlet leading to the said combustion chamber and provided with checker brick outside the combustion chamber to spread the gas, said gas inlet being substantially horizontal where it connects with the combustion chamber, and the checker brick being located in the said horizontal portion, and a series of jet openings for discharging hot air into the said chamber above the gas inlet, substantially as shown and described.

2. A furnace comprising a combustion chamber, a bridge wall at the back of the same a gas inlet leading to the said combustion chamber and provided in its mouth with checker brick to spread the gas, said gas inlet being substantially horizontal where it connects with the combustion chamber, and the checker brick being located in the said horizontal portion, and a series of jet openings for discharging hot air into the said chamber above the gas inlet, the said jet openings being inclined downwardly and forwardly, so that the gas and the air strike each other a short distance from the bridge wall, substantially as shown and described.

3. A furnace comprising a combustion chamber, a bridge wall, a working chamber in the rear of the bridge wall, and in communication with the said combustion chamber, a gas inlet leading to the said chamber at the front end thereof, and provided in its mouth with checker brick to spread the gas, said gas inlet being substantially horizontal where it connects with the combustion chamber, and the checker brick being located in the said horizontal portion and a series of jet openings for discharging hot air into the said chamber above the gas inlet, substantially as shown and described.

4. A furnace comprising a combustion chamber, a bridge wall, a working chamber in the rear of the bridge wall, and in communication with the said combustion chamber, a gas inlet leading to the said chamber at the front end thereof, and provided in its mouth with checker brick to spread the gas, said gas inlet being substantially horizontal where it connects with the combustion chamber, and the checker brick being located in the said horizontal portion, a series of jet openings for discharging hot air into the said chamber above the gas inlet, an air inlet flue located at the rear end of the furnace and air inlet channels arranged in the sides and bottom of the furnace so that the incoming air is heated by the heat passing from the combustion chamber into the working chamber, substantially as shown and described.

5. A furnace comprising a combustion chamber, a bridge wall, a working chamber in the rear of the bridge wall, and in communication with the said combustion chamber, a gas inlet leading to the said chamber at the front end thereof, and provided in its mouth with checker brick to spread the gas, said gas inlet being substantially horizontal where it connects with the combustion chamber, and the checker brick being located in the said horizontal portion, a series of jet openings for discharging hot air into the said chamber above the gas inlet, an air inlet flue located at the rear end of the furnace, air inlet channels arranged in the sides and bottom of the furnace so that the incoming air is heated by the heat passing from the combustion chamber into the working chamber, and a series of jet openings for discharging hot air into the said working chamber, substantially as shown and described.

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**500,906. BRUSH FOR STREET-SWEEPERS.** JOHN JOHNS and ALEXANDER GILLIES, Toronto, Canada. Filed May 4, 1892. Serial No. 431,946. (No model.)



*Claim.*—1. A street broom, consisting of a series of steel strips bunched together and arranged in rows around a cylindrical frame, some of the strips being edge-wise and other strips flatwise; substantially as and for the purpose specified.

2. A street broom consisting of a series of steel strips bunched together and arranged in rows around a cylindrical frame, some of the strips being edge-wise and other strips flatwise, in combination with blocks D, placed between the strips; substantially as and for the purpose specified.

3. A broom, comprising a series of steel strips arranged in sets around a cylindrical frame, said sets being arranged alternately flatwise and edgewise, substantially as described.

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**500,907. PADLOCK.** GEORGE W. JORDON, Meriden, Conn. Filed June 18, 1892. Serial No. 437,190. (No model.)



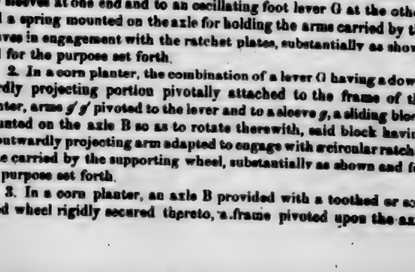
*Claim.*—1. In a pad lock, the combination of the case composed of side pieces, and a spring located between the said side pieces and forming the rim and having its free end constructed to engage with the free end of the bow, and the bow pivoted at one end and adapted to be engaged at the other end by the free end of said spring, substantially as described.

2. The herein described pad lock composed of the side pieces, a central portion and rim integrally formed and secured between the said side pieces, the free end of said rim being constructed to spring and engage with the bow, and a bow pivoted at one end between the said side pieces and adapted to have its free end engaged by the free end of the rim, substantially as described.

3. In a pad lock, the combination with the case comprising side pieces and a spring placed between the side pieces to form a rim, and having its free end constructed to engage with the bow, and having a bow pivoted at one end and adapted to be automatically engaged at the free end by the free end of the rim, and having a projection to extend over the free end of the said rim, substantially as described.

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**500,908. HYDRAULIC RECOIL-BRAKE FOR GUNS.** AUGUST KAEPP, Magdeburg, Germany, assignor to the Grusonwerk, same place. Filed Dec. 27, 1892. Serial No. 456,373. (No model.)



*Claim.*—1. A hydraulic brake for guns consisting of a cylinder, and a piston formed of two relatively rotatable parts having longitudinal passages adapted to register, as and for the purpose explained.

2. A hydraulic brake for recoil guns consisting of a cylinder, and a piston formed of two relatively rotatable parts having channels adapted to register; said cylinder being provided with a groove or guide in which one of said parts engages, and which is inclined to the stroke for rotating said part, as and for the purpose explained.

3. In a hydraulic brake for gun carriages, the combination of a suitable cylinder, a transversely divided piston, the parts of which are provided with grooves or channels adapted to register, and a ring also provided with grooves or channels fitting on one of the parts of said piston and adapted to be automatically rotated thereon for gradually closing the channels in the piston during the recoil of the gun, substantially as set forth.

4. In a hydraulic brake for guns, the combination of the cylinder, the piston, working in said cylinder, formed in two parts provided with grooves or channels adapted to register, and arranged for relative rotation, and the guide and lug on the cylinder and piston for causing such rotation, as and for the purpose explained.

5. In a hydraulic brake for guns, the combination of the cylinder formed with an inner cam-groove, a piston working in said cylinder formed in two relatively rotatable parts provided with grooves or channels adapted to register, and a ring also provided with grooves or channels fitting on one of said parts, and having a lug fitting in the spiral cam groove, substantially as and for the purpose set forth.

6. In a hydraulic brake for guns, the combination of the cylinder, and a piston working in said cylinder, formed in two relatively rotatable parts with longitudinal apertures adapted to register, and having concentric stems projecting from the cylinder, one of said piston stems being adapted for connection for controlling the recoil of the gun, and the other having a wrench seat formed on it, substantially as and for the purpose explained.

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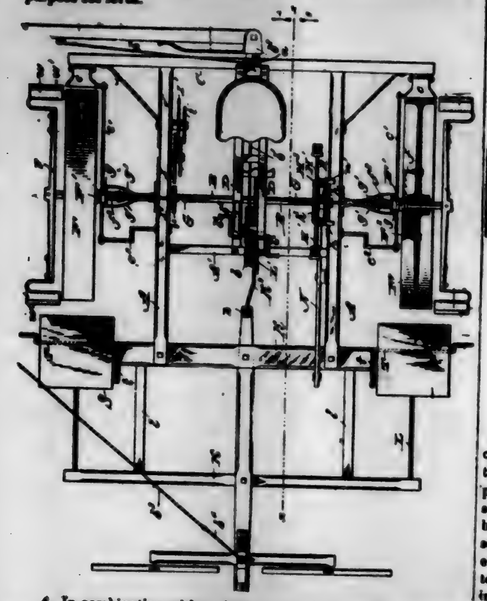
**500,909. CORN-PLANTER.** CHARLES E. KESSLER, Humboldt, Kans. Filed Dec. 1, 1892. Serial No. 453,778. (No model.)

*Claim.*—1. In a corn planter, the combination of the main supporting wheels having circular ratchet plates rigidly secured thereto, said wheels being loosely mounted on the axle, sleeves *g* engaging with the axle and having a sliding movement thereon, arms connected to the sleeves at one end and to an oscillating foot lever G at the other, and a spring mounted on the axle for holding the arms carried by the sleeves in engagement with the ratchet plates, substantially as shown and for the purpose set forth.

2. In a corn planter, the combination of a lever G having a downwardly projecting portion pivotally attached to the frame of the planter, arms *g g* pivoted to the lever and to a sleeve *g*, a sliding block mounted on the axle B so as to rotate therewith, said block having an outwardly projecting arm adapted to engage with a circular ratchet plate carried by the supporting wheel, substantially as shown and for the purpose set forth.

3. In a corn planter, an axle B provided with a toothed or serrated wheel rigidly secured thereto, a frame pivoted upon the axle

adjacent to said toothed or serrated wheel and provided with upwardly projecting arms A having cross-pieces as shown, springs attached to the ends of said cross-pieces and to the frame of the planter, levers E pivoted to the cross-pieces and provided with foot rests and with depending pawls which engage the serrated disk or wheel, and a spring connecting the inner ends of the levers so as to hold the pawls normally out of engagement with the serrated wheel, for the purpose set forth.



4. In combination with a planter, a marker therefor pivoted to the main frame, said pivot having a forwardly extended portion and a bifurcated rear end within which the end of the arm carrying the marker lies, a pivot pin for holding the arm in engagement therewith, and a spring carried by the pivot and adapted to bear against the marking arm, a flexible connection attached to the marking arm and guided to means for tightening and loosening said flexible connection, substantially as shown, and for the purpose set forth.

5. In combination with a marking arm having a flexible connection and guided substantially as shown, of a disk *b* having a grooved periphery to which the flexible connection is secured, a supporting shaft for said disk having bent ends and *q* latch *b*' adapted to engage with the side of said disk, substantially as shown, and for the purpose set forth.

6. In combination with the arms V, markers *w* carried thereby, said markers having longitudinal recesses on one side and opposite thereto a concave face, said markers being detachably secured to spring plates, substantially as shown, and for the purpose set forth.

7. In combination with the markers carried by the main shaft of a planter, bars V pivoted to the seed boxes and provided with crank arms at each end, the inner crank-arms having springs *t* attached thereto for holding the same in engagement with a stop, the outer end being located in front of the markers, substantially as shown, and for the purpose set forth.

8. In a corn planter, the combination of a disk $I^3$ carried by the axle or shaft, a pin $i^3$ attached thereto, and a register comprising vertical disks I and I', pinion carried by the shaft of the disk I so as to engage with the disk I', and disks *i* and *i*' overlapping each other, the disk *i* having an outwardly projecting pin, substantially as shown.

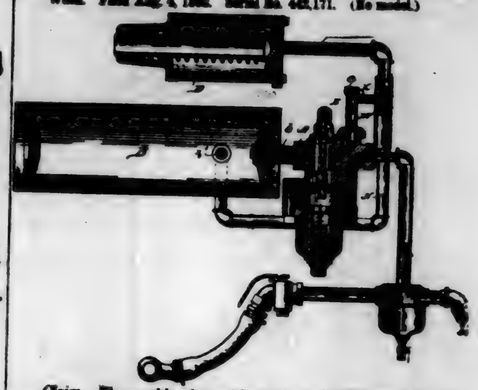
9. In a planter constructed substantially as shown, a shaft M provided with a ratchet wheel *m*, means for actuating said ratchet wheel from the axle of the planter as shown, toothed disks N' adapted to engage with the horizontal disks O located within the seed boxes, and a second cut-off R located within the seed spouts, said cut-off having a projecting portion which is engaged by the rotary disk O, substantially as shown, and for the purpose set forth.

10. In a planter, the combination with the seed spout having a second cut-off pivoted therein substantially as shown, said cut-off having oppositely bent ends and a projection *r* which is engaged by the rotary disk O for moving the second cut-off in one direction, and a spring for holding said second cut-off normally closed, substantially as shown, and for the purpose set forth.

11. In a corn planter, a seed spout having the upper portion thereof bent so as to provide an inwardly projecting portion $R^2$ and an outwardly projecting portion $R^3$, a second cut-off pivoted within said seed spout and adapted to abut against the bent portion $R^2$ of said spout, the second cut-off having its ends curved in opposite directions and provided with a spring R' and an arm *r* for oscillating the second cut-off upon its pivot, substantially as set forth.

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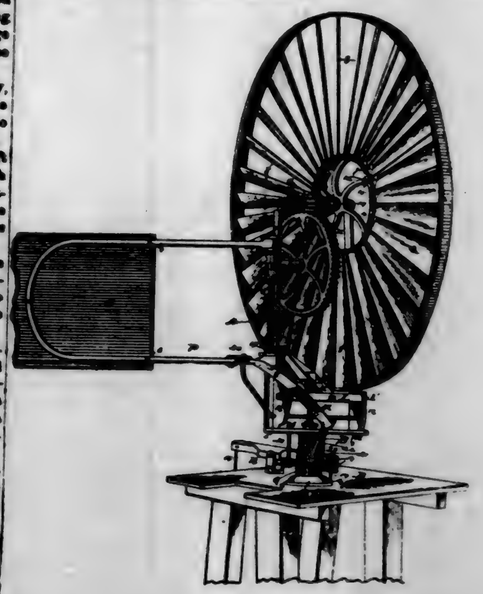
**500,910. AUTOMATIC AIR-BRAKE.** WILLIAM KEYWOOD, Tacoma, Wash. Filed Aug. 4, 1892. Serial No. 442,171. (No model.)



*Claim.*—The combination, with the brake cylinder and the pipe connected therewith, the auxiliary reservoir and the pipe connected therewith, and the triple-valve; of the casing located between the pipes, formed with an enlarged opening at one end, providing a valve-seat, an enlarged opening at the other end providing a piston-chamber, an intermediate chamber, a contracted bore beneath the valve-seat and a contracted bore above the piston-chamber, the check-valve, exposed to brake cylinder pressure, having a winged extension, a piston, exposed to auxiliary reservoir pressure, having a rod adapted to impinge against the extension, a tension spring located in the piston-chamber, and a tube connecting the triple-valve with the intermediate chamber in the casing; whereby the check-valve obstructs the passage back from the brake cylinder and holds the brakes in applied position until the auxiliary reservoir has been recharged to the proper pressure; substantially as described.

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**500,911. WINDMILL.** WESLEY KOONS, Salina, Kans. Filed Apr. 12, 1892. Serial No. 429,796. (No model.)





*Claim.*—1. In a windmill, the combination with a stationary platform and revolving frame, of a hollow axle for steadying and holding in position the revolving frame, a sleeve surrounding said axle, secured to the revolving frame and supporting the same, a collar surrounding and attached to said sleeve, guide-rods engaging with said collar and passing through the bottom of the revolving frame, a vane hinged to the revolving frame, means for connecting said vane with said collar, and means for moving said collar up and down, and thereby throwing the vane to and from the wind, substantially as described.

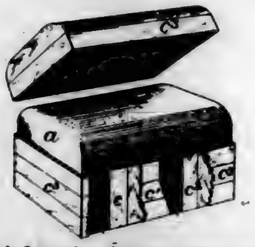
2. In a windmill, the combination with a vane, hinged to the revolving frame of the mill, of a lever secured to a collar surrounding the base of the revolving frame at one end, and to a bent shaft at the other end, said shaft being pivoted in the revolving frame, and secured by connecting straps or rods to the vane, and means for moving said collar up and down, and thereby throwing the vane to and from the wind, substantially as described.

3. In a wind mill, the combination with the frame A, of the wind wheel E, the vane O, the stationary platform D, the lever S, the bent shaft T, collar Q, pivoted lever R, and means for operating said lever R, whereby the wind wheel may be turned against or out of the current of air, substantially as described.

4. In a wind wheel, the combination with the vane O, straps 24, shaft T, lever S, straps 22, collar Q, lever R, and cords 19, of the flanged rollers 18, whereby the revolving frame A is permitted to have free movement without disarranging the mechanism for operating the vane, substantially as described.

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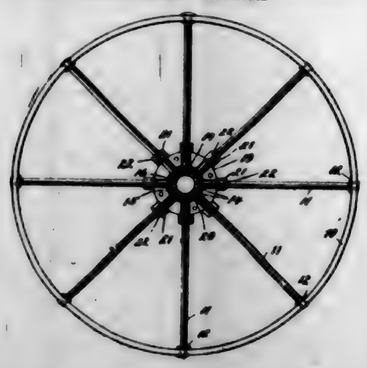
**500,912. MANUFACTURE OF TRUNKS, HAT-BOXES, &c.** HERMANN KRAMMER, Vienna, Austria-Hungary. Filed Jan. 22, 1891. Serial No. 378,712. (No specimens.) Patented in Austria-Hungary Nov. 4, 1888, No. 58 and No. 2,827; in Germany Jan. 16, 1889, No. 48,095; in France Feb. 2, 1889, No. 195,816; in England Feb. 14, 1889, No. 2,051; in Belgium Feb. 14, 1889, No. 86,011, and in Italy Mar. 31, 1889, No. 24,997.



*Claim.*—A body for trunks or hat boxes, formed of a hollow shell cut through to form the top and bottom portions of the trunk body and consisting of an interior lining or backing of woven fabric, a layer of wood shavings cemented thereon, a second layer of wood shavings cemented transversely upon the first layer, a layer of woven material cemented over these two layers of wood shavings, then two more layers of wood shavings cemented on transversely to each other, and another layer of woven fabric, and so on up to the required thickness, substantially as and for the purposes described.

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**500,913. WHEEL.** HERMAN E. KUEHNE, Davenport, Iowa. Filed Oct. 28, 1892. Serial No. 450,208. (No model.)



*Claim.*—1. In a wheel, a hub formed of two flanged sections, one of the sections being provided with radially extending spoke sockets open at one side and adapted to be closed after the spokes have been inserted therein, substantially as described.



2. A wheel, consisting of the metallic rim 10, spokes 11, riveted to the rim and provided with heads 14 on their inner ends, and the hub 16 formed of two sections 17, 18, having abutting flanges 19, and provided with the recess 15, the section 17 being provided with the inwardly extending collar 20, and the section 18 with the radial sockets 21 open at one side and adapted to be closed after the spokes are inserted therein, substantially as herein shown and described.

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**500,914. PROCESS OF MAKING AMMONIUM NITRATE.** JOHN LANDIN, Stockholm, Sweden. Filed Mar. 2, 1893. Serial No. 464,492. (No specimens.) Patented in Belgium Nov. 30, 1892, No. 103,102.

*Claim.*—1. A process for the manufacture of ammonium nitrate from sodium nitrate and ammonium sulphate by the aid of alcohol and ammonium chloride, by, percolating alcohol through a mixture of sodium nitrate and ammonium sulphate to produce (*a*) an alcoholic solution containing ammonium nitrate plus some sodium nitrate, and (*b*) a residue of sodium sulphate plus some ammonium sulphate; treating the said alcoholic solution by passing it first through ammonium sulphate and next through ammonium chloride thereby producing an alcoholic solution of ammonium nitrate and a precipitate of sodium sulphate and sodium chloride; then subliming the sodium chloride with the mixture of sodium sulphate and ammonium sulphate to produce sodium sulphate and ammonium chloride, substantially as described.

2. A process for the manufacture of ammonium nitrate from sodium nitrate an ammonium sulphate by the aid of alcohol and ammonium chloride, by, percolating alcohol through a mixture of sodium nitrate and ammonium sulphate to produce (*a*) an alcoholic solution containing ammonium nitrate plus some sodium nitrate and (*b*) a residue of sodium sulphate plus some ammonium sulphate; treating the said alcoholic solution by passing it through ammonium chloride thereby producing an alcoholic solution of ammonium nitrate and a precipitate of sodium sulphate and sodium chloride; then subliming the sodium chloride with the mixture of sodium sulphate and ammonium sulphate to produce sodium sulphate and ammonium chloride substantially as described.

3. A process for the manufacture of ammonium nitrate consisting of the following operations:—percolating alcohol through a mixture of sodium nitrate and ammonium sulphate to produce (*a*) an alcoholic solution containing ammonium nitrate plus some sodium nitrate, and (*b*) a residue consisting of sodium sulphate plus some ammonium sulphate; treating the said alcoholic solution by passing it first through ammonium sulphate and next through ammonium chloride, substantially as set forth, for the purposes specified.

4. For the manufacture of ammonium nitrate a process consisting of the following operations:—percolating alcohol or methylated spirit through a mixture of sodium nitrate and ammonium sulphate to produce (*a*) an alcoholic solution containing ammonium nitrate plus some sodium nitrate, and (*b*) sodium sulphate plus some ammonium sulphate; treating the said alcoholic solution by passing it through ammonium sulphate, substantially as set forth, for the purposes specified.

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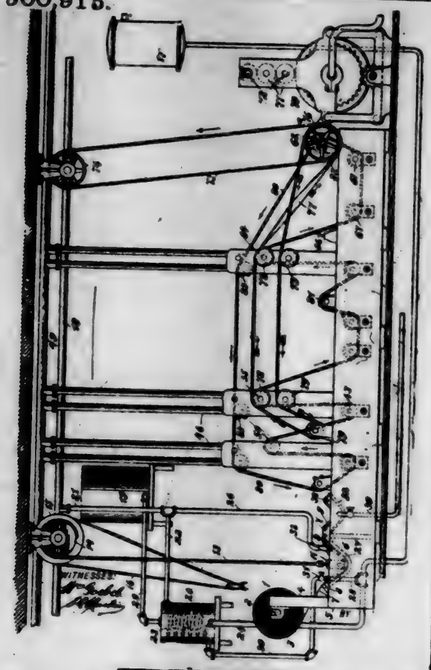
**500,915. MACHINE FOR MAKING VEGETABLE PARCHMENT-PAPER.** GOTTLOB T. LEONHARD, Paterson, N. J. Filed Oct. 5, 1892. Serial No. 447,893. (No model.)

*Claim.*—1. The combination of the acid bath tank 6 having refrigerating coil 27, the pipes 18, 25 for conveying a refrigerating liquid, the acid cooling tank 20 having means of connection with an acid supply tank, the coil 23 in said acid cooling tank 20 and arranged in connection with the pipes 18 and 25 and means for supplying the cooled acid from the tank 20 to the tank 6, substantially as shown and described.

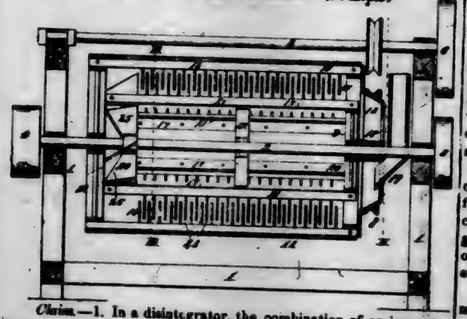
2. The combination in a single machine of devices for treating a roll of paper with acid and washing and neutralizing the acid, rollers for guiding the paper through the machine continuously, means for drawing the paper through the machine at one end and endless chains or belts and means for connecting the paper positively with said chains or belts; substantially as set forth.

3. The combination of chains or belts 80, with a bar 85, for attachment to a paper strip, and means for detachably connecting said bar with said chains or belts, substantially as described.

500,915.



500,916. DISINTEGRATOR. MARTIN W. LEONHARDT, St. Louis, Mo. Filed Feb. 3, 1893. Serial No. 461,443. (No model.)



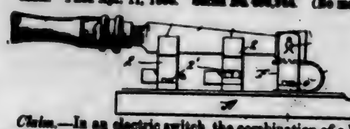
*Claim.*—1. In a disintegrator, the combination of an inner section, consisting of spiders and connecting bars having outwardly extending pins, an outer section consisting of a head and spider and connecting bars having inwardly projecting pins, a bolting cloth secured to the outer section, and driving mechanism arranged to move the sections at different rates of speed; substantially as, and for the purpose set forth.

2. In a disintegrator, the combination of the main shaft, an outer section having a bolting-cloth, an inner section consisting of spiders and connecting-bars having outwardly extending pins, inclined blades 25 carried by the spider of the inner section, and mechanism for turning the sections at different rates of speed, substantially as and for the purpose set forth.

500,917. VIOLET-RED DYE. ISAAC LIFSCHÜTZ, Grünau, near Berlin, Germany. Filed Sept. 8, 1892. Serial No. 445,380. (Specimens.)

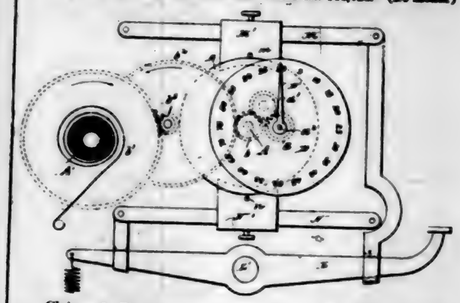
*Claim.*—The dyestuff which can be obtained from dinitroanthraquinone and which when dry occurs in the form of a dark colored powder, slightly soluble in water, alcohol, benzene and ether, soluble in concentrated sulphuric acid and in alkalies. Its solution in concentrated sulphuric acid shows a deep blue-violet color and a brownish-red fluorescence. Its solution in alcohol, benzene and ether and also in sulphuric acid exhibit most characteristic absorption spectra all substantially as described.

500,918. ELECTRIC SWITCH. GEORGE E. LESTER, Worcester, Mass. Filed Apr. 11, 1892. Serial No. 429,044. (No model.)



*Claim.*—In an electric switch, the combination of a base, binding posts arranged in sets of two on the base, a lever having an end shaped like the frustum of a wedge pivoted between the arms of a stand, said stand being situated in line with and mid-way between two sets of binding posts, and an adjustable flat blade spring, having one end secured under said stand, and the other end in contact with the pivoted end, of the lever, substantially as described and set forth.

500,919. ADDING DEVICE AND REGISTER. THOMAS J. LOCKWOOD, Muncie, Ind., assignor to the National Cash Register Company, Dayton, Ohio. Filed Oct. 1, 1890. Serial No. 366,738. (No model.)



*Claim.*—1. The combination of a motor, an escapement mechanism holding it in check, and a series of keys of different values co operating with the escapement mechanism to cause the latter, when two or more keys are operated at once, to release the motor and permit it to move a distance proportionate to the sum of the different values of the operated keys, substantially as described.

2. The combination of a motor, a series of escapement wheels holding it in check, and a series of keys of different values co-operating with the respective wheels to permit the motor, when a given key is operated, to move a distance determined by the escapement wheel corresponding to such operated key, said motor moving different distances at the operations of different keys substantially as described.

3. The combination of a motor, a train of escapement wheels connected at one end with the motor and at the other to a fixed point, for holding the motor in check, and a series of keys of different values co-operating with the escapement wheels to permit the motor, when a given key is operated, to move a distance proportionate to the value of such key, said motor moving different distances at the operations of different keys substantially as described.

4. The combination of a motor, a train of escapement wheels mounted side by side upon a single shaft or axis and connected at one end with the motor and at the other to a fixed point, for holding the motor in check, and a series of keys of different values co operating with the escapement wheels to release the motor and permit it to move different degrees proportionate to the values of the operated keys, said motor moving different distances at the operations of different keys substantially as described.

5. The combination of a motor, an escapement mechanism holding it in check, said escapement mechanism embodying two wheels, one movable by the motor and the other relatively fixed, two stops upon the fixed wheels, a lug or projection upon the other wheel co-operating with said stop to limit the movement of the movable wheel when the latter is released and turned by the motor, and an operating key and connections controlling the movable wheel, substantially as described.

6. The combination of a motor, an escapement mechanism holding it in check, said mechanism embodying a train of connected wheels arranged in pairs, the first wheel of each pair being movable with the motor, and the other wheel being relatively fixed and movable only with the movable wheel of the next adjacent pair, a pair of stops upon the fixed wheel and a co-operating projection upon the movable wheel of each pair, and a series of keys of different values co-operating with the movable wheels of the several pairs to cause them to permit the motor to move different degrees proportionate to the values of the operated keys, substantially as described.



7. In a registering machine, the combination of the disks E and G one of which is laterally movable relatively to the other and one provided with a detent and the other with co-operating receptacles or notches, the stop $g^5$ on disk G and relatively stationary stops K K', the spring I for turning the disk G in one direction and a motor for turning the disk E in the opposite direction, and a register actuated by the motor, substantially as described.

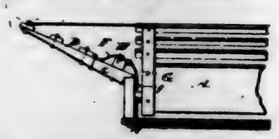
8. In a registering machine, the combination with disks E and E and the detents carried by the latter, of disks F and G, the spring I, and the limiting stops; substantially as described.

9. In a registering machine, the combination of the disk E and its detents, the disks F and G spring I, the limiting stops and the springs for pressing the disks E and F toward each other; substantially as described.

10. In a registering machine, the combination of the disks E and F having the peripheral notches or teeth, the detents on the disk E, the notched or toothed disk G, spring I and limiting stops carried by the disk F and the wedge shaped blocks carrying the projecting pins for separating the disks E and F and locking them from forward rotation while separated; substantially as described

11. In a registering machine, the combination of the prime mover, of the shaft A, the disks B, E, F, G and the detents, springs and limiting stops carried thereby, of the second series of disks $E^x$, $F^x$, $G^x$ and their detents, springs and limiting stops with the register, the key levers and the separating and locking blocks $M'$ $M^x$ operated by the key levers; substantially as described.

500,920. HAY OR HOG RACK. WILLIAM H. LOSH, Washington, Ill., assignor to the Long Manufacturing Company, same place. Filed Oct. 15, 1892. Serial No. 449,027. (No model.)



*Claim.*—1. The combination, with the side beams of a wagon bed, and a side-rack supported on said beams, of a device adapted to slide through the bed, and having a flexible or hinge connection with the side-rack, and a stop plate which is attached to the lower end of said device, and comes in contact with the bed when the rack is inclined outward, as and for the purpose specified.

2. The combination, with a beam, forming part of a wagon-bed, of a side-rack having standards with notched lower ends, rods, G, hinged to the inner side of the rack, and slidable through a base piece, and a stop-plate applied to the lower ends of the rods, substantially as shown and described to operate as specified.

3. The combination, with a beam, forming part of a wagon-bed, and a side-rack, D, having standards whose lower ends are notched, of rods which connect with such side-rack and are adapted to slide through a base piece, and provided with a stop-plate, whereby the said rods are subjected to tension when the side-rack is in an inclined position, and thus aid in supporting it, substantially as shown and described.

500,921. COMBINED SHIRT-COLLAR AND NECKTIE. BENJAMIN LOWENBERG, Norfolk, Va. Filed Oct. 13, 1892. Serial No. 448,754. (No model.)



*Claim.*—In combination with a shirt having a neck band formed with a rear fastening device and two fastening devices in front, one at each side of the center, a combined turn-down collar and necktie detachable from the shirt and provided with fastening devices to engage those aforesaid on the shirt, the turn-down portion of the collar terminating at points adjacent to said fastening devices, and the band portion being elongated so as to form ends adapted to be tied in either of several knots, and said fastening devices being hidden under the folds of the collar, substantially as set forth.

500,922. SHIRT AND COLLAR THEREFOR. BENJAMIN LOWENBERG, Norfolk, Va. Filed Oct. 13, 1892. Serial No. 448,755. (No model.)

500,922.



*Claim.*—As a new article of manufacture, a shirt having a neck opening, and a two ply collar formed of a single strip of fabric doubled upon itself, with a fold at one end, and a row of stitches at the other end for securing the free ends of the plies together, the lower edges of the plies being turned in and under and secured to the edges of the neck opening by a row of stitches, so as to conceal the said row of stitches, and said plies being secured along their upper edges by a row of stitches, substantially as set forth

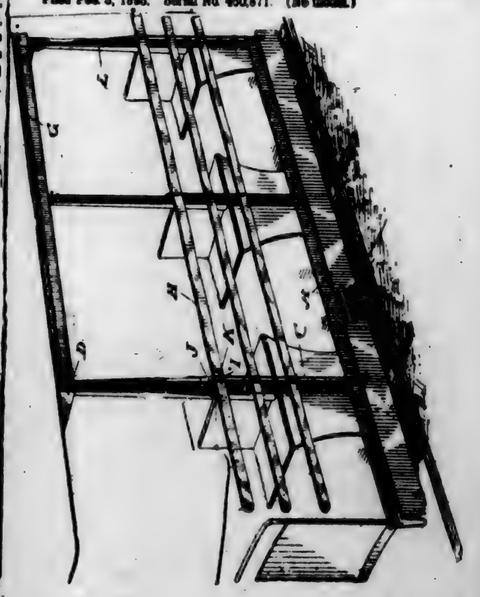
500,923. ICE SHREDDER OR SHAVER. TRUMAN MARSHALL, Philadelphia, Pa. Filed May 10, 1892. Serial No. 432,416. (No model.)



*Claim.*—1. An ice shredder consisting of a cup having a lid, a throat in its bottom, a bed rising from said bottom, and a blade with a serrated edge secured to said bed on the inclined reinforced side thereof, said bed being elevated above said bottom, leaving a chamber in the lower part of the cup back of said bed, said parts being combined substantially as described.

2. An ice shredder and shaver consisting of a cup with lid and handle, said cup having a throat in its bottom, a bed forming a reinforced wall for said throat, and a blade adjustably secured to said bed, said bed rising from the bottom of the cup, forming a chamber back of the same and said parts being combined substantially as described.

500,924. STREET-CAR. JAMES MARSHALL, Toronto, Canada. Filed Feb. 3, 1893. Serial No. 460,871. (No model.)

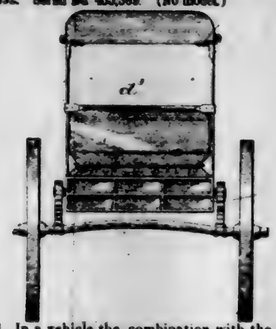


*Claim.*—1. A street car having a hinged step or foot-board, and one or more movable rails, in combination with a cord, connecting the rails with the step, and means for fastening said cord, substantially as described.

2. A street car having a hinged step or foot-board, a series of vertical rods J, one or more rails sliding on said rods, in combination with a cord connecting said rails with said step, whereby said rails and step are moved simultaneously, and a cleat F for holding said cord, substantially as described.

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**500,925. CARRIAGE-TOP.** MILTON D. MARTIN, York, Pa. Filed Dec. 14, 1892. Serial No. 455,389. (No model.)

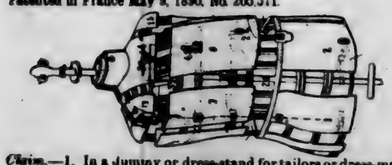


*Claim.*—1. In a vehicle the combination with the uprights for supporting the top and angle irons having upwardly extending flanges for removably securing the top to the uprights, substantially as described.

2. In a vehicle the combination with the uprights for supporting the top, and angle irons having upwardly extending flanges for removably securing the top to the uprights, a brace, and a part having inward projections adapted to engage the edge of said brace and said support, substantially as described.

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**500,926. BUST-FORM.** EMILIE MERLE and APOLLONIE MERLE, Paris, France. Filed Jan. 20, 1892. Serial No. 418,673. (No model.) Patented in France May 9, 1890, No. 205,571.



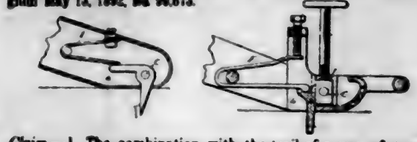
*Claim.*—1. In a dummy or dress-stand for tailors or dress-makers, the combination with a plurality or series of sections, of a cam-plate provided with slots diverging from its center, rods attached to said sections, cross-heads carried by said rods and engaging the diverging slots of the cam-plate, means connected with said cam-plate for operating the same to move the sections composing a series laterally relatively to each other, and means connected with each section composing a series for simultaneously vertically adjusting all the sections in a series relatively to the other series of sections, substantially as described.

2. In a dummy or dress stand for tailors or dress-makers, the combination with a series of movable sections and a frame, as 51, of a series of rods connected with said frame, and screws carried by said sections and engaging said rods, whereby said sections may be independently adjusted relatively to each other, substantially as described.

3. In a dummy or dress stand for tailors or dress-makers, the combination with a series of movable sections and a frame, as 51, of a series of rods connected with said frame, screws carried by said sections and engaging said rods, whereby said sections may be independently adjusted relatively to each other, and means for simultaneously adjusting said sections relatively to each other substantially as described.

4. In a dummy or dress-stand for tailors or dress-makers, the combination with a series of movable sections and a frame, as 51, of a cam-plate provided with slots diverging from its center, rods connected with the frame 51, and provided with cross-heads engaging the diverging slots of the cam-plate, screws carried by the movable sections and engaging said rods, whereby said sections may be independently adjusted relatively to each other, and means connected with said cam-plate for operating the same, to move the sections simultaneously relatively to each other, substantially as described

**500,927. BRAKE FOR GUN-CARRIAGES.** FRIEDRICH MOHR, Magdeburg-Buckau, Germany, assignor to the Grusonwerk, same place. Filed Oct. 5, 1892. Serial No. 447,894. (No model.) Patented in Belgium May 13, 1892, No. 99,673.



*Claim.*—1. The combination with the trail of a gun, of a spur hinged thereon and projecting downward for insertion into the ground, and a spring having one end fixed and the other end adjusted to oppose the turning of said spur on its hinge substantially for the purpose explained.

2. In a brake for a gun-carriage the combination with the trail, of a hinged spur projecting downward therefrom and suitable means for adjusting the position of the hinge on the trail, substantially as and for the purposes specified.

3. In a brake for a gun-carriage the combination with the trail, of an arm or frame pivoted to the trail, and having a spur projecting therefrom and a spring on the trail adjusted to resist the swinging movement of said arm or frame on its hinge, substantially as and for the purposes specified.

4. In a brake for a gun-carriage the combination of the trail, a pivoted spur projecting from the end of the trail and having an extension, and a spring between said extension and a fixed portion of the trail, as and for the purpose specified.

5. In a brake for a gun-carriage, the combination of the trail, a pivoted spur, a spring bearing at one end upon the spur and resisting its swinging movement, and a screw threaded in a fixed part and engaging the other end of said spring, all substantially as and for the purposes set forth.

6. In a brake for gun-carriages the combination of the trail, the pivoted spur, means for adjustably securing the pivot of the spur on the trail, and the spring mounted on the trail and bearing against the spur, substantially as and for the purposes set forth.

7. In a gun-carriage the combination of the trail a frame pivoted on the trail, a spur pivoted in said frame, a spring also carried by the frame and bearing against the spur for keeping it in vertical position, and a spring carried by the trail and bearing on the pivoted frame for holding it down with a yielding pressure, all substantially as and for the purpose set forth.

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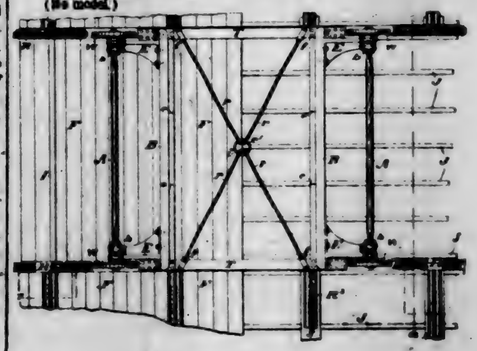
**500,828. LIGHTNING-ARRESTER.** WILLIAM A. TURBAYNE, Detroit, Mich. Filed Nov. 5, 1892. Serial No. 451,103. (No model.)



*Claim.*—A dress shield composed of a pilous fabric whose outer surface *b*, consists of vertical fibers, closely arranged, at right angles to the body of the fabric forming numerous cells between said fibers, and whose inner surface *c*, is provided with a coating of water proof substance, substantially as and for the purposes described.

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**500,929. TRANSFER-TABLE FOR RAILWAYS.** ARTHUR J. MOXHAM, Johnstown, Pa. Filed Sept. 30, 1891. Serial No. 407,272. (No model.)





*Claim.*—1. In a railway transfer-table, a horizontal corner-bracket forming a brace-member of the structure and provided with an axle-bearing for a track-wheel, for the purposes set forth.

2. In a railway transfer table, a bracket as E, provided with a box at one of its ends, said box having a movable cap on one of its sides.

3. In a railway transfer-table, the combination of rail-beams set to come in line with the main track-rails, connecting tie-beams transverse to said rail-beams; and horizontal brackets secured to said rail and tie-beams and forming angle-brace-members of the structure.

4. In a railway transfer-table, the combination of L-shaped beams as B, forming the rails of the table; T-beams, as T, connecting said rail-beams; and horizontal brackets, as E, secured to said rail and tie-beams and forming angle-brace-members of the structure.

5. In a railway transfer-table, the combination of rail beams set to come in line with the main track-rails; tie-beams transverse to said rail-beams; and horizontal corner brackets, as E, forming brace-members of the structure; one end of each of said brackets being secured to said rail and tie-beams and the other end serving as a journal for the axles of the table.

6. In a railway transfer table, diagonal stiffening rods connecting the corners of the table and meeting at a common central point.

7. In a railway transfer table, the combination of rail-beams set to come in line with the main track-rails; tie-beams transverse to said rail-beams; and stiffening rods between said beams connecting the corners of the table and meeting at a common central point.

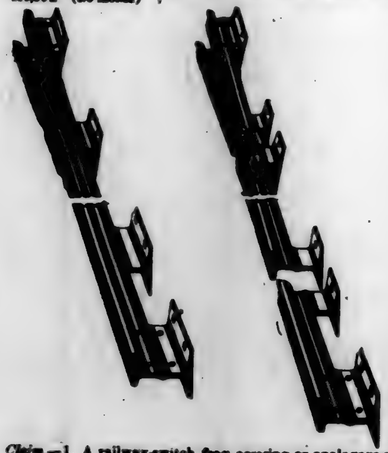
8. In a railway transfer table, the combination of L-beams as B; T-bars as T; and stiffening rods, as *r*, connecting the corners of the table and meeting at a common central point.

9. In a railway transfer table, the combination of rail-beams set to come in line with the main track rails; tie-beams transverse to said rail-beams; brackets secured to said beams, and stiffening rods between said beams connecting the corners of the table and meeting at a common central point.

10. In a railway transfer table, the combination of L-beams, as B, T-beams as T; brackets secured to said beams; and stiffening rods, as *r*, connecting the corners of the table and meeting at a common central point.

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**500,980. SWITCH-PIECE AND METHOD OF MAKING IT.** ARTHUR J. MOXHAM, Johnstown, Pa. Filed Jan. 26, 1892. Serial No. 418,204. (No model.)



*Claim.*—1. A railway-switch, frog, crossing or analogous structure, provided with the part intermediate to the track connecting rails formed separate from the track connecting rails and united into an integral structure therewith.

2. A railway-switch, frog, crossing, or analogous structure, provided with the part intermediate to the track connecting rails formed of material different from the track connecting rails and united into an integral structure therewith.

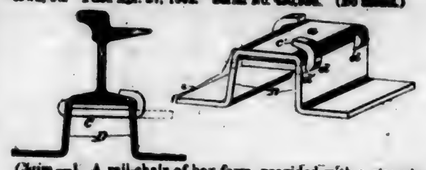
3. A railway-switch, frog, crossing, or analogous structure, provided with the part intermediate to the track connecting rails formed separate from the track connecting rails and tempered or hardened and united into an integral structure with said track connecting rails.

4. The hereinbefore described method of manufacturing railway-switches, frogs, crossings and analogous structures which consists in first constructing and tempering or hardening the part intermediate to the track connecting rails and then integrally uniting to said part the track connecting rails.

5. The hereinbefore described method of manufacturing railway-switches, frogs, crossings and analogous structures, which consists in first constructing and tempering or hardening the part intermediate to the track connecting rails and then welding thereto the track connecting rails.

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**500,981. RAILROAD-RAIL CHAIR.** ARTHUR J. MOXHAM, Johnstown, Pa. Filed Apr. 27, 1892. Serial No. 430,998. (No model.)



*Claim.*—1. A rail-chair of box-form, provided with a clamping-bar passing through the sides of the chair under the rail-seat, said bar having a head formed integral with the body of the bar bearing against one side of the chair, and its opposite end bent over to form a clamp for the foot of the rail.

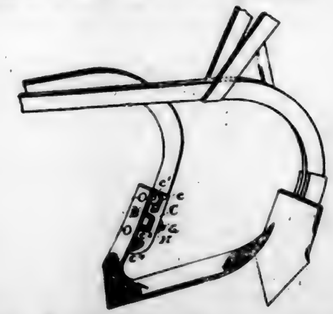
2. A rail-chair of box-form, provided with two clamping-bars passing through the sides of the chair, each of said bars having a head formed integral therewith, bearing against one side of the chair, and its opposite end bent over to form a clamp for the foot of the rail.

3. A rail-chair provided with two clamping-bars, each of said bars having one end enlarged so as to form a head bearing against the side of the chair, and its opposite end bent over to form a clamp for the foot of the rail, said clamping-ends being located diagonally opposite each other.

4. A rail-clamping-bar, for rail-chairs, provided with a hook-head, as *c*, and a hooked-end, as *c'*, said head and end being integral with the body of the bar.

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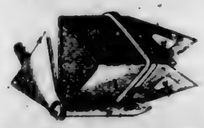
**500,932. WEED-CUTTER, &c.** WILLIAM A. MCCOY, Benson, Kans. Filed Oct. 25, 1892. Serial No. 449,964. (No model.)



*Claim.*—The casting C cross-slotted at $c^3$ and having three projections $c^3$ $c^4$ $c^4$ to support the cutter shank of a weed-cutter, one projection being right-angled and slotted across at $c'$ and another carrying the pivot D extending above its free end as shown and described, for the purpose set forth.

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**500,933. SEPARABLE SPOUT FOR METALLIC VESSELS.** CHAS. I. MCLAUGHLIN, New York, N. Y. Filed Oct. 11, 1890. Serial No. 367,769. (No model.)



*Claim.*—1. The combination of a detachable spout for metallic vessels of tubular shape formed to have a cutting skirt adapted to cut through the thin material of the vessel, and with a pouring spout, and a vent tube E situated upon the outside of the spout and formed with a lower cutting end, substantially as described.

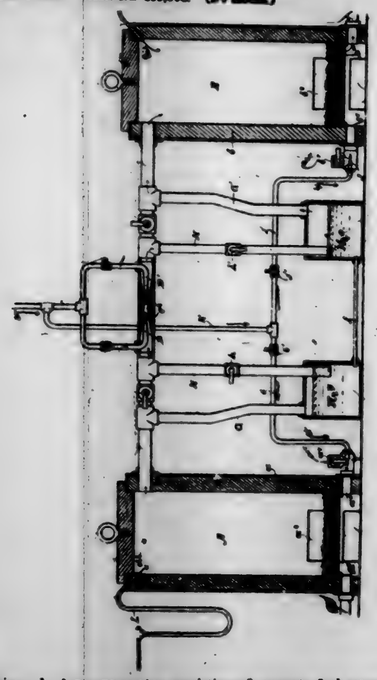
2. A detachable spout for metallic vessels, of triangular shape in cross-section, having the cutting skirt portion A, the pouring portion B, the flange D between these two parts, the cover C, and the vent tube E, substantially as shown and described.

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**500,934.** ARTIFICIAL FUEL. MAX BERLINER, Milwaukee, Wis., assignor to the Fuel Patents Company. Filed Mar. 1, 1892. Serial No. 424,228. (No specimens.)

*Claim.*—The herein described composition for fuel, it comprising one hundred pounds of the slack of bituminous coal, together with three pounds of silicate of soda and diluted sulphuric acid, together with eighteen hundred pounds of the slack of anthracite coal, together with ninety pounds of hard coal tar pitch and ten pounds of coal tar obtained in the manufacture of said pitch, and of a consistency slightly lighter than the pitch, mingled with three pounds of black oxide of manganese and five pounds of chlorate of potash, substantially as set forth.

**500,935.** GAS-GENERATOR. JAMES HOLAN, Oakland, Cal. Filed Apr. 8, 1892. Serial No. 428,506. (No model.)



*Claim.*—1. A gas generator consisting of separate fuel retorts, a pipe connecting them and having a cock, a washer, pipes connecting said washer with the connecting pipe of the fuel retorts on each side of its cock, and a means for forcing the gas generated in one retort through the washer and into and through the fuel in the other retort, substantially as herein described.

2. A gas generator consisting of separate fuel retorts, a pipe connecting them and having a cock, a washer, pipes connecting said washer with the connecting pipe of the fuel retorts on each side of its cock, and an injector fitted in said connecting pipe for forcing the gas generated in one retort through the washer and into and through the fuel in the other retort, substantially as herein described.

3. A gas generator consisting of separate fuel retorts, a pipe connecting them having separate cocks, separate washers, pipes connecting one of said washers with the connecting pipe of the fuel retorts at points on each side of one of its cocks, pipes connecting the other washer with said connecting pipe one on each side of its other cock, and a means for forcing the gas generated in one retort through one of the washers and into and through the fuel of the other retort, and vice versa, through the other washer and other retort, substantially as herein described.

4. A gas generator consisting of separate fuel retorts, a pipe connecting them having separate cocks, separate washers, pipes connecting one of said washers with the connecting pipe of the fuel retorts at points on each side of one of its cocks, pipes connecting the other washer with said connecting pipe one on each side of its other cock, and a means for forcing the gas generator in one retort through one of the washers and into and through the fuel of the other retort, and vice versa, through the other washer and other retort, consisting of oppositely directed injectors fitted to said connecting pipe, substantially as herein described.

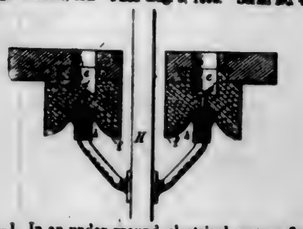
5. A gas generator consisting of the separate retorts, the pipe C connecting them having the cocks, the separate washers and pipes connecting them with pipe C on each side of its cocks, the oppositely directed injectors fitted to pipe C, and the oil feed pipes communicating with said fuel retorts, substantially as herein described.

**500,936.** HIGHLAND WATER-CARRIER. JOSEPH BOSTWAY and THOMAS R. HARRISON, Forsyth, Mont. Filed Nov. 12, 1892. Serial No. 451,750. (No model.)



*Claim.*—In an apparatus of the class described, the combination of cars A and B adapted to travel on the inclined tracks C, the lower end of each of said cars being hinged and connected to the sliding bars P by means of ropes N, and projections on the side of said tracks adapted to engage with the ends of said sliding bars substantially as and for the purpose set forth.

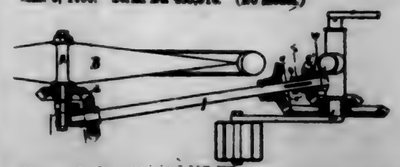
**500,937.** CONDUIT RAILWAY INSULATOR. GEORGE E. HOTH, Washington Grove, Md. Filed Aug. 8, 1892. Serial No. 442,480. (No model.)



*Claim.*—1. In an under-ground electrical system for operating rail-way cars, the continuous insulators E, secured under the cap-plates H, on each side of the slot *b*, and hollowed out for the insertion and support of the line wires: in combination with the cap plates supported on the top of a conduit: all substantially as and for the purpose described.

2. The insulators E, having the under side concave, and counter sunk screws at each end for securing the line wire in its position, substantially as described.

**500,938.** BICYCLE. VINTON H. FULLS, Lebanon, Ohio. Filed Mar. 9, 1893. Serial No. 465,316. (No model.)



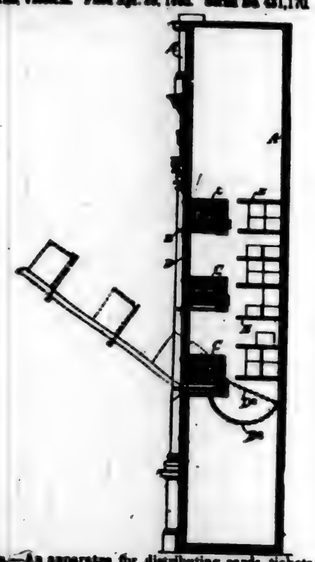
*Claim.*—1. In a bicycle, the combination of a pedal-shaft, provided at one end with bevel gears *b*, *b'*, a driving wheel A, a transmitting shaft *f* geared to the driving wheel, and two bevel gears *c c'*, both mounted upon the transmitting shaft for engaging the bevel gears at one end of the pedal-shaft, said gear *c'* being movable on the transmitting shaft into and out of engagement with the bevel gear *c*, substantially as described.

2. In a bicycle, the double driving mechanism consisting of the bevels *b b* mounted upon the pedal shaft *a'*, the bevels *c c'* mounted upon the transmitting shaft *f*, and clutch formed on the hub of gear *c'* and on the inner face of gear *c*, shifting mechanism engaging with the splined gear, whereby it is shifted longitudinally on the transmitting shaft to change the speed, substantially as specified.

3. In a bicycle, in combination with the transmitting shaft *f*, and the pedal shaft *a'*, the transmitting gears *c c'* engaging respectively with the gears *b b'*, clutch mechanism for locking said gears *c c'* together, and shipping mechanism connected with and adapted to operate the clutch mechanism for moving the gear *c'* to its working or idle position, substantially as specified.



**500,939.** ADVERTISING APPARATUS. THOMAS OSBORNE, Victoria, Victoria. Filed Apr. 29, 1892. Serial No. 431,170. (No model.)



*Claim.*—An apparatus for distributing cards, tickets, or advertisements, consisting of a case provided with a receptacle for holding cards and having a discharge outlet in the front opposite the lowest card, a slide moving in side guides and arranged below said receptacle and outlet and provided with a rubber thumb piece or pusher having an inclined rear face which thumb piece in its normal position rests behind the lowest card in the card receptacle, a rod for operating said slide provided with a knob extending outside of the case, and a spring surrounding said rod for retracting the same, substantially as described.

**500,940.** WAGON-JACK. ISRAEL L. PALMER, Bay Port, Mich., assignor to H. H. Gould, same place. Filed Mar. 28, 1893. Serial No. 468,104. (No model.)



*Claim.*—In a lifting jack, the lever G having under its front end a series of fulcrum notches *g*, in combination with a lifting-clutch connected with said lever by a pivoted loop, a post having the slot *a*, the cross-pivot H in said slot and guide-eyes on the same side, a rod movable in said guide-eyes and adapted to support the weight to be lifted, and a loose detent clutch for the top of the rod, all substantially as shown and described.

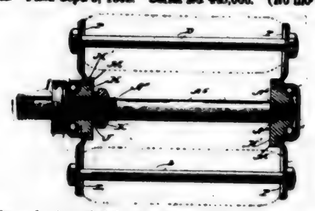
**500,941.** TUBULAR FRAME CONSTRUCTION. ALBERT PERKINS, Chicopee, Mass., assignor to the A. G. Spalding & Brothers, New York, N. Y., and the Lamb Knitting Machine Manufacturing Company, Chicopee Falls, Mass. Filed Sept. 5, 1892. Serial No. 445,088. (No model.)

*Claim.*—1. The combination with two drawn steel tubes making an angle with each other, of a short steel tube of analogous character fitting over the end of one as a sleeve, flanged out upon all sides upon the exterior surface of the other, and rigidly secured to both throughout the extent of the contact surfaces.



2. The combination with two drawn steel tubes making an angle with each other, of a steel thimble of the same character as the tubes passed over the end of one, flanged out upon the surface of the other, and brazed to both.

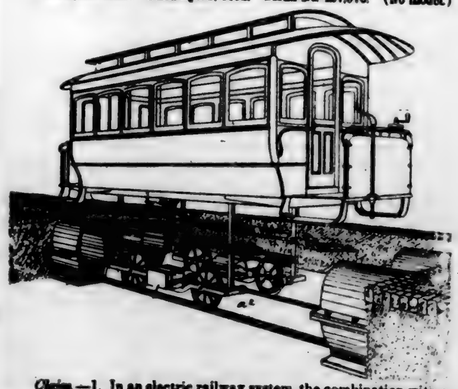
**500,942.** DUST-PROOF CYCLE-PEDAL. ALBERT PERKINS, Chicopee, Mass., assignor to the A. G. Spalding & Brothers, New York, N. Y., and the Lamb Knitting Machine Manufacturing Company, Chicopee Falls, Mass. Filed Sept. 5, 1892. Serial No. 445,088. (No model.)



*Claim.*—1. A pedal having its two bearing cones oppositely turned and between the end bars, end bars forming the opposing bearings for the balls, balls interposed between said end bars and cones, respectively, and fixing the end bars with reference to longitudinal motion upon the pedal axle, soft washers resting against the faces of the end bars and surrounding the passages to the balls, and the collar and flanges carried by the axle and resting against said washers to hold them against the end bars.

2. The combination with the pedal shaft bearing the pedal, of the collar fixed upon the shaft outside the inner end bar, the threaded cones working upon the shaft between the end bars and provided with the circumferential flanges, and the soft washers interposed, respectively, between the end bars and said flanges and between the end bars and said collar.

**500,948.** ELECTRIC-RAILWAY SYSTEM. FREDERICK S. PERRIN, Lynn, Mass. Filed Apr. 2, 1892. Serial No. 427,570. (No model.)



*Claim.*—1. In an electric railway system, the combination with a car, of two narrow elongated frames rigidly attached to the car and projecting downwardly therefrom, two conduits below the surface of the ground, a rail in each conduit, a wheeled truck in each conduit and supporting the car through the said frames, and an electric motor carried by each of said trucks, substantially as and for the purposes set forth.

2. The combination with an underground conduit, having a narrow longitudinal slot, of two shutters pivoted below said slot, one [illegible]

each side thereof, each of said shutters having an arm projecting below the pivotal point,

3. In an electric railway system, the combination with a car and an underground conduit having a narrow longitudinal slot, of running gear located within the conduit and connected with the car, shutters pivoted within said conduit and having extensions below their pivotal points and means connected with the car for operating upon the shutters above or below their pivotal points to open and close them, as set forth.

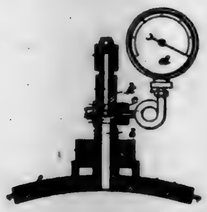
4. In an electric railway system, a car supported upon uprights extending through slots in the road bed and fixed to suitable running gear below the slots, pointed frames secured to said uprights and shutters or jaws below the slot adapted to be opened and closed by said pointed frames, substantially as described.

5. In an electric railway system, a conduit, a slot therein, shutters or jaws pivoted within said conduit and adapted to open and close said slot, a car, upright supports therefor, running gear upon which said uprights are secured, a motor on said running gear, horizontally disposed wedge-shaped frames, one above the other, adapted to open and close said pointed shutters or jaws in the passage of said car, said running gear, motor, frames, and shutters or jaws being inclosed by said conduit, substantially as described.

6. In an electric railway system, the combination of an underground conduit and shutters or jaws formed on curved arms which are pivoted to fixed supports at points below the shutters, portions of said arms projecting above and portions below the pivots, an operating device located above the pivots and another operating device below the pivots, whereby the shutters may be opened and closed as set forth.

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**500,944. PNEUMATIC TIRE.** GEORGE PICKEL, Berlin, Germany. Filed Dec. 3, 1892. Serial No. 453,979. (No model.)



*Claim.*—1. In combination with a pneumatic tire, an inflating tube secured to the tire, a transverse rotatable plug constructed to fit into a suitable aperture of the inflating tube, and a valve constructed to move in a transverse bore of the plug, the said plug being provided with a shoulder adapted to form a seat for the valve, substantially as shown and described.

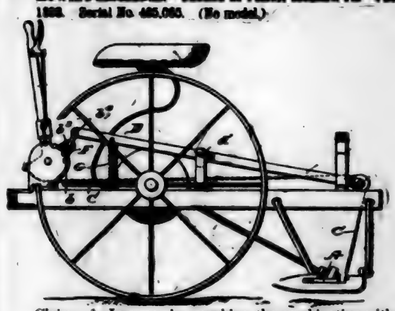
2. In combination with a pneumatic tire, an inflating tube secured to the tire, a transverse plug capable of being turned within a suitable aperture of the said inflating tube, the bore of the inflating tube being of different diameters on opposite sides of the said transverse plug, and the bore of the plug being likewise made in two portions of different width, corresponding with the width of the bore of the inflating tube, and a valve freely movable in the wider portion of the bore of the transverse plug, the said plug being provided with a shoulder adapted to form a seat for the valve, substantially as described.

3. In combination with a pneumatic tire, an inflating tube secured to the tire, a transverse rotatable plug constructed to fit into a suitable aperture of the said inflating tube, the plug having a transverse bore and a longitudinal bore communicating therewith, a valve freely movable in the transverse bore of the plug, and a pressure-gage communicating with the longitudinal bore of the plug, the said plug being provided with a shoulder adapted to form a seat for the valve, substantially as described.

4. In combination with a pneumatic tire, an inflating tube secured to the tire and having its longitudinal bore made in two portions of different diameters, a transverse plug capable of being turned within a suitable aperture of the said inflating tube, the plug having a transverse bore made in two portions corresponding in width with that of the bore of the inflating tube, and a longitudinal bore communicating with the wider portion of the transverse bore, a valve freely movable in the wider portion of the said transverse bore, the plug being provided with a shoulder adapted to form a seat for the valve, and a pressure gage communicating with the longitudinal bore of the plug, the said plug being provided with a shoulder adapted to form a seat for the valve, substantially as described.

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**500,945. MECHANISM FOR RAISING THE CUTTER-BARS OF MOWING-MACHINES.** GEORGE H. PRATT, McLean, Pa. Filed Mar. 4, 1893. Serial No. 465,065. (No model.)



*Claim.*—1. In a mowing machine, the combination with the cutter-bar, a lever and chain for elevating the cutter-bar, of a movable support provided with a guide pulley for the said chain to pass over, and having connection with the said lever to be actuated thereby, substantially as set forth.

2. In a mowing-machine, the combination with the cutter-bar, a lever and chain for elevating the same, of a pivoted support provided at one end with a guide-pulley for the said chain to pass over, and having its other end connected with the said lever, substantially as and for the purpose described.

3. In a mowing-machine, the combination with the cutter-bar and a movable support connected with the said cutter-bar, of a lever having independent connection with the cutter bar and with the said movable support and constructed to simultaneously actuate the cutter-bar and the movable support, substantially as and for the purpose specified.

4. In a mowing machine, the combination with a cutter-bar, a movable support carrying a guide-roller, and a chain, of a lever having a segment provided with a projection at one end to receive the said chain and having a lug at the opposite end to form means of connection for said movable support, substantially as set forth.

5. In a mowing-machine, the combination of a pivoted support embraced on both sides by the standard to which the said support is pivoted, a guide at the outer end of the support, a guide-pulley, a chain passing over the guide-pulley and connected with the cutter-bar, and a lever having independent connection with the said chain and the support, substantially as and for the purpose specified.

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**500,946. HAILLESS HORSESHOE.** SILAS PRIDEN, Los Angeles, Cal., assignor of one-half to George Stranbaugh, same place. Filed Oct. 17, 1891. Serial No. 409,067. (No model.)



*Claim.*—1. The combination with a main and a supplemental shoe, of straps having a pivotal connection with the latter shoe, and having their upper ends provided with hooks, a clasp having eccentric slots in which the said hooks work, and a bar carried by the clasp for locking the hooks within said slots, substantially as described.

2. The combination with a main and a supplemental shoe, of straps having a pivotal connection at their lower ends with the latter shoe, and having their upper ends provided with hooks, a clasp plate having eccentric slots in which said hooks work, a catch bar pivotally secured to the clasp-plate, and engaging teeth formed on said plate, substantially as described and for the purpose set forth.

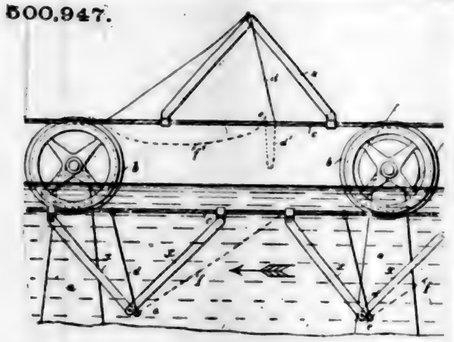
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**500,947. APPARATUS FOR OBTAINING MOTIVE POWER FROM RIVER-CURRENTS.** ALFRED A. RAUBOLD, Grebin, near Plaun, Germany. Filed June 25, 1892. Serial No. 437,902. (No model.) Patented in Germany Jan. 19, 1892, No. 65,419; in France May 26, 1892, No. 221,594, and in Belgium June 3, 1892, No. 100,005.

*Claim.*—In combination, the pulleys, the endless ropes the flexible paddles secured thereto, the rods *c* carried by the lower edges of the said paddles, the stays, *f* and the frame work *x*, *x*, clamped to the ropes and serving to support the rods *c*, substantially as described.

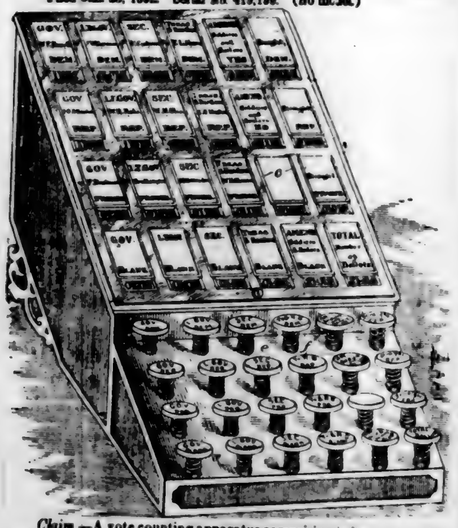


**500,947.**



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**500,948. VOTE-COUNTING APPARATUS.** EDWIN G. RICHARDS, Sharon, Mass., assignor of one-half to Henry L. Harnmore, same place. Filed Jan. 25, 1892. Serial No. 419,199. (No model.)



*Claim.*—A vote counting apparatus comprising in its construction a casing having its upper surface inclined to form two banks, one higher than the other, the upper bank being provided on its upper side with devices arranged in a plurality of rows indicating the several offices to be filled by ballot and the second or lower bank having a plurality of keys corresponding in number and arrangement and the names of the offices with the indicating devices and connected therewith, both of said banks being visible over their entire surfaces from one point of view, substantially as described.

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**500,949. BREECH-LOADING GUN.** JOSEPH RIDER, Newark, Ohio. Filed Feb. 6, 1893. Serial No. 461,089. (No model.)



*Claim.*—1. A frame for a double barreled break down gun, composed of a single piece of metal, and having in connection with the recoil shoulder, top and side walls, a pendent partition *b* centrally located and extending from top to bottom and rearwardly equidistant with the side walls or nearly so, whereby a separate chamber is formed for the reception of each of the hammers and its adjuncts, substantially as shown and described.

2. The hammer H provided with the laterally projecting tumbler and a cocking lever rigidly secured to the tumbler at the opposite side from the hammer, whereby, when the nose of the hammer is in line with the center of the barrel, the cocking lever is brought near the center of the frame as shown and described.

3. The combination in a tip barrel gun of the barrels provided with a lug *d* having the pin *i* or similar projections at its sides, with the hammers H provided with the cocking arms *a'*, the said parts being arranged in relation to each other substantially as shown and described, whereby, when the barrels are tipped the pin is caused to first cock the hammers, and when cocked to bear against the front ends of the arms *a'*, as set forth.

4. The combination of the hammer provided with the laterally projecting tumbler N having a notch *j* above its axis, the sear *r* and trigger *t* connected by an articulated joint as shown, and the flat bowed spring S having its front end engaged in the notch of the tumbler and its rear end bearing against a shoulder on the trigger above or in rear of its axis, all arranged and operating substantially as shown and described.

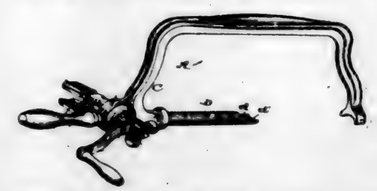
5. The thumb lever L provided with the hub A' having a recess *r'* in its side, in combination with the sliding latch I provided with a rearwardly extending arm carrying a tooth or projection *e* arranged to engage in said recess of the hub, and a spring arranged to operate on the hub and throw the latch forward to lock the barrels when the lever is released, as set forth.

6. The thumb lever L provided with a hub having an inclined shoulder *g'* formed thereon, in combination with a spring *n'* having its end inclined and arranged to bear on said inclined shoulder, substantially as and for the purpose set forth.

7. In combination with the safety pin *p* arranged to lock the triggers, the sliding bar *m* provided with the front extension *m'*, and the sliding latch I arranged to bear against the extension *m'* and automatically move the safety pin back to the unlocked position by the movement of the thumb lever to unlock the barrels, or by the closing of the barrels, substantially as shown and described.

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**500,950. COMBINED WRENCH AND WHEEL-LIFTER.** JAMES ROBERTSON, Perth, Canada, assignor of one-half to Anslow Barrington Rudd and Henry H. Nelson, same place. Filed Apr. 18, 1893. Serial No. 470,881. (No model.)



*Claim.*—1. A device of the character described consisting of an arched frame having a bearing member at its outer end, a spindle projected inward from its opposite end, such end terminating in an outwardly extending handle portion, said handle end having a transverse socket-like bearing, and a rotary wrench mechanism journaled in such socket, including nut clamp members, all arranged substantially as shown and for the purposes set forth.

2. An improved implement for the purposes described, comprising an arched like frame, having a bearing member *b* at one end, an arm C at its opposite end having an inwardly extending spindle D, an outwardly extending handle portion E and a socketed bearing arranged between the spindle and handle portions and transversely thereto, a spindle G held to rotate in such bearing, clamp members adjustably held therein, a crank handle, and an adjusting nut adapted to secure such handle and adjust the clamp members, all arranged substantially as shown and described.

3. In combination with the frame A, having a handle E and a socket bearing F, a wrench mechanism, comprising a sleeve G having a circular portion fitting the socket, a squared projecting portion at one end, and a laterally flared mouth at its opposite end, a nut clamp J fitting within such sleeve, and formed with spring clamp members *j*, terminating in a threaded shank held to project through the squared end of the sleeve, the crank handle H and the nut L all arranged substantially as shown and for the purposes described.

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**500,951. BELL.** EDWARD D ROCKWELL, Bristol, Conn. Filed July 14, 1892. Serial No. 440,027. (No model.)

*Claim.*—1. In bell mechanism, the combination with the gongs, of the frame piece located between the same, and provided with diametrical openings, so as to set over the handle of the bicycle, and internal mechanism for sounding the gong, operated by a wheel extending through a slot in the frame piece, substantially as specified.

2. The combination in a bicycle bell, of the frame piece having diametrical openings through which the handle bar passes, the gongs located on each side thereof, the toothed wheel journaled in bearings in the frame and extending through a slot in the periphery of the frame piece, and a train gearing with said toothed wheel, and with a striker carrier, the gongs and frame piece serving to conceal the internal mechanism piece, substantially as specified.



3. In bell the combination with a frame-piece adapted to carry a gong and bell mechanism, of semi-cylindrical stay pieces within the gongs united to the frame-piece on opposite sides, and adapted to secure it in place upon a bicycle handle-bar, or like support, substantially as and for the purpose specified.

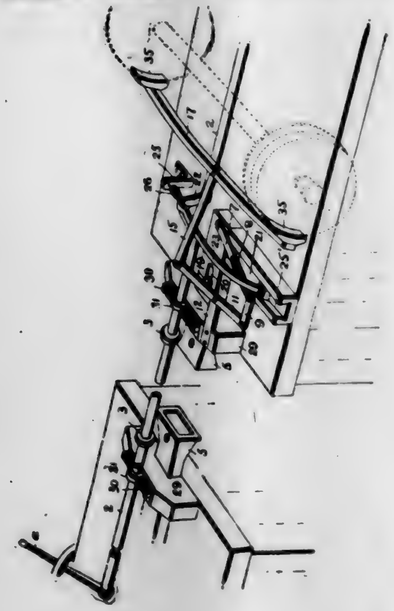
4. In a bell mechanism the combination with the frame-piece adapted to carry a gong and suitable sounding mechanism, of a stay-piece on one end of the frame-piece, bifurcatious on the other adapted to receive a handle-bar, or like support, located between the gongs of another stay piece and a yoke and also located between the gongs adapted to fasten the other stay piece to the bifurcations of the frame, substantially as and for the purpose specified.

5. In a bell the combination with a frame piece and gongs, of a striker carrier and striker thereon, and a continuous lever consisting of a cog wheel projecting from the side of the frame, and operatively connected with the carrier to drive it, substantially as and for the purpose specified.

6. In a bell the combination with a frame and gongs thereon on opposite sides, of striker carriers and striker adapted to sound the gongs, of a continuous lever consisting of a cog wheel projecting from the side of the frame, and mechanism connecting said lever with the striker carriers to operate them, substantially as and for the purpose specified.

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**500,952. CAR-BRAKE.** FREDRICK RORDIGER, Nashville, Tenn., assignor to Susan V. McCormick, same place. Filed Jan. 31, 1893. Serial No. 460,378. (No model.)



*Claim.*—1. The combination with a brake beam, and a sliding draw bar, of the lever 11 pivoted between its ends and having one end connected with the said brake beam, and the lever 7 having its outer end connected with the other end of the said lever 11, and having its inner end connected to the said draw bar, and having the fulcrum between the said ends, substantially as and for the purpose described.

2. The combination with a brake beam, and a sliding draw bar, of the sliding block 21, lever 7 fulcrumed between its ends on the said block and having one end connected with the draw bar, and the lever 11 arranged approximately parallel with the lever 7 and having one end connected therewith, and having its other end connected with the said brake beam, substantially as described.

3. The combination with a brake beam, and a sliding draw bar, of the sliding block 21, lever 7 fulcrumed between its ends on the said block and having one end connected with the draw bar, the lever 11 arranged approximately parallel with the lever 7 and having one end connected therewith, and having its other end connected with the said brake beam, the bar 2 having crank portion 22 and the rod 23 connecting the said crank with the said sliding block, substantially as described.

4. The combination with a system of brake levers attached to each car of a train, of a rod journaled lengthwise of the car and having a crank portion in connection with and adapted to actuate the said brake levers on being rotated, and having its ends extended and constructed to match with like ends of corresponding rods on the adjacent cars, to cause the said rods of the several cars to turn together, and rings 3 on the extended ends of the said rods substantially as set forth.

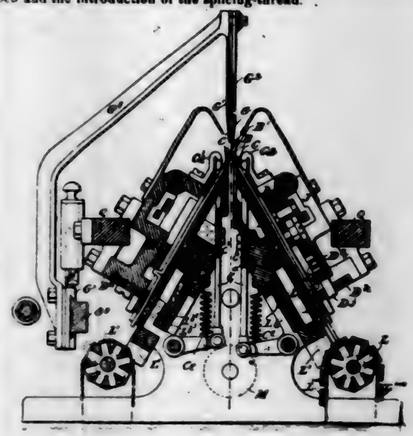
5. The combination with a system of brake levers attached to each car of a train, of bearings at the ends of the cars adapted to move laterally, springs on each side of the said bearings to normally hold them in a yielding position, and a rod journaled lengthwise of the car and having connection with and adapted to actuate the said brake levers on being rotated, and having its ends extended and constructed to match with the corresponding ends of the rods on the adjacent cars, to cause the said rods of the several cars to turn together, substantially as set forth.

6. The combination with a system of brake levers, attached to each car of a train, of a rod journaled lengthwise of the car and having connection with and adapted to actuate the said brake levers on being rotated, and having its ends extended and constructed to match with the corresponding ends of the rods on the adjacent cars, to cause the said rods of the several cars to turn together, and rings on the ends of the said rods to embrace the free ends of the adjacent rods, substantially as and for the purpose described.

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**500,953. STRAIGHT-KNITTING MACHINE.** WILLIAM T. ROWSETT, Leicester, England. Filed July 11, 1892. Serial No. 439,637. (No model.) Patented in England Aug. 1, 1891, No. 13,126, and in France June 30, 1892, No. 222,711.

*Brief.*—Besides the results mentioned in the claims, the jacquard is constructed to cause tuck-stitches to be formed upon the fashioning-needles, and in making the two rib-courses at the toe of the stocking, and also at the side whenever a new needle is brought into work, the fabric is made stiffer. The Jacquard barrels are brought up to the needles by slides having inclined slots which are actuated by stops on the sliding frame, three of the stops being controlled by pattern devices, such devices also controlling the shogging of the rear needle-bed and the introduction of the splicing-thread.





*Claim.*—1. The combination of two parallel needle beds, a thread layer, means for operating it, cams for raising and for lowering the needles reciprocated to and fro along each needle bed, the lowering cams being so formed as to lower the needles out of reach of the raising cams, a continuous chain of Jacquard cards for each needle bed, mechanism for bringing one of such cards against the ends of the needles just before a course of work is made on that bed so as to raise such of the needles as are to be brought into work and bring them within reach of the raising cam-control mechanism which control whether the Jacquard mechanism shall come into action or remain out of action, and means for holding the advancing down-throw cam above the needles raised into action by the jacquard.

2. The combination of two parallel needle beds, a thread layer, means for operating it, cams for raising and for lowering the needles reciprocated to and fro along each needle bed, the lowering cams being so formed as to lower the needles out of reach of the raising cams, a Jacquard barrel with a continuous chain of cards passing over it below each needle bed,—mechanism for raising each Jacquard barrel against the ends of the needles of the bed above it just before a course of work is made on that bed,—mechanism for giving a partial turn to each Jacquard barrel as it is moved back away from the needles, control mechanism for bringing into action or not bringing into action the Jacquard barrels at each course and means for holding the advancing down-throw cam above the needles raised into action by the jacquard.

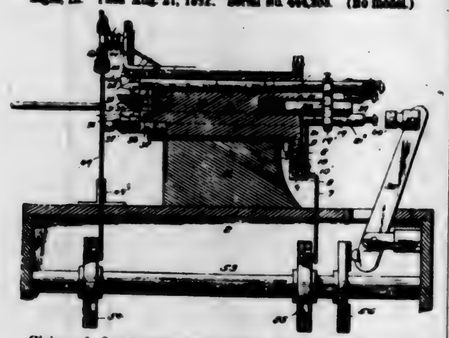
3. The combination of the two parallel needle beds one capable of being moved endwise to and fro, the thread layer, means for operating it, the cams for raising and lowering the needles; the lowering cams being so formed as to lower the needles below the reach of the raising cams, the Jacquard mechanism for raising needles in either bed, mechanism for shifting the bed endwise, the pattern chain for controlling its movements at the times required, so as when the work is to be widened to enable a needle which is to be brought into work at the end of one bed to be made to rise between the last two end needles in the other bed to have the thread with which a course of work is made on the needles of that bed laid across it, and means for holding the advancing down-throw cam above the needles raised into action by the jacquard.

4. The combination of the two parallel needle beds, one capable of being moved endwise to and fro, the thread layer, means for operating it, the cams for raising and lowering the needles, the lowering cams being so formed as to lower the needles below the reach of the raising cams, the Jacquard mechanism for raising the needles in either bed, and mechanism for retaining a splicing thread or allowing it to pass with the main thread into the work so as to splice or thicken the work produced either on the one bed or the other or on some of the needles on one bed and some on the other, and means for holding the advancing down-throw cam above the needles raised into action by the jacquard.

5. The combination of two parallel needle beds, a thread layer, means for operating the thread layer, cams for raising and lowering the needles means for operating them in such manner that work is first produced on the needles of one needle bed and then on the other so as to produce tubular work, a spring upon the thread layer having an eye for a thickening thread led through the same thread layer, the rocking lever engaging the spring for nipping and holding this thickening thread or allowing it to run free, and automatic mechanism for controlling the position of the lever to make it hold or release the thread at the times required, substantially as described.

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**500,954. JEWEL-SETTING MACHINE.** WILLIAM ROUNDQUIST, Elgin, Ill. Filed Aug. 27, 1892. Serial No. 444,303. (No model.)



*Claim.*—1. In a jewel setting machine, the combination of a jewel feeder, a revoluble carrier provided with a longitudinally slotted tube, and with a series of longitudinally movable spindles carrying a series of implements, a coiled spring arranged in the longitudinally slotted tube, and fingers attached to said spindles and extending into the longitudinally slotted tube beyond the end of the coiled spring therein, substantially as described.

2. In a jewel setting machine, the combination of a jewel feeder, a revoluble carrier provided with a longitudinally slotted tube and a series of longitudinally movable spindles arranged concentric with said tube and carrying a series of implements, a coiled spring fitted in the tube, and fingers adjustably mounted on the spindles and having their free ends inserted in the longitudinally slotted tube in rear of the spring therein, substantially as described.

3. In a jewel setting machine, the combination of a jewel feeder, a revolvable carrier provided at one end with a longitudinally slotted tube, a series of longitudinally movable spindles carried by the cylinder and provided with a series of implements, a spring arranged within the tube, collars secured on the spindles by set screws and each provided with a projecting finger which enters the longitudinally slotted tube in rear of the spring therein, substantially as described.

4. In a machine of the character described, the combination of a revoluble carrier, a series of longitudinally movable spindles carried by the carrier and provided at their forward ends with suitable implements, a thrust lever adapted to move the spindles longitudinally, as they are successively brought into line therewith, a spring for returning the spindles to their normal position, and auxiliary cushion springs arranged between the rear ends of one or more of the spindles and the thrust lever, substantially as described.

5. In a jewel setting machine, the combination of a jewel feeder, a carrier provided with an annularly peripherally notched flange and a series of longitudinally movable spindles carrying suitable implements, a casing 9 loosely supported on the flange on the carrier, a spring pressed dog arranged within said sliding casing, an oscillating lever connected with said casing, and a detent fulcrumed at one side of the carrier and provided with a laterally projecting lug adapted to take into the notches in the flange on the carrier, substantially as and for the purpose described.

6. In a jewel setting machine, the combination of a jewel feeder, a carrier provided with an annular flange, having a series of notches formed in its periphery, and a series of longitudinally movable implements carrying spindles, a casing 9, loosely supported on the annular flange of the cylinder, a spring pressed dog arranged in said casing, a locking detent fulcrumed at one side of the carrier and adapted to take into the notches formed in the periphery of the flange, a spring for normally holding the detent out of engagement with said notches, and an oscillating lever connected with the casing 9, and provided with a projecting arm which extends across the locking detent at one side of its fulcrum, substantially as described, for the purpose specified.

7. In a machine of the character described, the combination of a revoluble carrier, a series of longitudinally movable implement carrying spindles carried by and extending beyond the rear end of the carrier, sleeves adjustably connected to and extending rearwardly from one or more of said spindles, coiled springs arranged within said sleeves and bearing against the rear ends of the spindles therein, and means for moving the implement carrying spindles longitudinally, substantially as and for the purpose described.

8. In a jewel setting machine, the combination of a jewel feeder, a revoluble carrier, a series of longitudinally movable spindles carrying suitable implements mounted in laterally movable blocks, a fixed pin attached to the cylinder and extending parallel to the spindles, and means for holding the cylinder against rotation, substantially as described.

9. In a jewel setting machine, the combination of a revoluble carrier provided with a series of longitudinally movable implement-carrying spindles, a main oscillating feeder arm provided in one face with a longitudinal guide way, and in its other face with an intersecting transverse way, a slide fitted in said longitudinal way and provided in one face with a jewel receiving channel which communicates with the transverse way in the main arm, and means for turning the main arm on its pivot, substantially as described.

10. In a jewel setting machine, the combination of a tubular support, a revoluble carrier fitted in said support and provided with a series of longitudinally-movable implement-carrying spindles, a main oscillating feeder arm provided in one face with a longitudinal guide or way and in its opposite face with a transverse intersecting way, a slide arranged in said longitudinal way and provided with a jewel receiving channel which communicates with the transverse way in the main arm, a spring pressed pin extending into said jewel receiving channel, a movable block fitted in the transverse way in the main arm, a spring arm attached to said arm and extending across the upper end of the block in the transverse way, and means for moving said arm on its pivot, substantially as described.

11. In a jewel setting machine, the combination of an oscillating feeder arm provided with intersecting longitudinal and transverse ways, a jewel carrier arranged in the longitudinal way in the feeder

arm and having an expelling pin arranged in line with the transverse way in said arm, a revoluble carrier provided with a series of longitudinal movable spindles which support implements for forming and finishing a jewel setting, and mechanism for automatically bringing the expelling pin of the jewel carrier into line with one of the spindles and the jewel setting, whereby the said spindle can move the expelling pin longitudinally and force a jewel through the transverse way in the feeder arm and into the setting, substantially as described.

2. In a machine of the character described, the combination with a revoluble carrier provided with a series of longitudinally movable spindles, and implements carried by said spindles and adapted to form and finish a jewel setting, of an oscillating feeder bar, a jewel carrier carried by the feeder bar and adapted to be moved vertically by contact with the work as the expelling pin is brought into alignment with one of the spindles and the jewel setting, whereby as the said spindle is moved longitudinally a jewel will be forced, by the expelling pin, into the setting, substantially as described.

13. In a jewel setting machine, the combination of the axially turning carrier, a jewel carrier, and a series of spindles mounted in said axially-turning carrier, one of said spindles having a pivoted cutter provided with a ratchet and a positive feed mechanism for turning the cutter each time the spindle is reciprocated, as and for the purpose described.

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**500,955. COIN RECEIVER OR TRAY.** WILLIAM A. REED, Malta, Ohio. Filed Jan. 21, 1893. Serial No. 459,166. (No model.)



*Claim.*—1. A coin-receiver or tray having supports at each side, and an elastic band held on edge by said supports, substantially as specified.

2. A coin-tray or receiver having its coin-supports formed of independent rubber bands set on edge, as set forth.

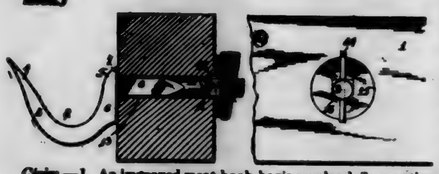
3. A coin-tray or receiver having its coin-supports formed of elastic bands formed independently of each other and detachably supported on edge as set forth.

4. A coin-tray or receiver consisting of a base piece with raised portions having slots, and rubber bands held in said slots, as set forth.

5. A coin-tray or receiver consisting of a base piece with raised portions with slots and coincident slots transversely of the base piece, and removable rubber bands held in said slots edgewise, as set forth.

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**500,956. MEAT-RACK.** FREDERICK GERHARDUS, St. Louis, Mo. Filed June 20, 1892. Renewed May 22, 1893. Serial No. 475,166. (No model.)



*Claim.*—1. An improved meat-hook having a shank 7, a portion 8 of said shank being square, the remaining portion 9 being round, said rounded portion 9 provided with a transverse key-way or slot 10, having its inner side perpendicular, and its outer side downwardly slanting, said slot being adapted to receive and secure a key 14, shoulders 6, formed with a hook 3, said shank 7 being secured to the shoulder 6, and said key 14 being adapted to be forced downwardly into the key-way 10 to hold said shoulder against the front side of the rail 1, and secure the hook in a perfectly rigid position, substantially as set forth.

2. An improved meat-hook having a shank 7, a square portion 8 of which is formed with or secured to the shoulder 6 of the hook 3, and the rounded portion 9 of said shank 7 provided with a key-way 10, a washer 15 provided with a round perforation 16 and adapted to fit over the projecting end of the shank 7, and a key 14 adapted to be forced into its seat in the key-way 10, and the downward movement of said wedge into its seat secures the shoulder 6 against the front side of the rail, and the washer 15 against the rear side of the rail and consequently the hook 3, and the shank 7 in a perfectly rigid position, substantially as set forth.

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**500,957. EARPIECE.** RUDOLF SCHWEIZER, Chicago, Ill. Filed Feb. 28, 1893. Serial No. 463,804. (No model.)

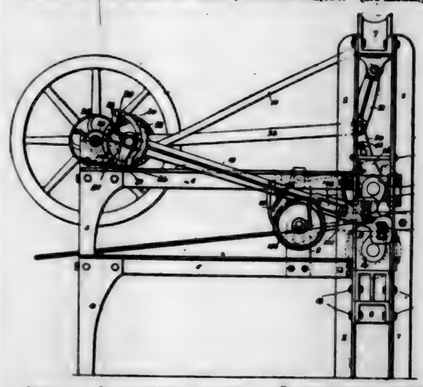


*Claim.*—1. An ear-piece of the kind specified consisting of a perforated disk provided with devices for holding the same upon the receiving instrument of a telephone, the portion of said disk through which the perforation is made being so constructed that it extends inwardly near the diaphragm of the receiving instrument when the ear piece is in place thereon, substantially as described.

2. An ear-piece of the kind specified consisting of a disk having a centrally located projection on one side, and a perforation extending through said disk and projection, substantially as described.

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**500,958. MACHINE FOR CUTTING NAILS.** WILLIAM H. SEVERANCE, Appleton, assignor to the Severance Nail Machine Company, St. Paul, Minn. Filed Nov. 20, 1890. Serial No. 372,087. (No model.)



*Claim.*—1. In a machine for cutting nails, the frame consisting of the detachable uprights 1, the uprights 2, the horizontal frames 5, 6, braces 10, and the feed roll standards 9; substantially as and for the purpose set forth.

2. In a machine for cutting nails, having oscillating cutter stocks, the combination of a frame for supporting the operative parts, with detachable uprights or housings for retaining the boxes of the cutter stocks in position, whereby the cutter stocks can be removed or interchanged with facility and without disturbing the other parts; substantially as described.

3. A machine for cutting nails, having an oscillating bed stock mounted in stationary bearings and provided with two or more cutting knives and an oscillating cutter stock, mounted in reciprocating bearings and provided with two or more cutting knives; substantially as and for the purposes set forth.

4. In a machine for cutting nails, the oscillating bed stock B mounted in stationary bearings and provided with two channels for cutting knives; in combination with the oscillating and reciprocating cutter stock C, mounted in reciprocating bearings and also provided with two channels for cutting knives companions to those in the bed stock B; substantially as and for the purposes set forth.

5. In a machine for cutting nails having an oscillating bed stock and an oscillating and reciprocating cutting stock for carrying the cutting knives, the combination of socket guides arranged in the line of the cutters on one stock, with engaging pin guides arranged in the line of the cutters on the other stock, for the purpose of causing the cutters to register accurately in making a cut; substantially as and for the purposes described.

6. A cutter stock for a machine for cutting nails having a channel or channels for receiving and holding the knives, with enlarged recesses at the ends of the channels for receiving and holding guides; substantially as and for the purposes described.



7. In a machine for cutting nails, cutter stocks B and C having channels for receiving and holding the knives with pin and socket guides contained in enlarged recesses at the ends of the channels; substantially as and for the purposes described.

8. In a machine for cutting nails, the cutter stocks B and C, having the channels 41 and 42 with enlarged ends to receive the position guides 34, the pin guides 39 and the socket guides 40 and retain the same rigidly in position; substantially as and for the purposes set forth.

9. In a machine for cutting nails, the cutter stocks B and C constructed with channels 41 and 42, for receiving and retaining the knives E and E', position guides 34 and pin and socket guides 39 and 40, and provided with double lines of set screws 49; substantially as and for the purposes described.

10. In a machine for cutting nails, the oscillating bed stock B, constructed with strengthening flanges 53, cutter channels 41, 42, the enlarged chambers for receiving and retaining the guides 34, and the channels 41 and 42 for receiving and retaining the knives E and E', in combination with the oscillating and reciprocating cutting stock C, constructed with strengthening flanges 53, the enlarged chambers, the cutter channels 41 and 42, and the concentric shoulders 61; substantially as and for the purpose set forth.

11. In a machine for cutting nails, having an oscillating and reciprocating cutter stock operating in conjunction with an oscillating bed stock, the combination of the reciprocating stock having position guides mounted thereon, with bridges on the sides of the frame or housing having guide ways or recesses therein to guide the cutting stock as it descends to make a cut; substantially as and for the purpose set forth.

12. In a machine for cutting nails, the bridge 36 constructed with the jaws 38, and adjustable guiding gibs 37 and attached to the uprights 1 and 2 of the frame; substantially as and for the purposes set forth.

13. In a machine for cutting nails, the bridge 36 constructed with the jaws 38, and provided with the adjustable gibs 37, in combination with the position guide 34 located in the oscillating and reciprocating cutter stock C; substantially as and for the purposes set forth.

14. In a machine for cutting nails, the bridge 36 provided with the jaws 38, the adjustable guiding gibs 37, and the circular bearing surfaces resting on the cutter stocks B, in combination with the position guides 34, the pin guides 39, the socket guides 40, the oscillating cutter stock B, and the oscillating and reciprocating cutter stock C; substantially as and for the purposes set forth.

15. In a machine for cutting nails, the pin guide 39, constructed with cutaways 45 and 47, inclined surface 48 and pin 43 in combination with the cutter stock B; substantially as described.

16. In a machine for cutting nails, the bed stock B, the pin guides 39, constructed with the cutaways 47, in combination with the cutting stock C and the socket guide 40 constructed with the cutaways 47; substantially as and for the purposes set forth.

17. In a machine for cutting nails, a gang of cutting knives placed edge to edge, having cutaways 57 on their contiguous edges and secured in place longitudinally in a channel in the cutting stock by holding devices bearing upon the outer edges of the end knives; substantially as and for the purposes described.

18. In a machine for cutting nails, the combination of the reciprocating cutter stock C with the toggle lever and adjustable suspension and depressing devices; substantially as and for the purposes described.

19. In a machine for cutting nails, the toggle levers 20, 21, provided with the arm 58, the adjustable shoe 59, and the adjusting plates 67; substantially as and for the purposes set forth.

20. In a machine for cutting nails, the toggle levers 20 and 21 constructed with the arms 58 and 62, and provided with the adjustable shoes 59, having concentric surfaces; in combination with the stirrup 63, the oscillating and reciprocating cutter stock C, the adjustable nuts 66 and the plates 67; substantially as and for the purposes set forth.

21. In a machine for cutting nails, the combination of the crank 22, the connecting rod 23, the toggle levers 20 and 21, the stirrups 63, and the oscillating and reciprocating cutter stock C provided with the position guides 34 and socket guides 40, the guide ways 35 and the oscillating cutter stock B provided with the pin guides 39; substantially as and for the purposes set forth.

22. In a machine for cutting nails, the sheet rack 46, provided with the sheet guides 78, the eccentric surfaces 80 and 81, the concentric surfaces 82, and the adjustable guides 89; substantially as and for the purposes set forth.

23. In a machine for cutting nails, the sheet rack 46 provided with the sheet guides, the eccentric surfaces 80 and 81, and the adjustable guides 89, in combination with the oscillating bed cutter stock B, and bridges; substantially as and for the purposes set forth.

24. In a machine for cutting nails, the sheet rack provided with the adjustable nut guides 89 in combination with the bridges 36; substantially as and for the purposes set forth.

25. In a machine for cutting nails, the combination of the sheet rack 46, the trunnion rod 79, the projection 88, the return spring 110, the stop bolt 132, the eccentric surfaces 80, 81, and concentric surfaces 82; substantially as and for the purposes set forth.

26. In a machine for cutting nails, the sheet rack 46 constructed with the eccentric surfaces 80 and 81, the concentric surfaces 82, the elevated projections 88 and the adjustable nut guides 89; in combination with the bridge 36, the supporting rod 86, the return spring 110, the stop bolt 132 and the oscillating bed cutter stock B; substantially as and for the purposes set forth.

27. In a machine for cutting nails, the sheet rack 46 constructed with the eccentric surfaces 80 and 81, and the concentric surfaces 82 and the adjustable nut guides 89; in combination with the bridges 36 and the bed cutter stock B; substantially as and for the purposes set forth.

28. In a machine for cutting nails, the sheet clamps 111 and 112 in combination with a sheet rack provided with the rods 85 and the eccentric surfaces 80 and 81, whereby the sheet of nail plate is lifted and replaced flat upon the cutters of the oscillating bed stock B; substantially as set forth.

29. In a machine for cutting nails, the cam yoke or shift head 30, consisting of the concentrics 91 and 92 and the shoulders 93 and 94; in combination with the cam 31, shift bar 18 and cutter stocks B, C; whereby a comparatively slow motion in starting and stopping the oscillation of the cutter stocks and their connections is secured; substantially as and for the purposes set forth.

30. In a machine for cutting nails the combination of the shaft 11, flanged and cushioned box 96, stirrup 99, shift bar 18 and cutter stocks B, C; substantially as and for the purpose set forth.

31. In a machine for cutting nails, the shift bar, guiding and buffer box 96 constructed with the half flanges 97 provided with the elastic buffers 98, in combination with the stirrup 99 and cam yoke or shift head 30; substantially as and for the purposes set forth.

32. In a machine for cutting nails, the cam or shifting arm 31 and the shaft 11; in combination with the cam yoke 30, the shift bar 18, the stirrup 99, the buffer box 96, and the elastic buffers 98; substantially as and for the purposes set forth.

33. In a machine for cutting nails, the shift bar 18 provided with the cam yoke 30, the stirrup 99, the shift bar, guiding and buffer box 96, the buffers 98, and the slots 103 and 102; in combination with the cranks 19 and 14 and the cutter stocks B and C constructed and operating together; substantially as and for the purposes set forth.

34. In a machine for cutting nails, the feed lever 60 and pawls 161 and 167, in combination with the sliding box 17, the ratchet wheel 166 and the feed rolls 68 and 69; substantially as and for the purposes set forth.

35. In a machine for cutting nails, the combination of the elastic feed lever 60, the feed stop 164 having an adjusting bolt 165, and the sliding box 17; substantially as and for the purposes described.

36. In a machine for cutting nails, the studs 100 in combination with the frame 2 and the shift bars 18; substantially as and for the purposes set forth.

37. In a machine for cutting nails, the automatic oiling devices consisting of the supports 115 and the oiled substance 114, in combination with the position guides 34 and the pin and socket guides 39, 40; substantially as and for the purposes set forth.

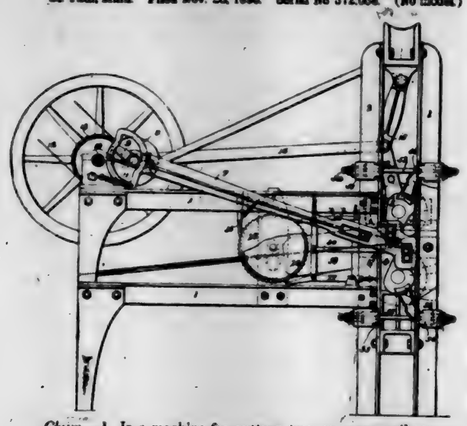
38. In a machine for cutting nails in which a gang of reciprocating knives operate in conjunction with a bed knife or knives to cut a series of nails transversely from a sheet; the arrangement of the reciprocating cutting knives herein-described whereby the end knives have the greatest projection and the central knives the least, the intermediate ones receding gradually from the ends to the middle, so that the edges of the sheet shall be first engaged by the end knives and the cut proceed from the edges to the middle of the sheet; substantially as and for the purposes described.

39. In a machine for cutting nails, having an oscillating bed stock carrying cutting knives and an oscillating and reciprocating cutter stock carrying companion knives; the combination of the cutter stock with the bed stock located slightly inside of the vertical line of the cutter stock; substantially as and for the purposes described.

40. In a machine for cutting nails, the combination of a reciprocating cutter stock having cutting knives and centering guides, with a bed stock located slightly inside of the vertical line of the cutter stock and having cutting knives and companion centering guides secured to the bed stock at an inclination equivalent to the want of alignment of the two stocks; substantially as and for the purposes described.

41. The cutting knives E and oscillating bed stock, in combination with the receiving apron 166 elastically secured in front of the knives, substantially as and for the purposes described.

**500,959.** MACHINE FOR CUTTING NAILS. WILLIAM N. SEVERANCE, Appleton, assignor to the Severance Nail Machine Company, St. Paul, Minn. Filed Nov. 20, 1890. Serial No. 372,058. (No model.)



*Claim.*—1. In a machine for cutting two or more nails transversely from a sheet at each cut, the combination of a reciprocating cutter, with intermittently operative feeding rolls for feeding and holding the sheet, and retracting devices for reversing the rolls at the completion of each cut: substantially as and for the purposes described.

2. In a machine for cutting nails the combination of a reciprocating cutter with a feeding mechanism for feeding the sheet and operated by the upward movement of the cutter, and devices for reversing the feeding mechanism operated by the downward movement of the cutter upon the completion of the cutting stroke for the purpose of retracting the sheet and preventing the knives from dragging over its edge when being retracted; substantially as and for the purposes described.

3. In a machine for cutting nails the combination of the reciprocating box 14, the plunger 40, pawl 27, ratchet wheel 29, and the sheet feeding rolls; substantially as and for the purpose set forth.

4. The combination of the box 14, plunger 40, pawl 27, ratchet wheel 29, arm 24, hook 25, lever 30, and bar 31; substantially as and for the purposes described.

5. The combination of the box 14, lever 34, pawl 36, pawl 67, trip 68, and ratchet wheel 28; substantially as and for the purposes described.

6. In a machine for cutting nails the combination of feeding mechanism for feeding and holding the sheet; a stop device for intermittently engaging and holding the feeding mechanism from backward movement; and a stop device for intermittently engaging and holding the feeding mechanism against forward movement; substantially as and for the purposes described.

7. The combination of the reversely toothed ratchet wheels 28, 29, pawls 67, 27, and the feeding rolls; substantially as and for the purposes described.

8. In a machine for cutting nails in which a sheet of nail plate is fed to the cutters, the combination of transverse feeding rolls, with oscillating cutter stocks and cutters, a heating furnace arranged between the feeding rolls and cutters and having a tapered or pointed end which extends between the cutter-stocks, nonconducting chambers arranged outside of the heating chamber and extending the entire length of the same, whereby the operative parts of the machine are protected from the heat of the furnace, and burners extending through the sides of the furnace into the interior heating chamber; substantially as and for the purposes described.

9. In a machine for cutting nails a sheet heating furnace having a heating chamber 61, and sheet guides 59, 78; substantially as and for the purposes described.

10. In a machine for cutting nails having oscillating cutter stocks the combination of the cutter stocks with buffer arms oscillating therewith and elastic buffers mounted on the frame of the machine to receive the impact of the buffer arms; substantially as and for the purposes described.

11. The combination of the oscillating cutter stocks provided with cranks for oscillating the same, buffer arms mounted thereon and elastic buffers for receiving the impact of the buffer arms at the end of the oscillating movements of the stocks; substantially as and for the purposes described.

12. In a machine for cutting nails the combination of the oscillating cutter stocks, the cranks for operating the same, buffer arms [illegible] the cranks and elastic buffers mounted on the opposite [illegible] housing to receive the impact of the buffer arms; substantially as and for the purposes described.

13. In a machine for cutting nails, the combination of the oscillating cutter stocks, cranks for operating the same, buffer arms 48 mounted on the cranks, and adjustable buffers 50; substantially as described.

14. The elastic buffer 50 secured in a buffer case 51 and provided with a face plate 55 and a compression rod 54; substantially as and for the purposes described.

15. The combination of the elastic buffer 50, the case 51, and the adjustable buffer follower screw 57; substantially as and for the purposes described.

16. The combination of the elastic buffer 50, the case 51, face plate 55, compression rod 54, and adjustable follower screw 57; substantially as and for the purposes described

17. In a machine for cutting nails a cutting knife secured in its retaining socket by means of adjusting set screws and with its face bearing against or upon a detachable pivotal piece, which in turn bears upon the wall of the retaining socket; substantially as and for the purposes described.

18. In a machine for cutting nails the combination of a removable knife secured in a retaining channel or socket with a face plate having a pivotal rib bearing against the wall of the retaining channel; substantially as and for the purposes described.

19. In a machine for cutting nails, the combination of a knife adjustably secured in a recessed or channeled holder, by set screws bearing on opposite sides, having a rocking fulcrum; in combination with a seat or groove for the fulcrum in the adjacent wall of the channel; substantially as and for the purposes described.

20. In a machine for cutting nails, the face plate 70 provided with a half-round piece or fulcrum 71, in combination with the cutting knife, the set screws 21 and 22 and the walls of the channel 20, one of which is provided with a grobve corresponding with the half-round piece 71; substantially as and for the purposes described.

21. In a machine for cutting nails, the stop pawl 67, engaging the teeth of the ratchet wheel, 28, in combination with the stop pawl, 27, engaging the reverse ratchet wheel 29 of the nail plate feeding device; substantially as and for the purposes set forth.

**500,960.** FINISHING-TOOL FOR GLASS BOTTLES. THOMAS E. SHELDON, Marion, and MIRABEAU W. LYNE, Indianapolis, Ind. Filed June 13, 1892. Serial No. 436,506. (No model.)



*Claim.*—1. In a tool for finishing bottles, a spindle carried on a central arm, and interior dies carried on spring arms and lying immediately above such spindle, substantially as shown and described.

2. In a tool for finishing bottles, a spindle carried on a central arm, interior dies carried on spring arms and lying immediately above such spindle, with their backs against such central arm, substantially as shown and described.

3. In a tool for finishing bottles, a spindle carried on a central arm, and interior dies carried on spring arms and lying immediately above such spindle with their backs against such central arm, and suitable collars immediately above and integral with such interior dies, substantially as shown and described.

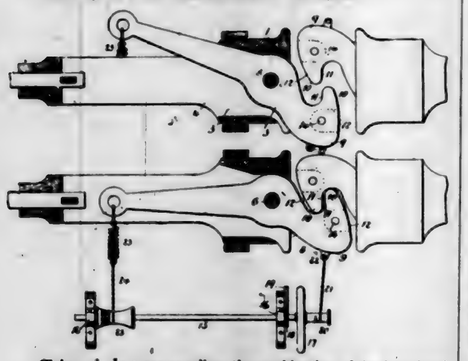


4. In a tool for finishing glass bottles, a pair of spring jaws carrying on their lower ends exterior finishing dies, a central arm carrying a spindle, interior dies carried on spring arms, and lying in recesses above the spindle, and adapted to be sprung out upon the bringing together of the spring jaws, whereby such heads will extend out beyond the face of the spindle proper, substantially as shown and described.

5. In a tool for finishing glass bottles, a pair of spring jaws carrying on their lower ends exterior finishing dies, a central adjustable arm carrying on its lower end a spindle between and in line with such dies, spring arms carrying on their lower ends interior dies having a collar above the same, such interior dies adapted to fit against the central arm above the spindle, and screw pins with nuts working thereon connected to each of the spring arms, and working loosely through openings within the spring jaws, whereby upon closing such dies the heads will be forced outward, and upon releasing the same they will be drawn inward, substantially as shown and described.

6. In a tool for finishing glass bottles, a pair of jaws connected together by a spring, exterior finishing dies secured to the lower ends of such jaws, an adjustable rod working loosely through such spring and retained in position by nuts, a spindle or plug mounted on the lower end of an extension of such rod and in line with and between the finishing dies, interior dies formed on the ends of spring arms secured to the central rod and adapted to fit in the recess above such spindle, screw pins carrying nuts thereon each working loosely through a spring jaw, and through the central arm and one of the spring arms of the spindle and secured to the opposite spring arm, the heads of the tapering spindle adapted to be forced outward beyond the line of such spindle as the spring jaws are brought together, and collars above such interior dies adapted to stop the movement of such jaws, substantially as shown and described

**500,961.** CAR-COUPLING. BALOS F. SHELDON, Saginaw, Mich. Filed Aug. 15, 1892. Serial No. 443,177. (No model.)



*Claim.*—1. In a car coupling, the combination of the draw head provided with a longitudinal chamber having openings in its lateral sides, with a draw bar within the chamber and secured by a vertical pivot passed through the outer end of the draw head and bar, and provided with an outwardly extending short arm projecting from said chamber and provided on its inner side with a laterally extending clutch, and having an inwardly extending long arm, a spring secured to the long arm for actuating the bar to engage the clutch, and means substantially as described for releasing the spring and for disengaging the clutch, substantially as described.

2. In a car coupling, the combination of a draw head having a longitudinal chamber and carrying a draw bar 5, having a short arm 6, extending beyond the draw head and provided with a clutch head 9, and clutch 10, and having an inwardly extending long arm 7, with a shaft 15, mounted in bosses secured to the car, and carrying on its outer end a spool 20, and on its inner end a spool 23, a chain 21, with one end secured to and leading from the under side of the spool 20, and with its opposite end secured to the outer side of the clutch head, a chain 24, having its outer end secured to and leading from the upper side of the spool 23, a spring 25, secured by one end to the inner end of said chain 23, and with its opposite end secured to the inner end of the arm 7, and means for revolving the shaft and for retaining it against revolution, substantially as set forth.

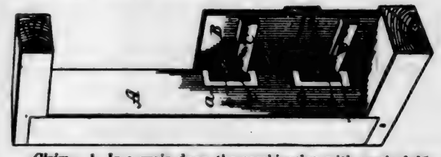
3. The combination in a car coupling of the draw head 1, provided with a body 2, and chamber 3, a draw bar 5, within the chamber and secured by a vertical pin 6, and provided with an outwardly extending short arm 8, having a clutch head 9, and clutch 10, and provided with an inwardly extending long arm 8, carrying a spring 25, upon its inner end a shaft 15, journaled beside the drawhead, and carrying a spool 20, on its outer end and a spool 23, on its inner end, a chain 21, with one end secured to the draw head and its opposite end wound from the under side upon and secured to the spool 20, a chain 24, with one end wound from the upper side upon and secured to the spool 23, and with its opposite end secured to the spring 25, a hand wheel 17, and ratchet wheel 18, mounted on the shaft, and a pawl 19, for engaging with the ratchet wheel for retaining the shaft against revolution, substantially as set forth.

**500,962.** HAT. ISABELLA SHEPARD, Niles, Mich. Filed Nov. 5, 1892. Serial No. 451,048. (No model.)



*Claim.*—As an improved article of manufacture a hat provided with a fabric strip having its lower edge exposed and formed with a series of loops; whereby a hair pin may be passed through the strip loops at any desired point, substantially as set forth.

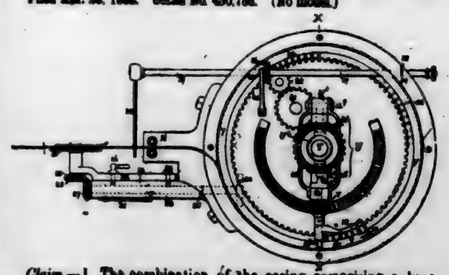
**500,963.** GRAIN-DOOR. JOHN SHERIDAN, Quincy, Ill. Filed Aug. 30, 1892. Serial No. 444,566. (No model.)



*Claim.*—1. In a grain door, the combination with vertical door posts having L-shaped openings therein, the upper portions of which are horizontal and extend to one face or edge of each door post, of removable door sections constructed to overlap each other at adjacent edges and provided with projections adapted to enter the openings in the posts, substantially as set forth.

2. The combination with two door posts having recesses therein, of socket pieces in said recesses, a grain door made in sections, a cross bar extending from end to end of each section, and ears at the ends of said cross bars adapted to enter said socket pieces, substantially as set forth.

**500,964.** NEEDLE-OPERATING AND REED-DENT-SEPARATING DEVICE FOR MACHINES FOR DRAWING IN WARP-THREADS. LEWIS P. SHERMAN, Biddeford, assignor to George Moore, Berwick, Me. Filed Apr. 20, 1892. Serial No. 430,786. (No model.)



*Claim.*—1. The combination of the casing comprising a base plate, a grooved guiding ring 4, a grooved ring confined between the

guiding ring 4 and the base plate, a flexible needle carried by said grooved ring and an oscillated arm guided by said guiding ring and connected to the grooved ring, substantially as specified.

2. The combination of the needle case, a needle and its operating mechanism contained therein a toothed ring guided in said needle case, mechanism for rotating said toothed ring, a reed dent separating disk, and a rack carried by said toothed ring and operatively connected to said reed dent separating disk, substantially as specified.

3. The combination of the needle casing, a toothed ring guided therein, a rack 23 carried by said toothed ring, a reed dent separating disk, a shaft carrying the same, a shaft 25, bevel gears connecting the shaft of the reed dent separator to the shaft 25, and a pinion carried by said shaft 25 engaging with the rack 23, substantially as specified.

4. The combination of the needle case, a frame 26 secured thereto, a rotated shaft 25 carried by said frame, a reed dent separating disk, a shaft 29 carrying the same, bevel gears connecting said shaft 29 to the shaft 25, and a frame 32 carrying said shaft 29 and pivoted to the frame 26, substantially as specified.

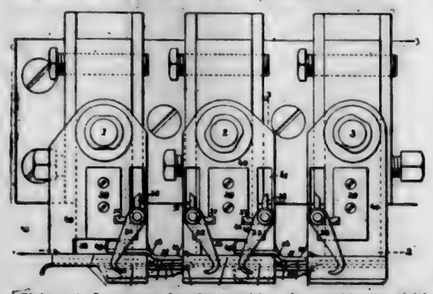
5. The combination of the needle case, a frame 26 secured thereto, a rotated shaft 25 carried by said frame, a reed dent separating disk, a shaft 29 carrying the same, bevel gears connecting said shaft 29 to the shaft 25, and a frame 32 carrying said shaft 29 and pivoted to the frame 26, with mechanism for locking said frame in operative position, substantially as specified.

6. The combination of the needle case, the needle and its operating devices contained therein a toothed ring guided therein, mechanism for rotating said ring a shaft 37 mounted in said case, a finger 38 carried by said shaft, a pinion 36 mounted on said shaft, and a rack carried by said toothed ring and adapted to engage with said pinion, substantially as specified.

7. The combination of the casing, a toothed ring guided therein mechanism for rotating said ring, a shaft 37 carried by the casing, a finger secured to said shaft 37, a pinion 36 mounted on said shaft, a rack carried by said toothed ring, and engaging with said pinion, and a locking device comprising a pin projecting from said pinion and a spring engaging with said pin, substantially as specified.

## 500,965. HARNESS-SUPPORTING AND HEDDLE-EYE-SELECTING DEVICE FOR MACHINES FOR DRAWING IN WARP-THREADS.

Lewis P. Sherman, Biddeford, assignor to George Moore, Berwick, Me. Filed Apr. 26, 1892. Serial No. 430,767. (No model.)



*Claim.*—1. In a warp drawing machine, the combination, with heddle cord selecting mechanism, of a heddle supporting device comprising a laterally and vertically adjustable supporting bar adapted to support the upper bar of the heddle frame, and a weight for the lower bar of said frame, substantially as specified.

2. The combination, with heddle cord selecting mechanism, of a supporting bar adapted to pass beneath the upper bar of the heddle frame, supports for said bar, and a bar 9 rigidly secured to the supporting bar and adapted to separate the opposite rows of heddle cords on the heddle frame, substantially as specified.

3. The combination, with heddle cord selecting mechanism, of a supporting bar (as 8) tapered in cross section extending across the machine, supports for the ends of the bar, said bar being adapted to pass beneath the upper bar of the heddle frame and between the heddle cords on such frame, substantially as specified.

4. The combination, with heddle cord selecting mechanism, of a supporting bar adapted to pass beneath the upper bar of the heddle frame, said supporting bar being tapered in cross section and adjustable laterally and vertically, supports for said bar, a heddle cord dividing bar adapted to pass between the heddle cords of said frame, and a weight adapted to the lower bar of said heddle frame, substantially as specified.

5. The combination, with heddle cord selecting mechanism, of a supporting bar, supports therefor a heddle frame, a weight adapted to the lower bar of the heddle frame, and adjustable hanging fingers carried by said weight, substantially as specified.

6. The combination, with heddle cord selecting mechanism, of a supporting device for heddle frames, a weight bar, and hanging fingers laterally adjustably on said weight bar and adapted to the lower bar of the heddle frame, substantially as specified.

7. The combination, with heddle cord selecting mechanism, of a notched supporting bar adapted to support the heddle frame, guiding boxes therefor, an operating pin adapted to the notches in the supporting bar, and a lever fulcrumed to the main frame and connected to said operating pin, whereby the frame may be adjusted transversely across the machine, substantially as specified.

8. The combination, with heddle cord selecting mechanism, of the fixed frame, a supporting bar for the heddle frame, guides therefor, and devices for adjusting said guides, comprising a bolt 5, passing through orifices in the fixed frame, and adjustable nuts on said bolts, substantially as specified.

9. The combination, with heddle cord selecting mechanism, of the fixed frame, a supporting bar adapted to support the heddle frame, vertically adjustable guides, as 7, for said bar, and a device for adjusting the supporting bar transversely, comprising a lever, fulcrumed to the fixed frame, a bar extending from said lever, and a pin carried by said bar and adapted to a recess in the supporting bar, substantially as specified.

10. The combination, with heddle cord selecting mechanism, of a fixed frame, a supporting device for a heddle frame, a weight bar for said frame, a fixed frame, and hooks, as 20, carried by said fixed frame and adapted to support the weight bar when the machine is not in operation, substantially as specified.

11. The combination, with heddle frame supporting devices, of a heddle cord selecting mechanism, comprising a hook, an operating lever to which said hook is swiveled, arms connected to said hook, and a guiding plate with which said arms are adapted to come into contact upon the reciprocation of said hook, substantially as specified.

12. The combination, with heddle frame supporting devices, of a hook, a lever to which said hook is swiveled, and means for oscillating said hook, comprising arms secured to the hook, and a guiding plate with which said arms are adapted to be brought into contact, said guiding plate having a recess into which one of said arms is adapted to enter, substantially as specified.

13. The combination, with heddle frame supporting devices, of heddle cord selecting mechanism, comprising a swiveled head, a lever by which said head is carried, a base plate having a guiding slot in which the end of the lever is adapted to travel, a selecting hook and guiding arms carried by said swiveled head, and a stationary recessed guiding plate with which said arms are brought into contact on the operation of the lever, substantially as specified.

14. The combination, with heddle cord selecting mechanism, of clamping jaws adapted to hold the selected heddle eye in position, one of said jaws having an inclined portion, means for reciprocating said jaw, and a stationary guide adapted to act upon the inclined portion of the said jaw, substantially as specified.

15. The combination, with heddle cord selecting mechanism, of clamping jaws adapted to hold the selected heddle eye in position, and a pin, as 56, with which said heddle eyes are brought into contact and held, substantially as specified.

16. The combination, with heddle cord selecting mechanism, of the pair of clamping jaws, one of said jaws having an inclined portion, an operating lever to which said jaw is swiveled, and a stationary guide adapted to act upon the inclined portion of the jaw, substantially as specified.

17. The combination, with heddle cord selecting mechanism, of a pair of clamping jaws, mechanism for effecting the reciprocation of said jaws, a projecting portion, as 60, on one of said jaws, and a stationary guide with which said projecting portion is adapted to be brought into contact, substantially as specified.

18. The combination, with heddle cord selecting mechanism, of the clamping jaws, mechanism for reciprocating said jaws, projections, as 60 and 61, on one of said jaws and a stationary guide with which said projections are adapted to be brought into contact, substantially as specified.

19. The combination, with heddle cord selecting mechanism, of a pair of clamping jaws, an operating lever to which one of said jaws is fulcrumed, and a spring secured to said lever and acting on a flattened portion of the swiveled jaw, substantially as specified.

20. The combination in a machine for drawing in warp threads, of a needle, heddle cord selecting mechanism, and a needle guide comprising a plate, as 57, a filling block, as 58, and a plate, as 53, extending over the filling block, substantially as specified.

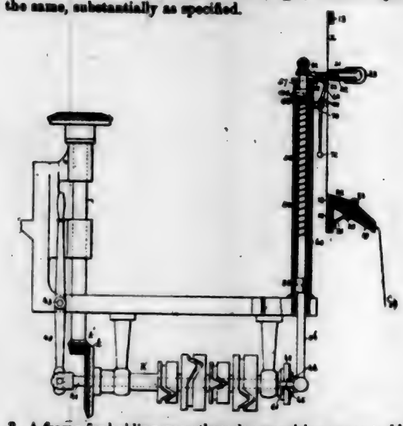
## 500,966. THREAD-SELECTING DEVICE FOR MACHINES FOR DRAWING IN WARP-THREADS.

Lewis P. Sherman, Biddeford, assignor to George Moore, Berwick, Me. Filed Apr. 26, 1892. Serial No. 430,768. (No model.)



*Claim.*—1. A warp frame comprising opposite standards 1, 1, rods 4 and 5 connecting such standards, and a warp frame 7 laterally adjustable on said rod 4, substantially as specified.

2. A warp frame, a transverse bar adjustably supporting said frame, a lever 37 fulcrumed to the stationary frame of the machine, and connected to said warp frame for effecting the lateral adjustment of the same, substantially as specified.



3. A frame for holding warp threads comprising upper and lower clamping bars, blades engaging with one side only of said warp threads with a thread-selecting hook, and mechanism for operating said hook, substantially as specified.

4. The combination of the upper and lower thread clamps, blades 31 and 32 adapted to engage with one side only of said threads, and a thread selecting hook operating between said blades 31 and 32, substantially as specified.

5. A warp frame comprising opposite side bars, a clamping bar secured at its opposite ends to said side bars, a clamp 14 embracing said clamping bar, a lower clamp jaw 19 extending between said side bars, and a clamping jaw 22 acting therewith, and blades 31 and 32 adapted to engage with one side only of the warp threads, substantially as specified.

6. A thread clamp for warp holding frames comprising a fixed clamp bar, a rib thereon, an upper movable clamp bar 22, a rib 23 thereon, and a clamping yoke comprising a curved bar 24 having one of its ends engaging with the rib 23, and a weighted lever 26 pivoted to said yoke and engaging with the rib 20, substantially as specified.

7. A frame for holding warp threads comprising upper and lower clamping bars, blades 31 and 32 adjustably secured to said frame and adapted to be moved into or out of contact with the warp threads carried by said frame, and a thread selecting hook with mechanism for operating said hook, substantially as specified.

8. The combination with a warp thread holding device, of a reciprocated arm inclined at its outer end, a selecting hook pivoted to the inclined portion of said arm, with devices for effecting the reciprocation of said arm, substantially as specified.

9. The combination with a warp holding frame of a selecting hook, a movable arm to which said hook is pivoted, a guiding stud 63 on said arm, a guide stud 67 projecting from said hook, and a fixed guide for altering the position of the hook during the reciprocation of the arm 63, substantially as specified.

10. The combination with a warp holding frame, of a reciprocated arm, a selecting hook pivoted thereto, a guard 66 carried by said hook, and devices for effecting the reciprocation of the arm 63, substantially as specified.

11. The combination with a warp holding frame of an arm 63 inclined at its outer end, and having a hollow stud 66, a selecting hook 65 pivoted in said hollow stud, a guard 66 on said hook, a pin 67 projecting therefrom, and a stationary guiding arm extending between the stud 63 and pin 67, substantially as specified.

12. The combination with a warp holding frame, of the arm 63 inclined at its outer end, a thread selecting hook swiveled thereto, and a covering plate 68 pivoted to said inclined arm and acting to hold said hook in position, substantially as specified.

13. The combination with a warp holding frame, of a thread tightening device comprising a pivoted arm having at its outer end an inclined face adapted to engage with the warp threads, substantially as specified.

14. The combination with a warp holding frame, of a thread tightening device comprising a weighted lever pivoted to the moving part of the frame and having an inclined face adapted to engage with the warp threads, substantially as specified.

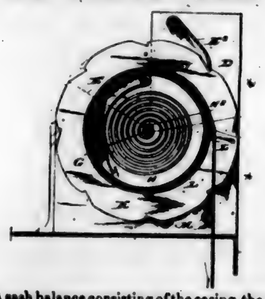
15. The combination with a warp holding frame, of a thread selecting hook, a lever 62 carrying the same, a shaft on which said lever is mounted, and means for effecting the oscillation of said shaft, comprising the rotated cam block 48, and a spring 58 adapted to return the shaft to its normal position, substantially as specified.

16. The combination of a cam block, a series of movable operating slides carried thereby, projections 46 on each of said slides, and a spreading disk 44 adapted to engage with said projections and effect the movement of the slides, substantially as specified.

17. The combination of the cam block having a series of movable slides thereon, projections 46 having inclined faces secured to said slides, and a spreading disk 44 adapted to engage with the inclined faces of the said projections and springs acting on said slides, and tending to hold them in position, substantially as specified.

## 500,967. SASH-BALANCE. Joseph H. Shipman, Whippany, N. J.

Filed Jan. 16, 1893. Serial No. 458,505. (No model.)



*Claim.*—A sash balance consisting of the casing, the drum mounted therein, the spring connected to the shaft and drum, the disks carried by the drum, the ratchet teeth formed on the periphery of one of the disks and having the short vertical wall, the inclined riding face and the rounding periphery, the pawl having the bent end for engaging the short wall as described, the tape or band connected to the drum at one end and to the sash at the other end, in the manner and for the purpose described.

## 500,968. BOOT FOR ANIMALS. Lindley H. Smalley, Cedar Rapids, Iowa. Filed Mar. 7, 1893. Serial No. 465,094. (No model.)



*Claim.*—1. As an improved article of manufacture, a boot for animals constructed to fit the animal's leg below the fet-lock, said boot extending from the fet-lock to the hoof, and provided with fastening devices, and with one or more rollers arranged horizontally on the outside of the boot and between its upper and lower edges, as set forth.

2. As an improved article of manufacture, a boot for animals constructed to fit and be secured to the animal's leg below the fet-lock, a horizontal rod on the boot, and a plurality of rollers mounted on the said rod, as set forth.

## 500,969. SELF-GENERATING GAS-BURNER. Harper F. Smith, Philadelphia, Pa., assignor of one-half to William F. McCully, same place. Filed Feb. 16, 1893. Serial No. 462,594. (No model.)

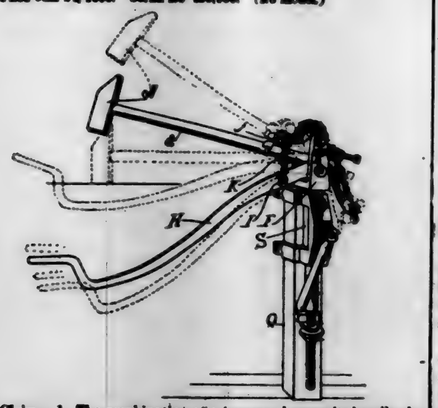


*Claim.*—1. A burner in which are combined an oil supplying pipe, a valve chamber and its valve, a retort connecting said oil supply pipe and valve chamber, and heated by the flame, and a hollow block communicating with the valve chamber, and having a burner tip and wings projecting upwardly alongside of said burner tip, and above the point of issuance of the flame, substantially as specified.

2. The combination in a burner, of the oil supply pipe, the valve chamber and its valve, a retort connecting said oil supply pipe and valve chamber and heated by the flame, and a hollow block communicating with the valve chamber, and carrying a burner tip, said block being also heated by the flame and having recesses in which portions of the retort are embedded, substantially as specified.

3. A burner in which are combined an oil supply pipe, a valve chamber and its valve, a retort connecting said oil pipe and valve chamber and heated by the flame, and a hollow block communicating with the valve chamber and carrying a burner tip, said block having recesses in which portions of the retort are embedded, and side wings extending up alongside of the burner tip, substantially as specified.

**500,970. FORGING-HAMMER.** ANTONIO STEEL, Los Angeles, Cal. Filed Jan. 24, 1893. Serial No. 459,606. (No model.)



*Claim.*—1. The combination of a hammer having its handle pivoted to a support; a spring secured at its ends respectively to the support and hammer and arranged to sustain the hammer in its elevated position; a lever pivoted near the pivotal support of the hammer; and the yielding connections substantially as described arranged between the hammer and lever to communicate the motion of the lever to the hammer.

2. The combination of the hammer having its handle pivoted to a suitable support and arranged to extend on both sides of its pivot; the hammer supporting spring secured at one end to the handle, and secured at the other end to the support; the pivoted operating lever provided with the two sockets adapted and arranged to receive the connecting rods; the connecting rods respectively pivoted to the hammer handle on opposite sides of the pivot, and the springs respectively arranged on such connecting rods to form yielding connections between the lever and the hammer.

3. The combination of a hammer having its handle pivoted to a suitable support, and arranged to extend on both sides of its pivot; the hammer supporting spring secured at one end to the handle and secured at the other end to the support; the pivoted-operating lever provided with two sockets adapted and arranged to receive the connecting rods; the connecting rods respectively pivoted to the hammer handle on opposite sides of its pivot; the springs arranged on such connecting rods to form yielding connections between the lever and the hammer, and suitable means arranged to allow the adjustment of the pivot of the stroke-producing connecting rod with relation to the pivotal support of the hammer.

**500,971. CONSTRUCTION OF CYCLES.** JOHN M. STARLEY and WILLIAM STARLEY, Coventry, England. Filed Sept. 30, 1892. Serial No. 448,282. (No model.)

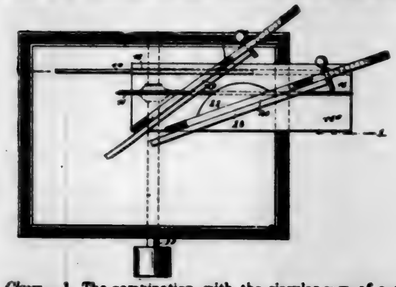


*Claim.*—1. In a cycle frame, the combination with a tubular part having a kerf or slot in one end, of a plate bent into a tube and provided with a projecting web inserted and secured within said kerf or slot, substantially as described.

2. In a cycle frame, the combination of tubes, each having a kerf or slot in one end, of a flat web inserted and secured within the kerfs or slots for connecting the tubes, substantially as described.

3. In a cycle frame, the combination of a tubular member having a projecting web, with a slotted tube abutting said member and in the slot of which the web projects and is secured, substantially as described.

**500,972. WORK-GUIDE FOR SAWS.** VALENTINE STEIN, New York, N. Y. Filed Mar. 25, 1893. Serial No. 467,615. (No model.)



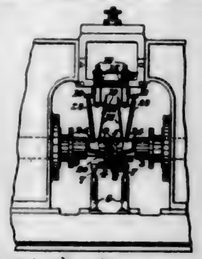
*Claim.*—1. The combination, with the circular saw, of a guide held to move over the saw, the guide being provided with a longitudinal slot to receive the saw, and with diverging wings extending across it and slotted also to receive the saw, substantially as specified.

2. The combination, with the circular saw, of the guide held to move over the saw and provided with a slot to receive the saw, wings placed diagonally and at different angles on the guide, the wings being slotted to receive the saw, and adjustable abutments carried by the wings and adapted to fit against the ends of the stiles which are sawed, substantially as specified.

3. The combination, with the saw and bench, of a guide rail secured to the bench parallel with the plane of the saw, a guide having a groove to fit the rail and a slot to receive the saw, and wings placed diagonally on the guide and provided with slots for the saw, substantially as specified.

4. As an improved article of manufacture, a work guide for saws comprising a longitudinally-slotted base, wings extending diagonally across the base, and at different angles, the wings having slots which register with the longitudinal slot and a plurality of holes in their outer ends, and abutment pins for the holes in the wings, substantially as specified.

**500,973. ELECTRIC WELDING MACHINE.** MAXIMILIAN M. SUPPES, Johnstown, Pa. Filed Sept. 10, 1892. Serial No. 445,578. (No model.)



*Claim.*—1. In an electric welding apparatus, substantially as herein set forth, a contact and swaging block support, movable between plungers and transversely thereto and contact and swaging blocks mounted thereon, whereby the contact blocks may be moved into and out of position, in front of the plungers, alternately with the swaging blocks.

2. In an electric welding machine substantially as herein set forth, a support, movable in front of and transversely to a plunger and having contact and swaging blocks mounted thereon, whereby the contact block alternately with the swaging block may be moved into position in front of the plunger, and be pressed by the latter against the joint to be welded.

3. In an electric welding machine substantially as herein set forth, supports, movable transversely to plungers and toward each other, and having contact and swaging blocks mounted thereon, whereby



the contact blocks are alternately with the swaging blocks placed in position in front of said plungers and adapted to be pressed toward each other by the latter.

4. In an electric welding apparatus, substantially as herein set forth, supports movable transversely to plungers, contact and swaging blocks mounted thereon, said supports normally holding the said blocks away from each other.

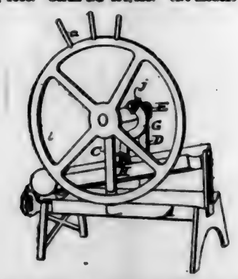
5. In an electric welding apparatus, as herein set forth, the combination with a vertical plunger, an anvil, and horizontal plungers, of a swinging frame, supporting contact and swaging blocks, suspended to travel transversely to the horizontal plungers and provided with reacting springs, whereby the contact blocks may alternately with the swaging blocks be moved into and out of position in front of the horizontal plungers and be pressed toward each other by the latter.

6. In an electric welding apparatus, substantially as herein set forth, a support, movable between plungers and transversely thereto, blocks mounted thereon whereby the blocks may be moved into and out of position in front of the plungers.

7. In an electric welding apparatus, substantially as herein set forth, a support, movable transversely to plungers, blocks mounted thereon, said support normally holding the blocks away from each other.

8. In an electric welding apparatus, as herein set forth, the combination with a vertical plunger, an anvil, and horizontal plungers, of a swinging frame supporting blocks, suspended to travel transversely to the horizontal plungers, and provided with, reacting springs, whereby the blocks may be moved into and out of position in front of the horizontal plungers and be pressed toward each other by the latter.

**500,974. BENDING-PRESS.** SAMUEL SWARTS, Detroit, Mich. Filed Feb. 6, 1893. Serial No. 461,483. (No model.)



*Claim.*—1. In a bending press, the combination of the upper and lower dies,—the lower die provided with rearwardly-projecting vertically-slotted arms, and a closed slotted guide at its forward end;—and the upper die provided with a hinge-rod at its rear fixed in relation to the said die, and a lug or projection at its forward end; to engage respectively the slots and the guide

2. In a bending press, the combination with the lower die or bed; of the upper die; a rock-shaft mounted upon the bed; a link connected to the rock-shaft; a bracket connected to the link and the upper die and adjustable vertically in relation to the latter; and a wedge interposed between the bracket and the upper die.

3. In a bending press, the combination with the upper and lower dies; a rockshaft mounted upon the bed; a link connected to the rockshaft; a bifurcated bracket secured to the link, and provided with a recess in its under face bolts extending upward from the upper face of the upper die and passing through the wings of the bracket; and a wedge interposed between the bracket and the upper die.

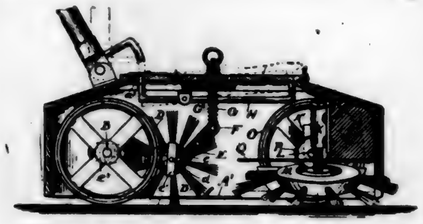
4. In a bending press, the combination of the upper and lower dies, a rockshaft mounted upon the bed and provided with a flat face, a bracket mounted on the upper die and adjustable vertically in relation thereto, a link hinged to the bracket and the cross-shaft; said link being provided with a flat face at its upper end adapted to bear against the flat face on the rockshaft when the press is closed.

**500,975. CEMENT FOR NUT-LOCKS.** CALEB SWAYZE, Welland, Canada. Filed Jan. 14, 1893. Serial No. 458,310. (No model.)

*Claim.*—As an improved nut lock, the composition of pulverized char-coal, plaster of paris, lampblack, white lead ground in oil, and white of egg, compounded in the proportions and applied in the manner substantially as hereinbefore explained.

**500,976. CARPET-SWEEPER.** CHRISTIAAN TAPPENBECK, Chicago, Ill. Filed Jan. 31, 1893. Serial No. 460,363. (No model.)

*Claim.*—1. In a carpet sweeper the combination with the main brush, of a pair of auxiliary brushes located forward of the main brush and so as to project beyond the sides of the casing, means independent of the main brush for revolving said auxiliary brushes whereby they throw the dirt inward and into the path of the main brush, and a casing inclosing the main brush and the auxiliary brushes, substantially as set forth



2. In a carpet sweeper, the combination with the main brush, of a pair of auxiliary brushes having upright axes and located forward of the main brush, and so as to project beyond the sides of the casing, means independent of the main brush for revolving said auxiliary brushes, and a casing inclosing the main brush and the auxiliary brushes, substantially as set forth.

3. In a carpet sweeper, the combination with the main brush, of a pair of auxiliary brushes located forward of the main brush, and so as to project beyond the sides of the casing, said auxiliary brushes having axes that are slightly inclined from a vertical position, means independent of the main brush for revolving said auxiliary brushes, and a casing inclosing the main brush and the auxiliary brushes, substantially as set forth.

4. In a carpet sweeper the combination with the main brush and casing, of a pair of auxiliary brushes located forward of the main brush and projecting beyond the sides of the casing, means for revolving said auxiliary brushes, and housings covering them, and protecting them from dirt that is thrown forward by the main brush substantially as set forth.

5. In a carpet sweeper the combination with the casing, the main brush and means for driving it, of a pair of auxiliary brushes located forward of the main brush, a wheel projecting through the opening in the bottom of the casing and adapted to have contact with the floor, a shaft carried by said wheel, and wheels carried by said shaft and engaging the auxiliary brushes whereby they are revolved, independently of the main brush substantially as set forth.

6. In a carpet sweeper, the combination with the main brush, of a pair of auxiliary brushes located forward of the main brush, the bolts L upon which said auxiliary brushes are journaled, and the sleeves K in which said bolts are secured and by which said bolts are held against displacement, said sleeves being secured to the casing, substantially as set forth.

7. In a carpet sweeper the combination with the casing of the brackets N' having notches in their under sides, the shaft N journaled in the said notches, the wheels P secured to said shaft, the brushes M bearing against the under sides of the wheels, and the removable upright bolts L upon which said brushes are journaled, substantially as set forth.

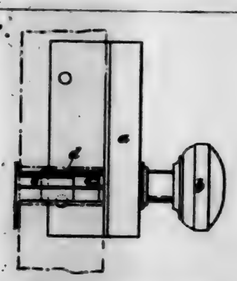
8. In a carpet sweeper the combination with the casing having an opening at top and a cover adapted to close said opening, said cover having an opening $a^3$, of a lever fulcrumed within the casing, having one end opposite the opening $a^3$, and the other end in engagement with the under side of the cover, and the handle pivoted to the casing, and having an arm adapted to enter the opening $a^3$ and engage the lever, substantially as set forth.

9. In a carpet sweeper the combination with the casing and the floor wheels, of the levers E fulcrumed upon the axles of said wheels, and having the openings $e$ and brackets $e'$, the main brush projecting through the openings $e$ and having axles $d$ journaled in said brackets, the rod F to which the free ends of said levers are secured, the adjusting screw G connected at its lower end to said rod, the brace $A^2$ through which said screw passes, the thumb nut $G'$ fitting upon said screw, and the spring $G^3$ surrounding the screw and exerting its pressure upward against the brace $A^2$ and downward against the rod F, substantially as set forth

**500,977. KEYHOLE-GUIDE.** CHARLES TAYLOR, Bocies, England. Filed Feb. 17, 1893. Serial No. 462,748. (No model.)

*Claim.*—The combination with a rim lock of a fixed socket or guide embracing the keyhole with a telescopic guide or guides sliding therein and attached to the escutcheon plate substantially in the manner and for the purpose hereinbefore set forth

**500,977.**

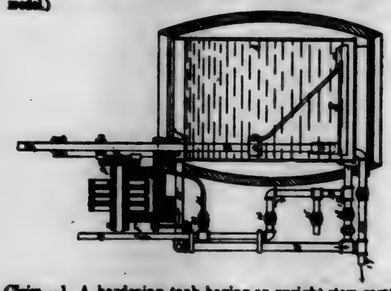


**500,978. SECONDARY ELECTRIC BATTERY.** CHARLES TISSOT and ALFRED CHARRIN, Paris, France. Filed Dec. 2, 1892. Serial No. 453,578. (No model.)



*Claim.*—The process of making a secondary battery element, by forming an envelope with perforated sides, from sheets of celluloid or similar material in a plastic or pliable condition, filling the envelope with active material and a conductor, closing the openings through which the receptacle was filled, and subjecting the entire element to heavy pressure, substantially as described.

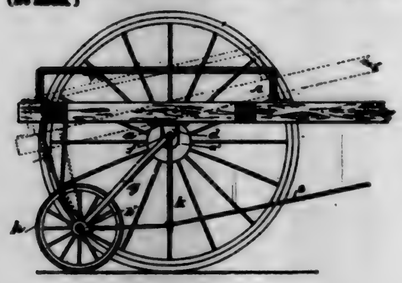
**500,979. APPARATUS FOR HARDENING STEEL.** EDWARD TWEEDY, Danbury, Conn. Filed Jan. 23, 1892. Serial No. 419,053. (No model.)



*Claim.*—1. A hardening tank having an upright stem carrying at its lower end a dasher or paddle, and means for vertically reciprocating the same, the said dasher or paddle being arranged to reciprocate freely within the liquid in the lower portion of said tank, substantially as described.

2. A hardening tank having an upright stem carrying at its lower end a dasher or paddle, and means for freely reciprocating the same within the liquid in the lower portion of the tank said tank having a jacket whereby the temperature of the tank may be controlled, substantially as described.

**500,980. RUNNING-GEAR FOR VEHICLES.** JOHANN URBANIC, Frankfort-on-the-Main, Germany. Filed Mar. 7, 1893. Serial No. 464,923. (No model.)



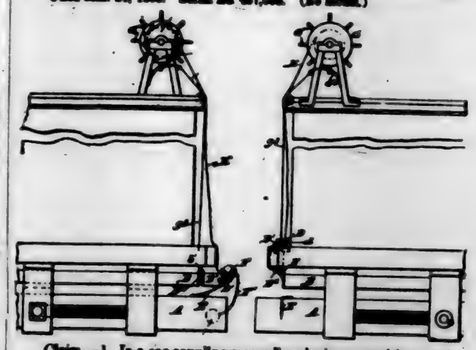
*Claim.*—1. The combination, with a wheeled vehicle, of rearwardly-extending frames pivoted beneath the vehicle, accessory wheels journaled in the lower ends of the frames, and draft traces applied to the axles of the accessory wheels, substantially as described.

2. The combination, with a wheeled vehicle, of the rock shaft pivoted beneath it, rearwardly-extending frames secured to the rock shaft, accessory wheels journaled in the frames, and draft traces applied to the accessory wheels, substantially as described.

3. The combination, with a wheeled vehicle, of rearwardly-extending frames pivoted beneath the vehicle, accessory wheels journaled in the lower ends of the frames, and supports secured to the vehicle and adapted to abut with the depending frames, substantially as described.

4. The combination, with a wheeled vehicle, of rearwardly-extending frames pivoted beneath the vehicle, accessory wheels journaled in the lower ends of the frames, radius bars extending downward from the vehicle adjacent to the frames, and draft traces connecting with the axles of the vehicles and with the radius bars, substantially as described.

**500,981. CAR-COUPLING.** FRANK VANDEAR, Elizabeth City, N. C. Filed Mar. 21, 1892. Serial No. 427,022. (No model.)



*Claim.*—1. In a car coupling a coupling device comprising a pair of connected balls one of which is provided with an opening to receive a pin in a support or receiver substantially as set forth.

2. In a car coupling an oscillating ball holder arranged normally to support the ball and to be tilted to position to discharge the same substantially as set forth.

3. In a car coupling a ball holder consisting of an oscillating receiver having a projecting pin to enter an opening in the ball substantially as set forth.

4. In a car coupling the combination of the drawhead supported to yield longitudinally, and the ball support arranged above the drawhead substantially as set forth.

5. In a car coupling the combination of the drawhead and the ball support arranged above it and having a pivoted outer arm or portion substantially as set forth.

6. In a car coupling a ball support provided with an oscillating ball receiver substantially as set forth.

7. In a car coupling the ball support having a pivoted outer arm or portion and provided at the extremity thereof with an oscillating ball receiver substantially as set forth.

8. The combination in a car coupling of the drawhead movable longitudinally the ball support having an oscillating ball receiver and a connection between said receiver and the drawhead whereby the movement of the drawhead may oscillate the receiver substantially as set forth.

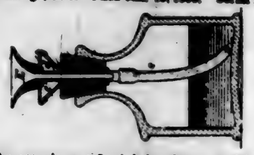
9. In a car coupling, the combination of the wheel or drum having handles and mounted to turn, and provided with a ratchet wheel, the pawl engaging said ratchet, the cord connected with said pawl the coupling ball and a rope or connection between said ball and the drum substantially as set forth.

10. In a car coupling substantially as described the drawhead having the open top mortise and the aperture leading to the point and provided, with the spring plates forming a yielding bearing for the coupling ball substantially as set forth.

11. The improved car coupling herein described consisting of the drawhead, the ball support arranged above the drawhead and having the pivoted spring actuated arm or portion B', the oscillating spring actuated ball receiver having a projecting pin, the connection between said receiver and the drawhead and the ball having an opening to fit said pin substantially as set forth.

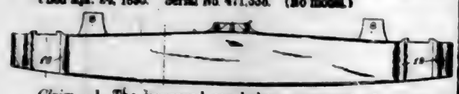


**500,982. STOPPER ATTACHMENT FOR INK-BOTTLES.** GERAVUS R. WEED, Orange, N. J. Filed Jan. 13, 1893. Serial No. 458,941. (No model.)



*Claim.*—An attachment for ink bottles comprising the centrally apertured stopper B, an air tube C entering said aperture to force air down into the bottle and provided with a funnel shaped or flared upper end *a*, a flexible diaphragm D provided with a rim *b* embracing the rim of the funnel shaped end *a* and having a central aperture *c* provided with thickened walls, the ink funnel E having an ink tube *d* extending down through the aperture *c* and through the air tube C and of less diameter than said air tube, substantially as set forth.

**500,983. CAR-BOLSTER.** CHARLES T. WHITLAW, St. Louis, Mo. Filed Apr. 24, 1893. Serial No. 471,338. (No model.)



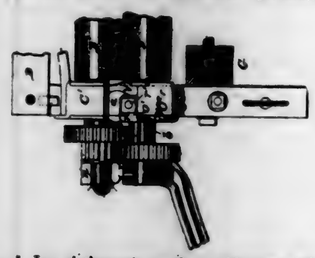
*Claim.*—1. The improved car bolster composed of a series of parallel girder-plates, a truss-web, spring plates, side bearings and end bearings all cast integral, substantially as herein specified.

2. The improved car bolster constructed with a truss web, spring plates, side bearings and end bearings all cast integral of malleable iron, substantially as herein specified.

3. The improved car bolster constructed with a truss-web, spring plates, side bearings, end bearings, a center bearing and arch-bar bearings, all formed of an integral piece of cast metal, substantially as herein specified.

4. The improved cast metal car-bolster, constructed with a series of vertical parallel girder-plates, a truss-web extending at an angle and located below the upper edges of the series of girder plates, spring-plates, side-bearings, and a center-bearing, all cast integral, substantially as herein specified.

**500,984. CLOTHES-WRINGER.** CYRENUS WHEELER, Jr., Auburn, N. Y. Filed Sept. 15, 1892. Serial No. 445,963. (No model.)

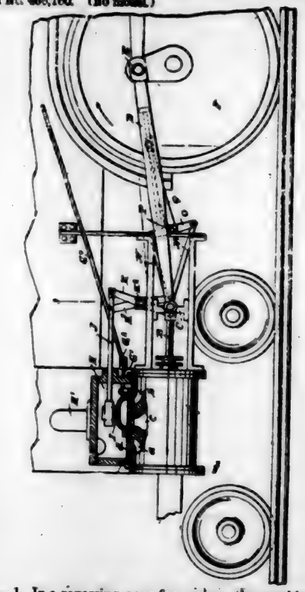


*Claim.*—1. In a clothes-wringer, the combination of the frame-work having slotted end pieces, the rolls mounted in bearings in the slots, and carrying on their projecting shafts gear wheels larger than the rolls, the gear-supporting plate secured to one of the end frame pieces and provided with two outwardly projecting fixed axles, and with an inwardly projecting box or journal-bearing seat adapted to fit the lower end of the slot in the end piece, and the intermediate gear wheels mounted upon the said fixed axles in front of the rolls, and arranged to turn freely thereon and to mesh together and with the gear wheels on the roll shafts, substantially as set forth.

2. In a clothes-wringer, the combination of the frame-work having slotted end pieces, the rolls mounted in bearings in the slots, and carrying on their projecting shafts gear wheels, the gear-supporting plate O attached to the end piece A, and carrying two hollow outwardly projecting fixed axles P and P and the inwardly projecting bearing seat Q, and the intermediate gear wheels mounted on the axles P and P', and the screw bolts passing through the axles for securing the wheels thereon, substantially as set forth.

3. In a clothes-wringer, the combination of the slotted end frame pieces, the rolls mounted therein, the upper roll being vertically movable to a limited extent, the spring which forces the upper roll toward the lower one, and the stop plate V inclining outward toward the top and situated partially within the slot in the end frame piece, and resting upon the bearing for the lower roll, the said plate serving as a stop for the upper roll and also to turn the water which overruns the ends of the rolls back into the tub, substantially as set forth.

**500,985. REVERSING-GEAR FOR ENGINES.** THOMAS P. WHITTINGTON and WILLIAM A. FISHERING, Xenia, Ohio. Filed Mar. 29, 1893. Serial No. 468,160. (No model.)

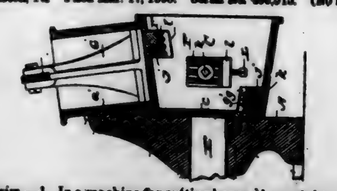


*Claim.*—1. In a reversing gear for engines, the combination of a rock shaft having an arm, and a sleeve pivotally connected with the said arm and fitted to slide on a guideway on the engine pitman, substantially as shown and described.

2. In a reversing gear for engines, the combination with the steam chest, two valves therein, and the engine pitman, of a shaft provided with a crank arm at each end, a sleeve mounted loosely on the said shaft and provided with arms, one valve stem being connected with one crank arm of the shaft and the other valve stem with one of the arms of the sleeve, a rock shaft provided with arms, one of the said arms having a sliding connection with the engine pitman, and links connecting the other arm of the rock shaft with an arm of the first named shaft, and an arm of the sleeve thereof, substantially as described.

3. In a reversing gear, the combination with a steam chest, a movable valve seat therein and provided with two sets of ports, two valves in the steam chest and the engine pitman provided with a longitudinal rod, of a shaft provided with an arm at each end, a sleeve mounted loosely on the shaft and provided with two arms, the valve stems being connected with one of the arms of the said shaft and sleeve, a rock shaft provided with an arm secured at its middle to said shaft, links connecting the ends of the said arms with one of the arms of the first named shaft and the sleeve thereon, and an arm on the end of the rock shaft and provided with a sleeve sliding upon the rod of the engine pitman, substantially as herein shown and described.

**500,986. MACHINE FOR CUTTING BONES.** JAMES E. WILSON, Easton, Pa. Filed Mar. 17, 1893. Serial No. 466,515. (No model.)



*Claim.*—1. In a machine for cutting bones, the upright or column having the integral face plate at its upper end and the transverse bearing below the face plate, combined with a hopper bolted to the face

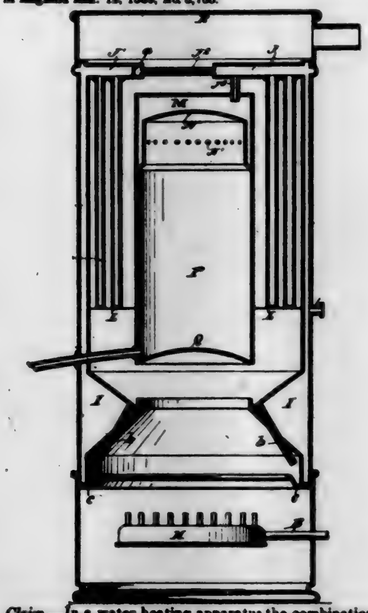
plate on the opposite side of the upright from the bearing, and a cutter cylinder arranged below the hopper and having its shaft journaled in the bearing, for the purpose described, substantially as set forth.

2. In a machine for cutting bones, the upright or column provided on one side with a face plate and on its other side with the transverse bearing that lies below said face plate, combined with a hopper fastened to the face plate and terminating above the bearing, a shaft journaled in said bearing, and a cutter cylinder situated below said hopper and rigid at its closed inner end with said shaft, the cutter cylinder having the spaced slots arranged out of line with each other circumferentially around the same and carrying within itself the knives which have their edges projected through the slots in said cylinder, substantially as and for the purpose described.

3. A machine for cutting bones, comprising the upright or column having a bearing D at an intermediate point of its height, the hopper B rigid with said upright or column, on one side thereof and terminating above said bearing, a shaft journaled in the bearing, a slotted cutter cylinder C fitted snugly against the lower open side of said hopper and against the upright or column, and the knives F seated within the cutter cylinder and adjustably held therein by the screws K, L, substantially as and for the purpose described.

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**500,987. WATER-HEATER.** JOSEPH WESTERFLOOD, London, England. Filed May 8, 1893. Serial No. 473,250. (No model.) Patented in England Mar. 13, 1888, No. 3,785.



*Claim.*—In a water heating apparatus the combination of many cylinder casing I. K. L. lower conical belly to cylinder I, boiler P with upper chamber M and connecting pipe J. J'. J². J³. putting all the cylinders in connection, as set forth and substantially as shown.

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**500,988. ROTARY ENGINE.** WILLIAM W. ANDREWS, Fallbrook, Cal. Filed Dec. 15, 1892. Serial No. 455,253. (No model.)



*Claim.*—1. The combination with the casing having a circular opening and a hole or opening in its top, and the steam inlet and outlet ports of the circular piston-wheel mounted in said circular opening and having a peripheral groove or channel and a stop therein, the cams on the sides of said wheel, the sliding abutment located in said hole or opening, the spring bearing thereon, and the parallel arms connected to said sliding abutment and having inner grooves or recesses corresponding to said cams which fit therein, substantially as set forth.

2. The combination with the casing having a circular opening, and a hole or opening in its top, and the steam inlet and outlet ports, of the circular piston wheel mounted in said circular opening and having a peripheral groove or channel and a stop therein, the cams on the outside of said wheel having V-shape portions corresponding with said stop, the cross-head, the vertically movable sliding abutment, the spring bearing thereon, the parallel arms having inner grooves, and the rollers located in said grooves and between which said cams fit, substantially as set forth.

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**500,989. CARRIAGE-DASH.** CHARLES A. BEHLEN, Cincinnati, Ohio. Filed Oct. 25, 1892. Serial No. 449,918. (No model.)

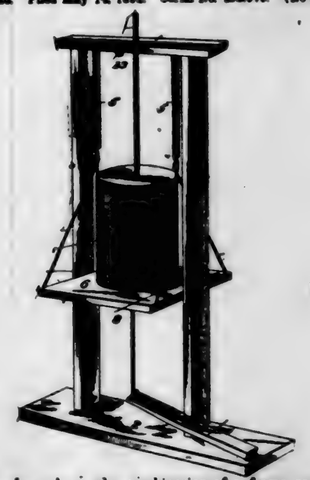


*Claim.*—1. A dash board composed of a sheet of metal clamped between the duplex frame, with the cushioning pieces interposed between the frame and sheet metal and bearing against the latter at opposite sides thereof, substantially as specified.

2. A dash board composed of a sheet of metal clamped between a duplex frame with cushioning material interposed between the frame and sheet metal and bearing against the latter opposite sides thereof, and the cylindrical beading finishing clamp 5, clamped around the outer edges of the frame, substantially as specified.

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**500,990. CHURN.** IRA S. BUSKER and WILLIAM O. BUSKER, Nevada, Mo. Filed May 14, 1892. Serial No. 432,979. (No model.)



*Claim.*—In a churn, the combination of a frame comprising a base, vertical standards rising therefrom and provided in their opposed faces with longitudinal grooves, and a top cross-bar having an opening, a rectangular churn body supporting board provided at opposite sides with lugs arranged in said grooves, spiral springs arranged at each side of the frame and depending from the cross piece and connected with opposite sides of the churn body supporting board, a churn body removably mounted on the supporting board and provided in its cover with an opening, a dasher rod passing through the opening of the cover and provided at its lower end with a dasher and having its upper end adjustably secured in the opening of the cross-bar of the frame, and a treadle connected with the supporting board, substantially as described.

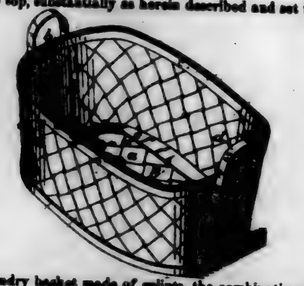
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**500,991. SPLINT LAUNDRY-BASKET.** GUSTAVE H. CARLSON, San Francisco, Cal. Filed Oct. 10, 1892. Serial No. 448,395. (No model.)

*Claim.*—1. A laundry basket made of splints, having the sides interwoven in two parts and united to form the sides or body part of



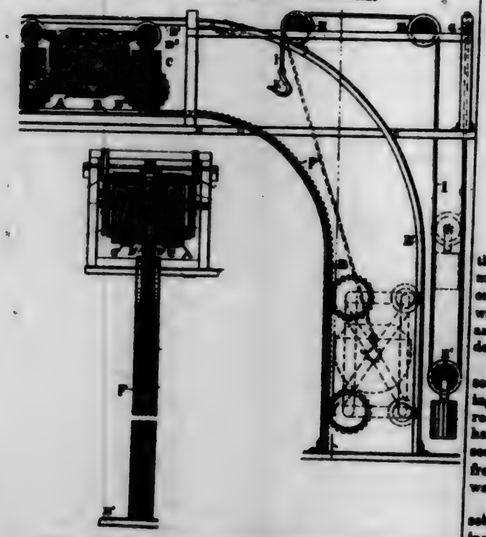
the same by bringing the parts together and overlapping their ends; the splints so interlacing each other as to form a diamond shaped figure, the overlapping ends being secured by upright pieces on the inside and outside of the overlapping pieces, fastened to each other over the splints and acting as supports to the body splint work, and having a framed splint bottom firmly fastened down upon the inside strip, that binds the edges of the body splint work, and furnished with handles at the top, substantially as herein described and set forth.



2. In a laundry basket made of splints, the combination of the two interwoven splint parts forming the body parts with the inside and outside upright pieces supporting the sides and firmly binding the overlapping ends of the splint sections and provided with a framed splint bottom, firmly fastened down upon the inside strip that binds the edges of the body splint work, and having handles *d*. attached at the top of the outer ends, substantially as herein described and set forth.

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**500,992. RAILWAY SYSTEM.** CHARLES CARR, Boston, Mass. Filed Aug. 12, 1892. Serial No. 442,991. (No model.)



*Claim.*—1. In a railway system in which the track consists of two rails secured in the same vertical plane and which has horizontal and inclined or vertical sections, with curved connecting sections and in which the motor-cars run supported by one and steadied by the other rail, the combination of said track, cars, the driving wheels of said cars, gears connected to and driven by said wheels, with an auxiliary rack-rail located at the curved, inclined or vertical sections of the track and with which the said gears mesh, all substantially as and for the purpose herein set forth.

2. In a railway system in which the track consists of two rails secured in the same vertical plane and which has horizontal and inclined or vertical sections with curved connecting sections, the combination of said track, motor-cars running thereon, the driving wheels of said cars, gears connected to and driven by said driving wheels, auxiliary rack-rails located at the curved, inclined or vertical sections of the track and with which the said gears mesh, and a counterbalancing device, so located and arranged that as a car enters a curved, vertical or inclined section of the track it is automatically caught and held in balance or approximate balance during its descent or ascent of the said grade sections of track, all substantially as and for the purpose herein set forth.

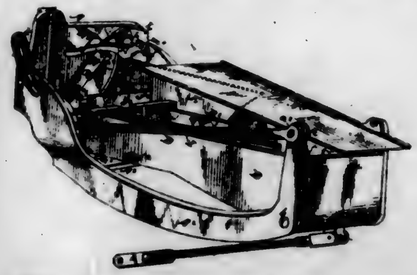
3. The combination of the track, consisting of rails B and B' and rack-rail F, motor-cars running thereon, gears meshing with the rack-rail F and connected to and driven by the driving wheels of said motor-cars, said driving wheels, studs, projecting from said cars to engage hooks suspended in the paths of said studs, said hooks, ropes by which said hooks are suspended, sheaves over which the said ropes run, and weights on said ropes, all operating together substantially as and for the purposes herein set forth.

4. The combination of rails B, B', car A, motor C, wheels D, gears D' connected to and driven by said wheels D, rack-rail F with which said gears mesh, studs projecting from the car, rope I with hook to engage the said studs, said hook, weight L on said rope, sheaves H over which the said rope runs, all operating together substantially as and for the purposes set forth.

5. In a railway the cars of which are subject to propulsion through relatively short ascending and descending sections, from level to steep grades, and also to vertical movements and for the purposes of an auxiliary safety car supporting, lowering and lifting device or attachment, the combination of the studs attached to the cars, the catch-hooks, the cables to which said catch-hooks are attached, the supporting and guiding sheaves for said cables and balance weights, all operating together substantially as set forth.

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**500,993. MACHINE FOR CONNECTING BUTTON SHANKS AND FASTENERS.** BELL CHRISTENSEN, Portland, Oreg., assignor of one-half to Ignatz Winter, same place. Filed Jan. 9, 1893. Serial No. 457,801. (No model.)



*Claim.*—1. In a machine for connecting buttons to their staples, the combination of a frame adapted to be secured to a button setting machine, a rectangular box for buttons and fasteners having its rear end pivoted to said frame and two slots in its bottom, a straight race-way for the buttons and a staple guide-plate received in said slots, and a connecting rod adjustably secured to said box substantially as described.

2. The combination of a frame adapted to be secured to a button setting machine, a straight race-way secured to said frame and having a groove in its top for the reception of the shanks of buttons, a rectangular box for buttons and fasteners pivoted at its rear end and having a slot in its bottom to receive the race-way, narrow plates $d^6$ secured to the front end of the race-way and extended through the front end of the frame, and a button retaining plate *f* above said race-way substantially as described.

3. The combination of a frame adapted to be secured to a button setting machine, a straight race-way secured to said frame and having a groove in its top, a rectangular box pivoted at its rear end and having a slot in its bottom to receive the race-way, narrow plates $d^6$ secured to the front end of the race-way, a button retaining plate *f* above said race-way, and a tuft of bristles pendent from said plate *f* substantially as described.

4. The combination of a frame adapted to be secured to a button setting machine, a race-way for the buttons, a box pivoted at its rear end and having a slot in its bottom to receive the race-way, and rollers $i$ $i^2$ on its side, a rod I pivoted to the frame and passing between said rollers, a slotted lever K in engagement with the rod I, and a horizontally movable carriage G linked to the lever K and having a cut-off plate $g^6$ to arrest the buttons substantially as described.

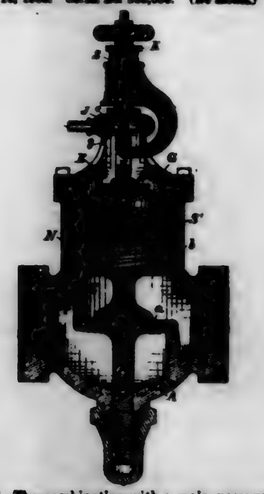
5. The combination of a frame adapted to be secured to a button setting machine, a box pivoted at its rear end to said frame and having rollers on the side, a rod I pivoted to the frame, a slotted lever K in engagement with the rod I, and a horizontally movable carriage G linked to the lever K, said carriage having a cut-off plate $g^6$ on top thereof, a beveled plane *g* and a pointed finger $g'$ substantially as described.

6. The combination of a frame adapted to be secured to a button setting machine and a staple guide-plate E secured to said frame, a box pivoted at its rear end to said frame, a rod I pivoted also to said frame and connected to the side of said box a pivoted lever H having a slot at one end in engagement with the rod I and a hook at the other end, and a plate L having a segmental groove to receive the staples from the guide plate E substantially as described.

7. The combination of a frame adapted to be secured to a button setting machine and a staple guide-plate E secured to said frame, a box pivoted at its rear end to said frame, a rod I pivoted also to said frame and connected with the side of said box, a pivoted lever H having a slot at one end in engagement with the rod I and pins $h^3$ $h^4$ projecting from said lever, with pivoted latches resting upon the plate E and adapted to be lifted therefrom by said pins $h^3$ $h^4$ substantially as described.

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**500,994.** PRESSURE-REGULATOR. HERMAN CUTTER, Boston, Mass. Filed Aug. 18, 1892. Serial No. 443,099. (No model.)



*Claim.*—1. The combination with a main passage-way for fluid under pressure, a piston valve therein, a relief passageway leading out of said main passageway on the high pressure side of said piston valve, and an auxiliary valve in said relief passageway, all within shell A, substantially as described, of fluid chamber J, supported by said shell A and provided with said flexible side or diaphragm $g$, in contact with the free end of the stem of said auxiliary valve, spring S, and hook H, taking into said stem, substantially as described.

2. The combination with a main passage-way for fluid under pressure, a piston-valve therein, a smaller passage-way connecting two parts of the said main passage-way, one above and the other below the port of said piston-valve and an auxiliary valve in said smaller passage-way, all within shell A, substantially as described, of fluid chamber J, supported by said shell A and provided with said flexible side or diaphragm $g$ in contact with the free end of stem of auxiliary valve, hook H taking into said stem and spring S, substantially as described.

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**500,995.** AUTOMATIC FIRE-LIGHTER. JAMES L. CUTLER, Piketon, Ohio. Filed Oct. 18, 1892. Serial No. 449,272. (No model.)



*Claim.*—1. In an automatic fire kindler, the combination of a base-piece having two stationary posts, a match-clamp mounted on one of said posts for clamping a match in a stationary position, a trigger pivoted to the other post, a longitudinally movable bar extending through the said posts and adapted at one end to engage the trigger, a spring for throwing the bar lengthwise, and match-igniting pistes connected to and moving longitudinally with the spring-pressed bar for igniting the match while the latter is held stationary by the match-clamp, substantially as described.

2. In an automatic fire-kindler, the combination with the base-piece having a hook and set screw at one end, to adapt it to be clamped to the stove-apron, of a non-rotatable, spring-pressed, longitudinally movable bar, having support in posts upon said base-piece, a carriage consisting of a lower friction-plate, provided with a lug, rigidly attached to said bar, and an upper plate hinged or pivoted upon the lower, a spring interposed between the said plates upon one side of the point of pivotal attachment, a clamping arm on one of the posts to hold a match having its friction-head lying between the said upper and lower plates upon the other side of the point of pivotal attachment, and a trigger pivoted upon the other post and having engagement with the projecting end of the said bar, when the same is retracted, substantially as described.

3. In an automatic fire-kindling device, the combination with a base-piece having two posts, of a bar supported in said posts and having capacity for longitudinal movement, a spring pressing said bar in one direction, a lower friction-plate rigidly mounted on said bar, an upper friction-plate pivoted to the said lower plate near its end, a spring interposed between said plates upon one side of the pivotal axis, a clamp-arm upon one of the posts upon the other side of said axis, a trigger pivoted upon the other post and having an arm extending in front of the broad outer face of said post, to enable it to engage the projecting end of the said bar, a wire mounted transversely upon one of said plates and a friction material drawn over said bar and lying on both sides of the head of the match which is held by the clamping-arm on the post, substantially as described.

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**500,996.** ENVELOPE. JOHN H. OUTTEN, Chicago, Ill., assignor to the Elgin National Watch Company, same place. Filed Jan. 3, 1893. Serial No. 457,113. (No model.)



*Claim.*—1. As a new article of manufacture, an envelope provided with a supplemental pocket formed and contained entirely within it, and having its entrance at the entrance to the envelope proper, and adapted to be closed by the closing of the envelope proper, substantially as and for the purpose specified.

2. As a new article of manufacture, an envelope provided with a supplemental pocket contained entirely within it which is located at a point opposite to that where postage stamps are to be affixed, and is accessible at the same point and adapted to be closed by the same means which are employed to close the envelope proper, substantially as and for the purpose shown.

3. As a new article of manufacture, an envelope provided with a supplemental pocket which is accessible only at the point where the envelope proper is accessible, and is formed within the envelope by folding a flap of suitable length upon itself and upon the main or body portion of the envelope so as to inclose the free end of said flap, substantially as and for the purpose set forth.

4. As a new article of manufacture, an envelope provided with an internal, supplemental pocket which is closed on all sides except at the point where the envelope proper is accessible, and is adapted to be closed by the flap which closes the latter substantially as and for the purpose described.

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**500,997.** CAR-UNLOADER. ALFRED DAHL, Minneapolis, Minn., assignor of one-half to R. J. Terwilliger and James Johns, same place. Filed Aug. 23, 1892. Serial No. 443,811. (No model.)

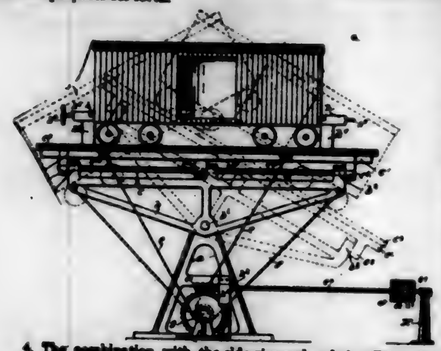
*Claim.*—1. A car-unloader, comprising a receiving platform or section of track mounted on a pair of pivots, one of said pivots extending longitudinally, and the other laterally of the car, whereby the contents of the car may be thrown to one side of the same under one pivotal movement of the said platform and from end to end of the car under the other pivotal movement of the said platform, substantially as described.

2. In a car unloader, the combination with a tilting platform or section of track, of laterally and longitudinally adjustable clamping arms or rests applicable to the ends and sides of the car, for holding the same from movement independent of the platform, and adapted to be adjusted out of the way of the car, when being moved onto or off from the platform, substantially as described.

3. In a car unloader, the combination with the car receiving platform, having both a sidewise and an endwise tilting motion, of sliding heads mounted in longitudinal guideways, fixed to the said platform beyond the dumping side of the track, laterally adjustable and end



side clamps carried by said sliding heads, and a right and left screw threaded shaft working through corresponding nuts in said heads, for adjusting the same toward and from each other, substantially as and for the purposes set forth.

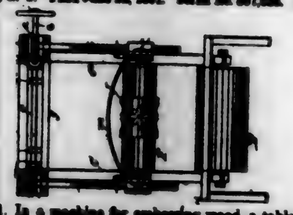


4. The combination with the sidewise and endwise tilting platform, of the sliding heads mounted in longitudinal guideways, fixed to the said platform beyond the dumping side of the track, the pivoted end clamps or arms carried by said heads, the head screw side clamps working through lateral screw threaded nuts in the said heads, and the right and left screw threaded shaft with hand wheel connecting said sliding heads, substantially as and for the purposes set forth.

5. In a car unloader, the combination with a sidewise and endwise tilting platform, for receiving and emptying the car, of a pair of independent drums and corresponding cables applied to the platform, one to control the sidewise, and the other the endwise tilting movements of the platform, substantially as described.

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**500,998.** MACHINE FOR EMBOSSING WOOD. STEPHEN I. DAVIS, Brooklyn, N. Y. Filed June 30, 1891. Serial No. 397,033. (No model.)



*Claim.*—1. In a machine for embossing wood, a table having a transverse slot therein and a supporting-roller working in said slot and extending above the table, in combination with a frame supported on the table, vertical screw-shafts journaled in the frame and carrying screw-gears at their upper ends and threaded blocks at their lower ends, a die-carrying shaft journaled in the blocks, a brace-bar connecting the two blocks, a combined worm and bevel gear journaled on each side of the frame, the worm-portions $c$ of which are engaged by the screw-gears $a$, and a shaft carrying bevel-gears engaging the gear-portions $d$, as set forth.

2. In a machine for embossing wood, the combination, with a frame carrying vertical screw-shafts, of threaded blocks on the shafts, an extension carried by each block and having a half-bearing therein, a die-carrying shaft journaled in the said bearing, a cover or cap pivoted to each extension and having a half bearing, a catch carried by the pivoted cap and having a projection on its lower end adapted to contact with the under side of the extension and a spring for holding the catch in its closed position, substantially as described.

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**500,999.** SPINNING-RING. GEORGE G. DRAPER, Hopedale, Mass., assignor to George Draper & Sons, same place. Filed Mar. 24, 1892. Serial No. 427,032. (No model.)

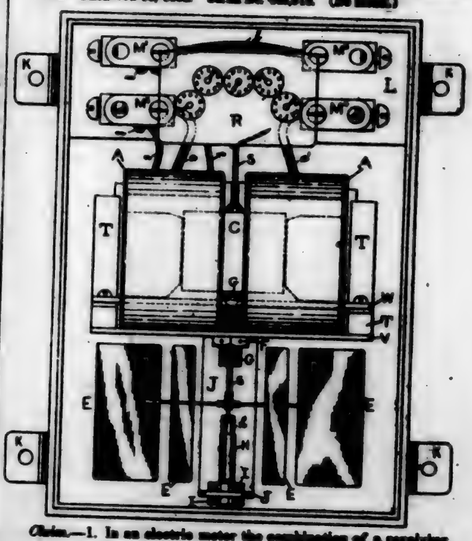


*Claim.*—1. A spinning ring composed of a body having a race at its end, the under side of the inner flange of the race being substantially horizontal, while the under side of the outer flange is inclined from a horizontal plane, the under side of the outer flange starting from the body of the ring at a higher plane than that at which starts the under side of the inner flange from the said body, substantially as and for the purposes set forth.

2. A spinning ring composed of a body terminated with a runway extended inwardly and outwardly from the said body, said body being provided externally with a groove for the reception of the outer end of the traveler, the under side of the flange adjacent to said groove being inclined, while the under side of the inner flange is in a substantially horizontal plane and starts from the body of the ring at a lower level, considering the top of the ring, than the said inclined flange and groove, substantially as described.

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**501,000.** METER FOR ALTERNATING, PULSATING, OR INTERMITTENT ELECTRIC CURRENTS. THOMAS DUNCAN, Fort Wayne, Ind. Filed Oct. 10, 1892. Serial No. 448,910. (No model.)



*Claim.*—1. In an electric meter the combination of a revolving secondary, a primary coil or coils traversed by the current to be measured, a magnetic path diverter, and the base pole W for mounting and holding said primary in position during usage and transportation, all substantially as herein before described.

2. In an electric meter the combination of a revolving secondary or armature, a primary coil or electro magnet traversed by the current to be measured, and a diverter whose magnetic and diverting properties are imparted or communicated thereto by means of a sheet or multiple arc fine wire winding, wound upon a non-metallic core and representing the fall of potential in volts of the generator or source of supply, all substantially as set forth and described.

3. In an electric meter for alternating currents the combination of a revolving secondary, a primary coil or electro magnet traversed by and representing the amperes or current strength to be measured, a diverter whose magnetic and diverting properties are imparted or communicated thereto by means of a sheet or multiple arc fine wire winding of high resistance wound upon a non metallic core and representing the electro motive force in volts of the generator or source of supply, and a non inductive resistance in series therewith and fitted into slots in T and T, all substantially as described.

4. In an alternate electric current meter the combination of a rotative secondary, a primary coil or electro magnet traversed by and representing the amperes or current strength to be measured, an adjustable magnetic diverter for determining the angle at which the magnetic flux emanating from or produced by said primary coil, shall encounter, cut through or thread the plane of said secondary and a diverter tube G on which said diverter is attached and capable of adjusting same vertically, and to any horizontal angle for varying the initial speed, direction of rotation or both, all substantially as described.

5. In an alternate current electric meter the combination of a rotative secondary, a primary coil or electro magnet traversed by the current to be measured, and the field or primary coil strips B and B

slotted and made adjustable laterally for increasing or decreasing the distance or air gap intervening between their points at which the magnetic flux is condensed, thereby varying the magnetic resistance of the primary coil or coils within which they are located and used as a means for varying the speed and producing rotation of the armature or secondary; all substantially as set forth and described.

6. In an electric motor for alternate currents, the combination of a rotative secondary, a primary coil or electro magnet traversed by the current to be measured, the primary coil or field strips B and B and the vertical supports Z and Z to which said field strips are attached and secured, when the requisite adjustment to or from the armature is obtained, by means of the set screws and washers provided for said purpose, substantially as described.

7. In an electric meter for measuring alternating currents the combination of a pivoted revolving secondary, a primary coil or coils carrying the currents to be measured and whose magnetic impulses repel said closed secondary, a magnetic diverter suitably arranged for the purpose set forth and the adjustable magnetic field strips B and B for varying the density of the magnetic flux emanating from and produced by the current to be measured in said primary coil or coils all substantially as herein set forth and described.

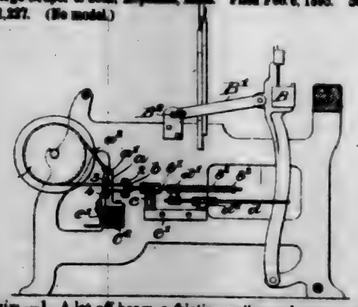
8. In a transformer motor meter for measuring alternating, pulsating or intermittent current of electricity, the combination of a closed metallic secondary in the form of a cylinder, a primary coil or coils carrying the current to be measured and repelling said secondary, a diverter for altering the angle of flow of the magnetic impulses through said revolving secondary for the purpose set forth, and a steel spindle S to which said revolving secondary is attached, all substantially as described.

9. In an electric transformer motor meter for measuring alternating, pulsating or intermittent currents of electricity, the combination of a closed metallic armature, a primary coil, coils, or electro magnets traversed by or representing the current to be measured, a shunt wound, paramagnetic metal diverter, a spindle carrying said closed metallic armature and revolving between jeweled bearings, and a counting, registering or indicating mechanism actuated by the revolutions of said spindle all substantially as set forth and described.

10. In combination with the revolving armature of a transformer motor meter suitable for measuring alternating pulsating or intermittent currents of electricity, a primary field or field traversed by or representing the current strength to be recorded and repelling said revolving armature, an adjustable diverter, the paramagnetic field strips B and B a steel spindle revolved by said armature and secured thereto, a registering device actuated by the revolutions of said armature, a retarding device for governing the rotative force and speed of said armature and the upper base plate W for securing said primary field or coils, all substantially as described.

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**501,001. LOOM.** DANIEL DURKIN, Woonsocket, R. I., assignor to George Draper & Sons, Hopedale, Mass. Filed Feb 6, 1893. Serial No. 461,227. (No model.)



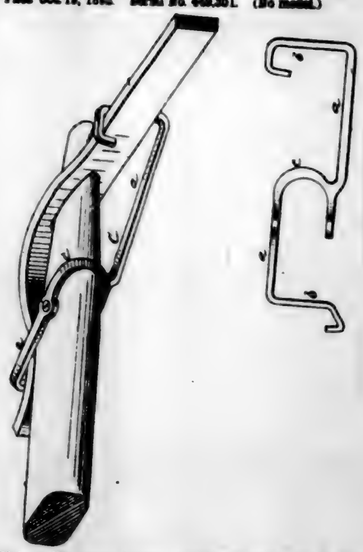
*Claim.*—1. A let-off beam, a friction pulley and strap, combined with checking devices consisting of a stand, a slide-rod *b'*, a spring, and a slide-rod *d* to act against one end of said spring, the latter slide-rod being operatively connected with a moving part of the loom, whereby it may be actuated intermittingly to increase the friction of the strap on the friction pulley and prevent rotation of the warp beam, as and for the purposes stated.

2. In a let-off for looms, a warp beam, a co-operating friction pulley, and a surrounding friction strap, combined with a slide-rod *b'* having a surrounding spring made adjustable by a suitable nut, and a slide-rod *d* actuated by or from the lay and having a projection to engage one end of the said spring, and by acting thereon to move the slide-rod *b'* to increase the friction of the strap upon the friction pulley, for the purposes set forth.

3. A let-off beam, its friction pulley and strap; checking devices consisting of a stand, a slide-rod *b'*, a spring, and a slide-rod *d* to act against one end of said spring, the latter slide-rod being operatively connected with a moving part of the loom whereby it may be actuated intermittingly to increase the friction of the strap on the friction pulley and prevent rotation of the warp-beam, combined with a releasing device connected with said slide-rod and adapted to relieve the friction of the strap of the checking devices on the friction pulley when it is desired to rotate the warp-beam by hand, substantially as described.

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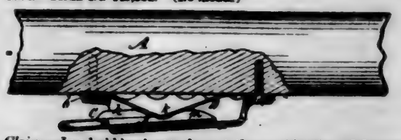
**501,002. WHIFFLETREE-HOOK.** GEORGE C. EDMUNDS, Rochester, assignor of one-half to Frank G. Ramsdell, Macedon Centre, N. Y. Filed Oct. 19, 1892. Serial No. 449,351. (No model.)



*Claim.*—The trace holder comprising the lever C consisting of the arms *a a* standing in different planes, the open reverse hooks *b b* at the ends of said arms, and the central oblique loop *c* forming the pivot bearing and a gage to limit the swing of the lever in opposite directions, as herein shown and described.

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**501,003. HOLDBACK.** GEORGE C. EDMUNDS, Rochester, assignor of one-half to Frank G. Ramsdell, Macedon Centre, N. Y. Filed Oct. 19, 1892. Serial No. 449,352. (No model.)



*Claim.*—In a hold back attachment, the combination of the socket B constructed with the enlarged opening *d* and slot *d'*, the flat spring D resting in said slot and provided with the central bow *h* and the pin C constructed with the flange *k* provided with the depression *l* and double sided cam *m*, as shown and described and for the purpose specified.

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**501,004. SECTIONAL FEED-ROLL.** ROBERT H. GLEASON, Grand Rapids, Mich., assignor of one-half to Alfred H. Waterman, same place. Filed May 1, 1893. Serial No. 472,653. (No model.)

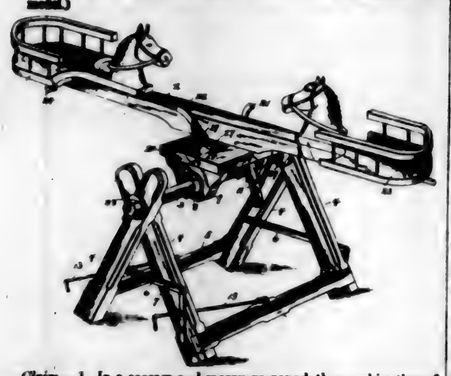


*Claim.*—1. In a feed roll in combination with a shaft, a series of collars keyed to the same, a series of hollow roll sections inclosing said collars, and having heads between said collars, enlarged openings in said heads, pins in said collars engaging said openings, and a filling of elastic material between said collars and roll sections, substantially as described.

2. In a feed-roll, a shaft having a key seat, a fixed collar, and an adjustable collar, a series of collars having keys engaging said key seat, a series of chambered roll sections, inclosing said collars, a filling of elastic material between said collars and the rims of said sections, enlarged openings in the heads of said sections, and pins in the sides of said collars, engaging said openings, substantially as described.

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**501,005. COMBINATION SEESAW AND MERRY-GO-ROUND.** FERDINAND GOLDSMITH, Saginaw, Mich., assignor of one-half to Theodore Du Bois, same place. Filed Sept. 7, 1892. Serial No. 445,229. (No model.)



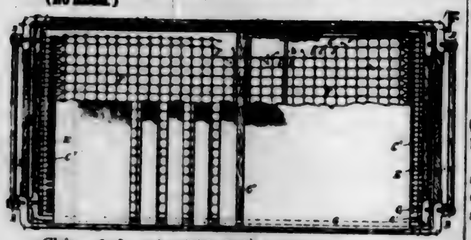
*Claim.*—1. In a seesaw and merry-go-round, the combination of an adjustable frame or support provided with pivoted legs having a cross-rod provided near its middle with annular flanges, a bearing consisting of a rectangular plate and depending flanges provided with bearing recesses receiving the cross-rod and arranged between the annular flanges thereof, a balance beam swiveled on the bearing, the diverging depending perforated arms secured to the bearing and hooks attached to the adjustable frame or support and adapted to engage the perforations of said arms, substantially as described.

2. In a seesaw and merry-go-round, the combination of an adjustable frame having a cross-rod, a bearing having depending flanges mounted on the cross-rod, said bearing having a central opening, a lower bearing disk mounted on the bearing and having a depending tubular portion therein and forming a socket and provided at its periphery with a recess, an upper bearing disk having a notch or recess corresponding with that of the lower bearing disk and provided with a depending spindle arranged in the tubular portion a balance beam secured to the upper disk and a lever fulcrumed on the balance beam and having a lower end adapted to engage the recesses or notches of the disks when the same are in alignment, substantially as described.

3. In a seesaw and merry-go-round, the combination of an adjustable support having a cross-rod, a bearing mounted thereon and having depending flanges and provided with a central opening, a lower bearing disk having diametrically disposed notches and provided with a depending tubular portion, an upper bearing disk provided with similar notches and having a depending spindle reduced and perforated at its lower end and arranged in the tubular portion, a key passing through the perforation and securing the spindle in the tubular portion, a balance beam and the levers fulcrumed on opposite sides of the balance beam and having lower ends adapted to engage said notches, substantially as described.

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**501,006. INVALID-BEDSTEAD.** ASAHEL J. GOODWIN, Brooklina, Mass. Filed June 13, 1891. Renewed Jan. 5, 1893. Serial No. 457,876. (No model.)



*Claim.*—1. In an invalid bed, the combination with corner posts provided with a series of perforations, of vertically adjustable slitted sleeves thereon provided with a dog to engage the perforations in the corner posts, tapering dovetailed projections on said slitted sleeves a portion of each projection located on each side of the slit in said sleeves, and inner and outer bed frames having corner pieces provided with tapering dovetailed recesses to engage the tapering dovetailed projections of the slitted sleeves, substantially as described.

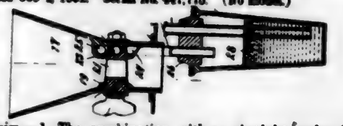
2. In an invalid bed, the combination with corner posts provided with perforations, of vertically adjustable sleeves thereon having dogs connected therewith to engage the perforations in the corner posts, inner and outer bed frames having corner pieces provided with tapering dovetailed recesses for engagement with tapering dovetailed projections on the vertically adjustable sleeves, and a screw for disengaging the same, substantially as described.

3. In an invalid bed, the combination with corner posts, of slitted sleeves thereon provided with tapering dovetailed projections, a portion of each projection located on opposite sides of the slit in said sleeves, inner and outer bed-frames having corner pieces provided with tapering dovetailed recesses, whereby when the said dovetailed projections and recesses are in engagement the slitted sleeves are firmly held on the corner posts, and a screw for disengaging the same, substantially as described.

4. In an invalid bed, the combination, with corner posts and a bed frame secured thereto, of levers G', G', connected at one of their ends to a cross bar G, to which cross-bar one end of the mattress is secured, and at their other ends pivoted to the sides of the bed frame, a slotted block M carried by one of the levers G', a plate H, secured to a side piece of the bed frame and provided with a steadying pin A, a segmental gear L pivoted to said plate, said segmental gear having a slot formed concentric with its pivotal point to receive the steadying pin A, a pin *l'* formed at one end of said segmental gear L and working in the slot in the block M, a pinion I journaled in said plate H, a gear K meshing therewith, a pinion K' formed integral with said gear K and meshing with the segmental gear L, mechanism for operating said gearing to elevate the mattress and a brake mechanism for retaining said mattress in its elevated position, substantially as described.

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**501,007. WATER-COOLER.** EDWARD T. GREEN, New York, N. Y. Filed Oct. 4, 1892. Serial No. 447,775. (No model.)



*Claim.*—1. The combination with an air-tight cooler, having a suitable faucet, of a funnel arranged to deliver into the cooler, the funnel having a casing therein with a bore opening downward, a plug or valve arranged in the funnel and adapted to simultaneously close the funnel and open the casing, a disinfectant-containing vessel arranged adjacent to the cooler, an air pipe leading into the vessel and delivering into the disinfectant, and a second pipe leading from the vessel above the disinfectant and connecting with the casing in the funnel, substantially as described.

2. The combination with an air-tight cooler having a suitable outlet faucet, of an inlet to the cooler, a disinfectant-containing vessel arranged adjacent to the cooler, an air pipe leading through the vessel and delivering into the disinfectant, a second pipe opening from above the disinfectant and adapted to connect with the cooler, and a valve arranged to simultaneously close the inlet and open the pipe leading from the disinfectant vessel to the cooler, substantially as described.

3. The combination with the air-tight cooler having a suitable outlet faucet and a valve-controlled inlet, of a disinfecting vessel held adjacent to the cooler and carrying a liquid disinfectant, an air pipe leading into the disinfecting vessel and delivering into the disinfectant, and a second valve-controlled pipe leading from the disinfecting vessel above the disinfectant to the upper portion of the cooler, substantially as described.

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**501,008. FRAME FOR ILLUMINATING-TILES.** HENRY HAMMER, San Francisco, Cal. Filed Mar. 13, 1893. Serial No. 466,621. (No model.)

*Claim.*—1. An illuminating-tile frame composed of parallel bars having holes at each end, screw-threaded rods passing through said holes, and nuts at both ends of said rods, substantially as set forth.

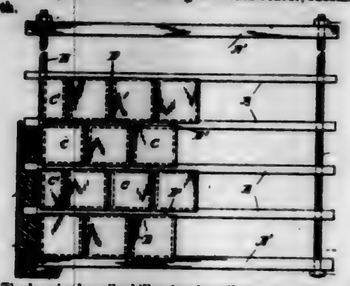
2. An illuminating-tile consisting of thin inner bars laid edgewise and provided with end holes, similarly-perforated outer bars of increased thickness, screw-threaded rods passing through the holes of all said bars, and lenses between the same, substantially as set forth.

3. The herein-described illuminating-tile construction comprising a bearer having parallel upper and lower flanges, tile-frames, and lenses the under surface of which is flush with the under surface of said lower flange, substantially as set forth.

4. The herein-described illuminating-tile construction comprising tile-frames thinner than the lenses therein, and a bearer having up-

per and lower flanges between which the sides of said frames may be inserted, substantially as set forth.

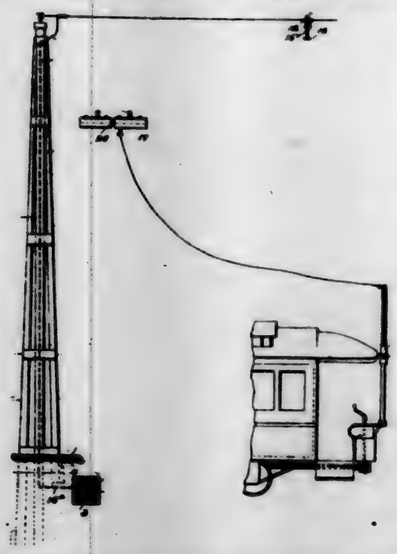
5. The herein-described illuminating-tile construction comprising tile-frames, lenses therein, a bearer between said frames provided with an upper flange partly concealed by the tops of said lenses and a lower flange coming flush with the under surface of the same, and a layer of filling material extending over said bearer, substantially as set forth.



6. The herein-described illuminating-tile construction comprising a bearer, frames borne by the same, upwardly-projecting lenses, and layers and borders of concrete or cement covering and surrounding said bearer and said frames, substantially as set forth.

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**501,009. OVERHEAD ELECTRIC RAILWAY.** JOHN C. HENRY, Westfield, N. J. Filed Sept. 27, 1892. Serial No. 326,944. (No model.)



*Claim.*—1. In combination with a source of electricity, a railway track electrically connected to one pole thereof, a main feed conductor connected to the other pole thereof, posts arranged along the said track on opposite sides thereof, guy-wires supported on said posts across the track and electrically connected with said main feed conductor and working conductors suspended over the track by said guy-wires and in electrical connection therewith, substantially as set forth.

2. In combination with a railway track, posts arranged along and on both sides of the same, and having insulators substantially as described, guy-wires supported from said posts by said insulators and feed and working conductors, both in electrical connection with said guy-wires.

3. The combination of guy-wires, one or more working conductors and hangers of conducting material, through which said guy-wires pass without break from side to side of the street for supporting said working conductor or conductors directly from said guy-wires without insulation, said hangers being adjustable on the guy-wires.

4. The combination of one or more traveling motors, an overhead working conductor or conductors electrically connected thereto, a series of posts "staggered" on opposite sides of said working conductor or conductors, and diagonal guy-wires supported on said posts and supporting said working conductor or conductors.

5. In an electric railway, the combination of a working conductor, posts "staggered" on opposite sides thereof, and a continuous guy-wire for said working conductor stretched diagonally back and forth from post to post.

6. In an electric railway system, the combination of a working conductor forming part of the electric circuit, posts "staggered" on opposite sides thereof, and an electrically continuous guy-wire for said working circuit connected thereto and forming part of the conducting circuit, and stretched back and forth from post to post substantially as set forth.

7. The combination of the working conductor of an electric railway, having guy-wire supports, of a series of guy-wire-supporting posts staggered on opposite sides of the track.

8. In an electric railway system the combination of a supply conductor supported from poles along the roadway, suspended working conductors over the track and branch conductors at intervals connecting the supply and working conductors.

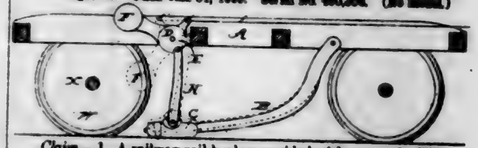
9. In an electric railway system, the combination of the track a line of posts on each side thereof, and an overhead wire system comprising feed and guy or span wires carried by said posts and working conductors suspended from the span wires over the track, substantially as set forth.

10. In an electric railway system, the combination of the track, a line of hollow posts at each side thereof, span wires carried by said posts, working conductors suspended from said span wires, and extending along the way over the track, a buried feeding conductor and branch wires connecting at intervals the feeding and working conductors and passing through said posts, substantially as set forth.

11. In an electric railway system, the combination of the track, hollow posts arranged along the same, span wires carried by said posts, working conductors extending along the way over the track suspended from said span wires and in electric connection therewith, a buried feeding conductor, and branch wires connecting at intervals the feeding conductors to said span wires, and passing through said posts, substantially as set forth.

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**501,010. RAILWAY-RAIL BRAKE.** SAMUEL M. J. HOUSE, Hillsborough, Va. Filed Jan. 31, 1893. Serial No. 460,266. (No model.)



*Claim.*—1. A railway rail brake provided with means for lifting and for pushing it down onto the track, in use, and with a cavity or means for feeding grit onto the rail to increase the adhesion of the brake shoe in use.

2. A railway rail brake shoe mounted on a bar pivoted at one end, in combination with a wheel connected therewith by a bar pivoted to each so as to lift or push down the brake as the wheel is turned, and a brake rod arranged to turn the wheel.

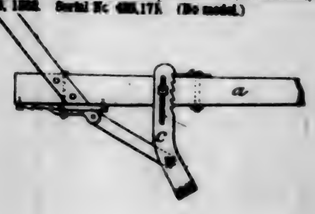
3. A railway rail brake shoe mounted on a bar held at one end by a pivot, in combination with a wheel connected therewith by a bar held to each by a pivot, so as to lift or push the brake shoe to the rail as the wheel turns, and a weight arranged to counterbalance and lift the bar and shoe when released.

4. A railway rail brake shoe mounted on a bar held by a pivot at one end, in combination with a cross shaft connected therewith by a pivoted bar and a crank to lift or push down the brake as the shaft is turned, a counterbalance weight, and a crank connecting with a brake rod or chain.

5. The pivoted bar B bearing brake shoe C, connected by bar H, with crank wheel E, and a counterbalance weight F, all arranged for use as set forth.

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**501,011. FLOW.** THOMAS H. LANCASTER, West Point, Ga. Filed Mar. 16, 1892. Serial No. 425,175. (No model.)

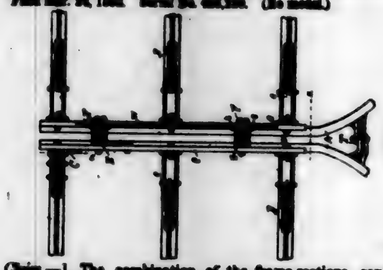




*Claim.*—The combination of the beam and handle, the standard composed of double bars slotted in their upper ends and dentated on the forward edges of their upper ends, a bolt passing through the said slots, a plate *g* slotted and bolted to the upper side of the beam, its back edge entering the interdental spaces on the said standard a brace pivoted to said standard near its lower end and extending upwardly at an angle therefrom, a slotted dog having an upturned back end and being pivoted to the free end of said brace, a plate dentated on its under side and engaging the under side of the beam and a bolt passing through the beam and said plate and dog securing the upturned back end of the dog in engagement with said plate, substantially as and for the purpose specified.

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**501,012. HARROW.** WILLIAM J. LAWRENCE, Kalamazoo, Mich. Filed Mar. 24, 1892. Serial No. 426,220. (No model.)



*Claim.*—1. The combination of the frame-sections, revoluble tooth-bars having upwardly extending brackets near their inner ends, longitudinal bars pivotally attached to the upper ends of the brackets of each section, hinges attached to said longitudinal bars and hinging the frame-sections side by side together, a lever attached to one of said bars, and a hinge directly hinging the frame-sections together, so as to be rigidly attached against endwise movement; substantially as set forth.

2. A frame section having revoluble tooth bars, a longitudinal bar pivotally attached to said tooth-bars, an operating lever attached thereto, in combination with another frame-section by the side of it and having like tooth bars and longitudinal bar, hinges hinging said longitudinal bars together, and a hinge directly hinging the frame-bars of the sections together, so as to be rigidly attached against endwise movement; substantially as set forth.

3. The combination of a frame section having revoluble tooth-bars, brackets extending upwardly from the inner end of the said tooth-bars, a longitudinal bar pivotally attached to the upper ends of said brackets, hinging arms attached to said longitudinal bar and an operating lever attached to said bar, in combination with another section having like revoluble tooth-bars, brackets, longitudinal bar and hinging arms, a rod attached at the ends to said hinging arms and passing through the eyes of the first named hinging arms, and a hinge directly connecting the frame bars of the sections together, so as to be rigidly attached against endwise movement; substantially as set forth.

4. In a harrow frame, the combination of revoluble share-bars or tooth-bars, upwardly extending brackets attached to said bars, a longitudinal bar pivotally attached to said brackets, and the lever, comprising the lever proper, rigidly attached at its lower end to one of the share-bars or tooth-bars, and pivotally attached to the longitudinal bar, said lever being provided with the locking projection and loop, an elastic bar having a series of perforations and attached at its lower end to the longitudinal bar and passing through said loop by the side of the lever, and the trip between said lever and the elastic bar; substantially as set forth.

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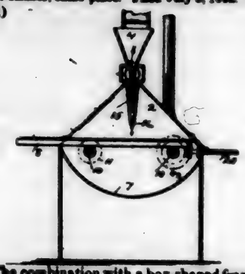
**501,013. ADVERTISING-VALISE.** DANIEL W. LOSS and CHARLES DUNDY, Lockport, Ill.; said Loss assignor to said Dundy; said Dundy assignor of two-thirds to Allen G. Hayley and Charles B. Gamble, same place. Filed Sept. 21, 1892. Serial No. 446,654. (No model.)



*Claim.*—A paper advertising valise formed of crossing paper strips A B, the wooden pieces O O covered by the ends of paper strip A and the interlocking handles D E having ends passed through paper strip A and bent around the pieces C as shown and described.

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**501,014. APPARATUS FOR DECORATING GLASS.** JOHN HAGNER, Pittsburg, Pa., assignor, by direct and mesne assignments, of two-thirds to Rudolph Glaser, same place. Filed July 5, 1892. Serial No. 439,008. (No model.)



*Claim.*—The combination with a box-shaped frame provided with a downwardly curved or sloped base and a cover having sloping sides, one of which is provided with a window or view-opening, of the two rollers 10, provided with pulleys 11, connected by a belt, the gear wheel 12, connected to one of the rollers, a driving pinion 13, engaging the gear wheel 12, a table for carrying the glass to be operated upon, provided with a reciprocating motion to pass it beneath the blast, and a nozzle 16 containing a nozzle 15 having a hopper 4, the oblong box 3, connected with the blast-fan and the conveyer 5, for returning the sand for re-use, substantially as specified.

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**501,015. ADVERTISING DEVICE.** GEORGE MANN, Toronto, Canada, assignor to George F. Burton, same place. Filed Sept. 12, 1892. Serial No. 446,207. (No model.)



*Claim.*—1. In a car advertising device, the combination of two parallel rods held by suitable fixed supports on the car, with a frame provided with a clip and spring plate to hold said frame to said rods, substantially as described.

2. In a car advertising device, the combination with the ribs of the car, of two parallel rods having adjustable ends to secure them between the ribs, and the frame E provided with the clips F and the spring plate D permanently attached to said frame, whereby the latter may be adjusted in any desired position, substantially as described.

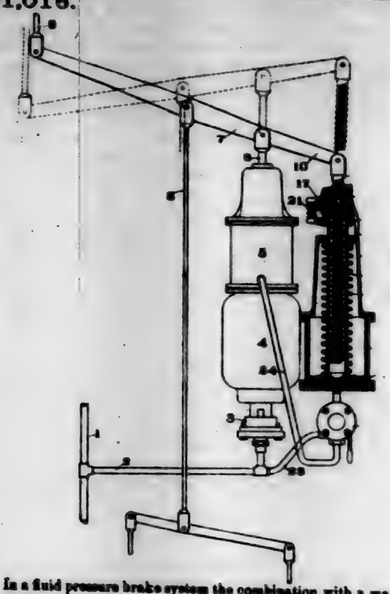
3. The frame E, having the forked end spring plate D, connected at one end and the forked-shaped clips F, at its other end, in combination with the rods A, each rod having an adjustable end C, and carrying an attaching device, substantially as and for the purpose specified.

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**501,016. AIR-BRAKE.** ALBERT P. HASSEY, Watertown, N. Y. Filed Apr. 12, 1892. Serial No. 428,561. (No model.)

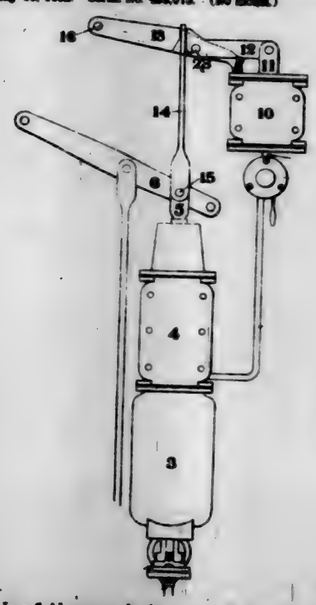
*Claim.*—1. In a fluid pressure brake system the combination with a main brake cylinder, its piston and piston rod and suitable levers and brake rigging to communicate the power of the main brake cylinder to the brake shoes; of a supplemental brake cylinder; its piston and piston rod; and a clutch mechanism, one member carried by the brake rigging and the other member operated by the supplemental piston to connect the supplemental piston with the brake rigging; all substantially as set forth.

501,016.



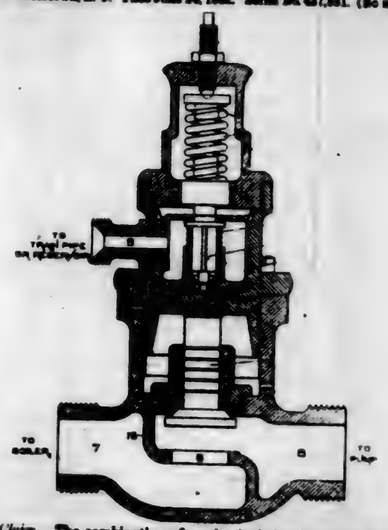
2. In a fluid pressure brake system the combination with a main brake cylinder, its piston and piston rod and suitable levers and brake rigging to communicate the power of the cylinder to the brake shoes; of a supplemental brake cylinder, its piston and piston rod; a clutch to connect the supplemental piston with the brake rigging; a valve to open a passage from the train-pipe to the supplemental brake cylinder and a piston controlled by the difference in pressure between the train pipe and the main brake cylinder to actuate the valve, all substantially as set forth.

501,017. CAR-BRAKE. ALBERT P. MASSEY, Watertown, N. Y. Filed May 16, 1892. Serial No. 433,073. (No model.)



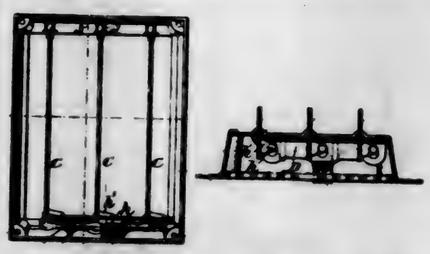
*Claim.*—In a fluid pressure brake system the combination of a main brake cylinder and piston; an additional brake cylinder and piston; a clutch mechanism connecting the piston of the additional brake cylinder with the brake rigging; a passage connecting the two brake cylinders; and an automatic valve set to open only at a desired fluid pressure in that passage; all combined and operating substantially as set forth.

501,018. GOVERNOR FOR STEAM-PUMPS. ALBERT P. MASSEY, Watertown, N. Y. Filed June 24, 1892. Serial No. 437,331. (No model.)



*Claim.*—The combination of a valve body having supply and delivery connections, a regulating-valve controlling communication between said connections, a cylindrical piston stem attached to said regulating-valve working in a cylinder whereby steam may cause opening movement to said regulating-valve, a piston unconnected with the regulating valve, but abutting against its stem and working in a chamber secured to the valve-body, an exhaust port to release pressure from the space between the regulating-valve-piston-stem and the piston unconnected with the regulating valve, an air-pressure valve controlling an air port between the chamber containing the piston and a chamber connected with an air supply, a spring to open said air-pressure valve, a flexible corrugated diaphragm exposed on one side to the pressure of the air supply, a spring on the opposite side of the flexible diaphragm connected with an adjusting screw, substantially as set forth.

501,019. REGISTER FOR HEATER-FLUES. WILLIAM H. HEVNER, Philadelphia, Pa., assignor to Thomas Devlin, Louis J. McGrath, William E. Brown, and Catharine A. McGrath, executors of William V. McGrath, deceased, same place. Filed Mar. 14, 1892. Serial No. 424,791. (No model.)



*Claim.*—1. In combination, a supporting frame, an open-work front plate slotted laterally, a series of wings or fans having bearing pins *d* adapted to rotate in recesses in the supporting frame, and a projecting arm *h'* carrying an actuating pin *h*, a laterally reciprocating connecting rod D, in which said actuating pins are mounted, and a guide-plate on which said connecting rod is mounted and whereby it may be reciprocated in a horizontal plane parallel to the line of bearing pins; said parts being constructed, combined and arranged substantially as described.

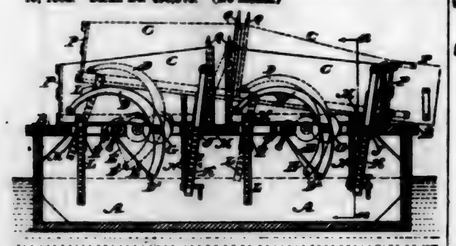


2. In combination, a supporting frame, a slotted connecting rod D supported therein and adapted to be reciprocated laterally, of a wing or fan having a bearing pin at each end adapted to rotate in recesses in the supporting frame, and an additional actuating pin *h* supported on a projecting arm *h'*, of such form that the line of actuating pins *h* shall always be parallel with the line of bearing pins *d* said actuating pin resting in a recess of the slotted rod, whereby when the latter is reciprocated laterally the wing or fan will be rotated in its bearing pins in an arc of a circle; substantially as described.

3. In combination, the supporting frame, the open work front plate F, the guide plate having transverse guide bars $f^a$ slotted at $f^a$, and a connecting rod D carrying knob *b*, and having slots *f*, and guide bars $f'$ $f^a$ on its under surface; wings or fans provided with bearing pins *d* and a projecting arm *h'* carrying an actuating pin *h* adapted to rest in the recess *f* of the connecting rod D whereby on a lateral reciprocation thereof, the fans may be partially rotated said parts being constructed and arranged substantially as described.

4. In combination, the supporting frame, with solid bottom recesses *m*, the same being cylindrical at top of the frame and semi-cylindrical at bottom of the frame, wings or fans C with bearing pins *d* at each end adapted to rotate in said recesses *m*, *m* and projecting actuating pins *h*; the stationary guide plate F, having semi-cylindrical recesses $f^a$, the slotted connecting rod D, adapted to receive said actuating pins *h* and reciprocate the same laterally; substantially as described.

501,020. DUMPING-SCOW. BERNARD A. MULLIN, Philadelphia, Pa., assignor to Adolph Segal and Hermann Hoops, same place, and the Mullin Dredging and Lightering Company, of New Jersey. Filed June 15, 1892. Serial No. 436,573. (No model.)

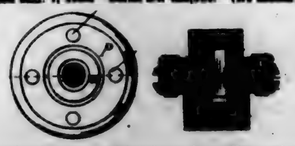


*Claim.*—1. A scow having a dumping body thereon, arms pivoted to said body and mounted on the scow, chains connected with said arms and with a shaft mounted on the scow, gearing for said shaft also mounted on the scow, bars pivotally connected with the opposite ends of the body and fitted in pivotal guides on the scow, and a screw mounted in the floor of the scow below the body, and adapted to bear against and raise the end of the latter opposite to the connection of the aforesaid arms.

2. A scow provided with two rows of dumping bodies independent mechanism for raising and lowering each end of said dumping bodies, said bodies having gates or doors in each end, and said rows being so arranged that adjacent bodies of the different rows may be connected when raised, said parts being combined substantially as described.

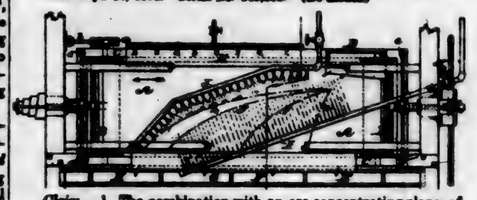
3. A scow having a dumping body thereon, a shaft and gearing mounted on the scow for operating said shaft, a chain connected with said shaft and with an arm pivoted to one end of the body, rising and falling bars pivoted to opposite ends of the body, pivotal guides mounted on the scow receiving said bars, and a screw mounted on the scow and bearing upwardly against the body at the end opposite to the connection of the said pivoted arm, substantially as described

501,021. INSULATING COUPLING. LOUIS MCCARTHY, Boston, Mass. Filed Mar. 7, 1892. Serial No. 423,963. (No model.)



*Claim.*—An insulator comprising flanged metallic portions, a layer of insulating material interposed between said flanged portions, securing bolts passing through said flanged portions and said interposed layer of insulating material, said bolts being insulated from one of said flanged portions by a surrounding layer of insulating material, and a metallic strip or ring through which the said bolts pass, said strip or ring being located under the heads of said bolts and interposed between said heads and the insulating material which surrounds said bolts, whereby said bolts may be headed down without danger of injuring the insulating material which surrounds them and which insulates them from the adjacent flanged metallic portion, substantially as set forth.

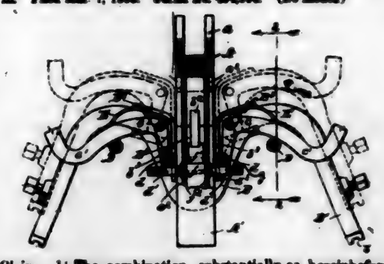
501,022. ORE-CONCENTRATOR. JOHN H. MCGOT, Ouray, Colo., assignor of one-half to William Boyd Cunningham, New York, N. Y. Filed Sept. 17, 1892. Serial No. 446,202. (No model.)



*Claim.*—1. The combination with an ore concentrating plane, of a water jet pipe and means for delivering a counter-current of gaseous fluid across the surface of the water in opposition to the wash produced by said water pipe, for the purposes described.

2. The combination with an ore concentrating plane, of a jet pipe for projecting a film of liquid upon the surface of the plane and another jet pipe for projecting a counter-current of gaseous fluid upon the surface of the said film in opposition to its direction of flow, for the purposes described.

501,023. PACKAGE-CARRIER. JOSEPH S. PARKINSON, Chicago, Ill. Filed Mar. 7, 1892. Serial No. 424,202. (No model.)



*Claim.*—1. The combination, substantially as hereinbefore set forth, with the forked carrier-block, and with the basket-bail and its latch-dog, of a safety-lock acting when the latch-dog has accomplished its engagement, to prevent upward movement of the basket-bail relatively to the carrier-block.

2. The combination, substantially as hereinbefore set forth, with the forked carrier-block, basket-bail and latch-dog, of catches mounted upon the basket-bail and engaging beneath stops upon the carrier-block when the latch rests upon its seats, and means controlled by the lifting hooks to disengage said catches.

3. The combination, substantially as hereinbefore set forth, with the carrier-block having shoulders, of the latch-block provided with pivoted catches having outstanding heel-arms to receive the lifting hooks, arranged to engage beneath the shoulders upon the carrier-block when the latch has accomplished its own engagement, to prevent upward movement of the latch-block relatively to the carrier-block.

4. The combination, substantially as hereinbefore set forth, with the carrier-block having two sets of stops or shoulders, of the latch-block having catches provided with heel extensions to receive the lifting hooks, and with teeth which engage with the upper set of shoulders, when the latch-dog is engaged, to form a positive lock against upward movement of the latch-block or basket, and act against the lower shoulders to prevent escape of the basket when the latch fails to operate

5. The combination, substantially as hereinbefore set forth, of the forked carrier-block, A, the latch-block, B, the catches, C, pivoted to the latch-block and arranged to be operated by the lifting arms or hooks, D, the latch-dog, and the shoulders or stops, *f*, on the carrier-block arranged to receive the catch-teeth when the latch-dog is engaged.

6. The combination of the carrier-block, A, the latch block, B, the pivoted catches, C, adapted to be opened by the lifting arm, D, the springs, E, and notches or recesses in the sides of the carrier-block to receive the teeth of said catches when the latch-dog has reached its position of engagement.

7. The combination, substantially as hereinbefore set forth, with the carrier-block and latch-block, of the elbow-lever catches pivoted to the latch-block, the stops, *f'*, upon the carrier-block to engage above these catches to prevent upward movement of the basket relatively to the carrier-block and the opposing stops, *f'*, on said carrier-block to engage beneath the catches and prevent escape of the basket when the latch-dog fails to operate.

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**501,024.** HARNESS-SADDLE. JOSEPH E. FRENZ, Chicago, Ill. Filed Sept. 29, 1892. Serial No. 447,344. (No model.)



*Claim.*—1. The combination, substantially as hereinbefore set forth, of a check-hook having a straight dove-tailed shank, a seat having a longitudinal undercut groove to receive said shank, a fastening directly entering the shank and wall of the groove transversely of the two to hold the shank from withdrawal, and a saddle-tree secured to said seat independently of the connection between the seat and check-hook.

2. The combination of a seat provided underneath with a longitudinal dove-tail groove, a check-hook formed with a straight dove-tail shank entering said groove and fitting closely therein, and a spring-catch fastening said shank to the seat.

3. The combination, substantially as hereinbefore set forth, of a seat provided underneath with a longitudinal dove-tail groove and recessed at a point along said groove, a check-hook formed with a straight dove-tail shank entering said groove and fitting closely therein and having a notch to oppose said recess and a plate spring secured in said recess and having its free end bent outward therefrom to snap into the notch and prevent the withdrawal of the shank.

4. The combination, substantially as hereinbefore set forth, of the saddle-tree having a dovp-tail groove at the forward edge, the seat formed with a longitudinal subpending flange dove-tailed at the forward end to enter said groove, screws passing directly through said tree at the rear side thereof, adjacent to the pad lining, and up into the seat, and a check-hook detachably connected to said seat independently of the fastening connection between the latter and the tree.

5. The combination of the saddle tree having a dove-tail groove at its forward edge, the seat formed with a longitudinal subtending flange, dove-tailed at its forward end to enter said groove, and with a dove-tail groove longitudinally through said flange, screws passing through the rear edge of the tree and into the seat, the check-hook having a straight dove-tail shank entering the groove in the seat and a fastening to prevent the withdrawal of said shank.

6. The combination of the saddle-tree having a dove-tail groove at its forward edge, the seat formed with a longitudinal subtending flange, dove-tailed at its forward end to enter said groove, and with a recessed dove-tail groove longitudinally through said flange, screws passing through the rear edge of the tree and into the seat, the check-hook having a notched dove-tail shank entering the groove in the seat, and a spring secured in the recess of the groove and engaging with the notch in the shank, to prevent the withdrawal of said shank.

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**501,025.** CENTRAL-DRAFT LAMP. FRANK REESE, Morrison, assignor of one-half to the Bridgeport Brass Company, Bridgeport, Conn. Filed Dec. 28, 1892. Serial No. 456,867. (No model.)

*Claim.*—1. The combination with an oil reservoir, an inner air tube and a wick raiser, of a collar 23 secured to said air tube, an arm 22 extending from said collar, and a wick raising shaft the lower end of which is journaled in said arm.

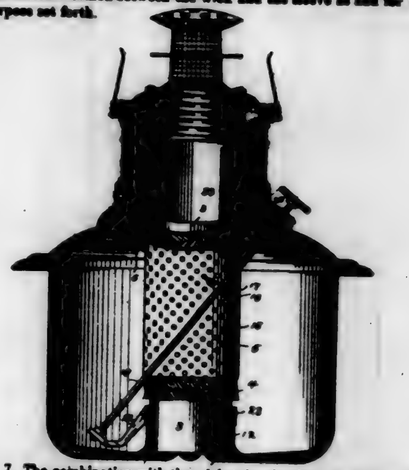
2. The combination with a wick raiser and a wick raising shaft carrying a wheel engaging said wick raiser, of an oil reservoir, an inner air tube, a collar 23 secured to said tube, and an arm extending from said collar in which the lower end of the wick raising shaft is journaled.

3. The combination with an inner air tube having at its upper end an internal and an external screw thread, of an inner air distributer threaded to engage the internal thread, and a sleeve threaded to engage the external thread and lying between the wick and the air tube so that neither sleeve nor air distributer can be raised by the wick and a channel is left for oil to run down between the wick and the depressions in the sleeve substantially as described.

4. The combination with an inner air tube having an internal and external thread, of an inner air distributer engaging said thread from the inner side, and a sleeve engaging said thread from the outer side substantially as described.

5. The combination with an inner air tube having a shoulder 25 and thread 24, of an inner air distributer engaging said thread from the inner side, and a sleeve engaging said thread from the outer side and resting upon said shoulder.

6. The combination with an inner air tube having a thread 24, of an inner air distributer and a sleeve 26 lying outside of said tube, a space being left between said tube and sleeve for the purpose set forth, and said sleeve being provided with a thread as shown so that a channel is formed between the wick and the sleeve as and for the purpose set forth.



7. The combination with the wick tube, the chimney gallery, the standards and ring 33 engaging the wick tube, of the body, and an outer air distributer secured to the body and fitting closely between the body and the wick tube whereby the latter is supported and retained in its central position.

8. The combination with the wick tube, the body having slots 34, and an outer air distributer lying between the body and the wick tube, of a chimney gallery, standards depending therefrom and passing through said slots, and a ring at the lower end of the standards which slides on the wick tube whereby said parts are held firmly against other than vertical movement.

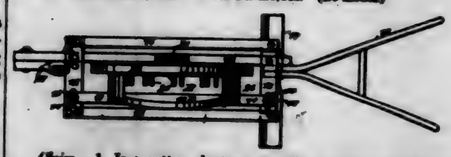
9. The combination with the body having perforations 9, of a chimney gallery having standards depending therefrom said standards being free to move vertically in the body but held against rotary movement, and having perforations 36 which register with the perforations in the body when the gallery is at its normal position.

10. The combination with the wick tube, the outer air distributer and the body having slots 34 and perforations 9, of a chimney gallery having standards depending therefrom and said standards being free to move vertically in the body but held against rotary movement and having perforations 36 which register with perforations 9 when the collar is lowered, and a ring at the lower end of the standards which engages the wick tube.

11. The combination with a chimney gallery having slots 37 of ring 36 having chimney springs blanked out from the metal within the ring, said springs passing upward through said slots and the metal of the chimney gallery carving over the edge of the ring, thereby securing the parts together.

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**501,026.** COTTON-PLANTER. LOUREAS H. ERWIN, Waverman, Ga. Filed Jan. 21, 1893. Serial No. 459,113. (No model.)



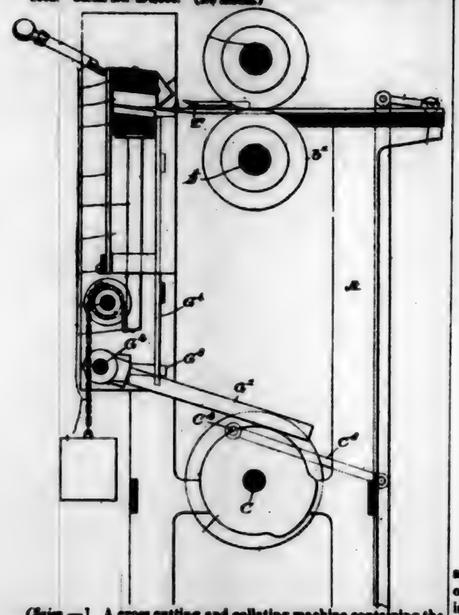
*Claim.*—1. In a cotton planter comprising a frame and a rotatable supporting wheel, a hopper the outer surface of which is constructed of two essentially semi-circular sections, the lower section being substantially parallel to the plane of the wheel, and the upper section being flared outward, as set forth.

2. In a cotton planter comprising a frame, a rotatable supporting wheel, and a hopper adjustable in relation to the wheel, a sleeve provided with a hub secured to the wheel, said sleeve inclosing the shaft of the wheel, a set-screw passing through the sleeve and adapted to lock the sleeve in relation to the shaft, and a head provided on the shaft at the inner end thereof, said head being in contact with the sleeve, substantially as described.

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**501,027.** MACHINE FOR CROSS-CUTTING AND COLLATING PAPER. JOHN T. ROBINSON and HENRY J. CHAMBERLAIN, Hyde Park, Mass., assignors to John T. Robinson & Co., same place. Filed May 31, 1892. Serial No. 434,602. (No model.)



*Claim.*—1. A cross cutting and collating machine containing the following instrumentalities, viz:—a series of cross cutting blades and a receptacle for short lengths of material, and reciprocating feeding and collating slides adapted to positively engage and carry tubes or strips of paper bodily through between the cross cutting rolls and deposit them into the said receptacle, substantially as described.

2. The combination with the cross cutters and the receiving feeding and collating devices, of a follower and a block or plate above it, the said feeding and collating devices entering between the follower and said block or plate and depositing sections of the said tube or strip upon the follower, and means for supporting the follower in a yielding manner, substantially as described.

3. The follower, means to support it in a yielding manner, and a stripper, combined with cross cutting blades and with feeding and collating slides adapted to receive at one side of the said cross cutting blades, a tube or strip, carry it between said cross cutting blades to thereby effect the transverse cutting of the said tube or strip, the feeding and collating slides depositing said short lengths of tube or paper upon or in the path of vertical movement of the follower, substantially as described.

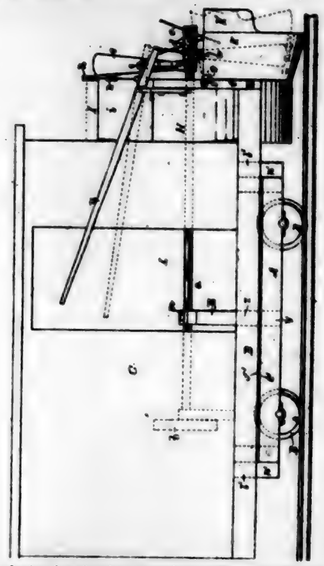
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**501,028.** TRACK-CLEANER. GEORGE W. ENGLISH, Charlotte, N. Y. Filed Feb. 27, 1893. Serial No. 463,891. (No model.)

*Claim.*—1. A snow-clearing device for railways, consisting of a car provided with a driving shaft and means to rotate it, a bucket wheel secured to the driving shaft in front of the car, and a wheel house for the bucket wheel, in combination with a series of blades secured to the shaft in front of the bucket wheel each held in an independent hub and arranged one forward of another on the shaft, the axes of said blades being at right-angles with the shaft, substantially as shown and described.

2. A snow-clearing device for railways, consisting of a car or vehicle having a shaft, a bucket wheel secured to said shaft in front of the car, and a wheel house for the bucket wheel, in combination with a series of inclined blades on the driving shaft in front of the bucket wheel, the wheel house having an opening near the blades and a circumferential opening, with means to rotate the shaft, the blades being held in hubs on the shaft and made shiftable in the hubs, substantially as and for the purpose set forth.

3. A device for clearing snow from railway tracks, consisting of a car or vehicle having a longitudinal shaft, a bucket wheel on the shaft forward of the car, and a house for the bucket wheel, in combination with a series of inclined blades mounted in independent hubs on the shaft forward of the bucket wheel, the blades being shiftable in the hubs and the latter being formed with shoulders or stops to control the positions of the blades, with means to drive the shaft, substantially as shown and described.



4. A device for clearing snow from railway tracks, consisting of a car or vehicle having a longitudinal rotatory shaft, a bucket wheel on the shaft forward of the car, and a house for the bucket wheel, in combination with a series of blades on the shaft forward of the bucket wheel, with means to drive the shaft, the bucket wheel being formed with radial arms having tapered or spade-shaped ends and buckets secured to said tapered ends to face in opposite directions, substantially as and for the purpose set forth.

5. A snow-clearing device for railways, consisting of a car body mounted upon a truck frame, said body having a longitudinal rotatory shaft, a bucket wheel on the shaft forward of the car, and a house for the bucket wheel, in combination with inclined blades on the shaft forward of the bucket wheel, the blades being shiftable in the hubs and the latter being formed with shoulders or stops to control the positions of the blades, with means to drive the shaft, substantially as shown and described.

6. A snow-clearing device for railways, consisting of a car body mounted upon a truck frame and having a longitudinal rotatory shaft, a bucket wheel on the shaft forward of the car, and a house for the bucket wheel, in combination with inclined blades on the shaft co-acting with the bucket wheel, and means to drive the shaft, said car body and the truck frame being formed with iron at their adjacent parts and joined by a central pivoted bolt or bearing, substantially as shown and described.

7. A snow-clearing device for railways, consisting of a car body mounted upon a truck frame, said body having a longitudinal rotatory shaft, a bucket wheel on the shaft forward of the car, and a house for the bucket wheel, in combination with inclined blades on the shaft co-acting with the bucket wheel, and means to drive the shaft, said car body and the truck frame being joined by a threaded swivel bolt, a threaded nut for the bolt held by the car body, and a plate in the truck frame beneath said nut, the bolt being provided with an enlarged part to bear upon said plate, substantially as shown and for the purpose set forth.

8. A device for clearing snow from railway tracks, consisting of a car body mounted upon a truck frame and having a longitudinal rotatory shaft, and a bucket wheel on the shaft forward of the car, in combination with inclined blades held by the shaft to co-act with the bucket wheel, and means to drive the shaft, the car body being adapted to turn horizontally upon the truck, and stops to hold the car body in different positions relative to the truck, substantially as and for the purpose set forth.

9. A snow-clearing device for railways, consisting of a car or vehicle provided with a driving shaft, a bucket wheel on the driving-

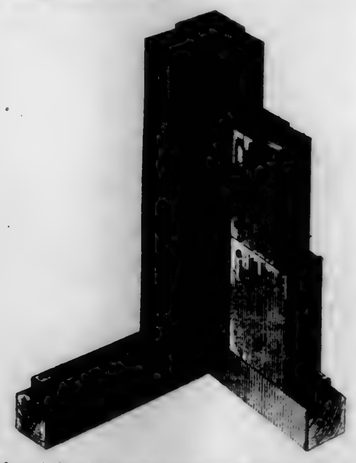
shaft in front of the car, and a wheel house, in combination with a series of blades on the shaft forward of the bucket wheel, and arranged in order from front to rear, with means to rotate the driving shaft, and a scoop forward of the wheel house having the lower part of its cutting edge back of the cut or sweep of the forward blade and the upper part of its cutting edge, on either side, in advance of said blade, substantially as shown and described.

10. A snow-clearing device for railways, consisting of a car provided with a driving shaft, a bucket wheel on the driving shaft in front of the car, and a wheel house, in combination with a series of blades on the shaft forward of the bucket wheel, arranged in order from front to rear, with means to rotate the driving shaft, and a scoop forward of the wheel house having the lower part of its cutting edge back of the sweep of the forward blade and the upper part of its cutting edge in advance of said blade, said scoop being hinged at its upper side to move in a vertical plane, and levers at the sides of the car connected with the scoop to control it, substantially as shown and described.

11. A snow-clearing device for railways, consisting of a car or vehicle provided with a driving shaft, a bucket wheel on the driving shaft in front of the car, and a wheel house, in combination with a series of blades on the shaft forward of the bucket wheel, with means to rotate the driving shaft, and a scoop forward of the wheel house, said bucket wheel being provided with pairs of arms having double inclined or spear-shaped heads provided with oppositely-faced buckets, substantially as shown and described.

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**501,029. FACING FOR WALLS.** DAVID F. SAUM, Washington, D. C., assignor of one-half to Jacob C. Donaldson, same place. Filed Apr. 18, 1893. Serial No. 470,865. (No model.)



*Claim.*—1. In a facing for walls, the combination of a corner piece and a series of tiles detachably connected together and to the corner piece and arranged to break joints with each other, substantially as described.

2. In a facing for walls, the combination with a series of tiles adapted to be rigidly connected together and to a suitable support, of corner pieces consisting of a series of sections adapted to be rigidly connected together and to the tiles, each section of the corner piece being of greater length than the tiles so as to break joints therewith, substantially as described.

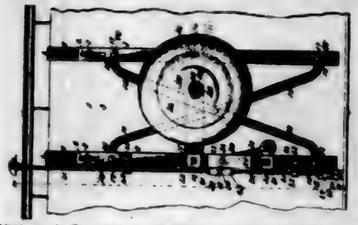
3. In a facing for walls, the combination with a series of tiles adapted to be rigidly connected together, of corner pieces provided in their edges with grooves adapted to receive flanges on the edges of the adjacent tiles, substantially as described.

4. In a facing for walls, the combination with a series of tiles adapted to be rigidly connected together by tongue and groove joints and provided with means for attachment to a suitable support, of sectional corner pieces having their adjacent ends connected by tongue and groove joints and provided in their side edges with longitudinal grooves adapted to receive tongues or flanges on adjacent tiles, the sections of the corner pieces being of greater length than the tiles so as to break joints therewith, substantially as described.

5. In a facing for walls, the combination of a base piece provided with a longitudinal rib on its upper surface, a series of rectangular tiles having grooves formed in two of their sides and provided on their other sides with integral tongues or flanges, whereby they are adapted to be connected together and to the base piece, and corner blocks supported by the base piece and provided in its longitudinal edges with grooves adapted to receive the tongues or flanges on the adjacent tiles, substantially as described.

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**501,030. CAR-GONG.** JOHN H. SUTTIE, St. Louis, Mo., assignor of one-third to Robert McCulloch, same place. Filed July 2, 1892. Serial No. 438,808. (No model.)



*Claim.*—1. In a car gong, the combination of the hangers 5, the hooks 4, the side bars 7 having the slotted, upper ends 6, the set screws 8, the transverse gong bearer bar 11, and the gong secured to said bar; substantially as described.

2. In a car gong, the combination of the adjustable extension and transferable hanger frame suspended on the inside of the dash, the combined signal and alarm gong secured to said frame, the bell crank lever 30 pivotally connected to said frame, the annunciator hammer mounted on the driven end of said lever, and striking on the outside of the gong and the operative pitman rod 41, which rod works in loose bearings mounted on said frame, the said pitman rod pivotally connected to the drive end 29 of said bell crank lever to operate the same, and strike said hammer against said gong; substantially as described.

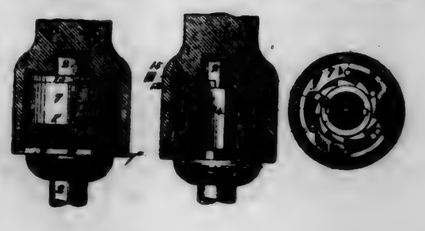
3. In a car gong, the combination of the adjustable extension and transferable hanger frame 3, the combined signal and alarm gong secured to said frame, the compound bridge bracket 27 having the inner bridge-plate 28 and outer bridge-plate 29, the bell-crank lever pivotally mounted between said bridge-plates, the annunciator hammer mounted on the driven arm of said bell crank lever, the drive arm of said lever provided with the elongated slot 40, the operative pitman rod 41, the bearer lugs 43, in which said rod works, the expansion bolt 45 having the elongated slot 46 on said rod, the traveler drive bolt 47, seated in said bolt, and that carries said bell crank lever; substantially as described.

4. In a car gong, the combination of the adjustable extension and transferable hanger frame 3 having the cross brace bars 15, and the gong bearer bar 11, the gong secured to said bar 11, the bell crank lever 30, pivotally mounted on said frame, the annunciator hammer mounted on the driven end of said lever, the operative pitman rod 41, the bearer lugs secured to said hanger frame in which bearings said pitman rod works, the pivotal connection of said pitman rod to the drive end of said bell crank lever, the treadle 48, and the push knob 53 on said pitman rod; substantially as described.

5. In a car gong, the combination of the hangers 5, having the hooks 4, the adjustable extension gong frame having the elongated slots 6 in the upper ends of the side bars 7 of said frame, the set screws 8, the gong secured to said frame, the bell crank lever pivotally mounted on said frame, the annunciator hammer mounted on said lever, the operative pitman mounted in bearing lugs secured to said frame and pivotally connected to the drive end of said bell-crank lever, the treadle 48, and the push knob 53 on said pitman rod, the dash-board of the car on which said gong frame hangs suspended, the said dash-board having the open gate or slot 52, for the passage and working of said treadle; substantially as described.

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**501,031. HAND-SHAFT FOR CAR-BRAKES.** JOHN H. SUTTIE, St. Louis, Mo., assignor of two thirds to Robert McCulloch and William Sutton, same place. Filed Oct. 24, 1892. Serial No. 449,940. (No model.)





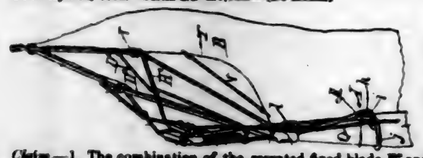
*Claim.*—1. The combination, with the brake shaft 2 of the ratchet wheel having spline connection with the shaft and the removable handle having a dog adapted to engage the teeth of the ratchet wheel, substantially as set forth.

2. The combination in a hand shaft for car brakes, of the shaft, a removable handle having a socket with a barrel fixed therein and containing a ratchet wheel confined by the ends of the barrel and capable of rotation therein, a dog within the barrel engaging the ratchet teeth of the wheel, the said wheel having spline connection with the shaft and being removable from the shaft with the handle, substantially as set forth.

3. The described combination with a hand shaft for car brakes, of the removable handle having dog 11, with spring 13, the ratchet wheel retained within the handle and adapted to fit over the upper end of the shaft and spline connection between the wheel and the shaft, substantially as, and for the purpose set forth.

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**501,032. FRUIT-PICKER.** JOSHUA SWANBURG, Los Angeles, Cal. Filed Apr. 14, 1892. Serial No. 429,102. (No model.)



*Claim.*—1. The combination of the serrated fixed blade E' and the pivoted cutting knife E' having the point *e* of its blade crescent shape and the heel *e'* of its cutting edge serrated and having such point and heel and cutting edge arranged in a curve eccentric to the pivot of such knife.

2. The combination set forth of the handle provided with the transverse side notches; the frame; the spring wire loop shank J extending from the frame and having at its end the transverse handle-embracing loop *j* and the spring wire loop shank I having at its end the handle embracing double reverse bend loop A and forming the side-wire guide loops *i* for the other shank, and the ferrule arranged to receive the end of the handle.

3. The combination set forth of the handle provided with the transverse side notches and the transverse end notch; the spring wire loop shank J having at its end the transverse handle embracing loop *j*; the spring wire loop-shank I having at its end the handle embracing double-reverse-bend loop A, and forming the side wire guide loops for the other shank; the ferrule ring arranged to embrace the loop-shanks and the handle, and the transverse bar arranged to extend thereacross to enter the transverse end notch.

4. In a fruit picker the combination of the handle; the dome shaped frame having its base or fruit receiver holding rim arranged oblique upward and forward with relation to the handle, the fruit receiver having its mouth secured to such rim arranged in a plane slightly below and slightly oblique to and divergent from the extended axis of the handle; and the stem severing device mounted on such frame and arranged above such extended axis of the handle.

5. The combination of the dome shaped frame; the stem severing device mounted thereon and the guide and branch separating wires arranged divergent from such stem severing device and extending forward therefrom to the fruit receiver holding rim.

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**501,033. RAILWAY-FROG.** IRA B. WEST, Gainesville, Ga. Filed Apr. 11, 1892. Serial No. 428,703. (No model.)

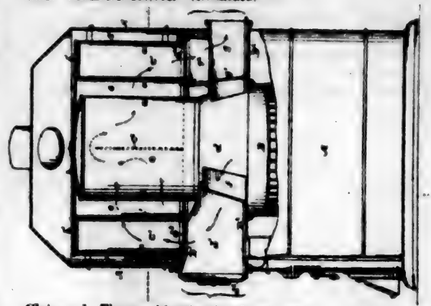


*Claim.*—1. In a railway frog, the combination of a rail movable vertically and blocks adapted to be drawn under and support same in an elevated position and means for actuating said elements in said movements for the purpose specified.

2. In a railway frog, the combination of the main-track and a siding and means for crossing the inner main-track rail consisting of a gate-rail 5 adapted to be turned across the said main track rail and form part of the frog at that point, a vertically movable rail 4 adapted to be raised at its free end and come into coincidence with the said rail 5, a pedal lever bearing on the under side of the said rail 4 and extending to near the tumbler-shaft, and supports adapted to be drawn under and sustain the said rail 4 in its elevated position, substantially as and for the purpose specified.

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**501,034. HEATING-FURNACE.** WILLIAM P. WIENER, Quakertown, Pa., assignor to himself, William P. Roberts, Frank Cavanaugh, Oliver R. Schoetz, and Charles A. Klump, same place. Filed Mar. 27, 1893. Serial No. 467,770. (No model.)



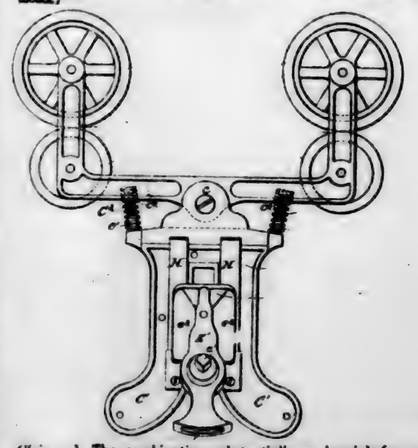
*Claim.*—1. The combination in a heating furnace, of the fire pot, the flue section mounted above the fire pot, a smoke flue opening at the rear, a damper therefor, the fire door, extensions on each side of the fire door opening, flues formed in said extensions, drums mounted above the flue section and forming a passage for the products of combustion, substantially as described.

2. The combination in a heating furnace of the fire pot, the flue section mounted above the fire pot, fire door opening in the front of said section, extensions on each side of said opening, passages in said extensions communicating with the combustion chamber, drums mounted above the flue section forming a passage for the products of combustion and communicating only with the passages at the front of the furnace, deflecting plates in said passage, and a passage at the rear forming a communication between the space between the drums and the smoke flue, substantially as described.

3. The combination in a heating furnace, of the fire pot section and drums, a flue section mounted between the fire pot section and the drums, said flue section composed of three parts, a center piece in which the flues are formed, and top and bottom plates, with bolts securing the said parts together, each part having side extensions at the front forming the flues between the combustion chamber and the space between the drums, substantially as described.

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**501,035. PACKAGE-CARRIER APPARATUS.** WILLIAM H. ALSACK, Mansfield, Ohio. Filed Mar. 15, 1893. Serial No. 466,155. (No model.)



*Claim.*—1. The combination substantially as hereinbefore set forth, of the carrier-block, the latch-block, and their engaging and disengaging devices, and a spring-presser arranged between the latch-block and carrier-block to hold the two against disengagement.

2. The combination substantially as hereinbefore set forth, of the carrier-block, the latch-block, the latch-dog, and a spring or springs arranged upon the carrier-block to yield before the latch-block to permit its engagement with the carrier-block and to expand to hold it in such engagement.

3. The combination substantially as hereinbefore set forth, of the carrier-block, the latch-block and their engaging and disengaging

flexion, and the curved plate-springs arranged at the sides of the slot in the carrier-block to rest upon the fingers of the latch-block.

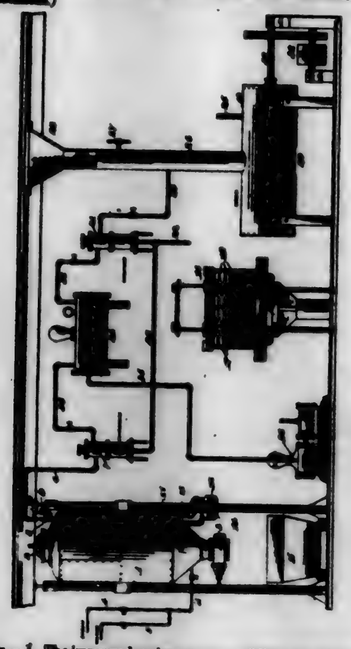
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**501,036.** SOFT SOAP. DUDLEY ALLEN, Lenoir, Iowa, assignor to The Star Manufacturing Company, same place. Filed Sept. 22, 1892. Serial No. 446,604. (No specimens.)

*Claim.*—The herein described composition of matter adapted to be used as a soft soap, consisting of hard soap, carbonate of soda, borax, chlorate of soda, concentrated lye and water, in about the proportions specified.

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**501,037.** PROCESS OF DISPOSING OF CITY GARBAGE. ERNATO R. ARNOLD, Boston, Mass. Filed Nov. 5, 1892. Serial No. 451,598. (No specimens.)



*Claim.*—1. The improved sanitary process of disposing of city garbage and recovering useful products therefrom which consists in first cooking the garbage in a closed vessel for a period of from four to eight hours, more or less according to the nature of its ingredients, and condensing all vapors which pass off during the cooking operation; then separating the solid matter or tankage from the water and grease; then pressing the tankage to separate an additional quantity of water; and then drying the tankage in a closed drier and condensing the vapors thus produced, substantially as described.

2. The improved sanitary process of disposing of city garbage and recovering useful products therefrom which consists in first subjecting the garbage to the direct action of steam in a closed vessel for a period of from four to eight hours, more or less according to the nature of its ingredients, and condensing all the vapors which pass off during the cooking operation; then drawing off separately the grease which arises to the top, the solid matter or tankage at the bottom, and the intermediate water; then subjecting the tankage to pressure to separate an additional quantity of water; and then drying the tankage from the presses in a closed drier and condensing the vapors thus produced, substantially as described.

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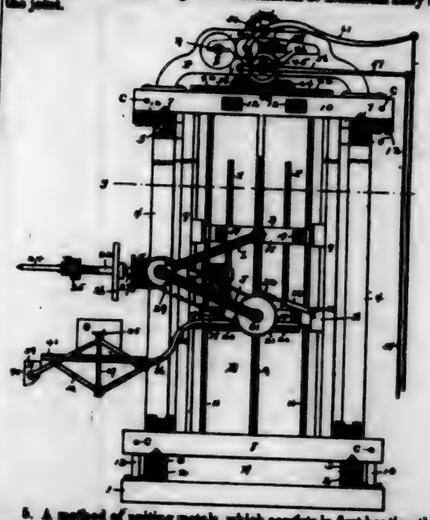
**501,038.** METAL-WORKING. JOHN H. RAHLEY, Hyndsboro, Pa. Filed Dec. 23, 1892. Serial No. 456,116. (No model.)

*Claim.*—1. A method of uniting metals, which consists in heating the materials to be united, then pouring aluminum or aluminum alloy into the joint of the materials, and finally passing an electric current through the materials and through the aluminum or alloy.

2. A method of uniting metals, which consists in first heating the materials to be united, then pouring molten aluminum or aluminum alloy into the joint of the materials, and finally passing an electric current through the materials and through the molten aluminum or alloy.

3. A method of uniting metals, which consists in first heating the materials to be united by an electric current, and while the current is still flowing, pouring aluminum or aluminum alloy into the joint.

4. A method of uniting metals, which consists in first heating the materials to be united by an alternating current, and while the current is still flowing, pouring molten aluminum or aluminum alloy into the joint.



5. A method of uniting metals, which consists in first heating the materials to be united by a pair of electric arcs, and then pouring molten aluminum or aluminum alloy into the joint.

6. A method of uniting metals, which consists in first coating the materials to be united with a layer of carbon, then electrically heating said materials, and finally pouring aluminum or aluminum alloy into the joint of the materials.

7. A method of uniting metals, which consists in first coating the materials to be united with a layer of carbon, then electrically heating said materials, and finally pouring molten aluminum or aluminum alloy into the joint of the materials.

8. A method of uniting metals, which consists in first coating the materials to be united with a layer of carbon, then heating said materials by an electric current, and finally, while the current is still flowing, pouring molten aluminum or aluminum alloy into the joint of the materials.

9. A method of uniting metals, which consists in first coating the materials to be united with a layer of carbon, then heating said materials by an electric arc on each side of the joint, and finally, while the arcs are still in use, pouring molten aluminum or aluminum alloy into the joint of the materials.

10. In an apparatus of the class described, a pair of horizontal frames, a pair of links pivoted to each frame, an electric motor translated in the outer ends of both pairs of links, and means for adjusting the vertical distance apart of the horizontal frames, whereby the motor may be moved in a horizontal plane.

11. In an apparatus of the class described, a vertical frame provided with vertical slideways, a pair of horizontal frames, means for moving said frames synchronously in the slideways, a pair of links pivoted to each frame, an electro-motor translated in the ends of both pairs of links, and means for adjusting the vertical distance between the horizontal frames.

12. In an apparatus of the class described, a main-frame, a vertical frame having vertical slideways, means for moving said vertical frame longitudinally in the main-frame, a pair of horizontal frames, means for moving said horizontal frames synchronously in the vertical slideways, a pair of links pivoted to each horizontal frame, means for adjusting the vertical distance between the horizontal frames, an electric motor translated in the outer ends of both pairs of links, and means for rotating the motor on its trunnions, substantially as described and for the purpose set forth.

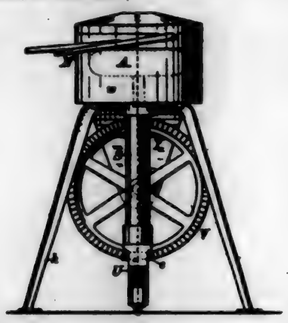
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**501,039.** CREAM-SEPARATOR. JOHN J. BRESSLER, Avon, N. Y. Filed Aug. 26, 1892. Serial No. 444,057. (No model.)

*Claim.*—1. In a centrifugal cream-separator, the combination with the revolving bowl A, provided with the upwardly extending neck G, of the exterior milk pipe B, attached to the outside of the bowl and extending upward and inward over the top of the bowl, and thence upward along the neck, and provided with means for regulating the discharge of milk therethrough, substantially as described.



2. In a centrifugal cream-separator, the combination with a revolving bowl A, provided with the upwardly extending neck G, of the exterior milk pipe B, attached to the outside of the bowl and extending upward and inward over the top of the bowl, and thence upward along the neck, and provided with a discharge-regulating valve at or near the point where the pipe is connected with the outside of the bowl, substantially as described.



3. In a centrifugal cream-separator, the combination with the revolving bowl A, provided with the upwardly extending neck G, of the exterior milk pipe B, attached to the outside of the bowl and extending upward and inward over the top of the bowl, and provided with a discharge regulating valve at or near the point where the pipe is connected with the outside of the bowl, and with another discharge regulating valve at or near the delivery end of the tube, substantially as described.

4. In a centrifugal cream-separator, the combination with the revolving bowl A, provided with the upwardly extending neck G, and having its bottom closed by the removable plate I, of the exterior milk-pipe B, attached to the outside of the bowl and extending upward and inward over the top of the bowl, and thence upward along the neck, and provided with means for regulating the discharge of milk therethrough, substantially as described.

5. In a centrifugal cream-separator, the combination of the bowl A, arranged to revolve on a vertical axis, and having the outer enlarged annular space *f*, inner contracted throat *e*, and upwardly extending open-ended neck G, the wing L extending across the space *f*, and a suitable milk-discharge pipe, substantially as described.

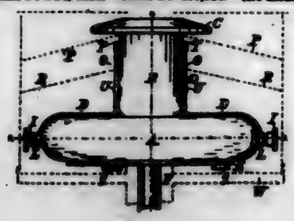
6. In a centrifugal cream-separator, the combination of the bowl A, arranged to revolve on a vertical axis, and having its bottom closed by the removable plate I, and having the outer enlarged annular space *f*, inner contracted throat *e* and upwardly extending open-ended neck G, the wing L, extending across the space *f*, and a suitable milk-discharge pipe, substantially as described.

7. In a cream-separator, the combination of the revolving bowl A, arranged to revolve on a vertical axis, and having the outer annular space *f*, inner contracted throat *e*, wing L, exterior milk-pipe B, and covers P and Q, for milk and cream respectively, substantially as described.

8. In a cream-separator, the combination with the revolving bowl A, arranged to revolve on a vertical axis, and having the outer annular space *f*, inner contracted throat *e*, open neck G, cap H, having radial pipe A, and the wing L, of the exterior pipe B, attached to the outside of the bowl and extending upward and inward over the top of the bowl, and thence upward along the neck and provided with means for regulating the discharge of milk therethrough, substantially as described.

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**501,040.** CENTRIFUGAL CREAMER. JOHN J. BRESSLER, Avon, N. Y. Filed Feb. 24, 1893. Serial No. 463,826. (No model.)

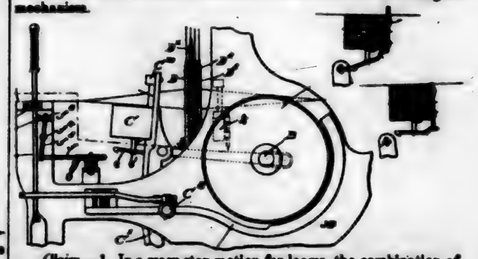


*Claim.*—In a centrifugal creamer, the combination with the revolving bowl A, provided with the upwardly extending neck B, having removable delivery flange C at its upper end, and supported by the plate E and shaft F, of the exterior milk-pipe D, extending along the outside of the bowl and the neck, and provided with means for regulating the discharge of milk therethrough, substantially as described.

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**501,041.** WARP STOP-MOTION FOR LOOMS. JOHN G. BARNES, Paterson, N. J., assignor to George Draper & Sons, Hopedale, Mass. Filed Oct. 19, 1892. Serial No. 448,949. (No model.)

*Brief.*—The detectors *d* slide up and down on the lay and are held down by the lower warps of the shed. When a thread breaks or a float occurs, a detector will be forced upward by the hooked end $d^6$ of the connector *e*. On the backward movement of the lay the hook will catch a cord *f*, which is connected with the lever knocking-off mechanism.



*Claim.*—1. In a warp stop motion for looms, the combination of the following instrumentalities, viz;—a series of warp detectors adapted to be acted upon and moved from their normal into their abnormal positions by the warp threads while the latter are perfect or unbroken; a stopping mechanism for the loom, an actuator co-operating with the stopping mechanism and to connect the same with and to be operated by a moving part of the loom; and an independent connecting device for and engaged by each of the said warp detectors to move said actuator and thereby connect said stopping mechanism with said moving part of the loom to stop the latter, substantially as described.

2. In a warp stop motion for looms, the combination of the following instrumentalities, viz;—a lay, a series of warp detectors thereon adapted to be acted upon and moved from their normal into their abnormal positions by the warp threads while the latter are perfect or unbroken, a stopping mechanism for the loom, and an actuator therefor; and an independent device on the lay for and moved by each of the said detectors to engage the said actuator and through movement of the lay cause movement of the actuator to stop the loom, substantially as described.

3. In a warp stop motion for looms, the combination of the following instrumentalities, viz;—a lay, a series of warp detectors thereon adapted to be acted upon and moved from their normal into their abnormal positions by the warp threads while the latter are perfect or unbroken; a stopping mechanism for the loom, a single actuator therefor adapted to be moved by a moving part of the loom, and a separate engaging connection for and moved by each detector, to at times connect the said actuator with the said moving part of the loom, whereby the said detector when permitted to remain in its normal position will cause movement of said actuator and effect the stopping of the loom, substantially as described.

4. In a warp stop motion for looms, the combination of the following instrumentalities, viz;—a series of warp detectors adapted to be acted upon and moved from their normal into their abnormal positions by the warp threads while the latter are perfect or unbroken, a stopping mechanism for the loom, a shipper therefor, an actuator adapted to be operated by a moving part of the loom to move said shipper, and a separate engaging connection moved by each of said warp detectors to at times connect said actuator with said moving part of the loom, whereby the detectors when permitted to remain in their normal positions will effect the stopping of the loom, substantially as described.

5. In a warp stop motion for looms, the combination of the following instrumentalities, viz:—a lay; a series of sliding warp detectors carried thereby and adapted to be acted upon and moved by the warp threads if unbroken; a series of hooked levers moved independently by said warp detectors; stopping mechanism for the loom and an actuator for the same consisting of a cord extending in line with and to be engaged by said hooked levers, to operate, substantially as described.

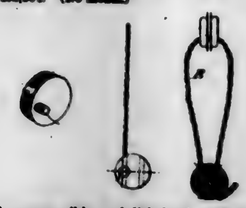
6. In a warp stop motion for looms, the combination of the following instrumentalities, viz;—a lay; a series of sliding warp detectors thereon adapted to be acted upon and moved by the warp threads

if unbroken; a series of hooked levers acted upon and moved independently by said warp detectors, the cord *f* on the frame and adapted to be engaged by one or another of said hooked levers, the lever *f''* moved by said cord and shipper $O^3$, moved by said lever all to operate, substantially as described.

7. In a warp stop motion for looms, the combination of the following instrumentalities, viz:—a lay, a series of sliding warp detectors adapted to be acted upon and moved by the warp threads if unbroken, a series of hooked levers moved independently by said warp detectors, stopping mechanism for the loom and an actuator for the same consisting of a cord extending in line with and to be engaged by said hooked levers and fixedly attached to a rigid support by a spring, to operate, substantially as described.

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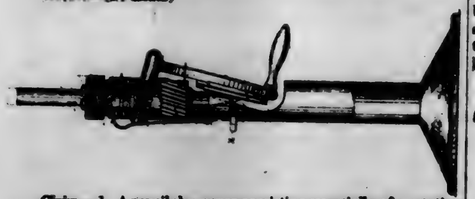
**501,042.** SEAL. EDWARD J. BROOKS, East Orange, N. J., assignor to the E. J. Brooks & Company, New York, N. Y. Filed Feb. 13, 1893. Serial No. 462,891. (No model.)



*Claim.*—A compressible seal-disk having threading holes to receive the respective ends of a flexible shackle, and having a projection on its face perpendicular to its first threading-hole for preliminarily attaching the seal-disk to one end of the shackle-wire in the manner and for the purposes hereinbefore set forth, the face and back of the seal-disk being otherwise flat as shown.

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**501,043.** PENCIL-SHARPENER. ALFRED FERRANDIS, New York, N. Y., assignor to Eberhard Faber. Filed Oct. 11, 1892. Serial No. 448,457. (No model.)



*Claim.*—1. A pencil sharpener consisting essentially of a rotating cutter and a rotating pencil holding cylinder for turning the point of the pencil relatively to the cutter, the said cylinder also having lengthwise feeding movement for the pencil and automatic mechanism therefor substantially as described.

2. In a pencil sharpener the combination of the rotating and lengthwise feeding pencil holding cylinder, and the rotating cutter having the angular advance of the inner end to shear out the pencil substantially as described.

3. In a pencil sharpener the combination of the tubular stock, the rotating and lengthwise feeding pencil holding cylinder in the said tubular stock, the rotating cutter geared with the cylinder, the spiral feeding groove in the cylinder and the feed stud engaging the spiral groove substantially as described.

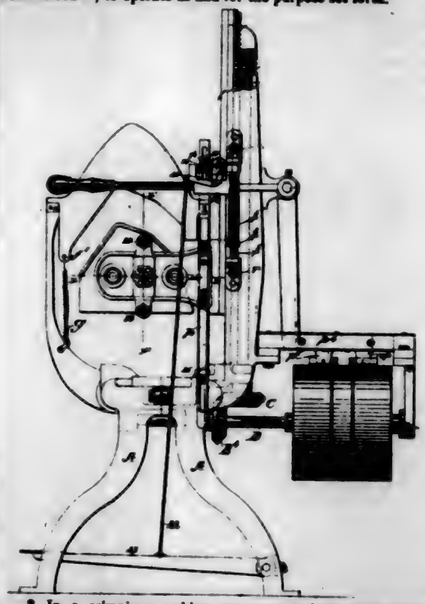
4. The combination of the holding and feeding cylinder having the central bore, the split tube having the head on each end and inserted in said bore, and the adjusting cap on the end of the cylinder substantially as described.

5. The combination of the cutting gage with the tubular stock, rotating and lengthwise feeding cylinder, and point cutting knife, said gage adapted to be temporarily set in the gaging position, and be normally retired therefrom substantially as described.

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**501,044.** CRIMPING-MACHINE. WALTER B. FREZ, Lewiston, Me., assignor to the S. W. Jamison Boot and Shoe Crimping Machine Company, New York, N. Y. Filed Mar. 3, 1891. Serial No. 383,603. (No model.)

*Claim.*—1. In a crimping machine the following instrumentalities, viz:—two posts; a form-plate mounted loosely thereon at its opposite ends; a steadying device for said form-plate, the same consisting of a depending ear and a spring; a jaw-carrier; a rigid jaw *e* adjustably mounted in said jaw-carrier; a yielding jaw *d* also mounted in said jaw-carrier, combined with a shipper lever, a block, as 18, mounted thereon, a lever pivoted on said block, a slide $r^5$ connected to said lever, a screw rod $r'$, its spring $r^6$, a nut $r^5$ to adjust the spring, and a block $r^4$, to operate as and for the purpose set forth.



2. In a crimping machine, two posts, a form plate mounted loosely thereon at its opposite ends, and a jaw-carrier, and jaws, combined with a steadying device consisting of a depending ear *f'* and a spring having one end attached thereto, and its other end held fixedly, to keep the form plate in proper vertical position with relation to the jaws, substantially as described.

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**501,045.** ICE-MACHINE. GUSTAVE P. KNUT, Chicago, Ill. Filed Aug. 22, 1892. Serial No. 443,703. (No model.)



*Claim.*—1. In an ice machine the combination of a freezing plate with a series of hollow longitudinal ribs therealong tapering toward their edges between which the ice strips are frozen, with connecting pipes whereby the cooling or warming fluid may be passed into such hollow ribs to make or free the ice from the sides of its grooves.

2. In an ice machine the combination of a tank, with an inclined bottom, an inclined freezing plate therein adapted to form ice above and below, and removable end pieces so that both cakes of ice may slide by gravity on inclines of the tank.

3. In an ice machine the combination of a freezing plate with longitudinal ribs above and below, and cross indenting ribs above and below, the lower ones fixed, the upper ones removable.

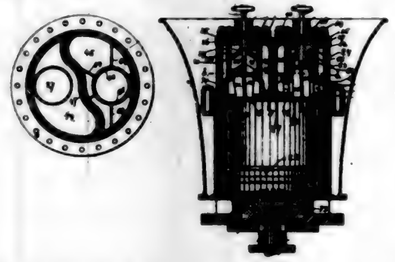
4. In an ice machine the combination of a freezing plate with a tank and insulation cross bars in the ends of the tank in which the ends of the freezing plate or pipes are embedded and insulation end blocks or boxes above and below the ends of the freezing plate and within the tank.

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**501,046.** AIR-COMPRESSOR. CHARLES GRAIG, Chicago, Ill., assignor of one-half to Frank H. Stein, same place. Filed Dec. 31, 1891. Serial No. 416,714. (No model.)

*Claim.*—1. In combination the cylinder 19 with its piston, a valve chest, a main chamber therein opening into the cylinder, a valve for closing the said opening, a supplemental chamber in rear of the valve communicating with the main chamber and a valve for regulating the supply of fluid to the said supplemental chamber, substantially as described.

2. In combination the cylinder and piston, the valve chest, a main chamber therein opening into the cylinder, the valve for controlling the said opening, the supplemental chamber in rear of the valve, the supplemental valve controlling the supply of fluid to said chamber, said valve having a hand operating connection extending to the outside of the valve chest, substantially as described.



3. In combination the cylinder and piston, the valve chest having a main chamber as 44 therein, the valve frame in the main chamber, said valve frame guiding the valve and having a supplemental chamber in rear of the said valve communicating with the main chamber and a valve for controlling the supply of fluid to said chamber, substantially as described.

4. In combination the cylinder and piston, the valve chest having a main chamber, the main valve therein, the valve frame in the main chamber having a bridge and a supplemental chamber with an opening through the said bridge and a regulating valve for controlling the said opening in the bridge, substantially as described.

5. In combination the cylinder and piston, the valve chest divided into two chambers, the suction valve in one chamber and the discharge valve in the other chamber, the valve frames for the said valves having the supplemental chambers, and the regulating valves for controlling the communication between the said supplemental chambers in rear of the valves and the main chambers, substantially as described.

6. In combination the cylinder and piston, a valve chest, a valve therein, the valve frame in the valve chest having a supplemental pressure chamber in rear of the valve, the bridge in said frame having an opening, said frame having openings laterally through its walls near its upper end, the valve seating on the bridge, having its screw threaded portion seated at the upper end of the frame, and the cover for holding the valve frame in position, substantially as described.

7. In combination the cylinder and piston, the valve chest and the main valve, and valve frame therein, said valve frame having a supplemental pressure chamber in rear of the valve, the supplemental valve for controlling the supply of fluid to said supplemental chamber, the said supplemental valve having a hollow bore adapted to receive the upper end of the main valve stem, substantially as described.

8. In combination the cylinder and piston, the valve chest, the main valve and valve frame therein, the latter having a pressure chamber in rear of the valve, the supplemental valve for controlling the pressure in said chamber, the nut seated loosely in the upper end of the frame, in which the supplemental valve stem works, and the cover of the valve chest fitting over the valve frame and the nut, substantially as described.

9. In combination the cylinder and piston, the valve chest and the valve, the valve frame having the perforated bridge, the chambers 41, 43, the upper and lower lateral openings through the walls of the frame and the supplemental valve for controlling the supply of fluid to the chamber 41, substantially as described.

10. In combination the cylinder and piston, the valve chest having a main chamber, the valve frame having a supplemental chamber, and the chamber 41 the main valve consisting of a disk to close the opening to the cylinder, and a piston 20 in the chamber 41, connected to the main valve and a supplemental valve for controlling the pressure in the supplemental chamber, substantially as described.

11. In combination the cylinder the piston, the valve chest and the valve having inclined ribs to be acted upon by the current of fluid in its passage through the valve chest, said valve being free from retaining connections and adapted to rotate as it moves longitudinally to and from its seat substantially as described.

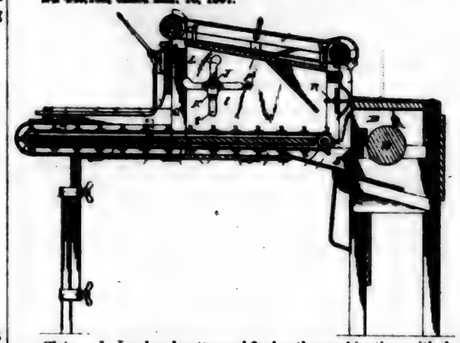
12. In combination the cylinder and piston, the suction valve 54, the valve frame 49 having the segments 51, the valve chest and the ring 68 in said chest secured by the arms 69, substantially as described.

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# REISSUES.

**11,849.** BAND-CUTTER AND FEEDER. EDWARD S. WILEMAN, West Salem, Ill. Filed Aug. 15, 1891. Serial No. 402,702. Original No. 445,103, dated Mar. 10, 1891.



*Claim.*—1. In a band-cutter and feeder, the combination, with the shaft I, of a series of combined knife-holders and grain-spreaders, arranged spirally upon the said shaft, and the curved knives secured in said holders opposite the grain-spreaders, substantially as described.

2. A combined knife-holder and grain-spreader constructed in one piece and having a central aperture, said holder being recessed on one side to receive the shank of a knife, the opposite side having spreading prongs formed thereon, substantially as and for the purpose set forth.

3. In combination, in a band-cutter and feeder substantially as described a crank pivoted to the side frame of the cutter and feeder, the long arm of which is provided with a weight, and the short arm adapted to form a journal bearing of the shaker, secured at one end to a rod located inside, said cutter and feeder, and the other end extending outside, for the purpose set forth.

4. The combination of an endless apron, a pivoted bar as u extending longitudinally with and above said apron and means for supporting its free end, substantially as and for the purpose specified.

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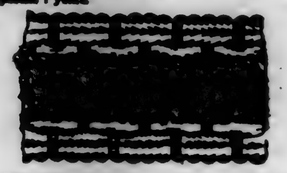
# DESIGNS.

**22,678.** RUG. ADOLPH PETZOLD, Philadelphia, Pa., assignor to John H. Bromley, Joseph H. Bromley, and Edward Bromley. Filed June 2, 1893. Serial No. 476,399. Term of patent 3½ years.



*Claim.*—The design for a rug substantially as shown and set forth.

**22,579.** GIMP. CHARLES WEINBERG, New York, N. Y., assignor to C. Weinberg & Co., same place. Filed Apr. 21, 1893. Serial No. 471,342. Term of patent 7 years.



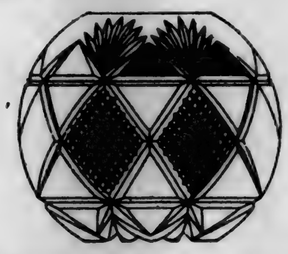
*Claim.*—The design for a gimp as shown and described.

**22,580.** CUP. WILLIAM A. BROWN, New York, N. Y., assignor to himself, Thomas G. Brown, and Thomas R. Brown, same place. Filed Nov. 11, 1892. Serial No. 451,718. Term of patent 3½ years.



*Claim.*—The design for cups substantially as herein shown and described.

**22,581.** GLASS VESSEL. JAMES J. O'CONNOR, White Hills, Pa., assignor to C. Derflinger & Sons, same place. Filed Feb. 16, 1893. Serial No. 462,637. Term of patent 14 years.



*Claim.*—The design for the ornamentation of glass vessels, substantially as herein shown and described.

**22,582.** BOTTLE-STOPPER. JOSEPH GAVE, Philadelphia, Pa., assignor to the SHIRK, KLINE & FRANCK Company, of Pennsylvania. Filed Mar. 14, 1893. Serial No. 466,712. Term of patent 14 years.



*Claim.*—The design for a bottle stopper, substantially as herein shown and described.

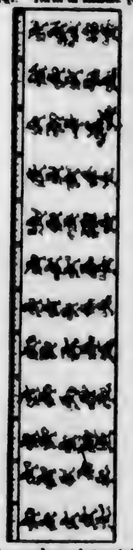
**22,583.** RULER. PALMER ORR, New York, N. Y. Filed May 10, 1893. Serial No. 473,703. Term of patent 14 years.

**22,583.**



*Claim.*—The design for a ruler, substantially as herein shown and described.

**22,584.** RULER. PALMER ORR, New York, N. Y. Filed May 10, 1893. Serial No. 473,747. Term of patent 14 years.



*Claim.*—The design for a ruler, substantially as herein shown and described.

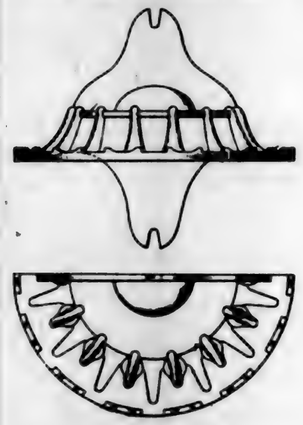
**22,585.** SIGN. CHARLES W. SPALDING, Chicago, Ill., assignor to the Globe Savings Bank, same place. Filed Jan. 16, 1891. Serial No. 377,993. Term of patent 14 years.



*Claim.*—The design for a sign substantially as described, and as shown in the accompanying drawing.

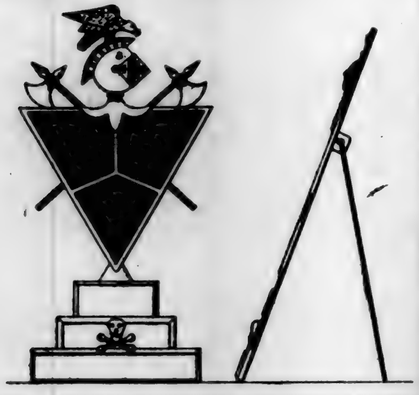


**22,586.** BRACKET. HENRY C. HINSON, Detroit, Mich. Filed June 5, 1893. Serial No. 476,977. Term of patent 7 years.



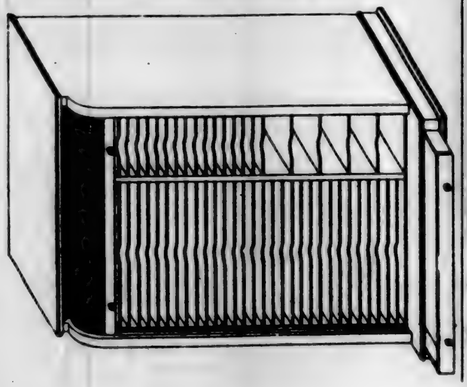
*Claim.*—The design for a bracket, herein shown and described.

**22,587.** EASEL. VINCENT ADLER, St. Louis, Mo., assignor of one-half to A. J. Somerville, same place. Filed Mar. 13, 1893. Serial No. 466,227. Term of patent 14 years.



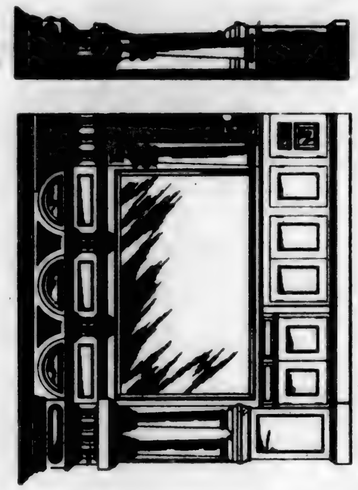
*Claim.*—The design for an easel as herein shown and described.

**22,588.** CABINET. MICHAEL J. CANTWELL, Madison, Wis. Filed Mar. 27, 1893. Serial No. 467,852. Term of patent 14 years.



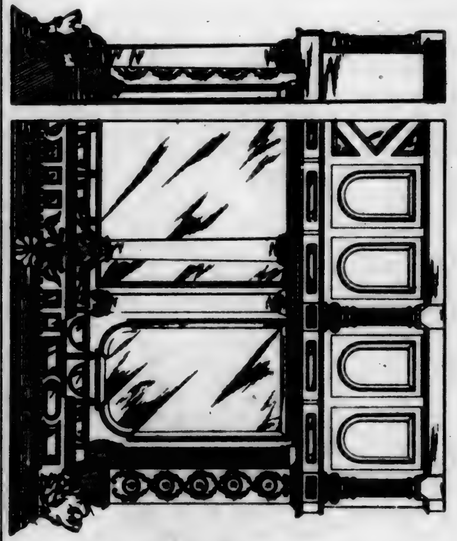
*Claim.*—The design for a law blank cabinet as herein described and shown.

**22,589.** WALL-FIXTURE FOR COUNTERS. BENJAMIN F. GANS, Cincinnati, Ohio. Filed June 3, 1893. Serial No. 477,013. Term of patent 3½ years.



*Claim.*—The design for wall fixtures for counters, substantially as herein shown and described.

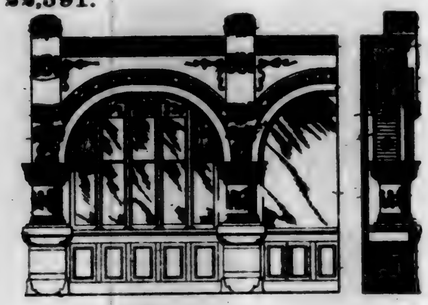
**22,590.** WALL-FIXTURE FOR COUNTERS. BENJAMIN F. GANS, Cincinnati, Ohio. Filed June 3, 1893. Serial No. 477,013. Term of patent 3½ years.



*Claim.*—The design for wall fixtures for counters, substantially as herein shown and described.

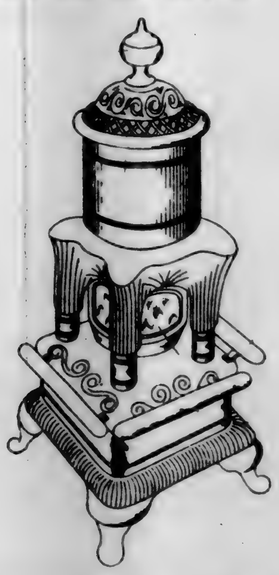
**22,591.** WALL-FIXTURE FOR COUNTERS. WILLIAM C. HESS, Cincinnati, Ohio. Filed June 3, 1893. Serial No. 476,934. Term of patent 3½ years.

22,591.



*Claim.*—The design for a wall fixture for counters, substantially as shown and described.

22,592. OIL-STOVE. JOHN KELLA, Detroit, Mich. Filed June 5, 1893. Serial No. 476,572. Term of patent 3½ years.



*Claim.*—The design for a stove substantially as herein shown and described.

22,593. MONUMENT. WILLIAM H. PERRY, Concord, N. H. Filed June 2, 1893. Serial No. 476,207. Term of patent 7 years.



*Claim.*—The design for a monument substantially as herein shown and described.

22,594. BILLIARD-TABLE. PETER ANDERMANN, Stamford, Conn., assignor to the Brunswick-Balke-Collender Company, Chicago, Ill. Filed Sept. 24, 1892. Serial No. 446,837. Term of patent 14 years.

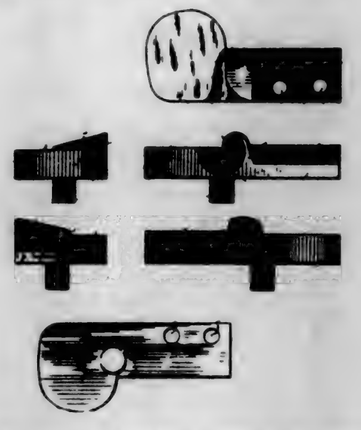


*Claim.*—1. The design herein shown, for the body portion of the table, consisting, essentially, in broad rails, or sides, which are concave.

2. The design of leg shown, consisting, essentially, of a top member which is square, in horizontal section, and a series of lower members members all of which are circular in contour.

3. The design, for the body-portion and legs of the table, consisting in a body-portion the broad-rails, or sides of which are concave; and legs each of which consists, essentially, of a top member which is square in horizontal section, and a series of lower members all of which are circular in contour.

22,595. HEAD-FORMER FOR CIGARS. CHARLES EVANS, New York, N. Y., assignor of one-half to Lazarus Lahner, same place. Filed May 16, 1893. Serial No. 474,361. Term of patent 14 years.



*Claim.*—The design for a head former for cigars, substantially as herein shown and described.

# TRADE-MARKS

## REGISTERED JULY 4, 1893.

22,282. DRESS-TRIMMINGS. DENTON & TOFF, New York, N. Y. Filed June 10, 1893.

KRINOLINO

*Essential feature.*—The word "KRINOLINO." Used since June 8, 1893.

22,283. PERFUMERY, TOILET SOAPS, AND COSMETICS. ROSSBRAS BROS., London, England, and New York, N. Y. Filed June 10, 1893.

Jequilla.

*Essential feature.*—The word "JEQUILLA." Used since May, 1892.

22,284. PERFUMERY, TOILET SOAPS, AND COSMETICS. ROSSBRAS BROS., London, England, and New York, N. Y. Filed June 10, 1893.

Marequil.

*Essential feature.*—The word "MAREQUIL." Used since May, 1892.

22,285. PERFUMERY. CYRUS L. CORTON, Hartville, N. Y. Filed May 19, 1893.

CHRYSANTHEMUM Bouquet

*Essential feature.*—The words "CHRYSANTHEMUM BOUQUET." Used since June 1, 1892.

22,286. PERFUMERY. CYRUS L. CORTON, Hartville, N. Y. Filed May 19, 1893.

Queen of Lillies

*Essential feature.*—The words "QUEEN OF LILLIES." Used since June 1, 1892.

22,287. MATCHES. OSHKOSH MATCH WORKS, Oshkosh, Wis. Filed June 1, 1893.



*Essential feature.*—The representation of a crown. Used since January, 1893.

22,288. CERTAIN CANDLES. PHOENIX CANDLE COMPANY, Syracuse and New York, N. Y. Filed May 8, 1893.

DRAWING ROOM

*Essential feature.*—The words "DRAWING ROOM." Used since March, 1886.

22,289. LUBRICATING-OILS. THE ABBOTT CYLINDER OIL COMPANY, Jersey City, N. J. Filed May 29, 1893.

FRIGIDINE

*Essential feature.*—The word "FRIGIDINE." Used since May 10, 1893.

22,290. BUTTERINE. SWIFT & COMPANY, Chicago, Ill. Filed May 8, 1893.



*Essential feature.*—The representation of a dairy maid standing beside a cow, one of the hands of the maid resting upon her neck, and the other hand holding a pail. Used since January 1, 1893.

22,291. SUBSTITUTE FOR LARD AND BUTTER. ARMOUR & Co., Chicago, Ill. Filed Apr. 15, 1893.

VEGETOLE

*Essential feature.*—The word "VEGETOLE." Used since March 1, 1893.

**23,292.** HAMS AND PORK MEAT. EDWARD ROTHSCHILD PACKING AND PROVISION COMPANY, St. Louis, Mo. Filed May 15, 1893.



WOODCOCK.

*Essential feature.*—The word "WOODCOCK" and the representation of the bird known as the woodcock. Used since October, 1891.

**23,293.** HERRINGS AND SARDINES. YSELMARS & Co., Vlaardingen, Netherlands. Filed May 4, 1893.



*Essential feature.*—A monogram of the letters "Y. M." Used since January 1, 1892.

**23,294.** BAKING-POWDER. WILLIAM F. MCLAUGHLIN, Chicago, Ill. Filed June 13, 1893.



*Essential feature.*—The word "MILK." Used since March, 1887.

**23,295.** WHEAT-FLOUR. WILLIAM H. STORER, Watertown, S. D. Filed Aug. 22, 1892.




*Essential feature.*—The word "SPLENDID" in white letters on a red field. Used since December 1, 1882.

**23,296.** WHEAT-FLOUR. NORTHWESTERN CONSOLIDATED MILLING COMPANY, Minneapolis, Minn. Filed June 6, 1893.

Pettit's

**BEST**

*Essential feature.*—The words "PETTIT'S BEST." Used since January 1, 1874.

**23,297.** WHEAT-FLOUR. NORTHWESTERN CONSOLIDATED MILLING COMPANY, Minneapolis, Minn. Filed June 6, 1893.

**WHITE AND GOLD**

*Essential feature.*—The words "WHITE AND GOLD." Used since January 1, 1874.

**23,298.** WHEAT-FLOUR. NORTHWESTERN CONSOLIDATED MILLING COMPANY, Minneapolis, Minn. Filed June 6, 1893.

**EMPEROR**

*Essential feature.*—The word "EMPEROR." Used since June 1, 1880.

**23,299.** WHEAT-FLOUR. NORTHWESTERN CONSOLIDATED MILLING COMPANY, Minneapolis, Minn. Filed June 6, 1893.

**ASTEROID.**

*Essential feature.*—The word "ASTEROID." Used since January 1, 1874.

**23,300.** WHEAT-FLOUR. NORTHWESTERN CONSOLIDATED MILLING COMPANY, Minneapolis, Minn. Filed June 6, 1893.

**CHRISTIAN'S EXTRA**

*Essential feature.*—The words "CHRISTIAN'S EXTRA." Used since April 1, 1876.

**23,301.** WHEAT-FLOUR. NORTHWESTERN CONSOLIDATED MILLING COMPANY, Minneapolis, Minn. Filed June 6, 1893.

**DANUBE**

*Essential feature.*—The word "DANUBE. Used since August 1, 1880.

**23,302.** WHEAT-FLOUR. NORTHWESTERN CONSOLIDATED MILLING COMPANY, Minneapolis, Minn. Filed June 6, 1893.

Christian's Superlative

*Essential feature.*—The words "CHRISTIAN'S SUPERLATIVE." Used since April 1, 1876.

**23,303.** LAGER-BEER. HIRE & GABLER BREWING COMPANY, Chicago, Ill. Filed June 10, 1893.

Chicago-Budweiser



*Essential feature.*—The representation of a sheaf of grain, bound with a hop vine, and placed upright, with the monogram "H G" and "B C" to its right and left respectively, and combined with the compound word "CHICAGO-BUDWEISER." Used since July 1, 1892.



**23,304.** WHISKY. ORLEMEY & Co., New York, N. Y. Filed May 26, 1893.

**MATADOR**

*Essential feature.*—The word "MATADOR." Used since December 1, 1892.

**23,305.** WHISKY. S. BRUNO & Co., New York, N. Y. Filed June 8, 1893.

**OLD DOMINION**

*Essential feature.*—The words "OLD DOMINION." Used since 1879.

**23,306.** CIGARETTE-PAPER. ARADIE & COMPANY, Paris, France. Filed June 2, 1893.




*Essential feature.*—The word "COLUMBUS." Used since February 8, 1893.

**23,307.** CIGARETTES AND TOBACCO. NATIONAL CIGARETTE AND TOBACCO COMPANY, New York, N. Y. Filed June 3, 1893.

Opera Lights

*Essential feature.*—The words "OPERA LIGHTS." Used since May 23, 1893.

**23,308.** PLUG OR CHEWING, TWIST, AND SMOKING TOBACCO AND CIGARETTES. J. R. PACE TOBACCO COMPANY, Richmond, Va. Filed June 13, 1893.

**SCROLL**

*Essential feature.*—The word "SCROLL." Used since 1877.

**23,309.** REMEDY FOR THE TOBACCO HABIT. UBSHER SEARSHOUSE, Indianapolis, Ind. Filed May 20, 1893.

**Tobacura**

*Essential feature.*—The word "TOBACURA." Used since March 25, 1893.

**23,310.** COLLYRIUM EMPLOYED AS A REMEDY FOR THE EYES. RICHARD HUDNUT, New York, N. Y. Filed June 1, 1893.

MEGYP

*Essential feature.*—The word "MEGYP." Used since March 1, 1893.

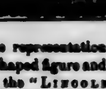
**23,311.** REMEDIES FOR COUGHS AND COLDS. HENRY H. STODDARD, New London, Conn. Filed Jan. 7, 1893.




*Essential feature.*—The words "OLD PURITAN BREW." Used since June 1, 1893.

**23,312.** SYRUP REMEDY FOR COUGHS, COLDS, CATARRH, &c. MARIE P. HAHN, Philadelphia, Pa. Filed May 15, 1893.

M. P. Hahn's



*Essential feature.*—The words "M. P. HAHN'S SOVEREIGN," and the representation of a bird with an olive branch in its beak. Used since April 10, 1893.

**23,313.** REMEDY FOR RHEUMATISM. GUSTAV A. LOHMAN, Philadelphia, Pa. Filed June 6, 1893.

RHEUMATIQUE

BALSAMIQUE.

*Essential feature.*—The words "RHEUMATIQUE BALSAMIQUE." Used since May 23, 1893.

**23,314.** BITTERS, EMULSIONS, COUGH MIXTURES, SARSAPARILLA, AND REMEDY FOR RHEUMATISM. CHARLES H. SMITH, Albany, N. Y. Filed Mar. 7, 1893.



*Essential feature.*—The portrait of the registrant and his fac-simile signature, "CHAS. H. SMITH M D." Used since February 1, 1892.

**23,315.** REMEDY FOR KIDNEY AND LIVER COMPLAINTS. THE HERBALINE MEDICINE CO., Springfield, Ill. Filed Apr. 28, 1893.

"HER-BAL-INE"

*Essential feature.*—The word "HER-BAL-INE." Used since January 1, 1865.

**23,316.** LIVER AND KIDNEY MEDICINES AND PILLS. LINCOLN PILL COMPANY, New York, N. Y. Filed Mar. 13, 1893.



*Essential feature.*—The representation of a clouded field, upon which are a black lozenge shaped figure and a fac-simile of the written signature of the registrant, the "LINCOLN PILL CO." with an extended flourish beneath. Used since March 16, 1893.

**23,317.** REMEDIES FOR GONORRHŒA, GLEET, AND THE LIKE. CAMPBELL B. PEASE and MICHAEL H. JOHNSON, Galesburg, Ill. Filed May 8, 1893.

Jack & Jill

*Essential feature.*—The words and character "JACK & JILL." Used since December 15, 1892.

**28,818.** VAGINAL CAPSULES, ANTISEPTIC UTERINE LOTIONS, AND LAXATIVE TABLETS. JOHN A. MILLER, San Francisco, Cal. Filed Apr. 15, 1898.

FEMINA

*Essential feature.*—The word "FEMINA." Used since January 15, 1883.

**28,819.** SALVE. MARIE P. HAHN, Philadelphia, Pa. Filed May 18, 1898.



*Essential feature.*—The representation of a bird holding a coin in each talon. Used since April 10, 1893.

**28,820.** INSECT-EXTERMINATING COMPOUNDS. WATSON, BROWN & CO., Oakland, Cal. Filed Apr. 1, 1898.



*Essential feature.*—The representation of a sprig having insects upon and about its leaves and stem, and bearing the letters, character, and abbreviation "W B & Co." Used since December 1, 1892.

**28,821.** PLATE-GLASS MIRRORS. ROUV. A. SCHLIEBE & BRO., St. Louis, Mo. Filed June 8, 1898.




*Essential feature.*—The words "DIAMOND BRAND" in connection with the words "PLATE MIRRORS," the whole inclosed within a diamond figure. Used since April 10, 1893.

**28,822.** PIANOS. MCCAMMON PIANO COMPANY, Oneonta, N. Y. Filed June 10, 1898.



*Essential feature.*—The representation of a star placed upon a circular disk. Used since May 1, 1893.

**28,823.** HOT AIR AND WATER HEATERS. RICHARDSON & BOYNTON COMPANY, New York, N. Y., and Chicago, Ill. Filed June 7, 1898.

LITTLE GIANT

*Essential feature.*—The words "LITTLE GIANT." Used since August 1, 1884.

**28,824.** BICYCLES AND TRICYCLES AND PARTS THEREOF. THE BLACK MANUFACTURING COMPANY, Erie, Pa. Filed June 3, 1898.

TRIBUNE

*Essential feature.*—The word "TRIBUNE." Used since May 25, 1892.

**28,825.** BUILDERS' HARDWARE, INCLUDING LOCKS AND LATCHES. READING HARDWARE COMPANY, Reading, Pa. Filed June 1, 1898.

VASSAR

*Essential feature.*—The word "VASSAR." Used since June, 1891.

# DECISIONS

OF THE

# COMMISSIONER OF PATENTS

AND OF

# UNITED STATES COURTS IN PATENT CASES.

## COMMISSIONER'S DECISIONS.

### EX PARTE DRAWBAUGH.

*Decided June 12, 1893.*

1. SUSPENSION OF DIVISIONAL APPLICATION FROM ISSUE.
When only one of several divisional applications is in condition for allowance, it is contrary to the recent decisions and practice of the Office and inconsistent with Rule 106 to withhold such application from issue until all the other divisional applications are ready for allowance.
2. SIMULTANEOUS ISSUE OF DIVISIONAL APPLICATIONS.
The doctrine announced in *ex parte* Holt, (29 O. G., 171,) that all the divisions of an application should be passed to issue simultaneously, overruled.

ON petition.

TELEPHONE.

Application of Daniel Drawbaugh filed October 26, 1880, No. 19,531.

*Messrs. Church & Church* for the applicant.

FISHER, *Assistant Commissioner:*

This is a petition praying that an order be made revoking the order of a former Commissioner suspending this case from issue, and also praying that the Primary Examiner be directed to resume action thereon.

The records show that this case is one of several divisional applications of a parent case. Several of the other divisions are still pending in the Office. The Primary Examiner informed the applicant May 6, 1884, that the present application considered by itself was ready for issue, but that in view of the doctrine then recently announced in *ex parte Holt*, (29 O. G., 171,) to the effect that "the legitimate divisions of an application should be passed to issue simultaneously," the case must be withheld from issue until the other divisions of the parent case should be ready to be passed to issue. This action was repeated May 19, 1886. A petition was then taken to the Commissioner praying that the Examiner be instructed to allow and pass the application to issue at once. In answer to that petition Commissioner Montgomery, on July 30, 1886, said:

> The doctrine involved in the question now under consideration has been settled in this Office for a considerable time, at least. It is very undesirable, in my judgment, that any established doctrine or established rule of practice should be unsettled, overturned, or questioned by each succeeding Commissioner. Certainty and uniformity are very desirable. In that view and without intending to express either assent to or dissent from the doctrine that "the legitimate divisions of an application should be passed to issue simultaneously," I must deny this petition.

The applicant, on July 18, 1889, in a communication to the Office stated that—

> having protested against the suspension of action, * * * we desire, in order to avoid any question of abandonment, to enter another and further protest against the suspension.

In answer to this Commissioner Hall ordered that—

> this communication shall be regarded as an action which shall prevent the case from being regarded as an abandoned one.

June 23, 1890, the matter was brought to the attention of Commissioner Mitchell, who substantially repeated the action of Commissioner Hall.

The applicant now brings the present petition. The Examiner's action of May 6, 1884, as has been shown, was based on *ex parte Holt, supra.* It will be noticed that none of the Commissioners in their actions on the case assented to the doctrine announced in *ex parte Holt* that the legitimate divisions of an application should be passed to issue simultaneously, and recent decisions indicate that the ground upon which the Examiner based his action in this case is untenable. (See *Graham* v. *McCormick*, C. D., 1882, 229; *ex parte Roberts*, C. D., 1887, 61; *ex parte Mullen and Mullen*, C. D., 1890, 9; *ex parte Neiswanger*, C. D., 1890, 37; *ex parte Woodward*, C. D., 1890, 169, and *Brush Electric Co.* v. *Electrical Accumulator Co. et al.*, 56 O. G., 1334.)

After an applicant has put one of his divisional applications in condition for allowance, to refuse to pass it to issue until all his other divisional applications are ready for allowance would be contrary to sound reason as well as to the Rules of Practice. Suppose, for instance, one of several divisions of an application should become involved in an interference under such practice. All the other applications would have to be withheld from issue until such interference was finally decided. This would be in direct opposition to the design of Rule 106, which is as follows:

> 106. When a part only of an application is involved in an interference, the applicant may withdraw from his application the subject-matter adjudged not to interfere and file a new application therefor, or he may file a divisional application for the subject-matter involved if the invention can be legitimately divided: *Provided* that no claim shall be made in either application broad enough to include matter claimed in the other.

The main object of this rule is to allow an applicant to obtain a patent for such matter as is not involved in the interference without having to wait until the interference is decided. (*Ex parte Wheeler*, C. D., 1888, 13.)

Moreover, to longer withhold this case from issue upon the grounds set forth in the Examiner's action of May 6, 1884, would be to entirely reverse what has been the practice of the Office in recent years on this point. The order of the Commissioner of July 30, 1886, is therefore revoked, and this application is remanded to the Primary Examiner with instructions to examine the application as to matters not covered by this decision, and when it is otherwise in proper condition to pass it to issue.

The petition is granted.

## DECISIONS OF THE U. S. COURTS.

### U. S. Circuit Court of Appeals—Second Circuit.

DIXON WOODS COMPANY *v.* PFEIFER.

*Decided April 18, 1893*

1. TONDEUR—GLASS-ANNEALING FURNACE—PATENTABLE NOVELTY. Letters Patent to Cleon Tondeur, No. 258,156, dated May 16, 1882, for an improvement in glass-annealing furnaces, examined and construed in view of the state of the art, and *Held* to be valid.
2. SAME - SUFFICIENCY OF DESCRIPTION - OMISSION TO EXPLAIN THE CAUSES TO WHICH THE IMPROVEMENT WAS DUE. The patent clearly describes and claims the construction of the invention whereby the improvement in the art of glass-annealing is accomplished, though the description is silent as to the philosophical principles which cause the invention to produce the improved annealing. *Held* that the description is sufficient and that the patentee ought not to lose the statutory benefits of his invention because he was perhaps not aware to what the improvements effected by his device were due.

*Messrs. Hey & Wilkinson* for the appellant.

*Messrs. W. Bakewell & Sons* and *Messrs. Kerr & Curtis* for the appellee.

SHIPMAN, *J.*:

This is an appeal from a decree of the Circuit Court for the Northern District of New York upon a bill in equity which was founded upon the alleged infringement by the defendant of Letters Patent No. 258,156, dated May 16, 1882, to Cleon Tondeur, for improvements in glass-annealing furnaces. The circuit court rendered, upon final hearing, an interlocutory decree against the defendant for an injunction and an accounting.

This patent has been twice the subject of adjudication by the Circuit Court for the Western District of Pennsylvania. Judge Acheson's opinions sustaining its validity are contained in 28 *Federal Reporter*, 561, and 46 OFFICIAL GAZETTE, 1110; 37 *Federal Reporter*, 333. Judge Wallace doubtingly followed in this case the decisions of Judge Acheson, (51 Fed. Rep., 292.)

The three opinions in the circuit courts fully explain the mechanical character of the improvement upon pre-existing machines.

The invention relates to an annealing glass-furnace which is generally called a "leer" and is a long arched tunnel, into one end of which the sheets of glass are placed as they leave the flattening-furnace, through which they are conveyed and are gradually cooled in their transportation. In order to properly temper the glass and prevent breakage or warping or undue hardness or unequal tension of its particles, the cooling process should be gradual and equally distributed. To this end the glass should not be subjected to alternations of heat and cold; but the temperature should be uniformly decreasing, and uniform'y is found in the same horizontal plane and above the floor. Free radiation and an equal distribution of heat should take place from both sides of the glass, and therefore it should not rest upon the floor or upon a broad surface.

Formerly the glass was carried from the flattening-furnace through the annealing leer upon loaded cars, which was obviously a slow and unsafe method. The state of the art before the Tondeur invention, as manifested by the patented inventions which substituted transportation of sheets placed side by side for transportation upon loaded cars, is described as follows by Judge Wallace: The two types of leers which were said to have been used are shown in the patents to Bievez and to Bouvy.

The Bievez leer is of the usual rectangular form, with the usual tile or stone floor. The floor is divided longitudinally by a series of channels. Located in these channels and connected together so as collectively to form a frame are a series of iron bars resting on a series of grooved wheels. The wheels are supported by axles located in transverse channels beneath the floor. Coacting mechanism is employed for actuating the frame, whereby the series of iron bars are raised, advanced, lowered, and pushed backward. In operation a plate of glass from the flattening-oven is placed upon the floor of the leer, and the mechanism is actuated to elevate the frame and lift the glass from the floor, carry the glass forward, and deposit it upon the floor. The frame is then lowered, pushed back to its original position, and the operation repeated until the glass is transported through the leer. The Bouvy leer in general construction resembles that of Bievez, but differs in the devices for transporting the glass through it. The frame which is supported in the longitudinal channels consists of two series of iron shelves, which reciprocate each between the other, each having a vertical and longitudinal motion, which is coincident and equal, and also continuous. Mechanism is employed which actuates one series of the shelves downward and forward and the other at the same time upward and backward. In operation the glass is placed upon one of the series of shelves, the mechanism is actuated, and as the two series pass each other the ascending series removes the glass from the descending series and carries it forward until it is in like manner removed again by the other series, and thus is transported through the leer.

To summarize: In the Bievez patent the frame has a free, vertical, and longitudinal movement. Its function is to lift a sheet of glass by its vertical movement from the floor of the leer and by its longitudinal movement carry it to an advanced position on the floor. In the Bievez patent one series of shelves moves vertically and longitudinally while the other set is moving vertically and longitudinally in an opposite direction. The function performed by the shelves is to transfer a sheet of glass from one set to the other and advance it through the leer. In the Bievez leer the sheet of glass rests upon the bottom of the leer throughout its passage, except while being advanced at each elevation of the frame. In the Bouvy leer the glass does not rest at any time in its passage through the leer upon the floor; but it is not advanced in the same horizontal plane, and in its movement describes a circle which varies the longitudinal plane about eight inches.

Besides the patents introduced in the former litigation to show the prior state of the art the defendant has introduced others in the present case, of which those relied on in the argument at bar are the French patent to Leverne, of 1868, and the Belgian patent to Bouillet, of 1878. The Belgian patent to Gugnon set up in the answer cannot be considered, because it was not introduced in evidence. Neither of these new patents are of any value as impeaching the novelty of the claim as it has been construed. Each of them belongs to the Bievez type; but in Bouillet's two sets of parallel bars co-operate to lift the glass from the floor and advance it along the leer instead of the single set of Bievez.

The improvement contained in the Tondeur leer consisted in a successful attempt to simplify the machinery and lessen the large amount of breakage which had been the result of former annealing processes. The patentee says in his specification:

> My device for removing the glass out of the furnace consists of two sets of bars of iron, one of which reciprocates between the other. By this reciprocating motion the glass is carried through the annealing-tunnel of the furnace, the bars of each set being one elevated while the other is lowered between the movements of the glass by means of a lever attached to one of several transverse shafts that support the base. Sets of arms are attached to each shaft, one set of arms with rollers for the reciprocating bars and the other set of arms with hinge-joints for the other set of bars.

The vital part of the improvement resides in the two sets of bars, one set reciprocating and called $d'$, the other set supporting and called $d$ in the patent.

The following description of the operation of the double bars is condensed from the description in the specification: Both sets are parallel to each other and are placed alternately. When a sheet of glass is in readiness, it is taken from the flattening-furnace and placed on the ends of the reciprocating bars, four in number and parallel to each other, and, by the aid of wheels, having a motion backward and forward of about four feet. The operator, who stands at the farther end of the leer, then pulls these bars toward himself, which causes their ends to move with the sheet





of glass on them until the ends coincide with the ends of the supporting-bars, and the sheet is also over the ends of these bars $d$. The movement of a lever which is fast to the end of a shaft lowers the bars $d'$ and raises the bars $d$ simultaneously to the extent of about one inch, which takes the sheet from the bars $d$ and leaves it on the bars $d$. The bars $d'$ are then pushed backward for another sheet. The bars $d$ are fast to the arm of the shaft, and their motion is very small, since they can move only the distance the lever moves the arm, which has no effect on the progress of the glass through the tunnel; but by the motion of the bars $d'$, together with the elevation and lowering of both sets of bars, a gentle change of the sheets is had from one set of bars to the other, and the glass moves onward through the annealing-tunnel until a series of sheets fill the tunnel, after which the operator, at each reciprocal movement of the bars $d'$, removes from the exit a sheet of glass. This he repeats as long as the furnace is in operation. The specification says, also:

> A space of about one foot deep is desirable beneath the bars.

The drawings of the patent and the leer as made and presented to the public show that, as a matter of fact, the supporting-bars were at some distance above the level of the floor and that the movement of the sheets was in the same horizontal plane. The invention, as a fact, consisted in substituting a pair of supporting-bars raised above the floor of the leer for the floor or the floor-ribs of the Bievez type and in so arranging the reciprocating bars with the supporting-bars that the sheets are pushed forward through the leer in the same horizontal plane, instead of through different degrees of temperature, by the oscillating or jumping movement of bars of the Bouvy type. The glass is continually supported above the floor and is both supported and carried forward in the same horizontal plane. The advantages of the leer and the reasons why it was an improvement are abundantly proved, not only by the testimony of mechanics and manufacturers, but by its history. It has well-nigh displaced other systems and is in almost universal use in glass-furnaces in this country.

The claims of the patent are as follows:

> 1. The combination of the bars $d$ $d'$, arranged side by side and alternately between each other, the set $d$ supporting the sheets of glass, while the bars $d'$ are pushed toward the leer or flattening-wheel $a$, and the set $d'$ supporting the sheets of glass and moving them onward and through the tunnel, substantially as set forth.
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> 2. The transmitting-bars $d'$, reciprocating between the alternate bars $d$, which receive the glass at the times described, in combination with the arms $e'$ $e'''$, which by the lever $h''$ and shafts $f$ change simultaneously the elevation of the sets of bars $d$ $d'$ and the glass supported by each, as set forth.
>
> 3. The furnace $x$ and tunnel $h'$, made with a continuous and straight chamber from the section $e''$ of the flattening-wheel $a$, in combination with the bars $d$ $d'$, so constructed that the bars $d'$ shall enter the leer-furnace over the section $e''$ of the wheel, as set forth.
>
> 4. A furnace and tunnel made with a draft through both from the fuel-chamber $a$, and with a draft flue, $m$, and dampers $n$, in combination with the bars $d$ $d'$, the several parts being constructed as set forth.
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> 5. The furnace $x$, with flattening-wheel $a$ and tunnel $h'$, constructed and adapted to the two sets of bars $d$ $d'$, the bars $d'$ being made by the wheels $e$ to reciprocate and project alternately into the furnace over the segment $e''$ and out of the exit $h$, whereby the sheets of glass are received by the furnace ends of said bars, and discharged by their exit ends out of the tunnel without opening the furnace or tunnel, as set forth.

The case depends upon the construction which shall be given to the bars $d$ and $d'$ in the several claims of the patent. The first claim is the broadest and most important one, being for the two sets of bars, irrespective of the particular mechanism by which they are operated. The second is for the two sets of bars with the described operative mechanism. The third, fourth, and fifth are for the two sets of bars in combination with the furnace and tunnel and specified details of construction mentioned in the respective claims. The defendant's theory of the invention, as it existed in Tondeur's mind and as he presented it in his specification, is that it was a modified construction of the bars, so as to avoid violent movement and consequent breakage; that its intended result was a gentle change of the sheets from one set to the other; that, so far as appears from the specification, the supporting-bars could be on a level with the floor and the reciprocating bars could move in a variable plane, and that it was a mere mechanical change and not an improvement in the art of annealing. If this theory is correct, there was no patentable invention in the improved leer. The defendant's argument relies upon the fact that the alleged distinctive features of the bars—viz., their elevation above the floor and the forward movement in the same horizontal plane—are not mentioned in the specification or in the claims as patentable features or patentable improvements or as the causes by which breakage is avoided, and that elevation above the floor is only alluded to as desirable.

It is perfectly true that the description in the specification is confined to the purely mechanical features of construction of the bars and the other operative mechanism, and that the patentee nowhere told why his improvement diminished breakage, or pointed out as a part of his invention that the movement was in the same horizontal plane, and that the supporting-bars must be above the floor, although he does mention the amount of space beneath the bars which would be desirable.

The specification closely, and altogether too closely, adheres to mere mechanical features and creates doubt as to whether Tondeur thoroughly understood his invention. It indicates that the patentee did not understand the philosophical principles which caused his mechanism to produce an improved annealing. If he had known, they would have been alluded to in the patent; but an examination of the specification and its drawings leaves little doubt that the patentee meant, and that the specification means, to describe bars in such relation to each other that the glass is carried forward constantly in the same horizontal plane. He meant to instruct the public that the glass was to be carried through the tunnel on a level, though he might not have known why it was to be so conveyed.

A very slight vertical movement transfers the glass from one set of bars to another, and it is during its entire progress through the tunnel in substantially the same horizontal plane.

The motion of the bars $d'$ is called a "backward-and-forward" one, and the specification says that the operator draws the exit ends of the bars $d'$ out with a sheet of glass on them when the bars $d'$ are up or elevated, and he pushes them in when they are lowered and the bars $d$ are up or elevated. The bars $d'$ are pushed backward and pulled forward on wheels which are

mounted on shafts whose journals are either made fast to the sides of the tunnel or set in them all at one level. Any other motion than one in a horizontal plane would not seem to be practicable.

The fact that the supporting-bars are raised above the floor is not so clearly found in the written parts of the specification. It is plainly implied, because the distinctive feature of these bars is that they are supporting, and the glass passes through the leer upon a grating, and the plan of movement is inconsistent with a rest upon or contact with the floor. Moreover, Figure 1 of the drawings clearly shows that the bars are above the floor. In addition, the fact that the advantages arising from the elevation of the supporting-bars above the surface of the floor over the old hearth-leer construction were immediately understood by practical glass-manufacturers is suggestive that they understood the real nature of the invention as described in the patent. The patentee told the trade, of which he was a member, by what mechanical means breakage of glass in the process of annealing could be saved—in other words, how to anneal glass better and more economically. His patent described clearly enough the way in which bars and the operative mechanism should be constructed and operated and the glass should be conveyed through the leer. He did not know or he did not tell why the new method would produce better results. He simply told how to construct a machine which carried the glass through the leer on a level and saved much breakage: but he ought not to lose the statutory benefits which would certainly belong to him if he had seen and described the philosophy of his machine accurately.

Our conclusion is in accordance with that of Judge Acheson, that the bars *d' d* are two sets arranged alternately side by side at some distance above the floor of the leer, so that the sheets of glass are supported by one set and moved onward by the other through the tunnel in practically the same horizontal plane when coacting mechanism is applied.

The defendant is a builder of leers and constructs them substantially in accordance with the description shown and described in Letters Patent No. 400,708, which were issued to him and dated April 2, 1889. In the opinion of the circuit court it is said "the combinations which are the subject of the several claims (of the Tondeur patent) are each employed in the furnaces or leers of the defendant."

The questions which were actually in controversy before the circuit court and are before this court relate to the construction of the patent and to patentable novelty. If the validity of the claims is sustained, infringement is not controverted.

The decree of the circuit court is affirmed, with costs.

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## U. S. Circuit Court of Appeals—Ninth Circuit.

IMPROVED FIG SYRUP COMPANY *et al. v.* CALIFORNIA FIG SYRUP COMPANY.

*Decided February 1, 1893.*

1. TRADE-MARK—SYRUP OF FIGS.

The laxative medical compound manufactured by the California Fig Syrup Company under the name "Syrup of Figs" is a preparation which a court of equity will look upon with favor as entitled to protection under the Trade-Mark laws.

2. SAME—SAME—STATEMENTS ON BOTTLES AND PACKAGES.

The representations and statements on the bottles and packages of the California Fig Syrup Company's medical compound "Syrup of Figs" are not such as will deprive the California Fig Syrup Company of standing in a court of equity in respect to infringement of its Trade-Mark or trade-name.

3. SAME—SAME—NOT DESCRIPTIVE, BUT INDICATIVE OF ORIGIN AND OWNERSHIP.

The name "Syrup of Figs" is a good Trade-Mark or trade-name, and one to which the California Fig Syrup Company has an exclusive right as applied to a laxative compound, and as such is not merely descriptive of its preparation, but indicates the origin and ownership of this medical compound, and the California Fig Syrup Company was the first to apply this name to a laxative compound.

4. SAME—SAME—NOT GENERIC.

The name or phrase "Syrup of Figs" is in no sense a generic one. It is not a name of a natural product or of a class of natural products. It is merely a name coined and first applied to designate the laxative compound of the California Fig Syrup Company.

5. SAME—SAME—INFRINGEMENT.

Defendants infringe the Trade-Mark rights of the California Fig Syrup Company when they apply to their laxative compound the name "Syrup of Figs" or any colorable imitation of that name, as such a name does not describe defendants' compound, but merely serves to induce the public to believe that the goods made and sold by them are those manufactured by the California Fig Syrup Company.

6. SAME—SAME—SAME.

While there may be a difference between defendants' packages of laxative compound and the packages of the California Fig Syrup Company's laxative compound, and such a difference as to probably put the general trade dealer on his guard, yet, defendants having adopted the trade-name of the California Fig Syrup Company, the consumer is likely to be deceived thereby, and it is against the probability of such imposition upon the consuming class of the public that courts will extend their protection.

APPEAL from the Circuit Court of the United States, Northern District of California.

*Mr. John L. Boone* for the appellants.
*Mr. Warren Olney* for the appellee.
*Mr. Paul Bakewell*, of counsel for the appellee.

Before GILBERT, MORROW, and BEATTY, Judges.

BEATTY, *J.*:

This is an appeal from the order of the Circuit Court of the Northern District of California continuing a temporary restraining order against appellants *pendente lite*.

It appears from the complaint that the appellee for a number of years last past has been engaged in the manufacture and sale of a liquid medical preparation designated by it as "Syrup of Figs;" that such designation has been pressed upon the bottles containing the preparation and printed upon the paper boxes containing the bottles, and that through such and other means during a long course of trade the medicine has become known to the public as "Syrup of Figs;" also as "Fig Syrup," and appellee's name as "California Fig Syrup Co.," "Fig Syrup Co.," and "Syrup of Fig Co." to such an extent that business letters concerning the same refer to it and appellee by such names and terms; that appellee was the first to manufacture such preparation and to adopt and use the name so given to it; that subsequently the appellants commenced the manufacture of a medicine claimed by them to be a like remedy for a similar purpose, which they styled "Improved Fig Syrup," put up in bottles and paper boxes resembling in size, shape, and appearance those used by appellee; and the complaint further alleges that the preparation of appellants is such and offered under name and appearance so closely resembling that used by appellee that the public are most likely to be deceived into the purchase of one for the other.

A demurrer to the complaint was overruled, and upon a showing by affidavits, under an order to show cause why the temporary restraining order, granted upon the filing of the complaint, should not be continued pending the action, such restraining order was continued.

The appellants now say that the—

only question that arises under this appeal is whether on the facts set out in the complaint and affidavits the complainant is entitled to an injunction. Respondents demurred to the complaint on several grounds; but the demurrer was overruled by the court. The grounds of demurrer are, however, the grounds upon which we maintain that an injunction should not be granted;

but the argument which follows is based upon other questions than those appearing alone from the complaint and demurrer.

The first point raised by appellants, that courts will not protect the Trade-Marks of manufacturers of patent or quick medicines, need not be discussed, for the reason that it does not satisfactorily appear from the record that appellee's preparation is such a medicine.

It is next urged that the appellee has no standing in a court of equity, because in the representations it has made concerning its medicine it has practiced deceit and fraud upon the public. If this were clearly established by the evidence, it would be ground for reversal. Trade-Marks which are based upon misrepresentation and deceit, and especially such as are intended to deceive and defraud the public into the purchase of articles for what they are not—into the belief that they are valuable when deleterious—will not be protected by the courts. There is too much reason for the assertion that "there is not a thing that we eat or drink or wear which is pure or genuine." To protect a dishonest manufacturer in a fraudulent and deceptive Trade-Mark would be simply to aid him to fraud—to add to his unlawful gain by assisting him in palming off upon the public his worthless wares as valuable goods—and thus discourage, injure, and bankrupt the honest dealer as well as to impose upon the public. Upon a proposition so plain discussion or the citation of authorities would seem unnecessary; but we may, in this connection, refer to the *Munhattan Medicine Co.* v. *Wood* (23 O. G., 1925; 108 U. S., 218) and the cases therein cited. While we agree with appellants as to the doctrine, the fact as claimed by them is not established in the case. We are not satisfied from the evidence that the appellee has attempted to practice any fraud or impose upon and damage the public.

The appellants contend that the phrase "Syrup of Figs" is merely descriptive of the preparation, and therefore cannot be adopted as a Trade-Mark. It is not always clear when this doctrine, involved by appellants, is applicable; but the facts and the manner of the use of the words, symbols, or signs adopted in a particular case will aid us in reaching a conclusion. Generally any words, marks, or symbols may be adopted as a Trade-Mark which are indicative of the origin or ownership of the manufactured article; but those used simply to describe the quality, kind, or nature of the article cannot be so appropriated. The law as stated in *Canal Co.* v. *Clark* (13 Wall., 322) has been quoted with approbation in *Amoskeag Manufacturing Co.* v. *Trainer*, (17 O. G., 1217; 101 U. S., 51;) *Lawrence Mfg. Co.* v. *Tennessee Mfg. Co.*, (55 O. G., 1528; 138 U. S., 546,) and other Supreme Court cases, and is that—

words in common use, with some exceptions, may be adopted if at the time of their adoption they were not employed to designate the same or like articles of production. The office of a Trade-Mark is to point out distinctively the origin or ownership of the article to which it is affixed, or, in other words, to give notice who was the producer. This may in many cases be done by name, a mark, or a device well known but not previously applied to the same article. But though it is not necessary that the word adopted as a Trade-Mark should be a new creation, never before known or used, there are some limits to the right of selection. This will be manifest when it is considered that in all cases where rights to the exclusive use of a Trade-Mark are invaded it is invariably held that the essence of the wrong consists in the sale of the goods of one manufacturer or vender as those of another, and that it is only when this false representation is directly or indirectly made that the party who appeals to a court of equity can have relief. This is the doctrine of all the authorities. Hence the Trade-Mark must, either by itself or by association, point distinctively to the origin or ownership of the article to which it is applied. The reason of this is that unless it does neither can he who first adopted it be injured by any appropriation or imitation of it by others nor can the public be deceived. The first appropriator of a name or device pointing to his ownership, or which by being associated with articles of trade has acquired an understood reference to the originator or manufacturer of the article, is injured whenever another adopts the same name or device for similar articles, because such adoption is in effect representing falsely that the productions of the latter are those of the former. Thus the custom and advantage to which the enterprise and skill of the first appropriator had given him a just right are abstracted for another's use, and this is done by deceiving the public by inducing the public to purchase the goods and manufactures of one person supposing them to be those of another. The Trade Mark must therefore be distinctive in its original signification, pointing to the origin of the article, or it must have become such by association. And there are two rules which are not to be overlooked. No one can claim protection for the exclusive use of a Trade-Mark or trade-name which would practically give him a monopoly in the sale of any goods other than those produced or made by himself. If he could, the public would be injured rather than protected, for competition would be destroyed. Nor can a generic name, or a name merely descriptive of an article of trade, of its qualities, ingredients, or characteristics, be employed as a Trade-Mark and the exclusive use of it entitled to legal protection.

The phrase "Syrup of Figs" is in no sense a generic one. It is not a name of a natural product or of a class of natural products. If such an article exists, it must be the result of a manufacturing process. So far as we are advised the name never existed, nor was it applied to any natural or artificial product, until formulated by appellee of words of no prior association and by it used to designate its preparation. Even if such medicine were made entirely of figs, it is still a new name applied to a manufactured, and not a natural, product; hence indicates rather its origin than its quality, or even its nature. It is not, however, claimed by appellee that its preparation is a product of figs alone, but that it is produced from a combination of the juice of figs with other plants. In this light the phrase is not—

merely descriptive of an article of trade, of its qualities, ingredients, or characteristics.

Appellants claim the preparation is not made of figs, nor do they claim, nor has it been shown, that their production is pure sirup of figs; but, as it also appears to be a combination of different articles, neither are they entitled to the name as a generic or descriptive one. Why, then, should they use it or any words or phrases in similitude thereof, unless it be thereby to induce the public to believe that the goods sold by them are those manufactured or produced by the appellee, thus palming off the former as those of the latter,

which the law says shall not be done. That such has been appellants' design we are constrained to believe when we consider the character and size of their bottles, their paper boxes, the printing on each, and other matters connected therewith, for, it appearing that the terms used are not merely descriptive of the preparation in either case, it cannot be conceived that it was purely by accident that appellants adopted the terms and appliances they have to make known to the public and dispose of their goods. While there is a difference between the two, there is still such similarity as we think would lead many purchasers (the consumer, though not likely the general trade dealer) to purchase one for the other. It is against the probability of such impositions upon the consuming class of the public that courts will extend their protection.

What degree of resemblance is necessary to constitute an infringement is incapable of exact definition as applied to all cases. All that the courts of justice can do in that regard is to say that no trader can adopt a trade-mark so resembling that of another trader as that ordinary purchasers, buying with ordinary caution, are likely to be misled. (*McLean* v. *Fleming*, 13 O. G., 913; 96 U. S., 251.)

As we construe the restraining order of the court below it simply excludes the use by appellants of Trade-Marks, bottles, wrappers, and devices used in offering their preparation to the public similar to those applied by appellee to its preparation for a similar use and purpose. Appellants are not restrained from making their medicine, but from offering it for sale or selling it under such or any circumstances, declarations, or representations that it may be taken as the preparation made and offered to the public by the appellee.

We have not deemed it necessary to enter into any lengthy discussion of the law on the points raised on this hearing, as they are fully settled by other courts, and moreover the cause is still pending for final trial; but we think facts before the lower court clearly justified the conclusion it reached, and its order and judgment so far made are affirmed.

[Vol. 64 No. 1.]

THE
# OFFICIAL GAZETTE
OF THE
# United States Patent Office.
[BY AUTHORITY OF CONGRESS.]

VOL. 64.—No. 2. TUESDAY, JULY 11, 1893. PRICE—$5 per year.

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## Oaths of Applicants in Foreign Countries.

(ORDER No. 822.)

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
*Washington, D. C., June 10, 1893.*

It is hereby directed that oaths accompanying applications for patents made within the following-named foreign countries must be taken before a minister, chargé d'affaires, consul, or commercial agent holding commission under the Government of the United States:

Austria Hungary.
Argentine Republic.
Belgium.
Brazil.
Costa Rica.
Denmark.
Haiti
Honduras.
Italy.
Mexico.
Netherlands
Norway.
Peru.
Portugal.
Russia.
San Salvador.
Servia.
Sweden.
Switzerland.

Applications filed in this Office presenting oaths not executed in compliance with this order will be treated as incomplete.

JOHN S. SEYMOUR,
*Commissioner.*

## Attorneys.

DEPARTMENT OF THE INTERIOR,
OFFICE OF THE SECRETARY,
*Washington, D. C., June 30, 1893.*

SIR: The Secretary of the Interior has ordered that W. R. Hicks, of Morgan Switch, Ky., be not recognized after this date as agent or attorney in the prosecution of any claim or other matter before this Department or any Bureau thereof.

Very respectfully,

J. J. S. HASSLER,
*Chief Clerk.*

The Commissioner of Patents.

## Notice of Interference

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE.
*Washington, D. C., July 13, 1893.*

*William J. Bennetts, his heirs, assigns, or legal representatives, take notice:*

An interference having been declared by this Office between the application for patent of Arthur W Robinson, of Bucyrus, Ohio, and a patent to William J. Bennetts, of Bucyrus, Ohio, and the notices of said declaration, mailed by the Patent Office in the usual manner to the said William J. Bennetts, having been returned undelivered, notice is hereby given to the said William J. Bennetts, his heirs, assigns, or legal representatives, that if he or they desire to contest the said interference they should immediately put themselves in communication with the Commissioner of Patents, in order that the notices heretofore sent by and returned to the Office may be forwarded to them. This notice will be published in the OFFICIAL GAZETTE for six consecutive weeks.

JOHN S. SEYMOUR,
*Commissioner.*

## Changes in Classification.

(ORDER No. 826.)

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
*Washington, D. C., July 5, 1893.*

The sub-class of Draft-eveners, under Class 97, Plows, is hereby abolished.

The following sub-classes are established under Class 126, Stoves and Furnaces:

138. Frictional heaters.
139. Water-heating systems, steam.

The following new sub-class is hereby established under Class 34, Driers:

13. Driers, brick.

The following sub classes are established under Class 48, Gas:

42. Retorts and settings, attachments.
43. Retorts and settings, cleaning.
44. Retorts and settings, domestic plants.
45. Retorts and settings, retorts.

S. T. FISHER,
*Acting Commissioner.*

## Privileges of the Scientific Library.

Persons who are not employés of the Office may, under the supervision and direction of the Librarian, make extracts, in pencil, from descriptions and drawings contained in the Scientific Library, such extracts, when in the nature of copies, not to exceed one-third of the descriptions or drawings from which the copies are made. Violation of this order will subject all persons and parties concerned in the violation to exclusion from thereafter making any such extracts or copies whatever.

## The Official Gazette.

THE OFFICIAL GAZETTE is published every Tuesday, simultaneously with the weekly issue of patents. From January 1, 1872, (the commencement of its publication,) to June 30, 1883, it was published and bound in semi-annual volumes; since July 1, 1883, in quarterly volumes. All subscriptions must commence with the beginning of a volume; none taken for less than three months. Terms: To all subscribers within the United States and Canada, $5 per annum; to foreign subscribers, $7; single copies, 10 cents; bound semi-annual volumes, (prior to June 30, 1883,) full sheep, $4 per volume; bound quarterly volumes, (subsequent to July 1, 1883,) full sheep, $2.75 per volume. No club rates. *Payment in advance.* All orders should be addressed to "The Commissioner of Patents, Washington, D. C."

### Issue of July 11, 1893.

| | | |
|---|---|---|
| Patents | 438 | No. 501,047 to No. 501,484, inclusive. |
| Designs | 17 | No. 22,596 to No. 22,612, inclusive. |
| Trade-Marks | 40 | No. 23,326 to No. 23,365, inclusive. |
| Labels | None | |
| Prints | None. | |
| Reissues | 1 | No. 11,350. |
| Total issue | 496 | |

TO CITIZENS OF THE UNITED STATES.

| States. | Patents and Designs. | Trade-Marks and Labels. | States. | Patents and Designs. | Trade-Marks and Labels. |
|---|---|---|---|---|---|
| Alabama | 1 | | Nevada | | |
| Arizona Territory | 1 | | New Hampshire | 3 | 1 |
| Arkansas | 2 | | New Jersey | 18 | |
| California | 7 | | New Mexico Ter. | | |
| Colorado | 8 | 1 | New York | 65 | 10 |
| Connecticut | 11 | | North Carolina | 3 | |
| Delaware | | | North Dakota | | |
| District of Columbia | 6 | | Ohio | 31 | 1 |
| Florida | | | Oregon | 1 | 1 |
| Georgia | 1 | | Pennsylvania | 44 | 3 |
| Idaho | | | Rhode Island | 4 | |
| Illinois | 25 | 6 | South Carolina | 2 | |
| Indiana | 10 | 1 | South Dakota | 1 | |
| Indian Territory | | | Tennessee | 4 | 1 |
| Iowa | 6 | | Texas | 5 | 1 |
| Kansas | 6 | | Utah Territory | 1 | |
| Kentucky | 5 | | Vermont | 3 | 1 |
| Louisiana | 1 | | Virginia | 4 | |
| Maine | 3 | | Washington | 2 | |
| Maryland | 2 | 2 | West Virginia | 1 | |
| Massachusetts | 53 | 5 | Wisconsin | 10 | 1 |
| Michigan | 12 | | Wyoming | | |
| Minnesota | 8 | 1 | U. S. Army | 1 | |
| Mississippi | 2 | | U. S. Navy | 1 | |
| Missouri | 13 | 1 | | | |
| Montana | 2 | | Total to citizens of the United States | 391 | 37 |
| Nebraska | 2 | | | | |

TO CITIZENS OF FOREIGN COUNTRIES.

| Countries. | Patents and Designs. | Trade-Marks and Labels. | Countries. | Patents and Designs. | Trade-Marks and Labels. |
|---|---|---|---|---|---|
| Austria-Hungary | 3 | | Mexico | | |
| Belgium | | | Netherlands | | |
| Bermuda | | | Newfoundland | | |
| Brazil | | | New South Wales | | |
| Canada | 4 | 2 | New Zealand | | |
| Ceylon | | | Norway | | |
| Chile, Republic of | | | Roumania | 1 | |
| Cuba | | | Russia | 1 | |
| Denmark | | | Scotland | 2 | |
| Ecuador | | | South Australia | | |
| England | 14 | 1 | Spain | 1 | |
| France | 7 | | Sweden | | |
| Germany | 29 | | Switzerland | | |
| India | | | Victoria | 1 | |
| Ireland | 1 | | | | |
| Italy | | | Total to citizens of foreign countries | 64 | 3 |
| Japan | | | | | |

## APPLICATIONS UNDER EXAMINATION.

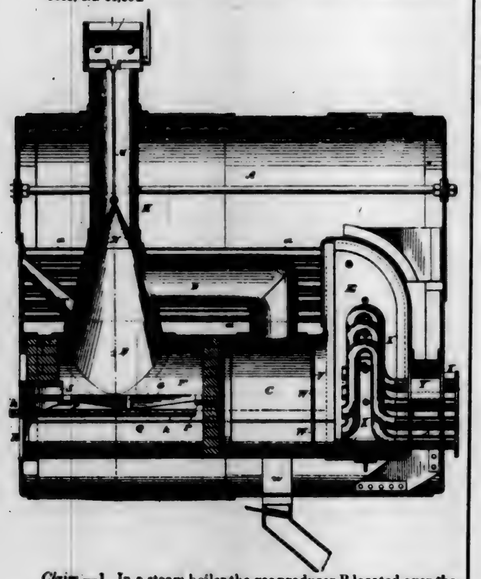
*Condition at Close of Business July 4, 1893.*

| Division No. | Subjects of invention. | Oldest new application and oldest action by applicant awaiting office action. New. | Amended | No. of applications awaiting action. |
|---|---|---|---|---|
| | *In arrears.—Under one month.* | | | |
| 31 | Gas, Painting, Leather, Tanning, Alcohol, Oils, Fats, and Glue, etc. | June 28 | July 3 | 13 |
| 2 | Farm Stock, Products, etc | June 15 | June 29 | 68 |
| | *Between one and two months.* | | | |
| 13 | Metal-Working, Arms and Projectiles, etc | May 9 | July 1 | 94 |
| 14 | Metal-Bending, Wire-Working, Coin-Controlled Apparatus, Farriery, etc | May 8 | June 30 | 124 |
| 21 | Textiles, etc | May 5 | June 28 | 204 |
| 8 | Furniture, Toilet, Umbrellas, and Canes, etc. | May 5 | June 28 | 273 |
| 11 | Boots and Shoes, Clasps, Buckles and Buttons, Harness, Hose and Belting. | May 4 | June 26 | 257 |
| 30 | Lamps, Gas-Fittings, Type-Writers, Matrix-Making Machines. | June 8 | June 24 | 151 |
| 16 | Telegraphy, Telephony, Electric Lighting and Signaling. | May 18 | June 24 | 85 |
| 12 | Mechanical Engineering, Stores-Service, etc. | May 6 | June 23 | 180 |
| 27 | Brushing and Scrubbing, Grinding and Polishing Laundry, etc. | May 15 | June 22 | 166 |
| 19 | Stoves and Furnaces | May 5 | June 19 | 302 |
| 24 | Sewing-Machines and Apparel | May 6 | June 16 | 115 |
| 6 | Chemistry, Medicines, Fertilizers, Preserving, Photography, Sugar and Salt, etc. | May 9 | June 15 | 136 |
| | *Between two and three months.* | | | |
| 7 | Harvesters, Games and Toys | Apr. 14 | June 26 | 440 |
| 32 | Advertising, Baggage, Packing and Storing Vessels etc. | Apr. 7 | June 26 | 325 |
| 25 | Artesian and Oil Wells, Butchering, Mills and Thrashing, Stone-Working, etc. | Apr. 29 | June 22 | 304 |
| 10 | Carriages and Wagons and Railway-Cars. | Apr. 29 | June 17 | 309 |
| 3 | Metallurgy, Metal Founding, Coating, Annealing and Tempering, Electro-Chemistry, etc. | Apr. 19 | June 15 | 211 |
| 17 | Paper-Manufactures and Printing | Apr. 6 | June 6 | 190 |
| 20 | Builders' Hardware, Cutlery, Safes, Dentistry, Surgery, Undertaking, Artificial Limbs, etc. | Apr. 4 | May 27 | 408 |
| 4 | Civil Engineering, etc | May 3 | May 22 | 323 |
| | *Between three and four months.* | | | |
| 23 | Instruments of Precision, Acoustics, Optics, etc. | Mar. 27 | June 19 | 323 |
| 9 | Hydraulics, Fire-Extinguishers, etc | Mar. 17 | June 19 | 329 |
| 29 | Wood-Working Machines, Carpentry, Coopering and Roofing, etc. | Mar. 20 | June 13 | 340 |
| 22 | Fire-Arms, Navigation, Signals, etc. | Mar. 14 | June 9 | 346 |
| 1 | Tillage and Fences | Apr. 3 | June 5 | 355 |
| 5 | Fine Arts, Stationery, Bookbinding, Music, etc. | Apr. 1 | June 2 | 204 |
| 18 | Steam-Engineering, etc | Mar. 7 | June 2 | 325 |
| 15 | Plastics, Paper-Making, Paving, Glass, Fuel, Bread-Making, etc. | Mar. 23 | May 26 | 290 |
| | *Between four and five months.* | | | |
| 28 | Pneumatics, Refrigeration, Air and Gas Engines, etc. | Feb. 30 | May 15 | 428 |
| | *Between seven and eight months.* | | | |
| 26 | Electricity, Generation, Distribution, etc. | Nov. 4 | Mar. 27 | 415 |
| | Total number of applications awaiting action | | | 8,050 |
| | *Under one month in arrears.* | | | |
| | Designs | June 26 | June 26 | 45 |
| | Trade-Marks | June 30 | July 1 | 8 |

# PATENTS

## GRANTED JULY 11, 1893.

**501,047. STEAM-BOILER.** JOHN J. BARCLAY, Elizabeth, assignor of one-half to William W. Dashiell, Bergen Point, N. J. Filed Dec. 9, 1892. Serial No. 454,557. (No model.) Patented in England July 25, 1889, No. 11,864.



*Claim.*—1. In a steam boiler the gas producer B located over the fire chamber F, the receiving chamber C, and the flue D passing from said producer to said chamber, combined with the combustion chamber E having air inlets and communicating with said chamber C, and the boiler tubes *a* leading from the combustion chamber, the whole being of metal and supported within the boiler shell, substantially as and for the purposes set forth.

2. In a steam boiler the metal gas producer B located over and collecting the gas from the fire chamber F, combined with the metal combustion chamber E receiving said gas and having inlets for the supply of air, and the boiler tubes *a* leading from said combustion chamber, the whole being inclosed within the boiler shell A and arranged and operating substantially in the manner and for the purposes described.

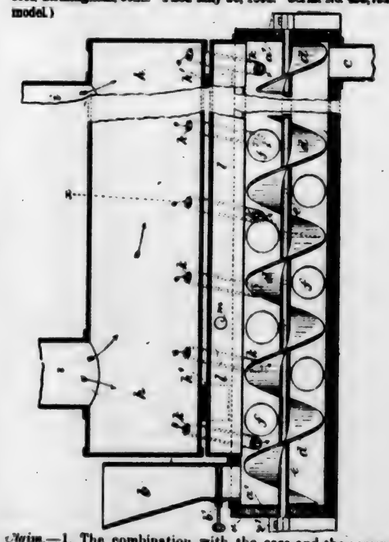
3. In a steam boiler the metal gas producer B located over and collecting the gas from the fire chamber F, and provided at its upper end with means for feeding the fuel combined with the metal receiving chamber C in line with the said fire chamber, the flue D extending from said producer to said receiving chamber, and the metal combustion chamber E having inlets for air, outlets for the products of combustion, and a communication with the said receiving chamber, the whole being inclosed within the boiler shell A and arranged and operating substantially in the manner and for the purposes set forth.

4. In a steam boiler, the cone-shaped gas producer connected at its upper end with the trunk to receive the fuel and at its lower end forming the fire box, combined with the bell-valve at the upper end of said producer, the receiving chamber connected with the gas producer, and the combustion chamber connected by ports with said receiving chamber and having an outlet for the products of combustion the whole being of metal and inclosed within the boiler shell; substantially as set forth.

5. In a steam boiler the gas producer, and the combustion chamber receiving the gas, combined with the series of pipes leading into said chamber and coiled therein the whole being of metal and inclosed within the boiler shell; substantially as set forth.

6. In a steam boiler the gas producer, combined with the connected receiving chamber and combustion chamber, the latter having air inlets and an opening to receive fuel; substantially as set forth.

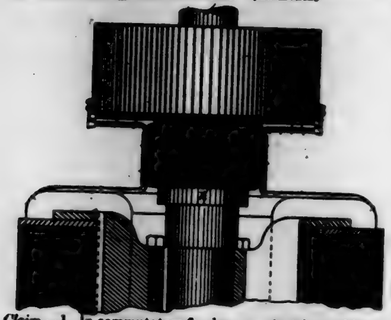
**501,048. APPARATUS FOR CONVEYING AND DRYING.** SEMLOOS H. BARRETT, Brooklyn, N. Y., assignor to himself, and Royal M. Bassett, Birmingham, Conn. Filed May 20, 1892. Serial No. 433,732. (No model.)



*Claim.*—1. The combination with the case and the screw conveyer within the case and the supply hopper at one end and a discharge at the other end, of the air chamber *h*, above the conveyer case, the pipes *k*, passing downwardly and entering the conveyer case at opposite sides and a pipe opening into the top of the conveyer case and through which the escape air passes substantially as specified.

2. The combination with a case having a supply hopper at one end and a discharge at the other end, of a conveyer screw and its shaft rotatable within said case, stirring blades *f* connected at intervals to the conveyer shaft between the convolutions thereof, a hot air chamber *h*, inlet pipes *i*, descending pipes *k* from the lower portion thereof and entering the conveyer case in pairs at opposite sides of the case and at a slight inclination toward the receiving end of the case, there being a chamber *l* in the upper part of the case between the pairs of pipes *k* and above the conveyer screw, and a pipe *m* passing from the chamber *l* to an exhausting device, substantially as set forth.

**501,049. COMMUTATOR CONNECTION.** NORMAN C. KEENEY, Lynn, Mass., assignor to the General Electric Company, of New York. Filed Feb. 9, 1893. Serial No. 461,566. (No model.)



*Claim.*—1. In commutators for dynamo-electric machines or motors, cross connections for the sections consisting of a cable E having portions *e* laid at an angle to the radius upon the back of the commutator, and portions *e'* and *e''* crossing and overlying and underlying each other, respectively, at an angle upon an arbor mounted on the shaft between the armature and the commutator, substantially as described.

2. As a new article of manufacture, the cross-connections of a commutator for dynamo-electric machines and motors, assembled upon an arbor adapted to be mounted upon the shaft between the armature and the commutator; the connections proceeding at an angle around the arbor, and having parts overlying and underlying each other, respectively, as herein set out and described.

**501,050. BOTTLE-UNCAPPING TOOL.** ALFRED L. BERNARDIN, Evansville, Ind., assignor to the Bernardin Metallic Cork Company, same place. Filed Mar. 14, 1893. Serial No. 465,908. (No model.)



*Claim.*—1. A tool for removing bottle caps comprising a suitable shank or handle provided with a head having a terminal lifting flange or lip, together with a fulcrum-piece having indenting points supported in advance of said lip and above the plane thereof so as to engage the upper surface of the cap, substantially as described.

2. A tool for removing bottle caps comprising a suitable shank provided with a head having a recess adapted to receive the circumferential bead of the cap and an adjacent lifting flange or lip adapted to fit under said bead, together with a fulcrum-piece having indenting points supported upon divergent arms springing from the shank above the plane of the lip and adapted to engage the upper surface of the cap, substantially as described.

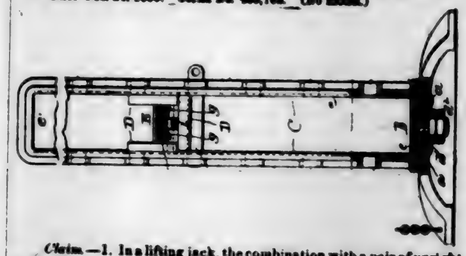
3. A bottle uncapping tool comprising the shank having the pronged head with fulcrum-piece extending partially across the head and provided with indenting points and the depressed lip in rear thereof and below the plane of said points for engaging and lifting the bead of the cap, substantially as described.

4. A bottle uncapping tool comprising the shank having the pronged head with toothed fulcrum-piece supported upon said prongs the latter extending only partially across the bottle cap, and the lifting flange or lip projecting below the plane of the prongs so as to provide an intermediate recess adapted to receive the bead of the cap, substantially as described.

5. The bottle uncapping tool comprising the shank having the head provided with divergent arms or prongs extending partially across the bottle cap and having the ears or guides thereon, and the cross-bar with teeth integral therewith, together with the lip or flange projecting between said arms below the plane thereof so as to provide an intermediate recess to receive the bead of the cap, substantially as described.

6. A cap removing tool provided with a shank or handle having a head formed with a terminal flange or lip adapted to lift the projecting circumferential bead of the cap, and a forwardly projecting fulcrum support extending partially across the cap above the plane of said lip and provided with indenting points adapted to take into the upper surface of the cap so as to prevent the tool from slipping, substantially as described.

**501,051. LIFTING DEVICE.** WILLIAM BLAKE, Camden, N. J. Filed Feb. 21, 1893. Serial No. 463,162. (No model.)



*Claim.*—1. In a lifting jack, the combination with a pair of upright members, of an oscillatory shoe operating between the uprights and adapted to receive and support a lifting lever thereon substantially as set forth.

2. In a lifting jack, the combination with a pair of uprights, and a base to which they are swiveled, of an oscillatory shoe operating between the uprights, substantially as set forth.

3. In a lifting jack, the combination with suitable support, of a carriage capable of being slid up and down, means for blocking the carriage, and a shoe pivoted to the carriage, substantially as set forth.

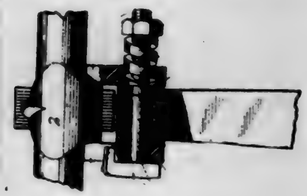
4. In a lifting device, the combination with a base having an annular V-shaped groove, of a base plate, an annular flange or rib projecting from said base plate and adapted to enter said annular groove, an arm or pin projecting from said base plate and through a perforation in the base, a standard projecting from said base plate and a shoe carried by said standard, substantially as set forth.

5. In a lifting device, the combination with a standard comprising two members or uprights having grooves or ways, of a carriage adapted to have a vertical movement in said ways, a bolt for supporting said carriage, and a shoe carried by said carriage, substantially as set forth.

6. In a lifting device, the combination with a standard, comprising two parallel members or uprights having grooves or ways, of a carriage adapted to have a vertical movement in said grooves or ways, a bolt for supporting said carriage, curved seats on said carriage, a shoe having a curved bearing on said curved seats, a lug having an elongated opening projecting from said shoe and between said curved seats, and a pin passing through perforations in said seats and the elongated slot in the ear or lug projecting from the shoe, substantially as set forth.

7. In a lifting device, the combination with a standard comprising two parallel members, ribs on said members, perforated bosses also on said members, of a carriage, a bolt adapted to pass through said perforated bosses and support the carriage, and an oscillatory shoe carried by said carriage, substantially as set forth.

**501,052. THILL-COUPLING.** GEORGE A. BROWN, Minneapolis, Minn. Filed May 25, 1892. Serial No. 434,342. (No model.)

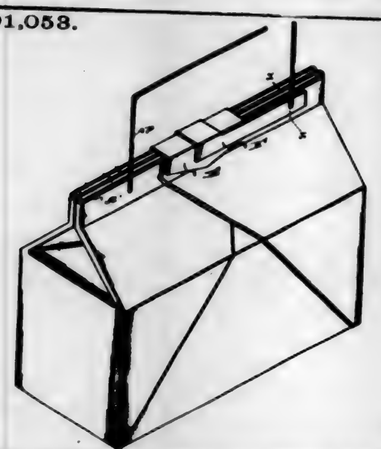


*Claim.*—The combination with the shackle having the lugs 3 and 4 provided with the small and large holes respectively, of the thill eye, the shackle bolt, the T-head of said bolt having the finger 14 to engage the edge of the lug 3, the coiled spring 9 on the threaded end of the bolt, and the nut 11 for forcing said spring into engagement with the eye whereby the latter is pressed firmly against the lug 3 and thereby prevented from rattling, substantially as described.

**501,053. OYSTER-SACK.** JAMES E. BURKE, Anderson, Ind. Filed Aug. 29, 1892. Serial No. 444,482. (No model.)



501,053.



*Claim.*—In a folded vessel or sack, the combination with the closing edges thereof, of the reinforcing strips B, B', one of said strips being held longitudinally along each of said closing edges between the thicknesses formed by the body portion A' of said sack or vessel, and its angular side laps C, C, securing staples *a*, *a*, through one of said strips, and its inclosing thicknesses, a tongue E on one of said side laps or extensions C, arranged to fold over the said closing edges, a bail D the ends of which secure the other of said reinforcing strips in place, and a clasp F comprising a strip of metal pivoted at one end to said bail, and having at its other end a U-like clasp which is arranged to embrace said closing edges, extensions C, and reinforcing strips, substantially as specified.

**501,054. DRIVING MECHANISM FOR CYCLES.** WILLIAM W. CARR, Tyrone, Pa. Filed Aug. 31, 1892. Serial No. 444,664. (No model.)



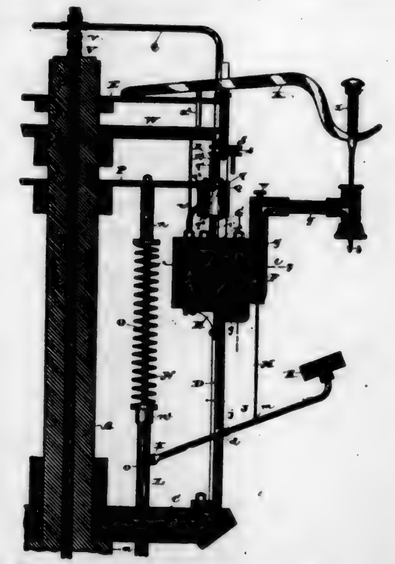
*Claim.*—The combination with the driving-shaft, adjusting slide, loose gears connected to fixed gears upon the axle of the driving-wheel, the hand-lever, and the connecting devices between the hand-lever and the adjusting slide, comprising a bell-crank lever and a connecting-rod, of the stop-mechanism having a guide-eye embracing said connecting-rod, and a spring-latch provided with a pin to engage depressions in said rod, substantially as specified.

**501,055. POWER FILLING-MACHINES.** JAMES J. CHAVASSE, Toronto, Canada, assignor of two-thirds to George Bengough and Arthur James Phillips, same place. Filed June 25, 1892. Serial No. 437,929. (No model.)

*Claim.*—1. In combination, the revolving frame, the holders for the bottles comprising a movable saucer K and a socket I, the valve box, the conduit leading therefrom to the socket, the sirup pipe connected to the valve box, the valve in the valve box controlling the passage of the liquid to the socket I, the lever for operating the movable saucer, the means for operating the said lever and the connection between the lever and the valve, the said saucer being carried and supported directly by the operating lever substantially as described.

2. In combination, the stationary post, the revolving frame movable about the said post and comprising a lower gear wheel, the laterally extending support E, at the upper end, the vertical standards D, extending between the gear wheel and said support, the valve boxes secured to the standards, the sockets I, for the upper ends of the bottles carried by the said frame, the movable saucers K, for the lower end of the bottles, the levers pivotally connected with the standards and the means for operating the inner ends of the said levers, substantially as described.

3. In combination, the stationary post, the revolving frame comprising the lower gear wheel about the post and the upper supports E, the standards D, extending between the gear wheel and upper supports, the valve boxes and sockets I, carried by the standards, the conduits leading to the valve boxes, the movable saucers, the levers carrying the same pivoted to the standards, the vertical spring rods at the inner ends of the levers and the cam supported on a stationary part and arranged in the path of the said spring rods, substantially as described.



4. In combination, the revolving frame carrying valve boxes sockets I, and movable saucers K, for holding the bottle, the sirup pipe connecting with the valve box, the said valve box having a valved passage *g*, leading to the socket I, the aerated water pipe leading to the valve box, the passage $g^a$, connecting the same with the inner passage *g*, the valve in the said passage and the means for operating the said valve as the revolving frame moves, substantially as described.

5. In combination, the pedestal the post thereon, the revolving frame comprising the gear wheel the upper support E, and the standards D, between the same, the valve boxes and sockets carried by the standards, the movable saucers, the pivoted levers therefor, the vertical rods L, under spring tension connected with the inner ends of the said levers and passing through the gear wheel and the cam on the pedestal for operating the rod vertically, substantially as described.

6. In combination, the revolving frame the valve box and socket I, carried thereby, the movable saucer, the lever pivoted to the frame and carrying the same, the hollow rod L, at the inner end of the lever, the stationary cam for operating said rod, the guide rod O, engaging the hollow rod and the spring about the rod, O, bearing on the hollow rod, substantially as described.

7. In combination, the revolving frame, the supporting means for the bottles comprising the sockets I, with the lower bearings as K, the conduits leading to the sockets I, the hooked rods Z, extending through the sockets, and having their hooked ends located between the bearings of the sockets and the lower bearings the levers carrying the said rods and pivoted to the revolving frame and the means for automatically operating the levers as the frame moves, substantially as described.

8. In combination, the revolving frame the sockets I, for the bottles, the hooked rods passing through the said sockets, with their hooked ends arranged to project into the bottle the levers X with means for operating them automatically as the frame revolves and the yielding connection between the levers and the hooked rods, substantially as described.

9. In combination, the revolving frame the valve boxes, pumps and sockets carried thereby, the hooked rods Z, passing through the sockets, with their hooked ends projecting from the bearing seat thereof to extend into the bottle the levers X, carrying the said rods and the stationary disk W, having cams for operating the pump pistons and the levers X, substantially as described.

10. In combination, the holder for the bottle, the valve box having a conduit $g$, leading to the bottle holder, the suction and force pump, the sirup supply pipe, the said valve box having an inlet conduit leading through it from the supply pipe to the pump with a check valve in said conduit and having also a second conduit $r^9$ leading from the pump to the conduit $g$, around the check valve, substantially as described.

11. In combination, the holder for the bottle, the valve box, and pump, the supply pipe, the said valve box having the conduit leading from the supply pipe through it to the pump whereby the liquid is drawn into the pump by the suction thereof, the check valve in the said conduit, the said valve box also having a passage $r^9$, leading from the pump on the rear of the check valve to communicate with the bottle holder, and second passage $r^7$, with a check valve therein leading from the pump to connect with the supply pipe, substantially as described.

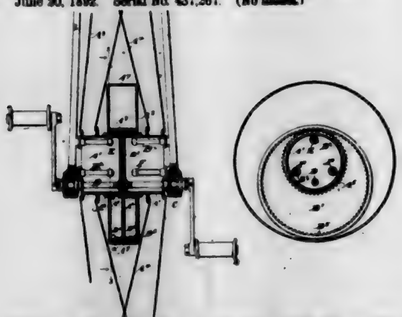
12. In combination, the holder for the bottle comprising the socket I, and the movable saucer, the valve box, the pump and the supply pipe, said valve box having the passage $g$, leading to the socket, the valved passage leading from the supply pipe to the pump, the passage $r^9$, having a valve $r^{10}$, and leading from the pump to the passage $g$, the passage $r^7$, having a valve $r^8$ under greater tension than the valve $r^{10}$ and connecting with the supply pipe, the valve $l$, in the passage $g$, and the connection therefrom to the movable saucer, substantially as described.

13. In combination, the revolving frame, the bottle holder, the valve box and the pump carried thereby, the supply pipe for the sirup, the said valve box having the main passage $g$, leading to the bottle holder, the valved inlet passage leading from the supply pipe to the pump, the passage leading from the pump to the passage $g$, the means for operating the pump, the supply pipe $v$, leading to the valve box and connecting with the main passage $g$, the valve $v^4$, and the means for operating the said valve, substantially as described.

14. In combination, the revolving frame, the bottle holder, valve box and pump, the supply pipe leading to the valve box, the said valve box having a valved inlet passage leading from the supply pipe to the pump and a second passage connecting the pump with the bottle holder, the sniff valve controlling the outlet of air from the valve box and bottle and the means for operating the stem of said sniff valve, automatically as the frame work revolves, substantially as described.

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**501,056. BICYCLE.** EDWIN R. CORBETT, New York, N. Y. Filed June 30, 1892. Serial No. 437,267. (No model.)





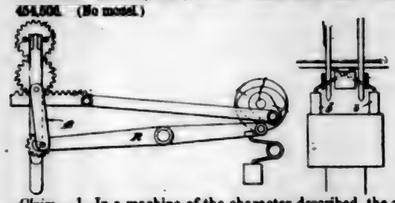
*Claim.*—1. In a bicycle, or analogous vehicle the combination with the main wheel and framing, of gear wheels and adjacent smooth rolling surfaces fixed thereto arranged substantially as shown, so as to perform the double functions of multiplying gear for the driving power and of anti-friction wheels to carry the load, all substantially as herein specified.

2. In a bicycle, or analogous vehicle the main wheel A, driving shaft D with means as the cranks $D^4$ and treadles $D^3$ for communicating a strong rotatory motion to such shaft, arranged to serve both to carry the load and to transmit the power, and tubes A′ and wheel D′ gearing $A^3$, $D^3$, and smooth circular tracks $A^6$, $D^6$, in combination with each other and with a framing B, $B^2$, $B^3$, adapted to allow the bearings of the main wheel to rise and sink freely to a small extent therein, all arranged for joint operation as herein specified.

3. In a bicycle or analogous vehicle, the wheel A, two tubes A′, A′, mounted centrally therein in line with each other with a space between them, having the smooth exterior circular tracks $A^6$ and the exterior gear $A^3$ on such tubes, in combination with the driving shaft D, and the wheel D′ on the latter, running in the space between such tubes and mounted eccentrically thereto, having the smooth interior circular tracks $B^6$ and the internal gears $B^5$ and with the framing B and means for steadying the position of the parts, all arranged for joint operation substantially as herein specified.

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**501,057. OVERSEAMING SEWING-MACHINE.** EMILE CORBELY and ROBERT CORBELY, Paris, France. Filed Dec. 2, 1892. Serial No. 454,506. (No model.)

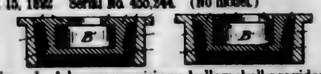


*Claim.*—1. In a machine of the character described, the combination with the two hook needles and mechanism for forming the seam, of a thread-carrier for alternately crossing the two threads of which the seam is formed to the opposite needle from that with which it was last engaged, and a series of reciprocating blades for forcing the threads into engagement with the needles, substantially as described.

2. In a sewing or embroidering machine provided with a universal-feed mechanism and an operating handle therefor, of two needles and their actuating mechanism, for forming parallel rows of chain stitches, and a thread-carrier having two thread guides for supplying threads to the needles, said thread-carrier being connected with and following the movements of said handle, and means for vibrating said carrier between the needle strokes, so as to cross the threads from one needle to the other at each stitch, substantially as described.

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**501,058. BUNG.** ANTHONY J. DIESOLT, Cleveland, Ohio. Filed Dec. 15, 1892. Serial No. 455,244. (No model.)

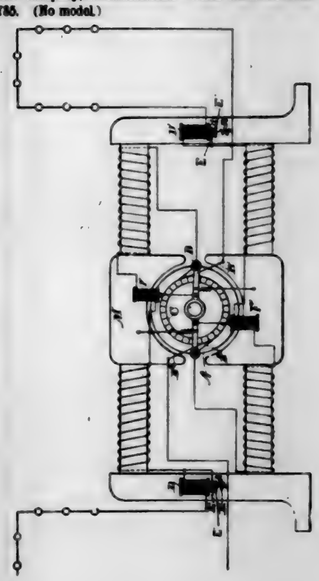


*Claim.*—1. A bung comprising a hollow shell provided with integral outwardly projecting flanges at the outer and inner ends and an overhanging integral flange projecting over the hollow interior beneath which a tool may engage for removing the bung, and an elastic body partially enveloping the shell, substantially as set forth.

2. A bung comprising a hollow shell, said shell having an inwardly projecting flange overlapping the hollow interior and provided with integral outwardly projecting flanges at the inner and outer ends of the shell, and an elastic body covering the body of the shell, the inner flange and the inner face of the flange at the outer end of the bung, substantially as set forth.

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**501,059. REGULATOR FOR DYNAMO-ELECTRIC MACHINES.** WILLIAM H. ELKIN, Cambridge, Mass., assignor to the Thomson-Houston Electric Company, of Connecticut. Filed June 23, 1892. Serial No. 437,735. (No model.)





*Claim.*—1. The combination with a dynamo electric machine having two sets of brushes bearing on its commutator and two working circuits connected respectively to such sets of brushes, and each having connections to the field coils, of a shunting switch for each of such circuits.

2. The combination with a dynamo electric machine having two sets of brushes bearing on its commutator with independent brush shifting devices for such sets of brushes, of two working circuits connected respectively to such sets of brushes, and each having connections to the field coils, and a shunting switch for each of such circuits.

3. The combination with a dynamo electric machine having two sets of field coils, of two work circuits connected respectively thereto and having independent current regulating devices, and a shunting switch for each work circuit.

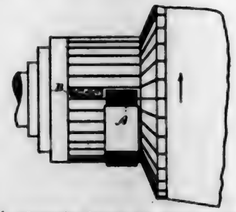
4. The combination with a dynamo electric machine having two sets of brushes on its commutator and two sets of field coils, of two work circuits, each connected with one of the field coils and sets of brushes, and each having brush-shifting devices and shunting devices controlled by magnets in connection with the respective circuits.

5. The combination with a dynamo electric machine having two sets of commutator brushes and two sets of field coils, of independent brush-shifting devices, electro-magnets controlling the same included respectively in circuit with corresponding brushes and field coils, and two work circuits connected respectively to the two sets of brushes and field coils, each having a shunting switch and including an electro-magnet controlling said switch.

6. The combination with a dynamo electric machine having two sets of brushes, of two work circuits, each connected with the field coils and one of the sets of brushes, independent regulating devices for each circuit, a shunting connection for each circuit, a resistance and a switch in such connection and a magnet in each circuit controlling said switch.

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**501,060. BRUSH FOR DYNAMO-ELECTRIC MACHINES AND MOTORS.** JONATHAN P. B. FISKE, Lynn, assignor to the General Electric Company, Boston, Mass. Filed Jan. 31, 1893. Serial No. 460,225. (No model.)



*Claim.*—1. A composite brush for dynamo electric machines, consisting of a low resistance conductor and a relatively high resistance conductor, bearing upon different portions of the length of the commutator, and so arranged that the high resistance conductor is the last to leave the commutator segment, substantially as set forth.

2. A composite brush for dynamo electric machines, consisting of a low resistance conductor and a relatively high resistance conductor, the latter being slightly in advance of the former, and the two conductors arranged to bear upon different portions of the length of the commutator substantially as described.

3. The combination with a commutator of two or more brushes of relatively high and low resistance, bearing upon different portions of the commutator segment, the brush nearest the armature being of low resistance, substantially as described.

4. The combination with an armature having one or more commutators, of brushes of relatively high and low resistance, arranged to bear upon such commutators in different longitudinal positions, the short circuit between adjacent commutator segments being broken through the high resistance brush, substantially as described.

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**501,061. FIREPLACE-GRATE.** WILLIAM H. PITCH, Louisville, Ky. Filed Feb. 24, 1892. Renewed June 5, 1893. Serial No. 476,690. (No model.)

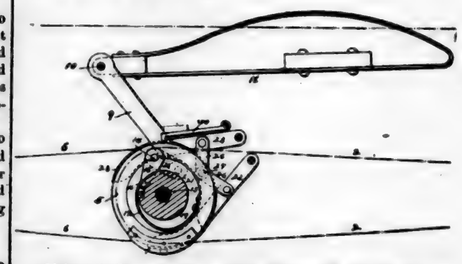


*Claim.*—1. A fire-place grate having grate-bars secured in a frame, and a back having a flanged seat separating the grate from the tile, supporting the tile, and restraining the upward movement of the grate, substantially as described.

2. A grate composed of a frame having a smooth or level upper face and having on its lower face seats or half-boxes adapted to receive the journals of the grate-bars, and hanger-bars also having seats or half-boxes to receive the journals of the grate-bars and fastened to the lower face of the frame, combined with the back having a flanged seat for the tile, substantially as described.

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**501,062. SEMAPHORE-OPERATING DEVICE.** JOHANN H. FRISCHEN, Berlin, Germany, assignor to Siemens & Halske, same place. Filed Mar. 13, 1893. Serial No. 465,748. (No model.) Patented in Germany Nov. 2, 1890, No. 56,847; in Switzerland Jan. 16, 1891, No. 3,412; in Austria-Hungary Jan. 24, 1891, No. 5,426 and No. 28,315, and in Belgium Feb. 20, 1891, No. 93,836.



*Claim.*—1. In semaphore operating devices, the combination with a semaphore and means for operating the same, of two interposed pulleys or disks adapted to couple together, and a track pedal and intermediate mechanism effecting uncoupling of the pulleys by a passing train, substantially as described.

2. In semaphore operating devices, the combination with a semaphore, a pulley adapted to actuate it, and two intermediate pulleys adapted to couple together, one connected to the semaphore and the other to the actuating pulley of track pedal and lever mechanism effecting uncoupling of the pulleys by a passing train, substantially as described.

3. In semaphore operating devices, the combination with a semaphore and means for operating the same, of two interposed disks or pulleys, one having a recess and the other having an elbow lever carrying a catch adapted to said recess, of a system of levers guiding the elbow lever, a shaft carrying one of the levers of the system, and a track pedal on said shaft operated by a passing train and uncoupling the intermediate pulleys, substantially as described.

4. In semaphore operating devices, the combination with the intermediate pulleys connected respectively to the semaphore and the actuating pulley and means for actuating the same, and adapted to couple and uncouple as specified, of a latch device and two plates, one on each intermediate pulley, one of said plates having a notch to which the latch is adapted, substantially as described.

5. In semaphore operating devices, the combination with the semaphore 1, pulleys 4, 5, 7, and pull connections 2, 6, said pulley 5, carrying an elbow lever 14, 15, 16, 20, 21 and a spring 17, and the pulley 4 having a notch 18, of a shaft 10, a track pedal 11 thereon, a lever 9 on the shaft and levers 22, 23 coupled to each other and to lever 9 by toggle links 26, all adapted for operation substantially as described.

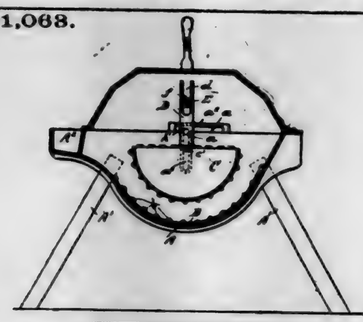
6. In semaphore operating devices, the combination with the semaphore 1, pulleys 4, 5, 7, and pull connections 2, 6, said pulley 5 carrying an elbow lever 14, 15, 16, 20, 21 and a spring 17, and the pulley 4 having a notch 18, of a shaft 10, a track pedal 11 thereon, a lever 9 on the shaft, levers 22, 23 coupled to each other and to lever 9 by toggle links 26, and plates 28, 31 on the pulleys 4, 5 respectively, one plate having a notch 29, and a latch 30 adapted to said notch and to be disengaged therefrom by the other plate, substantially as described, for the purposes set forth.

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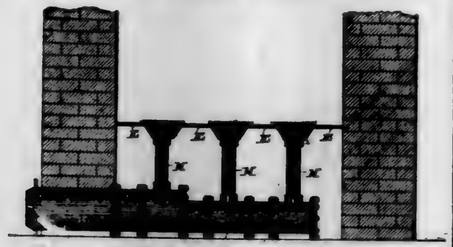
**501,063. WASHING-MACHINE.** JOHN A. OLICK, VAN M. HEIM, and ADAM E. HAFER, Reading, Pa. Filed Sept. 26, 1892. Serial No. 446,871. (No model.)

*Claim.*—In a washing machine the combination with the tub having bearings $a$ and a slide way $a'$, of a rubber with slotted post D, an operating crank shaft E mounted in said bearings and engaging said slotted post, and a slotted lever G pivoted to the tub and engaging an outside crank E′ of said shaft, all substantially as and for the purpose set forth

501,068.



501,064. GRATE. ELONZO J. GORDON, Greenville, Mich. Filed Sept. 26, 1892. Serial No. 446,907. (No model.)



*Claim.*—1. An unbroken flat grate surface composed of alternate blast grate bars, entirely inclosed and provided with valved blast or tuyere openings in the top, and flat draft bars arranged between the closed hollow blast grate bars and adapted to have their side edges meet the closed sides of said hollow blast grate bars in a closed joint, and to be in line and flush with the top faces thereof, substantially as set forth.

2. A grate composed of a series of alternate hollow blast grate-bars having laterally projecting side ledges, and open or draft bars or plates separating and spacing said hollow blast grate bars, and having their side edges taking under the overlapping side ledges of the same, substantially as set forth.

501,065. STOCKING-STRETCHER. CHRISTIAN GREINER, Munich, Germany. Filed Feb. 9, 1893. Serial No. 461,551. (No model.)



*Claim.*—A stocking expander composed of a length of wire bent to form a spring foot and a spring leg and in which the two free ends $c^4, c^5$ of the wire form the two inner shanks of the leg section and are interlooped to form a slip joint, substantially as specified.

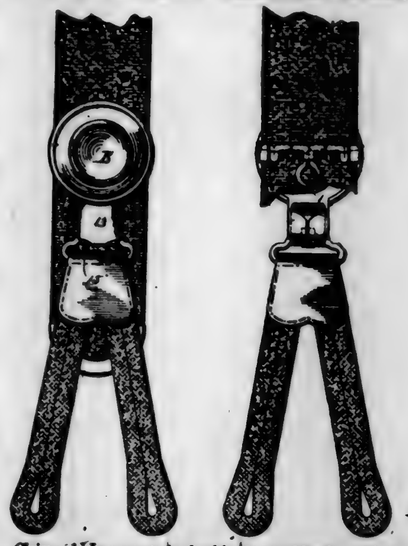
501,066. PROCESS OF MAKING SALTS OF QUININE. EDOUARD GRIMAUX, Paris, France, assignor to Jean Baptiste Francois Rigaud. Filed July 27, 1892. Serial No. 441,389. (Specimens.) Patented in England July 12, 1892, No. 12,811.

*Claim.*—1. The process of making halogen compounds of quinin sulfate, as chlorhydro-sulfate or bromhydro-sulfate of quinin, which consists in causing an acid halogen reagent, composed of hydrogen and a haloid, as hydrochloric acid or hydrobromic acid, to react upon quinin in the presence of sulfuric acid.

2. The process of making halogen compounds of quinin sulfate, as chlorhydro-sulfate or bromhydro sulfate of quinin, which consists in causing an acid halogen reagent, composed of hydrogen and a haloid, as hydrochloric acid or hydrobromic acid, to react upon a sulfur salt of quinin, and then removing the excess of said halogen reagent.

3. The process of making halogen compounds of quinin sulfate, as chlorhydro-sulfate or bromhydro-sulfate of quinin, which consists in causing an acid halogen reagent, composed of hydrogen and a haloid, as hydrochloric acid or hydrobromic acid, to react upon a sulfur salt of quinin, and then drying the resulting product.

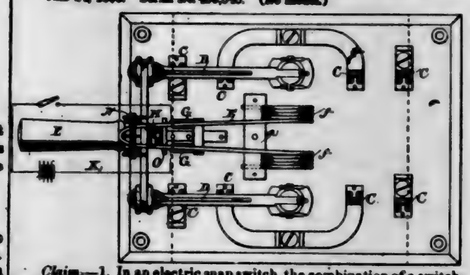
501,067. SUSPENDER-BUCKLE. CHARLES R. HARRIS, Williamsport, Pa. Filed June 21, 1892. Serial No. 437,443. (No model.)



*Claim.*—1. In a suspender buckle, the combination with a body portion, of a clamping lever hinged thereto, said lever having springs formed at or near its axial ends, and a biting or gripping portion located between the springs, and adapted to bear yieldingly upon and accommodate itself to suspender straps of different thickness, substantially as set forth.

2. In a suspender buckle, the combination with a body portion, of a clamping lever hinged thereto, said lever comprising a wire bent to form springs and bearing pintles and a thin plate of metal having a toothed or serrated edge secured to the wire between the springs, substantially as set forth.

501,068. ELECTRIC SNAP-SWITCH. CARYL D. HASKINS, Lynn, Mass., assignor to the General Electric Company, of New York. Filed Jan. 24, 1893. Serial No. 459,543. (No model.)



*Claim.*—1. In an electric snap switch, the combination of a switch mechanism normally held under tension with a spring F composed of a single piece of wire coiled at its extremities and having its middle portion engaged by the handle of the switch, substantially as described.

2. In an electric snap switch, a switch mechanism adapted to hold under tension a spring composed of a single piece of wire coiled at its extremities and engaged by its middle portion, in combination with a trigger securing the switch handle and adapted to be operated by a galvanic circuit.

3. In an electric snap switch, switching mechanism normally held under tension, a spring, as F, coiled at its ends, as *f f*, and having its middle part attached to the handle of the switch, substantially as set forth.



4. In an electric snap switch, a switching mechanism normally held under tension, a spring, as F, having its ends coiled, as *f f*, and its middle attached to the handle of the switch, in combination with a trigger, as H, engaging a lug, as I, upon the said handle, substantially as described.

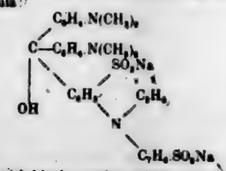
5. In an electric snap switch, a switching mechanism normally held under tension, a spring, as F, having its ends coiled, as *f f*, and its middle attached to the handle of the switch, in combination with a trigger, as H, engaging a lug, as I, upon the said handle, the trigger adapted to be operated by a subsidiary galvanic circuit, substantially as set forth.

6. In an electric snap switch, a switching mechanism normally held under tension, a spring, as F, having its ends coiled, as *f f*, and its middle attached to the handle of the switch; in combination with a trigger, as H, engaging a lug, as I, upon the said handle, the trigger adapted to be operated by a subsidiary galvanic circuit completed by means of a push button, as M whereby the switch may be operated from a distant point, substantially as described.

501,069. VIOLET DYE. HUGO HABERKAMP, Elberfeld, Germany, assignor to the Farbenfabriken, formals Fr. Bayer & Co., same place. Filed Jan. 19, 1893. Serial No. 458,903. (Specimens.) Patented in France Oct. 27, 1891, No. 217,080, and in England Nov. 4, 1891, No. 19,063.

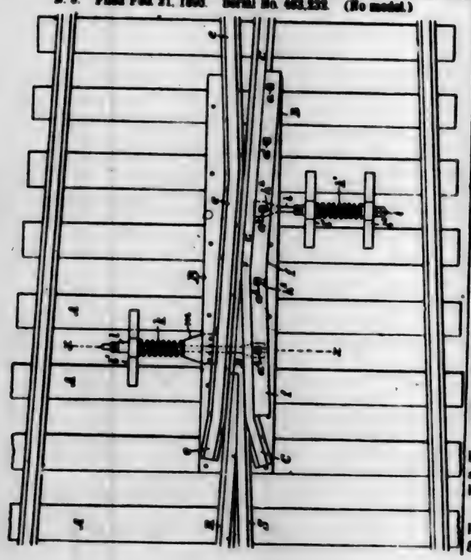
*Claim.*—1. The process for producing a new triphenylmethan dye-stuff by combining equimolecular proportions for tetramethyldiamidobenzhydrol and ethylbenzylanilin disulfo acid or a salt thereof, oxidizing the resulting leuco compound and converting the oxidation product into the sodium salt.

2. As a new product the triphenylmethan dye-stuff having the following formula:



forming a brownish-black powder, soluble in water, in ammonia, and sodium carbonate, slightly soluble in alcohol with blue color, soluble in soda lye with dull blue color, changing on heating into ruby red, and forming a dull violet on addition of acetic acid, soluble in dilute hydrochloric acid with brownish-yellow color, turning into green on addition of water, soluble in dilute sulfuric acid with green color; dyeing wool in an acid bath violet, with a strong bluish tinge; which color is fast to lime and ammonia and does not appear changed by artificial light, and has the qualities substantially as specified.

501,070. WING-RAIL FROG. OLIVER P. HIGGINS, Jersey City, N. J. Filed Feb. 21, 1890. Serial No. 463,232. (No model.)



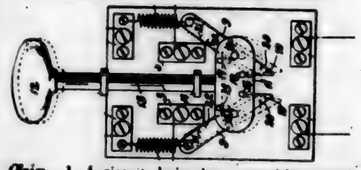
*Claim.*—1. In a spring rail frog, the combination, with the frog point, of the bed plate B provided with a series of slots, and the spring rail C having the foot piece *f* with bolts projected through the slots to hold the rail from lifting, substantially as herein set forth.

2. In a spring rail frog, the combination, with the frog point, of the bed plate B provided with a series of graduated slots, the spring rail C having the foot piece *f* with bolts projected through the slots to hold the rail from lifting, and a spring connected with the rail by means of the rod *i* and bolt passing through one of the slots, as set forth.

3. In a spring rail frog, the combination, with the frog point, of a bed plate having a series of graduated slots, the spring rail C having the angle foot piece *f* provided with bolts fitted to the said slots as described, and two springs applied to the rail in opposite relations to the point of the frog, and connected therewith by the spring rods *i* and bolts inserted through the slots into the foot piece *f*, substantially as herein set forth.

4. In a spring rail frog, the combination, with the frog point, of a bed plate having a spring rail held movably thereon by bolts and slots as described, and two springs arranged below the surface of the ties and operating upon the spring rail by connection with the spring bolts, substantially as herein set forth.

501,071. ELECTRIC SWITCH. CARL F. W. HÖFER, Berlin, Germany, assignor to Siemens & Halske, same place. Filed Mar. 25, 1893. Serial No. 467,664. (No model.) Patented in Germany Jan. 10, 1892, No. 66,560, and in Belgium May 17, 1892, No. 99,704.



*Claim.*—1. A circuit closing key, comprising opposing pairs of contacts, a reciprocating plunger or part, and switch levers or devices pivoted to the plunger and having sliding or rubbing action on the contacts, substantially as described.

2. A circuit closing key, comprising opposing pairs of contacts, a reciprocating plunger or part having stops, and switch levers or devices pivoted to the plunger and adapted to the stops and having sliding or rubbing action on the contacts, substantially as described.

3. A circuit closing key, comprising opposing pairs of contacts presenting angular or comparatively sharp corners or parts, a reciprocating plunger or part, and switch levers or devices pivoted to the plunger and having sliding or rubbing action on the contacts, substantially as described.

4. A circuit closing key, comprising opposing contacts presenting angular or comparatively sharp corners or parts, a plunger having stops and carrying pivoted switch levers or devices adapted to the stops and having sliding or rubbing action on the contacts, substantially as described.

5. A circuit closing key, comprising opposing pairs of contacts, a reciprocating plunger or part, and elastically held switch levers or devices pivoted to the plunger and adapted to the contacts, substantially as described.

6. A circuit closing key, comprising opposing pairs of contacts presenting angular or comparatively sharp corners or parts, a reciprocating plunger or part, and elastically held switch levers or devices pivoted to the plunger and adapted to the contacts, substantially as described.

7. A circuit closing key, comprising opposing pairs of contacts, a reciprocating plunger or part having stops, and elastically held switch levers or devices pivoted to the plunger and adapted to the contacts and stops, substantially as described.

8. A circuit closing key, comprising opposing pairs of contacts presenting angular or comparatively sharp corners or parts, a reciprocating plunger or part having stops, and elastically held switch levers or devices pivoted to the plunger and adapted to the contacts and stops, substantially as described.

9. A circuit closing key, comprising opposing pairs of contacts, a plunger, switch levers pivoted to the plunger, and springs connecting the levers with a third pair of contacts, substantially as described.

10. A circuit closing key, comprising pairs of contacts, a plunger having pairs of stops or detents, switch levers pivoted to the plunger and limited in movement by the stops, and springs connecting the levers with a third pair of contacts, substantially as described.

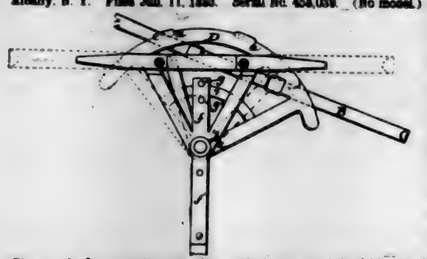
11. A circuit closing key, comprising opposing pairs of contacts presenting angular or comparatively sharp corners or parts, a plunger having pairs of stops, switch levers pivoted to the plunger and

limited in movement by the stops, and springs connecting the levers with a third pair of contacts, substantially as described.

12. The combination in a circuit closing key, of a base 1, pairs of contacts 2, 2; 3, 3, and 4, 4 thereon, a plunger 12 having stops 15, 16, 17, 18, and pivoted levers 9, 9, and spiral springs 8, 8 connecting the levers with the contacts 2, 2, substantially as described, for the purposes set forth.

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**501,072. RUNNING-GEAR FOR VEHICLES.** JOHN M. HOLLER, Albany, N. Y. Filed Jan. 11, 1893. Serial No. 458,039. (No model.)

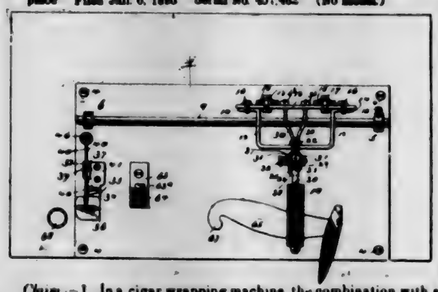


*Claim.*—1. In a running gear in which the pivot of the fifth wheel is back of the front axle; the combination of the upper fifth wheel plate and the reach with the king-bolt and the lower fifth wheel plate, the said reach being pivoted upon the king bolt and at its forward end clipped to one of the fifth wheel plates, whereby all longitudinal strain in the reach is taken from off of the king-bolt.

2. In a running gear in which the pivot of the fifth wheel is back of the front axle, the combination of the lower fifth wheel plate having the arc 7; and the king bolt with the reach and the brace extending from the king bolt and held upon both sides of the arc as set forth.

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**501,073. MACHINE FOR WRAPPING CIGAR-BUNCHES.** CHARLES HYAM, New York, N. Y., assignor of one-half to Lazarus Kahner, same place. Filed Jan. 6, 1893. Serial No. 457,482. (No model.)



*Claim.*—1. In a cigar wrapping machine, the combination with a table, of a wrapper-presser and retaining means for the same movably secured at one end to a suitable support, the presser and the sustaining means being so constructed as to admit of its free end being moved upon and from the table, inherent or adjunctive means for pressing the presser upon the table, the presser being movable upon the table independently of the bunch and without relieving its pressure upon the wrapper, substantially as described.

2. In a cigar wrapping machine, the combination with a table, of a movable and weighted or spring operated presser, adapted to press a suitably prepared wrapper to the table, and a support for the presser and means whereby it may be moved in advance of the bunch without involving a like movement on the part of the bunch, substantially as described.

3. In a cigar wrapping machine, the combination with a suitable table, of a movable support, a wrapper presser adapted to hold a wrapper to the table, having one end hinged or pivotally secured to said movable support, substantially as described.

4. In a cigar wrapping machine, the combination with a table, of a guide or way, a traveler movable on or in said way, a wrapper-presser secured to the traveler so as to bear on the table, and means for placing the roller under tension, substantially as described.

5. In a cigar wrapping machine, the combination with a table, of a guide or way, a traveler movable on or in said way, a wrapper-presser secured to the traveler so as to bear on the table, and means for adjusting the tension of said roller on the table, substantially as described.

6. The combination with the way suitably supported on a table, of a traveler movable along said way, the traveler having rolling instrumentalities bearing on the table, and a roller projecting therefrom and bearing on the table, the bearing rollers and pressing roller forming points of contact with the table, substantially as described.

7. The combination with the table of the traveler, a way or guide therefor, the traveler having adjustable contact elements bearing on the table, and a roller supported from the traveler and bearing on the table, substantially as described.

8. The combination with the way on the table, of the traveler adapted to be moved on the way, the traveler having contact elements bearing on said table, and a roller extending from the traveler and adapted to bear on the table, a jointed connection interposed between the said roller and the traveler, the said contact elements being adapted to adjust the tension of said roller upon the table, substantially as described.

9. The combination of the way upon the table, the traveler thereon, supporting rollers adjustably mounted in the traveler and bearing on the table, and a presser roller secured to the traveler by a jointed connection and which is adapted to bear on said table, substantially as described.

10. The combination with the way on the table, of the traveler on said way, the supporting rollers carried by the traveler and bearing on the table and a presser roller which is adapted to bear on the table secured to the traveler by a jointed connection, and a spring inserted in said connection for the purpose of pressing the presser roller upon the table, substantially as described.

11. The combination of the table, the way, the traveler thereon, of the presser roller secured to the traveler by a jointed connection, and a spring clip secured to the traveler and adapted to receive the presser roller or its spindle and sustain the same in an elevated position over the table, substantially as described.

12. In a cigar wrapping machine, the combination with the table, the way and traveler thereon having an extension, of the elastic presser roller 19 secured to the extension of the traveler, substantially as described.

13. The combination with the plate 3, of the bar 9 elevated above it, the traveler comprising the bracket 11, through which the bar 9 passes, and a back plate 13 having the rollers 18 journaled therein, the stem 21 secured to the cross bar of the bracket, the spindle 20 and roller 19 mounted thereon, the stem 21 and spindle 20 having juxtaposed cheek plates 22, 23 having aligning apertures through which passes a pin 24, and a spring 27 secured at one end to the pin and at the other end to the spindle 20, substantially as described.

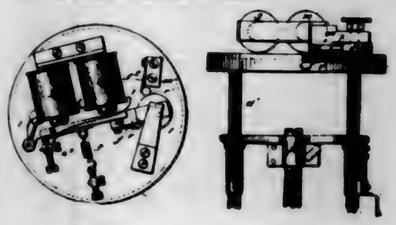
14. The combination of the bracket 11, the stem 21 secured thereto having the apertured cheek plate 22, the roller 19 mounted on the spindle 20, said spindle having the apertured cheek plate 23, a pin 24 passing through both eyes and having an abutment 26, and a spiral spring 27 encircling the pin 24 and lying between the abutment 26 and the eyes pressing them together, one end of the said spring being secured to the spindle 20, the other end being suitably fixed, substantially as described.

15. The combination with the bar 9, of the bracket 11 movable on said bar, the back plate 13 having the rollers 18 journaled therein, the plate 3, slots 15 in the back plate, and headed screws 16 passing through said slots and adjustably uniting the back plate 13 and bracket 11, and the roller 19 secured to the bracket by a jointed connection, substantially as described.

16. The head former comprising the thimble having the slotted aperture, the irregular or uneven surfaced straining block at one side and immediately adjacent thereto, the bed plate extending outwardly from the opposite side of the thimble, the journal arms extending upwardly from the bed plate, a stationary knife aligning with the head of the aperture, a movable knife having bearings in the journal arms, and means for detachably securing the head former through the bed plate directly upon a suitable table or support, substantially as described.

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**501,074. ELECTRIC-ARC LAMP.** JOSEF JERSLE, Vienna, Austria-Hungary. Filed Nov. 25, 1891. Serial No. 413,150. (No model.) Patented in France Apr. 23, 1891, No. 210,990, and in Austria-Hungary Sept. 23, 1891, No. 17,234 and No. 40,851.

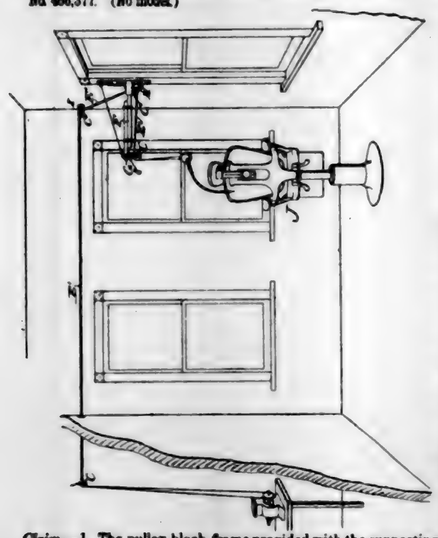




*Claim.*—In an arc lamp, the combination with a cross-head carrying the positive carbon of a vertical screw threaded rod engaging an open nut on the cross-head, a horizontal disk on the upper end of the rod, actuated by a step-by-step feed consisting of an armature lever pivoted on the rod, a shunt magnet parallel to the lever, and a pair of roller clutches each of which under the action of the shunt magnet and its armature is adapted to alternately engage and disengage the disk to rotate it.

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**501,075. DENTAL ENGINE.** WILLIAM A. JOHNSTON and ARTHUR W. BROWNE, Prince's Bay, N. Y., assignors to the S. S. White Dental Manufacturing Company, Philadelphia, Pa. Filed Mar. 16, 1893. Serial No. 466,377. (No model.)



*Claim.*—1. The pulley block frame provided with the supporting shank shouldered or enlarged and partly screw-threaded, and having the unthreaded reduced portion, substantially as and for the purpose set forth.

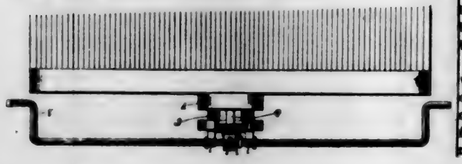
2. The combination of the cord guide pulleys, the pulley block frame in which they are mounted, provided with the supporting shank shouldered or enlarged and partly screw-threaded and having the unthreaded reduced portion, a carrier having the socket into which the supporting shank is screwed, and the set screw adapted to engage with the reduced unthreaded portion of said shank, substantially as and for the purpose set forth.

3. The combination of the cord guide pulleys, the pulley block frame having the shaft for said pulleys, and the yielding cord guards by which to hold the driving cord connected with the pulley block frame in event of its running off a pulley, substantially as set forth.

4. The combination of a pair of cord guide pulleys, the pulley block frame provided with the supporting shank shouldered or enlarged and partly screw-threaded, and having the unthreaded reduced portion, the supporting bracket rod, the sectional carrier each part of which has a threaded socket and the inner section of which is adjustably secured to the supporting bracket rod and provided with the set screw and the threaded socket for engagement with the shouldered or enlarged and partly screw-threaded shank of the outer section, and the set screw of the outer section adapted for engagement with the unthreaded portion of the supporting shank of the pulley block frame, which shank screws into the socket of the outer section, substantially as set forth.

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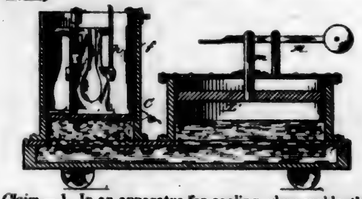
**501,076. CAR-COUPLING.** DANIEL R. JOSLYN, Gurdon, Ark. Filed Apr. 1, 1893. Serial No. 468,640. (No model.)



*Claim.*—In a car coupling, the combination with a car, of a draw-head provided in its bottom with an opening communicating with its cavity, a hook arranged in the opening and pivoted at its rear end to the draw-head, a rock-shaft journaled on a car and extending transversely of the same and provided with an arm, a chain connecting the arm to the hook, and a curved spring arranged on the bottom of the draw-head and secured at its rear end and having its front end bearing against the hook, said spring extending across and being out of contact with the rock-shaft, substantially as described.

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**501,077. APPARATUS FOR COOLING GLASS-MOLDS.** EDWARD KAYE, Phillipsburg, Pa. Filed Feb. 4, 1893. Serial No. 461,089. (No model.)



*Claim.*—1. In an apparatus for cooling glass molds, the combination with a suitable base of a receptacle for the mold and a water reservoir in communication therewith, both rigidly secured to said base, and means substantially as described for opening and closing the mold and for alternately forcing water from the reservoir into the mold receptacle and returning it to the reservoir.

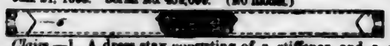
2. In an apparatus for cooling glass molds, the combination with a mold receptacle, and a water reservoir in communication therewith, of counterbalanced treadle mechanism for opening and closing the mold, a piston for forcing water from the reservoir into the mold receptacle and counterbalanced treadle mechanism for operating the piston, substantially as described.

3. In an apparatus for cooling glass molds, the combination with a hollow base, of a mold receptacle and water reservoir mounted on said base and communicating with each other through said base, a piston arranged to work inside said reservoir, and suitable treadle mechanism, substantially as described, for opening and closing the mold and for operating the piston, substantially as described.

4. In an apparatus for cooling glass molds, the combination with a mold receptacle and a water reservoir containing a piston and communicating with said receptacle, of a detachable perforated plate fitted in said receptacle and forming the support for the mold, substantially as set forth.

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**501,078. DRESS-STAY.** JOHN KENDRICK, St. Louis, Mo. Filed Jan. 21, 1893. Serial No. 459,099. (No model.)



*Claim.*—1. A dress stay consisting of a stiffener, and a casing therefor, said casing provided with an eyelet in each outer corner at the edge of the stiffener, substantially as set forth.

2. A dress stay composed of a casing having two pockets, a stiffener inserted in each of the pockets, flexible tips embracing each end of the casing, said tips each having three eyelets, one eyelet located at the central portion of the inner edge of the tips between the pockets of the stay and the other two eyelets located in the corners of the respective ends of the tips, substantially as set forth.

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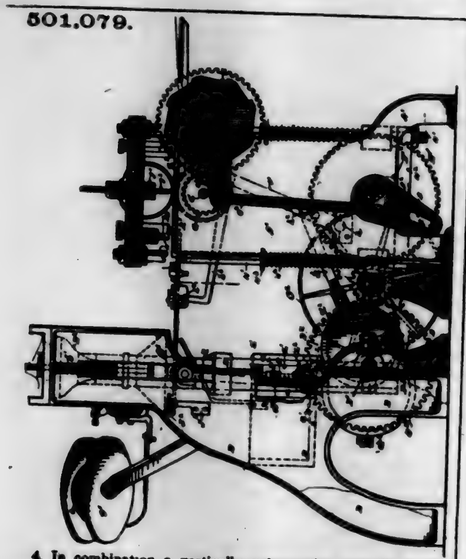
**501,079. MACHINE FOR MANUFACTURING WOODEN TRAYS.** EARNEST J. KERSHAW, Cleveland, Ohio. Filed July 3, 1889. Renewed Apr. 25, 1893. Serial No. 471,839. (No model.)

*Claim.*—1. In a machine for manufacturing wooden trays, the combination with a reciprocating die, of a crank arm adapted to have greater throw than said die, a pitman connected at one end to the reciprocating die and at the other end yieldingly connected to the crank arm by means of a sliding box backed by a spring, substantially as set forth.

2. In a machine for making wooden trays the combination with feed rollers, cutters, forming dies and cutters and drivers carried by the female die, of a gripper substantially as described located between the feed rollers and dies, driving mechanism and a lever connecting the gripper and driving mechanism, substantially as set forth.

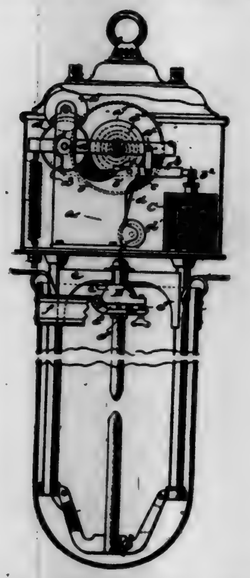
3. In combination, grippers adapted to reciprocate endwise on ways from the cutting table to the forming dies and return, reciprocating pins connected with the respective grippers, such pins having cams or inclines for opening or closing the gripper-jaws, and stops for engaging and shifting such pins at the extremes of the gripper movements, substantially as set forth.

501,079.



4. In combination, a vertically-reciprocating male die, having attached vibrating clinchers arranged in pairs, inclined gravity rods connected with the male die, each rod having a head for engaging and closing a pair of clinchers, and a vertical gravity-rod mounted on the plunger of the male die, each rod having inclines for actuating the inclined rods, substantially as set forth.

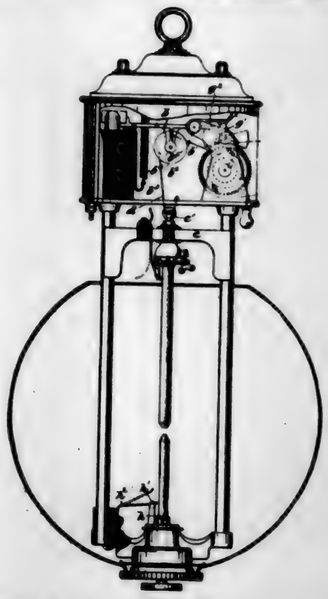
501,080. ELECTRIC-ARC LAMP. GEORG KIENBAARD, Brooklyn, N. Y. Filed Nov. 12, 1892. Serial No. 451,732. (No model.)



*Claim.*—1. In an arc lamp, the combination, of a pivoted frame carrying a train of wheels geared to the carbon carrier, a detent for said train of wheels, a pivoted lever operating said detent, a link or other device connecting the frame and the lever at such a point that a movement of the detent will be greater than the simultaneous movement of the frame, an electro-magnet and a spring, respectively connected with the lever and frame, and acting in opposition thereupon, substantially as and for the purpose described.

2. The combination, of the cup-shaped socket, the hollow ball resting therein, said ball being slit to form spring jaws, the ring surrounding said jaws and bearing against the sides of the ball, said ring being hinged to the socket and a screw engaging the ring and working into the socket whereby the ring may be forced against the ball for the purpose set forth.

501,081. ELECTRIC-ARC LAMP. GEORG KIENBAARD, Brooklyn, N. Y. Filed Feb. 20, 1892. Serial No. 422,967. (No model.)



*Claim.*—1. In an arc lamp, the combination with a hollow carbon rod, of a carbon holder having a split shank projecting into said holder and a screw or wedge entering the shank axially, to spread it and thus hold it in the rod, as described.

2. In an arc lamp, the combination of a pivoted lever carrying a pulley, a clock work and winding drum, the clock work controlled by the lever, an electro-magnet and a spring acting in opposition upon the lever, a carbon holder, and a cord connected with the carbon holder and leading over the pulley to the winding drum, substantially as described.

3. In an arc lamp, the combination of a movable carbon holder, a cord attached thereto, a winding drum for said cord, and means for manually winding said drum to lift the carbon holder, substantially as described.

4. In an arc lamp, the combination of a cord or ribbon supporting the upper carbon holder, a drum around which said cord passes, a spring for winding the drum, and means for connecting and disconnecting the spring with the drum.

5. In an arc lamp, the combination with the upper carbon holder, of a cord or ribbon supporting the same and a winding drum, said cord or ribbon to be fixed at one end, thence passing around a pulley or turning post on the carbon holder, and thence to said winding drum, substantially as described.

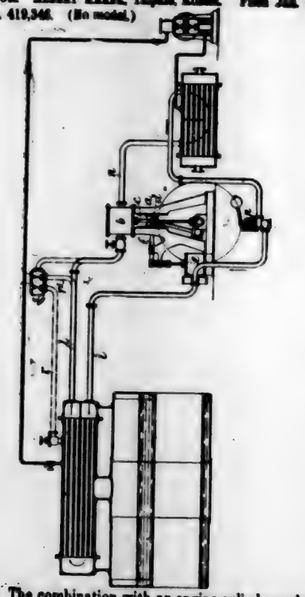
501,082. RUBBER BOOT. ELIAS KIRSINGER, Girardville, Pa. Filed Nov. 29, 1892. Serial No. 453,533. (No model.)





*Claim.*—As an improved article a rubber boot comprising the leg, the vamp, the outsole, the insole, the foxing, the stiffener E, secured to the vamp, consisting of the body portion, the central wing and the diverging wings, the leather counter, the stiffener H, located between the counter and heel portion, projecting up above the counter and having a series of perforations therein through which portions of the rubber project, substantially as described

501,083. PRODUCTION OF MOTIVE POWER AND APPARATUS THEREFOR. ALBERT KRAUS, Taipale, Russia. Filed Jan. 26, 1892. Serial No. 419,346. (No model.)



*Claim.*—1. The combination with an engine cylinder and piston, of a steam pipe connected with said cylinder, an air compressor device, a pipe connecting said air compressor with said steam pipe, an automatic valve located in said air pipe and an automatic valve located in said steam pipe whereby the pressure of the air in said air pipe will open its valve and close the valve in said steam pipe substantially as described.

2. The combination with an engine cylinder and piston, of a steam pipe provided with a valve box having an automatic valve controlling said steam pipe, and a connection between said valve box and the cylinder, of an air compressor, a pipe connecting said air compressor with said valve box and an automatic valve in said box independent of the valve controlling the steam pipe, for controlling said air pipe whereby an excess of pressure in one of said pipes will open its valve and close the other valve, substantially as described.

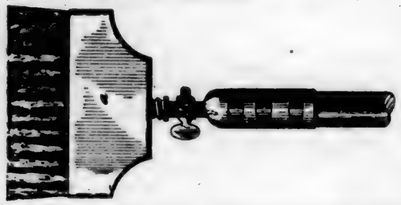
3. The combination with an engine cylinder, of an air compressor, a pipe connecting said air compressor with a valve box, a steam heater interposed in said air pipe, a steam pipe connecting said heater and said valve box, said valve box having independent automatic valves for controlling the air and steam pipes, and a connection between said valve box and the cylinder whereby an excess of pressure in one of said pipes will open its valve and close the other valve, substantially as described.

4. The combination with an engine cylinder and piston, of an air compressor, a connection between said compressor and said cylinder, an exhaust pipe for said cylinder, an air cooler connected therewith, a pipe connecting said cooler with the said compressor, an automatic valve in said pipe for closing the connection with said cooler and establishing a connection between said compressor and the atmosphere, substantially as described.

5. The combination with an engine cylinder and piston, of an air compressor connected with said cylinder, an air cooler for receiving the exhaust from said cylinder, a pipe connecting said air cooler with said compressor, a valve casing in said connecting pipe an air inlet pipe connected with said valve casing having communication with the open air, a valve for controlling said air inlet pipe and said connecting pipe, said valve being connected with an exhaustible portion of said valve casing for operating the valve, substantially as described.

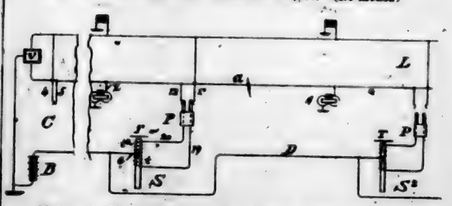
6. The combination with an engine cylinder and piston, of an air compressor connected with said cylinder, an air heater for heating the air before its delivery to said cylinder, a cooler for receiving the exhaust from said cylinder, a connection between said cooler and said air compressor a valve casing in said connection having a connection with the outside air, said casing being provided with the expansible portion, a valve in said casing adapted to control the connections between said casing and the cooler and between said casing and the outside air, said valve being connected to the expansible portion of the casing and the weighted lever connected with said valve, substantially as described.

501,084. BRUSH-HOLDER. ISRAEL L. LARSEN, Lancaster, Pa. Filed Mar. 11, 1891. Renewed Nov. 4, 1891. Again renewed Feb. 6, 1893. Serial No. 461,624. (No model.)



*Claim.*—The combination of a brush-head *a*, a screw *b* screwed into the brush-head and provided with a perforated disk, a handle socket provided with a similar disk overlapping the said disk, a thumb-screw connecting the two disks together, and a clamping plate interposed between the thumb-piece of the screw and the adjacent disk and provided with a tongue adapted to enter a recess in the adjacent handle-socket, substantially as described.

501,085. TELEPHONE CIRCUIT AND APPARATUS. SHERWOOD J. LARNED, Evanston, Ill., and FRANK A. PICKERNELL, Newark, N. J., assignors to the American Telephone and Telegraph Company, of New York. Filed Mar. 20, 1893. Serial No. 466,867. (No model.)




*Claim.*—1. The combination of a main double conductor telephone circuit extending between an end or central station and a series of substations and provided at the said substations with plug socket terminals: a line condition indicating device connected with or in said circuit at each substation; a suitably located battery or equivalent source of electricity; an earth branch conductor including the said source of current, provided with connecting plug terminals adapted to be inserted in the said plug sockets, and thereby to simultaneously close the said main circuit, and the earth branch circuit including the source of electricity for the purpose described.

2. The combination of a main double conductor telephone circuit, extending from a terminal station to two substations and provided at the said substations with plug socket terminals; a line condition indicating device included in an earth branch of said circuit at each of said substations; a telephone at the substations; a suitably located battery or equivalent source of current; an earth branch conductor extending from the said terminal station to the substations including the source of current, and branching to the helices of the said telephones, and connecting plug terminals for the helices of the said telephones adapted to be inserted in the said plug sockets and thereby to simultaneously close the main circuit, and the earth branch circuit, for the purpose described.

3. The combination of a main double conductor telephone circuit extending between a terminal and two or more substations; a line condition indicating device connected with or in said circuit or branches thereof at all of said substations; an independent earth branch extending from said terminal station to all of said substations, normally disconnected from said main circuit, and including an electrical generator; and means for closing the earth branch and thereby the generator circuit through the double conductor circuit whereby the closure of the generator circuit is enabled to change the indication of the line condition indicating devices, substantially as described.

4. The combination of a main double conductor telephone circuit extending from a central station to a number of substations, and provided at each substation with plug socket branch terminals united respectively to the conductors of said circuit; line condition indicating devices connected with or in said circuit, one at each substation, an electric generator such as a battery, common to all of the substations, located at any desired point; an earth branch conductor including the said source of current, extending to each substation and provided with connecting plug terminals branched to each substation, adapted to be inserted in either of the said plug sockets thereof, and thereby to simultaneously close the main circuit, and the earth branch circuit including the source of current, and also to change the indication of the line condition indicating devices at all the substations, substantially as described.

5. The combination of a main telephone circuit extending between an end or central station and a series of substations and provided at the said substations with plug socket terminals; an annunciator at the central station included in an earth branch of the said main circuit; a line condition indicating device connected with or in said main circuit at each substation; a suitably located battery or equivalent source of electricity, an earth branch conductor including the said source of current, provided with connecting plug terminals adapted to be inserted in the said plug sockets and thereby to simultaneously close the said main circuit and the earth branch circuit including the source of electricity, and to simultaneously actuate the annunciator at the central office to indicate a call, and the line condition indicating devices at the substations to indicate line in use.

6. The combination of a main double conductor telephone circuit extending between an end or central station and a series of substations with a branch to earth including a call annunciator at said central station, and provided at the said substation with plug socket terminals; a line condition indicating device included in an earth branch of said main circuit at each of the said substations; an independent earth branch conductor including a source of current provided with connecting plug terminals adapted to be inserted in the said plug sockets and thereby to simultaneously close the said main circuit through its annunciator earth branch at the central station and through all of the line condition indicating device earth branches at the substations, and the independent earth branch conductor including the source of electricity, substantially as described.

7. The combination of a double wire circuit extending between a central station and a series of substations, and having a permanent earth branch including an annunciator at the central station, and annunciators included at the substations in each of the two conductors of the main circuit or in derivations thereof, with an independent earth branch at each substation including a source of electrical energy; and connection devices for closing the main circuit through the substation telephone and for simultaneously connecting the said independent earth branch thereto, whereby a current is caused to flow in both sides of the said main, and in the said permanent and independent earth branches, substantially as and for the purposes specified.

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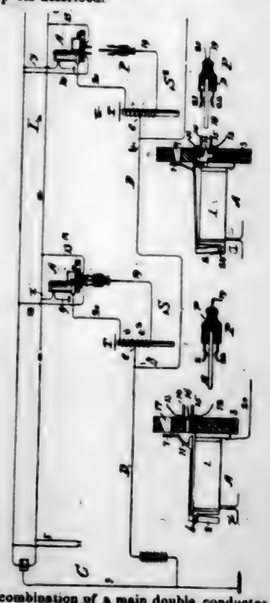
**501,086. STATION APPARATUS FOR TELEPHONE-CIRCUITS.** SHERWOOD J. LARNED, Evanston, Ill., and FRANK A. PICKERSELL, Newark, N. J., assignors to the American Telephone and Telegraph Company, of New York. Filed Mar. 20, 1893. Serial No. 466,868. (No model.)

Claim.—1. The combination of a main double conductor telephone circuit extending between an end or central station and a series of substations and provided at the said substations with plug socket terminals; a secrecy device or apparatus connected with said circuit at each substation, a suitably located battery or equivalent source of electricity; an earth branch conductor including the said source of current, provided with connecting plug terminals adapted to be inserted in the said plug sockets, and thereby to simultaneously close the said main circuit, and the earth branch circuit including the source of electricity and to operate the said secrecy device, substantially as described.

2. The combination of a main double conductor telephone circuit extending between an end or central station and a series of substations and provided at the said substations with plug socket terminals; a secrecy device or apparatus, and a line in use indicator, connected with said circuit at each substation, a suitably located battery or equivalent source of electricity, an earth branch conductor including the said source of current, provided with connecting plug terminals adapted to be inserted in the said plug sockets, and thereby to simultaneously close the said main circuit and the earth branch circuit including the source of electricity for the purposes described.

3. The combination of a main double conductor telephone circuit extending between an end or central station and a series of substations and provided at the said substations with plug socket terminals, a secrecy device or apparatus, and a line in use indicator, connected with said circuit at each substation, an annunciator at the central station included in an earth branch of said main circuit, a suitably located battery or equivalent source of electricity; an earth branch conductor including the said source of current, provided with connecting terminals adapted to be inserted in the said plug sockets and thereby to simultaneously close the said main circuit, and the earth branch circuit including the source of electricity, for the purpose described.

4. The combination of a main double conductor telephone circuit, extending from a terminal station to two substations and provided at the said substations with plug socket terminals, a secrecy device or apparatus included in an earth branch of said circuit at each of said substations a telephone at the substations; a suitably located battery or equivalent source of current; an earth branch conductor extending from the said terminal station to the substations including the source of current, and branching to the helices of the said telephones; and connecting plug terminals for the helices of the said telephones adapted to be inserted in the said plug sockets and thereby to simultaneously close the main circuit and the earth branch circuit for the purposes described.



5. The combination of a main double conductor telephone circuit extending between a terminal and two or more substations, a secrecy device or apparatus connected with said circuit or branches thereof at all of said substations; an independent earth branch extending from said terminal station to all of said substations, normally disconnected from said main circuit, and including an electrical generator, and means for closing the earth branch and thereby the generator circuit through the double conductor circuit whereby the closure of the generator circuit is enabled to block or render inoperative the line terminal sockets of the said main circuit, at all of the other substations, substantially as described.

6. The combination of a main double conductor telephone circuit extending from a central station to a number of substations and provided at each substation with plug socket branch terminals united respectively to the conductors of said circuit, secrecy devices or apparatus connected with said circuit, one at each substation; an electric generator such as a battery, common to all of the substations located at any desired point; an earth branch conductor including the said source of current, extending to each substation and provided with connecting plug terminals branched to each substation, adapted to be inserted in either of the plug sockets thereof, and thereby to simultaneously close the main circuit, and the earth branch circuit including the source of current, and also to simultaneously render inoperative the line terminal sockets at all of the other substations, substantially as described.

7. The combination of a main telephone circuit extending between an end or central station and a series of substations and provided at the said substations with plug socket terminals; a combined secrecy device and line in use annunciator connected with said main circuit at each substation; a suitably located battery or equivalent source of electricity; an earth branch conductor including the said source of current, provided with connecting terminals adapted to make connection with the said plug sockets and thereby to simultaneously close the said main circuit and the earth branch circuit including the source of electricity and to simultaneously actuate the said secrecy devices and the line in use annunciators to respectively render inoperative the line terminal sockets, and to indicate "line in use" at the said substations.



8. The combination of a double wire telephone circuit extending between a central station and a series of substations, provided at each station with branch terminal connection devices, and with earth branches including electro-magnets; with a telephone doop at each station, having plug terminals to fit said connection devices, and thereupon to close said circuit through the telephone; a supply conductor extending from earth through a source of electricity and connected to the center of said loop whereby current may be directed over both conductors of the main circuit and their respective earth branches; and a continuity controlling device associated with each connection device and itself controlled by the electro-magnet in the earth branch, adapted to become operative at any substation when the said electro-magnet is excited by the insertion of a plug at any other substation, and the consequent flow of current through its containing earth branch and to thereby prevent the establishment of a connection between the main circuit and the telephone loop at any station during the pendency of a similar connection at any other station.

9. The combination of a double wire telephone main circuit extending between a central station and a series of substations, provided at each substation with branch terminal connection plug sockets, and with an earth branch including an electromagnet; a telephone loop with plug terminals at each substation, said plugs being adapted to fit said sockets and to close said main circuit through the telephone included in said loop; a current supply conductor extending from earth through a source of electrical energy to a permanent connection at the center of said telephone loop, and adapted to close the circuit of said source through both conductors of said main circuit and their earth branches and to excite the magnets thereof; a circuit controlling device and a line condition indicating device at each substation, both controlled by the earth branch electro-magnets of said substation and adapted to become operative upon the establishment of a connection between the telephone loop and main circuit at any other substation, and thereupon to indicate such connection, and prevent the establishment of a second with the same main circuit, substantially as described.

10. The combination of a double wire telephone main circuit extending between a central station and a series of substations, provided at each substation with branch terminal plug sockets, and an earth branch including an electro-maguet, and at the central station with a permanent earth branch, and an annunciator included therein; a telephone loop with plug terminals at each substation, said plugs being adapted to fit said sockets and to close said main circuit through the telephone included in said loop; a current supply conductor extending from earth through a source of electrical energy to a permanent connection with said loop at the center of the helix of said telephone; and arranged to close the circuit of said source through both conductors of said main circuit, and their substation and central station earth branches and to excite the magnets thereof; and independent circuit controlling and line condition indicating devices at each substation controlled by the earth branch electromaguet of said substation, adapted to become operative upon the establishment of a connection between the telephone loop and main circuit at any other substation, and thereupon to indicate such connection, and prevent interruptions thereof, substantially as described.

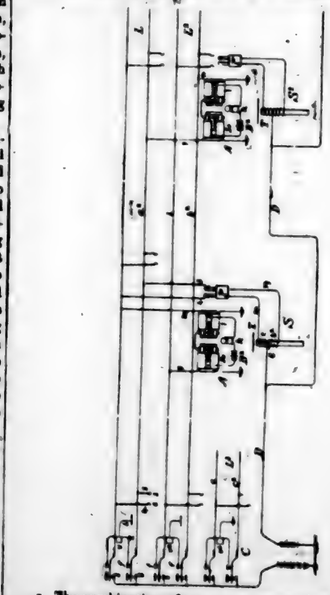
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**501,087. ELECTRIC SIGNALING.** THOMAS D. LOCKWOOD, Melrose, Mass., and SHERWOOD J. LARNED, Evanston, Ill., assignors to the American Telephone and Telegraph Company, of New York, and the American Bell Telephone Company, Boston, Mass. Filed Mar. 27, 1893. Serial No. 467,912. (No model.)

Claim.—1. The combination of a series of main double conductor telephone circuits extending between an end or central station and a series of substations, provided at the central station with calling keys one for each side or limb of the said main circuits, and an earth branch conductor including a source of electricity; a selective signal device or apparatus at each substation, consisting of two electro magnets each in earth branches from different sides or limbs of the said main circuits; and means whereby a local circuit, including a source of electricity and a signal indicator is closed by said electro-magnets upon the connection of two associated calling keys at the central station with the said earth branch.

2. The combination of a series of main double conductor telephone circuits extending between an end or central station and a series of substations, provided at the central station with calling keys, one for each side or limb of the said main circuits; and an earth branch conductor including a source of electricity; a selective signal device or apparatus at each substation connected in earth branches from two separate sides or conductors of said main circuits and adapted to operate a signal indicator upon the union of the two calling keys associated with the said two conductors at the central station with the said earth branch.

3. The combination of two or more main double conductor telephone circuits, extending between an end or central station and a series of substations, provided at the said central station with calling keys, one for each side or limb of the said main circuits, and an earth branch conductor including a source of electricity; selective signal devices or apparatus one at each substation connected in earth branches from two separate sides or limbs of said main circuits, each signal device being in a different combination of earth branches from every other, and adapted to operate a signal indicator when the two main conductors concerned are simultaneously connected with the said earth branch including said source of electricity.



4. The combination of two or more main double conductor telephone circuits extending between an end or central station and a series of substations, provided at the central station with calling keys one for each side or limb of the said main circuits, and an earth branch conductor including a source of electricity, and provided at the said substation with plug socket terminals; a second earth branch conductor including a source of electricity, provided with connecting plug terminals; an electro magnetic device at each substation connected in ground branches from two separate sides or limbs of said main circuits and adapted to first operate a signal indicator upon the closure of two associated calling keys at the central station with the said earth branch; and second to operate the "busy" or line-in-use" indicators at all the other substations, when the said connecting plug terminals are inserted in the said plug sockets.

5. The combination of two or more main double conductor telephone circuits extending between an end or central station and a series of substations, provided at the central station with calling keys one for each side or limb of the said main circuits, and an earth branch conductor including a source of electricity and provided at the said substations with plug socket terminals; a second earth branch conductor including a source of electricity, provided with connecting plug terminals, an electro magnetic device at each substation connected in earth branches from two separate sides or limbs of said main circuits, and adapted to first operate a signal indicator upon the closure of two associated calling keys at the central station with the said earth branch; and second: to operate the "busy" or "line in use" indicator and the secrecy devices at all of the other substations simultaneously, upon the insertion in the said plug sockets of the said connecting plug terminals.

6. The combination of a series of main double conductor telephone circuits extending between an end or central station and a series of substations, provided at the central station with electro-magnetic annunciators in earth branches and calling keys one for each side or limb of the said main circuits, and an earth branch conductor including a source of electricity and provided at the said substations with

plug socket terminals; a second earth branch conductor including a source of electricity, provided with connecting plug terminals; an electro-magnetic device at each substation connected in ground branches from two separate sides or limbs of said main circuits, and adapted to first operate a signal indicator upon the closure of two associated calling keys at the central station with the said earth branch; and second, to simultaneously operate the "busy" or "line-in-use" indicators, and the secrecy devices at all of the other substations, and to operate the electro magnetic calling annunciator at the central station upon the insertion in the said plug sockets of the said connecting plug terminals.

7. The combination of two or more main double conductor telephone circuits extending between an end or central station and two or more substations, provided at the central station with calling keys one for each side or limb of the said main circuits, and an earth branch conductor including a source of electricity; a selective signal device or apparatus at each substation, consisting of two electro magnets each in earth branches from different sides or limbs of the said main circuits, and each provided with switches operating to close a local circuit including a source of electricity and a signal annunciator upon the closure of two associated calling keys at the central station with the said earth branch.

8. The combination of a number of double conductor main circuits, extending from a central station to each of a number of substations; two relays at each substation connected in earth branches from two of the said main circuit conductors, differing for each station; a local circuit and alarm requiring for its operation the concurrent operation of both of the said relays; a source of electricity at the central station having one pole to earth; and a key for each main circuit conductor at the central station, adapted to connect the said conductor with the remaining pole of said source of electricity, whereby the concurrent connection of any given pair of keys operates the alarm at the substation at which the two main conductors associated with said keys extend to earth through the branches from each conductor, including the relay in each branch.

9. The combination of a number of double conductor main circuits extending from a central station to each of a number of substations; two polarized relays at each substation connected in earth branches from two of the said main circuit conductors differing for each station; a local circuit and alarm requiring for its operation the concurrent operation of both of the said relays; a source of electricity at the central station having one pole to earth and a key for each main circuit conductor at the central station adapted to connect the said conductor with the remaining pole of said source of electricity, whereby the concurrent connection of any given pair of keys operates the alarm at the substation at which the two main conductors associated with said keys are grounded through the branches which include the polarized relays.

10. The combination of two or more main double conductor telephone circuits, extending between an end or central station and two or more substations; provided at the central station with calling keys, one for each side or conductor of the said main circuits and a source of electricity in an earth branch conductor; a selective signal device or apparatus at each substation consisting of two electro-magnets each in earth branches from different sides or conductors of the said main circuits, and each provided with polarized switches operating to close a local circuit including a source of electricity and a signal annunciator upon the connection of two associated calling keys at the central station with the same pole of the said source of electricity in the earth branch conductor.

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**501,088. BOX.** JAMES M. LEAVER, Bay City, Mich., assignor of one-half to Emery J. Vance, same place. Filed Jan. 31, 1893. Serial No. 460,493. (No model.)

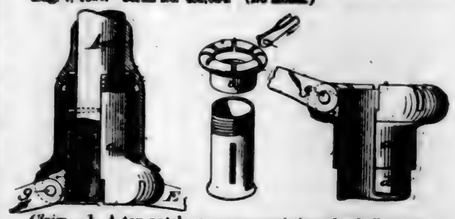


*Claim.*—1. A joint for boxes and analogous receptacles comprising a post provided at the end with a curved recess, horizontal bars having rounded tenons fitting in and filling the curved recess and provided at the sides of the tenons with shoulders fitting against the post, and a fastening device passed through the tenons into the post, substantially as described.

2. A receptacle comprising a frame composed of corner posts provided at their ends with curved recesses, and horizontal bars provided at their ends with rounded tenons of one-half the thickness of the bars, two of the tenons fitting in each of the recesses and shoulders being formed at the outer sides of the tenons and fitting against the corner posts, fastening devices passed through the tenons, and the sides, ends, top and bottom arranged in the frame, substantially as described.

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**501,089. UMBRELLA-RUNNER.** HERMAN LICHTENSTEIN, Hoboken, N. J., assignor to Samuel W. Richards, New York, N. Y. Filed Aug. 7, 1891. Serial No. 402,094. (No model.)



*Claim.*—1. A top notch or runner consisting of a shell or body *a*, having a swell or enlargement *b*, and tongues *c*, the interior of the shell *a* and the ends of the lips *c* being threaded; and an inner tube *d* externally threaded to fit the threads of the shell *a* and lips *c*.

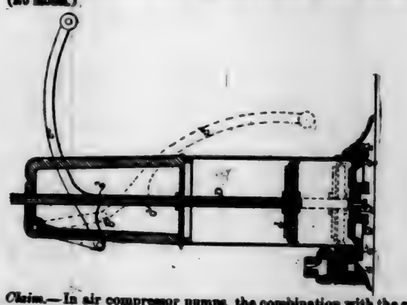
2. In combination with top notch B consisting of shell *a* and tube *d*, cover G, and clamping cap C, screwed upon the tube *d*, substantially as shown.

3. In a top notch or runner, a shell *a* provided with channeled enlargement *b* and with radial slots *c*, said slots having their end walls located substantially as shown to form stops for the ribs or braces.

4. In combination with the shell *a* having radial slots *c*, ribs or braces extending through said slots and adapted to bear against the end walls of the slots when the umbrella is spread or opened.

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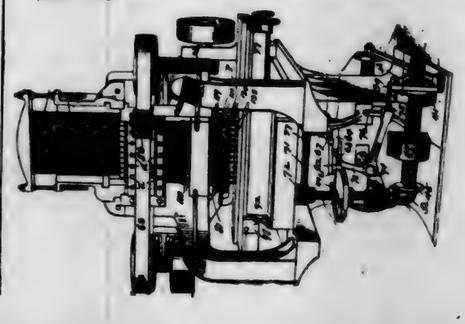
**501,090. AIR-COMPRESSOR PUMP.** ALFRED LOCKER and EMIL F. GEISSER, New York, N. Y. Filed July 23, 1891. Serial No. 400,380. (No model.)



*Claim.*—In air compressor pumps, the combination with the cylinder, piston, and pump-frame, of links pivoted at their upper ends to the upper part of the pump-frame, and the operating lever pivoted to the lower ends of the links and to the piston rod, so that the links and the short arm of the lever form a toggle-joint, substantially as specified.

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**501,091. AUTOMATIC DUPLICATING-MACHINE.** ROBERT MORGENSEN, Winona, Minn., assignor to the American Carving and Manufacturing Company, same place. Filed Aug. 5, 1892. Serial No. 442,277. (No model.)





*Claim.*—1 In an automatic duplicating machine, the combination with horizontally arranged material and pattern holders, each having two movements in the same plane angular with reference to each other, a series of vertically arranged revoluble cutters or bits, a guide finger operatively connected with each cutter or bit, means for imparting the described movements to the pattern and material holders and means for revolving the cutters and for moving the cutter and guide finger to and from the material and pattern respectively, substantially as described

2 In a duplicating machine, the combination with horizontally arranged pattern and material holders means for shifting said holders both horizontally and transversely, a series of independent frames each having mounted therein a revoluble cutter and a guide finger, a vertically reciprocating cross head adapted to support the series of frames and means controlled by the guide fingers for arresting the downward movement of the frames independently of each other upon contact of their respective guide fingers with the pattern, substantially as described

3 In an automatic duplicating machine, the combination with horizontally arranged pattern and material holders, of automatic mechanism for moving said pattern and material holders horizontally and transversely a series of vertically arranged frames each provided with a revoluble cutter and a guide finger, a cross head adapted to support the series of frames and a series of checking mechanisms actuated severally by the guide fingers upon contact with the pattern to arrest the downward movements of the frames and the action of the cutters substantially as described

4 In an automatic duplicating machine, the combination with pattern and material holders of a series of independently movable frames each provided with a revoluble cutter and a guide finger a cross head for supporting the series of frames and a series of springs bearing upon the frames and normally tending to move them toward the work, substantially as described

5 In an automatic duplicating machine, the combination with pattern and material holders of a series of independently movable frames each having a cutter revolubly mounted therein and a guide finger having a sliding movement independent of the frame, a reciprocating cross head adapted to support the series of frames and means whereby to impart a reciprocating movement to the cross head and frames, substantially as described

6 In an automatic duplicating machine, the combination with pattern and material holders, of a series of independently movable frames each having a cutter revolubly mounted therein and a guide finger having a sliding movement with reference to the frame, a reciprocating cross head adapted to support the series of frames, a walking beam pivoted to the cross head, gearing for oscillating said beam whereby to impart a reciprocating motion to the cross head, and means controlled by the guide fingers for checking the descent of the frames, substantially as described

7 In an automatic duplicating machine, the combination with the cutting tool, of a guide finger operatively connected therewith and controlling by its contact with a pattern the action of the tool, and a checking mechanism comprising a fluid chamber, a piston reciprocating within said chamber, a port or passage connecting the portions of the chamber above and below the piston and a valve mechanism connected with the guide finger and adapted to control said port or passage, substantially as described

8 In an automatic duplicating machine, the combination with a cutting tool, of a guide finger operatively connected therewith and controlling by its contact with a pattern the action of the tool, and a checking mechanism comprising a fluid chamber, a piston reciprocating within said chamber, a port or passage through said piston and a valve connected with the guide finger and controlling said port or passage, substantially as described

9 In a duplicating machine the combination with the cutting tool and a guide finger for controlling the action of the tool, of a checking mechanism controlled by the guide finger said checking mechanism comprising a fluid chamber, a piston reciprocating therein, a port or passage through said piston a valve to control said port or passage and having its stem connected with the guide finger, and a chamber connected with the piston and to which the fluid has access, substantially as described

10 In a duplicating machine the combination with a series of cutting tools and their controlling guide fingers, of a checking mechanism for the respective guide fingers and controlled thereby, and means for adjusting said checking mechanism whereby uniformity of action of the several guide fingers and cutters may be secured, substantially as described

11 In a duplicating machine, the combination with a reciprocating frame, of a cutting tool and a guide finger carried thereby, a checking mechanism controlled by the guide finger, said checking mechanism having a pivoted arm carrying a spring latch thereon and the guide finger having a notch to receive said latch, substantially as described

12. In a duplicating machine, the combination with a frame carrying a cutter and a controlling guide finger, of a checking mechanism controlled by the guide finger, a sleeve wherein said guide finger is mounted and a spring latch carried by the checking mechanism and adapted to enter notches in the sleeve and guide finger whereby to connect them with the checking mechanism, substantially as described

13 In a duplicating machine, the combination with a series of cutters or drills having driving spindles, of a belt running in contact with the spindles and a series of belt tightening rolls, said rolls being independently adjustable, substantially as described

14 In a duplicating machine, the combination with a series of cutters, of spindles to which the cutters are connected, sleeves through which said spindles may slide and a belt running in contact with the sleeves whereby to drive the spindles, substantially as described

15 In a duplicating machine, a series of cutting points and spindles to which said cutting points are secured, said spindles having sockets whose walls are split and tapered, and clamping sleeves for securing the shank of the cutter within the socket of the spindle, substantially as described

16 In a duplicating machine, the combination with a cutter, of a guide finger operatively connected therewith, said guide finger and cutter being of the same external diameter, and said guide finger having a series of circumferential steps in its periphery, substantially as described

17 In a duplicating machine, the combination with a reciprocating frame carrying a cutting tool, a cross head for moving said frame, a walking beam for reciprocating the cross head and a pitman for driving the walking beam, and gearing for driving the pitman, substantially as described.

18 In a duplicating machine, the combination of a series of vertically reciprocating frames carrying connected cutters and guide fingers, a cross-head for moving said frame in one direction, a swivel frame pivotally connected to the cross-head, a pitman and means for operating the pitman, substantially as described

19 In a duplicating machine, the combination of a series of vertically reciprocating frames carrying connected cutters and guide fingers, a cross-head for moving said frames in one direction, a swivel frame pivotally connected to the cross-head, a pitman constructed with two members adjustable upon each other and means for locking them in their adjusted position, substantially as described

20 In a duplicating machine, the combination with vertically operating cutters, of a carriage for the pattern and material holders, said carriage having alternate longitudinal and transverse movements and means for moving the holders, substantially as described

21 In a duplicating machine, the combination with vertically operating cutters, of a carriage for the pattern and material holders, said carriage having alternate longitudinal and transverse movements, and said pattern and material holders being vertically adjustable, and means for imparting said movements to the carriage and for adjusting said holders, substantially as described

22 In a duplicating machine, the combination with a carriage for the pattern and material holders, of a cam for moving said carriage, said cam having an acting face adapted to impart equal transverse movements to the carriage when rotated in equal times, and having a portion of its acting face cut away whereby it is rendered inoperative during the longitudinal movement of the carriage, substantially as described

23 In a duplicating machine, the combination with a horizontally and transversely moving carriage, of a cam for moving the carriage transversely of a sliding frame in which the cam acts, said frame being free to slide transversely in ways on the carriage and a second frame also adapted to slide transversely and to lock the first mentioned frame against longitudinal movement, substantially as described

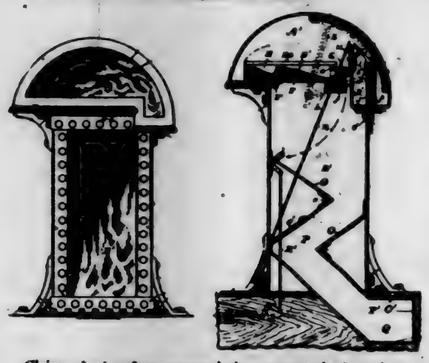
24 In a duplicating machine, the combination with the carriage for the pattern and material holders, of a shaft having a cam thereon for moving the carriage transversely, a disk provided with lugs equidistant thereon, a sliding bolt adapted to be engaged by said lugs and connected to a rock arm, a pawl connected to said rock arm, a spring adapted to be compressed by the rocking of said arm, a worm shaft engaged with the table and a ratchet mounted on said shaft and adapted to be engaged by the pawl, whereby when the bolt is released the reaction of the spring will cause a rotation of the worm shaft and the longitudinal movement of the table, substantially as described

25 In a duplicating machine, the combination with a carriage for the pattern and material holders, of means for moving said carriage transversely, of gearing for moving said carriage longitudinally, said gearing comprising a worm shaft engaged with the carriage and having a ratchet, a pawl for turning the ratchet, a rock arm to which said pawl is pivoted, a spring adapted to be compressed by the rocking of said arm, a sliding bolt connected to the rock arm and having a limit pin thereon, a rotatable disk having lugs to engage said bolt

and an adjustable stop to engage said limit pin whereby the longitudinal movement of the table may be regulated, substantially as described.

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**501,092. SAFE.** WILLIAM W. HUMMELL, Dodge City, Kans. Filed Dec. 16, 1892. Serial No. 456,323. (No model.)



*Claim.*—1. A safety money desk constructed of steel or iron plates, which are bolted together and firmly anchored to the floor, the money tills, B, B', pivoted on bearings, F', and held in a horizontal position by a roller resting under a bracket, so that when said tills are released, by operating a foot-lever, n, and thereby throwing the lever, H, which carries said roller, the weight, *f*, will throw them to a vertical position, thus emptying the contents into a chute, which conveys it to a receiver, substantially as set forth and described.

2. A safety money desk, the desk walls constructed of heavy metallic plates, securely bolted together, the tills pivotally secured in place, the roller, A, for holding the tills in position when in use, and for releasing same when desired; the roller, *f'*, resting on plate, J, to hold the spring, *j*, in a contracted position, which when thrown, will release said spring for instantly closing the desk, and the manner of attaching and operating the levers, &c., for releasing the till; as fully set forth and described.

3. In a safety money desk, the tills pivoted on bearings, F', the levers, H, I, carrying rollers, *h'*, *i'*, for holding and releasing said tills and the cover, the chute, P, constructed in said desk, to convey its contents to a place of temporary safety; all substantially as specified.

4. In a safety money desk, the tills pivoted on bearings F', the weight, *f*, for throwing said till to a vertical position so as to spill the contents therefrom, the bell-crank, R, operated by the weight, *f*, which operates a series of wires or rods and bell-cranks, and thereby releases the table, U, in cabinet, T, so that the contents contained in said cabinet are deposited at the bottom of same, for the purpose, and substantially as specified.

5. In a safety money desk, the tills pivoted on bearings, F', the chute, P; and pivoted cover, K; in combination with a cabinet, T, constructed in the main vault, said cabinet having inclined shelves, V, V', V'', to convey the contents to the bottom, so that they may not be reached until the cabinet has been taken apart, as fully specified.

6. A safety money desk, whose walls are constructed of metallic plates, bolted together in a suitable manner, and strengthened by angle bars, the lever, H, carrying a supporting and releasing roller, *h'*, the rod or wire, M, to which said lever is secured, the foot levers, *n'*, *n'*, connected to said wire or rod, by rods, *n*, *n*, to be operated by a person in any part of the room; substantially as specified.

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**501,093. RAIL-JOINT.** MILTON C. FILER, Oak Park, Ill. Filed June 14, 1893. Serial No. 436,676. (No model.)

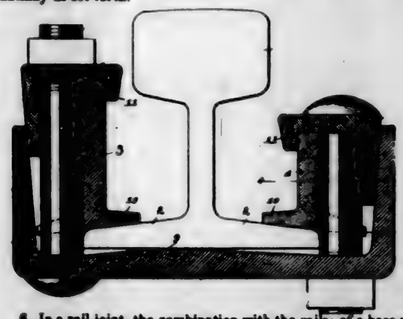
*Claim.*—1. In a rail joint, the combination with the rails and a chair or base-plate, of a truss-plate supported on edge on the rail flanges and means for suspending said base plate from the upper edge of said truss plate, substantially as set forth.

2. In a rail joint, the combination with the rails and a base-plate or chair, of a truss-plate supported by the rail flanges and bolts having their bearings upon the upper edge of said truss-plate and supporting the base-plate, substantially as set forth.

3. In a rail joint, the combination with the rails and a base-plate or chair, of truss-plates supported by the rail flanges and having their upper edges arranged at a distance from the rail-heads and means for supporting the base-plate from said truss-plates, substantially as set forth.

4. In a rail joint, the combination with the rails provided with downwardly and outwardly inclined surfaces, of truss-plates resting upon said inclined surface, a base-plate having upturned flanges, bearing-plates supported by said truss-plates and bearing against said upturned flanges, and means for drawing said bearing plates and the base-plate or chair together, substantially as set forth.

5. In a rail joint, the combination with the rails; of a base-plate or chair having upturned flanges, truss-plates supported by the rail flanges, bearing plates supported by said truss-plates and having a bearing against the flanges of said base-plate or chair, and means for drawing said bearing plates and base-plate or chair together, substantially as set forth.



6. In a rail joint, the combination with the rails; of a base-plate or chair having upturned flanges, truss-plates supported by the rail flanges, bearing plates supported by said truss-plates and having wedges or bevels bearing against the flanges of said base-plate or chair, and means for drawing said bearing plates and base-plate or chair together, substantially as set forth.

7. In a rail joint, the combination with the rails; of a base-plate or chair having upturned flanges, truss-plates supported by the rail flanges, bearing plates supported by said truss-plates and having wedges or bevels adapted to bear against the flanges of said base-plate or chair; and bolts against which said truss-plates bear, for clamping said base-plate or chair and truss-plates on the rail flanges, substantially as set forth.

8. In a rail joint, the combination with the rails; of a base-plate or chair having upturned flanges, truss-plates supported by the rail flanges, bearing plates supported by said truss-plates and having wedges or bevels adapted to bear against said upturned flanges; and bolts passing through said bearing plates and base-plate or chair contiguous to the edges of the rail flanges, substantially as set forth.

9. In a rail joint, the combination with the rails; of a base plate or chair having upturned beveled or wedge shaped flanges, truss-plates supported by the rail flanges, bearing plates supported by said truss-plates and having bearing against said upturned beveled flanges, and means for drawing said bearing plates and base-plate or chair together, substantially as set forth.

10. In a rail joint, the combination with the rails; of a base-plate or chair having upturned flanges, truss-plates supported by the rail flanges, bearing plates supported by said truss-plates and having the depending legs or lips 11, and downwardly projecting wedges or bevels adapted to bear against said upturned flanges, and means for drawing said bearing plates and base-plate or chair together, substantially as set forth.

11. In a rail joint, the combination with the rails; of a base-plate or chair having upturned flanges, truss-plates supported by the rail flanges and having inturned angle toes, bearing plates supported by said truss-plates and having wedges or bevels adapted to bear against the said upturned flanges, and means for drawing said bearing plates and base-plate or chair together, substantially as set forth.

12. In a rail joint, the combination with the rails; of a base-plate or chair having upturned flanges, truss-plates supported by the rail flanges and having inturned angle-toes, brace-plates interposed between said angle toes and the heads of the rails, bearing plates supported by said truss-plates and having wedges or bevels adapted to bear against said upturned flanges, and means for drawing said bearing plates and base-plate or chair together, substantially as set forth.

13. In a rail joint, the combination with the rails; of a base-plate or chair having upturned flanges, truss-plates supported by the rail flanges, bearing plates supported by said truss-plates and having depending wedge shaped or beveled portions adapted to bear against said upturned flanges, and bolts passing through said bearing plates and base-plate or chair and against which said beveled portions bear, substantially as set forth.

14. In a rail joint, the combination with the rails; of a base-plate or chair having upturned flanges, perpendicular truss-plates supported by the rail flanges, bearing plates supported by said truss-plates and having depending wedges bearing against said upturned flanges, and upright bolts against which the rail flanges and said truss-plates bear, passing through said bearing plates and base-plate or chair, and forming bearings for said depending wedges, substantially as set forth.

15. In a rail joint, the combination with the rails; having notches in their flanges; of a base-plate or chair having upturned flanges, truss-plates supported by the rail flanges, bearing plates supported by said truss-plates and bearing against said upturned flanges, and bolts passing through said bearing plates and base-plate or chair and being seated in said notches in the rail flanges, substantially as set forth.

16. In a rail joint, the combination with the rails; of truss-plates of differing strength on opposite sides of the rails, a base-plate or chair fulcrumed under the rails and constituting a lever, one arm of which lever being longer than the other, and a binding connection between the arms of said lever and truss-plates, substantially as set forth.

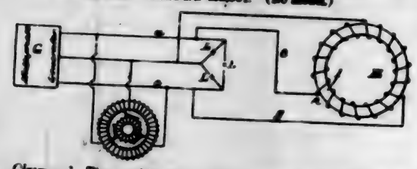
17. In a rail joint, the combination with the rails; of truss-plates of differing heights on opposite sides of the rails, a base-plate or chair having a fulcrum located to one side of the center of the rails, and binding connections between said base-plate or chair and truss-plates, substantially as set forth.

18. In a rail joint, the combination with the rails; of truss plates of differing strength on opposite sides of the rails, a base-plate or chair having upturned flanges and being fulcrumed under the rails, so as to constitute a lever, one arm of which lever being longer than the other, bearing plates supported by said truss-plates and having bearing against said upturned flanges, and binding connections between said truss-plate or chair and bearing plates, substantially as set forth.

19. In a rail joint, the combination with the rails; of truss-plates of differing vertical extent on opposite sides of the rail flanges, bearing plates supported by said truss-plates and having depending wedge-shaped or beveled portions, a base-plate or chair fulcrumed under the rails to one side of the center thereof, and having upturned flanges adapted to engage said depending portions, and upright bolts against which said depending portions and the truss-plates bear, passing through said bearing plates and base-plate or chair, substantially as set forth.

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**501,094. EQUALIZER FOR ROTARY CURRENT SYSTEMS.** PAUL HORDMANN, Berlin, Germany, assignor to Siemens & Halske, same place. Filed Feb. 23, 1892. Serial No. 422,561. (No model.)



*Claim.*—1. The combination with a multiphase system of distribution comprising three or more wires carrying three or more currents of different phase, of an equaliser consisting of an inductional apparatus, substantially as described, whereby energy may be transferred from such portion or portions of the system having a potential above the normal, to such portion or portions of the system having a potential below the normal.

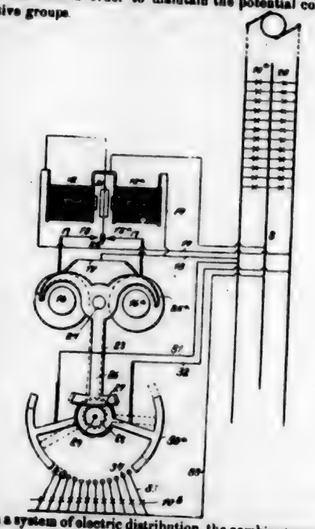
2. An equaliser for multiphase current systems, comprising a laminated core, said core having a coil wound thereon, divided into as many sections as there are current phases, said sections connected in successive order to the main line conductors, substantially as described.

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**501,095. ELECTRIC-LIGHTING SYSTEM.** PAUL HORDMANN, Berlin, Germany, assignor to Siemens & Halske, same place. Filed Nov. 16, 1892. Serial No. 452,628. (No model.) Patented in France June 27, 1889, No. 195,045; in Austria-Hungary June 27, 1889, No. 34,522 and No. 64,941; in England July 2, 1889, No. 10,060; in Italy July 5, 1889, No. 35,787; in Switzerland July 5, 1889, No. 26, and in Belgium Apr. 26, 1890, No. 90,329.

*Claim.*—1. In a system of electric distribution, the combination of a source of energy, main wires and an intermediate wire, and translating devices in parallel between the main wires and the intermediate wire, said translating devices being in parallel series between the main wires, a relay device connected to both sides of the system and an electro magnetic device controlled by the relay device and a resistance device controlled by the electro magnetic device for the purpose of maintaining the potential in the various groups of the system constant, irrespective of the load.

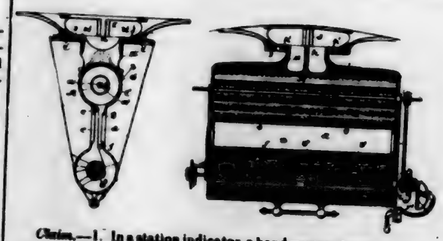
2. In a system of electric distribution, the combination of a source of energy, main wires and an intermediate wire, and translating devices in parallel between the main wires and the intermediate wire, said translating devices being in parallel series between the main wires, a relay magnet connected to the opposite sides of the system and another magnet controlled by the said relay magnet, and a variable resistance controlled by the second magnet, so connected as to be cut in and out of each side of the system according to the variations of the load in order to maintain the potential constant in the respective groups.



3. In a system of electric distribution, the combination of a source of energy, main wires and an intermediate wire, and translating devices in parallel between the main wires and the intermediate wire, said translating devices being in parallel series between the main wires, a relay magnet composed of two simple magnets each connected to one side of the system, and an electro-magnet controlled by the first magnet, and a switching device controlled by the second magnet and a variable resistance connected with the switching device to maintain the potential of the current constant which is supplied to the various groups.

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**501,096. STATION-INDICATOR.** GERALD DE C. O'GRADY and JOHN E. COLLINS, Toronto, Canada. Filed Nov. 28, 1891. Serial No. 413,436. (No model.)



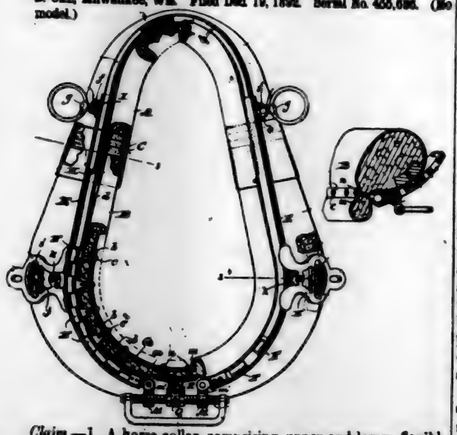
*Claim.*—1. In a station indicator, a band mounted upon connected rollers, a gear wheel loose on the spindle on one of the rollers, and carrying pawls reversed to each other, and a ratchet wheel keyed upon the said spindle, having teeth reversed to each other, mechanism for rotating the gear wheel, and means for retracting the said mechanism to its normal position, all substantially as described.

2. In a station indicator, a band mounted upon connected rollers, a gear wheel loose on the spindle of one of the rollers and carrying pawls reversed to each other, and a ratchet wheel keyed upon the said spindle, having teeth reversed to each other, said teeth consisting of four sets arranged in relation to each other as described, and operated in connection with the pawls to give longer and shorter movement, mechanism for rotating the gear wheel, and means for retracting the said mechanism to its normal position, all substantially as described.

3. In a station indicator, having rollers with a band connecting them, said rollers being mounted upon connected spindles, a pinion upon one of said spindles and mechanism for operating the same in either direction a limited distance, a flange upon said wheels carrying pawls in reverse direction to each other, said pawls resting upon the periphery of the ratchet wheel, having four sets of teeth, *a* and *a'*, means for limiting the movement of said pawls, and a dog on each side of said ratchet wheel pivoted upon a bar and arranged to permit

movement of the said pawls in one direction but to trip them in the opposite direction, all substantially as described.

## 501,097. COMBINED HORSE-COLLAR AND HAMES. GEORGE D. ORR, Milwaukee, Wis. Filed Dec. 19, 1892. Serial No. 455,686. (No model.)



*Claim.*—1. A horse-collar comprising upper and lower flexible continuous sections telescopically adjustable one upon the other; curved hame-sections longitudinally adjustable on the lower collar-section, and another hame-section consisting of a continuous spring metal yoke that is fast on the upper collar-section but adjustably engaged with the former hame-sections, substantially as set forth.

2. A horse-collar comprising two sections telescopically adjustable one upon the other, detachable layers of filling intermediate of the opposing ends of the collar sections; curved hame-sections longitudinally adjustable on the lower collar-section, and another hame-section that is fast on the upper collar-section but adjustably engaged with the former hame-sections, substantially as set forth.

3. A horse-collar comprising two sections telescopically adjustable one upon the other; a series of guide-lugs radially disposed on the lower collar-section, tubular hame-sections loosely engaged with the guide-lugs, another hame-section that is fast to the upper collar-section and has its ends adjustable in the upper ends of the former hame-sections, a bracket depending from the center of said lower collar-section, a right-and-left screw having fixed bearings in the bracket, and nuts on the screw pivotally connected to the lower ends of the tubular hame-sections, substantially as set forth.

4. A horse-collar comprising two flexible continuous sections telescopically adjustable one upon the other; curved hame-sections longitudinally adjustable on the lower collar-section and having tug plates provided with tapped openings, ring-carrying screws for engagement with said openings, and another hame-section consisting of a continuous spring metal yoke that is fast on the upper collar-section but telescopically adjustable with the former hame-sections, substantially as set forth.

5. A horse-collar comprising two flexible continuous sections telescopically adjustable one upon the other; curved hame-sections longitudinally adjustable on the lower collar-section, another hame-section consisting of a continuous spring metal yoke that is fast on the upper collar-section but adjustably engaged with the former hame-sections, and rein-rings provided with set screws that engage the lower hame-section and impinge against the ends of the upper hame-section, substantially as set forth.

6. A horse-collar comprising two sections telescopically adjustable one upon the other; curved and tubular hame-sections longitudinally adjustable on the lower collar-section, another hame-section that is fast on the upper collar-section but adjustable in the former hame-sections, and angle-plates fast on said upper collar-section, these angle-plates being engaged with slots in the lower hame-sections and impinged against the ends of the upper hame-section, substantially as set forth.

7. A combined horse-collar and hames, comprising upper and lower collar-sections, telescopically engaged, and upper and lower hame-sections, also telescopically engaged, and means for holding the sections in adjustment, substantially as set forth.

## 501,098. CORSET-FASTENING. JOHN A. PARRY, Luzerne, assignor of one-half to Edward B. Vandyke, Wilkes-Barre, Pa. Filed Mar. 8, 1893. Serial No. 465,067. (No model.)

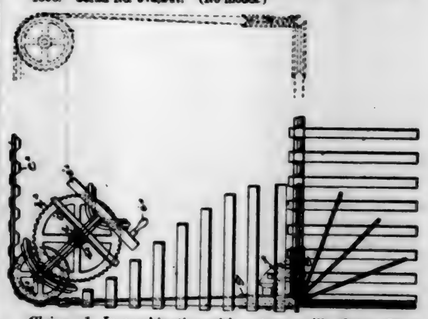
*Claim.*—1. A corset fastening consisting of the steel B provided with studs; in combination with the steel A provided with suitable intermediate loops; and with loops at both ends, each end loop consisting of a stationary part 1 adjacent to the ends of the steel, an inner pivoted part 8, and a spring for holding said parts in proper relative adjustment, said parts 1 and 8 being provided with stops and an abutment to limit the extent to which the end loops may be opened or closed, substantially as described.



2. A corset fastening consisting of the steel B provided with studs; in combination with the steel A provided with suitable intermediate loops; and with end loops each consisting of a stationary part 1 provided with an inclined rear abutment 3; and a pivoted part 8 having at its rear end a stop 13 normally resting against the abutment 3 and a stop 14 normally separated from said abutment, said stops being arranged to limit the movement of the pivoted part in either direction by contact with the abutment 3, the forward end 15 of one of said parts being prolonged to overlap the other to prevent the withdrawal of the stud; and a spring for holding the two parts in proper relative adjustment, substantially as described.

3. In a corset fastening the combination with the steel B and the stud $b$; of a two part loop consisting of a fixed portion 1 provided with a rear socket 10 and an inclined abutment 3; a movable portion 8 mounted upon a pivot 9 and provided with a rear bearing 11, stops 13 and 14 arranged to cooperate with the abutment 3, and a hook portion 15 at its forward end overlapping the fixed part 1; and a spiral spring 12 having one end confined within the socket 10 and the other end resting upon the bearing 11, substantially as described.

## 501,099. STAGE APPARATUS. JEFFERSON PAYNE, Brooklyn, N. Y., assignor to Neilson Burgess, Highlands, N. J. Filed Nov. 21, 1890. Serial No. 372,247. (No model.)



*Claim.*—1. In combination with a stage or like flat surface a series of pulleys arranged parallel to said surface, another series of pulleys arranged to give a sidewise turn to an endless belt, an endless belt movable on said pulleys and supporting slats or palings that project from one end of the belt, and a frame bearing a system of gearing for imparting movement to the pulleys bearing the belt, all substantially as described.

2. In combination with a theatrical stage, a series of pulleys arranged parallel to the surface thereof, another series of pulleys arranged to give a sidewise turn to an endless belt, an endless belt movable on said pulleys and supporting slats or palings that project from one edge of the belt, and the belt driving mechanism, all substantially as described.

## 501,100. RAILWAY SIGNALING APPARATUS. ROBERT PFEIL, Berlin, Germany, assignor to Siemens & Halske, same place. Filed Dec. 21, 1892. Serial No. 455,940. (No model.)





*Claim.*—1. In a railway signal, the combination with double-pull wires attached to the signaling device, of a weighted frame connected with said wires and arranged to relax one and simultaneously draw upon the other, and a locking device to retain said frame, and a rail contact for actuating the locking device, substantially as described.

2. In a railway signal, the combination with double-pull wires, a weighted frame connected with said wires to relax one and simultaneously draw upon the other, a locking device, and a rail contact for actuating said locking device, of means for holding the locking device away from the rail contact while the signal is at danger position, substantially as described.

3. In a railway signal, the combination with double-pull wires, a weighted frame connected therewith, a locking device, and a rail contact for actuating said locking device, of a retaining bar connected to one of the wires for holding the frame in elevated position, substantially as described.

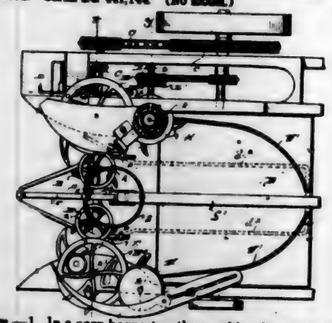
4. The vertically movable and weighted frame A provided with rollers at its end, in combination with the double-pull wires C, C, the rollers $d^2$ $d^2$ and $d^3$ $d^3$, the locking lever F, $f$ and the rail contact, substantially as described

5. The vertically movable frame A provided with a latch $f$, in combination with the double-pull wires, the locking lever, the rail contact and the bar H connected in the wire and formed with a notch or recess $f'$, substantially as described.

6. The combination with the weighted frame, and the double wire pull, of a locking device, an electro-magnet for operating said locking device and electric circuit connected to said magnet and a rail contact, whereby passing trains will cause the energization of the magnet, substantially as described.

7. In a railway signal, a locking lever and an electro-magnet for operating said lever, in combination with a weighted movable frame and a double-wire pull, arranged to be operated by said frame, substantially as described.

## 501,101. CORN-HARVESTER. WILLIAM M. PIATT, West Liberty, Ohio, assignor of one-third to Ben S. Leonard, same place. Filed July 25, 1892. Serial No. 441,144. (No model.)



*Claim.*—1. In a corn harvester, the combination with the binding mechanism, and the cam wheel thereof, of a centrally-hinged drop table having an upward and an inward fold, and a lever connected to the hinge of said table and engaging said cam wheel, substantially as specified.

2. In a corn harvester, the combination with the cutting mechanism, the packers, and the driving gear, of the hinge drop table comprising the two wings connected by a central hinge rod, the supporting frame, the link connection between said frame and wings, and the cam-actuated operating lever, substantially as specified.

3. In a corn harvester, the combination with the cutting mechanism, the packers, the binding mechanism, and the driving gear, of the drop table comprising the two wings connected by a central hinge rod, the supporting frame, the link connections between said frame and wings, the operating lever having one arm provided with a sliding connection with said hinge rod, the cranked arm of said lever, and the cam wheel carried on the driving shaft of the binder mechanism, said cam wheel having a groove engaged by the crank of said lever substantially as specified.

4. In a corn harvester, the combination with the lower packer wheels, of the upper packer wheels the rims of the upper wheels overhanging the rims of the lower wheels, substantially as specified.

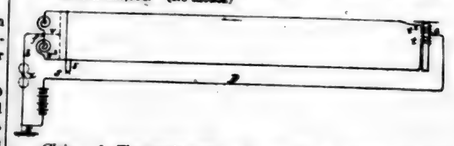
5. In a corn harvester, the combination with the vertical needle shaft and the knotter shaft, of the ejector wheels carried by said shafts shortly above the plane of the drop table, substantially as specified.

6. In a corn harvester, the combination with the upper and lower packer wheels, of the ejector wheels carried on the lower portions of the needle and knotter shafts, substantially as specified.

7. In a corn harvester, the combination with the wing-supporting frame, the center post, the jib pivoted to said post, the keel secured at its upper end to said post and running to the bow, thence underneath the cutter bar, rearward and secured to the cross frame and said wing supporting frame, the ring guard hinged or pivoted to the jib, and the brace loosely connected at its upper end to said guard, and at its lower end to the bow, substantially as specified.

8. In a corn harvester, the combination with a centrally hinged drop table having an upward and an inward fold, a lever connected to the hinge of said table, the binding mechanism, the cam wheel on the driving shaft of said binding mechanism, said cam wheel being arranged to operate said lever, and foot-lever mechanism for throwing said binding mechanism and cam wheel into gear, substantially as specified.

## 501,102. TELEPHONE SIGNALING APPARATUS AND CIRCUIT. FRANK A. PICKERNELL, Newark, N. J., assignor to the American Telephone and Telegraph Company, of New York. Filed Mar. 20, 1893. Serial No. 466,931. (No model.)



*Claim.*—1. The combination of a metallic or double conductor telephone circuit extending between a central office and a substation, and provided at the latter station with plug socket terminals; an electro-magnetic annunciator at the central station included in an earth branch of the said circuit; a telephone at the substation; a suitably located battery or equivalent source of current; an earth branch conductor extending from the center of the telephone helix and including the said source of current; and connecting plug terminals for the helix of the said telephone adapted to be inserted in the said plug sockets, and thereby to simultaneously close the metallic circuit through the telephone and the earth branch circuit including the said source of current through the annunciator, substantially as described.

2. The combination of a double conductor telephone circuit extending between two stations; an electro magnetic call receiving device at one of the said stations included in an earth branch of the said circuit; an independent earth branch at the other of said stations normally disconnected from the said circuit and having its disconnected end split into two divisions adapted for connection respectively with the two main circuit conductors; a differential or split coil telephone having its coils connected serially in the said divisions, and differentially between said earth branch and its said divisions; an electrical generator in one of the said earth branches; and means as indicated for connecting the divisions of the split earth branch with the two main conductors whereby the closure of the battery circuit through the call receiving device to give the call, is effected by the act of connecting the telephone with the metallic main circuit, substantially as described.

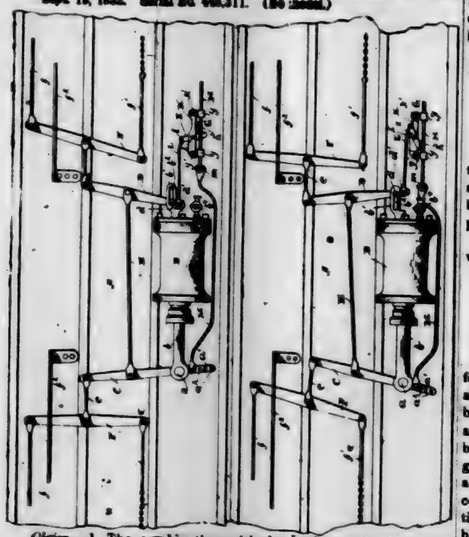
3. The combination of a double conductor telephone circuit extending from a central station to a number of substations, and provided at each substation with plugsocket branch terminals united respectively to the conductors of said circuit; an electromagnetic annunciator at the central station included in an earth branch of the said circuit; and a telephone at each substation; with a current supply conductor extending from an earth connection by independent branches to the centers of the helices of the several substation telephones; an electric generator such as a battery, common to all substations, included in the main circuit of said supply conductor, and located at any desired point; and connecting plugs forming the terminals of the helix of each substation telephone, adapted to be inserted in their respective station plug sockets, and thereupon to simultaneously close the signaling circuit including the common generator, the telephone differentially and the central station annunciator and a metallic telephone circuit including serially the substation telephone; substantially as described.

4. The combination of a double conductor telephone circuit extending from a central station to a substation, and provided at the latter with plug sockets one for each conductor; an electro-magnetic annunciator included therein, at the central station and wound or connected therewith differentially so as to be irresponsive to currents circulating therein; a telephone at the substation; connecting plugs adapted to fit the said sockets and forming the terminals of the telephone helix respectively; a normally incomplete call current supply circuit extending from the center of the said annunciator helix through a battery or equivalent source of current to the center of the said telephone helix, and adapted to be closed through the main circuit conductors in parallel, when the said main circuit is closed through the telephone by the insertion of the plugs in their respective sockets,

whereby the call is sent by switching the telephone into circuit, substantially as described.

5. The combination with a main telephone circuit extending from a substation to a central station; a telephone at the said substation; a suitably located source of calling currents such as a battery; and switching devices at the said substation, adapted to connect the said telephone and the said source of calling current with the said main circuit, and to disconnect them therefrom; of a double acting central station electromagnetic annunciator constructed to retain its signal shutter drop in place in an electrical condition of the line so long as such condition remains unchanged, but adapted to release the same and give the signal on any change in such condition substantially as described.

**501,103.** CAR-BRAKE. ANDREW R. ROTH, Lancaster, Pa. Filed Sept. 19, 1892. Serial No. 446,311. (No model.)



*Claim.*—1. The combination, with the brakes and a device for applying the brakes to the wheels, of a take-up mechanism composed of a draw-bar connected with said device for applying the brakes and a take-up lever having one end connected with the brakes and the other end adapted to be actuated by the draw-bar, substantially as and for the purpose specified.

2. In a brake-actuating-mechanism, the combination, with the brakes and a device for applying the brakes to the wheels, of hangers affixed to the car, a draw-bar constructed to slide through slots in the hangers, a take-up lever fulcrumed in plates attached to the hangers and having one end engaging a slot in the draw-bar and the other end connected with the brakes, and a connection between the draw-bar and the device for applying the brakes to the wheels, substantially as and for the purpose specified.

3. In a brake-actuating-mechanism, the combination, with a brake-lever fulcrumed to the piston-rod of a brake cylinder, of a second brake-lever having a shifting fulcrum, a device to automatically move said shifting fulcrum from and toward the lever fulcrumed to the piston-rod as said piston-rod makes its outward and inward stroke, a tie-rod connecting the brake-levers, and connections between said levers and the brakes, substantially as and for the purpose specified.

4. In a brake-actuating-mechanism, the combination, with a brake-cylinder, of a brake-lever fulcrumed to the piston-rod thereof, a bracket affixed to the end of said cylinder opposite the piston-rod and having vertical and horizontal slots, a brake-lever engaging the horizontal slot of the bracket and having its fulcrum pin passing through the vertical slot thereof, means for automatically moving the fulcrum of the brake-lever in the bracket from and toward the cylinder as the piston rod makes its outward and inward stroke, a tie-rod connecting the brake-levers, and connections between said levers and the brakes, substantially as and for the purpose specified.

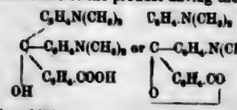
5. In a brake-actuating mechanism, the combination, with a brake-lever fulcrumed to the piston-rod of a brake-cylinder, of a second brake-lever having a shifting fulcrum, a "take-up" lever, a draw-bar adapted to actuate the "take-up" lever, connections between an arm of each of the brake-levers and the brakes, a tie-rod connecting said arms of the brake-levers, a connection between the draw-bar and the other arm of the brake-lever fulcrumed to the piston-rod, and a connection between the "take-up" lever and the other arm of the second brake-lever, substantially as and for the purpose specified.

6. In a brake-actuating mechanism, the combination, with a brake-lever fulcrumed to the piston-rod of a brake cylinder, of a bracket affixed to the end of said cylinder opposite the piston-rod and having vertical and horizontal slots, a second brake-lever engaged in the horizontal slot of the bracket and having its fulcrum pin passing through the vertical slot thereof, a connection between the brake and one of the arms of each of said brake-levers, a tie-rod connecting said arms, hangers affixed to the bottom of the car, a draw-bar adapted to slide through slots in the hangers, a "take-up" lever fulcrumed in plates attached to the hangers and having one end engaging a slot in the draw-bar, a connection between said draw-bar and the other arm of the brake-lever fulcrumed to the piston-rod, and a connection between the other arm of the second brake-lever and an end of the "take-up" lever, substantially as and for the purpose specified.

**501,104.** TRIPHENYLMETHANE DYE. FRIEDRICH REESER, Elberfeld, Germany, assignor to the Farbenfabriken, vormals Fr. Bayer & Co., same place. Filed Jan. 19, 1893. Serial No. 458,866. (Specimens.) Patented in Germany Sept. 10, 1890, No. 60,606; in England Sept. 16, 1890, No. 14,621, and in France Sept. 19, 1890, No. 208,330.

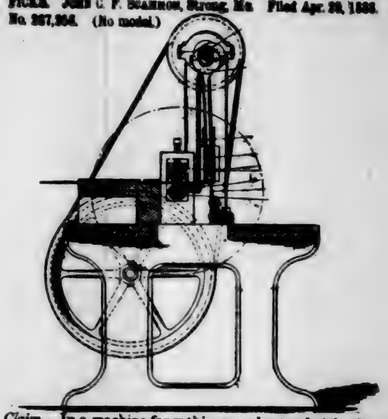
*Claim.*—1. The process of producing a new valuable triphenylmethane dye-stuff by combining in the presence of concentrated sulfuric acid equimolecular proportions of tetramethyldiamidobenzhydrol and benzoic acid and by subsequently oxidizing the resulting leuco compound.

2. The coloring-matter, which is a combination of zinc chlorid with the hydrochlorate of the product having the formula



forming a dark reddish-brown powder with metallic luster, soluble in alcohol with greenish-blue color; easily soluble in water with greenish-blue color which disappears when ammonia or sody lye is added, but the aqueous solution is not changed by the addition of sodium carbonate but is changed by the addition of hydrochloric or sulfuric acid to green; soluble in ammonia; and sparingly soluble in sodium carbonate at ordinary temperature with greenish-blue color, which becomes colorless if this solution is heated for a long time, but a further addition of acetic acid again produces the original color, which is insoluble in soda-lye; soluble in dilute hydrochloric acid with yellowish-red color, turning at first on addition of water into greenish-yellow and then into green; soluble in dilute sulfuric acid with brownish-yellow color, turning into green on the addition of water; and soluble in concentrated sulfuric acid with yellow color, which remains unaltered on the addition of a small quantity of ice water, while the addition of a large amount turns the color green, and having the qualities substantially as specified.

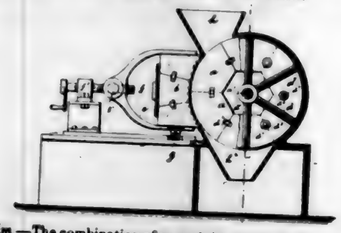
**501,105.** MACHINE FOR MANUFACTURING WOODEN TOOTHPICKS. JOHN C. F. SCARBOR, Stone, Me. Filed Apr. 20, 1888. Serial No. 267,264. (No model.)



*Claim.*—In a machine for making wooden toothpicks the combination of the knife *c*, the block *d*, the plate *h*, mechanism for imparting a reciprocating motion to the block *d*, the plate *e*, rods *f*, *f*, and cranks *g*, *g*, substantially as, and for the purpose, above described.

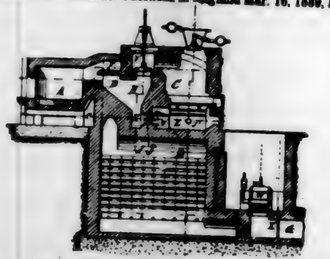


**501,106.** GRINDING-MILL. FREDERICK SCHMIDT, New York, N. Y. Filed Mar. 21, 1892. Serial No. 467,013. (No model.)



*Claim.*—The combination of an upright runner with a concave bed stone, a yoke secured to the bed stone, a perforated tapped pivot on which the yoke turns, and with a hand screw engaging the tapped pivot and a set screw which supports the yoke, substantially as specified.

**501,107.** REGENERATIVE GAS FURNACE AND PRODUCER. FREDERICK SIEMENS, Dresden, Germany. Filed Jan. 28, 1891. Serial No. 379,366. (No model.) Patented in England Mar. 16, 1889, No. 4,646.



*Claim.*—1. The combination in a regenerative gas furnace of a combustion chamber, reversible air heating regenerators, a gas producer located in proximity to said combustion chamber and over said regenerators, flues which connect each side of the gas producer at its top with the combustion chamber, valves in said flues, flues which connect the regenerators with the combustion chamber at opposite sides thereof, and flues which connect the combustion chamber with the gas producer at each side of its bottom portion.

2. The combination in a regenerative gas furnace of a combustion-chamber, reversible air heating regenerators, a gas producer located in proximity to said combustion chamber and over said regenerators, flues which connect each side of the gas producer at its top with the combustion chamber, valves in said flues, flues which connect the regenerators, with the combustion chamber at opposite sides thereof, flues which connect the combustion chamber with the gas producer at each side of its bottom portion, and a blast pipe in each of said flues near to the producer end thereof.

3. The combination in a regenerative gas furnace of a combustion chamber, a gas producer, occupying substantially the same horizontal level reversible air heating regenerators, flues which connect each side of the gas producer at its top with the combustion chamber, valves in said flues, flues which connect the regenerators with the combustion chamber at opposite sides thereof, flues which connect the combustion chamber with the gas producers at each side of its bottom portion, a blast pipe in each of said flues near to the producer end thereof, and a blast pipe arranged under the hearth or grate of the producer.

4. The combination in a regenerative gas furnace of a combustion chamber, a gas producer, occupying substantially the same horizontal level reversible air heating regenerators, flues which connect each side of the gas producer at its top with the combustion chamber, valves in said flues, flues which connect the regenerators with the combustion chamber at opposite sides thereof, flues which connect the combustion chamber with the gas producers at each side of its bottom portion, a valve in each of said flues near to the producer end thereof, and a blast pipe arranged under the hearth or grate of the producer.

5. The combination in a regenerative gas furnace of a combustion chamber, a gas producer, occupying substantially the same horizontal level reversible air heating regenerators, flues connecting the gas producer with both sides of the combustion chamber, reversing valves in said flues, flues connecting opposite regenerators with opposite sides of the combustion chamber, a flue connecting the space beneath the furnace bed with the bottom of the gas producer and a blast pipe in said flue.

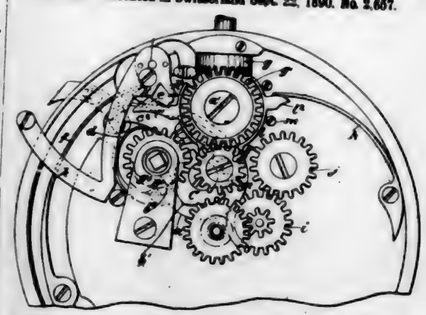
6. The combination in a regenerative gas furnace of a combustion chamber, a gas producer, reversible air heating regenerators, gas flues located over the crown of the furnace and communicating with both sides of the furnace and gas producer, reversing valves in said flues, flues connecting the regenerators with the opposite sides of the combustion chamber and having their port openings over the port openings of the gas flues, a flue connecting the space under the furnace bed with the bottom of the gas producer and a blast pipe in said flue.

7. The combination in a regenerative gas furnace, of a combustion chamber, a gas producer, occupying substantially the same horizontal level reversible air heating regenerators, flues which connect each side of the gas producer at its top with the combustion chamber, valves in said flues, flues which connect the regenerators with the combustion chamber at opposite sides thereof, and flues which connect the combustion chamber with the gas producer at each side of its bottom portion, substantially as described.

8. The combination in a regenerative gas furnace of a combustion chamber, reversible air heating regenerators, a gas producer occupying substantially the same horizontal level, gas flue which connects each side of the gas producer at its top with the respective ends of the combustion chamber, valves in said flue, flue which connects the separate regenerators with the combustion chamber at opposite ends thereof, and flue which connects the gas flue with the gas producer at each side of its bottom portion.

9. The combination in a regenerative gas furnace of a combustion chamber, a gas producer, flues which connect each side of the gas producer at its top and bottom with the combustion chamber, and all included in a single structure occupying substantially the same horizontal level, reversible air heating regenerators, and flues which connect the regenerators with the combustion chamber at opposite sides thereof and said regenerators located below the level occupied by the combustion chamber and gas producer.

**501,108.** STEM WINDING AND SETTING WATCH. NATHAN SILBERSTEIN, Jassy, Roumania. Filed Mar. 12, 1891. Serial No. 384,801. (Model.) Patented in Switzerland Sept. 22, 1890, No. 2,657.



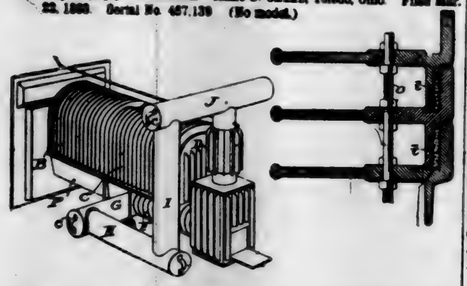
*Claim.*—1. In a stem-winding watch, the combination with the main-spring having winding gear $g^3$, and the stem arbor A, of winding mechanism consisting of the gear $g$ driven from the arbor A, pinion $g^3$ meshing with gear $g'$, and movable yoke *l* carrying the former, pivoted axially of gear $g'$, and adapted when moved to bring pinion $g^3$ into engagement with gear $g^3$, to wind the main spring, and means for controlling the position of said winding mechanism consisting of the lever *k* engaging the arm *l'* of yoke *l* and adapted when operated to move the latter on its axis, and a lock for said lever consisting of the stop lever $c^3$ engaging it, and cam *b'* operated by a moving part of the watch and constructed to free said lock.

2. In a watch the combination with the main spring winding gear $g^3$, the hand setting gear *j*, and the stem arbor, of movable pivoted yoke *l* having arm *l'*, gear $g'$ and pinion $g^3$ carried thereon, driven from the stem and adapted to engage successively with said gears $g^3$ or *j* when the yoke *l* is moved, spring *h* tending to move said plate toward gear $g^3$, lever *k* engaging arm *l'* and constructed when in one position to prevent yoke *l* from moving toward gear $g^3$, when partially moved to permit its movement toward the latter, and when further moved to move said yoke toward gear *j*, whereby the position of pinion $g^3$ can be controlled, and spring *f* tending to move said lever toward the initial position, all substantially as and for the purpose set forth.

3. In a watch the combination with the main spring winding gear $g^3$, the hand setting gear *j*, and the stem arbor, of movable pivoted yoke *l* having arm *l'*, gear $g'$ and pinion $g^3$ carried thereon, driven from the stem and adapted to engage successively with said gears $g^3$ or *j* when the yoke *l* is moved, spring *h* tending to move said yoke

toward gear $g^3$, lever $k$ engaging arm $l$ and constructed when in one position to prevent yoke $l$ from moving toward gear $g^3$, when partially moved to permit its movement toward the latter, and when farther moved to move said yoke toward gear $j$, whereby the position of pinion $g^2$ can be controlled, and spring $f$ tending to move said lever toward the initial position, stop-lever $c^3$ engaging said lever $k$ for locking it in position, cam-wheel C for releasing said lever $c^3$, and wheel B on the spring arbor for moving cam-wheel C, whereby at a predetermined time said lever $c^3$ is released and said lever $k$ may be moved to the initial position, all substantially as and for the purpose set forth.

**501,109. FURNACE.** ISAAC D. SHEAD, Toledo, Ohio. Filed Mar. 22, 1893. Serial No. 467,139. (No model.)



*Claim.*—1. A sectional casting for furnaces, consisting of a curved plate or body (as S or T), having a laterally projecting flange or rib $f$ with a groove $v$ in one side and a rib $t$ on the opposite side of said flange, substantially as shown and described.

2. A furnace having its body composed of a series of the curved sectional plates each provided with the laterally projecting flange $f$ having a groove $v$ on one face and a rib $t$ on its opposite face, the said sectional plates being held together by bolts which extend through each adjoining pair of flanges only, as shown and described.

3. A heat or smoke pipe composed of a series of annular plates or rings each provided with an annular groove on one edge and a corresponding rib or projection on its opposite edge each ring being provided with a laterally projecting rib or flange, and each ring composing the series being separately bolted to the next adjoining one by bolts which pass through the flanges of two adjoining rings only, substantially as shown and described.

4. The combination in a furnace or air warmer, of a fire box B, duplicate combustion chambers C C, smoke chamber D, breeching E, with pipes arranged to convey the products of combustion from said breeching first along below the furnace body, thence upward and to the chimney, and a direct draft pipe connecting said breeching with the pipe leading to the chimney and having therein a damper for opening and closing the same at will, all being constructed and combined to operate substantially as herein set forth.

**501,110. TOOL-HOLDER.** HENRY V. SMITH, Hartford, Conn. Filed Dec. 29, 1892. Serial No. 456,630. (No model.)

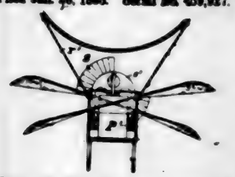


*Claim.*—1. In combination with a tool handle, a stem having a threaded end, a V-shaped socket in the end of the stem, a tool having a shank with a wedge shaped engaging part adapted to fit the socket in the stem and having a threaded shank of different pitch from the thread on the stem, and a coupling sleeve having an internal thread, fitting the threads on the ends of the stem and shank respectively, all substantially as described.

2. In a coupling device, two members adapted to be secured together and provided on their adjacent ends with screw threads and with engaging means whereby the rotation of one part independent of the other is prevented, the thread on one part being finer in pitch than that on the other part, and a sleeve provided with interior threads fitting the respective threads on the said parts, all substantially as described.

3. In a coupling device two members adapted to be secured together and provided on their adjacent ends with screw threads and with engaging means whereby the rotation of one part independent of the other is prevented, the threads on the two parts extending in the same direction and that upon one part being finer in pitch than that upon the other, and a screw threaded sleeve fitting the respective screw threads upon said parts, all substantially as described.

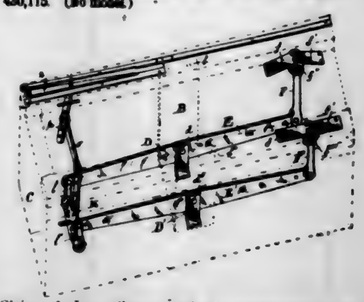
**501,111. AIR-SHIP.** THEODOR STEINHARD, Marburg, Austro-Hungary. Filed Jan. 28, 1893. Serial No. 459,927. (No model.)



*Claim.*—1. In an air ship, the combination of a balloon and its car, with a series of wings pivoted to the sides of the car and adapted, when operated to assist said balloon in supporting and elevating said car, a shaft extending through the car and carrying at its forward end a screw propelling wheel adapted to propel said car, a fly wheel provided with a series of openings and mounted on said shaft and means substantially as described for operating said wings and said shaft simultaneously, substantially as described.

2. In an air ship, the combination of a balloon and its car, with a series of wings pivoted to the sides of the car and adapted when operated to assist said balloon in supporting and elevating said car, a shaft extending through the car and carrying at its forward end a screw propelling wheel adapted when said shaft is rotated to propel said car, a fly wheel provided with a series of openings or air passages and mounted on said shafts, means substantially as described for operating simultaneously said wings and said shaft and with steering mechanism placed at the rear of said car, substantially as described.

**501,112. RAILWAY-SWITCH.** LOUIS V. STEVENS, Buffalo, N. Y., and JOHN R. MOTT, Cleveland, Ohio. Filed Apr. 21, 1892. Serial No. 430,115. (No model.)



*Claim.*—1. In a railway-switch, the combination of the pivoted levers E E', triple armed-crank M, links $l$, $l'$, $o$; pivoted lever $p$, and the switch-rail having a downwardly projecting-pin, as described, with the rods F F', connecting hinged-plates $f$ $f'$, and the platform G having rectangular openings therein, substantially as and for the purpose set forth.

2. The device for operating the switch rail 2 having a downwardly projecting pin, consisting of the pivoted lever $p$, the triple armed crank M, the link $o$ adjustably connecting the lever $p$ and crank M, the links $l$ $l'$ rocking levers E E' rods F F' hinged plates $f$ $f'$ pivoted to said rods and platform G, having rectangular openings therein all combined and adapted to be operated by a device upon the car for depressing said hinged plates substantially as shown and described.

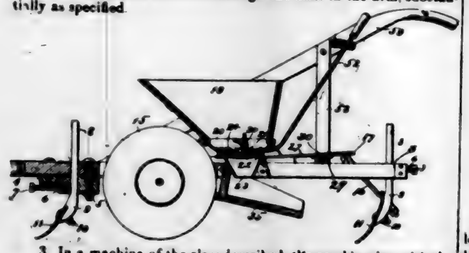
3. A device for operating a switch rail consisting essentially of a pair of separately pivoted levers located below the surface the arms on one side of the pivots being connected with devices at the surface for depressing their outer ends and the outer ends of the arms on the opposite side being pivotally connected to opposite arms of a pivoted triple armed crank the central arm of which being connected to and moving the switch rail substantially as shown and described.

**501,118. COMBINED PLANTER AND FERTILIZER-DISTRIBUTER.** CHRISTOPHER C. TAYLOR, Rockingham, N. C. Filed Feb. 6, 1893. Serial No. 461,408. (No model.)

*Claim.*—1. In a machine of the class described, the combination with the side-bars, ground-wheel having tappets, superimposed hopper, and furrow-opening and closing-devices, of a shoe loosely hung under said hopper, a segmentally-shaped bracket 37, having a front curved bar 38, provided with perforations, and a rear cross-bar having a single perforation, the arm 41 arranged adjacent to the bracket and provided with elongated slots 43, and the bolts passed through the perforations in the front and rear bars and through the slots in the arm, substantially as specified.



2. In a machine of the class described, the combination with the side-bars, ground-wheel, having tappets, superimposed hopper, and furrow-opening and closing-devices, of a shoe loosely hung under said hopper, a segmentally shaped bracket 37, having a front curved bar 38, provided with perforations, and a rear cross-bar having a single perforation; the arm 41 arranged adjacent to the bracket and provided with perforations, and the bolts passed through the perforations in the front and rear bars and through the slots in the arm, substantially as specified.



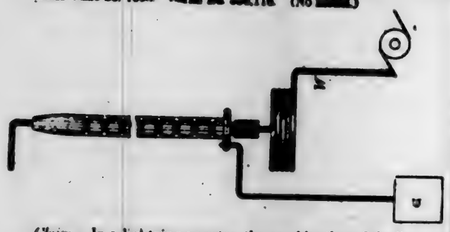
3. In a machine of the class described, the combination with the framework, the hopper, the ground-wheel having tappets, and the furrow-opening and closing-devices, of a shoe loosely hung under the hopper, a bracket extending forward from the shoe, and an agitating-arm mounted for the vertical and longitudinal adjustment upon the bracket and adapted to engage the tappets of the wheel, substantially as specified.

4. In a machine of the class described, the combination with the framework, the superimposed hopper, the ground-wheel, journaled in the framework of bearings located under the hopper, in rear of the wheel a shoe narrower than the framework, located therein and having its trunnions at opposite sides mounted for oscillation and transverse reciprocation in the bearings, an arm extending forward from the shoe, tappets arranged on the wheel and adapted to strike the arm, and means for transversely reciprocating said shoe, substantially as specified.

5. In a machine of the class described, the combination with the opposite beams, superimposed hopper, ground-wheel and furrow-opening and closing-devices, of tappets arranged on the wheel, bearings arranged under the beams, the shoe having the opposite trunnions mounted for reciprocation in the bearings, an arm extending forward from the shoe into the path of the tappets, a lever fulcrumed between its ends upon the framework, means for locking the lever, an L-shaped plate mounted in an opening and adapted for transverse movement upon the framework, and having its front end slotted, and a pin extending upward from one of the trunnions and engaging the slot in the plate, substantially as specified.

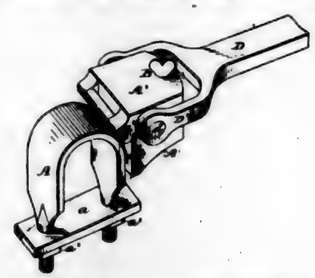
6. In a machine of the class described, the combination with the opposite side-beams, the superimposed hopper, the ground-wheel having tappets, and the furrow-opening and closing-devices, of the bearings upon the under-sides of the beams, the vibratory shoe, an arm extending forward from the shoe and engaged by the tappets, a transverse rung having a slot which receives the upper end of the lever which slot is at one edge provided with notches, a bearing bracket extending from the adjacent beam 1 and having an eye, and a sleeve mounted on the lever and provided upon its upper side with a binding-screw and upon its under side with a bearing lug engaging the eye of the bracket, substantially as specified.

**501,114. LIGHTNING-ARRESTER.** ELIHU THOMSON, Lynn, Mass., assignor to the Thomson-Houston Electric Company, of Connecticut. Filed June 20, 1890. Serial No. 356,116. (No model.)



*Claim.*—In a lightning arrester, the combination of the line conductor with the tubular, sheet-like discharge conductor connected to ground and surrounding the line conductor, and the self-induction coil between the apparatus to be protected and the point of connection between the line conductor and tube, as described.

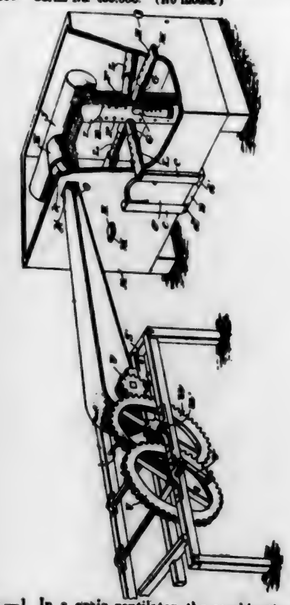
**501,115. THILL-COUPLING.** MATTHEW TODD, New Bedford, Mass., assignor of two-thirds to William J. Cowing and Charles Thompson, same place. Filed Apr. 5, 1893. Serial No. 469,163. (No model.)



*Claim.*—1. The combination of a thill-coupling clip having the lower half of a bearing box on its forward arm, a bearing box cover hinged to said lower half, a screw passing through said bearing box and cover, yielding bearing blocks E received into and protected on all sides by said box and cover, with a thill-iron having a pivot-pin provided with a central collar $d^9$ received within grooves $e^9$ in the blocks E substantially as described.

2. The combination of a thill-coupling clip having the lower half of a bearing-box on its forward arm, a bearing-box cover hinged to said lower half, a screw passing through said bearing box and cover, and dowel-pins on two sides of said screw, vulcanized fiber bearing blocks received into said box and cover, with a thill-iron having a pivot-pin provided with a central collar $d^9$ received within grooves $e^9$ in the bearing blocks substantially as described.

**501,116. GRAIN-VENTILATOR.** SAMUEL A. TOWEL, Salisbury, N. C., assignor of one-half to James B. Lanier, same place. Filed Mar. 9, 1893. Serial No. 465,335. (No model.)



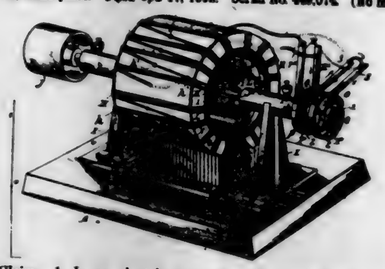
*Claim.*—1. In a grain ventilator, the combination with a grain bin or box having discharge openings in its walls, of a connected series of perforated ventilating pipes arranged inside of the grain bin or box and provided with contracted discharge ends, fitting said discharge openings and a blast supply for said ventilating pipes, substantially as set forth.

2. In a grain ventilating apparatus, opposite upright perforated supply tubes having a radial series of discharge necks, and lower contracted discharge ends, an air drum connecting the upper ends of said tubes, an inlet pipe connected centrally with said air drum and a suitable blast, and a horizontal series of radially extending perforated

distributing pipes fitted onto the radial series of discharge necks, and having contracted discharge ends projecting through the sides of the grain receptacle, substantially as set forth.

3. In a grain ventilating apparatus, the combination of a horizontal nest of connected perforated air-distributing pipes adapted to be arranged inside of a grain receptacle and provided with contracted discharge ends projecting through the sides of said receptacle, a single inlet pipe connected with said distributing pipes and having a coupling end outside of the grain receptacle, and a blower or fan air trunk having a tapered end adapted to removably fit in the coupling end of said supply pipe, substantially as set forth.

**501,117.** DYNAMO-ELECTRIC MACHINE. HARRY L. TYLER, Corning, N. Y., assignor of two-thirds to John Magee and Louis P. Miller, same place. Filed Oct. 17, 1892. Serial No. 449,074. (No model.)



*Claim.*—1. In an electric generator, the combination of a T-shaped base, a stationary ring armature having extended lower ends registering with the T-shaped base and provided with inner angle grooves, a beveled circuit closing block registering with said grooves to complete the circle of the ring and close the magnetic circuit thereof, a series of induction coils arranged on the armature, a rotating field magnet within the same, and connections from the field magnet to one or more coils of the armature, substantially as set forth.

2. In a magneto-electric machine, the combination with a stationary armature, having a series of separate and independent induction coils, a rotating multi-polar field magnet revolving within the armature, and a non-magnetic cylindrical case inclosing the entire exterior portion of said field magnet, substantially as set forth.

3. In an electric generator, the combination of a stationary ring armature, a circuit closing block connecting the adjacent ends of the armature to close the magnetic circuit thereof, a series of separate and independent induction coils coiled on the armature, alternate pairs of revolving field magnets moving inside of the armature, a non-magnetic case inclosing the entire set of field magnets inside of the armature, separate field magnet coil wires connecting the magnets of each pair separately in series to produce a constant polarity in each pair, a pole changer connected with the separate coil wires to charge the same separately and alternately, and wires leading from one or more of the induction coils to said pole changers, substantially as set forth.

4. In a magneto electric machine, the stationary armature having induction coils, alternate pairs of revolving field magnets moving within the armature, separate field magnet coil wires connecting the magnets of each pair separately in series to produce a constant polarity in each pair, the polarity of the pairs alternating with each other, a pole changer connected with the separate coil wires to charge the same alternately and separately, wires leading from one or more of the armature coils to said pole changer to feed the coils of the field magnet, and a short circuit connection with said pole changer to short circuit the induced current in the uncharged or unfed field magnet coils, substantially as set forth.

5. In a magneto electric machine, a stationary armature having induction coils, the revolving multi-polar field magnet, separate coil wires connecting pairs of the field magnets in series, a pole changer comprising parallel duplicate disks having separated contact plates, connecting wires connecting the terminals of the field magnet coils with the alternate plates of each disk, the two pairs of brushes, the charging wires leading to one pair of brushes, and a short circuit connection to the other pair, substantially as set forth.

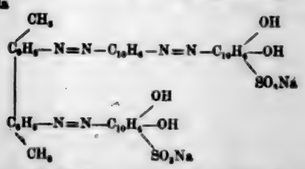
6. In a magneto electric machine, a stationary armature having induction coils, the revolving multi-polar field magnet, separate coil wires connecting pairs of the field magnets in series, a pole changer comprising parallel duplicate disks having corresponding parallel separated contact plates, cross-connecting wires connecting the two terminals of each field magnet wire with alternate contact plates of the separate disks, respectively, two pairs of brushes, the charging wires leading from an armature coil to one pair of brushes and a short circuit connection with the other pair, substantially as set forth.

7. In a magneto electric machine, a stationary armature having inducted coils, the revolving multi-polar field magnet, separate coil wires connecting the field magnets in series, the pole changer comprising duplicate disks having separated contact plates alternately connected with each other and the field magnet wire terminals, two pairs of brushes adapted to contact with adjacent pairs of contact plates at the same time, the armature coil having its terminals connected to one of the brushes of each pair contacting with the same disk, and a short circuit wire connecting the opposite brushes contacting with the other disk, to throw the several field magnet coils in series with the charging coil, substantially as set forth.

**501,118.** BLUE-BLACK TETRAZO DYE. MORITZ ULRICH and RICHARD LAUCH, Elberfeld, Germany, assignors to the Farbenfabriken, vormals Fr. Bayer & Co., same place. Filed Feb. 1, 1893. Serial No. 460,560. (Specimens.) Patented in France Sept. 2, 1889, No. 200,530; in Italy Sept. 30, 1889, XXIII, 26,159; in England Mar. 4, 1890, No. 3,397; in Germany Aug. 6, 1890, No. 57,912, and in Austria-Hungary Dec. 6, 1891, No. 3,932 and No. 3,678.

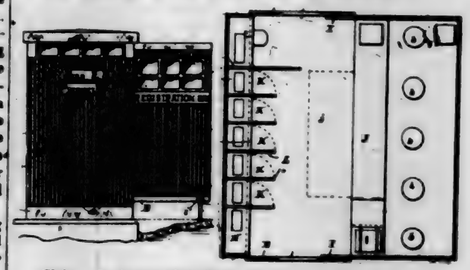
*Claim.*—1. The process for producing a new direct dyeing coloring-matter by combining one molecular proportion of tetrazoorthoditolyl salt with one molecular proportion of alphanaphthylamine, by further diazotizing the resulting intermediate product and coupling the tetrazo compound thus obtained with two molecular proportions of 1:8—dihydroxynaphthalene alphamonosulpho acid or an alkaline salt thereof.

2. As a new product the direct dyeing coloring-matter having the formula



forming a grayish-black powder, nearly insoluble in dilute hydrochloric and sulfuric acid and in alcohol; soluble in ammonia with bluish-black color, difficultly soluble in sodium carbonate and soda-lye at ordinary temperature; more easily on heating with bluish-black color; soluble in water with bluish-black color, which is not altered on addition of ammonia, which turns slightly redder on addition of sodium carbonate, and separates after some time blue flakes, and which on addition of soda-lye turns at first slightly greener, and then separates dark blue flakes; soluble in concentrated sulfuric acid with greenish-black color, which changes into greenish-blue on addition of ice-water, and separates after some time bluish-green flakes; dyeing unmordanted cotton in a neutral or alkaline bath greenish-blue to bluish-black shades; and having the qualities substantially as specified.

**501,119.** BALLOTING-BOOTH. JAMES H. VAN DORN, Cleveland, Ohio. Filed Dec. 13, 1892. Serial No. 455,063. (No model.)



*Claim.*—1. A portable balloting booth, comprising two rectangular sections, the one section constituting a drawer to be moved in and out of the other section, folding skids fastened to the main part of the booth, the drawer having rollers in position to travel on such skid when the latter are extended, such skids being adapted to fold outside the closed drawer, substantially as and for the purpose set forth.

2. A balloting booth comprising two sections, the one section constituting a drawer to be opened and closed, folding skids for the drawer to operate on, such skids having adjustable legs arranged substantially as and for the purpose set forth.

3. A balloting booth comprising two rectangular sections, one section constituting a drawer and adapted to be moved in and out of the other section, rollers near the outer lower and inner upper corners of said drawer, upper and lower guide-ways attached to the main structure for such rollers to travel on, the lower guide-ways being hinged and adapted to unfold when the drawer is distended, substantially as described and for the purpose set forth.

4. A balloting booth comprising a stationary and movable section, the latter being provided with adjustable legs located in such a position as to support and steady the same when in a distended position, and having a table constructed along the inner side of the said movable section, substantially as described.

5. A balloting booth comprising a stationary section and a drawer, such drawer having a table constructed along the inner side thereof, the frame work of the table being in the form of a truss, substantially as and for the purpose set forth.

6. A portable balloting booth, comprising two rectangular sections, the one section constituting a drawer to be moved in and out of the other section, the latter being provided with means for supporting the same when distended, and the stationary section having a series of folding partitions hinged to the back wall thereof, substantially as described.

7. A balloting booth comprising two rectangular sections, the one section being a drawer, the rear wall of the other section having a so-called fly sheet of metal rigidly fastened only along the upper edge thereof, a window sash hinged to the lower side of such "fly," in position to fold up inside, in closing the fly,—substantially as and for the purpose set forth.

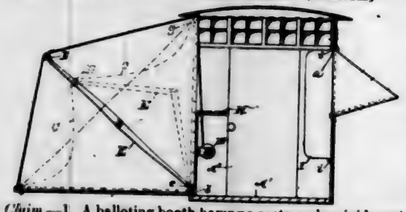
8. In combination a balloting booth, the upper section of the rear wall of the booth comprising a so-called fly sheet, fastened along the upper edge, a window hinged to the lower edge of such fly in position to fold up inside in closing the fly and in position to serve as a prop in holding the fly distended, substantially as and for the purpose set forth.

9. In combination a balloting booth, the rear wall having a series of folding partitions hinged to a section of the rear wall, a distensible fly-sheet fastened along the upper edge thereof, a folding shelf hinged to the lower edge of such fly sheet, canvas or other flexible material secured to and crosswise the fly and shelf opposite the said folding partitions, substantially as and for the purpose set forth.

10. A balloting booth constructed in two rectangular sections the one section being a drawer adapted to operate in and out of the larger section, the latter having doorways at the ends thereof in position to be closed by means of the closed drawer, and to be opened by means of opening the drawer part way, substantially as and for the purpose set forth.

11. A balloting booth constructed in two sections, the one section constituting a drawer, windows set in the end walls of the drawer in position to be covered by the end walls of the main portion of the booth in closing the drawer, substantially as and for the purpose set forth.

**501,120.** BALLOTING-BOOTH. JAMES H. VAN DORN, Cleveland, Ohio. Filed Feb. 10, 1893. Serial No. 462,645. (No model.)



*Claim.*—1. A balloting booth having a rectangular rigid section, the one side wall of which comprises a door hinged along the bottom thereof, so as to fold down to serve as a floor, a canvas cover fastened to the free edges of such door and fastened to the opposing sections of the rigid section of the booth, substantially as and for the purpose set forth.

2. A balloting booth comprising a rigid section, and a distensible section, the one side wall of the former being in a condition to fold downward and outward, to serve as a floor for the latter, a canvas cover adapted to fold inside such folding wall or floor, a stretcher for distending such canvas, toggles for operating such stretcher, substantially as described.

3. A balloting booth comprising a rigid section and a distensible section, the one side wall of the former comprising a door adapted to fold down to a horizontal position to serve as a floor for the latter, a windlass operatively connected with such folding member for raising and lowering the same, substantially as and for the purpose set forth.

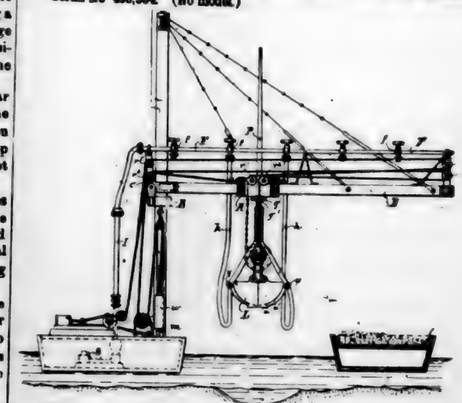
4. A balloting booth having a series of folding partitions, hinged to the one side wall of the booth, an opening in such side wall opposite such partitions, a table hinged along the lower edge thereof to the booth in position to close such openings, a canvas secured to the free edge of such table, and to the booth above in position to support such table in its depressed position, pieces of canvas respectively secured to the folding partitions, and secured to such table cross-wise the latter, substantially as and for the purpose set forth.



**501,121.** ART OF MANUFACTURING CHLORINE OR CAUSTIC ALKALI BY ELECTROLYSIS. CHARLES N. WAITE, Newton, Mass. Filed Dec. 10, 1891. Serial No. 414,553. (No specimens.)

*Claim.*—The improvement in the art of manufacturing chlorine and caustic alkali from brine by electrolysis which consists in first treating the brine to convert the sulphuric acid contained therein into an insoluble sulphate and then subjecting the brine to the action of an electric current, substantially as set forth.

**501,122.** DREDGING-MACHINE. JOHN E. WALSH, New York, N. Y., assignor to Mary A. Walsh, same place. Filed Feb. 3, 1893. Serial No. 460,864. (No model.)

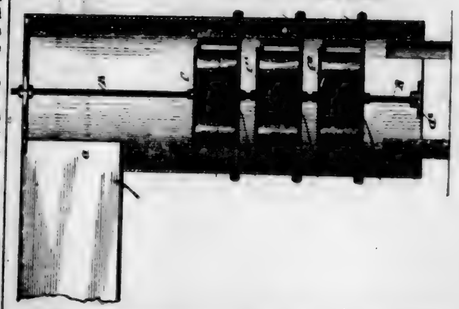


*Claim.*—1. In a dredging machine the combination of a dredging bucket with a trolley traveling upon a slotted arm secured upon a mast, said trolley having pulleys to carry the working chains or ropes and a guide-block for holding the guide-poles of the bucket, and means for operating the bucket and the trolley as and for the purposes herein shown and described.

2 In a dredging machine the combination of a dredging bucket provided with water jackets and water outlet slots at its lower edges and suspended from a traveling trolley with a horizontal water pipe arranged upon an arm of a crane and provided with stop valves, an upright stationary pipe connected with a pressure pump or other source of water supply, flexible hose provided with couplings to connect the water pipes and water jackets and means for operating the bucket and the trolley as and for the purposes herein shown and set forth.

3. In a dredging machine the combination of the shell of the bucket J, with the pipes *y*, *y*, the channels *x'* and the water jackets *u*, *u*, having the slots *s*, *s*, as and for the purposes herein shown and described.

**501,123.** COMPOUND WATER-WHEEL. LEWIS WERTZ, Oregon, Ill. Filed Oct. 15, 1892. Serial No. 448,955. (No model.)

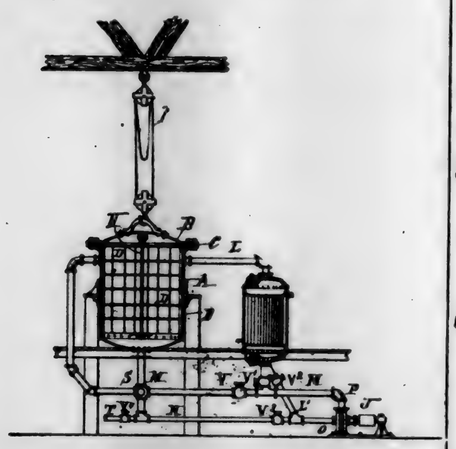


*Claim.*—The combination of an air-tight penstock, a shaft journaled therein, two or more wheels fast upon this shaft and having issues of increasing size one after the other, a series of air-tight par-

titions separating said wheels and suitable inlets and outlets whereby the water is supplied to the penstock, passed first through the wheel having the smallest issue and then in turn through the wheels having issues of increasing size and finally discharged at the outlet; substantially as described.

## 501,124. APPARATUS FOR TREATING VEGETABLE FIBERS.

CHARLES WYTENBWAY, Albany, N. Y. Filed Oct. 31, 1890. Serial No. 369,965. (No model.)



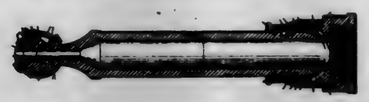
*Claim.*—1. The combination with a digesting vessel of one or more perforated trays located therein, and such trays provided with partitions.

2. The combination with a digesting vessel having a plurality of perforated trays located therein, and such trays provided with partitions, of a pump a pipe communicating with the digesting vessel and the inlet of the pump and a pipe communicating with the digesting vessel and the outlet of the pump, substantially as described.

3. The combination with a digesting vessel having a plurality of perforated trays located therein, and each having a spirally arranged partition, said trays being detachably secured together to enable the entire series to be introduced or removed from the digesting vessel, and a pump having pipe connections with the digesting vessel at opposite sides of the series of trays, to circulate treating liquid therethrough, substantially as described.

## 501,125. HOSE-NOZZLE.

PETER WIEBEN, New York, N. Y. Filed July 21, 1892. Serial No. 440,738. (No model.)



*Claim.*—1. The combination with the body of a hose nozzle having a spherical head and perforated axially, of a shell fitted on said head and having a series of holes and exterior screw-threads, and a thimble rotatable on the end of said nozzle without longitudinal movement and having interior screw-threads to engage the screw-threads on said shell, substantially as shown and described.

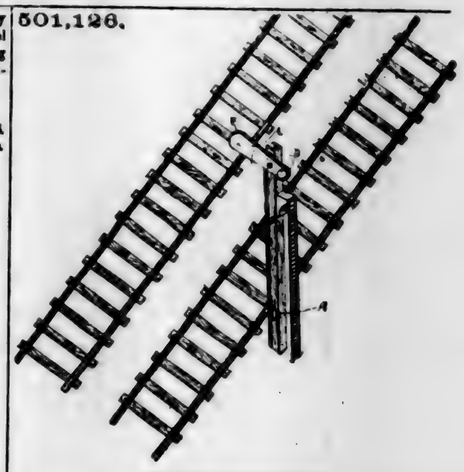
2. The combination of the body of a hose-nozzle slotted laterally and shaped to form bearings, opposing shells F and F' adapted to move in said slots and on said bearings and formed with exterior teeth *f f*, and a sleeve G adapted to rotate on said nozzle and interiorly threaded to engage the teeth on said shells, substantially as shown and described.

## 501,126. RAILWAY-SIGNAL.

MILES WILLIAMS, Boston, Mass. Filed Jan. 7, 1893. Serial No. 457,093. (No model.) Patented in England Mar. 24, 1891, No. 5,204.

*Claim.*—In railway signals, the signal arm B, with open end D, and long end C, the latter painted with the required color and afterward enameled for the purpose hereinbefore specified and set forth.

501,126.



## 501,127. DENTAL TOOL.

HENRY C. WOFFORD, Greenville, S. C. Filed Oct. 27, 1892. Serial No. 450,148. (No model.)

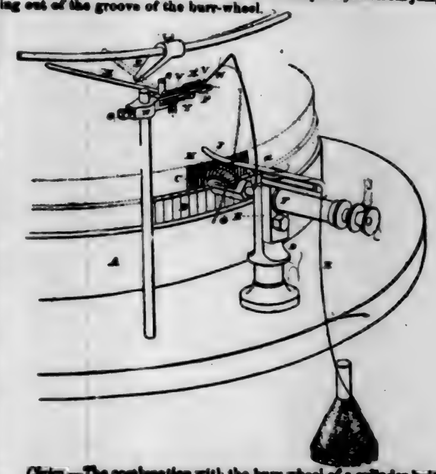


*Claim.*—The combination of the sleeve *c*, provided with a right angle piece *b*, journal *j*, journaled in said sleeve; with the eccentric *l*, secured near the outer end of said journal; U-shaped lever *f*, pivoted to the right angle piece *b*, and having the tape holding arms *g*, plate *e*, secured against the outer face of said U-shaped lever, and tape *i*, secured to the tape holding arms *g*, substantially as shown and described and for the purposes set forth.

## 501,128. YARN-GUIDING DEVICE FOR KNITTING-MACHINES.

SOLOMON WEBSTER and WILLIAM A. HERRON, Pownal, Vt. Filed July 5, 1892. Serial No. 438,868. (No model.)

*Brief.*—The object of the invention is to keep the yarn from jumping out of the groove of the burr-wheel.



*Claim.*—The combination with the burr wheel of a cylinder knitting machine and devices for supporting the same, of the described tension rod J having its end toward the burr wheel bent up substantially as shown, as and for the purposes described and set forth.



## 501,129. BARBED FENCING.

THOMAS V. ALLIN, New York, N. Y. Filed Oct. 25, 1892. Serial No. 449,947. (No model.)



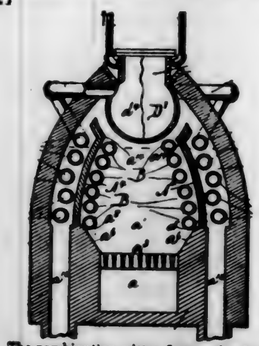
*Claim.*—1. The improved fencing strip having barbs at intervals along one edge and notches intermediate of said barbs, the strip being widest midway between the barbs and tapering therefrom to the barbs substantially as described.

2. The improved fencing strip having barbs at intervals along one edge and notched intermediate of said barbs the strip being widest midway between the barbs and tapering therefrom to the barbs and also being twisted substantially as described.

3. The improved fencing strip having barbs at intervals along one edge and notches intermediate of said barbs, with longitudinal slits at the bottom of the notches, said strip being widest midway between the barbs and tapering therefrom to the barbs substantially as described.

## 501,180. APPARATUS FOR THE MANUFACTURE OF GAS.

JOHN R. ARCHER, Washington, D. C. Filed June 8, 1892. Serial No. 436,085. (No model.)



*Claim.*—1. The combination with a furnace having curved walls and top, of tiling located within the said furnace on each side thereof and being concentric to the corresponding walls, forming a combustion chamber and a heating chamber on each side of the combustion chamber and communicating therewith at the top; a series of steam superheating pipes located within the said combustion chamber on each side thereof and concentric to the corresponding tiling, a series of horizontal retorts located in each of the said heating chambers, an oil supply pipe connected with each of the said series of retorts, a horizontal fixer contained within the said furnace at the top of the combustion chamber and between the converging upper ends of the tiling; and downtakes communicating with the lower ends of each of the said heating chambers, the said series of retorts having their lower ends communicating with the superheating pipes and their upper ends communicating with the fixer, substantially as described.

2. The combination with a furnace provided with side walls and top, of tiling located within the said structure on each side thereof and concentric to the corresponding side walls, forming a central combustion chamber and a heating chamber on each side thereof, communicating therewith at the top, the tops of the said tiling being bent outwardly, forming wing-walls; a series of steam superheating pipes located within the said combustion chamber on each side thereof, concentric to the corresponding tiling; a series of horizontal retorts located in each of the said heating chambers; an oil supply pipe connected with each of the said series of retorts, the alternate retorts of each series being located upon the opposite sides of the chambers containing them, a horizontal fixer contained in the said furnace at the top of the combustion chamber and between the wing-walls upon the said tiling, and downtakes communicating with the lower ends of the said heating chambers, each of the said series of retorts having their opposite ends communicating with the said superheating pipes and fixer, respectively, substantially as described.

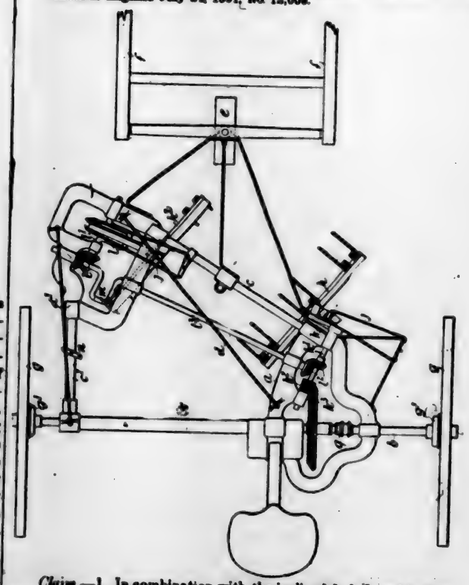
3. The combination with a furnace, of tiling located within the said structure on each side thereof and having converging upper ends, forming a central combustion chamber and a heating chamber on each side thereof, communicating therewith at the top, the tops of the said tiling being bent outwardly, forming wing walls; a series of steam superheating pipes located within the said combustion chamber on each side thereof, concentric to the corresponding tiling, a series of horizontal retorts located in each of the said combustion chambers; an oil supply pipe connected with the said retorts, a horizontal fixer contained in the said furnace at the top of the combustion chamber and between the wing walls upon the tiling, and downtakes communicating with the lower ends of the said heating chambers, substantially as described.

4. The combination with a furnace having arched side walls and top, of a horizontal fixer having shoulders thereon built into and forming the key of the said arched walls; steam superheating pipes and retorts contained in the said furnace, the said superheating pipes being connected to one end of the retorts, and the opposite end of the said retorts being connected with the said fixer, and an oil supply pipe connected with the said retorts, substantially as described.

5. The combination in a furnace of two series of superheating pipes and retorts contained therein, each of the said series of superheating pipes being connected with the corresponding series of retorts, a fixer contained in the said furnace and having its interior divided into two compartments by a diaphragm, each of which compartments is connected with one of said series of retorts, an oil supply pipe connected with each of the said series of retorts, and an eduction pipe leading from each of the compartments of the fixer, substantially as described.

## 501,181. SWATH-TURNER.

EDWARD C. BLACKSTONE, Stamford, England. Filed Aug. 9, 1892. Serial No. 442,543. (No model.) Patented in England July 24, 1891, No. 12,602.



*Claim.*—1. In combination with the inclined fork A, and its driving mechanism, all located between the path of the wheels, the inclined shaft $F^2$ also between the path of the wheels and having a crank *m*, adapted to carry a fork for throwing its swaths into one with the swath of fork A, the bar *c'*, and socket *n*, all substantially as set forth.

2. In combination with the two crank shafts which severally serve to operate their respective forks in similar directions, a third crank shaft which is not only geared to drive one of said shafts, but which by means of its own crank is adapted also to actuate at option one of such forks to throw a swath in another direction.

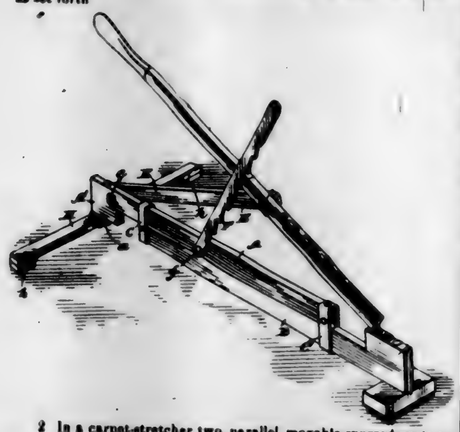
3. In a swath-turner, a fork serving to throw a swath in a pre-determined line or row, a similar fork adapted to throw another swath parallel therewith, and a crank-shaft to whose crank this last named fork may be transferred and connected and whereby, upon such transfer and connection, the material gathered by the machine, may be thrown into one and the same swath, all substantially as set forth.

## 501,132. CARPET-STRETCHER.

GEORGE W. BLANCHARD, Waterville, Me. Filed Oct. 10, 1892. Serial No. 448,434. (No model.)

*Claim.*—1. In a carpet-stretcher the combination of a stationary frame with a spurred cross-bar attached thereto and a longitudinally sliding bar mounted on the said frame this latter bar being provided

with a brush or spur which is arranged on a line passing between the spurs of the crom bar in order that the line of stretch may pass between those latter spurs and beyond the said stretcher substantially as set forth



2 In a carpet-stretcher two parallel movable spurred parts arranged to slide over each other and to have the line of draft pass between the spurs of one of them for stretching the carpet beyond the said spurs in combination with lever and connection acting to force the said parts away from each other substantially as set forth

3. In a carpet-stretcher two parallel movable spurred parts arranged to slide over each other and to have the line of draft pass between the spurs of one of them, for stretching the carpet beyond the said spurs, in combination with a lever and connections acting to force the said parts away from each other and a rack bar engaging the said lever to lock the said parts at will substantially as set forth.

4 In a carpet-stretcher the combination with a frame provided with a laterally adjustable spur bar of a longitudinally sliding spur bar mounted on said frame and levers actuating said bar substantially as set forth

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**501,133. BOOT-TREE.** CHESTER W. CLARK, Mishawaka, Ind. Filed Feb. 1, 1893. Serial No. 460,572. (No model.)



*Claim.*—1. In an expansible boot tree, the leg pieces A and B and the foot piece the sole whereof is formed in one rigid piece and is pivoted to the leg piece A and the instep whereof is pivoted to the leg piece B substantially as and for the purpose set forth.

2. The leg pieces A. B. combined with the foot piece provided with the extended arm A rigid with the sole portion of the foot piece, and the pivots whereby said foot piece is jointed to said leg pieces respectively for the purpose set forth

3. The leg piece A. provided with the rigid arm *d* and the leg piece B. provided with the catch *e*, combined with the foot piece jointed to said leg pieces respectively as and for the purpose set forth.

4. The leg piece B. the foot piece pivoted thereto at the instep, the arm A rigid with and extending from the sole portion of said foot piece, and the leg piece A. provided with a hollow heel having its bottom portion slotted to give proper form to the fabric at that point and to permit said arm A to come in line with said leg piece A when the tree is collapsed

5. An expanding tree A. B. combined with a foot-piece the fixed clips *m m*, and the movable clip N adapted to seize and hold the boot fabric near its upper edge, independently of the moving part of said tree as set forth

6. In a collapsible boot tree, comprising a stationary and a movable leg portion an arm *d* rigid with one of said portions to expand and sustain the parts of the tree, substantially as set forth

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**501,134. ARTIFICIAL STEM FOR CUT FLOWERS.** HARRY H. PEARCE, Madison, N. J. Filed Jan. 3, 1893. Serial No. 457,149. (No model.)

*Claim.*—1 An artificial stem for cut flowers having a tubular body tapering to form a hollow point, and provided with a series of indented perforations as specified

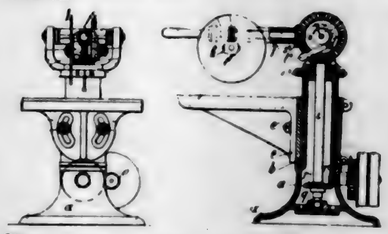
2. An artificial stem for cut flowers, having a tubular body tapering to a point and the indented perforations formed therein, as specified

3 An artificial stem for cut flowers, having a tubular and tapering body having indented perforations formed therein, as specified

4 In an artificial stem for cut flowers, a tubular body tapering to form a hollow pointed end, as specified

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**501,135. MACHINE FOR SAWING OR CUTTING METALS.** CHARLES FREMONT, Paris, France. Filed Mar. 6, 1893. Serial No. 464,838. (No model.)



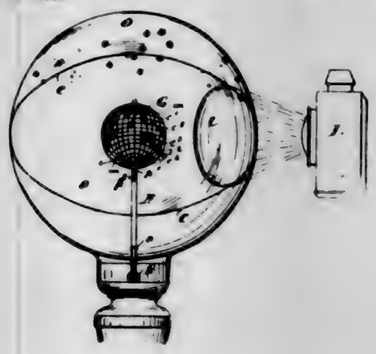
*Claim.*—1 In a machine for sawing or cutting metals, the combination with the vertically-arranged support, of a tube rotatably mounted upon said support, a table provided with segmental slots, and adjusting bolts passing through the said slots and adjustably connecting the table with the tube

2. In a machine for sawing or cutting metals, the combination with the vertically-arranged hollow support, of a cap carried at the upper end of the support and adapted to be horizontally adjusted, a rotatable shaft arranged within the support and passing through the cap, a lever pivotally connected with said cap and adapted to be moved vertically, a rotatable cutting saw carried by said lever, gearing between the said rotatable shaft and the cutting saw for rotating the latter, and a table carried by the support, as and for the purpose specified

3 In a machine for sawing or cutting metals, the combination with a hollow upright, of a table supported thereby and adapted to be adjusted thereon as described, a cap revolubly mounted in the upright, a lever pivotally secured to the cap and adapted to be moved horizontally and vertically, a saw carried by said lever, a shaft *i* mounted in the upright and passing through the cap, a drive shaft carried by the upright, intermeshing gear wheels carried by said shafts, a shaft *u*, carried by the cap, intermeshing gear wheels carried by said shafts *u*, and *i*, a shaft $A^3$ carried by the said lever, intermeshing gear wheels carried by said shafts $A^3$ and *u*, and a shaft carrying the saw mounted on the lever, and intermeshing worm wheels carried by the saw shaft and shaft $A^3$, for the purpose specified

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**501,136. APPARATUS FOR TEACHING ASTRONOMY AND GEOGRAPHY.** ANNIE M. GREGORY, London, England. Filed Jan. 23, 1893. Serial No. 460,485. (No model.) Patented in England Oct. 25, 1892, No. 17,107.





*Claim.*—An apparatus for teaching astronomy and geography, consisting of a stand, a hollow glass globe freely supported thereon and provided with representations of stars and a circle representing the ecliptic, a rod fixed to the stand extending within said globe, a semicircular support attached to said rod, a globe representing the earth mounted on said support centrally of the glass globe and provided with meridians and parallels and a detachable rod attached to the axis of said earth globe and passing through said glass globe substantially as described

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**501,137. ADVERTISING DEVICE.** EDWARD HARBER, Ottawa, Canada. Filed Sept. 6, 1892. Serial No. 445,190. (No model.)



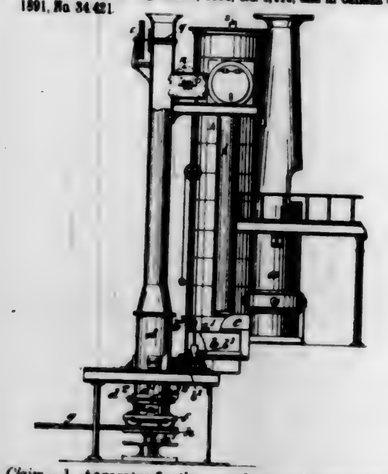
*Claim.*—1 In an advertising device, the combination of the frame A having aperture B, the moving web K carrying advertisements, and having the catches *k*, the weight I, having lip *l* suspending cords M, the roller C, carrying pulleys D and the paper roll O, substantially as described.

2. In an advertising device, the combination of the frame having apertures therein, the roller C journaled in the frame formed in two parts detachably secured together, a paper roll on the roller, pulleys mounted on the rollers, the rollers J journaled in the top of the frame, pulleys loosely mounted on the rollers, the endless web K, catches on the web, suspending cords M, the weight I, lips on the weight engaging the catches in its downward movement, substantially as described.

3. In an advertising device, the combination of the frame having apertures therein, roller C journaled in the frame, a paper roll on the roller, suspending cord M the endless web K, catches on the web, weight I, lips on the weights, and rollers J and L journaled in the frame having recesses formed therein, substantially as described

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**501,138. APPARATUS FOR THE MANUFACTURE OF STEEL OR IRON.** JOHN HEATON and GEORGE H. HOLDEN, Manchester, England. Filed Mar. 1, 1892. Serial No. 423,433. (No model.) Patented in England May 7, 1890, No. 7,070; in France Mar. 1, 1891, No. 94,019; in Belgium Mar. 5, 1891, No. 211,904; in Germany Mar. 5, 1891, No. 10,873; in Luxemburg Mar. 6, 1891, No. 1,416, and in Canada Sept. 17, 1891, No. 34,421.



*Claim.*—1. Apparatus for the manufacture of steel and iron by the Heaton process, comprising a converter consisting of a vertical converting chamber surmounted by a shaft or flue and having a removable lower portion adapted to contain a charge of nitrate of soda, a melting furnace, and a measuring vessel arranged at a lower level than and so as to receive metal flowing from said melting furnace, and adapted to be placed in communication with said converter by a lateral passage substantially as herein described for the purpose specified.

2. Apparatus for the manufacture of steel and iron by the Heaton process, comprising a converter *d*, a cupola *a*, and a fixed measuring vessel *b* connected with said converter by a lateral passage $b^3$ controlled by a valve $b^4$, said measuring vessel being arranged below the outlet of said cupola and so as to receive a definite quantity of molten metal from said cupola and conduct it to said converter substantially as herein described

3 Apparatus for the manufacture of steel and iron by the Heaton process, comprising a fixed melting furnace, a converter consisting of a vertical converting chamber surmounted by a shaft or flue and having a lower removable portion adapted to receive a charge of nitric of soda, a measuring vessel arranged to receive molten metal from said cupola and conduct it to said converter, a truck provided with wheels and whereon the lower removable portion of said converter is mounted, rails arranged below said converter and whereon said truck can travel, and raising and lowering mechanism arranged below said converter and adapted to move said lower part with its truck to and from the upper fixed part of said converter, substantially as herein described for the purpose specified.

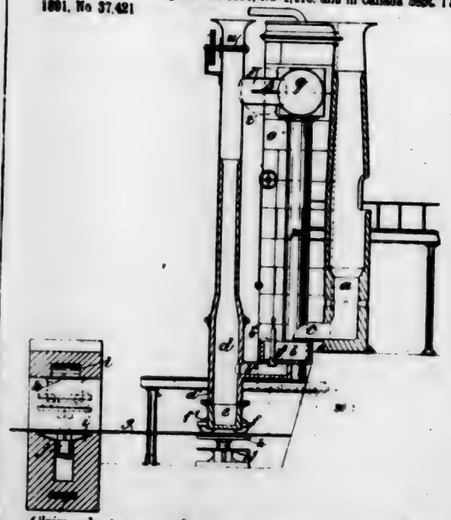
4 Apparatus for the manufacture of steel and iron by the Heaton process, comprising a cupola, a converter, consisting of a vertical converting chamber surmounted by a shaft or flue and provided with a lower removable portion adapted to hold a charge of nitrate of soda, a measuring vessel arranged between said cupola and converter and adapted to be placed in communication with each of them, a carrier whereon the lower removable portion of said converter is mounted means for raising and lowering said lower portion with its carrier to and from the upper portion of said converter, a reheating furnace such as *j* having a charging aperture through its upper part, and a suitable way arranged between said converter and reheating furnace and above the latter and whereon said carrier can travel, substantially as herein described for the purposes specified

5 In apparatus for the manufacture of steel and iron by the Heaton process, a converter having a lower removable portion comprising a casing formed at its upper part with inwardly projecting lugs or ears, a lining of refractory material formed at the upper part with a shoulder, and a perforated plate formed with lateral extensions adapted to pass through the spaces between the lugs or ears on said casing substantially as herein described for the purpose specified

6. The improved apparatus or plant for the manufacture of steel and iron by the Heaton process, comprising a cupola *a*, a measuring vessel *b*, a converter *d* having a lower removable portion *e*, a wheeled truck whereon said lower portion is journaled, a hydraulic ram with table A arranged below said converter, a reheating or melting furnace *j* having a charging aperture *j'* through its upper part, rails *g* extending from said table above the roof of said reheating or melting furnace and means for tilting said removable part of the converter, these parts being arranged substantially as herein described for the purposes specified.

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**501,139. APPARATUS FOR THE MANUFACTURE OF STEEL OR IRON.** JOHN HEATON and GEORGE H. HOLDEN, Manchester, England. Filed Mar. 1, 1892. Serial No. 423,434. (No model.) Patented in England May 7, 1890, No. 7,070; in France Mar. 1, 1891, No. 94,019; in Belgium Mar. 5, 1891, No. 211,904; in Germany Mar. 5, 1891, No. 10,873; in Luxemburg Mar. 6, 1891, No. 1,416, and in Canada Sept. 17, 1891, No. 37,421.



*Claim.*—1. Apparatus for the manufacture of steel and iron by the Heaton process, comprising a cupola, a converter having a lower

removable portion, a measuring vessel arranged between and adapted to be placed in communication with said cupola and converter, a carrier whereon the lower removable portion of said converter is mounted, means for raising and lowering said lower portion with said carrier to and from the upper portion of said converter, a reverberatory furnace having an opening through its lower side against which said lower portion of the converter can be held, raising and lowering mechanism below said furnace, and a suitable way arranged between said converter and reverberatory furnace and above said raising and lowering mechanism and whereon said carrier can travel substantially as herein described for the purposes specified.

2. The improved apparatus or plant for the manufacture of steel and iron by the Heaton process, comprising a cupola, a measuring vessel, a converter having a lower removable portion, a wheeled truck whereon said lower portion is journaled, a hydraulic ram with table A arranged below said converter, a reverberatory furnace *l* having an opening *k* through its lower side, a hydraulic ram *j* with table *i*, and rails *g*, extending from said table A to said table *i*, these parts being arranged substantially as herein described for the purposes specified.

## 501,140. APPARATUS FOR MANUFACTURING STEEL OR IRON.

JOHN HEATON and GEORGE H. HOLDEN, Manchester, England. Filed Mar. 1, 1892. Serial No. 423,425. (No model.) Patented in England May 7, 1890, No. 7,070; in France Mar. 1, 1891, No. 94,019; in Belgium Mar. 5, 1891, No. 211,904; in Germany Mar. 5, 1891, No. 10,573; in Luxemburg Mar. 6, 1891, No. 1,416, and in Canada Sept. 14, 1891, No. 34,941.



*Claim.*—1. For the manufacture of steel or iron by the Heaton process, a converter having a removable recessed lower portion, a block of compressed oxidizing material arranged therein, and wedges for fixing said block in said lower portion, substantially as herein described.

2. For the manufacture of steel and iron by the Heaton process a converter having a removable recessed lower portion, blocks of oxidizing material formed with vertical grooves and arranged within said lower portion so that a groove in one block will register with a groove in another block, and keys inserted in corresponding grooves and between said blocks substantially as described for the purpose specified.

3. For the manufacture of steel and iron by the Heaton process, a converter having a removable recessed lower portion, blocks of oxidizing material formed with vertical grooves and arranged within said lower portion so that the grooves in one block will register with grooves in other blocks, keys inserted in corresponding grooves, and bars arranged to bear on said keys and having their ends retained by lugs or ears on said lower portion substantially as described for the purpose specified.

## 501,141. DRAFT-EQUALIZER.

HENRY M. HICKOK and RUFUS M. HICKOK, Woonsocket, S. D. Filed Oct. 12, 1892. Serial No. 448,697. (No model.)



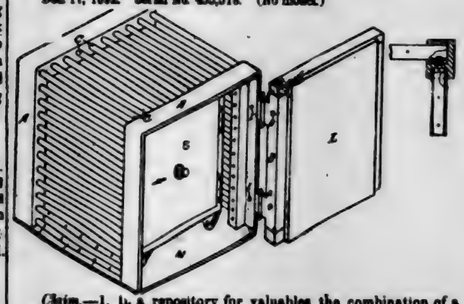
*Claim.*—1. In a draft equalizer, the combination with a draft or whiffletree-bar equipped with a suitable whiffletree and a singletree and said whiffletree with a number of singletrees, of the clip-bar carrying at one end a pulley, and having its other end connected to said whiffletree-bar, the whiffletree-plate lever pivoted to one end of said whiffletree and carrying a doubletree, and a line or chain connected to said whiffletree-plate lever and passed around said pulley, and connected to said whiffletree-bar, substantially as set forth.

2. In a draft-equalizer, the combination with a whiffletree bar, of the clip-bar carrying a pulley at one end, and having a series of adjusting apertures, the link or loop and bolt connecting said clip-bar with said whiffletree-bar, and the whiffletree-plate lever connected to one end of whiffletree carried by said whiffletree-bar, and a chain or line having one end connected to said latter bar, passed around said pulley, and having its other end connected to said lever, substantially as specified.

3. In a draft-equalizer the combination with a plow-beam clevis, of the adjusting clip-bar adapted to be connected to said clevis, and carrying at one end, a pulley, a whiffletree-bar, a link and bolt connecting said clip-bar with said latter bar, a whiffletree-plate lever pivoted to one end of a whiffletree, carried by said whiffletree-bar, and itself carrying a doubletree, and a line or chain having one end connected to said whiffletree-bar, passed around said pulley and having its other end connected to one end of said lever, substantially as specified.

## 501,142. SAFE OR VAULT.

CHARLES HILL, Seattle, Wash. Filed Dec. 17, 1892. Serial No. 455,518. (No model.)



*Claim.*—1. In a repository for valuables, the combination of a series of perforated metal pipes surrounding the same, and sealed glass tubes contained therein and containing a volatile compound which is inimical to life, substantially as shown and described.

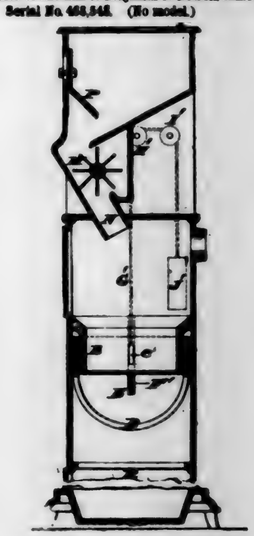
2. In a portable vault, the combination of the frames A, A, the perforated pipes C, C, connecting the same, the front and rear frames B, B, and their similar pipes C, C, one of the frames B, being hinged as a door, a suitable locking device for the same and a series of sealed glass tubes containing a volatile compound inimical to life contained one in each of the pipes C, substantially as shown and described.

3. In a portable vault of the character described, the combination with the frames and pipes as shown, of a series of bolts for holding the frames and pipes together which pass through portions of both frames, the head of which bolts are inclosed within the ends of the pipes, substantially as shown and described.

4. In a portable vault of the character described the combination with the frames and pipes as shown, of a series of bolts for holding the frames and pipes together which pass through portions of both frames and into the pipes of one series, the heads of which bolts are inclosed within the ends of the pipes of another series, substantially as shown and described.

## 501,143. STOVE OR HEATER.

JOHN W. HILTON, Cincinnati, Ohio, assignor of one-half to Benjamin P. Hewell, same place. Filed Mar. 31, 1892. Serial No. 468,548. (No model.)



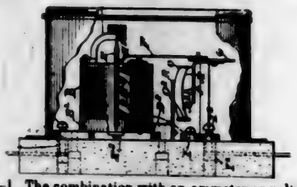


*Claim.*—1. The combination, in a heating apparatus, of a casing, a counterbalanced reciprocating grate fitted therein, a magazine mounted upon said casing, a chute leading from the latter and discharging into the fire-box, a revolving feed wheel journaled across said chute, a drum secured to the shaft of said wheel, and a brake adapted to act against said drum, which brake is operated by a connection that couples said grate to a counterbalance, substantially as described.

2. The combination, in a heating apparatus, of a casing having vertical slots E, in its sides, a reciprocating grate C D fitted in said casing and provided with lugs *c c'*, that traverse said slots, flexible connections G, G', attached to said lugs and carried over pulleys H, H', weights J J', suspended from said connections, stops *g*, *g'*, secured to one of the latter, a chute N leading into the heater, a feed wheel M, journaled in said chute, a drum L fastened to the shaft *l* of said wheel, and a brake K adapted to act against said drum, in the manner described, said brake being operated by said stops *g*, *g'*, for the purpose stated.

## 501,144. AMMETER.

WILLIAM HOCHHAUSER, Brooklyn, N. Y. Filed Feb. 23, 1891. Serial No. 383,157. (No model.)



*Claim.*—1. The combination with an ammeter or voltmeter, of a polarized visual indicator or tell-tale placed within the field of the ammeter magnet, and provided with means for showing to the eye a reversal of current in the ammeter.

2. The combination substantially as described, with an ammeter or voltmeter having means for indicating the strength or potential of the current, of a polarized pivoted bar or needle placed within the field of the ammeter magnet, and provided with a tell-tale indicator or disk exposed to view when the normal direction of current in the ammeter magnet is reversed.

3. In an ammeter or voltmeter, an electro-magnet the spool of which is composed of a casting of conducting material cast in one piece with an arm or bracket having means for attachment of a wire of the circuit, as and for the purpose described.

4. In an ammeter or voltmeter, the combination with the hollow spool, of a rock shaft mounted therein, a rod or bar of iron hung from said shaft and extending through the spool parallel with its axis, and a second rod or bar of iron extending through the spool parallel with the first and fastened to a head of said spool.

5. In an ammeter or voltmeter, an electro-magnet, the spool carrying coil of which is composed of a casting of brass or other suitable conducting material having two arms or brackets cast in one piece with it, a base plate of slate or other suitable material, and screws passing into said brackets from the rear for holding the spool down upon the base plate.

6. In an ammeter or voltmeter, an electro-magnet the spool of which is composed of a casting of conducting material and is included in the electric circuit of the magnet coils, as and for the purpose described.

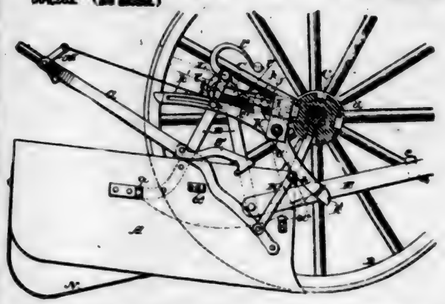
7. In an ammeter the combination substantially as described, of the hollow coil spool having suitable brackets or arms fastened to the base plate, a rock shaft parallel with the axis of the spool and mounted in bearings secured to opposite heads of said spool, a bar of magnetic material suspended on arms projecting from said rock shaft and extending through the hollow spool parallel with its axis, a second bar or piece of magnetic material parallel with the first and suitably fixed in the spool, and a pointer extending from said rock shaft.

8. The combination substantially as described, in an ammeter or voltmeter, of an electro-magnet secured upon a suitable base plate or support and having its magnetic axis vertical to said plate, and a visual indicator having a polarized magnetic bar or needle mounted within the field of said magnet and carrying at opposite ends suitable disks or plates which show the direction of the current in the electro magnet.

9. The combination in an ammeter or voltmeter, of an electro-magnet mounted upon a suitable base and having its magnetic axis vertical to said base, a rock shaft extending through the coil of the magnet and mounted in brackets secured to opposite ends of the spool for said magnet, a bar or piece of iron hung from the rock shaft, a second bar or piece of iron fixed but of the same magnetic polarity and a pointer projecting from said rock shaft and moving over a suitable scale, as and for the purpose described.

## 501,145. WHEELED SCRAPER.

FERDINAND F. HUDEL and EDWARD H. LIEBENSTEIN, Lake, Wis. Filed Sept. 8, 1890. Serial No. 364,262. (No model.)



*Claim.*—1. In a scraper, the combination with a crank shaped axle and supporting wheels mounted and capable of turning thereon of a scoop suspended by suitable hangers from said axle and a forked lever pivoted to the sides of said scoop near its front end and fulcrumed to and connected with the axle in line with the axis of the wheels, by jointed rods having pivot connections at their ends with said lever and axle substantially as and for the purposes set forth.

2. In a scraper, the combination with a crank shaped axle and wheels capable of turning thereon, of a scoop suspended by hangers directly from the crank portion of said axle, clutches arranged to lock said axle with said wheels, suitable means under the control of the operator for throwing said clutches into engagement, and stops arranged to automatically throw said clutches out of engagement, substantially as and for the purposes set forth.

3. In a scraper, the combination with a crank shaped axle and wheels capable of turning thereon, of a scoop suspended from said axle, draw bars pivotally connected with said scoop, a guide attached at an inclination to the bottom of said scoop, and a controlling lever pivoted to the sides of said scoop and connected by jointed rods or links with the axle in line with the axis of the wheels, substantially as and for the purposes set forth.

4. In a scraper, the combination with a crank shaped axle and wheels capable of turning thereon, of a scoop suspended from said axle, clutches arranged to lock said axle with said wheels, a controlling lever pivoted to the sides of said scoop and connected by jointed rods with said axle, and hooks on said lever arranged to engage with said axle and hold said scoop in its elevated carrying position, substantially as and for the purposes set forth.

5. In a scraper, the combination with a crank shaped axle and wheels capable of turning thereon, of a scoop suspended from said axle, clutches arranged to lock said axle with said wheels and thereby raise said scoop, a forked lever pivoted to the sides of said scoop and connected by jointed rods or links with said axle, hooks on said lever arranged to engage with said axle and hold said scoop in an elevated position, and stops on the sides of said scoop arranged to engage with said axle and limit the forward movement of the scoop, substantially as and for the purposes set forth.

6. In a scraper, the combination with a crank-shaped axle and wheels capable of turning thereon, of a scoop suspended from said axle, draw bars pivotally connected with said scoop, clutches arranged to lock said axle with said wheels, a forked controlling lever pivoted to the sides of said scoop and connected on each side by jointed rods or links with said axle, stops near the front end of said scoop arranged to engage with said draw bars when the scoop is elevated and prevent the same from being tilted rearwardly, and stops on the sides of said scoop arranged to engage with said axle and arrest the forward movement of said scoop when the same is elevated, substantially as and for the purposes set forth.

7. In a scraper, the combination with a crank shaped axle and wheels capable of turning thereon, of a scoop suspended from said axle, draw bars pivotally connected with the sides of said scoop, clutches comprising dogs carried by arms fixed upon said axle, notched hubs in connection with the supporting wheels, levers fulcrumed to the arms carrying said dogs, a shaft provided with cranks which engage with one set of arms of said levers whereby said clutches are thrown into engagement by the operator, and stops arranged to be engaged by said levers and to automatically throw said clutches out of engagement when the scoop is elevated into carrying position and when it is dumped, substantially as and for the purposes set forth.

8. In a scraper, the combination with a crank shaped axle and supporting wheels capable of turning thereon, of a scoop suspended from said axle, clutches arranged to lock said axle with said wheels, levers connected with and arranged to operate said clutches, a shaft provided with cranks which engage with said levers, a forked con-

trolling lever pivoted to the sides of said scoop and connected with said axle, and an angular lever pivoted in said controlling lever and connected with an arm on said crank shaft, substantially as and for the purposes set forth.

9. In a scraper, the combination with a crank axle and wheels capable of turning thereon, of a scoop suspended from said axle, dogs carried by arms fixed upon said axle and arranged to engage with said wheels, levers fulcrumed to said arms and connected with said dogs, a cross shaft carried by said axle and provided with cranks which engage with said levers, a forked controlling lever pivoted to the sides of said scoop and connected with said axle, hooks on the sides of said lever arranged to engage with said axle to hold the scoop in an elevated position, a trip lever pivoted in said controlling lever, connected with an arm on said crank shaft and arranged when the controlling lever is depressed to be engaged by said scoop so as to shift the dog-controlling levers, draw bars pivoted to the sides of said scoop, and stops arranged to arrest and hold the scoop in place when elevated into carrying position, and stops arranged to automatically move said dogs out of engagement with said wheels after the scoop has been raised into carrying position, or has been turned into position for dumping, substantially as and for the purposes set forth

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**501,146.** ROTARY ENGINE. HENRY C. HUNT, Newark, N. J. Filed Feb. 15, 1892. Serial No. 421,531. (No model.)



*Claim.*—1. In a rotary engine, the combination, with a stationary shaft and piston, having induction and exhaust ports, communicating with induction and exhaust ducts in said shaft, of a revoluble cylinder on said shaft, and pivoted valves in said cylinder, and a spring behind each valve adapted to exert a constant pressure thereon, and a bridge $k$ having a stem $k'$ movably arranged in the induction port of the piston and provided with one or more ports $k^2$, as and for the purposes set forth.

2. The combination of a cam-shaped piston provided with induction and exhaust ports, with a bridge $k$ having a stem $k'$ movably arranged in the induction port of the piston, and provided with one or more ports $k^2$, and valves $l$ and $l'$ pivoted to the cylinder and provided with springs, substantially as and for the purposes set forth.

3. The herein described rotary engine, comprising therein a stationary shaft and piston thereon, having induction and exhaust ports, communicating with induction and exhaust ducts in said shaft, a revoluble cylinder provided with hubs for arranging the same on the shaft, supports or standards $c$ and $c'$, grooves $n$, $n'$, and $n^3$, in the surface of the shaft and piston, forming a continuous groove for lubricating purposes, and pivoted valves in said cylinder engaging with the surface of the piston, all of said parts being arranged substantially as and for the purposes set forth.

4. The herein described rotary engine, comprising therein a stationary shaft and piston thereon, having induction and exhaust ports, communicating with induction and exhaust ducts in said shaft, a revoluble cylinder provided with hubs for arranging the same on the shaft, supports or standards $c$ and $c'$, grooves $n$, $n'$ and $n^3$, in the surface of the shaft and piston, forming a continuous groove for lubricating purposes, packing rings in the sides of said piston, and pivoted valves in said cylinder engaging with the surface of said piston, all of said parts being arranged substantially as and for the purposes set forth.

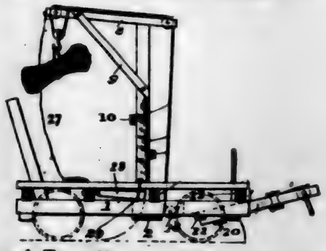
5. The herein described rotary engine, comprising therein a stationary shaft and piston thereon, having induction and exhaust ports, communicating with induction and exhaust ducts in said shaft, of a revoluble cylinder provided with hubs $c^6$ having cone-shaped openings $c^5$, supports or standards $c$ and $c'$, cone-shaped collars $d$ on said shaft adapted to extend in the cone-shaped openings in said hubs, and said collars being provided with flanges $d'$ which project over said hubs and a recess $g$, for packing, formed by said flanges, nuts $c^4$ and $c^5$ adapted to be screwed upon the shaft and against the outer surfaces of the bearings in said standards, pivoted valves in said cylinder, engaging with the surface of said piston, all of said parts being arranged substantially as and for the purposes set forth.

6. The herein described rotary engine, comprising therein a stationary shaft and piston thereon, having induction and exhaust ports, communicating with induction and exhaust ducts in said shaft, of a revoluble cylinder provided with hubs $c^6$ having cone-shaped openings $c^5$, supports or standards $c$ and $c'$, cone-shaped collars $d$ on said shaft adapted to extend in the cone-shaped openings in said hubs, and said collars being provided with flanges $d'$ which project over said hubs and a recess $g$ for packing, formed by said flanges, nuts $c^4$ and $c^5$ adapted to be screwed upon the shaft and against the outer surfaces of the bearings in said standards, pivoted valves in said cylinder, and springs secured to the backs of said valves, whereby the valves are forced into constant sliding engagement with the surface of said piston, all of said parts being arranged substantially as and for the purposes set forth.

7. The herein described rotary engine, comprising therein a stationary shaft and piston thereon, having induction and exhaust ports, communicating with induction and exhaust ducts in said shaft, of a revoluble cylinder provided with hubs $c^6$ having cone-shaped openings $c^5$, supports or standards $c$ and $c'$, cone-shaped collars $d$ on said shaft adapted to extend in the cone-shaped openings in said hubs, and said collars being provided with flanges $d'$ which project over said hubs, nuts $c^4$ and $c^5$ adapted to be screwed upon the shaft and against the outer surfaces of the bearings in said standards, grooves $n$, $n'$, and $n^3$, in the surfaces of the shaft and piston, forming a continuous groove for lubricating purposes, and pivoted valves in said cylinder engaging with the surface of said piston, all of the parts being arranged substantially as and for the purposes set forth.

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**501,147.** PORTABLE CRANE. CHARLES H. KING, Jessup, Iowa. Filed July 9, 1892. Serial No. 439,486. (No model.)



*Claim.*—1. The combination with a bed or rack of a wagon, of a board secured thereto substantially mid-way of its length, two posts secured to the board, and adapted to be secured to the rack, two blocks secured to the upper portion of the posts, upon opposite sides thereof, and one above the other, the facing sides of said blocks being each provided with a notch, a crane between the blocks at the upper portion of the posts, and pivotally and detachably secured at its lower end in the board at the bottom of the rack, and a windlass at one end of the rack, substantially as set forth.

2. The combination with the bed or rack of a wagon, of a crane detachably secured thereto substantially midway of its length, a cross piece secured to the main rails of the bed, near one end, a frame projecting through the end of the bed, the inner ends of the side pieces of which are each slotted and fit upon the cross piece, and the outer ends of said side pieces are provided with cross pieces, and a windlass journaled in the outer end of said pieces, substantially as set forth.

3. An apparatus comprising a bed or rack of a wagon, of a crane detachably secured thereto substantially midway of its length, a cross piece near one end of the rack, two cross pieces at the end of the rack, the upper one of which is provided with a button, a frame, the inner ends of the side pieces of which are each slotted and fit upon the first-mentioned cross piece, a cross piece adjacent to said slotted ends, and adapted to engage with the lower cross piece at the end of the frame, two cross pieces at the outer portion of said pieces, and a roller in the outer end of said side pieces, substantially as set forth.
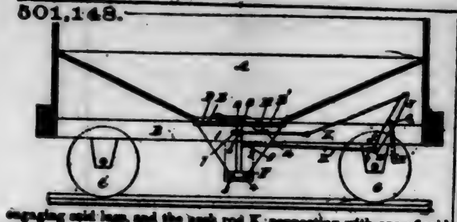
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**501,148.** COAL-DUMPING CAR. WILLIAM G. LANE, Picton, Canada. Filed Apr. 11, 1893. Serial No. 469,981. (No model.)

*Claim.*—1. The combination with a car frame having a hopper A, of the doors E, E', having ends 1, 2, pivoted to a bearing F, below the outlet of the hopper, a rock shaft G, journaled across the car frame and carrying radial arms J, J', and rods K, K', connecting said arms to the respective doors, whereby the doors are respectively pulled and pushed from the outlet of the hopper and pushed and pulled together by rocking said shaft by the levers H, as set forth.

2. The combination with a car frame B, having a hopper A, of the doors E, E', having ends 1, 2, pivoted to a bearing F, and provided with lugs 12, 13, the gravitating latch M, having a notch M',



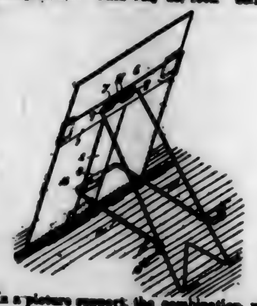
**501,148.**



engaging said lugs, and the push rod K, connecting with one of said doors, said rod provided with a cam 14, to lift the latch out of engagement to permit the doors to open, as set forth.

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**501,149.** SUPPORTING-STANDARD FOR PICTURES. CARL H. LUDEKE, Indianapolis, Ind. Filed July 26, 1892. Serial No. 441,118. (No model.)

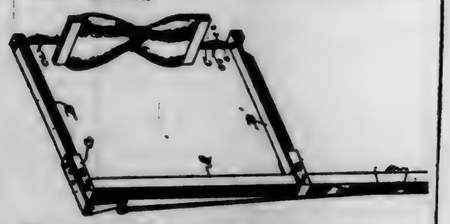


*Claim.*—1. In a picture support, the combination, with the flat strip 1 provided with bent ends adapted to clip the picture and having eyes 6 and 7 formed of portions of the said strip partially cut away and bent around as set forth, of a wire standard having horizontal portions at its upper end journaled in the said eyes and upwardly-bent stop-portions adapted to bear against the said strip when the standard is in use.

2. In a picture support, the combination, with the T-shaped flat strip provided with bent ends adapted to clip the picture and having eyes 6, 7 and 8 formed of portions of the said strip partially cut away and bent around as set forth, of a wire standard having horizontal portions at its upper end journaled in the said eyes 6, and 7, upwardly-bent stop-portions adapted to bear against the said strip, and the straps 16, and the brace 14 journaled in the eye 8 and having eyes 15 loosely embracing the wires of the standard, substantially as set forth.

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**501,150.** AUTOMATICALLY-FOLDING CRANE FOR MAIL-BAGS. WILLIAM H. LOVELL, Glen Ellyn, Ill. Filed Jan. 19, 1892. Serial No. 418,992. (No model.)



*Claim.*—1. In a mail crane the combination with a post of two arms pivotally secured thereto, one above the other and having near their free ends devices adapted to engage the mail-bag, an operating rod connected to the upper arm and at its lower end to a lever, said lever fulcrumed to the post or upright, and a push-pin on said post and adapted to engage the lever and lower arm, substantially as described.

2. In a mail crane the combination with a post of two arms pivotally secured thereto one above the other, each having near its free end a spring or clasp, consisting of the plate $c$, spring $c^3$, and lever $c^4$, loosely secured to engage the bag, an operating rod connected to the upper arm and at its lower end to a lever, said lever fulcrumed to the post or upright, and a push-pin on said post, and adapted to engage the lever and lower arm, substantially as described.

3. In a mail crane the combination with a post having the brackets $a$, $a'$, of two arms pivotally secured in the bifurcations of said brackets, and having near their free ends devices to engage the mail bag, the strap $b$, secured to the upper arm, an operating rod secured to the free end of said strap and at its lower end to a lever, said lever fulcrumed to the post or upright, and a push-pin on said post and adapted to engage the lever and lower arm, substantially as described.

4. In a mail crane the combination with a post having the brackets $a$, $a'$, of two arms B, B, pivotally secured in the bifurcations of said brackets, and each having near its free end a spring C, composed of the plate $c$, spring $c^3$, and lever $c^4$, to engage the bag, the strap $b$, secured to the upper arm, an operating rod secured to the free end of said strap and at its lower end to the lever D, said lever fulcrumed to the post or upright, and a push-pin on said post, all constructed, arranged and operating substantially as and for the purpose set forth.

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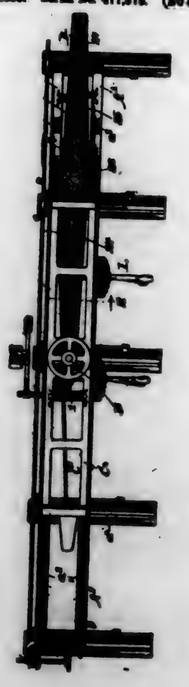
**501,151.** ELECTRIC BATTERY. JAMES H. MASON, Brooklyn, N. Y., assignor, by mesne assignments, to the Mason Electric Company, East Orange, N. J. Filed Nov. 14, 1892. Serial No. 451,894. (No model.)



*Claim.*—In an electric battery, the combination with a cell of a carbon element, having the central post and radial portions, a cup having a porous bottom and supported by the carbon element, and the zinc element supported on the bottom of said cup, substantially as specified.

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**501,152.** PUNCHING-MACHINE. JOSEPH MOHR, Chicago, Ill., assignor to John Mohr & Son, same place. Filed May 11, 1891. Renewed June 19, 1893. Serial No. 477,879. (No model.)



*Claim.*—1. The combination substantially as hereinbefore set forth in a punching machine, of a reciprocating work bed having a notched or toothed portion, a supporting frame for said bed, a pawl located transversely to said notched or toothed portion and supported by a suitable frame, a spindle depending from said pawl and connected with devices for retracting the same, and a spring located between a collar on said spindle and said frame.

2. The combination substantially as hereinbefore set forth in a punching machine, of a reciprocating work bed having a notched or toothed portion, a supporting frame therefor, a pawl for engaging said notched or toothed portion, devices for operating said pawl, a revolvable pivot frame upon which said pawl is supported, said pivot frame being supported by a suitable support secured to said supporting frame, and a lever connected with said pivot frame for turning the same.

3. The combination substantially as hereinbefore set forth in a punching machine, of a reciprocating work bed having a notched or toothed portion, a supporting frame therefor, a pawl for engaging said notched or toothed portion, devices for operating said pawl, a pivot frame 3 having a notch 9 within which said pawl is located, a pivot support 2 for said pivot frame, and a lever for turning said pivot frame.

4. The combination substantially as hereinbefore set forth in a punching machine, of a reciprocating work bed having a notched or toothed portion, a supporting frame therefor, a pawl for engaging said notched or toothed portion, devices for operating said pawl, a pivot frame 3 supporting said frame and having a recess 12 for the end portion of an operating lever, and a pivot support 2 for said pivot frame.

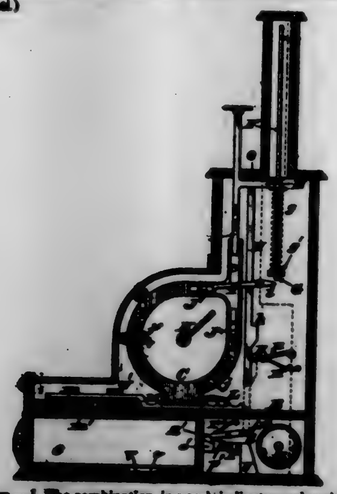
5. The combination substantially as hereinbefore set forth in a punching machine, of a reciprocating work bed having a notched or toothed portion, a supporting frame therefor, a pawl for engaging said notched or toothed portion, devices for operating said pawl, a pivot frame 3 having a notch 9 within which said pawl is located, and a recess 12 for the end portion of an operating lever, and a pivot support 2 for said pivot frame.

6. The combination substantially as hereinbefore set forth in a punching machine, of a supporting frame, a pivotally supported reciprocating work bed having a pivotal and sliding connection with a pivoted guide, and an operating lever connected with said guide on opposite sides of its pivot and serving to exert a pull in opposite directions on the end portions of said guide.

7. The combination substantially as hereinbefore set forth in a punching machine, of a supporting frame, a pivotally supported reciprocating work bed having a pivotal and sliding connection with a pivoted guide, an operating lever having an arm connected with said guide to one side of its pivot, and a bell crank lever having one arm connected with said guide to the other side of its pivot, the other arm of said bell crank lever being connected with said operating lever.

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**501,153.** CASH-INDICATOR AND REGISTER. EDWIN H. MUNSON, Cincinnati, Ohio. Filed Feb. 13, 1893. Serial No. 462,077. (No model.)



*Claim.*—1. The combination, in a cash-indicator and register, of a housing, a series of independent counters traversing the same, a plunger that advances said counters, a pawl that prevents them shifting, and a stem carried by said plunger and operating said pawl, in the manner described.

2. The combination, in a cash-indicator and register, of a housing, a series of independent counters traversing the same, a plunger that advances said counters, a lateral extension to said plunger, a stem projecting above and below said extension, a tablet carried by the upper portion of said stem, and a retaining pawl operated by the lower portion thereof, for the purpose described.

3. The combination, in a cash-indicator and register, of a housing C, a series of independent counters J, traversing the same, a plunger D that advances said counters, a lateral extension E, of said plunger, a stem F G, projecting above and below said extension, a tablet *f* carried by the upper portion F, of said stem, an elevating spring *g* coiled around the lower portion G thereof, and a retaining pawl I, operated by said lower portion G, in the manner described, and for the purpose stated.

4. The combination, in a cash indicator and register, of a housing, a series of independent counters traversing the same, a plunger that advances said counters, a stem carried by said plunger, a tablet mounted upon said stem, another stem carried by said plunger and surrounded by a coiled lifting-spring, and a pivoted pawl operated by the latter stem, all as herein described.

5. The combination, in a cash-indicator and register, of a housing a series of independent counters traversing the same, a plunger that advances said counters, a pin *j*, projecting outwardly from one of them, a pivoted escapement L, having teeth *l l*, and operated by said pin in the manner described, and a toothed bar M, provided with a pulling spring *m'*, for the purpose stated.

6. The combination, in a cash-indicator and register, of an unlocked drawer O, a longitudinal groove *v* in the bottom thereof, a recess *o''* in the cabinet base, and a balanced detent V, fitted within said recess, for the purpose described.

7. The combination, in a cash-indicator and register of a drawer that is neither locked to nor otherwise engaged with any part of the machine, a device that normally tends to open it, a retainer that holds this device in check, and an appliance that liberates said retainer when the machine is operated, as herein described.

8. The combination, in a cash indicator and register, of an unlocked drawer, a spring that normally tends to open it, a pair of lever-latches that hold said spring in check, and a rod that disengages said latches from said spring when the machine is operated, substantially as described.

9. The combination, in a cash indicator and register, of an unlocked drawer O, a spring P that normally tends to open it, a pair of lever-latches R, R, that engage with the ends of said spring and hold it in check, a bar S uniting said latches, and a rod H that actuates said bar, said rod H being carried by a plunger D, that operates the machine, in the manner described.

10. The combination, in a cash-indicator and register, of a plunger, registering or counting devices operated by it, a money drawer that is neither locked to nor otherwise engaged with any part of the machine, a device that initiates the opening of said drawer, a retainer that holds this device in check, and an attachment to said plunger for releasing said retainer, substantially as herein described

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**501,154.** CARBURETOR. JOSEPH C. MCCRORY and WILLIAM F. HOUSE, Nashville, Tenn. Filed Oct. 25, 1892. Serial No. 450,191. (No model.)

*Claim.*—1. In a carburetor, the combination with the casing, having horizontal partitions therein dividing the interior thereof into a series of compartments, feeding tubes leading into the respective compartments, those for the lower compartment passing through the compartments above and formed with a series of perforations at points within the uppermost compartment, a suspended wicking above the upper compartment, wicking in the lower compartments, extending from the bottom to the tops thereof in a series of folds or loops, an air supply pipe, a discharge pipe entering the top of the casing, a series of branch pipes leading from the said discharge pipe and entering respectively the respective compartments and a gasometer in which the discharge pipe leads, substantially as described.

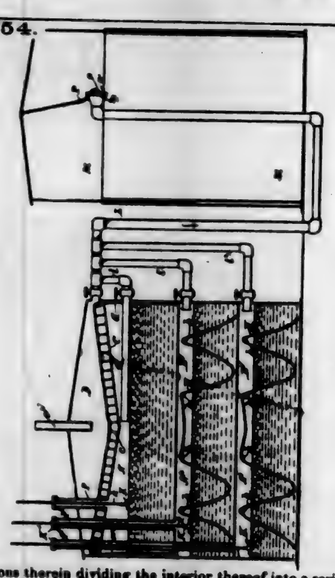
2. In a carburetor, the combination with the casing, having two or more compartments therein arranged one above the other and having communication with each other, means for supplying the compartments with a volatile liquid an inclined perforated partition above the upper compartment formed with openings therein, a suitable wick extending from the compartment below the partition up to and over the inclined partition, horizontal supports in the compartments near their upper ends arranged at intervals, wicking supported by said supports and extending down toward the bottom of the compartments, means for supplying air to the compartments, and a series of discharge pipes entering the respective compartments and leading into a common discharge pipe, substantially as described.

3. In a carburetor, the combination with the casing having horizontal partitions therein dividing the interior thereof into a series of compartments, feeding tubes leading into the respective compartments, those for the lower compartments passing through the compartments above, and formed with a series of perforations at points within the uppermost compartments, floats in the respective compartments having stems passing through and above the tubes, a suspended wicking above the upper compartment, wicking in the lower compartments, extending from the bottom to the tops thereof in a series of folds or loops, an air supply pipe, a discharge pipe entering the top of the casing, a series of branch pipes leading from the said discharge pipe and entering respectively the respective compartments and a gasometer in which the discharge pipe leads, substantially as described.

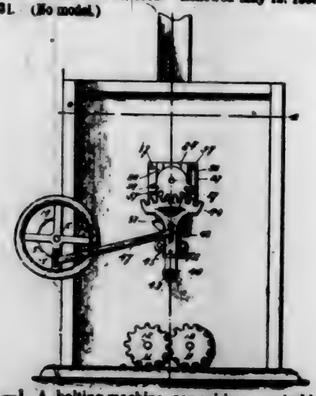
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**501,154.**



**501,155.** BOLTING-MACHINE. SYLVANUS A. HORDYKE, Kansas City, Kans. Filed Jan. 11, 1892. Renewed May 13, 1893. Serial No. 474,031. (No model.)



*Claim.*—1. A bolting-machine, comprising a suitable chest or casing, and a flat bolting-screen having lateral or sidewise reciprocation or rocking motion in the chest or casing and also simultaneous vertical reciprocation therein, substantially as set forth.

2. A bolting-machine, comprising a suitable chest or casing and a flat bolting-screen having lateral or sidewise reciprocation or rocking movement in the chest or casing and simultaneous vertical reciprocation therein, and a clearer-frame carried by the bolting-screen and mounted beneath the same, and also movable longitudinally thereof and constantly therewith, substantially as set forth.

3. A bolting-machine, comprising a suitable chest or casing a laterally oscillatory bolting-screen mounted therein, a longitudinally movable clearer frame carried by the screen-frame, a revolvable shaft journaled in the chest or casing beneath the screen-frame and clearer-frame, and a wave-cam-disk carried by said shaft and engaging the said clearer-frame to produce its longitudinal movements, substantially as set forth.

4. A bolting machine, comprising a suitable chest or casing, a flat, and only laterally oscillating screen mounted therein, and a flexible guard secured to the upper sides and one end of the screen frame, and also to the sides and one end of the chest or casing, said guard being of such length as to permit the full movement of the screen, in combination with a flexible guard secured to the under side of the opposite or open end of the screen frame, and a transversely arranged and inclined trough or conveyer, having its inner wall connected to the lower end of the guard or shield, substantially as and for the purpose set forth.

5. A bolting-machine, comprising a suitable chest or casing, a laterally oscillatory screen mounted therein, a power-shaft journaled upon the frame and carrying a radially slotted wheel, and a connecting rod attached adjustably at one end to the wheel and adjustably connected at its opposite end to the screen shaft, substantially as set forth.

6. A bolting-machine, comprising a suitable chest or casing, a laterally oscillatory screen mounted therein a vertically movable slide located at each end of the chest or casing and supporting each end of the screen, a revoluble shaft journaled in said chest or casing and carrying at each end a ratchet-wheel engaging the lower end of each slide, and a power-shaft carrying a wheel operatively connected to the slide, substantially as set forth.

7. A bolting-machine, comprising a suitable chest or casing, a laterally oscillatory screen, a slide mounted at each end of the chest or casing, a revoluble shaft journaled in said chest and carrying at each end a ratchet-wheel, engaging the lower end of the slide, and an adjusting or regulating-screw also mounted at each end of the chest or casing and beneath each of the slides, and operating to limit the downward movement of each slide, substantially as set forth.

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**501,156.** PRINTING COTTON FABRICS. OSCAR GUTTMANN, Sagan, Germany. Filed Feb. 17, 1893. Serial No. 462,762. (No specimens.)

*Claim.*—The process of printing cotton fabrics which are dyed with a diazotizable azo dye-stuff, such as diamine black, by means of a printing color consisting of a diazotizable but not reducible dye-stuff such as primuline, and a reducing agent, and of developing the printed design by steaming, passing through an acidulated bath of nitrite of soda and passing through a second bath which contains a phenol or an amine, substantially as herein described.

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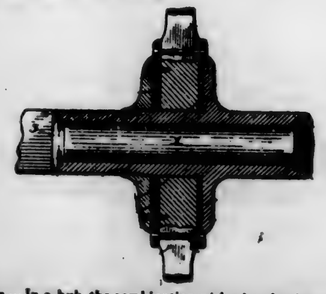
**501,157.** PLATED WIRE STOCK FOR JEWELRY AND METHOD OF MAKING SAME. JOHN S. PALMER, Providence, R. I. Filed Mar. 16, 1891. Serial No. 385,179. (No model.)

*Claim.*—1. The described process of plating precious metal of unequal thickness upon a rod of baser metal,—consisting in first forming a tube of unequal transverse thickness, next drawing such tube upon a rod of baser metal, and then soldering "or sweating" together such tube and rod, all substantially as and for the purpose set forth.

2. A tube or shell of precious metal of variable thickness transversely of such tube or shell, and united to a base-metal rod, substantially as described.

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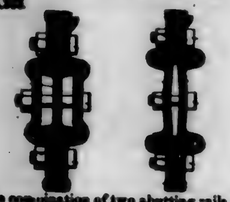
**501,158.** HUB. ALBERT PERL, Avoca, Ark. Filed Jan. 17, 1893. Serial No. 458,700. (No model.)



*Claim.*—In a hub, the combination with a box having an annular perforated flange upon the periphery thereof, the said flange having a grooved inner face; a perforated washer mounted on the said box, perforated elastic disks mounted on the said box between the said flange and washer, bolts passing through the said flanged disks and

washer, and drawing them together, a perforated nut screwed upon the said box and having an aperture to receive a lever, and screws passing through the perforations in the said nut and into the said washer, substantially as described.

## 501,159. JOINT FOR RAILWAY-RAILS. JOHN C. PENNIE, Washington, D. C., administrator of Julius Schmidt, deceased. Filed Aug. 13, 1892. Serial No. 442,992. (No model.) Patented in Germany Nov. 13, 1890, No. 55,205.



*Claim.*—1. The combination of two abutting rails a girder member having flanges and a web projecting downward from the flanged portion and formed continuous beneath the joint, and splice bars engaging the rail and girder member and secured thereto by bolts passing through the webs of the respective members.

2. The combination of two abutting rails, a girder member having flanges upon which said rails rest and a web projecting downward from the flanged portion and formed continuous below the joint, splice bars engaging the flanges of the girder member and secured to said rails, and girder member by bolts passing through the webs of the respective members whereby the web of the girder member acts as a brace or truss to the flanged portion, resting directly under the joint of the rail.

3. The combination of two abutting rails, a girder member having flanges, and a web projecting downward from the flanged portion and formed continuous beneath the joint, said girder member having projections from its lower end and splice bars engaging the rail and girder member and secured thereto by bolts passing through the webs of the respective members, the end of said splice bars resting against the projection from the lower end of the web of the girder member.

4. The combination of two abutting rails, a girder member having flanges upon which said rails rest, and a web projecting downward from the flanged portion and formed continuous below the joint, said web having projections from its lower end and splice bars engaging the flanges and resting against projection at the lower end of the girder member and secured to said rail and girder member by bolts passing through the webs of the respective members.

## 501,160. PROCESS OF DYEING BLACK. WILLIAM PFITZINGER, Elberfeld, Germany, assignor to the Farbenfabriken, vormals Fr. Bayer & Co., same place. Filed Nov. 18, 1891. Serial No. 412,436. (No specimens.) Patented in Germany Apr. 1, 1890, No. 53,790; in England June 2, 1890, No. 8,690; in Belgium Oct. 29, 1890, No. 92,517; in Italy Jan. 31, 1891, XXV, 30,122, and in Austria-Hungary Jan. 23, 1891, No. 4,229 and No. 23,349.

*Claim.*—The process of dyeing cotton, which consists, first, in dyeing said cotton by a coloring matter such as is obtained by the combination of one molecule of tetrazo diphenyl or analogous compounds thereof with two molecules of amido naphthol monosulfo acid G; second, in diazotizing on the fiber the dye-stuff thereon which contains one or two free amido groups; and, third, combining the resulting diazo compound with phenol, substantially as described.

## 501,161. RAIL-JOINT. JAMES H. PRICE, Philadelphia, Pa., assignor to the Price Railway Appliance Company, of Pennsylvania. Filed Sept. 17, 1892. Serial No. 446,202. (No model.)



*Claim.*—1. A metallic joint plate consisting of a vertical plate or girder, rounded or arched centrally so as to rise above the ends, which are flattened out with horizontal under surface, a suspended foot or horizontal table starting at right angles from the edge of the vertical plate, and carrying upon thin piers, a bench, whose rounding edge is shaped into a strong clamp or vise, so shaped as to press firmly down upon a rail flange seated upon the bench, the whole surrounded or embraced by a group of thin, converging ribs, all in one piece, as the half of a rail joint plate supporting two meeting rails, substantially as described.

2. A metallic joint plate in one piece combining a vertical plate or web, reaching from one cross tie to another, its ends shaped into horizontal feet resting upon the ties, while between these, three ledges project inwardly, the uppermost a vise bearing down upon meeting flanges of two rails supported by the middle one, a bench carried by piers arising from the lowest of the three, and by slanting knees which reach from the bench downward to the third projection or foot, the whole embraced by encircling ribs, and each plate bound to its fellow, so as to carry the rails from tie to tie, by bolts passing through proper holes near the bottom of the vertical plates, as a rail joint, substantially as described.

3. A rail joint consisting of two horizontal metallic plates attached edgewise to a longer vertical plate with flattened ends resting as feet upon two adjacent cross ties, the parallel plates connected by piers and slanting ends, so that the lower carries the upper as a bench to support the flanges of two meeting railway rails, while a third projection from the vertical plate or girder constitutes a vise bearing firmly down upon the top of the flanges and encircling ribs to bind all parts together in one whole, which is joined to its fellow when in use, by bolts traversing the lower part of the vertical plates thus combining to make a railway joint, substantially as described.

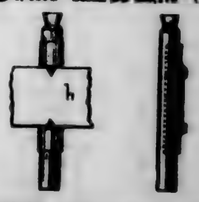
4. A rail joint consisting of metal shaped into a jaw closely fitting the flange of a railway rail, and supported by a horizontal foot carrying this jaw upon piers, the jaw and the foot both attached to a vertical plate suspended between two cross ties by, and upon, flattened ends resting upon the ties, and all parts embraced and strengthened by encircling ribs, in one piece or plate, attached, when in use as a joint, to its fellow by bolts traversing the vertical plates, substantially as described.

5. A metallic jaw consisting of a horizontal bench attached by rounded border or side to an overhanging vise, the space between bench and vise so shaped as to fit the flange of a railway rail, the combined jaw supported upon piers vertical and abutting rising from the surface of a horizontal foot, bench, vise and foot attached to a vertical plate or girder of arched or rounded upper contour, and with flattened ends seated as feet upon adjacent cross ties, the whole structure embraced by exterior ribs, all in one piece, with bolt holes near the base of the vertical plate, through which this metallic jaw containing the flanges of two meeting rails is so bound to its fellow as to constitute a rail joint, carrying the rails from tie to tie, substantially as described.

6. A joint plate of metal, consisting of a vertical plate or girder with rounded upper surface and bolt holes through which bolts attach it to its fellow, when carrying two meeting rails, as a rail joint, between two jaws projecting from its side, the one a bench supported upon piers seated on a horizontal foot also attached to the vertical plate, the other a vise bearing down upon the flanges of the carried rails, with exterior ribs reaching across the joint plane from the surface of the vise to the vertical plate, and from the top of the vertical plate to the outer edge of the foot at its base, substantially as described.

7. A metallic joint plate in one piece, consisting of a horizontal jaw to carry the flanges of two meeting rails from end to end of the joint plate, composed of a bench running its whole length and a vise bearing down upon the flanges, attached at one side to a vertical plate, with encircling ribs embracing the bench and vise, and the suspended foot between the ties from which piers arise to the bench to support it, and corresponding in the thickness of the metal upon the wooden ties and under the rails to that of tie plates used therewith, substantially as described.

## 501,162. VIAL-HOLDER. FERDINAND A. REINHARDT, New York, N. Y. Filed Aug. 8, 1891. Serial No. 402,178. (No model.)

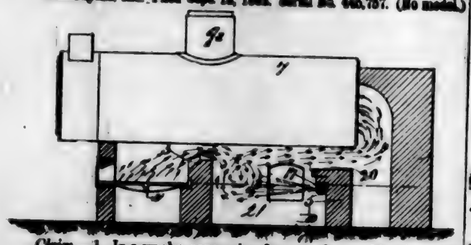



*Claim.*—In a vial holder, the combination with cylindrical springs, cleft so that a vial can be readily inserted into, and withdrawn therefrom, and formed with ears integral with said springs, transverse



the axle thereof, and bent and adapted to accommodate a transverse bar, of a transverse bar embraced by said clips; and said springs, and clips, and bars so adapted and arranged, that while the said springs are supported by said bar, said springs may be taken off and put on the said bar, and adjusted to rest on any part of the said bar, as may be required, all substantially as and for the purpose set forth.

## 501,163. SMOKE-CONSUMING FURNACE. BENJAMIN ROBERTS, Indianapolis, Ind. Filed Sept. 13, 1892. Serial No. 445,757. (No model.)

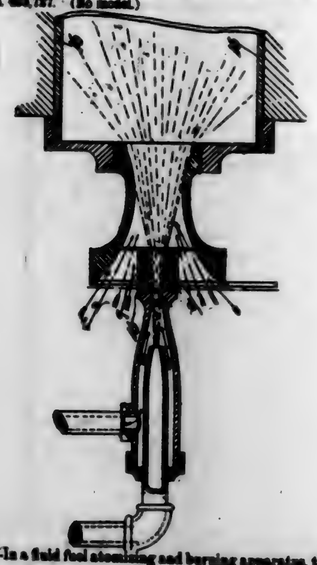



*Claim.*—1. In a smoke consuming furnace, the combination with the main furnace thereof having a rear bridge-wall of an intercepting wall to the rear of said bridge-wall and forming a combustion chamber, an auxiliary fluid fuel burner horizontally supported in front and near the top of said rear intercepting wall, suitable atomizing apparatus connected to said burner, and means as described for supplying the fuel and steam to said atomizing apparatus, substantially as and for the purpose set forth.

2. In a smoke consuming furnace, the combination with the main furnace, thereof having a rear bridge wall, of an intercepting vertical wall having a forwardly inclined crown, said wall to the rear of said bridge wall, and forming a combustion chamber therewith, a suitable fluid fuel burner within said chamber, and a suitable atomizing nozzle connected to the end of said burner, and means for supplying the atomizing steam and fluid fuel to said nozzle, substantially as and for the purpose set forth.

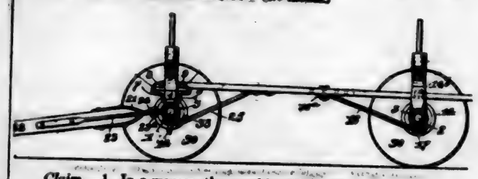
3. In a smoke consuming furnace, the combination with the main furnace thereof having a rear bridge wall, of an intercepting wall having a forwardly inclined crown, said wall to the rear of said bridge wall and forming a combustion chamber therewith, a suitable fluid fuel burner within said chamber, and a suitable atomizing nozzle connected to the end of said burner, and means for supplying the atomizing steam and fluid fuel to said nozzle, substantially as and for the purpose set forth.

## 501,164. FLUID-FUEL ATOMIZING AND BURNING APPARATUS. BENJAMIN ROBERTS, Indianapolis, Ind. Filed Jan. 17, 1893. Serial No. 458,737. (No model.)



*Claim.*—In a fluid fuel atomizing and burning apparatus, the combination with a perforated chamber having one end closed, of a steam supply pipe and its nozzle having a reduced tip, the exterior chamber surrounding said steam nozzle to form an oil chamber and terminating in a reduced throat formed as described and placed in advance of said steam nozzle tip, the air mixer having its interior profile formed as described, and the register 11, pivoted on the end of the atomizing nozzle 12, and having suitable air inlets registering with the similarly formed holes formed in the end of the mixer, all substantially as and for the purpose set forth.

## 501,165. WAGON. CHARLES W. ROBINSON, Reed City, Mich. Filed Mar. 7, 1892. Serial No. 424,264. (No model.)



*Claim.*—1. In a wagon, the combination with the forward axle thereof, having a vertical hole therein to receive the king bolt; of a piece inserted in the said axle and projecting forwardly therefrom, the said piece having an eye in its rear end in alignment with the said vertical hole in the said axle, and having an eye in the projecting part thereof, and a pole, having a downwardly opening hook in its rear end adapted to engage the eye in the projecting end of the said piece, substantially as described.

2. In a wagon, the combination with the forward axle thereof, and with a bolster mounted thereon, the said bolster and axle having a vertical hole therein, of a fifth wheel consisting of two castings, one of the said castings being secured to the top of the said axle, and the opposite casting having longitudinal and transverse grooves formed in its upper surface, the said transverse groove receiving the base of the said bolster; a reach having its forward end contained in the longitudinal groove in the said fifth wheel and extending therein through and in front of the said bolster; and a king bolt contained in the vertical hole in the said axle and bolster and passing through the said fifth wheel and the said reach, substantially as described.

3. As a new and improved article in manufacture, the hereinbefore described one half of a fifth wheel, consisting of a suitable casting, having shoulders upon its top, forming transverse and longitudinal grooves, which intersect each other at their centers and at the center of the said fifth wheel, which is apertured at the said center for the passage of a king bolt, substantially as described.

4. In a wagon, the combination with the forward axle thereof, and a bolster mounted on the said axle, the said bolster and axle having a vertical hole therein to receive a king bolt, of a piece inserted in the said axle and projecting forwardly therefrom, the said piece having an eye in its rear end, in alignment with the said vertical hole in the said axle; a fifth wheel consisting of two castings, one of the said castings being secured on the said axle, and the opposite casting having shoulders upon its top, forming transverse and longitudinal grooves, which intersect each other at their centers, and at the center of the said fifth wheel, which is apertured at the said center for the passage of the said king bolt, the said transverse groove receiving the said bolster, and a reach having its forward end inserted in the said longitudinal groove, and extending therein through and in front of the said bolster, substantially as described.

5. In a wagon, the combination with the front and rear axles, of bolsters mounted on the said axles, a reach, a fifth wheel, consisting of two castings, one of the said castings having shoulders upon its top forming transverse and longitudinal grooves, which intersect each other at their centers, and at the center of the said fifth wheel, the said transverse groove receiving the said bolster and the longitudinal groove receiving the forward end of the said reach, the opposite casting being secured on the upper surface of the forward axle, a king bolt passing through the said bolster, axle, reach, and through the center of the said fifth wheel, and a metallic rod, having an eye formed in its center to lock the said reach, and bolts passing through the opposite ends and through the rear axles and bolster thereon, substantially as described.

6. In a wagon, the combination with the front and rear axles thereof; of bolsters and wheels mounted on the said axles, the former projecting over the latter, the forward axle and bolster having vertical aligned holes therein, of a piece inserted in the said forward axle, and projecting forwardly therefrom and having eyes in its opposite ends, the rear eye therein being in alignment with the said hole in the said axle; of skeins mounted on the ends of the said front axle and having eyes cast thereon; a pole having a downwardly opening hook on its rear end adapted to engage the forward eye on the said piece, and having rearwardly projecting flared arms secured on its sides

and provided with downwardly opening hooks adapted to engage the eyes upon the said skeins, a fifth wheel consisting of two castings, one of the said castings having shoulders upon its top, forming transverse and longitudinal grooves, which intersect each other at their centers, and at the center of the said fifth wheel, the said transverse groove receiving the said forward bolster, the opposite casting being secured on the upper surface of the front axle, a king bolt passing through the said front axle, bolster mounted thereon, and through the center of the said fifth wheel, a metallic rod having an eye formed in its center, bolts passing through the opposite ends of the said rods and through the rear axle and bolster thereon, and a reach, having its forward end contained in the longitudinal groove in the said fifth wheel, and adapted to be secured to the said eye in the said rod, and having a downwardly projecting apertured brace thereon adapted to receive the lower end of the said king bolt, substantially as described.

## 501,166. CYCLE-WHEEL. JULES ROUBAT, Paris, France. Filed Feb. 18, 1893. Serial No. 462,164. (No model.)



*Claim.*—1. In a velocipede or other wheel, the combination with two ribbed rings, and adjusting rods or bolts therefor, of two flat rings, and spring-controlled rods connecting the two sets of rings, as and for the purpose specified.

2. In a velocipede or other wheel, the combination with two ribbed rings, adjusting rods or bolts therefor, spring controlled radial rods and two flat rings, of rod-guiding sleeves mounted on the flat rings, as and for the purpose specified.

3. In a velocipede or other wheel, the combination with two flat rings, of rods or bolts connecting them and serving for the attachment of the spokes, substantially as and for the purpose specified.

4. In a velocipede or other wheel, the combination with two flat rings and connecting rods or bolts, of spokes each formed in two parts, and a right and left-handed screwed nut connecting said two parts, as and for the purpose specified.

5. In a velocipede or other wheel, the combination of a tire of substantially I-shaped section, two ribbed rings, connecting rods or bolts, spring-controlled sleeves for guiding them, two flat rings connected by rods or bolts, spokes each made in two parts, and a right and left-handed screwed nut connecting the parts of each spoke, as and for the purpose specified.

6. In a velocipede or other wheel, the combination of a tire of substantially I-shaped section, two ribbed rings and combined ring connecting and spoke tightening rods or bolts, as described.

7. In a velocipede or other wheel, the combination with the substantially I-shaped tire having a groove in each side, of circular plates or rings arranged upon each side of the tire and having at their outer end inwardly-projecting ribs engaging the grooves of the tire, and means for adjusting the said rings toward and from each other, as and for the purpose specified.

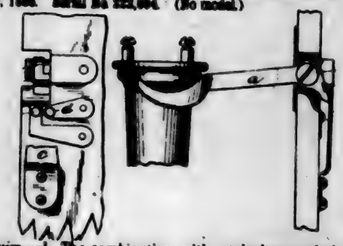
## 501,167. ELASTIC-TREAD HORSESHOE. GEORGE W. SAVAGE, Berwalt, Ohio. Filed Mar. 17, 1893. Serial No. 466,462. (No model.)



*Claim.*—1. The herein described horseshoe, consisting of a metal shoe proper with pairs of malleable lugs located on opposite sides thereof, and depressions or cavities arranged between the lugs in the under surface of the shoe and a cushion fitted to the said shoe between the said lugs and having recesses extending across the same at intervals, into which the said lugs are inwardly bent to hold the cushion in connection with the shoe proper, the upper surface of the cushion being compressed into the said depressions or cavities substantially as specified.

2. The herein described horseshoe, consisting of the metal shoe proper provided with lugs on the opposite edges thereof, that are arranged in parallel pairs and having fastening openings between the said lugs, and a cushion of yielding material bearing against the said shoe proper and located between the said lugs, the said cushion having transverse recesses at intervals therein into which the said lugs are bent inwardly toward each other, and also provided with vertical recesses on the outer side of the same to permit access to the fastening openings in the shoe proper, substantially as described.

## 501,168. TELEPHONE-SWITCH. CHARLES E. SCRIBNER, Chicago, Ill., assignor to the Western Electric Company, same place. Filed Dec. 27, 1892. Serial No. 456,694. (No model.)



*Claim.*—1. The combination with a telephone switch lever and the telephone adapted to be hung thereon, of the spring adapted to constantly bear against the shorter arm of said lever, said shorter arm being provided with two bearing surfaces, said bearing surfaces being placed at different distances from the pivotal axis of the switch, whereby when the telephone is hung upon the switch the bearing surface farthest from said pivotal axis is pressed against said spring, while the other bearing surface nearest the pivotal axis is separated from the spring, while on removing the telephone the spring by its tension acting to rotate the lever is caused to bear upon the bearing surface nearest to the pivotal axis and separate from the other bearing surface.

2. The combination with the pivoted lever serving as a telephone support, of a bifurcated circuit contact spring fixed at one end and adapted to press continuously at its other end upon the shorter arm of said lever, the tension of said contact spring being sufficient to raise the telephone supporting lever when the telephone is removed therefrom, and local contact points *d e* under the different portions of said bifurcated contact spring upon which contact points said spring is closed when the telephone is removed from the switch, thereby completing a local transmitter battery circuit independent of the pivot of the telephone supporting lever, substantially as described.

3. In a telephone switch, the combination of the bifurcated spring *c*, two contact points, one for each prong of the bifurcated switch and a lever pivoted as described, whereby the two springs of the lever may be alternated in connection to the pivoted lever or to the two contact points.

4. The combination with a vibrating telephone switch having the shorter arm provided with two bearing surfaces, one metallic and the other of insulating material, said bearing surfaces being at different distances from the pivotal axis of the switch, of a spring contact adapted to constantly press against the said shorter arm, the pressure of said spring being exerted upon only one of said bearing surfaces at a time, the particular bearing surface against which the spring is pressed being determined by the position of the switch lever, substantially as and for the purpose specified.

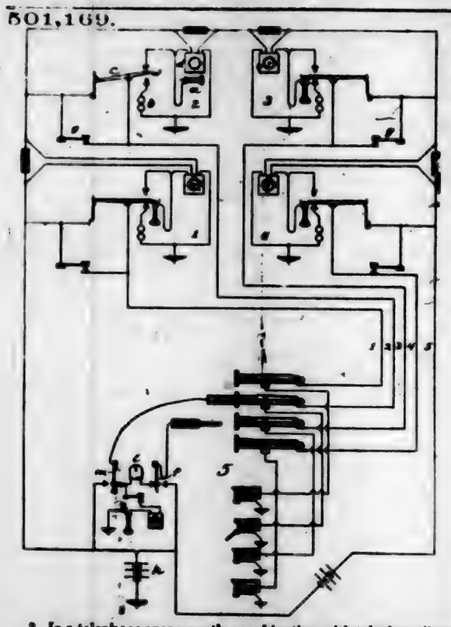
## 501,169. TELEPHONE-EXCHANGE APPARATUS. CHARLES E. SCRIBNER, Chicago, Ill., assignor to the Western Electric Company, same place. Filed June 6, 1893. Serial No. 476,309. (No model.)

*Claim.*—1. The combination with the metallic circuit including several subscribers' stations and a central station, of the transmitters at said stations connected therewith, two batteries, one battery being included in the metallic circuit for furnishing current to the transmitters and the primary coils of the induction coils of the transmitters connected therewith, and the battery being included in a wire branched from said metallic circuit to ground, the individual telephone lines of said stations, and switching apparatus; whereby signals may be sent over the metallic circuit, while, at the same time, the transmitters are supplied with battery, substantially as described.

2. The combination in a telephone exchange system of a metallic circuit extending to the different subscribers' stations, a battery included in the circuit of said metallic circuit, a ground branch from said metallic circuit at the central station including battery and individual telephone lines one to each subscriber's station, said individual telephone lines each including a signal device at the central station, a transmitter and the primary coil of the induction coil thereof connected at each subscriber's station with the metallic circuit and supplied with current from the battery included in said metallic circuit, and switching devices one at each subscriber's station for branching the individual lines to the said metallic circuit, whereby transmitters may be supplied with battery and the signal devices operated, substantially as described.

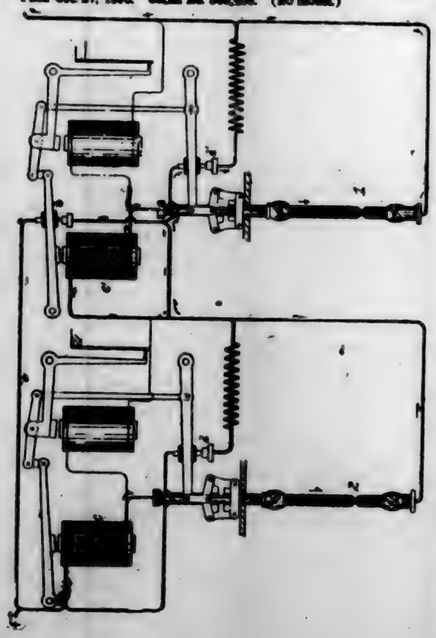


## 501,169.



3. In a telephone exchange the combination with telephone lines each connected through a switch and annunciator to ground at the central office and at their outer ends with a subscriber's telephone outfit respectively, of a metallic circuit, a branch circuit to ground containing battery A, and switching apparatus at the central office; whereby any subscriber may send current from said battery through his annunciator at the central office while the operator may send current from said battery through the bell of any subscriber wanted, substantially as and for the purpose specified.

## 501,170. DUPLEX ELECTRIC-ARC LAMP. CHARLES E. SCRIBNER, Chicago, Ill., assignor to the Western Electric Company, same place. Filed Oct. 27, 1890. Serial No. 369,498. (No model.)

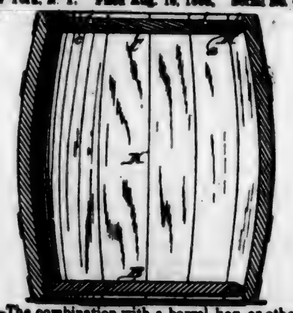


*Claim.*—1. The combination with two arc lamps in series in the same circuit, of contact points controlled by the lifting mechanism of one of the lamps to be closed together when the same is energized, and a shunt or by-path about the other lamp including the said contact points, whereby one of the lamps is short circuited during the operation of the other, substantially as described.

2. The combination in an electric arc lamp with an electromagnet in circuit with the carbons thereof, an armature therefor, and contact points adapted to be closed together when said armature is attracted, of a cut-out adapted to shunt the said electromagnet when closed to de-energize the same, whereby the normally closed contact points controlled by the electromagnet are opened when the lamp is cut out.

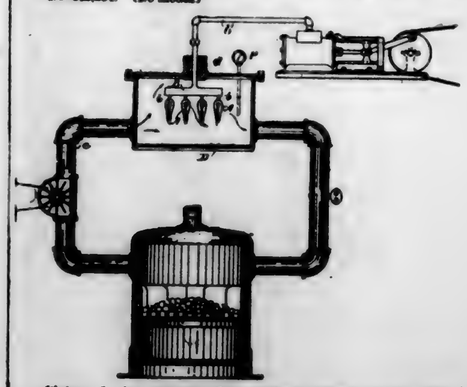
3. The combination with two arc lamps in series in the same circuit, of an electromagnet in series with the carbons of one lamp, contact points adapted to be actuated by said magnet to be closed when the magnet is energized, a shunt circuit about the other lamp, including the said contact points, and a cut-out in the lamp having the said electromagnet adapted to shunt the magnet when operated, substantially as described.

## 501,171. PAINT-KEG. TRUMAN A. SHAW, White Plains, N. Y., assignor of two-thirds to Samuel T. Sniffen, same place, and Joseph Tilton, New York, N. Y. Filed Aug. 16, 1892. Serial No. 443,264. (No model.)



*Claim.*—The combination with a barrel, keg, or other similar receptacle composed of staves having a cross, of a head comprising a ring A narrow in the direction of its diameter and having its outer edge beveled to fit in said cross and its inner edge screw-threaded, and a disk or plate C provided with cavities for the reception of a wrench and constructed to fit within the ring and having its edge complementarily threaded to engage the threads on the ring, whereby the said head may be driven into the barrel and the disk may be removed leaving the ring to support the ends of the staves, substantially as shown and described.

## 501,172. MANUFACTURE OF INCANDESCENT ELECTRIC LAMPS. ELIHU THOMSON, Swampscott, Mass., assignor to the Thomson-Houston Electric Company, of Connecticut. Filed Aug. 5, 1892. Serial No. 442,231. (No model.)



*Claim.*—1. An apparatus for expelling residual air from incandescent lamp bulbs, which consists of a box having a lid adapted to support the lamps and a furnace for heating the contents of the box to the desired high temperature, substantially as set forth.

2. An apparatus for expelling air and gases from incandescent

lamp bulbs during exhaustion which consists of a box having a removable cover or lid adapted to support the lamp, a furnace, and circulation pipes connecting said furnace with the box, substantially as described.

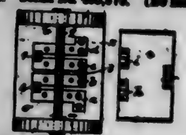
3. An apparatus for blowing incandescent lamps during exhaustion, consisting of a source of heat such as a furnace, a receptacle with a removable lid adapted to support the lamps and containing a fluid in which they are immersed, a system of pipes for conveying said fluid to and from the source of heat, and means for causing a circulation of said fluid through said pipes, substantially as described.

4. An apparatus for expelling air and gases during formation of a vacuum in incandescent lamp bulbs, which consists of a closed box with a lid adapted to support the lamps, a furnace, pipes connecting said box and furnace, and a fan or equivalent circulating apparatus for causing a circulation through said furnace, pipes and box, substantially as described.

5. In an apparatus for expelling air and moisture from incandescent lamp bulbs during exhaustion, a heater for a fluid steam, a receptacle with a cover adapted to support the lamps, circulation pipes or conduits for the fluid steam connecting the heater and the receptacle, and means for regulating the temperature of the fluid in the receptacle as described.

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**501,173. ELECTRIC SWITCH.** FREDERIC A. TUNE, Newark, N. J. Filed Mar. 14, 1893. Serial No. 466,079. (No model.)

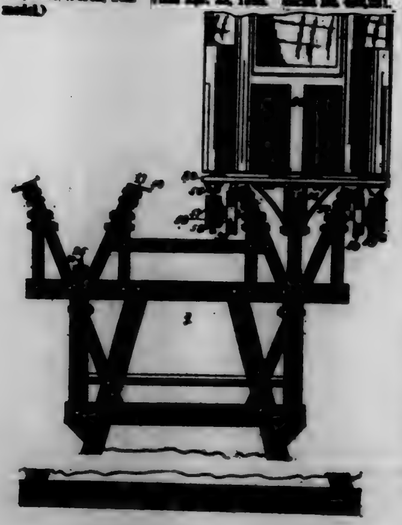


*Claim.*—1. The combination with two or more series of lights, of a switch consisting of a base plate, four substantially parallel metal strips on said base plate and provided at opposite ends with upwardly extending contact surfaces, a segmental shaped switch block pivotally arranged above and at right angles to the said metal strips and provided with three contact points adapted to alternately engage the contact surfaces of the metal strips, and connections between said metal strips and the series of lights, substantially as and for the purposes described.

2. In a switch, the combination with the base plate, of four substantially parallel metal strips arranged on said base plate and provided at opposite ends with upwardly extending portions adapted to form contact surfaces, a segmental shaped switch block pivotally arranged above and at right angles to the said metal strips and provided with three contact points, adapted to alternately engage the contact surfaces of the metal strips, and means for controlling said switch block in its various positions, substantially as described.

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**501,174. TRUCK OR VEHICLE FOR ELEVATED RAILWAYS.** BENJAMIN H. TRUESDELL, St. Louis, Mo., assignor of one-half to E. H. Hutcher, Fort Worth, Tex. Filed Apr. 22, 1893. Serial No. 470,931. (No model.)



*Claim.*—1. A truck wheel for elevated railways comprising two disks approximately U-shape in cross-section, the flanges of said disks projecting outwardly; substantially as and for the purpose set forth.

2. A truck wheel for elevated railways comprising two disks approximately U-shape in cross section and having their flanges projecting outwardly, and a gear wheel interposed between said disks and rigidly secured thereto; substantially as and for the purpose set forth.

3. In an elevated railway the combination of a truck-wheel comprising two disks located a suitable distance apart, and a brake-shoe adapted to be brought in contact simultaneously with both of said disks for retarding the motion of said wheel, substantially as set forth.

4. In an elevated railway a truck, wheels composed of disks of equal diameters mounted on said trucks, a gear-wheel of less diameter interposed between the said disks and secured against independent rotation, a brake-shoe provided with a projecting portion adapted to be brought in contact with the outer surfaces of said disks—the said extension of said brake-shoe when normally applied being located between the said disks for holding the said shoe in its proper relation to the same, substantially as set forth.

5. In an elevated railway a truck-frame, disks of equal diameters forming wheels for the said trucks, gear-wheels mounted between said disks, and an intermediate gear wheel located between the gear-wheels carried by the said disks and adapted to mesh with the same for imparting motion thereto, substantially as set forth.

6. In an elevated railway a truck having a plate 55 carrying anti-friction wheels, a skeleton frame-work 54 secured to said plate, gear-wheels 33, disks 35 secured to the said gear-wheels and adapted to be actuated by the same, a power shaft such as 39 located between the said wheels and suitably geared to a source of power, a gear-wheel 39 keyed to said shaft the teeth of which are adapted to mesh with said gear-wheels 33 for imparting motion to the same, and a brake as described carried by the said truck and adapted to be simultaneously brought in contact with the surfaces of the said disks, substantially as set forth.

7. An elevated railway having a truck, wheels mounted on or carried by the same each of which is provided with gear-wheels, and a gear-wheel located between, the said first mentioned gear-wheels for simultaneously actuating the same, substantially as set forth.

8. In an elevated railway a truck carrying wheels of the character described, a power-shaft located between the said wheels and adapted to simultaneously actuate the same, substantially as set forth.

9. In an elevated railway a truck-wheel comprising two disks 35 provided with outwardly formed flanges 36, a gear-wheel 33 located between said disks but of less diameter than the disks, bolts 38 adapted to pass through said disks and through the rim of said gear-wheels, circular openings 37 formed in the said disks, a hub 34 formed on said gear-wheel, and projecting through said opening 37 thus providing means for removably attaching said wheel to the truck, substantially as set forth.

10. In an elevated railway, the combination, with a truck frame, of rigid standards projecting downwardly therefrom, and a casing yieldingly mounted on each of said standards and carrying a guide-wheel adapted to engage the under side of a guide track; substantially as and for the purpose set forth.

11. In an elevated railway, the combination, with reversely-inclined tracks, of a truck, and reversely beveled guide wheels yieldingly mounted on the truck and contacting with the under faces of said rails; substantially as and for the purpose set forth.

12. In an elevated railway a truck-frame, a combined traction and tread-wheel mounted on the same, yieldingly secured guide-wheels carried by said truck-frame and so located relative to the guide-rails that they throw the resultant of the lateral force exerted upon the truck-frame directly on the combined traction and tread-wheel, substantially as set forth.

13. In an elevated railway a guide-rail provided with downwardly inclined tread surface, a truck-frame, yieldingly secured guide-wheels provided with downwardly inclined surfaces carried by said truck-frame and located beneath said guide-rails and interlocked thereunder, relative to outward lateral movement, substantially as set forth.

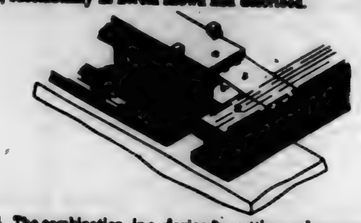
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**501,175. TORPEDO SIGNALING MACHINE.** CHESTER A. WELLS, Sing Sing, N. Y. Filed Mar. 19, 1892. Renewed Dec. 19, 1892. Serial No. 455,095. (No model.)

*Claim.*—1. In combination with a torpedo apparatus as herein described, a torpedo protecting plate extending from above the path of the torpedo to, and lying upon the rail, substantially as herein described.

2. A protecting plate *b* attached to a torpedo apparatus and lying in a notch in the rail, substantially as and for the purpose herein described.

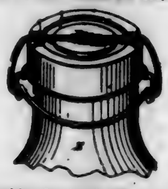
3. The combination, in a device for setting and recovering torpedoes, of a torpedo apparatus *a*, torpedo protecting plate *b*, and the rail *d*, substantially as herein shown and described.



4. The combination, in a device for setting and recovering torpedoes, of a torpedo apparatus *a*, torpedo protecting plate *b*, and the rail *d* notched to receive the plate *b* to the depth of its thickness, substantially as shown and described.

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**501,176. COVER FOR MILK-JARS.** CURTIS H. WILSON, Brooklyn, N. Y. Filed Feb. 4, 1893. Serial No. 461,092. (No model.)



*Claim.*—1. The combination in a bottle or jar-closing device with a cover or plate of sheet metal provided with perforated ears at opposite edges, of a wire or yoke extending across said plate or cover and having depending portions for securing said cover to the bottle or jar, the said wire being passed through the perforated ears and secured to the plate by said ears, which are bent down upon the upper surface of the plate and over the wire thereon.

2. The combination with the wire yoke F, a sheet metal plate or cover having diametrically opposite perforated ears through which the wire passes, said ears being bent down upon the upper surface of the plate and over that portion of the wire yoke extending across the same, of means for securing the ends of the yoke and a bottle or jar to which the same are attached.

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**501,177. WRENCH AND ROD-VISE.** JOHN W. WOLFF, Hohr., assignor of one-half to Truman H. Stevens, same place. Filed Nov. 14, 1892. Serial No. 451,969. (No model.)



*Claim.*—1. In a combined wrench and rod-vise, a head consisting of a pair of oppositely disposed integral jaws, with a suitable handle, in combination with a set screw having on its point and concentric annular, V shaped ridges, and so threaded through one of the jaws that the point bears toward the bottom of the space between the jaws, substantially as shown and described.

2. In a combined wrench and rod-vise the combination of the head 1 having the integral jaws 2 and 3 and the handle 10 with the set-screw 6 having the head 4, and perforation 5, the point 6' provided with the concentric annular V shaped ridges 9 and 9, the set screw so placed in the head that its point bears toward the bottom of the opening between the jaws substantially as shown and described.

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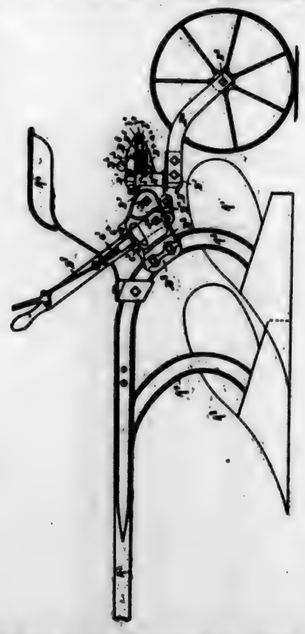
**501,178. APPARATUS FOR ATOMIZING OR PULVERIZING LIQUIDS.** FRANÇOIS F. DUBRUEL, Paris, France. Filed July 26, 1892. Serial No. 441,157. (No model.) Patented in France Apr. 27, 1891, No. 212,054.



*Claim.*—In a liquid atomizer or pulverizer, the combination of an apertured flexible diaphragm *c*, *d*, with vertical pillar *f*, wholly beneath the diaphragm, box *b* and inlet *e* for the liquid, substantially as described and for the purpose specified.

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**501,179. SULKY GANG-PLOW.** WILLIAM J. BROWER, Gladstone, Minn. Filed Aug. 22, 1892. Serial No. 443,894. (No model.)



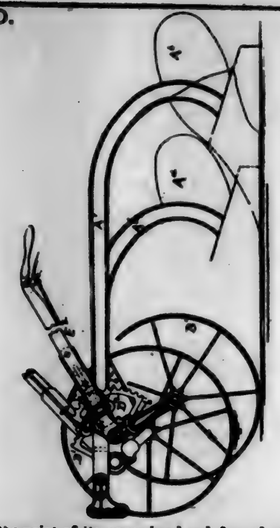
*Claim.*—In a gang plow, the beams having the plate $D^2$ attached thereto, bracket $D^3$ pivoted vertically to said plate and having vertical shaft D' journaled therein, and provided with arm $D^4$ carrying spring bolt $D^5$, the trailing wheel E' attached to the lower end of said shaft and adapted to be moved laterally therewith, an arm $D^6$ upon the upper end of said shaft and having depending concave lip $d^4$ with which said spring bolt is adapted to engage, and a trip latch $D^7$ pivoted in said arm $D^6$ and adapted to lock said trip bolt in engagement with said lip, whereby a rigid coupling is capable of being made between said trailing wheel frame and said beams, substantially as and for the purpose set forth.

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**501,180. GANG OR SULKY PLOW.** WILLIAM J. BROWER, Gladstone, Minn. Filed Aug. 30, 1892. Serial No. 444,562. (No model.)

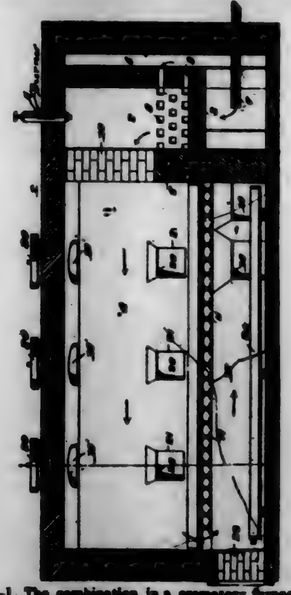
*Claim.*—In a sulky plow, a bent semi-axle journaled by its upper horizontal portion to the beams and having the landside wheel journaled on its lower horizontal portion, a bracket $B^6$ attached rigidly

501,180.



to the axle at the point of its upper bend and formed with slotted segment $b^3$, a lever $B^2$ pivoted loosely upon said axle and connected adjustably to said bracket by said slotted segment, a bracket $D^2$ attached to the beams of said plow and having a toothed segment with which said lever is adapted to be engaged, substantially as and for the purpose set forth.

501,181. FURNACE FOR BURNING GARBAGE. SAMUEL H. BROWN, Belleville, N. J., assignor to the Brown Developing Company, of New Jersey. Filed Feb. 21, 1893. Serial No. 463,277. (No model.)



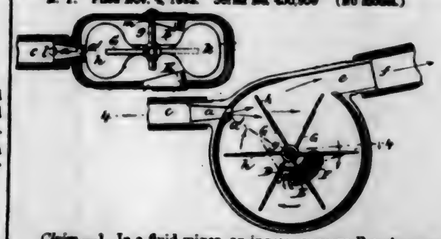
*Claim.*—1. The combination, in a cremetory furnace, of a primary combustion chamber, a secondary combustion chamber having its floor composed partly of a solid portion and partly of parallel bars, a tertiary combustion chamber below the bars, and an escape flue below the solid portion of the secondary chamber and communicating with the tertiary chamber, whereby the gaseous products of combustion of the garbage and the refuse grease are thoroughly consumed, substantially as described.

2. In a cremetory furnace, the combination of a primary combustion chamber and a secondary combustion chamber, the latter having its floor constructed partly of horizontal bars set over a tertiary chamber and partly of an inclined plate set over the exit flue of the furnace, whereby the garbage is drained and partly dried preparatory to its cremation, substantially as described.

3. The combination, in a cremetory furnace, of a primary combustion chamber having a surrounding superheating air space communicating with its interior by suitable ports, and means by which a forced blast of air may be injected into said space and combustion chamber, a secondary combustion chamber communicating with the primary chamber, a tertiary combustion chamber communicating with the secondary chamber, and the exit flue communicating with the secondary chamber, and the exit flue communicating with the tertiary chamber and with the stack or escape flue of the furnace, substantially as described.

4. In a cremetory furnace, the combination with the secondary combustion chamber, of the tertiary combustion chamber, the exit flue communicating therewith by means of suitable ports, the horizontal portion of the floor located above the tertiary combustion chamber and the inclined solid portion of the floor located over the escape flue whereby the garbage is initially dried preparatory to cremation, substantially as described.

501,182. FLUID-MIXER. JOHN J. H. COKELEY, Long Island City, N. Y. Filed Nov. 4, 1892. Serial No. 450,959. (No model.)



*Claim.*—1. In a fluid mixer, an ingress passage B and an egress passage C, in combination with a mixing chamber A of substantially circular interior constructed relatively to said ingress passage to cause the injected fluid therefrom to traverse the circuit of its interior before reaching the discharge passage, said chamber constructed with an air inlet aperture D and a wing E constituting a guard, substantially as and for the purpose set forth.

2. In a fluid mixer, the ingress and egress passages B and C, in combination with the intervening mixing chamber A constructed with a circular interior and having aperture D and wing E, the regulator E' said aperture, and the agitator G within said chamber and free to rotate with the fluid therein, and having blades h beyond said wing, all substantially as and for the purpose set forth.

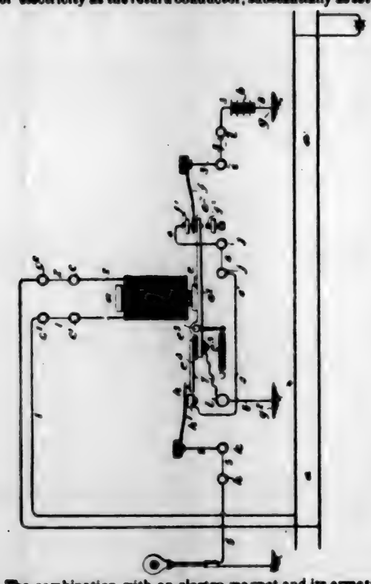
3. In a fluid mixer, the ingress and egress passages, in combination with a mixing chamber A constructed of opposite cup-shaped pieces *i i'* having intersengaging screw-threads *j k*, and projections *b d* constructed respectively with faces *l* disposed to intimately contact when said pieces *i i'* are screwed together, said projections *b* and *d* constructed with internal passages, the one for ingress to and the other for egress from said chamber, substantially as and for the purpose set forth.

501,188. ELECTRIC SIGNALING-CIRCUIT. WILLIAM DAVIS, Jersey City, N. J., assignor to the Hall Signal Company, of Maine. Filed May 2, 1892. Serial No. 431,461. (No model.)

*Claim.*—1. The combination with an electric signaling device operated to give a warning signal when no current is flowing through it, of a signaling circuit containing two make-and-break devices arranged in series in said circuit, said circuit also being connected to the electrical signaling device and including a suitable source of electricity, said make-and-break devices each containing a movable and a fixed contact,—in one make-and-break device the movable contact being pressed toward the fixed contact, and in the other make-and-break device the movable contact being pressed away from the fixed contact—and of the armature bar of a relay electro-magnet connected with the said contacts so as to permit the former two contacts and to compel the latter two contacts to come together when the armature is actuated in one direction by the electro-magnet, and to compel the former two contacts to separate and permit the latter two contacts to separate when the armature is actuated in the reverse direction by the electro-magnets, and an infusible connection between the armature bar and one of the latter contacts, substantially as set forth.

2. The combination with an electro-magnet, of a make-and-break device consisting of a fixed contact, and a movable contact normally pressed toward said fixed contact one of said contacts being connected to an electrical signaling device and the other of said contacts being connected to a source of electricity, and a suitable return conductor for completing the circuit from the signaling device to the source of electricity, of the armature of said electro-magnet normally held away from said electro-magnet and having an electrically conductive projection pressed against said movable contact when the armature is in normal position, said projection of the armature being electrically connected by a short-circuiting conductor to the same terminal of the source of electricity as the return conductor, substantially as set forth.



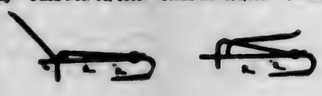


3. The combination with an electro-magnet and its armature, of two make-and-break devices, one make-and-break device consisting of a fixed contact, a movable contact normally pressed toward the fixed contact and an electrically insulated arm connected with the armature and pressed against the movable contact to move it away from the fixed contact when the armature is moved away from its magnet, and the other make-and-break device consisting of a fixed contact, a movable contact normally pressed away from the fixed contact, and an arm connected with the armature and pressed against the movable contact to move it toward the fixed contact when the armature is moved toward its magnet; the contacts of said make-and-break devices being connected in series in a circuit including an electrical signaling device and a source of electricity, and said insulated arm having a conductive part connected in a short circuit of relatively low resistance including the source of electricity and excluding the signaling device, substantially as set forth.

4. The combination with an electro-magnet and its armature, of two make-and-break devices, one consisting of the fixed contact *h'*, the spring contact *h*, and the insulated arm $e^4$ projecting from the armature, the other consisting of the spring contact *f*, the fixed contact *f'*, the arm *d'* of the armature, and an insulating infusible substance interposed between the spring contact *f* and the arm *d'*, the arm *f* being separate from the arm *e* but normally pressed against it; and conductors joining the contacts *h*, *h'*, *f*, *f'* in series in a circuit including a signaling device and a source of electricity, and joining the insulated arm $e^4$ in a circuit including the source of electricity and excluding the signaling device, substantially as set forth.

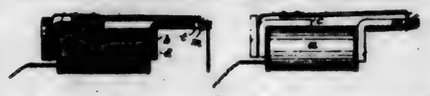
5. The combination of an electrical instrument, electrically connected to a binding post, a conducting wire connected to another binding post, and a spider wire joining said two binding posts, the spider wire receiving orifices of the said binding posts being adjusted to the diameter of said spider wire and so as not to permit the insertion of heavier wire, substantially as set forth.

501,184. SAFETY-CATCH FOR FIRE. CAROLINE DU BOIS, Hertzen, Germany. Filed Feb. 11, 1893. Serial No. 461,860. (No model.)



*Claim.*—The combination of a perforated plate *p*, with a perforated boat spring projecting through said plate and with a boat lever pivoted to the spring and adapted to bear against the rear face of the plate, substantially as specified.

501,185. VISIBLE SIGNAL. FRANCIS W. DUNBAR, New York, N. Y., assignor to the American Telephone and Telegraph Company, of New York. Filed May 4, 1893. Serial No. 472,867. (No model.)



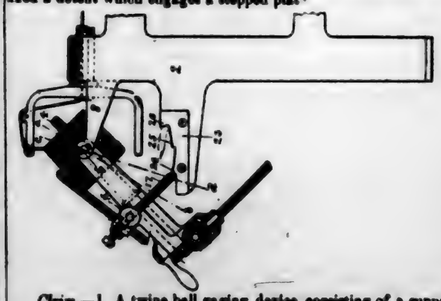
*Claim.*—1. An annunciator or visible signal indicator consisting of an electro-magnet having angular polar extensions; an armature overlapping both polar faces supported and normally retracted by a spring; and a signal shutter or target controlled by the said armature and positively withdrawn from view by the retraction thereof but released and permitted to fall into view when the said armature is attracted, substantially as described.

2. An annunciator or visible signal indicator comprising an electro magnet with polar extensions as described, a spring armature overlapping the said polepieces and having a hooked tongue at its free end; and a signal shutter or target pivoted to the front pole piece and provided with a hook at its upper edge engaging with the hooked tongue of said armature, whereby the said signal shutter is displayed upon the attraction of the armature, and withdrawn upon the retraction thereof, substantially as described.

3. The combination in an electric annunciator or visible signal indicator, of a bar electro-magnet; angular pole pieces therefor, whose active faces are parallel with the core of said magnet; an armature mounted on a spring in inductive proximity to the said polepieces and provided with a hooked extension at its front end, and a signal shutter or target, pivoted to the forward polepiece the said shutter being provided with a hook or detent on its pivot axis engaging with the said armature hook, whereby the display and withdrawal of the signal shutter are controlled by the attraction and retraction respectively of the armature, substantially as described.

501,186. TWINE-BALL-GAGING DEVICE. PETER HEYER, Brooklyn, assignor to James M. Waterbury and Chauncey Marshall, New York, N. Y. Filed Aug. 22, 1892. Serial No. 443,791. (No model.)

*Brief.*—The inclination of the ball-spindle is automatically changed as the ball increases in size by means of a lever bearing on the ball, the said lever being fixed to a rock-shaft, to which is also fixed a detent which engages a stepped plate.



*Claim.*—1. A twine ball gaging device consisting of a supporting head for the ball spindle, a gaging lever and detent rigidly connected together, and a gage plate provided with steps which are adapted to engage with that detent and support the ball spindle head in its desired positions; all substantially as described.

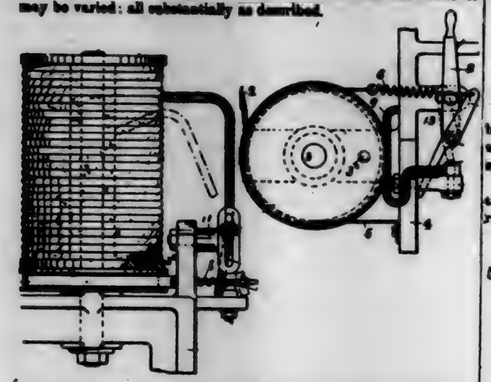
2. The combination of the swinging spindle head 5, the stepped plate 23, the detent 17, and the lever 20, the detent being adjustable to vary the angle of the ball spindle, and the lever being adjustable to vary the size of ball at the releasing times; all substantially as described.

501,187. TENSION-REGULATOR FOR TWINE-BOBBINS. PETER HEYER, Brooklyn, assignor to James M. Waterbury and Chauncey Marshall, New York, N. Y. Filed Aug. 22, 1892. Serial No. 443,792. (No model.)

*Claim.*—1. A tension regulator for bobbin spindles, consisting of a spring brake band, an oscillating lever, an arm adapted to bear against the twine and against the lever, and a bracket upon which that arm is pivoted, the bracket being adapted to adjust toward or

from the pivot of the oscillating lever; substantially as described and for the purpose specified.

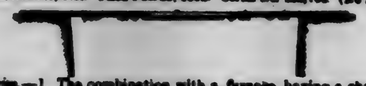
2. A tension regulator for bobbin spindles, consisting of a spring brake band, an oscillating lever, an arm adapted to be pressed against the twine by the action of the lever and the spring, an adjustable pivot for the arm and an adjustable bracket for the pivot, by means of which the relative angular movements of the arm and the lever may be varied; all substantially as described.



3. The combination of a regulator arm, a brake band, its lever 7 attached thereto, and a hand lever upon which the lever 7 is pivoted, all arranged and operating to carry the lever 7 into and out of the position in which it engages with the regulator arm; substantially as described.

4. A regulator arm, a brake band, its lever 7 attached thereto, a hand lever upon which the lever 7 is pivoted, an adjustable pivot for the hand lever, and an extension provided with the stop notches 17 and 18; substantially as described.

## 501,188. FLOORING FOR BLAST-FURNACES. MALVERN W. ILES, Denver, Colo. Filed Feb. 28, 1892. Serial No. 423,703. (No model.)



*Claim.*—1. The combination with a furnace having a charging opening as O, of cast iron flooring plates extending over the furnace and around the opening O and having a reinforcing strip of wrought iron or steel secured thereto by means of rivets $d^6$ all substantially as described and so that the parts of the plate if broken may be held together by the steel or wrought iron strips.

2. As a new article of manufacture cast iron floor plates for blast furnaces having outwardly-extending lugs *d* on a lower edge or edges adapted to extend beneath an abutting plate, and having a wrought iron or steel strip secured along its edge.

3. A blast furnace flooring consisting of side plates E E' in combination with end plates $D^5$ $D^6$ provided with lugs *d d* adapted to extend under and support the inner edges of the side plates, said side and end plates having wrought iron or steel strips secured along their inner edges, substantially as and for the purpose specified.

## 501,189. PROCESS OF MANUFACTURING OXIDE OF ZINC. GEORGE T. LEWIS, Philadelphia, Pa. Filed Sept. 1, 1891. Serial No. 404,493. (No specimens.)

*Claim.*—1. The described method of preparing zinc ores containing sulphur for the manufacture of zinc oxide which consists in mixing with the ore an alkali sufficient in quantity to unite with the sulphur present and then roasting the mixture to effect a union of the sulphur and alkali.

2. The described method of preparing zinc ores containing sulphur for the manufacture of oxide of zinc which consists in subjecting the ores to the usual treatment for driving off sulphur then mixing with the ores alkali in quantity sufficient to unite with the sulphur remaining in the ore and roasting the mixture to effect a union of the sulphur and alkali.

3. The described method of treating zinc ores containing sulphur, for the manufacture of oxide of zinc which consists in mixing with the ore alkali sufficient to unite with the sulphur and coal sufficient to effect the sublimation of the zinc charging the mixture into zinc oxide furnaces and igniting it to effect the union of the alkali and sulphur and the sublimation of the zinc.

## 501,190. COFFIN. JEAN LORENZ, Jr., Dusseldorf, Germany. Filed Feb. 11, 1893. Serial No. 461,901. (No model.)



*Claim.*—1. The combination of a coffin with a ball adapted to be projected over the chest of a corpse, arms secured to such ball and catches for locking said arms against rotation; substantially as specified.

2. The combination of ball *b*, with a tubular socket $b^2$, arms $b'$, turning in the same and with catches *k* for locking the arms against rotation substantially as specified.

## 501,191. SWITCH FOR ELECTRIC CONDUCTORS. OLOF OFFRELL, Middletown, Conn., assignor to the Schuyler Electric Company, of Connecticut. Filed Aug. 12, 1892. Serial No. 442,578. (No model.)



*Claim.*—1. In an electric switch, a stem having a central slot, and contact arms consisting of two strips of metal, having their ends lapped and received in said slot, substantially as set forth.

2. In an electric switch, a stem having a central slot, and contact arms consisting of two strips of metal provided with interlocking portions, received in said slot, substantially as described.

3. The combination with a stem having a central slot, of two strips of metal, one having a raised portion and a depression fitted to a corresponding depression and raised portion on the other, said meeting portions of the strips being received in the slot in the stem, substantially as set forth.

4. The combination with a stem having a central slot, of two strips received in said slot each having a transverse rib and groove, fitted together and lying adjacent to the stem, substantially as set forth.

5. A spring contact arm for an electric switch, consisting of the strip E having the transverse groove *d* and rib *e*, substantially as set forth.

## 501,192. MAGAZINE BOLT-GUN. HENRY A. PERKINS, Hollowville, Wis. Filed Nov. 21, 1891. Serial No. 412,606. (No model.)

*Claim.*—1. The combination of the receiver having the locking abutment, the cover sliding on said receiver and provided with inclined planes, the breech bolt within the receiver having a shoulder to engage said abutment and the levers pivoted on said bolt and provided with the curved or inclined faces, said levers bearing on the receiver at the end opposite said faces, whereby the moving of the cover under the levers lifts the bolts; substantially as set forth.

2. The combination of the receiver having the locking abutment, the cover sliding on said receiver and provided with inclined planes, the breech bolt within the receiver having a shoulder to engage said abutment and the levers pivoted on said bolt and provided with the curved or inclined faces, said levers bearing on the receiver at the end opposite said faces, whereby the moving of the cover under the levers lifts the bolt, said cover being provided with a cross piece, and the bolt with a lug and the extractor whereby when the bolt has been raised it is forced back and the shell extracted; substantially as set forth.

3. The combination of the receiver having a locking abutment 11, the cover having the bridge or cross piece 23, the bolt having a shoulder 10, and the lug 24 provided with an inclined face and with a horizontal face 25, and means for moving the cover lengthwise whereby the bolt is pushed forward and its rear end depressed and locked both in horizontal and vertical planes; substantially as set forth.

4. The combination of the slotted breech bolt, means for moving it lengthwise and the extractor loosely pivoted to one side of a lug extending above the bolt, and provided on the opposite side near the horizontal diameter of said bolt with a hook normally adapted to lie in the slot in the end of the breech block and engage the side of the shell; substantially as set forth.



5. The combination of the slotted breech bolt, means for moving it lengthwise and the extractor loosely pivoted to one side of a lug extending above the bolt, and provided on the opposite side near the horizontal diameter of said bolt with a hook normally adapted to lie in a slot in the end of the breech block and engage the side of the shell and a spring 30 fixed to the block and bearing laterally on the extractor to keep the hook in its slot and engaged with the cartridge, said spring being adapted to be compressed to permit the removal of the extractor; substantially as set forth.



6. The pivoted deflector located in a slot in the side wall of the receiver and provided with a projection on its exterior, and with an interior hook adapted to press on the rim of the cartridge shell; in combination with the arm of the handle provided with a projection adapted to push the deflector against the said rim; substantially as set forth.

7. The pivoted deflector located in a slot in the side wall of the receiver, and provided with a projection on its exterior and an interior finger adapted to press on the rim of the cartridge shell, in combination with the arm of the handle provided with a projection adapted to push the deflector against said rim, and the bolt having a recess for the head of the cartridge shell, and a slot extending into the recess to permit the passage of said finger; substantially as set forth.

8. The receiver, the breech bolt sliding in the receiver, the spring 45 provided with a hook 46 to engage a pivot or part secured to the breech bolt and provided also with a catch 47, in combination with the cover sliding on the receiver and having a transverse shoulder or projection 49, to engage the said catch whereby the gun is held in closed position while the hammer is at half or full cock; substantially as set forth.

9. The receiver, the breech bolt sliding in the receiver the spring 45 provided with a hook to engage the pivot or other part of the bolt and provided with a catch 47, in combination with the cover sliding on the receiver and with the hammer having a hammer-extension 44, whereby said catch is disengaged from the cover upon firing; substantially as set forth.

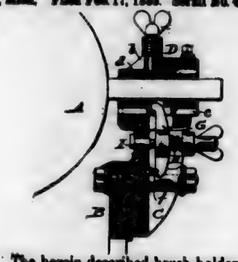
10. The slotted receiver in combination with the elastic skeleton magazine, provided with a head 58, adapted to bear on said receiver at the end of its slot and with a lip 56 normally projecting under the magazine; all substantially as set forth, whereby the skeleton magazine can be compressed to pass it by the lip either to insert or to remove said magazine.

11. In a gun the combination of the barrel, the magazine, a cartridge inserter adapted to hold cartridges in said magazine, operating mechanism whereby the inserter may move a cartridge into the barrel and a lock or hook to fasten the inserter at will to retain the cartridges in the magazine; substantially as set forth.

12. In combination, a magazine, a spring to raise cartridges therein, a pivoted inserter normally holding the cartridges against said spring, a spring to hold the inserter in said normal position, and one or more projections on the inserter located on the path of the breech block or a part thereof, whereby the inserter is withdrawn from above the cartridges and retained against the end of the upper one when the breech bolt releases said inserter; substantially as set forth.

13. The magazine provided with a spring in combination with the vertically movable inserter or pivoted lever extending over the cartridges and a hook to hold said inserter when desired in its lower position; substantially as set forth.

## 501,193. COMMUTATOR-BRUSH HOLDER. ALFRED J. SHAW, Muskegon, Mich. Filed Feb. 17, 1893. Serial No. 462,714. (No model.)



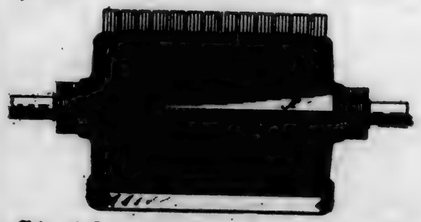
*Claim.*—1. The herein described brush holder, consisting of the block or casting C, provided with groove *a*; carrier D comprising the open frame *b* with rib *c*, and the clamping plate *d* and screw F; lever G; bolt I; spring H; and nut J,—all combined and operating substantially as set forth.

2. In a brush holder, the combination of a supporting block or casting provided with ways, a carrier adapted to clamp a brush, and mounted and movable in said ways, a lever fulcrumed upon the block or support and having one end arranged to bear against the carrier, a spring bearing against said lever, and a bolt passing through the spring and provided with a nut by which to adjust the pressure of said spring.

3. In a brush holder, the combination of a supporting block or casting provided with ways, a carrier adapted to clamp a brush, and mounted and movable in said ways, a lever fulcrumed upon the block or support and having one end arranged to bear against the carrier, and a spring bearing against said lever.

4. In a brush holder such as described, the combination with a block or support, a carrier movable therein, a lever bearing upon said carrier, a spring bearing upon the lever, and a bolt,—of an adjusting nut screwing upon said bolt and serving to regulate the compression of the spring, said nut being split and thereby adapted to bear upon the bolt with an elastic pressure, substantially as and for the purpose set forth.

## 501,194. REVOLVING ARMATURE FOR ELECTRIC MACHINES. ELMER A. SPERRY, Chicago, Ill., assignor to the Sperry Electric Railway Company, Cleveland, Ohio. Filed Jan. 6, 1893. Serial No. 417,419. (No model.)



*Claim.*—1. In an armature for an electric machine, a shaft having a squared portion, insulated disks provided with square apertures fitting said squared portion, grooves in said disks entering from the periphery toward the center, and flanges on either end of the armature, provided with means for forcibly compressing said disks.

2. In an armature for an electric machine, a shaft having a squared portion, insulated disks provided with square apertures fitting said squared portion, grooves in said disks entering from the periphery toward the center, and flanges of less diameter than the disks, on either end of the armature, provided with means for forcibly compressing said disks.

3. In an armature for an electric machine, a shaft having a squared portion, insulated disks provided with square apertures fitting said

squared portion, grooves in said disks entering from the periphery toward the center, and flanges on either end of the armature, provided with a square aperture also fitting the squared portion of the shaft, so located upon the shaft, that the squared portion enters such aperture, in combination with means for forcing the disks toward each other.

4. In an armature for an electric machine, a shaft having a squared portion, insulated disks provided with square apertures fitting said squared portion, the disks being of two classes provided with grooves of different size, and so disposed upon the shaft that the grooves of larger size are in the end disks next the flange, being next under the flanges, flanges of diameter less than the diameter of the disks on either end of the armature, and means for forcing the disks toward each other.

5. In an armature for an electric machine, a shaft, insulated disks forming the body of the core, being divided into two classes, each class provided with grooves of different size, and so disposed upon the shaft that the grooves of a larger size are in the disks at either end of the armature, substantially for the purpose specified.

6. In an armature for an electric machine, a shaft, insulated disks mounted thereon, being divided into two classes, each class provided with grooves of different size, and so disposed upon the shaft that the grooves of a larger size are in the disks at either end of the armature, insulation within such slots extending throughout the length of the armature, being thicker at each end and substantially fitting the enlarged slot, substantially for the purpose specified.

7. In an armature for an electric machine, a shaft having a squared portion, insulated disks provided with square apertures fitting said squared portion, and flanges provided with square apertures also fitting the squared portion of the shaft, located upon the shaft so that the squared portion enters such apertures, in combination with a screw at either end of the squared portion upon the shaft, for forcing the flanges toward each other, substantially for the purpose specified.

8. In an armature for an electric machine, a shaft, insulated disks forming the body of the core being divided into classes, each class provided with grooves differing as to shape, such grooves entering the disks from the periphery toward the center, their shape being in the case of one class such that the exterior or peripheral opening thereof is contracted, smaller in width circumferentially at this point than at a point further removed from the circumference, a second class provided with grooves of same shape and size except that they are not contracted at the periphery; the armature being made up of groups of disks of these classes, substantially as specified.

9. In an armature for an electric machine, a shaft, insulated disks forming the body of the core, being divided into classes, each class provided with grooves differing as to shape, such grooves entering the disks from the periphery toward the center, their shape being in the case of one class such that the exterior or peripheral opening thereof is contracted, smaller in width circumferentially at this point than at a point further removed from the circumference, a second class provided with grooves of same shape and size except that they are not contracted at the periphery, the body of the armature being made up of groups of disks of these classes combined with disks provided with grooves or slots in their peripheries substantially the same shape as the grooves in the other classes, but longer, these last named disks located at the ends of the armature, substantially for the purpose specified.

10. In an armature for an electric machine, a shaft, insulated disks forming the body of the core, provided with slots in their peripheries presenting a contracted opening on the surface of the armature less than the whole length of said armature, in combination with two or more coil-bonds as J, retained under the contraction of such openings and exterior to the coil.

11. In an armature for an electric machine, a shaft, insulated disks forming the body of the core, provided with slots in their peripheries, presenting a contracted opening on the surface of the armature broken at intervals by portions of the slot of full width, in combination with comparatively short coil-bonds retained within the contracted portions of the opening and separated by intervening spaces, substantially for the purpose specified.

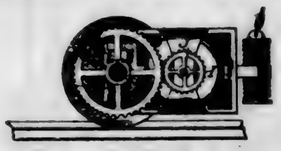
12. In an armature for an electric machine, a shaft, insulated disks forming the body of the core, provided with slots in their peripheries, presenting a contracted opening on the surface of the armature broken at intervals by portions of the slot of full width for insertion of the coil-bonds, comparatively short coil-bonds retained within the contracted portions of the opening adjacent to or near by the full width portions.

13. In an armature for an electric machine, a shaft, insulated disks forming the body of the core, provided with slots in their peripheries, presenting a contracted opening on the surface of the armature broken at intervals by portions of the slot of full width, insulated coils within such slots, in combination with comparatively short coil-bonds retained within the contracted portions of the openings exterior to such coils, substantially for the purpose specified.

14. An armature, the body of which is made up of a series of iron disks insulated from each other by layers of oxide, and divided into groups by intervening spaces running from the periphery of the armature down nearly to the center thereof, substantially as shown.

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**501,195. ELECTRIC LOCOMOTIVE.** ELMER A. SPERRY, Chicago, Ill., assignor to the Sperry Electric Railway Company, Cleveland, Ohio. Filed Apr. 28, 1892. Serial No. 431,182. (No model.)



*Claim.*—1. In a power gearing, an axle, a motor mounted upon the axle, an elastic support between such motor and axle and power transmitting gearing from the motor to the axle consisting in part of a gear wheel mounted on the axle by a universal joint.

2. In a power gearing, an axle, a motor mounted upon the axle by two or more independent journals, an elastic support between each of the journals and the motor and power transmitting gearing from the motor to the axle consisting in part of a gear wheel mounted on the axle by a universal joint.

3. In a power gearing, an axle, a motor mounted upon the axle, an elastic support between such motor and the axle, a toothed gear or pinion upon the motor and a co-operating gear mounted upon the axle by a universal joint.

4. In a power gearing, an axle, a motor mounted upon the axle, an elastic support between such motor and the axle, another elastic support for the motor independent of its support upon such axle, a power transmitting gearing from the motor to the axle consisting in part of a gear wheel mounted on the axle by a universal joint.

5. In a power gearing, an axle, a motor mounted upon the axle, an elastic support between such motor and the axle, an elastically driven pinion mounted upon a shaft upon the motor, in combination with a universally mounted gear upon the axle.

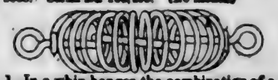
6. In a power gearing, a motor mounted elastically upon an axle, a toothed pinion upon a shaft of the motor, a gear mounted universally upon the axle, and means provided whereby a sliding or lateral movement is permitted between the pinion and the gear.

7. In a power gearing for vehicles, two axles, a motor mounted upon one of the axles, an elastic medium between the motor and the axle, power transmitting gearing from the motor to the axle consisting in part of a universal joint, sprockets mounted upon each axle and driving chain connecting such sprockets.

8. In a power gearing for vehicles, the combination of an axle, a sleeve mounted upon the axle, two wheels mounted upon the sleeve, one by a universal joint connection.

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**501,196. WHIP-HANGER.** FREDERICK TAYLOR, Lowell, Mass. Filed June 12, 1890. Serial No. 163,463. (No model.)

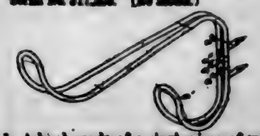


*Claim.*—1. In a whip-hanger the combination of a spiral, having a series of coils, and a clasp connected to and arranged to hold said coils, at one side of said spiral, and the adjacent coils of said spiral in immediate rigid contact with each other, said coils at the other side of said spiral being separated by intervals, as and for the purpose specified.

2. In the whip-hanger herein described, the combination of a spiral, having a series of coils, and a wire, passed through said spiral from end to end thereof and looped around the coils of said spiral and holding the adjacent coils of said spiral in contact with each other at one side of said spiral, said coils at the other side of said spiral being separated by intervals, said looped wire having attaching-eyes formed in the ends thereof, as and for the purpose specified.

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**501,197. HOOK.** FREDERICK TAYLOR, Lowell, Mass. Filed July 11, 1892. Serial No. 317,920. (No model.)



*Claim.*—1. A hook made of a single piece of wire, formed into a hat hook and a coat hook, each of which has two members in the same surface laterally, one of the members of both hooks being continuous on one side, the lower free end of the wire being looped and extended to form the other member of the coat hook and bent upward and the other free end of the wire looped and forming the second member of the hat hook and bent downward, one end of said wire having a backwardly-extending attaching-point or screw and said hook having a clip which surrounds the sides of said hook and the other end of said wire, as and for the purpose specified.

2. A hook made of a single piece of wire, formed into a hat hook and a coat hook, each of which has two members in the same surface laterally, one of the members of both hooks being continuous on one side, the lower free end of the wire being looped and extended to form the other member of the coat hook and bent upward and the other free end of the wire looped and forming the second member of the hat hook and bent downward, one end of said wire having a backwardly-extending attaching-point or screw, and said wire near said last-named end being offset laterally inward, to bring said attaching-point or screw between the sides of said hook, the other end of said wire being arranged at said offset and said hook having a clip which surrounds the sides of said hook, said offset and the last-named ends of said wire, as and for the purpose specified.

3. A hook formed of a single piece of wire, formed into a hat hook and a coat hook, each of which has two members in the same surface laterally, one of the members of both hooks being continuous on one side, the lower free end of the wire being looped and extended to form the other member of the coat hook and bent upward and the other free end of the wire looped and forming the second member of the hat hook and bent downward, one or both of the ends of said wire being provided with a backwardly-extending point or points, and other portions of said wire between said last-named members and said attaching-points being parallel with said last-named members and arranged between said last-named members and said continuous member to bring said attaching-points between the sides of said hook, as and for the purpose specified.



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**501,198. HOOK.** FREDERICK TAYLOR, Lowell, Mass. Filed July 11, 1892. Serial No. 317,919. (No model.)



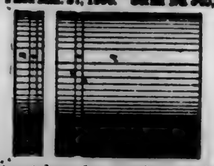
*Claim.*—1. A hook made of a single piece of wire, formed into a hat hook and a coat hook, each of which has two members in the same surface laterally, one of the members of both hooks being continuous on one side, the lower free end of the wire being looped and extended to form the other member of the coat hook and bent upward and the other free end of the wire looped and forming the second member of the hat hook and bent downward, one end of said wire having a backwardly-extending attaching-point or screw and said hook having a clip which surrounds the sides of said hook and the other end of said wire, as and for the purpose specified.

2. A hook made of a single piece of wire, formed into a hat hook and a coat hook, each of which has two members in the same surface laterally, one of the members of both hooks being continuous on one side, the lower free end of the wire being looped and extended to form the other member of the coat hook and bent upward and the other free end of the wire looped and forming the second member of the hat hook and bent downward, one end of said wire having a backwardly-extending attaching-point or screw, and said wire near said last-named end being offset laterally inward, to bring said attaching-point or screw between the sides of said hook, the other end of said wire being arranged at said offset and said hook having a clip which surrounds the sides of said hook, said offset and the last-named ends of said wire, as and for the purpose specified.

3. A hook formed of a single piece of wire, formed into a hat hook and a coat hook, each of which has two members in the same surface laterally, one of the members of both hooks being continuous on one side, the lower free end of the wire being looped and extended to form the other member of the coat hook and bent upward and the other free end of the wire looped and forming the second member of the hat hook and bent downward, one end of said wire having a backwardly extending attaching-point or screw and said wire near said last-named end being offset laterally inward and arranged between the said continuous member and the other end-portion of said wire, to bring said attaching-point or screw between the sides of said hook, said last-named end terminating at said offset and said hook having a clip which surrounds the sides of said hook, said offset and the last-named ends of said wire, as and for the purpose specified.

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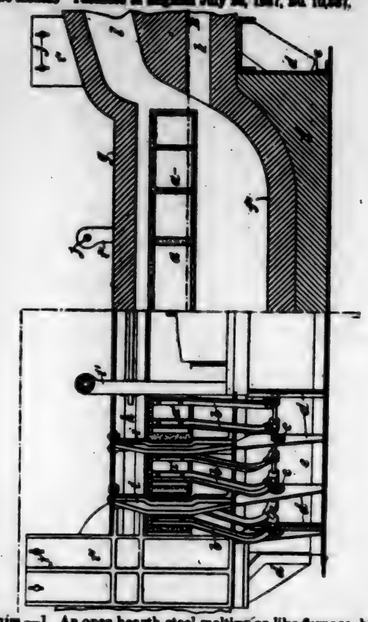
**501,199. SHEET-METAL CAN OR BOX.** GUSTAVUS A. WARNER, New York, N. Y. Filed Mar. 27, 1893. Serial No. 345,514. (No model.)



*Claim.*—A sheet-metal can, box or other vessel having, either in its body or in its cover, a groove or bead provided at each of its sides with a shoulder or corner so impressed into the metal that the shoulder or corner shall impart sufficient rigidity to the material adjacent to the groove to enable the metal at the bottom of the groove to be torn away, substantially as and for the purpose set forth.

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**501,200. OPEN-HEARTH STEEL-MELTING FURNACE.** JOHN W. WAILES, Prescot, England. Filed Jan. 13, 1893. Serial No. 458,711. (No model.) Patented in England July 26, 1887, No. 10,987.



*Claim.*—1. An open hearth steel melting or like furnace, having the side walls, or a portion thereof, formed of sections of refractory material between the hearth and roof and supported independently of the hearth and roof, substantially as and for the purposes set forth.

2. An open hearth steel melting or like furnace, having the side walls, or a portion thereof, formed of movable sections of refractory material, between the hearth and roof, said sections being carried by arms secured to suitable supports, substantially as and for the purposes set forth.

3. An open hearth steel melting or like furnace, having the side walls, or a portion thereof, formed of movable sections of refractory material between the hearth and roof, said sections being carried by arms hinged to suitable supports, substantially as and for the purposes set forth.

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**501,201. AUTOMATIC CIRCUIT-INTERRUPTER.** ALEXANDER WURTS, Pittsburg, Pa., assignor to the Westinghouse Electric and Manufacturing Company, same place. Filed Oct. 5, 1892. Serial No. 447,975. (No model.)

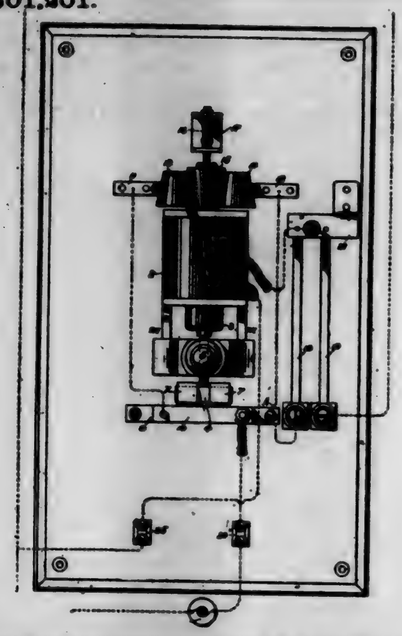
*Claim.*—1. The combination of a switch composed of fixed and movable parts with a circuit interrupter composed of non-arcing metal in shunt on said switch and adapted to be operated by the movement of said movable part, substantially as described.

2. In an automatic circuit-interrupter, the contact pieces, the bridge-piece for electrically connecting the same, the solenoid, the core adapted to be moved thereby and adapted to move said bridge-piece, a circuit interrupter composed of non-arcing metal in shunt with said contact pieces and adapted to be operated by impact with said core after removal of said bridge-piece, and means operated by an abnormal current through said contact-pieces whereby a short-circuit is established through said solenoid.

3. In an automatic circuit interrupter, contact pieces, and a circuit-interrupter composed of non-arcing metal normally electrically connecting said pieces, a thermostatic bar in circuit with said contact pieces and joined at one end by a movable contact-piece, a solenoid, a core movable thereby, a bridge-piece moved by said core and adapted to bridge said contact pieces and a contact piece permanently in electric connection with one end of said solenoid, substantially as described.

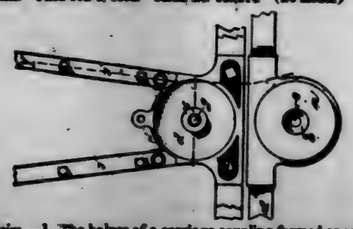
4. In an automatic circuit interrupter, the contact pieces 9 and 10, the non-arcing cups 13, electrically connected with the piece 10,

501,201.



the non-arcing cone 14 connected with the piece 9, the thermostatic bars connecting said piece 9 with one leg of the main circuit and joined at their movable ends by the contact piece 20, and the movable non-arcing cone normally resting in contact with the cones 13 and 14; in combination with a solenoid connected with the second leg of the circuit, a core movable therein, a bridge-piece for connecting the contacts 9 and 10 adapted to be moved by said core, a handle for adjusting said core, springs normally pressing on said handle for retaining the same in a given position, and a contact-piece 21 in the path of the contact piece 20 and electrically connected with said solenoid, substantially as described.

501,202. CARRIAGE-COUPLING. SAMUEL R. BAILEY, Amesbury, Mass. Filed Oct. 8, 1892. Serial No. 448,214. (No model.)



*Claim.*—1. The halves of a carriage coupling formed as an upper and under disk, the lower disk being formed integral with the axle and mainly in rear thereof, so that the transom bolt is in rear of the axle, and the upper disk being formed with an integral seat for the front spring, substantially as specified.

2. The lower half of a vehicle coupling formed integral with the axle and raised above the same to receive the upper half of the coupling, and extending from near the front to the rear of the axle so that the king bolt is in rear thereof, substantially as specified.

3. The upper half of a carriage coupling, formed with an inclosing wall to receive the raised portion of the lower half of the coupling, with a duly curved seat for the transverse spring i that rests thereon; and with seats formed outside of the wall that receives the lower half of the coupling, to receive the abutting ends of the perches which are confined between the irons j, and m, substantially as specified.

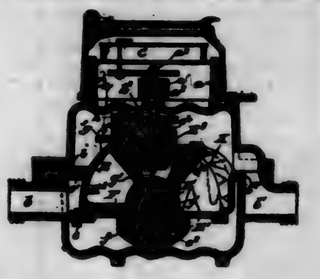
4. The half of a carriage coupling formed with a circumferential groove k, to serve as a dust and dirt arrester, substantially as specified.

5. In a carriage coupling formed with an upper and under disk, an interposed removable disk of vulcanized fiber charged with plumbago to serve as an antifriction bearing, substantially as specified.

6. In combination with the halves *c d* of a carriage coupling, the nut 8, fitted to part *c* and extended to the rear thereof, and formed with a bolt hole; the part *d* formed with a perforated ear 9, the bolt 10, fitted in said parts, and king bolt *g*, all substantially as specified.

7. The combination of part *d* of a carriage coupling fitted upon part *c*, and the nut 8, also fitted to part *c*, and extended to and fitted to the rear thereof, substantially as specified.

501,203. DISK WATER-METER. GEORGE B. BARRETT, Buffalo, N. Y. Filed Feb. 1, 1893. Serial No. 460,932. (No model.)



*Claim.*—1. In a water-meter the combination with an oscillating disk having a projecting spindle, of a disk-chamber inclosing said disk and spindle and having a bearing and guiding surface for the latter, a shaft projecting into said chamber and engaging said spindle, a register and intermediate gearing between said shaft and register, substantially as described.

2. In a water-meter of the kind described, the combination with the intermediate gearing, disk and disk-chamber formed with a bearing and guiding surface in the under side of the top thereof, of a spindle on the disk controlled by said guiding surface, a shaft connected with the intermediate gearing and extending downwardly through the top of said disk-chamber, and an angular extension on the lower end of the shaft engaging said spindle, substantially as set forth.

3. In a water meter the combination with the disk-chamber of the main casing having corrugations therein above said disk chamber, substantially as described.

4. In a water meter of the kind described the combination with the disk-ball, of ball bearings upon which said disk-ball rests and means for communicating motion from said disk to the registering mechanism, substantially as described.

5. In a water meter of the kind described the combination with the main casing, registering mechanism, oscillatory disk and a support having an overhanging arm thereon, of gearing mounted on said support and consisting of a shaft projecting up through the support and arm, and receiving motion at its lower end from the oscillating disk, a pinion carried by said shaft between the overhanging arm and the support, and an intermediate gear and pinion mounted on a pin secured to the support, substantially as and for the purpose described.

6. The combination with the oscillating disk of a disk-chamber having in its top wall a recess and an annular groove extending upwardly from said recess, a spindle attached to said disk and extending into said groove, and a shaft extending through the wall and having an angular arm working in said recess and engaging said spindle, substantially as described.

7. The combination with the register, the disk, its spindle and inclosing disk-chamber, of intermediate gearing turning on pins permanently set in the top piece of said disk chamber, substantially as described.

8. The combination with the disk chamber having inlet and outlet ports, of a diaphragm having projections at the corners which set in recesses in the disk chamber, and an upper projection extending through the top of said chamber and having its end spread or riveted, substantially as set forth.

9. The combination with the main casing having legs containing threaded sockets, of the top piece of the disk chamber secured to said casing by screws engaging in said sockets, substantially as described.

10. In a water meter, the combination with the oscillatory disk, of the disk chamber formed of two separable pieces, the upper of which has the central projection containing the guiding groove for the disk-spindle, and has also the inlet and outlet ports formed therein, substantially as described.



501,204. TRAY-BOARD. EDWIN F. CRANE, Batavia, N. Y. Filed June 27, 1892. Serial No. 438,220. (No model.)



*Claim.*—An improved device for catching and throwing balls without handling the same by hand, consisting, essentially, of a long and slender board having on its rear end a guard forming a pocket, and on its under side suitable handles for manipulating the device, substantially as described.

501,205. SOCKET FOR INCANDESCENT LAMPS. AXEL EDISON, Lynn, Mass., assignor to the Thomson-Houston Electric Company, of Connecticut. Filed June 27, 1892. Serial No. 438,096. (No model.)



*Claim.*—1. An incandescent lamp socket having a flanged base, provided with a central non-circular raised portion or projection D, a contact carrying piece having a part F recessed so as to fit over the said projection, and a shell adapted to be screwed to the base thereby clamping the parts together, as described.

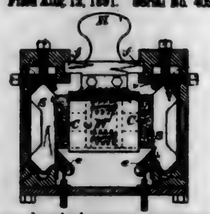
2. An incandescent lamp socket comprising a base, having a central non-circular projection, a contact carrying piece having a support X with lamp terminals on one side, and a raised piece F held above and away from the support X and engaging with the projection upon the base to prevent rotation when the parts are in place, and a shell inclosing the contact carrying piece clamping the parts together by its attachment to the base, as described.

3. An incandescent lamp socket, comprising a base having a central non-circular projection, a contact carrying piece adapted to fit over said projection, and so hold the said piece from rotation and a shell adapted to clamp said contact carrying piece in place, substantially as set forth.

4. An incandescent lamp socket, comprising a base having a threaded flange, and a central non-circular projection, a shell screwed into said flange, and a contact carrying piece fitting over said projection and so held against rotation and having a flange clamped between the base and the end of the shell, substantially as described.

5. A lamp socket comprising a base having a central non-circular projection, a separate contact carrying piece having screw and rubbing lamp terminal contacts, and matching the projection upon the base so as to be held against rotation, and a shell screwed to the base and holding the contact carrying piece in place, as described.

501,206. ELECTRIC CONTACT APPARATUS. JONATHAN P. B. FIREK, Lynn, Mass., assignor to the Thomson-Houston Electric Company, of Connecticut. Filed Aug. 12, 1891. Serial No. 402,416. (No model.)



*Claim.*—1. In an electrical contact apparatus, the combination of a base or support, a series of contact pieces a series of followers or blocks bearing against said contact pieces, and a series of individually adjustable clamping or holding devices for such blocks.

2. In an electrical contact apparatus, the combination with a series of contact pieces provided with wedge shaped bearings of a base and a series of individually adjustable clamping devices, engaging with the contact pieces by such wedge-shaped bearings

3. The combination of the base having an undercut shoulder, the series of contacts bearing against such shoulder and the series of individually adjustable clamping devices for such contacts.

4. The combination of the metal base having an undercut or wedge-formed bearing portion or shoulder, a series of contacts, a series of individually adjustable clamping devices holding such contacts against said shoulder, and insulation interposed between the contacts and the base, shoulder and clamping devices.

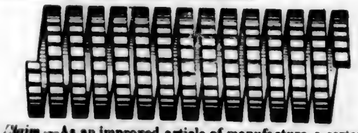
5. The combination of the base, the series of individually removable contacts, the series of followers, the individual adjusting screws therefor having locking devices.

6. An electrical contact apparatus comprising two parallel boxes, two series of separately removable insulated contacts carried by and secured to said boxes by separate clamping devices and facing one another, two electrically united brushes bearing respectively against said two series of contacts and electrical circuit connections leading from said two series of contacts.

7. An electrical contact apparatus comprising two parallel series of contacts, two brushes bearing against the inner faces of such contacts, and springs provided with insulation interposed between such brushes and forcing them apart.

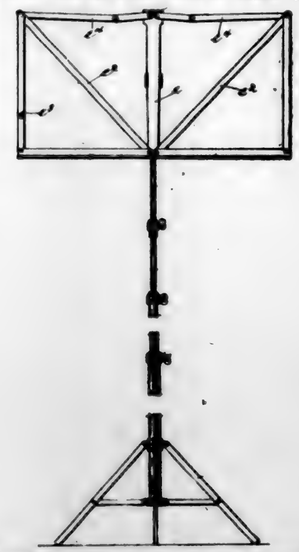
8. The combination of the base, the parallel side boxes, two series of insulated contacts on the inner sides thereof, the two brushes bearing against said series of contacts, and a carrier for said brushes guided in said boxes.

501,207. WASHER. TIMOTHY GINGRAS, Buffalo, N. Y. Filed Dec. 14, 1891. Serial No. 414,969. (No model.)



*Claim.*—As an improved article of manufacture, a series of axle-washers, formed into a helix having a number of convolutions and having slits or cuts in their external peripheries and adapted to be cut into individual washers, as and for the purpose described

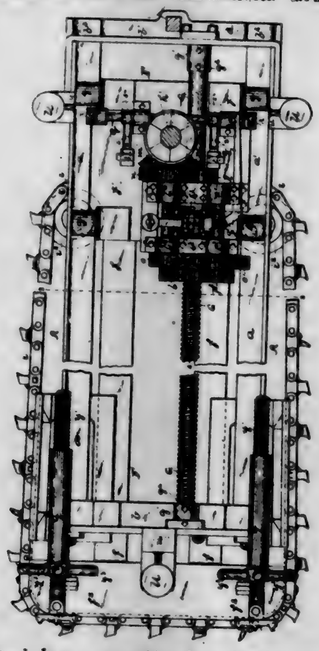
501,208. FOLDING MUSIC-RACK. WILLIAM H. HOWE, Watertown, Mass. Filed Apr. 3, 1893. Serial No. 468,762. (No model.)



*Claim.*—1. In a folding music rack, the combination of the median bar *c*, base bars $c'$, $c'$, pivoted to the lower end thereof and extending in opposite directions, bars $c^3$, $c^3$, also pivoted to the lower end of said bar *c*, and extending diagonally to the rear and left, jointed bars $c^4$, $c^4$, connecting the outer extremities of the diagonal bars with the outer extremities of the base bars, and the jointed bars $c^5$, $c^5$, connecting the outer extremities of the diagonal bars with the upper end of the median bar, substantially as described.

2 In a folding music rack, the combination of the median bar *e*, base bars *e'*, *e'*, pivoted to the lower end thereof and extending in opposite directions, bars $e^3$, $e^3$, also pivoted to the lower end of said bar *e* and extending diagonally to the right and left, jointed bars $e^4$, $e^4$, connecting the outer extremities of the diagonal bars with the outer extremities of the base bars, and jointed bars $e^5$, $e^5$, connecting the outer extremities of the diagonal bars with the upper end of the median bar, and the rib or projection $e^6$, formed upon the upper end of the bar *e*, against which the jointed bars $e^4$, $e^4$, abut, substantially as described.

**501,209. MINING-MACHINE.** ADAM EHL, McKeesport, and ANTON R. WESTERDAHL, Pittsburg, assignors to Samuel S. Brown, Pittsburg, Pa. Filed Jan. 6, 1892. Serial No. 417,146. (No model.)



*Claim.*—1. In a ——g machine, the combination with the main frame having a stationary screw bar mounted thereon, of a sliding frame having a nut engaging with said screw bar, clutch boxes on each side of the nut, rotating around the screw bar, and a clutch fitting around and having a sliding connection with the nut and engaging with said clutch faces, substantially as and for the purposes set forth.

2. In a mining machine, the combination of a main frame having a stationary screw bar mounted thereon, of a sliding frame having the nut engaging with said screw bar, sleeves on each side of the nut rotating around the screw bar, and connections from the nut to said sleeves, substantially as and for the purposes set forth.

3. In a mining machine, the combination with the main frame having a stationary screw bar mounted thereon, of a sliding frame having a nut engaging with said screw bar, a vertical shaft mounted in said sliding frame, the horizontal shaft $m^3$ connected by bevel gearing with the vertical shaft, the horizontal shaft *p* at one side of said shaft $m^3$, and cog gearing between said shafts $m^3$, *p*, for rotating the gear wheels *k* and *l* in opposite directions, the clutch *j* fitting around and connected to the nut by a feather, and mechanism for throwing said clutch into engagement with said gear wheels *k* and *l*, substantially as and for the purposes set forth.

4. In a mining machine, the combination with the main frame, of a caster giving support to said frame, and a cam on said caster for raising and lowering said frame, substantially as and for the purposes set forth.

5. In a mining machine, the combination with the main frame of a caster giving support to said frame, sleeves fitting around the caster spindle and also fitting in bearings on the main frame, said sleeves having opposed cam faces and one sleeve being mounted in its bearing so as to revolve but be held from longitudinal movement, and the other sleeve being mounted in its bearing so as to be kept from sliding but held from rotation.

6. The combination with the main frame A, of the caster U comprising the bracket *u*, the bearings *v*, *v'*, the journal *w* with the cam face *w'*, the feather $v^3$ fitting in the groove $v^2$ in said journal *w*, the cam face *x* with the journal *x'* and head $x^2$, and the spindle $x^4$ and roller $x^5$, substantially as and for the purposes set forth.

7. In a mining machine, the combination of a main frame having horizontal sockets extending longitudinally of said frame at the forward end thereof, threaded bars fitting within the sockets and their ends provided with two or more teeth adapted to engage the mine face and prevent the bars from turning and nuts engaging said threaded bars and bearing against the sockets and adapted to force the toothed ends of the bars into the body of coal, substantially as and for the purposes set forth.

8. In mining machines, the combination of a main frame having a vertical socket thereon, a bar journaled in the socket and a brace rod pivoted to said bar whereby said brace rod is free to swing vertically as well as laterally, substantially as and for the purposes set forth.

9. In a mining machine, the combination with the main frame having the vertical socket $r^3$ of the threaded bar or bolt $r^4$ mounted therein and held by the nut $r^5$, and a brace rod *s* pivoted to said bolt $r^4$, substantially as and for the purposes set forth.

10. In a mining machine, the combination with a main frame, of a carriage, a plate extending longitudinally forward therefrom, a cutter chain supported by the carriage and plate, a ratchet and pawl connection between the carriage and plate, and mechanism operating the pawl to force forward the plate and regulate the tension of the cutter chain.

11. In a mining machine, the combination of a main frame, a carriage having a sprocket wheel mounted therein, a plate extending longitudinally forward from the carriage, said plate having a ratchet face and carrying one or more sprockets at the forward end, a cutter chain supported by the carriage and plate, a pawl on the carriage engaging said ratchet face, and mechanism for operating said pawl to force forward said plate to regulate the tension of the cutter chain, substantially as and for the purposes set forth.

12. In mining machines, the combination of a main frame, a carriage having a vertical sprocket wheel mounted therein, the plate *f* extending forward from the carriage and provided with a ratchet face and carrying one or more sprockets at the forward end, a cutter chain supported by the carriage and plate, the pawl *s'* mounted on the carriage engaging with the said ratchet, the sleeve $s^4$, and the lever $s^5$, substantially as and for the purposes set forth.

**501,210. WATCH-BOW FASTENER.** FRITZ MIHR, Philadelphia, Pa., assignor to the Keystone Watch Case Company, same place. Filed Nov. 29, 1892. Serial No. 453,536. (No model.)



*Claim.*—1. The combination with the pendant of a watch case provided with laterally projecting arms, rotary sleeves carried by the arms and held thereon, and a bow having its ends provided with eyes fitting over the rotary sleeves on the arms of the pendant and directly secured to said sleeves.

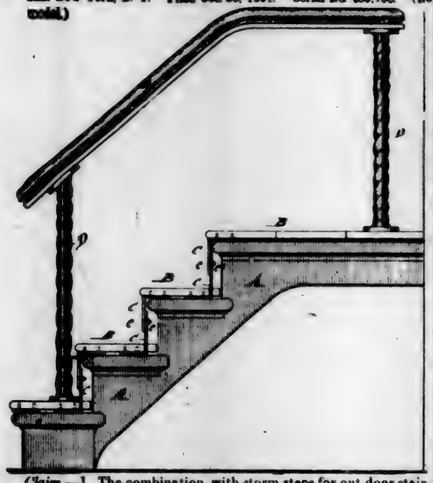
2. The combination with the pendant of a watch case provided with laterally projecting arms having heads upon their extremities of rotary sleeves carried by said arms within the heads, and a bow having its ends sleeved upon the rotary sleeves and fastened to them.

3. The combination with the pendant of a watch case provided with laterally projecting arms having heads upon their extremities of longitudinally split rotary sleeves carried by said arms within the heads, and a bow having its ends sleeved upon the rotary sleeves and fastened to them.

4. The combination with the pendant of a watch case having arms B provided with heads *b* of sleeves E upon the arms within the heads and free to turn upon the arms, a bow having its ends D sleeved upon the sleeves E, and removable fastenings uniting the bow ends D and the sleeves E.



**501,211. STORM-STEP FOR OUTDOOR STAIRS.** WILLIAM MOLLER, New York, N. Y. Filed Oct. 28, 1891. Serial No. 409,760. (No model.)



*Claim.*—1. The combination, with storm-steps for out-door staircases, said steps being composed of treads, angle straps connecting said treads and clamping devices for said treads, of the lower supporting-standards of the hand-rails, said standards being attached to the lowermost tread of the storm-step, and screw-bolts for connecting said standards to the angle-strap of the next adjacent tread of the storm-step, substantially as set forth.

2. The combination, with storm-steps for out-door staircases, said steps being composed of auxiliary treads, angle-straps attached to the under-side of the treads and having vertical overlapping ends provided with slots and a clamping device for the slotted overlapping ends of the angle-straps, of standards attached to the top-step of the storm-steps, standards attached to the lowermost tread of the storm-steps, screw-bolts connecting the lower standards with the angle-strap of the next adjacent tread of the storm-steps, and hand-rails connecting the upper ends of the standards, substantially as set forth.

**501,212. APPARATUS FOR TURNING MUSIC-SHEETS.** FERDINAND MOREL, Paris, France. Filed May 12, 1892. Serial No. 432,618. (No model.) Patented in France Sept. 4, 1890, No. 208,043, and in Germany Oct. 7, 1892, No. 64,665.

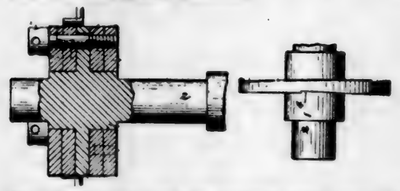


*Claim.*—1. In a music leaf turning apparatus the combination of the plates *x*, *v*, one of which is slotted and provided with racks and the other with pinions and thumb knobs for turning the same and the leaf turning rods carried by the base made up of said plates, substantially as described.

2. In combination the base, the series of arms, the escapement device engaging the said arms, the pneumatic device for operating the escapement, comprising the diaphragm, the air sack K, the inclosing casing therefor, the foot piece *t* resting on the sack and the springs *u* between the said foot piece and the sack casing, substantially as described.

3. In combination the base, the pivoted arms under spring tension, the holder for loose sheets comprising the concave part *p*, and the rod X O adapted thereto, both of the said parts being carried rigidly by a block P and the bracket S and pivot *r* for said block, substantially as described.

**501,218. ROTARY CUTTER.** CARL RAABE, Berlin, Germany, assignor of one-half to George H. Benjamin, New York, N. Y. Filed Mar. 6, 1893. Serial No. 464,865. (No model.)



*Claim.*—1. In a cutter-head, the combination with a stock, and a disk formed on opposite sides with cam depressions, and provided with elongated slots, of clamping plates formed with radial recesses to receive the bits, and clamping bolts extending through said plates, and through the slots of said disk, substantially as described.

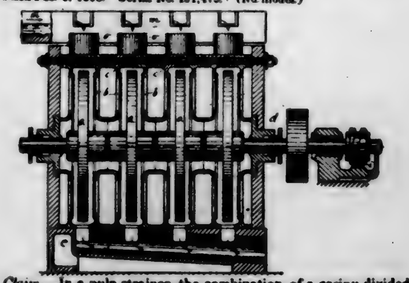
2. In a cutter-head, the combination of a slotted disk having alternating cam depressions on opposite sides, plates and bolts for clamping the bits against said disk, the slots in the disk permitting, when the bolts are loosened, the turning of the plates to shift the bits in the cam depressions and effect the transverse adjustment of the bits, substantially as described.

3. In a cutter-head, the combination with a stock provided with an integral disk having alternating cam depressions plates and securing bolts for clamping the bits, said plates adapted when turned, to shift said bits to shallower portions of the depressions, and thus effect the relative adjustment of both series of bits, substantially as described.

4. In a cutter-head, the combination with the stock, and its integral disk formed with opposite cam depressions, and elongated slots, of clamping plates formed with radial seats for the bits, and clamping bolts securing the plates and disk together, and permitting when loosened, a slight rotary movement of said plates to adjust the bits transversely, substantially as described.

5. In a cutter-head, the combination with a stock, of a disk formed with a series of cam depressions, and a series of arc-shaped slots, a clamping plate formed with radial seats to receive the bits, a series of securing bolts adapted when loosened, to permit a limited rotary movement of said plate to adjust the bits, and a scale and index located on the peripheries of the disk and plate to indicate the extent of movement of the latter, substantially as described.

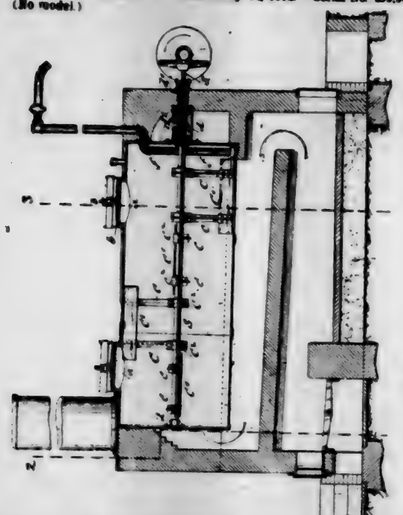
**501,214. PULP-STRAINER.** PAUL REINICKE, Coethen, Germany. Filed Feb. 8, 1893. Serial No. 461,473. (No model.)



*Claim.*—In a pulp strainer, the combination, of a casing divided into a series of compartments, the side walls of which are formed of

annular screens or strainers placed vertically, a rotative shaft mounted horizontally and passing through the several compartments, and a disk fixed on the shaft within each compartment, and means for conducting pulp into the said compartments, substantially as set forth.

## 501,215. APPARATUS FOR MIXING ASPHALT CEMENT. JULIUS SCHUBERT, Brooklyn, N. Y. Filed July 14, 1892. Serial No. 439,958. (No model.)



*Claim.*—1. In an apparatus for mixing refined asphalt and oil, the combination of a mixing vessel, a horizontal rotary shaft therein, radial arms attached to the shaft, and a horizontal agitating blade on said arms provided with a flange on its inner edge, substantially as set forth.

2. In an apparatus for mixing refined asphalt and oil, the combination of a mixing vessel, a rotary shaft supported in bearings of the heads of the same, radial arms attached to said shaft, agitating blades or paddles attached to the ends of said arms, said blades or paddles having flanges on their inner edges, a pipe for supplying compressed air to the interior of the vessel, and a discharge pipe that extends from a point near the bottom of the mixing vessel through the wall of the same to a sufficient height above the vessel, said discharge pipe being provided with a stop-cock, substantially as set forth.

## 501,216. WIRE FENCE. MICHAEL M. SHELLABERGER, De Kalb, Ill. Filed Mar. 14, 1893. Serial No. 466,566. (No model.)



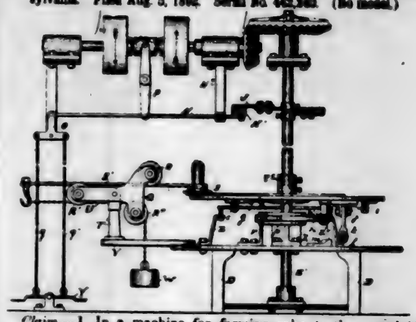
*Claim.*—1. The herein described fencing material composed of vertically arranged open mesh pickets each having two legs arranged parallel to each other and integrally formed from a plurality of wires woven to produce the mesh, and longitudinal cable wires crossing and embracing the pickets and twisted between adjoining pickets, substantially as described.

2. The herein-described fencing material, comprising in combination pickets composed of a strand wire or wires and a ribbon or web wire or wires supported by the strand wires and providing an open mesh, and longitudinal cable wires embracing the pickets and twisted between them, substantially as described.

3. The herein-described fencing material, comprising in combination pickets of U-form composed of a strand wire or wires and a zigzag ribbon wire or wires supported by the strand wires, the latter being crossed between the zigzag portions, and longitudinal cable wires embracing the pickets and twisted between them and also twisted between the legs of the pickets, substantially as described.

4. The herein-described fencing material, comprising U-shaped pickets each composed of two strand wires and a ribbon wire of zigzag form, the strand wires being twisted longitudinally of the ribbon wire so as to cross the angles thereof, and longitudinal cable wires embracing the legs of the pickets and twisted between the pickets, substantially as described.

## 501,217. MACHINE FOR FORMING RAKE-TEETH. JOHN H. SHORT, Johnstown, Pa., assignor to The Cambria Iron Company, of Pennsylvania. Filed Aug. 5, 1892. Serial No. 442,242. (No model.)



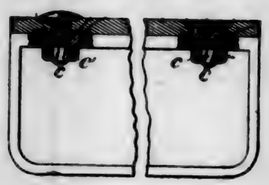
*Claim.*—1. In a machine for forming rake teeth, a revoluble forming table provided with a gripping device consisting of a short bar, working in a slide on said table, a spring attached to the table adjusted to force the bar against the former, a wheel or projection on said bar, arranged to engage with a stationary curved segment, said segment being arranged eccentrically with respect to the axis of revolution of said table, said gripping device being so arranged as to automatically clamp and release the end of a bar or rod, the parts being combined substantially as and for the purpose set forth.

2. In a machine for forming rake teeth on a revoluble table, a starting and stopping device consisting of a pair of rotary clutches revolubly mounted on their shaft, driven in opposite directions, a double faced shifting clutch secured to said shaft in such a manner as to turn with it and adapted to engage with either of the aforesaid clutches, a system of levers connected to said shifting clutch arranged to throw it into connection with either of the driven clutches, and curved arms on the driven shaft of the forming table arranged to automatically engage with the shifting levers in such a manner as to put the shifting clutch out of connection with the driven clutches, the parts being combined substantially as and for the purpose set forth.

3. In a machine for forming rake teeth on a revoluble table, a starting and reversing mechanism consisting of a pair of rotary clutches revolubly mounted on their shaft, driven in opposite directions, a double faced shifting clutch secured to said shaft in such a manner as to turn with it and adapted to engage with either of the aforesaid clutches, a system of levers connected to said shifting clutch arranged to throw it into connection with either of the driven clutches, and curved arms on the driven shaft of the forming table arranged to automatically engage with the shifting levers in such a manner as to put the shifting clutch out of connection with one and into connection with the other of the driven clutches, the parts being combined substantially as and for the purpose set forth.

4. In a machine for forming rake teeth on a revoluble table, an automatic ejector consisting of a plunger fitting in a recess of the former, a slide to guide said plunger, a projection or wheel on the plunger, a curved spring eccentrically located with respect to the axis of revolution of the table adapted to engage with the projection or wheel of the plunger, and a latch arranged to hold and to release the plunger at the proper times, the parts being combined substantially as and for the purpose set forth.

## 501,218. CONVEYER-BELT. GEORGE E. STEAD, Leeds, England. Filed Aug. 6, 1892. Serial No. 442,374. (Model.)



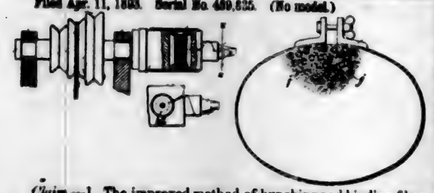


*Claim.*—1. The combination with a belt, of a tube with a flange at one end pressing against one side of the belt, a washer placed upon the opposite side of the belt, and spikes upon the washer entering the belt, the edges of the tube being turned over the inner edge of the washer and down flat upon the same.

2. The combination with a belt, of a square tube with a flange at one end pressing against one side of the belt, a washer placed upon the opposite side of the belt, and spikes upon the washer entering the belt the corners of the square tube opposite the said flange being cut through a part of the length of the tube and the ends of the tube being bent down upon the inner edge of said flange.

3. The combination with a belt, of a tube with a flange at one end pressing against one side of the belt, a washer placed upon the opposite side of the belt, and spikes upon the washer entering the belt, the edges of the tube being turned over the inner edge of the washer and down flat upon the same, a bucket, and a bolt passing through said tubes and secured to said bucket.

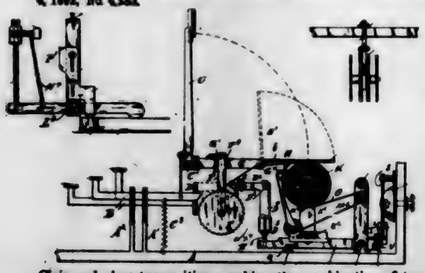
## 501,219. MANUFACTURE OF BROOMS, BRUSHES, &c. JOHANN T. C. STRUCK, Lübeck, assignor to Johannes Sander, Hamburg, Germany. Filed Apr. 11, 1893. Serial No. 469,835. (No model.)



*Claim.*—1. The improved method of bunching and binding fibers consisting in temporarily binding together a quantity of such fibers in a bundle, then while so bound, collecting separate portions of the fiber successively into single groups and binding said separate groups into bunches within the bundle, substantially as herein set forth.

2. An improved apparatus for bunching and binding fibers consisting in the combination of a spindle *b* having a sharp edged tubular end *c* and a hole *i* in its side and a bobbin *d* arranged to rotate in said spindle, substantially as herein set forth.

## 501,220. TYPE-WRITING MACHINE. VICTOR VAN DER MYNSBRUGGE and MARY VAN DER MYNSBRUGGE, New York, N. Y. Filed May 3, 1892. Serial No. 431,731. (No model.) Patented in England Mar. 4, 1892, No. 4,282.



*Claim.*—1. In a typewriting machine, the combination of type-levers and key-levers for operating the same, which key-levers are pivoted at their centers on standards projecting from the base of the machine, of a movable carrier for supporting a cylinder, a rack on said carrier, two ribbon-spools, a rocking bar resting on the key-levers and fixed to a rocking shaft having a downwardly-projecting arm, a pawl on the end of said arm, which pawl engages the rack of the carrier, a frontwardly-projecting arm on said rocking shaft and an adjustable pawl on said frontwardly-projecting arm, which pawl is adapted to engage either one of the two ribbon-spools, substantially as set forth.

2. In a typewriting-machine, the combination, with type levers and key-levers, of a rocking-bar operated by the separate key-levers, a downwardly-projecting arm on the shaft of said rocking-bar, said downwardly-projecting arm carrying pawls that engage a rack on the carrier, a frontwardly-projecting arm, a link pivoted to said arm, a pawl pivoted on said link and two ribbon-spools engaged with and rotated by said adjustable pawl on the frontwardly-projecting arm, substantially as set forth.

3. The combination, with the type-levers and key-levers, of a rocking-bar operated by the several key-levers, arms on said rocking-bar, of which one projects downward and the other toward the front, a pawl on the downwardly-projecting arm engaging a rack of the carrier, a link pivoted to the front end of the forwardly-projecting arm, a pawl pivoted to said link and hanging downward from the same, and two ribbon-spools arranged below said forwardly-projecting arm, each spool having a ratchet-wheel in which the said adjustable pawl on the forwardly-projecting arm can engage, substantially as set forth.

4. In a typewriting-machine, the combination, with type-levers and key-levers for the same, of a rocking-bar operated by the several key-levers, an arm on the shaft of said rocking-bar, a pawl on said arm, a sliding-carrier provided with a rack engaging the pawl, a removable square rod, a latch for locking said rod in place, two independent ribbon spools suspended from said rod, a ratchet-wheel on each spool, and an adjustable pawl supported from the shaft of the rocking-bar for engaging the ratchet-wheel of either spool, substantially as set forth.

5. In a typewriting-machine, the combination with a curved bar, serving as a pivotal support for the type-levers, of an arm projecting from the center of said curved bar, a combined ribbon and type-guide hinged to said arm, a removable rod placed into an opening of said arm, a latch for locking the rod in place, and ribbon-spools supported by said rod, substantially as set forth.

6. In a typewriting-machine, the combination, with a segmental bar, serving as a pivotal support for the type-levers, an arm projecting centrally from said curved bar, a swinging-arm pivoted to said arm on the curved bar and provided with a ribbon-guide, and an aligning-device composed of a pin on said swinging-arm and a pin on the end of a curved arm pivoted on the swinging-arm, substantially as set forth.

7. In a typewriting-machine, the combination, with a paper-carriage, of a carrier for supporting said carriage and on which carrier the said carriage can slide in the direction at right-angles to the length of the cylinder supported by said carriage, a shaft pivoted at its ends in the frame, or casing of the machine, on which shaft the carrier is mounted to slide in the direction of the length of the cylinder, a rod rigidly connected with said shaft by two standards, said rod passing through the apertures in the side-bars of the carriage, whereby said carriage is mounted to slide on said rod in the direction of the length of the cylinder and the carriage to move on the carrier transversely to the length of the cylinder, substantially as set forth.

8. In a typewriting-machine, the combination, with a paper-carriage, of a carrier supporting the carriage and mounted to slide in the direction of the length of the cylinder on a pivoted shaft in the frame of the machine, two standards fastened to said shaft and projecting upward, a rod held in the upper ends of said standards, which rod passes through apertures in the side-bars of the carriage, a projection on one of the above-mentioned standards, which projection extends over the shift key-lever, and a stop against which the said standard can strike, substantially as set forth.

9. In a typewriting-machine, the combination, with a paper-carriage, of a carrier supporting said carriage, and mounted to slide on a pivoted shaft in the casing or frame of the machine, upwardly-projecting standards fastened on the shaft and swinging with the same, a rod held in said standards, which rod passes through apertures in the side-bars of the carriage, a projection on one of said side-bars extending over the shift key-levers, a stop behind said standard against which the standard can strike, and a sliding-piece on said standard which sliding-piece is provided with a projection, substantially as set forth.

10. In a typewriting-machine, the combination, with a carrier mounted to slide on a pivoted shaft in the casing, a rack on the front of said carrier, a swinging-pawl operated from the key-levers and engaging said rack, a stop-pin on the back of the carrier, a bell-hammer in the path of said pin, a motor-spring, a cord connecting said pin and spring, an adjustable stop-piece, a rack behind the carrier for supporting said adjustable stop-piece and a carriage on the carrier and movable on said carrier from front to rear, substantially as set forth.

## 501,221. CORSET-STIFFENER. HERMANN H. WAGNER, Cassel, Germany. Filed Sept. 10, 1892. Serial No. 445,581. (No model.) Patented in Germany Mar. 18, 1891, No. 60,478, and in England Sept. 15, 1891, No. 15,863.

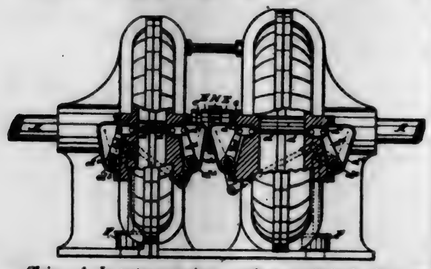


*Claim.*—A corset stiffener, comprising two interlocking flattened helical spring wires, the loops of the spring wires interlocking with each other and the curved part of the spring wires uniting the loops forming the side edges of the corset stiffener, substantially as shown and described.

**501,222.** METHOD OF MAKING ARTIFICIAL WHALEBONE. PAUL C. DAMS and LÉON FRANÇOIS, Paris, France. Filed Nov. 18, 1892. Serial No. 452,445. (No specimens.) Patented in France June 25, 1892, No. 222,804, and in Belgium June 27, 1892, No. 100,292.

*Claim.*—The herein described process of forming artificial whalebone from animal hair consisting in subjecting the same to a softening bath then immersing the material in a bath of acetic acid and finally subjecting the mass to pressure, substantially as described.

**501,223.** STEAM-ENGINE. JOHN H. ECKERSHOFF, Cincinnati, Ohio, assignor to the United States Engine Company, same place. Filed Oct. 8, 1892. Serial No. 448,272. (No model.)



*Claim.*—1. In a steam engine a continuous cylinder having a slot in its periphery; a plate mounted upon the shaft taking into the slot and carrying a pair of pistons; a pair of resistance slides taking diagonally across the section of the cylinder, and balanced piston valves controlling the distribution of steam substantially as set forth.

2. In a steam engine a continuous cylinder having a slot in its periphery; a plate mounted upon the shaft, taking into the slot and carrying a pair of pistons, a pair of self-seating resistance slides and link connection between the parts of the slides and the operating mechanism, and balanced piston valves controlling the admission and exhaust of steam, substantially as set forth.

3. In a steam engine a continuous cylinder having a slot in its periphery; a plate mounted upon the shaft, taking into the slot and carrying a pair of pistons; a pair of self-seating resistance slides composed of parts adapted to overlap or interlock with each other and a link connection between the parts of the slides and the operating mechanism, and balanced piston valves controlling the distribution of steam, substantially as set forth.

4. In a steam engine a continuous cylinder having a slot in its periphery; a plate mounted upon the shaft taking into the slot and carrying a pair of pistons; a pair of self seating resist-slides operated from the main shaft by a collar with cam grooves, a rock shaft and a set of levers, and a dash pot for the quick closing of the slides, substantially as set forth.

5. In a steam engine a continuous cylinder having a slot in its periphery; a plate mounted upon the shaft taking into the slot and carrying a pair of pistons; a pair of resistance slides taking diagonally across the cylinder; a rock shaft operated from the main shaft, levers and links connecting the rock shaft and the resistance slides and steam tight housings inclosing the bearings for the rock shaft, the resistance slides, the links and the levers, substantially as set forth.

6. In a compound engine two continuous cylinders having slots in their peripheries; plates mounted upon the shafts taking into the slots, and each carrying a pair of pistons; a pair of resistance slides taking diagonally across the cylinders and balanced piston valves each controlling the admission of steam to the two cylinders and the exhaust therefrom, substantially as set forth.

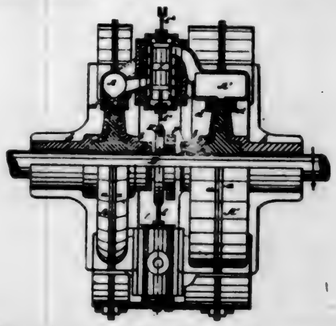
7. In a compound engine two continuous cylinders having slots in their peripheries, plates mounted upon the shafts taking into the slots and each carrying a pair of pistons; a pair of resistance slides in each of the cylinders taking diagonally across the cylinder, and balanced piston valves each controlling the admission, expansion and exhaust of steam, substantially as set forth.

8. In a compound engine two continuous cylinders having slots in their peripheries, plates mounted upon the shafts taking into the slots, and each carrying a pair of pistons; a pair of self-seating resistance slides taking diagonally across the cylinder; balanced piston valves, moving in opposite directions and operated by a cam wheel; a set of levers, and a dash pot, connected to one of the piston valves, for the quick return of the same, substantially as set forth.

9. In a steam engine a continuous cylinder having a slot in its periphery, a plate mounted upon the shaft, taking into the slot and carrying a pair of pistons mounted opposite each other; a pair of resistance slides taking diagonally across the cylinder and mounted opposite each other, and a pair of balanced piston valves mounted opposite each other, substantially as set forth.

10. In a compound engine, two continuous cylinders having slots in their peripheries, plates mounted upon the shafts, taking into the slots and each carrying a pair of pistons, a pair of resistance slides in each cylinder, distribution valves having the ports to the low pressure cylinder crossing each other and an extensible valve rod whereby the distribution valve may be actuated, and the engine reversed, substantially as set forth.

**501,224.** ENGINE. JOHN H. ECKERSHOFF, Cincinnati, Ohio, assignor to the United States Engine Company, same place. Filed Feb. 4, 1893. Serial No. 461,058. (No model.)



*Claim.*—1. In an engine the combination of a continuous cylinder, one or more pistons adapted to travel therein, one or more retractible resistance plates, an exhaust normally open and means for closing the exhaust as the piston approaches a resistance plate thereby balancing the pressure upon the resistance plates, substantially as set forth.

2. The combination, in an engine, of distribution valves; a shaft; a cam revolving therewith and adapted to actuate the valves, the cam having one face adapted to hold the valves in position for the admission of steam, a second adapted to hold them in place for the expansion and exhaust of steam, and a third adapted to hold them in position to shut off the exhaust, substantially as set forth.

3. The combination, in an engine, of distribution valves; a shaft; a cam revolving therewith having one face adapted to hold the valves in position for the admission of steam, a second adapted to hold them in place for the expansion and exhaust of steam and a third adapted to hold them in position to shut off the exhaust, and a yoke connecting the distribution valves and adapted to be actuated by the cam, substantially as and for the purpose specified.

4. The combination, in an engine, of distribution valves; a shaft; a cam revolving therewith having one face adapted to hold the valves in position for the admission of steam, a second adapted to hold them in place for the expansion and exhaust of steam and a third adapted to hold them in position to shut off the exhaust; a yoke connecting the distribution valves, embracing and adapted to be actuated by the cam; and a guide for the yoke, substantially as and for the purpose specified.

5. The combination, in an engine, of distribution valves; a shaft; a yoke revolving therewith having one face adapted to hold the valves in position for the admission of steam, a second adapted to hold them in place for the expansion and exhaust of steam and a third adapted to hold them in position to shut off the exhaust; a yoke connecting the distribution valves and adapted to be actuated by the cam; a movable bearing mounted on the yoke and adapted to engage with the cam; and means for adjusting the position of the bearing, substantially as and for the purpose specified.

6. The combination, in an engine, of distribution valves; a shaft; a cam; a sliding yoke connecting the distribution valves; a movable bearing mounted on the yoke and adapted to engage the cam; a governor and a connection between the governor and the movable bearing whereby the position of the bearing and the distribution valve may be controlled by the governor, substantially as and for the purpose specified.

7. The combination, in an engine, of distribution valves; a connection between the valves; a cam adapted to actuate the valves; a movable bearing adapted to engage with the cam; a lever adapted to adjust the position of the bearing; a governor; a connecting rod from the governor, and a slotted connection between the lever and the connecting rod, substantially as and for the purpose specified.

8. In an engine the combination of a cam; distribution valves normally operated thereby; a governor, and connections between the governor and the distribution valves whereby the engine may receive counter steam and be reversed, substantially as and for the purpose specified.

9. In a steam engine the combination of a continuous cylinder having a slot in its periphery; a plate mounted upon the shaft, taking into the slot, and carrying one or more pistons; one or more resistance plates; grooves in the shank portion of the cylinder sections; a packing in said grooves adapted to be operated by steam pressure, and composed of jointed segments, and regulating screws adapted to support the packing.

10. In a steam engine the combination of a continuous cylinder having a slot in its periphery, a plate mounted upon the shaft taking into the slot and carrying one or more pistons, grooves in the shank portion of the cylinder sections and a packing in the grooves composed of segments and operated in one direction by steam pressure, and wedges securing the segments and adapted to press the packing against its other bearing, substantially as and for the purpose specified.

11. In a steam engine the combination of a continuous cylinder having a slot in its periphery, a plate mounted upon the shaft taking into the slot and carrying one or more pistons, grooves $d$ in the shank portion of the cylinder sections, a sectional packing $d'$ in the grooves, grooves $d^3$ in the sections of the packing, grooves $d^5$ in the shank of the cylinder sections, wedges $d^6$ adapted to take into the grooves $d^3$ and $d^5$ and means for actuating the wedges, substantially as and for the purpose specified.

12. In a compound engine the combination of two or more continuous piston cylinders, of different form in cross section, having slots in their peripheries; plates mounted on the shaft, taking into the slots, and carrying one or more pistons; retractible resistance plates for each cylinder; and a rock shaft adapted to actuate the resistance plates, the form of the cylinders in cross section being such that the same movement operates the resistance plates in the high and low pressure cylinders, substantially as and for the purpose specified.

**501,225.** COMBINED KNIFE AND PENCIL AND ERASER HOLDER. JOHN G. F. FLAER, Cincinnati, Ohio. Filed Feb. 23, 1893. Serial No. 464,028. (No model.)



*Claim.*—The combination of an open-ended case A, having a longitudinal slot B, a slide C, adapted to traverse said case, and provided with pin $c$ and blade D, and the removable eraser-holder E, fitting snugly within said case, and serving as a stop that retains said knife in place, all as herein described and illustrated.

**501,226.** PIANOFORTE. ALEXANDER W. HALL, New York, N. Y. Filed Oct. 13, 1892. Serial No. 448,983. (No model.)



*Claim.*—1. The combination with the sound-board and bridge of a piano-forte, of arms projecting from the bridge and having their outer ends attached to the sound-board at a distance from the bridge, substantially as and for the purpose herein set forth.

2. The combination with a piano-forte sound-board, of a bridge recessed at intervals in the part next the said board and provided on either side opposite said intervals with projecting arms the outer ends of which are attached to the said board, substantially as herein set forth.

3. The combination with the strings and the bridge of a piano-forte, of a strip of channeled metal the edges of which bear upon the strings, and screws for clamping the said strip upon the strings, substantially as herein set forth.

4. The combination with the strips and the bridge of a piano-forte, of a channeled strip of aluminium the edges of which bear upon the strings, and screws for clamping the said strip upon the strings, substantially as herein set forth.

5. The combination with a piano-forte string and the pins to which the ends of said string are attached, of a spring interposed between one end of the string and its attaching pin and serving for the attachment of the string to the pin, substantially as herein set forth.

**501,227.** PRESERVATIVE DRIER. THOMAS G. HOYER, New York, N. Y. Filed Dec. 7, 1892. Serial No. 454,368. (No specimens.)

*Claim.*—A composition of matter for use as a drier, comprising hydrated manganese dioxide, calcium hydrate, and a calcium salt, substantially as set forth.

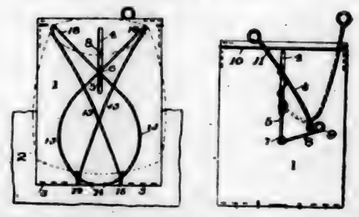


**501,228.** ATTACHING DRUMS AND SLEEVES TO SHAFTS. GUSTAVE H. JAHN, Cincinnati, Ohio. Filed Apr. 29, 1893. Serial No. 472,348. (No model.)



*Claim.*—The combination, of shaft A, having an enlargement B, flat faces $b$, $b'$, and shoulders $b^2$, $b^3$, the cylinder C, having countersunk ends E, E', provided with inwardly-projecting tongues $e$, $e'$, and the heads F, F', having notches $f$, $f'$, and openings G, G', that fit around the segmental portions of said shaft and are secured in place, substantially as described and for the purpose stated.

**501,229.** GARMENT-POCKET. HENRY MASON, U. S. Navy. Filed Jan. 31, 1893. Serial No. 460,422. (No model.)



*Claim.*—1. In a safety-pocket for garments and other articles, the combination of a metal plate, locking jaws secured to said plate, a sliding attachment substantially as described for said jaws, and a flexible bag secured to said jaws; whereby the jaws, when closed, close the mouth of said bag and are opened by the movement of said attachment, substantially as set forth.

2. In a safety pocket for garments and other articles, the combination of a metal plate, locking-jaws secured to said plate, a sliding attachment substantially as described for said jaws, a flexible bag secured to said jaws, and a catch; whereby the jaws, when closed, close the mouth of said bag and are opened and held open by said attachment, substantially as set forth.

3. In a safety-pocket, for garments and other articles, the combination of a metal plate, locking-jaws secured to said plate, a sliding rod connected to said jaws, a lever connected to said rod, and a catch for said lever.

4. In a safety-pocket for garments and other articles, the combination of a metal plate, locking-jaws secured to said plate, a sliding rod connected to said jaws, a lever connected to said rod, and a bar provided with a catch for said lever.

5. In a safety-pocket for garments and other articles, the combination of the following named parts: a plate or frame provided with a slot; a rod sliding in said slot; locking-jaws connected to said rod; a bell-crank-lever also connected to said rod; and a bar provided with a catch for said lever.

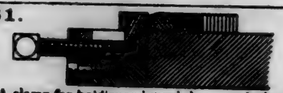
**501,230.** BICYCLE-SADDLE. AUGUST HENKY, Philadelphia, Pa. Filed Mar. 18, 1893. Serial No. 466,603. (No model.)



*Claim.*—In a bicycle saddle, the recurved coiled spring 12, having lengthwise adjustable free ends and means of attachment to the front end of the saddle seat, in combination with the clamp 6, formed on the end of the spring bar 1, by bending the end thereof back into parallel position with the bar, and perforating the bend for the insertion of the ends of the spring 12 and provided with a bolt and nut for compressing said clamp upon the ends of the spring 12, substantially as shown and described.

**501,231.** CLAMP FOR HOLDING PRINTERS' CHASES ON BEDS OF PRINTING-PRESSES. GEORGE H. PRATT and ALPHEUS I. PAINE, Newton, Mass. Filed Feb. 3, 1893. Serial No. 460,892. (No model.)

**501,231.**



*Claim.*—A clamp for holding printers' chases on beds of printing presses, comprising the main portion or body portion E adapted to be secured to the edge of the bed, and the reversible sliding jaw H provided with the lip H'' and arranged to slide on said portion E and be forced against the chase as it lies on the bed, substantially as described

**501,232. JEWELRY AND METHOD OF MAKING SAME.** HERMAN T. RIESSNER, JAMES A. BOSSET, and CHARLES O. SWEET, of Attleborough, Mass. Filed Apr. 17, 1893. Serial No. 470,732. (No specimens.)



*Claim.*—1. The method herein described for constructing articles of jewelry consisting of forming the petals from sheet-metal, next surrounding the same with an ornamental metallic-border, then grouping the petals together to form a flower, and finally applying to the central portion of the petals, coloring matter by brushing the same thereon, as described

2. An article of jewelry of a floral nature the petals of which have colored, concave central portions surrounded by raised and ornamented metallic-borders, as described.

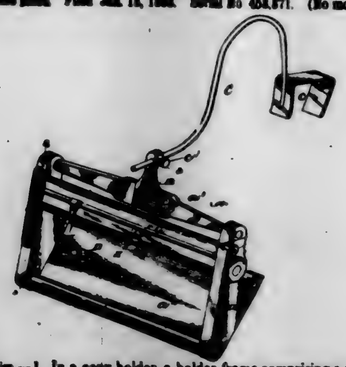
3. In an article of jewelry, a petal 5 having a concaved central portion, a convex metallic-border 6, the ornaments 7—7 raised from said border, and a coloring matter 8 applied to the concave portion of the petal, as and for the purpose described.

**501,233. ALLOY.** JOSEPH W. RICHARDS, Bethlehem, and ALFRED E. HUNT, Pittsburg, Pa. Filed Jan. 20, 1892. Renewed June 3, 1893. Serial No. 476,567. (No specimens.)

*Claim.*—1. An alloy for use in the manufacture of steel consisting of aluminum, iron and manganese, the same containing about thirty per cent. or more of manganese, substantially as set forth.

2. An alloy for use in the manufacture of steel, consisting of aluminum, iron and thirty per cent. or more of manganese and containing a low percentage of carbon, substantially as set forth.

**501,234. COPY-HOLDER AND PRINTER'S GUIDE.** JAMES W. SEARLE, Washington, D. C., assignor of one-half to William Lee White, same place. Filed Jan. 18, 1893. Serial No. 458,871. (No model.)



*Claim.*—1. In a copy holder, a holder frame comprising a paper winding roller, a clip arranged thereon, a presser plate, and line indicator attached to said plate, substantially as shown and described.

2. In a copy holder, a holder frame comprising a paper winding roller, a spring clip thereon, a spring presser plate and an adjustable line indicator, all arranged substantially as shown and described.

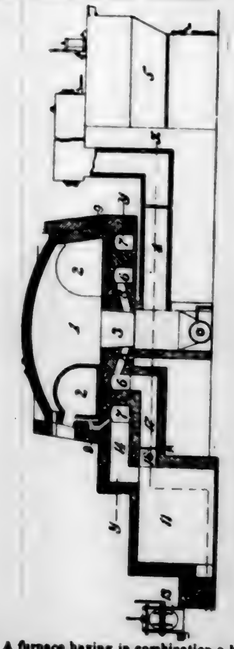
3. The combination with a frame, of a paper winding roller journaled therein, the paper clip thereon, the presser plate, the shaft having a knob and cam leg, the spring plate bearing on the leg, the slide rod and movable pointer thereon all arranged substantially as shown and described.

4. An improved copy holder comprising a bracket arm having a fork at one end, and a copy holding frame comprising a paper winding roller and presser plate, and the hanger plate, by means of which the frame is connected with the bracket arm, substantially as shown and described.

**501,235. CREOSOTE COMPOUND.** BRUNO R. SEIFERT, Radebeul, near Dresden, Germany, assignor to Dr. P. von Heydenn Nachfolger, same place. Filed Feb. 9, 1893. Serial No. 461,674. (Specimens.) Patented in England Nov. 24, 1890, No. 19,071; in Germany Mar. 2, 1891, No. 60,716; in Belgium Mar. 9, 1891, No. 94,068, and in Italy Mar. 24, 1891. XXXIX, 99.

*Claim.*—The new compound derived from creosote and carbon dioxid which is a thick semi-fluid oil, insoluble in water, soluble in alcohol and ether, neutral, not caustic, without smell and without the burning taste of the free creosote, and decomposable by soda lye into creosote and carbonic acid, substantially as set forth

**501,236. FURNACE.** WILLIAM SWINDELL, Allegheny, Pa. Filed Oct. 29, 1891. Serial No. 410,195. (No model.)



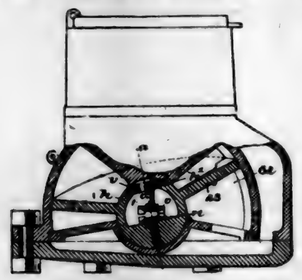
*Claim.*—1. A furnace having in combination a heating or melting chamber, an inlet flue for introducing gas and air into said chamber, an annular flue connected to the inlet flue, a second annular flue connected to the heating or melting chamber, two air regenerating chambers, each having independent connections to both of the annular flues, and valves controlling the flow of air and products of combustion along said connections, substantially as set forth.

2. A glass pot furnace having the combination of a melting chamber, a central flue for introducing gas and air into the melting chamber, a series of peripheral flues for the escape of the products of combustion from the melting chamber, a regenerating chamber, an annular flue connected to the regenerating chamber and having radial connections with the inlet flue, and an annular flue connected with the peripheral flues and with the regenerating chamber, substantially as set forth.

3. A glass pot furnace having in combination a melting chamber, a central inlet flue for introducing gas and air into the melting chamber, a series of peripheral flues for the escape of the products of combustion from the melting chamber, two regenerating chambers, an annular flue having a valved connection to both of the regenerating chambers, a series of radial passages connecting the annular flue to the inlet flue at points intermediate between its outlet and the point of introduction of gas thereinto, and an annular flue connected with the peripheral flues and having a valved connection with each of the regenerating chambers, substantially as set forth.



**501,237. DISK WATER-METER.** HERBERT F. WHITTIER, Lawrence, Mass. Filed June 23, 1892. Serial No. 437,559. (No model.)



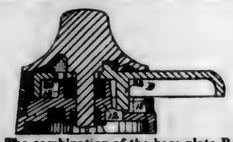
*Claim.*—1. In a water meter of the class described, an oscillating disk the axis of which at each oscillation is caused to describe the surface of a cone, and a fixed non-vibrating rotatable spindle, combined with a direct speed reducing mechanism between the disk and spindle, the said mechanism consisting of an oscillating member on and oscillating with the disk, and a co-operating non-oscillating member on and rotatable with the spindle, whereby the oscillations of the disk as described transmit a rotary motion to the spindle, substantially as described.

2. In a water meter of the class described, a rotatable spindle and an oscillating disk the axis of which at each oscillation is caused to describe the surface of a cone, combined with a circular rack on and arranged about the center of oscillation of the disk, and a pinion on the spindle in mesh with the said rack, the teeth on the rack successively rising to the plane of and to engage the said pinion on the spindle, substantially as describe

3. In a water meter of the class described, the combination with an oscillating disk, the axis of which at each oscillation is caused to describe the surface of a cone, a fixed rotatable spindle, and an engaging connection between the disk and spindle, of an eccentric guide loosely running in said disk and having a fixed center of rotation about the axis of said spindle whereby the disk is compelled always to make a complete oscillation, substantially as described

4. In a water meter of the class described, the combination with an oscillating disk, the axis of which at each oscillation is caused to describe the surface of a cone, a fixed rotatable spindle, and an engaging connection between the disk and spindle, of a guide ring loosely carried by the hub of the disk and having an eccentrically arranged opening through which the spindle is extended, the axis of the latter serving as the axis of rotation of the ring, substantially as described.

**501,238. FASTENER FOR THE MEETING RAILS OF SASHES.** CLAYTON WOLCOTT, Hartford, Conn., assignor to the Wolcott Hardware Company, same place. Filed Nov. 5, 1892. Serial No. 451,099. (No model.)

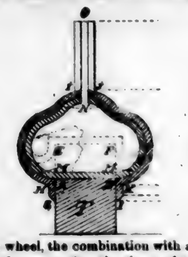


*Claim.*—1. The combination of the base plate B having the disk like projection with a locking notch 15 and lateral projection 16, the latch plate inclosing said disk and body of the latch as mounted on said base plate and having the internal stop shoulders 16 and 17 and the inwardly opening recess or notch 18, the latch D longitudinally slotted and having the downwardly projecting pin 23 for engaging said slots 15 and 18, and the upwardly projecting pin 24; and the cap E having the cam groove 25 for engagement with the pin 24 of said latch, substantially as described and for the purpose specified.

2. The combination of the base plate having the disk like projection and central boss 13, the latch plate mounted thereon and having the spring seat 20; the latch mounted in said latch plate; the cap E having means for imparting a longitudinal movement to said latch, and a spring 27 with one arm secured within said central boss and the other arm extending outwardly therefrom through the latch for engaging the spring seat on the latch plate, substantially as described and for the purpose specified.

**501,239. BICYCLE-TIRE.** OTTO L. WULLWEBER, Chicago, Ill. Filed Sept. 15, 1891. Serial No. 406,316. (No model.)

*Claim.*—1. The flexible tire T, having the two vertical sides A D and B C parallel to each other, in combination with a tabular wheel-rim or felly having its periphery longitudinally slotted, the sides of the slot being upset to form parallel flanges adapted to frictionally embrace the vertical sides of the tire, substantially as described

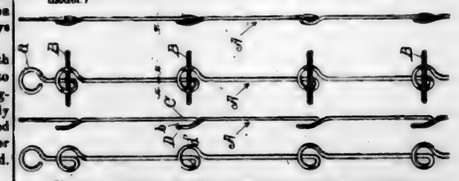


2. In a bicycle wheel, the combination with a flexible tire of an annular air cushion for supporting the tire, and a rigid tubular felly for inclosing the cushion, the felly chamber being wider than the cushion, substantially as described.

3. In a bicycle wheel, the combination with a flexible tire having its vertical sides parallel, and with rigid flanges having frictional contact with said tire sides, of an annular air cushion for supporting the tire substantially as described.

4. In a bicycle wheel, the combination with an elastic tire having its vertical sides flat and parallel, of an annular air cushion immediately within and for the purpose of supporting the tire, and a tabular felly for inclosing the air cushion and being of greater internal width than said cushion and having its periphery longitudinally channeled to receive the tire, and parallel radial flanges upon each side of said channel adapted to frictionally embrace the tire, substantially as described.

**501,240. WIRE-FENCE LOCK AND STAY.** GROVE G. BARTHOLEW, Garvanza, Cal. Filed June 14, 1892. Serial No. 437,205. (No model.)



*Claim.*—1. As a new article of manufacture the improved lock and stay set forth consisting of a wire having a series of locking loops thereon, each loop comprising the combination of a U shaped member having its arms arranged in substantially the same plane but separate from each other, and a single member arranged at a point substantially midway between the arms of, but at one side of the plane of such U shaped member; the U shaped member and the single member being arranged to receive a fence wire therebetween and adapted to be clamped upon the fence wire by suitable means and thus crimp the fence wire between the members of the loops.

2. As a new article of manufacture the improved fence lock and stay set forth consisting of a wire provided with a series of U shaped wire securing loops or seats formed of two wire embracing members, one of which members is double and comprises two arms which are arranged one on each side of the extended plane of the U shaped loop or seat; the whole of each loop being formed by a bend in the wire which forms the stay, and the two arms of the double member being arranged in a plane transverse the U shaped loop.

3. The combination set forth of a series of horizontal fence wires and the stay provided with a series of U shaped wire securing loops or seats formed respectively of two wire embracing members one of which members is double and comprises two arms which are arranged one on each side of the extended plane of the U shaped loop or seat; the whole of such loop being formed by a bend in the wire which forms the stay, and the two arms of the double member being arranged transverse the wire receiving seat and the several members being clamped upon each other and upon the wire seated in such U shaped seat.

**501,241. LIGHTNING-ARRESTER.** JAMES R. BROWN, Elizabeth, N. J. Filed Sept. 12, 1892. Serial No. 445,908. (No model.)

*Claim.*—1. The combination with a lightning arrester of a case or envelope of insulating material, one or more rods or conductors inserted therein, said case or envelope being closed by a seal or plug,

said seal or plug being protected from moisture by a cavity formed below it by an attachment to or the extension of said envelope, substantially as described.



2. The combination with a lightning arrester of a waterproof insulating case or envelope containing sand or other suitable dry and finely divided material; a plug or device for closing the envelope; two or more rods or conductors inserted within said envelope and held firmly in place by means of a frame or device therein to which they are attached; said envelope being protected against the entrance of moisture substantially as described.

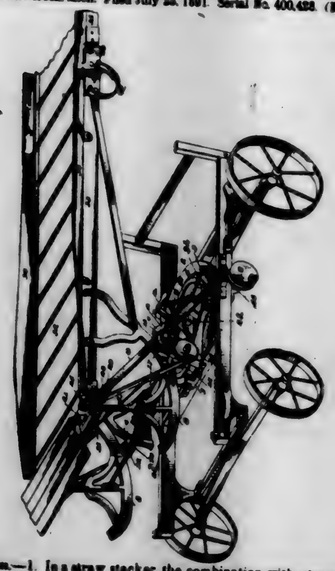
3. The combination with a lightning arrester of rods or conductors attached to separated points, said rods and separated points being held in position by means of an insulating frame or device, through portions of which they are passed or to which they are firmly attached said rods or conductors being partly and said separated points and insulating frame or device being wholly within an insulating envelope or case containing sand or other suitable powdered insulating material, substantially as specified.

4. The combination with a lightning arrester of two rods or conductors firmly attached to separated points, said rods and separated points being held in position by means of an insulated frame or device through portions of which they are passed or are firmly attached, said rods being partly and said separated points and insulated frame or device being wholly within an insulating envelope or case containing sand or other suitable powdered material said case or envelope being protected from the entrance of moisture by a sealed plug having a cavity below it said cavity being also protected from moisture by the flared or lower termination of the said envelope substantially as described.

5. The combination with a lightning arrester of two or more separated points a frame or device for holding said points in place within an insulating envelope, and two or more rods attached to said points, said rods protruding from said case or envelope, substantially as described.

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**501,242. STRAW-STACKER.** SAMUEL BUPKIN and CYRUS SNYDER, Battle Creek, Mich. Filed July 23, 1891. Serial No. 400,422. (No model.)



*Claim.*—1. In a straw stacker, the combination with a turn table having two parallel lever-arms secured thereto, of an elevator frame having its lower receiving end pivoted to the other ends of said lever-arms, two parallel and upwardly extending segments secured to the turn table, two parallel and downwardly extending segments secured to the elevator frame, a transverse shaft mounted in bearings in the lever-arms, two sets of drums mounted on the transverse shaft, ropes or cables wound upon said drums and connected to the ends of the segments, and mechanism for rotating said shaft, as shown and described.

2. In a straw stacker, the combination with a turn table having two parallel lever-arms secured thereto of an elevator frame having its lower receiving end pivoted to the other ends of said lever-arms, two parallel and upwardly extending segments secured to the turn table, two parallel and downwardly extending segments secured to the elevator frame, a transverse shaft mounted in bearings in the lever-arms and interposed between the oppositely arranged segments, two sets of drums of unequal diameter mounted on the transverse shaft ropes or cables wound upon said drums in opposite directions and connected to the ends of the segments, and mechanism for rotating said shaft, substantially as shown and described.

3. In a straw stacker, the combination with the turn table 2 having two parallel arms 9, 9, secured thereto, of an elevator frame having its lower receiving end secured to the other ends of said lever-arms, a shaft 28 mounted in bearings in the lever-arms and carrying at its extremities drive pulleys 29 and 30 and intermediate thereof pulleys 31 for actuating the carrier apron, a shaft 21 mounted in bearings in the upper extremities of the lever-arms and carrying a drive pulley 25 and eccentrics 22, a tailer 24 having bearings about said eccentrics and connected by arms 27 to the lever arms, and a drive pulley 48 connected by a belt with a pulley 30 and driven by mechanism adapted to be connected to a thrasher, substantially as shown and described.

4. In a straw stacker, the combination with the elevator frame mounted on the interiorly cogged turn table 2 provided with an annular band 90 carrying pins 92, of a driven shaft 57 having loosely mounted thereon two bevel gears 67 and 68 engaging a gear 85, the latter gearing by suitable intermediate gears with the turn table, a double clutch 69 adapted to alternately engage the gears 67 and 68, a lever 72 connected to said clutch and provided with mechanism, substantially as shown, adapted to be alternately engaged by the pins 92 and actuate said clutch to automatically engage first one and then the other of the bevel gears 67 and 68, all constructed substantially as shown and described whereby the elevator will be automatically swung from one side to the other, for the purpose specified.

5. In combination with the interiorly cogged turntable 2 carrying an annular band 90 having pins 92 and having mounted thereon an elevator frame, of a driven shaft 57 having loosely mounted thereon two bevel gears 67 and 68, a gear 85 engaged by said gears, intermediate gearing between the turntable and the gear 85, a double clutch 69 adapted to alternately engage the gears 67 and 68, a pivoted tripping lever 72 connected to said clutch and provided with a yoke 73, a V-shaped tripping dog adapted to oscillate within said yoke and mounted upon a shaft engaging a lever 78, alternately engaged by the pins 92, all constructed and arranged in such manner that the elevator frame will be automatically swung alternately from one side to the other for the purpose specified.

6. In combination with the interiorly cogged turntable 2 carrying an annular band 90 having pins 92, and having mounted thereon an elevator frame, of a driven shaft 57 having loosely mounted thereon two bevel gears 67 and 68 engaging a gear 85, said gear 85 driving the cog wheels 87 and 88, the cog wheel 88 meshing with the interiorly cogged turntable as double clutch mounted on the shaft 57 and alternately engaging the gears 67 and 68, a pivoted tripping lever 72 connected to said clutch and provided with a yoke 73, a V-shaped tripping dog 74 oscillating within said yoke and mounted upon a shaft carrying a lever 77 pivoted at its inner end to a lever 78, the lever 78, a pivoted rod 82 engaging the rod of the lever 78, a coiled spring arranged upon said rod, the free end of the lever 78 being alternately engaged by the pins 92, all constructed and arranged substantially as shown and described, whereby the elevator frame is automatically swung from one side to the other.

7. The combination of the interiorly cogged turntable 2 carrying an annular band 90 having pins 92, and having mounted thereon an elevator frame, a driven shaft 51 carrying a worm gear 53 meshing with a cog wheel 54 driving a cog wheel 56 loosely mounted upon a shaft 57 and provided with ratchet teeth engaged by a sliding clutch 59 keyed to said shaft 57, means for operating said clutch gears 67 and 68 loosely mounted upon the shaft 57, a clutch alternately engaging said gears, a train of gears interposed between and meshing with the gears 67 and 68 and the interiorly cogged turntable and operating to rotate the turntable, and a tripping lever alternately engaged by the pins 92 to automatically shift the clutch, all constructed and arranged substantially in the manner shown and described and for the purpose specified.

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**501,248. RING FOR SPINNING-MACHINES.** CHARLES H. CHAPMAN, Groton, Mass. Filed Mar. 27, 1893. Serial No. 467,898. (No model.)

*Claim.*—1. A spinning ring having a wedge-shaped race and a flange to restrain the inward movement of the traveler, substantially as described.

2. A spinning ring having a wedge-shaped race, and a flange at its inner edge arranged in a plane substantially at right angles thereto, substantially as described.



3. A spinning ring having a flange and a wedge-shaped race and provided with means for securing the same to the ring-rail, substantially as described.

4. A spinning ring having a wedge-shaped race provided with an internal flange, in combination with a traveler which will tighten or loosen upon said race automatically as the centrifugal force or the tension of the thread may predominate, substantially as described.

5. A spinning ring having an elevated vertical flange surrounded by a wedge shaped race, combined with means for adjustably attaching the ring to the ring-rail, substantially as described.

6. A spinning ring having a flange, a wedge-shaped race, means to secure the same to the ring rail, and an opening between the lower edge of the ring and the adjacent surface of the ring rail when applied thereto, for clearance of lint, dust, &c., substantially as described.

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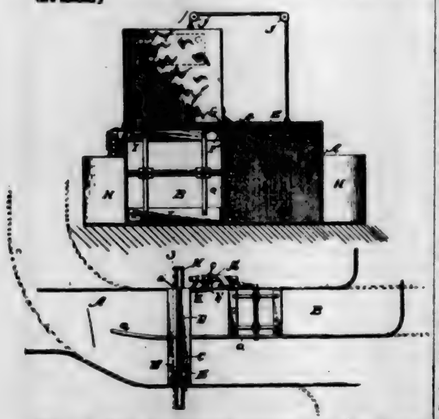
**501,244. SWEATER.** SAMUEL P. CURTIS, Boston, Mass. Filed Feb. 8, 1892. Serial No. 421,572. (No model.)



*Claim.*—As an improved article of manufacture, a sweater of the class described having its projecting neck-band, B, provided with the endless annular passage, C, extending around the neck-band, and with the opening, D, connecting with the passage, and having the removable annular elastic band, E, contained entirely within the passage with its ends separably secured together within the passage, said annular band forming an elastic stiffening-ring extending around the projecting neck-band and supporting the same; substantially as and for the purpose set forth.

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**501,245. LAND-IRRIGATING SYSTEM.** JAMES BUTLER, Utica, Mont. Filed Aug. 22, 1892. Renewed June 14, 1893. Serial No. 477,598. (No model.)



*Claim.*—1. Gates for alternately controlling the flow of water through two adjacent channels, mounted side by side and connected together at their corners, and mounted upon a single pivot, whereby as the gates are turned one will be opened and the other closed and vice versa, substantially as set forth.



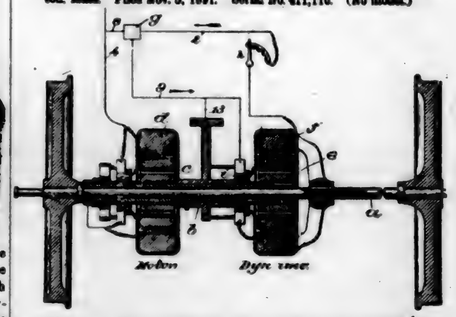
2. The combination, with a water-way divided by a partition into two substantially parallel channels, the gates C and D for closing respectively the said channels they being united together at their corners, whereby when one gate is in position to close one channel the other opens the opposite channel, and vice versa, and a pivotal support for the gates having its axis transverse to the gates, and arranged near the place where the gates are connected together, substantially as set forth.

3. The combination of the channels A and B separated by a partition, the pockets H communicating respectively with the said channels through slots, the gates which close respectively the said channels rigidly connected with each other as shown whereby one gate stands open when the other is closed and vice versa, and the pivot G upon which the gates are mounted, substantially as set forth.

4. The combination of two adjacent water channels arranged side by side, two gates for closing the said channels respectively arranged to move in the same or in parallel vertical planes, one of the gates being heavier than the other, connections between the gates whereby they move in opposite directions, a catch for holding the gates in position with the heavier one raised or open, and automatic trip mechanism operated by the flow of water for moving the said catch and releasing the gates, substantially as set forth

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**501,246. ELECTRIC LOCOMOTIVE.** WILLIAM E. C. EUSTIS, Milton, Mass. Filed Nov. 5, 1891. Serial No. 411,116. (No model.)



*Claim.*—1. The combination with a member to be rotated, of an electric motor, a two-part auxiliary generator, one part of which is connected with the member to be rotated and the other part of which is connected with and rotated by the armature of said electric motor, whereby rotation by the motor of one part of said generator with relation to the other part to generate a current of electricity causes said other part to also rotate and thereby act as a clutch to rotate the member to be rotated; and electrical connections between said generator and motor, whereby the current generated by the former may be caused to pass through the latter, substantially as described.

2. The combination with a member to be rotated, of an electric motor; a two-part auxiliary generator, one part of which is connected with the member to be rotated, and the other part of which is connected with and rotated by the armature of said electric motor, whereby rotation by the motor of one part of said generator with relation to the other part to generate a current of electricity causes said other part to also rotate and thereby act as a clutch to rotate the member to be rotated; electrical connections between said generator and motor, and a switch device controlled by the strength of the generated current to automatically turn the said current through said connections to and through the said motor, substantially as described.

3. The axle *a*, and electric motor, combined with the auxiliary generator driven by said motor, a short circuit, a controlling device operated by the short circuit for diverting the current produced by said generator, substantially as described.

4. An axle, and an electric motor, combined with an auxiliary generator driven by said motor, an actuating coil in circuit with said generator, and a circuit-controlling device for the generator controlled by the armature of said coil to divert the current of electricity produced by said generator, substantially as described.

5. An axle, an electric motor, and an operating ground circuit therefor, combined with an auxiliary generator driven by said motor, a circuit controlling device in circuit with the said generator, said circuit controlling device being operated by the generator current when the latter has reached a certain pressure to ground said generator circuit through the operating ground circuit for the motor, substantially as described.

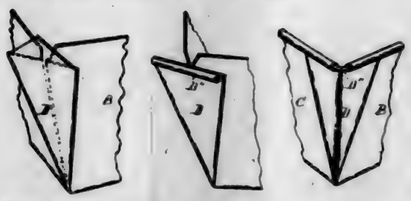
**501,247. SWEEPER.** WILLIAM H. GOLDSMITH, Bartley, N. J. Filed Oct. 14, 1892. Serial No. 448,192. (No model.)



*Claim.*—1. A sweeper formed of flexible material armed with card teeth and provided with a handle, substantially as hereinbefore set forth.

2. The combination with a plurality, of the sections 5—5 having the teeth 6—6 and secured together by the links 7—7, of the handle-tongue 8 fastened to one of said sections, as described.

**501,248. TIN PAN.** JOSEPH HILLSON, Cambridge, Mass. Filed Nov. 11, 1892. Serial No. 451,614. (No model.)

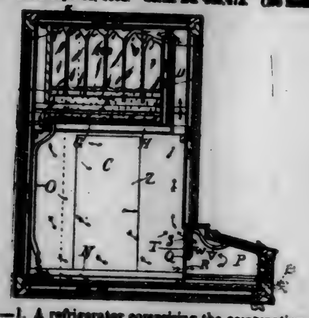


*Claim.*—1. A tin pan of substantially the character described, having its corner pieces or folds D folded against the sides and ends of the pan on both sides of the corners, substantially as set forth.

2. A tin pan of the character described, provided with corresponding pieces or folds D having extensions D', said corner pieces being folded against the sides and ends of the pan on both sides of the corner, and said extensions D' being rolled over upon themselves so as to constitute folds or beads D'' which are bent around and extend upon both sides of the corners, substantially as described.

3. A tin pan of the character described, provided with corner pieces or folds D having extensions D, said corner pieces being folded against the sides and ends of the pan on both sides of the corners, said extensions D being rolled over upon themselves so as to constitute folds or beads D'' which are bent around and extend upon both sides of the corners, and with the upper edges of the side and end portions B C folded or bent over and around the folds or beads D'' into folds or beads B' C', substantially as set forth.

**501,249. REFRIGERATOR.** JOHN H. KERR, Los Angeles, Cal., assignor, by mesne assignments, of one-half to George R. Shatto, same place. Filed Sept. 21, 1892. Serial No. 446,672. (No model.)

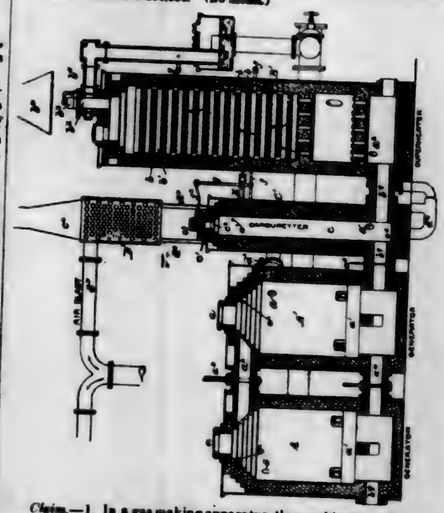


*Claim.*—1. A refrigerator comprising the combination of an ice chamber arranged at the upper portion of the refrigerator, closed throughout except an air inlet at the top and an air and drip outlet at the bottom, and having its floor arranged to allow the water from the melting ice to pass therethrough; the cooling chamber arranged in the lower portion of the refrigerator and having an open drip pan at the bottom thereof; an ascending warm air draft flue communicating between the top of the cooling chamber and the top of the ice chamber; the upper open drip pan arranged between the ice chamber and the cooling chamber at such a distance below the ice chamber as to provide a drip chamber of material depth so that the water falling from the ice chamber will create a downward draft of air from the ice chamber toward the bottom of the drip chamber; a cold air discharge communicating between the rear of the drip chamber and the rear top of the cooling chamber; the open lower drip pan arranged at the bottom of the cooling chamber, and the drip discharge arranged to discharge the drip from the upper drip pan into the cooling chamber and therethrough into the lower open drip pan.

2. A refrigerator having an open drip pan arranged between the cooling chamber and the ice chamber to receive the drip from the melting ice, and also having an open drip pan arranged at the bottom of the cooling chamber, a drip discharge arranged to discharge from the upper drip pan into the lower open drip pan; an air passage leading from above the upper drip pan into the cooling chamber, the air passage leading from the top of the cooling chamber and opening into the top of the ice chamber and the air and drip passage leading through the bottom of the ice box into the upper pan.

3. In a refrigerator having the cooling chamber and the front receptacle; the combination set forth of a vertical partition arranged between the front receptacle and the cooling chamber and provided at its bottom with the cool air opening and at its top with the warm air opening; the lid of the front receptacle; the vertically reciprocating valve arranged to close the warm and cool air openings; the curved valve operating lever fixed to the rear of the lid, and the connecting rod hinged at one end to the valve and at the other end to the valve operating lever.

**501,250. APPARATUS FOR MANUFACTURING GAS.** ALEXANDER C. HUMPHREYS, Philadelphia, Pa., assignor, by mesne assignments, to the United Gas Improvement Company, same place. Filed Dec. 19, 1887. Serial No. 258,366. (No model.)




*Claim.*—1. In a gas making apparatus, the combination substantially as hereinbefore described, of a generator and superheater having a duct or passage which connects said generator and superheater and is alternately occupied by heated products of combustion on their way from the chamber which is supplied with solid fuel, and by superheated or decomposed steam on its way to a fixing chamber, and a vertical carbureting chamber communicating at its base only, with said duct, and provided at its top with an oil supply pipe, and with an exit port provided with a valve or gate, whereby when said exit port is opened, said chamber will be heated by a diverted portion of the products of combustion supplied by the generator, passing directly through it from its base to and outward through its open top, and also whereby when said port is closed, and oil injected, the oil will be vaporized and partly gasified and merged at the base of said chamber, with decomposed or superheated steam while passing through said duct.

2. In a gas making apparatus, the combination substantially as hereinbefore described, of a generator, and a fixing chamber; a duct which affords the sole communication between the generator and fixing chamber; and a vertical carburetor which has at its top a valve guarded port and an oil injecting pipe, and which communicates at its base with said duct, whereby in heating up the apparatus, all of the hot products of combustion will pass to the fixer through said duct except when the top of the carburetor is opened, for permitting a portion of said hot products to pass upwardly therein, and also whereby gaseous matter delivered from said generator will pass through the same duct to the fixer and be carbureted in its passage thereto.

3. In a gas making apparatus, the combination substantially as hereinbefore described, of a down draft generator or furnace to which solid fuel is supplied, a chamber provided with a steam injection pipe and checker brick for rendering it capable of operating either as a steam superheater, or as a fixing chamber, through which the products of combustion are mainly conducted while heating up the apparatus, and a carburetor, provided with an oil injection pipe, and interposed between said generator and said chamber, communicating at its base only with the bases of both, and provided at its top with a valve guarded exit port.

4. In a gas making apparatus, the combination substantially as hereinbefore described, of a pair of sloped down draft generators, each having an air blast port above the grate, and an exit port below said grate, and to which solid fuel is supplied, and which communicate with each other at their tops; two chambers, in both of which steam may be superheated and gas fixed; each chamber at its base connected by a duct with the base of an adjacent generator, and between each generator and its superheater or gas fixer, a vertical carbureting chamber, communicating at its base with said duct, and provided at its top with a valve guarded exit port, whereby in heating up the apparatus, both carburetors may be properly heated by means of diverted portions of the products of combustion proceeding from the generators, while the main portions thereof pass to and through the superheating and gas fixing chambers, and also whereby either carburetor on being supplied with oil, will enrich gases after their passage from either superheater, through both generators, and while passing laterally through or across the interior of the carburetor near its base, on their way to the superheater then operating as a fixing chamber.

5. In a gas making apparatus, embodying duplicate carburetors, each provided at its top with an oil injecting pipe and a guarded port and duplicate superheaters, each of the latter provided with a valve guarded port at its top and with a steam injection pipe, and each capable of operating as a fixing chamber, the combination of a pair of generators which are coupled at their tops, by a duct provided with a gate, and a steam jet pipe in each generator, each of said generators being in communication with carburetors, and with a superheater or fixing chamber, substantially as described whereby the heating of the carburetors and the superheaters may be separately controlled, and also whereby when said generators are in open communication, steam may be superheated in either superheater, and conducted therefrom through both generators, then enriched by the contents of one carburetor, and the gases fixed in the other superheater, or by closing the said duct, enabling each generator to operate as a steam decomposing chamber, and the superheater which is connected therewith, to operate only as a fixing chamber.

6. In a gas making apparatus, the combination substantially as hereinbefore described, of the two generators, the two superheaters, provided with steam injecting pipes, and operating either for superheating steam, or as fixing chambers, and two carburetors, each intervening between a superheater and a generator, and provided with oil injecting pipes, and also with steam injection pipes, whereby while either carburetor is being supplied with oil, the other may be used for superheating steam and to co-operate with one of said superheaters.

7. In a gas making apparatus, the combination substantially as hereinbefore described, of a generator, to which solid fuel is supplied, a chamber in which steam may be superheated, or gas fixed, a duct connecting the bases of said generator and chamber, a carburetor provided with a steam injection pipe and communicating at its base with said duct, and provided at its top with a valve guarded exit port, and air blast ports at the bases of said chamber and carburetor, whereby in heating up the apparatus, appropriate portions of the heated products of combustion may be directed into and through said chamber and said carburetor, and each appropriately supplied with air for securing good combustion of gaseous matter therein.

8. In a gas making apparatus, the combination substantially as hereinbefore described, of the two generators or furnaces, communicating at top and bottom, valves or gates for controlling said communication, a carburetor and a superheater communicating with each other, and with one of said generators at its base, a similar carburetor and a similar superheater communicating in like manner with the other generator, and valves or gates for controlling said communication, whereby after heating up both generators, and either carburetor, and its communicating superheater (to enable it to operate as a fixing chamber), steam may be decomposed in either or both of said generators, and delivered to the heated carburetor and superheater or fixing chamber, while the other carburetor and superheater are wholly out of service.

9. In a gas making apparatus, the combination substantially as hereinbefore described, with a generator and a superheater and fixer of a carburetor having at its top a valve guarded exit port, and connected at its base with a duct for directing heated products of combustion thereto, and also having said port adapted to receive either of a series of annular neck pieces or throttlers of various sizes for varying the area of said port, whereby the heated products of combustion passing through said carburetor may be graduated to its proper requirements, and obviate the wasteful diversion of heat from other portions of the apparatus, such as superheaters, or fixers, or both, and also whereby overheating of said carburetor may be obviated while properly heating said other portions.

10. In a gas making apparatus, the combination substantially as hereinbefore described, of the vertically unobstructed carbureting chamber into which oil in liquid form is delivered, and within which the oil while falling in space is vaporized for carbureting purposes; the chamber in which the carbureted gas is fixed; and an oil heater communicating with, and affording a passage for hot product gas discharged from the fixer, and also communicating with the top of the vertically unobstructed carbureting chamber, whereby the temperature of the product gas is reduced, and oil in its passage through said heater is not vaporized, but raised to a desirable temperature suitable for delivery in its liquid form into the carbureting chamber.

11. In a gas making apparatus, the combination substantially as hereinfore described, of two generators, provided with air blast ports above their grates, and communicating with each other by way of a passage at the bottom below the grates, a valve or gate for controlling said passage, a carburetor and a gas "fixer" both communicating with each other, and with said generators below their grate, whereby either of said generators may be wholly relied upon for co-operating with said carburetor and "fixer," or both of them made to jointly co-operate therewith.

**501,251. ROD-REEL.** IRVING A. KILMER, Newburg, N. Y. Filed Dec. 13, 1892. Serial No. 455,067. (No model.)



*Claim.*—1. An attachment for the delivery tube of a rod reel, the same comprising an essentially tubular portion with a wire guiding plate mounted on and extended beyond the end thereof, as set forth.

2. An attachment for the end of a delivery tube of a rod reel consisting essentially of a tubular portion with a guiding plate mounted on and extended beyond its end and a vertical guide mounted on said plate and also extended beyond the end of the tubular portion, as set forth.

3. An attachment for the delivery tube of a rod reel, consisting of a tubular portion, a collar for supporting the same, and a curved plate carried by the tubular portion and provided with a vertical guide, as set forth.

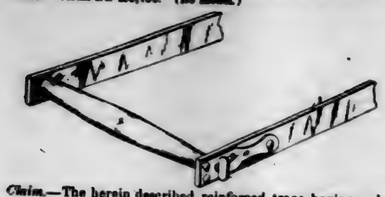
4. The combination with a delivery tube, of a collar adjustable thereon, a tubular portion supported by the collar, and a plate on the tubular portion provided with a vertical guide, as set forth.

5. The combination with the delivery tube, of a collar adjustable thereon, a tubular portion carried by the collar, a curved plate on the tubular portion and a removable vertical guide on the plate, as set forth.

6. An attachment for the delivery tube of a rod reel, consisting of a collar, a tubular portion carried thereby, a curved plate on the tubular portion and extended beyond the end thereof, and a vertical guide on said plate, substantially as and for the purpose specified.

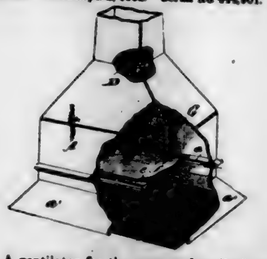
7. An attachment for the delivery tube of a rod reel, consisting essentially of a tubular extension of said tube, a wire-guide curved at its outer end and extended beyond the end of said extension, and a vertical guide carried by said guide, substantially as specified.

**501,252.** TRACE. IVOR B. MARTIN, Murray, Ky. Filed Dec. 20, 1892. Serial No. 455,758. (No model.)



*Claim.*—The herein described reinforced trace having a slot at the rear end of the same which extends obliquely across the longitudinal line of the said trace and has its front end elevated and its rear end depressed, and which is adapted to be mounted over a stationary button or hook on the end of the singletree which is positioned at a right angle to the longitudinal length of the trace that is applied thereto, substantially as described.

**501,253.** VENTILATOR FOR REFRIGERATORS. JOSEPH HEYSER, Laredo, Tex. Filed Sept. 2, 1892. Serial No. 444,901. (No model.)



*Claim.*—1. A ventilator for the purpose described, comprising a body portion having a hinged reticulated plate near the lower end, a reticulated plate near the upper end and an interposed loosely-mounted valve, as set forth.

2. The combination with the body portion having a crimp, of a frame held in said crimp and provided with a soft covering to form a valve seat, and a loosely-mounted valve above the seat and adapted to be actuated by hot air, as set forth.

3. The combination with the body portion provided with a valve seat, of a valve arranged within the body above the said seat and provided with openings through which are engaged loosely rods held to the body whereby the said valve may move bodily vertically or as upon a pivot, as set forth.

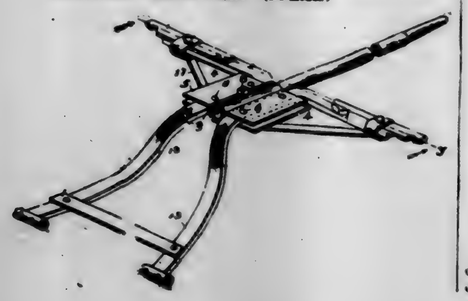
**501,254.** STOVE-POLISH. JULIUS G. POHLE, Georgetown, Colo. Filed Sept. 14, 1885. Serial No. 177,062. (Specimens.)

*Claim.*—1. A stove polish containing plumbago and phosphoric acid substantially as and for the purpose set forth.

2. In a stove polish, the combination of plumbago and mono-hydrated phosphoric acid, substantially as described.

3. The method of preventing the destructive action of heat upon the plumbago in stove polish, which consists in subjecting the plumbago in the polish to the action of phosphoric acid, substantially as set forth.

**501,255.** VEHICLE-POLE. FRANK G. ROSS, Lampasas, Tex. Filed Mar. 17, 1893. Serial No. 466,635. (No model.)



*Claim.*—1. In a device of the character set forth, the combination of a table having a socket therein, a pole removably fitted in said socket, and arms connected to the opposite sides of said table and having front oppositely-extending ends to which the singletrees are attached, and downwardly-bent divergent rear connecting-bars arranged to be attached to the running-gear, said front ends and connecting-bars being continuous of the arms, substantially as described.

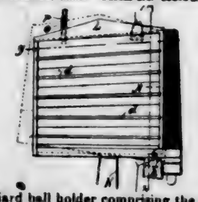
2. In a device of the character set forth, the combination of a table having a socket therein, a pole removably fitted in said socket, arms secured to the opposite sides of said table and having front ends transversely extending to provide supporting-arms, and rear depressed divergent ends to form connecting-bars, singletrees mounted on the supporting-arms, a brace attached at its opposite ends to the under part of said supporting arm and passing under the pole, rearwardly-extending braces connected at their front ends to the points of attachment of the aforesaid brace and at their rear ends secured to the rear part of the opposite sides of the table, and a brace extending transversely across and uniting the connecting-bars, substantially as described.

**501,256.** TRIANGLE FOR BILLIARD-BALLS. GABRIEL ROSEBACH, Del Rio, Tex. Filed Sept. 26, 1892. Serial No. 446,987. (No model.)



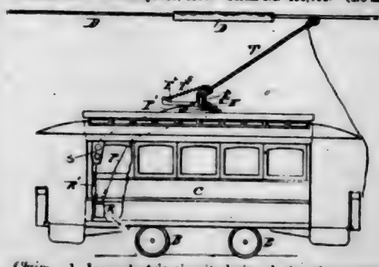
*Claim.*—A billiard ball triangle, comprising the sides D, D, provided with the movable doors C, C, pivoted at their ends *a*, and the fixed guide E, on the side of the triangle, provided with the springs F, F, to hold the doors C, C, in position, substantially as described and for the purpose set forth.

**501,257.** BILLIARD-BALL HOLDER. GABRIEL ROSEBACH, Del Rio, Tex. Filed Mar. 11, 1893. Serial No. 465,648. (No model.)



*Claim.*—A billiard ball holder comprising the side piece A, provided with a series of holes to allow the balls to pass out, the side piece C and the slats *d* which are applied between the side pieces at an angle, the chute F, which is applied to the side piece A, and extending its full height with the mouth of the chute at an angle, and the bottom piece B provided with the hook K to hang the triangle on, and the hanger N, located at the top of the holder, and the hanger guide P to adjust the ball holder, substantially as shown, and for the purpose set forth.

**501,258.** ELECTRIC-CIRCUIT-CLOSING DEVICE. WILLIAM SEARS, Boston, Mass. Filed Apr. 10, 1893. Serial No. 469,799. (No model.)

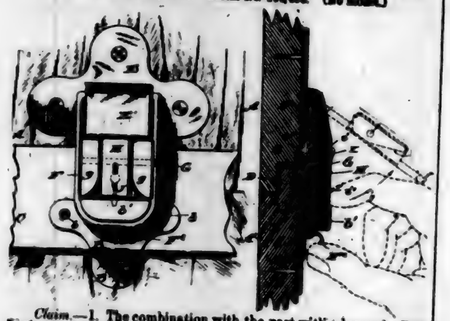


*Claim.*—1. In an electric circuit closing device, the combination of a trolley pole having electric contact plates insulated from each other, and adapted to engage in electrical contact with the circuit closers $D'$ $D^2$, with circuit closers $D'$ $D^2$ placed in the path traveled by the head of the trolley pole, and adapted to operate substantially as described and for the purpose set forth.

2. In an electric circuit closing device, the combination of contact plates J J' attached to the lower end of the trolley pole and insulated from it, and adapted to form a constant electric connection with the contact plates L L', said contact plates L L' being attached to the swiveling base upon which the trolley pole is mounted, and adapted to electrically connect with the stationary curved contact plates $M'$ $M^2$, with the curved contact plates $M'$ $M^2$, said plates $M'$ $M^2$ being in electrical connection with the battery and signal device, substantially as and for the purpose set forth.



**501,259.** TRUSS-FASTENING. JAMES RENWICK, Long Branch, N. J. Filed Aug. 22, 1892. Serial No. 444,402. (No model.)



*Claim.*—1. The combination with the part with a lug and offset, of a plate held in said offset, a part having depending portion with offset and a pivoted bail and a pivoted catch carried thereby, as and for the purpose specified.

2. The combination with the parts to be affixed to the lid and body portion, of a pivoted bail, a catch pivoted on the bail and a sliding bolt on the catch, as set forth.

3. The combination with the part to be affixed to the body portion of a trunk and provided with a lug, of the part to be affixed to the lid and having hollow portion, the bail pivoted to the hollow portion, a spring within the hollow portion acting on the bail, and a catch pivoted on the bail and arranged to be engaged between said portion and lug, substantially as specified.

**501,260.** REGISTER. OLIVER F. SWIFT and WILLIAM WARWICK, Buffalo, N. Y.; said Warwick assignor to said Swift. Filed July 25, 1891. Serial No. 400,677. (No model.)



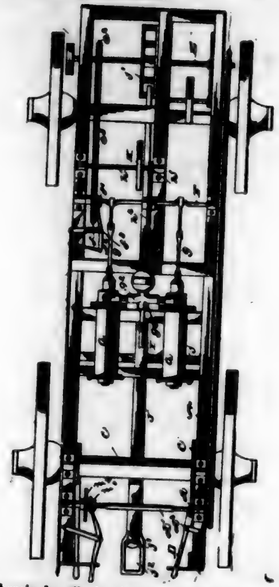
*Claim.*—1. As an improved article of manufacture, a sheet-metal register having its frame composed of two U shaped sections secured together by backing pieces having inwardly-projecting, perforated lugs, one of which having the apertures for the pivots, and the other having two apertures one for the journaling pivots, and the other for the pivots of the connecting rod, as described.

2. In a register, the combination, with the frame consisting of two U shaped pieces of the backing pieces having inwardly-projecting perforated lugs, rivets in said backing pieces projecting therefrom and forming pivots for the wings, further rivets in said wings forming pivots for, and connecting the connecting rod with, said wings and a lever secured to one of said wings, as and for the object stated.

3. As an improved article of manufacture, a sheet-metal register composed of two U shaped sections having an inwardly-projecting ledge at their lower ends, backing plates securing the adjacent ends of said frame and provided with inwardly-projecting perforated lugs and with rivets forming pivots for the wings, the series of wings having lugs on one end engaging the rivets of one of the backing plates and further wings at their other end engaging the rivets of the opposite backing plate, rivets in said last-named wings, a connecting rod engaging these rivets, and a lever for operating said wings, as and for the object stated.

**501,261.** WELL BORING AND DRILLING MACHINE. CHARLES W. WALKER, Blue Springs, assignor of one-half to H. S. Cleaty, Benton, Neb. Filed Nov. 5, 1892. Serial No. 451,093. (No model.)

*Claim.*—1. The herein-described well boring and drilling machine, comprising the frame or body, the derrick or extension at one end thereof, the upper and lower sets of parallel guide-rods secured to said derrick, the pulley, the well boring tube and tool, the yoke connected to the upper end of said tube and engaging said guide rods, the rope or chain secured to said yoke and passed over said pulley, the windlass to which the free end of said rope or chain is connected, the driver having rotary arms, the clamp secured on said tube and having its ends engaged by said rotary arms, and means for rotating said arms, substantially as set forth.



2. The herein-described well boring and drilling machine, comprising the frame or body, the derrick or extension at one end thereof, the upper and lower sets of parallel guide rods secured to said derrick, the pulley, the well boring tube and tool, the yoke connected to the upper end of said tube and engaging said guide rods, the rope or chain secured to said yoke and passed over said pulley, the windlass to which the free end of said rope or chain is connected, the driver having a rotary hub or sleeve provided with a bevel gear and lateral arms having hollow extensions or sockets, the vertical arms projecting from said hollow extensions or sockets and engaging the ends of said clamp, the shaft mounted in the frame of said driver having a beveled pinion engaging said bevel gear, the sprocket wheels secured on said shaft, the shaft having a sprocket wheel, the chain passed therearound and encompassing said former sprocket wheel, and the connection between said shaft and the main operating shaft, substantially as set forth.

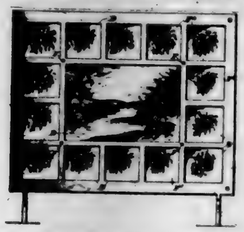
3. The herein-described well-boring and drilling machine, comprising the frame, the main operating shaft having a sprocket wheel, the windlass having a gear wheel at one end, the shaft *d* having a pinion designed to engage said gear wheel, a sprocket wheel on said shaft, the sprocket chain $d^5$, the derrick or extension having a pulley, the well-boring tube, the yoke secured to the upper end of said tube, the rope or chain secured to said yoke and passed over said pulley and attached to said windlass, the driver having rotary arms, the clamp secured on said tube and having projecting ends engaged by said arms, the rotating shaft mounted in the frame of said driver having a sprocket wheel, the sprocket wheel $m^3$ on shaft *d*, the chain $m'$ encompassing said latter sprocket wheels, and the sliding clutch collar on said shaft *d* designed to engage said sprocket wheel $m^3$, substantially as set forth.

4. The herein-described well-boring and drilling machine, comprising the frame, the main operating shaft, the S-shape cam secured thereon and revolving therewith, the pivoted walking beam or lever designed to be engaged by said S-shape cam and having an outer open end, an anti-frictional roll therein the well boring tube projected through said open end of said walking beam or lever, and means for connecting said tube and walking beam or lever, substantially as set forth.

3. The herein-described well-boring and drilling machine, comprising the frame, the main operating shaft, the S-shape cam secured on said shaft and having loosely mounted rollers between its side pieces, the walking beam or lever designed to be engaged by said S-shaped cam and having an outer open end, an anti-frictional roll secured therein, the well-boring tube, and means for connecting said tube and said walking beam or lever, the suspending rope or chain connected to said tube, and the windlass to which said rope or chain is connected, substantially as set forth.

6. In a well-boring machine, the combination with the frame, of the derrick or extension formed in sections, the upper and lower sets of parallel guide rods secured to said derrick, the pulley, the well-boring tube, the yoke secured thereto, and engaging said guide rods the rope or chain and the windlass, substantially as set forth.

**501,262.** ORNAMENTAL SCREEN. SARAH B. WALKER, Castle Rock, Colo. Filed Nov. 25, 1892. Serial No. 453,064. (No model.)



*Claim.*—1. In an ornamental screen, a laminated frame having a symmetrical arrangement of openings therein, transparent lights clamped between the sections of the frame and inside of said openings and having sealed meeting edges, and suitable ornamentations held in position between the superposed lights, and visible from either side of the screen substantially as set forth.

2. The combination of a laminated frame comprising duplicate superposed sections having a symmetrical series of openings, and one of which sections is provided upon its inner face with recessed or shouldered seats surrounding the inner edges of said openings and inclosed by the other duplicate unshouldered section, transparent lights clamped in said recessed or shouldered seats between the superposed sections and each comprising duplicate transparent plates, rubber packing strips hermetically joining the meeting edges of said plates, and ornamentations inclosed in the sealed space between the plates, and visible from either side of the frame substantially as set forth.

**501,263.** AUTOMATIC RAILWAY-SWITCH. MURDOCK A. WHATSON, Manchester, N. H. Filed Nov. 2, 1892. Serial No. 450,730. (No model.)

*Claim.*—1. In a street-railway switch, the combination with switch-plates and a switch-tongue, of connections between the plates and tongue, a cam-rail, a guide-roll, a pressure-roll arranged to travel in a plane above the switch-plates, and connections between the guide and pressure rolls, substantially as set forth.

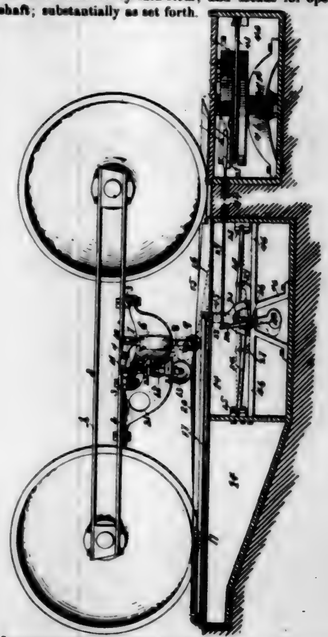
2. In a street-railway switch, the combination with switch-plates, a switch-tongue, and connections between said plates and tongue, of a shaft carrying oppositely extending arms, a pressure-roll carried by one of the arms above the plane of the switch-plates, a guide-roll carried by an opposite arm, and a cam-rail in the path of the guide roll, substantially as set forth.

3. In a street-railway switch, the combination with switch-plates, a switch-tongue, and connections between the plates and tongue, of a transverse shaft carried by a car-truck, an arm 10 carried by and adjustable upon said shaft a pressure-roll depending from said arm to engage one of the switch-plates, and means to rock said shaft when necessary to depress a switch-plate, substantially as set forth.

4. In a street railway switch, the combination with switch-plates, a switch-tongue, and connections between the plates and tongue, of a rock-shaft having oppositely extending arms, a pressure-roll carried by one of said arms, a guide-roll provided with a shank pivotally connected to an opposite arm, a cam-rail, and a forked guide to engage the shank of the guide roll, substantially as set forth.

5. In a street-railway switch, the combination with switch-plates, a switch-tongue, and connections between said plates and tongue, of a supporting frame-work fixed to the car-truck, a rock-shaft, a laterally adjustable guide-plate, opposite arms upon the shaft, a pressure-roll provided with a stem which moves in a guide-way in said plate and is connected to an opposite arm, a guide roll and a cam-rail, substantially as set forth.

6. In a street railway switch, the combination, with switch plates, a switch tongue, and connections between said plates and tongue; of a guide-plate provided with a vertical guide-way; a rock shaft; an arm carried by said shaft; a vertical stem connected to the free end of said arm, mounted in the guide-way and adapted to slide therein; a pressure-roll carried by said stem; and means for operating the rock-shaft; substantially as set forth.

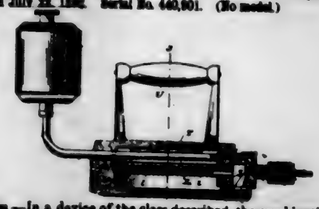


7. In a street-railway switch, the combination with pressure rolls, of switch-plates, a rock-shaft, oppositely disposed arms upon said shaft, pivoted levers each connected to a switch plate and to an arm of the rock-shaft, a switch-tongue, and connections between the rock-shaft and switch-tongue, substantially as set forth.

8. In a street-railway switch, the combination with pressure-rolls, of switch-plates, a rock-shaft, oppositely disposed arms on said shaft, combination-levers connected to switch-plates and arms, a crosshead, a revoluble disk or turntable, a switch-tongue connected to the disk or turntable, and connections between the cross-head and disk or turntable, substantially as set forth.

9. In a street railway switch, the combination with pressure-rolls, of switch plates, combination-levers, arranged with their inner ends under the free ends of the switch plates, vertical pins 23 connecting the plates to the levers, a rock-shaft having arms connected to the levers, at intermediate points a switch-tongue, and connections between the latter and the rock-shaft, substantially as set forth.

**501,264.** SAD-IRON. JAMES M. WINSANT, North Topeka, Kans. Filed July 22, 1892. Serial No. 440,801. (No model.)



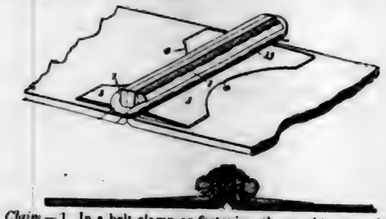
*Claim.*—In a device of the class described, the combination with a hollow and iron having end notches; of the heating apparatus resting within said notches and having a gas receiver provided with laterally extending notched ears, securing bolts engaging said ears and the end of said body to removably clamp said heating apparatus within the body, and a removable cap or cover substantially as set forth.



**501,265.** PROCESS OF FORMING DECORATIVE PANELS. ELIAS M. WARNER, Hartford, Conn. Filed Sept. 13, 1892. Serial No. 445,617. (No specimens.)

*Claim.*—The herein described process of forming decorative panels which consists in sketching the same design repeatedly upon a piece of porous stone with transparent pigments liquidized in varnish, allowing each application to permeate and dry in the pores of the stone before repeating, placing this in a muffle and gradually raising its temperature to a white heat, then allowing the same to cool gradually, after which it is polished by abrading the surface of the stone and decoration, substantially as specified.

**501,266.** BELT-FASTENER. OSRO J. BALDWIN, Youngsville, assignor of one-half to John L. O'Donnell, Warren, Pa. Filed Feb. 16, 1893. Serial No. 462,554. (No model.)

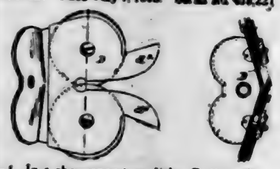


*Claim.*—1. In a belt clamp or fastening, the combination of two lever-grips or clamp-sections having angularly-disposed jaws, one of which has two ribs extending across the same and the other a single rib located in a plane intermediate of the aforesaid two ribs, and a link for connecting said lever-grips or clamp-sections, substantially as described.

2. In a belt clamp or fastening, the combination of two lever-grips or clamp sections having angularly-disposed jaws, one of which has two ribs extending across the same and the other a single rib located between the aforesaid two ribs, said ribs having rounded engaging apices and, the lower portions of said jaws being gradually curved and the ribs located some distance above the same, and round-ended link for connecting said lever-grips or clamp-sections, substantially as described.

3. In a belt clamp or fastening, the combination of two lever-grips or clamp-sections having angularly disposed jaws with upper beveled ends, one of said jaws having two ribs extending across the same and the other a single rib located between the aforesaid ribs, said ribs having rounded engaging apices and the sides of said jaws on the exterior of the same being formed with grooves, and the lower parts of the same being gradually curved and merging into tail-extensions with recesses therein, and a round-ended link fitted over said lever-grips or clamp-sections and arranged to be located in the grooves of the jaws thereof, substantially as described.

**501,267.** SHARPENER FOR KNIVES, &c. CHARLES K. BRADFORD, Lynnfield, Mass. Filed July 7, 1892. Serial No. 439,221. (No model.)

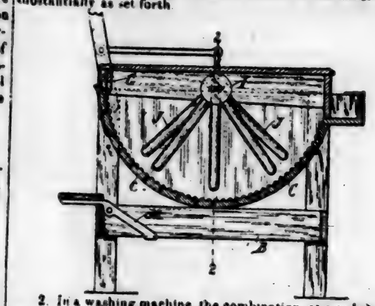


*Claim.*—1. In a sharpener two disks, B, C, each grooved about its periphery to form circular cutting edges *b*, *c*, and *b'* *c'* relatively disposed to form an angle, and with one cutting edge of one between the two cutting edges of the other, substantially as described.

2. The improved sharpener comprising cutting disks disposed outwardly at an angle and inclined from the base, a groove upon the periphery of each to form two cutting edges one edge of one disk lying between two edges of the other, and a brace for holding them, substantially as described.

**501,268.** WASHING-MACHINE. CALISTE BRULEY, Milwaukee, Wis., assignor of two-thirds to Albert P. Vale and Joseph Bruley, same place. Filed Nov. 21, 1892. Serial No. 452,612. (No model.)

*Claim.*—1. In a washing machine, the combination, of a suds-box, a drum or cylinder, a series of beater arms or pounders extending into the cylinder, an axis for the drum or cylinder passing through the upper ends of the beater arms or pounders which pass into the cylinder, to form a lock or key for said beater arms, and having laterally projecting ends from the cylinder to form bearings therefor, and mechanism for imparting a rocking motion to the drum or cylinder, substantially as set forth.



2. In a washing machine, the combination, of a suds-box, a rocking cylinder, and sets of beater arms or pounders, comprising two arms to a set, each arm of a set inclining from the cylinder laterally and longitudinally, the latter inclinations in each set, respectively being in opposite directions, whereby the lower ends of the arms are brought to a corresponding lateral line, and the upper ends are made to enter the cylinder at different points of its length in a longitudinal line, substantially as set forth.

3. In a washing machine, the combination, of a suds-box, a cylinder, sets of beater arms or pounders, comprising two arms to a set each arm of a set inclining from the cylinder laterally and longitudinally, the latter inclinations in each set, respectively, being in opposite directions, whereby the lower ends of the arms are brought to a corresponding lateral line, and the upper ends are made to enter the cylinder at different points of its length in a longitudinal line, cranks at the ends of the cylinder, and extending into said cylinder to form the axis thereof, and through the upper ends of the beater arms to provide a lock or key for said beater arms, and mechanism connected with the cranks for imparting a rocking motion to the cylinder, substantially as set forth.

**501,269.** FLUE-CUTTER. JAMES CUMMINS and JOHN H. MAGEE, Jr., Buffalo, N. Y., assignors of one-third to Allen Vail, same place. Filed Jan. 16, 1893. Serial No. 458,488. (No model.)



*Claim.*—1. As an improved article of manufacture, a flue-cutter having a rectangular, tapering body A', provided with the shank *a* on one end and the dove-tailed groove A'' in its face, a sleeve upon said body and having a longitudinal, rectangular, non-tapering aperture as described and a further rectangular aperture radiating from said longitudinal aperture, a cutter-block C, in said radial aperture and provided with a cutter D, said cutter-block having its lower face beveled to fit the taper of the body A' and provided with a tongue engaging the dove-tail groove in the face of said body; a collar F, adjustably retained upon said sleeve B by the set-screw *f* and a further, tubular sleeve H, over the sleeve B and provided with the slot A, as and for the object specified.

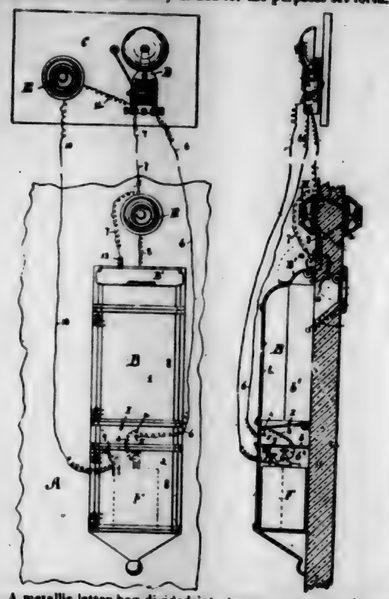
2. In an improved flue cutter, the rectangular tapering body A provided with a shank *a* on one end and a dove-tail groove A'' in its face, a sleeve B, upon said body and having a radial aperture fitted with a cutter block having a circular cutter, a collar upon said sleeve and an outer slotted sleeve upon said sleeve B as and for the purpose set forth.

**501,270.** LETTER-BOX. PETER J. FITZGERALD, Hyde Park, Mass. Filed Oct. 13, 1890. Serial No. 367,925. (No model.)

*Claim.*—1. The letter box B divided into two compartments *b'*, *b*, and the electric battery F, in combination with the bell D, push buttons E, H, and electrical connections whereby the bell can be rung when a letter is in the box by the person depositing the letter or by a person in a room or apartment where the bell is placed, substantially as set forth.

2. The combination of the box B, divided into two compartments and having a hinged shelf I, and contact points 4—5 with the battery F, electric bell D, push buttons E, H, and wires 3, 6, 7, 8, 9, 10, and 11 for making an electric circuit substantially as set forth.

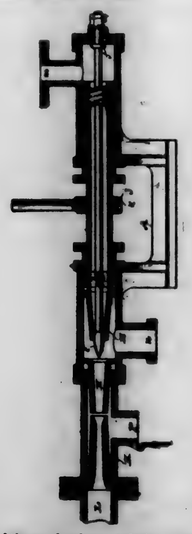
3. The combination of the box B, divided into two compartments and having a hinged shelf I, and contact points 4—5 with the battery F, electric bell D, push button E, contact point 13 and wires 6 7, 9, 10, 11 and 14 substantially as and for the purposes set forth.



4. A metallic letter box divided into two compartments, in one of which is an electric battery; an electric bell, push buttons and wire connections, the box itself forming part of the circuit, all arranged and operated substantially as shown and described.

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**501,271. INJECTOR.** FRANZ PUSELL, Milwaukee, Wis. Filed Mar. 18, 1893. Serial No. 466,641. (Model.)

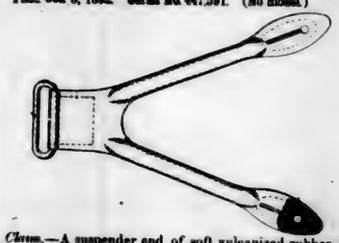


*Claim.*—1. An injector having a tubular portion provided with internal screw-threads, a rotative tube that communicates with the steam-entrance and has screw-threads engaging those aforesaid, a nozzle at that end of the tube furthest from the steam-entrance, a stationary rod inclosed by said tube, a valve that forms part of the rod and engages the nozzle, and a hand lever on the aforesaid tube, substantially as set forth.

2. An injector comprising a stand having tubular extensions projecting in opposite directions, one of these extensions provided with a steam-entrance and the other with a water-inlet, stuffing-boxes at the inner ends of both of said stand-extensions, a rotative longitudinal tube that engages the stuffing-boxes, and is screw-threaded in one of the aforesaid stand-extensions, a nozzle at that end of the tube farthest from the steam-entrance, a stationary rod inclosed by said tube, a valve that forms part of the rod and engages the nozzle, a shell fitted to the tubular stand extension that is provided with the water-inlet, and combining and delivery pipes opposing each other in the shell, substantially as set forth.

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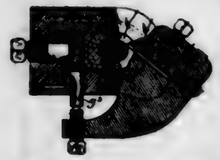
**501,272. SUSPENDER-END.** EMIL GUTMANN, New York, N. Y. Filed Oct. 3, 1892. Serial No. 447,591. (No model.)



*Claim.*—A suspender end of soft vulcanized rubber having the fabric F inclosed at the upper end and the fabric I inclosed at the lower end, leaving the mid-length freely elastic, in combination with the link E, attached by vulcanizing in place, all adapted for joint service, substantially as herein specified.

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**501,273. TOOL FOR TURNING TAPERING SURFACES.** JAMES HARTNESS, Springfield, Vt. Filed May 4, 1892. Serial No. 431,800. (No model.)



*Claim.*—1. In a taper-turning appliance, the combination of a casing or holder, a back-rest movable laterally, a cutter-holder pivotally connected to the casing, a cutter held in said cutter-holder, and means for moving said back-rest and cutter simultaneously toward the center of the casing, whereby the back-rest and cutter are caused to co-operate in reducing a piece of work interposed between them, as set forth.

2. In a taper-turning appliance, the combination of a casing or holder, a back-rest movable laterally, a cutter-holder pivotally connected to the casing, a cutter held in said cutter-holder, a bar or former movable longitudinally and provided with inclines adapted to impart lateral motion to the back-rest and cutter when the relative positions of the casing and former are being changed, as set forth.

3. In a taper-turning appliance, the combination of a casing or holder, a back-rest movable laterally, a cutter-holder pivotally connected to the casing, a cutter held in said cutter-holder, separate inclines provided for actuating the back rest and cutter-holder, as set forth.

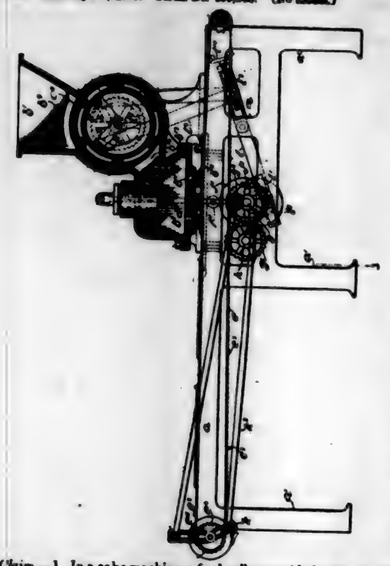
4. The combination of a chuck for holding and rotating a rod, a casing or holder having a rod-receiving chamber, a multiple-edged cutter and a back-rest arranged to bear simultaneously on opposite sides of a rod in said chamber, means for changing the relative positions of the rod and casing or holder to increase the projection of the rod into the casing, and means for simultaneously moving the back-rest and cutter toward each other during the change in the lateral positions of the rod and casing, as set forth.

5. In a taper-turning appliance, the combination of a casing or holder, a series of back-rest surfaces and a series of cutting edges both movable laterally in said casing, a bar or former movable longitudinally and provided with inclines adapted to impart a lateral motion to the back-rests and cutting edges when the relative positions of the casing and the former are being changed, as set forth.

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**501,274. CAKE-MACHINE.** PENROSE D. HARTON, Philadelphia, Pa. Filed Apr. 7, 1892. Serial No. 428,365. (No model.)



*Claim.*—1. In a cake machine, a feed-roller provided with pivotal paddles or deliverers having lugs contacting with means connected with the cylindrical casing and adapted to rock the paddles or deliverers into open position and to maintain the same in such position during the reception and conveyance of the plastic material, a rib, bar or arch for rocking the paddles or deliverers into closed position upon or during the throwing off tangentially of the plastic material into a reservoir, and means, substantially as described, for operating the feed-roller, substantially as and for the purposes set forth.

2. In a cake machine a rotating feed-roller having flanged heads, paddles provided near their edges with pintles journaled to said flanges and with lugs and a casing provided with means for engaging said pins and with bars or ribs in range of said paddles, substantially as and for the purposes set forth.

3. A cake machine provided with a feed-roller having a ratchet-wheel, a positively driven shaft, a rocker-arm actuated by said shaft, links pivoted at one of their extremities to the free end of the rocker-arm and provided at their other extremities with pawls operating alternately on opposite sides of the ratchet-wheel, and means for shifting the pivot of the links in respect to the fulcrum of the rocker-arm, substantially as and for the purposes set forth.

4. In a cake machine, a feed-roller having a ratchet-wheel, links provided with pawls meshing with said ratchet-wheel, a rocker-arm for operating said links, and a hand-wheel and set-screw for shifting the pivot of the links in respect to the fulcrum of the rocker-arm substantially as and for the purposes set forth.

5. In a cake machine, a feed-roller having a ratchet-wheel, a rocker-arm provided with a movable-block, a hand-wheel and set-screw for shifting said block, and links pivoted to said block and provided with pawls meshing with the said ratchet-wheel, substantially as and for the purposes set forth.

6. In a cake machine, a conveyer for feeding pans and other receptacles, a main-shaft and a driving shaft geared together, a link and pawl-and-ratchet connections operated by the main-shaft and adapted to drive the conveyer and feed the pans or receptacles slowly for the reception of molded material, a link and pawl-and-ratchet connections operated by the driving-shaft and adapted to drive the conveyer and feed the pans and receptacles rapidly to and from the machine, substantially as and for the purposes set forth.

7. In a cake machine, a conveyer for pans and other receptacles, a main-shaft and a driving-shaft geared together, a link and pawl-and-ratchet connections operated by the main shaft and adapted to drive the conveyer and feed each pan slowly for the reception of molded material, a pawl carried by an arm and adapted to mesh with a ratchet-wheel having a single space and adapted to drive the conveyer, and a link operated by a crank on the driving-shaft and adapted to operate said arm to feed the pans rapidly to and from the machine, substantially as and for the purposes set forth.

8. A cake machine, comprising a feed-roller provided with pivotal paddles having lugs, a cylindrical casing provided with a projection and a rib for rocking said paddles, a hopper, a reservoir, plungers penetrating the wall thereof, said reservoir having openings or molds in the base thereof, a conveyer, a movable-table, a driving-shaft provided with double cams engaging rollers depending from the table and rods depending from a yoke attached to the plungers, and means for operating the feed-roller and conveyer, substantially as and for the purposes set forth.

9. A cake machine, comprising a feed-roller provided with pivotal paddles having lugs, a cylindrical casing provided with a projection and a rib or arch for rocking and maintaining said paddles in the required position, a hopper, a reservoir, plungers penetrating the wall of said reservoir, the latter having openings, dies or molds in the base thereof, a conveyer, a movable table, a driving-shaft provided with double-cams engaging rollers depending from the table and rods depending from a yoke attached to the plungers, differential pawl-and-ratchet gear for feeding the conveyer, a rocker-arm adapted to operate links provided with pawls meshing with a ratchet-wheel on the feed-roller, and a hand-wheel and set-screw for adjusting the pivot of said links in respect to the fulcrum of the rocker-arm, substantially as and for the purposes set forth.

10. The combination, in a cake machine, of a rotatable feed-roller having peripheral paddles or deliverers provided with lugs journaled to end flanges thereof and mounted in a casing provided with a hopper and with a tapering throat or outlet at a corner thereof and connected with a reservoir provided with plungers and dies, molds or openings in the base thereof, an endless conveyer, a vertically movable table and mechanism for actuating said feed-roller, plunger and table so as to feed first slowly and then rapidly, substantially as and for the purposes set forth.

11. The combination, in a cake machine, of a rotatable feed-roller journaled in a partially recessed casing provided with an open top hopper, a contracted throat and communicating reservoir, arched ribs or projections in said casing, paddles or deliverers journaled to said roller and provided with lugs, plungers in said reservoir provided with openings, dies or molds in the base thereof, a conveyer and movable table, and mechanism, substantially as described, for intermittently and successively actuating said feed-roller, table and plungers, substantially as and for the purposes set forth.

12. In a cake machine, a rotatable feed-roller mounted in a partially recessed casing and provided with peripheral pivotal paddles or deliverers with lugs and means for causing said paddles or deliverers to assume and be maintained respectively in open and closed positions, substantially as and for the purposes set forth.

13. The combination, in a cake machine, of a rotatable feed-roller mounted in a casing provided with a hopper and with a contracted throat a reservoir provided with plungers and dies, molds or openings in the base thereof, guides located at different points of said casing, paddles pivotally connected with the surface of said roller and provided with pins or lugs adapted to contact with said guides to control the position of said paddles in their movement in said casing, a conveyer, a vertically movable table, and means for actuating said roller, conveyer and plunger and to feed said table first slowly and then rapidly, substantially as and for the purposes set forth.

14. In a cake machine, a casing provided with a hopper and a reservoir provided with plungers and dies, molds or openings, a feed-roller mounted in said casing and provided with pivotally supported peripheral paddles, guides for controlling the position thereof, and means for actuating said roller and plunger for discharging material into said reservoir from said hopper and depositing the molded material from the reservoir, substantially as and for the purposes set forth.

15. A cake machine, comprising a feed-roller provided with peripheral paddles, means for controlling the same in the travel thereof, a reservoir disposed adjacent thereto and directly connected with the housing or casing for said feed-roller and provided with plungers and dies, molds or openings, a movable-table, an endless conveyer for pans or receptacles operating independently of said table and mechanism, substantially as described, for operating the plungers, rotating the feed-roller, raising the table and feeding the pans or receptacles of the conveyer with a differential motion, substantially as and for the purposes set forth.

16. A cake machine provided with a feed-roller having pivotal paddles, means for controlling the positions thereof, plungers for depositing plastic material in molded form, a pan conveyer and movable table, and mechanism, substantially as described, for actuating said appliances or devices and for adjusting the feed while the machine is in motion, substantially as and for the purposes set forth.

17. A cake machine, comprising a rotatable feed-roller provided with peripheral paddles pivoted thereto and adapted to convey a plastic material to a reservoir having plungers and dies, molds or openings, a pan conveyer and movable table and means for actuating said appliances or devices of the machine with a positive motion and for

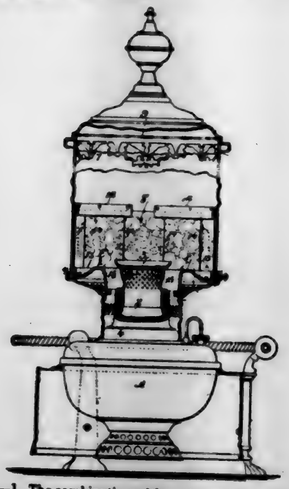
adjusting the feed while said appliances or devices are in action, substantially as and for the purposes set forth.

18. In a cake machine, a rotatable feed roller having peripheral movable paddles or deliverers mounted in a housing and provided with an open top hopper, a contracted throat or outlet and a reservoir provided with plungers movable in the top and dies, molds or openings in the bottom thereof, a shaft provided with cams, rods connected with said cams and plungers, and means for actuating said shaft, substantially as and for the purposes set forth.

19. In a cake machine, a rotatable feed-roller having paddles pivoted to the ends thereof and mounted in a housing provided with an open top hopper, a reservoir provided with plungers and dies, molds or openings connected with said housing by means of a contracted throat or outlet, a shaft provided with cams, levers or rods connected with said plungers and engaging said cams, a movable table, an endless conveyer actuated by means independently of said table, and means for actuating said levers or rods, conveyer and table at different rates of speed, substantially as and for the purposes set forth.

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**501,275. LAMP.** THOMAS HIPWELL, Long Island City, assignor to the Manhattan Brass Company, New York, N. Y. Filed Apr. 10, 1893. Serial No. 469,643. (No model.)



*Claim.*—1. The combination with an Argand lamp having a central air tube and perforated deflector, of an air distributer surrounding the wick tube, an ornamental ring extending out from the air distributer, an ornamental drum of perforated sheet metal resting upon the ornamental ring and having openings at the upper and lower portions of such drum, transparent material within the ornamental drum and closing the lower openings therein, and a sheet metal deflector formed as a disk at the base of the drum with a central opening and rim surrounding the flame and directing the draft to the base, substantially as set forth.

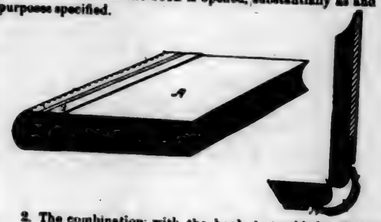
2. The combination with the ornamental drum of sheet metal with openings therein, of the interrupted bands within the ornamental drum and connected near their upper and lower edges respectively, and mica in sheets introduced between the interrupted bands at the openings between the ends and slipped around between such bands to close the openings in the lower part of the ornamental drum, an Argand lamp, an air distributer around the wick tube, and an ornamental rim extending out from such air distributer and supporting the drum, substantially as set forth.

3. The combination with the Argand lamp having a central air tube and perforated deflector, of an air distributer surrounding the wick tube, an ornamental ring extending out from the air distributer, a deflector in the form of a disk having a central opening and internal rim surrounding the base of the flame and resting upon the ornamental ring, and a sheet metal drum supported by the ornamental ring and adapted to receive and radiate the heat from the flame, substantially as set forth.

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**501,276. BLANK BOOK.** FRANK H. HOFFMANN and HERMAN H. HOFFMANN, Chicago, Ill. Filed Mar. 2, 1893. Serial No. 465,004. (No model.)

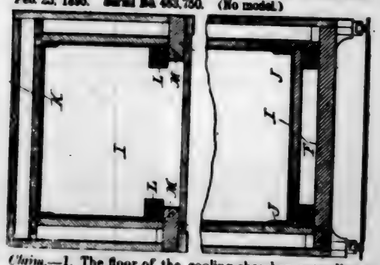
*Claim.*—1. In blank books, the combination, with the strapped book, of an inner back provided with the curved central portion *b*, and nearly straight edge sections *b'* integral therewith, said edge sections extending some distance over the sides of the strapped book and being secured thereto at their margins, and the back made from material sufficiently elastic to permit the edge sections to spring outward and then inward as the book is opened, substantially as and for the purposes specified.



2. The combination, with the book A provided with the strapping *a*, of the elastic back B provided with the integral extended edges *b'*, said edges extending over the sides of the book, and arranged to spring inward and then outward as the book is opened, the boards D, and the attaching strips C, substantially as and for the purposes specified.

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**501,277. REFRIGERATOR.** CHARLES HUBB, Duluth, Minn. Filed Feb. 23, 1893. Serial No. 463,750. (No model.)



*Claim.*—1. The floor of the cooling-chamber extending to the front edge of the door opening of the cooling-chamber; and the sheet metal lining, covering the entire floor, turned up on three sides of the refrigerator, and extending over and under the front edge of the floor, making a water-tight lining at the bottom of the cooling-chamber of the refrigerator, substantially as specified

2. The sheet metal lining I at the bottom of the cooling-chamber of the refrigerator turned upon three sides of the cooling-chamber, and extending under the stops on the sides of the door of the refrigerator, and through a scarf in the front pieces at the sides of the door of the refrigerator and also over the front edge of the floor of the refrigerator to prevent the water from running off of the sides of the lining under and around the bottom of the door-opening of the refrigerator, as specified.

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**501,278. WALL OR CEILING COVERING.** EDWARD JARDIN, New York, N. Y. Filed Aug. 11, 1892. Serial No. 442,832. (No model.)



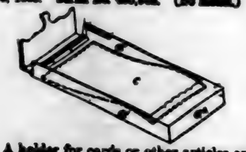
*Claim.*—1. A wall or ceiling-covering, composed of bars covered with woven or braided reed, rattan, willow or other basket-materials and fastened to the walls or ceilings to form panels and pieces of woven or braided reed or rattan secured to the wall or ceiling in said panels, substantially as set forth.



2. The combination, with a wall or ceiling, of strips or bars on the surfaces of which woven or braided reed or rattan is applied, by which bars panels are formed on the wall or ceiling, pieces of woven or braided reed or rattan fastened to the walls within said panels, and moldings fastened along the edges of said bars and lapping over the panel fillings, substantially as set forth.

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**501,279. CARD-HOLDER.** RICHARD D. KENNEY, Providence, R. I. Filed Mar. 10, 1893. Serial No. 465,362. (No model.)



*Claim.*—1. A holder for cards or other articles open on the top for a portion of its length and with the upper edges of its side pieces free and disconnected at one end, and bent to form springs, said holder being provided with a hinged lid or cover bent substantially at right angles, and arranged to be forced between the free ends of the side pieces, and to be held in for closed position by said side pieces, substantially as described.

2. A holder for cards or other articles open at the top for a portion of its length, and provided with a hinged lid or cover bent at substantially right angles, the upper edges of the side pieces of said holder being free and disconnected at one end and provided with grooves or indentations on their inner faces to receive and engage the edges of a portion of the bent cover, substantially as described.

3. A holder for cards or other articles composed of a bottom piece, two side pieces, an end piece, a top piece of a length less than the entire length of the holder, a lid or cover pivoted to the bottom piece and bent at substantially right angles, and a spring secured at one end to the bottom of the holder, and with its free end arranged to underlie the end of the top piece, substantially as described.

4. A holder for cards or other articles open at one end and on the top for a portion of its length, and provided with a hinged lid bent substantially at right angles to close the end of said holder and a portion of its top, said lid being provided with a projection arranged to abut against the bottom of the holder and thereby limit the movement of said lid, substantially as described.

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**501,280. LIFTING-JACK.** GEORGE W. LA RAW, Bayonne, N. J. Filed Sept. 20, 1892. Serial No. 447,231. (No model.)



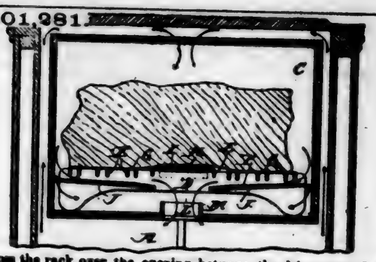
*Claim.*—1. The combination in a lifting jack, of a stand and a series of tubes slidable one within the other and having openings near the lower ends and cross keys or bearers to be inserted through the openings in such slidable tubes and to rest upon the ends of the adjacent surrounding tubes, substantially as set forth.

2. The combination in a lifting apparatus of a range of tubes, movable telescopically one within the other and having openings near their lower ends, cross keys or bearers inserted through such openings, a lifting device and head block of different sizes adapted to act between such screw and the lower ends of the tubes, substantially as set forth.

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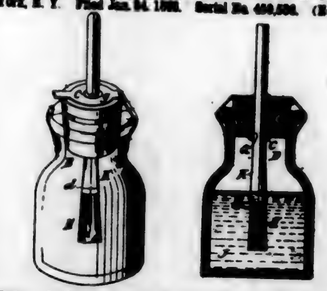
**501,281. REFRIGERATOR ICE-RACK.** GEORGE W. LAWRENCE, Eau Claire, Wis. Filed Sept. 12, 1892. Serial No. 445,756. (No model.)

*Claim.*—The ice-rack for a refrigerator, consisting of the rails or pieces D furnished on their sides with grooves to receive the drip aprons and with slots cut in their upper edges to receive the turned over edges of the metal cross-beams; the drip aprons J fitting in the grooves on the sides of the rails or pieces D; the metal beams G having turned over edges to fit into the cross-grooves on the top of the rails or pieces D; and the corrugated center piece H extending across the rack over the opening between the drip aprons J, all as specified and shown.



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**501,282. BOTTLE FOR GLUE, &c.** CLINTON H. LOCKETT, New York, N. Y. Filed Jan. 24, 1893. Serial No. 459,508. (No model.)



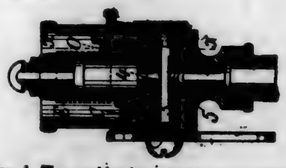
*Claim.*—1. In a stopper for bottles, the cork F, having a central perforation *a*, in combination with a brush H, having a handle G, traversing said perforation in the cork, and fixed therein, a coating of paraffine K covering the sides and bottom of the cork, the sides of said brush handle beneath the cork, and the joint where said handle enters the perforation in the cork, and a fastening device, as the eyelets *c*, engaging said handle and said cork and fixing the two rigidly together, whereby there will be no relative movement to break said coating at said joint, and a strap I fixed to the top of said cork, surrounding said handle, and having free ends A, projecting beyond said cork for attachment to the neck of the bottle to retain the cork therein.

2. In a stopper for bottles, the combination with a cork F, having a central perforation *a*, of a paper strap I, having a perforated middle and free ends, said strap fixed to the top of said cork with the perforation in its middle coinciding with that of the cork, and its free ends projecting for attachment to the neck of the bottle, and a brush H, having a handle G, traversing the perforation through said cork and that through said strap, and projecting above the latter, and means for fixing said brush, strap and cork together, whereby neither can become displaced, substantially as and for the purpose set forth.

3. In a stopper for bottles, the cork F, having a perforation *a*, in combination with the brush H, having handle G traversing said perforation, the strap I on the upper face of said cork, and the eyelets *c* surrounding said handle and soldered thereto, having a shank entering said perforation *a*, and a flange embracing said strap I, whereby said eyelet clamps said parts together.

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**501,283. GAS-BURNER.** FRANK J. LEHMAIR, New York, N. Y., assignor to H. P. Rothholtz & Co., same place. Filed Dec. 19, 1892. Serial No. 455,581. (No model.)



*Claim.*—1. The combination with the gas supply pipe and the main burner, of a cock having a hollow plug and openings for turning on the gas to the main burner, an igniting jet tube and a flash jet tube, between the igniting jet tube and the main burner there be-

ing an opening in the plug of the cock for passing the gas to the igniting jet tube and also an opening for passing gas to the flash jet tube while the gas is being turned on and for shutting off the gas from such flash jet tube when the burner is lighted, substantially as set forth.

2. The combination with the main burner, the burner tube, the base surrounding the same and the barrel of the cock, of an igniting jet tube, a flash jet tube between the igniting jet tube and the base of the burner tube, a hollow p' q for the cock into which the gas is allowed to pass continuously, there being an opening for the passage of gas to the igniting jet tube, and also a hole for supplying gas to the flash jet tube and cutting off the same after the main gas jet has been ignited, substantially as set forth.

3. The combination with the barrel and burner tube and the igniting and flash tubes, of a hollow conical plug and gas passages and a lever fitted to the smaller end of the plug and by which the gas is turned on and off, and a screw passing into the hollow of the plug and clamping said lever to the plug, substantially as set forth.

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**501,284. LAMP-BURNER.** BARTLETT P. LOCK, Boston, Mass. Filed Dec. 22, 1892. Serial No. 456,097. (No model.)



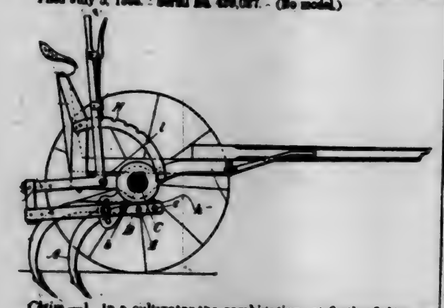
*Claim.*—1. A lamp burner, having a chimney supporting flange and a contractile yielding band located above the said flange and adapted to entirely surround and yieldingly grasp the base of a chimney at a point sufficiently elevated above said flange, to enable the band to securely hold the chimney in place, the band being provided with a fixed support intermediate of its ends, movable supports at its ends and a helical spring connecting its ends and tending to draw them together as set forth.

2. A lamp burner, provided with a chimney-embracing yielding band having downwardly-projecting arms integral with the band, said arms being formed on the free ends of the band and movably engaged at their lower ends with the base of the burner, and a closing or contracting spring of helical form engaged with the band and extending across the space between said arms, as set forth.

3. In a lamp burner, the combination of an upwardly-projecting arm or standard outside of the chimney support or seat, a chimney-embracing yielding band engaged at or near its central portion with the upper portion of said standard and bent downwardly at its ends to form supporting arms or standards which are movably engaged with the base of the burner, and a closing or contracting spring of helical form engaged with the band and extending across the space between said arms, as set forth.

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**501,285. CULTIVATOR.** MALCOLM MAGLSON, Los Angeles, Cal. Filed July 5, 1892. Serial No. 439,027. (No model.)



*Claim.*—1. In a cultivator the combination set forth of the supporting shaft or axle; the shank carrier arranged upon such shaft and having a shank arm provided with a pivot hole and a slot; the pivot and the clamp bolt and nut arranged to clasp the shank to the carrier and to allow adjustment of the cultivator shank.

2. In a cultivator, the combination set forth of the axle; the supporting wheels journaled upon such axle; the shank carrier arranged for attachment upon such axle, and provided with the rearwardly extending arm having a pivot hole and an adjusting slot therein; the cultivator shank provided at its lower end with the shovel and at its upper end with bolt holes corresponding to the slot and pivot hole in the shank carrier, the clamp and pivot bolt passed through the shank and the shank carrier, and the nuts arranged on such bolts.

3. In a cultivator the combination of the frame, the axle journaled to such frame; the supporting wheels journaled upon such axle, the cultivator shanks provided with cultivator shovels and fixed to such axle; the axle actuating lever adjustably attached to the axle and extending rearwardly therefrom, the seat bracket preferably journaled upon the axle and attached to the frame, the rack fixed to the seat bracket, the operating lever provided with the rearwardly extending arm and the pawl arranged to engage the rack and pivoted to the seat bracket; and the link arranged to couple the rear arm of the operating lever and the axle actuating lever to each other.

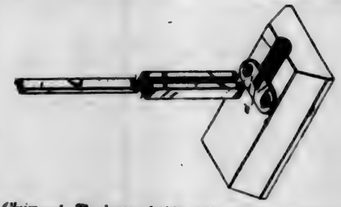
4. In a cultivator the weed cutter set forth comprising a thin narrow metal blade arranged to extend the full width of the cultivator and provided upon its front edge with downwardly bent ears having bolt holes therethrough adapted to receive the bolts which also secure the shovels to the shanks, all so arranged and proportioned that when the blade is secured to the shanks and the cultivator is in operation the plane of the blade will be substantially horizontal, permitting cultivation, weeding and leveling at the same operation.

5. In a cultivator the combination set forth of the frame; the axle journaled to the frame, the supporting wheels journaled upon the axle, the shank carriers arranged upon the axle and provided with the pivot hole and the slot, the cultivator shanks having their upper ends secured to the shank carriers by bolts passing through the pivot hole and slot; the bolts, the cultivator shovels fixed to the lower ends of the shanks; the weed cutter comprising the metal blade of sufficient length to extend the full width of the cultivator and provided upon its front edge with downwardly bent ears having bolt holes therethrough adapted to receive the bolts which secure the shovels to the shanks; the bolts; the bracket journaled on the axle and attached to the frame; the rack fixed to the bracket; the operating lever pivoted to the bracket and provided with the rearwardly extending arm and the pawl arranged to engage the rack; the axle actuating lever fixed to the axle and extending toward the rear, and the link arranged to connect the rear arm of the operating lever with the actuating lever.

6. In a cultivator the combination set forth of the frame; the cylindrical axle journaled to the frame and provided with the longitudinal channel; the wheels journaled upon the axle; the shank carriers fitted upon the axle and provided with the spline arranged to fit in such channel, and with a pivot hole arranged beneath the axle and a slot arranged rearward from such axle, the cultivator shank secured to the shank carriers by bolts passing through the shank and through the pivot holes and slots; such bolts; the cultivator shovels secured to the shanks; the weed cutter comprising the blade of sufficient length to extend the full width of the cultivator and arranged for attachment to the cultivator shanks, and suitable means for partially rotating the axle to force the shovels into or withdraw them from the ground, substantially as and for the purpose set forth.

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**501,286. BUTTON-SETTING TOOL.** JOSEPH MATHEWS, Somerville, Mass. Filed Apr. 18, 1892. Serial No. 429,366. (No model.)



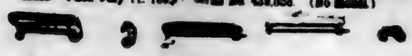
*Claim.*—1. The button holding block or base having a rigid plate secured thereto and provided with a slot adapted to receive the neck or shank of the button and support the prongs thereof for the action of a prong clinching device, said base having a semi-circular recess wider than the slot extending from the front end thereof and under and in line with the slot of the plate, substantially as described.

2. A button setting tool or implement, comprising a prong clinching device composed of a guide block adapted to fit over the prongs of a button and a slide fitted to said guide block and having one end provided with prong bending concavities; and the button holding block or base having a rigid plate secured thereto and provided with a slot adapted to receive the neck or shank of the button and support the prongs thereof for the action of the prong clinching device, said base having a semi-circular recess wider than the slot extending from the front end thereof and under and in line with the slot of the plate, substantially as described.

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**501,287. BOUQUET-HOLDER.** JOSEPH MATHEWS, Somerville, Mass. Filed July 11, 1892. Serial No. 439,656. (No model.)



*Claim.*—1. A bouquet holder comprising a frame or support having means for attachment to a garment, and provided with eyes or loops and an endless elastic band engaged with said eyes and held in a tense condition thereby, the sides of the band being both located on one side of the frame or support and constituting stem-grasping jaws, as set forth.

2. A bouquet holder comprising a safety pin having open eyes or loops at its ends and a bar connecting said loops, and an endless elastic band engaged with said eyes and having the two sides thereof extending along one side of said bar, as set forth.

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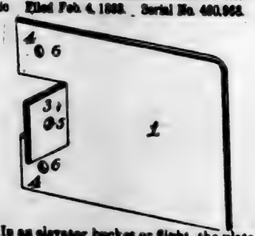
**501,288. EYELET.** ARTHUR MATHEWS, Springfield, Mass. Filed Jan. 16, 1893. Serial No. 458,504. (No model.)



*Claim.*—An eyelet consisting of a central metallic tube and a concave head, a ring of plastic material in the concavity of the head, and anchoring devices projecting from the metal of the head and entering the plastic ring but concealed by the face of said ring, all substantially as described.

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**501,289. FLIGHT FOR ENDLESS CONVEYERS.** FRED MILLER, Corning, Ohio. Filed Feb. 4, 1893. Serial No. 460,963. (No model.)




*Claim.*—1. In an elevator bucket or flight, the plate 1 having at one edge tongues 4 4, a recess intermediate said tongues adapted to receive a chain link, and a transverse tongue 3 at the edge of the recess, substantially as described.

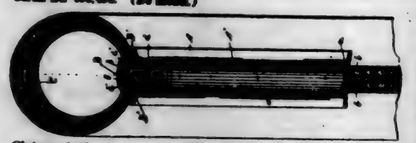
2. In an elevator bucket or flight, the plate 1 having at one edge tongues 4 4, a recess intermediate said tongues adapted to receive a chain link, a transverse tongue 3 at the edge of the recess, and the outer curved edge 2, substantially as described.

3. A bucket or flight for elevators comprising two plates 1 1 each having at their inner edge two overlapping tongues 4 4, a recess intermediate said tongues adapted to receive a chain link, and a tongue 3 transverse to the plane of the plate at the edge of the recess, substantially as described.

4. A bucket or flight for elevators comprising two plates 1 1 each having at their inner edge two overlapping tongues 4 4, a recess intermediate said tongues adapted to receive a chain link, the transverse tongue 3 at the edge of said recess, and the outer curved edge 2, substantially as described.

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**501,290. PNEUMATIC TIRE.** JOSEPH G. MOONEY, Erie, Pa., assignor of one-half to Thomas Brown, same place. Filed Mar. 31, 1893. Serial No. 468,402. (No model.)



*Claim.*—1. In a pneumatic tire, the combination with the felly, of the tire, and a chain band on the inner periphery of said tire.

2. In a pneumatic tire, the combination with the felly of the tire having a peripheral slit in its inner periphery, and the chain bands at the edges of said tire for the purposes set forth.

3. In a pneumatic tire, the combination of the felly having transverse depressions therein, the tire having a peripheral slit in its inner periphery, the chain bands at the edges of said tire, and means for drawing them into said depressions and holding them for the purposes set forth.

4. In a pneumatic tire, the combination of the felly, A, having the annular groove, A', therein, filling *a*, in said groove having depressions, *d*, therein, the tire having a peripheral slit on its inner periphery, inextensible and pliable edges thereon and means for drawing said edges into said depressions and holding them.

5. In a pneumatic tire, the combination of the felly, A, having groove, A', therein, filling, *a*, having depressions, *d*, therein, tire B, chain bands *b* in the edges thereof, and the "T" bolt D for drawing said edges in to said depressions.

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**501,291. ELECTRIC TIME-SWITCH.** JAMES F. MCLAUGHLIN, Philadelphia, Pa. Filed Sept. 29, 1892. Serial No. 447,361. (No model.)

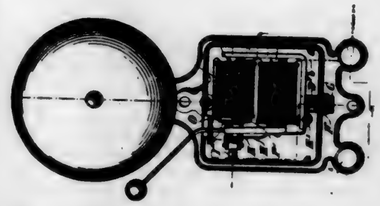


*Claim.*—1. In an automatic electric time switch, the combination of a spring actuated pivoted switch arm, and two contact blocks in the path of the switch arm, and circuit connections whereby in one position of the switch arm, one circuit is closed and another open and vice-versa; with a gravity latch intercepting the movement of the switch arm in one direction, and a tripping mechanism actuated by an alarm clock for releasing the switch arm, substantially as described.

2. In an automatic electric time switch, the combination of a spring actuated switch arm and two contact blocks in the path of the same, and circuit connections whereby in one position of the switch arm one circuit is closed and another opened and vice versa; with a latch intercepting the movement of the switch arm in one direction, and a tripping mechanism actuated by an alarm movement for releasing the switch arm, substantially as described.

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**501,292. ELECTRIC BELL.** WILSON J. NEWMAN, Brooklyn, N. Y., assignor to Henry E. Baxter and Channing Baxter, same place. Filed Oct. 23, 1892. Serial No. 450,343. (No model.)



*Claim.*—1. The combination, substantially as described, of the base plate having a slot, the electro-magnet, and a yoke piece for said magnet provided with two projections as described, one constituting a hook that engages with the slot in the base plate and the other serving for engagement of a fastening screw or bolt.

2. The combination with the base plate, of the electro-magnet, a yoke piece having an arm or projection by which it is fastened to the base plate, and a catch for the cover fastened beneath said projection.

3. In an electric bell, the combination with a base plate, of an electro-magnet having its armature mounted on an extension of a yoke piece formed independently of the base plate, the contact fastened to the magnet core, and means for fastening the yoke piece to the base plate, as and for the purpose described.

4. The combination with an electro magnet, of an arm fastened between the end of the magnet coil and a head of the magnet core consisting of the upset metal of the end of said core, and an armature stop mounted on said arm.

5. The combination with an electro-magnet, of an arm fastened between the end of the magnet coil and a head of the core consisting of the upset metal of the end thereof, an insulating washer between the upset iron head of the core and said arm, and an armature stop mounted on said arm.

6. The combination with the electro-magnet, of the metal ring flanged at its rim and having a supporting arm, the insulating washer within the rim, and the headed core, as and for the purpose described.

7. The combination with the magnet core, of the metal ring en-

circling the end of the core and held in place on said core against the head of the coil by the upset metal of the core, a boat arm extending from said ring integral therewith and returning upon itself opposite the pole, an armature between the arm and pole, and a back stop mounted on the arm.

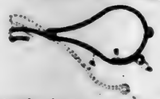
8. The combination with the electro-magnet, of the metal arm encircling the end of the magnet core but insulated therefrom and held against slipping from the core by the upset metal of the end of the core, a coil terminal connected with said arm, a contact stop mounted on said arm, a yoke piece for the magnet having an extension carrying the armature, means for fastening the yoke piece to the metal base, and an insulating post mounted on the base and connected to the opposite terminal of the magnet coil.

9. The combination with the post and the base, of the insulating washer nicked or indented at two or more points on radial lines forming an angle with one another and engaging with corresponding indentations or projections on the base, as and for the purpose described.

10. The combination of an armature and a supporting spring therefor, secured to the armature by a burr or ridge formed of material punched or pressed out of a notch or recess in the edge of said armature and upset upon the supporting spring, as and for the purpose described.

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**501,293. THILL-TUG.** WILLIAM F. NIEDERAUER, Minneapolis, Minn., assignor of one-fourth to Andrew L. Anderson, same place. Filed Feb. 25, 1892. Serial No. 422,738. (No model.)



*Claim.*—1. A thill carrier having, at its head, the exposed and open buckleholder D, projecting therefrom, which is of hook-like form with an expanded beak, and is provided with the tongue passage *d*, at the curve of the hook and with the open ended slot *d'* in the beak of the hook for the ready insertion and removal of the back strap buckle, substantially as described.

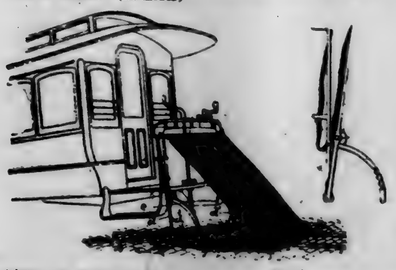
2. A thill carrier constructed in two pivotally connected sections A and B, provided on its upper or head section A, with means for the attachment of a back strap, and provided on its lower or body section B, with a link or bail-like billet holder E, which is removable over the free end of said body section, substantially as described.

3. The thill holder consisting of a pair of pivotally connected sections overlapping and interlocking at their free ends, the body or underlapping member of which is constructed of spring metal and provided with a loop opening into the body of the holder at or near the lowermost curve of the same, to permit the free end of the said body section to have an endwise movement for locking and unlocking the sections, and for forming a yielding seat for a removable billet holder, substantially as described.

4. The thill carrier consisting of the pair of pivotally connected sections A B, overlapping and interlocking at their free ends and opening outward, to admit the thill, of which sections the body A is constructed of spring metal and provided with the loop *a'*, for permitting an endwise movement of the free end of the said body section, for locking and unlocking and forming a seat for the removable billet holder E, and the other of which sections, to-wit, the section B is provided with the out turned roll or boss *b'* for the purpose stated, and having at its upper end or head the buckle-holder D *d d'*, substantially as and for the purposes set forth.

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**501,294. FENDER FOR ELECTRIC, CABLE, OR OTHER SIMILAR CARS.** WILLIAM J. NUDD, Hyde Park, Mass. Filed Jan. 27, 1892. Serial No. 418,394. (No model.)



*Claim.*—1. The fender for electric and other cars herein described, consisting a horizontal rectangular frame *a'* pivoted at its rear end to supports extending downward from the car front, the rolls C for supporting the same on the rails, said support and rolls being adapted to be moved upward upon its pivots and a flexible fender connected at its upper edge with the front of the car and at its lower edge with the forward cross bar of said hinged frame, as and for the purposes described.

2. The frame-work made of gas pipe or rods comprising the section *a*, having the vertical side bars *d d'*, provided at their lower ends with the eyes *d*, and extending backward at their upper ends, and united by the bar *d'*, the cross bar *b*, and the lower frame *d'*, comprising the forward extending arms *d*, and the cross bars *d' d'*, and the flexible material B, as and for the purposes described.

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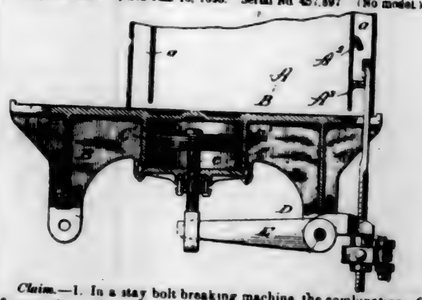
**501,295. LADY'S HAT-FASTENER.** JOHN J. O'CONNOR, Bridgeport, Conn. Filed Feb. 9, 1893. Serial No. 461,563. (No model.)



*Claim.*—In combination, with a hat, the fastener consisting of the base plate and spring prongs formed in one piece, the said base plate being attached to the sides of the hat, and extending vertically thereof and the prongs being curved downwardly from the lower end of the base plate and then upwardly at the free ends, the concaved side of the fastener being uppermost, substantially as described.

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**501,296. MACHINE FOR CUTTING STAY-BOLTS.** JOHN PLAYER, Topeka, Kans. Filed Jan. 10, 1893. Serial No. 457,897. (No model.)



*Claim.*—1. In a stay bolt breaking machine, the combination of a frame, a lever pivoted in such frame, a breaking rod operated by such lever, and means for rocking such lever to operate the rod and break the bolts, substantially as described.

2. In a stay bolt breaking machine, the combination of a frame carrying a cylinder, a piston and rod moving in such cylinder, a lever pivoted in the frame and connected to the piston rod, and staybolt breaking mechanism connected to the lever whereby as the piston moves back and forth the lever will be rocked in one direction and the other, to operate such mechanism substantially as described.

3. In a stay bolt breaking machine, the combination of a frame carrying a cylinder, a piston within said cylinder provided with a piston rod, a lever pivotally supported in the frame and connected to the piston rod, and a stay bolt breaking rod engaging with such lever whereby when the piston is moved in the cylinder the lever will be rocked to operate the breaking rod and break the bolt, substantially as described.

4. In a stay bolt breaking machine, the combination of a frame, a cylinder integral therewith, a piston moving in such cylinder and provided with a piston rod, a lever pivoted in a frame and engaging with the rod, a breaking rod, and an adjustable block upon such rod engaging with the pivoted lever, whereby when the piston is moved the lever will act upon the block to force the rod in a direction to break the bolt, substantially as described.

5. In a stay bolt breaking machine, the combination of a breaking rod, a block adjustable thereon, a pivoted lever engaging with such block and means for rocking the lever to operate the rod, substantially as described.

6. In a stay bolt breaking machine, the combination of a frame, a cylinder supported thereby, a piston and rod in such cylinder, a lever pivoted in such frame and connected to the piston rod, a screw threaded break rod, a block screwing along such rod, but provided with means whereby it may be released from the screw threads on the rod to permit a more rapid adjustment, such block engaging with the lever, substantially as described.

7. In a stay bolt breaking machine, the combination of a breaking rod, and an adjustable block upon each rod comprising a box, a two-part nut therein and a suitably operated eccentric whereby such block can be screwed along the rod, or can be released from the screw threads on such rod to permit of a more rapid adjustment, substantially as described.

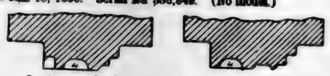
8. In a stay bolt breaking machine, the combination of a frame, a cylinder integral therewith, a piston and rod moving in such cylinder, a bearing carried by the frame upon either side of the cylinder, a lever engaging with the rod and adapted to be pivoted in either of the bearings, whereby the machine may be used for a right or left hand adjustment, and a breaking rod operated by such lever, substantially as described.

9. In a stay bolt breaking machine, the combination of a frame, a cylinder carried thereby, a piston and rod, a lever pivoted in the frame and connected to the rod, a breaking bar provided with an adjustable block engaging with and operated by the lever, and an anchor bar, M, connected to the frame, substantially as described.



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**501,297. TYPE-DIE FOR MATRIX-MAKING.** CASPER I. REDFIELD, Chicago, Ill., assignor to the Chicago Matrix Machine Company. Filed Jan. 13, 1890. Serial No. 336,849. (No model.)



*Claim.*—1. A type-die having its face partially surrounded by a shoulder and a smaller shoulder intermediate the first shoulder and the face, which surrounds a smaller portion of the character, substantially as set forth.

2. A type-die having its face partially surrounded by a shoulder, said shoulder consisting of two or more steps except on that portion which comes next to a preceding character, substantially as set forth.

3. A type die having a small shoulder close to the face of the portions of the character needing most protection and a larger shoulder embracing the former and farther removed from the face and extending around those portions of the face requiring least protection, substantially as set forth.

4. A type die having a small shoulder close to the face of the character and around that portion which it is more desirable to protect, a bevel extending from the face to this shoulder around those portions which it is most desirable to protect, and a larger shoulder embracing the smaller shoulder and farther removed from the face.

5. A type die having a bevel extending from the forward and lower edges of the face to a shoulder near the face, said shoulder passing by straight or slightly beveled sides to a second shoulder and said second shoulder passing by straight or slightly beveled sides to the body of the type, substantially as set forth.

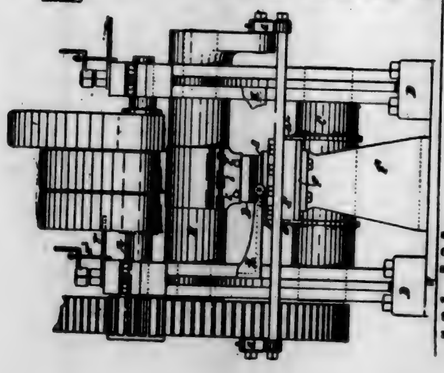
6. A type die having the portions intermediate the stems of the character-face recessed in concave form, substantially as set forth.

7. A type die having the contour of its face divided into four portions, one portion being left unprotected, a second portion being protected by one shoulder, a third portion being protected by two shoulders and a fourth portion being protected by two shoulders and a bevel, substantially as and for the purpose set forth.

8. A type die provided with shoulders for the protection of the face impressions and having the corners of the shoulders rounded, substantially as set forth.

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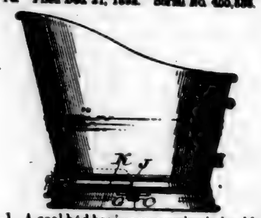
**501,298. MACHINE FOR MAKING HORSESHOES.** JACOB ROSSER, Catasauqua, Pa. Filed Mar. 19, 1891. Serial No. 385,595. (No model.)



*Claim.*—In a machine for pressing horseshoes, the combination with driving mechanism, of a reciprocating table, a die thereon, having clips $a^6$ $a^7$, a shaft, a die rotated by said shaft and coacting with the reciprocating die to press a shoe from heel to toe, cranks carried by the shaft and connections between the cranks and table, the crank pins being arranged at such a distance from the axis of the shaft that the reciprocating die will have a slower surface speed than the upper die, substantially as specified.

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**501,299. COAL-HOD AND ASH-SIFTER.** HERMAN ROTH, Philadelphia, Pa. Filed Dec. 21, 1892. Serial No. 455,888. (No model.)



*Claim.*—1. A coal hod having an opening in its side, near its base, a removable bottom provided with a guard covering said opening, said guard being provided with an opening for inserting a locking device, said parts being combined substantially as described.

2. A coal hod having an opening in its side near its base, a removable bottom, and a guard with an opening, said bottom being provided on the under side with ears, and a latch journaled in said guard and ears, said parts being combined substantially as described.

3. A coal hod having an opening in its side near its base, a removable bottom provided with a guard and ears, a latch journaled in said guard and ears journaling a latch, and a sifter having a peripheral rim engaging the nose of said latch, said parts being combined substantially as described.

4. A coal hod having an opening in its side near its base, a removable bottom provided with a guard and locking device, and a sieve having secured thereto a diametrical cross bar extending through the sides of said hod near its base, said bar being provided with a handle for reciprocating said sieve, said parts being combined substantially as described.

5. A coal hod having an opening in its side near its base, a removable bottom provided with a guard and locking device, and a sieve under said bottom having a peripheral rim, and a diametrical cross bar secured to said sieve, said parts being combined substantially as described.

6. A coal hod having an opening in its side, near its base, a removable bottom working in said opening, provided with a guard for covering the same, said bottom having on its under side ears, a latch having a handle, and nose journaled in said guard and ears, a sieve under said bottom provided with a peripheral shoulder engaging said nose of said latch, and a diametrical cross bar attached to said sieve and extending through the sides of said hod near its base, said cross bar being provided with a handle for reciprocating said sieve, said parts being combined substantially as described.

7. A coal hod having a base with cross bar, a removable bottom, a sifter having a diametrical bar pivoted to said cross bar of the base, a handle to said sifter bar projecting through an opening in the base, and a latch journaled in said ears on said bottom and having a nose engaging the rim of the sifter, said parts being combined substantially as described.

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**501,300. BODICE-BELT.** MAX SCHEUER, New York, N. Y. Filed Apr. 14, 1893. Serial No. 470,299. (No model.)



*Claim.*—1. A bodice belt composed of reversible front and rear sections which are reduced at the sides and of reversible buckles secured to the front sections and engaged by the rear sections, substantially as specified.

2. A bodice belt composed of reversible front and rear sections which are reduced at the sides and of reversible buckles secured to the front sections by loops A', that are overlapped by the ends of the rear sections B, when the belt is reversed, substantially as specified.

**501,801. SHOE-FASTENING.** ADOLF SCHULTE, Wuthlingen, Germany. Filed Jan. 21, 1892. Serial No. 419,055. (No model.)



*Claim.*—1. A fastening device for boots, corsets, and similar articles consisting of a series of rings on one of the meeting parts, a rod movably inserted in said rings, and hooks on the other of said meeting parts adapted to engage on said rod substantially as described.

2. A fastening for boots, corsets, and similar articles, and having the rod *b*, rings *c*, and hooks *a*, substantially as described.

**501,802. TOBACCO-PIPE.** OTTO SCHROEDER, Denver, Colo. Filed Dec. 7, 1892. Serial No. 454,352. (No model.)



*Claim.*—In a tobacco pipe, the combination with the bowl and mouthpiece, of the stem consisting of the tapering thin tubular shell C provided with a removable baffle plate D, consisting of a disk having a notched periphery, and the nipples B and E having central smoke passages and tubes *b* and *c* of less diameter than the inner diameter of the shell C and projecting therein in opposite directions, said nipples being also provided with screw-threaded bosses for engaging the bowl and mouthpiece, substantially as shown and described.

**501,808. GARMENT-FASTENING.** ALICE T. SMITH, Chicago, Ill. Filed Mar. 30, 1892. Serial No. 427,045. (No model.)



*Claim.*—1. A garment fastening comprising, in combination, a hook A formed with side-bars provided with rear attaching loops and with a single forward attaching loop, consisting of an inwardly bent coil lying between the side bars, and an eye B having side-bars provided with rear attaching loops and with two forward attaching loops upon and between its side bars, substantially as and for the purpose set forth.

2. The herein described fastening, comprising a hook and eye, the hook consisting of an integral piece of wire bent to form side-bars, having two rear attaching loops and one forward attaching loop between the side bars, and a tongue having an opening coincident with the said forward attaching loop, and the eye consisting of an integral piece of wire bent to form side bars, having the rear attaching loops and having forward attaching loops upon and between the side bars, and a hook engaging part, substantially as described.

**501,804. FOOT-BATH ATTACHMENT FOR BATH-TUBS.** CHARLES H. STEPHENSON, Lynn, Mass. Filed July 6, 1892. Serial No. 439,177. (No model.)



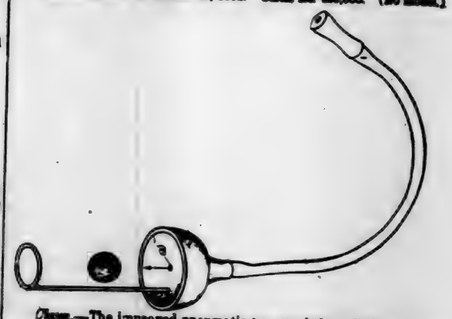
*Claim.*—1. A portable foot bath tub, provided with a waste or outlet pipe formed to be detachably connected with the waste outlet of a fixed bath tub, and having upwardly projecting arms provided with ears for engaging the upper edges of the sides of the tub, as set forth.

2. A portable bath tub provided with a waste or outlet pipe formed to be detachably connected with the waste outlet of a fixed bath tub and having arms extending upward therefrom to engage the upper edges of the sides of the tub, the said portable tub having also external buffers or cushions arranged to bear upon the inner surface of the fixed tub, as set forth.

3. A portable foot bath tub, provided with a waste or outlet pipe formed to be detachably connected with the waste outlet of a fixed bath tub, said outlet constituting a support holding one end of the portable tub at a suitable height above the bottom of the fixed tub, the said portable tub having additional supports at its opposite end, for the purpose set forth.

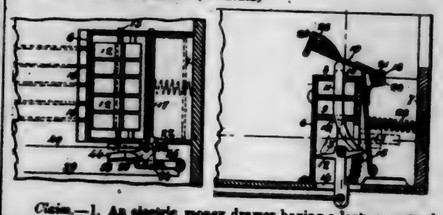
4. The combination with a fixed bath tub, of a portable foot bath tub provided with a waste or outlet pipe forming a support for one end of the portable tub and detachably connected with the lower waste outlet of the fixed tub, and additional supports at the opposite end of the portable tub, for the purpose set forth.

**501,805. PNEUMATIC TOY.** ROBERT B. YATE and JULIUS C. JOSEPH, Malden, Mass. Filed Mar. 18, 1892. Serial No. 425,565. (No model.)



*Claim.*—The improved pneumatic toy consisting of the cup, air tube connected with the cup, the ball having the wire arms projecting in opposite directions from its periphery, and the ring affixed to a standard supported by the cup and located over the center of the cup, the diameter of said ring being greater than that of the ball and less than the distance between the ends of the wire arms, so that the said arms may rest on the upper side of the ring and thus support the ball, as set forth.

**501,806. ELECTRIC-ALARM MONEY-DRAWER.** WILLIAM J. WALKER and ALEXANDER L. BEDFORD, St. Louis, Mo. Filed Apr. 12, 1892. Serial No. 429,115. (No model.)



*Claim.*—1. An electric money drawer having a lock composed of a pivoted plate the free end thereof moving in a vertical plane and the lower surface of the plate adapted to rest upon suitable tumblers, an electric circuit, a second plate hinged to said first named plate, a device against which the free end of the first plate is brought in contact when in an elevated position, and a switch operated by said plates to make or break the circuit, substantially as set forth.

2. An electric money drawer having a lock composed of tumblers, finger plates for operating the same, a plate resting upon the upper ends of the tumblers, an electric switch, means carried by said plate for operating the same in one direction, a second plate hinged to the first plate for operating the switch in the opposite direction, an electric circuit, and a device against which the first named plate is brought in contact, substantially as set forth.

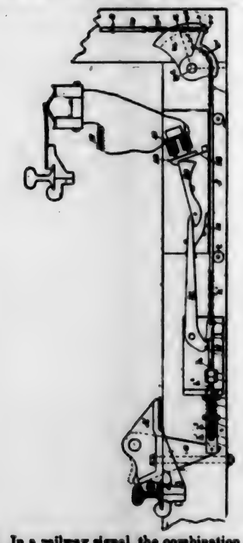
3. An electric money drawer having a lock, tumblers forming a part of the same, steps upon which the lower ends of said tumblers rest, rods attached to the said steps, finger plates also attached to the rods, a plate resting upon the upper ends of the tumblers, a spring pawl against which the said plate is brought in contact, a depending arm forming part of said plate and actuated thereby, a second plate pivoted to the casing of the lock and also to the first named plate, a switch actuated by the last named plate in one direction for completing the circuit, and an electric circuit in connection with said switch, substantially as set forth.



4. An electric money drawer having a lock composed of two movable plates hinged together, tumblers upon which one of the plates rests, a switch actuated by said plates, and an electric circuit in connection with said switch, substantially as set forth.

5. An electric money drawer having a lock, a plate forming a part of the same and hinged to the casing of the lock, a spring bearing against said plate for operating the same in one direction, a switch also pivoted to the casing and operated in one direction by the said plate, a second plate hinged to the first plate and adapted to be brought in contact with a spring pawl, tumblers upon which the last named plate rests, steps for supporting said tumblers, rods attached to said steps and provided with finger plates, a depending arm carried by said last named plate for operating the switch in the opposite direction, a spring located below said switch and normally out of contact with the same, and a circuit in connection with said switch and spring, substantially as set forth.

**501,807. RAILWAY-SIGNAL.** JAMES WAYLAND, Newark, N. J. Filed Jan. 21, 1892. Serial No. 418,782. (No model.)



*Claim.*—1. In a railway signal, the combination with a railway rail and a tread to receive the impulse from the passing train, of a horizontally disposed plunger, operated horizontally by the action of the tread under the power of the train, means for holding said plunger temporarily in the position assumed immediately after the passing of the train, a rod communicating with the plunger and having a horizontal movement independent thereof and means connecting said rod with the semaphore connections, means for releasing the holding means and for retracting the plunger to its normal position, substantially as set forth.

2. In a railway signal, the combination with the rail, of a lever or crank *e*, catch plunger, A, lever 21, lever 20, and armature catch 19, and electro-magnet controlled by the electric circuit and battery 17 and a flexible connection controlling the operation of the signal substantially as set forth.

3. In a railway signal, the combination with a railway rail and a movable tread to receive the impulse of a passing train, of a horizontally disposed plunger operated horizontally by the action of the train upon the tread, means for holding said plunger temporarily in the position to which it is forced at the passing of the train, a rod joined to the plunger and having a horizontal movement independent thereof, means for releasing the holding means and for retracting the plunger to its normal position and a speed pulley joined to said rod and receiving the connections for operating the semaphore or signal, substantially as set forth.

4. In a railway signal the combination with the rail, of a bracket, *d*, a triangular bell crank fulcrumed on said bracket at a distance laterally away from the rail and having a short arm or tread closely adjacent to said rail to receive the wheels of the train and a long arm extending downward from said tread and the fulcrum and receiving and operating a plunger, a catch for holding the plunger, a cooperating catch controlled by an electric armature and magnet and a circuit breaker arranged at the rail at a distance from said plunger, a battery and wires connecting said magnet and circuit breaker and a semaphore connected to said catch by flexible connections, all substantially as set forth.

5. In a railway signal, the combination with the rail, of a bracket secured thereto and providing bearings for a bell crank, said bell crank, a sectional and adjustable sliding plunger having a catch projection at the end opposite its connection with the bell crank, a cooperating catch to hold said catch in its abnormal position said cooperating catch being controlled by means extending to the farther limit of the block and adapted to be acted on by the passing train as it leaves the block a spring to return said sliding shaft to an initial position, and a flexible connection connecting said shaft with the semaphores, and said semaphores comprising a home and distance semaphore automatically movable to horizontal positions indicating danger substantially as set forth.

6. In a railway signal, the combination of means to receive the action of the passing train and a catch operated by said means a rod, *s*, connected to said catch but having an independent movement, a vertical rod connected to the signal and a speed pulley *u* connected to said rods and vertical rod, substantially as set forth.

7. In combination with the rail, a tread and catch for holding the same in its abnormal position means, such as the spring *l*, for raising said tread to its normal position and drawing the home semaphore to its safety position, said home semaphore weighted to turn automatically to its danger position when the tread is acted upon by the passing train and connected with said means such as the spring *l*, and adapted to be drawn thereby to its safety position and means for releasing said catch for holding the tread, all substantially as and for the purposes set forth.

8. In a railway signal, the combination with the horizontal connections extending to the rail, vertical connections extending to the home semaphore, a pulley having differently disposed segments receiving said connections, and said home semaphore, the weight 4 of which overbalances the blade of said semaphore and said connections substantially as set forth.

9. In a railway signal, the combination with a sliding catch adapted to be operated by the passing train, a cooperating catch to receive and hold said sliding catch when forced to its abnormal position, a spring to return said sliding catch when released, means for releasing the catches from one another as the train passes from the block, a flexible connection with a speed pulley *u*, said pulley *u*, vertical connections with the weighted semaphore and said semaphore, the weight of which overbalances the weight of the blade of said semaphore and raises the same with its connections, to the danger indicating position, substantially as and for the purposes set forth.

10. In a railway signal, the combination with the railway rail, a tread adapted to receive an impulse or movement from the passing train, a catch for holding the tread in the position assumed immediately after the passage of the train, a spring for returning the tread to its normal position and drawing down the home signal to safety, said home signal, connected with said tread and with a distance signaling semaphore and adapted automatically to draw said distance signaling semaphore to danger when relieved of the power of said spring, substantially as set forth.

11. In a railway signal, the combination with the railway rail, a tread adapted to be depressed by the passing train and having a catch provided with an incline or wedge to engage a cooperating catch and be held in its abnormal position temporarily thereby and thus relieve the semaphore from the power of a spring adapted to draw said semaphore to a safety position, and said spring, for forcing the semaphore to its safety position and the tread into its normal position, said semaphore, and an electric magnet, circuit wires and connections for releasing the catches from holding engagement and allowing the said spring to act on the semaphore and tread substantially as set forth.

12. In combination, in a railway signal, with the railway rail, a bracket, *d*, comprising sections *d'*, *d''*, and *f* and having a vertical recess to receive a lever, *e*, therebetween, and said lever working in said recess substantially as and for the purposes set forth.

13. In combination with the railway rail, a bracket, *d*, secured to said rail and having a lever, *e*, working therein, the said lever having a limiting projection, *g'*, adapted to engage the flange of the rail to prevent undue movement when acted on by the passing train, substantially as and for the purposes set forth.

14. In a railway signal, the combination with the rail, the tread, and catch for holding the tread down, a semaphore blade and a spring connected with said tread and semaphore blade and adapted to turn said blade to safety position and said tread to normal position, substantially as set forth.

15. In a railway signal, the combination with the weighted lever, 20, affecting the operation of a catch, of an armature catch, 19, adapted to catch the weighted end of said lever when the latter has gravitated to a catching position, substantially as set forth.

16. In a railway signal, the combination of the rail, means to be engaged by the wheel, a sliding plunger connected with said means, a flexible connection attached to said plunger, a rod attached to said flexible connection and connected with a crank or pulley and a signal connected to said crank or pulley and operated by means independent of the plunger A, substantially as and for the purposes set forth.

17. In a railway signal, the combination with the track, signal and connections, of a speed pulley having curved segmental bearings formed, to receive said connections, in a single plane, substantially as set forth.

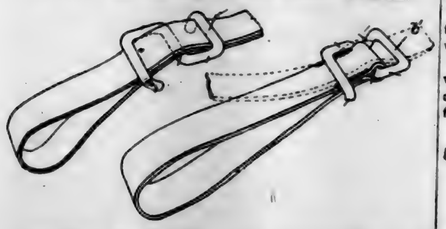
18. In a railway signal, the combination with the tread and signal and connections, of a speed pulley having segments formed in different concentric circles and in one and the same plane to receive said connections and having bearings for adjusting nuts or screws, substantially as set forth.

19. In a railway signal, the combination of a tread, speed pulley having bearings formed at different distances from the center, in one plane, as set forth, a catch holding the tread in its pressed down position temporarily, means for releasing said catch extending a distance from the semaphore post and semaphores, said semaphores and post holding the same, a flexible connection of the tread and speed pulley, a connection of the speed pulley and semaphores and a weight overbalancing the two semaphores to draw them to danger indicating positions and a spring overbalancing said weight when the said catch is released, all said parts being arranged and operating substantially as set forth.

20. In combination, a tread, a horizontally sliding plunger acted upon by said tread, a catch holding said plunger, a connecting rod movable independent of said plunger, a weighted lever, a catch-armature engaging the same, an electro-magnet, circuit breaker and connections, a pulley or crank, *u*, joined to said movable rod, semaphores and connections, all arranged and combined in a signaling apparatus, substantially as set forth.

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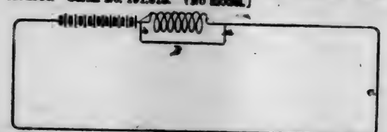
**501,808. HAND-HOLD FOR REINS.** GEORGE F. WHITING, Boston, Mass. Filed Mar. 30, 1893. Serial No. 468,206. (No model.)



*Claim.*—The improved rein-holding device, consisting of three parallel bars, end-bars one at one end and the other at the opposite end of the device, and diagonal guards formed on the ends of two of the bars, all made of a single rod or piece of wire bent into the form shown, the three parallel bars and the end-bars being all in the same plane, while the guards are arranged substantially at right angles to the edges of the plies of the rein, the parallel bars being separated by spaces of sufficient width to easily receive two plies of the rein, as set forth.

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**501,809. METHOD OF REGULATING DYNAMO-ELECTRIC MACHINES.** MERLE J. WIGHTMAN and HERMANN LEMP, Hartford, Conn., assignors to the Schuyler Electric Company, of Connecticut. Filed Feb. 13, 1893. Serial No. 461,813. (No model.)

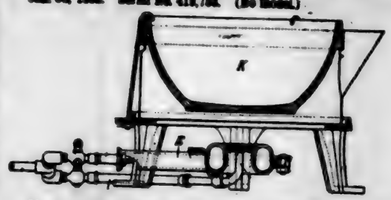


*Claim.*—1. The herein described method of regulating the action of a dynamo electric machine or motor consisting in determining by any desired means the relative potentials at the terminals of a branch connected to the circuit containing a field magnet coil or portion of coil at opposite sides of said coils respectively, irrespective of the resistance of said branch, as and for the purpose described.

2. The herein described method of regulating the action of a dynamo electric machine or motor consisting essentially in varying the relative potentials at the terminals, of a branch around a field magnet coil or portion of coil irrespective of the resistance of said branch.

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**501,810. APPARATUS FOR WARMING OR HEATING THE CONSTITUENTS OF CANDY.** FRANZ P. ZEISLER, Milwaukee, Wis. Filed Jan. 30, 1892. Serial No. 419,793. (No model.)



*Claim.*—1. A heating apparatus, comprising a suitable frame, a kettle provided with a lateral aperture and a nose forming a passage thereto, which kettle is supported on the frame, a bowl provided with a circumferential shoulder suspended in the kettle, rods clamping the bowl the kettle and the frame rigidly together, and a gas burner mounted on the frame beneath the kettle, substantially as described.

2. In a heating apparatus, an annular frame provided with a circumferential upwardly extending rim and with radially projecting ears, a kettle resting on the frame within the rim, a nose on the side of the kettle forming a passage through an aperture therein into the kettle, a bowl provided with a circumferential shoulder suspended in the kettle, and hooked rods catching on to the top of the bowl above the kettle and secured detachably to the ears of the frame, substantially as described.

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**501,811. COLORING AND BURNISHING COMPOSITION.** WILLIAM R. ALBERTSON, Worcester, and NATHANIEL B. BRIGGS, Rockland, Mass.; said Briggs assignor to said Albertson. Filed Mar. 1, 1893. Serial No. 464,947. (No specimens.)

*Claim.*—1. The improved burnishing composition hereinbefore described, comprising an acidulated solution containing dissolved soap and wax therein and a coloring material, as set forth.

2. The improved coloring and burnishing composition hereinbefore described, comprising a solution containing dissolved soap and wax therein, a coloring material and chromic acid, as set forth.

3. A coloring and burnishing composition composed of soap, wax, shellac, borax, dextrine, glue, water, a coloring material and chromic acid combined in solution in proportions substantially as set forth.

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**501,812. COLORING AND BURNISHING COMPOSITION.** WILLIAM R. ALBERTSON, Worcester, and NATHANIEL B. BRIGGS, Rockland, Mass.; said Briggs assignor to said Albertson. Filed Apr. 17, 1893. Serial No. 470,997. (No specimens.)

*Claim.*—1. The improved coloring and burnishing composition comprising an emulsion of soap and carnauba-wax, a soluble gum or adhesive ingredient, and coloring matter, compounded in a liquid mixture that is neither acid nor alkaline in character, as set forth.

2. The improved burnishing compound comprising an emulsion of soap with carnauba or other suitable wax, a neutral solution of fish glue, gum senegal, dextrine and coloring matter, as set forth.

3. The coloring and burnishing compound hereinbefore described, comprising an emulsion of soap and carnauba or other wax, a neutral solution of glue and dextrine, an alkaline mixture of gum, borax and coloring matter, as described.

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**501,818. DINNER-PAIL.** ELIAS R. ADDERSON and AXEL R. ADDERSON, Worcester, Mass. Filed Oct. 26, 1892. Serial No. 450,236. (No model.)



*Claim.*—1. A combined dinner pail, heater and lantern, comprising in combination the following elements; the bottom compartment $A'$ having a central opening and damper at the top, suitable inlet and outlet openings and glass at the sides; a lamp attached to the bottom of said compartment with its burner inside thereof; the liquid compartment $A^3$ next above said compartment A; the food compartment $A^2$, next above said liquid compartment; the cover D, over the food compartment, said compartments and cover all fitting together at the edges, the upright arms B, B, pivoted to the bottom compartment, and properly held in position laterally, and the handle C detachably connected at the ends, with the upper ends of said arms, substantially as and for the purpose set forth.

2. In a combined dinner pail and heater, the detachable, liquid compartment $A^3$ and the bottom compartment $A'$ having suitable inlet and outlet openings for the fresh air to enter and the products of combustion to pass out, and also with a large opening at the top, in combination with a hinged cover H fitting over said opening and having in turn a smaller central opening therein, the damper *g* arranged to cover said central opening in cover H and to be moved to one side thereof, and the lamp E secured in the bottom of said compartment $A'$, substantially as and for the purpose set forth.

3. In a combined dinner pail and heater, the combination of the detachable liquid compartment $A^3$ and the bottom compartment $A'$ having an opening in the top thereof, with the cover H hinged to said top over said opening, and having in turn a central opening therein, and the slide or damper *g* arranged to cover said central opening in cover H and to be moved to one side thereof, substantially as and for the purpose set forth.



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**501,814. BRICK-BARROW.** DANIEL J. C. ARNOLD, New London, Ohio. Filed Mar. 16, 1893. Serial No. 466,265. (No model.)



*Claim.*—1. In a brick barrow, the combination of, diverging strap metal side bars C, self oiling boxes secured thereto a wheel and spindle mounted in said boxes, cross girts E connecting the side bars, diverging longitudinals secured in pairs to the cross girts, and a front elevation to the said truck consisting in the extensions D of the longitudinal strips and cross girts E', centrally bent at *e* with V shaped braces F secured to the side bars, substantially as described.

2. In a brick barrow the combination of diverging strap metal side bars C, bearings B' secured thereto, wheel A and spindle B supported in said bearings, cross girts E, bolted to the side bars at suitable intervals, diverging longitudinals bolted to said cross girts, and bent upward at D' bent girts E', braces F, and rests H of U shaped metal substantially as described.

3. In a brick barrow the combination of strap iron side bars C, placed on edge and provided with handle shapes at one extremity, connecting X shaped brace G, cross girts E, longitudinals D secured to said girts and turned upward at the forward end, with rests H, and braces therefor, L, M and K, substantially as described.

4. In a brick barrow the combination of strap metal, members therefor, consisting in side bars C, cross girts E and E' longitudinals D bent upward at E V shaped braces F, X shaped brace G, rests H, and braces K, L, and M, with sectional handles I, all rigidly secured together as and in the manner specified.

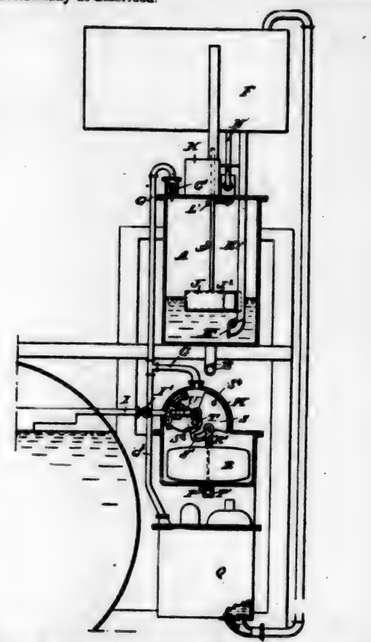
5. In a brick barrow diverging side bars C, provided with handle shapes at their rear extremities and sectional wooden handles secured thereto substantially as described.

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**501,815. BOILER-FEEDER.** AUGUSTO SANDINO Y BARCOS, Coruna, Spain. Filed Dec. 4, 1891. Serial No. 414,050. (No model.)

*Claim.*—1. In a boiler feeder, a regulator, a pipe connecting the same with the boiler at the line of maximum normal level of water, a float located within said regulator and adapted to be raised by the water entering the regulator from the boiler through the said pipe when the water in the boiler has attained its maximum normal level, a valve adapted to be operated by the upward movement of the said float so as to interrupt the connection between the regulator and the boiler, a filling receptacle adapted to contain water to feed the boiler, pipes connecting the said filling receptacle to the boiler and to the regulator respectively, and valves in said pipes, these valves being adapted to be automatically closed by the reduction of pressure in the filling receptacle and in the regulator when the admission of steam to the latter ceases, substantially as described.

2. In a boiler feeder, the combination with a regulator and a pipe connecting the same with the boiler at the line of maximum normal level of water, of a valve held in the said regulator and adapted to close the connection of the casing and the boiler, a weighted arm for moving said valve, a segmental arm for actuating the said weighted arm and a float connected with the said segmental arm in such a manner as to permit the segmental arm to drop of its own accord after the arm has passed a vertical position, the said float being adapted to be raised by the water entering the regulator from the boiler when the water in the latter has attained its maximum normal level, substantially as described.



3. In a boiler feeder, a filling receptacle provided with an air escape valve adapted to be closed by the action of a float kept closed by the pressure of the steam in the receptacle opened by its weight when the pressure in the receptacle decreases to a predetermined limit, in combination with a tube, an upper feeding tank connected by the said tube with the said receptacle, and a valve arranged on the lower end of the said tube and adapted to open by the pressure of the water in the said tank after the said escape valve opens, the said tube valve being adapted to be closed by the pressure of the steam which enters the said receptacle from the boiler, substantially as shown and described.

4. In a boiler feeder, the combination with a regulator, a pipe connecting the same with the boiler at the line of maximum normal level of water, a float located within said regulator and adapted to be raised by the water entering the regulator from the boiler through the said pipe when the water in the boiler has attained its maximum normal level, a valve adapted to be operated by the upward movement of the said float so as to interrupt the connection between the regulator and the boiler, a filling receptacle adapted to contain water to feed the boiler, a supply tank connected to the filling receptacle by a pipe, a valve in said pipe adapted to be closed by the pressure of steam in the filling receptacle, pipes connecting the latter to the boiler, and to the regulator respectively, and valves in said pipes, these valves being adapted to be automatically closed by the reduction of pressure in the filling receptacle and in the regulator when the admission of steam to the latter ceases, substantially as described.

5. In a boiler feeder, a filling receptacle provided with a tube leading to the boiler and a valve arranged on the said tube and held to its seat by the pressure of the steam in the boiler, in combination with an air escape valve arranged on the said filling receptacle and adapted to be closed by the pressure of the steam in the said filling receptacle, a tank located above the said filling receptacle, a tube leading from the said tank to the said filling receptacle and provided at its lower end with a valve adapted to be opened by the pressure of the water in the said tank after the said air escape valve is opened and a float arranged in the said filling receptacle to rise with the water that flows from the said tank to the said filling receptacle, the said float being provided with a rack for controlling a registering apparatus for registering the water which flows from the tank, the said float being retained in an uppermost position by the lever of the said

escape valve after the latter has closed and at a time when the volume of water which is yet to enter the filling receptacle is equal to that which afterward passes out by the regulator, so that only the quantity of water which is to be converted into steam is registered by the registering apparatus, substantially as shown and described.

6. In a boiler feeder, a filling receptacle having a valved pipe leading to the atmosphere and provided with a weighted escape valve held on its seat by the pressure within the receptacle so that a reduction of the pressure within the receptacle causes a closing of the valve in the pipe leading to the boiler, an opening of the said escape valve, and a tank located above the said filling receptacle and connected with the latter by a pipe having at its inlet end a valve adapted to open by the pressure of the water from the said tank after the said escape valve has opened, substantially as described.

7. In a boiler feeder, a filling receptacle having a valved pipe leading to the boiler and provided with a weighted escape valve held on its seat by the pressure within the receptacle so that a reduction of the pressure within the receptacle causes a closing of the valve in the pipe leading to the boiler, an opening of the said escape valve, a tank located above the said filling receptacle and connected with the latter by a pipe having at its inlet end a valve adapted to open by the pressure of the water from the said tank after the said escape valve has opened, and a float arranged in the said filling receptacle and adapted to rise by the water flowing from the tank to the said receptacle, the said float being arranged to seat the escape valve when reaching its uppermost position, substantially as described.

8. In a boiler feeder, the combination with a regulator having a graduated outlet and a float controlled valve adapted to connect the boiler with the said regulator to admit steam into the latter, of a filling receptacle connected with the said regulator and with a water supply, and a pipe leading from the said receptacle to the boiler and provided with a valve held on its seat by the pressure from the boiler, but opening as soon as the said regulator valve opens and admit steam to the said filling receptacle, substantially as described.

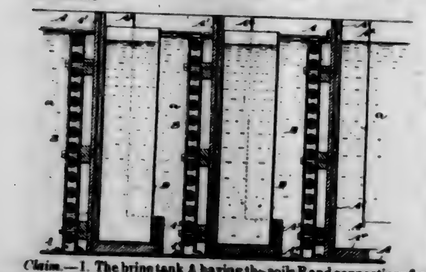
9. In a boiler feeder, the combination, with a filling receptacle provided with a supply pipe containing a valve, a regulator connected with the boiler, and a steam pipe containing a valve and connecting the said regulator with the said filling receptacle, of a valve held in the said regulator and adapted to open and close the pipe connecting the regulator with the boiler, a float held in the said regulator and controlling the said valve, an outlet provided with a self-opening valve to permit the water of condensation and the water which entered from the boiler by the connecting pipe to discharge from the said regulator, and an adjustable valve held in the said outlet to regulate the time necessary to discharge the water of condensation from the said regulator, substantially as shown and described.

10. In a boiler feeder, the combination with a regulator having an outlet tube governed by a rod to regulate the quantity of water which passes through the said tube, and a float for governing a valve connecting the boiler with and disconnecting it from the said regulator in order to admit or cut off the entrance of the steam to the regulator, of a filling receptacle connected with the said regulator and with a water tank, and a tube which leads to the boiler from the said receptacle and is provided with a valve held to its seat by the pressure from the boiler, the said valve being adapted to open as soon as the said valve of the regulator opens and admits steam to the apparatus, substantially as shown and described.

11. In a boiler feeder, a regulator having a float provided with a hollow rod through which steam can enter the said rod extending nearly to the bottom of the float, the walls of the said float being subjected to equal pressure on the inside and outside, substantially as shown and described.

## 501,816. BRINE-TANK FOR ARTIFICIAL-ICE MANUFACTURE.

LOUIS BLOCK, New York, N. Y. Filed Oct. 31, 1892. Serial No. 450,418. (No model.)



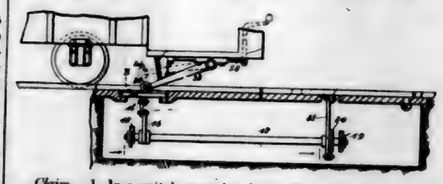
*Claim.*—1. The brine tank A having the coils B and connections for inducing cold therein, in combination with non-conducting partitions A' permanently attached to and forming a part of the tank, and with means as the guides $A^3$ for holding ordinary ice-forming cans in contact with such non-conducting partitions and allowing the ready insertion and removal of such cans, all substantially as herein specified.

2. The brine tank A having the coils B and connections for inducing cold therein, in combination with non-conducting partitions A' permanently attached to and forming a part of the tank, and with means as the guides $A^3$ for holding ordinary ice-forming cans in contact with such non-conducting partitions and with such ordinary ice-forming cans having all their surfaces of thin metal and allowing the ready insertion and removal of such cans all arranged to serve substantially as herein specified.

3. In ice-making apparatus, the brine tank A, refrigerating coils B, non-conducting partitions A', upright cleats $A^3$, guides $A^3$ and floor planks $A^4$, all of wood or analogous non-conducting material, permanently attached and forming a part of the tank and arranged to form pockets therein out of contact with but adjacent to the said coils, in combination with each other and with removable cans D of uniform thin metal, adapted to be easily inserted in and removed from the pockets formed by such non-conducting parts, all substantially as herein specified.

## 501,817. DEVICE FOR MANIPULATING SWITCHES.

DANIEL L. BOLAND, New York, N. Y. Filed July 5, 1892. Serial No. 439,347. (No model.)



*Claim.*—1. In a switch operating device, the combination with a switch rail, of platforms, hinged at one edge a shaft below the platforms, a curved lever secured to the shaft, links connecting the ends of the said lever with the platforms, a pivoted lever having one end connected with the switch rail, and a connection between the said pivoted lever and shaft, substantially as described.

2. In a switch operating-device, the combination with a switch rail, of platforms, hinged at one edge a shaft below the platforms and provided with a crank arm at one end, a crescent shaped lever secured to the said shaft, links pivoted at the ends of the lever and to the platforms, a pivoted lever having its upper end connected to the switch rail, and a link pivoted to the lower end of the said lever and to the crank arm of the said shaft, substantially as herein shown and described.

3. In a switch operating device, the combination with a switch rail, of the platforms 10 and 11 hinged at one edge, the stops 14 below the platforms, the shaft 17 provided with the crank arm 24 at one end, the crescent shaped lever 16 secured to the shaft 17, the links 15 pivoted to the ends of the said lever and to the platforms, the pivoted switch lever 22 having its upper end pivoted to the switch rail, and the link 23, pivoted to the lower end of the switch lever and to the crank arm, substantially as herein shown and described.

## 501,818. DRUM-CASE.

EMILE BOULANGER, St. Louis, Mo. Filed Nov. 16, 1892. Serial No. 452,166. (No model.)



*Claim.*—An improved portable case for drums consisting of two sections 2 and 3, the latter being smaller than the former and adapted to be received by the same, rivets 7 passing through the adjacent side walls of said sections, washers interposed between said adjacent walls, buckles 14 attached to the covering 5 of the section 2, straps attached to the covering of the section 3, and a handle 6 secured upon the top of the casing; substantially as and for the purpose set forth.

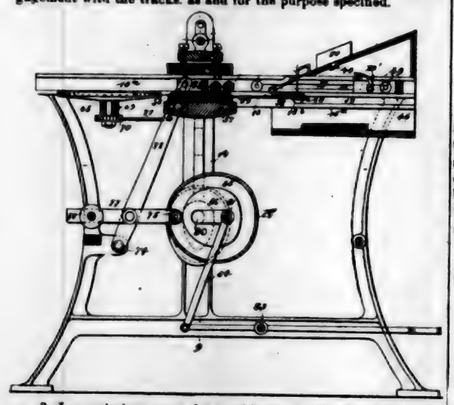
## 501,819. BED AND PLATEN PRINTING MACHINE.

OLIVER S. BOWMAN, Salt Lake City, Utah. Filed June 10, 1893. Serial No. 476,181. (No model.)

*Claim.*—1. In a printing press, in combination a frame, a feed table mounted thereon, a reciprocating carriage held to travel on the main frame, grippers on the carriage facing each other and having trip arms controlling the movement of their jaws, and tripping devices on the main frame constructed to alternately engage the opposing trip controlling devices at the alternate reciprocal movements of the carriage, whereby such grippers will alternately engage the opposite ends of the sheets, as and for the purposes described.

2. In a printing press, the combination, with the feed table and a frame supporting the table, the sides of the frame being provided with slideways and with tracks, the tracks being constructed in two sections, an elevated and a depressed section, of a carriage held to travel in the slideways of the frame, grippers located in the carriage and facing each other, the grippers being provided with trip arms controlling the movements of their jaws, the said trip arms having engagement with the tracks, as and for the purpose specified.





3. In a printing press, the combination, with a feed table the main frame provided with tracks and constructed in two sections, an elevated and a depressed section, and tilting platforms located at the junctions of the two sections of the track, of a carriage held to travel in the slideways in the frame above the tracks, grippers located in the carriage and facing one another, levers connected with one jaw of the grippers, the said levers being adapted to travel upon the tracks and the tilting platform, and a driving mechanism whereby the carriage is given a reciprocating movement in the frame, as and for the purpose set forth.

4. In a printing press, the combination, with a frame a feed table secured to the frame, provided with spring fingers at its lower end and a pivoted clamping bar engaging with the fingers, of tracks formed upon the sides of the frame and constructed in two sections, an elevated and a depressed section, tilting platforms and shifting devices located at the junctions of the tracks, a carriage held to travel in slideways in the frame above the tracks, grippers located in the carriage, one near the rear and the other near its forward end, the upper jaws of the grippers being recessed to receive the spring fingers of the feed table, and levers connected with the grippers and adapted for engagement with the tracks, as and for the purpose set forth.

5. In a printing press, the combination, with a frame, a feed table located over the frame, a carriage held to travel in slideways in the frame, and a driving mechanism connected with the carriage, of grippers located in the carriage and facing one another, the grippers being adjustable to and from each other, tracks located beneath the slideways of the frame, and levers connected with the gripper jaws and engaging constantly with the said tracks, which tracks are constructed in two sections, a depressed and an elevated one, as and for the purpose set forth.

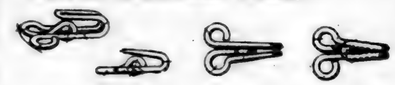
6. In a printing press, the combination, with a frame, a feed table supported above the frame and provided with spring fingers at its lower end, adjustable gages, and a scale located between the gages, a carriage held to reciprocate in the frame and provided with inking rollers, and a driving mechanism connected with the carriage, of grippers located in the carriage and adjustable to and from each other, a scale produced upon the carriage between the grippers and the corresponding scale upon the frame, tracks constructed in two sections, an elevated and a depressed one, located beneath the slideways of the carriage, levers connected with the gripper jaws, the jaws being recessed to receive the fingers of the feed table and the said levers being adapted to travel upon said tracks, and a clamping bar pivotally connected with the feed table, as and for the purpose specified.

7. In a printing press, the combination with the type bed, and the main frame of the platen supporting bar 65, hung on the main frame, to be swung upward, and formed with a lock portion having a lock pin adapted to engage a lock catch in the frame whereby to hold the bar 65 to its down or normal position and the platen A held for vertical adjustment on the bottom of the bar 65 all arranged substantially as shown and for the purpose described.

8. In a printing press, the combination, with a carriage and grippers adjustably located in the carriage, of tracks located beneath the carriage, comprising an elevated and a depressed section, and a switch at the junction of the sections, and levers connected with the gripper jaws, said levers being adapted to travel upon said tracks, as and for the purpose specified.

## 501,820. HOOK.

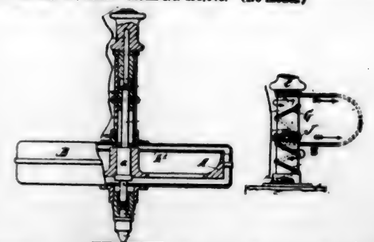
CORNELIUS J. BRONNAN, Springfield, Mass. Filed Aug. 28, 1891. Serial No. 403,960. (No model.)



*Claim.*—A hook member of a hook and eye formed of wire doubled upon itself and formed into a hook, the free ends of the wire extended rearwardly and parallel with each other to form the shank and bent into attaching eyes, the wire forming one of said eyes being extended forwardly and formed into an additional closed eye lying between the two parts of the shank in a median line under the bill of the hook, adjacent and at a right angle to the said attaching eyes, substantially as described.

## 501,821. SPINNING TOP.

JAMES L. BROWN, Glasgow, Scotland. Filed May 21, 1892. Serial No. 433,873. (No model.)



*Claim.*—1. A spinning top having two rotatable parts, one part having a support adapted to sustain the entire top, and the other part having supports in the first said part, in combination with means substantially as described, for rotating the said parts simultaneously in opposite directions, as and for the purposes described.

2. A spinning top having two rotatable parts or flies, one being relatively heavy, and one part having a bearing point whereby the entire top is supported and the other part or fly having bearings in the first said part, whereby it can rotate independently thereof, in combination with means for rotating the said flies simultaneously in opposite directions, substantially as described.

3. A spinning top having an exterior rotatable shell B, and a heavy fly wheel A within the shell, the bearings whereby the shell and fly wheel are free to rotate independently of each other, in combination with means for rotating the said shell and fly wheel simultaneously in opposite directions, substantially as described.

4. A spinning top having two independently rotatable parts, a stem for the spinning cord, means for connecting the two parts together during part of the spinning operation to cause them to rotate in the same direction, and the reversely wound cords upon the said stem, substantially as described.

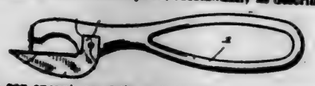
5. A spinning top having two independently rotatable parts or members, one being relatively heavy, and one having a cord receiving stem provided with a cord retaining peg and a cord reversing peg $g^9$, and means for connecting the two members or parts of the top during a portion only of the spinning operation, and means for rotating the said parts in opposite directions simultaneously, substantially as described.

6. A spinning top having two parts or members which are independently rotatable, one of them being relatively heavy, and one being provided with a stem for the winding cord a clutch between the two members adapted to unite them during a portion of the spinning operation, and the spinning cord reversely wound upon the said stem, substantially as described.

## 501,822. CAN-OPENER.

WILLIAM G. BROWNE, Meriden, Conn., assignor to the Browne & Dowd Manufacturing Company, same place. Filed Dec. 28, 1892. Serial No. 456,564. (No model.)

*Claim.*—1. A can opener consisting of a handle and two metal plates one of said plates being secured across the end of the handle and provided with a notched lower edge, the second plate being secured to the handle in rear of its end extending forward beyond the end and beneath the notched plate, substantially as described.

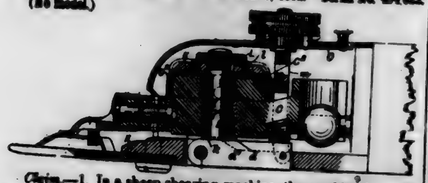


2. A can opener, consisting of a handle recessed in rear of its front end, a blade secured in said recess extending beyond the end of the handle, a notched plate or fulcrum independent of the blade secured to the end of the handle and extending transversely to the blade, and a lug *b* on the handle end engaging a notch in the fulcrum, substantially as described.

**501,823.** INSECTICIDE. WILEY R. BETANT, MOSES S. BETANT, and JOHN BETANT, Milan, Tenn. Filed Mar. 10, 1893. Serial No. 466,407. (No specimens.)

*Claim.*—The herein described compound for preventing the generation and effecting the extermination of insects in stored grain, the same consisting of the sublimed sulphur, slaked lime, sulphite of soda, nitrate of potash, sassafras bark powdered, gum camphor, and thymol, in the proportions stated, substantially as described and for the purpose set forth.

**501,824.** ANIMAL-SHEARS. CHARLES BURGON and HARRY BURGON, Sheffield, England. Filed Dec. 9, 1892. Serial No. 454,622. (No model.)



*Claim.*—1. In a sheep shearing machine, the combination, with the cutter driving lever and its pivot mounted in the frame as described, of a pair of anti-friction rollers mounted symmetrically in the boss of the lever and revolving on an axis or axes at right angles to the length of the lever and a contact or bearing surface for said rollers consisting of a disk or head secured upon the pivot, substantially as specified.

2. In a sheep shearing machine, the combination, with the cutter driving lever and its pivot mounted in the frame as described, of a pair of anti-friction rollers mounted symmetrically in the boss of the lever and revolving on an axis or axes at right angles to the length of the lever and a contact or bearing surface for said rollers consisting of a disk or head provided with means whereby the rollers are adjustable in the radial direction to a definite extent, substantially as specified.

3. In a sheep shearing machine, the combination, with the cutter-driving lever and its pivot mounted on a transverse axis in the frame, as described, of a pair of anti-friction rollers mounted in the boss of the lever at either side of the pivot, situated in a plane perpendicular to the length of the lever a path for said rollers formed by a disk or head secured adjustably on the pivot, a down-bearing anti-friction roller at the rear end of the lever running on the main frame, and a nut screwing on the pivot so as to apply downward pressure on the rollers, the nut which is adapted to be turned by hand, passing through the casing and notched to engage with a spring detent thereon, as specified.

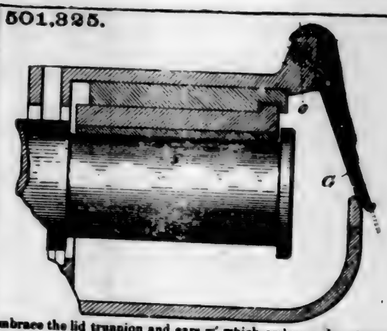
**501,825.** DUST-GUARD FOR AXLE-BOXES. JAMES J. BRENNAN, Rock Island, Ill. Filed Dec. 8, 1892. Serial No. 454,330. (No model.)

*Claim.*—1. A dust guard for journal boxes comprising a plate having ears at one end for swinging upon the lid-trunnion, substantially as described.

2. A dust guard for journal boxes having at one end ears for swinging upon the lid-trunnion and at the other end ears to embrace a part of the lid, whereby the dust guard swings with the lid, substantially as described.

3. A dust guard for journal boxes comprising a plate F having the facing G of felt or similar material and provided with the ears *m* and *m'*, as and for the purposes set forth.

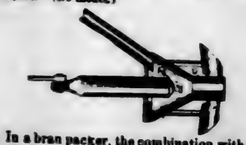
4. The combination with a journal box lid and the trunnion upon which the same swings, of a dust guard comprising a plate having a facing of felt or similar material, and provided with ears *m*, which



embrace the lid trunnion and ears *m'* which embrace the edge of the lid at the opposite end, substantially as described.

5. The combination with a journal box lid and the trunnions thereof of a dust guard comprising a plate F having the central stud H, and carrying the facing of felt or similar material, and provided with ears *m* embracing the lid-trunnions, and the ears *m'* embracing the edge of the lid, all as set forth.

**501,826.** BRAN-PACKER. JOHN S. CAMERON, Evansville, Ind., assignor of one-half to WILBUR ERSKINE, same place. Filed Jan. 2, 1889. Serial No. 295,173. (No model.)

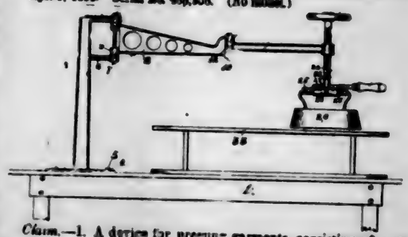


*Claim.*—1. In a bran packer, the combination with a closed hopper having an inlet for the bran, and an opening for the rammer, a vertical tube at the base of the hopper in line with opening for the rammer, of the rammer having at its lower end a projecting portion *d'* and an annular shoulder *d''* and adapted to reciprocate within the hopper and tube, and means for actuating said rammer, substantially as set forth.

2. In a bran packer, the combination of the closed hopper having an inlet tube for the bran, and an outlet tube having an unobstructed passage, the rammer adapted to reciprocate within the hopper and tube and project into the bag, the bag holder, the bag case and means for counterbalancing the case, substantially as set forth.

3. In a bran packer, the combination of the closed hopper having an inlet tube for the bran and an outlet tube having an unobstructed passage, the rammer adapted to reciprocate in said hopper and tube and project below the latter into the bag and provided with the projecting portion *d'* and the shoulder *d''*, the bag holder, and the bag case having the openings as described and for the purpose set forth.

**501,827.** MACHINE FOR PRESSING GARMENTS. WOLF COHEN, St. Louis, Mo., assignor of one-half to Sam Zemelman, same place. Filed Apr. 3, 1892. Serial No. 428,956. (No model.)



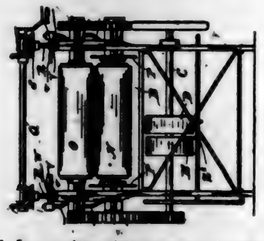
*Claim.*—1. A device for pressing garments, consisting of a stationary support provided with an integral base and stationary horizontal arms, a horizontally swinging arm pivoted between said arms an arm pivoted to said horizontal arm, a screw threaded shaft carried by the latter, normally closed clamping jaws carried by said shaft, and springs for automatically closing said jaws after being opened, substantially as set forth.

2. A device for pressing garments, consisting of a stationary support provided with a perforated integral base and horizontal arms



also provided with perforations, a swinging arm provided at both ends with perforated ears mounted between said horizontal arms, another arm provided with a perforated portion and also an internally screw threaded portion pivoted to said last mentioned arm, a screw threaded shaft mounted in said internally screw threaded portion, a cylindrical thimble mounted on the lower end of said shaft, a bar revolubly mounted in said thimble, normally closed clamping jaws pivotally mounted on said bar, arms carried by said jaws, and springs secured to said bar for automatically closing said jaws, substantially as set forth.

**501,828.** TOBACCO-WRINGING MACHINE. ANDERSON R. CONEY, Richmond, Va. Filed May 16, 1892. Serial No. 433,132. (No model.)

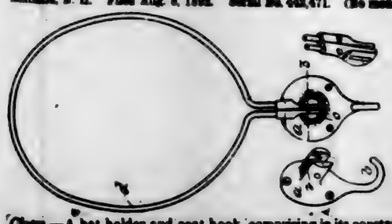


*Claim.*—1. In a machine of the character described, the combination of a suitable supporting frame, the lower roll revolubly mounted in said frame, the upper roll also revolubly mounted in the frame, vertical screw-shafts mounted in the frame and adapted to work in the journal-boxes of the upper roll, gear wheels mounted upon the said screw-shafts near their upper ends, bearings carried by the said screw-shafts above the gear-wheels, a horizontal shaft revolubly mounted in said bearings, gear-wheels mounted upon said shaft and meshing with the gear-wheels on the screw-shafts, nuts mounted upon the screw-shafts and provided with levers to effect the rotation of the nuts and cause them to bind upon the upper edges of the frame, and bowed springs carried by said frame and upon which springs said levers are adapted to bear, all arranged for co-operation substantially as described.

2. In a machine of the character described, the combination with a lower roll, of an upper roll mounted in journal-boxes, the latter being provided with the tubular screw-threaded extensions, and means for adjusting the upper roll uniformly comprising screw-shafts provided with heads at their lower ends caps screwed upon the threaded extensions of the journal-boxes and beneath which caps said heads engage, gear wheels mounted upon the upper ends of the shafts, and an operating shaft provided with gear wheels meshing with the gear wheels upon the screw-shafts, and an operating handle upon one end of said operating shaft, as and for the purpose specified.

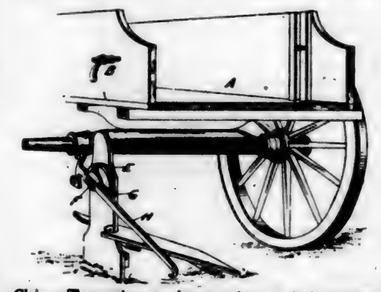
3. In a machine of the character described, the combination with the lower roll, of an upper roll mounted in journal-boxes, the latter being provided with the tubular screw-threaded extensions, and means for adjusting the upper roll uniformly comprising screw-shafts having heads at their lower ends, caps screwed upon the extensions of the journal-boxes and beneath which caps said heads engage, gear wheels mounted upon the upper ends of the shafts, and an operating shaft provided with gear wheels meshing with the gear wheels upon the screw-shafts, a plate slidingly mounted within the extensions of the journal-boxes, and springs arranged within the latter and bearing upon said plates, as and for the purpose specified.

**501,829.** HAT-HOLDER AND COAT-HOOK. JAMES M. COTTON, Ashland, N. H. Filed Aug. 8, 1892. Serial No. 442,471. (No model.)



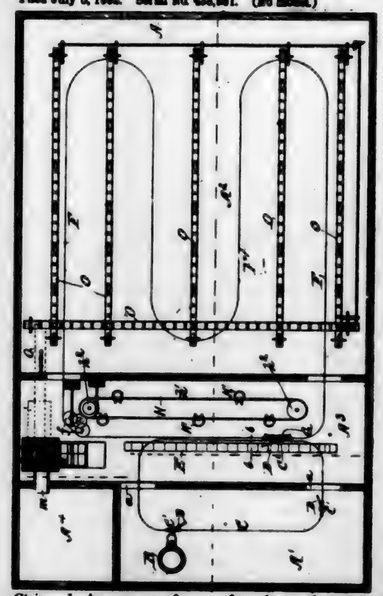
*Claim.*—A hat holder and coat hook, comprising in its construction a base plate provided with a bifurcated lug or projection having grooves on its inner faces, the walls of which are inclined a coat hook connected with said base plate, and a hat holder consisting of a hoop or loop provided with a split spring shank pivoted in the bifurcated lug or projection, the side faces of said shank having ribs with inclined faces to fit the aforesaid grooves in the faces of the bifurcated lug, as set forth.

**501,830.** COMBINED END-GATE AND WAGON-JACK. HENRY M. CRIPPEN, Athens, Ohio. Filed Apr. 14, 1893. Serial No. 470,327. (No model.)



*Claim.*—The combined end gate and wagon jack consisting of a board sawed to form two pieces hinged together and one fitting into the other so that when folded down, two legs or supports are provided, and a lever having ends constructed to be fastened to the sides of the wagon, provided with means for engaging the axle of the wagon when employed as a jack, and means for retaining the lever in an adjusted position, substantially as set forth.

**501,831.** APPARATUS FOR MAKING CASTINGS. WILLIAM W. DOOLITTLE, Chicago, Ill., assignor to the Crane Company, same place. Filed July 5, 1892. Serial No. 438,861. (No model.)



*Claim.*—1. An apparatus for manufacturing castings, comprising a cupola, an endless track passing near the cupola provided with one or more pouring ladles supported thereon by carriers, a second endless track passing through the molding space and extending for a portion of its length parallel with and in close proximity to the ladle track, carriers on said second track adapted to receive the molds, and means for moving said mold carriers along said track, substantially as described.

2. An apparatus for manufacturing castings, comprising a cupola, an endless track passing adjacent thereto and provided with one or more pouring ladles supported thereon by carriers, a second endless

track passing through the molding space and extending for a portion of its length parallel with and in close proximity to the ladle track and provided with mold carriers, means for actuating said mold carriers an endless moving platform located subjacent to and parallel with the parallel portions of the two tracks and moving in unison with the mold carriers, and means for moving the said platform substantially as described.

3. In an apparatus for manufacturing castings, the combination, with a cupola, an endless track passing adjacent thereto and one or more pouring ladles supported on said track by carriers, of a second endless track extending through the molding space and alongside of the ladle track and provided with mold carriers, means for imparting a continuous movement to said mold carriers, a third endless track extending parallel with the ladle and mold carrier tracks and provided with a series of weight carriers, and means for imparting a continuous motion to said weight carriers, substantially as described.

4. In an apparatus for manufacturing castings, the combination, with the cupola, the pouring ladles and their track, passing near the cupola of an endless track passing through the molding space and alongside of and beyond the ladle track and provided with mold carriers, means for imparting a continuous movement to said mold carriers, an elevator to receive the filled molds from the mold carriers after pouring, and a screen to receive the molds from the elevator and separately discharge the castings and sand, substantially as described.

5. In an apparatus for manufacturing castings, the combination, with the cupola and the pouring ladles and their track, passing adjacent to the cupola of an endless track extending through the molding space and alongside of and beyond the ladle track and provided with mold carriers, means for imparting a continuous movement to said mold carriers, an elevator located adjacent to the mold carrier track at a point beyond the ladle track, a hoisting and transferring device for lifting the molds from the carriers and delivering them on to the elevator, and a screen to receive the molds from the elevator and separately discharge the castings and sand, substantially as described.

6. An apparatus for manufacturing castings, comprising a cupola room containing a cupola, a molding room, a pouring room located between the cupola and molding rooms, an endless track extending from the cupola room into the pouring room and provided with carriers having pouring ladles, a second endless track extending from the molding room into the pouring room and arranged parallel with the ladle track within this latter, a series of mold carriers mounted on said last-mentioned endless track, and means for imparting a continuous movement to said mold carriers, substantially as described.

7. An apparatus for manufacturing castings, comprising a molding space, an endless track extending in a sinuous course through said molding space and provided with a series of mold carriers, and means for imparting motion to said mold carriers, substantially as described.

8. An apparatus for manufacturing castings, comprising a cupola room or space, a mold room or space, an intermediate pouring room or space, endless tracks extending, respectively, from the cupola and molding rooms into the pouring room and provided with carriers for the pouring ladles and molds respectively, a cooling room, and an elevator and screen for conveying the castings from the pouring room to the cooling room, substantially as described

9. In an apparatus for manufacturing castings, the combination, with the cupola and the pouring ladles and their track, passing adjacent to the cupola of an endless track extending from the molding space alongside of the ladle track and provided with mold carriers, means for imparting motion to said mold carriers, an elevator to receive the filled molds, a screen to separate the castings and sand, a riddle to receive the sand from the screen and sift the same, and conveyers to transport the same back to the mold space, substantially as described.

10. In an apparatus for manufacturing castings, the combination, with the ladles and their track passing adjacent to the cupola and the mold carriers and their track, extending from the molding space to the pouring-room alongside the ladle-track, of a moving platform comprising a sprocket-chain and suitable driving and supporting wheels, plates pivoted to said chain near one of their ends and overlapping, as described, supporting ways along the upper line of travel of said platform, and supporting rollers mounted on the plates and bearing on said ways, substantially as described

11. In an apparatus for manufacturing castings, the combination, with an endless track, provided with mold carriers, of an elevator located adjacent thereto, a lifting and transferring fork, and means under the control of the operator for automatically lifting said fork, moving it transversely across the elevator and returning it to its original position, substantially as described.

12. In an apparatus for manufacturing castings, the combination, with an endless track, provided with mold carriers, and an elevator located adjacent thereto, of a tilting and lifting track, means under the control of the operator for actuating said track, and a truck mounted on said track and having loosely suspended from it a fork which is adapted to receive and carry the molds, substantially as described.

13. In an apparatus for manufacturing castings, the combination, with the mold carriers and elevator, of the tilting and lifting track $J^3$ and means for actuating the same, said track being provided with stops $j^3$, $j^3$, the truck J' mounted on said track, and the fork J suspended from said truck by chains $j^3$, substantially as described.

14. In an apparatus for manufacturing castings, the combination, with the tilting and lifting track and its truck, of the transferring fork suspended therefrom, a lever connected with said track, a shaft provided with a cam on which said lever rests, a continuously rotating pulley provided with a ratchet-wheel and mounted loosely on said shaft, an arm secured on said shaft and provided with a spring pawl to engage said ratchet-wheel, a cam arranged to hold the pawl normally out of engagement with the ratchet-wheel, and means under the control of the operator for partially rotating said last-mentioned cam to free the pawl to permit it to engage the ratchet-wheel, substantially as described.

15. In an apparatus for manufacturing castings, the combination, with the lifting and tilting track $J^3$, and the transferring fork J suspended therefrom, of the lever $K^3$, the connecting rod $k'$ connecting said lever and track, the shaft K having cam K' on which the lever rests, the loose pulley L mounted on said shaft and having ratchet-wheel $l$, the arm $L^3$ secured on the shaft K and having spring pawl $L^4$, the cam $l'$ arranged in the path of the spring pawl, the arm $l^3$ connected with said cam $l'$, the lever L', and the connecting rod $l^2$ between the lever K' and arm $l^3$, substantially as described.

16. In an apparatus for manufacturing castings, the combination, with a track and a ladle, of a carrier mounted on the track and supporting the ladle, and having a frame which is flexible around a vertical axis, the two parts of the frame being united by an elastic connection which tends to hold them normally in line, substantially as described.

17. In an apparatus for manufacturing castings, the combination, with a track and a ladle, of a carrier mounted on the track and supporting the ladle, and having a frame composed of two stiff frame sections, the lower one hinged to the upper one by a stiff horizontal pivot on which it is free to swing only in a direction transverse to the line of travel of the carrier, substantially as described.

18. In an apparatus for manufacturing castings, the combination, with a track and a ladle, of a carrier mounted on the track and supporting the ladle, and having a frame which is flexible around a vertical axis, and a stiff horizontal axis on which it is free to swing only in a direction transverse to the carrier, substantially as described.

19. In an apparatus for manufacturing castings, the combination, with a track, of a ladle carrier, comprising two uprights $c$, each having trolley-wheels above and below the track, an elastic connecting bar $c^3$ between the upper ends of the uprights, a jointed connecting bar $c^4$ between the lower ends of the uprights, and the members $c^5$ suspended loosely from the lower ends of the uprights, and pivotally connected at their lower ends, substantially as described.

20. In an apparatus for manufacturing castings, the combination, with a pouring ladle and a track, of a carrier mounted on said track, a winch mounted on the carrier and provided with an eccentric drum, and a chain having one end attached to the drum, the other end fixed, and the intermediate portion passing under a pulley connected with the ladle, substantially as described.

21. In an apparatus for manufacturing castings, the combination, with the carrier and its track, of a yoke connected with the carrier, and a ladle mounted in the yoke by means of an inclined axis, substantially as described.

22. In an apparatus for manufacturing castings, the combination, with the track and carrier, of a ladle having a laterally projecting handle and mounted in a yoke, and a rod having its upper end suitably connected with the carrier and its lower end eccentrically connected with the yoke, substantially as described.

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**501,882. NAPKIN-RING.** ERNST DREVET, New York, N. Y. Filed Oct. 11, 1892. Serial No. 448,523. (No model.)

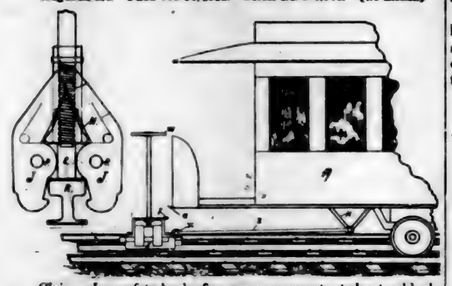


*Claim.*—A napkin ring consisting in the two curved bands 10, 10, overlapped at both of their ends and pivoted together by pivots 11 11, and the clasp 14 pivoted between its ends at 18 upon the upper or outer side of the end of one of the bands 10 and provided with a spring pressing one of its ends against the said band, the opposite end of the clasp serving as a finger piece for opening it, substantially as set forth.

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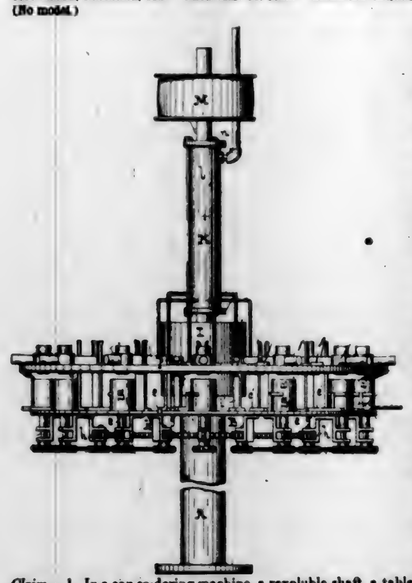
**501,883. CAR-BRAKE.** GEORGE R. GAY and JOHN H. PARSONS, Augusta, Me. Filed Oct. 31, 1892. Serial No. 450,571. (No model.)



*Claim.*—In a safety brake for cars, a screw actuated nut or block, in combination with a pair of rail-gripping jaws having their upper arms inclined inward toward said nut or block, and so pivoted or hinged that, when the nut or block is moved away from the pivotal point the upper arms of the rail-gripping jaws will be forced apart with a variable speed and pressure corresponding to the varying points of contact of the nut or block and the inwardly inclined upper arms of the rail-gripping jaws substantially as described in the foregoing specification.

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**501,884. CAN-CAPPING MACHINE.** FRANCIS P. GOODE and IGNATIUS GOODE, Frederick, Md. Filed Mar. 11, 1892. Serial No. 424,514. (No model.)



*Claim.*—1. In a can soldering machine, a revoluble shaft, a table keyed to said shaft to revolve therewith, and a series of axially rotating can seats in said table, combined with an annular gasoline tank fastened to the shaft and supported by the table, an annular compressed air reservoir also fastened to said shaft to revolve with it, a series of burners arranged one at each can seat, pipes leading from the gasoline tank and compressed air reservoir to the burners, and a soldering block situated over each seat, substantially as and for the purpose specified.

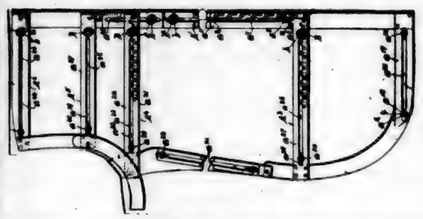
2. In a can capping machine, a series of rotating can seats, each seat being provided with a curved sustaining arm which is pivoted to the table and adapted to be turned so as to throw the can sustained by it from its seat at the completion of the capping operation, substantially as specified.

3. In a can capping machine, a revoluble can seat combined with a curved arm for sustaining the can on the seat, the said arm being pivoted to a table and provided with a curved cross arm one end of which is attached to the said table by means of a spring and the other adapted to strike a stop and thereby alter the position of the same and its curved arm so as to eject the can from its seat, substantially as specified.

4. In a can capping machine, the combination of a revoluble table having can seats therein, a conveying belt for the uncapped cans, and a yielding finger which projects over the table and serves to push the cans on the table into the seats and yield when the cans are carried forward by the rotation of the table, substantially as specified.

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**501,885. PATTERN FOR DRAFTING SHIRT-BACKS.** TERRENCE J. GOODWIN, Syracuse, N. Y. Filed Dec. 29, 1892. Serial No. 456,614. (No model.)



*Claim.*—1. In a pattern for the back piece of a shirt, the combination of the lengthwisely adjustable side-plate —A'— extending lengthwise of the pattern, lengthwisely adjustable cross-plates —$A^1$—$A^4$— extending laterally from the side-plate —A'—, the side-plate —$A^8$— consisting of a section —$a^9$— hinged at its upper end to the cross-plate —$A^4$— and the section —$a^{10}$— composed of the lower division —$a^{15}$— secured to the cross-plate —$A^3$— and formed with a curved outer edge having its lower extremity curved toward the side-plate —A'— and the division —$a^{12}$— having its lower end hinged to the upper end of the division —$a^{15}$— and its upper end adjustably connected to the section —$a^9$—, the top plate —$A^5$— composed of the section —$a^{41}$— secured to the side-plate —A'—, and the movable section —$a^{42}$— rectilinearly guided on the former section, and connecting plates —$A^6$—$A^9$— between the adjacent ends of the plates —$A^1$—$A^4$—, substantially as and for the purpose described.

2. In a pattern for the back piece of a shirt, the combination of the lengthwisely adjustable side-plate —A'— extending lengthwise of the pattern, lengthwisely adjustable cross-plates —$A^1$—$A^4$— extending laterally from the side-plate —A'—, the side-plate —$A^8$— consisting of a section —$a^9$— hinged at its upper end to the cross-plate —$A^4$— and the section —$a^{10}$— composed of the lower division —$a^{15}$— secured to the cross-plate —$A^3$— and formed with a curved outer edge having its lower extremity curved toward the side-plate —A'— and the division —$a^{12}$— having its lower end hinged to the upper end of the division —$a^{15}$— and its upper end adjustably connected to the section —$a^9$—, the top-plate —$A^5$— composed of the section —$a^{41}$— secured to the side-plate —A'—, and the movable section —$a^{42}$— rectilinearly guided on the former section, a top plate —$A^6$— having one end secured to the outer end of the movable section —$a^{42}$— of the top-plate —$A^5$—, and a plate —$A^9$— formed with a concaved outer edge and having one end hinged to the top-plate —$A^5$— and the other adapted to register with the end of the cross-plate —$A^4$—, substantially as and for the purpose set forth.

3. In a pattern for the back piece of a shirt, the combination of the lengthwisely adjustable side-plate —A'— extending lengthwise of the pattern, and formed at its lower end with a laterally projecting arm —$a^{17}$—, lengthwisely adjustable cross-plates —$A^1$—$A^4$— extending laterally from the side plate —A'— above the arm —$a^{17}$—, the side-plate —$A^8$— consisting of a section —$a^9$— hinged at its upper end to the cross-plate —$A^4$— and the section —$a^{10}$— composed of the upper division —$a^{13}$— having its upper end adjustably connected to the section —$a^9$— and the lower division —$a^{15}$— secured to the cross-plate —$A^3$— and having its upper end hinged to the lower end of the division —$a^{12}$— and its lower end formed with a laterally extending extremity projecting toward the side-plate —A'— and adjustable lengthwise on the arm —$a^{17}$—, said lower division —$a^{15}$— being formed with a curved outer edge, the top-plate —$A^5$— composed of the section —$a^{41}$— secured to the side-plate —A'—, and the movable section —$a^{42}$— rectilinearly guided on the former section, and connecting plates —$A^6$—$A^9$— between the adjacent ends of the plates —A'—$A^4$, substantially as set forth.

4. In a pattern for the back piece of a shirt, the combination of the lengthwisely adjustable side-plate —A'— extending lengthwise of the pattern, lengthwisely adjustable cross-plates —$A^1$—$A^4$— extending laterally from the side-plate —A'—, the side-plate —$A^8$— consisting of a section —$a^9$— hinged at its upper end to the cross-plate —$A^4$— and the section —$a^{10}$— composed of the lower division —$a^{15}$— secured

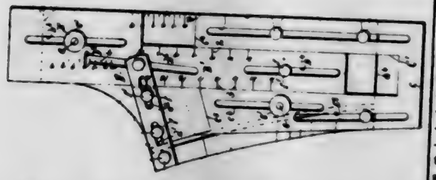
to the cross-piece —$A^2$— and formed with a curved outer edge having its lower extremity curved toward the side-plate —A'— and the division —$a^{12}$— having its lower end hinged to the upper end of the division —$a^{12}$— and its upper end adjustably connected to the section —$a^9$—, and the top-plate —$A^4$— composed of the section —$a^{41}$— secured to the side-plate —A'—, a movable section —$a^{42}$— rectilinearly guided on the former section, a lengthwisely adjustable cross-plate —$A^5$—, a top-plate —$A^6$— having one end secured to the outer end of the movable section —$a^{42}$— of the top-plate —$A^6$— and the other end secured to the outer end of the cross-plate —$A^5$—, and a curved plate —$A^8$— having one end hinged to the cross-plate —$A^5$— and the other adapted to register with the end of the cross-plate —$A^4$—, substantially as and for the purpose described.

5. In a pattern for the back piece of a shirt, the combination of the lengthwisely adjustable side-plate —A'— extending lengthwise of the pattern, lengthwisely adjustable cross-plates —$A^3$—$A^4$— extending laterally from the side-plate —A'—, the side-plate —$A^1$— consisting of a section —$a^9$— hinged at its upper end to the cross-plate —$A^4$— and the section —$a^{10}$— composed of the lower division —$a^{12}$— secured to the cross-plate —$A^3$— and formed with a curved outer edge having its lower extremity curved toward the side-plate —A'— and the division —$a^{12}$— having its lower end hinged to the upper end of the division —$a^{12}$— and its upper end adjustably connected to the section —$a^9$—, the top-plate —$A^4$— composed of the section —$a^{41}$— secured to the side-plate —A'—, and a movable section —$a^{42}$— rectilinearly guided on the former section, connecting plates —$A^9$—$A^9$— between the adjacent ends of the plates —$A^3$—$A^5$—, and the plate —A'— adjustable vertically on the side-plate —A'— and secured to one of the sections of the cross-plate —$A^4$—, substantially as specified.

6. In a pattern for the back piece of a shirt, the combination of the lengthwisely adjustable side-plate —A'— extending lengthwise of the pattern, lengthwisely adjustable cross-plates —$A^3$—$A^4$— extending laterally from the side-plate —A'—, the side-plate —$A^1$— consisting of a section —$a^9$— hinged at its upper end to the cross-plate —$A^4$— and the section —$a^{10}$— composed of the lower division —$a^{12}$— secured to the cross-plate —$A^3$— and formed with a curved outer edge having its lower extremity curved toward the side-plate —A'— and the division —$A^{12}$— having its lower end hinged to the upper end of the division —$a^{12}$— and its upper end adjustably connected to the section —$a^9$—, the top plate —$A^5$— composed of the section —$a^{51}$— secured to the side-plate —A'—, a movable section —$a^{52}$— rectilinearly guided on the former section, a plate —$A^6$— having one end rigidly secured to the outer end of the movable section —$a^{52}$— of the top-plate —$A^4$—, a plate —$A^8$— formed with a concaved outer edge having one end hinged to the top-plate —$A^6$— and the other adapted to register with the end of the cross-plate —$A^4$—, and the plate —$A^7$— adjustable vertically on the side-plate —A'— and secured to one of the sections of the cross-plate —$A^4$—, substantially as and for the purpose described.

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**501,836. PATTERN FOR DRAFTING SHIRT-YOKES.** TERRENCE J. GOODWIN, Syracuse, N. Y. Filed Feb. 13, 1893. Serial No. 462,100. (No model.)



*Claim.*—1. The herein described pattern for the yoke piece of a shirt, the same comprising a base-plate —A— formed with a projecting arm —a— at the central portion of its upper edge, a plate —B— adjustable lengthwise on the base-plate —A— and formed with a bottom edge —b— and a right-hand end edge —b'— arranged at substantially right angles with each other, and the plate —C— adjustable lengthwise on the base-plate —A— and formed with a bottom edge —c—, and a left-hand end edge —c'— extending at substantially right angles with each other substantially as and for the purpose set forth.

2. The herein described pattern for the yoke piece of a shirt, the same comprising a base plate —A—, a plate —B— adjustable lengthwise on the base-plate —A— and formed with a bottom edge —b— and a right-hand end edge —b'— arranged at substantially right angles with each other and provided with a tongue —B'— extending lengthwise of the plate —B—, a plate —C— adjustable lengthwise on the base plate —A— and formed with a bottom edge —c—, a left-hand end edge —c'— extending at substantially right angles with each other and provided with right-hand end edges —$c^3$—$c^4$—, and with an open slot —C'— for receiving the tongue —B'—, scales —1— and —2— provided respectively upon the base-plate —A— and the tongue —B'— in the paths of movement of the edges —$b^3$—$c^3$—, substantially as and for the purpose specified.

3. The herein described pattern for the yoke-piece of a shirt, the same comprising a base-plate —A—, a plate —B— adjustable lengthwise on the base-plate —A— and formed with a bottom edge —b— and a right-hand end edge —b'— arranged at substantially right angles with each other and provided with a tongue B'— extending lengthwise of the plate —B— and with an edge —$b^3$—, a plate —C— adjustable lengthwise on the base-plate —A— and formed with a bottom edge —c—, a left-hand end edge —c'— extending at substantially right angles with each other and provided with an open slot —C'— extending inwardly from its right-hand end edge for receiving the tongue —B'— and with a right-hand end edge —$c^3$—, and scales —1— and —2— formed respectively upon the base-plate —A— and the tongue —B'— along the path of movement of the edges —$b^3$—$c^3$—, substantially as specified.

4. The herein described pattern for the yoke piece of a shirt, the same comprising a base-plate —A— formed with a lengthwise edge —$a^3$—, end edges —$a^1$—$a^4$— disposed at substantially right angles with the edge —$a^3$— and provided at its upper edge with an arm —a— having concave sides —$a'$—$a^2$, the side —$a'$— being of greater concavity than the side —$a^2$—, a plate —B— adjustable lengthwise on the base-plate —A— and formed with a bottom edge —b— substantially coincident with said edge —$a^3$—, and a right-hand end edge —b'— arranged at substantially right angles with the edge —b— and the plate —C— adjustable lengthwise on the base-plate —A— and formed with a bottom edge —c— substantially coincident with said edge —$a^3$—, and a left-hand end edge —c'— extending at substantially right angles with the edge —c—, substantially as described.

5. The herein described pattern for the yoke piece of a shirt, the same comprising the base plate —A— formed with a lengthwise edge —$a^3$—, end edges —$a^1$—$a^4$— disposed at substantially right angles with the edge —$a^3$— and provided at its upper edge with an arm —a— having concave sides —$a'$—$a^2$—, the sides —$a'$— being of greater concavity than the sides —$a^2$—; a plate —B— adjustable lengthwise on the base-plate —A— and formed with a bottom edge —b— substantially coincident with said edge —$a^3$—, a right-hand end edge —b'— arranged at substantially right angles with the edge —b—, a top edge —$b^3$— substantially coincident with the upper end of said right-hand end edge —$a^3$— of the plate —a—, an edge —$b^2$—, a tongue —B'— at the left-hand end of the plate —B— extending lengthwise of said plate, the plate —C— adjustable lengthwise on the base-plate —A— and formed with a bottom edge —c— substantially coincident with said edge —$a^3$—, a left-hand end edge —c'— extending at substantially right angles with the edge —c— and an edge —$c^3$—, said plate —C— being formed with an open slot —C'— for receiving the tongue —B'—, and scales —1— and —2— formed respectively upon the base-plate —A — and the tongue —B'— along the path of movement of the edges— $b^3$—$c^3$—, substantially as and for the purpose described.

6. The herein described pattern for the yoke-piece of a shirt, the same comprising a base-plate —A—, a plate —B— adjustable lengthwise on the base-plate —A— and formed with a bottom edge —b— and a right-hand end edge —b'— arranged at substantially right angles with each other and provided with edges —$b^3$—$b^4$— and with a lengthwise tongue —B'—, a plate —C— adjustable lengthwise on the base-plate —A— and formed with a bottom edge —c— and a left-hand end edge —c'— extending at substantially right angles with each other and provided with right-hand end edges —$c^3$—$c^4$—, and with an open slot —C'— for receiving the tongue —B'—, scales —1— and —3— provided respectively upon the plate —A— and the tongue —B'— in the paths of movement of the edges —$b^3$—$c^3$—, and scales —3— and —4— provided respectively upon the base-plate —A— and the tongue —B'— in the paths of movement of the edges —$b^4$— —$c^4$— said scales being constructed, substantially as described, whereby the edges —$b^3$—$b^4$— register simultaneously with different graduations upon the scales —1— and —4— and the edges —$c^3$—$c^4$— with different graduations on the scales —2— and —3—, substantially as and for the purpose specified.

7. The herein described pattern for the yoke-piece of a shirt, the same comprising a base-plate —A—, a plate —B— adjustable lengthwise on the base-plate —A— and formed with a bottom edge —b— and a right-hand end edge —b'— arranged at substantially right angles with each other, and the plate —C— adjustable lengthwise on the base-plate —A— and formed with a bottom edge —c—, a left-hand end edge —c'— extending at substantially right angles with each other, and the plate —C— having a concave upper edge arranged in front of the upper edge of the plate —A—, and having its right-hand end movably supported on the plate —A— and its opposite end adjustably connected to the plate —C—, substantially as and for the purpose specified.

8. The herein described pattern for the yoke piece of a shirt, the same comprising a base-plate —A— formed with a projecting arm —a— at the central portion of its upper edge, a plate —B— adjustable lengthwise on the base-plate —A— and formed with a bottom edge —b— and a right-hand end edge —b'— arranged at substantially right angles with each other, and the plate —C— adjustable lengthwise on the base-plate —A— and formed with a bottom edge —c—, a left-hand end edge —c'— extending at substantially right angles with each other and provided with an inclined or cam edge —$c^3$— of the plate —B—, and a plate —D— having its right-hand end supported upon the arm —a— of the base-plate and its left-hand end provided with a lug bearing against the edge —$c^3$—, substantially as and for the purpose specified.

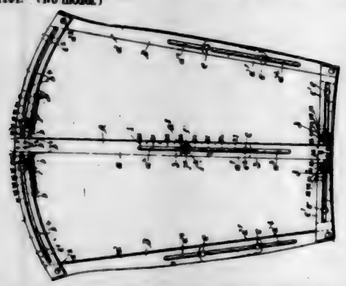
9. The herein described pattern for the yoke-piece of a shirt, the same comprising a base-plate —A—, a plate —B— adjustable lengthwise on the base-plate —A— and formed with a bottom edge —b— and a right-hand end edge —b'— arranged at substantially right angles with each other and provided with a tongue —B'— extending lengthwise of the plate —B—, a plate —C— adjustable lengthwise on the base-plate —A— and formed with a bottom edge —c—, a left-hand end edge —c'— extending at substantially right angles with each other and provided with an open slot —C'— extending inwardly from its right-hand end edge for receiving the tongue —B'— and with an inclined or cam edge —$c^3$—, and a plate —D— having a concave upper edge arranged in front of the upper edge of the plate —A— and having its right-hand end movably supported on the plate —A— and its opposite end adjustably connected to the plate —C—, substantially as set forth.

10. The herein described pattern for the yoke piece of a shirt, the same comprising a base-plate —A—, having a bottom edge —$a^3$— a plate —B— adjustable lengthwise on the base-plate —A— and formed with a bottom edge —b— and right-hand end edge —b'— arranged at substantially right angles with each other, and the plate —C— adjustable lengthwise on the base-plate —A— and formed with a bottom edge —c— a left-hand end edge —c—exteading at substantially right angles with each other, a plate —D'— lengthwisely movable upon the plate —A— and arranged upon said plate —A— in a plane inclined from that of the edge —$a^3$— of said plate, and a plate —D— having one end hinged to the top end of the plate —D'— and the other adjustably connected to the plate —C—, substantially as and for the purpose specified

11. The herein described pattern for the yoke-piece of a shirt, the same comprising a base-plate, a plate —B— adjustable lengthwise on the plate —A— and formed with a bottom edge —b—, and a right-hand end edge —b'— arranged at substantially right angles with each other and provided with an inclined or cam edge —$b^3$—, a plate —C— adjustable lengthwise on the base plate —A— and formed with a bottom edge —c— and a left-hand end edge —c'— extending at substantially right angles with each other and provided with an inclined or cam edge —$c^3$— a plate —D'— adjustable lengthwisely on the plate —A— and provided with a lug engaging the inclined or cam face —$b^3$— of the plate —B—, and a plate —D— having its right-hand end hinged to the upper end of the plate —D'— and its opposite end provided with a lug movable along the inclined or cam edge —$c^3$— of the plate —C— substantially as and for the purpose described.

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**501,837. PATTERN FOR DRAFTING SHIRT-SLEEVES.** TERRENCE J. GOODWIN, Syracuse, N. Y. Filed Feb. 13, 1893. Serial No. 462,101. (No model.)



*Claim.*—1. The herein described pattern for the sleeve-piece of a shirt, the same comprising a lengthwisely adjustable plate —A— having a substantially straight longitudinal edge, a lengthwisely adjustable arm —B— extending laterally from one end of the plate —A— and having its upper edge curved downwardly from its inner end, said arm —B— consisting of lapping sections, one of which is fixedly secured to the plate —A— a lengthwisely adjustable arm —C— extending laterally from the opposite end of the plate —A— and consisting of lapping sections, one of which is fixedly secured to the plate —A—, and a lengthwisely adjustable plate —D— having one extremity



hinged to the outer end of the arm —B— and the other extremity hinged to the corresponding end of the arm —C—, substantially as and for the purpose set forth.

2. The herein described pattern for the sleeve-piece of a shirt, the same comprising a lengthwisely adjustable plate —A— composed of a section —a— provided with a scale —1— and a section —a'— movable rectilinearly along said scale —1— a lengthwisely adjustable arm —B— extending laterally from one end of the plate —A— and having its upper edge curved downwardly from its inner end, said arm —B— being composed of a section —b— fixedly secured to one end of the plate —A— and provided with a scale —2— and a section —b'— movable lengthwisely of the scale —2—, a lengthwisely adjustable arm —C— extending laterally from the opposite end of the plate —A—, said arm —C— being composed of a section —c— fixedly secured to the opposite end of the plate —A—and provided with a scale —3— and a section —c'— movable lengthwise of the scale —3—, and a lengthwisely adjustable plate —D— having one extremity hinged to the outer end of one of the sections of the arm —B— and having its other extremity hinged to the corresponding end of one of the sections of the arm —C—, substantially as and for the purpose set forth.

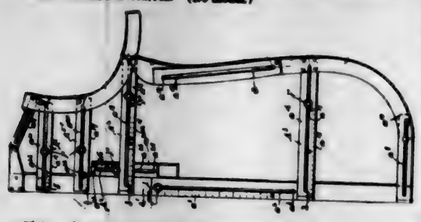
3. The herein described pattern for the sleeve-piece of a shirt, the same comprising a lengthwisely adjustable plate —A— for regulating the length of the central portion of the sleeve-piece, an upper plate composed of lengthwisely adjustable arms —B—B— fixedly secured to the upper end of the plate —A— and having their upper edges curved downwardly from their inner ends, a lengthwisely adjustable plate composed of arms —C—C— fixedly secured to the lower end of the plate —A— and formed of less length than the arms —B—B—, and lengthwisely adjustable downwardly inclining side plates —D—D— having their upper extremities hinged to the outer ends of the arms —B—B— and their opposite extremities hinged to the outer ends of the arms —C—C—, substantially as and for the purpose set forth.

4. The herein described pattern for the sleeve-piece of a shirt, the same comprising a lengthwisely adjustable plate —A— for regulating the length of the central portion of the sleeve-piece, an upper plate composed of lengthwisely adjustable arms —B—B— fixedly secured to the upper end of the plate —A— and having their upper edges curved downwardly from their inner ends, a lengthwisely adjustable plate composed of arms —C—C— fixedly secured to the lower end of the plate —A— and formed of less length than the arms —B—B— and having their lower edges curved downwardly from their inner ends, and lengthwisely adjustable downwardly inclining side plates —D—D— having their upper extremities hinged to the outer ends of the arms —B—B— and their opposite extremities hinged to the outer ends of the arms —C—C— and having the upper portions of their outer edges concavely curved and the lower portions of said outer edges convexly curved, substantially as and for the purpose described.

5. The herein described pattern for the sleeve-piece of a shirt, the same comprising a lengthwisely adjustable plate —A— for regulating the length of the central portion of the sleeve-piece, said plate —A— being composed of a section —a— provided with a scale —1— and a section —a'— movable lengthwise of said scale, an upper plate composed of lengthwisely adjustable arms —B—B— fixedly secured to the upper end of the plate —A— and having their upper edges curved downwardly from their inner ends, said arms —B—B— being composed of sections —b—b— fixedly secured to the plate —A— and provided with scales —2—2— and sections —b'—b'— movable lengthwise of the scales —2—2—, a lengthwisely adjustable plate composed of arms —C—C— fixedly secured to the lower end of the plate —A— and formed of less length than the arms —B—B— and having their lower edges curved downwardly from their inner ends, said arms —C—C— being composed of sections —c—c— fixedly secured to the plate —A— and provided with scales —3—3— and sections —c'—c'— movable lengthwisely of the scales —3—3—, and lengthwisely adjustable downwardly inclining side plates —D—D— having their upper extremities hinged to the outer ends of the sections —b'—b'— of the arms —B—B'— and their opposite extremities hinged to the outer ends of the sections —c'—c'— of the arms —C—C— and having the upper portions of their outer edges concavely curved and the lower portions of said outer edges convexly curved, substantially as and for the purpose specified.

6. The herein described pattern for the sleeve-piece of a shirt, the same comprising lengthwisely adjustable arms —B—B— having their adjacent ends relatively fixed and having curved upper edges, lengthwisely adjustable arms —C—C— of less length than the former arms —B—B—, having their adjacent ends relatively fixed and lengthwisely adjustable side plates —D—D— consisting of lapping sections movable upon each other in rectilinear planes parallel with the planes of extension of said side plates —D—D— and having corresponding ends secured to the outer ends of the arms —B—B— and having their opposite ends secured to the outer ends of the arms —C—C—, substantially as described.

**501,888. PATTERN FOR DRAFTING SHIRT-FRONTS.** TERENCE J. GEOGHEGAN, Syracuse, N. Y. Filed Dec. 16, 1891. Renewed Feb. 13 1893. Serial No. 462,102. (No model.)



*Claim.*—1. In a pattern for the front of a shirt, the combination of the lengthwisely adjustable side plate —$A'$— extending lengthwise of the pattern and forming one edge thereof, a laterally extending stationary arm —$a^{10}$— at the base of the side plate —$A'$—, the lengthwisely adjustable side plate —$A^3$— having a curved outer edge and formed of the sections —$a^4$— and —$a^5$— adjustably secured together, the section —$a^5$— being composed of the division —$a^6$— having its base curved toward the arm —$a^{10}$— and adjustably secured thereto, and the division —$a^7$— having its corresponding end hinged to the division —$a^6$—, and a lengthwisely adjustable cross plate —$a^4$— between the upper end of the side plate —$A^3$— and the side plate—$A'$—, substantially as and for the purpose described.

2. In a pattern for the front of a shirt, the combination of the lengthwisely adjustable side plate —$A'$— extending lengthwisely of the pattern, lengthwisely adjustable cross plates —$A^3$— and —$A^4$— extending laterally from the side plate —$A'$—, and the side plate —$A^3$— consisting of the section —$a^4$— hinged at its upper end to the cross plate —$A^4$— and formed with a curved outer edge, and the section —$a^5$— composed of the lower division —$a^6$— secured to the cross plate —$A^4$— and formed with a curved outer edge and with its lower end curved toward the side plate —$A'$—, and the division —$a^7$— having its outer edge curved, its lower end hinged to the upper end of the division —$A^6$—, and its upper end adjustably connected to the lower end of the section —$a^4$—, substantially as and for the purpose specified.

3. In a pattern for the front of a shirt, the combination of the lengthwisely adjustable scale carrying side plate —$A'$— extending lengthwise of the pattern and forming one edge thereof, a laterally extending stationary arm —$a^{10}$— at the base of the side plate —$A'$—, the lengthwisely adjustable side plate —$A^3$— having a curved outer edge and formed of the sections —$a^4$— and —$a^5$— adjustably secured together, the section —$a^5$— being composed of the division —$a^6$— having its base curved toward the lug —$a^{10}$— and adjustably secured thereto and the division —$a^7$— having its lower end hinged to the division —$a^6$—, a lengthwisely adjustable cross plate —$A^4$— having one end secured to the lengthwisely adjustable scale carrying side plate —$A'$— and the other to said division —$a^6$—, a lengthwisely adjustable scale carrying cross plate —$A^4$— between the upper end of the side plate —$A^3$— and the side plate —$A'$—, substantially as and for the purpose set forth.

4. In a pattern for the front of a shirt, the combination of the lengthwisely adjustable side plate —$A'$—, the lengthwisely adjustable side plate —$A^3$— having its outer edge curved and composed of the section —$a^4$—, and the section —$a^5$— comprising the division —$a^6$— and the division —$a^7$— having one end hinged to the division —$a^6$— and the other adjustably secured to the section —$a^4$—, the lengthwisely adjustable cross plate —$A^4$— having one end secured to the side plate —$A'$— and the other to said section —$a^4$—, the lengthwisely adjustable cross plate —$A^4$— having one end secured to the side plate —$A'$—and the other to the upper extremity of said section —$a^4$— the lengthwisely adjustable cross plate —$A^4$— having one end secured to the side plate —$A'$—and the other to the upper extremity of said section —$a^4$— and the plate —$A^3$— composed of vertically adjustable sections, one being secured to the side plate —$A$— and the other to the cross plate —$A^4$— for regulating the depth of the arm hole, substantially as and for the purpose specified.

5. In a pattern for the front of a shirt, the combination of the lengthwisely adjustable side plate —$A'$—, the lengthwisely adjustable side plate —$A^3$— having its outer edge curved and composed of the section —$a^4$—, and the section —$a^5$— comprising the division —$a^6$— and the division —$a^7$— having one end hinged to the division —$a^6$— and the other adjustably secured to the section —$a^4$—, the lengthwisely adjustable cross plate —$A^4$— having one end secured to the side plate —$A'$— and the other to said section —$a^4$—, the lengthwisely adjustable cross plate —$A^4$— having one end secured to the side plate —$A'$—and the other to the upper extremity of said section —$a^4$— and the plate —$A^3$— composed of vertically adjustable sections, one being secured to the side plate —$A$— and the other to the cross plate —$A^4$— for regulating the depth of the arm hole, substantially as and for the purpose specified.

6. In a pattern for the front of a shirt, the combination of the lengthwisely adjustable side plate —$A'$—, the lengthwisely adjustable side plate —$A^3$— having its outer edge curved and composed of the section —$a^4$— and the section —$a^5$— comprising the division —$a^6$— and the division —$a^7$— having one end hinged to the division —$a^6$— and the other adjustably secured to the section —$a^4$—, the lengthwisely adjustable cross plate —$A^4$— having one end secured to the side plate —$A'$— and the other to said section —$a^4$—, the lengthwisely adjustable cross plate —$A^4$— having one end secured to the side plate —$A'$—and the other to the upper extremity of said section —$a^4$— and the plate —$A^3$— pivoted to the plate —$A^4$— and formed with a curved outer edge, and scales provided upon the plates —$A'$—$A^4$— and —$A^3$—, substantially as and for the purpose described.

7. In a pattern for the front of a shirt, the combination of the lengthwisely adjustable side plate —$A'$—, the lengthwisely adjustable side plate —$A^3$— having its outer edge curved and composed of the section —$a^4$— and the section —$a^5$— comprising the division —$a^6$— and the division —$a^7$— having one end hinged to the division —$a^6$— and the other adjustably secured to the section —$a^4$—, the lengthwisely adjustable cross plate —$A^4$— having one end secured to the side plate —$A'$— and the other to said section —$a^4$—, the lengthwisely adjustable cross plate —$A^4$— having one end secured to the side plate —$A'$—and the other to the upper extremity of said section —$a^4$—, the lengthwisely adjustable cross plate —$A^4$— extending laterally from the side plate —$A'$—, the adjustable top plate —$A^3$— and the plate —$A^3$— having its central portion pivoted to the plate —$A^4$—, its outer edge curved and its opposite extremities adapted to be registered with the ends of the cross plate —$A^4$— and the top plate —$A^3$— for determining the curve of the arm hole, substantially as and for the purpose described.

8. In a pattern for the front of a shirt, the combination of the lengthwisely adjustable side plate —$A'$— provided with a scale, the lengthwisely adjustable side plate —$A^3$— having its outer edge curved, composed of the section —$a^4$— and the section —$a^5$— comprising the division —$a^6$— and the division —$a^7$— having one end hinged to the division —$a^6$— and the other adjustably secured to the section —$a^4$—, the lengthwisely adjustable cross plate —$A^4$— provided with a scale and having one end secured to the side plate —$A'$— and the other to said section —$a^4$—, the lengthwisely adjustable cross plate —$A^4$— provided with a scale and having one end secured to the side plate —$A'$— and the other to the upper extremity of the section —$a^4$— the plate —$A^3$— provided with a scale and composed of vertically adjustable sections, one being secured to the side plate —$A'$— and the other to the cross plate —$A^4$— for regulating the depth of the arm hole, the lengthwisely adjustable cross plate —$A^4$— extending laterally from the side plate —$A'$— and provided with a scale, the lengthwisely adjustable top plate —$A^3$— extending laterally from the side plate —$A'$—, and the plate —$A^3$— having its central portion pivoted to the plate —$A^4$—, its outer edge curved and its opposite extremities adapted to be registered with the ends of the cross plate —$A^4$— and the top plate —$A^3$— for determining the curve of the arm hole, substantially as and for the purpose specified.

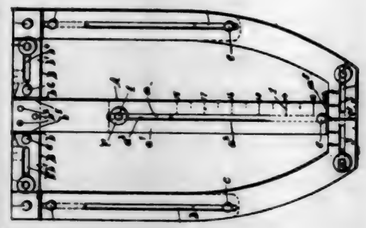
9. In a pattern for the front of a shirt, the combination of the lengthwisely adjustable side plates —$A'$— and —$A^3$—, the lengthwisely adjustable cross plate —$A^4$— having its opposite extremities secured to the separate side plates, the top plate —$A^3$— composed of the section —$a^{27}$— extending laterally from the side plate —$A'$—, and having one end fixed thereto and the section —$a^{28}$— inclining toward the base of the side plate —$A'$— and having one end hinged to the section —$a^{27}$—, the lengthwisely adjustable cross plate —$A^4$— extending laterally from the side plate —$A'$— and having its outer end hinged to the movable section —$a^{28}$— of the top plate —$A^3$—, the lengthwisely adjustable cross plate —$A^4$— extending laterally from the side plate —$A'$— and the plate —$A^3$— having its central portion pivoted to the plate —$A^4$—, its outer edge curved and its opposite extremities adapted to be registered with the ends of the cross plate—$A^4$— and the top plate—$A^3$—, substantially as and for the purpose described.

10. In a pattern for the front of a shirt, the combination of the lengthwisely adjustable side plates —$A'$— and —$A^3$—, the lengthwisely adjustable cross plate —$A^4$— having its opposite extremities secured to the separate side plates, the top plate —$A^3$— composed of the section —$a^{27}$— extending laterally from the side plate —$A'$— and having one end fixed thereto, and the section —$a^{28}$— inclining toward the base of the side plate —$A'$— and comprising the division —$a^{28}$— hinged at one end to the section —$a^{27}$—, and the division —$a^{28}$— having one end adjustably secured to the outer end of the division —$a^{28}$—, the lengthwisely adjustable cross plate —$A^4$— extending laterally from the side plate —$A'$— and having one end fixed to said side plate and the other hinged to the division —$a^{28}$— of the top bar section —$a^{28}$—, the lengthwisely adjustable cross plate —$A^4$— extending laterally from the side plate —$A'$— and the plate —$A^3$ having its central portion pivoted to the plate —$A^4$—, its outer edge curved, and its opposite extremities adapted to be registered with the ends of the cross plate —$A^4$— and the top plate —$A^3$—, substantially as and for the purpose set forth.



11. In a pattern for the front of a shirt, the combination of the side plate —$A'$—, the lengthwisely adjustable side plate —$a^3$— having its outer edge curved and composed of the section —$a^4$— and the section —$a^5$— comprising the division —$a^6$— and the division —$a^7$— having one end hinged to the division —$a^6$— and the other adjustably secured to the section —$a^4$—, the lengthwisely adjustable cross plate —$A^4$— having one end secured to the side plate —$A'$— and the other to said section —$a^4$—, the lengthwisely adjustable cross plate —$A^4$— having one end secured to the side plate —$A'$— and the other hinged to the upper extremity of the section —$a^4$—, the plate —$a^5$— composed of vertically adjustable sections, one being secured to the side plate —$A'$— and the other to the cross plate —$A^4$— for regulating the depth of the arm hole, the lengthwisely adjustable cross plate —$A^4$— extending laterally from the side plate —$A'$— and provided with a scale, the lengthwisely adjustable top plate —$A^3$— extending laterally from the side plate —$A'$—, the plate —$A^3$— composed of the section —$a^{27}$— extending laterally from the side plate —$A'$— and having one end fixed thereto and the section —$a^{28}$— inclining toward the base of the side plate —$A'$— and having one end hinged to the section —$a^{27}$—, the lengthwisely adjustable cross plate —$A^4$— extending laterally from the side plate —$A'$— having one end fixed to said plate and the other hinged to said section —$a^{28}$—, and the plate —$A^3$— having its central portion hinged to the cross plate —$A^4$—, its outer edge curved and its extremities adapted to be registered with the ends of the plates—$A^4$—and —$A^3$— for determining the curve of the arm hole, substantially as specified.

**501,889. PATTERN FOR DRAFTING SHIRT-BOSOMS.** TERENCE J. GEOGHEGAN, Syracuse, N. Y. Filed Mar. 11, 1893. Serial No. 465,668. (No model.)



*Claim.*—1. The herein described pattern for the bosom-piece of a shirt, the same comprising a lengthwisely adjustable plate —A—, having a substantially straight longitudinal edge as arm —B— extending laterally from one end of the plate —A— and consisting of sections lapping with each other and adjustable lengthwisely in a plane at substantially right angles to the plane of adjustment of the plate —A— one of said sections being fixedly secured to the plate A, an arm —C— extending laterally from the opposite end of the plate —A— and consisting of sections lapping with each other and adjustable lengthwisely in a plane at substantially right angles to the plane of adjustment of the plate —A— one of said sections being fixedly secured to the plate —A—, and a lengthwisely adjustable side plate —D— having one extremity secured to the outer end of the arm —B— and the other extremity secured to the corresponding end of the arm —C— and formed with a longitudinal edge curved inwardly, substantially as and for the purpose set forth.

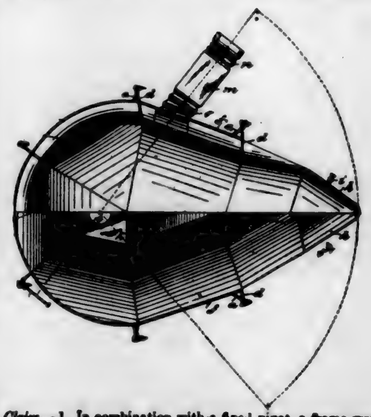
2. The herein described pattern for the bosom-piece of a shirt, the same comprising a lengthwisely adjustable plate having a substantially straight longitudinal edge, and composed of a section —a— provided with a scale —1— and a section —$a'$— movable lengthwisely of said scale —1—, a lengthwisely adjustable arm —B— extending laterally from one end of the plate —A— and composed of a section —A— fixedly secured to said end of the plate —A— and provided with a scale —2—, and a section —$b'$— movable lengthwisely of the scale —2—, a lengthwisely adjustable arm —C— extending laterally from the opposite end of the plate —A— and composed of a section —a— fixedly secured to said opposite end of the plate—A—and provided with a scale —2—, and a section —$a'$— movable lengthwise of the scale —2—, and a lengthwisely adjustable plate —D— having one extremity secured to the outer end of the arm —B— and the other extremity secured to the corresponding end of the arm —C— and formed with a longitudinal edge curved inwardly, substantially as specified.

3. The herein described pattern for the bosom piece of a shirt, the same comprising a lengthwisely adjustable plate —A—, an upper plate composed of arms —B—B— extending laterally from opposite sides of one end of the plate —A— and each consisting of sections lapping with each other and adjustable lengthwisely in a plane at substantially right angles to the plane of adjustment of the plate —A— one of the sections of each of said arms being fixedly secured to the plate A, a lower plate composed of arms —C—C— of less length than the arms —B—B— extending laterally from opposite sides of the opposite end of the plate —A— and each consisting of sections lapping with each other and adjustable lengthwisely in a plane at substantially right angles to the plane of adjustment of the plate —A— one of the sections of each of said arms being fixedly secured to the plate A, and lengthwisely adjustable side plates —D—D— having corresponding extremities secured to the outer ends of the arms —B—B— and having their opposite extremities secured to the corresponding ends of the arms —C—C— and each formed with a longitudinal inwardly turned edge, substantially as described.

4. The herein described pattern for the bosom-piece of a shirt, the same comprising a lengthwisely adjustable plate composed of a section —a— provided with a scale —1— and a section —$a'$— movable lengthwisely of said scale —1—, an upper plate composed of arms —B—B— extending laterally from opposite sides of one end of the plate —A—, said arms being each composed of a section —A— fixedly secured to one end of the plate —A— and provided with a scale —2— and a section —$b'$— movably lengthwisely of the scale —2— a lower plate composed of arms —C—C— of less length than the arms —B—B—, said arms being each composed of a section —c— fixedly secured to the plate —A— and provided with a scale—3—and a section —$c'$— movable lengthwisely of the scale —2—, and lengthwisely adjustable side plates —D—D— having corresponding extremities secured to the outer ends of the arms —B—B— and having their opposite extremities fixedly secured to the corresponding ends of the arms —C—C—, said opposite extremities of the side plates —D—D— having longitudinal edges curved inwardly, substantially as set forth.

5. The herein described pattern for the bosom-piece of a shirt, the same comprising lengthwisely adjustable arms —B—B— each having a substantially straight longitudinal edge, lengthwisely adjustable arms —C—C— disposed in a plane substantially parallel with that of the arms —B—B— and each having a substantially straight longitudinal edge, and lengthwisely adjustable side plates —D—D— having corresponding ends secured to the outer ends of the arms —B—B— and having their opposite ends secured to the outer ends of the arms —C—C— and provided with longitudinal edges having their upper portions substantially perpendicular to the substantially straight longitudinal edge of the arms —B—B— and having their lower ends curved inwardly, as and for the purpose specified.

**501,840. PHOTOGRAPHIC GALLERY.** EUGEN HAGER, Stuttgart Germany. Filed Nov. 16, 1891. Serial No. 412,076. (No model.) Patented in England Oct. 23, 1891, No. 18,592, and in Germany Dec. 6, 1892, No. 65,924.

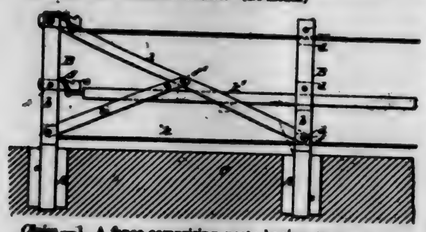


*Claim.*—1. In combination with a fixed pivot, a frame work or housing revolvable around the same having swiveled connection therewith, a stool or support movable with the frame work, a covering for said frame work, a light funnel at the upper part of one end, and a camera adjusted to an opening in the covering, substantially as described.

2. In combination with a fixed pivot, a stool or support swiveled thereon, an inclosing frame work having supporting standards *d* provided with casters and rods *e* extending to the center pivot with which they have swiveled connection, the funnel frame *i* at one end of the frame work, the light funnel *h* adjustably supported thereby at the upper end thereof, a covering for the frame work and a camera ad-

jacent to an opening in the side of the covering, substantially as described.

**501,841.** FENCE. JOHN S. HAMLINE, Marysville, Ohio. Filed Nov. 25, 1892. Serial No. 453,002. (No model.)

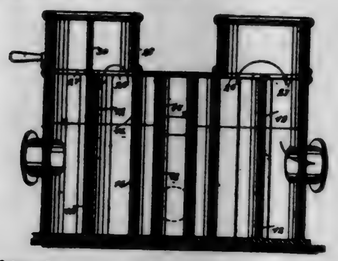


*Claim.*—1. A fence comprising posts having transverse arms *e* secured thereto at *f* and notched on one longitudinal edge and the strands or wires provided with loops *g g* at their ends embracing the said arms and engaging their notches, substantially as set forth.

2. A fence post comprising the strap and the base blocks clasped by said strap, metal spacing pieces between the upright portions of the straps and each provided with a groove across one face closed by one of said upright portions and bolts uniting said uprights and spacing pieces together, substantially as set forth.

3. In a fence of the character described, the combination with the end or corner post and next adjacent post, both of strap-like construction, and the blocks or spacing pieces between the uprights of said posts, of the long and short diagonal braces *l*, *m*, and bolts *f f'*, essentially as set forth.

**501,842.** CENTER-SEAL. JOHN HEARNE, Boston, Mass., assignor of one-half to William J. Strong, New York, N. Y. Filed Mar. 26, 1892. Serial No. 427,035. (No model.)



*Claim.*—1. A center seal for gas purifiers, comprising a shell having a revolubie top, a plurality of inner and outer concentric chambers, a plurality of valves arranged upon the shell and adapted to direct the flow of gas from an inner to an outer chamber or from one inner chamber to the next inner chamber, an inlet pipe adapted to deliver into an upper compartment of one of the inner chambers, an outlet pipe in connection with an upper compartment of an adjacent inner chamber, and ports or pipes opening into the outer chambers and adapted to connect with gas purifiers, substantially as specified.

2. A center seal of the kind described, comprising a shell having a revolubie top portion, inner and outer concentric chambers arranged within the shell and formed by radial and concentric partitions, compartments formed in the upper portions of two adjacent inner chambers, inlet and outlet tubes placed concentrically in the center of the seal, the inlet tube delivering into one of said upper compartments and the outlet tube being in connection with the other of said compartments, a gas supply pipe connected with the inlet tube, a gas outlet pipe connected with the outlet tube, ports produced in the top of the seal and above the intersecting partitions, revolubie valves held to turn above the ports, each valve having a transverse partition, and ports or pipes connected with the outer chambers of the seal and adapted to connect with gas purifiers, substantially as specified.

3. A center seal for gas purifiers, comprising a shell having a plurality of inner and outer concentric chambers, a transverse partition arranged in the upper part of two inner chambers so as to form compartments in said chambers, an inlet tube arranged vertically in the seal and connected with one of the said compartments, a supply pipe connected with the inlet tube, an outlet tube arranged around the inlet tube and connected with the other of said compartments and with an outlet pipe, ports leading from the outer chambers of the seal and adapted to connect with gas purifiers, ports produced in the seal top near the walls of adjacent chambers, and revolubie valves arranged above said ports and adapted to connect the inner and outer chambers or to connect the inner chambers and shut off the outer chambers, substantially as specified.

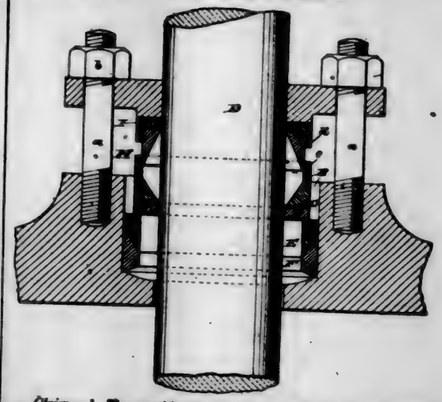
4. A center seal for purifiers, consisting of the shell 10 having the revolubie top 11 and provided with the inner and outer chambers 15, 14, two of the chambers 15 being divided by the partition 20, the central vertical outlet tube 16, the laterally extending outlet pipe 25 connected with the tube 16, the inlet tube 18 within the tube 16 and having its upper part cut away at 19, and the inlet pipe 17 connected with the tube 18, and the revolubie valves 29 above the top of the casing and provided with the vertical partition 30, the said valves being adapted to establish communication between the inner and outer chambers 15 and 14 or with two of the inner chambers 15, substantially as herein shown and described.

**501,843.** FIRE-ESCAPE. NACHMAN H. HERRERA, New York, N. Y., assignor of one-half to Alphonse Cahn, same place. Filed June 24, 1892. Serial No. 437,393. (No model.)



*Claim.*—The car 3 herein described consisting of the wooden bottom provided with casters, and strengthened with iron cross-bars 9 the canvas sides secured to said bottom the metal frame for distending the top of the canvas, and the ropes 10 secured through eyes in the ends of the bottom bars to the bottom and to the top frame, and terminating in a single central ring or eye 12, as set forth.

**501,844.** STUFFING-BOX. GEORGE H. HINCHCOCK, Danville, Ill. Filed Sept. 3, 1892. Serial No. 444,962. (No model.)



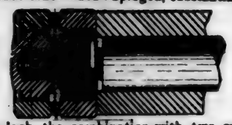
*Claim.*—1. The combination with the cylinder head provided with a piston rod aperture of greater diameter than the rod and having a counter bore B, of the two expansible rings F E in the base of the counter bore and of greater internal diameter than the piston rod and having beveled engaging surfaces, the lower edge of the ring F being exposed to the steam within the chamber formed by said rings, the stuffing box secured to the cylinder head with its lower end closing the upper end of the steam space formed by the rings E F, and means for securing the stuffing box in place substantially as set forth.

2. The combination with the cylinder head provided with a piston rod aperture of greater diameter than the rod and having a counter bore B, the beveled expansion rings E F, in the lower end of the counter bore and of greater internal diameter than the piston rod thereby forming a steam space to receive steam through piston rod opening, the flat ring G resting on the ring E and closing said steam space the annular telescopic stuffing box sections *c d* recessed on their inner walls and forming a packing space, the flat ring I, and the stud lower C mounted on the bolts or studs *a*, substantially as set forth.

**501,845.** NUT-LOCK. ROBERT HOLMES, Cuban City, Ohio. Filed Nov. 30, 1892. Serial No. 453,616. (No model.)



*Claim.*—1. A nut lock, comprising two sleeve nuts adapted to engage the same bolt end that is cut with a right-hand thread, left-hand threads on each sleeve nut externally, and two jam nuts tapped within to fit on the sleeve nuts, and adapted to have a locked engagement with each other when impinged, substantially as described.



2. In a nut lock, the combination with two cylindrical sleeve nuts having equal diameter and externally threaded left-handed, right-hand threads in the sleeve nuts adapted to engage with the same bolt end, and a squared reduction on each end of the sleeve nuts adapted to fit the same socket wrench, of two similar jam nuts hexagonal externally, internally threaded to fit on the sleeve nut threads, and ratchet teeth in a continuous circle, each formed on an end face of each jam nut, substantially as described.

**501,846.** SASH-WEIGHT. FRANK H. HOMAN, Patchogue, N. Y. Filed Jan. 21, 1893. Serial No. 459,125. (No model.)

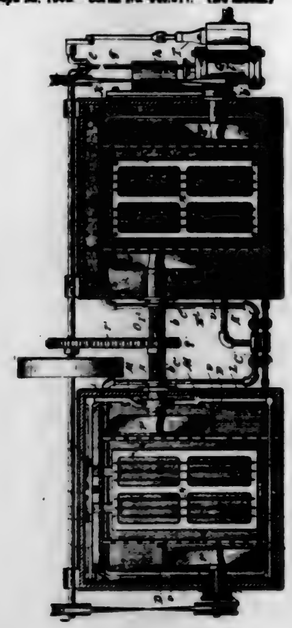


*Claim.*—1. A sash weight comprising a suspending rod having a screw thread at one end and a hook at the other end, a multiple of weight sections on said rod, the upper section having a slot adapted to receive and close the open end of the hook to form an attaching clip, and a fastening nut, as shown and described.

2. The combination, in a sash weight, of a multiple of weight sections, a rod having a hook at one end and screw threaded at the other end, a nut and means for engaging the upper weight section with the end of said hook to close it, and securing it by said nut, substantially as described.

3. A sash weight having a central hole terminating in a slot at its upper end, in combination with a suspending rod having a hook, and a nut for securing the open end of said hook within and between the walls of said slot to form the weight attacher as described.

**501,847.** DISH-CLEANER. ALFRED IMBODEN, Philadelphia, Pa. Filed Sept. 22, 1892. Serial No. 446,617. (No model.)



*Claim.*—1. In a dish washing machine, the combination, of a washing tank, supports movably secured to the side walls of the tank, a platform resting on said supports, and means for imparting a vertical movement to said supports, substantially as described.

2. In a dish washing machine, the combination, of a washing tank, supports movably secured to the side walls of the tank, a platform resting on said supports, levers pivotally connected to said supports and to the walls of the tanks, and means for rocking said levers, substantially as described.

3. In a dish washing machine, the combination, of a washing tank, supports movably secured to the side walls of said tank, a platform resting on said supports, levers pivotally secured to said supports and to the side walls of the tank, and levers centrally pivoted to one side wall of the tank and bearing at one end against the free ends of said first named levers, and means for rocking said last named levers on their pivots, substantially as described.

4. In a dish washing machine, the combination, of a washing tank, slotted supports movably secured to the side walls of said tank, a platform carried by said supports, levers pivotally connected to said supports and to the walls of the tank, levers centrally pivoted to one end wall of the tank, and having one end connected to said first named levers, and an eccentric for depressing the last named levers at one end, substantially as described.

5. In a dish washing machine, the combination, of a washing tank, movable angled supports having a slot formed therein, a pin for supporting and guiding said supports, a platform carried by said supports, levers having guiding projections formed thereon pivotally attached to said supports and to the walls of the tank, levers centrally pivoted to one end wall of the tank and having one end bearing against the free ends of said first named levers, and an eccentric for depressing the other ends of the last named levers simultaneously, substantially as described.

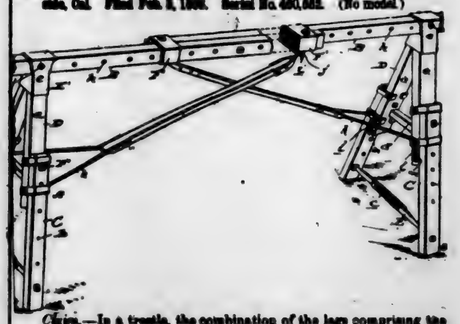
6. In a dish washing machine, the combination, of a washing tank, vertically movable supports secured to the side walls of said tank, a platform carried by said supports, means for operating said supports, and means for forcing currents of water diagonally across said tank, substantially as described.

7. In a dish washing machine, the combination, of a washing tank, supports secured to the side walls of said tank, levers connected to said supports, means for rocking said levers to impart a vertical movement to said supports, and means for creating currents of water diagonally across said tanks, substantially as described.

8. In a dish washing machine, the combination, of a tank, having chambers at each end, propellers arranged in said chambers with their centers diagonally opposite each other, and means for imparting motion to said propellers in opposite directions, substantially as described.

9. In a dish washing machine, the combination, of a washing tank, propellers having their centers diagonally opposite each other in said tank, a platform arranged between said propellers, means for imparting simultaneous movement in opposite directions to said propellers and means for imparting a vertical movement to said platform, substantially as described.

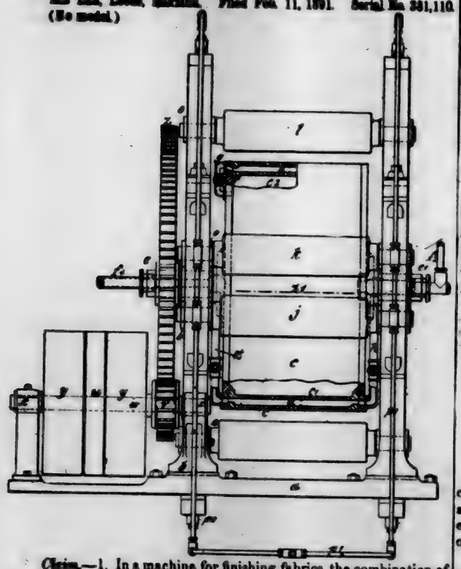
**501,848.** EXTENSIBLE TRESTLE. GEORGE H. JAQUITH, Riverside, Cal. Filed Feb. 2, 1892. Serial No. 420,552. (No model.)



*Claim.*—In a trestle, the combination of the legs comprising the lower sections, the vertically adjustable section carrying straps adapted to embrace the lower sections, a suitable means for connecting the adjustable section and the lower sections, the slotted and lapped straps connected to the lower sections, and a suitable means for adjustably fixing said straps with respect to each other, the castings F, comprising a thimble adapted to receive the upper end of the adjustable sections of the legs and a socket disposed at right angles to the thimble, the horizontal bars B, taking through the sockets of the castings F, and lapped as described, the loops F', connected to the bars B, and

adapted to receive the same, a suitable means for connecting the bars B, and the oblique braces connected at one end to the adjustable sections of the legs and at their opposite ends to the horizontal bars mounted on the section to which they are connected, all substantially as and for the purpose set forth.

## 501,849. CLOTH-PRESSING MACHINE. JOHN KIRK and BENJAMIN LEE, Leeds, Eng. Filed Feb. 11, 1891. Serial No. 381,110. (No model.)



*Claim.*—1. In a machine for finishing fabrics, the combination of a hollow metallic rotary cylinder having inner and outer walls or peripheries forming an intervening space, and hollow trunnions, a steam pipe *f*, extending into one of the said trunnions, a pipe *f'*, extending into or through the other hollow trunnion, one or more pipes or conduits in communication with said pipe *f'*, and with the interior of the cylinder and the space *d*, one or more pipes such as *g*, for placing the interior of said cylinder in communication with said annular space, and cocks for controlling each of said pipes substantially as herein described

2. In a machine for the purposes set forth the combination of a hollow metallic rotary cylinder having inner and outer walls or peripheries forming an intervening space, and hollow trunnions, a steam pipe *f*, extending into one of said trunnions, a pipe *f'*, extending through the other hollow trunnion, one or more pipes or conduits in communication with said pipe *f'*, and with the interior of the cylinder and the space *d*, one or more pipes *h*, for placing said annular space in direct communication with the interior of the hollow trunnion into which steam is admitted, and cocks for controlling each of said pipes substantially as herein described for the purposes specified.

3. In a machine for finishing fabrics, a hollow metallic rotary cylinder having double walls to form a steam jacket, hollow trunnions for entrance of steam and exit of water to and from the cylinder, means for admitting steam to the chambers of the cylinder the outer wall of said cylinder being perforated for exit of steam substantially as herein described for the purpose specified.

4. In a fabric finishing machine the combination of a hollow metallic rotary cylinder, means for rotating the same, pressing rollers located in suitable positions around said cylinder and capable of being forced toward the same, a tightening roller and means for operating the same in one direction, an endless non-extensile metallic sheet or band passing partly around said cylinder between the same and said pressing rollers and thence over or around said pressing and tightening rollers and a protective sheet or band of elastic material interposed between said endless non-extensile sheet or band and said cylinder, substantially as herein described for the purpose specified.

5. In a machine for finishing fabrics, the combination of a rotary hollow cylinder provided with an annular steam space just within its periphery, the periphery forming the outer wall of said space, means, substantially as described for admitting steam into the interior of the cylinder and into said annular space, and means substantially as described for pressing the fabric on the periphery of the cylinder, substantially as set forth.

6. In a machine for finishing fabrics, the hollow rotary cylinder having the double rim or periphery forming the annular space *d*, just within the outer wall of the cylinder to prevent water of condensation collecting in contact with the outer wall, and steam passages into the center of the cylinder, and an exhaust, as and for the purpose set forth.

7. The combination of the rotary cylinder having the double rim forming the intermediate space, means for admitting steam thereinto, pipes for exhausting therefrom, and means for admitting steam into the central portion of the cylinder and disengaging it therefrom into such space, as and for the purposes set forth.

8. The combination of the rotary hollow metallic cylinder having the double rim forming the intermediate annular steam space, passages for admitting steam into the central portion of the cylinder, branch pipes for admitting steam into said annular space, valves for cutting off the steam to discharge it into said annular space or into said central portion, and an exhaust pipe from said annular space, substantially as described.

9. In a fabric presser, the combination of a hollow rotary cylinder formed into central chamber $c^3$, an annular steam space *d*, within the rim and having the hollow trunnions, the pipes *g*, from the central chamber $c^3$, into annular space *d*, the steam pipe *f*, opening into the central chamber, a steam passage from pipe *f*, to space *d*, a valve, as $f^3$ at the steam entrance into the central chamber, and exhaust pipes *h'*, *f'*, as set forth.

## 501,850. ROACH-TRAP. CHARLES F. KUNTZ, St. Louis, Mo. Filed Mar. 31, 1893. Serial No. 468,993. (No model.)



*Claim.*—1. A roach trap, comprising a casing having hollow inclined walls with an opening at the bottom, the inner wall having also an opening at the top leading to the interior of the trap, downwardly-extending flanges arranged within the interior of the trap, and a lid or door at the bottom, substantially as described.

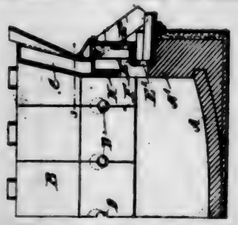
2. A roach trap, comprising a casing having a stand within it, inclined passageways leading up the side of the trap and to an opening above the stand, and a swinging lid or door forming the bottom of the trap, substantially as described.

3. A roach trap, comprising a casing having inclined passageways opening at its sides and near the bottom, the passageways leading to an opening in the top of the trap, a stand and bait box arranged beneath the opening, inclined flanges arranged within the trap and projecting downward and a lid in the bottom of the trap, substantially as described.

4. A roach trap, comprising a casing having a swinging bottom, a stand carried by the casing and having a bait box at its top, a perforated lid for the bait box, an opening for the inner portion of the casing, and inclined passageways leading from the sides of the casing to the opening therein, substantially as described.

5. A roach trap, comprising a casing having a swinging bottom, a stand carried by the bottom and having a bait box in its top, a perforated cover for the box, inwardly-extending flanges arranged within the casing, and inclined passageways leading from the sides of the casing and terminating in an opening above the stand, which opening has inclined walls, substantially as described.

## 501,851. FURNACE-TAP. EDWARD P. MATHEWSON, Pueblo, Colo. Filed Nov. 10, 1892. Serial No. 451,512. (No model.)



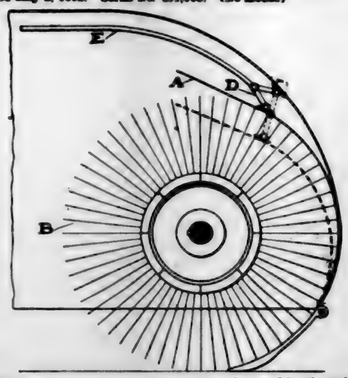
*Claim.*—1. A furnace tap provided with a casing in communication at its rear open end with the interior of the furnace, the front of the said casing being provided with an inward extension containing the matte hole, said matte hole being arranged below the bottom edge of the water-cooled bosh, substantially as shown and described.



2. A furnace tap provided with a casing in communication at its rear open end with the interior of the furnace, the front of the said casing being formed with a rearward extension containing a matte hole, the front being also formed with a cleaning hole located above the extension, and one side of the said casing being formed with a slag hole to permit the escape of the slag, substantially as shown and described.

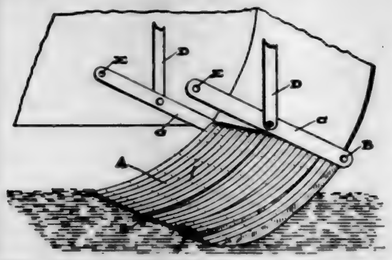
3. In a furnace tap, the combination with a casing formed in its front with a rearward extension containing the matte hole, of a chute into which discharges the said matte hole, and a trough arranged on the side of the said casing and into which opens the slag hole, substantially as shown and described.

## 501,852. STREET-SWEEPER. THOMAS C. MYERS, Cleveland, Ohio. Filed May 2, 1892. Serial No. 431,593. (No model.)



*Claim.*—In a street sweeping machine the combination with the casing covering the brush, of the curved apron A pivoted at *f*, jointed link D connecting said apron with the casing, and rod E attached to the link, for adjusting the apron relative to the brush, substantially as and for the purpose set forth.

## 501,853. STREET-SWEEPER. THOMAS C. MYERS, Cleveland, Ohio. Filed May 2, 1892. Serial No. 431,594. (No model.)



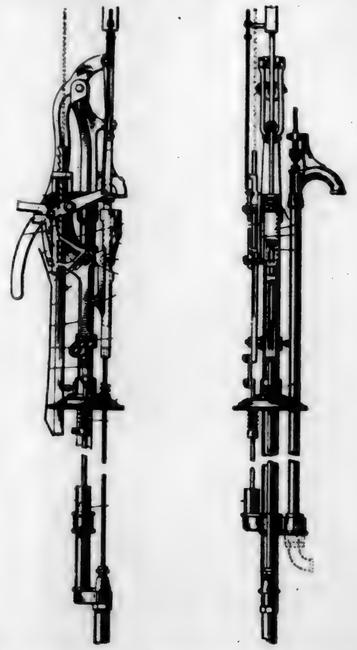
*Claim.*—The combination with the brush casing in a street sweeping machine, of the drag apron consisting of a series of curved bars A pivotally attached to a bar at the lower edge of the casing, and adapted to separately raise or lower in passing over obstructions or depressions; levers C C attached to said pivot bar, and also pivotally connected to the brush casing, links D D, attached to said levers, as a means for adjusting said drag apron, substantially as described.

## 501,854. WINDMILL-PUMP REGULATOR. PHILIP A. MYERS, Ashland, Ohio. Filed May 4, 1892. Renewed Mar. 31, 1893. Serial No. 468,578. (No model.)

*Claim.*—1. In a windmill pump, a detachable connection between the pitman of the wind engine, and the pump rod, a detachable connection between said pitman and the device for drawing the wheel out of the wind, and a hydraulic pressure device, arranged to operate both of the said detachable connections, substantially as described.

2. In a wind mill pump, a detachable connection between the pitman of the wind engine and the pump rod, a movable bar actuated by the pitman, a connection between the said bar and the device which draws the wheel out of the wind, and a bar operated by the pump pressure, and arranged to control the detachable connection to the pump rod, substantially as described.

3. In combination with the detachable connections between the pump rod and the pitman, and with the detachable connections between the movable bar G and the pitman, a bar as F having edges arranged to control said connections, a pressure cylinder connected to said bar F, substantially as described.



4. In combination with the detachable connections between the pump rod and the pitman, and with the detachable connections between the movable bar G and pitman, a bar F, having inclined slots and arranged on fixed pins said bar having straight edges arranged to bear upon the said detachable connections, a pressure cylinder connected to said bar F, and a spring to return the said bar when the pressure of the cylinder is removed, substantially as described.

5. In a wind mill pump, a detachable connection between the pitman of the wind engine, and the pump rod, a detachable connection between said pitman and the device for drawing the wheel out of the wind and a bar arranged to control both of the said connections, substantially as described.

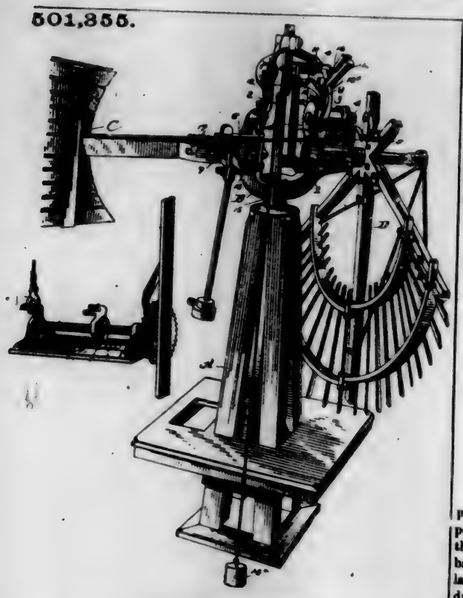
## 501,855. WINDMILL-REGULATOR. PHILIP A. MYERS, Ashland, Ohio. Filed Apr. 6, 1891. Renewed Mar. 31, 1893. Serial No. 468,579. (No model.)

*Claim.*—1. In combination, in a wind engine, a wind wheel, movable into and out of the wind, a vane or governor therefor, a two part regulator, the two parts being constructed to engage with each other, and to be disengaged; and when engaged, connecting the wind wheel operatively with the vane or governor, said regulator being mounted on the wheel frame; and a mechanism for engaging and disengaging the two parts of the regulator, substantially as described.

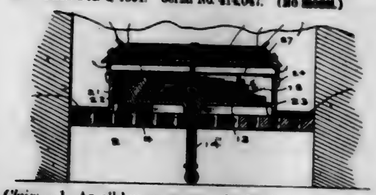
2. In combination in a wind engine, movable into and out of the wind, a two part regulator mounted directly upon the wheel frame, one of the said parts being connected to the wheel shaft and moving constantly therewith, and normally out of engagement, but adapted automatically to engage with the other part; and the other part being normally inactive and connected directly with the vane or governor; and a controlling device, arranged to hold the parts normally out of engagement, and to permit engagement, substantially as described.

3. In combination with the rope of a wind engine regulator, a screw shaft operated by the engine, means for holding the rope and a nut traveling on the screw shaft and arranged to release the rope

501,855.



501,856. OIL-BURNER. FREDERICK L. MCGAHAN, Indianapolis, Ind. Filed Dec. 4, 1891. Serial No. 414,047. (No model.)



*Claim.*—1. An oil burner composed of a hollow casting with a central opening, such burner having sloping sides with inclined grooves formed therein, with dams in such grooves to retard the flow of oil, substantially as set forth.

2. An oil burner composed of a hollow casting with a central slot, such burner having sloping sides with a series of inclined grooves formed therein, dams in such grooves and a projecting base forming a pan around the burner, all combined substantially as set forth.

3. An oil burner composed of a hollow casting with a central opening in its top, such burner having sloping sides with a series of inclined grooves formed therein, the lower end of each being above the upper end of the one below, whereby the oil as it is fed from the burner will flow through all of such grooves, substantially as set forth.

4. An oil burner composed of a hollow rectangular casting with a central slot in its top, such burner having sloping sides with a series of inclined grooves formed therein, dams in such grooves at opposite corners, and a projecting base forming a pan around the entire burner, the oil as it escapes from the burner adapted to pass entirely around the same, overflowing the several dams till it reaches the pan below, substantially as set forth.

5. In an oil burner, a deflector composed of a rectangular casting having sloping sides with wings adjustably secured thereon, such deflector adapted to be supported above a burner, substantially as set forth.

501,857. OIL STOVE AND BURNER. FREDERICK L. MCGAHAN, Indianapolis, Ind. Filed Jan. 2, 1893. Serial No. 416,826. (No model.)

*Claim.*—1. A hollow burner connected with an oil supply and suitably supported within a stove, and having an air space around its base, a conical hood having openings in its bottom resting on said burner base and above the same, a deflector having an open contracted top supported above the burner and its hood, with an air space between and a conical chimney resting on said deflector, all substantially as shown and described

2. A hollow burner connected with an oil supply and suitably supported within a stove with an air space formed between said burner and the walls of the stove, a conical hood having openings in its bottom resting on the base of said burner and above the same, a deflector having an open contracted top supported above said burner and its base, and fitting snugly within the walls of the stove, a conical chimney resting on said deflector and having a flanged base with closable draft openings therein, such base overhanging the deflector and forming an air chamber between the deflector and the stove walls, such walls having draft openings therein below said chimney base, substantially as set forth.

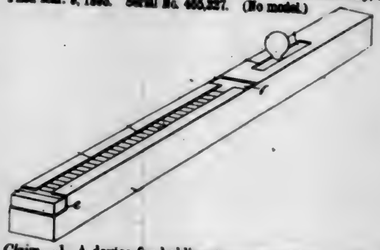


3. A hollow burner connected with an oil supply and centrally supported within a stove, a deflector having an open contracted top supported above said burner, whereby an air space is formed between them, a conical chimney resting on said deflector and having a flanged base with draft openings therein, a ring resting on said base with similar openings adapted to be operated from without the stove, with draft openings in the walls of the stove below the chimney base and means for regulating the same, substantially as set forth.

4. An oil burner suitably connected with an oil supply, and centrally supported within a stove, a deflector having an open contracted top supported above said burner, its base fitting the stove shell, a conical chimney resting on said deflector and forming an extension thereof, draft openings in the flanged base of said chimney regulated from without the stove, and draft openings in the walls of the stove, whereby an air draft is supplied within the stove and outside the chimney, substantially as set forth.

5. An oil stove having a circular air flue formed in its base, a burner connected with an oil supply and centrally supported within said stove above its air flue, a deflector and chimney supported above said burner forming a conical air flue, and means for supplying an air draft within the stove and outside of such chimney, substantially as set forth.

501,858. TYPE-HOLDER. SAMUEL H. HEWITT, Anthony, Kans. Filed Mar. 9, 1893. Serial No. 465,327. (No model.)



*Claim.*—1. A device for holding type comprising a casing for holding the type in a column, a follower, a spring for moving said follower, and openings in the casing for the insertion and removal of the type.

2. A device for holding type comprising a casing having an opening in its lower portion for holding a column of type, a slot at the top of said opening for the insertion of said type, a slot at the bottom of the casing for the removal thereof, and a spring-actuated follower in the upper portion of the casing operating with the column in the manner and for the purpose set forth.

3. A device for holding type comprising in combination, a casing for containing a column of type, and having an elongated slot, cross slots at each end of said slot for the insertion and removal of the type, a follower above the column, a spring, and a knob on the follower working in a slot in the casing, substantially as and for the purpose set forth.



501,859. AIR-BRAKE. LOUIS A. FIRESTON, Corsicana, Tex., assignor of one-half to Fred S. Brooks, same place. Filed May 13, 1892. Serial No. 433,203. (No model.)



*Claim.*—1. A fluid pressure brake mechanism, comprising an automatic system, including the automatic reservoir compartment, the automatic train pipe, the engineer's automatic valve, and a triple valve, a direct reservoir compartment, a direct train pipe arranged to discharge into the triple valve casing, an engineer's valve in the said direct pipe connected with the direct reservoir, the pump discharging into such direct reservoir, the pump governor and mechanism operated by the reduction of pressure in the direct system for holding the pressure in the automatic system to standard pressure during the application of the direct pressure substantially as set forth.

2. A fluid pressure brake mechanism, comprising the brake cylinder, the auxiliary reservoir, the triple valve, the automatic train pipe, the direct train pipe having laterals, one communicating with the brake cylinder feed channel, and the other with the exhaust of the triple valve, such laterals having oppositely moving valves, and means for varying the air pressure in the automatic or direct train pipe, whereby to apply the brakes either by automatic or direct system, all substantially as and for the purposes described.

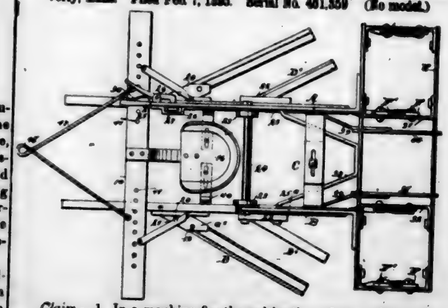
3. The combination in a fluid pressure brake system, of the automatic and direct train pipes, an engineer's valve, the pump, the automatic and direct reservoir compartments, the direct compartment connected with the pump, a supply pipe connecting the direct with the automatic reservoir compartment, having a back pressure valve, a double acting governor valve connected with the engineer's automatic valve, and an engineer's valve connected with direct pipe and direct reservoir compartment, and with the double acting governor valve, constructed to equalize the direct pressure against such valve to that of the automatic pressure thereagainst, and to provide for a reduction of such pressure when adjusted to apply, to lead the under standard pressure into the direct pipe, all substantially as and for the purpose described.

4. In a fluid pressure brake system, the combination with the pump governor, the double acting governor valve, of the automatic and the direct train pipes, the main and direct reservoir compartments, the engineer's valves in said pipes connecting them with the said reservoir compartments, and with the double acting governor valve, the direct engineer's valve having a reducing mechanism adapted to equalize the direct air pressure against the said governor valve to that of the automatic pressure against it, and adapted when set to apply the brakes to allow such pressure to exhaust, whereby to admit of the adjustment of such governor valve to cut off the governor from the automatic pressure, all substantially as and for the purpose described.

5. In a fluid pressure brake system, the combination with the brake cylinder, the auxiliary reservoir, the triple valve, the automatic train pipe, the automatic and direct reservoirs, the engineer's automatic brake valve and the pump, of a direct train pipe connected with the triple valve casing at its brake cylinder feed end and having a back pressure valve for preventing air under automatic pressure from passing out of the triple valve into the direct pipe, a brake pipe connecting the direct pipe with the triple valve exhaust and having a direct pressure valve whereby to prevent the flow of air from the said direct pipe into the said exhaust, an engineer's valve in the direct pipe formed with a bleeding off channel normally in communication with the direct pipe and the atmosphere, whereby the exhaust from the triple valve will be released through such direct pipe, and mechanism for holding the air under standard pressure in the automatic pipe when the direct pressure is in the direct pipe all substantially as shown and for the purpose described.

6. An air brake system, comprising an automatic system and a direct system, the train pipe of the latter having a three way valve, and connected to the exhaust of the triple valve of the automatic system, whereby to release the air through the three way valve when the brakes are released by the automatic system, the direct reservoir compartment adapted to hold air under standard pressure, connected with the direct train pipe and supplied from the pump, the automatic reservoir compartment, for supplying air to the automatic pipe, said automatic reservoir compartment being supplied from the direct reservoir compartment, a check valve for holding the pressure in the said automatic reservoir compartment, when pressure is reduced in the direct reservoir compartment, a double acting valve in the pump governor pipe operated to hold the pressure in the automatic train pipe when the direct system is used, all arranged substantially as and for the purposes described.

501,860. WEEDER AND CULTIVATOR. CHARLES C. PLATT, Waverly, Kans. Filed Feb. 7, 1893. Serial No. 461,859. (No model.)



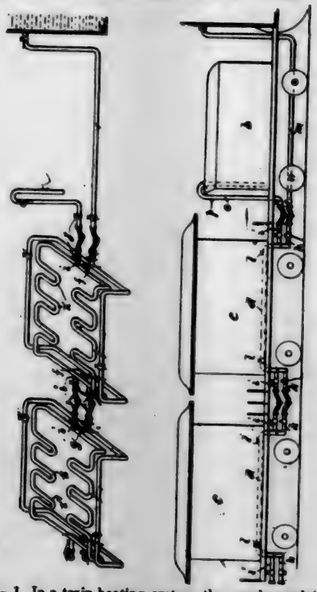
*Claim.*—1. In a machine for the cultivation of corn, the combination, with runners located a predetermined distance apart, of weeders attached to the runners, one near the front and the other near the rear, each weeder comprising a blade and a socket to receive the blade, the sockets being adjustably attached to the runners, the forward blades, which are the longest, having a rearward and downward inclination, and the rear blades an upward and rearward inclination, a bolt fastening the forward or longer blade to its socket, and a stay pin passed through the socket and the blade at one side of the fastening device, as and for the purpose specified.

2. In a machine for the cultivation of listed corn, the combination, with runners, levers fulcrumed upon the runners, and a frame attached to the rear portion of the levers, of plow shanks attached to the frame at its ends and at each side of the center, the shanks having vertical and lateral adjustment upon their supports, the inner set of shanks being located opposite the space between the runners, shovels attached to the shanks, and fenders carried by the runners and located between the inner set of shanks, as and for the purpose specified.

3. In a machine for the cultivation of corn, the combination, with runners located a predetermined distance apart, levers fulcrumed upon the runners, a locking device connected with the levers at their forward ends, and a frame secured to the rear ends of the levers, the frame being located transversely across the rear of the runners, and cross bars located at each side of the center of the frame, of plow shanks connected with the cross bars and end bars of the frame, the said shanks having vertical and lateral adjustment, arms projected from the plow shanks and having vertical and lateral adjustment upon the supports of the shanks, and means, substantially as shown and described, for adjusting the runners to and from each other, as and for the purpose set forth.

4. In a machine for working listed corn, the combination, with runners adjustably connected, weeders located at the sides of the runners, the weeders being of different length, the forward weeder being longer than the rear one, the forward weeder having a downward and rearward inclination and the rear weeder an upward and rearward inclination, and levers fulcrumed upon the runners and provided with locking devices, of a frame secured to the rear ends of the levers, the frame extending transversely across the rear ends of the runners, cross bars located one at each side of the center of the frame, plow shanks provided with forward arms or extensions, the shanks and extensions having vertical and laterally adjustable connection with the cross bars and end bars of the frame, and feeders carried by the runners and located between the inner set of plow shanks for the purpose of protecting the standing corn, substantially as and for the purpose specified.

## 501,861. CAR-HEATER. EDWARD A. GUMMERSERY, Lexington, Va. Filed Apr. 7, 1892. Serial No. 428,162. (No model.)



*Claim.*—1. In a train heating system, the supply conduit from the locomotive boiler, the supply conduit in each car being looped so that the sides are located on opposite sides of each car, a return conduit discharging into the boiler water supply, said return conduit being looped in each car so as to pass down opposite sides thereof, as described.

2. In a train heating system, the supply conduit from a fluid heating supply extending through the cars, the conduit in each car forming a complete loop, said loops connected between the cars by single connections, the return conduit formed into loops in each car having the radiator pipes, said loops connected between the cars by separate connections, substantially as described.

3. In a car heating system, the supply conduit in a car formed into a complete loop extending along opposite sides of the car, the opposite ends of the loop respectively provided with single connections to couple with the corresponding pipes of adjacent cars, and the return conduit in said car formed into a complete loop extending along opposite sides of the car and provided with end connections to couple to corresponding pipes of adjacent cars substantially as described.

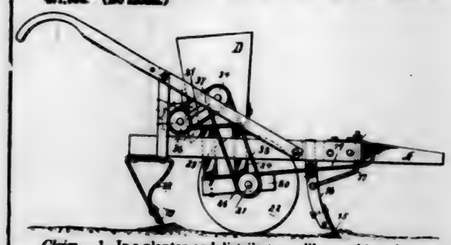
4. The train heating system comprising the looped supply pipes in each car, connections between the cars connecting the ends of said supply pipes, the looped return pipes in each car connected between the cars, and valved connections between the corresponding ends of the looped supply and return pipes in each car, substantially as described.

5. The train heating system composed of a continuous conduit throughout the train from the locomotive boiler back to the feed water supply of the locomotive, the supply connections of the conduit being looped in each car so as to extend on opposite sides thereof the return connections being correspondingly looped in the cars so that the loops of the return and supply connections are in proximity to each other in the cars and the heat in the same is equalized and all parts of the cars are evenly heated, substantially as described.

6. The train heating system comprising the continuous open circuit throughout the train from the locomotive boiler back to the feed water supply to the boiler, said circuit comprising the supply and the return conduits, both conduits being in the form of separate parallel loops in the cars, said loops connected by separate single connections between the cars, the supply conduit extending directly through the cars to the rear end of the train without radiating coils, and the return conduit provided with radiating coils, substantially as described.

7. The train heating system comprising the supply and the return conduits, each conduit being looped in the car so as to extend down opposite sides thereof, and so that both loops are in about the same horizontal plane, the ends of the loops at the ends of the car being dropped and located one above the other and provided with single connections for coupling between the cars, substantially as described.

## 501,862. SEED-PLANTER AND FERTILIZER DISTRIBUTER. CHARLES R. REED, Heidelberg, Miss. Filed Nov. 14, 1892. Serial No. 451,998. (No model.)



*Claim.*—1. In a planter and distributer or like machine, the combination with the frame, of a spring supported wheel and a hopper and an operating mechanism carried by said wheel, substantially as set forth.

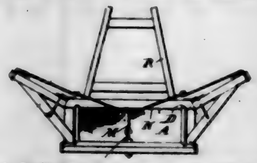
2. In a machine of the character described, the combination with the frame and its rearwardly extending spring arms of the wheel journaled in bearings mounted on the rear ends of the said arms, and a hopper and an operating mechanism carried by the said wheel, substantially as set forth.

3. In a machine of the character described, the combination with the frame, the rearwardly extending spring arms and the wheel journaled in bearings on the rear ends of said arms, of a hopper carried by the wheel and provided with an outlet, a feed wheel journaled on the hopper and projecting into the said outlet, a stirrer mounted in the hopper, the stirrer and feed wheel shafts being geared together and to the drive wheel shaft, substantially as set forth.

4. In a machine of the character described a feed wheel provided on its periphery along the opposite edges thereof with integral teeth one set registering with the spaces between the teeth of the other set and the adjacent ends of the teeth of both series terminating at the middle of the periphery and the forward faces of the teeth being flat, substantially as set forth.

5. A planter comprising the frame having rearwardly extending spring arms on its under side, a wheel journaled in bearings carried by the rear ends of the spring arms and having a connected sprocket wheel, a hopper carried by the main wheel and having a stirrer provided on its shaft with a double sprocket, a chain connecting said sprockets, a feed wheel having staggered peripheral teeth entering the hopper and a sprocket chain connecting a sprocket wheel on the feed wheel shaft with said double sprocket, substantially as set forth.

## 501,863. HAY OR STOCK RACK. EDWARD RIES, Goodrich, Mich. Filed Feb 6, 1893. Serial No. 461,082. (No model.)



*Claim.*—1. In a hay rack, the combination of the box, cross bars extending across the ends thereof, side racks hinged to the ends of the cross-bars, truss rods at each end, extending from the outer ends of the end posts of the rack to a point centrally of the cross bar, a tension post on the box connecting to said truss rod, and an adjusting device for said post, substantially as described.

2. In a hay rack, the combination with a wagon box, of cross bars at the end extending beyond the sides of the box, side racks hinged thereto and adapted to be turned outward, upward or to be folded upon the cross bars, triangular side braces rigid on the side racks arranged to engage the side of the box and truss rods for said braces, substantially as described.

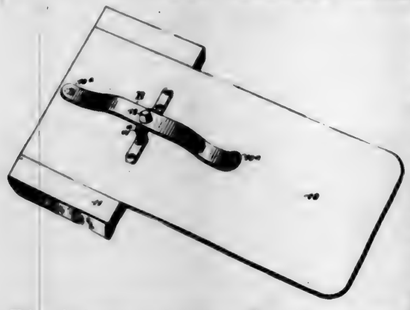
3. In a hay rack, the combination of the wagon box and the hinged side racks, of a double truss extending from the outer edges of the racks to a central tension post at the end of the box and made in sections comprising the two end sections I having the loop I at the outer ends engaging with the outer edges of the racks, the eyes J formed at the lower ends thereof, the section K having hooks at the outer ends, engaging in said eyes, the hooked stirrup M, centrally secured to said middle section and a tension post N passing through the wagon box and having means for adjusting the same, substantially as described.

4. In a rack, the combination of the cross-bars, the side racks having end posts hinged to the outer ends of said cross-bars and having mortise and tenon engagement therewith, the truss rods extending from the outer end of said end posts to a point centrally of the cross-bar, the tension post and longitudinal truss rods O for the racks, substantially as described.

5. In a hay rack, the combination of the cross-bars, the racks having their end posts hinged to the ends of said cross-bars, the trusses for the ends of the rack, substantially as described, the middle braces H and the longitudinal truss rod O extending from the end of the rack through said middle braces, substantially as described.

6. In a hay rack, the combination of the side racks, the inner strips P thereof having the arches P over the rear wheel, the truss rods Q extending across said arches at one side thereof and the posts Q, substantially as described.

## 501,864. ARM-REST. CHARLES S. RODGERS and CHARLES H. SCUDDY, Manitou, Colo. Filed Jan. 18, 1893. Serial No. 458,708. (No model.)



*Claim.*—1. An arm rest provided on one of its faces with a clamping plate, between which and the body of the rest the back of a book is adapted to be inserted and held by the said plate, substantially as described.

2. An arm rest provided on one of its faces with a clamp pivoted thereto, whereby the clamp can be turned longitudinally or transversely of the rest, substantially as and for the purpose set forth.

3. An arm rest provided with a spring clamp pivoted at about its center to one of the faces of the rest, substantially as described.

4. An arm rest, comprising a board, and a spring plate having upturned ends and pivoted at about the center of its length to the lower face of the board, substantially as described.

5. The combination, with an arm rest, of a spring clamp pivotally located upon its under surface, the center of the clamp being removed from the arm rest and the ends of the clamp being upturned and normally in engagement with the said arm rest, as and for the purpose set forth.

6. The combination, with an arm rest, of a bracket of arched construction secured to its under face, and a spring plate of bow construction attached to the arched bracket, the ends of the said spring plate normally engaging with the arm rest and the extremities of the plate being upturned, as and for the purpose set forth.

## 501,865. MEANS FOR SECURING DETACHABLE ORNAMENTS IN ARTICLES OF JEWELRY. JOHANN W. L. BOHDE, London, England. Filed Dec. 22, 1892. Serial No. 456,596. (No model.) Patented in England July 13, 1892, No. 12,951.

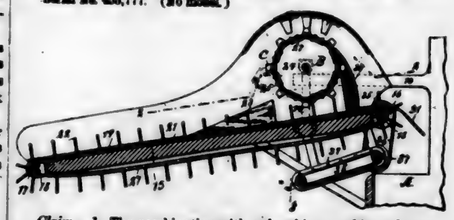


*Claim.*—1. In an article of jewelry having a detachable ornament secured thereto by a screw connection, the hereinabefore described means for preventing the unscrewing or loosening of such ornament, consisting of a springless pivoted locking blade or tongue on the article adapted to engage with a slot or notch in the ornament, substantially as described with reference to the drawings.



2. The combination with an article of jewelry having a detachable ornament secured thereto by a screw connection, and also having a slot or notch *e* in the stem of the ornament, of a springless locking blade or tongue *c* pivoted to the article and adapted to be engaged with and withdrawn from the slot or notch *e*, substantially as and for the purpose described and illustrated in the drawings.

## 501,866. FEEDING ATTACHMENT FOR THRASHING-MACHINES. GEORGE W. RUCKER, Belle Plaine, Iowa. Filed Dec. 1, 1892. Serial No. 453,777. (No model.)



*Claim.*—1. The combination with a thrashing machine, of a cutter fixedly located upon the machine, and a feed table suspended below the cutter and pivotally connected with its bearings, substantially as described.

2. The combination with a thrashing machine provided with a frame projecting therefrom, a shaft mounted in the frame, and a cutter on said shaft, of brackets mounted loosely on the bearings of the said shaft, and a feed table secured to the lower ends of the said brackets, substantially as described.

3. In a feeder for thrashing machines, the combination with a cutter, of a feed table below the cutter, endless carrying belts traveling over the table, and stripping boards between which the belts pass, substantially as described.

4. In a feeder for thrashing and like machines, the combination, with a table, endless carrying belts traveling over the table, and stripping boards between which the belts pass, of rotary knives located above the table and near the stripping boards, and feeders between which the knives pass, substantially as described.

5. In a feeder for thrashing and like machines, the combination, with a table, endless carrying belts traveling over the table, and stripping boards between which the belts pass and provided with inclined upper edges, of a drum mounted to revolve above the table, knives mounted upon the drum, the drum being adjacent to the stripping boards, and stationary knives located within the path of revolution of the drum, substantially as described.

6. In a feeder for thrashing and like machines, the combination, with a series of carrying belts, and a conveyer located beneath the delivery end of the belts, of a knife-carrying drum mounted to revolve above the delivery end of the belts, a series of stationary knives located in the path of revolution of the drums, and stripping or cleaning devices for the belts and knives, substantially as described.

## 501,867. STRAIGHT-PULL MAGAZINE-GUN. ANDREW H. RUSSELL, U. S. Army. Filed June 1, 1892. Serial No. 435,143. (No model.)

*Claim.*—1. In a breech loading gun, the combination of the barrel, the receiver, the bolt reciprocating in the receiver, the locking brace pivotally connected to said bolt in position to engage an abutment in the receiver, and the handle having extensible connection with the locking brace, and a shoulder engaging the bolt independently of said brace, all substantially as described.

2. The barrel, the receiver, and bolt reciprocating in the receiver the locking brace pivoted to the bolt, and a handle connected to the locking brace and having a longitudinal movement relatively thereto said handle having a projection in position to engage the firing pin and a projection having direct engagement with an abutment on the bolt independently of the locking brace, all in combination.

3. The gun having a receiver and bolt substantially as described, and a firing pin having a projection, the locking brace pivotally con-

nected to the bolt, the handle connected to the locking brace to have a slight independent longitudinal movement, said handle having a projection which swings between the projection on the firing pin and the body of the bolt, to hold the firing pin retracted as the bolt is drawn back, the parts in combination substantially as described.

4. In a fire arm the bolt, the firing pin having a projection, the brace pivotally connected to the bolt, the handle connected to the brace and having a recess therein, in combination with the receiver, whereby when the handle is swung toward the bolt the projection on the pin engages said handle and holds the handle into proximity with the bolt, all substantially as described.



5. The receiver, bolt, and locking brace pivotally connected with the bolt, and the handle connected to the brace and provided with a projection which has a direct bearing against the bolt, to press said bolt forward in closing the breech, (independently of the pivot) in combination with the necessary operative adjuncts, substantially as described.

6. The combination with the receiver, bolt, and brace pivotally connected to the bolt, of the handle connected to the brace and having longitudinal movement relatively thereto, said handle having a projection which bears against the bolt and serves to hold the brace in extended position when the handle is in forward position, the parts and necessary adjuncts combined substantially as described.

7. The receiver the reciprocating bolt and locking brace pivotally connected thereto, the handle extensibly connected to the brace and having a side projection with a cam surface and a recess at the rear thereof, and the firing pin having a hook at the rear end which engages and is engaged by the projection on the handle as stated, in combination with suitable adjunctive parts, substantially as described.

8. In a magazine gun, the magazine having a passage through which a cartridge package case may pass without obstruction, and a detent in the line of movement of cartridges in said case, in combination with an open ended cartridge package case constructed to pass directly through the magazine leaving the cartridges therein, substantially as described.

9. The gun having a magazine opening into the receiver, and a follower therein and having a slot extending the entire length of the magazine, in a direction transverse to the cartridges, so that the finger of the operator or a projection on the package may pass unobstructed through said slot.

10. The magazine opening laterally into the receiver, and the single leaf spring gate pivoted at the mouth of the magazine and at the side next the receiver, in combination substantially as described.

11. The magazine opening laterally into the receiver and having a slot at the side farthest from the receiver extending the entire length of the magazine transverse to the cartridges, in combination with the gate at the mouth of the magazine at the side opposite said slot.

12. The magazine gun having a magazine provided with a follower and with front and rear walls to guide the cartridges, and with the sides cut away to permit the grasp of the packing case through said cut away portions.

13. The magazine opening laterally into the receiver, and having a slot extending through one side for the entire width of the magazine and transverse to the cartridges.

14. The magazine opening laterally into the receiver, the sides partially cut away, and the rear wall narrowed to permit the grasp of the fingers on a case within the magazine.

15. The magazine having a spring follower, a front wall and a rear wall to guide the cartridges, and sides open in front of the lower part of the rear wall, to permit the grasp of the cartridge package, substantially as described.

16. The combination with the magazine opening laterally into the receiver open at both ends and having a recess substantially as described, of the packing case having spring catches which are allowed to expand into the recess of the magazine as the packing case is passed through the same, all substantially as described.

17. The gun having a laterally feeding magazine, open at both ends to pass the cartridge case, and having a side recess near the end of the magazine farthest from the receiver, into which opening a cartridge may be entered when the follower is depressed, substantially as described.

18. The magazine of substantially the length of the cartridges and opening laterally into the receiver and a side loading opening near the end farthest from the receiver, sufficient to receive a cartridge, in combination with a spring follower which may be depressed beyond the side loading opening, substantially as described.

19. The gun having a magazine of substantially the length of the cartridges and opening laterally into the receiver, the loading opening at the end of the magazine farthest from the receiver, the spring follower, and a guide acting to force the follower slightly to the side of the magazine away from said opening when the follower is depressed, the parts combined substantially as described

20. The magazine of substantially the length of the cartridges and having a loading opening at one side and a slot at its front inclined toward the side of the magazine, the follower lever passing through said slot, and a spring follower connected to said lever, all combined substantially as described.

21. The magazine and spring follower, and the exposed follower lever extending outside the magazine into position to be operated by the hand of the operator while supporting the gun at about the center of gravity thereof, substantially as described.

22. In a magazine gun, the magazine of about the length of a cartridge and opening laterally into the receiver, the spring follower in said magazine, and the exposed follower lever extending beyond the magazine into position to be operated by the fingers of the hand which supports the gun in usual position, all combined.

23. In a magazine gun, the magazine opening laterally into the receiver, the spring follower, the follower lever extending outside the magazine and having its outer end turned toward the stock, and the stock recessed to receive the end of said lever, all combined substantially as described.

24. In a magazine gun the magazine feeding laterally into the receiver, the spring follower, the follower lever projecting beyond the magazine, and a detent in position to hold the spring follower in depressed position.

25. In a magazine gun, the magazine feeding laterally into the receiver, the spring follower therein, and the compound follower lever projecting beyond the magazine, all combined substantially as described.

26. The combination with the receiver and reciprocating bolt, of the locking brace, the handle connected to said brace, and a projection on the handle engaging directly with the bolt when the brace is unlocked, to move the bolt either forward or rearward, all substantially as described.

27. A magazine gun having a magazine opening into the receiver, and having an unobstructed passage way through one side wall of the gun and magazine in a direction transverse to the cartridges, through which passage a projection on the feed clip may pass.

28. The magazine opening at one side into the receiver, and having a loading mouth in proximity to the receiver, and a loading gate interposed between the mouth of the magazine and receiver, in combination substantially as described.

29. In a magazine gun, the magazine having a passage through which a cartridge package case may pass without obstruction, and a detent in the line of movement of cartridges in said case, in combination with a cartridge package case constructed to pass through the magazine, and having a yielding catch for the cartridges whereby the cartridges remain in the magazine when the package case is passed therethrough, substantially as described.



30. The gun having a magazine opening into the receiver and recessed in its sides, and a detent partially closing the lower end thereof, in combination with a clip which enters the magazine, and extends opposite the recesses in the sides of the magazine when the clip is fully entered into the magazine, substantially as described.

31. The magazine gun having its follower lever prolonged in front of its pivot, said lever provided with an operating finger piece in front of said pivot, substantially as described.

32. The gun having a magazine constructed to hold cartridges side by side therein and opening laterally into the receiver at one end, and having an opening near the end farthest from the receiver, in combination with a follower lever pivoted in the frame, and having a finger piece connected thereto by which the follower may be retracted by the grasp of the hand without shifting said hand from its usual position in holding the gun, substantially as described.

33. The gun having a magazine and a follower therein, and a follower lever connected to said follower, and provided with means, substantially as described, for depressing the follower by the action of that hand which supports the gun, while supporting the gun in usual and natural position.

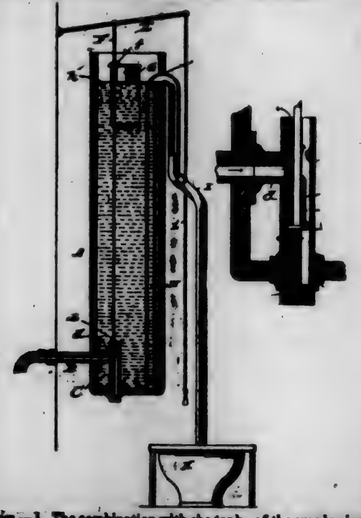
34. A magazine gun having a magazine opening into the receiver, said magazine having a slot in the side farthest from the receiver, which slot or passage is unobstructed from end to end of the magazine.

35. The magazine gun having a magazine opening into the receiver and having an unobstructed transverse opening through one side, in combination with a cartridge holding clip constructed to pass through said magazine, substantially as described.

36. The magazine gun having a magazine opening into the receiver and having an unobstructed passage or slot through one side, in combination with a feed case constructed to pass through the magazine, and having a side projection which moves in said slot, when the clip is so passed, substantially as described.

37. The magazine gun having a magazine opening into the receiver, said magazine having an opening at the bottom, and having its side walls cut away at the lower part so that a clip within the magazine may be grasped through said cut away portions and withdrawn from the bottom of the magazine, substantially as described.

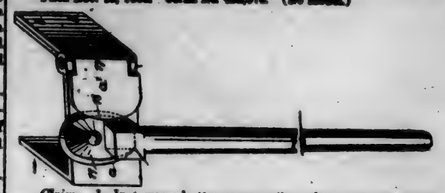
## 501,868. PLUMBING-TANK. JOSEPH H. SAVEL, Philadelphia, Pa. Filed Jan. 30, 1893. Serial No. 460,712. (No model.)



*Claim.*—1. The combination with the tank; of the supply pipe B, the vertical valve pipe C, open at both ends and having its lower end threaded, and also having the internal annular shoulder *a*, and the lateral branch *d*, connected with the supply pipe, the plug D, in the lower threaded end of the valve pipe, the valve rod, and the long rubber valve secured on the lower end of said rod, all adapted to operate, substantially as and for the purposes specified.

2. The flushing apparatus described, comprising the tank the supply pipe taking through one of the side walls thereof, the valve pipe open at opposite ends, and having an internal valve seat and connected with the supply pipe, a plug or cap for closing the lower end of said pipe, the valve rod having a stop, the long rubber or elastic valve on the lower end of said rod, the lever pivotally connected to the rod, a pull chain attached to one end of said lever, the float movable on the valve rod, a siphon pipe, leading from near the bottom of the tank with its neck carried to an altitude as described, and a flushing pipe connected with the siphon pipe, substantially as specified.

## 501,869. WRENCH. FREDERICK S. STETSON, Lake Geneva, Wis. Filed Nov. 15, 1892. Serial No. 452,076. (No model.)



*Claim.*—1. In a wrench, the combination of two approximately L-shaped pivoted jaws, one jaw being pivoted at the junction of its members to the rear member of the other jaw, with its rear member overlapping the same, and means adapted to be passed between the said rear members to force the jaws toward each other, substantially as described.

2. In a wrench the combination of two approximately L-shaped pivoted jaws, the rear member of one jaw being pivoted to the other jaw at the junction of its members, and a cam pivoted on the rear member of the stationary jaw and engaging the rear member of the movable jaw to swing it on its pivot, substantially as described.

3. In a wrench, the combination with two approximately L-shaped pivoted jaws, the rear member of one jaw being pivoted to the other jaw at the juncture of its members, of a cam pivoted to the rear member of the stationary jaw and provided on its face with an enlargement, substantially as described.

4. In a wrench, the combination with a body comprising two jaws having a hinged connection, one jaw overlapping the other and one overlapping end having a cylindrical surface, of a cam pivoted upon one jaw and engaging with the overlapping cylindrical surface of the other jaw, a projection formed upon one face of the cam, and a handle connected with the cam, substantially as described.

## 501,870. BROOM. EDGAR SHAW, Swampscott, Mass. Filed May 26, 1892. Serial No. 433,415. (No model.)

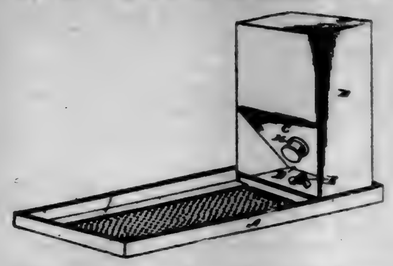


*Claim.*—1. A device adapted to be applied to an ordinary straw broom, provided with anti-friction rollers, or draft-sustaining centers, and adapted to be held in place on the body-portion of the broom, substantially as and for the purpose set forth.

2. An anti-friction device adapted to be applied to the body-portion of a straw broom, formed, or provided, with anti-friction rollers operating as described, and means for detachably and adjustably holding the anti-friction devices at different points on the body of the broom, as the latter wears away, substantially as hereinbefore described.

3. In combination with an ordinary straw broom an anti-friction device, having an encircling, or binder-like band-portion C, within which the straw of the broom is confined, substantially as and for the purpose set forth.

**501,371.** TOBACCO-MOISTENER. WILLARD G. SHELDON, Grand Haven, Mich. Filed Mar. 27, 1893. Serial No. 467,778. (No model.)



*Claim.*—1. In a humidifier, the combination with the extended evaporating pan, of the closed tank therein having the feeding openings at the bottom, and the small regulating pan having its edges higher than the top of the openings with a communication between said regulating pan and evaporating pan, substantially as described.

2. In a humidifying device, the combination with the extended evaporating pan and the small regulating pan having a valve for opening communication with the evaporating pan, of the tank closed at the top and having the small feed openings within the regulating pan, whereby the escape of water from the tank is regulated by the amount of water in the regulating pan; substantially as described.

3. In a humidifying device, the combination with the extended evaporating pan, of the tank closed at the top and having the small feed apertures at the bottom, and the small regulating pan formed on the bottom of the tank whereby the amount of water escaping through the feed apertures is regulated, and a communication between the regulating pan and evaporating pan; substantially as described.

4. In a humidifying device, the combination with the extended evaporating pan and the frame therein holding the absorbent material, of the removable tank closed at the top and having the small feed apertures at the bottom, the small regulating pan on the bottom of the tank for controlling the feed of water through said apertures and the valve in said regulating pan, controlling the flow of water therefrom to the evaporating pan; substantially as described.

**501,372.** URINARY APPARATUS. MARCUS D. L. SHERMAN, Lowell, Mass. Filed Mar. 30, 1893. Serial No. 468,308. (No model.)



*Claim.*—1. In a urinary apparatus, a receptacle adapted to be secured to the leg of the wearer, and a shoe having a tube or conduit attached thereto provided with an external outlet, combined with a detachable connection between said receptacle and tube, substantially as described.

2. In a urinary apparatus, a receptacle adapted to be secured to the leg of the wearer, and a shoe having a tube attached thereto provided with an external outlet, combined with a detachable flexible connection between said receptacle and tube, and a cut-off for said connection, substantially as described.

3. In a urinary apparatus, a shoe having a perforated sole, and a tube detachably connected at one end with said perforation, combined with a receptacle adapted to be secured to the leg of the wearer, a flexible tubular continuation extended therefrom and detachably connected with the upper end of said tube, and a removable cap to cover said perforation, substantially as described.

**501,373.** FIRE-ESCAPE. SAMUEL SILVER, Seattle, Wash. Filed Mar. 13, 1893. Serial No. 466,127. (No model.)

*Claim.*—1. A device for lowering objects, consisting of a shaft, suspended movably at one end so that it may swing laterally around an axis, other than its own and a line wound upon the shaft to which the object is attached, substantially in line with the axis of revolution of the latter.



2. A device for lowering objects, consisting of a suspended shaft adapted to swing around an axis, a flange on said shaft and a line wound on the shaft and depending therefrom over the flange.

3. A device for lowering objects, consisting of a movably suspended depending shaft adapted to swing laterally around an axis, an adjustable flange on said shaft, and a line wound on the shaft and depending therefrom over the flange, to which line the object is attached, substantially in line with the axis of revolution of the shaft.

4. In a fire escape or device for lowering objects, the combination with a movably suspended governor shaft, adapted to swing around an axis and provided with a lateral projection, of a line wound on said shaft and depending therefrom over the projection, substantially as described.

5. In a fire escape or device for lowering objects, the combination with a governor shaft which is movably suspended and adapted to swing around an axis, of an encircling circular plate or flange on said shaft, and a line wound about the shaft and depending therefrom over the flange, substantially as described.

6. In a fire escape or device for lowering objects, the combination of the supporting bracket, a depending governor shaft, movably connected thereto at one end and having a flange thereon, and a line wound about the shaft and depending therefrom over the flange, to which line the object to be lowered, is attached, substantially as described.

**501,374.** BALL-BEARING. GEORGE F. SUMNER, Fitchburg, Mass. Filed Nov. 14, 1892. Serial No. 452,443. (No model.)

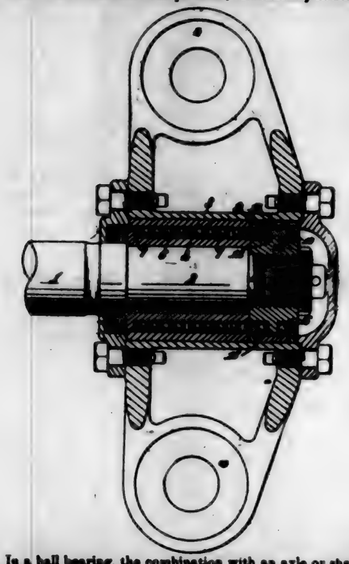


*Claim.*—The combination, with spherical rollers or balls for diminishing friction and sustaining radial pressure or weight in a ball bearing, of an annular cage composed of separate ball retaining compartments, each comprising an annular series of elongated open sided chambers parallel with the longitudinal axis of the cage, and an intermediate spacing and connecting portion in which no balls can be carried, the balls in the said separate compartments being thereby adapted to act in unison and capable of removal and replacement in a body with said cage, substantially as described.

**501,375.** BALL-BEARING. GEORGE F. SUMNER, Fitchburg, Mass. Filed Nov. 14, 1892. Serial No. 452,449. (No model.)

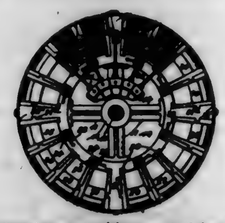
*Claim.*—1. In a ball bearing, the combination, with an axle or shaft, the axle boxing, and spherical rollers or balls arranged between the hardened concentric bearing surfaces of the axle and axle boxing, to sustain radial pressure or weight, of parallel rings located at the outer end of the bearing and separated by a tubular spacing piece, a collar or annular projection carried on the axle spindle intermediate said parallel rings, separate annular series of spherical rollers or balls placed between the hardened parallel plane bearing surfaces of said rings and intermediate collar or annular projection to resist thrust or end pressure, and cages in which said balls are confined, substantially as described.

2. In a ball bearing, the combination of two parallel rings, a tubular spacing piece intermediate the outer portions of said rings, bolts that connect said rings and tubular spacing piece, a collar located intermediate said rings and adapted to be attached to a shaft or axle, and separate annular series of spherical rollers or balls confined in annular cages placed between said rings and collar, the said rollers projecting laterally from the cages in position to roll on and against the hardened parallel plane bearing surfaces of the two rings and intermediate collar to resist thrust or end pressure, substantially as described,



3. In a ball bearing, the combination with an axle or shaft, the axle boxing an annular ball retaining cage located between the hardened concentric bearing surfaces of the axle and axle boxing and independent thereof, and spherical rollers or balls confined in said cage and projecting therefrom in position to roll in all directions on said concentric bearing surfaces for the purpose of sustaining radial pressure or weight, of two parallel rings located at the outer end of the bearing, a tubular spacing piece intermediate the outer portions of said rings, a collar or annular projection carried on the axle intermediate the inner portions of said parallel rings, separate annular cages placed between said rings and collar and containing spherical rollers or balls projecting laterally therefrom in position to roll in all directions on the hardened plane bearing surfaces of said parallel rings and intermediate collar to resist thrust or end pressure in both directions, a nut on the end of the axle spindle, a sand cap at the outer end of the bearing and a packing at the inner end of the bearing, substantially as described.

**501,376.** ARMATURE. JOSEPH J. SMITH and GEORGE W. FIELDLATER, Jamaica, N. Y. Filed May 26, 1892. Serial No. 434,443. (No model.)



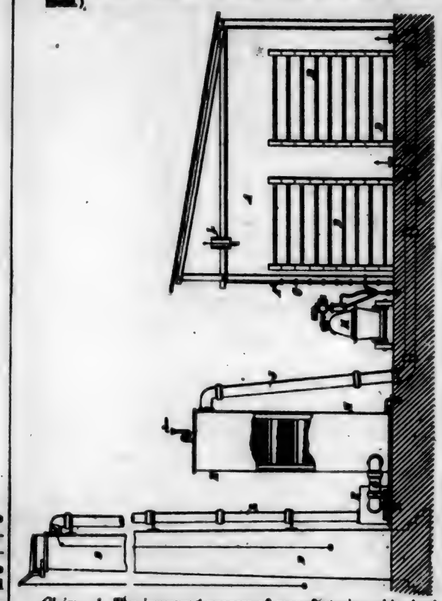
*Claim.*—1. An armature, comprising a central ring having radially-extending arms, circumferential bands carried by the arms, one of the bands having an end flange, and a series of removable bobbins held between the arms and within the band, the bobbins having their feet dovetailed into the ring, substantially as described.

2. An armature, comprising a central ring having radially-extending arms, circumferential bands carried at the ends of the arms, one of the bands having an end flange, and a series of removable bobbins tongued and grooved together and dovetailed into the ring, substantially as described.

3. The combination of the ring, the removable bobbins dovetailed into the ring, the revolvable washers pivoted on the ring so as to overlap the feet of the bobbins, the washers having one flat edge, and a fastening device to secure the washers, substantially as described.



**501,377.** MANUFACTURE OF WHITE LEAD. ARTHUR J. SMITH, London, England. Filed Sept. 12, 1892. Serial No. 445,700. (No specimens.)



*Claim.*—1. The improved process of manufacturing white lead, consisting in first forming curled, twisted or tangled strips, ribbons or cuttings of metallic lead of dimensions proportionate to the desired height of the pile thereof and to the quality of the metal as above described, dipping or immersing the said strips or cuttings in basic cream and, after draining the same, piling them on trays or grids so as to leave suitable vapor ways as above described, and then inserting the charge thus prepared, in the corroding or converting chamber and repeatedly subjecting it therein alternately to the action of acid vapor mixed with steam and atmospheric air and applied locally or generally to the charge on each tray or grid, and to the action of purified carbonic acid gas caused to diffuse slowly in and through the said chamber and applying to the charge from time to time and locally or generally as required a shower or spray of basic cream, substantially as hereinbefore described.

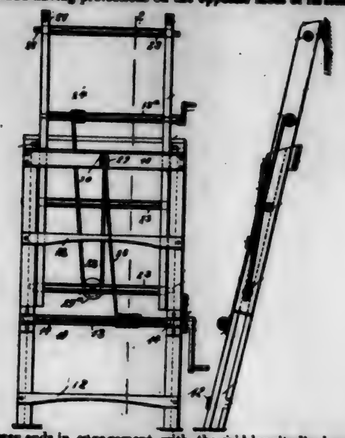
2. In the manufacture of white lead, subjecting the charge of lead strips or cuttings proportioned and piled as hereinbefore described, alternately to the action of acid vapor mixed with steam and atmospheric air, and of basic cream, and to the action of carbonic acid, applied in the manner and approximately for the periods above described, such periods being varied according to the quality of the metal to be treated and according to the state of the charge and the progress of the corrosion at intervals throughout the process, substantially as above set forth.

3. In the manufacture of white lead, the treatment of the charge in the corroding chamber, with acid vapors and basic cream of varying degrees of concentration or strength according to the irregularities observed in the corrosion of the said charge, substantially as hereinbefore described.

**501,378.** LADDER. JOHN SPLANE, Athens, Pa. Filed Oct. 22, 1892. Serial No. 449,661. (No model.)

*Claim.*—1. A ladder of the character described, comprising a lower section consisting of side rails having connecting rungs on their outer or front edges and parallel cross bars at the top, an upper section held to slide between the cross bars and between the side rails of the lower section, a windlass carried by the lower section, a windlass carried by the upper section, and a cable connecting between the two windlasses, the cable being passed over suitable guide pulleys on the upper and lower portions of the lower and upper ladder sections, substantially as described.

2. A ladder comprising a main section, the side bars of which are provided on their adjacent faces with longitudinal grooves intersected at their lower ends by transverse rearward extending grooves and front and rear cross pieces at the upper end of said side bars, and the sliding and swinging section sliding between the sides of the main section and having projections on the opposite faces of its sides near

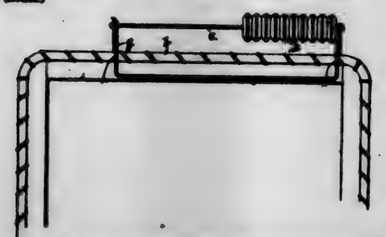


their lower ends in engagement with the said longitudinal grooves and adapted to be disengaged therefrom through said transverse grooves or slots when the sections are to be spread apart, substantially as set forth.

3. A ladder of the character described, comprising a lower section consisting of side rails having longitudinal grooves in their adjacent sides intersected by grooves 21, connecting rungs on their edges and parallel cross bars at the top, an upper section held to slide between the cross bars and having its rungs projecting through its rails and held to slide in said grooves in the rails of the lower section, a windlass carried by the lower section, and an operative cable connection between the windlass and the upper section whereby the upper section may be raised by winding the cable upon the windlass, substantially as described.

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**501,879.** ABACUS ATTACHMENT FOR SLATES. HENRY SWINARD, Cunningham, N. Y. Filed Dec. 3, 1892. Serial No. 453,990. (No model.)



*Claim.*—1. As a new article of manufacture an abacus provided with spring jaws attached to the ends thereof and arranged to clamp the abacus to a slate frame, substantially as described.

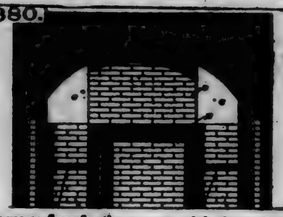
2. An abacus provided with spring jaws formed of wire coiled around the ends of the abacus and extended laterally therefrom to grasp a slate frame, and having recesses to receive the binding of the frame, substantially as described.

3. An abacus having a rod and counters thereon, and the wire coiled around the rod and extended outwardly, U shaped, to form two parallel jaws, the outer portion of the jaws parallel with the rod, substantially as described.

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**501,880.** BRICK-KILN FURNACE. FRANK E. SNOW, Washington, Iowa. Filed Aug. 17, 1892. Serial No. 443,242. (No model.)

*Claim.*—1. In a furnace for heating and burning purposes, the combination with the grates of an intermediate roasting table for receiving and preparing the fuel for burning before it is placed upon the grates and ash pits beneath said grates, an air chamber beneath the roasting table having lateral openings adjacent to the grates and

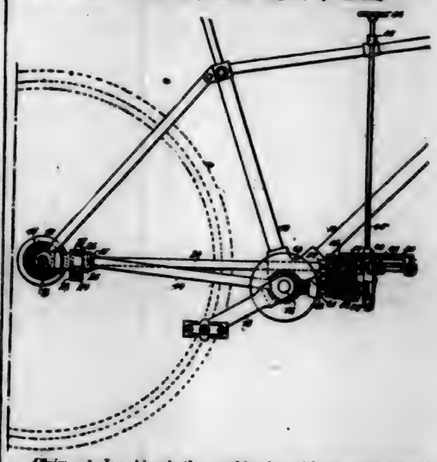


rear passages or flues for the passage of the heat after it leaves the grates, substantially as described.

2. The combination of the grates F F, the roasting table H, the chamber J below it having lateral openings h and the side air passages I having lateral openings i, together with the main furnace wall A having rear openings C, substantially as described.

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**501,881.** BICYCLE-GEAR. REUBEN H. P. TAYLOR, Wolcottville, Conn. Filed Jan. 14, 1893. Serial No. 458,357. (No model.)



*Claim.*—1. In a bicycle the combination with the treadle shaft having a gear wheel and a longitudinally extending drive shaft 20 geared at its rear end to the rear wheel extending at its forward tubular slotted end across the treadle shaft and provided with a series of loose gears 55, having recesses 54, of a longitudinally sliding bar 50 extending into said tubular slotted end and carrying a latch 51 having a nose 53 extending through said slot to lock any one of the loose gears to their shaft, a rack parallel with the shaft 20 and having a lateral extension at its forward end secured loosely to the forward end of the sliding rod to permit said rod to rotate while the rack remains stationary, a hand operated shaft geared at its lower end to the rack and the cone gear 56 meshing with the loose gears and provided at its inner end with a gear 62 meshing into the treadle shaft gear, substantially as set forth.

2. The combination, with the drive shaft having a tubular slotted end and a series of loose gears and the cone gear meshing into the said gears and geared to its operating shaft, of a rod sliding in the tubular shaft, a latch 51 pivoted to the inner end of the shaft and having a nose 53 extending through said slot to lock any one of the loose gears to its shaft, a longitudinally extending spring 51ª secured at its outer end to the sliding rod and at its inner end secured to the heel of the latch below its pivot to throw the said nose out through the slot and a rack and pinion for sliding the rod, the said rack being parallel with and loosely connected to the said rod whereby the rod will be free to rotate while the rack remains stationary substantially as set forth.

3. In a bicycle, the combination with the rear wheel gear 18, the bearing block 23 clipped to the frame adjacent to said gear, the forward bearing block 22 secured to the frame in front of the treadle shaft, the longitudinally extending shaft 20 journaled in said blocks 22, 23 geared at its rear end to the gear 18 and having a tubular slotted forward end, a series of loose gears on said slotted end, a cone gear meshing with said loose gears and the shaft of which is journaled at its forward end in the block 22 and at its rear end in a bearing



adjacent to the treadle shaft the gear 62 meshing with the treadle shaft gear, the extension 26 secured to the plate 24 of block or hanger 23 and having an upturned flange 26, a slotted rack bolted to and sliding on said flange, a sliding rod 50 parallel with the rod and secured to its outer end, a latch 51 pivoted to the inner end of the rod and having a nose 53 projecting through the slot in the shaft 20 to lock any one of the loose gears thereto, and the shaft 44 geared at its lower end to the rack, substantially as set forth.

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**501,882.** APPARATUS FOR CLOSING SWITCHES. JAMES A. TEAVERS, Hastens, Ill. Filed Mar. 11, 1893. Serial No. 465,507. (No model.)



*Claim.*—1. In a railroad switch, the combination with the switch-stand of a disk pivoted thereon, a weighted switch lever rigidly attached to said disk and connecting rods S' and S², sliding bolt f and spring s interposed between said rods, the said rods, bolt, and spring, connecting the said disk to the switch points, a dog pivoted in said switch stand and adapted to support said switch and means operated by an approaching train, for tripping said dog and releasing said switch lever, substantially as and for the purposes described.

2. An apparatus for closing railroad switches, comprising a releasing lever pivoted at the requisite distance from the switch and projecting above the ground alongside of the track, a weighted switch lever, a yielding connection between said switch lever and the switch points, a pivoted dog supporting the said switch lever, when the switch is open, a system of rods connecting said releasing lever with said pivoted dog, and a projecting lug or roller attached to the train and adapted to strike said releasing lever and trip said dog, substantially as described.

3. An apparatus for closing railroad switches, comprising a releasing lever pivoted at the requisite distance from the switch and projecting above the ground alongside of the track, means adapted to hold the same normally in a position approximately vertical, a weighted switch lever, a pivoted dog supporting the said switch lever when the switch is open, a spring normally holding said dog vertical, a bell-crank lever adapted to trip said dog by hand or foot, a system of rods connecting said releasing lever with said pivoted dog, and a projecting lug or roller attached to the train and adapted to strike said releasing lever and trip said dog, substantially as described.

4. In an apparatus of the character described, the combination with the pivoted switch lever H of the dog N pivoted at n, and provided with eye bolts n' and n², the spring N' normally holding said dog in the position to support the switch lever, and means operated by a moving train to trip said dog and release said switch lever, substantially as and for the purpose described.

5. In an apparatus of the character described, the combination with the pivoted switch lever H of the dog N pivoted at n, and provided with eye bolts n' and n², the spring N' normally holding said dog in the position to support the switch lever, the bell crank lever N² having arm n⁴ and foot rest n⁵ for tripping said dog, and means operated by a moving train to trip said dog and release said switch lever, substantially as and for the purpose described.

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**501,883.** HANDLE FOR BROOMS. ALBERT B. THOMAS, Hardwick, Vt. Filed Feb. 14, 1893. Serial No. 462,851. (No model.)

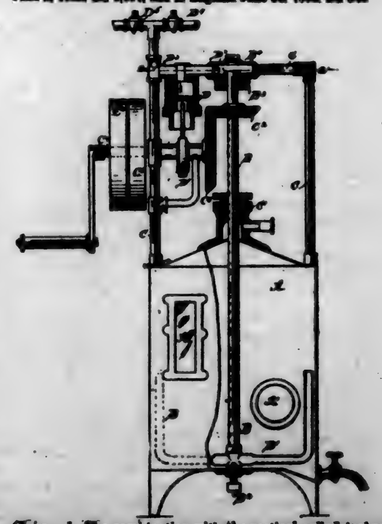


*Claim.*—1. In combination with a broom or the like, a handle secured thereto, and a saw kerf or slit intermediate of the ends thereof extending longitudinally of the handle, substantially as described.

2. In combination with a broom or the like, a handle secured thereto having a saw kerf or slit extending longitudinally thereof and intermediate of its length and a band encircling the slit portions of the handle, substantially as described.

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**501,884.** CHURN. JOHN G. THOMSON, Melbourne, Victoria. Filed May 18, 1892. Serial No. 433,695. (No model.) Patented in Victoria June 3, 1892, No. 9,091, and in England June 20, 1892, No. 548.



*Claim.*—1. The combination with the vertical cylindrical vessel; of a central tubular spindle extending to the bottom of said vessel and having at its lower end tubular and perforated radial arms the outermost parts of which are bent up and stand parallel with sides of vessel to act as beaters and scrapers substantially as herein described and shown.

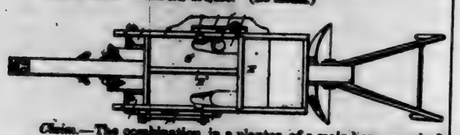
2. The combination with the vertical cylindrical vessel; of a central tubular spindle having at its lower end tubular and perforated radial arms with their outer ends bent up parallel to the sides of the

vessel, and a coupling or bearing C for the tubular shaft at the upper end of the receptacle provided with no outlet for air substantially as shown and described.

2. The combination with the receptacle A; of the revolving tubular shaft B with upturned and perforated arms B' at its lower end, and bearing C with air outlet at the top of the receptacle, the shaft C' with bevel gears C' C' for rotating the central tube and an eccentric D', the hollow frame work U U with pump D located above the eccentric, valves D' D' and inlet ports D' D' substantially as shown and described.

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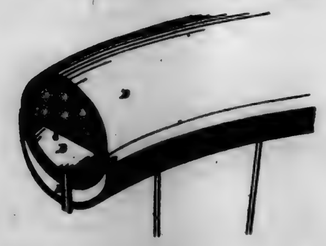
**501,885.** PLASTER. SAMUEL E. TURNER, Ethel, Miss. Filed Mar. 3, 1893. Serial No. 464,633. (No model.)



*Claim.*—The combination, in a plaster, of a main hopper, a shaft extending therethrough, roller I, thereon having enlarged ends M, which are recessed, and a partitioned hopper within the main hopper and which is recessed at its end to fit over the said enlarged ends of the roller, substantially as shown and described.

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**501,886.** WHEEL-TIRE. CHARLES W. VAN HOUTEN, Philadelphia, Pa. Filed Apr 29 1891. Serial No. 390,909. (No model.)



*Claim.*—1. The combination in a tire for cycle and other wheels, of a single inflated tube situated wholly within the felly of the wheel, and a tread portion situated upon said inflated tube and extending partly within and partly beyond the edges of the felly, substantially as specified.

2. The combination in a tire for cycle and other wheels, of an inflated tube situated wholly within the felly of the wheel and having a substantially flat outer surface and a tread portion supported on said flat surface and extending beyond the felly, substantially as described.

3. The combination in a tire for cycle and other wheels, of the two independent sections, one section being inflatable and situated wholly within the felly of the wheel and having a substantially flat outer surface, and the other section having its main portion beyond the felly and so arranged with respect to the inflatable section that the said inflatable section will act as a cushion, substantially as specified.

4. The combination in a tire for cycle and other wheels, of an inflated section situated wholly within the felly and being substantially semi-circular in form, with a second section also substantially semi-circular in form and mounted upon the inflatable section and extending beyond the felly of the wheel, substantially as specified.

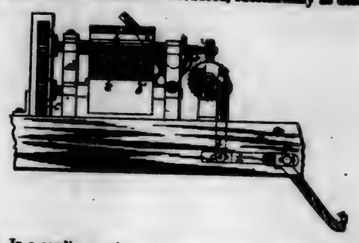
5. The combination in a tire for cycle and other wheels, of an inflated section situated within the felly of the wheel, and a cushion section mounted upon the inflated section and extending the full width of the tire so as to protect the inflated section, substantially as set forth.

6. The combination of the felly, the pneumatic section B the cushion section D mounted beyond the pneumatic section, and having flanges at each side adapted to fit between the pneumatic section and the felly, substantially as described.

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**501,887.** STOP MECHANISM FOR CARDING-ENGINES. JOHN VARLEY, Ashley-under-Lyne, assignor to John Bullough, Accrington, England. Filed Aug 20, 1892. Serial No. 444,021. (No model.) Patented in England July 23, 1892, No 11,716.

*Claim.*—1. In a carding engine, a pair of calendering rollers, the upper of which carries a worm on its axle, in combination with a worm wheel with which the worm is normally kept out of contact by the thickness of the sliver passing between the rolls, a link attached to said worm wheel, the doffer lever, a catch attached to same, and connection between the link and catch adapted to release the latter and permit the doffer lever to fall and stop the machine when the sliver breaks or its thickness is reduced, substantially as described.

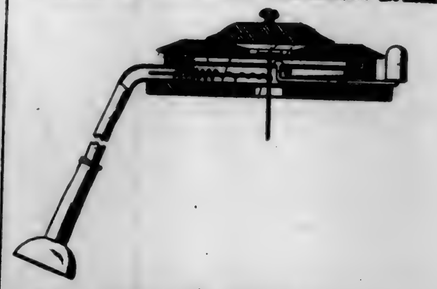


2. In a carding engine, and in combination, a pair of calendering rollers, the upper of which carries a worm on its axle a worm wheel with which the worm is normally kept out of contact by the thickness of the sliver passing between the rolls, the doffer lever, a catch attached to same, and connection between the worm wheel and catch adapted to release the latter and allow the doffer lever to fall when the sliver breaks or is reduced in thickness, a pivoted cranked lever, a second lever which normally holds the same up but is raised by the axle of the top roller when the thickness of the sliver increases and allows the cranked lever to fall and break the latter thereby putting into operation the stop motion aforesaid, substantially as described.

3. In a carding machine, a pair of calendering rollers the upper of which carries a worm on its axle in combination with a worm wheel with which the worm is normally kept out of contact by the uniform thickness of the sliver passing between the rolls, a link attached to said worm wheel, the doffer lever, a catch attached to same, and connection between the link and catch adapted to release the latter and permit the doffer lever to fall and stop the mechanism when the sliver varies in thickness, substantially as described.

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**501,888.** MECHANICAL TELEPHONE. EDWIN W. WARREN, Tyringham, Mass. Filed Feb 27, 1893. Serial No. 463,993. (No model.)



*Claim.*—1. In a mechanical telephone a diaphragm composed of adjacent disks of metal and raw hide, substantially as and for the purpose described.

2. In a mechanical telephone, the combination with an inclosing shell, of the connected ring and diaphragm seated within said shell and forming therewith a sound box, said diaphragm being secured on opposite sides of the ring and one of the diaphragms composed of flat layers of metal and rawhide, and a line wire extending through the sound box and connected with the composite diaphragm, for the purposes described, substantially as set forth.

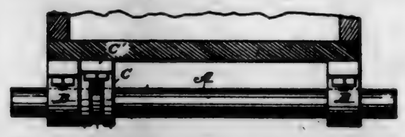
3. In a mechanical telephone, the combination with an inclosing shell, of a wooden ring secured within the shell, a metallic diaphragm attached to one side of the ring, another diaphragm, composed of a layer of raw hide and a metallic layer, attached to the other side of said ring, a line wire extending through the inclosing shell and the diaphragms therein and having at its end a button which rests on the metallic surface of the composite diaphragm, and a receiving tube extending through the wall of the inclosing shell substantially as described.

4. In a mechanical telephone, the combination with an inclosing shell, of a sound box consisting of a wooden ring and metallic disks attached to opposite sides of said ring, one of said disks having a raw hide disk attached to its inner surface, and a signal hammer having an arm adapted to pass through one of the disks of the sound box and contact with the raw hide lining of the other disk, substantially as described.

5. In a mechanical telephone, the combination with an inclosing case, a sound box arranged within the case, a line wire extending through the sound box, and a receiving tube entering the inclosing shell at one side of the sound box therein, of an auxiliary or branch wire bent upon itself to form an eye or loop to receive the main wire and having one member extending in a straight line into the inner end of the receiving tube and its other member coiled about said straight member and also entering the inner end of the receiving tube, substantially as described.

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**501,889.** CAR-AXLE MOUNTING. JAMES H. WATT, Barnesville, Ohio, assignor to the Watt Mining Car Wheel Company, same place. Filed Feb 17, 1893. Serial No. 462,782. (No model.)



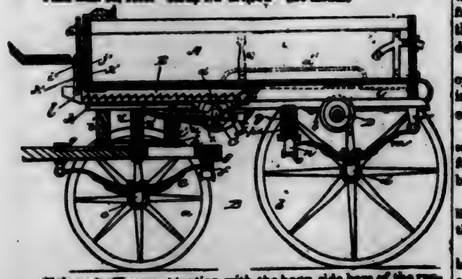
*Claim.*—1. The combination with a car body or frame, a non-sectional car axle having a single collar rigidly secured thereto intermediate the journal boxes; the journal boxes and wheels; of a keeper loosely receiving said collar made of one piece and secured to the body whereby longitudinal movement of the axle and consequent thrust thereof against the boxes is prevented, substantially as described.

2. The combination of the car body, the journal boxes attached thereto, the axle journaled in said boxes having a collar intermediate the boxes; with a one-piece keeper lying across the axle and bent thereunder so as not to interfere therewith and secured at its ends to the body at opposite sides of the axle, and longitudinally slotted in its bent portion to accommodate the collar on the axle, whereby longitudinal movement of the axle is prevented, substantially as described.

3. The combination of the axle A and its collar a, with the keeper C made in one piece curved at center to fit under the axle and having an open slot in its curved portion to accommodate the collar, all constructed substantially as and for the purpose specified.

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**501,890.** DUMPING-WAGON. FRANK WEBER, Louisville, Ky. Filed Mar. 30, 1893. Serial No. 467,564. (No model.)



*Claim.*—1. The combination with the body, side bars of the running gear, and front platform springs of the transverse spring connected to the transverse bar secured to the side bars, said spring arranged in front of the rear axle and shackled to the two side springs, the latter connected by their rear ends to the brackets on said side bars, substantially as described and for the purpose herein specified.

2. The body provided with the toothed bar secured to the under side thereof, the crank shaft and pusher bar pivoted thereto, the rollers secured to this shaft having flattened portions and the chains connecting the shaft to the body substantially as described.

3. The within described improved dumping wagon consisting of the running gear composed of the side bars secured to the front platform spring bars, the hind springs, the rear spring of which being secured to the cross bar, bolted to each of the side bars and arranged forward of the hind axle, the rear ends of the hind side spring secured to brackets secured to the side bars; the rod, connected to the latter and engaging the bracket on the side of the body; the transverse shafts journaled to the side bars, having the rollers, the pusher bar pivoted to the crank of the front transverse shaft, the chains connecting said shaft to the body, the toothed bar secured to the under side of the body and adapted to engage the pusher bar, and the locking device composed of the two dividing rods and hand lever pivoted to the front of the body all substantially as described.

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**501,891.** GAS-BURNER ATTACHMENT. MARSHAL WEBSTER, Oakland, Cal. Filed May 4, 1893. Serial No. 473,179. (No model.)



*Claim.*—1. A purifying chamber for gas burners or fixtures, comprising a cylinder or chamber, solidified blocks of purifying substance within the chamber, constructed and arranged to allow the gas to pass from one block to the other, a burner tube connected with one end of the cylinder, and a feeding pipe with the other end, substantially as described.

2. A purifying chamber for the purpose described, comprising a cylinder, several blocks of purifying substances placed within the cylinder, and each block having a series of perforations for the passage of gas, substantially as set forth.

3. A purifying chamber for gas fixtures, comprising a cylinder, several blocks of purifying substances placed therein and perforated for the passage of gas, the blocks cut out at their ends to form chambers, substantially as specified.

4. A purifying block for the purpose specified, composed of a solidified purifying substance having apertures extending through it for the passage of gas, substantially as described.

5. A purifying block for the purpose set forth, composed of a honeycombed solidified substance, having a surrounding band of metal as and for the purpose specified.

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**501,892.** HOLDER FOR BROOMSTICKS, &c. HERMAN C. WIMMERSHAM, Philadelphia, Pa. Filed Sept. 1, 1892. Serial No. 444,771. (No model.)



*Claim.*—1. A holder of the character described, comprising an adjustable body shaped to fit a rod and having outwardly-extending arms, a fastening device to hold the arms together, and a second pair of oppositely-arranged spring arms projecting from the body and having oppositely curved portions adapted to form a loop between them, substantially as described.

2. A holder of the character described, comprising a clasp having a body portion shaped to fit a rod and oppositely extending arms

formed integral with the body portion, a toothed tongue produced on one of the arms and held to extend through a slot on the opposite arm, a lip produced above the slot and held to engage the teeth of the tongue, and a holder carried by the clasp, substantially as described.

3. A holder of the character described, comprising a clasp having a body with an opening on one side, oppositely extending arms formed integral with the clasp and extending from the sides of the opening, an adjustable fastening device to affix the position of the arms and fasten the clasp to a support, and a second pair of arms projecting from one side of the clasp and forming between them an open loop adapted to receive and support an article, substantially as described.

4. A holder of the character described, comprising a clasp having a flexible lining and adapted to fit a support, an adjustable fastening device to secure the clasp in position and arms extending from one side of the clasp, said arms being curved so as to form between them an open loop, substantially as described.

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**501,893.** APPARATUS FOR HARDENING STEEL. HUGO WILHELM, Homberg-on-the-Rhine, Germany. Filed Aug. 26, 1892. Serial No. 444,212. (No model.) Patented in Germany June 26, 1891, No. 65,062, and in England July 18, 1892, No. 13,143.

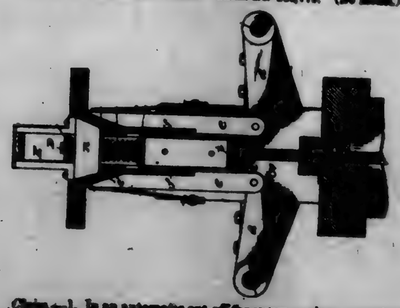


*Claim.*—1. The herein described apparatus for use in hardening articles of steel or other metal, consisting of a tank A adapted to receive the alloy, and provided with a heating device B, passing through said tank for keeping the alloy in a melted condition, and a cooler C also passing through the tank for regulating the temperature of the bath, substantially as described.

2. The herein described apparatus for use in hardening articles of steel or other metal, consisting of a tank A adapted to receive the alloy, and provided with a steam heating pipe B passing through said tank, a weighted valve for automatically controlling the pressure of steam in the pipe, a cold water pipe also passing through the tank, a valve for regulating the flow of liquid through said pipe, and a connection between said steam valve and cooling valve, for regulating the temperature of the bath, substantially as described.

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**501,894.** CUT-OFF FOR SLIDE-VALVES. MOSES WILKIN, Trenton, N. J. Filed Sept. 1, 1892. Serial No. 444,779. (No model.)

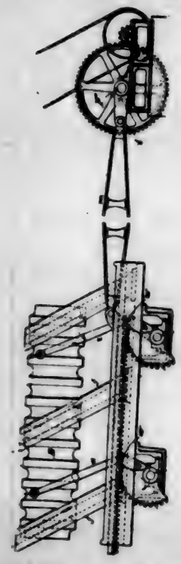


*Claim.*—1. In an automatic cut-off for steam engines, a vertically moving spring restored rod provided with a flange, a pair of movable spring-pressed toes provided on their inner faces with projections for engaging the flange and elevating the rod, a movable frame or wedge working in connection with the toes and supported upon the rod, and a pair of rock-shafts and lever connections for alternately operating said toes, substantially as described.

2. In an automatic cut-off for steam engines, the combination of the spring restored rod provided with the flange, the movable wedge or frame working on said rod, the vertically moving and alternating toes provided on their inner surfaces with projections which engage the flange, the rock-shafts and their cranks, the levers connecting said rock shafts with toes, and the rods which connect said cranks and operate the rock shafts, substantially as described.

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**501,895.** VENEER-MACHINE. WILLIAM H. WILLIAMS, Long Island City, N. Y. Filed Nov. 17, 1892. Serial No. 452,362. (No model.)



*Claim.*—1. The combination with a stay log, its support and mechanism substantially as described for actuating the stay log, of a cutter I and a guide A' and a support B' provided on its face with a series of lateral projections C' to provide a series of air-circulating spaces between the guide and the support, substantially as described.

2. The combination with a stay log its support and mechanism substantially as described for actuating the stay log, of a cutter I a guide A' and a support B' for said guide, said guide having a series of longitudinal slots D' through which fastenings extend to enable the guide to expand or contract lengthwise, substantially as described.

3. The combination with a stay log its support and mechanism substantially as described for actuating the stay log, of a cutter I, a guide A' and a support B' for said guide, the center portion of the guide being rigidly fixed to the support and the remainder of the guide loosely attached and movable lengthwise on its fastenings to provide for longitudinal expansion or contraction of said guide from the rigidly fixed central portion thereof substantially as described.

4. In a veneer-cutting machine, the combination with a base or support, having a horizontal guide-way, a cutter and a reciprocating stay-leg, of guide arms *f* for the stay-leg, pivots H having gears u, and crank-arms v, link *x* pivotally attached to the stay-leg and crank-arms, and a reciprocating rack G mounted in and supported by the horizontal guide-way of the base or support at a point above both of the said gears to oscillate them with their pivots and thereby reciprocate the stay-log on the guide arms to and from the cutter for severing veneers from a log carried by the stay-leg, substantially as described.

5. The combination with a stay-leg, and mechanism for guiding the same, of a support B', and a guide A' having longitudinal slots D', said support having on its face a series of lateral projections C' to provide a series of air-circulating spaces between the support and the guide, and fastenings extending through the longitudinal slots in the guide into said lateral projections, substantially as described.

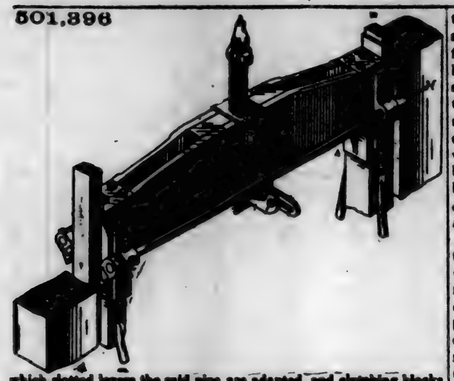
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**501,896.** SAFETY-CLUTCH FOR ELEVATORS. CHARLES E. ALLEN, Philadelphia, Pa. Filed Jan. 26, 1893. Serial No. 459,393. (No model.)

*Claim.*—The combination of the elevator frame, the cross bar thereon, a vertical bar C, adapted to guide ways in said cross bar, a hoisting rope attached to one end of said bar C, the box *c* on the lower end of said bar, a leaf spring passing through said box, projecting arms extending from each side of said box, pins carried by said arms, rock shafts having slotted levers extending therefrom, as



**501,896**



which slotted levers the said pins are adapted, and clutching blocks having serrated edges carried by said rock shaft and adapted to engage with guiding strips in the elevator well, substantially as specified.

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**501,897.** SHEATHING-LATH. ANDREW BALDWIN, Vinegar, Wis. Filed Apr. 3, 1893. Serial No. 469,573. (No specimens.)



*Claim.*—As an improved article of manufacture, the herein described concave-convex sheathing-lath of wood, having parallel shallow grooves C and a deeper middle groove C', and lateral rabbets F F, said grooves and rabbets being cut at an angle deflecting slightly from the longitudinal grain or fiber of the wood; substantially as and for the purpose shown and set forth.

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**501,898.** AUTOMATIC SELF-ARRESTER ICE-CAN FILLER. FERDINAND BAUER, St. Louis, Mo. Filed Mar. 3, 1893. Serial No. 465,173. (No model.)



*Claim.*—1. In an automatic self arrester ice can filler, the combination of the major spring valve tube chamber 45, the automatic spring drop valve 58 in said chamber, the major plunger piston 56, having the lock slot 66 and the trip trigger 69; substantially as described.

2. In an automatic self arrester ice can filler, the combination of the water filler tube 1, the major spring valve tube section 45, the tubular trip head 59, the automatic drop valve 58, the plunger piston 56 that carries said valve, provided with the lock slot 66, the spiral spring 64, and the trip trigger 69; substantially as described.

3. In an automatic self arrester ice can filler, the combination of the water filler tube 1, the globe float 30, the swing ball 31, pivotally secured to said tube 1, the trip rod 41, the bell crank lever 100, the major spring valve tube section 45, the tubular trip head 59, the plunger piston 56, provided with the lock slot 66, the automatic valve 58, and the trip trigger 69, arranged to be sprung and trip the valve piston by said bell-crank lever; substantially described.

4. In an automatic self arrester ice can filler, the combination of the water filler tube 1, the spring clamp holder 19, the clamping set-screw 20, the guard frame 23, 27, secured to said holder, the globe float 30, the swinging ball 31, the combined set-screw 20 of said clamp holder and swing holder of said ball, the projecting side lug 39 on said ball, provided with the slot-way 40, the trip rod 41, that passes through said slot-way, the twin stay rings 42, the set-screws 43, the major spring valve tube section 45, the tubular trip head 59, the lateral integral tube 60, the spring valve 58, the plunger piston 56 provided with the lock slot 66, the trip trigger 69, the spring abutting boss 96 on said trigger, the spiral spring 70, the pendent arm 104, the bell crank lever 100 pivoted on said arm, and the pivotal connection of said bell crank lever to said trip rod, that commands the same in the trip action of said trigger; substantially as described.

5. In an automatic self arrester ice can filler, the combination of the water filler tube, the basement tubular shoe 4, provided with the vent holes 10, the washer disk 6 provided with the perforate center 8, the foot valve 11 having the basket 12, the piston rod 13, the spiral spring 15, the surmounting tube sections 45 and 59, 60, the plunger piston 56 provided with the lock slot 66, the automatic spring valve on said piston, the trip trigger 69, the bell-crank lever 100, the trip rod 41 and the globe float 30 arranged to offset the trip and arrest the water flow; substantially as described.

6. In an automatic self arrester ice can filler, the combination of the tube sections 1, 45, and 59, the integral lateral tube 60, the basement tubular shoe 4, the spring valve in said tubular shoe, the piston that carries said valve, the trip foot 14 at the base of said piston and valve, the spring clamp holder 19, the set-screw 20, the swinging ball 31, the globe float 30 on said ball, the slotted lug on said ball, the trip rod 41, the water supply pipe section 53, the screw-joint nozzle 53, the elastic hose 54, the valve cushion bed 48, the valve 58, the piston 56, provided with the lock slot 66, the spiral spring 64, the stuffing box 71, the gasket 75, the trip trigger 69, the spring abutting boss 96, the spiral spring 70, the screw tube stopper 83, the stuffing box 85, the gasket 88, the screw set tube boss 93, the pendent arm 104, the bell-crank lever pivoted to said arm, having the ball forks 98 that clutch said screw set tube boss on said trip trigger, the eyelet lug 112 in which said trip rod reciprocates, and the pivoted connection of said trip rod to the bifurcated operative end of said bell crank lever; substantially as described.

7. The combination of the water filler tube 1, the major spring valve chamber section 45, the tubular trip-head 59, the said spring valve chamber and said tubular trip-head provided with the tubular, elongated piston bed 115, and with the horizontal circumferential grooves 114, around the working course of said piston, and the horizontal water ring packing 116; substantially as described.

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**501,899.** RAILWAY-TORPEDO. IRWIN G. BENEWITZ, Washington, D. C. Filed Oct. 12, 1892. Serial No. 448,659. (No model.)



*Claim.*—1. As an improved article of manufacture, a railway torpedo having an inclosing shell made of a single piece in the form of a tapered tube, with closed ends, substantially as described.

2. A railway torpedo composed of a tube having a closed fastened end, and a plug in its opposite end.

3. A railway torpedo composed of a tube having a closed fastened end, and a plug in its opposite end, a fastening strip at the plug end, and a strip securing tack or nail passing through the said strip into the plug.

4. A railway torpedo composed of a tube made wholly of a soft substance as described, both ends of said tube being closed, and one end fastened.

5. As an improved article of manufacture a rail-way torpedo composed of a single sheet of flexible material, substantially as and for the purpose described, made in the form of a tapered tube with closed ends, substantially as specified.

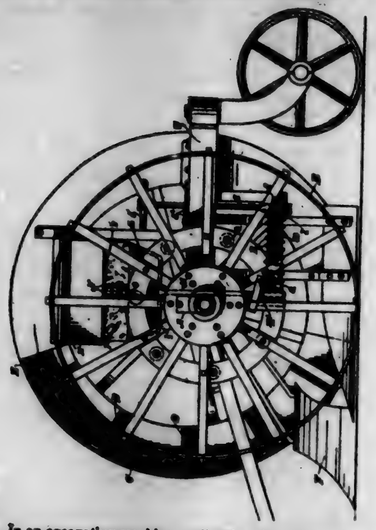
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**501,400.** EXCAVATOR. HENRY P. BENNETT, Phœnix, Ariz. Filed Oct. 24, 1892. Serial No. 449,948. (No model.)

*Claim.*—1. In an excavating machine, the combination of an elevator wheel, a fixed hopper into which said wheel discharges the dirt, a vibrating shovel adapted to receive the dirt from the hopper, and to throw it to one side, and a flexible apron extending between and connected with the backs of the hopper and shovel, whereby said apron serves as a back guard as the shovel is receiving the dirt, and

a bottom for the hopper as the shovel is discharging the dirt, substantially as herein described.

2. In an excavating machine, the combination of a frame, an excavating plow, a wheel upon which the frame is mounted, said wheel having a series of elevating buckets successively receiving the dirt from the plow, a fixed hopper above into which the buckets successively discharge the dirt, a vibrating shovel adapted to receive the dirt from the hopper and to throw it to one side, and a flexible apron extending between and connected to the backs of the hopper and shovel whereby said apron serves as a back guard for the shovel when receiving the dirt, and as a bottom for the hopper when the shovel is discharging its load, substantially as herein described.



3. In an excavating machine, a vibrating shovel adapted to receive the dirt and to throw it to one side, said shovel having perforated walls, substantially as herein described.

4. In an excavating machine, the axle, the elevator wheel on one end of the axle, and the wheel B on the other end, in combination with the shovel, having the pivoted handle with the short arm, a spring for throwing said handle forward, the contacts on the wheel B, and the cam on the short arm of the handle for returning said handle, substantially as herein described.

5. In an excavating machine, the axle, the elevator wheel on one end and the wheel B on the other end, in combination with the shovel, the handle of said shovel having the short arm with the cam, the contacts on the wheel B, the shaft on which the handle is pivoted, the spring encircling the shaft and bearing on the handle, and the means for regulating the tension of the spring consisting of the worm, bearing on the spring, the shaft, and pinion on said shaft, substantially as herein described.

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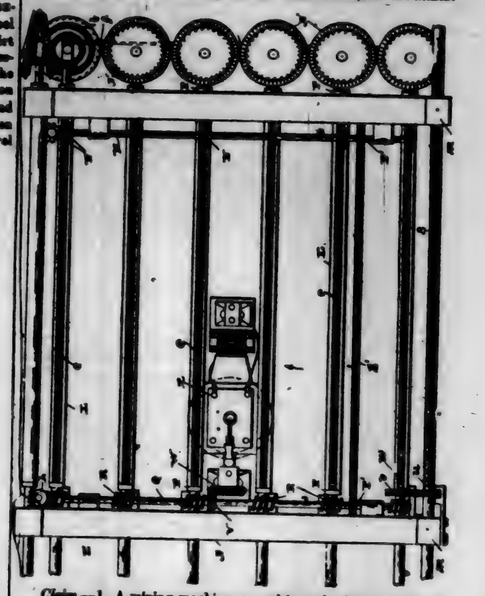
**501,401. SPRING-HOLDER FOR VEHICLE-LAMPS.** CARL F. BELLER, Alt-Chemnitz, Germany. Filed May 4, 1892. Serial No. 431,841. (No model.)



*Claim.*—A lamp-holder consisting of a bracket *c* formed with a vertical arm *c'* a horizontal forwardly projecting arm *c''* and a horizontal outwardly projecting arm *c'''* the post *b* supported on the outer end of the outwardly projecting arm, the ring *d* the superposed links *g* by which the ring is supported on the post, and the spiral spring *h* by which the upper link is secured to the post; substantially as described.

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**501,402. MINING-MACHINE.** JOSEPH BOLAND and GEORGE W. PIERCE, Pittsburg, Pa. Filed Apr. 5, 1892. Serial No. 428,126. (No model.)



*Claim.*—1. A mining machine comprising a horizontal series of shafts carrying at their outer ends a series of cutters, tubes surrounding the said shafts, and having rack teeth, the said tubes abutting against a stop on the said shafts, a transverse shaft engaging respectively all of the said horizontal revolving shafts, and a transverse shaft gearing with each of the said tubes and a motor for driving the said shaft, substantially as set forth.

2. A mining machine comprising a series of parallel shafts carrying cutters at their outer ends, intermeshing gear between the said cutters and the said shafts, a tube for each of the said shafts abutting against a stop thereon and having rack teeth, a transverse shaft for driving the parallel shafts, a transverse shaft and having cog wheels engaging and driving the said tubes, a motor for one of the transverse shafts, and intermediate gearing between the driven transverse shaft and the other transverse shaft, substantially as described.

3. A mining machine comprising a revolving shaft, a socket or casting loosely placed upon the end thereof a connection holding the casting in position, two cutters supported by the said casting and journaled thereon, a cog wheel upon the said shafts engaging one of the cutters, and the said cutter engaging and driving the other cutter, substantially as set forth.

4. A mining machine comprising a revolving shaft, a casting journaled upon the end thereof a connection holding the casting in position, two cutters journaled upon the said casting, a cog wheel upon the shaft driving one of the cutters, and the said cutters intermeshing whereby one driven the other, substantially as specified.

5. A mining machine comprising a shaft, a casting journaled thereon, two cutters journaled upon the said casting at an angle to each other, their outer peripheries approaching, the edges of the said cutters being at an incline as shown, so that they together form a point, a gear upon the said shaft driving one of the said cutters, and the cutters having cogs at their inner edges which intermesh at their outer converging ends, whereby one cutter is driven by the other, substantially as described.

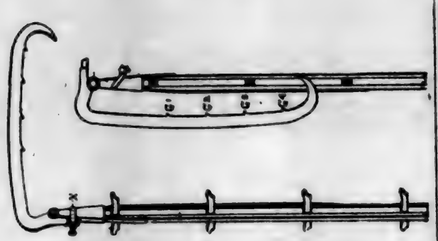
6. A mining machine comprising a revolving shaft, a casting journaled on the end thereof a connection holding the casting in position, two cutters journaled upon the said casting and extending at an angle to each other, their outer peripheries engaging for the purpose described, a gear upon the shaft for driving one of the said cutters, the other cutter provided with an annular groove through which the outer periphery of the said gear revolves, substantially as specified.

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**501,403. ADJUSTABLE FIREMAN'S LADDER.** RICHARD BRAYTON, Grand Rapids, Mich., assignor to the Michigan Fire Ladder and Engine Company, same place. Filed Jan. 16, 1893. Serial No. 458,533. (No model.)



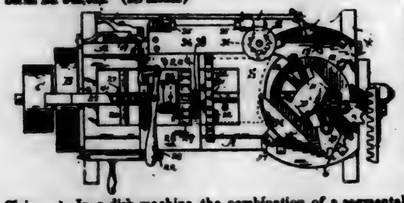
*Claim.*—1. In the combination of a ladder, a ferrule or plate attached thereto, a folding hook pivoted to said ferrule, and adapted to fold when not in use, a loop or clevis adapted to retain the hook in its unfolded position, substantially as described.



2. In combination with a ladder, a folding hook pivoted thereto, a clevis also pivoted to said ladder, and a thumb screw, said clevis and thumb screw adapted to retain the hook unfolded, substantially as described.

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**501,404. MACHINE FOR CUTTING CONCAVO-CONVEX WOODEN DISHES.** DAVID H. BRESSLER, Grand Rapids, Mich. Filed Apr. 16, 1892. Serial No. 429,092. (No model.)



*Claim.*—1. In a dish machine, the combination of a segmental saw, a saw arbor extending from the concave face of the saw, a continuously revolving block-holder or chuck which revolves the block of wood, and means for gradually feeding the saw into the block from the outside to the center of rotation thereof to completely sever a concavo-convex dish therefrom, substantially as described.

2. The combination of a continuously revolving block holder or chuck, with a segmental saw, and means for gradually feeding the saw into the block from the outside to the center of rotation thereof to completely sever a concavo-convex dish therefrom, substantially as described.

3. The combination of a segmental saw, a continuously revolving block holder or chuck, suitable mechanism for revolving such block, and means for gradually feeding the saw into the block from the outside to the center of rotation thereof to completely sever a concavo-convex dish therefrom, substantially as described.

4. The combination of a segmental saw, adapted to revolve and to oscillate from a point the same distance from the saw as the length of a radius of the segment, a continuously revolving block holder or chuck, and means for gradually feeding the saw into the block from the outside to the center of rotation thereof to completely sever a concavo-convex dish therefrom, substantially as described.

5. The combination of a segmental saw mounted upon an arbor extending from the concave side of the saw and adapted to turn from the radial center of the segment, a continuously revolving block holder or chuck, and means for gradually feeding the saw into the block from the outside to the center of rotation thereof to completely sever a concavo-convex dish therefrom, substantially as described.

6. The combination of a segmental saw mounted upon an arbor, a continuously revolving block holder or chuck, suitable mechanism for feeding the block holder or chuck toward the saw, and means for gradually feeding the saw into the block from the outside to the center of rotation thereof to completely sever a concavo-convex dish therefrom, substantially as described.

7. The combination of a segmental saw mounted on an arbor, a revolving block holder or chuck, a revolving cutter in position to operate upon the periphery of the revolving block as the same is fed to the segmental saw, and means for gradually feeding the saw into the block from the outside to the center of rotation thereof to completely sever a concavo-convex dish therefrom, substantially as described.

8. A revolving segmental saw mounted on an arbor, said saw oscillating upon a radial center of the segment, a block holder or chuck continuously revolved by suitable mechanism, means for gradually feeding the saw into the block from the outside to the center of rotation thereof, and mechanism adapted to move the saw rapidly away from the block after a dish has been cut therefrom, substantially as described.

9. In a dish cutting machine, the combination of a segmental saw, a holder or chuck supporting the block, a suitable pattern, a follower connected to a movable support, a revolving cutter connected with the follower, said follower adapted to follow the periphery of the pattern and the revolving cutter adapted to fashion the periphery of the revolving block into the form of the periphery of the pattern as the same is fed to the segmental saw, and means for gradually feeding the saw into the block from the outside to the center of rotation thereof to completely sever a concavo-convex dish therefrom, substantially as described.

10. The combination of the segmental saw mounted on a revolving arbor, a yoke or support for the arbor, turning on the radial center of the segment, suitable mechanism for turning the support, a revolving block holder, suitable mechanism, for continuously revolving the block holder, and means for gradually feeding the saw into the block from the outside to the center of rotation thereof to completely sever a concavo-convex dish therefrom, substantially as described.

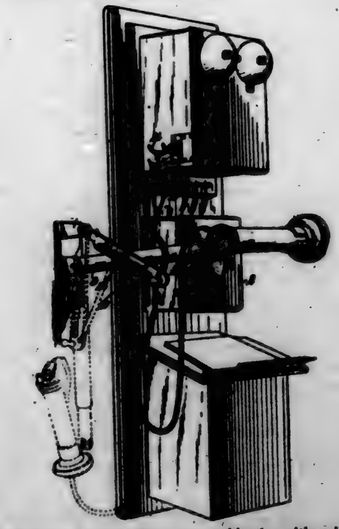
11. The combination of the segmental saw mounted on a revolving arbor, a yoke or support for the saw arbor, turning on the radial center of the segment, a continuously revolving block holder, suitable mechanism for moving the block holder intermittently toward the saw, and means for gradually feeding the saw into the block from the outside to the center of rotation thereof to completely sever a concavo-convex dish therefrom, substantially as described.

12. The combination of the segmental saw mounted on an arbor, a support for the saw arbor turning from the radial center of the segment, an oscillating arm engaging with the support of the saw arbor, elliptical gearing connected with the oscillating arm for giving a slow feed motion to the saw, and a rapid retrograde movement, and suitable mechanism for operating the elliptical gear, substantially as described.

13. The combination of the segmental saw and its arbor, the yoke supporting the same, the arm engaging with the saw arbor support, elliptical gear connected with the arm for giving the reciprocating movement to the saw, the revolving block, a movable carriage supporting the block, mechanism for revolving the block, feeding mechanism for moving the block toward the saw, and a friction clutch adapted to engage and disengage the mechanism from the shaft which revolves the block, substantially as described.

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**501,405. SUPPORT FOR TELEPHONIC RECEIVERS.** ROSVAL L. BURDSELL and BURRIT L. BEVINS, Jr., Washington, D. C. Filed Nov. 3, 1892. Serial No. 450,856. (No model.)



*Claim.*—1. In a telephone, the combination with a pivotally supported arm having a telescopic extension, of a duplex clamping support inserted in the end of said telescopic extension, a two part clamp,

adapted to hold a telephonic receiver and having its shanks inserted between the arms of the duplex clamping support, and a pivot for said clamp and clamping support, substantially as described.

2. In a telephone, the combination with a tubular pivotally supported arm, of a tubular telescopic extension having a slotted end inserted in and adjustable within said pivoted arm, a spring to force apart the slotted portion of said telescopic extension and cause it to have a frictional engagement within the pivoted arm, and an adjustable clamp carried by the outer end of the telescopic extension and adapted to hold a telephone receiver, substantially as described.

3. In a telephone, the combination with a primary arm, pivotally connected, at one end, to a support, of a secondary arm telescoping within the primary arm, and a ratchet-arm having a separate pivotal support and provided with teeth which engage a holding pawl on the primary arm, substantially as described.

4. In a telephone, the combination with a primary arm pivotally supported at one end, of a secondary arm telescoping within said primary arm and provided with a clamp for the telephone receiver, a ratchet-arm having a separate pivotal support and provided with ratchet teeth engaging a holding-pawl upon the primary-arm, and an elastic connection between the said ratchet-arm and the telephone switch, substantially as described.

5. In a telephone, the combination with an arm pivotally supported at one end, of a ratchet arm having a separate pivotal support, and an elastic connection between said ratchet arm and the telephone-switch which is placed under tension when the arm is dropped, substantially as described.

6. In a telephone, the combination with an arm having pivotal support at one end, a ratchet-arm having a separate pivotal support and provided with a slot having ratchet-teeth upon one side adapted to engage a holding-pawl upon the arm, and an elastic connection between the ratchet arm and the telephone-switch, whereby the movement in one direction will place said spring under tension, operate the switch, and throw the ratchet-teeth off the holding-pawl, while movement in the opposite direction will relax said tension, release the switch, and permit the ratchet-plate to engage the holding-pawl, substantially as described.

7. In a telephone, the combination with a pivotally supported extensible arm having a slotted end, of a duplex clamping support inserted in the slotted end of said arm and provided with broadened shouldered ends adapted to engage in and against the ends of the opposite slots of said arm, and an adjustable clamp having its shank inserted in said clamping support and pivotally connected therewith and with the end of the extensible arm, substantially as described.

8. In a telephone the combination with a receiver supporting arm, of a clamp-support composed of a piece of metal folded in the middle, and having its contiguous ends widened and shouldered, to lie in and against the ends of opposite slots in the end of said arm and a two-part clamp having a portion interposed between and pivotally connected to said ends, substantially as described.

9. In a telephonic, or other phonetic apparatus, the combination with a phonetic receiver of a pivotally mounted, extensible support, a pivotal clamp for the receiver, a supporting-arm having a separate support an elastic connection between said supporting-arm and the telephone switch, or other adjustable part, and a bumper, or cushion, arranged to receive the impact of the supporting-arm, when the same is suddenly dropped, substantially as described.

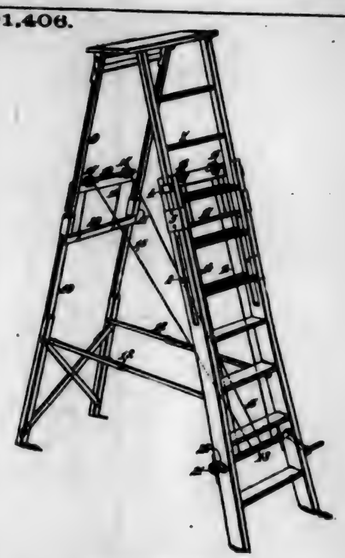
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**501,406.** EXTENSION STEP-LADDER. CARL T. CAMPBELL, Warren, Pa., assignor of two-thirds to Louis H. Clark and Andrew R. Bunn, same place. Filed Mar. 14, 1893. Serial No. 466,264. (No model.)

*Claim.*—1. In an extension step-ladder the combination with the extensible ladder sections and a hinged leg or support composed of extensible sections, of a windlass mounted on the lower ladder section and having two sets or pairs of ropes secured thereto, one set of said ropes being passed over pulleys mounted at the top of the lower ladder section and then secured to the bottom of the upper ladder section, and the other set of ropes being passed over pulleys at the top of the lower leg section and then secured to the bottom of the upper leg section, and a pawl and ratchet for holding the windlass, substantially as described.

2. In an extension step-ladder, the combination with the extensible ladder sections and a hinged leg or support composed of extensible sections, of a windlass mounted on the lower ladder section and provided with pawl and ratchet holding mechanism, ropes that connect said windlass with the lower end of the upper ladder section and with the lower end of the upper section of the leg support, pulleys mounted at the top of the lower ladder section and top of the lower leg section, respectively, and over which said ropes are passed, guides for the extensible ladder sections and for the extensible sections of the hinged leg or support, and hinged braces that connect the lower ladder section and lower leg section, substantially as described.

**501,408.**



**501,407.** EXHAUST FAN OR BLOWER. CHARLES H. CLARK, Rochester, N. H. Filed Oct. 1, 1892. Serial No. 447,305. (No model.)



*Claim.*—1. The herein described head for exhaust fans or blowers, comprising the central or body portion, of a shape similar to that of two cones joined at their bases and flattened and rounded at their apices, and convex along the entire surface, and the floats joined thereon, and also convexed on one face, substantially as specified.

2. The herein described head for exhaust fans or blowers, comprising the central or body portion of a shape similar to that of two hollow cones joined at their bases, flattened and rounded at the apices, and convex along the entire exterior surface, and float extensions joined thereto by the rounded neck portions C, said float extensions terminating in broad oval portions having a plane bearing surface and a convex reverse surface, all substantially as shown and described.

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**501,408.** SPINDLE-BEARING. GEORGE G. DRAPER, Hopedale, Mass., assignor to George Draper & Sons, same place. Filed Mar. 27, 1893. Serial No. 467,893. (No model.)



*Claim.*—1. A spindle, a bolster bearing, a supporting-case and a spring to sustain the bolster within the supporting-case, combined with a separate step shaped to receive and support the foot of the spindle and permit the latter to move freely thereon laterally, substantially as described.

2. A spindle, a supporting-case having a shoulder, and a bolster having a cooperating shoulder or flange and a spring to press the flange of the bolster against the shoulder in the supporting-case, combined with a step for the spindle, said step being separate from the bolster and having its top surface constructed substantially as shown whereby the foot of the spindle may move laterally on the top of the step as the bolster moves laterally, substantially as described.

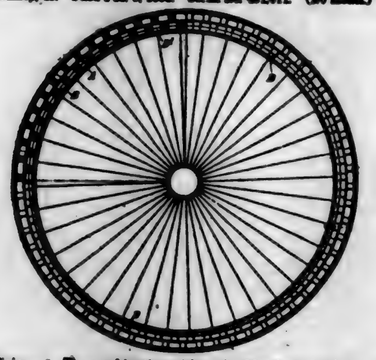
3. A supporting-case having at its lower end a chamber of larger diameter than at its upper end, a bolster fitted loosely into the upper bore of the supporting case and provided near its lower end with a flange or enlargement having a shoulder and also fitted loosely in the chamber of larger diameter, and a spring to sustain the bolster, combined with a step located in said lower chamber and adapted to receive upon it the foot of the spindle, the latter being free to move laterally on the surface of the step, substantially as described.

4. A supporting tube open at its lower end and provided with a shoulder, a bolster or lateral bearing inserted therein and provided with a shoulder to co-operate with the shoulder in the supporting-case, a spring to support the bolster or lateral bearing and press its shoulder against the shoulder of the supporting-case, and a step on which the lower end of the bolster is free to move laterally, combined with a pin or cotter G to support said spring, and with an independent oil slip surrounding the lower end of the supporting-case to a point above the step, substantially as described.

5. A spindle, a bolster bearing tube having a flange, a supporting tube surrounding the bolster tube and having a shoulder, a spring to press the bolster flange against the shoulder of the supporting tube, and a separate step piece suspended from the bolster, substantially as described.

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**501,409.** SPRING-RIM FOR WHEELS. JOHN J. DUNLOP, Sr., and JOHN J. DUNLOP, Jr., Dublin, Ireland; said Dunlop, Jr., assignor to said Dunlop, Sr. Filed Feb. 8, 1892. Serial No. 421,611. (No model.)



*Claim.*—1. The combination with a wheel having a rigid rim, of a spring tire made up of rows of elastic blocks secured at intervals on the rim and bands of canvas wrapped round each said row of blocks, substantially as and for the purpose specified.

2. The combination with a wheel having a flexible rim of a spring tire made up of rows of elastic blocks secured at intervals on the rim, and bands of canvas wrapped round each said row of blocks, substantially as described for the purpose specified.

3. The combination with a wheel of bands of canvas broader than and secured to the rim thereof, a row of blocks of india rubber secured at intervals to said band, the sides of said blocks being cemented to the overlapping edges of said band and other bands and blocks placed outside said row of blocks, substantially as for the purpose specified.

4. The combination with a wheel of bands of canvas secured at intervals on the rim thereof, blocks of india rubber secured to the said canvas bands, other bands and blocks secured outside the inner row, and an outer band of canvas and india rubber furnished with a projecting central ridge or ridges, substantially as described for the purpose specified.

5. The combination with a wheel of bands of canvas secured on the rim, blocks of rubber secured at intervals to the said bands, outer canvas bands covered with india rubber to form the tread surface of the wheel, and side strips of rubber or other suitable material to cover the spaces between the blocks, substantially as described for the purpose specified.

6. The combination with a wheel having a rigid corrugated or castellated rim, of bands of canvas secured thereon, and a row of blocks of india rubber secured at intervals on said bands, and other bands of canvas placed outside said row of blocks substantially as described and for the purpose specified.

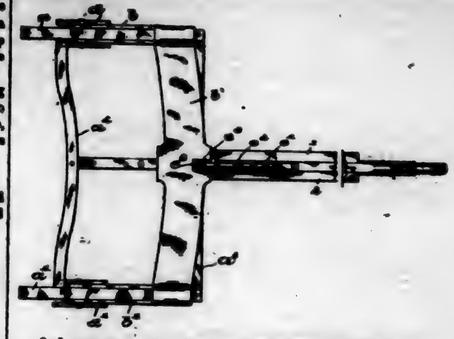
7. In the manufacture of a spring rim or tire having blocks of rubber or the like spaced at intervals on the rim of a wheel, the employment of a flat disk of larger diameter than the rim of the wheel and having projections on the sides thereof of the shape size and position of the desired spaces between the blocks to be placed on the rim of the wheel, substantially as described for the purpose specified.

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**501,410.** WAGON-JACK. CHARLES H. DUELLY, Hanover, Mass., assignor of one-half to Samuel H. Turner, same place. Filed Jan. 19, 1893. Serial No. 458,993. (No model.)



*Claim.*—1. In a wagon jack, a horizontally pivoted wheel lifting frame adapted to be placed under a wheel and turned about its pivot to raise the same, combined with a wheel-sustaining frame movable on said lifting frame, and actuating device under the control of the operator for and to positively move said wheel-sustaining frame upon and with relation to its lifting frame substantially as and for the purposes specified.



2. In a wagon jack, a horizontally pivoted wheel lifting frame adapted to be placed under a wheel and turned about its pivot to raise the same, combined with a wheel-sustaining frame mounted to slide on said lifting frame, a lever pivoted to said lifting frame and connected with and to positively slide said wheel-sustaining frame upon its lifting-frame, substantially as described.

3. In a wagon jack, a pivoted lifting-frame provided with a foot lever, combined with a wheel-sustaining frame mounted to slide on said lifting-frame, and a lever pivoted to said lifting-frame and normally lying in position against said foot lever and connected with and to slide said wheel sustaining frame, substantially as described.

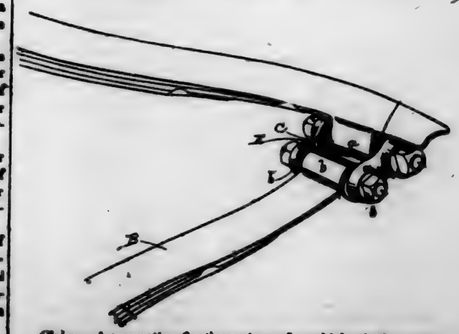
4. In a wagon jack, a pivoted lifting frame provided with a foot lever comprising two members, combined with a wheel-sustaining frame mounted to slide on said lifting frame, and an actuating lever therefor normally lying in position between the members of the foot lever, substantially as described.

5. In a wagon jack, a pivoted lifting-frame provided with a foot lever comprising two members, combined with a wheel-sustaining frame mounted to slide on said lifting frame, a lever $c$ pivoted to the link $c^2$ connected with and to slide said wheel-sustaining frame, and the guide-pins $c^3$ and guide-ways therefor, all to operate, substantially as described.

6. In a wagon jack, a pivoted lifting frame comprising the two side bars $b, b$, a connected yoke $b^x$, and a centrally located foot lever secured thereto, combined with a wheel-sustaining frame mounted to slide on or with relation to said lifting frame, to operate, substantially as described.

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**501,411.** GEAR CONNECTION FOR PLATFORM-SPRINGS. JOSEPH F. PARSELL, San Francisco, Cal., assignor to O'Brien & Sons, same place. Filed Apr. 3, 1893. Serial No. 468,899. (No model.)

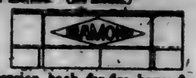


*Claim.*—A connection for the springs of a vehicle platform-gear consisting of an eye piece forged integral with the under side of the end of a spring, rubber bushings fitted in said eye piece and having a central sleeve, the side pieces of a shackle adapted to bear upon the outer ends of the bushings, a bolt passing through said side pieces

and the inner sleeve of the bushings, a second spring having an eye-piece upon its end transversely of the length thereof, and the securing bolt and bushing for securing the second spring to the side pieces of the shackle, as herein described.

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**501,412.** STOVE-BACK. FAY O. FARNUM, Dubuque, Iowa, assignor of one-half to the Adams Company, same place. Filed Mar. 26, 1892. Serial No. 426,132. (No model.)



*Claim.*—An extension back for fire boxes for stoves, provided with a flange at the top of the back, adapted to fit over and rest upon the oven plate, in combination with the extension side wings having flanges thereon and at a different angle than the aforesaid flanges and adapted to engage therewith and to be held in position by friction, and having tenons thereon engaging with mortises, with bottom pieces, all combined, substantially as described.

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**501,413.** STOCK-CAR. GEORGE G. FAVILLE, Baltimore, Md., assignor of one-half to Daniel R. CUTTER, same place. Filed Apr. 9, 1892. Serial No. 428,863. (No model.)



*Claim.*—The combination of the car the end sections 1—2—3—and 4 formed of the longitudinal bars $a$ $a^2$ and the cross bars B, projected at one end beyond the bar $a$ as at $b$ said ends having cuff sections J, the eye bolts D, the longitudinal rod C held in the projecting members $b$ and journaled in said eyes and the means for securing the adjacent bars $a^2$ $a^2$ of the sections together when in their lowered positions, substantially as shown and for the purpose described.

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**501,414.** MOLDER'S FLASK. JAMES FLOCKHART, Newark, N. J., assignor of one-half to Edward Meber. Filed Mar. 3, 1891. Serial No. 383,622. (No model.)

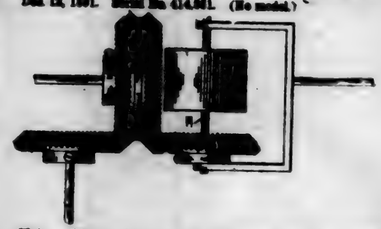


*Claim.*—1. In a clamp for molders' flasks, the combination, with the upper and the lower flask sections, of a plate secured to the upper section provided with two projections, a loop secured to the lower section slightly below the upper edge thereof, a longitudinally movable tongue under the loop, the lower end of which tongue is provided with a bearing for engaging with the loop and the upper end is provided with a projection and a wedge for engaging with the projections on the plate and on the tongue for drawing the parts together, the projection on the upper end of the tongue being adapted to rest upon the top of the loop when not in use whereby the upper end of the tongue is supported at a point so as not to project above the top of said lower section, substantially as set forth.

2. The combination with the flask section, $a$, provided with suitable lips, of a flask section, $b$, having clamps bolted at the ends and sides thereof, the end clamps having permanently projecting and lipped tongues serving as centering dowels and the side clamps having adjustable tongues adapted to be raised to project into holding relation to the lips of the section $a$ and to be lowered to or below the edge of the section $b$ and suitable wedges substantially as set forth.

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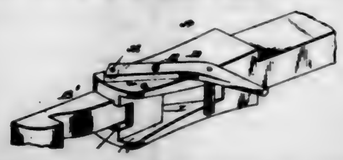
**501,415.** GEARING. EDWIN A. GARST, Substitute, Pa. Filed Dec. 12, 1891. Serial No. 414,981. (No model.)



*Claim.*—The combination, of a driving shaft, a gear thereon, a shaft extending at right angles thereto, a double gear wheel on last mentioned shaft, one side of said double wheel meshing with the driving shaft wheel, a rotatable frame having a pivotal point concentric with the double gear wheel, a shaft journaled in said frame at right angles to the double gear wheel shaft, a gear upon the said shaft meshing with the other side of said double gear wheel, and a driving pulley upon the said shaft, substantially as shown and described.

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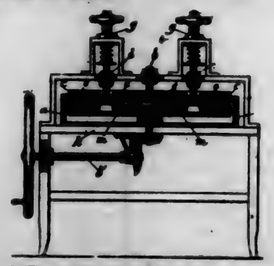
**501,416.** CAR-COUPLING. FRED A. GAUDET, East Longmeadow, Mass. Filed Mar. 27, 1893. Serial No. 467,910. (No model.)



*Claim.*—In car couplers, the draw heads A A in combination with the hooked grip-arms B B' held in place by flat springs C C; the pins M passing through each arm B B' and terminating upwardly in the lever D; the lever D oscillating on fulcrum E and whose arc of motion is limited by pin F; the pivotal pins L L permitting the vibration of the grip arms B B'; and the recesses H, I in the drawhead formed as shown and described to accommodate said arms B B', the whole coacting as and for the purpose set forth.

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**501,417.** MACHINE FOR STRAINING OR REMOVING TENDONS FROM CHOPPED MEAT. EMIL GRENZER, Wiesbaden, Germany. Filed Jan. 6, 1893. Serial No. 457,317. (No model.) Patented in Germany Sept. 28, 1890, No. 57,092.



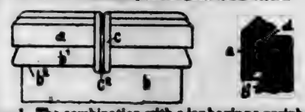
*Claim.*—1. The combination of a bed-plate or frame, a stationary drum $c$ supported by the frame, a rotary shaft $b$ extending through the center of the drum, a rotary drum $e$ fixed on the shaft in the stationary drum, and having a bottom sieve or strainer $m$, a series of rollers $o$, having a vertically movable spring-pressed spindle $d$, a frame $i$ supported by the bed-plate or frame, and through which the spring-pressed spindle of the rollers is movable, and means for rotating the center shaft, substantially as described.

2. The combination of a bed-plate or frame, a stationary drum $c$, supported by the latter, a rotary drum $e$ arranged in the stationary drum, and having a bottom sieve or strainer $m$, a cross-bar or frame $i$ extending over the two drums, a roller $o$, provided with a vertical spring-pressed spindle $d$, movable lengthwise through said cross-bar, and means for rotating the rotary drum in the stationary drum, substantially as described



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**501,418.** JAR-LID FASTENER. FRANZ GUILLEAUME and EWALD GOLDSTEIN, Zehden, Germany. Filed May 31, 1892. Serial No. 433,971. (No model.) Patented in Belgium Apr. 30, 1892, No. 98,946; in France Aug. 1, 1892, No. 220,854; in Austria-Hungary Aug. 31, 1892, No. 19,318 and No. 37,901, and in Germany Jan. 20, 1892, No. 66,767.

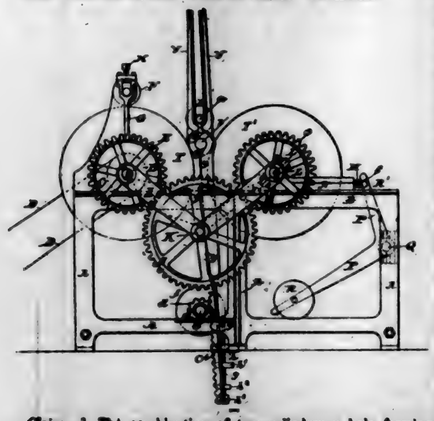


*Claim.*—1. The combination with a jar having a peripheral shoulder, and a lid to said jar, of a lid-fastener consisting in a resilient clamp constructed of a single wire bent into the shape of a star with a plurality of arms, which at their ends form hooks adapted to grasp over the lid and to engage with said shoulder, while toward the middle of the clamp the arms are formed to press on the lid, substantially as described.

2. The combination of the jar having a conical shaped rim, grooved for the reception of a washer and a shoulder $b^2$, with a lid or cover, the flange of which is provided with an internal corner or shoulder and an extension or lower part having its surface that comes next to the washer made perfectly smooth, whereby the internal shoulder or corner is permitted to press against the washer to deform the same both above and below said groove substantially as and for the purposes set forth.

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**501,419.** COTTON-PRESS. JACOB J. HATWARD, Wadesville, N. C., assignor of two-thirds to W. B. Crittenden and A. B. Stetson, Smyrna, Ohio. Filed Feb. 17, 1893. Serial No. 462,782. (No model.)



*Claim.*—1. The combination of two cylinders, a bale forming shaft, an independent pressure roller supported by pressure bars which are hung upon the bale forming shaft and devices operated by the pressure bars whereby the pressure on the bale is automatically adjusted to the size of the bale, substantially as set forth.

2. The combination of two cylinders linked and geared together, one of them having sliding journals so that it may be forced backwardly under the pressure of the enlarged bale, the links and gears being correspondingly lifted, whereby their weight will tend to force said cylinders toward each other against the bale and intermeshing of the gears be maintained, substantially as set forth.

3. The combination of two cylinders, a bale forming shaft, means whereby one of the cylinders may recede under the pressure of the enlarging bale, means to force the said cylinder against the bale, pressure bars hung upon the bale forming shaft and means operated by the pressure bars whereby the pressure upon the bale is automatically adjusted to its size, substantially as set forth.

4. The combination of two cylinders, a bale forming shaft, means whereby one of the cylinders may recede under the pressure of the enlarging bale, means to force the said cylinder against the bale, pressure bars hung upon the bale forming shaft, a roller adapted to rest upon the surface of the bale, and supported upon the pressure bars, and means operated by the pressure bars whereby the pressure upon the bale is automatically adjusted to its size, substantially as set forth.

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**501,420.** VEHICLE-WHEEL. JAMES O. HINE, Monterey, Va. Filed Mar. 11, 1893. Serial No. 465,890. (No model.)



*Claim.*—The herein described vehicle wheel, comprising a hub, broad metallic bands B on said hub one near each end thereof said bands being thicker at the inner than at the outer portions, threaded sockets in said bands, a metallic felly, and a double series of spokes, one series extending from each of the said bands to the felly, and secured by screwing their inner ends into said sockets, and by upsetting their outer ends in countersunk perforations in the felly, substantially as specified.

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**501,421.** RUBBER ERASER. ARTHUR S. HOBART and ALONZO W. ELDREDGE, Big Rapids, Mich. Filed Nov. 14, 1892. Serial No. 451,991. (No model.)



*Claim.*—1. An eraser holder composed of the parts A—B, suitably pivoted together in combination with the rubber C, and a spring adapted to close the two parts A and B upon the rubber, substantially as described.

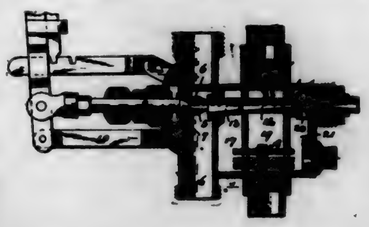
2. An eraser holder, consisting of a case for wholly inclosing and covering the eraser and composed of two sections A and B pivoted together intermediate their ends so that by pressing on one end the opposite end is opened, in combination with the eraser C, and a spring F acting to close the sections together, substantially as described.

3. The combination of the sections A and B adapted to wholly inclose and cover a rubber eraser and pivoted together intermediate their ends so that by pressing on one end the opposite end is opened, the rubber eraser C provided with grooves D with which the edges of the sections engage for holding the eraser in a fixed position, and a spring F acting to close the sections together, substantially as described.

4. The combination of the sections A and B adapted to inclose and cover a rubber eraser and composed of two sections A and B pivoted together, the rubber eraser C provided with grooves D, with which the edges of the sections engage to hold the eraser in a fixed position relatively to the said sections, and a spring F acting to close the sections together, substantially as described.

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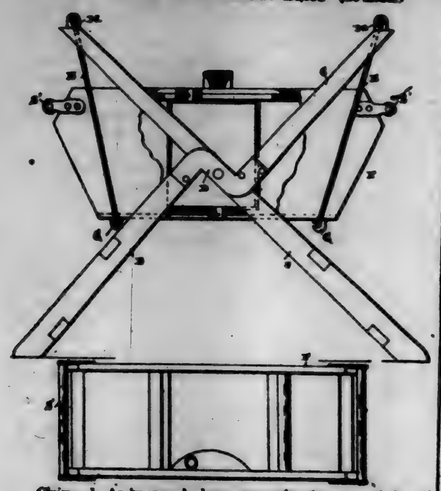
**501,422.** INJECTOR. PARKER F. HOOVER, Chesterfield, Ohio. Filed Apr. 29, 1893. Serial No. 472,481. (Model.)



*Claim.*—In an injector the combination of the two barrels, located one above the other, and the steam jet, lifting jet and combining tube all in the upper barrel. Of the chamber surrounding the combining tube having a vertically movable valve in its upper end and an automatic horizontally movable valve at its lower end in said lower barrel and the chambers at each side of said chamber communicating respectively with the lifting and combining tubes; substantially as described.

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**501,423.** CHURN. THOMAS P. HOOD and WILLIAM G. SMITH, Bellview, Ala. Filed Apr. 1, 1893. Serial No. 469,494. (No model.)

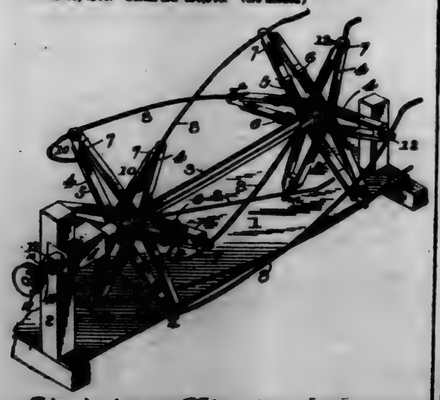


*Claim.*—1. An improved churn supporting frame consisting of arms A, brackets pivoted between their ends to the said arms, supports secured to the upper ends of said brackets, and legs secured to the lower ends thereof, substantially as shown and described.

2. An improved churn supporting frame comprising supports A, brackets pivoted between their ends to the said supports, supports C rigidly secured to the upper ends of said brackets, and legs pivotally secured to the lower ends of the brackets, substantially as shown and described.

3. An improved churn supporting bracket comprising supports A, S-shaped brackets C pivoted between their ends to the said supports, supports B rigidly secured to the said brackets, and legs D pivotally secured to the lower ends of the said brackets substantially as shown and described.

**501,424.** GRAIN-REEL. EDWARD B. HYDE, Elwood, Iowa. Filed Jan. 20, 1893. Serial No. 460,278. (No model.)



*Claim.*—In a harvester reel, the combination with the shaft, the radial arms secured thereto, each consisting of the wooden strips having their inner ends overlapping each other, the clasps, the blocks secured to said arms, having apertures in their ends, the curved diagonal bars passing through said apertures and secured to said arms, and the set screws for securing the said rods in place, substantially as described.

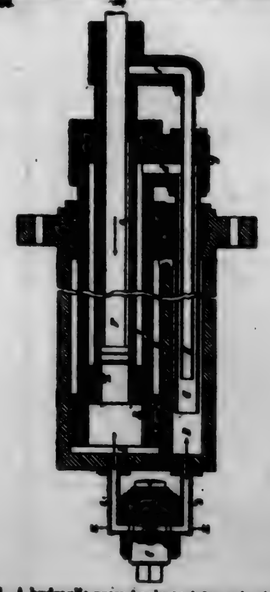
**501,425.** CORNICE WINDOW-SHADE AND CURTAIN-POLE SUPPORT. WILLIAM H. JOHNSON, Shreveport, La. Filed Mar. 6, 1893. Serial No. 464,982. (No model.)

**501,495.**



*Claim.*—A combined curtain pole and shade roller support, comprising a bracket adapted to be attached to a window frame and consisting of an approximately horizontal cylindrical member and an inclined brace secured to the under surface of the outer end of the said horizontal member, the said brace having a bearing therein for the shade roller in combination with a hook adapted to receive the curtain pole and having a hollow shank, sliding upon the horizontal member of the bracket, and having a longitudinal slot in its upper and lower sides, and a clamping screw passing through the upper slot in the said hollow shank and taking into the horizontal member of the bracket the said inclined brace passing through the lower slot in the said shank thereby guiding it and preventing its turning on the horizontal member of the bracket, substantially as described.

**501,496.** HYDRAULIC PRESS, &c. ARTHUR KAMP, Magdeburg, Germany, assignor to the Grusonwerk, same place. Filed Oct. 6, 1892. Serial No. 447,877. (No model.) Patented in England Jan. 6, 1891, No. 9,060; in Germany Mar. 26, 1891, No. 60,260, and in Italy June 30, 1891, LVIII. 426.



*Claim.*—1. A hydraulic press having a telescopic piston and an auxiliary cylinder, and telescopic pipes making communication between the annular spaces in front of the respective parts of the telescopic piston and the said auxiliary cylinder, substantially as and for the purpose set forth.

2. The combination of a pressure cylinder and an auxiliary cylinder, a double-acting telescoping piston working in said pressure cylinder, sliding pipes working in said auxiliary cylinder, and having permanent communication respectively with the spaces in front of the parts of the said telescoping piston, and means for supplying pressure to either cylinder at will, as and for the purposes set forth.

3. The combination of a pressure cylinder, a telescoping piston working in said pressure cylinder and consisting of the double-acting sections, an auxiliary cylinder, sliding pipes working in said auxiliary cylinder and permanently attached to the respective sections of the



telescoping piston, and having communication with the spaces within the same, substantially as and for the purpose set forth.

4. The combination with the pressure cylinder, and the concentric telescoping piston sections each having a space in front of its rear end, and movable one within another; of the parallel auxiliary cylinder, having communication with the space in front of the outer section of the telescoping piston, concentric telescoping pipes working in the auxiliary cylinder and connected with the sections of the telescoping piston and establishing communication between the spaces in front of the sections and the auxiliary cylinder; and the four-way cock having ducts communicating with the pressure supply and exhaust, all substantially as and for the purpose set forth.

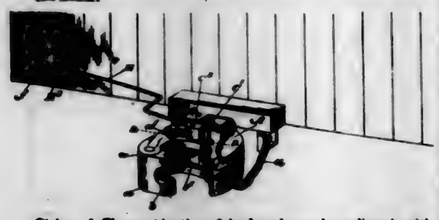
**501,427.** RING-SPINNING FRAME. CHARLES C. KENT, Taunton, assignor of one-half to George Draper & Sons, Hopedale, Mass. Filed Mar. 27, 1893. Serial No. 467,846. (No model.)



*Claim.*—1. A ring spinning frame containing the following instrumentalities, viz:—a series of spindles; a series of commencing rings concentric with said spindles; and an auxiliary series of finishing rings and carriers therefor, said commencing rings being of less diameter than the finishing rings, each commencing ring when operative during the spinning and winding of the first part of the yarn load on the spool, occupying a position within the circle bounded by the corresponding finishing ring and concentric to the spindle, substantially as described.

2. A ring rail having an attached ring concentric to the spindle, combined with a pivoted carrier mounted on said ring rail, and a second ring of smaller diameter mounted in said carrier, substantially as described.

**501,428.** CAR-COUPLING. EDGAR KLING, Louisville, Ky., assignor to Isaac Kling, same place. Filed Apr. 3, 1893. Serial No. 468,966. (No model.)



*Claim.*—1. The combination of the draw bar and coupling pin with a lever pivoted at one end on the draw bar and loosely connected to the pin and adapted to lift the pin when turned upward on its pivot, substantially as and for the purpose specified.

2. The combination of the draw bar and pin, with a curved lever pivoted at one end on draw bar and slidably engaging the pin at its other end, and a pull rod for swinging said lever upward, substantially as described.

3. The combination with the draw bar and a locking pin having an elongated slot in its upper end, of a lever playing through said slot and pivotally connected at one end to said draw bar, substantially as described.

4. The combination with the draw bar and swinging jaw of a locking pin adapted to be automatically raised by the arm of said jaw when the jaw closes having an elongated slot in its upper end, and a lever playing through said slot and pivotally connected at one end to said draw bar, substantially as described.

5. The combination of the draw bar, the vertically movable pin, the lever playing through a slot in the pin, and a pull rod E loosely connected to one end of the bar, and having a hand hold E', all constructed and arranged to operate substantially as described.

6. The combination of the draw bar having pin openings and an abutment at one side between the pin openings, and a swinging jaw with the locking pin adapted to bear laterally against said abutment, substantially as described.

7. The combination of the draw bar, the pin and the pivoted lever D having shoulder *d*, substantially as specified.

8. The combination of the draw bar, the swinging jaw having a bevel adapted to engage an opposite bevel on the draw bar and lift the jaw when closing, and also beveled on the inner end of its arm; with the angular pin shouldered and slotted as described, the pivoted lever passing through the slot of the pin, and the pull rod connected to said lever all constructed and arranged to operate substantially as described.

9. The combination of the draw bar having forwardly curved ears, pin openings, and an interior abutment at one side; with the locking pin, and the swinging jaw pivoted between said ears, substantially as described.

10. The combination of the draw bar having forwardly curved ears, pin openings and an interior abutment; with the pin, the swinging jaw pivoted between said ears, the coacting opposed bevels on the jaw and draw bar, and a pivoted lever and pull rod for lifting the pin, substantially as and for the purpose described.

11. The combination of the draw bar and uncoupling lever pivoted thereon, with the guide loop *f*, the pull rod E pivotally connected to said lever and extending through said loop, and having a hand hold and catch, substantially as and for the purpose described.

12. The combination of the draw bar the uncoupling lever pivoted thereon, and the pull rod passing through a guide loop on the car pivotally connected to said lever, and having a hand hold on its outer end; with the chain G, all constructed and arranged to operate substantially as and for the purpose set forth.

13. The combination of the draw bar, the vertically movable pin, the lever playing through a slot in the pin, and the pull rod E loosely connected to one end of the bar and having a hand hold E', and the loop *f*, and the chain G, all constructed and arranged to operate substantially as and for the purpose described.

**501,429.** ARTIFICIAL TOOTH. MAX J. F. KNIPP, Berlin, Germany. Filed Aug. 2, 1892. Serial No. 441,965. (No model.)



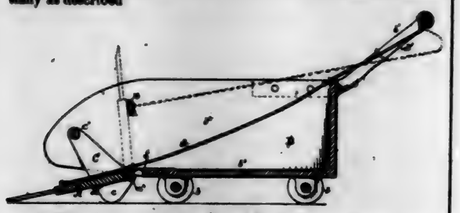
*Claim.*—1. The combination with the upper and lower plates *a*, *b*, having laterally projecting pins *a'*, *b'*, of the elastic india-rubber stripe *c*, having their extremities provided with eyes $a^2$, $b^2$ mounted on said pins, and inelastic sections *d* mounted on the end portions of the elastic stripe for securing a straight direction of vertical movement of said stripe and thus preventing them from yielding or bulging laterally when in use, substantially as described.

2. As a means for flexibly connecting the upper and lower plates of a set of artificial teeth, the elastic india-rubber stripe *c* adapted to connect at their ends to the said plates, and having the inelastic sections *d* surrounding their end portions, and similar inelastic sections *d'* at their central portions, substantially as and for the purpose described.

**501,430.** LAWN-RAKE AND GRASS-RECEIVER. JAMES KNOWLES, Philadelphia, Pa. Filed Feb. 1, 1893. Serial No. 460,501. (No model.)

*Claim.*—1. The combination in a lawn rake and grass receiver, of the grass receiving barrow having a flat bottom, a pivoted rake at the front of the barrow having a bar forming a downwardly inclined

continuation of said bottom of the receiver, and cords secured to the rake and passing rearward so that when they are pulled the rake will be lifted and the grass will be thrown back into the barrow, substantially as described



2. The combination of the receiving barrow, arms pivoted to the barrow, and resting upon the ground, projections on said arms, and a pivoted rake having a bearing upon said projections whereby the teeth are prevented from touching the ground, substantially as specified.

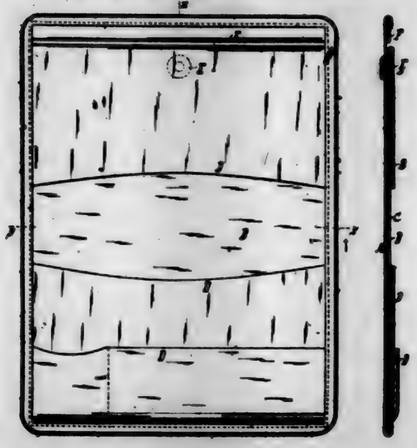
3. The combination of the receiving barrow, arms pivoted to the barrow and resting upon the ground, projections on said arms, and a rake pivoted to the arms and having a bearing upon said projections, substantially as specified.

4. The combination of the barrow, the pivoted rake having straight teeth beveled on their under sides at the points, and supports for preventing the undue dropping of the points of the teeth, substantially as specified.

5. The combination of the barrow, the pivoted rake at the front of the same, supports for preventing the dropping of said rake, means for lifting the rake, so as to throw the grass back into the barrow, and a flexible apron covering the joint between the rake bar and the bottom of the bar, substantially as specified.

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**501,481.** CARD OR LETTER CASE. JULIUS LAMBERT, Hoboken, N. J. Filed Feb. 2, 1893. Serial No. 460,643. (No model.)

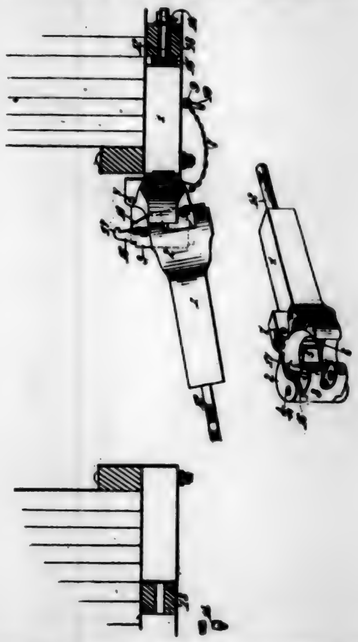


*Claim.*—1. A card or letter case, consisting of a back A, a main flap B of substantially the same dimensions as the back, secured thereto at three edges to form the storage space C, and leaving a free edge which is provided with a fastening clasp E to connect with the back, a flap D forming a supplemental pocket on the main flap, and a strip F secured to the back in juxtaposition to the free edge of the main flap to form a shoulder with which said free edge lies flush when held closed by the fastening clasp, substantially as described.

2. A card or letter case, consisting of a back A, a main flap B of substantially the same dimensions as the back, secured thereto at three edges to form the storage space C, and leaving a free edge which is provided with a fastening clasp E, supplemental flaps D secured to the opposite end portions of the main flap to form pockets, the mouths of which face each other, and a strip F secured to the back in juxtaposition to the free edge of the main flap to form a shoulder with which the said free edge lies flush when held closed by the fastening clasp, substantially as described.

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**501,482.** CAR-COUPLING. ALFONSO T. LEWIS, Knoxville, Tenn. Filed Apr. 20, 1893. Serial No. 471,201. (No model.)



*Claim.*—1. The combination with a draw-head having a latch or dog, of a pivoted jaw or knuckle having a tail-piece and provided on its upper side with a vertically projecting arm 16 for engaging with the upper side of the jaw or knuckle on an adjacent draw-head, substantially as described.

2. The combination with a draw-head having a latch or dog, of a pivoted jaw or knuckle provided on its upper side with an upwardly projecting arm 16 having a hooked top extremity 17, substantially as and for the purposes described.

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**501,488.** CRUSHING OR GRINDING MILL. WILLIAM A. MERRALLS, San Francisco, Cal. Filed Feb. 16, 1893. Serial No. 462,945. (No model.)

*Claim.*—1. In a mill of the type described, the combination of a crushing chamber or pan having a discharge screen in its periphery, a cylinder, a piston, a vertically sliding and horizontally revolving shaft, a bearing collar, friction balls between the piston and the collar, hinged bearing boxes, grinding wheels, a spider to which the boxes of the wheels are hinged, suitable springs between the spider and the boxes of the wheels, means for supplying water or other fluid under pressure to the cylinder above the piston, and means for operating a fluid pump and the shaft that revolves the grinding wheels, substantially as described.

2. The combination of the shaft D, grinding wheels carried by the shaft, cylinder G', collar J, balls $d'$, piston I, and means for supplying fluid under pressure to the cylinder, substantially as and for the purpose described.

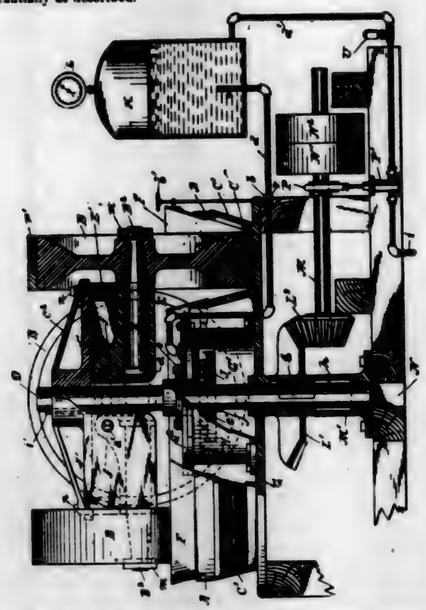
3. The combination of the pan or chamber A, shaft D, cylinder G', piston I, and chains H, substantially as and for the purpose described.

4. The combination of the pan or chamber having a screen applied in its periphery, cylinder G' having die C on its bottom, piston I, bearing J provided with balls $d'$, spider $f'$, grinding wheels B having their shafts in boxes E hinged to the spider $f'$, springs E' applied between the boxes and the spider $f'$, shaft D provided with a key $g$, gear L', step M' having recess A, and the supporting platform having an opening N through it for the shaft D to move in, substantially as described.

5. The combination of the pan or chamber A having a screen in its periphery, cylinder G having a stuffing box or gland at its top, piston I having a long upwardly extended collar passed through the stuffing box, and chained against revolution; bearing plate J, balls $d'$ and step M' having recess A, shaft D having spline $g$ and gear L', substantially as described.

6. The combination of the platform having opening N, pan or chamber A having die C, step M' having recess A, shaft D, piston I cylinder G', spider $f'$, shaft boxes E keyed to the spider, axles R having collars $a$, screw threads B', wheels B, nuts $m$ and springs E', substantially as described.





7. The combination with the pan or chamber having a screen in its periphery and provided with a revolving and sliding shaft D having a splined gear L', cylinder G', piston I, and a dished bearing plate J having friction balls on its top, of the air and water tank K, pipes $d$ $d'$ and $i$, three-way cock $b$ having a regulation stem $b'$, safety valve U, pump P', eccentric P, and gearing consisting of shaft M having fast and loose pulleys N', N$^2$ and gear L$^2$; and with the step M' having recess A, and platform having opening N, substantially as described.

8. The combination of the relief valve U on pipe $d'$ with the air and water tank K, pan or chamber A, pipe $d$ having a three-way cock $b$, cylinder G', piston L bearing plate J having balls on its top, shaft D, spider $f'$ and hinged wheels B, substantially as described.

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**501,484.** VIOLET DYE. CARL MÜLLER, Ludwigshafen, Germany, assignor to the Badische Anilin und Soda-Fabrik, same place. Filed Apr. 16, 1892. Serial No. 429,466. (Specimens.) Patented in France July 1, 1891, No. 214,571.

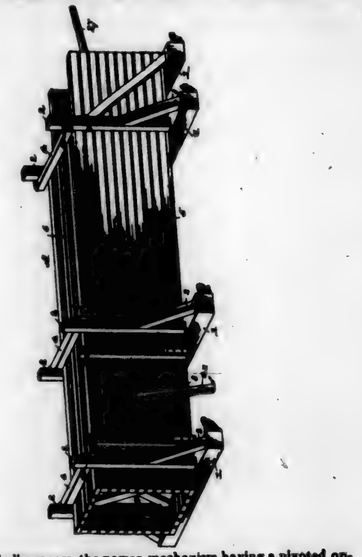
*Claim.*—1. The new violet dyestuff, which is a sulphonated derivative of ortho-alkyl-oxy-para-rosaniline, soluble in water and in alcohol, insoluble in ether and benzene, giving a violet blue aqueous solution turning violet red on treatment with hydrochloric acid and dissolving in concentrated sulphuric acid, giving an orange brown solution which changes through violet red to blue on dilution with water, all substantially as described.

2. The process for the production of a violet dyestuff which process consists in exposing the alkyl-ethers of meta-hydroxy-phenyl-para-tolylamine, meta-hydroxy-phenyl-ortho-tolylamine or meta-hydroxy-phenyl-meta-xylylamine to the action of a condensing agent such as phosphorus oxychloride or phosgene in the presence of a diluent such as toluene and then sulphonating the basic coloring matter formed substantially as described.

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**501,485.** HAY OR COTTON PRESS. SAMUEL M. HESLY, Smith's Turn Out, S. C. Filed July 25, 1892. Serial No. 441,165. (No model.)

*Claim.*—1. In a baling-press, the power mechanism having a pivoted operating-lever, a movable clutch mounted at its upper end upon a guide-pin and engaged by an actuating spring, said clutch being connected at its lower end to the lower end of the operating-lever, the stationary clutch engaged at its upper end by a spring, and a trip-lever to engage the upper ends of said movable and stationary clutches, in combination with a follower-rod extending through the clutches and adapted to be engaged alternately thereby, substantially as specified.



2. In a baling-press, the power mechanism having a pivoted operating-lever, a movable clutch sliding at its upper end upon a guide-pin and engaged by a rearwardly-pressing spring, the lower end of said clutch being connected to the operating-lever, and a stationary clutch arranged in juxtaposition to a retaining cross rod and engaged at its upper end by a forwardly-pressing spring, in combination with a follower-rod extending through said clutches, substantially as specified.

3. In a baling-press, the combination with the follower-rod, of the transverse guides arranged near the rear end of the frame and held in place by longitudinal parallel beams, the operating-lever bifurcated at its lower end and fulcrumed between said beams, the movable clutch provided at its upper end with a rearwardly-pressing spring and connected at its lower end to the lower end of the operating-lever, the stationary clutch arranged at its upper end between a cross-rod and a forwardly-pressing spring, the follower-rod passing through said clutches, and a trip-lever to separate the upper ends of the clutches and hold them out of engagement with the follower-rod, substantially as specified.

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**501,486.** TROLLING-SPOON. ERNEST P. PFLUEGER, Akron, Ohio. Filed Mar. 11, 1893. Serial No. 465,556. (No model.)



*Claim.*—1. A detachable device for attaching trolling spoons or other bait to a bait carrying rod or similar device, said detachable device comprising a piece of metal bent to form a loop designed to engage both the spoon and the rod, one of the end portions of said loop forming a spring tongue, held in closing position by its own elasticity substantially as specified.

2. A detachable device for attaching trolling spoons or other bait to their carrying device, said detachable device comprising a loop having a bearing at one portion designed to receive the bait-carrying device, and at the opposite portion designed to engage the spoon or other bait, one of the end portions of said loop forming a spring tongue, held in closing position by its own elasticity substantially as specified.

3. The combination with a trolling spoon, or other bait, having an eye or aperture, of a detachable device for connecting said spoon or bait to its carrying rod or snood, said device comprising a piece of metal bent to form a loop, and designed to engage said eye or aper-

ture, bearings in said loop for engagement with the rod or snood, one end portion of said loop forming a spring tongue, arranged to close the loop and held in closing position by its own elasticity substantially as specified.

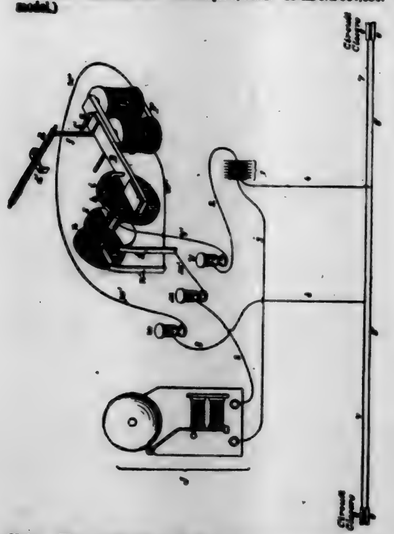
**501,437.** STEAM OR GAS REGULATOR. WILLIAM H. PIERCE, Anderson, Ind. Filed Mar. 11, 1893. Serial No. 465,551. (No model.)



*Claim.*—1. A regulator for gas or other fluids, comprising a shell or casing, having a passage therethrough said passage being enlarged at one end portion to form a chamber or reservoir, a diaphragm located in said chamber, and of less diameter than the diameter of said chamber, a spring upon which said diaphragm is seated, a small opening through said diaphragm, and means at the respective ends of said casing or shell for connection with inlet and outlet pipes, substantially as specified.

2. The herein described gas regulator, comprising a shell or casing having a chamber or reservoir therein, and a passage leading therethrough from said chamber or reservoir, a cap secured to one end of said casing or shell and closing the outer end of said chamber, a threaded boss or connection upon the outer face of said cap for connection with a service or supply pipe, a connection at the other end of said shell or casing for the burner pipe, a diaphragm seated in said chamber, said diaphragm being of less diameter that the interior of said chamber, and having a small opening therethrough, and a coiled spring bearing at one end upon said diaphragm, and at the other end against a shoulder in said passage, the tension of said spring being such as to balance said diaphragm against a normal pressure of the gas, substantially as specified.

**501,438.** RAILROAD-CROSSING ALARM OR SIGNAL. ELWOOD G. FOSTER, Vineland, N. J. Filed Apr. 6, 1891. Serial No. 387,859. (No model.)



*Claim.*—The combination of the electro-magnetically-operated signal, track and signal circuits, circuit closers in the track circuit, an electro magnet also in the track circuit, the armature of said magnet, rotary switches in both the track and signal circuits, a notched disk, escapement mechanism for controlling the operation of said rotary switches and notched disk, and means whereby the armature is caused to lock the notched disk and escapement mechanism when said armature is in its normal position, but, after releasing said mechanism, is held out of locking position by the notched disk for a predetermined time, the track circuit switch being normally closed, and the signal circuit switch normally open, but these conditions being reversed as soon as the escapement mechanism is released, and being restored just before the escapement mechanism is stopped, substantially as specified.

**501,439.** PLUMBER'S HOOK. GEORGE RAMSON, Mercer, Pa. Filed Apr. 12, 1893. Serial No. 470,012. (No model.)



*Claim.*—The plumber's-hook for fastening piping, consisting of a single piece of wire bent into substantially a U-form and having the ends of its arms sharpened and bent laterally, oppositely projecting shoulders being formed at the bends in the arms, substantially as described.

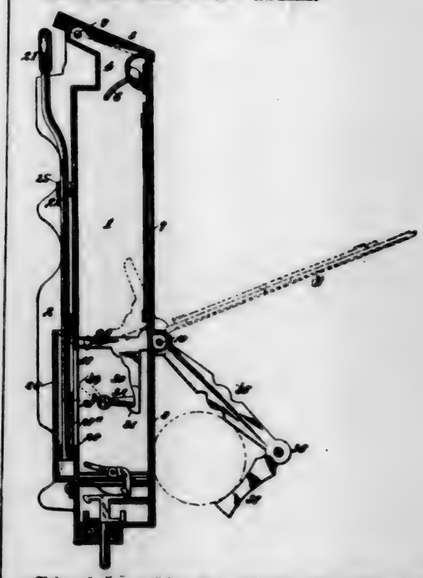
**501,440.** SELF-FASTENING GIANT-POWDER CAP. ALONZO B. REUDE, Thompson Falls, Mont., assignor to John Sweeney, same place. Filed Nov. 19, 1892. Serial No. 452,527. (No model.)



*Claim.*—1. A blasting fuse having a cap, said cap being provided with inwardly projecting barbs, the points of which are bent downwardly to allow free insertion of the fuse and automatically engage it as set forth.

2. The combination with a blasting or other fuse, of a cap A, having fingers B, formed by V shaped cuts in the side of the cap; the said fingers being bent inwardly and downwardly as shown and for the purpose set forth.

**501,441.** HOUSE MAIL-BOX. JOHN RINGER, St. Louis, Mo. Filed Nov. 30, 1892. Serial No. 453,578. (No model.)

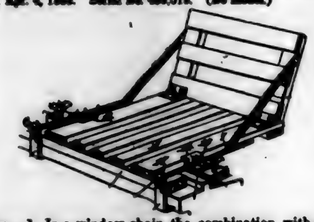


*Claim.*—1. In a mail box, the combination of an indicator rod, the indicator mounted on the rod, a guide arm secured to the rod, an opening in the back wall of the box in which said guide arm reciprocates, a spring arm on the rod, and a catch for engaging said spring arm, whereby the rod can be lifted and held in an exposed position, substantially as described.

2. In combination with a mail box, a paper holder comprising the arms 35 hinged at their upper ends to the box and connected at their lower ends by the rod 36, and the inwardly projecting extensions 37, for engaging the papers and supporting them against the box, as set forth.



**501,442.** WINDOW-CHAIR. MARY C. ROGERS, Philadelphia, Pa. Filed Apr. 4, 1893. Serial No. 469,018. (No model.)

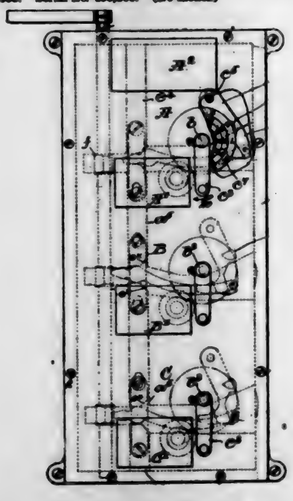


*Claim.*—1. In a window chair, the combination with the chair bottom having a front cross bar extended beyond the side of the chair and provided with depending rearwardly turned hooks and having lugs at the upper ends of said hooks, of an adjustable clamping bar located beneath the chair bottom in rear of said front cross bar and having its ends extended on each side of the chair, nuts and guide lugs secured to the projecting portions of the clamping bar, horizontal screw shafts engaged in the nuts of the clamping bar and in the lugs on the front cross bar of the chair bottom, and finger pieces for rotating said screw shafts to actuate the movable clamping bar, substantially as described.

2. In a window chair, the combination with the chair bottom having a front cross bar provided with depending rearwardly turned hooks, an adjustable clamping bar located beneath the chair bottom and provided with guide lugs engaged with the side edges of the chair bottom, and means for adjusting said clamping bar, of vertical screw shafts engaged in the ends of the clamping bar and having adjustable leveling disks on their lower ends and finger pieces on their upper ends, substantially as described.

3. In a window chair, the combination of a chair bottom having a front cross bar provided with depending rearwardly turned hooks, an adjustable clamping bar located beneath the chair bottom and provided with guide lugs and stationary nuts, horizontal screw shafts mounted on the chair bottom and engaged with said nuts to actuate the clamping bar, vertical screw shafts mounted in the ends of the clamping bar and provided with leveling disks, and a hinged chair back provided with brace arms, substantially as described.

**501,448.** VOTING-MACHINE. CHARLES F. ROPER, Hopedale, Mass., assignor of one-half to George Draper & Sons, same place. Filed Jan 31, 1893. Serial No. 460,909. (No model.)



*Claim.*—1. In a voting apparatus, the combination with a series of independent ballot-counting mechanisms arranged in groups, and a locking plate, and a releasing device including a plunger, for and connected with each mechanism, combined with a series of removable slides separated by said plungers, guides for the slides, stops at the ends of the series separated a predetermined distance, movement of one or more of the mechanisms throwing the locking plate into operative position and moving the connected plunger to separate the slides and fill the space between the stops, whereby one or more mechanisms may be operated and the others made inoperative, and means to actuate the releasing devices to simultaneously retract the extended plungers and to release the counting mechanism, substantially as described.

2. The combination with a series of counting mechanisms, and a plunger connected to and positively actuated by each mechanism and having a beveled outer end and an adjacent enlarged portion, of a guide parallel to said series of mechanisms, fixed stops at the ends, and slides movable longitudinally in the guide and normally separated by the projecting beveled ends of the plungers, the total movement of said slides being substantially equal to the enlarged portion of a predetermined number of plungers, whereby only a corresponding number of counting mechanisms can be operated to move the plunger connected to each and thereby move the slides longitudinally against the stops, to thus regulate the number of counting mechanisms which may be operated at a time, substantially as described.

3. In a voting apparatus, the combination with a series of positively and directly actuated ballot counting mechanisms, and stopping devices between and operated directly by said mechanisms to permit a predetermined number of mechanisms in the series to be operated, of a series of pivoted locking plates, one for and connected to each mechanism, moved directly by rotation thereof into position to lock its own particular counting mechanism when one ballot has been cast, and releasing devices to act upon the locking plates of the operated mechanisms and restore them to normal position, substantially as described.

4. A base plate, a recess therein, a post rigidly secured to the plate, a pivoted locking plate, and a plunger connected thereto and movable in said recess, combined with an actuator rotatable on said post, a series of indicators concentric therewith, mechanism intermediate said actuator and indicators, whereby rotation of the actuator moves the adjacent indicator step by step, it in turn moving the other indicators to register or count, and a projection moved by the actuator to throw the locking plate into position to hold the mechanism inoperative after each step until released, substantially as described.

5. In a voting apparatus, a post, an actuator thereon including a rotatable disk with a projection on its inner and a recess and two teeth on its outer sides and having a sleeve-like hub surrounding said post, and a pivoted stop-carrying plate having a cam surface thereon to be at times engaged and moved by the projection, combined with a series of separate concentric number-indicators each supported by the hub and disk of the preceding indicator and rotatable with relation to the actuator and to each other, a disk for each indicator provided with a series of teeth on one side and two teeth and a recess on the other side, a series of star wheels having alternate wide and narrow teeth adapted at times to mesh with the series of teeth on one disk and the two teeth of the next disk and rotate the disks simultaneously, and a releasing device for the stop-carrying plate, substantially as described.

6. In a voting apparatus, counting mechanism, a rotatable actuator therefor, and a suitable projection carried thereby, combined with a locking plate having limiting stops, a cam surface thereon formed by the two contiguous edges of said stops and adapted to be entered by said projection when rotated in either direction, to move the locking plate and bring one or the other stop into the path of the projection, to lock the actuator from further rotation in that direction, substantially as described.

7. In a counting or registering mechanism, a units indicator, an actuator to move it one unit or step at a time, and a suitable projection carried thereby, combined with a locking plate having a limiting stop thereon and adapted to be moved by said projection, and a releasing device for said plate, movement of the actuator advancing the indicator one unit, the projection on the actuator engaging the locking plate and moving it to bring the limiting stop into engagement with said projection, at the conclusion of its rotation whereby the actuator and indicator are locked from movement, substantially as described.

8. In a counting mechanism, a units indicator and actuating mechanism therefor provided with a suitable projection, combined with a locking plate having a cam surface and limiting stops, and independent means to move said cam surface into the path of said projection, rotation of said projection bringing it into engagement with said cam surface and moving the plate to bring the stops into the path of the projection at the conclusion of its rotation, to thereby limit its rotation in either direction, substantially as and for the purpose described.

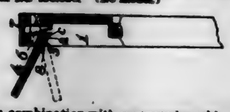
9. A booth, a closure therefor, inclosed counting mechanism movable step by step to count and register the successive votes cast, and an actuator therefor accessible to and operable by the voter to advance the counting mechanism one step to indicate his vote or to retract said step to thereby annul his vote so indicated, if desired, combined with locking devices to prevent alteration of the registered votes, and connections between the closure and locking devices whereby the exit of the voter actuates said locking devices and also automatically frees the actuator for the registration of the next vote, substantially as described.

10. A voting apparatus containing the following instrumentalities, viz:—a series of manually actuated counting disks to register successive votes cast, mechanism under the control of a voter to effect a retrograde movement of said disks to cancel, withdraw or change his vote when cast, and a locking device to prevent registration of more than a single vote at a time, combined with means beyond the control of the voter to effect a release of said locking device to permit registration of a succeeding vote in like manner, substantially as described.

11. In a voting apparatus a series of inte dependent counting disks provided with characters, and a units disk movable step by step to actuate the other disk and thereby register accumulatively successive impulses or movements, combined with a shield or cover for said disks provided with an opening, through which the characters upon the units disk are exposed, substantially as described.

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**501,444.** WASHBOARD. JAMES T. SARGENT, Cleveland, Ohio, assignor to the American Washboard Company, same place. Filed June 30 1892. Serial No. 438,690. (No model.)



*Claim.*—1. In combination with a pivoted washboard protector, fixed pivotal bearings for the protector, a yielding resilient spring, and an operating toe or projection adapted to engage the spring and be acted on with greatest effect while the protector is at or near either or both the limits of its normal movement, substantially as set forth.

2. In combination with two pivotal washboard protectors, fixed bearings for the protector, a yielding resilient spring, common to both protectors and adapted to operate on either and an operating toe on each protector adapted to engage the spring and be acted on with greatest effect while the protectors are at or near either or both limits of their normal movement, substantially as set forth.

3. In combination with a pivoted washboard protector, a yielding resilient spring, an operating toe provided with an opening for the admission of a portion of the wood of the protector adapted to engage the spring and be acted on thereby, and journal pins passing through the side-bars of the board and entering the portion of the wood inclosed by the toe, substantially as set forth

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**501,445.** JUNCTION-BOX. WILLIAM R. SMYTH, Glasgow, Scotland. Filed June 16, 1892. Serial No. 436,987. (No model.) Patented in England Oct. 6, 1891. No. 16,953.



*Claim.*—1. A junction box comprising a metallic receptacle *a* to contain electrical connections and having integral therewith one or more metallic extensions each consisting of a U-shaped pocket *d* of greater depth and width than the diameter of the cable to be passed therethrough and terminating in a U shaped neck *c* into and through which said conductor can be passed said pocket and neck being open at the top and serving to hold a fusible jointing metal substantially as herein described for the purpose specified.

2. A junction box comprising a metallic receptacle *a*, having integral therewith one or more lateral metallic extensions each formed with a pocket *d* terminating in a neck *c* said pocket and neck being of U-shape in cross section and open at the top, and a socket arranged at right angles to said extensions and coaxial with said receptacle, substantially as described for the purposes specified.

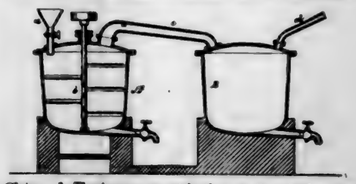
3. In a junction box, the combination of a metallic receptacle having integral therewith one or more metallic extensions each open at the top and of U-shape in cross section, concentric conductors extending through each of said extensions and the inner of which extends into said receptacle, fusible metal cast within and so as to fill said extensions and form a fluid-tight metallic and electrical joint between the outer of said concentric conductors and said extensions and a metallic cover *i* hermetically sealing the top of said receptacle substantially as herein described for the purpose specified.

4. In a junction box, the combination of a metallic receptacle having integral therewith a lateral extension consisting of a pocket open along the top and of U-shape in cross section, and also a socket, concentric conductors arranged within said lateral extension and the inner of which extends into said receptacle, fusible metal located within and filling said pocket and forming a fluid tight metallic joint between the outer of said conductors and said lateral extension concentric conductors arranged within said socket and the inner of which also extends into said receptacle, fusible metal forming a fluid tight metallic joint between the outer of said last mentioned conductors and said socket, conducting material uniting the portions of the two inner conductors that extend into said receptacle, and a fluid tight cover soldered to the top of said receptacle flush with the top of the filling in said extension, substantially as herein described.

5. In a junction box, the combination of a metallic receptacle *a* having integral therewith lateral extensions each consisting of a pocket *d* and neck *c* of U-shape in cross section and open at the top, and a socket *m* extending from its bottom, with concentric conductors extending through said extensions and the inner of which also extends through said receptacle, fusible metal forming a fluid tight metallic joint between the outer of said conductors and each of said extensions and filling said extensions so as to be flush with the top thereof, concentric conductors extending into said socket, and the inner of which also extends into said receptacle, fusible metal forming a fluid tight metallic joint between the outer of said last mentioned conductors and said socket, a contact piece uniting the two inner conductors within said receptacle, and a fluid-tight cover sealed in the top of said receptacle and insulated from said inner conductors substantially as herein described for the purpose specified.

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**501,446.** MANUFACTURE OF RESIN-ACID ESTERS. EUGEN SCHAAL, Stuttgart, Germany. Filed July 23, 1892. Serial No. 441,514. (No specimens.) Patented in England Feb. 12, 1890. No. 2,308.



*Claim.*—1. The improvement in the art of producing esters or esterlike products, which consists in exposing a resin acid to heat in the presence of an alcohol or hydroxyl derivative in a suitable retort and drawing off the aqueous vapors formed during the formation of the esters or esterlike products by suction applied as soon as the formation of the esters begins, substantially as described.

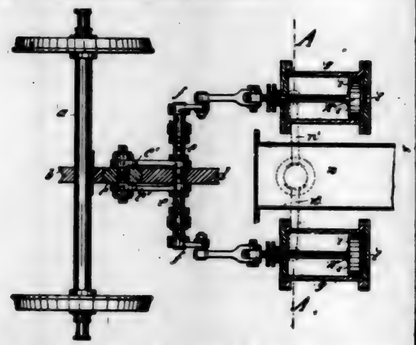
2. The improvement in the art of producing esters or esterlike products, which consists in exposing a resin acid to heat in the presence of an alcohol or hydroxyl derivative in a suitable retort, drawing off the aqueous vapors formed during the formation of the esters or esterlike products by suction applied as soon as the formation of the esters begins and replacing the alcohols which distill off, by the introduction of a fresh supply, until the formation of the ester or esterlike product is completed, substantially as described.

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**501,447.** CAR STARTER AND BRAKE. RICHARD SCHRÖDLER, Aussha, Austria-Hungary. Filed Oct. 8, 1892. Serial No. 448,227. (No model.)

*Claim.*—1. The combination with a vehicle, of a compressed air reservoir, an air pump for forcing air into the reservoir, pump-driving devices movable into and out of gear with one of the vehicle axles, cylinders containing pistons, and provided with pipes or channels to communicate with the air reservoir, a valve for controlling the flow of compressed air from the reservoir through the said pipes or channels, gearing driven by the piston rods for imparting power to one of the car axles to aid in starting the vehicle, and means for operating the valve, and for throwing the pump-driving devices, at will, into and out of gear with the vehicle axle which operates said devices, substantially as described.

2. The combination with a vehicle, of a compressed air reservoir, air compressing cylinders having pistons, a crank-shaft connected to the piston-rods, a friction wheel mounted on the crank-shaft, a friction wheel mounted on one of the vehicle axles, an intermediate friction-transmitting gear wheel, and means for throwing the friction-transmitting gear wheel into and out of engagement with the friction wheel on the vehicle axle, substantially as described.



3. The combination with a vehicle, of a friction wheel mounted on the vehicle axle, a crank-shaft having a friction wheel, an intermediate friction wheel adapted to be moved into engagement with the friction wheel on the vehicle axle, a longitudinal movable rod for moving the intermediate friction wheel into and out of engagement with the friction gear on the vehicle axle, cylinders having pistons connected with the crank-shaft, and an air reservoir into which air is forced by the action of the pistons, substantially as described.

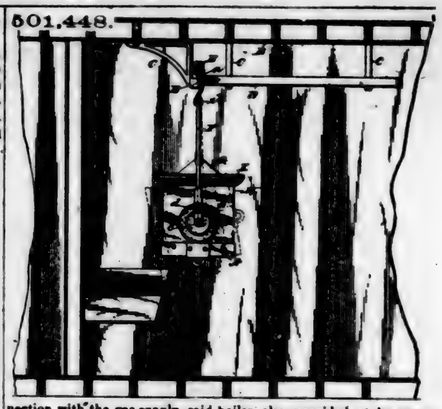
4. The combination of the vehicle axles *a a'* having wheels *b b'*, counter shafts *e e'* having cranks *f f'* and gear-wheels *d d'*, transmitting gears *c c'*, means for moving the transmitting gears into and out of engagement with the gears on the vehicle axles and air reservoir *n*, cylinders *g g'* having pistons connected with the crank-shafts, a valve for controlling the flow of compressed air from the air reservoir to one pair of cylinders, and means for operating said valve, substantially as described.

5. The combination with the axle *a'*, of a vehicle, cylinders *g'* having pistons and gearing for connecting the pistons with the vehicle axle, of an air reservoir *n*, a valve *p*, and a rod Q which operates the valve and throws the gearing into engagement with the vehicle axle, substantially as described.

6. The combination with the vehicle axles, of an air reservoir, an air pump, gearing adapted to be thrown into engagement with one of the vehicle axles to operate the pump and force air into the reservoir, a cylinder having a piston and connected with the air reservoir, a valve for controlling the flow of compressed air from the reservoir to said cylinder, gearing driven by the cylinder-piston and movable into engagement with one of the vehicle axles to aid in starting the vehicle, and means for operating said valve and gearing, substantially as described.

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**501,448.** WASHBOILER. PASCAL J. SHAMPAY, Chicago, Ill. Filed Apr. 25, 1891. Renewed Sept. 23, 1892. Again renewed June 12, 1893. Serial No. 477,381. (No model.)



*Claim.*—1. In a washing device for a laundry the combination between a permanent track or rail with its supports and a wash boiler traveling upon said rail by wheels conforming thereto, said boiler being provided with means for heating the same connected with the bottom thereof and having connections with a permanent gas supply, and means for supporting said boiler, pivotally connecting the ends of said boiler to said wheels all as substantially shown.

2. In a washing device in a laundry-room, the combination of a rail or track with its permanent supports with a wash boiler provided with a bail in which said boiler is pivotally supported, swiveled arms connecting said bail and one or more wheels traveling upon said rail or track, and a gas heater fixed to the bottom of said boiler and having connections with a permanent gas supply, all as substantially shown.

3. In a washing device for laundries a boiler provided with a bail pivotally attached to the ends of said boiler and a locking device upon one end thereof whereby the bail may be fixed in any given position with reference to said boiler, a gas tube attached to the bottom of said boiler with perforations and having a tip or jet for connection with the gas supply, said boiler also, provided at its upper edges with projecting ledges or flanges; and a dome-like cover with edges adapted to meet and fit into the main walls of said steam boiler and having means for locking the same in position, all as substantially shown.

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**501,449.** CORN-PLANTER. FRANK F. SHAWEN, Waukegan, Ill. Filed Feb. 10, 1893. Serial No. 461,819. (No model.)



*Claim.*—1. In a planter, the combination of a frame, a support for a seed planting mechanism adjustable thereon, pulleys supported by the frame above and below the normal position of said support, a lever fulcrumed between its ends to the frame, and lines leading from opposite sides of the fulcrum point of the lever over the respective pulleys and finally secured to the said support, substantially as shown and described.

2. In a planter, the combination of a frame, standards extending vertically therefrom having pulleys in their respective ends, a support for a seed planting mechanism adjustable on said frame, a lever fulcrumed between its ends to the frame and lines extending from the said lever on opposite sides of the fulcrum point over said pulleys in the ends of the standards and finally secured to the said support, substantially as shown and described.

3. In a planter, the combination of a frame, standards extending vertically therefrom having pulleys in their respective ends, a support for a seed dropping mechanism over said frame, a loose connection between the said support and the frame, a lever fulcrumed between its ends to the frame, and lines leading from opposite sides of the fulcrum point thereof rearward over the respective pulleys and finally secured to the said support, substantially as shown and described.

4. In a planter, the combination of a pole, angular frames extending from opposite sides thereof, standards extending vertically from the said frames having pulleys in their respective ends, frames D, loosely secured at their forward ends to the said first named frames, a seed dropping mechanism support secured to the rear ends of the said frames D, a lever fulcrumed between its ends to the pole, and lines leading from opposite sides of the fulcrum point therefor rearward over the respective pulleys and finally secured to the said frames D, substantially as shown and described.

5. In a planter, the combination of a frame, angular frames D, loosely secured thereto, a support for a seed dropping mechanism secured to the said frame D, and a means for adjusting vertically the said

support with relation to the frame, substantially as shown and described.

6. In a planter, the combination of a wheel, a seed containing depositor secured to the periphery thereof, a revolvable disk at the lower end of the depositor for turning the seed out of the same, and a means for operating the latter, substantially as shown and described.

7. In a planter, the combination of a wheel, a seed containing depositor pivoted to the periphery of the wheel, an automatically operated means for drawing the upper end of the said depositor forward against the pull of a spring, and a revolvable recessed disk at the lower end of the depositor for turning the seed out of the same, substantially as shown and described.

8. In a planter, the combination of a wheel, a seed containing depositor fulcrumed between its ends to the wheel periphery, a means for drawing the upper end of the depositor forward against the pull of a spring, a revolvable recessed disk journaled in a recess in the lower end of the depositor and a cord connecting its periphery with the wheel, whereby when the lower end of the depositor is turned rearward the disk is revolved and its recessed side turned outward, substantially as shown and described.

9. In a planter, the combination of a wheel, a seed containing depositor fulcrumed between its ends to the wheel periphery, a means for drawing the upper end of the depositor forward against the pull of a spring, a revolvable recessed disk journaled in a recess in the lower end of the depositor, a spring encircling the axial pin of said disk for holding its recessed side normally turned inward, and a cord connecting the peripheries of the said disk and wheel, substantially as shown and described.

10. In a planter, the combination of a wheel, a seed containing depositor fulcrumed between its ends to the periphery of the wheel, an inwardly movable push bar extending inward through the wheel periphery, a line connected at one end to the inner end of the said depositor, a pulley supported by the wheel periphery around which the said line passes, a wedge for securing the opposite end of the line in an opening in the inner end of the said push bar, and a means for turning the seed out of the lower end of the depositor, when the same is drawn forward, substantially as shown and described.

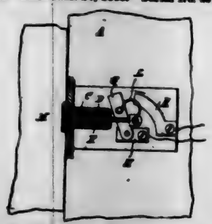
11. In a planter, the combination of a wheel, a seed box carried thereby, a seed depositor secured to the periphery of the wheel, a means for turning the seed out of the same, and a flexible tube connecting the seed box and the depositor, substantially as shown and described.

12. In a planter, the combination of a wheel, a seed box carried thereby, a depositor fulcrumed to the periphery of the wheel, a means for turning the same into a planting position, and a flexible tube connecting the seed box and depositor, substantially as shown and described.

13. In a planter, the combination of a wheel, a seed box carried thereby, a seed depositor fulcrumed between its ends to the wheel periphery, a spring for holding the upper end of the same normally in a rearwardly drawn position, a means for drawing the same forward into a dropping position, and a flexible tube connecting the depositor and seed box, substantially as shown and described.

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**501,450. ELECTRIC SWITCH.** LOUIS T. STANLEY, Brooklyn, N. Y., assignor to the Cutter Electrical and Manufacturing Company, Philadelphia, Pa. Filed Mar. 27, 1893. Serial No. 467,573. (No model.)



*Claim.*—1. The combination with a door of a contact terminal and a pivoted contact arm in a recess in the jamb of the door, a push-button or plunger in position to be forced into the recess by the closing of the door, a spring acting to return the plunger when the door is opened and a spring adapted to throw the contact arm into or out of engagement with the terminal, the action or operation of said spring being dependent upon a movement in either direction of the plunger, as set forth.

2. The combination with a door of a contact terminal and a pivoted contact arm in a recess in the jamb of the door, a plunger in position to be forced into the recess by the closing of the door, a spring acting to return the plunger when the door is opened and a flat spring connected to the end of the plunger and the pivoted contact arm respectively, whereby in the movement of the plunger the said arm will be shifted by the reaction of the spring, as set forth.

3. The combination with a door of the plate B, covering a recess in the jamb or frame, the socket D, the plunger C movable in the socket, the spiral spring F acting on the plunger, the stationary contact K within the recess, the pivotal contact G and the flat spring having its ends connected to the inner end of the plunger and to the pivoted contact respectively.

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**501,451. FASTENER FOR THE MEETING-RAILS OF SASHES.** WILLIAM WAGNER, Rochester, N. Y., assignor of one-half to Wendell Ernst, same place. Filed Oct. 19, 1892. Serial No. 449,206. (No model.)



*Claim.*—In a sash lock, the combination with two shell like parts, each of which is provided with a vertical wall or plate, each of which walls is provided with a key hole slot, the extended portion of each of which slots lies in the same horizontal plane but extends in opposite directions, one of the walls being provided with a hollow spiral in line with the key hole opening, a stop adjacent the wall of the other portion of the lock, said stop being opposite the extended portion of the key hole slot in said wall, and the upper surface of the stop being substantially in a line with the lower wall of the extended portion of the slot in the wall of the other portion of the lock, and a shaft journaled in bearings in the walls of one of the portions of the lock and having a handle at its outer end for rotating it and a lip upon its inner end for passing through the extended portions of the slots and engaging with the spiral, for drawing the sash together, substantially as set forth.

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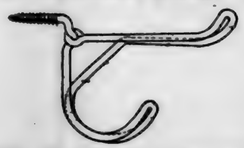
**501,452. COAT-HOOK.** ALBERT WHITE, Lowell, Mass., assignor to Frederick Taylor, same place. Filed Mar. 26, 1890. Serial No. 345,351. (No model.)



*Claim.*—A hook formed of a single piece of wire, one end of which is formed into an attaching-point, said wire being doubled upon itself with an upwardly deflected loop to form a hat hook, the two members of which are in the same surface laterally, said wire from the rear end of one of said members being extended diagonally downward and then doubled upon itself and curved to form a coat hook, the two members of which are in the same surface laterally, said wire from the end of one of said last-named members being extended vertically and around the shank of one member of said hat hook, substantially as described.

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**501,453. HAT AND COAT HOOK.** ALBERT WHITE, Lowell, Mass., assignor to Frederick Taylor, same place. Original application filed Mar. 26, 1890, Serial No. 345,351. Divided and this application filed Mar. 31, 1892. Serial No. 427,499. (No model.)

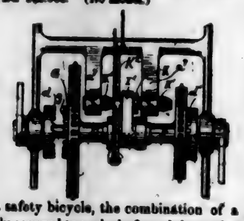


*Claim.*—A hat and coat hook formed from a single piece of wire, doubled upon itself to form a loop, with two members lying in the same surface laterally and constituting the hat-hook, the extremity of one of said members being formed into an eye and said wire at the rear end of the other of said members being projected diagonally downward to form a brace and said wire being then doubled upon itself, to form a coat hook with two members in the same surface laterally, one of said last-named members being extended upward through said eye and bent backward to form an attaching-point, substantially as described.

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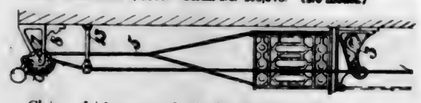
**501,454. SAFETY-BICYCLE.** JUDSON R. WRIGHT, Chicago, Ill., assignor of one-half to William R. Moore, same place. Filed Aug. 12, 1892. Serial No. 442,903. (No model.)



*Claim.*—In a safety bicycle, the combination of a pedal shaft, clutch disks rigidly secured to such shaft, and sleeves loosely mounted on such shaft, sprocket wheels mounted, respectively, on such sleeves, wheels or disks on the sides of such sprocket wheels, respectively, adapted to engage with the clutch disks rigidly secured on the pedal shaft, an arm journaled loosely on the pedal shaft between the sleeves thereon, such arm connected with the sleeves, respectively, so that movement of the arm longitudinally on the pedal shaft will produce longitudinal movement of such sleeves on such shaft, a second rotatable shaft having a screw thread thereon and corresponding screw threads in the journal bearings thereof, a flanged hub on such last named shaft and crank arms secured thereto, the arm extending around the pedal shaft connecting with the flanged hub on the second named shaft, a fulcrumed lever and links connecting such crank arms with such fulcrumed lever, substantially as described.

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**501,455. BALCONY-HOIST.** JULIA B CHETWYND, London, England. Filed Feb. 1, 1893. Serial No. 460,570. (No model.)



*Claim.*—1. Apparatus for facilitating ascent of persons and their descent from the upper parts of structures comprising a movable platform, mechanism for raising and lowering the same, and fixed brackets or supports, the platform being adapted to rest normally on the brackets or supports (which project from the structure to which the apparatus is applied) but capable of being raised and lowered by a person standing on such platform as set forth.

2. A balcony fire escape comprising a movable balcony, brackets or supports fixed to the building to which the fire escape is applied and whereon said movable balcony normally rests, a rotary shaft provided with pulleys and mounted in brackets fixed to said building, flexible connectors wound on said pulleys and connected to said movable balcony, and means for rotating and controlling the motion of said shaft to raise and lower said movable balcony substantially as herein described for the purpose specified.

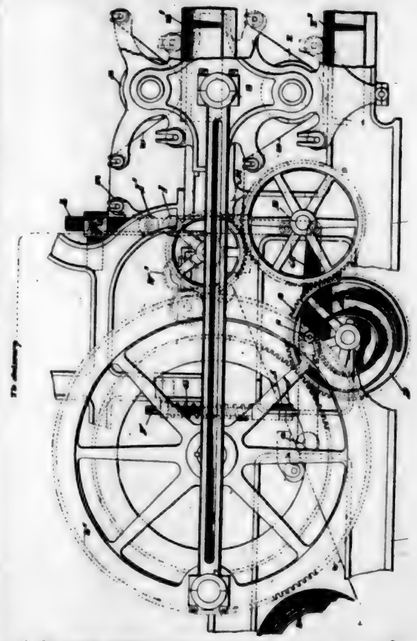
3. A balcony fire escape, comprising a movable balcony 2, brackets or supports 3 fixed to the building to which the said fire escape is applied and whereon said movable balcony normally rests, a shaft 7 mounted in brackets fixed to said building, pulleys 6 and 9 and ratchet wheel 11 fixed to said shaft, flexible connectors 5 connected to said movable balcony and wound upon said pulleys 6 a rope 10 wound upon said drum 9 in an opposite direction to that in which said flexible connectors 5 are wound upon said drums 6 said rope being arranged to be operated by a person standing on said movable balcony, and a weighted detent 12 adapted to engage said ratchet wheel and provided with an extension 12 through which said rope 10 passes substantially as herein described for the purpose specified.

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**501,456. WEB-LOOPING MECHANISM FOR PRINTING-PRESSES.** JOSEPH L. COX, Battle Creek, Mich., assignor to the Duplex Printing Press Company, same place. Filed Aug. 27, 1892. Serial No. 444,318. (No model.)

*Claim.*—1. In a machine for printing on a web of paper, the combination with mechanism for continuously feeding the web into the press, and a movable looping frame and roller for taking up the infed web between the feed and printing mechanisms, while the impression is being taken; of a vibrating lever connected to the roller supports at one end and pivoted at its other end, and having wrist pin intermediate its ends, and a rotating cam engaging said wrist pin and causing said lever to vibrate, and mechanism for rotating said cam, once for each impression made upon the paper, substantially as described.

2. In a machine for printing on a web of paper, the combination with mechanism for feeding the web continuously into the press, and a movable looping roller for taking up the infed web between the feed and printing mechanisms while the impressing is being taken, of bars supporting said looping roller, levers connected to said bars and to a fixed point on the frame, rotating cams engaging said levers for oscillating the same, and mechanism for rotating said cam so as to raise and lower the looping roller once for each impression made in the press, substantially as and for the purpose described.



3. In a web printing press the combination of paper feeding mechanism, and web guide rollers and a web looping roller and its supports, a vibrating lever connected to the roller supports at one end and pivoted at the other end, and having a wrist pin intermediate its ends, with a rotating cam engaging said pin and adapted to vibrate the lever, said cam having neither abrupt angles nor depressions, and mechanism for rotating said cam whereby said looping roller is caused to rise during the taking of an impression and to descend during the interval between impressions, substantially as described.

4. In a printing press the combination of the web feeding devices and means for taking an impression on the web, of a reciprocating web looping roller, the supports for said roller, vibrating levers each pivoted at one end, and connected by a pivoted link to one of the roller supports at the other end, a wrist pin on each lever, rotating cams engaging said wrist pins for vibrating said levers and springs for depressing said levers, and means substantially as described whereby said cams are rotated once for each impression produced, thereby vibrating the levers, and reciprocating the looping roller, once for each impression substantially as specified.

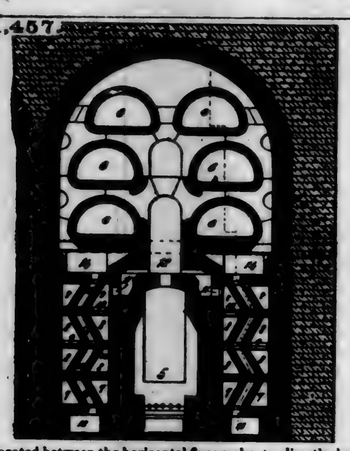
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**501,457. FURNACE FOR THE MANUFACTURE OF GAS.** JOHN C. DOUD, St. Louis, Mo., assignor to James Green, same place. Filed Feb. 20, 1893. Serial No. 463,052. (No model.)

*Claim.*—1. A recuperative furnace for the manufacture of gas comprising the tiling in the flues 7, 8, of approximately triangular shape in cross-section, said tiling being alternately inverted so that the larger base of one flue 8 communicates to the larger top of the adjoining flue 8, or vice versa; said tiling being constructed throughout of unequal lengths for the purpose of forming broken joints longitudinally of the furnace, and the vertical zigzag shaped down flues 13 substantially as described.

2. A recuperative furnace for the manufacture of gas comprising a fire-box, the horizontal flue 7, of approximately triangular shape in cross-section, passing to the rear of the furnace and returning to the front again and entering the fire-box, the horizontal flues 8, of approximately triangular shape in cross-section, passing to the rear of the furnace and returning to the front again, connected with each other and with the combustion chamber and the vertical zigzag down-

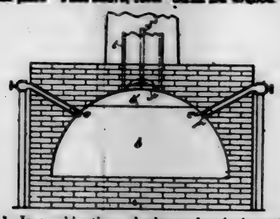
**501,457.**



flues 13 located between the horizontal flues and extending the length of the furnace; substantially as described.

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**501,458.** HYDROCARBON INCINERATING-FURNACE. ROBERT DOWLING, Philadelphia, Pa., assignor to the American Incinerating Company, same place. Filed Mar. 2, 1892. Serial No. 424,532. (No model.)



*Claim.*—1. In combination, a hydro-carbon incinerating furnace provided with an arched combustion chamber, and a series of jet tube or vapor burners projecting downward through the arched wall of said chamber and into the same at an angle to the plane of the furnace for effecting incineration of matter deposited in said chamber, substantially as described.

2. In combination, a hydro-carbon incinerating furnace provided with an arched combustion chamber, a series of jet tube or vapor burners provided with stop-cocks and projecting through the arched wall of said chamber at an angle to the plane of the furnace and a chute provided with counter-balanced valves for opening and closing the inlet and outlet of said chute, substantially as described.

3. The combination with a hydro-carbon incinerating furnace provided with an arched combustion chamber, and a series of jet tube or vapor burners provided with cocks for regulating flame issuing therefrom, of an endless conveyer and a chamber provided with an automatically controlled valve or valves for opening and closing the inlet and outlet of said chamber, substantially as and for the purpose described.

4. In combination, a hydro-carbon incinerating furnace provided with an arched combustion chamber having a series of controlled jet tube or vapor burners extending downward through the wall thereof and a vertical chute provided with an inlet and an outlet having automatically controlled valves and mechanism for actuating the same, substantially as and for the purposes described.

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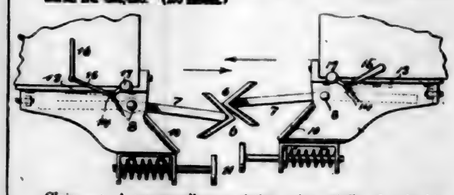
**501,459.** GAS-REGULATING BURNER. CHARLES S. POOR, Jr., Eden, Pa., assignor of one-half to Harry Duffield, same place, and Maurice Clair, Bound Brook, N. J. Filed Feb. 28, 1893. Serial No. 423,775. (No model.)



*Claim.*—The pendent cone D, having the spherical terminus c, upon its lower end, and an integral annular packing chamber C upon its upper end, provided with a series of passages *b*, through its bottom *d*, and surrounding the upper end of the cone D, in combination with the skeleton burner A, substantially in the manner, and for the purpose herein shown and described.

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**501,460.** CAR-COUPLING. WALTER GERARD, Ludlow Grove, Ohio, assignor of one-half to John Winkel, Covington, Ky. Filed Mar. 31, 1893. Serial No. 468,420. (No model.)



*Claim.*—1. A car coupling consisting substantially of a double hook pivoted to the draw-head in a manner to permit it to oscillate in a vertical direction, spring-actuated buffers carried by the draw-head, and means to operate the hook from the side of the car for the purpose of disengaging the coupling.

2. In a car coupling the combination of a draw-head, a shank pivoted thereto in a manner to permit it to oscillate in a vertical direction, a double hook extending from this shank above and below, spring-actuated buffers carried by the draw-head, and means to operate the hook from the side of the car for the purpose of disengaging the coupling.

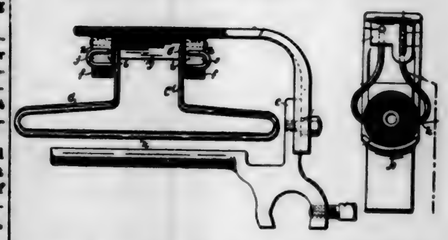
3. In a car coupling the combination of a draw-head, a double hook pivoted to it, means to operate the hook from the sides of the car for the purpose of uncoupling, an inclined-plane 10, below the hook and connected to the draw-head and spring-actuated buffers carried by the latter.

4. In a car coupling the combination of a draw-head, a shank pivoted to it, a double hook carried by the outer end of the shank, inclined planes 10, below the hooks, a rock shaft 14, provided with an arm 13, located so as to be capable of coming in contact with shank 7, and means to operate the rock-shaft.

5. In a car coupling the combination of a draw-head, a double hook pivoted to it, in a manner to permit it to oscillate in a vertical direction, means to operate the hook for the purpose of disengaging the coupling, spring-actuated buffers and bearings 12 for them, consisting substantially of a piece of flat iron with its ends bent at right angles and bolted to the draw-head.

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**501,461.** BOBBIN-HOLDER. COLBY A. HAWES, Pawtucket, R. I., assignor to the Boston & Burnham Machine Company, same place. Filed Jan. 31, 1893. Serial No. 460,440. (No model.)



*Claim.*—1. The combination with the bobbin holding trough, and the supporting arm, of the gravitating arm adapted for a swinging movement, and the opposite gravitating arm adapted for an up and down movement, substantially as described.

2. The combination with the bobbin holding trough, and the supporting arm, of the gravitating arm, adapted for a guided up and down movement and to bear upon the yarn as it is drawn from the bobbin, substantially as described.

3. The combination with the bobbin holding trough, of the attached arm provided with the perforated and slotted ears, the gravitating arm held in the said perforations and adapted for a swinging movement, and the opposite gravitating arm held in the slots, and guided for up and down movement, substantially as described.

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**501,462.** WRENCH. ALFRED A. HILL, Knoxville, Tenn., assignor of one-half to James Addyman, same place. Filed Dec. 21, 1892. Serial No. 455,982. (No model.)



*Claim.*—1. In a wrench the shank, the stationary jaw formed integral therewith, a box sliding on said shank, the movable jaw pivoted in said box and the pivoted dog having one end slotted and carrying a flat spring adapted to contact with said movable jaw, and the eccentric pivot passing through said slot substantially as described.

2. In a wrench the shank, the stationary jaw formed thereon, a box sliding on said shank and carrying the pivoted jaw, the dog having the spring adapted to engage said pivoted jaw and provided in one end with the slot for the eccentric pivot to work in, substantially as described.

3. In a wrench, the shank and stationary jaw formed integral, a sliding box carrying the pivoted jaw, the dog pivoted within said box and having the spring, secured to its upper side, which is adapted to engage the pivoted jaw, the pivot D eccentrically pivoted within the said box and adapted to work in the slot in the end of said pivoted dog, and carrying on one of its ends the lever E, substantially as set forth.

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**501,463.** NOSTRIL-PROTECTOR FOR HORSES. ADOLPH W. JOHNSEN and JOHN A. O'CONNELL, Oshkosh, Wis. Filed Feb. 2, 1893. Serial No. 460,694. (No model.)



*Claim.*—1. The within described improved article of manufacture, to wit, a wind and dust guard for horses, comprising a central attaching and wing supporting portion D, and right and left arched wings E attached in an inclined position to each side of the strap D, the said guard being provided with a strap F by which it can be attached to the head stall of the bridge, the guard being disconnected from the reins and when in use occupying a central position upon the horse's head, its wings being directly in front of the nostrils and to remain fixed in such position in an arched flaring manner so as to permit free inhaling and exhaling at the sides of the nostrils and at the same time prevent wind and dirt striking the nostrils in front, substantially as described.

2. A wind and dust guard for the nostrils of horses, comprising a central attaching and wing supporting portion, right and left arched wings or flanges which extend in front of the nostrils when in use and prevent the entrance of wind and dust at this point but permit air to enter at the sides of the nostrils, a nose strap B, bit strap H and supplemental bit G, the nose strap, bit strap and supplemental bit forming a part of the guard, substantially as described.

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**501,464.** INJECTOR. STRICKLAND L. KNEASS, Philadelphia, Pa., assignor to the William Sellers & Company, Incorporated, same place. Filed June 16, 1893. Serial No. 476,901. (Model.)

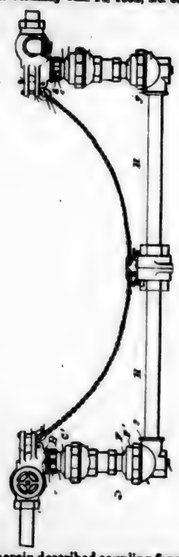


*Claim.*—1. In combination with an injector, a removable overflow casing which encircles the body of the injector and contains a passage for the overflow, between the overflow chamber of the injector and the air

2. A removable overflow casing which encircles the body of an injector, and contains a passage for the overflow, between the overflow chamber of the injector and the air, in combination with a check valve in the passage for the overflow.

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**501,465.** COMBINATION COUPLING FOR STEAM-PIPES OF RAILWAY-CARS. THOMAS W. MORAN, Louisville, Ky., assignor to the Moran Flexible Steam Joint Company, same place. Filed Nov. 26, 1892. Serial No. 453,242. (No model.) Patented in England Jan. 4, 1893, No. 151; in France Jan. 14, 1893, No. 218,675; in Belgium Jan. 14, 1893, No. 97,926, and in Germany Jan. 14, 1893, No. 66,277.

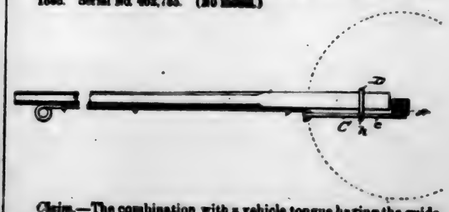


*Claim.*—1. The herein described coupling for steam pipes between adjacent railway cars, said coupling comprising a relief valve A, connected to the train pipe of each car, vertical pipe sections C connected at their upper ends one to each of said relief valves, a hollow spherical ball C' on the lower portion of each of said sections C, the vertical sections D', having spherical sockets D in which said balls C' have universal bearings, the annular rings E securing said balls in said sockets, a hollow ball or sphere in the lower portion of each of said sections D', the angular sections G having a socket and ring F' in which works the ball F, the horizontal pipe section H connected at one end to the horizontal arms of the respective sections G, and the couplings on the meeting ends of said pipe sections H, substantially as specified.

2. The herein described coupling for steam pipes between railway cars, said coupling comprising a relief valve A connected to the train pipe of each car, the vertical pipe sections C having each a threaded connection at its upper end with one of said relief valves, a hollow spherical ball C' on the lower end of each section C, the vertical sections D' having spherical sockets D in which said balls C' have loose bearings, the annular rings E securing said balls in said sockets, a hollow ball or sphere F on the lower end of each section D', the angular sections G having a socket and ring F' in which works the ball F, the traps in said angular sections, the horizontal pipe sections H connected at one end to the respective sections G, the interlocking couplings on the meeting ends of said sections H, and the tripping chains for said coupling, substantially as specified.

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**501,466.** TONGUE-SUPPORT. OSCAR M. MOSHER, Glidden, assignor of one-half to Myron W. Beach, Carroll County, Iowa. Filed Feb. 17, 1893. Serial No. 462,783. (No model.)

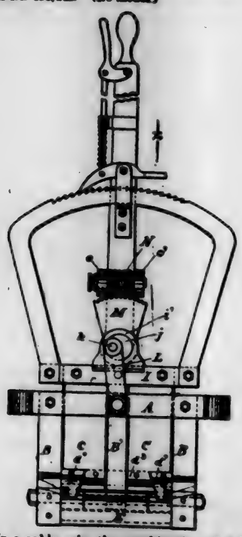


*Claim.*—The combination with a vehicle tongue having the guide eyes on its under side; of the rod arranged in said eyes and having a hook at its inner end, the approximately U-shaped plate connected with the hooked end of said rod so as to be moved thereby, and the

stirrup straddling the tongue and having lateral brackets to engage the under side of said plate, all adapted to operate, substantially as and for the purposes specified.

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**501,467.** CABLE-GRIP. SAMUEL A. HOLMAN, Portland, Oreg., assignor of one-half to Franklin I. Fuller, same place. Filed Jan. 31, 1893. Serial No. 462,442. (No model.)



*Claim.*—1. In a cable grip, the combination of a fixed hanging frame consisting substantially of a beam A, having sides plates as B, depending therefrom and furnishing bearings for the two ends of the pintle on which the cable gripping jaws are hinged, a central hanger as B', also depending from the beam and furnishing a center bearing for said pintle, for the purposes described, and a center-plate adapted to operate within said frame, substantially as set forth.

2. In a cable grip, the combination of jaws hinged oppositely on a pintle supported in suitable bearings therefor provided in the fixed hanging-frame, and a semi-circular foot as d', rigidly attached to the center-plate, to operate said jaws, such jaws and the said foot being respectively provided with means enabling the latter to engage the outer edges of the former, so that by the upward or downward movement of such foot the jaws will be opened or closed, substantially as set forth.

3. In a cable grip, in combination, a vertically movable center-plate provided at its top with bearings as f, a plate or arm as M having short journals *j* seated in said bearings f and provided with eccentrically fixed link-pins *k*, links L the upper ends of which are pivoted on said pins *k* and the lower ends thereof being pivoted to the beam of the fixed hanging-frame, and a lever also pivoted at its foot on one of said short journals *j* and provided with means for adjusting and holding in suitable adjustment the said plate or arm M, so that the position of said link-pins *k* may be vertically adjusted, and with them the drop of the center-plate, said plate M being adapted to co-operate with said adjusting means on the lever, all substantially as set forth.

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**501,468.** CORKSCREW. CHARLES PUDGEFOOT, Detroit, Mich., assignor to the Detroit Cork Screw Company, same place. Filed May 14, 1892. Serial No. 432,950. (No model.)



*Claim.*—1. A corkscrew consisting of a frame having parallel extensions formed with their inner ends inclining toward each other, a screw pivoted in the extensions, at the end of the inclined portions, and a fulcrum arm pivoted in the outer ends of the extensions of a length sufficient to carry its free end back to the inclined portions of the extensions between which it is forced, substantially as described.

2. In a corkscrew, the frame substantially as set forth, the cork-screw pivoted in the bend of the extension, the fulcrum arm pivoted in the end adapted to be folded into the frame across the pivots, point of the screw, and the extension of the shank of the screw for forcing out the arm in opening the screw, substantially as described.

3. In a corkscrew, a bifurcated frame, a corkscrew pivoted therein, a fulcrum arm also pivoted therein, the pivots of the two being in different planes parallel with the handle, whereby they may be folded into the frame on opposite sides, substantially as described.

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**501,469.** LATHE ATTACHMENT. JOHN D. ROSS, Ravenswood, W. Va., assignor to Ernest H. Lemley, same place. Filed Sept. 28, 1892. Serial No. 446,917. (No model.)



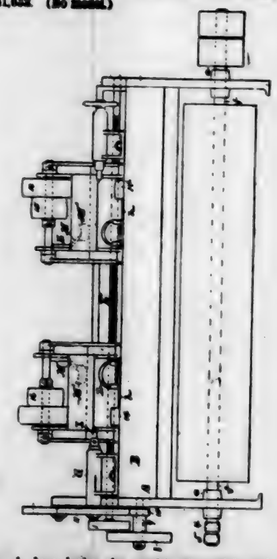
*Claim.*—1. An attachment for lathes, consisting essentially, of a laterally-movable tool-bar, a pivoted lever arranged on the frame carrying the tool-bar, an adjustable connection between the lever and the tool-bar, and a head on the lever designed to move toward and away from the tool-bar, substantially as described.

2. An attachment for lathes, consisting of a laterally and vertically movable tool-bar, a pivoted lever arranged on the frame carrying the tool-bar, an adjustable connection between the lever and the tool-bar, a head on the lever designed to move toward and away from the tool-bar, and screws placed in the end of the tool-bar, and bearing against the frame, substantially as described.

3. An attachment for lathes, consisting in a frame, a pin arranged across the frame, a tool-bar sliding on the pin, a spring arranged between the frame and the tool-bar, adjusting screws passing through the frame and bearing against the tool-bar, a lever mounted on the frame, an adjustable connection between the lever and the tool-bar, and a head on the lever designed to move toward and away from the tool-bar, substantially as described.

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**501,470.** LATHE. CHARLES SEYMOUR, Defiance, Ohio, assignor to the Defiance Machine Works, same place. Filed July 29, 1892. Serial No. 441,632. (No model.)



*Claim.*—1. In a lathe, the combination with end plates, and a series of bed-plates, of a movable carriage supported by the central bed-plate, cutting and operating mechanism mounted on said carriage, and devices supported solely on each of the side bed plates respectively for supporting the pattern and work, substantially as set forth.

2. The combination with two end plates, of a hollow bed plate secured between said end plates, a sliding carriage carried by said bed plate, a cutter carried by the carriage, and located and operating between two of the bed plates hollow bed plates at each side of and removed from the first-mentioned bed plate and head and tail stocks supported solely on each of said side bed-plates respectively, substantially as set forth.

3. In a lathe, the combination with end plates, of two bed plates, arranged a distance apart, devices carried by one of said bed plates, and a cutter supported by said devices between the bed plates, substantially as set forth.

4. In a lathe, the combination with end plates, of two bed plates secured thereto, a carriage on one of said bed plates, a bracket pivotally supported by said carriage and projecting downwardly between said bed plates; a cutter at the lower end of the bracket and devices carried by the other bed plate for supporting the work, substantially as set forth.

5. In a lathe, the combination with end plates, of two bed plates secured thereto, a carriage carried by one of the bed plates, a bracket pivotally connected to the carriage, a cutter carried by one arm of the bracket and located between the bed plates, a bracket located in position to swing the bracket and devices carried by the other bed plate for supporting the work, substantially as set forth.

6. In a lathe, the combination with a bed plate a carriage mounted thereon and a cutter carried by said carriage, of a bed plate located to one side of the cutter, head and tail stocks carried by the last-mentioned bed plate, said bed plates being so arranged relatively to the cutter, that the latter will operate between them and discharge the chips, &c., downwardly between said bed plates without coming into contact with them, substantially as set forth.

7. In a lathe, the combination with two bed plates, of a carriage carried by one of said bed plates, stocks carried solely by the other bed plate for supporting the material to be acted upon, a bracket carried by said carriage, and a cutter carried by said bracket and disposed between the bed plates in such manner as not to be in the way of the operator, substantially as set forth.

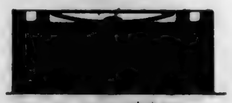
8. In a lathe, the combination with three bed plates, of a carriage carried by the central bed plate, means for moving said carriage, head and tail stocks carried by the two side bed plates, one pair of said stocks being for the reception of the material to be acted upon and the other pair for the pattern, an oscillatory bracket carried by the carriage one end of the bracket projecting between two of the bed plates and supporting a cutter, in proximity to the material to be acted upon, and a pivoted arm or lever carried by said bracket and adapted to bear on the pattern, substantially as set forth.

9. In a lathe, the combination with a series of hollow bed plates separated from each other, of a carriage carried by the central bed plate, means for moving said carriage, head and tail stocks carried by the two side bed plates, one pair of said stocks being for the reception of the material to be acted upon and the other pair for the pattern, an oscillatory bracket carried by the carriage one end of the bracket projecting between two of the bed plates and supporting a cutter, in proximity to the material to be acted upon, a pivoted arm or lever carried by said bracket and a shoe carried by said arm or lever and adapted to bear on the pattern, substantially as set forth.

10. In a lathe, the combination with three bed plates, of a carriage carried by the central bed plate, means for moving said carriage, head and tail stocks carried by the two side plates, one pair of said stocks being for the reception of the material to be acted upon and the other pair for the pattern, an oscillatory bracket carried by the carriage, one end of the bracket projecting between two of the bed plates and supporting a cutter in proximity to the material to be acted upon, an arm or lever pivotally connected to said bracket and having a limited vibratory movement, a shoe carried by said arm or lever and adapted to bear on the pattern and a spring attached at one end to the carriage and at the other end to the oscillatory bracket, substantially as described.

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**501,471.** SULPHUR CANDLE. CHARLES H. SHAW, Brooklyn, N. Y., assignor to the Seabury & Johnson, New York, N. Y. Filed Feb. 11, 1892. Serial No. 421,126. (No specimens.)



*Claim.*—1. A sulphur candle having on its upper surface a series of ridges, and cavities or gutters and a wick material substantially as specified.

2. A sulphur candle having a cavity or gutter, a wick and a ridge outside the same, substantially as specified.

3. A sulphur candle having a cavity or gutter, an annular wick and projections on opposite sides of the same, substantially as specified.

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**501,472.** STATION APPARATUS FOR TELEPHONIC AND TELEGRAPHIC CIRCUITS. THEODORE SPENCER, Cambridge, Mass. Filed Feb. 20, 1893. Serial No. 463,115. (No model.)



*Claim.*—1. The combination in an electric circuit of a receiving telephone, and a transmitting telephone at the same station; with means for preventing the side tone in the said receiver when the transmitter is operated, said means comprising balancing resistance and circuit connections for the said receiver whereby the said receiver is connected between substantially equi-potential points of the circuit with respect to outgoing currents, regardless of variations in the electric condition of the main circuit conductors.

2. The combination in an electric telephone circuit of a station apparatus, comprising a receiving telephone, a transmitting telephone, and an induction coil therefor, having its secondary helix serially connected in said circuit; with means for rendering the said receiver null or irresponsive to the outgoing currents developed by the said transmitter, the said means consisting of a greater resistance uniting directly the terminals of the circuit, and shunting said secondary helix; a lesser resistance interposed between one of the said circuit terminals and its corresponding secondary helix terminal; and a branch circuit including the receiving telephone connected between the same circuit terminal and the center of the said secondary helix, substantially as hereinbefore described.

3. In an electric telephone station apparatus, the combination of main circuit terminals; a telephone transmitter and an induction coil therefor, having its secondary helix looped to said main circuit terminals; a high resistance directly uniting the said circuit terminals in parallel with the said secondary helix; a lesser resistance approximately balancing the joint resistance of the greater resistance and the external circuit, interposed between one end of the said secondary helix and its corresponding main circuit terminal; and a receiving telephone in a branch circuit connecting the said corresponding main circuit terminal with the center of said secondary helix; whereby the said receiving telephone is rendered neutral or irresponsive to the voice currents of its associated transmitter, while remaining perfectly responsive to incoming voice currents, substantially as specified.

4. In a system of electrical communication, a circuit arrangement for rendering the receiving instrument irresponsive to the sending of its associated transmitter, consisting, of the external circuit; a high resistance uniting the terminals thereof and connected in parallel therewith or as a shunt thereof; three other resistances connected in series between the said terminals, two of which are substantially equal to one another, and the third substantially equal to the joint resistance of the external circuit and its shunting resistance; and a bridge or branch conductor uniting a point between the said two equal resistances to a point at the junction of the shunt resistance and the equalizing resistance, and including the said receiving instrument; substantially as and for the purposes specified.

5. The combination in an electric circuit of a receiving telephone and its associated transmitter so connected in such circuit that the operation of said transmitter determines equality of electrical potential at both terminals of said receiver, the line being arranged as one factor of a joint resistance constituting an element of the balanced potential, whereby disturbances of the said balance due to the varying electrostatic condition of the line are minimized, substantially as described.

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**501,473.** CANDLESTICK. THEODORE J. STILLE and OMAR G. STILLE, St. Louis, Mo. Filed Nov. 14, 1892. Serial No. 451,902. (No model.)



*Claim.*—1. A candle-stick composed of a spiral and a drip cup, the upper portion of said spiral being shaped to hold the candle and the lower portion of said spiral being enlarged, substantially as described.

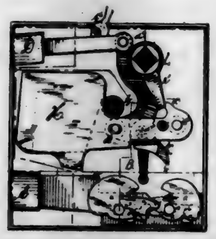
2. A candle-stick composed of a spiral and a drip cup, said cup being secured to said spiral between the upper and lower portions thereof, for the purpose described.

3. A candle stick consisting of a spiral and a drip cup, said spiral at its upper portion being of proper diameter to receive the candle, and at its lower portion being enlarged, and having its middle portion closed, and said cup being shaped and interlaced with and held in said spiral, substantially as described.

4. A candle stick consisting of a spiral and a drip cup, said spiral at its lower end being enlarged and having the kinks, substantially as described.

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**501,474.** LATCH AND LOCK COMBINED. JOHN ADAMS, Chicago, Ill., assignor to Eleanor Adams, same place. Filed July 22, 1890. Renewed Nov. 2, 1892. Serial No. 450,781. (Model.)



*Claim.*—1. The bolt having two lugs, combined with the opposite tumblers connected to swing together and having shoulders to engage the lugs alternately, said tumblers constructed substantially as described to release the bolt as the key moves the latter and to lock the bolt as key leaves the latter, substantially as set forth.

2. In a combined latch and lock a bolt having a lug projecting to one side, in combination with a weight provided at one side with a slot or groove adapted to receive said lug substantially as shown and described.

3. In a lock the combination of a bridge plate with a bolt and interlocking tumblers mounted on a pair of standards, said bridge plates being constructed to embrace said standards whereby changes of keys are obtained, substantially as shown and described.

4. In the lock the combination of a bridge plate, a slotted bolt provided with lugs, and interlocking tumblers having shoulders for engaging said lugs pivoted on standards on the case, whereby changes of keys are obtained and the picking of the lock rendered difficult, substantially as shown and described.

5. In a lock the bolt E having lugs $e^3$, $e^3$, and slots $e^5$, $e^5$, in combination with the tumblers pivoted on standards $e^7$, $e^8$, operating by a key to lock or unlock the bolt without the aid of springs or weight substantially as shown and described.

6. In a lock the combination of the bridge-plate F, having slots $d$, $d$, with the slotted bolt E, having lugs $e^3$, $e^3$, and the tumblers pivoted on standards $e^7$, $e^8$, whereby changes of keys are obtained and the picking of the lock avoided, substantially as shown and described.

7. In a latch lock the combination of a weight with a latch through an intermediate lever pivotally connected at one end to the latch and pivotally connected at the other end to the weight by a pin and slot, and a fixed pivot upon which said intermediate lever vibrates, substantially as shown and described and for the purpose set forth.

8. In a latch-lock a pivoted key lever K in combination with a weight connected through intermediate lever I to the latch, and with knob operating hub, having a lug $d'$, whereby the latch is operated by either knob or key at will substantially as shown and described.

9. In a latch-lock, the combination of the weight H, having the arm H', provided with beak $d^9$, holes $d^{10}$, and $d^{11}$, key lever K, lever I hub L, having lug $d'$ and latch D, all constructed arranged and operating substantially as shown and described.

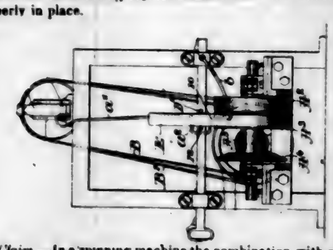
10. The combination of the key lever K, with the weight H, having arm H', and hub L, having lug $d'$ substantially as shown and described and for the purpose set forth.

11. The combination of the hub L, having lug $d'$ with the key lever K and the weight H, having arm H' formed with beak or hook $d^9$ and connected to latch by connecting lever substantially as shown and described and for purpose set forth.

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**501,475.** HEMP-SPINNING MACHINE. CHARLES E. BALDWIN, Boston, Mass., assignor of one-half to Whipple H. Potter, Jr., same place. Filed Mar. 22, 1892. Serial No. 427,187. (No model.)

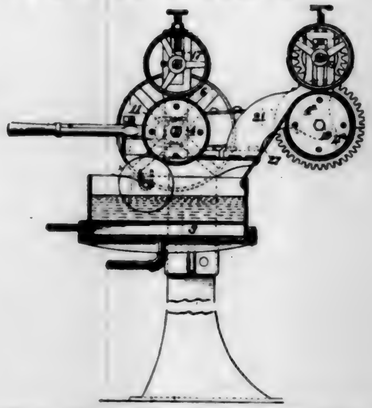
*Brief.*—The object of the invention is to prevent the removal of the bobbin-spindle until the belt is shipped upon the loose pulley, and to prevent the starting of the machine until the bobbin-spindle is properly in place.



*Claim.*—In a spinning machine the combination with a longitudinally movable spindle, its bearings, an abutment to close the spindle bearing and keep the spindle in its normal position, and a shipper, of a rod connected with said abutment, and a guide for the lower end of said rod, said rod being offset, as described, to form a loop, a portion of the said rod below the said loop serving to lock the shipper in position to retain the belt on the loose pulley, the loop serving to receive the belt shipper when the belt is on the fast pulley and to prevent the upward movement of the abutment until after the shipper has been moved to stop the machine, substantially as described.

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**501,476.** STARCHING-MACHINE. THOMAS J. BLAKE, Pittsburg, Pa. Filed Sept. 1, 1890. Serial No. 363,586. (No model.)



*Claim.*—1. In a starching machine, the combination of a rotating starch-carrying drum, provided with recesses or pockets having flexible walls for the reception of starch and a perforated presser roller for forcing the article against the drum, the drum and roller having unsupported outer ends, thereby permitting the passage of portions of the article between the drum and roller, substantially as set forth.

2. In a starching machine, the combination of a starch-carrying drum and a presser roller for applying the starch, rubbing and wiping drum and roller driven at different peripheral speeds so as to produce a wiping and rubbing action on the surface of the article for working in the starch and the removal of any surplus thereof, substantially as set forth.

3. In a starching machine, the combination of a starch-carrying drum, a presser roller, a rotating rubbing and wiping drum having a recessed covering, a perforated rubbing and wiping roller having a higher peripheral speed than the drum, said rubbing and wiping drum and roller having a cloth covering, substantially as set forth.

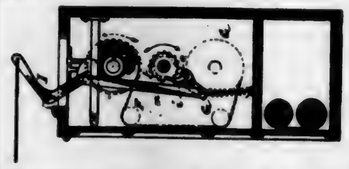
4. In a starching machine, the combination of a rotating drum provided with recesses or pockets having flexible resilient walls, a starch containing trough and a roll dipping into the trough and driven by frictional contact with the drum, the roll being adjustable toward and from the drum, for the purpose of regulating the quantity of starch taken up by the pockets in the drum, substantially as set forth.

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**501,477.** STATION-INDICATOR. ALVIN W. CROSMAN, Washington, Pa. Filed Sept. 20, 1892. Serial No. 447,103. (No model.)



*Claim.*—1. The combination, with a casing, of a rotative shaft journaled therein, a series of rollers with shafts connecting therewith by spur gearing, a ratchet and pawl connected with said shaft, a connecting rod having a catch fastened thereto, a disk, provided with projections and connected with one of said rollers, a pivoted latch, in position to connect with said disk and with the catch on said connecting rod, and a pivoted hand-lever, substantially as set forth for the purposes described.



2. The combination with a rotative shaft, adjustable lengthwise, of a yoke and ratchet mechanism connected with said shaft, a series of rollers and gearing, a disk connected with one of said rollers and provided with one or more projections $r$, a rod connected with said ratchet mechanism and with a pivoted lever, a catch on said connecting rod, and a pivoted latch in position to connect with said catch and with said disk, substantially as set forth and described.

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**501,478.** METHOD OF MAKING SEAMS. SAMUEL JAMES, Hartford, Conn. Filed Oct. 20, 1888. Serial No. 289,481. (No specimens.)



*Claim.*—1. The herein described method for the formation of a seam which consists in placing two pieces of fabric one upon the other, sewing a straight line of stitches adjacent to one edge of the pieces of fabric, then spreading out the two pieces of fabric so that they lie in the same plane, and finally further securing the seam of the united pieces of fabric by sewing a zig zag line of stitches over the seam of straight stitches passing the stitches over the seam successively from one piece of fabric to the other when the two united pieces are spread out.

2. The herein described method for the production of a seam in garments consisting of placing two pieces of fabric to be united one upon the other, then uniting said pieces of fabric together by a straight line of stitches and simultaneously therewith trimming the surplus material close to the line of stitches, then spreading the two pieces of fabric so as to bring them into the same plane, and finally strengthening the seam so formed by sewing a zig zag line of stitches over the seam of straight stitches passing the stitches over the seam successively from one piece of fabric to the other when the two united pieces are spread out.

3. The herein described method for the production of a seam in garments consisting of placing two pieces of fabric to be united one upon the other, then uniting the said pieces of fabric together by sewing a straight line of stitches and simultaneously therewith trimming the surplus material close to the line of stitches, then spreading the two pieces of fabric so as to bring them into plane and finally strengthening the seam so formed by sewing a zig zag line of stitches over the seam of straight stitches, portions of the zigzag stitches passing through the fabric outside of the straight line of stitches so as to entirely inclose them, passing the stitches over the seam successively from one piece of fabric to the other when the two united pieces are spread out.

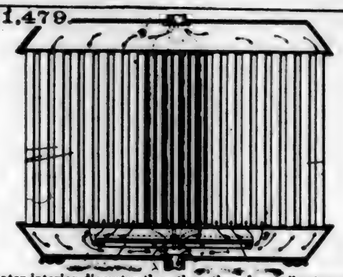
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**501,479.** HEAT-RADIATOR. FRANCIS KESSER, Mahanoy City, Pa. Filed Apr. 4, 1892. Serial No. 428,092. (No model.)

*Claim.*—1. A heat-radiator having an upper and a lower drum, flues connecting said drums, an inlet-pipe at the bottom, an exit-pipe at the top, and a deflector secured in the lower drum and extending entirely across it from front to rear, the flues above the middle portion of the deflector having a greater interior diameter than the other flues, for the purposes set forth.

2. A heat-radiator having an upper and a lower drum, flues connecting said drums, an inlet-pipe connected with the lower drum, an exit-pipe connected with the upper drum, a deflector through which there is an opening, said deflector being secured in the lower drum and extending entirely across it from front to rear, and a damper for closing said opening, the flues above the opening in the deflector having

**501,479.**

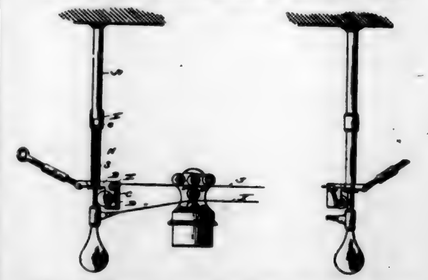


a greater interior diameter than the other flues, all substantially as described and for the purposes set forth.

3. A rectangular heat-radiator having an upper and a lower drum, two longitudinal rows of flues connecting said drums, the flues of one row being out of transverse alignment with those of the other row, an inlet-pipe connected with the lower drum, an exit-pipe connected with the upper drum, a deflector through which there is an opening, said deflector being secured in the lower drum and extending entirely across it from front to rear, and a damper for closing said opening, the flues above the opening in the deflector having a greater interior diameter than the other flues, all substantially as described and for the purposes set forth.

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**501,480.** STORE-SERVICE APPARATUS. DAVID LIPPY, Mansfield, Ohio, assignor to the Barr Cash and Package Carrier Company, same place. Filed Mar. 8, 1892. Serial No. 424,146. (No model.)



*Claim.*—1. The combination, with a hanger and track-wire supported thereby, of a rod having sliding connection with the hanger and a propelling wire connected with the rod.

2. In a store service apparatus, the combination with hangers or supports having tubular lower ends, a track wire extending from one support to the other, a coil spring located within the tubular end of each support, a rod passing through each spring, a roller carried by the upper end of each rod, and a propelling wire connecting said rods near the lower ends of the latter, substantially as set forth.

3. In a store service apparatus, the combination with hangers or supports having tubular lower ends, a track wire extending from one support to the other, a sliding rod mounted in the tubular end of each support, a spring for forcing each rod upwardly, a propelling wire secured at its ends to the sliding rods, and a foot secured to each hanger and provided with a roller adapted to steady its respective sliding rod.

4. The combination with the vertical tubes and means for supporting said tubes, of a suitably supported track-wire, a spring controlled propelling wire, vertically sliding rods, handles connected to the ends of said propelling wire and to the said rods, and guides for said vertically sliding rods.

5. In a store service apparatus the combination of hangers or supports having tubular lower ends, a track wire connecting the tubular ends, spring controlled rods movable in the tubular ends of the hangers, a propelling wire connecting said rods and guide rollers for guiding the rods, substantially as set forth.

6. In a store service apparatus the combination of tubular hangers, feet formed on or carried by said hangers, a track wire connected to said feet, rods movable in the hangers and provided with handles, a guide or roller carried by each of the rods and movable in the tubular hangers, springs surrounding the rods, rollers arranged in the feet for guiding the rods, and a propelling wire connecting the rods, substantially as set forth.

7. The combination with a hanger and track wire secured thereto,

of a rod having sliding connection with the hanger, said rod bearing at or near one end upon the hanger and a propelling wire connected to the rod.

**501,481.** TROLLEY-WIRE HANGER. ALEXANDER W. MEYER, St. Louis, Mo. Filed Oct. 31, 1892. Serial No. 450,801. (No model.)



*Claim.*—1. In a trolley-wire hanger, the combination with the upper suspension member and the lower trolley-wire supporting member, of a screw threaded connecting insulation stem, the upper and lower members being screw-threaded for the reception of the ends of the screw threaded connecting stem, substantially as and for the purpose described.

2. In a trolley-wire hanger, the combination with the upper suspension member and the lower trolley-wire supporting member, of a screw threaded connecting insulation stem, the upper and lower members being screw-threaded for the reception of the ends of the screw threaded connecting stem, and means for preventing the said upper and lower members from unscrewing from the stem, substantially as and for the purpose described.

3. In a trolley wire hanger the combination with the upper suspension member and the lower trolley wire supporting member, of an intermediate insulation member having threaded connection with the upper and lower members, substantially as and for the purpose specified.

4. In a trolley-wire hanger, the combination with the upper suspension member, trolley-wire supporting member, and connecting insulation stem, of an intermediate, radially-extending, flange member secured on the connecting stem and insulated from the upper and lower members, substantially as and for the purpose described.

5. In a trolley-wire hanger, the combination with the upper suspension member, trolley-wire supporting member, and screw-threaded connecting insulation stem, of an intermediate, radially extending, flange member secured on the connecting stem and insulated from the upper and lower members, the said upper, lower, and intermediate members being interiorly screw threaded adapting them to be screwed on to the screwthreaded connecting stem, substantially as and for the purpose described.

6. In a trolley-wire hanger, the combination with the upper suspension member, lower trolley-wire supporting member, and connecting insulation stem, of an intermediate petticoat member secured on the connecting stem and insulated from the upper and lower members, substantially as and for the purpose described.

7. In a trolley-wire hanger, the combination with the lower trolley-wire supporting member, of clip plates for securing the trolley wire to the supporting member, and means for securing the clip plates together, the said clip plates being formed with pivotal studs in one side face of the same, and the trolley-wire supporting member being formed with receptacles for the reception of the pivotal studs, substantially as and for the purpose described.

8. In a clip plate for securing the trolley-wire to the trolley hanger, the combination with the curved lips in which the wire is retained, of a raised rib on the inner side face of the clip plate, substantially as and for the purpose described.

**501,482.** REVOLVING MOTOR. HERBERT I. PARKER and ALEXANDER W. MEYER, St. Louis, Mo. Filed Oct. 22, 1892. Serial No. 449,813. (No model.)



*Claim.*—1. The combination with a motor, its armature shaft, and a pivotal support for the motor, of an encircling track adjustable relative to the armature shaft which is adapted to engage with the same, substantially as and for the purposes described.

2. The combination with a revolubly supported motor, its armature shaft, and a fan secured on the armature shaft, of an encircling track with which the armature shaft is adapted to engage, substantially as and for the purposes described.

3. The combination with a revolubly supported motor, its armature shaft, one end of which is diametrically reduced, and a fan secured on the other end of the armature shaft, of an encircling track adapted to be engaged by the diametrically reduced end of the armature shaft, substantially as and for the purposes described.

4. The combination with a motor, its armature shaft and a yielding pivotal support for the motor, of an encircling track adjustable relative to the armature shaft, which is adapted to engage with the same, substantially as and for the purposes described.

5. The combination with a motor, of a divided or sectional supporting standard, of means for elevating the motor to relieve the same of the frictional contact between the contiguous faces of the divided standard, and mechanism for revolving the motor when so elevated; substantially as and for the purposes described.

6. The combination with a revolubly supported motor and its armature shaft, of an encircling track, with which the armature shaft is adapted to engage in all revoluble positions of the motor and thereby completely rotate the motor by the rotations of the armature shaft, and means for making electrical circuit to the exciting coils of the revoluble motor, substantially as and for the purposes described.

7. The combination with a revolubly supported motor, of a stationary track completely encircling the motor, and means for completely rotating the motor, substantially as described.

8. The combination with a motor, of a supporting standard composed of a stationary and a revolubie section upon which the motor is mounted, a track adjustably mounted on the stationary section, and an armature shaft engaging with the track; substantially as and for the purposes described.

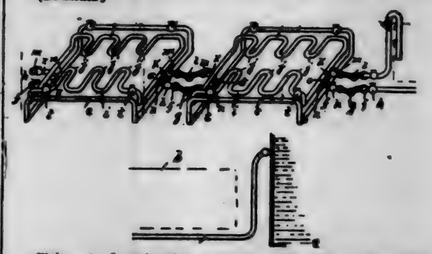
9. In a revolving motor, the combination with the motor body mounted upon a pivot pin, of a supporting base provided with a socket therefor, and a yielding cup bearing in the socket upon which the pin rests; substantially as and for the purposes described.

10. In a revolving motor, the combination with a motor body, of a divided supporting standard composed of a stationary section and a revoluble section upon which the motor is mounted, a pivot pin projecting from one of said sections and fixing in a socket formed in the other section, a compression spring in the socket, and a follower in the form of a cup bearing interposed between the spring and the pivot pin; substantially as and for the purposes described.

11. In a revolving motor, the combination with a motor body pivoted in its supporting standard, of a standard, an adjustable track surrounding said motor, and an armature shaft, one end of which is adapted to engage the track while its other end rotates freely; substantially as described.

12. The combination with a revoluble motor, comprising a field-magnet and armature, of a supporting standard for the motor comprising a stationary section and a pivotal section to which the motor is secured, contact rings, to which the terminals of the exciting coils of the motor are directly connected, secured to the pivotal section, and stationary terminal plates, to which the terminals of the exterior supply circuit are connected, held in yielding contact with the rings, respectively, substantially as and for the purposes described.

**501,488.** CAR-HEATER. EDWARD A. GUTHRIDGE, Lexington, Va. Filed Aug. 20, 1892. Renewed June 17, 1893. Serial No. 478,097. (No model.)

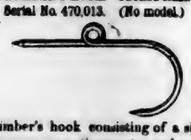


*Claim.*—1. A car heating system comprising the supply conduit having the single connections between the cars and looped in the cars so that the two sides of the conduit extend longitudinally of the car and at their ends connected with said single connections, one side of said conduit being permanently open through the car, a cut off valve in the other side of said conduit, the return conduit having the single connections between the cars and looped in the cars so that the two sides of the conduit extend longitudinally of the car and at their ends connect with said single connections, one side of said conduit being permanently open, and a cut off valve in the other side of said return conduit as and for the purpose set forth.

2. A car heating system the supply conduit having the single valved connections between the cars, and looped in the cars, the sides of each loop extending longitudinally of and on opposite sides of the car, one side of the loop having a cut off valve, the return pipe having the single valved connections between the cars and looped in the cars, the sides of each loop extending longitudinally of and on opposite sides of the car, and a cut off valve in the side of each return loop on the opposite side of the car from the side of the supply loop having a cut off valve, as set forth, the supply and return loops in each car connected at their ends by valved connections, substantially as described.



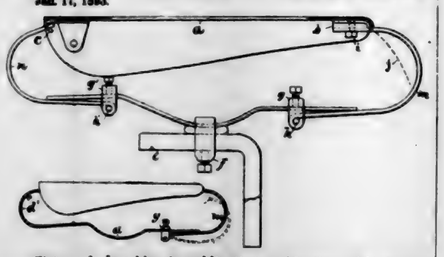
**501,484.** PLUMBER'S HOOK. GEORGE REESOR, Mercer, Pa. Filed Apr. 12, 1893. Serial No. 470,013. (No model.)



*Claim.*—A plumber's hook consisting of a single piece of wire bent into a curved open supporting-part *a* and a straight prong *a'*, a lateral impact shoulder being formed at the juncture of said two parts by bending the wire into a loop, substantially as described.

# REISSUES.

**11,350.** BICYCLE-SEAT SPRING. HENRY BERGFELD, Newark, N. J. Filed Mar. 6, 1893. Serial No. 465,191. Original No. 490,097, dated Jan. 17, 1893.



*Claim.*—1. In a bicycle saddle, the combination, with the seat leather, of a fixed spring bar connected with the forward end of the leather and provided with a clamp for attaching it directly to the seat post, and a pivoted spring bar secured to the rear end of the seat leather and jointed to the fixed spring bar by a hinge, the hinge being located between such clamp and the rear end of the seat leather, and the springs thereby operating to stretch the leather when loaded, substantially as herein set forth.

2. In a bicycle saddle, the combination, with a seat leather, of a fixed spring bar connected with the forward end of the leather and provided with a clamp for attaching it directly to the seat post, and a pivoted spring bar secured to the rear end of the seat leather and hinged to the fixed spring bar between such clamp and the rear end of the seat leather, and the hinge or pivotal connection being adjustable upon the fixed spring bar to vary the tension of the seat leather, substantially as herein set forth.

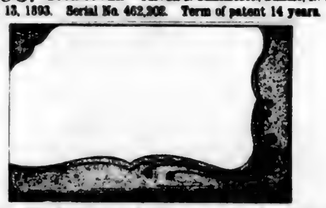
3. In a bicycle saddle, the combination, with the seat leather *a* having the cantle *b*, of a spring bar *d* connected to the front of the seat leather, a clamp *f* for securing the same upon a post, and a U-spring secured at its upper end to the cantle and attached at its lower end to the spring bar *d* by a pivotal connection in the rear of the clamp *f*, substantially as set forth.

4. In a bicycle saddle, the combination, with the seat leather *a* having a cantle *b*, of a spring bar *d* attached to the front of the seat leather, a clamp for securing the same upon a seat post, a pivot *k* affixed to the spring bar *d* within its rear end and adjustable to and from the clamp, and the U-spring *m* secured at its upper end to the cantle and hinged at its lower end beneath the spring bar *d* to the pivot *k*, substantially as herein set forth.

5. In a bicycle saddle, the combination, with the seat *a* having cantle *b* and hook *c*, of the spring bar *d* curved downward at its middle, the clamps *g*, *g'*, provided with the pivots *h*, *h'*, and secured upon the spring bar inside its ends, and the U springs *m* and *n* connecting the pivots respectively with the cantle and the hook, as set forth

# DESIGNS.

**22,596.** BOOK-COVER. OLIVER S. GARRETSON, Buffalo, N. Y. Filed Feb. 13, 1893. Serial No. 462,202. Term of patent 14 years.



*Claim.*—The design for a book cover as herein shown and described.

**22,597.** BADGE. ALONZO P. CONNOLLY, Chicago, Ill. Filed Dec. 5, 1892. Serial No. 454,411. Term of patent 7 years.



*Claim.*—1. The design for a badge, substantially as shown and described.

2. In a design for a badge, the obverse, substantially as shown and described.

3. In a design for a badge, the reverse, substantially as shown and described.

**22,598.** WATCH-CHARM. ANDREW MULCAY, Forsyth, Ga. Filed Jan. 6, 1893. Serial No. 457,560. Term of patent 3½ years.



*Claim.*—The design for a watch charm, herein shown and described.

**22,599.** WATCH-DIAL. JOHN C. DUERER, Canton, Ohio. Filed Mar 14, 1893. Serial No. 465,974. Term of patent 14 years.

22,599.



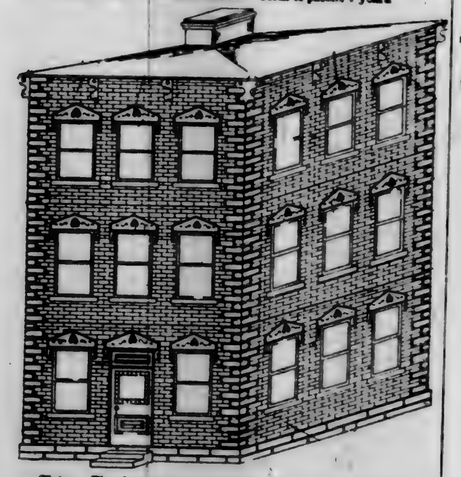
*Claim.*—The design for watch dials herein shown and described.

22,600. PLAQUE. JOSEPH A. GOLDSTEIN, Washington, D. C. Filed June 14, 1893. Serial No. 477,502. Term of patent 3½ years.



*Claim.*—The design for the ornamentation of a plaque or similar article substantially as herein shown.

22,601. CONFECTION-DISH. CARL CAPPEL, Pittsburg, Pa. Filed June 21, 1892. Serial No. 437,547. Term of patent 7 years.



*Claim.*—The design for a confection dish, as herein shown.

22,602. PLATE. GEORGE A. GLASS, Wallingford, Conn., assignor to the Simpson, Hall, Miller & Company, same place. Filed Apr. 21, 1893. Serial No. 471,348. Term of patent 3½ years.



*Claim.*—The design for a plate, as herein shown and described.

22,603. LEGGIN. MORRIS SACHS, New York, N. Y. Filed Apr. 27, 1893. Serial No. 472,130. Term of patent 3½ years.



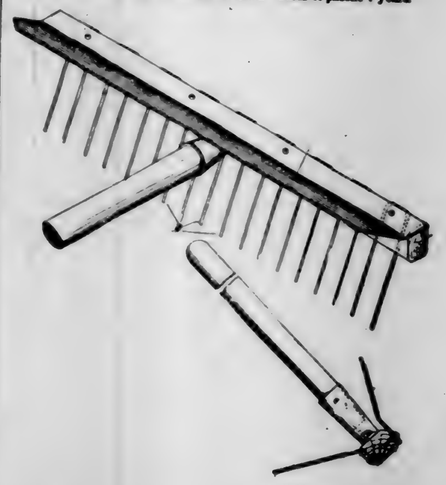
*Claim.*—The design for a leggin as herein set forth.

22,604. HARDWARE ORNAMENTATION. LEOPOLD KAHN, New York, N. Y. Filed Apr. 13, 1893. Serial No. 470,250. Term of patent 3½ years.



*Claim.*—The design for hardware ornamentation, substantially as shown and described.

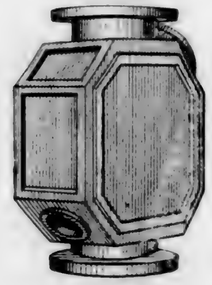
22,605. LAWN-RAKE. FREDERICK H. KOHLER, Canton, Ohio. Filed Apr. 13, 1893. Serial No. 470,254. Term of patent 7 years.



*Claim.*—The design for a garden rake herein shown and described.

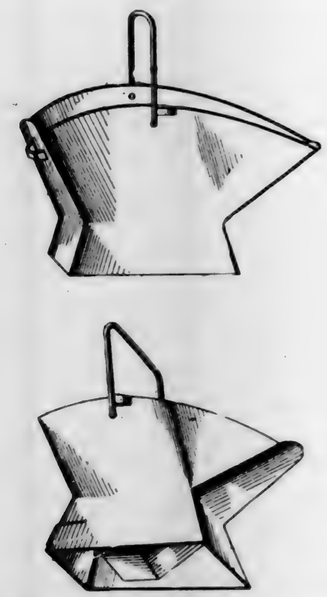


22,606. SEWER-GAS TRAP. WINFIELD E. HINSDALE, New Haven, Conn. Filed Feb. 13, 1893. Serial No. 462,904. Term of patent 7 years.



*Claim.*—The design for a sewer gas trap herein described, the same comprising the octagonally formed body having an octagonal panel on each of its sides and a rectangular panel on surfaces *a*. and *b*. and panels of the same form on the surfaces diametrically opposite to the surfaces *a*. and *b*. and the cylindrical posts at the upper and lower extremities of the body, each terminating in a circular flange substantially as described and shown in the accompanying drawing.

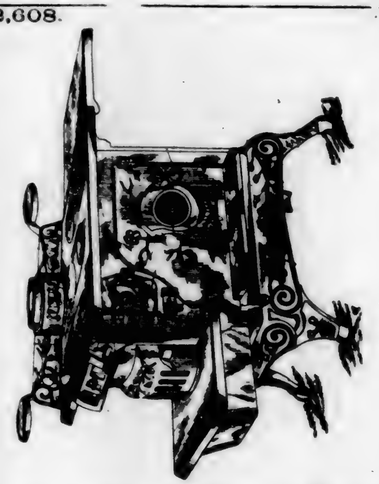
22,607. COAL-SCUTTLE. DAVID JONES, Brooklyn, N. Y. Filed May 10, 1893. Serial No. 473,733. Term of patent 14 years.



*Claim.*—The design for a coal scuttle consisting of the design substantially as shown.

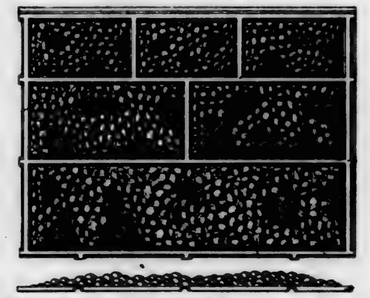
22,608. COOKING-STOVE. FRANK A. SEIFERT, St. Louis, Mo., assignor to the Western Stove Manufacturing Company, same place. Filed May 11, 1893. Serial No. 473,879. Term of patent 14 years.

22,608.



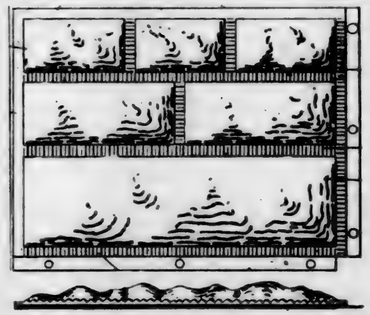
*Claim.*—The design for a cooking stove herein shown and described.

22,609. SIDING-PLATE. PHILIPP A. DEBLAURIERS, St. Paul, Minn. Filed Oct. 4, 1892. Serial No. 447,824. Term of patent 14 years.



*Claim.*—The design for a siding plate as herein shown and described.

22,610. SIDING-PLATE. PHILIPP A. DEBLAURIERS, St. Paul, Minn. Filed Oct. 4, 1892. Serial No. 447,825. Term of patent 14 years.



*Claim.*—The design for a siding plate as herein shown and described.

22,611. MEMORIAL TABLET. WILLIAM H. CAMPBELL and JESSE J. WILLINGHAM, Pueblo, Colo. Filed May 12, 1893. Serial No. 474,027. Term of patent 7 years.

22,611.



*Claim.*—The design for a tablet herein shown and described

22,612. MONUMENT. STEPHEN SO SAPTER, New York, N. Y., assignor to George Keisser, same place. Filed June 2, 1893. Serial No. 476,401. Term of patent 7 years.



*Claim.*—The design for a monument, substantially as shown and described.

# TRADE-MARKS

## REGISTERED JULY 11, 1893.

23,326. GOLD, SILVER, AND PLATED FLAT AND TABLE WARE AND JEWELRY. WILLIAM B. DURGIN, Concord, N. H. Filed June 16, 1893.

CROMWELL.

*Essential feature.*—The word "CROMWELL." Used since May 15, 1893.

23,327. LADIES CARRIAGE-BOOTS. B. COHEN & SON, New York, N. Y. Filed Mar. 16, 1893.



*Essential feature.*—The representation of an ellipse inclosing the words and abbrevations "B. COHEN & SON, MAKERS, N. Y." Used since March 1, 1893.

23,328. DRESS AND CORSET STAYS. JULIUS JABOWITH, New York, N. Y. Filed May 17, 1893.

EAGLE DRESS BONE.

*Essential feature.*—The words "EAGLE DRESS BONE." Used since May, 1893.

23,329. CLOTHING FOR MEN AND BOYS. GROSSMAN, MICHAELSON, & Co., Chicago, Ill. Filed June 9, 1893.



*Essential feature.*—The word "PICKWICK" and the pictorial representation of Mr. Pickwick. Used since May 1, 1893.

23,330. EYE GUARDS AND PROTECTORS. EDWARD G. STEVENS, Boston, Mass. Filed June 7, 1893.

WARREN

*Essential feature.*—The word "WARREN." Used since December 7, 1892.

23,331. GLOVES. PERRIN FRERES ET CIE., New York, N. Y. Filed June 8, 1893.



*Essential feature.*—The representation of an ace of clubs. Used since January 1, 1893.

23,332. GLOVES. PERRIN FRERES ET CIE., New York, N. Y. Filed June 8, 1893.



23,332.



*Essential feature.*—The representation of an ace of spades. Used since January 1, 1893

23,333. GLOVES. PERRIN FRERES ET CIE., New York, N. Y. Filed June 8, 1893.



*Essential feature.*—The representation of a diamond shaped figure. Used since January 1, 1893.

23,334. GLOVES. PERRIN FRERES ET CIE., New York, N. Y. Filed June 8, 1893.



*Essential feature.*—The representation of a heart shaped figure. Used since January 1, 1893.

23,335. GLOVES. PERRIN FRERES ET CIE., New York, N. Y. Filed June 8, 1893.



*Essential feature.*—The representation of a fleur de lis. Used since January 1, 1893

23,336. GLOVE-GRAIN LEATHER. ALLEN, FIELD & LAWRENCE, Boston, Mass. Filed June 17, 1893.




*Essential feature.*—The representation of the head of a doe and the words "DOE SKIN." Used since December 18, 1891.

**23,337.** CUT-LEATHER BOOT OR SHOE BOTTOM STOCK. BAXTER, STOWER & SCHRAMLBERGER, Boston, Mass. Filed Apr. 12, 1893.



*Essential feature.*—Three straight parallel lines arranged transversely of the goods. Used since March, 1893.

**23,338.** EMBROIDERED RUGS AND CARPETS. HAROOTUNE ESTAJIAN, Denver, Colo. Filed May 15, 1893.



*Essential feature.*—The representation of a lion grasping a sword, with a child's face from which radial lines extend, for a background. Used since July, 1892.

**23,339.** LINOLEUMS AND WINDOW-SHADES. LYON, HALL & CO., Baltimore, Md. Filed June 7, 1893.



LANCASTER

*Essential feature.*—The word "LANCASTER," and the representation of a shield bearing the figures of three lions, a crown surmounting the shield, and a branch on each side. Used since May, 1888.

**23,340.** WOVEN WOOLEN FABRICS USED MAINLY FOR SHADES FOR VEHICLE-WINDOWS. THE BRUSSELS TAPESTRY COMPANY, Chauncey and New York, N. Y. Filed May 29, 1893.

296

*Essential feature.*—The words "STANDARD QUALITY," and the arbitrarily selected number "296." Used since April, 1893.

**23,341.** WOVEN WOOLEN FABRICS USED MAINLY FOR SHADES FOR VEHICLE-WINDOWS. THE BRUSSELS TAPESTRY COMPANY, Chauncey and New York, N. Y. Filed June 17, 1893.

333

*Essential feature.*—The words "EXTRA QUALITY," and the arbitrarily selected number "333." Used since April 15, 1893.

**23,342.** HORSE-BLANKETS. WM. S. RILEY & CO., Philadelphia, Pa. Filed June 6, 1893.




*Essential feature.*—The words "THE QUAKER CITY," and the representation of a horse rearing or rampant. Used since April 15 1893.

**23,343.** CRACKERS, CAKES, AND BISCUITS. INDEPENDENT BISCUIT AND CRACKER COMPANY, Peoria and Pekin, Ill. Filed June 15, 1893.

PERI

*Essential feature.*—The word "PERI." Used since January 1, 1892.

**23,344.** CHEESE. KOEHLER & HINRICHS, St. Paul, Minn. Filed May 13, 1893.



*Essential feature.*—A sheet metal tag having the form of a comet. Used since April 1, 1892.

**23,345.** CANNED CORN. MITCHELL BROS., Aberdeen, Md. Filed June 14, 1893.

SUSQUEHANNA BRAND

*Essential feature.*—The words "SUSQUEHANNA BRAND." Used since September, 1884.

**23,346.** CANNED SALMON. GEORGE & BARKER, Astoria, Oreg. Filed June 14, 1893.

PALM

*Essential feature.*—The word "PALM." Used since February 18, 1893.

**23,347.** FARM OR AGRICULTURAL SEEDS. THE ALBERT DICKINSON COMPANY, Chicago, Ill. Filed May 19, 1893.





*Essential feature.*—A circle of triangular shaped figures having the outer edge scalloped, and including the letter "D." Used since March, 1887.

**23,348.** TOBACCO, CIGARS, CIGARETTES, AND CHEROOTS. D. RITCHIE & CO., Montreal, Canada. Filed June 17, 1893.

PURITAN

*Essential feature.*—The word "PURITAN." Used since December 29, 1885.

**23,349.** TOBACCO, CIGARS, CIGARETTES, AND CHEROOTS. D. RITCHIE & CO., Montreal, Canada. Filed June 19, 1893.

ATHLETE

*Essential feature.*—The word "ATHLETE." Used since April 17, 1888.

**23,350.** CERTAIN NAMED BEVERAGES. FRANK L. HAZELTON, Boston, Mass. Filed June 14, 1893.

COLD
BLAST

*Essential feature.*—The words "COLD BLAST." Used since August 1, 1888.

**23,351.** COMPOUND SIRUP OF SPRUCE GUM. HENRY H. PERRY, Essex Junction, Vt. Filed Apr. 20, 1893.



*Essential feature.*—The representation of a spruce tree accompanied by the words "PERRY'S COMPOUND SYRUP OF" arranged above the tree, and the words "SPRUCE GUM" below the tree. Used since June 1, 1891.

**23,352.** HERB TONIC. VIRGINIA D. DOWD, Peoria, Ill. Filed May 22, 1893.



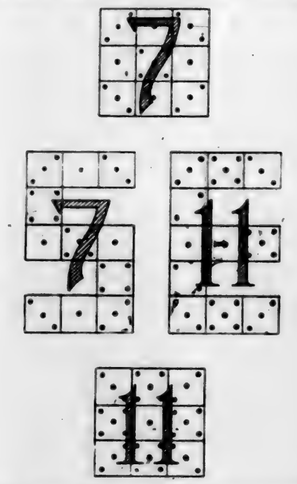

*Essential feature.*—The word "PURITY," the representation of a dove bearing in its beak a bunch of herbs, an outstretched open hand and the representation of a scene showing land, water, and clouds. Used since February 1, 1892.

**23,353.** COMPOUND OF SARSAPARILLA. CHARLES I. HOOD, Lowell, Mass. Filed June 13, 1893.




*Essential feature.*—The words "HOOD'S, SARSAPARILLA, and monogram letters "C I H & Co," printed respectively upon the bars of a letter Z. Used since June 1, 1878.

**23,354.** BLOOD-PURIFIER AND REMEDY FOR GONORRHŒA AND GLEET. LEE M. BYRNE, Kansas City, Mo. Filed May 18, 1893.



*Essential feature.*—The numerals "7, 11," and two squares each formed of nine dice and the initials "S E" each formed of eleven dice. Used since May, 1892.

**23,355.** MEDICATED COMPOUND FOOD FOR STOCK. THE PHŒNIX STOCK FOOD CO., Chicago, Ill. Filed June 5, 1893.

PHŒNIX
STOCK FOOD

*Essential feature.*—The words "PHŒNIX STOCK FOOD. Used since March 10, 1893.

**23,356.** PERFUMES. RICHARD SCHWEICKHARDT & ALBERT DE LORENZI, Dallas, Tex. Filed Sept. 23, 1892.

El Mérito

*Essential feature.*—The words "EL MERITO." Used since March, 1890.

**23,857.** TOILET SOAP. MILBURN & KNOPF, New York, N. Y. Filed June 5, 1893.

*Infanta.*

*Essential feature.*—The word: "INFANTA." Used since June 1, 1893.

**23,858.** LIQUID COSMETIC. FREDERICKSON & FREDERICKSON, South Bend, Ind. Filed May 26, 1893.

"SOCIETY BLOSSOM"

*Essential feature.*—The words "SOCIETY BLOSSOM." Used since February 1, 1893.

**23,859.** CLEANSING MIXTURE FOR HORSES AND OTHER ANIMALS. THOMAS H. BAILO and WILLIAM V. BAIER, Toledo, Ohio. Filed June 13, 1893.

Bonnie's Horse Cleaner

*Essential feature.*—The words "BONNIE'S HORSE CLEANER." Used since September 1, 1889.

**23,860.** AXLE-GREASE FOR VEHICLES. GARRETT OIL COMPANY, Nashville, Tenn. Filed June 7, 1893.




*Essential feature.*—The representation of an ape and the letter "X," in connection with the word "APEX." Used since 1887.

**23,861.** MINERAL PAINTS, PIGMENTS, AND OXIDES. A-F PAINT AND COLOR COMPANY, Milwaukee, Wis. Filed June 3, 1893.



*Essential feature.*—The word "AIR-FLOATED." Used since January 15, 1893.

**23,862.** WOOD-FILLERS. MARY E. B. FRANTZ, Lancaster, Pa. Filed June 10, 1893.



*Essential feature.*—The word "PARADOX" and three capital letters F. Used since January 1, 1886.

**23,863.** APPARATUS FOR OUTDOOR GAMES. ARCHIBALD LAUDER, Chicago, Ill. Filed June 2, 1893.

BRASSY

*Essential feature.*—The word "BRASSY." Used since June 1, 1893.

**23,864.** PADLOCKS. EDWARD T. FRAIL, Ludlow, Pa. Filed Apr. 27, 1893.

CYCLE

*Essential feature.*—The word "CYCLE." Used since October 1, 1891.

**23,865.** LAMPS, HOLDERS, SWITCHES, AND APPLIANCES FOR ELECTRICAL ILLUMINATION. THE EDISON & SWAN UNITED ELECTRIC LIGHT COMPANY, Limited, London, England. Filed June 15, 1893.

EDISWAN

*Essential feature.*—The word "EDISWAN." Used since 1884.

# DECISIONS

OF THE

# COMMISSIONER OF PATENTS

AND OF

# UNITED STATES COURTS IN PATENT CASES.

## COMMISSIONER'S DECISIONS.

### EX PARTE KLAUS.

*Decided June 21, 1893.*

1. PRACTICE.

Final rejection should not be given until all matters of form are settled.

2. SAME.

Where a claim was finally rejected and at the same time the statement of invention was criticised as being too broad, the final rejection was premature and an amendment touching the merits may properly be admitted thereafter.

ON petition.

DRAWING-KNIFE.

Application of Nicholas Klaus filed November 23, 1891, No. 412,715.

*Mr. Thomas G. Orwig* for the applicant.

FISHER, *Assistant Commissioner:*

This is a petition taken from the action of the Primary Examiner refusing to admit certain amendments. The application was finally rejected August 23, 1892. In the same letter the statement of invention was criticised as being too broad.

The action of the Examiner was contrary to the established practice of the Office.

Rule 64 provides that—

* * * until the formal objections are disposed of further action will not be taken upon the merits without the order of the Commissioner.

In *ex parte Eastman* (57 O. G., 410) it was directed that—

final rejection should not be given until all matters of form are settled.

The Examiner states in his answer to the petition that—

* * * the limitation of the statement of invention, being a formal matter, may, and properly should, be postponed until it has been decided what is patentable in the case, in order that the statement of invention and the claims may be made to correspond.

Such a course, besides being objectionable for the reasons already stated, would necessitate the reopening of the case under Rule 142. This should not be required without sufficient reasons, and it is not necessary in this case. The statement of invention need not be a restatement of the claim. If the Examiner had followed the established practice of the Office, the action of August 23, 1892, would not have been a final rejection and there would have been no necessity for the present petition.

It is therefore directed that the Examiner reopen the case and that final rejection be not given until all formal objections have been removed.

To the above extent the petition is granted.

### EX PARTE HENRY.

*Decided July 6, 1893.*

1. WHAT MAY BE CLAIMED IN A DIVISIONAL APPLICATION.

A divisional application should only contain matter carved out of the parent case; but if the matter has been fully disclosed in the earlier application, although not reached by any claim or statement of invention, such disclosure should be sufficient to secure to the applicant the benefit of the date of the parent case.

2. SUPPLEMENTAL OATH—ORIGINAL OATH CHANGED.

The matter claimed additional to what was claimed in the parent case should always be supported by a proper supplemental oath, or if claimed in the divisional application as first filed the oath prescribed by Rule 46 should be correspondingly changed.

ON petition.

ELECTRIC RAILWAY.

Application of John C. Henry filed April 29, 1892, No. 431,204.

*Messrs. Knight Brothers* for the applicant.

FISHER, *Assistant Commissioner:*

This is a petition taken from the action of the Examiner in refusing to consider and treat the above-entitled application as a division of applicant's prior application, No. 321,360, filed August 20, 1889, upon the ground—

that this application is not a proper division under the Commissioner's decision in the case of *ex parte Freeman*, (58 O. G., 542) for the reason that claims 1, 2, and 3 of this application were not substantially embraced in any statement of invention or claim of the parent case.

In view of the statement made by the Examiner in his answer to the petition that "* * * the disclosure in this application is identical with that of the parent case," the sole question to be determined here is whether or not an application may properly be held to be a division of an earlier application by the same applicant which shows and describes the subject-matter of the later application, but which contains no claim or statement of invention covering the subject-matter of the claims of such later application.

Under the established practice of the Office the applicant would be permitted to present and prosecute any claim in the earlier application which could be predicated upon what is shown and described therein, if properly supported by either the original or a supplemental oath, and he would, under such circumstances, have the benefit of the filing date of the application for any and all such claims. A proper divisional application does and can contain only matter carved out of the original case, and since the applicant has a right to the benefit of the original filing

date so long as the matter remains in such original case it is not seen how he can be consistently deprived of such benefit merely because he has segregated such matter from the original case and paid a new fee thereon. If the matter has been fully disclosed by the applicant in his earlier application, although not reached by any claim or statement of invention, such disclosure should be sufficient to secure to him the benefit of the date of the parent application.

In such a case, however, said matter must always be supported by a proper supplemental oath, unless such matter is claimed in the divisional application as first filed, and then a statement should be inserted after the last words, "invention thereof," in the oath prescribed by Rule 46, (see Form 17, Rules of Practice,) to the effect that the matter herein claimed, additional to that embraced in the claims of his original application, formed a part of the original invention at the date of filing said application and was invented by applicant before he filed the same.

The conclusion herein reached is believed to be in harmony with and warranted by the decision in the case of *Forbes* v. *Thomson* (53 O. G., 2042) and the cases therein cited.

The objection made by the Examiner that claims 2 and 3 are not warranted by the illustration and description relates to the merits of the case, and it has not therefore been considered.

The petition is granted.

## DECISIONS OF THE U. S. COURTS.

### Court of Appeals—Second Circuit.

VERMONT FARM MACHINE COMPANY *v.* GIBSON.
SAME *v.* SAME.

*Decided June 15, 1893*

1. COOLEY—PROCESS OF RAISING CREAM FROM MILK—INVENTION. Claim 1 in Letters Patent No. 187,516, February 20, 1877, to William Cooley, for process of raising cream from milk, examined in view of the state of the art, and *Held* to be the product of invention and novel.
2. SAME—USE OF THE PRODUCT MADE UNDER A PROCESS PATENT—A PURCHASER OF AN ARTICLE MADE UNDER A PATENT FOR A PROCESS A LICENSEE TO USE THE PROCESS TO THE EXTENT OF USING THE PURCHASED ARTICLE.
Where the defendant bought from the patentee a creamery containing four cans made under the patent, *Held* that the defendant thereby became a licensee to use the process in connection with that creamery and its cans and their necessary repairs, but no further.
3. BUTLER—CREAMING-CAN—ARTICLE OF MANUFACTURE—NOVELTY.
Claims 2, 5, 7, and 8 of Letters Patent No. 321,340, June 30, 1885, to Francis G. Butler, for a creaming-can, examined in view of the state of the art, and *Held* to be valid.
4. SAME—PLEADING—EVIDENCE—WHEN A PATENT CANNOT BE ADMITTED UNDER THE GENERAL ISSUE AS ANTICIPATORY EVIDENCE OF THE STATE OF THE ART
Where in the preparation for trial of several suits it was agreed by the parties thereto that testimony taken in either of the suits might be used in either of them, and where the complainant introduced a patent in rebuttal in explanation of the record in one of the cases, but it was not mentioned in the pleadings of either party and no testimony was given in respect to it, such patent is not admissible under the general issue in the other of the suits as an anticipation of the patent sued upon without an amendment of the pleadings setting it up.

*Mr. William Edgar Simonds* for the complainant.
*Mr. George G. Frelinghuysen* for the defendant.

Before LACOMBE, WALLACE, and SHIPMAN, Judges.

SHIPMAN, *J.*:

The Vermont Farm Machine Company brought before the Circuit Court for the District of Vermont two suits in equity against Hugh G. Gibson, an inhabitant of said district, which were respectively founded upon the alleged infringement of two Letters Patent—viz., No. 187,516, dated February 20, 1877, to William Cooley, for a new process of raising cream from milk, and No. 321,340, dated June 30, 1885, to Francis G. Butler, for an improvement in creaming-cans.

These appeals are from final decrees of the circuit court in said suits in favor of the complainant for perpetual injunctions and for costs and for the sums which the parties had agreed upon as nominal damages, the complainant waiving other damages, and also a recovery of the defendant's profits.

The bills in equity were brought in 1891, and did not originally aver that Gibson was an inhabitant of the district of Vermont, whereupon the defendant demurred to the jurisdiction of the court in each case upon the ground that under the act of August 13, 1888, the bill must affirmatively appear to have been brought in the district of which the defendant is an inhabitant. Subsequently the respective counsel signed stipulations, which were duly filed in the clerk's office. Each stipulation stated that the—

bill of complaint shall be and hereby is amended by inserting immediately after the words "Hugh G. Gibson, of Newbury, in the State of Vermont" the words "and an inhabitant of the district of Vermont."

The defendant's first point is that the circuit court, which had overruled the demurrer without knowing that these stipulations had been filed, erred in so doing. The stipulations, which provided that the bill not only should be, but was, amended, render examination of this point unnecessary.

The improvement described in the Butler patent is so closely related to the apparatus and process of the Cooley patent that it is proper to include an examination of each patent in one opinion.

The nature and the advantages of the improved process of the Cooley patent were clearly stated in the specification of the patent, as follows:

The ordinary mode of raising cream is with open pans, either shallow or deep, and then by hand-labor skimming the cream from the surface after the milk has stood, say, from thirty-six to forty-eight hours. This mode is open to several serious objections, among which may be named the exposure of the milk to the atmosphere, from which it attracts insects and absorbs gases and odors often very deleterious, and from which it collects and retains dust and dirt floating in the air, the agitation of its surface from winds and other causes, the great length of time required to raise the cream, the unavoidable lack of uniformity in the quality of the cream, and, consequently, in the butter made from it, because of the various subtile and invisible atmospheric causes which tend to taint, acidify, or otherwise vitiate it, the positive and direct exposure to all the sudden changes—electrical, thermal, and otherwise—of the atmosphere, and the necessity of having cans enough to hold the milk of two or more days' milking.

When milk is set in open vessels which are cooled by water underneath them, it being at a lower temperature than the surrounding atmosphere, and being, as is well known, a ready absorbent of odors and taints, it will absorb from the air by condensation the moisture contained in it together with its impurities.

* * * * *

By my present invention I water-seal the can, or other vessel containing the milk to be treated, whereby all possibility of the entrance into it of foreign matter, gases, or odors is prevented, and when I wish to bring the whole to a uniform temperature, to any degree desired, I then submerge this vessel entirely in water of the required low degree.

The effect of these two steps of the operation is the production of a better quality and of an increased quantity of cream, and in





a far less period of time than usual; the securing of a uniformity of quality all the year round; great economy in time, apparatus, and expense; a superiority in the skimmed milk; the production from the cream thus raised of a butter having not only a better quality, but also a better keeping property, and the capacity in the remaining milk, technically called "skimmed milk," of producing a better character of cheese.

My invention can be very simply and cheaply practiced, and by very simple means—such, for instance, as a tank or vessel, B, for holding water, a pan or can (or cans) A, preferably cylindrical, for holding the milk, provided with a removable cover, C, shaped similarly to an ordinary tin pan, and placed upside down on top of the pan A, and held down by any appropriate weight or fastening, the overlapping or flaring sides of the cover leaving an annular space between such sides and the vessel A.

No packing is required to make this cover water-tight when the water is high enough in the tank B to reach up to or a little above the lower edge of the cover, because the air in this annular space is then unable to rise and escape, and remains there, thus making a perfect air-packing, and the whole can is thus simply but completely water-sealed.

This water-sealing is a distinct thing from submerging, and if the water be no higher than is sufficient thus to seal the cover, all the advantages due to the exclusion of the outer atmosphere and atmospheric effects are completely attained, and a nearer approximation is also made to an equalization of the temperature of the contents of the can than by any other method known to me * * *

The first claim of the patent, which is the only one said to have been infringed, is for water-sealing and not for submerging, and is as follows:

1. The process of treating milk for raising cream by sealing with water and air the cover applied directly to the vessel containing the milk, substantially as set forth.

The process, which consists in water-sealing each separate can of milk by immersing the can in a tank of water, which is high enough in the tank to reach up or a little above the lower edge of the cover, which overlaps the sides of the can, thus making an air packing in the annular space between the sides of the cover and the can, has been very generally introduced into the creameries of the North and has helped to make the manufacture of butter upon a large scale successful.

The attempt by immersing cans in water to cool milk in large quantities and to keep it in proper condition of temperature while the cream rises was made before the date of the patent in suit, and the results of two of the different attempts are described in Letters Patent No. 182,700, dated September 26, 1876, to Dexter Pettingill, and No. 184,062, dated November 7, 1876, to William Cooley. Milk-cooling cans were also invented and are described in Letters Patent No. 59,993, dated November 27, 1866, to William Garrard; to John Buckley, No. 68,696, dated September 10, 1867, and to J. F. Hawkins, No. 140,919, dated July 15, 1873.

The inner milk-can of the Pettingill device was closed by an ordinary cover. The space between the inner can and the outside box was filled with water. Above the box and hinged thereto was an ice-box, with perforated bottom, which was closed by a lid. The melting water from the ice-box dropped upon the lid of the milk-can, and a water-pipe near the top of the can conducted the waste water from the box.

In the Cooley device of 1876 there is a flange around the upper edge of the inner milk-can to form a seat for a rubber packing, upon which the lower side of the edge of the can-cover rests. By means of an air-pump detachably connected with a hole in the center of the cover the air in the can is pumped out, forming a vacuum above the milk. The object of the rubber packing is to prevent the subsequent introduction of air into the can.

In neither device was any attempt made to seal the can with water or with air. The object of each invention was to cool the milk; but the idea of the formation of a water seal did not enter into either improvement. In the Buckley and the Hawkins cans and in the unpatented cans of John C. Pennington there is the same absence of the principle of the patent in suit. The Morandi patent of 1868, for an improved cooling apparatus, and the Colton patent of 1858, for a preserve can, have no relation to the Cooley creamery.

The Garrard invention had a water-sealing idea, and therefore is the nearest approach to the Cooley invention of 1877 of any of the alleged anticipating devices. It was a cooler for preserving milk or butter or other articles, and consisted, in general, of a vessel or tank fitted with a lid and forming a water-chamber The lid fitted into this vessel by a flange which made a water-tight joint by dipping into the water in the vessel. A smaller vessel containing the milk was placed in the tank. The cover was not the cover of the milk-can, but of the tank. In the water-sealing apparatus of Cooley the cover is applied directly to each can, and only that portion of air which fills the annular space between the cover and the sides of each can comes in contact with the milk. If the Garrard cover should only be relied upon in a Cooley creamery, which may contain twelve or sixteen cans, the beneficial results of air exclusion would be much diminished. Besides, the size and weight of the Garrard cover would render its use in such a creamery impracticable. But the defendant says that even if the air-tight joint of Garrard was not a joint for each can, but for the tank which contained the cans, it suggested the Cooley improvement and deprived it of the character of invention. The Garrard cooler was simply for cooling milk or butter. It was not for a creamery, whose needs differ very much from those of a mere cooling apparatus, because for the purity of the butter the milk in each can in a creamery must be kept, so far as is possible, out of contact with the odors and heat of the milk in other cans.

When Cooley ascertained that his attempt in 1876 to bottle up the milk entirely was too expensive for practical use and that a cover for the entire tank was inadmissible because of the danger that the milk in each can might become contaminated and that in a creamery it was indispensable that each can should be sealed, but sealed as simply as possible, and that a water and air seal combined simplicity and efficiency, his process which carried those principles into effect was the work of an inventor.

In 1883 Gibson bought from the complainant a creamery containing four cans, which was made under the patent in suit. This creamery he discarded, reserving nothing but the wooden exterior of the tank, into which the Barden Automatic Cream Separator Company put a metal lining, six cans, and six Butler covers.

It is claimed that the sale by the complainant of its four-can creamery was a license to use the patented process. It was such a license in connection with the apparatus and its necessary repairs, but not to use the process in connection with a new, different, and enlarged creamery or number of creameries. The infringement of the first claim of the Cooley patent by the use of the new creamery admits of no extended discussion.

So much of the Butler invention as appertains to this case was said in the specification to consist—

in a milk setting vessel adapted for raising cream by sealing in water, having an overhanging cover and internal supports for raising the cover slightly above the vessel.

The construction and advantages of this cover are thus described:

Q is a flaring and elevated cover for the milk vessel, its top being elevated somewhat above the top edge of the vessel by means of supports or rests r r inside the cover. These supports may be simply bent wires affixed to the cover, or they might be projections on the top of the can itself. This acts as a deodorizer for carrying off the taint or odor of vegetables which may have been fed to the cows, and when the whole is water-sealed by immersing the vessel and its secured cover under water this raised cover allows the gases and animal heat to pass freely from the milk into the water, while at the same time sealing the milk from the outer atmosphere. With this raised cover I find I can work the creamer with about 5° higher temperature than without it, and can raise cream in less time, because the cooling effect of the water is more directly upon the milk.

The claims which were infringed are the second, fifth, seventh, and eighth, and are as follows:

2. A milk setting vessel adapted for raising cream by sealing in water, having an overhanging cover and internal supports for raising the cover slightly above the vessel, as and for the purposes set forth.

5. A milk-setting vessel adapted for raising cream by sealing in water, having an overhanging cover, and supports for raising the cover slightly above the vessel as and for the purposes set forth.

7. A milk-setting vessel adapted for raising cream by standing in water, and having supports for a raised cover provided with a cover adapted to be held raised above the vessel by means of such supports, but with its lower edge below the top of the vessel.

8. A milk-setting vessel adapted for raising cream by standing in water, and having supports for a raised cover provided with a cover adapted to be held raised above the vessel by means of such supports, but with its lower edge below the top of the vessel and to dip into the water surrounding the vessel.

Experience proved that if the milk in a can of a Cooley creamery had derived an unpleasant odor from the substances upon which the cows had fed and the can was hermetically sealed, the butter would be injuriously affected; but it was ascertained that if exhalation was permitted the water would absorb the odors with which the milk was affected without otherwise influencing or changing the qualities of the milk. Butler first made this discovery permanently useful by his raised cover, which permitted this exhalation and relieved the milk from odor or taint without the introduction of external air.

The Garrard cooler is again relied upon in an anticipation; but, in addition to what has been previously said, its cover had no supports on the inside of the cover or projections on the vessel containing the milk, which are the distinctive feature of the Butler patent. The defendant introduced as an anticipation Letters Patent No. 180,962, dated August 8, 1876, to Theodore R. Timby, for an improved apparatus for manufacturing solar salt. In the manufacture of "solar salt" the brine is exposed in vats to the action of the sun and wind, which are covered by movable sheds during rains. Timby's cover was made of opaque material with an upper surface of dark color, so as to absorb a large amount of solar heat. To prevent the displacement of the heated air by cooler currents of wind, the cover was made with inclined sides, so as to deflect the wind. The cover was elevated somewhat by corner-posts extending above the sides of the vat for the purpose of allowing air to enter and impinge obliquely upon the lower surface of the cover and to be deflected upon the surface of the brine. It seems unnecessary to enlarge upon the dissimilarity between a brine-vat with the Timby raised wind-and-air cover and a Cooley creamery with the Butler cover.

The patent to John G. Cherry, No. 219,910, dated September 23, 1879, was introduced by the complainant in rebuttal in the case upon the Cooley patent in explanation of the record in *Boyd* v. *Cherry*, (60 O. G., 160; 4 McCrary, 70; 50 Fed. Rep., 281.) No testimony was given in regard to this patent by any one, and it was not mentioned in the pleadings of either party.

By stipulation testimony taken in either of the cases could be used in the other of said cases. Under this stipulation the defendant claims that the Cherry patent may be used in the case upon the Butler patent as an anticipation. It is apparently a fact, though the fact is not proved by competent evidence, that the Butler application antedated the Cherry application. It was not the intention of the stipulation that a patent offered for one purpose by the complainant in one case could be used by the defendant in the other case as an anticipation without an amendment of the pleadings and without a scintilla of testimony by which the complainant could be warned so as to offer seasonable testimony in regard to the history and character of the alleged anticipation before the record reached the appellate court.

We therefore do not give attention to the Cherry patent.

The decrees of the circuit court are affirmed with costs.

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## U. S. Circuit Court of Appeals—Ninth Circuit.

HARPER & REYNOLDS COMPANY *v.* WILGUS.

*Decided May 18, 1893*

1. WILGUS—LAWN SPRINKLERS.
   Letters Patent No. 443,734, dated December 30, 1890, issued to Daniel C. Wilgus, for an improvement in lawn-sprinklers, *Held* to be valid.
2. SAME—ACTION AT LAW FOR DAMAGES FOR INFRINGEMENT—ANTICIPATION A QUESTION OF FACT FOR THE JURY.
   In an action at law for damages for an infringement the question whether a certain patent set up as a defense is an anticipation of the patent sued on is a question of fact to be submitted to and decided by a jury, and where there was no request for an instruction to the jury to return a verdict for the defendant the appeal court cannot under such circumstances consider the question.
3. WRIT OF ERROR—QUESTIONS OF LAW.
   On a writ of error to the circuit court of appeals its review is confined to the consideration of questions of law, the rulings of trial courts upon questions of evidence, and the instructions given and refused to the jury.
4. VERDICT—INSTRUCTIONS—BILL OF EXCEPTIONS.
   Where there is nothing in the bill of exceptions to show that the jury disregarded the instructions of the court, the presumption is that they strictly followed them and, in the light of the evidence, obeyed the charge of the court.

IN ERROR to the Circuit Court of the United States for the Southern District of California.

*Messrs. Graff & Lapham* and *Mr. Stephen M. White* for the appellant.

*Messrs. Cole & Cole* for the appellee.

Before MCKENNA, GILBERT, and HAWLEY, Judges.

GILBERT, *J.*:

The defendant in error, Daniel C. Wilgus, brought an action against the plaintiffs in error, the Harper & Reynolds Company, for damages for an alleged infringement of Letters Patent No. 443,784, issued December 30, 1890, for an improvement in lawn-sprinklers.





The answer of the defendant denied that the plaintiff therein was the inventor of the lawn-sprinkler so patented and denied the infringement, but alleged that on the 7th day of July, 1888, Letters Patent were issued from the United States to Clement Gauthier for an invention substantially identical with that described in the Wilgus patent, which Letters Patent had been thereafter duly assigned to certain persons in the answer named.

The action was tried before a jury and the verdict was rendered for the defendant in error for $1,238.41.

The first assignment of error, and that upon which the plaintiffs in error mainly rely, is that the evidence is wholly insufficient to justify or sustain the verdict, for the reason that it shows the plaintiff's patent to be void, the same having been anticipated by the Gauthier patent.

There was no request upon the part of the plaintiffs in error for an instruction to the jury to return a verdict for defendant either at the close of the plaintiff's testimony or upon the final submission of the case to the jury. It is not claimed that there was no evidence to go to the jury in support of the novelty of the plaintiff's invention. On the other hand, the bill of exceptions distinctly discloses that there was such evidence. In addition to this, the patent was itself *prima facie* evidence of its own validity. (*Cantrell* v. *Wallick*, 35 O. G., 871; 117 U. S., 690; *Smith* v. *Goodyear*, 12 O. G., 1; 93 U. S., 486; *Lehnbeuter* v. *Holthaus*, 21 O. G., 1783; 105 U. S., 94.)

This court cannot now, upon this assignment of error, enter into the consideration of the question whether or not the Wilgus patent was anticipated by the Gauthier patent and therefore was itself void. That inquiry involved a question of fact for the jury and it was properly submitted to the jury. No exception was taken on the trial either to the submission of the case to the jury or to the charge of the court.

On the writ of error to this court we are confined to the consideration of questions of law—the rulings of the trial court upon questions of evidence and the instructions given or refused to the jury. We have no concern with the weight to be given to evidence which has been properly admitted. (*Parsons* v. *Bedford*, 3 Pet., 446; *Railroad Co.* v. *Fraloff*, 100 U. S., 31.)

It is assigned as error that the court excluded the evidence of a certain assignment made by Wilgus to one Lyall two years before the issuance of the Wilgus patent transferring to Lyall the "claim of invention of sprinkler" for a consideration of fifteen dollars.

This instrument was offered in connection with the cross-examination of the plaintiff, and it is claimed to have been pertinent for the purpose of showing his knowledge of the state of the art and of the existence of the prior invention of Gauthier. The inference is sought to be drawn therefrom that the plaintiff would not have parted with his improvement for fifteen dollars if he had believed himself to be the inventor thereof. This inference is altogether unwarranted, and is not even remotely suggested by the instrument; but if this instrument did indeed tend to show that the plaintiff did at that time believe that his invention was of little value or lacked novelty that fact was wholly immaterial to the issues to be tried in this case. The question before the jury was not what Wilgus may have thought of his own invention in 1888. The evidence was properly excluded.

Error is claimed in the ruling of the court allowing the witness Townsend to answer the following question:

With reference to the tangential inlet spoken of by Mr. Graff, what is the shape of the tangential inlet in the sprinkler?

The response of the witness was in substance that the inlet in the Wilgus sprinkler was circular in shape, while the other was not. It is possible that this evidence was wholly immaterial, since no claim is made in either of the patents upon the shape of the inlet and no reference is made thereto in the specifications, and it is probable that the shape of the inlet has no bearing whatever upon the issues in the case. The sprinklers as actually constructed under both patents were in evidence before the jury, however, and the shape of inlets in each could be distinctly seen upon inspection of them. This evidence of the witness added nothing to what was already admitted before the jury, could not affect the issues and could not in any way have prejudiced the rights of the plaintiff in error.

It is claimed that the verdict was contrary to the charge of the court and that the jury disregarded the following instruction:

A mere carrying forward or a new or more extended application of the original thought and changed only in form, proportion, or degree, or substitution of equivalents doing substantially the same thing in the same way by the same means, with better results, is not such an invention as would sustain a patent.

It is impossible for us to say that the jury disregarded this instruction. There is nothing in the bill of exceptions to show that they did. The presumption is, on the other hand, that they strictly observed it. We must infer that the jury, in the light of the evidence, obeyed the charge of the court, and that in arriving at their verdict they reached the conclusion that the Wilgus patent was not a mere carrying forward of the original thought of the Gauthier patent, and that the two sprinklers do not accomplish substantially the same things in the same way by the same means. This was the main question in issue in the case and was, as we have seen, submitted to the jury without objection upon the part of the plaintiffs in error.

There being no error in the trial below, the judgment is affirmed, with costs to the defendant in error.

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## U. S. Circuit Court—Eastern District of Pennsylvania.

S. S. WHITE DENTAL MANUFACTURING COMPANY *v.* JOHNSON *et al.*

*Decided June 6, 1893.*

PRELIMINARY INJUNCTION—WHEN IT WILL BE GRANTED.
Where upon motion for a preliminary injunction it is shown that the claim alleged to be infringed has already been adjudged by a Federal court to be valid on substantially the same evidence as is presented with the motion, *Held* the validity of the claim for the purpose of issuing the injunction is thereby conclusively established.

*Mr. Joseph C. Fraley* for the complainants.

*Mr. George B. Selden*, *Mr. Jerome Carty*, and *Mr. George Harding* for the defendants.

DALLAS, *J.*:

This is a motion for preliminary injunction. The

circumstances which have been urged in argument as showing acquiescence by the plaintiffs in the conduct of the defendants and as estopping the plaintiffs from asserting that the "foot-rest" of the defendants is an infringement of the patent in suit have been fully examined and carefully considered; but nothing has been shown which, in my opinion, amounts to a waiver of the complainants' rights or which precludes them from maintaining them in a court of equity. Therefore it is necessary to dispose of this motion upon the other defenses which have been interposed, and these are, first, that the patent is invalid, and, second, that the defendants have not infringed.

Upon both points this motion is supported by the decree of the Supreme Court of the District of Columbia in the case of *Morrison* v. *The Canton Dental Chair Co.*, (49 O. G., 735.) That case involved the same claim as is here in question, viz: the ninth claim of Letters Patent No. 369,295, dated August 30, 1887, granted to James B. Morrison, for "adjustable chairs," as follows:

In combination with a chair-body having a platform or step attached thereto, a supplemental foot-rest, and arms to sustain said rest pivoted to the platform to swing forward and backward to a limited extent and interlocking with said platform in an upright operative position when turned rearward as well as forward, whereby said arms are adapted to sustain the rest in either of two operative positions at different distances fom the chair-seat.

This claim was distinctly sustained by the decree to which I have referred, and for the purpose of this application its validity is thereby conclusively established, (*Brush Electric Co.* v. *Accumulator Co.*, 61 O. G., 726; 50 Fed. Rep., 833; *Cary* v. *Domestic Co.*, 34 O. G., 1158; 27 Fed. Rep., 299; *Cary* v. *Lovell Co.*, 32 O. G., 1009; 24 Fed. Rep., 141;) but if this were otherwise, still the only new matter set up and insisted upon here is a patent issued to C. L. Bauder, April 6, 1842, for a "foot-rest" so manifestly different from that of Morrison and so plainly incapable of accomplishing its object that it is obvious, upon inspection, that they do not conflict.

The Supreme Court of the District of Columbia also adjudged the defendant in the Morrison case had infringed this patent by the use of an appliance which was substantially the same as that of the defendants in the present case. The infringing device of the Canton Dental Chair Company was said by Judge Cox to be identified with that of the patent—

by the fact that there are lugs placed upon the frame which are exactly as in the other for the very purpose of preventing the rest from going down to a level with the platform and for the purpose of keeping it in position where it can operate as a foot-rest.

So, also, in speaking of certain devices which had been introduced to show anticipation, the learned judge, in distinguishing them, said:

* * * The rest, when it is turned rearward, instead of being used as a rest for the foot, simply folds up flat with the body of the chair or platform, and therefore *it does not serve the purpose* of a rest at all;—

and again:

The rest was folded into the body of platform or went down immediately upon it and *was not sufficiently elevated from it to be used at all.*

It is evident that it was not the mere presence of "lugs" which was considered important, but the fact that they were present—

*for the purpose of* keeping it [the rest] in position where it can operate as a foot-rest;

and, although lugs are absent from the contrivance of these defendants, yet their *purpose* is accomplished by simply increasing the diameter of the foot-rest. The end is the same and the difference in means is not substantial, and therefore, if there was infringement in the case decided by Judge Cox, there is also infringement in this one.

I should not be understood as intimating any independent opinion upon either of the two questions which were determined by the Supreme Court of the District of Columbia, but only as holding that, because they have been determined by that court, and upon substantially the same evidence as has been now adduced, they are not open for present consideration.

The motion for a preliminary injunction is granted, and the writ may issue accordingly.



THE
# OFFICIAL GAZETTE
OF THE
# United States Patent Office.
[BY AUTHORITY OF CONGRESS.]

VOL. 64.—No. 3. TUESDAY, JULY 18, 1893. PRICE—$5 per year.

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## Notice of Interference.

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
*Washington, D. C., July 13, 1893.*

*William J. Bennetts, his heirs, assigns, or legal representatives, take notice:*

An interference having been declared by this Office between the application for patent of Arthur W. Robinson, of Bucyrus, Ohio, and a patent to William J. Bennetts, of Bucyrus, Ohio, and the notices of said declaration, mailed by the Patent Office in the usual manner to the said William J. Bennetts, having been returned undelivered, notice is hereby given to the said William J. Bennetts, his heirs, assigns, or legal representatives, that if he or they desire to contest the said interference they should immediately put themselves in communication with the Commissioner of Patents, in order that the notices heretofore sent by and returned to the Office may be forwarded to them. This notice will be published in the OFFICIAL GAZETTE for six consecutive weeks.

JOHN S. SEYMOUR,
*Commissioner.*

## Changes in Classification.

(ORDER No. 898.)

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
*Washington, D. C., July 5, 1893.*

The sub-class of Draft-eveners, under Class 97, Plows, is hereby abolished.

The following sub-classes are established under Class 126, Stoves and Furnaces:

138. Frictional heaters.
139. Water-heating systems, steam.

The following new sub-class is hereby established under Class 34, Driers:

13. Driers, brick.

The following sub-classes are established under Class 48, Gas:

42. Retorts and settings, attachments.
43. Retorts and settings, cleaning.
44. Retorts and settings, domestic plants.
45. Retorts and settings, retorts

S. T. FISHER,
*Acting Commissioner.*

## Oaths of Applicants in Foreign Countries.

(ORDER No. 822.)

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
*Washington, D. C., June 10, 1893.*

It is hereby directed that oaths accompanying applications for patents made within the following-named foreign countries must be taken before a minister, chargé d'affaires, consul, or commercial agent holding commission under the Government of the United States:

| | |
|---|---|
| Austria Hungary. | Netherlands. |
| Argentine Republic. | Norway. |
| Belgium. | Peru. |
| Brazil | Portugal. |
| Costa Rica. | Russia. |
| Denmark. | San Salvador. |
| Haiti | Servia. |
| Honduras. | Sweden. |
| Italy. | Switzerland. |
| Mexico. | |

Applications filed in this Office presenting oaths not executed in compliance with this order will be treated as incomplete.

JOHN S SEYMOUR,
*Commissioner.*

## DISCLAIMER.

214,944.—*Joseph B. Stetson*, Lincoln, Me., assignor of two-thirds to *Albion D. Wilson* and *Frederic A. Edwards*, same place. IMPROVEMENT IN LANTERNS. Patent dated July 25, 1881. Disclaimer filed July 21, 1893.

Enter their disclaimer to that part of the claims in said specification which is summed up in the second claim of said Letters Patent in the following words, to wit:

2. The tubular frame D D' and the globe G, in combination with the plates C p, the connecting-rods F, and the guides H, whereby said globe is raised and lowered by a suitable lever and guided or steadied laterally in its movements, for the purpose set forth.

## Publishers' Catalogues.

This Office would be pleased to receive from manufacturers and publishers such catalogues, circulars, price-lists, or other advertisements relating to the sciences and mechanical arts as are published by them for gratuitous distribution; but notice is hereby given such manufacturers or dealers who feel disposed to send their publications that not less than three copies should be forwarded in order that the subjects may be properly indexed, classified, and subclassified in the Scientific Library for convenient and ready reference.

## The Official Gazette.

THE OFFICIAL GAZETTE is published every Tuesday, simultaneously with the weekly issue of patents. From January 1, 1872, (the commencement of its publication,) to June 30, 1883, it was published and bound in semi-annual volumes; since July 1, 1883, in quarterly volumes. All subscriptions must commence with the beginning of a volume; none taken for less than three months. Terms: To all subscribers within the United States and Canada, $5 per annum; to foreign subscribers, $7; single copies, 10 cents; bound semi-annual volumes, (prior to June 30, 1883,) full sheep, $4 per volume; bound quarterly volumes, (subsequent to July 1, 1883,) full sheep, $2.75 per volume. No club rates. *Payment in advance.* All orders should be addressed to "The Commissioner of Patents, Washington, D. C."

## Issue of July 18, 1893.

| | | |
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| Patents | 422 | No. 501,485 to No. 501,906, inclusive. |
| Designs | 29 | No. 22,613 to No. 22,641, inclusive. |
| Trade-Marks | 26 | No. 23,366 to No. 23,391, inclusive. |
| Labels | None. | |
| Prints | None. | |
| Reissues | 2 | No. 11,351 to No. 11,352, inclusive. |
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TO CITIZENS OF THE UNITED STATES.

| States. | Patents and Designs. | Trade-Marks. | States. | Patents and Designs. | Trade-Marks. |
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| Alabama | 1 | ..... | Nevada | ..... | ..... |
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| Montana | ..... | ..... | Total to citizens of the United States | 382 | 24 |
| Nebraska | 1 | 1 | | | |

TO CITIZENS OF FOREIGN COUNTRIES.

| Countries. | Patents and Designs. | Trade-Marks. | Countries. | Patents and Designs. | Trade-Marks. |
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| Argentine Republic | ..... | ..... | Netherlands | ..... | ..... |
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| Belgium | ..... | ..... | New South Wales | ..... | ..... |
| Bermuda | ..... | ..... | New Zealand | ..... | ..... |
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| Italy | ..... | ..... | Total to citizens of foreign countries | 69 | 2 |
| Mexico | ..... | ..... | | | |

## APPLICATIONS UNDER EXAMINATION.

*Condition at Close of Business July 11, 1893.*

| Division No. | Subjects of invention. | Oldest new application and oldest action by applicant awaiting office action. New. | Amended | No. of applications awaiting action. |
|---|---|---|---|---|
| | *In arrears.—Under one month.* | | | |
| 31 | Gas, Painting, Hides, Skins, and Leather, Alcohol, Oils, Fats, and Glue, etc. | July 1 | July 10 | 25 |
| 2 | Farm Stock, Products, etc | June 19 | June 30 | 97 |
| | *Between one and two months.* | | | |
| 13 | Metal-Working, Arms and Projectiles, Nails and Spikes, Needles and Pins, etc. | May 20 | July 11 | 95 |
| 14 | Metal-Bending, Wire-Working Coin-Controlled Apparatus, Farriery, Nut and Bolt Locks, etc. | May 15 | July 8 | 117 |
| 12 | Mechanical Engineering, Stove-Service, etc. | May 15 | July 7 | 185 |
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| 30 | Lamps, Gas-Fittings, Linotyping, Matrix-Making Machines, and Type-Writing Machines. | June 10 | July 1 | 138 |
| 16 | Telegraphy, Telephony, Electric Lighting and Signaling. | June 9 | June 29 | 73 |
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| 6 | Chemistry, Explosives, Medicines, Fertilizers, Preserving, Photography, Sugar and Salt, etc | May 29 | June 24 | 112 |
| 10 | Carriages and Wagons and Railway-Cars. | May 12 | June 24 | 379 |
| | *Between two and three months.* | | | |
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| 3 | Metallurgy, Metal Founding, Coating, Annealing and Tempering, Electro-Chemistry, etc. | May 1 | July 3 | 175 |
| 11 | Boots and Shoes, Clasps, Buckles and Buttons, Harness, Hose and Belting, and Leather Working Machinery. | May 9 | July 1 | 247 |
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## GRANTED JULY 18, 1893.

**501,485. INCANDESCENT-LAMP SOCKET.** HENRY P. BALL, Schenectady, assignor to the Edison General Electric Company, New York, N. Y. Filed Aug. 3, 1892. Serial No. 441,994. (No model.)





*Claim.*—1. The combination of a disk or plate having a central and an edge metal eyelet or terminal, a second disk or section having holes at different points in it from the eyelets in the first mentioned disk or plate, through which eyelets and holes conductors may be threaded, and means for holding said disks or sections together for clamping the conductors and connecting them to the terminals, substantially as described.

2. The combination of disks connected by means of a pivot pin, holes in said disks at substantially equal distances apart but differently arranged in the two disks through which conductors may be passed, whereby when the disks are in one position the holes may be brought in line with each other and conductors threaded therethrough, and when the disks are moved to a second position the holes are moved out of line with each other bending and clamping the conductors when placed therein, and means for holding said disks in the second position, substantially as described.

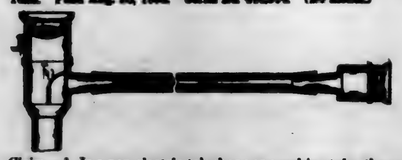
3. The combination, in a socket, of a shell or casing, a socket body consisting of disks or plates having holes in them, which holes are adapted to receive conductors and are so arranged in the several disks as to be out of line with each other when the disks or plates are put together in the socket, substantially as described.

4. The combination, in a socket, of a shell or casing, a socket body consisting of disks or plates having holes in them, which holes are adapted to receive conductors and are so arranged in the several disks as to be out of line with each other when the body is put together, and metallic eyelets or terminals in the holes of the inner disk, substantially as described.

5. The combination, in a socket, of a screw-threaded sleeve adapted to receive the neck of a lamp or other device, a body consisting of disks or plates having holes through them at different points in the several disks, whereby conductors extending through said holes are caused to pass in zig-zag or circuitous lines, and means for clamping said disks against the lower end of said screw-threaded sleeve, substantially as described.

6. The combination, in a socket, of a shell, a body consisting of several plates through which conductors may pass in circuitous lines, and a cap engaging the shell and clamping said plates, substantially as described.

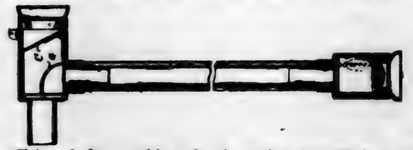
**501,486. SPEAKING-TUBE.** CHARLES A. BARTLETT, Memphis, Tenn. Filed Aug. 20, 1892. Serial No. 444,004. (No model.)



*Claim.*—1. In a non-electric telephone or speaking tube, the combination with the speaking phone, its hinged whistle and indicator, of the flexible ear tube connected at one end to the lower portion of said speaking phone, an ear phone on the opposite end of said flexible tube, a hinged gravity trap in said ear phone, and normally closing the orifice therein, and a shield or deflector located within said speaking phone at the juncture therewith of said flexible tube, substantially as specified.

2. In a non-electric telephone or speaking tube, the combination with a line tube, and a speaking phone or transmitter connected thereto, of a flexible ear tube attachment connected at one end to the lower inner portion of said speaking phone or transmitter, an ear phone on the opposite end of said flexible tube, a hinged shut-off trap or diaphragm in said ear phone, and normally closing the orifice therein, and a curved deflector or shield within said speaking phone or transmitter at the juncture therewith of the line and ear tubes, said shield or deflector forming two separate passages opening at one end in said line tube, and at their other ends leading one into the mouthpiece of said speaking phone or transmitter, and the other into said ear tube, substantially as specified.

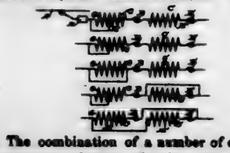
**501,487. SPEAKING-TUBE.** CHARLES A. BARTLETT, Memphis, Tenn. Filed Aug. 31, 1892. Serial No. 444,653. (No model.)



*Claim.*—1. In a speaking tube, the combination with the mouth tube, its line tube connection, and the normally open hinged disk or valve in said mouth tube, of the flexible ear tube forming a branch of said mouth tube, an ear piece on said tube, a gravity-operated whistle in said ear piece, and means at the junction of said air tube and line tube with the mouth tube for diverting the air from said mouth tube into the line tube, and from the line tube into the ear tube, substantially as specified.

2. In a speaking tube, the combination with the mouth tube, its line connection, and the normally open hinged disk or valve, of the flexible ear tube forming a branch of said mouth tube, an ear piece on said tube, a gravity-operated whistle in said piece, and a curved deflector in the mouth tube at the junction of the line and ear tubes therewith, substantially as specified.

**501,488. REGULATING ELECTRIC LOCOMOTIVES.** JOHN B. ELDER, Lynn, Mass., assignor to the General Electric Company, of New York. Filed Nov. 16, 1892. Serial No. 452,119. (No model.)



*Claim.*—1. The combination of a number of electric motors of normally different counter-electromotive force at a given speed, with switching mechanism for throwing each machines into parallel at will, and means for balancing or evening their counter-electromotive forces when thus in parallel.

2. The combination of a number of electric motors for driving a vehicle or other mechanism, the normal field strength of one being greater than that of the other, with switching mechanism for coupling said motors in series or parallel at will, and means for augmenting the field of the weaker machine upon so doing, so as to make its counter-electromotive force approximately equal to that of the stronger machine, as described.

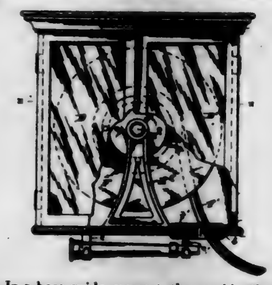
3. The combination of a number of electric motors of normally different counter-electromotive force, with a series parallel controller therefor, and an additional field winding on the weaker machine normally short circuited but brought into circuit when the machines are thrown into multiple to approximately equalize the counter-electromotive forces of the machines, as set forth.

4. The combination of a number of electric motors of normally different counter-electromotive force, with a switch such that as it is thrown from open circuit position, the two motors are first coupled in series and the load then thrown successively upon the weaker and stronger machines in order to obtain increased speeds, as described.

5. The combination of a number of electric motors and a resistance, with a switch arranged to gradually cut out resistance when thrown from open circuit position, and by a still further movement to short circuit a motor after the resistance is cut out.

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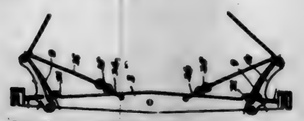
**501,489.** GUIDE-SUPPORT FOR HOSE-REELS. WILLIAM F. BOYDEN, San Francisco, Cal. Filed Aug. 22, 1892. Serial No. 443,794. (No model.)



*Claim.*—In a hose guide support, the combination with the inclosed cabinet secured thereto, of the hollow shaft located within the cabinet, of the rotable reel secured upon the hollow shaft, of the movable front for permitting insertion or withdrawal of the hose reel, one end of the cabinet being movable so as to permit of being opened or closed, which when opened permits the hose passing therethrough as wound upon the reel, of the stand or supply pipe, projecting within the cabinet, and of the guide outlet opening formed within the support and through which the hose runs as unwound from the reel.

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**501,490.** HORSE-DETACHER. ELISHA C. BURNETT, Cibic, Va. Filed Mar. 11, 1893. Serial No. 465,845. (No model.)



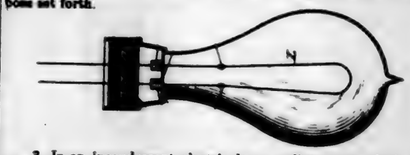
*Claim.*—In a device of the character set forth, the combination of a whiffletree having hooks at the outer opposite ends thereof that extend rearwardly and open at their front ends, a pair of levers having their front ends pivotally connected to the whiffletree inside of and adjacent to the said hooks, the said levers extending at an angle rearwardly from the said whiffletree and terminating at their outer ends in eyes, a locking bolt pivotally connected to each of said levers in rear of the point of connection between the same and whiffletree and freely moving through openings in the opposite sides of each of the said hooks, said bolts being positioned in a line substantially parallel with the whiffletree and at an angle to the levers, flat springs secured to the whiffletree and extending rearward and bearing against the inner sides of the levers to thereby normally force the said levers outwardly from each other and hold the bolts across the hooks, and operating cords connected to the whiffletree between the levers and run loosely through the eyes at the rear ends of the levers, substantially as described.

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**501,491.** INCANDESCENT ELECTRIC LAMP. EDWARD H. CAREY, Boston, Mass. Filed Apr. 6, 1893. Serial No. 469,598. (No model.)

*Claim.*—1. In an incandescent electric lamp, the combination of the glass lamp globe K, fusible cement plug P, filament L, and leading-in wires M M; with the radiators T T attached to said wires, substantially as and for the purpose set forth.

2. In an incandescent electric lamp in which a fusible cement is used to render the globe of the lamp air tight, radiators located within the lamp and attached to the leading-in wires, adapted to prevent the said wires from softening the said cement by conducting to it, heat from the filament and hotter parts, substantially as and for the purpose set forth.

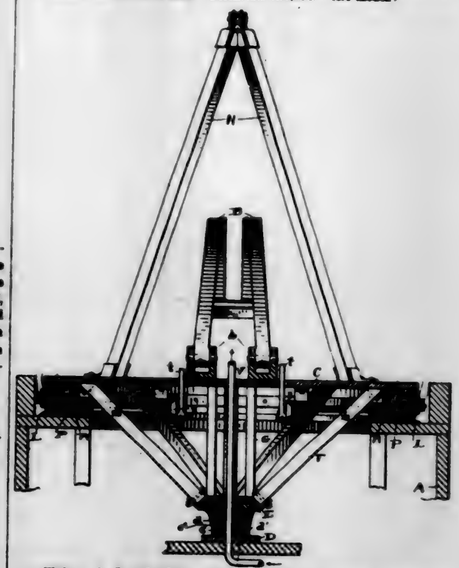


3. In an incandescent electric lamp, radiators attached to the leading-in wires said radiators having a slot, by means of which, they are secured to said wires, substantially as and for the purpose set forth.

4. In an incandescent electric lamp, the combination of the glass globe K, filament L, disk N, cement plug P, and leading-in wires M M with, the radiators T T, and disk R, substantially as and for the purpose set forth.

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**501,492.** DREDGING APPARATUS. WILLIS R. CHILSON, Lorain, Ohio. Filed Jan. 9, 1893. Serial No. 457,750. (No model.)



*Claim.*—1. In a dredging apparatus, a fixed bearing arranged on the bottom of the boat, a bearing-block resting on the bearing, a turn-table, vertical and inclined braces connecting respectively the center and the outer portions of the table with the said block, a rigid top frame and a boom supported on the table, and wheels supporting the outer edge of the table.

2. In a dredging apparatus, a fixed bearing arranged on the bottom of the boat and having a central cylindrical stud and an annular flange surrounding the stud, a bearing-block having a recess for the stud and an annular shoulder bearing upon the flange of the bearing, a turn-table, vertical and inclined braces connecting respectively the center and the outer portions of the table with the said block, and a rigid top frame and a boom supported on the table.

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**501,498.** VELOCIPEDE. FRANK P. CHENEY, Chicago, Ill. Filed Nov. 21, 1892. Serial No. 452,672. (No model.)



*Claim.*—1. In combination, substantially as set forth, the two parts of the steering joint having two independent bearings upon each other, one of said bearings being adapted to be tightened to increase the friction between said parts at will without affecting the other bearing.



2. In combination, substantially as set forth, the two parts of a steering joint having two bearings upon each other, each of said bearings being adapted to be adjusted independently of the other, whereby one may be tightened to increase the friction between its parts while the other is left free.

3. In a velocipede, in combination with the steering head and the steering spindle having anti-friction bearings between them, a frictional bearing between said parts independent of the anti-friction bearing and adapted to be tightened at will to increase its friction: substantially as set forth.

4. In a velocipede, in combination with the two parts of the steering joint provided with anti-friction bearings and means for adjustment in the direction of the axis of the joint to compensate for lost motion in said bearings; a friction bearing between said parts of the joint and means for adjusting the same transversely to the axis to increase its friction, whereby such adjustment is made without effect upon the anti-friction bearings: substantially as set forth.

5. In a velocipede, in combination with the steering head and the steering spindle having ball bearings between them, two rings or collars encircling and adapted to be clamped respectively to the two members of the ball-case, said collars being rigidly connected, one of said collars being split, whereby it is adaped to be clamped more or less tightly about the member which it encircles: substantially as set forth.

6. In a velocipede, in combination with the steering head and spindle, the two members of the ball-bearing case rigid with said parts respectively, the two rings or collars encircling and adapted to be clamped to said members of the ball-case respectively; one of said collars being split and adapted to be more or less tightly clamped to the part which it encircles, the other ring encircling the adjustable member of the ball-case and being adjustably secured thereabout: substantially as set forth.

7. In combination with the steering head and the member of the ball-case rigid therewith, the steering spindle having the adjustable member of the ball-case; a split collar D encircling and adapted to be clamped to the member of the ball-case on the head, and the collar D' encircling and adapted to be adjustably secured to the adjustable member of the ball-case: substantially as set forth.

8. In combination with the steering head and the steering spindle and the members of the ball-case on them respectively, the dust guard and friction sleeve D encircling one of said members of the ball-case; the split collar encircling and adapted to be clamped about said member outside of said friction sleeve, and the collar D' rigid with the collar D, adapted to be secured rigidly to the other member of the ball-case: substantially as set forth.

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**501,494.** ORE-ROASTING KILN. OWEN W. DAVIS, Jr., Middlesborough, Ky. Filed July 5, 1892. Serial No. 438,901. (No model.)



*Claim.*—1. An ore roasting furnace consisting of a central stack, an ore roasting chamber surrounding the stack with openings to the same, a series of vertically arranged combustion chambers, encircling the roasting chamber and of substantially the same height as the roasting chamber, and a series of openings to the roasting chamber in its inner wall from the top to the bottom, said openings being in line with the openings in the opposite wall of the roasting chamber, substantially as described.

2. An ore roasting furnace consisting of a stack, a roasting chamber surrounding the same, a series of vertically extending combustion chambers surrounding the roasting chamber and in communication therewith at various points in its height from the top to the bottom thereof, a gas conduit at the bottom of said combustion chambers having an outlet therefrom and an air inlet leading into the combustion chamber above the gas flue, substantially as described.

3. In an ore roasting kiln, an annular ore chamber, a series of combustion chambers arranged around said ore chamber and communicating therewith through a series of apertures in the intermediate wall, and air passages in said wall having apertures leading into the combustion chamber, all substantially as described.

4. In an ore roasting kiln, a central draft space, a stack in connection therewith an ore chamber encircling said space, with a series of openings at intervals in the dividing wall, a series of combustion chambers around the ore chamber and communicating therewith, and a cap covering the upper end of the draft space, substantially as described

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**501,495.** HARMONICA. EDUARD DIENST, Leipsic-Gohlis, Germany. Filed Mar. 14, 1893. Serial No. 466,883. (No model.)

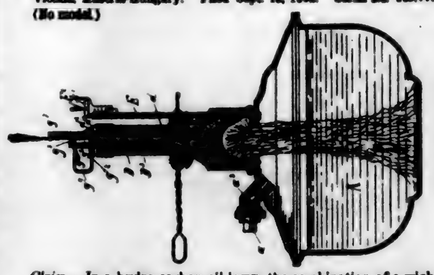


*Claim.*—1. A harmonica composed of a box B and of a removable U-shaped spring cover that embraces the box, substantially as specified.

2. A harmonica composed of a grooved box and of a removable U-shaped spring cover that embraces the box and has inwardly turned flanges that engage the groove, substantially as specified.

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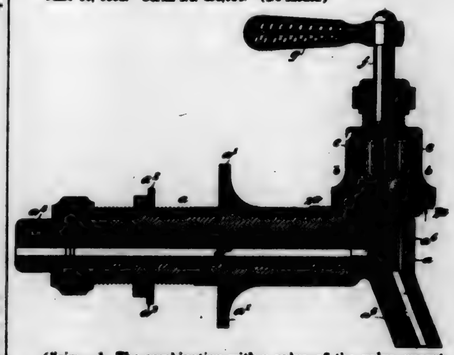
**501,496.** HYDROCARBON-VAPOR BURNER. CARL FABRINIUS, Vienna, Austria-Hungary. Filed Sept. 13, 1892. Serial No. 445,778. (No model.)



*Claim.*—In a hydro-carbon oil lamp, the combination of a wick tube D with a small opening $d'$ on its top surmounted by a chamber $d^3$, a small tube $g^2$ passing through the plates $g$ $g'$ and extending into the said chamber $d^3$, the upper surface of which small tube is provided with a capillary sectional slot, the other extremity being closed by a wire; substantially as described and for the purpose specified.

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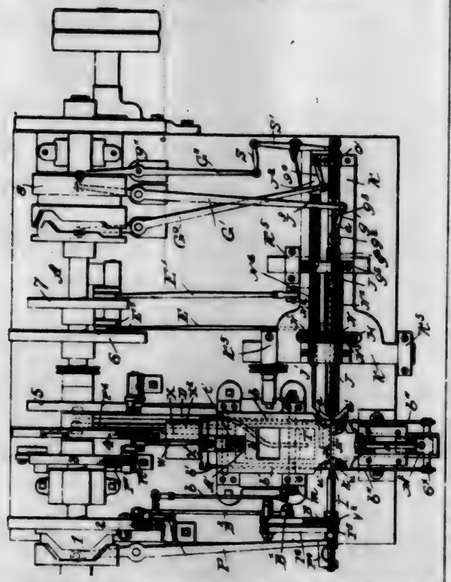
**501,497.** VALVE. FRANK J. FERRELL, New York, N. Y. Filed June 16, 1892. Serial No. 436,951. (No model.)



*Claim.*—1. The combination with a valve, of the valve operating stem $f$, provided with the cup-shaped extension $e$, located centrally in line with the valve and of larger internal diameter than the width of the valve, so that the valve may enter therein, and of larger diameter than the valve operating stem $f$, and having its inner periphery threaded, the short valve stem $d$ connected to the valve and exteriorly threaded to fit and mesh within the threaded inner portion of the extension $e$, and a casing for the valve having a bonnet provided with bearings for said valve operating stem and for the cup-shaped extension thereof, substantially as set forth.

2. The combination of the valve body $a$, the valve port and fluid passages and the channel $a^2$ therein, the upper part $b$, the valve $c$ having channel $d$ therein, the valve stem $d$, connected to the valve and exteriorly threaded, the operating stem $f$ and the interiorly threaded extension $e$ thereof meshing with the valve stem, substantially as shown and described.

**501,498. CIGARETTE-MACHINE.** VALENTIN S. FOSSEUSA, Madrid, Spain. Filed June 14, 1892. Serial No. 436,690. (No model.) Patented in Spain Apr. 10, 1889, No. 9,490; in Portugal July 9, 1889, No. 1,304; in France July 10, 1889, No. 199,906; in Belgium July 13, 1889, No. 87,086; in Switzerland Feb. 6, 1890, No. 2,060; in Germany Feb. 25, 1890, No. 54,073, and in England Apr. 29, 1890, No. 6,552.



*Claim.*—1. In combination, the hopper, the feed slide having an opening to receive the charge of tobacco, the frame having a pocket $D^{x}$, the vertically movable plunger T therein with means for operating the same, the said feed slide carrying the mold section M, the mold section M' with means for operating the same and the mechanism for rolling and tucking in the ends of the wrapper, substantially as described.

2. In combination, the hopper, the feed slide having an opening to receive the charge of tobacco, the mold sections with operating means therefor, the means for feeding the charge of tobacco in front of one of the mold sections the wrapper rolling and tucking mechanism, and the means for regulating the size of the feed slide opening consisting of the adjustable plate h with the adjusting means therefor, substantially as described.

3. In combination, the reciprocating mold sections M, M' with means for operating them, the paper feeding devices for feeding the paper between said mold sections, the hollow gouge $a'$ having longitudinal reciprocating movement and also rotary movement, said gouge being arranged to move to and from position between the mold sections, the cutter and the tucking mechanism with operating means therefor, substantially as described.

4. In combination, the reciprocating mold sections with operating means therefor, the feed rollers arranged above the mold sections for feeding the paper down between them, the knife c carried by one of the mold sections, the spring plate $d'$ also carried by one of the mold sections for holding the web, the hollow gouge with means for reciprocating it to and from position between the mold sections, means for rotating the gouge and tucking mechanism, substantially as described.

5. In combination the mold sections M, M' with means for moving them to and from each other, the said section M moving in a way $A^{x}$ in the frame, the means for feeding the tobacco into said way in front of the mold section M, the paper feeding rolls, the cutting knife carried by one of the sections to sever the paper, the paper rolling means, the tucking mechanism and means for operating the same, substantially as described.

6. In combination, the reciprocating mold sections, the means for feeding the tobacco between them, the paper feeding rolls arranged to feed the paper down between the mold sections the revolvable gouge, the pasting roller, the oscillating lever S carrying the gummer to contact with the lower end of the paper, the means for operating the said lever, the means for operating the gouge, and tucking mechanism with operating means therefor, substantially as described.

7. In combination, the reciprocating mold sections, the feed rolls for feeding the paper down between them, the revolvable gouge, the oscillating lever carrying the gummer, the paste roller having the ratchet, the pivoted tank carrying the roller, the lever carrying the pawl for operating the ratchet and arranged to tilt the tank to move the roller into contact with the gummer, and the tucking mechanism with means for operating it, substantially as described.

8. In combination, the reciprocating mold sections with operating means therefor, the means for feeding the paper down between them, the revolvable gouge with operating means therefor, the yielding apron e carried by one of the mold section slides, and the gummer lever with means for operating the same, substantially as described.

9. In combination, the reciprocating mold sections, the means for feeding the tobacco between them, the means for feeding the paper between them, the hollow gouge $a'$, the means for reciprocating and rotating the same, the stem a movable along the hollow gouge, the reciprocating needle I carrying a head b, the means for reciprocating said needle, and tucking mechanism, substantially as described.

10. In combination, the reciprocating mold sections, the means for feeding the tobacco between them, the means for feeding the paper between them, the hollow gouge $a'$, the means for reciprocating and rotating the same, the stem a with means for reciprocating it, the spindle J' with means for reciprocating it, the reciprocating plate K carrying the gouge with its stem and the spindle J', the means for reciprocating said plate and the tucking mechanism, substantially as described.

11. In combination, the mold sections with means for opening and closing them, the paper feeding mechanism, the needle I operating at one side of the mold sections, the means for reciprocating said needle, the gouge for rolling the paper about the filler, the spindle J', the means for operating the gouge and spindle, and the reciprocating plate K carrying said gouge and spindle and arranged to bring them alternately into alignment with the mold and the needle I, substantially as described.

12. In combination, the reciprocating mold sections, the paper feeding devices, the means for rolling the cigarette within the mold, the oscillating tuckers at the ends of the mold sections arranged to tuck in the ends of the wrapper and the means for operating the same, substantially as described.

13. In combination, the reciprocating mold sections, M, M' the paper feeding devices, the means for rolling the cigarette within the mold sections, the pair of tuckers u, u, for the front mold section the tuckers $u'$, $u'$ for the rear mold sections and the means for operating the same in succession whereby the ends of the wrapper are tucked in from opposite sides, substantially as described.

14. In combination, the reciprocating mold sections, the paper feeding devices, the gouge with means for reciprocating and rotating the same, the stem a with means for reciprocating it, the reciprocating needle I having the head K, the means for reciprocating the said needle, the spindle J' with operating means therefor and the pivoted tuckers u, $u'$ at the ends of the molds with means for operating the same, substantially as described.

15. In combination, the mold sections with means for reciprocating the same, the paper feeding devices, the rotary gouge $a'$ the lever connections for reciprocating the same, the sleeve through which the gouge spindle passes, the gear on said sleeve, the segment for operating the gear, substantially as described.

16. In combination, the stationary frame having the slideway $A^{x}$, the mold section movable in said way, the movable mold section M', the slide $M^{3}$ therefor, the means for operating said slide, the means for feeding the paper and tobacco between the mold sections, the rolling mechanism, the two pairs of tuckers one pair being supported by the stationary frame and the other pair by the movable slide $M^{3}$ and means for operating the tuckers, substantially as described.

17. In combination, the mold, the tobacco feeding device, the paper feeding means, the hollow rotary gouge within the mold for receiving the tobacco in its hollow side and rolling the paper and the folding mechanism, substantially as described.

18. In combination, the mold, the tobacco feeding device, the paper feeding means, the rotary means within the mold for rolling the cigarette, the longitudinally reciprocating spindles for compressing the tobacco longitudinal of the cigarette, and tucking mechanism for the wrapper, substantially as described.

19. In combination, the main driving shaft, the mold the paper feeding and cutting device, the gouge $a'$ in the mold the spindle therefor, the lever connections for reciprocating said spindle, the sleeve through which the spindle passes, the gear N' thereon, the segment for operating the said gear, the spindle J' with lever connections for reciprocating it, the sleeve through which the spindle passes, the gear on said sleeve meshing with the gear N', the plate K carrying the said gouge and spindles and the means for reciprocating the said plate, substantially as described.



**501,499. HEATING ATTACHMENT FOR COOK-STOVES.** DUSSELLA P. GALES, Palmyra, Pa. Filed Mar. 8, 1893. Serial No. 465,128 (No model.)



*Claim.*—1. An interchangeable cook-stove door having an opening in its side adapted for connection with a heater-pipe and a tongue centrally formed on its free end, said tongue having its upper and lower edges parallel with the central axis of said door, substantially as described.

2. The combination with the tubular thimble, of the damper pivoted in said thimble and extending diametrically across the same, and the semi-circular stops 3, arranged in the interior of said thimble on opposite sides thereof, and extending in planes on opposite sides of the pivot point of said damper, each of said stops having its ends and one face adapted to contact with said damper in extreme positions thereof, substantially as described.

**501,500. BLACK DYE.** LEO GANS, Frankfort-on-the-Main, and EBERHARD HOFFMANN, Höchster, near Frankfort-on-the-Main, assignors to Leopold Cassella & Co., Frankfort-on-the-Main, Germany. Filed Jan. 4, 1893. Serial No. 457,033. (Specimens.) Patented in France Jan. 23, 1891, No. 201,770, and in England Jan. 30, 1891, No. 1,742.

*Claim.*—The bluish black coloring matters herein described derived from tetrazo compounds of paradiamines such as benzidine or analogous bodies, one molecule of gamma-amidonaphtholsulfo acid and one molecule of amidonaphtholdisulfo acid H which is easily soluble in water with a bluish black color, insoluble in spirit, dissolving in strong sulfuric acid with a blue color, being transformed by nitrous acid into a tetrazotized dye-stuff which can be combined with phenols or amines.

**501,501. CHILD'S CYCLE.** OTTO GERBRUDE, Heidelberg, Germany. Filed Feb. 28, 1893. Serial No. 463,433. (No model.)



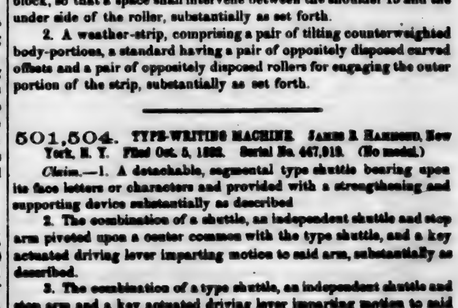
*Claim.*—1. The combination, with a tricycle, of the body of a horse mounted by means of a spring on the pivot of the front steering wheel, substantially as set forth.

2. The combination, with a back bone, of a driving shaft, driving wheels on the shaft, pedals and means for rotating said shaft from the pedals, a steering wheel on the front end of the back bone, a horse mounted by means of a spring on the upper end of the pivot of the steering wheel, a vertical standard journaled on the back bone back of the horse, a handle bar on the upper end of said standard, and rods connecting arms of the standard with arms of the steering wheel fork, substantially as set forth.

**501,502. INCANDESCENT-LAMP FIXTURE.** ALBERT T. SUTFORD, Hopedale, Mass. Filed Nov. 23, 1892. Serial No. 472,702. (No model.)

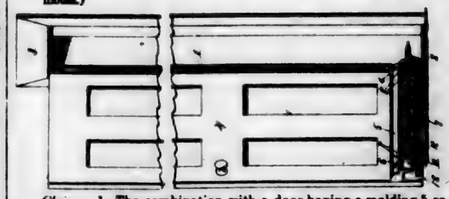
*Claim.*—1. A rigid incandescent lamp-stem, provided at one end with a ball having a diametrical wire passage for the circuit wires of the lamp, combined with a separable clamp composed of narrow rings having concavities to embrace the ball at or near its equatorial part and leave the poles of the ball uncovered, and means to hold the parts of the clamp together and cause the clamp to embrace the said ball by a measured friction, substantially as described.

2. A rigid incandescent lamp-stem, provided at one end with a ball having a diametrical wire passage for the circuit wires of the lamp, combined with a separable clamp composed of narrow rings having concavities to embrace the ball at or near its equatorial part and leave the poles of the ball uncovered, and means to hold the parts of the clamp together and cause the clamp to embrace the said ball by a measured friction, one of the said rings being provided with feet adapted to rest on a wall and keep the end of the ball receiving the wires away from the wall and provide a free space in which the wires may move as the ball is turned, substantially as described.



3. The combination with the socket of an incandescent lamp, of a fixture secured thereto and consisting of a rigid stem carrying at one end the lamp and at the other end thereof a ball, having a diametrical hole for the passage of the electric wires, and a two-part annular clamp b, b' embracing the equatorial zone of the ball to hold it frictionally in adjusted position, said clamp bearing directly against the ball and being held thereto by screws uniting the two parts of the clamp, one of said parts being provided with arms extending beyond the circumference of the ball, by which the clamping device is secured in position, substantially as described.

**501,503. SELF-OPERATING WEATHER-STRIP.** JOHN H. GRAHAM, Kansas City, Mo. Filed July 11, 1892. Serial No. 439,589. (No model.)



*Claim.*—1. The combination with a door having a molding 5 secured near its lower end provided with a recess in its lower edge, of a strip 7 concavo-convex in cross section and having a longitudinal marginal flange and a counterweight 12 secured thereto, hinges 8, connecting the strip 7 to the molding 5, so that the counter-weighted flange shall enter the recess when the door is closed, and the stop-block 13, having a curved shoulder, and a roller carried by said stop-block, so that a space shall intervene between the shoulder 15 and the under side of the roller, substantially as set forth.

2. A weather-strip, comprising a pair of tilting counterweighted body-portions, a standard having a pair of oppositely disposed curved offsets and a pair of oppositely disposed rollers for engaging the outer portion of the strip, substantially as set forth.

**501,504. TYPE-WRITING MACHINE.** JAMES R. HAMMOND, New York, N. Y. Filed Oct. 5, 1892. Serial No. 447,913. (No model.)

*Claim.*—1. A detachable, segmental type shuttle bearing upon its face letters or characters and provided with a strengthening and supporting device substantially as described

2. The combination of a shuttle, an independent shuttle and stop arm pivoted upon a center common with the type shuttle, and a key actuated driving lever imparting motion to said arm, substantially as described.

3. The combination of a type shuttle, an independent shuttle and stop arm and a key actuated driving lever imparting motion to said arm, substantially as described.

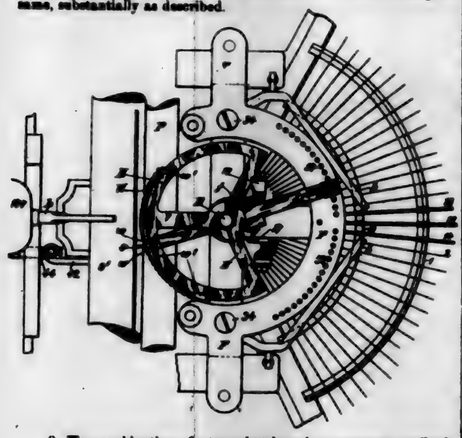
4. The combination of a shuttle, a pivoted shuttle arm and a lever actuated by a key lever whereby motion is imparted to said arm, substantially as described.

5. The combination of a shuttle arm provided with means for engaging the shuttle, a cylindrical sleeve rigidly united to said arm and

adapted to fit upon a supporting shaft and a key operated driving lever for actuating said arm, substantially as described.

6. A shuttle arm provided with means for engaging a type shuttle at one end and adapted at its other end to engage a stop pin, substantially as described.

7. The combination of a type anvil consisting of a circular segment rigidly mounted upon a shaft and suitable levers for shifting the same, substantially as described.



8. The combination of a type shuttle and a supporting anvil substantially as described.

9. The combination of a type shuttle and a movable supporting anvil substantially as described.

10. The combination of a type shuttle and an anvil having a sliding connection therewith substantially as described.

11. The combination with a type shuttle of an anvil and means for preventing a rotary motion while permitting the vertical movement of the same, substantially as described.

12. The combination with a type shuttle having a metal rib of an anvil provided with means for supporting such shuttle and permitting its reciprocation thereupon, substantially as described.

13. The combination of a type shuttle, a supporting anvil and means whereby the same may be raised and lowered, substantially as described.

14. The combination of a type shuttle, a supporting anvil and an independent shuttle arm adapted to actuate said shuttle, substantially as described.

15. The combination of a type shuttle, a supporting anvil, an independent shuttle arm with means for actuating said shuttle arm, substantially as described.

16. The combination of a type shuttle, a supporting anvil, an independent shuttle arm and a driving lever or levers adapted to actuate said shuttle arm, substantially as described.

17. The combination of a type shuttle, a supporting anvil, an independent shuttle arm, a stop arm and a series of stop pins substantially as described.

18. The combination of a type shuttle, a supporting anvil, an independent shuttle arm, a stop arm, a series of stop pins and means to actuate said shuttle and stop arm and stop pins, substantially as described.

19. The combination of a segmental type shuttle removably supported upon an anvil, suitable key levers, a propelling mechanism between said shuttle and key levers and adapted to be actuated by said levers, substantially as described.

20. The combination of a type shuttle, suitable key levers, a propelling mechanism between said shuttle, and key levers adapted to be actuated by said levers, and a stop mechanism, substantially as described.

21. A shuttle arm having a finger at one end and being rigidly united with a cylindrical sleeve adapted to fit upon a supporting shaft, substantially as described.

22. A shuttle arm provided with means for engaging a type shuttle and with a stop arm adapted to strike against an index pin raised by a key-lever also adapted to actuate said shuttle arm through intermediate mechanism, substantially as described.

23. A type anvil consisting of a lower section rigidly mounted upon a supporting shaft, and an upper section mounted upon said shaft so as to be capable of being rotated thereupon, substantially as described.

24. A type anvil consisting of a lower section permanently fastened upon a supporting shaft and having an upper removable section adapted to be secured to said shaft by suitable means, substantially as described.

25. The combination with a type anvil having upper and lower sections of a type shuttle adapted to project within said sections and adapted to receive an actuating device reciprocated within said anvil, substantially as described.

26. The combination with a double type anvil of a type shuttle provided with a rib on its inner side and having means to engage a shuttle finger adapted to be actuated within the circumference of the said anvil, substantially as described.

27. The combination of a type anvil having upper and lower sections, a type shuttle supported thereupon between the same, and a type finger mounted upon a shuttle arm and adapted to engage said type shuttle, substantially as described.

28. The combination with a type shuttle supported between the sections of a double type anvil of a shuttle finger adapted to engage said shuttle, a shuttle arm supporting said shuttle finger and mechanism adapted to operate the same, substantially as described.

29. The combination of a type shuttle, a supporting anvil, a shuttle arm adapted to reciprocate said shuttle, a driving lever and means for actuating the same, substantially as described.

30. The combination of a type shuttle, suitable key-levers, and a propelling mechanism between said shuttle and key levers, substantially as described.

31. The combination of a type shuttle, suitable key levers, a propelling mechanism between said shuttle and key levers, and a stop mechanism, substantially as described.

32. The combination with a series of finger key levers, each of which operates to actuate the type shuttle of a type shuttle, a supporting anvil, mechanism between the finger key levers and type shuttle whereby motion imparted to the key levers is transmitted to the type shuttle, and means for retaining the type shuttle in the desired position, substantially as described.

33. In a type writing machine the combination with a type shuttle adapted to reciprocate in either direction from a normal position through a series of characters to present any desired letter at a given point, of an anvil upon which said shuttle reciprocates, finger key levers by which the operating power is supplied, intermediate mechanism, between said key lever and the shuttle, by which motion is imparted to said shuttle, and a stop mechanism operated by the key levers and acting to arrest said shuttle at the proper point, all substantially as described.

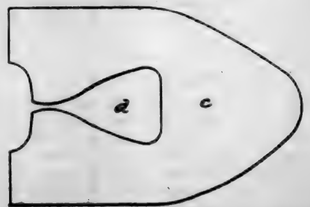
34. The combination of a type shuttle adapted to be reciprocated in either direction from a normal point through a series of characters to bring any one of said characters to said point, key levers to produce said motion and intermediate mechanism whereby said right and left hand motion is communicated to said shuttle, and a stop mechanism set in motion by said key levers and adapted to arrest said shuttle at a series of points on the right or left of said normal point, all substantially as described.

35. In a type writing machine the combination of the type shuttle, the anvil upon which the same is reciprocated, the independent shuttle arm adapted to actuate the shuttle, the driving lever arranged to rotate the shuttle arm and suitable devices whereby motion may be imparted to said driving lever through a finger key lever, all substantially as described.

36. In a type writing machine the combination of the reciprocating type shuttle, the shuttle arm actuating the same, the supporting type anvil, the stop pins acting against the stop arm to arrest the motion thereof, key levers adapted to raise said stop pin and driving levers adapted to be operated by said key levers, and to engage and operate said shuttle and stop arm, substantially as described.

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**501,505.** SHOE. HARRY H. HARRIS, Quincy, Mass. Filed Aug. 23, 1892. Serial No. 443,788. (No model.)

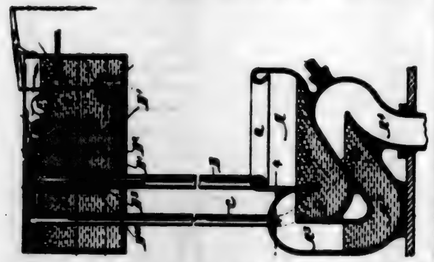



*Claim.*—A vamp for use in the manufacture of boots or shoes having substantially straight sides and rounded toe portion, and having a semi-elliptical section removed from the rear portion thereof, and the opening *d* intersecting said semi-elliptical part where it is contracted and gradually widened toward the toe, substantially wedge shaped, as and for the purpose set forth.



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**501,506.** SIPHON CLOSET AND TANK. PATRICK HARVEY, Chicago, Ill. Filed Apr. 14, 1893. Serial No. 347,781. (No model.)



*Claim.*—1. In a siphon closet, in combination with the flushing tank the closet bowl and two traps having the air space intervening between them, the air pipe through which the air is exhausted from said inter-trap space and mechanism for exhausting the air, and a duct leading from said air pipe into the second trap near the water level thereof on the discharge side, whereby the mouth of said duct is slightly sealed at the end which enters the trap: substantially as and for the purpose set forth.

2. In a siphon closet, the closet bowl and the discharge passage therefrom comprising two traps having an air space intervening between them; a flushing tank comprising a portion closed above and communicating with the remaining open portion only at the lower part; the air pipe leading from the inter-trap space of the closet and terminating in the upper part of the closed portion of the tank; the closet having a duct communicating at one end with the air pipe and at the other end with the lower trap of the closet on the discharge side near and below the water level thereof, the closed portion of the tank being provided with a passage communicating with the outer air above the overflow level of the tank, and with the inclosed portion at a level enough lower to afford a flushing supply between the two levels, said passage being controlled to permit easy ingress and difficult egress of air from the closed portion: substantially as set forth.

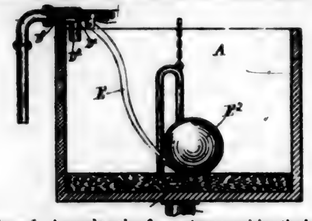
3. In a siphon closet, in combination with the bowl and the two traps having an air space between them, an air pipe leading from said air space; the water tank into which said pipe opens at the other end, said tank being closed at the top and having egress for the water therein only toward the bottom, whereby the lowering of the water operates to draw air through the air pipe into the tank and the rising of the water operates to force the air back from the tank through the pipe; and a duct communicating with the air pipe and discharging in the lower trap of the closet on the discharge side and near the water level thereof; the water seal over the mouth of said duct being less than the water seal of the first trap of the closet: substantially as set forth.

4. In a siphon closet, in combination with the closet bowl and traps, the tank having a portion *d'* closed above and separated from the remaining open portion by the partition *D'* at whose lower edge communication is afforded between the open and inclosed portions of the tank; a trap or pocket located in the inclosed portion above the level of the communication between said closed and open portions; and a duct open downwardly in said pocket and extending above the water level and opening through the wall of said inclosed portion of the tank to the outer air, the capacity of said duct being small relatively to the capacity of the water seal of the bowl; substantially as and for the purpose set forth.

5. In combination with a siphon closet having a by-passage from the inter-trap space to the up-limb of the second trap slightly below the water level of said trap, the flushing tank having the inclosed portion *d'* the air exhaust pipe from the inter-trap space of the closet communicating with the said inclosed part of the tank at the upper part of the latter, said inclosed part of the tank having a communication with the outer air at the upper part through a duct leading down into the tank and terminating in a water pocket making a trap, the horizontal area of such pocket within the inclosed part of the tank being large relatively to the cross-area of the said duct, whereby the water seal in the trap formed by the duct and pocket, may be made so shallow that it will offer less resistance to an in draft of air than the seal over the mouth of the by-passage in the closet, while still offering greater resistance than said by-passage seal to discharge of air from the tank: substantially as set forth.

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**501,507.** SUPPLY-VALVE FOR CLOSET-TANKS. PATRICK HARVEY, Chicago, Ill. Filed Nov. 2, 1892. Serial No. 450,714. (No model.)

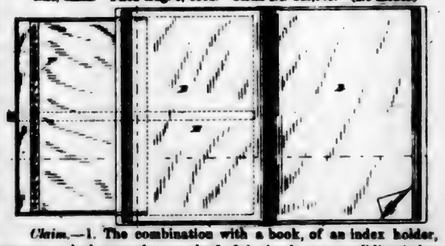



*Claim.*—1. A supply valve for tanks comprising the body having the induction and eduction passages; the valve seat $D^4$ through which the induction passage leads, and the valve seat $D^3$ between the seat $D^4$ and the eduction passage, in combination with the valve playing between the two seats and the buoy-operated lever which actuates it with the stop screw set through the body and adjustable in the direction of the movement of the valve to limit the approach of the latter to the seat $D^3$ substantially as set forth.

2. In a supply valve for tanks, the body comprising the induction and eduction passages; two valve seats located between the two passages; a buoy-operated lever, and a valve in said body actuated by the lever adapted to be moved toward the seat nearest the eduction passage when the buoy falls and away from said seat when the buoy rises, and a stop to limit the approach of the valve to said seat; whereby a minimum continuous flow is maintained through a passage which is flushed by a maximum flow through it at each opening movement of the valve: substantially as set forth.

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**501,508.** INDEX-HOLDER FOR BOOKS. JOHN W. HAYS, Robbinsdale, Minn. Filed Aug. 9, 1892. Serial No. 442,575. (No model.)



*Claim.*—1. The combination with a book, of an index holder, support or bed secured to one leaf of the book-cover, a sliding index holder movable on said bed or support, and a flexible connection uniting the same to the support for permitting and limiting the outward movement of the holder, substantially as described.

2. The combination with a book cover provided with a recessed leaf, serving as a case for the index holder of an index holder seated in said recess with freedom for an outward sliding movement to expose the index.

3. The combination with a book cover having a recessed leaf, serving as a case for the index holder of an index holder seated in said recess and secured to the leaf with freedom for only a limited outward movement, to expose the index, substantially as described.

4. The combination with a book-cover having a recessed leaf, serving as a case for the index holder of an index holder support or bed secured in said recess, a sliding index holder movable outward and inward on said bed or support, and a slack strap or cord uniting the index holder, to the said bed or support, substantially as and for the purposes set forth.

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**501,509.** ROOFER'S SEAMING-TOOL. WILLIAM L. HEGELMAN, Havana, Ill. Filed May 20, 1892. Serial No. 433,636. (No model.)



*Claim.*—1. In seaming tongs the combination with a jaw having an upwardly projecting lip and provided with means for its operation, of a former or bender which is hinged or pivoted to its actuating device and provided with a downwardly projecting lip or arm adapted to engage the side of a seam and turn the former or bender on its hinge or pivot when forced over the seam.

2. In seaming tongs the combination with a jaw having an upwardly projecting lip and provided with means for its operation, of a former or bender which is adjustably attached to actuating mechanism and has working faces on opposite sides one to form the initial bead and the other to close down the fold.

3. In seaming tongs the combination with a jaw having an upwardly projecting lip and provided with means for its operation, of a former or bender which has two lips between which is a groove or recess to receive the work and the said upwardly projecting lip of said jaw and is loosely hinged or pivoted to its actuating mechanism and adapted to rock automatically over the said upwardly projecting lip of said jaw.

4. In seaming tongs the combination with a jaw having an upwardly projecting lip and provided with means for its operation, of a former or bender which is hinged or pivoted to its actuating device and provided with a downwardly projecting lip or arm adapted to engage the side of a seam and turn the former or bender on its hinge or pivot when forced over the seam, and a spring to hold the said former or bender when idle in proper position for the commencement of work.

5. In seaming tongs the combination with a jaw having an upwardly projecting lip and provided with means for its operation, of a former or bender which is hinged or pivoted to its actuating device and provided with a downwardly projecting lip or arm adapted to turn it on said hinge or pivot when forced over a seam, and a stop to limit the rotary movement of said former.

6. In seaming tongs the combination with a jaw having an upwardly projecting lip and provided with means for its operation, of a former or bender which is adjustably attached to actuating mechanism and has working faces on opposite sides one to form the initial bead and the other to close down the fold, and a locking device to hold the said former or bender rigidly in adjustment.

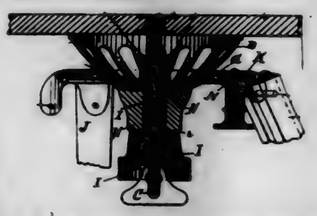
7. In seaming tongs the combination with a jaw having an upwardly projecting lip and provided with means for its operation, of a former or bender which is adjustably attached to actuating mechanism and has working faces on opposite sides one to form the initial bead and the other to close down the fold, and a sliding bolt to lock said former or bender rigidly in position.

8. In seaming tongs the combination with a jaw having an upwardly projecting lip and provided with means for its operation, of a former or bender which is hinged or pivoted to its actuating mechanism and adapted to rock automatically over the said upwardly projecting lip of said jaw, and a raising bar which is hinged or pivoted to the said jaw having the said upwardly projecting lip and is adapted to be folded beneath it or to be swung out therefrom.

9. In seaming tongs the combination with a jaw having an upwardly projecting lip and provided with means for its operation, of a former or bender which is hinged or pivoted to its actuating mechanism and adapted to rock automatically over the said upwardly projecting lip of said jaw, and a raising bar which is hinged or pivoted to the said jaw having the said upwardly projecting lip and is adapted to be folded beneath it or to be swung out therefrom, and a locking device to retain said raising bar in its different positions.

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**501,510. CAMERA-TRIPOD HEAD.** SYLVANUS C. HOTCHIN, Boston, and ATKINS HOTCHIN, Cambridge, Mass. Filed Mar. 27, 1893. Serial No. 467,881. (No model.)



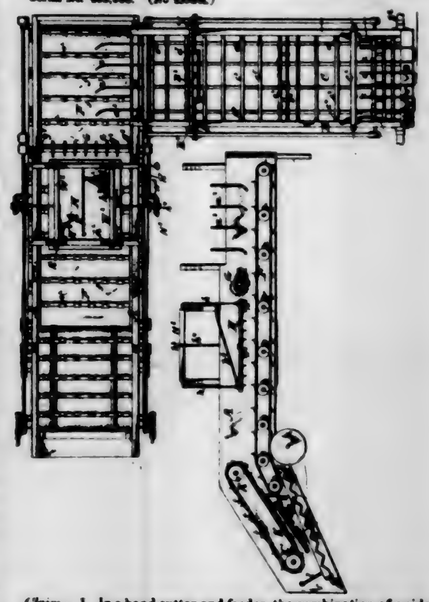
*Claim.*—1. In a tripod-head the base or body, held firmly to the bottom of the camera by an independent screw and formed with a convex lower portion, a concave skeleton plate fitting loosely on such convex portion and formed with an enlarged central opening to provide for lateral adjustment, in combination with a hub fitting beneath said plate and with a tightening screw having a shoulder engaging the lower part of said hub and a rotatable threaded stem extending through said hub and plate and engaging with said base or body, substantially as set forth.

2. In a tripod-head, the convex base or body B, the concave plate G fitting thereon, and the hub H and a suitable clamping screw, in combination with the marginal ring K K' connected to the supporting legs and with hinges M and screw N connecting said plate and ring substantially as and for the purpose set forth.

3. In a tripod-head, the convex base or body B, the plate G, hub H and clamp screw I, whereby the camera is adjusted horizontally on its supporting legs, in combination with the marginal ring to which the plate G is hinged, and with the slotted link O and stop pins P P', serving to strengthen the joint, substantially as set forth.

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**501,511. COMBINED FEED-REGULATOR, BAND-CUTTER, AND SPREADER.** WALTER HOWARD, Washington, D. C. Filed Feb. 28, 1893. Serial No. 463,999. (No model.)



*Claim.*—1. In a band cutter and feeder, the combination of a side apron carrier B, posts thereon, a gate suspended from said posts, and spring catches having one end secured to the frame B and the other end in engagement with the sides of said gate with an apron having transverse slats and latch-opening fingers projecting upon said slats substantially as described.

2. In a band cutter and feeder, the combination of a slat carrier, rectangular slats $c^4$ secured thereto transversely thereof, metal straps $c^6$ removably secured to any one of the slats $c^4$, and slats $c^5$ carrying gate-latch opening fingers $c^7$ and carried by said straps $c^6$, whereby the distance between the slats $c^5$ is adjustably regulated; and teeth $c^8$ mounted upon the slats substantially as described.

3. In a band cutter and feeder, the combination of a side apron carrier B, posts adjustably secured thereon, a beam $B^2$ mounted upon said posts, bell-cranks pivoted to said beam, a cutter attached to one end of said bell-cranks, a shaft located transversely of the apron carrier, crank pin carriers upon said shaft, and connecting rods adjustably uniting the crank pins of said carriers with the bell-cranks substantially as described.

4. In combination with the apron of a band cutter and feeder the rotary spreader consisting of pointed wheels G, drums $g^2$ between them, each drum having a head provided with perforations $g^3$ and a head provided with pins $g^4$ to enter the perforations $g^3$, and also the perforations $g^5$ in the wheels, with a shaft passing through the wheels and the drums, and nuts $g^6$ upon said shaft substantially as described.

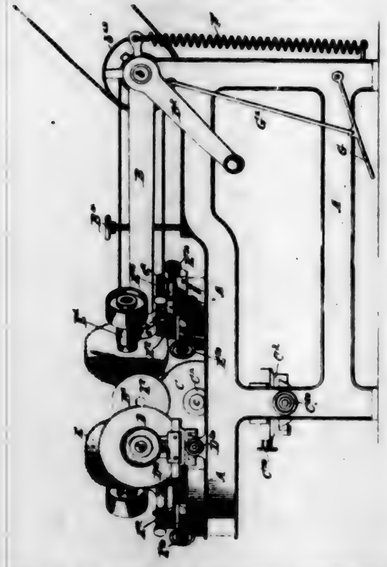
5. In combination with the apron of a band cutter and feeder, the oscillatory spreader H consisting of a platform having secured to its under side, two series of sheet metal angular teeth $h^3$ having one edge beveled, posts $H^2$ mounted upon the inclosing frame of the apron, beams $H^3$ adjustably retained upon said posts, shafts $H^4$ adjustably retained upon said beams and means to oscillate said shafts substantially as described.



6. In combination with the grain spreader of a band cutter and feeder, the apron thereof having slats provided with sheet metal covering plates and with teeth, and said slats interwoven with flexible straps passed under said plates substantially as described.

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**501,512. MACHINE FOR DRESSING SPOOLS.** EBER HUBBARD, Chicago, Ill., assignor to the Willimantic Linen Company, Hartford, Conn. Filed Feb. 13, 1893. Serial No. 462,627. (No model.)



*Claim.*—1. In a machine for dressing spools, a rotatable spindle to carry the spool, and suitable supports on which it may be carried sidewise in a definite path; a shaft parallel to the spindle axis, and obliquely mounted saws thereon occupying positions corresponding to the cylindrical portions of the spool; a pair of shafts which, when the spindle in its path is in the plane thereof, stand respectively at oblique angles to the spindle corresponding to the slope of the spool heads; obliquely mounted saws on said oblique shafts, and suitable means for communicating rotary motion to the shafts and spindle: combined substantially as set forth.

2. In a machine for dressing spools, a rotatable spindle to carry the spool, and suitable supports on which it may be carried sidewise in a definite path; an oblique shaft *c* carrying obliquely mounted saws, the journal bearings for such shaft being adjustable in a path parallel both with the shaft and with the spindle axis, and also adjustable about an axis at right angles to such plane: substantially as set forth.

3. In combination with a spool-carrying spindle, the arm which carries it adapted to vibrate to carry the spool sidewise; oblique shafts *c c* having obliquely mounted saws; turn-tables on which said shafts, respectively, are journaled, adapted to be rotated, respectively, about axes at right angles to said shafts; slide-bearing bases for said turn-tables adapted to afford it adjustment parallel with and at right angles to the spindle axis: substantially as set forth.

4. In combination with a horizontal shaft *c*, and the saws mounted obliquely thereon, the spool-carrying spindle and devices for supporting it, adapted to move toward and away from said shaft; a stop to limit the approach of the spindle to the shaft; shafts oblique to the plane which contains the shaft *c* and the spindle axis at the nearest approach of the latter to said shaft, and obliquely mounted saws on said oblique shafts respectively: substantially as and for the purpose set forth.

5. In combination with a horizontal shaft *c*, and the saws mounted obliquely thereon, the spool-carrying spindle and devices for supporting it adapted to move toward and away from said shaft; a stop to limit the approach of the spindle to the shaft; shafts oblique to the plane which contains the shaft *c*, and the spindle axis at the nearest approach of the latter to said shaft, and obliquely mounted saws on said oblique shafts respectively; and the horizontal shaft *d*, parallel to the shaft *c*, at the side thereof from which the spindle approaches said shaft *c*, and the saws on said shaft *d*: substantially as set forth.

6. In combination with a horizontal shaft *c* and the saws obliquely mounted thereon, the spool-carrying spindle and the devices for supporting it overhanging the shaft *c*, and adapted to move down toward and upward away from said shaft; a stop to limit its approach: horizontal shafts oblique to the vertical plane of the shaft *c* and higher than said shaft, and obliquely mounted saws on said oblique shafts respectively, and the horizontal shaft *d* parallel to the shaft *c*, higher than the latter and lower than the oblique shafts and having the saws D D mounted securely thereon: substantially as and for the purpose set forth.

7. In combination with the spool-carrying spindle and the vibrating arm which carries it sidewise, and means for rotating the spindle in its bearings on said arm; the shaft *d* and the saws D D thereon; the spindle having the groove *b'* into which the cutting edge of the inner saw D protrudes at the nearest approach of the spindle to the saw: substantially as set forth.

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**501,513. SPOOL.** EBER HUBBARD, Chicago, Ill., assignor to the Willimantic Linen Company, Hartford, Conn. Filed Feb. 13, 1893. Serial No. 462,628. (No model.)

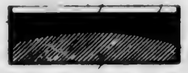


*Claim.*—1. A spool having a central core of natural wood extending throughout its length, and having an exterior portion of fibrous pulp also extending the entire length and glued to the core: substantially as set forth.

2. A spool having its outer portion made of fibrous pulp suitably hardened, and having an axial cavity tapering from end to end, combined with a central core of natural wood correspondingly tapered and occupying the cavity, and glued to the outer portion at the tapering surfaces in contact: substantially as set forth.

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**501,514. MIRROR AND METHOD OF MAKING SAME.** JOHN JACOBSON, Boston, Mass. Filed Oct. 31, 1892. Serial No. 450,463. (No model.)



*Claim.*—1. As an improved article of manufacture the herein described mirror, composed of a deposited metallic reflecting surface, a base of plaster of paris cast thereon, and an air expelling filling in the pores of the said plaster of paris base, substantially as set forth.

2. The improvement in the art of making metallic mirrors which consists in depositing upon a suitably shaped and finished mold or form a film of metal whose reflecting surface next to the mold is completed and finished by deposition thereon; then applying a backing of plaster of paris to the film while on the mold, and permitting the same to set and harden, then filling the pores of the said plaster of paris backing with a wax-like air excluding material and finally removing the said backing with the film adhering thereto from the mold, substantially as described.

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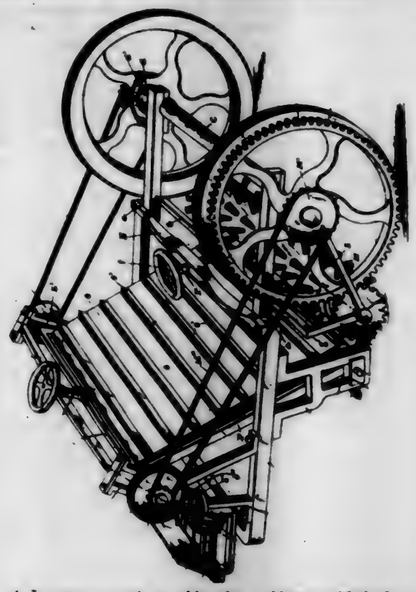
**501,515. STREET-SWEEPER.** ERNST M. JOHNSON, Racine, Wis. Filed Oct. 24, 1892. Serial No. 449,866. (No model.)

*Claim.*—1. In a street sweeping machine, the combination with the frame-work, the traction-wheels, and a rotary brush geared to the traction-wheels, of the elevator shaft and idler shaft mounted in journal-blocks arranged to slide in inclined slots in the frame-work, adjusting mechanism connected to the elevator shaft, and means for conveying motion from the traction-wheels to the elevator-shaft, substantially as specified.

2. In a street sweeping machine, the combination with the frame-work, the traction-wheels, and a rotary brush, geared to the traction-wheels, of the slidably mounted elevator and idler shafts carrying an endless apron, struts connecting said shafts, adjusting means for elevating and depressing the elevator shaft, and means for conveying motion from the traction wheels to the elevator shaft, substantially as specified.

3. In a street sweeping machine, the combination with the frame-work, traction-wheels, and a rotary brush geared to the traction-wheels, of an elevator-shaft mounted in journal-blocks which are slidably fitted in upward and rearward inclined slots, a yoke connected to said shaft, an adjusting screw connected to the yoke, an idler-shaft

mounted in bearings in journal-blocks which are slidably fitted in downward and rearward inclined slots, an endless elevator apron carried by said shafts, and means for communicating motion from the traction wheels to the elevator-shaft, substantially as specified.



4. In a street-sweeping machine, the combination with the framework, traction-wheels, rotary brush geared to the traction-wheels, an endless elevator, and means for communicating motion from the traction-wheels to the elevator, of a transverse carrier, having a frame, pivotally connected at one end to the framework, a vertically adjustable bracket supporting the other end of the said casing, blocks slidably mounted upon the framework, and having said bracket fixed thereto and provided with bearings for one of the elevator-shafts and gearing between the transverse carrier and the adjacent end of the elevator, substantially as specified.

5. In a street sweeping machine, the combination with the framework, traction-wheels, and brush geared to the traction-wheels, of a vertically adjustable elevator having its shafts mounted in slidable blocks, means to adjust said blocks, a hanger fixed to one of said blocks, a transverse carrier having its casing attached to and supported at one end by said hanger, means to support the other end of the carrier gearing between the elevator and the carrier, and means to convey motion from the traction-wheels to the elevator, substantially as specified.

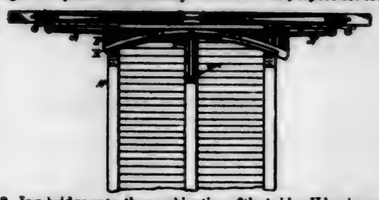
6. In a street sweeping machine, the combination with the framework, traction-wheels, rotary brush geared to the traction-wheels, an elevator connected by gearing to the traction-wheels and means for vertically adjusting the elevator, of a transverse carrier arranged in juxtaposition to the upper end of the elevator and geared thereto, and means for connecting one end of said carrier to the upper end of the elevator, substantially as specified.

7. In a street sweeping machine, the combination of a U-shaped frame, uprising slotted standards and depending slotted brackets fixed to the side-bars of said frame, slidable journal-blocks fitted in the slots of said standards and brackets, horizontal shafts mounted in bearings in said journal-blocks and connected by struts, an endless apron carried by said shafts, adjusting devices connected to one of said shafts, a dust-pan loosely pivoted to the depending brackets, extending under and having a trough concentric with the lower shaft, and provided with a down-turned free edge, an axle mounted in bearings in the rear ends of the side-arms of the frame, traction-wheels loosely mounted upon said axle, pawl and ratchet connections between the traction-wheels and the axle, a rotary brush rotatably supported in rear of the dust-pan and geared to the traction-wheels, and means for communicating motion from the traction-wheels to one of the shafts of the elevator, substantially as specified.

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**501,516. BRIDGE-GATE.** ANDREW J. LAZENBURY, Evansville, Ill. Filed Apr. 26, 1892. Serial No. 431,203. (No model.)

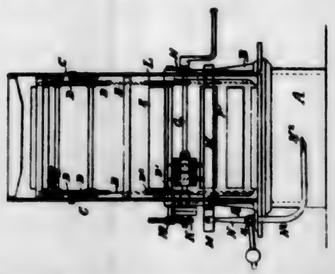
*Claim.*—1. In a bridge gate, the combination of the bridge H having arm T, gates G, G' having respectively arms A and A' provided with the notches or recesses *n*, cord D and pulleys P, P', P², P³, for connecting said gates in such manner that they may move each other simultaneously in either direction, and guide R having the cam surfaces *r s, v, x* for detachably connecting arms A, A', with arm T, all arranged to operate substantially as and for the purpose set forth.



2. In a bridge gate, the combination of the bridge H having arm T, arms A and A adapted to be detachably connected with arm T, and gates connected with arms A and A in such manner as to be opened and closed by the bridge when it swings substantially as and for the purpose set forth.

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**501,517. APPARATUS FOR DYEING YARN.** WILLIAM LAIDLAW, Hawick, Scotland. Filed Aug. 24, 1892. Serial No. 443,941. (No model.) Patented in England Oct. 21, 1890, No. 16,751; in France Aug. 31, 1891, No. 215,634, and in Belgium Aug. 22, 1891, No. 93,113.



*Claim.*—1. In a dyeing apparatus the vat, the frame work C, capable of having vertical movement relatively to the vat, the guides for said frame work, the pulleys D, carried by the frame work, the chain carrying the cages F, and passing over the pulleys, and means adapted to operate the chain in all the vertical positions of the frame work, substantially as described.

2. In a dyeing apparatus, the vat, the frame work having vertical adjustment, the guides, the pulleys and chains carried by the frame work and operating means adapted to operate the chains and pulleys in all the vertical positions of the frame work, substantially as described.

3. In combination, the vat, the vertically adjustable frame work, the guides therefor, the pulleys, and chains carried by the frame work, the drive chain wheels D', supported on a stationary part and engaging the chains, the means for operating the said pulleys and the means for keeping the chains in engagement therewith consisting of the pulleys D², and the yielding support therefor carried by a stationary part of the frame work adjacent to the drive chain pulley D', substantially as described.

4. In combination, in a dyeing apparatus, the vat, the pulleys and carrying chains, the supporting means for the same and the perforated cages F, secured to the chains, said cages having the contracted central portions, substantially as described.

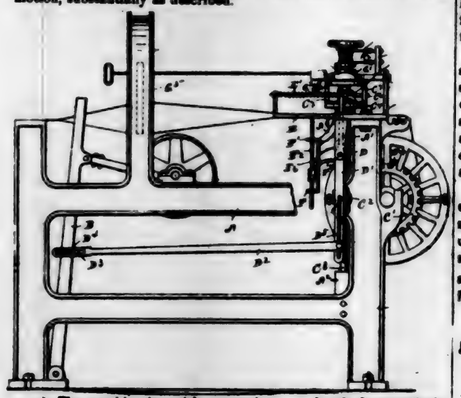
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**501,518. LET-OFF MECHANISM FOR LOOMS.** JOHN H. LEMOURT, Worcester, Mass. Filed Apr. 4, 1892. Serial No. 427,726. (No model.)

*Claim.*—1. The combination with the warp-beam of a loom, of a shaft operatively connected with said beam, a ratchet wheel carried on said shaft, a pawl engaging said ratchet wheel and actuated in one direction to rotate the warp-beam and deliver warp therefrom, a spring applied to reverse the motion of said pawl and a sliding cam plate by which the reverse movement of said pawl is limited, substantially as described.

2. The combination with a warp-beam, of a shaft operatively connected with said beam, a ratchet wheel carried by said shaft, a vibrating pawl actuating said ratchet wheel, a lever connected with the lay of the loom and actuating said pawl in one direction, a spring applied to reverse the motion of said pawl and a sliding cam plate by which the reverse motion of said pawl is limited, substantially as described.

3. The combination with a warp-beam, of a shaft $O^3$ operatively connected with said beam, a ratchet wheel $O^4$ attached to said shaft, and pawls $O^5$ carried upon arms extending radially from a collar $O^6$ turning on said shaft, a vibrating lever operatively connected with the lay of the loom and acting against one of said arms, and a sliding cam plate placed in the path of one of said arms to limit its reverse motion, substantially as described.



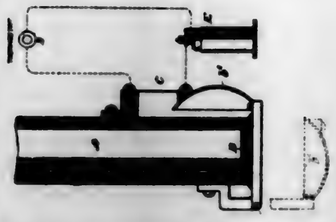
4. The combination with a warp-beam and a shaft operatively connected with said beam, of a ratchet wheel carried by said shaft, actuating pawls operatively connected with the moving parts of the loom by which said pawls are moved in one direction to rotate the warp-beam and deliver warp therefrom, a spring applied to reverse the motion of said pawls, a sliding cam plate by which the reverse motion of said pawls is limited and a movable frame actuating said cam plate, said frame comprising the sliding rod $F^2$, bar $F^3$ attached to said rod and carrying a plate $F^4$ resting upon the warp wound on the warp-beam and a bar $F^5$ supporting said cam plate, substantially as described.

5. The combination with a shaft $O^3$ operatively connected with the warp-beam, of a ratchet wheel $O^4$, pawls $O^5$, and sliding flanged collar G by which said pawls are released from the ratchet wheel, substantially as described.

6. The combination with a shaft $O^3$ operatively connected with the warp-beam, of a ratchet wheel attached to said shaft, pawls $O^5$, sliding collar G provided with a flange $G^2$, pivoted lever $G^3$ engaging said collar, arm $H^2$ carried by said lever, and a friction cord H' connected with said arm and applied to resist the rotation of the shaft $O^3$, substantially as described.

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**501,519. METHOD OF AND APPARATUS FOR EXTINGUISHING FIRES.** JAMES G. LORRAIN, London, England. Filed Mar. 18, 1892. Serial No. 425,391. (No model.) Patented in England Oct. 17, 1889, No. 16,416.



*Claim.*—1. The herein-described method of extinguishing fire and preventing it from spreading which consists in holding a valve (whether a throttle-valve, sprinkler-jet, fire-door, gas-cock or the like) in its normal position by a thermally-operated connection of conducting material, then heating said connection by passing an electric current through it to operate the same and release the valve.

2. The herein-described method of extinguishing fire and preventing it from spreading which consists in holding a valve (whether a throttle-valve, sprinkler-jet, fire-door, gas-cock or the like) in its normal position by a thermally-operated or fusible connection of conducting material, then heating said connection by passing an electric current through it from a circuit controlled by one or more thermal or hand contacts to operate or melt said connection and operate the valve.

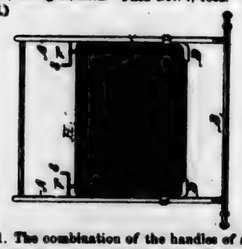
3. In apparatus for extinguishing fire and preventing it from spreading, the combination of a valve (whether a throttle-valve, sprinkler-jet, fire-door, gas-cock or the like) and a thermally-operated connection of conducting material for holding the same in its normal position, a source of electricity and a normally open electric circuit leading therefrom and including said valve connection, and a device for closing said circuit, whereby the valve may be operated upon closing the circuit.

4. In apparatus for extinguishing fire and preventing it from spreading, the combination of a valve (whether a throttle-valve, sprinkler-jet, fire-door, gas-cock or the like) and a fusible connection of conducting material for holding the valve in its normal position, a source of electricity and a normally open circuit leading therefrom and including said valve connection, and a device for closing said circuit, whereby upon closing the circuit the connection may be fused and the valve operated.

5. In apparatus for extinguishing fire and preventing it from spreading, the combination of a valve (whether a throttle-valve, sprinkler-jet, fire-door, gas-cock or the like) and a fusible connection of conducting material for holding the valve in its normal position, a source of electricity and a normally open circuit leading therefrom and including said valve connection, and thermal or hand contacts for controlling said circuit.

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**501,520. NURSERY-CASE FOR CHILDREN'S CARRIAGES.** JESSE R. LYLE, Douglas, Mich. Filed Nov. 7, 1892. Serial No. 451,371. (No model.)

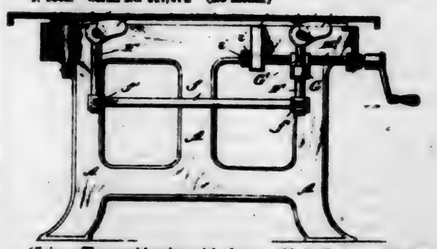


*Claim.*—1. The combination of the handles of a baby carriage, upper and lower supports attached to said handles, and a nursery case detachably and entirely supported thereby; substantially as set forth.

2. The combination of the handles of a baby carriage having the upper supports attached to them below the upper round, a transverse rod attached to the handles below the said supports, pockets or supports attached to said handles below the transverse rod, and a nursery case detachably supported by the upper and lower supports; substantially as set forth.

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**501,521. SAW-TABLE.** CALVIN D. MARSH, Williamsport, Pa., assignor to the Rowley & Hermance Company, same place. Filed Oct. 1, 1892. Serial No. 447,494. (No model.)



*Claim.*—The combination with the movable table top and a plurality of cams arranged to support the same, of shafts carrying the cams, connections consisting of the vertical arms and horizontal connecting link between said shafts, a sleeve on one of the said arms, a nut connected with said sleeve by a swivel bolt, and a screw rod engaging said nut, as and for the purpose specified.

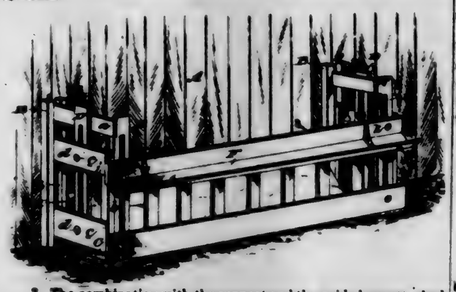
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**501,522. FEED RACK.** OTTO F. MARSHAL, Jr., Bath, N. Y. Filed Feb. 26, 1891. Renewed Mar. 21, 1893. Serial No. 466,877. (No model.)

*Claim.*—1. A combined sheep rack and feed trough, consisting of the vertically adjustable front and end pieces, guides therefor, and

the hinged trough carried by the front piece, substantially as specified.

2. The combination with the base pieces and the slotted uprights secured thereto, of the end pieces having cross bars, the bolts in the cross bars with their inner ends working through the slots of the uprights, and the nuts on the inner ends of the bolts, substantially as specified.



3. The combination with the support and the guide bars attached thereto, of the base pieces, the slotted uprights secured thereto, the independently-adjustable front and end pieces provided with bolts working in the slots of the uprights and having nuts on their inner ends, and the hinged trough on the front piece, substantially as specified.

4. The combination with the base pieces and the slotted uprights secured thereto at right angles to each other, of the independently-adjustable end and front pieces having bolts with their inner ends working in the slots of the uprights, and the nuts on the inner ends of the bolts, all substantially as shown and described.

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**501,523. BRIDGE-GATE.** HENRY MEYER, Chicago, Ill. Filed Feb. 20, 1893. Serial No. 463,017. (No model.)



*Claim.*—1. In a bridge-gate the combination of a bridge having secured to its lower surface a roller, with two cam-levers, fulcrumed to the abutment and having near their inner ends longitudinal slots, and at their outer ends the levers $D^3$, fulcrumed to the sides of the abutment, the rods F, connected at their lower ends to the levers $D^3$, and at their upper ends to the bell-crank-levers H, the securing-pin C, adapted to connect the cam-levers and to operate within their slots as well as the slot of the guide-piece B, said piece secured to the abutment and having a vertical slot, the bell-crank-levers having the bearings in the posts G, and the bars or gates I, secured to the ends of the bell-crank-levers, substantially as and for the purpose set forth.

2. In a bridge-gate the combination of a bridge having secured to its lower surface the bracket L, having journaled therein the roller M, with the levers D, and D′, fulcrumed to the abutment, and formed at their inner parts with an upward curve and provided with the slots *c*, and pins C, and *c*, to operate in the guide-ways or slots *b*, and E, respectively, said guide-ways located on the surface of the abutment, the levers $D^3$, secured at one of their ends to the outer portions of the levers D, D′, and at their other ends to the rods F, and fulcrumed to the sides of the abutment, the rod F, connected at their lower ends to the levers $D^3$, and at their upper ends to the bell-crank-levers H, the bifurcated bars or gates I, and the bell-crank-levers having their bearings in the posts and connected to said bars or gates, substantially as and for the purposes set forth.

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**501,524. SURGICAL LAMP.** WILLIAM S. HEDGES, Fryeburg Me., assignor of one-half to Gerry Hedges, same place. Filed July 27, 1892. Serial No. 441,488. (No model.)

*Claim.*—1. An electric lamp having in combination an incandescent lamp B fixed to a suitable stock or support, a transparent thimble incasing said lamp, conduits for fluid leading to and from the chamber M, and an electric circuit leading to and from the lamp, the whole arranged so that a circulation of fluid may be maintained around the lamp and the heat removed.

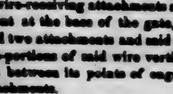


2. The combination in an electric surgical lamp of the small electric incandescent lamp B, the transparent thimble C, the channeled stock A and the tubular terminals E E.

3. An electric lamp having in combination a small incandescent lamp B secured in the chamber M at the end of a suitable channeled stock, a transparent thimble incasing said lamp and extending partly over the stock, a circuit extending to said lamp, and conduits adapted to conduct fluid to and from the said channeled stock; whereby a circulation of cooling fluid may be maintained around the lamp.

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**501,525. VEHICLE-WHEEL.** JOHN H. HOGREN, Seward, Nebr. Filed Mar. 21, 1892. Serial No. 426,031. (No model.)



*Claim.*—A vehicle-wheel comprising a suitable hub, and a number of spokes radiating therefrom and having ferrules surrounding their outer extremities, an outer circular tire surrounding the outer ends of the spokes, an inner tire formed of a single piece or band and also surrounding the outer ends of the spokes, a number of nails each passing through the two tires and into the outer ends of the spokes, and a number of blocks each interposed between the outer ends of two of the spokes and also between the two tires and each of longitudinally convex form at its outer side, and having a straight inner side connected by oblique portions to the ends of the block; the inner tire being thus made straight between each pair of spokes, substantially as set forth.

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**501,526. GATE.** MOSES E MYERS, Cambridge City, Ind. Filed Feb. 4, 1892. Serial No. 420,328. (No model.)



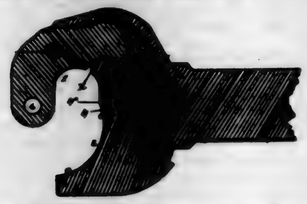
*Claim.*—1. In a gate, the combination, substantially as set forth, of a wire-receiving attachment directly secured to the upper portion of the hinge-stile and disposed in the vertical central plane of the gate as set forth, a wire-receiving attachment at an intermediate part of the base of the gate and having a width greater than the thickness of the gate, a shifting saddle, mounted upon the upper portion of the gate between said two wire-receiving attachments and having a width less than the attachment at the base of the gate, and a continuous truss-wire engaging said two attachments and said saddle, said saddle deflecting the two side-portions of said wire vertically and horizontally out of direct lines between its points of engagement with said two wire-receiving attachments.

2. In a gate, the combination, substantially as set forth, with a continuous truss-wire engaging the gate at the hinge-stile and at a point between the hinge-stile and latch-stile, of a saddle mounted for adjustment on the gate to deflect the two side portions of said truss-wire and provided with wire-receiving ledges extending lengthwise of the saddle in a plane substantially parallel with a line cutting said two points of engagement of the wire with the gate, whereby the wire receives two slight bends at its engagement with a saddle-ledge.

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**501,527. CAR-COUPLING.** JAMES MCCORMICK and JOHN B. DUNKER, Pottsville, Pa. Filed Nov. 5, 1892. Serial No. 472,026. (No model.)



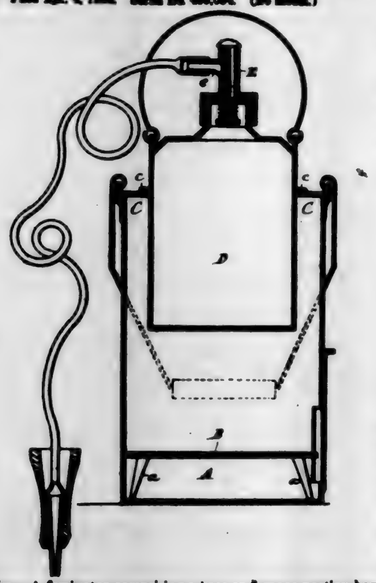
*Claim.*—1. A drawhead having a coupling tongue and coupling lever, working together, and a coupling pin having its upper and lower parts of different sizes substantially as described.

2. In a car coupler of the type shown and described, the combination of a coupling tongue and coupling lever, opening and closing together, with a coupling pin working in a slot in the coupling lever substantially as set forth.

3. In a car coupler of the type shown and described, the combination of a coupling tongue with a coupling lever having an aperture corresponding in size to the larger part of a pin, which has its upper and lower parts formed of different sizes, and a slot corresponding in width to the smaller part of said pin as and for the purposes herein shown and set forth.

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**501,528. FUMIGATOR.** JAMES R. MCELVEY, Lawrenceville, Ga. Filed Apr. 4, 1893. Serial No. 469,084. (No model.)



*Claim.*—A fumigator comprising a base or furnace portion having a fire box therein an insecticide receptacle telescoping in said base portion an internal flange on the said furnace portion, lugs on the receptacle for engaging said flange, valve mechanism on said receptacle, a nozzle leading therefrom, flexible tubing coupled with said nozzle, and an auxiliary nozzle for projecting the fumes from the receptacle.

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**501,529. INCANDESCENT ELECTRIC LAMP.** WILLIAM E. HIGGINSON, Cambridge, and EDWARD E. CARY, Boston, Mass. Filed Mar. 30, 1892. Serial No. 426,142. (No model.)



*Claim.*—1. In an incandescent electric lamp the combination of a flexible non-conducting disk of non-volatile substance having a laminated structure and a glass-like reflecting surface, said disk being located within the neck of the lamp and forming a part of the inclosing wall of the vacuum chamber and supporting a plug of fusible cement by which the lamp is sealed air-tight; with a lamp globe having a neck adapted to retain the said disk, and said cement, substantially as and for the purpose set forth.

2. In an incandescent electric lamp, the combination of the glass globe B, having a neck adapted to receive a cement supporting disk and cement plug, the filament C and the leading-in wires D D; with the fusible cement plug F and the flexible non conducting disk E of a non-volatile substance having a laminated structure and glass-like reflecting surface, located within the neck of the lamp and forming a part of the inclosing wall of the vacuum chamber and supporting the said cement plug and the said leading-in wires, substantially as and for the purpose set forth.

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**501,530. INCANDESCENT ELECTRIC LAMP.** WILLIAM E. HIGGINSON, Cambridge, and EDWARD E. CARY, Boston, Mass. Filed Mar. 31, 1893. Serial No. 468,564. (No model.)



*Claim.*—1. In an incandescent electric lamp, the combination of a glass globe having a neck adapted to be closed air-tight by fusible cement; with a sealing of fusible cement, composed of rosin chemically combined with lime, and a suitable oil, substantially as and for the purpose set forth.

2. In an incandescent lamp, the combination of the glass globe B having a neck adapted to be closed by fusible cement, the filament E and leading-in wires F F; with the disk G and the fusible cement plug H, said cement being composed of rosin chemically combined with lime, and a suitable oil, substantially as and for the purpose set forth.

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**501,531. INCANDESCENT ELECTRIC LAMP.** WILLIAM E. HIGGINSON, Cambridge, Mass. Filed Apr. 6, 1893. Serial No. 469,286. (No model.)

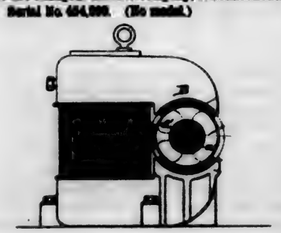


*Claim.*—1. In an incandescent lamp, the combination of a glass globe having a neck adapted to be closed air tight by a fusible cement; with a fusible cement, the materials composing which, have been freed from volatile matter by being exposed to a much reduced atmospheric pressure at a high temperature, substantially as and for the purpose set forth.

2. In an incandescent lamp, the combination of the glass globe M having a neck adapted to be closed by a fusible cement, the filament N and leading in wires O O; with the disk P and plug of fusible cement R, the materials composing said cement having been freed from volatile matter by exposure to a vacuum at a high temperature, substantially as and for the purpose set forth.

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**501,532. DEVICE FOR REGULATING CONSTANT-CURRENT DYNAMO-ELECTRIC MACHINES.** OLOF OFFRELL, Middletown, Conn., assignor to the Schuyler Electric Company, of Connecticut. Filed Dec. 12, 1892. Serial No. 454,999. (No model.)



*Claim.*—1. A regulator for a dynamo electric machine, consisting of an iron plate adapted to be moved between the armature and the pole of the field magnet, substantially as described.

2. A regulator for a dynamo electric machine, consisting of an iron plate adapted to be moved from one pole of the field magnet toward the other pole, substantially as described.

3. A regulator for a dynamo electric machine, consisting of an iron plate lying between the armature and one pole of the field magnet, and adapted to be moved out toward the other pole, substantially as described.

4. A regulator for a dynamo electric machine, consisting of a curved iron plate parallel with the armature, and mounted to move concentrically therewith, substantially as described.

5. A regulator for a dynamo electric machine, consisting of two curved iron cylindrical quadrants mounted to move concentrically with the armature, substantially as described.

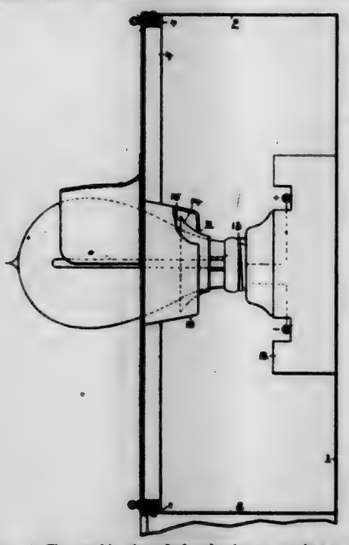
6. An automatic regulator for a dynamo electric machine, comprising a movable magnetic shunt around the armature, and a solenoid adapted to move said shunt and responsive to changes in the counter-electromotive force of the armature, substantially as described.

7. An automatic regulator for a dynamo electric machine, comprising a curved iron plate lying between the armature and a pole of the field magnet, and a solenoid connected in shunt around the armature and adapted to move said plate, substantially as described.

8. The combination with a dynamo electric machine, of curved plates mounted concentric with the armature shaft and between the armature and the pole pieces, segment gears for operating said plates, a solenoid having a core attached to one of said gears, and a spring for retracting said core, said solenoid being in shunt around the armature, substantially as described.

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**501,583.** ELECTRICALLY-ILLUMINATED CHARACTER FOR ADVERTISING. ALBERT D. PAGE, Newark, N. J. Filed June 10, 1892. Serial No. 436,310. (No model.)



*Claim.*—1. The combination of a box having an opening or openings in a side thereof, an equal number of sockets on the opposite side of the box and in line with the opening or openings, said openings and sockets being adapted to receive lamps, and means for preventing entrance of water through said opening or openings to the sockets and devices in the box, substantially as described.

2. The combination of a box in the form of a letter or character, adapted to be used alone or with other letters or characters for advertising or similar purposes, the box having openings in a side thereof, an equal number of sockets on the opposite side of the box and in line with the openings, the openings and sockets being adapted to receive lamps, substantially as described.

3. The combination of a box in the form of a letter or character, adapted to be used alone or with other letters or characters for advertising or similar purposes, the box having openings in a side thereof, an equal number of sockets on the opposite side of the box and in line with the openings, the openings and sockets being adapted to receive lamps, and means for preventing entrance of water through said openings to the sockets and devices in the box, substantially as described.

4. The combination of a box in the form of a letter or character, adapted to be used alone or with other letters or characters for advertising or similar purposes, the box having openings in a side thereof, an equal number of sockets on the opposite side of the box and in line with the openings, the openings and sockets being adapted to receive lamps, shield metal shields at one side of the openings for preventing entrance of water, substantially as described.

5. The combination of a box in the form of a letter or character, adapted to be used alone or with other letters or characters for advertising or similar purposes, the box having openings in a side thereof, an equal number of sockets on the opposite side of the box and in line with the openings, the openings and sockets being adapted to receive lamps, sheet metal shields at one side of the openings, and sleeves or channels on the inner face of the side having openings and in a position to prevent water, finding its way under the shields, from reaching the circuit connections in the box, substantially as described.

6. The combination of a box having an opening or openings in a side or cover thereof, a socket in line with each opening and adapted to receive a lamp and to connect the same to a circuit, sleeves on the inner face of said side or cover around each opening, and a lamp for each opening having on it a ring adapted to stand within said sleeve, said lamps projecting through the openings into the sockets, substantially as described.

7. The combination, in a device for supporting incandescent electric lamps, of a box or casing having one or more openings in a side thereof, means for supporting incandescent electric lamps in said openings so that a portion of each lamp projects from the box, and shields over or at one side of the openings, substantially as described.

8. A letter or character adapted for use alone or with other characters, for advertising or similar purposes, consisting of a box or casing in the form of such letter or character, lamps extending through openings in one side of said box or casing and so arranged as to form the outline of the letter or character, and lamp sockets or supports and circuit connections within the box or casing, substantially as described.

9. The combination, in a letter or character of the nature indicated, of a sheet metal box in the form of such letter or character in one side of which are holes of suitable size for receiving incandescent lamps, shields partially surrounding said holes and projecting from said side, lamps in said holes, and means for supporting the lamps, substantially as described.

10. The combination, in a letter or character of the nature indicated, of a sheet metal box or casing, strips of wood or similar material secured in the box along the edge, and a cover for the box having openings in suitable order for receiving the lamps, substantially as described.

11. A box or casing in the form of a letter or character, having openings in a side or cover thereof, means for supporting lamps in said openings, and cut-out devices in the lamp circuit in the box, there being a hand hole to give access to said cut-out devices, substantially as described.

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**501,584.** BRIDGE. WINFIELD S. PALMER, Glenburn, Pa. Filed Feb. 27, 1893. Serial No. 463,944. (No model.)



*Claim.*—1. In a reed bridge the combination with the abutments, of a series of I-beams having their ends resting upon the abutments, a side beam above and at each side of the series of I-beams, a layer of corrugated iron resting upon the upper flanges of the I-beams and upon the lower flanges of the side beams, and a layer of road way material resting upon the corrugated iron, substantially as described.

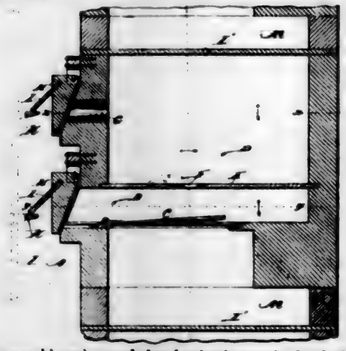
2. In a road bridge the combination with the abutments, of I-beams B, ⌐⌐-shaped side beams C, corrugated sheet iron D having its ends connected to the lower flanges of the side beams C, and the macadamized road bed E resting upon the corrugated iron, substantially as described.

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**501,585.** REED-BOARD FOR ORGANS. JARVIS PHELPS, Chicago, Ill., assignor to the Lyon & Healy, same place. Filed May 4, 1893. Serial No. 473,093. (No model.)



*Claim.*—1. A reed-board, comprising a series of auxiliary chambers in open communication with the reed chambers and provided with ports which are valved for opening and closing in unison with the opening and closing of the reed-chamber, substantially as and for the purpose set forth.



2. In a reed-board, a reed-chamber having a valved end which is opened to play the note, and an auxiliary chamber in open communication with the reed-chamber and provided with a valved port which is opened for the influx of external air simultaneously with an inflow of air into the said end of the reed-chamber, substantially as set forth.

3. A reed-board comprising a series of reed-chambers, a series of auxiliary chambers in open communication with and of larger area than the reed-chambers, and valved ports opening into the upper portions of the auxiliary chambers, substantially as described.

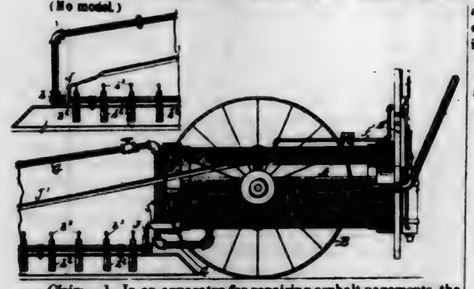
4. In a reed-board, a reed-chamber valved at one end, an auxiliary chamber separated from the reed-chamber by a partition having an opening F by which the two chambers are in constant open communication, and a valved port opening into the auxiliary chamber, substantially as set forth.

5. The reed-chamber provided with a pallet or valve and communicating through the reed with a chamber M, and the auxiliary chamber in open communication with the reed chamber and ported for the admission of external air when the valve or pallet of the reed-chamber is open, substantially as described.

6. The reed chambers B, auxiliary chambers D, in open communication with the reed-chambers, ports G opening into the auxiliary chambers, and valves or pallets H and H' respectively for and arranged relatively to the reed-chambers and said ports, substantially as described.

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**501,586.** APPARATUS FOR REPAIRING ASPHALT PAVEMENTS. AMOS H. PERKINS, Chicago, Ill., assignor to the Western Paving and Supply Company, same place. Filed Mar. 8, 1893. Serial No. 465,136. (No model.)



*Claim.*—1. In an apparatus for repairing asphalt pavements, the combination of a series of burners and means for movably supporting the same in close proximity to the pavement, substantially as described.

2. In an apparatus for repairing asphalt pavements, the combination of a series of hooded burners and means for movably supporting the same in close proximity to the pavement, substantially as described.

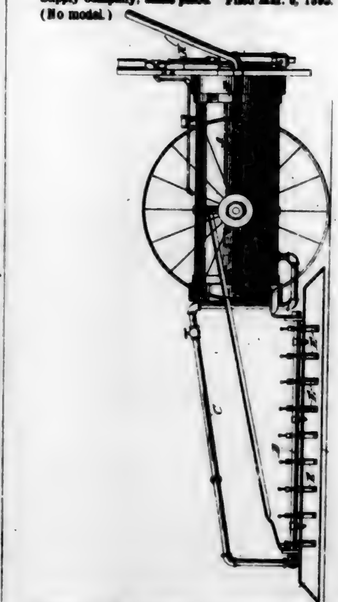
3. In an apparatus for repairing asphalt pavements, the combination of a series of hooded fluid burners, and a reservoir for supplying fuel thereto, said reservoir and burners mounted on a wheeled frame and the burners supported in close proximity to the pavement, substantially as described.

4. In an apparatus for repairing asphalt pavements, the combination with a series of hooded fluid burners supported in close proximity to the ground, a reservoir for supplying fuel to the burners, and means for applying pressure to the fuel to force it to the burners, of a wheeled frame carrying said apparatus, substantially as described.

5. In an apparatus for repairing asphalt pavements the combination of a fuel reservoir, a pump for exerting a pressure on the fuel therein, a series of burners connected with a series of horizontal pipes which are connected with the reservoir, and a plate forming a hood or shield through which each burner passes, the orifice around each burner being somewhat larger than the burner itself, substantially as described.

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**501,587.** METHOD OF REPAIRING ASPHALT PAVEMENTS. AMOS H. PERKINS, Chicago, Ill., assignor to the Western Paving and Supply Company, same place. Filed Mar. 8, 1893. Serial No. 465,137. (No model.)



*Claim.*—1. The method of repairing asphalt pavements which consists in subjecting the spot to be repaired to heat adding new material and smoothing and burnishing it, substantially as described.

2. The method of repairing asphalt pavements which consists in subjecting the spot to be repaired to heat until the material is softened, agitating it and mixing with it new material and finally smoothing and burnishing it, substantially as described.

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**501,588.** REVOLVING STORM-DOOR. DAVID G. RISK, Chicago, Ill. Filed Dec. 5, 1892. Serial No. 454,115. (No model.)



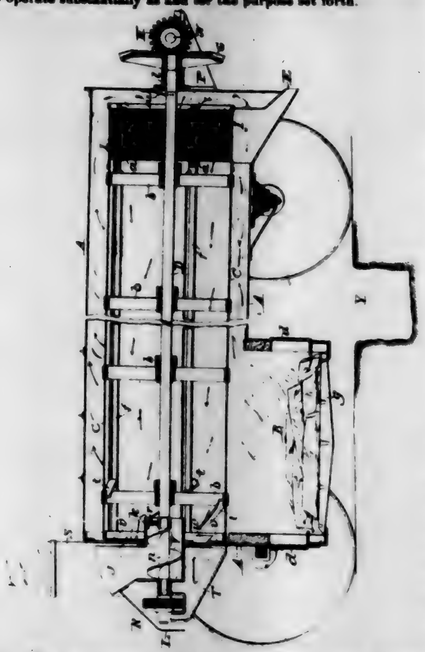
*Claim.*—A four winged door integral of itself and without a central post, and centrally pivoted above and below in combination with opposite side segments of such a width each as to inclose the spaces between the opposite two wings; as and for the purpose specified.

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**501,589.** SAND OR GRAVEL DRIER. SAMUEL S. SHARD, Washington, D. C. Filed Mar. 8, 1892. Serial No. 424,169. (No model.)

*Claim.*—1. The herein described machine for drying and separating sand and gravel, consisting of a non-rotating outer shell or

body having a fire box in the lower part thereof at one end, a rotating cylinder mounted within said shell and having a screen at its delivery end, with mechanism substantially such as described for imparting motion to said cylinder, and a smoke pipe located at the same end as the fire box and connecting with the interior of the cylinder by an opening through the outer shell, the said parts being arranged to operate substantially as and for the purpose set forth.



2. The combination of the non-rotating case or body provided with a fire box and smoke pipe as shown, a rotating cylinder and screen mounted therein, with a hopper provided with a screw feed arranged to project through the closed end of the body and deliver the material within the open end of the rotating cylinder, substantially as shown and described.

3. In combination with the hopper and feed screw arranged to deliver the material into the end of the rotating cylinder, the cylinder provided with an inturned flange e, and a series of inclined plates or flights f arranged to pass under the delivery mouth of the feed hopper as the cylinder rotates and throw the material inward away from the open end of the cylinder, as set forth.

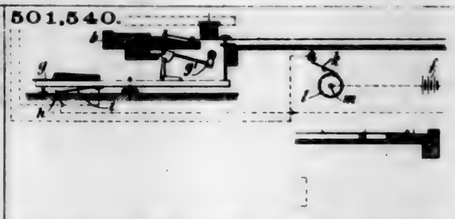
4. In a portable machine for drying and separating sand and gravel, the combination of the following elements: a shell or body having a fire box and smoke pipe secured thereto, a horizontal cylinder mounted therein and carried by a central shaft projecting at the opposite ends of said shell or body, and provided at one end with a bevel gear wheel G arranged to engage with a bevel pinion H, mounted on a cross shaft, and carrying at its opposite end a pinion, and a hopper having a feed screw in its bottom the shaft of said feed screw being provided with a pinion engaging with the pinion on said cylinder shaft, the bearings for all of said movable parts being secured to the shell or body, substantially as shown and described.

5. In a sand drying machine in which the products of combustion are conducted through the rotating cylinder, a smoke pipe having its lower wall inclined and arranged to project within the cylinder, substantially as and for the purpose set forth.

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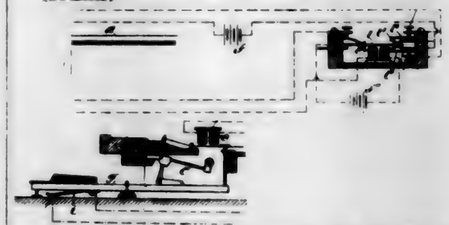
**501,540.** ELECTRICAL MUSICAL INSTRUMENT. PARIS E. SINGER, London, England. Filed June 16, 1892. Serial No. 436,907. (No model.)

*Claim.*—In a keyed musical instrument in which electro-magnets are used to create or maintain the vibration of the strings or other sonorous bodies employed, rotary commutators, one for each note in the gamut, constructed and arranged to make and break the circuits of their respective electro-magnets at a rate synchronous with, or having musical relation to, the vibrations in the strings, or other bodies, requisite to produce and sustain the notes of the keys, when they are depressed, and are putting the magnets in connection with the source of electricity, as set forth.



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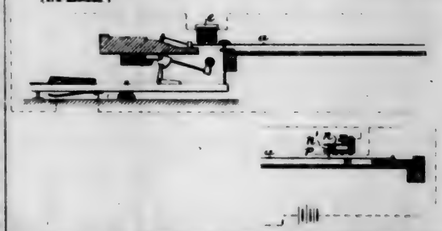
**501,541.** ELECTRICAL MUSICAL INSTRUMENT. PARIS E. SINGER, London, England. Filed June 16, 1892. Serial No. 436,908. (No model.)



*Claim.*—In a keyed musical instrument in which the strings or other sonorous bodies are sounded, or their sound is maintained, by electro-magnets, the combination therewith of a vibrating commutator tuned in musical relation to the note it represents and placed between two pairs of terminals belonging to the circuit in which the electro-magnet of the sounding body is situate, such commutator serving, by each complete vibration, twice to make and break the circuit of that electro magnet, and correspondingly control the vibrations of its string or other sounding body, the commutator magnet being excited by a current separate from that which excites the electro magnet of the sounding body.

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**501,542.** ELECTRICAL MUSICAL INSTRUMENT. PARIS E. SINGER, London, England. Filed June 17, 1892. Serial No. 437,052. (No model.)



*Claim.*—1. In a keyed musical instrument in which the strings or other sounding bodies are sounded, or their sound is maintained by the direct action of electro-magnets, the connection of such string or sounding body with an elastic contact maker in the battery circuit, whereby the vibrating string or sounding body, when in action, is caused to vibrate the contact maker, and the contact maker is caused to control the vibrations of the string or sounding body, substantially as described.

2. In a keyed musical instrument the combination with a string or other sounding body, of an electric circuit, a circuit closer therefor, a magnet in said circuit for attracting the string or other body, an elastic contact maker controlling the circuit through the magnet and through it the vibrations of the string or other body, and connections between the string or other body and said circuit maker for vibrating the latter as the string or other body vibrates, substantially as described.

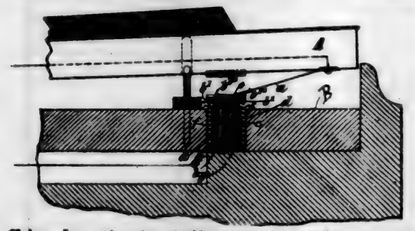
3. In a keyed musical instrument the combination with a string or other sounding body, of an electric circuit, a circuit closer therefor, a magnet in said circuit for attracting the string or other body, an elastic contact maker controlling the circuit through the magnet and through it the vibrations of the string or other body, and mechanical connections between the string or other body and said circuit maker and breaker for vibrating the latter as the string or other body vibrates, substantially as described.

4. In a keyed musical instrument the combination with a string or other sounding body, of an electric circuit, a circuit closer therefor, an electro-magnet in said circuit for attracting the string or other body, a contact maker controlling the circuit through the electro-magnet, a disk for actuating said contact maker, an electro magnet for actuating said disk, a permanent magnet with which the string or other sounding body contacts in vibrating, and circuit connections between said permanent magnet and electro magnet for energizing the latter when such contact is made to actuate the disk and break the circuit, substantially as described.



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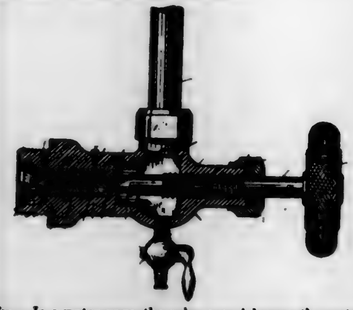
**501,543.** ELECTRICAL MUSICAL INSTRUMENT. PARIS E. SINGER, London, England. Filed Feb 21, 1893. Serial No. 463,246. (No model.)



*Claim.*—In a stringed musical instrument actuated by electricity under the control of finger keys, a yielding or elastic contact maker, consisting of granules, disks, or pellets of carbon or equivalent material, contained within, and supported by, a tube or chamber below the finger key, and connected with the battery wire, the carbon "filling" of such tube or chamber being exposed to electric contact with a metallic plate or button carried by the overlying finger key, as and for the purpose above set forth.

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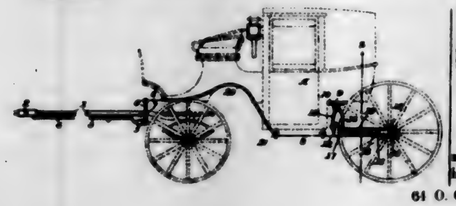
**501,544.** WATER-GAGE. FRED J. STOLL, Muskegon, Mich. Filed Apr. 7, 1892. Serial No. 428,257. (No model.)



*Claim.*—In a water-gage, the valve-case A having the projecting part A', the main valve-stem B having the valve *b*, the wall C having a central opening and forming a seat *c* for the valve *b*, the seat *c* at the outer end of the opening in the projecting part A', a check-valve E adapted to close against the seat *c'*, a stem E' to which the valve E is attached, and removable spiders or boxes D D', the said check-valve-stem E' being supported and guided in said spiders, and screws *d*, *d'* to hold the spiders D, D' substantially as shown and described.

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**501,545.** AUTOMATIC VEHICLE-BRAKE. ELI SWARTS and DANIEL S. BENNER, Scranton, Pa. Filed July 25, 1892. Serial No. 441,170. (No model.)



*Claim.*—1. In a vehicle brake the combination with the lever mounted in the hounds, the pole having a sliding collar at its outer end, and the rod connecting the collar with the lever, of the brake shaft mounted in bearings upon the body and having brake arms and blocks at each end, a brake lever connected to the brake shaft, a pulley connected to the rear axle, and a rope connected to the brake lever and extending around said pulley and forward to the lever mounted in the hounds of the vehicle, substantially as described.

2. In a vehicle brake the combination of a shaft mounted in bearings upon the body and having brake arms and blocks at each end, the brake lever 13 extending downward from the shaft and having a perforation in its lower end, the rod 17 pivotally connected to the rear axle and passing through said perforation in the brake lever, the spring 19 upon the rod, the pulley connected to the rear axle, and the rope connected to the brake lever and extending around the pulley and forward to the front of the vehicle, substantially as described.

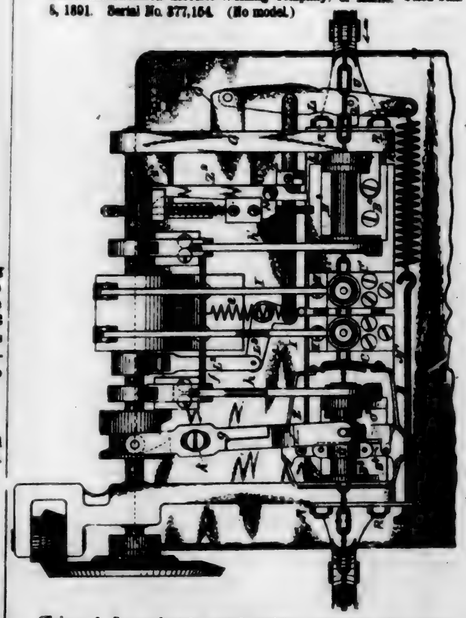
3. In a vehicle brake the combination of the shaft mounted in bearings upon the body and having brake arms and blocks at each end, the brake lever extending downward from the shaft and having a perforation near its lower end, the clip connected to the rear axle, the pulley mounted in the clip, the yoke 18 embracing the clip and pivotally connected thereto, the rod 17 extending through the perforation in the brake lever, the springs 19 surrounding said rod and interposed between the brake lever and the yoke, and the rope connected to the brake lever and extending around the pulley and forward to the front of the vehicle, substantially as described.

4. In an automatic vehicle brake the combination of a removable pole, a lever mounted in the hounds of the vehicle and having a socket piece 5 at its lower end, a sleeve upon the outer end of the pole, and a rod connected to the sleeve at one end and having its other end removably fitted within said socket piece, whereby the pole and the rod may be readily removed together from the vehicle substantially as described.

5. In an automatic brake for cut-under vehicles the combination of the sleeve 2 and the rod 3 mounted upon the pole, the lever 6 mounted in the hounds and connected at its lower end with the rod 3, the rope 8, the pipe 20 guiding the rope 8 through the forward part of the vehicle, guide pulleys 21 beneath the vehicle, the pulley connected with the rear axle around which the rope 8 passes, and brake mechanism to which said rope is connected, substantially as described.

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**501,546.** AUTOMATIC CHAIN-WELDING MACHINE. ELIHU THOMSON, Swampscott, and CHARLES H. HARTMAN, Lynn, Mass., assignors to the Thomson Electric Welding Company, of Maine. Filed Jan. 5, 1891. Serial No. 377,154. (No model.)



*Claim.*—1. In an electric metal working apparatus, the combination of electrodes for passing a heating electric current through or into the work, and a step by step feeder for feeding the work inter-

mittently or step by step to cause portions or pieces thereof to rest successively in position in the electric circuit between said electrodes.

2. The combination in an electric metal working apparatus, of a pair of heating electrodes, and an oscillating or reciprocating feed jaw or jaws in line with the same for feeding the work longitudinally step by step across the space between said electrodes.

3. In an electric metal working apparatus, the combination with heating electrodes, of an oscillating feed jaw for feeding the work intermittently into and out of position in the electric circuit between said electrodes.

4. In an electric metal working apparatus, the combination with heating electrodes, of a step by step feeder in line with said electrodes for feeding the work into and out of position in the electric circuit between said electrodes.

5. The combination in an electric metal working apparatus, of work holders, means for supplying a heating electric current to the work while held in position between them, and an intermittent or step by step feeder in line with said work holders.

6. In an electric metal working apparatus, the combination, substantially as described, of a step by step feeder acting intermittently to feed the work into and out of position in a heating electric circuit, and an intermittently acting current controller for causing heating current to flow between the successive feeding operations.

7. In an electric metal working apparatus, the combination substantially as described, of heating electrodes adapted to receive the work between them, an oscillating feed jaw or jaws for feeding the work intermittently into position between said electrodes, and an intermittently heating current controller for causing the heating current to flow between the feeding operations.

8. In an electric metal working apparatus, the combination substantially as described, of heating electrodes, a step by step feeder for feeding the work intermittently into position in circuit between said electrodes, clamping jaws or blocks for holding the work in contact with said electrodes, and an intermittently operating actuating mechanism for said jaws or blocks for fixing and releasing the same between the successive feeding operations.

9. The combination, substantially as described, in an electric metal working apparatus, of heating electrodes adapted to receive the work between them, a step by step feeder for feeding the work into position between said electrodes, clamping jaws or blocks, a current controller, and intermittently operating actuating devices for said jaw and current controller, for clamping the working and turning on the heating current between successive operations of the feeder.

10. In an electric metal working apparatus, the combination of heating electrodes adapted to receive the work between them, clamp jaws or blocks for holding the work, a current controller for turning on the heating current, and a connected actuating mechanism for said jaws and current controller whereby the work may be fastened and the current then turned on as a connected or substantially single operation.

11. In an electric metal working apparatus, the combination of clamp jaws or blocks for holding the work in circuit, mechanism for reciprocating said jaws or blocks, and an automatic current controller for setting up a flow of current after the clamp jaws or blocks are set and cutting off the flow of current before or about the time that they release the work.

12. In an electric metal working apparatus, the combination substantially as described, with the clamp jaws or blocks for holding the work in position to be heated by the electric current, of a current controller, actuating mechanism for said controller and clamp jaws adapted to set the controller after the closure of the clamp jaws, and a releasing dog or detent adjusted to release the current controller as and for the purpose described.

13. In an electric metal working apparatus, the combination with an intermittently acting mechanism for operating upon the heated work, of an intermittently acting step by step feeder for feeding the work to position in the heating electric circuit, and an intermittently operating current controller for removing the heating current previous to each feeding operation of the feeder.

14. In an electric metal working apparatus, the combination with an intermittently operating actuator for the mechanism which operates on the heated work, and an oscillating or intermittently operating current controller for automatically cutting off the current between the movements of said mechanism.

15. The combination in an electric metal working apparatus, of a movable work holding clamp or clamps, a reciprocating or intermittently operating actuator therefor, an oscillating or reciprocating feeder for feeding the work into position in said clamps or holders, and a current controller for intermittently causing the heating electric current to flow between the successive feed movements of the feed mechanism.

16. In an electric metal working apparatus, the combination with work holding devices and means for passing a heating electric current through the material while held by such devices, of a reciprocating actuating mechanism for moving a holder in a line parallel to the line joining said holders, and a step by step feeder for moving the work into position between the holders, between the successive operations of said actuator.

17. The combination in an electric metal working apparatus, of an intermittently operating feeder for feeding the work into position in an electric circuit between two electrodes, means for giving an end movement to the work while softened for upsetting, welding or other operation, and an automatic current controller for causing the current to flow through the work between the successive feeding operations.

18. In an electric metal working apparatus, the combination of two holders, one or both of which are movable in the line of the feed, a reciprocating automatic feeder for feeding the work longitudinally into position between said holders, and a reciprocating actuator for intermittently operating the movable holder or holders between the successive feeding operations.

19. In an electric metal working apparatus, the combination of a suitable clamp or holder movable in the direction of the feed, a reciprocating automatic feeder for feeding the work longitudinally and step by step into position in said clamp or holder, and an automatic actuating mechanism for the latter, timed to move the holder between the successive feed operations.

20. In an electric metal working apparatus, the combination with a clamp or holder and mechanism for reciprocating the same so as to subject the electrically heated work to a squeezing or upsetting force, of a step by step feeder for moving the work into position in said holder, said feeder being connected with actuating devices timed to produce a feed movement in the interval between the movements of the holder which operates on the work.

21. The combination in an electric metal working apparatus, of a work holder or abutment for operating on the heated work, a spring for acting on the same to upset, weld or otherwise act upon the work, and a cam or equivalent device actuated from a power driven shaft for periodically reversing the movement of the holder and then leaving it to the action of the spring.

22. In an electric metal working apparatus, the combination with a sliding electrode or work holder, of means for supplying electric current thereto, a continuously revolving cam or other device for moving the same in one direction, and a spring for moving it in the other direction.

23. In an electric metal working apparatus, the combination substantially as described, of a work holder, a driving shaft P', mechanism for reciprocating said work holder from said power shaft, a current controller, and an actuating cam therefor or similar device, also operated by said shaft.

24. In an electric metal working apparatus, the combination of a reciprocatory work holder, means for supplying current thereto, a power shaft, a cam or equivalent device acting on the work holder through suitable devices, a current controller, an actuating device moving said controller periodically into position to cause current to flow to the work holder, and an automatic trip for releasing the current controller when the work holder moves in a direction to act on the heated work.

25. In an electric metal working apparatus, the combination with a reciprocating electrode connected with a source of heating electric current, of a spring tending to move the same in one direction, mechanism for periodically moving the same in the opposite direction, a current controller, actuating mechanism for periodically setting the same, a dog or catch, and a trip connected with the electrode for releasing said current controller when the electrode moves under the action of the spring.

26. The combination substantially as described, in an electric metal working apparatus, of a reciprocatory work holding electrode C', connected with a source of electric energy, a current controller, a catch for holding the same set, a trip moving with the electrode for releasing the same on forward movement of the electrode, a continuously operating driving shaft and connecting devices between the same and the electrode and current controller, whereby the electrode may be moved rearwardly and the current controller may be set to cause current to flow, as and for the purpose described.

27. In an electric metal working apparatus, the combination of a reciprocatory work holder connected to a source of electric energy, a current controller, a revolving shaft, two cams thereon, and mechanism actuated by said cams and connected respectively with the work holder and current controller.

28. The combination in an electric metal working apparatus, of a reciprocatory electrode, a transformer whose secondary connects with the same, a current controller for periodically closing the circuit of the primary, and a continuously revolving driving shaft actuating said electrode and current controller.

29. In an electric metal working apparatus, the combination substantially as described, of a reciprocating electrode connected to the primary of a transformer, a driving shaft, mechanism connected with the same for moving the electrode in one direction, a spring or equivalent device for moving it in the opposite direction, and a circuit closer connected to the primary of the transformer and actuated by said driving shaft for closing the circuit of the primary in the interval between the forward movements of the electrode.



30. The combination in an electric metal working apparatus, of a reciprocatory clamp body C', a spring or equivalent device for moving the same in the direction to perform the desired operation upon the heated metal, a rotating shaft for moving the same in the opposite direction and periodically freeing it so that it may be acted upon by the spring, a transformer whose secondary supplies current to the work held by said clamp body, a circuit closer in the circuit of the primary, actuating devices for the same timed to close the circuit between the forward movements of the clamp body, a catch holding the same closed, and a trip operating on the forward movement of the clamp, as and for the purpose described.

31. The combination in an electric metal working apparatus, of a work holder, means for supplying current to the work sustained by said holder, a reciprocating actuating mechanism for said holder, an intermittently acting feeder for feeding or bringing successive parts or pieces of the work into place in said holder, and a current controller for putting current onto the work when in position in the work holder.

32. The combination substantially as described, in an electric metal working apparatus, of a reciprocating work holder, or abutment C', actuated in one direction by a cam or equivalent device and in the other by a spring, an intermittently acting or step by step feeder for causing portions or pieces of the work to rest successively in position for operation, means for supplying an electric current to the work, and an intermittently operating current controller.

33. The combination in an electric metal working apparatus, of a work holder or abutment for operating on the heated work, a spring for acting on the same to upset, weld or otherwise act upon the work, a cam or equivalent device actuated from a pivoted driving shaft for permanently reversing the movement of the holder and then leaving it to the action of the spring, and an intermittently operating or step by step feeder for causing portions or pieces of work to rest successively in position on the work holder.

34. In an electric metal working apparatus, the combination with a sliding electrode or work holder, of means for supplying electric current thereto, a continuously revolving cam or other device for moving the same in one direction, a spring for moving it in the other direction, and an intermittently operating or step by step feeder for causing portions or pieces of work to rest successively in position on the work holder.

35. In an electric metal working apparatus, the combination substantially as described, of a work holder, a driving shaft P' mechanism for reciprocating said work holder from said power shaft, a current controller, an actuating cam therefor or similar device, also operated by said shaft, and an intermittently operating or step by step feeder for causing portions or pieces of work to rest successively in position on the work holder.

36. In an electric metal working apparatus, the combination of a reciprocatory work holder, means for supplying current thereto, a power shaft, a cam or equivalent device acting on the work holder through suitable devices, a current controller, an actuating device moving said controller periodically into position to cause current to flow to the work holder, an automatic trip for releasing the current controller when the work holder moves in a direction to act on the heated work, and an intermittently operating or step by step feeder for causing portions or pieces of work to rest successively in position with respect to said electrode.

37. In an electric metal working apparatus, the combination with a reciprocating electrode connected with a source of heating electric current, of a spring tending to move the same in one direction, mechanism for periodically moving the same in the opposite direction, a current controller, actuating mechanism for periodically setting the same, a dog or catch, a trip connected with the electrode for releasing said current controller when the electrode moves under the action of the spring, and an intermittently operating or step by step feeder for causing portions or pieces of work to rest successively in position with respect to said electrode.

38. The combination substantially as described, in an electric metal working apparatus, of a reciprocatory work holding electrode C', connected with a source of electric energy, a current controller, a catch for holding the same set, a trip moving with the electrode for releasing the same on forward movement of the electrode, a continuously operating driving shaft and connecting devices between the same and the electrode and current controller, whereby the electrode may be moved rearwardly and the current controller may be set to cause current to flow, and an intermittently operating or step by step feeder for causing portions or pieces of work to rest successively in position with respect to said electrode.

39. In an electric metal working apparatus, the combination of a reciprocatory work holder connected to a source of electric energy, a current controller, a revolving shaft, two cams thereon, mechanism actuated by said cams and connected respectively with the work holder and current controller, and an intermittently operating or step by step feeder for causing portions or pieces of work to rest successively in position with respect to said electrode.

40. The combination in an electric metal working apparatus, of a reciprocatory electrode, a transformer whose secondary connects with the same, a current controller for periodically closing the circuit of the primary, a continuously revolving driving shaft actuating said electrode and current controller, and an intermittently operating or step by step feeder for causing portions or pieces of work to rest successively in position with respect to said electrode.

41. In an electric metal working apparatus, the combination substantially as described, of a reciprocating electrode connected to the primary of a transformer, a driving shaft, mechanism connected with the same for moving the electrode in one direction, a spring or equivalent device for moving it in the opposite direction, a circuit closer connected to the primary of the transformer and actuated by said driving shaft for closing the circuit of the primary in the interval between the forward movements of the electrode, and an intermittently operating or step by step feeder for causing portions or pieces of work to rest successively in position with respect to said electrode.

42. The combination in an electric metal working apparatus, of a reciprocatory clamp body C', a spring or equivalent device for moving the same in the direction to perform the desired operation upon the heated metal, a rotating shaft for moving the same in the opposite direction and periodically freeing it so that it may be acted upon by the spring, a transformer whose secondary supplies current to the work held by said clamp body, a circuit closer in the circuit of the primary, actuating devices for the same timed to close the circuit between the forward movements of the clamp body and a catch holding the same closed, a trip acting on the forward movement of the clamp, and an intermittently operating or step by step feeder for causing portions or pieces of work to rest successively in position on said clamp body.

43. The combination in an electric metal working apparatus, of a feeder, a work holder or abutment C, a current controller, and an actuating shaft P', provided with cams or similar devices for operating said devices in the order or combination hereinabefore described.

44. In an electric metal working apparatus, the combination substantially as described, of a reciprocating feeder, a reciprocating work holder or abutment C', means for supplying heating current to the work held thereby, a current controller for starting the flow of current when the work is in place, an actuating shaft, cams connected therewith, and intermediate mechanism between said cams and the feeder, work holder and controller as and for the purpose described.

45. The combination in an electric metal working apparatus, of a reciprocating work holder or abutment operating on the heated work, a movable clamp jaw or block for holding the work in position, a current controller, a driving shaft, and mechanism actuated or controlled by the latter for operating said holder, clamp and current controller, as and for the purpose described.

46. The combination in an electric metal working apparatus, of a reciprocating work holder, means for supplying an electric current to the work engaging therewith, a reciprocating clamp jaw, a current controller, and an actuating mechanism for closing the jaw and then actuating the current controller to turn on the current.

47. The combination in an electric metal working apparatus, of a reciprocating work holder connected to a source of electric energy, a reciprocating clamp jaw or block, a driving shaft, and actuating mechanism driven thereby for setting and unsetting the clamp jaw and moving the work holder.

48. The combination in an electric metal working apparatus, of a work holder connected with a source of energy, a clamp jaw, mechanism operating on the same to alternately set and relieve the jaw, a current controller, and a driving shaft for actuating the controller and the mechanism which operates the clamp jaw.

49. In an electric metal working apparatus, the combination of a movable work holder, a clamping jaw or block for holding the work in position, a current controller, a driving shaft, and mechanism operated thereby for actuating said holder, jaw and current controller.

50. In an electric metal working apparatus, the combination of a work holder C', connected to a source of energy and operated in one direction by positive action from a driving power and in the other by a spring or other power, a movable clamp jaw or block, a current controller for putting on the current when the work is clamped, and a driving shaft for operating said jaw, holder and controller.

51. In an electric metal working apparatus, the combination of a movable work holder, a source of electric energy connected thereto, a spring for moving the same in a direction to effect the desired action upon the heated metal, a reversing mechanism, a clamp jaw or block

mechanism for setting and releasing the same, a current controller, a catch for holding the same, a driving shaft for operating said mechanisms, and a trip for releasing the current controller on the forward movement of the work holder.

52. The combination in an electric metal work apparatus, of a feeder, a pair of work holders, means for applying current to the same, clamp jaws or blocks for fastening the work, a current controller for setting up the flow of current to said holders when the work is clamped, a driving shaft connected with the feeder, clamp jaws, and a cam for actuating the same, as and for the purpose described.

53. The combination in an electric metal working apparatus, of a pair of work holders forming terminals of a source of electric energy, a feeder for causing parts or portions of the work to rest successively in position on said holders, movable clamp jaws or blocks for holding the work when in position and releasing it, a current controller for causing current to flow when the work is in position, and a driving shaft for actuating said feeder, jaws, and current controller, as and for the purpose described.

54. In an electric metal working apparatus, the combination of a pair of work holders forming terminals of the secondary for a transformer, a feeder for feeding parts or portions of the work successively into position between them, reciprocating clamp jaws or blocks mounted in movable supports, mechanism for raising and lowering the same, a current controller in the primary of the transformer, and a driving shaft for operating said current controller, feeder and clamp actuating devices, as and for the purpose described.

55. In an electric metal working apparatus, the combination of a pair of work holders, a transformer whose secondary supplies the current for heating the work between said holders, a feeder for feeding the work into position between the work holders, reciprocating clamp jaws or blocks, a circuit closer in the circuit of the primary, a driving shaft for actuating said feeder, and jaws, and a trip device for releasing the circuit closer automatically on the completion of each metal working operation.

56. In an electric metal working apparatus, of work holders one movable to and from the other, means for supplying a heating current thereto, a feeder, movable clamp jaws or blocks, a current controller, a detent and a trip for the same, and a driving shaft for operating said feeder, clamps, and current controller, as and for the purpose described.

57. In an electric metal working apparatus, the combination of a feeder, a pair of work holders, means for supplying electric current to the same, mechanism for clamping the work in position between said work holders, a current controller, and a driving shaft for operating on said feeder, clamping mechanism and current controller.

58. In an electric metal working apparatus, the combination of a step by step feeder, an actuating cam therefor, a reciprocating electrode connected with a source of current, an actuating or controlling cam therefor, clamping mechanism for holding the work when fed into position in the circuit, an actuating cam for said mechanism, a driving shaft acting on said cams, and a current controller, as and for the purpose described.

59. In an electric metal working apparatus, the combination with the work holders, of means for supplying electric current to the work, a shifting or turning device for shifting the position of the work with relation to the same, and a feeder, as and for the purpose described.

60. In an electric metal working apparatus, the combination with the work holders for holding the work heated by the current, of means for moving one holder toward the other, and a rotary guide or guides arranged in line with said holders and adapted to turn in a plane transverse to the line of movement of the holders, as and for the purpose described.

61. In an electric metal working apparatus, the combination of the two work holding devices and the rotary guide all arranged in substantially the same straight line, the feeder feeding the work in a line joining said holding devices, and a driving shaft operating on said feeder and guides.

62. The combination in an electric metal working apparatus, of a feeder, a work holder or holders, a movable guide or guides, a current controller, and a driving shaft.

63. The combination in an electric metal working apparatus, of a feeder, a rotary guide or guides, a work holder or holders, a reciprocating clamping block or blocks, a current controller, and a driving shaft.

64. In an electric metal working apparatus, the combination of two work holders, a step by step feeder, and a chain guide all arranged in substantially the same straight line, and a common driving mechanism for moving the holders and operating the feeder and chain guides, as and for the purpose described.

65. The combination, substantially as described, in a chain welding machine, of a pair of work holders connected to a source of electric energy and one or both movable, of a step by step feeder, and a rotary chain guide or guides turning the work in a plane transverse to the line of movement of the holder.

66. The combination in an electric metal working apparatus, of a pair of work holders, movable one toward the other, of a chain guide or guides in line with the same, a step by step feeder, reciprocating clamp jaws or blocks, a current controller, and a driving shaft for operating said feeder, guide, holder and current controller, as and for the purpose described.

67. In an electric metal working apparatus, the combination substantially as described, of a pair of work holders connected to a source of electric energy and one or both movable, a step by step feeder, a reciprocating clamp jaw or jaws for said holders, a rotary chain guide or guides, a current controller, a driving shaft for actuating said parts, a catch for holding the current controller, and a trip therefor moving with the work holder.

68. The combination in an electric metal working apparatus, of a pair of holders each of which has a movable clamp jaw, of a chain guide having its opening with the line joining the said holders and capable of turning in a plane transverse to said line, means for moving one holder toward the other, and a common driving power for operating the chain guide, holders and clamp jaws in the order described.

69. In an electric metal working apparatus, the combination with a pair of work holders suitably constructed to hold the link of a chain between them, of a pair of chain guides arranged with their axes in a line parallel to the line joining the work holders rotatable for the purpose described.

70. In an electric metal working apparatus, the combination of work holders for holding the links of a chain, of a step by step feeder adapted to grasp the chain, a guide or guides having their axes parallel with the line joining the holders, and mechanism for rotating said guides and reciprocating the feeder, as and for the purpose described.

71. The combination in an electric metal working apparatus, of a pair of holders adapted to receive a chain link, and a turning chain guide or guides having a cruciform or equivalent interior and adapted to turn in a plane transverse to the line joining said holders.

72. In an electric metal working apparatus, the combination with the chain holding heating jaws, of a pair of feed jaws adapted to grasp the chain and mounted on feed levers, and a reciprocating slide connected to said levers, as and for the purpose described.

73. In an electric metal working apparatus, the combination with the rotary guide, of a slide reciprocating thereon and carrying pivoted feed jaws, and a second slide reciprocating parallel with the first and connected with suitable actuating mechanism.

74. In an electric metal working apparatus, the combination of a step by step feeder, a pair of chain links or holders, one or both movable, a turning guide or guides, reciprocating clamp jaws or blocks, a current controller, a spring connected to the movable holder, a driving mechanism for actuating the feeder, the link holder, guides, clamp jaws and current controller, and a trip connected with the movable holder for releasing the current controller all combined and operating as and for the purpose described.

75. In an electric metal working apparatus, the combination with a clamp jaw, of a toggle joint one member of which connects to the clamp jaw while the other engages a spring carried by the clamp body.

76. In an electric metal working apparatus, the combination of the clamp jaw, a toggle joint, spring engaging with toggle lever, a bar or rod connected to the center of the toggle for operating the same, and a cam for actuating said lever.

77. In an electric metal working apparatus, the combination of the clamp jaw, the slide carrying the same and working in a guide standard, the toggle lever guided on the same standard, a spring acting on the guide for said lever, and a second toggle lever connected to the clamp jaw, as and for the purpose described.

78. In an electric metal working apparatus, the combination with reciprocating work holders, of means for supplying electric current thereto, an actuating lever connected to said work holder, a spring tending to move said lever in one direction, and a cam $K^3$, and suitable intermediate mechanism for moving the lever in the opposite directions.

79. In an electric metal working apparatus, the combination with an actuator L, for operating on the heated work, of a spring tending to move the same in a direction to upset and shape the work, a cam $K^5$, and intermediate links and levers for moving said actuator in the opposite direction against the stress of the spring.

80. The combination in an electric metal working apparatus, of a current controller cam on a rotary shaft engaging with the same, a catch, a mechanical retractor for reversing the current controller, and a trip moving with the devices operating on or connected with the work.

81. The combination in an electric metal working apparatus, of a current controller, an actuating cam, a catch for the current controller, and a trip for engaging and releasing the catch, as and for the purpose described.

82. In an electric metal working apparatus, the combination of a step by step feeder, and an electric circuit for passing the heating current through the work after each feeding operation.

83. The combination in an electric metal working apparatus, of a step by step feeder, an electric circuit, and an automatic circuit changer.

84. The combination in an electric metal working apparatus, of two blocks or holders for acting upon the work and one movable with relation to the other, a step by step feeder for feeding the work into position with relation to the same, and an electric circuit for passing current through the work.

85. The combination of two work holders for receiving the work to be operated upon, a step by step feeder for feeding the material into position, an electric circuit for passing heating currents through the material, and an automatic circuit changer.

86. The combination substantially as described, in an electric metal working apparatus of a movable block C, for upsetting the work, a feeder for feeding the material step by step into position to be acted upon by said block, and means for heating the material to be worked.

87. The combination in an electric metal working apparatus, of electrodes for heating the material to be worked, means for intermittently reciprocating one of said electrodes, and a feeding mechanism for feeding the material intermittently into position between said electrodes.

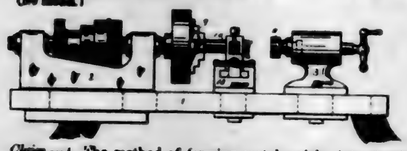
88. The combination in an electric metal working apparatus, of a feeding mechanism, an upsetting mechanism, and means for passing an electric current into the work.

89. The combination in a metal working apparatus, of means for upsetting the material, electrodes for passing the heating current through the material, a step by step feed mechanism for feeding the material into position between the electrodes, and an automatic circuit changer for controlling the flow of the electric current.

90. In an electric metal working machine, the combination with the mechanism which operates upon the softened metal, of a source of heating electric currents, and a current controller connected with said mechanism and operated thereby automatically to apply the heating current intermittently to successive portions of the work.

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**501,547. SHAPING AND SPINNING METALS BY ELECTRICITY.** ELIHU THOMSON, Swampscott, Mass., assignor to the Thomson Electric Welding Company, of Maine. Filed Jan. 3, 1891. Serial No. 377,159. (No model.)



*Claim.*—1. The method of forming metal articles into circular shapes, consisting in including the material in a heating electric circuit to soften the same and applying the shaping force while the work or the tool or both are rotated to gradually force or crowd the material into the desired shape.

2. The herein described method of forming metal into the desired form consisting in including the material in an electric circuit to heat the same, rotating the work, and applying lateral pressure, as and for the purpose described.

3. The herein described improvement in spinning metal consisting in passing a current of electricity through the material to soften the same, and applying pressure to spin the heated material into the desired form.

4. The herein described improvement in spinning metal consisting in rotating the material while included in a heating electric circuit, and applying a suitable force to gradually shape the metal as desired.

5. The herein described method of shaping metal consisting in rotating the metal while subjected to the pressure of a forming tool constituting a terminal or electrode of a heating electric circuit by which heating current is passed into the work.

6. The herein described method of contracting the ends of hollow pieces of metal, consisting in passing a current of electricity through the metal to soften the same at its end, and then gradually compressing the pipe by pressure applied while the same is rotated.

7. The herein described method of contracting or expanding the end of a hollow piece of metal, consisting in bringing the end into connection with an electrode forming a terminal of the heating circuit, passing current through the tube or pipe to heat the same, and then rotating the tube while applying the desired force or contract the end of said tube.



8. The herein described method of closing the end of a tube of metal, consisting in abutting the open end of the tube against an electrode forming the terminal of a heating electric current, passing a heating current into the tube so as to heat the open end, and then spinning down or closing the end.

9. The herein described improvement in forming hollow balls, consisting in including the end of a metal tube in an electric circuit so as to heat or soften the same, and then spinning down the tube into the shape required, as and for the purpose described.

10. The herein described method of forming hollow metal objects by hot spinning them in succession from a metal pipe.

11. The herein described method of forming two hollow metal objects with closed ends, consisting in including a section of pipe or tube in a heating electric circuit and then spinning down the heated portion of the tube, as and for the purpose described.

12. The herein described method of forming hollow metal articles from a section of tube or piping, consisting in including the tube in an electric circuit so as to heat the same to plasticity, and then spinning down an intermediate portion of the tube so as to form the closed ends or sides of two articles simultaneously.

13. The herein described method of shaping or forming a piece of metal, consisting in including the same in an electric circuit, one electrode of which is applied to the surface to be formed or modified in shape, and applying the desired shaping or compressing force while the metal or tool is rotated.

14. The method of utilizing electricity in the formation of metal articles, consisting in electrically heating the metal, applying suitable force to form the metal as desired while the metal is rotated, and maintaining the metal in the heating electric circuit during the operation.

15. The herein described method of utilizing electricity in the formation of hollow metal articles, consisting in passing a current of electricity through the metal to soften the same, and then gradually forming the metal by pressure or other force over a die or mold.

16. The herein described method of utilizing electricity in the formation of hollow metal articles, consisting in electrically heating the metal while in position upon a die or mold, and applying pressure to gradually form the metal to the form of said die or mold.

17. The herein described method of utilizing electricity in the formation of metal articles, consisting in passing a current of electricity through a piece of metal having substantially the thickness of the finished article so as to soften the same, and then gradually applying pressure to form the metal into the desired shape over a suitable die or mold.

18. The herein described method of utilizing electricity in the formation of hollow metal articles, consisting in passing a current of electricity through a metal blank between two points, one upon the formed surface, and applying pressure to the blank to form the same over a suitable die or mold.

19. The herein described method of utilizing electricity in the formation of metal, consisting in electrically heating the metal while it is rotated and gradually formed or spun over or upon a suitable die or mold.

20. The method of utilizing electricity in the formation of hollow metal articles, consisting in electrically heating a blank of the desired thickness while it is rotated and formed upon a suitable die or mold.

21. The method of forming a hollow metal object, consisting in electrically heating a metal blank by passing a current of electricity through the same while it is rotated and formed or spun upon a suitable die or mold surface, and passing said current between two points, one at or near the point where the blank is held by the rotating device, and the other where the tool is applied.

22. The method of forming hollow metal articles, consisting in communicating a rapid circular motion to a metal blank of the desired thickness held against a mold, passing a heating current of electricity through the metal to soften the same, and then, by means of a suitable instrument, applying pressure to successive points to form the blank to the shape of the surface of the mold.

23. The herein described method of forming or shaping metals, consisting in communicating a circular motion to the blank, passing a heating current of electricity through it to soften the same, and applying pressure to successive parts of the metal to form it.

24. The herein described method of forming hollow metal articles, consisting in revolving a metal blank of the desired thickness, applying pressure upon successive parts of the blank to form or shape it, and at the same time passing a heating electric current through or into the blank at the points where the pressure is applied.

25. The method of utilizing electricity in the formation of hollow metal articles, consisting in electrically heating a metal blank to soften the same, and then gradually applying pressure to form the metal over a suitable circular die or mold.

26. The herein described improvement in forming conical point projectiles, consisting in including a section of a metal tube in a heating electric circuit, and spinning down the heated portion so as to

close the tube and at the same time form the point with a thickened wall.

27. The combination in an apparatus for forming or shaping metals, of means for rotating the work, and a support or rest for the shaping instrument forming a terminal of the heating electric circuit.

28. In an electric apparatus for forming hollow metal articles, the combination with a die or mold, of means for holding and rotating said die and mold with the metal to be operated upon, connections to pass an electric current through the metal while it is rotated, and means for imparting pressure to the metal to conform the same to the surface of said die or mold.

29. In an apparatus for forming hollow metal articles, the combination with a die or mold, means for holding the metal against said die or mold, a removable pressure instrument for forming the metal blank to the shape of the mold, and electric terminals in contact with the metal.

30. The combination in an apparatus for forming or shaping metal, of means for holding the metal and rotating it, a removable shaping or forming instrument, and electric connections leading to the rotating holder and the said shaping or forming instrument.

31. The combination in an electric metal working apparatus, of a rotating chuck or holder connected to one terminal of an electric circuit, a removable contact mounted in line with said chuck and connected to another terminal of the electric circuit, and a tool post or support connected to the same terminal.

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**501,548. TROLLEY-WHEEL.** EDGAR H. TOWSLEY, Jamestown, N. Y. Filed July 16, 1892. Serial No. 440,242. (No model.)



*Claim.*—1. The wheel formed with conical sockets at its sides and placed on an axle held in the cheek pieces of the frame combined with cones placed on the axle and fitted in said sockets and acted upon by yielding pressure for pressing the cones into the sockets, substantially as described.

2. The wheel having side plates chambered to form an oil reservoir and fitted in the felly face to face and formed with inwardly projecting bosses in combination with the axle and the oil feeder grasped between the adjacent faces of the bosses, substantially as described.

3. The felly screw-threaded upon its inner periphery and the chambered side plates screwed into the felly and formed with conical sockets, in combination with the axle, the cones, and the spring arranged to act upon the cones, substantially as described.

4. The wheel formed with conical sockets in combination with the cones, and a U-shaped spring, arranged to press upon the cones, substantially as described.

5. The side plates of the wheel formed with conical sockets in combination with the cones formed with shoulders at the base and springs for pressing the cones into the sockets, substantially as described.

6. The wheel formed with conical sockets at its sides and the spring applied thereto and pins fitted in the cones for retaining the same, substantially as described.

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**501,549. FIFTH-WHEEL.** SIMEON VAN SICKLE, Indianapolis, Ind., assignor of one-half to Samuel Pangh, same place. Filed Aug. 23, 1892. Serial No. 443,923. (No model.)



*Claim.*—1. The combination, in a fifth wheel, of the parts D and E, one having a large convex surface, and the other a correspondingly large concave surface, and one being provided with a ridge, as *d*, extending around approximately one-half its periphery, and the other having a corresponding groove, as *e*, similarly positioned, substantially as shown and described.

2. The combination, in a fifth wheel, of the parts D and E provided with comparatively large bearing surfaces one having a ridge *b* and the other having a corresponding groove *c*, extending partially around the outer edge of the bearing surfaces at the forward side substantially as shown and described.

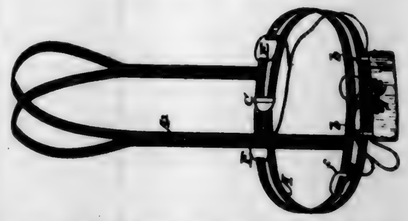
3. The combination, in a fifth wheel, of the parts D and E, one having a projection, as *d'*, provided with a collar, through the center of which the attaching bolt passes, and the other having a central hole adapted to surround said projection when assembled, and a slit extending out to one side from said hole for use in assembling, substantially as set forth.

4. The combination of the axle, the bolster, the reach, and the fifth wheel, said fifth wheel being composed of the two parts D and E, said part E having a central opening, and said part D having an upwardly projecting shouldered part *d'* extending through said hole, and a flange or collar $d^3$ secured thereon above said part E, substantially as shown and described.

5. The combination of the axle, the bolster, the reach, the two parts of a fifth wheel, one secured to the axle and the other to the bolster and both projecting to the rear thereof and provided with a hole for a connecting bolt, an axle plate A' secured to the under side of the axle and having a rearwardly projecting ear with a corresponding hole for the connecting bolt, and reach irons, one extending to above the fifth wheel and the other to below said axle plate, and a connecting bolt C' passing through said several parts, substantially as shown and described.

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**501,550. ELECTRIC BODY-BATTERY.** HARRY G. WARNER, Cleveland, Ohio. Filed Sept. 1, 1892. Serial No. 444,720. (No model.)



*Claim.*—1. In an electric body belt a series of cells D consisting of a zinc strip Z having its ends folded back, openly, upon itself, a copper strip X also having its ends folded back, openly upon itself, and interwoven crosswise with the zinc strip, and having an absorbent material interposed between the said strips, and a wire loop *d* attached to zinc strip and linked to the copper strip of the adjacent cell, substantially as described.

2. In an electric body belt, the combination of two belts A, having a common clasp or buckle C, and provided with supporting shoulder straps $A^1$, a pocket B having loops *b*, *b*, for suspending same on lower belt, and containing the battery cells D, electrode H having slots *e e* for attaching same onto upper belt and provided with safety pin *f*, wires F connecting said electrodes with the battery cells, substantially as described.

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**501,551. TRUSS.** HENRY L. WALDRIDGE, Springfield, Mass. Filed Sept. 17, 1892. Serial No. 446,168. (No model.)



*Claim.*—1. In a truss, in combination, a common support and several spring fingers of return-bent form supported thereby and extended therefrom in various directions and having undercurved extremities extended the one toward the other, and all whereby said bearing parts have imparted thereto when the truss is in use capabilities for yielding pressures in directions away from said common support, and also in directions converging toward an intermediate point, for the purposes set forth.

2. A truss comprising a common support, A, the several fingers pivotally connected to said support and extended in various directions outwardly therefrom and having their extremities return-bent and provided with the bearing bottoms, the spiral springs controlling said fingers and also having an engagement with the said common support, and appliances for confining the truss about the person, substantially as described.

3. In a truss in combination a support, A, having radiating arms, *d*, *d*, with the separated ear-pieces, *f*, *f*, the fingers having tongues, *g*, entered within and pivotally connected to said ear-pieces and having the return-bent extremities provided with the bearing bottoms, and the spiral springs controlling said arms, *d*, and fingers, substantially as described.

4. In a truss the combination with a finger-carrying support having a hole therethrough, of a carrying arm, a stud having a screw-



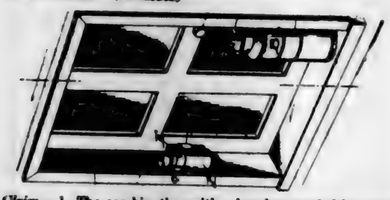
threaded portion thereof extended through and beyond the hole and having at its portion which is near and outwardly beyond the orifice of such hole the eye, *p*, the arm, D, and the nut, substantially as and for the purpose set forth.

5. The combination with the support, A, having the radiating arms, *d*, *d*, and the central hole with a portion of its length enlarged to form the socket, *n*, the spring pressure fingers with buttons, the stud, *e*, with the screw-threaded portion and the enlarged head set partially in said socket having the eye, *p*, and the arm, D, and nut *n*, substantially as described.

6. In a truss the combination with a suitable arm or part carrying a truss-pad, of a band adapted to have its ends connected to said carrying part and having the greater portion of its length formed of practically stretchless material, the remainder being of elastic webbing, substantially as described.

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**501,552. DEVICE FOR SECURING CANS OR OTHER RECEPTACLES.** JOHN W. WALKER, Philadelphia, Pa. Filed Jan. 19, 1893. Serial No. 458,012. (No model.)



*Claim.*—1. The combination with a bracket carried by a can or other receptacle, a rack along which the bracket can slide in but one direction, and a stop so arranged as to come over the mouth of the can or other receptacle.

2. The combination with a can or other receptacle, of a bracket having inwardly beveled sides and a spring tongue secured to the can or other receptacle, a rack having outward beveled faces to engage with the beveled sides of the bracket and along which the bracket can slide in but one direction, said rack being adapted to be secured to a door, and a stop arranged above the can and adapted to limit the movement of the can to which the bracket is secured along the rack and prevent the removal of the cover of the can or other receptacle.

3. The combination with a toothed rack carried by a door of a bracket secured to a can and fitting over the rack and provided with a spring catch fitting in the teeth of the rack whereby the bracket can slide in but one direction on the rack and a stop arranged on the jamb of the door above the can so as to prevent the raising of the bracket from the rack when the door is shut but which will be out of the way of the can when said stop is swung aside by opening the door.

4. The combination with a door, of a rack carried thereby, a bracket carried by a can and which can move in but one direction along the rack, and a stop which abuts against the can and normally prevents the bracket and the can carried thereby from being entirely slid off the rack, or the removal of the can cover but which stop is swung away from its position by the opening of the door.

5. The combination with a door, of a rack carried thereby, a bracket carried by a can and arranged to slide in but one direction on the rack, and a stop abutting against the cover of the can and arranged to prevent the moving of the can from the rack or the raising of the cover, and so situated that it will be swung away from the can by the opening of the door.

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**501,553. ALUMINIUM ALLOY.** CHRISTOPHER P. WHITNEY, Newton, Mass. Filed Nov. 23, 1892. Serial No. 453,404. (No specimens.)

*Claim.*—A metal alloy consisting of aluminium in proportions of seventy-six per cent. or more and of manganese and tungsten in proportions of twelve per cent. or less of each.

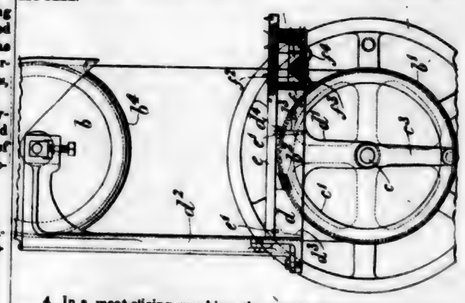
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**501,554. MEAT-SLICING MACHINE.** CHARLES WILSON, Newcastle-on-Tyne, England. Filed Mar. 3, 1892. Serial No. 425,200. (No model.) Patented in England June 11, 1892, No. 10,982.

*Claim.*—1. In a meat-slicing machine a band-saw and cutter, having a continuous line of saw teeth on a portion of its edge, and having the remainder of its edge made with a cutting or knife edge, substantially as shown and described.

2. In a meat slicing machine, a grease cleanser composed of two blocks in frictional contact with the moving saw, and provided with grease receptacles located beneath them, all substantially as shown and described.

3. In a meat-slicing machine, the combination with a band saw, of a sliding table having pins or teeth to hold the meat while being cut, and blocks beneath the table serving to clean the grease from the band.



4. In a meat-slicing machine, the combination with an endless band having saw-teeth in continuous line on one part of its cutting edge, and a knife edge on the remainder of such edge, of grease cleaning blocks *f*, *f*, beneath the bed or plate, provided with sloping upper surfaces, grease receptacles *f'*, beneath such blocks, and grease passages leading thereto from such surfaces.

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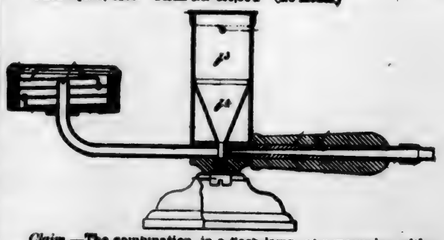
**501,555. METHOD OF MAKING ROTARY TOOTHED CUTTERS.** HENRY W. WINTER, Boston, assignor to James W. Brooks, trustee, Peterham, Mass. Filed Mar. 13, 1893. Serial No. 465,782. (No model.)



*Claim.*—The herein described method of producing rotary toothed cutters which consists, first, in making the peripheral contour of a metallic ring to accord in cross section with the shape of the edge to be trimmed; second, jigging or drilling multiple concentric series of holes *a*, in said ring; and third, separating the ring segmentally into teeth, each segment containing at least two of said holes, substantially as described.

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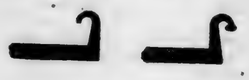
**501,556. FLASH-LAMP.** NATHANIEL H. BROWN, Norristown, Pa. Filed Apr. 8, 1893. Serial No. 469,504. (No model.)



*Claim.*—The combination, in a flash lamp, of a magazine with a detachable cap, an air-vent in the surface thereof and a funnel-shaped device connected with the detachable base of the magazine and extending vertically into the interior of said magazine, a holder having a radially perforated bottom and central draft tube extended and connected with the detachable base of said magazine and said base extended and formed into a handle having an internal tapering air injector tube provided with a detachable flexible tube having a mouth piece, and a removable wick supported to position in said holder by means of a helical or coiled spring, all arranged as shown and for the purposes described.

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**501,557. BELT FOR ORE-CONCENTRATORS.** JAMES S. BROWNELL, San Francisco, Cal. Filed Jan. 28, 1893. Serial No. 460,942. (No model.)



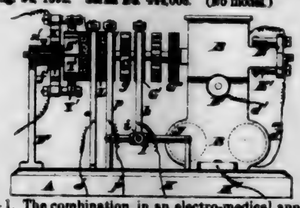
*Claim.*—1. A belt for ore concentrators having continuous side flanges, the edges of which are turned over so as to overlap the main body of the flanges.

2. A belt for ore concentrators consisting of a plane surface having a flange at each side projecting at an angle to the surface, the edge of each flange being turned over so as to overlap the main part of the flange.

3. A rubber belt for ore concentrators having side flanges turned over so that their edges overlap the main portion of the flanges, and having a continuous bead formed along the edge of each flange.

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**501,558.** ELECTRO-MEDICAL APPARATUS. JOHN A. CADOT, Cincinnati, Ohio, assignor of one-half to Frank H. Kirchner, same place. Filed Aug. 24, 1892. Serial No. 444,008. (No model.)



*Claim.*—1. The combination, in an electro-medical apparatus, of a motor shaft armed with a series of wheels adapted to break a primary current at different intervals, a brush and connections uniting either one of these circuit-breakers with a primary coil, a pair of insulated contact-rings having brushes and connections uniting them respectively with a low tension and high tension coil, a commutator consisting of two distinct series of insulated segments communicating with said rings, and a pair of brushes bearing against said segments, in the manner described, and for the purpose stated.

2. The combination, in an electro-medical apparatus, of a pair of insulated contact-rings M, N, and wires U, V, connecting said rings with a commutator composed of one set of segments, as S, S′, S″, S‴, connected by wires *s*, and another set of segments, as T, T′, T″, T‴, connected by wires *t*, all as herein described, and for the purpose stated.

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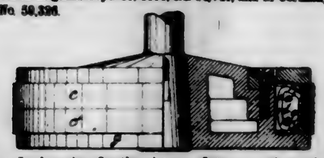
**501,559.** PROCESS OF EXTRACTING METALS FROM COMPOUND ORES. ARTHUR CRASUTE, Denver, Colo. Filed Jan. 9, 1892. Serial No. 417,533. (No specimens.)

*Claim.*—1. In the treatment of compound ores containing zinc the process which consists of mixing the finely divided ore with salt, roasting the mixture to form and drive off haloids of the zinc and other metals and catching the haloid fumes in screens or bags.

2. In the treatment of compound ores containing zinc the process which consists of mixing the finely divided ore with salt, roasting the mixture to form and drive off haloids of the zinc and other metals, catching the haloid fumes in screens or bags, then leaching the fumes in an aqueous solution of hydrochloric or other halogen acid to bring the haloids of zinc, silver and gold into solution and then precipitating and separating the gold and silver from the zinc by the addition of zinc to the solution.

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**501,560.** PISTON. JOHN COOPER and THOMAS PATTINSON, Sheffield, England. Filed June 29, 1892. Serial No. 438,396. (No model.) Patented in England Sept. 18, 1890, No. 14,741, and in Germany Oct. 18, 1891, No. 59,396.



*Claim.*—1. A spring for the pistons of steam engines, air pumps, compressors and the like formed of a coil the upper and lower members of which are inclined to each other to form surfaces which bear against corresponding surfaces on the piston rings while the back and front or inner and outer members of the coil are respectively convex and straight or flat, substantially as described and for the purpose set forth.

2. A piston spring formed of a coil the upper and lower members of which are inclined to each other to form surfaces which bear against corresponding surfaces on the piston rings while the back and front or inner and outer members of the coil are respectively convex in opposite directions substantially as described and shown and for the purposes set forth.

3. A piston spring formed of a coil the upper and lower members of which are inclined to each other to form surfaces which bear against corresponding surfaces on the piston rings while the back and front or inner and outer members of the coil are respectively formed convex in the same direction substantially as described and shown and for the purposes set forth.

4. The combination with piston rings whose inner flanged surfaces are inclined toward each other, of a spring each of whose coils has two opposite sides parallel to and in contact with said surfaces, and whose side opposite said rings is curved toward the center of the piston.

5. In a piston the combination of piston rings having tapering or conical flanges with a helically coiled spring with coils having two flat sides inclined toward each other at the same angle at which the inclined or conical surfaces of the said flanges are inclined toward each other, substantially as hereinbefore described and for the purposes set forth.

6. In a piston the combination of piston rings *c*, *c′* having conical or inclined faces *b*, *b′* with a helically coiled spring the upper and lower members *a* and *a′*, of which are inclined toward each other at the same angle as the conical or inclined faces *b*, *b′*, of the piston rings *c*, *c′* are inclined substantially as described and shown.

7. In a piston the combination of piston rings *c*, *c′* having conical or inclined faces *b*, *b′* helically coiled spring having inclined members *a*, *a′* convex members *d* and straight or convex members *e*, junk ring *f*, and piston block or body formed with a flange *g* substantially as described and shown and for the purposes set forth.

8. In a piston the combination of piston rings *c*, *c′* formed with additional flanges *c″* *c‴* having inclined faces *b″* *b‴* of a helically coiled spring the upper and lower members of which are inclined toward each other substantially as described and shown.

9. The combination with piston rings whose inner flanged surfaces are inclined toward each other, of a spring each of whose coils has two opposite sides parallel to and in contact with said surfaces.

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**501,561.** ADJUSTABLE EARTH-AUGER. GRANVILLE S. DEMATUR, Hamilton, Canada. Filed Dec. 1, 1892. Serial No. 453,724. (No model.)



*Claim.*—The segmental auger head, A, having through slots, B, of same segmental shape, and bosses, H and E, in combination with the bent arms, C, the upper part of which follow the aforesaid segmental shape, and bending downward are riveted to the steel blades, D, bent inward as at I, curved as at J, and slit as at K, substantially as described.

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**501,562.** HORSESHOE. LUDWIG DUETRICH, Chicago, Ill. Filed Jan. 3, 1893. Serial No. 457,055. (No model.)



*Claim.*—1. A horseshoe comprising two members, a member 1 adapted to be nailed to a horse's hoof, having dovetailed heels and an opening 3 at its toe, a member 2 having dovetailed recesses at its heels and a lug 9 at its toe, and a pin 5 located within an aperture in said member 1 adjacent to the opening 3 and passing into an opening in said lug 9, substantially as described.

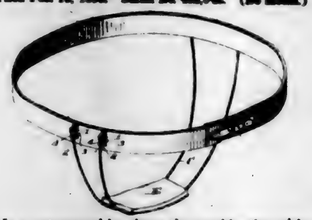
2. A horseshoe comprising two members 1 and 2, the said member 1 having dovetailed heels and an opening 3 at its toe, the said member 2 having dovetailed recesses 8 at its heels and a lug 9 at its toe, and cushions interposed between said members 1 and 2, substantially as described.

3. A horseshoe comprising two members 1 and 2, the said member 1 having dovetailed heels and an opening 3 at its toe, the said member 2 having dovetailed recesses 8 at its heels and a lug 9 at its toe, cushions interposed between said members 1 and 2, and a pin 5 located within an aperture in said member 1 adjacent to the opening 3 and passing into an opening in said lug 9, substantially as described.

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**501,563.** CATAMENIAL SACK. GEORGE W. GAMES, Rockwood, Texas. Filed Feb. 16, 1892. Serial No. 422,542. (No model.)



*Claim.*—In a catamenial bandage, the combination with a waist band, of a pair of elastic tubes each secured at one end to the rear portion of said waist band and adapted to be secured at their free ends to the forward ends of said waist band, an oblong rubber bandage having a series of apertures along each side, said tubes passing through the series of apertures along the longitudinal sides of said bandage, and safety pins passed through the apertures along the shorter sides of said bandage and adapted to secure an absorbent lining to said bandage, substantially as described.

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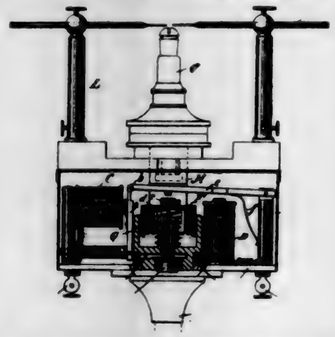
**501,564.** FURNITURE-FASTENER. GEORGE C. GOODYEAR, Flint, Mich. Filed Dec. 3, 1892. Serial No. 453,975. (No model.)



*Claim.*—The metal fastener "C—" with its end "1—" bent at an angle of about sixty degrees to form a catch—and fit the groove "E—" or bit hole "F—" in rail "B—" and its other end "2—" bent at a slightly obtuse angle to the face resting against the rail "B—" and a nail or screw hole through the end of flange "2—."

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**501,565.** GAS-LIGHTING APPARATUS. GUSTAV GÖRLDT, Kitzingen, Germany. Filed Dec. 10, 1892. Serial No. 454,762. (No model.)



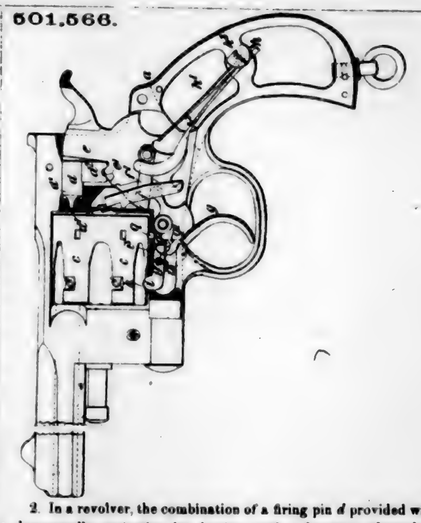
*Claim.*—The combination, in a gas lighting apparatus of the electro-magnets C D, the armature *c*, the valve E suspended to rod *c*, the bell F, the vertical lever *a*, forming the armature and provided with a catch *b* as and for the purpose set forth.

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**501,566.** REVOLVING SMALL-ARM. HUBERT H. GRENFELL, London, and JAMES G. ACKLAM, Birmingham, England. Filed Dec. 19, 1891. Serial No. 415,679. (No model.)

*Claim.*—1. In a revolver the combination of a firing pin provided with a downwardly projecting lug having teeth at its lower end, and a hammer adapted to strike the firing pin and provided with teeth *d* meshing with the teeth on the lug of the firing pin, substantially as described.

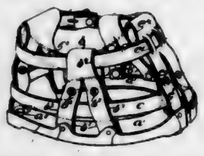
**501,566.**



2. In a revolver, the combination of a firing pin *d* provided with a downwardly projecting lug having teeth, a hammer adapted to strike the firing pin, said hammer being provided with a toothed portion *d′* meshing with the teeth on the firing pin, a stop lever *i*, and a trigger connecting said stop lever and hammer for operating the same, substantially as described.

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**501,567.** HORSE-SANDAL. HENRY G. HASBROUK, Jr., Philadelphia, Pa. Filed Apr. 10, 1893. Serial No. 469,857. (No model.)



*Claim.*—1. A horse sandal, comprising a two-part hinged metal sole provided with upwardly projecting front, side, and rear bifurcated tugs having separate sets of loops disposed the one beyond the other, and hoof and ankle straps adapted to penetrate said loops to accommodate the sandal to hoofs of different sizes and heights, substantially as and for the purposes set forth.

2. A horse-sandal, comprising a two-part hinged sole composed of aluminium or an alloy thereof and provided with a recessed or channeled and ribbed tread and with marginal vertically projecting flanges conforming to the contour of the hoof and forming lugs having upwardly projecting toe and side tugs connected with the lugs of said flanges, a heel-tug connected with the sole, a hoof-strap engaging loops provided in the tugs and an ankle-strap engaging separate loops in the side tugs and adapted to pass through either of the two separate loops near the top of the heel and toe tugs to accommodate the sandal to hoofs of different heights, substantially as and for the purposes set forth.

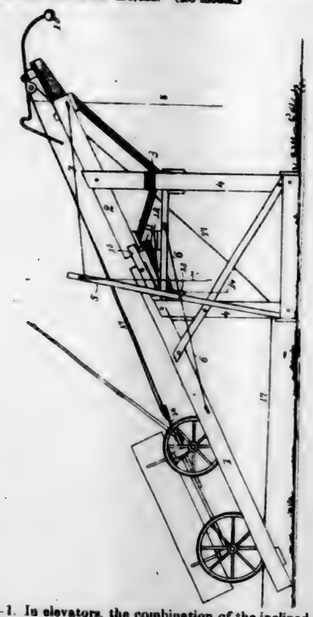
3. In a horse sandal, divided or bifurcated heel and toe tugs provided with loops for the reception of a hoof-strap provided with retaining devices and with loops located the one beyond the other for the reception of an ankle-strap provided with retaining devices, substantially as and for the purposes set forth.

4. In a horse sandal, divided heel and toe tugs provided with loops for the reception of a hoof-strap having retaining devices, and with loops located the one beyond the other for the reception of an ankle strap provided with retaining means, and divided side tugs provided with separate loops for the reception of said hoof and said ankle straps substantially as and for the purposes set forth.

5. A horse-sandal composed of aluminium or an alloy thereof with a flat face and with a channeled and ribbed sole, divided heel, side, and toe tugs, a hoof strap with retaining means, loops for the reception thereof, and an ankle-strap provided with retaining means and separate loops therefor, substantially as and for the purposes set forth.

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**501,568. ELEVATOR.** MORRIS KALLENBACH, Brady, Ill. Filed Oct. 27, 1892. Serial No. 450,126. (No model.)



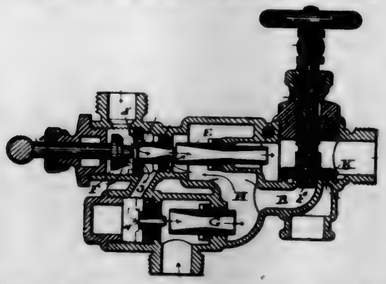
*Claim.*—1. In elevators, the combination of the inclined ways 1, the inclined turn table 2 normally in line with the ways, the bar 5 connected with the elevator frame as specified, and the line 7 connected with an end of the turn table and extended through an eye on bar 5, substantially as set forth.

2. In elevators, the combination of inclined ways 1, the inclined turn table 2 normally in line with the ways, the latch 12 adapted to engage a notch in the lower end of the turn table, the lever 13 engaging the latch, and the line 14 connected with the lever, substantially as set forth.

3. In elevators, the combination of inclined ways 1, the inclined turn table normally in line with the ways, the draft line 17 running over a pulley or pulleys at the upper end of the turn table and having a bail 16 adapted to engage a wagon, the pivoted and weighted catch 9 adapted to engage the bail and hold the wagon on the turn table, and the line 8 connected with the catch, substantially as set forth.

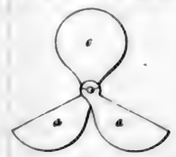
4. In elevators, the combination of an inclined track for wagons, and a horizontally swinging turn table at the upper termination of the track, the turn table having the same, or substantially the same inclination as the track, and adapted to form a continuation of the same, substantially as set forth.

**501,569. INJECTOR.** ISAAC R. LAUX, Wadsworth, Ohio. Filed Jan. 13, 1893. Serial No. 458,236. (Model.)



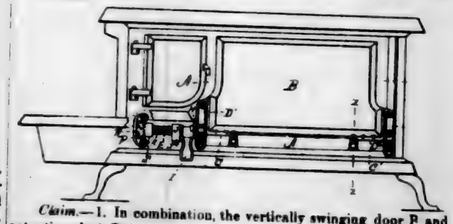
*Claim.*—In an injector, the main casing A having, to wit, the steam passages D, 3, 4, the steam and water tubes E, G, the chamber H, and the overflow passage R, in combination with the steam controlling valve F, the reciprocating valve K for the overflow passage having a screw-threaded stem, the spool $A^6$ loose on said stem, quadrant M pivoted on the casing, link L connecting the spool and quadrant, and the link N connecting the steam valve and quadrant, all constructed, arranged, and operating substantially as shown and described.

**501,570. POCKET-ERASER.** EUGEN LUSTNAUER, Pforzheim, Germany. Filed Feb. 21, 1893. Serial No. 463,219. (No model.)



*Claim.*—The combination of two laterally opening casings *a*, having abutting edges and overlapping lugs *a'*, with a pivot *b*, passing through said lugs and with an eraser *c*, secured within the casings by the pivot, substantially as specified.

**501,571. OVEN-DOOR FOR COOKING STOVES, RANGES, &c.** BERA A. MASON, Taunton, Mass., assignor to the Dighton Furnace Company, of Massachusetts. Filed Apr. 25, 1893. Serial No. 471,781. (No model.)



*Claim.*—1. In combination, the vertically swinging door B and actuating shaft E the latter provided with the engaging tooth H, the kicker or pedal I loose on said shaft and provided with the notch I' for the said tooth, the collar J fast on said shaft, the stud N secured to the stove and extending toward said shaft, the clutch R S engaged by the stove by means of projections on said clutch and stove, and the spring K having its opposite ends secured to said clutch and collar and surrounding said shaft and stud, substantially as set forth.

2. In combination, the vertically swinging door B and actuating shaft E the latter provided with the engaging tooth H, the kicker or pedal I loose on said shaft and provided with a notch I' for the said tooth, the collar J fast on said shaft, the stud N secured to the stove and extending toward said shaft, a clutch engaged by the stove, and the spring K having its opposite ends secured to said clutch and collar and with its end K' formed into the shape shown, whereby said end by bearing against the stove just before the door reaches its lowest point, eases the blow of the same on its rests, substantially as described.

**501,572. CENTER-SEAL.** KERR M. MITCHELL, St. Joseph, Mo. Filed Feb. 15, 1892. Serial No. 462,518. (No model.)

*Claim.*—1. In a center-seal, the annular receiving chamber composed of an upper and of a lower section, the upper section being conical or funnel-shaped as set forth, and whereby it has a greater relative capacity than its lower or vertical part, as and for the purposes described.

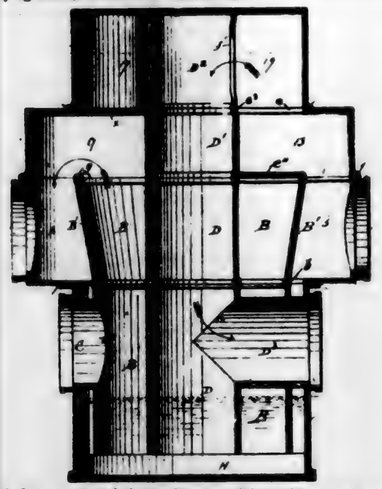
2. In combination with the annular receiving chamber B, having an upper conical section B', and with the radial chambers or cells of the turret E, the partial floor or bottom *c''*, secured to and extending from the central opening through the said cone B', all as set forth.

3. In combination with a center seal having a conical section B' at the upper part of its receiving chamber, the central outlet pipe D, $D'$ $D^6$, the turret valve E provided with the series of ribs or radial partitions all starting from the periphery of said pipe, and the turret valve F, provided with the series of radial partitions *f* all starting from said pipe, all such pipes terminating in the outer walls respectively.

4. In combination with the annular receiving chamber having a funnel-shaped upper section, the valve E, the turret or valve F, provided with the described series of chambers or cells and with the discharge passage *f'*, serving for the escape of the purified gas from said turret F, into the central outlet chamber D, $D'$, $D^6$, all substantially as set forth.



5. In a center-seal, in combination, a circular shell or case open at both ends, constructed in two sections, the upper section thereof being greater in diameter than the lower section thereof, and projecting beyond it on all sides; an annular inlet chamber within said casing also open at both ends, and provided with an inlet pipe and composed of two sections, the upper section thereof being funnel-shaped as shown; radial ribs or partitions dividing the space between said annular chamber and the casing into radial chambers or cells, open at both ends, and divided into pairs, each pair being provided respectively with an outlet and inlet port; a concentric cylindrical outlet chamber within said inlet chamber open at both ends, and provided with an outlet port $D^6$; a double valve or turret superposed on said shell or casing, and comprising an upper and lower valve adapted to be rotated in unison or independently of each other, and in any direction; and a means for the passage of gas to and from said seal into a series of purifying boxes, substantially as described.

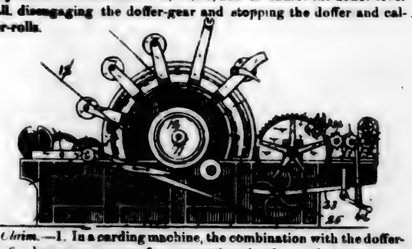


6. In a center-seal, the combination of the shell or casing A, open at both ends; the annular receiving chamber B, with its inlet port; radial ribs or partitions dividing the space between said casing and inlet chamber into radial cells or chambers open at both ends, said cells being divided into pairs, each pair being provided with an outlet and inlet port; a central cylindrical outlet chamber, with its outlet pipe $D^6$; two turrets or valves superposed on said shell or casing, connected therewith and with each other by ground gas-tight joints, and rotatable in unison or separately; a continuation of the outlet chamber upward through both turrets or valves to the top thereof, each section of said outlet chamber being fitted to the section thereof immediately below it by a gas-tight joint, and rotatable thereon, the lower part of said double valve or turret being divided by radial ribs or partitions extending from the periphery of said outlet chamber outward to the sides of said valve or turret, and dividing the same into radial cells or chambers corresponding in number to those contained in the shell A; a partial circular floor in valve E, at right angles to, and integral with the lower end of the section $D'$ of the outlet chamber D, and extending outward to and covering all of the top of the receiving chamber B, except that portion thereof under one of said radial cells or chambers 9,—said cell or chamber 9, being closed at its top and sides, and adapted as a gas passage from said receiving chamber to purifying boxes; the upper valve or turret F, open at its bottom, and closed at its top, and being smaller in diameter than the valve E, and having the central tube $D^6$, said valve being divided into five radial cells or chambers by five radial ribs or partitions extending from the periphery of said outlet chamber D, outward to the sides of said valve; three of said radial chambers or cells being each relatively as large as two of the radial cells of the valve E, and one of said cells being provided with an outlet opening into the top of said central outlet chamber through which purified gas passes out of said seal, substantially as described.

7. In a center-seal, in combination, the shell A, with its lower and upper sections *a*, *a'*; its outlet and inlet ports; the annular receiving chamber B, and inlet port C, and funnel-shaped upper section B'; the radial ribs or partitions *b'*, and cells or chambers 1 to 6, inclusive; the central cylindrical outlet chamber D, $D'$, $D^6$, with its outlet pipe $D^6$; the rotatable valve or turret E, with central cylindrical chamber; the partial floor *c''* fitting over the top of the receiving chamber B, integral and rotating with said valve E; the radial ribs or partitions *c'*, extending from said central chamber to the outer casing of said valve E, and dividing the same into eight radial cells or chambers 9, to 16 inclusive; the cell or chamber 9, closed at its top and sides, and open at its bottom over the vacant space in said floor *c''*, and adapted as a gas passage from the receiving chamber to purifying boxes; the rotatable valve or turret F, superposed on the valve E, with its central cylindrical outlet chamber; its radial ribs or partitions F; the radial cells or chambers 17 to 21 inclusive, and the gas outlet from cell or chamber 19, into the central outlet chamber, substantially as and for the purpose described.

**501,578. STOP-MOTION FOR CARDING-MACHINES.** HENRY MCDERMOTT, Norwich, Conn. Filed Dec. 31, 1892. Serial No. 456,960. (No model.)

*Brief.*—A sleeve is placed on the shaft of the lower calender-roll, and attached to such sleeve is a segmental gear 41. On the shaft of the upper calender roll is another segmental gear 40 that does not mesh with gear 41 when the sliver is passing between the calender-rolls; but when the sliver breaks and the calender-rolls approach, the gear 40 in its rotation engages gear 41, rotating said gear and the sleeve, and by means of connections 44, 45, 46, and 48' causes the doffer-lever to fall, disengaging the doffer-gear and stopping the doffer and calender-rolls.



*Claim.*—1. In a carding machine, the combination with the doffer-roll, of a lever-arm, a cam for supporting the free end of said arm, condensing rolls adjacent to the doffer-roll, segmental gears carried by said rolls and adapted to engage when the sliver breaks, and connections between said gears and cam, whereby the cam is operated upon the breaking of the sliver, substantially as set forth.

2. In combination with the doffer-roll of a carding machine, and driving mechanism therefor consisting of a lever-arm, a gear mounted upon said lever-arm as set forth, a cam for supporting said lever-arm in its operative position, condensing rolls having gear segments adapted to engage each other only upon the breaking of the sliver, and a slotted pitman connecting one of said gear segments with the said cam, substantially as and for the purpose specified.

3. In combination with the doffer-roll of a carding machine, a lever-arm, a gear mounted upon said lever-arm, condensing rolls movable toward and from each other, one of which is positively driven and its shaft provided with a sleeve, a segmental cam upon the sleeve, and a corresponding cam upon the shaft of the other roll, and a pitman connecting said sleeve to the lever-arm, substantially as set forth.

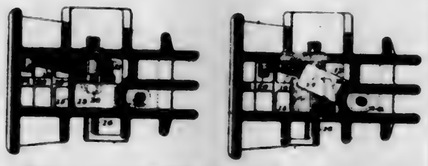
4. In combination with the doffer-roll of a carding machine, a lever-arm, a gear mounted upon said lever-arm, condensing rolls movable toward and from each other, one of which is positively driven and its shaft provided with a sleeve, a segmental gear wheel on the sleeve, an adjustable stop for engaging with said segmental gear, a corresponding gear upon the other roll, and means for connecting said sleeve with the lever-arm, substantially as set forth.

**501,574. ATTACHMENT FOR COOKING-STOVES.** RALPH W. NYE, Richmond, Ind., assignor of one-half to Jacob G. Scott, same place. Filed Apr. 18, 1892. Serial No. 429,503. (No model.)



*Claim.*—As an article of manufacture, a support for cooking vessels consisting of a strip provided, at one end, with integral hooks and, at the other end, with a series of aligned apertures made on each side of a longitudinal rib and depression formed in the body of the strip, substantially as and for the purpose specified.

**501,575. CAR-COUPLING.** JOSEPH O. PATTEE and HENRY H. VAUGHAN, St. Paul, Minn. Filed Feb. 13, 1893. Serial No. 462,064. (No model.)



*Claim.*—1. In a vertical plane coupler, the combination with the knuckle locking mechanism, of the rotary cam adapted to engage and release said locking mechanism, and a pivoted arm engaging said knuckle and engaged by said cam, substantially as described.

2. In a vertical plane coupler, the combination with the knuckle, of means for automatically locking the same in closed position, means for opening the same when unlocked, and a rotary cam successively engaging both said locking and said opening mechanisms, substantially as described.

3. In a vertical plane coupler, the combination with the knuckle and the locking mechanism therefor, of a rotary cam adapted to release said locking mechanism, and the opening mechanism for said knuckle adapted to be actuated by said cam when it is turned sufficiently to release said locking mechanism, substantially as described.

4. In a vertical plane coupler, the combination with its knuckle, of the pivoted locking latch therefor, the rotary cam engaging said latch, the pivoted arm engaging said knuckle and engaged by said cam when it has been turned through a sufficient angle, to lift said latch substantially as described.

5. In a coupler of the class described, the combination with the knuckle, of the locking latch having a concave shoulder adapted to bear against the convex surface of the draw head between its pivotal point and the knuckle, substantially as described.

6. In a coupler of the class described, the combination of the knuckle, the pivoted locking latch therefor, the rotary cam engaging said latch, the arm mounted loosely on the pivot of said cam and engaging the knuckle, and the stop on said cam engaging said arm, substantially as described.

7. In a coupler of the class described, the combination with the knuckle, of the locking latch engaging the knuckle, the lateral spur upon said latch, the rotary cam engaging said spur, the arm mounted loosely upon the pivot pin of said cam and engaging said knuckle, and the stop on said cam engaging said arm when said cam has been turned through a sufficient angle to lift said latch out of engagement with the knuckle substantially as described.

8. In a car coupler, the combination with its knuckle, and the locking and opening mechanisms therefor, of the cam for releasing said locking mechanism and operating said opening mechanism, the arm carried by said cam and the sliding rod attached to said arm, substantially as described.

9. In a coupler of the class described, the combination with the knuckle and its locking and opening mechanisms, of the rotary cam adapted to release said locking mechanism and to operate said opening mechanism, the crank arm carried by said cam, and the operating rods connected to said arm and extending to the sides of the car, substantially as described.

10. In a coupler of the class described, the combination with the knuckle and its locking and opening mechanisms, of the rotary cam adapted to release said locking mechanism and to operate said opening mechanism, the crank arm carried by said cam, the rods for operating said arm, and the stop limiting the movement of said cam, substantially as described.

11. In a car coupler of the class described, the combination with the knuckle and its locking and opening mechanisms, of the rotary cam for releasing said locking mechanism and operating said opening mechanism, the crank arm carried by said cam and means connecting said arm with the car, whereby if the draw head is pulled out the cam is operated sufficiently to unlock the knuckle, substantially as described.

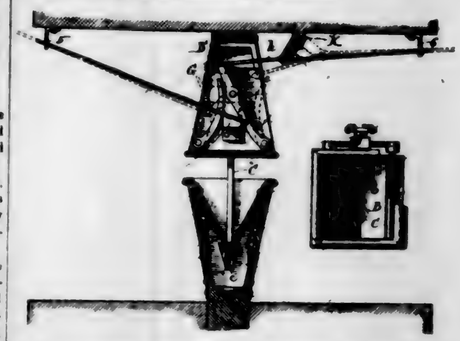
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**501,576. CAR-COUPLING.** WILLIAM B. PATTERSON, Storr, Ill. Filed Oct. 12, 1892. Serial No. 448,664. (No model.)

*Claim.*—1. A car coupler comprising a draw head provided with inwardly swinging spring actuated jaws pivoted at its front said jaws having one or more seats to receive the coupling link, substantially as described.

2. A car coupler comprising a draw head having at its back one or more stops to engage the end of the coupling link and provided with pivoted jaws having one or more seats to receive the coupling link, substantially as described.

3. A car coupler comprising the combination with the draw head of inwardly swinging jaws adapted to engage the coupling link, releasing arms connected to said jaws for opening the same, a pivoted releasing block for operating said arms, a lever connected to said pivoted releasing block and rods connected to said lever and extending to the sides of the car, whereby said lever may be shifted to operate said releasing block, substantially as described.



4. A car coupler comprising the combination with the draw head of pivoted jaws to engage the coupling link, a releasing block whereby said jaws may be opened, rods connected with said releasing block and extending to the sides of the car, and a rod extending to the top of the car and having a crank arm also connected with the releasing block, whereby the jaws may be released from the top or sides of the car, substantially as described.

5. A car coupler comprising the combination with the draw head of the pivoted jaws, releasing arms connected to said jaws, a pivoted releasing block for operating said arms and rods connected with said releasing block and adapted to turn said releasing block into position to open and hold open said jaws, substantially as described.

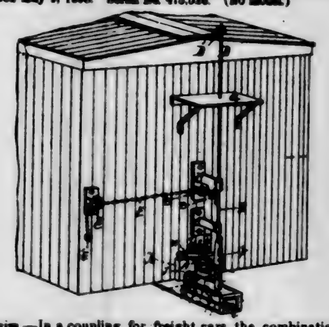
6. A coupling link having a head provided with the reduced corners $c'$, substantially as described.

7. A coupling link having a head provided with reduced corners and having a body formed oblong in transverse section adjacent said head, substantially as described.

8. The combination with the draw head having movable jaws to engage the head of the coupling link of a link having a head provided with reduced corners, whereby when said link is partially turned, it can be withdrawn from said jaws, substantially as described.

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**501,577. CAR-COUPLING.** EUGENE PERROTT, Sandwich, Mass. Filed May 9, 1893. Serial No. 473,026. (No model.)



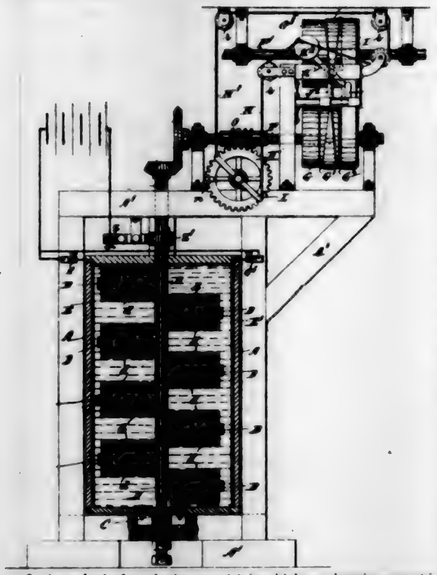
*Claim.*—In a coupling for freight cars, the combination of the rock-shaft I provided with the extension K and arm I, the reciprocating bar L extending along the draw-bar and provided with an end adapted to be engaged by the approaching car, the pivoted grappling hooks H H' H'', their rear portions straddling the said extension K, the spring N bearing against said extension and rear ends of the grappling levers, the coupling pin F F', and lifting bar D, substantially as set forth.

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**501,578. METHOD OF MANUFACTURING VARNISH AND APPARATUS THEREFOR.** HEINRICH PFANHL, Rixdorf, near Berlin, Germany. Filed Aug. 20, 1892. Serial No. 444,493. (No model.)



*Claim.*—1. A method of producing varnish, in which an electric current is caused to traverse linseed oil and water and sulphuric acid mixed therewith.



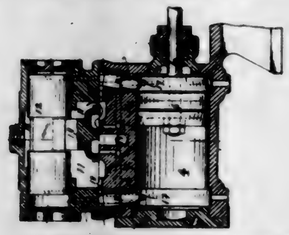
2. A method of producing varnish in which an electric current is caused to traverse a mixture of linseed oil, and acidulated water kept in constant agitation.

3. A method of producing varnish in which an electric current is caused to traverse a mixture of linseed oil and acidulated water kept in constant rotary agitation periodically reversed.

4. For the production of varnish from linseed oil under the action of electric current, apparatus comprising in combination a vat having its sides lined with metal plate, a rotary agitating shaft therein, metallic brushes on said shaft, a periodical reversing gear for said shaft and a producer of electric current of which the terminals are connected to said plate linings and agitating shaft respectively.

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**501,579. STEAM-ACTUATED VALVE.** GEORGE J. ROBERTS, Dayton, Ohio. Filed Mar. 6, 1893. Serial No. 464,843. (No model.)



*Claim.*—1. In a steam actuated valve for pumping engines, the combination with the steam chest and the cylinder, of the valve table 9 having valve chambers 8 8 on an incline substantially as described, puppet valves for said chambers, the live steam channels 18 18 communicating with the valve chest 13 and the upper surface of the puppet valves, as herein specified.

2. In a steam actuated valve for pumping engines, the combination with the cylinder 4 and the steam chest 13 and the slide valve 14, of the table 9 having valve seats 8 8 and puppet valves 10 10 on an incline substantially as described, the exhaust ports 17 17, and the ports 16 16 communicating with the cylinder, the latter portions serving alternately as supply and exhaust channels, the live steam channels 18 18 conveying pressure to normally keep the valves 10 10 within their seats, the piston 4 with beveled periphery, adapted to impinge with the valves 10 10 and effect an angle therewith, substantially as specified.

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**501,580. ELECTRIC-LAMP SOCKET.** GUSTAVE SACHS, St. Louis, Mo. Filed Apr. 27, 1892. Serial No. 472,144. (No model.)

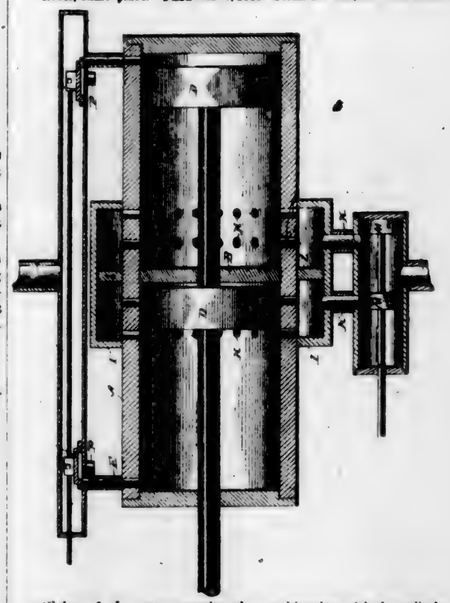


*Claim.*—1. A lamp socket attachment, having a center contact piece 3, insulated from the contact end of the casing 1, by a nonconducting plate 4, each contact being provided with two conductors, one pair of which extend through the base of the lamp socket, to operate the lamp, and the other pair lead out through the casing, substantially as described and shown.

2. A lamp socket attachment, having a center contact piece 3, insulated from the shell or casing 1, by a nonconducting plate 4, and provided with two wires leading from the said center contact piece 3, one passing out of the casing 1, and the other through the socket of the lamp, and two wires from the contact end of the casing 1, of which one leads out through the casing 1, and the other leads to the lamp through the socket base.

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**501,581. STEAM-ENGINE.** GEORGE SMITH, Little Rock, Ark., assignor of three-fourths to John McClure, W. K. Elliott, and Logan H. Roots, same place. Filed Mar. 8, 1893. Serial No. 465,091. (No model.)



*Claim.*—1. In a steam engine, the combination with the cylinder having the steam admission port at one end and a set of exhaust ports at the opposite end, of the exhaust chamber into which said exhaust ports open, an exhaust port for said exhaust chamber, a valve controlling said last mentioned exhaust port, and a piston working in the cylinder and adapted to uncover the exhaust ports therein during its inward movement; substantially as described.

2. In a steam engine, the combination with the cylinder having the admission port at one end, a set of exhaust ports at the opposite end and a valve controlling the admission port, of an exhaust chamber surrounding the exhaust ports, an exhaust port leading from said exhaust chamber and a valve controlling said port, and a piston working in the cylinder and adapted to open the exhaust ports therein during its inward movement; substantially as described.

3. In a steam engine, the combination with the cylinder having the admission port at one end, a set of exhaust ports at the opposite end, a secondary exhaust port in proximity to the admission port and a valve controlling said admission and secondary exhaust ports, of an exhaust chamber surrounding the exhaust ports, an exhaust port for said exhaust chamber, a valve controlling said last mentioned exhaust

port and a piston working in the cylinder and adapted to open the exhaust ports to the outer end of the cylinder during its inward movement; substantially as described.

4. In a steam engine, the combination with the cylinder having the admission port at one end and the two sets of exhaust ports at the opposite end, of the exhaust chamber surrounding said exhaust ports and having itself a valve controlled exhaust, and a piston working in the cylinder and adapted when at the inner extreme of its movement to open one set of exhaust ports to the outer end of the cylinder, and to open the other set in rear of the piston when it has moved sufficiently far forward to close the first mentioned set; substantially as described.

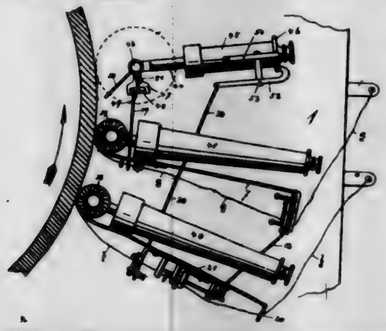
5. In a steam engine, the combination with the cylinder having the admission port at one end, two sets of exhaust ports at the opposite end, a secondary exhaust port in proximity to the admission port and a valve controlling said admission and secondary exhaust ports, of an exhaust chamber surrounding said exhaust ports and having itself a valve controlled exhaust, and a piston working in the cylinder and adapted when at the inner extreme of its movement to open one set of exhaust ports to the outer end of the cylinder and to open the other set in rear of the piston when it has moved sufficiently far forward to close the first mentioned set; substantially as described.

6. In a steam engine, the combination with the cylinder divided centrally into two oppositely arranged cylinders, each having an induction or admission port at the outer end and each having at the inner end a set of exhaust ports, of exhaust chambers surrounding said exhaust ports and having themselves valve controlled exhaust ports, and pistons working in said cylinders and adapted when at the inner extremes of their movement to open the cylinder exhaust ports to the outer ends of the cylinder; substantially as described.

7. In a steam engine, the combination with the two oppositely arranged cylinders each having an admission port at the outer end, and each having at the inner end a set of exhaust ports, secondary exhaust ports located in proximity to the admission ports and valves controlling said admission and secondary exhaust ports, of exhaust chambers surrounding the exhaust ports at the inner ends of the cylinders with valves controlling the exhaust from said chambers, and pistons mounted on the same piston rod, working in said cylinders and so proportioned as that they open the sets of exhaust ports to the outer ends of the cylinders, when at the inner extremes of their movement; substantially as described

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**501,582.** AUTOMATIC FEED-STOP FOR KNITTING-MACHINES. GEORGE W. SNYDER, Herkimer, N. Y. Filed Mar. 24, 1892. Serial No. 427,403. (No model.)



*Claim.*—1. The combination of two cutters or yarn severing devices for severing yarns passing through the same, and devices for controlling and for actuating said cutters, the controlling devices having provisions by virtue of which each yarn controls the cutter for the other yarn.

2. The combination of two automatic yarn severing devices for severing yarns passing through the same, mechanism for operating, and devices for controlling the same, the controlling devices of each severing device engaging with yarn passing through the other.

3. The combination of a movable cylinder, two cutters or yarn severing devices for yarn passing through the same, a throw-out means adapted to be engaged by the knitting cylinder for operating the same, provisions for controlling said means and adapted to be controlled by engagement with one of the yarns, and a connection between the throw-out and cutter of the other yarn.

4. The combination in a knitting machine of yarn guides for feeding two yarns to the needles, a cutting or severing device for each yarn, one operated by mechanism engaging with the moving knitting cylinder or other moving part of the machine, the other cutter by a spring held in operative position by a controlling device engaging with the yarn passing through the first mentioned cutting device.

5. The combination with a knitting machine of two cutting or severing devices for two yarns passing through the same, a spring for automatically operating one of the cutters, a cutter controller operating to hold in check the spring actuated cutter by engagement with the yarn of the other cutter, mechanism for operating the other cutter by engagement with the moving knitting cylinder or other moving portion of the machine, which cutter operating mechanism is held normally out of engagement with the moving cylinder by a controller engaging the yarn passing through the first mentioned cutter.

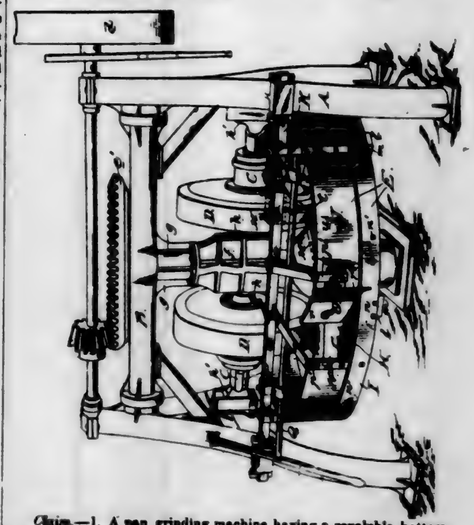
6. In a device for automatically discontinuing the feed to a knitting or similar machine using two threads or yarns, a presser, an automatic throw-out for the presser, a controller for holding the throw-out in check by engagement with one of the yarns, a cutter for each of the yarns, a connection between the presser mechanism and one of the cutters for operating the cutter, a spring for operating the other cutter, a cutter holder for holding the spring actuated cutter normally in check in operative position by connections engaging with the other thread or yarn, combined substantially as set forth.

7. The combination of two automatic yarn severing devices for severing yarns passing through the same, each having mechanism for controlling the same and engaging with yarn passing through the other.

8. In a device for feeding two yarns, a yarn cutting or severing device through which one of the yarns passes, and a controlling device for controlling the cutting or severing device and engaging with the other yarn.

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**501,583.** PAN GRINDING-MACHINE. JOHN THOMPSON, Bucyrus, Ohio, and WILLIAM P. VANDER, Altoona, Pa.; said Thompson assignor to the Frey-Shoemker Company, Bucyrus, Ohio. Filed Apr. 3, 1893. Serial No. 469,554. (No model.)



*Claim.*—1. A pan grinding machine having a revoluble bottom with channel or trough formed in it and surrounding its outer edge, a rim fixed with relation to said bottom and surrounding the same, and provided with a gate or outlet in its side through which the crushed material may be discharged, and means for rotating said bottom and crushing the material.

2. In a pan grinding machine and in combination with complementary grinding and power devices, a revoluble bottom or floor fixed to a driver and having a depression or trough at its outer edge, and an annular rim fixed with relation to said bottom with its lower edge fitted in the depression or trough thereof, said rim having a gate or outlet in its side for the discharge of the crushed material.

3. In a pan grinding machine and in combination with complementary crushing and power devices, a bottom or floor upon which the material is crushed, a stationary rim or flange surrounding the outer edge of the same and having an opening through one side, a gate adjustably secured in said opening to automatically control the discharge of material, and means for adjusting the gate.

4. In a grinding machine and in combination with complementary grinding and power devices, a pan fixed to the driver and comprising sections or plates having bent outer ends forming a continuous annular trough or channel said sections having lugs at their outer ends, a band or flange bolted to said lugs and forming the front wall of the trough or channel, a stationary vertically disposed rim or flange having its lower edge fitted in said trough or channel, and means for discharging the material through the rim during the rotation of the bottom or floor.

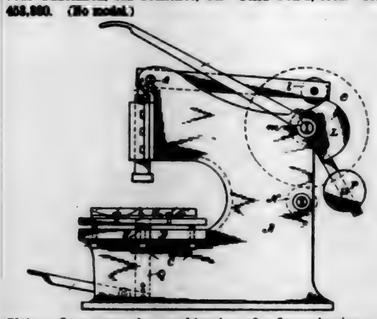
5. In a grinding machine having complementary grinding devices including a pan having a bottom or floor fixed to a driver and a rim or flange held immovably with relation thereto, and having its lower edge fitted in a depression or trough surrounding the outer edge of the bottom or floor a gate hinged to and controlling an opening in said rim or flange, and a lever and connections therefrom to the gate for adjusting the latter and increasing or decreasing the size of the discharge outlet and directing the material through the same.

6. In a grinding machine having a pan with movable bottom or floor fixed to a driver and a rim or flange having its lower edge fitted in a trough or channel in said bottom or floor, a gate hinged to said rim or flange and closing a discharge opening therein, a rod mounted to slide upon a fixed portion of the machine, means for reciprocating the rod, and a link connection between the rod and gate whereby the latter is adjusted by the movement of the rod.

7. In a grinding machine the combination with the frame and the driver, of a pan comprising a bottom or floor fixed to the driver, and a stationary rim or flange having its lower edge fitted in a trough or channel in or near the outer edge of the bottom or floor, and having a discharge opening in its side, a gate hinged to said rim or flange and adapted to close said opening, a rod mounted to slide in bearings on a fixed part of the machine, a lever for operating the rod, and a link pivotally connected with an arm on the rod and with the gate whereby when the rod is shifted the gate is opened or closed to regulate the discharge of the material and to feed the material through the discharge opening, substantially as herein described.

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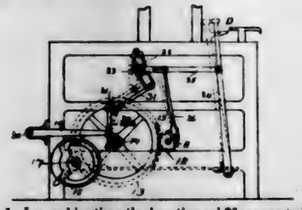
**501,584.** MOSAIC AND TILE PRESS. BERNARD TOULOUSE and JOHN DELOSIENY, San Francisco, Cal. Filed Dec. 2, 1892. Serial No. 453,990. (No model.)



*Claim.*—In a press, the combination of a frame having a table, adjustable sides and plates forming a mold on the table, a follower mounted in the frame and bearing upon the mold, a lever fulcrumed on the upper end of the frame, extending rearward over the same and connected with the follower, a driving shaft mounted in the rear side of the frame, and a cam carried by said shaft and bearing against the under side of the lever at the rear end of the same.

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**501,585.** LAY-MOTION FOR LOOMS FOR WEAVING LOOPED PILE FABRICS. ROBERT C. YOUNG, Manningham, England. Filed Aug. 10, 1892. Serial No. 442,730. (No model.) Patented in England July 4, 1892, No. 12,362; in France July 19, 1892, No. 223,083, and in Belgium July 19, 1892, No. 100,366.



*Claim.*—1. In combination, the lay, the rod 25 connected thereto, said rod having its rear end movable vertically, the slotted link 22, pivoted on the frame for engaging and controlling said movable end, the rod 26, connected to the rod 25, and operating vertically to move said rod 25, so that its rear end will slide in the slotted link the means for operating the rod 26 and the means for swinging the link on its pivot to alter the path in which the rear end of the rod 25, moves, substantially as described.

2. In combination, the lay, the rod 25, having a vertically movable rear end the slotted link pivoted to the frame and connected with the rear end of the link to control the movement thereof, the rod 26, for moving the rod 25, up and down, the means for operating the rod the lever 21, pivoted to the frame the connection therefrom to the slotted link, the cam 18, the lever 19, pivoted to the frame and the connection therefrom to the lever 21, substantially as described.

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**501,586.** TANNING HIDES. JAMES W. CLAYTON, Barton Fork, Ark. Filed Mar. 13, 1893. Serial No. 466,732. (No specimens.)

*Claim.*—The herein-described improved compound for tanning or treating hides, the same consisting of red-oak bark; white oak bark; ash bark; table salt; lye soap; soda; gum gambria; alum and pure phosphate of sodium, as set forth.

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**501,587.** DRIVE-CHAIN. FRANCIS GILBRICH, Philadelphia, Pa. Filed Sept. 7, 1892. Serial No. 445,269. (No model.)



*Claim.*—1. A drive chain comprising two sets of links, one consisting of two cylindrical portions united together and having open bearings, and the other composed of connecting pieces united by cross pieces forming bearings, and anti-friction rolls interposed between the bearing portions of the links, substantially as described.

2. A drive chain comprising two series of links, one composed of two cylindrical portions united together, and having internal bearings, the other composed of connecting pieces united by cross bars, the central portions of which are enlarged, anti-friction rollers interposed between the bearing surfaces of the links, and the ends of the connecting pieces being enlarged to cover the bearings in the roller links, substantially as described.

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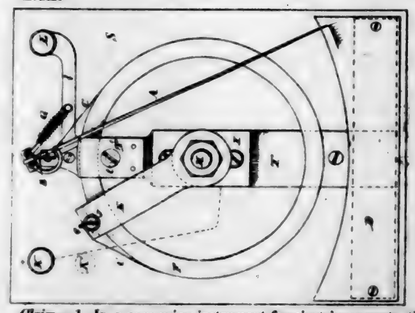
**501,588.** WHEEL-TIRE. EMILE H. GERBOT, Paris, France. Filed Oct. 26, 1892. Serial No. 450,048. (No model.)



*Claim.*—A tire for a velocipede consisting of a series of tubes interwoven together, substantially as described.

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**501,589.** ELECTRICAL MEASURING-INSTRUMENT. RUDOLPH M. HUNTER, Philadelphia, Pa., assignor to the Thomson-Houston Electric Company, of Connecticut. Filed Feb. 10, 1893. Serial No. 461,782. (No model.)



*Claim.*—1. In a measuring instrument for electric currents, the combination of a pointer, an expansion wire connected with the pointer to move it, a curved surface acting as a support about which the expansion wire is passed, and terminals electrically connected with the expansion wire at a widely separated distance apart.

2. In a measuring instrument for electric currents, the combination of a pointer, an expansion wire connected with the pointer to move

it, a curved surface acting as a support about which the expansion wire is passed, an adjustable support for one end of the wire, and terminals electrically connected with the expansion wire at a widely separated distance apart.

3. In a measuring instrument for electric currents, the combination of a pointer, an expansion wire connected with the pointer to move it, a curved surface acting as a support about which the expansion wire is passed, a dial over which the pointer moves, a spring to move the pointer over the dial, and terminals electrically connected with the expansion wire at a widely separated distance apart.

4. In a measuring instrument for electric currents, the combination of a cylinder or curved support of insulating material, a pivoted pointer, an expansion wire to control the movements of the pointer supported upon the surface of the cylinder or curved support.

5. In a measuring instrument for electric currents, the combination of a cylinder or curved support of insulating material, a pivoted pointer, an expansion wire to control the movements of the pointer supported upon the surface of the cylinder or curved support, and an adjustable support for the end of the wire.

6. In a measuring instrument for electric currents, the combination of a cylinder or curved support of insulating material, a pivoted pointer, an expansion wire to control the movements of the pointer supported upon the surface of the cylinder or curved support, and an adjustable support for the end of the wire movable about an axis substantially concentric with the center of the curvature of the cylindrical or curved support.

7. The combination of a pivoted pointer, an expansion wire connected to move the pointer and having portions of its length arranged out of a straight line, terminals connected with the expansion wire at points distantly removed, and a curved compensating support for holding the expansion wire in position.

8. The combination of a pivoted pointer, an expansion wire connected to move the pointer and having portions of its length arranged out of a straight line, terminals connected with the expansion wire at points distantly removed, and a curved compensating support of insulating material for holding the expansion wire in position.

9. The combination of a pivoted pointer, an expansion wire connected to move the pointer and having portions of its length arranged out of a straight line, terminals connected with the expansion wire at points distantly removed, and a curved compensating support of glass or vitreous material for holding the expansion wire in position.

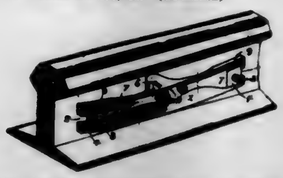
10. The combination of a pivoted pointer, an expansion wire connected to move the pointer and having portions of its length arranged out of a straight line, terminals connected with the expansion wire at points distantly removed, a curved compensating support for holding the expansion wire in position, a scale or dial over which the pointer is moved, and a common support for holding the pivot of the pointer, the curved compensating support and terminals.

11. The combination of a pivoted pointer, an expansion wire adapted to control the movements of the pointer having portions of its length arranged out of a straight line, and terminals connecting with the expansion wire at distantly removed places, and a curved compensating and supporting structure adapted to hold the expansion wire in position.

12. The combination of a pivoted pointer, an expansion wire connected to move the pointer and having portions of its length arranged out of a straight line, terminals connected with the expansion wire at points distantly removed, a curved compensating support for holding the expansion wire in position, and an adjustable device for adjusting the expansion wire in the direction of its length.

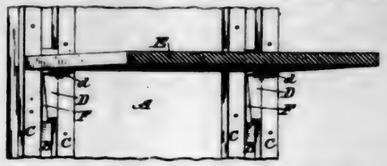
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**501,590. NUT-LOCK.** EDWARD U. MOORE, Chaires, Fla. Filed Jan. 25, 1893. Serial No. 459,708. (No model.)



*Claim.*—In a nut lock, the combination of a resilient bar having its ends bifurcated to straddle the bolts beneath the nuts of a rail joint to bring the nuts on its outer face, and provided intermediate of its ends on its inner face with an inwardly projecting convex enlargement or swell, having a rounded engaging end and forming a bearing or fulcrum for the bar and interposed between the same and the fish-plate of a rail joint to form springs of the end portions of the bar, said end portions being recessed and reduced at their inner faces adjacent to the enlargement or swell to impart resiliency to the bar, and latches for engaging the nuts, substantially as described.

**501,591. SUPPORT FOR SHELVES.** WILLIAM H. RICHARDS, New York, N. Y. Filed Sept. 15, 1892. Serial No. 446,001. (No model.)



*Claim.*—1. As an article of manufacture a shelf support consisting of a bracket for supporting the shelf, and a wedge piece for locking the bracket.

2. In combination, with ways or grooves in the frame of a book case or like article a shelf support adapted thereto consisting of a bracket and a wedge piece, the said bracket being locked within the grooves or ways by the wedge, substantially as described.

3. In combination, with the ways or groove in the frame of a book case or like article, a shelf support fitted thereto consisting of a bracket within the groove having an ear or lug projecting therefrom to support the shelf and a wedge piece interposed between the bracket and the wall of the groove or way, substantially as described.

4. The combination in a book case or similar structure of the main frame A provided with grooves B, the brackets D, wedges F, and shelf E, substantially as shown and described.

5. In a support for shelves and other like structures, the combination with the grooves or ways in the frame, of a wedging piece and a bracket piece, said bracket piece having a ledge projecting therefrom to support the shelf and a projecting part or portion overlapping the wedging piece to prevent its displacement, substantially as shown and described.

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**501,592. CAR-COUPLING.** STEPHEN H. SPRINGER, Des Moines, Iowa. Filed Aug. 29, 1892. Serial No. 443,980. (No model.)



*Claim.*—1. In a car-coupling, a draw head having an open cavity extending from one side thereof to near the other side and the rear face or wall of said cavity concave from end to end, a cavity extending vertically through the side portion of the draw head and intersecting the open end portion of the horizontal cavity, and a jaw pivoted in said horizontal cavity and provided with a rear extension that is convex on its rear face and adapted to abut against the said concave face of the rear wall of the horizontal cavity and also provided with a shoulder extending vertically in the rear convex face of the said rear extension and a latch pivoted in the said vertical cavity of the draw head and adapted to swing in a vertical plane and to engage the shoulder on the rear face of the rear extension of the jaw, and means for withdrawing the latch from engagement with the said shoulder on the rear extension of the jaw, all constructed and arranged and combined to operate in the manner set forth.

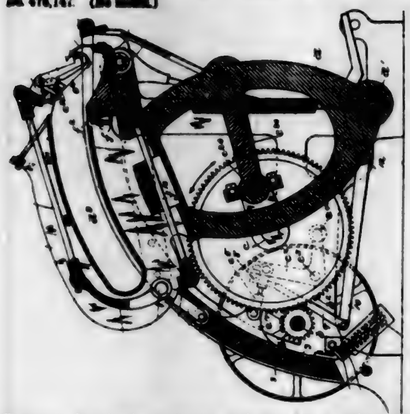
2. A draw bar having a head B, a curved lateral extension C and a concave opening or cavity as shown and described, a rearward projection J, a jaw D having a curved extension and shoulder H on the rear convex face thereof, and a pivoted latch K, arranged and combined substantially as and for the purposes stated.

3. An improved automatic car coupling comprising a draw head having an open cavity extending from one side thereof to near the other end and the rear face or wall of said cavity concave from end to end, a cavity extending vertically through the side portion of the draw head and intersecting the open end portion of said horizontal cavity and a jaw pivoted in said horizontal cavity and provided with a rear extension that is convex on its rear face and adapted to abut against the concave face of the horizontal cavity and also provided with a shoulder extending vertically in the convex face of said rear extension of the jaw, a latch pivoted in the said vertical cavity to swing in a vertical plane and adapted to engage the said shoulder in the convex face of the rear extension of the jaw, and a rock shaft in bearings on the car end provided with a crank or arm connected with the lower end of the pendent latch by means of a rod, to operate in the manner set forth for the purposes stated.

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**501,593. LEATHER STRETCHING AND SOFTENING MACHINE.** CHARLES F. STAKEPOLE, Lynn, assignor of one-fourth to John M. Schofield, Boston, Mass. Filed June 6, 1892. Renewed May 31, 1893. Serial No. 476,147. (No model.)



*Claim.*—1. In a leather softening and stretching machine, the combination with a scraping blade or jaw, of a supporting jaw, composed of a continuous plate of elastic material, a separate yielding backing for said jaw or plate, and means for operating said jaw, as set forth.

2. In a leather softening and stretching machine, the combination with a rocking frame of a scraping blade or jaw, a supporting jaw co-operating with the scraping blade, mechanism for imparting a back and forth motion to said jaws, mechanism for opening and closing said jaws, and means for varying the degree of pressure of the jaws on the interposed material when the jaws are closed, as set forth.

3. In a leather softening and stretching machine, the combination of a rocking frame or carriage, jaw-holders pivotally connected to the carriage, operating jaws secured to said holders, cam levers or sweeps pivoted to the supporting frame, mechanism connecting said cam levers with the jaw-holders whereby oscillating movements of the cam levers while the carriage is in motion are caused to alternately open and close the jaws, and mechanism for oscillating said cam levers, as set forth.

4. In a leather softening and stretching machine, the combination of a rocking frame or carriage, jaw-holders pivotally connected to the carriage, operating jaws secured to said holders, cam levers or sweeps pivoted to the supporting frame, mechanism connecting said cam levers with the jaw-holders whereby oscillating movements of the cam levers while the carriage is in motion are caused to alternately open and close the jaws, mechanism for oscillating said cam levers, said means for varying the extent of the oscillating movements of one of the cam levers and thereby varying the degree of pressure of the jaws on the interposed material when the jaws are closed, as set forth.

5. In a leather softening and stretching machine, the combination of a rocking frame or carriage, jaw holders pivotally connected to the carriage, operating jaws secured to said holders, cam levers or sweeps pivoted to the supporting frame, mechanism connecting said cam levers with the jaw-holders whereby oscillating movements of the cam levers while the carriage is in motion are caused to alternately open and close the jaws, mechanism for oscillating said cam levers, said mechanism including an adjustable or telescopic connecting-rod, and means for varying the length of said connecting-rod and thereby varying the degree of pressure of the jaws on the interposed material, as set forth.

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**501,594. CORN-THINNER.** JOHN L. TANDY, Columbia, Mo. Filed July 30, 1892. Serial No. 441,721. (No model.)



*Claim.*—1. As an article of manufacture, an implement consisting of a staff provided at one end with a cutting blade, an auxiliary arm pivoted on the staff, means for moving the auxiliary arm toward or away from the staff, and a hand rest provided at one end with a depending sleeve adapted to fit loosely on the upper end of the staff, substantially as described.

2. As an article of manufacture an implement consisting of a longitudinally slotted staff provided at one end with a cutting blade, an auxiliary arm pivoted within the slot in the staff, and an operating arm attached to the auxiliary arm and extending between rollers on the main staff, substantially as described.

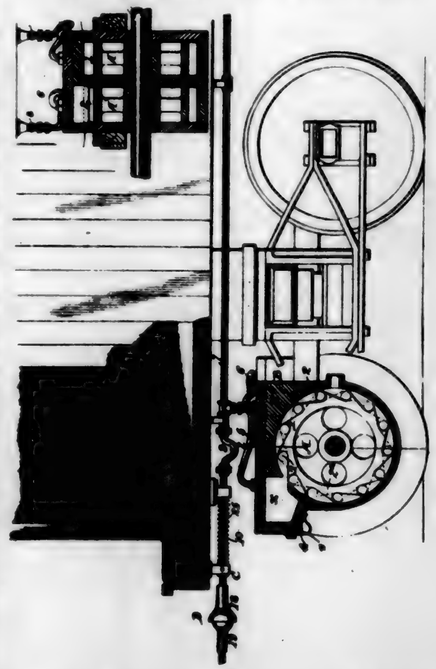
3. As an article of manufacture, an implement consisting of a longitudinally slotted staff, a concave cutting blade adjustably connected to the lower end of said staff, a hand rest loosely mounted on the upper end of the staff, an auxiliary arm pivoted to the main staff within the slot therein, and means for moving the auxiliary arm toward or away from the staff, substantially as described.

4. As an article of manufacture, an implement consisting of a longitudinally slotted staff, a cutting blade adjustably connected to the lower end of said staff, a hand rest loosely mounted on the upper end of the staff, an auxiliary arm pivoted to the main staff within the slot therein, a pair of rollers journaled within the slot in the staff above the pivot point of the auxiliary arm, and an operating arm extending between said rollers and connected at one end with the auxiliary arm, substantially as described.

5. The combination of a staff provided at its lower end with a cutting blade, an auxiliary arm pivoted to the main arm at an intermediate point of its length, and elastic pads or cushions secured on the adjacent faces of the cutting blade and auxiliary arm, said pads having their adjacent concave faces corrugated or roughened, substantially as described.

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**501,595. CAR-STARTER.** WILLIAM WEAVER, Norwalk, Conn., assignor to himself, Dexter Hitchcock, William A. Curtis, Arthur C. Wheeler, and Charles Lapham, same place. Filed Feb. 18, 1893. Serial No. 462,900. (No model.)



*Claim.*—1. The combination with a car of two wheels mounted upon the axle or axles thereof in proximity to a casing having an air-chamber, each of said wheels having blades and means for throwing air under pressure into one or other of said chambers to act upon opposite sides of the blades of said wheels, substantially as set forth.

2. The combination with the axle of a car of two bladed wheels, a chamber adjacent to each wheel in a casing B, two chambers on opposite sides of the axle, and means for throwing the air under pressure to one or other of said chambers, substantially as set forth.

3. The combination with the axle, its wheels, 1, 2, casing B, and chambers *x*, *y*, of pipes extending along a train and a valve device R, whereby air under pressure may be thrown into either set of pipes and to either chamber, substantially as set forth.

4. The combination of the truck, its wheels, casing and air-chambers, and pipes extending along the platform of the car, flexible connections between the said pipes and the air chambers, and means for throwing air into one or other of the said pipes, substantially as set forth.

5. The combination with the truck, wheels, air chambers and conducting pipes, 7, 8 secured fixedly to the platform, of sliding pipe sections 10, provided with coupling sections and connected with the stationary sections by flexible tubes 9, substantially as set forth.

6. The combination of the bladed wheel and casing containing an air chamber, a hinged plate constituting the bottom of said chamber and a spring arranged to lift the plate, substantially as described

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**501,596.** POCKET-COUNTER FOR MISCELLANEOUS ITEMS. EMIL BERNHARD, Woodbridge, and ALBERT W. ESTLOW, Elizabeth, N. J., assignors to the Columbian Register Company, of New Jersey. Filed Mar. 17, 1893. Serial No. 466,436. (No model.)



*Claim.*—1. A pocket register formed of a frame, having recesses in the edges and slots in the top, number wheels or rings mounted to turn in the frame and projecting slightly into the recesses in the edges, and a covering plate of transparent flexible material on the top of the frame, substantially as set forth.

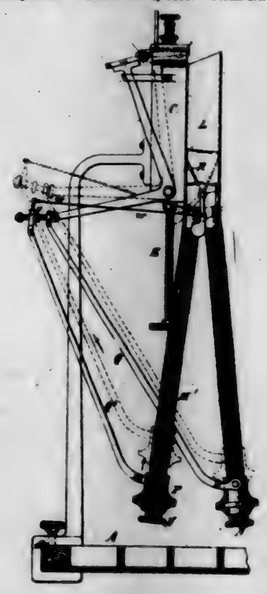
2. In a pocket register, the combination, with two frame-plates, of disks fastened between said plates, and number wheels or rings having apertures for receiving said disks and mounted to turn on said disks, said wheels projecting beyond parts of the side edges of said frame-plates, substantially as set forth.

3. In a pocket register, the combination, with a frame, of number wheels or rings mounted on the same at the edges and a sliding transparent cover sheet on the top of the frame, substantially as set forth.

4. In a pocket register, the combination, with a folding card case, of frames formed on the inner surface of the same, which frames are thus united by the card case and a series of number disks or wheels mounted in the adjacent edges of the frames on the interior of said card case, substantially as set forth.

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**501,597.** TYPE-DISTRIBUTING MACHINE. OLIVER S BOWMAN, Salt Lake City, Utah. Filed Feb. 4, 1893. Serial No. 461,015. (No model.)



*Claim.*—1. In a type-distributer, a flexible tube connected at its upper end to receive the ejected types, and free at its lower end to direct them to their destined compartments.

2. In a type-distributer, a flexible distensible tube through which the types fall, having its lower end free, whereby it may be drawn down and moved into communication with the several compartments of the type-case.

3. In a type-distributer, a flexible tube connected at its upper end to receive the ejected types, and free at its lower end, combined with an ejecting mechanism for expelling the types, connected to the lower portion of said tube to be operated by the manipulation thereof.

4. In a type-distributer, a flexible tube connected at its upper end to receive the ejected types, and free at its lower end, combined with an ejecting mechanism for expelling the types, comprising a pusher loosely engaging the tube, adapted to be displaced upwardly by raising the lower end of the tube, to operate the ejector.

5. In a type-distributer, the combination of an ejecting mechanism, two flexible tubes through which the ejected types may fall, and an operative connection between the ejecting mechanism and each tube whereby the operation of either tube will cause the ejection of a type to fall through that tube.

6. In a type-distributer, the combination of an ejecting mechanism, two flexible tubes through which the ejected types may fall, two pushers loosely engaging the respective tubes and connected to the ejecting mechanism to operate it on being thrust upwardly, a valve for directing the ejected type into either tube, and a connection between said valve and one of said pushers, for operating the valve to insure the dropping of the type into the tube from which the ejector was operated.

7. In a type-distributer, the combination of a type-box for holding the type, an ejector movable relatively to said box to push out the end type of the top line, means for reciprocating said ejector, and means for displacing it laterally to bring it into engagement with the type during its forward stroke and out of engagement therewith during its backward stroke.

8. In a type-distributer, the combination of a type-box for holding the type, having a top plate, and means for pressing the type against said top plate, an ejector movable relatively to said type-box to push out one type at a time, and a spring exerting a downward pressure on said top plate to cause it to frictionally engage the type and prevent other than the one type engaged by the ejector from being pushed out.

9. In a type-distributer, the combination of a type-box having a top plate, an ejector movable relatively to said box to engage and push out the end type, means for reciprocating said ejector, a slide for feeding the top line of type to the ejector, and means for elevating the top plate during the retractile movement of said ejector to relieve its tension upon the type and permit said slide to operate.

10. In a type-distributer, the combination of a type-box having a top plate, a spring for pressing down said top plate, an ejector adapted to push out one type at a time, means for reciprocating said ejector, and said ejector and top plate constructed relatively to each other to cause the ejector during its rearward movement to engage and lift the top plate against the tension of said spring.

11. In a type-distributer, the combination of a type-box constructed with sides for confining the type and open in front, a top plate for said box, a slide movable in said box to press the type up against said top plate, and means for feeding said slide upwardly as line after line of the type is distributed.

12. The combination of type-box C, top plate F, slide G, and ejector K, the latter having inclines *e* and *n*, with stationary projection *p* adapted to be engaged by said inclines to displace the ejector laterally, so that in moving forward it shall engage the end type of the top line and eject it, and in moving backward it shall be out of contact therewith.

13. The combination of type-box C, top plate F, slide G and ejector K, with means for laterally displacing the ejector to bring it into or out of engagement with the end type, and a rib *t* on the top plate adapted to engage the ejector and prevent its lateral displacement during its movement.

14. The combination of type-box C, top plate F, spring *g*, for pressing down the top plate, spring-pressed slide G and ejector K, the latter provided with a roller *q* engaging the under side of the top plate, movable freely in a groove thereof during the forward movement of the ejector, and impinging upon the under surface of the top plate during the retractile movement of the ejector, whereby it lifts the top plate against the tension of said spring.

15. The combination of type-box C, ejector K, ejector-lever J, flexible tube M, pusher P engaging said tube, and rod Q connecting said pusher to said ejector-lever for operating the ejector by an upward displacement of said pusher.

16. The combination of type-box C, ejector K, ejector-lever J, chute L, tubes M M', valve R, pushers P P loosely engaging said tubes, rods Q Q' connecting said pushers to said ejector-lever, and a connection *w* from one of said rods to said valve for operating the latter.



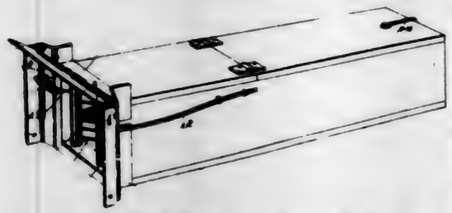
**501,598.** ROTARY STEAM-ENGINE. WALTER M. BYRD, Mount Olivet, N. C., assignor of one-half to Archibald D. Clark and William D. Clark, same place. Filed July 3, 1893. Serial No. 479,304. (No model.)



*Claim.*—In a rotary engine, the combination of a steam cylinder having a side inlet and an opposite exhaust port, said cylinder being further provided with a circular steam chamber or recess, a semi-circular packing abutment seated in one side of said chamber or recess and projecting therein to form a piston or drum abutment and an opposite exhaust space between its ends said packing abutment being bored to register with the inlet and having its lower end terminating in a line with the exhaust port, a steam drum mounted concentrically in the cylinder and provided with a peripheral series of indented or dipping side-inclosed steam buckets, superposed packing extending circumferentially around the steam drum and comprising a single blank of packing material having a series of rectangular openings registering with the top peripheral edges of the steam buckets so as to extend circumferentially around each side of the same and transversely there between, said single-blank packing being adapted to contact with said packing abutment, and to travel out of contact with the sides of said steam chamber or recess opposite said abutment, substantially as set forth.

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**501,599.** ANIMAL-TRAP. WILLIAM H. CROCKETT and RICHARD H. HADADAWN, Lawn, Tex. Filed Mar 14, 1893. Serial No. 466,936. (No model.)



*Claim.*—1. A trap comprising a receptacle having an open front end, the top and side plates secured to the front of the receptacle and provided with flaring flanges, the side plates having horizontal slots in its flanges, the opposite horizontally swinging doors extending inward and having pintle bars provided with horizontally extending arms arranged opposite said slots, and springs secured to the sides of the receptacle and extending forward through said slots and connected with said arms, substantially as described.

2. A trap comprising a receptacle having an open front end, the top and side plates secured to the front of the receptacle and provided with flaring flanges, the side plates being provided with horizontal slots, the outwardly extending wings attached to the outer edges of the side plates, the opposite horizontally swinging doors extending inward into the receptacle and having vertical pintle bars and provided, opposite said slots, with outwardly extending arms, springs secured to the sides of the receptacle and extending forward through the slots, links connecting the arms with the front end of the springs, and the stops depending from the top of the receptacle and holding the doors slightly open, substantially as described.

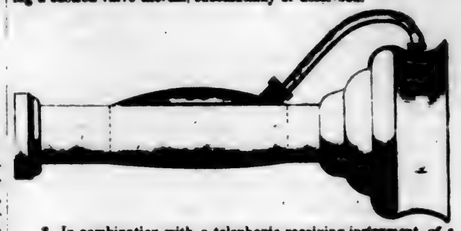
3. A trap comprising a receptacle, the opposite inwardly extending doors arranged at the front of the receptacle, a depending door journaled between the sides of the casing and arranged near the center of the receptacle and inclined rearward and provided with a forwardly extending arm, a spring arranged at one side of the receptacle and connected with said arm, and a counterbalancing weight depending from the arm, substantially as and for the purpose described.

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**501,600.** EAR-PHONE ATTACHMENT. CHARLES W. FARR, Chicago, Ill. Filed Apr. 14, 1893. Serial No. 470,262. (No model.)

*Claim.*—1. An attachment for a telephonic receiving instrument, consisting of a band, a bulb, and a pipe connecting said band and bulb, substantially as described.

2. In an attachment for telephonic receiving instruments, the combination of a band arranged to be fitted over the head of the receiving instrument, a bulb adapted to encircle the body of said instrument, and a pipe or tube connecting said band and bulb and having a suction-valve therein, substantially as described.



3. In combination with a telephonic receiving instrument, of a flexible band surrounding the receiving orifice thereof, and a suction bulb connected to said projection and adapted to contract the same around the ear of the receiving operator, substantially as described.

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**501,601.** CHAMBER-VESSEL. GEORGE C. FITTS, Durham, N. C. Filed Aug. 1, 1892. Serial No. 441,810. (No model.)



*Claim.*—1. A chamber or other vessel provided with a hollow handle communicating with both the upper and lower portion of said vessel, substantially as and for the purpose described.

2. A chamber vessel, having a narrowed extension and a hollow handle communicating with said extension, substantially as, and for the purpose set forth.

3. A chamber vessel having an extension and a hollow handle forming a conduit between said extension and the body of the vessel, substantially as and for the purpose described.

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**501,602.** SOFA-BED. HENRY A. C. HINES, Brooklyn, N. Y. Filed Mar. 21, 1892. Serial No. 425,698. (No model.)



*Claim.*—1. In a sofa-bed, the combination of a main frame, a swinging bed-section hinged to the rear side wall thereof and provided with catches, two latches pivoted to the front wall of the main section for engaging said catches to lock the swinging bed-section in closed position for use as a sofa, and a rod connecting said latches for tilting them into inclined position below the front rail when the sofa is open for use as a bed.

2. In a sofa-bed, the combination of a main bed-section, a swinging bed-section hinged to the rear side-wall thereof and provided with catches, two latches pivoted to the front wall of the main section for engaging said catches to lock the swinging section in closed position for use as a sofa, a rod connecting said latches for tilting them into inclined position below the front rail when the sofa is open for use as a bed, means for holding said rod in adjusted position and a spring for restoring said latches to their normal position.

3. In a sofa-bed, the combination of a main bed-section, a swinging bed-section hinged to the rear side-wall thereof, and provided with catches, two latches pivoted to the front wall of the main section for engaging said catches to lock the swinging section in closed position for use as a sofa, a rod connecting said latches for tilting them into inclined position below the front rail when the sofa is open for use as a bed, a lug on said rod and a catch on the main frame engaged by said lug for holding said rod in adjusted position, and a spring for restoring said latches to their normal position

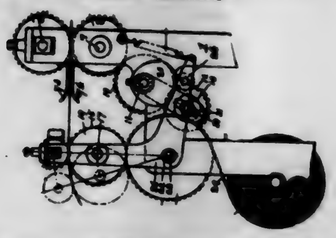
4. In a sofa-bed the combination of a main-frame, a bed-section hinged thereto, a sliding plate attached to said bed-section on its upper face when unfolded, and adapted to move toward and from the end thereof, said plate having two eyes, one of which is provided with

a notch, a rod connecting said eyes, a sliding leg mounted on said rod and provided with a lug adapted to engage said notch, to hold said leg in either open or closed position, and a spring acting on said leg, substantially as set forth.

5. In a sofa-bed, the combination of a main frame, a bed-section frame hinged to the rear edge thereof, a plate mounted on the under-side of the swinging bed-section on its upper face when unfolded, adapted to slide toward and from the end of said bed-section, two eyes on the outer end of said plate, one of which eyes is provided with a notch or recess extending vertically therethrough, a rod connecting the eyes, a spring surrounding said rod, and a leg having an eye through which said rod passes, said leg being provided with a lug adapted to pass into the recess or notch in one of the eyes of the plate, said leg being adapted to engage said notch to hold the leg in either a folded or unfolded position, substantially as described.

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**501,603. FEED MECHANISM.** WILLIAM H. KEMP, Hartford, Conn., assignor of one-half to William A. Lucas, same place. Filed Jan. 27, 1892. Serial No. 419,418. (No model.)



*Claim.*—1. A feed mechanism, consisting of geared feeding rolls carried on a bed or frame which has a reciprocating movement relative to the source of motion from whence those rolls are rotated, and a connecting gear 14 arranged and operating to maintain operative connection between those rolls and that source of motion during the reciprocation of the bed or frame and operating to increase the accelerating and retarding effect upon the material, beyond the effect that would be due merely to the reciprocation of the bed or frame, all substantially as described.

2. A feed mechanism consisting of feeding rolls carried on a bed or frame which is capable of movement in a direction transverse to the axial lines of the feeding rolls, and a cam arranged and operating to move that bed or frame in that transverse direction, whereby the rate of progression of the material being fed is intermittently arrested at that part which has passed the feeding rolls while maintaining a constant rate of progression at that part which is passing to the feeding rolls, all substantially as described.

3. A feed mechanism consisting of feeding rolls carried on a bed or frame, change gears by means of which the amount of material to be fed may be altered, and a cam or its equivalent operating to move that bed or frame whereby the rate of progression of the material being fed is intermittently arrested, substantially as described.

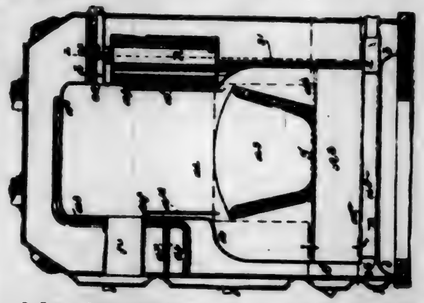
4. A feed mechanism for a printing or cutting machine, consisting of feeding rolls operatively connected with that machine and carried on a bed or frame capable of a reciprocating motion in the same general direction as that of the material being fed, and a cam arranged and operating to move that bed or frame at a suitable rate and time, whereby the material being fed is arrested while being operated upon by the printing or cutting mechanism, and whereby a suitable length of material is fed forward between the recurring operations of the printing or cutting devices, substantially as described.

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**501,604. AIR-WARMING FURNACE.** GEORGE W. JOHNSON, Farmington, Ill. Filed Mar. 13, 1893. Serial No. 466,777. (No model.)

*Claim.*—1. An air-warming furnace in which are combined a fuel-chamber; a combustion-chamber the lower extremity of which is in near proximity to the upper extremity of the fuel-chamber; a deflecting-cylinder, within the cylinder of the combustion-chamber, and forming in connection therewith a thin annular air-induction chamber which is open at its lower and closed at its upper extremity; and a series of air-pipes or passages which extend from the air-casing and through the air chamber of the furnace, to the thin annular chamber within the combustion-chamber; whereby currents of fresh highly-heated air are supplied to the open space which is coincident with the lower extremity of the body of the combustion-chamber, and with the upper extremity of the fuel-chamber.

2. In an air-warming furnace, a fuel-chamber or fire-pot; a combustion-chamber, the lower extremity of which is in close proximity to the upper extremity of the fuel-chamber or fire-pot; and air-induction passages which extend from the air-casing of the furnace, horizontally inward through the air-warming chamber to a point near the body of the combustion-chamber,—thence upwardly, along the outer surface of the combustion-chamber, to the top thereof,—thence along the top of the furnace and across or partially across the same, to an opening therein, through which air is discharged into the upper extremity of the combustion-chamber; substantially as and for the purposes set forth.



3. In an air-warming furnace, a combustion-chamber the lower extremity of which is in near proximity to the upper extremity of the fuel-chamber; a thin annular air-induction chamber, within the lower and middle portion of the combustion-chamber; a series of air-induction flues which lead from a point outside the air-casing of the furnace into such thin annular air-induction chamber; and a series of air-induction flues which lead from the air-casing of the furnace inwardly to the body of such combustion-chamber,—upwardly along such body to the upper extremity thereof, and thence along and overlying the top of such body, to an opening therein through which air is discharged directly into the upper extremity of the combustion-chamber,—in combination; substantially as and for the purposes specified.

4. In an air-warming furnace, an annular supporting-plate, in a horizontal plane immediately above the ash-chamber of the furnace, and having in its front portion a left smoke-opening and a right smoke-opening; a fire-pot or fuel-chamber, resting by its lower extremity in the opening of such annular supporting-plate; independent left and right horizontal smoke-passages, in the base of the furnace, below the ash-chamber of the same; an ash-chamber in which a left and a right smoke-opening are provided in the front portion of the bottom-plate of the chamber; and a smoke-box or radiator, in rear of the combustion-chamber of the furnace, which receives the products of combustion from both of the horizontal smoke-passages, and discharges the same into the single exit-pipe of the furnace,—in combination; substantially as described and shown.

5. In an air warming furnace, an outstanding fuel-chamber or fire-pot; combined with independent left and right base flues, below the ash-chamber of the furnace, and overspreading the bottom surface of the same; a smoke-box or radiator, in rear of the combustion-chamber of the furnace, provided with vertical air-pipes, and with a central top smoke-opening; and vertical smoke-flues one of which extends from the rear portion of each of the independent base-flues to one extremity of the smoke-box or radiator;—whereby the volatile products of combustion are caused to pass in opposite directions, within the body of the radiator.

6. In an air-warming furnace, a heater the walls of the fuel-chamber or fire-pot section and of the combustion-chamber section of which are composed of a single thickness of thin sheet-metal, to insure quick heating of the same, and rapid radiation therefrom; in combination with an air-casing or jacket which is composed throughout of double parallel walls of like thin sheet metal and an intermediate thin closed non-conducting air-chamber, to insure retention of the heat within the air-reservoir of the furnace, and to permit the same to be conveyed to the apartments which are to be warmed.

7. In an air-warming furnace, a heater the walls of the fuel-chamber or fire-pot section and of the combustion-chamber section of which are composed of a single thickness of thin sheet-metal, to insure quick heating of the same, and rapid radiation therefrom, and in which the products of combustion ordinarily pass from the front upper extremity of the fuel-chamber, downwardly, into and through flues in the base thereof; in combination with an air-casing or jacket which from bottom to top is composed of double parallel walls, of like thin sheet metal, embracing an intermediate thin closed non-conducting air-chamber, to insure retention of the heat, within the air-reservoir of the furnace, and to permit the same to be conveyed to the apartments which are to be warmed.

8. In an air-warming furnace, a combustion-chamber which is provided in its middle and lower portion with a cylindrical deflecting sheet which forms, in connection with the wall of the combustion-chamber, an air-induction-chamber or flue which is in communication with a source of fresh air, and which in its rear upper portion is provided with a dampered direct-exit pipe; combined with an isolated or outstanding fuel-chamber, below the plane of the shell of the combustion-chamber; horizontal plates which constitute the top and bottom of the ash-chamber, each provided with a left smoke-opening and a right smoke-opening; left and right smoke-flues, beneath the ash-chamber, extending from the front of the base portion of the furnace to a point in rear of the same; vertical smoke-passages which extend upwardly from the rear extremity of the underlying left and right smoke-flues; and a smoke-box or radiator, behind the combustion-chamber of the furnace, which receives the smoke currents from the vertical smoke-passages, and discharges the same, through a single outlet, into the dampered direct-exit pipe; substantially as specified.



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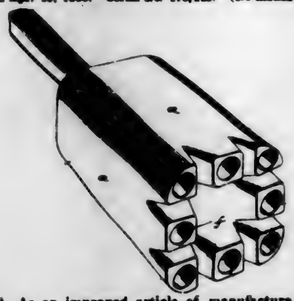
**501,605. CAR-COUPLING.** JOHN LA BURT, New York, N. Y., assignor to the La Burt Automatic Electric Block Signal System and Car Coupler Company, same place. Filed Nov. 26, 1892. Serial No. 453,144. (No model.)



*Claim.*—In a car coupling composed of a bifurcated head with a swinging locking jaw, an incline formed upon the upper pivotal bearing of said coupler head together with a corresponding incline formed on the under side of the pivotal pin head, the face of the latter incline lying in a plane parallel with the face of the first mentioned incline, substantially as and for the purposes set forth.

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**501,606. CLOTHES-POUNDER.** GEORGE W. LAWRENCE, Geneseo, Ill. Filed Apr. 15, 1893. Serial No. 470,462. (No model.)



*Claim.*—1. As an improved article of manufacture, a clothes pounder, comprising a head formed from a block of wood, and having the central, vertical aperture *e*, in its under side, a similar aperture *e*, in its upper side, the narrow apertures *d*, connecting the upper and lower apertures, the series of vertical, longitudinal apertures *f*, exterior to the central aperture, the oblique channels *g*, connecting the exterior aperture, with the upper, central aperture, and the face of the block having the grooves *h*, and the lower ends of the apertured parts *f*, projecting as shown, and a suitable handle placed in the upper, central aperture, substantially as specified.

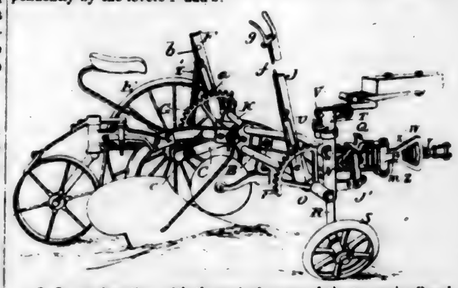
2. The block having the flat sides and rounded corners and also having the central vertical hole or aperture *e*, the vertical aperture *e*, and the intermediate aperture *d*, connecting the upper and lower center apertures, the longitudinal vertical series of holes or apertures *f*, the oblique channels *g*, connecting these latter apertures or holes with the handle hole, in combination with the handle having its under side grooved and placed in the aperture *e*, so as to form a chamber or space *i*, substantially as specified.

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**501,607. SULKY-PLOW.** HANS H. SATER, Madison, Wis. Filed Mar. 14, 1893. Serial No. 465,915. (No model.)

*Claim.*—1. In combination with a main frame, the two axles B and K mounted therein one above the other; a land wheel H carried by or supported from the lower axle; and a furrow-wheel supported from the opposite ends of both axles.

2. In combination with the main frame, the axles B and K mounted therein and rigidly connected at one end; a detachable connection at the opposite end of the axles; a lever F applied to the lower axle B on the land side of the plow; and a lever J on the furrow side of the machine; all substantially as shown, whereby when the link is connected to the two axles the plow may be raised or lowered at both sides simultaneously by lever J, and whereby also when the link is disconnected the plow may be raised or lowered at each side independently by the levers F and J.



3. In combination with the main frame and the two axles B and K; the rack P connecting the axles at one end; a rack G mounted upon the opposite end of axle B; and a link M extending from the rack G to an arm or axle K.

4. In combination with the main frame and the axles B and K; the coupling N; and the furrow wheel rod or stem mounted in the coupling.

5. In combination with the main frame and the axles B and K; the rack P; and the lever J mounted upon the axle B and connected at its lower end to the frame.

6. In combination with the main frame and the axles B and K; the coupling N; and the furrow-wheel-stem R journaled in the coupling, and having a bayonet-joint connection with the sleeve.

7. In combination with the main frame and the axles B and K; the coupling N; the furrow-wheel stem R journaled in the coupling, and a collar adjustable longitudinally upon the stem, and engaging the coupling.

8. In a safety clevis, the combination with the frame X; of the draw-bar; the wooden break-pin *m*; and the coiled spring connected with the draw-bar and adapted to come into action only after the pin breaks.

9. In a clevis, the combination with the frame X; of the draw bar Y; and the pyramidal spring Z bearing at one end against the frame X and at the other end against the draw bar or a lug thereon, the coils of said spring being adapted to fold one within the other.

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**501,608. FRUIT-PITTING MACHINE.** ROBERT P. SCOTT, Baltimore, Md. Filed Oct. 19, 1891. Serial No. 409,289. (No model.)

*Claim.*—1. In a fruit-pitting machine the gripping device comprising two rods, a longitudinally adjustable block on each rod, a connecting bar pivoted to the rear block, and a hand lever pivoted to the forward block, and also to the said bar substantially as described and for the purpose set forth.

2. In a fruit-pitting machine the gripping device comprising two rods, a connecting bar, a lever handle and a rigid handle extending from the said bar, the said lever and rigid handles being graspable as a whole by one hand of the operator substantially as described and for the purpose set forth.

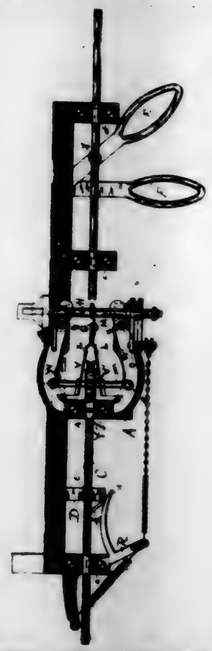
3. In a fruit-pitting machine the gripping device comprising two rods, a longitudinally adjustable block on each rod, a connecting bar pivoted to the rear block, and a handle lever pivoted to the forward block and also to the said bar, the said lever and rigid handles being graspable as a whole by one hand of the operator, substantially as described and for the purpose set forth.

4. In a fruit-pitting machine of the class described, two springs of differential tractive power, a pivoted cutter actuated by the said springs, a traveling gripping rod, a cam therein and a pivoted spring holding arm, the said cam and arm adapted to engage with each other and thereby bring the stronger spring into active operation, substantially as described and for the purpose set forth.

5. In a fruit-pitting machine, in combination, two radially yielding cutters, an arm on each, an endless chain passing over the said arms, a spring attached to the said chain, an arm pivoted on the frame of the machine, the said spring being attached thereto and a second spring also attached thereto and connected to the said frame, a trav-

oting gripping rod, a cam on the same, the said cam being adapted to strike the pivoted arm and thereby throw the first mentioned spring into operative action, substantially as described and for the purpose set forth.

6. In a fruit-pitting machine a halving knife, a bifurcated cutter following the same and an arc shaped cutter following the second, all the said cutters being spring actuated toward the common axial line of the gripping rod, substantially as described and for the purpose set forth.



7. In a fruit-pitting machine a halving knife, a cutter holding plate, a bifurcated cutter mounted thereon, two tubes to which the said halving knife and cutter plate are respectively rigidly attached, and a common supporting rod on which the said tubes rock, the said halving knife and cutter holding plate abutting in close but free contact with each other, substantially as described and for the purpose set forth.

8. In a fruit-pitting machine a halving knife, a cutter holding plate, a bifurcated cutter mounted thereon, two tubes to which the said halving knife and cutter plate are respectively rigidly attached, a common supporting rod on which the said tubes rock, the said halving knife and cutter holding plate abutting in close but free contact with each other, and a cutter arc shaped in cross-section, all the said cutters swinging and being spring actuated toward the line of travel of the peach, substantially as described and for the purpose set forth.

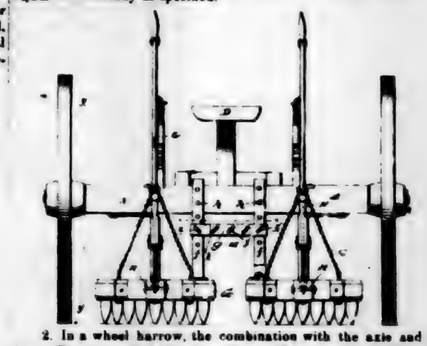
9. A fruit-pitting machine comprising the frame work A, the longitudinally reciprocable gripping rods B and C, the connecting bar D pivoted to the rear rod C, the handle lever E pivoted on the said connecting bar and also on the forward rod B, the spring actuated swinging knives G, G', the spring-actuated swinging cutters L, L', substantially as described and for the purpose set forth.

10. A fruit-pitting machine comprising the frame work A the longitudinally reciprocable rods B and C, the connecting bar D pivoted to the rear rod C, the handle lever E pivoted on the said connecting bar and also on the forward rod B, the spring-actuated swinging knives G, G', the spring-actuated swinging cutters L, L', the spring-actuated hook-shaped arms W, W', pivoted to the frame A and the cutters V, V', are shaped in cross-section, rigidly attached thereto, substantially as described and for the purpose set forth.

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**501,609. TWIN CULTIVATING-HARROW.** THOMAS A. WALDRIP, Alexander, Tex. Filed Feb. 20, 1893. Serial No. 463,119. (No model.)

*Claim.*—1. In a wheel harrow, the combination with an axle, and the harrow frames connected with the axle, of the coupling M, comprising the uprights pivotally connected to the harrow frames and having apertures at intervals in their length, the adjustable lapped straps also having apertures at intervals in their length, and pins or bolts adjustably connecting the lapped straps together and to the uprights substantially as specified.

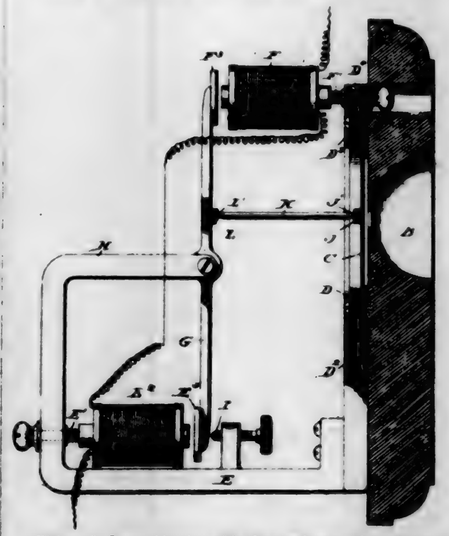


2. In a wheel harrow, the combination with the axle and the frames F, connected to the axle and depending therefrom; of the harrow open frames having clevises at their forward ends links connecting the clevises of the harrow frames to the frames F, the levers fulcrumed on the axle, and having the rearwardly extending branches, a suitable means for locking said levers in their adjusted position and suitable connections between the levers and the harrow frames, substantially as and for the purpose specified.

3. In a wheel harrow, the combination of an axle, the open frames F, connected to the axle, and depending therefrom, the harrow frames having clevises at their forward ends, links connecting the clevises of the harrow frames to the frames F, and the coupling M, comprising the uprights pivotally connected to the harrow frames and having apertures at intervals in their length, the adjustable lapped straps also having apertures at intervals in their length, and pins or bolts adjustably connecting the lapped straps together and to the uprights, substantially as and for the purpose set forth.

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**501,610. TRANSMITTER FOR TELEPHONES.** JAMES A. BROWN, Moline, Ill. Filed Apr. 26, 1893. Serial No. 471,917. (No model.)



*Claim.*—1. In combination with the diaphragm of a telephone transmitter, adapted for use in telephones, said diaphragm being placed out of the magnetic-field, separated magnets in circuit, armatures for said magnets, and connections between said armatures and the diaphragm located between the magnets and adapted to impart to the armature the vibrations of the diaphragm and to increase the scope and amplitude of said vibrations, substantially as described and for the purpose specified.

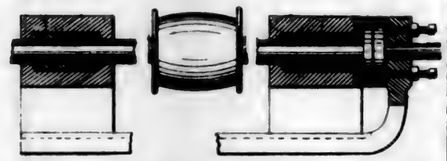


2. A transmitter for telephones comprising a diaphragm located between two magnets and placed outside of the magnetic field, and connected with an armature common to two magnets in circuit, substantially as described.

3. In a transmitter for use in electric and magnetic telephones, a diaphragm placed outside of the magnetic field, two or more magnets in circuit, armatures for said magnets carried upon a pivoted lever, connections between said diaphragm and the lever carrying the armatures at one side of the pivotal point of the lever, whereby the vibrations of the diaphragm are communicated to the armatures and increased in scope and amplitude, substantially as described.

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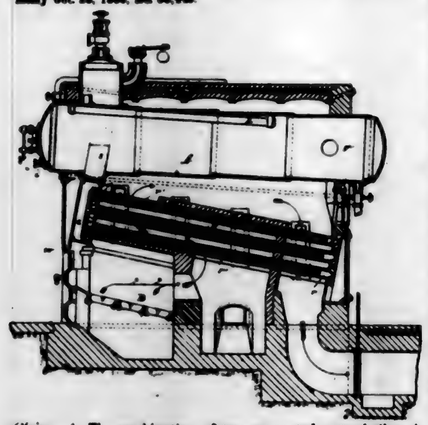
**501,611. SHAFT AND BEARING.** THEODORE A. COOK, Callicoon Depot, assignor to James Mathison and Walter Mathison, Brooklyn, N. Y. Filed Nov. 3, 1891. Serial No. 410,718. (No model.)



*Claim.*—The bearing B provided with a lining *a* formed with a flat faced outer flange *a'*, in combination with a shaft A formed at its end with a flange *b* of greater diameter than the shaft, and an adjustable follower D held in an auxiliary bearing and adapted to firmly hold the flange *b* against the flange *a'* substantially as and for the purpose set forth.

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**501,612. STEAM-BOILER.** GUSTAV DÜRR, Duesseldorf, Germany. Filed Feb. 1, 1893. Serial No. 460,803. (No model.) Patented in Germany Oct. 22, 1889, No. 53,449.



*Claim.*—1. The combination of two connected water boilers A, with a water room divided into two compartments *c*, *c'*, and with a series of feed pipes and heating pipes, all being so constructed that one of the boilers together with the feed pipes communicate with compartment *c*, while the other boiler and the heating pipes communicate with compartment *c'*, substantially as specified.

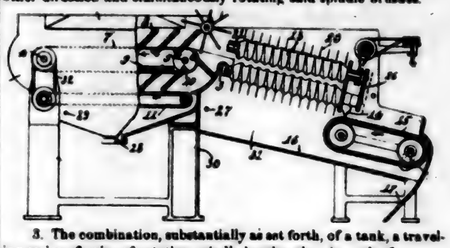
2. The combination of two sets of feed pipes and heating pipes, with divided water rooms *c*, *c'*, and with two water boilers A, all being so constructed that the compartment *c*, of one set of pipes connects with one boiler A, at one end and the compartment *c*, of the other sets of pipes connects with the other boiler A, at the other end, while the compartment *c'*, connects with the boilers at the opposite ends, substantially as specified.

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**501,613. VEGETABLE-PEELING MACHINE.** JOHN B. FOOTE, Hamilton, Ohio. Filed Feb. 25, 1893. Serial No. 463,729. (No model.)

*Claim.*—1. In a peeling machine, the combination, substantially as set forth, of a tank, a traveling surface therein, as an endless belt, spindle-brushes projecting in pairs therefrom, and mechanism for advancing the traveling surface and rotating the spindle-brushes carried thereby.

2. The combination, substantially as set forth, of a tank, a traveling belt brush therein, a series of pairs of spindle-brushes with their ends contiguous to said belt brush, and mechanism for moving said belt brush in one direction and said series of spindle brushes in the other direction and simultaneously rotating said spindle brushes.



3. The combination, substantially as set forth, of a tank, a traveling series of pairs of rotating spindle-brushes therein, and a floor surface over which the lower ends of said spindle brushes may travel.

4. The combination, substantially as set forth, of a horizontally disposed belt, a series of pairs of rotary spindle-brushes carried thereby and projecting from the outer surface of the belt diagonally, a tank, and mechanism for supporting and moving said belt and brushes in said tank.

5. The combination, substantially as set forth, of a tank having a discharge ledge at one end, a pair of shafts disposed across said tank, an endless belt carried by rollers upon said shafts, and a series of pairs of rotary spindle-brushes carried by said belts and sweeping with their ends the end wall of said tank to said discharge ledge.

6. The combination, substantially as set forth, with the traveling series of rotary spindle brushes, of a rotary spider with its arms projecting between the spindle brushes of the pairs.

7. The combination, substantially as set forth, of a group of roller brushes arranged to form a longitudinal channel between the brushes, and having their entire surfaces armed with brushes provided with helical grooves an outlet spout at the tail end of said channel, and mechanism for turning said roller brushes.

8. The combination, substantially as set forth, of a multiplicity of roller brushes arranged parallel with each other and having their entire surfaces armed with brushes provided with helical grooves.

9. The combination, substantially as set forth, of a brush shaft, and a series of brush sections arranged thereon and to be driven thereby and having hub-holes larger than the shaft.

10. The combination, substantially as set forth, of a brush shaft, tubes of elastic material surrounding the shaft, and a series of brushes with their hubs encircling said tubes.

11. The combination, substantially as set forth, of an inclined brush belt, having its top surface moving up the incline and a tail board projecting upward from the lower end of the upper surface of said belt brush.

12. The combination, substantially as set forth, of a group of roller brushes arranged to form a channel between them, and a belt brush disposed with its upper surface below the discharge end of said channel.

13. The combination, substantially as set forth, of a tank provided with a discharge ledge, a series of pairs of rotating spindle-brushes traveling therein, a group of roller brushes arranged parallel to form a channel with its receiving end at said discharge ledge, and a belt brush with its upper surface arranged below the discharge end of said channel.

14. The combination, substantially as set forth, with a series of brushes arranged to operate upon vegetables and discharge the same, and a boring spindle arranged near the discharge point of said brushes.

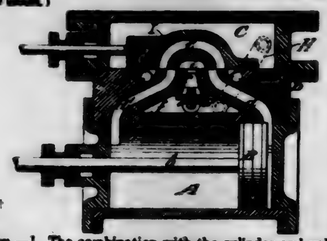
15. The combination, substantially as set forth, of a tank, a series of spindle-brushes therein, a belt brush in the tank below the spindle-brushes, a group of roller-brushes beyond the tank, and a belt brush beyond the discharge point of the roller brushes.

16. The combination of a traveling surface, as an endless belt, spindle brushes projecting in pairs therefrom, disposed so as to form a longitudinal channel between them, and mechanism for advancing the traveling surface and rotating the spindle brushes carried thereby.

17. The combination of a traveling belt brush, a series of pairs of spindle brushes with their ends contiguous to the said belt brush and disposed so as to form a longitudinal channel between them, and mechanism for moving said belt brush in one direction and said series of spindle brushes in the other direction, and simultaneously rotating said spindle brushes.

18. The combination of a traveling series of pairs of rotating spindle brushes arranged to form a longitudinal channel between them, and a floor surface over which the lower ends of said spindle brushes may travel.

## 501,614. PUMP FOR MOVING GASEOUS BODIES. William F. Garrison, Brooklyn, N. Y. Filed July 12, 1892. Serial No. 439,770. (No model.)

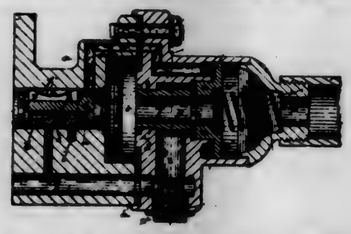


*Claim.*—1. The combination with the cylinder and valve chamber, of passage-ways connecting the opposite ends of the cylinder with the valve chamber, a compression or discharge chamber intermediate of said passage-ways and in communication with the valve chamber, a valve for controlling the passage of the fluid from the valve chamber to the discharge or compression chamber, inlet ports in communication with the valve chamber, and a valve provided with a cove and port arranged to alternately open communication between the opposite ends of the cylinder and the inlet ports and between the opposite ends of the cylinder and the discharge chamber, the said valve being so arranged that when the piston nears the end of its stroke, the valve opens communication through its port between the opposite ends of the cylinder, substantially as set forth.

2. The combination with the cylinder and valve chamber, of passage-ways connecting the valve chamber and cylinder, a discharge port, inlet ports, a sliding valve and a self-acting valve supported independently of the slide valve to control the discharge, the said passage-ways, inlet and discharge ports being all located on one side of the slide valve and under the control of the sliding valve to open and close communication between them, substantially as set forth.

3. The combination with the cylinder and valve chamber, of passage-ways leading from the valve chamber to opposite ends of the cylinder, a slide valve located within the valve chamber, a discharge or compression chamber in communication with the valve chamber beneath the valve, inlet ports and a passage-way leading from the discharge or compression chamber to the valve chamber exterior to the valve, substantially as set forth.

## 501,615. VALVE MECHANISM FOR FLUID-PRESSURE BRAKES. Peter Gaebler, Pittsburg, assignor of one-half to Edward F. Walsh, Wilmerding, Pa. Filed Feb. 20, 1892. Serial No. 422,964. (No model.)

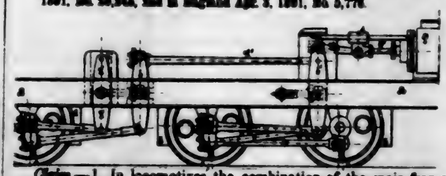


*Claim.*—1. A valve mechanism for fluid pressure brakes, having a main air pipe, an auxiliary reservoir, a brake cylinder, a triple valve, an annular valve fitting within a valve chamber and having a central passage leading to said triple valve, a direct passage from the main air pipe to the brake cylinder controlled by said valve, one side of said annular valve being exposed to the pressure of the main air pipe, and a direct passage from the auxiliary reservoir to the opposite side of said valve, substantially as and for the purposes set forth.

2. A valve mechanism for fluid pressure brakes, having a main air pipe, an auxiliary reservoir, a brake cylinder, and a triple valve, an annular valve with a flange formed thereon fitting within a valve chamber, said annular valve having a central passage leading to the triple valve, a direct passage from the main air pipe to the brake cylinder controlled by said annular valve, the flange of said annular valve being on one side exposed to the pressure of the main air pipe, said valve chamber having an annular space formed therein on the other side of said annular valve, and a passage communicating with said annular space and the auxiliary reservoir, substantially as and for the purposes set forth.

3. A valve mechanism for fluid pressure brakes, having a main air pipe, an auxiliary reservoir a brake cylinder and a triple valve, and having the auxiliary valve chamber $a^1$ in the main air pipe, the annular spring operated valve $a$ fitting therein, a direct passage from the auxiliary reservoir to said annular valve, and a passage leading from said valve $a$ to the brake cylinder, said passage having the check valve $a$ therein, substantially as and for the purposes set forth.

## 501,616. LOCOMOTIVE. Christian Hagans, Erkrt, Germany. Filed Feb. 4, 1892. Serial No. 420,864. (No model.) Patented in Germany Jan. 11, 1891, No. 56,845; in France Jan. 15, 1891, No. 210,814; in Switzerland Feb. 16, 1891, No. 3,267; in Austria-Hungary Feb. 17, 1891, No. 9,263; in Belgium Mar. 10, 1891, No. 94,072; in Italy Mar. 31, 1891, No. 30,945, and in England Apr. 3, 1891, No. 5,776.



*Claim.*—1. In locomotives the combination of the main-frame carrying the cylinder or cylinders, with a swiveled truck or trucks, driving connections between the cylinder or cylinders and the truck wheels, and shifting compensating gear interposed between the main-frame and the trucks, substantially as set forth.

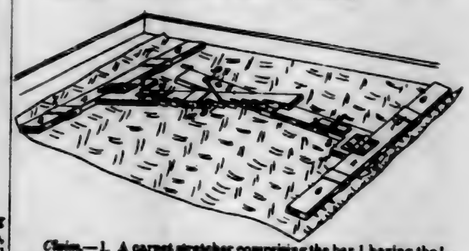
2. In locomotives the combination with a truck of a lever, having equal or unequal arms pivoted on a shifting fulcrum and connected with the piston and a truck wheel at its respective arms, substantially as set forth.

3. In locomotives the combination with a swiveled truck of a two-armed lever pivoted on a shifting fulcrum, a cylinder-piston and a pitman, the two-armed lever being connected with the cylinder-piston and the pitman at its opposite arms and the pitman being connected to one of the truck-wheels, substantially as set forth.

4. In locomotives a swiveled truck and a main-frame provided with a cylinder and piston of a weigh lever pivoted to the main-frame, a two-armed lever, pivoted on the weigh-lever, a link pivoted to the main-frame and engaging the ends of the weigh-lever and a controlling lever between and connecting the truck and the link, substantially as set forth.

5. In locomotives with swiveled trucks, the levers, E, interposed between the cylinders and the driving axles, in combination with the weigh-lever, F', connected to the swiveled truck by the controlling rods, I, and the depending links, H, substantially as set forth.

## 501,617. CARPET-STRETCHER. Anton Hasent, Gilman, Colo. Filed Nov. 8, 1892. Serial No. 450,864. (No model.)



*Claim.*—1. A carpet stretcher comprising the bar 1 having the L-shaped outer end and the hinged inner section, the bar 2 having the L-shaped outer end and the hinged inner section, the sleeves 12 fitting movably on said bars, the cross-heads hinged centrally to the L-shaped ends of the bars, and having the hinged end-pieces 6, the locking-bands 7, a retaining loop secured at one end to the bar 1 and extending around bar 2, and the turn-buttons 13 pivoted on the ends of the bars as shown; substantially as set forth.

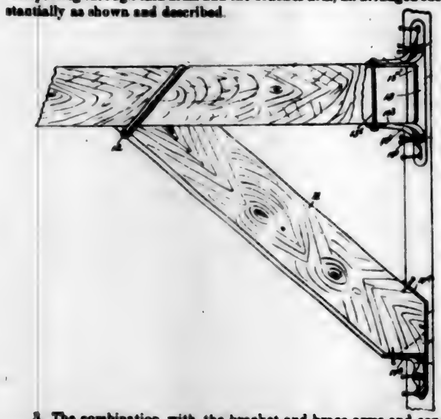
2. A carpet stretcher comprising the bar 1 having the L-shaped outer end and the hinged inner section formed with the series of adjusting openings 11, the bar 2 having the L-shaped outer end and the hinged inner section, the sleeves 12 fitting movably on said bars, the cross-heads hinged centrally to the L-shaped ends of the bars, and having the hinged end-pieces 6, the locking bands 7, the retaining loop secured in the openings 11 and extending around bar 2 and the turn-buttons 13 pivoted on the ends of the bars as shown; substantially as shown.

## 501,618. BRACKET. William H. Higgins, Forest City, Pa. Filed Dec. 26, 1892. Serial No. 456,745. (No model.)



*Claim.*—1. The combination with the bracket and brace arms and connecting link of the bracket socket having parallel horizontal arms, and the brace rest having the horizontal supporting arm and the inclined holding plate, substantially as shown and described.

2. The combination with the bracket and brace arms and connecting link of the bracket socket having the horizontal arms and a bolt passing through said arms and the bracket arm, all arranged substantially as shown and described.



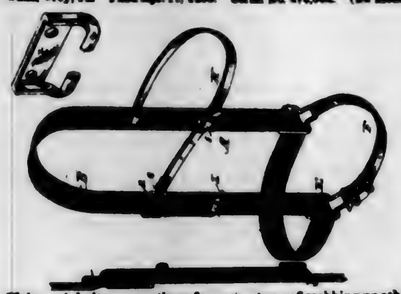
3. The combination with the bracket and brace arms and connecting link, of the brace rest having a horizontal arm and holding plate and the centering flange arranged substantially as shown and described.

4. The combination with the bracket and brace arms of the bracket socket consisting of the back plate, and horizontal arms a bolt passing through the arms and the brace rest consisting of the back plate, horizontal rest arm, holding plate and centering flange, all arranged substantially as shown and described.

5. As an improved article of manufacture, the herein described bracket socket or support consisting of the back plate, the horizontal arms, and a bolt passing through the arms all arranged substantially as shown and described.

6. As an improved article of manufacture, the herein described brace rest consisting of a back plate the horizontal rest arm, the inclined holding plate and the centering flange formed upon the rest arm, substantially as shown and described.

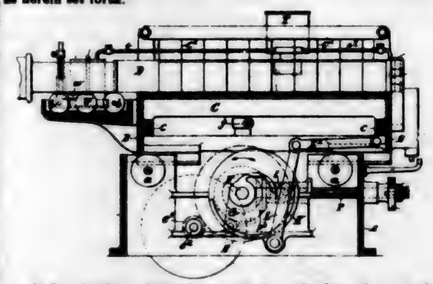
## 501,619. HALTER. Dubbeck H. Hobart and Edward A. Rockwell, Troy, Pa. Filed Apr. 17, 1893. Serial No. 470,588. (No model.)



*Claim.*—A halter consisting of a main strap of webbing or other suitable material provided at its respective ends with a split loop and a buckle having a split loop and loops at right angles to each other, corner pieces upon the strap, a chin strap connected thereto, and a throat latch connected to the main strap and buckle, substantially as and for the purpose set forth.

## 501,620. BRICK OR TILE CUTTING MACHINE. Samuel Jefferies, Stroud, England. Filed June 30, 1892. Serial No. 441,690. (No model.)

*Claim.*—1. In a brick machine, the combination of a die and a press for forcing a stream of clay therethrough, a table movable back and forth in the line of the delivery of the stream of clay from the die, a stop upon said table to be operated upon by the said stream to start the forward movement of the table, a cutter carriage and a cutter thereon movable transversely to and upon the said table for severing the stream of clay transversely, mechanism for advancing the table at an increased rate with the severed clay thereon clear of the advancing stream and afterward returning the said table to a position of rest, mechanism for operating the cutter carriage, a driving shaft, and engaging devices between said shaft and said two mechanisms to be thrown into and out of engagement by the movement of said table, substantially as herein set forth.



2. In a brick machine, the combination of a die and a press for forcing a stream of clay therethrough, a table movable back and forth in the line of the delivery of the stream of clay from the die, a stop upon said table to be operated upon by the said stream to start the forward movement of the table, a cutter carriage and cutter thereon movable transversely to and upon said table for severing the stream of clay transversely, mechanism for advancing the table at an increased rate with the severed clay thereon clear of the advancing stream and afterward returning the table to a position of rest, mechanism for operating the cutter carriage, a rocking frame and mechanism for actuating the same to lift the bricks off the machine, a driving shaft, and engaging devices between the said shaft and said several mechanisms to be thrown into and out of engagement by the movement of the table, substantially as herein set forth.

## 501,621. SNAP-HOOK. Calvin J. Jenkes, Readsburg, Wis., assignor of one-half to J. B. Righter, same place. Filed Mar. 31, 1893. Serial No. 468,454. (No model.)



*Claim.*—The herein described improved snap hook, the same constructed of a single piece of wire doubled upon itself at each side of its center, opposite which point its terminals cross, one of said terminals being disposed upward out of the plane of the loop thus formed and doubled upon itself forming a longitudinal loop through which the remaining terminal passes, and terminating at the point opposite the intersection of the two terminals, and the remaining terminal diverging from the longitudinal loop and curved to form the hook, the free end of which terminates against the upper side of said longitudinal loop substantially as specified.

## 501,622. FIREPROOF PARTITION. Thomas A. Lee, Kansas City, Mo. Filed Apr. 28, 1892. Serial No. 430,794. (No model.)

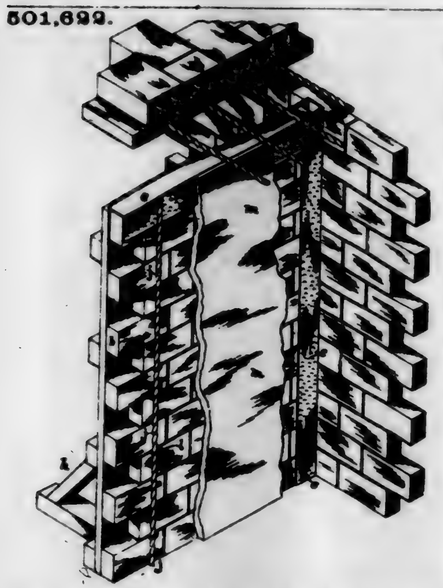
*Claim.*—1. A partition or other wall having an interior of tiling and layers of mortar or other cement with tension rods embedded therein for reinforcing the said mortar or cement, whereby the cement and tension rods form tension and compression members of the structure separated but rigidly united by the said tiling, substantially as, and for the purposes, set forth.

2. A partition or other wall having an interior of tiling with tension rods laid upon each face thereof and secured thereto, substantially as, and for the purposes, set forth.

3. A partition or like wall of tiling provided with channels secured to the ceiling and adjacent walls and embracing the said tiling, and rods secured to the said tiling upon each face of the said wall, substantially as, and for the purposes, set forth.

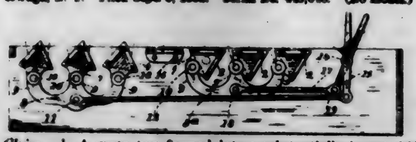
4. A partition or like wall of tiling, a coat of plastering upon each face thereof, tension rods embedded in the said plastering, and channels at the junction of the said wall with ceiling, adjacent walls, or doors and other frames, embracing the said tiling and embedded in the said plastering, substantially as, and for the purposes, set forth.

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5. A partition or other wall consisting of an interior portion of tiling and coats of mortar or other cement laid upon each face thereof, and channels secured to the adjacent walls or ceiling and embracing the said interior portion and covered by the said mortar or cement, whereby the interior portion may be supported in the process of formation by the said channels and whereby the said coats of mortar or cement form tension and compression members of the structure separated but rigidly united by a web of tiling, and secured to the adjacent wall or ceiling by the said channels, substantially as, and for the purposes, set forth.

501,623. ALTERNATING DUMPING-GRATE. ELI L. LOPE, Chaskowaga, N. Y. Filed Sept. 5, 1892. Serial No. 445,040. (No model.)

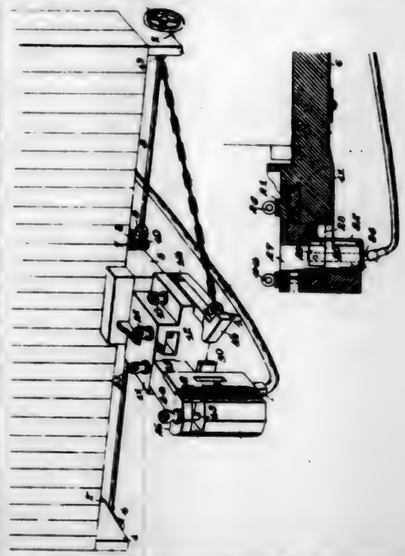


*Claim.*—1. A grate bar formed into a substantially inverted V shaped trough, the ends of which are each provided with a trunnion, each face of the bar being provided with openings, and adapted to be turned into a horizontal plane, with an open side below it for the escape of ashes, and the entrance of air, said bar being also provided with an extension portion diametrically opposite the apex of the bar, for operating it, substantially as set forth.

2. In a grate, the combination, with a series of inverted V shaped trough bars pivotally secured at their ends, each bar having its edges the same distance from an axial line through the trunnions and each face and edge of the bar being provided with openings, said bar being further provided with an extension portion diametrically opposite the apex, a holding piece for said series of bars provided with a series of upward projections, one for each extension of the bar to which it is pivotally secured, and means for moving said holding piece longitudinally whereby the bars may be rocked on their trunnions so as to bring either face into a horizontal plane without the other face coming in contact with the holding piece, substantially as set forth.

501,624. COMBINED CAR AND AIR BRAKE COUPLING. PHINEAS PELTON, Persia, Iowa. Filed Mar. 31, 1893. Serial No. 468,494. (No model.)

*Claim.*—1. In a car-coupler, the combination with a draw-head provided upon its front face and at one side of its center with a forwardly-projecting coupling-head whose outer side is provided with a vertical shoulder, of a hook pivoted at the opposite side of the draw-head and extending in front of the same opposite the coupling-head a spring for normally pressing the hook inward at its outer end, bearings, one of which is a standard having a recess, a reciprocating shaft mounted in the bearings, wheels for operating the shaft, connections between the hook and the shaft, and a beam mounted on the shaft and provided with a lug for engaging the recess of the standard, substantially as specified.



2. In a car-coupler, the combination with a draw-head having at its front side and at one side of its center a projecting coupling-head provided upon its outer side with a vertical rib, and upon its inner face with a horizontal recess, a cut off located in the horizontal recess and provided with an outwardly extending lug, a spring for normally pressing the cut-off into the recess, an air-passage leading from the side of the coupling-head to the recess and a pivoted spring-pressed hook at the opposite side of the draw-head, substantially as specified.

3. In a car-coupler, the combination with a draw-head provided upon its front face with a removable coupling head extending forwardly therefrom, said coupling-head having at one side a vertical rib, and its inner face vertically recessed the bottom of which is provided with a horizontal recess, a smooth face-plate located in the vertical recess, a sliding cut-off mounted in the horizontal recess, a spring for normally pressing the cut-off into its recess, an air-passage communicating with the horizontal recess and with the bottom of the coupling-head, a pipe coupling connected with the air-passage, a recess in the opposite side of the draw-head, a draw-hook pivoted in the recess and extending forward beyond the draw-head, a spring interposed between the rear end of the hook and the draw-head, and means for retracting the hook against the tension of its spring, substantially as specified.

4. In a car-coupler, the combination with a draw-head having its front face provided with a pair of transversely opposite openings, a coupling-head having a tenon perforated and mounted in one of said openings, a pin extending through said openings and the tenon, a rib at the front end and at one side of the coupling head, a pivoted spring-pressed hook having a front beveled face located at the opposite side of the draw-head, means for retracting the hook, and a recess in the front end of the coupling-head, said recess being provided with a pin-hole, of a link having long and short perforated terminals, the same engaging removably with the recess in the draw-head and that in the coupling-head, and pins passing through said recesses and terminals, substantially as specified.

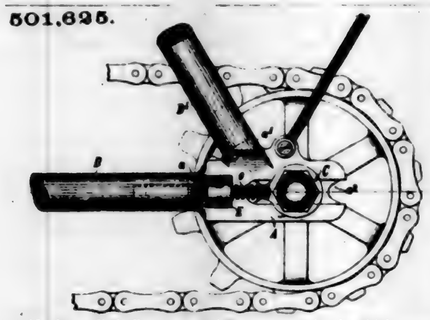
5. The combination with a jaw-coupler provided at one side with a T-shaped stud, of recesses formed in the jaw-coupler, and a link having long and short terminals adapted to engage the recesses and be secured therein in a removable manner, and to engage the T-shaped studs and be supported thereby, substantially as specified.

501,625. DRIVING-WHEEL ADJUSTMENT. ERNST H. PERRY, Chicago, Ill., assignor to the Sunol Bicycle Company, same place. Filed Dec. 6, 1892. Serial No. 454,941. (No model.)

*Claim.*—In a bicycle, the combination, of a yoke which connects the rear ends of the frame and forms a part thereof, said yoke having



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a guide slot and a hollow arm, and the rear wheel axle which extends through said slot, with a guide block which embraces the said axle, a threaded stem on said block which extends forward through the hollow arm of the yoke, a nut on said stem, and two shoulders on the yoke between which the nut lies, substantially as and for the purpose specified.

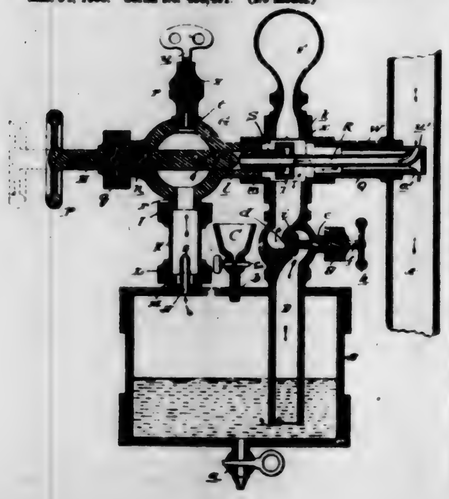
501,626. GEAR-CASE. ERNEST H. PERRY, Chicago, Ill. Filed Feb. 20, 1892. Serial No. 462,041. (No model.)



*Claim.*—1. In a bicycle, the combination of a gear-case adapted to inclose the two sprocket wheels and the driving chain, with one of the rear fork members which passes diagonally through said case, and suitable means for clamping said fork member on both sides of the case, whereby the latter is supported, substantially as specified.

2. In a bicycle, a gear case adapted to inclose the two sprocket wheels and driving chain, composed of two substantially equal longitudinal sections which are hinged together at one end, the meeting edges of said sections being notched substantially as described, to permit the crank shaft and the rear wheel hub and spindle, and one of the rear fork members to pass through the case when the same is closed, combined with said rear fork member, which passes diagonally through the case and upon which the case rests, and means for securing together the free ends of the case sections, substantially as set forth.

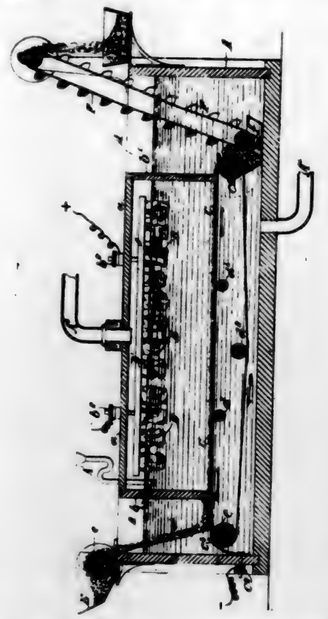
501,627. LUBRICATOR. ALLEN B. QUEEN and JOHN J. KIMBALL, Larned, Kans.; said Queen assignor to John J. Hesbitt, same place. Filed Mar. 31, 1893. Serial No. 468,491. (No model.)



*Claim.*—1. The combination with a water or steam pipe and an oil and water reservoir; of a lubricator, connected with the reservoir by a pipe extending well into the same and carrying a valve, a coupling on the upper end of said pipe, an air or condensing chamber arranged on one branch of the coupling, a pipe connecting the coupling with the steam or water pipe, a pipe arranged within said connecting pipe, and having an internal tube, the outer passage of which connects the steam or water pipe with the pipe leading to the oil and water chamber, a valve for closing one end of the tubular extension, a second coupling or casting, having an air cock on one branch, a sight tube depending from an opposite branch, a valve for controlling the oil through the tubular extension, and a vertically disposed nozzle or tube leading from the oil tank into the sight tube, all adapted to operate, substantially as and for the purposes specified.

2. In a lubricator, substantially as described, the combination with a steam or water pipe, and an oil and water reservoir; of the horizontal pipe Q, tapping said oil and water pipe, and having the central, longitudinal tube R, passing through the short pipe *a*, said pipe Q, having the openings *a'*, and *a''*, in its end tapping the steam or water pipe, the valve rod H, adapted to close the inner end of the tube Q, the tank B, the sight tube K, the drop tube N, arranged in the base of the sight tube, and suitable valves for opening and closing communication for the oil and water, substantially as specified.

501,628. APPARATUS FOR DEPOLARIZING IN ELECTROLYSIS. JAMES C. RICHARDSON, London, England. Filed Jan. 26, 1893. Serial No. 460,777. (No model.)



*Claim.*—In apparatus for use in the electrolysis of solutions, the combination with a tank having an anode compartment substantially as illustrated, of a movable cathode arranged to carry depolarizing material and provided with means for advancing it through the tank, and means for delivering and removing the depolarizing material, as and for the purpose set forth.

501,629. CIGAR OR CIGARETTE MACHINE. CONRAD SCHWEIZER and JAKOB HÜBSCH, Schaffhausen, Switzerland; said Schweizer assignor to said Hübsch. Filed Feb. 8, 1893. Serial No. 461,475. (No model.) Patented in Switzerland Nov. 30, 1891, No. 4,364.



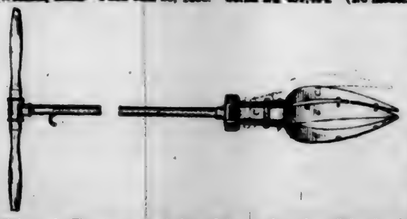
*Claim.*—1. In a machine for manufacturing cigars, cigarettes and similar articles, an inclined rolling table A, having a step *a*, in combination with a rolling cloth O on said table, secured at one end thereto, passing across the step thereof, folded on itself, and carrying at its other end a hook, within the fold of which cloth the filling for the cigar is placed below said step, and on which cloth the covering leaves for the cigar are placed above said step, a presser bar acting on the folded part of said cloth and a roller J engaging the hook end of said cloth and when rotated winding the cloth thereon to draw it across said table, whereby said filling is first rolled into cylindrical form in said cloth and is then rolled thereby in the covering leaves, substantially as and for the purpose set forth.

2. In a machine for manufacturing cigars and like articles, a rolling table A, having a step *a*, and side cheeks B B' fixed relatively to said table, in combination with a rolling cloth O on said table, fixed relatively thereto at one end, passing across the step thereof, folded on itself, and carrying at its other end, within the fold of which cloth the filling for a cigar is placed below said step, and on which cloth the covering for the cigar is placed above the step, a roller J engaging the hook end of said cloth and when rotated winding the latter on itself to draw it across said table, whereby said filling is first rolled into substantially cylindrical form in said cloth and is then rolled by the latter in said covering, a presser bar contacting with the folded portion of said cloth immediately in advance of said filling for maintaining a cylindrical form of the latter, and a movable slide carrying said bar and advancing with the movement of said cloth during the rolling and covering operation, substantially as and for the purpose set forth.

3. In a machine for manufacturing cigars and like articles, a rolling table A, side cheeks B fixed relatively to said table, and a rolling cloth on said table, fixed relatively thereto at one end, folded on itself over said table and carrying at its other end a hook, on which cloth the filling for a cigar is placed within the fold, and in advance of said filling the covering for a cigar, in combination with a roller J engaging the hook end of said cloth and when rotated winding the latter up to draw it across said table, whereby said filling is first rolled in said cloth and then thereby rolled in its covering, and a movable slide mounted on said side cheeks movable with said cloth and having an adjustable presser bar F movable toward and from said cloth and contacting with the latter immediately in advance of the part thereof containing said filling for maintaining the form of the latter, substantially as and for the purpose set forth.

4. In a machine for manufacturing cigars and like articles the combination with a rolling table A, a rolling cloth thereon within which the article is rolled, and cheeks B B' at the sides of said table, of a movable slide C riding on said cheeks, movable with said cloth, and consisting of a cross bar G, a movable presser bar F carried by said cross bar and movable toward and from said cloth, springs for moving said bar F from said cloth and catches for holding said bar F against said cloth, and weights I engaging said slide for retracting the latter to its initial position, all substantially as and for the purpose set forth.

## 501,680. EARTH-AUGER. William H. Scott and Ambrose Mize, Wichita, Kans. Filed Jan. 23, 1893. Serial No. 459,464. (No model.)



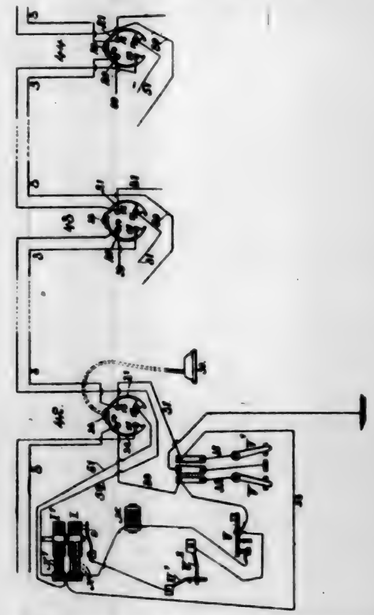
*Claim.*—1. The auger consisting of the combination of the shank provided with the cross-handle; the notched or recessed annular flange fixed to the shank end; the head fixed upon the shank and provided with the laterally extending ear lugs; the cutter-blades provided with the arms hinged to said head; and the adjustable ring arranged about said arms, substantially as set forth.

2. In the auger described the combination with the cutting blades and the arms thereof hinged to the auger shank; of the adjustable ring arranged encircling said arms and provided with a cross-bar operating in a longitudinal cross-slot of the auger shank; and the rod arranged within the shank, and connected at one end to the ring cross-bar and terminating at its opposite end with finger hook extending sidewise from the shank through a longitudinal slot, substantially as and for the purpose set forth.

3. In the auger described the combination of the shank, the cutting blades provided with the arms independently hinged to the shank, and the ring adapted to be adjusted to jointly hold said arms against movement outward, or to release and permit said arms to independently, or jointly, move outward, substantially as set forth.

4. In the auger described, the combination with the cutting blades *c* and the arms *d* thereof hinged to the auger shank; of the wings adapted to be detachably attached to said blades in the manner substantially as and for the purpose specified.

## 501,681. ELECTRIC-CIRCUIT CONNECTION FOR SIGNALING OR TELEPHONE BOXES. John R. Smith, New York, N. Y. Filed Feb. 24, 1892. Serial No. 462,837. (No model.)



*Claim.*—1. The combination with the fire alarm signal boxes and the signaling devices and the two metallic circuits leading to the same, of a telephone instrument and circuit connections at each signal box, substantially as specified, for introducing the telephone at one signal box into the metallic circuit that passes to the signaling devices at a distant signaling box; substantially as set forth.

2. The tubular circuit block 10 adapted to be connected to the signal box in combination with the cable having the wires of the two metallic circuits, the binding posts for the wires, and a signaling apparatus in the box and connections to two of the binding posts, the clips 20 and 21 connected to the other binding posts and adapted to receive between them the connections for a telephonic instrument, substantially as set forth.

3. The tubular insulating circuit block for receiving the electric conductors, the spring clips 20, 21 around the block near one end and connected with the conductors for normally closing the circuit, there being a bow in one of the clips, a telephone or other instrument and a tapering two-part plug adapted to be inserted between the clips to separate them and close the circuit through the telephone or other instrument, substantially as set forth.

4. The combination in a signaling or fire alarm apparatus of signaling boxes, two independent metallic circuits leading through such boxes to the place where the signal is received, and two circuit breaking devices insulated from each other in each box, one in each independent circuit, and mechanism for actuating the circuit breakers for sending a primary signal over one metallic circuit by one circuit breaker and over the other circuit by the other circuit breaker, substantially as set forth.

5. The combination in a signaling or fire alarm apparatus of signal boxes, two independent closed electric circuits leading through all of the boxes to the place where the signal is received, two circuit breaking devices in each box and mechanism for actuating the same, one of the circuit breaking devices sending a primary signal over one electric circuit and the other of such circuit breaking devices sending a secondary signal over the other electric circuit, and circuit closing



clips and operable telephones or other instruments in the circuit of the secondary signal, substantially as set forth.

6. The combination in a signaling or fire alarm apparatus of two independent metallic electric circuits leading to the place where the signal is to be received, a signaling box and two circuit breaking springs and wheels insulated from each other and mechanism for simultaneously operating the same, one of such wheels acting to send a primary signal over one electric circuit and the other of such wheels acting to send a secondary signal over the other electric circuit, an electromagnet for a bell and a circuit preserving finger key in the circuit of the primary signal, and a telephone in the circuit of the secondary signal, substantially as set forth.

7. The combination in a signaling or fire alarm apparatus of two independent metallic circuits leading to the place where the signal is to be received, a signaling box and two circuit breaking springs and wheels insulated from each other and mechanism for simultaneously operating the same, one of such wheels acting to send a primary signal over one electric circuit and the other of such wheels acting to send a secondary signal over the other electric circuit, and electro magnet for a bell and a normally closed finger key in the circuit of the primary signal, substantially as set forth.

8. The combination in a signaling or fire alarm apparatus of two independent metallic circuits leading to the place where the signal is to be received, a signaling box and two circuit breaking springs and wheels insulated from each other and mechanism for operating the same, one of such wheels acting to send a primary signal over one electric circuit and the other of such wheels acting to send a secondary signal over the other electric circuit and a second signaling instrument in the second circuit substantially as set forth.

## 501,682. GAME COUNTER AND REGISTER FOR POOL-TABLES. Levi F. Tuerst and Jerome La Sha, Syracuse, N. Y., assignors to Margaret Tuerst and Salina La Sha, same place. Filed July 20, 1892. Serial No. 440,667. (No model.)



*Claim.*—1. The combination with the pockets of a pool table, the delivery tube and the trucks whereby the balls are carried from the pockets into said tube, of a shaft having a pointer at one end, a ratchet wheel secured to the opposite end of the shaft and provided with an outer row of teeth on its periphery and an inner row of teeth on one of its sides, a trip lever extending into the delivery tube and provided with a pawl engaging with the inner row of teeth, and a detent pawl engaging with the outer row of teeth, substantially as set forth.

2. The combination with the pockets of a pool table, the delivery tube, and the trucks whereby the balls are carried from the pockets into said tube, of a shaft having a pointer, a ratchet wheel secured to the shaft and provided with a drum, a trip lever extending into the delivery tube and provided with a pawl engaging with the ratchet wheel, whereby the ratchet wheel is moved forward, a detent pawl engaging with the ratchet wheel, and a weight provided with a cord attached to the drum, whereby the ratchet wheel is moved backward when released from the detent pawl, substantially as set forth.

3. The combination with the pockets of a pool table and the trucks connected with said pockets, of a movable delivery tube receiving the balls from said trucks, a series of stationary indicators, and a trip lever mounted on the delivery tube and adapted to operate either of the indicators upon shifting the delivery tube, substantially as set forth.

4. The combination with the pockets of a pool table and the trucks connecting said pockets, of a delivery tube movably connected with said trucks, a series of indicators each of which is provided with a ratchet wheel, a trip lever mounted upon the delivery tube and having one arm extending into said tube, a pawl mounted upon the other arm of the trip lever and adapted to engage with any one of the ratchet wheels, and a guide rod whereby the pawl is engaged and disengaged from the ratchet wheels upon shifting the delivery tube, substantially as set forth.

5. The combination with the pockets of a pool table and the trucks connecting said pockets, of a delivery tube movably connected with said trucks, a series of indicators each of which is provided with a ratchet wheel, a trip lever mounted upon the delivery tube and having one arm extending into said tube, a pawl mounted upon the other arm of the trip lever and adapted to engage with any one of the ratchet wheels, and a guide rod supporting the pawl and having indented portions whereby the pawl is released, substantially as set forth.

6. The combination with the pockets of a pool table and the trucks connecting said pockets, of a delivery tube movably connected with said trucks, a series of indicators each of which is provided with a ratchet wheel, a trip lever mounted upon the delivery tube and having one arm extending into said tube, a pawl mounted upon the other arm of the trip lever and adapted to engage with any one of the ratchet wheels, detent pawls engaging with the ratchet wheels, and a shifting bar whereby the detent pawls are simultaneously released, substantially as set forth.

7. The combination with the pockets of a pool table and the trucks connecting said pockets, of a delivery tube movably connected with said trucks, a case inclosing the delivery tube and provided with a slot having notches, indicators arranged in said case and provided with ratchet wheels, a trip lever mounted on said tube and provided with a pawl adapted to engage with any one of the ratchet wheels, and a handle pivoted upon the delivery tube and arranged in the notched slot, substantially as set forth.

8. The combination with the pool table and its ball delivery tube, of a movable ball frame adapted to receive the balls from said tube, a support for said frame arranged below said tube, a trip lever projecting above said support and adapted to be depressed by the ball frame, and an indicator operated by said trip lever, substantially as set forth.

9. The combination with the inclosing case provided with an opening in its top, and the ball frame provided with a removable bottom resting upon the case over said opening, of an indicator wheel arranged in said case and provided with ratchet teeth, and a trip lever having a pawl upon one arm which engages with the ratchet teeth while its other arm is adapted to project above the top of the case through said opening and be depressed upon placing the frame with its bottom upon the case, thereby operating the indicator, substantially as set forth.

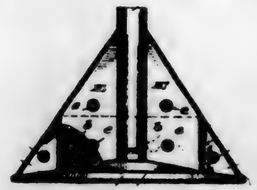
## 501,683. HOOK AND EYE. Willard A. Towler, Detroit, Mich. Filed Oct. 27, 1892. Serial No. 450,109. (No model.)



*Claim.*—1. The hook and eye comprising an eye A formed of a single piece of wire *a* having loop *a'* and inwardly projecting locking coils $a^2$ $a^2$ and quadruple hook B formed of a single piece of wire *b* having a close fold or bend *b'* at its middle and two close folds $b^2$ $b^2$ one in each half to form the quadruple branches or members $b^3$ $b^3$ and $b^4$ $b^4$ of the hook, the outer pair of branches $b^3$ $b^3$ having locking coils $b^5$ $b^5$ formed therein for the loop *a'* of the eye to project against, the space between said locking coils $a^2$ $a^2$ on the eye being less than the width of the quadruple hook, substantially as specified.

2. The combination with an eye A of the quadruple hook B formed of a single piece of wire *b* having a close fold *b'* at its middle and two close folds $b^2$ $b^2$ at the prong end of the quadruple hook, said hook having two outer and upper branches $b^3$ $b^3$ and two lower and inner branches $b^4$ $b^4$, said branches $b^3$ $b^3$ having coils $b^5$ $b^5$ formed therein and projecting above said branches $b^3$ $b^3$ at the loop $b^2$ of said quadruple hook to form a look for the loop of the eye to project against, substantially as specified.

## 501,684. CLOTHES-POUNDER. William F. Ware, Hillsborough, Tex. Filed Feb. 27, 1893. Serial No. 463,993. (No model.)



*Claim.*—1. The combination with the outer conical portion of the concentric vertical partition, the radial partitions upon both sides of the vertical partition, and the handle-socket passed through the apex of the conical portion and secured to the inner radial partitions, as set forth.

2. The combination with the outer conical portion, of the vertical partition, the radial partitions connecting the said partition and conical portion and the radial partitions within the inner compartment and connected to the vertical partition, and a handle-socket se-

cured to the inner radial partitions, the bottom edge of the said partitions terminating above the lower edge of the conical portion, substantially as specified.

3. The herein described clothes pounder consisting of the outer conical portion with handle-socket extending within the same through its apex, the vertical partition provided with perforations, the radial partitions between said partition and conical portion and provided with perforations, and the radial partitions within the space inclosed by the vertical partition and provided with perforations, the bottom edges of said partitions terminating above the lower edge of the outer conical portion, substantially as shown and described.

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**501,635.** SPITTOON FOR RAILWAY-CARS. KONRAD WEIBSSER, Nuremberg, Germany. Filed June 24, 1892. Serial No. 437,897. (No model.)



*Claim.*—1. The combination of the grating *c*, containing vessel *a*, overflow *l* located beneath said grating, *c* and discharge valve *c* adapted to control the discharge of the contents of said containing vessel *a*, substantially as described.

2. The combination of the grating *c*, containing vessel *a*, and the discharge valve *c* provided with overflow holes *l*, located beneath said grating *c* substantially as described.

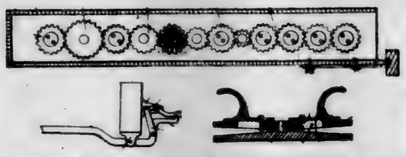
3. The combination of the grating *c*, containing-vessel *a* beneath said grating, and provided with perforated internal basin *d* located within the said containing-vessel *a* and discharge valve *c*, all arranged substantially as described.

4. The combination of the removable grating *c*, containing-vessel *a*, located beneath said removable grating, basin *d* and valve *c* adapted to be seated by said removable grating, substantially as described.

5. The combination of the containing-vessel *a*, with removable grating *c*, hood *k*, internal basin *d*, and valve *c*, having escape-openings *l* which form overflows for the containing-vessel, substantially as described.

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**501,636.** SLAT-AND-WIRE-FENCE MACHINE. BENJAMIN A. WELLS, Jackson, Mich. Filed Mar. 9, 1893. Serial No. 466,372. (No model.)



*Claim.*—1. In a fence machine, the combination of the frame, a series of twister wheels provided with circumferential gearing, a series of idler gear wheels of varying diameter decreasing toward the bottom between the upper series of twister wheels, the lower twister wheels being geared together, an actuating crank shaft and gear, and a picket gripping device for holding the pickets in position when the twister wheels are actuated, consisting of two jaws pivoted upon the frame, a link connecting the jaws, and an actuating extension on one jaw, substantially as described.

2. In a fence machine, the combination of the frame, of a picket gripping device consisting of two jaws pivoted upon the frame, a link connecting them together, and an extension on one jaw forming an actuating lever for both jaws, substantially as described.

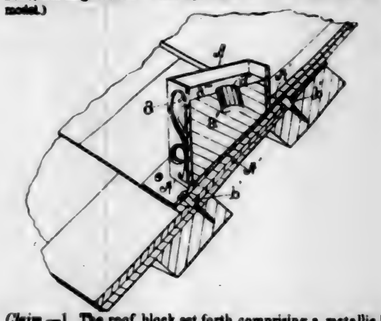
3. In a fence machine, the combination of the frame, a picket gripping device consisting of two jaws pivoted upon the frame, a link connecting them together on opposite sides of their pivotal points and an extension for one jaw forming an actuating lever for both, substantially as described.

4. In a fence machine, the combination of the frame, a picket gripping device consisting of the lever *d* centrally pivoted upon the bracket *c*, the lever *a* pivoted upon the side of the frame and having a jaw extending beside the lever *d*, a link connecting the inner end of the lever *d* with the portion of the lever *a* beyond its pivot, and the lug or offset *g* at the end of the jaw *c*, substantially as described.

5. In a fence machine, a reel consisting of a base, a reel frame journaled thereon, having slots therein, and a serrated upper face, curved arms having notches on their lower faces engaging the serrations on the reel frame, and bolts for detachably securing the arms to the reel frame, substantially as described.

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**501,637.** ROOF-BLOCK. JOSEPH WEDEMS and FREDERICK J. GILLMORE, Los Angeles, Cal. Filed Apr. 24, 1893. Serial No. 471,996. (No model.)



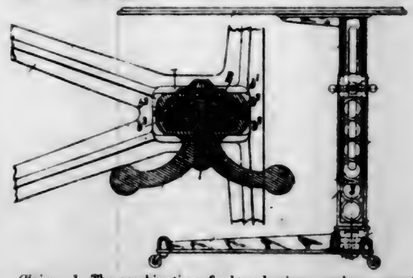
*Claim.*—1. The roof block set forth comprising a metallic body provided with a socket adapted and arranged to receive a block of suitable material therein and provided with the base plate adapted and arranged to be secured to the roof of the building, and a block of wood or other suitable material seated in the socket in the metallic body.

2. The roof block set forth comprising the metallic body provided with a socket adapted and arranged to receive a block of suitable material therein and also provided with a base plate adapted to be secured to the roof of the building, and a block of wood or other suitable material seated in the socket in the metallic body and having its upper face arranged below the top of the walls of such socket.

3. The roof block set forth comprising a metallic body provided with a socket adapted and arranged to receive a block of suitable material therein and also provided with a base plate arranged at an angle with such socket and projecting outwardly beyond the walls of the body and provided with suitable perforations to receive screws or nails to attach the base plate to the roof of the building, and a block of wood or other suitable material arranged in the socket in the metallic body and having its upper face arranged below the top of the walls of the socket.

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**501,638.** ADJUSTABLE TABLE. NEWTON M. ANDERSON and GEORGE S. RIDER, Cleveland, Ohio. Filed Dec. 16, 1892. Serial No. 455,335. (No model.)



*Claim.*—1. The combination of a base having a socket, a standard composed of two separable sections which are seated in said socket, each section having an external bead and an inwardly turned flange, a plate over the lower end of said socket, and a bolt passing between said flanges and through said plate, with a post longitudinally-movable between said sections and means for drawing said sections toward each other thereby clamping said post, substantially as and for the purpose specified.

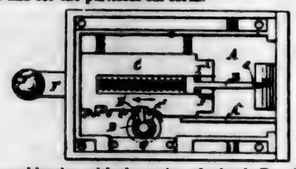
2. The combination of a base having a socket, and a standard composed of separable sections which are seated in said socket, and have oppositely beveled proximate edges, with a post lying between said sections and provided with V-shaped edges, and means for drawing said sections toward each other, substantially as and for the purpose specified.

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**501,639.** LOCK. MAXIMILIANO RADOSI, Geneva, Switzerland, assignor to Aloys Revilliod-De Muralt, same place. Filed June 20, 1892. Serial No. 437,411. (No model.)



*Claim.*—1. The combination with the casing, the bolt C, and means for moving and holding the bolt within the casing, of the latch B, the rods H and F, the handle F', the forked interlocking ends *d* and F', the rod *e* which said forked ends straddle, and a spring *d'*, substantially as and for the purposes set forth.



2. The combination with the casing, the latch B and means for operating the same, of the bolt C having notches $c^3$, $c^4$, $c^5$ and $c$ on its under edge and intermediate talons, the key cylinder D engaging the notches and talons of the bolt C, and the compressible spring G engaging the key cylinder, substantially as set forth.

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**501,640.** LOCK. MASSIMILIANO RADOSI, Geneva, Switzerland, assignor to Aloys Revilliod-De Muralt, same place. Filed June 21, 1892. Serial No. 437,543. (No model.)



*Claim.*—1. In locks the combination with the box B, containing the lock mechanism; of a hollow case having an opening for the latch and composed of parts adapted to telescope over the top, bottom and front of said box B, and to be secured adjustably thereto, substantially as set forth.

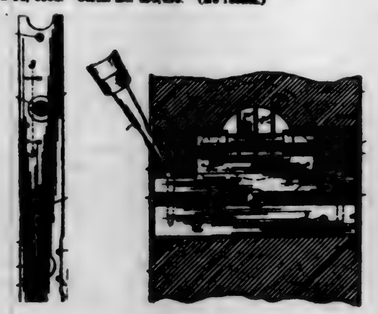
2. In locks, the combination with the handles and the mechanism operated thereby, of a longitudinally movable pusher bar, a sliding tumbler adapted to be maintained frictionally in position and to be moved by a key, and a spring actuated arm connected to the tumbler, and means for locking the same in its extended position, said arm engaging the pusher bar to impart a vertical movement thereto, whereby the handle mechanism and the pusher are in operative engagement in one position of the tumbler and are separated in the other positions, substantially as set forth.

3. In locks, the combination with a rocking lever D and handles and a spring for maintaining their normal position of a pusher G, a sliding tumbler K adapted to be maintained frictionally in position, a pivoted interlocking arm engaging the pusher G and adapted to lock the sliding tumbler in one of its positions, and a collar on the pusher adapted to release the arm, substantially as set forth.

4. In locks, the combination with a rocking lever D and handles and a spring for maintaining their normal position, of a pusher G, a sliding tumbler K adapted to be maintained frictionally in position, a pivoted interlocking arm engaging the pusher G and adapted to lock the sliding tumbler in one of its positions, a collar on the pusher adapted to release the arm, the casing I, and the spring actuated latch H adapted to engage and to move endwise the pusher G to release the mechanism and which is in turn operated by said pusher by the depression of the handle in opening the door, substantially as set forth.

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**501,641.** LEVEL. CHARLES M. BARTLETT, Chicago, Ill. Filed Oct. 31, 1892. Serial No. 450,492. (No model.)

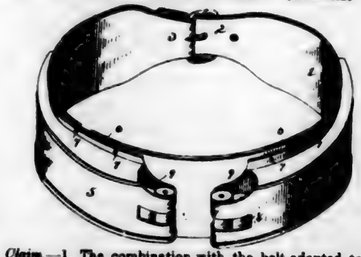


*Claim.*—1. A spirit level consisting of a bar, a second bar placed above such bar, a fulcrum interposed between such bars, a screw on each side of the fulcrum holding the bars in place and against the fulcrum, a vial containing liquid having an air bubble therein, a sheet metal strap extending around the ends of the vial, a flexible lining interposed between the vial and the sheet metal strap, a groove in the top bar, with such sheet metal strap surrounding the vial extending into and secured in such groove, and a casing adapted to contain the same; substantially as described.

2. A spirit level consisting of a bar, a second bar placed above such bar, a fulcrum interposed between the bars, a screw on each side of the fulcrum, such screws holding the bars in place and against the fulcrum, a vial containing liquid with an air bubble therein, a sheet metal strap extending around the ends of the vial, a flexible lining interposed between the vial and the sheet metal strap, a groove in the top bar, with such metal strap surrounding the vial extending into and secured in such groove, a casing having a mortise therein into which the above described construction is inserted, and pins extending through the casing and into the bottom bar of such construction and holding it in place suspended thereon; substantially as described.

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**501,642.** CARTRIDGE BELT. GEORGE W. BARTON, Bethlehem, Ky. Filed Mar. 9, 1893. Serial No. 465,968. (No model.)

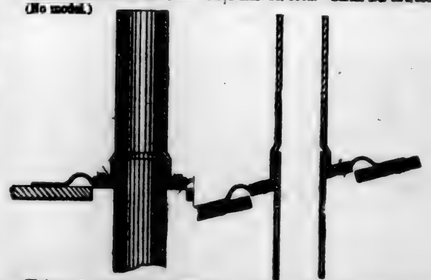


*Claim.*—1. The combination with the belt adapted to encircle the waist of the person, of the opposite cartridge-receiving boxes, the same being curved to approximate the shape of the waist, coiled springs located in the boxes, follower-plates at the front ends of said springs, openings formed in the upper front corners of the boxes, and slots located below the openings, and extending longitudinal the boxes substantially as specified.

2. The combination with the belt terminating in the securing-straps, of the opposite metal boxes curved to conform to or approximate the shape of the waist of the wearer, said boxes being provided at their rear ends with ways, sliding covers mounted in the ways, the front ends of the boxes being rounded and provided between their edges with slots, and at their upper corners with exit-openings, coiled springs resting against the covers, and follower-plates curved to conform to the cartridge located in front of the springs and secured thereto, substantially as specified.

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**501,648.** ROOF CONNECTION FOR VENTILATING-PIPES. BURNETT B. BESSALL, Aurora, Ill. Filed Mar 11, 1893. Serial No. 464,685. (No model.)



*Claim.*—1. An improvement in roof connections for ventilating pipes consisting of the pipes B above the roof and the pipe C connecting therewith and extending below the roof, said pipes provided with flanges between which the flash plate is secured; as and for the purpose specified.

2. The flanged pipes above and below the roof, in combination with a flash plate secured between the flanges, and formed with an elevated annular bead exterior to the flanges to permit of a settlement of the roof, or pipes; substantially as and for the purpose specified.

2. The upper section of a ventilating pipe provided with a flange at its lower end and an annular rabbet which enlarges the inner periphery of the pipe, the lower pipe provided with a flange on its top portion and an extension portion which enters said rabbet, in combination with a flash plate which is clamped between the flanges; as and for the purposes specified.

**501,644. CORRUGATING-TOOL.** JAMES BLESSER, Brooklyn, N. Y. Filed Apr. 10, 1893. Serial No. 469,988. (No model.)



*Claim.*—1. The combination with the corrugating rolls, of arbors and a stock for supporting the same, lever handles connected with the stock and a pawl operated by one of the lever handles for rotating the rolls progressively, substantially as set forth.

2. The combination with the corrugating rolls C and D, of the stock A, the handle A extending out from the stock, the handle B pivoted at 2 upon the stock and having a projection, and the pawl E pivoted at 6 to said projection, and the spring F acting upon the pawl, substantially as set forth.

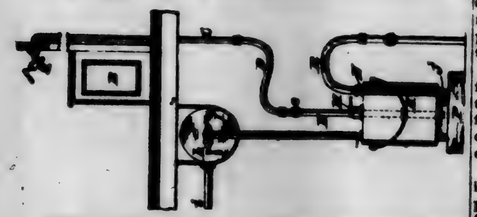
3. The combination with the corrugating rolls C and D, of the stock A, the handle A extending out from the stock, the handle B pivoted at 2 upon the stock and having a projection, and the pawl E pivoted at 6 to said projection, and having a tail, a spring connected with the tail of the pawl and with a stud upon the handle A' so as to actuate the pawl and also to move the handle B, substantially as set forth.

4. The combination with the stock and the arbors 3 and 4 upon such stock, of handles and a pawl actuated by the handles for rotating the corrugating rolls, such corrugating rolls having teeth that are longer at the ends adjacent to the stock so as to gear together, and one of the teeth being reduced to allow for the introduction of the material to be corrugated between the rolls, substantially as set forth.

5. The combination with the stock, the handles and a pawl acted upon by the moving handle, of corrugating rolls, a fixed arbor 3 for one of the rolls, the arbor 4 for the other roll provided with an eccentric bearing whereby the proximity of the rolls can be adjusted, and means for holding the eccentric bearing and arbor, substantially as set forth.

6. The combination with the stock, the handles and a pawl acted upon by the moving handle, of corrugating rolls, a fixed arbor 3 for one of the rolls, the arbor 4 for the other roll provided with an eccentric bearing whereby the proximity of the rolls can be adjusted, a notched disk upon the eccentric arbor, and a spring pin for holding the eccentric bearing and arbor after the proximity of the rolls has been adjusted, substantially as set forth.

**501,645. APPARATUS FOR CLEANING LIQUOR-FAUCETS AND THEIR KEG CONNECTIONS.** JOHN F. BELLAMY, Cincinnati, Ohio. Filed Feb. 7, 1893. Serial No. 461,908. (No model.)



*Claim.*—An apparatus for cleansing liquor-faucets, and their keg-connections, which apparatus consists of a closed tank J, having a nipple L, to which is applied a hose H communicating with a compressed-air reservoir I, a stuffing-box M, traversed by a tube E, to which is attached a hose D, communicating with the liquor-discharge pipe C; and a coupling N, to which is attached a hose R, communicating with a cold-water supply-pipe, all as herein described, and for the purpose stated.

**501,646. CURLING-IRON.** EUGENE C. BOGUE, Buffalo, N. Y. Filed Sept. 29, 1892. Serial No. 447,212. (No model.)

*Claim.*—1. In a curling iron, the combination with the handle, of a mandrel capable of turning on the handle, and an actuating knob or button rigidly connected to the mandrel adjacent to the inner portion of the handle, substantially as set forth.



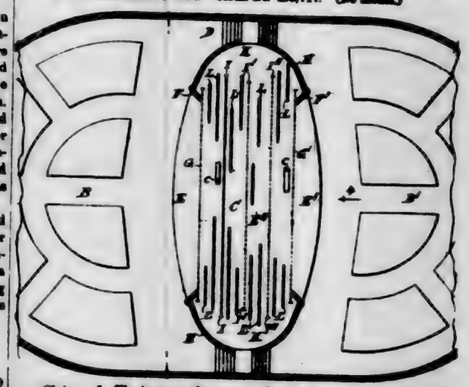
2. In a curling iron, the combination with the handle and a spindle turning therein, of a mandrel secured to said spindle, and an actuating knob or button rigidly secured to said mandrel between the latter and the handle, substantially as set forth.

3. In a curling iron, the combination with the handle and the spindle turning therein, of a mandrel, a sleeve secured to the inner portion of the mandrel, and a button for turning the mandrel secured to said sleeve, substantially as set forth.

4. In a curling iron, the combination with the handle and the spindle turning therein, of a mandrel having a clasp, a sleeve having a contracted outer portion secured to the mandrel, and an enlarged inner portion forming an air chamber, and a button for turning the mandrel, secured in the enlarged end of the sleeve, substantially as set forth.

5. In a curling iron, the combination with the handle and the spindle journaled therein, of a mandrel having a pivoted clasp, provided with perforated ears, a sleeve surrounding the inner end of the mandrel, a pin or rivet passing through the mandrel, the sleeve and the perforated ears of the clasp, whereby the sleeve is secured to the mandrel and the clasp is at the same time pivoted to the sleeve, and a button for turning the mandrel, secured to the sleeve adjacent to the handle, substantially as set forth.

**501,647. THEATRICAL DEVICE.** HERMAN DUBOIS, Brooklyn, N. Y. Filed Nov. 3, 1892. Serial No. 450,717. (No model.)



*Claim.*—1. The improved structure for theatrical exhibitions consisting of a platform, as C, having two stages, as E E', on its opposite sides, an intermediate space, as F', between said stages, and a plurality of partitions constructed when in position to subdivide said platform between said stages, substantially as and for the purpose set forth.

2. The improved structure for exhibitions consisting of a platform, as C, having two stages as E E' on its opposite sides, and an intervening partition, as I, having exhibition surfaces on its opposite faces, whereby its one face can serve as a background for the stage on one side, and its other face as a background for the stage on the other side, substantially as and for the purpose set forth.

3. In a structure for theatrical exhibitions, a platform, as C, having two stages, as E E' on its opposite sides arranged on the same plane, in combination with stage paraphernalia having exhibition faces on its opposite sides, whereby said paraphernalia can be utilized for either stage without reversal.

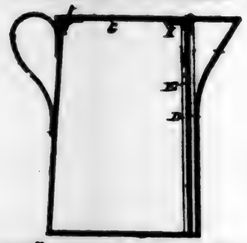
4. In a structure for theatrical exhibitions, two stages, as E E, arranged back to back, arches, as F, inclosing said stages, an intervening partition separating said stages and of less height than said arches, whereby an open space above said partition and beneath said arches exists across said stage, and a substantially horizontal screen above said arches constructed to intercept the line of sight above said partition from the auditory, substantially as and for the purpose set forth.

5. In structures for theatrical exhibitions, an inclosure, as A, having auditorium, as E F, in combination with a platform, as C, subdividing said inclosure, and having two stages as E E', the one facing one auditory and the other the other auditory, whereby separate exhibitions can simultaneously be given in said inclosure.

6. In structures for theatrical exhibitions the platform C having the stages E E', arches F F' thereover, and curtains G G, in combination with partitions, as I I', flies, as L L, and top scene, as J.

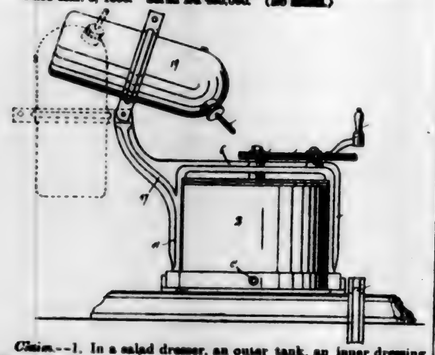


**501,648. TEA OR COFFEE POT.** THERESE R. FRIEDEL, Baltimore, Md. Filed Apr. 1, 1893. Serial No. 468,698. (No model.)



*Claim.*—In a coffee or tea pot, the removable strainer located therein having two lids hinged thereto, the upper one of said strainer provided with a lip to prevent the liquid from leaking out between the hinges, substantially as described.

**501,649. SALAD-MIXING DEVICE.** JESSE B. FITCH, Utica, N. Y. Filed Mar. 4, 1893. Serial No. 465,090. (No model.)



*Claim.*—1. In a salad dresser, an outer tank, an inner dressing holding tank, a rotary stirrer a removable frame upon which the stirrer is mounted spanning the top of the tanks, and an oil receptacle mounted upon a jointed arm of the tank and adapted to be partially inverted to discharge oil into the tank, combined substantially as set forth.

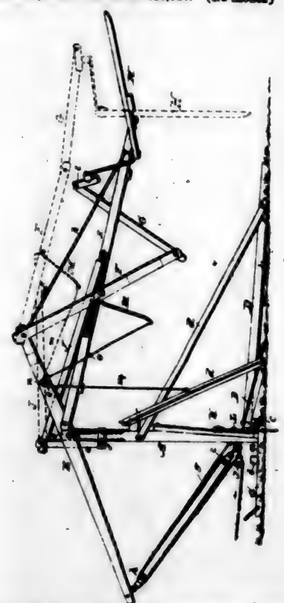
2. In a salad dresser, a dressing holding tank, a rotary stirrer adapted to operate in the tank, a removable frame having an arm spanning the tank and on which the stirrer is mounted, mechanism mounted on the frame for operating the stirrer, an oil receptacle mounted in a clamp on a jointed arm of the frame and adapted to be partially inverted over the tank, substantially as set forth.

3. In a salad mixing device, a base, an outer tank mounted on the base, an inner mixing basin suspended in the outer tank and having spring blade for scraping the inner wall of the basin, the stirrer being mounted on a removable frame having an arm spanning the top of the tank and parallel arms engaging in recesses in the upper edge of the tank and in sockets at the base of the tank, and an oil receptacle mounted in a clamp or jointed arm on the frame and adapted to be partially inverted over the basin to discharge oil in the central portion thereof, all combined substantially as set forth.

4. In a salad mixing device, a dressing holding basin, a rotary stirrer mounted on a vertical spindle, a frame having a bar spanning the dressing basin in which the spindle has bearing and on which the mechanism for rotating the stirrer is mounted, and a jointed arm carrying a receptacle adapted to be moved over the basin to discharge into it, combined substantially as set forth.

5. In a salad mixing device, a base, an outer tank fixed on the base, an inner basin suspended in the tank, a stirrer adapted to be operated in the basin and mounted upon a removable frame having a cross-bar spanning the tank, and vertical arms at opposite sides of the tank, each engaging in a recess in the upper edge of the tank and in a socket at the base of the tank, the frame furnishing a bearing for the spindle of the stirrer, and mechanism mounted on the frame for operating the stirrer, combined substantially as set forth.

**501,650. HAY-STACKER.** PETER F. FLEMING, Huntsville, Mo. Filed Feb. 4, 1893. Serial No. 460,927. (No model.)



*Claim.*—1. In a hay or straw stacker, the combination with a suitable standard, of a supporting frame or base consisting of jointed or pivoted sections, and a tongue to which the sections are pivotally connected, substantially as and for the purpose set forth.

2. In a hay or straw stacker, a suitable standard, an upright arm having upon its lower end a collar which loosely encircles the standard, a frame pivotally connected with the arm, a tilting platform or carriage, and intermediate connections between the carriage and frame, substantially as and for the purpose described.

3. A hay or straw stacker provided with a pivoted hand lever having pivotally connected to it an anchor-rod to enter the ground for steadying the stacker, substantially as and for the purpose specified.

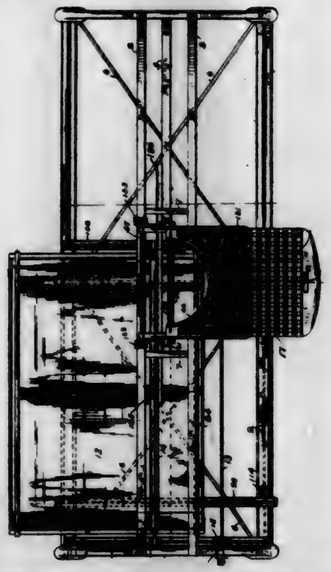
4. In a hay or straw stacker, the combination with a tilting platform or carriage, of a releasing or holding device, consisting of a pivoted trip-lever upon an arm pivoted between the platform and frame supported upon a standard, and having a cord attached thereto, and a fulcrum and keeper upon the end of a pivoted bar to engage with a pin on the arm, substantially as and for the purpose specified.

**501,651. TYPE-WRITING MACHINE.** EDGAR GIBBS, Alton, Ind. Filed Oct. 1, 1892. Serial No. 447,464. (No model.)

*Claim.*—1. The combination in a type-writer, of an upright base frame adapted to support letter spacing and line spacing carriages and a superposed key-board with its writing mechanism, the said frame being provided with the longitudinal tracks 4 and 5 and the key board supporting plates 2 and 3, a letter spacing carriage 8 adapted for movement on said tracks, having rack-bar standards 15 and the roll supporting standards 150 rigidly mounted thereon, and provided with the transverse tracks 90 and a proper line spacing device, and a transversely movable carriage 9 mounted on tracks 90, having a revolvable shaft 75 and rigid shafts 120 mounted in the sides thereof, shaft 75 being provided with the ratchet wheel 71, the hand lever 73 and the shafts 79 for elevating the book-rest, said carriage having the adjustably mounted clamping frames 84, with a two part adjustable book rest 10 pivotally mounted on the pivoted standards 86 and the described writing mechanism mounted on the plates 2 and 3, all substantially as set forth and described.

2. In a type-writing machine, the combination of a rectangular base frame having longitudinal tracks 4 and 5 and the parallel plates 2 and 3, provided with a graduated scale 136 and a hinged key-board 17 mounted upon said plates, a longitudinally movable carriage 8

provided with the rack bar standards 15 and roll supporting standards 150 upon either end thereof, having the rigid transverse tracks 90 and a line spacing device as described, and a transversely movable carriage 9 adapted for movement on the tracks 90, having the shafts 75 and 120 mounted thereon, said shafts having the standards 79 and 86 mounted thereon, respectively, and provided with racks 63 and 64 on the sides thereof, a ratchet wheel 71 and a hand lever 73 mounted on shaft 75 and adapted to elevate the book rest 10, and the adjustably mounted clamping frames 84, with a vertically adjustable book support 10 mounted on the pivoted standards 86 and having the coil spring 21 arranged to elevate said book support, a ribbon-reel mechanism comprising the frame 18 mounted on the said key board, the reel 19, the ribbon 37 guard 38 and the bell crank 36 and the writing mechanism mounted on said plates 2 and 3 all substantially as set forth and described.



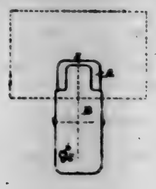
3. In a type writer, the combination of the book support 10, the pivotally mounted brackets 86 supporting said book rest, the adjustable clamping frames 84 adapted to hold the book in position, and the revoluble shaft 75 provided with a rigid standard 79 having a coil spring secured thereto and connected with said book rest, the ratchet wheel 71 rigidly mounted thereon, the hand lever 73 pivotally mounted thereon and having a dog or pawl 72 adapted for engagement with said wheel, the pawl 77 and the thumb lever 78, all substantially as described.

4. The combination, in a type writer, of the ribbon, the ribbon reel 19 having a ratchet wheel 41 and a spring 45, the said ribbon reel being properly mounted in a supporting frame 18, with the ribbon shield 40 and the operating lever 36, all substantially as described.

5. In a type-writer, a ribbon shifting device consisting of the frame 18, the ribbon reel 19 mounted upon the shaft 137, the ratchet wheel 41, the ribbon 37, the ribbon shield 38 having a longitudinal slot 40, the bent spring 45 adapted for engagement with the ratchet wheel 41 and the operating lever 36, all substantially as set forth and described.

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**501,652.** TICKET-HOLDER. FRANK H. HASKELL, REVERE, and WILLIS H. HASKELL, Chelsea, Mass. Filed Mar. 6, 1893. Serial No. 464,933. (No model.)



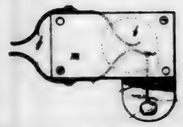
*Claim.*—1. In a ticket holder the combination of two clamping plates pivoted together at or near the middle of their length; and a plate or leaf spring riveted at one end to one end of one of said clamping plates and bearing at its other end against the opposite arm of the other plate and provided with a series of spurs at its riveted end and integral therewith.

2. In a ticket holder the combination of two clamping plates pivoted together at or near the middle of their lengths; a plate or leaf spring riveted at one end to one end of one of said plates and bearing at its opposite end against the opposite arm of the other clamping plate; and a locking device for locking said clamping plates in closed position.

3. In a ticket holder the combination of the plates A and B provided respectively with the ears *b b'* and *c, c'*, and pivoted together at or near the middle of their lengths; the spring C; the wedge *h*; the spring *j*; and the screw *i*, all constructed and operating substantially as described.

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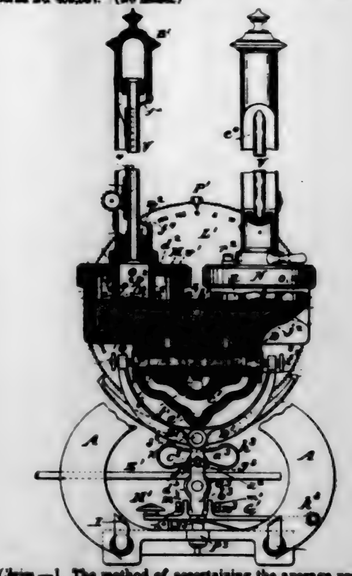
**501,653.** AUTOMATIC FIRE-ALARM. JOSEPH HAVARD, New Bedford, Mass. Filed May 10, 1893. Serial No. 473,662. (No model.)



*Claim.*—In an electric alarm, an automatic circuit closer, consisting of a box composed of non-conducting material having slots in its sides, and provided with a projection *l*; strips of spring metal secured to the sides of said box, and extending through said slots to the interior of the box, where they normally come in contact by the spring of the metal; a wire, connected with one of said springs, extending to the outside of said box and over the projection *l*, and provided with a loop whereby the said strips may be held out of contact, by fusible metal, wax, or a cord; for the purpose, as shown and described.

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**501,654.** POWER-MEASURING INSTRUMENT FOR STEAM-ENGINES. WILLIAM T. HOWARD, Baltimore, Md. Filed Nov. 19, 1892. Serial No. 452,537. (No model.)



*Claim*—1. The method of ascertaining the average pressure of steam in an engine cylinder, herein described, which consists in subjecting a body of mercury in a vessel having a limited discharge aperture of known capacity, to the same steam pressure, and measuring the mercury discharged, substantially as specified.

2. The method of arriving at the average of a varying pressure of steam acting on a moving engine piston during a given period of time, herein described, which consists in subjecting a body of mercury in a vessel having a limited discharge aperture, to steam in communication with that affecting the said piston, and comparing the quantity of mercury discharged from the said vessel with another quantity discharged through the same or a similar aperture under a constant pressure, for the same, or a certain proportion of the same, period of time, substantially as specified.



3. In a power measuring instrument, the combination of a mercury holding vessel having a limited discharge opening, a pipe to convey steam to the surface of the contained mercury, and a measuring vessel to ascertain the volume of the discharged mercury, substantially as specified.

4. In a power measuring instrument, the combination of a mercury holding vessel having a limited discharge aperture, a measuring vessel to ascertain the volume of the discharged mercury, a pipe whereby pressure is applied to the surface of the contained mercury, and valve mechanism to control the said applied pressure, substantially as specified.

5. In a pressure measuring instrument, the combination of a mercury holding vessel having a limited discharge aperture, a measuring vessel to ascertain the volume of the discharged mercury a pipe leading from the space in the mercury-holding vessel above the contained mercury to one end of an engine cylinder, a second pipe leading from the said space above the mercury to the other end of the said engine cylinder, and valve mechanism whereby the said vessel may be placed alternately in communication with each end of the said steam cylinder, substantially as specified.

6. In a pressure measuring instrument, the combination of a mercury holding vessel having a limited discharge, a measuring vessel to ascertain the volume of the discharged mercury, a pipe leading from the surface of the contained mercury to one end of a steam engine cylinder, a second pipe leading from the surface of the mercury to the other end of the said engine cylinder, valve mechanism whereby the said mercury-holding vessel may be placed alternately in communication with each end of the said steam engine cylinder, and means whereby the said valve mechanism is actuated by the piston of the steam engine and in unison with its movement, substantially as specified.

7. In a pressure measuring instrument, the combination of two mercury holding vessels, each one of which is provided with a limited discharge and with a measuring vessel to ascertain the volume of the discharged mercury, a pipe leading from above the surface of the mercury in the two vessels to one end of an engine cylinder, a second pipe leading from the same place to the other end of the said engine cylinder, and valve mechanism actuated primarily from the piston of the engine whereby, in the operation of the engine, the forward steam from each end of the steam cylinder is alternately admitted to one mercury holding vessel, and the back pressure steam from each end of the steam cylinder to the other mercury holding vessel, substantially as specified.

8. In an instrument for ascertaining the power of a steam engine, devices for registering the mean effective pressure of steam acting on the engine piston for a certain period of time, and devices for registering the revolutions of the engine for the same period of time, combined with mechanism whereby the two sets of devices are simultaneously placed in operation, substantially as specified.

9. In a pressure measuring instrument, consisting primarily of a mercury holding vessel having a limited discharge leading to a measuring vessel, a valve which controls the action of steam from the cylinder of a steam engine on the surface of the contained mercury, and actuating mechanism for the said valve having a limited movement less than the stroke of the engine piston, combined with a device operated by the engine piston and having a movement in unison therewith, which device is connected with the said valve actuating mechanism and imparts only a portion of its movement thereto, whereby the said controlling valve is operated at the beginning of each single stroke of the piston, and then held in its position until the completion of the said single stroke substantially as specified.

10. In a pressure measuring instrument, the combination of a valve, a valve-operating pivoted rocker with a vibratory tail piece, a rod connected with some part of an engine having a movement in unison with the engine piston, the free end of which rod passes through the vibratory tail piece, and friction producing devices or rollers forming a part of the tail piece to clamp the said rod and serve to communicate the first part of its motion to the said valve-operating rocker, substantially as specified.

11. In a pressure measuring instrument, the combination of a steam holding vessel containing mercury, and a mercury reservoir inserted in the said steam holding vessel with its end, which is immersed in the mercury, provided with a small aperture, whereby, as pressure is applied to the surface of the mercury exteriorly of the reservoir, the mercury is made to rise in the said reservoir, substantially as specified.

12. In a pressure measuring instrument, the combination of a steam holding vessel containing mercury, a mercury holding vessel having at its lower end a valve which may be opened and closed, and also a diaphragm having a small aperture which is at all times open, the said aperture forming a constant means of communication between the mercury holding portion of the steam holding vessel, and the interior of the reservoir, substantially as specified.

13. In a pressure measuring instrument, the combination of a steam holding vessel containing mercury, a mercury holding reservoir having at its lower end a ported plate valve which is immersed in the mercury, and also a diaphragm secured to the plate valve having a small aperture which is never closed and forms a means of communication between the steam holding vessel and the interior of the reservoir, substantially as specified.

14. In a pressure measuring instrument, the combination of a steam holding vessel in which is inserted a reservoir having a controllable opening and a non-controllable aperture, both of which serve as means of communication between the steam-holding vessel and the reservoir, and a measuring tube leading from the upper end of the said reservoir, substantially as specified.

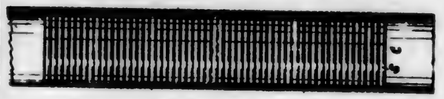
15. A power measuring instrument, which consists of a steam holding vessel having an apertured reservoir in communication with the said vessel, valve mechanism whereby the admission of steam to the said vessel is controlled, and means whereby a motion in unison with the engine piston is communicated to the valve mechanism, combined with a dial and an escapement whereby, at each complete stroke of the engine, the dial is allowed or made to perform a part of a revolution, substantially as specified.

16. In a power measuring instrument, a reversing valve, substantially as described, combined with an actuating pivoted rocker having a tail piece with friction rollers therein, a rod leading from some part of an engine having a movement in common with the engine piston, which is clamped between the friction rollers, and a holding and releasing bar whereby the movement of the said rod may be made operative or inoperative to communicate motion to the said rocker, substantially as specified.

17. In combination with some part of a steam engine having a movement for each stroke of the engine piston, a spring wound toothed dial, and escapement pallets connected to the said part of the engine, whereby at each stroke of the said engine piston, the dial is allowed to make a partial revolution, substantially as specified.

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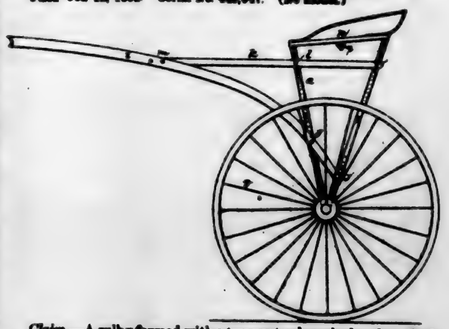
**501,655.** WELL-STRAINER. JOSEPH J. MOSER, West Covington, Ky. Filed July 28, 1892. Serial No. 441,051. (No model.)



*Claim.*—A strainer for deep wells, composed of a series of rings F, one placed above the other, said rings having depressions in their faces at *d*, shoulders *e*, and keys *k*, tube B, having recess G caps D and tube A, substantially as set forth.

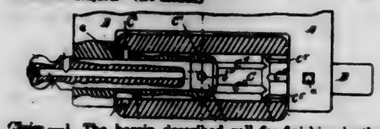
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**501,656.** SULKY. CHARLES H. PALMER, Jr., Amesbury, Mass. Filed Oct. 12, 1892. Serial No. 448,947. (No model.)



*Claim.*—A sulky formed with a two part axle arched as described, the shafts *i* bent downward at their rear ends and secured to said axle near the wheels, and the bars *k* secured to the shafts at their front ends and to the two parts of the axle above and inside the point where said shafts connect with the axle, whereby said bars constitute both a vertical and lateral stay to the shafts, as shown and described.

**501,657.** MEANS FOR LUBRICATING ROLLS OF LEATHER-FINISHING MACHINES. JOHN PALMER, Woburn, Mass. Filed May 1, 1893. Serial No. 472,672. (No model.)



*Claim.*—1. The herein described roll for finishing leather consisting of a head and secured to it a spindle having central oil chamber and exit opening leading therefrom combined with a lubricator and air circulating sleeve journaled on said spindle and having lateral perforations, annular grooves and alternately arranged longitudinal channels, said roll being journaled on said sleeve, substantially as and for the purpose set forth.

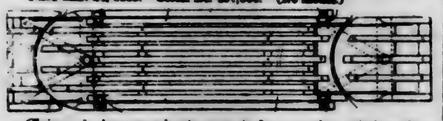
2. The herein described roll for finishing leather consisting of a chambered spindle secured to the head of the machine and having a recessed portion, an oil exit, and longitudinal oil channels combined with a lubricating and air circulating sleeve journaled on said spindle and having lateral perforations, grooves and alternating longitudinal channels, said roll being journaled on said sleeve and means for preventing longitudinal movement of said roll relative to its sleeve, substantially as and for the purpose set forth.

**501,658.** AUTOMATIC ELEVATOR-LOCK. SAMUEL J. PARKER, Rochester, N. Y. Filed Sept. 24, 1892. Serial No. 446,804. (No model.)



*Claim.*—In an elevating apparatus the combination of a main driving shaft, an elevator brake, its operating rope, an automatic locking device for said brake operative when the said shaft is at rest, and connections between said shaft and lock to automatically unlock the brake when the main shaft is in motion, substantially as set forth

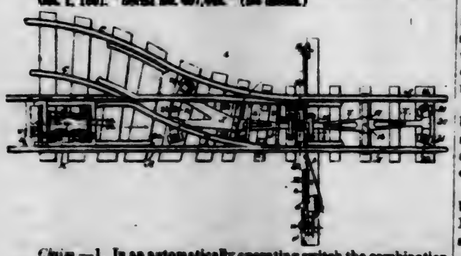
**501,659.** ICE-RUNWAY. JAMES PATTERSON, Jr., Albany, N. Y. Filed Mar. 21, 1893. Serial No. 467,004. (No model.)



*Claim.*—1. A runway having a main framework consisting of sections arranged to automatically draw out and close in the direction of their length when in use in connection with a moving boat or similar object, and a swinging nonextensible end piece attached to one of the main sections of the framework, and automatically adjustable guide plates connected with the frame and swinging end substantially as described.

2. A runway having a framework comprising two laterally movable end pieces, movable supporting brackets arranged lengthwise of the sections, and friction-reducing devices connecting the main portions of the framework substantially as described.

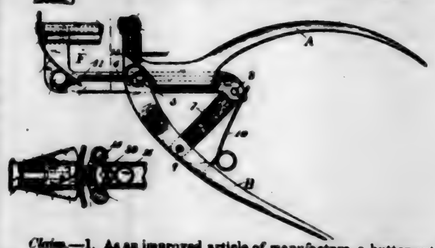
**501,660.** RAILWAY-SWITCH. NELSON PRAT, Cohoes, N. Y. Filed Oct. 1, 1891. Serial No. 407,445. (No model.)



*Claim.*—1. In an automatically operating switch the combination with the switch rails having their swinging ends connected by a tie-bar, of the operating levers fulcrumed between the track rails and having their inner ends pivotally secured to said tie bar, and the opposite ends provided with arms working in suitable guides, and having mounted thereon rollers which project slightly above the upper faces of the inner rails, substantially as described.

2. In an automatically operating switch, the combination with the switch-rails, having their swinging ends connected by a tie-bar, of the operating levers fulcrumed between the track-rails and having their inner ends pivotally secured to the said tie-bar, and the opposite ends provided with arms extending at right angles to their fulcrumed portions and provided with rollers projecting above the upper faces of the track-rails, and guides in which the said arms work, substantially as described.

**501,661.** BUTTON-SETTING INSTRUMENT. FRANCIS H. RICHARDS, Hartford, Conn. Filed Apr. 1, 1891. Serial No. 387,202. (No model.)



*Claim.*—1. As an improved article of manufacture, a button-setting instrument, comprising the member A carrying the setting dies, and having means for carrying the member C which carries the fastener holding devices; the member C sliding in said member A, with its fastener holding devices; the lever or handle B pivotally connected at its end to the member A, and the link 7 pivotally connecting the handle B and member C, substantially as described whereby the members A, C, will have a horizontally aligned movement toward and from each other when the handle is operated, substantially as described.

2. In a button-setting instrument, the combination with the member A carrying the setting-die, and the member C carrying the holding device and sliding in the member A, of the member B pivoted at its forward end to the member A, the inclined link 7 pivoted to the members B, C, in the rear of the pivotal points of the members A, B, and the spring secured to the member B and bearing against member C, substantially as and for the purpose described.

3. In a button-setting instrument, the combination with the member A having pivotally-supported spring-held half-dies abutting against each other and having a setting die-cut formed partially in each; the member C sliding upon member A and having the fastener-holding devices and the driver N thereon; the member B pivoted to the member A at its forward end and the link 7 pivotally connecting members B and C in the rear of the pivotal-point of the members A and B, and forming a connection therewith, substantially as, and for the purpose described.

4. In a button-setting machine, the combination with the member A having the button-setting die at its forward end, and the member B pivoted to said member A as described, of the member C having a sliding connection with the member A and pivotally connected, through the medium of a link at its rear end, to the member B, and having the fastener holding devices comprising the oppositely-disposed pivotally-connected side-clamps 24 and 25, the spring 22 bearing against said clamps, and the presser-slide F and driver N all constructed and arranged substantially as and for the purpose specified.

5. In a button-setting instrument, the combination of the three members A, B and C pivotally-connected, as described, the member A having the two half-dies 12 and 14 with stems 13 and 15 journaled in said member at one side of said dies, and the spring connecting said stems and operating to close the dies, and the member C having the driver N, the presser-slide carried on said member below the driver, and the spring-held pivoted fastener-holding side-clamps carried on said slide, all substantially as and for the purpose set forth

6. In a button setting instrument, the combination with the member having a movement toward and from the setting-die, and having a driver, of the presser-slide carried on said member below said driver, and fastener-holding side-clamps, substantially as described, carried on said slide, all substantially as described.

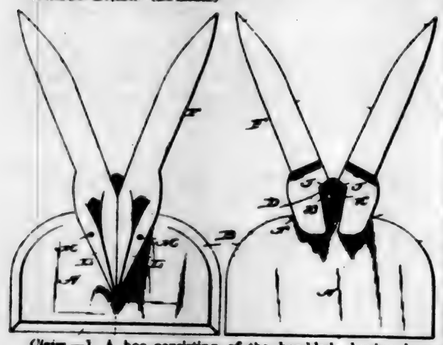
7. In a button setting instrument, the combination with the member C constructed to carry the presser-slide, of the slide F, the driver N, the side clamps, and a spring actuating said clamps and slide, all substantially as described.

8. In a button setting instrument, the combination of the member C having driver N, slide F, and the spring-actuated clamps 24 25, having jaws 23 23, substantially as described.

9. In a button setting instrument, the combination of the slide F, the oppositely-disposed clamps 24 25 pivoted thereto, and having diverging ends 42 43, and the slide-actuating spring bearing on and between said ends, substantially as described.



**501,662.** HOE. DANIEL W. EDELMEYER, South Frankfort, assignor of one-third to H. May, Frankfort, Mich. Filed Dec. 14, 1892. Serial No. 455,177. (No model.)

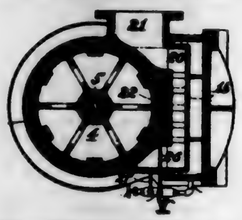


*Claim.*—1. A hoe consisting of the hoe-blade having lower straight and side curved cutting edges, tines connected to the blade and curved outward and terminating in a point having cutting edges on each side, and a handle connected to the blade.

2. A hoe consisting of the blade, shank and handle, the teeth detachably connected to the blade having the shoulders and recesses fitting on the upper edge of the hoe blade, and the reduced lower ends secured to the hoe blade, substantially as described.

3. In a hoe, the combination with a hoe blade, of two blades or tines provided with cutting edges and having shoulders provided with recesses fitting on the edge of the hoe blade, and reduced ends secured to the said hoe blade and the handle having the shank secured to the hoe blade adjacent to the reduced ends of the tines, substantially as described.

**501,663.** BALANCED SLIDE-VALVE. FRANCIS M. RITER, Allegheny, Pa. Filed Mar. 13, 1893. Serial No. 466,574. (No model.)



*Claim.*—1. The combination of a slide distribution valve having a balancing chamber or recess in its face, a valve chest, a valve face, a fluid supply passage having its discharge opening in that portion of the valve face which is continuously covered by the valve when in operation, and a valvular appliance having differential pistons subject to pressure, in one direction from steam in the valve chest, and in the other to pressure from the exhaust steam, and being intermediately subject to pressure from a source of high pressure supply, said pistons controlling communication between said source of high pressure supply and the balancing chamber, substantially as set forth.

2. The combination of a slide distribution valve having a balancing chamber or recess in its face, and a valvular appliance consisting of a casing or chest, a smaller piston and two larger and equal sized pistons mounted on the same stem and adapted to move longitudinally in the casing, a passage leading from the chest, on the outer side of the smaller piston, to the exhaust passage controlled by the distribution valve, ports leading from a high pressure supply into the casing between the two larger pistons and between the smaller piston and one of the larger pistons respectively, a passage leading from the casing, between the smaller and one of the larger pistons, to the balancing chamber of the distribution valve, a passage leading from the casing on the side of the larger piston farthest from the smaller piston to the valve chest, and an opening controlled by said larger piston establishing communication between one of the high pressure supply ports and said valve chest passage, substantially as set forth.

**501,664.** PAPER BOX AND METHOD OF MAKING SAME. JOHN T. BRENNAN, Hyde Park, Mass. Filed May 31, 1892. Renewed May 10, 1893. Serial No. 474,478. (No model.)



*Claim.*—1. A box blank composed of paper reversely creased on the same longitudinal folding lines indicating the corner or edge lines of the finished box, substantially as described.

2. In the method of making paper boxes, creasing the paper longitudinally in one and then in a reverse direction in the same line of fold, and folding the said paper along two of said creased lines to form a tube leaving two lines of reverse creasing in condition to be readily beat, and present true and symmetric side corners when the tube is pinched from edge to edge, substantially as described.

**501,665.** BICYCLE-BELL. ARVID J. SANDBERG, Hartford, Conn. Filed June 20, 1892. Serial No. 436,983. (No model.)



*Claim.*—1. In a signal apparatus for bicycles, the combination with the bell, its striker, and striker-actuator, of the fulcrumed brake-lever capable of a double, or horizontal and vertical movement, the brake-rod connected to said lever and carrying a catch adapted to be engaged with the actuator; one movement of the lever in one direction actuating the brake-rod alone, and the other movement thereof throwing said rod laterally and bringing the catch into engagement with the striker-actuator, substantially as set forth.

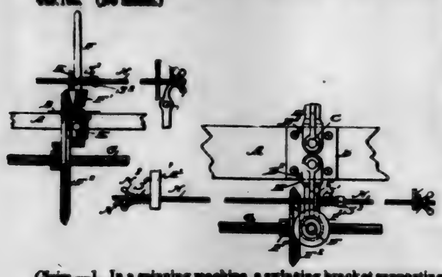
2. In a signal apparatus, the combination with the bell and means for supporting the same, of an oscillating striker-actuator having catches for engagement with the striker-lever, the pivotally-supported bell-striker-lever having a catch to be engaged by said actuator, a spring connecting said actuator and bell-striker, and means for imparting movement to the actuator, consisting of a fulcrumed brake-lever capable of a double or horizontal and vertical movement, and a brake-rod connected to said lever and carrying a catch adapted to be engaged with the actuator whereby one movement of the lever in one direction actuates the brake-rod alone, and the other movement thereof throws said rod laterally bringing its catch into engagement with, and operating the striker actuator, substantially as described.

3. In a signal-apparatus, the combination with the bell and the back-plate 15 having the opening 23, therethrough, (the said bell and back-plate being connected together and supported substantially as described,) of the oppositely-arranged bell-strikers 12, 12', loosely pivoted to the back-plate and having projections to be engaged by a projection upon the striker actuator, an oscillating striker-actuator pivoted centrally within the bell and having the pin 22 projected through the opening 23, and having catches at its either end to engage the projections upon the bell-strikers, two oppositely-arranged springs bearing against the strikers at one end, and connected with the actuator at the other end, and means to impart an oscillating movement to the striker actuator, substantially as and for the purpose set forth.

4. In a signal apparatus, the combination with the bell and the back-plate connected together and supported as described, of a striker-actuator pivotally-supported upon the back-plate and capable of an oscillating motion, and having projections at opposite ends, a plurality of bell-strikers loosely mounted upon pivots upon the back-plate and having catches to be engaged by the catches upon the actuator, springs in contact with the strikers and actuator, a brake-rod 6 having a projection to engage with and oscillate the striker-actuator,

and a pivotally-supported lever to actuate said brake-rod, all substantially as and for the purpose described.

## 501,666. MECHANISM FOR DRIVING SPINNING-SPINDLES. Conrad Seiberth, Paterson, N. J. Filed Oct. 17, 1892. Serial No. 449,166. (No model.)



*Claim.*—1. In a spinning machine, a swinging bracket supporting a spindle, said spindle provided with a friction pulley, in combination with a driving shaft arranged longitudinally in suitable bearings on said machine, a face driving wheel securely fixed to said driving shaft, a rod passing longitudinally along side of said machine through openings in supporting brackets attached to said machine and through an opening formed in an arm on said swinging bracket, said rod provided with a resisting collar, a spring on said rod between the resisting collar and the adjacent swinging bracket, a spring on one end of said rod and an adjusting nut adapted to regulate the tension of said spring and thereby that of the spring located on said rod between the resisting collar and the swinging bracket, which forces its spindle into engagement with its face driving wheel, all constructed substantially as shown and described.

2. In a spinning machine, a shaft extending longitudinally in suitable bearings on said frame, a face driving wheel secured to said shaft, a swinging bracket suitably secured to the rail on said frame above said driving shaft the lower end of said bracket formed to hold the bolster of a spindle, in combination with a spindle provided with a friction pulley, a rod N extending longitudinally along side of said frame passing through arms F on the swinging bracket E, the ends of rod N being provided with screw threads and adjustable nuts, a compression spring at one end of said rod, at the other end a forked lever, said rod N also provided with a resistance collar, and a spring between said resisting collar and the adjacent bracket supporting the spindle, substantially as and for the purposes specified.

3. In a spinning machine, a spindle provided with a friction pulley and mounted in a swinging bracket, in combination with a shaft, suitably mounted on said machine, a face driving wheel secured to said shaft, the rod N provided with screw threads $N'$ and $N^2$, resisting collar —$S^2$, springs $S'$, and a spring $S^3$ adapted to hold the friction pulley in engagement with its respective driving wheel, the brackets H and A' provided with openings through which rod N passes, an adjustable nut adapted to be screwed on each end of the rod N, and on one end of the rod N a forked lever —P— secured to frame of machine on a pivot P', substantially as shown and described and for the purpose specified.

## 501,667. BALE-WIRING TOOL. George Seymour, Walnut, Tex. Filed Nov. 12, 1892. Serial No. 451,727. (No model.)



*Claim.*—1. A bale wiring tool, plungers within a hollow shank, levers *a*, *a*, pivoted to the shank A to operate the plungers, spiral springs on said plungers, projections $f^2$ on the lower end of the plungers, a bar *g*, and plate $g^2$, within the lower end of said shank, means to retain said shank, as and for the purpose described.

2. A bale wiring tool, plungers within a hollow shank, levers *a*, *a*, on said shank to operate said plungers, a plate $g^2$ secured in the lower end of the shank A, a division bar *g*, springs on said plunger bars to rest on the plate $g^2$, guides *g'*, *g'*, means to retain said shank, projections $f^2$ on the plungers, as and for the purpose described.

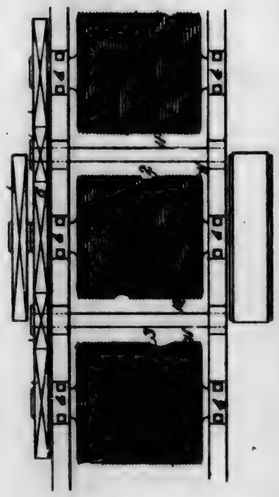
3. A bale wiring tool, plungers operated within a hollow shank A, levers *a*, *a*, pivoted on the body of the tool to operate the plungers, projections $f^2$ on said plungers, a bar *g* between said plungers, guides *g' g'* as shown and for the purpose described.

4. In a bale wiring tool, plungers within said tool, to clamp and cut the wire, a shaft L on the upper end of the tool, a pinion K on said shaft, a handle J bifurcated and journaled on the shaft L, a rack bar *n* to be inserted between the handle and the pinion K, to rotate the tool, as described.

5. In a bale wiring tool, plungers within said tool to clamp and cut the wire, a shaft L on the upper end of the tool, a pinion K rigid on said shaft, a handle J bifurcated and journaled on each side of the pinion K on the shaft L, a rack bar *n* to be inserted between the pinion K and the body of the handle J, an antifriction roller journaled in the handle J to operate on the rack bar, as and for the purpose described.

6 In a bale wiring tool, plungers within said tool to clamp and cut the wire, a shaft L on the upper end of the tool, a pinion K rigid on said shaft, a handle J bifurcated and journaled on each side of the pinion K on the shaft L a rack bar *n* to be inserted between the pinion K and the body of the handle J, a recess $J^3$ as shown and for the purpose described.

## 501,668. WOOD-GRAINING MACHINE. John Shannon, Pittsburg, Pa. Filed May 16, 1892. Serial No. 432,170. (No model.)



*Claim.*—In a wood graining machine, the combination of a series of two or more rollers, all the rollers being provided with cutting edges adapted to produce the same design, said rollers being successively operative on a board or strip and so arranged with reference to each other that the cutting edges of one roller shall lie in a plane passing between the cutting edges of the other roller or rollers, substantially as set forth.

## 501,669. MECHANISM FOR ACTUATING PICKERS FOR COTTON-HARVESTERS. Gerard Beekman, New York, N. Y. Filed May 26, 1892. Serial No. 434,360. (No model.)

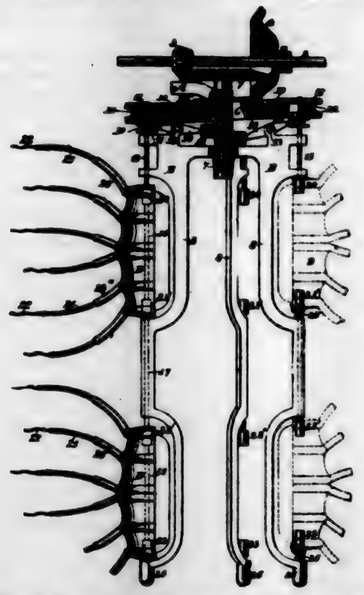


*Claim.*—1. In a mechanism for actuating rotary pickers for cotton harvesters, the combination of a rotary toothed bobbin, and means for supporting the same, a picker shaft frictionally attached to the bobbin bearing two pickers extending in opposite directions of its axis, and a toothed driving gear engaging with the bobbin; said bobbin and gear provided with oppositely inclined spiral teeth adapted to center the bobbin vertically, substantially as described.

2. In a mechanism for actuating rotary pickers for cotton harvesters, the combination of a picker bobbin and a picker shaft extending through the axis of a bobbin frictionally engaging therewith, an idler having smooth flanges engaging with corresponding smooth peripheries or reduced ends of the said bobbin to support it in its proper position, and a gear for rotating the bobbin; said bobbin and gear being provided with oppositely inclined spiral teeth adapted to center the bobbin vertically, substantially as described.



## 501,670. COTTON-HARVESTER. Gerard Beekman, New York, N. Y. Filed Sept. 29, 1892. Serial No. 447,203. (No model.)



*Claim.*—1. In a machine for harvesting cotton, a main rotary support and a plurality of subordinate supports, each bearing the group of rotary picking stems; said subordinate supports being located in circular series at different levels, each having independent oscillatory motion.

2. In a machine for harvesting cotton, a rotary support, vertically aligned subordinate supports independent one from the other and each bearing groups of picking stems and mechanism for rotating them, and shafts for operating said mechanism, forming means of support and axes of oscillation for the said subordinate supports.

3. In a machine for harvesting cotton, a rotary support, vertically aligned subordinate supports, each bearing a group of picking stems and mechanism for rotating them, shafts for operating said mechanism composed of separable sections, respectively situated in the main support, and in the subordinate supports, and suitable couplings for said sections; the same when connected, forming axes of oscillation for the subordinate supports.

4. In a machine for harvesting cotton, a main rotary support, and a subordinate oscillatory support longitudinally movable thereon, a driving roller with oscillatory support, a plurality of bobbins engaging with the driving roller in common, bearing the cotton picking stems, idle spindles on which said engagement is dependent, retractible axial rods bearing the spindles, and a cam or other lifter attached to the said main support in a position adapted to encounter said spindle axes and cause the spindles to retract successively when the subordinate support is oscillated while at one extremity of its longitudinal movement.

5 In a machine for harvesting cotton a rotary support, a plurality of driving shafts longitudinally movable thereon, a picking mechanism substantially such as described dependent for its action or inaction upon the longitudinal positions of said shafts, pinions on the shafts, and a central oscillating driving gear having a supporting engagement with said pinions through the agency of tongues and grooves

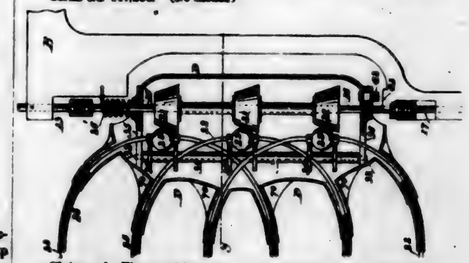
6 In a cotton harvester, the combination of a main rotary support, a longitudinally movable driving shaft thereon for the pickers, and a picking mechanism substantially as described, depending for its action or inaction upon the longitudinal position of said shaft, a pinion on the said shaft, and an oscillating driving gear central to the axis of the main support, and means for rotating the same, and a cam upon the main support concentric with the said gear for producing its oscillation substantially as described.

7. In a machine for harvesting cotton, a driving roller a bobbin bearing a cotton picking stem, an idle spindle, a sliding spindle rod for retracting the spindle from the bobbin, oblique springs commonly inclined supporting the extremities of said rod, and an encountering cam or other lifter for moving the said spindle rod and retracting the spindle.

8. In a cotton harvester, the combination of a main rotary support, subordinate oscillatory supports, rotating picking stems thereon, and mechanism for rotating the same; the oscillatory supports tending to revolve one way by the frictional action of the said mechanism, and springs tending to revolve said supports the other way, substantially as and for the purposes described.

9. In a cotton harvester, the combination of a main rotary support, longitudinally movable driving shafts thereon for the pickers, and a picking mechanism dependent for its action or inaction upon the longitudinal positions of said shafts, pinions on the shafts, an oscillating driving gear central to the axis of the main support engaging with and determining the positions of said pinions substantially as described, a rotary cam fixed upon the axis of the main rotary support beneath said driving gear having depressions corresponding to each of said shafts, and interposed between each cam and the driving gear a non-rotary vibrating disk supporting the latter and bearing a projection adapted to be moved by said depressions at intervals as described.

## 501,671. PICKER-ACTUATING MECHANISM FOR COTTON-HARVESTERS. Gerard Beekman, New York, N. Y. Filed Sept. 29, 1892. Serial No. 447,206. (No model.)



*Claim.*—1. The combination in a cotton harvester, of a main rotary support, a subordinate support, a rotary picking stem and a bobbin thereon in the said subordinate support, a longitudinally movable driving shaft in said subordinate support, a tapered driving roller on the shaft engaging with the bobbin, and means for holding the said subordinate support and the bobbin longitudinally in place when the said driving shaft is moved longitudinally, for the purpose set forth.

2. The combination in a cotton harvester, of a main rotary support, a subordinate support, a rotary picking stem and bobbin thereon a longitudinally movable driving shaft extending vertically in the said subordinate support, a tapered driving roller on the said shaft engaging with the said bobbin, and means for maintaining the said bobbin in a longitudinally given position in said subordinate support, the weight of the said support, pickers, and bobbins being sustained by the bearing of the latter on the tapered driving wheels when the driving shaft is raised, and an independent means for sustaining the weight of said parts when the driving shaft is depressed, substantially as and for the purpose described.

3. The combination in a cotton harvester, of a main rotary support, a subordinate oscillatory support, a rotary picking stem and bobbin thereon in the subordinate support, a vertical longitudinally movable driving shaft bearing a tapered driving roller engaging with said bobbin and forming the axis of oscillation of said subordinate support; the latter being longitudinally movable with reference to the said shaft; and a torsionally and longitudinally resilient spring interposed between the main support and the subordinate support in the axis of oscillation of the latter, for the purpose described.

4. The combination in a cotton harvester, of a suitable support, a rotary picking stem, a spherical bobbin thereon having reduced extensions as described, two pairs of idle flanges 30, 30, engaging with the said reduced extremities of each bobbin and bearing upon the spherical portion of each bobbin a tapered frictional driving roller, means for actuating the same, and means for engaging and disengaging said bobbin and driving roller by a longitudinal movement of one relatively to the other.

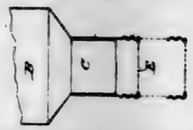
5. The combination in a cotton harvester, with a suitable support, a tapered frictional driving roller and a flanged idle spindle having a longitudinal movement, of an elastic bobbin bearing a picking stem; the said bobbin adapted for limited longitudinal compression for the purpose described.

6. The combination in a cotton harvester, with a suitable support and driving shaft, longitudinally movable, the one with reference to the other, of a tapered frictional driving roller on said shaft, a series of flanged idle spindles mounted within the support, and a series of bobbins bearing picking stems, interposed between said spindles, and tapered rollers, dependent for their rotation upon the longitudinal compression of the said support with reference to the driving shaft, for the purpose described.

7. The combination in a cotton harvester, of a suitable support, a tapered driving roller, and means for displacing the same longitudinally, a circular series of bobbins resting thereon, and flanged spindles supporting and resting on the bobbins having variable distances of longitudinal displacement within said support, substantially as and for the purpose described.

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**501,672.** COFFEE-POT. FRANK P. BOLARD, Providence, R. I. Filed Mar. 14, 1893. Serial No. 465,890. (No model.)

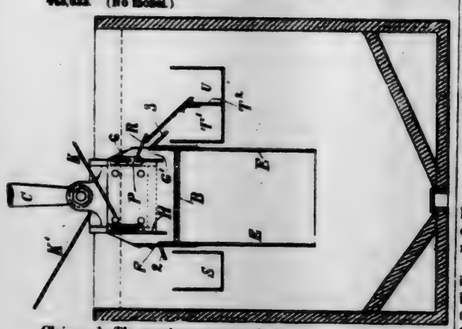


*Claim.*—1. A coffee pot constructed with a receptacle B having a funnel-shaped base and a contracted neck C grooved to form a thread, also having a collar D with corresponding thread, for securing strainer to bottom of this neck, all in combination substantially as described

2. A coffee pot constructed with a receptacle B having a funnel-shaped base and a contracted neck C to which is secured a sliding sleeve grooved at bottom to form a thread, and collar D with corresponding thread, all in combination substantially as and for the purpose set forth

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**501,673.** SEPARATOR FOR COAL, &c. HEZEKIAH BRADFORD, Philadelphia, Pa.; Samuel Isaac Willingale and Robt. W. Finlettar administrators of said Bradford, deceased. Filed Oct. 12, 1892. Serial No. 448,632. (No model.)



*Claim.*—1. The combination in a hydraulic separating jig, of a grate, an inertia box below the grate, two delivery dams above and near the opposite edges of the grate, a supply chute over the grate and a guard plate between the supply chute and one of the dams, whereby the materials supplied to the jig are separated according to gravity in opposite directions, the heavier portions passing under the guard plate and over one dam, while the lighter portions rise and pass toward and over the edge of the other dam, substantially as set forth.

2. The combination in a hydraulic separating jig, of a grate, an inertia box below the grate, two delivery dams above and near the opposite edges of the grate, a supply chute over the grate and a guard plate between the supply chute and one of the dams, whereby the materials supplied to the jig are separated according to gravity in opposite directions, the heavier portions passing under the guard plate and over one dam, while the lighter portions rise and pass toward and over the edge of the other dam, and a secondary dam near the delivery for the lighter materials, the lower edge of which secondary dam is above the grate, and the upper edge is sufficiently high to form a second separation for the removal of the lightest materials, substantially as set forth.

3. The combination in a hydraulic separating apparatus, of a jig having a grate, an inertia box below the grate, two dams above and near the edges of the grate, one or both of which dams are adjustable in their height in relation to the other, a supply chute over the jig and a guard plate with its lower edge above the grate leaving an intermediate space for the heavier materials to pass beneath such guard plate, substantially as set forth.

4. The combination in a hydraulic separating apparatus, of a jig having a grate, an inertia box below the grate, two dams above and near the edges of the grate, one or both of which dams are adjustable in their height in relation to the other, a supply chute over the jig and a vertically adjustable guard plate with its lower edge above the grate leaving an intermediate space for the heavier materials to pass beneath such guard plate, substantially as set forth.

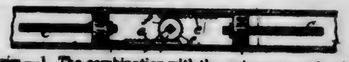
5. The combination in a hydraulic separating apparatus, of a jig having a grate, two dams above and near the edges of the grate, one of which is higher than the other, a supply chute for the material, a guard plate above the grate with an opening between the lower edge and the grate for the passage of the heavier materials, a secondary dam above the grate, the upper edge of which is variable in height so as to effect a second separation of the pure coal or lighter material from the bone coal or heavier material that passes beneath the secondary dam, substantially as set forth.

6. The combination in a hydraulic separating jig, of a grate an inertia box below the grate, two delivery dams above and near the opposite edges of the grate, a supply chute over the grate and a guard plate between the supply chute and one of the dams, whereby the materials supplied to the jig are separated according to gravity in opposite directions, the heavier portions passing under the guard plate and over one dam, while the lighter portions rise and pass toward and over the edge of the other dam, and stationary receiving troughs at opposite sides of the jig, substantially as set forth.

7. The combination in a hydraulic separating jig, of a grate, an inertia box below the screen, two delivery dams above and near the opposite edges of the grate, a supply chute over the grate and a guard plate between the supply chute and one of the dams, whereby the materials supplied to the jig are separated according to gravity in opposite directions, the heaviest portions passing under the guard plate and over one dam, while the lighter portions rise and pass toward and over the edge of the other dam, and a secondary dam near the delivery for the lighter materials, the lower edge of which secondary dam is above the grate, and the upper edge is sufficiently high to form a second separation for the removal of the lightest materials, bars extending from the upper edge of the secondary dam over the coal dam, and three troughs within the water holding tank, one of which troughs receives the heavier material at one side of the jig and the other two troughs receive the pure coal and bone coal respectively from the coal and auxiliary dam, substantially as set forth.

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**501,674.** HOLDING MECHANISM FOR SPRING-ACTUATED SHADES. EDWARD T. BURROWES, Portland, Me. Filed Feb. 15, 1893. Serial No. 462,426. (No model.)



*Claim.*—1. The combination with the spring actuated rods of the longitudinally and rotatively movable friction heads permanently secured thereto, and the auxiliary springs for holding said heads normally extended upon said rods.

2. The combination, with a shade stick, the outer end of which is hollow and provided with a stop, of a longitudinally movable rod in the stick, the outer end of which is provided with a head longitudinally movable thereon, and the inner end is provided with means for moving the rod longitudinally, a stop on the rod between the stop in the stick and the head on the rod, a spring on the rod between the two stops and an auxiliary spring on the rod between the stop on the rod and the head.

3. The combination with a shade stick, the outer end of which is provided with a longitudinally movable hollow stem, the bottom or inner end of which is perforated and the outer end is provided with a friction head, of a longitudinally movable rod within the stick, the outer end of which is passed through the perforation in the stem and enlarged and fitted in the hollow of the stem, a stop on the rod to limit the inward movement of the head, and a spring on the rod adapted to engage with the bottom of the stem and force it outward, and means for moving the rod within the stick.

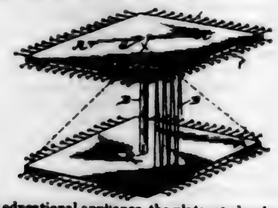
4. The combination with a shade stick, each end of which is provided with a friction head, rods in the stick, the outer ends of which, each engages loosely with the head at that end, said head being longitudinally movable relatively to the rod, a stop on each rod, a spring on each rod, one end of which engages with the stop and the other end engages with the head, and means for moving the rods.

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**501,675.** EDUCATIONAL APPLIANCE. JOSEPH L. CHILDS, Minneapolis City, Pa. Filed June 17, 1892. Serial No. 437,116. (No model.)

*Claim.*—1. In an educational appliance, a plate, card, or board provided with peripheral pins or points lying in the plane thereof, and a cord or cords to engage such pins or points to form designs, substantially as specified.

2. An educational appliance having duplicate plates, cards or boards, arranged in different planes and provided with central sockets and pins or points, a stem fixed at its ends in said sockets, and cords to engage said pins or points, substantially as specified.

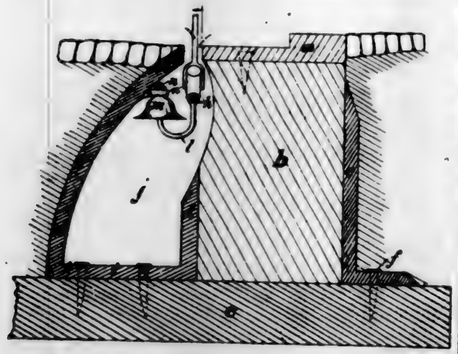


3. In an educational appliance, the plate, card or board provided with attaching pins or points, the cords to engage said pins or points, and removable design-sheets to cover the plate, card, or board, substantially as specified.



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**501,676.** ELECTRIC-RAILWAY CONDUIT. IRVING J. COOK, Newark, N. J. Filed Aug. 23, 1892. Serial No. 443,869. (No model.)



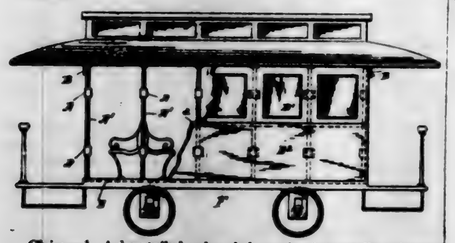
*Claim.*—1. An electric conduit combining therein a sleeper or stringer *b*, means for supporting the same whereby it may be removed to afford access to the conduit, and a track-rail supported upon said sleeper, as described, for the purpose set forth.

2. The combination in an electric conduit of a removable rail, a chamber adjacent to the said rail and having an opening at the top; said opening lying between the rail on one side and the wall of the conduit on the other side, substantially as and for the purpose set forth.

3. In an electric subway conduit, the combination of a rail and sleeper removable from the conduit, cross-ties *c*, therefor, and guides or stays for retaining said rail and sleeper in correct position, all substantially as and for the purpose set forth.

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**501,677.** REMOVABLE SIDE WALL FOR CARS. LEE D. CRAIG, San Francisco, Cal. Filed Dec. 12, 1892. Serial No. 454,993. (No model.)



*Claim.*—1. A dovetailed or beveled panel, substantially as herein described, for movable sides to street or railroad cars, when secured in place by dovetailed lugs, or equivalent, and cam-bearings, substantially as herein described.

2. In a railway car or carriage, the upright stanchions A provided with lugs D, having dovetail grooves in combination with side panels $D^2$, having lugs adapted to fit the grooves in the lugs D., and a locking device for fastening the panels to the car, substantially as described.

3. In a railway car or carriage, side panels $D^2$ adapted to interlock with the lower transverse beam of the car, and having a lugel (*a*) adapted to cover the joint, in combination with an upper panel $D'$, and locking device, substantially as described.

4. In a railway car or carriage, the movable side panels adapted to interlock at their meeting edges, and to be connected with upright stanchions of the car by means of dovetailed lugs and grooves substantially as described.

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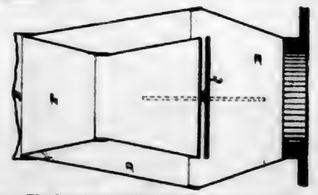
**501,678.** DEVICE FOR PREVENTING RAILS FROM SPREADING. THOMAS R. DARLL, Alfred Centre, N. Y., assignor of two-thirds to W. C. Dunham and W. B. White, same place. Filed Apr. 26, 1893. Serial No. 471,948. (No model.)



*Claim.*—In a device of the character set forth, the combination of a pair of bars having their inner ends recessed on opposite sides and supplied with a pair of longitudinally-disposed bolt-openings arranged to engage with each other, and the outer ends thereof formed with upturned hooks to engage the outer portions of the flanges of oppositely-disposed rails, and with a single bolt-opening adjacent to each of said hooks, and a keeper bar with heads at the opposite ends thereof having bolt-openings extending therethrough to align with the similar openings adjacent to the hooks of the said bars and also formed with a pair of centrally-located longitudinally-disposed bolt-openings that align with the similar openings at the center of the united lower bar, and bolts uniting said parts at the center and at the ends, substantially as described.

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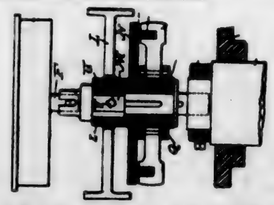
**501,679.** SMOKE AND GAS BURNER AND HEAT-RADIATOR. EDWARD DOBB, Kansas City, Mo. Filed May 6, 1892. Serial No. 432,065. (No model.)



*Claim.*—The herein described heating drum forming a section of stove pipe and consisting of a short upwardly expanded pipe section forming an enlarged heating chamber, an upwardly contracted pipe section fitted onto the aforesaid pipe section, an interior pipe section forming a smoke flue and projecting from the upper end of the contracted section, downwardly within said section, forming an annular heating chamber between it and the said contracted section, and a solid damper secured below the lower end of said interior smoke flue and serving to deflect the flame and gases into the annular chamber, substantially as set forth.

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**501,680.** TURNSTILE. WILLIAM T. ELLISON, Jr., Salford, and JAMES UNSWORTH, Jr., Manchester, assignors to George Thomas, Manchester, England. Filed Feb. 17, 1893. Serial No. 462,799. (No model.) Patented in England Feb. 18, 1892, No. 3,295.



*Claim.*—1. In a turnstile, the combination, substantially as set forth, with the turnstile-shaft and its wings, of a circumferential series of steps carried by the shaft, one step for each wing, a lever arranged

to engage in front of said stops and prevent the forward turning of the turnstile and adapted to be moved out of such engaging position by the attendant, means, as a weight, for holding said lever in engaging position, and cam-surfaces carried by the turnstile-shaft and engaging said lever and serving to force the lever into engaging position in front of each of said stops successively.

2. In a turnstile, the combination, substantially as set forth, of two rotary parts, one forming the turnstile-shaft and the other forming the spindle of the recording device, a flanged disk turning with one of said rotary parts, a hub turning with the other of said rotary parts, one or more gripping arms hinged to said hub and provided with a slot engaging said flange, and a spring for each of said gripping arms tending to drag the gripping arm backward.

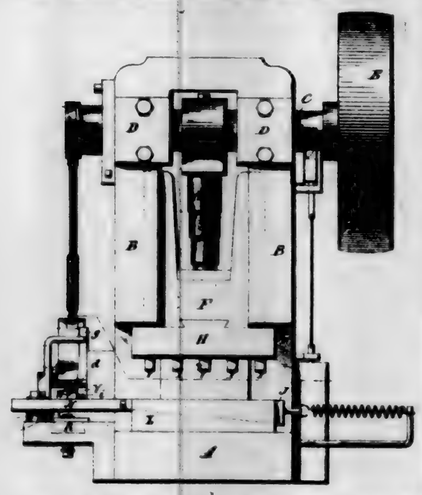
3. In a turnstile, the combination, substantially as set forth, of a turnstile shaft, a recording device having the axis of its spindle in line with the axis of the turnstile-shaft, an intermediate spindle connected with the spindle of the recording device and extending toward the turnstile-shaft, a friction-clamp for resisting the rotation of said intermediate spindle, and devices, substantially as set forth, connecting the turnstile-shaft with said intermediate spindle and serving to force said intermediate spindle to turn with the turnstile-shaft when the latter moves in admission-direction and permitting said intermediate spindle to remain at rest when the turnstile shaft turns in the opposite direction.

4. In a turnstile, the combination, substantially as set forth, of a turnstile-shaft, a bearing at the top of the same, a step-bearing in the top of the turnstile-shaft, a bearing above the top of the turnstile-shaft, a spindle journaled in said last-mentioned bearing and stepped in said step bearing, and devices, substantially as set forth, connecting said turnstile-shaft and spindle.

5. In a turnstile, the combination, substantially as set forth, with a turnstile-shaft and a recording device, of a flanged disk connected with and turning with the recording device, a loose hub concentric with said flanged disk, an arm fast on the turnstile-shaft and engaging said hub and forcing the hub to turn with the turnstile-shaft, and one or more gripping arms hinged to said loose hub and engaging said flanged disk.

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**501,681. RIVETING-MACHINE.** SAMUEL FRISBIE, Unionville, Conn. Filed Sept. 29, 1892. Serial No. 447,235. (No model.)




*Claim.*—1. In a riveting machine, the combination with one or more reciprocating hammers, and an anvil arranged in opposition thereto, of step-by-step mechanism for regularly and intermittently reducing the distance between the hammer or hammers and the anvil, the said mechanism being constructed and arranged to operate between the successive blows of the hammer or hammers, substantially as set forth, and whereby the rivets are operated upon progressively, or little by little, instead of all at once.

2. In a riveting machine, the combination with one or more reciprocating hammers, and an anvil arranged in opposition thereto, of step-by-step mechanism for imparting a regular intermittent movement to the anvil toward the hammer or hammers, the said mechanism being constructed and arranged to operate between the successive blows of the hammer or hammers, substantially as described, and whereby the rivets are operated upon progressively or little by little, instead of all at once.

3. In a riveting machine, the combination with one or more reciprocating hammers, and an anvil arranged in opposition thereto and having its lower face longitudinally inclined, of a bed located below the anvil, and having a corresponding opposite inclination, and step-by-step mechanism for imparting a regular, intermittent movement to the anvil upon its bed to move it progressively toward the hammer or hammers, the said mechanism being constructed and arranged to operate between the successive blows of the hammer or hammers, substantially as set forth, and whereby the rivets are operated upon progressively or little by little, instead of all at once.

4. In a riveting machine, the combination of a reciprocating slide carrying one or more hammers corresponding in number to the rivets to be operated upon, an anvil below said hammers, and adapted to support the work, the anvil inclined upon its under side from one end toward the other, a bed below the anvil upon which the said inclined surface of the anvil rests, the anvil constructed with an arm projecting from one end, a slide arranged to move in a path at right angles to said arm, the said slide carrying a cam, and the arm carrying a stud against which said cam is adapted to operate, mechanism substantially such as described for imparting to said slide a step by step or intermittent movement, which movement will be communicated to the anvil by said cam, and cause the anvil to ride up the inclined surface on which it rests, mechanism substantially such as described to release the said anvil from the action of said slide, and a spring to return the anvil after such release, substantially as and for the purpose described.

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**501,682. KNIFE.** MOSES L. HAWES, Chicago, Ill. Filed Oct. 8 1892. Serial No. 448,250. (No model.)

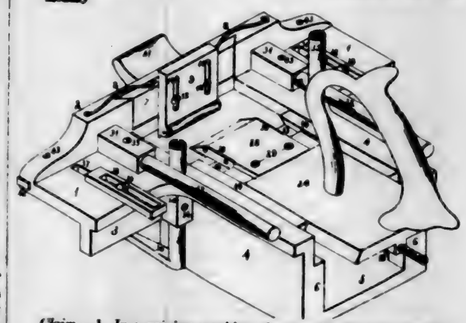


*Claim.*—1. In a knife having the blade with shank formed in one piece, the blade having the longitudinal projections 2, with the shank having the barbs 3, or their equivalent in the margin thereof, and a grooved and bent wire permanently secured thereto—substantially as herein described.

2. A knife having a fixed handle consisting of the knife shank formed with inwardly curved sides, and a grooved bent wire extending around the edge of said shank, with the ends forked and bearing against the pointed projections 2, of the blade, and the margin of the shank bearing closely within the groove in the wire, whereby the parts are rigidly connected, and wherein the combined strength of the knife shank and wire is made available as a durable and convenient handle for the knife, substantially as shown and described.

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**501,683. GAINING-MACHINE.** FRANK JOHNSON and CARL A. JOHNSON, Rockford, Ill. Filed Mar. 1, 1893. Serial No. 464,576. (No model.)



*Claim.*—1. In a gaining machine, the combination of a suitable support, a reciprocating knife, a spring moving the knife in one direction and a combined knife and saw capable of a movement at right angles to the reciprocating knife, the movement of the combined knife and saw imparting a reciprocating movement to the knife in one direction.

2. In a gaining machine, the combination of a suitable support, a combined knife and saw, a movable support therefor and a connection between the combined knife and saw and its support whereby the reciprocation of the combined knife and saw will lower the support, and stops limiting the descent of the support.



3. In a gaining machine, the combination of a suitable support, a combined knife and saw, a movable platform, a screw threaded shank having a connection with a stationary part and provided with an enlarged end having an annular surface provided with saw teeth, and a spring dog secured to the under-side of the combined knife and saw engaging the saw teeth at each reciprocation thereof, the upper enlarged end supporting the movable platform.

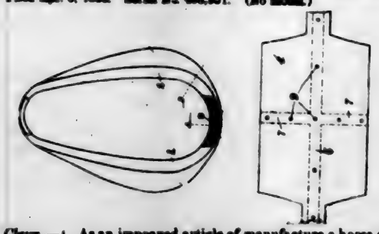
4. In a gaining machine, the combination of a suitable support, a combined knife and saw, a platform having guide-ways and supporting the combined knife and saw, and adjustable stops limiting the movement of the platform.

5. In a gaining machine, the combination of a suitable support, a reciprocating knife supporting a roller near its cutting edge, a spring moving the knife in one direction, a combined knife and saw capable of a movement at right angles to the reciprocating knife and engaging therewith at the end of its movement in one direction.

6. In a gaining machine, the combination of a suitable support, a reciprocating knife, a spring moving the knife in one direction and a combined knife and saw capable of a movement at right angles to the reciprocating knife, the movement of the combined knife and saw imparting a reciprocating movement to the knife in one direction, and a system of clamps and gages for properly adjusting the wood-work and holding the same.

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**501,684. HORSE-COLLAR.** JACOB S. MARING, Mason City, Ill. Filed Apr. 3, 1893. Serial No. 468,951. (No model.)



*Claim.*—1. As an improved article of manufacture a horse collar attachment comprising a piece of leather having portions 8, extensions 5, and a + shaped metallic stiffening strip 6 provided with elastic branches 7 secured to said piece of leather, substantially as set forth.

2. The improved horse-collar attachment constructed of leather or pliable material with portions 8 of unequal widths to embrace the fore and aft wales of the collar, narrow duplicate-extensions 5 adapted to fit in the inside crease of the collar, and a suitable fastening or stiffening-strip 6 provided with elastic branches 7 and applied to the portions 8 and the duplicate extensions, substantially as herein specified.

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**501,685. CUTTER-HEAD.** WILLIAM MORGAN, Brooklyn, Ohio. Filed Feb. 20, 1893. Serial No. 463,003. (No model.)



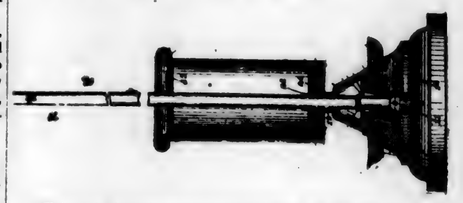
*Claim.*—1. In a cutter head, in combination, a barrel having a hole adapted to receive a locking pin, movable dies mounted in one end of said barrel, a longitudinally movable sleeve to move said dies, having a hole adapted to receive one end of said locking pin, a locking pin F, a pressure pin F' and a collar having an interior wedge shaped part adapted to engage with said pressure pin, substantially as and for the purpose specified.

2. In a cutter head, in combination, a barrel having a hole adapted to receive a locking pin, movable dies mounted in one end of said barrel, a longitudinally movable sleeve D adapted to move said dies, having (first) a hole adapted to receive one end of said locking pin, (second) an interior longitudinal groove, and (third) two shoulders $d$ $d'$, a locking pin F, a spring acting to force said pin outward into engagement with the sleeve D, a pressure pin F' lying in the hole in the sleeve D and engaging with the pin F', and a longitudinally movable sleeve G mounted on sleeve D between the two shoulders thereon having an interior wedge which engages with the pin F', substantially as and for the purpose specified.

3. In a cutter head, in combination, a barrel, the dies mounted in its end, a movable piece A' set into said barrel having a hole adapted to receive a locking pin, a set screw adapted to adjust the relative position of piece A' and the barrel, a sleeve D adapted to operate the said dies having a hole adapted to receive one end of said locking pin, a locking pin F, a pressure pin F' and a collar G having an interior wedge adapted to engage with the pin F', substantially as and for the purpose specified.

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**501,686. FLY-TRAP.** JACOB MOSKOWITZ, St. Louis, Mo. Filed Jan. 5, 1893. Serial No. 457,314. (No model.)



*Claim.*—1. As an improvement in fly traps, the combination, with a base, and a stem projecting upwardly therefrom, of a reciprocatory reservoir mounted on said stem and provided with an inner bottom elevated above the bottom proper, and a disk of flexible material disposed between the same and surrounding the stem; substantially as set forth.

2. As an improvement in fly-traps, the combination, with a base, a stem projecting upward therefrom, and a reciprocatory reservoir mounted on the stem, of a removable scraper for cleansing said stem and consisting of two sections hinged together at one side, said sections being provided with coincident recesses adapted to form conjunctively a central opening corresponding to and receiving the stem; substantially as set forth.

3. An improved fly trap having a hollow substantially conical shaped base, the upper end of said base truncated, two inwardly projecting spring plates, the inner edges of which outline an elliptical opening, two downwardly projecting and converging walls from said plates, horizontal flanges in said walls above a point at which they merge into a plate forming a part of the base, a vertical stem elliptical shaped in cross section and hollow, said stem provided with two upwardly projecting spring lugs, a peripheral flange upon said stem and which when inserted in the opening between said spring plates is adapted to engage flanges upon the converging walls, the upper ends of said spring lugs adapted to engage under said spring plates, and a peripheral flange adapted to engage over said spring plates, substantially as set forth.

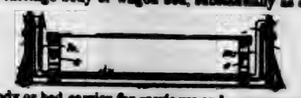
4. An improved fly trap having a hollow base surmounted by an upwardly projecting hollow stem, said stem being elliptical in cross section, a reservoir for the storage of adhesive material adapted to be reciprocated upon said stem, said reservoir comprising a cylindrical shell having a double bottom, the outer bottom having a downwardly projecting flange coincident in form with and adapted to fit over said stem, the upper of said bottoms provided with an opening through which said stem is adapted to pass, a felt packing located between said bottoms, a wax paper set between said felt packing and the lower of said bottoms, said wax paper imperforate except when punctured by the passage of the stem through the same, the top of said reservoir provided with an annular rounded portion, four lugs projecting therefrom, a cap for said reservoir having a circumferential downwardly and inwardly projecting rounded portion adapted to engage over said projecting lugs, an imperforate sheet of wax paper normally held between said cap and the upper end of said reservoir and said wax paper adapted to be punctured by the passage of said reservoir downward and over same, substantially as set forth.

5. As an improvement in fly-traps, the combination, with a stem, and a reciprocatory reservoir mounted thereon, of a supporting base for said stem comprising a conical support provided with two inwardly-projecting plates adapted to engage and support the stem, a horizontal plate located within said base, and a tube disposed between the inwardly-projecting and the horizontal plates, said tube being adapted to receive the stem and provided near its lower end with an inwardly-projecting annular flange for limiting the downward movement of the stem; substantially as and for the purpose set forth.

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**501,687. CARRIAGE.** CURTIS HILLIER, Harrisville, Ind. Filed Mar 24, 1893. Serial No. 467,486. (No model.)

*Claim.*—1. A body or bed carrier for carriages and wagons, consisting of side-bars, cross-bars adjustable thereon, and means for supporting the carriage body or wagon bed, substantially as set forth.



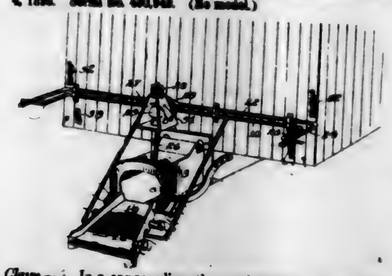
2. A body or bed carrier for carriages and wagons, consisting of side bars, cross bars provided with upturned ends, angle irons secured to the cross-bars, and to the side-bars, braces secured to the said upturned ends and to the side bars, and swinging cross rods journaled in the upturned ends, said rods being adapted to support a carriage body or wagon bed, substantially as set forth.

3. A body or bed carrier for carriages and wagons, consisting of side-bars, adjustable cross-bars having upturned ends and bearings, means for securing the cross-bars adjustably to the side-bars, transverse rods for supporting a body or bed, and crank arms on said rods provided with journals received by said bearings, substantially as set forth.

4. The combination with a body or bed carrier for carriages and wagons, the same being provided with swinging rods, of carriage-springs or a wagon bed provided with sectional boxes secured to said rods whereby the springs or bed are removably secured to said rods, substantially as set forth.

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**501,688.** CAR-COUPLING. GEORGE A. HORNBECK, San Antonio, Tex., assignor of one-half to Henry E. Verner, same place. Filed Feb. 4, 1893. Serial No. 460,948. (No model.)



*Claim.*—1. In a car coupling, the combination of a car having a draw-head, a link-guider located beneath the draw-head at the front thereof, and links hingedly connecting the upper end of the link-guider with the front portion of the draw-head and pivoted at each of their ends, and means for swinging the link-guider outward to an inclined position in advance of the draw-head, substantially as described.

2. In a car coupling, the combination with a car having a draw-head, of links having their upper ends hingedly connected with the car, at the front end of the draw-head a link-guider located beneath the draw-head and hinged at its upper end to the lower ends of said links and adapted to be swung outward to an inclined position in advance of the draw-head, and a rock-shaft journaled on the car and having an arm connected with the link-guider to swing the latter outward and to return the same beneath the draw-head, substantially as described.

3. In a car coupling, the combination with a car having a draw-head, of a link-guider arranged beneath the draw-head and hingedly connected with the car and provided with yielding sides adapted to be forced outward, and means for swinging the link-guider outward to an inclined position in advance of the draw-head and for returning the same beneath the draw-head, substantially as described.

4. In a car coupling, the combination with a car having a draw-head, of a link-guider arranged beneath the draw-head and hingedly connected with the car and provided with converging yielding sides adapted to be forced outward, and means for swinging the link-guider outward to an inclined position in advance of the draw-head and for returning the same beneath the draw-head, substantially as described.

5. In a car coupling, the combination with a car having a draw-head, of a link-guider comprising a body provided on its inner face with tubular portions and having slotted lateral extensions, sides having openings receiving the lateral extensions and provided with cross-pieces arranged in the slots of the extensions, and springs arranged in the tubular portions and attached to said cross-pieces, and means for swinging the link-guider outward to an inclined position in advance of the draw-head and for returning the same beneath the draw-head, substantially as described.

6. In a car coupling, the combination with a car having a draw-head, of a link-guider comprising a body provided with lateral extensions, sides mounted on the extensions, and springs connecting the sides, and means for swinging the link-guider outward to an inclined position in advance of the draw-head at the same time raising the coupling pin and for returning the same beneath the draw-head dropping the coupling pin in its draw-head, substantially as described.

7. In a car coupling, the combination with a car having a draw-head, of a link-guider comprising a body, yielding sides adapted to be forced outward, and springs connecting the sides, and means for swinging the link-guider outward to an inclined position in advance of the draw-head and for returning the same beneath the draw-head, substantially as described.

8. In a car coupling, the combination with a car having a draw-head, of a link-guider hingedly connected with the car and arranged below the draw-head and adapted to be swung outward in advance of the draw-head, a rock-shaft journaled on the car and having an arm connected to the link-guider, said rock-shaft being provided at its ends with handles, a coupling pin, and a rock-shaft journaled on the car and arranged above the first mentioned rock-shaft and provided with a central arm connected to the coupling pin and at its ends with handles arranged for movement independent of the handles of the first mentioned rock-shaft and arranged to be engaged by the handles of the first mentioned rock-shaft, substantially as and for the purpose set forth.

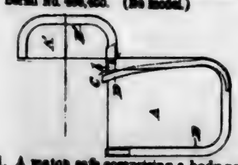
9. In a car coupling, the combination with a car having a draw-head, of a link guider hingedly connected with the car and arranged below the draw-head and adapted to be swung outward in advance of the draw-head, a rock-shaft journaled on the car and having an arm connected to the link-guider, said rock-shaft being provided at its ends with handles, a coupling pin, a rock-shaft journaled on the car and arranged above the first mentioned rock-shaft and provided with a central arm connected to the coupling pin and at its ends with handles arranged for movement independent of the handles of the first mentioned rock-shaft, a chain arranged above the rock-shafts for holding the coupling pin elevated, and a latch arranged below the rock-shafts and adapted to engage the last mentioned one to hold the link guider beneath the draw-head and to prevent the coupling pin from rising, substantially as described.

10. In a car coupling, the combination with a car having a draw-head, of a coupling pin, a casing receiving the upper end of the coupling pin, an inverted cup suspended within the casing and a rock-shaft mounted on the car and having an arm connected with the top of the casing, substantially as described.

11. In a car coupling, the combination with a car having a draw-head, of a coupling pin, a casing having tapering sides receiving the upper end of the coupling pin, an inverted cup suspended within the casing and engaging the upper end of the coupling pin, a rock-shaft having an arm, and a link connected to the upper end of the casing and to the arm of the rock-shaft, substantially as described.

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**501,689.** POCKET MATCH-SAFE. ERNST OLDENBURGER, Jersey City, assignor to William Schimper & Co., Hoboken, N. J. Filed Mar. 17, 1893. Serial No. 466,465. (No model.)



*Claim.*—1. A match safe comprising a body portion and a cover and having a tubular or U-shaped frame or back-bone forming a support for the attachment thereto of the sides, the sides secured at their margins to the opposite sides of the frame, the cover and the cover actuating spring, substantially as set forth.

2. A match safe comprising a tubular or U-shaped frame, sides secured at their margins to the opposite sides of the frame, a hinge piece pivoted between the separate sides of the end of the frame at one edge of the safe, a cover connected with the hinge piece and a cover actuating spring in position to engage the hinge piece, substantially as set forth.

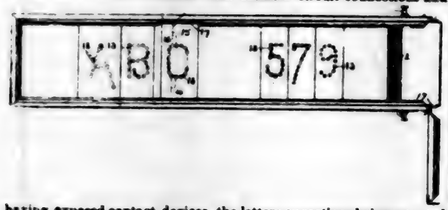
3. The match safe comprising the tubular or U-shaped frame, a catch inserted in one end of the body portion of the frame, a hinge piece secured to the cover portion of the frame and adapted to enter between the separated sides of the opposite end of the body portion of the frame, and a cover actuating spring inserted in the body portion of the frame and extending into position to engage the said hinge piece, substantially as set forth.

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**501,690.** UNIVERSAL JOINT. ALBERT D. PAGE and EDWIN J. HALLENBECK, Bennett, N. Y. Filed May 14, 1892. Serial No. 432,572. (No model.)



*Claim.*—1. The combination, in a sign, of a support with exposed contacts to which a source of current may be connected, electrically illuminated letters or sections with suitable circuit connections and



having exposed contact devices, the letters or sections being adapted to be placed in any desired order on said support, and said contact devices being arranged to complete the circuit through each letter or section by the act of putting it in place, substantially as described.

2. The combination, in a sign, of a support with exposed contacts to which a source of current may be connected, electrically illuminated letters or sections adapted to be arranged removably and interchangeably on said support, said sections having suitable circuit connections and exposed contact devices making contact with the first mentioned exposed contacts when the sections are put in place, and means for holding the sections in position on the support and for releasing the same when desired, substantially as described.

3. The combination in a section of a sign, of a suitable body, electric lamps supported thereon in the form of a letter or part of a sign, circuit wires connected to said lamps, and exposed contact plates to which such wires are connected in position to co-operate with external exposed contacts connected to a source of current, substantially as described.

4. The combination, in a sign or similar device, of several boards or sections having characters formed of electric lamps, the number of lamps on each section being the same or a multiple of the same number, terminals for the lamps of each section, and conductors to which said terminals are connected, substantially as described.

5. A sign made up of letters, figures or parts on separate boards or sections, each letter, figure or part having the same number, or a multiple of the same number, of electric lamps as the other letters or parts so that the lamps on the separate sections can all be connected in equal groups to a supply circuit, substantially as described.

6. A series of letters or characters made up of electric lamps arranged in the desired form and adapted to be connected to a single circuit, each letter being separate from the others but having the same or a multiple of the same number of lamps, and means for connecting the lamps forming each character to such circuit in any desired order, substantially as described.

7. The combination, in a sign, of a support having a base-board, conductors in grooves formed along the edges of the base-board, and boards or sections carrying electric lamps and having contact devices adapted to bear on said conductors held in said grooves, substantially as described.

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**501,691.** BUTCHERING APPLIANCE. LEVI J. PEACHEY, near Hunterville, Ohio. Filed Dec. 16, 1892. Serial No. 455,400. (No model.)



*Claim.*—The block B, staples D, hooks E, chains F, clamps G having the curved, bent, ends H, and notch I and the support R, as and for the purpose set forth.

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**501,692.** OIL-BURNER. WILLIAM T. PUTNAM, Brightwood, Ind. Filed Dec. 19, 1892. Serial No. 455,956. (No model.)



*Claim.*—1. In an oil burner having an open center, a pipe with open ends one below the center of each burner, and the other extending to the outside of the stove, whereby a central air draft is furnished the burner, substantially as set forth.

2. In an oil burner having an open center and connected with an oil supply pipe by hollow radial arms, a larger pipe with open ends surrounding such supply pipe from a point below the burner to the outside of the stove, thereby giving a central air draft to such burner and keeping the supply pipe cool substantially as shown and described.

3. An oil burner consisting of a circular pan with a filling of suitable material and adapted to be connected with an oil supply through a central pipe, such pipe inclosed in a larger one from a point below the burner to the outside of the stove, and a central air deflector supported above such inclosing pipe for spreading the air supply through such pipe above the burner, substantially as set forth.

4. An oil burner having an open center and connected with an oil supply, such burner supported centrally within a surrounding shell or air flue, such shell having an adjustable extension on its top with contracted edges, whereby the space between the edges of the extension and the burner may be adjusted substantially as set forth.

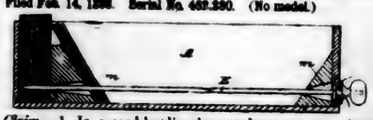
5. An oil burner having an open center and connected with an oil supply, such burner supported centrally within a surrounding shell or air flue, such shell having an adjustable extension on its top with contracted edges whereby the space between the edges of the extension and the burner may be adjusted, an air deflector adjustably supported within the open center of the burner and a flame deflector above, substantially as set forth.

6. An oil burner having an open center and connected with an oil supply, such burner centrally supported within a surrounding shell or flue, an extension screwing on such shell, the top of such extension being contracted, an air deflector adjustably supported within the open center of the burner, a flame deflector above, and an air pipe leading from without the stove to a point just below the central air deflector, all substantially as set forth.

7. An oil burner having an open center and supported within a surrounding shell, a head in such open center connected with an oil supply, and with the burner by radial pipes, a deflector adjustably supported on such head, and a flame deflector above such air deflector, all substantially as set forth.

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**501,693.** CARD-BOX. WILLIAM R. RICHARDS, New York, N. Y. Filed Feb. 14, 1893. Serial No. 462,290. (No model.)



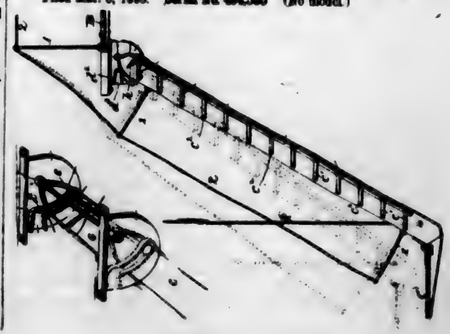
*Claim.*—1. In a card-holding box or drawer, a guard-rod provided with a locking device consisting of a button and a cam or cams engaging with each other, and a handle on the rod substantially in the manner and for the purpose herein described.

2. In a card-holding box or drawer a guard rod provided with a locking device consisting of a button and a cam or cams engaging with each other, a handle or knob G provided with a flange *f*, bearing against the face of the box or drawer, and a shank between said flange and the button A, substantially as described.

3. In a card holding box or drawer, a guard rod having a knob or handle G having a button A on the end thereof, an elliptical opening in the face of the box or drawer for the insertion of the button and an escutcheon plate having a rim *l* provided with cam surfaces adapted to be engaged by the button, substantially as described.

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**501,694.** LADDER. WILLIAM R RICHARDS, New York, N. Y. Filed Mar. 3, 1893. Serial No. 464,580. (No model.)



*Claim.*—1. The combination in a ladder or similar structure of a suspending bracket, of main and auxiliary portions pivotally suspended from said bracket, steps or treads pivotally mounted in both of said portions, a variable bearing operating the auxiliary portion as the ladder itself is moved, and means for raising and lowering the ladder, substantially as set forth.

2. The combination with a structure of a ladder mounted thereon, having a main and an auxiliary portion, said main and auxiliary portions being pivotally supported and separately suspended in suitable bearings, steps or treads pivotally mounted in both the main and auxiliary portions, said auxiliary portion being suspended in a variable bearing that imparts movement to the auxiliary portion additional to that of the main portion whenever the ladder is moved, substantially as set forth.

3. The combination in a ladder or similar structure, of a suspending bracket, a main frame pivotally suspended from a rigid bearing in said bracket, an auxiliary portion pivotally suspended therefrom, and free to move in a variable bearing in said bracket, steps or treads pivotally mounted in both said main and auxiliary portions, said main and auxiliary portions being capable of motion relatively of each other, whereby the position of the steps is changed as the ladder is moved from one position to another, substantially as set forth.

4. In combination with a bracket, a ladder pivoted thereto, steps pivoted at one edge to said ladder, a movable frame supporting the other edge of said steps and cam shaped bearings for the upper end of said frame having open ends, substantially as set forth.

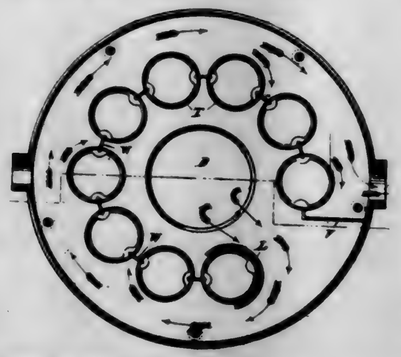
5. The combination in a ladder or similar structure, of a suspending bracket with its bearings, main and auxiliary portions pivotally suspended from said bracket in such bearings, and steps or treads pivotally supported between said main and auxiliary portions, one of said portions of the ladder being provided with suitable openings to permit the passage and operation of the shaft or bar upon which the other of said portions of the ladder is supported, substantially as shown and described.

6. The combination with the depending brackets adapted to be secured to a gangway or platform, and each provided with a cam-bearing, of a ladder pivotally suspended from said brackets, an auxiliary portion engaging said cam-bearings, together with a series of steps pivotally mounted in the main and auxiliary portions of the ladder as set forth.

7. In a ladder, the segmental brackets D, D', provided with bearings $d^3$ to receive the bar E for suporting the ladder, and with ribs $d$, $d'$ forming an inclined bearing for supporting and actuating an auxiliary portion, substantially as shown and described.

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**501,695. FURNACE.** JEREMIAH J. EDMANDSON, Brooklyn, N. Y. Filed Dec. 19, 1892. Serial No. 455,094. (No model.)

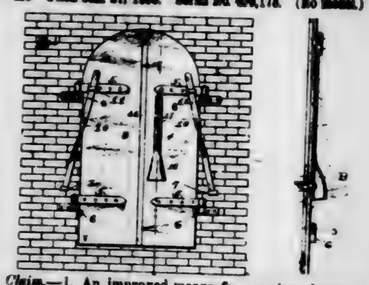


*Claim.*—1. In a furnace, a radiator R with perforated top and bottom plates and a series of perpendicular air heating flues connected centrally with each other by cut off walls, all arranged substantially as set forth and in such a manner that the products of combustion after being utilized upon one side of the concentric series of flues are drawn over the other side of the same flues, as set forth.

2. In a furnace, a radiator provided with a centrally located orifice for introducing the products of combustion, a series of perpendicular hot air pipes arranged in a circle around said orifice, in combination with the dividing partitions or plates between the perpendicular hot air pipes in connection with the end division perpendicular plate V arranged just beyond the exit flues, as and for the purpose set forth.

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**501,696. SHUTTER-FASTENER.** CHARLES J. SAUERBIER, St. Louis, Mo. Filed Jan. 21, 1893. Serial No. 459,173. (No model.)



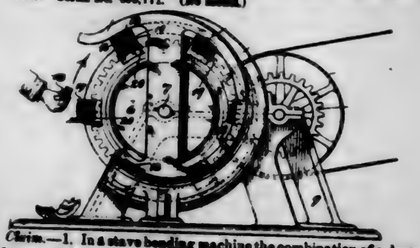
*Claim.*—1. An improved means for opening shutters having a spring-controlled cup, carrying a latch-pin projecting through within the inner side of said shutter to which said spring is secured, a latch-bar carried by an adjacent shutter and adapted to be normally held upon said latch pin and under a casting secured to said shutter, substantially as set forth.

2. An improved means for opening shutters having springs held at their lower ends in sockets driven between the bricks in the wall adjacent and above the lower hinges, the upper ends of said springs projecting through staples secured to said shutters adjacent the upper hinges, a spring controlled cup secured to the exterior of one of said shutters, said cup having a latch-pin projecting inwardly through said shutter, a latch-bar pivoted to the adjacent shutter and projecting through an opening in a casting secured upon the edge thereof and normally held above said latch pin and below a casting secured adjacent thereto, and the withdrawal of said latch pin adapted to drop said latch bar and allow the opening of said shutter, substantially as set forth.

3. An improved means for opening shutters having a spring secured vertically upon a shutter, a cup-shaped device secured upon the lower end of said spring, the side of said cup adjacent said shutter flat, the outer side of said cup rounded, a latch pin secured to the back of said cup and projecting inwardly through an opening in said shutter a latch bar secured to an adjacent shutter and normally in position above said latch pin, tension springs secured to the outer sides of said shutters and to the wall, and the tension of said springs adapted to hold said latch-bar in place independent of the support by the latch-pin, substantially as set forth.

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**501,697. STAVE-BENDING MACHINE.** CHARLES SOMMER, Sloan's Valley, Ky., assignor to Regina Sommer, same place. Filed Apr. 10, 1893. Serial No. 469,771. (No model.)



*Claim.*—1. In a stave bending machine the combination of a drum the face of which is curved barrel shaped or bulged to a form which corresponds with the shape to which the staves are to be bent, and provided with projections 13, to support the latter, means to rotate this drum, and a frame partly surrounding it having its surface opposite the face of the drum varying gradually from the form of a cylinder at one end, to the shape of the face of the drum at the other end, whereby the staves are caused to gradually assume the shape of the latter.

2. In a stave bending machine the combination of a drum the face of which is curved barrel shaped or bulged to a form which corresponds with the shape to which the staves are to be bent and provided with projections 13, to support the latter, means to rotate this drum, and a concentric frame partly surrounding its curved and round part, provided with an opening to permit feeding and egress of the staves, its distance from the drum corresponding with the thickness of the staves, its receiving end being straight as shown at 11, and its discharge-end corresponding to the curve of the drum to which the frame is parallel at this point and which transformation of shape proceeds gradually from the receiving-end



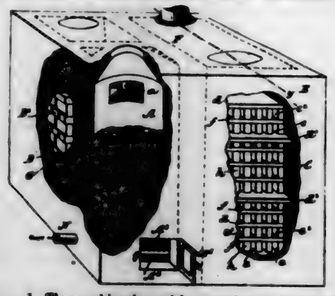
3. In a stave bending machine the combination of a drum the face of which is curved barrel shaped or bulged to a form which corresponds with the shape to which the staves are to be bent and provided with projections 13, to support the latter, raised portions 19, adjacent and in advance of projections 13, means to rotate this drum, and a frame partly surrounding its curved and round part, provided with an opening to permit feeding and egress of the staves, and its distance from the drum corresponding with the thickness of the staves, the receiving-end of such frame being straight as shown at 11, and its discharge-end corresponding to the curve of the drum to which it is parallel, which transformation of shape proceeds gradually from the receiving-end.

4. In a stave bending machine the combination of a drum the face of which is curved barrel shaped or bulged to a form which corresponds with the shape to which the staves are to be bent and provided with projections 13, to support the latter, raised portions 19, adjacent and in advance of projections 13, and provided with corrugations as shown, means to rotate this drum and a frame partly surrounding it and having its surface opposite the face of the drum varying gradually from the form of a cylinder at one end, to the shape of the face of the drum at the other end, whereby the staves are caused to gradually assume the shape of the latter.

5. In a stave bending machine the combination of a drum the face of which is curved barrel shaped or bulged to a form which corresponds with the shape to which the staves are to be bent and provided with projections 13, to support the latter, raised portions 19, adjacent and in advance of projections 13, and provided with corrugations as shown, means to rotate this drum and a frame partly surrounding its curved and round part, provided with an opening to permit feeding and egress of the staves, and its distance from the drum corresponding with the thickness of the staves, the receiving-end of such frame being straight as shown at 11, and its discharge-end corresponding to the curve of the drum to which it is parallel, which transformation of shape proceeds gradually from the receiving-end.

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**501,698. GAS APPARATUS.** ALEXANDER M. SUTHERLAND, Orange, N. J. Filed Aug. 22, 1892. Serial No. 443,781. (No model.)



*Claim.*—1. The combination, with a cupola in which the heating and decomposition of the materials entering into the manufacture of the gas are effected, a fixing chamber B fitted with refractory material down through which the products coming from the cupola pass, and a fixing chamber C formed with a series of horizontal flues of extended areas joining end spaces, of flues for connecting the cupola and chambers, and supplemental heaters arranged to discharge their heat in the line of the flues in the fixing chamber C, substantially as described.

2. The combination, with a main continuous casing, a cupola A and fixing chambers B C, formed therein and separated from one another by partitions F G, of the flue *a* for connecting the top of the cupola with the top of the fixing chamber B, flue *c* for connecting the bottom of fixing chamber B with the bottom of fixing chamber C, and supplemental heaters K K arranged to discharge their heat in the fixing chamber C in the same direction as the products of combustion coming from the cupola are passing, to both aid in heating such chamber and assist in creating a draft through the machine, as and for the purpose described.

3. The combination, with a cupola A in which the heating and decomposition of the materials entering into the manufacture of the gas are effected, fixing chambers B and C, a continuous casing in which the cupola and fixing chambers are arranged, flue *a* for connecting the cupola with the fixing chamber B, and flue *c* for connecting the fixing chamber B with the fixing chamber C, of longer and shorter plates *d d* arranged alternately in the fixing chamber C to form end spaces and flues between them, and supplemental heaters arranged to discharge their heat in the line of these last mentioned flues, to both aid in heating the same and assist in creating a draft through the machine, as and for the purpose described.

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**501,699. LAST.** HENRY THURBER, Worcester, Mass. Filed May 11, 1892. Serial No. 432,812. (No model.)

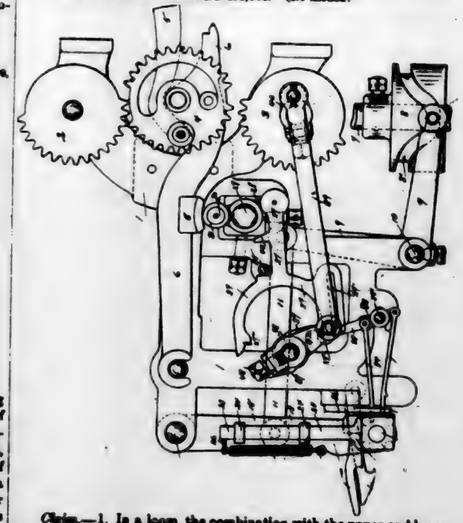


*Claim.*—1. The combination in a last having heel and toe sections A and B and a block C, of a hinge bar D uniting said heel and toe sections and provided with a stirrup F and a prong G attached to said block and passing through said stirrup, whereby said block is held in position and said hinge bar is rendered rigid, substantially as described.

2. The combination in a last, of a heel section A, toe section B, hinged-bar D provided with prongs E, E, entering holes in said heel and toe sections and having a stirrup F, a block C grooved to receive said bar and a prong G attached to said block and passing through said stirrup, substantially as described

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**501,700. PATTERN MECHANISM FOR LOOMS.** WILLIAM WAYTE, Worcester, Mass., assignor to the Knowles Loom Works, same place. Filed Feb. 6, 1893. Serial No. 461,076. (No model.)



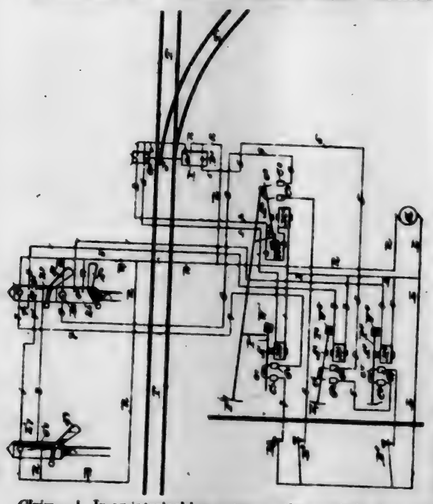
*Claim.*—1. In a loom, the combination with the upper and lower cylinder gears, the vibrator gear, the indicator lever, and the pattern surface supported on a swinging frame, and said frame, and means for swinging said frame, and for rotating the pattern surface or chain, of intermediate mechanism between the indicator lever, and the pattern surface, consisting of a forked lever, provided with a slot and pivoted to a double lever or arm, loose on a rock shaft, and carrying a roll which engages the indicator lever and said double lever or arm, and rock shaft, and a double bladed knife supported on a rock shaft, and adapted to engage and operate said forked lever, and said rock shaft, and means for operating the same, and a pivoted lever, provided with a pin which engages the slot in the forked lever, and the indicating needles pivoted at their inner ends upon said pivoted lever, upon opposite sides of its pivot point, with their free ends adapted to be acted on by the pattern surface, for the purpose stated, substantially as shown and described.

2. In a loom of the class described, the combination with the indicator lever, of means for communicating the indications of the pattern surface to said indicator lever, consisting of a double lever or arm loose on a rock shaft, with one end adapted to engage the indicator lever, and the other end pivoted to one end of a forked le-

ver, and said rock shaft, and forked lever provided with a slot, and a double bladed knife supported on a rock shaft and adapted to engage and operate said forked lever, and said rock shaft, and means for operating the same, and a pivoted lever provided with a pin adapted to travel in the slot in the forked lever, and two indicating needles pivoted at their inner ends upon said pivoted lever, upon opposite sides of its pivot point, with their free ends adapted to be operated on by the pattern surface, for the purpose stated, substantially as set forth.

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**501,701. ELECTRIC CONTROLLING AND LOCKING MECHANISM FOR RAILWAY SWITCHES AND SIGNALS.** CHARLES M. WILDER, Chestnutt, Ohio. Filed Oct. 17, 1892. Serial No. 449,032. (No model.)



*Claim.*—1. In an interlocking system a railway switch, electrical terminals controlled thereby, one or more controlling circuits leading from the terminals, electro-magnets in these circuits, one or more working circuits, terminals in the working circuits adapted to be controlled by the action of the magnets and other terminals adapted to be controlled by the operator.

2. In an interlocking system, a railway switch; two pairs of electrical terminals controlled thereby; two electrical circuits each containing a pair of said terminals; an electro magnet in each of said circuits; armatures for said magnets carrying terminal closers; other switches or signals or both; electrical circuits leading to and adapted to operate said switches or signals; terminals in these circuits controlled by the action of the magnet armatures, and terminals within said circuits adapted to be controlled by the operator.

3. In an interlocking system a railway switch, electrical terminals controlled thereby, controlling circuits leading from the terminals, terminals within these circuits, a locking device, a strip controlled by the locking device to connect said terminals, electro-magnets in the controlling circuits, working circuits, and terminals in the working circuits adapted to be controlled by the magnets.

4. In an electrical interlocking system a switch motor circuit, one or more switch indicator circuits and a signal circuit controlled thereby.

5. In an electrical interlocking system a switch motor circuit, one or more switch indicator circuits and a switch circuit controlled thereby.

6. In an electrical interlocking system a switch motor circuit, one or more switch indicator circuits and one or more signal and switch circuits controlled thereby.

7. In an electrical controlling and locking system a signal, a motor for operating the signal, mechanism for holding the signal after it has been moved and an electro-magnet for cutting the motor out and controlling the signal holding mechanism.

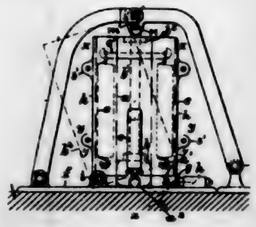
8. In an electric controlling and locking system a signal, a motor for operating the signal, a segmental cam arranged to rock with the signal, a pivoted armature arm carrying a lug adapted to engage with and lock the cam against return movement, an electric circuit leading to the motor, terminals in this circuit, a connecting strip on the pivoted arm and an electro-magnet for actuating the pivoted arm.

9. In an electric controlling and locking system a signal, one or more dependent signals, motors for actuating the signals, an electric circuit leading to the dependent signal motor or motors a rock shaft, governed by the position of the primary signal, and an arm extending therefrom carrying a connecting strip, adapted to close the dependent signal circuit or circuits.

10. In an electric controlling and locking system a signal, one or more dependent signals, motors for actuating the signals, an electric circuit leading to the dependent signal motor or motors a rock shaft governed by the position of the primary signal, and an arm extending therefrom and carrying a connecting strip arranged to close the circuit when the primary signal has been brought to clear.

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**501,702. COMBINED DOOR SPRING, CHECK, AND LATCH.** CHARLES WIDELSPERR, Newark, N. J. Filed Apr. 1, 1893. Serial No. 468,695. (No model.)



*Claim.*—1. In a door spring having a cylinder with a piston actuated by a spring, the combination, with a cylinder *a* and piston *b*, of the brake blocks *c* pivoted upon the cylinder and arranged to press elastically upon the piston near the close of its stroke, as set forth.

2. In a door spring having a cylinder with a piston actuated by a spring, the combination, with the cylinder *a* and piston *b*, of the brake blocks *c* pivoted upon the inner end of the cylinder and having inclined shoulders *c'* at their outer ends to intercept the piston, and adapted to press elastically upon the piston within the shoulders, as set forth.

3. In a door spring having a cylinder with a piston actuated by a spring, the combination, with the piston *b*, of the cylinder *a* having the flange *a'* with sockets *a²* having springs *k* therein, and the brake blocks *c* pivoted upon the flange and provided with the arms in contact with the springs, substantially as herein set forth.

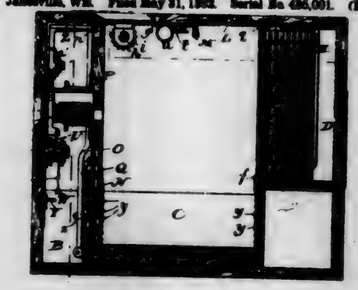
4. In a door spring having a cylinder with a piston actuated by a spring, the combination, with the cylinder *a* and piston *b*, of the foot plate *f* having the cylinder hinged thereto, and a spring latch fitted to engage the cylinder detachably with the foot plate, substantially as herein set forth.

5. In a door spring having a cylinder with a piston actuated by a spring, the combination, with the cylinder *a* and piston *b*, of the brake blocks *c* pivoted upon the cylinder and arranged to press elastically upon the piston near the close of its stroke, a foot plate having the cylinder hinged thereto, and having mounted thereon a spring latch with reversely beveled nose fitted to a beveled notch upon the cylinder, as herein set forth.

6. In a door spring having a cylinder with a piston actuated by a spring, the combination, with the cylinder *a* having the bottom flange *a'*, of the tubular casings *h'*, the piston *b* having rod *b'* extended through the head of the cylinder and provided with cross head *c*, the springs *k* attached to the opposite ends of the cross head and secured at their inner ends within the tubular casings, a foot plate having the flange *d'* hinged thereto, and brake blocks pivoted upon the flange and adapted to press upon the piston near the close of its stroke, as set forth.

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**501,703. PHOTOGRAPHIC CAMERA.** CHARLES B. WITHINGTON, Janesville, Wis. Filed May 31, 1892. Serial No. 436,001. (No model.)





*Claim.*—1. In a camera substantially such as shown and described, the box A provided with the fixed exposed-plate compartment C, one wall of which is stationary and grooved, while the opposite wall is likewise grooved and movable toward and from the stationary wall.

2. In a camera, the combination with the plate N forming one wall of the exposed-plate-compartment, of a slide L for transferring the exposed plate to the said compartment, and intermediate mechanism for operating the plate N, by means of the slide all substantially as shown and described.

3. In a camera, the box A having a movable plate N forming one wall of the exposed-plate-compartment, an actuating lever O for said plate, and a slide L for transferring the exposed plate to the said compartment, and acting upon the upper end of said lever.

4. In a camera, the follower H provided with forwardly-extending rack bars *g*, in combination with the shaft I carrying the pinions A; bearings *i* in which said shaft is journaled, a spring J tending to rotate the shaft I to urge the follower forward, and the pawl and ratchet for holding the shaft against rotation.

5. In a camera, the combination with the plate M having the lips *s* to engage the plates or films, of the slide L provided with lips *q* and a spring tongue *p*, and serving to throw the plate M out of action.

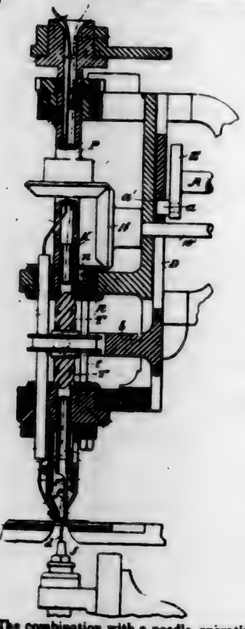
6. In a camera, the combination with the pivoted plate M having the retaining lips *s* and a spring *v*, of the slide L provided with lips *q*, spring tongue *p*, and a cam *t* to tip or rock the plate.

7. In a camera, the combination with a plate M adapted to hold the films or plates at their upper edges, of a slide as L adapted to throw the plate M out of action and to engage the exposed plate and move it out of the way.

8. In a camera, the combination with a plate M provided with lips *s*, of a slide L provided with lips *q* and spring tongue *p*,—the plate M and slide L alternating in their action substantially as shown and described.

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**501,704. EMBROIDERING-MACHINE.** EMILE COMBELY'had and ROBERT COMBELY, Paris, France. Filed Apr. 7, 1893. Serial No. 469,468. (No model.)



*Claim.*—1. The combination with a needle operating upwardly from beneath the bed-plate, of a thread-carrier above the latter, a vertically arranged shaft, to the lower end of which the thread-carrier is secured, an interiorly screw-threaded nut engaging a screw-thread on the vertical shaft, a vertically oscillating slide operated from the main driving shaft, a right-angle extension on the oscillating slide carrying the nut and means for preventing the nut from rotating during its vertical movement, substantially as described.

2. The combination with the universal feed mechanism and its crank-handle of a hollow shaft through which the thread passes to the looper at its lower end, an oscillatory nut engaging a screw-thread on the exterior of said shaft, a tube slidingly engaged by the nut in its oscillatory movement, through which braid passes, and means for rotating said tube around the hollow shaft as an axis upon the movement of the crank-handle, substantially as described.

3. The combination with the universal feed-mechanism and its crank-handle of rotatable blocks supported in suitable bearings in the frame of the machine, an exteriorly screw-threaded shaft engaging loosely in said blocks and carrying a looper at its lower end, an interiorly screw-threaded nut engaging said shaft, connections between said blocks upon which the nut slidingly engages, means for imparting movement to said nut, and connections whereby said blocks and nut are rotated upon the movement of the crank-handle, substantially as described.

4. In an embroidering machine the combination with the needle operating upwardly from beneath the bed-plate, of a looper casing above the latter and a series of removable plates for regulating the distance between the looper casing and bed-plate, substantially as described.

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**501,705. METHOD OF MANUFACTURING SHEET METAL.** ISAAC E. CRAIG, Troy, Ohio. Filed Jan. 31, 1893. Serial No. 460,462. (No specimens.)

*Claim.*—The improvement in the manufacture of sheet iron herein set forth substantially consisting in oxidizing the sheets by directing against the edges of packages or piles of sheets while at a red-heat a strong current of steam or water in such manner as to cause it to enter between the sheets contained in such package or pile.

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**501,706. HAND-TRUCK.** CHARLES G. CURTIS, Troy, N. Y., assignor of one-half to George W. Herton, same place. Filed Dec. 19, 1892. Serial No. 455,612. (No model.)

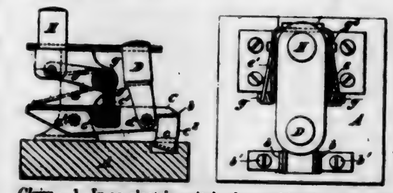


*Claim.*—1. The combination with a truck made with side-beams connected by cross-bars or slats, and having an axle connected with said side beams by brace-bars—of a spring at its upper end connected with the front end of each of said side-beams, and a spring-bar connected at its rear end with one of each of said side-beams, and at its front end constructed for the adjustment thereon of the lower end of one of said springs, substantially in the manner as and for the purpose set forth.

2. In a hand-truck the combination with the side-beams B, B, of the axle A, the brace-bars D, D, the springs S, S, and the spring bars E, E, constructed and arranged to operate substantially in the manner as and for the purposes set forth.

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**501,707. ELECTRIC SWITCH.** WILLIAM H. DIGGLE and JOHN M. UNDERHAY, London, England. Filed Apr. 23, 1892. Serial No. 430,330. (No model.)



*Claim.*—1. In an electric switch, the combination of a rocking-contact lever, a circuit-making plunger acting upon said contact lever, a detent-lever interlocking with said contact lever, and a circuit-breaking plunger acting upon said detent-lever.

2. In an electric switch, the combination of a rocking contact-lever and a detent-lever interlocking therewith, a circuit-making plunger acting upon said contact-lever, a circuit-breaking plunger engaging said detent-lever and a spring arranged between said circuit-breaking plunger and said contact-lever.

3. In an electric switch, the combination of a spring-actuated rocking-lever for making and breaking the circuit, a circuit-making plunger acting upon one end of said lever, and a circuit-breaking plunger acting upon the other end of said lever, a spring-actuated detent lever pivoted to a fixed point and having one end thereof con-

nected with one of said plungers and its free end adapted to engage the said rocking-lever and lock it in position when the circuit is open and also when the circuit is closed.

4. In an electric switch, the combination of a spring-actuated rocking-lever, a circuit-making plunger acting upon one end of said lever and a circuit-breaking plunger acting upon the other end of said lever, a detent lever engaging said rocking-lever and locking it in position when the circuit is open and also when the circuit is closed, said detent lever being released from engagement with the rocking-lever by the action of the two said plungers.

5. In an electric switch, the combination of the spring-actuated lever C and the fixed-piece B, a circuit-making plunger D acting upon one end of said rocking-lever and a circuit-breaking plunger H acting upon the other end of said lever, a spring-actuated detent G for engaging and locking the said rocking-lever in both open and closed positions, respectively, and having its movements controlled by the movement of said plungers.

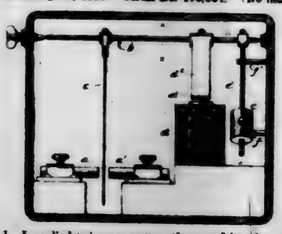
6. In an electric switch, the combination of a spring-actuated rocking-lever C for making and breaking the circuit and provided with a shoulder or cross-piece $c'$, a spring-actuated detent lever G pivoted to a fixed-point at $g$ and adapted to engage with the shoulder or cross-piece $c'$ of the rocking-lever and to lock said lever in both open and closed positions, respectively, a head-operated device for rocking said lever and said detent lever connected with and operated by said device, substantially as and for the purpose set forth.

7. In an electric switch, the combination of a spring-actuated rocking-lever C for making and breaking the circuit, and provided with a shoulder or cross-piece $c'$, a spring-actuated detent lever G pivoted to a fixed-point at $g$ and adapted to engage with the shoulder or cross-piece $c'$ of the rocking-lever and to lock said lever in both open and closed positions, respectively, a circuit-making plunger D connected with and acting upon one end of said rocking-lever, a circuit-breaking plunger H acting upon the other end of said rocking-lever and the said detent lever pivoted thereto, substantially as and for the purpose set forth.

8. In an electric switch, the combination of a rocking-lever for making and breaking the circuit, a detent lever G for engaging and locking said rocking-lever in both open and closed positions, respectively, a double V-shaped spring E suitably secured to a fixed point and having one free part engaging one end of said rocking-lever and the other free part engaging said detent lever, substantially as and for the purpose set forth.

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**501,708. LIGHTNING-ARRESTER.** FRANCIS H. DOANE, New York, N. Y. Filed May 31, 1892. Serial No. 476,067. (No model.)



*Claim.*—1. In a lightning arrester, the combination of a pair of arcing points, two circuits leading to ground from one of said points, an electro-magnet included in one of said circuits, and a diaphragm of non-conducting material arranged to be interposed between the arcing points by the magnet, substantially as described.

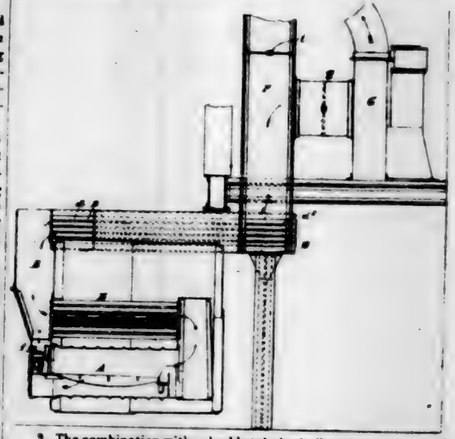
2. In a lightning arrester, the combination of a pair of arcing points, a rock shaft arranged above the same, a diaphragm of non-conducting material carried by said rock shaft, a sector of non-magnetic material carried by the rock shaft, an armature attached to the face of the sector and being thicker at one end than at the other, and an electro-magnet acting upon said armature and located in the ground circuit of the arrester, substantially as described.

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**501,709. BOILER-FURNACE.** JOHN D. ELLIS, Sheffield, England. Filed Jan. 17, 1893. Serial No. 458,092. (No model.) Patented in England May 11, 1891, No. 8,078.

*Claim.*—1. The combination with a tubular steam boiler and its furnace, having a space or chamber in front of the boiler, a partition dividing said space into two contiguous compartments, one of which communicates with the boiler tubes, and conducts the hot gases upward the other communicating with the fire chamber and conveying air downward a cluster of flues or tubes forming two series of passages communicating with the two compartments respectively, and through which the incoming air and outgoing products of combustion pass in opposite directions, and means for creating an induced draft, substantially as described.

2. The combination with a furnace and tubular boiler, of retarders in the tubes of said boiler a partition dividing the space in front of said boiler into two contiguous compartments, one of which receives and conveys upward the products of combustion from said tubes, the other compartment serving to convey air downward to the furnace, and a fan or device for creating a forced draft through the boiler tubes, substantially as described.

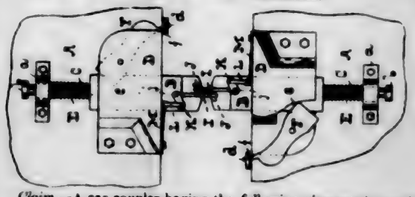


3. The combination with a double tubular boiler whose outer shell is contracted toward the top, two clusters of tubes with intervening passages arranged one on each side of the contracted part of said boiler, and a partition in front of each boiler dividing the space into two contiguous compartments, one of which communicates with the tubes and the other with the intervening spaces, so that the air and products of combustion pass to and from the furnace in opposite directions through adjacent passages substantially as described.

4. In a steam boiler furnace the combination of the contiguous passages for the incoming air, and the products of combustion respectively, boiler tubes provided with retarders and communicating with the passages for the products of combustion, and a device connected with said passages for creating an induced draft, substantially as described.

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**501,710. CAR-COUPLING.** HERMANN OAT and FIDELIO PIKER, Baltimore, Md., assignors of one-third to Alexander H. Schulz, same place. Filed Apr. 7, 1893. Serial No. 469,413. (No model.)



*Claim.*—A car coupler having the following elements in combination, viz., a draw-head held yieldingly in an extended position with regard to the car body, and provided with a notch, as described, a tumbler adapted to enter the said notch when the draw-head is forced inward, and thereby hold the said draw-head, a spring-held lever for operating the said tumbler, and a pivoted link and hook adapted to be thrown into alignment with the longitudinal center line of the car as the draw-bar is depressed, and thereby adapted to couple with a similar link and hook on another coupler, substantially as specified.

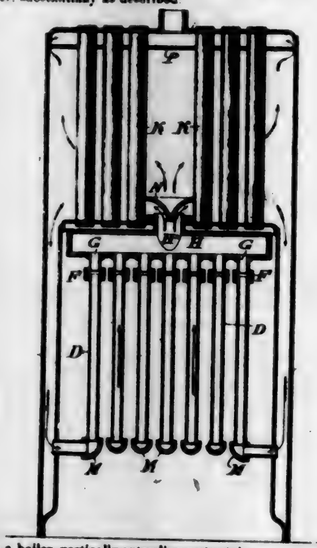
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**501,711. UPRIGHT BOILER.** EUGENE U. GIBBS, Mount Holly, N. J., assignor of three-fourths to Restore B. Lamb, same place. Filed Oct. 6, 1892. Serial No. 447,997. (No model.)

*Claim.*—1. An upright boiler having a series of vertical tubes, horizontal tubes within the top and bottom ends of the same, a tube connected with the upper horizontal flue, said horizontal flue being in communication with the upper portion of the shell of the boiler substantially as described.



2. A shell having a crown sheet between the upper and lower portions thereof, flues in the upper portion of said shell connected with said crown sheet and the top crown sheet of the shell, a water tube below said flues communicating with the shell, a sheet between said flues and tube, and vertical water tubes connected at their upper ends with said horizontal tube and at bottom with the water leg of the boiler, substantially as described.



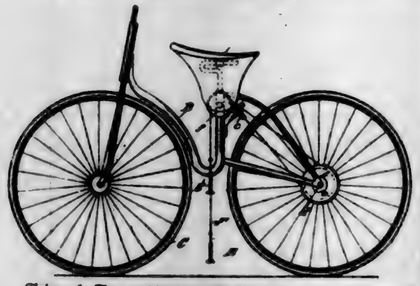
3. In a boiler, vertically extending water tubes connected at top and bottom by horizontal tubes in combination with a water tube which is centrally connected with the upper horizontal tube and located within the shell below hot air flues in the upper end of said shell, substantially as described.

4. A boiler having in the fire box thereof vertical tubes connected at top and bottom with upper and lower transverse tubes, a horizontal tube connected with the said upper transverse tubes, nipples connecting the said horizontal tube with the water space of the boiler, and deflectors located in the water space above said nipples, said parts being combined substantially as described.

5. A boiler having vertical combustion flues in its water space, and a diaphragm inclosing said flues, and having a space between it and the walls of the boiler, said diaphragm being located a short distance below the top sheet of the boiler, said parts being combined substantially as described.

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**501,712. VELOCIPEDE.** JAMES E. A. GIBBS, Raphine, Va. Filed Dec. 13, 1892. Serial No. 455,063. (No model.)



*Claim.*—1. The combination with the driving wheel of a velocipede, of driving gear comprising flexible cords or belts connected at one end with a driving pulley on the main axle, guide pulleys over which said cords or belts are led, and stirrups suspended from the ends of said cords or belts and free to swing in any direction, substantially as described.

2. The combination of the driving pulleys, each having a detachable connection with the main axle, a driving cord or belt for each pulley, a stirrup freely suspended at one end of each cord or belt, and a coiled spring for raising the stirrup, substantially as described.

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**501,713. VALVE.** SAMUEL F. GOLD, Englewood, N. J. Filed Mar. 11, 1893. Serial No. 465,513. (No model.)



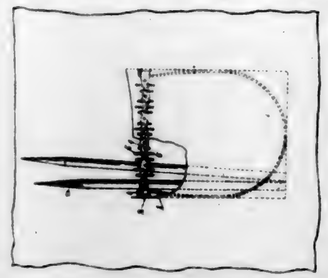
*Claim.*—1. In a valve, a head, having a discharge passage, a screw-thread adjacent thereto, and a seating face, in combination with a plunger, having screwthreads at both its ends, each of said screw-threads fitting that of said head, and having two valve seats, one for each of said screwthreads and each engaging said seat face when its corresponding screwthread is in engagement with the screwthread of said head, whereby the plunger can be reversed, and thereby a different seat brought against said face, at will, substantially as and for the purpose set forth.

2. In a valve, a head, having a passage, a screw-thread adjacent thereto, and a seating face, in combination with a hollow plunger having a plurality of screw-threads each fitting and successively engaging the screw-thread of said head, and having a plurality of seats corresponding with its screw-threads and successively engaging said seating face, whereby by shifting the plunger and bringing a different screw-thread into engagement with that of the head one of said seats may be substituted for another when desired, substantially as and for the purpose set forth.

3. In a faucet, the head A having passage C, seating face D, and screw thread E, in combination with the plunger B, consisting of the socket F, having screw thread H at both its ends, axial plug K intermediate of said screw thread, seats J and J' corresponding each to one of said screw threads H, said threads H each fitting and successively engaging said thread E, said seats J and J' respectively engaging said face D as their corresponding thread H is in engagement with said thread E, and said socket constructed with an internal passage and an aperture through each of said screw threads H through which the discharge from the valve may escape, substantially as and for the purpose set forth.

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**501,714. POCKET PENCIL-HOLDER.** ROBERT L. GORSUCH, Kirkwood, Mo. Filed Mar. 16, 1893. Serial No. 466,390. (No model.)



*Claim.*—1. An improved pocket pencil holder having a number of elastic teeth projecting at different angles and adapted to retain the articles in the pocket, substantially as set forth.

2. An improved pocket pencil holder having a number of elastic teeth projecting from a strip or body held between the two ends of a spring wire frame, substantially as set forth.

3. An improved pocket pencil holder having an elastic body provided with a number of projecting teeth, said elastic body fastened by one end to one extremity of a wire frame, said elastic body then twisted and its opposite end secured to the other extremity of said frame, and this construction adapted to cause the teeth on said body to project at a variety of angles, to hold the articles in the pocket, substantially as set forth.

4. An improved pocket pencil holder having a wire frame preferably made of spring material, the extremities of said frame con-

nected by an elastic body twisted and having teeth projecting at a variety of angles, said frame adapted to conform to the width of the pocket in which it is to be held, substantially as set forth.

### 501,715. VALVE FOR PNEUMATIC TIRES. FREDERICK W. HARDWICK, Passaic, N. J., assignor to the New York Belting and Packing Company, Limited, of England. Filed Apr. 17, 1893. Serial No. 470,720. (No model.)



*Claim.*—1. A valve for pneumatic tires, designed for use on bicycles, buggies, sulkies, and the like, having a base of metal, or other suitable material, concave in cross-section, covered by a layer of vulcanite or hard rubber, and a layer of soft rubber, substantially as described.

2. A valve for pneumatic tires, designed for use on bicycles, buggies, sulkies, and the like, having a base of metal, or other suitable material, concave in cross-section, covered by a layer of soft rubber, substantially as described.

3. A valve for pneumatic tires, designed for use on bicycles, buggies, sulkies, and the like, having a base of metal, or other suitable material, concave in cross-section, covered by a layer of soft rubber, which extends a considerable distance beyond the metallic base around its entire circumference, substantially as described.

4. A valve for pneumatic tires, designed for use on bicycles, buggies, sulkies, and the like, having a base concave in cross-section; that part of the base which is adjacent to the circumference, being flexible, and the parts adjacent to and surrounding the center of the base, being rigid, substantially as described.

### 501,716. PNEUMATIC TIRE. FREDERICK W. HARDWICK, Passaic, N. J., assignor to the New York Belting and Packing Company, Limited, of England. Filed Apr. 19, 1893. Serial No. 470,977. (No model.)



*Claim.*—1. A pneumatic tire, containing an outer tube, and a tube within the same, capable of being moved within the outer tube, the outer tube being provided with one or more slits, the sides of which are united by lacings, which lacings are protected by a closed pocket, substantially as described.

2. A pneumatic tire, containing an outer tube, and a tube within the same, capable of being moved within the outer tube, the outer tube being provided with one or more slits, the sides of which are united by lacings, which lacings are protected by a pocket, the outlet of the pocket being closed by a removable strip cemented over the same, or otherwise united to the outer tube, substantially as described.

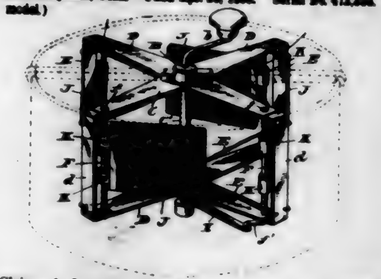
3. A pneumatic tire, containing an outer tube, and a tube within the same, capable of being moved within the outer tube, the outer tube being provided with one or more slits, the sides of which are united by lacings, which lacings are protected by a closed pocket, and the inner tube being further protected by a strip over that part of the tube, which is designed to be adjacent to the lacings in the outer tube, substantially as described.

4. A pneumatic tire, having one or more slits in the outer tube of the tire whereby access can be had to the interior of the tube, provided with lacings and lacing holes, whereby the same can be closed, which lacings are protected by a pocket, substantially as described.

5. A pneumatic tire, having one or more slits in the outer tube of the tire, whereby access can be had to the interior of the tube, provided with lacings and lacing holes, whereby the same can be closed, that portion of the tube, which is adjacent to the slits, being strengthened by one or more layers of linen, or other fibrous material, substantially as described.

6. A pneumatic tire, having one or more slits in the outer tube of the tire, whereby access can be had to the interior of the tube provided with lacings and lacing holes, whereby the same can be closed, that portion of the tube, which is adjacent to the slits, being strengthened by a strip of linen or other fibrous material, folded upon itself, and firmly united to the tube by vulcanization, substantially as described.

### 501,717. CENTRIFUGAL HONEY-EXTRACTOR. JAMES R. HAWKINS, Benjamin, Utah. Filed Apr. 20, 1893. Serial No. 472,308. (No model.)

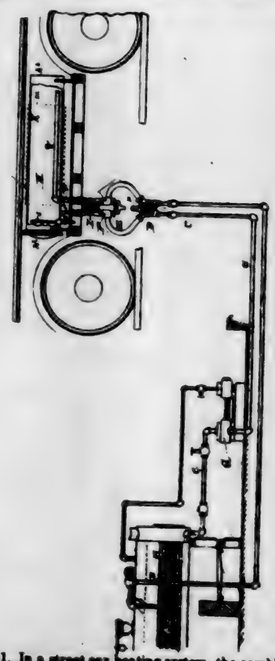


*Claim.*—1. In a centrifugal honey-extractor the combination with the frame and the vertical shaft, of the honey-basket shafts, the triangular plate on the lower end of the main shaft, and the independent connections between said plate and the basket-shafts, as set forth.

2. In a centrifugal honey-extractor the combination with the frame and the vertical shaft, of the triangular plate on the end of the shaft, the basket-shafts, and the bars pivotally connected with said plate and with said shafts, substantially as specified.

3. In a centrifugal honey-extractor the combination with the basket-shaft and its operating means, of the honey-basket having an end plate with slots, and the collars provided with hooks on the shaft, substantially as and for the purpose specified.

### 501,718. CAR-HEATER. GARDNER D. HISCOX, Brooklyn, assignor, by mesne assignments, to the Sterling Car Heating and Lighting Company, New York, N. Y. Filed Dec. 30, 1892. Serial No. 456,823. (No model.)



*Claim.*—1. In a street car heating system, the combination with stationary hot water boiler of a continuous and complete circulatory system which consists of a flow pipe from the water space of said boiler, a return pipe thereto, a multi-chambered cock at the junction of said flow and return pipes, and tubes from said cock adapted to be connected with corresponding pipes from a water cylinder in a car, substantially as described.

2. In a street car heating system, the combination with a hot water cylinder in a car of flow and return pipes therefrom, a four-way cock connected with said pipes, tubes adapted to connect with said cock and leading to a five way valve which is connected with the flow and return pipes of a continuous circulatory system, main ports in said five-way valve adapted to connect the tubes with said flow and return pipes and a blow off port in said valve adapted to connect the tubes with atmosphere, a stationary hot water boiler operatively connected with said flow and return pipes, and a pump operatively connected with said return pipes, substantially as described.

3. In a street car heating system the combination of a hot water cylinder in a car, air relief pipe therefrom, a hot water supply pipe longitudinally arranged in said cylinder, a return pipe from one end of said cylind. a four way cock communicating with said supply and return pipes, tubes from said four-way cock to a five way valve which is connected with the flow and return pipes of the main constant hot water circulatory system and has main ports adapted to connect the said flow and return pipes with said tubes and a blow off port adapted to connect said tubes with atmosphere, a stationary hot water boiler operatively connected with said flow and return pipes, and a pump operatively connected with said return pipe, substantially as described.

4. In a street car heating system and in combination with a constant forced hot water circulation and with tubes leading to a hot water cylinder in a car, a five way cock having four main ports adapted to alternate the circulation either directly between the branches of said constant forced circulation or indirectly between the same through the said cylinder in the car, and a blow-off port adapted to communicate with said tubes so as to reduce the pressure therein to atmosphere, substantially as and for the purpose described.

5. In a street car heating system, the combination with a stationary hot water boiler of a continuous and complete circulatory system which consists of a flow pipe from the water space of said boiler, a return pipe thereto, a multi-chambered cock at the junction of said flow and return pipes, and a hot-water cylinder in a car adapted to be connected with said cock by flow and return tubes substantially as described.



### 501,719. CASTER-WHEEL. ERNEST G. HOFFMANN, New York, N. Y., assignor to the Standard Caster and Wheel Company, of West Virginia. Filed Dec. 13, 1892. Serial No. 454,939. (No model.)



*Claim.*—1. A wheel or roller composed of two metal halves or shells, and spring devices pinned in the interior of said shells engaging with the inner surfaces thereof, whereby the shells are held together, substantially as described.

2. A hollow wheel or roller composed of two hollow sections and two conical disks provided with interlocking teeth on their periphery, engaging with the inner surfaces of said sections, whereby the same are held together substantially as described.

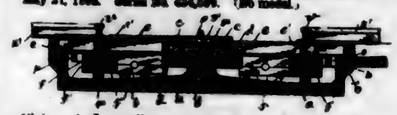
3. The combination substantially as hereinbefore set forth of a hollow wheel or roller, composed of two hollow halves or shells, an indentation or beveled groove running around the inner face near the periphery of each of said shells, and spring devices in the interior of the shells engaging with the inner surfaces of the shells, by means of said beveled grooves whereby the parts are held together.

### 501,720. VAULT OR SKYLIGHT COVER. JAMES JENKINSON, Brooklyn, assignor to Jacob Mark, New York, N. Y. Filed Jan. 5, 1893. Serial No. 457,093. (No model.)



*Claim.*—In a vault or skylight cover the combination with the sheet metal cover having lens openings contiguous to the lenses inclined upward, of a series of U-shaped corrugated sheet metal troughs or ribs with lips formed integrally therewith a lens to each lens embedded in putty or the like to coincide with the holes in the sheet metal cover and having transverse braces united to the cover and the corrugated troughs to strengthen the same, substantially as shown and described.

### 501,721. RAILWAY-CROSSING. FREDERICK A. JOHNSON, Columbus, Ohio, assignor of one-half to James H. Evans, same place. Filed May 27, 1892. Serial No. 434,509. (No model.)



*Claim.*—1. In a railway crossing, the combination of the base *a*, having flanged sides *b*, a circular frame pivoted centrally thereon as described, permanent track rail sections $a^2$ on said frame having their ends cut to conform to the circle described by said frame and main or switch track rails having their ends cut in the arc of the circle described by said frame and supported upon said base flange *b*, said rails $a^2$ adapted to be brought as described, into alignment with either said main or switch rails, substantially as specified.

2. In a railway crossing, the combination of the base *a*, side flange *b* formed therewith, a circular frame pivoted centrally on said base, wheels $f^2$ journaled in bearings depending from said frame and adapted to bear on said base, permanent track rail sections $a^2$ on said frame having their ends cut to conform to the circle described by said frame and main or switch track rails having their ends cut in the arc of the circle described by said frame said rails $a^2$ adapted to be brought into alignment with said main or switch rails, substantially as specified.

### 501,722. SANDING-BOX FOR CARS. JOHN J. KNEBELS, New York, N. Y., assignor, by mesne assignments, to the Sterling Car Heating and Lighting Company, same place. Filed Mar. 10, 1893. Serial No. 465,474. (No model.)



*Claim.*—1. The combination, in sanding boxes, of pivoted bottoms in the boxes, arms on said bottoms adapted to prick the sand, geared sectors on the pivots of the bottoms, and devices for oscillating said sectors and bottoms, substantially as described.

2. In sanding boxes, the combination of pivotal bottoms, geared sectors thereon, and devices for oscillating said sectors, substantially as described.

3. The combination in sanding boxes, of a tread, bell crank lever and spring, connecting rod, box frame, pivotal bottoms therein, and geared sectors on said bottoms, adapted to be operated by said connecting rod.

4. In sanding boxes and in combination with tipping bottoms for the boxes, a bell-crank lever fulcrumed on the car and attached at one arm to a device for tripping the bottoms and having a socket in the other arm, and a removable tread adapted to bear in said socket and be removed therefrom at will, substantially as described.

5. In a sanding box, the combination with tipping bottoms, of a connecting rod adapted to trip the bottoms, a bell crank lever having one arm connected with said rod, a sleeve fixed on the car adjacent to the other arm of the lever and flared downwardly, and a removable tread adapted to bear on said other arm of the lever and guided in said sleeve, substantially as described.

6. In a sanding box, the combination of a removable tread, a downwardly flared sleeve fixed on the car and adapted to guide said tread, a bell-crank lever having one arm engaging the end of the tread and the other arm actuated by a spring and connected with a rod for operating the bottoms, substantially as described.

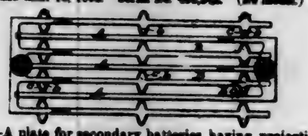
7. The combination, in a sanding box of a connecting rod adapted to operate the bottoms, a bell-crank lever having one arm connected with said rod and also actuating a spring, a tread adapted to engage the other arm of the lever and removably guided in a downwardly flaring sleeve, and a dog pivoted adjacent to the tread and adapted to engage the head thereof, substantially as described.

8. A sanding box made in two parts, each part forming one half

of a body and of a downwardly projecting scuttle therefrom and being provided with flanges and bolt holes at the meeting faces for fastening the two parts together, and each of said parts also being provided with flanges at the upper end for securing the box to a car, substantially as described.

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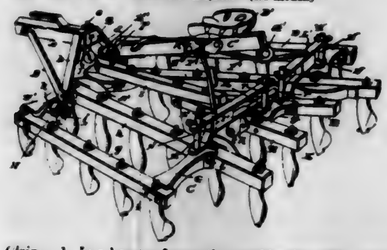
**501,723.** SECONDARY BATTERY. FRANK KIRK, London, England. Filed Mar. 16, 1892. Serial No. 425,242. (No model.)



*Claim.*—A plate for secondary batteries having projections extending out from the surface thereof, and combined with continuous strips of insulating and acid resisting material placed over said projections substantially as described.

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**501,724.** HARROW-FRAME. FRANK Y. KRADAGH, Defiance, Ohio. Filed Nov. 7, 1892. Serial No. 451,275. (No model.)



*Claim.*—1. In a harrow frame, the combination with a central section; of two lateral wings or sections, having a universal connection with the draft beam or frame and close together at their forward ends, and a detachable hinged connection and wide apart at their rear ends, whereby said lateral sections may be turned on their inner sides and the rear connections made to secure the same in such position, substantially as specified.

2. The combination with a central section, having the vertical studs or posts thereon; of the two lateral sections provided with shoes or runners on their inner longitudinal beams, and also having vertical studs or posts at their rear portions and connected by a loose or universal joint at their forward portions, and the detachable connection to take over the respective posts or studs and secure the sections together in a horizontal position, and also secure the lateral sections in a vertical position so as to bear upon their shoes or runners, substantially as specified.

3. The combination with the central or intermediate section of the lateral sections, the connections for the rear portions of said sections, each having a vertical aperture, the seat having its forward end connected to the central harrow section, and the legs supporting said seat, and bearing in the apertures of the connections, substantially as specified.

4. The combination with the central or intermediate section, having the hook at its forward end, and the cross bar or plate at its rear portion provided with vertical studs or posts; of the two lateral sections adapted to be turned upon their sides and provided on their inner longitudinal beams with shoes or runners, and also having cross bars or plates at their rear ends carrying vertical studs or posts, and the respective sections connected to the draft beam at their forward portions, the connections for the rear portions having eyes at opposite ends to receive the respective studs or posts, and the plates on the intermediate section having eyes to receive a bolt designed to also take through the apertures in one end of the rear connection when the frame has been folded, substantially as specified.

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**501,725.** LINK FOR SLEEVE OR CUFF BUTTONS. GEORGE F. KUNZ, Philadelphia, Pa. Filed July 11, 1892. Serial No. 439,998. (No model.)



*Claim.*—Two cuff buttons having a connecting link consisting of a single piece of material formed with a coiled spring at one end, engaging the eye of one of the buttons, and having crossed shanks with oppositely formed hooked ends, producing a loop engaging the eye of the other button, said coil spring normally closing said hooked ends, so as to form said loop, said parts being combined substantially as described.

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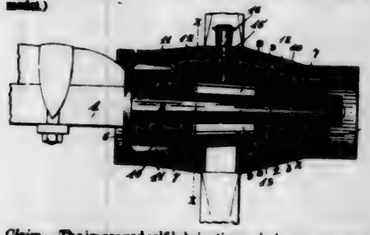
**501,726.** COMPENSATING JOURNAL-BOX. ABRAHAM R. LANDIS, Waynesborough, Pa. Filed Mar. 22, 1893. Serial No. 467,123. (No model.)



*Claim.*—The combination, with a shaft, of a revolvable shaft bearing provided with a longitudinal slot in its side and a flat-faced spiral step-cone on its periphery, a support provided with a spiral bearing for the said step-cone to rest in, and collars secured on the said shaft and bearing respectively against the larger end of the said step-cone and against the end of the said support beyond the smaller end of the step-cone, substantially as and for the purpose set forth.

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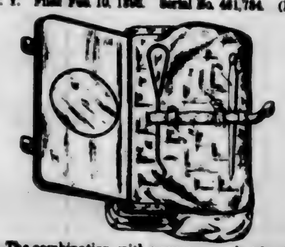
**501,727.** SELF-LUBRICATING AXLE-BOX. THOMAS MOORE, Cheyenne, Wyoming. Filed Apr. 24, 1893. Serial No. 471,010. (No model.)



*Claim.*—The improved self lubricating axle-box, constructed with a sleeve 7 having a bore tapered to fit the spindle and provided with a smooth exterior surface tapered in a direct line from its inner end outward, and said sleeve arranged to revolve loosely upon the spindle and having a series of radial slots 8 extending longitudinally therein, but terminating a distance away from the ends thereof, a box 10 provided with ribs or wings 11 for preventing its turning in the hub, and provided with a smooth interior surface tapered from its inner end outward to loosely fit and turn upon said sleeve, an annular shoulder 12 formed in the inner face of the box 10 at a point adjacent the outer end thereof, said box being provided with an annular space 13, the outer end of which terminates at the shoulder 12, and said space extending inward in the direction of the length of the box to a point opposite the inner ends of the radial slots in said sleeve, and merging thereat into said inner surface of said box, a hub in which said box is fixed, means for supplying lubricant to the annular space 13 and to the slots 8 from the exterior of the hub, and means which engage the adjacent ends of said box and said sleeve and hold same in position upon the spindle, substantially as herein specified.

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**501,728.** PURSE OR POCKETBOOK. SOLOMON HATHAN, New York, N. Y. Filed Feb. 10, 1893. Serial No. 461,784. (No model.)



*Claim.*—The combination, with a purse or pocket-book, of a strap fastened to the side of the same and passed through a series of loops formed on the side of the purse or pocket-book, a loop or eye on the free end of said strap, a metal frame hinged to the side of the purse or pocket-book frame at the top to swing toward or from the side of said purse or pocket-book, and loops projecting from the bottom of said hinged frame, substantially as set forth.



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**501,729.** STEAM-BOILER FURNACE. JOHN R. NEESHAM, Mount Tabor, Oreg. Filed Feb. 27, 1893. Serial No. 463,914. (No model.)

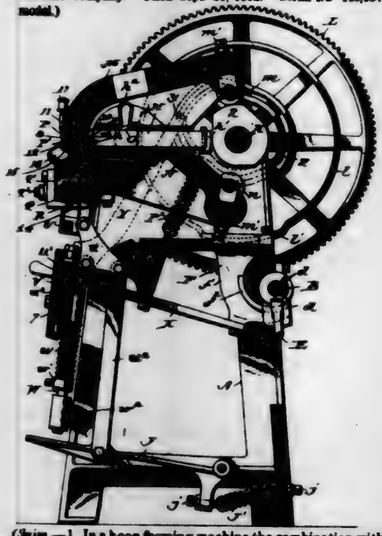


*Claim.*—1. In a steam boiler furnace, the combination with the casing having a fire box in its forward end, a bridge wall and a tubular flue boiler, of frame work between the bridge wall and rear of the casing resting on the base of the casing of a fire-brick work arranged between the bridge wall and rear of the casing a short distance below the boiler and above the base resting on said frame work said brick work having a series of vertically disposed apertures therein, an air space below the entire brick work, an air pipe leading into the air space and longitudinal pipes within the air space communicating with the air supply and having a series of perforations at points below the tops thereof, substantially as described.

2. In a steam boiler furnace, the combination with the casing boiler and fire box, of a fire brick work between the bridge wall of the fire box and rear of the casing consisting of a series of rectangular perforated brick, a second series of brick resting thereon having sloping inner faces, flat rear sections and flanges between the sloping faces and rear sections, a third series of bricks resting on the flat rear sections and abutting against the flanges of the second series having curved inner faces the respective bricks having registering apertures therein, an air space below the brick work and air supply pipes leading into the air space, substantially as described.

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**501,730.** HOOP-MAKING MACHINE. JAMES PLEUKHARP and WILLIAM K. LASSETT, Columbus, Ohio, assignors to the Pleukharp Barrel Machine Company. Filed Sept. 26, 1892. Serial No. 446,987. (No model.)



*Claim.*—1. In a hoop forming machine the combination with jaws provided with the punching and riveting mechanism, of a former to receive the hoop iron, and mechanism for moving said former to carry the overlapping ends of the hoop iron between the jaws to be successively operated upon by the punching, and the riveting mechanism, substantially as set forth.

2. In a hoop forming machine the combination with jaws carrying the punching, riveting, and rivet feeding mechanism, of a former adapted to receive the hoop iron, and mechanism for moving said former to carry the overlapping ends of the hoop iron between said jaws to be successively punched, receive the rivets, and have the ends of the rivets upset, substantially as set forth.

3. In a hoop forming machine the combination with the jaws carrying the punching and riveting mechanism and a wheel as L having a cam Z having portions at different radii, of a former having an arm projected therefrom, and having a portion of said arm engaging with the cam Z whereby said former is moved backward and forward to carry the hoop iron between said jaws to be successively operated upon by the punching and riveting mechanism, substantially as set forth.

4. In a hoop forming machine the combination with the jaws carrying the punching and riveting mechanism and a wheel L having a grooved cam Z having portions at different radii, of a pivoted former to receive the hoop iron having an arm projected therefrom and provided with a portion to engage with said grooved cam, whereby said former is rocked on its pivotal support, substantially as described for the purpose set forth.

5. In a hoop forming machine the combination with the jaws carrying the punching and riveting mechanism, and the wire feeding mechanism, of a slide constructed to sever portions from the wire to form the rivet, and mechanism for actuating the said slide and the wire feeding mechanism, substantially as set forth.

6. In a hoop forming machine the combination with the jaw M having elongated opening 10, and the jaw N having an opening to permit of the passage of the rivet forming wire, and having shoulder *p*, of a slide constructed to sever portions from said wire to form the rivet and clamp said rivet between said shoulder *p* and the end of the slide, substantially as set forth.

7. In a hoop forming machine the combination with the jaws provided with the punching and riveting mechanism, and an actuating cam, of a slide for cutting the rivets provided with an adjustable end piece to ride upon said cam, substantially as set forth.

8. In a hoop forming machine the combination with the jaws carrying the punching and riveting mechanism a shaft provided with cams for actuating said jaws and the wire feeding mechanism, and a wheel L mounted on said shaft and having a rim *l* which is provided with a depressed portion *l'*, of a drive shaft, a drive pulley loosely mounted on said drive shaft, a pawl E carried by said drive shaft and adapted to engage with said drive pulley, a trip adapted to have one end to travel on the rim *l* and having its other portion provided with a cam $f^9$, and a lever under the control of the operator to move said trip and project the cam portion $f^9$ within the path of a portion of the pawl E, substantially as and for the purpose set forth.

9. In a hoop forming machine the combination with the jaws carrying the punching and riveting mechanism, feed rollers Q and R, and a shaft provided with a series of independent cams for actuating said jaws and the feed rollers, of a ratchet wheel S on the journal of one of said rollers, lever T loosely mounted on the journal and provided in one end with a socket, a spring actuated pawl located in the said socket to engage with said ratchet wheel, lever $T^5$ pivoted between its ends, one end being constructed to engage with one of the said cams, and having the other end connected with the lever T, and a spring *t'* for maintaining the free end of the lever $T^5$ in engagement with the actuating cam, substantially as set forth.

10. In a hoop forming machine the combination with the jaws carrying the punching and riveting mechanism, of wire feeding rollers located in one of said jaws, adjustable bearings for one of said rollers, and set screws for adjusting said bearings to vary the distance between said rollers, substantially as set forth.

11. In a hoop forming machine, the combination of the jaws M and N carrying the punching mechanism, the jaw N having receptacle 16 projected forwardly therefrom and communicating with the opening through which the cuttings escape, to receive the said cuttings and the lubricant, and a lubricator to automatically supply oil to the punching mechanism, substantially as described.

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**501,731.** POWER-TRANSMITTING FLEXIBLE SHAFT. JOSEPH E. PRIME, Boston, N. H. Filed Mar. 30, 1893. Serial No. 468,008. (No model.)

*Claim.*—1. A power transmitting shaft of the type described, having a flexible cable-like intermediate connecting portion between its rigid portions, said connecting portion comprising between its hooking ends, two series of links constructed respectively of pairs of flat hinging plates arranged alternately in horizontal and vertical planes, and other pairs of hinged plates each plate of a pair of the latter, being formed with both a horizontal and a vertical hinging end, and the several pairs of plates of the two series being united by pivots which pass through the plates the joints in vertical and horizontal planes, substantially as described.

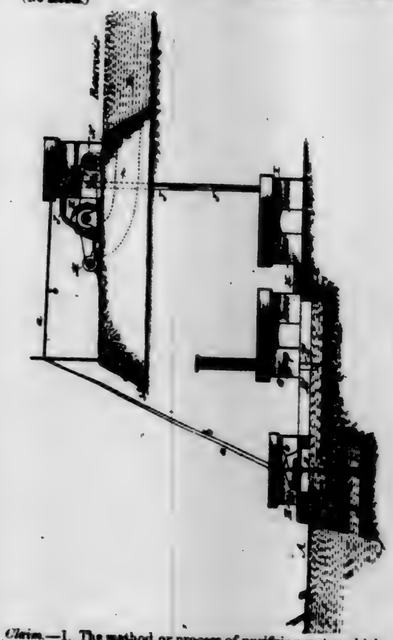
2. In a power transmitting shaft having a flexible connecting por-

501,781.



tion between its rigid portions, the combination with a chain formed of links consisting of pairs of flat plates *a*, *a*, set alternately in horizontal and vertical planes, and other pairs of plates *a'* *a'*, each plate of a pair of the latter being formed with both a horizontal and vertical hinging end, and the several pairs of plates being united by pivots running alternately at right angles to one another, of hooks C, C', wire inclosing coil D, tubular rigid parts F, H confining screws *d* and *f*, and spindles G and I, substantially as described.

501,782. METHOD OF AND APPARATUS FOR PURIFYING WATER. HENRY ROBERT, Philadelphia, assignor of one-half to Robert Wetherill & Co., Chester, Pa. Filed Oct. 15, 1892. Serial No. 449,011. (No model.)



*Claim.*—1. The method or process of purifying water which consists in passing it through a stratum or body composed of pieces of iron which is simultaneously agitated and subjected to the action of an electric current, then filtering the water to remove such impurities as were not precipitated by the oxide disengaged from the iron and mingled with the water, and finally aerating the filtrate, substantially as specified.

2. In purifying water the process or method consisting in passing water through a stratum or body of comminuted iron which is simultaneously agitated and subjected to the action of an electric current, then filtering the water to remove such impurities as were not precipitated by the oxide disengaged from the iron, substantially as specified.

3. In purifying water, the method or process which consists in passing water through a stratum or body of comminuted iron, in simultaneously agitating such stratum and subjecting it to the action of an electric current, substantially as shown and described, for the purpose specified.

4. In a water purifying apparatus, the combination with a water conduit and a quantity of comminuted iron supported therein, of an electric circuit of which the iron forms a part, and a means for agitating the iron, substantially as shown and described.

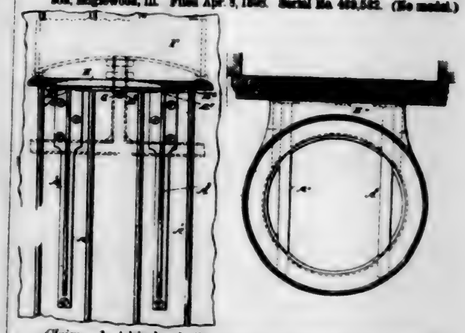
5. In a water purifying apparatus the combination with a water passage or conduit, and a quantity of comminuted iron supported or held therein of an electric circuit of which the iron forms a part, and a revolving rake composed of a shaft and radial arms having projecting teeth, which work in the iron and agitate the same, substantially as shown and described.

6. In an apparatus for purifying water, the combination of the conduit B, a perforated plate arranged therein, a stratum or body of comminuted iron supported upon said plate, the revolving iron rake arranged directly above the plate and working through the iron, and the electric circuit wires, one connecting with the rake and the other with the body of iron, as shown and described.

7. In an apparatus for purifying water, the combination, with the dynamo, of a water-wheel connected thereto by means suitable for effecting their simultaneous rotation a water-pipe discharging upon the water-wheel, an electric motor a body of comminuted iron, a device for agitating the latter, and an electric circuit from the dynamo through such motor and iron, and a pump connected with said pipe for forcing water through the same as shown and described.

9. An improved apparatus for purifying water, the same being composed of a conduit or passage, a stratum or body of comminuted iron arranged in such conduit, a means for agitating the iron, an electric circuit of which the iron forms a part, a pump for forcing the water forward, a filter, a pipe connecting said filter with the pump and means for aerating the filtrate, substantially as shown and described.

501,783. SUPPORT FOR KITCHEN-BOILERS. WILLIAM ROWLINSON, Englewood, Ill. Filed Apr. 9, 1892. Serial No. 428,542. (No model.)

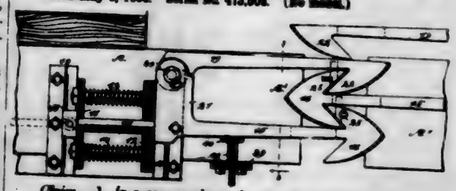


*Claim.*—1. A kitchen boiler support, comprising brackets adapted to be secured to the kitchen wall, and a seat for the boiler and held on the said bracket and adapted to be fastened to the kitchen wall, substantially as shown and described.

2. A kitchen boiler support, comprising L-shaped brackets secured with their vertical members to the kitchen wall, a seat having a circular depression for the reception of the boiler, the said seat being fitted onto the horizontal members of the said brackets, and transverse ribs formed on the under side of the said seat and fitting the outer sides of the horizontal members of the brackets, substantially as shown and described.

3. A kitchen boiler support, comprising L-shaped brackets formed with a circular opening and secured with their vertical members to the kitchen wall, a seat having a circular depression for the reception of the boiler, the said seat being fitted onto the horizontal members of the said brackets, transverse ribs formed on the under side of the said seat and fitting the outer sides of the horizontal members of the brackets, and a lug extending from the rear end of the said seat and adapted to be fastened to the kitchen wall, substantially as shown and described.

501,784. CAR-COUPLING. MOSES P. SCOTT, Woodville, Miss. Filed May 9, 1892. Serial No. 473,001. (No model.)



*Claim.*—1. In a car coupler a drawhead comprising a body bar capable of limited movement at its rear end, the body bar terminating in substantially an arrow head, a second bar having a hinged connection with the body bar and provided with a head at its upper end normally engaging with the arrow head of the body bar, and a latch bar adapted for locking engagement with the locking bar, contained in the head of the body bar of the drawhead, as and for the purpose specified.

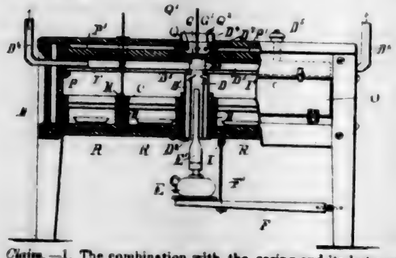
4. In a car coupler, a body bar terminating at its outer end in an arrow-head, said arrow head containing a locking bar, and a latch bar adapted for locking engagement with the locking bar, and an upper bar having hinged connection at one end with the body bar and terminating at its outer end in a head provided with inclined inner and outer faces, the head of the upper bar being adapted to be normally in engagement with the head of the body bar, the upper or hinged bar being provided with a slot adapted to receive the latch of the body bar, as and for the purpose specified.

3. In a car coupler, the combination, with spaced draft plates adapted to have vertical movement, and cushions intervening the draft plates, said draft plates being provided with aligning slots, of the drawhead, the rear portion of which is passed through the slots in the draft plates, and terminates at its rear end in a head adapted to stand normally at right angles to the slots in the draft plates, as and for the purpose set forth.

4. In a car coupler, the combination, with buffing timbers, and cushioned draft plates having sliding movement between the timbers, of a drawhead detachably connected with the cushioned draft plates, the said drawhead comprising an arrow-headed body bar connected directly with the cushioned plates, a hinged bar connected with the body bar and provided with a head inclined upon the front and rear faces, and a locking and latch bar carried by the head of the body bar, as and for the purpose specified.

5. A car coupler provided with an arrow head, capable of limited lateral and vertical movement, a hinged bar located above the arrow head and having inclined front and rear faces, a spring-controlled locking bar carried by the arrow head, a gravity latch bar adapted for engagement with the locking bar, and a shifting lever connected with the locking bar, as and for the purpose set forth.

501,785. INCUBATOR. HENRY M. SHEER, Quincy, Ill., assignor to himself and George Ertel, same place. Filed Nov. 5, 1892. Serial No. 451,073. (No model.)



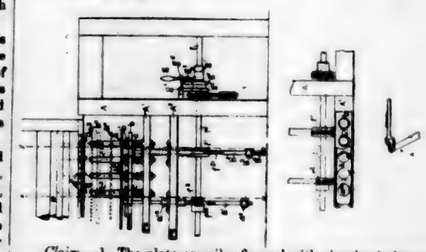
*Claim.*—1. The combination with the casing and its hot water vessel provided with a vertical hot air flue $D^3$ leading through it and having a valve controlled communication at its upper end with the exterior of the casing, and the lateral branches leading through the water vessel from said flue, of the imperforate pipe D', extending upwardly from an opening in the bottom of the casing to the lower end of the flue $D^3$ and the pipe D, (for the lamp chimney) within and of less length than the pipe D' to permit the annular air space between said two pipes D D' to open into the lower end of flue $D^3$, substantially as set forth.

2. An incubator comprising a hot air distributing chamber and flues leading therefrom, and a hot water heater formed with a horizontally disposed tank, having a central channel into which extends the said air distributing chamber and the said air flues, side channels connected at their ends with the central channel, return pipes connecting the said side channels with the said central channel at or near the said hot air distributing chamber, and a valve adapted to open and close the top of the said air distributing chamber, to regulate the amount of heat passing through the said air flues, substantially as shown and described.

3. The combination with the casing having cold air inlets, its central hot air pipe, and the water vessel having hot air flues communicating with said pipe, of the elongated moistening pan provided with a central vertical opening to receive said hot air pipe therethrough, cold air pipes K' and two connected slides L L over said pipes, substantially as set forth.

4. An incubator provided with a casing supporting the egg trays within the egg chamber, vertical channels formed in the end walls of the said casing, horizontal channels formed in the top of the said casing, and connecting with the said vertical channels, a central outlet pipe into which discharge the said horizontal channels, and a perforated ring mounted in the said outlet pipe and adapted to register with the said horizontal channels leading to the outlet pipe, substantially as shown and described.

501,786. RING-SPINNING AND DOUBLING FRAME. GEORGE SHEPHERD and HENRY MIDGLEY, Bacup, England, assignors, by mesne assignments, to the Lowell Machine Shop, Lowell, Mass. Filed Mar. 9, 1892. Serial No. 425,252. (No model.) Patented in England Mar. 8, 1884. No. 4,566.



*Claim.*—1. The plate or rail *a* formed with circular holes as described and with a front edge having swells and re-entrant angles, and having slits leading from the said angles and entering the holes at about tangents to the circles of the holes, substantially as described.

2. The combination with the plate or rail *a* formed with circular holes as described and with a front edge having swells and re-entrant angles, and also having slits leading from the said angles and entering the holes at about tangents to the circles of the holes, of rods by which the said plate or rail is supported, and means for moving the rods vertically to raise and lower the plate or rail, substantially as described.

3. The combination with the ring-rail, and operating means for the ring-rail of a plate or rail having anti-ballooning arrangements located beside the spindles, a rod by which the plate or rail is supported, and means for moving the said rod and the plate or rail carried thereby in unison with the ring-rail but through a traverse of less extent than that of the ring-rail, substantially as described.

4. The combination with the ring-rail, and operating means for the ring-rail, of a plate or rail having anti-ballooning arrangements located beside the spindles, a rod by which the said plate or rail is supported, a guide whereby the said rod is held in vertical position, and means for moving the said rod and the plate or rail carried thereby in unison with the ring-rail but through a traverse of less extent than that of the ring-rail, substantially as described.

5. The combination with the ring-rail, and operating means for the ring-rail, of a plate or rail having anti-ballooning arrangements located beside the spindles, a rod by which the said plate or rail is supported, a guide through which the rod slides and whereby the said rod is held in vertical position, and means for moving the said rod and the plate or rail carried thereby in unison with the ring-rail but through a traverse of less extent than that of the ring-rail, substantially as described.

6. The combination with the ring-rail, and operating means for the ring-rail, of a plate or rail having anti-ballooning arrangements located beside the spindles, and means for moving said plate or rail in unison with the ring-rail and in the same direction but at a reduced speed, substantially as described.

7. The combination with the ring-rail, and operating means for the ring-rail, of a plate or rail having anti-ballooning arrangements located beside the spindles, a rod by which the said plate or rail is supported, a guide through which the rod slides and whereby the said rod is held in vertical position, and means for moving the said rod and the plate or rail carried thereby in unison with the ring-rail and in the same direction but at a reduced speed, substantially as described.

8. The combination with the ring-rail, and operating means for the ring-rail, of a plate or rail having anti-ballooning arrangements located beside the spindles, a rod by which the said plate or rail is supported, a guide through which the rod slides and whereby the said rod is held in vertical position, and means for moving the said rod and the plate or rail carried thereby in unison with the ring-rail and in the same direction but at a reduced speed and through a traverse of less extent than that of the ring-rail, substantially as described.

9. The combination with the ring-rail, a plate or rail having anti-ballooning arrangements located beside the spindles, and a rod supporting said plate or rail, of a moving member of the copping mechanism and separate trains of connections between the said moving

member and the ring-rail and rod, whereby the ring-rail and plate or rail are independently actuated from the said moving member and caused to move in unison but with a traverse of the plate or rail of less extent than that of the ring-rail, substantially as described.

10. The combination with the ring rail, a plate or rail having anti-ballooning arrangements located beside the spindles, a rod supporting said plate or rail, and a guide through which the rod slides and whereby the said rod is held in vertical position, of a moving member of the copping mechanism and separate trains of connections between the said moving member and the ring-rail and rod, whereby the ring-rail and plate or rail are independently actuated from the said moving member and caused to move in unison but with a traverse of the plate or rail of less extent than that of the ring-rail, substantially as described.

11. The combination with the ring-rail, a plate or rail having anti-ballooning arrangements located beside the spindles, a rod supporting said plate or rail, and a guide through which the rod slides and whereby the said rod is held in vertical position, of a moving member of the copping mechanism and separate trains of connections between the said moving member and the ring-rail and rod, whereby the ring-rail and plate or rail are independently actuated from the said moving member and caused to move in unison but with a traverse of the plate or rail of less extent than that of the ring-rail, and at a reduced speed, substantially as described.

12. The combination with the ring-rail, and a plate or rail having anti-ballooning arrangements located beside the spindles, of the copping-shaft $f$, and separate trains of connections intermediate the said shaft and the ring-rail and plate or rail whereby the latter are moved in unison but with the traverse of the said plate or rail less in extent than that of the ring-rail, substantially as described.

13. The combination with the ring-rail, its poker, a plate or rail having anti-ballooning arrangements located beside the spindles, and a rod by which said plate or rail is supported, of the copping-shaft $f$ and operating connections intermediate the said shaft and the poker and rod, embracing blocks or pulleys on said shaft, and chains whereby the ring-rail and plate or rail are moved in unison but with the traverse of the said plate or rail less in extent than that of the ring-rail, substantially as described.

14. The combination with the ring-rail, its poker, a plate or rail having anti-ballooning arrangements located beside the spindles, and a rod by which said plate or rail is supported, of the copping shaft $f$, blocks or pulleys on said shaft, one of them less in diameter than the other and serving for the actuation of the plate or rail, and connections intermediate the said blocks or pulleys and the poker and rod, embracing chains, whereby the ring-rail and plate or rail are moved in unison but with the traverse of the said plate or rail less in extent than that of the ring-rail, substantially as described.

15. The combination with the ring-rail, and a plate or rail having an anti-ballooning arrangement, of a moving member of the copping mechanism having separate operative connection with the ring-rail and the said plate or rail, and a stop for arresting the descent of the ring-rail before the termination of that of the plate or rail when the ring-rail and plate or rail are depressed for doffing, substantially as described.

16. The combination with the ring rail, its poker, a plate or rail having an anti-ballooning arrangement, and a rod for supporting the said plate or rail, of the copping-shaft $f$, blocks or pulleys thereon, connections intermediate said blocks or pulleys and poker and rod, embracing chains, and a stop for arresting the descent of the ring-rail before the termination of that of the plate or rail when the ring-rail and plate or rail are depressed for doffing, substantially as described.

17. The combination with the ring-rail, and a plate or rail having an anti-ballooning arrangement, of a copping-shaft $f$, separate trains of operating connections intermediate the said shaft and the ring-rail and plate or rail, and means whereby the said shaft may be turned by hand to lower the ring-rail and plate or rail for doffing, substantially as described.

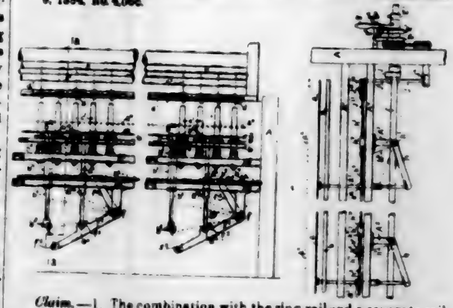
18. The combination with the ring-rail, and a plate or rail having an anti-ballooning arrangement, of a copping-shaft $f$, separate trains of operating connections intermediate the said shaft and the ring-rail and plate or rail, means whereby the said shaft may be turned by hand to lower the ring-rail and plate or rail for doffing, and a stop for arresting the descent of the ring-rail before the termination of that of the plate or rail, substantially as described.

19. The combination with the ring-rail, and a plate or rail having an anti-ballooning arrangement, of a copping-shaft $f$, separate trains of operating connections intermediate the said shaft and the ring-rail and plate or rail, a notched disk fast on said shaft, a handle carrying a pawl to engage with said disk and whereby the shaft may be turned by hand to lower the ring-rail and plate or rail for doffing, and a stop for arresting the descent of the ring-rail before the termination of that of the plate or rail, substantially as described.

20. The combination with the ring-rail, and a plate or rail having an anti-ballooning arrangement, of a copping-shaft $f$, separate trains of operating connections intermediate the said shaft and the ring-rail and plate or rail, a notched disk or disks fast on the said shaft, a handle provided with a pawl for engaging with the notch of said disk or of one of the disks, whereby to turn the said shaft to lower the ring-rail and plate or rail for doffing, a pawl to engage with a notch of said disk or of one of the disks to prevent the return of the parts, and a stop for arresting the descent of the ring-rail before that of the plate or rail is terminated, substantially as described.

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**501,787. RING-SPINNING AND DOUBLING FRAME.** GEORGE SHEPHERD and HENRY MIDGLEY, Bacup, England, assignors, by mesne assignments, to the Lowell Machine Shop, Lowell, Mass. Filed Mar. 9, 1893. Serial No. 465,256. (No model.) Patented in England Mar. 8, 1884, No. 4,066.



*Claim.*—1. The combination with the ring-rail and a separate rail or plate having anti-balloon or yarn-separating arrangements located beside the spindles, of a rod supporting the said rail or plate, an arm which engages with the said rod to actuate the same, and means for moving the said arm up and down, substantially as described.

2. The combination with the ring-rails on opposite sides of a frame, and separate rails or plates also on the opposite sides having anti-balloon or yarn-separating arrangements located beside the spindles, of a rod at each side by which the said rail or plate at each side is supported and operated, a cross-shaft, and arms at the opposite ends of the said cross-shaft whereby the said rods are actuated, substantially as described.

3. The combination with the ring-rail, the poker for the ring-rail, and the cross-shaft arm actuating the said poker, of a rail or plate having anti balloon or yarn-separating arrangements located beside the spindles, and independent means whereby the said rail or plate is separately operated from the said cross-shaft arm and caused to rise and fall vertically during the corresponding movements of the ring-rail, substantially as described.

4. The combination with the ring-rail, the poker for the ring-rail, and the cross-shaft arm actuating the said poker, of a rail or plate having anti balloon or yarn-separating arrangements located beside the spindles, and a rod supporting said rail or plate and also actuated by the said cross-shaft arm, substantially as described.

5. The combination with the ring-rail, the poker for the ring-rail, and the cross-shaft arm actuating the said poker, of a rail or plate having anti balloon or yarn-separating arrangements located beside the spindles, and a rod supporting said rail or plate and also actuated by the said cross-shaft arm but through a traverse of less extent than that of the poker, substantially as described.

6. The combination with the ring-rail, the poker for the ring-rail, and the cross-shaft arm actuating the said poker, of a rail or plate having anti balloon or yarn-separating arrangements located beside the spindles, and a rod supporting said rail or plate, in continuous operative engagement with the said cross-shaft arm, and actuated by the latter through a traverse of less extent than that of the poker.

7. The combination with the ring-rail, the poker for the ring-rail, and the cross-shaft arm actuating the said poker, of a rail or plate having anti balloon or yarn-separating arrangements located beside the spindles, and a rod supporting said rail or plate and also actuated by the said cross-shaft arm, but at a different speed from that of the poker, substantially as described.

8. The combination with the ring-rail, the poker for the ring-rail, and the cross-shaft arm actuating the said poker, of a rail or plate having anti balloon or yarn-separating arrangements located beside the spindles, and a rod supporting said rail or plate and also actuated by the said cross-shaft arm but from a point thereof intermediate the axis on which the arm swings and the point on the arm at which motion is transmitted to the poker of the ring-rail, substantially as described.

9. The combination with the ring-rail, the poker for the ring-rail, and the cross-shaft arm actuating the said poker, of a rail or plate having anti-balloon or yarn-separating arrangements located beside the spindles, a rod by which said rail or plate is supported, a guide for the said rod through which the latter moves up and down, a lever operating upon the said rod to actuate the said rail or plate independently of the ring-rail, and separate means for moving the said lever to raise and lower the said rail or plate, substantially as described.



10. The combination with the ring-rail, the poker for the ring-rail, and the cross-shaft arm actuating the said poker, of a rail or plate having anti-balloon or yarn-separating arrangements, and a rod supporting said rail or plate and connecting positively with the said cross-shaft arm at a point intermediate the axis on which the said arm turns and the point at which motion is transmitted to the poker of the ring-rail, substantially as described.

11. The combination with the ring-rail, the poker for the ring-rail, a stop to arrest the descent of the ring-rail when the latter has reached the position for doffing, and the cross-shaft arm actuating the said poker, of a rail or plate having anti-balloon or yarn-separating arrangements, and a rod supporting said rail or plate and also actuated from the said cross-shaft arm, substantially as described.

12. The combination with the ring-rail, the poker for the ring-rail having connected therewith a stop to arrest the descent of the ring-rail when the latter has reached the position for doffing, and the cross-shaft arm actuating the said poker, of a rail or plate having anti-balloon or yarn-separating arrangements, and a rod supporting said rail or plate and also actuated from the said cross-shaft arm, substantially as described.

13. The combination with the ring-rail, the poker for the ring-rail, a stop to arrest the descent of the ring-rail when the latter has reached the position for doffing, and the cross-shaft arm actuating the said poker, of a rail or plate having anti-balloon or yarn-separating arrangements, a rod supporting said rail or plate and also actuated from the said cross-shaft arm, the cross-shaft and its arm $f^5$, and an actuating-rod $b^4$ provided with lengthening and shortening means, substantially as described.

14. The combination with the ring-rail, the poker for the ring-rail having connected therewith a stop to arrest the descent of the ring-rail when the latter has reached the position for doffing, and the cross-shaft arm actuating the said poker, of a rail or plate having anti-balloon or yarn-separating arrangements, a rod supporting said rail or plate and also actuated from the said cross-shaft arm, the cross-shaft and its arm $f^5$, and an actuating-rod $b^4$ provided with lengthening and shortening means, substantially as described.

15. The combination with the ring-rail, the poker for the ring-rail, a stop to arrest the descent of the ring-rail when the latter has reached the position for doffing, and the cross-shaft arm actuating the said poker, of a rail or plate having anti-balloon or yarn-separating arrangements, a rod supporting said rail or plate and also actuated from the said cross-shaft arm, the cross-shaft and its arm $f^5$ carrying a pin, and an actuating-rod formed with the slot $b^5$ having the notch or offset $b^7$, substantially as described.

16. The combination with the ring-rail, the poker for the ring-rail having connected therewith a stop to arrest the descent of the ring-rail when the latter has reached the position for doffing, and the cross-shaft arm actuating the said poker, of a rail or plate having anti balloon or yarn-separating arrangements, a rod supporting said rail or plate and also actuated from the cross-shaft arm, the cross-shaft and its arm $f^5$ carrying a pin, and an actuating-rod formed with the slot $b^5$ having the notch or offset $b^7$, substantially as described.

17. The combination with a rail or plate having anti-balloon or yarn-separating arrangements, and a rod supporting said rail or plate, of a rocker by which the said rod is actuated, and operative connections in engagement with the said rocker and provided with lengthening and shortening means, substantially as described.

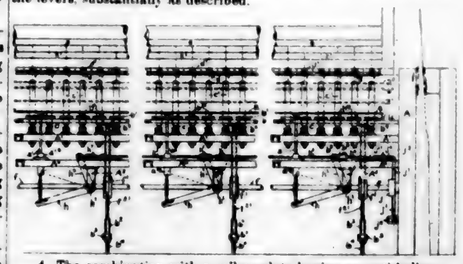
18. The combination with a rail or plate having anti-balloon or yarn-separating arrangements, and a rod supporting said rail or plate, of a rocker by which the said rod is actuated, and also carrying a pin, and an actuating-rod formed with the slot $b^5$ having the notch or offset $b^7$, in which the said pin normally is engaged substantially as described.

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**501,788. RING-SPINNING AND DOUBLING FRAME.** GEORGE SHEPHERD and HENRY MIDGLEY, Bacup, England, assignors, by mesne assignments, to the Lowell Machine Shop, Lowell, Mass. Filed Mar. 9, 1893. Serial No. 465,264. (No model.) Patented in England Mar. 8, 1884, No. 4,066.

*Claim.*—1. The combination with the ring-rail, and means for actuating the ring-rail, of a rail or plate having anti-ballooning or yarn-separating arrangements located beside the spindles, a lever operating to actuate the said rail, or plate independently of the ring-rail, and separate means for moving the said lever to raise and lower the said rail or plate, substantially as described.

2. The combination with the ring-rail, and means for actuating the ring-rail, of a rail or plate having anti-ballooning or yarn-separating arrangements located beside the spindles, rods by which the said rail or plate is supported, levers whereby the said rods are operated, separate actuating means for the levers, and a wire or rod connecting the levers, substantially as described.



4. The combination with a rail or plate having an anti-ballooning or yarn-separating arrangement, of rods by which the said rail or plate is supported, levers whereby the said rods are operated, actuating means for the levers, and a wire or rod connecting the levers and having an adjusting device whereby its length may be varied, substantially as described.

5. The combination with a rail or plate having an anti-ballooning or yarn-separating arrangement, of rods by which the said rail or plate is supported and operated, levers whereby the said rods are operated, actuating means for the levers, and a wire or rod connecting the levers composed of parts having a right-and-left-handed screw coupling whereby to effect adjustment of the combined length thereof, substantially as described.

6. The combination with a rail or plate having an anti-ballooning or yarn-separating arrangement, of a rod by which the said rail or plate is supported and operated, a lever whereby the said rod is operated, a swiveling eye carried by said lever, a connecting wire or rod passing through the said eye, nuts on the said wire or rod on opposite sides of the swiveling eye, and actuating means with which the said wire or rod is connected, substantially as described.

7. The combination with a rail or plate having an anti-ballooning or yarn-separating arrangement, of rods by which the said rail or plate is supported and operated, levers whereby the said rods are operated, a swiveling eye carried by one of the said levers, a connecting wire or rod passing through said eye and composed of parts having a right-and-left-hand screw coupling, nuts on the said wire or rod on opposite sides of the swiveling eye, and actuating means with which the said wire or rod is connected, substantially as described.

8. The combination with a rail or plate having an anti-ballooning or yarn-separating arrangement, of rods by which the said rail or plate is supported and operated, levers whereby the said rods are operated, an actuating lever connected with said levers, and a cam for operating said actuating lever, substantially as described.

9. The combination with the rails or plates on opposite sides of a frame, having anti-ballooning or yarn-separating arrangements, of rods by which the said rail or plate at each side is supported and operated, levers for operating the rods at each side, an actuating lever connected with the levers on both sides of the frame, and means for operating said actuating lever, substantially as described.

10. The combination with the rails or plates on opposite sides of a frame, having anti-ballooning or yarn-separating arrangements, of rods by which the said rail or plate at each side is supported and operated, levers for operating the rods at each side, an actuating lever connected with all the levers on both sides of the frame, and a cam for operating said actuating lever, substantially as described.

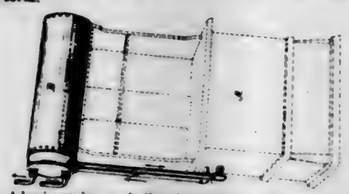
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**501,789. HORIZONTAL CIRCULATING-BOILER.** HOWARD R. SHEPPARD, Philadelphia, Pa. Filed Mar. 26, 1891. Serial No. 386,434. (No model.)

*Claim.*—1. In a horizontal circulating boiler, the combination with the shell thereof of a flanged section having radial openings for hot and return water from the water-back, the former being integral with said flanged section, and also having side openings for hot water outlet and cold water inlet, the former being above the line of incoming cold water, substantially as set forth.

2. In a horizontal range boiler, the combination with the shell of said boiler, of a flanged head-section projecting beyond the range, pro-

vided with radial openings for hot and return water pipes, whereby the said pipes may be directly connected to said boiler, substantially as set forth.

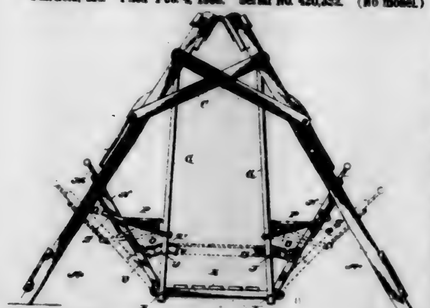


3. A horizontal range boiler placed above and projecting beyond said range, having a flanged section provided on its inner circular side with a passage opening above the central line of said boiler, and also having a return opening and an upper circulating opening and a lower cold water inlet, whereby the circulation is easily maintained, substantially as set forth.

4. In a horizontal circulating boiler, a flanged section or head provided with two radial openings, one terminating in a passage integral with and conforming to said flange for the hot water pipe and the other for the return pipe to the water-back of a range, said head also provided with upper and lower openings for circulating and cold water pipes, respectively, substantially as and for the purpose set forth.

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**501,740. SWING.** REUBEN A. SHOREY and GEORGE E. SHOREY, Fairfield, Me. Filed Feb. 4, 1893. Serial No. 420,232. (No model.)



*Claim.*—The combination of the swing frames having the seat bars and the bottom brace rods, the chair backs pivoted on the lower brace rods the seat pivoted to the backs and resting on the seat bars, the links pivoted to the swing frames and adjustably secured to the chair backs, and the platform adapted to engage either the brace rods or the seat bars.

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**501,741. DENTAL ARTICULATOR.** GEORGE W. SIMPSON, Santa Barbara, Cal. Filed Sept. 22, 1892. Serial No. 446,564. (No model.)



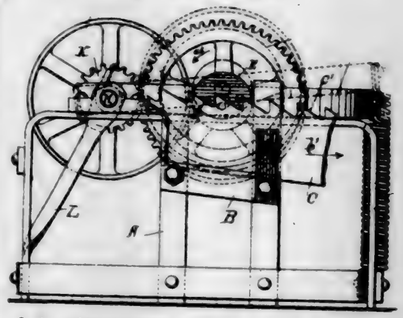
*Claim.*—A dental articulator consisting in the base plate 11 formed with a stationary jaw 10 and a vertical tubular socket 13 provided with a transverse set screw 22, the post 14 adjustable vertically in said socket, formed with a rearwardly extending ear 16 and provided in its upper end with a vertical screw 24, the plate 18 having depending ears 17 hinged to ear 16 and formed along its upper side with longitudinally extending guiding flanges 19, 19, one of which is provided with a transverse set screw 23, and the jaw 21 having a shank 20 extending along the upper side of the plate 18 between its flanges 19 and engaged by its screw 23, substantially as set forth.

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**501,742. METHOD OF AND MACHINE FOR FINISHING SAWS.** THOMAS J. ST. LOUIS, Cadott, Wis. Filed Nov. 7, 1892. Serial No. 451,168. (No model.)

*Claim.*—1. The method of finishing saws which consists in applying a rolling pressure to the throats of the teeth only, beginning on the back of one tooth in rear of the point and continuing the pressure down the tooth and into the base of the throat, substantially as set forth.

2. The method of finishing saws consisting in subjecting the throat of the tooth to a rolling pressure beginning upon the back of one tooth and continuing therealong to the base line of the tooth and thence upwardly on the forward edge of the succeeding tooth and by the rolling pressure in said upward movement feeding the saw the distance of one tooth, substantially as set forth.



3. A machine for finishing saw teeth comprising a die eccentric to its axis and so mounted as to roll off the throat of the teeth of the saw blade, substantially as set forth.

4. A machine for finishing saw teeth comprising a die eccentric to its axis, grooved on its working edge and so mounted as to roll off the throat of the teeth of the saw blade as it is carried around with its shaft, substantially as set forth.

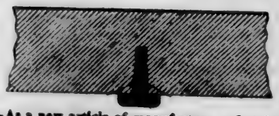
5. A machine for finishing saws, comprising an anvil for supporting the saw blade, a crank disk carrying a die adapted to roll off on the saw teeth, and to feed the saw forward on the anvil, and a yieldingly mounted bearing for the shaft of the said crank disk, substantially as shown and described.

6. A machine for finishing saws, comprising an anvil for supporting the saw blade, a crank disk carrying a die adapted to roll off on the saw teeth, and to feed the saw forward on the anvil, a yieldingly-mounted bearing for the shaft of the said crank disk, and means, substantially as described, for imparting a rotary motion to the said crank disk, as set forth.

7. A machine for finishing saw teeth comprising a frame a drive shaft journaled therein, a vertically yielding ∩-shaped frame loosely mounted at its ends on said shaft a die shaft journaled in said frame and geared to the drive shaft, a die secured eccentrically to the outer end of the shaft to roll off the throat of the teeth of the saw blade and a support for the back of the saw on the side of the frame beneath the die, substantially as set forth.

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**501,743. FRET FOR MUSICAL INSTRUMENTS.** JOHN F. STRATTON, Brooklyn, N. Y. Filed Mar. 28, 1893. Serial No. 467,976. (No model.)



*Claim.*—As a new article of manufacture, a fret for musical instruments, provided in its shank with recesses or grooves adapted to be filled in by the wood expanding after the fret has been driven in place, substantially as shown and described.

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**501,744. DEVICE FOR THAWING OUT FROZEN PIPES, &c.** DANIEL H. STREEPER, Norristown, Pa. Filed Mar. 11, 1893. Serial No. 465,569. (No model.)



*Claim.*—1. In an apparatus of the character described, a furnace, a spherical boiler within said furnace, a pump having its discharge pipe extending down through the said boiler and discharging near the bottom thereof and an outlet pipe leading from the top of the boiler and through which the water is forced by said pump and a supply pipe for the pump, substantially as set forth.

2. A portable thawing apparatus comprising a casing A, a pump mounted therein with its operating lever extending to the exterior, a plumber's furnace and boiler in the casing, the discharge pipe leading from the pump to the boiler, a supply pipe and reservoir for the pump an outlet pipe leading from the upper end of the boiler and a reel in the casing having a tubular axis with which the said outlet pipe is connected, and a flexible pipe wound on the reel and connected with its axis to conduct the water therefrom; the casing having an aperture through which the flexible pipe may be drawn, substantially as set forth.

3. In a thawing apparatus the hollow reservoir drum provided with a filling aperture, a central tube extending through the drum and provided with stuffing boxes at its ends a perforated pipe extending through said tube and stuffing boxes and upon which the drum rotates, a pipe K leading from said central tube and piping K' wound on the reel and connected with outer end of pipe K, substantially as set forth.

4. The combination with the hot water pipe $K^3$ to enter the pipe to be treated and having a suitable pilot on its forward end, of a flexible stiffening wire $K^4$ secured longitudinally along the exterior of the pipe, substantially as set forth.

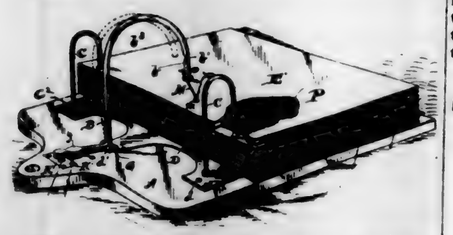
5. The combination with the hot water pipe $K^3$ having a section of hose $K^5$ at its forward end provided with a pilot L and an internal spring $K^6$ connecting the pilot and tube, substantially as set forth.

6. The combination with the flexible hot water pipe $K^3$ provided with a longitudinally extending flexible stiffening wire $K^4$, and a pilot $L^5$, of the flexible push rod detachably connected at its forward end with the pilot, substantially as set forth.

7. A device of the class described, provided with a flexible pipe adapted to be passed into the frozen pipe, a pilot arranged on the outer end of the said flexible pipe to pass over obstructions in the said frozen pipe, and a flexible push rod removably connected with the said pilot, substantially as shown and described.

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**501,745. FILE FOR LETTERS, BILLS, ACCOUNTS, &c.** ARTHUR H. SWAIN, Fremont, Ohio. Filed Feb. 14, 1893. Serial No. 462,319. (No model.)



*Claim.*—1. In a file for letters, bills, accounts, &c., the combination with a supporting-base, and an arch or holder comprising two sections, the one section being fixed to or rigid with the supporting-base and adapted to receive the papers to be filed, and the other section being pivotally secured to said base and adapted to be separated from the stationary section, of a lever rigid with said movable section for separating the same from the fixed or stationary section, and a spring interposed between said lever and base, and acting in the direction to retain said movable section closed against the fixed or stationary section, substantially as set forth.

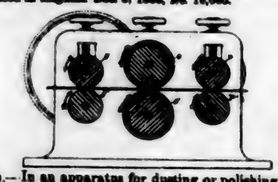
2. In a file for letters, bills, accounts, &c., the combination with a supporting-base, and an arch or holder comprising two sections, the one section being fixed to or rigid with the supporting-base and adapted to receive the papers to be filed, and the other section being pivotally secured to said base, and adapted to be separated from the stationary section, of a lever rigid with said movable section for separating the same from the fixed or stationary section, said lever being provided with a punch or perforator, and a spring interposed between the lever and base and adapted to yieldingly support the outer end of the lever and retain the movable section of the arch movably closed substantially as set forth.

3. The combination with a base, plate D secured thereto, of small arches connected with the base, and a larger central arch comprising two parts one rigid and the other hinged to the plate D, and a spring for normally throwing the ends of the two sections of the central arch together, substantially as set forth.

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**501,746. DUSTING METAL PLATES.** RICHARD B. THOMAS, Lydbrook, England. Filed June 11, 1890. Serial No. 355,017. (No model.) Patented in England Dec. 8, 1888, No. 16,083.



*Claim.*—In an apparatus for dusting or polishing metal plates or sheets, the combination of the two pairs of holding or feeding rollers and intermediate dusting rollers, with driving mechanism for revolving all the pairs of rollers in the same direction, but the dusting rollers at a much greater speed than the holding or feed rollers, substantially as described.

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**501,747. FENCE-POST.** BENJAMIN F. THOMAS, Camden, Ind., assignor of one-half to Philip Ray, same place. Filed Apr. 3, 1893. Serial No. 468,917. (No model.)



*Claim.*—1. The combination with the fence post, of a retaining plate provided at opposite ends with parallel laterally extending flanges having aligned apertures formed therein to receive the post, substantially as described.

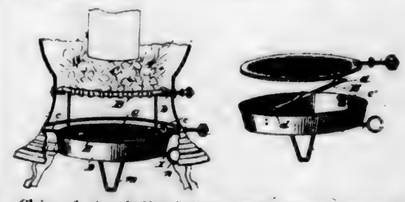
2. The combination with a fence post, of a retaining plate arranged to extend along one face of the post both above and below the surface of the ground and provided at its ends with integral parallel flanges having apertures formed therein to receive the post, substantially as described.

3. The combination with a fence post, of a retaining plate which extends partially below the surface of the ground and is provided at its ends with parallel flanges having formed therein aligned apertures through which the post extends, the lower flange being bent up against the rear face of the post, substantially as described.

4. The combination with a fence post, of a retaining plate which extends partially below the surface of the ground and is provided at its ends with parallel flanges in which are formed aligned apertures to receive the post, and wires D extending around the post, between the flanges on the retaining plate, and passing through apertures in the body of said plate, substantially as described.

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**501,748. SIFTING ATTACHMENT FOR STOVES.** ALBERT E. TRENTOWSKY, St. John, Canada. Filed Mar. 1, 1893. Serial No. 464,778. (No model.)



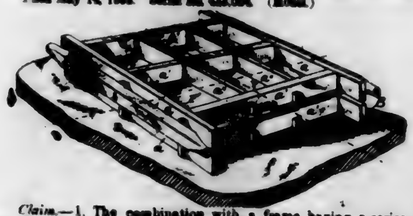
*Claim.*—1. An ash sifter device, comprising a pan, a rocking prop bar thereon, transversely secured on the lower side having a leg to engage the floor, and a handle on the bar whereby it may be rocked, means for removably securing the pan below a hole in the base wall of a stove or similar heating device, and a sifter grate vibratile above the ash pan, substantially as described.

2. An ash sifting device, comprising a circular ash pan having opposite lugs thereon, a cross bar extended diametrically from edge to edge of a circular aperture in the base wall of a stove or similar heating device and secured thereto, and adapted to be engaged by the lugs on the ash pan, a rocking prop bar on the bottom of the ash pan to normally rest on the floor, having a depending leg, and a handle on the prop bar adapted for a rocking vibration, a sifting grate pivoted to receive rotatable motion on the cross bar, and an operating lever for the grate, substantially as described.

3. The combination with the apertured base plate of a stove, and a cross bar secured at its ends diametrically across said aperture, a circular ash pan, diametrically opposite lugs thereon, adapted to engage the ends of the cross bar, a prop rod rotatable beneath the ash pan, an integral bent leg thereon, a handle ring on one end of said prop rod and a toe on the other end thereof, a circular sifting

grate pivoted centrally on the cross-bar, and a vibratile lever on the sifting grate, substantially as described.

**501,749. SHAPER FOR PLUG-TOBACCO.** ROBERT M. VAUGHAN, Richmond, Va., assignor of one-half to William P. Mayo, same place. Filed May 14, 1892. Serial No. 433,094. (Model.)

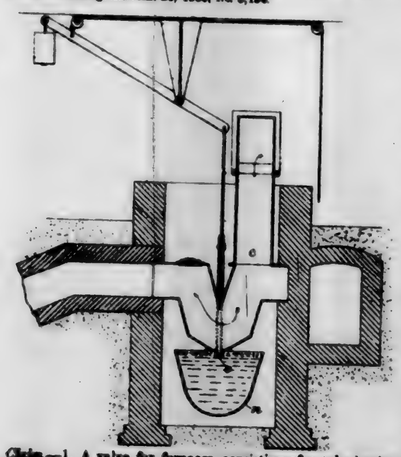


*Claim.*—1. The combination with a frame having a series of compartments therein, of a pressure bed comprising the side bars and a back plate stamped out of a single sheet of metal and having suitable slots therein, and the blocks or sections secured to the back plate to extend across the wider slots therein and adapted to be forced into the compartments in the frame, substantially as and for the purpose set forth.

2. The combination with a frame having rectangular compartments therein, of a pressure bed comprising the side-bars and the back-plate secured thereto, said plate being stamped out of a single sheet of metal and having a series of slots therein, the blocks or sections secured to said back plate to extend transversely across the wider slots and forming intermediate spaces to receive the side walls of the compartments in the frame and the plates *d* secured on said blocks and adapted to fit snugly in the compartments, substantially as described.

3. The combination with a frame having a series of compartments therein, of a pressure bed comprising the side bars and the back plate stamped out of a single sheet of metal and having a series of slots therein, the blocks secured to said plate so as to extend across the wider slots and adapted to fit snugly in the compartments in the frame, said blocks being spaced apart to receive the sides of the compartments between them, the plates *d* secured on the bottom of said blocks and the plates F secured to said blocks on top of the back plate and arranged to fit up into the compartments of the frame placed above the pressure bed, substantially as described.

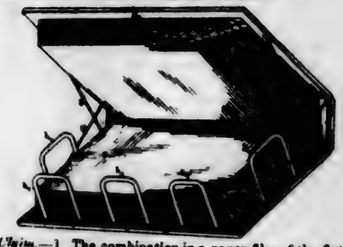
**501,750. HOT-BLAST VALVE.** JOHN W. WAILES, Gateshead-on-the-Tyne, England. Filed Oct. 20, 1892. Serial No. 449,507. (No model.) Patented in England Mar. 26, 1888, No. 5,156.



*Claim.*—1. A valve for furnaces, consisting of a tube having a downward depression therein, a contracted opening in the depression, and means for forcing liquid through said opening; substantially as described.

2. A valve for furnaces, consisting of a tube having a downward depression therein, a contracted opening in the depression, and a vessel arranged to be raised and to force liquid through said opening; substantially as described.

**501,751. PAPER-FILE.** THOMAS WARING, Camden, N. J. Filed July 21, 1892. Serial No. 440,703. (No model.)



*Claim.*—1. The combination in a paper file, of the flat back and the opposite covers, one or both hinged to the back, and each capable of assuming a position inclined upwardly and outwardly from said back, with guards around the edges of the file for retaining the papers therein when the file is closed, but permitting access to the papers both at the top and end of the file when the latter is open, and stays or stops extending from the hinged cover or covers to a rigid portion of the file for limiting the movement of said hinged cover or covers in respect to said rigid portion when the file is open, and whereby the said file is not liable to tip over when a preponderance of weight is thrown upon either cover, said stops or stays being so located that they will not prevent access to the papers at the end of the file when the latter is open, substantially as specified.

2. The combination in a paper file, of the flat back and the opposite covers hinged thereto, with guards around the edges of the file for preventing displacement of the papers therein when the file is closed, but permitting access to the papers both at the top and end of the file when the latter is open, and stops or stays extending from the covers to the back for limiting the movement of said covers in respect to each other when the file is open, and whereby the said file is not liable to tip over when a preponderance of weight is thrown upon either cover, said stops or stays being so located that they will not prevent access to the papers at the end of the file when the latter is open, substantially as specified.

**501,752. ATTACHMENT FOR CYLINDER-PRESSES.** FRANK W. WEST, Brooklyn, N. Y., assignor to Joseph Wetter, same place. Filed Apr. 6, 1892. Serial No. 428,203. (No model.)



*Claim.*—1. In a cylinder printing press, the combination with a slotted impression cylinder and a blanket having its ends passed into said slot, of a removable impression pad placed in said slot, substantially as shown and described.

2. In a cylinder printing press, the combination with a slotted impression cylinder and a blanket having its ends passed into said slot, of an impression pad placed in said slot and means to hold said pad in place, substantially as shown and described.

3. In a cylinder printing press, the combination with a slotted impression cylinder and a blanket having its ends passed into said slot, of a block supporting an impression surface placed in said slot and having the portion which enters the slot expansible to press against the sides of the slot, substantially as shown and described.

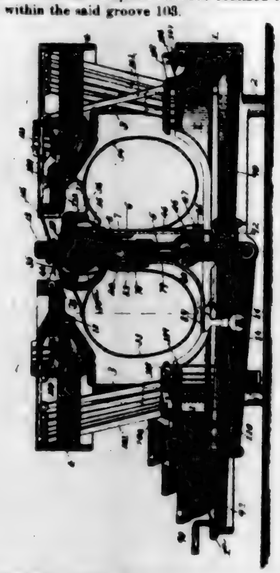
4. A removable impression pad adapted to be placed in the slot of the impression cylinder of a printing press, the same comprising a block to support an impression surface, plates extended downwardly from said block, and means to spread the lower edges of said plates apart and against the sides of the slot, substantially as shown and described.

5. A removable impression pad adapted to be placed in the slot of the impression cylinder of a printing press, the same comprising a block to support an impression surface, plates extended downwardly from said block, a wedge adapted to be drawn between the lower edges of said block and means to move said wedge, substantially as shown and described.

**501,758. TYPE-WRITING MACHINE.** JOHN H. WILLIAMS, Brooklyn, N. Y. Filed Nov. 30, 1892. Serial No. 453,118. (No model.)

*Claim.*—1. In a typewriting machine, the combination of a base frame, the upper segmental frames supported therefrom, the series of type carriers supported on said upper segmental frames and the links and levers carrying and operating said type carriers, the links pivoted on the upper segmental frame and the levers on the base frame, substantially as and for the purposes set forth.

2. The combination of a typewriter frame having radiating slots 102 and arcuate groove 103 traversing the slots 102, and opening on one side of said frame the type carrier operating levers or links arranged in said slots 102 and the pivot rods 104 common to said levers and retained within the said groove 103.



3. In a typewriting machine, the combination of a rotating platen, its carriage, the lever 13 pivoted at the left hand end of said carriage and having arm 15, the rod or link 16, the yoke 17, the ratchet wheel 12 and spring pressed pawl 18.

4. The combination of the rotating platen 10, its carriage, the lever 13 pivoted on said carriage and moving in a plane parallel therewith, the arm 15 on said lever having finger 28 the step-by-step feed rack 24 pivoted on said carriage and the arm 25 on said rack projecting in the path of the finger 28, substantially as and for the purpose set forth.

5. The combination of the paper carriage, having a rotary platen, ratchet wheel and pawl for operating the same and an L lever hinged to said carriage having a vertical arm 13 adapted to oscillate to and from the platen and a horizontal arm 15, connected to said pawl, a feed rack and connections between lever 13 and said rack for moving the latter by the former, substantially as set forth.

6. The combination of the paper carriage, the lever 13 pivoted at the left hand end of said carriage and moving in a plane transverse of the machine, the arm 15 in said lever, the step-by-step feed rack pivoted on said carriage and having the arm 25 projecting in position to be operated on the movement of said lever to swing the feed rack laterally substantially as set forth.

7. The combination of the paper carriage, the rotary platen mounted thereon, thumb piece 30 pivoted on the right hand trunnion of said platen and having stop 31 and long feed rack 24 swiveled on said carriage and having arm 26 projecting in the path of said thumb piece whereby the step-by-step feed may be detached without rotating the platen, substantially as set forth.

8. The combination of a paper carriage, step-by-step feed mechanism therefor, means for releasing the action of said step-by-step mechanism while the carriage is being thrown to the right, and a lock or catch thrown into engagement automatically when the carriage is thrown to the right and holding said carriage from reverse movement for the instant after the release of the carriage by the operator before the engagement of the feed mechanism, substantially as set forth.

9. The combination of a paper carriage, a step-by-step escapement, a fixed toothed bar 6, 6ª, locking pawl 8ª carried by said carriage and having arm 8ᵇ and spring 8ᶜ and lever 13 having arm 15 and stop 8ª arranged and adapted to operate substantially as set forth.

10. The combination of the paper carriage, its support, the rack-bar 40 and the stop 45 having a spring pawl for locking it in desired position on said bar for arresting the paper carriage, substantially as set forth.



11. The combination of the single rail or track, paper carriage mounted thereon, the pendent arm from said carriage and two part telescopic spring pressed wheel carried by the lower end of said arm and running on the under edge of said girder or track; substantially as set forth.

12. The combination of the single rail or girder, the paper carriage thereon, the steadying arm and the two part beveled spring pressed wheels on said arm bearing under said rail; substantially as set forth.

13. The combination of the platen or paper carriage, oscillating arms or levers whereon the same is mounted and sustained and means for maintaining the said carriage, horizontal whatever the position of said oscillating levers.

14. The combination of oscillating arms or levers and a paper carriage supported thereon and arranged to oscillate therewith and relatively thereto.

15. The combination of a paper carriage and oscillating levers having round or segmental upper ends whereon the carriage is mounted and whereby it is maintained in a horizontal plane.

16. The combination of a paper carriage, oscillating standards or levers whereon said carriage is mounted, sustained and pivoted, means for oscillating said levers and a second lever fulcrumed on one of said standards and on the stationary frame and connected to the paper carriage so as to oscillate the same relatively to the said standards; substantially as set forth.

17. The combination of the platen or paper carriage, a track therefor, oscillating standards whereon said track is pivoted, and means for shifting said platen or paper carriage, substantially as set forth.

18. The combination of a single track or girder, a paper carriage adapted to run thereon, transverse of a type-writing machine, oscillating standards whereon said girder or track is pivoted and means for oscillating said standards, substantially as set forth.

19. The combination of the track or girder 5, paper carriage mounted thereon, the standards 52 whereon said track or girder is mounted, means for oscillating said standards, parallelizing lever 74 pivoted on the stationary frame on one of said standards and on the girder 5, substantially as and for the purposes set forth.

20. The combination of paper carriage carrying a track or girder 5, standards 52 whereon the same is pivoted, lever 74 fulcrumed as described and spring 77 arranged and adapted to operate, substantially as set forth.

21. The combination of an oscillating paper carriage, vertical arms or standards supporting said carriage, an arm 54 connected to said vertical arms or standards, an operating key and a link or connecting rod 55 between said arm 54 and key, substantially as set forth.

22. The combination of an oscillating paper carriage, a rocking key for operating the same, the stationary frame having stop 65 and the stop cam 62 carried by the said rocking key, substantially as set forth.

23. The combination of a platen carriage having movement in opposite directions from a normal central position with a rigid or positive lock adapted to arrest the carriage on its return to central position from vibration in either direction, substantially as set forth.

24. In combination with a platen or paper carriage adapted to be shifted both ways from a normal central position, a shifting arm or lever therefor, a spring adapted to return the carriage to its normal position, and a positive lock for arresting it in said position, substantially as set forth.

25. The combination of a paper carriage, an arm or lever for shifting the same, a lock which automatically engages said arm or lever in its normal position and locks it and the carriage from movement in both directions, and a key connected to said arm or lever and to said lock and automatically unlocking said arm or lever when moved to shift the carriage, substantially as set forth.

26. The combination of an oscillating paper carriage its operating arm 54 having arm 64 and the rocking key 56 provided with pins 67 and means for operating said arm 54 from said rocking key.

27. The combination of an oscillating paper carriage, its operating arm 54 and the key 56 having arm 64 provided with pins 67 and means for operating said arm 54 from said key.

28. The combination of the paper carriage, arm or lever 54, rocking key 56, connecting rod 55 having loose connection with said arm 54 and a lock for said arm which is detached by the key 56 during the take up of loose motion of the connecting rod 55, substantially as set forth.

29. The combination of the paper carriage, oscillating arm 54, the rocking key 56 having means for locking and unlocking said arm 54 the connecting rod 55 having loose connection with said arm 54 and returning spring 70 adapted to keep the said connecting rod midway of its loose motion, substantially as set forth.

30. The combination of the step-by-step escapement operating arm, the universal spacer bar, a spreader or bar arranged between said arm and spacer bar and a spring also arranged between the said two members, substantially as and for the purposes set forth.

31. The combination of two pivoted levers projecting from their fulcra toward and past each other connected by a link or bar and a spring which acts to convert the link pivots into floating fulcra and tends to move the levers and link or bar together in one direction.

32. The combination of two pivoted or fulcrumed bars, arms or members projecting toward each other from their fulcra and connected by a tensile spring and a thrust bar or spreader arranged so as to operate, substantially as described.

33. The combination of the escapement operating arm 79, spring 87 hung therefrom, the universal spacer bar hung from said spring and the thrust bar or spreader arranged to oscillate on said universal spacer bar and having a segmental upper end whereon said arm 79 rests, substantially as and for the purposes set forth.

34. The combination of the paper carriage, the long feed rack thereon, two laterally movable short feed racks, one sliding on the other arranged to co-act with said long feed rack, the bent arm 79 carrying said short feed racks bent forward in direction across the plane of said racks and pivoted to the paper carriage support and means connected with the key levers for operating the said bent arm, to move said short racks laterally substantially as set forth.

35. The combination of the type carrier operating levers 101 having arms 108, the long key levers 90, the tensile springs 110 whereby said key levers are hung from said arms and thrust rods or spreaders 109 between said arms 108 and key levers 90 all arranged and adapted to operate, substantially as set forth.

36. The combination of the series of key levers 90, 91, the round pivot bar 92, the slotted guide plate 95 for spacing said key levers and the stationary frame whereon the same are mounted.

37. The face plate or key board having key-lever guide slots larger at their ends than at their midway, substantially as and for the purposes set forth.

38. The combination of U-shaped type carriers 98 and the bent carrying links 100 therefor.

39. The combination of a series of parallel type blocks and an ink pad therefor made up of a number of parallel sections.

40. The ink pad made up of a series of parallel sections rounded on their under surface in combination with a flat bottomed pan adapted to contain said sections, substantially as set forth.

41. The combination of the ink pad made up of a series of parallel sections supported on metal seats or springs.

42. The combination of a pivoted paper pressure bar and a pivoted index adapted to be thrown out of position by said paper pressure bar.

43. The combination of a paper carriage having an arm or stop with a toothed bar, a stop carried thereby and arranged to turn thereon and to slide on said bar, and with means for holding said stop on said rod, substantially as described.

44. The combination of a paper carriage having an arm or stop 45, with a toothed bar, a sleeve adapted to slide thereon, a stop 45 on said sleeve, and a spring bolt or pin carried by said sleeve, to engage said toothed bar substantially as described.

45. The combination with the key levers and the vibrating traveling paper carriage, of a locking bar arranged transversely of said key levers and normally in reach of said key levers, and means for holding said locking bar to prevent depression of the key levers, said holding means being arranged to release said bar upon the vibration of said carriage, substantially as described.

46. The combination with the key levers and the vibrating traveling paper carriage, of a universal space bar arranged to be depressed by the key levers, and means carried by the vibratory portion of said carriage for locking said spacer bar to prevent depression of the key levers, and releasing said spacer bar upon the lateral movement of said carriage, substantially as described.

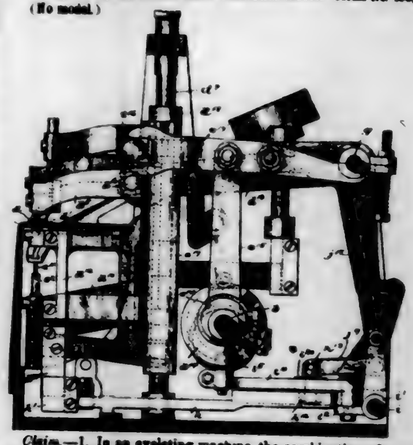
47. The combination with the key levers and the traveling paper carriage of a universal spacer bar, means for locking said spacer bar to prevent its depression by the key levers, and means connected with the paper carriage for actuating said locking device to lock the spacer bar, and for releasing the latter while near the end of a line to permit the insertion of an additional letter, substantially as described.

48. The combination with the key levers and the traveling paper carriage, of a pivoted universal spacer bar, a finger or projection extending from said spacer bar on the side opposite its pivot, a hook for engaging said finger to prevent depression of the spacer bar, and means connected with the paper carriage for actuating said hook as and for the purpose specified.

49. The combination with the key levers and the traveling paper carriage of a universal spacer bar, a finger or projection carried thereby, a rod 120 carried by the main frame a rotary sleeve or member journaled on said rod, and a hook carried thereby to engage said finger or projection, and a projection on the paper carriage to actuate said sleeve or hook, as and for the purposes specified.

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**501,754. EYELETING-MACHINE.** ERASTUS WOODWARD, Somerville, and CHARLES HATCH, Jr., Revere, assignors to the Merrick Sewing Machine Company, Boston, Mass. Filed June 6, 1892. Serial No. 435,673. (No model.)



*Claim.*—1. In an eyeleting machine, the combination of punching and eyelet-setting devices arranged in pairs, one pair comprising a punch and a die and the other a top set and a bottom set, a series of carriers to which said devices are secured, two yokes one engaged with the punch-carrier and with the bottom set carrier and the other with the punch die carrier and top set carrier, two fixed guide-rods on which said yokes are fitted to slide vertically, the carriers on one yoke being fitted to swing laterally on one rod while the carriers on the other yoke are fitted to swing laterally on the other rod, sliding connections between each carrier on one yoke and the corresponding carrier on the other yoke, mechanism for reciprocating the yokes on the guide-rods, and mechanism for swinging the carriers on the guide-rods, as set forth.

2. In an eyeleting machine, the combination of a pair of punching devices comprising a punch and a die, a pair of setting devices comprising a top set and a bottom set, a series of carriers supporting said devices and adapted to swing laterally, mechanism for reciprocating said carriers vertically to cause the devices of each pair to alternately approach and recede from each other, mechanism including two levers and an adjustable stud or pivot connecting said levers whereby said carriers are moved laterally, and means for adjusting said stud to vary the extent of the lateral movement of the carriers, as set forth.

3. In an eyeleting machine, the combination of a pair of punching devices comprising a punch and a die, a pair of setting devices comprising a top set and a bottom set, a series of carriers supporting said devices and adapted to swing laterally, mechanism for reciprocating said carriers vertically to cause the devices of each pair to alternately approach and recede from each other, mechanism including two levers and an adjustable stud or pivot connecting said levers, whereby said carriers are moved laterally, a rotary cam mounted on the frame of the machine, devices controlled by the operator for giving said cam a step by step rotation, and connections between said cam and the adjustable stud, whereby each change of position of the cam is caused to change the position of the stud and vary the extent of the lateral movement of the carriers, as set forth.

4. In an eyeleting machine, the combination of a pair of punching devices comprising a punch and a die, a pair of eyelet-setting devices comprising a top set and a bottom set, a pair of carriers holding the punching devices, another pair of carriers holding the setting devices mechanism for reciprocating said carriers vertically to cause the devices of each pair to alternately approach and recede from each other mechanism including a lever pivoted to a horizontally movable support whereby said carriers are moved laterally, and mechanism for reciprocating said support and thus causing the punch to retreat from the position it occupied when punching the work, whereby the top set is permitted to enter the punched hole without being obstructed by the punch carrier, as set forth.

5. In an eyeleting machine, the combination of a pair of punching devices, a pair of eyelet-setting devices, two pairs of carriers supporting said devices and adapted to swing laterally, mechanism for reciprocating said carriers vertically, adjustable mechanism whereby the carriers may be given a longer or a shorter lateral movement, an eyelet chute adapted to supply eyelets to the setting devices, and mechanism substantially as described whereby the eyelet chute is automatically displaced from its operative position when the lateral movement of the carriers is lengthened as set forth.

6. In an eyeleting machine, the combination of a pair of punching devices, a pair of eyelet-setting devices, two pairs of carriers supporting said devices and adapted to swing laterally, mechanism for reciprocating said carriers vertically to cause the devices of each pair to alternately approach and recede from each other, mechanism including two levers and an adjustable connecting stud or pivot, whereby the carriers are moved laterally, a laterally movable eyelet chute adapted to supply eyelets to the setting devices, mechanism substantially as described for adjusting the position of said stud to vary the lateral movement of the punching and setting devices, and mechanism substantially as described for displacing the eyelet chute from its operative position when the lateral movement of the punching and setting devices is increased, as set forth.

7. In an eyeleting machine, the combination of a pair of punching devices, a pair of eyelet-setting devices, two pairs of carriers supporting said devices and adapted to swing laterally, mechanism for reciprocating said carriers vertically, adjustable mechanism whereby the carriers may be moved back and forth laterally, said mechanism including an adjusting device whereby the lateral movement of the carriers may be made longer or shorter, normally inoperative mechanism substantially as described for moving said adjusting device from either of its operative positions to the other by the power of the machine, and devices substantially as described controlled by the operator whereby said normally inoperative mechanism may be made operative to change the length of said lateral movement, the said mechanism being organized to become inoperative after effecting each change, as set forth.

8. In an eyeleting machine, the combination of a pair of punching devices, a pair of eyelet-setting devices, two pairs of carriers supporting said devices and adapted to swing laterally, mechanism for reciprocating said carriers vertically, adjustable mechanism whereby the carriers may be moved back and forth laterally, said mechanism including an adjusting device whereby the lateral movement of the carriers may be made longer or shorter, normally inoperative mechanism for moving said adjusting device from either of its operative positions to the other by the power of the machine, a laterally movable eyelet chute arranged to supply eyelets to the setting devices, connections between said normally inoperative mechanism and the eyelet chute, whereby the chute is moved from its operative position when the length of the lateral movement of the punching and setting devices is increased, and devices controlled by the operator whereby said normally inoperative mechanism may be made operative to change the length of the said lateral movement, the said mechanism being organized to become inoperative after effecting each change, as set forth.

9. In an eyeleting machine, the combination of a pair of punching devices, a pair of eyelet-setting devices, two pairs of carriers supporting said devices and adapted to swing laterally, mechanism for reciprocating said carriers vertically, adjustable mechanism whereby the carriers may be given a longer or a shorter lateral movement, said adjustable mechanism including an adjustable stud which determines the extent of said lateral movement, a laterally movable eyelet chute arranged to supply eyelets to the setting devices, a rotary disk having a cam-groove such as $j^9$ and a cam such as $m^2$, connections between said cam-groove and the movement-controlling stud whereby said stud is moved by change in the position of the disk, connections between the cam $m^2$ and the eyelet chute whereby the chute is displaced when the disk is moved to position to increase the lateral movement of the punching and setting devices, an operating device such as the pawl $j^{10}$ operated by the power of the machine and adapted to give said disk a partial rotation, and a device controlled by the operator for giving said disk a preliminary partial rotation and thereby enabling said operating device to give the disk its space-changing movement, as set forth.

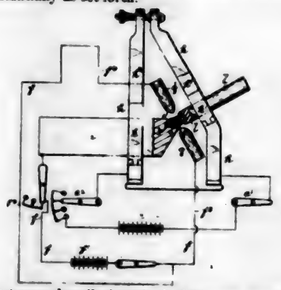
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**501,755. METHOD OF FORMING COAL-CUTTERS.** FOSTER BAIN, Chicago, Ill., assignor to Samuel S. Brown, Pittsburg, Pa. Filed May 31, 1892. Serial No. 435,098. (No model.)

*Claim.*—1. The herein-described method of forming coal and other cutting tools, consisting in shaping the body of the tool from iron, steel or like metal with a recess at the point and thereof, and then uniting a piece of iridium to form the point to the body portion of the tool by including the parts within an electric circuit and pressing the iridium while hot and plastic into the recess so formed in the body of the tool, and so uniting the iridium point to the body, substantially as set forth.

2. The herein-described method of forming coal and other cutting tools, consisting in first uniting a piece of iridium to form the point to a suitable metal holder through the medium of an electric circuit, and then uniting the iridium point to the body of the cutting tool through the medium of an electric current and subsequently separating the metal holder from the iridium point, substantially as and for the purposes set forth.

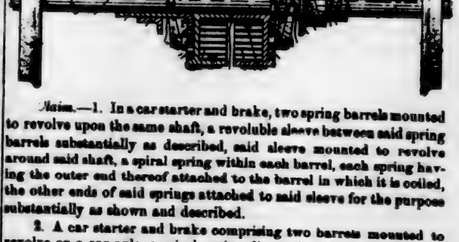
3. The herein-described method of forming coal and other cutting tools, consisting in shaping the body of the tool from iron, steel or like metal with a recess at the point and thereof, and then including a piece of iridium to form the point and a large part of the tool body within an electric circuit and thereby raising the iridium by heat to the necessary plastic state and pressing it into the recess in the tool body, substantially as set forth.



4. The herein-described method of forming coal and other cutting tools, consisting in shaping the tool body from iron, steel or like metal with a recess at the point thereof, then including such body and a piece of iridium to form a point within an electric circuit, and at the same time including a piece of iridium in an auxiliary or supplementary electric circuit and so increasing the heat of the iridium until sufficiently plastic to be pressed into the recess in the tool body, substantially as set forth.

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**501,756. CAR STARTER AND BRAKE.** WENDELL A. BARNES, Chicago, Ill. Filed Nov. 28, 1892. Serial No. 453,302. (No model.)



*Claim.*—1. In a car starter and brake, two spring barrels mounted to revolve upon the same shaft, a revoluble sleeve between said spring barrels substantially as described, said sleeve mounted to revolve around said shaft, a spiral spring within each barrel, each spring having the outer end thereof attached to the barrel in which it is coiled, the other ends of said springs attached to said sleeve for the purpose substantially as shown and described.

2. A car starter and brake comprising two barrels mounted to revolve on a car axle, a spiral spring disposed and attached within and to each barrel, and each of said springs attached to a sleeve mounted to revolve around the car axle between said barrels as described, arms I and I′ attached to said axle, friction dogs for engaging said barrels, said dogs pivotally mounted at the ends of said arms, said dogs vibrating in the same plane as the revolution of said barrels, said friction dogs operating to prevent said barrels from revolving in opposite directions, levers K and K′ pivotally attached to said arms to vibrate at substantially a right angle to the movement of said dogs, said levers connected to operate said dogs in the manner substantially as described.

3. In the hereinbefore described car starter and brake the helical cams F and F′ said cams mounted to vibrate around the car axle upon the inwardly projecting portion of the axle boxes, said cams operating to release friction dogs J and J′ through the medium of levers K and K′, in the manner substantially as described.

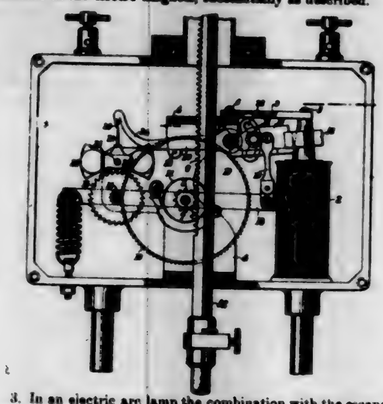
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**501,757. ELECTRIC-ARC LAMP.** SIGMUND BERGMANN, New York, N. Y. Filed Jan. 10, 1893. Serial No. 457,947. (No model.)

*Claim.*—1. The combination with the electro-magnets of an electric arc lamp, of an armature and armature lever, an adjusting lever adjustably secured to said armature lever and a loosely mounted arresting lever cooperating with said adjusting lever, substantially as described.

2. In an electric arc lamp the combination with the escapement

mechanism of a loosely mounted arresting lever connected with the armature of the electro magnets, substantially as described.



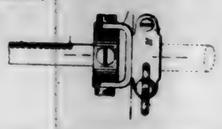
3. In an electric arc lamp the combination with the escapement mechanism of a loosely mounted arresting lever connected with the armature of the electro-magnets and means for adjusting the arresting lever, substantially as described.

4. In an electric arc lamp the combination of an armature lever, an adjusting lever, and an arresting lever all mounted on one and the same shaft, the adjusting lever being capable of adjustment on the armature lever and the arresting lever being loosely mounted on said shaft, substantially as described.

5. In an electric arc lamp the combination of an armature lever an adjusting lever provided with a laterally projecting stop and a loosely mounted arresting lever arranged to rest on said stop, substantially as described.

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**501,758. CARBON-HOLDER FOR ELECTRIC-ARC LAMPS.** SIGMUND BERGMANN, New York, N. Y. Filed Mar. 20, 1893. Serial No. 466,793. (No model.)



*Claim.*—1. In a carbon holder the combination with a rack bar, of a ring frictionally secured thereto, a yoke frictionally held to said ring, and a carbon holder clamping mechanism connected with said yoke, substantially as described.

2. In a carbon holder the combination with a rack bar, of a ring frictionally secured thereto, and a yoke frictionally held to said ring, said yoke having a downwardly bent portion shaped to act as a member of the carbon holder clamping means, substantially as described.

3. In a carbon holder the combination with a rack bar provided with a screw threaded perforation near its lower end, of a ring having transverse openings thereon, headed screws which freely pass through said openings and screw tightly into said rack bar, a yoke constructed to act as a member of the carbon rod clamping means, and provided with apertures in its upturned ends, and headed screws for securing the yoke to the ring, substantially as described.

4. In a carbon holder the combination with a rack bar provided with a screw threaded perforation near its lower end, of a ring having transverse openings therein, headed screws which freely pass through said openings and screw tightly into said rack bar, a yoke provided with a downwardly projecting portion as described acting as a member of the carbon rod clamping means, and provided with apertures in its upturned ends, and headed screws for securing the yoke to the ring, substantially as described.

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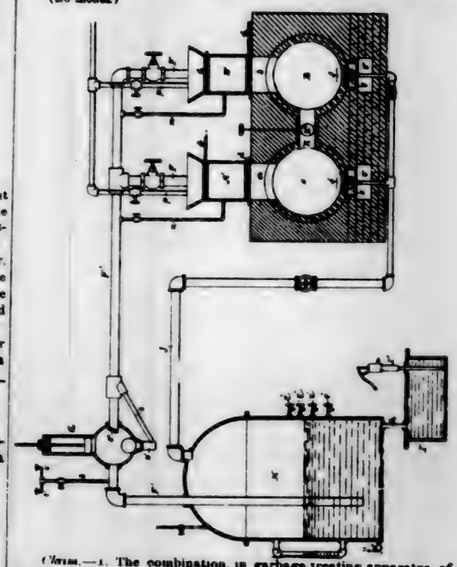
**501,759. APPARATUS FOR EXTRACTING GLUE.** LOUIS BERTRAM, Berlin, Germany. Filed Feb. 1, 1892. Serial No. 419,994. (No model.)



*Claim.*—In an apparatus for extracting glue, gelatine and grease from animal matter or waste: the combination of an inner tank A, provided with a sieve bottom B and a perforated steam-pipe G' below the sieve bottom B, with a heating water-tank E surrounding the tank A, and having tubes G, inserted in the cover or top plate of tank E and extending above the latter, and with a steam chamber F, arranged under the water tank E, substantially as and for the purpose as described.

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**501,760. APPARATUS FOR TREATING GARBAGE OR LIKE WASTES.** CHARLES J. BERT and WALTER A. HALL, Seattle, Wash., assignors, by direct and mesne assignments, to the Chemical Garbage Reduction Company, Chicago, Ill. Filed Dec. 21, 1892. Serial No. 455,976. (No model.)



*Claim.*—1. The combination, in garbage treating apparatus, of the retort having a supply hopper and discharge pipe, a fire box beneath the retort for heating the same, and means for supplying air in limited volume to the retort so as to restrict combustion therein and cause a charring of the solid portions of the garbage, substantially as specified.

2. The combination, in garbage treating apparatus, of the retort having a feed hopper and discharge pipe, a fire box beneath said retort for heating the same and in communication therewith, means for admitting air in limited volume to the retort, and a pipe whereby a portion of the volatilized products escaping from the retort is returned to the fire box, substantially as specified.

3. The combination in apparatus for treating garbage, of the retort having a feed hopper, discharge pipe and pump, a grate of refractory material in the lower portion, and a fire box located directly beneath said grate, substantially as specified.

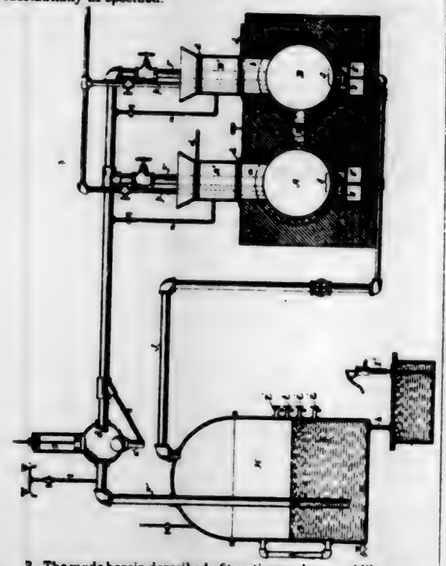
4. The combination in apparatus for treating garbage, of a pair of retorts located side by side and each having a feed hopper, a discharge pipe and heating devices, with a valved passage connecting the retorts and serving to convey heated vapors from one to the other when the flow of the same through the main discharge pipe is cut off, substantially as specified.

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**501,761. TREATING GARBAGE OR LIKE WASTES.** CHARLES J. BERT and WALTER A. HALL, Seattle, Wash., assignors, by direct and mesne assignments, to the Chemical Garbage Reduction Company, Chicago, Ill. Filed Dec. 21, 1892. Serial No. 455,977. (No model.)

*Claim.*—1. The mode herein described of treating garbage and like wastes, said mode consisting in subjecting the garbage to heat in the presence of a limited supply of air sufficient only to cause the charring of the solid portions of the garbage and the driving off of the volatilizable constituents of the same, substantially as specified.

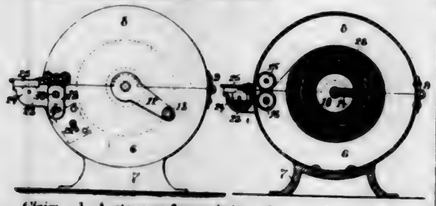
2. The mode herein described of treating garbage and like wastes, said mode consisting in subjecting the garbage to heat in the presence of a limited supply of air sufficient only to cause the charring of the solid portions of the garbage and the driving off of the volatilizable constituents of the same, igniting the gaseous elements of the latter and utilizing them as fuel for the heating of the garbage, substantially as specified.



3. The mode herein described of treating garbage and like wastes, said mode consisting in subjecting the garbage to heat in the presence of a limited supply of air sufficient only to cause the charring of the solid portions of the garbage and the driving off of the volatilizable constituents of the same, separating the gaseous elements of the constituents from the condensable elements of the same, and igniting said gaseous elements and using them as fuel for the heating of the garbage, substantially as specified.

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**501,762. STAMP-SAFE.** LUCIUS BRIGGS, Glasgo, Conn. Filed Feb. 17, 1893. Serial No. 462,690. (No model.)



*Claim.*—1. A stamp-safe consisting of a metal case having a hinged cover, a barrel the shaft of which is journaled in the sides of the lower part of the case and provided at one end with a removable crank, a top roll journaled in the sides of the cover, a delivery roll, journaled in the sides of the lower case, provided at one end with a thumb-piece the other end being square to engage a rectangular opening in a hasp hinged to the cover of the case and having a staple to enter a slot cut in the side of the lower part of the case and to be locked by a locking-device contained within the case and operated as described.

2. In a stamp-safe, the combination with the lower part 6, the upper part 8, and hinge 9 of the case, the barrel 10, the clip 14, the roll 15 and delivery roll 16, thumb-piece 17 and square end 18, the hasp 19 and a locking device contained in the case, of the tank 23, roller 24, and cover 25, as and for the purpose described.

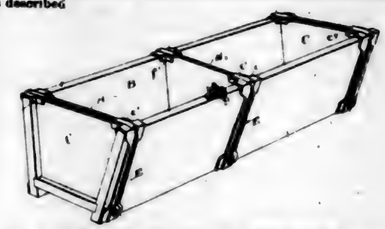
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**501,763. LAUNDRY-TUB.** EDWARD C. BROUWER and WILLIAM J. REMER, Cleveland, Ohio. Filed Nov. 9, 1892. Serial No. 451,415. (No model.)

*Claim.*—1. In laundry tubs, the body of the tub composed of stone or the like, front and rear straps having flanged heads over-lapping the joint between the division walls and the front and rear sides thereof, and upper and lower tie rods, substantially as described.



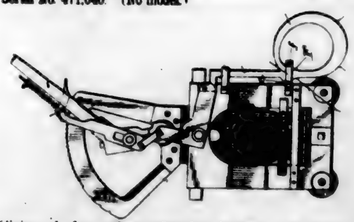
2. The tub herein described consisting of stone, the front supporting straps E, having over-lapping heads $e$ and corner flanges $e^2$ and rod grooves $e^3$, and the rear straps F having heads $f$ and corner flanges $f^2$, and rod grooves $f^3$, the tie rods H resting in said grooves and on the top of the walls C of the tub, and the lower tie rods $h$, substantially as described.



3. In a laundry tub, the sides and walls thereof, the front supporting straps E having inward projecting heads $e$ and corner flanges $e^2$ and slotted lower ends, and the rear straps F having heads $f$ and corner flanges $f^2$ and slotted lower ends with ribs $f^4$ at the side of the slot deepening toward the bottom, substantially as described.

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**501,764. GRIP-OPENER.** WILLIAM P. COURTNEY, Oakland, Cal., assignor of one-half to Albert Brown, same place. Filed Apr. 19, 1893. Serial No. 471,040. (No model.)



*Claim.*—1. In a grip a safety bar having at its lower end reversely curved or inclined tripping surfaces 1 and 2 and provided with opposite upwardly flared inclines E and F all substantially as set forth.

2. In a grip a safety bar consisting of the shank and the ring or loop at the lower end thereof provided with the reversely curved tripping surfaces 1 and 2 and the connecting portion 3 substantially as set forth.

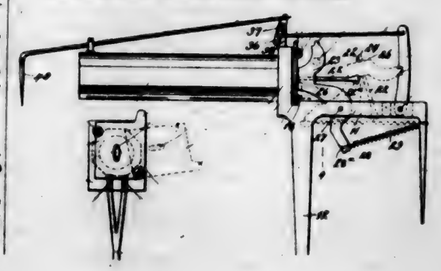
3. The combination with the grip having the keepers or guides of the safety bar held in said keepers and formed with a shank and a ring or loop extended rearwardly from the lower end of said shank and formed with reversely curved or inclined tripping surfaces substantially as set forth.

4. The improvement substantially as herein described consisting of the grip having keepers G and H, the safety bar held in said keepers and provided with reversely inclined upwardly flared edges E and F and a ring or loop C having curved surfaces 1 and 2 and a connecting portion 3 and the rollers $e$ and $f$ engaging the surfaces E and F substantially as set forth.

5. The combination with the grip having a guide or keeper H of the safety bar held in said keeper and provided below the same with tripping surfaces 1 and 2 and having a connecting portion 3 extended from tripping surface 1 and uniting with the safety bar above the keeper H all substantially as shown and described.

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**501,765. SPRING-GUN.** WILLIAM H. CRAM, Pensaukee, Wash. Filed Nov. 8, 1892. Serial No. 451,394. (No model.)



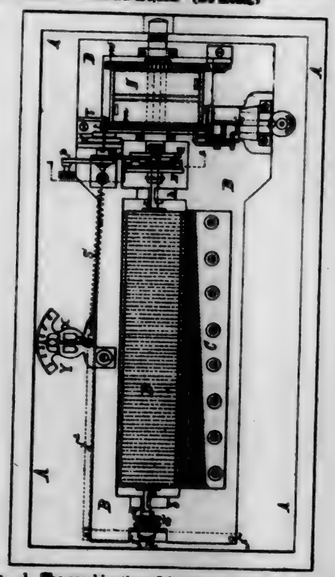
*Claim.*—1. A spring gun comprising a supporting stock a breech loading barrel mounted thereon, a spring projected hammer 23 pivoted in rear of the breech and having a firing pin, a vertically extending trigger 31 pivoted at its lower end in rear of the hammer and having a notch 33 to receive the upper or free end of the hammer when cocked, a lever 36 pivoted between its ends to the stock, a rod 35 connecting one end of the lever with the upper end of the trigger 31, and a bait rod leading from the other end of the trigger to the muzzle of the barrel, substantially as set forth.

2. The combination with the hammer provided with a transverse opening through it from front to rear, of a rotary striking pin 24 extending through said opening and provided at its front with a striking projection 24 and provided in rear of the hammer with a finger piece 22 for turning it, substantially as set forth.

3. A spring gun, comprising a supporting stock having suitable legs, a breech-block carried by the stock, a detachable breech-loading barrel secured to the breech-block, a hammer pivoted in the stock and having a depending shank, the hammer being arranged to strike a cartridge in the barrel, a spring secured to the hammer shank and to the rear portion of the stock, a swinging trigger pivoted in the stock and having a notch to engage the free end of the hammer, a lever pivoted on the breech-block and having one end connected with the trigger, and a bait rod pivoted to the outside end of the lever and extending forward in front of the barrel where it terminates in a bait-holding fork, substantially as described.

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**501,766. MUSIC-BOX.** EMILE L. CONRADT, Brooklyn, N. Y. Filed Apr. 27, 1892. Serial No. 430,958. (No model.)



*Claim.*—1. The combination of the pin barrel shaft of a music box with a changing cam and a motor shaft having a disk carrying a bearing piece acted on by the said changing cam and against which the end of the pin barrel shaft bears.

2. The combination of the pin barrel shaft of a music box with a changing cam and a pivoted bearing plate for the end of the said shaft, the said bearing plate being acted upon by the changing cam.

3. The combination of the pin barrel shaft of a music box with a motor shaft carrying a bearing piece for the end of the said pin barrel shaft and a changing cam to act on the said bearing piece.

4. The combination of the pin barrel shaft with a motor shaft having a crank disk and a bearing plate which is pivoted to the latter and against which the end of the pin barrel shaft bears, with a changing cam to act upon the pivoted bearing plate.

5. The combination of a pin barrel shaft with a movable bearing piece for the end of the said shaft and having its upper edge beveled or flared with a changing cam to act on the bearing piece.

6. The combination of the pin barrel shaft of a music box with an upright arm F and a spring to cause said arm to bear against the end of the shaft, substantially as set forth.

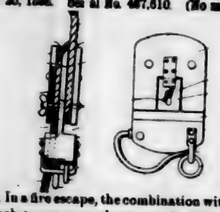
7. The combination of the pin barrel shaft of a music box with an upright arm F having its upper end flaring outward, and a spring to cause said arm to bear against the end of the shaft, substantially as described.

8. The combination of the pin barrel shaft of a music box with an arm, rod and spring to act upon the said shaft and an indicator controlled by the arm and rod, substantially as set forth.

9. The combination of the bearing plates for the opposite ends of a pin barrel shaft with one or more adjustable bearing points, as and for the purpose set forth.

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**501,767. FIRE-ESCAPE.** ROBERT G. DALPHIN, Malone, N. Y. Filed Mar. 25, 1892. Serial No. 427,010. (No model.)

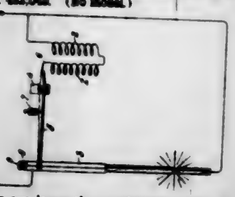


*Claim.*—1. In a fire escape, the combination with a suspended rope, of a friction block cross-grooved on opposite sides, and channeled on the edges to intersect said cross-grooves, a spring clamping plate fast by one end on the block and adapted to vibrate in a recess of the block and press the rope in one of the cross-grooves, and a seat suspended from the block, substantially as described.

2. In a fire escape, the combination with a friction block provided with opposite grooves, one on each side, and a peripheral channel near one side of the block, the ends of said channel being connected to the ends of one of said grooves, which groove has a curved top wall, a parallel channel intersecting the other of said grooves at its lower end, and vanishing at the apex of the block, and a recess in one side of the block, of a pendent rope located in the grooves and channels of the block, a spring clamping plate in the recess, a bolt and nut adapted to clamp the plate on the rope, a handle on the block, a flexible band seat, and means to connect the seat and block, substantially as described.

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**501,768. ELECTRIC-ARC LAMP.** JOHN T. DRIPPER, Summit, N. J., assignor to Sigmund Bergmann, New York, N. Y. Filed Feb 13, 1893. Serial No. 462,040. (No model.)

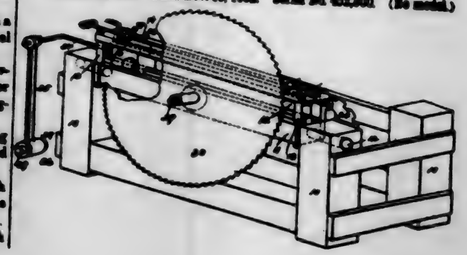


*Claim.*—1. In an arc lamp the combination with the rack bar provided with an insulating block, of the shunt electro-magnets, and a switch lever held in contact with said rack bar, and electrically connected with the shunt electro-magnets, substantially as described.

2. In an arc lamp the combination with the rack bar provided with an insulating block having an inclined surface, of the shunt electro-magnets, a switch lever loosely pivoted and electrically connected with the shunt electro-magnets, and a spring for holding said switch lever in contact with said rack bar, substantially as described.

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**501,769. SAW-HAMMERING MACHINE.** THOMAS J. DILLON, Beaumont, Tex. Filed Nov. 19, 1892. Serial No. 452,800. (No model.)





*Claim.*—1. A machine of the character described, comprising an oscillating frame, a mandrel carried by the frame and adapted to carry a saw, an anvil adjustable longitudinally on the frame, and a swinging hammer adapted to be brought opposite the anvil, substantially as described.

2. A machine of the character described, comprising an oscillating frame, a mandrel extending at right angles to the frame and adjustable in and out thereon, a slide block held to move longitudinally on the frame, an anvil carried by the block, a beat arm secured to the slide block, and a swinging hammer carried by the arm and adapted to be brought opposite the anvil, substantially as described.

3. A machine of the character described, comprising an oscillating frame, a mandrel carried by the frame and adapted to carry a saw, an oppositely arranged hammer and anvil held to move longitudinally on the frame and adapted to clasp a saw between them, and a screw mechanism for adjusting the hammer and anvil, substantially as described.

4. The combination with the saw-holding frame, of a slide block held to move longitudinally on the frame, an anvil carried by the slide block and adapted to contact with the saw, a beat arm carried by the slide block, a hammer shank pivoted on the arm and having its free arm terminating in a case, and a spring-pressed hammer head carried in the case and adapted to contact with the saw opposite the anvil, the hammer head having an outwardly extending shank, substantially as described.

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**501,770. PROCESS OF REMOVING PILES OF MATERIAL.** JAMES M. DODGE, Philadelphia, Pa., assignor to the Link-Belt Engineering Company, same place. Filed Mar. 6, 1893. Serial No. 464,737. (No specimens.)



*Claim.*—1. The process herein described of removing a pile of coal or other material in lump or granular form, said process consisting in beginning the removal of the material at the central portion of the pile, leaving an annular pile with an open center, second removing a portion of the annular pile in a line radiating from the center, and finally removing the remaining portion of the pile, from this line in an annular path, substantially as described.

2. The process herein described of removing a pile of coal or other material in lump or granular form, said process consisting in first removing the center of the pile by allowing the material to flow to a central discharge, leaving an annular pile with an open center, second removing a portion of the annular pile in a line radiating from the center, carrying said material thus removed through the central discharge, third, attacking the pile along one edge on the line radiating from the center, moving forward the point of attack in an annular path, and carrying the material thus removed through the central discharge, substantially as described.

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**501,771. CONVEYING APPARATUS.** JAMES M. DODGE, Philadelphia, Pa., assignor to the Link Belt Engineering Company, same place. Filed Mar. 11, 1893. Serial No. 465,615. (No model.)



*Claim.*—1. The combination of a piling floor having a discharge opening, with a horizontal movable conveyer, a cover for said conveyer, openings in the cover, with mechanism for operating the conveying apparatus and moving the conveyer upon the floor, substantially as specified.

2. The combination in apparatus for moving piles of material, of the piling floor, a central discharge pit, a vertical elevator adapted to receive material from said pit, a movable horizontal conveyer pivoted at the center and adapted to move upon the floor around the pit and convey material to the pit, substantially as described.

3. The combination in storage apparatus, of the circular pit, conveyer for storing material in said pit, a discharge conveyer for removing material from the pit, with a conical roof covering the pit, substantially as described.

4. The combination in storage apparatus, of the shear truss structure, conveyer mounted upon one of the legs of said structure, a piling floor thereunder, with a conical roof for said piling floor supported in part by the truss structure, substantially as described.

5. The combination of the piling floor, the central pit therein, an elevator extending into said pit, a horizontal conveyer pivoted at the center and adapted to move around the elevator, an endless chain conveyer, flights thereon, a hollow shaft mounted on the elevator trunk, a driving shaft geared to the said hollow shaft which in turn is geared to the mechanism for driving the chain and for turning the conveyer, substantially as described.

6. The combination of the piling floor having a central pit, a vertical elevator extending into said pit and receiving material therefrom, a supporting spider, a hollow shaft mounted in said spider, a driving shaft geared to said hollow shaft, a horizontal conveyer having a pivot portion adapted to the spider, mechanism for traversing the conveyer over the floor around the elevator, flighted conveyer chain, a shaft, chain wheel on said shaft, the gear wheel on the shaft meshing with the gear wheel on the hollow shaft, substantially as described.

7. The combination of the piling floor, a horizontal conveyer adapted to travel on said floor, a cover for said conveyer and sides therefor, one or both of said sides being adapted to be moved so as to expose the flights and allow the material to flow into the conveyer from the side by gravity, substantially as described.

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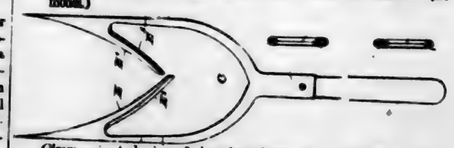
**501,772. UMBRELLA-TIE.** JOHN H. DUFF, Philadelphia, Pa. Filed Jan. 5, 1893. Serial No. 457,812. (No model.)



*Claim.*—An umbrella tie consisting of the outer loop E, an eye having plates with lips at opposite ends and the encircling piece D, the ends of said loop and piece being clamped by the respective plates and lips, said parts being combined substantially as described.

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**501,773. COMBINED PITCHFORK AND HAND-CUTTER.** FRANCIS DUGGAN, Odessa, Del. Filed Feb 24, 1893. Serial No. 463,592. (No model.)

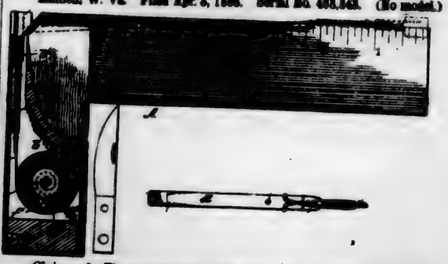


*Claim.*—1. A device of the class described, comprising a fork, and knife blades extending inwardly from the prongs of the said fork, the cutting edges of the knives being at the rear edge thereof, substantially as shown and described

2. A device of the class described, comprising a handled fork, and knives extending inwardly from the prongs of the said fork, and curved rearwardly to form with their ends a passageway for the twine, the rear edges of the said knives being the cutting edges, while the front edges are smooth, substantially as shown and described.

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**501,774. CARPENTER'S SQUARE.** FRANK D. DUNLAVEY, Buckhannon, W. Va. Filed Apr. 3, 1893. Serial No. 468,843. (No model.)



*Claim.*—1. The combination with the square of the marker a line secured to the marker and a retracting device connecting the line with the square substantially as set forth.

2. The combination of the square, a spring actuated drum, jour-

sealed thereto, a marker and a line connecting the marker with the drum substantially as set forth.

3. A square provided in its handle with a recess or mortise *b* and having an opening *b'* leading out from said recess at the blade end of the handle, the drum supported within said recess *b* the marker and the line connected with the marker extended through opening *b'* and connected with the drum all substantially as set forth.

4. In an apparatus substantially as described a marker comprising a case, and a blade pivoted and movable at its point into and out of the case, and spring actuated normally into the case substantially as set forth.

5. The improved square having its handle provided with a recess *b* and opening *b'*, the spring actuated drum arranged within said recess *b* the line connected with the drum and extended out through the opening *b'* and the marker connected at one end with the line and movable at said end through the opening *b'* into the recess *b* such marker having a pivoted spring actuated blade provided at the end of the marker opposite the line connection with a handle portion all substantially as described and for the purpose set forth.

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501,775. BROODER. CHARLES BARRE, Quincy, Ill. Filed Mar. 27, 1893. Serial No. 467,729. (No model.)



*Claim.*—1. In a brooder, the combination of the lower box, a lamp, and a water tank contained in said box, a drum resting on the tank, a pipe extending from the tank through said drum, and an upper box having a partition forming an upper and lower brooding chamber; said drum extending into said lower brooding chamber; and said pipe extending into said upper brooding chamber; substantially as and for the purpose set forth.

2. In a brooder, the combination of the lower box, a lamp, and a water tank contained in said box, said box having an air passage between its top and said water tank, a drum having a notched bottom and perforated top and resting on said water tank, a pipe mounted on said tank and extending through said drum, and an upper box divided into an upper and lower brooding chamber, said drum extending into said lower brooding chamber and communicating through said notches with said air passage between the top of the lower box and the water tank, and said pipe extending into the upper brooding chamber; substantially as and for the purpose set forth.

3. In a brooder, the combination of the lower box, a lamp and a water tank contained in said box, said box having an air passage between its top and said water tank, strips 28 forming the walls of said air passage, a drum having a perforated top and notches in its bottom on one side only, a pipe mounted on said tank and extending through said drum, and an upper box divided into an upper and lower brooding chamber, said drum extending from the tank into the said lower brooding chamber, and communicating through said notches with said air passage, and said pipe extending into the upper brooding chamber; substantially as and for the purpose set forth.

4. In a brooder, the combination of the lower box, a lamp and a water tank, contained in said box, an upper box having a partition extending part way only of the length of the box, a running board and strips secured to said partition, and means for conducting heat from said tank into the upper box; said upper box forming an upper and lower brooding chamber, and a running chamber; substantially as and for the purpose set forth.

5. In a brooder, the combination of the lower box, a lamp and a water tank contained in said box, an upper box having a partition forming a running chamber and an upper and lower brooding chamber, glass doors hinged together and forming the top of said box, and a sliding screen 19; substantially as and for the purpose set forth.

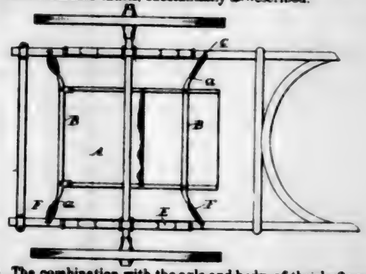
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501,776. ROAD-CART. ALVAH P FERGUSON, Ann Arbor, Mich. Filed Mar. 21, 1893. Serial No. 467,094. (No model.)

*Claim.*—1. The combination with the axle and wheels, of the shafts connected by cross bars to form a supporting frame, a body freely suspended by coil springs from and within said frame and elliptic springs connecting the shafts with the axle, substantially as described.

2. The combination with the axle and wheels, of the shafts connected by cross bars to form a supporting frame for the body, a body freely suspended within and from said frame by coil springs secured to the shafts, cross bars under the front and rear ends having projecting ends to which the lower ends of the coil springs are secured, and elliptic springs connecting the shafts with the axle and forming the draft connection, substantially as described.

3. The combination with the axle and the shafts intermediately supported thereupon, of a suitable body, and coil springs secured to the shafts and angularly suspending the body at or near its front and rear ends from said shafts, substantially as described.



4. The combination with the axle and body, of the shafts extending beyond the body and having their rear ends connected by a cross bar, the elliptic springs secured respectively to the under side of the shafts and axle intermediately between the same and forming the draft connection, and coil springs suspending the body in front and rear from the shafts, said coil springs being placed angularly inclined toward each other and connected to the ends of cross-bars secured underneath the body, substantially as described.

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501,777. BURGLAR-ALARM. CHARLES J. FISHER, Chicago, Ill. Filed Apr. 5, 1893. Serial No. 469,151. (No model.)



*Claim.*—1. As an article of manufacture, a burglar alarm, the same consisting of a base plate of a non-conducting material, conducting plates adapted as conductors of electricity secured upon the upper face of the base plate, a second set of conducting plates upon the under face of the base, one in connection with each of the upper plates, a spring arm in electrical engagement with one of the lower plates, a guide device, through which the spring arm passes, in engagement with the second under plate, and binding posts connected with the upper plates, as and for the purpose specified.

2. As an article of manufacture, a burglar alarm, the same consisting of a base plate of a non-conducting material, conducting plates adapted as conductors of electricity secured upon the upper face of the base plate, a second set of conducting plates located upon the under face of the base, one in connection with each of the upper plates, a spring arm in electrical engagement with one of the lower plates, a guide device through which the spring arm passes in engagement with the second under plate, binding posts connected with the upper plates, and a knob of an elastic or yielding material located in the outer end of the spring arm, as and for the purpose specified.

3. As an improved article of manufacture, a burglar alarm, consisting of a base plate carrying the following elements:—conducting plates, connections for receiving the line wires, such connections being in contact with the conducting plates, a contact device for closing the circuit, such device consisting of an elongated spiral spring connected with one conducting plate, and a guide device through which the said spring passes, the guide device being in contact with the second conducting plate, substantially as described.

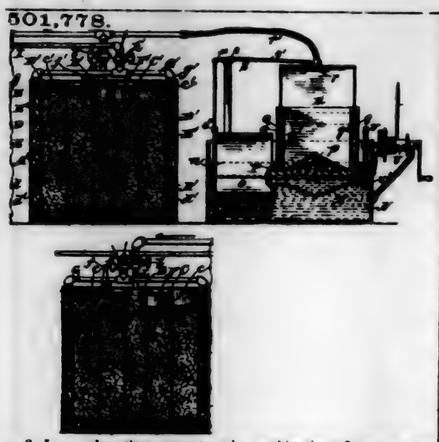
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501,778. APPARATUS FOR CARBURETING AIR. PATRICK H. FOSTALER, Rome, assignor of one-half to C. G. Holland and J. D. Blair, executors of Elam Blair, deceased, Danville, Va. Filed Sept. 19, 1892. Serial No. 446,201. (No model.)

*Claim.*—1. A carbureting vessel having, preferably, four compartments in communication with one another by passages alternately at top and bottom of the vessel, an absorbent, preferably charcoal, in each compartment, a circular pipe perforated on each side, arranged for discharging oil simultaneously on the charcoal in the two principal compartments, a pipe in the central compartment for the inflow of air, and two or more pipes in the outer compartment for the outflow of gas; the outer compartment having charcoal not wet with oil, except such as comes in contact with the oil at the bottom of the vessel; in combination with an air forcing apparatus, substantially as and for the purpose described.



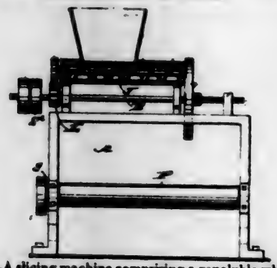
501,778.



2. In a carbureting apparatus, the combination of a pump, two carbureting vessels, each, preferably, provided with four compartments in communication with one another by passages alternately at top and bottom of a vessel, an absorbent, preferably charcoal, placed in the compartment of each vessel to a height nearly to the top, perforated pipes F F' having upwardly bent terminals *f f'*, and caps *f'' f''*, pipes G G' connected with the compartments E E' of the two vessels, and having T-shaped coupling joints, pipes H H' having cocks A A', pipe I, cocks K K' serving for drawing off and gaging the depth of the oil in the vessels, pipe M, pipes L L' having cocks *l l'* and arranged between the pump O' and the vessels A A', whereby one of the carburetors can be in use while the other is being prepared for use, and thus the carbureting vessels alternately brought into operation, substantially as described.

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501,779. SLICING-MACHINE. PIERCE FORD, Chicago, Ill. Filed Oct. 17, 1892. Serial No. 449,134. (No model.)



*Claim.*—A slicing machine comprising a revoluble wheel carrying sets of knives, each set containing a gage plate and a knife blade, a feed tube engaged at its discharge end by the cutting edges of the said knives to cut the material passing through the tube into slices, a screw for adjusting the said wheel to hold the cutting edges of the knife blades against the said tube, and a feed screw revolving in the said tube in unison with the said knife wheel, the said screw feeding the material to the cutting edges of the said knife blades, substantially as shown and described.

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501,780. GAS LIGHTER OR EXTINGUISHER. RUDOLPH GRESSLER, New York, N. Y. Filed Jan. 17, 1893. Serial No. 458,698. (No model.)



*Claim.*—1. As an improved article of manufacture, a gas lighter and extinguisher, the same consisting of a standard and a combined lighter and extinguisher having sliding movement upon the standard, the lighter and extinguisher having a locking connection with the standard near its top and bottom, substantially as shown and described.

2. In a gas lighter and an extinguisher, the combination, with a standard of a gas lighter having sliding movement thereon and locking connection therewith, the said lighter consisting of a receptacle provided with a spout or nozzle, and said receptacle being adapted to receive a coiled wick or taper, the said wick or taper extending through the spout or nozzle, as and for the purpose set forth.

3. In a gas lighter and an extinguisher, the combination, with a standard, of a lighter having sliding movement upon the standard and a locking engagement therewith, the lighter consisting of a receptacle adapted to contain a coiled wick or taper, and a spout emanating from the receptacle, the spout being provided with slots produced in opposite sides, as and for the purpose set forth.

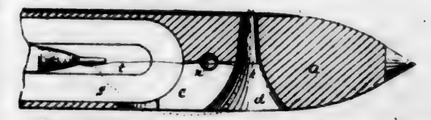
4. In a gas lighter and an extinguisher, the combination, with a standard provided with a key at one end, of a gas lighter having sliding movement upon the standard and a locking engagement therewith, the said lighter consisting of a sleeve loosely mounted upon the standard, a receptacle attached to the sleeve, a tube emanating from the receptacle, and a strengthening plate held in engagement with the tube, as and for the purpose set forth.

5. In a gas lighter and an extinguisher, the combination, with a standard having a key located at one end thereof, of a sleeve having a sliding and locking connection with the standard, a receptacle attached at one side of the sleeve, provided with a tube or nozzle having a slot produced in opposite sides, and an arm projected from the opposite side of the sleeve, the said arm being provided with an extinguisher, substantially as and for the purpose specified.

6. In a gas lighter and extinguisher, the combination, with a standard provided with a key at one end, and pins located one near each end, of a sleeve having sliding movement upon the standard and provided with a bayonet slot in its ends adapted to receive the said pins, a receptacle connected with the sleeve, provided with a nozzle, and an extinguisher likewise connected with the sleeve, as and for the purpose specified.

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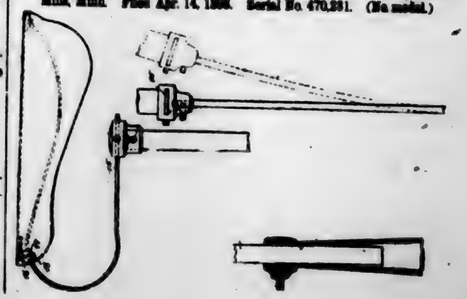
501,781. LOOM-SHUTTLE. STEPHEN M. HAMBLIN, New Bedford, assignor of one-half to Edwin S. Damon, Plymouth, Mass. Filed Feb 20, 1893. Serial No. 463,804. (No model.)



*Claim.*—In a loom shuttle, the combination of the body having a horizontal opening in the side of its head, in line with, and connecting with the delivery eye; and having a horizontal thread way, in line with the spindle, connecting said opening with an opening in the side of the spindle cavity, adapted to have the thread from the bobbin, passed therethrough; and having a perpendicular opening in the top of said shuttle head, connecting with said thread way, in the track of the thread from the bobbin; a weight, having straight sides and a slightly rounded bottom, loosely inclosed in said perpendicular opening, and adapted to rest on and give tension to said thread by its gravity, when said thread is being drawn from the bobbin through the delivery eye of the shuttle; and a removable screw plug in the top of said perpendicular opening, whereby the inclosed weight may be increased or diminished, and the tension regulated, substantially as shown and described.

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501,782. VELOCIPEDE-SADDLE. LEWIS W. HARPER, New York Mills, Minn. Filed Apr. 14, 1893. Serial No. 470,231. (No model.)



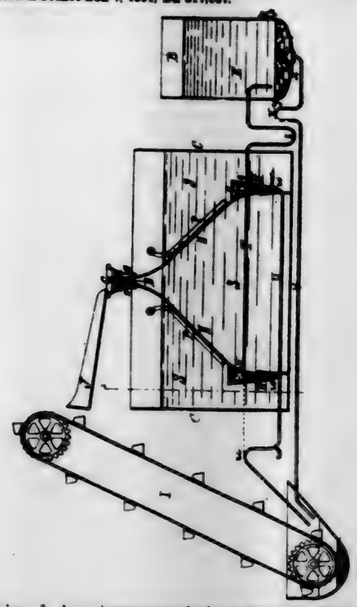
*Claim.*—1. As an improved article of manufacture, a supporting stem for velocipede saddles, the stem being formed of spring material and adapted to sway laterally, substantially as described.

2. The combination, with a velocipede saddle, of a spring stem to support the same, the stem being held normally vertical but adapted to sway laterally under pressure, substantially as described.

3. The combination, with a saddle for velocipedes, of a spring stem to support the saddle, the stem being adapted to sway laterally, and a supporting socket for the stem, substantially as described.

4. The combination, with the spring supporting stem adapted to be secured to a machine, of a slotted head carried at the upper end of the stem and adapted to connect with a saddle spring, substantially as described.

**501,788.** METHOD OF AND APPARATUS FOR ELECTROLYTING SOLUTIONS. HERMAN HENRICH, Paris, and ALFRED DUBOSC, Rouen, France. Filed July 9, 1892. Serial No. 439,582. (No model.) Patented in France Dec. 7, 1891, No. 217,627.



*Claim.*—1. As an improvement in the method of obtaining alkali or alkaline earth metal bases or compounds thereof, by the electrolysis of saline solutions, the mode herein described, consisting in subjecting a thin sheet of mercury to electrolysis in a saline solution thereby forming an amalgam of the metal of the base, and separating the amalgam, as it is formed, from the saline solution by a layer of liquid lighter than the amalgam and heavier than the saline solution, all substantially as set forth.

2. The method of obtaining alkali and alkaline earth metal bases or compounds thereof by the electrolysis of saline solutions, consisting in subjecting a thin sheet of mercury to electrolysis in a saline solution thereby forming an amalgam of the metal of the base, separating the amalgam, as it is formed, from the saline solution, by a layer of liquid lighter than the amalgam and heavier than the saline solution and permitting the mercury to separate from the amalgam by the difference in densities, substantially as set forth.

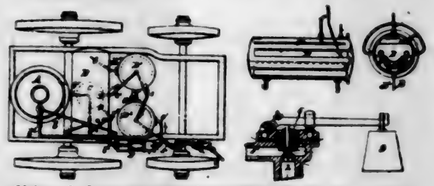
3. An apparatus for obtaining alkali and alkaline earth metal bases or compounds thereof by electrolysis, the said apparatus comprising a vessel for the saline solution and provided with a positive electrode and with an inclined plate or plates forming the negative electrode and bent up at the bottom to form a gutter, in combination with a collecter for the reception of disamalgamated mercury, a distributing device to spread the mercury in a thin sheet over the negative electrode, an elevating device to carry the mercury from the collecter to the distributing device, a tank in which the amalgam is brought into contact with the water employed for exhausting it, and a system of pipes connecting the gutter on the negative electrode with the said tank and with the said collecter, all substantially as set forth.

4. In an apparatus for obtaining alkali and alkaline earth metal bases or compounds thereof by the electrolysis of saline solutions, the combination of a vessel for the saline solution, with an inclined metallic plate provided at the lower end with a gutter, the said plate forming the negative electrode, and a positive electrode facing the negative electrode, substantially as and for the purpose set forth.

5. In an apparatus for obtaining alkali and alkaline earth metal bases or compounds thereof by the electrolysis of saline solutions, the combination of a vessel for the saline solution, provided with a metallic plate, forming the negative electrode and terminating at its base in a gutter with a distributing device at the upper part of the said negative electrode, the said device consisting of a trough provided with a series of tubes contracted at their lower extremities, all substantially as and for the purpose set forth.

6. In an apparatus for obtaining alkali and alkaline earth metal bases or compounds thereof by the electrolysis of saline solutions, the combination of a vessel for the saline solution, provided with positive and negative electrodes, the negative electrode formed of an inclined metallic plate terminating at its base in a gutter to hold mercury, amalgam and a liquid lighter than the amalgam and heavier than the saline solution, an exhausting tank, and a collector for the pure mercury, with a pipe T opening communication between the said tank and the said gutter at a suitable height from the bottom of the gutter, a pipe U connecting the bottom of the gutter with the collector, and a pipe V connecting the bottom of the tank with the collector, the said pipes T, U, V, being provided with suitable bends for maintaining constant the levels of the mercury, of the amalgam, and of the aforesaid liquid in the said gutter, and the level of the amalgamated mercury in the tank, all substantially as set forth.

**501,784.** STERILIZED AND DRINKABLE WATER. CHARLES HENRICH, Paris, France. Filed Mar. 24, 1891. Serial No. 386,278. (No model.) Patented in France Dec. 17, 1890, No. 210,873; in Belgium Feb. 3, 1891, No. 93,645; in England Feb. 4, 1891, No. 2,051; in Italy Feb. 11, 1891, No. 29,086; in Germany Feb. 13, 1891, No. 62,114; in Spain Apr. 27, 1891, No. 11,736, and in Austria-Hungary Aug. 13, 1891, No. 6,975 and No. 28,310.



*Claim.*—1. In an apparatus for sterilizing liquids, the combination of a feed pump and a sterilizing vessel, with means for controlling the action of the feed-pump by the temperature of the liquid in the steriliser whereby a certain sterilization of the liquid is assured.

2. In an apparatus for sterilizing liquids, the combination of a temperature exchanger, and a sterilizing vessel, with a feed pump to force the liquid through the apparatus, and means to control the action of the feed pump by the temperature of the liquid in the said sterilizing vessel, substantially as set forth.

3. In an apparatus for sterilizing liquids, the combination of a feed pump, with a vessel B provided with means for heating the liquid, a steam coil $i^6$ in the said vessel, one end connected with the steam supply and the other end leading to the said pump, substantially as and for the purpose set forth.

4. In an apparatus for sterilizing liquids, the combination of a feed pump, with a vessel B for sterilizing the liquid provided with steam pipes in the lower part thereof to heat the liquid, and a steam coil in the upper part thereof in contact with the liquid, a steam supply pipe leading to the said steam pipes and having a branch pipe leading to the said coil, and a pipe connecting the other end of the coil with the feed pump, all substantially as and for the purpose set forth.

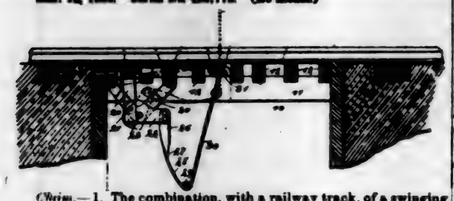
5. In an apparatus for sterilizing liquids, the combination of a feed pump and a sterilizing vessel provided with an outlet pipe, with a pressure valve in the said outlet, all substantially as and for the purpose set forth.

6. In an apparatus for sterilizing liquids the combination of a feed-pump, a sterilizing apparatus provided with an outlet pipe, and means for controlling the action of the feed pump by the temperature of the liquid in the sterilizing apparatus, with a pressure valve in the said outlet pipe from the sterilizing vessel to control the duration of heating therein, all substantially as set forth.

7. In an apparatus for sterilizing liquids, the combination of a feed-pump, a sterilizing vessel and an outlet pipe therefrom with a boiler to supply steam to the sterilizing vessel, and a pressure valve in the said outlet having a greater pressure than that in the boiler, all substantially as and for the purpose set forth.



**501,785.** CATTLE-GUARD. LORENZO HILLS PITTSburg, Tex. Filed Mar. 13, 1893. Serial No. 465,775. (No model.)



*Claim.*—1. The combination, with a railway track, of a swinging platform pivoted thereon, a tilting arm arranged beneath the platform, a connecting arm extending from one end of the tilting arm to the platform, a brace secured to the opposite end of the tilting arm, and guard strips carried by the brace and adapted to be thrust upward above the track, substantially as specified.

2. The combination, with the railway track, of a swinging platform arranged thereon, a tilting arm arranged beneath the platform, a connecting arm extending from one end of the said arm to the platform, guard strips carried by the tilting arm and adapted to be thrust upward above the track at one edge of the platform, and a guide rod arranged transversely on the track and adjacent to the guard strips, substantially as specified.

3. The combination with a pivoted platform provided with a depending arm at its free end, of a pivoted arm below the platform to which the depending arm is pivoted, a brace projecting from the pivoted arm, and guard strips carried at the free end of the said brace, substantially as described.

4. The combination with a pivoted platform provided with a depending arm, of a pivoted arm below the platform to which the depending arm is pivoted, a brace secured to the inner end of the pivoted arm, said brace being twisted near its center and having its lower end widened and secured to a rod, and guard strips secured upon the said rod, substantially as herein shown and described.

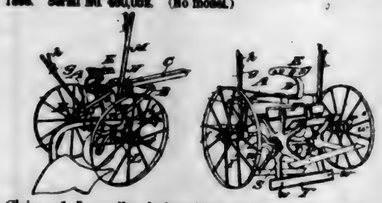
5. The combination with a pivoted platform provided with a depending arm at its free end, of a pivoted arm below the platform to the outer end of which the depending arm is pivoted, a brace secured to the inner end of the pivoted arm, and flexible guard strips carried at the free end of the brace, substantially as described.

**501,786.** SPRING-HINGE. FREDERICK W. HOEFER, Freeport, Ill. Filed Aug. 1, 1891. Serial No. 401,380. (No model.)



*Claim.*—The combination with the screw-plates of a hinge, one of which has a stud projecting at right angles to and intersected by the pivotal center of the hinge which is provided with a laterally projecting toe, of a coil spring coiled upon said stud, having its ends extending parallel to the pivotal center of the hinge, and suitably connected to the other plate, as set forth.

**501,787.** SULKY-PLOW. WILFORD H. HOLSCLAW, Louisville, Ky., assignor to the B. F. Avery & Sons, same place. Filed Jan. 28, 1893. Serial No. 460,052. (No model.)



*Claim.*—1. In a sulky designed for use in connection with a plow, the combination, with the usual arch A; wheels F and G; and an axle for the furrow wheel mounted in the lower end of one of the depending portions of the arch, of a bail I, having one end (*l*) journaled in that leg of the arch to which the furrow wheel axle is thus secured, and having its other end *d* passed through the other depending portion of said arch, and carrying on its outwardly projecting portion the crank casting, in one journal box of which is mounted the axle of the other wheel, F, of the carriage; all substantially as and for the purposes set forth.

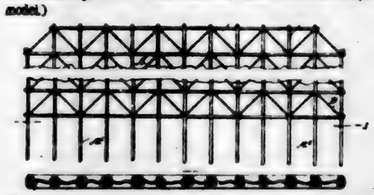
2. In a sulky plow convertible into a sulky stalk-cutter of the type herein described, the combination with the arch A, and the wheels F and G, of a bail I, passing, at one end, through one of the depending portions of the arch, and there carrying the socket crank in which is mounted the axle of one of said wheels; and passing, at the other end, through the other, depending, portion of the arch, above the point at which said portion of the arch carries the axle of the other wheel; and a bell-crank L hung on the end of said bail, made fast at its rear end to said bail, and connected at its other end with a suitable hand-lever mechanism, for oscillating said bell-crank; all substantially as and for the purposes set forth.

3. In a sulky plow or stalk-cutter, the combination with the usual arch and main-frame; and a bail adapted to carry the cutting cylinder, and non-adjustable, relatively to the arch, of wheels F and G, the axles of which are, independently, adjustable, vertically, relatively to the frame and bail; and hand-levers arranged on either side of the machine, adapted to effectuate the adjustment of the wheel axles; all substantially as and for the purposes set forth.

4. In a machine adapted to the purposes of stalk-cutting, the combination with the the bail I of the vehicle, of a rotary stalk-cutter, composed of a series of spider-wheels, removably combined with said bail, and provided with a series of cutter-bars, adapted to revolve by contact with the ground, and operating to cut off the stalks; all substantially as set forth.

5. In a stalk-cutter sulky, the combination with the bail I, of a stalk cutter implement, composed of spider-wheels removably secured to said bail, and a series of cutter bars, or blades, T, having straight edges, but set obliquely to the bail, or axis of motion of the cutting implement; substantially as and for the purposes set forth.

**501,788.** METAL HAT OR LIKE STRUCTURE. JOSHUA HORNOCER, Brooklyn, N. Y. Filed Mar. 21, 1893. Serial No. 466,988. (No model.)



*Claim.*—1. A mat or like metal structure, the same consisting of a wire mesh, and plates longitudinally waved and provided with apertures at their points or angular portions, the plates crossing the meshes, and the wires of the mesh passing through the apertures in the plates, as and for the purpose specified.

2. As an improved article of manufacture, a mat, panel or like structure, the same consisting of crimped or corrugated wire woven in meshes, and metal plates of serpentine or zig-zag construction located between parallel strands of the wire forming the mesh, the other wire strands being passed through the metal plates, as and for the purpose specified.

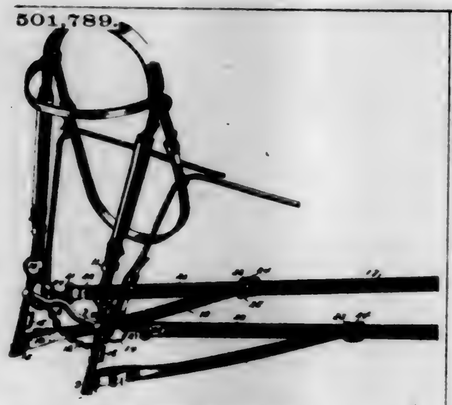
3. As an improved article of manufacture, a mat, panel, or like article, consisting of strands of wire corrugated or crimped and arranged in longitudinal and transverse strands, forming meshes, the strands of wire being interlocked, a series of metal strips or plates of zig-zag or serpentine form, said plates being located between each two parallel strands of wire, running in one direction, the edges of the plates facing the sides of the structure, the cross strands being passed through apertures made in the points or angular portions of the plates and at their ends, substantially as and for the purpose set forth.

**501,789.** DRIVING-REIN. CHARLES W. HOSS, St. Louis, Mo. Filed Nov. 16, 1892. Serial No. 452,166. (No model.)

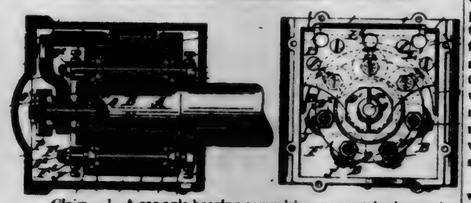
*Claim.*—1. In a duplex, combined snaffle and curb-rein, the combination of the combined snaffle and curb bit 5, the extensile rein 20, secured to the snaffle ring 14, the non extensile curb rein 18, secured to the curb side-bars 9, the holder rein 17, and the tongueless buckle or clamp holder 23, secured to the coupling end of said extensile snaffle rein, the said tongueless buckle clamp, forming the adjustable coupling of said extensile snaffle rein to said holder rein; substantially as described.

2. In a duplex, combined snaffle and curb rein, the combination of the bridle 3, the combined snaffle and curb bit 5, having the grip bar 7, the snaffle rings 14, the curb side bars 9, the attachment loops on said bars, the curb chain 12, the extensile rein 20, secured to said snaffle ring 14, the non-extensile curb rein 18, secured to the curb side-bars 9, the holder rein 17, and the tongueless buckle or clamp holder 23, the said tongueless buckle clamp forming the adjustable coupling of said extensile snaffle rein to said holder rein; substantially as described.

501,789.



501,790. CAR-AXLE BEARING. OLAUS B. JACOBS, Fremont, Wash. Filed Nov. 14, 1892. Serial No. 451,990. (No model.)



*Claim.*—1. A car axle bearing comprising concentric rings, spindles held radially adjustable in the said rings, and provided with ball bearings, and a roller journaled on the ball bearings on the said spindles, substantially as shown and described.

2. A car axle bearing comprising concentric rings, spindles held radially adjustable in the said rings, and provided with ball bearings, a roller journaled on the ball bearings on the said spindles, and means, substantially as described, for radially adjusting the said spindles in the said rings, as set forth.

3. A car axle bearing comprising rings, spindles held in the said rings, cones held on the said spindles, sets of balls held on the said cones and on each spindle, and a roller journaled on the said balls on each spindle, substantially as shown and described.

4. A car axle bearing comprising rollers, each having cup-shaped recesses in its ends, balls held in each recess, a spindle for each roller, and cones held on each spindle, and extending into the roller recesses to engage the balls contained in the recesses, substantially as shown and described.

5. A car axle bearing comprising a box, a brass held in the said box, a series of longitudinally-extending rollers interposed between the top of the brass and the box, rollers interposed between the axle and the under curved side of the brass, and balls H' interposed between the corners of the said brass and the sides and top of the box, as set forth.

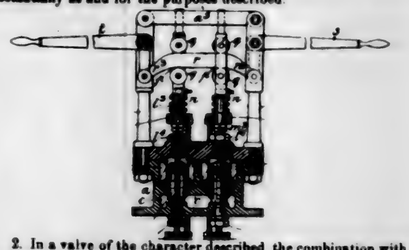
6. A car axle bearing provided with an end thrust plate secured to the brass and extending in front of the car axle, and ball-bearings arranged on opposite sides of the said thrust plate and supported from the car axle, substantially as shown and described.

7. A car axle bearing provided with an end thrust plate secured on the brass and extending in front of the car axle, a set of balls on the front and rear of the said thrust plate, a pin supported from the axle and surrounded by the said sets of balls, and means for holding the latter in place on the said pin, substantially as shown and described.

8. A car axle bearing comprising rings, spindles held on the said rings and each mounted to slide in radial slots on the said rings, cones held on each spindle, and pins secured on each ring and engaging the base end of the corresponding cone, substantially as shown and described.

501,791. VALVE FOR HYDRAULIC OR STEAM MACHINERY. CHARLES A. JESSE, Sunderland, England. Filed Oct. 11, 1892. Serial No. 448,536. (No model.) Patented in England Oct. 12, 1892, No. 16,117.

*Claim.*—1. In a valve of the character described, the combination with a water-tight chamber divided into three compartments, and a duct communicating with each of the said compartments, of hollow cylindrical valves to open or cut off communication between the said compartments, valve rods formed of two pieces, the lower pieces passing through the hollow cylindrical valves and through the upper and lower walls of the chamber, to balance the said valves; spring cushions connecting the upper and lower pieces of the valve rods together, and means for reciprocating the said valve rods to open or cut off communication between the compartment in the chamber, substantially as and for the purposes described.



2. In a valve of the character described, the combination with a water tight chamber divided into three compartments, and a duct communicating with each of the said compartments, of hollow cylindrical valves to open or cut off communication between the said compartments, valve rods formed of two pieces, the lower pieces secured to the hollow cylindrical valves, and passing through guides in the frame and the upper pieces having slots in which are journaled rollers, a horizontal cam bar curved downwardly at its ends and passing between the said rollers, bell-crank levers pivoted in the frame from which the said horizontal cam bar is suspended at its ends, so that by motion of one of said bell-crank levers the horizontal piece may be moved to the right or left and at the same time upwardly or downwardly, to raise or lower either of the hollow cylindrical valves, substantially as and for the purposes described.

3. In a valve of the character described, the combination with a water-light chamber divided into three compartments, and a duct communicating with each of the said compartments, of hollow cylindrical valves to open or cut off communication between the said compartments, valve rods formed of two pieces, the lower pieces secured to the hollow cylindrical valves, and passing through guides in the frame and the upper pieces having slots in which are journaled rollers; spring cushions by which the two pieces of the valve rods are connected together; a horizontal cam bar curved downwardly at its ends and passing between the said rollers, bell crank levers pivoted in the frame from which the said horizontal cam bar is suspended at its ends, so that by motion of one of said bell-crank levers the horizontal piece may be moved to the right or left and at the same time upwardly or downwardly, to raise or lower either of the hollow cylindrical valves, substantially as and for the purposes described.

4. In a valve of the character described, the combination with a water-tight chamber divided into three compartments, and a duct communicating with each of the said compartments, of hollow cylindrical valves to open or cut off communication between the said compartments, valve rods formed of two pieces, the lower pieces secured to the hollow cylindrical valves, and passing through guides in the frame and the upper pieces having slots in which are journaled rollers, spring cushions by which the two pieces of the valve rods are connected together, weights secured to the upper ends of the upper pieces of the valve rods to assist in balancing the valves, a horizontal cam bar curved downwardly at its ends and passing between the said rollers, bell-crank levers pivoted in the frame from which the said horizontal cam bar is suspended at its ends, so that by motion of one of said bell-crank levers the horizontal piece may be moved to the right or left and at the same time upwardly or downwardly, to raise or lower either of the hollow cylindrical valves, substantially as and for the purposes described.

501,792. SPINNING-SPINDLE AND SUPPORT THEREFOR. HENRY D. KLOSS, New York, N. Y. Filed Mar. 22, 1892. Serial No. 427,161. (No model.)



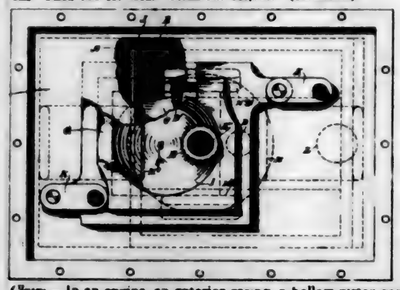


*Claim.*—1. The combination with a spindle bearing, its support and its yielding connection thereto, of a spindle blade composed of an upper bobbin-carrying portion, a lower bearing portion and of a spring intermediate said bobbin-holding and bearing portions to cooperate with the yielding connection of the bearing, substantially as described.

2. The combination, with a rigidly combined bolster and step-bearing tube, its support and its yielding connection thereto, of a spindle-blade composed of an upper bobbin-carrying portion, a lower bolster-bearing portion and a spring intermediate said bobbin-holding and bolster-bearing portions to cooperate with the yielding connection of the bearing tube, substantially as described.

3. The combination, with a rigidly combined bolster and step-bearing tube mounted on a universal spring pivot-joint of the character described, of a spindle-blade composed of an upper bobbin-carrying portion, a lower bolster-bearing portion and a spring intermediate said bobbin-holding and bolster bearing portions to cooperate with the universal spring pivot joint of the bearing tube, substantially as set forth.

501,793. STEAM-ENGINE. AUGUSTUS KNUDSEN, San Francisco, Cal. Filed Oct. 12, 1892. Serial No. 448,771. (No model.)



*Claim.*—In an engine, an exterior casing, a hollow piston reciprocating therein, a second piston reciprocating within the first one, transversely to its line of motion, a shaft and a crank pin connected with both of said pistons, a steam chest with ports for the admission of steam alternately to opposite ends of the piston chambers, a rectangular valve movable over said ports, an eccentric or cam upon which the valve is mounted whereby the valve receives a movement of circular translation over the ports, and radius links connected with opposite angles of the valve, whereby the edges of the valve maintain their parallelism during its movements, substantially as herein described.

501,794. ARTIFICIAL STONE. MARC LAFFONT, Paris, France. Filed Apr. 13, 1892. Serial No. 429,067. (No specimens.) Patented in France Nov. 28, 1891, No. 217,727; in England June 2, 1892, No. 10,892, and in Canada June 14, 1892, No. 36,148.

*Claim.*—1. The herein described process for the production of artificial stone, which process consists in mixing plastic refractory argil with the fusible matter derived from igneous rocks, the mixture containing a minimum of fifteen per cent. of the plastic ingredient, and heating the mixture to a temperature above 1,250 centigrade maintaining the heat above that point until the material is transformed into a homogeneous crystalline body, substantially as described.

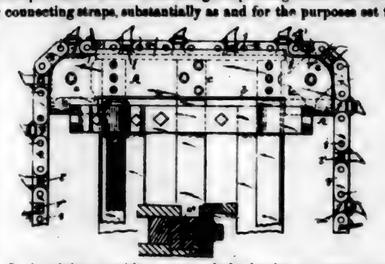
2. The herein described process for the production of artificial stone, consisting in calcining and pulverizing fusible argil, mixing the same with pulverized plastic refractory argil, the mixture containing a minimum of fifteen per cent. of the plastic ingredient, and heating to a temperature above 1,250° centigrade, substantially as set forth.

3. A homogeneous crystalline body, composed of plastic refractory argil and fusible calcined argil, having the properties and appearance herein set forth.

501,795. MINING-MACHINE. BENJAMIN A. LOSS, Allegheny, and ADAM KERR, McKeesport, assignors to Samuel S. Brown, Pittsburg, Pa. Filed Mar 26, 1891. Serial No. 386,497. (No model.)

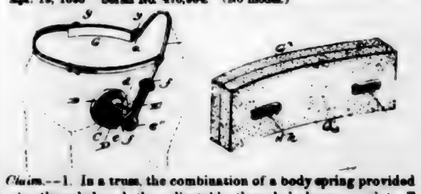
*Claim.*—1. In a cutter chain for mining machines, the combination of a chain link having a vertical transverse grooved seat $e$ formed in its front face and having a threaded seat $e^2$ below the same, and a cutter having a body portion fitting in said grooved seat and a cutting wing extending out at an angle to the body portion, and a bolt passing through the body portion and into the threaded seat $e^2$ of the link, substantially as and for the purposes set forth.

2. A mining machine having a guide way extending across the face thereof, provided with an upwardly projecting rib, in combination with a cutter chain provided with a longitudinal groove formed in the lower face thereof to receive such supporting rib on the bottom guide plate, said chain being formed of main links and connecting straps, and the lower connecting straps being thicker than the upper connecting straps, substantially as and for the purposes set forth.



3. A mining machine cutter chain, having a scraper secured thereto, said scraper having a horizontal lug extending over and secured to the top face of a chain link, and having a vertical lug extending out from the side thereof, and connected to the front face of the chain link, substantially as and for the purposes set forth.

501,796. TRUSS. BENJAMIN M. LOGINSDAL, Blanton, Ohio. Filed Apr. 19, 1893. Serial No. 470,984. (No model.)



*Claim.*—1. In a truss, the combination of a body spring provided with the threaded end, the adjustable threaded sleeve or plate E screwed on the threaded end of said spring and held by a jamb nut, the pad B having the nut and the socket $d$, the adjusting screw journaled in said sleeve or plate and working in the nut of the pad, and the guide stem carried by the sleeve or plate and fitted loosely in the socket $d$ of the pad, substantially as and for the purpose described.

2. In a truss, the body spring A provided with the arm $a$, the rear pad composed of two layers united together, and the metallic fasteners having the loops fitted on the arm $a$ and with the free ends bent and confined between the members of said pad, substantially as described.

501,797. PROCESS OF CARROTTING FURS. HENRI A. A. LOUSSIER, Paris, France. Filed Nov. 20, 1892. Serial No. 453,535. (No specimens.) Patented in France Oct. 17, 1892, No. 224,960; in Belgium Oct. 31, 1892, No. 101,805, and in Italy Nov. 12, 1892, No. 32,803.

*Claim.*—1. The hereinbefore described improvement in the process of carrotting or preparing furs for use in the manufacture of felts which consists in treating the furs with caustic alkali.

2. The hereinbefore described improvement in the process of carrotting or preparing furs for use in the manufacture of felts which consists in treating the furs with caustic potash.

501,798. METHOD OF CARROTTING FURS. HENRI A. A. LOUSSIER, Paris, France. Filed Mar. 13, 1893. Serial No. 466,672. (No specimens.) Patented in France Oct. 17, 1892, No. 224,960; in Belgium Oct. 31, 1892, No. 101,805, and in Italy Nov. 12, 1892, No. 32,803.

*Claim.*—The herein described improvement in the process of carrotting or preparing furs for use in the manufacture of felts, which consists in treating the furs with carbon and nitric acid or the liquid product of the reaction of these bodies upon one another.

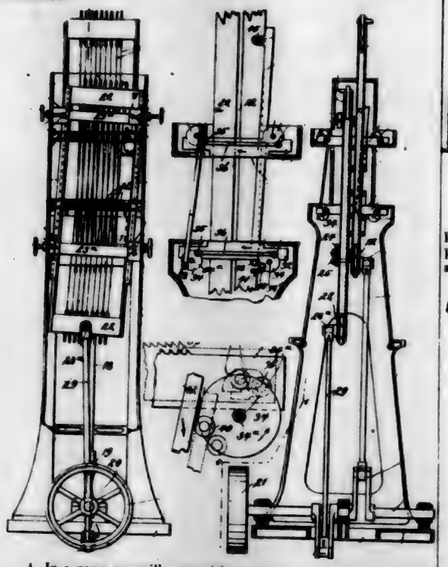
501,799. GANG-SAW MILL. WILLIAM T. MACKEY, Vancouver, Canada. Filed Oct. 3, 1892. Serial No. 447,792. (No model.)

*Claim.*—1. The combination with the vertically reciprocating saw frame of a second reciprocating saw frame, parallel guide bars between which said second frame reciprocates and means for adjusting the said guide bars to a vertical or oblique position to change the pitch of the second saw frame, substantially as set forth.

2. A gang sawmill, comprising a vertically-reciprocating saw frame having a gang of saws therein, a second reciprocating frame held to move opposite the first frame and having gangs of saws ar-

ranged obliquely with respect to the first saws, and means for adjusting the pitch of the second saw frame, substantially as described.

3. A gang sawmill, comprising a supporting frame or standard, a vertically-reciprocating saw frame held to move in rigid guides in the standard and having a gang of saws secured therein, a second reciprocating frame provided with a gang of saws and held to move opposite to the first frame, the second frame being inclined laterally, and a crank mechanism for actuating the frames, substantially as described.



4. In a gang sawmill, comprising a supporting frame or standard, a vertically-reciprocating saw frame held to move in rigid guides in the standard and having a gang of saws therein, an inclined guide frame held in front of the saw frame, a screw mechanism for adjusting the inclined frame laterally, and a second saw frame provided with a gang of saws and held to slide in the inclined guide frame, substantially as described.

5. The combination with a vertically reciprocating saw frame, of the transverse upper and lower connected feed bars connected for simultaneous movement toward and from each other to clamp and release the block and also movable in the direction of their length to feed the block and mechanism for actuating the said bars from the saw frame, substantially as set forth.

6. The combination, with the reciprocating saw frame, of the oscillating cam wheels arranged adjacent to the frame, means for tipping the cam wheels back and forth by the reciprocating of the frame, oppositely arranged feed bars adapted to be clamped upon a bolt, and an operative connection between the feed bars and the cam wheels whereby the movement of the cam wheels will force the two sets of bars toward each other and feed them forward and back, substantially as described.

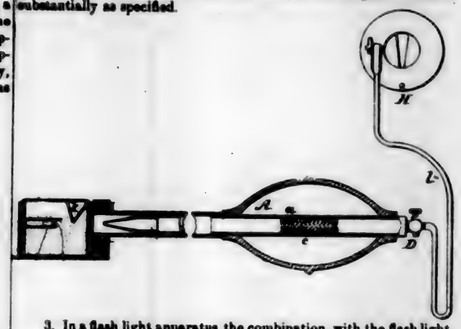
7. The combination of the reciprocating saw frame, the oscillating connected cam wheels arranged adjacent to the frame, the feed bars connected with the cam wheels whereby said sets will be forced toward each other and fed forward and back by the movements of the cam wheels, contact rollers journaled on the cam wheels, an inclined plane secured to the saw frame and adapted to engage the cam wheel rollers and tilt the cam wheel, and a lug carried by the saw frame and adapted to engage the roller and throw back the cam wheel on the return stroke of the saw frame, substantially as described.

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**501,800. FLASH-LIGHT APPARATUS.** ALBERT F. HALLEN, Jamestown, N. D. Filed Dec. 5, 1892. Serial No. 454,099. (No model.)

*Claim.*—1. In a flash light apparatus, the combination of a pneumatic tube, a hammer inclosed in the tube, a flash light powder box holder, a flash light powder box provided with an anvil for a percussion cap and having a slitted side, and a flexible bulb connected with the tube, substantially as specified.

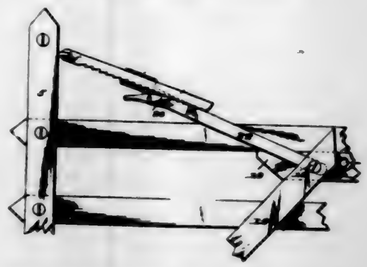
2. In a flash light apparatus, the combination of the perforated tube, a hammer fitted to the tube, a rubber bulb stretched over the perforated portion of the tube, and a hinged flash light powder box provided with an anvil for a percussion cap and having a slitted side, substantially as specified.



3. In a flash light apparatus, the combination, with the flash light powder box, and pneumatic hammer of a cover provided with a bent piece extending into the path of the pneumatic hammer, substantially as specified.

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**501,801. GATE.** GEORGE W. MAUK, Williamsburg, Pa. Filed June 16, 1892. Serial No. 437,009. (No model.)



*Claim.*—1. The combination with a pivoted gate panel, the inclined bar, and a horizontal slide bar, of a ratchet carried by the gate, and a slide connected with the slide and inclined bars and carrying a pawl that engages with said ratchet, substantially as and for the purpose described.

2. The combination with a pivoted gate panel, the inclined bars pivoted to said gate, and a horizontal slide bar fitted against a gate-bar and connected with the inclined bars, of a ratchet bar connected to the gate, a slide fitted on the ratchet bar and carrying a pawl that engages with the teeth of said bar, and a link connected with the slide and the slide bar, substantially as and for the purpose described.

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**501,802. ROWLOCK.** LEWIS MINERLEY, Kingston, N. Y. Filed Oct. 15, 1892. Serial No. 449,008. (No model.)



*Claim.*—1. A rowlock, comprising a ring having on its inner surface segmental recesses, and a pin held in the oar with its ends projecting through the oar and into the recesses of the ring, substantially as described.

2. A rowlock, comprising a ring having recesses in its inner surface and oppositely arranged apertures leading into the recesses, and a pin held in the oar with its ends projecting through the oar and into the recesses of the ring, substantially as described.

3. In a rowlock, the ring A, provided with the pin C, the segmental recesses $A'$ $A^2$ in its inner surface and the oppositely arranged openings $A^3$ leading into the recesses, in combination with an oar provided with the pin D having its ends projecting into the recesses of the ring, substantially as herein shown and described.



**501,803. ACCORDION.** WILHELM R. MÜHLHAUS, Klingenthal, Germany. Filed June 23, 1892. Serial No. 437,748. (No model.) Patented in Germany Mar. 14, 1892, No. 66,451.



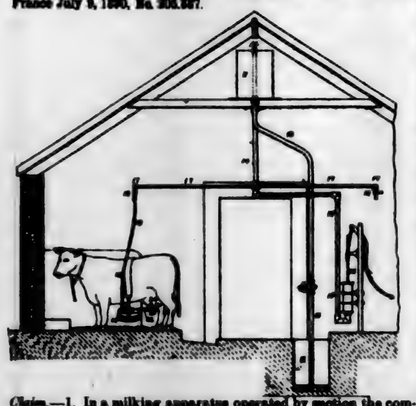
*Claim.*—1. An accordion provided with a hollow handle, containing the melody reed board and reeds and dividing the handle into two compartments, of which one is connected with the key valves and the other with the interior of the bellows, substantially as shown and described.

2. An accordion provided with a handle made hollow and adapted to be attached to one side of the bellows, a melody reed board held in the said hollow handle and containing the reeds, the said reed board dividing the hollow handle into two compartments, of which one is connected with the interior of the bellows, and key valves for opening and closing the apertures leading to the sounding chambers of the other compartment, substantially as shown and described.

3. An accordion provided with a hollow handle, a melody reed board secured in the said hollow handle and dividing the latter into two compartments, of which one is connected with the interior of the bellows, reeds held on the said reed board, transverse partitions formed in the other of the said compartments for forming sound chambers for the individual sets of reeds, and key valves adapted to open and close the apertures leading to the said sounding chambers, substantially as shown and described.

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**501,804. APPARATUS FOR MILKING COWS.** WILLIAM MUIRHEAD, Kilmarnock, Scotland. Filed Feb. 3, 1891. Serial No. 380,051. (No model.) Patented in England Sept. 27, 1889, No. 15,810, and in France July 9, 1890, No. 205,867.



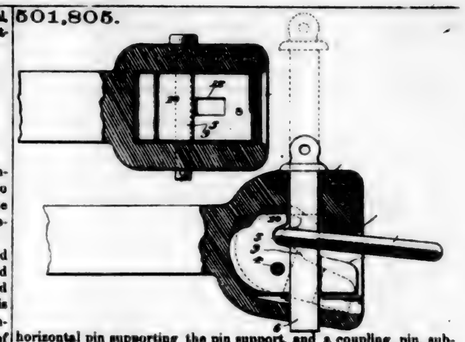
*Claim.*—1. In a milking apparatus operated by suction the combination with the air exhausting apparatus, of one or more milk receptacles and a liquid column for automatically preventing excess of suction, said column being separate and distinct from the milk receptacles whereby the milk is drawn without admixture with the controlling liquid in said column, substantially as described.

2. The combination of a milking apparatus adapted to be worked by suction with means for regulating the degree of suction, independent of the milk receptacles said means consisting of a downwardly extending pipe having its upper end connected to parts of the apparatus in which the suction acts, its lower end being open when the apparatus is in operation and such pipe being of a length to contain a liquid column of an effective height (such as twelve feet) corresponding to the maximum degree of suction intended to be applied, substantially as described.

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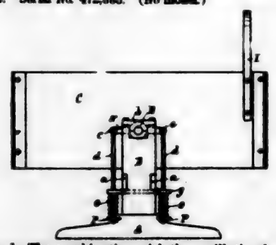
**501,805. CAR-COUPLING.** THOMAS B. MCDERMOTT, Portland, Oreg. Filed Mar. 28, 1892. Serial No. 427,215. (No model.)

*Claim.*—In a car coupling, the combination of a draw-head having a coupling pin perforation, and a link opening or cavity, a pin support mounted in the draw-head and having its front portion adapted to rest upon the bottom of the draw-head and provided at its rear portion with a forwardly extending supporting flange 10, said pin support being of the same width as the opening of the draw-head and provided on its upper face between its ends with a shoulder 9, a horizontal pin supporting the pin support, and a coupling pin, substantially as described.



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**501,806. CHURN.** HENRY G OLDS, Fort Wayne, Ind. Filed Apr. 29, 1893. Serial No. 472,383. (No model.)

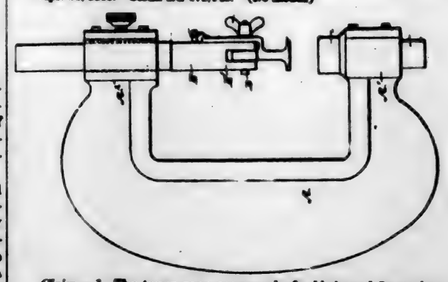


*Claim.*—1. The combination with the oscillating box, of the rods *d* arranged on opposite sides of the axis of the box and provided with adjustable nuts P, a seat *g*, and compensating springs O interposed between the seat and the nuts on the rods, substantially as described

2. The combination with the posts B, and the oscillating box C provided with gudgeons D, of the bracket N having pivots *e* at opposite sides of the gudgeons, the rods *d* engaging the pivots of the bracket, and provided with adjustable screw nuts P, the spring seat *g* secured to one of the posts, and the compensating springs O arranged on the rods between the spring seat and the nuts, substantially as described.

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**501,807. TAPER-GAGE.** FRANK PETERSEN, Chicago, Ill. Filed Apr. 20, 1892. Serial No. 471,148. (No model.)



*Claim.*—1. The taper gage composed of a U-shaped frame having aligned bearings at its ends, a table fixed on one arm of the frame, the opposite straight-edge arranged at an angle to the latter; and a bar adapted to slide in the other bearing, and carrying said straight-edge which is pivoted thereon, as shown and described.

2. A taper gage consisting of a frame having two opposite bearings, a table, B, for engaging one side of the work, a straight-edge, C, arranged opposite, a slidable bar on which said straight-edge is pivoted, and a graduated segment, and clamp-screw for securing said segment in different adjustments, or angles, to the table, B, and also nearer or farther from the table, B, as shown and described.

3. A taper gage comprising a frame, a table held on the said frame, a bar held adjustable in the frame over the said table, a straight edge hung on the said bar and adapted to be swung into an angular posi-

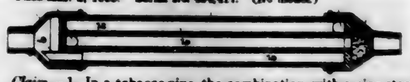
tion relative to the said table, and a graduated segment on the said straight edge, to indicate the angular position of the straight edge, substantially as shown and described.

4. A taper gage comprising a frame, a table held on the said frame, a bar held adjustable in the said frame and having a forked end, a straight edge held in the forked end of the said bar, a bolt for securing the said straight edge in place on the bar, and a graduated segment on the said straight edge, substantially as shown and described.

5. A taper gage comprising a frame, a table held on the said frame, a bar held adjustable in the said frame and having a forked end, a straight edge held in the forked end of the said bar, a bolt for securing the said straight edge in place on the bar, a graduated segment on the said straight edge, and a pointer held on the said bar to indicate on the said graduated segment, substantially as shown and described.

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**501,808. TOBACCO-PIPE.** ALBERCHT REUSS, Darmstadt, Germany. Filed Mar. 2, 1893. Serial No. 464,417. (No model.)



*Claim.*—1. In a tobacco pipe, the combination, with a pipe-stem having a series of longitudinal, communicating smoke-channels, of a hollow cap attached to the upper end and provided with a diaphragm having a perforation registering with the first smoke-channel in the pipe-stem, and a small tube inserted through the opening in the diaphragm and projecting into the interior of the cap.

2. In a tobacco-pipe, the combination, with a pipe-stem having a series of longitudinal, communicating smoke-channels, of a cap arranged at one end of the pipe-stem and provided with a diaphragm having a perforation registering with the last smoke-channel in the pipe-stem, and a chamber below the diaphragm adapted to contain a smoke-purifying medium, substantially as set forth.

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**501,809. SASH-HOLDER.** PHILIP S RIDDELLE, Woodstock, Va. Filed Feb. 24, 1893. Serial No. 463,597. (No model.)



*Claim.*—1. In an anti-rattling attachment for a window sash, the combination with a spring yielding support, a projecting guide rail, of a bevel-faced or conoidal anti-friction roller mounted on said support and adapted to travel against the projecting guide rail to wedge or force the sash laterally against the bead of the window frame, substantially as described.

2. In an anti-rattling attachment for a window sash, the combination with a spring yielding support, a spring for acting upon said support, and a projecting guide-rail, of a bevel-faced or conoidal anti-friction roller mounted on the support and adapted to travel against the projecting guide rail to wedge or force the sash laterally against the bead of the window frame, and an adjustable connection between the support and the spring for varying the tension of the latter without preventing yielding movements of the support, substantially as described.

3. In an anti-rattling attachment for a window sash, the combination of a supporting plate 5, a roller support composed of a bell-crank lever having one member pivoted to the supporting plate, a spring for exerting pressure on the roller support, and an adjustable connection between the spring and the other member of the bell-crank lever, for rocking the said lever on the supporting plates and varying the tension of the spring without preventing yielding movements of the lever, substantially as described.

4. In an anti-rattling attachment for a window sash, the combination of a supporting plate, a bell crank lever having one member pivoted to the supporting plate and the other member provided with a screw socket, an anti-friction roller at the angle of the lever, a spring secured to the supporting plate, and a set-screw engaging the screw socket in the lever and acting against the free extremity of the spring, substantially as described.

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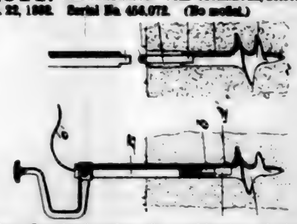
**501,810. BLIND-SLAT TENON.** LOUIS STERN, New York, and WILLIAM BOEHME, Brooklyn, N. Y. Filed July 7, 1892. Serial No. 439,211. (No model.)



*Claim.*—A metallic blind slat tenon A having the slits or cuts D extending therefrom, and wings B formed integral with the tenon, substantially as and for the purpose described.

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**501,811. LAND-ANCHOR.** JOHN STONEBRAKER, Brinston, Ohio. Filed Dec. 22, 1892. Serial No. 454,072. (No model.)



*Claim.*—In a land anchor, the combination, of a base portion A having an upwardly projecting stem with notches *a* and a portion *b* of less diameter than the stem provided with an eye through which the flexible connection is adapted to pass, and a tube having depending portions *d* and means for turning the same, said tube being adapted to fit over the upper end of the stem and into the recess *c*, substantially as shown, and for the purpose set forth.

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**501,812. THILL-COUPLING ATTACHMENT.** WILLIAM J. POST, Locust Corner, Ohio. Filed Apr. 10, 1893. Serial No. 469,671. (No model.)



*Claim.*—1. A thill coupling having the shackles B and headed bolt, E, in combination with the spring latch, D, pivotally connected to one of said shackles, said latch having the bent angular portion $d^3$ adapted to rest against the rear portion of the head of said bolt, the forwardly projecting portion of said latch being adapted to impinge laterally against the face of said headed bolt, as set forth.

2. In combination with the shackles B and headed bolt, E, the spring latch *D* having an offset $d^3$, said latch being pivotally connected to one of said shackles at a point below a plane central with said bolt, said latch and its offset being adapted to spring and impinge against the head of said bolt, as and for the purposes set forth.

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**501,818. SWINGING GATE.** GEORGE F. VOORT, Lower Lake, Cal. Filed Sept. 7, 1892. Serial No. 445,283. (No model.)



*Claim.*—1. The combination of a hinge post provided with bearings, a pintle rod journaled in the bearings and provided near its ends with oppositely disposed crank bends, the lower bend being longer than the upper one and disposed rearwardly, a swinging gate provided with eyes receiving the bends, a cross bar fixed to the pintle rod and forming oppositely disposed arms, a main shaft provided with oppositely disposed crank bends arranged on opposite sides of the hinge post and disposed horizontally when the gate is opened or closed, and rods connecting the crank loops of the shaft with the ends of the cross-bar, substantially as described.

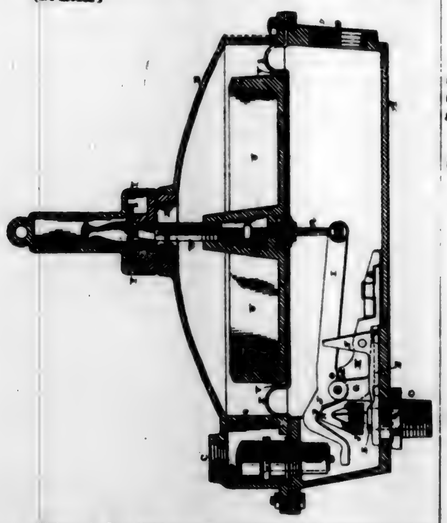
2. The combination of a hinge post provided with bearings, a pintle rod journaled in the bearings and provided near its ends with oppositely disposed crank bends, the lower bend being the longer and



disposed rearwardly, a swinging gate provided with eyes receiving the bends, a cross-bar fixed to the lower end of the pintle rod and forming oppositely disposed arms, a main shaft provided with oppositely disposed crank bends arranged on opposite sides of the hinge post and connected with the ends of the cross-bar, operating shafts arranged at right angles to the main shaft and provided with rectangular bends, and the gearing connecting the shafts, substantially as described.

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**501,814. FLUID-PRESSURE REGULATOR AND CUT-OFF.** FRED E. YOUNGS, Allegheny, Pa. Filed July 30, 1889. Serial No. 319,206. (No model.)



*Claim.*—1. In a fluid pressure regulator, the combination of the diaphragm, the diaphragm lever operated thereby, and provided with the bearing surface P, and the valve lever provided with the bearing surface N, with a valve which controls the inflow of the gas, substantially as shown.

2. In a fluid pressure regulator, the combination of the diaphragm, the diaphragm lever operated thereby, and provided with the bearing surfaces O, P, and the valve lever provided with the bearing surfaces N, M, with a valve which controls or entirely cuts off the flow of the gas, substantially as described.

3. In a fluid pressure regulator, the combination of a diaphragm, the diaphragm lever operated thereby, and provided with the bearing surface O, and the valve lever provided with the bearing surface M, with a valve which will entirely cut off the flow of gas when the pressure becomes too low to support the diaphragm, substantially as shown.

4. The combination of the diaphragm, a diaphragm lever connected thereto, a valve lever which is operated by the diaphragm lever, and a safety valve which is operated by the diaphragm lever when the diaphragm drops, substantially as set forth.

5. In a fluid pressure regulator, the combination of a casing provided with a separate escape chamber, a safety valve placed therein, a diaphragm, and the operating levers which are operated thereby, an opening being made through the partition between the diaphragm chamber, and the escape chamber, substantially as specified.

6. The combination of the casing provided with a separate escape chamber, the safety valve placed in this chamber, the diaphragm and the diaphragm chamber, an opening being made through a partition between the diaphragm and the escape chambers, substantially as shown.

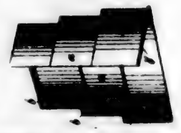
7. The combination of the diaphragm, the weight, the pull up rod connected to the weight and provided with shoulders A', and a laterally moving washer placed upon the top of the casing and adapted to catch under the shoulders upon the rod, substantially as described.

8. The combination of the diaphragm, the weight placed thereon, the pull up rod provided with the shoulders A', and a tapered portion below the shoulders and the laterally movable washer Z, placed upon the casing, substantially as set forth.

9. The combination of the casing, provided with a perforated bushing in its top, the diaphragm, the weight placed upon the diaphragm and provided with upturned edges, the pull up rod W, provided with a hole B, whereby the weight and the diaphragm may be held for transportation, substantially as specified.

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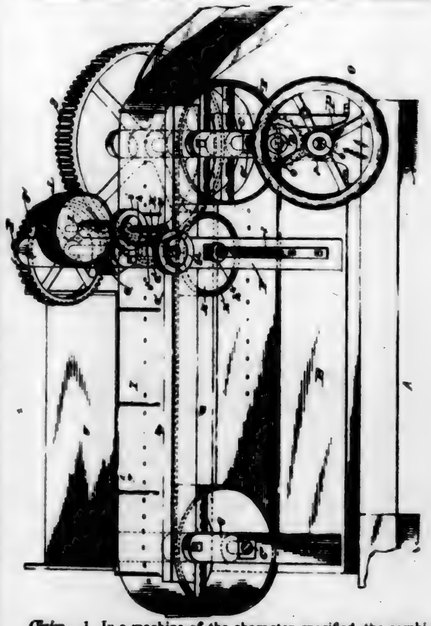
**501,815. CONSTRUCTION OF METALLIC VOLUTE COILS.** JAMES APPERSON and THOMAS BRADLEY, London, England. Filed Mar. 2, 1893. Serial No. 464,406. (No model.)



*Claim.*—In collapsible opera glass and other barrels composed of a volute coil of metal, the combination therewith of projecting edges or lips formed thereon in contrary directions, so as to engage, and prevent the separation of the volutions, substantially as described.

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**501,816. MAIL-MARKING MACHINE.** GEORGE E. BARNARD, Fitchburg, Mass. Filed Oct. 19, 1892. Serial No. 449,339. (No model.)



*Claim.*—1. In a machine of the character specified, the combination with the printing die, of the inclined carrying belt, the driving pulley cooperating positively therewith, the loose, supporting and guiding pulleys at each end and gearing between the drive pulley and die, whereby the proper relation of the die and belt is preserved, substantially as described.

2. In a machine of the character specified, the combination with the printing die, of the inclined belt, the drive shaft having the fast pulley thereon, positively cooperating with the belt, and the loose guiding and supporting pulleys on the drive shaft at each side of the drive pulley; substantially as described.

3. In a machine of the character specified, the combination with the rotary die, of the inclined carrying belt having the central line of grommets or eyelets, the narrow drive pulley having pins or projections entering said grommets or eyelets and the loose supporting and guiding pulleys at each side of the drive pulley; substantially as described.

4. In a machine of the character specified, the combination with the rotary die, of the carrying belt inclined in a plane at right angles to its direction of movement, the drive shaft having the central drive pulley and outside loose guide pulleys, the gear wheel on the end of the drive shaft and the gear wheel meshing therewith mounted on the die shaft; substantially as described.

5. In a machine for marking letters, the combination with the die

and carrying belt inclined in a plane at right angles to its direction of movement and having ribs or cleats thereon, of a fixed guard extending along the lower edge of the belt for positioning the letters and retarding them until carried forward positively by the ribs or cleats; substantially as described.

6. In a machine for marking letters, the combination with the die and carrying belt inclined in a plane at right angles to its direction of movement, and provided with ribs or cleats, of the fixed guard along the lower edge of the belt against which the letters travel and the overhanging supplemental guard on the fixed guard; substantially as described.

7. In a machine for marking letters, the combination with the rotary die and carrying belt inclined in a plane at right angles to its direction of movement, of the drive shaft carrying the inclined guiding and drive pulleys at one end of the belt, the intermediate bed or platen roller supported in spring pressed bearings beneath the die and gearing between the drive shaft and die; substantially as described.

8. In a machine of the character specified, the combination with the die shaft, of a double faced die mounted thereon and adjustable in a line between the two faces, whereby either face may be moved out into operative position; substantially as described.

9. In a machine of the character specified, the combination with the die shaft, having a squared portion thereon, of a double faced die having a rectangular opening therein longer in the direction of the faces, and fitting the rectangular portion of the shaft with means for holding either face projected; substantially as described.

10. In a machine of the character specified, the combination with the inclined belt and die, of the inking wheel cooperating with the die the inking wheel shaft mounted to move longitudinally in an inclined bearing and having the lower end prolonged to form a handle extension, whereby it may be moved up away from the die; substantially as described.

11. In a machine of the character specified, the combination with the inclined belt and die, of the inking wheel cooperating with the die, the inking wheel shaft mounted to move longitudinally in an inclined bearing whereby the wheel may be moved away from the die a drive pulley keyed to said shaft and held against longitudinal movement therewith by the frame and a spring for holding the wheel in elevated position; substantially as described.

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**501,817.** DARNING IMPLEMENT. ADAM BÖHRER, New York, N. Y. Filed Dec. 2, 1892. Serial No. 453,893. (No model.)



*Claim.*—1. The combination, in a darning implement, with a head provided with reciprocating hooks, of a head B provided with swinging attaching devices *b*, and a handle connected with said attaching devices for swinging them to their releasing position, substantially as described.

2. The combination, in a darning implement, of a base C having a rack W, a head provided with reciprocating hooks *a*, *a'* and a sliding head B having swinging attaching devices and a swinging handle U adapted to swing the attaching devices and provided with a catch *v* for engaging the rack, substantially as described.

3. The combination in a darning implement, of a base having a rack W, a head provided with reciprocating hooks *a*, *a'*, a head provided with movable attaching devices *b*, and a movable handle adapted to move said attaching devices and having a catch for engaging the rack, said attaching devices and catch being made swinging so as to be capable of being moved to their releasing position, substantially as described.

4. The combination, in a darning implement, of a head provided with two sets of reciprocating hooks, one set being laterally movable and having a spring catch Z, and the other set provided with a projection *b*' adapted to be engaged by the catch to hold the laterally movable set of hooks after it has been shifted, substantially as described.

5. The combination, in a darning implement, of a head B provided with attaching devices *b*, a head composed of two plates adapted to move in parallel planes and having hooks *a*, *a'*, a bell crank lever frame connected with the two plates, and devices carried by the bell crank lever frame for moving the two plates, substantially as described.

6. The combination, in a darning implement, of a head B having attaching devices *b*, a head comprising two sets of hooks *a*, *a'* which is adapted to alternately rise and fall in parallel planes, oscillating disks or plates A connected with said hooks, and a handle R for oscillating the disks or plates, substantially as described.

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**501,818.** CULTIVATOR. JOHN L. BAILEY, Louisville, Ky. Filed Apr. 13, 1893. Serial No. 470,214. (No model.)

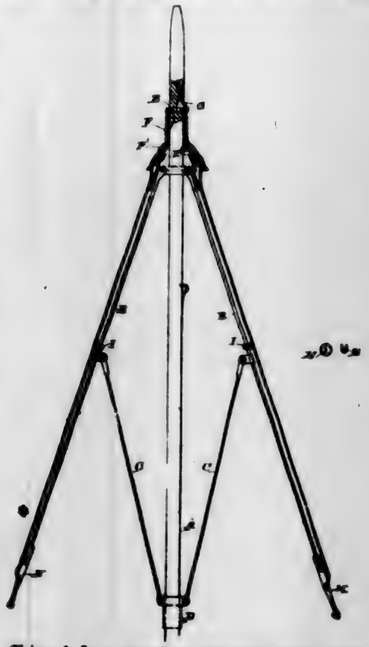


*Claim.*—1. In a cultivator, the combination with the beam A and standards carrying shovels, of a plate B comprising a central portion having bolt holes for securing the same to the under side of the beam, laterally projecting members C C which project in opposite directions the end portions thereof being bent downwardly and provided with outwardly projecting parallel flanges and bolt holes, substantially as shown, and for the purpose set forth.

2. A fixture for securing standards to a plow beam, comprising a flat central plate with bolt-holes or apertures adjacent to the ends thereof, the end portions of the plate having laterally projecting members the ends of which are bent downwardly, and means for securing thereto the independent shovel carrying standards, substantially as shown, and for the purpose set forth.

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**501,819.** DETACHABLE UMBRELLA-COVER. MATILDA C. S. BROWN, Berkeley, Cal. Filed Oct. 1, 1892. Serial No. 447,513. (No model.)



*Claim.*—1. In a parasol or umbrella the interior and exterior cones between which the open of the covering is clamped and the spring catch and notch whereby the seams of the covering are directed along the lines of the radial ribs, in combination with grooved ribs and removable hollow tips having longitudinal inwardly projecting diaphragms to take into the grooves of the ribs, substantially as herein described.

2. In a parasol or umbrella the combination with grooved ribs, of removable hollow tips having inwardly projecting longitudinal diaphragms to take into the grooves of said tips, substantially as herein described.



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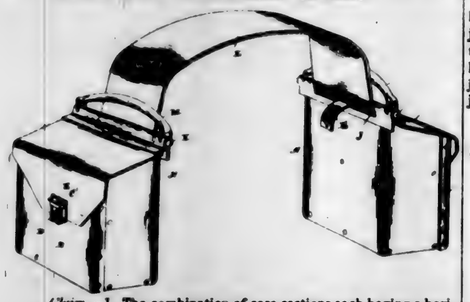
**501,820.** BAG-HOLDER. BRADLEY F. BROWN, Cuyler, N. Y. Filed Feb. 13, 1893. Serial No. 462,141. (No model.)



*Claim.*—In a bag-holder the combination with the standards having their upper ends made cylindrical, of the vertically movable collars provided with downwardly depending spring-arms bearing against said standards, the arms pivoted to said collars, and the rim to which said arms are secured, made of a single piece of metal with curved front and straight back, and provided with prongs or hooks, substantially as and for the purpose specified.

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**501,821.** SADDLE-BAGS. JULIAN A. BROWER, Kosciusko, Miss. Filed Nov. 18, 1892. Serial No. 452,438. (No model.)



*Claim.*—1. The combination of case sections each having a horizontal slot formed in its rear wall near its upper end, horizontal bars arranged over said slots, projections depending from said bars into said slots, and a yoke strap adapted to enter at its ends said slots where they are engaged by the said depending projections, substantially as shown and described.

2. The combination of saddle bag sections having slots in their adjacent walls, transverse revolable bars above the slots, lateral projections thereon adapted to be turned down across the slots and a yoke adapted to be inserted through the slots and engaged by the said projections, substantially as shown and described.

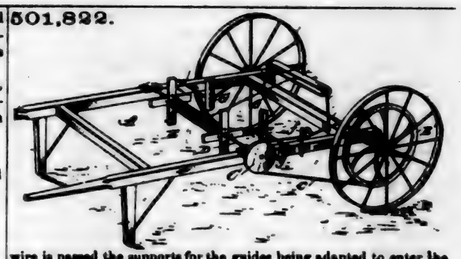
3. In a convertible saddle and hand bag, the combination, of two bag sections, a yoke strap adapted to pass around beneath the sections and upward on their outer sides, and a means for securing the strap ends to said outer sides, substantially as shown and described.

4. In a convertible saddle and hand bag, the combination, of two bag sections, a means for securing together their upper ends, covers for the said bags, fastening devices on the outer bag sides for securing the covers when closed and a yoke strap adapted to extend around beneath the bags and upward on their outer sides where its ends are secured by said fastening devices, substantially as shown and described.

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**501,822.** REEL-CARRYING FRAME. ALBERT O. BRYON, Caryville, and HENRY B. STANTON, Durand, Wis. Filed Mar. 15, 1893. Serial No. 466,309. (No model.)

*Claim.*—In a wire reel, the combination of a frame constructed substantially as shown and provided at its forward end with an axle carrying supporting wheels, a removable reel carrying shaft D journaled upon the frame, and provided on one side of the frame with a pulley *c* vertical guides G G presenting convex surfaces, and a horizontal guide H having upper and lower members, between which the wire is passed the supports for the guides being adapted to enter the sockets attached to the frame, substantially as shown and for the purpose set forth.



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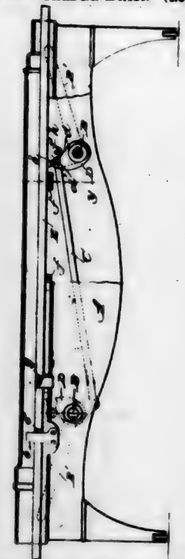
**501,823.** KITCHEN ARTICLE. SARAH C. CALDWELL, Benson City, Mich. Filed Apr. 17, 1893. Serial No. 470,646. (No model.)



*Claim.*—The device described, consisting of a handle, a shank held therein and provided with a slot, a shoulder and a broadened jaw, a shank pivoted in said slot on a plane below the acting face of the other jaw and having a broadened jaw and a shoulder, a cloth held between the jaws, and a set screw passed through both of the jaws between their clamping edge and the pivot for clamping the jaws together, as set forth.

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**501,824.** MOLDING-MACHINE. ROBERT CAMPBELL, Gadsden, Ala. Filed Oct. 27, 1892. Serial No. 450,129. (No model.)



*Claim.*—1. In a molding machine, the combination of a frame A, having transverse shafts with projecting arms which are connected to each other, of cams D mounted on the shafts, a pattern supported by the frame A, and a bed-plate resting upon the frame and having an opening which registers with the pattern, rollers carried by the bed-plate and positioned so that the cams will contact therewith, and

guides *e* and *g* carried respectively by the frame and bed-plate, substantially as shown, and for the purpose set forth.

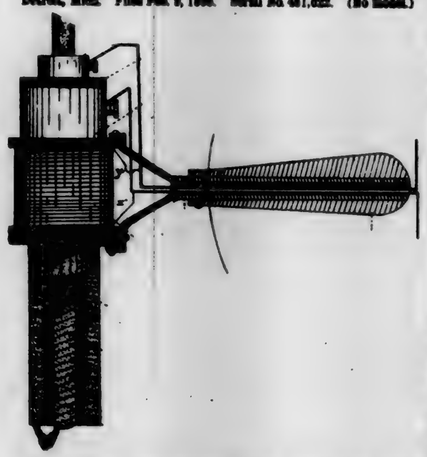
2. In a molding machine, the combination of a frame A supporting a pattern, a bed-plate resting upon the frame and having depending lugs and an opening which registers with the pattern, together with transverse shafts journaled in the frame and having cams mounted thereon which are adapted to contact with the lugs and elevate the bed-plate, said cams having a straight face beyond which is a depression, substantially as shown, and for the purpose set forth.

3. The combination with the frame A supporting the pattern and a vertically movable bed-plate apertured for the passage of the pattern and provided with rollers as shown, of transverse shafts provided with cams G which are adapted to be moved in unison, said cams having straight faces upon which the rollers bear and recesses within which the rollers will rest when the bed-plate is elevated, substantially as shown.

4. In a molding machine, the combination of a frame A supporting a pattern which is rigidly secured thereto, a bed-plate resting upon the frame and having depending lugs and an opening which registers with the pattern, guide plates *e* and *g* attached to an edge of the frame and bed-plate respectively, together with transverse shafts journaled in the main frame and provided with arms projecting in opposite directions and connected to each other by a rod, said shafts having cams mounted thereon which are provided with a straight face upon which the lugs on the bed-plate ride and beyond said straight face with a depression in which the lugs rest, substantially as shown, and for the purpose set forth.

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**501,825.** METHOD OF AND APPARATUS FOR HEATING, WELDING, OR WORKING METALS ELECTRICALLY. CHARLES L. COFFIN, Detroit, Mich. Filed Feb. 9, 1892. Serial No. 461,622. (No model.)



*Claim.*—1. The herein described mode of electrically heating metal consisting in springing a voltaic arc between two electrodes one within the other, rotating said arc magnetically, and applying said arc to the article to be heated.

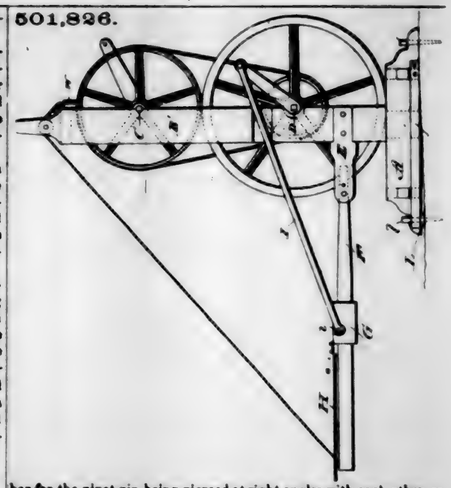
2. In an apparatus for electrically heating and welding by means of an electric arc, the combination with two concentric electrodes, of a magnet for directing and steadying the arc, substantially as shown and described.

3. In an apparatus for heating and welding by means of the electric arc, the combination of two electrodes one within the other, a support for said electrodes and a magnet upon said support, and means for connecting said electrodes and magnet with the terminals of a generator of electricity, substantially as shown and described.

4. In an apparatus for heating and welding by means of the electric arc, the combination of two electrodes, one within the other, an electro-magnet surrounding said electrode and a support carrying said magnet and electrodes, substantially as shown and described.

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**501,826.** SAWING-MACHINE. LYMAN COOPER, Peters, Ind. Filed Mar. 2, 1892. Serial No. 424,204. (No model.)

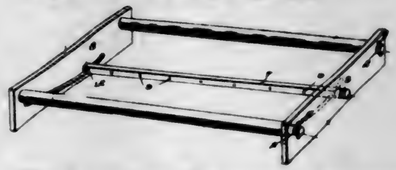


*Claim.*—1. In a sawing machine, the combination, of a frame having uprights which support the shafts of driving mechanism, a bracket-arm attached to one of the uprights, and a bar pivoted to the bracket-arm and carrying a slide to which the saw is secured, the holes in the bar for the pivot-pin being pierced at right angles with each other, so that the saw can operate vertically or horizontally, substantially as set forth.

2. In a sawing machine, the combination, with the frame, pivoted at one end, of a spring attached to said frame and engaging a stop located adjacent thereto, substantially as shown, and for the purpose set forth.

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**501,827.** BED-BOTTOM. HOSEA B. CRANDALL, Brooklyn, N. Y. Filed Apr. 12, 1892. Serial No. 429,078. (No model.)



*Claim.*—In a bed-bottom of the class described, the combination with the opposite transverse end strips having a lower central perforation and opposite upper end perforations, and opposite side rolls having their ends reduced and mounted in the end perforations, of a central roll having its ends journaled in the central perforations, and perforated adjacent thereto and the endless canvas bottom passing over the side-rolls and having its meeting ends secured to the central roll, between the perforations thereof, and curved tightening rods or levers loosely mounted for reciprocation in the perforations and adapted to engage the side rolls, substantially as specified.

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**501,828.** DEVICE FOR HEADING BARRELS. JOHN A. DOWNING, Oil City, assignor of one-half to Samuel G. Robbins, Rivesty, Pa. Filed Feb. 25, 1892. Serial No. 422,994. (No model.)



*Claim.*—1. In a device for clamping or holding the parts of a barrel head, the combination of a frame having teeth at one end and a slide or movable block with teeth at the other, of a handle having a movable rod which is adapted to be projected beyond the frame so as to engage with one of the intermediate parts of the barrel head, substantially as shown.

2. In a device for clamping the parts of a barrel head together, a frame having at one end inclined teeth and at the other inclined



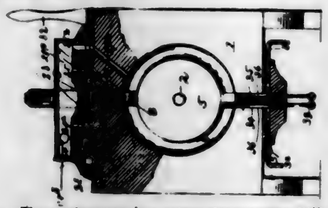
teeth carried by a movable block, of a rod H having its lower end pointed and provided at its upper end with a cross-piece, substantially as shown.

3. In a device for clamping the parts of a barrel head together, the combination of a frame having teeth at one end, a movable block having teeth located at the other end of the frame and connected to a lever, as F, a central handle having an aperture through the same through which a rod H passes said rod being connected to a cross-piece or knob, together with a spring located between the handle and knob, substantially as shown.

4. In a tool for coopers' use, the combination of a frame made up of side pieces A A connected to each other and provided at one end with a block having inclined pins, a movable block having flanges which slide in the side pieces of the frame, said movable block also having inclined pins, a link *e* connecting the movable block with a lever, a centrally located handle apertured for the passage of a pointed rod H, said rod having a knob G attached thereto, the parts being organized substantially as shown, and for the purpose set forth.

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**501,829.** STEAM-ENGINE. DWIGHT C. GIVENS, Ragsr, Mo. Filed Feb. 14, 1893. Serial No. 462,518. (No model.)



*Claim.*—The combination, in a rotary steam-engine, with the revolving piston, of the starting-valves 35, having steam-passages 36 and located in a valve-chamber, 34, diametrically opposite the main abutment-valve 8, and steam-pipes 38, whereby the engine may be thrown off a "dead center," substantially as set forth.

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**501,830.** BOOT OR SHOE. HERMANN C. GROS, Ober-Ursel, Germany. Filed Dec. 15, 1892. Serial No. 455,246. (No model.)



*Claim.*—A boot or shoe having the insole, the upper, and the welt provided with a series of awl holes, and a wire piece inserted through each hole and bent to form two substantially parallel arms *f* which lie respectively inside and outside the boot or shoe, and have pointed extremities extending toward each other and penetrating the material of the boot or shoe, substantially as described.

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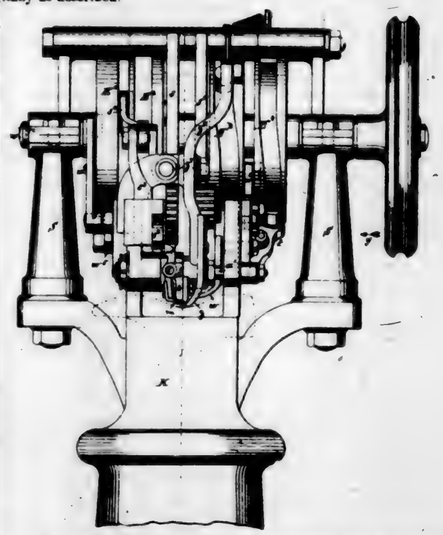
**501,831.** WELT-ATTACHING MACHINE. HERMANN C. GROS, Ober-Ursel, Germany. Filed Mar. 9, 1892. Serial No. 425,232. (No model.)

*Claim.*—1. In a welt-attaching machine, the combination with an oscillatory awl or perforator, of an oscillatory wire-carrier for inserting the wire into the perforation made by the awl, a cutter for severing the wire, and inner and outer pliers for bending the opposite end portions of the severed parts of the wire, and pressing them against the inner and outer sides of the material being fastened, substantially as described.

2. In a welt-attaching machine, the combination with an awl or perforator, of an oscillatory wire-carrier for inserting the wire into the perforation made by the awl or perforator, a cutter pivotally mounted on and oscillating with the wire carrier, and means for operating the awl or perforator, oscillating the wire-carrier, and vibrating the cutter on said wire-carrier, substantially as described.

3. In a welt-attaching machine, the combination with an awl or perforator, of an oscillatory wire-carrier, for inserting the wire into the perforation made by the awl or perforator, a cutter pivotally mounted on and oscillating with the wire-carrier, means for operating the awl or perforator, oscillating the wire-carrier, and vibrating the cutter on said wire-carrier, and pliers for bending the end portions of the severed part of the wire, and pressing them against the inner and outer sides of the material being fastened, substantially as described.

4. In a welt-attaching machine, the combination of an oscillatory awl or perforator, an oscillatory wire-carrier for inserting the wire into the perforation made by the awl or perforator, a lengthwise movable shaft on which the awl or perforator and the wire-carrier are mounted side by side, and means for oscillating the awl or perforator and the wire-carrier, and moving the said shaft lengthwise, substantially as described.



5. In a welt-attaching machine, the combination with an awl or perforator, of an oscillatory wire-carrier, guiding and curving devices mounted upon said oscillatory wire-carrier for imparting to the wire the proper bend for the insertion thereof, and means for operating the awl or perforator, and oscillating the wire-carrier, substantially as described.

6. The combination with an awl or perforator of a wire carrier *d'* and guiding and curving rollers *f* substantially as described, for imparting to the wire the proper bend for the insertion thereof.

7. The combination with an awl or perforator, of an oscillating wire-carrier *d'*, provided with a rocking cutter for severing the wire into proper lengths, and means for operating the awl or perforator, oscillating the wire-carrier, and rocking the cutter on the wire carrier, substantially as described.

8. The combination with an awl or perforator and a wire carrier *d'* provided with a knife *m* and knife lever *m'*, of a segment $s^3$ for actuating the lever, a slide $s^2$ for the segment and an actuating lever $s^4$ for the slide, substantially as described.

9. In a welt attaching machine the combination with mechanism substantially as described for inserting wire pieces into the parts to be united of the plier cheeks *s s'* actuating mechanism substantially as described for the cheek *s* and an actuating lever for the cheek *s'* said lever being composed of two spring interposed parts or sections $s^3$, $s^3$, an actuating lever $s^4$ for the first named lever and a ball joint for connecting said two levers, substantially as described.

10. In a welt attaching machine the combination with mechanism substantially as described for inserting wire pieces into the parts to be united of the plier cheeks *s s'* for bending the wire and actuating mechanism substantially as described for said plier cheeks, said cheek *s'* being provided with a yielding spring-pressed finger $s^5$, substantially as described.

11. In a welt-attaching machine, the combination with mechanism, substantially as described, for inserting wire pieces into the portion to be united, of a rising and falling presser foot *w*, a rising and falling, and backward and forward moving presser-foot *w'*, plier cheeks *s s'* opposing the presser foot for bending the end portions of the wire pieces and pressing them against the parts to be united, and means for operating the presser feet and plier cheeks, substantially as described.

12. In a welt attaching machine the combination with mechan-

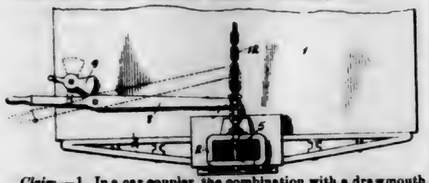
ism substantially as described for inserting wire pieces, of presser foot $w$ $w'$, actuating mechanism substantially as described for the presser foot $w$ and an actuating lever $w^4$ for the presser foot $w'$ said lever having a movable fulcrum and a lever $w^5$ for actuating the fulcrum, substantially as described.

13. In a welt attaching machine the combination with mechanism substantially as described for inserting wire pieces, of presser foot $w$ $w'$, a slide $w^2$ and lever $w^3$ for actuating one of the presser feet and a movably fulcrumed lever for actuating the other presser foot, substantially as described.

14. In a welt attaching machine the combination with mechanism substantially as described for inserting wire pieces, of plier cheeks $s$ $s'$ and actuating levers for said cheeks, each of said levers having a double jointed fulcrum so as to be capable of compound motion, substantially as described.

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501,882. CAR-COUPLING. OSCAR S. GUERNSEY, Seymour, Ind. Filed July 23, 1892. Serial No. 441,639. (No model.)

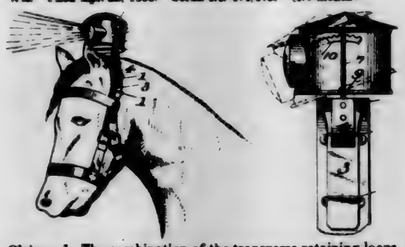


*Claim.*—1. In a car coupler, the combination with a drawmouth, having secured inside of the same a spring with two forwardly projecting ends, each of which has on its upper surface a side projecting flange, of a coupling pin resting on the said flanges when the drawmouth is empty, and a link provided with an interior stop, for entering the drawmouth and causing the said coupling pin to pass through the drawmouth, substantially as described.

2. In a car coupler, the combination with a drawmouth, having secured inside of the same a spring with two forwardly projecting ends, each of which has on its upper surface a side projecting flange, of a coupling pin resting on said flange when the drawmouth is empty, a link for entering the drawmouth and separating the two ends of the spring to cause the passage of the coupling pin through the drawmouth, and the lever 8 and the fan-shaped dog 9, for holding the said coupling pin entirely free of the drawmouth when desired, substantially as described.

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501,883. LANTERN-HOLDER. CHARLES L. HALSTEAD, La Crosse, Wis. Filed Apr. 22, 1893. Serial No. 471,473. (No model.)



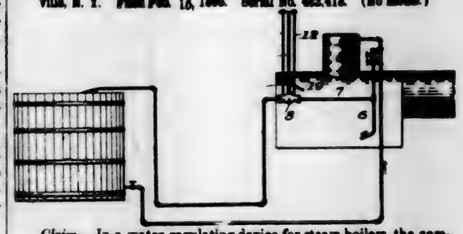
*Claim.*—1. The combination of the transverse retaining-loops, 1, 1, secured to the bridle, or other suitable part of the harness, as specified, and the standard, supporting a lantern, and formed with the straight downwardly extending metal side pieces adapted to pass through said loops, and provided upon their upper outer sides with the metal catches 4, having the inwardly hooked free lower ends, adapted to engage with loops 1, substantially as set forth.

2. The combination, with a suitable standard, of the spring-wire secured upon the same and having the upwardly-extending side-pieces the upper ends of which extend inward, and the lantern having the bottom-flange formed with opposite notches, and having upon its sides the inclined plates formed with the series of notches or openings adapted to be engaged by the upper ends of said spring-wire; substantially as set forth.

3. The combination, of the transverse retaining-loops 1, 1, the removable standard formed with the top, the side-pieces adapted to pass through said loops, and the metal catches 4, the spring-wire secured centrally upon the top of said standard and having the upwardly extending side-pieces formed with the inwardly-bent upper ends, and the lantern having the bottom-flange formed with the opposite notches, and having upon its sides the inclined plates formed with the series of notches or openings; substantially as set forth.

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501,884. FEED-WATER REGULATOR. ADDISON S. HARRIS, Pineville, N. Y. Filed Feb. 15, 1893. Serial No. 462,418. (No model.)



*Claim.*—In a water regulating device for steam boilers, the combination with a boiler, and inspirator and a pipe leading therefrom to the boiler, of the horizontal pipe connected with said pipe, the valve casing having a valve seat, the pipe connected therewith and leading to a supply tank, the vertical expansible and contractible pipe communicating with said casing and provided with a valve, having a collar, a coiled spring, a pet cock, a coupling and a pipe leading to the boiler, the vertical rods secured to the valve casing, and the cross-head to which said rods and vertical pipe are secured, substantially as described.

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501,885. VENT-PIPE. JOSEPH HEIDENREICH, Brooklyn, N. Y. Filed Mar. 16, 1893. Serial No. 466,310. (No model.)

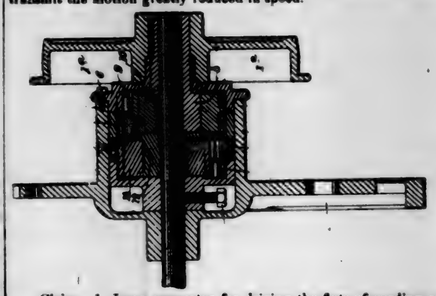


*Claim.*—The combination with a roof having a hole, and a vent pipe extending loosely through the hole, of a surrounding sleeve C secured to the roof and having its upper end portion provided with a laterally projecting flange F, and a cap E secured to the vent pipe and having an expanded lower portion into which the laterally flanged upper end of the sleeve extends, substantially as and for the purpose described.

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501,886. APPARATUS FOR DRIVING THE FLATS OF TRAVELING-FLAT CARDING-ENGINES. ALFRED HITCHON, Accrington, England. Filed Mar. 6, 1893. Serial No. 464,861. (No model.)

*Brief.*—The purpose of the invention is to drive the traveling flats from the shaft of the main cylinder by intermediate connections which transmit the motion greatly reduced in speed.



*Claim.*—1. In an apparatus for driving the flats of carding engines, the combination with the flat driving shaft, of a driven boss on the said shaft having an eccentric thereon, a planet wheel mounted on the said eccentric, an internally toothed wheel journaled on the said shaft, a fixed internally toothed ring, a second eccentric attached to the said toothed wheel, a second stationary internally toothed ring, an internally toothed wheel secured on the said shaft and a second planet wheel mounted on the second eccentric and gearing with the second stationary ring and the wheel secured upon the shaft, substantially as described.

2. In combination, the main shaft, the flat driving shaft, a boss on the flat driving shaft, a pulley and an eccentric carried thereby, a planet wheel on the eccentric, a stationary rack, and a loose rack, having a different number of teeth, with which the planet wheel engages, a second eccentric attached to the loose rack, a second planet wheel mounted on said eccentric, a second fixed rack, a second driven rack, having a different number of teeth, with which the planet wheel engages, such driven rack being secured to the flat driving shaft, and a casing to which the stationary racks are secured, substantially as described.



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501,887. MOUTH-HARMONICA. MATTHIAS HOHNER, Trossingen, Germany. Filed Aug. 27, 1892. Serial No. 444,232. (No model.)



*Claim.*—1. In a mouth-harmonica, a cover consisting of a single piece stamped out from sheet-metal, and provided with central blow-holes, as $b$, and notches at its outer edges to form vents when the cover is bent and put in place on the harmonica, substantially as set forth.

2. In a mouth-harmonica, a cover consisting of a single piece with central blow-holes, as $b$, and side flaps, as $b^3$, $b^4$, substantially as set forth.

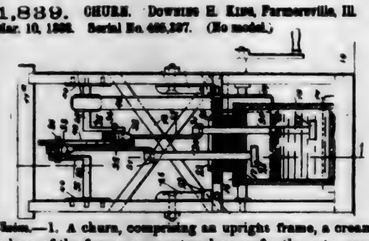
3. In a mouth-harmonica, the combination, with a body having reed-cells, of a cover consisting of a single piece of sheet material provided with blow-holes registering with the reed-cells and having side flaps secured to the ends of the body, substantially as set forth.

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501,888. WITHDRAWN.

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501,889. CHURN. DOWNING H. KING, Farmersville, Ill. Filed Mar. 10, 1893. Serial No. 465,897. (No model.)



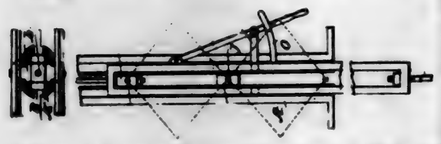
*Claim.*—1. A churn, comprising an upright frame, a cream pot on the base of the frame, an apertured cover for the pot, means for securing the cover in place, two dashers having their dasher rods extending through the apertures of the cover, two shafts mounted in the frame and each provided with a crank arm, a fly wheel between the inner ends of the said shafts, pitmen having their lower ends connected to the dasher rods and their upper ends adjustably secured to the fly wheel and crank arms, and means for operating one of the said shafts, substantially as described.

2. In a churn, the combination with reciprocating dashers, and pitmen connected with the dasher rods, of two shafts each provided with an apertured crank arm, a fly wheel between the inner ends of the said shafts and provided with an apertured cross bar, blocks to which the pitmen are secured between the fly wheel and crank arms, and bolts passing through the cross bar of the fly wheel and crank arms, substantially as described.

3. In a churn, the combination with reciprocating dashers, and pitmen connected with the dasher rods and having bent upper ends, of two shafts, each provided with an apertured crank arm on its inner end, a fly wheel between the crank arms and provided with an apertured cross bar, bolts passing through the apertures of the crank arms and the cross bar of the fly wheel, sleeves on the bolts, and blocks made in two parts recessed to receive the bent ends of the pitmen and pivoted on the said sleeves, substantially as described.

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501,840. VARIABLE-LIFTING DEVICE FOR ELEVATORS. HENRY R. KENT, St. Joseph, Mo. Filed Dec. 13, 1892. Serial No. 454,978. (No model.)

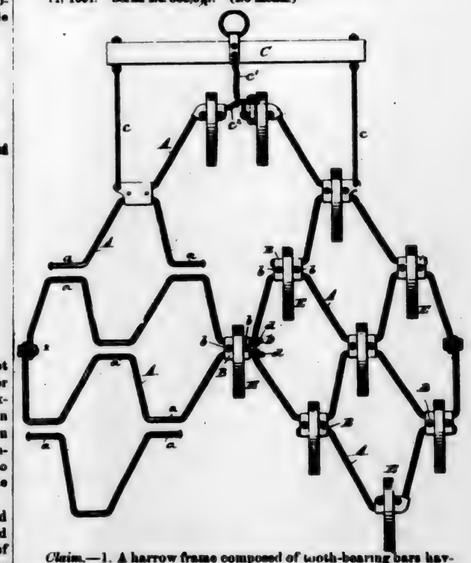


*Claim.*—1. In a hydraulic elevator, the combination with the piston rod having slide or head on its upper end and the sheave-carrying lifting rod having a sliding connection at its lower end with the upper end of said slide or head, of a lazy tongs pivoted at its lower end to a fixed support and pivotally connected at its upper end with the lower end of said lifting rod and a device adapted to engage at will the slide or head in its downward movement with the tongs intermediate of the ends thereof to cause the tongs to fold and draw down upon the lifting rod, substantially as set forth.

2. In a hydraulic elevator, the combination with a vertical stationary guide way and a slide or head mounted therein, a piston rod connected at its upper end with the lower end of said slide or head, and a lifting rod having a sliding connection at its lower end with the slide or head, of a lazy tongs pivoted at its lower end to said guide way and pivotally connected at its upper end to the lower end of the lifting rod and provided between said two pivotal points with a block sliding on the said slide or head, a transverse bolt adapted to cross the slide or head and engage said block in the downward movement of said slide or head to fold said tongs and cause the same to exert a downward pull on the lifting rod, and means for operating said bolt, substantially as set forth.

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501,841. HARROW. CHARLES LA DOW, Albany, N. Y. Filed Apr. 11, 1891. Serial No. 388,617. (No model.)



*Claim.*—1. A harrow frame composed of tooth-bearing bars having adjacent portions attached by hinge connections in combination with teeth mounted at the hinge connections, substantially as described.

2. A harrow frame composed of zig-zag bars having adjacent parallel portions hinged together.

3. A harrow frame having zig-zag bars hinged together by parallel adjacent portions, in combination with teeth mounted on couplings to which the frame bars are hinged.

4. A harrow composed of zig-zag frame bars, couplings for hinging together adjacent parallel portions of different bars, at the several tooth bearing portions of the frame and teeth secured to the couplings.

5. A harrow frame comprising a series of bars with openings substantially diamond-shaped between them, and having adjacent portions connected together by hinges, in combination with spring harrow teeth secured to the bars at their hinge connection.

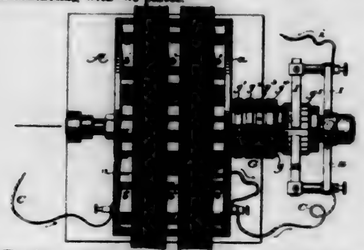
6. The combination with a series of bars hinged together at their adjacent angles, in combination with curved or C-shaped harrow teeth connected to the bars at their angles, substantially as described.

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501,842. ELECTRIC MOTOR. MALCOLM W. LOMB, Harrisburg, Pa., assignor of one-half to Thomas W. Snow, Batavia, Ill. Filed Mar. 23, 1891. Serial No. 386,162. (No model.)

*Claim.*—1. In an electric motor, the series of field magnets of unchanging polarity and each of opposite polarity from the next, in combination with the armature having the poles at each end of the same polarity, and a commutator for automatically reversing the polarity of the armature as it revolves.

2. In combination with the series of field magnets each of opposite polarity from the next, the armature having all the poles at each end of like polarity, the commutator rings having the magnet coils connected thereto as described, the commutator plates, and the two brushes contacting with the plates.

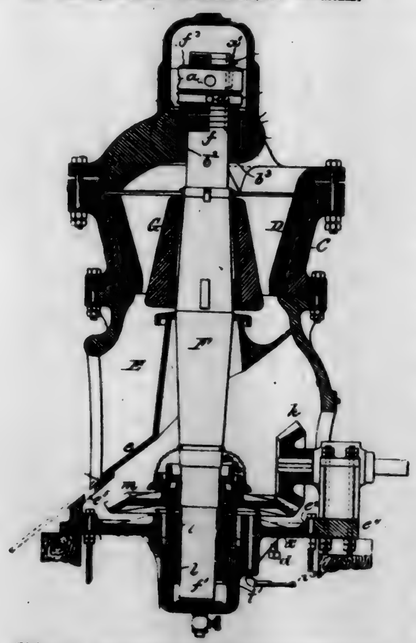


3. The fixed magnets each with two end poles and an intermediate consequent pole, the continuous wire oppositely wound on the successive field magnets and reversely wound on opposite ends of each magnet, in combination with the armature having the three annular series of poles, the coils reversely wound on the two ends of the armature, the four rings connected with the field and armature coils, as described, the commutator bars connected to the respective rings and the commutator brushes.

4. In an electric motor the series of field magnets of unchanging polarity, each of opposite polarity from the next, the armature having at each end a series of poles of the same polarity, the two series being of opposite polarity, a coil wound on the armature, and means for reversing the direction of the current through said coil.

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**501,843. CRUSHING-MACHINE.** ROBERT MCCULLY, Philadelphia, Pa. Filed Apr. 10, 1893. Serial No. 470,260. (No model.)



*Claim.*—1. In a grating crusher, a gyratory-shaft having at its upper end an adjusting-nut and a locking-nut one above the other and the threads of the upper nut sustaining the entire weight of the shaft and crusher-head and downward pressure of crushing, substantially as set forth.

2. In a gyratory-crusher, a gyratory-shaft suspended at its upper end by an adjusting and a locking nut, the thread surfaces of which have opposite pressure impingement or contact with the shaft threads, substantially as set forth.

3. In combination with a gyratory shaft having an upper threaded end an adjusting and a locking nut on said end, a key engagement between the adjusting-nut and shaft and a set-screw for the locking-nut, substantially as set forth.

4. In a crusher, the combination of a gyratory shaft having an upper threaded end, a sleeve surrounding said end, a support for said sleeve, an adjusting and a locking-nut on said shaft-end above said sleeve, a key engagement between the shaft and one of said nuts, and a set-screw for the other of said nuts, substantially as set forth.

5. In a gyratory crusher, the combination with the top-plate or spider having a hub-opening, a gyratory-shaft, and sectional cover for the top of said hub-opening, substantially as set forth.

6. In combination with the spider or top-plate hub opening of a gyratory-crusher, a two part or sectional cover, and rabbeted meeting edges for said sections and hub-opening, substantially as set forth.

7. In combination with a gyratory-crusher, a removable bottom, short and long length securing bolts for said bottom and set-screws interposed between the bolts, substantially as and for the purpose set forth.

8. In a gyratory crusher, the combination of removable bottom N, bolts $n^3$ $n^3$, chute $e$, having opening $e^2$ and rabbet or recess $g'$ and extension chute $g$, substantially as set forth.

9. In a gyratory-crusher, the combination of a gyratory shaft having upper threaded end, supporting adjusting and locking nuts at said end, and the threads of the shaft having different surfaces contact with the nuts, substantially as set forth.

10. In a gyratory-crusher, a shaft having at its upper end a superposed adjusting and a lock nut, the threads of the upper nut sustaining the entire weight of the shaft and crusher-head and downward pressure of crushing; and the threads of the lower nut being relieved of such weight and pressure, substantially as set forth.

11. In a gyratory crushing machine, the combination of gyratory shaft F, a bottom plate N having well $n$, an inwardly projecting flange $t$ in said well, a bushing $t'$ supported on said flange and actuating mechanism for said shaft within said bushing, substantially as set forth.

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**501,844. PARLOR GAME.** FERDINAND PETTERSON, Grand Rapids, Mich. Filed Mar. 16, 1892. Serial No. 426,347. (No model.)



*Claim.*—1. In a parlor game, a shallow tray having a cup pivoted thereto, a spring for holding said cup to position, and balls or cubes to be discharged from the cup into the tray, substantially as and for the purpose set forth.

2. The combination, in a parlor game, of a shallow tray, a diagram upon the inner surface of said tray, a standard upon the edge thereof, a cup pivoted to said standard, and balls or cubes, substantially as, and for the purpose set forth.

3. The combination, in a parlor game, of a shallow tray, a diagram and pockets in said tray, a standard upon the edge of said tray, a cup pivoted to said standard to stand, nominally, with the open end up and projecting over the tray, and balls, cubes, or other figures, substantially as, and for the purpose set forth.

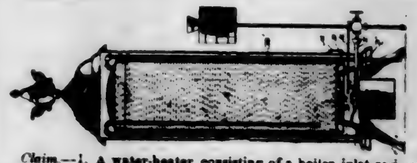
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**501,845. STOVE-POLISH.** JULIUS G. POHLE, Georgetown, Colo. Filed Apr. 3, 1893. Serial No. 469,267. (Specimens.)

*Claim.*—A stove polish containing plumbago, phosphoric acid, and a hygrometric substance, substantially as and for the purpose specified.

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**501,846. APPARATUS FOR HEATING WATER.** WILLIAM S. REED, Marshalltown, Iowa. Filed May 21, 1892. Serial No. 433,955. (No model.)



*Claim.*—1. A water-heater, consisting of a boiler, inlet and outlet water pipes, and a casing surrounding said pipes and boiler, forming a flue, substantially as described.



2. A water heater consisting of a boiler, inlet and outlet water pipes, the inlet pipe leading into the upper end of said boiler and extending downward to near the bottom thereof, and a casing surrounding said pipes and boilers forming a flue, and having a bottom with an opening therein, substantially as described.

3. A water-heater, consisting of a boiler, water inlet and outlet pipes, a casing forming a flue surrounding said boiler and pipes the latter extending alongside said boiler, and a blow-off cock for said boiler, the bottom of said casing having an opening therein, said parts being combined substantially as described.

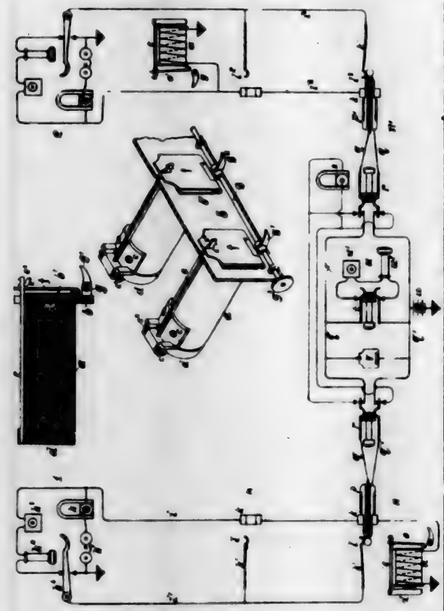
4. A water-heater, consisting of a boiler, water inlet and outlet pipes, a casing with a bottom through which said pipes pass, and having an opening therein and a blow-off pipe leading from said boiler through said casing, surrounding said pipes and boilers forming a flue, and said casing having an opening at its upper end, said parts being combined substantially as described.

5. A water-heater, consisting of a boiler, water inlet and outlet pipes alongside of said boiler, a casing forming a flue surrounding said boiler and pipes, a blow-off cock from said boiler leading through said casing, and feet at lower end of said casing, the bottom of said casing having an opening therein, said parts being combined substantially as described.

6. A water-heater consisting of a boiler, inlet and outlet pipes, a casing surrounding said pipes and boiler, a bottom for said casing, supports for said boiler resting on said bottom, and a gas burner in said casing below said boiler, said parts being combined substantially as described.

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**501,847. MULTIPLE SWITCHBOARD FOR TELEPHONE-EXCHANGES.** CHARLES E. SCRIBNER, Chicago, Ill., assignor to the Western Electric Company, same place. Filed July 30, 1892. Serial No. 441,784. (No model.)



*Claim.*—1. The combination with an annunciator having an electro-magnet, a pivoted armature therefor, an indicator, and mechanism in connection with said armature and indicator adapted to actuate the indicator when the armature is vibrated between its extreme positions, of a circuit containing a source of pulsating currents, a source of continuous current and means for connecting said source of continuous current with the circuit, whereby the actuation of the indicator by pulsating currents may be prevented by connecting the source of continuous current with the said circuit, substantially as specified.

2. The combination with an annunciator having an electro-magnet, an indicator, and mechanism adapted to actuate said indicator, when said electro-magnet is intermittently energized by a pulsating current, but adapted to retain said indicator inoperative when the electro-magnet is continuously energized or de-energized, of a circuit containing said electro-magnet and a source of pulsating current, a source of continuous current, and means for connecting the same in said circuit, substantially as specified.

3. The combination with an annunciator having an electro-magnet, a pivoted armature therefor an indicator and a catch-arm carried by said armature having alternate teeth adapted to engage with said indicator when said armature is in either of its extreme positions, but to release the same when the armature is vibrated, of a conducting circuit including said electro-magnet and a source of pulsating current, a source of continuous current, and means for connecting said source of continuous current in circuit with said electro-magnet, substantially as described.

4. The combination with a telephone line circuit, of spring jacks connected therewith in multiple, an annunciator having an electro-magnet, a pivoted armature therefor, an indicator, and a catch-arm carried by said armature having alternate teeth adapted to engage with and to retain said indicator when the armature is in either of its extreme positions but to release the indicator when the armature is vibrated, a connecting plug adapted for insertion into a spring jack and having a conducting surface arranged to make contact with the corresponding contact piece of the spring jack, a cord circuit terminating in said plug, and a source of continuous current connected with said cord circuit, whereby the indicator of the annunciator may be operated by pulsating currents sent over the line when disconnected, but such operation is prevented when connection is made with the line, substantially as described.

5. The combination with a telephone line circuit of a grounded source of pulsating current connected therewith, spring jacks each having two contact pieces connected with the different sides respectively, of the line circuit, an annunciator in a ground branch from one side thereof having an electro-magnet, a pivoted armature therefor, an indicator, and a catch-arm provided with alternate teeth adapted to engage with and retain the said indicator when the armature is in either of its extreme positions, but to release the same when said armature is vibrated, a connecting plug for insertion into any spring jack, having contact pieces arranged to register with the corresponding contact pieces of a spring jack, and a source of continuous current in a ground branch from that contact piece of said plug which is arranged to connect with the side of the line circuit connected with said annunciator, substantially as described.

6. The combination with an annunciator having an electro-magnet, a pivoted armature therefor, an indicator, and a catch-arm provided with alternate teeth adapted to engage with and retain said indicator, when the armature is in either of its extreme positions but to release the indicator when the armature is vibrated, of a circuit including said electro-magnet and a source of pulsating current, a source of continuous current, means for connecting said source of continuous current in said circuit, and means for periodically resetting said indicator, substantially as specified.

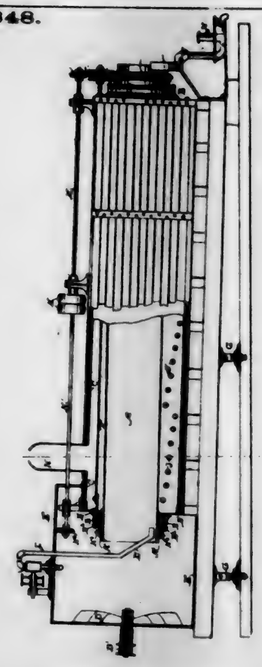
7. The combination with a telephone line circuit, of a grounded source of pulsating current connected with one side thereof, spring jacks each having two contact pieces connected with the different sides respectively of the line circuit, an annunciator in a ground branch having an electro-magnet, a pivoted armature therefor, an indicator, and a catch-arm carried by said armature, having alternate teeth adapted to engage with and retain said indicator when the armature is in either of its extreme positions, but to release the same when the armature is vibrated, a connecting plug for insertion into any spring jack, having contact pieces arranged to register with the corresponding contact pieces of a spring jack, a conducting circuit joining the different contact pieces of a plug, including a clearing-out annunciator, a source of current adapted to actuate said clearing-out annunciator, included in said line circuit, and a grounded source of continuous current connected with that contact piece of the connecting plug which connects with the side of the circuit containing the annunciator, substantially as specified.

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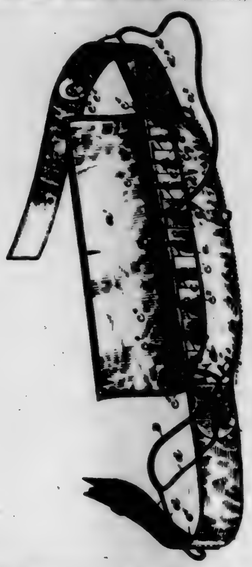
**501,848. EVAPORATING-PAN.** ELTON R. SHAW, Los Gatos, Cal. Filed Jan. 12, 1893. Serial No. 458,152. (No model.)

*Claim.*—A liquid evaporator consisting of a rotating cylinder inclined in the direction of its length, means for supplying the liquid to the head end of the cylinder, whereby it spreads out in a thin film therein, and is gradually advanced through the cylinder, a receiver at the foot of the cylinder to receive the condensed liquid, a tight jacket surrounding the cylinder and adapted to receive an evaporative agent whereby the side of the film next to the cylinder is acted upon, and a fan opposite the head end of the cylinder for creating an evaporative air current through the cylinder, to act upon the inner side of the film, substantially as herein described.

501,848.



501,849. ELECTRIC BELT. BARNEY H. STARDISH, Evansville, Wis. Filed Oct. 24, 1892. Serial No. 449,855. (No model.)



*Claim.*—1. In an electric belt, the combination with a belt proper of a pocket secured thereto, hooks secured at the ends of the pockets, a battery within said pockets having a series of cells, connecting wires between the cells having eyes formed therein, conductor wires adapted to be connected with the said eyes, the connecting wires of the battery terminating at each end thereof in an eye adapted to fit over the hooks; substantially as described.

2. In an electric belt, the combination with a belt proper, of a pocket secured thereto, hooks secured at the ends of the pocket, a battery attached to the hooks and located within the pocket, a series of cells composing said battery, connecting wires between the cells having eyes formed thereon, and detachable conductor wires having devices for connecting them with said eyes, said connecting device consisting of a piece of spring wire coiled centrally to provide an eye, and having spring arms adapted to be inserted through the battery eyes and bent outwardly to prevent accidental displacement; substantially as described.

3. In an electric belt, a battery composed of a central plate of zinc, a pocket of felt, and an outer cylinder of copper, the zinc plate being bent or folded upon the felt strip which forms the pocket, the free end of said strip being wrapped around the bent plate, and a connecting wire soldered to the upper and lower ends of the zinc plate; substantially as described.

4. An electrode composed of a metallic plate, an absorbent disk secured thereto, and a combined shaping and reservoir packing interposed between the plate and disk; substantially as described.

5. An electrode consisting of a metallic plate having an eye, a felt disk secured to the same, the felt packing and a covering, all arranged substantially as shown and described.

6. In an electric belt, in combination with conductor wires, an electrode comprising a metallic plate having an eye passed through the belt, a felt disk secured to the plate, a felt packing and suitable covering, and a spring contact device on the conductor wires securing the eye to the belt; substantially as described.

501,850. AUTOMATIC HOLDER FOR PENCIL-LEADS, CRAYONS, OR OTHER ARTICLES. TOM B. STUART, Washington, D. C., assignor to the Eagle Pencil Company, New York, N. Y. Filed Sept. 4, 1888. Serial No. 284,563. (No model.)



*Claim.*—1. In an automatic holder for lead, crayons and other articles the combination of a sheath, a carrier freely movable within limits which will permit the protrusion or withdrawal of the lead, and a detent movable by gravity according as the sheath is held point downward or upward into and out of a position in which it will lock or retain the carrier in its advanced position, substantially as and for the purposes hereinbefore set forth.

2. The combination of the sheath, the gravity carrier freely movable longitudinally therein within definite limits, the gravity detent or follower and the cap or receptacle containing the same, provided with a locking shoulder between which and the head of the carrier the gravity detent or follower is maintained whenever and so long as the sheath is held point downward, substantially as and for the purposes hereinbefore set forth.

3. The combination of the sheath, the gravity carrier freely movable longitudinally therein within prescribed limits, and the gravity follower separate from the carrier and freely movable in the sheath independently of said carrier, and operating to lock the carrier in, or to release it from, its advanced position according as the holder is held point downward or upward, substantially as and for the purposes hereinbefore set forth.

501,851. MANUFACTURE OF JAWS FOR COUPLING-RODS. SIMON H. STUPAKOFF, Pittsburg, Pa., assignor of one-half to Edward H. Goodman, same place. Filed Nov. 29, 1892. Serial No. 453,490. (No model.)



*Claim.*—1. As an improvement in the art of manufacturing jaws for coupling rods, the method herein described, which consists in splitting a rod or bar by a sidewise shearing action, for a distance greater than the required length of jaws, and then causing the metal of the tangs to flow laterally and longitudinally into matrices suitably shaped for the formation of the body portions and the heads or end enlargements of the jaws, by endwise pressure applied to the ends of the tangs, substantially as set forth.

2. As an improvement in the art of manufacturing jaws for coupling rods, the method herein described, which consists in splitting a rod or bar by a sidewise shearing action, for a distance greater than the required length of jaws, heating the tangs thus formed and then causing the metal of the tangs to flow laterally and longitudinally into matrices suitably shaped for the formation of the body portions and the heads or end enlargements of the jaws, by endwise pressure applied to the ends of the tangs, substantially as set forth.

3. As a step in the art of manufacturing jaws for coupling rods and other articles, the method herein described of splitting the rod or bar which consists in inclosing the portion to be split between suitably grooved dies and then moving one of said dies so that one of the edges of the moving die shall have an angular movement across the groove in the other die, substantially as set forth.

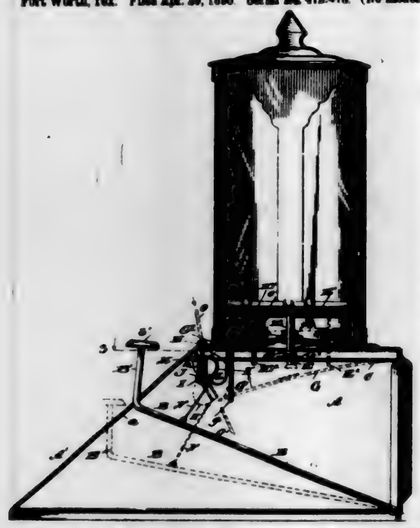


501,852. BED-PAN. JOHN TASCHER, Chicago, Ill. Filed Mar. 24, 1893. Serial No. 467,400. (No model.)



*Claim.*—In a bed-pan, a bowl having a seat on top with a hole therein and a bottom convex antero-posteriorly and inclined downwardly and inwardly from the side edges of the bed-pan a portion of the way to the center of the bowl, in combination with a spout and a chamber communicating therewith in front of the bowl and to the rear of the spout, the front and bottom wall of the spout and chamber being a continuation of the front part of the bottom of the bowl and the rear wall of the spout being extended backwardly to the hole in the seat and thereby forming the top wall of the chamber, with the top of the bowl extending forward by the side of the curved top of the chamber; substantially as described.

501,853. COIN-CONTROLLED APPARATUS. JAMES P. TAYLOR, Fort Worth, Tex. Filed Apr. 20, 1893. Serial No. 472,418. (No model.)



*Claim.*—1. The combination with the case and the vertically-movable disk, of an operating lever pivotally mounted beneath the disk, a spring arm arranged between the lever and the disk and mounted to actuate the latter and a pivotally-mounted cam at the same end of said arm and provided with a coin-receiving slot and a connection between said cam and lever whereby the former is moved upon its pivot by the actuation of the latter, substantially as specified.

2. The combination with the case and vertically-movable disk, of an operating-lever, a spring-arm arranged beneath the disk with its free end in the path of and arranged to be engaged by a coin a coin-receiving cam connected with the lever and springs around the cam shaft, substantially as specified.

3. The combination with the case and the vertically-movable plate having depressions, of an operating-lever, a spring-arm arranged to actuate the plate, and mounted on its free end in the path of a coin held in the cam a coin-receiving cam connected with the lever and the retaining plates upon opposite sides of the cam, substantially as specified.

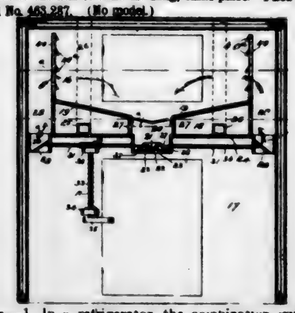
4. The combination with a case and the vertically-movable plate with depressions, of the operating lever, the spring arm arranged to actuate said plate, and mounted on its free end in the path of a coin held in the cam the coin-carrying cam connected with the lever, and the stop lug on the inner face of the case to engage said cam, as set forth.

5. The combination with the case and the glass case, of the gravity disk with depressions, the operating lever, pivotally mounted beneath the disk the spring arm arranged beneath the disk, with its free end in the path of and constructed to be actuated by a coin carried by a coin receiving cam the cam with coin slot, and connected with the lever, and the springs on the shaft of the cam, substantially as specified.

6. The combination with a case and a gravity disk with depressions and depending rod, of the spring arm held at one end beneath the disk and having a plate arranged under said rod, the operating lever, pivotally mounted beneath said arm the pivotally mounted cam with coin slot connected with the lever, the stop lug on the case to limit the movement of the cam and the springs on the shaft of the cam, substantially as and for the purpose specified.

7. The combination with the case and the disk with depressions and depending rod, of the operating lever, pivotally mounted beneath the disk the cam with coin slot, pivotally mounted at the end of the spring arm the connection between the cam and the said lever, the springs on the shaft of the cam, and the guide plate, the spring arm, held at one end between the disk and lever, the guide and stop therefor and the stop plate for the said arm, substantially as specified

501,854. REFRIGERATOR. CHARLES E. VELIE, Denver, Colo., assignor of one-half to John M. King, same place. Filed Feb. 21, 1893. Serial No. 463,287. (No model.)



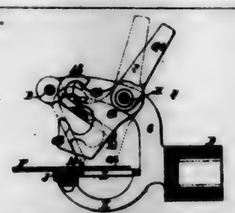
*Claim.*—1. In a refrigerator, the combination with the outer walls, of a partition dividing the inclosed space horizontally into two compartments, a movable valve controlling an opening in the horizontal partition, a vertical shaft journaled in a suitable support in proximity to the door of the lower compartment, an arm attached to the top of this shaft, a pitman connected at one extremity with said arm and at the opposite extremity with the valve, and an arm attached to the lower extremity of the shaft and projecting into the path of the door, whereby the closing of the door engages the last named arm, gives the shaft a partial rotation and opens the valve through the medium of the pitman, substantially as described.

2. In a refrigerator the combination of the outer walls, a partition dividing the inclosed space into upper, lower and intermediate compartments, the partition separating the two last named chambers being perforated, flues located in the intermediate chamber and communicating therewith by suitable openings, said flues leading to vertical extensions attached to the outer wall and communicating with the open air, substantially as described.

3. In a refrigerator the combination with the outer walls, a partition dividing the inclosure horizontally into two compartments, and the door leading to the lower compartment, of movable valves so located as to control ports formed in the horizontal partition, a vertical shaft journaled in a suitable support and located in proximity to the door, arms made fast to the upper extremity of the shaft, pitmen connecting these arms with the valves, a coil spring surrounding the shaft and attached thereto at one extremity, its opposite extremity being connected with the stationary support, and an arm attached to the lower extremity of the shaft and projecting into the path of the door, the parts being so arranged and connected that the closing of the door acts upon the arm and opens the valve through the medium of the shaft and the pitmen, while as the door is opened the action of the spring closes the valves, substantially as described.

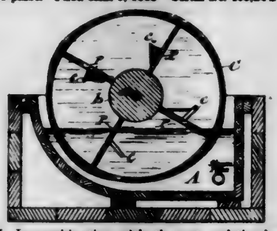
501,855. CHAIN-CLIP FOR CLOTH-FINISHING MACHINES. ROBERT WALKER, Glasgow, Scotland. Filed Sept. 28, 1891. Serial No. 406,517. (No model.) Patented in England Dec. 2, 1890, No. 19,603.

501,855.



*Claim.*—A chain clip composed of a link with an upper and a lower jaw, the lower jaw being fixed to the link and provided with a slot, the upper jaw being pivoted to a fixed part of the link and provided with a curved back projection and a slot, in combination with a lever also pivoted to a fixed part of the link, and provided with a prong adapted to rest on the cloth above the slot in the lower jaw, and also provided with a projection to lift the upper jaw, the said prong adapted to pass through the slot in the upper jaw when above the cloth, all substantially as and for the purposes set forth.

501,856. APPARATUS FOR DYEING. LEONARD WELDON, Amsterdam, N. Y., assignor to the Klauder-Weldon Dyeing Machine Company, same place. Filed Mar. 9, 1893. Serial No. 465,364. (No model.)



*Claim.*—1. In combination with the vat and the horizontal revolving cage arranged with its lower portion in said vat, partitions extending from the periphery of the cage inward, and racks projecting from the lifting sides of the partitions as and for the purpose set forth.

2. In combination with the vat, a horizontal roller pivoted to opposite ends of the vat, a cage surrounding the roller, partitions extending from the periphery of the cage to the roller, and racks projecting from the lifting sides of the partitions as set forth.

501,857. CABINET-ALBUM. ORIN H. WILLIAMS, Hamilton, Ohio, assignor of one-third to John M. Ray, same place. Filed Aug. 29 1892. Serial No. 444,477. (No model.)



*Claim.*—1. In a cabinet album, the combination, with a base, one side of which is provided with a longitudinal groove and with equidistant transverse notches, one end of each of which notches terminates in the longitudinal groove and the other end terminates at the opposite edge of the base, a card holder in each of the said notches, one end of which is provided with a foot to fit in the longitudinal groove, and the other end projects beyond the opposite edge of the base, and is provided with means for rotating it, and the intermediate portion of said holder is provided with means for holding cards, and a frame upon the base, the bottom of which rests upon and forms a cover for the grooves and notches in the base, substantially as set forth.

2. In a cabinet album, the combination, with a base, one side of which is provided with a longitudinal groove, and with equidistant transverse notches, one end of each of which notches terminates in the groove and the other end terminates at the opposite edge of the base, a card holder in each notch consisting of a single piece of wire, one end of which is provided with a foot to fit within the groove, and the opposite end projects beyond the edge of the base and is provided with means for rotating it, and the intermediate portion is provided with coils for the reception of the card, and a frame upon the base, the bottom of which covers the groove and the outer ends of the notches, whereby the removal of the wires is prevented, substantially as set forth.

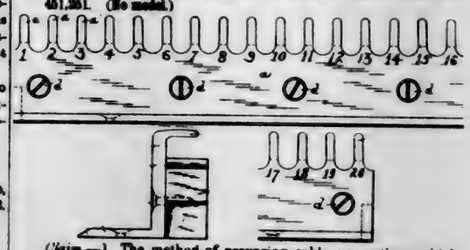
3. A cabinet album, having in combination, a rectangular base, constructed with a raised margin on each side of its top surface, the face of the margin on one side being provided with a longitudinal groove and a series of equidistant transverse notches leading outwardly therefrom, the face of the opposite margin being intersected transversely by a series of corresponding notches, a series of card holders constructed of wire having intermediate coils adapted to receive and engage the edge of the photo cards, one end of said holders terminating without said base and provided with a handle, and the other end terminating at an angle within said groove, and a rectangular case secured to the base on said margin whereby the card holders are kept in place, substantially as set forth.

501,858. SCRAPER. CHARLES P. ALDRICH, Pittsburg, N. H. Filed July 25, 1891. Serial No. 400,680. (No model.)



*Claim.*—In a scraper, the combination, of a shank formed or provided at its forward end with an enlarged portion or head, a cutting implement consisting of a transverse cutting blade and rearwardly extending curved arms secured to the enlarged portion or head, reinforcing plates, a spring plate, and a set-screw passing through registering perforations in the head and reinforcing plates, and adapted to elevate or depress the free end of the spring, substantially as set forth.

501,859. METHOD OF PREPARING CABLES FOR MULTIPLE SWITCHBOARDS. OTIS A. BELL, Brooklyn, N. Y., assignor to the Western Electric Company, Chicago, Ill. Filed Nov. 7, 1892. Serial No. 451,251. (No model.)



*Claim.*—1. The method of preparing cable connections, which consists in removing the serving from a portion of a cable, separating the exposed portion into two parts connected by wires leaving said parts at different points, and severing the connecting wires midway between said parts; whereby two pieces of cable are formed with wires of equal length projecting at different points along the extremities thereof, substantially as described.

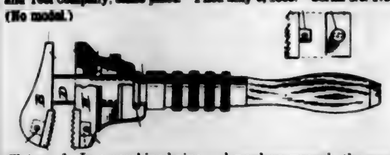
2. The method of preparing cable connections, which consists in removing the serving from a portion of a cable, separating the exposed portion into two parallel parts connected by wires passing from points along one of said parts to points along the other, and severing said connecting wires; whereby two separate cables are formed with wires of equal length projecting at different points along the extremities thereof, substantially as described.

3. The method, which consists in removing the serving from a portion of a cable, separating the exposed wires into two groups connected by wires leaving said groups each at a different distance from the end thereof and in uniform order, binding together the groups thus formed by passing a thread around the groups where the wires leave the same, and severing the connecting wires; whereby two separate cables are formed with wires of equal length projecting at different points along the extremities thereof, substantially as described.

4. The method of arranging the wires of cables for connecting therewith, which consists in laying bare a portion of the cable, bending aside the said bared portion to shorten the same, separating the different wires of the cable from the mass thereof at different points along the bared portion, and severing the wires at equal distances from the axis of the cable; whereby two separate cables are formed, each having its wires protruding from its mass to equal distances at different points along its length, substantially as described.



501,860. COMBINED PIPE AND MONKEY WRENCH. WILLIAM S. BEMIS, Springfield, Mass., assignor to the Bemis & Call Hardware and Tool Company, same place. Filed May 8, 1893. Serial No. 473,209. (No model.)



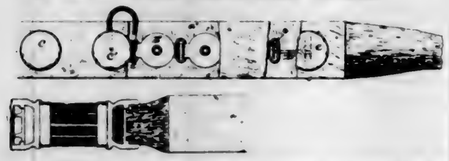
*Claim.*—1. In a combined pipe and monkey-wrench, the wrench-bar, D, the fixed jaw, B, the rocking jaw, H, and the wedge, G, adjustable between the jaw, H, and the bar, to different positions, substantially as and for the purpose set forth.

2. The within described combined pipe and monkey-wrench, consisting of a bar, D, a fixed end jaw, B, a movable jaw-piece inclosing bar, D, in a slot having parallel side walls conforming to the sides of the bar, and opposite end walls at an angle to each other to adapt one wall to be inclined from the surface of bar, D, when the other is in contact with the bar, an operating nut, I, collared to the movable jaw-piece, a hinge formed by collar, A, and the movable jaw-piece upon which the latter can be rotated, a wedge cavity in one of the inclined inner sides of the movable jaw, and a segmental wedge adapted to be slid from one end of the wedge cavity to the other, all operating as and for the purpose set forth.

3. In wrenches, a bar, D, a fixed end jaw, B, supplying jaw surfaces upon opposite sides of bar, D, a movable jaw-piece inclosing bar, D, in a slot having parallel guiding side walls, and opposite end walls at an angle to each other, substantially as shown, and provided with jaw surfaces upon opposite sides of bar, D, an operating nut, I, a hinge-formed by collar, A, and one end of the movable jaw-piece, a wedge cavity in one of the inclined inner sides of the movable jaw, and a segment of a wedge partially filling the wedge cavity and adapted to be slid therein from one end to the other, all combined and operating as and for the purpose set forth.

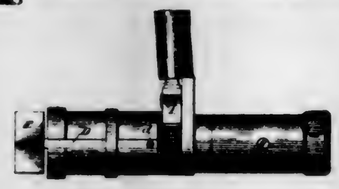
4. In wrenches, the combination of bar, D, jaw, B, movable jaw-piece, H, inclosing bar, D, to slide thereupon, and provided with interior inclined sides permitting the jaw-piece a limited rotation in one plane, as shown, an operating nut, I, collared to the jaw-piece, H, and affording a hinge for the jaw-piece to rotate upon, a wedge-shaped recess in one interior inclined side of the jaw-piece, H, and a segmental wedge provided with a handle, *g*, combined with a slot, *s*, in the wall of the movable jaw-piece, and adapted to fill one end of the wedge recess to hold the jaw piece, H, from tilting, and to be slid to the other end of said recess to leave the jaw free to tilt.

501,861. ELECTRIC BELT. ABRAHAM D. BERLINER, Rock Island, Ill. Filed June 23, 1892. Serial No. 437,753. (No model.)



*Claim.*—The combination with the battery of an electric belt, of the contacts C having arms *d*, passed through one of the folds of the fabric of the belt, the links D having one end bent around the arms *d* of the contact, and the link *e* connected to the battery pole, the link D being carried through the link *e* and then back upon the wire composing said link D, so as to form a reliable electrical connection between the contacts C and its adjoining battery cell, substantially as specified.

501,862. ADJUSTABLE NUT AND DRILL RATCHET-WRENCH. CHARLES H. BERNHEIM, Conover, assignor of one-half to Baxter Shemwell, Lexington, N. C. Filed Apr. 19, 1893. Serial No. 470,933. (No model.)



*Claim.*—The combination with the head of the pawl and ratchet disk, the head provided with the annular rim and with the longitudinal grooves, the spring arms mounted in the grooves the nut clamping jaws on the spring arms, a ring adjustable on the head to hold the jaws engaged with the nut, and a socket in the head to receive the shank of a drill or bit, substantially as and for the purpose set forth.

501,863. PAPER-CLIP. EDWARD T. BLAKE, Denver, Colo., assignor of one-half to Frederick R. Schwegler, same place. Filed Mar. 8, 1893. Serial No. 465,196. (No model.)



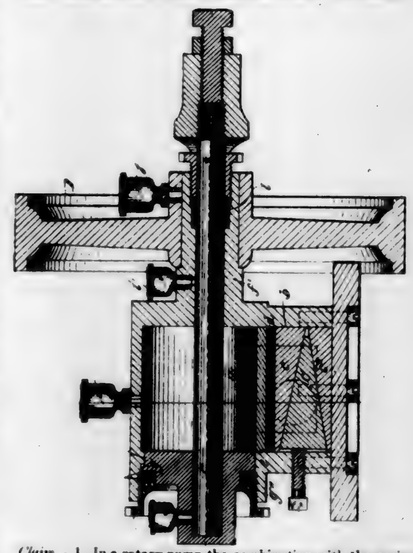
*Claim.*—1. In a paper clip, the combination of the supporting base consisting of the bottom plate and the top part formed into a clamp to receive the board, and the spring-actuated clip pivotally mounted on the clamp, substantially as described.

2. The combination of the clamping base composed of the top and bottom plates, and the spring actuated clip pivoted on legs carried by the top part of the clamp substantially as described.

3. The combination of the clamping base composed of the top and bottom plates, the clip pivoted on the spindle carried by legs formed on the top plate of the clamp and a spring attached to the spindle and engaging the clip and the top of the clamp, substantially as described.

4. The combination of the clamping base composed of the top and bottom plates formed from an integral piece of sheet metal, the clip pivoted on legs carried by the base, and a spring so located as to actuate the clip and simultaneously press upon the top plate of the clamping base, substantially as described.

501,864. ROTARY PUMP. ERNST BOEHNIG and JONAS SJÖSTRÖM, Yonkers, N. Y., assignors to James Scott, same place. Filed Apr. 19, 1892. Renewal June 13, 1893. Serial No. 477,493. (No model.)



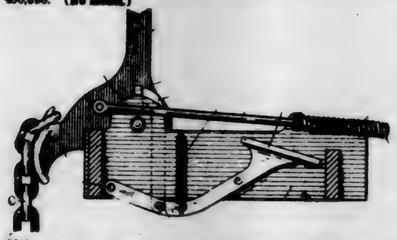
*Claim.*—1. In a rotary pump the combination with the casing A and drum B mounted on a shaft C journaled eccentrically in bearings *f* and *f'*, of semi-circular shaped grooves *m* running lengthwise of said drum, and vanes with correspondingly semi-circular shaped tongues *n* adapted to fit in said grooves, said grooves *m* and tongues *n* forming a hinge or pivot between said drum and vanes, substantially as shown and described.

2. In a rotary pump the casing A provided with a lower extension A' in which suitable inlet and outlet ports are formed, a slot *b* also formed in said extension, said slot containing the metallic pack-

ing *e*, cushion *d* formed of leather, rubber or other suitable material, also the wedge shaped keys *c c'* and *c''*, and set screws for operating said keys, substantially as shown and described.

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**501,865. MOWER.** ELIAS H. BREWSTER, Norwich, assignor to Robert M. Brewster, Hartford, Conn. Filed Oct. 29, 1892. Serial No. 450,290. (No model.)



*Claim.*—1. In combination with the finger bar lifting lever of a mower, provided with a stop, of a bolt movable longitudinally between the center and the circumference of the circle described by the movement of the stop, substantially tangential to said circle, whereby the engagement of the stop with one side of the bolt locks the lever in one position and engagement of it with the other side of the bolt locks it in the opposite position, substantially as set forth.

2. In a mower, in combination, a pivotal finger-bar-lifting lever having a projection $b^3$, adapted to move in the arc of a circle a bolt movable longitudinally between the center and the circumference of the circle described by the movement of the stop and substantially tangential to said circle, whereby the stop is adapted to engage with said projection and lock said lever in either a vertical or horizontal position as set forth, and a spring actuated foot lever connected with said bolt, substantially as and for the objects specified.

3. In a mower, the combination, with the machine frame provided with an extension, of a finger bar lever pivotally secured to said extension and provided with a stop, a bolt longitudinally movable in a line between the pivotal point and the circumference of the circle described by said stop upon the lever whereby the engagement of the stop with one side of the lever holds the lever in one position and its engagement with the opposite side holds it in another position, and means for moving said bolt, substantially as set forth.

4. In a mower, the combination, with the machine frame, one side of which is provided with a slot or chamber, of a finger bar lever pivotally secured to that side of the frame, a portion of the lever overlying the slot, and provided with a stop, a bolt longitudinally movable in said slot, one end of which is adapted to be projected from the slot to engage with the stop on the lever, and a spring actuated lever for moving the bolt in the slot, substantially as set forth.

5. In a mower, the combination, with a machine frame having two projections, a finger bar lever pivotally secured to one of said projections and provided with a stop, and a collar loosely secured in the other projection, a rod pivotally secured to the lever at one end and passed through the collar at the other end and provided with a spring beyond the collar, and a bolt longitudinally movable between the center and the circumference of the circle described by the movement of the stop, and substantially tangential to said circle, whereby one side of the bolt is adapted to engage with the stop and lock the lever in one position and the other side is adapted to engage the stop and lock the lever in another position, and means for moving said bolt, substantially as set forth.

6. In a mower, the combination, with the machine frame provided with a slot or chamber, of a finger bar lifting lever pivotally secured to the exterior of said frame so as to cover a portion of said chamber, a bolt in said chamber for locking the lever in two positions, a spring actuated foot lever pivotally secured to the side of the frame opposite the finger bar lever, the intermediate portion of which is pivotally secured to the lower end of the bolt, whereby the pressure upon the free end of the foot lever will disengage the bolt from the stop and permit of the movement of the finger bar lever, substantially as set forth.

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**501,866. PHOTOGRAPHIC SHUTTER.** FRANK A. BROWNELL, Rochester, N. Y., assignor, by mesne assignments, to the Eastman Kodak Company, same place. Filed Oct. 24, 1889. Serial No. 328,021. (No model.)

*Claim.*—1. The combination with the vibrating shutter, of the arbor, the reversed ratchets thereon, the spring connecting the shutter and arbor, and the pawls co-operating with the ratchets, substantially as described.

2. The combination with the vibrating shutter having the two notches and the spring catch co-operating therewith, of the arbor, the reversed ratchets thereon, the spring connecting the shutter and arbor, and the pawls for engaging the ratchets, substantially as described.



3. The combination with the vibrating shutter arranged to open and close a lens opening by a single movement in either direction, of a spring connected at one end to the shutter, a support to which the other end of the spring is connected capable of being moved across the center of vibration, and catches for holding said support arranged to be disengaged by the movement of the shutter, substantially as described.

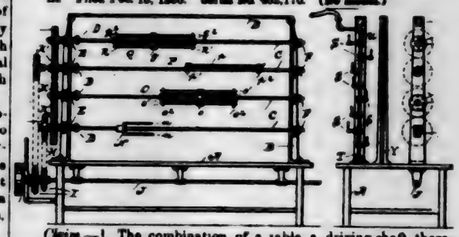
4. The combination with the vibrating shutter, of an arbor on which it is loosely pivoted, a spring connected to the arbor and shutter, detents for engaging the arbor, and a catch for engaging the shutter, substantially as described.

5. The combination with a photographic shutter and a catch for engaging it, of a movable plate carrying a latch for operating said catch in one direction, substantially as described.

6. The combination with a photographic shutter and a spring catch for engaging it, of a pivoted lever, a latch thereon adapted to engage and release the catch by its continued movement, substantially as described.

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**501,867. ROASTING APPARATUS.** PETER CACCIATORI, Chicago, Ill. Filed Feb. 13, 1893. Serial No. 462,170. (No model.)



*Claim.*—1. The combination of a table, a driving-shaft thereunder, a frame on said table, short shafts journaled in one side of said frame and connected with said driving-shaft, and spits connected by universal joints to said short shafts, the free ends of said spits resting in notches cut into the opposite side of said frame, substantially as set forth.

2. In a roasting-apparatus, the combination of a suitable frame, rotatable shafts, journaled in one side thereof, and spits one end of which is removably fitted in the opposite side of said frame and the other end connected by universal joints to said shafts, substantially as set forth.

3. In a roasting-apparatus, the combination of spits and holders composed of flexible wires adapted to be slipped thereon, substantially as set forth.

4. The combination, in a roasting-apparatus, of spits, burners by the side thereof, and means, such as elbows or links, whereby said burners may be moved and adjusted at a suitable distance either parallel or obliquely with relation to said spits, substantially as set forth.

5. The combination, in a roasting-apparatus, of spits, a fuel supply, heat-transmitting devices provided with movable elbows or links, and a heat-tempering appliance, as a sheet of asbestus cloth, interposed between said spits and devices, substantially as set forth.

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**501,868. ANTIFRICTION JOURNAL-BEARING.** JOHN A. CAMERON, Cornwall, Canada. Filed Mar. 22, 1892. Serial No. 426,026. (No model.) Patented in Canada Nov. 21, 1885, No. 22,869.

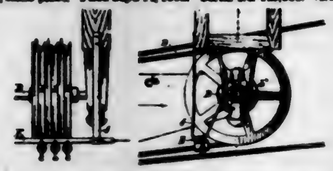


*Claim.*—The combination of a cylindrical slotted sleeve, rollers in said slots, a casing comprising a shell recessed at each end and recessed collars at opposite ends, said recesses forming an annular groove, and a ball in each groove.

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**501,869. DRIVING-ROPE-SHIFTING MECHANISM.** SAMUEL S. GARRET, Philadelphia, Pa., assignor to the Link-Belt Engineering Company, same place. Filed Sept. 14, 1892. Serial No. 445,898. (No model.)

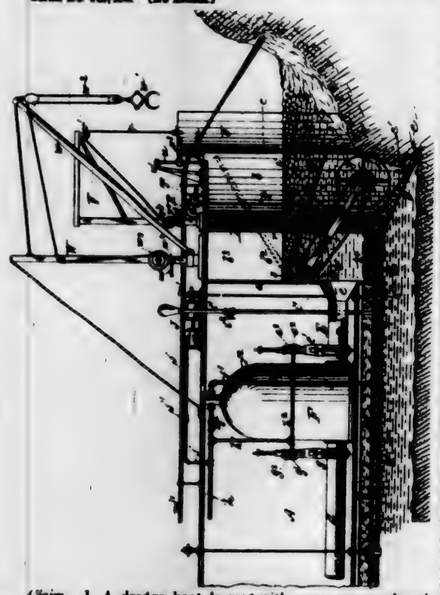


*Claim.*—1. The combination in rope driving mechanism, of the series of sheaves secured to the main shaft, a series of sheaves secured to a countershaft, a series of sheaves loosely mounted on the hubs of the sheaves secured to the countershaft, and alternating with the same, and ropes adapted to said sheaves, with mechanism for shifting the coils of rope from one set of sheaves to the other, substantially as described.

2. The combination of the sheave fast upon the shaft, said sheave having a high and a low flange, with a loosely mounted sheave on the hub of the sheave fast upon the shaft, said sheave also having a high and a low flange, the two low flanges of the sheaves adjoining each other, with a rope adapted to the sheave, whereby, when transverse pressure is applied to the rope, it will readily pass from one sheave to the other, substantially as specified.

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**501,870. DREDGING APPARATUS.** CALEB G. COLLINS, Woodsburg, assignor to Calvin Amory Stevens, New York, N. Y. Filed Sept. 10, 1892. Serial No. 445,452. (No model.)



*Claim.*—1. A dredge boat formed with an open scoop bow in front of its bulk-head, with a pump having a suction pipe opening into said scoop bow through said bulk-head and with means for forcing the float forward substantially in the manner and for the purpose described.

2. A dredge boat formed with an open scoop bow in front of its bulk-head having sides and bottom flaring outward so that the front edges of the scoop bow will cut a channel wider and deeper than the hull of the boat with a pump having a suction pipe opening into said scoop bow through said bulk-head, and with means for forcing the float forward substantially in the manner and for the purpose described.

3. In a dredge boat the combination of a scoop bow in front of the bulk-head, a pump formed with a suction pipe opening into said scoop bow through said bulk-head, a water compartment formed in the walls of said scoop bow, the inner walls of said scoop bow formed with perforations which open into said water compartment means for supplying water under pressure to said water compartment, and means for forcing the boat forward substantially in the manner and for the purpose described.

4. In a dredge boat, the combination of a scoop bow formed in front of the bulk-head, a pump with a suction pipe opening through said bulk-head into said scoop bow, means for injecting jets of water laterally into said scoop bow, and means for forcing the boat forward for the purpose and substantially in the manner described.

5. In a dredge boat, the combination of a scoop bow formed in front of the bulk-head, a pump with a suction pipe opening through the said bulk-head into the said scoop bow, one or more water tight compartments formed in the hull of the boat, means for admitting or discharging water from said water tight compartments, and means for forcing the boat forward, substantially in the manner and for the purpose described.

6. In a dredge boat, the combination of a scoop bow formed in front of the bulk-head, a pump with a suction pipe opening through the said bulk-head into the said scoop bow, vertically adjustable wings or extensions attached to the exterior side walls of the said scoop bow, and means for forcing the boat forward, for the purpose and substantially in the manner described.

7. In a dredge boat, the combination of a scoop bow formed in front of the bulk-head, a pump with a suction pipe opening through the said bulk-head into the said scoop bow, wings or extension pieces attached to the exterior side walls of the said scoop bow, means for adjusting the angle of the said wings or extension pieces with relation to the sides of the scoop bow, and means for forcing the boat forward, for the purpose and substantially in the manner described.

8. In a dredge boat, the combination of a scoop bow formed in front of the bulk-head, a pump with a suction pipe opening through the said bulk-head into the said scoop bow, a horizontal shield within the scoop bow for separating the water above from the lower portion of the scoop, and means for forcing the boat forward, substantially in the manner and for the purpose described.

9. In a dredge boat, the combination of a scoop bow formed in front of the bulk-head, a pump with a suction pipe opening through the said bulk-head, into the said scoop bow, a horizontal shield pivoted within the scoop bow, means for adjusting the said pivoted shield vertically, and means for forcing the boat forward substantially in the manner and for the purpose described.

10. In a dredge boat, the combination of a scoop bow formed in front of the bulk-head, a pump with a suction pipe opening through the said bulk-head into the said scoop bow, a horizontally rotating cutter within the scoop bow, means for forcibly rotating the said cutter and means for forcing the boat forward, substantially in the manner and for the purpose described.

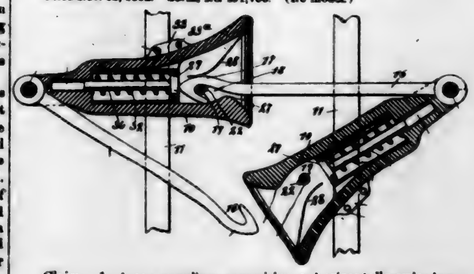
11. In a dredge boat, the combination of a scoop bow formed in front of the bulk-head, a pump with a suction pipe opening through said bulk-head into said scoop bow, a horizontally rotating cutter within the scoop bow, means for forcibly rotating the said cutter, means for adjusting the said cutter vertically, and means for forcing the boat forward substantially in the manner and for the purpose described.

12. In a dredge boat, the combination of a scoop bow formed in front of the bulk-head, a pump with a suction pipe opening through said bulk-head into said scoop bow, means for projecting jets of water under pressure from above the said scoop bow against the material in and in front of the said scoop bow, and means for forcing the boat forward substantially in the manner and for the purpose described.

13. In a dredge boat, the combination of a scoop bow formed in front of the bulk-head, a pump with a suction pipe opening through said bulk-head into said scoop bow, a grapple and hoist for raising obstructions out of the scoop bow, and means for forcing the boat forward, substantially in the manner and for the purpose described.

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**501,871. CAR-COUPLING.** CONSTANT COUBY, New York, N. Y. Filed Nov. 12, 1892. Serial No. 451,780. (No model.)



*Claim.*—1. A car coupling, comprising a horizontally-swinging

drawhead pivoted to a car and having a vertically movable pin therein, and a horizontally-swinging drawbar secured to the drawhead and extending forward at an angle to the same, the front end of the drawbar terminating in a hook, substantially as described.

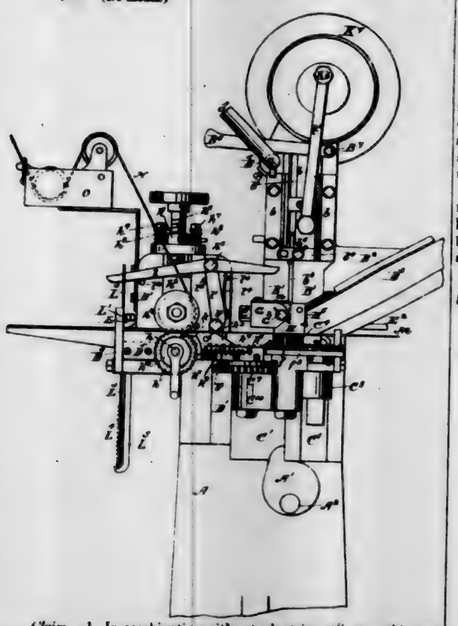
2. A car coupling, comprising a diverging drawhead and drawbar pivoted on a common pivot so as to swing horizontally beneath a car, the drawhead having a vertically movable coupling pin and an inwardly-extending spring arranged at one side of the pin, and the drawbar having a hook at its front end to engage the pin of an opposing coupling, substantially as described.

3. In a car coupling, the horizontally-swinging drawbar having a bell-shaped mouth, a vertically moving coupling pin, an inwardly-extending boss on one side of the mouth, and an inwardly-extending spring on the opposite side of the mouth and opposite the pin, substantially as described.

4. In a car coupling, the drawbar held to swing horizontally beneath a car and having a bell-shaped mouth, a boss in one side of the mouth, a spring in the opposite side of the mouth, a vertically-movable pin arranged opposite the spring, and a spring-pressed plate arranged behind the pin, substantially as described.

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**501,872. TACK-SETTING MACHINE.** JOSEPH B. CRISP, Somerville, Mass., assignor, by mesne assignments, to the Copeland Rapid Lester Manufacturing Company, of Maine. Filed July 31, 1891. Serial No. 401,267. (No model.)



*Claim.*—1. In combination with a tack strip setting machine an inclined chute or roadway, mounted elastically on and secured to said machine at the lower end only, and which has secured to and supports at its upper free end, a tack hopper, and mechanism whereby tacks are arranged in said chute, the length of said chute between the tack setting and the tack arranging mechanism being such as to cause the action of the machine in motion, to vibrate the chute, whereby the flow of tacks from the hopper to the setting mechanism is accelerated, by said vibrations substantially as described.

2. In a tack setting machine, in combination with a tack chute, a tack separator, and a tack pusher, each substantially the thickness of the tack shanks, which reciprocate, next and parallel to each other, at right angles to and across the lower end of said tack chute; a spring to cause the separator to move a tack from the chute to before the pusher, and a suitable cam and connecting mechanism to move the separator back at the proper time, a suitable cam and connecting mechanism to cause the pusher to move the tack into the nippers of the throat and a spring to return the pusher at the proper time, all operating substantially as shown and described.

3. In a tack setting machine, in combination with the throat thereof comprising two slotted plates secured together, of horizontally operating spring-nippers, to take a tack from the pusher, and hold it vertical for the action of the driver, and tack feeding, driving and receiving mechanism all substantially as shown and described.

4. In a tack setting machine a tack receiving wheel provided with grooves for the reception of tack shanks as described, in combination with a tongue fitting said grooves, and a spring for drawing and holding said tongue into said grooves until forced therefrom by the introduction of a tack shank, whereby said tack shank is forced to stand vertical, and tack feeding and driving mechanism all substantially as described.

5. In a tack setting machine, in combination with its receiving wheel and a tongue held in the receiving groove thereof, a shield and suitable connecting mechanism to said tongue whereby the presence of a tack shank in the receiving wheel operates said shield and discloses the tooth of the ratchet wheel operating the receiving wheel to the action of an operating pawl, which pawl thereby presents a vacant space of the receiving wheel for the reception of the next tack delivered from the throat, and tack feeding and driving mechanism all substantially as shown and described.

6. In a tack setting machine mechanism for moving the tack receiving strip one space, combined with detent mechanism substantially as described for stopping the pusher which delivers the tack which is to be placed in said space, without varying the speed of the tack driving or tack strip feeding mechanism, substantially as described and for the purposes set forth.

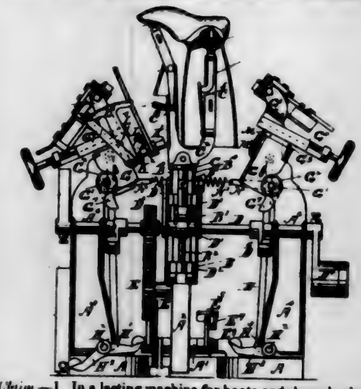
7. In a tack setting machine, combined pressure and feeding rolls of different diameters, in combination with gearing having the same pitch diameters, whereby their revolutions are made synchronal, and a suitable ratchet, slide, and spring for operating the lower roll at the correct interval, all arranged and operating substantially as shown and described.

8. In a tack setting machine, the combination with a stud mounted on the clamp $b^4$ moving with the tack driving slide, a pivoted horizontal lever on the swinging lever $l'$ for operating a shear slide, and mechanism for moving the end of the lever under the stud at the proper time, to separate a desired portion from the finished tack strip, substantially as shown and described.

9. In a tack setting machine the slide carrying the driver, (the rod loosely mounted therein) and the driver, in combination with a latch located as described, and a crank disk, said latch operating as a brake upon the circumference of the crank disk, substantially as shown and described.

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**501,873. LASTING-MACHINE.** JOSEPH B. CRISP, Somerville, and GEORGE W. COPELAND, Malden, Mass., assignors, by direct and mesne assignments, to the Copeland Rapid Lester Manufacturing Company, of Maine. Filed Aug. 15, 1891. Serial No. 402,763. (No model.)



*Claim.*—1. In a lasting machine for boots and shoes, heel and toe lasting heads mounted in carriers pivoted to the standards, and also independently pivoted for adjustment, and an intermediate pivoted jack, in combination with mechanism substantially as described for raising said jack above the heads for hand lasting, and a treadle and intermediate connecting mechanism for drawing down said jack between the heads and locking it, in position for machine lasting, by one movement of the treadle substantially as set forth.

2. In a lasting machine for boots and shoes heel and toe lasting heads mounted in carriers pivoted to the standards, and also independently pivoted for adjustment, and an intermediate pivoted jack, in combination with mechanism substantially as described for raising said jack above the heads for hand lasting, and a treadle and intermediate connecting mechanism for swinging said jack from an inclined to a vertical position and then drawing down said jack between the heads and locking it in position for machine lasting, by one movement of the treadle substantially as set forth.



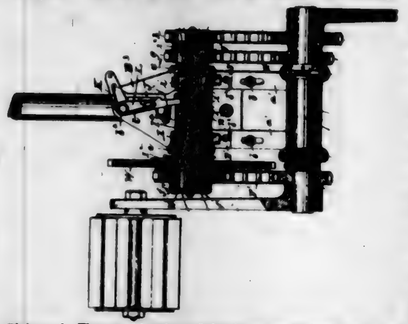
3. In a lasting machine of the class described, the combination of the spring $A^5$, affixed to the base of the machine, the counter balance $D^6$ and the lever $D^5$, affixed to the jack operating mechanism, said jack operating mechanism, and lasting mechanism, all substantially as and for the purposes set forth.

4. In a lasting machine of the class described having heel and toe lasting mechanism, the combination therewith of a jack and operating mechanism substantially as described provided with an auxiliary treadle F and suitable connecting mechanism all operating substantially as described.

5. In a lasting machine head, a toe or heel conforming band, comprising two independent flexible bands, elastically mounted upon and above the lasting plates carried by said head, in combination with the lasting plates and suitable operating mechanism therefor, whereby the conforming band is actuated by and in advance of the operative motions of said plates substantially as described and for the purposes set forth.

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**501,874. BICYCLE DRIVING-GEAR.** RICHARD R. CUNNINGHAM, Hillsborough, Ohio, assignor of two-thirds to P. J. Geyler and O. S. Price, same place. Filed Dec. 20, 1892. Serial No. 455,703. (No model.)



*Claim.*—1. The combination of the frame and wheels, the pedal shaft, and an auxiliary shaft beside the same, the sprockets and chains for transmitting motion from one shaft to the other, and means for transmitting motion from one shaft to the drive wheel; with the independent keys playing in, and lying end to end in a slot in said auxiliary shaft having teeth on their ends adapted to interlock the sprockets on the auxiliary shafts therewith when shifted, and the arms and levers and connections whereby said keys are separately or simultaneously shifted, substantially as and for the purpose described.

2. The combination of the frame and wheels, a pair of sleeves connected to the frame, shafts journaled in said sleeves, a set of sprockets and chains for transmitting motion from one of said shafts to the other, movable keys concealed in one sleeve adapted to interlock the sprockets thereon therewith, and the arms J and L, and crank lever K, and connections for shifting said keys, substantially as described.

3. The combination of the main frame, the wheels, the pedal shaft and auxiliary shaft suspended therefrom, the gearing for transmitting motion from one shaft to the other, a clutch device for engaging or disengaging said gearing from the auxiliary shaft, and the hand lever, rods m, M, and spring $m'$, and connections for operating said clutch, substantially as described.

4. The combination of the frame, its wheels, the pedal shaft and auxiliary shaft parallel therewith, the gearing between said shafts, and means for transmitting motion from the auxiliary shaft to the main wheel; with the key I, arm L, levers K, $k^6$, N, and rods $k'$, M, and catch n, all constructed and arranged to operate substantially as described.

5. The combination of the main frame, the wheels, the pedal shaft, the auxiliary shaft, attached thereto, and the adjoining sets of gearing for transmitting motion from the pedal to the auxiliary shaft, with the key $i$, arm J, lever K, and connections substantially as described, whereby said key can be shifted to throw either set of gearing into operation, substantially as described.

6. The combination of the pedal and auxiliary shafts, the sprockets F, G, and H, on the pedal shaft, and sprockets $f$, $g$, $h$, on the auxiliary shaft, the sliding keys $i$, I, the spring arm J engaging key $i$, the arm L engaging key I, and the lever K adapted to operate either or both of said arms, and mechanism for shifting said lever, substantially as specified.

7. The combination of the main frame, and its wheels a sleeve suspended from the frame, a slotted shaft in said sleeve, sprockets on the opposite ends of said shaft, keys playing in the slot of said shaft and adapted to respectively interlock the opposite ratchets therewith, and the arms J, L, and lever K substantially as described for independently shifting either key, and for normally keeping them out of engagement with the sprockets, substantially as set forth.

8. The combination of the main frame and its wheels a sleeve suspended from the frame, a slotted shaft in said sleeve, sprockets on the opposite ends of said shaft, keys playing in the slot of said shaft and adapted to respectively interlock the opposite ratchets therewith, and the arms J, L, and lever K substantially as described for independently shifting either key, and for normally keeping them out of engagement with the sprockets, and another shaft parallel with the former and carrying similar number of sprockets, and chains for transmitting motion from the sprockets on one shaft to the other, substantially as described, and from the driven shaft to the main wheel substantially as specified.

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**501,875. SNAP-HOOK.** CHARLES W CUTTER, Broomfield, Colo. Filed Feb. 6, 1893. Serial No. 461,271. (No model.)



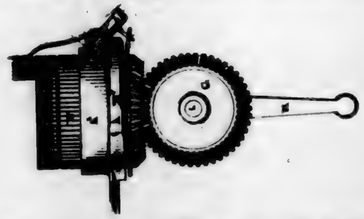
*Claim.*—1. As an improved article of manufacture, the snap hook composed of the hooked body part recessed to receive the snap which is pivoted to the butt thereof, and the spring actuated dog pivoted on the body of the device and normally engaging the snap which it locks from movement, substantially as described.

2. As an improved article of manufacture, a snap-hook composed of the hook, the snap and the locking dog, the body of the hook being recessed to receive the snap and the dog, which are pivoted therein, the butt of the snap being grooved to receive a coil-spring, one extremity of which bears against the snap, while the other extremity engages a shoulder formed on the pivoted dog, whereby the latter normally locks the snap from movement, substantially as described.

3. As an improved article of manufacture, the snap-hook composed of the body part, the snap and the locking dog, the body part being recessed to receive the snap and the dog which are pivoted therein, the snap being recessed to receive a coil spring, the extremities of which engage the snap and the dog respectively, the latter being provided with a projection exterior to the body of the device, whereby it may be manipulated in unlocking the snap, substantially as described.

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**501,876. YARN-CARRIER FOR CIRCULAR-KNITTING MACHINES.** JOHN W. OSWALD, Philadelphia, Pa. Filed June 4, 1892. Serial No. 435,494. (No model.)



*Claim.*—1. In a knitting-machine, the yarn-carrier having the axis of its pivotal part at an angle less than a right angle relatively to the axis of the needle-cylinder, the outer end or head of said carrier being thereby adapted to travel in a path, the horizontal projection of which is in a curved line, substantially as and for the purpose specified.

2. In a knitting-machine, the combination of a rotary cylinder, the yarn-carrier, and a ring or collar frictionally sustained on and adapted to rotate, to a limited extent, with said cylinder and communicate motion to the yarn-carrier, substantially as and for the purpose specified.

3. In a knitting-machine, the combination of a rotary cylinder; a yarn-carrier having the axis of its pivotal part at an angle less than a right angle relatively to the axis of the needle cylinder; a ring or collar frictionally sustained on and adapted to rotate, to a limited extent, with the cylinder and communicate motion to the yarn-carrier, substantially as and for the purpose specified.

4. In a knitting-machine, the combination of the needle-cylinder; the yarn carrier, and a ring or collar frictionally sustained on and adapted to rotate, to a limited extent, with said cylinder and communicate motion to said yarn-carrier, substantially as and for the purpose specified.

5. In a knitting-machine, the combination of the needle-cylinder, the yarn-carrier having the axis of its pivotal part at an angle less than a right angle relatively to the axis of the needle-cylinder; and a ring or collar frictionally sustained on and adapted to rotate, to a limited extent, with said cylinder and communicate motion to the yarn-carrier, substantially as and for the purpose specified.

6. In a knitting-machine, the combination of the needle-cylinder provided with an annular groove, the yarn carrier, and a ring or collar frictionally sustained in said groove, and adapted to rotate, to a limited extent with said cylinder and actuate the yarn-carrier, substantially as and for the purpose specified.

7. In a knitting-machine, the combination of the needle-cylinder provided with an annular groove; a ring or collar sustained frictionally in said groove; the yarn-carrier connected with said ring or collar and having the axis of its pivotal part at an angle less than a right angle relatively to the axis of said cylinder; and a limiting pin or stop on each side of said yarn-carrier, substantially as and for the purpose specified.

8. In a knitting-machine, the combination of the cam-cylinder provided with a boss whose angle of inclination is less than a right angle relatively to the axis of the needle-cylinder; the yarn-carrier journaled on said boss; and means for imparting motion to said carrier, substantially as and for the purpose specified.

9. In a knitting-machine, the combination of the cam-cylinder provided with a boss whose angle of inclination is less than a right angle relatively to the axis of the needle-cylinder; the yarn-carrier journaled on said boss; and a ring or collar connected to said carrier and frictionally sustained on the needle-cylinder and adapted to rotate, to a limited extent, therewith, substantially as and for the purpose specified.

10. In a knitting-machine, the combination of the cam-cylinder provided with a boss whose angle of inclination is less than a right angle relatively to the axis of the needle-cylinder; the yarn-carrier journaled on said boss; a ring or collar connected to said carrier and frictionally sustained in an annular groove in the needle-cylinder; and a limiting pin or stop on each side of said yarn-carrier, substantially as and for the purpose specified.

11. In a knitting-machine, the combination of the cam-cylinder provided with a boss whose angle of inclination is less than a right angle relatively to the axis of the needle-cylinder; the yarn-carrier journaled on said boss and provided with a loop depending from its hub; a ring or collar frictionally sustained on the needle cylinder and provided with a lateral extension or arm in engagement with said loop, said ring or collar being adapted to rotate, to a limited extent, with said needle-cylinder, substantially as and for the purpose specified.

12. In a knitting-machine, the combination of the cam-cylinder; a plate secured to the latter and provided with a boss whose angle of inclination is less than a right angle relatively to the axis of the needle-cylinder; the yarn-carrier journaled on said boss and provided with a loop depending from its hub; a ring or collar frictionally sustained in an annular groove in said needle-cylinder and provided with a lateral extension or arm in engagement with said loop; and a limiting pin or stop on each side of said yarn-carrier, substantially as and for the purpose specified.

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**501,877. LANTERN.** CHARLES W. DURELLE, Madison, Wis. Filed Feb. 7, 1893. Serial No. 461,343. (No model.)



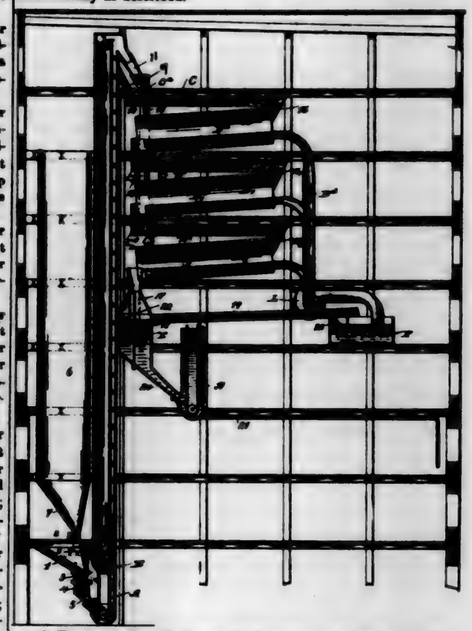

*Claim.*—1. In combination with a lantern, a flanged screw bolt attached to the lantern, a centrally perforated metal plate having notched bearings below the base of the lantern, and a nut clamping the plate to the flange, substantially as and for the purpose set forth.

2. In combination with a lantern a flanged screw ferrule upon its base, a nut upon the ferrule, a hub perforated by the ferrule and clamped by the nut, an outer rim supporting the lantern, downwardly projecting notches formed in the base of the rim, and elastic spokes intermediate of the hub and rim, substantially as set forth.

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**501,878. PROCESS OF REFINING SUGAR.** COURTNEY ESSEX, South Baltimore, Md. Filed Nov. 17, 1892. Serial No. 452,302. (No specimens.)

*Claim.*—1. The herein described process of cleansing sugar, which consists in mixing with the raw sugar a finely or coarsely divided substance such as cork, wood, or brown coal, to which the impurities of the sugar will adhere, and then mechanically separating the cleansing substance with the impurities adhering thereto from the sugar, substantially as described.



2. The herein described process of cleansing sugar, which consists in mixing with the raw sugar a finely or coarsely divided substance such as cork, wood, or brown coal lighter than the raw sugar and to which the impurities of the sugar will adhere, and then mechanically separating the cleansing substance with the impurities adhering thereto from the sugar by reason of their differing specific gravities, substantially as described.

3. The herein described process of cleansing sugar, which consists in mixing with the raw sugar a finely or coarsely divided substance lighter than the sugar, and to which the impurities of the sugar will adhere, separating the cleansing substance with the impurities adhering thereto from the sugar, effecting a final separation between the sugar and the cleansing substance by discharging the sugar into a vessel containing a liquor incapable of dissolving the sugar, and of a specific gravity intermediate between that of the sugar and the cleansing substance, and drying the sugar, substantially as described.

4. The herein described process of cleansing sugar, which consists in mixing with the raw sugar a finely or coarsely divided substance lighter than the sugar and to which the impurities of the sugar will adhere, separating the cleansing substance and the impurities adhering thereto from the sugar, effecting a final separation between the sugar and the cleansing substance by discharging the sugar into a vessel containing a liquor incapable of dissolving the sugar, and of a specific gravity intermediate between that of sugar and the cleansing substance, and repeatedly washing the sugar with a liquor of a grade of purity corresponding to that of the sugar it is to treat, after each washing expressing the liquor, substantially as described.

5. The herein described process of cleansing sugar, which consists in mixing with the raw sugar a finely or coarsely divided substance such as cork, wood, or brown coal, to which the impurities of the sugar will adhere, mechanically separating the cleansing substance with the impurities adhering thereto from the sugar, and recovering and revivifying the cleansing substance, substantially as described.

6. The herein described process of cleansing sugar, which consists in mixing with the raw sugar a finely or coarsely divided substance to which the impurities of the sugar will adhere, separating the cleansing substance with the impurities adhering thereto from the sugar, effecting a final separation between the sugar and the cleansing substance by discharging the sugar into a vessel containing a liquor having no dissolving action on the sugar and intermediate in specific gravity between the sugar and the cleansing substance, the different quantities of cleansing substance separated being all conveyed to a common receptacle, drying the sugar, and recovering and revivifying the cleansing substance, substantially as described.

7. The herein described process of cleansing sugar, which consists in mixing with the raw sugar a finely or coarsely divided substance such as cork, wood, or brown coal, to which the impurities of the sugar will adhere, mechanically separating the cleansing substance with the impurities adhering thereto from the sugar, and recovering and revivifying the cleansing substance by a series of washings and a final drying, substantially as described.

8. The herein described process of cleansing sugar, which consists in mixing with the raw sugar a finely or coarsely divided substance to which the impurities of the sugar will adhere, and which is of a less specific gravity than water, separating the cleansing substance with the impurities adhering thereto from the sugar, and recovering and revivifying the cleansing substance by a series of washings and a final drying, the purity of the water used for purifying the cleansing substance being of a grade corresponding to that of the substance it is to purify, substantially as described.

9. The herein described process of cleansing and decolorizing sugar, which consists in mixing with the raw sugar a finely or coarsely divided substance to which the impurities of the sugar will adhere, during such mixing subjecting the sugar to the action of a bleaching reagent, and then withdrawing the cleansing substance with the impurities adhering thereto, substantially as described.

10. The herein described process of cleansing and decolorizing sugar, which consists in mixing with the raw sugar a finely or coarsely divided substance to which the impurities of the sugar will adhere, and which is saturated with a bleaching reagent, and then withdrawing the cleansing substance with the impurities adhering thereto, substantially as described.

11. The herein described process of cleansing and decolorizing sugar, which consists in mixing with the raw sugar a finely or coarsely divided substance to which the impurities of the sugar will adhere, and which is saturated with a bleaching reagent, separating the cleansing substance with the impurities adhering thereto from the sugar, and recovering and revivifying the cleansing substance, substantially as described.

12. The herein described process of cleansing and decolorizing raw sugar, which consists in mixing with the raw sugar a finely or coarsely divided substance to which the impurities of the sugar will adhere, which is saturated with a bleaching reagent and is lighter than the sugar, separating the cleansing substance with the impurities adhering thereto from the sugar, and recovering and revivifying the cleansing substance, substantially as described.

13. The herein described process of cleansing and decolorizing sugar, which consists in mixing with the raw sugar a finely or coarsely divided substance to which the impurities of the sugar will adhere, and which is saturated with a bleaching reagent, separating the cleansing substance with the impurities attached thereto from the sugar, effecting a final separation between the sugar and the cleansing substance by discharging the sugar into a vessel containing a liquid incapable of dissolving the sugar and of a specific gravity intermediate between that of the sugar and the cleansing substance, drying the sugar, and recovering and revivifying the cleansing substance.

14. The herein described process of cleansing and decolorizing sugar, which consists in mixing with the raw sugar a finely or coarsely divided substance to which the impurities of the sugar will adhere, which is saturated with a bleaching reagent, and is of a less specific gravity than water, separating the cleansing substance with the impurities attached thereto from the sugar, effecting a final separation between the sugar and the cleansing substance by discharging the sugar into a vessel containing a liquid incapable of dissolving the sugar and of a specific gravity intermediate between that of the sugar and the cleansing substance, the different quantities of cleansing substance separated being all conducted to a common receptacle, repeatedly washing the sugar with a liquor such as that above described and of a grade of purity corresponding to that of the sugar it is to cleanse, after each washing expressing the liquor, and recovering and revivifying the cleansing substance by repeatedly washing it with water of a grade of purity corresponding to that of the cleansing substance it is to purify, and finally drying the cleansing substance, substantially as described.

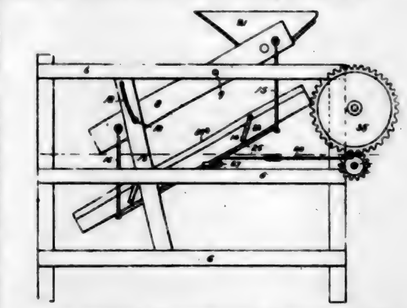
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**501,879. COMBINED ORE-SEPARATOR AND AMALGAMATOR.** JAMES J. FITZGERALD, Denver, Colo. Filed Dec. 31, 1892. Serial No. 456,966. (No model.)

*Claim.*—1. The combination with a suitable frame, of a movable box suspended thereon and lined with amalgamated copper plates and carrying a movable series of transverse riffles suitably connected, the box being provided with a screen through which the material is fed thereto, and which may be raised to permit the removal of the riffles, and means for imparting to the box, a suitable movement, substantially as described.



2. The combination with a suitable frame, of an amalgamated copper pan movably suspended thereon at a suitable inclination, a movable series of transverse riffles suitably connected together, and located in the pan, the riffles being provided with yielding lips slightly raised from the bottom of the pan, and mechanism for imparting to the pan the desired movement, substantially as described.



3. In a separator and amalgamator, the combination of a copper pan movably suspended on a suitable frame, and provided with a screen through which the material is fed thereto, and which may be raised to permit the removal of the riffles, a series of longitudinally connected transverse riffles located in said pan, and movable therein and removable therefrom, the lower extremity of the pan being provided with a removable flanged plate adapted to catch the gold and concentrates at the bottom, substantially as described.

4. The combination of a stationary frame, a pivoted frame supported thereon and adjustable by means of bolts passing through curved slots formed in the stationary frame, and an amalgamating pan movably suspended from the movable frame, carrying a movable series of connected transverse riffles and provided with a screen through which the material is fed to the pan, and which may be raised to permit the removal of the riffles, and suitable means for simultaneously imparting to the pan, both lateral and longitudinal movements, substantially as described.

5. The combination of a stationary frame, a pivoted frame mounted thereon and adjustable by means of bolts in one part engaging slots formed in the other part, a box suspended from the pivoted frame, and an amalgamating pan located in said box, a series of removable transverse riffles, carried by the pan, the box being provided with a screen which may be raised to permit the removal of the riffles, and means for imparting to the box, a suitable movement, substantially as described.

6. The combination with the stationary frame, of an amalgamating pan movably suspended thereon and carrying a movable connected series of transverse riffles, the pan being provided with a screen through which the material is fed thereto, and which may be raised to permit the removal of the riffles, and means for simultaneously imparting to the pan, both longitudinal and lateral movement, said means consisting of two adjustable pitmen, each connected with the pan at one extremity and with suitable actuating mechanism at the opposite extremity, substantially as described.

7. The combination of a stationary frame, a pivoted frame supported thereon, a box movably suspended from the pivoted frame and adapted to receive a separating pan, said box being provided with a longitudinal bar composed of spring steel, said bar being attached at its extremities to transverse strips but intermediately detached, and means connected with the steel bar for simultaneously imparting to the box both lateral and longitudinal movements, substantially as described.

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**501,880. STOP-ACTION FOR ORGANS.** FRANKLIN W. FRASER, Toronto, Canada. Filed Oct. 20, 1892. Serial No. 449,498. (No model.)



*Claim.*—1. In combination, the spheroidal push button having the halves of its surface distinguishable to the senses of vision and touch and arranged to project through the face of the step board from the rear, and the shank supporting said button at one end and supported to vibrate radially and transversely, substantially as shown and described.

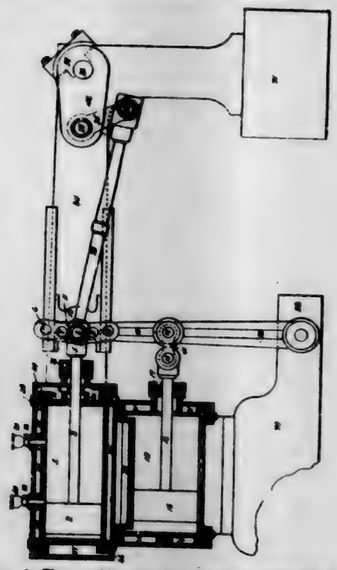
2. In combination, the spheroidal push button distinguishable by halves of its surface as specified, the shank supporting said button on one end and supported at its opposite end on the step board, and the pinion on the said shank near the supported end, substantially as shown and described.

3. In combination, the spheroidal push button distinguishable by halves of its surface as specified, the shank supported by the step board at one end and supporting the said button on its opposite end, the pinion on said shank near the supported end, and the tracker-rod having a rack thereon, engaged with said pinion to vibrate it transversely and a spring to extend and compress for the purpose specified.

4. In combination, the spherical push button having the halves of its surface distinguishable as specified the shank supported in the step board and supporting said button, and the electric contact springs to operate by contact of said shank, substantially as set forth.

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**501,881. GAS-ENGINE.** CHARLES J. B. GAUME, Brooklyn, N. Y.; Cecile Gaume administratrix of said Charles J. B. Gaume, deceased. Filed June 7, 1893. Serial No. 313,517. (No model.)



*Claim.*—1. The combination in a gas engine with the cylinder thereof and a pump communicating therewith substantially as specified, of an oscillating lever operating the piston of said pump as auxiliary crank upon the revolving main shaft of said engine a connecting rod connecting said crank and said lever, to actuate said lever and means substantially as specified whereby the stroke of the said lever may be lengthened or made shorter, substantially as and for the purpose set forth.

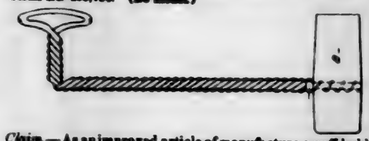
2. In a gas engine, the combination with an oscillating shell wheel, pivoted to the frame of said engine, another wheel pivoted concentrically within said shell, pins upon said inner wheel, a spring attached to said shell and operated by said pins, a bell crank lever detained by said spring, another bent lever pivoted to the wall of said engine, detained at one end by the said last named lever, and with the other end operating the gas entry valve of said engine, and a gas entry valve for said engine, operated by said lever, of a connecting rod, connecting said oscillating shell wheel and a rock shaft, an oscillating lever, pivoted to the pedestal of said engine and said rock shaft carried thereby, an eccentric wheel upon the main shaft of said engine a yoke upon said eccentric wheel and a connecting rod connecting said eccentric yoke and said oscillating lever, all substantially as and for the purpose set forth.

3. In a gas engine the combination with the cylinder and pump of said engine, of a sliding chamber within a shell or case, said chamber being capable of communication with both said cylinder and said pump, a gas burner within the said chamber, and a coil of wire within the blaze of said burner, of a rock shaft, an oscillating lever, pivoted to the pedestal of said engine, and carrying the said rock shaft, an eccentric wheel upon the main shaft of said engine a yoke upon said eccentric, a connecting rod connecting said eccentric yoke and said oscillating lever, and a connecting rod, connecting said sliding chamber, and said rock shaft, all substantially as and for the purpose set forth.

4. In a gas engine the combination with an exhaust chamber communicating by two ports, with the cylinder of said engine, of a double valve substantially as specified, working in said chamber an oscillating lever pivoted to the pedestal of said engine, a rock shaft carried by said lever, an eccentric wheel and yoke mounted upon the main shaft of said engine, a connecting rod connecting said yoke and an oscillating lever to operate said oscillating lever, a connecting rod connecting said rock shaft and a pivoted bar, substantially as described to hold up said exhaust valve, and arranged to afford facility for starting said engine, substantially as and for the purpose set forth.

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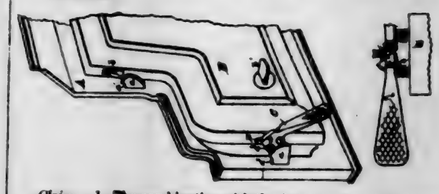
**501,882. CUFF-HOLDER.** WILLIAM C. HOLMES, Denver, Colo., assignor of one-half to John J. Cram, same place. Filed Mar. 30, 1893. Serial No. 468,756. (No model.)



*Claim.*—As an improved article of manufacture a cuff-holder composed of a piece of wire bent into an elongated loop to form one extremity of the holder, the two strands being uniformly and continuously twisted together from this point to form the neck and shank, the neck projecting laterally from the shank which lies approximately parallel with the elongated loop extremity, and a clasp swiveled on the projecting extremity of one strand of the wire, while the other extremity forms a shoulder against which the clasp bears, substantially as described.

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**501,888. KICKER-LATCH FOR STOVE OR OTHER DOORS.** LOGAN P. KENNEDY, Louisville, Ky., assignor to the Lithgow Manufacturing Company, same place. Filed Apr. 17, 1893. Serial No. 470,747. (No model.)



*Claim.*—1. The combination with the frame, and a catch secured to said frame and having a notch in its upper edge, of a hinged door, and a lever, pivoted to said door and having a bearing on said catch near the notch therein, said lever having the under side of its forward end formed to be received by said notch and the upper side of its forward end in engagement with the frame, substantially as described, whereby the door may be released by either depressing or elevating the free end of said lever, as specified.

2. In a device for opening a door adapted to be moved vertically in order to disengage its latch from the holding catch, a kicker latch C, having a catch portion $C'$, a bearing or fulcrum portion $C^2$, a handle portion $C^3$, bosses or lugs $c$ $c$, pivot hole $c'$ and an angular corner $c^4$, and a door B, having on its free edge a stopper lug D provided with a pivot post $d$ adapted to engage the hole $c'$ in the kicker latch C, in combination with the frame A provided with the catch $a$ having the notch $a^3$, all constructed and arranged substantially as described and for the purposes specified.

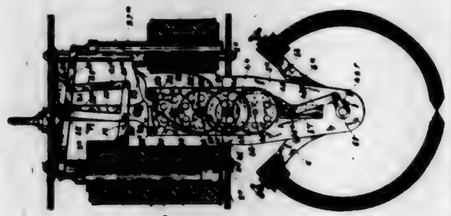
3. The combination with a frame, a catch thereon, having an inclined outer edge and a notch in its upper edge, of a hinged door, and a lever, pivoted to said hinged door, said lever having a curved under surface designed to engage the inclined surface of said catch adjacent to said notch, and also having the under side of its inner end formed to be received by said notch and the upper side of its inner end formed to engage said frame, substantially as described and for the purpose specified.

4. The combination with a frame, and a catch, secured thereto and formed with a notch, of a hinged, vertically-movable door, a stop-lug, secured to said door adjacent to the free end thereof, a latch-lever, loosely pivoted to the side of said lever and having a boss designed to engage said lug, the under side of said lever bearing against said catch and also formed so as to be received by said notch in the catch, substantially as described and for the purposes specified.



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**501,884. ELECTRIC-ARC LAMP.** WILLIAM H. KLEIN, Susquehanna, Pa., assignor to himself and H. E. Outwater, same place. Filed June 10, 1892. Serial No. 436,200. (No model.)



*Claim.*—1. In an alternating current arc lamp, the combination, with a support, of carbon holders movably secured thereto, two hollow magnets in the support, an oscillatory frame within the support, each end of which frame is provided with a core pivotally secured thereto, said cores passing down into the magnets, side pieces pivotally secured at their lower ends to the support and provided with a train of gearing, one end of which train is connected with the carbon holders, an angle lever, one arm of which is connected with the top of the plate and the other arm is connected with the frame, and a locking and releasing mechanism for the opposite end of the train of gearing for regulating the movement of the carbon holders by the movement of the frame, substantially as set forth.

2. In an alternating current arc lamp, the combination, with a support, of carbon holders movably secured thereto, two hollow magnets within the support, an oscillatory frame within the support, each end of which is provided with a core to pass into magnets, side pieces pivotally secured at their lower ends to the support and connected with the carbon holders, an arm secured to one of the magnets, an angle lever pivotally secured to the arm, the end of one of the arms of which angle lever is slotted and pivotally secured to the side pieces, a bifurcated bar secured to the end of the other arm of the lever and with the frame, and means for locking and releasing the opposite end of the train of gearing as the frame and side pieces are oscillated back and forth, whereby the movements of the carbon holders are regulated, substantially as set forth.

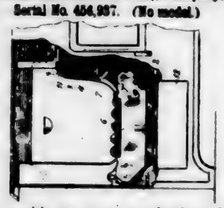
3. In an alternating current arc lamp, the combination with a support provided with depending supporting pieces, a slide way upon each piece, two carbon holders pivotally secured in the lower ends of said pieces, the inner end of the shaft of each holder being provided with a crank, a train of gearing, a jointed connection between the cranks and the last wheel of the train of gearing, the ends of the pivot of which connection engage with the slide way of the depending pieces, and means for regulating the movement of the train of gearing, substantially as set forth.

4. In an electric lamp, the combination of two electro magnets, their soft iron cores 27 and 27', a pivoted rocking frame connecting said cores, a pivoted swinging gear-holding frame carrying an escapement wheel and its connecting gearing for operating the carbon holders, a spring for holding the escapement arm in engagement with the escapement wheel and an inclined faced portion secured to a stationary portion of the lamp for throwing said escapement arm out of engagement with the escapement wheel every time the gear holding frame is moved toward it, substantially as described.

5. In an electric lamp, the combination with two carbon holders, each consisting of a pair of arms, one of each of which is rigidly connected to its pivotal shaft and the other arm of each adapted to run loosely thereon, one carbon holder being insulated from the other as above described, a crank firmly connected to each shaft each having an arm pivoted thereto and kept in line at that pivotal point by slideways, a connecting rod pivoted at the opposite ends of said arms having its upper end pivoted to a gear wheel connected with a train of gear wheels and an escapement wheel and its several operating parts, a pivoted frame carrying the gear wheels and the escapement pawl arm, a stationary inclined plate secured to the frame of the lamp and against which the end of the pawl moves while operating, and mechanism consisting of a pivoted rocking frame connected with electro magnets and electrical connections and with an angular arm pivoted to a stationary support, and having its short end connected by a connecting rod with the rocking frame and its upper or slotted end, connected with the pivoted gear holding and escapement frame, the whole combined for joint operation substantially as described.

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**501,885. FIRE-BOX.** FRANK V. KRAUSS, Portsmouth, Ohio, assignor to the Portsmouth Stove and Range Company, same place. Filed Dec. 31, 1892. Serial No. 456,937. (No model.)

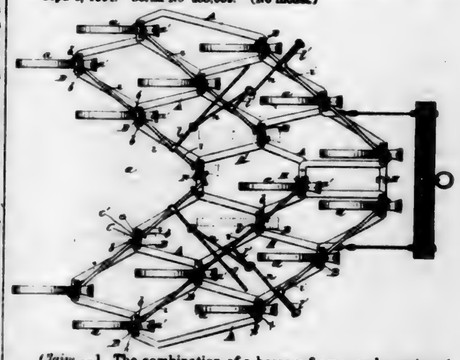


*Claim.*—1. A cooking stove or range having a fire box consisting of the herein described supporting rails, the inclined flanges integral therewith, the side and end lining provided with perforations for the admission of heated air into the fire box and upheld by the rails and adapted to form an air space between the combustion chamber and the vertical walls of the stove, and provided with the recess leading from the door-way to the interior of the fire chamber and forming a supplementary air space beneath the door-way of the fire box, all constructed and arranged substantially as and for the purposes set forth.

2. In a cooking stove or range the lining of the fire box cupped at the upper edge to form a lip so as to rest upon the upper corner of the oven, and having a lower edge or foot curved inwardly and projecting over the outer edges of the grate and provided with heel spurs 7, forming saddles combined with the rail 7', and supporting braces 8, and the downwardly inclined flange or apron 9, thus forming a continuous air space and free communication with the open space beneath the grate, substantially as set forth.

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**501,886. HARROW.** CHARLES LA DOW, Albany, N. Y. Filed Sept. 8, 1891. Serial No. 405,089. (No model.)



*Claim.*—1. The combination of a harrow frame, and a series of yielding teeth rigidly secured to stationary portions of the frame, and lever devices for varying the elevation of the points or working ends of the teeth by bending the yielding portions of the teeth.

2. The combination of a harrow frame, and a series of yielding teeth rigidly secured to stationary portions of the frame, in combination with means for bending the teeth in rear of their fastened portions.

3. In a harrow, a frame, spring teeth mounted thereon with their points held out of contact with the ground when in a normal position by spring tension, in combination with means adapted to spring the teeth so that their points shall enter the ground and be held under spring tension.

4. In a harrow, a draft frame, and spring teeth supported thereon, in combination with means adapted to hold the teeth to their work under tension and to release them from pressure to permit them to assume a position with their points above the frame by their own recoil.

5. In a harrow, a draft frame and spring teeth rigidly secured thereto, yielding connections between the working portions of the teeth and the frame, and means for holding the teeth under tension in different positions and for allowing them to quickly assume another position by means of their own volition or resiliency when the tension is removed.

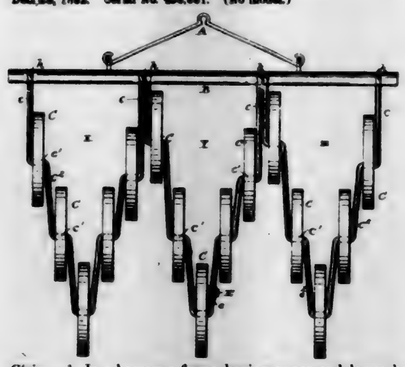
6. In a harrow, a frame provided with a series of tooth-bearing

portions, a series of spring teeth mounted thereon, and a device connected with the teeth for bending them between their points and their fastened portions.

7. In a harrow, the combination of a frame having a series of tooth-bearing portions, a series of spring teeth mounted thereon, a rock shaft carrying eccentrics and connections between the eccentrics and the teeth for varying the elevation of the working ends of the teeth.

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**501,887.** HARROW. CHARLES LA DOW, Albany, N. Y. Filed Dec. 29, 1892. Serial No. 456,681. (No model.)



*Claim.*—1. In a harrow a frame having upper and lower bars adapted to be moved backwardly and forwardly relatively to each other and a C-shaped tooth hinged to each of said bars, in combination with lever devices whereby the upper hinges of several teeth may be simultaneously moved backwardly or forwardly and thereby simultaneously vary the position of the front bow portion of several teeth relatively to said hinges, substantially as described.

2. In a harrow a frame whose bars form openings between them, C-shaped teeth hinged separately to the bars or to a device on the bars at or near the ends of said openings and operatively connected together so that the front bow portions of different teeth may be simultaneously moved backwardly or forwardly relatively to their hinge connections, in combination with means for moving said teeth substantially as described.

3. A harrow having a draft bar provided with openings, upper and lower bars having hooks entering said openings, and teeth carried by the upper and lower bars, the organization being such that by lifting the upper and lower bars they may be unhinged from their draft bar.

4. In a harrow, a bar, and a curved tooth hinged thereto, in combination with a second bar, also hinged to the tooth and adapted to reach around the front curved portion thereof so as to be hinged to an arm located within the circle of the tooth and to then extend rearwardly past the digging end of the tooth.

5. In a harrow, upper and lower bars adapted to be moved backwardly and forwardly relatively to each other to adjust the position of the teeth in combination with curved spring teeth having arms within their circles and in rear of their front bow portions, and connected flexibly to the upper and lower bars, whereby substantially the whole length of each tooth is left vibratory and wabbling of the teeth is prevented.

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**501,888.** ARTIFICIAL STONE. MARC LAFFONT, Paris, France. Filed May 15, 1893. Serial No. 474,322. (No specimens.) Patented in France Nov. 26, 1891, No. 217,727; in England June 2, 1892, No. 10,532, and in Canada June 14, 1893, No. 39,145.

*Claim.*—A homogeneous crystalline body composed of plastic refractory (apyrous) argil and igneous (eruptive) rocks, or the dust or debris thereof, the mixture containing a minimum of fifteen per cent. of the plastic ingredient, and having the properties herein set forth.

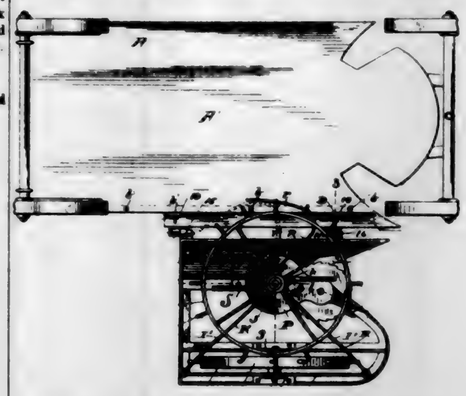
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**501,889.** ARTIFICIAL STONE. MARC LAFFONT, Paris, France. Filed May 15, 1893. Serial No. 474,323. (No specimens.) Patented in France Nov. 26, 1891, No. 217,727; in England June 2, 1892, No. 10,532, and in Canada June 14, 1893, No. 39,145.

*Claim.*—A homogeneous crystalline body composed of plastic refractory (apyrous) argil and sedimentary (aqueous) rocks or the dust or débris of the same, the mixture containing a minimum of fifteen per cent. of the plastic ingredient, and having the properties herein set forth.

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**501,890.** HARVESTING-MACHINE. FRANKLIN LEONARD, Chadwick's Mills, assignor to the Leonard Manufacturing Company, New Hartford, N. Y. Filed June 16, 1892. Serial No. 436,920. (No model.)



*Claim.*—1. In a harvesting-machine adapted, at one side, to be detachably connected with a wagon, the combination with a traction-wheel adapted to carry the outer or opposite side of the machine, of a horizontal or approximately horizontal reel-wheel, the rim whereof is provided with radially-projecting-pins, spurs or arms, I', the traction wheel aforesaid being provided with similar pins, spurs or arms, adapted to interlock with and actuate pins, spurs or arms of said horizontal reel-wheel and communicate motion to the latter, substantially as and for the purpose set forth.

2. In a harvesting machine adapted to be detachably connected with the one side of the wagon and to be drawn by said wagon, the combination with a traction-wheel for carrying the outer or opposite side of the machine, of a vertical shaft, J, and a horizontal reel-wheel, I, mounted upon said shaft and provided with radially-projecting pins, spurs or arms, I', the aforesaid traction-wheel being provided with similar pins, spurs or arms, H', adapted to interlock with members I' of the horizontal reel-wheel and communicate motion to the latter, the arrangement of parts being substantially as described and for the purpose set forth.

3. In a harvesting machine, the combination with a traction-wheel, of a vertical shaft, J, a horizontal reel-wheel mounted on said shaft and provided with radially-projecting pins spurs or arms, adapted to be engaged and actuated by similar pins spurs or arms, of the traction wheel aforesaid, a sleeve, L, adjustably mounted on said shaft, braces K secured at their lower ends to the frame or platform of the machine and adjustably secured at their upper ends to sleeve L, substantially as shown and described.

4. In a harvesting machine, the combination with a traction-wheel, H, a vertical shaft, J, a reel-wheel, I, mounted on said shaft and adapted to be driven by said traction-wheel, the traction and reel wheels each provided with peripheral pins adapted to strike one another whereby one wheel is driven by the other, of a rotary cutter, N, intergeared with said vertical shaft, the arrangement of parts being substantially as shown and described.

5. In a harvesting machine, the combination with a reel-wheel, provided with radially-projecting pins, spurs or arms adapted to engage the stalks and carry them sidewise, of a guard-arm, R, adapted to cause the stalks to be disengaged from the reel-wheel and cause them to fall or drop, substantially as described, said guard-arm being adjustable in a horizontal plane so as to come into engagement with the severed stalks sooner or later as desired, substantially as and for the purpose set forth.

6. In a harvesting machine, the combination of a stationary knife, Q, a rotary cutter, N, a vertical shaft, J, intergeared with said rotary cutter, a horizontal reel-wheel, I, operatively mounted on said shaft, a traction-wheel, H, said reel-wheel and traction wheel each provided with peripheral projections adapted to drive said horizontal reel-wheel, and a guard-arm R, the arrangement of parts being substantially as shown and described and for the purpose set forth.

7. In a harvesting machine, the combination with a vertical shaft, J, a horizontal reel-wheel, I, mounted on said shaft and provided with radially-projecting pins, spurs or arms, I', a sleeve L, mounted on said shaft and provided with a laterally-projecting vertically-perforated ear or member $l'$, of a guard-arm, R, adjustably secured in the perforation of member $l'$, substantially as indicated, thence extending to the rim of reel-wheel I, and thence rearwardly, and terminating outside



of the path of radially-projecting pins, spurs or arms I', of said reel-wheel, substantially as shown and for the purpose set forth.

8. In a harvesting machine, the combination with a traction-wheel, H, having peripheral pins H' a vertical shaft, J, a horizontal reel-wheel, I, having peripheral pins I', said wheel operatively mounted on said vertical shaft and adapted to be actuated by said traction-wheel, by the pins of one wheel striking the pins on the other of a pair of wings, S, secured to said shaft, substantially as and for the purpose set forth.

9. In a harvesting machine, the combination with a traction-wheel, having peripheral pins a vertical shaft, J, a horizontal reel-wheel having peripheral pins, said wheel operatively mounted on said shaft and adapted to be driven by said traction-wheel, said shaft having a square section, J', of a pair of wings, S, secured to said square section substantially as shown and described.

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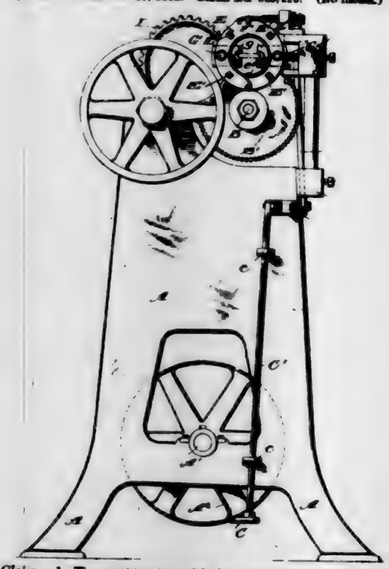
**501,891.** STAPLE-SETTING MACHINE. ISAAC MANAUX, Pittsburg, Pa., assignor to Albert Manaux, same place. Filed Apr. 10, 1893. Serial No. 469,816. (No model.)



*Claim.*—In a machine for setting staples in awnings, the combination with a table having a U-shaped recess to receive the bend of the staple, of a plate secured on said table, recessed so as to overhang the recess in the table, the overhanging edge of said plate being a sufficient distance from the ends of the U-shaped recess to permit the insertion of the border rope of the awning between the end of said plate and the upturned spikes of the staple when placed in said recess, a vertically sliding bar arranged to descend close to the outer sides of the upturned spikes to force the canvas down and over said spikes, and a concave plunger arranged in its descent to contact with the upturned spikes and turn the same over said rope, substantially as described.

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**501,892.** SLAT-TENONING MACHINE. CALVIN D. MARSH, Williamsport, Pa., assignor to the Rowley & Hermance Company, of Pennsylvania. Filed Oct. 10, 1892. Serial No. 448,416. (No model.)



*Claim.*—1. The combination with the head-body having gear and a flange with eccentric slots and projection, of the jaws having lateral portions with slots, and the bolts and a cap held thereby partially rotatably on the head body and the screw held in the frame to engage said projection as set forth.

2. The combination with the head-body with flange with eccentric slots and projection, of the cap with ways, the jaws with lateral portions sliding in said ways, the bolts holding the cap to the flange of the head-body and the spiral spring held to the body with one end engaging means on the cap, and the screw held in the frame to engage said projection as and for the purpose specified.

3. The combination with the head-body with eccentric slots and projection, of the sliding jaws, the cap, the bolts holding the same adjustably to the body, means to engage said projection and the spring having a spiral portion the end of which engages a pin on the cap and its other end held within the body, as set forth.

4. The combination with the revoluble head having a projection, of the jaws carried thereby, the rotatable cap mounted on the head, and a screw for engaging said projection, as set forth.

5. The combination with the revoluble head having projection, jaws and a cap for actuating the jaws, of cutters to and from which the work is raised or lowered respectively means substantially as described for raising and lowering the head, as set forth.

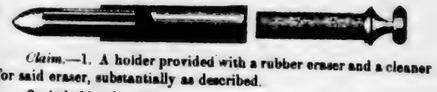
6. The combination with the revoluble head having projection, jaws and cap, of cutters to and from which the work is raised and lowered respectively means substantially as described for raising and lowering the head, and a screw for engaging the projection, as set forth.

7. The combination with the revoluble head having jaws, projection and partially-rotatable cap for actuating the jaws, of a treadle, vertical rod, horizontal pivoted arm and a connection between said arm and the head substantially as described for raising and lowering the head and an adjustable screw for engaging the projection, as set forth.

8. The combination with the head-body having gear at one end and a flange at the other, of the partially-rotatable cap, the jaws actuated by the said cap, and the spring having a portion held within the head and a spiral portion connected with the cap, as and for the purpose specified.

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**501,893.** ERASER-HOLDER. WILLIAM M. MARSHALL, Philadelphia, Pa., assignor of three-fourths to Samuel Retter, trustee, same place, and Josiah Torr, Atlantic City, N. J. Filed Dec. 20, 1892. Serial No. 455,801. (No model.)



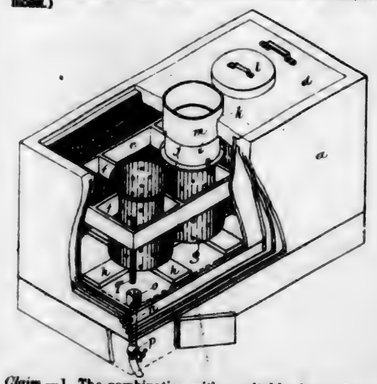
*Claim.*—1. A holder provided with a rubber eraser and a cleaner for said eraser, substantially as described.

2. A holder having a cover, a rubber eraser held in one end thereof, and a removable cleaner inserted in the opposite end, said parts being combined substantially as described.

3. A holder having a cover, a rubber eraser and a cleaner having a beveled head with a handle, said parts being combined substantially as described.

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**501,894.** ICE-CREAM COOLER AND FREEZER. FRANK W. MERRILL, Deering, Me. Filed May 10, 1892. Serial No. 432,453. (No model.)



*Claim.*—1. The combination with a suitable chest, of a removable frame adapted to fit closely against the interior wall of said chest perforated shields supported in a fixed position relative to said walls by said frame and adapted to rest upon the bottom of said chest but not attached thereto, cans for cream resting in said shields and having their sides entirely surrounded thereby, a cover to said chest having openings therein directly over the tops of said cans when in position and supplementary covers for said openings, substantially as and for the purposes set forth.

2. The combination with a chest having a removable cover, a removable frame adapted to rest against the interior walls of said

chest, perforated shields supported in said frame and held thereby in fixed positions relative to the walls of said chest and cans stepped in the bottoms of said shields, of a shaft journaled in brackets attached to said chest a bar attached to the top of said chest, spindles passing through said bar and extending down into said cans and having a series of stirrers attached thereto and a system of gears substantially as described, arranged and adapted to impart a rotary motion to said cans and a rotary motion in the opposite direction to said spindles by means of the revolution of said shaft, substantially as and for the purposes set forth.

## 501,895. FOUNTAIN-PEN. MORRIS W. MOORE, Holyoke, Mass., assignor of five-sixths to Joseph R. Chase and William D. Park, same place. Filed Jan. 16, 1893. Serial No. 458,373. (No model.)

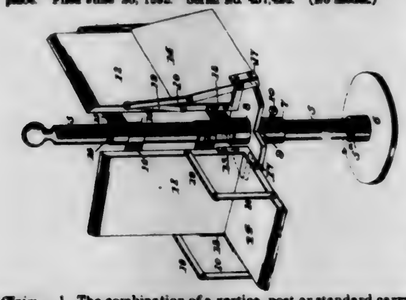


*Claim.*—1. A fountain pen having a barrel or reservoir provided with an opening in its upper end, a longitudinally movable rod located in said barrel having one end extending through the opening in the upper end of the barrel and a pen secured to the rod at its other end, a tip-section secured to the barrel and provided with a longitudinal passage constituting a way for the movement of the pen in and out of said section and a groove for the passage of the ink, a removable cap on the upper end of the reservoir having an opening for the reception of the rod, and another cap to close the lower end of the tip-section and adapted to fit on the upper cap, all substantially as described.

2. In a fountain pen, the combination with the reservoir or barrel having in its forward end the tip with the pen endwise movable therein, and with a suitable ink-way leading from the reservoir to the pen, of a rod located within the reservoir and having one end formed split to embrace the upper end of the pen and having the uniting rivet and the rod having an extension downwardly under the pen, and said rod having its upper end projected through a suitably packed opening therefor in the upper end of the barrel, substantially as described.

3. In a fountain pen, the combination with the barrel or reservoir having in its upper end a circular opening with a peripheral depression, the annular packing of soft rubber having an external circumferential bead and the rod movable through the packing, substantially as and for the purpose set forth.

## 501,896. OPERA-CHAIR. MICHAEL MCAHEBY and FREMONT STANSBURY, Denver, Colo., assignor of one-third to John Swank, same place. Filed June 30, 1892. Serial No. 437,423. (No model.)

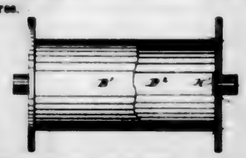


*Claim.*—1. The combination of a vertical post or standard carrying a flanged sleeve vertically adjustable thereon, two chairs having their backs rotatably attached to the post by means of straps which are also vertically movable thereon and supported by the sleeve, the seats of the chairs being hinged to the backs, and the flange of the sleeve being notched to engage the adjacent seat corners whereby the chairs are locked from rotation when in position for use, substantially as described.

2. In a chair the combination of a vertical post or standard, a vertically adjustable flanged sleeve attached thereto, the back rotatably attached to the post, vertically movable thereon and supported by the adjustable sleeve, and the seat hinged to the back, the flange of the sleeve being notched to receive the adjacent seat corner, and lock the chair from rotation when in position for use, substantially as described.

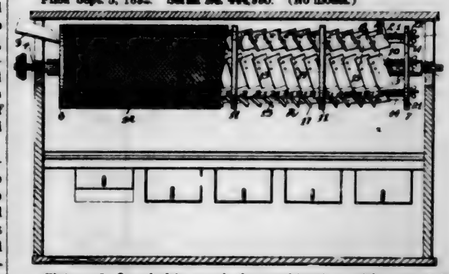
## 501,897. BOBBIN. GORDON PENDLETON, Jr., Paterson, N. J., assignor of one-half to Henry D. Klotz, New York, N. Y. Filed Mar. 2, 1892. Serial No. 424,249. (No model.)

*Claim.*—1. A bobbin constructed substantially as herein described of a closed cylindrical metallic shell B, formed with series of end tenons C, two metallic heads A formed with mortises E, in which the tenons C are upset and with central apertures G, and gudgeons H fixed in said apertures.



2. A bobbin constructed substantially as herein described of two centrally apertured metallic heads A, rigidly united by a cylindrical metallic shell B, and gudgeons H formed with reduced necks H' received in said apertures in the heads, and upset on the inside of the heads.

## 501,898. BOLTING-REEL. FREDERICK J. SCHUPP, Marshall, Mo. Filed Sept. 3, 1892. Serial No. 444,996. (No model.)



*Claim.*—1. In a bolting reel, the combination, with a revoluble reel, of a series of buckets each comprising a flat bottom, 16, arranged approximately parallel with the periphery of said reel, a flange, 17, projecting from the side of said bottom nearest to the receiving end of the reel, and a flange, 18, projecting from the distal end of the bottom, and of greater depth than the flange 17; substantially as and for the purpose set forth.

2. In a bolting reel, the combination, with a revoluble reel provided with a series of longitudinally and radially-arranged, fixed bars, 14, of a series of overlapping buckets pivoted thereto and provided with a flanged end and side, bars, 10, pivoted to the under sides of the respective buckets and in rear of the bars 14, and means for adjusting said bars 10 longitudinally; substantially as and for the purpose set forth.

3. An improved bolting-reel having horizontal series of laterally adjustable conveying buckets, said conveying buckets over-lapping each other, substantially as set forth.

4. An improved bolting-reel having a number of conveying buckets 13 having one side and end open, and the closed end and side of the next adjacent bucket over-lapping said open side, substantially as set forth.

5. An improved bolting-reel having a number of adjustable conveying buckets, provided with one side flange 17, a heel-flange 18 upon one end, said heel flange projecting upwardly above said side flange 18 and presenting a scooping surface, and said buckets 13 overlapping each other, substantially as set forth.

6. An improved bolting-reel having a number of radially arranged horizontally adjustable bars 10, said bars 10 projecting through aligned perforations in the tail-head 7, said projecting ends 23 and a portion of said rods 10 interior of said head 7, provided with exterior screw-threads, a shoulder 20 on each of said horizontally adjustable bars 10 a spring 21 normally held between said shoulder 20 and the inner face of said head 7, and a thumb nut 22 mounted on the threaded end of the bars 10, substantially as set forth

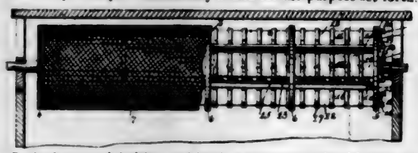
7. An improved bolting-reel having a number of horizontally adjustable bars 10, having screw-threaded ends 23 projecting beyond the outer face of the tail-head 7, thumb nuts 22 adjustable on said screw-threads, to horizontally adjust the position of said bars 10 and the buckets 13, pivotally mounted thereon, substantially as set forth.

## 501,899. BOLTING-REEL. FREDERICK J. SCHUPP, Marshall, Mo. Filed Sept. 3, 1892. Serial No. 444,996. (No model.)

*Claim.*—1. In a bolting reel, the combination, with a revoluble reel, of a series of longitudinally and radially-arranged bars, and a series of conveyer strips corresponding in length to the space between two adjacent bars, the outer plane of said strips being within the outer plane of said bars; substantially as and for the purpose set forth.

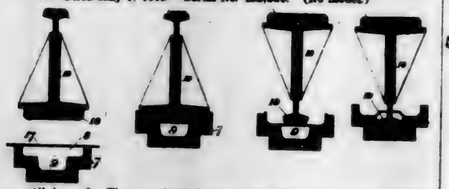


2. In a bolting reel, the combination, with a revoluble reel provided with longitudinally-arranged boards the surface of the latter being approximately parallel with the periphery of the reel, of equi-distant bars 10 arranged between said boards and projecting beyond the latter, conveyer strips pivoted upon the boards and located within the outer plane of said bars, and means for effecting the lateral adjustment of the conveyer strips; substantially as and for the purpose set forth.



3. An improved bolting-reel having conveyer strips 16, bars 13 connected with the same, a bell-crank lever 19 pivoted to an angle brace 21 at its center, one end pivoted to a bracket 18 secured to the ends of said bars 13 the opposite end having a flat portion 20 provided with a screw-threaded perforation 22 and a thumb-bolt 23 operating in said perforation 22 and its lower end freely and revolubly mounted in a block 24 secured to one of the heads of the reel, substantially as set forth.

## 501,900. METHOD OF AND APPARATUS FOR THE MANUFACTURE OF HOLLOW ARTICLES. ROBERT R. SIPOCH, Pittsburg, Pa. Filed May 9, 1892. Serial No. 432,229. (No model.)



*Claim.*—1. The method herein described of making vehicle tongues and other hollow articles, which consists in bending a sheet metal blank into the form of a wide trough, and then bending in the middle of said blank a narrower trough, whereby the edges are caused to approach and the hollow article is formed; substantially as and for the purposes described.

2. In apparatus for making vehicle tongues and other hollow articles, a female-die having two cavities one within the other, viz: a wider cavity and an inner narrower cavity, in combination with two trough-bending dies, adapted to enter said cavities in succession, substantially as and for the purposes described.

3. In apparatus for making vehicle tongues and other hollow articles, two female die-cavities, viz., a wider cavity and a narrower cavity adapted to receive the blank after it has been acted on in the cavity first named, and male trough-forming dies adapted to enter said cavities in succession, the second male-die having a head which is contracted above the die, substantially as and for the purpose described.

4. In apparatus for making vehicle tongues and other hollow articles, the combination of a female-die having two cavities one within the other, viz., a wider cavity and an inner narrower cavity, and a reversible die-stock carrying male-dies substantially as and for the purpose described.

5. In apparatus for making vehicle tongues and other hollow articles, the combination of die-mechanism having two female die cavities, viz: a wider cavity and a narrower cavity adapted to receive the blank after it has been acted on in the cavity first named, and male dies corresponding in form to said cavities, the die of the narrower cavity having a contracted shank to permit the near approach of the edges of the metal; substantially as and for the purposes described.

6. A rotary die-head having segmental gearing, racks in connection with which the gearing operates, and means for reciprocating the die-head to accomplish its reversal; substantially as and for the purposes described.

7. In apparatus for making vehicle tongues and other hollow articles, two female die-cavities, viz: a wider cavity and a narrower cavity adapted to receive the blank after it has been acted on in the cavity first named; male trough-bending dies, and mechanism for actuating the dies; substantially as and for the purpose described.

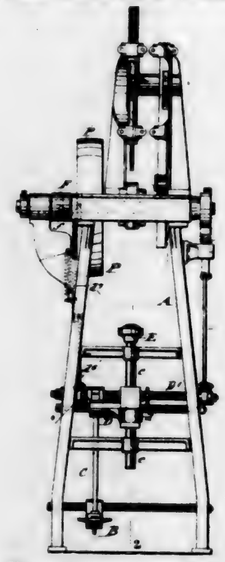
## 501,901. HEATING-DRUM. FRANK A. SMITH Flora, Ind., assignor of one-third to Jacob Krauss, same place. Filed Jan. 31, 1893. Serial No. 460,345. (No model.)

*Claim.*—1. In a heating drum, an air chamber having inlet pipes below with closable openings therein, and outlet pipes at the top, a central flue extending up through such air chamber with a funnel resting in its top having perforations therein and an outer flue surrounding such air chamber, such air chamber and outer flue centrally contracted, such flues adapted to be suitably connected with the combustion chamber of a stove substantially as set forth.



2. In a heating drum, an air chamber surrounding a central flue and having inlet pipes at the bottom with slide valves therein and outlet pipes at the top opening outside of the drum, a flue surrounding the air chamber and connected with the central flue, the outer flue and the air chamber centrally contracted, the drum suitably connected with the combustion chamber of a stove, whereby the products of combustion passing through the flues will heat the air chamber, substantially as set forth.

## 501,902. TREADLE-MOTION FOR ROTARY SHAFTS. CHARLES SPINDLER, Brooklyn, assignor to Wittemann Brothers, New York, N. Y. Filed July 7, 1892. Serial No. 439,265. (No model.)



*Claim.*—1. The combination of an oscillating treadle, an intermediate fulcrumed lever having a toe at its rear-end, a pivot-rod connecting the treadle and lever, a rock-shaft provided with a pivoted nose that is adapted to be engaged by the toe of the lever, a crank on said rock-shaft, a guided and spring actuated slide-rod applied to said crank, a rotary driving-shaft, a driving-pulley on said shaft, and a clutch arranged on said driving shaft adjacent said pulley, said clutch engaging the hub of the pulley when the slide-rod is withdrawn and released from the pulley when the same is returned to its normal position, substantially as set forth.

2. The combination of an oscillating treadle, an intermediate fulcrumed lever having a nose at its rear end, a pivot-rod connecting the treadle and lever, a rock-shaft provided with a nose pivoted to a collar on said shaft, a crank on said rock-shaft, a guided and spring-actuated brake-shoe, a pivot-rod connecting the crank with the stem of the brake-shoe, a rotary driving-shaft and a brake-wheel on said shaft, substantially as set forth.

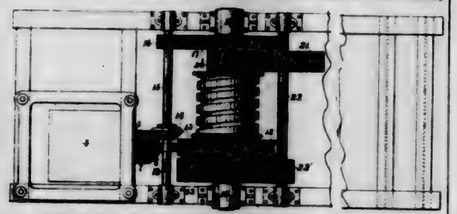
**501,903.** CAKE OR BISCUIT CUTTER. THOMAS R. STONE, Camptown, Pa., assignor of two-thirds to Clarence C. Smith and Prescott A. Smith, same place. Filed Jan. 28, 1893. Serial No. 460,067. (Model.)



*Claim.*—1. In a cake or biscuit cutter, substantially such as herein shown and described, the revolubie skeleton cutter comprising a series of cutter-rings each bent or curved to a segment of a circle in side view and the transverse end and middle braces fastened respectively to the sides of the ring cutters and to the middle thereof where the curved parts of said ring cutters meet each other, in combination with a suitable handle in which the revolubie cutter is loosely journaled, as set forth.

2. A cake or biscuit cutter, substantially such as herein shown and described, comprising a suitable bail having the trunnions, the skeleton cutter-cylinder formed of wire rings bent or recurved backward upon themselves and united together, at *c*, the transverse end stays joined to the ends of the cutter-cylinder and having the trunnions of the bail fitted centrally thereto, and the transverse c ntral stay joined to the wire rings at the points, *e*, where they are joined to each other, substantially as set forth.

**501,904.** MOTOR CONNECTION AND LOCK. THOMAS JAMES, Braddock, Pa. Filed May 11, 1892. Serial No. 432,672. (No model.)



*Claim.*—1. A double connection between a driving and a driven shaft comprising a set of worm gearing and a set of spur-gearing, the one set of gearing being arranged to act when the other is inactive and each adapted to rotate the driven shaft at the same speed; substantially as and for the purposes described.

2. A double connection between an actuating and a driven shaft, comprising a set of worm-gearing and a set of spur-gearing, the spur-gearing arranged to form the actuating connection in one direction of rotation, and the worm-gearing as the actuating connection in the opposite direction of rotation and each adapted to rotate the driven shaft at the same speed; substantially as and for the purposes described.

3. A double connection between a driving and a driven shaft, comprising a set of worm-gearing having a slight amount of lost motion in its connection to the driving-shaft, and a set of spur-gearing each adapted to rotate the driven shaft at the same speed; the spur-gearing forming the actuating connection when the worm gearing is inactive, and vice versa, substantially as described.

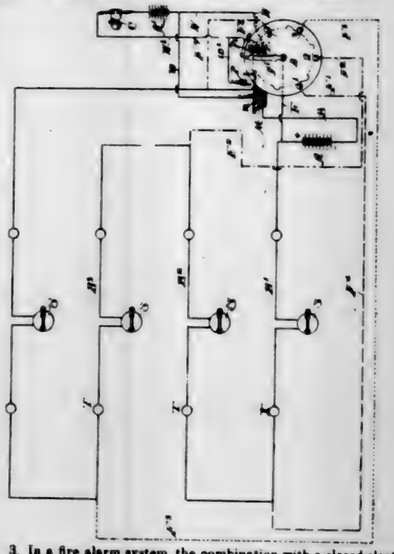
4. A shaft having a pinion and a bevel-wheel thereon, a toothed wheel engaging the pinion and carried upon a shaft having a worm-gear connection with a winding shaft, a bevel wheel engaging the first named bevel-wheel, and connecting by a series of spur-gears with the winding shaft; substantially as described.

5. A shaft having a pinion and a bevel-wheel thereon, a toothed wheel engaging the pinion with a slight amount of lost motion therein and carried upon a shaft having a worm gear connection with a winding shaft, a bevel-wheel engaging the first named bevel-wheel, and connecting by a series of spur gears with the winding shaft; substantially as described.

**501,905.** ELECTRIC FIRE-ALARM. CHARLES BERNHARDT, Chicago, Ill., assignor of one-half to William H. Altman, same place. Filed Oct. 3, 1892. Serial No. 447,598. (No model.)

*Claim.*—1. The combination with a closed electric circuit of a thermostat made up of a hollow body containing a suitable fluid and having an elastic wall of conducting material, and a conducting spindle entering the fluid and having its point normally in contact with said elastic wall but separable from it through the expansion of the fluid under the influence of heat, said spindle and elastic wall being in electrical connection with the circuit and insulated from each other, except at their normal point of contact whereby the contact of the spindle and elastic wall maintains the circuit, and their separation breaks the circuit.

2. The combination with a closed electric circuit, of a thermostat made up of a body, T, filled with a suitable liquid and having an elastic base, an insulating plug, T', closing the thermostat and confining the liquid therein, and a conducting spindle, T², set in the block and having its point normally in contact with the base of the thermostat, but adapted to be separated from it through the expansion of the liquid under the influence of heat, the spindle and the body of the thermostat being in electrical connection with the wire of the circuit, whereby the contact of the spindle with the base of the thermostat maintains the circuit and the separation of the spindle from the base breaks the circuit; substantially as shown and described.



3. In a fire alarm system, the combination with a closed electric circuit, thermostats lying therein and adapted to break the circuit under the influence of heat, and an electro-magnet controlled by the circuit, of an indicating dial, a hand mounted on a rotatable shaft upon the dial and electrically connected with the closed circuit, a ratchet wheel mounted on the shaft and rotating therewith, an armature operated by the electro-magnet and serving as a movable stop for the ratchet wheel, contact points arranged upon the dial in the path of rotation of the hand, and wires connecting said contact points with different points upon the closed circuit, whereby, upon the breaking of the circuit, the armature of the electro-magnet may release the ratchet wheel and permit rotation of the hand, and the contact of the hand with the proper contact point upon the dial may close a circuit through the wire connected with said contact point and thereby operate the armature and arrest the rotation of the ratchet wheel and hand; substantially as shown and described.

4. The combination with a closed circuit made up of parts, B, B', B², &c., of an electro magnet lying in the circuit, a dial, D, a hand, E, mounted on the dial, contact points mounted on the dial and connected with various points on the circuit, the ratchet-wheel, R, rotating with the hand, E, and the armature, *m*, operated by the magnet M, and acting as a stop for the ratchet wheel, whereby, the breaking of the circuit may release the ratchet wheel and permit rotation of the hand, and the rotation of the hand to the proper point may close the circuit and thereby actuate the armature and arrest the rotation of the ratchet wheel and hand, thereby indicating the location of the break in the circuit; substantially as shown and described.

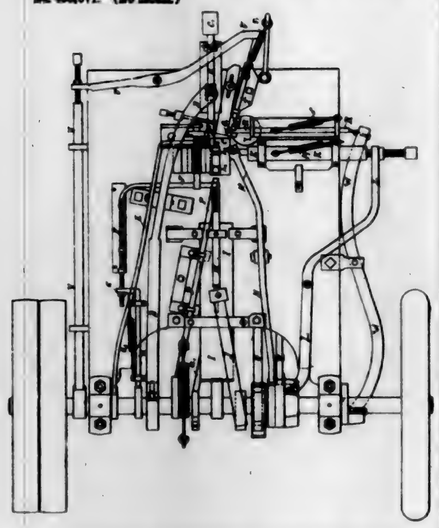
5. In a fire alarm system, the combination with a series of wires provided with thermostats forming parts of a closed electric circuit, of a dial, a series of contact plates mounted thereon and separated by suitable spaces, a hand mounted on the dial and adapted to bridge over the spaces between said contact plates, loops joining the ends of the wires of said series and passing through said contact plates, respectively, means for rotating said hand, and an electro-magnet lying in the circuit and adapted to prevent rotation of the hand when the circuit is closed, but to permit such rotation when the circuit is broken.

6. The combination with the closed circuit, the electro-magnet, M, and its armature, *m*, the hand, E, and ratchet wheel, R, of the secondary circuit and bell lying therein, and the contact points P', P², forming terminals of the wires of the secondary circuit, one of said contact points being pressed out of contact with the other by the hand, E, so long as the hand is in its normal position, but released by the rotation of the hand upon the breaking of the closed circuit, whereby, upon the breaking of the closed circuit, the bell in the secondary circuit may be rung; substantially as shown and described.

7. The combination with the closed circuit and the electro-magnet, M, lying therein and provided with the armature, *m*, of the dial provided with the hand and ratchet wheel, the secondary circuit made up of wires, W, W', and the bell, C, lying therein, the contact points, P', P², forming terminals of the wires, W, W', and held out of contact by the hand, E, while the hand is in its normal position, the contact point, P, and the wires, *w*, *w'*, connecting the wires of the secondary circuit with said contact point, P, and the armature, *m*, respectively, whereby the secondary circuit may be closed either by the release of the armature *m*, from the electro-magnet, or by the movement of the hand, E, from its normal position, and the consequent contact of the points, P', P², substantially as shown and described.



**501,906.** MACHINE FOR MANUFACTURING FISHING-HOOKS. CARL W. HAESEBICK, Iserlohn, Germany. Filed Mar. 28, 1892. Serial No. 426,071. (No model.)



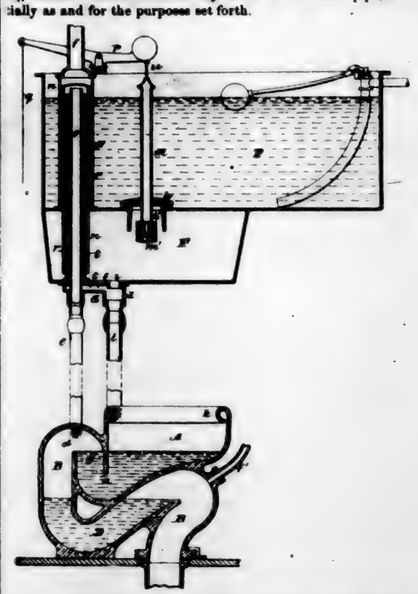
*Claim.*—A fish-hook manufacturing machine consisting of a feed-wheel B' for feeding the wire-pieces step-wise to fork-bearers A' A², of a sliding-lever F for pushing forward the wire-piece into a slit of a lever C, of a cutter H adapted to cut the barb when the fork A' descends, of a form-bar K around which the wire-piece is folded by means of the ascending fork A' and the bar P, and of a groove-piece Q in combination with a sliding-pin X, a finger R and a pressing-bar T adapted to form the eye of the fish-hook, and with suitable eccentrics and cams arranged on the main shaft and adapted to produce the necessary motions of the several parts substantially as and for the purpose specified.

# REISSUES.

**11,351.** FLUSHING APPARATUS FOR WATER-CLOSETS. JAMES R. BOYLE, Jr., Brooklyn, administrator of James R. Boyle, deceased, assignor to the Henry Huber Company, New York, N. Y. Filed May 26, 1888. Serial No. 275,696. Original No. 291,130, dated Jan. 1, 1884. Reissue No. 10,625, dated Apr. 19, 1887.

*Claim.*—1. A flushing apparatus for water-closets, consisting of a reservoir tank, a flushing-chamber adapted to be filled therefrom, a valve controlling the admission of water from said tank to said chamber, a suction-injector arranged beneath the outlet from said chamber, a flushing-pipe leading from said injector, and a suction or air-pipe communicating with said injector, all combined and arranged substantially as set forth, whereby the water in escaping from said chamber into the flushing-pipe traverses said injector, and sucks the air from said suction-pipe.

2. The combination of a reservoir-tank, a flushing-chamber, a valve controlling the admission of water from said tank to said chamber, a suction-pipe terminating at the upper part of said chamber, an injector beneath the outlet from said chamber, a flushing-pipe leading downward from said injector, and a suction-passage affording communication from said injector to said suction-pipe, substantially as and for the purposes set forth.



3. A flushing apparatus for water-closets, consisting of a reservoir-tank, a flushing-chamber, a valve controlling the admission of water from said tank to said chamber, a suction-injector beneath the outlet from said chamber, a flushing-pipe leading downward from said injector, a suction or air-pipe opening into the upper part of said chamber, and a suction-passage extending from said pipe to said injector, whereby the passage of water through said injector into the flushing-pipe will develop a suction in said suction-passage and suction-pipe, in combination with means, substantially as described, for admitting air to said suction passage or pipe, and so breaking the vacuum therein before all the water has escaped from the chamber, whereby an after-wash is secured, all combined and arranged to operate substantially as set forth.

4. In combination, the tank E, the chamber F, provided with inlet-orifice *h'* and outlet-orifice *i*, the valve A, the suction-injector I, the flushing-pipe *l*, the air-pipe *c*, the suction-passage *t*, and the air-bell *n*, substantially as set forth.

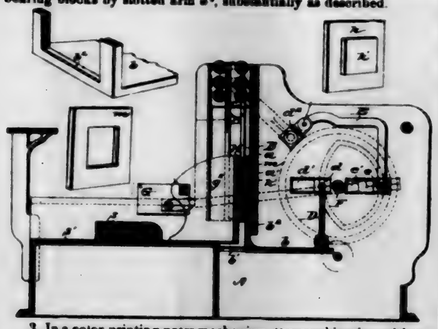
5. A flushing apparatus for a water-closet, consisting of the combination of a reservoir-tank, a flushing-chamber provided with an inlet-orifice of larger area communicating with said tank, and with an outlet-orifice of contracted area proportioned to the area of said inlet-orifice, substantially as specified, a valve adapted to close said inlet-orifice, an air-pipe opening into said flushing-chamber, and a flushing-pipe leading from said outlet-orifice, all arranged and adapted to operate substantially as set forth.

6. The combination, with tank E and chamber F, of the valve A thereof, its stem consisting of an overflow-tube *m*, and a sealing-cup *m'*, below the valve, in which cup the lower end of the overflow-tube is immersed, substantially as set forth.

**11,352.** PRINTING-PRESS. WILLIAM B. LAWRENCE, Columbus, Ohio, assignor to Lyne S. Sullivant and R. M. Lawrence, same place. Filed Feb. 27, 1893. Serial No. 463,959. Original No. 447,491, dated Mar. 3, 1891.

*Claim.*—1. In a printing mechanism, the combination with the press-frame and its form-carrying frame $b^9$, of the revolving cam-disk having therein a camway formed by the connection of a concentric and eccentric groove, a cross-head or block *d* sliding within the press frame, an idler projecting therefrom within said camway, and a horizontal traveling bed-plate *b* connected with said cross-head, substantially as described.

2. In a printing mechanism, the combination with a frame, ink-rollers supported in vertically-sliding bearings, shaft F, and cam-disk $f$ thereon, said disk having the cam-way $f^3$ consisting of two connected grooves respectively concentrically and eccentrically located therein, of the sliding cross-head $e$, its idler projecting into said camway, and shaft $d^3$ connected with said cross-head $e$ by arm E and with the roller-bearing blocks by slotted arm $d^4$, substantially as described.



3. In a color printing-press mechanism, the combination with the frame, of two vertical sets of inking-rollers horizontally-journaled in sliding blocks, two inking-pads, as described, revolving cam disk $f$ and camway $f^3$ in said disk consisting of a concentric and eccentric groove, sliding cross-head $e$, having an idler which projects within said camway, as described, rocking arm E connecting cross-head $e$ and a shaft $d^3$, the said shaft $d^3$ and slotted arm $d^4$, connecting, as described the shaft $d^3$ and roller-bearing blocks, substantially as specified.

4. In a printing mechanism, the combination, with the frame, the movable and stationary bed-plate arranged, as described, the former supporting a form-frame $b^3$ in front of the latter, two vertical rows or sets of horizontal inking-rollers pivotally supported in vertically-sliding blocks, of cam-disk $f$ supported, as described, on a rotatable shaft F, a camway $f^3$ in each of said disks consisting of a concentric and eccentric curved groove, horizontally-sliding cross-heads $e$ and $d$ having idlers which project, respectively, into the portions 9 and 3 of said camway, vertical cross-plate D connecting cross-head $d$ and bed-plate $b$, rocking-arm E, connecting cross-head $e$ and shaft $d^3$, the said shaft $d^3$ and slotted arm $d^4$ connecting, as described, the shaft $d^3$ and roller-bearing blocks, substantially as described.

5. In a printing mechanism, the combination with a form-holding frame or bed-plate consisting of a fixed and movable member, of a carrier for the movable member having an open vertical frame at its forward edge in which the movable member is placed, an extension at the rear of the carrier, vertically movable inking rolls, and a cam and connections for actuating the rolls and carrier, substantially as described.

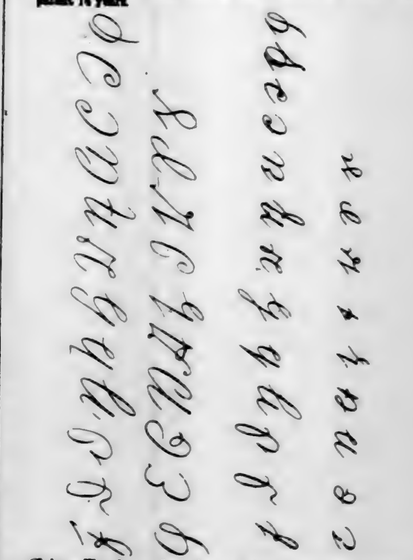
6. In a printing press, a reciprocating platen, a form supporting frame composed of two or more separable sections arranged in the same impression surface or plane, means for moving one or more of said sections out of and into the plane of the other or others comprising the arm D and a cam disk having connected grooves 3, 9, made in arcs or curves of different radii, the said arm engaging the grooves, inking devices constructed to ink the parts of the form when in different planes, means for operating the inking devices comprising the arm E engaging the grooves in the said cam disk, the wheel $f$ rotatably connected with the cam disk, and the rod or pitman $i$ connecting the platen and wheel, all arranged and operating substantially as set forth.

7. In a printing press, the combination with the movable section of a form carrying frame and the inking devices, of means for imparting intermittent reciprocatory movements to said section and inking devices, respectively, in intersecting planes comprising a cam disk having a single camway composed of connected grooves 3 9 made in arcs of curves of different radii, arm D connected with the said section and engaging the groove on one side of a plane passing through the axis of rotation of said disk, and the arm E connected with the inking devices and engaging the groove on the other side of said plane, substantially as described.

8. The means for imparting intermittent reciprocating movements to the movable section of the form-carrying frame and the inking devices, respectively, in intersecting planes, comprising a cam disk having a single camway composed of connected grooves 3, 9, made in arcs of curves of different radii, arm D engaging the groove on one side of a plane passing through the axis of rotation of the cam disk, and the arm E engaging the groove on the other side of said plane, substantially as described.

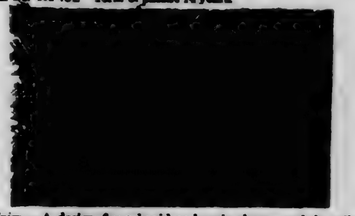
# DESIGNS.

**22,618.** FONT OF PHONETIC PRINTING-TYPE. Benoni S. Avery, Washington, D. C. Filed June 15, 1893. Serial No. 477,781. Term of patent 14 years.



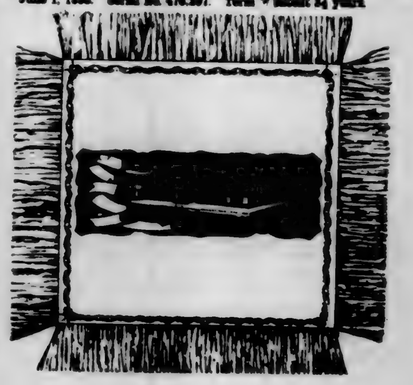
*Claim.*—The design for a font of phonetic, printing scrips, substantially as shown.

**22,614.** BRAID. Valentine G. Smyth, New York, N. Y., assignor to the Sutro Bros. Braid Company, same place. Filed June 6, 1893. Serial No. 476,784. Term of patent 14 years.



*Claim.*—A design for a braid as herein shown and described.

**22,615.** KERCHIEF. John E. Ashbrook, Paterson, N. J. Filed June 1, 1893. Serial No. 476,397. Term of patent 14 years.



*Claim.*—The design for a kerchief, substantially as herein shown and described.



**22,616.** CARPET. John Matthews, Bridgeworth, England, assignor to Arnold, Constable & Co., New York, N. Y. Filed June 22, 1893. Serial No. 478,516. Term of patent 3½ years.



*Claim.*—The design for a Brussels carpet, as shown in the accompanying drawing.

**22,617.** PLATE. Charles E. Haviland, Limoges, France. Filed June 22, 1893. Serial No. 478,510. Term of patent 14 years.



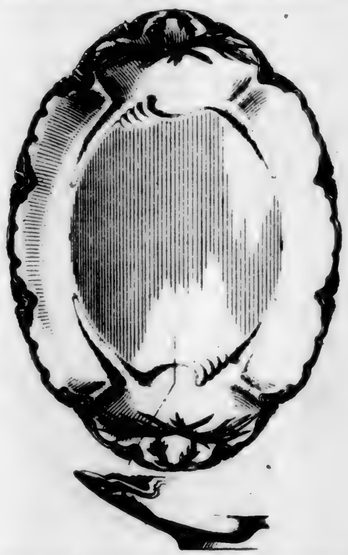
*Claim.*—The design for a plate and other articles, substantially as shown and described.

**22,618.** SALAD-BOWL. Charles E. Haviland, Limoges, France. Filed June 22, 1893. Serial No. 478,511. Term of patent 14 years.



*Claim.*—The design for a salad-bowl and other articles substantially as shown and described.

**22,619.** DISH. Charles E. Haviland, Limoges, France. Filed June 22, 1893. Serial No. 478,512. Term of patent 14 years.



*Claim.*—The design for a dish and other articles, substantially as shown and described.

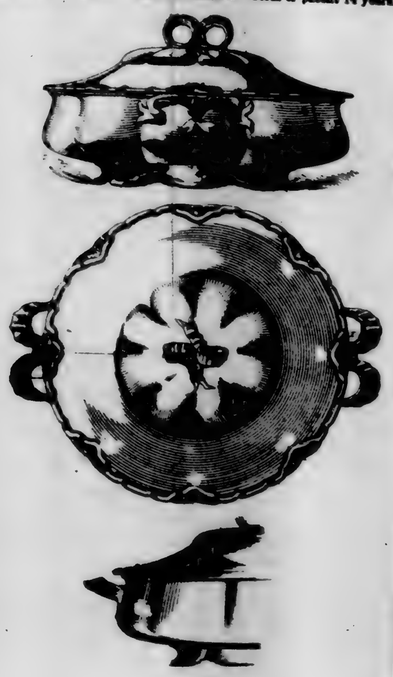
**22,620.** COVER-DISH. Charles E. Haviland, Limoges, France. Filed June 22, 1893. Serial No. 478,513. Term of patent 14 years.

*Claim.*—The design for a cover-dish and other articles, substantially as shown and described.

22,620.

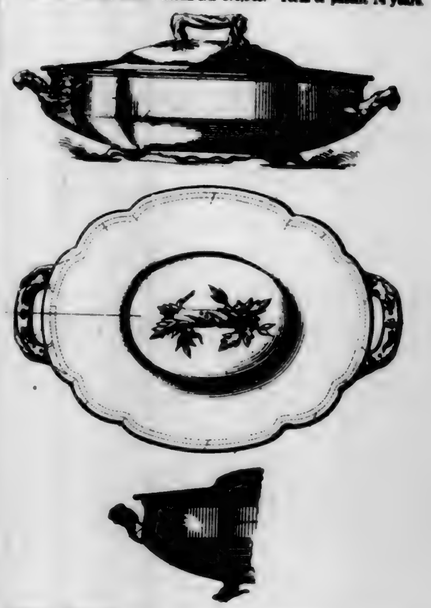


22,621. COVER-DISH. CHARLES H. HAVILAND, Limoges, France. Filed June 22, 1893. Serial No. 478,514. Term of patent 14 years.



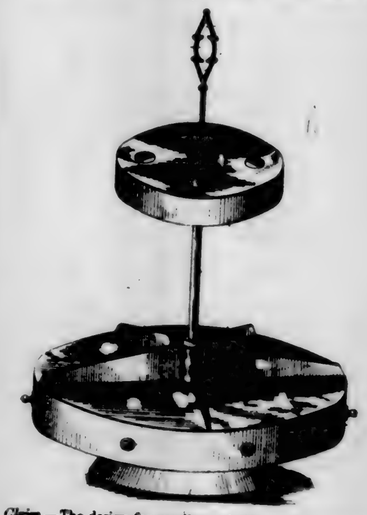
*Claim.*—The design for a cover-dish and other articles substantially as shown and described.

22,622. COVER-DISH. CHARLES H. HAVILAND, Limoges, France. Filed June 22, 1893. Serial No. 478,515. Term of patent 14 years.



*Claim.*—The design for a cover-dish, substantially as shown and described.

22,623. CONDIMENT-HOLDER. WALTER WEIMER, Chicago, Ill. Filed June 16, 1893. Serial No. 477,865. Term of patent 7 years.

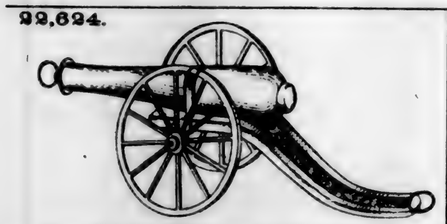


*Claim.*—The design for condiment holders herein shown and described.

22,624. PERFUMERY-HOLDER. DANIEL R. BRADLEY, New York, N. Y. Filed Mar. 28, 1893. Serial No. 468,051. Term of patent 3½ years.

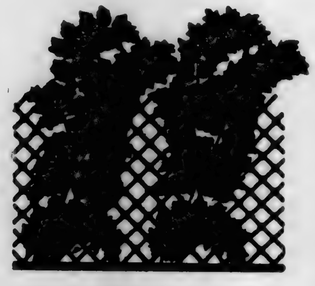


22,624.



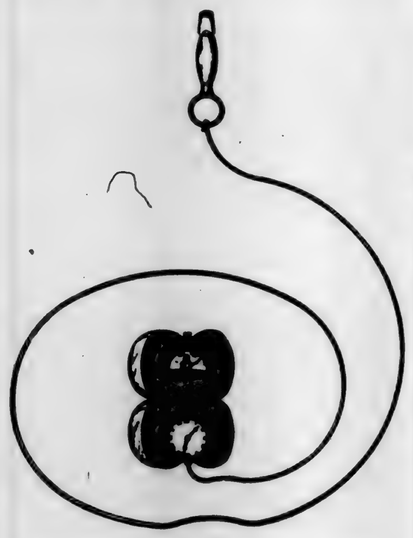
*Claim.*—The design for a perfumery holder as herein shown and described.

22,625. ORNAMENTAL METAL SHEET. LEOPOLD KAHN, New York, N. Y. Filed Apr. 6, 1893. Serial No. 469,610. Term of patent 3½ years.



*Claim.*—The design for an ornamental metal sheet for decorative purposes substantially as set forth.

22,626. TOY. MARY CUNNINGHAM, Bellevue, Idaho. Filed June 15, 1893. Serial No. 477,782. Term of patent 7 years.



*Claim.*—The design for a toy herein shown and described.

22,627. BRUSH BACK OR SIMILAR ARTICLE. CHARLES OSBORNE, New York, N. Y., assignor to the Whiting Manufacturing Company, same place. Filed May 18, 1893. Serial No. 474,708. Term of patent 3½ years.



*Claim.*—The design for a brush back or similar article herein shown and described.

22,628. BREASTPIN. EUGENE DE ROSY, Newark, N. J. Filed Jan. 23, 1893. Serial No. 460,169. Term of patent 3½ years.



*Claim.*—The design for a breast pin substantially as herein shown and described.

22,629. SPOON. FREDERICK F. HOBE, Colorado Springs, Colo. Filed May 29, 1893. Serial No. 475,971. Term of patent 3½ years.



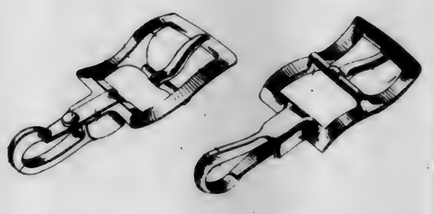
*Claim.*—The design for a spoon substantially as herein described.

**22,630.** DEFLECTOR. ROBERT WOOD, Syracuse, N. Y. Filed Apr. 15, 1893. Serial No. 470,538. Term of patent 14 years.



*Claim.*—The design for a deflector substantially as herein described and shown.

**22,631.** BUCKLE AND SNAP-HOOK. GEORGE L. FREDERICK, Ebensburg, Pa. Filed June 17, 1893. Serial No. 478,008. Term of patent 14 years.



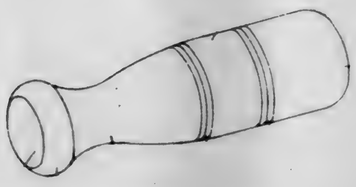
*Claim.*—The design for a combined buckle and snap hook herein shown and described.

**22,632.** WAGON-SPRING. GEORGE PEER, Syracuse, N. Y. Filed Mar. 13, 1893. Serial No. 465,529. Term of patent 14 years.



*Claim.*—The design for a wagon spring, substantially as herein described and shown.

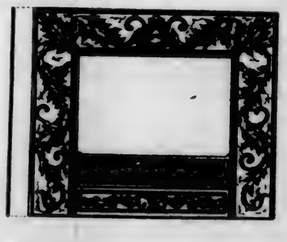
**22,633.** TOOL-HANDLE. EDWARD W. HUTCHINSON, Chicago, Ill. Filed June 12, 1893. Serial No. 477,377. Term of patent 14 years.



*Claim.*—The design for a tool handle herein shown and described.

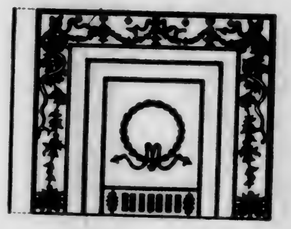
**22,634.** FRAME FOR GRATES. JAMES T. PHILLIPS, Grand Rapids, Mich., assignor to the Aldine Manufacturing Company, same place. Filed Mar. 10, 1893. Serial No. 466,432. Term of patent 7 years.

**22,634.**



*Claim.*—The design for grate frames herein shown and described.

**22,635.** FIRE-BOARD. JAMES T. PHILLIPS, Grand Rapids, Mich., assignor to the Aldine Manufacturing Company, same place. Filed Mar. 10, 1893. Serial No. 466,431. Term of patent 7 years.



*Claim.*—The design for a fire board herein shown and described.

**22,636.** BADGE. WILLIAM H. BARTLETT, Worcester, Mass. Filed Apr. 19, 1893. Serial No. 471,042. Term of patent 14 years.



*Claim.*—The design for a badge, substantially as herein shown and described.

**22,637.** BADGE. CHARLES L. EDWARDS, Dallas, Tex. Filed May 9, 1893. Serial No. 473,632. Term of patent 7 years.



*Claim.*—The design for a badge as herein described and shown.



**22,638.** BADGE-PIN. HERBERT L. HORTON, Providence, R. I. Filed Oct. 6, 1892. Serial No. 447,894. Term of patent 7 years.



*Claim.*—The design for a badge pin, herein shown and described.

**22,639.** SPOON. CHARLES R. BARKER, Brooklyn, N. Y. Filed June 14, 1893. Serial No. 477,600. Term of patent 3½ years.



*Claim.*—The design for a handle for spoons, substantially as herein shown and described.

**22,640.** PLAYING-CARD. GEORGE W. LANPHAR, Swanton, Vt. Filed Mar. 2, 1893. Serial No. 464,455. Term of patent 14 years.



*Claim.*—The design for playing cards herein described and shown.

**22,641.** JEWEL-CASKET. JEAN L. BOULAY, Paris, France. Filed Apr. 20, 1893. Serial No. 471,290. Term of patent 3½ years. Patented in France Jan. 14, 1893, No. 3,071.



*Claim.*—The design for a jewel casket, substantially as shown and described.

# TRADE-MARKS

## REGISTERED JULY 18, 1893.

**23,366.** LINIMENT. ADAM BURGER, Toledo, Ohio. Filed May 22, 1893.



*Essential feature.*—The representation of a battered or irregularly shaped medal having a marginal fissure, and a swooping dove bearing a twig represented on it. Used since May 1, 1893.

**23,367.** MEDICINE FOR TOPICAL APPLICATION. X-SALZA MEDICINE COMPANY, Portland, Me., and Boston, Mass. Filed June 5, 1893.



*Essential feature.*—The representation of a plant known as the cat-tail flag. Used since May 15, 1893.

**23,368.** TOILET PREPARATIONS. RICHARD HUDNUT, New York, N. Y. Filed June 8, 1893.

**HUDNUTINE.**

*Essential feature.*—The word "HUDNUTINE." Used since May 15, 1893.

**23,369.** CHEWING-GUM. ROBERT WRIGHT, Cleveland, Ohio. Filed May 29, 1893.



*Essential feature.*—A small bouquet attached to each package of chewing gum. Used since January, 1892.

**23,370.** CANNED AND PRESERVED FISH. JOHN M. CHAPMAN, New York, N. Y. Filed May 27, 1893.



*Essential feature.*—The representation of a section of a fish net containing fish and two rope bordered panels in one of which is also a swimming fish. Used since May 15, 1893.

**23,371.** CANNED SALMON. GROSER & BARKER, Astoria, Oreg. Filed June 14, 1893.





*Essential feature.*—The representation of a palm having a short, thick trunk with a number of divergent branches bearing palm leaves which extend upward and to the right and left. Used since February 16, 1893.

**23,372.** FLOUR AND MEAL. LEAYCRAFT & Co., New York, N. Y. Filed Apr. 27, 1893.

**EL JABALI**

*Essential feature.*—The words "EL JABALI." Used since April 15, 1893.

**23,373.** FLOUR AND MEAL. LEAYCRAFT & Co., New York, N. Y. Filed Apr. 27, 1893.

**COEUR DE LION**

*Essential feature.*—The words "COEUR DE LION." Used since 1891.

**23,374.** LEATHER-DRESSING. BATCHELDER & LINCOLN, Boston, Mass. Filed May 9, 1893.

**PURITAN.**

*Essential feature.*—The word "PURITAN." Used since August, 1892.

**23,375.** LEATHER FOR SATCHELS AND FOR CASES FOR MUSICAL INSTRUMENTS, &c. MAULSBURGH & WHITTINGHAM, Newark, N. J. Filed May 24, 1893.



*Essential feature.*—The representation of a bovine animal's head and a staff of music the music appearing on a scroll which extends behind the said head. Used since October 10, 1891.

**23,376.** ALL MANUFACTURED RUBBER GOODS. HODGMAN RUBBER COMPANY, New York, N. Y. Filed May 27, 1893.



*Essential feature.*—The letters and abbreviation "H R Co" in the form of a monogram. Used since January 3, 1891.

**23,377.** CIGARS. FRANK X. SEYB, Des Moines, Iowa. Filed May 23, 1893.



*Essential feature.*—The representation of Uncle Sam in a standing position. Used since April 1, 1893.

**23,378.** ROOT-BEER. FRANK J. SEITZ, Albany, N. Y. Filed June 17, 1893.




*Essential feature.*—The representation of a curved band having scroll-like ends, and bearing the words "OLD FASHIONED." Used since April 1, 1887.

**23,379.** WHISKY. ABRAHAM GOLDBERG, Louisville, Ky. Filed May 15, 1893.




*Essential feature.*—The representation of two double circles, arranged side by side, one inclosing the words "PEPSIN WHISKEY" and the other "PEPSIN TONIC." Used since January 3, 1893.

**23,380.** BRASS ARTICLES FOR TRIMMING AND DECORATION, INCLUDING SCREWS AND ELECTRIC AND GAS FITTINGS. THE LUDDEN & BATES MANUFACTURING COMPANY, New York, N. Y. Filed May 8, 1893.




*Essential feature.*—The representation of a gas-cock the thumb piece of which is shown as a flat disk with a central opening through it, and a monogram consisting of the letters "L R." Used since February 3, 1893.

**23,381.** WHEAT-FLOUR. KAUFFMAN MILLING COMPANY, St. Louis, Mo., and Bethalto, Ill. Filed Apr. 19, 1893.




*Essential feature.*—The words "ST. LAWRENCE." Used since 1875.

**23,882.** BAKING-POWDER. HAAS-SMITH TEA AND COFFEE COMPANY, St. Louis, Mo., and Denver, Colo. Filed May 31, 1893.

SILVER STATE

*Essential feature.*—The words "SILVER STATE." Used since March, 1890.

**23,883.** COFFEE. WM. J. STITT & CO., New York, N. Y. Filed Mar. 1, 1893.

*Essential feature.*—The word "KNICKERBOCKER." Used since 1843.

**23,884.** WHEAT FLOUR. NORTHWESTERN CONSOLIDATED MILLING COMPANY, Minneapolis, Minn. Filed June 24, 1892.

MINNEHAHA

*Essential feature.*—The word "MINNEHAHA." Used since December 1, 1882.

**23,885.** APPARATUS FOR OUTDOOR GAMES. ARCHIBALD LAUDER, Chicago, Ill. Filed June 2, 1893.

PUTTER

*Essential feature.*—The word "PUTTER." Used since June 1, 1893.

**23,886.** APPARATUS FOR OUTDOOR GAMES. ARCHIBALD LAUDER, Chicago, Ill. Filed June 2, 1893.

CLEEK

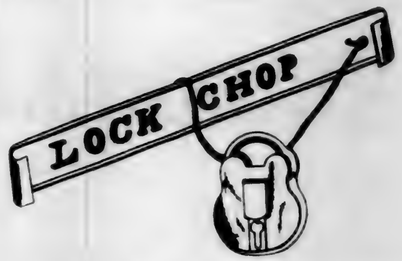
*Essential feature.*—The word "CLEEK." Used since June 1, 1893.

**23,887.** APPARATUS FOR OUTDOOR GAMES. ARCHIBALD LAUDER, Chicago, Ill. Filed June 2, 1893.

DRIVER

*Essential feature.*—The word "DRIVER." Used since June 1, 1893.

**23,888.** TEA. McCORD, BRADY COMPANY, Omaha, Nebr. Filed May 4, 1893.




*Essential feature.*—The words "LOCK CHOP," and the representation of a padlock. Used since March, 1893.

**23,889.** CAMERAS. GEORGE I. SPALDING, London, England. Filed June 20, 1893.

ZOKA

*Essential feature.*—The word "ZOKA." Used since March 10, 1893.

**23,890.** NEEDLES. THOMAS HARPER, Redditch, England. Filed June 7, 1893.

SWIFTSURE

*Essential feature.*—The word "SWIFTSURE." Used since January 3, 1893.

**23,891.** INSECTICIDE. ROBERT E. KING, Richmond, Va. Filed May 31, 1893.



*Essential feature.*—A monogram composed of the letters "M S L." Used since April 1, 1893.

# DECISIONS

OF THE

# COMMISSIONER OF PATENTS

AND OF

# UNITED STATES COURTS IN PATENT CASES.

## COMMISSIONER'S DECISIONS.

### EX PARTE STOKES.

*Decided June 1, 1893.*

TRADE-MARK REGISTRATION OF THE WORD "SPLENDID" REFUSED.

The registration of the word "Splendid" as a Trade-Mark for flour refused upon the ground that it is not arbitrary or fanciful.

ON petition.

TRADE-MARK REGISTRATION.

Application of William H. Stokes filed August 23, 1892, No. 42,483.

*Messrs. Paul & Hawley* for the applicant.

FISHER, *Assistant Commissioner:*

This is a petition taken from the decision of the Primary Examiner refusing to register the word "Splendid" as a Trade-Mark for flour.

The Examiner bases his refusal upon the ground that the word for which registration is sought is not arbitrary or fanciful as applied to flour, and also on the ground that it is so similar to the mark "Esplendido," already registered for use upon the same class of merchandise, as to be calculated to deceive purchasers using ordinary caution.

While it is true, as contended by applicant, that the word "Splendid" as applied to flour is not indicative of a high degree of excellence within the strict dictionary meaning of the term, yet it is so generally employed to indicate excellence or superior quality of all sorts of articles and commodities without regard to the correctness of its application that I am unable to escape the conclusion that it is not an arbitrary symbol such as will properly denote the origin or ownership of the article to which it is affixed within the meaning of the Trade-Mark law.

It is well settled that words and phrases which have been in common use and indicate the character, kind, quality, and composition of the article to which they are affixed cannot be exclusively appropriated by any one. (*Canal Company* v. *Clark*, 13 Wall., 311; *Amoskeag Manufacturing Co.* v. *Trainer*, 17 O. G., 1217; 101 U. S., 51; *The Brown Chemical Co.* v. *Meyer et al.*, 55 O. G., 287.)

It is also well settled that no one has a right to appropriate a sign or a symbol or a name which, from the very nature of the fact it is used to signify, others may employ with equal truth and therefore have an equal right to employ for the same purpose. (See *Corbin* v. *Gould*, 51 O. G., 622; 133 U. S., 308, and cases there cited.)

I am of the opinion that this word for which registration is sought is such that any manufacturer of flour would be equally entitled with applicant to use it, so far as the Trade-Mark law is concerned.

The conclusion reached renders it unnecessary to consider the second ground on which the Examiner's decision was based.

The decision of the Examiner is affirmed.

### LAMB *v.* WARREN.

*Decided July 19, 1893.*

1. INTERFERENCES—EFFECT OF MOTIONS TO STAY PROCEEDINGS.

The granting of a motion to stay the proceedings pending the determination of a motion to dissolve does not release the interferants from a requirement to file other motions specifically provided for within a stated period.

2. SAME—SAME—PRACTICE.

When a motion to effect a stay of proceedings has been granted, the correct practice is to file all special motions at the times and periods specified for them. Such motions will then be determined in their usual order; or in case of agreement of the interferants therein and upon approval of the agreement by the Office the determination thereof will be adjourned to a day proper.

3. SAME—MOTION TO DISSOLVE—DELAY IN FILING.

Where an interferant relied upon a proper tracing of the drawing of his opponent's application for an understanding of the latter's invention and was misled thereby, such misunderstanding will not excuse his delay to file a motion to dissolve after the period of twenty days.

4. SAME—RULE 122.

The delay that may be excused within the discretion of the Office provided for in Rule 122 is not such as will be exercised to relieve an interferant from his own negligence.

APPEAL from Examiner of Interferences.

EYE-SHIELD.

Application of Benjamin F. Lamb filed September 25, 1891, No. 406,830. Patent granted Alfred D. Warren January 12, 1892, No. 466,896.

*Messrs. Lange & Roberts* for Lamb.

*Mr. Louis W. Southgate* and *Mr. Charles D. Davis* for Warren.

FISHER, *Assistant Commissioner:*

This is an appeal taken by Warren from the decision of the Examiner of Interferences refusing to transmit to the Primary Examiner a motion made by him to dissolve this interference.

The interference was declared on November 25, 1892, and the time within which the preliminary statements must be filed fixed for December 21, 1892. On December 15, 1892, Lamb filed his preliminary statement, and on the 30th of the same month filed several motions, among others one to enter judgment of priority to him on the record because Warren had failed to file a pre-

liminary statement, another to make him the senior party instead of the junior party, and another to stay the proceedings pending a determination of the aforesaid motions. On the same day—to wit, December 30, 1892—Warren filed a motion to be allowed to file a preliminary statement, and in support of his motion filed affidavits to the effect that he had not received his notice of the declaration of the interference.

On January 3, 1893, Lamb's motion to suspend the interference was granted and his motion to make him the senior party was transmitted to the Primary Examiner and by him denied on April 5, 1893, whereupon Lamb appealed from the Examiner's decision to the Commissioner in person, and a hearing thereon was fixed for May 5, 1893. On May 13, 1893, the Commissioner affirmed the decision of the Examiner.

But to return to Warren: On March 11, 1893, the Examiner of Interferences granted his motion to be permitted to file a preliminary statement. On May 11, 1893, Warren filed this motion to dissolve the interference.

The facts have been recited with some degree of minuteness in order that the position of Warren may be clearly seen in all the circumstances of the case. It is to be observed that the first day that Warren had the right of access under the rules of Office practice to inspect Lamb's application was March 11, 1893, Warren's preliminary statement having been previously examined and approved March 10, 1893; and it was on March 11, 1893, that the period of twenty days began to run within which he might as a matter of course, under the rules of practice, file a motion to dissolve the interference. This period ended on April 5, 1893.

The first of the principal reasons offered by Warren for the delay in filing his motion is that the granting of the motion to stay the proceedings of the interference made by Lamb deprived the Examiner of Interferences of all jurisdiction until after the decision of the Commissioner, May 13, 1893, denying Lamb's motion to be made the senior party. Such a position is not tenable. It is the custom in interference proceedings to receive motions at any and all stages of the case, (unless the proffered motions are expressly prohibited,) leaving them to be acted on or not, as the case may permit or require. The silent practice of the Office has conformed to the custom. The reason is that a delay of the determination of an interference ought not to be incurred or allowed when a seasonable compliance with the rules of practice would expedite the decision. The record in this interference shows that the Examiner of Interferences during the period of suspension acted on Warren's motion to be permitted to file a preliminary statement. But if Warren believed himself unable to make the motion within the period of twenty days, because of the stay of proceedings, it would seem that he was entitled, as a matter of right, to save the motion—that is, to have filed it within the period of twenty days—and thereupon its determination would either have been had upon a day fixed by the Office for the hearing thereof or have been adjourned, upon agreement of the parties and approval of the Office, to some other day proper.

The other or second of the two principal reasons Warren claims should excuse his delay in filing his motion to dissolve is that he did not understand Lamb's invention until May 10, 1893, the day before he filed this motion. It would appear from the affidavits in support of Warren's motion that he relied on a tracing of Lamb's drawing to understand Lamb's eyeshield (although the original drawing was open to his examination) and that he mistook therefrom what Lamb's invention really is. There is no allegation that the tracing was not accurate. This excuse for the delay ought not to be accepted as sufficient cause for deliberately setting aside the rule under which the motion is brought, in view of the fact that all the original papers in the application were open and accessible to Warren within the period of the twenty days within which to bring a motion to dissolve, and because of the further fact that the rules are framed with a view to enjoin diligence and establish certainty of practice.

Rule 122, under which this motion is brought, states that—

> motions to dissolve an interference * * * should, if possible, be made not later than the twentieth day after the statements of the parties have been received and approved.

Certainly the facts in this case do not show that it was not possible for Warren to have brought this motion within the period of the twenty days. On the contrary, the facts establish that it was both possible and practicable for him to have done so and that the means and opportunities were at his hands throughout the period of the twenty days.

Warren claims that the mistake he made in misunderstanding Lamb's invention from the tracing ought in itself to excuse the delay in filing the motion, and asserts in support thereof that it was such a mistake as a court of equity would take cognizance of to give relief. It is not believed that he is correct in making such an assertion, for one of the four general principles to bring a mistake within the cognizance of a court of equity is that the party seeking relief is free from negligence; and in accordance with this principle there are numerous decisions of the Commissioner of Patents holding that he will not exercise his discretion under the rules of practice to afford relief to a party who was bound to make the best and proper inquiry in order to prevent a mistake or obviate its consequences.

The decision of the Examiner of Interferences is affirmed.

## DECISIONS OF THE U. S. COURTS.

### U. S. Circuit Court of Appeals—Seventh Judicial Circuit.

STANDARD ELEVATOR COMPANY *et al.* *v.* CRANE ELEVATOR COMPANY *et al.* SAME *v.* SAME.

*Decided February*, 1893.

1. LETTERS PATENT—PRELIMINARY INJUNCTION.
   In patent cases the infringement upon which a preliminary injunction will be granted must be without reasonable doubt and the rights of the patentees clear, and, failing in prior adjudication in favor of the validity of a patent, there must be shown such continued public acquiescence in the exclusive right asserted as raises a presumption of validity of the patent.





2. SAME—SAME.
   Where the evidence as to the construction of claims and their infringement was necessarily and largely *ex parte* and where the damages which the complainants may suffer can be compensated in money by the respondents, *Held* that a preliminary injunction ought not to be granted.

ON appeal from the Circuit Court of the United States for the Northern District of Illinois.

*Mr. Frank T. Brown* for the appellants.
*Mr. James H. Raymond* for the appellees.

Before GRESHAM, WOODS, and JENKINS, Judges.

JENKINS, *J.*:

The bills of complaint in these two cases were filed by the Crane Elevator Company to enjoin the alleged infringement of certain claims in several patents for improvements in hydraulic elevators—viz., claim 1 of Patent No. 317,202, issued to George H. Reynolds May 5, 1885; claims 2, 4, and 6 of Patent No. 328,614, issued to George H. Reynolds October 20, 1885; claim No. 3 of Patent No. 248,908, issued to Cyrus W. Baldwin November 1, 1881; claims 1, 4, and 5 of Patent No. 456,107, issued to Cyrus W. Baldwin July 14, 1891; claims in Patent No. 456,122, issued to George H. Reynolds July 14, 1891; claims in Patent No. 309,865, issued to Joseph Moore December 30, 1884; claims in Patent No. 458,917, issued to George H Reynolds September 1, 1891. Before answers to the bills the complainants moved for injunctions *pendente lite*, which motions were heard upon bills and answers and upon *ex parte* evidence and models constructed by the parties, respectively. The court below, at the hearing of the motions, granted the preliminary injunctions on the first claim of Patent No. 317,202 and on the second and fourth claims of Patent No. 328,614 and on the first and third claims of Patent No. 458,917. The devices the use of which was enjoined are known as (1) "the bottom water-discharge;" (2) "the air-escape;" (3) "the lever device;" (4) "the compensatory device."

The appeal involves the propriety of these preliminary injunctions. The answers deny infringement, deny invention, novelty, and public acquiescence.

The principles upon which courts of equity grant the writ of injunction in advance of a decree upon the merits are elementary. The purpose of the interlocutory writ is not to conclude the question of right, but to protect against material injury pending the litigation. In patent cases to warrant the writ not only must the infringement be without reasonable doubt, but the rights of the patentee must be clear. Failing prior adjudication in favor of the validity of the patent, there must be shown such continued public acquiescence in the exclusive right asserted as raises a presumption of validity—a presumption not arising from the Letters Patent unless accompanied by public acquiescence. The object of the provisional remedy is preventive largely, and it will not be granted if it is more likely to produce than to prevent irreparable mischief. If the controversy between the parties be substantial, and not, as to the alleged infringement, colorable merely, courts of equity are not disposed to adjudicate upon the rights of the parties otherwise than according to the approved usages of chancery when the defendant's rights might by the issuance of a writ of injunction be put in great jeopardy and the complainant can be compensated in damages.

Without passing any opinion upon the complainants' rights or the defendants' infringement, it suffices to say that upon proofs in the record we cannot declare that the right or the infringement is so clear from doubt as to warrant the issuance of a preliminary injunction. The evidence as to the construction of claims and infringement upon which the court below was called to pass was largely and necessarily *ex parte*. There was no opportunity of probing the witnesses. Scientific expert evidence is not wholly reliable when not subjected to the search-light of intelligent cross-examination. It would, we think, be most unsafe to determine this controversy without full and orderly proof. It would be most unwise to imperil and presumably wholly ruin the large capital and interests involved in the business of the appellants by arresting the enterprise in advance of a final decree when the damages which the appellee may sustain can be compensated in money. The financial ability of the appellants to so respond has not, in our judgment, been successfully attacked.

The order appealed from will be reversed.

### U. S. Circuit Court—Northern District of Illinois.

FASSETT *v.* EWART MANUFACTURING COMPANY.

*Decided April* 3, 1893.

1. HOWE—MACHINE FOR COUPLING THE LINKS OF DRIVE-CHAINS.
   The patent to Eugene L. Howe, No. 317,790, of May 12, 1885, for a machine for coupling the links of drive-chains by a sidewise thrust of the coupling-bar, *Held* to be invalid in view of the machine for coupling by an endwise thrust of the coupling-bar previously invented by Fassett, as only mechanical skill, and not invention, was required to make the Howe machine in view of the Fassett.
2. MECHANICAL SKILL—SUBSEQUENT PATENT FOR MERE CHANGE IN MODE OF OPERATION SHOULD BE DENIED.
   Where the inventor of a machine for coupling the links of drive-chains simultaneously filed two applications for patents, one for a machine for an endwise and the other for a machine for a sidewise thrust of the coupling-bar, and had a patent issued on the first machine, *Held* that he was not afterward entitled to a patent on the second machine, as it was only a matter of mechanical skill, and not invention, to adapt the endwise to the sidewise thrust.
3. RESERVATION FOR SUBSEQUENT PATENT.
   Where, in the case above, the patent on the endwise-thrust machine contained a reservation saying that "the feed-chute, guideway, and means for pushing the assembled links forward, a delivery wheel or device, the fulcrum plate or corner, operating mechanism, and such details of construction as are not herein broadly claimed form the subject of a separate application," *Held* that such reservation meant that the invention was broadly claimed in the patent, and that the patentee meant to reserve only the right to claim the elements specifically in his separate application, and that a patent on such separate application, claiming the features mentioned in the reservation broadly and generically, could not be sustained as covered by the reservation.

SUIT for infringement of patent and injunction.

*Messrs. Banning & Banning & Payson* for the complainant.

*Mr. L. Hill* and *Messrs. Kerr & Curtis* for the defendant.

WOODS, *J.*:

In the opinion of the court the patent in suit, in re-

spect to the claims alleged to have been infringed, is invalid for two reasons: first, because it is not covered by the reservation contained in Patent No. 347,338, (Case A,) and, second, even if the reservation were sufficient the matter of this patent (Case C) was not divisional or properly severable from the matter of the first patent, (A) whether the severance be considered as direct or as made through Case B.

The contention of the complainant is that the claims in the patent of Case A and the claims of Case B and of the Howe patent, with which B was put into interference, were for specific constructions—the first for an endwise and the second for a sidewise coupling machine—while the patent in suit is fundamental and generic and covers a machine made up of the parts named or described, whether arranged and combined for coupling by an endwise, sidewise, or other kind of thrust, and that, the first applications being specific, the reservation (in Case A) operated, as it was designed to do, to save to the applicant the right to put into Case B generic claims, and that having been prevented from doing that by reason of the declaration of interferece between Case B and the Howe patent Case C was a legitimate mode of attaining the desired end.

The reservation will not bear that construction. The reference, instead of being to broad or generic claims, was plainly to claims more specific than those of the patent, which were already to be found in Case B, covering the sidewise thrust, and not to any which were thereafter to be formulated and added to the application in that case.

The entire reservation is as follows:

> The feed-chute, guideway, and means for pushing the assembled links forward therein, a delivery wheel or device, the fulcrum plate or corner, operating mechanism, and such details of construction as are *not herein broadly claimed* form the subject of a separate application, Serial No. 174,982.

In other words, whatever is "broadly claimed" is to be found herein; but for the elements specified, with such details of construction as are not herein broadly claimed, reference is made to Case B, of which they "form the subject."

The patent granted, though for an endwise coupling, showed the entire machine with all its so-called "fundamental" or "generic" elements, and the evident purpose of the reservation was to guard the patent against being construed so broadly as to include the claims in Case B for the sidewise movement, the avowed object of the separation having been to bring about a declaration of interference between Case B and the Howe patent, and meanwhile to enable Case A to go as it did to undelayed issue.

There was necessity for guarding against such construction. The patent itself contains a suggestion of the applicability of the machine to the coupling of other "forms or patterns of chain links," and in the caveat which Fassett had filed the mode of construction for sidewise thrust had been expressly described and illustrated. Indeed to my mind, though it is not a point necessary to be decided, once the machine for the endwise coupling had been invented, it was only a matter of mechanical skill, and not invention, to adapt it to the sidewise thrust, and if Fassett was, as it seems clear he was, the first to invent the machine for the endwise thrust the interfence with Howe should have been resolved in his favor on the ground that Howe's patent was a mere mechanical modification of Fassett's device.

Besides the manner of coupling shown in Howe's patent, the sidewise coupling might have been effected without removing the chain guide or channel from its location directly under and in the same vertical plane with the feed-chute. This could be done by causing each link as it reaches the bottom of the chute to be pushed a proper distance to one side and then either to be lowered or moved forward into position to be pushed into coupling by a counter sidewise thrust.

A skilled mechanic would readily supply the means for these movements and perhaps suggest other more simple or familiar modes of accomplishing the result.

But whether the decision upon the interference was right or wrong, it is conclusive between the parties, since no steps were taken to set it aside. Indeed, there has been an avowed acquiescence in the ruling.

In view of the terms of the reservation, and of the fact that the applications in Cases A and B were prepared with the intention that the latter should be put into interference with the Howe patent, the assertion that the complainant discovered that his generic claims had been omitted from Case B, when on account of the interference it was too late to add them, must be regarded as an afterthought.

Some of the considerations already advanced go far to establish the proposition that the matter of Case C was not severable from Case A, and that by taking out the patent for a device arranged to operate in a specific manner the claimant abandoned to the public the more general claims which might have been predicated upon the same combination of parts. The conclusive consideration is that the so-called fundamental or generic claims and the specific claims found in Cases A and B and in the Howe patent are for the same machine as a whole and not for different parts thereof, and are distinguishable only in respect to their scope.

The generic claims are for a chain-link-coupling machine composed of the following elements (as named in the reservation) without restriction of the manner in which the coupling should be effected—viz., the feed-chute, guide-way, pusher, delivery-wheel, fulcrum, and operating mechanism—while the specific claims are for the same machine, composed of the same physical elements combined in the same general manner, but so arranged to effect the coupling of the links in one case by an endwise and in the other case by a sidewise movement.

Except those two, it does not appear that any other method of effecting the coupling had been thought of as feasible or desirable, though it is conceivable that other modes might be used; and there was therefore no practical reason for prosecuting the generic claims, except to procure a patent which would dominate the other two, the effect of which should be to nullify the decision in favor of Howe upon the interference and to extend for eighteen months the monopoly acquired by the complainant under his first patent.

These results are perhaps not conclusive of the invalidity of the patent; but they justify and require a strict application of the doctrine of the Patent Office that applications for patents shall not be severable except upon structural lines, meaning, as I think must be held, upon physical lines which actually divide the machine into separable parts. It may happen in proper cases for division that some of the parts will be dominating; but they must be less than the whole device and separable upon a structural line from other physical parts. If the claims in question here were properly severable, it is difficult to suppose a case in which broad and narrow claims covering the same devices or combinations of elements might not be severed.

It has been argued that the action of the Patent Office in allowing a separation of claims is conclusive; but the proposition is deemed unsound and not established by the authorities cited in support of it.

The court upon the whole finds for the defendant, and that the bill should be dismissed for want of equity. So ordered.





## DECISIONS OF STATE COURTS.

### Circuit Court of Cook County, Illinois.

GRAVEL ROOFERS' EXCHANGE *et al. v.* TURNBULL *et al.*

*Decided April 17, 1893.*

1. A TRADE-MARK MAY BE USED BY MANY JOINTLY AND ALL JOIN IN AN ACTION FOR INFRINGEMENT.

A Trade-Mark may be adopted, owned, and used by a number of parties engaged in the same business as separate firms, and all of them may join as complainants in a suit to restrain infringement.

2. SAME.

The members of an association may adopt and use a Trade-Mark to indicate that the goods on which it is placed are manufactured or sold by some member of the association, in which case the Trade-Mark indicates a class of persons or firms, rather than any single one.

STATEMENT OF THE CASE.

In this case the Gravel Roofers' Exchange, a corporation not for profit, and seven other parties, firms, and corporations, each doing business separately, but all being members of the Exchange, filed a bill jointly against the defendants to restrain the use of the word "Eclipse" as a Trade-Mark on roofing-felt. The defendants demurred to the bill on the ground that the Gravel Roofers' Exchange, being a corporation not for pecuniary profit, was improperly joined as a party complainant; that the other complainants, who were corporations, could not be members of the Gravel Roofers' Exchange, another corporation, under the laws of Illinois; that there was no privity of interest in the Trade-Mark between the respective complainants; that there could be no exclusive right to a Trade-Mark in several independent individuals or firms; that the bill should allege exclusive right in the complainants as against the whole world, instead of in Chicago and throughout the territory in which they did business, and that the bill was defective in other respects.

*Messrs. Banning & Banning & Payson* and *Messrs. Warren & Cox* for the complainants.

*Mr. W. O. Robinson* and *Mr. John H. Whipple* for the defendants.

TULEY, *J.*:

In this matter of the *Gravel Roofers' Exchange* v. *Turnbull et al.*, demurrer to bill. I regret that there has been such delay in disposing of this case; but judicial duties on the bench give the court very little time to look up authorities and dispose of matters he has taken under advisement.

In this case a certain number of individuals engaged in the roofing business in this city, in the year 1888, formed an association, not for profit, but to improve and raise the quality of work done by its members and to establish a reputation for their work as to its being the best in quality, durability, and character. They decided that it would be wise to adopt as an Exchange—the name of the association being the Gravel Roofers' Exchange—a Trade-Mark or name to distinguish the members of the Exchange and their roofing material. The bill states that they did adopt the word "Eclipse" and caused it to be printed on labels and applied the label to roofing-felt sold or used by them in their business—business of putting on gravel roofs. The defendants have imitated this label on the roofing-felt sold or used by them in the roofing business, and an injunction against the use of this label by the defendants is prayed for.

It will be perceived that the bill presents a very novel question. The Gravel Roofers' Exchange, a non-profit corporation, adopts a Trade-Mark or name. It does no business itself. It has no roofing-felt; but the members of that non-profit corporation are engaged in the business of gravel-roofers, putting on gravel roofs, and they use the label or Trade-Mark adopted by the Exchange. The bill is brought in the name of the Exchange corporation and in the name of the members belonging to that corporation. It must be admitted that no property in a Trade-Mark or label can be acquired by mere selection. It must be applied to some vendable commodity either manufactured or sold by the party claiming the Trade-Mark. In this case the bill does not allege that the roofing-felt sold or used by the complainants is manufactured by them or any one of them. In that respect only it differs from the *Union Cigar Label Case*, (49 Fed. Rep., 780.) Inasmuch as there are averments in the bill that this label is applied and used in roofing-felt sold by the complainants, I am in some doubt as to whether this demurrer is allowable; but as the bill contains no express allegation that the roofing business which the complainants carried on consisted in whole or in part in the buying or selling of roofing-felt as a vendible commodity, I must, upon the well-known rule that "all averments must be taken more strongly against the pleader," hold the bill to be demurrable in that regard. It is impossible to tell, upon a careful reading of the bill, whether the complainants sold roofing-felt or whether they merely used roofing-felt, to which they attached a label, in their business of putting on roofing. If the former is the case, the bill can be amended so as to make a case; if the latter, the bill cannot be amended to make a good bill for the injunction. Leave will be given to amend by the complainants, if desired.

Thereupon complainants amended their bill by alleging sales, and the court ordered the defendant to answer and referred the cause to a master to take proofs.

## Circuit Court of Cook County, Illinois.

WHITFIELD *v.* LOVELESS.

*Decided July 1, 1893.*

1. HOTEL NAME—"COLUMBIA" A FANCIFUL WORD.
The name "Columbia" as applied to a hotel is a fanciful name, indicating no people, no locality, and no particular service which a hotel will render, and the person first selecting it is entitled to its use.

2. SAME—GEOGRAPHICAL WORDS.
A name, although generic and geographical, is within the rule of protection in law if it does not indicate that the business carried on is to be patronized by the people of any particular locality, or that any specific product is therein to be sold, or any particular language is there to be spoken.

3. SAME—PRIORITY.
That which is prior in time is first in right.

*Messrs. Banning & Banning & Payson* for the complainant.

*Mr. George W. Brown* and *Mr. R. Waite Joslyn* for the defendant.

COLLINS, *J.*:

Defendant selected the name "Columbia Hotel" for the name of the hotel run by him in Chicago. The name had, prior to that time, been used by the complainant to designateh is hotel, and he files this bill to enjoin defendant from its further use.

There are only two questions to be considered on the exceptions to the master's report, all the other allegations of the bill being sustained by the evidence The first is the defense of laches; the second is the name "Columbia," a geographical name and not subject to exclusive appropriation by any person.

The court finds as to the first proposition that the complainant has not been guilty of laches.

As to the second proposition it will be necessary to consider somewhat critically the sense in which the word "Columbia" is used. It is a collective noun and is here used in apposition. A noun or adjective to come within the rule against the appropriation of a geographical name must be *sui generis* and not collective. To illustrate: German, Swedish, and French are *sui generis* carry a fixed and definite meaning to all minds, under all circumstances, refer to particular countries, and used in connection with a noun their meaning can never be mistaken. They are the only adjectives that can be directly used to express the fact that any commodity or manufactured article is of the country in question, or that the business there carried on is conducted in accordance with the customs of the country to which the adjectives refer. Other nouns and adjectives, while in a loose sense geographical, are not in fact so.

It is true that in *Bolander* v. *Peterson* (136 Ill., 215) the court says:

A generic name, or one merely descriptive of the article made or sold, or its qualities, ingredients, or characteristics, and which may be applied truthfully by other makers or dealers, is not entitled to protection as a Trade-Mark.

In conclusion the court says:

Moreover, as we have before seen, to constitute such a Trade-Mark or name as will give the first who applies the name the exclusive right to its use it must not be such as will merely indicate the composition or quality of the article to which it is applied or to the particular country or district where produced or manufactured.

The reason of the rule is clearly this, that a generic name is not to be used where every person is equally entitled to its use, the design of the law being not to foster monopolies or to tolerate their existence; but where a name, although generic and geographical, does not indicate that the business there carried on is to be patronized by the people of any particular [illegible] or that any specific product is there to be sold particular language is there to be spoken, it cannot be a generic or geographical name within the meaning of the rule.

In the selection of the word "Columbia" the complainant chose merely a fanciful name. It indicates no people, no locality, no particular service which his hotel will render. It does not hold out the idea that people patronizing his hotel will have any accommodations or advantages different from those offered by any other hotel. So that, in the case cited, in the selection of this name, it is not such as to indicate the—

composition or quality of the article to which it is applied or the particular country or district where produced or manufactured,

or to indicate the particular manner in which the business is there carried on.

The court finds, then, that the word "Columbia" is a fanciful name; that the person first selecting it is entitled to its use, for the reason that by its selection and exclusive use no monopoly is created, and on the further broad legal ground that that which is prior in time is first in right.



THE
# OFFICIAL GAZETTE
OF THE
# United States Patent Office.
[BY AUTHORITY OF CONGRESS.]

VOL. 64.—No. 4. TUESDAY, JULY 25, 1893. PRICE—$5 per year.

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## DISCLAIMER.

244,944.—*Joseph B. Stetson*, Lincoln, Me., assignor of two-thirds to *Albion D. Wilson* and *Frederic A. Edwards*, same place. IMPROVEMENT IN LANTERNS. Patent dated July 26, 1881. Disclaimer filed July 21, 1893.

Enter their disclaimer to that part of the claims in said specification which is summed up in the second claim of said Letters Patent in the following words, to wit:

2. The tubular frame D D′ and the globe G, in combination with the plates C p, the connecting rods F and the guides H, whereby said globe is raised and lowered by a suitable lever and guided or steadied laterally in its movements, for the purpose set forth.

## Notice of Interference.

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
*Washington, D. C., July 13, 1893.*

*William J. Bennetts, his heirs, assigns, or legal representatives, take notice:*

An interference having been declared by this Office between the application for patent of Arthur W. Robinson, of Bucyrus, Ohio, and a patent to William J. Bennetts, of Bucyrus, Ohio, and the notices of said declaration, mailed by the Patent Office in the usual manner to the said William J. Bennetts, having been returned undelivered, notice is hereby given to the said William J. Bennetts, his heirs, assigns, or legal representatives, that if he or they desire to contest the said interference they should immediately put themselves in communication with the Commissioner of Patents, in order that the notices heretofore sent by and returned to the Office may be forwarded to them. This notice will be published in the OFFICIAL GAZETTE for six consecutive weeks.

JOHN S. SEYMOUR.
*Commissioner.*

## Copies of Decisions Furnished.

Hereafter an uncertified copy of every decision or action by any tribunal in this Office will be furnished by such tribunal to the interested party or parties without charge.

## Oaths of Applicants in Foreign Countries.

(ORDER NO. 822.)

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
*Washington, D. C., June 10, 1893.*

It is hereby directed that oaths accompanying applications for patents made within the following-named foreign countries must be taken before a minister, chargé d'affaires, consul, or commercial agent holding commission under the Government of the United States:

Austria-Hungary.
Argentine Republic.
Belgium.
Brazil.
Costa Rica.
Denmark.
Haiti
Honduras.
Italy.
Mexico.
Netherlands.
Norway.
Peru.
Portugal.
Russia.
San Salvador.
Servia.
Sweden.
Switzerland.

Applications filed in this Office presenting oaths not executed in compliance with this order will be treated as incomplete.

JOHN S. SEYMOUR.
*Commissioner.*

## Construction of Statutes Relating to the Registration of "Prints" and "Labels."—Amended.

In the publication of this Office entitled "United States Statutes Concerning the Protection and Registration of Trade-Marks and Labels, with the Rules of the Patent Office Relating Thereto, Edition of January 4, 1892," the following matter on page 17 is hereby canceled:

The words "prints" and "labels," as used in this act, so far as it relates to registration in the Patent Office, are construed as synonymous, and are defined as any device, picture, word or words, figure, or figures (not a trade-mark) impressed or stamped directly upon the articles of manufacture, or upon a slip or piece of paper or other material to be attached in any manner to manufactured articles, or to bottles, boxes, and packages containing them, to indicate the contents of the package, the name of the manufacturer, or the place of manufacture, the quality of goods, directions for use, etc.

By the words "articles of manufacture" (to which such print or label is applicable by this act) is meant all vendible commodities produced by hand, machinery, or art.

But no such print or label can be registered unless it properly belongs to an article of commerce, and be as above defined; nor can the same be registered as such print or label when it amounts to a lawful trade-mark, or when its use in connection with the article to which it is applied is arbitrary or fanciful.

And the following is substituted therefor:

These sections of statute (referring to sections 3, 4, and 5 of the act of Congress relating to patents, trade-marks, and copyrights, approved June 18, 1874, 18 Statutes at Large, p. 78) are construed as authorizing the registry of "prints" and "labels." A label is a device or representation borne by an article of manufacture or vendible commodity. A print is a device or representation not borne by an article of manufacture or vendible commodity, but in some fashion pertaining thereto—such, for instance, as a pictorial advertisement thereof. A label cannot be registered if it bear a device capable of sequestration as a trade-mark until after such device is registered as a trade-mark. Both labels and prints, in order to be entitled to registry, must be intellectual productions in the degree required by the copyright law.

The note on page 19 is canceled.

## Notice.

All solicitors, agents, or attorneys who, in circulars or advertisements or otherwise, refer to the Commissioner of Patents, or to any other official of the Patent Office, for evidence of their professional standing, do so without authority.

## Publishers' Catalogues.

This Office would be pleased to receive from manufacturers and publishers such catalogues, circulars, price-lists, or other advertisements relating to the sciences and mechanical arts as are published by them for gratuitous distribution; but notice is hereby given such manufacturers or dealers who feel disposed to send their publications that not less than three copies should be forwarded in order that the subjects may be properly indexed, classified, and subclassified in the Scientific Library for convenient and ready reference.

## Issue of July 25, 1893.

| | | |
|---|---|---|
| Patents | 358 | No. 501,907 to No. 502,264, inclusive. |
| Designs | 8 | No. 22,642 to No. 22,649, inclusive. |
| Trade-Marks | 30 | No. 23,392 to No. 23,421, inclusive. |
| Labels | | None. |
| Prints | | None. |
| Reissues | 2 | No. 11,353 to No. 11,354, inclusive. |
| Total issue | 398 | |

### TO CITIZENS OF THE UNITED STATES.

| States. | Patents and Designs. | Trade-Marks and Labels. | States. | Patents and Designs. | Trade-Mark. and Labels |
|---|---|---|---|---|---|
| Alabama | 2 | | Nevada | | |
| Arizona Territory | 1 | | New Hampshire | | |
| Arkansas | 1 | | New Jersey | 11 | 3 |
| California | 9 | 3 | New Mexico Territ'y | | |
| Colorado | 6 | | New York | 49 | 6 |
| Connecticut | 13 | | North Carolina | 4 | 1 |
| Delaware | | | North Dakota | | |
| District of Columbia | 2 | | Ohio | 21 | 3 |
| Florida | 2 | 1 | Oklahoma Territory | 1 | |
| Georgia | 2 | | Oregon | 2 | |
| Idaho | 1 | | Pennsylvania | 35 | 2 |
| Illinois | 35 | | Rhode Island | 4 | |
| Indiana | 12 | 1 | South Carolina | 4 | |
| Indian Territory | 1 | | South Dakota | 1 | |
| Iowa | 12 | 1 | Tennessee | 3 | 1 |
| Kansas | 2 | | Texas | 4 | 1 |
| Kentucky | 2 | | Utah Territory | 1 | |
| Louisiana | 3 | | Vermont | | |
| Maine | 1 | | Virginia | | |
| Maryland | 1 | | West Virginia | 1 | |
| Massachusetts | 32 | 1 | Wisconsin | 7 | |
| Michigan | 11 | 1 | United States Army | | |
| Minnesota | 7 | | United States Navy | 1 | |
| Mississippi | | | | | |
| Missouri | 13 | 1 | Total to citizens of the United States | 325 | 26 |
| Montana | 3 | | | | |
| Nebraska | 2 | | | | |

### TO CITIZENS OF FOREIGN COUNTRIES.

| Countries. | Patents and Designs. | Trade-Marks and Labels. | Countries. | Patents and Designs. | Trade-Marks and Labels. |
|---|---|---|---|---|---|
| Australia | | | Germany | 5 | |
| Austria-Hungary | | | Guatemala | 2 | |
| Barbadoes | | | Ireland | 2 | |
| Belgium | | | Mexico | | |
| Bermuda | | | New Zealand | | |
| Brazil | | | Russia | 1 | |
| Canada | 4 | | Scotland | | |
| Chili | | | So. African Republic | 1 | |
| Colombia, U. S. of | | | Sweden | 1 | 1 |
| Cuba | | 1 | West Indies | | |
| Denmark | | | | | |
| Ecuador | | | Total to citizens of foreign countries | 41 | 4 |
| England | 19 | 2 | | | |
| France | 6 | | | | |

## APPLICATIONS UNDER EXAMINATION.

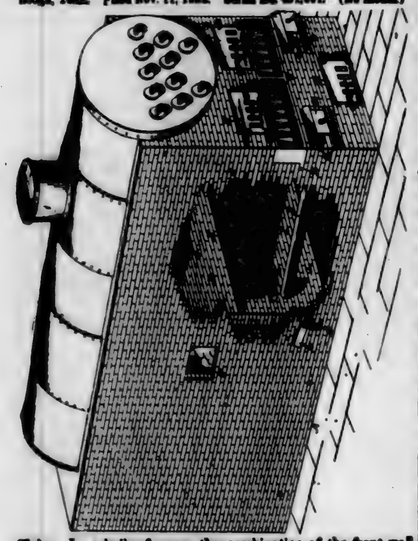
*Condition at Close of Business July 18, 1893.*

| Division No. | Subjects of invention. | Oldest new application and oldest action by applicant awaiting office action. New. | Amended | No. of applications awaiting action. |
|---|---|---|---|---|
| | *In arrears.—Under one month.* | | | |
| 31 | Gas, Painting, Hides, Skins, and Leather, Alcohol, Oils, Fats, and Glue, etc. | July 10 | July 17 | 21 |
| 2 | Farm Stock, Products, etc | June 20 | July 5 | 183 |
| | *Between one and two months.* | | | |
| 14 | Metal-Bending, Wire-Working, Coin-Controlled Apparatus, Farriery, Nut and Bolt Locks, etc. | May 30 | July 15 | 103 |
| 13 | Metal-Working, Arms and Projectiles, Nails and Spikes, Needles and Pins, etc. | June 5 | July 14 | 82 |
| 21 | Textiles, etc | May 19 | July 13 | 172 |
| 11 | Boots and Shoes, Clasps, Buckles, and Buttons, Harness, Hose and Belting, and Leather-Working Machinery. | May 19 | July 10 | 258 |
| 16 | Telegraphy, Telephony, Electric Lighting and Signaling. | June 17 | July 8 | 62 |
| 27 | Brushing and Scrubbing, Grinding and Polishing, Laundry, etc. | June 1 | July 8 | 139 |
| 12 | Mechanical Engineering, Store Service, etc. | May 22 | July 7 | 187 |
| 19 | Stoves and Furnaces | May 22 | July 5 | 310 |
| 30 | Lamps, Gas-Fittings, Linotyping, Matrix-Making Machines, and Type-Writing Machines. | June 10 | July 1 | 160 |
| 10 | Carriages and Wagons and Railway-Cars. | May 18 | July 1 | 390 |
| 6 | Chemistry, Explosives, Medicines, Fertilizers, Preserving, Photography, Sugar and Salt, etc. | June 7 | June 30 | 116 |
| 24 | Sewing-Machines, Crinolene and Corsets, and Apparel. | May 20 | June 27 | 162 |
| 20 | Builders' Hardware, Cutlery, Safes, Dentistry, Surgery, Undertaking, Artificial Limbs, etc. | May 20 | June 26 | 354 |
| | *Between two and three months.* | | | |
| 7 | Harvesters, Games and Toys, and Velocipedes. | Apr. 25 | July 12 | 383 |
| 32 | Advertising, Aeration and Bottling, Baggage, Packing and Storing Vessels, etc. | May 8 | July 11 | 290 |
| 3 | Metallurgy, Metal-Founding, Coating, Annealing and Tempering, Electro-Chemistry, etc. | May 1 | July 10 | 182 |
| 25 | Artesian and Oil Wells, Butchering, Mills and Thrashing, Stone-Working, Vegetable Cutters and Crushers. | May 5 | July 5 | 208 |
| 29 | Wood-Working Machines, Carpentry, Coopering, and Roofing, etc. | Apr. 24 | July 3 | 241 |
| 8 | Furniture, Toilet, Umbrellas and Canes, etc. | May 12 | June 28 | 347 |
| 9 | Hydraulics, Fire-Extinguishers, etc. | May 8 | June 27 | 317 |
| 17 | Paper-Manufactures and Printing | Apr. 27 | June 21 | 234 |
| 4 | Civil Engineering, Fire-Proof Buildings, Fire Escapes and Ladders, etc. | May 15 | June 2 | 323 |
| | *Between three and four months.* | | | |
| 23 | Instruments of Precision, Acoustics, Optics, etc. | Apr. 8 | June 27 | 328 |
| 1 | Tillage and Fences | Apr. 5 | June 23 | 295 |
| 15 | Plastics, Paper-Making, Paving, Glass, Fuel, Bread-Making, etc. | Mar. 27 | June 19 | 276 |
| 5 | Fine Arts, Stationery, Book-Binding, Music, etc. | Apr. 12 | June 14 | 316 |
| | *Between four and five months.* | | | |
| 18 | Steam-Engineering, etc | Mar. 7 | July 3 | 301 |
| 22 | Fire-Arms, Fishing and Trapping, Navigation, Signals, etc. | Mar. 14 | June 19 | 272 |
| 28 | Pneumatics, Refrigeration, Air and Gas Engines, etc. | Feb. 20 | June 8 | 392 |
| | *Between seven and eight months.* | | | |
| 26 | Electricity, Generation, Distribution, Electric Railways, etc. | Nov. 21 | Apr. 19 | 374 |
| | Total number of applications awaiting action | | | 7,668 |
| | *Under one month in arrears.* | | | |
| | Designs | July 8 | July 10 | 56 |
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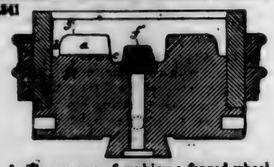
## GRANTED JULY 25, 1893.

**501,907.** BOILER-FURNACE. COURTLAND H. ALLEN, Sr., Chattanooga, Tenn. Filed Nov. 11, 1892. Serial No. 451,661. (No model.)



*Claim.*—In a boiler furnace, the combination of the front wall having separate air supply openings and grooved guides at both sides of said openings, a series of hollow draft grate bars arranged with their front ends opening at the front of the furnace above the air supply openings in said front wall, a bridge wall having a perfectly straight air circulating space therein and communicating at its upper end with the space between the top of the bridge wall and the boiler in the furnace, a deflector arranged over the inner open ends of the grate bars, separate air circulating pipes arranged longitudinally of the ash pit below the hollow grate bars and connected at their inner ends with the inclosed circulating space of the bridge wall and having their outer ends registering in the air supply openings in the front wall, and air supply regulating dampers or slides working in the guides and over the air supply openings, substantially as set forth.

**501,908.** METHOD OF MAKING CAR-WHEELS AND DIES FOR SAME. PIERRE ARBEL, Paris, France, assignor to the Société Anonyme Industrielle des Etablissements Arbel, same place. Filed Apr. 12, 1892. Serial No. 429,071. (No model.) Patented in France Feb. 11, 1891, No. 211,941.



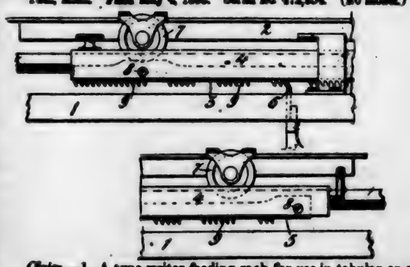
*Claim.*—1. The process of making a forged wheel consisting in first building up a fagot of the rim, nave and spokes, second, heating this and forging it between dies to produce a spoke wheel, third, applying a heated disk on one side thereof, and fourth, welding this disk to the spokes, rim and nave, whereby is produced an integral forged wheel having spokes and web.

2. The process of making a forged wheel consisting in first building up a fagot of rim, nave and spokes, the latter being made wedge-shaped in cross-section with their broader flat sides in the same plane as the side of the rim, and the nave having a projection *d'* beyond this plane, second, heating this fagot and forging it between dies to form a spoke wheel, third, placing against the flat side thereof a heated disk having a central hole fitting over said nave projection, and fourth, welding this disk to the spoke wheel between dies.

3. The process of making a forged wheel consisting in first building up a fagot of rim, nave and spokes, second, heating this and forging it between dies to produce a spoke wheel, third, applying to one side of said wheel while still at welding heat a heated disk, and fourth, welding this disk to the wheel between dies, whereby the complete wheel is made at one heat.

4. The improved dies for forging the combined spoke and web wheel described, consisting of a lower die F having recesses *a b* and *c* for receiving the entire thickness of the rim and spokes, and of the nave excepting a projecting portion *d'* thereof, combined with the upper die G having a plane or unrecessed lower face except for the recess *g'* for receiving said projecting portion *d'* of the nave, whereby the same dies are adapted for first forging the spoke wheel and subsequently welding a disk thereto to form the web.

**501,909.** TYPE-WRITING MACHINE. FRANK V. BARTLETT, St. Paul, Minn. Filed May 4, 1892. Serial No. 432,254. (No model.)



*Claim.*—1. A type-writer feeding rack for use in tabular or column work, said rack having its teeth formed in sets or groups alternating with plain spaces, the latter corresponding to the spaces between the columns or rows of figures or other characters on the sheet; substantially as described.

2. A type-writer feeding rack for use in tabular or column work, said rack having teeth or serrations formed in sets or groups only at points corresponding with the rows or columns of figures or other characters on the sheet; substantially as described.

3. A reversible feeding rack for type-writing machines, said rack having teeth on one edge uniformly spaced for continuous and even line-writing, the opposite edge of the rack being provided with groups or sets of teeth alternating with plain spaces, for column or tabular work; substantially as described.

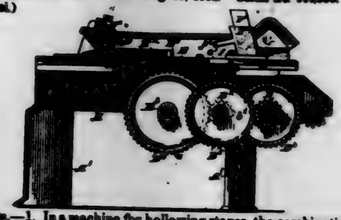
4. In a type-writing machine, the combination of the carriage, mechanism for moving the same, the feed dog, and a feeding rack, the latter having teeth formed in sets or groups leaving the rack plain at intervals, whereby when the dog engages the teeth the carriage will be moved with a regular *step-by-step* motion, and when the dog reaches the plain portions of the rack the carriage will be automatically shifted to a point where the dog encounters the next set of teeth; substantially as described.

5. In a type-writing machine, the combination of the carriage, mechanism for moving the same, the feed-dog, and a duplex feeding rack, the latter having two or more lines of teeth, one line of teeth being uniformly spaced, and the remaining line or lines having their teeth formed in sets or groups alternating with plain untoothed portions, whereby the machine is adapted for continuous and even line-writing, or for column or tabular work, substantially as described.

6. A reversible feeding rack for type-writing machines, said rack being provided with teeth on both edges, those on one edge being arranged in groups or sets alternating with plain spaces, for column or tabular work, and those on the other edge being differently arranged, for use in work of a different character: substantially as described.

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**501,910. MACHINE FOR HOLLOWING STAVES.** ASSA M. BENNER, Cleveland, Ohio. Filed Aug. 29, 1892. Serial No. 444,230. (No model.)



*Claim.*—1. In a machine for hollowing staves, the combination of a stave rest against which the outer side of the dressed stave may rest, a gouging knife arranged opposite and parallel to said stave rest to cut into the inner side of the stave, and means for forcing one of said elements toward the other, substantially as set forth.

2. In a machine for hollowing staves, the combination of a concave stave rest against which the convex side of the dressed stave may bear, a convex gouging knife arranged opposite and parallel to said stave rest to cut into the concave side of the stave, and means for forcing one of said elements toward the other, substantially as set forth.

3. In a machine for hollowing staves, the combination of a concave stave rest against which the convex side of the dressed stave may bear and formed with a convex rounded rear edge, with a convex gouging knife arranged opposite to said stave rest to cut into the concave side of the stave and formed with a rounded heel at its rear edge, substantially as set forth.

4. In a machine for hollowing staves, the combination of a stave rest, an opposed stave knife, a support for one end of the stave, and mechanism for forcing said support toward and from said rest and stave knife and simultaneously approaching and separating said rest toward and from said stave knife, substantially as set forth.

5. In a machine for hollowing staves, a stave rest against which the outer side of the dressed stave may rest, a gouging knife arranged opposite and parallel to said stave rest to cut into the inner side of the stave, and means for forcing one of said elements toward the other; in combination with a stave support for the end of the stave to be hollowed and opposed to the cutting edge of the knife, and means for forcing the stave support,—as one part,—and the knife and stave rest,—as another part,—one toward the other, substantially as set forth.

6. In a machine for hollowing staves, the combination of a rigid stave knife, an opposed, sliding stave rest, and a reciprocating slide having a crowning wedge bearing against said rest, substantially as set forth.

7. In a machine for hollowing staves, the combination of two brackets having grooves in their inner faces, a stave knife secured at the upper ends of said bracket, a stave rest sliding with its ends in the grooves in the brackets, and a reciprocating slide having a wedge bearing against the under side of the stave rest, substantially as set forth.

8. In a machine for hollowing staves, the combination of a stave knife and an opposed stave rest, with a post supported to be reciprocated toward and from the knife and rest, and a stave support sliding upon said post and having means for raising and lowering it upon said post, substantially as set forth.

9. In a machine for hollowing staves, the combination of a stave knife and opposed stave rest, a slide having a post and having means for reciprocating it toward and from the knife and rest, a stave support sliding upon said post and having a laterally projecting roller, and a cam bracket having a triangular groove for said roller, substantially as set forth.

10. In a machine for hollowing staves, the combination of a stave knife, an opposed stave rest, and a reciprocating stave support having means for lowering it at its forward stroke, substantially as set forth.

11. In a machine for hollowing staves, the combination of a stave knife, an opposed stave rest, and a reciprocating stave support having means for lowering it at its forward stroke and raising it at its back stroke, substantially as set forth.

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**501,911. CARBON-HOLDER FOR ELECTRIC-ARC-LAMPS.** EDWARD BERGMANN, New York, N. Y. Filed Oct. 22, 1892. Serial No. 449,046. (No model.)



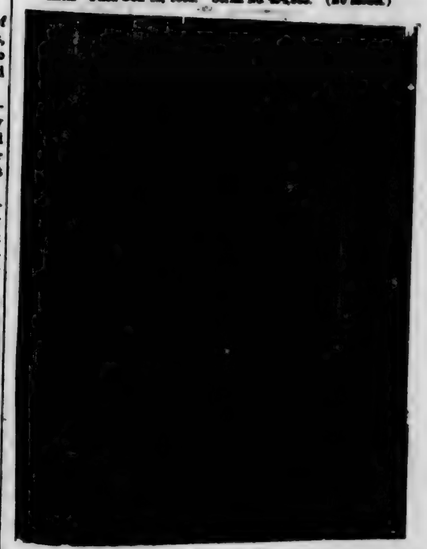
*Claim.*—1. A rack bar of an electric arc lamp provided with a concave end, in combination with a convex headed carbon holder, a spring and a screw for securing said parts together, substantially as described.

2. A rack bar of an electric arc lamp having a socket plug secured to its lower end, of a convex headed carbon holder a spring and a screw for securing said parts together.

3. A rack bar of an electric arc lamp provided with a concave end in combination with a convex headed carbon holder having an enlarged opening in its head, a spring washer having an enlarged opening and arranged in the cavity of the holder and a screw for securing the several parts together, substantially as described.

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**501,912. WRECKING APPARATUS.** MICHAEL BRADAW, Detroit, Mich. Filed Dec. 12, 1892. Serial No. 454,852. (No model.)



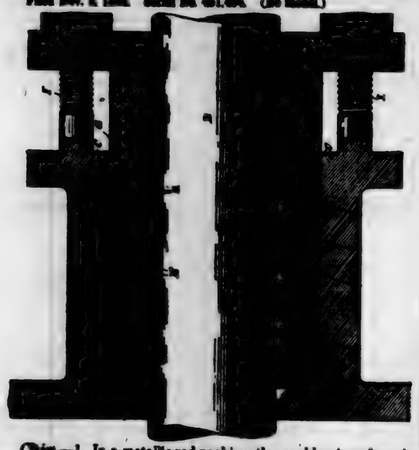
*Claim.*—1. In a wrecking appliance, the combination of air-tight pontoons, chain tubes traversing said pontoons, means for holding chains passed through said tubes, an air pipe for conducting air into said pontoons, water outlet pipes and valves in said water and air pipes, means for holding said valves in either an open or a closed position, and means for operating the valves from the surface of the water, substantially as and for the purpose described.

2. In a wrecking apparatus, the combination of a ponton rectangular in vertical cross-section, diagonal tubes crossing said ponton lifting chains passing through said tubes, and joining the pontons in couples, air inlet tubes leading to the surface of the water, water and air outlet tubes disposed along the top and ends of said ponton, valves controlling said outlet and means for operating said valves from a distance, and holding them in either an open or a closed position, substantially as and for the purpose described.

3. In combination with a wrecking device, a spring closed valve, having a valve stem extending beyond the casing a double bell crank lever, fulcrumed at one elbow to the casing and linked at the other elbow to the valve-stem, the elbow to which the end of the link is attached being adapted to be forced to either side of the main fulcrum, and to strain the spring in either position whereby the valve is held in either its open or its closed position by the strain of the spring, substantially as and for the purpose specified.



**501,918. ROD-PACKING.** ALDEN BRADFORD, Fall River, Mass. Filed Nov. 5, 1892. Serial No. 451,694. (No model.)



*Claim.*—1. In a metallic rod packing, the combination of a series of circular split sectional rings having inner beveled or concaved faces disposed toward each other said rings being adapted to fit out against the inner side of a stuffing box and to be out of contact with the rod therein, and a series of fagot anti-friction packing rings comprising compact circular bunches adapted to be clamped between the beveled faces of the rings, substantially as set forth.

2. In a metallic rod packing, the combination with a series of clamping rings out of contact with the rod; of a series of uncovered fagot packing rings arranged between the clamping rings and held onto the rod thereby, each of said fagot packing rings comprising a compact bundle of small continuous fibers or strips of anti-friction metal closely bunched together to form a ring truly circular in cross section, and having their ends terminating short of each other to form a split ring capable of adjustment on the rod, substantially as set forth.

3. In a rod packing, the combination with the stuffing box and gland thereof, of a series of adjacent pairs of split clamping rings, the rings of each pair having flat registering faces and opposite beveled faces closely meeting each other disposed toward the corresponding face of the ring of the adjacent pair, said clamping rings being adapted to fit out against the inner sides of the stuffing box and circular fagot packing rings of continuous strips of anti-friction metal clamped between the beveled faces of the several pairs of clamping rings, said clamping rings being out of contact with the rod, substantially as set forth.

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**501,914. METHOD OF BUILDING ENGINE-FOUNDATIONS.** PERRYNE M. BROWNE, St. Louis, Mo. Filed Mar. 22, 1892. Serial No. 425,900. (No model.)



*Claim.*—1. The herein-described method of building an engine foundation and anchoring the bed-plate of the engine thereto, which consists,—first, in setting up the standards; second, in placing the bed-plate thereon and bringing all to a level; third, building a portion of the foundation; fourth, removing the bed-plate; fifth completing the foundation; and, sixth, in replacing the bed-plate, substantially as described.

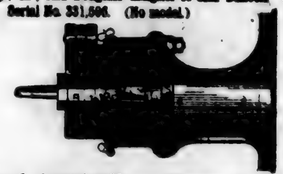
2. In a foundation for engines or other machinery, the combination with the engine bed plate, or other equivalent part, of anchoring standards rigidly secured to said bed plate for supporting the said bed plate in position while the foundation is being built and for anchoring the same to the said foundation, and suitable means for securing the standards to the bed-plate, substantially as described and for the purpose specified.

3. In an engine or machinery foundation, the combination of the foundation composed of concrete with anchoring standards a bed plate rigidly secured to said standards, and suitable means for securing the bed-plate to the standards, substantially as described.

4. The herein-described method of building a foundation for an engine, or other heavy machinery, consisting,—first, in setting up the standards in approximate position; second, in placing the engine bed-plate, or equivalent part, on the standards and securing the bed-plate thereto; third, in leveling the bed-plate and bringing the same into alignment; and, fourth, in building the foundation in and around the standards, substantially as described.

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**501,915. MOLD.** MILAN C. BULLOCK and SAMUEL W. DOUGLASS, Chicago, Ill.; said Douglass assignor to said Bullock. Filed Nov. 28, 1889. Serial No. 331,606. (No model.)



*Claim.*—1. A metal mold, comprising a central member having transverse holes therein to receive holding wires or pins by which to retain diamonds or other separate parts, in proper position within the mold during the pouring; the said central member being provided with a cavity affording access to the holding wires or pins while said member is in position in the mold, substantially as set forth.

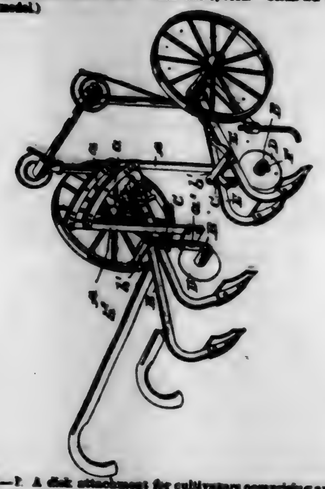
2. A sectional metallic mold comprising an external vertically divided body portion forming the external walls of the mold and having an opening through its bottom, a tapered wedge-shaped member projecting upward through said mold, and wholly separate from the mold, a contractible tubular core or sleeve surrounding the tapered member and located wholly separate therefrom within the mold and slit longitudinally at one side and also recessed longitudinally at another side, and a wholly separate spreader-piece wedge-shaped in cross-section and inserted into the split of the core, substantially as set forth.

3. A sectional metallic mold, comprising an external vertically divided body portion having its two sections hinged together and forming the external walls of the mold and having an opening in its bottom, a tapered member wholly separate from the body portion of the mold and removable downwardly from the mold through the bottom opening thereof, a movable support for the tapered member hinged beneath the body of the mold and having also a central opening, a contractible tubular core or sleeve surrounding the tapered member and located wholly separate therefrom within the mold and split longitudinally at one side and also recessed longitudinally outward at another side, and a wholly separate spreader-piece wedge-shaped in cross-section and inserted into the split of the core, substantially as set forth.

4. A sectional metallic mold, comprising a vertically divided external casing forming the body portion of the mold and having an opening in its bottom, the two portions of the casing being hinged together and having connecting attachments opposite their hinge, a wedge-shaped member wholly separate from the mold and projecting upwardly through the same and also removable downwardly through the bottom of said mold, a contractible tubular core or sleeve surrounding the tapered member and located wholly separate therefrom within the mold and split longitudinally at one side and also recessed outward longitudinally at another side, a separate wedge-piece arranged to enter the longitudinal split of the sleeve a retaining-band embracing one end of the core or sleeve, and interlocking recesses and projections upon the tapered member and core to prevent expansion of the latter within the mold, substantially as set forth.

5. A sectional metallic mold, comprising a base, a vertical support integral with the base, and a body portion integral with the support, said base, support and body-portion being vertically divided and hinged together, and the internal cavity of the body-portion being of greater diameter at its upper than at its lower portion, a vertically divided top piece for the mold wholly separate therefrom and having an inlet opening communicating with the cavity of the mold, ribs and projections located within the cavity of the mold and serving to form the water-ways of the molded article, a support hinged below the body-portion of the mold and having a central opening, a tapered member wholly separate from the mold and resting upon the support, a longitudinally split and recessed contractible tubular core having external ribs to form the internal water-ways of the molded article, and located within the mold and surrounding the tapered portion, and also wholly separate from the mold and the tapered portion, and a spreader wedge-shaped transversely, inserted into the split of the core, substantially as set forth.

**501,916.** DISK ATTACHMENT FOR CULTIVATORS. ALEXANDER CALDWELL, Rhodes, Iowa. Filed Oct. 6, 1892. Serial No. 447,913. (No model.)



*Claim.*—1. A disk attachment for cultivators comprising among its members the disk, its supporting axle having a vertically disposed stem, devices for securing said stem to the cultivator for the disk to cooperate with the cultivator shovels, a laterally extending arm secured to the said axle stem and an adjustable connection between said arm and the frame of the cultivator whereby the axle stem can be turned and secured to adjust the disk to the proper position, substantially as described.

2. A disk attachment for cultivators comprising among its members a pair of disk supporting axles, devices for removably securing said disks and axles to a cultivator for use with the same, said axles being connected by an arch construction pivotally connected with each whereby said disks are held a certain distance apart but are permitted an independent forward and backward movement, substantially as described.

3. The combination with a walking cultivator having independently movable plow or cultivator beams, of two disks and their supporting axles, devices for securing said axles to the cultivator beams, means for adjusting said disks at different angles to the line of draft and an arch construction having its lower ends pivotally connected with said axles to permit independent back and forward movement, the vertical portions of said arch being connected at the top to permit independent vertical movement, substantially as described.

4. An attachment for cultivators comprising a pair of disk supporting axles having vertically disposed stems securing devices for securing said stems to the cultivator beams, a pair of vertical standards having their lower ends pivotally secured to the said stems, and their upper ends connected by cross bars pivotally secured thereto, substantially as described.

5. An attachment for cultivators comprising a pair of disk supporting axles having vertically disposed stems securing devices for securing said stems to the cultivator beams, a pair of vertical standards having their lower ends pivotally secured to said stems adjustable cross bars pivotally secured to their upper ends, substantially as described.

**501,917.** CLEANER FOR CULTIVATOR-TEETH. ALEXANDER CALDWELL, Rhodes, Iowa. Filed Feb. 14, 1893. Serial No. 462,774. (No model.)



*Claim.*—1. The combination with the cultivator disk and its supporting axle, of a collar adjustably secured to said axle, a cleaning knife having a shank at an angle to the cleaning edge, said shank being slotted and a bolt passing through said slot for securing said knife adjustably to the said collar, substantially as described.

2. The combination with a cultivator disk and a non-rotatable supporting axle therefor, of a collar adjustably secured to said axle provided with an arm extending in a direction substantially parallel to the axis, a cleaning knife having a shank extending at an angle to the knife and provided with a slot, and a bolt for securing said slotted shank adjustably to the arm of said collar, substantially as described.

**501,918.** COUPLING FOR HOLLOW SHAFTS. HENRY W. CALDWELL, Chicago, Ill. Filed Dec. 13, 1892. Serial No. 455,102. (No model.)



*Claim.*—1. In a shaft-coupling, the combination with tubular shafts having splines or feathers, of a core-coupling connecting the shafts together, and having grooves into which the splines or feathers extend, substantially as set forth.

2. In a shaft-coupling, the combination with tubular shafts having splines or feathers, of a core coupling connecting the shafts together, and having grooves into which the splines or feathers extend, and exterior collars covering and protecting the said core coupled ends of the shafts, substantially as described.

3. In a shaft-coupling, the combination with tubular shafts having splines or feathers, of a core-coupling connecting the shafts together, and having grooves into which the splines or feathers extend, exterior collars covering and protecting the core coupled ends of the shafts, and bolts or screws passing through the collars and shafts and bearing against the core-coupling to hold it against vibration, substantially as described.

4. In a shaft-coupling, the combination with tubular shafts, of a core fitted into said shafts, splines or feathers projecting into said shafts, and fitted into grooves in said core, and one or more bolts for holding said core against vibration, substantially as described.

**501,919.** TACK-PULLER. GEORGE J. CAPEWELL, Hartford, Conn. Filed Sept. 7, 1892. Serial No. 445,577. (No model.)



*Claim.*—A tack puller consisting of a handle having a fixed plate of thin metal of uniform thickness, with its outer end bent in a curve to form a gouge, wide enough to project on each side of a thin plate of uniform thickness pivoted to the fixed plate, said plate having a hook-shaped end that is movable toward and from the gouge end of the fixed plate, and an end that is bent across itself to form a resting foot, substantially as specified.

**501,920.** LEATHER-STRETCHING MACHINE. JOHN M. CHARBONE, Boston, Mass., assignor to Harriet R. Holmes. Filed Feb. 18, 1892. Serial No. 421,882. (No model.)

*Claim.*—1. In a leather stretching machine, the combination of the frame of the machine, a leather holding clamp at one end thereof, the adjustable leather holding clamp C at the other end thereof, and an intermediate reciprocating frame having a number of rubbers mounted thereon, of which those adjacent to the adjustable clamp C are movable from operative position to a position which permits the adjustment of the clamp C over them, without being detached from their operative frame, as and for the purposes described.

2. In a machine of the character specified the rubber frame, one or more rubber holders or leaves pivoted to the frame to be swung on a vertical axis, and a locking device for locking the leaves or holders in vertical position, substantially as described.

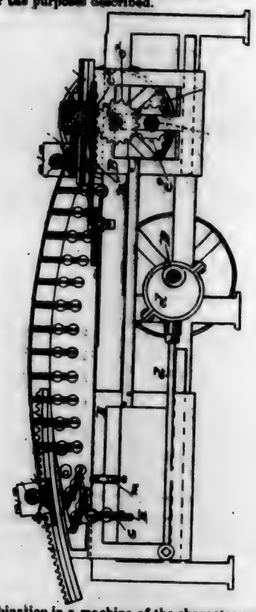
3. In a machine of the character specified one or more leaves or supports for carrying the rubbers hinged to their supporting frame, and having bolts or pins $g^3$ $g^3$ respectively, to enter holes in said frame when in vertical position said bolts being connected together to be simultaneously withdrawn to release the leaf, substantially as described.

4. The combination of the leaf or holder G pivoted as specified, the bolts or pins $g^3$ $g^3$, the levers $g^4$ $g^4$, and the toggle connecting links $g^5$ $g^5$, as and for the purposes described.

5. In a machine for stretching leather the leaves or supports G having imparted to them a reciprocating movement upon the same



plane, and each of which has in its upper edge a cross recess $h'$ and the rubbers H having their working surfaces rounded regularly on each side from their top to provide working surfaces on each side thereof, and having extensions to enter said cross recesses respectively, all as and for the purposes described.



6. A combination in a machine of the character specified of the frame M, the rubbers mounted thereon, the said frame being pivoted to the bed, means for adjusting the vertical position of said pivots, and automatic means for varying the heights of the frame from the pivotal point forward to the takeup clamp, as and for the purposes described.

7. In a machine of the character specified the adjustable slide C having the pinions $c^3$ and racks $c^4$, the pinions being mounted upon a shaft carried by the adjustable clamp frame, and being turned to move the frame and clamp in their guide-ways, the racks having pin holes and the pins $c^5$ to enter said holes, substantially as described.

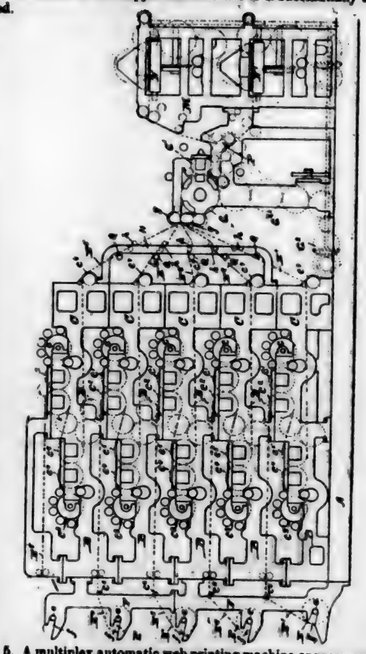
**501,921.** ROTARY WEB-PRINTING MACHINE. JOHN J. CLAUSS, Chicago, Ill. Filed July 18, 1891. Serial No. 399,833. (No model.)

*Claim.*—1. A multiplex automatic web printing press or machine comprising a single pair of cutting cylinders and a series of automatic printing cylinders or mechanisms adapted each to print a separate web and arranged in a series of similar horizontal sections or layers one upon another, said sections or layers having each a separate and similar frame adapted to be imposed upon the one below it and to support the one above it, substantially as specified.

2. A multiplex automatic web printing press or machine comprising a single pair of cutting cylinders and a series of automatic printing cylinders or mechanisms adapted each to print a separate web, and arranged in a series of similar sections or layers one upon another, said series of printing mechanisms being all geared together by a series of removable connecting gears so that one or more of the series may be disconnected when desired, said sections or layers having each a separate and similar frame adapted to be imposed upon the one below it and to support the one above it, substantially as specified.

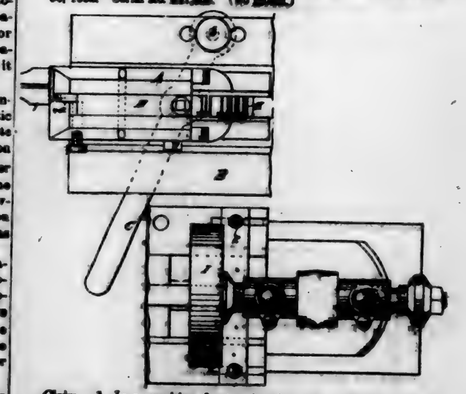
3. A multiplex or sectional automatic web printing press or machine, comprising a single cutting mechanism, and a series of automatic printing cylinders or mechanisms adapted each to print a separate web and arranged in a series of horizontal sections or layers one upon another, each layer or section having a similar separate block or box-shaped frame whereby the complete machine may be conveniently and cheaply made of any desired number of layers or sections, substantially as specified.

4. The multiplex or sectional automatic web printing press, composed of a series of sections or layers of automatic printing mechanisms one on top of another for simultaneously printing a number of webs, a common cutting mechanism for simultaneously severing the several webs into sheets, and take up devices located between said cutting mechanism and said printing mechanisms to cause the printed pages or matter of the several webs to properly register when the webs are brought together at said cutting mechanism, each of said layers having a separate and similar frame adapted to rest upon the one below it and support the one above it substantially as specified.



5. A multiplex automatic web printing machine or press comprising a series of printing cylinders or mechanisms adapted each to print a separate web, arranged in a series of similar sections or layers one upon another and provided with means for connecting or disconnecting the same with the other, each of said series having a separate frame adapted to be placed one on another, substantially as specified.

**501,922.** MECHANISM FOR TURNING PEARL BUTTONS OR OTHER ARTICLES. SOLON CARNEY, Philadelphia, Pa., assignor to the Clerot Pearl Button Manufacturing Company, same place. Filed Sept. 30, 1892. Serial No. 447,403. (No model.)



*Claim.*—1. In a machine for turning buttons or other articles, the combination with a work-holding chuck, of a tool-holder movable toward and away from said chuck, and a curved tool having its

outer face shaped to give the desired contour to the work, and supported in said holder so that in operation the plane of rotation of the work is approximately tangential to the curve of the tool, substantially as described.

2. The combination with the work-holding chuck, of a curved tool, and a holder comprising a chambered support, a plate against which the inner end of the tool rests, means for adjusting said plate in a right line, and means for clamping the tool in its operative position, substantially as described.

3. In a turning machine, provided with a chuck, and a relatively stationary sharpener the combination of a tool carriage adapted to slide toward the chuck in one direction, and toward the sharpener in the other, and a tool-holder pivoted on said carriage and capable of rotation to bring the tool into contact with the grinder, substantially as described.

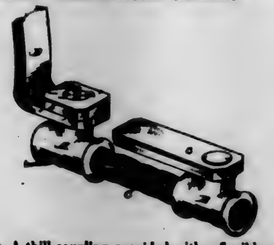
4. In a turning machine, provided with a sharpener, and a work-holding chuck, the combination of a tool-carriage, and a tool-holder pivoted in said carriage and movable on its pivot to bring the tool in one position into operative relation to said chuck, and in the other into contact with said sharpener, substantially as described.

5. The combination of a movable tool carriage, a relatively stationary sharpener, a tool-holder pivoted on said carriage, and gearing coming into engagement as said carriage approaches said sharpener and rotating said holder on its pivot, thereby bringing the cutting edge of said tool into contact with the sharpener substantially as described.

6. In a turning machine provided with a work-holding chuck, and a relatively stationary sharpener, the combination of a carriage adapted to reciprocate in a path between the two, a tool-holder pivoted on said carriage, and means (such as a rack and pinion) for turning said holder on its pivot so as to present the end of the tool to the latter, substantially as described.

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**501,923.** THILL-COUPLING. WOODSON D. COBB, Fort Worth, Tex. Filed Apr. 3, 1893. Serial No. 468,918. (No model.)

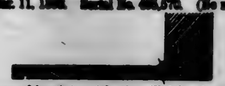


*Claim.*—1. A thill coupling provided with a flexible connection between its end the axle or other part of a vehicle, consisting of a wire rope, substantially as and for the purpose set forth.

2. In a thill-coupling, a wire rope having thimbles or other suitable device upon its ends and means for connecting them to the thill-iron or pole and the axle or other part of a vehicle, substantially as and for the purpose described.

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**501,924.** BOGEY-BODY. CHARNEY M. COFFEY, Crawfordsville, Ind. Filed Mar. 11, 1893. Serial No. 465,573. (No model.)



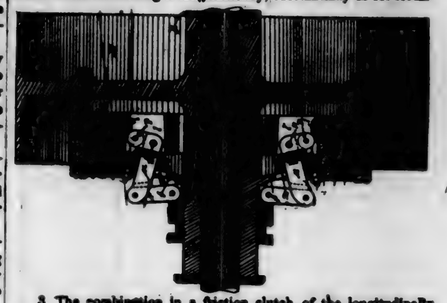
*Claim.*—The combination with the sill 1 having the rib formed upon its upper side and along its outer edge and its outer face flush with the external surface of the sill, of the panel 3 having its inner face near its lower edge recessed as at 4, said recess agreeing in length with the combined height of the sill and rib and having its upper side or bottom undercut to receive the rib, substantially as specified.

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**501,925.** FRICTION-CLUTCH. ELIAS C. CROWELL, Dunkirk, N. Y. Filed Dec. 14, 1892. Serial No. 454,915. (No model.)

*Claim.*—1. The combination in a friction clutch, of an annular friction ring fixed to a shaft and a loose ring moving annularly with and supported by said fixed ring, and also moving longitudinally thereon, with a loose annular clutch ring, adapted to be brought into contact with the fixed friction ring by the longitudinal movement of said loose ring, and released therefrom by springs operating on said loose clutch ring, and bell-crank lever mechanism connecting said fixed portion of the clutch with said loose ring sliding thereon, for the purpose set forth.

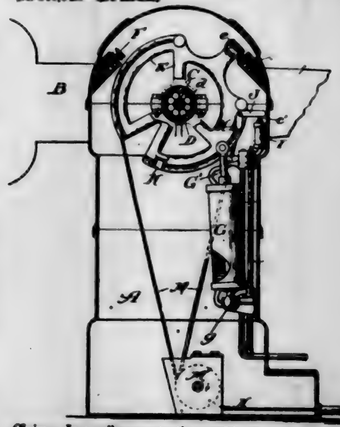
2. The combination in a friction clutch, of an inclined friction ring fixed to the shaft, a loose pulley secured against longitudinal movement on the shaft, and an inclined faced clutch ring, mounted on studs in the arms of said pulley so as to move laterally thereon, with springs for moving said clutch ring in one direction, and a loose ring moving annularly in unison with the fixed friction ring, and bell-crank levers for moving it longitudinally, substantially as set forth.



3. The combination in a friction clutch, of the longitudinally moving annular clutch ring E and the springs e for moving it toward the arms of the pulley upon which it is mounted, with the fixed annular friction ring A, the longitudinally sliding ring I mounted and moving longitudinally in the fixed friction ring A, the bell-crank lever L mounted in said loose ring I, the bolt or link Q connecting one arm of said bell-crank lever with the web *f* of fixed friction ring A, and the link N connecting the other arm of said bell-crank lever with the shifting sleeve O, substantially as and for the purpose set forth.

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**501,926.** RAILROAD-GATE. ROBERT C. DOUGLASS, Chicago, Ill., assignor to A. B. McChesney, same place. Filed Apr. 20, 1891. Serial No. 389,645. (No model.)



*Claim.*—In a railway gate, the combination of a post, a shaft journaled therein, a sector secured to such shaft and provided with a head or bumper, and spiral springs supported in sockets, whereby as the sector rocks in one direction or the other the head will strike against one or the other of such springs, substantially as described.

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**501,927.** FOOT-GUARD FOR RAILWAYS. OLIVER L. DUFLINGER, Shelbyville, Ind. Filed Feb. 9, 1893. Serial No. 461,415. (No model.)



*Claim.*—1. The combination of a guard pivotally secured to the ties at one end by spikes S driven through holes therein suitably formed to permit the pivotal motion, a supporting plate secured to other ties below the free end of said guard, and a spring interposed between said plate and said guard whereby said guard is normally held in raised position, said guard being constructed and operating substantially as set forth.

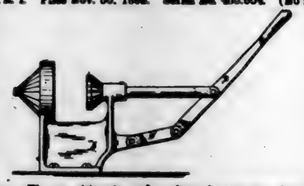
2. The combination of a guard C secured at one end, with its free end curved downwardly, a bottom plate D having its corresponding end curved upwardly, and a spring interposed between them, substantially as set forth.

3. The combination of a guard C secured at one end, the other or free end being formed to fit between the rails or frog or switch sides, as shown, and provided with a bolt or pin C' extending downwardly, the bottom plate D having a perforation for said pin or bolt, and a spring E interposed between the parts C and D and surrounding the pin or bolt C', substantially as shown and described.



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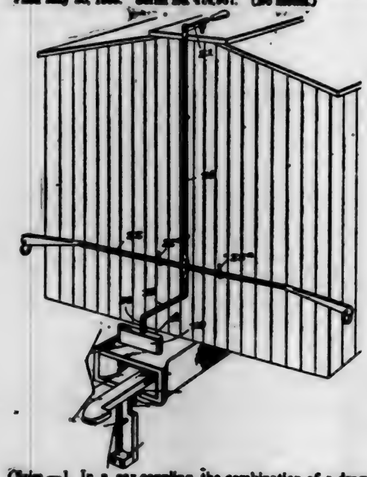
**501,928.** VEGETABLE-SLICING MACHINE. CRAWFORD M. FAIRBANKS, Central Falls, assignor of one-half to George E. Cranston, Riverside, R. I. Filed Nov. 30, 1892. Serial No. 453,604. (No model.)



*Claim.*—The combination of a slotted plunger, detachable co-operating knife-blades, peripheral stay provided with a slotted interior for holding the remote ends of the same truncated nut and bolt for holding the knife-blades at the converging ends of the same, and compound lever for operating the plunger, substantially as specified.

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**501,929.** CAR-COUPLING. JOHN W. FLYNN, Bordentown, N. J. Filed May 20, 1893. Serial No. 474,907. (No model.)



*Claim.*—1. In a car coupling, the combination of a draw-head having a longitudinal opening and provided with a transverse slot communicating therewith, a vertically and laterally movable locking-bar arranged in the transverse slot of the draw-head and provided with a link-receiving recess and adapted to be raised to cause the recess to register with the opening of the draw-head, and springs for holding the locking bar in engagement with the link, substantially as described.

2. In a car-coupling, the combination of a draw-head having a longitudinal opening and provided with a transverse slot communicating therewith, a vertically and laterally movable locking-bar mounted in the slot and provided with a link-releasing recess, a spring-actuated plate engaging the outer edge of the locking-bar and forcing the latter inward to engage a link, and a spring for holding the locking-bar downward, substantially as described.

3. In a car-coupling, the combination of a draw-head provided with a transverse slot, a locking-bar mounted therein and provided with a link-releasing recess, a plate attached at its rear end to the draw-head and having its front end bearing against the locking-bar, a horizontal bolt mounted in the draw head and forming a guide for the plate, and a spring disposed on the bolt and engaging the plate, substantially as described.

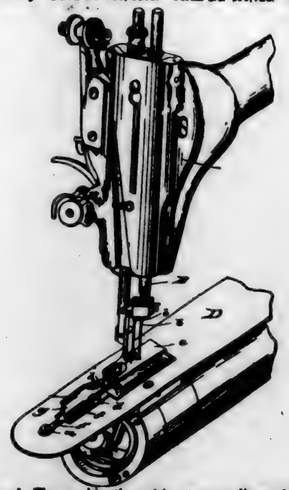
4. In a car coupling, the combination of a draw-head provided with a transverse opening, a locking-bar mounted in the transverse opening and provided with a recess for releasing the link and capable of vertical and lateral movement, a spring-actuated plate engaging the outer edge of the locking-bar, a block secured to the lower end of the locking-bar and provided with an opening, a rod depending from the draw-head and arranged in the opening of the block, a spring disposed on the rod and interposed between the draw-head and the block to hold the locking-bar downward, and a projection extending from the locking-bar forming a stop and limiting the upward movement of the locking-bar, substantially as described.

5. In a car-coupling, the combination of a draw-head provided in its bottom at its outer end with a notch, a locking-bar, and a link adapted to be engaged by the locking-bar and provided with a depending projection for limiting its movement into the draw-head, substantially as described.

6. In a car-coupling, the combination of a car, a draw-head having a transverse slot, a locking-bar arranged therein, a vertically-disposed lifting-bar mounted on the car and connected at its lower end to the locking-bar, a foot-lever connected with the upper end of the lifting-bar and fulcrumed on the top of the car, fulcrum supports arranged on the car at opposite sides of the lifting-bar, and a transversely-disposed lever pivotally connected to the lifting-bar and arranged on the fulcrum supports, substantially as and for the purpose described.

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**501,930.** GUIDE FOR SEWING-MACHINES. CHARLES H. FOSTER, New York, N. Y., assignor to The Singer Manufacturing Company of New Jersey. Filed Feb. 10, 1893. Serial No. 461,720. (No model.)



*Claim.*—1. The combination with a two-needle sewing machine provided with a presser-foot scroll hemmer, of a guide, for use in making lap seams, said guide comprising a vertical rib or flange having its forward or inner part turned over into a downwardly and forwardly sloping scroll, and the said vertical rib or flange being arranged in a line about midway between the two needles of the machine.

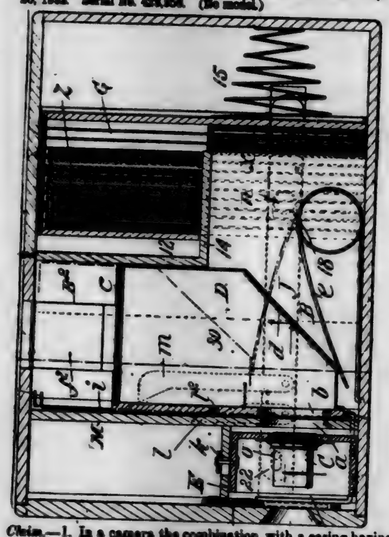
2. A sewing machine guide, for use in making lap seams, comprising a vertical flange having at its outer part a horizontal lip and having its inner or forward part turned over to form a downwardly and forwardly sloping scroll.

3. A sewing machine guide, for use in making lap seams, consisting of a base provided with an outwardly extending shank by which to attach the guide to the work-plate of the machine, and a flange extending upward from said base and provided at its outer part with a horizontal lip and at its inner or forward part with a forwardly and downwardly sloping scroll.

4. The combination with a two-needle sewing machine provided with a presser foot scroll hemmer, of a guide consisting of the base *f* having the shank *f''* by which said guide is pivotally attached to the work-plate of the machine, said base having also the flange or rib *g* arranged in line about midway between the needles of the machine,

and the said flange or rib being provided at its outer part with the horizontal lip *l* and at its inner or forward part with the scroll A.

## 501,981. PHOTOGRAPHIC CAMERA. JULIUS D. GARFIELD, Springfield, assignor of one-half to Henry Emery, Holyoke, Mass. Filed Apr. 20, 1892. Serial No. 429,956. (No model.)



*Claim.*—1. In a camera the combination, with a casing having a lens-opening, a lens and an exposing chamber in rear of the lens, of a shutter, a finder movable into and out, of a position between said lens and the plates in the exposing chamber, and a shutter setting device having a portion located in the path of movement of and operated by said finder, substantially as described.

2. In a magazine camera, the combination with a casing having a lens-opening, a lens, and exposing chamber in rear thereof, of an inwardly opening door in said casing, and a finder casing located in the path of the inwardly opening door, and operated thereby substantially as described.

3. In a camera, the combination with a casing having a lens opening, a lens, and chamber in rear of said lens, of a shutter, a finder movable into and out of a position at the rear of the lens, and a rock-shaft having two arms, one of which engages the shutter, and the other of which is located in the path of movement of the finder, whereby the shutter is operated by the finder depressing that arm of the rock-shaft which lies in the path of said finder, substantially as described.

4. In a camera, the combination with a casing having a lens-opening, a lens and a chamber in rear of said lens, of a shutter a finder movable in said chamber, a device engaging said shutter a portion of which is located in the path of and which is operated by said finder driving its movement in one direction, and shutter releasing mechanism located in the path of said finder and connected with said shutter operating device, said shutter releasing mechanism operated by the finder during its movement in the other direction to release the shutter, substantially as described.

5. In a camera the combination with a casing having a lens-opening, a lens, and a chamber in the rear of said lens, of an apertured shutter pivotally supported to swing across the lens, a finder movable in said chamber, and a rock-shaft having the arms *g'*, *g²* and the rod *i*, connected to one of said arms and adapted to be engaged and moved by the finder on the withdrawal of said finder from its position in rear of the lens, substantially as described.

6. The combination with a camera-box having a lens opening, a lens, and a chamber back of the lens, of a movable shutter, a finder movable in said chamber, a shutter-operating shaft a portion of which is located in the path of and operated by the finder, mechanism located in the path of and operated by said finder for releasing said shutter from the shutter operating shaft, a catch device automatically engaging said finder and retaining the same in its lowered and raised position, and a movable support connected with said catch device to release the finder therefrom, substantially as described.

7. In a camera, the combination with a lens and a finder movable transversely of the axial line of the lens, as specified, provided with the stud *n*, of the hooked bar *l*, and the bar *m*, a spring for each of said bars, and a movable support on which said bars are mounted for movements, substantially as described.

8. In a camera the combination with the lens and a movable finder provided with the stud *n*, of the slide bar *J*, having the hooked-bar *l*, and the bar *m*, of unequal length, pivotally mounted thereon and said bars having the inclines $l^3$, and $m^3$, the stops 20, 21, and a spring applied to each bar, substantially as described.

9. In a camera the combination with a casing having apertures in its opposite sides and a lens-opening, a lens, a chamber at the rear of said lens, and a movable shutter, of a finder movable in said chamber transversely of the axial line of the lens, a device between and coacting with the finder and shutter which is adapted to be actuated by the finder and which sets and releases the shutter, a slide bar having an aperture *a* registering with the apertures in the sides of the casing and also having automatic catch devices for engaging the finder to retain it in either its position opposite the lens, or its position transversely removed therefrom, which devices are bodily movable with the slide bar whereby either of said engagements that may be established will be released by the movement of said bar, substantially as described.

10. In a camera the combination with a casing having openings 18 and 22, through its side and a lens aperture *a* lens, a chamber back of the lens, and a lens-shutter, of a finder movable in said chamber and provided with a catch stud, a device between and coacting with the finder and shutter for setting and springing the shutter on the movements of the finder, a magazine movable within said casing, the slide bar J, having an aperture *a* registering with the opening 18, and having the stud *o* at the opening 22, and the catch bars *l* and *m* of unequal length and having engaging portions properly located to engage said stud *o*, substantially as described.

## 501,982. AWNING. CHARLES GLAWE, Dayton, Ohio. Filed Apr. 7, 1893. Serial No. 469,434. (No model.)



*Claim.*—1. In an awning, the combination with the roof and its supporting frame, of a folding wing adapted to inclose the ends of said roof, provided with laterally and inwardly projecting flaps *D'*, the folding rods *d* and *f* with the laterally projecting plates *q q* fixed thereto, upon which the flaps *D'* are supported, the sliding levers *g* and *i* pivoted to said folding rods, and the vertical brackets *o* and *o'*, substantially as described.

2. In an awning, the herein described wing consisting of the folding rod *d* pivoted to the bracket *o*, and the folding rod *f* which together with folding rod *d* have pivotal connection with sliding levers *g* and *i*, the latter lever having a pivotal connection with folding rod *f*, and both lever *i* and rod *f* pivoted to the horizontal drop rod *m*, the vertical brackets *o* and *o'* with the pins *q q*, the sleeves *p* and *p'* slidingly mounted on said brackets and secured by the pins *q q* when the wing is lowered, substantially as herein described.

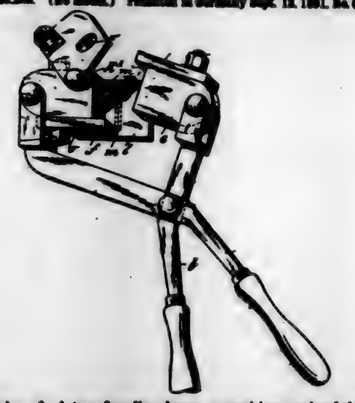
## 501,988. CAR-COUPLING. CASHIOUS M. GRAVES, Eddyville, assignor of one-half to M. P. Molloy, W. M. Bowman, J. L. James, Jr., and J. H. Catlett, Lyon County, and C. W. Matthis, La Rue County, Ky. Filed July 18, 1892. Serial No. 440,314. (No model.)



*Claim.*—In an automatic coupling for cars a draw-head provided with flaring open mouth, an opening extending horizontally through said draw-head, a vertical guide-eye for the coupling pin, a lateral recess at the rear of the draw-head, an elliptic spring head in said recess, the angular plate —H— lying partially in said recess and connected to said spring by its vertical wall, and projecting horizontally forward into the opening in said draw-head beneath the guide-eye, a coupling-pin in said guide-eye, a cranked-rod —F— and positive connection of said pin with said cranked-rod for raising said pin to its elevated position, all combined and arranged substantially as specified.



## 501,984. ADJUSTABLE TYPE-FOUNDING APPARATUS. WALDEMAR GROTE, Berlin, Germany. Filed Apr. 14, 1892. Serial No. 429,259. (No model.) Patented in Germany Sept. 13, 1891, No. 68,787.



*Claim.*—1. A type founding device, comprising a pair of pivotal levers provided with jaws having adjustable end plates and pivotal side plates and one of them provided with a pour hole or gate, substantially as and for the purposes set forth.

2. A type founding device, comprising a pair of pivotal-levers provided with pivotal jaws having adjustable end-plates and a pair of side-plates, whereof one is pivotally supported and provided with a pour-hole or gate, substantially as and for the purposes set forth.

3. A type founding device, comprising a pair of pivotal levers provided with pivotal jaws having adjustable end-plates, a pivotal side-plate having a gate or pour-hole, a hinged side-plate for supporting a matrix, and a button or latch for engaging the hinged side-plate, substantially as and for the purposes set forth.

4. A type founding device comprising a pair of pivotal levers provided with jaws having end-plates and beveled edges, a side-plate hinged to one of said jaws and constituting with the beveled edges of the jaws a support for a matrix, means for maintaining said side-plate in closed position, and a second side-plate pivoted to one of said jaws and provided with a pour-hole or gate, substantially as and for the purposes set forth.

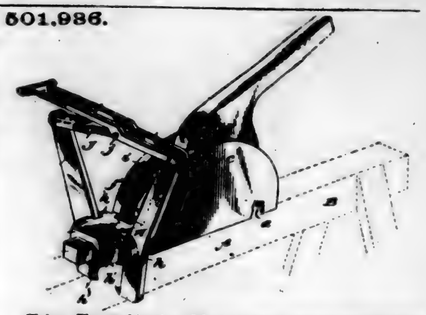
## 501,985. FURNITURE-JOINT. LESLIE S. HASKELL, Chicago, Ill. Filed Nov. 26, 1892. Serial No. 453,202. (No model.)



*Claim.*—1. A tubular metal clip for furniture joint having the ferrule portion, and lateral wings extended therefrom; portions intermediate the lateral wings folded inward without severance from the lateral portions to form a transverse seat between the wings: substantially as set forth.

2. A metal clip for furniture joint, consisting of a tubular portion which serves as a ferrule upon the stem; longitudinal continuations of such tubular portion forming lateral wings to clasp the cross-bar, and transverse continuations of said tubular portion between the longitudinal continuations and unsevered therefrom, forming the seat for the cross bar between the wings which clasp it: substantially as set forth.

## 501,986. CLAMP. JAMES F. HARVEY, Greensboro, Ark. Filed Apr. 4, 1892. Serial No. 427,993. (No model.)



*Claim.*—The combination of the bed plate having the longitudinal groove *a* and upwardly extending separated ears, a socket piece formed with said bed plate having outwardly extending ears, a sliding bar having a stem mounted in the socket piece and having its inner head located between the ears of the bed plate and provided with an inclined surface, a lever pivotally held between the ears of the bed plate and provided with a cam head, a link connecting said head with the slide bar, the arms H pivoted in the ears of the socket piece and provided at one end with points and at the other end with a series of holes, and the arms J pivotally connected at their outer ends with the arms H and at their inner portions with each other, substantially as herein described.

## 501,987. CEMENT. ELMER E. RAWN, Providence, R. I. Filed May 16, 1892. Serial No. 474,201. (No specimens.)

*Claim.*—1. The herein-described cement composed of tar, rosin, glue, vinegar, salt, flour and sal-soda in about the proportions mentioned.

2. The herein-described cement for securing canvas coverings to pulleys composed of a mixture of pine, tar and rosin while hot with a mixture composed of glue, vinegar, salt, and flour cooked together and added to the tar and rosin mixture while hot and sal-soda.

## 501,988. CARBON-HOLDER FOR ELECTRIC-ARC LAMPS. FREDERIC D. HAMILTON, New York, N. Y., assignor to Sigmund Bergmann, same place. Filed Jan. 10, 1893. Serial No. 457,884. (No model.)



*Claim.*—1. In combination with the rack bar, a cross-wise adjuster frictionally secured thereto, a lateral adjuster frictionally secured to the cross-wise adjuster so as to have a movement at right angles to the latter, a clamping bar and screws for holding the carbon firmly in place, substantially as described.

2. In combination with the rack bar, a U-shaped cross-wise adjuster frictionally secured thereto, a lateral adjuster frictionally secured to the cross-wise adjuster, a clamping bar springs and screws for holding the carbon firmly in place, substantially as described.

3. In combination with the rack bar, a U-shaped cross-wise adjuster frictionally secured to the rack bar so as to extend laterally therefrom a lateral adjuster pivoted to the cross-wise adjuster so as to extend downward and under the same, and clamping means for holding a carbon in place, substantially as described.

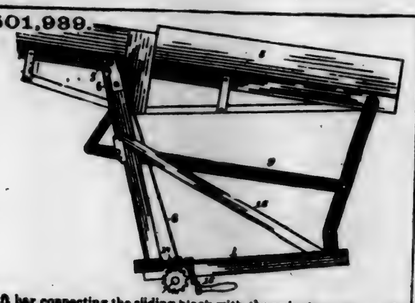
4. In combination with the rack bar, a U-shaped cross-wise adjuster frictionally secured to the rack bar so as to extend laterally therefrom a lateral adjuster pivoted to the cross-wise adjuster so as to extend downward and under the same, a clamping bar, springs and screws for holding the carbon firmly in place, substantially as described.

5. In a carbon holder for an arc lamp the combination with the adjuster receiving the end of the carbon, of a clamping bar, screws which pass through openings in the clamping bar and screw into the said adjuster and spiral springs surrounding the said screws and bearing on the clamping bar, substantially as described.

## 501,989. STRAW-STACKER. MARTIN HERBER, Springfield, and CHARLES HERBER, Carlinville, Ill. Filed Sept. 24, 1892. Serial No. 446,905. (No model.)

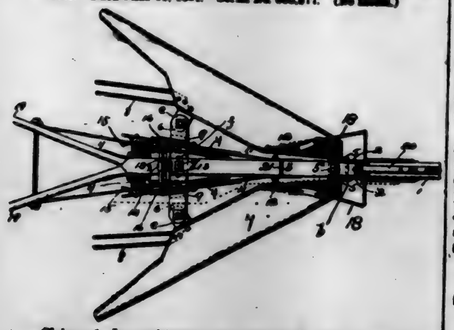
*Claim.*—In stackers, the combination of the base frame, the standard rising from the front end of the base, the sliding block guided on the standard, the swinging support at the rear end of the base, the stacker frame carried at its rear end by the swinging support, the

501,939.



draft bar connecting the sliding block with the swinging support, the link between the front end of the draft bar and the stacker frame, and means for raising and lowering the block on the standard, substantially as set forth.

501,940. LISTING-CULTIVATOR. JAMES A. HERSHMAN, Lincoln, Nebr. Filed June 11, 1891. Serial No. 395,677. (No model.)



*Claim.*—1. In a cultivator, the combination of the tongue 1, the beam 3 jointed to the tongue to swing in a vertical plane, the runners 4, having their front ends pivotally attached to the beam, and their rear ends adjustably connected therewith, the cultivator plow 7, adjustably connected to the beam, and the shovel-plows 9, substantially as specified.

2. In a cultivator, the combination of the tongue 1, the clevis 2 formed with vertically arranged rows of pin-holes, in the beam 3, adjustably connected to the clevis, the cultivator plow 7, the fingers 8, on the rear of the plow-wings, and the shields 13, on the beam at the front and resting on the plow wings, as described.

3. The combination of the beam 3, the arms 11 hinged to the beam to swing horizontally, the plows 9, having their shanks pivotally secured to the arms 11, levers fulcrumed to the arms 11, and connecting rods between the plow-shanks and the levers whereby the plows may be lifted and lowered,

4. The combination of the beam 3, the hinged arms 11 on opposite sides of the beam formed with laterally projected arms 13, and a keeper A, on the beam to take and hold the arms 13, and the plows 9, substantially as and for the purpose specified.

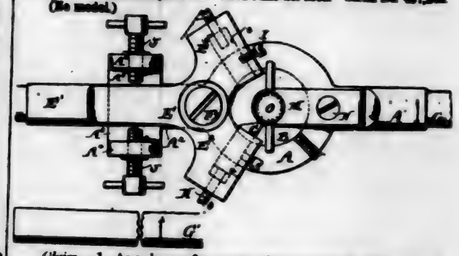
501,941. BOLT AND NUT. CLINTON A. HIGBEE, Philadelphia, Pa. Filed Mar. 2, 1892. Serial No. 423,481. (Model.)



*Claim.*—1. As a new article of manufacture, a nut and bolt, the threads of which are tapered at the end so as to be of less height than the total height of the thread, and the aggregate height of the thread ends of which is equal to or greater than the total height of the thread.

2. As a new article of manufacture, a nut and bolt, the threads of which are tapered at the end so as to be of less height than the total height of the thread and beveled as described to facilitate engagement, and the aggregate height of the thread ends of which is equal to or greater than the total height of the thread.

501,942. TOOL FOR TRIMMING SCREW-THREADS. CLINTON A. HIGBEE, Philadelphia, Pa. Filed June 20, 1892. Serial No. 437,248. (No model.)

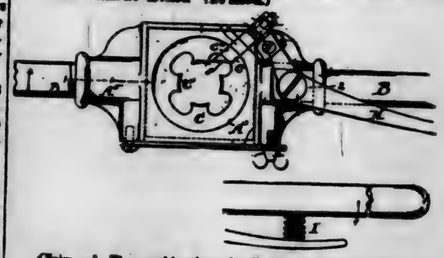


*Claim.*—1. As a device for cutting down screw threads, a die A B having a threaded center B adapted to screw on to the screw to be treated, in combination with a longitudinal movable cutting tool C adjustably secured to said die so that its edge can be forced against the thread of the screw or withdrawn from its path at will, and means for moving said cutting tool longitudinally and so that its edge will be forced within or retracted from the threaded die center.

2. As a device for cutting down screw threads a die A, B having a threaded center B adapted to screw on the screw to be treated, in combination with a fixed handle G, a pivoted lever E having a handle G' secured to the die opposite handle G, an arm as $E^2$ secured to lever E, a cutting tool arranged to be thrust into operation by arm E and stops J arranged to regulate the movement of the pivoted lever E and its arm $E^2$.

3. As a device for cutting down screw threads a die A, B having a threaded center B' adapted to screw on the screw to be treated, in combination with a fixed handle G, a pivoted lever E having a handle G' secured to the die opposite handle G, an arm as $E^2$ secured to lever E, a cutting tool arranged to be thrust into operation by arm E, stops J arranged to regulate the movement of the pivoted lever E and its arm $E^2$, and a stop O arranged to regulate the point on the screw thread where the cut shall begin.

501,943. TOOL FOR CUTTING DOWN SCREW-THREADS. CLINTON A. HIGBEE, JOHN BRAUN, and ROBERT DIXEY, Philadelphia, Pa., assignors to said Higbee and John Braun & Sons, same place. Filed June 16, 1892. Serial No. 437,203. (No model.)



*Claim.*—1. The combination of a die C, a holder A in which the die is removably held, a longitudinally movable cutting tool G secured in guides directly to the die C and means for moving said tool so as to force it toward or from the die cavity substantially as specified.

2. The combination of a die C, a holder A in which the die is removably held, a cutting tool G secured in guides directly to the die C, a stop L secured to the cutting tool and arranged to abut against the die C and means for actuating said tool substantially as specified.

3. The combination of the die C, a holder A in which the die is removably held, a cutting tool G secured in guides directly to the die C and an actuating lever pivoted to the holder and in engagement with the cutting tool.

4. The combination of the die C, a holder A in which the die is removably held, a cutting tool G secured in guides directly to the die C and an actuating lever H $H^2$ pivoted to the holder and in engagement with the cutting tool at one end and a cam lever J also pivoted to the holder and arranged to act on the free end of the lever H $H^2$ as described.

501,944. HAMMOCK. WILLIAM HYDE, Higganum, Conn. Filed Mar. 21, 1892. Serial No. 427,218. (No model.)

*Claim.*—In a hammock, the suspension devices, comprising the rings D, having the openings *d* for the suspension cords, the loops *d'* and the hook F turned downwardly into said loops, the brackets H

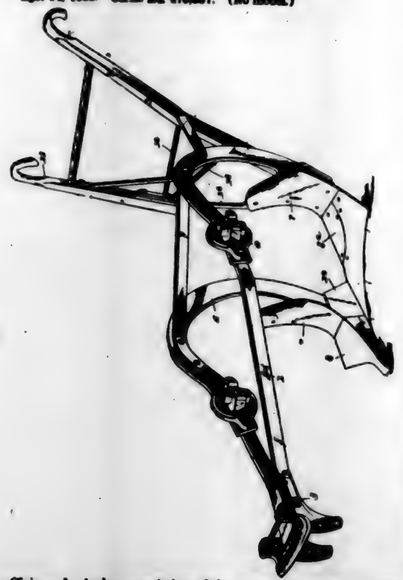


501,944.



having the upper and lower loops, and the suspension ropes secured at one end to the upper of said loops, a ring I through which said rope is passed, and from thence passing loosely through the lower of said eyes, thence loosely around said hook F, and thence secured to said ring, substantially as specified.

501,945. PLOW. ARMENIS F. JACKSON, Oklahoma, Okla. Filed Apr. 14, 1892. Serial No. 429,257. (No model.)



*Claim.*—1. A plow, consisting of the two standards arranged side by side and one in advance of the other, combined with the front and rear moldboards and shares, the share of the rear plow being extended forwardly and laterally connected to the opposite plow, substantially as specified.

2. The herein described plow, consisting of the two standards arranged side by side and one in advance of the other, combined with the front and rear moldboards, the front and rear shares, the landside located at the inner side of the front moldboard and share, and the share of the rear plow being laterally extended and connected to said landside, substantially as specified.

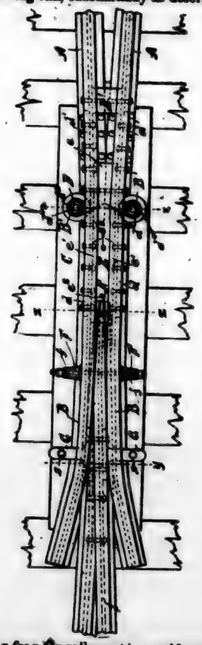
3. The herein described plow, consisting of the standards 5, combined with the front and rear moldboards secured to the standards, the front and rear shares below the moldboards, the landside at one side of the front moldboard and share and connected to the advanced portion of the rear share, said rear share being curved from the point of connection back to its landside, substantially as specified.

501,946. SPRING RAILWAY-FROG. OSWALD F. JORDAN, St. Thomas, Canada. Filed May 16, 1892. Serial No. 433,156. (No model.)

*Claim.*—1. In a spring rail frog, the combination of a main rail, a point rail, a blocking transversely filling the space between the point rail and the wing rail and extending longitudinally between and connecting by appropriate means the main and point rails, substantially as described.

2. The combination of a spring actuated pivoted wing rail, a main rail, a point rail, a base plate connecting and supporting the whole, a blocking transversely filling the space between the wing and point rails, and extending longitudinally between and connecting the main and point rails, substantially as described.

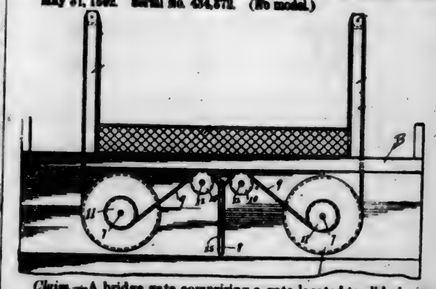
3. The combination of a spring actuated pivoted wing rail, a main rail, a point rail, a base plate connecting and supporting the whole, a blocking transversely filling the space between the wing rail, point and main rails, and longitudinally extending from the main rail to the point rail, and having its lower portion cut out, whereby the flange of the wing rail is held and allowed to work underneath the blocking, and a laterally extended knuckle of the hinge on the opposite side of the wing rail, substantially as described.



4. In a spring frog for railways, in combination with the main rail and forming an extension thereof, a spring actuated wing rail pivoted to the main rail at a point between the heads of the main rail and the frog point, substantially as described.

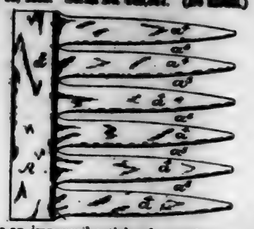
5. The combination of a wing rail, a main rail, a point rail, and blocking transversely filling the space between the wing rail, point and main rails and notched to receive the point rail and having its lower portion cut out, whereby the flange of the point rail projects underneath the blocking, substantially as described.

501,947. BRIDGE-GATE. AUGUST JUERGENS, Chicago, Ill. Filed May 31, 1892. Serial No. 434,872. (No model.)



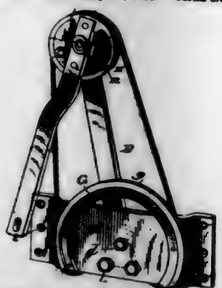
*Claim.*—A bridge gate comprising a gate located to slide in upright guideways, a vibrating lever 8, a cable 9 connected with said lever and trained over pulleys 10 and secured to winding drums 11, pulleys 6 secured to and turning with said winding drums, cables 4 connected with said pulleys 6 and trained over pulleys 5 on the upper end of gate posts 1 and connected with the ends of said gate, and a cam surface on said bridge located to engage the end of said vibrating lever, substantially as described.

**501,948. STALL-CLEANER.** EDWARD LEONARD, Milton, Mass. Filed July 15, 1892. Serial No. 440,327. (No model.)



*Claim.*—As an improved article of manufacture, a stall cleaner consisting of a series of wide, thin, separated blades $a^4$ rounded upon their under edges and beveled upon the under side of their ends and united to a common handleless cross-bar A, as and for the purposes described.

**501,949. SUPPORT FOR MOVING BODIES.** WILLIAM J. LAPE, Poughkeepsie, N. Y. Filed July 25, 1892. Serial No. 441,134. (No model.)



*Claim.*—1. An apparatus for supporting moving bodies consisting of a bar pivoted on a suitable base, and an arm pivoted on the free end of said bar, a wheel or segment on the arm, and a rim on the base and direct connections between the wheel and rim, substantially as described.

2. In combination with a bar D, pivoted on a base, a supporting arm F, pivoted to the free end of said bar, a curved bearing secured to the arm F and a curved bearing G secured to the base, and flexible connections between said bearings arranged to conform thereto, substantially as described.

3. In combination with a suitable base having a segment, a bar pivoted on said base, an arm provided with a wheel, pivoted on the free end of said bar, and a rope or chain connection between said wheel and said segment, substantially as described.

**501,950. COLLAPSIBLE LADDER.** ABEL LEA, London, England. Filed July 5, 1892. Serial No. 439,007. (No model.) Patented in England Apr. 14, 1892, No. 7,209.



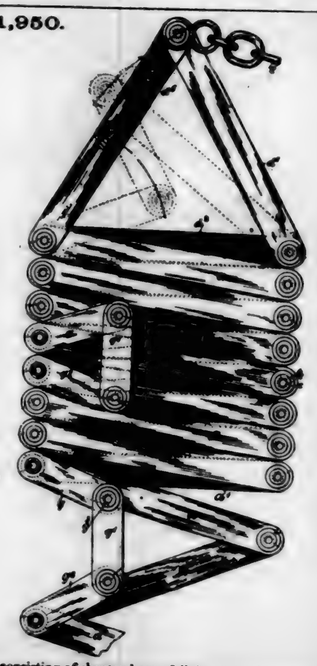
*Claim.*—1. The combination in a collapsible ladder, of pairs of ladder-sections, tubular rungs and central tubes holding the sections and rungs together.

2. The combination in a collapsible ladder, of tubular rungs, central tubes passed through the respective rungs and sections and holding them together, and devices for preventing the rungs moving about their respective axes.

3. The combination in a collapsible ladder of any adjoining pairs of sections, their three rungs and a pair of stay sections attachable to the rungs to form a stay by connecting the terminal rungs of the three by the stay sections, the intermediate rung and the ends of the sections adjoining thereto being offset from the plane of the ladder, as set forth.

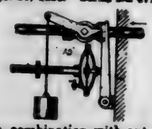
4. The combination with a collapsible ladder of a collapsible head pivoted thereto, said head consisting of a pair of triangles each made by pivoting three bars to each other at their respective ends and three transverse ties holding the said triangles rigidly together in parallel planes at their respective angles, the bars forming two opposite sides of the face of the head which is in tension when the ladder

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is in use consisting of shorter bars of links pivoted together by their ends, as set forth.

**501,951. AUTOMATIC GAS-CUT-OFF APPARATUS.** NATHANIEL LOMBARD, Boston, assignor of one-half to Henry A. Clark, Brookline, Mass. Filed Apr. 20, 1892. Serial No. 471,162. (No model.)



*Claim.*—1. The combination with automatic fire-extinguishing apparatus, of an automatic gas cut-off device, and a pipe system which connects the fire extinguishing apparatus on the several floors with the gas cut-off device, whereby the latter is operated upon activity of the fire-extinguishing apparatus, substantially as and for purpose explained.

2. The combination with fire-extinguishing apparatus composed of independent sections, each provided with a valve to the main, and means for operating said valves should a fire occur, of a gas cut-off device, a conducting pipe system consisting of independent floor sections united with the fire extinguishing pipe sections, and a common pipe which interconnects said conducting pipe system with mechanism for actuating the gas cut-off, substantially as stated and set forth.

3. In combination with automatic fire-extinguishing apparatus, a gas system, and a cut-off therein, a holding latch, latch-operating mechanism, and a pipe system which interconnects the fire-extinguishing apparatus with the latch-operating mechanism, substantially as described and stated.

4. The combination with a gas supply pipe, a valve therein, and a swinging latch of a pipe extending into the several rooms of a building and provided with check-valves, an operating diaphragm within a closed pipe at one end of said pipe, and fire-extinguishing apparatus interconnected with the other end, all operating substantially as specified.

**501,952. STEAM-COOKER.** CLARK B. LOSS and CHARLES H. KLINE, Halsey, Oreg. Filed Feb. 29, 1892. Serial No. 423,466. (No model.)

*Claim.*—1. In a steam-cooker, the combination with a water or boiler-chamber having an opening in its top, a steam-chamber arranged thereover and communicating therewith and adapted to receive the cooking-pans, an annular collar encircling the upper end of the steam-chamber and combining therewith to form an annular gutter, and a return pipe leading from said gutter to the water-chamber, of a series of removable trays or pans arranged in the steam-chamber, a cover for said steam-chamber, and a cold water pan or tray arranged in the collar above the steam-chamber, substantially as specified.

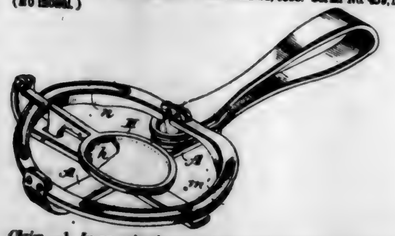




2. In a steam-cooker, the combination with a conical water chamber or boiler, standards rising therefrom, a cylindrical steam-chamber surmounting the same and the boiler and provided with an opening in its bottom communicating with that in the apex of the dome of the boiler, a flared collar encircling the steam-chamber and extending from a point below the upper end thereof and combining with said steam-chamber to form an annular gutter, a return pipe leading from said annular gutter to the boiler, of a cover for the steam-chamber the same being located below the upper edge of the collar, a cold water pan arranged in the upper end of the collar, and the series of cooking trays arranged in the steam chamber, substantially as specified.

3. In a steam-cooker, the combination with a lower boiler chamber, an upper steam-chamber, and a cover for the same, of a removable frame adapted to fit the steam-chamber, the same consisting of the lower base-ring, and a series of strips crossing the ring, secured thereto and projecting thereabove, loose bails connected with the strips and the series of cooking-pans or trays removably fitting the frame and having their upper sides provided with spacing-lugs, substantially as specified.

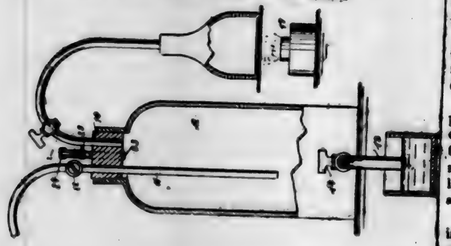
**501,953. ANIMAL-TRAP.** CHARLES C. MARTIN and ALBERT J. SCHLAPPER, West Franklin, Ind. Filed Jan. 21, 1893. Serial No. 459,192. (No model.)



*Claim.*—1. In an animal-trap, a bait or trip pan constructed of porcelain, and having a concavity or dish shaped depression in its upper face whereby it is adapted to receive and hold bait in the form of a plastic mass, substantially as described.

2. In an animal trap a bait or trip pan constructed of porcelain, and having a concave or dish-shaped depression in its upper face, whereby it is adapted to receive and hold bait in the form of a plastic mass, and provided with an integral lateral arm, with depending apertured lug, substantially as described.

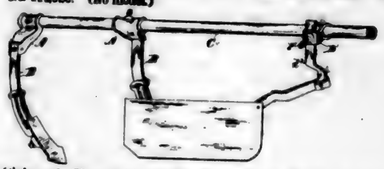
**501,954. VACUUM-PUMP.** WILLIAM B. MOORE, New York, N. Y. Filed Sept. 12, 1892. Serial No. 445,640. (No model.)



*Claim.*—1. The combination with the vessel A provided with an outlet faucet at its lower end, of a stopper for the mouth of the vessel a' valved water inlet pipe and a valved gas inlet pipe 18 communicating with the vessel through its stopper, and a retort 16 connected with pipe 15 and beneath which a heating device is adapted to be placed; the vessel A and parts connected therewith being portable as a whole, substantially as set forth.

2. A portable apparatus of the character described comprising the vessel A having a faucet in its lower end, a stopper for its mouth, a pipe 23 entering through the stopper and having a cap 24 and a valve 25, the water inlet pipe provided with a valve, and the retort 16 having a pipe 15 leading through the stopper and provided with a valve, substantially as set forth.

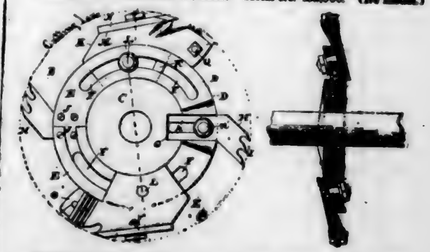
**501,955. DEVICE FOR ATTACHING SHOVEL-STANDARDS, &c.** AUGUSTUS S. MCDERMOTT, Dubuque, Iowa. Filed Aug. 30, 1892. Serial No. 444,525. (No model.)



*Claim.*—1. The combination with an annular drag-bar, of the described device for attaching shovel-standards to said drag-bar, consisting of the arm A provided at one end with the sleeve A' having a tubular bore and mounted and adapted to be adjusted circumferentially and longitudinally upon the drag-bar, a threaded perforation in said sleeve, a set-screw working in said perforation, and impinging upon the drag-bar, a recess $A^3$ in the outer end of the arm and provided with a perforation *b*, a shovel-standard seated in the recess $A^3$ and a securing-bolt *b'* passing through a perforation in the standard, and the perforation *b*, as and for the purpose specified.

2. The combination with a cultivator drag-bar and a shield C' secured to arm $d^2$ and an arm $d^3$ to which said arm $d^2$ is pivoted, of the sleeve D mounted and adapted to slide upon said drag-bar, the boss or enlargement D' on said sleeve, and having a vertical opening *d*, through which the arm $d^3$ passes, and the set-screw F working in a horizontal opening *d* in said enlargement and in an opening in arm $d^3$ and impinging on the drag-bar, for securing the shield and holder in place, as described.

**501,956. ROTARY CUTTER-HEAD.** KILBURN NELSON, West Duluth, Minn. Filed Nov. 19, 1892. Serial No. 452,590. (No model.)



*Claim.*—1. In a rotary cutter of the class described, the cutter wheel, having oppositely slanting or inclined rim sections, cutter heads circumferentially adjustable on said sections,—and intermediate cutters adjustably secured to said wheel between said cutter heads, substantially as set forth.

2. In a rotary cutter, the cutter wheel having opposite seats arranged on opposite sides of the same, single saw toothed cutters mounted in said seats, and means for radially and laterally adjusting each cutter substantially as set forth.

3. In a device of the class described, the cutter wheel having opposite notched seats arranged at opposite edges and at opposite sides of the same, interchangeable saw toothed cutters mounted for longitudinal adjustment in said seats, and a series of adjusting screws arranged to engage the inner sides of said cutters to adjust the same laterally in opposite directions away from the wheel, substantially as set forth.

4. In a rotary cutter of the class described, the cutter wheel having opposite rim sections set at opposite inclinations to the vertical plane of the hub of the wheel and on both sides thereof, cutter heads

circumferentially adjustable on each of said inclined sections at both sides of the wheel to secure a consequent simultaneous lateral adjustment, and cutters adjustably mounted on said heads, substantially as set forth.

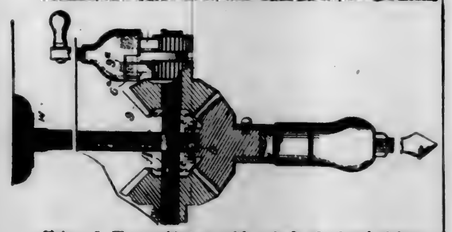
5. In a rotary cutter of the class described, the wheel having oppositely slanting or inclined rim sections in which are formed curved slots, sliding cutter heads moving against opposite faces of the opposite rim sections and having lugs projecting into said slots, bolts passing through said cutter heads and said slots, cutters adjustably mounted on said heads, and intermediate cutters arranged between said cutter heads, substantially as set forth.

6. In a rotary cutter of the class described, the cutter wheel having opposite rim sections arranged at an angle to each other, opposite cutter heads circumferentially adjustable on said rim sections to secure a consequent lateral adjustment and provided with flattened edges and grooves in advance of said edges, plain cutters adjustably mounted on said flattened edges, and saw cutters adjustably mounted in said grooves, substantially as set forth.

7. In a rotary cutter of the class described, the cutter wheel having opposite rim sections, opposite sliding cutter heads circumferentially and laterally adjustable on said rim sections and provided with slightly inclined flattened edges and arms having dove-tailed grooves in advance of said flattened edges, plain cutters adjustably mounted on said flattened edges, saw cutters radially adjustable in said grooves, and toothed cutters adjustably mounted on the wheel between the cutter heads, substantially as set forth.

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**501,957.** RATCHET DEVICE FOR TOOLS. PATRICK J. O'BRIEN, Cincinnati, Ohio. Filed June 23, 1892. Serial No. 437,757. (No model.)



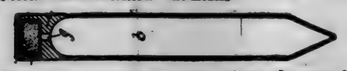
*Claim.*—1. The combination with a shaft, of a bevel pinion secured to one end thereof and a ratchet wheel secured to the other end, a bevel pinion mounted loosely on the shaft and carrying a ratchet wheel, an intermediate bevel pinion adapted to mesh with the above mentioned pinions, a lever mounted on said shaft between the ratchet wheels, two spring actuated dogs carried by said lever at each side thereof, and a movable collar carried by said lever, whereby a continuous rotation of the intermediate gear in either direction can be caused by a vibration of the operating lever, substantially as set forth.

2. In a ratchet device for tools, the combination with a shaft, of a pinion secured to one end thereof and a ratchet wheel secured to the other end, a bevel pinion mounted loosely on the shaft and carrying a ratchet wheel, an intermediate bevel pinion adapted to mesh with said first mentioned pinions, a lever mounted on the shaft, a series of dogs carried by said lever and means for reversing the relation of each pair of said dogs to the ratchet wheels, so that when said lever is vibrated, the intermediate gear can be continuously rotated in one direction or the other, substantially as set forth.

3. The combination with a shaft, a bevel pinion secured to one end thereof and a ratchet wheel secured to the other end, a bevel pinion mounted loosely on the shaft and carrying a ratchet wheel, an intermediate bevel pinion adapted to mesh with the above mentioned pinions, a lever mounted on said shaft between the ratchet wheels, a pair of spring actuated dogs, pivotally connected at each side of said lever, and a collar having depending flanges, mounted loosely on said lever and adapted to maintain one dog of each pair in engagement with the adjacent ratchet wheel, while the other dog of each pair is left free, whereby the direction of the continuous rotation of the intermediate gear and the tool actuated thereby, may be changed at will, substantially as set forth.

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**501,958.** FLUID-HOLDING PENCIL. WALTER B. OLMSTED, HERBERT O. WARNER, and HOWARD A. GIDDINGS, Hartford, Conn. Filed Feb. 13, 1893. Serial No. 462,152. (No model.)



*Claim.*—1. As an improved article of manufacture, a tubular fluid containing pencil having a punctured and tapered lower end, and an internally flanged upper end with an inlet opening therethrough, in combination with a stopple to hermetically seal said inlet, substantially as described.

2. An ink-eraser pencil consisting of a tubular body containing a fluid, and having a tapered punctured marking end and an internally flanged upper end with an inlet opening therethrough, a stopple inserted in the upper end of said pencil with glue or cement interposed between the stopple and neck of the pencil to hermetically seal the same, substantially as described.

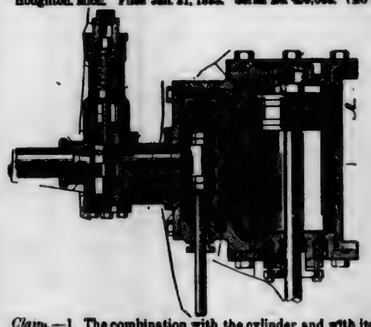
3. The pencil having the tubular body *b* filled with fluid, and having the tapered end *c* with the puncture *d* therethrough, the flange *f* near the upper end of the tube having the inlet opening *g* therethrough, in combination with the stopple *h* having the cement or glue *i*, and the supplemental coating *i'* to cover the face of the stopple, substantially as and for the purpose described.

4. As an improved article of manufacture a tubular fluid containing pencil having a punctured and tapered lower end and with an opening at the upper end, and a stopper treated with an adhesive material closing the upper end, all substantially as described.

5. As an improved article of manufacture a tubular fluid containing pencil having a punctured and tapered lower end and with an opening at the upper end, and a stopper incased in a coating of hardened adhesive material, all substantially as described.

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**501,959.** AUTOMATIC THROTTLE FOR ENGINES. SAMUEL V. RAWLINS, Marquette, assignor of one-half to Joseph W. V. Rawlings, Houghton, Mich. Filed Jan. 21, 1893. Serial No. 459,069. (No model.)



*Claim.*—1. The combination with the cylinder and with its chest and valve, of the supply-pipe the throttle-valve mechanism interposed between said pipe and chest and having an actuating port therefor communicating with the chest-side of the supply, whereby the variations in pressure of the motive-agent at such side automatically shift said throttle to modify the feed of the agent, substantially as described.

2. The combination with the cylinder and with its chest and valve, of the supply-pipe the throttle-valve mechanism interposed between said pipe and chest said mechanism comprising a case with port therein leading from the chest-side of the supply, an inclosed piston-stem with actuating head, a re-action spring, and a throttle plug proper shifted by said head to govern the communication from the supply-pipe to the chest, substantially as described.

3. The combination with the cylinder and with its chest, and valve of the supply-pipe and the throttle-valve mechanism interposed between said pipe and chest; said mechanism comprising a case with main ports for the supply-pipe and chest, a supplemental port leading from the chest side and a piston-stem with throttle-plug, actuating head and re-action spring inclosed by said case, said plug and head being located at the main and supplemental ports respectively, substantially as described.

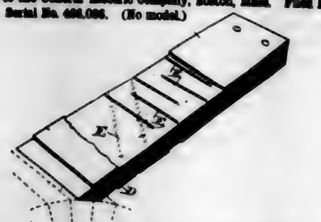
4. The combination with the cylinder and with its chest, and valve of the supply-pipe and the throttle-valve mechanism interposed between said pipe and chest; said mechanism comprising a case with main-ports and supplemental ports both communicating with the supply-pipe and with the chest and a piston-stem with throttle-plug, actuating head and re-action spring inclosed by said case, said plug and head being located at the main and supplemental ports respectively, substantially as described.

5. The combination with the engine and its piston and with the motor supply-pipe of the throttle control mechanism interposed between said pipe and engine and having the actuating port therefor in communication with the engine side of the supply, whereby the variations in the pressure of the supply are caused to shift the throttle, substantially as described.

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**501,960.** COMMUTATOR-BRUSH. HENRY G. REED, Lynn, assignor to the General Electric Company, Boston, Mass. Filed Mar. 15, 1893. Serial No. 466,096. (No model.)



*Claim.*—1. A commutator brush composed of laminæ having transverse slits, substantially as described.

2. A commutator brush composed of superposed laminæ as B B having transverse slits as E E, the laminæ inclosed between backing plates as D D, substantially as described

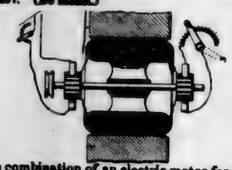
3. A commutator brush composed of laminæ B B connected together at their rear ends and inclosed between backing plates as D D, the laminæ having transverse slits as E E, whereby the specific resistance of the brush is increased.

4. A commutator brush composed of laminæ as B B having transverse slits as E E, and inclosed and movable back and forth between backing plates as D D.

5. As articles of manufacture, laminæ for commutator brushes composed of metallic stripe whose continuity is interrupted by transverse slits, substantially as described.

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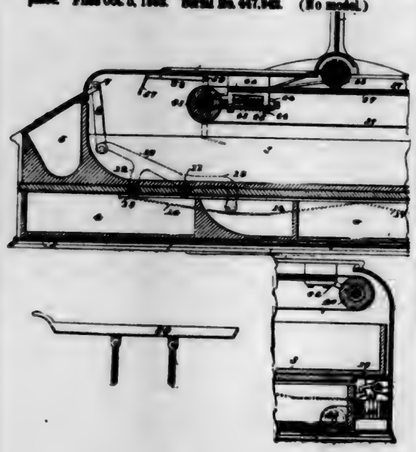
**501,961.** MEANS FOR REGULATING ELECTRIC MOTORS. CHARLES H. RICHARDSON, Philadelphia, Pa., assignor to the S. S. White Dental Manufacturing Company, same place. Filed Jan. 16, 1893. Serial No. 458,497. (No model.)



*Claim.*—The combination of an electric motor for doing external mechanical work, generating coils electrically separate from the motor armature and mechanically connected with and driven by the motor shaft, and a variable resistance in circuit with the generating coils, whereby provision is made for controlling the speed of the motor armature shaft while maintaining nearly constant the torque or pull thereon at any given speed determined by the adjustment of the resistance, substantially as set forth.

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**501,962.** CASH-CONTROLLING MACHINE. THURSIS F. ROWEL and JAMES BRADY, Brooklyn, N. Y., assignors to Howard Gibb, same place. Filed Oct. 5, 1892. Serial No. 447,942. (No model.)



*Claim.*—1. In combination in a cash controlling machine, a box or casing, an endless belt or carrier and mechanism for moving the same, a receptacle located under the belt, a glass pane projecting over part of the belt and a push plate 57, hung within the casing and adapted to swing to below the belt and thereby push the contents of the receptacle along or to other parts of the same.

2. In combination in a cash-controlling machine, a box or casing, an endless belt or carrier, a receptacle under said carrier, a glass pane projecting over part of the carrier, a roll brush 43 and mechanism for operating the same connected with and driven by the belt-driving mechanism.

3. In combination in a cash-controlling machine, a box or casing, an endless belt or carrier and mechanism for moving the same, a glass pane projecting over parts of the carrier, a drawer 3 located under the belt and provided with cash pockets 5 and cover 6, and mechanism connecting said cover with the driving mechanism of the belt and adapted to lift the said cover upon the forward movement of the belt.

4. In combination in a cash-controlling machine the endless belt and mechanism for driving the same the drawer and mechanism for locking said drawer which is connected with and operated to release the drawer by the operation of the belt driving mechanism.

5. In combination in a cash-controlling machine, the drawer 3 provided with cash pockets 5, the drawer 4, the cover 6 to said cash pockets and the lever and cam connections between the said cover and the beveled edges of said drawer 4, whereby as the said drawer is withdrawn and closed the cover 6 will be lifted and lowered to open and close the said pockets.

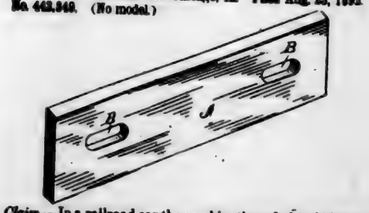
6. In combination in a cash-controlling machine, the endless belt and its driving mechanism, the drawer 4 and its locking mechanism, a spring 23 for impelling the drawer forward, and connections between the drawer locking mechanism and the belt-driving mechanism, whereby as the belt is moved forward the drawer will be released and also propelled forward.

7. In combination in a cash-controlling machine, the endless belt and its driving mechanism, the drawer 3 provided with pockets 5 and having a cover 6, the drawer 4 and its locking mechanism, connections between said cover and the drawer 4 whereby as the latter is propelled forward the cover will be raised, and mechanism connected with the belt-driving devices and adapted to release the drawer 4 as the belt is moved forward.

8. In combination with the endless belt and its driving mechanism, the drawer 4 and its locking mechanism and devices for operating the belt and releasing the drawer, which consists of the cash tray 30 mounted upon the lever arm 32, connected with and for working the said driving and releasing mechanisms.

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**501,963.** WEAR-PLATE FOR HEAD-BLOCKS OF CAR-COUPLINGS. JAMES B. SAFFORD, Chicago, Ill. Filed Aug. 23, 1892. Serial No. 443,843. (No model.)



*Claim.*—In a railroad car the combination of a head block, a wear plate secured thereto by means of bolts, such bolts passing through the head block and out through elongated holes in the wear plate, the major axes of such holes being arranged in a substantially horizontal plane transverse to the car, and retaining nuts upon the outer ends of the bolts, whereby as the plate becomes bent and driven in use it will be afforded sufficient play upon the bolts to prevent the plate or either of the bolts from being torn out notwithstanding how distorted such plates may become, thereby preventing accident consequent upon the displacement or tearing out of such plates or bolts and diminishing the dangers of transportation, substantially as described.

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**501,964.** TROUSERS. JOHN I. SCHUEY, Rochester, N. Y. Filed Nov. 5, 1892. Serial No. 451,256. (No model.)



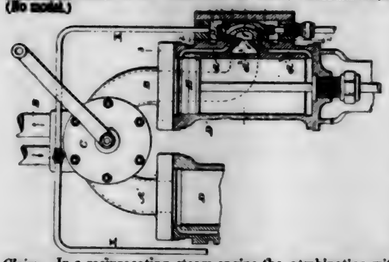
*Claim.*—1. The herein described trousers having the waistband divided as shown, and adjustable connections between the parts and the pocket connected to both parts of the waistband and arranged to be folded inside when the latter is adjusted; substantially as described.

2. The herein described trousers having the waistband divided as shown and adjustable connections between the parts, the inner pocket facing secured to the inner part and the pocket of flexible material secured to the outer part of the waistband and to the facing and adapted to be folded inside when the parts are adjusted; substantially as described.

3. In a pair of trousers, the combination with the connected front and rear leg-portions, and the pocket-facing secured to the latter, of the flexible pocket secured to the facing and to the front leg-portion, and adjustable connections between the two leg-portions above the pocket, substantially as described.

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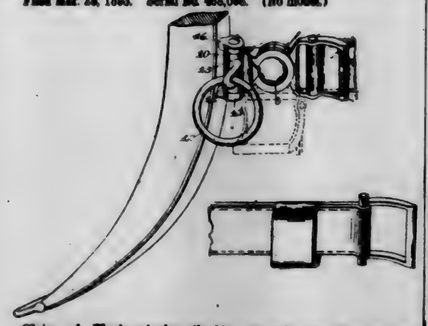
**501,965.** VALVE FOR REVERSIBLE STEAM-ENGINES. LOUIS SCHUTTE, Philadelphia, Pa. Filed June 12, 1890. Serial No. 355,223. (No model.)



*Claim.*—In a reciprocating steam engine the combination with the cylinder, its valve chamber and valve, and with the steam supply pipe, of a branch steam pipe communicating with the valve chamber exteriorly of the valve and a valved opening through the body of the valve from the interior to the exterior thereof.

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**501,966.** HAME-TUG FASTENER. CLAUS SIEVERS, Denison, Iowa. Filed Mar. 29, 1893. Serial No. 468,096. (No model.)



*Claim.*—1. The herein described hame tug fastener, the same consisting of the frame having a vertical bar or pintle adapted to be fastened to the hame-tug whereby the latter is pivotally connected thereto, and at its front end provided with an eye, the clevis section provided at its rear end with an eye aligning with that of the frame and at its front end with a pair of vertically opposite eyes adapted to be pivotally connected with the staples of a hame, and a bolt connecting the aligning eyes of the clevis and frame, substantially as specified.

2. In a hame tug fastener, the combination of a main body-plate having a pivot-bolt extending through the rear part thereof in a transverse direction, a loop arranged to be removably attached to a hame-section, and pivotally connected to said pivot-bolt for the purpose of permitting the tug to move in a vertical plane, a vertically positioned bolt mounted in the opposite end of said body-plate in a removable manner, a clevis for supporting the breast ring removably and pivotally mounted on said latter bolt, and staple-legs movably attached to said last-named bolt and arranged to be secured in the hame, whereby said plate may freely move inward and outward in a transverse direction in a horizontal plane at right angles to the movement of the loop attached to the hame-section, and said clevis independently movable of the remaining part of the fastener, substantially as described.

3. In a hame tug fastener, the combination of a main body-plate having a pair of vertically-disposed ears at the rear end thereof spaced apart with aligned bolt-openings therein, and a series of ears at the front end at right angles to the aforesaid ears, a loop having an ear pivotally mounted between the ears at the rear end of said body-plate, a bolt for removably attaching said loop to the hame-section, a clevis having ears pivotally mounted between the ears at the front end of said body-plate and arranged to carry a breast ring, a bolt removably passed through the ears at the front end of the main body-plate and the ears of the said clevis, and staple-legs having ears at the rear ends of the same movably engaging the last-named bolt and arranged to be secured in the hame, substantially as described.

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**501,967.** WHEEL-TIRE. JOHN T. SMITH, Bridgeport, Conn., assignor of one-half to Arthur Herbert Smith, New York, N. Y. Filed Oct. 24, 1892. Serial No. 449,947. (No model.)



*Claim.*—1. An elastic tire comprising a flanged crown and a webbing provided with transverse openings, substantially as set forth.

2. An elastic tire comprising a crown and an oblong webbing having marginal disconnected sections, substantially as set forth.

3. An elastic tire comprising a webbing and a flanged crown forming longitudinal depressions on each side of the webbing, substantially as set forth.

4. The combination, in an elastic tire, of a notched webbing, a crown thereon, and lobes or flanges projecting from said crown, substantially as set forth.

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**501,968.** ELECTRIC-RAILWAY TROLLEY. ELMER A. SPERRY, Chicago, Ill., assignor to the Sperry Electric Railway Company, Cleveland, Ohio. Filed Apr. 1, 1892. Serial No. 427,364. (No model.)

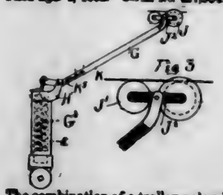


Fig 3

*Claim.*—1. The combination of a trolley pole with a socket therefor and means for securing said socket to the car by a pivoted and frictional contact.

2. The combination of a trolley pole with a socket therefor, the two swiveled together by means of a plunger on the trolley pole, adapted to pass within the socket, and a spring in the plunger connected with the end of the trolley pole so as to hold the latter to its work.

3. The combination of a mining motor car with a trolley pole socket secured to the side thereof and a trolley pole swiveled in said socket and pivoted so as to move in a vertical plane, said trolley pole of a length less than the width of the car.

4. The combination with a trolley pole, of two separate trolley wheels, one in front of the other, one of said trolleys being grooved and the other having a cylindrical surface, substantially as described.

5. The combination with a trolley pole, of two separate trolley wheels, one in front of the other, the forward one having a cylindrical surface and the rear one being grooved, substantially as described.

6. The combination with a trolley pole, of two separate trolley wheels, in line with each other, the front wheel being smaller than the rear wheel, and one of such wheels being grooved and the other cylindrical substantially as described.

7. The combination of a trolley pole with two trolleys thereon, one grooved and the other provided with a cylindrical surface, the two trolleys placed at the ends of a part pivoted midway on the end of the pole.

8. The combination with a trolley pole, of two separate trolley wheels in line with each other, the front wheel being smaller than the rear wheel and having a cylindrical surface and the rear wheel having a grooved surface.

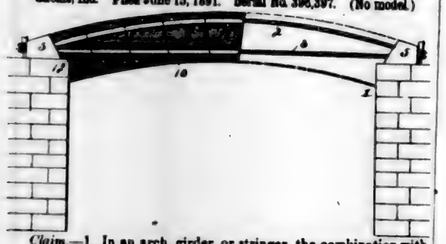


9. The combination with a minor motor car, of two trolley poles secured one to each side of the car outside of the lines of the car body, substantially as described.

10. The combination of a mining motor car with two trolley poles secured one on each side thereof and trolley wires placed at one side of the track in part of the system, and supplementary trolley wires placed at the opposite sides of the track through part of the system.

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**501,969.** CABLE ARCH SUPPORT. SAMUEL D. STEPHENS, West Shoals, Ind. Filed June 15, 1891. Serial No. 396,397. (No model.)



*Claim.*—1. In an arch, girder, or stringer, the combination with an upwardly arched cable, and a subjacently located horizontal cable, of opposite perforated binding blocks in which the ends of the cables are secured, and a series of intermediate plates arranged in pairs at opposite sides of the cables and clamping the same, and rivets for securing the plates together, substantially as specified.

2. In an arch, girder, or stringer, the combination with an upwardly arched cable and a subjacent horizontal cable, of opposite abutments, perforated binding blocks arranged thereon, and in rear of their edges said cables being provided with eyes beyond the blocks, keys passing through the eyes, and a series of pairs of plates interposed between the blocks, recessed to fit over the corners of the abutments, and provided with offsets for the reception of the cables, and riveted above and below such cables, substantially as specified.

3. In an arch, girder, or stringer, the combination with a pair of cables, of opposite supports, and a series of pairs of plates having offsets coincident with each other and receiving and clamping the cables, rivets passed through the plates above and below the cables, and securing devices for the ends of the cables, substantially as specified.

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**501,970.** TWINE. JOHN F. STEWARD, Chicago, Ill. Filed Nov. 25, 1892. Serial No. 453,147. (No specimens.)

*Claim.*—1. As a new article of manufacture, a twine made of raw paper and having its surface coated with a dry lubricant, substantially as described.

2. As a new article of manufacture, a paper twine having its surface coated with plumbago, substantially as described.

3. As a new article of manufacture a twine made of strips of raw paper coiled into tubular form and twisted, and having a dry lubricant applied to its surface, substantially as described.

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**501,971.** METHOD OF AND MACHINERY FOR MAKING TWINE. JOHN F. STEWARD, Chicago, Ill. Filed Nov. 25, 1892. Serial No. 453,148. (No model.)

*Brief.*—Between the former and flier is located a horizontal rotating plate upon which powdered plumbago is placed and thereby rubbed onto the twine. A pad K and scrapers L prevent the escape of the plumbago from plate.

*Claim.*—1. The process of making paper twine consisting in crushing or collapsing a strip of paper, then twisting the same and applying a dry lubricant during the twisting operation.

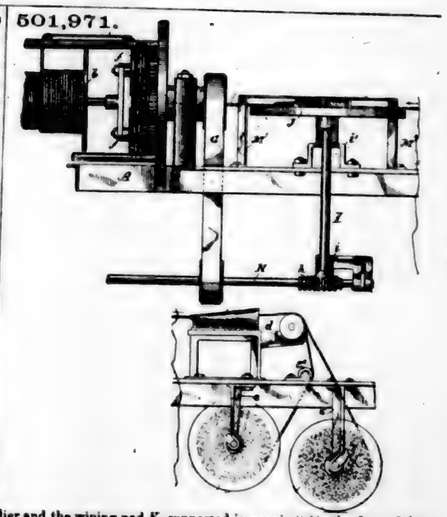
2. The process of making paper twine consisting in dampening a strip of paper, crushing or collapsing the same, then twisting and applying a lubricant during the twisting operation.

3. The process of forming twine, consisting in crushing or collapsing a strip of damp paper, twisting the same after it is crushed and rubbing onto the surface of the said dampened twine a coating of dry lubricant, substantially as described.

4. In a machine for the manufacture of paper twine, the combination with the tubular former C and the flier B, of a rotary, lubricant-holder for coating the surface of the twine with a dry lubricant, substantially as described.

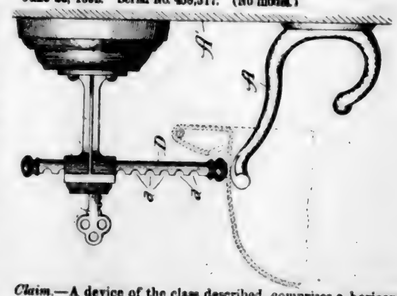
5. The combination of the tubular former, the flier, and the brushing wheel J, rotatable on a vertical axis between the former and the flier substantially as described.

6. In combination with the tubular former and the flier, the brushing wheel rotatable on a vertical axis between the former and the flier and the wiping pad K, supported in proximity to the face of the table in the path of the twine substantially as described.



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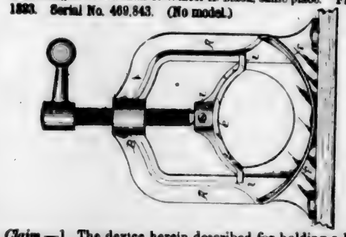
**501,972.** HAT-HOLDER. GEORGE M. R. TWOSS, Chicago, Ill. Filed June 28, 1892. Serial No. 438,317. (No model.)



*Claim.*—A device of the class described, comprises a horizontal slotted arm attached to a support above and in line with a garment supporting hook, a notched bar passing through such slot and sliding vertically toward and from the hook to secure and release the garment, and a means for engaging with the notches in the bar for fastening the same in any desired position, substantially as described.

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**501,973.** HAM-HOLDER. CHARLES C. UMBENHAUER, Miamisburg, Ohio, assignor of one-half to Walter A. Black, same place. Filed Apr. 10, 1893. Serial No. 469,843. (No model.)

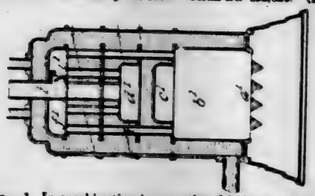


*Claim.*—1. The device herein described for holding a ham, consisting of a base having the curved ledges D and E, the latter having an extent of surface greater than the former, and the shapes of both ledges conforming to the shape of the shank and shoulder of a ham, the screw C, and the clamp e adapted to be depressed against the ham to secure the same, substantially as herein described.

2. In a ham holder, the combination with the standards having at their base the curved ledges D and E, feet O O by which it is at-

tached to a table, and at its top an arch; of the screw C, with the crank *d*, the curved clamp *e* fixed to said screw, and maintained in position by guides *i' i'*, substantially as herein described.

## 501,974. HOT-WATER HEATER. WILLIAM VANDERMAN, Willimantic, Conn. Filed May 11, 1892. Serial No. 432,629. (No model.)



*Claim.*—1. In combination in a sectional boiler and furnace the lower section forming the fire-pot, an upper section *c* having a number of vertical flues located near the sides of the fire-pot and having a re-entrant bottom forming a chamber extending above the flue outlets, all substantially as described.

2. In combination in a sectional boiler and furnace the lower section forming a fire-pot, the sections overlying the fire-pot, a series of vertical flues extending from the fire-pot to a deflector chamber in one of the upper sections, a series of inner flues extending from the upper deflector chamber to a lower deflector chamber in one of the intermediate sections, and a central flue extending upward from the lower deflector chamber, all substantially as described.

3. In combination in a sectional boiler and furnace the lower section comprising the fire-pot, an upper section having a re-entrant bottom forming a combustion chamber, a deflector chamber located below the bottom section, the vertical flues extending from the fire-pot to the deflector chamber, a central flue extending through the upper sections of the boiler and a damper located in the side of said flue and communicating between the upper deflector chamber and a central flue, all substantially as described.

4. In combination in a sectional boiler and furnace the lower section comprising the fire-pot, the crown sheet section having a re-entrant bottom forming a combustion chamber, a deflector chamber located below the dome section of the boiler, a lower deflector chamber located between intermediate sections of the boiler, vertical flues extending from the fire pot to the upper deflector chamber and from the upper deflector chamber to the lower and a central smoke flue extending from the lower deflector chamber through the upper sections of the boiler, and the damper located in the side of the central flue and communicating with the upper deflector chamber with a handle extending to the outside of the furnace, all substantially as described.

5. In combination in a sectional boiler and furnace, the lower section comprising the fire-pot, the upper sections overlying the fire pot, a deflector chamber located below the dome section, a deflector chamber located between the intermediate boiler sections, a series of flues extending from the fire-pot to the upper deflecting chamber, an inner series of tubes extending between the deflector chambers, a central smoke flue extending from the lower deflector chamber, and the waterways extending between the several sections and communicating with the water chambers therein, all substantially as described.

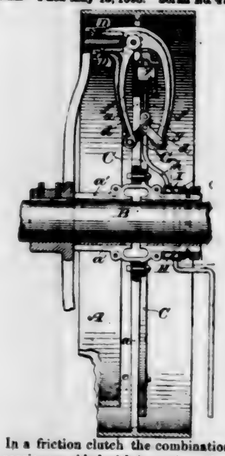
## 501,975. CORKSCREW. EDWIN WALKER, Erie, Pa. Filed June 2, 1892. Serial No. 435,268. (No model.)



*Claim.*—1. The combination in a cork-screw, of a sleeve as D provided with a collar as E on the lower end thereof, on the stem adjacent to the upper end of the screw, with a yoke as F having an annular rim as G thereon and provided with a collar as F' surrounding said sleeve D, so as to rotate freely thereon, and a pin as *f* passing through said sleeve and the stem of the screw above the collar F' of the yoke operating thereon, and securing said sleeve and yoke from vertical movement on the stem of the screw, substantially as and for the purpose set forth.

2. The combination in a cork-screw, of a stem as B terminating in a screw as C, a sleeve as D, having a collar as E on the lower end thereof, on said stem B adjacent to the upper end of the screw C, with a yoke as F having an annular rim as G, H thereon and mounted on said sleeve D, and a pin as *f* passing through said sleeve D, and the stem B above the collar F' of said yoke, so as to prevent the vertical movement of either the sleeve D or the yoke F mounted thereon on the stem B, substantially as and for the purpose set forth.

## 501,976. FRICTION-CLUTCH. FREDERICK L. WATERMAN, South St. Paul, Minn. Filed May 15, 1893. Serial No. 474,314. (No model.)



*Claim.*—1. In a friction clutch the combination with a friction wheel, of a jaw carrier provided with jaws pivotally connected therewith, a cylinder, a piston adapted to work therein, and a toggle joint connecting the piston with said jaws, substantially as and for the purposes set forth.

2. In a friction clutch, the combination of a friction wheel, a jaw carrier provided with jaws pivotally connected therewith and having inwardly projecting arms, a radially arranged cylinder mounted upon said jaw carrier, a piston working therein having an inwardly projecting piston rod, and a toggle joint connecting the arms of said jaws with each other and with the piston rod, substantially as and for the purposes set forth.

3. In a friction clutch, the combination of a friction wheel, a jaw carrier provided with jaws pivotally connected therewith and having inwardly projecting arms, a cylinder and piston mounted upon said jaw carrier, a link connection between the piston rod and the arms of said jaws, and a spring interposed between said piston and one of the cylinder heads, substantially as and for the purposes set forth.

4. In a friction clutch, the combination of a friction wheel, a jaw carrier, jaws pivotally connected therewith and provided with arms, a cylinder and piston mounted upon the jaw carrier and connected through the piston rod with said arms, and hollow rings, one fixed and the other loosely mounted upon the hub of the jaw carrier and having registering openings in their contiguous faces, the fixed ring having a connection with said cylinder and the loose ring with a source of fluid pressure, substantially as and for the purposes set forth.

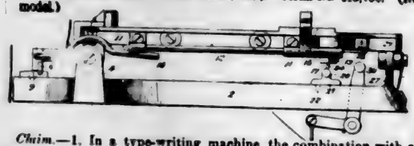
5. In a friction clutch, the combination of a friction wheel, a jaw carrier, jaws pivotally connected therewith and provided with arms, a cylinder and piston mounted upon the jaw carrier and connected through the piston rod with said arms, hollow rings, one fixed and the other loosely mounted upon the hub of the jaw carrier and having registering openings in their contiguous faces, the fixed ring having a connection with said cylinder and the loose ring with a source of fluid pressure, and an axially movable spring-actuated ring pressing against the opposite side of said loose hollow ring, substantially as and for the purposes set forth.

6. In a friction clutch, the combination of a friction wheel, a jaw carrier, radially movable jaws arranged on opposite sides of the rim of the friction wheel and pivotally connected with said jaw carrier, said jaws being formed or provided with inwardly extending arms, a cylinder and piston mounted upon said jaw carrier between said arms,



a piston rod projecting radially through the inner head of the cylinder, and a toggle joint connecting said arms and linked to said piston rod, substantially as and for the purposes set forth.

## 501,977. TYPE-WRITING MACHINE. GEORGE B. WEBB, New York, N. Y., assignor, by mesne assignments, to the Wyckoff, Seamans & Benedict, of New York. Filed Dec. 2, 1891. Serial No. 413,756. (No model.)



*Claim.*—1. In a type-writing machine, the combination with a paper carriage, of one or more relatively fixed or stationary column stops, and a dog connected to the paper carriage and adapted to be moved to engage the column stop or stops.

2. In a typewriting machine, the combination with a paper-carriage and its releasing mechanism, of one or more column-stops, and a key connected to the paper-carriage and carrying a dog to engage said stop or stops.

3. In a typewriting machine, the combination with a paper-carriage and its releasing mechanism, of one or more column-stops, and a pivoted arm or lever connected to the paper-carriage and carrying a stop-dog.

4. In a typewriting machine, the combination with a paper-carriage and its releasing mechanism, of a column stop key mounted on the paper-carriage, and one or more column stops fixed relatively to the paper-carriage.

5. In a typewriting machine, the combination with a paper carriage and its releasing mechanism, of a depressible dog connected to the paper-carriage, and one or more column stops connected to the machine frame.

6. In a typewriting machine, the combination with a paper-carriage and its releasing mechanism, of one or more column stops, and a column stop key connected to the paper-carriage and arranged in proximity to the carriage release key.

7. In a typewriting machine, the combination with a paper-carriage and its releasing mechanism, of one or more column stops, and a column stop key connected to the paper-carriage and to the release-key so that when the column stop key is actuated it in turn actuates the release-key.

8. In a typewriting machine, the combination with a paper-carriage and its releasing mechanism, of one or more column stops, and a column stop key connected to the releasing mechanism, the arrangement being such that the column stop key when actuated operates upon the releasing mechanism while the releasing mechanism is capable of operation independently of the column stop key.

9. In a typewriting machine, the combination with a paper-carriage and its hinged frame provided with an arm, of a rock-shaft having an arm and a finger-piece, one or more column stops, and a pivoted arm or lever having a dog and also a projection adapted to engage with said finger-piece.

10. In a typewriting machine, the combination with a paper-carriage and its hinged frame provided with an arm, a rock-shaft having an arm and a finger-piece, a pivoted arm or lever having a dog and a projection, a spring, and one or more column stops.

11. In a typewriting machine, the combination with a paper-carriage and its hinged frame provided with an arm, a rock-shaft having an arm and a finger-piece, an arm or lever pivoted upon said rock-shaft, a dog and a projection on said arm or lever, and one or more column stops.

12. In a typewriting machine, the combination of a paper-carriage, a rod or support having one or more column stops, and a depressible column-stop key connected to travel with the paper carriage.

13. In a typewriting machine, the combination of a paper-carriage, a rod or support detachably connected to the machine frame and having adjustable or removable column stops, and a depressible column stop key connected to travel with the paper-carriage.

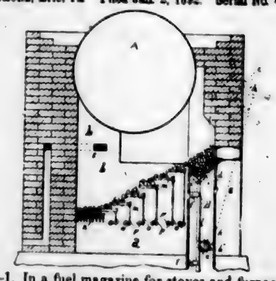
14. In a typewriting machine, the combination of a paper-carriage, a depressible column stop key connected at the front of said carriage, and a column stop rod or support mounted on the machine frame in the plane of travel of the column stop key.

## 501,978. SHANK-STIFFENER. GEORGE A. WELD, Winchester, Mass. Filed Mar. 28, 1892. Serial No. 426,664. (No model.)



*Claim.*—A shank stiffener for boots and shoes having its central portion of plano-convex form in cross section, and its ends flattened and thinned, substantially as and for the purpose described.

## 501,979. FUEL-FEEDING DEVICE FOR FURNACES. JEROME W. WETMORE, Erie, Pa. Filed Jan. 2, 1892. Serial No. 416,752. (No model.)

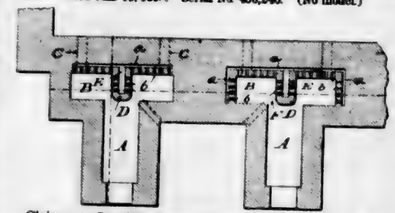


*Claim.*—1. In a fuel magazine for stoves and furnaces, the combination of an upward moving, V-shaped carrier and the mechanism for raising and lowering it, an inclined grate and a door adapted to be opened to admit a charge of fuel to the magazine when the carrier is lowered and to be closed when the load on the carrier is to be raised, substantially as and for the purpose set forth.

2. In a surface burning stove or furnace, the combination of the vertical fuel carrier, the pinion bars, *l*, cog wheels *e*, shaft K, sprocket wheels *h K'*, chain belt *o*, friction wheels *f*, magazine B and inclined grate surface substantially as and for the purpose set forth.

3. In the surface burning stove or furnace, the fuel door, *d*, closing the opening into the combustion chamber while opened to admit fuel supplies, in combination with the fuel magazine B, the carrier *c*, *c'*, the combustion chamber and the inclined grate, substantially as and for the purpose set forth.

## 501,980. BRICK-KILN FURNACE. ISAAC C. WHEELER, Carthage, Mo. Filed Jan. 13, 1893. Serial No. 458,240. (No model.)

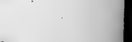


*Claim.*—1. In a kiln, the combination with the furnace chamber of a combustion chamber at the inner end thereof; a hollow closed block extending forwardly from the rear wall of the combustion chamber to the mouth of the fire chamber but set away from the sides of the latter; and eyes opening from the combustion chamber into the kiln.

2. In a kiln, the combination with the furnace chamber, of a combustion chamber at the inner end thereof; a hollow block extending forwardly from the rear wall of the combustion chamber as described and containing an air-chamber; a flue or passage *a* formed in the rear wall of the combustion chamber and provided with openings; means for supplying air to the interior of the hollow block, and from the latter to the flue *a*; and eyes opening from the combustion chamber into the kiln.

3. In a kiln, the combination with the furnace chamber; of a combustion chamber at the inner end thereof; a hollow block extending forwardly from the rear wall of the combustion chamber; eyes opening from the combustion chamber into the kiln; a flue or passage *a* formed in the walls of the combustion chamber and hollow block and provided with discharge openings *b*; and means for supplying air to the hollow block.

## 501,981. GRIP-BUTTON. WILLIAM F. WHITING, Providence, R. I., assignor, by mesne assignments, to the Howard & Son Company, same place. Filed June 28, 1890. Serial No. 357,077. (No model.)



*Claim.*—In a grip button the combination with the outer plate, of the inner plate having a concave inner surface, a spring plate cor-

responding in length to the diameter of the outer plate and having its end secured between the edges of said two plates, and having a curve from end to end corresponding approximately to the concavity of the inner plate, prongs on said spring plate intermediate of its ends and constructed to extend through an opening in the inner plate, and a grip lever having a pivotal connection with the inner plate and having its inner end bearing upon the spring plate, substantially as specified.

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**501,982. BUSHING.** ISAAC M. WILLIS, Freeport, Ill. Filed Feb. 14, 1893. Serial No. 462,345. (No model.)



*Claim.*—1. A bushing consisting of a main section and a movable section, and means forming a part of the bushing for separating the sections after the bushing is in position in the wood work.

2. A bushing consisting of a main section and a movable section provided with pointed projections, and means forming a part of the bushing for forcing the projections into the wood support by separating the sections after the bushing is in position in the wood work.

3. A bushing consisting of a main section and a movable section, each provided with grooves in their meeting faces, and means forming a part of the bushing for separating the sections by being driven along the grooves after the bushing is in position in the wood work.

4. A bushing consisting of a main section and a movable section each provided with projections, also with grooves in their meeting faces, and means forming a part of the bushing for separating the sections by being driven along the grooves after the bushing is in position in the wood work.

5. A bushing consisting of a main section its ends of cylindrical form, a portion of its length being of semi cylindrical form, a movable section of semi-cylindrical form filling the cut away portion and provided with projections.

6. A bushing consisting of a main section its ends of cylindrical form, the center portion of its length being of semi-cylindrical form, a movable section of semi-cylindrical form filling the cut away portion and provided with projections.

7. A bushing consisting of a main section its ends of cylindrical form, the center portion of its length being of semi-cylindrical form, a movable section of semi-cylindrical form filling the cut away portion and provided with projections, the head end of the main section slotted and the meeting faces of the sections longitudinally grooved and means forming a part of the bushing for separating the movable section by being driven along the grooves, when the bushing is in position in the wood-work.

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**501,983. MULTI-CYLINDER ENGINE.** LEWIS C. WORRON, Hartford, Conn., assignor to Abraham Vanderbeek, same place. Filed Dec. 10, 1892. Serial No. 454,708. (No model.)

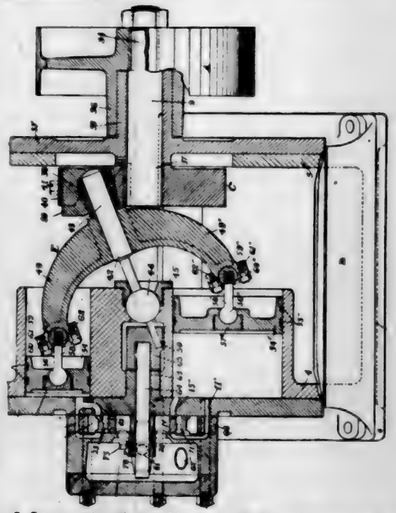
*Claim.*—1. In a compound engine, the combination of a high-pressure and a low pressure cylinder having their ports located in the valve seat, a valve shaft, a valve mounted upon and rotating with said shaft and having transverse movements thereon, and a spring-and-weight governor in direct connection with said valve and shaft, substantially as and for the purpose described.

2. In a compound engine, the combination with two high-pressure and two low-pressure cylinders arranged in pairs about the valve axis and having their ports located in the valve-seat at different distances, respectively, from said valve axis, of the valve-shaft, the rotating valve transversely-movable upon the shaft and having an interior passage eccentric to the valve axis, whereby the exhaust of the high-pressure cylinder is conveyed to the opposite low-pressure cylinder, and a spring-and-weight governor in direct connection with the valve and shaft, substantially as and for the purpose set forth.

3 In a compound engine, the combination with the series of cylinders having their ports located in the valve-seat at different distances from the axis of the valve movement, and with the shaft, of an eccentrically-disposed rotating-valve having the annular passage-way formed in its inner and outer faces eccentric to its axis for opening communication between opposite cylinders, and having transverse openings therethrough in communication with said passage-way to admit steam to both sides the roof, and a governor to regulate the movement of the valve transversely of its axis of rotation for varying the ratio of expansion, substantially as described.

4. In an engine, the combination with the cylinders, the pistons and main-shaft, of a rocking-beam having ball and socket connections with the pistons, and having an independent central driving-spindle provided with a tubular journal socket at one end and supported in a bearing in a crank-disk secured to the main-shaft and provided with a spherical journal at its opposite end which is supported in the frame of the engine centrally with relation to the axis of the main-shaft and in alignment transversely with the ends of the rocking-beam, a rotary-valve and an independent valve-shaft, one end of which is connected with the rocking-beam spindle, substantially as and for the purpose described.

5. In an engine, the combination with the cylinders, the pistons, the main-shaft, and a rocking beam intermediate to the pistons and main-shaft, of the valve and valve-shaft, and the valve-shaft-actuating stem 50 carried by the rocking-beam and operatively connected with the valve-shaft for actuating the same, all organized and co acting substantially as described.



6. In an engine, the combination with the main-shaft and rocking-beam, of the driving-spindle having a spherical journal at one end supported in a journal-bearing in the frame of the engine and axially-aligned with the main-shaft, and having the tubular journal socket at its opposite end, the crank-disk fixed to said shaft and having a journal-bearing for said tubular socket, and a bearing-block and fastening for securing the said socket in place, substantially as described.

7. In an engine, the combination with the cylinder, of the piston, the main shaft, the rocking-beam, and the independent supporting-spindle for said rocking-beam having a spherical journal at one end supported in the frame and indirectly connected with the main-shaft at the opposite end, and capable together with the rocking-beam of a universal rocking movement to actuate said shaft, the connecting-rod spherically journaled at one end thereof in the piston and having the spherical journal-socket removably-secured to its opposite end and seated in a spherical bearing in the end of the rocking-beam, and caps securing the ends of the connecting-rod in place in their respective bearings, substantially as described.

8. In a multi-cylinder compound engine, the combination of four cylinders arranged equi-distant and parallel with relation to the axis of the main-shaft, the main-shaft the crank or crank-disk secured to said shaft, the rocking-beam supported upon an independent spindle journaled at one end in the engine-frame, and at its opposite end in the crank-disk upon the main-shaft and capable of universal rocking movements for actuating the main-shaft, and having four cross-wise arms connected at their ends by balls and sockets with the pistons of the several cylinders, respectively, and the guide-arm 51 secured to the rocking-beam intermediate to the planes of said beam-arms, and a guide-bar on the engine-frame engaging said guide-arm for controlling the movement of the rocking-beam, substantially as described.

9. In a compound engine, the combination with the high-pressure cylinder and its port, and the low-pressure cylinder and its port, of the steam-chest, the valve-shaft, the valve having the elongated central opening movably-mounted upon said shaft and dividing the steam-chest into two parts, one for the live-steam, and one for the exhaust-steam, and having a transverse movement upon the shaft, substantially as described, for intermittently opening communication with the live-steam space and the high-pressure cylinder, and the exhaust-steam space and the low-pressure cylinder and adapted between these



times for opening communication between the two cylinders through a passage-way in the valve, substantially as set forth.

10. The combination with the valve-chest and its ports, of the valve-shaft, the rotatable valve movable transversely of the shaft, the regulator-lever pivotally supported on the shaft and bearing upon the valve, the lever 78 bearing at one end against the shaft, and at the other end against the valve in opposition to the normal action of the regulator-weight, and the regulator-spring carried by the shaft and bearing against said lever 78, whereby the valve is movable transversely of the shaft and the slack of the joints is taken up, substantially as described.

11. In a compound engine, the combination with the high-pressure and the low-pressure cylinders and their pistons, and the main-shaft, of the rocking-beam having the independent supporting-spindle journaled at one end in the engine-frame and indirectly connecting the main-shaft at its opposite end, connecting-rods having a universal-connection with the arms of the rocking-beam and pistons, the independent valve-shaft connected at one end with the rocking-beam spindle, the rotating-valve having the elongated central opening which embraces the valve-shaft, and having passage-ways therein arranged and operating as described, to first open communication for the live-steam to the high-pressure cylinder, then cut off the live-steam, and open communication from the high-pressure cylinder to the interior of the valve to the low-pressure cylinder and then exhaust the low-pressure cylinder through the middle space of the valve, while again admitting live-steam to the high pressure cylinder, and a spring-and-weight governor in connection with the valve and valve-shaft for the purpose of regulating the transverse movements of the valve and consequently the ratio of expansion of steam by changing the time of port closure, substantially as described.

12. In a compound engine, the combination with the frame, of the cylinders having a main and auxiliary ports, as described, the steam-chest having the inlet and exhaust ports, the annular valve having the elongated central opening, and having the eccentric passage-ways 83 formed in its inner and outer face with the transverse openings 23 communicating therewith, the valve-shaft extended through the elongated central opening in the valve, a governor directly connecting said valve and valve-shaft, the pistons, the main-shaft, and the walking-beam mounted upon an independent spindle and indirectly connected with the main-shaft, pistons and valve-shaft, substantially as and for the purpose described.

13. In an engine, the combination with the valve-chest and its ports, the valve-shaft, the revoluble valve movable transversely on the shaft, of a governor comprising a hub adjustably-secured to the shaft, a lever pivoted to said hub at one side and engaging the valve at one end, a counter-weight pivotally-supported at the opposite end of said lever, an oppositely-disposed regulator-lever engaging the valve at one end and bearing upon the shaft at its opposite end, and a spring bearing upon said lever to counter-balance the centrifugal force of the counter-weight and regulate the transverse movement of the valve, substantially as and for the purpose described.

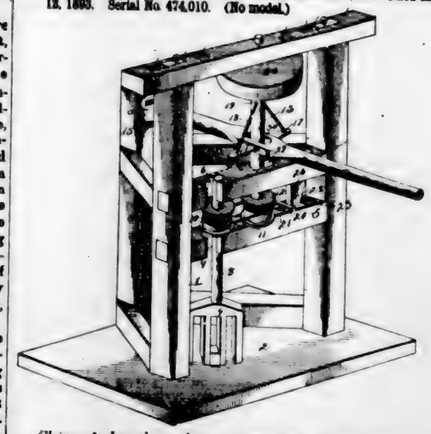
14. In an engine, the combination with the valve-chest and its ports, and the valve-shaft, of the revoluble valve having the central elongated opening through which the valve-shaft extends, and transverse recesses 73, 73', a governor for said valve comprising a hub adjustably-secured to the shaft, a lever pivotally-connected to said hub having a bearing at one end in the recess 73 of the valve, and having a counter-weight pivotally-secured to the opposite end, a stem secured to the hub at the opposite side, a lever movably-mounted on said stem, bearing at one end upon the valve-shaft, and having a bearing at its opposite end in the recess 73' of the valve, a spiral spring mounted upon said stem and bearing upon the said lever, and a nut screwed upon the end of the stem and bearing against the spring to regulate the tension thereof, all co-acting to regulate the transverse movement of the valve upon its shaft, substantially as and for the purpose described.

15. In a multi-compound-engine, the combination with the engine-frame, of a series of cylinders radially-disposed around a common center, a steam-chest intermediate to, and in communication with, said cylinders, a revoluble valve having a central elongated opening, and independent valve-shaft extended through said opening having a bearing in the cylinder head-plate located between the cylinders and steam-chest, a main-shaft, a rocking-beam interposed between the main-shaft and valve-shaft, and mounted upon an independent spindle indirectly connected with the main-shaft through the medium of a crank at one end, and supported by a spherical journal in the engine-frame at the opposite end and connected to the valve-shaft by a stem projecting beyond the said spherical bearing engaging a head upon the valve-shaft, (the said rocking-beam having a series of arms,) the pistons located in said cylinders, and the piston-rods having ball-bearings at each end, and connected with the arms of the rocking-beam and the pistons, respectively, all combined and co-acting, substantially as and for the purpose described.

16. In a compound-engine, the combination of a high-pressure and a low-pressure cylinder having their ports located in the valve-seat, of the valve-shaft, the rotating valve transversely-movable upon said shaft having an annular passage eccentric to the valve axis, whereby the exhaust of the high-pressure cylinder is conveyed to the low-pressure cylinder, and a spring-and-weight governor in operative connection with the valve and shaft, substantially as described and for the purpose set forth.

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**501,984. CHURN.** JOSEPHUS WYLIE, Ireland Hill, Ala. Filed May 12, 1893. Serial No. 474,010. (No model.)



*Claim.*—1. In a churn, the combination of a supporting frame, a dasher-shaft journaled therein, a drive-shaft journaled on the frame, pulleys mounted on said shafts, a belt connecting the pulleys, a horizontally-adjustable top-bar mounted on the frame and receiving the upper end of the drive-shaft, a horizontally-adjustable slide having the lower end of the shaft journaled on it, and means for holding the adjustable slide in position substantially as and for the purpose described.

2. In a churn, the combination of uprights, upper and lower intermediate bars connecting the uprights, the lower one being provided in its upper face with a longitudinal recess, a slide mounted in the recess and provided with a bearing-socket, a dasher-shaft journaled in suitable bearings of the intermediate bars and carrying a dasher, a longitudinally-adjustable top-bar mounted on the upper ends of the uprights and provided with a bearing-opening, a drive-shaft journaled at its upper end in the bearing-opening of the top-bar and having its lower end journaled in said socket, pulleys mounted on said shafts, a belt arranged on the pulleys and communicating motion from the drive-shaft to the dasher-shaft, and means for securing the slide and the top-bar in their adjustment, substantially as described.

3. In a churn, the combination of uprights 1, intermediate upper and lower bars connecting the uprights and provided with bearings and having longitudinal slots the lower intermediate bar being provided in its upper face with a longitudinal recess and the upper intermediate bar having an elongated shaft-opening 29, a dasher-shaft journaled in said bearings, a drive-shaft passing through the shaft-opening 29 of the upper intermediate bar, pulleys arranged on said shafts, a belt passing around the pulleys, a slide arranged in the recess of the lower intermediate bar and provided with a slot arranged above that of the lower intermediate bar, said slide having a bearing-socket and receiving the lower end of the drive-shaft, a transverse piece secured to the upper face of the lower intermediate bar and spanning the recess, a wedge arranged in said slots for securing the slide in its adjustment, and an adjustable top-piece mounted on the uprights and having the upper end of the drive-shaft journaled in it, substantially as described.

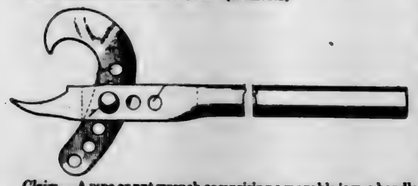
4. In a churn, the combination of uprights, intermediate lower bars connecting the uprights and provided with bearings, a dasher-shaft journaled in the bearings, an adjustable slide mounted on the lower one of the intermediate bars, an adjustable top-bar provided with longitudinal slots receiving the upper ends of the uprights, said top-bar having adjacent to the slots perforations arranged at different distances from the slots, hooks hinged to the uprights and engaging the perforations to secure the top-bar in its adjustment, a drive-shaft journaled on the slide and the top cross-bar, pulleys mounted on the shafts, and a belt arranged on the pulleys, substantially as described.

5. In a churn, the combination of a supporting frame having up-

rights provided with reduced upper ends, a lower intermediate bar having a longitudinal slot and connecting the uprights and provided in its upper face with a longitudinal recess, a slide having a longitudinal slot and arranged in the recess, a transverse piece spanning the recess and securing the slide therein, an adjustable top bar provided with longitudinal slots receiving the reduced ends of the uprights and having adjacent to the slots adjusting perforations, hooks mounted on the uprights and engaging the perforations and securing the top-bar in its adjustment, a drive-shaft having its lower end journaled on the slide and having its upper end journaled on the top-bar, a wedge arranged in the slots of the slide and the intermediate bar, a dasher-shaft journaled on the intermediate bar, pulleys mounted on said shafts, and a belt connecting the pulleys, substantially as described.

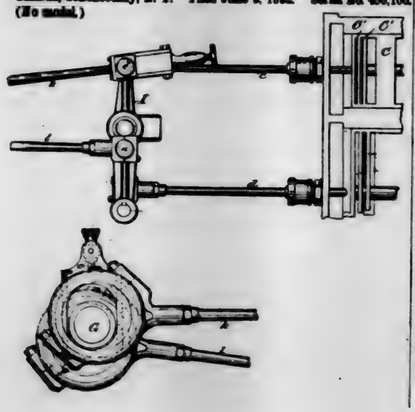
6. In a churn, the combination of a supporting frame comprising a base, uprights rising from the base, a fulcrum post mounted on the base in rear of the uprights, horizontal bars connecting the uprights and the fulcrum post, upper and lower intermediate bars connecting the uprights and provided with bearings and having longitudinal slots, the lower intermediate bar being provided in its upper face with a longitudinal recess and the upper intermediate bar having an elongated shaft-opening 29, a dasher-shaft journaled in said bearings, a slide arranged in the longitudinal recess of the lower intermediate bar and provided with a longitudinal slot, a wedge arranged in said slots and securing the slide in its adjustment, an adjustable top-bar mounted on the uprights, a vibrating shaft arranged in the elongated opening 29 of the upper intermediate bar and journaled on the slide and the top-bar, pulleys mounted on said shafts, a belt connecting the pulleys, an operating-lever fulcrumed at its rear end on said post and provided intermediate of its ends with laterally-extending arms and having an opening receiving the vibrating shaft, and a cord extending downward from the shaft at opposite sides thereof and connected to said arms, substantially as described.

**501,985.** PIPE OR NUT WRENCH. PETER ARNAFFOUT, Hoover, Ind., assignor of one-half to Frederick L. Schneider, same place. Filed Sept. 2, 1892. Serial No. 444,913. (No model.)



*Claim.*—A pipe or nut wrench comprising a movable jaw, a handle provided with a slotted head having a curved rigid jaw, the extremity of which is in line with the axis of the movable jaw, an angular shoulder projecting above the said curved rigid jaw, at a point near its outer end, said movable jaw pivoted within the slot in the head, said latter jaw having a curved outer end of greater width than the pivoted portion, and provided at its curved outer end with a knife edge to co-act with the said shoulder for holding a pipe nut or the like, and means, comprising a bolt and a pin for adjusting the movable jaw, as set forth.

**501,986.** VALVE-GEAR FOR COMPOUND ENGINES. DANA A. BARNES, Schenectady, N. Y. Filed June 9, 1892. Serial No. 436,106. (No model.)



*Claim.*—1. As a means for controlling the cut-off and exhaust of combined high and low pressure cylinders, a double rocker arm or shaft pivoted between its ends and carrying at one end a secondary rocker arm or shaft and suitable connections extending to the valves and to the eccentrics, substantially as specified.

2. As a means for controlling the cut-off and exhaust of combined high and low pressure cylinders, a double rocker arm or shaft pivoted between its ends and carrying at one end a secondary rocker arm or shaft and suitable connections with the valves and with eccentrics one of which is adjustable in accordance with the load, substantially as specified.

3. As a means for controlling the cut-off and exhaust of combined high and low pressure cylinders, a double rocker arm or shaft pivoted between its ends and carrying at one end a secondary rocker arm or shaft and suitable connections with the valves and with eccentrics one of which is adjustable in accordance with the load and the other adjustably secured to the shaft with relation to the operation of the first-mentioned eccentric, substantially as specified.

4. A compound valve gear comprising a double rocker arm or shaft pivoted between its ends and connecting a variable eccentric with a high pressure cylinder valve and connecting a low pressure cylinder valve with a fixed eccentric by means of an intermediate secondary rocker arm or shaft, substantially as specified.

5. A rocker arm for valve gear provided with means for connection with the variable eccentric and high pressure valve, and carrying a secondary rocker shaft beyond the pivot of said means and provided with arms of varying lengths provided with means for connection with an eccentric and a low pressure valve, substantially as specified.

6. In a compound engine, as a means for controlling the high and low pressure valves, a substantially centrally pivoted double rocker arm or shaft and eccentrics arranged to produce a proportionate cut-off between the valves to equalize the load, as herein specified.

7. In compound engines, eccentrics mounted on slides to vary their throw for different points of cut-off and connected with a substantially centrally-pivoted double rocker arm or shaft and the high and low pressure valves, substantially as and for the purpose specified.

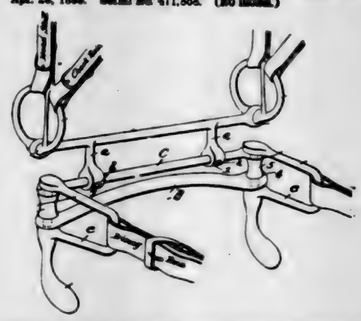
8. In compound engines, a substantially centrally-pivoted double rocker arm or shaft consisting of a long arm connected to the low pressure valve and a short arm connected to the high pressure valve, said arms being arranged to equalize the pressure of both the high pressure steam and the exhaust as set forth.

9. High and low pressure cylinders arranged one above the other and exhausting from one to the other direct and a valve gear consisting of substantially centrally-pivoted double rocker arms or shafts having pins connected by valve stems to the valves of said cylinders and by rods to the eccentrics one of which is variable, as set forth.

10. In compound engines, a valve gear arranged to equalize the load and having valves operated by a substantially centrally-pivoted double rocker arm or shaft constructed as described, with eccentrics adjustable in the manner shown and set forth.

11. High and low pressure cylinders and pistons having rods connected to the same cross-head and the high and low pressure valves connected to a substantially centrally-pivoted double rocker arm or shaft and eccentrics substantially as herein shown and described.

**501,987.** BRIDLE-BIT. EDWIN T. BARTRUFF, Keokuk, Iowa. Filed Apr. 28, 1892. Serial No. 471,868. (No model.)



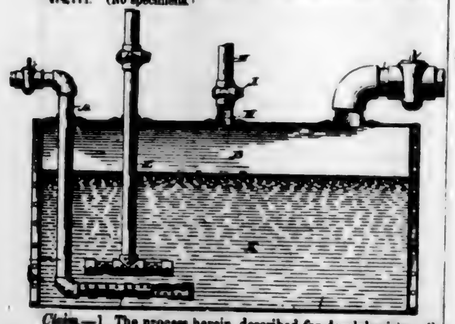
*Claim.*—1. As an article of manufacture the herein described bridle bit, consisting of upper bar A, provided with rings B, the two lower bars C and D; said bar C supported in eyes of arms or projections *a a*, proceeding from bar A; cheek-pieces E provided with depending projections *c*, all substantially as shown.

2. As an article of manufacture, an improved bridle-bit consisting of an upper bar A, provided at its ends, with swiveled rings B, to receive the head-stall and the check-rein, and also provided with the arms or projections *a*, having eyes and the slots 2: the bar C provided at its ends with eyes, and with studs 1, located in the slots 2; the bar D, provided with eyes; and the cheek-pieces E, swiveled to the bars C and D, and provided with depending projections *c*; all substantially as shown.

3. As an article of manufacture, the bar A provided with eyes and swiveled to the rings B; the bar C provided with eyes, and the bar D provided with eyes; the cheek pieces E swiveled to said bars C and D, provided with the upward projection 6, having the slots 7, and also provided with the depending projections *c*; all substantially as shown.



**501,988.** PROCESS OF REFINING SULPHUROUS PETROLEUM. FRANCIS J. CARMAN, Washington, D. C. Filed May 19, 1893. Serial No. 474,771. (No specimens.)



*Claim.*—1. The process herein described for desulphurizing oils which consists in passing the oil vapors through a receptacle containing a mass of melted metal, which will reduce the sulphurous vapors to a common form of combination, and then combine with the sulphur.

2. The process herein described for desulphurizing oils, which consists in passing the oil vapor into contact with a mass of melted metal, of which lead is the essential element.

3. The process herein described for desulphurizing oils which consists in passing the oil vapor into contact with a mass of melted lead, whereby the sulphide of lead is formed and immediately dissolved, as described.

4. The process herein described for desulphurizing oils, which consists in passing the oil vapors into contact with a mass of melted metal, and subsequently desulphurizing the melted mass by means of an oxidizing agent, substantially as shown and described.

5. The process herein described for desulphurizing oils which consists in passing the oil vapors into contact with a mass of melted lead, and revivifying said lead by means of a current of air brought into contact therewith, substantially as set forth.

**501,989.** MANDREL FOR COMBINED RAILWAY CHAIRS AND FISH-PLATES. DANIEL A. CHAPIN, Boston, Mass. Filed Dec. 1, 1892. Serial No. 453,728. (No model.)



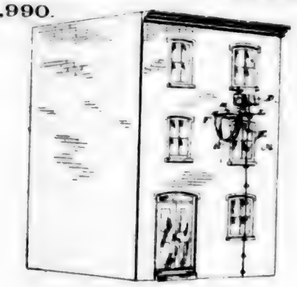
*Claim.*—A separable mandrel for forming a combined chair and fish-plate, consisting of a middle piece and two side pieces, each side piece having an upright portion and a flange, the two upright portions and the middle portion together composing the web of the mandrel, substantially as described.

**501,990.** FIRE-ESCAPE. JAMES P. COOPS, Scottsville, Ill. Filed Apr. 24, 1892. Serial No. 471,712. (No model.)

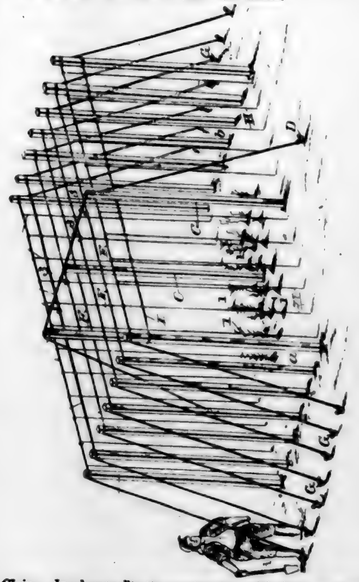
*Claim.*—1. In a fire escape, the combination of an escape rope provided with elastic bosses or stops, and a belt carrying a loop adapted to encircle the rope and pass down the same and engage the bosses.

2. The combination with the escape rope provided with bosses or stops, of a belt, and a loop carried by the belt and adapted to pass along the escape rope and clear the bosses and having a notch adapted to engage the rope and be arrested by the bosses.

**501,990.**

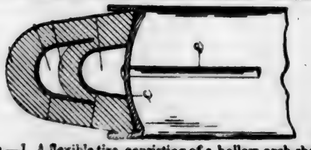


**501,991.** HOP-TRELLIS. DAVID CRAIG, Macleay, Oreg. Filed Mar. 17, 1893. Serial No. 466,511. (No model.)



*Claim.*—In a hop trellis, the combination with the two series of end posts, and the two series of stakes G arranged outside of and aligned with said posts, the intermediate posts C one at each side of the trellis in line between the outer posts at the ends thereof, the stakes D, arranged outside of and in line with the posts C, the wire E, secured to said stakes and also to the tops of posts C, said wire extending transversely across the trellis and being provided with depending hooks 3, the wires F, having end loops embracing the several stakes G, said wires F being each loosely connected to the upper portions of one pair of the end posts and having its central portion in position to engage the depending hooks on the transverse wire E, and cords attached to the wires F and adapted to support the vines, substantially as described and for the purpose set forth.

**501,992.** VEHICLE-WHEEL. DAVID CROWTHER, Huddersfield, England. Filed Feb. 27, 1893. Serial No. 463,883. (No model.)

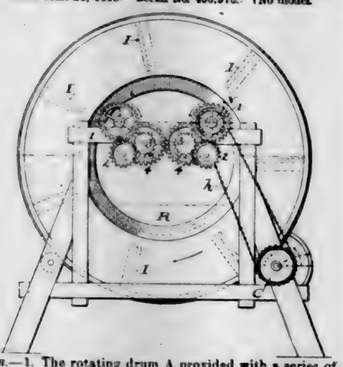


*Claim.*—1. A flexible tire, consisting of a hollow arch-shaped top portion *a'*, the flat outwardly-diverging sides, and the inner arch-shaped

portion $a^3$ joining the said sides, substantially as and for the purpose set forth.

2. The combination, with a flexible tire having an outer arched bearing surface $a'$, flat outwardly diverging sides an inner arch $a^4$ an air space $b$ between the said arches, and an open space $b'$ below the inner arch $a^4$, of the sheets or layers of canvas $d$, $d'$, forming a lining to the inner walls of the arches, substantially as and for the purposes set forth.

## 501,993. BUTTER-WORKER. DAVID W. CURTIS, Fort Atkinson, Wis. Filed Mar. 21, 1893. Serial No. 466,978. (No model.)



*Claim.*—1. The rotating drum A provided with a series of concave shelves or buckets I, with holes $g$ arranged as shown for the purpose of separating the fluid from the butter and delivering the latter to the rolls, substantially as described.

2. The rotating drum provided with the concave buckets I, the holes $g$, and the groove or channel $a$ on its exterior, substantially as and for the purpose set forth.

3. The rotary drum provided with the concave buckets I, with a hole $g$ and shield $f$, located at the center of the concavity of the buckets, substantially as and for the purpose set forth.

4. In combination with the rotating drum, provided with buckets, the working rolls L, L', and the delivery rolls K, K said rolls all being arranged parallel with the axis of the drum, and in relation to each other, substantially as shown and described.

5. In combination with the rotary drum provided with a series of internal buckets, the two pairs of rolls connected by gearing (or equivalent means) substantially as described, whereby the two rolls on each side of the center are caused to rotate inward toward the center, as shown and described.

6. A tray or receiver, consisting of a base O, provided with casters or wheels, with uprights or supports P secured to said base at or near one end, and the tray or box R secured at one end to the uprights and projecting therefrom in the same direction as the base, whereby the box or tray R can be inserted within the open end of the rotating drum while the base O passes under the drum, substantially as, and for the purpose set forth.

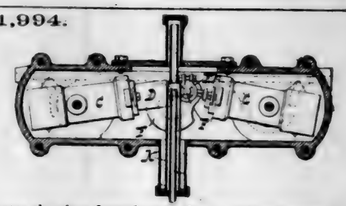
7. The combination in a butter worker, of the rotary drum provided with a series of internal buckets, the working rolls L L' each having their journals at one end mounted in boxes arranged to swivel or turn, and their journals at the opposite end being mounted in sliding boxes, with the pivoted lever $i$ connected by links to the sliding boxes, and the handle H provided with notches for adjusting the working rolls and locking them in position when adjusted, substantially as shown and described.

8. The combination in a butter worker, of the rotary drum provided with a series of internal buckets, the concave and convex working rolls, and the two delivery rolls K and K located outside of and above the working rolls, all of said rolls being arranged parallel with the axis of the drum, substantially as shown and described.

9. In a butter worker, the combination of the drum A provided on its exterior with the projecting bands $d$ and the rack $o$, with the shaft B provided at one end with a fast and loose pulley, at its opposite end with a sprocket wheel C, and with a pinion $m$ arranged to engage with the rack $o$, all arranged for joint operation substantially as shown and described.

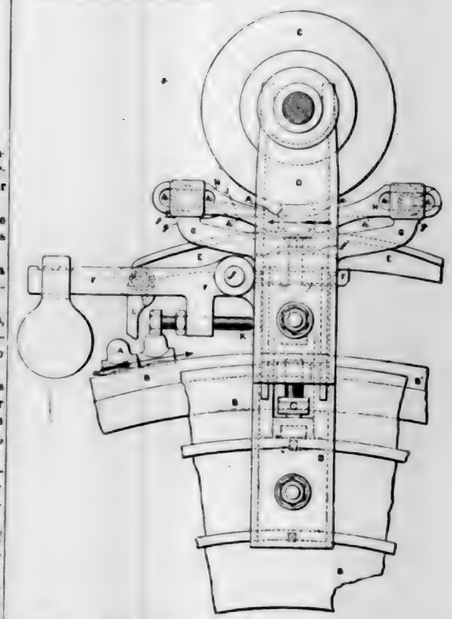
## 501,994. OSCILLATING ENGINE. MILES H. DELANY, Brooklyn, assignor to Levi J. Wing, New York, N. Y. Filed Oct. 7, 1892. Serial No. 448,166. (No model.)

*Claim.*—In an oscillating engine herein shown the combination with the shell B forming part of a casing inclosing the working parts,



of a water chamber, formed on the bottom of said casing, to extend below the bottom, a steam chamber formed on the top of the casing, a water and steam discharge pipe K open at both ends, extending from the base of said water chamber to the upper part of said steam chamber, an overflow pipe N within the discharge pipe, extending through the base of said water chamber, substantially as and for the purpose described.

## 501,995. APPARATUS FOR GRINDING REVOLVING FLATS OF CARDING-ENGINES. JAMES EDEN, Gorton, England, assignor of one-half to Samuel Herbert Brooks, same place. Filed Oct. 13, 1890. Serial No. 367,970. (No model.)



*Claim.*—1. In apparatus for grinding the revolving flats of carding-engines a sliding grinding block or bracket against which the working surface of the flat bears mounted on studs or slides at each end and which moves along and carries the flat along a path inclined to the radius of the grinding roller at the point of contact therewith substantially as described.

2. In apparatus for grinding the revolving flats of carding-engines a sliding grinding block or bracket against which the working surface of the flat bears formed with inclined bearing surfaces at each end which as it is carried forward with the flat give the required inclination thereto substantially as described.

3. In apparatus for grinding the revolving flats of carding-engines the combination with a grinding roller C grinding bracket D, horned bracket E and pivoted lever F of the fixed stationary bracket G and sliding grinding block or bracket H substantially as described.

4. In apparatus for grinding the revolving flats of carding-engines the combination with the fixed bracket G provided with horns $g$ of the sliding block or bracket H against which the working surfaces of the flats bear and the pivoted catch or tumbler J with tail piece $j$ substantially as described.

5. In apparatus for grinding the revolving flats of carding-engines the combination with the fixed bracket G provided with horns $g$ of the studs I the sliding block or bracket H provided with slots $h$



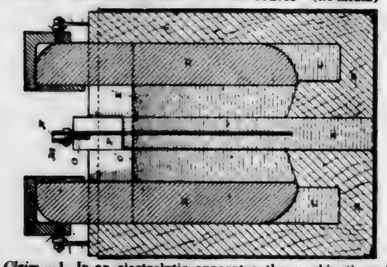
at each end and the bearing surface $h''$ against which the working surfaces of the flats rest substantially as described.

6. In apparatus for grinding the revolving flats of carding-engines the combination with the pivoted lever F which lifts the flats against the bearing surface of the sliding bracket H of the adjustable screw stop K and the finger L substantially as described.

7. In apparatus for grinding the revolving flats of carding-engines the combination with the grinding roller C of the sliding block or bracket H with inclined slots h at either end and bearing surfaces $h'$ and the pivoted tumbler or catch J with tail piece $j$ substantially as described.

8. In apparatus for grinding the revolving flats of carding-engines the combination with the flats A roller bracket D and grinding roller C of the stationary brackets E and G the sliding block H the tumbler J the pivoted lever F and finger L substantially as described.

## 501,996. ELECTROLYTIC BATH. STEPHEN H. EMMENS, London, England. Filed June 17, 1889. Serial No. 314,569. (No model.)



*Claim.*—1. In an electrolytic apparatus, the combination with suitable anodes and cathodes and their connections of a vat having removable side-linings the lower parts of which are provided with cavities or receptacles for collecting the impurities that fall from the anodes.

2. In an electrolytic apparatus, containing a plurality of anodes and cathodes arranged in parallel lines, the combination with a suitable vat of devices whereby any individual anode or cathode may be removed from the apparatus without opening the electric circuit, said devices comprising, first, a positive pole-bar notched at the top, secondly, a screw-clamp attached to each anode and provided with a horizontal nut-receiving bolt occupying a notch of said pole-bar, thirdly, a negative pole-bar notched at the top, and, fourthly, cathodes in the form of bars provided at their upper ends with horizontal clamp-bolts which occupy the notches of said negative pole-bar, substantially as hereinbefore specified.

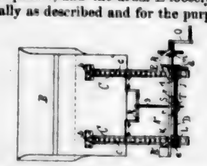
## 501,997. APPARATUS FOR THE ELECTROLYTIC EXTRACTION OF METALS. STEPHEN H. EMMENS, London, England. Filed July 18, 1889. Serial No. 317,878. (No model.)



*Claim.*—In apparatus for the electrolytic extraction of metals, a vat having an anode lining on its floor and sides, in combination with a suitable cathode or cathodes suspended within the vat and a non-porous and non-conducting inner wall or curb located between the side-linings and the cathode or cathodes and extending from the upper surface of the floor-lining to above the surface of the electrolyte, and serving to support a lining of the substance to be acted upon in contact with the anode side-linings and to prevent short-circuiting between said anode side-linings and the cathodes, substantially as hereinbefore specified.

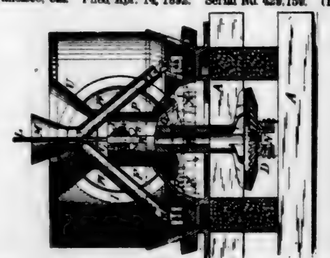
## 501,998. DUMPING-WAGON. JOHN FIEGER, New York, N. Y. Filed Apr. 4, 1893. Serial No. 468,974. (No model.)

*Claim.*—1. In a dumping wagon, in combination with the bed-frame, the respective plates $d$, $e$, the shaft D, journaled in said plates, the sprocket-wheels $f$, $h$, and the spur-wheel $g$ carried by said shaft D, the angle plates E, F, secured to the side-piece A, the shaft G journaled in said angle-plates and carrying the spur-wheel I and the pinion H, the latter being adapted to mesh with the spur-wheel $g$, the plate $j$, through the ends of which the respective shafts D, G, loosely pass, a rod connecting said plate $j$ with the angle-plate E and having loosely mounted thereon the drum J, the plate $m$ extending downward from the outer face of the side-piece A, a shaft journaled at one end therein and bearing in the angle-plate F, said shaft carrying a drum, and the pinion M, the latter being adapted to mesh with the spur-wheel I, the crank O carried by said shaft, the pawl $n$ adapted to engage the teeth of the pinion M, the angle-plate K secured to the side-piece A', a rod extending from the horizontal portion of said angle-plate to the plate $e$, and the drum L loosely mounted on said rod, all substantially as described and for the purposes set forth.



2. In a dumping wagon having a body and a bed-frame, in combination, the angular piece R secured to the rear end of said body, the arms $r$ secured to the rear end of said bed-frame and projecting outward therefrom, the block S, journaled in said arms $r$ and having an opening provided with interior screw-threads, and the screw $s$, passing through said opening, said screw being rotatably connected at its point to the horizontal portion of said angular piece R, and carrying at its lower end the wheel T, all substantially as described and for the purposes set forth.

## 501,999. ORE-CRUSHING MACHINE. ANDREW FRASER, San Francisco, Cal. Filed Apr. 14, 1892. Serial No. 429,152. (No model.)



*Claim.*—1. In an ore crushing machine, two or more rollers revolubly supported on studs or axes and having inward projecting sleeves or extensions reaching beyond the main chamber or pan of the machine, so as to give a long bearing for the rollers and convey escaping oil from the bearings, beyond the main pan or chamber, so it will not drip among the material being crushed, and may serve for lubricating the bearings of the central or main driving shaft, in the manner substantially as shown.

2. In an ore crushing machine provided with edge rollers as herein described, a central driving shaft around which the rollers revolve, and surrounding this axis a cylinder or shell that revolves with the main axis, excluding oil that drips from the bearings of the crushing rolls and serving as a support for the feeding hopper and distributing pipes that conduct ore to the machine, constructed in the manner substantially and for the purposes specified.

3. In an ore crushing machine having crushing rollers as herein described, two or more feeding pipes for ore moving with the crushing rollers about the main axis of the machine; hinged scrapers attached to the bottom of the feeding pipes and resting on the die or sole ring, in the manner and for the purposes substantially as described.

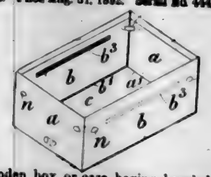
## 502,000. BRUSH FOR WASHING AND WIPING WINDOWS. JAMES P. GILES, Harrisburg, Pa. Filed Dec. 1, 1892. Serial No. 453,791. (No model.)



*Claim.*—A brush for cleaning windows having two parts joined together one part a brush proper, the other a block covered with leather or rubber and having affixed on each side of it a spring arrangement for holding a rag, towel, or similar article.

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**502,001. JEWELRY-CASE.** WILLIAM HEATLEY, London, England, assignor to the Detecter Patent Safety Postal Box Syndicate, Limited, same place. Filed Aug. 31, 1892. Serial No. 444,640. (No model.)




*Claim.*—A wooden box or case having beveled top edges and having side grooves in opposite faces of its walls, combined with a cover provided with a locking cross bar having projecting tongues, and which when applied to the box and pressed down, cause the walls to spring slightly to lock the bar in such grooves, all substantially as set forth.

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**502,002. PNEUMATIC TIRE.** RUDOLPH W. HUSS, Chicago, Ill., assignor to Charles G. Page, trustee, same place. Filed Nov. 18, 1892. Serial No. 452,452. (No model.)



*Claim.*—1. A pneumatic tire provided along its tread with longitudinally arranged threads capable of elastic longitudinal yield, substantially as described.

2. A pneumatic tire having its tread reinforced by cross-threads in conjunction with longitudinal threads capable of longitudinal elastic yield, substantially as described.

3. A pneumatic tire having its tread reinforced by cross-threads which prevent its transverse stretch, and by longitudinal threads which permit it to have a longitudinal elastic stretch, substantially as described.

4. A pneumatic tire involving a reinforcing fabric having warp threads adapted for longitudinal yield and arranged along the tread of the tire, substantially as described.

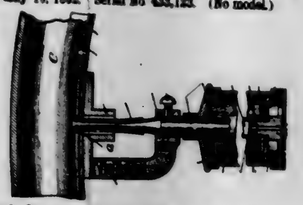
5. A pneumatic tire having a reinforcing fabric formed with warp or longitudinal threads which run along the tread portion of the tire and which are capable of longitudinal elastic stretch, and with warp threads running along the sides of the tire and not adapted for longitudinal stretch, substantially as described.

6. A pneumatic tire having a reinforcing fabric having warp threads along the tread of the tire made smaller than the warp threads along the sides thereof, substantially as described.

7. A pneumatic tire having a reinforcing fabric formed with warp threads which decrease in size toward the tread portion of the tire, substantially as described.

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**502,003. PNEUMATIC TIRE AND DEVICE FOR INFLATING SAME.** THOMAS B. JEFFERY, Chicago, Ill. Filed Aug. 5, 1891. Renewed May 16, 1892. Serial No. 433,123. (No model.)



*Claim.*—1. In combination with the rim, the inflatable tire seated therein having a compressible inlet tube leading from its inflation cavity to the side of the rim opposite the tire seat, and a clamp whose members are connected to the rim to receive and clamp the inlet tube: substantially as set forth.

2. In combination with the wheel rim, the tire seated therein comprising an inflatable tube provided with a compressible inlet tube which leads from the inflation cavity through the rim, the rim having a seat or bearing adjacent to the inlet tube at its emergence through the rim, and adapted to support it at one side; and a clamp adapted to compress the inlet tube against such seat or bearing: substantially as set forth.

3. In combination with an inflatable tire having a compressible inflating tube, the rim in which such tire is seated having an aperture through which the inlet tube protrudes, and a marginal boss about one side of said aperture on the surface of the rim opposite the tire seat, and a lever pivoted to the rim and having a tongue corresponding to the concavity of the marginal boss to compress the inlet tube against said boss when the lever is moved on its pivot toward the latter: substantially as set forth.

4. In combination with the wheel rim, the inflatable tire seated therein having a compressible tube leading to its cavity; a clamp mounted on the rim and adapted to grasp the inlet tube, and provided with a screw to draw and hold its members together to compress the inlet tube between them: substantially as set forth.

5. In combination with an inflatable tire, the rim in which it is seated having an aperture through which access is gained to the cavity of the tire, and a bracket projecting from the rim opposite the tire seat, and provided with a seat or bearing in line with said aperture in the rim adapted to receive the nozzle of the inflating pump and direct it toward said aperture: substantially as set forth.

6. In combination with the inflatable tire, the inflating pump cylinder, its piston-rod having a longitudinal duct and constituting the discharge nozzle; and a check valve in such duct at the piston end and opening toward the other end: substantially as set forth.

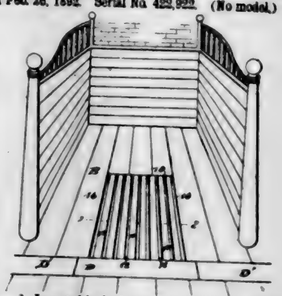
7. In combination with the inflatable tire having an inlet tube which leads to its cavity, the rim in which such tire is seated having an aperture for the inlet tube; an inflating pump, the nozzle of which enters the inlet tube; and a clamp whose members are secured to the rim and which is adapted to grasp and clamp the inlet tube between the end of the nozzle and the rim: substantially as set forth.

8. In combination with the rim, the inflatable tire seated therein having a valveless compressible inlet tube; the pump cylinder, its piston rod having a longitudinal duct and constituting the discharge nozzle adapted to be inserted in the mouth of the inlet tube; a check valve in said duct at the piston end opening toward the other end, and a clamp to compress the inlet tube between the rim and the pump nozzle: substantially as set forth.

9. In a wheel tire, an inflatable tube having an inlet tube which constitutes also an unobstructed outlet from the tire cavity; a clamp permanently connected to the wheel and adapted to contract such inlet to prevent the escape of air therethrough: substantially as set forth.

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**502,004. DRAIN FOR STALLS.** MARTIN LOGAN, New York, N. Y. Filed Feb. 26, 1892. Serial No. 422,922. (No model.)



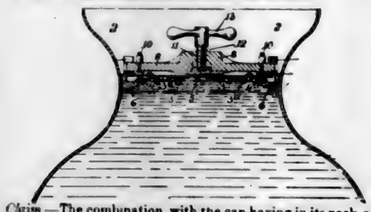

*Claim.*—1. In a stable drain, a supporting plate having ribs formed on its upper surface to form alternate drain-channels and tread-bar receiving grooves, said tread-bar grooves having substantially vertical sides, and the T-shaped tread-bars vertically removable, substantially as and for the purpose specified.

2. The combination, with a culvert and a flooring having an opening therein, of a plate adapted to fit in and close the floor opening as described, one end of the plate extending to the drain and the said plate being provided in its upper face with a series of gutters and channels and tread-bars located in the channels and movable therefrom, the said tread-bars being stepped at one end to extend beneath the flooring and provided with a beveled surface at their opposite end over which the beveled edge of the cover of the drain rests, whereby the tread-bars are held in position and may be withdrawn from the plate only when the drain-cover is removed from engagement with them, substantially as described



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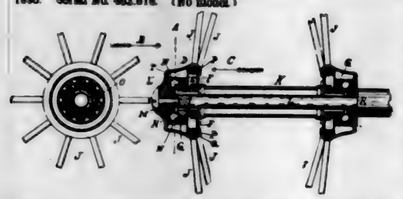
**502,005. VESSEL FOR THE CONVEYANCE OF MILK.** WILLIAM W. MELLOR, Seacombe, and JOSEPH SHAW, Huddersfield, England. Filed Jan. 10, 1893. Serial No. 458,191. (No model.)



*Claim.*—The combination, with the can having in its neck a seat, and lugs 9 above the seat; of a removable bridge-piece adapted to engage with the said lugs, a diaphragm cover provided with a stiffening ring at its periphery, a packing ring interposed between the said seat and cover, screws engaging with the said bridge-piece and operating to press the cover onto the packing ring, and a central screw engaging with the said bridge-piece and adapted to force the said cover downward, whereby the contents of the can are subjected to hydrostatic pressure, substantially as set forth.

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**502,006. VEHICLE-WHEEL.** ALEXANDER L. H. MESSMER, Gardner, Mass., assignor to Heywood Bros. & Co., same place. Filed Feb. 16, 1893. Serial No. 462,616. (No model.)



*Claim.*—1. A notched washer, a part of the notched extensions of which are closed over the uniting bend of a pair of integral spokes, a plain washer located adjacent to the ends of the said closed notched extensions, a casing washer having notched projections, closing over the periphery of the said plain washer and over the notched extensions of the said notched washer, in combination with an axle box substantially as shown.

2. An axle box provided with spoke securing washers located near the ends of said box, casing washers extending longitudinally beyond the ends of said axle box adapted to form sand bands, the said casing washers being provided with notched projections extending between spokes and closing over the peripheries of the spoke securing washers, substantially as shown.

3. A tubular axle box, means for securing spokes thereto, provided with sand band extensions, collars secured to said axle box in combination with an axle to which is secured collars adjacent to those secured to said axle box, said collars being provided with annular grooves and adapted to use balls for bearings, substantially as shown.

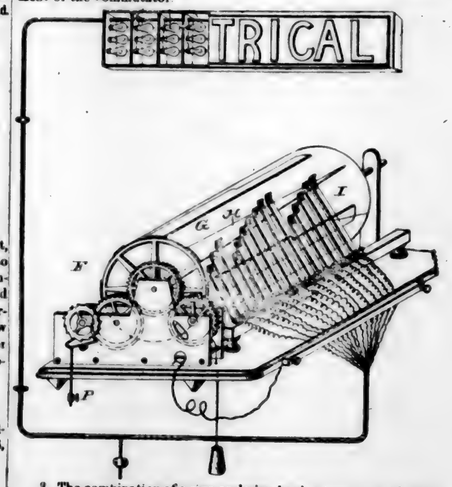
4. In a metal wheel hub an integral casing having longitudinal notched extensions at one extremity adapted to be inwardly turned to embrace the connecting bands of integral pairs of spokes wherein the said casing reducing in diameter in the direction of its axis terminates at its opposite extremity in an inwardly projecting flange adapted to form a sand band, substantially as shown.

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**502,007. ILLUMINATED SIGN.** ARTHUR L. MCCORMICK, Port Huron, Mich. Filed Feb. 17, 1893. Serial No. 462,720. (No model.)

*Claim.*—1. The combination of a sign or design having transparent letters or parts on an opaque field, in front of a series of cells separated by walls and containing each a number of electric lamps of different colors, with a commutator arranged to change the current from lamp to lamp in each cell while supplying a current to several cells simultaneously

2. The combination of a sign or design having transparent letters or parts on an opaque field, in front of a series of cells separated by walls and containing each a number of electric lamps of different colors, with a commutator arranged to change a current in each of several cells from lamp to lamp therein in such way that each cell will be continuously illuminated while the colors of the light change repeatedly and the colors in the several cells differ from each other in different combinations and orders of change produced by the arrangement of the commutator




3. The combination of a sign or design having transparent letters or parts on an opaque field in front of a series of cells separated by walls and containing each a number of electric lamps of different colors, with a commutator having separate conductors for each lamp and means to supply currents for one or more lamps in each cell, together with a rotatable cylinder arranged to change the current to each cell from lamp to lamp therein by means of plates on its surface of varied shapes arranged to vary the order of such changes as it turns.

4. The combination of a sign having transparent letters on an opaque field in front of a separate cell for each letter provided with a number of different colored electric lamps in each cell, with a commutator having current connections for each cell, arranged to automatically change the current from lamp to lamp therein while continuously illuminating each

5. The combination of a sign having transparent letters on an opaque field in front of a number of cells provided with a number of different colored electric lamps in each cell, with a commutator arranged to automatically change the colors of the light in the cells in different orders of change while continuously illuminating them, or several of them.

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**502,008. PENCIL-SHARPENER.** PETER MCMENAMIN, Jersey City, N. J. Filed Apr. 25, 1893. Serial No. 471,755. (No model.)



*Claim.*—A pencil sharpener consisting of a body piece or holder having its ends shaped to an acute angle, and a blade or cutter projecting endwise thereover, said body piece or holder having side bars secured thereto and projecting in front of and below said blade or cutter, substantially as described and shown.

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**502,009. METALLIC ROOFING.** JOHN T. NEEL, Millersport, Ohio. Filed Dec. 12, 1892. Serial No. 454,948. (No model.)

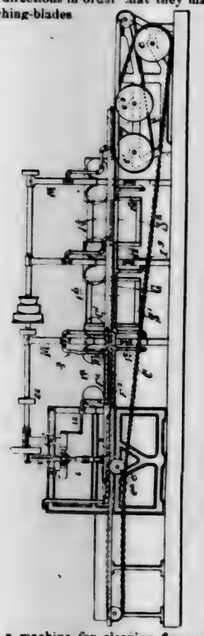


*Claim.*—In a metal roof the combination with the roof frame work, of side and end eaves strips, the latter having double outwardly projecting portions, downwardly projecting shoulder portions and inwardly extending attaching portions, said attaching portions and shoulder portions being adapted as described to be secured to the upper and outer sides of said roof framework, and metallic roofing plates

d upon said framework, the latter having their edges engaging as described with the edges of the projecting portions of said strips, substantially as and for the purpose specified.

## 502,010. FLAX-DRESSING MACHINE. CHARLES H. NORTON, Detroit, assignor to Arthur Pack and Rena A. Fraser, Alpena, Mich. Filed Jan. 18, 1892. Serial No. 418,418. (No model.)

*Brief.*—The fiber-bearing stalks are carried by the feed-chains to the slatted table T, where they are broken by the reciprocating break-jaws 7 8. They are then received between the teeth of the carrying-chain C, carried forward under a presser-bar C' and acted upon by a series of scutchers. In the passage of the stalks through the machine jets of air are applied thereto, by means of which the crushed woody matter is blown away, and the ends of the fiber are turned in various directions in order that they may be better acted upon by the scutching-blades



*Claim.*—1. In a machine for cleaning flax or other vegetable fiber, the combination of a carrier adapted to grasp the fiber at a central point and to move the fiber forward, a pair of break jaws, each consisting of a fixed and movable member lying diagonally across the path of moving fiber, one or more auxiliary feeding wheels rotating in planes parallel with the motion of said carrier; said feeding wheels being provided with involute teeth adapted to push forward the ends of the fiber, substantially as and for the purpose specified.

2. In a machine for cleaning flax or other vegetable fiber, the combination of a carrier adapted to move the fiber forward, of an air blast pipe lying parallel to the track of said carrier, provided with a series of air jet nozzles, adapted to direct jets of air against the fiber, and a regulating valve adapted to regulate the force of said jets of air, substantially as and for the purpose described.

3. In a machine for cleaning flax or other vegetable fiber, the combination with a carrier, a feed table, and a pair of vertically acting break jaws, each consisting of a fixed and a movable member, of an air pipe lying above said table and provided with jet nozzles, adapted to direct jets of air across the surface of said table and against the fiber, while under operation between said break jaws, substantially as and for the purpose described.

4. In a machine for cleaning flax or other vegetable fiber, the combination of a feed table, a carrier, a pair of vertically acting break jaws, each consisting of a fixed and a movable member, a walking-beam actuator, adapted to give alternate motion to said movable jaws, an air pipe provided with jet nozzles, adapted to direct jets of air across the surface of said table, and against the fiber while the fiber is passing between the break-jaws, substantially as and for the purpose specified.

5. In a machine for cleaning flax or other vegetable fiber the combination of a carrier, adapted to carry the fiber forward sidewise, an air pipe provided with jet nozzles, and adapted to vibrate in a path parallel to the path of said carrier, the said jet nozzles being arranged to direct jets of air outward from near the point of support of said fiber, substantially as and for the purpose described.

6. In a machine for cleaning flax or other vegetable fiber, the combination of a carrier, adapted to carry the fiber forward sidewise, a vibrating air pipe provided with jet nozzles and a regulating valve, adapted to regulate the force of the air escaping from said nozzles, substantially as and for the purpose specified.

7. In a machine for dressing flax or other vegetable fiber, the combination of a carrier adapted to grasp the fiber and move it forward sidewise, a rotary scutching knife having its axis of rotation parallel to the path of the moving fiber, an air pipe provided with jet nozzles extending in a line parallel to the path of the moving fiber, and adapted to direct air jets outward toward the scutching bar, and a regulating valve for the pipe, substantially as and for the purpose described.

8. In a machine for treating flax or other vegetable fiber, in combination with a carrier adapted to hold the fiber and carry it forward sidewise, a moving apron adapted to receive the free ends of the fiber and carry the same forward, the delivery end of the carrier being arranged to lap by the receiving end of the apron whereby the fiber is laid upon the apron before it is released from the carrier, substantially as and for the purpose specified.

9. In a machine for cleaning flax or other vegetable fiber, the combination of a carrier adapted to grasp the fiber and carry it forward sidewise, a moving apron adapted to receive the free ends of the fiber, while it is still held in the carrier and an air pipe provided with air jet nozzles adapted to lay the fiber from the ends which are held smoothly outward on said apron, substantially as and for the purpose specified.

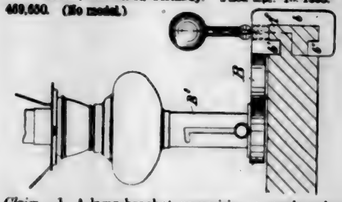
10. In a machine for treating flax and other vegetable fiber, the combination with a carrier adapted to grasp the fiber and carry it forward sidewise, of a moving apron adapted to receive the free ends of the fiber while it is still held by the carrier, an air pipe provided with jet nozzles adapted to lay the fiber smoothly on the apron and a regulating valve, substantially as and for the purpose described.

11. In a flax cleaning machine the combination with a carrier arranged to engage the material and carry the same sidewise, of a series of air jet nozzles, adjacent to the carrier, inclined in opposite directions, substantially as described.

12. In a flax cleaning machine, the combination with the breakers and carrier, of air discharge nozzles in the path of the moving material inclined to direct air currents against the opposite sides of the material, substantially as described.

13. In a flax cleaning machine, the combination with a carrier, of a series of air discharge nozzles arranged at different angles, along and adjacent to the same, substantially as described.

## 502,011. ADJUSTABLE LAMP-BRACKET. JOHANNA PAUNGARTEN-FRAUENSTEIN, Darmstadt, Germany. Filed Apr. 10, 1893. Serial No. 469,650. (No model.)

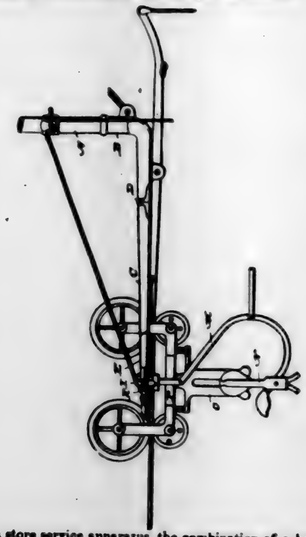


*Claim.*—1. A lamp-bracket comprising a stock and an arm to support a lamp, the stock provided with a guide adapted to move on a way formed on the edge of a work table, and a fastening device provided on the stock consisting of a pawl or shoe, hinged with one end to the said stock and having its other end in contact with the said way, and a weighted lever adapted to bear upon said pawl or shoe, substantially as and for the purposes set forth.

2. In an adjustable lamp-bracket a stock or socket adapted to slide on a way, a fastening device comprising a pawl or shoe hinged in an aperture in the said stock and a weighted lever hinged also in the said aperture and having a cam shaped projection to contact with the said pawl or shoe, to press the same onto the said way, substantially as and for the purposes set forth.

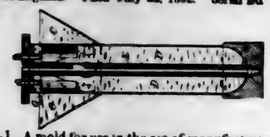
## 502,012. STORE-SERVICE APPARATUS. JAMES E. POLLOCK, Mansfield, Ohio. Filed Jan. 18, 1893. Serial No. 458,772. (No model.)

*Claim.*—1. In a store service apparatus, the combination of a hanger, a foot piece secured thereto, the parallel arms connected to the foot piece, the cases or tubes carried by the arms, the rods in said tubes carrying pulleys, springs coiled around the rods, the cords passing over the pulleys, the hooks connected to the cords, and the brakes for engaging the cord, as and for the purpose described.



2. In a store service apparatus, the combination of a hanger, a foot piece carried thereby, arms connected to the foot piece, a propelling device, spring actuated rods carried by the arms, pulleys carried by said rods, cords passing over the pulleys, hooks connected to the cords and having buffers or cushions at the upper end adjacent to the point of connection of the cords and a car and basket connected thereto and having a bail adapted to be engaged by the hooks, all adapted to serve as described.

## 502,013. MOLD FOR THE MANUFACTURE OF SOLID BALLS OF ARTIFICIAL IVORY. ALEXANDRE DE PONT and SILVIUS DE PONT, Lancaster, England. Filed July 22, 1892. Serial No. 440,939. (No model.)



*Claim.*—1. A mold for use in the art of manufacturing variegated composition balls which consists of a tubular casing B divided internally into a number of chambers or sections *d* by thin plates D substantially as described.

2. A mold for use in the art of manufacturing solid articles of ivory substitutes or artificial ivory in variegated colors which consists of the mold A, the tubular casing B provided with holes *b* and divided internally into chambers by the thin plates D and tube E and the small hoppers or chutes C placed outside the casing B substantially as described.

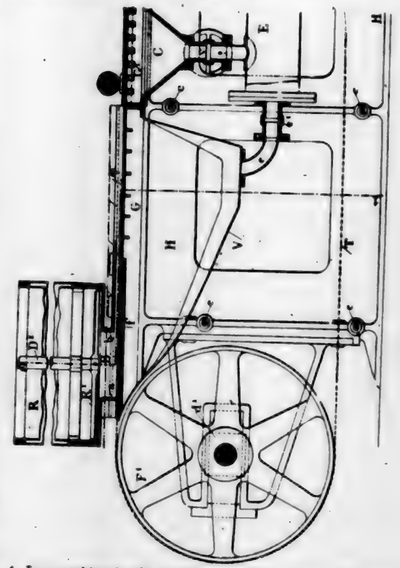
3. In a mold for use in the art of manufacturing solid articles of artificial ivory or ivory substitutes the combination with the mold A of the external casing B provided with holes *b* and divided internally into chambers into which the material is placed, the hopper C by which the material is filled, the cap or cover F provided with holes *f''*, and the plungers G by which the material is pressed down into the mold A while the casing B is removed.

## 502,014. APPARATUS FOR REFINING SUGAR. LOUIS R. A. PRASSET, Paris, France. Filed Aug. 24, 1892. Serial No. 443,975. (No model.)

*Claim.*—1. In a machine for the continuous refining of sugar, the combination with an endless perforated draining apron, of a reservoir provided at its lower part with an outlet box which comprises a vertical rear wall *a* in which is a slit for the passage of the said apron, a vertical front wall *b* presenting throughout its whole width an opening of which the height above the apron is equal to the greatest thickness which it is desired to give to the slab of sugar to be made by the machine, two lateral faces *l*, and a solid bottom *f* united with the said lateral faces, substantially as and for the purpose described.

2. In a machine for the continuous refining of sugar, the combination of a reservoir R having in its bottom an outlet box B with horizontally prolonged fixed bottom and sides and a changeable plate *m* covering the so prolonged bottom and sides, substantially as and for the purpose herein set forth.

3. In a machine for the continuous refining of sugar, the combination with an endless apron perforated throughout the greater portion of its width but imperforate at its edges, of a grate comprising bars arranged transversely to the apron for maintaining the said apron in a horizontal position, and grooved guides on said grate for receiving and guiding the imperforate edges of the said apron, substantially as and for the purpose herein set forth.



4. In a machine for the continuous refining of sugar, the combination of a perforated endless draining apron, a supporting grate for said apron composed of hollow bars, arranged below said apron with spaces between them for the drainage of the sugar and means for circulating steam, air or water through said hollow bars, substantially as and for the purpose herein set forth.

5. In a machine for the continuous refining of sugar, the combination with an endless draining apron, of a reservoir for clarifying liquid above said apron, a series of funnels with perforated bottoms arranged between said reservoir and apron over different parts of the length of the latter, and cocks for regulating the supply to said funnels of the clarifying liquid from the reservoir to the sugar undergoing drainage on said apron, substantially as herein set forth.

6. In a machine for the continuous refining of sugar, the combination with an endless draining apron and a supporting grate therefor, of a cover arranged over said apron and grate, and a heating coil arranged over said apron and grate within said cover for drying the drained sugar on the apron, substantially as herein set forth.

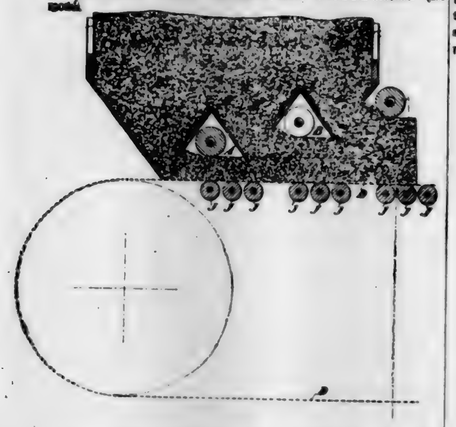
7. In a machine for the continuous refining of sugar, the combination with an endless sugar carrying apron and a drum for driving said apron, of a jet tube N for directing water upon said drum near its contact with the apron for washing both the apron and drum, and stationary flexible strips O O' between which the apron runs to be dried, substantially as herein set forth.

8. A machine for the continuous refining of sugar comprising a single perforated, metallic, endless apron T serving to transport the sugar mass through the machine and carried by two rotating drums F, F' of which one is adjustable to regulate the tension of the apron; a jacketed sugar reservoir R containing an agitator or stirrer and arranged directly over the apron which passes under it; a box *m*, *l*, *l*, *f* to mold the sugar mass in the form of a sheet or slab; a grate G formed of solid transverse bars; a grate G' forming a continuation of the grate G and composed of hollow bars having communication with each other; troughs C, C having their mouths of the same width as is intended for the slab of sugar and which are put into commu-

cation with two collectors in which is maintained a vacuum capable of regulation in each of the said troughs; funnels K, K, $K^1$ having perforated bottoms to distribute the clarifying liquor; a cover M containing a steam coil L for drying and receiving air for cooling the slab of sugar; one or more rollers Q or a cutting blade to even off the upper face of the said sheet of slab; a perforated tube N and drying bands O, O' for the cleaning of the endless apron and its forward drum; a frame H composed of similar panels; driving mechanism for the agitator or stirrer, of the sugar reservoir and a separate driving mechanism of variable speed for the drum F which drives the endless apron, all constructed, arranged and combined as and for the purpose described.

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**502,015. APPARATUS FOR REFINING SUGAR.** LOUIS E. A. PLANET, Sannois, France. Filed May 5, 1893. Serial No. 473,099. (No model.)



*Claim.*—1. The combination with the traveling apron, of a sugar reservoir in which are partitions at different levels dividing said reservoir into hoppers which debouch at different levels above the apron, substantially as and for the purpose herein set forth.

2. The combination with the traveling apron, of several hoppers debouching at different levels above said apron and pressure rollers arranged in front of the several hoppers and above the apron, substantially as herein set forth.

3. The combination with the traveling apron and the reservoir arranged above it, of a series of inverted V-shaped hollow transverse partitions at different levels within the reservoir and pressure rollers arranged under the said partitions and above the apron, substantially as herein set forth.

4. The combination with the traveling apron, of several hoppers debouching at different levels above said apron, pressure rollers above the said apron in front of the several hoppers, and supporting rollers below said apron and under said pressure rollers, substantially as herein set forth.

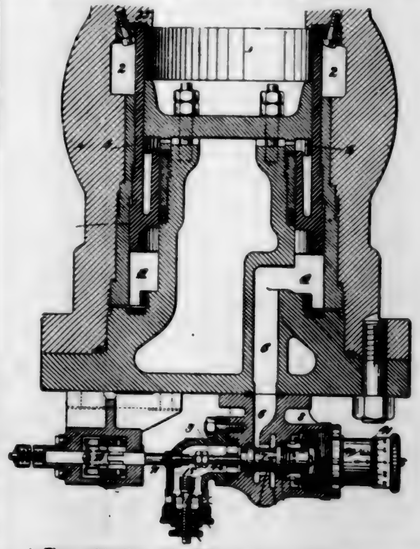
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**502,016. AUXILIARY VALVE FOR PNEUMATIC GUNS.** JOHN RAPIEFF, New York, N. Y. Filed Sept. 9, 1889. Renewed Nov. 15, 1892. Serial No. 452,049. (Model.)

*Claim.*—1. The combination with a pressure actuated fluid delivery valve, of an auxiliary differential piston valve having the space between its pistons permanently connected with the pressure source, a port of the delivery valve retaining pressure chamber connected with said space between the differential pistons when the auxiliary valve is normal, an exhaust outlet exterior to the less piston and to which the delivery valve port is connected when the pistons are advanced, a receiving chamber normally charged with pressure connected by a port to the space exterior to the greater piston when the valve is normal, but connected by such port to the interspace of the differential pistons when the same are advanced, a port of regulated capacity connecting from the receiving chamber to the piston cylinder at a portion thereof beyond the range of advance stroke of the pistons, and an internal hand operated exhaust valve controlling exhaust ports, in the differential valve, whereby the said receiving chamber is exhausted for the purposes specified.

2. The combination in an auxiliary valve adapted for the purposes described, of differential connected pistons, a supply port permanently connected to the interspace of the pistons, a delivery valve retaining pressure port connected with the said interspace when the pistons are in a normal position, exhaust openings exterior to the less piston with which the said delivery valve port is connected when the pistons are advanced, a plunger exterior to the greater piston, a chamber thereof normally connected with pressure, and means, within the differential pistons for exhausting the said chamber.

3. The combination, in an auxiliary valve adapted for the purposes described, of a cylinder having differential diameters, the less end whereof is open to exhaust, the greater end being closed to exhaust and normally charged with pressure, differential connected cylinder pistons, the interspace whereof is permanently connected with a supply port, means, independently operative on ports through the piston adjacent the closed end of the cylinder, whereby such closed end is exhausted, a receiving chamber normally charged with pressure being connected to the said closed end of the cylinder, a port of the receiving chamber located in the cylinder to connect with the interspace of the pistons at or near the termination of their opening stroke and a port of regulated capacity permanently connecting the receiving chamber with the closed end of the cylinder.



4. The combination with a differential connected auxiliary piston valve, adapted to control the firing valve supply and exhaust ports as specified, of a closed chamber or chambers of the cylinder opposite the greater piston, and an independent exhaust valve interior to the piston valve controlling passages therein whereby the said chamber or chambers are connected with the atmosphere.

5. The combination of a primary differential piston valve, adapted for the purposes specified, a normally charged chamber or chambers exterior to its greater end, an exhaust outlet exterior to its less end, a secondary differential piston (or plunger) exhaust valve interior to said primary valve, controlling ports therein, connected to the said chamber or chambers, said secondary valve seating at its lesser end toward and within the exhaust end of the primary valve, means whereby the greater end of the secondary valve is normally connected with pressure, a supplemental space 52, of the differential areas of the secondary valve constantly connected with pressure; the said ports being located relatively to each other whereby the initial movement of the secondary valve will first cut off the pressure opposite the greater end thereof, and second exhaust the same through its seat, and whereby the pressure becomes active upon the said supplemental space for the purposes specified.

6. The combination with the primary differential valve, and the secondary differential valve therein operative as specified, of a valve stem to the secondary valve provided with a stop, and an abutment therefor, whereby the exhaustion of the space exterior to the greater end of the primary valve is terminated before the completion of the latter's stroke for the purposes specified.

7. The combination of the differential piston primary valve, a closed chamber or chambers opposite the greater piston thereof, the secondary valve reciprocative within the primary valve, the passages 53, 54, in the primary valve, and the passage 57, in the secondary valve whereby the said chamber or chambers are charged when both valves are normal.

8. The combination with an auxiliary valve having its initial movement imparted at will, and its remaining movements automatic, of a pneumatic valve starter, consisting of an actuating piston connected to the auxiliary valve, and exhaust ports in the casing of such piston normally closed by the piston but opened thereby subsequent to the completion of said initial movement of the auxiliary valve, and means, whereby a measured quantity of fluid is delivered to actuate the piston.

9. The combination of the pneumatic auxiliary valve starting piston and its exhaust passages arranged as described of the confined chamber 85, the releasing valve, the firing lever for opening it, and a shank of the releasing valve fitting a supply inlet, and having passages to close the same prior to the release of pressure by the opening movement of the releasing valve.

10. In a pneumatic gun, an auxiliary firing valve and ports controlled thereby, in combination with a secondary valve movable with and independent of the auxiliary valve, starting mechanism connected to the secondary valve, exhaust and pressure ports and passages connecting the cylinders of the two valves, said ports and passages being unaffected by the starting movement of the secondary valve, an exhaust port in the cylinder of the secondary valve which exhausts both ends of said cylinder upon the starting movement of said valve, and pressure surface in said secondary valve intermediate said exhausted ends, said surface in communication with the pressure reservoir whereby said secondary valve is caused to automatically complete its opening stroke, substantially as described.

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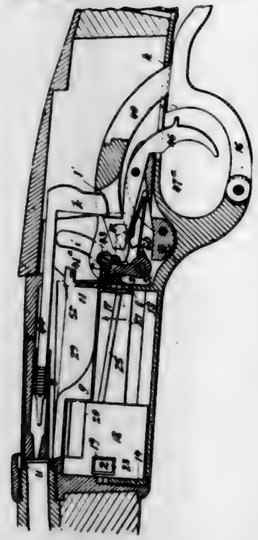
**502,017. BICYCLE-SADDLE.** LOUIS L. RICHMOND, Meadville, Pa. Filed Apr. 5, 1893. Serial No. 469,130. (No model.)



*Claim.*—The leather seat with hook in front, the concave plate rivated to the rear of said seat the cushion arranged between the plate and rear of seat, the keeper riveted to the concave plate, and a subjacent plate spring having a loop in front to connect with the hook of the leather seat, the rear of said spring being held adjustably in the keeper, all combined and arranged substantially as shown and described.

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**502,018. MAGAZINE-GUN.** ARTHUR W. SAVAGE, Bay Ridge, assignor to J. Morris Childs, Richard S. Reynolds, and Edwin H. Risley Utica, N. Y. Filed Apr. 10, 1889. Renewed Feb. 23, 1892. Serial No. 422,512. (No model.)



*Claim.*—1. The combination with the frame and reciprocating breech piece, of a lever having its fulcrum connected to the frame, and an arm projecting from said lever, from a point at the rear of the fulcrum, and extending upward and forward into engagement with the breech piece, substantially as described.

2. In combination with the frame and breech piece, the lever pivoted to the frame and having an arm concentric with the pivot projecting through a slot in the frame and connected to the breech piece, to operate the same, substantially as described.

3. The combination with a sliding breech bolt of a lever mounted to swing beneath the frame and formed to constitute a portion of the trigger guard and with a segmental arm that extends forward from a point to the rear of the trigger guard portion of the lever to a point in advance of the pivoted support of the lever such support constituting a portion of the trigger guard and connections between the arm and the bolt substantially as described.

4. The frame the reciprocating bolt, having a plate extending to the rear thereof and provided with a cam bearing, and the lever pivoted in the frame and having a projection engaging said cam bearing to actuate the bolt, in combination substantially as described.

5. The combination with a sliding breech bolt provided with plates which extend to the rear and downward from the bolt and are formed with segmental slots, of a lever, an arm which is rigidly connected to the lever and extends between the bolt plates, the arm being segmental and substantially concentric with the axis of the lever support, and a pin carried by the arm and riding in the plate slots substantially as described.

6. The combination with a sliding breech bolt having a forward fulcrum point, of a lever mounted to swing beneath the frame, an arm connected to the lever, connections between the arm and the bolt, and a rocking dog arranged to be operated upon by the lever arm and to operate upon the bolt to raise and lower the same, substantially as described.

7. The combination with a breech bolt provided with slotted and recessed plates that extend downward from the rear end of the bolt, of a lever mounted to swing beneath the frame, an arm rigidly connected to the lever and extending between the bolt plates, a pin carried by the arm, said pin entering the plate slots, and a rocking dog which is engaged by the bolt plates and by the lever arm and is located to the rear of the magazine chamber substantially as described.

8. The frame and reciprocating bolt therein, the magazine opening at its side toward the bolt and having a follower therein, and a cartridge retainer at the mouth of said magazine having a cam face with which the bolt engages in its forward movement to press back the retainer, all combined substantially as described.

9. In a magazine firearm the combination with a frame formed with a magazine chamber of a spring actuated cartridge advancing leaf or flange, located therein, a spring pressed retaining leaf and a tongue connected to said retaining leaf substantially as described.

10. In a gun, the frame having a magazine chamber consisting of curved walls around a central axis, a cartridge follower, a spring pressed retaining leaf at the mouth of the magazine having a cam face with which the bolt engages, and the reciprocating breech bolt, all in combination substantially as described.

11. In a breech loading firearm the combination with the breech block or bolt of an extractor carried thereby, and a fixed flange or rib constituting a combined guide and ejector, mounted beneath the bolt and riding in a slot formed therein substantially as described.

12. In a magazine firearm the combination with a frame formed with a magazine chamber of a spring actuated cartridge follower mounted to move about the axis of the magazine chamber and a number carrying flange mounted to move with the cartridge follower substantially as described.

13. In a magazine firearm, the combination with a frame formed with a magazine chamber adapted to receive a number of cartridges placed side by side, a means for advancing the cartridges about the axis of the magazine chamber, a cartridge retaining leaf, a breech bolt, a firing pin carried thereby, downwardly extending and slotted plates connected to the breech bolt, said plates having recesses, *q*, a dog having a projection *r* and projections which at times enter the recesses *q*, a lever, an arm connected thereto, and formed with a hook like projection which at times engages the dog projection and a trigger, and a spring arranged in connection therewith, substantially as described.

14. The frame, the breech bolt reciprocating therein and having a side projection with a cam face, the firing pin having also a projection with a cam face of different contour, and the operating lever having projections engaging said cam faces to retire the pin in advance of the retiring of the bolt, all combined substantially as described.

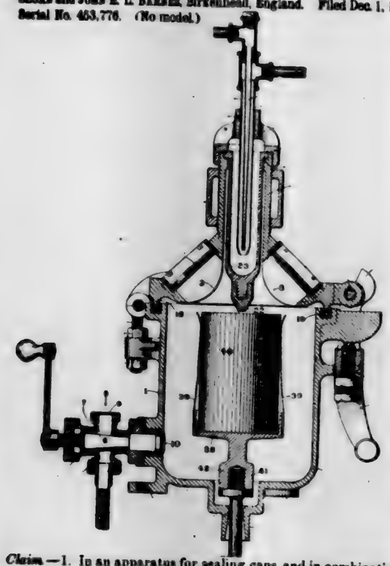
15. In a fire arm, a magazine having a curved wall and a spring-actuated cartridge advancing core having a leaf with an inclined face in the direction of the muzzle, substantially as set forth.

16. In a fire arm, a magazine having a curved wall in cross-section and a partially-rotated spring-actuated cartridge advancing core hav-

ing a flange with numerals on the edge or face of the flange, substantially as set forth.

17. In a fire arm a magazine within the frame, a partially rotating cartridge-advancing core having a portion provided with numerals on the periphery, and an opening in the wall of the magazine to expose the numerals, substantially as described.

## 502,019. APPARATUS FOR SEALING CANS, &c. ROBERT A. SLOAN and JOHN R. L. BARBER, Birkenhead, England. Filed Dec. 1, 1892. Serial No. 453,776. (No model.)



*Claim.*—1. In an apparatus for sealing cans, and in combination, a receiver having an opening in communication with means for controlling the interior pressure, a can holder, an air tight cover, a soldering iron arranged to project into the receiver and devices for heating the said iron, and means for changing the relative horizontal and vertical positions of the can and iron, substantially as described.

2. In apparatus for sealing cans and the like; in combination, a receiver having a cover adapted to readily close it air-tight and having an opening controlled by a cock through which the receiver communicates either with the atmosphere or a pump as may be desired, a soldering bit projecting within the receiver and heated while in position from without the receiver and carried by the cover of the receiver so that when the latter is opened the soldering bit is moved out of the way of the cans, and a handle entering the receiver by a flexible air-tight connection whereby relative movement can be produced between a can held in the receiver and the said soldering bit;—substantially as described.

3. In apparatus for sealing cans and the like; in combination, a receiver having a cover adapted to readily close it air-tight and having an opening controlled by a cock through which the receiver communicates either with the atmosphere or a pump as may be desired, a soldering bit carried by a tube 23 from a tubular portion 24 of the said cover, which said tubular portion 24 is surrounded by a water casing to prevent conduction of heat from the soldering bit to the receiver, and a handle entering the receiver by a flexible air-tight connection whereby relative movement can be produced between a can held within the receiver and the said soldering bit;—substantially as described.

4. In apparatus for sealing cans and the like; in combination with the receiver, the cover 3, hinged by the pin 11 and eyebolts 12, the fastening and lifting lever 14, the cam surface 17, and the tube 23 supported by the said cover and carrying the soldering bit 22;—substantially as described.

5. In apparatus for sealing cans and the like; in combination with the receiver, the cover 3, having a V rim 18 adapted to bear on the rubber ring 19 for making an air-tight joint, the hand lever 14, the set screw 16 therein, the cam surface 17, the stops 21 on the hand lever, whereby the latter serves both to fasten and to lift the cover, the pin 11, the eye-bolts 12, and the nuts 20 whereby in conjunction with the set screw 16, the pressure of the cover on the rubber ring can be accurately adjusted, substantially as described.

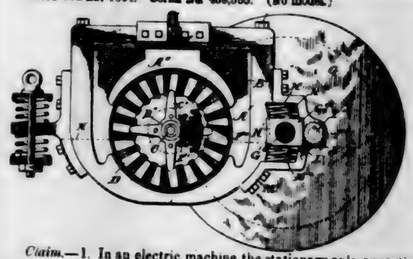
6. In combination with the receiver, the device for heating the soldering bit 22 from without the receiver, consisting of the tube 23 to which the bit is detachably secured and which is jointed above to the cover, the blow-pipe 27, and the coupling nut 26 having the boss 28 for carrying the blow-pipe, substantially as described.

7. In combination with the receiver, the device for moving the can 40, consisting of the handle 43 fulcrumed and sliding at 45, and the rubber tube 49 secured above to the tubular prolongation 50 and below to the piece 47; substantially as described.

8. The combination with the receiver 1 of the handle 43 passing into the receiver through a flexible air-tight connection and the can holder 38 adapted to be detachably secured to the said handle; substantially as described.

9. The combination with the receiver, of the handle 43, the can holder secured thereto the spring 51 for balancing the pressure tending to force the handle 43 into the receiver, and the bow 52 which connects the said spring to the said handle without interfering with the use of the knob 44; substantially as described.

## 502,020. ELECTRIC LOCOMOTIVE. ELMER A. SPERRY, Chicago, Ill., assignor to the Sperry Electric Railway Company, Cleveland, Ohio. Filed Oct. 23, 1891. Serial No. 409,583. (No model.)



*Claim.*—1. In an electric machine the stationary axle, a rotating hollow armature shaft combined with a non metallic sleeve between the two forming a journal bearing therefor.

2. In an electric machine, the stationary axle, a rotating hollow armature shaft combined with a non-metallic sleeve mounted within and rotating with the armature shaft forming a bearing therefor.

3. In an electric machine, the stationary axle, a rotating hollow armature shaft combined with a non-metallic sleeve between the two forming a journal bearing therefor and brackets for supporting the axle exterior to each end of the armature shaft.

4. In an electric machine, the stationary axle, a rotating hollow armature shaft combined with a non-metallic sleeve between the two forming a journal bearing therefor, brackets for supporting the axle and dust collars applied to the ends of the armature shaft.

5. In an electric machine, the stationary axle, a rotating hollow armature shaft combined with a non-metallic sleeve between the two forming a journal bearing therefor, brackets for supporting the axle and dust collars applied to the ends of the armature shaft consisting in part of a collar of non-metallic lubricating material similar in substance to the sleeve and requiring no liquid lubrication.

6. In an electric machine, which is mounted solely upon elastic supports, power transmitting gearing connected with the rotating portion thereof in combination with a device or devices independent of such gearing adapted to confine the alignment of the axes of the gearing to parallelism in at least one plane.

7. In an electric machine which is mounted solely upon elastic supports, power transmitting gearing requiring alignment of axes for successful operation connected with the rotating portion thereof, in combination with a device or devices independent of such gearing adapted to confine the alignment of the axes of gearing to parallelism in at least one plane.

8. In an electric machine mounted elastically upon an axle, journals upon the axle adapted to move up or down in guides upon the machine, a parallel motion connection between such journals arranged to synchronize their motion in such guides, a gear upon such axle and a co-operating gear mounted upon the rotating part of the machine.

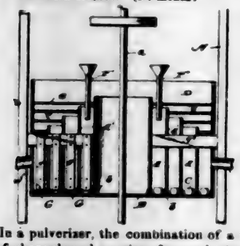
9. In an electric machine mounted elastically upon an axle, journals upon the axle working in guides upon the machine, a segmental rack upon each journal cooperating with pinions secured to a shaft extending from one journal to the other, the shaft being mounted upon the machine.

10. In an electric machine having but one field magnet coil, a U-shaped forging forming one pole piece and a cap for the U consisting of a casting having the other pole-piece depending therefrom and provided also with brackets integral therewith supporting the armature journal.



11. In an electric machine having but one field magnet coil, a U-shaped forging forming one pole-piece and a cap for the U consisting of a casting having the other pole piece depending therefrom and provided also with brackets integral therewith supporting the armature journal and a single field coil wound and supported between the pole-piece and the cap.

## 502,021. PULVERIZER. AUSTIN STEVENS, Brooklyn, N. Y. Filed June 4, 1892. Serial No. 435,467. (No model.)

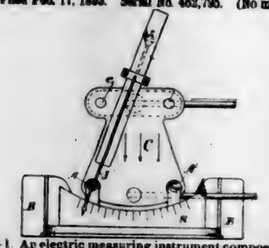


*Claim.*—1. In a pulverizer, the combination of a traveling bed having a series of channels and a series of spaced trips C in each of the channels, a series of fixed vertical partitions *d* forming a series of compartments corresponding to the channels on the bed and each partition having a series of transverse perforations *f*, the fixed supports *g* extending transversely across the compartments, above the bed, the yielding arms *g* fastened to the supports and each having a hammer at its lower end to impinge against the trips on the traveling bed, and the feed pipes discharging into the inner one of the series of compartments, substantially as and for the purpose described.

2. In a pulverizer, the combination of a rotating bed having a series of annular channels each provided with a series of spaced trips C, the series of fixed vertical partitions *d* arranged concentric with each other to form a series of compartments and each having the transverse perforations *f* arranged at a different elevation relative to the perforations of adjacent partitions, the transverse fixed supports *g* across the compartments, the series of hammer arms hinged to the transverse supports and each provided with a spring and with a hammer which is forced by the spring into contact with the bed and in the path of the trips thereon, substantially as described.

3. In a pulverizer, the combination with a traveling bed having a series of channels arranged at different elevations and each having a series of trips, of the partitions *d* arranged to form a series of compartments having the transverse openings *f* arranged at different elevations, another series of partitions N arranged close to the partitions *d* and forming therewith a supplementary chamber *n* into which the powdered material passes from the compartment to the chamber *n* and thereby conducted to the bottom of the surrounding compartment, said partitions N being held relatively to the bed to leave passages beneath the partitions leading from the supplementary chambers *n* into the next compartment, and a series of arms having the hammers adapted to contact with the trips on the stationary bed, substantially as described.

## 502,022. ELECTRIC MEASURING-INSTRUMENT. ELIHU THOMSON, Swampscott, assignor to the General Electric Company, Boston, Mass. Filed Feb. 17, 1893. Serial No. 462,795. (No model.)



*Claim.*—1. An electric measuring instrument composed of a single balanced horse-shoe magnet with its poles closely approximated and a plate interposed between the poles of the magnet, the plate conducting the current to be measured at an approximate right angle to the field of the magnet, substantially as described.

2. An electric measuring instrument composed of a single vertically suspended horse-shoe magnet with its poles closely approximated and a plate interposed between them, the plate conducting the current to be measured through the field of the magnet, substantially as set forth.

3. An electric measuring instrument composed of a single oscillating horse-shoe magnet having its poles closely approximated, and a plate interposed between them; the plate conducting the current through the field of the magnet, substantially as described.

4. In an electric measuring instrument, the combination of a single oscillating magnet having its poles closely approximated and a plate interposed between them conducting the current to be measured at an approximate right angle to the field of the magnet, the magnet being provided with an adjustable counterpoise, whereby its angular displacement may be varied, substantially as set forth.

5. In an electric measuring instrument the combination of an oscillating magnet, as described, with a plate conducting the current to be measured between its poles, as herein set out; the magnet provided with a knife edged bearing having a thrust-check prevent[illegible] its longitudinal movement and the contact of the magnet with [illegible] plate, substantially as described.

6. In an electric measuring instrument a conducting and "damping" plate consisting of a trapezoidal body and tongues extending therefrom connecting with the circuit terminals, substantially as set forth.

7. In an electric measuring instrument the combination of a single oscillating magnet, as described, with a conducting and "damping" plate placed between its poles and carrying the current to be measured; the plate being formed with a trapezoidal body and tongues extending therefrom connecting with the circuit terminals, whereby the current is caused to flow at an approximate right angle to the field of the magnet, substantially as described.

8. In an electric measuring instrument the combination of a single oscillating horse-shoe magnet having its poles closely approximate and mounted upon an arbor having knife edged bearings and a thrust check, and a plate interposed between the poles of the magnet and formed with a trapezoidal body and tongues extending therefrom to the circuit terminals, substantially as set forth.

9. In an electric measuring instrument the combination with a base plate, as B B, of a plate, as C, carrying the current between suitable terminals, as T T', and a vibrating horse-shoe magnet, as M, provided with an index, as I, reciprocating upon a scale, as S; the magnet being counterpoised by suitable means, as L, and having its poles closely approximated to the plate, substantially as described.

10. In an electric measuring instrument an oscillating magnet, as described, in combination with a plate interposed between its poles and carrying the current to be measured; the plate composed of laminæ in series insulated from one another, all carrying current adjacent to the magnet poles in substantially the same direction, substantially as set forth.

11. In an electric measuring instrument an oscillating magnet, as described, in combination with a plate formed with a trapezoidal body and tongues extended to connect with adjacent plates of a similar shape and reversed in position, and thereby making connection with the circuit terminals, the plates carrying the current to be measured and composed of laminæ in series insulated from one another, substantially as described.

12. In an electric measuring instrument composed of an oscillating magnet carrying an index and a stationary plate between its poles conducting the current to be measured, the method of adjusting the index readings which consists in varying the course of the current through the plate relative to the magnetic field, substantially as set forth.

13. In an electric meter or measuring instrument a suspended horseshoe magnet or its equivalent with its poles closely approximated to the opposite sides of a plate or plates interposed between said poles, means for passing current through the plate in a direction from or toward the pivot of the suspended magnet, the center of gravity of such magnet being arranged with respect to its pivot so as to cause the poles of the magnet at rest, and without current flowing in the plate, to lie near the edge or side of the conducting and damping plate, as described.

14. The combination in an electric meter or measuring instrument of a stationary damping and conducting disk or plate, traversed by the currents to be measured, and which currents flow in a direction from or toward a pivot for a magnet, a magnet mounted on the pivot at or near the edge of the disk or plate, and whose poles embrace or pass over in proximity to said disk or plate without touching the same, and an index actuated by said magnet.

15. In an electric measuring instrument a damping and conducting plate through which the currents to be measured are passed, a horseshoe magnet having expanded pole areas embracing said plate and pivoted at or near the center of gravity of the magnet, whereby it is suspended and free to move in planes parallel with the plate, and an index or scale for indicating the movements.

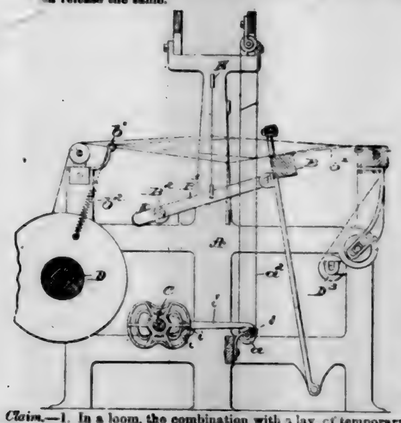
## 502,023. ARTIFICIAL STONE. JOHN W. TURNER, Jones' Mill, Ala. Filed Feb. 4, 1893. Serial No. 460,864. (No specimens.)

*Claim.*—The herein described composition for building stone, the same consisting of equal parts Portland cement, rock-lime, plaster of paris, marble-dust and sand, with water, substantially as described.

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**502,024.** LOOM. ED P. WOODWARD, Vernon Centre, Conn. Filed Nov. 7, 1892. Serial No. 451,230. (No model.)

*Brief.*—At each side of the warp-threads which are to be woven into the fabric are arranged several threads which act as temporary binders upon the weft-thread to prevent it from being beat up in a tight condition. These binder-threads are attached at both ends to the loom and are operated by heddles to open and close during each pick to thus hold the weft-thread between the selvage and the shuttle, then release the same.



*Claim.*—1. In a loom, the combination with a lay, of temporary binders for the weft thread, said binders being located at each end of the loom, and mechanism to move said binders to hold and release a weft thread at each pick of the loom, substantially as described.

2. In a loom, the combination with a lay, of temporary binders for the weft thread, said binders being attached to the loom at one of its ends, and mechanism to move said binders toward and from each other to hold and release a weft thread, substantially as described.

3. In a loom, the combination with a lay, of two or more temporary thread-like binders for the weft thread, heddles through which said binders are passed, and mechanism to shift said heddles to thereby move said binders toward each other and return them again to their normal positions at a single pick of the loom, substantially as described.

4. In a loom, the combination with a lay, and supports, of two or more temporary thread-like binders fixedly attached at one of their ends to one of said supports and yieldingly attached at their opposite ends to another of said supports, and means to move said binders to hold and release a weft thread, substantially as described.

5. In a loom, the combination with a lay, of two or more temporary thread-like binders, heddles through which said binders are passed, a rotating cam, pulleys reciprocated therefrom and connected with and to shift said heddles and thereby move said binders toward each other and return them again to their normal positions at a single pick of the loom, substantially as described.

6. In a loom, the combination with a lay, of two or more temporary thread-like binders, heddles through which said binders are passed, pulleys to shift said heddles and cams e having two high and two low surfaces and adapted to rotate once during every two picks of the loom to thereby shift said heddles twice at a single pick of the loom, substantially as described.

7. In a loom, the combination with a lay of two or more temporary thread-like binders, heddles through which said binders are passed, and actuating mechanism for and whereby said heddles are shifted twice during a single pick of the loom, substantially as described.

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**502,025.** ANTIFRICTION-BEARING. JOHN G. AVERY, Spencer, Mass. Filed Aug. 5, 1892. Serial No. 442,244. (No model.)

*Claim.*—1. An improved anti-friction bearing having journalless cylindrical rollers the bodies and outer surfaces of which are of hard fiber, each roller being provided with an axial metallic rod under strain riveted to end washers of less diameter than the roller, and concentric coacting surfaces of unhardened metal, as cast iron, substantially as hereinbefore specified.

**502,026.**



2. In an anti-friction bearing for heavy work, anti-friction rollers of hard-fiber, each provided with an axial metallic rod under strain riveted to end-washers of less diameter than the roller, substantially as hereinbefore specified.

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**502,026.** ARTICLE OF JEWELRY OR PLATE. WILLIAM W. BRADLEY, Philadelphia, Pa., assignor to the Keystone Watch Case Company, same place. Filed June 3, 1892. Serial No. 435,349. (No model.)



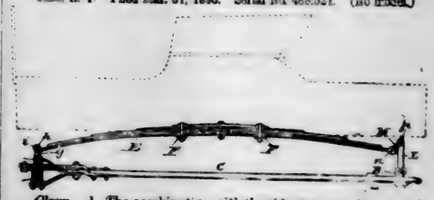
*Claim.*—1. As an article of manufacture, a piece of jewelry or plate having an inner filling of base metal and a thin outer covering of precious metal and one or more ornamental pieces of metal of different character or color from the surface metal, but of a thickness less than the thin outer covering of precious metal, pressed into the surface metal.

2. As an article of manufacture, a piece of jewelry or plate having one or more pieces of metal of different color having elevated or raised portions, pressed into the surface metal of the part so that its edges are on a substantial level with the surface metal of the part to which it is applied and its raised portions are elevated above said surface.

3. As an article of manufacture a piece of jewelry or plate having an inner filling of base metal and a thin outer covering of precious metal, and one or more pieces of metal pressed into the surface of precious metal and having a thickness at their edges less than the thin outer covering of precious metal but with raised or thickened portions within the edges.

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**502,027.** SPRING-VEHICLE. CHRISTOPHER G. BRADLEY, Syracuse, N. Y. Filed Mar. 31, 1893. Serial No. 468,521. (No model.)



*Claim.*—1. The combination with the side springs, of a rear axle, elevated brackets secured upon the rear axle, pendent links hung with their upper ends to said bracket and connected at their lower ends to the rear ends of the side springs, and a rigid front head block provided with upwardly and inwardly turned ends to which the front ends of the side springs are attached, substantially as set forth.

2. The combination with the side springs, of a rear axle, elevated brackets secured upon the rear axle and provided at their upper ends with transverse pivots, pendent links hung with their upper ends to said pivots and connected at their lower ends to the rear ends of the side springs, and a rigid front head block provided with upwardly and inwardly turned arms terminating in inwardly projecting bolts on which the front eyes of the side springs are supported, substantially as set forth.

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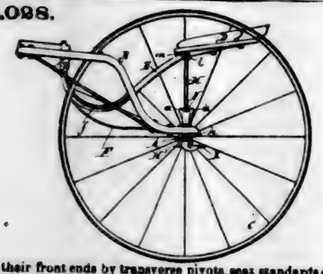
**502,028.** ROAD-CART. CHRISTOPHER G. BRADLEY, Syracuse, N. Y. Filed Mar. 31, 1893. Serial No. 468,583. (No model.)

*Claim.*—1. The combination with the axle divided at its middle, the shafts secured thereto, the spring arranged underneath the axle, and the seat, of seat bars extending forwardly from the seat and supported at their front ends by transverse pivots, and seat standards connected at their upper ends to the seat and passing through the opening of the axle to the spring, to which the lower ends of the seat standards are connected, substantially as set forth.

2. The combination with the axle divided at its middle, the shafts secured thereto, the transverse spring arranged underneath the axle, and the seat, of seat bars extending forwardly from the seat and supported at their front ends by transverse pivots, seat standards extending downwardly from the seat through the opening of the axle and connected to the spring at their lower ends by a transverse pivot, and links connecting the ends of the spring to the axle and having their pivotal points below the axle, substantially as set forth.

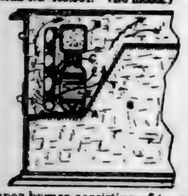


**502,028.**



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**502,029.** VAPOR-BURNER. CLARK SHOUK, Chicago, Ill. Filed Feb. 23, 1893. Serial No. 463,301. (No model.)

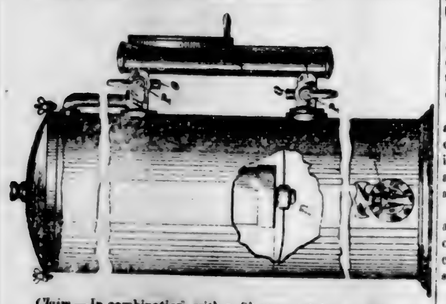


*Claim.*—1. A vapor burner consisting of two portions arranged side by side and joined together at the top, one of the portions comprising two sections the lower one of which has a water supply pipe and forms a boiler and is provided with transverse passages or openings, and the upper section forming a super-heater, said sections being joined together by vertical tubes, one above each of said openings, and the other portion comprising a series of pipes or tubes arranged one above the other, and communicating at one end with the super-heater of the other portion of the burner, and having its opposite end terminating in a closed ended burner the upper side of which is perforated, and an oil supply pipe communicating with said second mentioned section at a point substantially even with the level of the water in the boiler substantially as set forth.

2. The combination, with a cooking stove, the upper portion of the front wall of the oven of which stove is the fire wall of the furnace apartment, of a vapor burner located in the furnace apartment in close proximity to the fire wall, said burner comprising two portions, the front one of which is provided with the burner and the rear portion is provided with transverse openings or passages whereby the heat from the burner in front may pass through the rear portion and strike directly against the fire wall and heat the oven uniformly, substantially as set forth.

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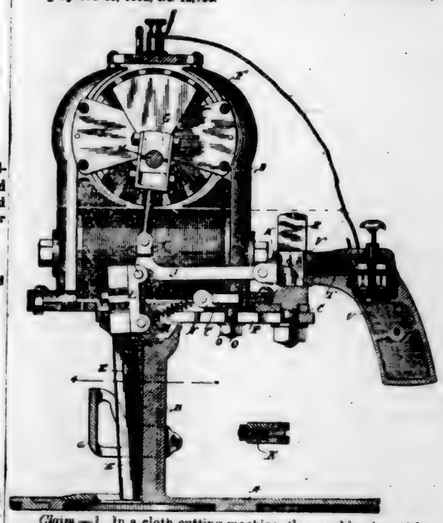
**502,080.** FILTER. WILLIAM E. CADDELL, London, England. Filed Sept. 19, 1892. Serial No. 446,320. (No model.)



*Claim.*—In combination, with a filter containing two chambers with an interposed filtering medium, an air pump connected with both of said chambers and with the outside air, substantially as described.

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**502,081.** CLOTH-CUTTING MACHINE. HENRY A. CALDWELL, Chicago, Ill., assignor to the Electric Cutting Machine Company, same place. Filed Mar. 11, 1892. Serial No. 424,484. (No model.) Patented in England Mar. 8, 1892, No. 4,609; in Germany Mar. 8, 1892, No. 64,618; in Canada Sept. 19, 1892, No. 40,414, and in Austria-Hungary Oct. 10, 1892, No. 12,790.



*Claim.*—1. In a cloth cutting machine, the combination with a reciprocating knife having a shifting fulcrum between its ends, of a yielding connection for holding the knife up to its fulcrum, substantially as set forth.

2. In a cloth cutting machine, the combination with a standard, of a reciprocating knife fulcrumed upon the front edge of said standard, the meeting edges of one of said members being curved and the other straight, and a yielding connection for holding said knife against said standard, substantially as set forth.

3. In a cloth cutting machine, the combination with a knife having a shifting fulcrum between its ends and means for reciprocating said knife in a curved line, of a yielding connection for holding said knife up to its fulcrum, substantially as set forth.

4. In a cloth cutting machine, the combination with a reciprocating knife having a curved back, of a fulcrum for the back of said knife and a yielding connection for holding said knife up to its fulcrum, substantially as set forth.

5. In a cloth cutting machine, the combination with a standard, of a knife having a curved back resting against said standard, and a spring acting upon said knife to hold it against said standard, substantially as set forth.

6. In a cloth cutting machine, the combination with a standard, of a knife having a curved back resting against said standard, a lever for reciprocating said knife, and a spring acting upon said knife to hold it against said standard, substantially as set forth.

7. In a cloth cutting machine, the combination with the standard, an adjustable arm or lever and means for oscillating said lever, of a knife attached to said lever and having a shifting fulcrum between its ends, and a yielding connection for holding the knife up to its fulcrum, substantially as set forth.

8. In a cloth cutting machine, the combination with the standard, an adjustable arm or lever and means for oscillating said lever, of a knife attached to said lever and having a shifting fulcrum between its ends and a yielding connection adjustably anchored at one end and acting upon said knife for holding it up to its fulcrum, substantially as set forth.

9. In a cloth cutting machine, the combination with the standard, an adjustable arm or lever and means for oscillating said lever, of a knife attached to said lever having a curved back and a yielding connection for holding said knife up to its fulcrum, substantially as set forth.

10. In a cloth cutting machine, the combination with the standard, an adjustable arm or lever and means for oscillating said lever, of a knife attached to said lever and having a curved back, and a yielding connection adjustably anchored at one end and acting upon said knife for holding it against said standard, substantially as set forth.

11. In a cloth cutting machine, the combination with a standard, of a reciprocating knife having its rear edge bearing against the front edge of said standard, the sides or lateral faces of said knife and standard lying flush or in a plane with each other, and means for retaining the knife against the standard; substantially as set forth.

12. In a cloth cutting machine, the combination with the standard, of a reciprocating knife and an inter-locking connection between the meeting edges of said knife and standard, the sides or lateral faces of said knife and standard lying flush or in a plane with each other, substantially as set forth.

13. In a cloth cutting machine, the combination with a standard, of a reciprocating knife having a curved back fulcrumed upon or against the front edge of said standard a yielding connection for holding said knife against the standard, and means for guiding said knife, substantially as set forth.

14. In a cloth cutting machine the combination with the standard, of a reciprocating knife having a curved back fulcrumed upon or against the front edge of said standard, a yielding connection for holding said knife against the standard and an inter-locking connection between the meeting edges of said knife and standard, substantially as set forth.

15. In a cloth cutting machine, the combination with a standard, of a reciprocating knife having a curved back fulcrumed upon or against the front edge of said standard, a yielding connection for holding said knife against the standard an inter-locking connection between the meeting edges of said knife or standard and means for guiding said knife, substantially as set forth.

16. In a cloth cutting machine, the combination with a standard, a lever, a knife block pivotally secured to said lever, and means for oscillating said lever, of a knife having a curved back resting against said standard, said knife being detachably secured to the knife block, and a spring secured at one end of the knife block, and at the other end to the machine frame for holding said knife against the standard, substantially as set forth.

17. In a cloth cutting machine, the combination with a standard, a lever, a knife block pivotally secured to said lever, and means for oscillating said lever, of a knife having a curved back resting against said standard, said knife being detachably and adjustably secured to the knife block, and a spring secured at one end of the knife block, and at the other end to the machine frame for holding said knife against the standard, substantially as set forth.

18. In a cloth cutting machine, the combination with a standard, a lever, a knife block pivotally secured to said lever, and means for oscillating said lever, of a knife having a curved back resting against said standard, said knife being detachably and adjustably secured to the knife block and a spring secured at one end of the knife block, and at the other end adjustably secured to the machine frame for holding said knife against the standard, substantially as set forth.

19. In a cloth cutting machine, the combination with a standard, a lever, a knife block pivotally secured to said lever, and means for oscillating said lever, of a knife having a curved back resting against said standard, said knife being detachably and adjustably secured to the knife block, and a spring secured to one end of the knife block, and at the other end adjustably secured to the machine frame for holding said knife against the standard, substantially as set forth.

20. In a cloth cutting machine, the combination with a knife having a shifting fulcrum between its ends, an arm or lever actuating said knife and means for oscillating said lever, of an adjustably pivoted bearing for said arm or lever comprising an upright slotted post, a bearing block fitting in said post and provided with a stud bolt, a handle having a screw threaded socket for reception of said bolt, and a filling or clamping block interposed between said handle and the post, substantially as set forth.

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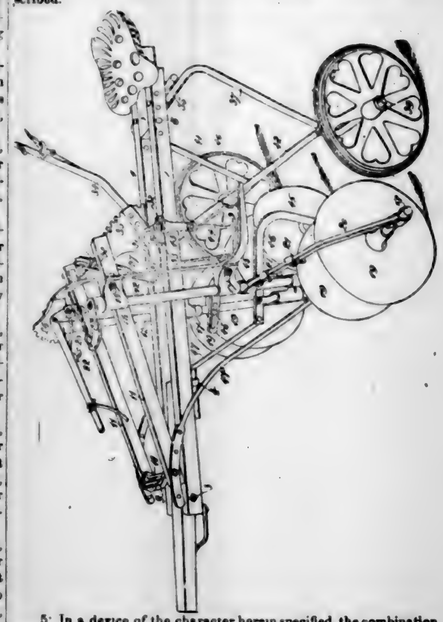
**502,032. AGRICULTURAL IMPLEMENT.** ALEXANDER CALDWELL, Rossx, Iowa. Filed Feb. 16, 1892. Serial No. 462,638. (No model.)

*Claim.*—1. In a device of the character herein specified, the combination with the main supporting frame, of the cultivating disks 19, and the supporting wheels 40, provided with circumferential ribs 41, said supporting wheels being located in the rear of the cultivating disks, substantially as shown and described.

2. In a device of the character herein specified, the combination with the hounds 1, of the casting 8, yoke 9 pivoted thereto, and the bars 11, arranged substantially as shown and described.

3. In a device of the character herein specified, the combination with the support for the disk standards and disk, of a loose connection at the rear of said support, consisting of a bearing piece embracing a cross-bar, said bearing piece being provided with friction pulleys, as set forth, and means for raising, lowering and locking the parts in place, substantially as shown and described.

4. In a device of the character herein specified, the combination with the hounds 1, of the supporting axles 39, rods 42, cranks 43, and foot pieces 44, arranged to operate substantially as shown and described.



5. In a device of the character herein specified, the combination with the standards 12, of the double adjustable sleeve pieces 49, the arms 48, and disks 45, substantially as shown and described.

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**502,033. BROOM-HOLDER.** WILLI CHRIST, Detroit, Mich. Filed Apr. 3, 1893. Serial No. 468,862. (No model.)



*Claim.*—1. In a broom holder the combination with a support having a bracket thereon, outwardly extending jaws pivoted to the bracket, a spring for closing the jaws and an abutment carried by the bracket and interposed between the jaws in front of the pivots thereof for limiting the inward movement of the jaws, substantially as described.

2. In a broom holder, the combination of the wall plate, the bracket secured on the front face thereof, a plate at the outer end of the bracket jaw, having bifurcations on their inner faces, embracing the sides of said plate and pivoted thereto, rearwardly extending arms on said jaws, the coil spring K extending between the inner end of the arms and guided and supported in an aperture in the base of the bracket, the cross-bar E at the forward end of the plate D, the shoulder P in front of the pivotal points of the arms bearing against said cross-bar, to limit the movement of the arms and an elastic gripping strip held in dovetail grooves on the inner face of the jaws substantially as described.

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**502,034. METHOD OF SECURING BUTTONS TO FABRICS.** HENRY H. CUMMINGS, Malden, Mass. Filed Oct. 8, 1892. Serial No. 448,258. (No specimens.)

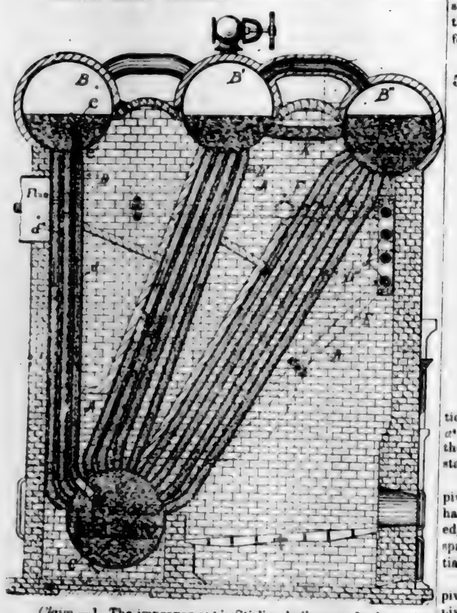
*Claim.*—The method of attaching shanked buttons to leather and other material or fabric, which consists in bending the material about the shank of the button, drawing the free end of a thread through the material and the eye of the button, crossing the free end of the thread and its main body under the material, making two loops or coils in such body of the thread and drawing the free end of the thread through the material and the eye of the button and also through the two loops or coils and then drawing the thread thus passed through the loops or coils into a hard knot under the material, substantially as described.





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**502,035. FEED-WATER HEATER AND PURIFIER.** BENJAMIN F. FIELD and ELI P. CLARK, Los Angeles, Cal. Filed Nov. 23, 1892. Serial No. 452,895. (No model.)



*Claim.*—1. The improvement in Stirling boilers set forth consisting in the combination of a pipe system arranged within the mud drum and heater of the boiler and communicating with the feed pipe; a series of tubular connections arranged to connect such pipe system with a series of the vertical tubes of the boiler, and a valve-controlled blow off communicating with such coil.

2. The combination set forth of a steam boiler, a drum arranged below such boiler; a system of tubes communicating between the drum and the boiler; a feed water pipe; a sediment receiving coil or pipe system arranged within the lower drum and communicating with the feed water pipe; a series of tubes leading from such coil and passing upward through the heating furnace and opening into the boiler; the furnace arranged to heat the boiler, the drum, the coil and the tubes, and a valve-controlled blow off communicating with the coil.

3. The combination set forth of the boiler; the feed pipe; the coil communicating with the feed pipe; the vertical tubes communicating between the coil and the boiler; the valve-controlled blow off communicating with the coil and the valve-controlled supplemental blow off pipe arranged to communicate between the boiler and the coil, and the furnace arranged to heat the boiler and the coil.

4. The combination set forth of the steam boiler; a drum arranged below such boiler; a system of tubes communicating between the drum and the boiler; a feed water pipe; a sediment receiving coil or pipe system arranged within the lower drum and communicating with the feed water pipe; a series of tubes leading from such coil and passing upward through the heating furnace and opening into the boiler; the auxiliary heating coil arranged in the furnace and communicating with the sediment coil within the heating drum; a supplemental valve-controlled blow-off pipe arranged to communicate between the boiler and the auxiliary heating coil; the furnace arranged to heat the boiler, the coil, the drum and the tubes, and a valve-controlled blow-off communicating with the coils.

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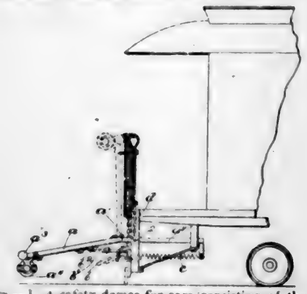
**502,036. THREAD-CUTTING ATTACHMENT FOR THIMBLES.** MARY FOGG, Beaver Dam, Wis. Filed Apr. 17, 1893. Serial No. 470,609. (No model.)



*Claim.*—An attachment for thimbles comprising a recurved spring-plate having offset prongs of less length than itself, and a cutting-blade projecting outward from the plate, substantially as set forth.

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**502,037. CAR-FENDER.** CHARLES T. ORILLEY, Boston, Mass. Filed Feb. 23, 1893. Serial No. 464,022. (No model.)



*Claim.*—1. A safety device for cars consisting of the combination of the pivoted fender *a* having beneath its forward end the roller $a^4$, and having upon its under side clips $b^3$, and the pivoted guard *b* the lower edge of which is adapted to be engaged by said clips, substantially as described.

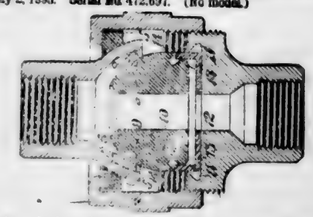
2. A safety device for cars consisting of the combination of the pivoted fender *a* having beneath its forward end the roller $a^4$, and having upon its underside clips $b^3$, and the pivoted guard *b* the lower edge of which is adapted to be engaged by said clips, and the strong spring *c* connected with and adapted to actuate said guard, substantially as described.

3. The safety device for cars consisting of the combination of the pivoted fender *a* having beneath its forward end a roller $a^4$, and the pivoted guard *b* normally held in its elevated position by the fender, and adapted to be released by slightly raising said fender, and a strong spring *c* connected with said guard for instantly moving it when released, substantially as described.

4. A safety device for cars consisting of the combination of the pivoted fender *a* having beneath its forward end the roll $a^4$, and the pivoted guard *b* normally held in its elevated position by the fender, and adapted to be released by slightly raising said fender, and a strong spring *c* connected with said guard for instantly moving it into its vertical position when released, and a chain or equivalent for holding said guard in partial elevated position when not in use, substantially as described.

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**502,038. PIPE-COUPLING.** REINHOLD HERMAN, Crafton, Pa. Filed May 2, 1893. Serial No. 472,697. (No model.)

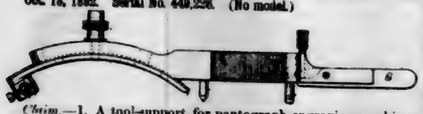


*Claim.*—1. In a pipe coupling, the combination of two internally threaded sockets, one of the sockets being provided with an externally threaded head or enlargement and the other with a concave-

convex bowl, a hollow bearing block detachably connected to one of said sockets and provided with a packing ring, an annular disk fitting over the bowl of the other socket and an internally threaded sleeve provided with an inwardly projecting flange for engagement with the annular disk and adapted to screw onto the externally threaded socket, substantially as set forth.

2. In a pipe coupling, the combination of two internally threaded sockets, one of the sockets being provided with an externally threaded head or enlargement, and the other with a concavo-convex bowl, a bearing block formed of insulating material attached to one of the sockets and provided with a packing ring, an annular disk formed of insulating material and fitting over the bowl of the other socket, and an internally threaded sleeve provided with a flange for engagement with the annular disk and adapted to screw onto the externally threaded socket, substantially as set forth.

**502,039. TOOL-HOLDER.** JOHN HOPE, Providence, R. I. Filed Oct. 18, 1892. Serial No. 449,226. (No model.)



*Claim.*—1. A tool-support, for pantograph engraving-machines, having a laterally offset tool-clamp.

2. A tool-support, for pantograph engraving-machines, having an arm extensible on the radius of a circle and carrying a laterally offset tool-holder.

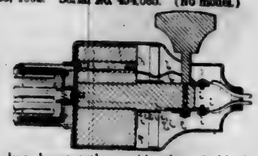
3. The combination with a tool-holder, for engraving machines, of the extension 5, the plate 6 pivoted to said extension, and the thumb-screw 7 carried by said extension and adapted to bear on the forward end of the plate 6.

4. The combination with a tool-holder having a curved-arm 8 and an extensible-arm 14 carried thereby, of an offset tool-support carried on the end of the arm 14 and adjustable laterally and radially.

5. In a tool-holder, for pantograph engraving-machines, the combination with a curved supporting-arm, of a tool-clamp carried thereby and adjustable laterally and radially.

6. The combination, in a tool-holder, with the extension 5 and the slotted-arm 8 connected by the diagonal-member 9, the plate 6 pivoted to the extension, and the screw 7 for adjusting the same, of the extensible-arm 14 secured to the arm by the clamping-screw 15, the transverse perforated-enlargement 16 provided with the set-screw 17 on the end of the arm 14, and the clamp 19 having the shank 18 adapted to be secured in the transverse perforation of the enlargement 16, as and for the purpose described.

**502,040. RHEOSTAT.** CHARLES A. HUSSEY, New York, N. Y. Filed May 23, 1892. Serial No. 434,085. (No model.)



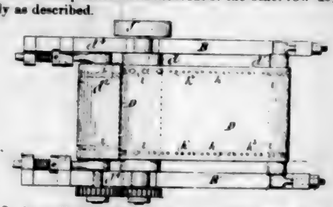
*Claim.*—1. In a rheostat, the combination of a block of insulating material provided with a cavity or cavities and a conducting material therein composed of powdered material of good conductivity and peroxide of manganese substantially as described, and means whereby said material may be thrown into or out of the circuit, substantially as specified.

2. In a rheostat, the combination of a block of insulating material provided with a cavity or cavities, granular or pulverized material therein, a screw or its equivalent for varying the compression of the said material consisting of a conducting material and pulverized peroxide of manganese and means whereby more or less of such material may be thrown in or out of circuit, substantially as specified.

3. In a rheostat, the combination of an electric lamp socket or holder with a block of insulating material provided with cavities containing conducting material mixed with powdered peroxide of manganese and so arranged that more or less of the material may be thrown into or out of the circuit to vary or extinguish the light, substantially as specified.

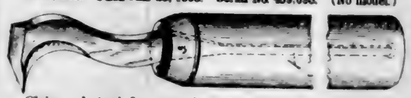
**502,041. CONVEYER-BELT.** SIGMUND JACOBY, New York, N. Y. Filed Jan. 26, 1893. Serial No. 459,761. (No model.)

*Claim.*—1. An endless feed belt containing a row of studs arranged in line along and adjacent to each of its side edges, the said studs being adapted to enter and fit annular grooves contained in the supporting rollers for the belts, and the studs of one row, as A, being arranged to alternate in position with the studs of the other row, as A', substantially as described.



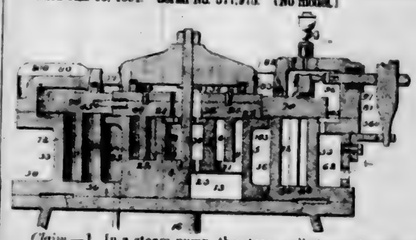
2. An endless feed belt having the guide studs, $A^2$, in the form of hollow cones secured to the belts by means of prongs, $A^3$, extending from the bases of the cones through the belts and clinched, substantially as described.

**502,042. HOOF-CLEANING TOOL.** ROBERT C. JENNER, San Antonio, Tex. Filed Jan. 25, 1893. Serial No. 459,093. (No model.)



*Claim.*—A tool for removing obstructions from and cleaning horses' hoofs, formed with a shank provided with a handle, and a double-curved blade having a sickle-shaped and sharpened portion 5, an outwardly flaring sharp portion 6 forming a tapering point at the juncture with the portion 5, and the straight chisel-edge 8, arranged at right angles to the axis of the handle and shank, substantially as and for the purpose specified.

**502,043. STEAM-PUMP.** EDWARD C. JOHNSON, Keokuk, Iowa. Filed Jan. 16, 1891. Serial No. 377,975. (No model.)



*Claim.*—1. In a steam pump, the steam cylinder, and water cylinder concentric therewith, and annular steam and water pistons concentric with each other but separably connected, a ring cover for one piston and a cup cover for the other, and a single sliding guide from which the two pistons are guided, all in combination substantially as described.

2. The combination with the water cylinder having broken annular chamber as described, of the ring piston having its flange in said chamber, and a cover or cap of less diameter than the ring piston and removably connected to the water cylinder, substantially as described.

3. The combination of the water cylinder with annular chamber and central hub, the rod extending up from the hub, the ring piston having its flange in the annular chamber and open around said rod, and a cap or cover held by said rod and having its outer edge bearing by suitable packing on the upper surface of the water piston ring, substantially as described.

4. The combination with a base, of the central water cylinder having broken annular chamber with a floor thereto and inlet and outlet ports through said floor but above the base, the water piston in said cylinder, and a removable cap therefor, and a steam cylinder surrounding said water cylinder but of greater depth, and having a piston and cap separate from the cap of the water cylinder, substantially as described.

5. In a steam pump, a central water cylinder having broken annular chamber and driving piston therein, and a cap over the driving piston, and a steam cylinder having a broken annular steam chamber surrounding the water cylinder and having a driving piston in said chamber and an annular cover therefor, the caps and piston of the steam and water cylinders being separately removable, in combination substantially as described.



6. In a steam pump of the character described, the combination of a central water cylinder having broken annular chamber and piston, a surrounding steam cylinder of similar character and separate piston, and drivers separate from both pistons connecting the two pistons to cause them to partake of the same gyratory movement but to permit vertical movement independently of each other, substantially as described.

7. In a steam pump of the character described, the central water piston having recesses in the edges thereof, the surrounding steam piston having similar recesses, and drivers separate from both pistons in said recesses connecting the two pistons but permitting independent vertical movement, and the cylinders and connections, all combined substantially as described.

8. The combination with the central water cylinder, its piston, and a cap for said piston held down by a central rod extending through the piston, of a packing ring interposed between the piston and cap, and springs bearing on the packing ring, all substantially as described.

9. The combination with the divided annular steam cylinder and piston, of a cap above the same having a recess above the break in the piston, a pin extending up from the piston and a link connected to the same and to the cover and serving as a guide for the piston, and a starting bar connected to said guide pin and extending outside the casing, substantially as described.

10. The combination with the divided annular cylinder, piston, and cap, of a guide pin on the piston above the division in the flange thereof, a link connecting said pin to the cap, substantially as described and a starting bar connected to said guide pin and extending outside the casing, substantially as described.

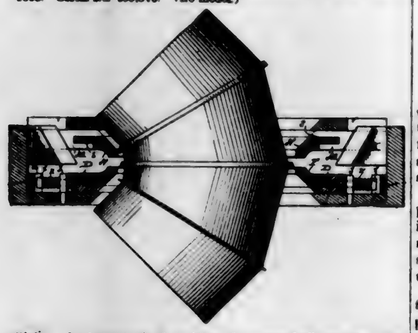
11. The combination with the divided annular steam piston, cylinder, and cap or cover, and pin projecting from the piston opposite the division thereof, of a starting bar connected to said pin and extending outside the casing, and a lever having a bearing on the casing and on the starting bar, substantially as described.

12. The combination with the steam piston, cylinder, casing, and link guide, of a lubricating cup on the casing, and a passage along the link guide from said cup, whereby both pivots of the link are lubricated from said cup, substantially as described.

13. The combination with the annular water cylinder, and the annular steam cylinder surrounding the same with a chamber between, of an open drip or escape leading from the chamber between the cylinders, substantially as described.

14. The combination with the cylinders, pistons, and annular cap over the steam piston, of the cap over the water cylinder secured to a central support from the hub thereof, said cap having side lugs to bear against and center it in the annular cover to the steam piston.

**502,044. MANUFACTURE OF SHEET-METAL ELBOWS.** CHARLES LINDEMANN and AUGUST LINDEMANN, Milwaukee, Wis. Filed Feb. 24, 1892. Serial No. 463,578. (No model.)



*Claim.*—1. A method of making sheet-metal elbows, the same consisting in connecting together, by partly finished seams, all the sections necessary to such an elbow, bringing the seams to rest, in successive order, upon a series of movable dies that unite in one direction of their movement to entirely surround the elbow, impacting a supported seam by other movable dies that also unite in one direction of their movement to entirely surround said elbow, and retracting all the dies at the completion of each seam to permit the necessary longitudinal movement of the aforesaid elbow, substantially as set forth.

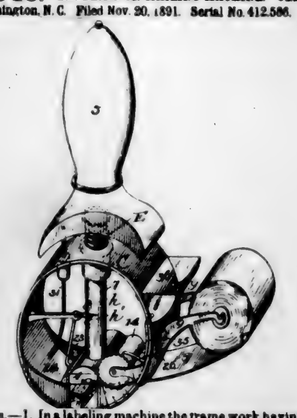
2. A machine for finishing sectional sheet-metal elbows, said machine comprising a series of reciprocating seam-supporting dies that close in to form a predetermined contour, and a series of reciprocative impact dies that also close in to form a similar contour, both series of dies being retractible a distance sufficient to clear a seam completed by their joint impingement against interposed metal, substantially as set forth.

3. A machine for finishing sectional sheet-metal elbows, said machine comprising a series of positively adjustable but reciprocative seam-supporting dies that close in to form a predetermined contour, and a series of positively adjustable reciprocative impact dies that also close in to form a similar contour, both series of dies being retractible a distance sufficient to clear a seam completed by their joint impingement against interposed metal, substantially as set forth.

4. A machine for finishing sectional sheet-metal elbows, said machine comprising a series of jaws loose in radial guides, a corresponding series of seam-supporting dies detachably connected to the jaws, suitable means for reciprocating said jaws, a series of stationary inclined guides, another series of jaws that are also loose in radial guides and loosely engage the inclined guides, a corresponding series of impact dies detachably connected to the latter jaws, and suitable means for actuating said latter jaws, substantially as set forth.

5. A machine for finishing sectional sheet-metal elbows, said machine comprising a stationary annular casing, a centrally open base-plate within the casing, a series of seam-supporting dies connected to jaws that have a radial reciprocation on the base-plate, inclined guides fast in said casing above said base-plate, another centrally open plate having notches that clear the inclined guides, a series of impact dies connected to jaws loose in radial guides on the latter plate and also loosely engaged with the aforesaid inclined guides, and suitable mechanism for imparting a reciprocation to said latter plate, substantially as set forth.

**502,045. LABELING OR MAILING MACHINE.** JAMES C. LODOR, Wilmington, N. C. Filed Nov. 20, 1891. Serial No. 412,586. (No model.)



*Claim.*—1. In a labeling machine the frame work having a plunger space, the plunger adapted to move therein, the paper feeding roll the sponge for applying moisture to the receiving surface, the handle for operating the plunger, said handle being hollow to contain water and the means operated by the handle for supplying water to the sponge, substantially as described.

2. In combination in a labeling machine, the frame work having a plunger space, the plunger arranged to move therein, the paper feeding mechanism, operated by the plunger, the movable sponge, the means for supplying moisture thereto and the connection from the said sponge to the plunger stem to be operated thereby, substantially as described.

3. In combination, the frame work having a plunger space the feeding mechanism for the paper strip, the handle for operating the plunger, said handle being hollow to receive water and a cylinder and piston, the latter operated by the handle for feeding the moisture therefrom, substantially as described.

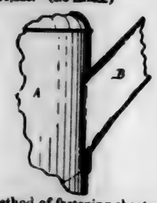
4. In combination, the frame work formed of a plate curved as shown and having its free ends turned up to form a plunger space the sponge box comprising one of said upturned ends, the feeding mechanism arranged adjacent to the other upturned end, the plunger arranged to move in the plunger space, the sponge movably arranged in the sponge box, the connections therefrom to the plunger stem to be operated thereby and the automatic means for supplying moisture to the sponge box, substantially as described.

5. In combination the frame, having a plunger space, the plunger movable therein, the feed roll for feeding the strip, the mucilage box containing one of said rolls, the upper mucilage receptacle supported on the frame and the tubes leading from said receptacle to the lower mucilage box, substantially as described.

6. In combination, the frame consisting of a plate having its lower ends turned up to provide a plunger space, a guide-way at the upper middle portion of said plate, a plunger stem movable therein, having a plunger at its lower end, a handle for operating the plunger and strip feeding mechanism, carried by the frame substantially as described.

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**502,046. JOINING SPOUTS TO METALLIC KETTLES.** CHARLES D. MILES and ALBERT R. PRITCHARD, Rochester, N. Y. Filed Apr. 5, 1893. Serial No. 469,233. (No model.)




*Claim.*—1. The method of fastening sheet metal spouts to sheet metal vessels consisting in first forming an aperture in the side of the vessel substantially triangular in form with rounded corners and in forming around one corner of said aperture and around the contiguous edges thereof an inwardly projecting flange and an outwardly projecting bead and in forming an outwardly projecting flange around the base of a spout corresponding in contour to the flanged and beaded edges of said aperture, then fitting the flange of the spout over the flange of the aperture with the edge of each flange resting within the sides of the other flange, then compressing the two flanges together inwardly and outwardly at once between dies having grooves fitting upon the inner side of the curve of the spout flange and upon the outer side of said bead, whereby the edges of the flanges are rolled or curled together, each within the other, and then fastening together the unflanged portion of the base of the spout and the unflanged edge of the aperture in the vessel, substantially as described.

2. The method of fastening sheet metal spouts to sheet metal vessels, consisting in first forming an aperture in the side of the vessel and forming partly around the edges of said aperture an inwardly projecting flange and an adjacent outwardly projecting bead and in forming a coextensive outwardly projecting flange around the base of a spout fitting said aperture, then fitting said flanges together with the edges of each flange resting within the sides of the other flange, then compressing the two flanges together inwardly and outwardly at once between dies having grooves fitting upon the inner side of the spout flange and upon the outer side of said bead, whereby the edges of the flanges are rolled together each within the other, and then soldering together the unflanged edges of said aperture and of the base of said spout, substantially as described.

3. The method of fastening sheet metal spouts to sheet metal vessels consisting in first forming an aperture in the side of a vessel and forming partly around the edge of said aperture a continuous inwardly projecting flange and an adjacent co-extensive outwardly projecting bead and in forming a co-extensive outwardly projecting flange around the base of a spout fitting said aperture, then fitting said flanges together with the edge of each flange resting in and upon the curved base or bead of the other flange, then compressing the two flanges together inwardly and outwardly at once between dies having grooves fitting upon the inner side of the curve of the spout flange and upon the outer side of said bead, whereby the edges of the flanges are rolled or curved, each within the other, and then fastening together the unflanged edges of said aperture and of the base of said spout, substantially as described.

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**502,047. PNEUMATIC TIRE.** FRED W. MORGAN and RUFUS WRIGHT, Chicago, Ill. Filed Dec. 24, 1892. Serial No. 456,205. (No model.)



*Claim.*—1. The within described improvement in forming inflatable tire tubes, consisting in flattening the end portions of the tube, and closing and uniting together the opposing flattened walls of the same as described.

2. The within described improvement in forming inflatable tire tubes, consisting in flattening the end portions of an unvulcanized tube and vulcanizing the same with its flattened end portions subject to compression.

3. An inflatable tire tube having transversely flattened closed end portions, substantially as described.

4. An inflatable tire tube having flattened and solid closed end portions, substantially as described.

5. A hollow or pneumatic tire comprising an inflatable tube confined within a sheath and having closed transversely flattened end portions, substantially as described.

6. A hollow or pneumatic tire comprising an inflatable tube having flattened closed end portions, and confined within a sheath, the flattened end portions of said tube being arranged to overlap the inflatable portion of the tube, substantially as described.

7. A hollow or pneumatic tire comprising a tubular sheath having a limited split or opening for the insertion and removal of an air tube, and an air tube having flattened end portions and confined within the sheath and having its flattened end portions removably held between the sheath and the inflatable portions of the air tube, substantially as set forth.

8. A hollow or pneumatic tire comprising a tubular sheath having a limited opening for the insertion and removal of the air tube, an air tube confined within the sheath and having flattened end portions, and a shield or layer arranged between the said opening and the inclosed air tube substantially as described.

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**502,048. PNEUMATIC TIRE.** FRED W. MORGAN and RUFUS WRIGHT, Chicago, Ill. Filed Feb. 7, 1893. Serial No. 461,304. (No model.)



*Claim.*—1. The improvement in forming inflatable air-tubes for tires, consisting in vulcanizing the tube in a flattened condition, substantially as and for the purpose described.

2. A normally flattened air-tube adapted for inflation and service in a hollow or pneumatic tire, substantially as described.

3. A hollow or pneumatic tire provided with a normally flattened inflatable air-tube, substantially as described.

4. A hollow or pneumatic tire comprising a tubular sheath having a limited opening, and an inclosed normally flattened inflatable air-tube, substantially as described.

5. A hollow or pneumatic tire comprising a sheath and an inclosed normally flattened air-tube of such size relatively to the internal diameter of the sheath that when the tire is inflated the inflation of the air-tube shall stop at or short of the point of material stretch, substantially as described.

6. A hollow or pneumatic tire comprising a sheath and an inclosed inflatable air-tube having closed flattened ends, and normally flattened along its inflatable portion, substantially as described.

7. A hollow or pneumatic tire comprising a sheath, and an inclosed inflatable air-tube having closed flattened ends, the inflatable portion of the air-tube being proportioned relatively to the internal diameter of the sheath so that when the tire is inflated, the inflation of the air-tube shall stop at or short of the point of material stretch, substantially as described.

8. A hollow or pneumatic tire comprising a sheath, and an inclosed air-tube having closed flattened ends and a normally flattened inflatable portion, said inflatable portion of the air-tube being of such size relatively to the internal diameter of the sheath that the inflation of the tire shall not materially stretch the air-tube, substantially as described.

9. A hollow or pneumatic tire comprising a tubular non-expansible sheath, and an air-tube confined therein and having separable ends whereby it can be removed through an opening in the tubular sheath, the said air tube being of such size relatively to the internal diameter of the sheath that the inflation of the tire shall not materially stretch the air-tube, substantially as described.

10. A hollow or pneumatic tire comprising a tubular molded sheath having a limited opening for the removal of the air-tube, and an air tube confined within the sheath and made of such size relatively to the internal area of the sheath that it shall not materially stretch when the tire is inflated substantially as described.

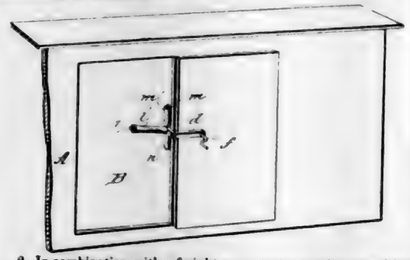
11. The air-tube provided with a flexible nipple composed of a tubular layer of rubber, a tubular layer of fabric and a flat base which is secured to the air-tube and composed of rubber and a spread out end portion of the tubular layer of fabric, substantially as described.

12. The air tube provided with a flexible nipple having its bore contracted adjacent to the air tube so as to render the nipple stouter at its base, but provide the remaining portion of the nipple with a socket, substantially as described.

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**502,049. JACK FOR LOADING OR UNLOADING CARS.** QUIN W. MORRISON, St. Louis, Mo. Filed Mar. 31, 1893. Serial No. 468,506. (No model.)

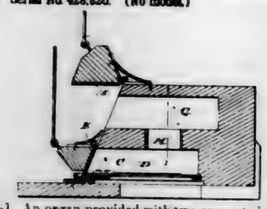
*Claim.*—1. In combination with a freight car, a jack therefor consisting of a suitable clamp adapted to engage the door casing, a horizontal arm carrying a roller extending from said clamp and vertical rollers journaled upon arms above and below at the base of said horizontal roller whereby the jack may be clamped to either side of the doorway and one of said vertical rollers will serve as a guard for the casing above the horizontal roller and the other as a brace below, substantially as described.




2. In combination with a freight car, a jack therefor comprising a bar having angular extended arms embracing the door casing of said car, a clamping device carried by one of said arms, a horizontal arm carried by said bar vertical arms extending above and below said bar, with rollers carried by all of said arms, substantially as described.

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**502,050. ORGAN.** HENRY NELSON, Fort Wayne, Ind. Filed Apr. 12, 1892. Serial No. 428,830. (No model.)



*Claim.*—1. An organ provided with two connected cells, an independent valve for each of the cells and adapted to open each cell at its front end to the outer air, and a reed held in one of the said cells in such a manner as to be sounded on opening either or both of the valves, substantially as shown and described.

2. An organ provided with two cells open at the front and located one above the other and in communication one with the other, the lower cell containing a reed and each cell containing, at its front end, an independent valve, substantially as shown and described.

3. An organ provided with two cells open at the front located one above the other and in communication one with the other, a reed arranged in the bottom of the lower cell over the opening in the sounding board, and a spring pressed valve for the front open end of each cell and under the control of the operator, substantially as shown and described.

4. In an organ, the combination with a sounding board having a series of reed apertures, of a series of cells arranged on the said sounding board and each containing a reed over the corresponding reed aperture in the sounding board, a valve for opening and closing the front openings of the cells in the said series, a second series of cells each in communication with the corresponding cell of the series below, and a second valve for opening and closing the front ends of the cells in the second series independent of the valves for the first named series of cells, substantially as shown and described.

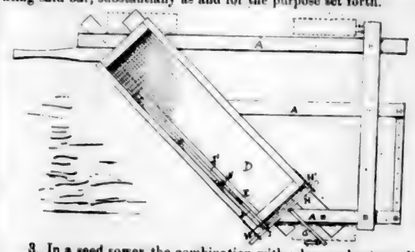
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**502,051. SEED-SOWER.** MILES J. NIGHTINGALE and JAMES B. STEARNS, Oakdale, Cal. Filed Jan. 10, 1893. Serial No. 457,944. (No model.)

*Claim.*—1. The combination with the gang plow frame of the sloping bottomed hopper D, provided with the perforated slide-bar E, the pitman F, the arm G, the rock shaft H, the hangers H', the vertical arm I, the horizontal rod J, the arm J', the pronged agitators R attached to plates N by means of face lugs Q the plates N, provided with journals P, which are attached to the arm J' by bolts, such plates provided with raised ways O, and journal bearings O', the plates L, provided with circular raised ways M, and hollow journals M' engaging with the journal bearings O' of the plates N, and the lugs L' of the plates L, attached to the side of the hopper D, and the bolts S, flexibly securing the plates N and L to the back side of the hopper, all arranged and operating substantially as set forth and described.

2. In a seed sower, the combination with a hopper having a discharge aperture; of a plate L, connected to one wall of the hopper and having a circular flange M, a pivoted plate N, having a flange O, adapted to engage the flange M, and also having lug journals on its exposed face, a shaft journaled in the lug journals of the plate N, and carrying a series of prongs, and a suitable means for rocking or oscillating the plate N, substantially as and for the purpose set forth.

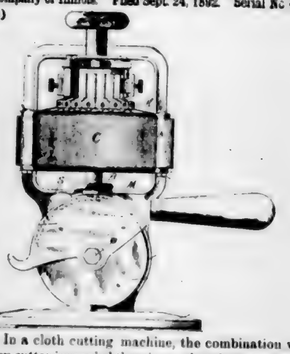




3. In a seed sower, the combination with a hopper having a discharge aperture; of a plate L, connected to one wall of the hopper and having a circular flange M, a pivoted plate N, having a flange O, adapted to engage the flange M, and also having lug journals on its exposed face, a shaft journaled in the lug journals of the plate N, and carrying a series of prongs, a reciprocatory bar connected to the plate N, and a suitable means for actuating said bar, substantially as and for the purpose set forth.

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**502,052. CLOTH-CUTTING MACHINE.** WILBUR S. SALISBURY, Chicago, Ill., assignor, by mesne assignments, to the Electric Cutting Machine Company of Illinois. Filed Sept. 24, 1892. Serial No. 446,813. (No model.)



*Claim.*—1. In a cloth cutting machine, the combination with a frame, of a rotary cutter journaled therein, an electric motor mounted on said frame and having an upright armature shaft, and a gear connection between said shaft and rotary cutter, substantially as set forth.

2. In a cloth cutting machine, the combination with the frame, of a rotary cutter journaled therein, an electric motor carried by said frame and having its armature shaft journaled in an upright position, and geared directly to said rotary cutter, substantially as set forth.

3. In a cloth cutting machine, the combination with a frame and a cutter mounted thereon, of an electric motor mounted in said frame and having its armature shaft arranged in an upright position and connected to said cutter, and a guiding knob or handle having a common axis with said shaft, substantially as set forth.

4. In a cloth cutting machine, the combination with a frame and a rotary cutter mounted therein, of an electric motor mounted in said frame and having its armature shaft arranged in an upright position over the axis of said cutter, and a guiding knob or handle arranged over said shaft, substantially as set forth.

5. In a cloth cutting machine, the combination with the frame having a foot, a rotary cutter mounted therein and means for operating said cutter, of an adjustable combined presser foot and shield arranged over the edge of said cutter and pivoted concentrically therewith, substantially as set forth.

6. In a cloth cutting machine, the combination of the frame having the circular flange R, thereon, a rotary cutter journaled within said flange and being partially surrounded thereby, a shield pivoted concentrically with said cutter and having a flange over-lapping said flange R, a dog for locking said shield in position, and means for operating said cutter, substantially as set forth.

7. In a cloth cutting machine, the combination with a frame having a foot, a rotary cutter mounted therein, and means for operating said cutter, of a pivoted shield arranged to cover the edge of said cut-

ter, and a spring dog for holding said shield in position, substantially as set forth.

8. In a cloth cutting machine, the combination of a two-part frame, the field magnets to which the parts of said frame are secured, a longitudinally arranged armature having an upright shaft journaled in said frame, and a cutter connected to said shaft, substantially as set forth.

9. In a cloth cutting machine, the combination of the frame consisting of the upper and lower sections H, I, having cross bars thereon, horizontally arranged field magnets to which said cross bars are secured, a longitudinally arranged armature having an upright shaft journaled in said frame and a cutter connected to said shaft, substantially as set forth.

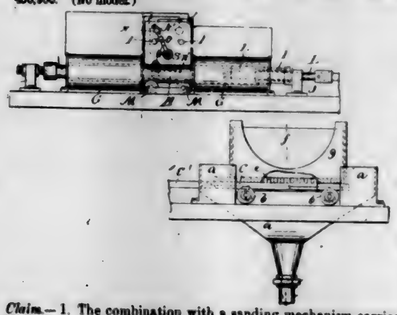
10. In a cloth cutting machine, the combination of the upper and lower sections H, I, provided with the cross bars *h*, *i*, and the upper section with the centrally arranged stem *g*, the field magnets to which said cross bars *h*, *i*, are secured, the knob G secured to said stem *g*, an armature having an upright shaft journaled in said frame, and a cutter connected to said armature shaft, substantially as set forth.

11. In a cloth cutting machine, the combination with a frame and a rotary cutter journaled therein, of an electric motor having an upright armature shaft journaled in said frame, and a pair of beveled gears connecting said shaft to said cutter, substantially as set forth.

12. In a cloth cutting machine, the combination with a frame and a rotary cutter journaled therein, of an electric motor having an upright armature shaft journaled in said frame and being geared to said cutter, the washer M, upon which said shaft is supported, and anti-friction balls interposed between said washer and frame, substantially as set forth.

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**502,053.** SANDING DEVICE FOR CARS. NICHOLAS SEIBERT, Boston, assignor, by direct and mesne assignments, of nineteen twenty-fifths to George F. Malcolm, Allston, and Oliver Eliot Simmons and Siegmund Leipziger, Boston, Mass. Filed Nov. 3, 1892. Serial No. 450,906. (No model.)



*Claim.*—1. The combination with a sanding mechanism carried by the car, of electric appliances and contacts on the car in electric connection with the current which drives the motor, and a device carrying a contact and disposed so that it may be operated by the knee of the motorman to complete the circuit through the electric appliances and operate the sanding mechanism.

2. The combination with a sanding mechanism carried by the car, of a shifting magnet connected with the sanding mechanism, a switch board having contacts to which the current from the main conductor is led, and a switch adapted to make and break contact with the switch board contacts to operate the sanding mechanism.

3. The combination with a sanding mechanism carried by the car, of shifting magnet connected therewith, a switch board having contacts to which the main conductor leads, a switch movable over the switch board, and a hinged lever having a pad and contact for establishing the circuit to operate the magnet and sanding mechanism.

4. The combination with a sanding mechanism and electric appliances for operating the same, a movable pad hinged upon the dash board of the car and adapted to be operated by the knee of the motorman to make contact with the electric appliances, whereby a current is transmitted from the trolley wire to a motor attached to the sanding mechanism to operate the latter.

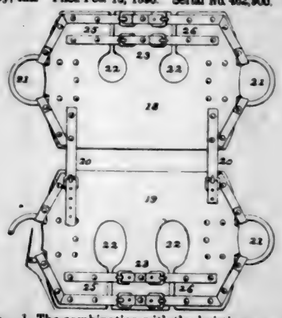
5. The combination with a sanding mechanism carried by the car, a shifting magnet or motor connected therewith, electric appliances connected with the trolley wire and with the magnet for operating the latter by a current derived from the former, and a switch secured to the dash board of the car and adapted to be operated by the lower portion of the motorman's body to establish a circuit through the shifting magnet or motor whereby the sanding mechanism is operated by a current derived from the main conductor or trolley wire.

6. The combination with a sanding mechanism carried by the car and comprising a reciprocating grate frame and fixed disintegratable substance, of a shifting magnet connected with the grate frame, the solenoids in which the magnet is mounted, a switch board having contacts to which wires from the main conductor lead, a switch lever having a carbon holder, a carbon therein adapted to make contacts, whereby a circuit is established to operate the sanding mechanism, substantially as herein described.

7. The combination with a fixed disintegratable material, a reciprocating grate frame, and a hopper for delivering disintegrated portions of said material to the track rails, and a roller support for the grate frame, of the fixed solenoids, the shifting core or magnet therein connected with the grate frame, a roller support for the core or magnet, the switch lever O, the contacts N N' and carbon holder P, a crank arm slidable with the core or magnet, a spring connecting the same with the switch lever, and wires leading from the trolley wire or main conductor for transmitting a current to actuate the core or magnet and sanding mechanism, substantially as herein described.

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**502,054.** APPARATUS FOR SHOEING ANIMALS. EMIL SIBOLD, Shelby, Ind. Filed Feb. 18, 1893. Serial No. 462,905. (No model.)

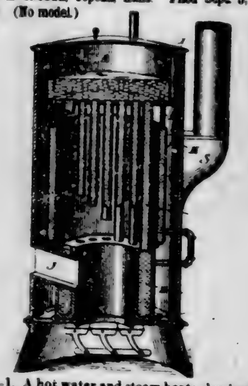


*Claim.*—1. The combination with the hoisting ropes of a shoeing stall, of the hoisting harness or sling composed of sections 18 and 19, having foot orifices 22, adjusting buckles and straps 20, 25, 26, and suspension rings 21, substantially as set forth.

2. The combination with the hoisting ropes of a shoeing stall, of the hoisting harness or sling composed of sections 18 and 19, having foot orifices 22 slitted so as to form the central and lateral end members 23, 24, adjusting buckles and straps 20, 25, 26, and suspension rings 21, substantially as set forth.

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**502,055.** HOT-WATER AND STEAM HEATING APPARATUS. ALBERT L. SNYDER, Topeka, Kans. Filed Sept. 5, 1892. Serial No. 445,149. (No model.)



*Claim.*—1. A hot water and steam heater having around the fire-box a water jacket connected by a series of water tubes with the bottom of the dome, in combination with a shell boiler incasing these tubes which shell boiler extends from the water jacket around the fire-box nearly to the dome leaving space enough above the shell boiler for passage of smoke and draft, tube connections from top of this shell boiler to bottom of dome, tube connections from bottom of this shell boiler to water jacket around the fire-box, a flange partition outside of and around part of the shell boiler extending from the rear toward the front on each side and to make forward and downward reverse draft, a casing encircling the whole having large doors therein which casing is connected with the outside of the shell boiler by the flange partition and connecting with the top of the dome by an annular covering, a smoke vent in the outside casing below the flange partition, all substantially as described.



toward the front on each side and to make forward and downward reverse draft, a casing encircling the whole having large doors therein which casing is connected with the outside of the shell boiler by the flange partition and connecting with the top of the dome by an annular covering, a smoke vent in said outside casing below the flange partition, a series of tubes dependent from the bottom of the dome having their lower ends closed, all substantially as described.

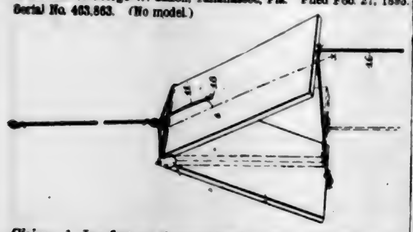
2. A hot water and steam heater having around the fire-box a water jacket connected by a series of water tubes with the bottom of the dome, in combination with a metal shell incasing these tubes nearly their entire length leaving space enough above the shell and below the dome for passage of smoke, a flange partition partly encircling the outside of this shell extending from the rear forward and down on either side to cause return draft, a casing encircling the whole having large doors therein which casing is connected with the outside of the shell by the flange partition and connected with the top of the dome by an annular covering, a smoke vent in said outside casing below the flange partition, a series of tubes dependent from the bottom of the dome having their lower ends closed, all substantially as described.

3. A hot water and steam heater having around the fire-box a water jacket connected by a series of water tubes with the bottom of the dome, in combination with a shell boiler incasing these tubes which shell boiler extends from the water jacket around the fire-box nearly to the dome leaving space enough above the shell boiler for passage of smoke and draft, tube connections from top of this shell boiler to bottom of dome, tube connections from bottom of this shell boiler to water jacket around the fire-box, a flange partition outside of and around part of the shell boiler extending from the rear toward the front on each side and to make forward and downward reverse draft, a casing encircling the whole having large doors therein which casing is connected with the outside of the shell boiler by the flange partition and connected with the top of the dome by an annular covering, a smoke vent in the outside casing below the flange partition, all substantially as described.

4. A hot water and steam heater having around the fire-box a water jacket connected by a series of water tubes with the bottom of the dome, in combination with a metal shell incasing these tubes nearly their entire length leaving space enough above the shell and below the dome for passage of smoke, a flange partition partly encircling the outside of this shell extending from the rear forward and down on either side to cause return draft, a casing encircling the whole having large doors therein which casing is connected with the outside of the shell by the flange partition and connected with the top of the dome by an annular covering, a smoke vent in said outside casing below the flange partition, all substantially as described.

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**502,056.** FLY-TRAP. THOMAS A. TEATE, Waukeenah, assignor of one-half to George W. Saxon, Tallahassee, Fla. Filed Feb. 27, 1893. Serial No. 463,863. (No model.)



*Claim.*—1. In a fly trap, the combination of two depending downwardly diverging boards or pieces of material hingedly connected at their upper ends, a yoke for suspending said boards or pieces of material, a spring yoke arranged transversely to the aforesaid yoke normally holding said boards apart from each other and automatically returning them to said position after they have been closed, and an operating cord secured to the lower end of one of said boards or pieces of material and loosely engaging the lower end of the opposite board or piece of material, whereby the said boards may be drawn together, substantially as described.

2. In a fly trap, the combination of two depending downwardly diverging hingedly connected boards having their lower ends normally spread apart from each other and suspended by their upper ends, a spring for holding said boards apart from each other, and an operating cord for drawing said boards together, substantially as described.

3. In a fly trap, the combination of two depending downwardly diverging boards with upper beveled ends arranged closely together and hingedly connected, a suspending yoke attached to the upper ends of said boards and having a central loop, a spring yoke loosely engaging the said boards in a direction transverse to the position of the aforesaid yoke and having a coil engaging the loop of said yoke, the lower ends of said boards being held apart normally, and an operating cord secured to the lower end of one board and loosely engaging the lower end of the opposite board, whereby said boards may be drawn together, substantially as described.

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**502,057.** BUCKLE-SHIELD. FREDERICK L. THOMPSON, Neligh, Nebr.; Mary I. Thompson administratrix of Frederick L. Thompson, deceased. Filed Apr. 24, 1891. Serial No. 390,358. (No model.)



*Claim.*—1. As an improved article of manufacture, a buckle shield formed from a single piece of wire and comprising a loop *a*, adapted to engage the tongue of a buckle, the strap engaging loop *g*, formed by twisting the branches of the wire and bending them in a plane at right angles to the plane of the loop *a*, and crossing them, and the branches or legs *h*, formed by the end portions of the wire and extending in the same general direction from the loop *g*, as the loop *a*, and adapted to rest on the opposite side of a strap or piece of harness with respect to said loop *a* substantially as and for the purpose set forth.

2. In a harness, the combination with a strap A, and a strap B, carrying a buckle adapted to engage the strap A, and a box loop adapted to receive the free portion of said strap A; of the buckle shield comprising a loop *a*, adapted to engage the tongue of the buckle, a loop *g*, connected with loop *a*, and adapted to embrace the strap A, and branches or legs *h*, connected with the loop *g* and arranged on the opposite side of the piece of harness, with respect to the loop *a*, and extending in the same general direction as said loop *a*, so as to take into the box loop of the strap B, substantially as and for the purpose set forth.

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**502,058.** HEDGE FENCE. FELIX J. TROXELL, Look Haven, Pa. Filed Nov. 25, 1892. Serial No. 453,054. (No model.)



*Claim.*—1. The herein described hedge-fence, consisting of opposite posts and an intermediate series of plants located in line and between the posts, the main rope extending from post to post and separating the plants so that a series thereof will be located at each side of the rope, said rope being taut and straight, said plants being inclined in opposite directions at opposite sides of the rope and intersecting, and spaced apart at and by the main rope, and a binding rope for securing the plants in their relative positions, upon the main rope substantially as specified.

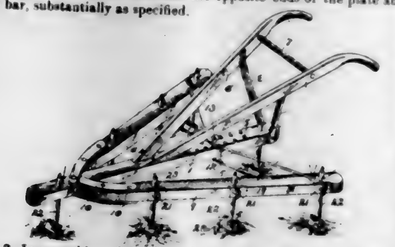
2. The herein described hedge fence consisting of opposite posts, and an intermediate series of plants located in line and between the posts, the straight main rope extending from post to post and separating the plants so that a series thereof will be located at each side of the rope, said plants being inclined in opposite directions at opposite sides of the rope and intersecting and spaced apart at and by the main rope, and a binding rope secured to the posts and embracing each plant at its point of intersection with the main or supporting rope, and at opposite sides of said point being wound in a reverse direction, substantially as specified.

3. The herein described hedge-fence consisting of opposite posts, and an intermediate series of plants located in line and between the posts, the main rope being of a waterproof material and extending from post to post and separating the plants so that a series thereof will be located at each side of the rope, said plants being inclined in opposite directions at opposite sides of the rope and intersecting, and spaced apart at and by the main rope, and a binding rope, of a waterproof material, secured to the post and embracing each plant at its point of intersection with the main or supporting rope, and at opposite sides of said point being wound in a reverse direction, substantially as specified.

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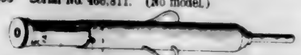
**502,059.** COMBINATION HARROW AND CULTIVATOR. EDWARD B. WEST, Simpsonville, Tex., assignor of one-half to Thomas J. Nelson, same place. Filed Jan. 21, 1893. Serial No. 458,148. (No model.)

*Claim.*—1. In a machine of the class described, the combination with a beam having front and rear tooth-seats, teeth removably seated therein, handles carried by the beam, and a series of perforations or adjusting holes formed in the beam, of opposite bars provided with teeth hinged to the opposite sides of the beam, a perforated plate arranged on the upper and lower sides of the beam, pins removably located in the perforations of the plate and taking into those of the beam, and connections between the opposite ends of the plate and the bar, substantially as specified.



2. In a machine of the class described, the combination with a bar having a vertical opening and a horizontal slot communicating therewith, of a tooth mounted in the opening, a link located in the slot and receiving the tooth and having its eye projecting beyond the outer side of the bar, and a wedge-shaped key driven between the outer side of the bar and the link, substantially as specified.

## 502,060. WATCH-KEY. IRVIN WILLIAMS, Nelson, Mo. Filed Mar. 20, 1893. Serial No. 466,811. (No model.)



*Claim.*—1. In a watch key of the character set forth, the combination of an outer barrel having a screw extending inwardly from one side thereof, an inner barrel having a groove extending longitudinally of the same engaged by the inner projecting end of said screw, and provided with a lower reduced end to form a shoulder with the teeth at the lower end of the said inner barrel, a movable cap on the upper end of said inner barrel with depending tongues having oppositely-extending shoulders, the upper end of the outer barrel having oppositely-extending lugs to engage the shoulders of said tongues, a rotatable shaft centrally mounted in the inner barrel and extending through the outer barrel and provided with a lower shoulder having teeth in the upper side thereof arranged to be engaged by the teeth at the lower end of the inner barrel, and a lifting spring for forcing the inner barrel upwardly, substantially as described.

2. In a watch key of the character set forth, the combination of an outer barrel having oppositely-extending lugs at the upper end thereof, a spring-actuated inner barrel movably mounted in the aforesaid barrel and having a rotatable cap at the upper end thereof with depending shouldered tongues arranged to engage with the lugs at the upper end of the outer barrel, and a shaft extending through the said barrels, substantially as described.

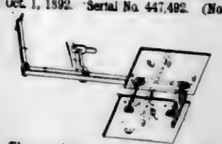
3. In a watch key of the character described, the combination of an outer barrel, an inner barrel mounted in said outer barrel and having a spiral groove on the inner surface thereof, a lifting spring mounted in the outer barrel and bearing against the inner barrel, a shaft extending through said barrels and having a key-socket at the lower end of the same and a shoulder adjacent to the upper end with teeth in the upper side thereof, a ratchet-wheel having a cam lug thereon to engage the spiral groove of the inner barrel and teeth to coact with the teeth of the said shoulder, a spring surrounding the shaft above the said ratchet-wheel, and a key extending through the upper end of the shaft to hold the spring in place, whereby the said ratchet-wheel is permitted to have a movable action on the shaft, substantially as described.

4. In a watch key of the character set forth, the combination of an outer barrel having a shoulder at the bottom thereof, an inner barrel movably mounted in said outer barrel, a lifting spring normally holding said inner barrel elevated in the outer barrel, a shaft extending through the said barrels and projecting below the lower end of the outer barrel and provided with a shoulder that bears on the shoulder of said outer barrel and also with a circumferential groove that is located adjacent to the lower terminating end of said outer barrel, said shaft being revolved by the operation of the inner barrel, and a link fitted in and surrounding said circumferential groove and arranged to bear against the lower terminating end of the outer barrel to prevent the shaft from being forced upwardly in the said latter barrel, substantially as described.

5. In a watch key of the character set forth, the combination of an outer barrel having oppositely-extending lugs at the upper end thereof and a shoulder at the lower end of the same, and also having engaging ears in the body thereof, a screw extending through the said outer barrel, a spring-actuated inner barrel movably mounted in the aforesaid barrel and having a rotatable cap at the upper end thereof with depending shouldered tongues arranged to engage the lugs at the upper end of the outer barrel and also provided with a longitudinally-disposed groove into which extends the inner end of the said screw, said inner barrel being provided with teeth at the lower end of the same, a shaft extending through said barrels having a key-socket at the lower end of the same, a shoulder near the said key-socket with teeth in the upper edge thereof, and a shoulder adjacent to the upper end also formed with teeth in its upper edge, a ratchet-wheel movably mounted on the shaft above the upper shoulder and having a cam lug arranged to engage a spiral groove in the inner barrel, a spring mounted on said shaft above said ratchet-wheel, and a key extending through said shaft above said spring, substantially as described.

6. In a watch key, the combination of an outer barrel provided with handles or loops 4, with the inner barrel guided in the outer barrel and held from rotary movement by means substantially as described, the interior surface of the inner barrel being formed with a spiral groove, the coiled spring arranged within the outer barrel and bearing against the inner barrel, and the winding-shaft passing through the outer barrel and received at its inner end within the inner barrel as and provided with a lug to engage the spiral groove, substantially described.

## 502,061. PROPELLER. RUSSELL P. AMBLER, De Funiak Springs, Fla. Filed Oct. 1, 1892. Serial No. 447,492. (No model.)



*Claim.*—1. The combination of the upright shaft A, the transverse bar B secured thereto and forming therewith an inverted cross the short arms or bars $a'$, $a'$, one above and one below the said bar B, the plates C, C, hinged to said arms or bars $a'$, $a'$, the arm D designed to be swiveled to a boat, and pivoted to the shaft and the operating arm or lever E, connected to the upper portion of said shaft, substantially as specified.

2. The combination of the upright shaft A, the transverse bar B secured to the forward face of said shaft toward the lower end thereof, the arms $a'$, $a'$ secured transversely to said shaft on the rear face thereof, one above and one below the bar B, the plates C, C, having slots therein to receive said arms $a'$, $a'$, and hinged to said arms, the stop H secured to the rear lower portion of said shaft, and the swiveled arm D to which said shaft is pivotally connected, substantially as specified.

3. The combination with the shaft A, its operating lever, bar B, arms $a'$, $a'$, and plates C, C, hinged to said arms, of the shaft G to the rear of shaft A, said shaft G also having a bar B, arms $a'$, $a'$, and plates arm or lever H' connected at its rear end to the shaft G above its fulcrum, and at its forward end to the shaft A below its fulcrum, substantially as specified.

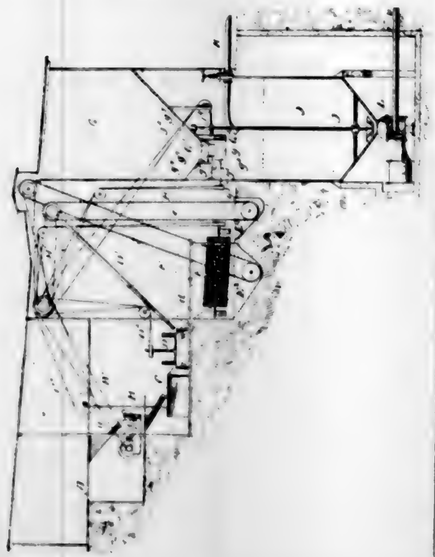
## 502,062. APPARATUS FOR PREPARING COAL FOR TRANSPORTATION. WALLACE C. ANDREWS, New York, N. Y. Filed Oct. 28, 1892. Serial No. 450,229. (No model.)

*Claim.*—1. In an apparatus for preparing coal for transportation, a pulverizer, an inclined screen, a receptacle below the screen for the fine particles, a second receptacle at the end of the screen, a hopper for receiving the pulverized coal, a conveyor arranged between the receptacle below the screen and the hopper, a conveyer extending from the receptacle at the end of the screen, and a conduit from the conveyer to the pulverizer, substantially as described.

2. An apparatus for preparing coal for transportation, comprising a pulverizer, a hopper for receiving the pulverized material, means for conveying the pulverized substance to the hopper, a mixing chamber arranged adjacent to the hopper, and a water inlet entering the mixing chamber, substantially as described.

3. In an apparatus for preparing coal for transportation, comprising a pulverizer, a hopper for receiving the pulverized substance, a movable spout attached to the hopper, means for shaking the spout, a mixing chamber arranged below the hopper, a water inlet leading to the mixing chamber, and an agitator in the mixing chamber, substantially as described.

4. In an apparatus for preparing coal for transportation, a pulverizer, a hopper for receiving the pulverized substance, a movable spout having a projection, a screw-conveyer arranged adjacent to and communicating with the spout, the shaft of the conveyer being provided with a projection designed to engage the projection from the spout, and a mixing chamber, substantially as described.



5. In an apparatus for preparing coal for transportation, a breaker whereby the coal is reduced, a washer whereby foreign matter is separated from the coal, a pulverizer, an inclined screen connected with the pulverizer, a receptacle below the screen for the fine particles, and a second receptacle at the end of the screen for the coarser particles, a hopper for receiving the pulverized coal, a conveyer between the hopper and the receptacle for receiving the fine particles, a conveyer extending from the receptacle at the end of the screen, and a conduit connecting the conveyer and the pulverizer, substantially as described.

6. In an apparatus for preparing coal for transportation, a breaker whereby the coal is reduced, a washer by which foreign matter is separated from the substance, a pulverizer, an inclined screen adjacent to the pulverizer, a receptacle below the screen for receiving the fine particles, a hopper for receiving the pulverized coal, a conveyer extending from the receptacle below the screen to the hopper, a movable spout attached to the hopper, a conveyer arranged below the movable spout, the spout being provided with a projection, and the shaft of the conveyer also being provided with a projection, a mixing chamber, a water inlet into the mixing chamber, an agitator within the mixing chamber, and a pump connected with the mixing chamber, substantially as described.

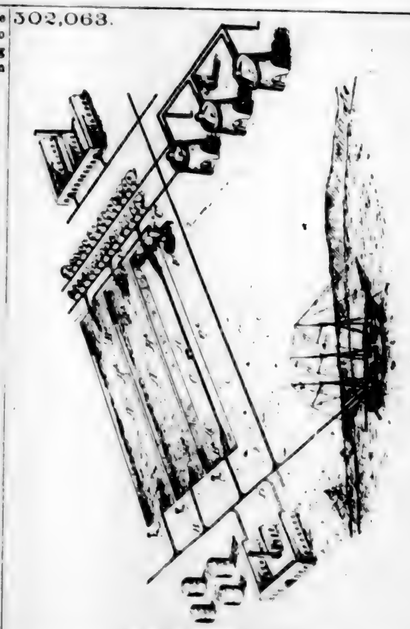
## 502,063. SETTLING OR STORAGE POND OR BASIN FOR PULVERIZED COAL. WALLACE C. ANDREWS, New York, N. Y. Filed Oct. 28, 1892. Serial No. 450,230. (No model.)

*Claim.*—1 The means of providing for the storage and settling of pulverized coal, suspended in water, which consists in a suitable number of settling ponds or basins arranged in close proximity and connected with each other, each pond or basin being provided with an inlet and an outlet and having in it a railway track, substantially as described.

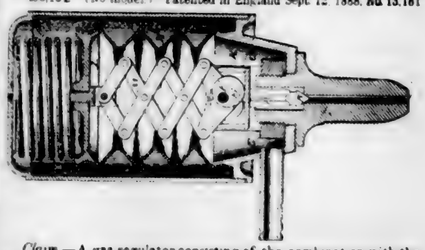
2 The means of providing for the storage and settling of pulverized coal, suspended in water, consisting of settling ponds or basins arranged in close proximity, inlet pipes through which the powdered coal mixed with water is supplied, outlets near the tops of the ponds or basins, weirs placed in the walls separating the ponds or basins and regulating the outlets, a pump for drawing the water from the ponds or basins, and tracks leading along the bottoms of the ponds or basins, substantially as described.



## 502,063.

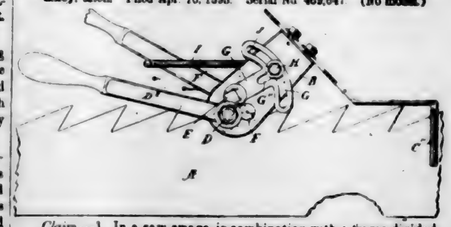


## 502,064. GAS REGULATOR OR GOVERNOR. ROBERT R. BEARD, London, England. Filed Jan. 31, 1890. Renewed Oct. 28, 1892. Serial No. 450,194. (No model.) Patented in England Sept. 12, 1888, No. 13,161.



*Claim.*—A gas regulator consisting of the combination with the cover N casing K and tube A of the cap L flexible tube H secured at one end to the cap and at the other end to the casing, spring O within the cover and bearing upon the cap, frame D carrying a valve which is located within the tube and the levers M secured at one end to the cap and at the other end provided with eccentrics operating within the frame D all substantially as described.

## 502,065. SAW-SWAGE. ALBERT E. BRONSON and DANIEL CHUBB, Lilley, Mich. Filed Apr. 10, 1893. Serial No. 469,647. (No model.)



*Claim.*—1. In a saw swage, in combination with a frame divided in a vertical plane, a reversible anvil and die, consisting of cylindrical steel pins, having oppositely projecting ends provided with holding and operating mechanism, and having their middle portions sub-

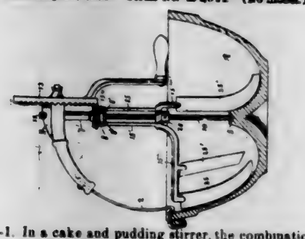
stantially oval in cross section, and each having opposite obtuse angles, E", E", and F", F", respectively, whereby said pins may be taken out and reversed in said frame, and operated at four different portions of their respective surfaces, substantially as described.

2. In a saw swage, the combination with the frame and clamping jaws, of an anvil and die, an adjustable lever, having in one end an open-ended slot engaging an angular portion of said anvil, said lever having in its upper end a curved slot and a supplemental slot extending at an angle with and opening at one end into said curved slot, and a set screw designed to pass through either said curved or supplemental slot, and serving to keep the lever in its adjusted position, substantially as described.

3. A saw swage, consisting of a frame, divided in a vertical plane, a reversible anvil and die, having their adjacent portions substantially oval in cross-section and each having a plurality of opposite obtuse angles, whereby said anvil and die may be operated at four different portions of their respective surfaces; a lever, detachably secured to the outer end of said anvil, said lever having in its upper end a curved slot and a supplemental slot opening into said curved slot; a set-screw designed to engage the frame and pass through either said curved or supplemental slots in the lever, a clamp; a lever on the end of the movable member of the clamp, for operating the same; an operating lever on the end of said die, a stop adjustably secured to the frame and designed to engage said last-mentioned lever; and a guide bar, removably and adjustably secured to the frame and designed to engage the saw being swaged, substantially as described.

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**502,066.** CAKE OR PUDDING STIRRER. ANNABELL C. BULL, Peoria, Ill. Filed May 31, 1892. Serial No. 434,844. (No model.)

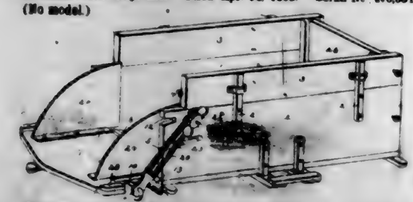


*Claim.*—1. In a cake and pudding stirrer, the combination with the frame consisting of the vertical rod 10, the angle piece 7, 7' and the flexible arm 2, adapted to engage with a lug on the edge of the vessel in which it is used, of the revoluble rack driven by suitable gearing and the laterally extending arm 15", having the depending twisted blades 25, 25' and depending finger 15"', provided with attached curved blade 25" integral therewith, all substantially as described and set forth.

2. In a cake and pudding stirrer, the combination with the receptacle A, formed with the lug 3, and raised central portion, the stirring device consisting of the blades 25—25'—25", the rack 15—15' provided with the laterally extending arm 15", and depending finger 15"' the blades 25—25'—25" adjusted thereon, the perpendicular rod 10, bearing within the depression 5 in the raised portion of the receptacle, the beveled pinion 8, carried with the rack 15—15', upon rod 10 the said rod being provided with the collar 20, adjustably connected therewith to hold the rack in position, the frame piece 7 having sleeve 7' and provided with the flexible hooked arm 2, and recessed raised portion 9, and the beveled gear wheel 13, journaled upon a projection from the frame piece 7, and provided with suitable crank arm, all substantially as described and set forth.

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**502,067.** COMBINED END-GATE AND SCOOP-BOARD. WILLIAM H. CLARK, Star City, Ind. Filed Apr. 14, 1893. Serial No. 470,351. (No model.)



*Claim.*—1. In a device of the class described, the combination with a wagon body, of a cleat mounted on the bottom thereof, an end hinged at its lower edge to said cleat, adjustable hangers movably connected to the opposite sides of said end, catches secured to the body, a catch-bar attached to the said end, and latches pivotally connected to the said catch bar and adapted to engage the said catches, substantially as described.

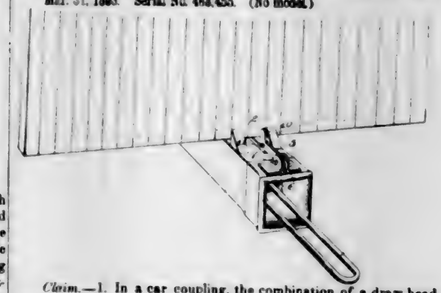
2. In a device of the class described, the combination with a wagon body, of an end hinged thereto, catches connected to said body, a catch bar attached to said end and having openings in the opposite ends of the same through which said catches pass, and latches pivotally connected to said catch bar and having shouldered ends to engage said catches, substantially as described.

3. In a device of the class described, the combination with an end having metallic guards to form therewith a scoop board, of hooks projecting from opposite sides thereof, elongated slotted hangers having eyes therein to engage the said hooks and formed with roughened surfaces, clamping devices also roughened and arranged to engage the said hangers, and securing devices for holding the said end in closed position and coacting with the wagon body, substantially as described.

4. In a device of the class described, the combination with a wagon body, of a cleat secured to one end of the bottom thereof, an end hinged to said cleat above the bottom, hooks projecting from the opposite sides of said end, elongated slotted hangers having eyes engaging said hooks and provided with roughened surfaces, clamping devices with roughened surfaces engaging said hangers, a catch bar attached to the said end and having openings in the opposite ends of the same, catches secured to the said body and arranged to project through the said openings of the catch bar, and latches pivotally connected at their inner ends to the said catch bar and arranged to have their outer ends engage the said catches, substantially as described.

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**502,068.** CAR-COUPLING. JOHN F. DAVIDSON, Edgerly, La. Filed Mar. 31, 1893. Serial No. 468,455. (No model.)

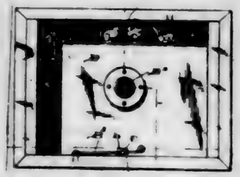


*Claim.*—1. In a car coupling, the combination of a draw-head provided in its top and bottom with slots, an L-shaped catch having one arm arranged at the top of the draw-head and hinged thereto and its other arm extending downward into said slots, and a link provided at one end with a pair of upwardly and outwardly extending arms having a space between them and adapted to engage the top wall of the opening of a draw-head to maintain the link against sagging, substantially as described.

2. In a car coupling, a link provided at one end with a pair of upwardly extending arms adapted to engage the top wall of the draw-head and having a space between them, substantially as described.

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**502,069.** PIANO-STOOL. JOHN DIEKDORF, Indianapolis, Ind. Filed July 26, 1892. Serial No. 441,237. (No model.)

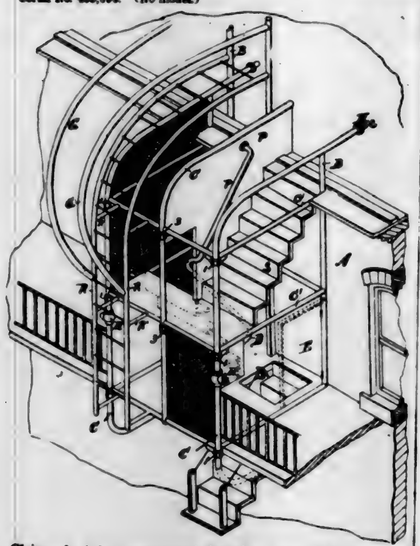


*Claim.*—The combination, in a piano stool, of a top, and an upholstered portion or seat having projections extending down through openings in said top to underneath the same, and there bent up into the form of hooks, and two spring catches attached to said top one to each side of the frame thereof, the point of attachment of one being to the right and the other to the left of the projection, and which engage with said hook portions.

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**502,070.** FIRE-ESCAPE. FRANK J. FAIRCHILD, Saginaw, Mich., assignor of one-half to James J. Wall, same place. Filed Mar. 13, 1893. Serial No. 465,699. (No model.)



*Claim.*—1. A fire escape consisting of the pieces B B secured to the wall, the hose pipes C C provided with hose coupling at each story and on top and bottom, braces C' C' staying pipes C C to wall pieces B B, the partition P, the series of right and left stairs on each side of the partition, extending from and to the building, and the railing D and a covering for the escape, substantially as described, and as and for the purpose set forth.

2. In a fire escape, the combination with the frame of the escape consisting of wall pieces B B B and hose pipes C C C properly stayed and braced, of the stairs S S arranged in flights each flight S comprising a series of steps made in one piece, each flight being secured to the wall pieces and pipes by brackets, one flight being secured so as to extend from the wall outward, another from the outer wall of the escape inward, and located at the side of the first flight, the next flight secured at a proper distance under the first flight in the same manner, and so on from story to story, and the partitions P between the flights, with an opening at each landing, and the railing, substantially as described and as and for the purpose set forth.

3. In a fire escape, the combination with the wall supports for the escape, of hose pipes forming outer corners of the frame work of the escape, clasps 3 provided with one or more lugs secured to the pipes and to which the stays and braces and stairs are secured, the braces, the series of stairs, and the railing, substantially as described, and as and for the purpose set forth.

4. A clasp C consisting of a piece of band iron bent into a band with ends bent outward and provided with corresponding holes for securing a bolt, and the bolt 3' passing through the hole, and the nut whereby when the nut is tightened the band is tightened to the pipe, and one or more lugs extending horizontally forming a bracket, substantially as described, and as and for the purpose set forth.

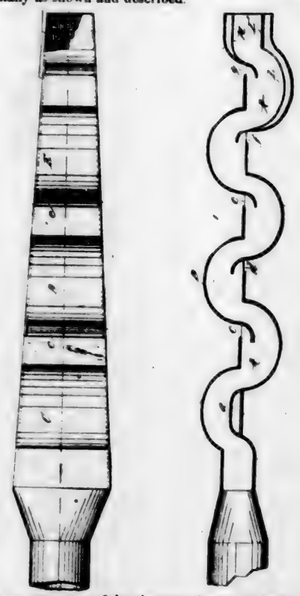
5. In a fire escape, the combination with the wall pieces B B, the hose pipes C C, the connecting braces B' B', brackets 1, 2, 3, couplings H H, of a series of flights of stairs, each series being in one piece and arranged as described, the partition P, the railing B, folding ladder S' from ground to top of first story, and the fireman's ladder R, substantially as described, and as and for the purpose set forth.

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**502,071.** DUST COLLECTOR AND SEPARATOR. MOSES F. GALE, Brooklyn, N. Y. Filed Feb. 11, 1893. Serial No. 461,899. (No model.)

*Claim.*—1. In an apparatus of the character herein set forth, the oppositely disposed curved sections following one after the other leaving air outlets between adjacent sections, each section following an air outlet being smaller than the preceding section the margin of one section extending inwardly beyond that of the one preceding it, substantially as shown and described.

2. In an apparatus of the character herein set forth, the oppositely disposed curved sections following one after the other leaving air outlets between adjacent sections, the inwardly projecting margins in advance of the air outlets, and the side plates contracted from the inlet toward the outlet, the parts being arranged and combined substantially as shown and described.

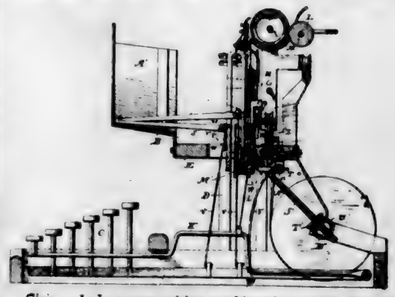


3. In an apparatus of the character herein set forth, the curved sections with air outlets between them and the side plates inclosing a channel for the passage of the dust laden blast, the channel being enlarged at points opposite each air outlet, the curved sections having margins extended into the enlarged portions of the channel, the parts being combined and arranged substantially as shown and described.

4. The herein described apparatus consisting of the oppositely disposed and gradually contracted curved sections leaving air outlets between them, the upper and lower nettings or perforated pieces and the imperforate partition located in one section of the apparatus, the parts being combined and arranged to separate the dust into three streams, substantially in the manner and for the purposes set forth.

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**502,072.** TYPE-WRITING MACHINE. JOHN A. GARNER, Kansas City, Mo. Filed Sept. 21, 1892. Serial No. 446,431. (No model.)



*Claim.*—1. In a type-writing machine, the combination with an impact-roller, of a vertically movable type-guide, comprising a sliding arm provided with a guide-opening, a guide in which said arm operates, key-bar connected to said arm, and spring to normally hold it in its raised position, and the type bars pivotally mounted in position to strike through the said guide-opening, substantially as specified.

2. In a type-writing machine, the combination with an impact-roller of a guide, a spring-elevated slide mounted in said guide and having a ribbon guide attached thereto, and means to depress said slide, substantially as specified.

3. In a type-writing machine, the combination with a platen, ribbon-rolls, and means to operate the same, of a ribbon-guide comprising duplicate parallel spring plates fitted at their outer ends in guides E" adjacent to the ribbon rolls and provided at the center of the impact-roller with an opening, and means whereby said guide may be depressed at its center, substantially as specified.

4. In a type-writing machine, the combination of the feed-mechanism having rack-bars, a pivoted guide adapted to oscillate in a plane perpendicular to the rack-bars, a pawl-bearing slide mounted for reciprocation in said guide, a line-spacing lever and means for operating the platen thereby, and connections between the lever and said pivoted guide, substantially as specified.

5. In a type-writing machine, the combination of the feed-mechanism for the carriage, having a pivoted guide, a pawl-bearing slide mounted in said guide, to engage the rack-bars, a rock shaft connected to said guide, and the line-spacing mechanism having a lever which is connected to said rock-shaft, whereby when the line-spacing lever is operated the pawls of the feed-mechanism are thrown out of engagement with the rack-bars, substantially as specified.

6. In a type-writing machine, the combination with the carriage, the spring-actuated shaft carrying a drum connected to said carriage, and the ribbon rolls, of a rotary-rod provided at its ends with gears to engage corresponding gears on the ribbon-rolls and carrying a worm-gear, and a worm-shaft meshing with said worm-gear and geared at one end to the shaft of the drum, substantially as specified.

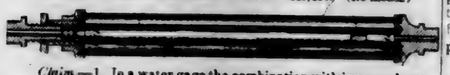
7. In a type-writing machine, the combination of the feed-mechanism having relatively movable rack-bars, a pivoted guide adapted to oscillate in a plane perpendicular to the rack-bars, a pawl-bearing slide mounted for reciprocation in said guide, key levers, and connections between the key levers and said slide, a line-spacing lever and means for operating the platen thereby, a trip-bar J arranged horizontally in operative relation to the pivoted guide, and connections between the line-spacing lever and said trip-bar, substantially as specified.

8. In a type-writing machine, the feed-mechanism for the carriage having a stationary rack-bar, a sliding rack bar, the slide carrying the pawls to engage said rack-bars, and the thumb-screws mounted in the ends of the stationary rack-bar, to engage opposite ends of the sliding-rack-bar, all substantially as specified.

9. In a type-writing machine, the combination with a suitable frame having guides, a carriage, and pawl and ratchet feed mechanism, of a spring actuated drum, a tension belt connecting the carriage to said drum, ribbon spools a transverse shaft P geared to said spools and carrying a worm-gear, a worm-shaft having a worm which meshes permanently with said worm gear, and gearing between the worm-shaft and the shaft of the drum, and connected to the latter by a ratchet coupling, substantially as specified

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**502,073. WATER-GAGE.** FREDERICK H. HAUSMAN, San Francisco, Cal. Filed Oct. 19, 1892. Serial No. 449,407. (No model.)



*Claim.*—1. In a water gage the combination with inner and outer gage glasses of a seating plate having annular grooves to receive the lower ends of the glasses, together with collars movable vertically upon a steam pin and having grooves with which to hold said glasses in an upright position, substantially as and for the purpose described.

2. In a water gage the combination with a gage glass, of a seating plate provided with an annular groove to receive the lower end of the glass, together with a gasket, of substantially double U shape in cross section adapted to fit between said groove and glass to effect a tight joint, substantially as and for the purpose described.

3. In a water gage the combination with a gage glass, of a seating plate provided with an annular groove to receive the lower end of the glass, together with a gasket, of substantially double U shape in cross section adapted to fit between said groove and glass to effect a tight joint, the said groove being provided with a nick or recess having sharp edges which will embed themselves in the gasket, substantially as and for the purpose described.

4. In a water gage the combination with a tubular glass and seating therefor of a gasket of substantially double U shape in cross section, the glass end fitting within the annular chamber formed by the gasket by its aforesaid peculiar construction, substantially as and for the purpose described.

5. In a water gage the combination with a gage glass and a collar having an annular groove fitting over the upper end of said glass, of a vertically adjustable steam pin adapted to enter the glass end, and a gasket fitting between the glass end and the collar to effect a tight joint, substantially as and for the purpose described.

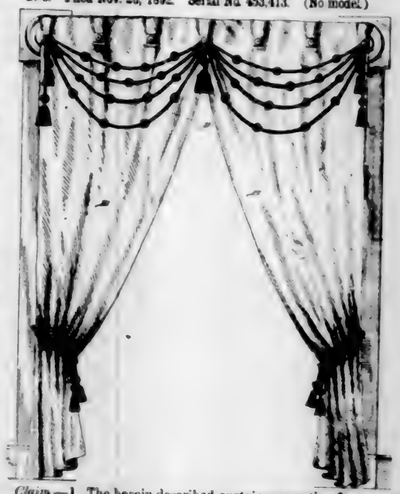
6. In a water gage the combination with inner and outer glasses of a collar screwed upon a central support and having a groove to receive the upper end of the inner glass, together with an outer collar of larger diameter, placed over and vertically slidable upon the inner collar said outer collar having a groove to receive the upper end of the outer glass to hold same in a vertical position, substantially as and for the purpose described.

7. In a water gage the combination with inner and outer gage glasses of inner and outer collars having grooves adapted to fit over the ends of the gage glasses, the said outer collar being slidably mounted over the inner collar and adapted to be raised upwardly either independently or by the action of the inner collar, together with a hand wheel fitted to the inner collar and adapted to raise the collars when revolved, substantially as and for the purpose described.

8. The combination with a water gage of a float formed of cork or other suitable material having a wire passed through it, the ends of said wire being bent outwardly to form a support to rest upon the seating plate, substantially as and for the purposes set forth.

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**502,074. CURTAIN-FIXTURE.** ALBERT W. HERR, Washington, D. C. Filed Nov. 28, 1892. Serial No. 453,413. (No model.)



*Claim.*—1. The herein described curtain-supporting fixture comprising a suitable series of upright blocks or supports around which the curtain or drapery can be draped in plaits or folds, and means for securing or clasping the curtain or drapery to the blocks or supports, as set forth

2. A curtain-supporting fixture comprising the combination of a suitable upright block and a suitable clamp adapted to clasp a curtain or drapery and form and maintain it in plaits or folds, one of said parts being provided with means for attaching it to a door or window frame, substantially as set forth.

3. A curtain fixture comprising the combination of a vertical block or support from which a curtain or drapery can be draped, and a suitable clamp engaging the block or support and adapted to clasp the curtain thereto and project into the folds of the curtain and form and maintain it in plaits or folds, substantially as and for the purpose herein set forth.

4. A curtain fixture comprising a substantially cylindrical vertical block or support from which the curtain can be draped, and a suitable spring clamp adapted to engage the cylindrical block or support and clasp the curtain thereto, and form and maintain it in plaits or folds substantially as set forth.

5. A curtain fixture comprising a substantially cylindrical block or support having a flaring head projecting therefrom, and adapted to rest in a vertical position in combination with a suitable spring clamp adapted to engage therewith and clasp the curtain thereon, and form and maintain it in folds substantially as set forth.

6. A curtain-supporting fixture comprising a suitable block or support from which the curtain or drapery can be hung, a flange or beading around the bottom of said block or support for preventing the slipping of the curtain thereon, and a suitable clamp adapted to to clasp the curtain to the support, as set forth.

7. A curtain-supporting bracket formed with a substantially cylindrical portion around which the curtain can be draped, and an annular beading at the bottom of the cylindrical portion for preventing the curtain from slipping, in combination with a suitable clamp



adapted to engage the cylindrical head and hold the curtain thereon, substantially as set forth.

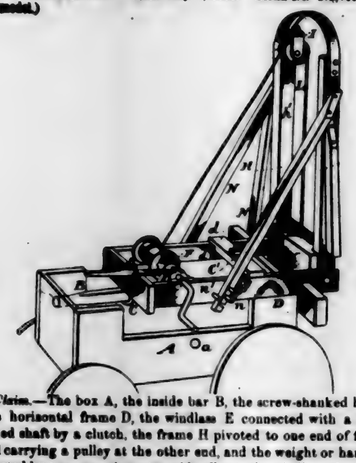
8. The combination of the bracket arm E, the cylindrical head secured thereto, means for securing the bracket arm to a door frame, and a spring clamp adapted to engage the cylindrical head, substantially as set forth.

9. The combination of the curtain-supporting bracket comprising essentially a cylindrical head, with a spring clamp adapted to engage the cylindrical head and clasp the drapery thereto, and a button attached to the spring clamp and adapted to support an over-drapery, substantially as set forth.

10. The combination of a series of substantially cylindrical blocks or supports attached to a window or door frame in an upright position, a curtain or drapery plaited or folded around said blocks or supports, and spring-clamps engaging said curtain and blocks and projecting into the folds of the curtain for maintaining the folds, substantially as described.

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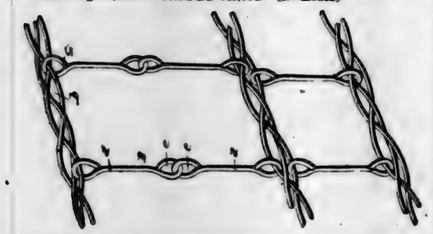
**502,075. POST-DRIVER.** JOHN H. HOGE, Civil District No. 16, Union County, Tenn. Filed May 2, 1893. Serial No. 472,760. (No model.)



*Claim.*—The box A, the inside bar B, the screw-shanked hooks C, the horizontal frame D, the windlass E connected with a hand cranked shaft by a clutch, the frame H pivoted to one end of frame D and carrying a pulley at the other end, and the weight or hammer connected by a rope passing over said pulley to the windlass, the frame H being provided with notched adjustable braces as and for the purpose set forth.

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**502,076. WIRE FENCE.** ISAAC K. HOLLINGER, Covington, Ohio. Filed Aug. 22, 1892. Serial No. 443,691. (No model.)

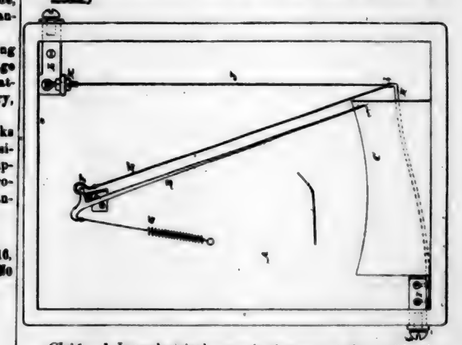


*Claim.*—1. A wire fence, substantially as described, comprising a series of runners respectively formed of a plurality of braided strands, and stays for connecting the runners and strengthening the fence; the said stays being provided at their opposite ends with hooks or eyes adapted to engage one or more of the strands of the runners and be prevented from movement by the intersecting strands, substantially as and for the purpose set forth.

2. A wire fence, substantially as described, comprising a series of runners respectively formed of a plurality of braided strands, and stays for connecting the runners; the said stays respectively comprising the sections *d*, having the interlocked eyes *e*, and the hooks or eyes *c*, adapted to engage one or more of the strands of the runners and be prevented from movement by the intersecting strands in the manner set forth.

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**502,077. ELECTRICAL MEASURING-INSTRUMENT.** RUDOLPH M. HUPTER, Philadelphia, Pa., assignor to the Thomson-Houston Electric Company, of Connecticut. Filed Mar. 28, 1892. Serial No. 427,089. (No model.)



*Claim.*—1. In an electrical measuring instrument, the combination of a movable pointer, an expansion wire through which an electric current passes, a spring connecting with one end of the expansion wire to move it when expanded, and a connecting wire also operated by the said spring and connecting with the pointer whereby the latter is moved in accordance with variations in the length of the expansion wire.

2. In an electrical measuring instrument, the combination of a movable pointer, an expansion wire through which an electric current passes, a spring connecting with one end of the expansion wire to move it when expanded, a connecting wire also operated by the said spring and connecting with the pointer whereby the latter is moved in accordance with variations in the length of the expansion wire, and means to adjust the expansion wire.

3. In an electrical measuring instrument, the combination of a movable pointer, an expansion wire over which the electric current to be measured passes, a spring connecting with one end of the expansion wire for keeping it under tension, a mechanical connection between said spring and the movable pointer over which no current passes to cause the pointer to move under any movement of the spring.

4. In an electrical measuring instrument the combination of a movable pointer, an expansion wire over which the electric current to be measured passes, a spring connecting with one end of the expansion wire for keeping it under tension, a mechanical connection between said spring and the movable pointer over which no current passes to cause the pointer to move under any movement of the spring, and means to adjust the position of the end of the spring which connects with the expansion wire whereby the pointer may be adjusted.

5. In an electrical measuring instrument, the combination of a dial plate, a movable pointer adapted to move over the dial plate, a spring or weight to oppose the movement of the pointer, an expansion wire maintained under tension, and over which an electric current to be measured is passed, a spring to maintain the said expansion wire under tension, and a mechanical connection between the said spring and the movable pointer whereby when the expansion wire expands the spring connecting therewith shall move the pointer in opposition to the first mentioned spring.

6. In an instrument for measuring electric currents, the combination of an expansible body over which the electric current to be measured passes, a spring to keep the expansible body under tension, a movable pointer, and a compensating mechanical connection over which no current passes between the pointer and expansible body, whereby the pointer will not move for variations in temperature of the surrounding atmosphere.

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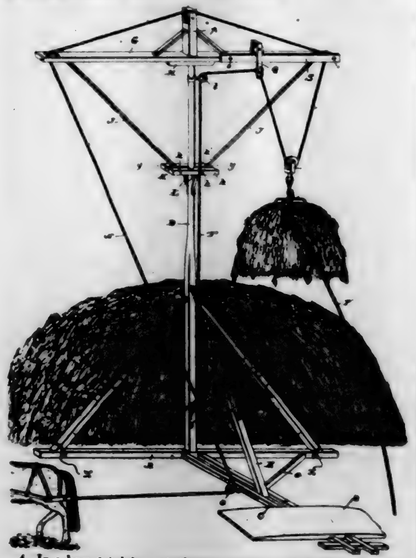
**502,078. HAY-DERRICK.** JACOB F. HUTCHINSON, Basalt, Idaho. Filed Jan. 16, 1893. Serial No. 458,498. (No model.)

*Claim.*—1. In a derrick, the ground sill, ground timbers secured to and extended from one side only of the sill and having at a point near their outer ends a weight platform, a braced mast or pole arising from the ground sill at right angles thereto and adapted to lie close to the point of stack, a swinging frame pivotally supported on the upper end of the mast or pole, and having rope pulleys, and a hoisting rope arranged over said pulleys, substantially as set forth.

2. In a hay derrick, the combination of a stationary mast or pole having a pivot pin or stud at its upper end, adjustable braces, for said mast or pole, extended ground timbers carrying near their outer extremities a weight platform, a swinging frame having a removable bearing plate attached to its under side and resting on said

pivot pin or stud, and a turning collar loosely embracing the mast or pole, and hoisting devices, substantially as set forth.

3. In a hay derrick, the combination of the ground sill, ground timbers secured to and extended from one side of the sill, a weight platform arranged near the outer ends of said timbers, a stationary mast secured at its lower end to the sill, sectional adjustable braces D loosely connected to the mast and removably to the sill near its ends and comprising separate members having their meeting ends adjustably connected, a similar sectional adjustable brace attached to one side of the mast and to the ground timbers, a swinging frame balanced on the mast, and adjustable hoisting devices arranged on said swinging frame, substantially as set forth



4. In a hay derrick, a stationary mast or pole having a pivot pin or stud at its upper end, a horizontal swinging derrick arm, a recessed block removably clamped to the center under-side of said arm and having a central perforation, a metallic bearing plate fitting the recess of the block and clamped thereby to the arm, said bearing plate having a socket adapted to receive the point of the pivot pin or stud which projects through the perforation in said block, a sectional brace collar loosely embracing the mast or pole, braces connecting said collar and opposite portions of the swinging derrick arm, roller supports for the collar, and adjustable rope devices arranged on the swinging arm, substantially as set forth.

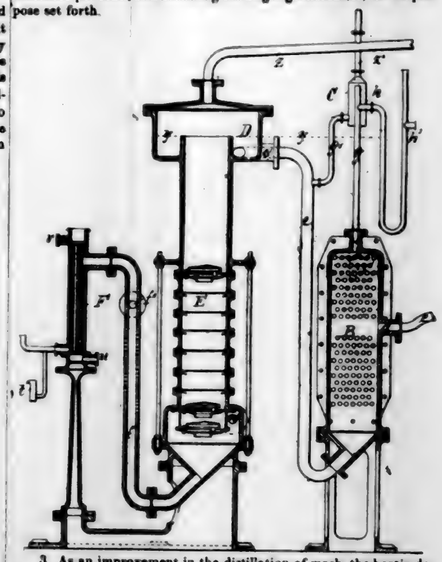
5. The combination of a stationary mast or pole, a horizontal balance derrick arm pivotally supported on said mast or pole, a track removably bolted to one side of said arm, a traveler moving on said track, means for adjusting said traveler, rope pulleys arranged in opposite ends of the swinging arm, an intermediate pulley supported above the center of said arm, an adjustably arranged ground pulley, and the combined fork-hoisting and derrick arm-turning rope, arranged over the several pulleys and connected at one end to the adjustable traveler, substantially as set forth.

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**502,079. DISTILLING MASH.** ROBERT ILGE, Cologne-Bayenthal, Germany. Filed Oct. 11, 1892. Serial No. 448,567. (No model.) Patented in Germany Feb. 13, 1889, No. 48,343, June 3, 1890, No. 54,606, and Oct. 29, 1890, No. 60,389; in Austria-Hungary Dec. 20, 1891, No. 41,556 and No. 73,555, and in Russia May 1, 1892, No. 5,314.

*Claim.*—1. As an improvement in the distillation of mash, the herein described process for separating the fusel-oil from the singlings proceeding from the rectificator of a mash distilling apparatus, consisting in boiling said singlings at a constant temperature, which corresponds to the volumetrical proportion of alcohol and to the pressure within the distilling apparatus, and in cooling the boiling singlings thereafter for the purpose set forth.

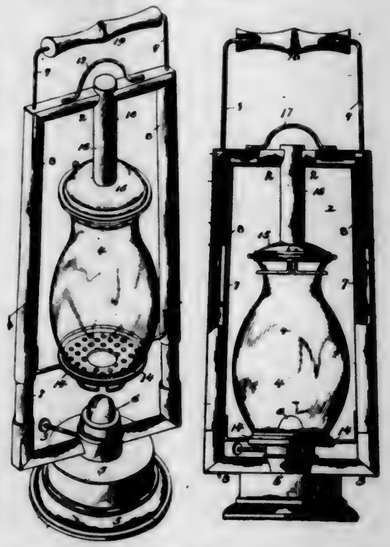
2. As an improvement in the distillation of mash, the herein described process for separating the fusel-oil from the singlings proceeding from the rectificator of a mash distilling apparatus, which consists in keeping the said singlings at a constant boiling temperature corresponding to a volumetrical proportion of alcohol somewhat exceeding seventeen per cent., and in cooling the singlings thereafter, for the purpose set forth.



3. As an improvement in the distillation of mash, the herein described process for separating the fusel-oil from the singlings proceeding from the rectificator of a mash distilling apparatus, which consists in keeping the said singlings at a constant boiling temperature corresponding to a volumetrical proportion of alcohol somewhat exceeding seventeen per cent., and in cooling the singlings thereafter, and in utilizing the inferior specific weight of the fusel-oil for separating and drawing it off in a continuous manner, substantially as and for the purpose described.

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**502,080. LANTERN.** EDSON O. KEEP, Lincoln, Me. Filed Mar 11, 1893. Serial No. 465,583. (No model.)



*Claim.*—1. In a tubular lantern, the combination of a tubular main frame composed of telescoping upper and lower portions slidingly mounted on each other, a reservoir supporting the lower portion and having a burner, a globe carried by the upper portion, vertical rods extending upward from the lower portion of the tubular main frame through the upper portion and above the same, a handle connected to the upper ends of the rods, and spiral springs disposed on the rods and arranged within the upper portion of the tubular main frame and having their upper ends engaging the rods and their lower ends engaging the upper portion of the tubular main frame, substantially as for the purpose described.

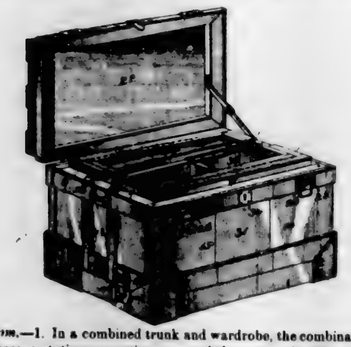
2. In a tubular lantern, the combination of a tubular main frame composed of telescoping upper and lower portions slidingly mounted on each other, the upper portion being provided at the top with a handle, vertical rods secured to the lower portion and extending through the upper portion and having their upper ends bent inward to form journals, a handle receiving the journals and connecting the upper ends of the rods, and spiral springs disposed on the rods and having their lower ends engaging the upper portion of the tubular main frame to force the same downward, substantially as described.

3. In a tubular lantern, the combination of a tubular main frame composed of telescoping upper and lower portions slidingly mounted on each other, the upper portion being provided at the top with a handle, and being provided within its side tubes with projections 13, verdical rods arranged within, secured to, and extending upward from the sides of the lower portion of the tubular main frame and extending through the upper portion and provided near their upper ends with annular flanges 12, a handle connecting the upper ends of the rods, and spiral springs disposed on the rods and bearing against the flanges 12 and the projections 13, substantially as described.



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**502,081. COMBINED TRUNK AND WARDROBE.** JACOB C. KERN, Wilkes-Barre, Pa. Filed Jan. 21, 1893. Serial No. 459,185. (No model.)



*Claim.*—1. In a combined trunk and wardrobe, the combination with a base, a stationary section mounted thereon, and smaller than the base, thereby forming a surrounding surface of the base and an intermediate and external section, and an upper external section telescopically connected and mounted on the surrounding section, the upper two sections being provided with aligning door-openings, sliding doors loosely connected together and mounted in said openings, and adapted to fall vertically and rest upon the surrounding space of the base of devices for locking the trunk sections in a collapsed or distended position, substantially as specified.

2. In a combined trunk and wardrobe, the combination with a rectangular base provided with angle plates at its corners, and a plurality of telescoping trunk-sections, the inner one of which is secured to the base and the outer section of which is adapted to be inclosed by said angle-plates, of a cover for the outer section, means for locking the cover, lugs on the lower end of the outer section, and swinging bails secured to the ends of the base and adapted to engage with the lugs, substantially as specified.

3. In a combined trunk and wardrobe, the combination with a base, the stationary section mounted on the base and having its front wall provided with a groove, the intermediate section mounted on the lower section and having its front wall throughout its length provided with a vertical opening having ways, the external section mounted on the intermediate section, and having its front wall throughout its depth provided with an opening having ways, a door-section mounted in the opening of the intermediate trunk-section, headed-studs mounted on the outer face of the door-section and upon the inner face of said section the whole engaging with grooves in the front wall of the lower section, an upper door-section having grooves upon its inner face for receiving the outer headed-studs of the first-mentioned section and mounted for movement in the door-opening of the external section, of means for locking the door-section and trunk sections, substantially as specified.

4. In a combined trunk and wardrobe, the combination with a base, a plurality of sections mounted on the base, and holes formed in the lower wall of the upper section, of a cleat, hooks extending from the cleat, and pins extending inwardly from the cleat and removably engaging the holes, substantially as specified.

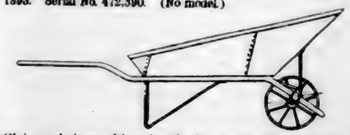
5. In a combined trunk and wardrobe, the combination with a plurality of sections telescopically connected the inner section being provided at the upper edge of its end walls with short vertical grooves and below the same near its bottom with transverse cleats, of a tray of less length and adapted to fit loosely within said inner sections, the said tray being provided at its ends with slits, L-shaped plates mounted loosely in the slits and engaging the shallow recesses in the end walls of the inner trunk section and adapted to be disengaged therefrom whereby the tray may be lowered upon the cleat, substantially as specified.

6. In a combined trunk and wardrobe, the combination with a series of telescoping sections, means for locking the same in a distended or collapsed position, of a tray of less depth than and adapted to fit within the inner section, and means for supporting the same at the upper or lower end of said section, substantially as specified.

7. In a combined trunk and wardrobe, the combination with a series of telescopically connected trunk-sections, each section, except the external, having its walls provided with pairs of upper and lower openings, of a series of spring-strips secured to the external walls of the sections, with the exception of the inner one, and terminating at their lower ends in bolts extending through holes in their respective trunk-sections and engaging the holes of the section below, substantially as specified.

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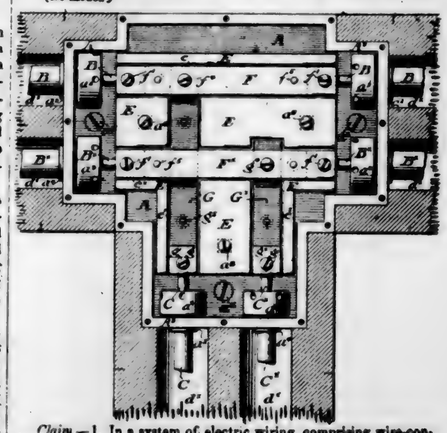
**502,082. JOURNAL FOR BARROWS.** ALBERT E. MOREY, Akron, Ohio, assignor to the Akron Tool Company, same place. Filed Apr. 29, 1893. Serial No. 472,390. (No model.)



*Claim.*—A journal bearing for barrows consisting of a clip perforated to receive the shaft and provided with two embracing arms arranged to be clamped around the frame of the barrow substantially as shown and described and for the purpose set forth.

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**502,083. JUNCTION-BOX.** EDWARD J. MCEVOY, New York, N. Y., assignor of one-half to the William Cramp & Sons Ship and Engine Building Company, Philadelphia, Pa. Filed Jan. 3, 1893. Serial No. 457,066. (No model.)



*Claim.*—1. In a system of electric wiring, comprising wire-containing moldings and a junction box,—a joint between the junction box and a molding, formed by a relative counterpart overlap of the box and molding, substantially as set forth.

2. In a system of electric wiring comprising wire-containing moldings and a junction box,—a joint between a junction box and a molding, formed by the combination of a box formed with a lateral exten-

sion with a molding provided with an end recess conformed to said extension, substantially as set forth.

3. In a junction box formed with lateral extensions of its body portion, substantially as and for the purposes set forth.

4. A junction box formed with lateral extensions of its body portion, in combination with moldings formed with end recesses adapted to said extensions, substantially as and for the purposes set forth.

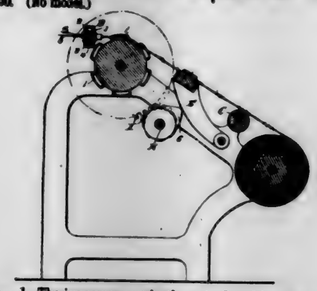
5. In combination with a junction box having lateral apertures for the entrance of electric conductors, a base-block provided with intersecting channels of relatively different depths, substantially as and for the purposes set forth.

6. In combination with a junction box having lateral apertures for the entrance of electric conductors,—electric conductors,—a base-block provided with intersecting channels of relatively different depths,—and connecting bridge bars formed with heels, reversely disposed within said channels substantially in the manner described, and connected with the electric conductors,—substantially as and for the purposes set forth.

7. In combination with a base block for a junction box formed with intersecting channels of relatively different depths, intersecting connecting bridge bars formed with heels and respectively reversely disposed within said channels, substantially as and for the purposes set forth.

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**502,084. METHOD OF AND MACHINE FOR MAKING WIRE-NETTING.** WALTER C. ORR, Trenton, N. J., assignor to the New Jersey Wire Cloth Company, same place. Filed Aug. 23, 1892. Serial No. 443,600. (No model.)



*Claim.*—1. The improvement in the art of making wire netting which consists in forming the meshes of the netting and then stretching the meshes on formers determining the shape of the meshes to be produced, substantially as described.

2. The improvement in the art of making twisted wire netting which consists in twisting the wires to form the meshes of the netting and then stretching the meshes on formers to change the shape of the meshes, substantially as described.

3. The combination with means for feeding wire netting, of a series of formers, determining the shape of the meshes to be produced and means for forcing the meshes of the netting over the formers, substantially as described.

4. The combination with means for feeding wire netting, of a series of formers corresponding in shape to the meshes to be produced, and means for forcing the meshes of the netting over the formers, substantially as described.

5. In a machine for making wire netting, the combination with the mesh forming mechanism and the winding roll, of a series of formers determining the shape of the meshes to be produced placed between the mesh forming mechanism and winding roll, and means for forcing the meshes of the netting on the formers, substantially as described.

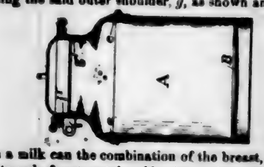
6. The combination with the shaping or draw off roll and twisting mechanism of a machine for making hexagonal netting, of a series of formers over which the netting passes after it leaves the shaping roll, and means for forcing said formers into the meshes to change the shape of the latter, substantially as described.

7. The combination with means for feeding wire netting, of a series of tapering formers determining the shape of the meshes to be produced, and means for forcing the meshing of the netting over the formers, substantially as described.

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**502,085. MILK-CAN.** HENRY PHILIPP, Baltimore, Md. Filed May 17, 1893. Serial No. 474,504. (No model.)

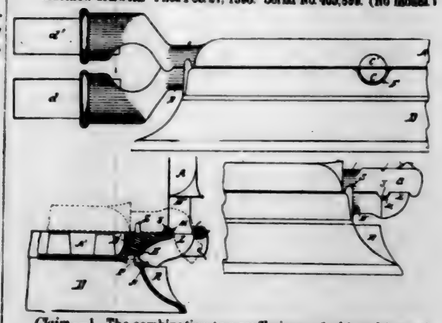
*Claim.*—1. In a milk can the combination of the breast, C, and neck, C', formed integral of cast metal and having a circumferential shoulder, *e*, on the inner side of the breast near the lower edge thereof and a shoulder, *g*, on the outer side and near the top edge of the neck; a body, A, having its upper edge fitted within the lower edge of the breast and abutting against the said inner shoulder; a mouth-piece having a downwardly-projecting flange, *d*, fitting over the neck-piece and abutting the said outer shoulder, *g*, as shown and described.



2. In a milk can the combination of the breast, C, and neck, C', formed integral of cast metal and having a circumferential shoulder, *e*, on the inner side of the breast near the lower edge thereof; a body, A, having its upper edge fitted within the lower edge of the breast and abutting against the said inner shoulder; and an outward circumferential bead, *f'*, extending around the breast and located immediately outside of the seam or joint formed by the said inner shoulder and the upper edge of the can-body, as set forth.

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**502,086. WAFFLE-IRON.** DAVID SHIELDS, Erie, Pa., assignor to Matthew Griswold. Filed Feb. 27, 1893. Serial No. 463,899. (No model.)



*Claim.*—1. The combination in a waffle-iron, of a hinged journal forming one of the bearings on which the iron rotates, consisting of a female section and a male section, passing through a slot in said female section, and so interlocking with each other that they will not separate during the operation of opening and closing the iron, substantially as set forth.

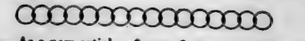
2. The combination in a waffle-iron, of divided handles, forming one of the journals, and a divided hinged journal, consisting of a male section passing through a female section interlocking with the same, and forming the other of the journals upon which the iron rotates, with slots or projections on the waffle-iron ring, adapted to engage the part of the hinge attached to each section of the iron, when such section is in a raised position, substantially as and for the purpose set forth.

3. The combination in a waffle-iron, of a divided journal B', forming one of the bearings upon which the iron rotates, with a hinge H thereon, consisting of a female section G, having a bearing J thereon, and a male section L having a recess M therein adapted to fit over and turn on the bearing J on the female section, substantially as and for the purpose set forth.

4. The combination in a waffle-iron, of a divided hinged journal B' forming one of the bearings upon which the iron rotates, and a collar T thereon, with upwardly projecting lugs S on the waffle-iron ring D at each side of the journal bearing E therein, substantially as and for the purpose set forth.

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**502,087. MAKING WIRE FOR PAPER-MACHINES.** PAUL TOUBASSE, La Bridoire, France. Filed Apr. 13, 1892. Serial No. 428,969. (Specimens.) Patented in France Oct. 19, 1889, No. 201,255; in Belgium Dec. 9, 1889, No. 88,772; in Germany Dec. 13, 1889, No. 54,525; in Switzerland May 19, 1890, No. 2,169, and in England Mar. 25, 1892, No. 5,893.



*Claim.*—As a new article of manufacture an endless wire cloth for paper making machines, composed of metallic wire helices threaded together in the direction of the width of the fabric and flattened so that the wire forming a helix lies practically in one plane, the fabric being of a single thickness of wire, substantially as described.

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**502,088. TROLLEY WIRE AND HANGER.** EARL P. WESTBURY, Helena, Mont. Filed Dec. 23, 1892. Serial No. 456,122. (No model.)



*Claim.*—1. The combination of a trolley wire provided at intervals with undercut grooves or depressions, and a pair of jaws fitted into said grooves or depressions, for the purpose set forth.

2. The combination of a trolley wire provided at intervals with undercut grooves or depressions, and a pair of clamping jaws fitted into said grooves or depressions for the purpose set forth.

3. The combination of a trolley wire, provided at intervals with undercut grooves or depressions on two sides horizontally opposite each other and located at or above the center of the wire and a pair of clamping jaws fitting into said grooves or depressions for the purpose set forth.

4. The combination of a trolley wire, provided at intervals with undercut grooves or depressions and a pair of clamping jaws having projections corresponding in shape to the grooves or depressions and adapted to be clamped into the same for the purpose set forth.

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**502,089. PLAYING-CARD.** WILLIAM G. BIRD, Cambridge, Mass. Filed Feb. 6, 1893. Serial No. 461,131. (No specimens.)



*Claim.*—1. A pack of playing cards having the usual or any suitable marks upon their faces, each card carrying an indicator whereby the hands dealt out of a pack of such cards are recorded and may be re-dealt from the same pack.

2. A pack of playing cards having the usual or any suitable marks upon their faces, each card carrying a movable indicator suitably inscribed and adapted to record the hands dealt out of a pack of such cards, substantially as described.

3. A pack of playing cards having the usual or any suitable marks upon their faces, each card carrying a rotary indicator suitably inscribed and adapted to record hands dealt out of a pack of such cards, substantially as described.

4. A pack of playing cards having the usual or any suitable marks upon their faces, each card carrying a rotary indicator bearing numbers arranged to show at the back of the card, substantially in the manner and for the purpose described.

5. A pack of playing cards having the usual or any suitable marks upon their faces, each card having a pocket, and a rotary indicator in said pocket and bearing numbers which are arranged to show through the back of the card, substantially as described.

6. A playing card, having a slot, and a rotary indicator with a series of perforations arranged to register with the slot, said indicator being suitably inscribed and adapted to record hands dealt out of a pack of such cards, substantially as described.

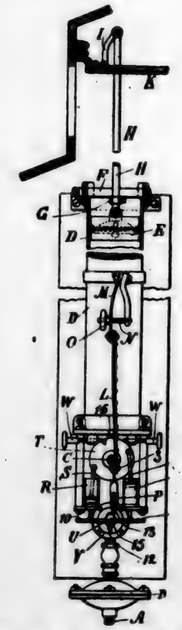
7. A pack of playing cards having the usual or any suitable marks upon their faces, each card having a pocket, and a rotary indicator in said pocket and bearing numbers on both sides which are arranged to show through the front and back of the card, substantially as described.

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**502,090. VENTILATING APPARATUS.** FREDERIC C. CRADDOCK, Newburg, N. Y. Filed Nov. 1, 1892. Serial No. 450,634. (No model.)

*Claim.*—1. The combination with the ventilator, of a cylinder, piston and connections to the ventilator, a main cock by which liquid under pressure is admitted to the cylinder or allowed to escape, cylinders and pistons acting to turn the main cock in either one direction or the other, a thermostat and a three-way cock actuated by the thermostat to admit liquid under pressure to either of the cylinders and pistons that move the main cock and to allow the escape of liquid from the other of said cylinders, substantially as specified.

2. The combination with the ventilating devices, of a motor cylinder and piston, a rod connected with the ventilator, a removable cross key at the end of the cylinder and through which the piston rod passes, and an adjustable collar on the piston rod for regulating the position of the parts when the ventilator is opened and a cock or valve for admitting fluid pressure to act upon the piston, substantially as set forth.



3. The combination with the thermostatic blade having one end held firmly and adjustably, of a fork at the moving end of the blade, a cock with the lever arm engaging and turned by the fork of the thermostat, a ventilator, a cylinder and piston for moving the same, a supply pipe for liquid under pressure and a main cock for regulating the admission of liquid to and discharge from such cylinder, cylinders and pistons acting in opposite directions to turn said main cock, and supply pipes for liquid under pressure and regulated by the thermostatic cock for admitting the liquid to either of the cylinders for moving the main cock substantially as specified.

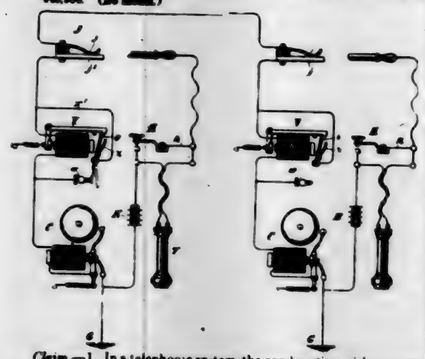
4. The combination with the thermostatic blade having one end held firmly and adjustably, of a fork at the moving end of the blade, a cock with a lever arm engaging and turned by the fork of the thermostat, a ventilator, a cylinder and piston for moving the same, a supply pipe for liquid under pressure and a main cock for regulating the admission of liquid to and discharge from such cylinder, stops for arresting the movement of the main cock, cylinders and pistons acting in opposite directions to turn said main cock, and supply pipes for liquid under pressure and regulated by the thermostatic cock for admitting the liquid to either of the cylinders for moving the main cock substantially as specified.

5. The combination in a thermostatic ventilating apparatus, of a thermostatic blade fastened at one end and provided with a fork at the other end, a cock having pipes for a fluid under pressure to act in regulating the ventilating apparatus, a turning plug for said cock and an adjustable crank arm to such plug and means for holding the same when adjusted to vary the leverage of the crank arm and the movement of the plug by given changes of temperature to regulate the speed of movement of the ventilating apparatus substantially as specified.

6. The combination with a thermostat, a ventilating apparatus, a motor cylinder and a supply for liquid under pressure, of a delicate cock or valve, an adjustable crank arm between the thermostat and the cock for regulating the action of the thermostat, in opening and closing said cock, and an adjusting screw to prevent the pressure of the fluid producing undue friction of the delicate thermostatic cock on the seat, substantially as set forth.

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**502,091. SYSTEM OF TELEPHONIC INTERCOMMUNICATION.** FRANK R. COLVIN, New York, N. Y. Filed Oct. 15, 1892. Serial No. 448,958. (No model.)



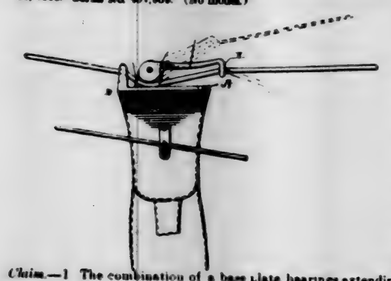
*Claim.*—1. In a telephonic system, the combination with a source of electricity E of a telephone T and a normally open shunt *t*, of a line wire L, a plug P whereby said source of electricity may be connected with said line at will, and a key K for closing said shunt when a calling current is to be sent through the line.

2. In a telephonic system, the combination with a source of electricity E, a telephone T, and a calling key K placed in shunt relation to said telephone, of an electro-magnetic call C, an electro-magnetic visual signal V, and a shunt *x'* bridging the helix of said visual signal which shunt is automatically closed when said signal is displayed.

3. The combination of an electro-magnet, a visual signal which is released from its concealed position by the attraction of said magnet, a circuit-closer which is actuated by said signal when in its displayed position, and a shunt circuit which when closed by the action of said circuit-closer bridges or short circuits said electro-magnet.

4. In a telephonic system, comprising three or more stations, the combination with the ground or return conductor G, of independent lines $L'$ $L^2$ $L^3$ extending from each station to one or more of the other stations, branches normally connecting each entering line with the ground or return G at each station, a visual signal V and a call C (either or both) actuated by electro-magnetism in each of said branches, a normally open branch permanently connected to the ground or return G at each station, in which is included a telephone T and a calling key K in shunt relation to each other, and two parallel terminals for each such normally open branch, only one of which includes a source of electricity E but either of which may be placed in connection with the line L at will.

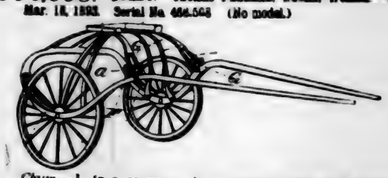
**502,092. HORSE-CHECKING DEVICE.** LEWIS S. FRANKLIN, Parkersburg, W. Va., assignor to Ella F. Franklin, same place. Filed Jan. 10, 1893. Serial No. 457,969. (No model.)



*Claim.*—1. The combination of a base plate, bearings extending therefrom, a cam pivoted between the bearings, an arm extended rearward from the cam having a slot in its outer end, and a check rein operating line adapted to pass beneath the cam and through the slot, substantially as shown and described.

2. The combination of a base plate, bearings B, made integral with and extending vertically from opposite sides thereof, slotted projection C, on the forward end of the plate, a cam pivoted between the bearings, an arm extending rearward from the cam having a slot in its outer end, and a check rein operating line adapted to pass beneath the cam and through the slot, substantially as shown and described.

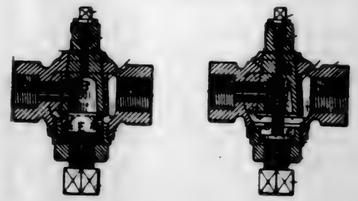
**502,093. SULEY.** THOMAS FREEMAN, Dublin, Ireland. Filed Mar. 18, 1893. Serial No. 466,568. (No model.)



*Claim.*—1. In a carriage, the combined shafts and side-bars dipped or curved as shown, provided with elongated slots inclosing the wheels and extended and connected across the rear, in combination with the bridged arms D whereby the driver's seat is carried, all arranged to serve substantially as herein set forth.

2. In the construction of sulkies and road carts for trotting horses, the forked bars F serving as trees between the seat and the thill and the adjustable clamped foot rests G G, combined and arranged substantially as herein described.

**502,094. STOP-COCK OR TAP.** JOHN T. HAILWOOD, Rochdale, England. Filed Nov. 1, 1892. Serial No. 450,662. (No model.)



*Claim.*—1. A stop-cock or tap, comprising a casing provided with an inlet and an outlet and an internal tapering seat, a hollow tapering plug provided with fluid ways and having the smaller end extending vertically beyond the casing and forming a seat for the reception of a key or wrench, a plug-carrier provided with a packed seat, a cap detachably engaging said casing and a vertical adjusting screw inserted through said cap and adapted to engage with the seat of said plug-carrier, substantially as and for the purposes set forth.

2. A stop cock or tap, comprising a casing having an inlet and an outlet and an internal tapering seat, a hollow tapering plug with a thimble or hat shaped internal body and fluid-ways co-operating with the inlet and outlet of said casing, a plug-carrier provided with a packed seat, a cap detachably engaging said casing and a vertical adjusting screw inserted through said cap and adapted to engage with the seat of said plug-carrier, substantially as and for the purposes set forth.

3. A stop-cock or tap, comprising a casing provided with an inlet, an outlet and an internal seat, a hollow-plug engaging with said seat, a carrier or spindle for said plug provided with an annular flange forming a pivot for revolubly supporting the plug to position, radial apertures in said flange for the passage of fluid through the device, an oil hole provided in the smaller end of said plug and having a cap for closing the same, substantially as and for the purposes set forth.

4. A stop-cock or tap, comprising a casing provided with an inlet, an outlet and an internal-seat, a plug having the smaller end projecting beyond the casing for the reception of a key or wrench and with axial and radial fluid-ways, a plug-carrier provided with a flange having radial apertures therein and supporting one end of the plug and said carrier seated to or abutting against a set-screw for adjusting the same to position, a removable cap connected with said casing and detachably connected with said set screw, substantially as and for the purposes set forth.

**502,095. END GATE FASTENING.** FREDERICK A. HAVENS, Wethersfield Conn. Filed Mar. 22, 1893. Serial No. 467,143. (No model.)





*Claim.*—1. The combination of a body, a hinged end gate, a strap secured thereto, perforated lugs projecting from the strap, a latch adapted to engage the body at its forward end, lugs depending from the rear end of the latch, and a bolt extending through the lugs of the latch and strap, substantially as shown and described.

2. The combination of a body having the transverse groove, a swinging end gate, lugs projecting outward therefrom, a horizontal latch, a lug depending from the forward end of the latch which enters the said tranverse groove, depending perforated lugs on the rear end of the latch, a pivotal bolt extending through the last named lugs and the lugs projecting from the gate, and a spring coiled about the said pin having its lower end turned outward to engage the gate and its upper end so projected as to bear against the latch, substantially as shown and described.

**502,096. PLASTER COMPOSITION.** THOMAS J. HELLER, Easton, Pa. Filed Feb. 18, 1893. Serial No. 462,884. (No specimens.)

*Claim.*—1. A compound adapted for admixture with a plaster composition, consisting of silicate and carbonate of soda, alum, sugar, gum, salt-cake and ground inert material, substantially as and for the purposes set forth.

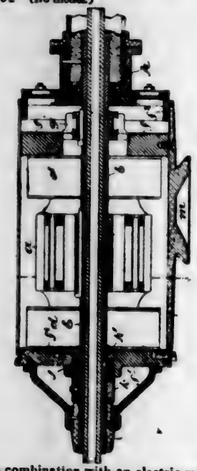
2. A compound adapted for admixture with a plaster composition, consisting of silicate and carbonate of soda, alum, sugar, senegal-gum, salt-cake and ground china-ware, substantially as and for the purposes set forth.

**502,097. PLASTER COMPOSITION.** THOMAS J. HELLER, Easton, Pa. Filed Apr. 7, 1893. Serial No. 469,463. (No specimens.)

*Claim.*—1. A plaster composition composed of a body material, silicate and carbonate of soda, alum, sugar, gum, salt-cake and ground inert material, substantially as and for the purposes set forth.

2. A plaster composition composed of clay, silicate and carbonate of soda, alum, sugar, senegal-gum, salt-cake and ground china-ware, substantially as and for the purposes set forth.

**502,098. ELECTRIC MOTOR FOR ROTARY DRILLING-MACHINES.** ROBERT M. JONES, Salt Lake City, Utah. Filed Dec. 22, 1892. Serial No. 456,104. (No model.)



*Claim.*—1. The combination with an electric motor adapted for operating a rotary drill, of a semi-cylindrical motor-casing of non-magnetic metal provided with a boss or flange for securing the casing to a mining column or tripod, the motor being securely fixed in said casing and having a tubular armature shaft with bearings in the heads of said casing.

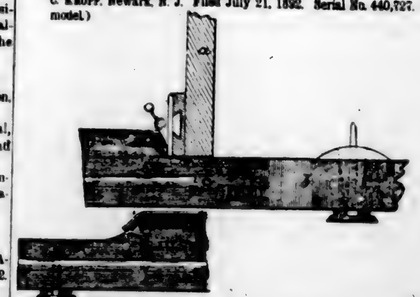
2. The combination with the semi-cylindrical casing of non-magnetic metal, and the two circular keepers of metal fixed in said casing, of the electric motor mounted in said casing between said keepers, said motor comprising the tubular armature shaft, the armature fixed thereon, the commutator and brushes, the pole-pieces, the opposite, extended ends of which form cores of the field magnet coils, and the said coils, the field magnets being secured to and being in electrical contact with the respective adjacent keepers of the casing and the several elements of the motor arranged concentrically within said casing, substantially as set forth.

3. An electric motor, comprising an armature and its shaft, pole-pieces, *c*, having circular exterior surfaces concentric with the armature shaft and extended parallel with said shaft to form cores for the field magnets, the coils of the field magnets, and the commutator and brushes, in combination with an inclosing casing of cylindrical form made of non-magnetic metal, the field magnets being secured to the ends of said casing, as set forth.

4. The combination with an inclosing cylindrical casing for an electric motor, having packed bearings in its ends for the tubular armature shaft and made of non-magnetic metal, of the motor mounted in said casing and fixed in place by having its field magnets secured to circular keepers which form part of the inclosure, substantially as set forth.

5. The combination with the electric motor provided with a tubular armature shaft and having a cylindrical form exteriorly of a cylindrical, moisture-proof housing of non-magnetic metal, in which the armature shaft has packed bearings, the inclosing housing having a removable section to afford access to the motor, as set forth.

**502,099. KEYBOARD FOR MUSICAL INSTRUMENTS.** CHARLES C. KNOPP, Newark, N. J. Filed July 21, 1892. Serial No. 440,727. (No model.)



*Claim.*—1. The key board for a musical instrument comprising a series of uniformly colored keys embracing the full chromatic scale, substantially as set forth.

2. The key board for musical instruments herein described, having therein the keys of each chromatic scale uniform and alike in shape and color.

3. In a musical instrument, the combination with the uniform keys comprising full chromatic scales, of covers for said keys disposed, in their relations with said keys and with each other, to cover the second, fourth, seventh, ninth and eleventh keys in each scale and connected together to be moved simultaneously laterally with reference to said keys substantially as set forth.

4. In a manual or key board, the keys having the exposed portions of uniform length, and having the bases wide and the upper parts narrow, the said upper parts having a lower and upper touch surface.

5. In a manual or key board, the series of keys of uniform length, all extending out to a given line, having wide base portions and narrow upper parts and having laterally adjustable covers, substantially as set forth.

6. The combination with a key board having uniformly colored keys including a full chromatic scale or scales, of covers laterally adjustable with reference to said keys and relatively disposed, to cover the second, fourth, seventh, ninth, and eleventh keys of said scale or scales substantially as set forth.

7. In a musical instrument the series of keys having spaces, F, formed between and having upper and lower touch surfaces, substantially as set forth.

8. In a musical instrument the series of keys having wide bases and narrow upper parts with spaces formed between, the upper surfaces of said keys being comparatively low at the front and more elevated at the rear to form differently elevated touch surfaces A, B, substantially as set forth.

9. In combination with the lever, *b*, of a piano or similar instrument, a series of keys extending uniformly to a given line, the said keys being all provided with touch surfaces A, B, at different elevations, substantially as set forth.

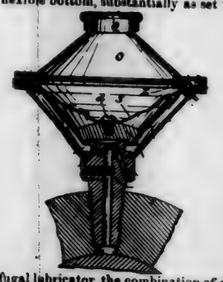
**502,100. LUBRICATOR.** PHILIP F. KRUG, New York, N. Y. Filed July 5, 1892. Serial No. 438,918. (No model.)

*Claim.*—1. In a centrifugal lubricator the combination of an oil cup comprising a flexible bottom surmounted by a detachable cap, a

frame supporting such bottom, a passage between the interior of the oil cup and the surfaces to be lubricated, and means for confining the rim of such flexible bottom between the supporting frame and the cap, substantially as set forth.

2. In a centrifugal lubricator the combination of an oil cup comprising a flexible bottom surmounted by a cap, an inlet with proper closing device for admitting oil to the oil cup, a frame supporting the flexible bottom, a passage between the interior of the oil cup and the surface to be lubricated, and means for confining the rim of the flexible bottom between the supporting frame and the cap, substantially as set forth.

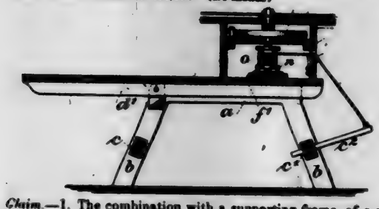
3. In a centrifugal lubricator the combination of an oil cup comprising a flexible bottom and a casing O held in contact therewith, two shells as A and B attached to nipple G containing the oil passage, the space between said shells communicating with the interior of the oil cup and with such oil passage, and an air passage leading to the under side of the flexible bottom, substantially as set forth.



4. In a centrifugal lubricator, the combination of an oil cup with flexible bottom, a dished casing, as A, inclosing and protecting said bottom, an oil passage connecting the interior of the oil cup with the surfaces to be lubricated, and an air passage communicating with the under side of the flexible bottom, all substantially as set forth.

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**502,101.** TOY. AUGUSTUS LE PLONGEON, Brooklyn, N. Y. Filed Nov. 7, 1892. Serial No. 451,144. (No model.)



*Claim.*—1. The combination with a supporting frame, of a pivoted table top capable of tipping, a dial with figures and letters, a pointer and shaft and means substantially as specified for rotating the shaft and pointer and for returning the same to a normal position, substantially as set forth.

2. The combination with a supporting frame having legs, of a pivoted and overhanging table top connected therewith and capable of tipping, a dial with figures and letters, a pointer and shaft, a cord and pulley for rotating the shaft and pointer and a spring for returning the same to a normal position, substantially as set forth.

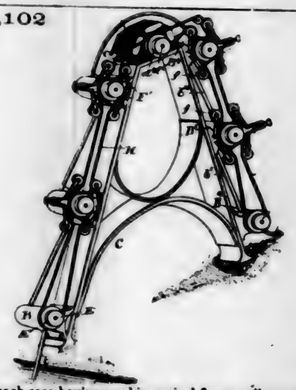
3. The combination with a supporting frame having legs, of a pivoted and overhanging table top or board connected therewith and capable of tipping, a dial with letters and figures and a supporting case therefor at one end of the board, a shaft passing vertically through the case and a pointer thereon above the dial, a cord and pulley for rotating the shaft and pointer with the tilting or tipping of the board, and a spring for returning the parts to a normal position, substantially in the manner and for the purposes set forth.

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**502,102.** APPARATUS FOR ELEVATING AND EQUALIZING THE SUPPLY OF LIQUIDS. WAITMAN M. MORGAN, Kansas City, Mo. Filed Aug. 3, 1891. Serial No. 401,570. (No model.)

*Claim.*—In a system of liquid elevation through ascending and descending pipes the combination with a series of liquid inclosing cases having suitable induction and eduction openings at opposite sides and ends and arranged in ascending and descending planes and sections of liquid conducting pipes connected with the respective induction and eduction openings of adjacent cases in said series of cases and also upon both ascending and descending planes of power driven

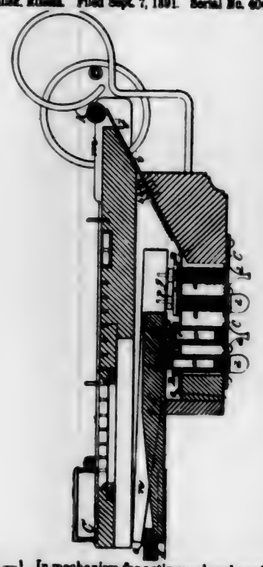
**502,102**



shafts in each case having meshing spiral flanges all operating simultaneously as and for the purpose described.

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**502,103.** MUSICAL INSTRUMENT. KONSTANTIN POLEWOFF, Nishne Tagulisk, Russia. Filed Sept. 7, 1891. Serial No. 404,920. (No model.)



*Claim.*—1. In mechanism for acting on key-board musical instruments, the combination of a series of electro-magnets, with a series of horizontal keys above the electro-magnets, the inner ends of the keys being provided with armatures for the said electro-magnets, and resting at the inner edge of these armatures, freely upon the said electro-magnets, while the outer ends of the keys rest on the keys of the musical instrument substantially as set forth.

2. In mechanism for acting on key-board musical instruments, the combination of a bar C, a series of electro-magnets screwed thereto, a conducting plate *f* to which one end of each coil of the said electro-magnets is connected, the other ends of the coils being brought near together in a parallel range, spring wires *i* in contact with each of the last named ends of the coils, and a roller K against which the outer ends of the spring wires *i* rest, the said roller K and plate *f* being electrically connected to a battery, all substantially as and for the purposes set forth

3. In mechanism for acting on key-board musical instruments, the combination of an electro-magnet and an armature therefor, with a key *n* to which the armature is secured by two adjustable screws, a wire *g*, inserted between the key and the armature, between the two screws, the said armature resting freely at one edge on the electro-magnet, substantially as and for the purposes set forth.



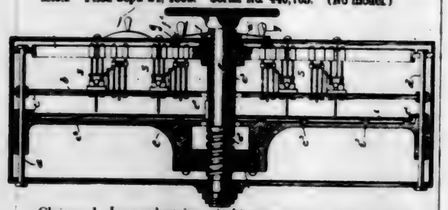
4. In mechanism for acting on key-board musical instruments, the combination of an electro-magnet and an armature therefor, with a key *n* to which the armature is secured, a washer *r* secured to the under side of the armature and adapted to enter one of the tubes of the electro-magnet, all substantially as and for the purposes set forth.

5. In an instrument for acting on key-board musical instruments, the combination of a roller K provided with a hand-wheel, with guides A, A′ for the roll of music, shaft B′, guide hooks D′ D′ and wire rings E wherein the music after passing the roller K coils itself up substantially as set forth.

6. In an instrument for acting on key-board musical instruments, the combination of the lid with means for guiding and passing a music strip having slits therein, over the lid of the instrument, the said lid having marked thereon a key-board, substantially as and for the purposes set forth.

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**502,104.** ELECTRIC SWITCHING APPARATUS. ARTHUR R. ROE, Duluth, Minn., assignor of one-half to George J. Northrop, Marquette, Mich. Filed Sept. 24, 1892. Serial No. 446,765. (No model.)



*Claim.*—1. In an electric switching apparatus, two elements in combination, one a gang or plurality of switches or circuit controllers and the other a device acting at intervals upon the switches or circuit controllers to simultaneously open some of them and close others, the switches or circuit controllers remaining in the condition to which they were last thrown, during the intervals between the actions of said device, substantially as described.

2. The combination with a plurality of electric switches, two movable rods or levers controlling each switch, and a plate or frame having openings in the line of movement of said rods or levers, said plate or frame having two movements, one to determine how its openings shall be placed with respect to the rods or levers and the other toward or against said rods or levers, substantially as described.

3. The combination with a plurality of switches, each of which has two operating rods or levers, of a plate or frame having means for moving one or the other of the rods or levers of each switch, and means for setting said plate or frame to determine which of said rods or levers shall be operated

4. The combination of a plurality of electric switches, two reciprocating rods operating each, a plate or frame provided with openings and having two movements, one to determine how its openings shall be placed with respect to the rods and the other toward or against said rods for the purpose set forth.

5 The combination of a plurality of electric switches arranged around a common center, reciprocating rods operating said switches, a concentrically placed plate or frame located back of and in a plane parallel to the ends of said rods and means for moving said plate or frame against the ends of the rods to operate the switches.

6 The combination of a plurality of electric switches arranged around a common center, reciprocating rods operating said switches, a concentrically placed plate or frame located back of and in a plane parallel to the ends of said rods, said plate provided with openings through which the rods can pass and solid portions through which the rods cannot pass, means for rotating said plate to properly adjust the openings and solid portions and means for moving it toward or against the ends of the rods substantially as described.

7. The combination of the main frame, the electric switches mounted therein and provided with reciprocating operating rods, a traveling carriage mounted in the main frame a plate carried by the traveling carriage and adapted to be brought against the ends of the operating rods and means for moving said traveling carriage forward and backward

8. The combination with a shaft mounted in a frame of a plurality of switches arranged in the frame around the shaft, a traveling carriage carrying a stationary nut engaged by a thread on the shaft, a concentric rotatable plate also carried by the carriage, a loose sleeve on the shaft engaging the plate and an index arm on the sleeve by which the same may be turned to rotate the plate, substantially as and for the purpose set forth.

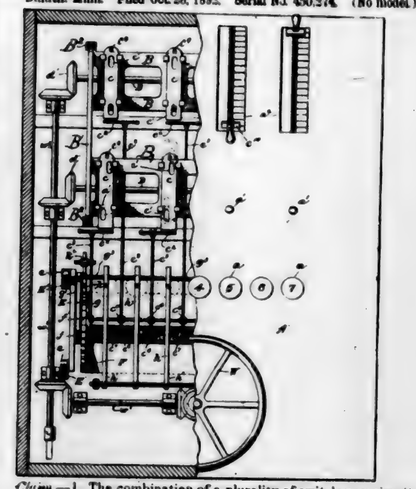
9. The combination of the main frame, the switches mounted therein, the switches provided with operating rods extending outside the frame and there provided with handles and the movable combination plate located inside of the frame and adapted to throw switches

10. The combination of two push rods connected together by a walking-beam, one of the rods carrying the movable part of an electric switch or cut-out, of a plate or frame having two holes in it, means for turning the plate to bring one or the other of the holes into line with one or the other of the rods and means for moving the plate toward or against said rods for the purpose set forth.

11. The combination of two cross-heads, one carrying the movable part of an electric switch, and both provided with slots, a walking-beam having pins at its extremities working in said slots respectively, a pair of rods connected with said cross-heads respectively, one of said rods carrying a stop arranged to partially close one of the slots in the cross-heads, a spring arranged to swing the walking-beam on its center and means for moving the rod carrying the stop, whereby the switch is released and permitted to operate by the action of the spring.

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**502,105.** ELECTRIC SWITCHING APPARATUS. ARTHUR R. ROE, Duluth, Minn. Filed Oct. 28, 1892. Serial No. 450,274. (No model.)



*Claim.*—1. The combination of a plurality of switches or circuit controllers, of an operating device acting at intervals and adapted to open one or any number of the switches or circuit controllers and simultaneously close others or the remainder of them, and a plurality of independent adjustable selecting devices carried by said operating device and corresponding respectively with said switches, the switches or circuit controllers remaining in the positions to which they were last thrown, during the intervals when the operating device is not acting substantially as described.

2. The combination with a plurality of electric switches, movable rods or levers controlling the respective switches, a plate or frame adapted to move against said rods or levers to operate the switches and selecting devices carried by the plate or frame, determining how many and which of said switches shall be operated, substantially as described.

3. The combination with a plurality of switches each of which has two operating levers or rods, of a plate or frame for moving one or the other of the rods or levers of each switch and selecting devices carried by said frame or plate determining which of said rods or levers shall be operated.

4. The combination with a plurality of switches each of which has two operating levers or rods, of a plate or frame for moving one or the other of the rods or levers of each switch and selecting devices carried by said frame or plate determining which of said rods or levers shall be operated, and mechanism for simultaneously setting said selecting devices.

5. The combination of a plurality of switches, respective selecting devices determining which of said switches shall be operated, a series of pins or levers connecting with and operating the selecting devices, a plurality of rows or groups of pins arranged to engage with various pins or levers of said series, and means for determining which of said rows or groups shall engage with said pins or levers, substantially as described.

6. The combination of a plurality of switches, respective selecting devices determining which of said switches shall be operated, a series of pins or levers connecting with and operating the selecting devices,

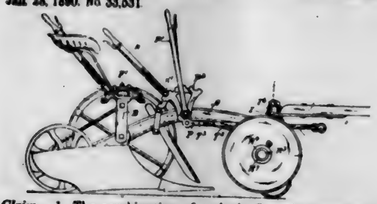
a roller carrying a plurality of groups or rows of combination pins adapted to engage with said series of pins or levers, and rotating means for said roller to determine which of said groups shall engage with the series of pins, said roller being bodily movable to carry the group into engagement and operate the pins of said series, for the purpose set forth.

7. The combination of a plurality of switches, a switch operating apparatus, respective selecting devices determining which of said switches shall be operated, a series of sets of levers through which motion is imparted to said selecting devices respectively, a combination apparatus determining which of said sets of levers shall be moved, and a main shaft first acting upon the combination apparatus and then on the said switch operating apparatus, substantially as described.

8. The combination of a plurality of switches and a combination apparatus for determining which of said switches may be operated, said combination apparatus consisting of a roller having a rotary and a sliding motion, groups of combination devices such as pins set in its surface, a stop for each group, manually operated levers engaging with said stop and gearing for rotating the roller operated by said manually operated levers, substantially as described.

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**502,106. RIDING-PLOW.** DAVID THOM, Watford, Canada. Filed Mar. 20, 1891. Serial No. 385,704. (No model.) Patented in Canada Jan. 28, 1890, No. 33,631.



*Claim.*—1. The combination of a clevis, O, and a press or gage wheel, R', adjusted simultaneously and together with said clevis, and means for adjusting and holding said clevis and press or gage wheel, as, and for the purpose set forth.

2. The combination of a clevis, O, having a pivotal lateral movement, and a press or gage wheel, R', having a lateral movement, as well as a revolving motion, and supported on the axle or extended stud pin, R³, the bell crank lever, S, and connecting rod, T³, connecting said press or gage wheel, R', with the connecting rod, P, and the latter formed with perforations, T³, and connecting the clevis, O, with the lever, P', provided with a spring actuated dog, which engages with the toothed segment, I³, substantially as shown and described, and for the purpose specified.

3. The combination of the post, H³, with the tongue casting, I, one having a fin or projection, I³, and the other, a groove or recess, H⁴, to which said projection is fitted, to cause them to both turn together, and the same proportionate distance, at the same time, permit the gage wheel and post to be raised and lowered without raising or lowering said tongue casting, a gage wheel, H³, attached to the lower end of said post, and means for raising or lowering said gage wheel and post, as, and for the purpose set forth.

4. A tongue casting, I, and overhanging flange, I³, in combination with the jaw H, in which a socket, H', is formed, the post, H³, gage wheel H², and means for adjusting and holding said devices at any position, to which they may be adjusted, substantially as, and for the purpose set forth.

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**502,107. FASTENING FOR TOOL-HANDLES, &c.** WILLIAM H. THOMAS, Jenkintown, Pa. Filed Dec. 30, 1891. Renewed Apr. 13, 1893. Serial No. 470,543. (No model.)

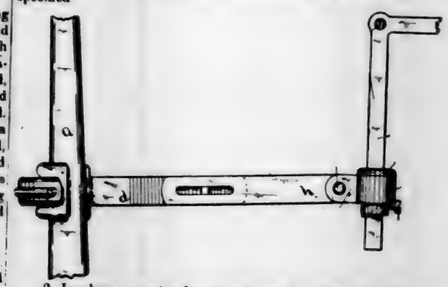


*Claim.*—As a new article of manufacture, a fastening for tool-handles, spokes, &c., consisting of a headless wedge having its entering or apex and side edges sharp, or approximately so, and provided with lateral projections or burrs, the latter being adapted to embed themselves in the part into which the wedge is driven, substantially as and for the purpose specified.

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**502,108. LUG CONNECTION FOR PICKER-STICKS.** THOMAS H. WEBSTER and TOM DIMMOCK, Taftville, Conn. Filed June 6, 1892. Serial No. 436,760. (No model.)

*Claim.*—1. In a loom, in combination with a picker-stick and its actuating arm *b*, and a section *g* mounted to swivel on said arm, mechanism connecting said stick and arm consisting of a shoe secured to the stick, a two-part extensible arm *d*—*h*, having one end turned to hook around said shoe as set forth, and having its opposite end pivotally connected to said section *g*, substantially as and for the purpose specified.



2. In a lug connection for picker-sticks, in combination with said stick, a shoe secured to the stick having projecting from one side a loop as set forth, and a connecting arm turned to hook around said shoe and supported loosely in said loop with its other end pivotally connected with a swivel on the picker-stick-actuating arm, the outer face of the shoe and the engaging inner face of the connecting arm being curved substantially as described and for the purpose specified.

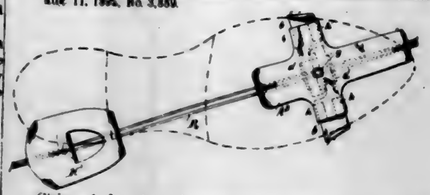
3. In a loom, in combination with a picker-stick and its actuating arm *b*, a collar *b*² on said arm, mechanism connecting the stick and arm and consisting of a shoe secured to the stick, an extensible arm of rigid material having one end turned to loosely embrace said shoe and a swivel loosely mounted on the collar of the actuating arm *b* and having pivotal connection with the other end of the extensible arm, substantially as specified.

4. In a loom, in combination with the picker-stick and its actuating arm, mechanism connecting the stick and arm and consisting of a shoe secured to the stick and provided with a loop, an extensible arm endwise movable through said loop and having at one end a hook to loosely embrace the shoe, and a swivel on the actuating arm and having pivotal connection with the extensible arm, substantially as specified.

5. In a lug connection for picker sticks, in combination, a picker stick, an actuating arm, a collar thereon, having a flange at one end and a set screw at the opposite end, said set screw engaging with said arm for holding the collar in position, a section loosely mounted upon the collar between the flange and the set screw, and an extensible arm, one end of which is connected with the section and the other end is connected with the picker stick, substantially as set forth.

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**502,109. SKATE.** OSCAR E. WOLLERT, Stockholm, Sweden. Filed Oct. 10, 1892. Serial No. 448,368. (No model.) Patented in Sweden Aug. 11, 1892, No. 3,889.



*Claim.*—1. In a skate, the combination with the runner and heel plate, of sole clamps adjustable in planes at right angles to the runner, one of said clamps provided with teeth or corrugations to hold it against forward motion and constructed to act as a fulcrum for the runner when the skate is applied to the foot and the runner moved laterally to bring said heel plate to the heel of the boot or shoe, the other sole clamp provided with teeth or corrugations to prevent vertical motion of the sole plate, and constructed to guide the skate in its lateral movement.

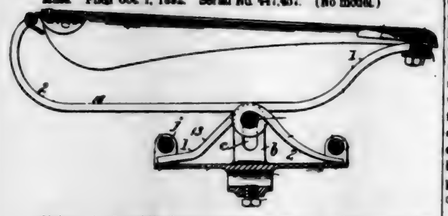
2. The combination with a skate, of sole clamps adjustable in a plane at right angles to the runner, said clamps having convex acting or biting faces, one of which is provided with forwardly inclined teeth, said acting or biting faces lying in planes intersecting the longitudinal plane of the runner in a forward direction, for the purpose set forth.

3. The combination with the sole plate, of a skate provided on its under side with transverse guide ways, and a screw-threaded bolt or pin between said ways, of two clamps fitted and reciprocally movable in said ways, said clamps having a portion of the proximate faces of their shanks recessed to form an abutment or shoulder at either end and a slot between them for the passage of the bolt or pin and to limit the movement of the clamps in either direction, and a nut adapted to screw onto the bolt and impinge upon both shanks of the clamps, for the purpose set forth.

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**502,110. BICYCLE-SADDLE.** JOSEPH BETHUNE, Chicopee Falls, Mass. Filed Oct. 1, 1892. Serial No. 447,457. (No model.)



*Claim.*—1. A saddle-frame comprising upper and lower spring sections intermediately united the one to the other, the upper of which consists of portions extended upwardly forwardly and upwardly rearward from their place of union, and supporting the seat-leather at their extremities, and the lower frame section consisting of portions extended downwardly forward and also downwardly rearward from said place of union and having the separated lower extremities thereof in engagement with a suitable base-support which is provided therefor, for the purpose set forth.

2. A saddle-frame comprising upper and lower spring sections united the one to the other, the upper of which consists of portions extended upwardly forward and upwardly rearward from the place of union, and the forward upper portion also having the rearward continuation, and the lower frame section consisting of portions extended forwardly downward and rearwardly downward from said place of union, and having the separated lower extremities thereof in engagement with a suitable base support which is provided for the sustenance of the saddle-frame, substantially as and for the purposes set forth.

3. In a saddle-frame, in combination, a base-support and upper and lower spring sections united one to the other, the lower section having normally a rising reaction, one or more risers standing above said base with which the spring frame adjacent the place of union of its upper and lower sections has guiding engagement for vertical sliding movements, and for limitation of the upward movement of the spring parts of the frame relative to said support.

4. A saddle-frame comprising upper and lower spring sections united the one to the other the upper of which consists of portions forwardly upward and rearwardly upwardly extended from said place of union and the lower section consisting of portions extended forwardly and rearwardly and each downwardly from said place of union and each having the separated lower extremities thereof in engagement with a base-support which is provided for the sustenance of the saddle-frame, and said base-support being provided with the one or more risers with which the frame adjacent said place of union has guiding engagements for vertical sliding movements and for limitation of the degree of upward movement of the parts of the frame relative to said support, substantially as described.

5. In a saddle the combination with a base or support having one or more rising members with which a horizontal part has a vertically sliding engagement, of a part of the saddle-frame for supporting the rear of the seat-leather which extends forwardly and downwardly to have a pivotal engagement with said vertically sliding part and thence a downward inclination to an engagement with the forward part of said base, and a part of the saddle-frame for supporting the rear of the seat leather which extends downwardly and rearwardly to have also a pivotal engagement with said vertically sliding part and thence a further downward inclination to an engagement with the rear part of said base, for the purposes set forth.

6. In a saddle, in combination a base-support, having one or more risers and the seat-leather, of parts formed of spring metal having respectively at their rear upper, and forward upper portions engagements with the rear and forward ends of the seat-leather, and both thence extended in opposite downward inclinations respectively to engagements upon the forward and rear end portions of said base-support, and both of said spring-formed parts having intermediately thereof eyes, a shaft or bolt passed through said eyes and having an upwardly limited, vertically sliding engagement with said risers, substantially as set forth.

7. A bicycle saddle comprising intermediately engaged upper and lower parts in the forms respectively of an upwardly opening bow and a downwardly opening bow and both formed of spring strip-material, as wire a seat-leather supported on the extremities of the upper part and a rigid base or rest on which the extremities of said lower part have a bearing engagement and means between and relative to the said base and the joined-bow-formed parts for constraining the movements of the latter vertically and for limiting the degree of the upward spring reaction of the lower bow-formed part, substantially as described.

8. In a bicycle saddle the combination with a base having the risers with the vertical slots, and the bolt or shaft having a sliding engagement in said slots, a length of spring-wire which intermediately thereof is return bent and supporting thereat the rear of the seat, and having the side members thereof thence continued forwardly downward having the coil-formed eyes encircling said shaft, and the extremities thence extended further downwardly and forwardly to rest upon the forward portion of said base and a second length of spring-wire also intermediately thereof return bent supporting thereat the forward end of the seat, the side portions thereof thence continuing downwardly and rearwardly, being provided with the coiled-formed eyes which also encircle said shaft, the end portions of said second length being thence further continued rearwardly downward to a supporting bearing upon a rear portion of said base, substantially as described.

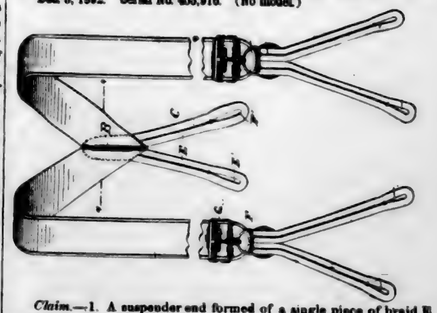
9. In a bicycle saddle the combination with a base having the risers, *b*, *b*, with the vertical slots, and the bolt or shaft, *d*, having a sliding engagement with said slots and also at its front and rear having the opposing upwardly extended ear-pieces, *ii*, *ii*, the intermediately engaged upper and lower parts in the forms respectively of an upwardly opening and a downwardly opening bow the extremities of the latter being extended to bearing on said base between said forward and rearward ear-pieces and cross-bars mounted in said ear-pieces and overlying said extremities and the seat-leather supported by the upwardly opening bow-formed part, substantially as described.

10. In a bicycle saddle, substantially as described, the combination with the base having the opposing upwardly extending ear-pieces, *i*, *i*, the cross-bars with the rollers thereon of the legs, 13, 13, and 18, 18, extended to bearing upon the base under said rollers, substantially as described.

11. The combination with a bicycle saddle of a support for the rear portion of the seat-leather consisting of the length of wire intermediately bent into a loop or U-form, of a cantle or metallic bushing for the seat-leather, a clip consisting of a flat plate to bear against the under side of the loop-bent wire and having the curved upwardly extended flange to lie against the rear of said wire portion and the headed screw passed through said clip, through and within the loop-formed portion of the wire, and, with a screw engagement, into the said metallic bushing, substantially as described.

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**502,111. SUSPENDERS.** JACOB H. BLEY, New York, N. Y. Filed Dec. 3, 1892. Serial No. 453,916. (No model.)

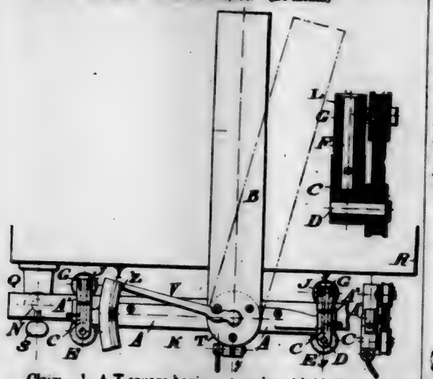


*Claim.*—1. A suspender end formed of a single piece of braid E doubled upon itself, with the ends meeting at the center of the length of the braid, and sewed together except near the ends to form loops E', the braid thus doubled being then doubled again upon itself at its middle and the edges sewed together for a suitable distance forming the head E² by which the end is secured to the suspender and two straps projecting from the head, substantially as described.

2. A suspender, comprising shoulder straps secured together at the rear at an angle, and provided at their front ends with rings, and ends each formed of a single piece of braid, doubled upon itself with the ends meeting at the center of length of the braid and sewed together except near the ends to form loops, the braids thus doubled being then doubled again upon itself at its middle and the edges sewed together to form a head, and to straps projecting from the head, the head of the rear end being secured directly to the shoulder straps over the joint thereof and the heads of the front ends passed through

the said rings doubled upon themselves and fastened together, substantially as described.

## 502,112. T-SQUARE. JOSEPH W. BRAKWELL, Camden, N. J. Filed Jan. 14, 1893. Serial No. 458,209. (No model.)



*Claim.*—1. A T-square having a traveler with blocks at its ends provided with rollers, a bar on which said rollers are guided, and a limb secured to said traveler, said parts being combined substantially as described.

2. A T-square having a bar, means for adjustably connecting said bar with a support, a traveler movable on said bar, a limb having a collar secured thereto, and a split sleeve connected with the traveler and clamping the said collar, said parts being combined substantially as described.

3. A T-square having a bar, means for adjustably connecting said bar with a drawing board, a traveler having blocks with rollers journaled thereon and guided on said bar, said blocks having yielding connections, and a limb pivotally connected with said traveler, said parts being combined substantially as described.

4. In a T-square, a rotating collar carrying the limb of said square, a split sleeve encircling said collar, and a support for said sleeve, in combination with an index finger connected with said limb at the axis thereof, and a graduating segment or scale connected with said support for operation with said index finger, substantially as described.

5. In a T-square, a split sleeve, a collar therein and an index finger having a pin which is fitted in said collar, the parts named being combined substantially as described.

## 502,113. COMBINED JUMPER AND APRON. THOMAS R. CRAWFORD, Brooklyn, N. Y. Filed Mar. 14, 1893. Serial No. 465,913. (No model.)

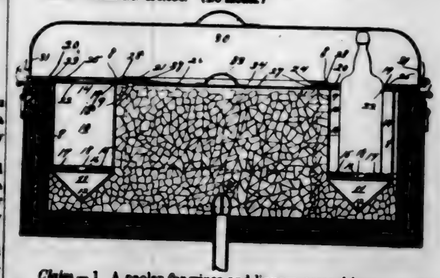


*Claim.*—1. As an improved article of manufacture, a jumper or like garment provided with guides at each side of its rear opening, and tapes attached to the garment at each side of the said rear opening, near the upper portion thereof, the said tapes being crossed and passed through the guides, as and for the purpose specified.

2. As a new article of manufacture, a jumper having an apron integral therewith and provided with a neck band continuous or without break, an opening in the rear extending from the neck band to the bottom thereof, guides at the sides of the opening, and tapes secured to the upper portion of the jumper at opposite sides of the said opening and adapted to be passed through the guides, as specified.

3. The combination, with a combined jumper and apron, the jumper being provided with a rear opening, of tabs secured to the jumper near its lower edge, one at each side of the rear opening and extending in direction thereof, and tapes attached to the back of the jumper near the neck, one at each side of the rear opening, which tapes are crossed and carried downward through the tabs, as and for the purpose specified.

## 502,114. WINE-COOLER. WILLIAM H. FAY, Kansas City, Mo., assignor of one-half to Frank G. Mitchell, same place. Filed Dec. 22, 1892. Serial No. 454,090. (No model.)



*Claim.*—1. A cooler for wines and liquors, comprising a receptacle, a smaller receptacle for ice supported within said first named receptacle and having a water-escape tube communicating therewith, and a plate closing the open ends of said receptacles and having casings or sockets depending therefrom into the ice-receptacle, and having openings in their lower ends, substantially as and for the purpose set forth.

2. In a cooler for wines and liquors, the combination with a receptacle, and an ice receptacle supported within the first named receptacle, and a water-escape pipe communicating with the ice receptacle, and a packing filled in between said receptacles, of a plate closing the open ends of said receptacles, and having a central opening, and casings or sockets depending within the ice-receptacle and having V-shaped bottoms provided with openings, and a removable trap-door or cover adapted to close the central opening, substantially as set forth.

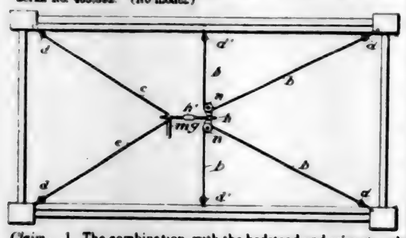
3. In a cooler for wines and liquors, the combination with an ice-receptacle, and a water-escape tube communicating therewith, of a plate closing the open end of said ice-receptacle, and having casings or sockets depending therefrom into the ice-receptacle, and having V-shaped bottoms provided with holes or openings, a number of partitions dividing said casings or sockets into separate compartments or chambers, and a horizontal partition supported above the bottom of each compartment or chamber, and an opening formed through each partition, substantially as set forth.

4. In a cooler for wines and liquors, the combination with an ice receptacle having a water-escape tube communicating therewith, of a plate closing the open end of said ice-receptacle, casings or sockets depending from said plate into the ice receptacle, and vertical partitions dividing the casings or sockets into separate compartments or chambers, and a cushion-pad having a central opening communicating with the opening of the plate, and with a number of smaller openings communicating each with a compartment or chamber of the casings or sockets, and a top-plate secured upon the cushion pad and formed with an opening registering with the central openings of the cushion-pad and the plate carrying the casings, and also formed with a number of openings communicating with and slightly larger than the openings of the cushion-pad, and a removable trap-door or cover adapted to close the central openings of the top-plate, the cushion-pad and the plate carrying the depending casings, substantially as set forth.

5. In a cooler for wines and liquors, the combination with an ice-receptacle, and a water escape tube communicating therewith, of a plate closing the open end of said ice-receptacle, and having casings or sockets depending therefrom into the ice-receptacle, and having V-shaped bottoms provided with holes or openings, a number of partitions dividing said casings or sockets into separate compartments or chambers, and a horizontal partition supported above the bottom of each compartment or chamber, and an opening formed through each partition, substantially as set forth.



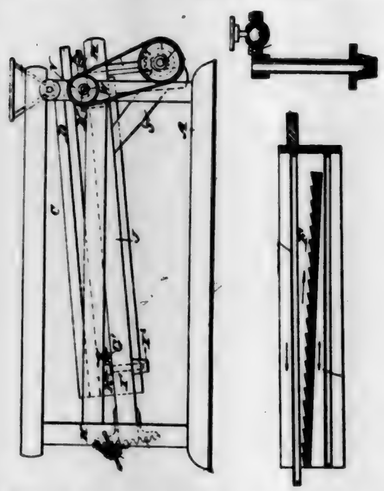
## 502,115. BED-BRACE. WILLIAM H. FITZGERALD, Monroe, assignor to Ira Addison Fitzgerald, Sapona, N. C. Filed Feb. 23, 1893. Serial No. 463,392. (No model.)



*Claim.*—1. The combination, with the bedstead and wire strands attached thereto, of the bracket block, *g*, and pulleys, *n*, *n*, journaled on its upper side, the screw *A*, having right and left threads, the handle piece, *m*, having a grooved lug, *m'*, depending therefrom, the bights of said strands being looped over said pulleys and lug, and adapted to be detached from them, as shown and described.

2. In a bed brace, a stretching device for flexible strands attached to the side rails and corner posts of the bedstead, comprising an elongated bracket block, two grooved pulleys rotatable thereon near the ends of said block, a handle piece, a laterally grooved depending lug thereon, and a right and left hand screw engaging threaded holes in the handle piece and in the bracket block centrally of said block, and having a flattened central portion, substantially as described.

## 502,116. GYRATING BOLT. WILLIAM E. GETZ, Quincy, Ill. Filed June 25, 1892. Serial No. 437,941. (No model.)



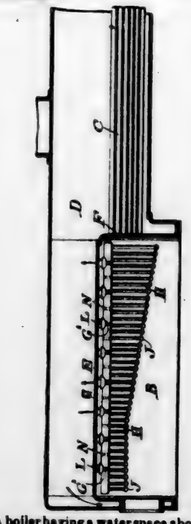
*Claim.*—1. In a gyrating bolt the combination with a sieve of crank arms connected by ball and socket joints with the said sieve, shafts carrying the said crank arms and a frame in which the said shafts are journaled and means substantially as described for revolving the said shafts, substantially as shown and described.

2. In a gyrating bolt the combination with a pivoted frame and means for adjusting the inclination thereof, of shafts journaled in the said frame at right angles thereto, crank arms carried by the said shafts, ball and socket joints on the said crank arms and a sieve connected with the said ball and socket joints and extending parallel to the said frame, substantially as shown and described.

3. In a gyrating bolt, the combination with a pivoted frame and means for adjusting the inclination thereof, of shafts journaled in the said frame at right angles thereto, crank arms carried by the said shafts, ball and socket joints on the said crank arms, a sieve connected with the said ball and socket joints and extending parallel to the said frame, a driving shaft journaled in an extension of the said frame and gearing for connecting the said driving shaft with some of the said frame shafts to rotate the latter and thus impart a gyrating motion to the said sieve, substantially as shown and described.

4. In a gyrating bolt, the combination with a pivoted frame and means for adjusting the inclination thereof, of shafts journaled in the said frame at right angles thereto, crank arms carried by the said shafts, ball and socket joints on the said crank arms, a sieve connected with the said ball and socket joints and extending parallel to the said frame, a driving shaft journaled in an extension of the said frame and gearing for connecting the said driving shaft with some of the said frame shafts to rotate the latter and thus impart a gyrating motion to the said sieve, a pulley shaft arranged in axial line with the pivot for the said frame and pulleys and belting for connecting the said pulley shaft with the said driving shaft, substantially as shown and described.

## 502,117. BOILER FOR LOCOMOTIVE OR OTHER ENGINES. EUGENE U. OTHS, Mount Holly, N. J. Filed Oct. 6, 1892. Serial No. 447,998. (No model.)



*Claim.*—1. A boiler having a water space above the fire box thereof, depending tubes arranged in series of increasing length, transverse tubes at the lower ends of and in communication with said depending tubes, and a separate tube connected with said depending tubes and in communication with said water box, said parts being combined substantially as described.

2. The vertical and horizontal pipes H and J, the tube K communicating with the pipes G and the water leg A', said tube K communicating through the crown sheet D with the steam and water space D of the boiler, substantially as described.

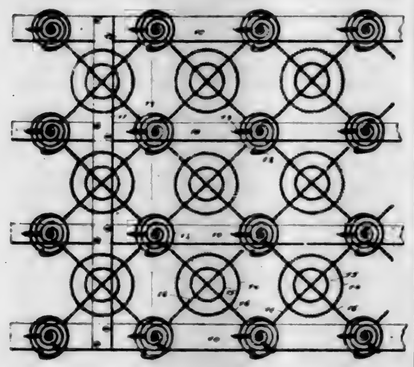
3. A boiler having in the fire-box thereof a series of depending tubes communicating with the water space of the boiler, each of said tubes having a transverse tube at its lower end, and said depending tubes increasing in length toward the flues of the boiler, said parts being combined substantially as described.

4. A steam boiler having the fire box and the water space D, the latter with combustion flues C therein, the shell G with the vertical tubes H, the transverse tubes J communicating with said tubes H, and the tube K connected with said shell G and said water space, said parts being combined substantially as described.

5. The vertical pipes H, and the horizontal pipes J, the shell G connecting the opposite ends thereof, in combination with the pipe K, the water leg A', and the nipples G', R, substantially as described.

6. A boiler having in its fire-box a shell formed with separate chambers, vertical tubes connected with the chambers of said shell and horizontal tubes connected with said vertical tubes, said parts being combined substantially as described

**502,118. SPRING-BED.** OLIN R. GOULD, Dayton, Iowa. Filed Mar 7, 1893. Serial No. 464,831. (No model.)



*Claim.*—A bed spring comprising a frame, a series of vertically extending spiral springs thereon, concentric horizontal circular spiral springs in the space between each four vertical springs and of lighter material than the latter, and a pair of straight horizontal spiral springs interlocked at their middle with each other at the center of the innermost circular spring, interlocked beyond their point of intersection with both of said circular spiral springs at the several points of intersection and connected at their ends with the upper coils of the vertical spiral springs, substantially as set forth.

**502,119. HAME.** ALFRED D. HEIST, Philadelphia, Pa. Filed Aug. 18, 1891. Serial No. 402,961. (No model.)



*Claim.*—A hold back for a hame consisting of a ring and eye with solid connecting neck, formed integral therewith the planes of said ring and eye being at substantially right angles to each other, and said ring being adapted to normally hang vertically when the eye is secured to the connecting staple on the hame, said parts being combined substantially as described.

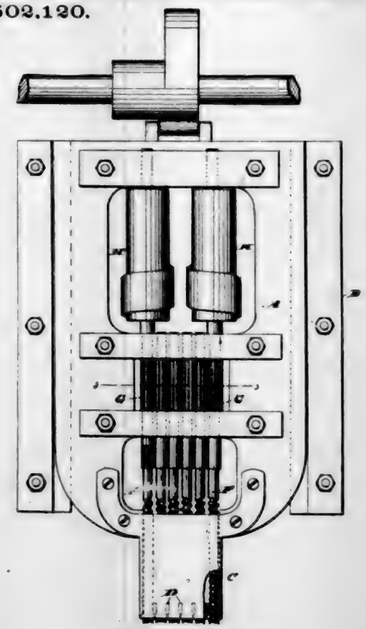
**502,120. MORTISING-TOOL.** SIMEON J. HICKS, Englewood, Ill. Filed May 21, 1892. Serial No. 433,833. (No model.)

*Claim.*—1. In a mortising tool, a hollow chisel provided at its cutting end with cutting bars extending transversely across the chisel and having their cutting edges flush with the cutting edges of the chisel, substantially as described.

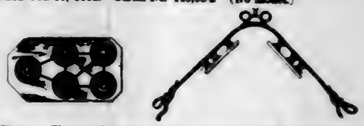
2. A mortising tool, comprising a hollow chisel provided at its cutting end with transverse cutters extending across the same and having their cutting edges flush with the cutting edges of the chisel, and bits mounted to revolve in unison and passing through the openings formed by the transverse cutters, substantially as herein shown and described.

3. A mortising tool, comprising the hollow chisel C, having at its lower end transverse cutters D, the bits F passing through the openings formed by the transverse cutters, the elongated gear wheels G to which the bits are secured, and the pulleys H on the extended shafts of the outermost gear wheels, substantially as herein shown and described.

**502,120.**



**502,121. HARNESS-SADDLE.** LEONARD A. HILL, Boston, Mass. Filed Oct. 10, 1892. Serial No. 448,334. (No model.)



*Claim.*—The combination with a harness saddle, of pads applied to the sides thereof and each consisting of a series of springs on which the sides of the saddle rest, the said springs being tied together by a cross-piece or cross-pieces and having secured to the free ends thereof felt or similar material for contact with the back of the animal to which the harness saddle is applied, substantially as described.

**502,122. COMBINED SKIMMER AND SWEATER.** WILLIAM H. HOWARD, Pueblo, Colo. Filed Jan. 31, 1893. Serial No. 460,297. (No model.)

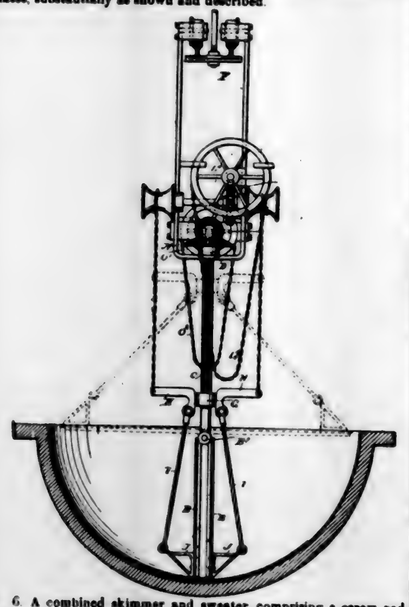
*Claim.*—1. The method of skimming molten lead which consists in passing a perforated skimmer beneath the scum and raising the skimmer slowly until its upper surface on which the scum rests is out of the lead, then holding the skimmer stationary on the surface of the lead (where it will be kept hot) until the mechanically combined lead in the scum is freed therefrom and drains through the skimmer, substantially as shown and described.

2. A lead skimming apparatus comprising a carriage, a skimmer suspended below the carriage and adapted to be raised and lowered bodily toward and from the carriage; said skimmer being pivoted at one edge to its suspending medium to permit it to be swung down to enter the pot with its lower or free edge and adjusting mechanism for swinging the skimmer on its axis, substantially as set forth.

3. A combined skimmer and sweater, comprising perforated plates hinged together, a screw rod adapted to be raised and lowered and pivotally-connected with the said plates, and means, substantially as described, for opening and closing the said plates, as set forth.

4. A combined skimmer and sweater, comprising perforated plates hinged together, a screw rod adapted to be raised and lowered and pivotally-connected with the said plates, means, substantially as described, for opening and closing the said plates, and a carriage for supporting the said plates, screw rod and means for actuating the same, substantially as shown and described.

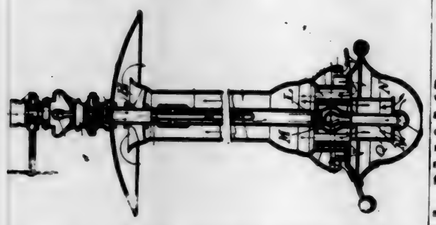
5. A combined skimmer and sweater, comprising a screw rod adapted to be raised and lowered, perforated plates hinged on the said screw rod, a sleeve fitted to slide on the said screw rod, and links pivotally-connecting the said sleeve with the free ends of the said plates, substantially as shown and described.



6. A combined skimmer and sweater, comprising a screw rod adapted to be raised and lowered, perforated plates hinged on the said screw rod, a sleeve fitted to slide on the said screw rod, links pivotally-connecting the said sleeve with the free end of the said plates, and means, substantially as described, for raising and lowering the said sleeve to open and close the plates, as set forth.

7. A combined skimmer and sweater, comprising a screw rod adapted to be raised and lowered, perforated plates hinged on the said screw rod, a sleeve fitted to slide on the said screw rod, links pivotally-connecting the said sleeve with the free end of the said plates, means, substantially as described, for raising and lowering the said sleeve to open and close the plates, and means, substantially as described, for raising and lowering the said screw rod, as set forth.

**502,123. GAS-LAMP.** CARL KALKUHL, Philadelphia, Pa., assignor of one-half to Samuel Frank, same place. Filed Aug. 2, 1892. Serial No. 441,919. (No model.)

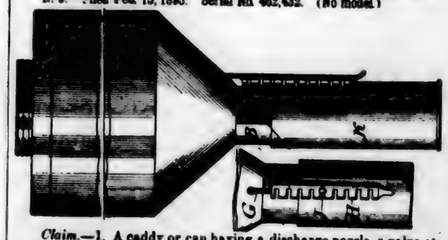


*Claim.*—1. A gas burner consisting of gas conveying pipes with a burner, a surrounding flue and globe, and an inner perforated block with a surrounding cup, said flue having its top and bottom open to the atmosphere, and said cup having perforations in its bottom forming a communication between the atmosphere and the chamber surrounding the burner, said parts being combined substantially as described.

2. A gas burner having a conveying pipe, a burner at its end, a flue surrounding said pipe, a perforated block surrounding said pipe at the lower end of said flue and within the same, a cup surrounding said block, and a globe forming a chamber outside of said burner, said flue being open at top and bottom, and said cup being perforate, said parts being combined substantially as described.

3. A hot air chamber adjacent to the burner, and a flue which surrounds the gas conveying pipe, a slotted heating block around the lower gas-receiving chamber, a globe inclosing the burner, and a perforated cup which is supported above said globe, and communicates with the latter and with the lower end of the flue, said flue having a division therein, and having both ends open to the atmosphere, one end admitting fresh air through said cup into the globe, and the other serving to discharge the products of combustion and heat the pipes inclosed therein, the several parts named being combined substantially as described.

**502,124. MEASURING-CADDY.** THOMAS G. KEELER, Mount Holly, N. J. Filed Feb. 15, 1893. Serial No. 462,432. (No model.)



*Claim.*—1. A caddy or can having a discharge nozzle, a valve at the base thereof, and a charger, the latter encircling said discharge nozzle and being adapted to be connected with said valve, substantially as described.

2. A caddy or can having a removable charger on the discharge nozzle thereof, a valve on said nozzle, and means for connecting said nozzle with said valve, substantially as described.

3. A caddy or can having a rack depending therefrom, a charger on the discharge nozzle of said caddy or can, a pin on said charger adapted to engage with said rack, and a valve for the discharge nozzle connected with said rack, substantially as described.

4. A caddy or can having a valve for the discharge nozzle thereof, a charger on said nozzle, a rack on the caddy, and a pin on the charger adapted to engage with said rack, the supporting arm of said rack and the stem of said valve being connected, substantially as described.

5. A caddy or can having a valve for the discharge opening thereof, a charger below said opening, and means for connecting said rack and valve, in combination with a spring which is attached to the caddy, and has said rack and valve depending therefrom, substantially as described.

6. A caddy or can having its discharge portion of inverted cónical form, and a seat on said portion, a valve for said seat, and a charger which is connected with said valve, and encircles the discharge portion of the caddy, substantially as described.

7. A caddy or can having a charger around the discharge opening thereof, a valve for said opening, and a connection for said charger and valve, the same having a stop such as Q for limiting the descent of the charger, substantially as described.

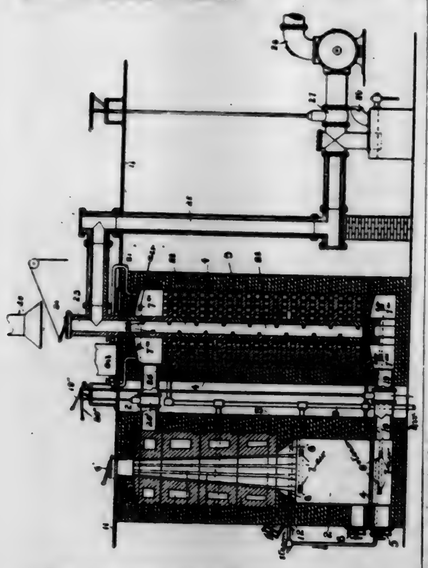
**502,125. APPARATUS FOR MANUFACTURING GAS.** JOHN J. KIRKHAM, Terre Haute, Ind. Filed Dec. 15, 1892. Serial No. 455,258. (No model.)

*Claim.*—1. In a gas making apparatus the furnace having the generator situated in the lower part thereof, and its upper part provided with vertical partitions of tile arranged within the outer wall and extending radially toward the center and inclosing a central coking chamber between their inner faces, said partitions being separated by a series of radial chambers communicating laterally with said coking chamber and also communicating with an exit near the furnace top and with the generator below substantially as described.

2. In a gas making apparatus the furnace having the generator situated in the lower part thereof, and its upper part provided with vertical partitions of tile having transverse openings, arranged within the outer wall and extending radially toward the center and inclosing a central coking chamber between their inner faces, said partitions being separated by a series of radial chambers communicating laterally with said coking chamber and also communicating with an exit near the furnace top and with the generator below substantially as described.

3. The furnace having in its lower part a generator and in its upper part a series of vertical tile partitions arranged radially and forming an interior coking chamber said partitions having spaces between them communicating with the interior coking chamber and with an exit near the furnace top, substantially as described.

4. The furnace having in its lower part a generator and in its upper part a series of vertical tile partitions arranged radially and forming an interior coking chamber said partitions having spaces between them communicating with the interior coking chamber and with an exit near the furnace top and provided near their inner edges with projections, substantially as described.



5. The furnace having in its lower part a generator and in its upper part a series of vertical tile partitions arranged radially and forming an interior coking chamber said partitions having spaces between them communicating with the interior coking chamber and with an exit near the furnace top and having their outer edges held by projections from the inner surface of the furnace wall, substantially as described.

6. The furnace having in its lower part a generator and in its upper part a series of vertical tile partitions arranged radially and forming an interior coking chamber said partitions having spaces between them communicating with the interior coking chamber and with an exit near the furnace top and also with the generator, and air inlets to supply air between the partitions, substantially as described.

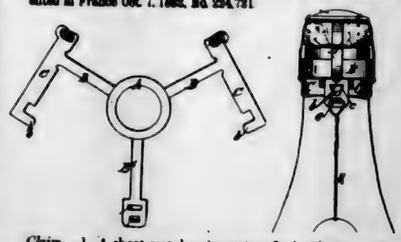
7. The gas furnace having in its lower part a generator, the partitions forming the central coking chamber and vertical radial spaces between them in communication with the generator and with the coking chamber and with an exhibit at the upper part of the furnace, in combination with the superheater whereby hot gases from the generator can be conducted through the spaces about the coking chamber and mingled with vapors from said chamber and conveyed to the superheater substantially as described.

8. The furnace having in its lower part a generator, the radial partitions forming a central coking chamber and having spaces between them in communication with the generator with the coking chamber and with an exit at the upper part of the furnace, in combination with the superheater whereby hot gases from the generator can be conducted through the spaces about the coking chamber and mingled with vapors from said chamber and conveyed to the superheater, and oil and air inlets in the top of the superheater substantially as described.

9. The furnace having the generator in its lower section provided with steam and air inlet ports at both its upper and lower parts, the superposed coking chamber communicating laterally with vertical chambers or passages which communicate with an exit near the furnace top, and the superheater having refractory material surrounding a central fixing retort flue and having its base in communication with the coking chamber, and suitable valves, whereby either water gas, or products of combustion, may be passed up about the coking chamber and down through the refractory material and up through the central retort and whereby either may be passed direct to the bottom of the retort and up through the same, all substantially as described.

10. The furnace having the generator in its lower section provided with steam and air inlet ports at both its upper and lower parts, the superposed coking chamber communicating laterally with vertical chambers or passages which communicate with an exit near the furnace top, and the superheater having its base in communication with the coking chamber and with the generator and its top in communication with the coking chamber and suitable valves, whereby either water gas or products of combustion may be passed up about the coking chamber and down through the refractory material and up through the central retort and whereby either may be passed direct to the bottom of the retort and up through the same and in every case oil or oil vapor admitted at will to the current of gases, all substantially as set forth.

**502,126.** CORK-RETAINER. AUGUSTE J. B. LAUBEDAT, Paris, France. Filed Mar. 23, 1893. Serial No. 467,202. (No model.) Patented in France Oct. 7, 1892, No. 224,731.

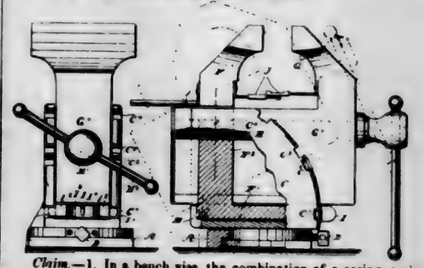


*Claim.*—1. A sheet metal cork-retainer for bottles, comprising a ring-cap or circle, A, the branches B, B, integral with said circle, the collar in two parts, each integral with a branch B, and provided with a clip *b*, the branch B', integral with the circle A and provided with a slot *c* to receive the clips on the collar, and a wire *d* connecting the ends of the two parts of the collar opposite to the ends on which the clips are formed, substantially as set forth.

2. A sheet metal cork-retainer, comprising a ring-cap or circle, A, branches B, B, integral with said ring, the collar, in two parts, each integral with one of the branches B, and provided at its end with a clip *b*, the branch B', integral with the circle A and provided with a slot *c* to receive the clips *b*, a wire *d* for connecting the ends of the collar opposite to the clips, and a wire and thumb-piece, attached to the branch B', to serve for disengaging it from the clinched clips, substantially as set forth.

3. An integral cork-retainer blank, formed of sheet metal, substantially as described, comprising the ring or circle A, the radial branches B, B, the parts C, C, of the collar, connected, respectively with the outer ends of said branches and furnished each with a clip, *b*, at one end and a keeper, *a*, at the other end, and the middle branch, B', having in its free end a slot *c*, as set forth.

**502,127.** BENCH-VISE. ABRAHAM LURIE, New York, N. Y. Filed Mar. 30, 1893. Serial No. 468,293. (No model.)



*Claim.*—1. In a bench vise, the combination of a casing, a vise having its fixed jaw pivoted in the casing, and means for locking the vise to the casing, substantially as described.

2. In a bench vise, the combination of a casing having a segmental and notched front edge, a vise having its fixed jaw pivoted in the casing, and latches carried by one of the jaws of the vise and engaging the notches of the casing, substantially as described.

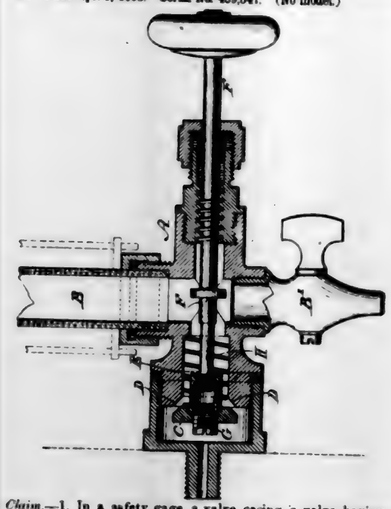
3. A bench vise comprising a fixed jaw, a movable jaw fitted to slide thereon, a casing carrying a pivot on which the said fixed jaw is hung, and a locking device held on the said fixed jaw and adapted to engage notches in the sides of the said casing, substantially as shown and described.



4. In a bench vise, the combination with a casing adapted to be turned horizontally and provided in its parallel sides with notches, of a fixed jaw having a shank and a foot on which the jaw is pivoted in the said casing, a movable jaw formed with a casing fitted to slide between the sides of the first-named casing and on the said fixed jaw, and a locking device held on the said fixed jaw and adapted to engage the said notches in the first-named casing, substantially as shown and described.

5. In a bench vise, the combination with a casing adapted to be turned horizontally and provided in its parallel sides with notches, of a fixed jaw having a shank and a foot on which the jaw is pivoted in the said casing, a movable jaw formed with a casing fitted to slide between the sides of the first-named casing and on the said fixed jaw, a locking device held on the said fixed jaw and adapted to engage the notches in the first-named casing, and a screw rod mounted to screw in the said movable jaw and screwing in the shank of the said fixed jaw, substantially as shown and described.

**502,128.** WATER-GAGE. CHARLES R. MARSHALL, Philadelphia, Pa. Filed Apr. 5, 1893. Serial No. 469,547. (No model.)



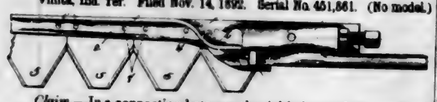
*Claim.*—1. In a safety gage, a valve casing, a valve having a seat on said casing provided with a stem loosely connected with one end thereof, and a screw plug in the opposite end, said connection of stem and valve being movable in said valve, said parts being combined substantially as described.

2. A valve casing, a valve having a seat on said casing, a loose sleeve in said valve having a shoulder adapted to bear against a shoulder on the said valve, a stem secured to said sleeve and a plug in the other end of the valve from the sleeve, said parts being combined substantially as described.

3. A safety cock for a water gage, having a valve therein, between the gage and boiler end, a sleeve loosely fitted in said valve, a valve stem engaging with said sleeve, and a spring bearing against said valve, said parts being combined substantially as described.

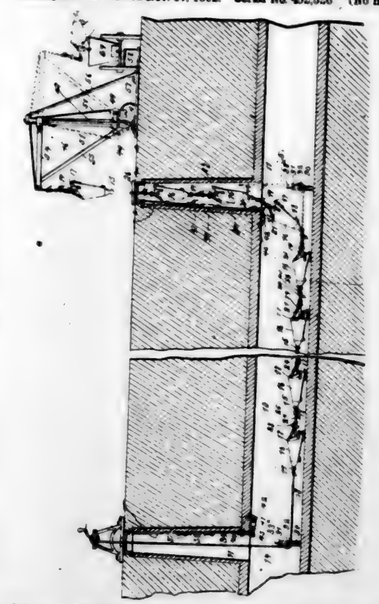
4. A valve casing, a valve having a seat on said casing, and provided with a loose sleeve in one end thereof, and a plug in the opposite end, said sleeve having the valve stem secured thereto, and a spring bearing against said valve so as to normally raise the same from its seat, said sleeve having a shoulder bearing against a shoulder on the inner face of the valve, said parts being combined substantially as described.

**502,129.** SICKLE-HEAD FOR MOWERS. THOMAS J. MITCHELL, Vinita, Ind. Ter. Filed Nov. 14, 1892. Serial No. 451,861. (No model.)



*Claim.*—In a connection between the sickle-bar and pitman-head of a reaper, the combination of a bearing-block having an elongated opening and a cavity communicating with said elongated opening, an extension of one end of said block, a retaining clip formed on one side of said block, two mating bearings adapted to fit in the elongated opening, one of said bearings being held stationary by means of a lug engaging the cavity in the bearing block, the other mating-bearing being capable of longitudinal adjustment, a set-screw, a locking nut, said screw passing through the end of said bearing-block and engaging against the said mating-bearing, a pitman head and a pivot-pin, all arranged as described and for the purpose set forth.

**502,130.** SEWER-CLEANING APPARATUS. ALFRED MUNDELL, Brooklyn, N. Y. Filed Nov. 17, 1892. Serial No. 452,326. (No model.)



*Claim.*—1. In a sewer cleaning apparatus the guide comprising the bars 27, overlapped at their inner ends, keepers 28 embracing said overlapped ends and each provided with a set screw 29 to bind the bars in their adjusted positions, and a block 30 supported by said bars and provided with an upward projecting frame 31 having a pulley journaled therein to guide the operating cable, substantially as set forth.

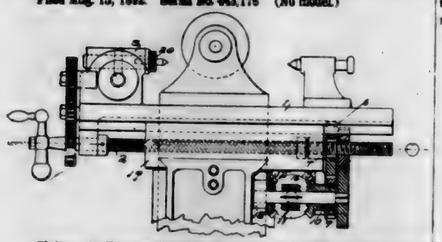
2. A sewer cleaning bucket 16 having its front open end inclined upwardly and rearwardly, straps 17 embracing and projecting in front of the sides and bottom of the bucket, side bars 19 rigidly secured to the sides of the bucket projecting in front thereof and having a transverse connecting bar 20, a brace 21 extending from the upper edge of the bucket forwardly and downwardly to the middle of the bar 20, a bail 22 pivoted to the frame formed by said bars and brace, a wear plate 18, and an eye 15 at the rear end of the bucket, substantially as set forth.

3. In a sewer cleaning apparatus the guide comprising bars 33, 34 having hooked outer ends 35, 39, an adjusting mechanism connecting the inner ends of said bars, an angle plate 41 having a slot 43 in its vertical member, a clamping screw 44 extending through said slot into the bar 34, a keeper 42 on the horizontal portion of bar 34 and through which the corresponding member of the plate 41 projects and the roller 45 journaled in the angle of the plate 41, substantially as set forth.

4. The combination with the sewer and manhole and the buckets adapted to be drawn upward through the manhole, of the clamping bars adapted to be secured to the walls of the manhole, mechanism for tightening and fastening the bars, and an angle plate secured to the lower bar and having a guide roller journaled therein, substantially as described.

5. The combination with the sewer and manhole and the hoisting bucket adapted to pass through the manhole, of the clamping bars extending from top to bottom of the manhole, the turn buckle connecting the two bars, an angle plate adjustably secured to the lower bar, and a guide roller carried by the angle plate, substantially as described.

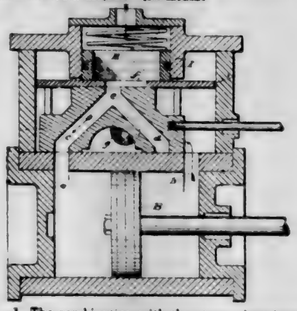
**502,131. FEED-MOTION.** EDWARD J. MCLELLAN, New York, N. Y. Filed Aug. 15, 1892. Serial No. 443,176. (No model.)



*Claim.*—1. The combination in a universal milling machine and in a lathe, of a rotating feed screw and a rotating nut thereon, to feed the slide in said machine, change gearing for varying the relative rotative speeds of said screw and nut, said screw and nut being geared to the rotating spindle holding the work, for the purposes and substantially as described.

2. The combination in a universal milling machine and in a lathe, of a rotating feed screw and a rotating nut thereon, to feed the slide in said machine, change gearing for varying the relative rotative speeds of said screw and nut, and relative reversing gear for said screw and nut, said screw and nut, being geared to the rotating spindle holding the work, for the purposes and substantially as described.

**502,132. BALANCED SLIDE-VALVE.** GEORGE S. NEELEY, Pacific, Mo., assignor to himself and Ferdinand Meurer, same place. Filed Mar. 18, 1893. Serial No. 466,644. (No model.)



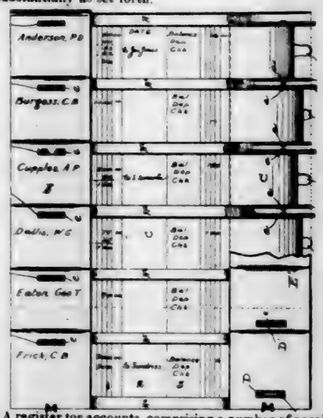
*Claim.*—1. The combination with the steam chest having a lateral exhaust *g*, and cylinder ports *a b*, of the balanced slide valve having diverging ports, and made of less width than the steam chest, to allow exhaust steam to pass around it, substantially as shown and described.

2. A balance slide valve comprising a steam chest connected with the cylinder ports and provided in its side with an exhaust port, a slide valve mounted to slide in the said chest and provided with diverging ports adapted to alternately connect with the cylinder ports, a plate held in the said steam chest on top of the said slide valve, and provided with a port in register at all times with the apex of the said diverging ports, a cylinder formed in the cover for the said steam chest and provided with a covering plate connected with a steam supply, and a spring-pressed hollow piston fitted in the said cylinder and surrounding the port in the said plate, substantially as shown and described.

**502,133. CREDIT-BALANCE REGISTER.** ABRAM L. NORFLEET, Kearney, Mo. Filed Sept. 17, 1892. Serial No. 446,239. (No model.)

*Claim.*—1. A register for accounts, comprising a number of parallel partitions, having recesses or grooves in their front edges, a number of spools journaled in said recesses or grooves and between the parallel partitions, a roll of paper connecting said spools and adapted to be wound from one to the other, substantially as set forth.

2. A register for accounts, comprising a number of parallel partitions having recesses or grooves in their front edges, and a number of shells interposed between and connecting said partitions, and a number of spools located between the outer ends of said parallel partitions having split spindles, having projecting ends engaging the recesses or grooves of the parallel partitions, and paper strips having their opposite ends secured in said split spindles and extending over the face or front sides of the said shells, and adapted to be wound from one to the other of said spools, and tension plates secured to the shells at one end, and bearing against the under side of the paper rolls, substantially as set forth.




3. A register for accounts, comprising a number of parallel partitions having recesses or grooves in their front edges, a number of shells interposed and connecting said partitions, spools having projecting ends journaled in said recesses or grooves, and located at each end of the shells, paper strips extending over the face or front side of said shells, and each connecting a pair of spools, and cover-plates hinged to the top partition near its opposite ends, and spring latches secured near the opposite ends of the lowest partition and adapted to secure the hinged cover-plates over the recesses or grooves in the front edges of the partitions, to prevent the displacement of the spools, substantially as set forth.

4. A register for accounts, comprising a number of parallel partitions, a number of shells connecting said partitions, a number of spools having one disk end of greater diameter than the other disk end, journaled between said partitions in pairs, and a paper strip connecting each pair of spools, and cover plates hinged to one of said partitions and having slots through which the larger disk end of the spool protrudes, when the cover-plates are closed, so that the spools may be revolved to wind the paper strip from one to the other, substantially as set forth.

5. A register for accounts, comprising a number of parallel partitions having recesses or grooves, a number of shells interposed and connecting said shells, a spool having projecting ends journaled in said recesses or grooves, and a paper strip having a "dollar and cents" column, a "date" column, and a "remarks" column, and a hinged cover-plate having the names of the parties to the account inscribed thereon, which are adapted to be opposite their respective accounts when the cover-plate is closed, substantially as set forth.

**502,134. ANTI-RATTLER FOR THILL-COUPLINGS.** WILLIAM H. PARDEE, Antigo, Wis. Filed Nov. 26, 1892. Serial No. 453,227. (No model.)



*Claim.*—1. As an improved article of manufacture an anti-rattler comprising a spring having a curved upper end to engage the thill iron, a fulcrum block 22, a bail adjustably connected at its lower end with the lower end of the spring and a cam lever pivoted within the upper or free end of the bail, substantially as set forth.

2. The combination, with the thill coupling having the usual clip and knuckle, of a spring lever fulcrumed beneath the knuckle and held to press against the same, and a bail adjustably secured to the lower end of the spring lever and adapted to engage the back end of the clip plate, substantially as described.

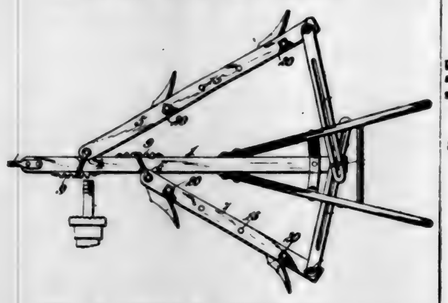
3. The combination, with a thill coupling having the usual clip and knuckle, of a spring lever fulcrumed beneath the knuckle and adapted to press against the same, a bail carried by the axle clip, and a screw mechanism connecting the bail with the free end of the spring lever, substantially as described.

4. The combination, with the thill coupling having the usual clip and knuckle, of a spring lever fulcrumed beneath the knuckle and held to press against the same, a bail pivoted to the free end of the lever and held to hook over the back end of the clip plate, and a cam mechanism for moving the bail and spring lever, substantially as described.

5. The combination, with a thill coupling having the usual clip and knuckle, of a bearing block adapted to rest against the free end of the clip plate, a spring lever fulcrumed in the block and having its upper end fitted against the thill knuckle, and a bail pivoted to the lower end of the lever and adapted to hook over the back end of the clip plate, substantially as described.

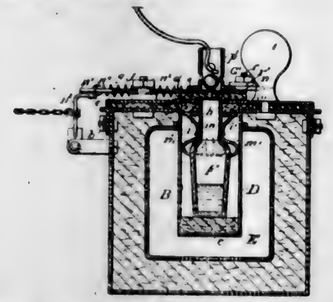


**502,135. CULTIVATOR.** JOSEPH A. PARKER, Morrisville, N. C. Filed Sept. 8, 1892. Serial No. 445,348. (No model.)



*Claim.*—In a cultivator, the combination of the draft beam having racks 9 secured to the opposite sides of its forward end, the inclined wings 5 and 7 having their forward ends provided with pivoted loops 8 adapted to surround the draft beam and be adjustably engaged with one of said racks, slotted bars for adjustably connecting the rear ends of said wings to the rear portion of the beam, and standards adjustably connected to the wings and each adapted to carry an adjustable point or tooth at its end and an adjustable blade on its vertical face, substantially as described.

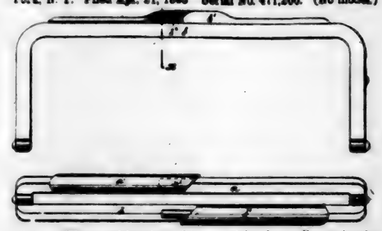
**502,136. FIRE-LIGHTER.** PETER PEDERSON, Alton, Iowa. Filed Jan. 24, 1893. Serial No. 459,513. (No model.)



*Claim.*—1. In a fire lighting device, the combination with a sealed chamber, a receiver therein, a non-conductor between the chamber and receiver, a third vessel within the receiver, an open receptacle, and a conduit leading from the lid of the outer vessel into the inlet of said receptacle, of a bracket arm on the lid, a bottomless cup on said arm, above the conduit and separated therefrom, and a swinging gate on the lid, having a projecting arm and adapted to form a bottom for the cup, and means for swinging the gate, substantially as described.

2. In a fire lighting device, the combination with a sealed chamber, a receiver therein, a non-conductor between these parts, a third vessel within the receiver, an open receptacle which is a resistant of corrosive acid, and an open conduit leading from the lid of the outer vessel into said receptacle, of a bracket arm on the lid, a bottomless cup on one end of said arm, above the conduit and separated therefrom, a swinging gate on the lid, an arm on said gate, a retractile spring for said arm, a bracket arm on the outer vessel below the gate arm, a trigger rod loosely engaging said arms, and a draft chain or like connection for the trigger rod, substantially as described.

**502,137. FRAME FOR POCKET-BOOKS.** CARL G. PFISTERER, New York, N. Y. Filed Apr. 21, 1893. Serial No. 471,366. (No model.)



*Claim.*—The combination of jaw *a* with a laterally projecting top plate having a downwardly opening groove and with a jaw *b* having a longitudinal tongue that is adapted to enter the grooved top plate sidewise, substantially as specified.

**502,138. TOP-PROP FOR CARRIAGES.** HATTIE L. PHILIPS, Wisner, Mich. Filed Mar. 17, 1893. Serial No. 466,507. (No model.)

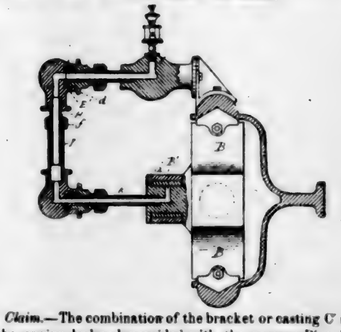


*Claim.*—1. As a new article of manufacture, a top-prop comprising a base plate, a cushion-block secured on said base plate, and a clasp connected with the base-plate and having its yielding members connected by devices which serve to clamp the members on a suitable prop-arm, as and for the purposes described.

2. A cushioned top-prop comprising a bed plate provided on one side with the spaced sockets, a cushion-block resting against said bed plate and having its ends fitted in the sockets thereon, and a clasp joined with the bed plate and provided with means for compressing its yielding members around a fixed prop-arm, substantially as and for the purpose described.

3. A cushioned top-prop, comprising the bed plate A provided with the spaced sockets B on its exposed side, an exposed cushion block C having its ends fitted in the sockets B and thereby confined laterally against the bed plate, and the yielding clasps D joined with the bed plate and each provided with a set screw or bolt which passes through the free ends of its yielding members, substantially as described.

**502,139. LUBRICATOR.** ROBERT PLACE, Fall River, Mass. Filed Mar. 30, 1893. Serial No. 468,291. (No model.)

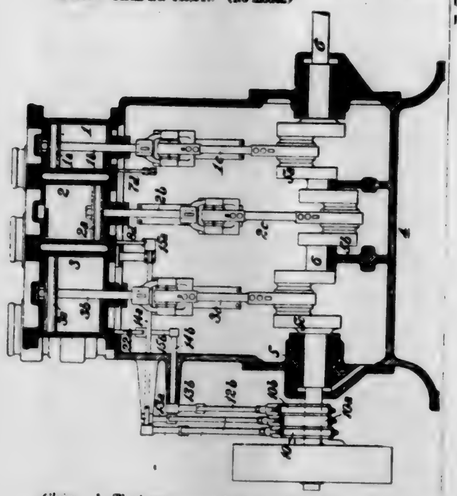


*Claim.*—The combination of the bracket or casting C supported by the engine bed and provided with the passage D', a lubricator mounted thereon, the tubular spindle E extending from said casting and connecting with said passage and provided with the flange E', the swing-joint F provided with the passage F', flanged stuffing box *b d*, similar tubular spindle K extending from the cross-head and connecting with a passage B' therein, similar swing-joint hung on the end of said spindle, and the telescopically arranged tubes H I extend

ing respectively from the swing-joints F J and projecting one into the other, substantially as described.

## 502,140. METHOD OF STEAM DISTRIBUTION IN MULTIPLE EXPANSION ENGINES.

FRANCIS M. RITES, Allegheny, Pa. Filed Sept. 18, 1892. Serial No. 446,247. (No model.)



*Claim.*—1. The improvement in the method of steam distribution in multiple expansion engines, which consists in coincidently and automatically varying all the distribution functions in all the cylinders of the engine, similarly and in respectively different degrees, substantially as set forth.

2. The improvement in the method of steam distribution in multiple expansion engines which consists in coincidently and automatically varying the expansion in all the cylinders, similarly and in respectively different degrees, substantially as set forth.

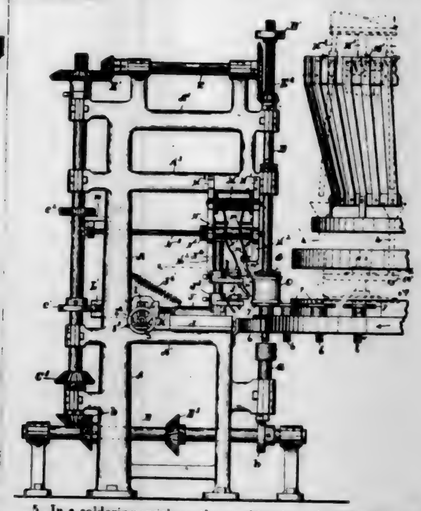
3. The improvement in the method of steam distribution in multiple expansion engines which consists in coincidently and automatically varying the expansion in all the cylinders, the degrees of variation in the primary cylinder being different from that in the succeeding cylinders or either of them, substantially as set forth.

4. The improvement in the method of steam distribution in multiple expansion engines which consists in expanding steam in all the cylinders, effecting high pressure compression and intermediate compression to initial pressure, and effecting a low pressure compression which is variable in period and degree, substantially as set forth.

5. The improvement in the method of steam distribution in multiple expansion engines which consists in coincidently and automatically varying the expansion and period of compression in all the cylinders, effecting high pressure compression and intermediate compression to initial pressure, and effecting a low pressure compression which is varied in period coincidently with and proportionately to variations of expansion, substantially as set forth.

## 502,141. SOLDERING-MACHINE.

JOHN W. ROBERTS, Cleveland, Ohio, assignor, by direct and mesne assignments, to the Sherwin-Williams Company and the Roberts Tin Ware Company, same place. Filed Oct. 18, 1892. Serial No. 449,300. (No model.)



*Claim.*—1. In a soldering machine, the combination, of a clamp for holding and rotating the can, disks in position to be rotated by engagement with the can, flux container having eduction members for feeding the flux to the disks, as a means of applying the flux to the can, substantially as and for the purpose set forth.

2. In a soldering machine, the combination, of a clamp for holding and rotating the can, disks for applying the flux to the can, such disks being mounted on holders, such holders having adjustment lengthwise the can, a reciprocating bar bearing such holders, the reciprocations of bar being endwise toward or from the can, substantially as and for the purpose set forth.

3. In a soldering machine, the combination, of a revolving clamp for holding the work, rotative disks for applying flux to the work, such disks being mounted on holders, a reciprocating bar bearing such holders, a cam and a spring arranged to actuate such bar endwise respectively in reverse directions toward and from the work, substantially as and for the purpose set forth.

4. In a soldering machine, the combination, of a revolving clamp, a sliding bar bearing disks, such bar having end play toward and from the work, a cam for actuating the bar, the latter having a toe in position opposing the cam, such toe being adjustable lengthwise the bar, a spring for reversing the bar, substantially as and for the purpose set forth.

5. In a soldering machine, the combination, of a sliding bar and means substantially as indicated for reciprocating the bar toward and from the work, such bar having a (T) tee head, combined with holders adjustably mounted on such head, such holders bearing rotative disks in position for engaging the work with the advance of the sliding bar, substantially as and for the purpose set forth.

6. In a soldering machine, the combination, of revolving clamp for the work, rotative disks having movement to and from the work, a flux container having eduction valves, distributing tubes for receiving the flux, such tubes being packed with wicking, such tubes each having a lateral opening through which the wicking protrudes in position to engage the disks when the latter are advanced to the work, substantially as and for the purpose set forth.

7. In combination, soldering tools, spools, grooved feed-rolls for the soldering wires, hangers provided with suitable journal boxes for said spools and rolls, guiding tubes for the soldering wires located between the feed rolls and the soldering tools, sleeves for supporting such guiding tubes, such sleeves being attached to the respective hangers, substantially as described and for the purpose set forth.

8. In combination, spools, feed rolls and guiding tubes for the soldering wires and hangers for supporting these members, the hangers being provided with split sleeves for embracing and holding the guiding tubes, such split sleeves having clamping bolts for holding the guiding tubes in adjustment, substantially as and for the purpose set forth.

9. The combination of the rotary feed table of a crimping device with a soldering machine constructed substantially as described, and located to serve as an adjunct of the crimping device, a container for flux, such container having eduction members arranged to feed the flux to the crimping disks of the crimping device, substantially as and for the purpose set forth.

10. The combination of the rotary feed table of a crimping device with a soldering machine of the variety herein described, the soldering machine being timed to the movement of the crimping device, the soldering machine having a revolving clamp in position for engaging the work while the latter is in position on the crimping device.

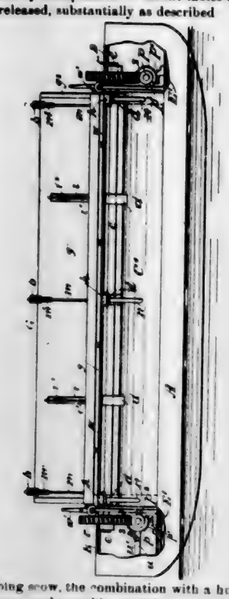
## 502,142. DUMPING-SCOW.

PATRICK RYAN, New York, N. Y. Filed Jan. 7, 1893. Serial No. 457,588. (No model.)

*Claim.*—1. In a dumping scow, the combination with a hull having a flat bottom sloped upwardly to meet decks at the ends of the hull, and provided with a main deck sloped oppositely toward the sides of the hull, of tilting tables on the level part of the main deck adapted to tilt toward the sloped portions of said main deck, and a lever, ratchet and worm gear mechanism connected to a rocking shaft on each table for rocking the tables, substantially as described.

2. In a dumping scow, the combination with a hull, two similar tilting tables thereon, and devices adapted to retain the tables level on the hull, of a ratchet, lever and worm gear mechanism at each end of the hull adapted by manipulation to tilt the tables when the retaining devices are released, substantially as described.





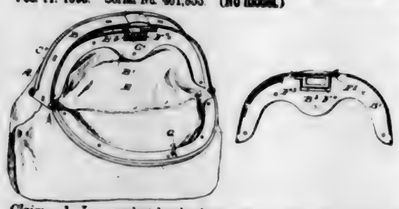
3. In a dumping scow, the combination with a hull, two similar tilting tables thereon, and stanchions on the median line of said hull, of two tables, L-shaped in cross section and adapted to rock on the deck of the hull toward or from the stanchions, stay rods adapted to hook fast to the tops of said stanchions, and mechanism for rocking the tables into level or inclined positions, substantially as described.

4. In a dumping scow, the combination, with a hull having a main deck level at its center and oppositely inclined toward the sides of the hull, and two similar tilting tables on said main deck, of curved braces working though the inclined portions of the deck and adapted to support the tables in a level position, by the application of wedges at their ends and ratchet, lever and worm gear mechanism for rocking the tables and adjusting them level or inclined, substantially as described.

5. In a dumping scow, the combination, with a hull having a main deck level at its center, and oppositely inclined from the edges of the level part toward the sides of said hull, and two longitudinal supporting walls between the bottom of the hull and the level part of the main deck, of two tilting tables, L-shaped in cross section, a set of curved braces projecting from each table into the hull toward the longitudinal walls, and wedges that key the ends of the curved braces from the sides of the longitudinal walls, substantially as described.

## 502,143. POCKET-BOOK.

ISAAC SCHEUER, New York, N. Y. Filed Feb. 11, 1893. Serial No. 461,853. (No model.)



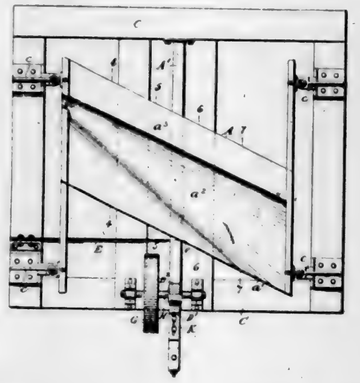
*Claim.*—1. In a pocket book, the combination with a stationary curved and slotted bar, and sides hinged to the bar and provided with catches, of a spring having one end secured to the under side of the bar and provided at its free end with a head and keeper, opposite each other the head projecting into the slot of the bar and the keeper being adapted to be engaged by the catches of the sides, substantially as described.

2. In a pocket book, the combination with a curved stationery T-shaped bar provided with a transverse slot, and a recess below the slot, and sides hinged to said bar, of a spring secured to the under side of the bar, having its free end forked and provided with a head on its upper surface projecting into the slot of the said bar and with a keeper on its under surface projecting into the recess of the bar and adapted to be engaged by the catches of the sides, substantially as described.

3. In a pocket book, the combination with a curved and slotted bar provided with a downwardly projecting arm riveted thereto, said arm being recessed below the slot of the bar, and sides hinged to the said bar, of a spring secured to the bar between it and its arm and provided with a slot to receive one of the rivets which secures the arm, a notched or forked end, a head on its upper surface projecting into the slot of the bar, and a keeper on its lower surface projecting into the recess of the arm and adapted to be engaged by the catches of the sides, substantially as herein shown and described.

## 502,144. SEPARATOR.

WILLIAM SCOULAR, Johannesburg, South African Republic. Filed Sept. 2, 1892. Serial No. 444,857. (No model.) Patented in England Nov. 14, 1891. No. 19,782.



*Claim.*—1. A separator, comprising a suspended table A, having in it a somewhat triangular concentrating recess, $a^3$, said recess having an upper outlet $a$ at one end, a lower lateral outlet $a'$, near the other end, and a bottom which slopes gradually toward the back and abruptly at the front, and means for imparting a vibrating and jarring motion transversely of and obliquely to the axis of said recess, substantially as set forth.

2. In a separating apparatus, the combination with the table A, having in it a somewhat triangular recess, $a^3$, furnished with an outlet, $a$, for the heavier particles at the apex of the triangle and a lateral outlet, $a'$, for the lighter particles near the base of said triangle, of means for imparting a jarring and vibrating motion to said table and means for supplying material to be separated and water to said table, substantially as set forth.

3. In a separating apparatus, the combination with a table A, adapted to be vibrated and having in its upper surface a concentrating recess or compartment, $a^3$, which is of somewhat triangular form in plan with outlets $a$ and $a'$ arranged as shown, a bottom, $a^4$, sloping toward the front and a steeper margin $a^5$ at the back which is oblique to the movement of vibration, of means substantially as described for vibrating and jarring said table.

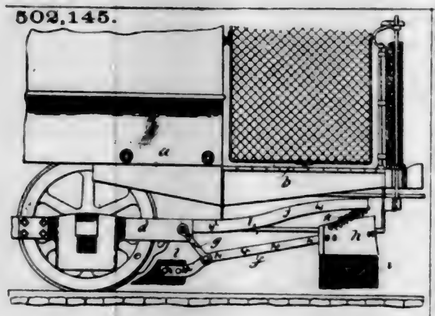
## 502,145. CHOCK AND GUARD FOR RAILWAY-CARS.

WILLARD T. SEARS, Boston, Mass. Filed Apr. 5, 1892. Serial No. 428,314. (No model.)

*Claim.*—1. A fender for cars, comprising in its construction, a brush, and springs connected with the fender and car body or truck or truck-frame for supporting it normally out of contact with the road-bed, as described.

2. The combination with a fender for cars comprising a brush and means connected with the fender and car body or truck or truck frame for supporting it normally out of contact with the road bed, of the chock *l* connected with the fender and pivotally connected with the truck frame, as described.

**502,145.**



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**502,146. FOOD-HOLDER FOR BIRD-CAGES.** LOUIS F. SHABOVEZ and BARNEY RUBENSTEIN, Chicago, Ill. Filed Mar. 10, 1893. Serial No. 465,880. (No model.)



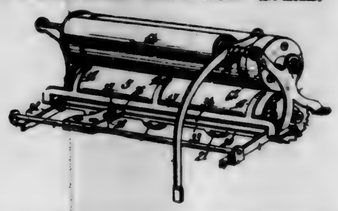
*Claim.*—1. In a food holder substantially as described a clasp A having front arms *a a* and rear arms $a^1$ $a^1$ the said arms *a a* and $a^1$ $a^1$ being separated to adapt the insertion between them of the food to be held and having the ends of the arms $a^1$ connected by a coil $a^2$ all substantially as set forth.

2. The improved holder herein described composed of wire bent to form the base rod E the main side rods D having the hook like hangers B, the lateral arms C and the clasp A, all substantially as and for the purposes set forth.

3. A holder composed of wire bent to form the base and side rods E and D and hangers B and the spring clasp A, and provided with the brace plate or medallion F connecting the side rods E E all substantially as and for the purposes set forth.

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**502,147. TYPE-WRITING MACHINE.** JOHN D. SMITH, Bonham, assignor of one-half to Reuben R. Gaines and James S. Williams, Paris, Tex. Filed Aug. 13, 1892. Serial No. 443,053. (No model.)



*Claim.*—1. The combination with the paper cylinder of a type-writing machine, of a pay-off roll carrying a continuous web of paper, a cutting or sheet severing device traveling on a support in front of the paper-cylinder, and a supporting-strip for the paper behind the line of cut, said strip lying next to and receiving support from the surface of the paper-cylinder, under the thrust of the cutting or severing-device, substantially as described.

2. The combination with the paper-cylinder of a type-writer, of a pay-off roll carrying a continuous web of paper, a sheet-severing device movable upon a support in front of the paper-cylinder, a strip arranged behind the line of cut and lying between the web and the paper-cylinder which supports the said strip under the thrust of the cutting or severing-device, and a straight-edge for the latter lying in front of the web, substantially as described.

3. The combination with the paper-cylinder of a type-writing machine, of a pay-off roll carrying a continuous web, and a cutting or severing-device movable on a support in front of the paper-cylinder which sustains the thrust of the same, substantially as described.

4. The combination with the paper-cylinder of a type-writing machine, of a pay-off roll carrying a continuous web of paper, a sheet-cutting or severing-device movable on a support in front of the paper-cylinder, a paper-supporting strip arranged between the web and the surface of said cylinder, and a bar having a straight-edge in front of the web to guide the cutting or severing-device and to receive the thrust thereof, whereby said bar is pressed against and clamps the web between its rear face and the supporting-strip, substantially as described.

5. The combination with the paper cylinder, of a type writer, of a rotary printing roll provided with a form of type for printing upon sheets successively as they are fed to the type, and means for rotating the printing roll at intervals, substantially as described.

6. The combination with a type-writing machine, of a printing-mechanism, operated by and in conjunction with the paper-feeding devices, to print a letter-head, bill-head, or other matter upon the paper, substantially as described.

7. In a type-writing machine, the combination with a paper-cylinder, of a printing-roll, or cylinder, geared thereto, and a paper-feed-lever giving an advance movement to said paper-cylinder, substantially as described.

8. In a type-writing mechanism, the combination with a paper-cylinder and with means for operating the same, of a printing-cylinder geared thereto and making impressions upon the paper passing over the paper-cylinder, and means for temporarily arresting the revolution of the said printing-cylinder without affecting the paper-cylinder, substantially as described.

9. In a type-writing mechanism, the combination with a paper-cylinder with means for operating the same, of a printing cylinder deriving its movement from the same, and means for disconnecting the printing-cylinder from the gear-connections to render it inoperative, substantially as described.

10. In a type writing mechanism, the combination with a paper-cylinder and means for operating the same, of a printing-cylinder or type-cylinder having its shaft geared to the shaft of the paper-cylinder, a dog automatically locking the printing cylinder with its shaft, and a spring-operated rider automatically engaging the dog and disconnecting the printing roll or cylinder from its shaft, substantially as described.

11. In a type-writing mechanism, the combination with a paper-cylinder and with means for operating the same, of a printing-roll, or cylinder loose upon a shaft which is geared to said paper-cylinder to have synchronous revolution, a spring-actuated dog on one part adapted to engage ratchet-teeth on the other, to lock the printing-roll or cylinder with its shaft, a riding-roll, to release the dog from its ratchet, a lever in the end of which the riding roll is journaled, and a spring acting on said lever, substantially as described.

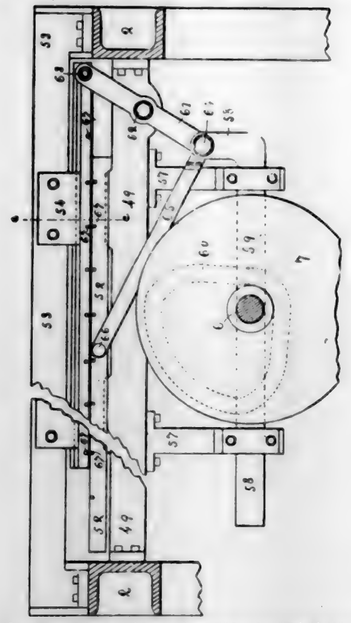
12. In a type-writing mechanism, the combination with a pay-off roll carrying a continuous web of paper, of a sheet-cutting or severing roll, having a peripheral tread upon its body-portion and a cutting-edge projecting beyond the tread, a bar lying in front of the paper on the paper-cylinder and having a straight-edge, the flat face of the cutting-roll resting upon said edge and the tread resting upon the outer face of the bar, a supporting-strip arranged in front of the paper-cylinder and between the same and the paper sheet, and a support for the bracket carrying the cutting-roll, substantially as described.

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**502,148. MACHINE FOR WEAVING WIRE BANDS OR NETTING.** JOSEPH A. TATRO, Beaver Falls, Pa. Filed Nov. 23, 1892. Serial No. 452,913. (No model.)

*Claim.*—1. In wire weaving machinery, the combination of the upper bar sliding vertically in guides supported by the frame of the machine, the housings dependent from said bar and having the guides at the lower part and the annular projections on the inner faces of said housings, the half wheels severally supported by and between each pair of the aforesaid housings and having annular grooves engaged with the annular projections of said housings; the fixed bar beneath the aforesaid sliding bar; the housings supported by said fixed bar, having annular projections on the inner faces thereof, the half wheels, in correspondence with the half wheels of the aforesaid sliding bar, severally carried by and between each pair of the last mentioned housings, and having annular grooves engaging with the projections on the inner faces of said housings; the studs depending from the aforesaid sliding bar, near the ends thereof; the two cams mounted beneath and respectively near each extremity of said sliding bar, having their edges in contact with the studs above mentioned and connected with the drive shaft of the machine by a proper system of shafting and gearing; the rack engaging with the toothed edges of the aforesaid half wheels, and supported by the vertical bar fastened beneath said rack; the horizontal bar fixed to and supporting said vertical bar and sliding in guides dependent from the aforesaid fixed lower housing bar, and having a stud at one end thereof, the cam supported near said horizontal bar having the eccentric groove in one of its faces engaged with the aforementioned stud, and rotated from the drive shaft of the machine by a proper system of shafting and gearing, the aforesaid half wheels having each a substantially rectangular recess in the center of the chord or straight edge thereof, corresponding with the like recess in its counterpart and corresponding half wheel; the whole constructed and arranged substantially as described, for the purpose of forming twists in a series of crossed wires arranged in pairs and confined in the arbors formed by the temporary junction of a series of the aforesaid half wheels in pairs, by simultaneously rotating said series of joined wheels, as fully explained herein.





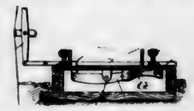
2. In wire weaving machinery the combination of the lower brace across the frame of the machine, having the bracket guides dependent therefrom and the tongue on the upper face thereof; the upper brace across the aforesaid frame, having the guide plates on the sides of said brace; the upper shift bar beneath the said upper brace, having the grooves in its sides, engaged with the guide plates of said brace, and the apertures through the sides of said bar; the lower shift bar above the aforesaid lower brace, having the groove in the under face thereof, engaged with the tongue of said lower brace, and the apertures through the sides of said bar; the sliding bar supported and moving in the bracket guides of the lower brace, having the stud on one face thereof; the cam supported near the said sliding bar, having the groove in its face, engaged with the aforesaid stud on said bar, and suitable shafting and gearing in system for the rotation of said cam by the drive shaft of the machine; the rocking arm, pivoted to the aforesaid lower brace and pivotally attached to the sliding bar aforesaid and to the upper shift bar, and the rod pivotally connecting the said sliding bar and the lower shift bar aforesaid; the whole constructed and arranged substantially as described, for the purpose of shifting and crossing the wires carried in the apertures of said shift bars, as herein fully explained.

3. The combination in wire weaving machinery of the large roller across the frame of the machine, studded with pins in the face thereof and having its sunken ratchet in its periphery; the bracket guides supported in the frame of the machine beneath said roller; the rod moving vertically in said guides, having a pawl on the upper end thereof, engaged with the ratchet in the aforesaid roller, and a stud on the inner face of said rod, and the cam supported near said rod, having a groove in the face thereof, engaged with the stud on said rod, and provided with a system of shafting and gearing to rotate said cam from the drive shaft of the machine; the whole constructed and arranged substantially as set forth, for the purpose of drawing the strands of wire through the weaving mechanism by periodic movements of the pin-studded roller, as herein fully described.

4. In a machine for weaving wire strands into meshed nettings or bands, wherein the wire strands fed to the machine are twisted together at their junction points, carried toward and crossed one upon another for successive twistings in the formation of the woven pattern, and drawn through the twisting and shifting mechanism by regular spaces in periodic movements, the combination of the following coöperative, coördinated and concurrent parts: first, the twisting wheels, formed each in two counterpart, separable halves; each counterpart recessed at the center of its straight edge to form, when the counterparts are in union, a substantially rectangular arbor; each counterpart also mounted and rotatable between a pair of housings provided with annular projections on their inner faces fitting in corresponding grooves in the faces of the counterparts; the paired housings for each set of half wheels being supported in a row, in the like vertical and horizontal planes, by a horizontal bar; the two bars being parallel and one above the other, and the upper bar being so fitted to the frame of the machine as to move up and down for the separation and reunion of the counterparts forming each wheel, with proper and familiar mechanism to lift said bar and permit it to descend in the regular and continuous operation of the machine, and the set of twisting wheels—the counterparts being in union by the descent of the upper bar upon the fixed lower bar—being simultaneously rotated one or more complete revolutions by a horizontal, longitudinal moving rack in contact with the peripheries of the wheels, or other proper and familiar mechanical motor: secondly, the pair of shifting bars, arranged in horizontal position one above the other, parallel with the twist wheel bars, and so fitted as to slide longitudinally in the frame of the machine; the said bars pierced through their sides with a series of apertures at regular intervals and in such relation that each aperture in one bar pairs with an aperture in the other bar, and the said bars being simultaneously moved in opposite directions for a prescribed distance, by proper and familiar motor mechanism; thirdly, the horizontal roller, carried in the frame of the machine, parallel with the twist wheel bars and shifting bars; studded with pins in the face thereof which are set at regular longitudinal and cross intervals to correspond with the twists in the woven fabric, and said roller turned in prescribed arcs of rotation and at regular intervals by proper and familiar mechanical means of rotation; fourthly, a revolving shaft, driven by suitable power, and properly and familiarly connected and geared to the motors of the aforesaid upper twist-wheel bar, twisting wheels, shifting bars and pin-studded roller; the whole constructed and arranged substantially as described, for the purpose of weaving strands of wire into a meshed netting or band by a continuous rotation of the said revolving shaft and the coördinated movement of the twisting, shifting and driving mechanism herein fully explained.

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**502,149. SWITCH.** JOHN W. TEW, Rome, Ga., and JOHN D. RIGGS, Selma, Ala. Filed May 3, 1892. Serial No. 431,735. (No model.)



*Claim.*—1. The combination of the switch rails, a lever pivoted between its ends and provided at one end with a lock projection for locking the switch, and an operating lever engaging directly with the opposite end of said lever and adapted to positively operate the latter into both locked and unlocked positions substantially as set forth.

2. The combination of the switch rails, the locking lever provided with a projection by which to lock the switch and an operating lever provided with a cam arranged to engage and actuate the locking lever substantially as set forth.

3. The combination with the switch rails of the locking lever pivoted between its ends and provided at one end with an upwardly extending locking projection and having a notch in its opposite end, and an operating lever pivoted to rock in a plane at right angles to the plane of movement of the locking lever and having a cam fitting in the notch of said lever substantially as set forth.

4. In a switch substantially as described the combination with the lever provided with the locking projection and the lever G pivoted between its ends and arranged to operate said first lever, of the contact or tripping plates and connections between the same and the lever G including rods arranged on opposite sides of and engaging the opposite ends of the lever G all substantially as set forth.

5. In a switch the combination with the lever F provided at one end with a locking projection, of a cam lever engaging the opposite end of the said lever and mechanism for operating said cam lever substantially as set forth.

6. In a switch the combination of the lever F provided with the switch locking projection, the lever G arranged to operate the lever F, the tripping or contact plates, and intermediate connections between said plates and the lever G, all substantially as set forth.

7. The combination with the switch, the lever G, the switch lock-

ing device and connections between the same and lever G, of the tripping plate, a bell crank lever, operated by said plate, and a rod extending between said bell crank lever and the lever G substantially as set forth.

8. In an apparatus substantially as described the combination with a track of a tripping or contact plate arranged for operation by the wheel flange, a plate or support carrying said contact plate and movable laterally whereby it may be set with the contact plate to adjust the latter into and out of the path of the wheel flange, and the lever J carried by and movable with the supporting plate and connected with the contact plate all substantially as set forth.

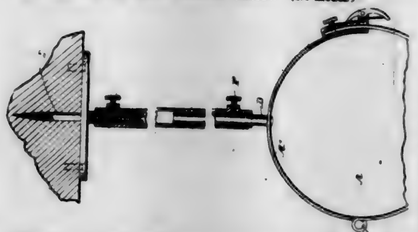
9. The combination in a switch lock of the lever F having the lock projection, the lever G for operating said lever F the tripping or contact plate, the bell crank lever operated by said plate and the rod extending between the bell crank lever and the lever G substantially as set forth.

10. The combination in an apparatus substantially as described of the lever F pivoted between its ends and provided at one end with the switch locking projection and the lever G having a cam arranged to engage the opposite end of and operate the said lever F substantially as set forth.

11. The combination substantially as described of the switch, the lock for fastening said switch the lever F supporting said lock the spring actuated lever G having a cam by which to operate the lever F the tripping or contact plate E the bell crank lever J and the rod extending between the levers J and G substantially as set forth.

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**502,150.** STOVEPIPE-HANGER. WILLIAM H. TREPUS, Chicago, Ill. Filed Mar. 14, 1893. Serial No. 465,937. (No model.)



*Claim.*—1. A stove pipe hanger, comprising an adjustable band made in two sections and adapted to encircle the stove pipe and provided with a rod, a sleeve in which the said rod is held adjustably, and a plate for supporting the said sleeve from the ceiling or other support, substantially as shown and described.

2. A stove pipe hanger, comprising a band made in two parts hinged together, a lock for fastening the free ends of the said parts, a rod extending from one of the hinged parts, a sleeve in which the said rod is held adjustably, a set screw for fastening the rod in place in the sleeve, a plate adapted to be secured to the ceiling and provided with a screw on which screws the upper end of the said sleeve, and a set screw for fastening the said screw to the sleeve, substantially as shown and described.

3. A stove pipe hanger, provided with a band adapted to encircle the stove pipe and made in two parts hinged together, and a lock for fastening the free ends of the said parts together, said lock comprising a toothed bar fastened to the free end of one band part, a spring-pressed pawl pivoted on the other band part and engaging the said toothed bar, and guideways held on one band part and engaged by the free end of the band part carrying the said toothed bar, substantially as shown and described.

4. A stove pipe hanger, provided with a band adapted to encircle the stove pipe and made in two parts hinged together, and a lock for fastening the free ends of the said parts together, said lock comprising a toothed bar fastened to the free end of one band part, a spring-pressed pawl pivoted on the other band part and engaging the said toothed bar, guideways held on one band part and engaged by the free end of the band part carrying the said toothed bar, and a screw screwing in the said toothed bar, substantially as shown and described.

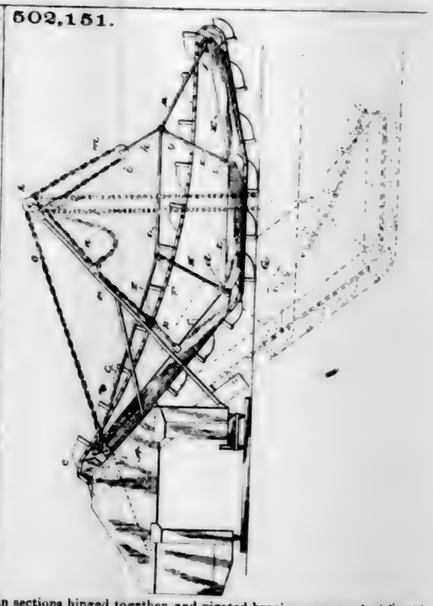
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**502,151.** EXCAVATING-MACHINE. FRIEDRICH W. VOLLERING and CARL BERNHARDT, Lubeck, Germany. Filed Apr. 28, 1892. Serial No. 431,088. (No model.) Patented in Germany Aug. 30, 1891, No. 61,816; in England Mar. 18, 1892, No. 5,407; in Canada June 14, 1892, No. 38,142, and in Austria-Hungary Oct. 25, 1892, No. 15,547.

*Claim.*—1. In an excavating machine, a frame for the bucket chain constructed in sections hinged together, and pivoted bracing connected with said sections, substantially as described.

2. In an excavating machine, a frame for the bucket chain made

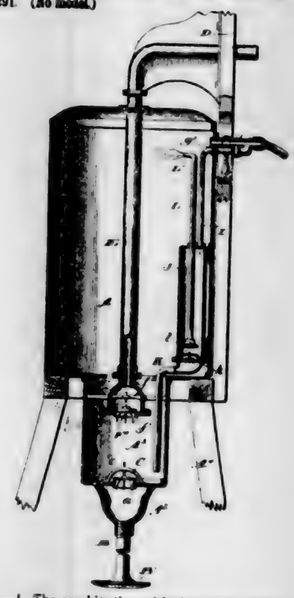
**502,151.**



in sections hinged together, and pivoted bracing connected with said sections, said sections and bracing arranged in such manner that they can be formed into desired angles against each other, substantially as described.

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**502,152.** AUTOMATIC SUPPLY-TANK FOR LOCOMOTIVES. RANDOLPH G. WARD, Charleston, S. C. Filed Dec. 6, 1892. Serial No. 454,291. (No model.)



*Claim.*—1 The combination with the tank and its inclosed discharge pipe with valve, of the condensing chamber within the tank and having independent discharge pipe and valve, of the steam inlet pipe having independent passages one of which communicates with the condensing chamber, the independently-operated valves for said



passages, and the valve in the discharge pipe of the condensing chamber, the depending chamber within which the inner end of the discharge pipe is located and the valve and suction pipe at the bottom of the depending chamber, substantially as specified.

2. The combination with the tank and its inclosed discharge pipe, with valve of the condensing chamber within the tank and having independent discharge pipe and valve, of the steam inlet pipe having independent passages one of which communicates with the condensing chamber, the independently-operated valves for said passages and the valve in the discharge pipe of the condensing chamber, the depending chamber within which the inner end of the discharge pipe is located, the valve and suction pipe at the bottom of the depending chamber and the suction pipe from the condensing chamber extended into said depending chamber below the valve of the discharge pipe, substantially as specified.

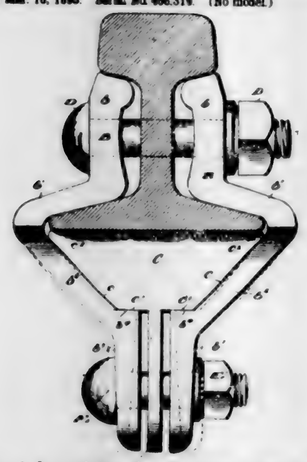
3. The combination with the tank having a depending chamber, of the condensing chamber within the tank, the centrally-arranged discharge pipe within the tank with its lower end extended into said chamber and provided with a valve, the condensing chamber within the tank, a suction pipe with valve depending from the condensing chamber into the depending chamber, independent discharge pipe from the condensing tank extending nearly to the top of the main tank, the steam inlet pipe having independent passages one of which is connected with the condensing chamber and the independently-operated valves to said passages having independent operating means, substantially as specified.

4. The combination with a tank having a secondary depending chamber thereto and a valve located at the lower end thereof connecting with a suitable suction pipe, a discharge pipe centrally located having an uplifting valve and chamber depending from its lower end also centrally located, a condensing chamber located within said tank having uplifting valve and suction pipe located at its lower extremity which suction pipe projects downwardly and into the secondary chamber, and a discharge pipe located within and projecting above said condensing chamber provided with a valve and chamber at its lower extremity, a connection provided with two orifices and valves one of which connects with the tank and the other of which connects with the condensing chamber and both of which are operated and actuated separately and independently, as described and for the purposes set forth.

5. The combination with the upright having an opening therein, of the tank, its supplemental tank, discharge pipe, depending chamber, suction pipe and valves, the suction pipe, discharge pipe and valves to the supplemental tank, the steam inlet pipe having two independent passages and removably affixed to the tank in said opening in the upright and the independently operated valves for said passages with their handles located within or at the opening in the upright, substantially as and for the purpose specified.

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**502,153.** RAIL-JOINT. RANDOLPH G. WARD, Charleston, S. C. Filed Mar. 16, 1893. Serial No. 466,319. (No model.)



*Claim.*—1. In a rail joint, the combination with the rails, fish-plates having depending flanges provided with flat portions, of a bridge-piece having flat portion adapted to be supported by the flat portions of the flanges of the fish-plates, the fish plates and bridge piece having adjacent walls on different angles substantially as specified.

2. The combination with fish-plates having depending portions, of a bridge piece having inclined sides upon a different incline from the adjacent portions of the fish plates and adapted to be supported upon said fish-plates and to be forced upward in a vertical plane by flat portions on said fish-plates, as set forth.

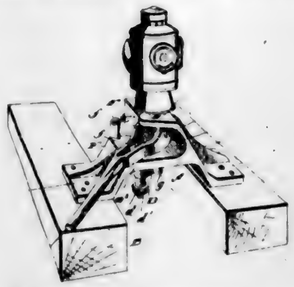
3. The combination with fish-plates having depending portions with laterally-projecting shoulders, of a bridge-piece having horizontal portions supported by said shoulders, the adjacent inclined portions on the fish plates and bridge plates being upon different inclines as set forth.

4. The combination with fish plates having inclined portions, and inwardly-projecting horizontal shoulders, of a bridge-piece having a flat portion upon its under face and inclined sides upon a different incline from that of the sides of the fish-plates, as and for the purpose specified.

5. The combination with the rails and the fish plates having portions to engage the same and depending elastic portions with inclined portions and inwardly-extending horizontal portions, of the bridge-piece having horizontal portions upon its under face and inclined sides, the adjacent inclines of the fish plates and bridge piece being upon different inclines and securing bolts and nuts, substantially as specified.

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**502,154.** SWITCH-STAND. RANDOLPH G. WARD, Charleston, S. C., and HOBART B. POTTER, Hillburn, N. Y. Filed Apr. 18, 1893. Serial No. 470,913. (No model.)



*Claim.*—1. The combination with the switch stand having pins upon its under face, of a signal standard mounted in the stand for vertical and rotary movement, an arm carried by the standard below the base portion of the stem and a lever pivotally mounted on the standard and having a cam portion whereby the standard may be moved vertically and rotated, as set forth.

2. The combination with the switch stand having stop pins upon its under face, of a signal standard mounted in the stand for vertical and rotary movement, an arm carried by the standard below the base portion of the stem, a slotted sleeve around the standard and a lever having its pivot passed through the slots of the sleeve and supported in the standard, substantially as specified.

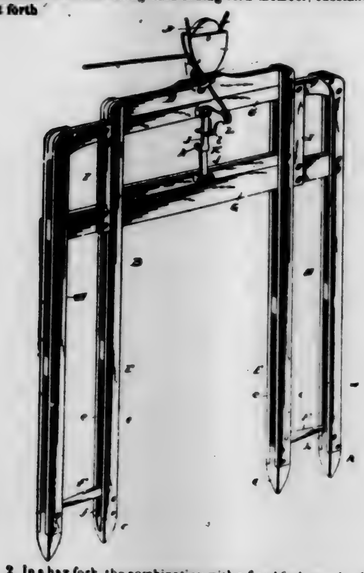
3. The combination with the switch stand having stop pins and inclined portion, of a signal standard mounted in the stand for vertical and rotary movement and having a squared portion, a square sleeve on the squared portion and provided with slots and a lever pivotally mounted on the pin passed through the slots of the sleeve and held in the square portion of the standard, substantially as specified.

4. In a switch or gate stand, the combination of a base plate having upon its under side two stop pins and a lug of less projection, a shaft having a crank adapted to rotate and engage between said pins and lug, an overhanging lip with a space intervening between such lip and the upper surface of the base, said shaft having square portion, the square sleeve adapted to fit between the base and lip having the slotted sides, the forked lever having cam shaped heads and bolt adapted to give vertical motion to the shaft by means of the bolt acting upon the shaft through the slotted sleeve, and operated by the cam shaped heads of the lever acting upon the upper side of the base and under side of the lip and adapted to rotate the shaft by means of the forked lever acting upon the square sleeve, which in turn acts upon the square portion of the shaft, causing it to be moved without strain upon the bolt, substantially as specified.

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**502,155.** HAY-FORK. SAMUEL E. WELCH and STEPHEN WELCH, Millville, Iowa. Filed Feb 6, 1892. Renewed June 27, 1893. Serial No. 478,089. (No model.)

*Claim.*—1. In a hay fork, the combination of a fixed member, a larger sliding member working in and outside of said fixed member, automatic tine or drop latches pivoted to the tines of said fixed fork member and adapted to fall into the tines of said sliding member, and means for controlling said sliding fork member, substantially as set forth.



2. In a hay fork, the combination with a fixed fork member having parallel heads and a series of open tines secured to said heads, a sliding fork member having parallel heads working between and below the heads of said fixed member, and a series of similar open tines, automatic tine or drop latches pivoted in the lower ends of the tines of said fixed fork member and adapted to fall into the tines of said sliding member, and means for controlling said sliding fork member, substantially as set forth.

3. In a hay fork, the combination of a fixed fork member having parallel heads and a series of straight open tines terminating in pointed ends having side grooves, a sliding fork member having parallel heads working between the open tines and heads of said fixed member, and a series of similar open tines terminating in pointed ends, guide strips secured to the heads of said sliding member on each side of the fixed member tines, automatic tine or drop latches pivoted in the lower ends of the fixed tines directly above the side grooves, and means for controlling said sliding fork member, substantially as set forth.

4. In a hay fork, the combination of the fixed fork member, a sliding fork member working in and outside of said fixed member, supporting devices connected with the tines of said fixed member, a lock hinge comprising opposite members centrally hinged or pivoted together and having their opposite ends pivoted to the heads of the fixed and sliding fork members, respectively, a separate and independent bell crank lever pivoted to the sliding fork head and having a bifurcated flanged arm straddling one of said hinge members, and a trip rope connected with the other arm of said bell crank, substantially as set forth.

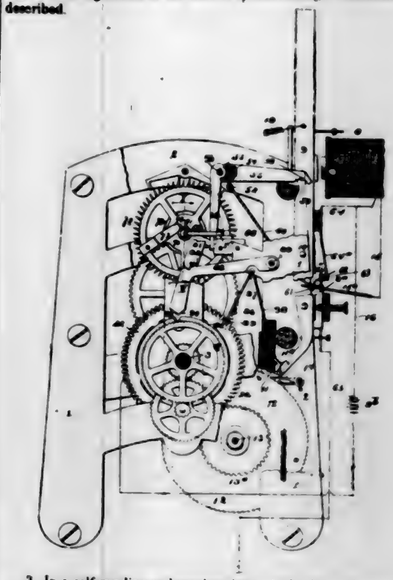
5. In a hay fork, the combination with the fork and a suitable tripping device, of the sheave frame, a hoisting pulley journaled within said sheave frame, a smaller trip rope pulley mounted within said sheave frame below said hoisting pulley, a hollow swivel connecting the lower end of the sheave frame with the fork, and a trip rope connected with said tripping device and passing through said hollow swivel and over the trip rope pulley within the sheave frame, substantially as set forth.

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**502,156. SELF-WINDING AND SYNCHRONIZING CLOCK.** ARTHUR G. WIEDMAN, St. Louis, Mo. Filed Oct. 28, 1892. Serial No. 450,210. (No model.)

*Claim.*—1. In a self-winding and synchronizing clock, the combination of a single magnet, an armature lever, mechanism operated by said magnet and lever to wind the clock, and mechanism operated by said magnet and lever to synchronize the clock, whereby but one magnet and armature is required to both wind and synchronize; substantially as set forth.

2. In a self-winding and synchronizing clock, the combination of a single magnet, an armature-lever, mechanism operated by said magnet and lever, to wind the clock, mechanism operated by said maguet and lever to synchronize the clock whereby but one magnet and armature is required to both wind and synchronize and mechanism for breaking the winding circuit at the time of synchronizing; substantially as described.



3. In a self-winding and synchronizing clock, the combination of a single magnet, an armature lever, mechanism operated by said magnet and armature lever to wind the clock, mechanism operated by said magnet and armature lever to synchronize the clock, and mechanism for disengaging said lever from the clock mechanism when the clock is to be synchronized; substantially as set forth.

4. In a self-winding and synchronizing clock, the combination of a single magnet, an armature lever, mechanism operated by said magnet and armature lever to wind the clock, mechanism operated by said magnet and armature lever to synchronize the clock, mechanism for disengaging said lever from the clock mechanism when the clock is to be synchronized, and mechanism for breaking the winding circuit at the time of synchronizing; substantially as described.

5. In a self-winding and synchronizing clock, the combination of a single magnet and armature lever, mechanism operated by said magnet and lever to wind the clock, mechanism operated by said magnet and lever to synchronize the clock whereby but one magnet and armature is required to both wind and synchronize, and mechanism for breaking the winding circuit at the time of synchronizing consisting of the disk 4 having a pin 50, the shaft 52 having lever 51, engaged by the pin, and an arm 60 for disengaging the wire 13, substantially as described.

6. In a self-winding and synchronizing clock, the combination of a magnet, an armature lever, a disk or dial adapted to move with the minute hand of the clock, a pin or projection on said disk, mechanism operated by said disk to close the circuit, and mechanism operated by said disk to disconnect said armature lever from the winding mechanism of the clock, when the clock is to be synchronized, consisting essentially of arms 96 and 97, and a lever 51, substantially as set forth.

7. In a synchronizing clock, the combination of a magnet, an armature lever, a disk or dial adapted to move with the minute hand of the clock, a pin or projection on said disk, and mechanism operated by said disk to close the circuit comprising the shaft 52 having the lever 51, and pin 53, the arm 55 having a cam face 54, a rod on which the arm is moved by the pin bearing on the cam face, and a spring for returning the arm, and a pin on the armature lever receiving the impact of the arm, substantially as set forth.

8. In a synchronizing clock, the combination of a magnet, an armature, a disk or dial adapted to move with the minute hand of the clock, mechanism moved by said disk to close the circuit, an arm moved by said disk into position to be engaged by the armature lever, and mechanism moved by said arm, when the armature is attracted to the magnet, to disconnect the second hand shaft from the escapement of the clock, substantially as and for the purpose set forth.



9. In a synchronizing clock, the combination of a magnet, an armature lever, a disk or dial adapted to move with the minute hand of the clock, a pin carried by said disk, a lever adapted to be engaged by said pin, an arm 55 having an inclined face, a pin or projection moved by said lever and bearing against said inclined face on the arm to move the arm laterally, a projection on said armature lever adapted to engage the end of said arm when the armature is attracted by the magnet, an arm 66 operated by said arm 55 to move the second hand shaft longitudinally, a projection carried by the cage on said second hand shaft, and which is adapted to engage a toothed disk on the escapement wheel, a pin 81 on said cage and a stop 82, substantially as and for the purpose set forth.

10. In a synchronizing clock, the combination of a magnet, an armature lever, an arm 55 adapted to be moved by the minute hand shaft, bell crank lever 67ª, a second hand shaft 71, a cage on said second hand shaft, a projection 79 carried by said cage, and adapted to engage a toothed wheel or disk secured to the escapement wheel, a pin 81 on said cage and a stop 82, substantially as and for the purpose set forth.

11. In a synchronizing clock, the combination of the magnet, an armature lever, an arm 55 having an inclined end 59 adapted to be engaged by a pin on said armature lever and having an incline 54, a rod 52 having a pin 53 and a lever 51, a disk or dial 4 having a pin 50, a bell crank 67ª, an arm 66 depending from the arm 55 adapted to engage and move said bell crank lever, a second hand shaft 71, a disk on said second hand shaft behind which said bell crank lever fits, a cage on said second hand shaft having an arm 80 carrying a pin 79, a toothed disk or wheel 78 secured to the escapement wheel, a projection or pin 81 on said cage, and a stop 82, all substantially as and for the purpose set forth.

12. In a synchronizing clock, the combination of a magnet, an armature lever, mechanism moved by said armature lever to disconnect the second hand from the escapement wheel and mechanism moved by said armature lever to correct the minute hand of the clock; said mechanism consisting essentially of a notched disk, an arm having a conical end and a lever arranged to move said arm to press its conical head into said notch, substantially as and for the purpose set forth.

13. In a synchronizing clock, the combination of a magnet, an armature-lever, carrying a pin a notched disk connected to the minute hand of the clock, an arm having a conical end to engage in said notch, a lever adapted to bear against said arm, and which is moved by said armature; and a shaft carrying the last named lever, having an arm provided with an incline engaging the pin on the armature-lever substantially as and for the purpose set forth.

14. In a synchronizing clock, the combination of the rod 52, having a lever 51, a disk carried by the minute hand shaft, and adapted to move said lever, and an arm 60 on said shaft carrying an insulated contact plate 62 for closing the circuit, substantially as and for the purpose set forth.

15. In a synchronizing clock, the combination of an arm 102, lever 105, having an inclined end 108, a stop 107 secured to said lever, a cage carried by the second hand shaft and having a pin adapted to engage a toothed disk carried by the escapement wheel, a pin 81 on said cage, an arm 110, adapted to be moved by said arm 102, and a bell crank lever 67ª, adapted to move said second hand shaft, substantially as and for the purpose set forth.

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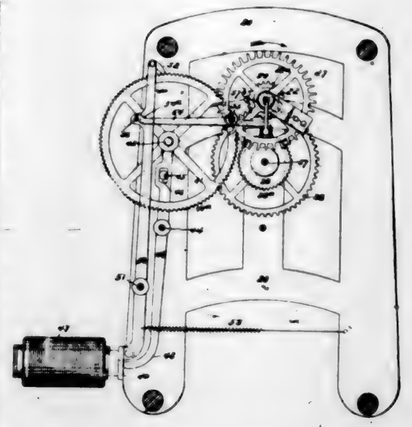
**502,157. ELECTRIC-CLOCK SYNCHRONIZER.** ARTHUR G. WIEDMAN, Webster Groves, Mo. Filed Apr. 29, 1892. Renewed Mar. 24, 1893. Serial No. 467,451. (No model.)

*Claim.*—1. In a synchronizing mechanism for clocks, an armature, a seconds-hand shaft, a scape wheel carried loose on said shaft, a clutch adapted to engage the said shaft and scape wheel and mechanism between the armature and seconds hand shaft adapted to rotate the shaft and disconnect it from the scape wheel, for the purpose set forth.

2. In a synchronizing mechanism for clocks, an armature, an armature lever, the seconds-hand, a shaft giving motion to the seconds-hand and a wheel having frictional connection with the said shaft and mechanism between the armature lever and said wheel adapted to rotate the wheel by the simple movement of the armature lever, for the purpose set forth.

3. In a synchronizing mechanism for clocks, an armature lever having a pawl, a wheel acted on by the pawl on the movement of the lever and a wheel upon a shaft of the clock mechanism adapted to engage the pawl wheel and having frictional connection with its shaft, substantially as, and for the purpose set forth.

4. In a synchronizing mechanism for clocks, an armature lever carrying a pawl, a lever adapted to swing with the armature lever and carrying a wheel with teeth adapted for engagement by the pawl upon the armature lever, and a wheel upon a shaft of the clock mechanism and having frictional connection therewith and in engagement with the pawl wheel in the active position of the pawl wheel, substantially as, and for the purpose set forth.



5. In a synchronizing mechanism for clocks, an armature-lever carrying a pawl, a pawl wheel carried on a lever adapted to swing with the armature-lever, a stop-pin limiting the movement of the wheel carrying lever, a spur wheel adapted for engagement with the pawl wheel in one position of the latter and upon a shaft of the clock mechanism and having connection therewith, substantially as, and for the purpose set forth.

6. In a synchronizing mechanism for clocks, a seconds-hand shaft, a scape wheel revoluble on the said shaft, a clutch engaging the shaft with the scape wheel and disengaged by an endwise movement of the shaft, an armature lever, mechanism in connection with the armature lever adapted to revolve and give the said endwise motion to the seconds hand shaft, and a spring restoring the shaft to engagement with the scape wheel, substantially as set forth.

7. In a synchronizing mechanism for clocks, an armature lever carrying a pawl, a lever carrying a wheel having teeth engaged by the pawl the two levers swinging together, gear mechanism connecting the pawl wheel with the clock mechanism, a pin upon the armature lever, a lever acted on by the pin and acting on a bell crank lever, a seconds hand shaft having endwise movement, a collar on the shaft engaged by the bell crank lever, a scape wheel turning on the shaft, a clutch between the shaft and scape wheel adapted for engagement and disengagement by the endwise movement of the shaft, and a spring acting on the shaft in opposition to the bell-crank lever, substantially as, and for the purpose set forth.

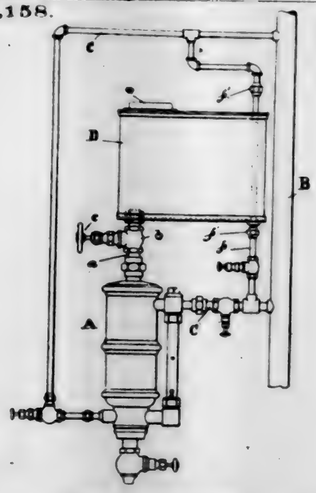
8. In a synchronizing mechanism for clocks, an armature lever carrying a pawl 52 and a pin 56, a lever swinging with the armature lever and carrying a wheel acted on by the pawl, a spur wheel engaging the pawl wheel on the active position of the latter, said spur wheel being upon a shaft of the clock mechanism, a lever 54 actuated by the pin 56, a bell crank lever 57, a seconds-hand shaft 22 with clutch connection with the scape wheel and having a collar adapted to receive the pressure of the bell crank and a spring acting upon the shaft 22 in opposition to the bell-crank, substantially as, and for the purpose set forth.

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**502,158. LUBRICATOR.** CLARK B. WOOD, Boston, Mass., assignor of one-half to Charles A. Jewett, same place. Filed Feb. 6, 1893. Serial No. 461,143. (No model.)

*Claim.*—The combination with a steam-supply pipe, an oil-cup, a condensing pipe connecting the said steam-supply pipe and the oil-cup and having a horizontal portion extending above the oil-cup, and a feed-pipe connecting the oil-cup and steam-supply pipe and extending horizontally, of a filling-reservoir supported above the oil-cup independent of the steam-supply pipe, a pipe connecting the bottom of the reservoir with the top of the oil-cup and having a valve, and a pipe extending through the reservoir and joined above and below the same to the condensing and feed pipes, said pipe being composed of sections, one of which is carried by the reservoir.

502,158.



502,159. DISH-CLEANER. WALTER A. ADAMS, Hogan, Mont. Filed Sept. 13, 1892. Serial No. 445,769. (No model.)



*Claim.*—The herein described dish washer, consisting of the outer receptacle A provided with the circular track 14 in its bottom, and an inner reticulated or perforated receptacle B having handles 11 and provided with a ring like plate on the under side of its bottom and with rollers 13 secured to said plate and adapted to travel upon the track of the outer receptacle, as specified.

502,160. TAG-FASTENER. SAMUEL E. ADAMS, Washington Court House, Ohio. Filed Apr. 11, 1893. Serial No. 469,890. (No model.)



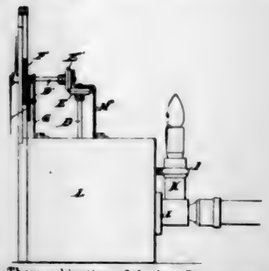
*Claim.*—1. A tag fastener, the same consisting of a plate provided with a loop for the reception of a tag, a needle point projecting from the upper surface of the plate near the front, and a second needle point extending from the lower surface of the plate near the rear, the said second needle point being in the form of a hook, as and for the purpose set forth.

2. A tag fastener, comprising a plate provided with a loop for the reception of a tag, and a needle secured to the plate and having its extremities projecting from opposite sides of the plate at an angle thereto, one extremity being in the form of a hook substantially as described.

3. A tag fastener, the same consisting of a plate provided with a tongue bent to form a loop, the said loop being located below the forward end of the plate, and a fastening device consisting of a needle extending longitudinally along the plate, one end of which needle extends upwardly at an angle from the forward upper surface of the plate, the other extremity of the needle extending below the under surface of the plate near the rear and at an angle to said surface, as and for the purpose specified.

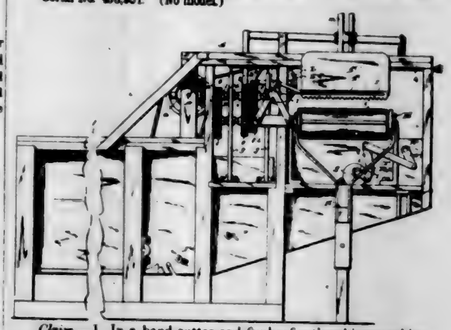
4. A tag fastener, the same consisting of a plate, a tongue located at the forward end of the plate, carried downward from the plate and then at an inclination upward and rearward, and a needle secured upon the plate, one extremity of which extends upwardly and forwardly from the upper face of the plate in direction of its front, the opposite extremity of the needle extending downwardly and forwardly beneath the plate near the rear portion thereof, whereby the plate when brought in contact with two folds of fabric will engage with both, and whereby also the plate is prevented from moving laterally, as and for the purpose set forth.

502,161. ILLUMINATED CLOCK. WILLIAM H. ALDERSON, Withington, near Manchester, England. Filed Oct. 18, 1892. Serial No. 449,274. (No model.)



*Claim.*—The combination of the box B containing a clock mechanism and provided on its rear side with the bearing plate L and adjustable loop I adapted to be engaged with a gas bracket, the transparent dial A supported on the front upper portion of the box and provided with hands, and gearing connecting the hands with the clock mechanism, substantially as shown and described.

502,162. FEEDER AND BAND-CUTTER FOR THRASHING-MACHINES. ANDREW J. AMICK, Boonesborough, Mo. Filed Jan. 19, 1893. Serial No. 458,951. (No model.)



*Claim.*—1. In a band cutter and feeder for thrashing machines the combination with the separator frame, and the transverse shaft A' journaled therein, of a shaft D at right angles to said transverse shaft, and driven thereby, a graduated series of pinions on said shaft D, a shaft F parallel with the said shaft D, a graduated series of pinions on said shaft F, said pinions on the shaft F being arranged reversely to those on the shaft D as regards their diameter, clutch pieces or collars on the pinions of both series, and also on their shafts, the vertically slotted arms or levers *g*, *g*, engaging the clutch pieces or collars on said shafts, and the operating rods connected to said levers, substantially as specified.

2. In a band cutter and feeder for thrashing machines the combination with the separator frame and the shaft A' journaled transversely thereof, of the shaft D at right angles to the shaft A' and driven therefrom, the shaft F parallel with the shaft D, oppositely arranged variable gear wheels or pinions mounted upon said shafts, and carrying clutch hubs, the levers pivoted at their lower ends to the frame, and having vertical slots therein, movable clutch hubs on said shafts engaged by said levers, and band cutter mechanism driven by said shaft F, substantially as specified.

3. In a band cutter and feeder for thrashing machines the combination with the separator frame, and the bundle carrier, of the frame J connected to said separator frame, the oscillating arms J' carried by said frame J, the knife or cutter I carried by said oscillating arms, the knife or cutter I' having a pin and slot connection with the knife or cutter I, and mechanism for effecting the opposite reciprocation of said knives or cutters, substantially as specified.



4. In a band cutter and feeder, the combination with the carrier, of the frame J hinged at one end to the separator frame, a presser board K, arms *j'* connecting said presser board to the frame J', the guide board K' to which the outer end of said presser board is hinged, the knives or cutters swung from said frame J, and means for effecting the adjustment of said guide board, presser board, and cutters, substantially as specified.

5. In a band cutter and feeder for thrashing machines, the combination with the carrier, the hinged frame J, the adjustable guide board, the presser board hinged at its outer end to the lower end of said guide board, and at its inner edge connected to said frame J, the knives or cutters swung from said frame J, and means for effecting the opposite reciprocation of said knives or cutters, substantially as specified.

6. In a band cutter and feeder, the combination of the adjustable guide board, the presser board hinged to the lower edge thereof, the knife-carrying frame hinged at one end to the main frame, and at the opposite portion connected to said presser board, and the adjusting rope or cord connected to said hinged frame, substantially as specified.

7. The combination with the bundle carriers, and the separator, of the feeder located in the mouth of said separator, comprising the frame I" supported at its lower end portion in close relation to the cylinder, the endless traveling canvas or apron working on said frame, the plate R above said apron or canvas, the transverse rods or shafts R', R² journaled at the upper portion of said frame, a series of fingers carried by each of said rods or shafts, and mechanism for alternately rocking said rods or shafts, substantially as specified.

8. The feeder, comprising the jointed frame I", situated in the mouth of the separator, and rigidly supported at its upper portion, a removable support for its lower portion, an endless traveling canvas or apron working on said frame, the plate R overlapping the upper portion of said canvas or apron, the rod or shaft R' journaled transversely at the upper end portion of said frame I", the rod or shaft R² journaled transversely underneath the lower portion of the plate R, a series of fingers *r'* carried by each of said rods or shafts, those of the shaft R' working over the plate, and those of the shaft R² working over the upper portion of the apron or canvas through slots in said plate, and mechanism for imparting an alternately rocking movement to said rods or shafts and the fingers carried thereby, substantially as specified.

502,163. ADHESIVE PENCIL. CHARLES S. APPLE, Bellaire, Ohio. Filed Feb. 27, 1893. Serial No. 463,953. (No model.)

*Claim.*—An improved composition for adhesive pencils, consisting of dextrine, cold water, glue, zinc white and glucose, substantially as described.

502,164. DENTAL ARTICULATION-CUP. GEORGE K. BAGBY, New Berne, N. C. Filed Nov. 26, 1892. Serial No. 453,233. (No model.)



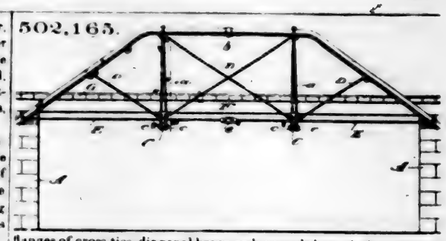
*Claim.*—1. The dental articulation cup consisting of the outer arched wall *a a'* having smooth and uninterrupted outer surface, the inner arched wall *b b'*, and the connecting webs or ribs *c* uniting the two walls on the median line and all made in one piece substantially as and for the purpose described.

2. The dental articulation cup consisting of the outer arched wall *a a'*, the inner arched wall *b—b'* and the connecting ribs *c*, the said arched walls being provided, the outer one with a hinge *e*, and the inner one with a flexible sheet *f*, both arranged on the median line of the walls to adapt them to different widths of jaw substantially as shown and described.

502,165. BRIDGE. CHARLES H. BALL, East Windsor, Mass. Filed Apr. 20, 1893. Serial No. 471,136. (No model.)

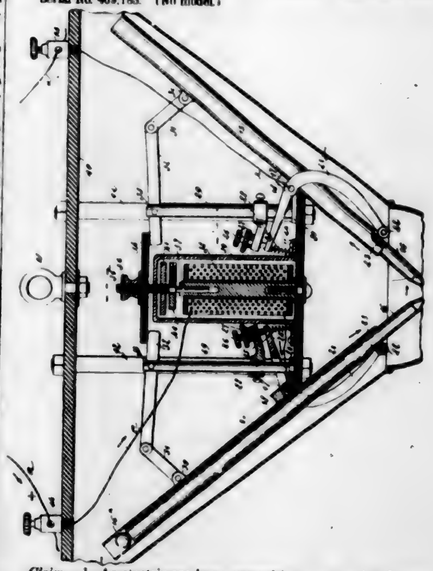
*Claim.*—1. In a bridge, the combination of the tubular chords having inclined end portions and a horizontal central portion, looped bars connected to the central portion of the chords and to cross-ties, diagonal brace-rods D extending from the inclined portions of the chords through the cross-ties to the horizontal portion of the chords, and tension bars attached to the lower ends of the chords and extending through the cross-ties and connected to each other by turn-buckles, substantially as shown.

2. A bridge constructed substantially as shown and comprising chords having inclined end portions and horizontal central portions, looped bars connecting the horizontal portion of the chords with the



flanges of cross-ties, diagonal brace-rods passed through the cross-ties on a line with the chords, said brace-rods extending from the inclined portions of the chords to the central portion, tension bars E having turn-buckles *e*, longitudinal beams F F adapted to rest upon the abutments and upon the cross-ties, and a floor secured to the longitudinal beams, the parts being organized substantially as shown.

502,166. ELECTRIC-ARC LAMP. PATRICK J. BARRETT, Boston, Mass., assignor of one-half to John J. Frawley, as president of the Boston Society of Redemptorist Fathers, same place. Filed Apr. 5, 1893. Serial No. 469,183. (No model.)



*Claim.*—1. An electric arc lamp, comprising a supporting frame, carbon-holding tubes pivoted to the frame, carbons arranged to move downward through the tubes, spring pressed brakes pivoted to the frame and each projecting outward beyond the carbon tubes and having its lower end engaging the carbons thereof, and electrical connections for sending the current through the carbons, substantially as described.

2. An electric arc lamp, comprising converging carbon-holding tubes, a support for the tubes, carbons arranged to move downward through the tubes, a brake mechanism to control the movement of the carbons, ball followers arranged in the tubes above the carbons, and electrical connections for the carbons, substantially as described.

3. An electric arc lamp, comprising a supporting frame, hinged carbon-holding tubes carried by the frame and having converging lower ends, carbons held to slide longitudinally in the tubes, a swinging brake mechanism carried by the frame and provided with rollers to press against the carbons, an electro-magnet carried by the frame, an armature for the magnet, and a lever mechanism actuated by the movement of the armature for shifting the pitch of the tubes, substantially as described.

4. An electric arc lamp, comprising a supporting frame, hinged carbon-holding tubes supported on the frame and having converging lower ends, carbons held to slide longitudinally in the tubes, adjustable spring-pressed forks pivoted on the frame and having rollers to engage the carbons, a magnet carried by the frame, a vertically-movable ar-

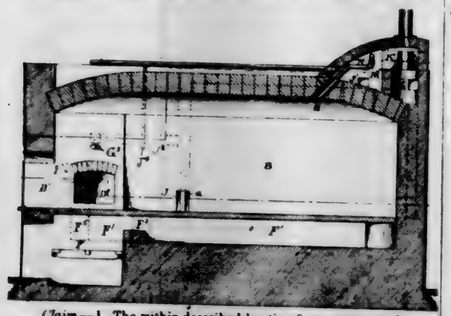
mature above the magnet, a presser plate moved vertically by the armature, outwardly extending levers fulcrumed on suitable supports and having their inner ends extending beneath the presser plate, and a link connection between the levers and the upper portions of the carbon-holding tubes, substantially as described.

5. The combination, in an arc lamp, with the supporting frame and the swinging carbon-holding tubes having longitudinally movable carbons therein, of the spring pressed forks fulcrumed on the frame and having rollers to engage the carbons, and a screw mechanism for adjusting the tension of the rollers on the carbons, substantially as described.

6. In an electric arc lamp, the combination of an electro magnet, a vertically movable armature above the magnet a hinged carbon tube, a presser plate carried by the armature spindle, a pivoted lever having one end projecting under the presser plate, and a link pivoted to the lever and to the carbon tube, substantially as described.

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**502,167. METALLURGICAL FURNACE.** FRANCIS G. BATES, Philadelphia, Pa. Filed Mar. 26, 1891. Serial No. 386,415. (No model.)



*Claim.*—1. The within described heating furnace or oven having at the front separate fire places discharging into the working chamber, exit flues at the rear of said working chamber, and side flues communicating at their front ends with said working chamber at points adjacent to the front fire places, and at their rear ends with the outlet flue, substantially as specified.

2. The within described heating furnace or oven, having at the front opposite side fire places, and a central fire place in a lower plane, the side fire places communicating directly with the working chamber, but the central fire place communicating with said chamber through flues located beneath the floor of the chamber and discharging directly into the products of combustion from the side fire places, substantially as specified.

3. The combination in a metallurgical furnace or oven, of the working chamber, the side fire places arranged to discharge their products into said working chamber, a central fire place in a lower plane than said side fire places, and flues extending from said central fire place, first rearward and then forward beneath the bottom of the working chamber, then upward through the side walls of the side fire places to a point above the fuel therein, and then laterally into said side fire places so as to discharge directly into the products of combustion arising from the fuel in said fire places, substantially as specified.

4. The combination in a metallurgical furnace or oven, of the working chamber, fire places at the front end of the same, and outlet flues having bottom inlets communicating with the working chamber, and provided with slabs or blocks so as to divide and contract the mouths of said flues, substantially as specified.

5. The combination in a metallurgical furnace or oven, of a working chamber having side outlets, fire places at the front of the furnace communicating with said working chamber, chambers above said fire places, air heating pipes located in said chambers, and communications between said chambers and the side outlets of the working chamber, said chambers having contracted outlets through which the air heating pipes discharge so as to induce a flow of gases into and through said chambers, substantially as specified.

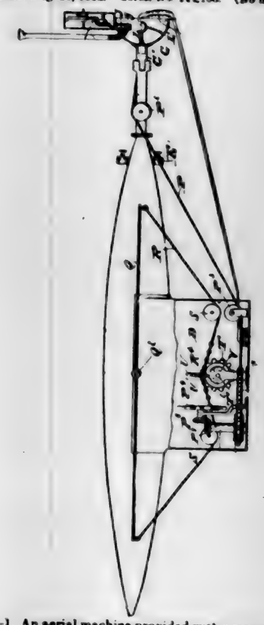
6. The combination in a metallurgical furnace or oven, of the working chamber, fire places at the front end of the same communicating with said chamber, a dome surmounting said working chamber at the rear end, outlet flues for the products of combustion leading from said working chamber to the dome, the chimney communicating with said dome, passages leading from the dome into the upper portion of the working chamber, and an air pipe forming a heating coil in said dome, and discharging into said passage so as to cause the return of a portion of the products of combustion mixed with hot air, into said working chamber, substantially as specified.

7. The combination in a metallurgical oven or furnace, of a working chamber, a front fire place communicating therewith, a dome surmounting the working chamber at the rear end, exit flues for the products of combustion, communicating with the chimney and also with the heating chamber within the dome, a passage leading from the dome into the upper portion of the working chamber, and an air jet pipe discharging into said passage, and causing a return flow of the products of combustion into and through the dome chamber, and thence back into the working chamber, substantially as specified.

8. The combination in a metallurgical oven or furnace, of the working chamber, the fire place, the dome surmounting the working chamber at the rear end of the furnace, the discharge stack on said dome, the short smoke chamber communicating with the exit flues of the working chamber, inwardly projecting slabs inclosing a central flue at the top of said smoke chamber, but having spaces between them, a passage through which the dome chamber communicates with the working chamber, and an air jet pipe discharging into said passage, substantially as specified.

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**502,168. AERIAL MACHINE.** SUMNER B. BATTEY, New York, N. Y. Filed Aug. 26, 1892. Serial No. 444,183. (No model.)



*Claim.*—1. An aerial machine provided with a propeller comprising a cup-shaped holder pivoted on the rear end of the balloon and adapted to swing sidewise, a feed pipe secured on the said holder and containing explosive pellets, a feeding device connected with the lower end of said feed pipe to feed one pellet at a time from the pipe into the cup shaped holder, and a pellet receiver mounted yieldingly in the said holder, substantially as shown and described.

2. An aerial machine, provided with a propeller having a holder, and an explosive receiver mounted yieldingly in the said holder, substantially as shown and described.

3. An aerial machine provided with a propelling mechanism comprising a holder, a feed pipe for containing the explosives and connected with the said holder, an automatic delivery device for discharging the explosives one at a time from the pipe into the said holder, an igniting device for firing the explosive after its delivery to the holder, and a yieldingly mounted receiver arranged in the said holder and adapted to support the explosive for firing the same, substantially as shown and described.

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**502,169. ELEVATOR FOR SUCKER-RODS.** FREDERICK E. BOYLAN, Cyclone, Pa. Filed Mar. 6, 1893. Serial No. 464,787. (No model.)

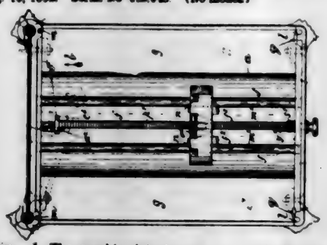
*Claim.*—1. In an elevator for sucker rods, the combination with the handle formed at one end with prongs, a wrench-head provided with an opening J pivotally mounted in said prongs, and a pair of inwardly extending ears formed on said prongs, one of said ears being adapted to fit over the opening in the wrench-head when the elevator is in operative position to prevent the escape of the rod from the opening, and the other adapted to bear upon the wrench-head for holding the same in a horizontal position substantially as shown and described.



2. In an elevator for sucker-rods, the combination with the handle formed at one end with prongs, a wrench-head provided with an opening J pivotally mounted in said prongs, and a pair of inwardly extending ears formed on said prongs, one of said ears being adapted to fit over the opening in the wrench-head when the elevator is in operative position to prevent the escape of the rod from the opening, substantially as shown and described.

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**502,170. CHEESE CASE AND CUTTER.** PER W. BRUNDIN, New York, N. Y., assignor of one-half to Emil Torublom, same place. Filed Aug. 10, 1892. Serial No. 442,643. (No model.)



*Claim.*—1. The combined inclosing case, vertically sliding and backwardly shifting cutter, cutter carrying slides, lever subject to the thrust of one of the cutter carrying slides, feed bar, feed slide and pawl, and the intermediate lever and the spring actuating the feed bar substantially as described.

2. The combination of the inclosing case, cutter, cutter carrying slides, and means for feeding the cheese to the cutter intermittingly, said cutter being connected with one of the inclosing plates of the case adapted to slide suitably for actuating the cutter, and said plate connected to the said cutter slides, and the slides arranged in the vertical slide ways and having limited movement along the cutter plate, and also having the inclines to thrust the cutter back and over the cheese substantially as described.

3. The combination of the bed cutter, the vertical slide ways, vertical slides having the upper and lower grooves, and the cutter plate having the upper and lower spurs engaging said grooves substantially as described.

4. The combination of the bed cutter, the vertical slide ways, vertical slides having the upper straight grooves and lower curved rabbet grooves, the cutter plate having the spurs engaging said grooves and adapted to slide thereon to a limited extent substantially as described.

5. The combination of the bed cutter, the vertical slide ways having the upper straight grooves and lower curved rabbet grooves, the cutter plate having the spurs engaging said grooves and adapted to slide therein to a limited extent, and the spring for thrusting the cutter plate backward over the cheese substantially as described.

6. The combination of the bed cutter, the vertical slide ways having the upper straight grooves and lower curved rabbet grooves, the cutter plate having the spurs engaging said grooves and adapted to slide therein to a limited extent, the spring for thrusting the cutter plate backward, and the guide ways limiting the back thrust of the cutter plate by the spring substantially as described.

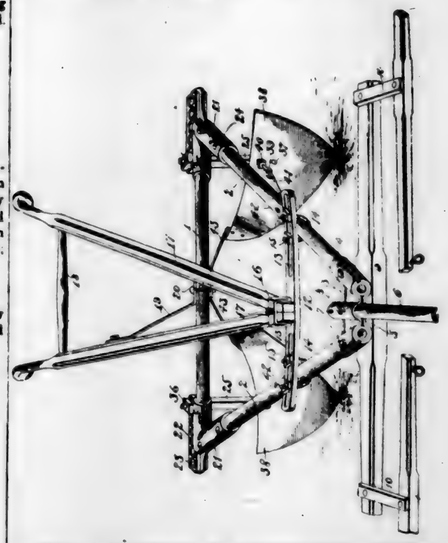
7. The combination of the bed plate, vertically sliding cutter, and cutter carrying slides, the feed slide, feed bar, the feed lever subject to the thrust of one of the cutter carrying slides, the intermediate lever acting on the feed bar, and the feed bar actuating spring substantially as described.

8. The combination of the feed bar adapted to be rotated to disconnect the pawl of the feed slide from the notches of said bar, the spring adapted to restore the feed bar to, and hold it in the normal position, and the stop opposing the rotating thrust of the spring on the bar substantially as described.

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**502,171. CULTIVATOR.** ROYER S. BUCH, Elizabethtown, Pa., assignor of one-half to John H. Buch, same place. Filed Mar. 31, 1893. Serial No. 468,437. (No model.)



*Claim.*—1. In a cultivator, the combination with a triangular frame, of a transversely disposed curved bar mounted upon the side bars of the frame and provided with longitudinal slots near its ends, clips extending upwardly from the side-bars through the slots and provided with nuts, a pair of handle bars secured to the transverse bar, and a brace between the handle-bars and rear bar of the frame and pivoted to the latter, concentrically with relation to the curved bar substantially as specified.

2. In a cultivator, the combination with the triangularly disposed pipes, of the clamping sections embracing the pipes and connecting the same, the bolts passed through the sections and pipes, the upper sections of the rear clamps being provided with horizontal brackets having a series of openings, standards removably mounted in the openings, and blades or shovels secured to the standards, substantially as specified.

3. In a cultivator, the combination with the triangularly disposed pipes 1 and 2 secured at their front ends, the V-shaped clamping sections 21 securing the rear ends of the said pipes to the rear pipe, bolts passing through the same, the brackets 22 having rectangular openings 23, the standards having the shoulders 34, reduced, threaded and grooved tenons 26 extending into the openings of the brackets, the keys 32 having the ribs 33 fitting the grooves and located in the openings, and the nuts 36 threaded on the upper ends of the studs, substantially as specified.

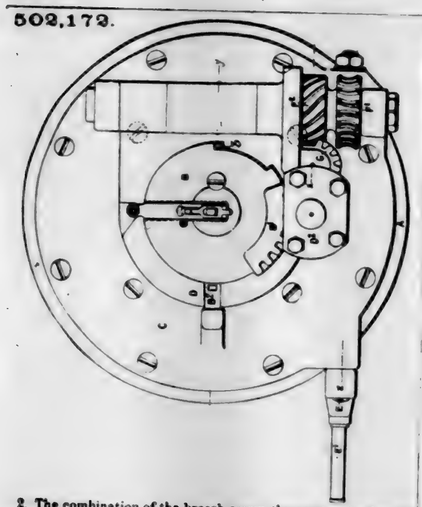
4. In a cultivator, the combination with the triangular frame, the clamping sections 21 having the brackets provided with openings, the standards 25 having the spread flange 30, openings 27 and 28, the latter formed in the boss 29, the stud 26 at the upper end of the standard, and means for securing the same in the openings of the brackets, the triangular shovels 38, heel-bolts passing through the shovels and openings 28 of the standards, eye bolts passing through the shovels and the openings 27 of the standards, links 41 between the eye-bolts and side bars of the frame, the metal straps 43 secured to the inner angles of the shovels and overlapping each other under the rear bar of the same, and the bolt passing through the straps and said bar substantially as specified.

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**502,172. BREECH MECHANISM FOR ORDNANCE.** JEAN J. G. A. CANET, Paris, France, assignor of one-half to the Sir Joseph Whitworth & Company, Limited, Openshaw, Manchester, England. Filed Dec. 6, 1892. Serial No. 454,278. (No model.)

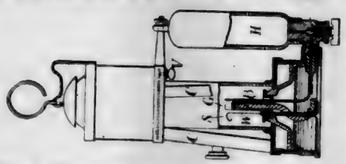
*Claim.*—1. In a breech-loading gun, the combination with the breech-screw, of the toothed sector B', the endless screw or worm H having its axis parallel with that of the gun, and gearing with the sector B', a crank-shaft E, and the helical wheels $F^3$, G, worm wheel $F^2$, and worm $E^2$, for gearing the worm H with the said operating crank shaft, substantially as and for the purpose specified.

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2. The combination of the breech-screw, the carrier-ring hinged or pivoted to one side of the breech and through which the breech-screw can slide, the bracket D' on the carrier-ring for supporting the breech-screw when the latter is withdrawn from the breech, the toothed sector B', the endless screw or worm H, gearing with the said sector B', and supported in bearings in the bracket D' with its axis parallel to that of the gun, the crank shaft E, geared with the worm H, through a worm wheel F', and helical wheels F², G, the end of the bracket D' being constructed to form a stop to limit the sliding movement of the breech-screw, substantially as described for the purpose specified.

502,173. APPARATUS FOR ESTIMATING THE QUANTITY OF COMBUSTIBLE GAS OR VAPOR PRESENT IN AIR. FRANK CLOWES, Nottingham, and BOVERTON REDWOOD, London, assignors of a part to Sidney Waters, London, England. Filed Feb. 6, 1893. Serial No. 461,156. (No model.) Patented in England Jan. 4, 1893, No. 187; in France Jan. 4, 1893, No. 226,916, and in Belgium Jan. 4, 1893, No. 102,367.



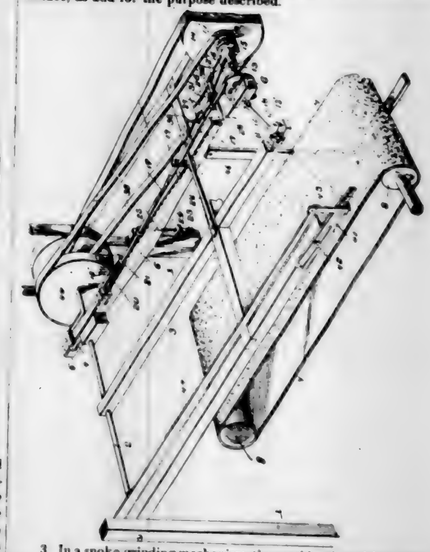
*Claim.*—1. For estimating the quantity of combustible gas or vapor present in air, a miner's safety lamp provided with a hydrogen burner and gage wire close to the oil wick, and a reservoir of compressed hydrogen with regulating valve, substantially as described.

2. For estimating the quantity of combustible gas or vapor present in air, a miner's safety lamp provided with a hydrogen burner and gage wire close to the oil wick, a reservoir of compressed hydrogen with regulating valve, a valve to close the ordinary air supply, and a capped nozzle for connecting to a tube for separate air supply, substantially as described.

502,174. MACHINE FOR GRINDING SPOKES. GEORGE J. COVERT, GEORGE W. PRICE, and IRA L. PRICE, Penn Yan, N. Y. Filed Oct. 27, 1892. Serial No. 450,178. (No model.)

*Claim.*—1. In a spoke grinding machine, the combination with an abrasive surface, of a vertically-movable frame carrying a rotating work holder, and mechanism for automatically turning and arresting said work holder as the frame rises and falls, as and for the purpose described.

2. In a spoke grinding machine, the combination with an abrasive surface, of a vertically movable frame, a rotating work-holder, mechanism substantially as described for moving said frame toward and from the abrasive surface, and a driving mechanism acting in unison with the frame-actuating mechanism and operating to rotate the work holder as the frame is brought close to the abrasive surface and to arrest the work holder as the frame is moved away from said abrasive surface, as and for the purpose described.



3. In a spoke grinding mechanism, the combination with an abrasive surface, of a swinging frame, a shaft journaled therein and carrying the work-holding head, a shouldered disk rotating with said shaft, a rod actuated in one direction by said disk, a driving mechanism for rotating the shaft and work-head, connections between said rod and said driving mechanism to move the latter in and out of operation as the rod is moved endwise, and mechanism for moving the frame toward and from the abrasive surface, as and for the purpose described.

4. In a spoke grinding mechanism, the combination with an abrasive surface, of a movable frame carrying a rotating shaft provided with a work-head, a driving mechanism for rotating said shaft also carried by said frame, an endwise movable rod having connections with said driving mechanism to move the latter into and out of gear with the rotating shaft as said shaft is actuated longitudinally, mechanism, substantially as described, for impelling said rod in one direction as the frame is lifted and in the opposite direction as the frame is lowered, a crank shaft, and a lever arranged in the path of said crank shaft and adapted to lift the frame when acted on by said crank shaft, as and for the purpose described.

5. In a spoke grinding machine, the combination with an abrasive surface, of a vertically swinging frame, a rotary shaft, having a work-head, a driving shaft connected with said rotary shaft and carrying a shouldered disk and a loose driving pulley controlled by a clutch, a crank-shaft operating against a lever to raise the frame, an endwise-movable rod supported on said lever and arranged to engage with said shoulder disk, springs for moving said rod vertically and in the direction of its length, and a shipping mechanism between said rod and the clutch on the driving shaft, as and for the purpose described.

6. In a spoke grinding machine, the combination with an abrasive surface, of a vertically-swinging frame, a rotary shaft carrying the work-head, a driving shaft connected to said shaft and having a loose pulley clutched thereto, a shouldered disk rigid with said driving shaft, a spring-impelled rod adapted to be moved into the path of said disk as the frame is lifted, a shipping lever connected to the clutch and having intermediate connections with said rod to be moved by the latter as it is impelled in one direction by the disk and in the other direction by the spring, mechanism for raising and lowering the frame, and a spring to free the rod from the disk as the frame is lowered, substantially as described.

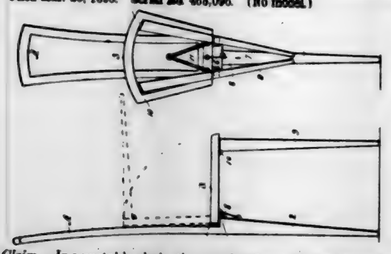
7. In a spoke grinding machine, the combination with an abrasive surface, of a swinging frame, a shaft carrying the work-head, a driving shaft connected with said shaft and having a driving pulley clutched thereto, a shouldered disk fixed to the driving shaft, a spring impelled rod, a shipping lever connected to the clutch and having the links, a crank connected to one link and the rod, an arm carried by the rod and adapted to strike the links when the rod is forced by the shouldered disk, and mechanism for raising and lowering the frame, substantially as described.



8. In a spoke grinding mechanism, the combination with an abrasive surface, of a swinging frame carrying a rotary work-holding shaft, a driving shaft connected to said shaft and having a pulley clutched thereto, a crank shaft on which the frame is pivoted, a lever having one end arranged in the path of the crank of the crank-shaft and its other end adapted to lift the frame, an endwise movable rod supported and guided on said lever, intermediate connections between said rod and the clutch, and mechanism, substantially as described, for moving said rod positively in both directions as the frame rises and falls and thereby move the clutch to throw the driving pulley into and out of engagement with the driving shaft, substantially as described.

9. In a spoke grinding machine, the combination with an abrasive surface, of a frame, a driving shaft carried thereby, a rotary shaft carrying a work-head, a coupling shaft between said driving and rotary shafts and having the swiveled couplings therewith, an adjustable bearing in which said rotary shaft is journaled, and an adjustable retainer for holding the free end of the spoke held in the work head, substantially as described.

502,175. FOLDING CHAIR. JULIE A. CRIM, Grand Rapids, Mich. Filed Mar. 29, 1893. Serial No. 468,096. (No model.)



*Claim.*—In a portable chair, the rear leg formed by an extension of the back frame, and shouldered at 4, the seat hinged to the back, and supported when open by said shoulder, the front legs hinged at an angle to the seat, and connected to each other and the back leg by the folding brace, and the hook 6, and eyes 7 and 8, all constructed and combined in the manner and for the purpose set forth.

502,176. HAME-FASTENER. PATRICK F. CULLEN and PATRICK F. MULCHROSE, Scranton, Pa. Filed Mar. 30, 1893. Serial No. 468,358. (No model.)

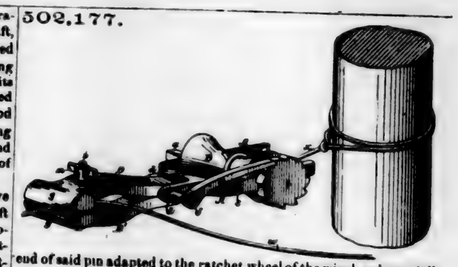


*Claim.*—In combination with the lower ends of the hames having a D in connection with each, of two metallic straps each of which is formed with an outer U-shaped end having its termination bent toward the main body of each strap to contract the entrance to the said U-shaped end and prevent accidental disengagement of the straps from the hame-ends, one of said straps being provided with a downwardly-projecting lug having an eye therethrough, and the other strap formed with a series of openings therein for adjustably engaging the said lug, and also provided with a downwardly-extending grip at the terminating end of the same for drawing the strap with which it is formed over upon the adjacently-situated strap, and a chain attached to the lower end of the said grip and carrying a pin on the free end of the same arranged to be removably inserted in the eye of the said lug to lock the straps in connection with each other, substantially as described.

502,177. COMBINED VISE AND WINCH. MARTIN J. DOHERTY, Philadelphia, Pa. Filed May 21, 1892. Serial No. 433,841. (No model.)

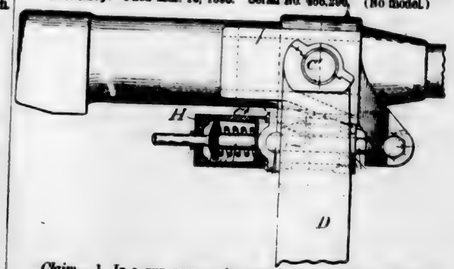
*Claim.*—The combination with the winch frame, provided with ears *d*, *d*, of a pivot pin passing through said ears, the drum having a ratchet wheel, the vise carried by said pivot pin, and a pawl on one

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end of said pin adapted to the ratchet wheel of the winch, substantially as specified.

502,178. RECOIL-MOUNT FOR ORDNANCE. WILLIAM H. DRIGGS, U. S. Navy. Filed Mar. 16, 1893. Serial No. 466,296. (No model.)



*Claim.*—1. In a gun mount, the combination with a trunnioned rocking slide and a gun mounted therein, of a trunnioned recoil cylinder mounted approximately parallel to the gun, and a piston adapted to move relative to said cylinder as the gun recoils, substantially as and for the purposes described.

2. In a gun mount, the combination with a trunnioned rocking slide and a gun; of a reinforce band mounted on said gun and provided with projections engaging in said rocking slide, downwardly-projecting arms rigidly attached to said reinforce band, a recoil cylinder trunnioned in said arms, a piston in said recoil cylinder, and a piston rod connected to said piston and attached to said rocking slide, substantially as and for the purposes described.

3. In a gun mount, the combination with a trunnioned rocking slide and a gun mounted therein, of a trunnioned recoil cylinder mounted approximately parallel to the gun and provided at one end with a conical chamber; and a piston adapted to move from the larger to the smaller portion of the chamber as the gun recoils, substantially as and for the purposes described.

4. In a gun mount, the combination with a trunnioned rocking slide and a gun mounted therein, of a recoil cylinder trunnioned beneath said gun and moving axially therewith, the said cylinder having a tapering chamber in the rear end thereof, a piston in said chamber and concentric therewith, and a piston rod connected to said piston and attached to said rocking slide, substantially as and for the purposes described.

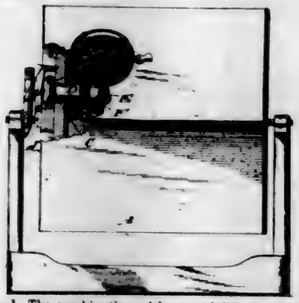
5. In a gun mount, the combination with a trunnioned rocking slide and a gun mounted therein, of a recoil cylinder trunnioned beneath said gun and moving axially therewith, the said cylinder having a conical shaped chamber in the rear end thereof, a piston in said chamber and concentric therewith, and a piston rod connected to said piston and passing through both ends of said cylinder, and attached to said rocking slide, substantially as and for the purposes described.

6. In a gun mount, the combination with a trunnioned rocking slide and a gun; of a reinforce band mounted on said gun and provided with projections engaging in said rocking slide, downwardly-projecting arms rigidly attached to said reinforce band, a recoil cylinder trunnioned in said arms, the said cylinder having a tapering chamber near the rear end thereof, a piston in the said chamber, and a piston rod connected to said piston and attached to said rocking slide, substantially as and for the purposes described.

7. In a gun mount, the combination with a trunnioned rocking slide and a gun; of a reinforce band mounted on said gun and provided with projections engaging in said rocking slide, downwardly-projecting arms rigidly attached to said reinforce band, a recoil cylinder trunnioned in said arms, the said cylinder having a tapering chamber near the rear end thereof; a piston in said chamber and concentric therewith, and a piston rod connected to said piston and pas-

ing through both ends of said cylinder and attached to said rocking slide, substantially as and for the purposes described.

**502,179. CHURN.** WORDEN EDMISTER, Mount Vernon, Ohio, assignor to Jacob Ast, same place. Filed Apr. 11, 1893. Serial No. 469,907. (No model.)

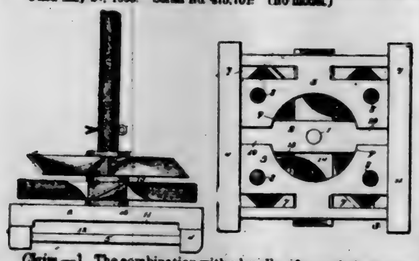


*Claim.*—1. The combination with a revolving churn, of a valve for closing a vent-opening in the end thereof and provided with a stem, a lever pivoted on the churn to normally hold said valve in its closed position, a stationary rub-block having a beveled portion to engage said lever to open the valve and a bowl arranged over the outer end of the vent opening and through which the valve-stem passes, substantially as described.

2. The combination with a revolving churn, of a valve for closing a vent-opening in the end thereof and provided with a stem, a lever pivoted on the churn to normally hold said valve in a closed position, a stationary rub-block having a beveled portion to engage said lever to open the valve, a bowl arranged over the outer end of the vent opening and through which the valve stem passes, and provided with a discharge pipe with cock, substantially as described.

3. The combination with a revolving churn, of a valve for closing a vent opening in the end thereof and provided with a stem, a lever pivoted on the churn to normally hold said valve in a closed position, a stationary rub-block having a beveled portion to engage said lever to open the valve, a bowl arranged over the outer end of the vent opening and through which the valve-stem passes and provided with a discharge pipe with cock, and a dish shaped piece carried by the valve-stem to close an opening in the bowl, substantially as described.

**502,180. CHURN-DASHER.** WILLIAM H. EVANS, Gainesville, Ga. Filed May 27, 1893. Serial No. 475,701. (No model.)

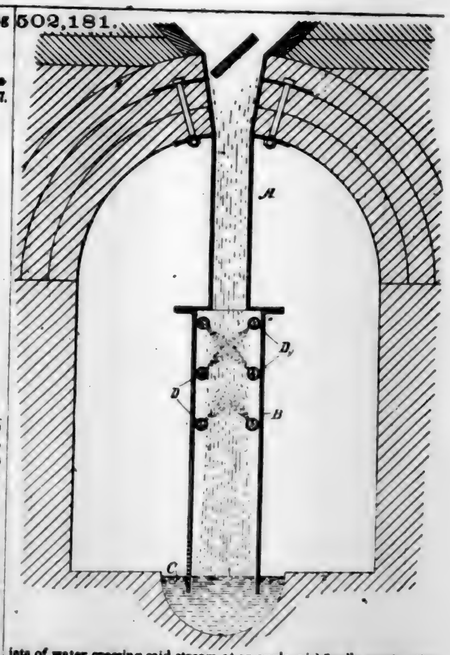


*Claim.*—1. The combination with a handle, of oppositely rotating paddle wheels longitudinally movable upon said handle, and devices adapted to limit such longitudinal movement of the paddles, substantially as specified.

2. The combination with a handle, bridge secured upon one end thereof, end pieces secured to said bridge, and a perforated intermediate plate therebetween, of oppositely rotating paddle wheels carried on the handle above said bridge, substantially as specified.

**502,181. METHOD OF TREATING REFRACTORY ORES.** CHARLES J. FAUVEL, London, England. Filed Nov. 14, 1892. Serial No. 451,911. (No specimens.)

*Claim.*—In the treatment of refractory ores of the precious metals, the herein described method of breaking up the particles of freshly roasted ore and removing any adherent oxides of the base metals, which consists in causing said ores to fall as a stream of incandescent particles, in subjecting the falling stream of particles to the action of



jets of water crossing said stream at an angle, and finally causing the said particles to fall into a running stream of water, the particles of ore being kept out of contact with air after they have been quenched by the said jets of water, as specified.

**502,182. LOOM FOR WEAVING ENDLESS AND JOINTLESS FABRICS.** DOMENICO FILIPPI, Paterson, N. J. Filed Mar. 25, 1893. Serial No. 467,562. (No model.) Patented in France Nov. 4, 1887, No. 186,770; in England Aug. 16, 1888, No. 11,826; in Germany Aug. 16, 1888, No. 46,121, and in Italy Sept. 27, 1888, No. 24,117.



*Claim.*—1. In an apparatus for weaving endless and jointless fabrics, a comb or reed comprising a frame, a series of teeth, and fillings of solder or other material resting in the alternate spaces between the teeth and extending from the base to an intermediate point in the length thereof, substantially as and for the purpose described.

2. In an apparatus for weaving an endless fabric, a comb or reed comprising a frame, a series of teeth, fillings of solder or other material resting in the alternate spaces between the teeth and extending from the base to an intermediate point in the length thereof, spacing plates arranged between the teeth, and a removable spindle taking through the frame and the teeth adjacent to the upper ends thereof; the said spindle being adapted to be secured in position so as to close the comb, substantially as specified.

**503,188. DEVICE FOR TEACHING SPELLING.** JOSÉ GALLEGOS, Ocós, Guatemala. Filed Dec. 1, 1892. Serial No. 453,759. (No model.)



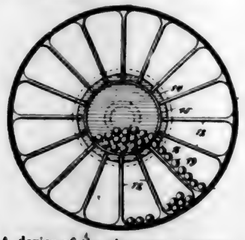
*Claim.*—1. A device of the character described, comprising an open frame adapted to be placed over printed or other matter, and provided on its upper side on opposite sides of the opening with inwardly



projecting flanges, and a sliding block provided with wings extending beneath the flanges of the frame, and adapted to be moved back and forth in the opening of the frame to cover one or more of the characters showing through said opening, substantially as described.

2. A device of the character described, comprising a flat elongated frame having a central opening adapted to be arranged over a word or number, a glass arranged to cover the back of the frame, inwardly extending flanges on the upper side of the frame and on opposite sides of the opening, and a slide block held in the open portion of the frame with wings extending beneath the flanges, substantially as described.

**502,184. DEVICE FOR TEACHING ARITHMETICAL CALCULATIONS.** JOSÉ GALLEGOS, Ocós, Guatemala. Filed Feb. 3, 1893. Serial No. 460,853. (No model.)



*Claim.*—1. A device of the character described, comprising a case having a transparent front, and a plurality of radially arranged compartments open at their inner ends, a revoluble pocket held to turn opposite the inner ends of the compartments and provided with an opening adapted to register with the compartments, and balls in the pocket and compartments substantially as described.

2. A device of the character described, comprising a case having a transparent front, and a plurality of radially arranged compartments with open inner ends, a removable revoluble pocket held to turn in the center of the case and provided with a slot to register with the several compartments and balls in the pocket and compartments, substantially as described.

3. A device of the character described, comprising a cylinder having a transparent front, and a plurality of compartments arranged radially within the cylinder and provided with open inner ends, a revoluble cylindrical pocket held to turn in the center of the main cylinder and provided on its back side with a handle and on one side with a slot to register with the several compartments, and a plurality of balls held within the pocket and compartments, substantially as described.

**502,185. MACHINE-GUN.** RICHARD J. GATLING, Hartford, Conn. Filed Sept. 10, 1892. Serial No. 445,492. (No model.)

*Claim.*—1. In combination with the frame of a machine gun, a revolving shaft bearing an armature a group of barrels and a mortised cylinder holding reciprocating locks, a casing inclosing a field magnet adjacent to the armature, and a cylindrical cam in the path of the locks, substantially as specified.

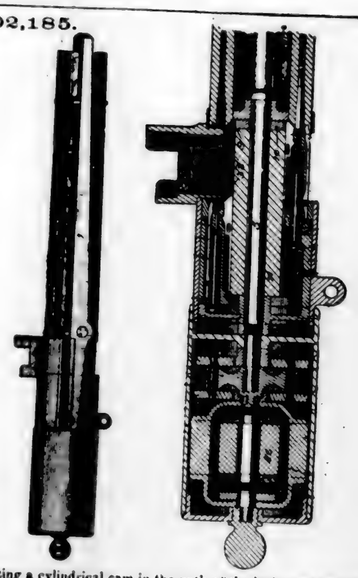
2. In combination with the frame of a machine gun, a revolving shaft bearing an armature a group of barrels and a mortised cylinder holding reciprocating locks, a casing supporting a cylindrical cam in the path of the locks, and a casing detachably secured to the former casing and inclosing a field magnet adjacent to the armature, substantially as specified.

3. In combination with the frame of a machine gun, a revolving shaft bearing a group of barrels and a mortised cylinder holding reciprocating locks, a sectional hinged casing supporting a cylindrical cam in the path of the locks, a hopper hinged to the frame adjacent to the breech of the barrels, and means for revolving the shaft, substantially as specified.

4. In combination with the frame of a machine gun, a revolving shaft bearing a group of barrels and a mortised cylinder holding reciprocating locks, a sectional hinged casing supporting a cylindrical-cam in the path of the locks, a sectional hinged diaphragm at the rear of said casing, a hopper hinged to the frame adjacent to the breech of the barrels, and means for revolving the shaft, substantially as specified.

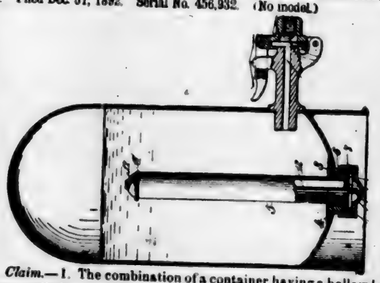
5. In combination with the frame of a machine gun, a revolving shaft bearing a mortised cylinder holding reciprocating locks, and disks holding a group of barrels, the rear one of said disks being formed of a portion with circular perforations and a portion of harder metal having mortises adjacent to the circular perforations, barrels with lugs projecting from their rear ends into said mortises, a casing

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supporting a cylindrical cam in the path of the locks, and means for revolving the shaft, substantially as specified.

**502,186. FIRE-EXTINGUISHER.** WILLIAM GEE, New York, N. Y. Filed Dec. 31, 1892. Serial No. 456,932. (No model.)



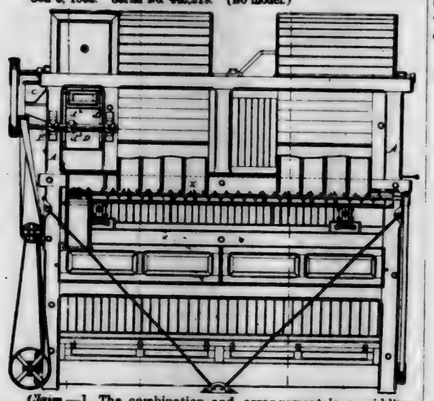
*Claim.*—1. The combination of a container having a hollow base, a pump-cylinder extending through the bottom of the container and opening into the hollow base and into the container near its top, a valved piston, a stem attached thereto, a handle removably secured to the lower end thereof and which, when the piston is in its elevated position, is contained within the hollow base, and a cap for closing the cylinder and for supporting the piston-stem when the handle is removed.

2. A nozzle or outlet having in combination a cap pivotally connected thereto, a flexible disk in the cap and the said cap having an air-chamber forward of the disk, and means for securing the cap in place, substantially as described.

3. In a fire-extinguisher, the combination, with a container, of a nozzle or outlet consisting of a tubular portion, a cap pivotally connected to a downwardly and outwardly-extending arm on the tubular portion, the said cap, having a chamber, a flexible disk in said cap between the said chamber and outlet of the tubular portion, a latch pivotally connected to the cap, and a lug on the tubular portion, having a curved or cam-edge to engage with the latch, substantially as described.

4. In a fire-extinguisher, a removable handle for the piston-rod, said handle having a threaded opening to engage the threaded end of the rod and a second opening on one side of the threaded opening adapted to loosely engage the end of the rod, the part of the handle provided with such opening being also provided with lugs, or projections, to engage the cylinder-head and remove and replace the pump, substantially as described.

**502,187. MIDDLINGS-PURIFIER.** WILLIAM D. GRAY, Milwaukee, Wis., assignor to the Edward P. Allis Company, same place. Filed Oct. 8, 1892. Serial No. 448,219. (No model.)



*Claim.*—1. The combination and arrangement in a middlings purifier of an aspirator a dust catcher, and fan arranged to circulate the air through the aspirator and dust catcher, a sieve arranged to receive partially purified material from the aspirator; a second dust catcher communicating with the sieve, and a fan arranged to circulate air through the sieve and said second dust catcher, substantially as shown and described.

2. In a middlings purifier the combination and arrangement of two purifying mechanisms, one arranged to deliver to the other, each purifying mechanism including a dust-catcher and a circulating fan, substantially as shown and described.

3. In a middlings purifier the combination of an external casing, a feed mechanism, a series of aspirating shelves to which the said mechanism delivers the material to be purified; a shaking screen to which the material is delivered from the aspirator; a dust catcher communicating with chambers above and below the aspirating shelves; a fan to circulate the air in an upward direction between the shelves and thence through the dust catcher and the space beneath the shelves; a suction chamber overlying the screen; side chambers opening above the sides of the screen and a chamber thereunder; a dust catcher communicating with the suction chamber, and a fan arranged to induce a continuous circulation of air upward through the screen and the suction chamber, to the dust catcher and thence in a downward direction past the sides of the screen, that it may re-ascend therethrough.

4. In a middlings purifier the aspirator and the sieve to which it delivers, in combination with the suction chamber and side chambers overlying the screen; the two dust catchers communicating respectively with the aspirator and the screen, and a shaft provided with two fans for maintaining currents of air through the respective dust catchers and their connections.

5. In a middlings purifier in combination with the aspirator shelves, the underlying chamber, the overlying chamber, the annular dust catcher communicating at the top with the last named chamber and fan, and a passage extending thence to chamber beneath the aspirator.

6. In combination with a dust catcher comprising a horizontal cylindrical screen, a series of annular chambers or pockets and a fan, turning on a horizontal axis, said catcher communicating through a top opening with the upper part of the aspirator chamber and through a lower passage with the base of the aspirator chamber.

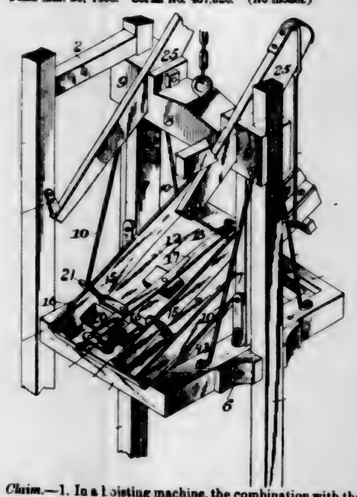
7. In combination with the aspirator, the dust catcher, consisting of the cylindrical screen, the annular chambers and the fan, a passage leading from the top of the aspirator chamber downward, to the center of the dust catcher; a central tube in the latter, and rotary blades to prevent the lodgment of material in said tube.

8. In a middlings purifier the combination of the shaking sieve, the overlying suction chamber, the side chambers opening downward past the sides of the sieve, the horizontal shaft carrying a fan and a cylindrical screen, the annular dust receiving pockets or chambers encircling the screen; a passage leading from the suction chamber to the fan and a passage leading from the fan and dust catcher to the side chamber above the sieve.

9. In combination with the sieve, the overlying suction chamber and side chambers; the horizontal dust catcher communicating with the suction chamber, the chamber leading from the dust catcher to the side chambers, and a deflector arranged in the path of the down going air to distribute the same lengthwise of the side chambers.

10 In combination with the aspirator, the screen and the two dust catchers communicating with the aspirator and screen respectively, the dust receiving chamber of the aspirator, its delivery conveyer and the side conveyer delivering the dust from the two dust catchers.

**502,188. HOISTING-MACHINE.** SAMUEL GRIFFITH, Weir, Kans. Filed Mar. 23, 1893. Serial No. 467,326. (No model.)



*Claim.*—1. In a hoisting machine, the combination with the hoisting cage, of the platform, and the pivoted bars connecting the same with the bottom of the cage, the uprights, the pivoted levers, the bars connecting said levers with the platform and the stops against which said levers are adapted to strike to tilt the platform, substantially as described.

2. In a hoisting machine, the combination with the cage, the uprights, the cross beam, and the levers pivoted to said cross beam, of the platform, the rods connecting the same with the platform, the pivoted bars connecting the platform and cage, the rails having upwardly extending flanges provided with apertures, the pivoted lever, the lugs pivoted thereto, and the link, lever, and lug connected with said lever, substantially as described.

**502,189. STOVE-CASTER.** JOHN H. HALL, Brantford, Canada. Filed Feb. 24, 1893. Serial No. 463,562. (No model.)





*Claim.*—1. In a stove-caster, a bracket provided with means for securing it to the stove leg, a hollow nut inserted in said bracket and adapted to be screwed in or out whereby the stove-leg is raised or lowered, and a caster-spindle inserted in the hole in said nut, substantially as described.

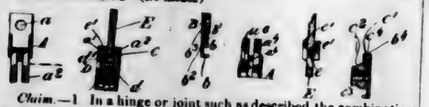
2. In a stove-caster, a bracket having a caster adapted to be raised or lowered therein and means for adjusting said caster in any desired position, and a plate extending from said bracket adapted to bear against the stove-leg and thereby hold the upper end in position, in combination with means for securing said bracket to the stove-leg, substantially as described.

3. In a stove-caster, a bracket having a caster adapted to be raised or lowered therein and means for adjusting said caster in any desired position, a plate adjustably connected to the top of and extending from said bracket and adapted to bear against the stove-leg, and thereby hold the upper end of said bracket in position, in combination with means for securing said bracket to the stove-leg, substantially as described

4. In a stove-caster, a bracket provided with a caster and having its base fitted into notches in the stove-leg, a plate fixed to the top of said bracket and adapted to bear against said stove-leg, in combination with a bolt and nut for securing the bracket to the stove-leg, substantially as described.

5. In a stove, brackets provided with casters, and means for securing said brackets to the stove-legs, in combination with rods J, each rod connected with two of said brackets, and means, substantially as described, for adjusting said rods, as and for the purpose set forth.

**502,190. JOINT FOR TYPE-WRITING MACHINES.** EDWARD S. HIGGINS and HENRY C. JENKINS, London, England. Filed Oct. 25, 1892. Serial No. 449,934. (No model.)



*Claim.*—1 In a hinge or joint such as described the combination with the two members to be jointed together of a segmental collar and washer having a rim whose internal curve or diameter corresponds with the external curve or diameter of the segmental collar substantially as described and illustrated in the accompanying drawings.

2. In a hinge or joint such as described the combination with the two members to be jointed together and a segmental collar jaw and washers of a partly cylindrical and partly conical projection substantially as described and illustrated in the accompanying drawings.

3. In a hinge or joint such as described the combination with the two members to be jointed together and a segmental collar jaw and washers of a cylindrical projection formed in part with one of the washers and a partly conical and partly cylindrical sleeve fitting thereon substantially as described and illustrated in the accompanying drawings.

4. In a joint such as described the combination with one of the members to be jointed having a conical hole of another member having a central recess and holes one cylindrical and the other stepped substantially as described and illustrated in the accompanying drawings.

5. In a joint such as described the combination with the members to be jointed one of which is provided with shoulders of a washer having a rim extending partly around it and the ends of which abut against the shoulders on the member to which it is applied substantially as described and illustrated in the accompanying drawings.

6. In a joint such as described the combination with one member having jaws $a'$ $a^3$ of a second member having the parts $e$, $e'$ and fitting between the jaws of the member and the washers B C one of which has parts $C'$ $C^3$ $C^4$ the whole being connected together by a single screw, substantially as described.

7. In a joint such as described the combination with the two members to be jointed together of two segmental collars on and a conical hole in one of the members and on the other member two perforated jaws having a recess between them two washers a segmental rim on each a cylindrical projection on one washer a partly cylindrical and partly conical projection on the other washer and a screw substantially as described and illustrated in the accompanying drawings.

8. In a joint such as described the combination with the two members to be jointed together of two segmental collars on and a conical hole in one of the members and on the other member two perforated jaws having a recess between them two washers a segmental rim on each a short cylindrical projection on one washer a longer one on the other and a partly conical and partly cylindrical sleeve fitting on the longer projection substantially as described and illustrated in the accompanying drawings.

**502,191. HIGH OR LOW WATER ALARM.** WILLIAM HODGSON, Nanticoke, Pa. Filed Apr. 1, 1893. Serial No. 468,649. (No model.)

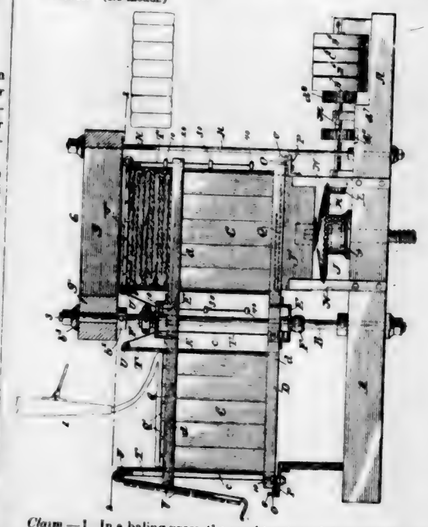


*Claim.*—1. A high and low water alarm, comprising the combination with the boiler, a tube mounted therein, having an alarm signal upon its outer end, its inner end being provided with a valve, said valve having a bifurcated end —C—, the nut or piece —*b*— secured to said tube, and the lever —D— provided with a float upon one end and secured, pivotally, to said piece —*b*—, and means for limiting the travel of the lateral arms of the lever —D— upon the pieces —*c*—.

2. A high and low water alarm comprising the combination with the boiler, of a tube mounted therein and having an alarm signal upon its outer end and its inner end being provided with a valve, the lever —D—, and means for securing the float —G— adjustably thereto, the piece —*b*— secured to the tube, the lever —D— pivoted to the outer end of the valve —B— and means for limiting the travel of the lateral arms of the lever —D— upon the arm —*c*—.

3. The combination with the tube —A—, of the valve —B—, the lever —D— having a float upon one end and pivoted to said valve, the piece —*b*— having arms —*c*— and the pins —*d*— adapted to engage with the slots —*f*— in the lever —D—

**502,192. BALING-PRESS.** EDMUND M. IVENS, New Orleans, La., assignor to Emily L. Ivens, same place. Filed May 9, 1891. Serial No. 392,240. (No model.)

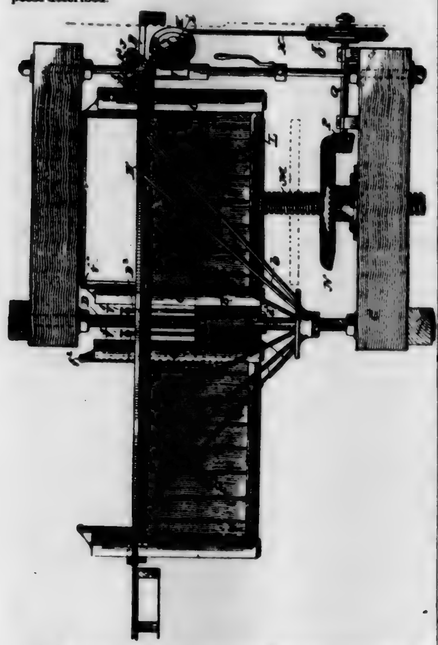


*Claim.*—1. In a baling press, the combination of the pressing follower the shaft M intermediate connections between said shaft and the follower, a fixed pulley $C^3$ and loose pulleys $D^3$ $D^4$ and $D^7$ on said shaft, a side shaft $d^9$ geared by pinions $d^{10}$ $d^{11}$ with the shaft M and by pinions $d^7$ $d^8$ with the pulley $D^7$, the drive shaft $G^3$ having pulleys, and the straight and crossed belts $E^3$ and $F^3$ connecting the pulleys of the shafts M and $G^3$, all arranged substantially as and for the purpose described.

2. The combination with the main frame, of the strain rod B formed with reduced portions *b b*, the press box mounted on the rod B, the castings E secured to the press box and loosely mounted on the reduced portions of the rods B, and the collars F formed of sections and fixedly secured to the spindle substantially in the manner and for the purpose shown.

**502,193. APPARATUS FOR BALING COTTON.** EDMUND M. IVENS, New Orleans, La., assignor to Emily L. Ivens, same place. Filed June 25, 1892. Serial No. 438,087. (No model.)

*Claim.*—1. In a cotton baling apparatus, in combination, a rotatable press box, having a horizontal band wheel, the compressor platen operating in the press box, the presser platen mechanism, including a continuously operated drive pulley, an endless rope loosely held about such band wheel and drive pulley, and movable sheaves arranged intermediate the band and drive pulleys to serve as guides for the rope, and adapted when moved in one direction to place such rope in tight frictional contact with such drive and band pulleys as and for the purposes described.



2. In a cotton baling apparatus, the combination of the frame, the cross head, the central or king post and end queen posts, the dual press box rotatable thereon having a horizontal band drive wheel, mechanism, including an externally grooved drive pulley, the endless rope guide wheels, vertically adjustable on the queen posts, operating to guide the said rope from the band wheel to the pulley and means for raising such guide wheels, whereby to tighten the rope on such pulley and band wheel, substantially as and for the purpose described.

3. In a cotton baling apparatus, the combination with the rotatable press box having dual compartments, means for rotating it, a lock plate at each end thereof, a latch for automatically engaging one of such lock plates at each semi rotation of the box, said latch hold on a vertically adjustable bearing plate and means for raising such plate whereby to release the latch, substantially as and for the purpose described.

4. In a cotton baling apparatus, the combination with the rotatable dual press box having lock plates at each end and a horizontal band wheel, a drive pulley, means for operating it continuously, and an endless rope or cable passing loosely around such wheel and drum, of a vertically adjustable bearing plate, guide sheaves journaled thereon, engaging the opposite strands of the rope as it leaves the band wheel, and a latch pivoted on such adjustable bearing plate adapted to engage the lock on the coincident end of the press box when the bearing plate is in its lowermost position and means for raising such bearing plate whereby to throw the rope in a tight frictional contact with the pulley and band wheel and to lift the latch from the lock plate, all substantially as shown and described.

5. In a cotton baling press, the combination of a rotatable press box having dual compartments, a fixed cross head over one of such compartments, a presser platen arranged to operate against such cross head, feed mechanism for such presser platen, intermediate connections between such mechanism and press box and shifting devices for such mechanism, all constructed and arranged substantially as shown, whereby such connections can be adjusted to operate to rotate the press box when the presser platen is at its lowermost position and out of the press box, as and for the purpose described.

6. In a cotton baling apparatus, the combination with the press box, the cross head, and the screw platen of the platen operating mechanism comprising the shaft Q carrying the drive pinion P, the fast and loose pulleys $A^3$ $B^3$ $C^3$, said pulley $C^3$ formed with a gear $C^7$, the internally geared loose pulley O, having a clutch hub, the sliding clutch $N^3$, on the shaft Q, the counter shaft $S^3$ having gear T meshing with the internal pulley O and a gear $H^3$ meshing with the gear $C^7$, all substantially as shown and for the purpose described.

7. In a cotton baling apparatus, the combination with the press box and the screw platen, the drive shaft Q for operating such screw platen, of the fast and loose pulleys $A^3$ $B^3$ and $C^3$, the pulley $C^3$ having a gear $C^7$, the gears $L^3$ $M^3$, loosely mounted on the shaft Q, said gear $M^3$ having a clutch collar, the counter shaft $S^3$ provided with a gear $H^3$, meshing with the gear $C^7$, and with slidable gears $I^3$ and $K^3$ adapted to be alternately moved into mesh with the gears $L^3$ and $M^3$ and the sliding clutch $N^3$ on shaft Q, all arranged substantially as and for the purpose described.

8. In a cotton baling apparatus the combination with the press box, cross head and screw platen and the screw platen operating shaft Q, of the fast and loose pulleys $A^3$, $B^3$, and $C^3$ and frictional bevel pulley $G^3$ fixedly held on such shaft, said pulley $C^3$ having a bevel friction pulley section $C^8$, of the vertically adjustable shaft $R^3$ having bevel pulley $F^3$ adapted to be moved into engagement with the pulleys $G^3$ and $C^8$, all substantially as and for the purpose described.

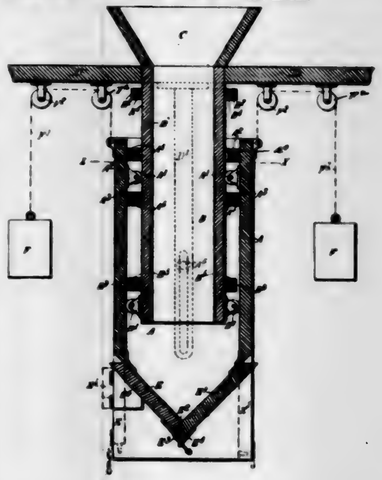
9. In a cotton baling apparatus substantially as described, the combination with a press box and follower vertically movable therein, of water chambers, pistons operating therein, said pistons connected with the followers, a water supply discharging into the bottom of the water chambers all arranged substantially as shown whereby a counterbalance is formed for the followers, as the pistons are movable in the water chambers by the alternating weight on the follower in the press box as and for the purpose described.

10. In a cotton baling apparatus substantially as described the combination with a press box having dual chambers, and followers movable in such chambers, of counterbalance devices held on the press box and such devices, comprising water chambers, pistons operating therein said pistons connected to the followers, and a main supply tank connected with such water chambers, all arranged substantially as shown, whereby a water balance is drawn under such pistons as they are pulled up by the weighted followers, and whereby such water is forced back into the reservoir or tank when the pistons fall and raise the followers, and valved connections for such water chambers, for cutting off such chambers from the supply reservoir, when it is desired to hold the pistons and followers at any given point all substantially as shown and described.

11. The combination with a rotatable press box having dual chambers followers vertically movable therein, a water supply tank, and cylinders carried on such box, valved pipe connections between the tank and the cylinders, pistons operating in such cylinders and flexible connection between such cylinders and the follower substantially as and for the purpose described.

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**502,194.** FLOUR-CHUTE. JOHN K. JOHNSTON, Dundrum, Ireland. Filed Mar. 2, 1893. Serial No. 464,423. (No model.)





*Claim.*—1. A telescopic chute, consisting of a stationary and a movable tubular part having guide rollers and co-acting ledges mounted on the stationary and movable tubular parts and operating to prevent the escape of dust, and also to limit the movement of the movable tubular part relatively to the stationary part, substantially as described.

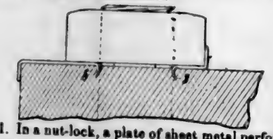
2. A chute for grain and the like comprising the combination with a tubular fixed part, of a movable tubular part one pair of opposite sides of which is shorter than the other pair, and adapted to slide on the said fixed part, rollers secured to the said parts, ledges secured to the said parts and adapted to limit the travel of the said movable part and to prevent dust escaping from between the said parts, a valve consisting of two doors hinged to the lower edges of the two short sides of the movable part of the chute, and means for maintaining said valve tightly closed, substantially as described.

3. A chute for grain and the like comprising the combination with a tubular fixed part, of a movable tubular part one pair of opposite sides of which is shorter than the other pair, and adapted to slide on the said fixed part, stops secured to the said parts and adapted to limit the travel of the said movable part, a valve consisting of two doors hinged to the short sides of the movable part of the chute, and brackets hinged to the long sides of the movable part adapted to hold one of the said doors at any desired height and thus maintain the valve partly open, substantially as described.

4. The combination with a telescopic chute, consisting of a stationary and a movable tubular part having guide rollers, and coacting ledges mounted on the stationary and movable tubular parts, of a detachable hopper adapted to be moved away from said chute when required, substantially as described.

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**502,195.** NUT-LOCK. THOMAS D. JONES, Chicago, Ill., assignor to A. W. Dreves, A. S. Osgood, and John Early, same place. Filed Apr. 19, 1893. Serial No. 471,005. (No model.)



*Claim.*—1. In a nut-lock, a plate of sheet metal perforated to receive a bolt, and having at each of two edges a pair of oppositely pointing hook-shaped spurs to engage a penetrable base, and further having a portion to be bent against the side of a nut placed upon the plate to lock the same, substantially as described.

2. In a nut-lock, a plate of sheet metal adapted to receive a bolt and to hold a nut placed thereon and provided at two of its edges with oppositely pointing hook-shaped spurs, substantially as described.

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**502,196.** PROCESS OF MAKING HOLLOW OBJECTS FROM PLASTIC MATERIAL. ROBERT KIESSELING and MAX MÖLLER, Altona, Germany. Filed June 4, 1892. Serial No. 435,546. (No specimens.)



*Claim.*—The process of molding hollow cylindrical objects from plastic material which consists in evenly spreading a layer of plastic material upon a flexible molding plate, attaching a collapsible core to one end of said flexible molding plate, and then wrapping or rolling the flexible molding plate around said core and interposed layer of plastic material, and finally removing the molding plate and core after the plastic material has become hardened in cylindrical form substantially as described.

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**502,197.** BRIDLE-BLIND. LEO LOEBER, Buffalo, N. Y. Filed Apr. 22, 1893. Serial No. 471,389. (No model.)

*Claim.*—1. A blind of the character described comprising a rigid portion, a swinging semicircular portion pivoted thereto, a spring for normally separating the two portions, a cover connecting them, a holding device connected to the swinging portion intermediate its ends and adapted to engage the rigid portion, and a cord connected with the holding device for closing the swinging portion and operating the holding device, substantially as shown and described.

2. A blind for the purpose described, comprising two semi-circular portions pivotally connected at their ends, a spring for normally holding them apart, a covering attached to the said portions, a hook connected to one of the said portions, and a cord adapted to operate the said hook, substantially as specified.

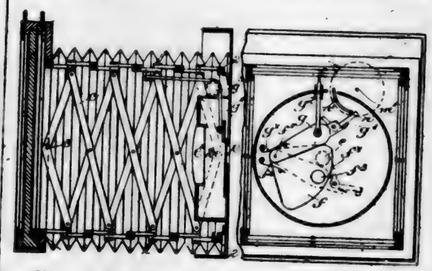


3. A blind for the purpose described, comprising two semi-circular portions pivotally connected at their ends, springs for normally holding them apart, a cover connected with the said portion, a hook pivotally connected with the movable portion, the said hook having an eye, a cord having one end connected to the stationary portion and passed through the said eye to the driver, substantially as set forth.

4. A blind for the purpose described, comprising two semi-circular portions pivotally connected at their ends, a spring for normally holding them apart, a covering connected to the said portions, the upper portion connected to the bridle, a hook pivotally connected to the lower portion provided with an eye between its ends, a cord attached to the upper stationary portion and passed around behind the covering and under the lower pivoted portion, and thence through the eyes of the hook, substantially as described.

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**502,198.** PHOTOGRAPHIC CAMERA. CARL G. OSTEHAD, Boston, assignor of one-half to Frederick B. Carpenter, D. Harry Darling, and E. N. Heath, Wakefield, Mass. Filed May 12, 1892. Serial No. 432,722. (No model.)



*Claim.*—1. In a camera, two frames movable toward and from each other, one of which frames is provided with a lens, the other carrying a sensitized surface, combined with a shutter carried by the lens-carrying frame, mechanism connected with said shutter and actuated by the movement of one of said frames with relation to the other to automatically retract said shutter, and adjustable means to release the shutter automatically when a predetermined point in the movement of the frames has been reached, and at that point to effect the exposure of the plate, substantially as described.

2. In a camera, two frames movable toward and from each other, one of which frames carries a lens, and the other of which is adapted to receive a sensitized surface, combined with a shutter and its operating lever carried by the lens carrying frame, a locking device normally connecting said lever and shutter, and a connection between the said lever and some part of the camera having a different movement from that of the lens-carrying frame, whereby the lever and shutter are moved simultaneously by the movement of one of the frames with relation to the other to set the shutter, and adjustable means to automatically release the shutter when a predetermined point in the movement of the frames has been reached, and at that point to effect the exposure of the plate, substantially as described.

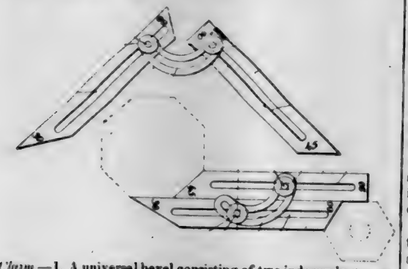
3. In a camera, two frames movable toward and from each other, one of the frames carrying a lens, and the other adapted to receive a sensitized surface, combined with a shutter on the lens-carrying frame, devices connecting said shutter with a portion of the camera having a different movement from that of the lens-carrying frame to move the shutter, and an adjustable tripping device located in the path of movement of said connecting devices to automatically trip the said shutter at any predetermined point in its movement, when a predetermined point in the movement of the frames has been reached, and at that point to effect the exposure of the plate, substantially as described.

4. In a camera, two frames movable with relation to each other, one of which carries a lens, and the other a sensitized surface, combined with a shutter pivoted on the inner side of the lens-carrying frame and actuated by the movement of the frames with relation to each other, and a movable index plate pivoted to the outer side of said lens-carrying frame, and a tripping device carried by said plate and to engage with and release the shutter automatically to determine the instant of exposure of the surface by the said shutter, substantially as described.

5. In a camera, two frames movable with relation to each other, one of which carries a lens, and the other a sensitized surface, combined with a shutter carried on the inner side of the lens-carrying frame and actuated by the movement of the frames with relation to each other, and a movable index plate upon the outer side of the lens-carrying frame, and a tripping device connected thereto to co-operate with and release the shutter to determine the instant of exposure of the plate by the said shutter, and a fixed index also on the outer side of the lens-carrying frame, and co-operating with said movable index plate to indicate the position of the tripping device with relation to the shutter, substantially as described

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**502,199. BEVEL.** CARL G. OSTEMAN, Boston, Mass., assignor of one-half to the S. A. Woods Machine Company, same place. Filed Mar. 6, 1893. Serial No. 464,854. (No model.)



*Claim.*—1. A universal bevel consisting of two independent members, in combination with a link connecting the said members at one of their faces to thereby permit the opposite faces of said members to be laid flat upon the same working surface throughout their lengths, and clamping devices to clamp said members in relative adjusted positions, substantially as described.

2. A universal bevel consisting of two independent members, in combination with a curved link connecting the same, and clamping devices to retain said members and link in adjusted positions with relation to each other, substantially as described.

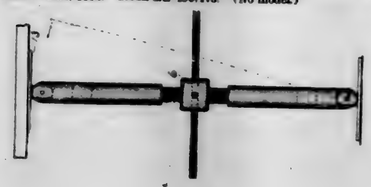
3. A universal bevel consisting of two independent members having longitudinal slots, in combination with a slotted link, and adjusting devices connecting said members and link and made adjustable in the slots of the same, substantially as described.

4. A universal bevel consisting of two independent members having slots, in combination with a slotted link, and thumb bolts passed through the slot in said link and through the slots in said members respectively and having their heads flush with the under surfaces of said members, whereby said members and link may be clamped in adjusted position with relation to each other, substantially as described.

5. A universal bevel consisting of two independent members having longitudinal slots and angular ends, in combination with a link connecting said members with their under faces in the same plane, and adjusting devices to clamp said members and link in adjusted positions with relation to each other, whereby one of the said members may be moved about and against the angular end of the other to thereby fix the angle between the two members as of the angle of said angular end, substantially as described

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**502,200. STREET-CAR JACK.** GEORGE F. PEARSON, Lowell, Mass. Filed Oct. 31, 1892. Serial No. 450,473. (No model.)

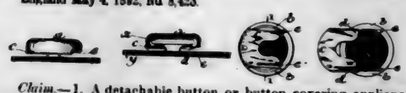


*Claim.*—1. A screw-jack, having a screw turning in internally and oppositely threaded upper and lower members having slotted curved outer ends, a base and a head each provided with a tongue for entering the appropriate end-slot, and pins pivoting the tongues in place while permitting them to bear against the heads of the slots, substantially as set forth.

2. In a screw-jack, an upper and a lower member having internal screw-threads in opposite courses, a screw adapted to work in the same and having a nut at its middle whereby both end members may be simultaneously moved in opposite directions, a base and a head each having a tongue pivoted in an end-slot in its appropriate member, whereby objects may be lifted and the jack swung laterally in a vertical plane only, substantially as set forth

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**502,201. DETACHABLE BUTTON-COVER.** GEORGE PILSBAM, London, England, assignor to the Gordon Hotels, Limited, same place. Filed Mar. 27, 1893. Serial No. 467,861. (No model.) Patented in England May 4, 1892, No. 8,423.



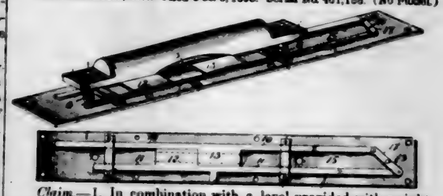
*Claim.*—1. A detachable button or button covering appliance, comprising a hollow cover or cap adapted to fit over and cover the head of the button, a dovetail slideway in the under side thereof; a dovetailed slide having two similar arms adapted to slide into said slideway and having a U-shaped recess between said arms to receive the shank of the button and to hold the same firmly when the said slide is pushed home, substantially as and for the purposes described.

2. A detachable button or button covering appliance, comprising a hollow cover or cap adapted to fit over and to cover the head of the button, a dovetailed slideway in the under side thereof, a dovetailed slide having two similar arms adapted to slide into said slideway and having a U-shaped recess between said arms, to receive the shank of the button and to hold the same firmly when the said slide is pushed home; and stops arranged to hold said slide against accidental displacement, substantially as and for the purposes described.

3. A detachable button or button covering appliance comprising the hollow cover or cap *a* adapted to fit over and to cover the button, a dovetail slideway *b b* in the under side thereof; a dovetailed slide *c* adapted to slide into said slideway *b b*, and having a U-shaped recess therein to receive the thread used to attach the button or other fastening, and to hold the same firmly when pushed home; and stops *e e* to hold said slide against forward movement, and stops *d d* to hold said slide against backward movement: and a knob on said slide for facilitating its removal, substantially as and for the purposes described.

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**502,202. GUARD ATTACHMENT FOR LEVELS.** JOSHUA PRICKETT, Marinette, Wis. Filed Feb. 6, 1893. Serial No. 461,188. (No model.)



*Claim.*—1. In combination with a level provided with a sight-opening, of twin oppositely-movable slides arranged in operative relation with said sight-opening, and means for unitedly operating the slide, substantially as specified.

2. In a device of the character set forth, the combination of the level-glass, the top plate having a sight-opening therein, a pair of slides mounted against the under side of said top-plate and adapted to open or close the said sight-opening and having arms extending therefrom, links connected to a portion of said arms, and a pivoted lever having the said links attached to the opposite ends thereof whereby the said slides are unitedly operated to open or close, substantially as described.

3. In a device of the character set forth, the combination of a level-glass, a top-plate having a sight-opening therein, a pair of slides mounted against the under side of the top-plate and adapted to open and close the sight-opening therein and having oppositely-extending arms, one of which is supplied with a laterally-projecting operating finger, guides in which said arms are mounted, links connecting a portion of the ends of said arms with a lever, and a frame in which the said level-glass is mounted and to which the said top plate is attached, substantially as described.

4. The combination with a level provided with a sight-opening,



of oppositely-movable twin slides, arms connected to and carrying said slides respectively, and means connected to the arms for reciprocating the latter simultaneously in opposite directions, substantially as specified.

5. In a device of the character set forth, the combination of a level-glass, the top-plate having a sight-opening therein, a pair of slides mounted against the under side of the said top-plate and a connection at one end of said slides for simultaneously operating the latter, substantially as described.

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**502,203. STOVEPIPE-DAMPER.** CHARLES T. REDFIELD, Glen Haven, N. Y. Filed Mar. 20, 1893. Serial No. 466,830. (No model.)



*Claim.*—1. The combination, with a stove-pipe, of a damper smaller in diameter than the interior of the pipe, and bearings on opposite ends of the damper-shaft compressing the pipe diametrically on the line of said shaft, whereby the pipe is made to pinch the edges of the damper adjacent to the shaft thereof, and the pipe is loosened from the edges of the damper on a line at right angles to the said shaft substantially as described and shown.

2. The combination with a stove-pipe and damper of the damper-shaft passing through the pipe and having one of its protruding ends provided with a bearing on the exterior of the pipe, a spring on said shaft compressing the pipe and the opposite protruding end split longitudinally and spread apart to confine the pipe diametrically compressed as and for the purpose set forth.

3. The combination of the damper-shaft formed at one end with the loop —*l*— separate disks —*c c*— of wood or analogous material applied to opposite sides of said loop, and the rivet —*i*— passing through said disks and center of the loop and holding the loop partly embedded in the disks substantially in the manner set forth and shown.

4. In combination with the stove-pipe, a damper having its shaft passing through the pipe and provided at one end with a bearing on the exterior of the pipe and the opposite end of said shaft bent into a loop, disks of wood applied to opposite sides of the loop, a rivet tying the disks to the loop, a shield mounted on the shaft, and a spiral spring on the shaft between the disks and shield and pressing said shield against the pipe and compressing the same diametrically as set forth.

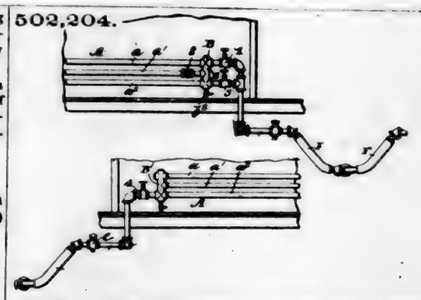
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**502,204. STEAM HEATING APPARATUS FOR RAILWAY-CARS.** PATRICK REILLY, Lima, Ohio. Filed Apr. 7, 1893. Serial No. 469,466. (No model.)

*Claim.*—1. In a car heating system, the combination of a direct main heating line section $a^3$, provided with inlet and outlet cocks 3 and 4, and a circulatory section comprising a series of longitudinally arranged pipes *a*, *a'*, the pipe *a* being provided with a cock 1 and the pipe *a'* being provided with a cock 2, both sections being located inside of and running through the car and connected by hollow end connections B B', each of which latter is provided with a diaphragm, the diaphragm *b* in the connection B being arranged between the points where the pipes *a*, *a'* enter said connection and the diaphragm *b'* in the connection B' being between the points where the pipes $a'$ $a^3$ enter said connection, whereby by a proper manipulation of the cocks, the steam may be passed in a direct line through the car or caused to circulate back and forth through the pipes and pass out at the opposite end of the system of pipes from which it entered, substantially as described.

2. In a car heating system the combination of a direct main heating line section $a^3$, provided with inlet and outlet cocks 3 and 4, and a circulatory section comprising a series of longitudinally arranged pipes *a*, *a'*, the pipe *a* being provided with a cock 1 and the pipe *a'* being provided with a cock 2 both sections being located inside of and running through the car and connected by hollow end connections B B' each of which latter is provided with draw-off cocks and a diaphragm, the diaphragm *b* in the connection B being arranged between the points where the pipes *a*, *a'* enter said connection and the diaphragm *b'* in the connection B' being between the points where the pipes $a'$ $a^3$ enter said connection, whereby by a proper manipulation of the cocks, the steam may be passed in a direct line through the car or caused to circulate back and forth through the pipes and pass

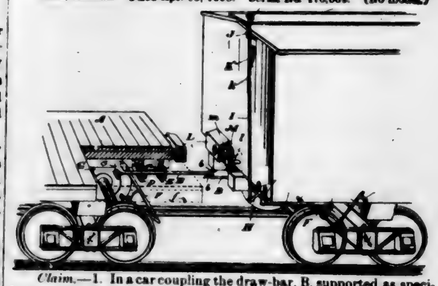
**502,204.**



out at the opposite end of the system of pipes from which it entered, substantially as described.

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**502,205. CAR-COUPLING.** JOHN D. RIPSON, Thorold, assignor of one-half to Thomas Francis Brown and William Manley German, Welland, Canada. Filed Apr. 18, 1893. Serial No. 470,869. (No model.)



*Claim.*—1. In a car coupling the draw-bar, B, supported as specified and having the hooked end, *b*, and weighted bent end, C, and means whereby the weighted bent end is raised and lowered as and for the purpose specified.

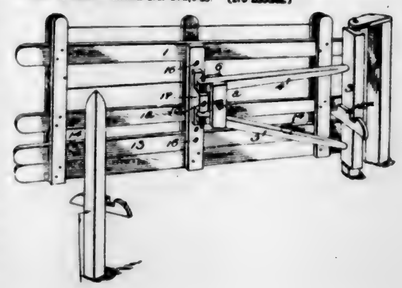
2. In a car coupling, a draw-bar provided with the hooked outer end supported in plates slightly to one side of the center of the car and held in position longitudinally by collars attached to the draw-bar and having a weighted bent inner end which is lifted by a tilting plate secured on a rod journaled in the bottom of the car and provided with handles as shown and lowers of its own gravity as and for the purpose specified.

3. The combination with the draw-bar, B, provided with the hooked end, *b*, supported in the plates, D, and, E, and held in position longitudinally by the collars, *d*, and having a weighted end, C, of the tilting plate, G, rod, F, arm, *f*", rod, *g*, crank, H, vertical rod, I, provided with a handle, *i*, having a notch, *k*, and the catch K, as and for the purpose specified.

4. The combination with the draw-bar, B, supported as specified and having the hooked end, *b*, and weighted bent end, C, and means whereby the weighted bent end is raised and lowered, of the buffers, L, supported on the studs, *l*, and held normally from the end of the car by the springs, M, as and for the purpose specified.

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**502,206. GATE.** ANDREW J. RUSSELL, Edgerton, Ohio. Filed June 7, 1893. Serial No. 476,843. (No model.)

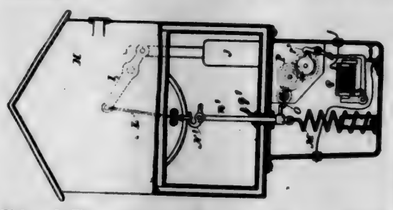


*Claim.*—1. The combination of a hanger having a vertical pivot-post, a gate centrally hinged to the outer end of the hanger and having a rigid latch-bar, a latch-post, double keepers secured to the latch and pivot posts and projecting from opposite sides thereof and adapted to be engaged by the latch-bar of the gate, and a locking-bar slidingly mounted on the gate and arranged below the keepers and adapted to engage the lower edges of the same to prevent the latch-bar being lifted out of engagement with them, substantially as described.

2. The combination of a hanger having a vertical pivot-post, a gate centrally hinged to the outer end of the hanger and provided with a rigid latch-bar projecting from its ends, a latch-post, the double keepers secured to the latch and pivot posts and provided at their upper edges with recesses and having beveled ends and adapted to be engaged by the projecting ends of the latch-bar, and a locking-bar slidingly mounted on the gate and adapted to engage the lower edges of the keepers and having handles forming stops, substantially as described.

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**502,207.** ELECTRIC SIGNAL FOR FIRE-ALARM SYSTEMS. JOSEPH SACHS, New York, N. Y. Filed Apr. 10, 1893. Serial No. 469,669. (No model.)



*Claim.*—1. The combination with a main signal box containing a hand actuated pull for energizing the signal sending mechanism; of an appended call box, a motor in said call box, a connection between the same and the pull mechanism in the main signal box, an electrically controlled stop mechanism for liberating the motor in the appended call box, and means for disconnecting the motor from the pull at the completion of the downward movement, substantially as set forth.

2. The combination with the main signal box and its motor and circuit closing devices; of an appended call box, mechanism within the appended call box for actuating the main signal box, an electrically controlled stop for bringing into action the mechanism of the appended call box, and a trip mechanism for disconnecting the mechanism in the appended call box from the mechanism in the main signal box, substantially as set forth.

3. The combination with the main signal box and its motor and circuit closing devices; of an appended call box, mechanism within the appended call box for actuating the main signal box, an electrically controlled stop for bringing into action the mechanism of the appended call box, a trip mechanism for disconnecting the mechanism in the appended call box from the mechanism in the main signal box, and means for sending from the appended box a return call to the place from which the signal was sent out, substantially as set forth.

4. The combination with a device for actuating a signal sending box so as to send its signal, of a differential magnet, having one of its coils in the circuit containing the actuating device and a battery and the other coils in a circuit containing a battery and auxiliary signal boxes, and means for sending a return signal from the actuating device to the first circuit and then to actuate the return call in the auxiliary boxes

5. The combination with a main signal box containing a hand-actuated pull for energizing the signal sending mechanism, of an auxiliary motor, a flexible connection between the auxiliary motor and the hand actuated motor of the main call box, an electrically controlled stop, an auxiliary circuit and call boxes therein for liberating the stop, and a trip mechanism for disconnecting the auxiliary motor at the end of its movement, substantially as set forth.

6. The combination with a main signal box, of a device for actuating the same, and a differential magnet, a return call, large battery, and the auxiliary sending or call device having therein a bell and a means for so changing the circuit on one side of the differential magnet that the differential magnet is so actuated as to throw into the circuit leading to the actuating device the large battery, and a means at said actuating device to cause it to release the return call device and cause said bell in the auxiliary box to ring when said actuating device is released.

7. The combination with a differential magnet of two circuits, one side containing a device for actuating a main signal box, and a battery, and the other a battery and auxiliary call boxes, each containing a circuit controller and a return call bell, and a device for changing the circuit and actuating the return call bell, said differential magnet being so arranged that when its balance is disturbed by the circuit controller it switches a larger battery into the circuit containing the actuating device, thereby releasing the same, and a means for properly releasing the device for changing the circuit of the auxiliary call boxes so as to ring the return call bell.

8. The combination with a main signal box containing a hand-actuated pull for energizing the signal sending mechanism, of an auxiliary motor, a flexible connection between the auxiliary motor and the hand-actuated motor of the main call box, a stop held by a wire in the electric circuit and means for releasing the said stop by heating or melting the wire, call boxes in the auxiliary circuit for closing the circuit, and a trip mechanism for disconnecting the auxiliary motor at the end of its movement, substantially as set forth.

9 The combination with a main signal sending mechanism, of an actuating device therefor in a circuit with a main battery, and call boxes at a distance from said actuating device and in another circuit, and a differential magnet and its armature susceptible to changes in either circuit, and so arranged as to throw a larger battery into the first circuit to energise the actuating device when the circuit has been changed at the auxiliary call boxes.

10. The combination with a main signal box, of an actuating device therefor, and auxiliary call boxes and a differentially wound magnet and circuit connections and batteries substantially as specified so arranged as to first open the circuit and then close it again through the return call magnet and thereby disturb the balance of the differential magnet and cause it to so change the circuit containing the actuating device as to cause the same to operate the main signal mechanism, and a means for changing this circuit and actuating the return call mechanism in the auxiliary boxes when the main signal mechanism has been properly tripped.

11 The combination with a main call box and its signal sending mechanism, of an auxiliary motor, an electrically controlled stop, an auxiliary circuit, whereby the auxiliary motor is brought into action, a trip mechanism for disconnecting the auxiliary motor at the end of its movement, and means for sending a return call, substantially as set forth.

12. The combination with a main signaling box and auxiliary mechanism for actuating the same, of an auxiliary local circuit and signaling devices, a main battery and circuit connections, a differentially wound electro-magnet, one of its helices being in the auxiliary circuit to the signaling boxes and the other in the circuit to the auxiliary mechanism, substantially as set forth.

13. The combination with the main call box, of an appended call box and the electrically controlled mechanism therein for pulling said main call box, of a local circuit, auxiliary call boxes in the local circuit, a differential electro-magnet and its armature, and electric circuit connections, substantially as specified, controlled by the armature of the differential magnet, and a main battery brought into action by the armature of the differential magnet for causing the liberation of the mechanical stop in the appended call box, substantially as set forth.

14. The combination with a main fire alarm or other call box and electrically controlled devices for bringing the same into action, of a local circuit and auxiliary call boxes in such local circuit, each of such auxiliary local call boxes containing an electro-magnet, and bell; a differentially wound electro-magnet and its armature and circuit connections controlled by such armature, an electro-magnet A in the circuit of the main battery, a circuit breaking wheel and mechanism for operating the same, and a stop liberated by the armature of the said electro-magnet whereby the current is pulsated through the electro-magnet of the auxiliary local signal box and the bell thereof sounded, substantially as set forth.

15. The combination with a main signaling box and automatic mechanism for actuating the same, of an auxiliary local circuit and signaling boxes and battery in such auxiliary local circuit, a differentially wound electro-magnet and its armature, a main battery and circuit connections to the auxiliary local circuit and to the main signal box, substantially as specified, for bringing into action the main signaling box by a variation in the electric currents passing through the helices of the differentially wound electro magnets, substantially as set forth

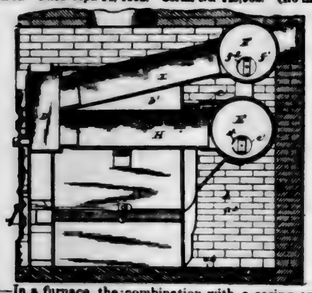
16. The combination with a main signal box, and electrically controlled mechanism for actuating the same, of a differential magnet and two balanced circuits containing the helices thereof, one of which circuits also contains the electric controlling devices for the actuating mechanism of the main signal box, auxiliary call boxes and their circuit breaking devices in the other of such circuits, a main battery and its circuit connections controlled by the armature of the differential magnet and brought into circuit for actuating the main signal by either circuit breaking device in the auxiliary call boxes, substantially as set forth.

17. The combination with a main signal box, and electrically controlled mechanism for actuating the same, of a differential magnet and two balanced circuits containing the helices thereof, one of which circuits also contains the electric controlling devices for the actuating mechanism of the main signal box, auxiliary call boxes and their circuit breaking devices in the other of such circuits, a main battery and its circuit connections controlled by the armature of the differential magnet and brought into circuit for actuating the main signal by either circuit breaking device in the auxiliary call boxes, and a pulsator in the circuit of the auxiliary call boxes brought into action after the balance has been restored in the differential magnet, substantially as set forth



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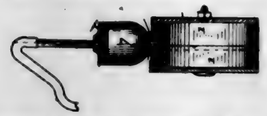
**502,208.** FURNACE. GEORGE W. SCATES, Knoxville, Tenn., assignor to himself, Rudolph Knafl, William D. Hume, and W. O. White, same place. Filed Sept. 14, 1892. Serial No. 445,902. (No model.)



*Claim.*—In a furnace, the combination with a casing or inclosure, a centrally-located fire-box and a smoke-flue at the rear, of a horizontal transverse drum E arranged in rear of the fire-box and communicating therewith at its center, a smaller drum F arranged above the drum E and communicating at its center with the smoke-flue, the duplicate soot-boxes arranged near and accessible from the front of the casing or inclosure, side flues or radiators H disposed at opposite sides of the fire-box and communicating at opposite ends, respectively, with the drum E and the soot-boxes, and side flues or radiators I disposed at opposite sides of the fire-box, respectively above the flues or radiators H, and communicating at their extremities respectively with the drum F and the soot-boxes, said soot-boxes being provided in their front sides with doors *d* and *d'*, the doors *d* being in alignment with the side flues or radiators, whereby the latter may be reached for cleaning, substantially as specified.

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**502,209.** APPARATUS FOR CASTING ALUMINIUM DENTAL PLATES. WARREN M. SHARP, Binghamton, N. Y. Filed Feb. 10, 1893. Serial No. 461,741. (No model.)



*Claim.*—In a flask for casting articles from aluminum, the combination with the annular rings and end plates secured together and the boss or hub formed with said rings, of the cup having a tube at its lower end communicating with the flask, the cover consisting of the two disks of different diameters with an interposed disk of asbestus, the tube to which said disks are secured, and the air tube connected therewith, substantially as described.

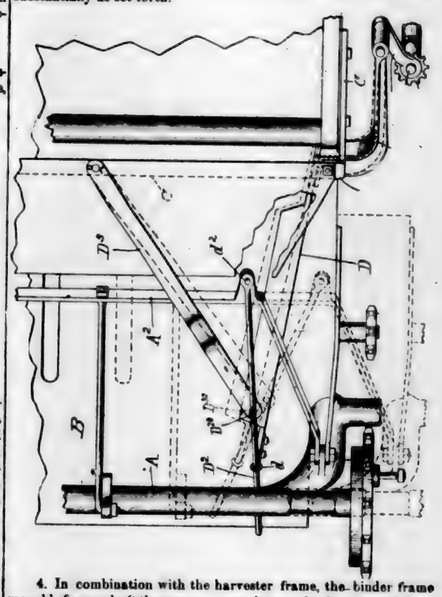
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**502,210.** BUTT-ADJUSTER FOR GRAIN-BINDERS. ANDREW STARK, Chicago, Ill., assignor of one-half to the Warder, Bushnell & Glessner Company, same place, and Springfield, Ohio. Original application filed Oct. 27, 1892, Serial No. 450,110. Divided and this application filed Mar. 27, 1893. Serial No. 467,792. (No model.)

*Claim.*—1. In combination with a harvester frame, the binder frame movable fore-and-aft thereon, the butter having a support on the binder frame, and connections from such support to the harvester frame adapted to cause fore-and-aft adjustment of the binder to communicate a reverse movement to the butter: substantially as set forth.

2. In a harvester, in combination with the main harvester frame, the binder frame movable fore-and-aft on the harvester frame, and the butter deriving support on the binder frame and deriving movement from the mechanism on the harvester frame, and connections from the butter support to the harvester frame elsewhere than at the point at which the butter derives movement, whereby the adjustment of the binder produces a contrary adjustment of the butter: substantially as set forth.

3. In combination with a harvester frame, the binder-frame movable fore-and-aft on the harvester frame, the butter and a guide rod for the same pivoted on the binder frame and a controlling bar or link pivoted on the harvester frame and pivotally connected to said butter guide rod at a point stubbleward from the pivot of the latter: substantially as set forth.



4. In combination with the harvester frame, the binder frame movable fore-and-aft thereupon; a crank arm of a shaft journaled on the harvester frame, and the butter actuated at one end by such crank arm and guided at the other end; the guide rod for such butter being pivoted on the binder frame, and a link or bar which controls the position of such guide rod pivoted on the harvester frame rearward of the said guide rod and pivotally connected to said guide rod at a point between the pivot of the latter and the guide connection of the butter thereto: substantially as set forth.

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**502,211.** APPARATUS FOR REDUCING BITUMINOUS ROCK. EDWIN R. THOMASON, San Francisco, Cal. Filed Feb. 15, 1893. Serial No. 462,494. (No model.)

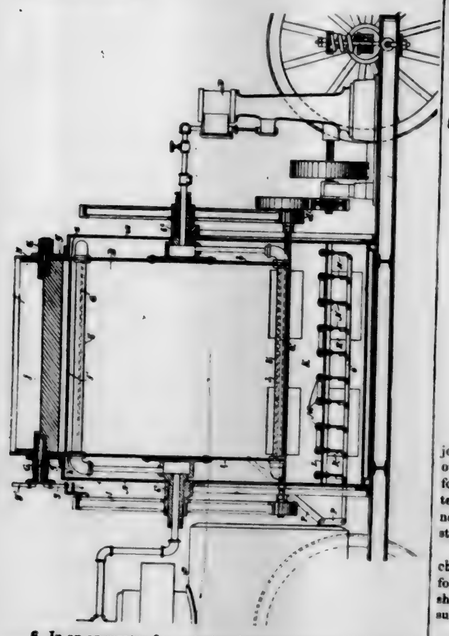
*Claim.*—1. In an apparatus for reducing bituminous rock and other asphaltum compounds, the combination of a continuously rotating vessel in which the material is reduced, and an intermittently rotatable hopper above adapted to discharge its supply into the vessel at intervals, substantially as herein described.

2. In an apparatus for reducing bituminous rock and other asphaltum compounds, the combination of a rotating vessel in which the material is reduced, and a periodically rotating hopper above divided into compartments adapted to receive and to deliver their charges successively into the reducing vessel, substantially as herein described.

3. In an apparatus for reducing bituminous rock and other asphaltum compounds, the combination of a rotating reducing vessel, a feed hopper above divided into compartments adapted to receive and to deliver their charges successively into the reducing vessel, and connections between said vessel and hopper whereby the feed hopper is periodically operated at timely intervals, substantially as herein described.

4. In an apparatus for reducing bituminous rock and other asphaltum compounds, the combination of a rotating reducing vessel, a feed hopper above divided into compartments adapted to receive and to deliver their charges successively into the reducing vessel, and connections between said vessel and hopper whereby the feed hopper is periodically operated at timely intervals, consisting of the wheel on the reducing vessel having the contact pins and the arms on the hopper shaft with which said pins come in contact, substantially as herein described.

5. In an apparatus for reducing bituminous rock and other asphaltum compounds, the combination of a continuously rotating reducing vessel, an outer casing having a top opening, and an invertible feed hopper intermittently actuated and adapted by its movement to alternately expose said opening to deliver its charge into the reducing vessel and to close it, while receiving a fresh supply, substantially as herein described.



6. In an apparatus for reducing bituminous rock and other asphaltum compounds, the combination of a rotating reducing vessel, an outer casing having a top opening and a periodically rotating feed hopper divided into compartments with intervening closed portions, whereby the opening in the casing is successively opened and closed, and successive charges are delivered to the reducing vessel, substantially as herein described.

7. In an apparatus for reducing bituminous rock and other asphaltum compounds, the combination of a rotating reducing vessel, an outer casing having a top opening, a feed hopper divided into compartments with intervening closed portions and adapted to successively open and close the opening of the casing, and to successively deliver charges to the reducing vessel, a casing exterior to said hopper for guarding its compartments on the sides, and connections for periodically rotating said hopper, substantially as herein described.

8. In an apparatus for reducing bituminous rock and other asphaltum compounds, a rotating reducing vessel and a feed device adapted to deliver material into the top of the vessel, in combination with an inwardly opening freely swinging gravity door carried by the reducing vessel, substantially as herein described.

9. In an apparatus for reducing bituminous rock and other asphaltum compounds, the combination of a reducing vessel, an outer casing having a discharge chamber in its lower portion with a door and an adjustable gate or shutter in the upper portion of said discharge chamber, whereby communication with the reducing vessel above may be cut off when the door is opened, substantially as herein described.

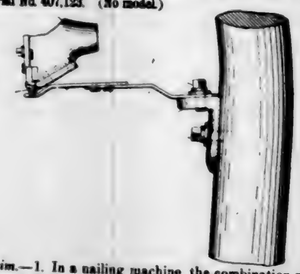
10. In an apparatus for reducing bituminous rock and other asphaltum compounds, the combination of a reducing vessel, an outer casing having a discharge chamber in its lower portion with a door and an adjustable gate or shutter in the upper portion of said discharge chamber, whereby communication with the reducing vessel above may be cut off when the door is opened, said gate or shutter consisting of the rock screens and the connected flaps or plates, substantially as herein described.

11. In an apparatus for reducing bituminous rock and other asphaltum compounds, the combination of a reducing vessel, an outer casing having a discharge chamber in its lower portion with a door and an adjustable gate or shutter in the upper portion of said discharge chamber, whereby communication with the reducing vessel above may be cut off when the door is opened, said gate or shutter consisting of the rock screens and the connected flaps or plates, and the means for operating it from without, consisting of the connecting link and the lever and connections, substantially as herein described.

12. In an apparatus for reducing bituminous rock and other asphaltum compounds, the combination of an outer casing having a discharge chamber in its base, a reducing vessel within the casing, a series or coil of steam pipes M below the reducing vessel and above the discharge chamber, a series of connected shutter flaps or plates pivoted on said pipe and connections for operating said flaps or plates from without, substantially as herein described.

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**502,212. NAILING-MACHINE.** FRANKLIN O. TOBEY, Boston, assignor to James W. Brooks, principal trustee, Petersham, and Frank F. Stanley, associate trustee, Swampscott, Mass. Filed Sept. 29, 1891. Serial No. 407,123. (No model.)



*Claim.*—1. In a nailing machine, the combination with its projecting nose adapted to enter a channel, and a foot supporting stand, of an independent surface foot sustained thereby and having a recess for the reception of the nose of the machine, and adapted to be interposed between the nose and the work, to surround and cover the nose, so that a channel nailer may be adapted for surface work, substantially as described.

2. In a nailing machine, the column thereof, and the nose for channel nailing, combined with a yielding, independent surface foot for surface nailing, pivoted at or near the column, and having a cup shaped recess to receive and be held in operative position by the nose, substantially as described.

3. In a nailing machine, the nose thereof, combined with a yielding, independent surface-foot, made in two parts so as to be adjusted longitudinally one upon the other, and means for adjusting the parts combined with a support for the said foot, and upon which one of the parts of the latter is pivoted, to operate, substantially as described.

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**502,213. HORSE-COLLAR FASTENER.** R. J. VANDERBECK, Sheldon, Iowa. Filed Feb. 28, 1893. Serial No. 464,104. (No model.)



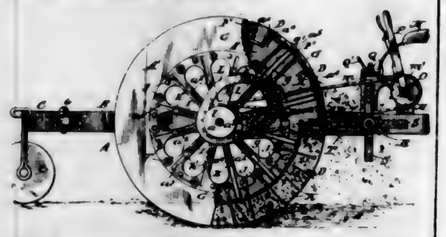
*Claim.*—In a horse collar fastener, the combination of the sections 1 and 2 consisting of curved plates and provided with flanges 3 and 4, the flange 3 being provided with a slot having an enlarged portion or mouth and a narrow portion, the lug formed integral with the section 1 and provided in its outer face with an L-shaped recess forming shoulders 9 and 10, and the latch pivoted to the flange 3 and arranged to engage the shoulder of the lug, substantially as described.

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**502,214. ROTARY PLOW AND PULVERIZER.** GEORGE F. WHITMORE, West Union, Iowa. Filed Apr. 18, 1893. Serial No. 470,850. (No model.)

*Claim.*—1. In a combined digger and pulverizer, in combination, a main frame, a digger frame held to rotate thereon, said frame formed of a plurality of disks, radial blades connecting them at their outer ends, whereby to form dirt holding portions, radially movable followers operating between such blades, and a cam mechanism for moving such followers outward at predetermined points, all substantially as and for the purposes described.

2. In a machine as described, in combination, a main frame, a disk frame, said disk frame having a series of radial pockets and cutter plates, reciprocating followers operating in such pockets, a pulverizer frame comprising a comb plate and stirring fingers rotating between the comb fingers, said frame arranged to receive the dirt as it is discharged from the disk frame, and means for reciprocating the followers, substantially as described.



3. In combination, the disks A', the shovel blades D, having cutting edges on their inner and outer edges, the followers G, and means for reciprocating the followers between the shovel blades D substantially as shown and described.

4. In a combined digger and pulverizing machine, the combination with the disks A', the shovel blades D and the followers arranged substantially as shown, of the forked fingers extended through the followers into the spaces between the shovel blades as and for the purposes described.

5. In a machine substantially as described, the combination, with the main frame, the cams adjustably held thereon, the disks held to rotate on the frame B, having spokes formed with elongated slots, and the shovel blades D, of followers held to reciprocate between the shovels, said followers having rearwardly extending shanks, transverse rods seated in the said slots, and connecting the follower shanks, such rods adapted to engage the cams and spring devices for holding the rods to their normal position substantially as and for the purpose described.

6. The combination of a series of colter disks having radial plates or shovels at their outer edges, followers operating between such shovels, forked arms extended outward through such followers and a cam and spring mechanism for reciprocating such followers all substantially as and for the purposes described.

7. The combination of a series of colter disks having radial plates or shovels at their outer edges, followers operating between such shovels, forked arms extended outward through such followers, spring devices for normally drawing the followers to their inner position adjustable cams loosely mounted on the colter shaft, adapted to force the followers to their outer positions, and lever mechanism arranged to be operated from the driver's seat, for adjusting such cams, all substantially as and for the purpose described.

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**502,215. ELECTRIC WINDING ATTACHMENT FOR CLOCKS.** ARTHUR G. WISEMAN, St. Louis, Mo. Filed July 30, 1892. Serial No. 441,780. (No model.)

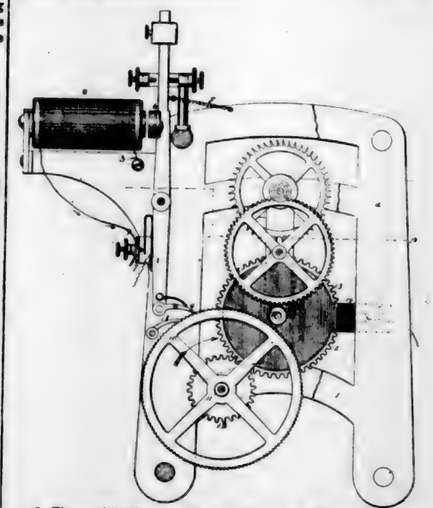
*Claim.*—1. The combination, with a gear-shaft 15; wheel turning free on the shaft, a main spring with ends connected to the shaft and said wheel, a disk 5, a lever pivoted to said wheel and adapted to bear against said disk to close the circuit, and mechanism carried by said wheel to operate said lever, all substantially as, and for the purpose set forth.

2. The combination, in an electric winding attachment for clocks, of the shaft 15, the circuit breaking wheel loose on the shaft, the main spring attached by its opposite ends to the shaft and circuit breaking wheel, a cog gear on the circuit breaking wheel, an electro magnet, a ratchet pawl on the armature and a ratchet wheel actuated by the pawl and having gear connection with the circuit breaking wheel, substantially as set forth.

3. The circuit breaking wheel turning loose in the shaft 15 and connected therewith by the main spring, the circuit breaking lever 20 with its contact roller 22, the lever 26, the catch 28, lever 33 catch 40 having a finger 42 and the wheel 17 upon the shaft 15 having a stud 44, all substantially as set forth.

4. The shaft 15, circuit breaking wheel turning loose on the shaft, main spring connected by its ends to the shaft and circuit breaking wheel respectively, a movable contact device 22 upon the wheel and the contact disk 5 adapted for continuous contact with the device during the rotation of the circuit breaking wheel, substantially as set forth.

5. The shaft 15, an incline 34 and stud 44 on the shaft, a circuit-breaking wheel turning loose on the shaft, a rod 35 parallel with the shaft and having bearing in the circuit breaking wheel, the levers 37, 26 and 20 with springs 23 and 30, and the catch 40, all adapted to operate substantially as set forth.



6. The combination of the shaft 15 having incline 34 and stud 44, the circuit breaking wheel turning loose on the shaft, the main spring connected to the shaft and circuit-breaking wheel by its opposite ends respectively, the rod 35 with wheel 36, the contact lever 20 with contact roller 22, the conducting disk 5, the levers 26, 33, 37, catches 28 and 40 and an electric winding device substantially as set forth giving rotation to the circuit-breaking wheel 13, substantially as set forth.

7. The described combination of the mainspring 16 and wheel 13 on the minute hand shaft 15, and the electric winder composed of the magnet 2, armature 6, pawl 9, ratchet-wheel 10 and spur wheel 12, all constructed substantially as set forth.

8. The combination, in an electric clock winder, of an armature carrying a pawl, a ratchet-wheel actuated by the pawl, an insulated spring on the armature connected with the electric cell, an insulated piece connected with the magnet and receiving the contact of the spring in one position of the armature.

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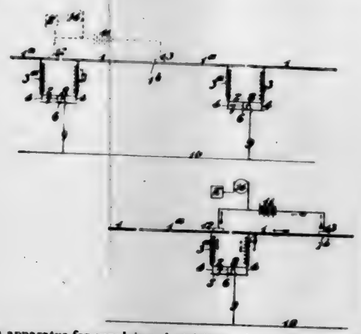
**502,216. CONDUIT SYSTEM FOR ELECTRIC RAILWAYS.** FRANK WYNNE, London, England. Filed Apr. 3, 1891. Serial No. 387,561. (No model.) Patented in England Dec. 4, 1890, No. 19,811; in Germany Mar. 18, 1891, No. 64,132; in France Sept. 17, 1891, No. 216,184; in Canada July 30, 1892, No. 39,555, and in Austria-Hungary Oct. 23, 1892, No. 26,047.

*Claim.*—1. In apparatus for supplying electricity to electrically propelled vehicles, the combination of an insulated main conductor, a series of insulated road contacts extending along the line and a series of contact making devices, said road contacts being connected so as to form pairs of conductors each of which is independent of the adjacent pairs, by conductors each of which is connected with one of said contact making devices substantially as herein described.

2. In apparatus for supplying electricity to electrically propelled vehicles, the combination of an insulated main conductor a series of insulated road contacts normally disconnected from said main conductor, arranged one in advance of the other with spaces between them in the longitudinal direction of the road, and connected across each alternate space by conductors to form independent pairs of road contacts and a series of contact making devices each in circuit with one of said conductors, substantially as herein described for the purpose specified.

3. In apparatus for supplying electricity to electrically propelled vehicles, the combination of an insulated main conductor, a series of insulated road contacts arranged one in advance of the other in the longitudinal direction of the road and connected by conductors in pairs each of which is independent of the adjacent pairs, a series of contact making devices each in circuit with the conductor connecting the corresponding pair of road contacts, a car motor, a motor con-

tact a battery on said vehicle and contacts in connection with the poles of said battery one of these latter contacts being arranged in advance of said motor contact, substantially as herein described for the purpose specified



4 In apparatus for supplying electricity to electrically propelled vehicles, the combination of an insulated main conductor, a series of insulated road contacts arranged one in advance of the other in the longitudinal direction of the road and connected by conductors in pairs each of which is independent of the adjacent pairs, a series of contact making devices each in circuit with the conductor connecting the corresponding pair of road contacts, a battery on said vehicle, contacts connected to the poles of said battery and arranged to travel in contact with said road contacts, and a car motor connected to one pole of said battery and to one of said contacts, and to a return conductor substantially as hereinbefore described for the purpose specified.

5 In apparatus for supplying electricity to electrically propelled vehicles, the combination of an insulated main conductor, a series of insulated road contacts arranged one in advance of the other in the longitudinal direction of the road and connected by conductors in pairs each of which is independent of the adjacent pairs, a series of contact making devices each in circuit with the conductor connecting the corresponding pair of road contacts, a battery on said vehicle, a forward contact connected to one pole of said battery, rearward contacts connected to the other pole of said battery, a contact breaking device in the circuit between said forward contact and the battery and adapted to break the circuit between the rearmost contact and said battery and a car motor connected to one pole of said battery and one of said contacts, and to a return conductor substantially as herein described for the purpose specified.

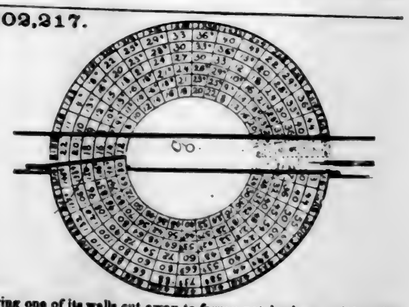
6. In apparatus for supplying electricity to electrically propelled vehicles, the combination of an insulated main conductor, a series of insulated road contacts arranged one in advance of the other in the longitudinal direction of the road and connected in pairs each by a conductor, and a series of contact making devices each comprising two solenoids in circuit with the conductor connecting two road contacts constituting a pair, an armature for each of said solenoids, an insulated movable contact piece, a lever carrying said armatures and contact piece, and separate contacts connected to said solenoids and to said main conductor and arranged in proximity to said contact piece substantially as herein described for the purpose specified.

7 In apparatus for supplying electricity to electrically propelled vehicles, the combination of an insulated main conductor, a series of insulated road contacts arranged one in advance of the other in the longitudinal direction of the road and connected in pairs each by a conductor, and a series of contact making devices each comprising two solenoids in circuit with a conductor connecting two road contacts constituting a pair, an armature for each of said solenoids, an insulated movable contact piece, a lever carrying said armatures and contact piece, separate contacts connected to said solenoids and to said main conductor and arranged in proximity to said contact piece and a removable air tight box or lid incloaing said solenoids, armatures, lever and contacts and adapted to act after the manner of a diving bell substantially as herein described for the purpose specified.

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**502,217.** MECHANICAL CALCULATING DEVICE. DAVID L ALBERT, Fort Bragg, Cal. Filed Feb 2, 1893. Serial No. 460,772. (No model.)

*Claim.*—An improved calculating device consisting of a card having circular and radial subdivisions, with characters therein, a handle extending above and below the card having a slot located inside of its outer ends and adapted to pivotally receive said card, said slot



having one of its walls cut away to form a notch whose wall is radial to the center about which the card turns whereby said wall may be aligned with the radial lines of the subdivisions, as herein described.

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**502,218.** PENMAN'S REST. CHARLES H. ALLARD, Quincy, Ill. Filed Dec. 17, 1892. Serial No. 455,457. (No model.)



*Claim.*—1. A hand-support, or rest-ring for the use of a penman consisting of a substantially circular body-portion formed of a sheet, or strip, of metal, having a concave exterior face and provided with a lateral extension which is curved over and across the body-portion to form a clasp, or loop, for the finger, substantially as described.

2. A penman's rest-ring, consisting of a substantially circular body-portion having a circumferentially concave outer face and divided by a transverse cut, one of the ends being provided with a lateral extension which is curved over and across the same to form a clasp, or loop, for the finger, one end thereof being free or unattached, substantially as described.

3. A penman's rest ring, consisting of a substantially circular strip of metal one end thereof being provided with an integral lateral extension bent to over-hang the end from which it springs to form a loop, or clasp, for the finger, substantially as described.

4. A penman's rest ring, consisting of a substantially circular plate, or strip of metal of suitable elasticity, the ends thereof being capable of passing each other under compression, the exterior face being concave and one end of said circular plate being provided with a lateral, integral, extension, bent to overhang the said end and provided with a concave and convex inner and outer surface, respectively, to form an elastic clasp for the finger, to cover and protect the joint thereof and to form, by its outer, or convex face, a sliding support for the same upon the paper, substantially as described.

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**502,219.** CAM FOR STAMP-MILLS. ALBERT ARSBURY, Keystone, S. D., assignor of one-half to Eugene Little, same place. Filed Mar. 28, 1893. Serial No. 467,943. (No model.)



*Claim.*—A two part cam consisting in the sections A B, provided with toes A' B', heels C C' recessed to fit the shaft and form the hub, the parallel flanges E E' projecting from the heel C, shoulders $A^2$ $A^2$, at the bases of the said flanges, parallel flanges D D' projecting from the heel C', receiving the heel C between their adjacent edges and lying face to face with the flanges E E' shoulders $B^2$ $B^2$ at the base of flanges D D'; the extremities of the flanges D D' and E E' projecting respectively under the shoulders $A^2$ $A^2$ and $B^2$ $B^2$, and the said heels having key ways or apertures registering with similar aligned ways or apertures through the respective pairs of flanges, substantially as set forth.

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**502,220.** HAY-RACK. CHARLES W. BEEBER, Lancaster, Ohio. Filed Sept. 26, 1892. Serial No. 446,838. (No model.)



*Claim.*—1. The hay rack having its bottom frame provided with side clips, the sides removably fitted therein, the end clips secured to the end cross beams, and the end gates composed of the metal bars as described, having slats secured thereto and joined at their lower ends to fit said end sockets.



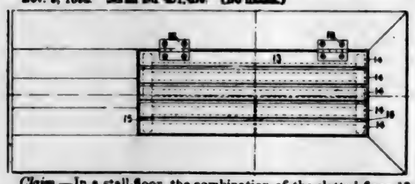
2. A hay rack comprising the cross and side beams, the reversible and correspondingly curved sides, and an end gate composed of cross bars secured to uprights or bars which project below and from the sides of the gate to removably fit in sockets in the end cross beam and sides of the rack, substantially as described.

3. A hay rack having cross and side beams, the side frames, an end gate, a socket secured to an end cross bar to retain the end gate, said socket having perforated ears, the floor having a drop, said drop having a perforated plate to register with said ears and be held by a pin, substantially as described.

4. The combination of a running gear, the U shaped plates on the bolster thereof having the eyes on the sides thereof, a hay rack having the plates secured to the sides thereof to rest on the U shaped plates and having pins to enter said eyes, substantially as described.

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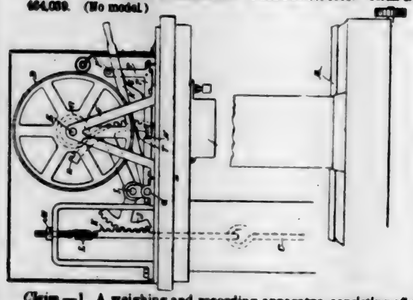
**502,221.** STALL-FLOOR. SAMUEL G. BROWN, Lynn, Mass. Filed Nov. 9, 1892. Serial No. 451,459. (No model.)



*Claim.*—In a stall-floor, the combination of the slatted floor 13, composed of the main slats 14 and the supplemental slats 17 and connecting mechanism, with the metallic drip-pan 10, provided with the drain pipe 11, substantially as set forth.

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**502,222.** AUTOMATIC WEIGHING AND RECORDING SCALE. WALTER F. BURNS, San Francisco, Cal. Filed Feb 28, 1893. Serial No. 464,039. (No model.)



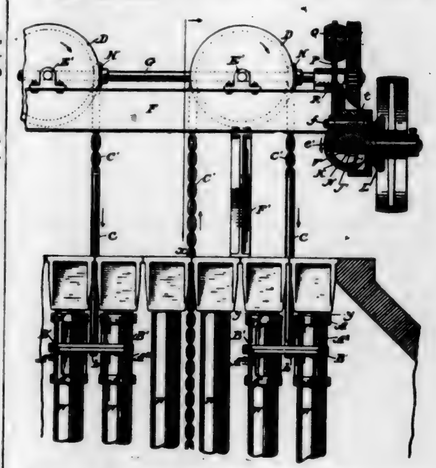
*Claim.*—1. A weighing and recording apparatus, consisting of a scale, a vertically moving rod connected with the weighing levers of the scale, a spring with which the upper end of said rod is connected, the tension of which determines the vertical movement of the rod caused by any weight placed upon the scale, inclosed printing-wheels fixed upon the rotating shaft, a pinion fixed to said shaft, a double segmental rack, one arm of which engages the pinion, and the other the vertically moving rack-bar, an intermediate fulcrum to which the uniting arm of said racks is pivoted, a plates or support where cards are introduced beneath the printing-wheels, and a lever mechanism whereby the cards are raised into contact with the back of the printing-wheels, substantially as herein described.

2. A weighing and recording apparatus consisting of a scale, a vertically moving rod extending upwardly from the weighing levers of the scale, a spring fixed above said rod and connecting with its upper end, the tension of said spring determining the amount of movement of the rod caused by any weight placed upon the scale, a pair of wheels fixed to a horizontally rotating shaft and having corresponding rows of type upon their peripheries, a pinion fixed to the shaft of said printing-wheels, a double segmental rack fulcrumed between the pinion and the vertically moving rack, the teeth upon one part of the segment engaging those of the pinion, and upon the other end engaging those of the rack, whereby the movement of the rack-bar caused by a weight upon the scale will rotate the printing-wheels and present corresponding figures upon the lower surface of the wheels, a table or platen upon which a card is introduced beneath the wheels, a lever upon which said platen is supported, a second lever fulcrumed and engaging a lug upon the first named lever whereby the latter is raised and the card brought into contact with the printing-wheels when the lever is raised, a knife carried by the second lever and adapted to sever the card into two parts on a line between the two sets of figures, and a receptacle into which one of said parts falls when severed, substantially as herein described.

3. A weighing and recording mechanism, consisting of a platform scale, printing-wheels mounted side by side upon a horizontally rotating shaft, a mechanism interposed between the printing-wheels and the vertically moving platform of the scale, whereby the movements of the platform are transmitted so as to rotate the printing-wheels, an adjustable spring connected with said intermediate mechanism whereby any weight upon the platform will act upon the spring and also upon the mechanism by which the printing-wheels are rotated so as to present figures representing said weight at the lower part of the wheel, a table or support and a slotted guide through which a card is introduced upon said table in line beneath the printing-wheels, a lever mechanism whereby the card is first raised and duplicate imprints made upon it by the two wheels, a cutter by which when the card is again depressed the inner end containing one of the imprints is severed from the outer end, and a locked containing case into which said inner end is deposited leaving the outer end free to be removed, substantially as herein described.

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**502,223.** TUBE-SCRAPER FOR FEED-WATER HEATERS. GEORGE H. BURPEE, New York, N. Y., assignor to the American Fuel Economizer and Engineering Company, same place. Filed Mar. 9, 1891. Serial No. 384,258. (No model.)



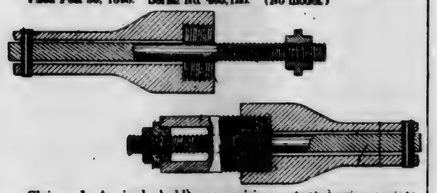
*Claim.*—1. The combination in a feed-water heater of a series of vertical tubes arranged in two rows, a central bar extending horizontally between said rows, arms projecting from said bar and each being forked and having diverging ends of unequal length and triple interchangeable scrapers surrounding said tubes and having each a lug on its outer face and each being symmetrical with respect to a vertical line passing through said lug, the opposite lugs of the scrapers on opposite sides of said central bar having bearing points thereon offset with respect to each other and the opposing lugs of the scrapers on opposite sides of one of said forked arms having bearing points on the long and short ends respectively of said forked arms, substantially in the manner and for the purpose herein set forth.

2. The combination with a driving-shaft for the chain pulleys in a feed-water heater constructed substantially as described, and a worm-wheel on said shaft, of a spiral or scroll cam upon the side face of said worm-wheel, a countershaft geared to said driving-shaft, idle-wheels revolving loosely on said counter-shaft, a driving-wheel geared to both idle-wheels to produce their revolution in opposite directions, a clutch interposed between the two idle-wheels to engage the one or the other and keyed to the counter shaft, a pivoted reversing-lever operating by gravity to throw the clutch out of engagement with the one idle-wheel into engagement with the other, and a sliding-rod coupled to the lever and engaging the spiral cam, whereby the reversing-lever is oscillated and the clutch shifted by the movement of the rod as it reaches either end of the cam in the revolution of the cam-wheels, substantially in the manner and for the purpose herein set forth.

3. The combination in the reversing mechanism of a feed-water heater, with a pulley on the main shaft actuating the scrapers, a worm-wheel upon said shaft having a spiral cam upon its lateral face, of a swinging yoke pivoted upon the axis of the lever having a lateral pin projecting from its lower end through a transverse slot in the end of the lever, a clutch actuated by said yoke, and a driving-wheel geared to the worm-wheel by means of the clutch, substantially in the manner and for the purpose herein set forth.

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**502,224. NIPPLE-HOLDER.** JOSEPH CANNEY, Butte City, Mont. Filed Feb. 20, 1893. Serial No. 463,125. (No model.)



*Claim.*—1. A nipple holder comprising a stock having an interiorly threaded socket in its end, adapted to receive one end of the nipple to be held, a rod secured in and projecting from the end of the stock and passing through the nipple, the projecting end of the rod being provided with exterior threads the reverse in direction of those within the end socket of the stock, and a nut seated upon said projecting end and adapted to bear against the outer end of the nipple, substantially as herein described.

2. A nipple holder comprising a hollow stock having an interiorly threaded socket in each end, the threads in one being the reverse of those in the other, said sockets being adapted to receive one end of the nipples to be held, a rod passing through and secured in said stock, its ends passing through the nipples and each being exteriorly threaded the threads being the reverse of those in the stock sockets at corresponding ends, and nuts seated upon the rod ends and bearing against the outer ends of the nipples, substantially as herein described.

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**502,225. SLEEVE-WHIRL SPINDLE.** JOSEPH T. COVE, Fall River, assignor to Geo. Draper & Sons, Hopedale, Mass. Filed Apr. 10, 1893. Serial No. 469,875. (No model.)

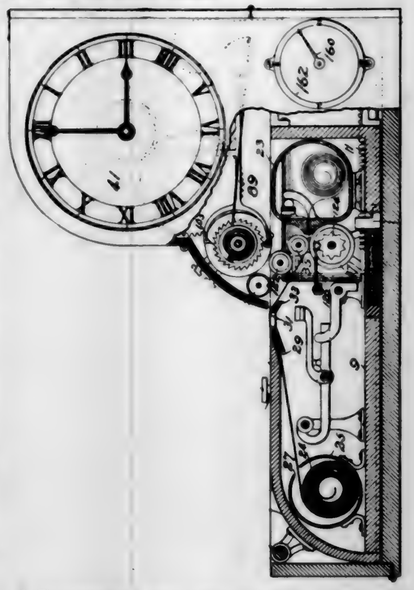


*Claim.*—A sleeve whirl spindle having an attached slotted flange, and tongue located to partially cover said slot, combined with bearings for the spindle, and a pin or projection adapted to enter the chambered lower end of the whirl and co-operate with the said flange, substantially as and for the purposes set forth.

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**502,226. WORKMAN'S TIME-RECORDER.** EDWARD A. DEAR, Minneapolis, Minn., assignor of one-half to Harry L. Woodburn, same place. Filed June 28, 1892. Serial No. 438,262. (No model.)

*Claim.*—1. The combination with a clock mechanism and recording wheels operated thereby, of a sliding case, a recording strip carried by said case and adapted when in one position to have a signature made thereon and means for bringing said case into position with the portion of the recording strip upon which said signature is made opposite said recording wheels, and means for moving said strip against said wheels for the purpose specified.



2. The combination with a clock mechanism, recording wheels operated by said clock mechanism, a sliding case arranged in said inclosing case having a portion thereof exposed, a spring for moving said sliding case into said inclosing case so as to bring the exposed portion of said strip opposite said registering wheels, means in said sliding case for pressing said strip against said wheels, and means for feeding said strip.

3. The combination with a clock mechanism, a series of recording wheels operated thereby, an inclosing case, a sliding case arranged therein, a recording strip arranged in said sliding case and having a portion thereof exposed, a spring adapted to draw said sliding case into the inclosing case so as to bring the exposed portion of the strip opposite the recording wheels, a catch for holding the sliding case in position with a portion of the strip exposed, means for releasing said case and means for pressing said strip against said recording wheels as the sliding case is drawn inward by said spring.

4. The combination with a clock mechanism, a series of recording wheels operated by said mechanism, a suitable inclosing case, a sliding case, a recording strip arranged in said case and having a portion thereof exposed, a spring for moving said sliding case into the inclosing case and thereby carrying the exposed portion of the recording strip opposite said registering wheels, feed rolls for moving said recording strip and a series of hammers arranged to engage said recording strip and press it against said recording wheels as said sliding case is moved inward, substantially as described.

5. The combination with the clock mechanism, the recording wheels operated thereby, the inclosing case 2, the sliding case 9 arranged therein and adapted to be moved inward in said case by the spring 11, said case being provided with the slotted table 10, a notch for holding said case in its retracted position, roll holders arranged in said sliding case, the recording strip arranged in said roll holders and passing through the slotted portion of said table whereby a portion of said surface is exposed when the case is drawn out, feed rolls for said recording strip, and the series of hammers arranged to press said strip against said registering wheels as said case is drawn inward.

6. The combination with the recording wheels and the sliding case provided with the roll holders, of the recording strip, the feed rolls 35 and 37, said roll 37 provided with the notched wheel 134, and the spring dog 126 and also with the ratchet 128, the lever 130, a spring 134 and the stationary stud 136 with which said lever is adapted to engage.



7. The combination with the recording wheels and the case 2 provided with the fixed stud 152, of the sliding case 9 carrying the recording strip, the pivoted lever 140, a series of hammers 146 pivoted thereon, the lever 148 adapted to engage the lever 140 and thereby move said hammers and the spring engaging said sliding case for the purpose specified.

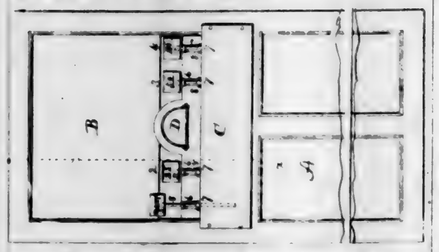
8. The combination with the recording wheels and the inclosing case, of the sliding case 9 provided with a table 10 having the slot 29 and with the plate 31, the portion of said table carrying said plate 31 being adapted to move in and out of said inclosing case, means for moving the case 9, the recording strip arranged in the case 9 and passing over said plate 31, means for feeding said strip, and means for pressing said strip against said recording wheels.

9. The combination with the clock mechanism and the inclosing case 2, and the series of registering wheels operated from said clock mechanism, of a sliding case 9 arranged in said case 2, the recording strip carried by said sliding case, means for moving said strip against said recording wheels, and the recording mechanism arranged in said case 2 and adapted to be operated by the sliding case 9 each time said case is moved to make a registration upon said strip.

10. The combination with the clock mechanism, of the type wheel, a sleeve upon which said wheel is mounted, a spring pawl connecting said wheel to said sleeve, a pulley, a pawl connecting said pulley with said sleeve, a cord upon said pulley, a spring connected with said cord, a spring connected with said pulley for turning it in the opposite direction, a ratchet connected with said sleeve, and an escapement lever connected with said ratchet and controlled by a cam upon said clock mechanism.

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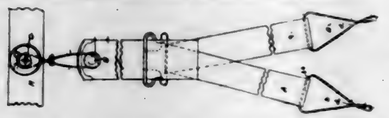
**502,227. STREET-CAR INDICATOR.** JAMES W. DEAR, Dayton, Ohio, assignor of one-half to Thomas W. Davy, same place. Filed Aug. 22, 1892. Serial No. 443,813. (No model.)



*Claim.*—In a street-car indicator the combination of the frame C with supporting lugs, the sliding-bars hold therein, the tablets attached to the top of said bars provided with buttons to depress the same, the elevating spiral spring and the slotted spring-actuated detaching catch, held beneath the upper supporting lugs, substantially as set forth

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**502,228. GARMENT-SUPPORTER.** ROBERT GEMMELL, Brookline, Mass. Filed Apr. 1, 1890. Serial No. 346,196. (No model.)

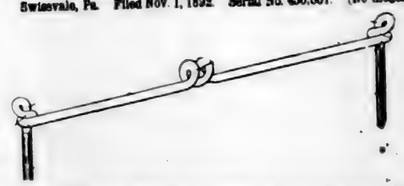


*Claim.*—1. In combination with a garment-supporter, a device composed of two lengthwise spring-arms $g$, $g^a$, at one end, both attached to the garment-supporter and at their other and free ends each having an angular bend $A^3$, $A^3$ extending relatively in opposite directions and adapted to be attached to a button or stud held on the wearing apparel and a slide F held on and movable lengthwise of said spring-arms $g$, $g^a$, substantially as described, for the purpose specified.

2. In combination with a garment-supporter and a device composed of two lengthwise spring-arms $g$, $g^a$ at one end, both attached to the garment-supporter and at their other and free ends each having an angular bend $A^3$, $A^3$ extending relatively in opposite directions and adapted to be attached to a button or stud held on the wearing apparel and a slide F held on and movable lengthwise of said spring-arms, of a loop made of stiff and rigid wire which is doubled and made into lengths $b$, $b^a$ crossed upon and in close contact with each other and formed into an eye $b^3$ at the double end $a$ and having their lengths $b$, $b^a$ at an acute angle with its apex at, and the ends $b^4$ of said lengths the farther removed from, their said crossing extremity adapted for attachment to the garment-supporter, substantially as described, for the purpose specified.

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**502,229. CONNECTOR FOR TRACK-CIRCUITS.** EDWARD H. GOODMAN, Pittsburg, assignor to the Union Switch and Signal Company, Swissvale, Pa. Filed Nov. 1, 1892. Serial No. 450,601. (No model.)

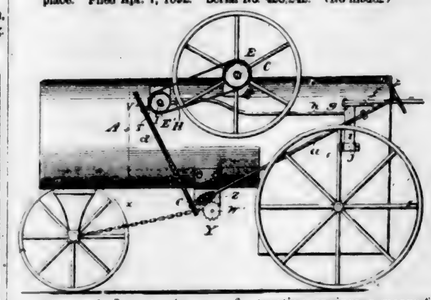


*Claim.*—1. An electrical rail connector having the pins and body portion formed integral with each other, the heads consisting of two parts of wire parallel or approximately parallel with each other and formed by folding the wire upon itself, substantially as set forth.

2. An electrical rail connector having the pins and body portion formed integral with each other, the heads of the pins being formed by folding the wire upon itself, and reinforced by one or more coils surrounding the pins below the heads, substantially as set forth.

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**502,230. STEERING-GEAR FOR TRACTION-ENGINES.** GEORGE W. KRAMER, Peoria, Ill., assignor to the Hart Weigher Company, same place. Filed Apr. 7, 1892. Serial No. 428,242. (No model.)



*Claim.*—1. In a steering gear for traction engines, a means for changing direction of movement consisting, essentially, of the oppositely disposed beveled gears, J J', mounted upon the shaft I, and provided on their inner faces with the annular flanges K, K, having their faces turned out to form a cup; the longitudinally movable clutch bowl L, upon such shaft I, and having both ends tapered to fit said cups; a shifting lever connected to said bowl; the interposed gear wheel T, gearing with said beveled gears J J'; the take up drum X, means for imparting rotary motion to said take up drum from the rotary member driven by said gear wheels J, J', and means for imparting rotary motion to said gear wheels J J'; substantially as and for the purposes herein set forth.

2. In a steering gear for traction engines, a means for transmitting and changing direction of movement consisting of the oppositely disposed beveled gears J, J' mounted upon shaft I, and provided on their inner faces with the annular flanges K, K having their inner faces turned out to form a cup, the clutch bowl L mounted upon said shaft I and having either end taper to fit said cups, the said bowl being connected with the said shaft by spline and groove, the shifting mechanism $k$, connected with the said bowl L, the interposed gear-wheel T, carried upon the shaft T and the sprocket-wheel and sprocket chain connection with take-up drum X and the mechanism for operating the shaft upon which the beveled gears J, J' and clutch bowl L are carried as shown, all substantially as described and set forth.

3. In a steering gear for traction engines, the rectangular frame H, secured to the boiler thereof, and having the semi-circular portion O, O depending therefrom, and having adjustably secured thereto the plate Q, the shaft T, having bearings from said plate Q, the beveled gear wheel T' secured thereto, the beveled gear wheels J, J' provided with annular flanges K, K having their inner faces turned out to form a cup, and engaging with said bevel gear T' intermittently, the friction bowl L, formed with tapering ends, the shaft I, upon which the said friction bowl and bevel gears J, J' are mounted, and suitable mechanism for operating shaft I, and suitable sprocket wheel and sprocket chain connection between shaft T, and take-up drum X, or

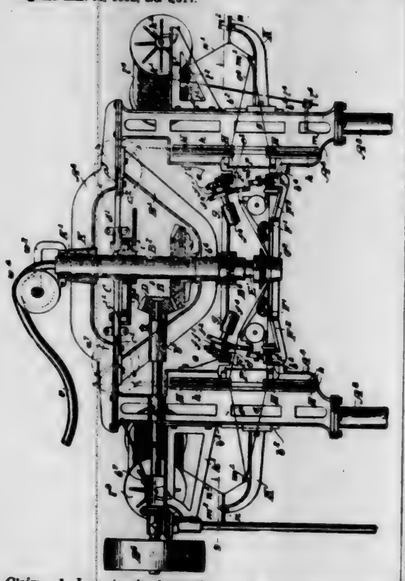
transmitting motion, all in combination, substantially as and for the purpose set forth.

6. In a steering gear for traction engines, the rectangular frame H, secured to the boiler thereof, and having the semi-circular portion O, O depending therefrom, and having adjustably secured thereto the plate Q, the shaft T, having bearings from said plate Q, the beveled gear wheel T' secured thereto, the beveled gear-wheels J, J' provided with annular flanges K, K having their inner faces turned out to form a cup, and engaging with said bevel gear T', intermittently, the friction bowl L, formed with tapering ends the shaft I, upon which the said friction bowl and bevel gears J, J' are mounted, the shaft C, mounted on the boiler thereof and carrying at one end a pulley E imparting motion by a belt to a pulley E' on the shaft I and suitable mechanism for operating shaft C, and suitable sprocket wheel and sprocket chain connection between shaft T, and take-up drum X for transmitting motion, all substantially as described and for the purpose set forth.

5. In a steering gear for traction engines, the guiding of the engine, by means of power used to propel the engine, consisting of a shaft C, mounted on the top of the boiler, and having direct connection at one end thereof with the engine, the opposite end of said shaft being provided with pulley E, the rectangular frame H, secured to the boiler thereof, and having the semi-circular portion O, O depending therefrom, and having adjustably secured thereto the plate Q, the shaft T, having bearings from said plate Q, the beveled gear wheel T' secured thereto, the beveled gear-wheels J, J' provided with annular flanges K, K, having their inner faces turned out to form a cup, and engaging with said bevel gear T' intermittently, the friction bowl L, formed with tapering ends the shaft I, upon which the said friction bowl and bevel gears J, J' are mounted, and suitable mechanism for operating shaft C, and suitable sprocket wheel and sprocket chain connection between shaft T, and take-up drum X for transmitting motion, all substantially as described and for the purpose set forth.

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**502,231.** CIRCULAR LOOM. ALBERT DE LASKI, Cleveland, Ohio. Filed Apr. 10, 1891. Serial No. 388,417. (No model.) Patented in England Mar. 11, 1892, No. 4,817.



*Claim.*—1. In a circular loom, the combination with the central otatory shaft; the perforated spider-plate C; the cam $B^4$; and a pair of heddles, of a sliding shoe-piece $d'$, arranged in the spider-plate and in engagement with the groove of the cam $B^4$; a pair of connecting-rods connected at one end, to said shoe-piece; a pair of bell-crank levers, one arm of each of which is coupled to the other end of said connecting rods; a suitable support for the pintle, or arbor, on which said levers oscillate; a pair of connecting rods, connected at their upper ends to different ones of the arms of said bell-crank levers and at their lower ends to the frames of said pair of heddles; all substantially as and for the purposes set forth.

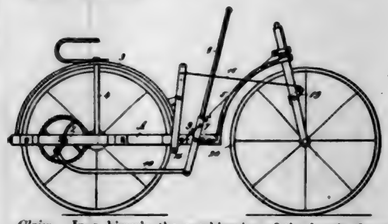
2. In a circular loom, the combination with the frame of the machine, of a reed-like device, or frames, having a series of vertical rods, or wires, P; the said device being arranged, as specified, intermediately of the heddles and the shuttle track, and so that the warp threads of the loom will impinge, laterally against, and be thus laterally steadied and vertically guided by, the said wires, at the locality where the sheds are formed; all substantially in the manner and for the purposes hereinbefore set forth.

3. In combination with the warp-beam of the loom, and the usual feeler-pins thereof, a lacing-ring, or device, $m'$, and suitable means for supporting said ring; the combination being such and so operating, as shown, that all the warp threads pass from the beams through the feeler-pins, and thence through the holes of the said lacing-ring, at such angles to the axes of the feeler-pins that each and all pull always on said pins, during the weaving operations, in a direction tending only to move said pins in lines coincident with the axial lines of the holes or bearings, within which they are arranged.

4. In a circular loom, the combination with the harness and warp beams thereof, of a vertically adjustable lacing-ring, or device $m'$, provided with holes through which all the warp threads are passed; whereby the loom may be adjusted to weave either a tubular fabric that will have a softer exterior than interior surface, or a fabric equally hard on each of said surfaces.

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**502,232.** BICYCLE. HUGH LIND, Whitewater, Colo., assignor of one-half to J. R. Snyder, same place. Filed Feb. 4, 1893. Serial No. 461,050. (No model.)



*Claim.*—In a bicycle, the combination of the herein described frame and adjuncts, of a hand lever having a bifurcated lower end; the pitman bars pivotally attached thereto and adapted to transmit motion, through the intervening gear wheels and pinions, to the driving wheel; the steering pedals pivoted to a cross bar attached to the front of the arch of the back bone and provided with connections having bearings upon the sides of the steering head, and the equalizing springs extending from the lower ends of the pedal to the steering head and adapted to hold the front and rear wheels automatically in alignment; all arranged substantially as and for the purposes herein set forth.

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**502,233.** CURRYCOMB. ELMER E. MILLER, Canton, Ohio. Filed Jan. 23, 1893. Serial No. 459,459. (No model.)



*Claim.*—As an improved article of manufacture, a currycomb provided with a flexible back, and having attached thereto, the handle or strap B, the comb-bars C, fixed to the back and provided with the ribs *c*, and the tire-bars *a*, substantially as and for the purpose specified.

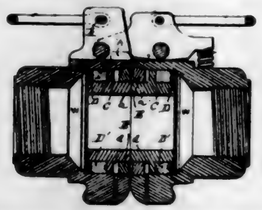
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**502,234.** PIPE-COUPLING. THOMAS W. MORAN, Louisville, Ky., assignor to the Moran Flexible Steam Joint Company, same place. Filed Nov. 26, 1892. Serial No. 453,944. (No model.) Patented in England Jan. 4, 1893, No. 151; in France Jan. 14, 1893, No. 218,678; in Belgium Jan. 14, 1893, No. 97,925, and in Germany Jan. 14, 1893, No. 66,27

*Claim.*—1. The herein described pipe coupling, comprising the opposing casings having the cylindric chambers or boxes therein, the cylindric hollow piston sections telescoping said chambers or boxes, and



having each a surrounding annular flange, the facing rings E surrounding the outer portions of said piston sections and having a threaded connection with the walls of said chambers or boxes, the chambers *d* between said rings E and the flanges on the piston sections, the drain openings leading outwardly from said chambers through the walls of the casings, the movable rings D at the inner portions of said boxes or chambers, and the packing rings D' between said movable rings and the flanges on the piston sections, substantially as specified.

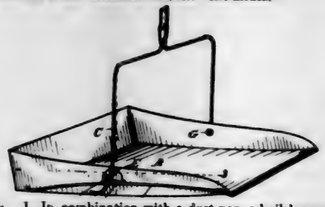


2. In a pipe coupling, the combination with the opposing casings, having the boxes or chambers therein, the hollow sliding piston sections working in said chambers or boxes, their annular flanges, the rings E, the movable rings D, and the packing rings D', of the opposite interlocking hooks and eyes *g*, *g'*, on the lower meeting faces of said casings, the lug or projection G on the upper portion of each of said casings, the latches G' pivoted to said lugs or projections, the engaging lugs or projections *h*, and the springs H, substantially as specified.

3. In a pipe coupling, the combination with the opposing casings, and the interlocking opposite hooks *g* and eyes *g'*, on the meeting faces of said casings, of the lugs or projections G on the upper portions of said casings, the latches or catches G' pivoted to said lugs or projections, the springs seated under the rear arms of said latches or catches, the lugs *h* for engagement with said latches or catches, and the clevis rings or links secured one to each of said lugs or projections G by a movable pin, substantially as specified.

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**502,235.** DUST-PAN. WILLIAM S. MCCAY, Grand Rapids, Mich. Filed Oct. 18, 1892. Serial No. 449,243. (No model.)



*Claim.*—1. In combination with a dust pan, a bail having arms pivoted to the sides of said dust pan, a spring or flexible arm engaging said bail and the floor and operating to raise the rear of the pan when depressed by the bail, and to automatically restore said bail to a vertical position, substantially as described.

2. In combination with a dust pan, flexible arms, or springs at each side of the same, engaging the floor at their movable ends, a bail having arms embracing and pivoted to the sides of said pan, plates attached to said bail, having angles engaging and deflecting said arms, and automatically restoring said bail to a vertical position, substantially as described.

3. In combination with a dust pan, a bail pivoted to the same, having an arm, or pawl attached, projecting below the pivot and engaging the floor to move the dust pan backward and intermittently in one direction only as the bail is vibrated on said pivot, substantially as described.

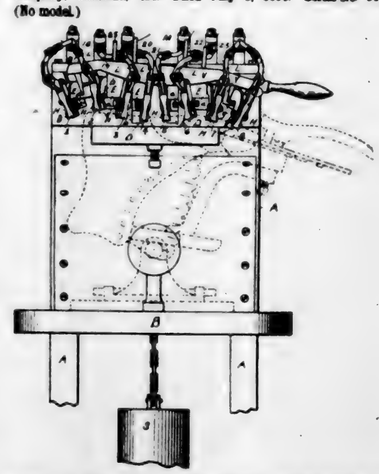
4. In combination with a dust pan, flexible arms or springs, a pivoted bail engaging the same, and depressing the free end thereof, when turned away from a vertical position, and an arm, or pawl attached to said bail, and engaging the floor, and moving the dust pan intermittently in one direction only, substantially as described.

5. In combination with a dust pan, flexible arms, or springs attached at each side and near the front thereof, and having their free ends near the rear thereof, a bail having arms embracing and pivoted to the sides of said dust pan, plates attached to the bail near the pivots thereof, having angular bases engaging said springs, and curved arms attached to said plates at their upper ends and engaging the floor at their lower ends, substantially as described.

6. In a dust pan in combination with a bail, having arms bent inward at right angles to form pivots, a plate through which the inward bent part of said bail passes, and lugs on said plate at each side of the bail, having inclined adjacent surfaces and laterally extended portion of said bail between said lugs, the side of which engage the inclined surface of the same, and springs attached at one end to said pan, vertically movable and engaging the floor at their other ends, and intermittently engaging said plates, substantially as described.

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**502,236.** LASTING-MACHINE. ALBERT F. PRESTON, Lynn, Mass., assignor, by mesne assignments, to the Columbian Lasting Machine Company, Portland, Me. Filed July 3, 1891. Serial No. 398,411. (No model.)



*Claim.*—1. In a lasting machine having a series of pairs of jaws adapted to grasp and hold the upper of a boot or shoe between them and each pair of jaws connected to a separate guide bar adapted to move back and forth in suitable guideways, in combination, one or more of the outer of said guide bars on each side, and a lever pivoted at its central portion to a suitable support and provided with means to engage at each end respectively with said outer guide bars to respectively raise them.

2. In a lasting machine having a series of pairs of jaws adapted to grasp and hold the upper of a boot or shoe between them and each pair of jaws connected to a guide bar adapted to move back and forth in suitable guideways, in combination, one or more of the outer of said guide bars on each side, and a lever pivoted at its central portion to a suitable support and provided with a downwardly extending shouldered arm or arms to engage with said guide bars for the purpose specified.

3. In a lasting machine having a series of pairs of jaws adapted to grasp and hold the upper of a boot or shoe between them and each pair of jaws connected to a guide bar adapted to move back and forth in guideways, in combination, a lever pivoted to a frame or support and provided with means to engage with said guide bars, a socket in said lever, a shouldered push knob adapted to move back and forth in said socket, a socket in said frame, a spring pin arranged to move back and forth in said frame socket and said lever socket for the purpose specified.

4. In a lasting machine in combination a guide bar provided with a pair of jaws for operation on the upper of a boot or shoe, a rod connected thereto made in two parts, a sleeve or holder into which one part is screwed, a central longitudinal socket in said sleeve or holder in which the other part is disposed and adapted to move back and forth therein, a shoulder or collar on said second part, and a spiral spring secured to said sleeve by one end and extending along said sleeve over said collar and having a reduced portion on the rod beyond said collar for the purpose specified.

5. In a lasting machine in combination a guide bar provided with a pair of jaws for operation on the upper of a boot or shoe, a rod connected thereto made in two parts, a sleeve or holder into which one part is secured, a central longitudinal socket in said sleeve or holder in which the other part is disposed and adapted to move back and forth therein, a transverse socket in said sleeve or holder at one side, a pin adapted to slide back and forth in said socket and having an inner beveled end, a disk or plate secured to said pin outside of said sleeve, a spring secured to said sleeve, by one end and

adapted to bear upon said disk or plate, and a socket in the side of the part of the rod in the sleeve with which the pin engages for the purpose specified.

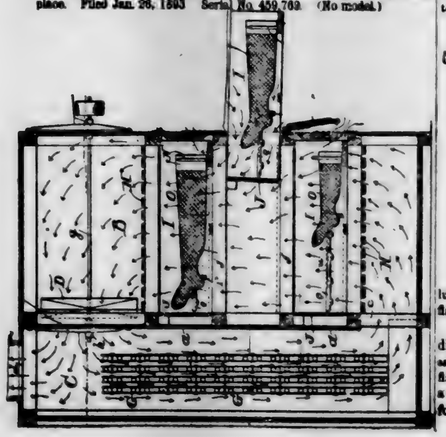
6. In a lasting machine in combination a guide bar provided with a pair of jaws for operation on the upper of a boot or shoe, a rod connected thereto made in two parts, a sleeve or holder into which one part is secured, a central longitudinal socket in said sleeve or holder in which the other part is disposed and adapted to move back and forth therein, a shoulder or collar on said part and a spiral spring secured to said sleeve by one end and extending along said sleeve over said collar and having a reduced portion on the rod beyond the collar, a transverse socket in said sleeve or holder at one side, a pin adapted to slide back and forth in said socket and having an inner beveled end, a disk or plate secured to said pin outside of said sleeve, a spring secured to said sleeve, by one end and adapted to bear upon said disk or plate, a socket in the side of the part of the rod in the sleeve with which the pin engages and a lever pivoted to a suitable support provided with means to operate upon said disks for the purpose specified.

7. In a lasting machine in combination a guide bar provided with a pair of jaws for operation on the upper of a boot or shoe, a rod connected thereto made in two parts, a sleeve or holder into which one part is secured a central longitudinal socket in said sleeve or holder in which the other part is disposed and adapted to move back and forth therein, a transverse socket in said sleeve or holder at one side, a pin adapted to slide back and forth in said socket and having an inner beveled end, a disk or plate secured to said pin outside of said sleeve, a spring secured to said sleeve, by one end and adapted to bear upon said disk or plate, and a socket in the side of the part of the rod in the sleeve with which the pin engages and a lever pivoted to the frame and constructed and adapted to engage with and operate said disk for the purpose specified.

8. In a lasting machine in combination a guide bar provided with a pair of jaws for operation on the upper of a boot or shoe, a rod connected thereto made in two parts, a sleeve or holder into which one part is secured, a central longitudinal socket in said sleeve or holder in which the other part is disposed and adapted to move back and forth therein, a transverse socket in said sleeve or holder at one side, a pin adapted to slide back and forth in said socket and having an inner beveled end, a disk or plate secured to said pin outside of said sleeve, a spring secured to said sleeve, by one end and adapted to bear upon said disk or plate, and a socket in the side of the part of the rod in the sleeve with which the pin engages and a lever pivoted to the frame and provided with arms to operate said disk for the purpose specified.

9. In a lasting machine in combination a series of pairs of jaws adapted to grasp and hold the upper of a boot or shoe between them and each pair of jaws connected to a separate guide bar adapted to move back and forth in suitable guideways, in combination a series of rods one to each pair of jaws and connected thereto, two of said rods being rigid longitudinally, four of said rods being yielding longitudinally and the other two being made in two parts and connected together by a sleeve and spring by which they can yield longitudinally and provided with locking mechanism by which they are made rigid for the purpose specified.

**502,237. DRYING-MACHINE.** JOSIAH K. PROCTOR, Philadelphia, Pa., assignor to the Philadelphia Textile Machinery Company, same place. Filed Jan. 26, 1893. Serial No. 459,769. (No model.)



*Claim.*—1. The adjustable frame P for holding the foot end of the stocking boards in combination with the cleats *o* attached to the sides of the slides or drawers so that the frame can be adjusted for the holding of various lengths of boards.

2. The adjustable frame P having downwardly projecting lugs *f* at either end of the frame, in combination with the notched cleats *o* attached to the sides of the slides or drawers so that the frame can be adjusted to and retained in various positions with respect to the front of a slide or drawer for the purpose of rendering one slide or drawer capable of holding boards or goods of different lengths.

**502,238. HOOK AND EYE.** WILLIAM S. SEYMOUR, Philadelphia, Pa., assignor of one-half to Joseph S. Keller, same place. Filed June 18, 1892. Serial No. 437,197. (No model.)



*Claim.*—1. As a means of fastening separable pieces of fabric or the like, a series of eyes attached to one of said pieces of fabric, and a series of hooks attached to the other of said pieces of fabric, the tongues of the hooks extending in a direction transverse to the line of strain; whereby the eyes may be stripped or disengaged from the entire series of hooks by a single continuous movement, substantially as described.

2. In a hook and eye, a hook having anchoring projections at the bend of the tongue and having a retaining guard extending along the side of the tongue; substantially as described.

3. In a hook and eye, a hook having anchoring projections at the bend of the tongue and having a retaining guard extending along the side of the tongue and anchored at its outer end; substantially as described.

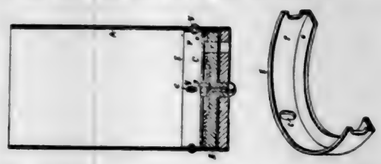
4. In a hook and eye, a hook having a retaining guard extending along the side and past the base of the tongue to the opposite side of the tongue; substantially as described.

5. In a hook and eye, a hook having two anchoring projections at its bend, and a third anchoring projection beyond the same and beneath the free end of the tongue; substantially as described.

6. In a hook and eye, a hook having a retaining guard at the side thereof, said hook being provided with a free space beneath the guard to permit backward and forward play of the eye; substantially as described.

7. In a hook and eye, a hook having a retaining guard at the side thereof, said hook being provided with a free space beneath the guard to permit backward and forward play of the eye, and having a projection between which and the retaining guard, the eye is adapted to rest; substantially as described.

**502,239. HAND CORN-PLANTER.** GEORGE S. SHEFFIELD, Burr Oak, Mich., assignor of one-half to Adelbert C. Himebaugh, same place. Filed Feb. 6, 1893. Serial No. 461,118. (No model.)

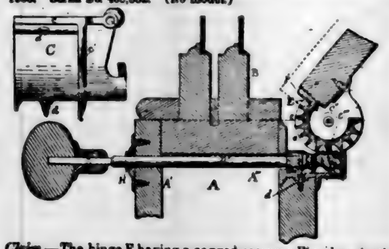


*Claim.*—1. In a planter, the combination of the seed-box, a revoluble seed-pocket disk in said seed-box, and the vertically adjustable flanged ring above the seed-pocket disk; substantially as set forth.

2. In a planter, the combination of the seed-box, a seed-pocket disk, an apertured disk for controlling the size of the seed-pockets said disks revoluble together in the bottom of the seed-box, and the flanged ring right-angled in cross section, attached in said seed-box in a vertically adjustable manner above the disks; substantially as set forth.

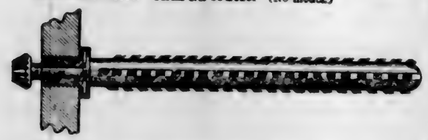


**502,240. SHUTTER-WORKER.** JOHN V. STRIBLING, Richland, assignor of one-half to John D. Verner, Walhalla, S. C. Filed Feb. 23, 1893. Serial No. 463,332. (No model.)



*Claim.*—The hinge E having a cogged segment E' and projecting bosses *g*, *g*, in combination with the box C having bosses *c'*, *c'*, supplied with overhanging caps, *g'* and the screw rod D' and worm screw D operated by the knob G whereby the shutter can be adjusted—opened and locked when closed substantially as described.

**502,241. PICKER-STEM.** GEORGE N. TODD, Chicago, Ill., assignor, by mesne assignments, to George N. Todd, trustee, New York, N. Y. Filed Dec. 17, 1889. Serial No. 334,129. (No model.)



*Claim.*—1. A picker stem comprising a body portion and bristles secured thereto, the free ends of which lie in a plane with, or project slightly beyond the periphery of said body, said bristles being arranged to point toward the outer or entering ends of the body, substantially as described.

2. A picker stem comprising a body portion, provided with longitudinal grooves and bristles secured therein, with their free ends lying in a plane with, or projecting slightly beyond the periphery of said body, said bristles being arranged to point toward the outer or entering end of the stem body, substantially as described.

3. A picker stem comprising a body portion provided with longitudinal grooves, angular recesses or sockets in the bottom of said grooves, and bristles secured in said recesses with their points lying in a plane with, or projecting slightly beyond the periphery of said body, said bristles pointing toward the outer or entering end of the stem body, substantially as described.

4. A picker stem comprising a body portion provided with longitudinal grooves, recesses or sockets in the bottoms of said grooves, bristles bent at their center of length, and the bent portion confined in said recesses, and wires passing through said body portion, and over the bent portions of the bristles so as to secure the same in the recesses, the said bristles pointing toward the outer or entering end of the stem body, substantially as described.

5. A picker stem having a plurality of longitudinally arranged guards between which are arranged inclined bristles, substantially as set forth.

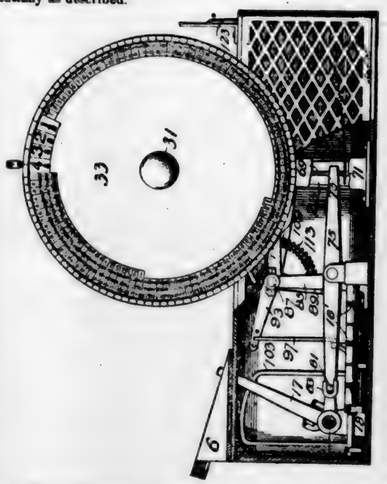
**502,242. CHANGE MAKING AND DELIVERING DEVICE.** CHARLES L. TRAVIS, Minneapolis, Minn., assignor to the American Change and Register Company, Chicago, Ill. Filed Feb. 4, 1893. Serial No. 460,982. (No model.)

*Claim.*—1. The combination in a change maker, of a series of coin receptacles, a series of slides for ejecting the coins therefrom, means for operating said slides, a series of governing disks each of said disks controlling the movement of the slide or slides, for one receptacle and means for setting said disks so as to cause any desired combination of slides to be operated.

2. The combination in a change maker with a series of coin receptacles, a series of slides therefor, operating levers for moving said slides, means for operating said levers, a series of governing disks controlling the engagement of said levers with said slides, and means for setting said disks to cause any desired combination of slides to be operated, substantially as described.

3. In a change maker, the combination with a rotary shaft provided with a series of governing disks, a series of coin receptacles, each disk controlling the movement of the slide or slides for one receptacle, slides for said receptacle, and means controlled by said disks for operating said slides, substantially as described.

4. The combination in a change maker, of a series of coin receptacles, coin ejecting slides therefor, operating levers for moving said slides, means for removing said levers, and a series of governing disks for causing one or more of said levers to engage said slides, substantially as described.



5. The combination in a change maker with a series of coin receptacles, of slides for ejecting coins therefrom, operating levers, means for operating said levers, and governing disks for causing the levers of the slides that are to be moved to be brought into engagement with the slides, and those of the slides that are not to be moved to be held out of engagement therewith, substantially as described.

6. In a change maker, the combination, with a series of coin receptacles, and a series of slides therefor, a series of operating levers, means for simultaneously moving all of said levers, and a series of governing disks, and connecting means for engaging one or more of said levers with the corresponding slide or slides, substantially as described.

7. The combination in a change maker, of a series of coin receptacles, a series of slides therefor, a rotary shaft provided with a governing disk for the slide or slides of each receptacle and with an indicating dial, operating means connecting said shaft with said slides, and governing devices between said disks and said slides, substantially as described.

8. The combination with a series of coin receptacles, the slides therefor, a rotary shaft provided with a series of governing disks, a series of levers for operating said slides, means connected with said disks for governing the position of said levers, and means for simultaneously moving all of said disks, substantially as described.

9. The combination with the coin receptacle 3 and slides 11, provided with the L-shaped slot, the operating lever 17 engaging said slide in said slot, means for giving a longitudinal movement to said lever, and means for giving a lateral movement to said lever to cause it when desired to move into the short part of the slot and thereby cause said slide to move with it in its longitudinal movement, substantially as described.

10. The combination with the coin receptacle 3 and the coin ejecting slide 11, provided with the L shaped slot, of the lever 17 projecting into said slot and capable of both a longitudinal and lateral movement, means whereby the said lever may be given a lateral movement to bring it into the short part of the slot, and means for giving a longitudinal movement to the lever, whereby, when the lever moves in the long part of the slot, the slide remains stationary, and when the lever is in the short part of the slot the slide moves with it, substantially as described.

11. The combination with the coin receptacle 3 and the slide 11 of the operating lever 17 adapted to move without engaging said slide, or to engage said slide and move it with it, a governing disk connected with said lever so as to govern its engagement with said slide, and means for operating said lever, substantially as described.

12. The combination with the coin receptacles, provided with a series of slides 11 having L-shaped slots therein the operating levers 17 projecting into said slots, a rotary shaft consisting of two parts joined together, one of said parts being capable of a downward movement in addition to its rotary movement, a series of governing disks mounted upon the stationary part of said shaft, an indicating dial

mounted upon the movable part, means connecting said disks with said levers 17 for causing said levers to be simultaneously moved when said shaft is depressed, substantially as described.

13. The combination with the coin slides and the operating levers, of the series of governing disks provided with recesses or notches in their peripheries, means for giving said levers 17 a lateral movement, and means for giving said levers a longitudinal movement, the lateral movement of said levers being governed by said disks, substantially as described.

14. The combination with the coin receptacle provided with a suitable slide, of the operating lever 17 secured upon the rock-shaft 19 and capable of a lateral and a longitudinal movement, a governing disk provided with one or more recesses in its periphery, means for turning said shaft 19, and means governed by said disk for giving a lateral movement to said lever 17, substantially as described.

15. The combination with the coin slide, of the operating lever 17 arranged to move longitudinally and laterally in respect to said slide, the rock shaft 19 for imparting a longitudinal movement to said slide, the lever 93, means for moving said lever into engagement with the periphery of said disk, and means connecting said lever with said lever 17 for the purpose set forth.

16. The combination with the coin slide and its operating lever 17, of the governing disk, the lever 93 arranged to engage the periphery of said disk and have its movement limited thereby, the yoke 89 provided with a rod passing through a loop on said lever, the spring 113 engaging said lever and said yoke, the bail 103 engaging the lever 17, and a connection between said lever 93 and said bail, for the purpose set forth.

17. The combination with a coin receptacle, of two or more slides 11 connected therewith and provided with L-shaped slots, the long part of said slots being successively withdrawn in the upper slides, an operating lever projecting into said slot and capable of moving laterally or longitudinally in respect to the slide, and means governing the lateral movement of the slide, whereby it is caused to move without moving either slide or to move one or more of the slides as may be desired, substantially as described.

18. The combination with the ledge or plate 6, of the series of coin receptacles 3 having open fronts and arranged upon said plate so as to cause the coins resting thereon to partially project over the front edge of the ledge, whereby the coins may be removed by grasping the upper and lower coins substantially as described.

19. The combination with the coin receptacle 3, of the slide 11 provided with the guard 13 projecting partially around the front end of the slide, for the purpose set forth.

20. The combination, with the ledge or plate 6, of a series of coin-receptacles having open fronts and arranged upon said plate so as to cause the coins resting thereon to partially project over the front edge of the plate, the slides 11, and the guards 15 secured upon said receptacles and projecting partially around the front thereof directly above said slides, substantially as and for the purpose set forth.

21. The combination with the coin receptacle 3, of the slide 11 provided with the guard 13 projecting partially around the front end of the slide, and the guard 15 secured upon the receptacle 3 and projecting partially around its front directly above said slide, for the purpose set forth.

22. The combination with the coin receptacle and the series of slides 11 provided with the L-shaped slot, the operating lever 17 projecting into said slot, means for moving said lever both laterally and longitudinally in said slot, the locking plate 18 arranged to engage one or more of said slides and adapted to partake of the lateral movement of said lever, for the purpose set forth.

23. The combination with the coin receptacle arranged with an open front and adapted to hold the coins so that they project beyond the bottom of the receptacle, of the guard 15 secured upon said receptacle and projecting partially around the front of the receptacle, and the slide 11 arranged below said guard, substantially as described.

24. The combination with the rotary shaft 25, formed in two parts, connected by a universal joint, one part of said shaft being mounted in standards 23 and provided with a series of governing disks, the other part of said shaft being mounted in a yielding standard and provided with an indicating dial and an operating handle, a series of coin receptacles, coin slides connected therewith, means controlled by said disks for determining the slides that are to be moved, and means operated by the movable part of said shaft for moving said slides, substantially as described.

25. The combination with a rotary shaft, provided with a series of governing disks and an indicating dial, of a series of coin receptacles, and a corresponding series of coin slides, each of said disks controlling the movement of the slide or slides for one receptacle and means for operating said slides whereby the slides will be moved to eject from the coin receptacles the amount of money indicated by the position of said dial, substantially as described.

26. The combination with the rotary shaft provided with a series of governing disks and with an indicating dial, of a series of coin receptacles and a corresponding series of coin slides, a series of operating levers for moving said slides, and means for first, locking said disks after the dial has been turned to indicate the amount of change wanted; second, moving the operating levers into position to engage the slides that must be moved to give the amount of change indicated by the dial; and third, moving said levers and the slides that they engage to eject the necessary coins, substantially as described.

27. The combination with the shaft 25, formed in two parts, connected together by a universal joint, one part of said shaft being mounted in standards 23 and provided with a series of governing disks, and a locking device for engaging one of said disks, arranged to be operated by the downward movement of the other part of the shaft, substantially as described.

28. The combination with the shaft 25 and the series of disks mounted thereon, one of said disks being provided with a series of holes 38, the locking pin 40 arranged to engage any one of said holes, the movable standard 69 connected to said shaft, the lever 77 connected to said standard, the slotted plate 42 connected to said lever and also connected to said pin, whereby, as said lever is moved the pin is projected into engagement with said disk, substantially as described.

29. The combination with the coin receptacles and their slides, of the rotary shaft provided with the series of governing disks, means controlling said slides from said disks, and the indicating or index dial provided with two series of oppositely arranged figures or numbers, and operatively connected with said disks for the purpose set forth.

30. The combination with the coin receptacles and the operating slides, and means for operating said slides, and the governing disks of the indicating or index dial operatively connected with the governing means and provided with an outer series of numbers running from 1 to 99, and an inner series of oppositely arranged figures running from 1 to 99, substantially as described.

31. The combination with the coin receptacles and slides and means for governing and operating said slides, of the indicating or index dial operatively connected with the governing means and provided with a series of figures or numbers running from 1 to 99 and arranged near the edge of the disk, a series of numbers running from 1 to 99, arranged opposite said outer series of figures, the lowest figure in one series being arranged opposite the highest figure in the other, a third series of figures running from 1 to 49 arranged with its lowest number opposite the 49 in the outer series, and its highest number opposite the 1 in the outer series, and a fourth series of numbers running from 1 to 24, arranged with its highest number opposite the lowest number of the outer series, and its lowest number opposite the 24 in the outer series, substantially as described.

32. The combination with the series of coin receptacles, their slides, and the governing disks, and means controlling said slides from said disks of means for independently changing the connection between the governing disk and one of said slides, for the purpose set forth.

33. The combination with the coin receptacles, the slides, the governing disks, and operating means for said slides controlled by said disks, and means for independently changing the connection between the dollar slide and the dollar disk, so as to cause the dollar slide to be operated to eject one or more coins therefrom in addition to those that are ejected from the other receptacles, substantially as described.

34. The combination with the coin receptacle, the slide and the operating lever, of the governing disk 47, the lever 93 connected with the operating mechanism and having its movement controlled by said disk 47, the movable plate 115 provided with the series of steps 117, arranged upon said lever and adapted to be brought into contact with the periphery of the disk, and means for changing the adjustment of said plate 115, for the purpose set forth.

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**502,243.** ELECTRIC-RAILWAY TROLLEY. CHARLES J. VAN DEPOELE, Lynn; Albert Wahl and Charles A. Coffin, executors of said Van Depoele, deceased, assignors to the Thomson-Houston Electric Company, Boston, Mass. Filed Aug. 9, 1888. Serial No. 282,331. (No model.)

*Claim.*—1. In electric railways a car provided with a contact carrying arm having a contact device at its free extremity and mounted at its lower end on a transverse axis carried by a support located upon the top of the car, substantially as described.

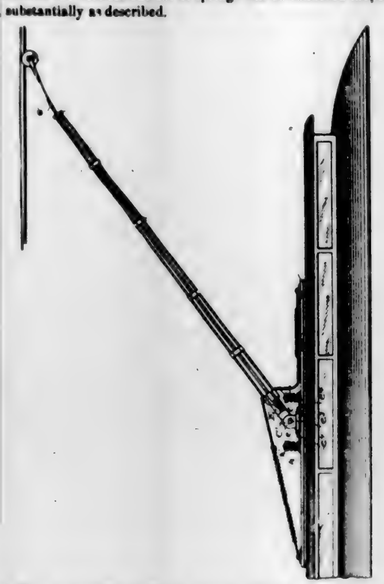
2. In electric railways, a car provided with a contact carrying arm hinged at its lower end upon a transverse axis and extending upward from the roof of said car, substantially as described.

3. An electric railway car provided with a contact carrying arm mounted at its lower end upon a hinged support located upon the roof of the car said support being also pivoted and capable of lateral swing, substantially as described.

4. The combination with an electric railway vehicle, of a contact carrying arm hinged at its base at about the center of the top thereof, and oppositely acting tension springs by which the arm may be held in an upright position toward either end of the car, substantially as described.



5. The combination with an electric railway vehicle, of a contact carrying arm hinged at its base at about the center of the top thereof, opposing tension springs acting oppositely to elevate the arm to a vertical position and so arranged that when the contact arm is at any angle below the vertical one set of springs will be rendered inoperative, substantially as described.



6. The combination with an electric railway car, of a contact carrying arm hinged at its base at about the center of the top thereof, and duplex sets of oppositely acting tension springs by which the arm may be held in an upward position toward either end of the car, substantially as described.

7. The combination with an electric railway car, a contact arm hinged to a support upon the top thereof, duplex sets of tension springs acting oppositely to elevate the arm to a vertical position and so arranged that when the contact arm is at any angle below the vertical, one set of springs will be rendered inoperative substantially as described

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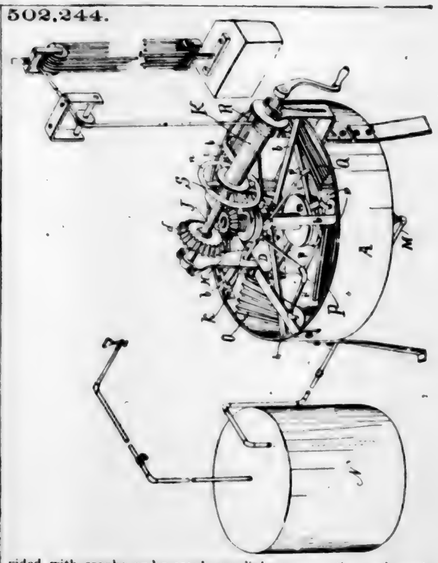
**502,244.** BLOWER FOR CARBURETORS. CLEARMONT V. BENT, Canton, Ohio, assignor of one-half to the Sun Vapor Street Light Company, same place. Filed Nov. 7, 1892. Serial No. 451,175. (No model.)

*Claim.*—1. The combination with the supporting frame, the shaft B, journaled therein, provided with cranks *e* and a crank pin *f*, the apertured valve plates D and F secured to said frame and the rotatable apertured valve plates E and G secured to said shaft, of the series of bellows secured to said frame the pipes *i* and *i'*, connecting said bellows and valve plates, and means, substantially as described for rotating said shaft to alternately open and close the bellows.

2. The combination with the supporting frame and a series of bellows, of the valve plates D and F, having a series of apertures *h* and *h'* to correspond with the bellows, and pipes *i* and *i'* connecting said apertures with the bellows, valve plates E and G having elongated apertures *k* and *k'*, and means for rotating said valve plates E and G, to alternately open and close the apertures *h* and *h'*, and thereby open and close the inlet and outlet to the bellows, as the bellows are correspondingly opened and closed, by the crank pin *f* and link P, substantially as described and for the purpose set forth

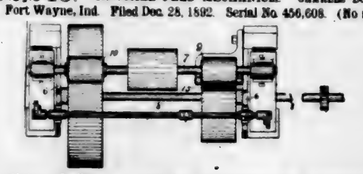
3 The combination with a carburetor of a series of bellows O, P, Q, R, and S, the stationary valve plates, D and F, having a series of apertures *h* and *h'* to correspond with the bellows, pipes *i i'* to connect the apertures with the bellows, valves E and G having elongated apertures *k* and *k'*, to alternately open and close the apertures *h* and *h'* to allow air to flow to and from the bellows, a hood L to inclose the valve G, and pipe M to connect the hood with the carburetor, substantially as set forth

4 The combination of the supporting frame A, a series of bellows secured thereto, cross bars *b* and *b'*, the shaft supported thereby, provided with cranks and a crank pin, links *p* connecting said cranks with the bellows, non-rotatable valve plates D and F having apertures *h* and *h'*, bolts *g*, *g'* to level and support said plates, pipes connecting said valve plates with the bellows, hood L, and pipe M connecting said hood with a carburetor, rotatable valve plates E and G, having apertures *k* and *k'*, to alternately open and close the apertures *h* and *h'*, springs *l* to seat the valve plates E and G, and means for rotating the crank shaft and valve plates to alternately open and close the apertures *h* and *h'* and to distend and collapse the bellows, substantially as herein described



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**502,245.** SAWMILL FEED MECHANISM. CHARLES BOWMAN, Fort Wayne, Ind. Filed Dec. 28, 1892. Serial No. 456,608. (No model.)



*Claim.*—1. In a saw mill feed mechanism, the combination of brackets or hangers having suitable journal bearings for horizontal shafts, a driving shaft revolubly mounted in said hangers and carrying two driving pulleys of different diameters, and having a pinion at one end thereof adapted to engage the rack bar of a log carriage, two pulleys of different diameters rigidly mounted upon said driving shaft, an intermediate pulley revolubly mounted and in contact with the smaller of said driving pulleys, a power shaft mounted in vertically movable bearings and provided with an operating pulley, and two friction pulleys mounted on said shaft, near to but not in actual engagement with said intermediate pulley and large pulley respectively with two spring plates secured to said hangers adapted to support the power shaft, and an operating shaft mounted in said hangers, provided with an operating handle and having eccentrics on both ends thereof and adapted for engaging the free ends of said spring plates to bring the said friction pulleys into engagement with the said intermediate pulley or the said larger driving pulley, as described

2. The combination in a saw mill feed mechanism, of a driving shaft properly mounted in supporting brackets, having a pinion for engaging the rack bar of a log carriage, and provided with large and small pulleys; an intermediate pulley revolubly mounted and in contact with said small pulley, spring plates secured at one end in said brackets and provided with suitable journal bearings for the power shaft, a power shaft revolubly mounted in said bearings and provided with an operating pulley, friction pulleys mounted on said power shaft not quite in contact with said intermediate pulley and large pulley respectively, and means for depressing the said spring plates independ

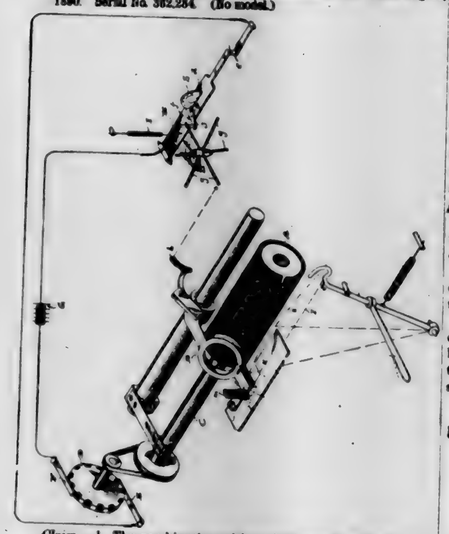
ently of each other at the will of the operator, all substantially as described.

3. In a saw mill feed mechanism, operated by friction pulleys, the combination of vertically moving journal bearings supporting the power shaft, with means to suspend the said bearings and means to depress the same separately and independently of each other; a power shaft provided with friction pulleys, and pulleys operating a driving shaft in alternate directions, all as set forth and described

4. The combination, in a saw mill feed mechanism operated by friction pulleys, of the springs 17 having vertically movable bearing plates 9' and 10' provided with proper journal boxes, a power shaft 7 having an operating pulley mounted thereon, the friction pulleys 9 and 10 rigidly mounted on said shaft an operating shaft 20 provided with an operating handle 21 and having upon the extremities thereof the eccentrics or feet 19 adapted to depress the said plates separately and independently of each other, all substantially as set forth and described.

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**502,246. COMBINED PHONOGRAPH AND COIN OPERATED MECHANISM.** WILLIAM S. BURNETT, Milwaukee, Wis. Filed Aug. 18, 1890. Serial No. 362,284. (No model.)



*Claim.*—1. The combination with a phonograph, adapted to be operated by a motor, of a coin actuated starting and stopping device for the motor, an arm on the needle-carriage of the phonograph, a recessed guard plate provided with a stop and arranged to normally oppose the carriage arm from above the latter, and a shifting lever having a lifting crook in the path of said carriage arm, substantially as set forth.

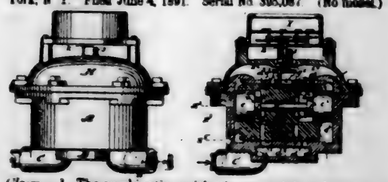
2. The combination with an electrically actuated phonograph, of contact plates forming terminals of an electric-circuit, a spring for holding one of the plates normally out of contact with the other, a slot in the spring-controlled plate, a spring controlled guard for a portion of the slot, a device for retracting the slot-guard, and an arm on the needle-carriage of the phonograph arranged to actuate said retracting device, substantially as set forth.

3. The combination with a phonograph, adapted to be operated by a motor, of a source of electricity and contact plates in circuit with the motor, a spring for holding one of the plates normally out of contact with the other, a slot in the spring-controlled plate, a spring controlled guard for a portion of the slot, a device for retracting the slot guard and an arm on the needle carriage of the phonograph arranged to actuate said retracting device, substantially as set forth

4. The combination with a phonograph, adapted to be operated by a motor, of a source of electricity and contact plates in circuit with the motor, a spring for holding one of the plates normally out of contact with the other, a slot in the spring controlled plate, a spring-controlled guard for a portion of the slot, a device for retracting the slot-guard, an arm on the needle-carriage of the phonograph arranged to actuate the retracting device, another arm on said carriage and a shifting lever provided with a lifting crook in the path of the latter carriage-arm, substantially as set forth

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**502,247. ROTARY WATER-METER.** GEORGE F. CHAPPELL, New York, N. Y. Filed June 4, 1891. Serial No. 395,087. (No model.)



*Claim.*—1. The combination with the containing chamber, the supply pipe and the discharge pipe, of a head provided with cylinders and movably fitted in the containing chamber, pistons fitting the cylinders and extending through said head and carried by it, suitable supply ports and passageways for controlling the flow of the fluid from the supply pipe to the discharge pipe, and a counting device actuated by the head, substantially as described.

2. The combination with the containing chamber A, the supply chamber B, supply pipe C leading into, the supply chamber, and the discharge pipe D leading from the containing chamber of the head E, the cylinders $b\ b'\ b^2\ b^3$ formed in said head, the pistons $c\ c'\ c^2\ c^3$ fitting the cylinders, the top plate G, the cap H, the supply ports $a\ a'\ a^2\ a^3$, the channels $d\ d'\ d^2\ d^3$ and the discharge ports $g\ g'\ g^2\ g^3$, substantially as described.

3. The combination with the containing chamber A, the supply chamber B, the supply pipe C and the discharge pipe D of the head E, the cylinders $b\ b'\ b^2\ b^3$ formed in said head, the dash pots $m\ m'\ m^2\ m^3$ formed in the cylinders, the pistons $c\ c'\ c^2\ c^3$ fitting the cylinders, the extensions $l\ l'\ l^2\ l^3$ on said pistons, the top plate G, the cap H, the supply ports $a\ a'\ a^2\ a^3$, the channels $d\ d'\ d^2\ d^3$ and the discharge ports $g\ g'\ g^2\ g^3$, substantially as described.

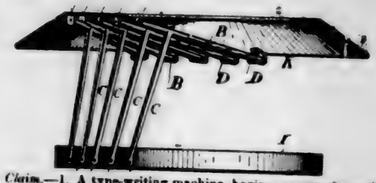
4. A head or hub having upper and lower valve faces and provided with suitable ports and passageways, and the cylinders formed on the head, substantially as described.

5. A head or hub having upper and lower valve faces, the cylinders formed on the head and the pistons and rods arranged to extend through the head, substantially as described.

6. A head or hub having upper and lower valve faces, the cylinders formed on the head, the pistons and rods extending through the head and the containing chamber having projections to hold the pistons and to form guides for the motions of the pistons and hub, substantially as described.

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**502,248. TYPE-WRITING MACHINE.** CHARLES C. CLARKE, Scranton, Pa., assignor to Lyman C. Smith, Syracuse, N. Y. Filed Mar. 14, 1891. Serial No. 385,040. (No model.)



*Claim.*—1. A type-writing machine, having a series of type-bars supported on a horizontal ring or plate, each type-bar connected to a suitable pivot-shaft whose ends are journaled in a different horizontal plane, substantially as specified.

2. In combination with the supporting plate of a type writing machine, a rock shaft and type bar projecting at the side of the axial line of said shaft, and brackets supporting the two ends of the rock shaft at different horizontal planes, substantially as described

3. In combination with the supporting plate of a type writing machine, having a central opening, a series of rock shafts arranged tangential to a circle drawn about said opening, the rock shafts having type bars projecting from the sides thereof, and hangers supporting the ends of the rock shafts at different elevations so that all the bars strike to a common center substantially as described.

4. In combination with the supporting plate of a type writer, a pair of hangers attached to said plate and a type bar shaft having its ends journaled in said hangers, in different horizontal planes, and having a type bar and an operating crank projecting from the sides thereof, substantially as described

5. The combination with the supporting plate of a set of type bar rock shafts and type bars projecting from the sides of said shafts and supporting brackets screwed to the plate and supporting the ends of the rock shafts in different horizontal planes

6. The combination with the truncated frusto conical ring of a series of brackets or bearings projecting from said ring near the outer and inner edges thereof, a series of rock shafts having their ends supported in said bearings in different horizontal planes, and type bars projecting from the sides of said rock shafts, so that the printing characters on the bars all strike to the same center.

7. The combination with the frusto conical ring A, of the brackets E E' secured to the outer and inner edges thereof, the rock shafts B extending tangentially as described and with the ends at different elevations, and the type bars projecting from the sides of said bars so as to hang obliquely but to strike to a common center, all substantially as described.

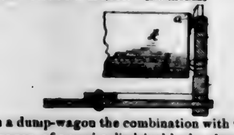
8. In a type writer the combination with the supporting plate of brackets adjustable on said plate, and type bars supported in said brackets with the ends of their pivotal shafts at different elevations substantially as described.

9 A bar for type writers having the face of its printing character in a plane oblique to the axis of the pivot of said bar.

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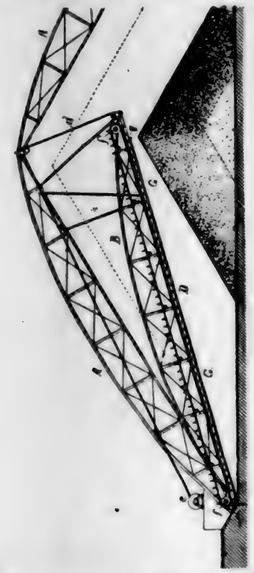
**502,249. DUMP-WAGON.** CALVIN R. DEYO, Calumet, Ill. Filed May 25, 1892. Serial No. 434,309. (No model.)



*Claim.*—In a dump-wagon the combination with the bolsters and standards of a wagon, of a semi-cylindrical body adapted to swing between the forward and rearward bolsters, trunnions projecting from the ends of the body, pillow-or riser-blocks carried by the bolsters and having sockets or bearings for the trunnions, one of the trunnions and its socket being in the form of a ball and socket joint, whereby the wagon is adapted to adjust itself to uneven ground, substantially as described

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**502,250. APPARATUS FOR HANDLING COAL.** WILLIAM D. EWART, Chicago, Ill., assignor to the Dodge Coal Storage Company, Philadelphia, Pa. Filed Feb. 16, 1891. Serial No. 381,612. (No model.)



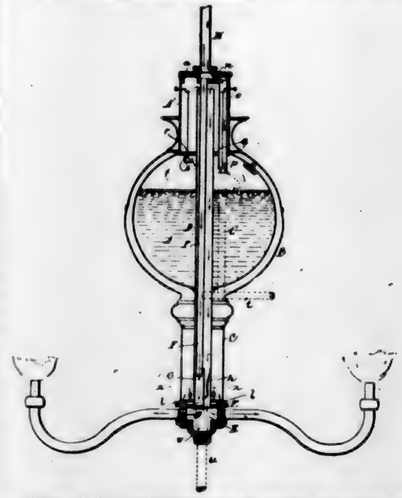
*Claim.*—1. The combination in a machine for piling coal or analogous material, of the shears having legs adapted to span the pile to be formed, the pivoted piling conveyer support, conveyer thereon and a rope connecting the support to the shears whereby the discharge end of the conveyer support can be raised and lowered while the receiving end is fixed, substantially as set forth.

2. The combination of the shears having legs adapted to span the pile to be formed, the piling conveyer support pivoted at the base of one of said legs, a continuous forward feed conveyer carried by the support, and rock shafts having their ends supported on the shears, substantially as specified.

3. The combination of the shears, a piling conveyer support pivoted at the base of one of the legs of the shears, and suspended from the said shears, a trough for supporting the material as it is conveyed, and an endless chain conveyer the lower run of which travels over the trough and conveys the material to the discharge point, substantially as specified.

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**502,251. CARBURETING-LAMP.** NICHOLAS FINCK, Elizabeth, N. J., assignor to Pierre L. B. Coombs, St. Joseph, Mo. Filed Mar. 11, 1890. Serial No. 343,470. (No model.)



*Claim.*—1. In a carbureting lamp for enriching gas, the combination with the heating burners, of the tubes D and F. composed of metals or materials of different expansibility, placed eccentrically one within the other and having a touching contact in a single line only and at one end of such tubes as set forth, and both having a small lateral passage through them in such contact line and leading to the heating burners, as set forth

2. In a carbureting lamp, the combination with the independent tubes D and F. composed relatively of materials of different expansibility and placed eccentrically one within the other, and having a touching linear contact with each other, and a small passage through them both in such contacting line, and serving automatically to control the flow of gas to the heating burners,—of the chamber $j$, in the base and between such passage and said burners, substantially as shown and described.

3. In a carbureting lamp for enriching gas, the tubes D. and F made of metals or materials having different expansibilities, and placed one eccentrically within the other and in linear contact with each other at their lower ends, each tube having a small orifice in such contacting line, normally coinciding and registering with that in the other; these orifices affording the only outlet to the heating burners.

4. In a carbureting lamp, the combination of the carburetor with illuminating burners and with heating burners, and with the pipe connecting the carburetor and burner, of an outer tube and an interior gas tube which supplies the burners with gas, communicating with the carburetor and placed eccentrically within such other tube, and provided with an enlarged extension in lineal contact only, with and at one side of the other tube which supplies the illuminating burners, these tubes being of material of different expansibility, and each having a small outlet performing jointly the duty of a single outlet and normally registering with each other and serving when heated to control the supply of gas to the heating burners only, these outlets constituting a thermo-regulator valve located within the pipe.

5. In a carbureting lamp, the combination with a carburstor of the tubes D and F. made relatively of materials of different expansibility, and communicating with the carburetor and set eccentrically one within the other and having registering orifices in the contacting sides as set forth, the base E. having in its upper part the inclosed chamber $j$., and also within it and below said chamber another independent chamber K, and the chamber C. having air passages between

it and base E as set forth, all substantially as and for the purposes described

6. In a carbureting lamp, the combination with the carburetor, of two tubes D and F, composed of metals or materials having relatively different expansibility, the tube F being set eccentrically within tube D, and contacting lineally with it for short distance at their lower ends and communicating with the carburetor, said tubes being provided with orifices *i*, *i*, as shown and described—and a base E, having therein two connecting chambers *j*, and K, the tube D, leading to chamber K, and the tube F, leading to the chamber *j*, all as set forth.

7. In combination, the carburetor, the tube D, and the tube F, these tubes being composed of metals or materials of different expansibility and provided with orifices *i*, *i*, normally coinciding,—the tube F being set eccentrically within the tube D, and contacting with it in a short single line of touch as set forth, said tubes communicating with the carburetor,—the chamber E, the illuminating burners branching from said chamber, chamber *j*, and heating burners *k*, communicating therewith and serving to regulate the supply of gas, all as set forth.

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**502,252. PROCESS OF AND APPARATUS FOR PURIFYING WATER.** DAVID HANNA, Ogdensburg, N. Y. Filed June 30, 1891. Serial No. 398,050. (No model.)

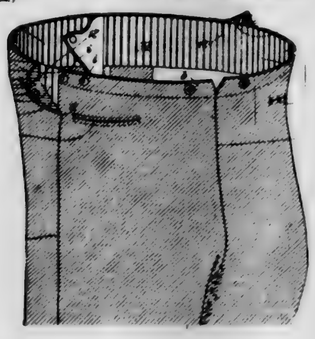


*Claim.*—1. The process of separating impurities from water, which consists in forcibly injecting a coherent mass or thick stream of water into the highly heated and unobstructed steam within the boiler, thereby vaporizing the feed water before it reaches the collecting vessel or body of water in the boiler, separating the impurities from the feed water while being vaporized and allowing them to drop through the unobstructed vapor within the steam space of the boiler, collecting the impurities so separated from the water and conducting them outside the boiler before they mingle with the body of water within the boiler.

2. The herein described water purifying apparatus for steam boilers, the same comprising a boiler provided with a valve controlled open mouthed feed-water nozzle discharging into the steam space thereof; said boiler being further provided with a collecting basin having a valve controlled discharge pipe, the mouth of said basin being directly under the feed water inlet and slightly above the water level of the boiler; whereby a coherent stream of feed water may be discharged directly into the steam space, be afforded space therein in which to be immediately vaporized by the live steam, all the impurities held in suspension therein be at once freed and thereby precipitated into the basin, and discharged therefrom without opportunity to again commingle with the water in the boiler or precipitate upon any of the other parts thereof or of the feeding apparatus, as set forth.

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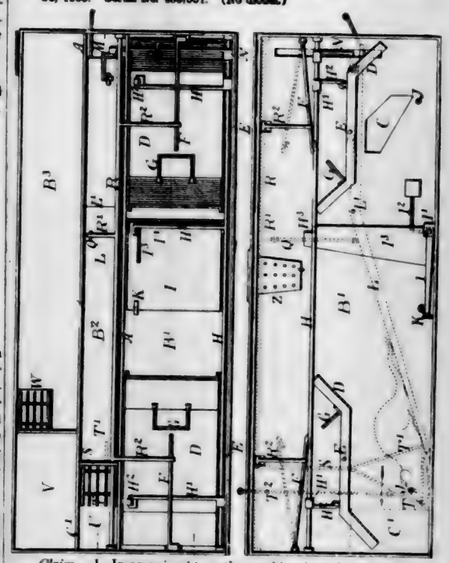
**502,253. TROUSERS.** MAX HARRIS, Everett, and NATHAN HARRIS, Boston, Mass. Filed Feb. 23, 1893. Serial No. 463,437. (No specimens.)



*Claim.*—The combination, in a pair of trousers, of the fore part *a*, and the back-part *b*, left open at the top on each side, forming side openings *g*, *g*, in line with the side seams *d* and adapted to be lapped more or less, the one over the other, to vary the size of the garment at the waist, the continuous waistband-lining B extending around the waistband and across both of the side openings *g*, *g*, and sewed to the edges of the latter, forming stays to limit the expansion of the garment at the waist, and fastening devices substantially as described, whereby said fore-part and back-part are secured together at the side openings *g*, *g*, when more or less lapped, the one over the other, substantially as set forth

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**502,254. ANIMAL-TRAP.** THOMAS M. HOVELL, Elstree, assignor of one-half to Frank Bertram Charlton, London, England. Filed Mar. 28, 1893. Serial No. 468,001. (No model.)



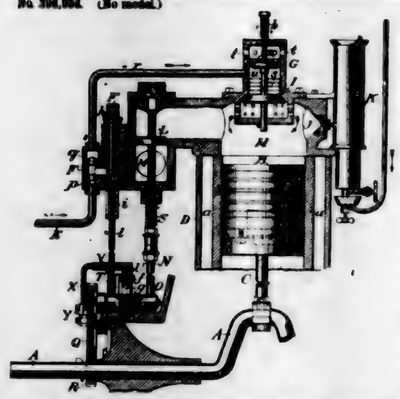
*Claim.*—1. In an animal trap the combination of a compartment having two opposite doors, a treadle operated by an entering animal, a catch on said treadle which holds the two doors open when the treadle is in a raised position and which allows the doors to close simultaneously when the treadle is depressed, a second compartment communicating with the first one and containing a sway beam or equivalent device connected by rods and lever arms with the doors of the first compartment, so that on the sway beam being actuated by the weight of the animal the doors are raised to the open position thereby, substantially as described.

2. In an animal trap the combination of a compartment having two opposite doors, a treadle operated by an entering animal, a catch on said treadle which holds the two doors open when the treadle is in a raised position and which allows the doors to close simultaneously when the treadle is depressed, a second compartment communicating with the first one and containing a sway beam or equivalent device connected by rods and lever arms with the doors of the first compartment, so that on the sway beam being actuated by the weight of the animal the doors are raised to the open position thereby, and locking catches for holding the doors in the closed position, also actuated by the sway beam for releasing the doors before being opened thereby, substantially as described

3. In an animal trap, the combination of a compartment $B^1$ having a door D at each end, a spindle H connected to the said doors by rods and levers, a weighted treadle I with post $I^3$ engaging with an arm on the spindle H so as to hold the doors in the open position, catches F for locking the doors in the closed position, a second compartment $B^2$ communicating with the first compartment by an opening C and containing a weighted sway beam L connected first to spindle H by rods and levers so as by its motion to effect the opening of the doors D, and secondly to a spindle R, having arms connected to the catches F so as to disengage these from the doors before they are opened, and a third compartment $B^3$ separated from the second compartment by a door on the opening of which the sway beam L is liberated so as to resume its original position, substantially as described



**502,255. GAS-ENGINE.** GEORGE E. HOYT, San Francisco, Cal., assignor to the Palmer & Hoy, same place. Filed June 20, 1891. Serial No. 396,896. (No model.)



*Claim.*—1. In a gas engine, which has its feet controlled and governed by the exhaust valve, the combination of the exhaust valve and its stem, a vibrating arm or lever connected to said stem, a pawl-piece pivoted on the frame and adapted to engage and uphold the vibrating lever at certain times for the purpose of keeping the exhaust valve open, the main engine shaft, the main piston which it operates, the swinging weight pivotally supported on the frame and operated from the main engine shaft with which it is connected for the purpose of causing it to impinge upon the pawl piece and thereby cause an engagement between said pawl-piece and the vibrating lever when required, substantially in the manner and for the purpose specified.

2. In a gas engine, which has its speed governed and controlled by the exhaust valve, the combination of the exhaust valve and its spring-provided stem, a vibrating lever connected to the lower end of said stem, a pawl-piece pivoted on the frame and having a projecting arm provided with an adjustable weight thereon whereby the static position of the pawl-piece is determined, a swinging weight pivotally supported on the frame and connected to and operated from the main engine shaft, said weight being so arranged that at a pre-determined rate of movement it will strike the pawlpiece and cause an engagement between said pawl-piece and the vibrating lever for the purpose of holding the exhaust valve of the engine open so that no charge of gas and air will be drawn in until the speed of the engine is reduced or regulated, substantially as described.

3. In a gas engine which has its speed controlled and regulated by the exhaust valve, the combination of the exhaust valve and its spring-provided stem, a vibrating lever connected to the end of said stem, a pawl-piece pivoted on the frame and adapted to engage the vibrating lever at certain times and thereby support the latter and keep the exhaust valve temporarily open, a swinging weight pivotally supported on the main frame and connected to and operated from the main engine shaft, said weight being so arranged that at a pre-determined rate of movement it will strike the pawl piece and cause an engagement between it and the vibrating lever for the purpose of holding the exhaust valve of the engine temporarily open, a pinion on the main engine shaft a gear wheel engaging said pinion and provided with a cam located beneath and operating upon the vibrating lever, substantially as described.

4. In a gas engine, the combination with the engine cylinder, main piston and main engine shaft, a carbureting chamber and an injector pump, of an exhaust valve and its stem, a vibrating arm connected to said stem and to the injector pump, a pivoted pawl-piece having thereon a hook adapted to engage a corresponding hook on the said vibrating arm, a swinging weight pivotally supported on the main frame, a bell crank for driving said weight and a link connecting it to some constantly running part of the engine, a pinion on the main engine shaft and a cam-provided gear which engages the pinion and is arranged so that the cam may act on the vibratory lever, all substantially in the manner and for the purposes specified.

5. In a gas engine, governed by the exhaust valve, the combination of the pivoted pawl-piece U, swinging upon a point on the frame and having a projecting arm *g* provided with an adjustable weight thereon and having also an engaging hook, the exhaust valve and its stem, a vibratory arm connected to said stem and having a hook corresponding in shape to the hook on the pawl-piece which hooks are adapted to engage with each other, a swinging weight W connected to and operated from the main engine shaft and so arranged that at a pre-determined rate of movement it will strike the pawl-piece and cause an engagement thereof with the vibratory arm for the purpose of holding the exhaust valve open so that no charge of gas and air will be drawn in until the speed of the engine has been reduced, substantially as described.

6. In a gas engine operated by hydro-carbon fuel, a pump for injecting the fuel connected by a pipe with the carbureting chamber having valves at its top and bottom, one to admit air and the other to permit air and gas to enter the cylinder, said carbureting chamber being provided with perforated screens or plates to diffuse the liquid fuel and to cause it to mingle with the air, substantially as described.

7. In a gas engine, a pump for injecting liquid fuel or hydrocarbons, combined with a carbureting chamber or vessel as herein described, having an air inlet and a gas outlet valve on the same stem, a perforated air inlet division at the top, a middle chamber provided with perforated plates or screens and a lower perforated chamber projecting within the main cylinder, having a series of lateral apertures at the sides to mix and diffuse the air and gas as they enter the cylinder and are ignited, substantially in the manner and for the objects described

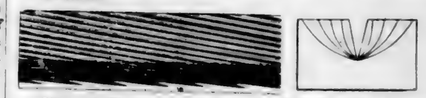
8. In a gas engine, a carbureting chamber or vessel constructed substantially as herein described, having an air inlet and a gas outlet valve on the same stem, a perforated air inlet division at the top, a middle chamber provided with perforated plates or screens and a lower perforated chamber projecting within the main cylinder and having lateral apertures to mix and diffuse the air and gas, substantially as described.

9. In a gas engine, the combination of the exhaust valve and its stem, a vibratory arm connected to said stem, a pivoted pawl-piece adapted to engage with and support the vibratory arm and valve stem at certain times for the purpose of keeping the valve open, a swinging governor weight connected to and operated from the main engine shaft which weight impinges upon the pivoted pawl-piece and causes engagement between the latter and the vibrating arm when required, and the force pump for injecting the fuel, said pump having a plunger operated by a rod connected to the aforesaid vibrating arm or lever so that the strokes of the plunger may correspond with those of the exhaust valve, substantially as described.

10. In a gas engine, the combination of the pump for injecting liquid fuel or hydrocarbons, a carbureting chamber or vessel, substantially as herein described having an air inlet and a gas outlet valve on the same stem, a perforated air inlet division at the top, a middle chamber provided with perforated plates or screens and a lower perforated chamber having lateral apertures to mix and diffuse the air and gas as they enter the cylinder and are ignited, the exhaust valve and its stem, a vibrating arm connected to said stem, a pivoted pawl-piece on the frame having a hook adapted to engage said vibrating arm, a swinging governor weight operated from the main engine shaft and impinging at times upon the said pawl-piece and an operating rod connected to the said vibrating arm for the purpose of actuating the pump plunger in order that said plunger and the exhaust valve may move in unison, substantially as described.

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**502,256. DIE FOR ROLLING SCREW-THREADS.** HORACE E. JONES, Hartford, assignor to the Russell & Erwin Manufacturing Company, New Britain, Conn. Filed May 24, 1892. Serial No. 434,151. (No model.)



*Claim.*—1. The combination of a die block for rolling ribs or screw threads having alternately ribbed and grooved body rolling portions and point rolling portions on its opposite faces, with a backing one side of which is fitted to one of said faces while its opposite or back side lies in a plane that projects beyond the point threading portion on that side of said block which confronts said backing substantially as described and for the purpose specified.

2. A die block for rolling ribs or screw threads having alternate ribs and grooves for rolling the body portion on its opposite faces and having also ribbed and grooved point rolling portions symmetrically arranged on said opposite faces, substantially as described and for the purpose specified.

3. A die block for rolling ribs or screw threads having alternate ribs and grooves on its opposite faces for rolling the body portion and having also the ribbed and grooved point rolling portions at diagonally opposite corners on said opposite faces, substantially as described and for the purpose specified

4. A die for rolling ribs or screw threads with alternate tapering

grooves and ridges, the tapering portions of the grooves having concave sides meeting each other at an angle in the bottom of the groove substantially as described.

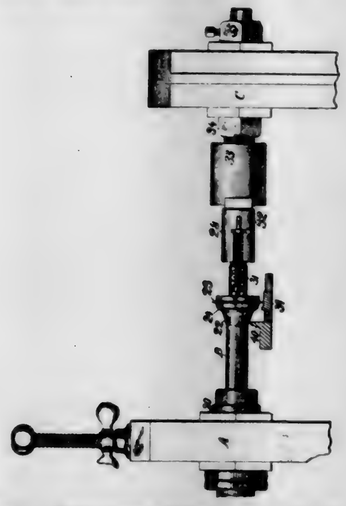
5. A die for rolling screw threads having alternate tapering grooves and ridges, the grooves in which are of a V shape in cross section at or near the finishing end and in the form of a modified V with concave sides at or near the entering end, while between said two forms the grooves taper with a gradual and continuous change in shape for the entire distance, substantially as described and for the purpose specified.

6. A die for rolling raised threads or ribs upon cylinders or other circular forms of metal having alternate tapering ridges and grooves, the form of the latter being in cross-section the segment of an ellipse, with the smaller curve thereof at the bottom of the groove, substantially as described and for the purpose specified.

7. A die for rolling raised threads or ribs upon cylindrical or other circular forms of metal having alternate tapering ridges and grooves, the form of the latter being in cross-section the segment of an ellipse the proportions of which vary as the width of the grooves increases, substantially as described and for the purpose specified.

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**502,257. APPARATUS FOR MILLING DIES FOR ROLLING SCREW-THREADS.** HORACE E. JONES, Hartford, assignor to the Russell & Erwin Manufacturing Company, New Britain, Conn. Filed May 24, 1892. Serial No. 434,152. (No model.)



*Claim.*—1. In an apparatus for forming uneven surfaces the combination of a rotating spindle, a cutter mounted thereon and provided with a wabbling axis transverse to that of said spindle, and means for controlling the wabbling movements of said cutter on said axis, substantially as described and for the purpose specified.

2. The combination of a spindle having a shoulder with transverse curved recess, a cutter mounted on said spindle and having a transverse axial rib fitted in said curved recess, the axis of which rib is in the plane of the apices of the cutter teeth, and devices for holding said cutter in place, substantially as described and for the purpose specified.

3. The combination of a wabbling cutter mounted upon a rotating spindle, of a yielding holding mechanism, a carriage and a moving wedge or pattern bearing upon said yielding holding mechanism to govern the position of the cutter on its wabbling axis, substantially as described and for the purpose specified.

4. The combination of a wabbling cutter mounted upon a rotating spindle, with the sleeve 28, rigid arm 29, yielding arm 31, and a moving wedge or pattern for acting upon said sleeve, substantially as described and for the purpose specified.

5. The combination of a spindle mounted to rise and fall a hub and cutter on a spindle, a carriage for moving the work by said cutter and a lifting rib on said carriage for acting on said hub to raise the cutter, substantially as described and for the purpose specified.

6. The combination of a mounted milling machine cutter for milling screw threading dies, the carriage of said machine, the vise pivoted to said carriage as at 38, and a divisional operating device for moving said vise a given distance on said pivot after cutting each groove to change the angle of inclination, substantially as described and for the purpose specified.

7. In a machine for making ribbed dies for rolling screw threads, the combination of a carriage adapted to be repeatedly moved laterally a given distance, a pivoted vise mounted on said carriage for holding said dies, and a divisional operating device for moving said vise a given distance on its pivot in connection with said lateral movement of said carriage, substantially as described and for the purpose specified.

8. In a machine for forming uneven surfaces, a cutter with teeth upon its periphery which periphery is of oval or eccentric or cam shaped contour and means for giving the same a wabbling motion, substantially as described and for the purpose specified.

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**502,258. DIE FOR ROLLING SCREW-THREADS.** HORACE E. JONES Hartford, assignor to the Russell & Erwin Manufacturing Company, New Britain, Conn. Original application filed May 24, 1892, Serial No. 434,152. Divided and this application filed Feb. 27, 1893. Serial No. 463,821. (No model.)



*Claim.*—1. A die for rolling screws, having its face provided with alternate tapering ridges and grooves, the latter varying in transverse section from a V shape at or near the finishing end to the form of a truncated V with a curved bottom at or near the entering end, said ridges being flat on their tops for the main portion of their lengths, substantially as described and for the purpose specified.

2. A die for rolling screws having its face provided with alternate tapering ridges and grooves, the sides of the latter having a warped surface extending along their length with a constantly changing angle of inclination, substantially as described and for the purpose specified.

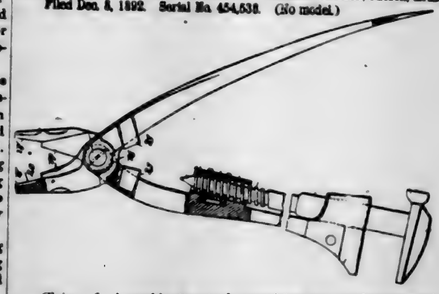
3. A die for rolling screw threads having on its face alternate tapering ridges and grooves, the latter having curved bottoms at the entering end of the die with their sides running together while the ridges between them at the points so run together are brought to an edge and slope toward said entering end, substantially as described and for the purpose specified.

4. A die for rolling screw threads having on its face alternating tapering ridges and grooves, and a finishing portion in which the grooves taper in the reverse direction from that of the rest of the die, substantially as described and for the purpose specified.

5. A die for rolling screw threads, having inclined ribs that diverge toward the finishing end substantially in proportion to the progressively increasing diameter of the thread, the distance between the ribs on a line parallel with the line of the ridge of the point forming part of the die being at any part of the die practically equal to the rolling circumference of the thread as rolled at said part, substantially as described and for the purpose specified.

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**502,259. COMBINATION-TOOL.** ANDREW KNUDSEN, Tucson, Ariz. Filed Dec. 8, 1892. Serial No. 454,538. (No model.)



*Claim.*—1. A combination tool comprising two members pivoted together near one end and having the extremities of their shorter ends formed into pliers, the remaining portions of the said shorter ends being formed into overlapping shear blades, a fixed jaw formed on the free end of one of the said pivoted members, a slideway secured to the said member near the jaw, a longitudinally movable shank adapted to travel in the slideway and having a jaw at its outer end extending opposite the fixed jaw, and a screw mechanism for adjusting the shank, substantially as described.

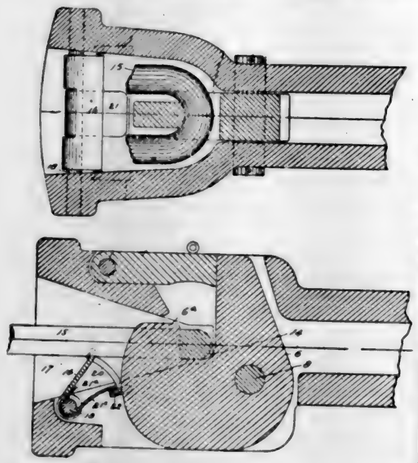


2. A combination tool, comprising pliers having a fixed jaw on one member, and an adjustable and detachable shank carried by the jaw member and having a jaw extending opposite the fixed jaw, the movable jaw having a hammer head produced thereon, substantially as described.

3. A combination tool, comprising pliers, a rigid jaw formed on the free end of one of the plier members, a shank held to move parallel with said member, and a movable jaw formed on the outer end of the shank and extending opposite the fixed jaw, substantially as described.

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**502,260. CAR-COUPLING.** HENRY O. MILLER, Eaton, Colo., assignor of one-half to Aaron J. Eaton and Edgar F. Hurdle, same place. Filed Feb. 24, 1893. Serial No. 463,657. (No model.)



*Claim.*—1. In a car coupling the combination with the drawhead and link, of the coupling device pivoted in the drawhead, the link supporting plate pivoted in the lower part of the drawhead near the entrance of the link recess into which it is adapted to project, and the double spring movably supported on the pivot, one part engaging the supporting plate on the under side and the other part projecting backward into the path of a projection formed upon the locking device whereby as said device is raised to the coupled position said projection engages the spring and raises the plate to engagement with the link, substantially as described.

2. In a car coupling the combination with the drawhead and link, of the pivoted coupling device, the movable link supporting plate and means actuated from the coupling device whereby the supporting plate is maintained in operative relation with the link, substantially as described.

3. The combination with the drawhead, link and pivoted coupling device, of a link supporting plate pivoted in the drawhead at one extremity and carrying projections at the opposite extremity adapted to enter guide ways formed in the adjacent walls of the drawhead, and means actuated from the coupling device whereby the said plate is maintained in operative relation with the link, substantially as described.

4. The combination with the drawhead and link of the coupling device projecting into an opening formed in the upper part of the drawhead, the pivoted locking bar engaging the same, the link supporting plate and means actuated from the coupling device whereby said plate is maintained in operative relation with the link, said means being adapted to react on the coupling device and hold the same in engagement with the locking bar, substantially as described.

5. The combination with the drawhead of the coupling device pivoted therein and carrying a locking pin adapted to move in ways formed in the adjacent walls of the drawhead as the coupling device moves from one position to the other, substantially as described.

6. The combination with the drawhead of the coupling device pivoted therein and carrying the vertically movable locking pin engaging ways formed in the walls of the drawhead and slotted to receive a projection formed upon the coupling device whereby as said device moves the locking pin passes from the one position to the other, substantially as described.

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**502,261. PEDAL ATTACHMENT FOR PIANOS.** FREEMAN E. OLMSTEAD Denver, Colo. Filed Mar. 6, 1893. Serial No. 464,924. (No model.)



*Claim.*—1. In a piano attachment, the combination of the upright frame provided with the vertically adjustable fastening screws, and the vertically movable rods carrying the auxiliary and false pedals, substantially as described.

2. In a piano attachment, the combination of the upright frame carrying vertically adjustable means for securing the same to the instrument, and the vertically movable rods carrying the auxiliary and false pedals, substantially as described.

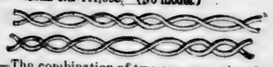
3. In a piano attachment, the combination with the upright frame provided with means for fastening the same to the instrument, and the vertically movable rods carrying the hollow false pedals, and the adjustable auxiliary pedals, substantially as described.

4. In a piano attachment, the combination of the upright frame carrying the adjustable fastening screws, recessed blocks attached to the instrument to receive the tops of the screws, and the vertically movable rods mounted on the frame, and carrying the auxiliary and false pedals, substantially as described.

5. In a piano attachment, the combination with the upright frame carrying the vertically adjustable fastening screws, and the vertically adjustable folding foot-rest, substantially as described.

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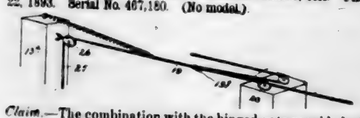
**502,262. TELEPHONE-CABLE.** WILLIAM R. PATTERSON, Chicago, Ill., assignor to the Western Electric Company, same place. Filed July 30, 1892. Serial No. 441,683. (No model.)



*Claim.*—The combination of two or more pairs of wire, the wires constituting the different pairs being twisted together with an undulating or varying degree of twisting, said strands being laid in the same cable to break joints with respect to the different undulations of twisting, whereby cross talk is prevented, substantially as and for the purpose specified.

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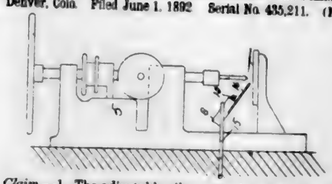
**502,263. GATE.** MILLARD F. SHEHAN, Boulder, Colo. Filed Mar. 22, 1893. Serial No. 467,180. (No model.)



*Claim.*—The combination with the hinged gate provided with the movable latch, and the upwardly extending front end bar, of a rope leading from the latch upward through a pulley block on said end bar extension, a spring also attached to said bar, a pull rope attached to the spring and the latch rope, and suitable attachments and supports, whereby the gate may be operated from either side, substantially as described.

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**502,264. LUBRICATOR.** JOHN H. EARLES and FRANK A. EARLES, Denver, Colo. Filed June 1, 1892. Serial No. 435,211. (No model.)

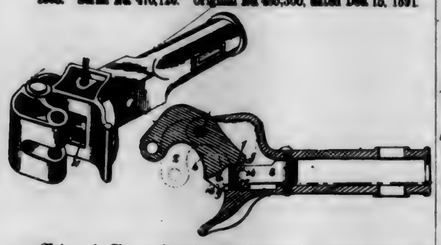


*Claim.*—1. The adjustable oil receptacle provided with inlet and outlet openings controlled by suitable valves and an adjustable drip-plate attached to the receptacle and adapted to guide the oil to the desired point, substantially as described.

2. The oil receptacle provided with an outlet opening controlled by a suitable valve, the adjustable drip plate attached to the receptacle and adapted to guide the lubricant to the desired point, and a supporting arm to which the receptacle is movably attached, substantially as described.

# REISSUES.

**11,853.** CAR-COUPLING. WILLIAM J WALKER, St. Louis, Mo., assignor, by direct and mesne assignments, to the Walker Automatic Car Coupler Manufacturing Company, East St. Louis, Ill. Filed Apr. 12, 1893. Serial No. 470,124. Original No. 465,300, dated Dec. 15, 1891.

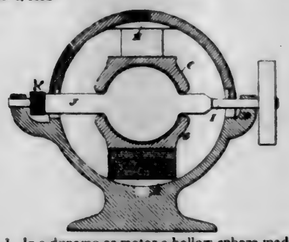


*Claim.*—1. The combination of a drawhead, a knuckle 2 adapted to swing in a horizontal plane and pivoted to said drawhead, a locking device 8 pivoted at its rear end within the drawhead; the tail end of the knuckle having a rounded surface 5 conforming to the inner wall of the drawhead, a flat supporting surface 6, said surface 6 supporting the free end of the locking device when the knuckle is in an uncoupled position, and means for elevating the locking device after it has dropped to the limit of its downward movement substantially as set forth.

2. In a car coupler, the improved locking device for hooks of the Janney type, the same having an aperture 10 in one end by means of which it is adapted to be pivoted to the drawhead and its forward end provided with two projections 11 and 12 respectively, each cast integral with the body of the locking device, so that the projection 11 may engage an opening in the bottom of the drawhead and also be engaged by the tail end of the knuckle, and whereby the projection 12 may form a stop and limit the downward movement of the free end of the locking device by coming in contact with the internal surface of the lower wall of the drawhead and also form a stop to limit the lateral movement of the locking device, substantially as set forth.

3. In a car coupler, the combination of a drawhead 1, having a flared or funnel shaped passage 16 formed in its upper wall and communicating with the interior of the drawhead, a knuckle 2 pivoted to said drawhead, a locking device 8, mounted within the drawhead and pivoted at the rear end of the same in the rear of said flared passage 16, a chain 15, connected to the free end of the locking device and passing upwardly through said flared passage 16, the free end of said locking device adapted to be elevated into said flared passage, and means for limiting the downward movement of the free end of the locking device, substantially as set forth.

**11,854.** DYNAMO OR MOTOR. RALSTON C. KINTNER, Brooklyn, N. Y., assignor to the Crocker-Wheeler Electric Company, of New Jersey. Filed Jan. 25, 1893. Serial No. 459,742. Original No. 470,067, dated Mar. 1, 1892.



*Claim.*—1. In a dynamo or motor a hollow sphere made of magnetic material and included within the magnetic circuit of said dynamo or motor and inclosing the armature thereof, substantially as set forth.

2. A dynamo or motor having its pole pieces and armature inclosed in a two part magnetic sphere, substantially as set forth.

3. A dynamo or motor having a frame consisting of a hollow sphere of magnetic material, and field pole pieces upon the inner surface of the sphere magnetically connected through the body thereof substantially as described.

4. A dynamo or motor consisting of a hollow sphere of magnetic material, field poles upon the inner surface of the sphere magnetically connected through the body thereof, and an armature mounted to revolve within the sphere between the poles, substantially as described.

5. A dynamo or motor having a frame consisting of a hollow sphere of magnetic material, and field pole pieces upon the inner surface of the sphere magnetically connected through the body thereof, said sphere being divisible to facilitate assembling the parts of the machine, substantially as described.

6. A dynamo or motor composed of a hollow spherical shell in two parts, the lower part or hemisphere having base and brackets bearings for the shaft integral therewith, the opposing field-magnets being attached to the two hemispheres, respectively, as set forth.

7. A dynamo or motor having a hollow spherical shell to constitute a frame having within the field-magnet cores removably attached to the shells, substantially as set forth.

8. A dynamo or motor having a hollow spherical frame, field-magnets within said shell, having hemispherical pole-pieces, and a spherical armature-core, substantially as set forth.

9. A dynamo or motor having a frame composed of two hollow hemispheres secured together, field-magnets removably attached within and provided with hemispherical pole-pieces, and a spherical armature-core, substantially as set forth.

10. The combination of two hollow hemispherical shells constituting a frame for a dynamo or motor, joined together on a horizontal plane, a base and journal-bearing arms cast with the lower portion, a horizontal armature-shaft journaled in said arms, a removable field-magnet vertically disposed and attached to each hemisphere within, and a spherical armature core on said shaft, substantially as set forth.

# DESIGNS.

**22,642.** HAIR-PIN. GEORGE P. PARKER, Montclair, N. J. Filed June 8, 1893. Serial No. 477,017. Term of patent 14 years.



*Claim.*—The design for a hair-pin, substantially as herein shown and described.

**22,643.** SPOON. CARRIE P. TRUESDELL, Cleveland, Ohio. Filed May 4, 1893. Serial No. 473,047. Term of patent 7 years.



*Claim.*—The design for a spoon herein shown and described.

**22,644.** DISH. WILLIAM H. TAHL, Trenton, N. J., assignor to the Greenwood Pottery Company, same place. Filed Mar. 7, 1893. Serial No. 465,043. Term of patent 7 years.

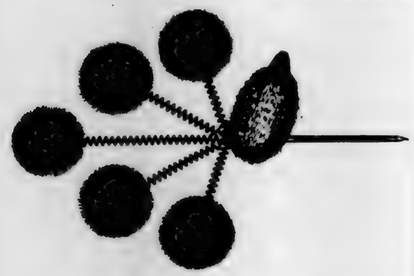


**22,644.**



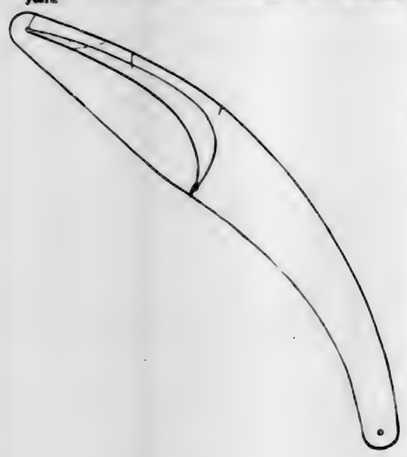
*Claim.*—The design for dishes herein shown and described.

**22,645.** HAT-TRIMMING. GABRIEL GUTLOEB, Philadelphia, Pa. Filed June 26, 1893. Serial No. 478,896. Term of patent 3½ years.



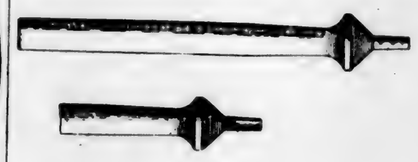
*Claim.*—The design for a trimming for hats, &c., substantially as herein shown and described.

**22,646.** DRESSMAKER'S RULER. SARAH S. FREEMAN, Los Angeles, Cal. Filed Apr. 12, 1893. Serial No. 470,111. Term of patent 7 years.



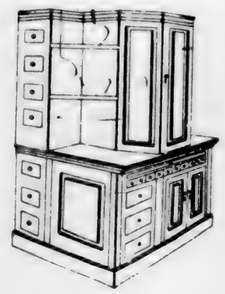
*Claim.*—The design for a dressmaker's ruler substantially as herein described and shown.

**22,647.** NAIL-SET OR COUNTERSINK. JOHN E. HITCH, Wilmington, Ohio. Filed June 13, 1893. Serial No. 477,426. Term of patent 14 years.



*Claim.*—The design for a nail-set and countersunk, substantially as herein described and shown.

**22,648.** CABINET. NOAH S. WOOD, Rockdale, Ind. Filed June 23, 1893. Serial No. 478,661. Term of patent 14 years.





*Claim.*—The design for a cabinet herein shown and described.

**22,649.** CAMERA-CASE. HERMAN CABLER, Syracuse, N. Y. Filed Mar. 13, 1893. Serial No. 465,816. Term of patent 7 years.



*Claim.*—The design for a camera case, substantially as herein described and shown.

# TRADE-MARKS

## REGISTERED JULY 25, 1893.

28,392. CAKE-YEAST. WILLIAM J. CORNER, St. Louis, Mo. Filed June 19, 1893.

DR HANSENS YEAST

*Essential feature.*—The words "DR. HANSENS QUICK YEAST" and the representation of the face of the sun. Used since April 1, 1893.

28,393. YEAST. BELL P. MYERS, Orlando, Fla. Filed June 24, 1893.

White Star

*Essential feature.*—The words "WHITE STAR" and a monogram of the letters "J Q M." Used since December 1, 1892.

28,394. SOAP POWDER. THE M. WERK COMPANY, Cincinnati, Ohio. Filed June 22, 1893.

CLEAN WORK

*Essential feature.*—The words "CLEAN WORK." Used since June 1, 1893.

28,395. SOAP POWDER. THE M. WERK COMPANY, Cincinnati, Ohio. Filed June 22, 1893.

*Essential feature.*—The representation of a broom. Used since June 1, 1893.

28,396. LAUNDRY, TOILET, AND FANCY SOAPS. WILLIAM H. MCMULLIN, Houston, Tex. Filed June 27, 1893.

MILDEST AND MOST POWERFUL

*Essential feature.*—The representation of a lamb and a lion, and the words "MILDEST AND MOST POWERFUL." Used since March 10, 1893.

28,397. MAGNESIA. MIGUEL J. MARQUES, Havana, Cuba. Filed June 26, 1893.

*Essential feature.*—The representation of a store front having a balcony, and three windows above and accompanied by an ornamental disk on either side. Used since December 30, 1884.

28,398. REMEDY FOR INDIGESTION. HENRY O. STATT, Kinston, N. C. Filed June 27, 1893.

PEPSINAGOGUE

*Essential feature.*—The word "PEPSINAGOGUE." Used since May 1, 1893.

28,399. REMEDY KNOWN AS A MICROBE-KILLER. WILLIAM RADAR, New York, N. Y. Filed June 23, 1893.

*Essential feature.*—A rectangular frame or border inclosing figures of cylindrical form, arranged in two irregular lines and representing a certain species of bacteria. Used since May 10, 1893.



28,400. REMEDY FOR AMENORRHEA, DISMENORRHEA, CORPULENCY, AND NERVOUS DISEASES. WILCOX SPECIFIC MEDICINE COMPANY, Philadelphia, Pa. Filed June 21, 1893.

*Essential feature.*—The representation of a shield with the initial "W" thereon. Used since June 11, 1893.

28,401. LINIMENT. MICHIGAN CHEMICAL CO., Detroit, Mich. Filed June 26, 1893.

WANTED

*Essential feature.*—The word "WANTED." Used since January 1, 1893.

28,402. ANÆSTHETICS. CHARLES R. HALE, Boston, Mass. Filed June 14, 1893.

HALE METHOD

*Essential feature.*—The words "HALE METHOD." Used since May 1, 1891.

28,403. CIGARS. THE WERTHEIMER COMPANY, San Francisco, Cal. Filed May 25, 1893.

*Essential feature.*—The words "LILLIAN NORDICA" arranged in connection with an open book of printed music and the representation of a musical instrument resting upon a pedestal. Used since November 1, 1891.

28,404. CIGARS. THE WERTHEIMER COMPANY, San Francisco, Cal. Filed May 25, 1893.

LILLIAN NORDICA

*Essential feature.*—The words "LILLIAN NORDICA." Used since November 1, 1891.

28,405. CIGARS. THE WERTHEIMER COMPANY, San Francisco, Cal. Filed May 25, 1893.

LILLIAN NORDICA

*Essential feature.*—The words "LILLIAN NORDICA" arranged in connection with the representation of the head and bust of a woman and with the representation on either side of "Carmen" and "Zuleika." Used since November 1, 1891.

28,406. GLUE FOR MENDING CHINA, GLASS, LEATHER, &c. OLIVER CABANA, Jr., Buffalo, N. Y. Filed June 27, 1893.

CROCKERY MENDER

*Essential feature.*—The words "CROCKERY MENDER." Used since January 1, 1893.

23,407. HENRIETTA CLOTH. WALTER L. WELLINGTON, New York, N. Y. Filed June 13, 1893.

WLW

*Essential feature.*—The letters "W. L. W." Used since April 18, 1893.

28,408. SHOES. WALLACE, ELLIOTT & CO., New York, N. Y. Filed June 22, 1893.

CREST SHOE

*Essential feature.*—The words "CREST SHOE," printed upon a shield, with the head of an elephant above same. Used since April 1, 1892.

28,409. DIAMOND-POINTED SPADES. TERRE HAUTE SHOVEL AND TOOL COMPANY, Terre Haute, Ind. Filed July 19, 1893.

VATERLAND

*Essential feature.*—The word "VATERLAND." Used since September, 1891.

28,410. PERIODICAL JOURNAL. THE KITTREDGE COMPANY, Newark, N. J., and New York, N. Y. Filed June 6, 1893.

METAL

*Essential feature.*—The word "METAL." Used since December, 1892.

28,411. PERIODICAL JOURNAL. THE KITTREDGE COMPANY, Newark, N. J., and New York, N. Y. Filed June 6, 1893.

Business

*Essential feature.*—The word "BUSINESS." Used since September, 1891.

28,412. TEA. CHARLES STANSFELD HICKS, London, England. Filed June 15, 1893.

DALU-KOLA

*Essential feature.*—The word "DALU-KOLA." Used since November, 1889.

28,413. WITHDRAWN.

28,414. PIANOS, ORGANS, GUITARS, MANDOLINS, AND BANJOS. MEMPHIS MUSIC CO., Memphis, Tenn. Filed Feb. 27, 1893.

Pullman

*Essential feature.*—The word "PULLMAN." Used since July 1, 1891.

28,415. FRICTION, PARLOR, SAFETY, AND WAX MATCHES. ERIK HOLMBERG, Södertelje, Sweden. Filed July 1, 1893.

*Essential feature.*—The representation of a ship in full sail. Used since 1879.

28,416. PILLS, TINCTURES, COUGH REMEDIES, AND MEDICINAL POWDERS AND PLASTERS. HANNAH MATHER, St. Helen's, England. Filed May 11, 1893.

LANCORA

*Essential feature.*—The word "LANCORA." Used since February, 1892.

28,417. FACE-WASH AND CURLING FLUID. GERMAN AMERICAN DRUG COMPANY, Ohio City, Ohio. Filed May 29, 1893.

Dew of Lilies

*Essential feature.*—The words "DEW OF LILIES." Used since October 15, 1892.

28,418. CARRIAGE HARNESS, SADDLES, AND COLLARS. S. R. & I. C. MCCONNELL, Burlington, Iowa. Filed July 1, 1893.

28,418.



*Essential feature.*—The words "HAWKEYE HARNESS" and the representation of a hawk. Used since February, 1893.

28,419. CAR-COUPLINGS AND PARTS THEREOF. THE SHILLER COUPLER AND MANUFACTURING COMPANY, Newark, N. J. Filed June 14, 1893.



*Essential feature.*—The representation of two interlocked links crossing each other at substantially right angles. Used since April 8, 1893.

28,420. PACKING FOR MACHINERY. GARLOCK PACKING CO., Palmyra, N. Y. Filed Jan. 23, 1893.

GARLOCK

*Essential feature.*—A diamond-shaped figure with the word "GARLOCK" inclosed therein. Used since July 1, 1890.

28,421. WHEAT-FLOUR. MARSHALL, KENNEDY MILLING COMPANY, Allegheny, Pa. Filed June 6, 1893.

CAMBRIA

*Essential feature.*—The word "CAMBRIA." Used since January 1, 1892.

# DECISIONS

OF THE

# COMMISSIONER OF PATENTS

AND OF

# UNITED STATES COURTS IN PATENT CASES.

## COMMISSIONER'S DECISIONS.

### EX PARTE HAFELY AND REDLEFSEN.

*Decided July 21, 1893.*

CANCELLATION OF UNNECESSARY DRAWINGS AND DESCRIPTIVE PARTS OF AN APPLICATION.

Where an application originally contained claims for a method, a product, and an apparatus for carrying out the method, and upon an Office requirement of division the applicant canceled the claims for the apparatus, and where the disclosure of the apparatus does not make it clearer how the method might be carried out, *Held* that the drawings and description of the apparatus should be canceled.

ON petition.

MANUFACTURE OF CELLULOID BOXES.

Application of Alfred C. Hafely and Jens Redlefsen, filed November 26, 1892, No. 453,276.

*Mr. G. M. Plympton* and *Mr. Harold Binney* for the applicants.

FISHER, *Assistant Commissioner:*

This is a petition taken from the action of the Primary Examiner requiring that Figures 9 to 14, inclusive, of the drawings and the description thereof in the specification be canceled.

The records show that applicants originally claimed in this application a method, a product, and the apparatus for carrying out the method. Division was required as between the machine and the other inventions, and applicants have canceled their claims covering the apparatus. The invention as now claimed relates to a method and a product. The method consists in covering a board with celluloid, the celluloid extending over one side and overlapping both top and bottom edges of the board. Said board is then cut into two sections and the sections thus formed are utilized to form the sides of the bottom and the sides of the top of a box, the raw edge formed by the cut being turned up in the top section and covered by the top plate, and the raw edge of the bottom section being turned down and covered by the bottom plate. The article consists of a box covered with celluloid by the above-described process. The process may be carried out by hand or by other machines, and it is not seen that a disclosure of the machine for carrying out the process makes it any clearer as to how the process might be carried out, and in accordance with the doctrine announced in the Commissioner's decision in *ex parte Simonds*, C. D., 1888, '89, said drawings and description should be canceled from this application.

The petition is denied.



### EX PARTE BECKER.

*Decided July 25, 1893.*

1. TITLE OF INVENTION—REQUISITES OF.

If the title of an application is short and correctly indicates the nature and design of the invention, the applicant should be allowed, within reasonable limits, to say what it shall be.

2. SAME—EXAMINER HAS NO RIGHT TO ARBITRARILY SELECT.

If the title given by the applicant is not satisfactory to the Examiner, objection should be made; but the Examiner himself should not arbitrarily select such title.

ON petition.

MEANS FOR DISCONNECTING CHAINS, BUCKLES, STRAPS, ETC.

Application of Ludwig Becker filed October 27, 1892, No. 450,092.

*Messrs. Briesen & Knauth* for the applicant.

FISHER, *Assistant Commissioner:*

This is a petition praying—

that the title given this case by the Examiner be changed to "means for disconnecting chains."

The title given by the Examiner is "horse-detacher." The only statutory requirements as to the title are that it shall be "short" and "correctly indicating the nature and design" of the invention. (Rev. Stat., sec. 4884.) If the title complies with these requirements, it follows "that the applicant should be allowed, within reasonable limits, to say what that title shall be." (*Ex parte Nickola*, 57 O. G., 1425.)

It is not proper for the Examiner to arbitrarily select the title for the application. If the one given by the applicant is not satisfactory, in that it does not comply with the requirements of the statute noted above, objection should be made and it should be required that the title be changed. This, however, like any other requirement as to form, may be brought before the Commissioner, under Rule 145, if the Examiner and the applicant cannot agree.

The petition is granted.

## DECISIONS OF THE U. S. COURTS.

### U. S. Circuit Court—Southern District of New York.

ELECTRICAL ACCUMULATOR COMPANY *v.* JULIEN ELECTRIC COMPANY *et al.*

*Decided July 18, 1893.*

1. PRIOR FOREIGN PATENT FOR SAME INVENTION.

The tests of identity of invention for the purposes of section 4887, United States Revised Statutes, collated from the leading cases of *Siemens v. Sellers* (123 U. S., 276) and *Commercial Manufacturing Company v. Fairbank Canning Company* (51

O. G., 965; 135 U. S., 176) and applied. The tests are: Is the principal invention of the domestic patent found in the foreign patent? Is the subject-matter of the one the same in all essential particulars as that of the other? Would a structure made pursuant to the foreign patent infringe the domestic patent? Could both patents have been granted in this country?

2. SAME.

The two patents need not be in identical garb or employ identical forms of expression.

3. SAME.

Evidence of an intention to patent the same invention in the two patents is material and important.

4. SAME.

Admissions, express or implied, that the two patents are respectively for the same invention as a third and earlier patent issued in a third country are material and important.

5. SAME.

The same canons or methods of criticism applied to the ambiguities or perspicuities of the domestic patent should be also applied to those of the foreign patent.

6. SAME.—DISCLAIMER.

The comparison should be instituted with the domestic patent as it was issued, and not with the domestic patent as it may afterward exist after being cut down by a disclaimer and limited by the state of the art. If a patent, when granted, covers an invention which has been previously covered by a foreign patent, it expires with the foreign patent, notwithstanding the fact that it has subsequently been pared down to cover only one method of practicing the invention, or restricted to a single claim.

7. SAME.

Though the domestic patent claim the product and the foreign patent claim the process, still where the process makes the product and the product can be made only by the process the product and the process constitute one discovery and the patents are for the same invention. (Citing *Mosler* v. *Mosler*, 43 O. G., 1115; 127 U. S., 354; *Plummer* v. *Sargent*, 130 U. S., 442.)

8. SAME.

In the present state of the law the date of issue of the domestic patent is controlling under section 4887, United States Revised Statutes, not the date of application for the domestic patent. (Citing *Gramme Company* v. *Arnoux*, 25 O. G., 145; 17 Fed. Rep., 838; *Edison* v. *United States Company*, 35 Fed. Rep., 134.)

9. SAME.

The right to obtain an extended term of the foreign patent on application within a time limited, if not availed of by actual application within such time, does not constitute such a potential term in the foreign patent as to prolong the domestic patent through or into such extended term. (Distinguishing *Consolidated Roller Company* v. *Walker*, 54 O. G., 136; 43 Fed. Rep., 573, 580, and citing *Bate* v. *Gillett*, 46 O. G., 1029; 31 Fed. Rep., 809; *Bate* v. *Hammond*, 46 O. G., 669; 129 U. S., 151; *Huber* v. *Nelson*, 63 O. G., 311.)

10. SAME.

The international convention of March 20, 1883, to which, among others, Spain and France and the United States were parties, has not the force of a statute in the United States. (Citing opinion of Attorney-General Miller, April 5, 1889, 47 O. G., 398.)

11. FAURE—SECONDARY OR STORAGE BATTERIES—No. 252,002—EXPIRED JUNE 27, 1891, WITH PREVIOUS FOREIGN PATENTS.

United States Letters Patent No. 252,002, issued to Camille A. Faure on January 3, 1883, for "improvement in secondary or storage batteries," on an application filed April 11, 1881, are for the same invention as Spanish Letters Patent issued to the same Camille A. Faure on June 27, 1881, on an application filed April 16, 1881, and issued for the term of ten years, and said United States Letters Patent expired on June 27, 1891, with the expiration of said Spanish Letters Patent. (*Brush* v. *Electrical Accumulator Company*, 56 O. G., 1334; 47 Fed. Rep., 48, 58, distinguished; *Brush* v. *Julien Company*, 41 Fed. Rep., 679, 683, 685, cited.)

REHEARING.

STATEMENT OF THE CASE.

**The first claim of the patent granted to Camille A. Faure, January 3, 1883, as limited by a disclaimer to an electrode of a secondary battery to which the active layer is applied in the form of a paint, paste, or cement, insoluble in the electrolytic liquid, was sustained by this court March 18, 1889, (38 Fed. Rep., 117.) It was again sustained on rehearing, (39 Fed. Rep., 490.) On the 19th of October, 1891, an order was made permitting the defendants to amend their answer by setting up the grant and expiration of a Spanish patent issued to Faure June 27, 1881, for the term of ten years, (56 O. G., 1334; 47 Fed. Rep., 892.) Proofs were taken on this new issue, and the cause now comes on for rehearing upon this issue alone.**

*Mr. Frederic H. Betts* for the complainant.

*Mr. C. E. Mitchell*, *Mr. William H. Kenyon*, and *Mr. Robert N. Kenyon* for the defendants.

COXE, *J.*:

It is proved beyond question that a Spanish patent was issued to Camille A. Faure June 27, 1881, for a term of ten years, and that this patent expired June 27, 1891.

If the Spanish patent was for the same invention as the patent in suit, it is manifest that the latter expired June 27, 1891. This is the only question: Was the Spanish patent for the same invention?

Section 4887 of the Revised Statutes provides:

> But every patent granted for an invention which has been previously patented in a foreign country shall be so limited as to expire at the same time with the foreign patent; or, if there be more than one at the same time, with the one having the shortest term.

In the leading cases of *Siemens' Administrators* v. *Sellers* (123 U. S., 276) and *Commercial Manufacturing Company* v. *Fairbank Canning Company* (51 O. G., 965; 135 U. S., 176) the Supreme Court has made the test of identity to depend upon the following propositions:

Is the principal invention of the domestic patent found in the foreign patent?

Is the subject-matter of the one the same in all essential particulars as that of the other?

In other words, will a structure made pursuant to the foreign patent infringe the domestic patent?

Could both the patents have been granted in this country?

Would a person skilled in the art, after reading the description of the invention covered by the Spanish patent, be able to construct the electrode described and claimed in the United States patent?

In approaching the subject of identity it should be remembered that Faure is a Frenchman and that the first description of his invention was written in the French language. From this original it was translated into Spanish and English. Making allowance for philological differences, for errors and unavoidable changes in translation, and for dissimilarities in Patent Office procedure, it would hardly be expected that the United States and Spanish patents would emerge from such an ordeal in identical garb, even though it were the avowed purpose of the inventor to make them the same.

There seems to be no doubt that the application as filed in the Patent Office at Washington was almost an exact counterpart of the Spanish patent, and that both the patent and the application were translated from one and the same French original.

It is evident [says the complainant's brief]—

> that the original American application was very much like the Spanish patent. The claims were differently phrased; but it is quite possible that they were intended by the translator to cover the same subject-matter.





Faure's invention was described by him in the same language, and was presented for their approval to the patent officials of three countries differing widely in their methods for the protection of inventors. If he had made any new discoveries between the date of the French patent and the dates, respectively, of his application in Spain and in the United States, he certainly failed to note the fact in either specification. The proof that he did make such discoveries is very unsatisfactory. This being so, it precludes the idea that Faure had made many kindred inventions along the same lines, which he was desirous of protecting. Like Mr. Brush, for instance. (56 O. G., 1334; 47 Fed. Rep., 48, 51, 54) It clearly was his intention to take out a patent for the same invention in the two countries. This is not disputed. One of the experts for the complainants says:

> These patents, [Faure's,] intended to cover the same invention, differ widely.

Faure had taken an important step forward in the construction of secondary batteries, which may be broadly stated as an improvement on the method of Planté, by adding directly to the support the layer of active material which Planté produced by disintegration after weeks and months of effort. This invention Faure described. This invention he endeavored to have patented in France, Spain, and the United States. It is now said that he failed in this undertaking; that he patented one invention in Spain and another in France and in this country.

It is argued that this result was accomplished because Faure failed to patent in Spain the invention in the form in which he had actually embodied it and in which its success had been proved in France—the one form which makes it thoroughly practical and useful—in other words, that he failed to describe the most valuable part of his invention, although fully known to him at the time.

The inquiry naturally suggests itself: How can this be? How can such a result be reached—an attempt to patent one invention and the actual patenting of another—without the participation or knowledge of the inventor? It will be found on examination that the supposed differences, which are so greatly magnified, are differences of form and not of substance and grow out of different environments and forms of expression. The inventor has described several ways in which the active layer may be applied, and it is not surprising that the officials of Spain should have given prominence to one way and those of this country to another way.

Again, there is an express admission that the United States and French patents are the same, the specification of the former stating that the invention was "patented in France, October 20, 1880," and in the oath attached to the application Faure swears that the invention "has been patented to him by Letters Patent of the French Government."

There is also an admission, at least by implication, that the Spanish and French patents are the same. The Spanish law permitted a patent for twenty years—

> if it has for its object new and original inventions;

but if the inventor had obtained a patent therefor in one or more foreign countries the term was for ten years only. The French patent had been granted (October 20, 1880) when the application for the Spanish patent was filed, (April 16, 1881.) The inventor asked for a ten years' term in Spain presumably because he knew that he was not entitled to a twenty years' term, the invention having been patented in France.

Furthermore, the proceedings instituted on behalf of the complainant to reinstate the Spanish patent proceeded upon the theory that the French and Spanish patents were for the same invention. In other words, a concession that the Spanish and French patents are the same is also a concession that the Spanish and United States patents are the same. The latter two cannot both be like the French patent without being like each other also. The description of what Faure discovered was the same in both cases. If the domestic patent is for another invention, the patent should have been granted to the Patent Office officials and not to Faure. The changes are theirs and not his.

Not only are the two descriptions from the same source; but the drawings, except in a few unimportant details, are identical.

It is a mistake to start out with the hypothesis that the United States patent in terse and perspicuous language describes the application of the active material in the form of paint, paste, or cement and stops there. It is a mistake to compare the Spanish patent with a patent thus assumed to be clear in language and limited in scope, for it will be found on examination that neither patent is free from ambiguity and that the real invention of Faure is as plainly proclaimed in the one as in the other. The comparison should be instituted between the patents as they were issued, and not between the Spanish patent and the United States patent as it now exists after being cut down by a disclaimer and limited by an art existing in this country of which the inventor knew nothing. If a patent when granted covers an invention which has been previously covered by a foreign patent, it expires with the foreign patent, notwithstanding the fact that it has subsequently been pared down to cover only one method of practicing the invention or restricted to a single claim. A disclaimer cannot add a new invention to the patent. Assume the case of a foreign patent and a United States patent subsequently granted in language precisely identical. Assume that pursuant to the decision of the court or for other reason the inventor has disclaimed all of the claims but one and that one is so restricted that it covers only one feature not made prominent in the original patent. Can it be said that this proceeding wholly changes the scope and purport of the patent, making it, in fact, a patent for a different invention? If so, disclaimers will be put to new and important uses never dreamed of before. When it is remembered that Faure intended to claim, broadly, in both patents all described methods of adding the active material, giving no especial preference to any one, there will be less difficulty in perceiving that "the principal invention is in both."

But let it be assumed that the inquiry is: Was the invention of the United States patent as now construed and limited previously patented in Spain?

Does the Spanish patent cover the method of con-

structing a secondary-battery electrode to which the active material, insoluble in the electrolyte, has been mechanically applied in the form of a paint, paste, or cement prior to immersion in the battery fluid, so as instantly to become porous? Does it cover that? If so, it must be conceded on all sides that it is for the same invention.

Both the Spanish and American patents relate to secondary batteries and to improvements upon the method of Gaston Planté.

Other similarities and differences will best be appreciated by placing side by side the parts of the two patents which relate chiefly to the invention when limited as above stated:

| *Spanish Patent.* | *United States Patent.* |
|---|---|
| An unlimited power of accumulation is obtained and rapidly manufactured, first, *by covering with plaster* deposits or galvanic coatings, or coatings of a chemical precipitate, the elements of the secondary piles (of the inventor) with a spongy or porous coat of lead, of the thickness that may be deemed fit. | An unlimited accumulating power is obtained. The electrodes are made by the addition or application of a layer of an active material—metal, metallic oxide of salt—which layer is or at once becomes porous or spongy, to suitable plates or supports, which may be of suitable non-metallic substances as well as of metal. This active material may be applied in various ways, so as to obtain a layer of the desired depth, *as in the form of paint, paste, or cement*, in the form of a deposit by galvanic action or chemical precipitation, or otherwise. |
| The supporting surface is of lead or any other material, and is covered by either galvanoplastic process, or *by a deposit in the form of a paste of some matter, that may be minium*; or an oxide of lead, or any salt of lead whatever, insoluble in the liquid of the pile, or with one or more salts of metals capable of accumulating or storing electrical energy such as manganese and others. | In order to render the active layer more porous, the material composing it has preferably *inert material—such, for example, as crushed coke—mixed with it*. The active layer is retained in position upon the support by means of an openwork, perforate, or porous medium or partition, which, while allowing free percolation of the electrolytic liquid, prevents the active material from separating either spontaneously or by the slight jarring to which it is liable to be subjected. The retaining medium or partition is made of material which is not liable to be acted upon by the electrolyte used—for example, of felt, cloth, asbestus paper or board, netting of cane, gutta-percha, or caoutchouc, wire-cloth, of lead or other suitable metal, porous earthenware, and the like. |
| The porosity of the lead (the reduced as well as the oxidized) can be increased by the incorporation of *inert matters, as, for example, coke, in the coating of the oxide or in that of the lead salt*. | |
| For the partitions or compartments, the object of which is to prevent the separation and fall of the porous lead, felt, cloth, asbestus-board, linen or any other porous matter not susceptible of alteration in consequence of this use, may be used; the object of this porous matter, whatever it may be, is to hold fixed in its place against the support, the active composition. In fact, we could employ for the same purpose wire cloth of lead, or any other proper metal, but, in such case, it will be necessary to secure to the support this porous layer, for the purpose of holding the composition; different means can be adopted for securing it, and this will depend upon the nature of the support: for example, rivets of lead, or of any other convenient material; that is to say, a material such that the action of the liquid of the battery upon it may not cause the formation of injurious products. | The fastening can be made by rivets, cement, or winding with woolen or cotton yarn, or otherwise. |
| Instead of rivets placed at different points, a continuous pressure may be obtained by means of threads of wool, placed across the whole. | Secondary batteries, like ordinary galvanic batteries, can be made with a series of cells side by side, or one above the other, with the intermediate walls common to the two adjacent cells. In making such batteries it is advantageous, and in some cases essential, to apply a non-porous partition of rubber or other suitable substance to the plates, so as to cut off all communication between the cells. This combination of non-porous diaphragms with the electrodes in such secondary batteries constitutes a portion of the invention. |
| Figure first represents a couple formed by two elements, A and B, each of which is formed by a thin plate of lead, covered with a porous metallic coating, and submerged in a rectangular vessel, containing water acidulated with sulphuric acid. | Figures 1 and 2 are views in vertical section of single cells, the cell shown in Fig. 2 being provided with porous media for retaining the active layer on the electrodes, and that in Fig. 1 being without such media. |
| Figure second shows in vertical section a circular couple or cell, formed by an element of lead, A, and a rod or plate, B, of lead or carbon; C is a porous vessel, and D the external vessel containing the acidulated liquid. | The cell shown in Fig. 1 consists of two parts, A B, formed each of a thin plate of lead covered with a porous metallic coating, C, and placed in a rectangular vessel, D, containing an electrolytic liquid, F, of, say, sulphuric acid and water. The |
| An intimate mixture of coke and sulphate of lead is then prepared in such a way that it may be porous, and for this purpose may be used either crushed coke, sawdust, or any other similar substance that may be convenient; this mixture is placed between the vessel C and the element B, and also between C and the element A, but by making use of some proper device, such as a porous piece of earthenware, or in any other way it will be possible to hold together with the element A the coating of said mixture, leaving free the space required for the acidulated water. | |
| The Figures third and third *bis* represent a battery of many cells, connected in tension. | |
| The Figures fourth in elevation and fifth in cross-section both represent a support a covered with a coating *b of a paste of minium*, which is maintained adherent to the support by a porous felt C held by some clamps *f*. | |
| To prepare two elements we commence by establishing and securing a separation or partition, as will be hereinafter explained; after this is done, they are set up and mounted in couples, with a liquid, such as water mixed with sulphuric acid, and by submitting them afterward to the action of an electric current, we obtain on one side a coating of peroxidated lead, and on the other a coating of reduced lead. The pair thus formed is converted into a real deposit or recipient, charged with disposable electricity, and while the discharge is made, the reduced lead becomes oxidized, and the peroxidated lead is reduced until the pair comes once more to an inert condition; that is, ready to receive a new charge of electricity. | |
| Summing up, therefore, the various details already explained, the object of this invention is constituted by the improved batteries or secondary piles, which, having a small bulk and a very light weight, allow the storage or accumulation of a considerable quantity of electric energy, and its principal features are the following, to wit: | |
| First. The new process, devised by the inventor for obtaining rapidly and economically electrodes, able to retain and keep a large amount of electrical energy; a process which consists in covering the electrode or support with a coat of metallic substance, porous or spongy, formed and deposited with whatever thickness may be required, by galvanic process, chemical precipitation, *or adherence*. | |
| Second. The devices already explained for covering the supports, made of lead or any other proper substance, with a thick or thin coating (at will) of a porous or spongy substance, capable of keeping the electrical energy at the disposal of whosoever may want to make use of it. | |
| Third. The new application of the borders, padding or garniture of india rubber, felt and other proper substances, to maintain and preserve adherent to the supporting plates, the *cement* or layers of metallic matters, such as lead, specially in a porous or spongy condition as above set forth; said metallic matter may besides be mixed or not with inert matter. | |
| Fourth. The arrangements above stated are applicable to the case in which the secondary piles are constituted by single leaden sheets forming according to Mr. Planté's method. | |
| The porous metallic coating may be made of lead, or an oxide or salt of lead applied to the lead plates in any suitable way. In Fig. 2 a circular cell is shown, one electrode being inclosed in the other. The rod B, of lead or carbon, is placed in a porous vessel, G, and is coated with the active accumulating or absorbing material, G', say sulphate of lead mixed thoroughly with coarse coke, sawdust, or other material adapted to make the mass more porous. The other electrode consists of a piece of lead, A, with its inner face covered by *a paste or mixture*, Z, of sulphate of lead and coke or equivalent material, which is held in place by a porous medium or partition, G''. A suitable space is left between the partition G' and the vessel G for the electrolytic liquid. D is the containing vessel. | |
| The battery shown in Figs. 3 and 3*bis* has a number of elements connected in tension. | |
| The electrode shown in Figs. 4 and 5 consists of a support *a* covered on both sides with a layer of lead oxide *c*, held in place by sheets of felt *b*, fastened by rivets *f* of lead. | |
| In charging, the electricity acts to produce a reduced mass of porous lead on one electrode and a mass of peroxide of lead on the other. When the battery is discharged the reduced lead becomes oxidized, and the peroxidized lead is reduced until the equilibrium is restored. When again connected with a source of electricity the oxidized lead on one electrode is again reduced and the lead on the other is again peroxidized, and the battery becomes charged ready to give out a current when required. | |
| The oxides or salts of lead not soluble in the electrolytic liquid are deemed the most advantageous for covering the supports of the electrodes. The invention is not, however, limited to these, but includes generally substances capable of absorbing or storing electric energy in the manner described—for example, manganese or any salt the oxide of whose base is insoluble. | |
| What I claim is— | |
| 1. As an improvement in secondary batteries, an electrode consisting of a support coated on one or more faces with an active layer of absorptive substance—such as metal or metallic compound applied thereto in the described condition—so as to be or instantly become spongy, and thus capable of receiving and discharging electricity, as stated, in contradistinction to a metallic plate itself rendered spongy by the disintegrating action of electricity, substantially as and for the purpose set forth. | |
| 2. In a secondary battery, an electrode having a plate or support coated with an active porous layer of metal or metallic compound, with inert material—such as crushed coke—mixed or incorporated therewith, substantially as described. | |
| 3. In combination with the plate or support of an electrode and active spongy layer thereon, an openwork, perforate, or porous medium for holding said layer on the plate or support of the electrode, substantially as described. | |
| 4. In a secondary battery, a series of cells, comprising each a pair of electrodes with an active spongy layer thereon, combined with non-porous partitions between adjacent cells, substantially as and for the purpose set forth. | |
| 5. An electrode for secnodary batteries, comprising a support, an active spongy layer of metallic substance, and a holding medium through which the battery-fluids may pass, adapted to hold said layer on said support, said support, layer, and holding medium being all fastened together, so as to be capable of transportation, substantially as described. | |
| 6. A battery comprising a series of plates clamped together with strips of rubber or like material placed between every two plates near the edges, so as to form the bottom and ends of narrow troughs or cells with open tops, the sides of the troughs or cells being formed by the plates, and the latter being clamped firmly, so that liquid-tight joints are formed, substantially as described, the projecting edges of the plates, when metallic, being protected by insulation, substantially as described. | |
| Fifth. The arrangement of piles or combined elements of parallel faces, forming liquid tight compartments between each element, thus constituting piles, having as many couples as may be the number of elements less one. | |
| Sixth. The arrangements and the means of construction described herein and represented in Figs. 4th, 5th and 6th of the annexed drawings, devices and arrangements which allow the inventor to store or accumulate electrical force, and this in a small bulk to be transported to any place that may be convenient; he being at liberty to employ these devices and arrangements either conjointly or severally. | |





The italics do not appear in the originals.

Without pausing to examine the various features of the Spanish patent relating to the porous holding media and the arrangement of the electrodes in a series of cells, which will be found in each instance to be similar to the United States patent, I proceed at once to consider whether or not what is now called the principal invention is found in each.

The use of a paste is not, it is true, recommended in the Spanish patent as the best way of applying the active material; but neither is it in the United States patent. It is suggested in both; but the language is rather more general in the latter than in the former. The United States patent says:

> This active material may be applied in various ways, so as to obtain a layer of the desired depth, as in the form of paint, paste, or cement, in the form of a deposit by galvanic action or chemical precipitation or otherwise.

No preference is here expressed for one way over another. The United States patent does not inform the public how the paint, paste, or cement is prepared or applied. The use of sulphuric acid is not suggested as an ingredient, and the use of a spatula is not suggested for making the application. This is equally true of the Spanish patent; but if a man of ordinary intelligence would know that a paint, paste, or cement of active material is not to be applied by galvanic or chemical processes he would know equally well that a plaster of active material or a paste of minium is not to be so applied.

The Spanish patent certainly suggests the mechanically-applied paste coating, and could be limited to such a coating by disclaimer as well as the United States patent.

If the words "galvanic process, chemical precipitation, or" were omitted from the first claim of the Spanish patent, and corresponding words were stricken from the description, the patent would protect the paint, paste, or cement method as effectively as the United States patent.

The Spanish Patent describes the supports as covered—

> by a deposit in the form of a paste of some matter that may be minium;

and again—

> with a coating *b* of a paste of minium, which is maintained adherent to the support by a porous felt C, held by some clamps.

To the ordinary mind this language seems perfectly clear. It means just what similar language means in the United States patent. To give to it a different signification the words must be wrested from their ordinary meaning, the improbable substituted for the probable, and incongruity for common sense. One of the criticisms made by defendants' [complainants'] experts is that the language referred to is an appropriate description of coating by galvanic action or chemical precipitation. In order to meet this suggestion, it is shown that a paste of minium, either by galvano-plastic action or by chemical precipitation, is, for all practical purposes, at least, out of the question. It can only be applied mechanically.

The Spanish patent also speaks of covering the elements with "plaster coatings." The first claim is intended, *inter alia*, to secure the process of covering the electrode with a coat of active material by "adherence," and the third claim refers to "the cement or layers of metallic matters."

If the language quoted from the Spanish patent does not convey to the mind as clear an idea of what Faure actually did as the phrase "in the form of paint, paste, or cement," it is only because this expression did not occur to him or the solicitor who prepared the description of the Spanish patent. The phrase does not occur at all in the specification filed with the application for the United States patent or in the description and claims as they originally went to the Issue Division. It seems to have originated with the solicitor who prepared the amended specification as the outcome of a fortunate accident.

In the Spanish patent "paste" is used, "cement" is used, and if "paint" is omitted its place is supplied by "plaster," which is an equally appropriate word.

Sir William Thomson, in describing the Faure invention, used this word in preference to all others. He said:

> The battery consisted of sheets of lead *plastered* over with a paste of moistened red-lead.

If the Spanish patent had said that—

> the active material may be applied in the form of plaster, paste, or cement,

it would probably be admitted that it contained the invention of the United States patent; but it does say exactly this, though not in precisely the same order. The idea is there. The information is the same.

One skilled in the art could learn the mechanical application in the form of a paste equally well from both patents. The United States patent furnishes no information on the subject that is not found in equally clear language in the Spanish patent. It is true that the first claim of the former is for a product, and of the latter for a process; but the process makes the product, and the product can be made only by the process. It was the use of this process that was made free by the expiration of the Spanish patent. Where a product is produced by a certain process, and only so, it cannot be said that he who first discovers the process and by it produces the product has made two inventions.

> The product and the process constitute one discovery. (*Mosler* v. *Mosler*, 43 O. G., 1115; 127 U. S., 354; *Plummer* v. *Sargent*, 130 U. S., 442.)

An electrode made by the Spanish process would infringe the United States claim, and an electrode made in Spain pursuant to the United States method would infringe the Spanish claim. The same is true

if both patents are limited to the paint, paste, cement, or plaster method.

The second claim of the Spanish patent is not clear: but it was intended, apparently, to cover the described means of coating the electrodes with the porous or spongy mass.

The fifth claim is designed to cover the same arrangement as the fourth claim of the United States patent.

I am constrained to think, therefore, that the invention of the United States patent, even though construed as the complainant insists it should be, is covered by the Spanish patent.

Few, if any, of the conditions are present here which differentiated the foreign from the domestic patent in *Brush* v. *this defendant*, [complainant,] (47 Fed. Rep., 48, 58.) On the other hand, many of the reasons are present which induced the court to hold that "Case I" and "Case J" of Brush were for the same invention. (*Brush* v. *Julien Co.*, 41 Fed. Rep., 679, 683, 685.)

It is thought that the principal invention of the United States patent is found in the Spanish patent; that an electrode made pursuant to the latter patent would infringe the former, and vice versa, and that the former could not have been granted in this country if the latter had previously been granted here.

The subject-matter is essentially the same in the two patents. An electrician, after reading one, would be as able to construct a mechanically-coated Faure electrode as after reading the other.

It is argued that section 4887 is not applicable, for the reason that the United States patent was applied for before the Spanish patent was granted. This question is not an open one in this court. (*Gramme Co.* v. *Arnoux*, 25 O. G., 195; 17 Fed. Rep., 838; 21 Blatchf., 450; *Edison* v. *U. S. Co.*, 35 Fed. Rep., 134.)

Whenever the able and interesting argument in support of the complainant's contention is presented to a tribunal which is at liberty to consider it, it will unquestionably receive the attention it deserves.

It is argued for the complainant that the Spanish patent has a potential term of twenty years.

The patent was granted June 27, 1881, for a term of ten years. It expired June 27, 1891. On August 31, 1891, it was declared extinct by the proper authority. On March 20, 1883, two years after the patent was issued, Spain and France entered into a convention by which, in certain circumstances, the terms of patents might be extended. To this convention the United States was a party. The Director-General of the Spanish Department of Agriculture, Industry, and Commerce, which has charge of all subjects relating to patents, decided that the provisions of this convention were retroactive. It is probable, therefore, that if application had been seasonably made the patent would have been extended till June 27, 1901. But the application was not made until March 26, 1892, long after the patent had lapsed and after the expiration of the time within which an application could be made for an extension. On the 20th of March, 1892, the application was denied.

It is thought that this subsequent international convention, even if it had the force of a statute, and it had not, cannot be considered as prolonging the term of the United States patent. It is not necessary to consider what might have been the result if the Spanish patent had been extended. It was granted for ten years. It expired in ten years, and no effort was made to rehabilitate it until long after it had lapsed.

This is not the case of a patent granted for a long term, but expiring because of the failure to observe some condition subsequent. Here the life of the patent was definitely fixed for ten years, and it never had any other term.

In *Consolidated Roller Co.* v. *Walker* (54 O. G., 136; 43 Fed. Rep., 575, 580) the foreign law providing for a potential term was in force when the foreign and domestic patents were granted, and it was held that the patents were limited by the optional and not the designated term. This is not such a case. (*Bate* v. *Gillett*, 40 O. G., 1029; 31 Fed. Rep., 809; *Bate* v. *Hammond*, 46 O. G., 689; 129 U. S., 151; Opinion of Attorney-General Miller, April 5, 1889, 47 O. G., 398; *Huber* v. *Nelson*, 63 O. G., 311.)

For the reasons stated in *Brush* v. *this defendant* [complainant] (56 O. G., 1334; 47 Fed. Rep., 48, 55) this decision has been reached with reluctance. Those reasons do not, it is true, apply with the same force to an invention made abroad by a foreigner as to an invention made by one of our own citizens; but the statute in its practical operation has failed to remedy the supposed evil at which it was aimed, and the duty of overthrowing a valuable patent under its provisions is one that the court would naturally wish to avoid. But the question: Do the patents cover the same invention? is fairly presented, and its decision cannot be avoided.

After giving the complainant the benefit of every reasonable doubt, the court is convinced that the question must be answered in the affimative. The longer the record is studied the more settled becomes the conviction that the invention which Faure patented in Spain and in the United States was the invention which he made and patented in France: that so far as the inventor was concerned the language was substantially identical, and that the changes in phraseology made by the translators and Patent Office officials, of which changes the inventor was ignorant, did not, and could not, operate to change the invention.

It follows that the defendants are entitled to a decree dissolving the injunction issued April 12, 1889.



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[BY AUTHORITY OF CONGRESS.]

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## Notice of Interference.

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
*Washington, D. C., July 13, 1893.*

*William J. Bennetts, his heirs, assigns, or legal representatives, take notice:*

An interference having been declared by this Office between the application for patent of Arthur W. Robinson, of Bucyrus, Ohio, and a patent to William J. Bennetts, of Bucyrus, Ohio, and the notices of said declaration, mailed by the Patent Office in the usual manner to the said William J. Bennetts, having been returned undelivered, notice is hereby given to the said William J. Bennetts, his heirs, assigns, or legal representatives, that if he or they desire to contest the said interference they should immediately put themselves in communication with the Commissioner of Patents, in order that the notices heretofore sent by and returned to the Office may be forwarded to them. This notice will be published in the OFFICIAL GAZETTE for six consecutive weeks.

JOHN S. SEYMOUR,
*Commissioner.*

## Women Inventors.

The Patent Office has published and has for sale a volume containing a list of women inventors to whom patents have been granted by the United States from 1790 to July 1, 1888. 44 pages. Paper covers, 50 cents.

An Appendix to the above, covering the period from July 1, 1888, to October 1, 1892, has been published, and is now for sale. 18 pages. Paper covers, 25 cents.

## Price of Printed Copies of Patents.

Attention is called to the fact that under date of May 14, 1891, the price of uncertified printed copies of patents was fixed at the *uniform price of ten cents each*, whether purchased singly or in quantities.

## Indexes to Patents on Electricity.

Indexes to patents relating to electricity, covering the period of time from July 1, 1882, to June 30, 1890, have been issued, and are for sale. These indexes, arranged alphabetically, numerically, and by classes, comprise the following volumes, the prices of which are given below:

Vol. 1. Index to patents relating to electricity granted by the United States prior to June 30, 1881, with an appendix, July 1, 188 , to June 30, 1882. One volume, 250 pages. In paper covers, $3; bound, $5.

Vol. 2. Appendix No. 2, July 1, 1882, to June 30, 1883. One volume, 50 pages. In paper covers, $1.50.

Vol. 3. Appendix No. 3, July 1, 1883, to June 30, 1884. One volume 60 pages. In paper covers, $1.50.

Vol. 4. Appendix No. 4, July 1, 1884, to June 30, 1885. One volume, 60 pages. In paper covers, $1.50.

Vol. 5. Appendix No. 5, July 1, 1885, to June 30, 1886. One volume, 54 pages. In paper covers, $1.50.

Vol. 6. Appendix No. 6, July 1, 1886, to June 30, 1887. One volume, 52 pages. In paper covers, $1.50.

Vol. 7. Appendix No. 7, July 1, 1887, to June 30, 1888. One volume, 68 pages. In paper covers, $1.50.

Vol. 8. Appendix No. 8, July 1, 1888, to June 30, 1889. One volume, 72 pages. In paper covers, $1.50.

Vol. 9. Appendix No. 9, July 1, 1889, to June 30, 1890. One volume 84 pages. In paper covers, $1.50.

Vol. 10. Appendix No. 10, July 1, 1890, to June 30, 1891. One volume, 98 pages. In paper covers, $1.50.

## Oaths of Applicants in Foreign Countries.

(ORDER No. 822.)

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
*Washington, D. C., June 10, 1893.*

It is hereby directed that oaths accompanying applications for patents made within the following-named foreign countries must be taken before a minister, chargé d'affaires, consul, or commercial agent holding commission uuder the Government of the United States:

Austria-Hungary.
Argentine Republic.
Belgium.
Brazil.
Costa Rica.
Denmark.
Haiti.
Honduras.
Italy.
Mexico.
Netherlands.
Norway.
Peru.
Portugal.
Russia.
San Salvador.
Servia.
Sweden.
Switzerland.

Applications filed in this Office presenting oaths not executed in compliance with this order will be treated as incomplete.

JOHN S. SEYMOUR,
*Commissioner.*

## File-Wrappers—Entries On.

It is directed that entries shall not be made on the back of a file-wrapper, containing the application-papers for a patent, of papers or actions which do not become a permanent part of the contents of the file.

A card (Form 3-384 Office Series of blanks, sample hereto attached) will be placed in the file showing all appellate actions.

## The Official Gazette.

THE OFFICIAL GAZETTE is published every Tuesday, simultaneously with the weekly issue of patents. From January 1, 1872, (the commencement of its publication,) to June 30, 1883, it was published and bound in semi-annual volumes; since July 1, 1883, in quarterly volumes. All subscriptions must commence with the beginning of a volume; none taken for less than three months. Terms: To all subscribers within the United States and Canada, $5 per annum; to foreign subscribers, $7; single copies, 10 cents; bound semi-annual volumes, (prior to June 30, 1883,) full sheep, $4 per volume; bound quarterly volumes, (subsequent to July 1, 1883,) full sheep, $2.75 per volume. No club rates. *Payment in advance.* All orders should be addressed to "The Commissioner of Patents, Washington, D. C."

### Issue of August 1, 1893.

| | |
|---|---|
| Patents | 436—No. 502,365 to No. 502,602, inclusive. |
| Designs | 22—No. 24,650 to No. 22,671, inclusive. |
| Trade-Marks | 30—No. 23,422 to No. 23,451, inclusive. |
| Labels | None. |
| Prints | None. |
| Reissues | None. |
| Total issue | 488 |

TO CITIZENS OF THE UNITED STATES.

| States. | Patents and Designs. | Trade-Marks and Labels. | States. | Patents and Designs. | Trade-Marks and Labels. |
|---|---|---|---|---|---|
| Alabama | 1 | | Nevada | | |
| Arizona Territory | | | New Hampshire | 2 | 2 |
| Arkansas | 1 | | New Jersey | 19 | 3 |
| California | 13 | | New Mexico Ter | 1 | |
| Colorado | 6 | | New York | 78 | 6 |
| Connecticut | 7 | | North Carolina | | |
| Delaware | | | North Dakota | | |
| District of Columbia | 6 | | Ohio | 28 | |
| Florida | | 1 | Oregon | 4 | |
| Georgia | | 1 | Pennsylvania | 38 | 5 |
| Idaho | | | Rhode Island | 1 | |
| Illinois | 25 | 1 | South Carolina | | |
| Indiana | 15 | | South Dakota | 2 | |
| Indian Territory | | | Tennessee | 1 | 2 |
| Iowa | 7 | | Texas | 9 | |
| Kansas | | | Utah Territory | 1 | |
| Kentucky | 7 | | Vermont | 3 | |
| Louisiana | 3 | | Virginia | 5 | |
| Maine | 3 | 1 | Washington | 1 | |
| Maryland | 7 | | West Virginia | 2 | |
| Massachusetts | 42 | 4 | Wisconsin | 14 | 1 |
| Michigan | 21 | 1 | Wyoming | 1 | |
| Minnesota | 5 | | U. S. Army | 1 | |
| Mississippi | 3 | | U. S. Navy | | |
| Missouri | 18 | | | | |
| Montana | | | Total to citizens of the United States | 403 | 28 |
| Nebraska | 2 | | | | |

TO CITIZENS OF FOREIGN COUNTRIES.

| Countries. | Patents and Designs. | Trade-Marks and Labels. | Countries. | Patents and Designs. | Trade-Marks and Labels. |
|---|---|---|---|---|---|
| Argentine Republic | | | Mexico | | |
| Austria-Hungary | 3 | | Netherlands | | |
| Belgium | 1 | | Newfoundland | | |
| Bermuda | | | New South Wales | | |
| Brazil | | | New Zealand | | |
| Canada | 6 | | Norway | | |
| Chile, Republic of | | | Peru | | |
| Cuba | | | Russia | | |
| Denmark | | | Scotland | 1 | |
| Egypt | | | S. African Republic | | |
| Ecuador | | | South Australia | | |
| England | 2 | 2 | Sweden | | |
| France | 7 | | Uruguay | | |
| Germany | 19 | | Victoria | | |
| Hawaii | | | | | |
| Ireland | 1 | | Total to citizens of foreign countries | 47 | 2 |
| Italy | | | | | |

## APPLICATIONS UNDER EXAMINATION.

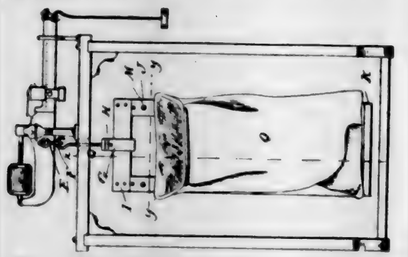
*Condition at Close of Business July 25, 1893.*

| Division No. | Subjects of invention. | Oldest new application and oldest action by applicant awaiting office action. New. | Amended | No. of applications awaiting action. |
|---|---|---|---|---|
| | *In arrears.—Under one month.* | | | |
| 31 | Gas, Painting, Hides, Skins, and Leather, Alcohol, Oils, Fats, and Glue, etc. | July 14 | July 19 | 25 |
| 2 | Farm Stock, Products, etc | June 26 | July 13 | 116 |
| | *Between one and two months* | | | |
| 13 | Metal-Working, Arms and Projectiles, Nails and Spikes, Needles and Pins, etc. | June 6 | July 24 | 79 |
| 21 | Textiles, etc | May 26 | July 20 | 154 |
| 14 | Metal-Bending, Wire-Working, Coin Controlled Apparatus, Farriery, Nut and Bolt Locks, etc. | May 26 | July 18 | 101 |
| 32 | Advertising, Aeration and Bottling, Baggage, Packing and Storing Vessels, etc. | May 26 | July 17 | 232 |
| 10 | Carriages and Wagons and Railway Cars. | May 25 | July 17 | 374 |
| 16 | Telegraphy, Telephony, Electric Lighting and Signaling | June 24 | July 15 | 69 |
| 11 | Boots and Shoes, Clasps, Buckles, and Buttons, Harness, Hose and Belting, and Leather-Working Machinery. | June 1 | July 15 | 273 |
| 20 | Builders' Hardware, Cutlery, Safes, Dentistry, Surgery, Undertaking, Artificial Limbs, etc | May 26 | July 15 | 270 |
| 27 | Brushing and Scrubbing, Grinding and Polishing, Laundry, etc. | June 1 | July 14 | 130 |
| 12 | Mechanical Engineering, Stove-Service, etc. | June 3 | July 13 | 200 |
| 19 | Stoves and Furnaces | May 27 | July 12 | 302 |
| 6 | Chemistry, Explosives, Medicines, Fertilizers, Preserving, Photography, Sugar and Salt, etc. | June 15 | July 5 | 125 |
| 30 | Lamps, Gas-Fittings, Linotyping, Matrix Making Machines, and Type-Writing Machines. | June 10 | July 1 | 192 |
| | *Between two and three months.* | | | |
| 3 | Metallurgy, Metal Founding, Coating, Annealing and Tempering, Electro-Chemistry, etc. | May 1 | July 15 | 194 |
| 7 | Harvesters, Games and Toys, and Velocipedes. | Apr. 25 | July 12 | 439 |
| 8 | Furniture, Toilet, Umbrellas and Canes, etc | May 13 | July 11 | 362 |
| 24 | Sewing-Machines, Crinoline and Corsets, and Apparel. | May 22 | July 10 | 112 |
| 25 | Artesian and Oil Wells, Butchering, Mills and Thrashing, Stone-Working, Vegetable Cutters and Crushers. | May 5 | July 5 | 216 |
| 29 | Wood-Working Machines, Carpentry, Coopering, and Roofing, etc. | Apr. 26 | July 3 | 283 |
| 9 | Hydraulics, Fire-Extinguishers, etc. | May 10 | June 30 | 375 |
| 17 | Paper-Manufactures and Printing | May 1 | June 22 | 226 |
| 4 | Civil Engineering, Fire-Proof Buildings, Fire Escapes and Ladders, etc. | May 22 | June 2 | 335 |
| | *Between three and four months* | | | |
| 23 | Instruments of Precision, Acoustics, Optics, etc. | Apr. 11 | July 3 | 331 |
| 15 | Plastics, Paper-Making, Paving, Glass, Fuel, Bread-Making, etc. | Apr. 14 | July 1 | 311 |
| 1 | Tillage and Fences | Apr. 5 | July 1 | 257 |
| 5 | Fine Arts, Stationery, Book-Binding, Music, etc. | Apr. 12 | June 17 | 282 |
| | *Between four and five months.* | | | |
| 18 | Steam-Engineering, etc | Mar. 13 | July 15 | 292 |
| 22 | Fire-Arms, Fishing and Trapping, Navigation, Signals, etc. | Mar. 14 | July 12 | 274 |
| | *Between five and six months.* | | | |
| 28 | Pneumatics, Refrigeration, Air and Gas Engines, etc. | Feb. 20 | July 1 | 427 |
| | *Between eight and nine months.* | | | |
| 26 | Electricity, Generation, Distribution, Electric Railways, etc. | Nov. 21 | May 10 | 364 |
| | Total number of applications awaiting action | | | 7,735 |
| | *Under one month in arrears.* | | | |
| | Designs | July 8 | July 22 | 27 |
| | Trade-Marks | July 22 | July 21 | 33 |

# PATENTS

## GRANTED AUGUST 1, 1893.

**502,365. SACK-SCALE.** ROBERT ABERCROMBIE, Hanford, assignor of one-half to John A. Ross, Essex, Canada. Filed July 1, 1892. Serial No. 438,665. (No model.) Patented in Canada Apr. 28, 1891, No. 36,487.



*Claim.*—1. The combination of the frame, the scale beam, the bag supporting frame suspended therefrom and having a vertical series of diagonal holes M therein, of the bag holder P formed of a single piece of bent metal having the inclined pins O at its ends adapted to engage in said holes, substantially as described.

2. The combination of a frame, the scale beam supported upon the top thereof, the suspending link F, the bag supporting frame J having the cross bar I at the top, the hook G loosely engaging said cross bar and adapted to receive the link F, the adjusting nut H, platform K at the lower end of the frame and the adjustable bag holder B at the upper end thereof, substantially as described.

**502,366. PAPER-MAKING MACHINE.** ALONZO ALDRICH, Beloit, Wis. Filed Jan. 23, 1892. Serial No. 459,431. (No model.)



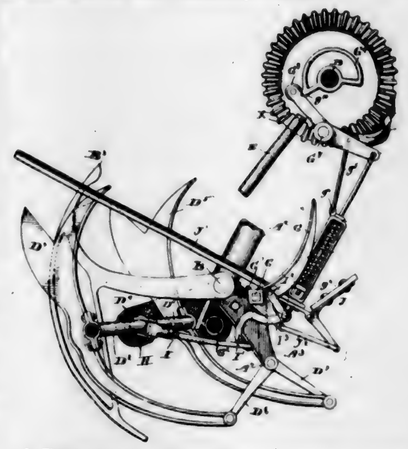
*Claim.*—1. In a paper making machine the combination of the dekle rails, the cross shafts supporting said dekle rails and having sockets on their ends and heads for supporting said sockets and cross shafts substantially as and for the purpose set forth.

2. In a paper making machine the combination of the cross shafts D having sockets B on their ends, dekle rails F supported by said cross shafts, and the ball supports fitting said sockets, substantially as and for the purpose set forth.

**502,367. GRAIN-BINDER.** JOHN F. APPLEBY, Santa Cruz, Cal. Filed July 28, 1891. Serial No. 401,017. (No model.)

*Claim.*—1. In a grain binder of the kind in which the parts directly instrumental in binding are disengaged at the close of the operation of binding a bundle, an arm connected with the engaging and disengaging mechanism and adapted to control the latter, in combination with a packer shaft and packers mounted thereon, said packer shaft pivotally supported at one end and yieldingly supported at the packer end and suitably connected to said arm, substantially as described.

2. The tripping arm G suitably connected to the clutching devices to compel engagement of the same, in combination with a picker shaft pivoted at its driven end and carrying packers, and yieldingly supported at its packer end, said yielding end so connected to the arm G that the said shaft, with its packers, and the said arm will yield in directions from each other, substantially as described.



3. The clutching devices and the arm G suitably connected whereby the former is controlled by the latter, and the said arm G, in turn, connected by a linking device to the pivotally moving packer shaft by a jointed connection that shall permit the said arm G to fall, all combined, substantially as described.

4. A tripping compressor G, the pivotally yielding packer shaft connected thereto by an adjustable and jointed connection, all combined with clutching devices set free thereby, substantially as described.

5. The tripping compressor G, the pivotally yielding packer shaft and the adjustable connection I, all combined with the clutching devices, substantially as described.

6. In a grain binder the continuously rotating pinion, the mutilated gear C adapted to be moved in a forward direction to produce engagement, the said pinion elastically held in position for proper mesh with the said gear, all combined, substantially as described.

7. In a grain binder the pivoted packer shaft and packers, a yielding tripping arm, and the wheel C adapted to move in a forward direction to produce engagement, the said arm G so connected to the wheel C that the latter may be influenced thereby and started to rotate in a forward direction, the continuously driven pinion elastically held in position for proper mesh with the teeth of said wheel when moved in a forward direction, all combined, substantially as described.

8. In a grain binder a packer shaft supported in a bearing at the packer end that permits it to yield, said shaft connected at its driven end to the frame of the machine by a pivoted bearing, said shaft at said yielding end suitably connected to clutching devices whereby the movement of the free end of said shaft under the resistance of the infed grain may actuate said clutching devices substantially as described.

**502,368. WATCHCASE-PENDANT.** OLEO AUPE, Columbus, Ohio. Filed Jan. 25, 1893. Serial No. 459,655. (No model.)

*Claim.*—1. In a stem setting watch the combination with the case, case stem and watch mechanism and a setting and winding mechanism in connection therewith, of a winding stem or stem, a spring collet surrounding said stem or winding stem, notches in said collet above and below its end meeting points and a screw or pin A entering said stem and normally in engagement with one of said collet notches, the position of the winding and setting mechanism of said watch being dependent upon the position of said winding stem, substantially as and for the purpose set forth



2. In a stem setting watch the combination with the case, a case stem projecting therefrom, a watch mechanism within said case and a winding and setting mechanism in connection therewith adapted to be operated by the rotation of the winding stem and a winding square extending within said watch case and case stem, of an adjustable and detachable collar $c$ on said winding stem, a shoulder $c'$ on said collar, a washer $d^3$ on said winding stem, a spring collet or band $g$ between said washer and collar shoulder, a notch or seat above and below the meeting ends of said band or collet and a pin or screw projecting within said case stem and normally in engagement with one of said collet notches, substantially as and for the purpose specified.

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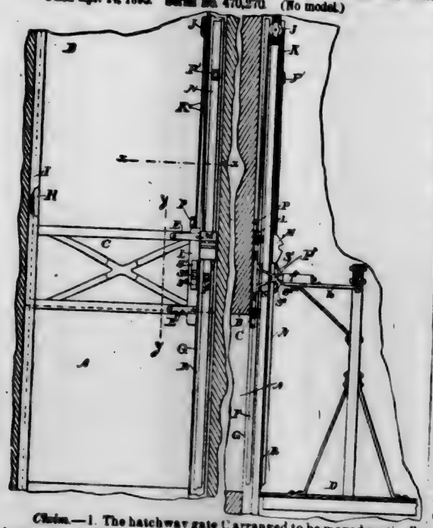
**502,269. STOVEPIPE ATTACHMENT.** LYMAN E. BALDWIN, Lander, Wyo. Filed Mar. 30, 1893. Serial No. 468,325. (No model.)



*Claim.*—In combination, a stove-pipe section, a metallic band or collar fitted within the pipe and provided with spring actuated arms having shoulders near their free ends and lugs upon the outer faces of the arms, said lugs being extended through openings in the pipe and serving as a means for compressing the springs substantially as shown and described and for the purpose specified.

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**502,270. ELEVATOR.** NELSON BECKWITH, Somerville, Mass. Filed Apr. 14, 1893. Serial No. 470,270. (No model.)



*Claim.*—1. The hatchway gate C arranged to be moved vertically in suitable guideways, the catch S secured to the gate and projected into the elevator well, and formed with inclines $S'$ and $S^2$ and the intermediate notch $S^3$, the counter-balancing weight M having a catch formed thereon consisting of corresponding inclined faces and central notch and adapted and arranged to be operated by the same device that engages catch S; cord K connecting gate C and weight M; pulley J upon which the gate and weight are suspended by cord K, stops P and P arranged in the paths of the gate and weight and by which their upward movements are respectively limited and resisted; and the spring-actuated catch-bar T secured to the elevator car and formed with inclined faces $a$, $b$, and arranged to successively engage and release catches S and M while moving up and down with the car; all substantially as and for the purposes specified.

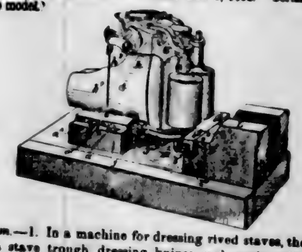
2. The catch-bar mechanism consisting of casing $f$, in which the bar T is mounted so as to be free to move as described, and thereby attached to the car; spring $e$, mounted upon the arm $o$ of the bar and arranged to thrust the bar outward longitudinally; and bar T mounted in said casing and arranged to be so acted upon by spring $e$, and having inclined faces $a$, $b$, and a single row $c$, pivoted thereto and projecting beyond the upper and under sides of the bar, and moved by the bar so as to have its peripheral bearing above or below the bar accordingly as the pressure which forces the bar inward is against face $a$, or face $b$, all as and for the purposes specified.

3. The catch-bar mechanism consisting of the combination of casing $f$, in which the bar is mounted and by which it is secured to the car; the catch-bar T having inclined faces $a$ and $b$ and roll $c$, and arranged to move in said casing as described, spring $e$ arranged to thrust the bar longitudinally outward, and slide $i$ by which the spring may be adjustably compressed against the bar, all as and for the purposes specified.

4. The combination of catch M; guide-rail N, elastic lip R', and stop $P^3$, whereby the catch M, when it has accidentally fallen against stop $H^3$, is locked in that position and prevented from being carried up by the catch-bar, as and for the purposes specified

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**502,271. MACHINE FOR DRESSING RIVED STAVES.** ARIA M. BENSON, Cleveland, Ohio. Filed Dec. 5, 1892. Serial No. 454,032. (No model.)



*Claim.*—1. In a machine for dressing rived staves, the combination of a stave trough, dressing knives, and guide rollers for said knives,—two of said elements being adjustable in transverse alignment relatively to the third element, substantially as set forth.

2. In a machine for dressing rived staves, the combination of a stave trough, a head carrying the dressing knives and provided with means for transversely adjusting it relatively to said stave trough, guide rollers pivotally supported upon said head, and a stop for said rollers and between the same,—said stop having means for adjusting it transversely to the stave trough, substantially as set forth.

3. In a machine for dressing rived staves, the combination of the bed frame provided with a transverse tongue, a head carrying the dressing knives and formed with a groove sliding upon said tongue, adjusting screws bearing against the sides of said head, guide rollers pivotally supported from said head, a bar transversely supported upon the frame and provided with a tongue projecting between the pivoted supports for said rollers, and adjusting screws for transversely adjusting said bar upon the frame, substantially as set forth

4. In a machine for dressing rived staves, a concave curved knife for dressing the outer side of a stave, and a convex curved rest for supporting the inner side of the stave, said rest having an outwardly curved bead projecting beyond the point opposite the knife edge, substantially as set forth.

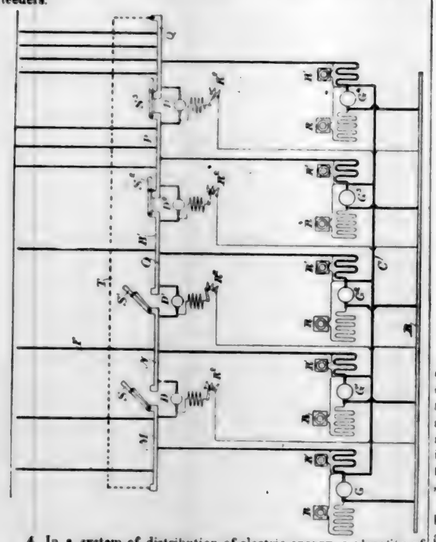
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**502,272. SYSTEM OF ELECTRIC DISTRIBUTION.** EDWARD M. BENTLEY, Boston, Mass., assignor to the General Electric Company, same place. Filed May 8, 1893. Serial No. 473,398. (No model.)

*Claim.*—1. The method of raising the electro-motive-force of one or more feeders of a group in a system of electric distribution, which consists in supplying the feeder with an increased electro-motive force and interposing between such feeder and the others of the group means adapted to reduce the electro-motive force by the required amount.

2. The method of raising the electro-motive force of one or more feeders of a group in a system of electric distribution, which consists in supplying the feeder with an increased electro-motive force and interposing between such feeder and the others a counter-electro-motive force equal to the desired difference of potential.

3. In a system of distribution of electric energy, a plurality of generators supplying two or more feeders, means for adjusting the electro-motive force of one or more of said generators and potential reducers adapted to be included between one feeder and the adjacent feeders.



4. In a system of distribution of electric energy, a plurality of generators connected to bus-bars, one of which bus-bars is divided into sections provided with connecting switches, and motors arranged between the sections adapted to run when the sections are disconnected.

5. In a system of distribution of electric energy, a plurality of generators connected to bus-bars, one of which bus-bars is divided into sections equal in number to the generators and provided with connecting switches, and motors arranged between the sections adapted to run when the sections are disconnected

6. In a system of distribution of electric energy, a plurality of generators connected to bus-bars, one of which bus-bars is divided into sections provided with connecting switches, and motors having adjustable fields and arranged between the sections, such motors adapted to run when the bus-bar sections are disconnected.

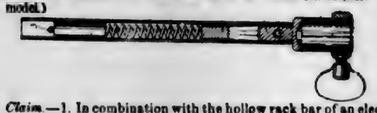
7. In a system of distribution of electric energy, a plurality of generators connected to bus-bars, one of which bus-bars is divided into sections corresponding in number to the generators and provided with connecting switches, and motors having adjustable fields arranged between the sections and adapted to run when the sections are disconnected

8. In a system of distribution of electric energy, a plurality of generators connected to bus-bars, one of which bus-bars is divided into sections provided with connecting switches and resistances arranged between the sections and adapted to be brought into operation when the sections are disconnected

9. In a system of distribution of electric energy, a plurality of generators connected to bus-bars, one of which bus-bars is divided into sections provided with connecting switches and adjustable resistances arranged between the sections and adapted to be brought into operation when the sections are disconnected

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**502,273. CARBON-HOLDER FOR ARC LAMPS.** SIGMUND BERGMANN, New York, N. Y. Filed Oct. 22, 1892. Serial No. 449,645. (No model.)

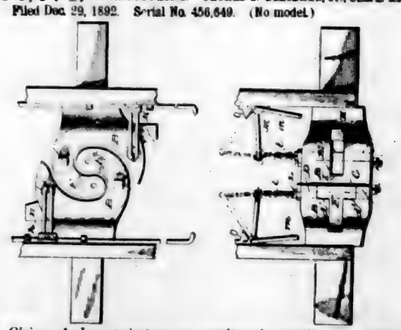


*Claim.*—1. In combination with the hollow rack bar of an electric arc lamp of a carbon holder having a head or extension extending into the rack bar and shaped so as to have a universal motion therein, and secured thereto by a pin or pivot passing through an outwardly enlarged opening in the said head, substantially as described.

2. In combination with the rack bar of an electric arc lamp a split carbon holder movably secured thereto, a ring surrounding the said holder, a clamping screw for forcing the jaws together, a socket piece and a spring for exerting a pressure on said carbon holder to retain it in any desired position, substantially as described.

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**502,274. CAR-COUPLING.** THOMAS G. BLACKMAN, Jr., Ozark, Ala. Filed Dec. 29, 1892. Serial No. 456,649. (No model.)



*Claim.*—1. In a twin jaw car coupling the combination with a draw head having a concave outer face and a transverse horizontal slot therein of a curved coupling knuckle pivoted to said draw head and provided with a shank located in the transverse slot and having a curved outer face conforming to the concave face of the drawhead and adapted when coupled to be flush with said face and a gravitating locking pin mounted in the draw head and adapted to engage the shank and hold the same in a locked position, substantially as shown and described

2. In a twin jaw car coupling the combination with a draw head having a concave outer face and a transverse horizontal slot having a rear straight bearing surface, of a curved coupling knuckle pivoted to the draw head and provided with a shank located in the transverse slot and having a curved outer face conforming to the concave face of the draw head and a rear straight side adapted to engage the straight bearing surface of the transverse slot, and a gravitating coupling pin mounted in the draw head, all constructed, arranged and operating, substantially as shown and described

3. In a twin jaw car coupling the combination with the draw head B having a concave outer face and transverse horizontal slot E having a rear straight bearing surface $e$ and stops I, of a curved coupling knuckle F having a shank H located in the transverse slot and having the straight rear side $h$ and outer curved face $h'$ conforming to the concave face of the draw head, and a gravitating coupling pin L mounted in the draw head and adapted to engage the shank and hold the same coupled, all constructed, arranged and operating, substantially as shown and described

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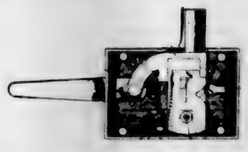
**502,275. OVERSHOE.** JOHN F. BULLARD, Swanton Junction, Vt. Filed Apr. 28, 1893. Serial No. 472,266. (No model.)



*Claim.*—1. A rubber or overshoe having around its mouth upon the outside thereof a narrow overlapping automatically contracting elastic strip the upper edge of which is contracted inwardly, said strip terminating at the opening at the front upon opposite sides of the same and around said opening terminating at the top edge of the upper, as set forth.

2. The herein described method of applying a narrow elastic strip to the mouth of a rubber, which consists in expanding the strip to the desired length dependent upon the amount of curve required, and while in this state of expansion cementing the strip to the outer upper edge of the mouth of the rubber and allowing it to draw and contract to curve the upper edge inward, substantially as specified.

**502,276. LOCK AND LATCH.** AARON BURRER, Grand Rapids, Mich. Filed Oct. 21, 1892. Serial No. 450,537. (No model.)



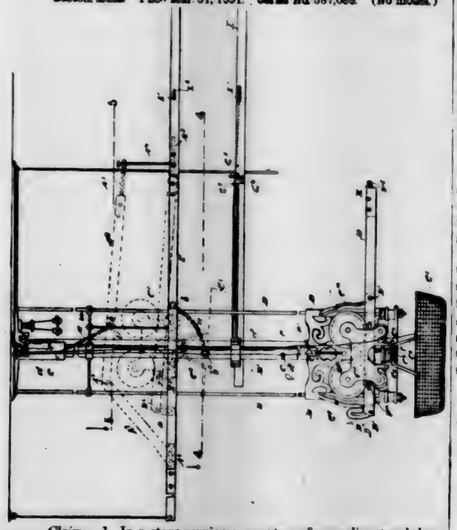
*Claim.*—1. In a combined lock and latch, the combination with a pivoted plate having a latch thereon and an upwardly extending arm, of a lever mounted pivotally in a slot in the upper side of the casing and pivoted to the aforesaid arm, substantially as described.

2. The combination of the latch-provided pivoted plate, the operating lever mounted pivotally in a slot in the upper side of the casing and pivoted to said plate and a locking key-operated slide between the plate and the casing adapted to engage a recess in the said plate, substantially as described.

3. The combination of casing A, plate C, pivoted on the post *d* and having a latch B, spring E bearing on said plate, handle D pivoted to the arm $C^3$ of the plate, substantially as described.

4. The combination with the slotted casing, of the plate C having latch B, curved upward arm $C^3$, shoulder *e* and rear-faced recess $C'$, the curved handle lever D, mounted pivotally in the casing slot and pivotally attached to the arm $C^3$, the spring E bearing on the shoulder *e* and the key-operated slide adapted to engage the recess $C'$, substantially as described.

**502,277. STORE-SERVICE APPARATUS.** JAMES M. BURNS, Chicago, Ill., assignor to the Lamson Consolidated Store Service Company, Boston, Mass. Filed Mar. 31, 1891. Serial No. 387,088. (No model.)



*Claim.*—1. In a store service apparatus a forwarding track having a movable section, an elevator carrying an elevator track section upon which the carrier is supported, the spring controlled rods E and M attached to said elevator track section, said carrier being held on the elevator track section by the said spring-controlled rods E and M, in combination with a downwardly extending rod U adapted to come in contact with the rod M so as to release the carrier when the said elevator track section is in alignment with the forwarding track, substantially as set forth.

2. The combination in a store service apparatus with a forwarding track having a movable track section, of an elevator carrying a pivotally mounted track section, a vertically arranged keeper attached to the elevator, the said elevator track section having one end adapted to engage with said forwarding track, and the other end having a pin adapted to move in a slot of the said keeper so as to occasion an inclination to the track, and start the carrier upon the way, substantially as set forth.

3. In a store service apparatus a forwarding track having stationary sections, a movable section pivoted thereto located in line therewith and forming a continuation of the said stationary sections, said section being formed of two parts pivotally secured together and adapted normally to align with the stationary sections of the forwarding track, substantially as set forth.

4. A store service apparatus having forwarding and return tracks, a movable section in said forwarding track, a pivoted lever normally extending through a slot in the forwarding track, a car elevator having an elevator track section adapted to align with the forwarding track means thereon to start the carrier upon the way, the said pivoted lever being adapted to be forced from its projection through the slot by the carrier as it travels from the track section to the forwarding track, means whereby the removal of the lever causes the elevator track section to be released from the forwarding track and the elevator and its track section allowed to descend, and means for holding said pivoted lever in its inward position, substantially as set forth.

5. In a store-service apparatus, an elevator, a rope attached thereto, a hollow standard, a weight arranged therein and connected with the rope, a governor interposed between the weight and the elevator to regulate the descent of the latter, comprising a casing a rotatable disk contained in said casing and around which the rope passes, a ratchet-wheel, a pawl carried by the disk and engaging the said wheel, a vertically movable plate located below the said casing and carrying spring arms adapted to be engaged by the governor-arms, and a washer arranged between the said casing and the movable plate, substantially as described.

6. In a store service apparatus having forwarding and return tracks, a slotted switch track from the return track at each way station for receiving the carriers, a dog extending through the slot to prevent the passage of said carriers, a rod connected to the dog an elevator carrying an elevator track section and having on its rear side a curved spring adapted to come in contact with said rod to cause the withdrawal of the dog from the slot when the elevator track section is in alignment with the switch track so as to allow the carriers to pass from the switch track onto the elevator track section, substantially as set forth.

7. In a store service apparatus having forwarding and return tracks, an elevator carrying an elevator track section, an arm pivotally secured to the elevator, a rope attached to said arm extending to the operator, the said arm adapted to assume a horizontal position due to a pull upon the operator's rope so as to throw the strain of the hoisting rope directly over the basket, and prevent the elevator binding on its guide rods during its ascent, substantially as set forth.

8. In a store service apparatus the combination of a forwarding track having a movable section, an elevator carrying an elevator track section which is adapted to align with the forwarding track, and means for holding in alignment the elevator track section with the forwarding track consisting of a plate J, projections J', a spring-pressed rod L, a right-angled arm F, and a cross-arm F', substantially as set forth.

9. In a store service apparatus the combination of a forwarding track having a movable section, an elevator carrying an elevator track section which is adapted to align with the forwarding track, means for securing the elevator track section to the forwarding track, consisting of a plate J, projections J', spring-pressed rod L, a rightangled arm F, and a cross-arm F', and means for releasing the elevator track section consisting of a lever L', rod L, and pawl L H, as the movable section returns to its normal position, substantially as set forth.

**502,278. DUMPING-WAGON.** HARLES E. BUTLER, St. Michael's, Md. Filed May 1, 1893. Serial No. 472,572. (No model.)



*Claim.*—1. In a dumping wagon, the combination of the truck, the standards on the sides, the body connected to the truck by pivoted links, the windlass shaft journaled in the standards above the body



and the chains connecting the shaft with the body, substantially as described.

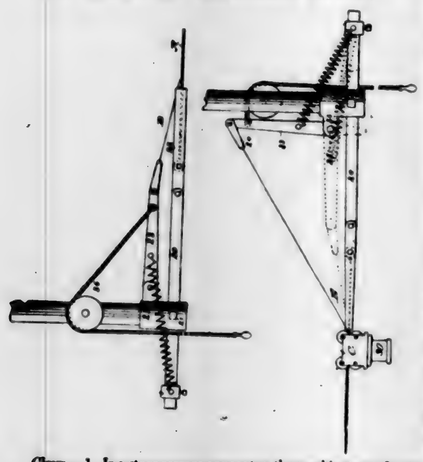
2. In a dumping wagon, the combination of the truck, th standards on the sides, the body connected to the truck by pivoted links, the windlass shaft journaled in the standards above the body the chains connecting the shaft with the body, the operating lever, and the holding pawl; substantially as described.

3. In a dumping wagon, the combination of the truck, the standards on the sides, the body connected to the truck by pivoted links, the windlass shaft journaled in the standards above the body, the ratchet disk on the shaft, the chains connecting the shaft with the body, the operating lever, the releasable pawl carried by the lever, and the holding pawl, substantially as described.

4. The combination of the windlass shaft, the ratchet disk fast thereon, the operating lever, the pawl carried by the lever, mechanism carried by the lever for releasing the pawl at will, and the holding pawl, substantially as described.

5. In a dumping wagon, the combination of the truck, the body, the pivoted links connecting the body to the truck, the front links being longer than those at the rear, and the overhead raising and lowering mechanism, substantially as described.

**502,279. STORE-SERVICE APPARATUS.** JAMES T. COWLEY, Lowell, assignor to the Lamson Consolidated Store Service Company, Boston, Mass. Filed Nov. 9, 1889. Serial No. 329,766. (No model.)



*Claim.*—1. In a store service apparatus, the combination of a stationary wire, a second wire movable with respect thereto, a wheeled carrier between the wheels of which both wires extend, a pivoted lever to the end of which the second wire is connected, means by which the lever is moved to spread the second wire apart from the stationary wire in rear of the carrier, and a spring the tension of which holds said lever and wires in an open or closed position, substantially as described.

2. In a store service apparatus, the combination with a wheeled carrier, of a track and propelling means composed of a fixed and a movable wire, both passing between the wheels of the carrier, a lever at each end of and connected to said movable wire, means as separate cords and pulleys at each end for alternately raising the levers and spreading the movable wire apart from the stationary wire, and springs arranged so that their tension will hold each lever both in its raised and folded down position, substantially as described.

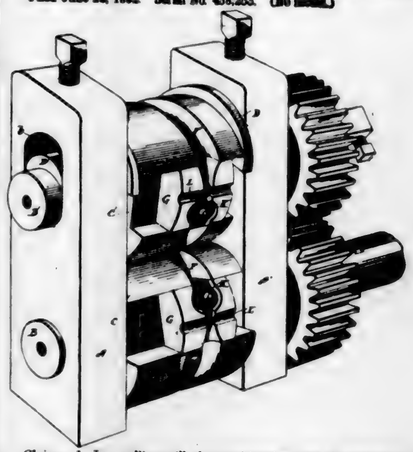
3. In a store service apparatus, the combination of a wheeled carrier, standards, horizontal bars carried by the standards, a wire stretched between the bars, levers, one pivotally mounted at each standard, a second wire connected with and stretched between the free ends of said levers and both of said wires extending between the wheels of the carrier, springs connected with the levers and to the horizontal bars, and means for moving the levers to cause the second wire to be spread from the other wire in rear of the carrier, substantially as described.

4. The combination of the track wires A, B, a pivoted lever to which the wire B is connected, a spring connected at one end to the lever and at the other end to an adjustable block, an operating cord for moving the lever, and a wheeled carrier between the wheels of which the wires extend, substantially as described.

5. The combination of the stationary wire, the movable wires B, B', a pivoted lever for each of the latter wires, a coupling device connecting the levers, means for moving the levers to spread the movable wires from the stationary one, and a wheeled carrier, substantially as described.

6. The combination of the stationary wire, a bar sustaining the end of said wire, two movable wires, a pivoted lever for each of said movable wires, a linked coupling between said levers guided by said bar, an operating cord for moving the levers to spread the movable wires from the stationary one, and a wheeled carrier, substantially as described.

**502,280. MACHINE FOR ROLLING SOLDERING-IRONS.** JOHN W. CRANER, West Troy, N. Y., assignor to James C. Covert, same place. Filed June 28, 1892. Serial No. 438,253. (No model.)



*Claim.*—1. In a rolling mill, the combination with the rolls thereof, of the dies having lateral grooves to take up the surplus of the blank and form projections thereon which are engaged by said grooves to carry the blank positively between the rolls, substantially as described.

2. The combination, in a rolling mill, of the intergearing cog-wheels on the journal of the rolls, the blocks inserted in the gear wheels, the set screws passing through the same, the wedges adjustably feathered in grooves in the gear wheels and the shafts of the roll, whereby the rolls may be adjusted circumferentially to cause the dies to properly register, substantially as described.

**502,281. ROAD-CART.** JOHN J. CRETSINGER, Davison, Mich. Filed Nov. 16, 1891. Serial No. 411,975. (No model.)



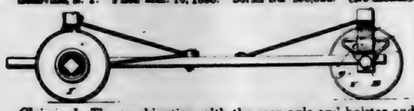
*Claim.*—1. In a road cart, the combination of the thills, the seat frame rigidly secured thereto, the axle, rods secured to the axle and hinged to the thills and having a spring section, substantially as and for the purpose described.

2. In a road cart, the combination of the thills, the seat frame rigidly secured thereto, the axle rods secured to the axle and hinged to the thills, a spring section in said braces, a spring on the seat frame, an arm of said spring supported on the axle and slidingly engaging therewith, substantially as and for the purpose described.

3. In a road cart, the combination of the thills, the seat frame rigidly secured thereto, the axle rod hinged to the thills and secured to the axles, a coil spring having one end secured to the seat frame and its other end extending above the axle, and a stepped frame on the axle for adjusting said arm vertically, substantially as described.

4. In a road cart, the combination with a seat frame rigidly secured to the thills, the axle, the rod connecting the axle with the thills hinged at its forward end and comprising a spring section, of a spring between the seat and the axle, the arm K of said spring, the stepped frame consisting of a single piece of metal formed with the hooks *b c*, the bend *d*, the arm *a* and the clips for securing said frame to the axle, substantially as described.

**502,282.** WAGON RUNNING-GEAR. LOUIS S. CRITTENDEN, Hornellsville, N. Y. Filed Mar. 16, 1893. Serial No. 466,323. (No model.)



*Claim.*—1. The combination with the rear axle and bolster and the reach, of the inclined braces having an opening through which said braces pass secured to the bolster and a cap over the forward ends of the braces and all held by a single bolt, substantially as specified.

2. The combination with the rear axle and bolster, and the reach, of the inclined braces of a single piece with an eye, the brace connecting the reach and bolster and formed with an eye, the cap over the eyes of the braces, and a single bolt passed through the cap, eyes and reach, substantially as shown and described.

3. The combination with the rear axle and bolster and the reach, of the diverging brace arms formed with an eye and having their rear ends passed through the bolster, nuts on the said arms upon opposite sides of the bolster, the additional brace secured to the bolster and having an eye, a cap covering the eyes of said braces and a single bolt passed through the cap, eyes and reach and provided with an adjusting nut, substantially as specified.

4. A fifth wheel comprising two like parts each embodying a horizontally outwardly curved bearing surface and integral supporting portions at the ends thereof at an angle thereto and converging toward each other, and a wear plate on the top of the bolster engaging the curved portions of the fifth wheel as set forth.

5. The combination with the front axle and bolster, of a fifth wheel having two like parts each with a horizontally outwardly curved bearing surface supported upon the top of the bolster, and end portions secured to opposite sides and ends of the bolster, and a wear plate on the top of the bolster having grooves for the reception of and serving to hold the curved portions, as set forth.

**502,283.** TEA-BLENDING MACHINE. THOMAS CROMPTON, Midland, Canada. Filed Nov. 23, 1892. Serial No. 452,953. (No model.) Patented in Canada June 24, 1892, No. 39,155.



*Claim.*—The herein described tea blending machine consisting of a rotating receptacle provided interiorly with wings adapted to agitate and mix the tea, an opening on one side adapted to receive and discharge the tea alternately and a weight on the opposite side to adjust the said opening in position to receive the tea substantially as and for the purpose herein set forth.

**502,284.** LAMP-BURNER GALLERY. WILLIAM H. EDSALL and HARRY C. H. WALSH, Brooklyn, assignors to the H. L. Judd & Company, New York, N. Y. Filed Feb 15, 1893. Serial No. 462,391. (No model.)

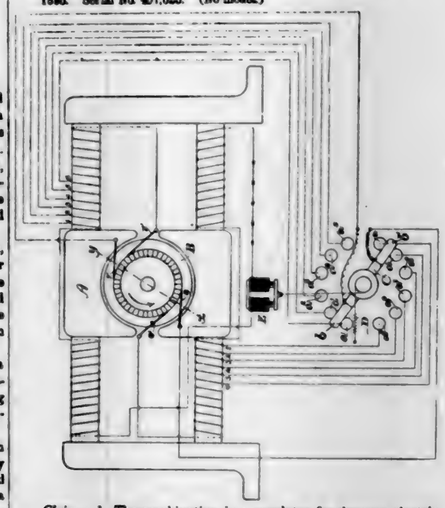


*Claim.*—1. The combination with a gallery cap for a lamp burner, of a ring *l* adapted to fit onto a supporting body, arms *m* from the cap to the ring for supporting said cap above the ring, and springs *n* carried by said ring and adapted to bear upon the supporting body, whereby the cap can be supported at different elevations and the lamp can be lighted without removing said cap.

2. The combination with a gallery cap for a lamp burner, of a ring *l* adapted to fit onto and slide on an outer wick tube of a lamp, arms extending from the cap to the ring, said arms having spring ends *n* adapted to bear on said wick tube, substantially as described.

3. The combination with a gallery cap, having means for supporting a lamp chimney, of a supporting ring *l*, having grooves *o* in its inner side, arms *m* between the cap and ring, said arms having spring ends occupying said grooves and adapted to bear against a supporting tube, substantially as described.

**502,285.** REGULATOR. WILLIAM H. ELKINS, Cambridge, Mass., assignor to the General Electric Company, of New York. Filed Jan. 3, 1893. Serial No. 457,023. (No model.)

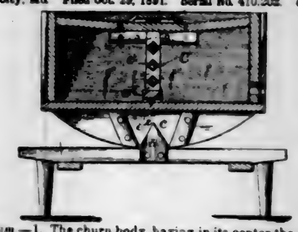


*Claim.*—1. The combination, in a regulator for dynamo electric machines, of means for dividing the field exciting current into two portions, one such portion passing through the entire field magnet winding, means for shunting the other portion around more or less of the field-magnet winding, and a device responsive to changes in the main or generated current and arranged to adjust the length of the shunted field-magnet winding so as to preserve a resultant field strength adapted to maintain a practically uniform current in the main circuit under varying loads.

2. The combination in a regulator for dynamo electric machines, of pairs of brushes forming the poles of the machine, one set of such brushes being connected to the terminals of the field winding, and a circuit controller in the circuit of the other set of such brushes which circuit controller shunts more or less of the field according to its adjustment, and a device responsive to changes in the main or generated current for actuating such circuit controller so as to preserve the effective voltage of the machine such as will maintain a practically constant current in the main circuit under varying loads.

3. The combination in a regulator for dynamo electric machines, of pairs of brushes *r*, *r'* and *s*, *s'*, set normally at full load on opposite sides of the line of maximum potential, with circuit connections joining brushes *r'* and *s'* to the entering and leaving terminals of the field winding, a circuit controller for shunting more or less of the field in the path of the current flowing between brushes *r* and *s*, and a device responding to changes in the main or generated current automatically controlling the circuit controller so as to preserve the effective voltage of the machine such as will maintain a constant current in the main circuit under varying loads.

**502,286.** CHURN. MANNING ELLIOTT and AARON J. CRIGLER, Monroe City, Mo. Filed Oct. 29, 1891. Serial No. 410,502. (No model.)

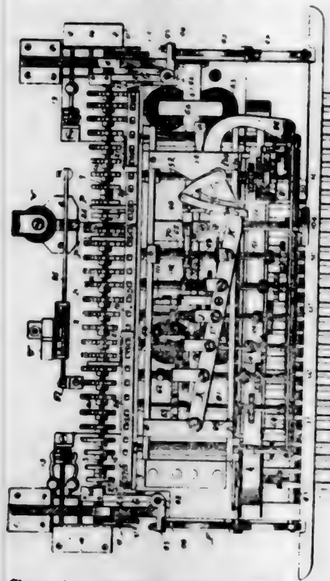


*Claim.*—1. The churn body, having in its center the beater, having the series of diamond shape slats, and the bottom piece provided with a series of transverse grooves or recesses, and the base or frame having the tapering or conical projections or guides adapted to engage sockets of the churn body, substantially as set forth.

2. A churn the combination of the body having in its center the beater having a series of slats, and the bottom piece provided with a series of transverse grooves or recesses, and the base or frame having tapering conical projections adapted to engage sockets in the churn body, substantially as described.



**502,287.** ELECTRICAL CASH REGISTER, RECORDER, AND INDICATOR. LEO EHRLICH, St. Louis, Mo., assignor, by mesne assignments, to the National Cash Register Company, Dayton, Ohio. Filed Sept. 29, 1889. Serial No. 325,382. (No model.)



*Claim.*—1. A registering machine provided with a bank of keys arranged adjacent to each other, a series of circuit closers, one actuated by each key, and constructed to close the circuit a number of times equal to the number upon the key, and a sight register provided with an actuating electro-magnet in the same circuit as all the circuit closers, substantially as set forth.

2. A registering machine provided with a bank of independent keys, arranged in proximity to each other a series of circuit closers constructed to send each a different number of impulses and mechanism for actuating each of the same from the adjacent key, a register and an electro-magnet in circuit with each of the circuit closers and having its armature connected to actuate the register, substantially as set forth.

3. In a registering machine a series of keys, a circuit closer to each key, a spring for moving one part of the circuit closer in one direction, connections between each key and the spring whereby to wind and release the same on the movement of each key, and a connection between each key and the other part of the circuit closer whereby to set the latter into contacting position on the movement of its key, substantially as set forth.

4. The combination in a registering machine of a key, a circuit closer having two parts, a spring for moving one part, a connection between the key and the other part for setting said part into contacting position, a detent for holding said part in its set position, and a stop arranged to make contact with and displace said detent as the spring-actuated part of the circuit closer completes its movement, substantially as set forth.

5. The combination with the bank of keys arranged in proximity to each other, register and register-operating electro-magnet of a registering machine, of a series of circuit closers, one to each key and in electric circuit with said magnet, and each with contacting parts corresponding in number to the number upon the connected key, substantially as set forth.

6. The combination of a series of keys and key levers, a shaft carrying a series of toothed disks, a series of slides each with one of the disks constituting a circuit closer, in circuit with the magnet of a register, a spring connected to turn the shaft, a bearing connected with the shaft arranged to make contact with each of the key levers, and a bearing on each slide arranged to make contact with the adjacent lever, substantially as set forth.

7. The combination with circuit closers, each consisting of a traveling contacting piece and an adjustable contacting piece, of a detent for holding each of the latter pieces in contacting position and connections between each key and the adjacent adjustable contacting piece for moving the latter on the movement of a key, substantially as set forth.

8. The combination, with the series of keys and traveling contacting pieces, of a series of slides movable to and from said contacting pieces, detents for holding them in contacting position, and a bearing carried by the traveling contacting pieces arranged to bear upon and move said detent as the movement of said traveling pieces is completed, substantially as set forth.

9. The combination with the keys, of the revolving toothed disks, the slides arranged adjacent to said disks, and key levers arranged to bear upon and lift the slides into contacting position, substantially as described.

10. The combination with the series of toothed disks constituting electrical contact pieces and series of slides having inclined ends and shoulders carrying contact pieces of a movable notched plate constituting a detent for holding all the slides in their elevated positions, substantially as set forth.

11. The combination with the revolving shaft 3, arms 5 and notched disks, of the slides 15, notched plate 20 and bearing 22 on one of the arms, substantially as and for the purpose set forth.

12. The combination with the series of keys, series of circuit closers each having a traveling part, and actuating spring, of a brake or governor for retarding the movement of all of the said traveling parts, substantially as set forth.

13. The combination of series of keys, series of circuit closers connected to be operated by said keys in circuit with said circuit closers, register and operating connections with the electric magnet, and locking device arranged to permit the movement of but one key at a time, substantially as set forth.

14. The combination of two series of keys, a circuit closer for each key, a registering device for each series of keys provided with an actuating magnet in circuit with the circuit closers of such series, and transfer devices between the two registering devices, substantially as set forth.

15. The combination with the keys, circuit closers, registers and magnets, of a circuit closer U in circuit with the magnet of the higher register, a shunt magnet for holding the parts of the circuit closer U out of contact, and a circuit closer W connected with the lower register to complete a circuit through the shunt magnet as the register completes its movement, substantially as set forth.

16. The combination with the lower section of the register and its actuating magnet and keys, of the upper section of the register with its actuating mechanism and keys, of circuit closers for completing the circuit of both magnets, and a retarding device connected with the circuit closer of one of the magnets to prevent both circuit closers from being closed simultaneously, substantially as set forth.

17. The combination of two electro magnets each connected to operate one section of a register, two series of keys and circuit closers for regulating the currents to the separate magnets, a circuit closer U in circuit with a magnet of the upper circuit of the register, a shunt magnet connected to operate the circuit closer U, and a circuit closer W in circuit with the shunt magnet and connections arranged to close the circuit closer W after the lower section of the register completes its full movement, substantially as set forth.

18. The combination with the register having a cents section and a dollars section and actuating magnet and circuit closer W, of a retarding device, for prolonging the contact between the terminals of said circuit closer substantially as and for the purpose set forth.

19. The combination with the register, actuating magnet and circuit closer W, of the circuit closer U and the retarding device, substantially as set forth.

20. The combination of the two part register and actuating magnets, of the circuit closer W, shunt magnet B and retarding device, and circuit closer U and retarding device, substantially as described.

21. The combination with the two series of keys, circuit closers B, register sections and actuating magnets each in circuit with one of the series of circuit closers B, of a circuit closer W one part movable over the other and arranged in circuit with the shunt magnet, and a retarding device for prolonging the contact of the parts of the circuit closer W, substantially as set forth.

22. The combination with the register and electro-magnet arranged to operate the same, of a series of keys, a shaft carrying a series of disks, each provided with contact points corresponding in number to the number indicated upon the adjacent key, a series of contact pieces 15, and connections between each key and one of the contacting pieces whereby the latter is brought to the contact into position to make contact with the points of the adjacent disk upon the movement of the key, substantially as set forth.

23 The combination of a series of keys, a series of indicators corresponding thereto and normally tending to move into indicating position, and means controlled by the keys for holding said indicators against movement and releasing them upon the operations of the respective keys to permit them to move into indicating position, substantially as set forth.

24 The combination of a series of keys, a series of vertically reciprocating indicator staffs or supports normally tending to drop into indicating position, and means controlled by the keys for upholding said staffs and releasing them upon the operations of the respective keys to permit them to drop to indicating position, substantially as set forth.

25 The combination of a series of keys, a series of indicators corresponding thereto and normally tending to move into indicating position, a series of electro-magnets and means controlled thereby for holding the respective indicators against movement, and a series of circuit-closers actuated by the keys, one in the circuit of each magnet, for releasing the indicators upon the operations of the respective keys, substantially as set forth.

26 The combination of a series of keys, a series of indicators corresponding thereto and normally tending to move into indicating position, a series of detents normally holding said indicators against movement, and connections between the keys and detents for releasing the indicators upon the operation of their corresponding keys, substantially as set forth.

27 The combination of a series of keys, a series of vertically sliding staffs or supports carrying indicators and normally tending to move by gravity into indicating position, a series of detents co-operating with the indicators to normally prevent their gravitating into indicating position, and connections between the detents and keys for releasing an indicator upon the operation of its corresponding key, substantially as set forth.

28 The combination of a series of keys, a series of vertically reciprocating indicator-staffs or supports, a series of detents controlled by the keys for upholding said staffs and operating to release the latter upon the operation of their corresponding keys and permit them to drop to indicating position, substantially as set forth.

29 The combination with the keys of a register, of a series of tablets, a detent to each tablet, the electro-magnet connected to operate each detent, and a circuit closer connected with each key, inserted in the circuit of one of the electro-magnets, substantially as set forth.

30 The combination with the keys of a register, of an indicator consisting of fixed tablets, marked to correspond to the different keys, a movable screen for each tablet, and mechanism for releasing said screen to expose the tablet upon the movement of the corresponding key, substantially as set forth.

31 The combination of the keys, fixed tablets, double screens extending to each side of each tablet and connections between the screens and the keys for releasing said screens so as to allow them to drop and expose the tablets upon the movement of the key corresponding to the tablet exposed substantially as set forth.

32 The combination of the series of adjacent keys of a register, a series of screens, tablets, staves 33, a detent for each staff and electro-magnet for moving each detent, and a circuit closer in circuit with each of said magnets and connected to be closed on the movement of the corresponding key, substantially as set forth.

33 The combination of a series of keys, a series of vertically sliding staffs or supports carrying indicators and normally tending to move into indicating position, means controlled by the keys for holding said indicators against movement and releasing them upon the operations of the respective keys, and means actuated by the keys for restoring the operated indicators to non-indicating position, substantially as set forth.

34 The combination of a series of keys, a series of indicators corresponding thereto and normally tending to move into indicating position, means controlled by the keys for holding the indicators against movement and releasing them upon the operations of the respective keys to permit them to move into indicating position, and a movable plate or frame common to the series of indicators for restoring the operated indicators to non-indicating position at the succeeding operation of the machine, substantially as set forth.

35 The combination of a series of keys, a series of indicators corresponding thereto and normally tending to move into indicating position, a series of detents for holding the respective indicators against movement, connections between the detents and keys for causing the detents to release the indicators upon the operations of the respective keys, and a movable plate or frame for restoring the operated indicators to non-indicating position at the succeeding operation of the machine, substantially as set forth.

36 The combination of a series of keys, a series of vertically reciprocating indicator-staffs or supports normally tending to drop into indicating position, means controlled by the keys for holding said staffs in elevated position and releasing them upon the operations of the respective keys, and a movable plate or frame common to the staffs for lifting them to non-indicating position, substantially as set forth.

37 The combination of a series of keys, a series of indicators corresponding thereto and normally tending to move into indicating position, a series of electro-magnets and means controlled thereby for holding the indicators against movement, a series of circuit-closers actuated by the keys, one in the circuit of each magnet, for releasing the indicators upon the operations of the respective keys, and means actuated by the keys for restoring the operated indicators to non-indicating position, substantially as set forth.

38 The combination of a series of keys, a series of vertically-reciprocating indicator-staffs or supports, a series of electro-magnets, a series of detents controlled by said magnets and co-operating with the indicator-staffs to hold the latter in elevated position, a series of circuit-closers actuated by the keys, one in the circuit of each magnet, for causing the detents to release the staffs upon the operations of the corresponding keys, and a movable plate or frame common to the indicator staffs for lifting them to non-indicating position upon the succeeding operation of the machine, substantially as set forth.

39 The combination of the keys, indicators, staves and detents and detent actuating devices, of a vertically movable plate 36, and connections for operating the same to restore the staves to position as any key is depressed, substantially as set forth.

40 The combination with the indicators, indicator staves, detents, detent operating devices and keys of a restoring plate 36, and operating arms arranged to make contact with and lift the plate, and then to escape therefrom as any key is depressed, substantially as set forth.

41 The combination with the plate 36, and staves and keys of arms carrying the pawls 44 having shoulder *u*, substantially as set forth.

42 The combination with the series of shafts and numbered disks of a register and with the operating keys thereof, of driving gears connected movably to the shafts, and shifting devices for shifting said gears simultaneously into and out of engagement with each other for the purpose specified.

43 The combination with a series of indicator-disks, shafts 61, movable gears and shifting appliances, and with mutilated pinions 99 upon said shafts, of a sliding rack bar 101 arranged in position to engage with the pinions when the shafts are out of gear, substantially as set forth.

44 The combination of the series of parallel indicator-shafts movable longitudinally, each of said shafts carrying a disk and a type wheel 106, of a platen movable to and from the type wheels, substantially as set forth.

45 The combination of the keys, indicator-shafts 61, gears, and carriers J connected to move said gears, of a shifter lever K connected with all of said carriers, and means for rotating said shafts from the keys, substantially as and for the purpose specified.

46 The combination of the shafts 61, gears, carriers, and shifter lever K, of a platen carried by a frame 109, connected with the shifter to be operated thereby, substantially as set forth.

47 The combination of a registering wheel having a mutilated pinion turning with it and movable longitudinally of its axis, and a movable rack-bar co-operating with the pinion to restore the wheel to initial position, substantially as set forth.

48 The combination of a series of registering wheels, each provided with a mutilated pinion turning with it and movable longitudinally of its axis, means for shifting the pinions into line, and a movable rack-bar co-operating with the pinions to restore the wheels to initial position, substantially as set forth.

49 The combination of a series of registering wheels normally in driving gear or connection with each other and each provided with a mutilated pinion turning with the wheel and movable longitudinally of its axis, means for simultaneously throwing the registering wheels out of gear with each other and shifting the pinions into line, and a reciprocating rack-bar co-operating with the pinions to restore the wheels to initial position, substantially as set forth.

50 The combination of a series of rotary and longitudinally reciprocating shafts normally in driving gear or connection with each other, a registering wheel and a mutilated pinion fast upon each shaft, means for sliding the shafts longitudinally to throw them out of gear and to bring the mutilated pinions into line with each other, and a reciprocating rack-bar co-operating with the pinions to restore the wheels to initial position, substantially as set forth.

51 The combination of a series of rotary and longitudinally reciprocating shafts normally in driving connection or gear with each other, a registering wheel and a mutilated pinion fast upon each shaft, the registering wheels being located in approximately the same plane, while the mutilated pinions are located in different planes at different distances from the registering wheels, a shifter co-operating with the series of shafts to slide them longitudinally different distances, to throw them out of connection with each other and to bring the mutilated pinions into line, and a reciprocating rack-bar co-operating with the pinions to restore the wheels to initial position, substantially as set forth.

52 The combination with the keys, register, operating magnet and circuit closers connected to be operated by the separate keys, of a catch device arranged to lock each key in position during the movement of the circuit closers, substantially as set forth.

53 The combination of the series of keys, and circuit closers, of a catch plate L having a series of shoulders *r*, and connections for shifting the catch plate out of engagement with the levers as the circuit closers complete their movements, for the purpose set forth.

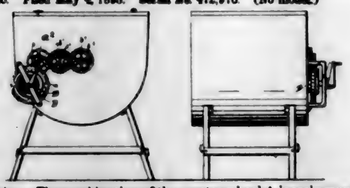
54 The combination in a registering device of a series of keys a series of circuit closers and a series of tablets connected to be operated by the keys arranged in one position, as at the counter of a store, and an adding or counting device and electro magnets arranged in another position, as in an office, with the circuit closers of the key part in electrical connection with the operating magnets of the counting device, substantially as set forth.

55 A registering device in two separated parts, the frame of one part supporting a series of adjacent keys and a series of circuit closers and means for preventing more than one key being actuated at one time, the frame of the other part supporting an adding device and operating magnet or magnets, and conductors extending between and including the circuit closers of one part, the magnets of the other and a generator of electricity, substantially as set forth.

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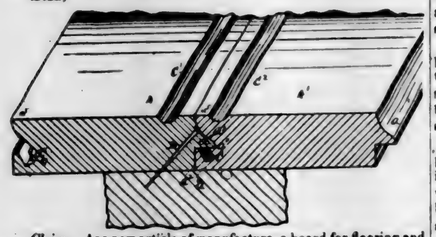
## 502,288. SPRING-MOTOR. THEODORE L. EVERHART, Bakersville, Ohio. Filed May 4, 1893. Serial No. 472,970. (No model.)



*Claim.*—The combination of the master wheel A loosely mounted upon a winding shaft, a power spring located within a barrel, a ratchet and detent, a dog, a train of gear wheels, the studs D' provided with the attaching flanges *c*, having apertures *d*, the screw threaded apertures *d'* formed in the outer ends of the studs D', the collars F located upon the ends of the studs D', screws E provided with the flanges *e*, all arranged substantially as described and for the purpose specified.

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## 502,289. FLOORING OR OTHER LUMBER. FRANK J. FELDMANN, Detroit, Mich. Filed May 31, 1892. Serial No. 434,846. (No specimens.)

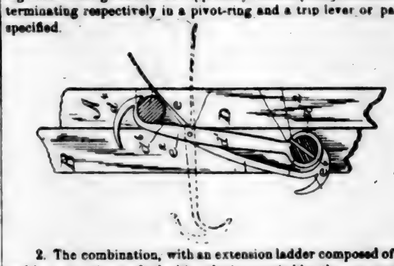


*Claim.*—As a new article of manufacture, a board for flooring and like uses, the top surface of which is provided with a longitudinal groove or channel, near each edge, and one of the edges of the board is provided with a recess, one side of which is formed on an ogee curve, and the other side is formed on a straight line parallel with the sides or surfaces of the boards, whereby a thin projection is formed upon the lower side of the board, said projection being provided with a longitudinal groove upon the inner straight side of the recess, and the opposite edge of the board is provided with a tongue to fit the recess, the upper surface of which tongue is formed on an ogee curve and the lower surface is flat and parallel with the sides of the board to correspond with the straight surface of the recess, substantially as set forth.

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## 502,290. EXTENSION-LADDER. ALBERT M. PEDERSON, Millport, N. Y. Filed Dec. 5, 1892. Serial No. 454,043. (No model.)

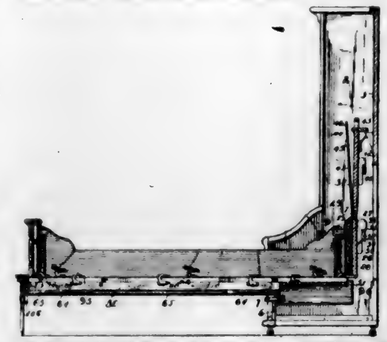
*Claim.*—1. The combination with an extension ladder composed of two or more sections, of an automatic locking device mounted on the movable section and comprising two members pivotally secured together, each of said members being provided with a terminal engaging hook having double and oppositely curved prongs, said members terminating respectively in a pivot-ring and a trip lever or pawl, as specified.



2. The combination, with an extension ladder composed of upper and lower sections, of a locking device carried by the upper section, suitable stops for limiting the movement of the locking device, and an auxiliary or safety latch pivotally secured on the locking device and provided with a trip lever and a terminal engaging hook having double and oppositely curved prongs, as specified.

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## 502,291. FOLDING BED. PHILLIP FLOWERS, St. Louis, Mo. Filed Nov. 16, 1892. Serial No. 452,158. (No model.)



*Claim.*—1. In a folding-bed, the combination, with a stationary section provided with supports, of a folding section, a head-board hinged thereto, and provided with a rearward projection adapted to automatically engage said supports when the folding section is opened; substantially as set forth.

2. In a folding bed, the combination, with a stationary section provided with supports, of a folding section, a head-board hinged thereto and provided with a rearward projection adapted to engage said supports, and weights carried upon the rear face of said head-board and adapted to draw the same rearwardly; substantially as set forth.

3. In a folding bed, the combination, with a stationary section provided with downwardly-inclined supports or blocks 45, of a folding section, a head-board hinged thereto and provided with a rearwardly-projecting cross-piece 43 adapted to engage said supports or blocks 45, weights 41 carried at the back of said head-board and adapted to draw the same rearwardly, and guides 46 secured to the sides of the stationary section in advance of the cross-piece 43; substantially as set forth.

4. In a folding bed, the combination, with a stationary section, of a folding section provided between its outer walls and the bed proper with a channel open at both ends, and a foot-support adapted to automatically fold over and close said channel when the folding section is opened; substantially as set forth.

5. In a folding bed, the combination, with a stationary section, of a folding section provided between its outer walls and the bed proper with a channel 110 open at its ends, a foot-support 102 hinged to the folding section and adapted to close the outer end of said channel, and a catch 106 adapted to automatically lock the foot support in supporting position when the folding section is opened; substantially as set forth.

6. An improved folding bed having weights located above the center of the head-board upon the rear face of same, weights located upon the rear of the center of the head-frame, and engaging strip above said weights upon the head-frame, and said weights adapted to

compel said strip to engage over blocks secured to the back of the stationary portion of the bed, to prevent the folding section from closing up, substantially as set forth.

7. In a folding bed, the combination, with a stationary section, and a folding section, of guides therefor consisting each of a segmentally-grooved plate 9 secured to the side of the stationary section, a flanged plate 22 secured under the plate 9, and a curved plate 17 secured to the opposing side of the folding section and provided at one end with a stud 18 working in the grooved plate 9 and with a flange 20 working upon the plate 22; substantially as and for the purpose set forth.

8. In a folding bed, the combination, with a stationary section, of a folding section provided with upwardly-projecting curved hooks, and side-boards 14 provided with catches formed with lugs adapted to be engaged by said hooks; substantially as set forth.

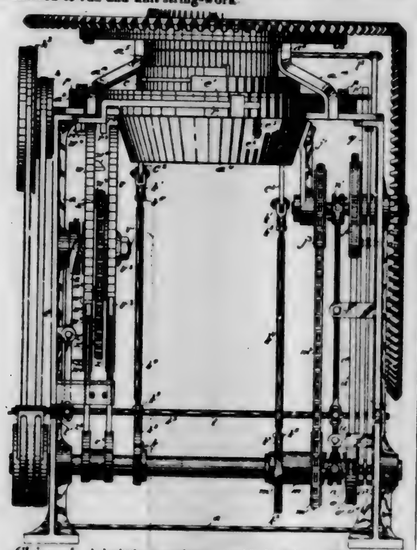
9. In a folding bed, the combination, with a stationary section, of a folding section provided with upwardly-projecting curved hooks, and side boards 14 provided with catches 76 comprising a staple 80, and a lug 81 projecting inwardly therefrom and adapted to be engaged by said hook; substantially as set forth.

10. In a folding bed, the combination, with a knock-down stationary section, and a knock-down folding section, of a head-board, and devices for hinging the latter to the folding section and consisting each of an apertured plate 47 secured to the upper end of said section, a plate 53 secured to the head-board and provided with a lug 56 bearing in said apertured plate, and an adjustable plate 58 adapted to lock the lug 56 in engagement with said apertured plate; substantially as set forth.

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**502,292. CIRCULAR-KNITTING MACHINE.** EMIL J. FRANCK, Philadelphia, Pa. Filed Nov. 22, 1892. Serial No. 452,765. (No model.)

*Brief.*—The needles are reciprocated in two groups alternately by two semicircular plates having grooves for the needle-heels. During fashioning one plate ceases to be actuated. The fashioning-needles are connected to the other plate by keys so as to be thrown into and out of engagement therewith when the keys are moved around the plate by fashioning-carriages. A toothed ring is oscillated so as to close the beards of the descending group of needles. The machine may be stopped by hand at the completion of each stocking or allowed to run and knit string-work.



*Claim.*—1. A knitting machine provided with needles movable in respect to their cylindrical support and with semi-circular plates reciprocated longitudinally of the cylindrical support and operating to effect the required rise and fall of the needles alternately, substantially as and for the purposes set forth.

2. A knitting machine provided with needles movable in respect to their cylindrical support, semi-circular plates for operating said needles and means for elevating and depressing said plates alternately, substantially as and for the purposes set forth.

3. A knitting machine provided with needles movable in respect to their cylindrical support, semi-circular plates for operating said needles, and a main shaft provided with eccentrics and links for elevating and depressing said plates alternately, substantially as and for the purposes set forth.

4. A knitting machine provided with needles movable in respect to their cylindrical support and having bits or hubs, semi-circular plates provided respectively with grooves engaging the bits or hubs of the needles, and means for elevating and depressing the plates alternately, substantially as and for the purposes set forth.

5. A knitting machine provided with a bed-plate having an annular opening and a depending flange, a needle cylinder attached to said flange, needles movable in respect to the cylinder, plates working between the needle cylinder and the edge of the annular opening and adapted to operate the needles, and means for elevating and depressing said plates, substantially as and for the purposes set forth.

6. A knitting machine provided with needles operated in groups and a reciprocating ring having teeth for closing the beards of a group of descending needles and having spaces for permitting the beards of an ascending group of needles to open, substantially as and for the purposes set forth.

7. A knitting machine provided with needles movable in respect to their support, reciprocating plates for operating said needles in groups, a ring having teeth for closing the beards of a group of needles as they descend and having spaces for permitting the beards of the needles to open as they ascend, substantially as and for the purposes set forth.

8. A knitting machine provided with needles operated in groups and a reciprocating ring having sets of teeth whereof the tooth and space respectively intermediate of the respective sets are wider than the others, substantially as and for the purposes set forth.

9. A knitting machine provided with needles operated in groups, a ring having teeth for closing the beards of a group of descending needles and having spaces for permitting the beards of an ascending group of needles to open, and a tappet-arm and connections for operating said ring, substantially as and for the purposes set forth.

10. A knitting machine provided with needles movable in respect to their cylindrical support, semi-circular plates for operating said needles, a main shaft, and eccentrics and their complemental links interposed between the shaft and plates, whereby said plates may be actuated alternately substantially as and for the purposes set forth.

11. A knitting machine provided with needles movable in respect to their support, plates for operating said needles, a toothed ring for opening and closing the beards of said needles, a main-shaft, eccentrics and their complemental links interposed between the shaft and plates, and a tappet and its accessories for reciprocating the ring, substantially as and for the purposes set forth.

12. A knitting machine comprising needles movable in respect to their support, reciprocating plates for operating said needles, a toothed ring for opening and closing the beards of the needles, a yarn-carrier, and means for operating the plates, ring, and yarn-carrier, substantially as and for the purposes set forth.

13. A knitting machine provided with needles movable in respect to their support, plates for operating said needles, mechanism for actuating said plates, and means for throwing the actuating mechanism of one of said plates out of action, substantially as and for the purposes set forth.

14. A knitting machine provided with needles, means for lifting and depressing groups of the needles, a thread or yarn carrier for laying the thread or yarn onto each group of needles as they approach and recede from their highest positions, sinker-bars provided with projections for holding bights or loops of the thread or yarn between the needles of each group until the bights or loops are positively drawn down by the descent of the needles and means for operating the sinker bars, substantially as and for the purposes set forth.

15. A knitting machine provided with needles operated in groups, and sinker bars having projections for retaining bights or loops of thread between the needles, substantially as and for the purposes set forth.

16. A knitting machine provided with needles movable in respect to their support, a reciprocating plate for operating a group of said needles, and devices for disconnecting and connecting certain of said needles from and to the plate to permit of the narrowing and widening of the fabric, substantially as and for the purposes set forth.

17. A knitting machine provided with heel and fashioning needles movable in respect to their support, an oscillating plate provided with a recess engaging the bits of the heel needles and with cavities for the accommodation of the bits or hubs of the fashioning needles, and keys for locking and unlocking the bits or hubs of the fashioning needles, substantially as and for the purposes set forth.

18. A knitting machine provided with fashioning needles movable in respect to their supports, an oscillating plate provided with a cavity for the accommodation of the bits or hubs of the fashioning needles, and a key for locking and unlocking the bits or hubs of the fashioning needles, substantially as and for the purposes set forth.



19. A knitting machine provided with a bed plate having a flange, a fixed needle cylinder, fashioning needles movable in respect to the cylinder and provided with shanks adapted to rest on said flange, and a reciprocating plate provided with keys adapted for insertion beneath the bits or hubs of the fashioning needles when the bits or hubs thereof rest on said flange, substantially as and for the purposes set forth.

20. In a knitting machine, a needle cylinder, a set of heel needles having their bits or hubs comparatively near their hooks, a set of fashioning needles having their bits or hubs comparatively far from their hooks, a set of fashioning needles having their bits or hubs intermediate of the bits or hubs of the other two sets of needles, a plate provided with a recess engaging the bits or hubs of the heel needles and with cavities of different heights for the accommodation of the bits or hubs of the respective sets of fashioning needles, and keys adapted to be shifted into engagement with the bits or hubs of the fashioning needles and into a recess located beneath the heel needle recess, substantially as and for the purposes set forth.

21. A knitting machine provided with fashioning needles movable in respect to their support, an oscillating plate provided with a cavity for the accommodation of the bits or hubs of the fashioning needles, a key adapted to lock and unlock the bits or hubs of the fashioning needles and provided with a shank extending through a longitudinally ranging slot in the plate, and a movable carriage engaging said shank, substantially as and for the purposes set forth.

22. A knitting machine provided with fashioning needles movable in respect to their support, an oscillating plate provided with a cavity for the accommodation of the bits or hubs of the fashioning needles, a key carried by said plate and provided with a shank projecting through a slot therein, and a movable carriage having a transversely ranging slot engaging the projecting shank of the key, substantially as and for the puposes set forth.

23. A knitting machine provided with fashioning needles movable in respect to their support, an oscillating plate provided with a cavity for the accommodation of the bits or hubs of the fashioning needles, a key carried by said plate and provided with a shank projecting through a slot therein, a movable carriage having a transversely ranging slot, and a plate attached to a face of said slot by a yielding connection and adapted to engage the projecting shank of the key, substantially as and for the purposes set forth.

24. A knitting machine provided with a group of needles, a reciprocating plate having keys for connecting and disconnecting the needles and plate, carriages for operating the keys, rods provided with teeth meshing with teeth on said carriages, and mechanism for reciprocating said rods, substantially as and for the purposes set forth.

25. A knitting machine provided with a group of normally operated needles, means for throwing certain needles of the group out of and into action, a carriage, a rod provided with teeth meshing with teeth on said carriage, and a revoluble drum having a cam for operating said rod, substantially as and for the purposes set forth.

26. A knitting machine provided with a group of normally operated needles, means for throwing certain needles of the group out of and into action, a carriage, a rod provided with teeth meshing with teeth on said carriage, a drum having a step-by-step cam for operating said rod, and mechanism for intermittently rotating said drum, substantially as and for the purposes set forth.

27. A knitting machine provided with a group of normally operated needles, means for throwing certain needles of the group out of and into action, a carriage, a rod provided with teeth meshing with teeth on said carriage, a drum mounted on a ratchet wheel and provided with a cam for operating said rod, a pawl adapted to drive the ratchet-wheel and to work in peripheral recesses therein, a pattern chain for intermittently rotating the ratchet-wheel, a pattern chain feed wheel, and means for continuously driving the pattern chain feed wheel, substantially as and for the purposes set forth.

28. A knitting machine provided with a reciprocating plate, needles some of which are detachably connected with said plate, means for throwing certain of the detachable needles out of and into action, a carriage, a rod provided with teeth meshing with teeth on said carriage, and mechanism for reciprocating said rod, substantially as and for the purposes set forth.

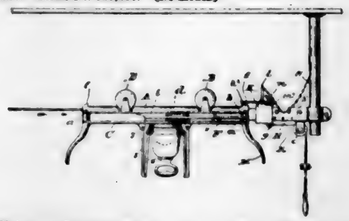
29. A knitting machine, comprising needles movable in respect to their support, plates for operating said needles, keys for detachably connecting certain needles to one of the plates, carriages for controlling said keys, means for continuously operating the plate having detachable needles and for intermittently operating the other plate, and mechanism for shifting the carriages, substantially as and for the purposes set forth.

30. A knitting machine comprising needles movable in respect to their support, plates for operating said needles, keys for detachably connecting certain needles to one of the plates, carriages for controlling said keys, means for continuously operating the plate having detachable needles and for intermittently operating the other plate, rods provided with racks for shifting said carriages and a revoluble drum having a cam for operating said rods, substantially as and for the purposes set forth.

31. A knitting machine comprising needles movable in respect to their support, plates for operating said needles, keys for detachably connecting certain needles to one of the plates, carriages for controlling said keys, means for continuously operating the plate having detachable needles and for intermittently operating the other plate, rods for shifting said carriages, a ratchet wheel having a cam for operating said rods, a pawl adapted to drive said ratchet-wheel and to work in peripheral recesses therein, a pattern chain for intermittently driving the ratchet-wheel, and a continuously driven pattern-chain feed-wheel, substantially as and for the purposes set forth.

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**502,293. STORE-SERVICE APPARATUS.** JOHN H. GOODFELLOW, Lansingburg, N. Y., assignor, by mesne assignments, to the Lamson Consolidated Store Service Company, of New Jersey. Filed Sept. 7, 1889. Serial No. 323,259. (No model.)



*Claim.*—1. In a store service apparatus the combination of a way, a carrier mounted thereon of a suitably constructed casing having open end and sides a pair of pulleys mounted therein, a propelling spring having one part attached to the carrier body and another part supported by the said pulleys, a fixed resistant stop or arm adapted to extend into the casing and bear against the spring, a retracting follower, a latch to engage the carrier and a releasing device for the latch substantially as described.

2. In a store-service system the combination with the way or track thereof, of a carrier adapted to move on said way and provided with pulleys, an elastic cord or band around said pulleys and means substantially as described for tensioning said elastic cord, substantially as set forth.

3. In a store-service system, the combination with the way or track thereof, of a carrier adapted to move on said way and provided with an elastic cord or band running around pulleys and serving as a motor, a fixed stop arranged to encounter said motor, a follower movably mounted on said track or a section thereof and provided with a spring-actuated latch to engage the carrier, an operating cord for drawing back the follower and carrier, a chain to automatically unlock the carrier, substantially as specified.

4. In a carrier for store service apparatus, the combination with wheels, of a frame carried thereby, a receptacle, and a series of pivoted levers, the upper levers of which are pivoted to the said frame, and the lower levers of which are pivoted to the said receptacle by a universal joint, the levers when the said receptacle is raised being approximately vertical, substantially as described.

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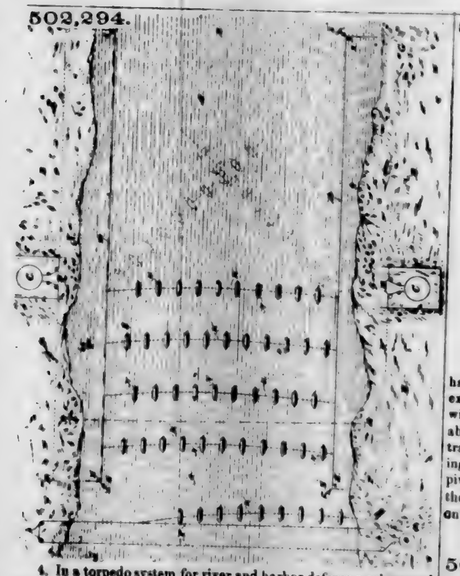
**502,294. SUBMARINE TORPEDO.** JAMES W. GRAYDON, Washington, D. C., assignor, by mesne assignments, to the Graydon Dynamite Projectile Cartridge and High Explosive Company, same place. Filed May 7, 1887. Renewed Dec. 19, 1891. Serial No. 415,570. (No model.)

*Claim.*—1. In a torpedo system for rivers and harbors in combination with the two submerged cables extending along the shore one on each side of the harbor or river, a line fastened to such cables extending across from one to the other and having attached to it a series of torpedoes and means for moving the cables to carry the sweep line along, substantially as and for the purpose described.

2. In a torpedo system for the defense of rivers and harbors, in combination with the two parallel submerged cables one on each side of the harbor or river, a sweep line extending from one cable to the other, a series of torpedoes attached to the line by suitable lead or float lines, and means for moving the cables to carry the sweep line up or down the river or harbor as desired, substantially as and for the purpose described.

3. In a torpedo system for river and harbor defense, the two submerged cables each extending up and down the river or harbor on each side of the channel, the series of sweep lines extending from cable to cable and each having attached to it by suitable lead or float lines a series of torpedoes, and means for causing the cables to travel up or down the river or harbor as desired, substantially as and for the purpose described.

502,294.

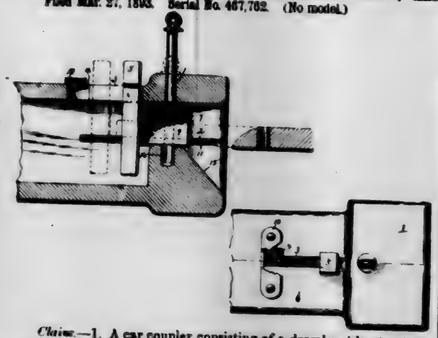


4. In a torpedo system for river and harbor defense a submerged cable extending along each side of the river or harbor passing over suitable submerged pulleys or blocks, and from these to suitably protected means for causing it to move up or down the harbor or river as desired, and one or more sweep lines attached at each end to one of the cables and carrying series of torpedoes, all combined substantially as and for the purpose described.

5. In a torpedo system for the protection of rivers and harbors, in combination with the submerged cables extending along the sides of the river or harbor provided with means for moving them as desired, and adapted to carry sweep lines with torpedoes attached up or down the river or harbor as desired, the means for getting the torpedo sweep lines across the harbor or river so that they can be attached to both cables, which consists in the endless cable passing across the river or harbor and adapted to carry across the end of the sweep line attached to it, and means for moving the cable, substantially as and for the purpose described.

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502,295. CAR-COUPLING. WILLIAM M. HALL, Victoria, Miss. Filed Mar. 27, 1893. Serial No. 467,762. (No model.)

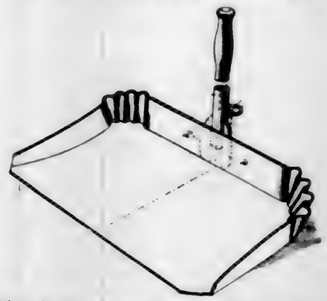


*Claim.*—1. A car coupler consisting of a drawhead having in its inner and perpendicular sides horizontal grooves, and in its top a suitable slot; a sliding block having suitable flanges adapted to rest in said grooves, and a suitable recess; a sliding post located in said slot and adapted to push the sliding block forward substantially as set forth.

2. In a car coupler having a suitable sliding block, a drawhead having a slot with an enlargement cut in its top; a sliding post adapted to work in said slot; and a plate adapted to be secured over the enlargement of said slot, substantially as set forth.

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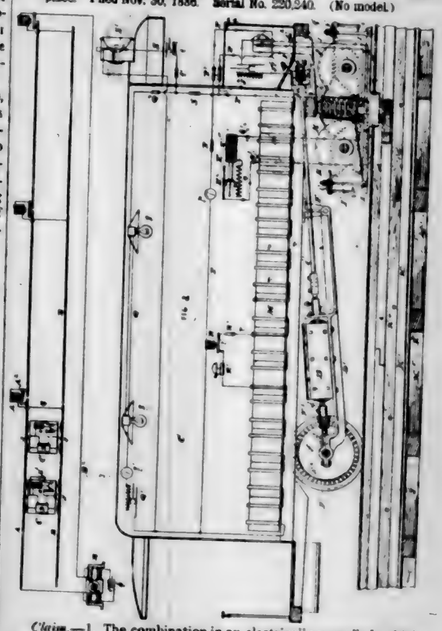
502,296. FOLDING HANDLE FOR DUST-PANS. ELLA L. HIATT, Dublin, Ind. Filed Mar. 25, 1893. Serial No. 467,548. (No model.)



*Claim.*—In a dust-pan, the combination of the body of the pan having a socket at the back thereof with a lower integral heel and extending below and supporting the body of the pan and provided with an upper suspending ring, said socket being open at the front above the upper edge of the back of the pan, a pivot-pin extending transversely through the upper part of said socket, and a handle having an elongated slot in the lower end thereof through which said pivot-pin also passes, said handle being pressed downwardly to position the same against movement and drawn upwardly and turned down on its pivot for storing the pan, substantially as described.

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502,297. ELECTRIC LOCOMOTIVE. RUDOLPH M. HUNTER, Philadelphia, Pa., assignor to the Electric Car Company of America, same place. Filed Nov. 30, 1886. Serial No. 220,240. (No model.)



*Claim.*—1. The combination in an electrically propelled vehicle, of a body part having seats, wheels at the forward end of the body part pivoted thereto on a vertical axis, rear wheels and axle arranged near the rear end of the body part, springs supporting the body part upon the axle and wheels, an electric motor arranged between the forward and rear wheels and hinged upon the rear axle, and a power transmitting connection between the motor and the axle to which it is hinged.

2. The combination in an electrically propelled vehicle, of the body, a pivoted truck at or near one end, a pair of wheels near the other end having boxes fixed against lateral movement, on the vehicle body an electric motor arranged under the vehicle body and connecting with the fixed pairs of wheels or their axle by a power transmitting device, and a hinged frame supporting said motor and journaled on the axle of said pair of wheels.

3. The combination in an electrically propelled vehicle, of the body, a pivoted truck at or near one end, a pair of wheels near the other end having boxes fixed against lateral movement, an electric motor connecting with the fixed pair of wheels, or their axle, a hinged frame supporting said motor journaled on the axle of said pair of wheels, and a connection between the other or free end of said frame and vehicle body.

4. In an electrically propelled vehicle, the combination of the body having an operator's platform, supporting wheels therefor, an electric motor connecting therewith and supported under the vehicle body and having its commutator brought up to within operative position of the operator's platform.

5. In an electrically propelled vehicle, the combination of the body having an operator's platform, supporting wheels therefor, an electric motor connecting therewith and supported under the vehicle body and having its commutator brought up to within operative position of the operator's platform, and a dust case or cap to inclose the commutator.

6. In an electrically propelled vehicle, the combination of the body having an operator's platform, supporting wheels therefor, an electric motor connecting therewith and supported under the vehicle body and having its commutator brought up to within operative position of the operator's platform, and a trap door in the platform to expose or protect the commutator.

7. In an electrically propelled vehicle, the combination of the body having an operator's platform, supporting wheels therefor, an electric motor connecting therewith and supported under the vehicle body and having its commutator brought up to within operative position of the operator's platform a trap door in the platform to expose or protect the commutator, and a dust case to inclose the commutator from below.

8. The combination of the vehicle body, having a front platform, supporting wheels therefor, an electric motor supported by the vehicle and connecting with the said wheels, the commutator and brushes of said motor being located at the front platform, and a long electrical connection between the motor armature and commutator.

9. The combination of the vehicle body having a front platform, supporting wheels and axles for said body, and an electric motor connecting with the rear axle or its wheels and having a long obliquely arranged commutator shaft extending to the front platform and carrying the commutator.

10. The combination of the vehicle body having a front platform, supporting wheels and axles for said body, and an electric motor connecting with the rear axle or its wheels having a long obliquely arranged flexible commutator shaft extending to the front platform and carrying the commutator.

11. The combination of the vehicle body, supporting wheels located close to the front end and supporting wheels located at some distance from the rear end, and a motor mechanically connecting with the rear wheels or their axle and journaled upon the rear axle.

12. The combination of the vehicle body, supporting wheels located close to the front end and supporting wheels located at some distance from the rear end, and an electric motor connecting with the rear wheels or their axles located close to them to increase the traction, and having its commutator brought to the forward part of the vehicle.

13. The combination of a vehicle body, supporting wheels therefor, an electric motor to propel the vehicle and connecting with the wheels or their axle, and a dust cap or casing inclosing the commutator and brushes alone and carried with the vehicle.

14. In an electrically propelled vehicle, the supporting wheels and their axles in combination with an electric motor, a gear wheel supported upon the axle and connected therewith by a coiled spring, surrounding the axle and a spur wheel connecting the motor with the gear wheel.

15. In an electrically propelled vehicle the supporting wheels and their axles, in combination with an electric motor, a power wheel supported upon the axle and connected therewith by a coiled spring, surrounding the axle and a mechanical power transmitting connection between the motor and power wheel.

16. The combination of an electrically propelled car having an unobstructed motor platform at its forward end having doors therein, axles and wheels located under the car body of the said car, and an electric motor journaled upon one axle and mechanically connected to rotate it and having its commutator arranged below the platform whereby access may be had thereto by opening the doors.

17. The combination in an electrically propelled car, of a car body having a motor operating platform at its forward end and a passenger platform at its rear end, a pivoted truck under the front or motor operating platform, wheels and axles supporting the rear end of the car body, and an electric motor journaled upon the rear axles and adapted to rotate it and having its commutator arranged under the front or motor operating platform.

18. In an electrically propelled vehicle, the combination of the front and rear axles and their wheels, an electric motor journaled upon the rear axle and mechanically connected to rotate it, and an elastic support for the free end of the motor upon the forward wheels and axles.

19. In an electrically propelled vehicle, the combination of the supporting wheels and axles, an electric motor journaled upon and mechanically connected to rotate one of the axles, and an elastic support between the free end of the motor and the other axle or axles.

20. In an electrically propelled vehicle, the combination of a pivoted truck and a rear axle and wheels for supporting the car body, and an electric motor journaled upon the rear axle and mechanically connected to rotate it and having its free end elastically supported upon the axles of the pivoted truck.



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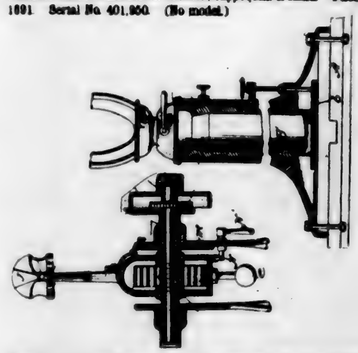
502,298. BICYCLE-SUPPORT. HYAM J. HYAMS, Dayton, Ohio, assignor of one-half to Henry J. Myers, same place. Filed Nov. 30, 1892. Serial No. 453,673. (No model.)



*Claim.*—In a bicycle support, the combination with the steering post having a pivotal point near its median portion, a bell crank pivoted below said pivotal point, a link rod connecting said bell crank with the upper portion of the steering post, supporting legs pivoted to the rear axle and joined to the bell crank on the steering post by connecting rods, of a ground rod having its two ends angular in form, journaled transversely in the lower ends of the supporting legs, to afford a brace for said legs and allow them to be lowered to a vertical position, the said angular rod the meanwhile being in contact with the ground and free from contact with the periphery of the wheel, substantially as described.

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502,299. BALL THROWING OR BOWLING MACHINE. FREDERICK H. KRANZ and DAVID WILSON, Cappoquin, Ireland. Filed Aug. 6, 1891. Serial No. 401,950. (No model.)



*Claim.*—1. A ball throwing or bowling machine consisting of a thrower arm adapted to rotate in a vertical plane about an axis, a spring actuating said thrower arm, a ball holder having mechanical release adjustable to any definite point of the revolution or revolutions, a movable retaining catch against which the spring is reinforced, and a frame carrying the axis of rotation, adapted to be adjustably rotated on a fixed base plate round a vertical axis.

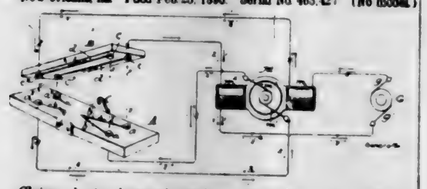
2. In a ball throwing or bowling machine the combination of a flexible ball holder and a locking bar; with a release device carried with the locking bar upon thrower arm or arm carrier, and an adjustable trip or tappet mounted upon a regulator disk or drum or

other part of the frame to operate the said release device at any definite and predetermined point in the revolution of the carrier arm

3 In a ball throwing or bowling machine an adjustable trip engaging by an adjustable stop with a screw thread on a sleeve on the carrier arm so as to be moved sidewise to an adjustable extent automatically by the carrier arm in combination with the ball release device to permit the carrier arm to make one or more revolutions before the tripping of the ball release mechanism

4 In a ball throwing or bowling machine a ball holder adapted to be moved and adjusted about the axis of its support having a grooved ring pivotally attached to the locking bolt of the catch of the ball holder and sliding upon the carrier arm in combination with a ring engaging in the said grooved ring and pivotally attached to the rod of the tripping device, substantially as described

## 502,300. ELECTRIC-POLE CHANGER. CHARLES P. KELLS, Jr., New Orleans, La. Filed Feb. 23, 1893. Serial No. 463,427. (No model.)



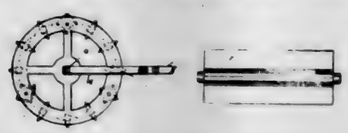
*Claim.*—1 An electrical switch or circuit changer, comprising a bed plate carrying two sets of contacts, a pivoted contact carrier carrying two sets of contacts adapted to connect with the contacts of the bed plate, means for holding the contacts of the contact carrier out of connection with the contacts of the bed plate, and catches at opposite ends of the bed plate for holding the contact carrier in either of its tilted positions, substantially as described.

2 The combination of the bed plate carrying two sets of contacts the contact carrier carrying two other sets of contacts, a spring for holding the contact carrier in a horizontal position, a handle for tilting the contact carrier, and a spring catch at each end of the contact carrier for holding it in its tilted position.

3 The combination of a bed plate, four contacts carried thereby the crossed wires connecting diagonally opposite contacts, the contact carrier having two pairs of contacts, the wires connecting the directly opposite contacts, and means for shifting the contact carrier for changing the circuits

4 The combination of a generator, an electric motor, and a switch or electric circuit changer comprising a bed plate, two sets of contacts carried thereby a contact carrier pivotally connected with the bed plate and carrying two sets of contacts, electrical connections between the contacts on the bed plate, electrical connections between the contacts on the contact carrier, circuit connections between the contacts on the contact carrier, the contacts on the bed plate and the electric motor and generator, and means for shifting the contact carrier to change the circuits substantially as described

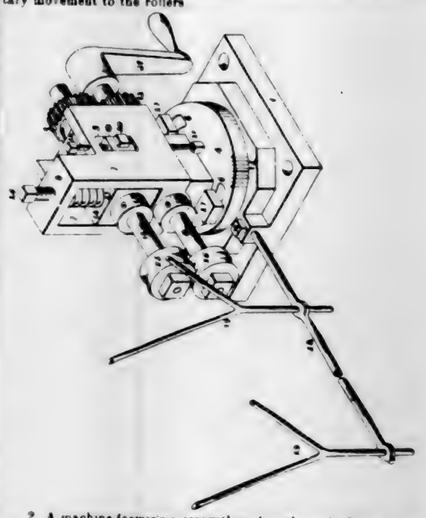
## 502,301. LAND ROLLER AND PULVERIZER. ENOCH KIRK, Milton, Ohio. Filed Mar. 11, 1893. Serial No. 465,560. (No model.)



*Claim.*—In land rollers the combined land roller and clod pulverizer formed by a succession of the longitudinally flanged sub-rollers *r* having bearings at each end in the facing sides, near the peripheries, of the two diametrally parallel wheels *w w*, which are held in relative positions by the flanged ties *t* that are rigidly attached at each end to the rims of the respective wheels, such wheels *w w* having the fixed axle *a* to which means of draft are attached, substantially as described and for the purpose expressed

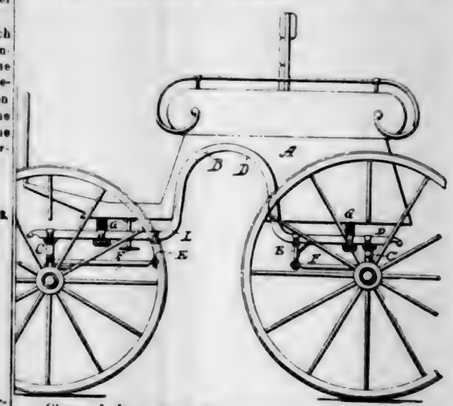
## 502,302. MACHINE FOR FORMING SCREW-THREADS. EDWARD O. KING and CHRISTIAN H. BECKER, Beloit, Wis. Filed Feb. 21, 1893. Serial No. 463,271. (No model.)

*Claim.*—1 A machine forming a screw thread on the end of sheet metal tubing, consisting of a base, a portion carrying rollers made adjustable in its connection with the base by curved slots and bolts passing through the slots into the base, a rest for the tubing made horizontally and vertically adjustable, and means for imparting a rotary movement to the rollers



2 A machine forming a screw thread on the end of sheet metal tubing, consisting of a base, a portion carrying rollers made adjustable in its connection with the base by curved slots and bolts passing through the slots into the base, a rest for the tubing made horizontally and vertically adjustable, and means for imparting a rotary movement to the rollers, and a pointer and scale between the base and adjustable portion for determining their relative positions

## 502,303. VEHICLE. JACOB KRAUSS, Lexington, Ky. Filed Feb. 9, 1893. Serial No. 461,612. (No model.)

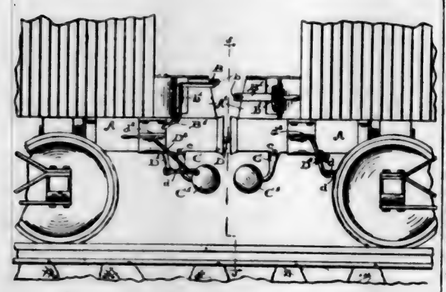


*Claim.*—1 In a vehicle, the combination with a body portion, rear axle, and front cross bar or bolster, side bars curved upwardly at a point between the ends, cross bars secured at their ends to the side bars at opposite sides of the center thereof, and coupling rods connecting said cross bars respectively with the rear axle and front cross bar or bolster, substantially as set forth

2 In a vehicle, the combination with a body portion having a curved portion or wheel house, the rear axle, and the front cross bar or bolster, of side bars, each having a curved portion extending upwardly in conformity with the curved portion or wheel house of the body portion, cross bars secured to and connecting the side at opposite sides of the curved portions thereof, and coupling rods connecting said cross bars respectively with the rear axle and the front cross bar or bolster, substantially as set forth



## 502,304. CAR-COUPLING. DAVID A. LEE and MICHAEL F. SNYDER, Marietta, Ind. Filed Mar. 14, 1893. Serial No. 465,863. (No model.)



*Claim.*—1. The combination, in a car coupler, of the draw-head, the coupling link having a downwardly projecting arm on its rear end which extends through a slot on the bottom side of said draw-head, and a lever connected to said arm whereby said link may be manipulated, substantially as set forth.

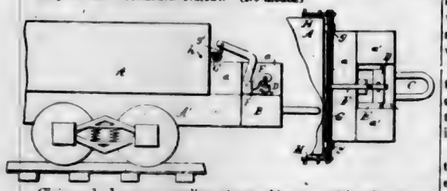
2. The combination, in a car coupler, of the draw-heads containing the coupling pins, pivoted bars also in said draw-heads, two coupling links one in each draw-head, said bars passing through said coupling links and serving as a means to secure them at the rear end, and the coupling pins passing through the links of the opposite draw-heads and securing them at the forward ends, whereby a double coupling is secured, substantially as set forth.

3. The combination, in a car coupler, of a draw bar, the rectangular coupling pin having a forwardly-extending arm, an upward projection on the draw-bar through a slot in the side of which said arm extends, a pivoted and weighted arm C passing through and securing the link in the draw-head and bearing against the rear side of the coupling pin B, sustaining the same until said contact is forcibly removed, substantially as set forth.

4. The combination, in a car coupler, of a draw-head, a coupling pin having a bend at its upper end, and a wrist on the end of said bend, the draw-head being provided with an upward extension A' slotted to receive said bend or arm, levers B' pivoted to the car frame attached to the wrist on the end of said bend, said wrists being slotted on their pivots, and said several parts being arranged and operating substantially as set forth.

5. The combination, in a car coupler, of two draw-heads each provided with a vertically moving coupling pin, levers whereby said coupling pins are operated, pivoted and weighted bars C mounted in said draw-heads the upper ends whereof come in contact with said coupling pins and links D, one in each draw-head, and secured therein by the bars C which pass through them, and adapted to be connected to the opposite draw-heads by the coupling pins B, all substantially as shown and described.

## 502,305. CAR-COUPLING. AMOS B. LEFEVER, Leacock, Pa. Filed May 3, 1893. Serial No. 472,827. (No model.)



*Claim.*—1. In a car-coupling, the combination, with a draw-head slotted substantially as described, of a rectangular spring actuated rock-plate having its lower front edge beveled, a coupling-pin secured thereto and passing into the draw-head, and means for raising the rock-plate, substantially as and for the purpose specified.

2. In a car-coupling, the combination, with a draw-head slotted substantially as described, of spring-plates located on opposite sides of the slot in the top of the draw-head, a rock-plate having its ends journaled in the vibrating ends of the spring-plates, a coupling pin secured to the rock-plate and passing into the draw-head, and means for raising the rock-plate, substantially as and for the purpose specified.

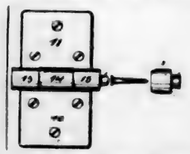
3. In a car-coupling the combination, with a draw-head slotted substantially as described, of a spring actuated rock-plate, a coupling pin secured thereto and passing into the draw-head, a lever fulcrumed behind the rock-plate, a hinge connection between the outer end of the lever and the rock-plate, and means for depressing the inner end of the lever, substantially as and for the purpose specified.

4. In a car-coupling, the combination, with a draw-head slotted substantially as described, of spring-plates located on opposite sides of the slot in the top of the draw-head, a rock-plate having its ends journaled in the vibrating ends of the spring-plates, a coupling-pin secured to the rock-plate and passing into the draw-head, a lever fulcrumed behind the rock-plate, a hinge-connection between the outer end of the lever and the rock-plate, and means for depressing the inner end of the lever, substantially as and for the purpose specified.

5. In a car-coupling, the combination, with a draw-head slotted substantially as described, of spring-plates located on opposite sides of the slot in the top of the draw-head, a rock-plate having its ends journaled in the vibrating ends of the spring-plates, a coupling-pin secured to the rock-plate and passing into the draw-head, a rock-shaft attached to the car, and a connection between the rock-plate and rock-shaft whereby said rock-plate is raised by the rock-shaft, substantially as and for the purpose specified.

6 In a car-coupling, the combination, with a draw-head slotted substantially as described, of spring-plates extending longitudinally of the draw-head on opposite sides of the slot in the top thereof, a rock-plate having its ends journaled in the vibrating ends of the spring-plates, a coupling-pin secured to the rock-plate and passing into the draw-head, a lever fulcrumed behind the rock-plate, a hinge-connection between the outer end of the lever and the rock-plate, a rock-shaft journaled to the front of the car, a chain connecting the inner end of the lever and the rock-shaft, and cranks attached to the rock-shaft and adapted to actuate the same to take up said chain, all constructed and arranged substantially as and for the purpose specified.

## 502,306. COMBINED STRAP AND PIVOT HINGE. LOUIS LIPP, Cincinnati, Ohio. Filed Apr. 21, 1893. Serial No. 471,251. (No model.)



*Claim.*—1. The combination of a top 13, seat 12, and lid 18, a hinge for uniting the first two, having its pin extending out sidewise to form a pivot and a bearing to secure the lid in place, having two bores, one adapted to engage with said pivot, the other to receive the means for securing it in place on the lid

2. The combination of a top 13, seat 12, and lid 18, a hinge for uniting the first two, having its pin extending out sidewise to form a pivot and a bearing to secure the lid in place, provided with the reduced part 22, to be inserted into the wood, and having two bores, one adapted to engage with the pivot, the other to receive the means for securing it in place to the lid

3. The combined strap and pivot-hinge for hinging three parts together consisting of two straps, a bearing and a pivot for the latter, such bearing consisting substantially of a cylinder with a perforation, which receives at one end the pivot and at the other the means to secure it in place and the pivot formed by an extension of the pin, which unites the two straps.

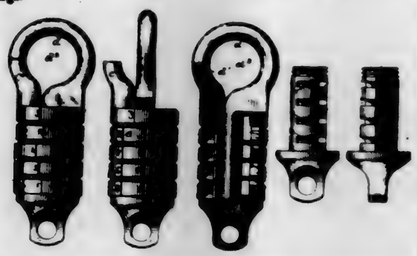
4. The combined strap and pivot-hinge for hinging three parts together, consisting of two straps united by a pin, a pivot formed by an extension of the latter, and a bearing having two bores, one adapted to engage with the pivot, the other to receive the means for securing it in place on the third part

5. The combined strap and pivot-hinge for hinging three parts together, consisting of two straps united by a pin, a pivot formed by an extension of the latter, and a bearing having two bores, one adapted to engage with the pivot, the other to receive the means for securing it in place and further provided with a shoulder 23, to facilitate its even adjustment and aid it in retaining its alignment

## 502,307. PERMUTATION-PADLOCK. HARVEY C. LOWRIE, Denver, Colo. Filed Sept. 29, 1892. Serial No. 447,327. (No model.)

*Claim.*—1. In a permutation padlock, the combination substantially as hereinbefore described, of a series of appropriately marked working rings, a central longitudinally slotted tube, concentric with said rings and serving as their axial support, a base section at one end of said tube, a cap secured to the other end of the tube, and having a projecting horn; a harp which engages in locking contact with said horn, and has a shank which occupies said central tube and

is slidable and rotative therein, and locking lugs or pins which are carried by said hasp shank and are controlled with respect of their relations to the longitudinal slot in the central tube, by said working rings.



2. In a permutation padlock, the combination substantially as hereinbefore described, of a series of appropriately marked working rings; a central longitudinally and laterally slotted tube concentric with said rings and serving as their axial support; and a hasp having a shank which is rotative and slidable within said tube, and provided with lugs which with relation to the slots in the tube are controlled by the working rings.

3. In a permutation padlock, the combination substantially as hereinbefore described, of the working rings, a central tube on which said rings are rotatively mounted and secured; a slidable and rotative hasp having a cylindrical shank and provided with laterally projecting locking lugs, and an ejecting spring between the end of the shank and the bottom of the tube.

4. In a permutation padlock, a complex working ring consisting of an outer ring, and an inner ring, engaging with the outer ring under heavy friction, substantially as described, whereby said two rings will normally operate as one, but which while the hasp of the lock is projected, will enable the outer ring to be forcibly rotated for changing permutation without taking the lock apart.

## 502,308. PERMUTATION-PADLOCK. HARVEY C. LOWRIE, Denver, Colo. Filed Sept. 29, 1892. Serial No. 447,328. (No model.)



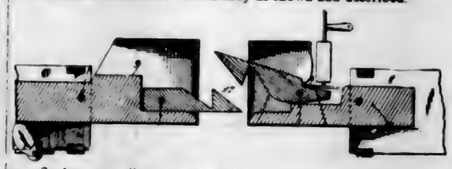
*Claim.*—1. In a permutation padlock, the combination with appropriately marked working rings, and a slidable spring actuated bolt, controlled by said rings, and confined by them in its locked position, of an annular hasp, rotative in the cap plate of the lock, and provided with a gating with which the head of the bolt engages, and also with an external handle by which the bolt may be retracted after the working rings have been properly adjusted.

2. In a permutation padlock, the combination substantially as hereinbefore described, of a series of appropriately marked working rings, a central longitudinally slotted tube concentric with said rings and serving as their axial supports, and provided with a cap plate and a base plate, a slidable bolt within the tube, but projecting through the base plate, and carrying a series of locking lugs which occupy the slot in the central tube, and are controlled by the working rings, a spring for projecting said bolt from its unlocked to its locked position, and an annular hasp, rotative in the cap plate, provided with an opening into its central space or shackling eye, and also with locking shoulders with which the bolt head engages.

3. In a permutation lock, working rings having on their peripheries separate rows of markings, as by letters or numerals, the letters or numerals in one row being offset with relation to adjacent letters in the adjacent row, and each letter having its own registering line, as and for the purposes specified.

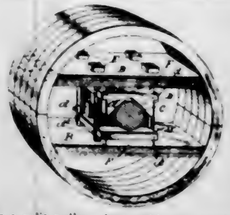
## 502,309. CAR-COUPLING. HENRY H. MARTIN, Campbellsville, Ky. Filed Nov. 15, 1892. Serial No. 452,084. (No model.)

*Claim.*—1. A car coupling consisting of first a drawhead, having pivoted therein a suitable catch, said catch having its rear end provided with a suitable socket, a rod journaled to the front of the car and having on its lower end a suitable extension, said rod adapted to be revolved and thereby throw the said extension into the socket of the catch; second a drawhead having pivoted in its mouth a suitable catch, the catch of the first drawhead adapted to engage the catch of the second drawhead, substantially as shown and described.



2. A car coupling consisting of first a drawhead, having pivoted therein a permanently downward extending catch; second a drawhead having pivoted therein a permanently upward extending catch, the two catches adapted to engage each other substantially as shown and described.

## 502,310. SPLIT PULLEY. WILLIAM S. MILLER, Meyersdale, Pa. Filed Aug. 25, 1892. Serial No. 444,031. (No model.)



*Claim.*—In a split pulley, the combination with a rim and pulley arms, of elongated clamping blocks adapted to be arranged on opposite sides of a shaft and having flat outer faces and each provided on its inner face with a series of separated integral ribs having V-shaped grooves therein formed with serrations, the ribs on one block being arranged directly opposite and adapted to enter the spaces between the ribs on the other block, the outer edges of the blocks having grooves therein and bolts passing through the arms and grooves, substantially as described.

## 502,311. LABELING-MACHINE. JOHN C. MCBEAN, GEORGE J. MCLAUGHLIN, HENRY B. CORKHILL, Jr., and GEORGE BAXTER, Rochester, N. Y. Filed Feb. 17, 1892. Serial No. 421,798. (No model.)

*Claim.*—1. In a machine for labeling packages a press roller, in combination with carrying rollers for the package and supporting arms for the carrying rollers and an adjusting screw for the carrying rollers between the supporting arms, substantially as shown and described.

2. In a machine for labeling packages, the combination, with a vertically movable carrier for the packages, a vertically movable controller for the packages adjacent to the carrier, and a stop for limiting the downward movement of said controller independently of the carrier, substantially as set forth.

3. In combination with the carrying rollers of a labeling machine a lifter to raise and lower the carrying rollers, and a controller for the packages held by the lifter between the carrying rollers and fitted to move in its bearings therein, and a stop for the downward motion of said controller substantially as set forth.

4. In combination with carrying rollers for a labeling machine, a lifter to alternately raise and lower said carrying rollers, a controller held to move independently in bearings in the lifter provided with a bead to be engaged by the lifter in its upward movements, and a stop for the controller in its downward movements, substantially as set forth.

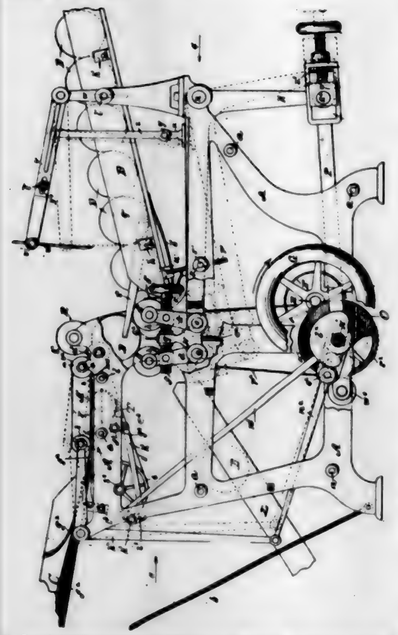
5. An alternately rising and falling lifter of a labeling machine, provided with carrying rollers, in combination with a controller held to slide in bearings in said lifter, and a stop beneath the controller in position to arrest its downward motion while the lifter is yet moving downward whereby said controller is caused to project above said carrying rollers, for the purpose set forth.

6. In a package labeling machine carrying rollers for the package and a lifter for the carrying rollers, in combination with a controller for the package between the carrying rollers, said controller being adjustable, substantially as described and shown.

7. In a labeling machine, a lifter provided with carrying rollers for the cans, and a movable controller for the can advancing onto said carrying rollers held to move independently in the lifter, and a stop to limit the downward motion of said controller, in combination with a conveyer for supplying cans to said carrying rollers, substantially as shown and described.



8. In a labeling machine, a press roller, and a lifter to move the can toward and from the press roller provided with carrying rollers, and a controller for the can advancing upon said rollers, in combination with a conveyer for supplying cans to said carrying rollers, and means for determining the distance of said carrying rollers below the press roller when the lifter is at the bottom of its stroke, said conveyer being adjustable as to height to bring it to correspond with the carrying rollers when at their lowest position in any given case, substantially as described.



9. In a labeling machine a lifter provided with carrying rollers for the can, and a movable controller for the can advancing onto said carrying rollers, in combination with an intermittingly acting conveyer for supplying cans to said carrying rollers, a stop being provided for the downward motion of the controller, substantially as set forth.

10. In a machine for labeling packages, the combination with a non-yielding pressure roller for applying the labels, a carrier movable toward and from said roller, and an actuator for the carrier, the limit of the movement of which actuator is always the same, and a yielding connection, as a spring buffer, between the actuator and the carrier, substantially as set forth.

11. In a labeling machine, a lifter provided with carrying rollers, in combination with a conveyer for supplying cans to said carrying rollers, said conveyer being provided with movable adjusters for the cans, substantially as specified.

12. In a labeling machine a lifter provided with carrying rollers and a press roller, in combination with an actuator for the lifter, and a regulator for the lifter to determine the distance of the lifting rollers from the press roll at the ends of their travel, substantially as set forth.

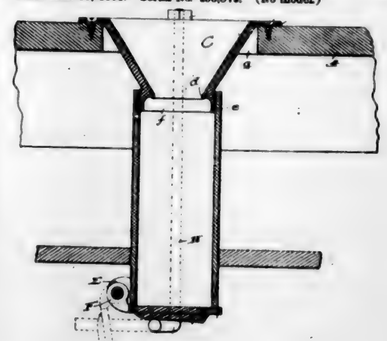
13. In a machine for labeling packages a feed board for holding the labels provided with a delivering tongue extending beyond its edge, and a revolving friction roller adapted to alternately press and clear said tongue in combination with an intermittingly acting stop for the labels caused to alternately rise above and fall below said tongue, substantially as described.

14. In a machine for labeling packages, the combination with a vertically movable paste pot, of a paste roller journaled therein, having annular depressions in its periphery, feed rollers in front and at the rear of said pot, and cords around said feed rollers and crossing the paste roller at a tangent thereto and through the depressions, substantially as set forth.

15. In a machine for labeling packages, the combination with a substantially semi-cylindrical paste pot one side of which is provided with a rigid top or scraper, of a roller journaled in the open portion of said pot and projecting above the top thereof, and an adjustable scraper secured to the rigid portion of the pot and projecting beyond the inner edge of the same and adapted to bear against the roller, and means for passing the labels above the paste pot, substantially as set forth.

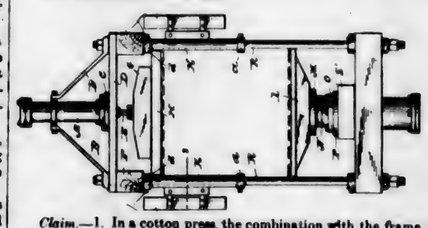
16. In a machine for labeling packages, the combination with a paste pot, one side of which is provided with a rigid top, a roller journaled in the open portion of said pot, and projecting above the top thereof, a pin at each end of said rigid portion, a scraper upon said rigid portion, having slots in its ends for engaging with said pins, a screw for locking said scraper in its adjusted position, and means for passing the labels above the paste pot, substantially as set forth.

## 502,312. CUSPIDOR. CHARLES R. MCCOMB, Columbus Grove, Ohio. Filed Mar. 16, 1893. Serial No. 466,379. (No model.)



*Claim.*—The improved cuspidor described, comprising the flaring receiver, having the horizontal, marginal flange at its upper end, and the depending, threaded flange at its reduced lower end, the tube threaded at its upper end, and having the bottom hinged to close the lower end and provided on its under side with the beveled or inclined lug, and the operating rod provided with a key seat at its upper end and having an angular branch at its lower end and adapted to engage said lug and close the hinged bottom of the tube, substantially as specified.

## 502,313. COTTON-PRESS. JOSHUA L. MCCUTCHEON, Houston, Tex., assignor of one-half to James S. Price, same place. Filed June 30, 1892. Serial No. 438,499. (No model.)



*Claim.*—1. In a cotton press, the combination with the frame, of two platens independently movable toward each other to compress the material between their faces, motors separate and independent from each other for operating said platens, and blocks or struts adapted to be interposed between portions of the frame and the back of one of the platens, for the purpose set forth.

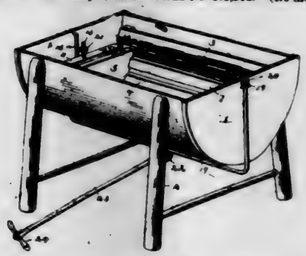
2. In a cotton press, the combination with the frame, of two platens independently movable toward each other, a motor for each platen, one of which is adapted to impart a quick but light pressure, and the other a slow but powerful pressure, the two motors being entirely separate and independent from each other, and blocks or struts adapted to be interposed between the light pressure platen and suitable fixed supports to sustain the pressure exerted by the heavy pressure platen, substantially as described.

3. In a cotton press, the combination with the frame including standards, of two platens independently movable toward each other, and blocks or struts pivotally supported on said standards and bodily movable in a horizontal plane, whereby they may be swung inward

over the upper platen and rest with their lower ends on said platen and their upper ends against a portion of the frame, substantially as described

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**502,314. WASHING-MACHINE.** MARCIA MCKEEVER, Promise City, Iowa. Filed May 9, 1893. Serial No. 473,592. (No model.)

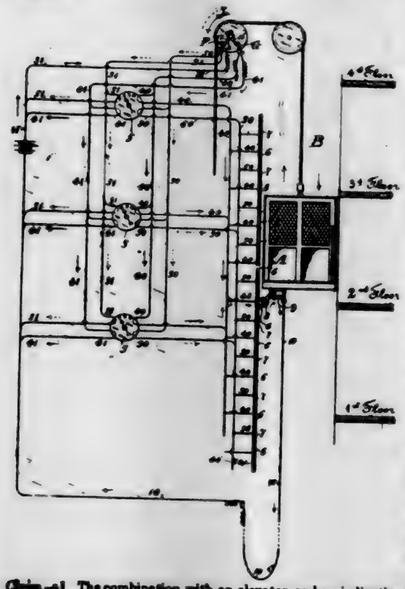


*Claim.*—1. In a washing machine, the combination of a washing machine body having a stationary rubbing surface, suspension hooks arranged within the body and provided with journals extending through the same, said suspension hooks having vertical portions, one of which is provided with a nut, a bail connected to the journals and provided with a handle, cleats provided with openings and arranged on the vertical portions of the supporting hooks, and an oscillating rubber hingedly connected to one of the cleats and rigidly secured to the other, substantially as described.

2. In a washing machine, the combination of a washing machine body having a stationary rubbing surface, suspension hooks arranged within the body and provided with journals extending through the body and having their outer ends squared, a bail extending down the ends and along the bottom of the body and provided at its middle with a depending loop and having eyes at its ends provided with square openings secured on the squared ends of the journals, a handle rod secured to the bend of the bail, and an oscillating rubber hingedly connected with one of the hooks and detachably connected to the other, substantially as described.

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**502,315. ELECTRICAL INDICATOR FOR ELEVATORS.** EUGENE E. PERRIN, Boston, Mass. Filed July 5, 1892. Serial No. 438,960. (No model.)



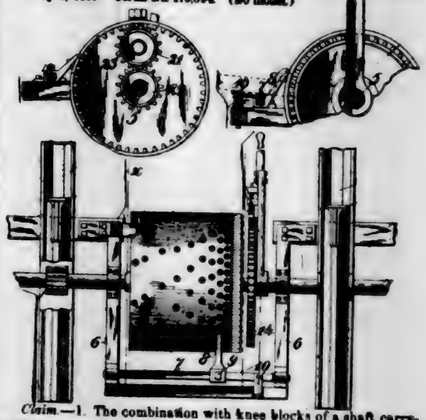

*Claim.*—1. The combination with an elevator, and an indicating device for indicating the position of said elevator, of two electro-magnets or two series of electro-magnets, and mechanism operated by one of these magnets for actuating the indicator in one direction, and operated by the other electro-magnet for actuating the indicator in the opposite direction, means for automatically including the one or the other such electro-magnet or series thereof in circuit according to the direction of motion of the car, and an interrupting device composed of a series of insulated plates in the passage of the car, and a contact-making device attached to and movable with the car, all substantially as and for the purposes herein described.

2. The combination with an elevator and an indicating device for indicating the position of said elevator of two electro-magnets or two series of electro-magnets and mechanism operated by one of these magnets for actuating the indicator in one direction and operated by the other electro-magnet for actuating the indicator in the opposite direction, a circuit interrupting device consisting in two series of insulated contact making plates in the passage of the car, a main electric circuit and branches thereof independently including the said two electro-magnets or series thereof and independently connected to the said two series of contact plates, and means for automatically including one or the other said branches in circuit according to the direction of motion of the car.

3. The combination with an elevator, and an indicating device for indicating the position of said elevator, of two electro-magnets or series thereof, and means for including automatically the one or the other such electro-magnets or series thereof in circuit according to the direction of motion of the car, two opposed pawl and ratchet mechanisms connected to the index of the indicator respectively operated by said two electro-magnets or series thereof effecting a practically continuous motion, and a current interrupter operated by the car producing a plurality of interruptions during the travel of said car from one floor to either adjacent floor

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**502,316. AUTOMATIC RECEDING SAWMILL-SETWORKS.** ALGERNON S. PETTICREW, St. Louis, Mo. Filed Jan. 30, 1891. Renewed July 1, 1893. Serial No. 479,394. (No model.)




*Claim.*—1. The combination with knee blocks of a shaft carrying pinions engaging therewith, a drum having a perforated periphery loosely mounted upon the said shaft, but revolved thereby, a dog adapted to engage the perforations in the said drum, means for rotating the said shaft, and a spring contained within the drum and around the shaft for rotating the latter in the opposite direction, substantially as described.

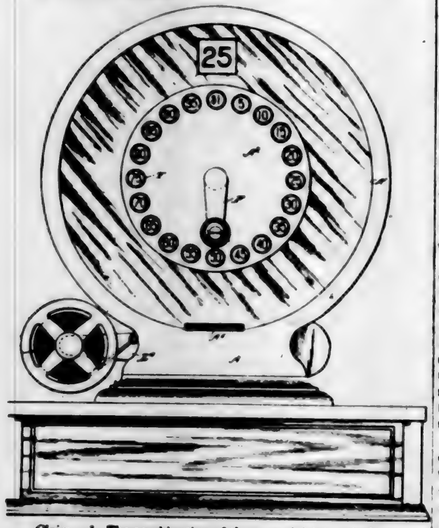
2. The combination with knee blocks, of a shaft carrying pinions engaging therewith, a headed drum loosely mounted upon the said shaft and having a perforated periphery and internal cog teeth, a spring adapted to rotate the said cylinder in one direction a pinion upon the said shaft opposite the said teeth, and a pinion mounted upon the head of the drum and gearing with the said teeth and with the opposite pinion upon the shaft and a spring actuated dog adapted to engage in the perforations in the said drum, substantially as described.

3. The combination with knee blocks, of a shaft carrying pinions engaging therewith, a headed drum loosely mounted upon the shaft and having a perforated periphery and internal cog teeth, a pinion upon the said shaft opposite the said teeth, a pinion mounted upon the head of the drum and gearing with the said teeth and with the opposite pinion upon the shaft, a spring actuated dog adapted to engage in the perforations in the said drum, means for rotating the shaft, and a spring contained within the drum and around the shaft for rotating the latter in the opposite direction, substantially as described.

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**502,317. CASH REGISTER, INDICATOR, RECORDER, AND CHECK-PRINTER.** JOHN PFEIFER, Dayton, Ohio, assignor to the National Cash Register Company, same place. Filed Apr. 11, 1893. Serial No. 469,953. (No model.)




*Claim.*—1. The combination of the central driving shaft, the concentric series of keys, the detent plate co-operating with the keys and a lock co-operating with the detent plate and operating to lock the latter from movement when the driving shaft is turned from normal position, whereby operation of the keys is prevented when said shaft is out of normal position, substantially as described.

2. The combination of the central driving shaft, the locking disk F' mounted thereon, the concentric series of keys, the detent plate co-operating with the keys, and a locking device interposed between the detent plate and locking disk and operating to lock the latter and the keys from movement when the driving shaft is turned from normal position, substantially as described.

3. The combination of the central driving shaft, the notched locking disk F' mounted and capable of slight oscillation thereon, the concentric series of keys, the detent plate co-operating with the keys and provided with a projection, as the stud K', and the locking arm J' interposed between the disk F' and detent plate, substantially as described.

4. The combination of the central driving shaft, the driving disk L fast thereon, the notched locking disk F' loose thereon and loosely connected to the driving disk L, as by the hole and pin G' H', the concentric series of keys, the detent plate co operating therewith and provided with the stud K', and the locking arm J' interposed between the disk F' and detent plate, substantially as described.

5. The combination of the central driving shaft E, the driving disk L fast thereon, the notched locking disk F' loose thereon and connected to the disk L by the hole and pin G' H', the plate L' pivoted to the disk F' and co-operating with a fixed stop M', the concentric series of keys, the detent plate Y provided with the stud K', and the locking arm J co-operating with the disk F' and stud K', substantially as described.

6. The combination of the concentric series of keys T, each provided with three notches, X, C', D', the fixed plate W whose periphery co-operates with the notch X, and the spring-pressed oscillatory detent plate Y provided on its periphery with the teeth co-operating with the notches C' D' in the keys, substantially as described.

7. The combination of the concentric series of keys, mounted in tubular bearings and guided at their inner ends in the fixed plate V the springs U' surrounding the keys within the tubular guides and bearing against shoulders upon the keys, the fixed plate W co-operating at its periphery with the notches X in the keys, and the spring-pressed detent plate Y provided on its periphery with the teeth co-operating with the notches C' D' in the keys, substantially as described

8. The combination of the oscillatory driving disk L provided with the notch M, the concentric series of keys, the oscillatory arm O mounted upon the same axis as the disk L, the coupling device or latch N carried by the arm O and provided with the portion overlapping the periphery of the disk L and having the coupling lug Q' adapted to co-operate with the notch M, and having also the cam-shaped projection P', the spring-pressed pivoted plate S', and the spring R', the plate S' and portion P' operating to embrace the operated key and lock the arm O thereto, substantially as described.

9. The combination of the oscillatory driving disk L provided with the notch M, the spring-pressed pivoted plate N carried by the disk L and projecting beyond its periphery, the oscillatory arm O mounted upon the same axis as the disk L, the concentric series of keys, and a spring-pressed latch carried by the arm O and co-operating with the keys and with the notch M and plate N of the disk L, substantially as described.

10. The combination of the oscillatory driving shaft E, the driving disk L fast thereon and provided with the notch M, the spring-pressed pivoted plate N carried by the disk L, the concentric series of keys, the arm O oscillating on the shaft E, the latch-disk N' pivoted to the arm O and provided with the portion overlapping the disk L and having the extended part P' and the coupling lug Q' adapted to co-operate with the notch M, the plate L' pivoted in the disk N', and the spring R' connected to the disk N', substantially as described.

11. The combination of the central driving shaft E, the notched driving disk L fast thereon, the concentric series of keys, the oscillatory arm O mounted on the shaft E, the coupling device carried by the arm O and co-operating with the disk L and the keys, the gear-wheel $H^3$ fast upon the arm O, the type-wheel $R^3$ geared to the wheel $H^3$, the platen $T^3$ carried by an arm or reciprocating support $U^3$, a spring co-operating with said arm to throw the platen against the type-wheel, and a cam, as $H^4$, actuated by the driving shaft, and connections between the same and the actuating spring of the arm $U^3$, for putting the spring under tension and releasing it to cause it to throw the platen $T^3$ against the type-wheel, substantially as described.

12. The combination of the driving shaft E, the notched driving disk L fast thereon, the concentric series of keys, the arm O loose upon the shaft, the coupling device carried by the arm O and co-operating with the disk L and keys, the shaft $Q^3$ geared to the arm O, the type-wheels $R^3$ $S^3$ fast upon the shaft $Q^3$, the platen $T^3$ carried by reciprocating arms or supports $U^3$ and co-operating with the type-wheels, an actuating arm $W^3$ for the platen arms, a spring co-operating with the arm $W^3$ to cause it to throw the platen against the type-wheels the cam $H^4$ fast upon the shaft E, and connections between the cam and the arm $W^3$ for retracting the latter against the tension of the spring and releasing it, substantially as described.

13. The combination of the central driving shaft E, the notched driving disk L fast thereon, the concentric series of keys, the arm O loose upon the shaft E, the coupling device carried by the arm O and co-operating with the disk L and keys, the registering wheel $J^3$ loose upon the shaft E, a clutch between said wheel and the arm O, one member of the clutch being movable longitudinally of the shaft E into and out of engagement with the other member, and a shifter for such moving clutch member actuated by a cam upon the shaft E, substantially as described.

14. The combination of the central driving shaft, the notched driving disk L fast thereon, the concentric series of keys, the arm O loose upon the shaft, the coupling device carried by the arm O and co-operating with the disk L and keys, the registering wheel $J^3$ mounted upon the shaft E, a clutch between said wheel and the arm O, one member of said clutch being movable longitudinally of the shaft E into and out of engagement with the other member, the disk $C^3$ fast upon the shaft E and provided with the recess $E^3$ having the inclined or beveled walls, the shifting arm or lever $G^3$ carrying a stud co-operating with the disk $C^3$, and connections between the arm $G^3$ and movable member of the clutch, substantially as described.

15. The combination of the central driving shaft, the notched driving disk L fast thereon, the concentric series of keys, the arm O loose upon the shaft E, the coupling device carried by the arm O and co-operating with the disk L and keys, the clutch member $I^3$ fast upon the arm O, the registering wheel $J^3$ mounted to turn and slide upon the shaft E and provided with clutch teeth $L^3$ co-operating with the clutch member $I^3$, the disk $C^3$ fast upon the shaft E and provided with the recess $E^3$ having the beveled walls, the spring $D^3$ interposed between the disk $C^3$ and registering wheel, the pivoted shifting arms $G^3$ $J^3$, the former provided with a stud co-operating with the disk $C^3$ and the latter provided with a stud fitting in a circumferential groove $L^3$ in a disk or part turning with the registering wheel, the link $I^3$ connecting the arms $G^3$ and $J^3$, and the spring $M^3$ connected to the arm $G^3$, substantially as described.

16. The combination of a driving gear, as $Q^3$, for a train of registering wheels, a rotary shaft $T^3$, a gear-wheel $S^3$ splined thereon and adapted to be moved into and out of mesh with the wheel $Q^3$, and a second gear-wheel $U^3$ fast upon the shaft and geared to the primary registering wheel, substantially as described.

17. The combination of the driving gear-wheel $Q^3$, the rotary shaft $T^3$, provided with a thumb-piece B for turning it, the gear-wheel $S^3$ splined upon the shaft and provided with a spring $A^3$ co-operating with a notch in the shaft, the gear-wheel $U^3$ fast upon the shaft, and

the primary registering wheel geared to the wheel $U^3$, substantially as described.

18. The combination of the central driving shaft, the notched driving disk L fast thereon, the concentric series of keys, the arm O loose upon the shaft, the coupling device carried by the arm and co-operating with the disk L and keys, the numbered dial Q fast upon the arm O and adapted to expose its numbers singly at the window S in the frameplate or casing, the transversely sliding screen plate Z provided with the opening $B^3$, the spring $C^3$ connected to said plate, and the pivoted lever $D^3$ co-operating at its lower end with the driving disk L and at its upper end with a projection upon the screen-plate Z, substantially as described.

## 502,318. VEHICLE-SPRING. HERMAN H. PIEPER, St. Louis, Mo., assignor to Gustav F Staats and Theodore Klein, same place. Filed Oct. 3, 1892. Serial No. 447,641. (No model.)



*Claim.*—1. As an improvement in vehicle springs, the combination, with a casting comprising two parallel chambers open at opposite ends, of sectional springs 5 having their opposing ends located and working in the respective chambers, and auxiliary coil springs disposed between the closed ends of the latter and the inner ends of the springs said auxiliary springs having their ends connected with the casting and the springs 5, substantially as set forth.

2. An improved vehicle spring, consisting of sectional springs, the outer ends of said sectional springs movably secured in castings 6 secured to the side bars 2 by clips 10, the inner ends of said springs adapted to operate downwardly and inwardly toward each other, substantially as set forth.

3. An improved vehicle spring, consisting of sectional springs, said sectional springs arranged in pairs, the outer ends of said springs 5 pivotally secured between ears 8 upon plates 9, rectangular shaped castings 6 consisting of a bottom-plate 18, two right angular sides 19, a central partition 20 dividing the interior space into two compartments 17, ends 21 half of the width of said bottom-plate 18 and closing one end of each of the chambers 17 at opposite ends of the casting 6, and the inner ends of said springs 5 adapted to be operative in said chamber 17, substantially as set forth.

4. An improved vehicle spring, composed of sectional springs 5, the top leaves 13 of said springs 5 projecting inwardly into chambers 17, said leaves 13 being a part of said springs 5, a spring 14 located in each of said chambers 17, the screw threaded end of said spring adapted to pass through a perforation in said projecting leaf 13 and be engaged by a nut 16, the opposite screw threaded end 22 of said spring 14 adapted to pass through a perforation in said end plate 21 and be engaged by a nut 23, and rollers 24 mounted upon the top inner ends of said sectional springs 5, substantially as set forth.

5. An improved vehicle spring, having sectional springs 5, arranged in pairs, the inner ends of said springs adapted to be operative in oppositely terminating chambers 17 in the casting 6, a top plate 26 provided for said casting 6, the side walls 19 of said casting having right angular flanges 27, perforations in said top 26, said flanges 27, and bolts 25 adapted to be placed through the floor of the body, said lid 26 and flanges 27, substantially as set forth.

## 502,319. SAW-GUMMER. JAMES B RHODES, Grand Rapids, Mich. Filed Apr. 8, 1892. Serial No. 428,393. (No model.)

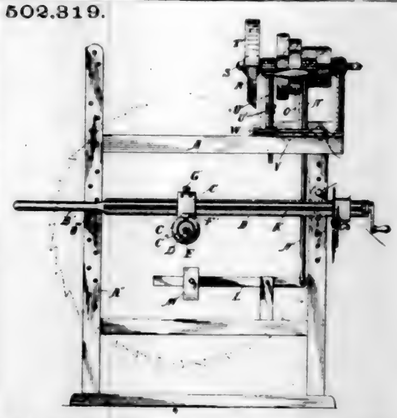
*Claim.*—1. In combination with a saw gummer having mechanism for grinding the teeth in succession, and an adjustable carriage, adapted for holding the saw, and permitting the same to rotate, an adjustable carriage adapted to hold a file against the ends of the teeth of said saw and joint the same, substantially as described.

2. In a saw gummer the combination of a bar, a carriage moving on said bar, a screw engaging said carriage, a cup, a stud, a cone, and a binding nut on said carriage to hold the saw, and an adjustable file carriage on said bar, having a flange and binding screw to hold a file against the ends of the teeth of said saw, substantially as described.

3. In a saw gummer, in combination with a counter shaft, and a spindle having an emery wheel attached, and pulleys and belts to operate the same, a yoke pivoted near its middle, and having arms embracing, and disconnected from the counter shaft and a frame having bearings for said spindle, and pivoted to the respective arms of said yoke opposite the respective ends of said counter shaft, substantially as described.

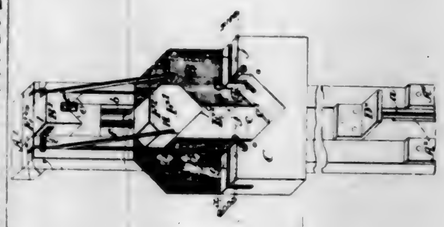
4. In a saw gummer, the combination of an adjustable bar, a movable saw carriage on said bar, a screw engaging and moving said saw carriage, and an adjustable file carriage on said bar, an emery

## 502,319.



wheel, a spindle, a counter shaft and pulleys and belts to operate the same, and a frame having said spindle journaled therein, and a yoke pivoted to said frame opposite the ends of said counter-shaft, and turning on a pivot near its middle, substantially as described.

## 502,320. BOX-FORMING MACHINE. WILLIAM S. RICE, Elvira, Iowa. Filed Mar 3, 1892. Serial No. 423,681. (No model.)



*Claim.*—1. In a section press, the combination with a blank platform provided with an angular notch in its upper surface, of an automatic folder pivotally secured at each side of said notch and a plunger for forcing the blanks into said notch, substantially as set forth.

2. In a section press, the combination with a blank platform, provided with an angular notch in its upper surface, of an angular folder pivotally secured at each side of said notch one end of which normally projects into the same, and a plunger for forcing the blanks into said notch, substantially as set forth.

3. In a section press, the combination with a blank platform provided with an angular notch in its upper surface the walls of said platform being provided with recesses at each side, intersecting said notch, of a folder pivoted in each of said recesses, and having an arm projecting into the notch, and a plunger for forcing the blanks into said notch, substantially as set forth.

4. In a section press, the combination with the blank platform, provided with an angular notch in its upper surface, of a folder at each side of said notch, a plunger for forcing the blanks into said notch and a striker, having on its lower side two striking surfaces, whereby the dovetailed ends of said blanks are interlocked, substantially as set forth.

5. In a section press, the combination with the blank platform, provided with an angular notch in its upper surface, of a folder at each side of said notch, a plunger for forcing the blanks into said notch and an automatic tripper for discharging the folded sections, substantially as set forth.

6. In a section press, the combination with a blank platform provided with an angular notch in its upper surface, of a folder at each side of said notch, a plunger for forcing the blanks into said notch, and a tripper on each side of said notch behind said plunger and having a projection arranged in the path thereof, whereby the folded sections are discharged, substantially as set forth.

7. In a section press, the combination with the blank platform provided with an angular notch in its upper surface, of a folder at each side of said notch, a plunger for forcing the blanks into said notch and a striker having a beveled recess in its lower face, substantially as set forth.

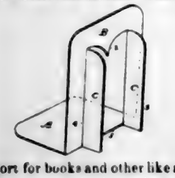
8. In a section press, the combination with the frame having vertical guide ways therein, of the blank platform secured thereto and provided with an angular notch in its upper surface, a plunger mounted in said guide ways in the frame, the middle portion of which is provided with a former for forcing the blanks into said notch and is spring actuated and moves upon the connections of the other two parts, substantially as set forth.

9. In a section press, the combination with the longitudinally grooved standards provided with a blank platform of a sectional plunger mounted therein the end sections being connected by means of two strips the edges of which project beyond the sides of the sections and fit within the grooves of the standards, and the middle section is grooved at its sides and fits upon the guide ways and means for operating the plunger, substantially as set forth.

10. In a section press, the combination, with a blank platform provided with an automatic folder, one portion of which folder normally lies within the plane of movement of the object to be folded, below the joint to be formed, and is movable out of said plane, and another portion of said folder is automatically movable into the plane of movement of said object to be folded, above said joint, and a plunger for engaging with the object, substantially as set forth.



## 502,321. ADJUSTABLE SHELF-PARTITION. WILLIAM E. RICHARDS, New York, N. Y. Filed June 30, 1892. Serial No. 438,539. (No model.)



*Claim.*—1. A support for books and other like articles formed of a single sheet of metal, consisting of a base plate adapted to be inserted beneath the books, an upright extending therefrom and a brace projecting in a direction opposite to the base plate and connected to the upright above the plane thereof with its lower edge in the plane of the base plate, substantially as described.

2. A support for books and like articles formed of sheet metal, consisting of a base plate, an upright extending therefrom, a brace connected thereto above the plane of the base plate and extending in a direction opposite to said base plate, with its lower edge in the plane thereof and a flange depending from the base plate to engage the edge of the supporting surface, substantially as described.

3. A book support consisting of a base plate adapted to be inserted beneath the books, an upright rising from said base plate, said upright having a brace bent out therefrom at or near the top thereof on the side opposite the base plate, and extending to the plane of the base plate, substantially as described.

## 502,322. ELECTRIC INCANDESCENT LAMP. PAUL SCHARF, Vienna, Austria-Hungary. Filed Apr. 17, 1893. Serial No. 470,701. (No model.)

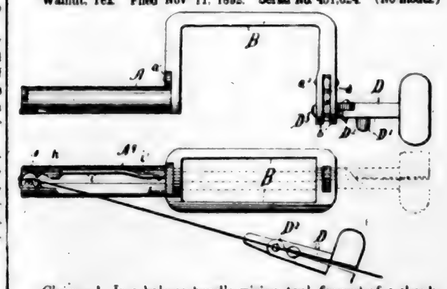


*Claim.*—1. The mode of connecting the leading in wires of incandescent lamps with the lamp bulb and the contact wires, which consists in embedding said leading in wires in the neck of the bulb, cutting the wires flush with the outer face of their bearings, covering the exposed wire surface with a precious metal and connecting the contact wire with the precious metal by soldering, for the purpose set forth.

2. The mode of connecting the leading in wires of incandescent lamps with the lamp bulb and with the contact wires, which consists in forming glass bearings on the leading in wires, embedding said bearings in the neck of the lamp so as to project therefrom, reinforcing said bearings by addition of glass, cutting the leading in wires flush with the lower face of their bearings, covering the exposed wire surface with a precious metal, and soldering the contact wires to the precious metal by means of soft solder, for the purposes set forth.

3. The mode of connecting the leading in wires of incandescent lamps with the lamp bulb and with the contact wires, which consists in embedding the leading in wires in the neck of the bulb, cutting said wires flush with the outer face of said neck, covering the exposed wire surfaces with a precious metal, laying a contact wire across the precious metal coverings, soldering said contact wire thereto by means of soft solder and cutting out that portion of the contact wire between the points of connection with the precious metal, for the purposes set forth.

## 502,323. BALE OR BUNDLE WIRING TOOL. GEORGE SCHUBERT, Walnut, Tex. Filed Nov 11, 1892. Serial No. 451,624. (No model.)



*Claim.*—1. In a bale or bundle wiring tool, formed of a shank, formed in two halves, to be inserted between the bars of a baling press, a spring within said shank to clamp the end of the wire, clamping and cutting jaws near the lower end of said shank to clamp and cut the wire after being drawn firmly around the bale, means to close and rotate said shank to form a twist to tie the wire as and for the purpose described.

2. The combination, of a bale or bundle wiring tool, formed of a brace and shank, formed in two halves, a detachable knob D having the projections D' and the extension $D^2$, as shown and for the purpose described.

3. A bundle or bale wiring tool formed of a shank formed of two halves, and having two separate clamping jaws to receive two or more wires at two different times substantially as described.

4. A bundle or bale wiring tool formed of a shank formed in two halves and hollowed out, a spring *i* in one of said halves the body of the other half adapted to close against the lower end of said spring, clamping jaws *f*, *f'*, and cutting jaws *h*, *h'*, in connection with a brace as and for the purpose described.

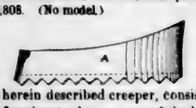
5. A bundle or bale wiring tool formed of a hollow shank formed in two halves a spring *i* in one of said halves, having its lower end widened and with one edge resting against the projecting hinge *a*, clamping jaws *f*, *f'*, and cutting jaws *h*, *h'* near the lower and front part of said shank, as shown and described.

6. A bundle or bale wiring tool formed of a hollow shank formed in two halves, a spring *i* in one of said halves, having one or more grooves $i^4$ in its lower end corresponding grooves in the body of the opposite half, as shown, clamping jaws *f*, *f'*, and cutting jaws *h*, *h'*, near the lower and front part of said shank, as and for the purpose described.

7. A bundle or bale wiring tool formed of a hollow shank formed of two halves, a spring *i* in one of said halves, the lower end of the body of the opposite half adapted to close against the lower end of the spring *i*, studs J, J', in said shank, clamping jaws *f*, *f'*, and cutting jaws *h h'* near the lower end and in front of the studs J, J', as described.

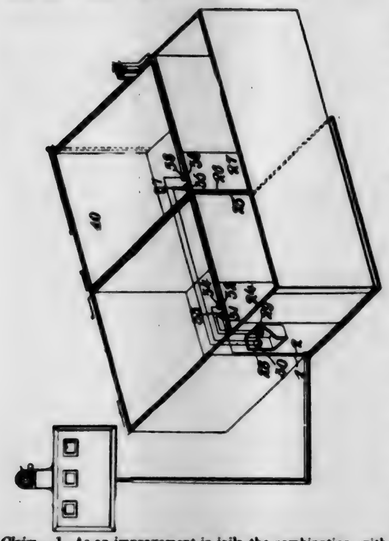
8. In combination with a bale or bundle wiring tool, formed of a brace and shank, formed in two halves, clamping and cutting jaws near the lower end of said shank, gripping jaws L L, on the lower end of said shank, in connection with a brace as and for the purpose described.

## 502,324. ICE-CREEPER. JOHN B SCOTT, Philadelphia, Pa., assignor of one-half to Robert L Russell, same place. Filed Feb. 2, 1893. Serial No. 460,808. (No model.)



*Claim.*—The herein described creeper, consisting of the integral elastic casing, conforming to the contour of the heel, and comprising a roughened, or corrugated base, and an upwardly projecting flange, or wall surrounding the same, the height of the wall being substantially the height of the heel and having the front wall set rearward, or at an angle less than a right angle with relation to the bottom of the creeper, to clasp the breast of the heel, substantially in the manner herein shown and described for the purpose set forth.

**502,825. ELECTRIC JAIL.** CHARLES H. STARKE, St. Louis, Mo. Filed Mar. 28, 1892. Serial No. 426,903. (No model.)

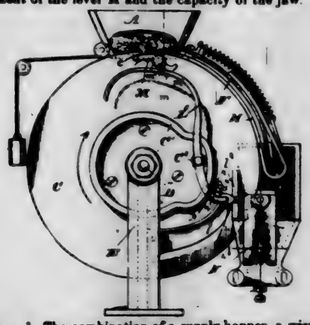


*Claim.*—1. As an improvement in jails, the combination, with a cell having its walls traversed by insulated electrical conductors, of a door for said cell consisting of a grating formed of hollow bars, electrical conductors disposed in the latter and insulated therefrom, said conductors being adapted to be in circuit with the wall conductors when the door is closed, and an electrical annunciator adapted to be actuated and expose a marked plate to view when the circuit is broken; substantially as and for the purpose set forth.

2. The combination, with an inclosure provided with a door, of closed-circuit electrical conductors traversing the walls of said inclosure, said conductors being provided with contact points adjacent to the door, conductors traversing said door and provided with contact points placing said door in circuit when in normal position, short circuit wires connected with the first-mentioned contact points, and a switch interrupting said short circuit wires; substantially as and for the purpose set forth.

**502,826. FEED-REGULATOR FOR TWINE-MACHINES.** JOHN F. STEWART, Chicago, Ill. Filed Mar. 12, 1892. Serial No. 424,858. (No model.)

*Brief.*—The rotating wheel has a notch or jaw in its periphery to grasp the fiber. This jaw is adjustable in capacity by means of the lever M bearing on the curved end L' of the lever L. A feeler K rests on the sliver and rises and falls with the varying thickness of the latter. The feeler K is connected with the lever L and thus regulates the movement of the lever M and the capacity of the jaw.



*Claim.*—1. The combination of a supply hopper, a wisp-forming and carrying jaw, a spinner to which the fibers are delivered, and mechanism, influenced by the quantity of fiber being spun, adapted to regulate the amount of fiber delivered to the said spinner by regulating the capacity of the said wisp forming and carrying jaw, substantially as described.

2. The combination of a supply reservoir, a wisp-forming and carrying jaw, operating to take fibers from the said supply reservoir, said jaw adapted to be increased or decreased in its capacity, and a controlling element therefor that is itself controlled by the quantity of fiber in the sliver at a point where the latter is fully completed, substantially as described.

3. A supply reservoir, a wisp forming and carrying jaw, the capacity of which may be increased or decreased, a lever provided with a guiding surface adapted to regulate the capacity of the said wisp-forming and wisp-carrying jaw, and means controlled by the amount of fibers previously deposited for regulating the position of the lever all combined substantially as described.

4. The combination with the hopper at its end, having the aperture through which the formed sliver is drawn, of a feeler, the position of which is adapted to be influenced by the size of the outdrawn sliver, and a wisp-forming and carrying jaw adapted to lay the fibers of said sliver under the control of said feeler, substantially as described.

5. The combination of a supply reservoir, a wisp-forming and wisp-carrying jaw, a fiber receiving hopper out from which the said fibers are drawn as sliver, a feeler the position of which is adapted to be influenced by the size of said sliver, and means adapted, by the variations in position of said feeler due to irregularities in size of said sliver, to regulate the capacity of the said wisp-forming and carrying jaw, substantially as described.

6. The combination with the hopper, at its end having the aperture K through which the prepared sliver is drawn, of a feeler the normal position of which, in order to be influenced, is against the fiber being outdrawn, a supply reservoir and wisp-forming and carrying jaw, said feeler and said jaw connected by mechanism whereby the position of the feeler regulates the capacity of the wisp-forming and carrying jaw, substantially as described.

7. In combination with the hopper, having, at its end, the aperture K through which the prepared sliver is drawn, of the feeler K' in its normal position being in contact with the outgoing sliver, mechanism connecting said feeler with the automatically adjustable wisp forming and carrying jaw, and the said jaw, the said feeler moved out of contact with the sliver during the time that the feeding jaw is not passing the reservoir substantially as described.

8. The combination of the supply reservoir, the feeding jaws, the receiving hopper, the lever L for controlling the capacity of the said jaws, and the weighted feeler K', said lever L connecting said feeler to said jaws substantially as described.

9. The combination of the hopper A and the hopper B, the feeding devices, the latter adapted to take the fibers from the hopper A and deliver them into the hopper B, the spinning mechanism adapted to draw the sliver prepared by the feeding devices from the hopper B, the said hopper having an aperture through which the said sliver is drawn, with the feeler K', having the sides which span the outdrawing sliver at an acute angle relative to each other, whereby the variations in the size of the sliver will cause the said feeler to assume widely different positions during its contact with said varying sizes of sliver, and mechanism connecting the said feeler with the feeding devices so as to influence the capacity of the same, substantially as described.

10. In a sliver-forming machine, the combination of a wisp-forming and carrying jaw, a receptacle to which the wisps are delivered and from which the wisps are drawn in a longitudinal direction and thus formed into a sliver, a feeler and connecting mechanism whereby the movement of the said feeler, influenced by the size of the sliver passing it, is adapted to control the wisp-forming jaw, said connecting mechanism being adjustable so that the machine may be set for various sizes of sliver required, substantially as described.

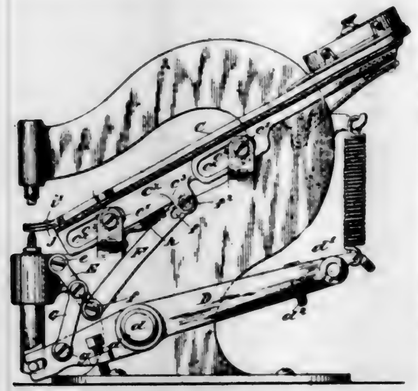
**502,827. EYELETING-MACHINE.** EDWIN R. STIMPSON, New York, N. Y. Filed Oct. 14, 1892. Serial No. 448,830. (No model.)

*Claim.*—1. In a machine for setting eyelets and the like, the combination with the movable eyelet-road, adapted to advance and retire, of the operating lever, mechanism between the eyelet-road and operating lever whereby the latter moves the former, in both directions and a friction pad, A, arranged to bear on some part of the eyelet-road and hold it against shifting its position by gravity when free from the control of the operating lever.

2. In a machine for setting eyelets and the like, the combination with the frame, the plunger, the longitudinally movable eyelet-road, and the operating lever coupled to the plunger, of mechanism between and connecting the operating lever and eyelet-road, said mechanism comprising a toggle having one of its links coupled to the frame and the other to the eyelet road, and a link connecting the operating lever with one of the toggle links, said intermediate mechanism having a slot at one of its couplings to permit of some independent movement of the operating lever, as set forth.



3. In a machine for setting eyelets and the like, the combination with the frame, the plunger, the eyelet-road, and the operating lever, coupled to the plunger, of the intermediate mechanism between and connecting the operating lever and eyelet-road said intermediate mechanism comprising the toggle-links coupled at one extremity to the frame and at the other extremity to the eyelet-road by a slotted connection, and the link G, coupled at one end to the operating lever and at the other end to that link of the toggle which is coupled to the frame, substantially as and for the purpose set forth.



4. In a machine for setting eyelets and the like, the combination with the frame, the plunger mounted therein, the movable eyelet-road mounted on the frame, and the operating lever fulcramed on the frame and coupled to the plunger, of the mechanism connecting the operating lever with the eyelet-road, said mechanism comprising the shorter toggle link E, coupled at one end to the frame, the longer toggle link F, coupled by a slotted connection to the eyelet-road, and the link G, coupled at one end to that arm of the operating lever which is coupled to the plunger, and at the other end to the toggle link E, the knuckle of the toggle being directed toward the operating lever, as shown.

5. In a machine for setting eyelets, the combination with the plunger *b*, provided with a point *b'* which takes the eyelet from the road, the eyelet-road, and mechanism for drawing away the eyelet-road as the plunger rises, of means for retaining the eyelets in place, normally, but permitting the lowermost eyelet to be forcibly displaced, said means comprising a latch *i*, pivotally mounted at *i'* in the eyelet-road at its extreme, forked end, with its point extending part way into the path of the eyelets, and the leaf spring *j*, fixed to the eyelet-road and bearing at its free end on the back of said latch, whereby the withdrawal of the eyelet-road is permitted to disengage the eyelet, as set forth.

**502,828. REAPER.** OLE O. STOKLE, Milwaukee, Wis., assignor to the William Deering & Company, Chicago, Ill. Filed May 25, 1886. Serial No. 203,256. (No model.)

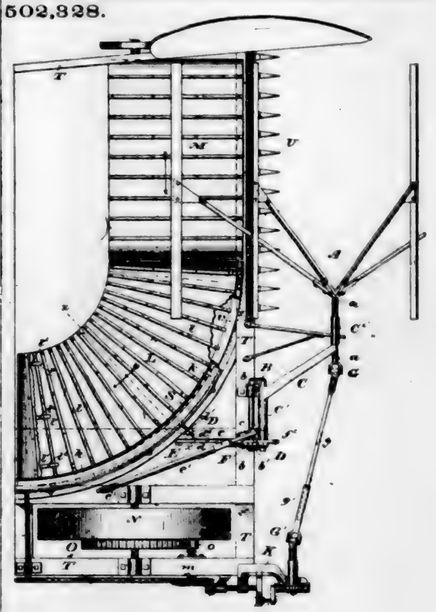
*Claim.*—1. The combination in a reaper of a curved conveyer L, chain S attached thereto and provided with ears *s s* which engage with guide V and retain said conveyer in place, and the adjustable curved guide V arranged to take the slack out of said chain, substantially as and for the purposes set forth.

2. The combination of the curved conveyer L, chain S attached to said conveyer and provided with ears *s s* which engage with the curved guide V and retain said conveyer in place, curved guide V fixed at one end to the machine and attached thereto at the other end so as to be capable of longitudinal movement, adjusting bolt *d* secured to said guide at an intermediate point and to a fixed ear or bracket *d'*, substantially as and for the purposes set forth.

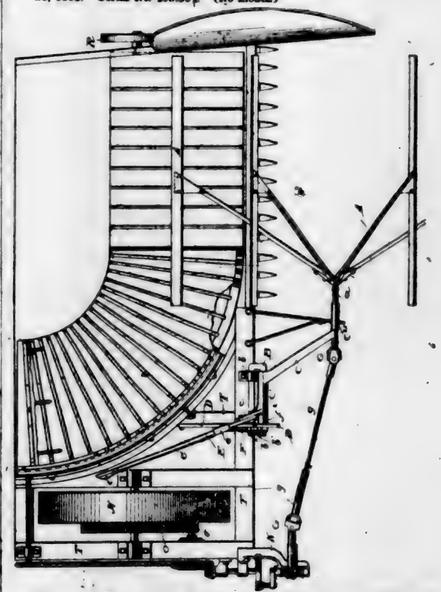
3. The combination with an endless conveyer, a driving chain-belt attached thereto, and sprocket wheels carrying said chain belt, of a guide upon which said chain belt rides between said sprocket wheels, said guide being provided with a projection which terminates at the face of one of said sprocket wheels close to the base of the sprockets at a point where the chain belt leaves the periphery of said sprocket wheel, substantially as and for the purposes set forth.

4. The combination of the conveyer L, chain S attached thereto and mounted upon sprocket wheels R, and guide V provided with a projection $r^3$, substantially as and for the purposes set forth.

**502,828.**



**502,829. REAPER.** OLE O. STOKLE, Burlington, Wis., assignor to the William Deering & Company, Chicago, Ill. Original application filed May 25, 1886, Serial No. 203,256. Divided and this application filed Mar. 28, 1893. Serial No. 468,004. (No model.)



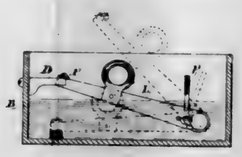
*Claim.*—1. The combination in a reaper of a reel standard hinged at its lower end to the machine, and sustaining at its upper end the adjustable reel bearing, a brace also hinged at its lower end to the machine, a locking device adjustably connecting the brace with the standard, and a single lever serving to adjust the reel bearing and also to inclose the brace locking device.

2. The combination in a reaper, of a reel supporting standard hinged at the lower end to the machine, a brace also hinged to the machine at the lower end and notched at its upper end, a notched sector mounted upon the upper end of said standard and provided with a slot or loop to receive and engage with the notched end of said brace, an arm hinged or pivoted to the upper end of said standard and provided with a bearing for the reel journal, and a lever arranged to swing said standard and arm about their bearings and provided with a catch working with said sector, substantially as and for the purposes set forth.

3. The combination in a reaper of a standard provided at the ends with right angled arms, the lower one of which is journaled in bearings formed on or attached to the machine frame, a reel supporting arm provided with transverse sleeves or boxes, one of which is supported and turns upon the upper arm of said standard, while the other supports and furnishes a bearing for the reel journal, a brace hinged at the lower end to the machine, a locking device adjustably securing the upper end of said brace to the upper end of said standard, and a single lever attached to said reel supporting arm and connected with said locking device, whereby the reel is moved forward and backward and up or down and said locking device operated, substantially as and for the purposes set forth.

4. The combination in a reaper, of a reel A, driving shaft $g$, $g'$, crank disk Q carrying crank pin $q$, worm wheel H, and worm I provided with crank $i$ connected with said crank pin $q$, substantially as and for the purposes set forth.

**502,330. FUSIBLE CUT-OUT.** ELIHU THOMSON, Swampscott, Mass., assignor to the Thomson-Houston Electric Company, of Connecticut. Filed Sept. 17, 1891. Serial No. 406,009. (No model.)



*Claim.*—1. As a new article of manufacture, a safety cut-out for electric circuits, comprising a detent, a fusible strip engaging with said detent, and an actuator carrying said strip, consisting of two arms connected respectively with the terminals of the circuit, substantially as described.

2. As a new article of manufacture, a safety cut-out comprising a fixed detent, a fusible strip engaging therewith, two levers carrying said strip insulated from one another, and connected to the respective terminals of the circuit and spring and manual operating devices for such levers.

3. As a new article of manufacture, a safety cut-out comprising a fusible strip, a carrier and actuator therefor consisting of two spring actuated arms a releasable pawl for said carrier and a detent engaging with said strip.

4. As a new article of manufacture, a safety cut-out comprising a fusible strip, a swinging carrier and actuator therefor having an insulated handle, a detent engaging with said strip, and an additional insulating stop engaging with such carrier when the fuse melts.

5. As a new article of manufacture, a safety cut-out comprising a fusible strip, a swinging carrier and actuator therefor, an insulated detent engaging with said fusible strip, and a non conducting liquid interposed in the path of such carrier.

6. As a new article of manufacture, the combination of a receptacle containing a non-conducting liquid, a detent placed above said liquid a fusible strip engaging with such detent, a carrier and actuator for such strip and having strip holding terminals movable into such liquid.

7. As a new article of manufacture, a safety strip for electric cut-outs having a core of fusible metal and a coating of comparatively non-oxidizable metal

8. As a new article of manufacture, a safety strip for electric cut-outs having a core of fusible oxidizable metal and a coating of comparatively non-oxidizable metal.

9. As a new article of manufacture, an electro-plated fuse for use upon electric circuits.

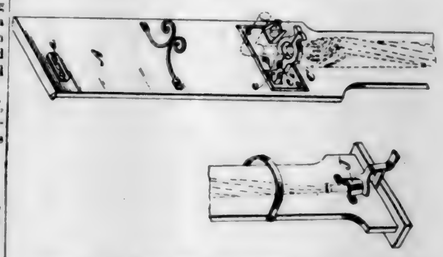
10. In combination a safety strip for an electric cut-out having a core of fusible metal and a plating of comparatively non-oxidizable metal and means, substantially as described, adapted to include such strip under strain in an electric circuit.

11. As a new article of manufacture, a safety cut-out comprising a carrier, a safety strip attached thereto, and consisting of two conducting parts united together and connected in multiple, one part being comparatively fusible, and the other part being comparatively infusible, and a detent engaging with said strip.

12. As a new article of manufacture, the combination of two movable terminals a body of non-conducting liquid placed beneath them, and means, substantially as described, adapted to automatically immerse said terminals in such liquid when an arc may be formed between them.

13. As a new article of manufacture, the combination with two movable terminals between which an arc is liable to be formed, of a body of non-conducting liquid placed below and in the path of motion of such terminals.

**502,331. UMBRELLA-STAND.** HENRY TIDEMAN, Detroit, Mich. Filed Dec. 8, 1892. Serial No. 454,544. (No model.)



*Claim.*—1. In an umbrella holding device, jaws for retaining the umbrella, means for locking the jaws in their open position adapted to be unlocked by the insertion of an umbrella, substantially as set forth.

2. In an umbrella holding device, jaws for retaining the umbrella, means for locking the jaws in their open position adapted to be unlocked by the insertion of an umbrella, and a spring to automatically open the retaining jaws, substantially as set forth.

3. In an umbrella holding device, jaws for retaining the umbrella, means for locking said jaws in closed position adapted to be opened by a check key, and means for retaining the check while the holding device is open and expelling the same on closing it, said means for retaining and expelling the check being connected to and operated directly by an umbrella retaining jaw, substantially as set forth.

4. In an umbrella holding device, the combination of a holding jaw, means adapted to engage with said jaw and hold the same closed, said means being adapted to be forced out of engagement by a key, and means for automatically locking said jaw in its open position adapted to be disengaged by the insertion of an umbrella, substantially as set forth.

5. In an umbrella holding device, the combination of pivoted jaws, one of said jaws having a rear extension, the lever E having an arm adapted to lock a pivoted jaw in closed position and an arm extending at such time across the check chute in the path of a check to support the same, and said chute to conduct the check to said arm, substantially as set forth.

6. In an umbrella holding device, the combination of a pivoted umbrella-retaining jaw having a rear extension and the rod F adapted to be moved by an umbrella placed in said holder, said rod when moved by the umbrella being adapted to lock said pivoted jaw in closed position, substantially as set forth.

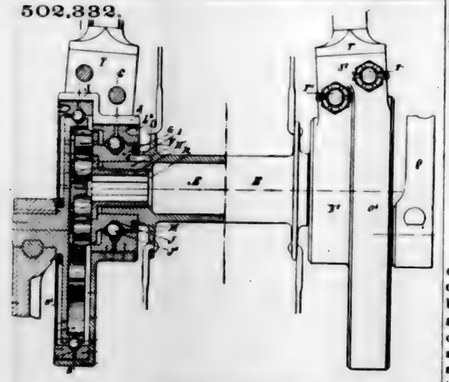
7. In an umbrella holder, the combination of the plate B, the jaw C, the jaw C', provided with the rear extension D, the pivoted lever E, and the rod F adapted to be automatically moved into the path of said extension when an umbrella is removed from the holder, substantially as set forth.

**502,332. SPEED-MULTIPLYING MECHANISM FOR CYCLES.** HENRI TRÉPREAU, Angers, France. Filed June 23, 1892. Serial No. 437,761. (No model.) Patented in France Jan. 29, 1892, No. 218,906.

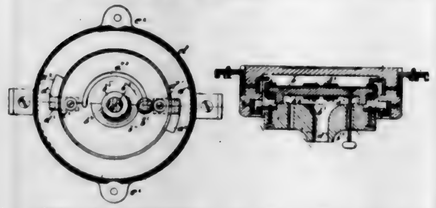
*Claim.*—In a chainless speed multiplying mechanism for velocipedes, the combination with the internally toothed plate or disk O moving within the case $O^3$ (secured to the handle bar) upon balls arranged in contact with its external periphery, two rings $Q'$ and $Q^3$ screw threaded and chamfered for precise lateral adjustment, and means for closing the case containing the mechanism, of the hub E moving on balls contained in the groove formed by rings K K', the pinion in gear with the internal teeth of disk O, formed by a spindle head or crown N having loosely mounted rollers N' adapted to rotate freely and capable of a limited displacement for purposes of adjustment, substantially as described.



**502,332.**



**502,333. MULTIPLE FUSE.** GARDNER T. VOORHEES, Boston, assignor to James E. Maynadier, trustee, Taunton, Mass. Filed May 25, 1892. Serial No. 434,366. (No model.)



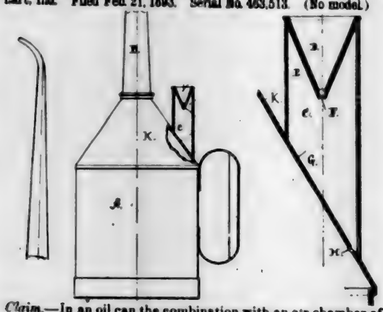
*Claim.*—1. In combination, a case, a fuse carriage supported by the case; two sets of terminals $a'$ $b^3$; two sets of fuses connected to one set of terminals $b^3$; and means for revolving the carriage to bring the free ends of the fuses successively into contact with the second set of terminals, all substantially as described.

2. In a multiple fuse cut out, two sets of fuses $b'$, with their free ends connected with contact pieces, and the other ends of the fuses of each set connected with one terminal $b^3$; in combination with terminal contact pieces $a'$ and means for successively and simultaneously bringing one contact piece of each set of fuses, in contact with its terminal contact piece, substantially as described.

3. In a multiple fuse cut-out a fuse carrier, two sets of fuses and insulated contact pieces, the fuses of each set being electrically connected at their inner ends, but each provided with its insulated contact piece at its outer end, all substantially as described.

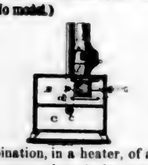
4. The improved multiple fuse cut-out above described, consisting of the body $a$, the detachable cover $d$, the fuse carriage $b$, fuses $b'$ and terminals $a'$ and $b^3$, all combined and operating substantially as described.

**502,334. AIR-VENT FOR OIL-CANS.** GEORGE W. WEAR, Elkhart, Ind. Filed Feb. 21, 1893. Serial No. 463,513. (No model.)



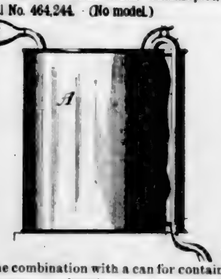
*Claim.*—In an oil can the combination with an air chamber of an inverted cone forming the top thereof and provided with an air vent at its apex and an inclined bottom to said chamber provided with an aperture at its lowest side to admit of the can being tipped sufficiently for use, without its contents closing said aperture substantially as set forth.

**502,335. HEATER.** JOHN A. WEAVER, Pequea, assignor of one-half to Daniel W. Harner, New Holland, Pa. Filed Dec. 10, 1890. Serial No. 374,176. (No model.)



*Claim.*—The combination, in a heater, of a fire chamber and an oven located over the same, a hot-air flue opening into the oven, a cut-off in the oven adapted to close said flue-opening, an air-chamber formed in the hot air flue and having openings through the sides, a rib or shoulder formed about the lower edge of the chamber, a cut-off resting on said rib or shoulder and having openings and plates adapted to register alternately with the openings in the air-chamber, a handle on the cut-off of the air-chamber passing through a slot in the wall thereof, and a damper located in said flue above the hot-air chamber, substantially as and for the purpose specified.

**502,336. OIL-CAN.** ISAAC WEIL, Williamsport, Pa. Filed Mar. 1, 1893. Serial No. 464,244. (No model.)



*Claim.*—1. The combination with a can for containing liquid, of a siphon terminating at one end within the can and at the other end extending through the bottom thereof, the bend in said siphon being disposed above the top of the can where it is provided with an opening, a spring valve for normally closing said opening, and means for forcing air into said can, substantially as set forth.

2. The combination with a can for containing liquid and a spout projecting from said can, of a bulb or pump connected with said spout a siphon terminating at one end within the can and provided with perforations and at the other end extending through the bottom of said can, the bend in said siphon being disposed above the top of the can where it is provided with an opening, a spring actuated valve adapted to normally close said opening, and a flexible tube connected to the protruding end of the siphon, substantially as set forth

**502,337. PROCESS OF ORNAMENTING PAPER.** SETH WHEELER, Albany, N. Y. Filed Sept. 15, 1892. Serial No. 445,946. (Specimens.)

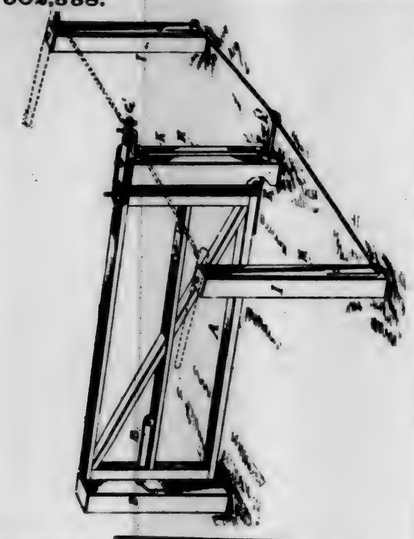


*Claim.*—The process of ornamenting or wrinkling paper and fibrous or analogous material, consisting of operating on a damp or wet sheet so as to first dry it in spots or lines and second, to subsequently dry the remainder of the sheet substantially as described.

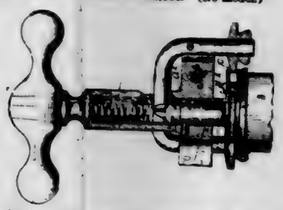
**502,338. SWINGING GATE.** JOHN C. WILSON, Washington, Pa. Filed Jan. 28, 1893. Serial No. 459,967. (No model.)

*Claim.*—The combination with a gate hinged at bottom to admit of being tilted on the hinge E in a vertical plane and provided with a vertical pin on top of the rear stile, of a yoke G fastened horizontally on the top of the post and having the inside notch $g$ and the lever G' fulcrumed on the post, having the front slot $g'$ and the middle bearing $g^3$, the latter made pentagonal in shape to play forward and back as well as laterally; whereby the turning of this lever by hand or suitable mechanism, will lock or unlock the gate and swing it as set forth.

502,838.



502,839. CRIMPING-TOOL. F. CORTES WILSON, Chicago, Ill. Filed Apr. 27, 1893. Serial No. 472,061. (No model.)



*Claim.*—1. A tool for crimping caps upon can spouts comprising a stock made of two relatively movable sections, one adapted to be grasped in operating the tool and the other provided with a cap engaging part, a lever pivoted to one of the sections and adapted for oscillation by the relative movement of said sections, and a crimping member upon the lever, substantially as described.

2. A tool for crimping caps upon can spouts comprising a stock made of two relatively reciprocatory sections, one adapted to be grasped in operating the tool and the other provided with a cap engaging part, a lever pivoted to one of the sections and adapted for oscillation by the relative reciprocation of said sections, and a crimping member upon the lever, substantially as described.

3. A crimping tool comprising a stock provided with a circular plate or disk, crimping rolls mounted adjacent to the edge of said disk upon oscillatory arms pivoted to the stock, and means adapted for actuation by pressure upon the stock, for oscillating said arms to throw the crimping rolls into operative position, substantially as described.

4. A tool for crimping caps upon can spouts, comprising a stock made in two sections adapted to reciprocate upon each other, one section being provided with a cap-engaging part, and one section having a lever pivoted thereto, a crimping roll mounted upon said lever adjacent to said cap engaging part, and means for oscillating said lever by the reciprocation of the sections upon each other, substantially as described.

5. A crimping tool comprising a stock made in two sections adapted to be reciprocated upon each other, one section being provided with a disk and the other having oscillatory levers pivoted thereto, crimping rolls mounted on said levers adjacent to said disk, and means for oscillating said levers by the reciprocation of the sections upon each other, substantially as described.

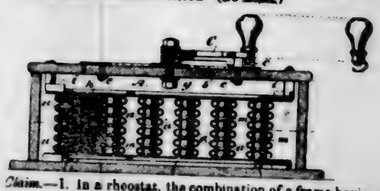
6. A crimping tool comprising a stock made in upper and lower sections, the lower section being provided with a disk, bent levers pivoted to the upper section with their ends resting normally on top of the lower section, and crimping rolls mounted on said levers adjacent to said disk, whereby the forcing of the sections together will throw the crimping rolls inward into operative position, substantially as described.

7. A crimping tool comprising a stock provided with a longitudinal bore, a disk having on its upper side a spindle engaging said bore, bent levers pivoted to said stock with their upper ends projecting into the bore thereof and normally engaging the upper end of the spindle, and crimping rolls mounted on the lower ends of said levers adjacent to said disk, substantially as described.

8. A crimping tool comprising a stock provided with a longitudinal bore, a disk having on its upper side a spindle engaging said bore, bent levers pivoted to said stock with their upper ends projecting into the bore thereof and normally engaging the upper end of the spindle, a spring in the upper end of said bore normally holding the upper ends of the levers and the spindle in their lowermost position with relation to the stock, and crimping rolls mounted on the lower ends of said levers adjacent to said disk, substantially as described.

9. A crimping tool comprising a stock provided with a circular plate or disk, an annular groove in the edge of said disk, crimping rolls mounted adjacent to the edge of said disk upon oscillatory arms pivoted to the stock, said rolls being provided with annular flanges engaging said groove, and means for oscillating said arms to throw the crimping rolls into operative position, substantially as described.

502,840. RHEOSTAT. JAMES J. WOOD, Fort Wayne, Ind. Filed July 15, 1892. Serial No. 440,114. (No model.)



*Claim.*—1. In a rheostat, the combination of a frame having opposite grooved insulating supports, with resistance coils carried by said supports and extended back and forth between them with their helical portions carried uninterruptedly over the opposite supports.

2. In a rheostat, the combination of a supporting frame consisting of front and back plates, with intervening insulating supports, of resistance coils carried between the frames on said supports and extended back and forth over the opposite supports.

3. In a rheostat, the combination of a supporting frame consisting of front and back plates and two opposite rows of pins extending between said plates, of insulating supports carried on said pins, and resistance coils mounted in said frame on said supports, being extended back and forth over the opposite supports.

4. In a rheostat, the combination with a supporting frame consisting of front and back plates and two opposite rows of pins extending between them, of grooved insulating rollers mounted on said pins, and resistance coils supported on said rollers with their helical portions carried uninterruptedly around them in the grooves thereof, and extended back and forth between the opposite rollers.

5. In a rheostat, the combination with a supporting frame consisting of front and back plates and two opposite rows of pins extending between them, of grooved insulating rollers mounted on said pins, a resistance coil supported on said rollers by being extended back and forth over the opposite rollers, with its helical portion carried uninterruptedly around in the groove thereof, fastened at its terminals and distended to separate its convolutions, whereby by the turning of the rollers its distension is equally distributed.

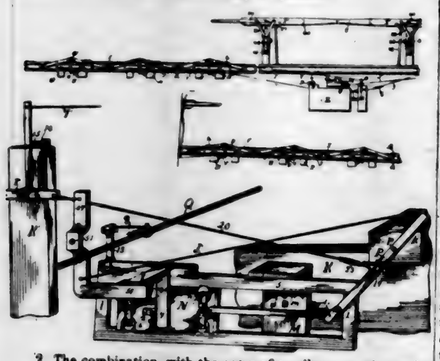
6. In a rheostat, the combination of a supporting frame having insulating supports and resistance coils carried on said supports, with a box inclosing said frame, the front board or cover of said box carrying the segments and contact arm, and the connecting wires for joining the segments to the resistance coils extending downwardly from the respective segments between said cover and frame, and passing underneath the frame, to the respective coils, whereby by turning down the cover all the connecting wires are exposed and accessible.

7. In a rheostat having a circular series of segments and a contact arm sweeping over them, the combination with this arm of an indicator carried by it and consisting of pointers pointed in opposite rotative directions, and directive words or marks in connection with the said pointers, whereby the arm carries with it an indication of the direction in which it should be turned to increase or decrease the resistance.

502,841. GATE FOR RAILWAY-CROSSINGS. HARRY W. ALBRIGHT and SAMUEL B. LEHMERY, Maytown, Pa. Filed Sept. 6, 1892. Serial No. 445,094. (No model.)



*Claim.*—1. The combination, with the gates of a railway crossing, of a lever supporting a shifting weight, an intermediate lever connected with the shifting weight and adapted to move said weight to and from the vibrating end of the lever supporting it, an operating connection between the vibrating end of said weighted lever and said gates, treadles connected with the rails of the track, and a connection between the treadles and said intermediate lever, whereby the intermediate lever is actuated, substantially as specified.



2. The combination, with the gates of a railway crossing and a rock-shaft constructed to operate the same, of a lever frame, a shifting weight supported in said lever frame, an intermediate lever connected with the shifting weight and adapted to move said weight to and from the vibrating end of said lever frame over the pivot thereof, an operating connection between the vibrating end of the lever frame and said rock-shaft, treadles connected with the rails of the track, and a connection between the treadles and said intermediate lever, whereby the intermediate lever is actuated, substantially as specified.

3. The combination, with the gates of a railway crossing and a rock-shaft constructed to operate the same, of a lever supporting a shifting weight, an operating connection between the vibrating end of the weighted lever and said rock-shaft, an intermediate lever connected with the shifting weight and adapted to actuate the same, a double lever having one end connected with the intermediate lever, and treadles located at the sides of the rails of the track on opposite sides of the gates, the treadles on opposite sides of the gates being connected with opposite ends of the double lever, substantially as and for the purpose specified.

4. The combination, with the gates of a railway crossing, of a lever supporting a shifting weight, an operating connection between the vibrating end of said weighted lever and the gates, an intermediate lever connected with the shifting weight and adapted to actuate the same, a double lever united with the intermediate lever by a yielding connection, and treadles located at the sides of the rails of the track on opposite sides of the gates, the treadles on opposite sides of the gates being connected with opposite ends of the double lever, substantially as and for the purpose specified.

5. The combination, with the gates of a railway crossing, of a lever supporting a shifting weight, an operating connection between the vibrating end of said weighted lever and the gates, an intermediate lever connected with the shifting weight and adapted to actuate the same, a double lever secured to the end of a bent revoluble fulcrum rod, a spring bearing against the bent over portion of the fulcrum rod on the side thereof opposite the intermediate lever, a connection between one end of the double lever and the intermediate lever, and treadles located at the sides of the rails of the track on opposite sides of the gates, the treadles on opposite sides of the gates being connected with opposite ends of the double lever, substantially as and for the purpose specified.

6. The combination, with the gates of a railway crossing, of a lever supporting a shifting weight, an operation connection between the vibrating end of said weighted lever and the gates, an intermediate lever connected with the shifting weight and adapted to actuate the same, a double lever secured to the end of a bent revoluble fulcrum rod, a spring bearing against the bent over portion of the fulcrum rod on the side thereof opposite the intermediate lever, a yielding connection between one end of the double lever and the intermediate lever, and treadles located at the sides of the rails of the track on opposite sides of the gates, the treadles on opposite sides of the gates being connected with opposite ends of the double lever, substantially as and for the purpose specified.

7. The combination, with the gates of a railway crossing, of a lever supporting a shifting weight, an operating connection between the vibrating end of said weighted lever and the gates, an intermediate lever connected with the shifting weight and adapted to actuate the same, a double lever having one end connected with the intermediate lever, and a series of connected treadles located by the sides of the track on each side of the gates, the series of treadles on opposite sides of the gates being connected with opposite ends of the double lever, said treadles being adapted to communicate movement successively and progressively to said double lever, substantially as and for the purpose specified.

8. The combination, with the gates of a railway crossing, of a lever supporting a shifting weight, an operating connection between the vibrating end of said weighted lever and the gates, an intermediate lever connected with the shifting weight and adapted to actuate the same, a double lever having one end connected with the intermediate lever, and a series of connected treadles located by the sides of the tracks on each side of the gates, the series of treadles on opposite sides of the gates being connected with opposite ends of the double lever, said treadles being adapted to communicate movement successively and progressively to said double lever, the connections between said series of treadles and the levers actuating the shifting weight being constructed to yield to a limited extent under the strain exerted thereon, substantially as and for the purpose specified.

9. The combination, with the gates of a railway crossing, of a lever supporting a shifting weight, an operating connection between the vibrating end of said weighted lever and the gates, an intermediate lever connected with the shifting weight and adapted to actuate the same, a double lever secured to the end of a bent revoluble fulcrum rod, a spring bearing against the bent over portion of the fulcrum rod on the side thereof opposite the intermediate lever, a connection between one end of the double lever and the intermediate lever, and a series of connected treadles located by the side of the track on each side of the gates, a series of treadles on opposite sides of the gates being connected with opposite ends of the double lever, said treadles being adapted to communicate movement successively and progressively to said double lever, substantially as and for the purpose specified.

10. The combination, with the gates of a railway crossing, of a lever supporting a shifting weight, an operating connection between the vibrating end of said weighted lever and the gates, an intermediate lever connected with the shifting weight and adapted to actuate the same, a double lever secured to the end of a bent revoluble fulcrum rod, a spring bearing against the bent over portion of the fulcrum rod on the side thereof opposite the intermediate lever, a connection between one end of the double lever and the intermediate lever, and a series of connected treadles located by the track on each side of the gates, the series of treadles on opposite sides of the gates being connected with opposite ends of the double lever, said treadles being adapted to communicate movement successively and progressively to said double lever, the connections between said series of treadles and the levers actuating the shifting weight being constructed to yield to a limited extent under the strain exerted thereon, substantially as and for the purpose specified.

11. The combination, with the gates of a railway crossing, of a lever supporting a shifting weight, an operating connection between the vibrating end of said weighted lever and the gates, an intermediate lever connected with the shifting weight and adapted to actuate the same, a double lever having one end connected with the intermediate lever, a series of pairs of treadles located on each side of the gates, the treadles of each pair being pivoted at their outer ends at the sides of the track and inclining upward toward each other and having a movable connection between their inner ends, rock-shafts journaled below said treadles, posts pivoted to arms projecting from the sides of said rock-shafts and engaging the united ends of the treadles, weighted arms projecting from the opposite sides of the rock-shafts, upright arms formed on the rock-shafts, connections between said upright arms, and connections between the innermost upright arm of the opposite series and opposite ends of the double lever, substantially as and for the purpose specified.

12. The combination, with the gates of a railway crossing, of a lever supporting a shifting weight, an operating connection between the vibrating end of said weighted lever and the gates, an intermediate lever connected with the shifting weight and adapted to actuate the same, a double lever having one end connected with the intermediate lever, a series of pairs of treadles located on each side of the gates, the treadles of each pair being pivoted at their outer ends at the sides of the track and inclining upward toward each other and having a movable connection between their inner ends, rock-shafts journaled below said treadles, posts pivoted to arms projecting from the sides of said rock-shafts and engaging the united ends of the treadles, weighted arms projecting from the opposite sides of the rock-shafts, upright arms formed on the rock-shafts, connections between said upright arms, and connections between the innermost upright arm of the opposite series and the opposite ends of the double lever, the connections between said series of treadles and the levers actuating the shifting weight being constructed to yield to a limited extent under the

strain exerted thereon, substantially as and for the purpose specified.

13. The combination, with the gates of a railway crossing, of a lever supporting a shifting weight, a stop formed on the shifting weight, an arm connected with the vibrating end of the weighted lever and constructed to engage said stop, a releasing lever adapted to disengage said arm from the stop on the shifting weight, an intermediate lever connected with the shifting weight and adapted to actuate the same, series of connected treadles located by the side of the track on opposite sides of the gates, a connection between the innermost treadle of each series, and the intermediate lever, whereby said intermediate lever is actuated successively and progressively in the same direction by both series of levers, and operating connections between the outermost of the opposite series of levers and opposite ends of the releasing lever, substantially as and for the purpose specified.

14. The combination with the gates of a railway crossing, of a lever supporting a shifting weight, a stop formed on the shifting weight, an arm connected with the vibrating end of the weighted lever and constructed to engage said stop, a releasing lever adapted to disengage said arm from the stop on the shifting weight, an intermediate lever connected with the shifting weight and adapted to actuate the same, series of connected treadles located by the side of the track on opposite sides of the gates, a connection between the innermost treadle of each series and the intermediate lever, whereby said intermediate lever is actuated successively and progressively in the same direction by both series of levers, and operating connections between the outermost of the opposite series of levers and opposite ends of the releasing lever, the connections between said series of treadles and the intermediate lever being constructed to yield to a limited extent under the strain exerted thereon, substantially as and for the purpose specified.

15. The combination, with the gates of a railway-crossing, of a lever supporting a shifting weight, a stop formed on the shifting weight, an arm connected with the vibrating end of the weighted lever constructed to engage said stop, a releasing lever adapted to disengage said arm from the stop on the shifting weight, an intermediate lever connected with the shifting weight and adapted to actuate the same, treadles located by the track on opposite sides of the gates, connections between the oppositely located treadles and the intermediate lever, whereby said intermediate lever is actuated in the same direction by said oppositely located treadles, and operating connections between said treadles and opposite ends of the releasing lever, substantially as and for the purpose specified.

16. The combination, with the gates of a railway-crossing, of a lever supporting a shifting weight, a stop formed on the shifting weight, an arm connected with the vibrating end of the weighted lever and constructed to engage said stop, a releasing lever adapted to disengage said arm from the stop on the shifting weight, an intermediate lever connected with the shifting weight and adapted to actuate the same, treadles located by the track on opposite sides of the gates, connections between the oppositely located treadles and the intermediate lever, whereby said intermediate lever is actuated in the same direction by said oppositely located treadles, the connections between said treadles and the intermediate lever being constructed to yield to a limited extent under the strain exerted thereon, and operating connections between said oppositely located treadles and opposite ends of the releasing lever, substantially as and for the purpose specified.

17. The combination, with railway gates pivoted to posts, of a rock-shaft located between the gates, bell crank levers pivoted to the gate-posts, rods connecting the outer limbs of the bell-crank levers and arms projecting from opposite sides of said rock-shaft, and rods connecting with the inner limbs of said bell-crank levers and with the gates inside of the posts, substantially as and for the purpose specified.

18. The combination, with railway gates pivoted to posts, of a rock-shaft located between the gates, bell-crank levers pivoted to the gate-posts, rods connecting the outer limbs of the bell-crank levers and arms projecting from opposite sides of said rock-shaft, rods connected with the inner limbs of said bell-crank levers and with the gates inside of the posts, depending rods pivoted in the outer ends of the pivoted sections of the gates, and weights detachably connected with the depending rods, substantially as and for the purpose specified.

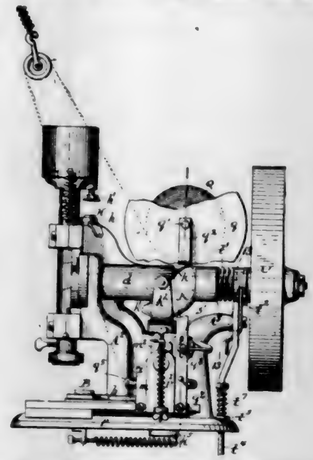
19. The combination, with a road gate pivoted to a post, of means for operating said gate, a footway gate hinged to the pivot of the road gate, a sliding post located in a groove in the gate post, a rod pivotally connected with the road gate inside of the gate post and with the sliding post, and a rod pivotally connected with said sliding post and with the footway gate outside of the gate post, substantially as and for the purpose specified.

20. The combination, with a road gate pivoted to a post, of means for operating said gate, a footway gate having its inner end forked to embrace the end of the road gate and hinged to the pivot of said road-gate, one fork of the footway gate extending inward beyond said pivot and having a weight attached thereto, a sliding post located in a groove in the gate post, a rod pivotally connected with the road gate inside of the gate post and with the sliding post, and a rod pivotally connected with said sliding post and with the footway gate outside of the gate post, substantially as and for the purpose specified.

21. The combination, with a road gate pivoted to a post, of means for operating said gate, a footway gate hinged to the pivot of the road gate, a sliding post located in a groove in the gate post, a rod pivotally connected with the road-gate inside of the gate post and with the sliding post, a rod pivotally connected with said sliding post and with the footway gate outside of the gate post, buffers attached to the face of the sliding post and adapted to engage buffers on the gate post, a bell attached to the gate post, and an arm on the sliding post adapted to sound said bell, substantially as and for the purpose specified.

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**502,842. EMBOSSING-MACHINE.** ROBERT S. ANDERSON, Toronto, Canada. Filed Oct. 16, 1891. Serial No. 408,880. (No model.)



*Claim.*—1. The combination with the die, the frame supporting the die and a vertically movable plunger guided in said frame, of a driving shaft, a lifting cam secured to said shaft and engaging with said plunger whereby the plunger is raised and permitted to drop when released by the cam, a yielding buffer block arranged on the frame and a buffer head attached to the plunger and adapted to engage with said buffer block upon the descent of the plunger, substantially as set forth.

2. The combination with the main frame, the die and the vertically movable plunger guided in said frame, of a lifting cam whereby the plunger is raised and permitted to drop on the die, and a buffer mechanism which resists the downward movement of the plunger and which can be shifted out of engagement with the plunger, substantially as set forth.

3. The combination with the main frame, the die and the vertically movable plunger guided in said frame, of a lifting cam whereby the plunger is raised and permitted to drop on the die, a buffer block arranged on the main frame, a buffer head arranged on the plunger over the buffer block and adapted to strike the same and a carrying plate supporting the buffer block and pivoted to the main frame whereby the buffer block can be moved from underneath the buffer head, substantially as set forth.

4. The combination with the vertically movable plunger, the driving shaft and mechanism for actuating the plunger from the driving shaft, of a die, a rock shaft arranged below the driving shaft and provided with an oscillating arm carrying said die, a cam secured to the driving shaft, and an actuating arm secured to the rock shaft and engaging with said cam, substantially as set forth.

5. The combination with the vertically movable plunger, the driving shaft and mechanism for actuating the plunger from the driving shaft, of a die, a vertical rock shaft arranged below the driving shaft and provided with an oscillating arm carrying the die, a cam secured to the driving shaft and engaging with an actuating arm on the rock shaft, and a spring whereby the actuating arm of the rock shaft is held in engagement with said cam, substantially as set forth

6. The combination with the vertically movable plunger, the driving shaft and mechanism whereby the plunger is actuated from the driving shaft, of a die, a wiper, a rock shaft arranged below the driving shaft and provided with an arm carrying the die, a cam secured to the driving shaft, and an actuating arm secured to the rock shaft and engaging with said cam, whereby the die is oscillated back and forth beneath the plunger and wiper, substantially as set forth

7 The combination with the vertically movable plunger, and the driving shaft provided with a lifting cam whereby the plunger is actuated, of a movable die, a rock shaft provided with an arm carrying said die, an actuating arm secured to said rock shaft and a cam secured to the driving shaft and engaging with the actuating arm of the rock shaft, substantially as set forth

8 The combination with the vertically movable plunger, the driving shaft and mechanism for actuating the plunger from the driving shaft, of a movable die, a rock shaft provided with an arm carrying said die, a head secured to the driving shaft and provided with a cam face and a concentric face, an actuating arm secured to the rock shaft and provided with a roller engaging with the cam face and concentric face of the head, substantially as set forth.

9 The combination with the vertically movable plunger, the driving shaft, and mechanism for actuating the plunger from the driving shaft, of a movable die, a rock shaft provided with an arm carrying said die, a head secured to the driving shaft and provided with a cam face and a concentric face, an actuating arm secured to the rock shaft and provided with a roller, and a spring whereby the roller is held against the cam and concentric faces of the head, substantially as set forth

10 The combination with the vertically movable plunger, the driving shaft, and mechanism for actuating the plunger from the driving shaft, of a movable die, a wiper, a rock shaft provided with an arm carrying the die, an actuating arm secured to the rock shaft, a cam arranged on the driving shaft and engaging with said actuating arm whereby the die is oscillated below the wiper and the plunger, and mechanism for moving the wiper toward and from the die, substantially as set forth

11 The combination with the plunger, the movable die and the wiping pad, of a wiping tape arranged on the pad, a feed roller whereby the tape is fed across the pad, a shaft supporting the feed roller and provided with a ratchet wheel, a disk mounted loosely on said shaft and provided with a pawl adapted to engage with the ratchet wheel, and an adjustable trip cam whereby the pawl is disengaged from the ratchet wheel, substantially as set forth

12 The combination with the plunger, the movable die, and the wiping pad, of a wiping tape arranged on the pad, a feed roller whereby the tape is fed across the face of the pad, a shaft supporting the feed roller and provided with a ratchet wheel, a disk mounted loosely on said shaft and provided with a pawl adapted to engage with the ratchet wheel, a carrying arm adjustably mounted on the shaft, and a trip cam secured to the carrying arm and adapted to disengage the pawl from the ratchet wheel, substantially as set forth

13 The combination with the main frame, the movable plunger, the movable die, and the wiping pad, of a wiping tape arranged on the under side of the pad, a feed roller whereby said tape is shifted, a shaft supporting the feed roller and provided with a ratchet wheel an oscillating disk mounted loosely on the shaft and provided with a pawl engaging with said ratchet wheel, a carrying arm mounted loosely on said shaft and provided with a trip cam whereby the pawl is disengaged from the ratchet wheel, and a rod pivoted with one end to the carrying arm and adjustably connected with its opposite end to the main frame, substantially as set forth.

14 The combination with the plunger, the movable die, and the wiping pad, of a tape arranged on the under side of the pad, a feed roller whereby the tape is shifted on the pad, a pressure roller pressing against the feed roller and provided with grooves in its periphery, and stripping fingers, extending into said grooves, substantially as set forth.

15 The combination with the plunger, the movable die, and the wiping pad, of a wiping tape arranged on the under side of the pad, a spool carrying the supply of tape, a feed roller whereby the tape is shifted, a tension roller supporting the tape between the spool and the pad, and a spring yieldingly supporting the tension roller, substantially as set forth

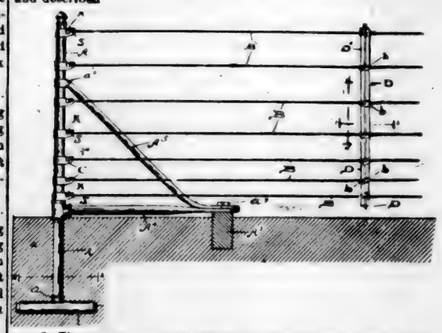
16 The combination with the driving shaft, the driving wheel and the clutch adapted to couple the driving shaft and wheel, of a movable die, a plunger, a lifting cam which is secured to the driving shaft and which raises the plunger and permits the same to drop on the die, a main cam whereby the clutch can be disengaged when the plunger is raised and an auxiliary cam whereby the clutch can be disengaged when the plunger has dropped, substantially as set forth

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**502,848. FENCE.** JOHN A. E. ANDERSON, Lebanon, Ind., assignor of two-thirds to William C. Kern and Thomas S. Kern, same place. Filed Jan. 23, 1893. Serial No. 459,966. (No model.)

*Claim.*—1. The combination, in a fence, of a post A formed of metal pipe, a coupling $a$ at its extreme lower end, transversely extending arms $A'$ secured thereto by said coupling, a plate $A^2$ bent over and thus secured to said arms $A'$ and thus forming a flat horizontal anchor-plate on the bottom end of said post, substantially as shown and described





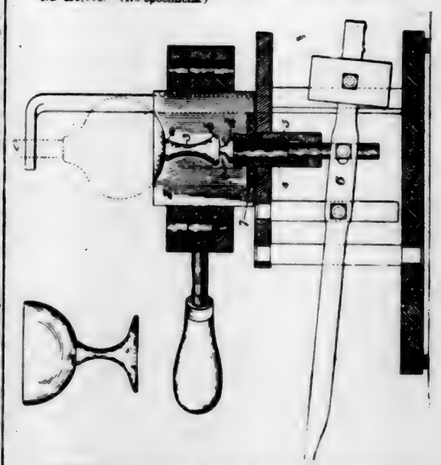
2 The combination of the post A formed of pipe in two parts, a coupling $A^6$ uniting said two parts at or about the surface of the ground, an arm $A^4$ extending out from said coupling, a brace $A^5$ extending from said arm to a point near the top of the post, a coupling ring $A^6$ secured to said post and entering the end of said brace $A^5$, a block $A^7$ secured in the ground at the outer end of the brace, and a bolt or pin $a^7$ passing through said brace and said arm into said block, the whole being constructed and arranged substantially as shown and described.

3 The combination, in a fence, of the post, the fence-wires, and intermediate stay-bars made up of the parts D and D', said parts D' being bent to partially inclose said parts D and being also bent or flanged to extend alongside and in contact with the fence wires, whereby the structure as a whole is prevented from turning

4 The combination, in a fence, of the posts, the fence wires, and the intermediate stay-bars D having notches for said wires, inclosing portions D' upon said stay-bars and wires $b$ whereby the several parts are secured together, substantially as set forth

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**502,344. METHOD OF FORMING ARTICLES OF GLASSWARE.** JOHN J. BRANNAGAN, Martin's Ferry, Ohio. Filed Jan. 26, 1893. Serial No. 459,776. (No specimens.)



*Claim.*—1. The method of making articles of glassware having bodies, stems and feet, which consists in forming the body, pressing a stem against the body and forming a separable button on the end of the stem, separating the button from the stem, and then applying a foot to the end of the stem, substantially as described.

2. The method of making articles of glassware having bowls, stems and feet, which consists in blowing the bowl, pressing a stem against the bowl and pressing a button on the end of the stem, separating the button from the stem, and then applying a foot to the end of the pressed stem, substantially as described.

**502,845.** FENCE AND STAY. DARIUS BRYAN, Washington Court House, Ohio. Filed June 2, 1892. Serial No. 435,342. (No model.)



*Claim.*—1. An anchoring device for fence wires, consisting of a short block having a wedge-shaped lower end, and a wire fastened to said end and led up alongside the block—substantially as described.

2. An anchoring device for fence-wires, consisting of a block A having its lower end beveled off to form an inclined surface a, and a wire B, fastened to the sharp lower end of the block and led up said inclined face and the adjacent vertical side of the block, substantially as described.

3. The mode of anchoring a rope or wire in the earth which consists in fastening it to a comparatively short block at one end of the longer axis thereof, placing the block entirely below the surface of the ground, with that end lowermost to which the rope or wire is attached, and with the rope or wire lying lengthwise of the block, and then partially upsetting the block by putting a strain on the rope or wire and thereby increasing the surface which resists the strain, substantially as described.

**502,846.** STANDARD FOR WAGON-BOLSTERS. HERMAN C. BUCKINGHAM, New Milford, Conn. Filed Mar. 26, 1892. Serial No. 427,073. (No model.)



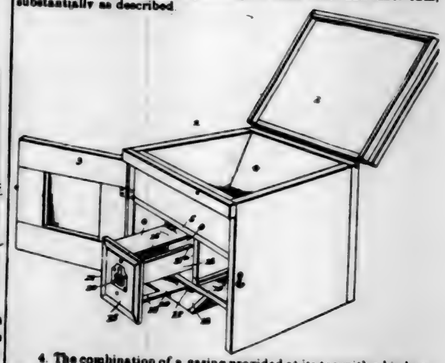
*Claim.*—A standard for wagon bolsters consisting of a metal structure comprising the flat closed front, a closed bottom and straight sides and a plate set diagonally between the sides and forming a tapering mortise between it and the front plate whereby to receive a similarly shaped stake, and base flanges constructed to embrace the sides of a bolster, said flanges and the bottom of the standard having bolt holes formed therein adapted to receive bolts whereby to retain the standard in place upon the bolster, substantially as set forth.

**502,847.** MEASURING-VESSEL. AMOS H. CELL and ELLSWORTH G. PASTER, Colorado Springs, Colo. Filed Mar. 9, 1893. Serial No. 466,273. (No model.)

*Claim.*—1. The combination of a casing provided with a bin having a discharge opening, a measuring chamber arranged below the bin and having its top and bottom open, a spout located beneath the measuring chamber, and slides rigidly connected with each other and simultaneously operated in the same direction and arranged above and below the measuring chamber, and provided respectively with openings at their inner and outer ends adapted to register alternately with the discharge opening of the bin and the bottom of the measuring chamber substantially as and for the purpose described.

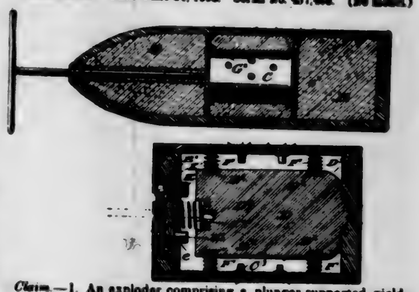
2. The combination of a casing provided at its top with a bin having a discharge opening, a measuring chamber arranged beneath the bin and having its top and bottom open and provided at its side walls with horizontal ways, a guiding frame provided with parallel guide bars arranged in said ways, and the upper and lower slides having at their inner and outer ends discharge openings and secured to and carried by the guiding frame, substantially as described.

3. The combination of a casing provided at its top with a bin having a discharge opening, a measuring chamber having its top and bottom open and provided at its side walls with openings, a guiding frame provided with guide bars arranged in the openings and having a cross-piece connecting the inner ends of the guide bars and forming a stop, and the slides secured to and carried by the guide frame and provided with openings arranged respectively at their outer and inner ends, substantially as described.



4. The combination of a casing provided at its top with a bin having discharge openings, a measuring chamber located beneath the bin and having an open top and bottom and provided in its side walls with openings, the ways arranged beneath the bin and the measuring chamber and constructed of sheet metal and provided with openings and having securing flanges, a guide frame provided with guide bars arranged in the openings of the side walls of the measuring chamber and provided at their rear ends with a stop cross-piece, the upper and lower slides secured to and carried by the guide frames and arranged in said ways and provided at their inner and outer ends with openings, and a spout arranged beneath the measuring chamber, substantially as described.

**502,848.** EXPLODER FOR PROJECTILES. JOSEPH CLARK, San Francisco, Cal. Filed June 21, 1892. Serial No. 437,462. (No model.)



*Claim.*—1. An exploder comprising a plunger supported yieldingly to permit movement in radial directions.

2. An exploder comprising a plunger supported yieldingly to permit movement in a forward and in radial directions.

3. An exploder provided with a plunger supported rigidly at its rear and yieldingly at its sides, whereby it may move radially.

4. An exploder comprising a plunger and means for locking said plunger against movement, said means extending beyond an area in cross section greater than the caliber of the shell in which said exploder is employed.

5. An exploder consisting of a shell provided with a nipple arranged on a diametric line in its side and of a plunger yieldingly supported within the shell and capable of radial movement.

6. An exploder consisting of a shell provided with a plurality of nipples arranged diametrically in its sides and a plunger yieldingly supported within the shell whereby it is adapted to move radially in all directions.

7. An exploder consisting of a shell provided with nipples arranged diametrically in its sides and front end and with an interior plunger yieldingly supported in all directions except against rearward movement.

8. An exploder consisting of a shell having nipples arranged diametrically in its sides and front end, having a plunger and means for rigidly supporting it against rearward movement and for yieldingly supporting it in all other directions.



9. An exploder, consisting of a shell having nipples and a recessed bottom and a plunger provided with a projection fitting said recess and with springs projecting diametrically from the plunger and supporting it within the shell.

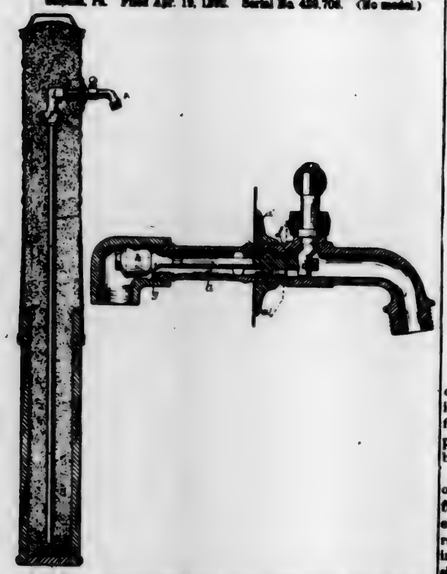
10. A projectile having rigid partitions provided with sockets, an exploder seated in said sockets and having a spring-supported plunger and a bolt screw-threaded into the exploder and provided with a T-head, a branch of which extends beyond the periphery of the projectile.

11. An exploder shell provided with a nipple and a spring-held hammer both of which are co-operatively seated in a wall of the shell, in combination with an interior yieldingly-supported plunger, substantially as specified.

12. An exploder having seated in a wall thereof a nipple, an encircling spring and a hammer against which said spring takes bearing and an interior plunger operating to strike said hammer.

13. An exploder provided with a plunger surrounded upon all sides and at its front end by springs and rigidly supported at its rear, substantially as specified.

**502,849.** HYDRANT AND FAUCET. WILLIAM R. CORNOG, Philadelphia, Pa. Filed Apr. 19, 1892. Serial No. 429,708. (No model.)



*Claim.*—1. The combination in an outside water supply device, of the faucet casing, the water valve, an air check valve between the water valve and the nozzle of the faucet, and means for permitting the drainage of water from the space between said valves, substantially as described.

2. The combination of the faucet casing, the valve stem having a water valve at one end, and provided with an air check valve adapted to fit into a flanged portion on the interior of the faucet casing between the water valve and the nozzle, and means for permitting the drainage of water from the space between the two valves, substantially as described.

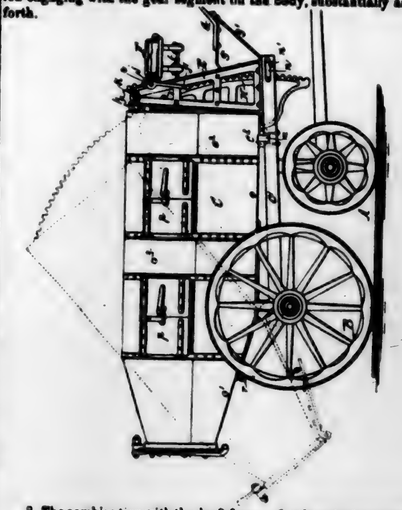
3. The combination of the faucet casing, the valve stem and water valve thereon, piston air check carried by said valve stem, an internal flange on the faucet casing into which the piston air check moves, with a drip opening in the internal flange to allow the entrapped water between the air check and the water valve to escape, substantially as described.

4. In a hydrant structure, the combination of the sheet-metal body, a cast metal base upon which the body is mounted, with a wooden ground structure secured to the base, and a supply pipe and valve, substantially as described.

**502,850.** GARBAGE-CART. THOMAS DARE, Sr., Buffalo, N. Y. Filed Apr. 13, 1893. Serial No. 470,178. (No model.)

*Claim.*—1. The combination with the draft frame, of a body pivoted upon the same and composed of a tight front, sides, top and bottom, forming a tight inclosure, and having in its top inlet openings provided with doors, its rear end being formed with an upright discharge opening provided with a door, and with a bottom descending forwardly from said discharge opening, substantially as set forth.

2. The combination with the draft frame, of a tilting body pivoted upon the draft frame and provided with a tight front and sides, an upright discharge opening at its rear end, a tight bottom having its rear portion inclined upwardly toward the rear discharge opening, a top sloping toward both sides and having a receiving opening in each side and doors applied to said openings, and a gear segment secured to the front end of said body, stationary standards secured to the draft frame in front of said body and supporting a seat and foot board, and a crank shaft journaled in said standards and provided with a gear pinion engaging with the gear segment on the body, substantially as set forth.



3. The combination with the draft frame, of a tilting body mounted on the draft frame, a stationary frame arranged on the draft frame in front of the body, a driving shaft supported on said stationary frame, supports arranged on opposite sides of the cart below the end portions of the driving shaft, and a removable platform adapted to be placed upon either of such supports, substantially as set forth.

4. The combination with the draft frame, of a tilting body mounted on the draft frame, a driving shaft supported on the draft frame in front of the body, a removable platform adapted to be placed on either side of the cart below the end portion of said shaft, loops arranged on the draft frame on opposite sides of the cart for supporting one end of such platform, and retractible supports for the opposite end of such platform, substantially as set forth.

5. The combination with the draft frame, of a tilting body mounted on the draft frame, a driving shaft supported on the draft frame in front of the body, supporting loops secured to the draft frame on opposite sides of the body, retractible supporting rods arranged in front of such loops and sliding in transverse openings in the draft frame, and a platform arranged with its rear portion in one of said loops and resting with its front portion upon the adjacent rod, substantially as set forth.

6. The combination with the draft frame, of a tilting body mounted on the draft frame, a driving shaft supported on the draft frame in front of the body, supporting loops secured to the draft frame on opposite sides of the body, retractible supporting rods arranged in front of such loops, and a platform provided near its rear end with shoulders which bear against said loop and provided near its front end with a recess which receives the headed outer ends of said supporting rod, substantially as set forth.

**502,851.** COMBINED CORKSCREW, MATCH-HOLDER, &c. PRESTON DEAN, Chicago, Ill., assignor of one-half to George H. Orr, same place. Filed Feb. 27, 1893. Serial No. 464,064. (No model.)



*Claim.*—1. The herein-described article of manufacture, comprising in combination a hollow body having open ends, a suitable closure for the bottom opening and a cork screw whose screw is of such size as to enter the top opening or neck of the body and whose shank is adapted for operative engagement with the neck of the body, substantially as described.

2. The herein-described article of manufacture, comprising in combination a hollow metal body having open ends, a telescoping bottom cover, an interiorly threaded neck and a cork screw having a threaded shank adapted for engagement with said neck, substantially as described.

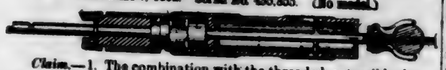
3. The herein-described article of manufacture, comprising in combination a hollow metal body having open ends, a telescopic bottom cover, the upper portion of the body being contracted to form a neck and said neck being threaded interiorly and exteriorly, a cork screw adapted to have the screw thereof enter through the neck and having a threaded shank and a flange of greater diameter than the opening of the neck, and a screw cap or cover, substantially as described.

4. The herein-described article of manufacture, comprising in combination a hollow metallic body having open ends, the upper end being contracted to form a neck and the lower end tapered and provided with an external bead or rib, a telescopic bottom cover adapted to said tapered lower end, a screw cap adapted to the threaded neck, a cork screw having a threaded shank and a guard secured with the body to cover the point of the cork screw, substantially as described.

5. The herein-described article of manufacture, comprising a hollow metal body having an open top provided with a cover, the lower end of the body being also open and having a telescopic bottom cover, a flanged plate secured on the interior of the body to provide a stamp receptacle open at its bottom, and the wall of the body being cut away at its lower margin and within the stamp receptacle to facilitate the removal of the stamps, substantially as described.

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**502,852. DENTAL PLUGGER.** ALONZO A. DILLEHAY, Meridian, Miss. Filed June 7, 1892. Serial No. 435,855. (No model.)



*Claim.*—1. The combination with the threaded, extensible sleeve having blocks fixed in the corresponding ends of each of its two sections, of a non-rotary plunger sliding in the two blocks and having at each end a head to meet, the corresponding blocks, respectively, and limit the length of the plunger's path; whereby the relative rotation of the sleeve sections varies the length of stroke possible to the plunger.

2. The combination with the threaded, extensible tube or sleeve having blocks fixed in the corresponding ends of its two parts, of a non-rotary plunger sliding in the two blocks and bearing at its ends heads in position to meet said blocks, respectively, and limit the length of the plunger's path, a rotary shaft mounted in a longitudinally adjustable bearing screwed into the outer end of the tube, and having at its inner end a head bearing a lug adapted to impinge upon corresponding lugs upon the head at the inner end of the plunger and force the latter outward; whereby relative rotation of the sleeve sections and relative rotation of the shaft bearing and the sleeve in which it is placed, will give any desired combination of initial force and length of stroke.

3. In a dental plugger, the combination with a suitably mounted plugging tool, of a rotary shaft mounted in suitable bearings, and a head upon its inner end comprising a disk provided with projections upon its front and side faces extending substantially at right angles to each other, whereby it is adapted to drive a tool in line with, or at right angles to said shaft, substantially as described.

4. The combination with the tool head, of a ball pivoted therein and perforated transversely to its pivotal axis to receive a tool shank; said head being provided with a series of recesses to receive the projecting end of a tool shank passed through the ball.

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**502,853. CASH-REGISTER.** LEO EHRLICH, St. Louis, Mo., assignor, by mesne assignments, to the National Cash Register Company, Dayton, Ohio. Filed Nov. 20, 1889. Serial No. 330,975. (No model.)

*Claim.*—1. The combination of two or more register actuating levers, a plurality of keys for each lever, a register consisting of a plurality of adding wheels operated by each lever and carrying mechanism between the registers, substantially as described.

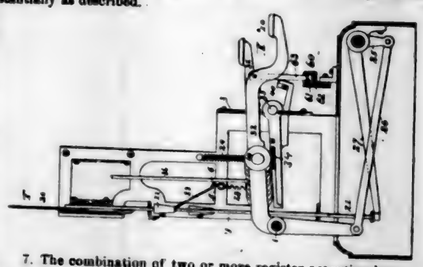
2. The combination of two or more register actuating levers, a plurality of keys for each lever, a register operated by each lever, carrying mechanism between the registers, and visual indicators moved by the keys, substantially as described.

3. In a registering machine, the combination of a plurality of keys, a register, a lever operated by the keys and a stopping bar engaged by a key for determining the movement of said lever, substantially as described.

4. The combination of a register actuating lever, a plurality of keys therefor, a stopping bar engaged by the key, and a register operated by said lever, substantially as described.

5. The combination of a register actuating lever, a plurality of keys therefor, a stopping bar carried by said lever and common to said keys and a register, substantially as described.

6. The combination of a register actuating lever, a plurality of keys therefor, a stopping bar vibrating in the opposite direction to the keys and contacting with the key operated, and a register, substantially as described.



7. The combination of two or more register actuating levers, a plurality of keys for each lever, stopping bars for the levers and engaged by the keys, a register operated by each lever, and carrying mechanism between the registers, substantially as described.

8. The combination of two or more register actuating levers, a plurality of keys therefor, a stopping bar carried by each lever, a register operated by each lever and carrying mechanism between the registers, substantially as described.

9. The combination of a register actuating lever, a plurality of keys therefor, a movable stepped stopping bar for contact with the keys, and a register operated by said lever, substantially as described.

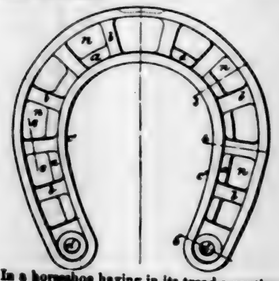
10. The combination of the bell-crank key levers, the visual indicators, the bell-crank levers 25, and connecting rods 26, substantially as described.

11. The combination of the bell-crank key levers, tablets and tablet-rods, the bell-crank levers 25, one arm of each of the latter levers bearing against a tablet-rod, and connecting rods 26, substantially as described.

12. The combination of a plurality of keys, tablets and tablet-rods, a cone-shaped collar secured to each tablet-rod, the smaller diameter downward, and a supporting wing, substantially as described.

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**502,854. HORSESHOE.** RICHARD DE RICKER, Paris, France. Filed Mar. 25, 1893. Serial No. 467,922. (No model.) Patented in France Nov. 22, 1892, No. 225,554.



*Claim.*—In a horseshoe having in its tread a continuous groove, the combination of the side walls *c* and *c'*, partitions *b* connecting these walls at intervals and forming in part the bottom of the groove, and other bottom sections *a* partly closing the space between the cross partitions and providing nail-holes for the attachment of the shoe, substantially as set forth.

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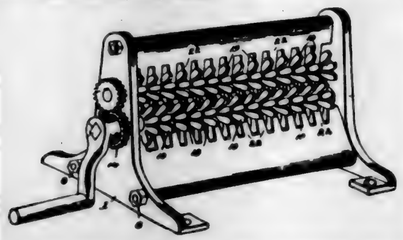
**502,855. MEAT-TENDERER.** ROBERT A. GALLERATH, near Louisville, Ky. Filed Mar. 27, 1893. Serial No. 467,874. (No model.)

*Claim.*—1. In a machine of the class described, the combination with a supporting frame, intermeshing toothed rolls rotatably mounted in said frame, and means for operating the same, of shields pivotally mounted upon the frame parallel with the rolls and provided with fingers to intermesh with the teeth thereof, substantially as specified.



2. In a machine of the class described, the combination with a supporting frame having horizontal parallel cylindrical bars, intermeshing toothed rolls rotatably mounted in the frame parallel with said bars, and means for operating the rolls, of pivotal shields mounted upon said bars and having fingers to intermesh with the teeth of the rolls, substantially as specified.

3. In a machine of the class described, the combination with the supporting frame, the toothed rolls, and means for operating the same, of an upper shield pivotally connected to the supporting frame at a point above the upper roll and provided at its free lower edge with fingers which intermesh with the teeth upon the roll and are held in the operative position by gravity, and duplicate lower shields, pivotally connected to the supporting frame below the plane of the lower roll and incline inwardly toward their upper edges, said lower shields being provided with fingers which intermesh with the teeth of the lower roll, substantially as specified.



4. In a machine of the class described, the toothed rolls and means for operating the same, each roll consisting of a core and spaced series of radially-disposed teeth, the intervals between adjacent series of teeth being equal to the width of the bases of the teeth, and the teeth being tapered in width toward their terminals, substantially as specified.

5. In a machine of the class described, the co-acting toothed rolls and means for operating the same, said rolls being provided with spaced alternately-disposed series of radial teeth having abrupt or flat terminals, the teeth of each roll terminating short of the base of the teeth of the coacting roll, substantially as specified.

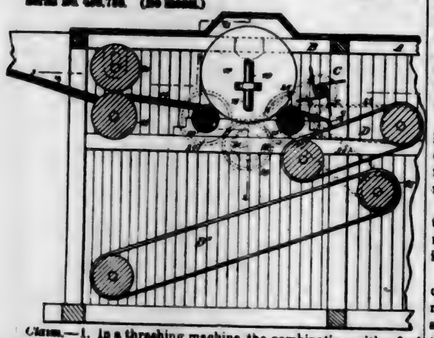
6. In a machine of the class described, the co-acting toothed rolls provided with teeth having beveled sides and approximately parallel edges and terminate in abrupt flat ends which are elongated in the direction of tangents of the rolls, substantially as specified.

7. In a machine of the class described, the coacting rolls provided with radial teeth the edges of which are rounded or convexed, whereby they are tapered in thickness toward their extremities and toward their bases, substantially as specified.

8. In a machine of the class described, the co-acting toothed rolls, each comprising a shaft, rings fitted upon said shaft, radial teeth integral with said ring, and securing devices between the rings and the shaft, and means for operating said rolls, substantially as specified.

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**502,856. FLAX-THRASHING ATTACHMENT FOR THRASHING-MACHINES.** ALFRED GILMORE, Stillwater, Minn. Filed July 12, 1892. Serial No. 439,799. (No model.)

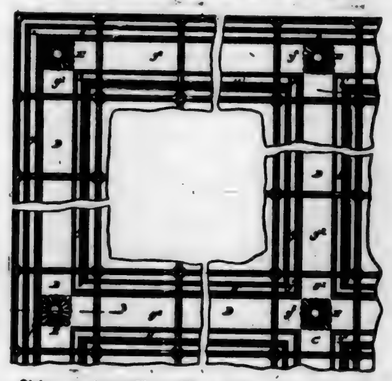


*Claim.*—1. In a thrashing machine, the combination, with a feed mechanism, of a thrashing group of rollers, consisting of lower supporting rollers journaled in suitable bearings, and an upper pressing roller resting upon the supporting roller, the pressing roller being a composite roller which consists of a series of independent disks arranged side by side in free contact, and guides engaging with the end disks and maintaining all the disks in said free contact, the disks having no other vertical support but the supporting rollers, substantially as shown and described, whereby the pressing roller will accommodate itself to an unlimited extent throughout its length to varying thickness of material presented to it, as and for the purpose specified.

2. A thrashing mechanism for thrashing machines, the same consisting of feed rollers, a group of thrashing rollers located adjacent to the feed rollers, said group comprising lower journaled supporting rollers, an upper pressing roller having no journals or bearings, resting upon the supporting rollers and comprising a series of independent disks placed side by side, guides bearing against the ends of the pressing roller, and a beater having arms of a pliable material located in advance of the thrashing group of rollers, substantially as and for the purpose set forth.

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**502,857. METALLIC MOLDING.** WILLIAM S. GRAFTON, Steubenville, Ohio, assignor to the Wheeling Corrugating Company, Wheeling, W. Va. Filed Apr. 5, 1893. Serial No. 469,502. (No model.)



*Claim.*—1. A metallic molding section having hollow ribs or ridges at one or more of its edges, and artificial rosettes at one or more of its corners, both rosettes and ridges being formed to match corresponding ridges and rosettes in the edges and corners of adjacent plates.

2. A corner piece for a molding, in which the raised and sunken portions are L-shaped and formed to match and form continuations of the raised and sunken portions in adjacent molding sections and having hollow ribs or ridges at one or more of its edges, adapted to match corresponding ridges in the edges of adjacent plates.

3. The herein described square corner piece having hollow ribs or ridges at its edges, adapted to match corresponding ribs or ridges in adjacent molding sections, and having the raised and sunken portions on the body of the plate L-shaped, substantially as described.

4. The herein described junction piece rectangular in outline, having raised and sunken portions to form a molding, the sunken portion thereof being T-shaped, and the raised portions suitably formed to admit of the T-shaped formation of the sunken portion, both the raised and sunken portions being so formed as to match and form continuations of the corresponding portions in adjacent molding sections, and one or more of the edges of the junction piece having a hollow rib or ridge to overlap a corresponding rib or ridge at the edge of an adjacent ceiling plate or molding section.

5. The herein described junction piece for a metallic molding having the central portion thereof cross-shaped and adapted to match corresponding portions in adjacent molding sections and having at its four edges hollow ribs or ridges adapted to overlap and match corresponding ribs or ridges in adjacent molding sections.

6. The junction piece herein described, having the central portion thereof cross-shaped and having its edges formed with hollow ribs or ridges adapted to match corresponding ribs or ridges in adjacent molding sections.

7. The herein described square corner piece having hollow ribs or ridges at its edges, and artificial rosettes at its corners, adapted to match corresponding ribs or ridges and rosettes in adjacent molding sections or ceiling plates, and having the raised and sunken portions of the plate L-shaped, substantially as described.

8. The combination of a corner piece having a raised portion to form a molding and having hollow ribs or ridges at one or more of its edges, a molding section having a hollow rib or ridge at its edge adapted to match the rib or ridge in the corner piece and having also a raised portion to form the molding, which is adapted to match and

form a continuation of the molding in the corner piece, the body of the corner piece and the molding section being in substantially the same plane.

## 502,358. ELECTRIC CABLE. THEODOR GUILLEAUME, Cologne, Germany. Filed Mar. 1, 1893. Serial No. 464,295. (No model.)



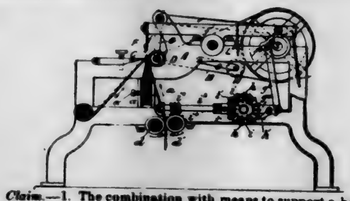
*Claim.*—1. An electric cable consisting of a series of naked conductors $c$ $c'$ $c^2$ &c., respectively occupying air spaces $b$ $b'$ $b^2$ &c. in a spirally grooved strip of non-conducting material $a$, a lead sheathing $e$, gutta-percha or like water-proof coating $f$ and a metallic sheathing composed of interlocked wires such as $h$ $h'$ $h^2$ &c., substantially as herein described.

2. In an electric cable, the combination, with a series of naked conductors $c$ $c'$ $c^2$ &c. respectively occupying air-spaces $b$ $b'$ $b^2$ &c. in a spirally grooved strip of non-conducting material $a$, of a lead sheathing $e$ and a gutta-percha or like water proof coating $f$, the lead sheathing surrounding the core of conductors and insulating material and serving to support the waterproof coating, substantially as herein set forth.

3. In an electric cable, the combination, with a series of naked conductors $c$ $c'$ $c^2$ &c. respectively occupying air-spaces $b$ $b'$ $b^2$ &c. in a spirally grooved strip of non-conducting material $a$, of a metallic sheathing composed of interlocked wires such as $h$ $h'$ $h^2$ &c. insulated from the aforesaid central group of parts, and serving to protect the same from distortion, substantially as herein set forth.

## 502,359. MACHINE FOR REMOVING WATER-HAIRS FROM PELTS. ARTUS HEDGAVNY, New York, assignor to Louis Werner, same place. Filed Mar. 27, 1890. Renewed Jan. 17, 1893. Serial No. 458,736. (No model.)

*Brief.*—Improvements on patent to Hedbavny granted August 15, 1889, No. 408,879. The machine is provided with means for maintaining at all times the incandescent wire at a uniform tension and with means for oscillating the brush away from the knife-edged bar when the incandescent wire is approaching the latter, so that the brush may not be burned.



*Claim.*—1. The combination with means to support a body, such as a pelt, to be singed, of a metallic conductor adapted to be rendered incandescent by an electric current, supports for such conductor and means for adjusting such supports vertically; a tension device for automatically compensating for the expansion of said conductor, and means to bring said conductor into operative conjunction with the body to be treated, substantially as described.

2. The combination with means to support a body, such as a pelt, to be singed, of a metallic conductor adapted to be rendered incandescent by an electric current, a plate and a vibrating frame therefor, a support fixed to one side of said frame and receiving one end of the conductor, a movable plate at the other side of such frame, a support for the other end of the conductor secured to such plate, and means for automatically adjusting such plate and support correspondingly with the expansion of the conductor, substantially as described.

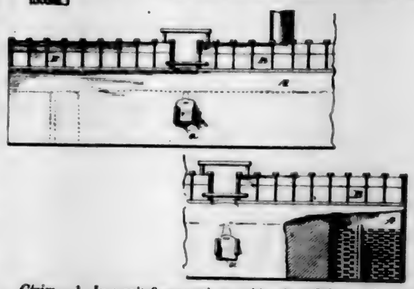
3. The combination of an incandescent electric conductor, a knife-edged bar over which a body to be treated is stretched, means for intermittently moving said conductor toward and from said bar, a rotary brush, and means for oscillating such brush, substantially as described.

4. The combination of a knife-edged bar, means for intermittently feeding the body to be treated over said bar, a guard comb at one side of said bar, a rotary brush at the other side of said bar, and means for oscillating said brush; an incandescent electric conductor arranged above said bar, and means for intermittently oscillating the said conductor, substantially as described for the purpose set forth.

5. The combination of an incandescent electric conductor, a tension device for automatically keeping said conductor taut, a knife-edged bar over which the body to be treated is stretched, means for intermittently moving the said conductor toward and from the bar, a brush, means for rotating the same, and a vibrating or oscillating frame in which said brush is supported, substantially as described.

6. The combination of a knife-edged bar, means for intermittently feeding a body to be treated over said bar, a guard comb at one side of said bar, a brush at the opposite side and means for oscillating said brush; an incandescent electric conductor arranged above said bar, means for intermittently oscillating said conductor, and a tension device for said conductor operating automatically by the expansion and contraction of the conductor, substantially as described.

## 502,360. REGENERATIVE SALT-FURNACE. EDWARD K. HOLLAND, Clifton, W. Va. Filed Apr. 25, 1893. Serial No. 471,799. (No model.)



*Claim.*—1. In a salt furnace the combination of the combustion chamber A with the shallow open pans B forming the upper wall of the chamber, the flues C and D communicating with each end of said chamber and in the rear thereof communicating with air and gas boxes respectively, which are adapted for connection with sources of air and gas, a chimney connected with both boxes, and dampered apertures $a$ $a$ in the combustion chamber between the end connections of the flues C and D, all substantially as shown and described.

2. The combination with the chamber A having the shallow open pans, forming the upper part of the chamber, the air and gas boxes at the longitudinal center and in the rear of said chamber, of the air and gas flues C and D connecting said air and gas boxes respectively with the ends of the chamber, a chimney connected with both of said boxes, a valve pivoted at its center in each box to allow the air and gas to be delivered to either end of the said chamber, and the checker work at each end of the chamber, all substantially as shown and described.

## 502,361. RAIL-FASTENER. CHARLES C. HOLT, Lawrence, Mass., assignor of one-half to Thomas Hall, same place. Filed Apr. 22, 1892. Serial No. 431,001. (No model.)



*Claim.*—In a rail-fastener, the combination with a cross-tie and a rail, of L-shaped clamping plates arranged at each side of the rail and each consisting of a resilient flat horizontal branch resting upon the base of the rail and projecting beyond the same and a depending lug arranged at the outer end of the horizontal branch and having a chisel edge forming a driving point and above the driving point provided with a flat shoulder extending below the under surface of the horizontal branch and located some distance from the rail and forming an intermediate space between the ends of the clamp and the base of the rail and between the tie and the clamp, said horizontal branch having an opening arranged between the lug and the rail, and a regulating screw passing through the opening of each plate and causing the same to clamp the rail, substantially as described.

## 502,362. BLIND-STOP. WILLIAM W. HOSKINS, Houston, Tex. Filed Oct. 20, 1892. Serial No. 450,400. (No model.)

*Claim.*—1. The blind slat fastening consisting of the inclosing case C, the notched segment B contained within and pivoted to the inner



## 502,362.



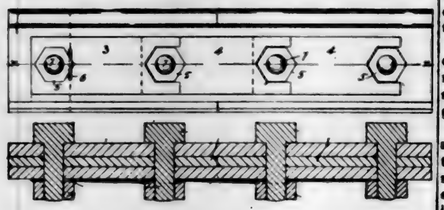
edge of the inclosing case, the bar $e$ pivoted directly to the segment at a point remote from the center, and a spring latch or detent pivoted to the outside of the case and working through the same into the notches of the segment substantially as shown and described.

2. The combination of the semi-circular case C, the curved spring-actuated detent fulcrumed to the same upon the outside and having a tooth passing through to the interior, a swinging notched segment pivoted within the case, and a connecting bar $e$, substantially as shown and described.

3. The combination of the notched segment having extensions $b$ $b$ at its ends, the case C pivotally connected to and inclosing the segment, the curved latch or detent $f$ having tooth $h$ and spring $i$ and fulcrumed upon the outside of the case, and the connecting bar $e$ extending through a slot in the case substantially as shown and described.

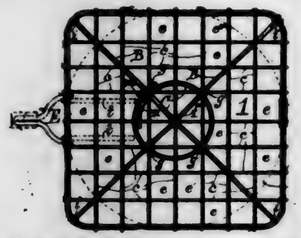
4. The combination with the shutter frame recessed at $k$ $k$, the pivoted slats S, and slat strip A; of the bar $e$, segment B, case C, and detent $f$, substantially as shown and described.

## 502,363. NUT-LOCK. HUGH M. HOWELL, Denver, Colo. Filed Aug. 8, 1892. Serial No. 442,462. (No model.)



*Claim.*—In a nut lock, the combination of a series of bolts and nuts; a plate 4 having a nut, nut shaped recess $4^a$ in one end—and an oblong bolt opening in the other end; a plate 3 having a nut shaped recess $4^a$ in one end and a bolt opening $3^4$ near the other end, and a slot $3^a$ intersecting the bolt opening $3^4$—a pin 6, adapted to enter and lie in said slot $3^a$ and engage the edges of a superposed nut 5 all constructed and arranged to operate as shown and described.

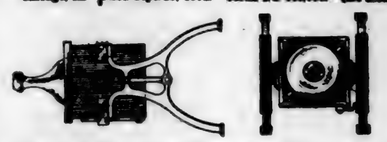
## 502,364. HEATING ATTACHMENT FOR LAMP-CHIMNEYS. GEORGE W. IVES, Syracuse, N. Y. Filed Apr. 15, 1893. Serial No. 470,564. (No model.)



*Claim.*—1. As a new article of manufacture, a heating-attachment for lamp-chimneys comprising an apertured seat, radial supporting ribs thereto, angular supporting arms projecting downwardly therefrom, and a ring with non-connected overlapping extremities, loosely connected to the angular supporting arms, all constructed of connected wire lengths suitably bent to shape, substantially as described.

2. As a new article of manufacture, a heating attachment for lamp-chimneys comprising an open-work seat, radial braces thereto, angular supporting arms extending downward therefrom and approaching each other, a ring with loosely overlapped ends retaining said arms in proper relative positions, and a lifter to one side of the seat, all formed of wire lengths engagingly bent to shape, substantially as described.

## 502,365. BOTTLE OR VESSEL HOLDER. FRANK G. KAMERER, Chicago, Ill. Filed Sept. 23, 1892. Serial No. 446,080. (No model.)



*Claim.*—1. The combination, in a bottle or vessel holding device, of a supporting stand, a case or crate pivotally mounted therein, coiled or spiral springs for holding said case or crate in its normal position and for returning it thereto after it has been moved therefrom, and means for supporting or holding a bottle or vessel within said case, substantially as described.

2. The combination, in a bottle or vessel holding device, of a tiltably supported case or crate provided with yielding cushions for frictionally holding or supporting bottles or vessels therein, and means for yieldingly holding said case or crate in its set position and for returning it thereto after it has been tilted, substantially as described.

3. The combination in a bottle or vessel holding device, of a crate or case, curved springs secured therein, and cushions of elastic material secured to the ends of said springs, whereby said cushions may frictionally hold the bottles or vessels in position and the springs yield to adapt the case to hold bottles or vessels of varying sizes substantially as described.

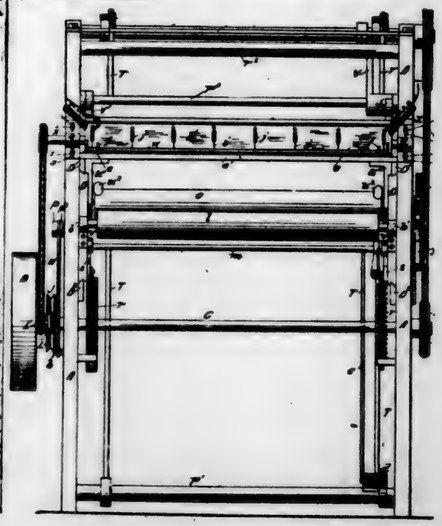
4. The combination of a supporting stand, a case or crate pivotally mounted therein, and springs coiled around the pivotal points of said case and having one end secured to the case and the other to the stand, substantially as described.

5. The combination of a stand, a case or crate supported therein on suitable trunnions, springs coiled around said trunnions and connected at one end to the case or crate and at the other to the stand, and a spring catch attached to the case or crate and adapted to engage the stand, substantially as described.

6. The combination, in a bottle or vessel holding device, of a suitable frame, a tiltable case or crate, means for automatically returning said case or crate to its normal or set position, a stop or lug mounted on the frame and means, secured to the case or crate, for engaging the stop or lug to automatically arrest the case or crate at its normal or set position, substantially as described.

## 502,366. MACHINE FOR REMOVING WATER-HAIRS FROM PELTS. EDWARD R. KNOWLES, Brooklyn, assignor to Louis Werner, New York, N. Y. Filed Apr. 17, 1890. Renewed Jan. 17, 1893. Serial No. 458,733. (No model.)

*Brief.*—The pelt is fed intermittently over a knife-edged bar, the fur on one side held down by a stationary comb and on the other side by an intermittently rotating brush, and the water-hairs removed by suitable mechanism.



*Claim.*—1. A machine for removing the stiff water hairs from pelts, comprising a frame carrying a knife-edged bar and a guard comb arranged in front of said bar, means for stretching and intermittently feeding the pelt over said bar, and means for imparting a reciprocating motion to said frame, in combination with a brush arranged back of the knife-edged bar and opposite to the comb, means for causing the brush to rotate intermittently and means for removing the water hairs, substantially as described.

2. A machine for removing the stiff water hairs from pelts, comprising a frame carrying a knife-edged bar, means for stretching and intermittently feeding the pelt over said bar, and means for imparting a reciprocating motion to said frame, in combination with a brush arranged back of the knife-edged bar, means for causing the brush to rotate intermittently, and means for removing the water hairs, substantially as described.

3. A machine for removing the stiff water hairs from pelts, comprising a frame carrying a knife-edged bar and a guard comb, means for stretching and intermittently feeding the pelt over said bar and means for imparting a reciprocating motion to said frame, in combination with a brush, means for causing the brush to rotate intermittently and an incandescent conductor in the form of a tense wire and means for causing the conductor to oscillate intermittently, substantially as described.

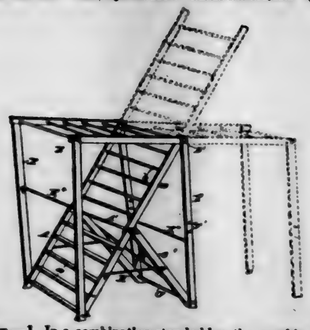
4. In a machine for removing the stiff water hairs from pelts, intermittent feeding mechanism for the pelt, comprising a ratchet wheel in connection with a train of gears operating feeding rolls, in combination with a reciprocating frame and spring pressed pawls and means for actuating the pawls, thereby intermittently rotating the ratchet wheel a predetermined amount, substantially as described.

5. In a machine for removing the stiff water hairs from pelts, a brush, and mechanism for intermittently rotating the same, consisting of the friction wheels J and L, the sprocket wheels L′ and L², and the sprocket chain G′, in combination with driving mechanism and means for moving said friction wheels into and out of frictional contact, substantially as described.

6. In a machine for removing the stiff water hairs from pelts, the combination of a knife-edged bar, means for stretching and intermittently feeding the pelt over said bar, a brush at one side of said bar, means for causing the brush to rotate intermittently, and an incandescent conductor in the form of a tense wire, and means for causing the conductor to oscillate intermittently, substantially as described.

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**502,867.** COMBINATION STEP-LADDER. GAITHER A. LAKE, Stockwell, Ind. Filed Apr. 22, 1893. Serial No. 471,490. (No model.)



*Claim.*—1. In a combination step-ladder, the combination of a forward ladder section, a rear ladder section, and a central frame, all pivotally connected together at their upper ends and having pivots projecting on the outer sides of their lower or free ends, and the supporting bars formed with the central and end openings adapted to receive said pivots; substantially as set forth.

2. The combination, of the forward ladder section, the ladder section B, and the central frame, all pivotally connected together at their upper ends and having pivots projecting on the outer sides of their free ends, the rods or chains swiveled to the central frame and having end-hooks at their free ends, eyes arranged on the side-pieces of the front section, and the supporting-bars formed with the central and end openings adapted to receive said projecting end-pivots; substantially as set forth.

3. In a combination ladder, the combination of the forward section, the section B, and the central frame, all pivotally connected at their inner ends on the extended top round of the front section, and having each at its free end the extended rounds the ends of which project beyond the side-pieces to form pivot-bearings, the rods or chains swiveled to the central frame and having end-hooks at their free ends, eyes arranged on the side-pieces of the front section, and the supporting-bars formed with the central and end openings adapted to receive said projecting pivots; substantially as set forth.

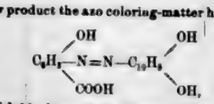
4. In a combination ladder, the combination of the front section, the middle section B, and the central frame, all pivotally connected at their inner ends and having at their free ends the extended rounds, the detachable section E, pivoted detachably to the outer end of the middle section and having the extended round at its outer end, the supporting-bars formed with the central and end openings adapted to receive the ends of said extended rounds, and having the eyes and swiveled hooked rods, the hooked rods swiveled to the central frame, and the eyes arranged on the front section C; substantially as set forth.

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**502,868.** BLACK AZO DYE. RICHARD LAUCH and CARL KREKELER, Elberfeld, Germany, assignors to the Farbenfabriken, vormals Fr. Bayer & Co., same place. Filed Feb. 6, 1893. Serial No. 461,243. (Specimens.) Patented in England May 18, 1889, No. 8,299; in France Oct. 21, 1889, No. 196,531; in Germany Nov. 10, 1889, No. 58,271, and in Italy Feb. 28, 1891, XXV, 29,265, LVII, 442.

*Claim.*—1. The process for producing a new azo dye-stuff by combining one molecular proportion of the diazo-compound of amidosalicylic acid with one molecular proportion of 1:8— dihydroxynaphthalene.

2. As a new product the azo coloring-matter having the formula:



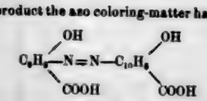
forming a greenish-black powder with metallic luster, difficultly soluble in water at ordinary temperature, more easily on heating, with bluish-red color, changing to a redder shade on addition of ammonia, sodium carbonate and caustic soda, and on addition of dilute hydrochloric and dilute sulfuric acid the aqueous solution changes at first to a dull brownish-red, and finally separates brownish-red flakes; slightly soluble in alcohol with violet color; almost insoluble in dilute hydrochloric and sulfuric acids; soluble in ammonia, sodium carbonate and caustic soda with dark bluish-red color; soluble in concentrated sulfuric acid with greenish-blue color, which on addition of water changes through greenish-black, brown to yellowish-brown; dyeing wool mordanted with chromium salts deep black, and producing when printed with chrome mordants on cotton the same shade; and having the qualities substantially as specified.

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**502,869.** REDDISH-BLUE AZO DYE.—RICHARD LAUCH and CARL KREKELER, Elberfeld, Germany, assignors to the Farbenfabriken, vormals Fr. Bayer & Co., same place. Filed Feb. 6, 1893. Serial No. 461,244. (Specimens.) Patented in England May 18, 1889, No. 8,299, in France Oct. 21, 1889, No. 196,531; in Germany Nov. 10, 1889, No. 58,271, and in Italy Feb. 28, 1891, XXV, 29,265, LVII, 442.

*Claim.*—1. The process for producing a new azo dye-stuff by combining equal molecular proportions of beta naphtholcarbonic acid (melting at 216° centigrade) and the diazo compound of amidosalicylic acid.

2. As a new product the azo coloring-matter having the formula:



forming a greenish-black powder with metallic luster, soluble in water with reddish brown color, which is not changed on addition of ammonia or sodium carbonate, while an addition of soda-lye to the aqueous solution renders it clearer, and on addition of dilute hydrochloric or sulfuric acid causes a reddish-brown precipitate; difficultly soluble in ammonia, sodium carbonate and soda-lye if the dry powder is used, and easier when the coloring-matter is treated in the form of a paste; difficultly soluble in alcohol with bluish-red color; insoluble in dilute hydrochloric and sulfuric acid; soluble in concentrated sulfuric acid with a magenta red color, which is not altered on addition of ice water; producing when printed with chromium mordants on cotton reddish-blue shades fast against soap; and having the properties substantially as specified.

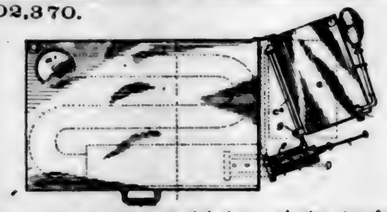
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**502,870.** WARMING DEVICE. FRED LEED, Columbus, Ohio. Filed Oct. 19, 1892. Serial No. 449,406. (No model.)

*Claim.*—In a foot warmer the combination with the water reservoir and heat conducting pipes passing therethrough, of an oil reservoir hinged to said water reservoir as described and an oil burner supported from and fed from said oil reservoir, said burner adapted



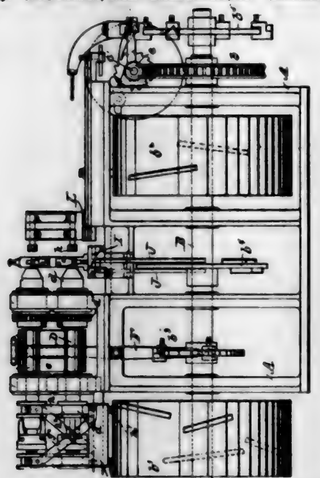
**502,870.**



to be projected into the mouth of the heat conducting pipe of the water reservoir by swinging said oil reservoir inward substantially as described.

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**502,871.** MACHINE-SCREW MACHINE. MATTHEW MACDOUGALL, Elizabeth, N. J., assignor to The Singer Manufacturing Company of New Jersey. Filed June 27, 1892. Serial No. 438,163. (No model.)



*Claim.*—In a screw cutting machine, the combination with the frame A, the shaft B and the cam or tappet wheels carried by the latter, of the stock-carrying spindles D, driving gearing for said spindles causing them to rotate in the same direction, the slides G and H connected with said spindles to move the same longitudinally, the transversely movable slide I, the posts $i$ and $i'$ mounted thereon, the cutting tools $i^3$ carried by the said post $i$, the stops $i^3$ carried by the said post $i'$, the levers J and tappet wheel $b^4$ for operating said slide, the longitudinally movable post or turret K, the threading dies $k$ carried thereby, the slide L on which said post or turret is mounted, and the tappet wheel $b^2$ for operating said slide L.

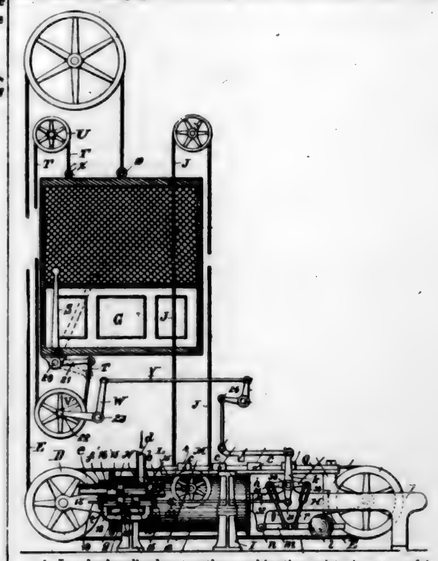
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**502,872.** CONTROLLING DEVICE FOR ELEVATORS. CHARLES R. MOORE, Boston, Mass., assignor to the Moore & Wyman Elevator and Machine Works, same place. Filed Apr. 10, 1893. Serial No. 469,812. (No model.)

*Claim.*—1. An elevator controlling mechanism, comprising a detent, means located within the car for operating said detent, starting and stopping mechanism connected with said detent, a series of traveling stop-blocks or projections actuated by the elevator-motor and adapted to engage said detent and thereby actuate the mechanism connected therewith to stop the car, and a weight connected with said starting and stopping mechanism and said detent, and adapted to be raised when said detent is actuated by one of said stop blocks to stop the car, and descend to operate the mechanism whereby the car is set in motion and said detent is thrown out of engagement with said stop-block, substantially as set forth.

2. In an elevator controlling device, the combination, with a car and its hoisting mechanism, of a detent, means located within the car for operating said detent, a lever to which said detent is pivoted, starting and stopping mechanism connected with said lever, a series of traveling stop-blocks or projections actuated by the elevator motor and adapted to engage said detent and thereby move the lever connected therewith to stop the car, and a weight connected with said lever and adapted to move the same to start the car when the detent is released from its engagement with a stop-block, substantially as described.

3. In a hydraulic elevator, the combination, with the car and its hoisting mechanism, of a detent, means located within the car for operating said detent, a lever to which said detent is pivoted, an operating valve connected with said lever, a reciprocating bar connected with and actuated by the hoisting mechanism and provided with a series of stop-blocks or projections adapted to engage said detent and thereby move the lever connected with the operating valve to stop the car, and a weight connected with said lever and adapted to move the operating valve connected therewith to start the car when said detent is disengaged from a stop-block, substantially as described.



4. In a hydraulic elevator, the combination, with the car, and its hoisting mechanism, of a detent, means located within the car for operating said detent, a lever to which said detent is pivoted, an operating valve connected with said lever, a reciprocating bar connected with and actuated by the hoisting mechanism and provided with a series of stop-blocks or projections adapted to engage said detent and thereby move the lever connected with the operating-valve to stop the car, a weight connected with said lever and adapted to move the operating-valve connected therewith to start the car when said detent is disengaged from the stop-block bar, and a reversing valve adapted to be operated by means located within the car, all operating substantially as set forth.

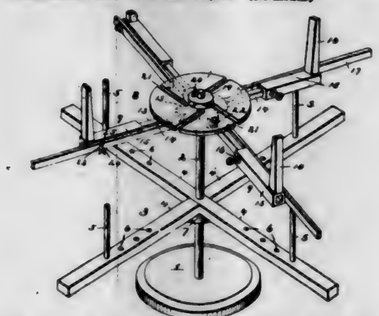
5. In a hydraulic elevator, the combination, with the car and its hoisting mechanism, of a detent, means located within the car for operating said detent, a lever to which said detent is pivoted, an operating valve connected with said lever, a reciprocating bar connected with and actuated by the hoisting mechanism and provided with a series of stop-blocks or projections adapted to engage said detent and thereby move the lever connected with the operating valve to stop the car, a weight connected with said lever and adapted to move the operating valve connected therewith to start the car when said detent is disengaged from the stop-block bar, a reversing valve adapted to be operated by means located within the car, and a retarding-device connected with the operating-valve mechanism, whereby the descent of the weight and the movement of the operating-valve is automatically controlled to effect the gradual application of the power in starting the car, substantially as set forth.

6. In an elevator, the combination, with the elevator car and its hoisting mechanism, of the detent R, means located within the car for operating said detent, the lever $k$, starting and stopping mechanism connected with said lever, the latter having the detent R pivoted thereto and provided with the lateral arms 36, 37, the lever $m$ with its weight $l$, the slotted rods $q$, $r$, connected with the arms 36, 37, of the lever $k$, and a series of traveling stop-blocks adapted to move in opposite directions and engage the detent R to move the lever $m$ and stop the car in its ascent or descent, substantially as set forth.

7. In an elevator, the combination, with the elevator car, of the

cylinder A, the cross-head B, the hoisting-rope E, rope wheels C, D, the reciprocating bar Q secured to the cross head B and provided with a series of stop-blocks or projections corresponding to the several landings, the detent R means located within the car for operating said detent, the lever *k* having the detent R pivoted thereto and provided with arms 36, 37, the lever *m* with its weight *l*, the slotted rods *q*, *r*, connected with the arms of the lever *k*, the operating valve P connected to the lever *k* by the rod 19, the reversing valve N and means located within the car to operate the same, and a retarding device for the operating-valve all constructed to operate substantially as set forth.

**502,373. REEL FOR WIRE-NAIL MACHINES.** JOSEPH B. MUMLOW, Findlay, Ohio, assignor of one-half to P. B. Morrison, same place. Filed Jan. 31, 1893. Serial No. 460,304. (No model.)



*Claim.*—1. In a device of the class described, the combination with a vertical shaft, of a spider rotatably mounted upon said shaft and provided with radial, longitudinally extensible arms, fingers pivotally connected to the extremities of said arms, and means to hold said fingers in a horizontal position, substantially as specified.

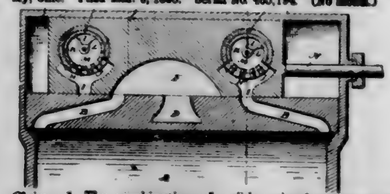
2. In a device of the class described, the combination with a vertical shaft, of a spider having radial arms each comprising an inner stem and an outer hollow or socket portion slidably fitted upon the stem, and fingers pivotally connected to the outer ends of said arms and provided with means whereby they may be locked in their operative position, substantially as specified.

3. In a device of the class described, the combination with a vertical shaft, of a spider having radial arms provided with terminal uprights, fingers pivotally connected to the outer ends of such arms, and a rotatable clutch-plate mounted upon said shaft and provided with slots to register with the inner arms of the fingers, substantially as specified.

4. In a device of the class described, the combination with a vertical shaft, of vertically adjustable collars, slidably fitted upon said shaft and provided with means to lock them thereto, a lower reel rotatably mounted upon said shaft and bearing upon one of said collars, an upper reel mounted upon the shaft and bearing upon one of the said collars, fingers pivotally connected to the upper reel near the outer terminals of its arms, a clutch-plate rotatably mounted upon the shaft above the upper reel, and a collar slidably fitted upon the shaft above said clutch-plate, all constructed and arranged substantially as specified.

5. In a device of the class described, the combination with a vertical shaft, of a spider rotatably mounted thereupon, fingers pivotally connected to the arms of said spider near their outer terminals, means whereby said fingers may be longitudinally adjusted, and a rotatable clutch-plate to engage the inner ends of the fingers, substantially as specified.

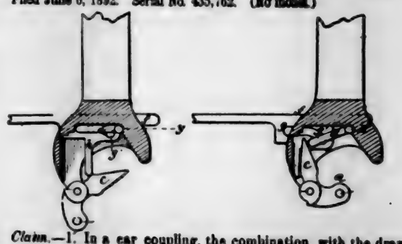
**502,374. STEAM-ENGINE VALVE.** JOSEPH B. MUMLOW, Findlay, Ohio. Filed Mar. 8, 1893. Serial No. 465,194. (No model.)



*Claim.*—1. The combination of a slide valve for steam engines having transverse circular bearing openings formed directly in the body thereof near each end, end ports piercing one side of the valve and enlarged at one end inside of the valve into widened steam spaces, and a multiplicity of steam ports covering the widened steam spaces and connecting the same with said transverse bearing openings, and rotary cut-off valves mounted to oscillate in said circular bearing openings and provided with a series of valve openings adapted to cover and uncover the multiplicity of steam ports in the slide valve, substantially as set forth.

2. The combination of a steam engine slide valve having transverse bearing openings near each end, end ports piercing one side of the valve and leading into widened steam spaces, a cylindrical packing and bearing tube inserted in each of said openings and provided with a longitudinal series of steam ports connecting the transverse bearing openings into said enlarged steam spaces, circular rotary cut-off valves mounted to oscillate in said inserted tubes, said cut-off valves being open at each end and provided with a longitudinal series of valve openings adapted to register with the series of steam ports in the tubes, and means for simultaneously moving the slide valve and the rotary cut-off valve carried thereby, substantially as set forth.

**502,375. CAR-COUPLING.** JOSEPH M. MCMASTER, Rochester, N. Y. Filed June 6, 1892. Serial No. 435,762. (No model.)



*Claim.*—1. In a car coupling, the combination, with the drawhead, of the pivoted jaw *a* provided with the arm *c*, a dog *d* arranged to swing outward to lock said arm when the jaw is closed, and the sliding cam lever *f* provided with the slot *g g'* said dog provided with pins *d' d²* one resting in the shell of the drawhead and the other in the slot of the cam lever, as herein shown and described.

2. In a car coupling, the combination, with the drawhead, of the pivoted jaw *a* provided with the arm *c*, a dog *d* arranged to swing outward to lock said arm when the jaw is closed, the sliding cam lever *f* provided with the slot *g g'*, and the hand lever *k* pivoted to one end of the cam lever and to the end of the car, as shown and described and for the purpose specified.

3. In a car coupling, the combination of the pivoted jaw *a* provided with the arm *c*, the swinging dog *d*, the sliding cam lever *f* provided with the slot *g g'*, the hand lever *k*, and the wire *n*, attached to said hand lever and extending to the top of the car, as shown and described and for the purpose specified.

4. In a car coupling, the combination, with the drawhead, of the pivoted jaw *a* provided with the arm *c*, a dog *d* arranged to swing outward to lock said arm when the jaw is closed, and the sliding cam lever *f* provided with slot *g g'*, which receives the pin at the bottom of the dog, and with the projecting stem *h* resting behind the arm of the jaw and serving to open the latter in the inward movement of the cam lever, as herein shown and described.

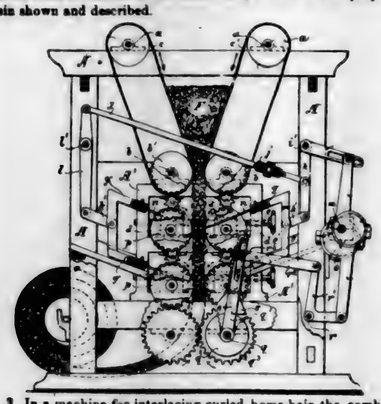
5. In a car coupling, the combination, with the drawhead B, of the pivoted jaw *a*, provided with the arm *c*, and a lever provided with a flat head entering a slot in a drawhead and capable of end movement therein, and constructed with a rigid stem integral with the head, said stem resting behind the arm as and for the purpose specified.

**502,376. MACHINE FOR INTERLACING CURLED HORSE-HAIR.** FRITZ OCHS, Fürth, Germany. Filed Feb. 9, 1893. Serial No. 461,437. (No model.)

*Claim.*—1. In a machine for interlacing curled horse hair, parallel shafts arranged in pairs one above the other in suitable frames, and carrying pressure disks and gearing at one or both ends, in combination with needle hooks, arranged in rows opposite each other, the needles of two opposing rows being situated in different vertical planes, with frames carrying the needle-hooks, the main frame, feeding aprons, arranged above and means for operating the parts, as and for the purposes herein shown and set forth.

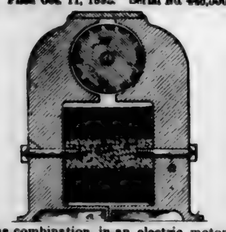
2. In a machine for interlacing curled horse hair, the needle-hook-frames arranged in pairs, one above the other, needle-hooks carried by said frames and arranged in different vertical planes and levers connected with said frames in combination with the main shaft, an eccentric thereon and connections between said lever and eccentric whereby the frames are caused to approach and recede from each other at each revolution of the main shaft, as and for the purposes herein shown and described.





3. In a machine for interlacing curled horse-hair the combination with pairs of shafts carrying pressure-disks and provided with gears and means to give the disks an adjustable intermittent feed-motion, of pairs of needle-hook-rows, sliding frames carrying said needle-hooks and means for imparting an intermittent, oblique, sidewise motion in opposite directions to said frames and means for varying the limits of said motion, as and for the purposes herein shown and set forth.

**502,377. ELECTRIC MOTOR OR DYNAMO.** SAMUEL FAUDE, Indianapolis, Ind. Filed Oct. 11, 1892. Serial No. 448,550. (No model.)



*Claim.*—1. The combination, in an electric motor, of the main portion consisting of the two sides of proportionately heavy or massive structure, the pole-pieces whereof are at one end, and a lighter uniting portion at the base or other end whereby a rigid or mechanically integral structure, is produced substantially as set forth.

2. The combination, in an electric motor, of the main structure the sides whereof are mechanically connected at both ends, and a magnet secured between said sides by means of a bolt or bolts passing through perforations therein into the core of said magnet, said magnet being thus removable by removing said bolts without otherwise disturbing the structure of the motor, substantially as shown and described.

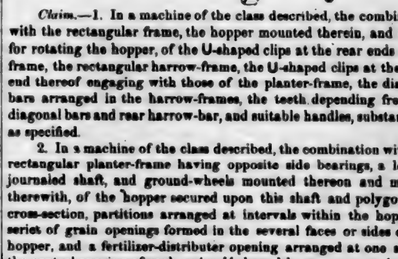
3. The combination, of the main portion A having pole-pieces at one end, the armature B, the magnet C, and inwardly-extending base portions on said main portion which meet and are firmly united together below the magnet, the whole forming an electric motor or dynamo, substantially as shown and described.

4. The combination with a motor or dynamo frame having flanges on opposite sides, of clamps bearing upon said flanges whereby the machine may be adjustably secured in position, substantially as shown and described.

**502,378. MACHINE FOR THE PREPARATION OF CEREALS FOR FOOD.** HENRY D. PERET and WILLIAM H. FORD, Watertown, N. Y., assignors, by direct and mesne assignments, to the Cereal Machine Company, of Colorado. Filed Oct. 29, 1892. Serial No. 450,390. (No model.)

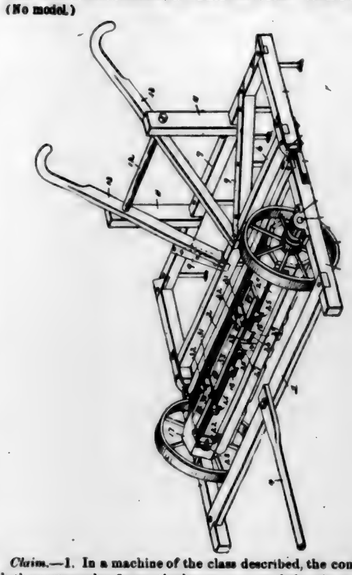
*Claim.*—1. In a machine for the preparation of cereals for food, the combination with a pair of compressing rolls, one of which is provided with circumferential grooves, of a comb-like scraper the teeth of which are arranged to fit said grooves, the spaces between said teeth being arranged to fit the cylindrical faces of the divisions separating said grooves, substantially as specified.

2. In a machine for the preparation of cereals for food, the combination of a pair of circumferentially grooved rolls, the comb-like scraper therefor, the conveyer belt, and the spindle H hung in slotted bearings over said belt, substantially as specified.



3. In a machine for the preparation of cereals for food, the combination with a pair of compressing rolls, one of which is formed with circumferential grooves, the comb-like scraper therefor, and the weight for holding said scraper in contact with said roll, of the conveyer belt, traveling underneath said grooved roll, and the spindle H journaled in bearing slots over said belt and designed to have frictional contact therewith, substantially as specified.

**502,379. COMBINED PLANTER AND FERTILIZER-DISTRIBUTER.** JOSEPH PIPER, Arcadia, La. Filed Feb. 9, 1893. Serial No. 461,598. (No model.)

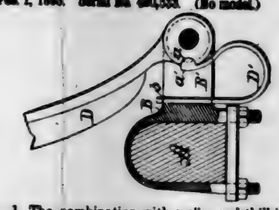


*Claim.*—1. In a machine of the class described, the combination with the rectangular frame, the hopper mounted therein, and means for rotating the hopper, of the U-shaped clips at the rear ends of the frame, the rectangular harrow-frame, the U-shaped clips at the front end thereof engaging with those of the planter-frame, the diagonal bars arranged in the harrow-frames, the teeth depending from the diagonal bars and rear harrow-bar, and suitable handles, substantially as specified.

2. In a machine of the class described, the combination with the rectangular planter-frame having opposite side bearings, a loosely journaled shaft, and ground-wheels mounted thereon and moving therewith, of the hopper secured upon this shaft and polygonal in cross-section, partitions arranged at intervals within the hopper, a series of grain openings formed in the several faces or sides of the hopper, and a fertilizer-distributer opening arranged at one side of the central opening of each series, U-shaped keepers mounted on the hopper and aligning with the openings, seed-slides mounted in the keepers, binding devices mounted in the keepers and adapted to impinge upon the slides, each of said slides being provided with a series of uniformly spaced apart notches 25 and at one side of the central notch with an elongated recess 26 from which extends a pro-

jection 27 located at one side of the center of said recess, all combined and operated as specified.

## 502,380. THILL-COUPLING. GEORGE W. FORT, Fond du Lac, Wis. Filed Feb. 1, 1893. Serial No. 460,533. (No model.)

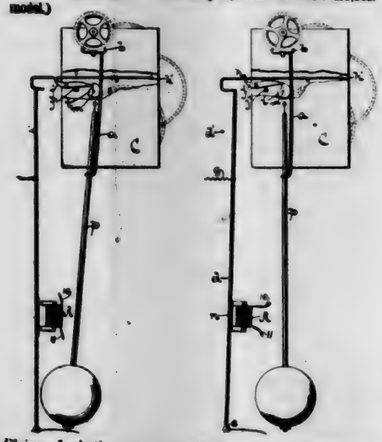


*Claim.*—1. The combination with a clip, and thill iron adapted to be attached to the clip, of a spring the ends of which are approximately parallel with each other and adapted to be inserted between and bear outwardly against the clip and the thill iron, and one end of the spring provided with a projection adapted to enter a notch in the thill iron whereby the latter is locked against turning, substantially as set forth.

2. In a thill coupling, the combination with a clip, and a thill iron having a notch formed therein, of a detachable spring, said spring having shoulders thereon adapted to overlap the upper and lower edges of the arms or ears of the clip and the opposite end provided with a projection adapted to enter the notch in the thill iron, whereby to hold the thill iron in an elevated position, substantially as set forth.

3. In a thill coupling, the combination with a clip and arms or ears projecting therefrom, of a thill iron mounted between said arms or ears and having a recess therein, a spring located between the arms or ears of the clip and having shoulders to project over and under the same, and a knob or enlargement at the free end of said spring adapted to enter the recess in the thill iron, substantially as set forth.

## 502,381. ELECTRIC SYNCHRONIZER FOR CLOCKS. HENRY S. PRENTISS, Elizabeth, N. J. Filed May 19, 1892. Serial No. 433,505. (No model.)



*Claim.*—1. A time piece provided with a mechanical detent adapted to engage with the governing member to arrest its motion and stop the train, a cam on one of the arbors of the train, an operative connection between said cam and the detent for actuating the latter to lock the governing member and arrest the motion of the train at the hour as indicated by the time piece, and an electro-magnet for effecting the release of the governing member from the detent, substantially as described.

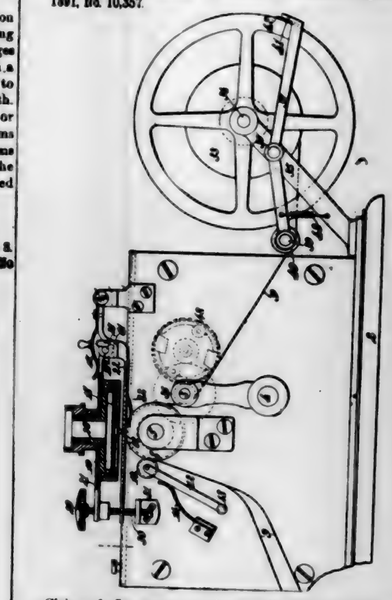
2. In a clock system, a master clock provided with a circuit closer adapted to close and break the circuit at the hour as indicated by said clock, and secondary clocks, each provided with a detent adapted to engage with and hold the pendulum, a cam on one of the arbors of the train, an operative connection between said cam and the detent for actuating the latter, as described, to lock the pendulum, at the hour as indicated by the clock, and an electro-magnet vitalized by the closing of the circuit at the master clock to withdraw the detent from the pendulum, substantially as described.

3. In a time piece, the combination of a pendulum, a detent provided with a notch or hole adapted to engage with the pendulum, a locking lever arranged to engage with said detent as described, an operative connection between the train of the time piece and the locking lever, and an electro-magnet arranged to act upon the detent, substantially as described.

4. In a time piece, a pivoted detent adapted to engage with the pendulum, a locking lever adapted to engage with the detent, a cam, an operative connection between the cam and the locking lever, and an electro-magnet arranged to act upon the detent, substantially as described.

5. A time piece provided with a detent adapted to positively engage the governing member to arrest the motion of the train, an operative mechanical connection between said detent and the train of the time piece for actuating the detent to engage with and lock the governing member to arrest the normal motion of the train at the hour as indicated by the time piece, and an electro-magnet vitalized for effecting the release of the governing member from the detent, substantially as described.

## 502,382. APPARATUS FOR RECORDING AND REPRODUCING SPEECH, &c. CHARLES A. RANDALL, London, England. Filed June 11, 1892. Serial No. 436,369. (No model.) Patented in England June 18, 1891, No. 10,357.



*Claim.*—1. In an apparatus for recording and reproducing articulate speech and other sounds, the combination with a plurality of recording styles, of a corresponding number of independent, flexible strips, ribbons, or bands, of record-receiving material, a pulley supporting the said material and having a plurality of grooves or channels lying in the planes of the recording styles, means for rotating said pulley to feed the strips simultaneously to the recording styles, and spring-pressed rolls holding the said strips, or ribbons upon said supporting pulley, said rolls being provided with peripheral grooves, or channels, lying in the plane of the recording styles, whereby said strips are free from surface-contact, or pressure, along the lines of record, substantially as described.

2. In an apparatus for recording and reproducing articulate speech and other sounds, the combination with a plurality of independent recording styles of a single diaphragm operating the same means for supporting and simultaneously feeding a plurality of record-receiving strips, or ribbons, a pulley having a plurality of grooves or channels lying in the vertical planes of said styles to support the strips and give feed-movement thereto, and spring-pressed rolls bearing upon said strips after they have passed beneath the styles said rolls being provided with channels or grooves lying in the vertical planes of the styles, whereby the lines of record are free from surface-contact, or pressure, substantially as described.

3. In an apparatus for recording and reproducing articulate



speech and other sounds, the combination with one or more rotating drums, supporting a plurality of strips, bands, or ribbons each adapted to receive a record, simultaneously, of a plurality of recording styles, a pay-off roll, from which said strips, bands, or ribbons, are taken, a lever fulcrumed between its ends and bearing upon one extremity a guide-roll, or rolls, pressed by the paid-off strips in one direction and by a spring in the other direction, and provided at its other extremity with a friction-plate lying near the periphery of the reel, with which it is engaged by the action of the spring, when the tension of the record-receiving strips is relaxed, substantially as described.

4. In an apparatus for recording and reproducing articulate speech and other sounds, the combination with the recording devices of means for supporting and feeding the record-receiving material, a spool from which said material is paid off, an automatic friction-brake, consisting of a spring-engaged lever having a friction plate on one end and a guide-roll on the other end, engaged by the paid-off strip or strips of material, and an automatic speed-governor on a driving-shaft, consisting of a disk, rigid on said shaft, lever-arms fulcrumed thereon, and a fixed flange against which friction-pads on said arms are projected with a bearing proportioned to the centrifugal force developed, substantially as described.

5. In an apparatus for recording and reproducing articulate speech and other sounds, the combination with means for supporting and feeding the record-receiving material, of a diaphragm having a chamber, and having a removable and interchangeable supporting-arm, having a pivotal connection, and a permanently pivoted arm having seats for said connection, substantially as described.

6. In an apparatus for recording and reproducing articulate speech and other sounds, the combination with means for supporting and feeding the record-receiving material, of an interchangeable supporting arm carrying the diaphragm and style, and an arm supporting the interchangeable arm, the latter of said arms having pivotal hinged connection with the frame of the machine, and the former of said arms being pivotally connected with or hinged to the latter arm, substantially as described.

7. In an apparatus for recording and reproducing articulate speech and other sounds the combination of one or more rotating drums or rollers, over which the material in ribbon-form is fed by the aid of friction-rollers, means for holding and guiding the material, and means for recording the sounds thereon or reproducing the sounds therefrom in duplicate or otherwise, substantially as described.

8. In an apparatus for recording and reproducing articulate speech and other sounds, a rotating support over which the material is frictionally carried, provided with a circumferential groove or channel substantially as shown.

## 502,383. APPARATUS FOR RECORDING AND REPRODUCING ARTICULATE SPEECH. CHARLES A. RANDALL, London, England. Filed Aug. 25, 1892. Serial No. 444,105. (No model.) Patented in England Mar. 14, 1892, No. 4,971, and June 20, 1892, No. 11,478.

*Claim.*—1. In a phonographic apparatus a support for the record-receiving material, a swinging-arm adjustable, relatively to said material, an independent, point-carrying arm, diaphragms secured to the swinging arm and a swinging piece carrying the concentrator upon one side and the ear-tubes and phones on the other side of the axis of movement of the swinging piece, substantially as described.

2. In an apparatus having a record-receiving, or record-containing material the combination with means for moving the same, of one or more suitably held styles or points, a diaphragm and an adjustable tension-regulator exerting a variable pressure upon the diaphragm within the line of its marginal attachment, and between the same and the recording or reproducing point, substantially as described.

3. In a phonographic apparatus a rotating support for the continuous record-receiving band, suitable supporting and guiding-rollers, a diaphragm and means, substantially as shown, for keeping the latter under tension, the tension devices having surface-contact with the face of the diaphragm at a plurality of points between the center and the line of marginal attachment, substantially as described.

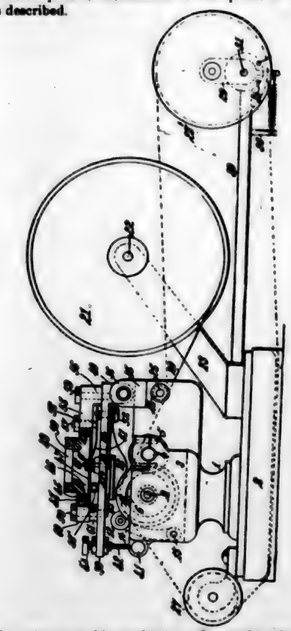
4. In a phonographic apparatus, a pivoted, point-carrying arm, or lever, a diaphragm, and a connecting-piece between the diaphragm and said point-carrying arm, a rigid connection being formed between the latter and said connecting piece, and constituting the sole support of said point-carrying-arm, substantially as described.

5. In a phonographic apparatus, a pivoted or vibrating, point-carrying lever upward projecting studs thereon, a dampener, swinging diaphragm-carriers and diaphragms and a swinging arm supporting such parts, substantially as described.

6. In a phonographic apparatus a recording-diaphragm and a reproducing-diaphragm each of different tension and constructed to be swung, or moved into and out of position for use independently, substantially as described.

7. In a phonographic apparatus, separate recording and reproducing-diaphragms upon a support common to both and arranged to be moved into and out of use independently of each other, in combination with an independently supported arm or lever carrying the point or style, one or more, for recording or reproducing, and having loose contact with the diaphragms, substantially as described.

8. In a phonographic mechanism, the combination with a support for the record-receiving material, a diaphragm, a supporting arm for the diaphragm-housing, or frame, and an elastic dampener between the lower face of said diaphragm and said supporting-arm, and eccentric to the central point of attachment of the point, or style, substantially as described.



9. In a phonographic mechanism, the combination with a diaphragm-frame, or housing, of a diaphragm loosely placed in a seat in said housing and an elastic strip, or filament, having non-central contact with the diaphragm at a plurality of points pressing the diaphragm upward and retaining it in its place in said housing, substantially as described.

10. In a phonographic apparatus, the combination with a diaphragm-frame, or housing, of a diaphragm loosely placed therein, an elastic strip or filament having surface-contact with the said diaphragm at a plurality of points, and exerting an upward pressure upon the diaphragm to hold it in its seat, and means for varying said pressure substantially as described.

11. In a phonographic apparatus a movable or vibratory point-carrying arm or lever provided with a V, or cone-shaped recess or seat, a diaphragm, an adjustable connecting-piece between the arm or lever and the diaphragm arranged to rest or bear in the V, or cone-shaped seat in the lever, and means for holding the same together with a yielding contact by spring-tension, substantially as shown.

12. In a phonographic apparatus the combination with two or more styles of two or more recording diaphragms having different tensions as and for the purpose set forth.

13. In a phonographic apparatus two or more recording-diaphragms, having different tension, rigidity, or elasticity, fixed upon a support common to all and arranged to be moved into and out of place interchangeably, substantially as and for the purpose set forth.

14. In a phonographic apparatus, the combination with a diaphragm of an adjustable arm supporting the housing, or casing, of said diaphragm, and a soft, non-vibratory connection between the diaphragm and said arm, substantially as described.

15. In a phonographic apparatus, the combination with a single vibratory arm, of a plurality of styles, or points, carried by said arm and a diaphragm adapted to vibrate said arm, substantially as described.

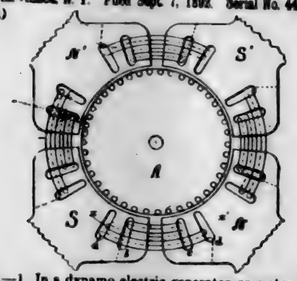
16. In a phonographic apparatus, the combination with a single diaphragm of a single vibratory arm having rigid connection with said diaphragm at or near one end and a plurality of styles, or points, car-

ried by the said arm, and arranged to operate upon different ribbons or strips of record-receiving material, substantially as described.

17. In a phonographic apparatus, the combination with a diaphragm composed of a plurality of disks or plates, of the same diameter and having a common point of support, of a point, or stylus, connecting all of said diaphragm plates or disks, substantially described.

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**502,384.** DYNAMO-ELECTRIC MACHINE OR MOTOR. HARRIS J. RYAN, Rhinebeck, N. Y. Filed Sept. 7, 1892. Serial No. 445,288. (No model.)




*Claim.*—1. In a dynamo electric generator or motor, balancing coils applied for the purpose of overcoming armature reactions, said coils being wound through holes in the pole pieces, substantially as and for the purpose set forth.

2. In a dynamo electric generator or motor, balancing coils applied for balancing armature reactions, each of said coils being wound spirally round and round in one continuous coil, through holes in the pole pieces and with the space between the adjacent poles at the center of said coil, substantially as shown and described.

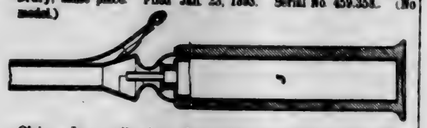
3. In a dynamo electric generator or motor, balancing coils applied for overcoming armature reactions, each of said coils consisting of a ribbon-shaped conductor wound spirally round and round through holes in the pole pieces, in such a way that the separate layers shall nowhere cross each other, substantially as and for the purpose described.

4. In a dynamo electric generator or motor, the combination with the pole pieces, of a series of holes placed transversely beneath the pole surfaces, and conducting coils wound through said holes, substantially as and for the purpose described.

5. In a dynamo electric generator or motor, the combination with the pole pieces, of a series of holes placed transversely beneath the pole surfaces, slots separating the metal between the holes and the pole faces, and conducting coils wound through said holes, substantially as and for the purpose described.

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**502,385.** CURLING-IRON. HARRY SAXTON, St. Louis, Mo., assignor, by mesne assignments, to John H. Ouhrabka and Marshal P. Drury, same place. Filed Jan. 23, 1893. Serial No. 459,358. (No model.)



*Claim.*—In a curling iron, the combination of a hollow handle or body, adapted to receive a lamp, a commingling chamber having an extension adapted to fit in the hollow body, and a flange adapted to bear against the end of the handle or body, a ferrule fitting the end of the handle or body, rivets passing through the extension of the commingling chamber and through the handle or body, and said ferrule, a tube extending from the commingling chamber, and a spring-actuated clamp pivoted to said tube; substantially as and for the purpose set forth.

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**502,386.** VETERINARY FORCEPS. DAVID M. SCHEIVER, New Castle, Ind., assignor to the Chas. Truax, Greene & Company, Chicago, Ill. Filed June 3, 1892. Serial No. 435,375. (No model.)

*Claim.*—1. In a veterinary incisor-cutter, the combination with the body portion of the supporting jaw formed integral and extending in line therewith, of a bearing piece extending laterally therefrom and a sliding cutting jaw movably connected to the said bearing piece, substantially as described.

2. In a veterinary incisor-cutter, the combination with the body portion having a supporting jaw formed on one end, a bearing piece projecting laterally from the body portion and having a slot therein, of a cutting jaw having a head mounted on the bearing piece and provided with an extension moving in the slot in said bearing piece, and a washer secured to the extension and holding and guiding the jaw in said slot, substantially as described.

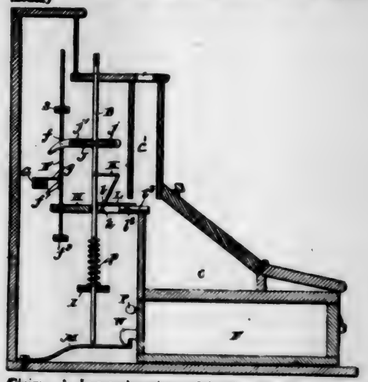
3. In a veterinary incisor-cutter, the combination with the body portion having a supporting jaw formed thereon, of a bearing piece, a cutting jaw movable in the bearing piece, a lever mounted on the body and connected to the movable jaw and a hand lever also mounted on the body and connected to the former lever by a link, substantially as described.



4. In a veterinary incisor-cutter, the combination with the body portion and jaw thereon, of the hand lever pivotally mounted on the body portion, a lever mounted on the opposite side of the body portion, a link connecting the levers, a bearing piece extending from one side of the body portion and a movable connecting jaw mounted on the bearing piece and connected to the lever, substantially as described.

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**502,387.** CASH REGISTER AND INDICATOR. ALBERT H. SCRAFTON, Fremont, Ohio. Filed Mar. 17, 1893. Serial No. 466,497. (No model.)



*Claim.*—1. In a cash register of the character described the combination of a plunger rod B, guides and supports therefor, spring P surrounding said rod and secured thereto, drawer E and locking spring M therefor, with an angle-iron K secured to said plunger B, pusher plate L reciprocated by said angle-iron, guide P on said plate working in groove P, and a check receiving chamber located within the casing of the register, as and for the purpose set forth.

2. In a cash register of the character described the combination of the plunger rod B, guides and support therefor, spring secured to said plunger rod the pivoted lever J slotted at one end and loosely



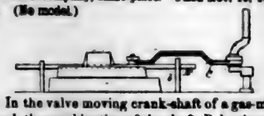
attached to the plunger by fastening in said slot, the other end of said lever being curved and supporting the indicator rod F, the indicator rod F, guides therefor, lugs or stops thereon and a knife-edge bar or rod G, with the angle-iron K secured to said plunger, pusher plate L reciprocated by said angle-iron, guide P on said plate working in groove P, and a check receiving compartment located within the casing of the register, all constructed and arranged substantially in the manner and for the purpose set forth.

3. In a cash register of the character described the combination of a reciprocating rod or plunger, with a bracket or angle-iron secured thereto, and a plate or pusher secured on said angle-iron and reciprocated thereby at right-angles to the reciprocation of the plunger rod, as set forth.

4. In a cash register of the character described the combination of a plunger, angle-iron secured thereto, and a plate reciprocated by said angle-iron, with check receiving and holding compartments, as set forth.

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**502,388.** GAS-METER. JACOB B. WALLACE, Erie, Pa., assignor to the Metric Metal Company, same place. Filed Nov. 19, 1892. Serial No. 452,520. (No model.)



*Claim.*—1. In the valve moving crank-shaft of a gas-meter of the class herein named, the combination of the shaft, D, having the curved part, *d*, forming one of the crank-arms, formed of a malleable metallic rod, and the cast metal part, E, forming the other crank arm, and having as part thereof the sleeve, *d'*, forming the wrist of the crank, and a socket for the lower end of the curved shaft, D.

2. In a gas-meter of the class herein named, the combination of the valves, B, having straight valve stems, B', carried in guides, *b*, and with wrist pins, *b'*, thereon, the valve moving crank-shaft consisting of the shaft, D, having the curved portion, *d*, forming one of the crank arms and the casting, E, having the sleeve, *d'*, forming the wrist of the crank and the other crank-arm, and the connecting rods, C, connecting the said wrist, *d'*, with the wrist pins, *b'*, on the valve stems, B', and having the upward deflections, *c*, arching over the guides, *b*, that are between the valves and the said crank-shaft.

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**502,389.** GUN-MAGAZINE. BURREL F. WHITTEN and JOSEPH P. PORCHER, Patroon, Tex. Filed Jan. 21, 1893. Serial No. 458,193. (No model.)



*Claim.*—1. A gun-magazine having a glass lining, substantially as shown and described.

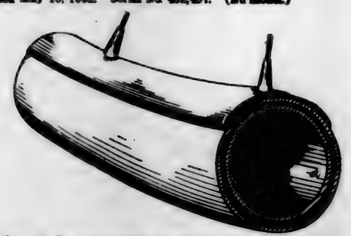
2. A gun magazine having openings combined with a transparent lining for the magazine which extends over said openings, substantially as shown and described.

3. A gun magazine having openings therein, and a tubular glass lining for said magazine, substantially as shown and described.

4. A gun magazine having formed therein a longitudinal series of openings, and a glass tube within the magazine forming a lining for the same, substantially as shown and described.

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**502,390.** BICYCLE-TIRE. JOHN A. WRIGHT, Indianapolis, Ind. Filed May 10, 1892. Serial No. 432,457. (No model.)



*Claim.*—1. In a pneumatic tire, the combination of an inner and outer layer of rubber, and an intermediate layer of rawhide, embodied within and forming a part of the tire structure, substantially as set forth.

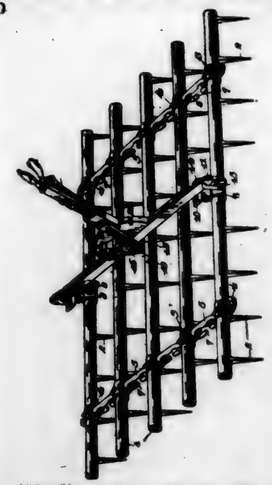
2. In a pneumatic tire, a layer of rawhide interposed between the ordinary outer layer and the layer next it, said rawhide layer being tapered at the sides, or given feather edges, substantially as shown and described.

3. That method or process of constructing pneumatic tires which consists in treating rawhide with glycerine or a glycerine preparation, and cutting and molding it to the desired form, and interposing the same between the layers of the ordinary substances, and cementing the whole together into one homogeneous mass, whereby a hollow or pneumatic tire is produced with a substantially impenetrable outer surface.

4. As a new article of manufacture a layer of rawhide molded or pressed into circular form longitudinally, and into the form of a segment of a circle transversely, with tapered or feathered edges, and adapted to be embodied in a pneumatic tire, substantially as set forth.

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**502,391.** HARROW. CHARLES A. ANDERSON and JOHN S. WILSON, Sturgis, Ky., assignors of one-half to Jesse J. Jones and James S. Wilson, same place. Filed Aug. 4, 1892. Serial No. 442,183. (No model.)



*Claim.*—1. In a harrow the combination with a series of transverse harrow bars provided with depending rigid teeth, of a series of clips secured to the bars and arranged at an angle thereto, said clips being provided at opposite sides with eyes, links located in the eyes and loosely connecting the bars, central clips mounted on the end bars and provided with eyes, and upon their upper sides with T-shaped standards, an extensible beam mounted on the T-shaped standards and loosely connected at its ends to said central clips, and means for adjusting said beam, substantially as specified.

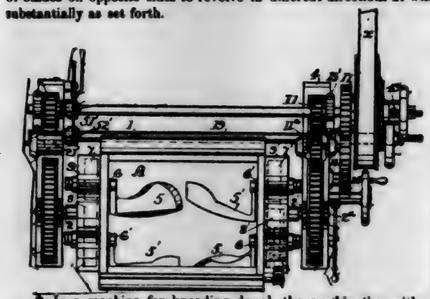
2. In a harrow the combination with the series of transverse harrow bars provided with depending teeth, clips located on the bars near their ends and provided at diametrically opposite sides with eyes, said clips being arranged at an angle to the bars, and links loosely connecting the clips, of central clips mounted on the end bars of the series provided with eyes, and upon their upper sides with T-shaped standards, of a pair of beam sections located side by side each provided with keepers for loosely engaging the other and engaging curved locking standards mounted on one of the sections and with a bearing block located upon the under side of said section, a standard located within the locking bar and mounted upon the remaining section, links connecting the extremities of said sections with the eyes of the center clips, a bifurcated lever embracing the sections and locking bar and pivoted to the bearing block and standard of said sections, a locking sleeve mounted on the lever and having a depending tooth engaging the locking bar and bell-cranked hand lever pivoted on the lever, a spring interposed between the upper end of the same and said lever, and a link loosely connecting the lower branch of the bell-cranked lever with the sleeve, substantially as specified.

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**502,392.** KNEADING-MACHINE. GEORGE S. BAKER, London, England. Filed Feb. 8, 1893. Serial No. 461,471. (No model.)

*Claim.*—1. In a machine for kneading dough, the combination with a drum and mechanism for actuating the same, of the flat blades 5' and hollow blades 5 rotating within said drum and mechanism for causing such rotation substantially as set forth.

2. In a machine for kneading dough the combination with a kneading trough 1, constructed to be tilted by hand, of the separate hollow and flat mixing blades 5, 5', mechanism for actuating the pair of blades on opposite sides to revolve in different directions at will substantially as set forth.



3. In a machine for kneading dough the combination with a friction clutch and a driving pulley 14, of a hand wheel 16, operating said clutch to graduate the motion of the mixing blades, gear pinions 11, 11ª, 10', 8', 7, 7', pinions 11, 11ª, 22, 21, counter shaft 19, and pinions 21', 11ª, 10, 8, 7, 7' in the way and manner described.

4. In a machine for kneading dough the combination with the friction clutch of wheel 18 mounted on shaft 19, driving pulley 14, gear wheel 17, wheels 18, 21, 22, 11ª, 10', 8', 7, 7' on the right hand side of trough, shaft 19, pinions 21', 11ª, 10, 8, 7, 7' on the left side, and the mixing blades 5, 5', in the way and manner described.

5. In a machine for kneading dough, for the purpose of tilting the trough 1, by power, the combination of the V-shaped friction wheel 36, spur pinions 35, 18, 17, and driving pulley 14 actuating the same, hand lever 40, eccentrically mounted spindle 33, and friction wheels 39, 29', depending upon the direction in which the drum is tilted, bevel wheels 21', 26, and worm 24, engaging with rack 23, in the way and manner described.

6. In a machine for kneading dough, the combination with the hand gear of lever 40 controlling the same, wheel 30, keyed to shaft 31, pinion 29, friction pulley 29', miters 26, 26', worm wheel 24, and the rack 23, for the purpose of tilting the drum in either direction in the way and manner described.

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**502,398. GARMENT-SUPPORTER.** JAMES W. BEAUMONT, Waterbury, Conn. Filed Sept. 3, 1892. Serial No. 444,857. (No model.)



*Claim.*—1. In a clamp for garment supporters, the shank A and lip A' at its lower end, standing at right angles thereto, in combination with the slide B, having a short bearing on the said shank, and the inclined wing B' on such slide arranged to seize the garment M between such wing and such lip and cause the friction of the slide on the shank to be thereby increased, substantially as herein specified.

2. In a garment supporter, the clamp described having the shank A formed with the transverse grooves *a* on its upper portion and the lip A' at its lower end, in combination with the slide B having the inclined wing B' at its lower end, and the burr or in-turned lip *b'* at its upper end, the slide being retained against displacement by the engagement of the lips *b'* in the grooves *a* and to be engaged and released substantially as herein specified.

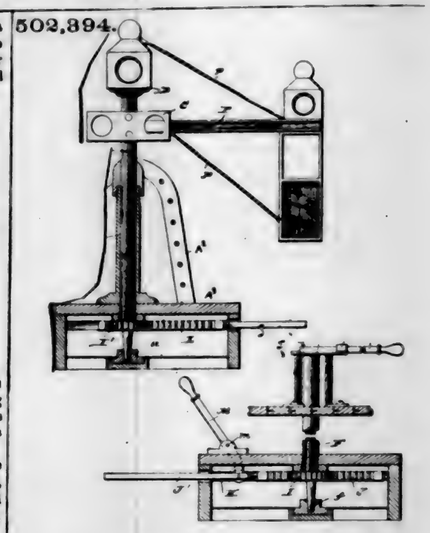
3. The clamp described having the shank A with the lip A' at its lower end, and the grooves *a* on one of its faces near the top, in combination with the slide B carrying the lip or burr *b'* at its upper end, and the inclined wing B' having grooves *b* on its under face, arranged for joint operation substantially as herein specified.

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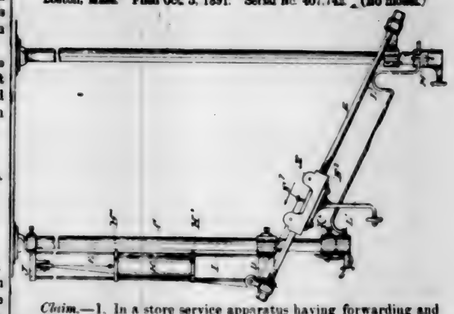
**502,394. RAILWAY SIGNAL AND CROSSING-GATE.** JOHN S. BERRY, Tyler, Tex. Filed June 20, 1891. Serial No. 396,958. (No model.)

*Claim.*—The combination with the rotary signal post, and its operating mechanism, of the lamp B on said post, the signal board C below said lamp, the arm extension P, its braces *p*, *p*, the signal carried by said arm and depending therefrom, said signal with said arm forming a crossing gate, the bearing *a* for the lower end of said rotary post, the box in which said bearing is fixed, the elongated sleeve supported upon the cap plate of said box, and forming an extended bearing for said post, and the ladder fixed at its foot to said cap plate, and at its upper end to an extension of said sleeve, and forming a brace for said post against the weight of said signal and crossing gate, substantially as specified.

**502,394.**



**502,395. STORE-SERVICE APPARATUS.** JAMES M. BURNS, Chicago, Ill., assignor to the Lamson Consolidated Store Service Company, Boston, Mass. Filed Oct. 5, 1891. Serial No. 407,742. (No model.)



*Claim.*—1. In a store service apparatus having forwarding and return tracks, a transfer carriage with the track section adapted to align with said tracks in its upper and lower positions for transferring the carrier from the forwarding track to the return track, inclined ways upon which said carriage travels between said tracks, and automatically actuated mechanism for regulating the travel of the carriage from the forwarding to the return track, substantially as set forth.

2. In a store service apparatus provided with forwarding and return tracks secured to hangers, a transfer carriage adapted to align with said forwarding and return tracks in its upper and lower positions and for transferring the carrier from the upper to the lower track, and a rod extending between said hangers for preventing the removal of the carrier, substantially as set forth.

3. In a store service apparatus provided with forwarding and return tracks secured to hangers, a transfer carriage adapted to align with said forwarding and return tracks in its upper and lower positions and for transferring the carrier from the upper to the lower track a weight for transferring the carriage from one track to the other, and a rod pivoted to the lower end of one hanger and held in place on the other hanger by a spring-pressed arm so as to prevent the displacement of the carrier, substantially as set forth.

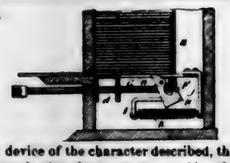
4. In a store service apparatus having forwarding and return tracks, a transfer carriage having a track section adapted to align respectively with said tracks in its upper and lower positions, and ways upon which the said carriage travels between said tracks, substantially as set forth.

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**502,396. APPARATUS FOR DISTRIBUTING ADVERTISEMENTS.** FREDERIC B. COCHRAN, Brooklyn, N. Y. Filed Sept. 27, 1892. Serial No. 446,995. (No model.)



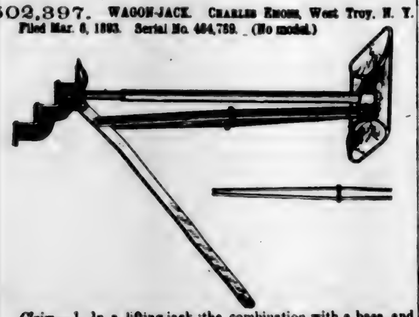
**502,396.**



*Claim.*—In a device of the character described, the combination of the inclosing case having the compartment A', a slotted platform located below the same, a cross head arranged to reciprocate beneath the platform, a handle outside the casing and secured to said cross-head, a retractile spring connected with the cross head, and the finger or fingers H pivotally mounted in and supported by said cross-head, and normally projecting above the platform, substantially as shown and described.

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**502,397. WAGON-JACK.** CHARLES ENGEL, West Troy, N. Y. Filed Mar. 6, 1893. Serial No. 464,759. (No model.)



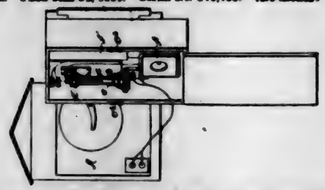
*Claim.*—1. In a lifting jack, the combination with a base, and standard, of a head block, carrying a rod working in the standard, a lever pivoted on the head block, a fulcrum consisting of separate side bars pivotally connected to the lever and base, and a connecting brace having eyes in its opposite ends through which the side bars pass, and a connecting web having a groove in its outer edge in which the lever engages, substantially as described.

2. In a lifting jack, the combination with a standard, of an integral base consisting of a flat metal plate, of substantially uniform thickness, having on its upper face a socket, a longitudinal fin, oppositely inclined ribs extending from the fin to the edge, and a marginal flange, substantially as described.

3. In a lifting jack, the combination with a base and hollow standard, of a head block carrying a rod working in the standard, a lever pivoted to the head block, a fulcrum consisting of two side bars oblong in cross-section, having their opposite ends pivotally secured to the lever and base respectively, and their intermediate portions bowed outwardly in opposite directions, and an integral connecting brace located intermediate the ends of and between the side bars, said brace being formed with eyes in its opposite ends through which the side bars pass and are held by frictional contact, substantially as described.

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**502,398. PORTABLE TELEPHONE.** BROWN & FLANDERS, Boston, Mass. Filed Jan. 31, 1891. Serial No. 379,755. (No model.)



*Claim.*—1. A signal box containing a signal transmitter, two switch plug receiving sockets, one of which is electrically connected with the signaling circuit, and the other with an open ground tap, or return circuit, and a hinged door, as *a*, combined with the portable telephonic transmitting and receiving apparatus herein described, consisting of a box or case *b*, having at its rear side an over-hanging lip or projection *b'*, and a rest *b²*, whereby it may be supported upon said hinged door *a*, the door *c* for said box or case, the transmitter *f*, local battery therefor, the receiver *d*, and support therefor, a switch for said local battery circuit controlled by said support, the condenser and wire 5, connected to the two binding posts 6, and including said transmitter, receiver, and condenser, and two switch plugs $g^3$, $g^4$, connected with said binding posts 6, by flexible electric connections, whereby said switch plugs may be placed in their receiving sockets when the door *a*, of the signal box is open, and the apparatus supported thereon, substantially as described.

2. The signal box containing a signal transmitter, two switch-plug receiving sockets one of which is electrically connected with the signaling circuit, and the other with an open ground tap or return circuit, and a hinged door as *a*, combined with the portable telephonic transmitting and receiving apparatus herein described consisting of the box or case *b*, adapted to be supported on said door *a*, and having a door *c*, transmitter *f*, local battery therefor, receiver *d*, and support therefor, a switch for said local battery circuit controlled by said support, a condenser, and wire 5, connected to the two binding posts 6, and including said transmitter, receiver, and condenser, and two switch plugs $g^3$, $g^4$, connected with said binding posts 6, by flexible electric connections, whereby said switch plugs may be placed in their receiving sockets in the signal box when the door *a*, is open and the apparatus supported thereon, and the switch plug holders $g^3$, $g^3$, in said box *b*, opposite the door *c*, substantially as described.

3. The portable telephonic receiving and transmitting apparatus herein described, adapted to be hung upon the door of a signal box, consisting of the box or case *b*, having a door *c*, and containing the receiver *d*, transmitter *f*, local battery therefor, and condenser, and switch for the circuit of said battery, and means for locking said switch open, controlled by said door *c*, substantially as described.

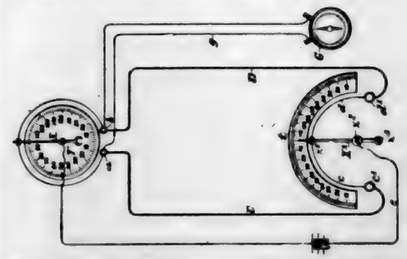
4. The portable telephonic receiving and transmitting apparatus herein described, adapted to be hung upon the door of a signal box consisting of a box or case *b*, having a door *c*, and containing the transmitter *f*, local battery therefor, receiver *d*, and support therefor, and switch for the circuit of said local battery controlled by said support, the holder *e*, for said receiver *d*, which co-operating with the said closed door *c*, holds said switch open, substantially as described.

5. The portable telephonic receiving and transmitting apparatus herein described, adapted to be hung upon the door of a signal box, consisting of a box or case *b*, having a door *c*, and containing the transmitter *f*, local battery therefor, receiver *d*, having an enlarged end, a support therefor, and switch for the circuit of said local battery controlled by said support, the holder *e*, embracing the receiver *d*, adjacent to its enlarged end, holding it with said switch open, substantially as described.

6. The portable telephonic receiving and transmitting apparatus herein described, adapted to be hung on the door of a signal box, consisting of the box or case *b*, door *c*, receiver *d*, transmitter *f*, local battery, and condenser, and wire 5, connected to the binding posts 6, and including the said transmitter receiver, and condense in the order stated, whereby the said transmitter and receiver are interposed between the signaling circuit and the condenser, substantially as described.

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**502,399. ELECTRIC TELEMETER.** CHARLES H. HASKINS, New York, N. Y. Filed Mar. 9, 1892. Serial No. 424,255. (No model.)



*Claim.*—1. In a telemetric apparatus, an electrical balance consisting of four arms and a transverse bridge or indicator circuit, two of said arms being composed in part of line conductors of negligible resistance, for the purpose specified and provided with a movable electric contact at each terminal of the source of electricity; means substantially such as described whereby one of said contacts receives motion from the device whose movement is to be indicated, and means, substantially such as described, whereby the other may be moved correspondingly at the place of observation to restore the equilibrium of the balance as set forth.

2. In a telemetric apparatus, an electrical balance consisting of four arms and a transverse bridge or indicator circuit, two of said arms being composed in part of conductors extending between separate localities, and having an electrical resistance which is negligible

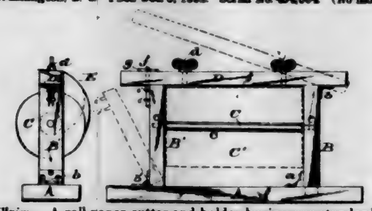
in comparison to the resistance of the other conductors of the system, as set forth.

3. In a telemetric apparatus, an electrical balance consisting of four arms and a transverse bridge or indicator circuit, a movable contact for varying the ratio of resistance between two of said arms, which contact receives its motion from the device whose movement is to be indicated; a movable contact for varying the ratio of resistance of the remaining two arms, which receives its motion from a reversible motor, and a galvanoscope in the indicator circuit, whereby the starting, stopping, and direction of motion of said motor are governed or controlled, substantially as set forth.

4. In a telemetric apparatus, the combination of a resistance conductor bisected by a movable electric contact, a traveling nut carrying said contact, and a screw engaging with said nut formed upon a shaft coupled to a reversible motor, substantially as set forth.

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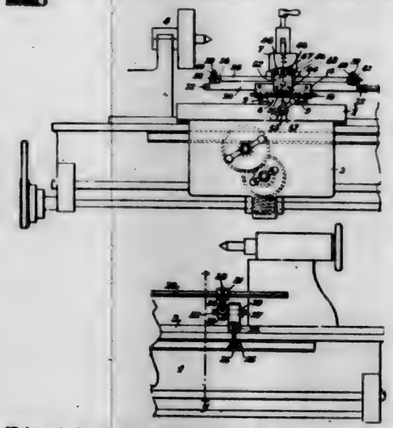
**502,400. ROLL-PAPER CUTTER AND HOLDER.** JAMES S. HAYS, Washington, D. C. Filed Dec. 5, 1892. Serial No. 454,064. (No model.)



*Claim.*—A roll-paper cutter and holder having one standard secured permanently to the base plate, and the other standard hinged to the base-plate: the top plate hinged to the fixed standard and removably secured to the other standard; the elastic sheet cutter, having two slots therein and adjustably secured to the top plate by the screw bolts, all substantially as shown and for the purpose described.

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**502,401. TAPER ATTACHMENT FOR LATHES.** MARTIN P. ROSES, Jersey City, N. J., assignor of one-half to Luther Lawrence Frazier, Brooklyn, N. Y. Filed Dec. 30, 1892. Serial No. 456,760. (No model.)



*Claim.*—1. In a taper attachment for lathes, the combination of a slide adapted to be secured to the carriage or slide-rest, a guide or way passing through the said slide and adapted to be secured to a stationary part of the lathe, a guide-bar connected to the said way and adapted to be adjusted to various angles, a shoe-piece adapted to traverse the said guide-bar, a guided block 46 connected to said nut and said slide and adapted to slide transversely of the guide or way and provided with means to enable its attachment to the tool-holder or slide of the lathe.

2. In a taper attachment for lathes, the combination of a slide adapted to be secured to the carriage or slide-rest, a guide or way adapted to be secured to a stationary part of the lathe, a guide bar connected to said way and adapted to be adjusted to various angles, a shoe-piece adapted to traverse the said guide-bar, a block connected to said shoe-piece, transverse guide-rods for said block supported by said slide, and means for connecting the said block to the tool-holder or slide of the lathe.

3. In a taper attachment for lathes, the combination of a slide adapted to be secured to the carriage or slide-rest, a guide or way adapted to be secured to a stationary part of the lathe, a guide-bar connected to said way and adapted to be adjusted to various angles, a shoe-piece adapted to traverse the said guide-bar, a block having a threaded hole and connected to said shoe-piece, means for guiding said block transversely, and a shaft or spindle provided with a threaded portion engaging the threaded hole in said block, whereby it may be independently turned to feed the cutting tool by hand, and also arranged to slide in supports bodily with said block during its automatic movements.

4. In a taper attachment for lathes, the combination of the slide 14, the guide or way 20, the guide-bar 34 pivoted on said way the shoe-piece 53, the block 46 connected to said shoe-piece, and having a threaded aperture, the shaft or spindle 47, having a screw thread, and supports therefor connected to said slide.

5. In a taper attachment for lathes, the combination of a slide provided with transverse jaw-pieces adapted to clamp the way on the carriage or slide-rest of a lathe, the way 20, the guide-bar, the shoe-piece, the transversely-sliding block, and the shaft or spindle adapted for connection to the tool-holder of the lathe.

6. In a taper attachment for lathes, the combination of a slide, the transversely-arranged jaw-pieces adapted to slide in grooves longitudinally of said slide to clamp the way 6 on the carriage or slide-rest of a lathe, the way 20, the guide-bar, the shoe-piece, the transversely-movable block, and the shaft or spindle.

7. In a taper attachment for lathes, the combination of a slide, the transversely arranged jaw-pieces adapted to slide in grooves longitudinally of said slide, a right and left hand screw for moving said jaw-pieces, the way 20, the guide-bar, the shoe-piece, the transversely-sliding block, and the shaft or spindle.

8. In a taper attachment for lathes, the combination with a fixed guide-bar, a shoe-piece for traversing the same, a block connected to said shoe-piece and adapted to travel crosswise of said guide-bar, a shaft or spindle adapted to travel with said block, and having also a threaded connection with said block, whereby it may be moved back and forth independently of said block, and thereby set the tool for any depth of cut.

9. In a taper attachment for lathes, the combination of a slide, adapted to be secured to the carriage of a lathe, the way 20, upon or over which the said slide travels, constructed at each end for connection to the bed or frame work of a lathe, a guide-bar, a shoe-piece for traversing said guide-bar, means for connecting the said shoe-piece to the tool-holder, and adjustable clamping means for connecting the said way 20 either at the front or the rear of the lathe or on the right or on the left hand side thereof, according to the desire of the user or the style or construction of lathe.

10. In a taper attachment for lathes, the combination of the way 20, the slide 14, the guide-bar, a shoe piece for traversing the same and adapted for connection to the cutting tool of a lathe, the adjustable rod 23 connected to the said way 20, and the adjustable and movable brackets or supports for said rod.

11. In a taper attachment for lathes, the combination with a guide-bar, of a sliding and guided block connected thereto to be moved transversely thereof, a shaft or spindle arranged to be carried with said block and to be connected to the tool-holder, and also arranged for movement independently of said block to adjust the tool for obtaining the desired depth of cut.

12. The combination, in a lathe, of the carriage, the way 6 thereon, the slide 7, a slide, as 14, secured to said way 6, a guide or way 20, arranged in the direction of travel of the carriage and held stationary by suitable connections to the bed or frame-work of the lathe, the guide-bar mounted upon said way 20, the shoe-piece, the block 46 adapted to slide transversely of the way 20, and connections between the said block and the slide 7, whereby during the movements of the carriage longitudinally the slide may be moved transversely.

13. The combination, in a lathe, of the carriage, the way 6 thereon, the slide 7 on said way, the slide 14 attached to said way at right angles thereto, the way 20 connected to the bed or frame-work of the lathe, the guide-bar, the shoe piece, the block 46 adapted to travel transversely of the way 20, and the screw shaft or spindle 47 connected to said block and to the said slide 7.

14. The combination, in a lathe, of the carriage, the way 6, the slide 7, the way 20 constructed at each end for attachment at either end of the lathe-frame or bed, the slide 14 constructed for attachment to the way 6 at either side of the lathe, the guide-bar 34, the shoe-piece, and connections between the same and the slide 7

15. The combination, in a lathe, with the slide 14 clamped to the way 6 of the bed of the slide-rest and having a transversely-movable block connected to the tool-holder and also a shoe-piece, of a relatively-fixed but adjustable guide bar.

16. The combination, in a lathe, with the slide 14, having beveled clamps and attached to the dovetailed way 6 on the slide-rest, and having a transversely movable block connected to the tool-holder and also a shoe-piece, of a relatively fixed but adjustable guide-bar, and a fixed support for said guide-bar arranged parallel with the line of movement of the carrier 14.

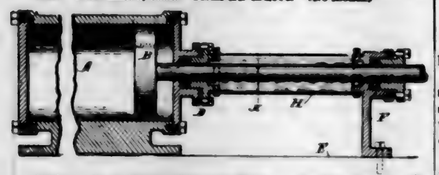
17. The combination in a lathe, of the carriage, the dove-tailed way 6 thereon, the slide 14 carrying adjustable beveled jaws 9, 9, arranged transversely of the slide, a right and left hand screw for moving said jaws, a dove-tailed way 20 in a corresponding recess in the slide 14, a guide-bar 34 pivoted on said way 20, a shoe piece for traversing said guide-bar, a block 34 pivoted to said shoe-piece, guides for said block connected to said slide 14, and a shaft or spindle connected to the tool-holder and the said block and supported by said slide 14.

18. The combination, in a lathe, of the carriage, the slide 14 connected thereto, the way 20, the guide-bar 34, the shoe-piece for traversing the same connected to the tool holder, the tie-rod 23, the bracket 24, the plate 25, the bracket 31 having shank 30, and retaining bolts and nuts.

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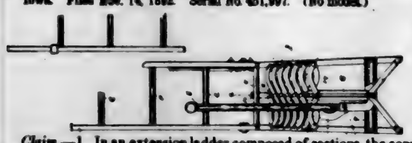
**502,402. PISTON-ROD PROTECTOR.** SAMUEL KAYE, Yazoo City, Miss. Filed Mar. 9, 1892. Serial No. 424,308. (No model.)



*Claim.*—An apparatus for protecting piston rods, comprising the combination of a piston-rod, two packing glands in which the rod operates, the outer gland being so arranged that that portion of the rod that enters the cylinder will not pass beyond it, a sheet metal covering reaching from one gland to the other and partially embracing the same, and binding straps secured over the glands and covering, whereby an open chamber is formed in which the piston-rod operates and which is adapted to receive oil for the protection of the rod, substantially as described.

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**502,403. EXTENSION-LADDER.** HENRY KNIPRATH, Davenport, Iowa. Filed Nov. 14, 1892. Serial No. 451,997. (No model.)



*Claim.*—1. In an extension ladder composed of sections, the combination of the pairs of bars 1 attached to the respective sections, the slotted bars 6, the hand lever, the bar 12 and curved bars 10 for the purposes stated and substantially as described.

2. In an extension ladder composed of sections, the combination of the pairs of bars 1 attached to the respective sections, the slotted bars 6, the hand lever, the bar 12, the curved bars 10, and a hook for the purposes stated and substantially as described.

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**502,404. GLOVE OR GARMENT FASTENER.** EDWIN J. KRANTZER, Cambridge, Mass., assignor to the Consolidated Fastener Company, Portland, Me. Filed Mar. 22, 1892. Serial No. 427,223. (No model.)



*Claim.*—1. In a fastener consisting of a socket member and stud member, a socket chamber provided with a struck up bow curved annular lipped spring C, substantially as described.

2. In a fastener consisting of a socket member and a stud member, a socket member consisting of a chambered eyelet H, and a non-resilient collet I, and a bow curved annular lipped spring C, substantially as described.

3. In a fastener consisting of a socket member and stud member, a socket chamber provided with a struck up bow curved annular lipped spring, C and the ring J, substantially as described.

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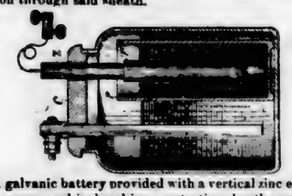
**502,405. GALVANIC BATTERY.** EDWARD H. LYON, Brooklyn, N. Y. Filed Sept. 28, 1892. Serial No. 446,873. (No model.)

*Claim.*—1. A positive element for a galvanic battery having a limited area exposed to electrolytic action and protected at all other points by a loosely fitting impervious sheath.

2. An impervious protective tube for a battery zinc adapted to permit the latter to slide within it and provided with lateral openings at or near the bottom.

3. A galvanic battery having its positive electrode surrounded by a protective cover or sheath, a portion of its surface only being exposed within narrow vertical limits.

4. A galvanic battery provided with a positive electrode inclosed loosely in a protective sheath and adapted to feed to the solution by gravitation through said sheath.



5. A galvanic battery provided with a vertical zinc electrode dipping in mercury and inclosed in a protective sheath or tube.

6. An impervious protective sheath or tube adapted to loosely surround a positive battery electrode provided with openings in substantially the same horizontal plane to expose a portion of the electrode to electrolytic action within an area of substantially uniform electrolytic activity.

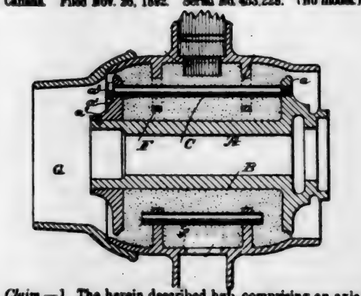
7. An impervious protective tube for a battery zinc adapted to permit the latter to slide within it and provided with an opening or openings at the bottom to permit electrolytic action.

8. A galvanic battery having a negative electrode surrounded by a suitable depolarizing agent, and a zinc electrode resting on the bottom of the porous cup, a protective sheath or cover loosely surrounding the zinc, and a body of mercury surrounding the bottom of the zinc.

9. A protective tube or sheath for a battery zinc having an internal diameter adapted to permit the zinc to slide through it and having an opening or openings near its bottom, the upper portion of the tube being of larger internal diameter than the lower portion, for the purpose described.

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**502,406. VEHICLE-HUB.** HENRY E. MORRIS, Woodstock, Ontario, Canada. Filed Nov. 26, 1892. Serial No. 453,228. (No model.)



*Claim.*—1. The herein described hub, comprising an axle box, a spoke receiving shell, and an interposed filling of rubber vulcanized both to the box and shell, and interlocked to prevent rotary movement of either the box or shell relatively to the filling, substantially as described.

2. The herein described hub, comprising an axle box, a spoke receiving shell, and an interposed filling of rubber vulcanized both to the box and shell, and the box and shell being interlocked with the rubber to prevent rotary movement of either relatively to the rubber, the box having a fixed and a removable flange which prevents undue movement of the shell and filling longitudinally of the hub, substantially as described.

3. The herein described hub comprising an axle box having flanges, and bolts extending between said flanges, an outer shell having internal rings or flanges which are also united by bolts or rods, and an interposed filling of rubber vulcanized both to the shell and box, substantially as described.

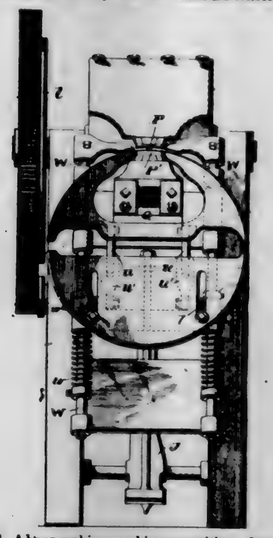
4. The herein described hub, comprising a box having flanges, and provided with inwardly extending studs on said flanges, an exterior shell and an interposed filling of rubber vulcanized both to the shell and box, substantially as described.

5. The herein described hub comprising a box having flanges, and having radial ribs extending longitudinally of the hub between the flanges, an exterior shell having internal, longitudinal ribs also extending longitudinally between the box flanges, and alternating with the ribs of the box, and an interposed filling of rubber, vulcanized both to the box and shell, substantially as described.

6. The herein described hub comprising an axle box, an exterior spoke-receiving shell, and a filling of rubber, centrally of the hub and vulcanized both to the box and shell the said shell being free to move in the direction of the length of the hub, in response to side thrusts, and the rubber serving to permit also a yielding of the shell transversely of the hub, substantially as described.

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**502,407. HOOP-MAKING MACHINE.** JAMES PLEUKHARP and WILLIAM K. LIGGETT, Columbus, Ohio, assignors to the Pleukharp Barrel Machine Company. Filed Apr. 12, 1892. Serial No. 428,865. (No model.)



*Claim.*—1. A hoop making machine comprising a former to shape the hoop iron about, gripping devices to hold the overlapping ends of the hoop iron, die plates movably related to the gripping devices and provided with punching, rivet holding and riveting instrumentalities, and mechanism for automatically actuating the said mechanisms, and moving the parts to successively bring the punching, rivet holding and riveting instrumentalities in operative relation to the overlapping ends of the hoop iron, substantially as described.

2. A hoop making machine comprising a former to shape the hoop iron about, gripping devices to hold the overlapping ends of the hoop iron, movable die plates provided with punching, rivet holding, and riveting mechanism, jaws to press the die plates together, and mechanism for independently and automatically actuating the jaws and moving the said die plates to successively bring the punching, rivet holding and riveting mechanism into proper relation with the overlapping ends of the hoop iron, substantially as described.

3. A hoop making machine comprising a former, to shape the hoop iron about, gripping devices to hold the overlapping ends of the hoop iron, jaws, movable die plates carried by the said jaws and provided with the punching, rivet holding, and riveting devices, mechanism for automatically opening and closing the said jaws, and independent mechanism for automatically moving the said die plates relative to the jaws to successively bring the punching, rivet holding and riveting devices into proper relation with the overlapping ends of the hoop iron, substantially as set forth.

4. A hoop making machine comprising a former, to shape the hoop iron about, gripping devices to hold the overlapping ends of the hoop iron, jaws having ribs on their opposing sides, die plates provided with rearwardly projecting rods which are mounted in the said ribs, and mechanism for opening and closing the jaws and moving the said rods longitudinally in the said ribs, substantially as and for the purpose described.

5. In a hoop making machine comprising a former, to shape the hoop iron about, gripping devices to hold the overlapping ends of the hoop irons, jaws having ribs on their opposing sides, die plates provided with rearwardly projecting rods which are mounted in the said ribs, springs mounted on the said rods and confined between stops thereon and the said ribs of the jaws, and mechanism for opening and closing the jaws and independently moving the said rods forward against the tension of the said springs, substantially as described.

6. In a hoop making machine the combination with jaws, one of the jaws having an opening for the passage of the rivet forming wire, and a wire feeding mechanism carried by the said apertured jaw, of die plates located between the said jaws and pressed together thereby, and mechanism for moving the said die plates between the said jaws, whereby a portion of the wire is cut off sufficient to form a rivet, substantially as set forth.

7. In a hoop making machine the combination with jaws, one of the jaws having an opening for the passage of the rivet forming wire, and a wire feeding mechanism carried by the said apertured jaw, and consisting of two grooved rollers geared to revolve together, and mechanism for actuating the said roller, of die plates located between the said jaws and pressed together thereby, and mechanism for moving the said die plates between the said jaws, whereby a portion of the wire is cut off sufficient to form a rivet, substantially as set forth.

8. In a hoop making machine the combination, with jaws one of the jaws having an opening for the passage of the rivet forming wire, and a wire feeding mechanism carried by the said apertured jaw, and consisting of grooved rollers of the plate T loosely mounted on the journal of one of the rollers, the disk S, the pawl S' pivoted to the plate T and having spring $s'$ and biting edge $s$, and means for actuating the said pawl to operate the said rollers, substantially as described.

9. In a hoop making machine the combination with jaws, one of the jaws having an opening for the passage of the rivet forming wire, and a wire feeding mechanism carried by the said apertured jaw, and consisting of grooved rollers of the plate T loosely mounted on the journal of one of the rollers, the disk S, the pawl S' pivoted to the plate T and having spring $s'$ and biting edge $s$, the lever $T^5$ mounted between its ends on a spring actuated rod $t$ and connected at one end with the pawl S' and adapted to have its other end actuated by a cam, and an adjustable stop $t^5$, substantially as and for the purpose described.

10. In a hoop making machine the combination of gripping devices to clamp the overlapping ends of the hoop iron, two formers and mechanism for separating the said formers to stretch the hoop, substantially as described.

11. In a hoop making machine the combination with the jaws 8 and the formers, of mechanism for moving the formers to clamp the hoop between the jaws and the upper former, and separate the said formers, substantially as described.

12. In a hoop making machine the combination of the jaws 8, guide rods, formers mounted on the said guide rods, springs to support the said formers on the guide rods, and mechanism to separate the formers and press them against the jaws 8 against the tension of the said springs, substantially as described.

13. In a hoop making machine the combination with gripping devices to clamp the overlapping ends of the hoop iron, the formers, and mechanism for separating the formers to stretch the hoop, of an adjusting mechanism to adjust the relative distance apart of the said formers, substantially as and for the purpose described.

14. In a hoop making machine the combination with gripping devices to clamp the overlapping ends of the hoop iron, the formers, and the treadle, of toggle levers connecting the formers to effect a separation thereof to stretch the hoop, and a rod connecting the said toggle levers with the treadle, substantially as set forth.

15. In a hoop making machine the combination with the former for shaping the hoop, jaws for gripping the ends of the hoop, shaft K provided with cams for actuating the said jaws, gear wheel L secured on shaft K and provided with rim $l$ having depressions $l'$, and the shaft B having pinion D in mesh with gear wheel L, of a continuously driven pulley C mounted on shaft B, a pawl E constructed to interlock and normally held out of engagement with the said pulley, and a trip for releasing the said pawl to permit it to engage with the said pulley to start the machinery, and having one end constructed to travel on the said rim $l$, substantially as and for the purpose specified.

16. In a hoop making machine the combination with the former for shaping the hoop, jaws for gripping the ends of the hoop, shaft K provided with cams for actuating the said jaws, gear wheel L secured on shaft K and provided with rim $l$ having depressions $l'$, and the shaft B having pinion D in mesh with gear wheel L, of a continuously driven pulley C mounted on shaft B, a pawl E constructed to interlock and normally held out of engagement with the said pulleys, and a trip for releasing the said pawl having a cam edge $f^3$ to engage with the said pawl, and having a lateral extension $f^4$ inclined on its outer edge to be engaged by the treadle, and having a horizontal arm $f$ to engage with the said rim $l$, substantially as described for the purpose specified.

17. In a hoop making machine the combination with the former for shaping the hoop, jaws for gripping the ends of the hoop, shaft K provided with cams for actuating the said jaws, gear wheel L, secured on shaft K and provided with rim $l$ having depression $l'$, and the shaft B having pinion D in mesh with gear wheel L, of a continuously driven pulley C mounted on the shaft B, a pawl E constructed to interlock and normally held out of engagement with the said pulley, a sleeve $d$ keyed on said shaft B and having a lateral extension, a pawl E pivoted to the said lateral extension and adapted to interlock with the pulley C, and a trip for releasing the said pawl having a cam edge $f^3$ to engage with the said pawl, and having a lateral extension $f^4$ inclined on its outer edge to be engaged by the treadle, and having a horizontal arm $f$ to engage with the said rim $l$, substantially as and for the purpose described.

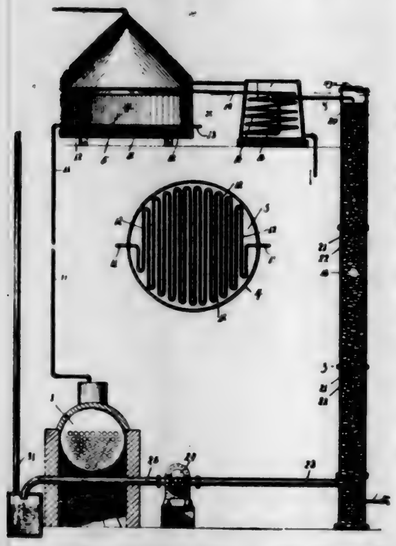
18. In a hoop making machine the combination with the former for shaping the hoop, jaws for gripping the ends of the hoop, shaft K, provided with cams for actuating the said jaws gear wheel L secured on shaft K and provided with rim $l$ having depressions $l'$, and the shaft B having pinion D in mesh with gear wheel L of a continuously driven pulley C mounted on shaft B, a pawl E constructed to interlock and normally held out of engagement with the said pulley, a trip for releasing the said pawl having a cam edge $f^3$ to engage with the pawl, and having a lateral extension $f^4$ inclined on its outer edge, and a treadle having a pivoted arm $j$ to engage with the inclined edge of the said lateral extension $f^4$, substantially as described for the purpose specified.

19. In a hoop making machine the combination of the jaws 8, guide rods, formers mounted on the said guide rods, a cross head 7, springs mounted on the said guide rods, collars $w'$ and $w^3$, and actuating mechanism for separating the formers and pressing the upper former against the said jaws 8, substantially as described.

20. In an organized machine for making hoops, the combination with the rivet wire feeding mechanism, of the lever $T^5$ pivoted between its ends and carrying a pawl $t$ at one end to actuate the said feeding mechanism, and adapted to be operated on at the other end by a cam, an adjustable stop $t^5$, and a spring for returning the said lever to a normal position after being actuated, substantially as described.

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**502,408. APPARATUS FOR AERATING DISTILLED WATER.** JAMES E. THOMAS and ELISHA P. GROW, Bay City, Mich. Filed Nov. 2, 1892. Serial No. 450,737. (No model.)



*Claim.*—1. The combination of the water still, with a hollow vertical cylinder provided with a filling of crushed or disintegrated stone, a pipe leading from the still to the upper portion of said cylinder, an air pipe passing through a furnace for heating the contained air and leading to the bottom of the cylinder, substantially as set forth.

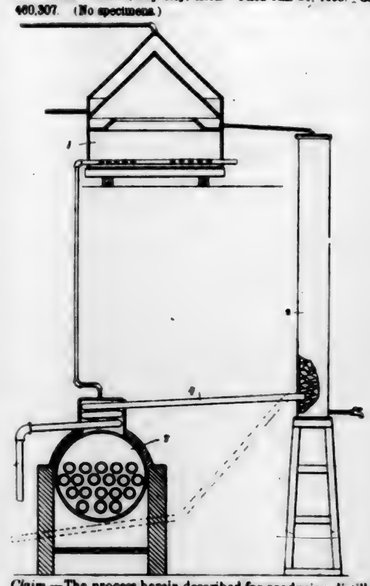
2. The combination of the water still, with a hollow vertical cylinder as described, and provided with a filling of crushed or disintegrated stone, and a pipe for conducting the water from the still to the upper end of said cylinder, an air pipe connected to the lower end of the cylinder a blower for supplying air currents to said pipe, and a furnace for heating a portion of the pipe to purify the air passing through the same substantially as set forth.

3. The combination of the water still, the aerator, a pipe for conducting the water from the still to the aerator, a pipe passing through a heater for conducting purified air to the aerator, a blower for supplying air currents to the pipe, a closed tank for containing water in its lower portion, and having the said air pipe connected with its upper portion and an air supply pipe having its inner end passed into the tank and extended below the water surface thereof, substantially as set forth.

4. The combination of the water still, the long vertical aerator cylinder having a filling of disintegrated or crushed stone, and a pipe for conducting water from the still to the aerator, an air pipe provided with a blower for conducting air to the aerator, and a series of disks depressed toward their center and placed at intervals within the aerator cylinder, and provided with a central opening for deflecting the descending water and the ascending air current from the outer portions of the filling material to the central portion thereof, substantially as described.

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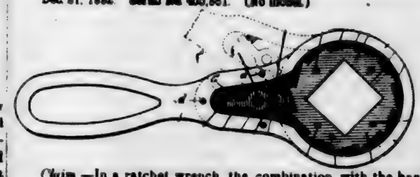
**502,409. AERATING DISTILLED WATER.** JAMES E. THOMAS and ELISHA P. GROW, Bay City, Mich. Filed Jan. 31, 1893. Serial No. 460,307. (No specimens.)



*Claim.*—The process herein described for producing distilled and aerated water, which consists in distilling and condensing water, directly confining and subjecting atmospheric air for a prolonged period to an independent source of heat of the desired temperature, and combining the said heated air and distilled water in an aerator, substantially as set forth.

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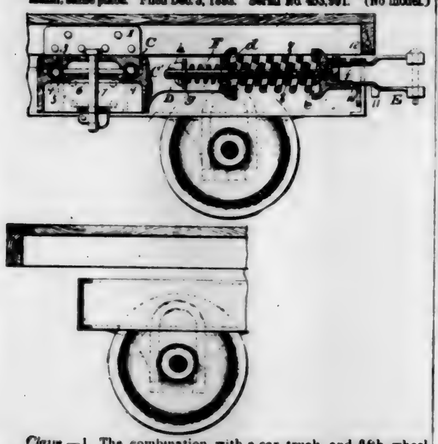
**502,410. RATCHET-WRENCH.** WILLIAM H. DIEDRICH, San Francisco, Cal., assignor of one-third to Casper H. Mason, same place. Filed Dec. 31, 1892. Serial No. 456,861. (No model.)



*Claim.*—In a ratchet wrench, the combination with the handle having boxings for the wrench head and for the pawl, and a head in the head boxing having ratchet teeth on its edge and a socket in its center of a pivot pin within the pawl boxing, a pawl comprising a central hub mounted on said pin, a forward arm having a beveled end adapted to bear against the beveled faces of the ratchet teeth, while the side of said forward arm bears against the flat faces of the teeth

and a rearward arm adapted to contact with the wall of the pawl-boxing when the forward arm is under strain, and a spring holding said rearward arm normally in such contact, as and for the purpose set forth.

**502,411. COMBINED CAR TRUCK AND COUPLING.** OTTO FLOER, Buffalo, N. Y., assignor of two-thirds to Henry Altman and George R. Mann, same place. Filed Dec. 3, 1892. Serial No. 453,991. (No model.)



*Claim.*—1. The combination with a car truck, and fifth wheel having a forwardly projecting yoke, of a draw head, means for connecting the yoke and draw head and means for holding said draw-head and yoke yieldingly apart, substantially as set forth.

2. The combination with a car frame and truck, of a fifth wheel comprising two sections one secured to the car frame and the other to the truck, the truck section extending approximately from one side of the truck to the other, and having a yoke projecting forwardly therefrom substantially as set forth.

3. The combination with a car frame and truck, of a fifth wheel comprising two sections, one secured to the car frame and the other to the truck, the truck section reaching approximately from one side of the truck frame to the other and a means projecting outwardly from this section, to sustain the inward pressure upon the draw head of a coupling, substantially as set forth.

4. The combination with a car truck, of a casting extending from one side thereof to the other, and a yoke integral therewith, and projecting forwardly therefrom, of a draw head connected with the yoke, and spring interposed between the yoke and draw head, substantially as set forth.

5. The combination with a car truck, of a casting reaching approximately across the truck, and secured thereto, said casting having a forwardly projecting yoke, a draw head having a tail bolt passing loosely through the yoke, a spring interposed between the yoke and draw head, and a spring mounted on the rear end of the tail bolt rearward of the outer end of the yoke, substantially as set forth.

6. The combination with a car truck, a yoke secured thereon and provided with a concaved or dish shaped outer end, of a draw-head provided with a dish shaped inner end, a tail bolt loosely connecting the yoke and draw-head, and spring mounted on the bolt between the dish shaped ends of the yoke and draw-head, substantially as set forth.

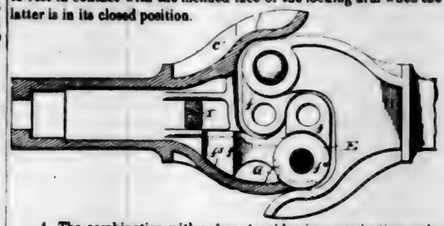
7. The combination with a car truck, and a yoke or similar device secured thereon, of draw-head connected with the yoke, an angle iron secured at the outer end of the truck and projecting inward for the abutment of the draw-head when pulled outward sufficiently and a projection on the draw-head adapted to strike opposite this angle iron plate when forced inward sufficiently, substantially as set forth.

**502,412. CAR-COUPLING.** OTTO FLOER, Buffalo, N. Y., assignor of two-thirds to Henry Altman and George R. Mann, same place. Filed Dec. 3, 1892. Serial No. 454,184. (No model.)

*Claim.*—1. In a car coupling the combination with a draw head having a projection thereon, of a coupling jaw having an inclined slot within which said projection rests and means for locking the jaw in its closed position.

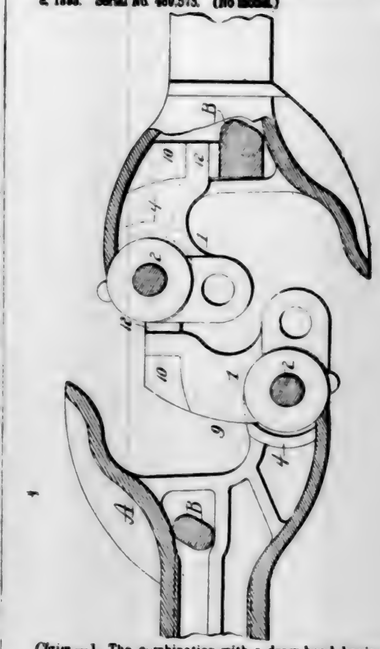
2. In a car coupling the combination with a draw head having a projection thereon, of a coupling jaw pivoted to the head and having an inclined slot in its hub adapted to receive the projection on the head, and means for locking the jaw in its closed position.

3. The combination with a draw head and a coupling jaw consisting of a coupling arm and a locking arm, the latter having a curved face and an inclined face, of a locking pin having a curved surface adapted to be engaged by the curved face of the locking arm as the latter is moved to its closed position and with an inclined face adapted to rest in contact with the inclined face of the locking arm when the latter is in its closed position.



4. The combination with a draw head having a projection and a coupling jaw having a slot, a curved face and an inclined face, of a coupling pin having a curved section adapted to be engaged by the curved section of the locking jaw, and an inclined section adapted to engage the inclined section of the locking jaw.

**502,413. CAR-COUPLING.** OTTO FLOER, Buffalo, N. Y. Filed Apr. 8, 1893. Serial No. 469,573. (No model.)



*Claim.*—1. The combination with a draw head having a spiral way on its floor, and a knuckle hinged to the draw-head, said knuckle having a tapering end and a bevel portion formed at one side of the tapering end, of a sliding locking pin having an inclining surface beneath which the tapering end of the knuckle engages in raising the pin and provided with a beveled side adapted to engage the beveled side of the knuckle, whereby the knuckle is locked, substantially as set forth.

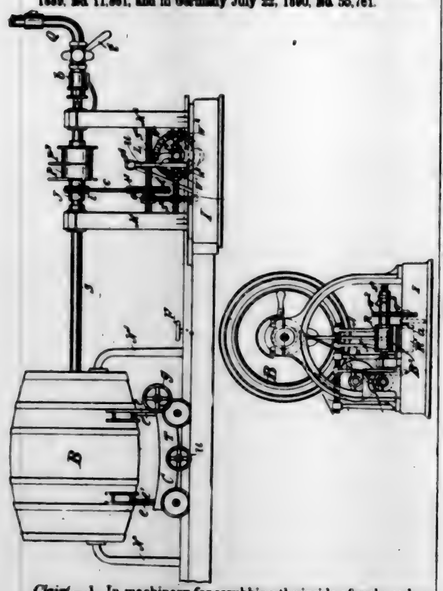
2. The combination with a draw-head having a spiral way on its floor, and a knuckle hinged to the draw-head, said knuckle provided with a bevel face on its lower surface adapted to bear on the spiral way and tapering at its outer end, of a sliding locking-pin having an inclining portion adapted to be engaged by the tapering end of the knuckle whereby the pin is raised and the pin constructed to drop into the space between the knuckle and the wall of the draw-head when the knuckle is closed, substantially as set forth.

3. The combination with a draw head, and a knuckle hinged thereto, said knuckle provided with a tapering outer end, of a locking pin provided with a beveled portion adapted to be struck by the tapering outer end of the knuckle whereby it is raised, the outer end of the knuckle also beveled and the locking pin constructed to form a wedge between this portion of the knuckle and the wall of the draw head, substantially as set forth.

4. The combination with a draw head having a spiral way on its floor, and a knuckle hinged to the draw head, said knuckle provided with a bevel face on its lower surface adapted to bear on the spiral way and tapering at its outer end, of a sliding locking pin having an inclining portion adapted to be engaged by the tapering end of the knuckle whereby the pin is raised, and the pin constructed to drop into and fill the space between the knuckle and the wall of the draw head when the knuckle is closed, and a stop for preventing the knuckle from swinging open beyond a certain point, substantially as set forth.



**502,414. BARREL-WASHER.** JOHN W. FLOWER, AUGUSTUS P. FLOWER, and ROBERT J. COOMBS, Shaftesbury, England. Filed Dec. 9, 1890. Serial No. 374,118. (No model.) Patented in England July 25, 1889, No. 11,961, and in Germany July 22, 1890, No. 55,761.



*Claim.*—1. In machinery for scrubbing the inside of casks or barrels and other similar vessels the improved scrubbing brush pivoted upon the nozzle of the main shaft and composed of two rods and jointed links furnished with wire or other bristle in combination with the mechanism for adjusting the cask or barrel, substantially as and for the purpose described.

2. In a cask scrubbing and scouring machine the barrel supporting carriage having its body or frame adjustably mounted upon the axles by means of arms B, B rigidly connected to the said axles, nut $f'$ and the screw rod engaging said nut, the crossed arms $e$ $e'$ rigidly secured to axles journaled in the carriage-frame, the toothed sectors $f$, $f'$ rigidly secured to the axels of the crossed arms and the screw rod journaled in a swiveled bearing upon the carriage frame and engaging a swiveled nut upon one of the sectors, substantially as herein described and shown and for the purpose set forth.

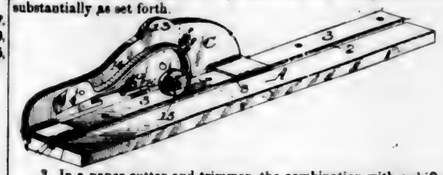
3. In cask scrubbing machines the carriage band B connected thereto and provided with projections $p$ $p'$ and supports N N' in combination with the rollers R R' for moving the cask or barrel and holding the same in position substantially as and for the purpose described.

4. In a cask scrubbing and scouring machine the combination of carriage C, band B', connected thereto and provided with projections $p$, $p'$ and supports N, N', rollers R R' for moving said band and carriage and the shifting mechanism consisting of shafts S' and its gear $o$, shaft $S^3$ its gear $o'$ and bevel-wheels $W'$ $W^3$ with their couplings $n'$ $n^3$ and shifting coupling $n^3$, and shafts $S^4$ carrying arms A, A' and crank lever L, substantially as herein described and shown and for the purpose set forth.

**502,415. PAPER-CUTTER.** JOHN S. FLOWERS, Three Oaks, Mich., assignor of one-half to Marvin H. Nye, Washington, D. C. Filed Sept. 17, 1892. Serial No. 446,143. (No model.)

*Claim.*—1. The combination with the straight-edge formed with a rabbet on one edge and a longitudinal groove in its body, a plate secured on the straight-edge with its edges overhanging the rabbet and the groove, a shiftable carriage on the straight-edge, having end-pieces turned to engage the overhanging edges of the plate on the straight edge, a rotary-cutter journaled in the carriage, and a cleaner and sharpener in the carriage to engage and clean the cutter, substantially as described.

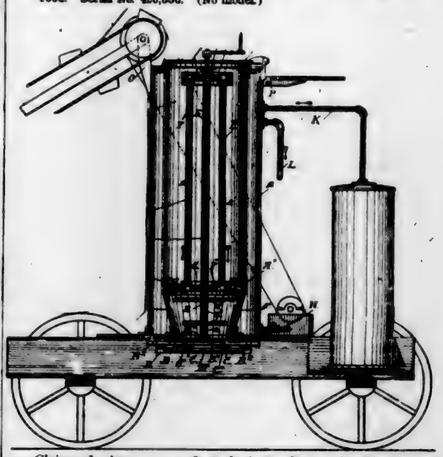
2. The combination with a straight-edge formed with a rabbet on one edge and a longitudinal groove in its body, a plate secured on the straight-edge with its edges overhanging the rabbet and the grooves, a shiftable carriage having end pieces turned to engage the overhanging edges of the plate on the straight-edge, a rotary-cutter journaled in the carriage, and a spring to tilt the carriage sidewise, substantially as set forth.



3. In a paper-cutter and trimmer, the combination with a shifting carriage, and a rotary cutter journaled therein, of the cleaner and sharpener consisting of a wire bent with its free ends crossing each other and arranged to engage and clean the edge of the cutter, substantially as described.

4. In a paper-cutter the combination with a straight-edge and a shiftable carriage thereon, adapted to tilt sidewise, of a spring secured to the carriage, and a roller in the free-end of the spring arranged to bear on the straight-edge, whereby the carriage is tilted sidewise and the cutter lifted from engagement, as set forth.

**502,416. APPARATUS FOR REDUCING AND SOFTENING BITUMINOUS ROCK.** ELIAS GROAT, San Luis Obispo, Cal. Filed Mar. 25, 1892. Serial No. 426,336. (No model.)



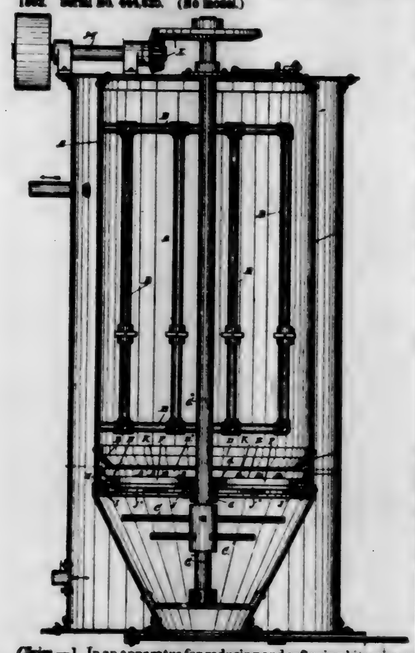
*Claim.*—1. An apparatus for reducing and preparing bituminous rock consisting of a jacketed or double walled steam-tight tank A, with a conical lower end and horizontally sliding discharge gates at the bottom, and having its interior provided with a vertical steam-tight stack connecting with the lower jacket of the tank, by means of couplings at the lower end, and curved supporting plates at both ends which conform to the interior wall of the tank, as hereinbefore set forth.

2. The combination with an apparatus for reducing and preparing bituminous rock, consisting of a steam jacketed tank with a conical bottom, and its interior provided with a vertical steam-tight stack connecting with the steam jacket, of the vertical stirrer composed of radial arms or blades, operating in the lower end of the tank beneath the stack, upon a spindle stepped in a cross-bar at the foot of the tank, as and for the purpose set forth and specified.

3. In an apparatus for reducing and preparing bituminous rock for paving purposes, consisting of a double walled steam-tight tank A, steam induction and outlet pipes, pipe N for discharging water of

condensation, hinged cover for the reducing chamber, steam-tight stack and stirrer in said chamber, the discharge opening in the bottom of said chamber, and the sliding doors therefor, all constructed and arranged substantially in the manner and for the purpose set forth.

**502,417. MACHINE FOR REDUCING AND SOFTENING BITUMINOUS ROCK.** ELIAS GRANT, San Luis Obispo, Cal. Filed Aug 31, 1892. Serial No. 444,625. (No model.)



*Claim.*—1. In an apparatus for reducing and softening bituminous rock, the combination with a tank, of a vertical shaft journaled in suitable bearings in said tank, a steam stack secured thereto, a rotating horizontal dish shaped plate secured to said shaft and having curved slots therein, an annular deflecting plate secured to the interior of the tank above the rotating plate, rollers for carrying the said plate and the mixers secured to the said shaft below the rotary plate, all constructed and arranged in the manner and for the purpose set forth.

2. In an apparatus for reducing and softening bituminous rock the combination with the interior of the tank or cylinder, of a rotary horizontal dish shaped plate, radially disposed curved slots therein, removable disintegrating teeth or arms secured along the line of said slots, an annular track or way beneath said plate, the friction rollers secured to the face of said track the mixers beneath said plate and the vertical shaft for supporting said plate and mixers, substantially in the manner and for the purpose set forth.

3. The combination with the interior of a tank or cylinder for reducing and softening bituminous rock, of a rotating horizontal dish shaped plate, radially disposed curved slots therein, and disintegrating teeth or arms along the line of the said slots, as and for the purpose set forth.

4. In an apparatus for reducing and softening bituminous rock, the combination with a rotating horizontal disk or plate, a flange on the outer circumference thereof, radially disposed curved slots in said disk or plate and disintegrating teeth or arms along the line of said slots, of an annular track secured to the interior of the reducing tank, and travelers or friction rollers therein for carrying and supporting the rotary plate, as and for the purpose set forth.

5. In an apparatus for reducing and softening bituminous rock, the combination with a rotating horizontal disk or plate, a flange on the outer circumference thereof, radially disposed curved slots in said disk or plate and disintegrating teeth or arms along the line of said slots, of an annular deflecting plate or rim secured to the interior of the reducing tank above the rotating plate, as and for the purpose set forth.

**502,418. STEAM-GENERATING APPARATUS.** ARNOLD KRUMLER, Staten Island, N. Y. Filed Aug. 19, 1892. Serial No. 443,523. (No model.)



*Claim.*—1. In a steam generator, the combination with inner and outer arched shells, of an arched screen located in the space between said shells, and capillary material confined between said screen and the inner shell, substantially as described.

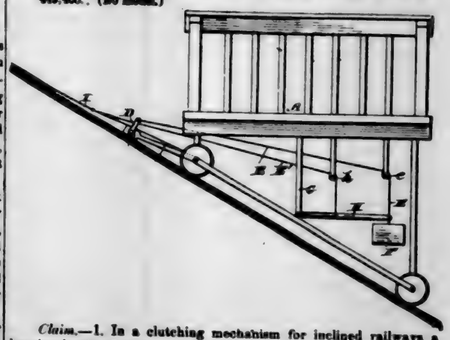
2. A steam generator A, having the arched shells *a* and *b*, closed at the ends *a'* and *b'* and at its bottom, forming a liquid receiving chamber *c*; the capillary material *d*, and pipes *f* and B, in combination with means for heating the inner shell, substantially as described.

**502,419. WAGON-REACH.** FELIX A. LENARZ, Shiloh, assignor of one-half to Charles F. Moore, Cleveland, Ohio. Filed Oct. 24, 1892. Serial No. 449,777. (No model.)



*Claim.*—The combination in a jointed wagon reach of a bar on one part provided on each side with a guiding pin at its end and a pivot pin intermediate of its length, and the two plates on the other part of the reach secured together with said bar between them, each of said plates having a parabolic groove engaging the guiding pin on said bar and a straight slot in the internal axis of the parabola engaging the pivot pin on said bar, substantially as described

**502,420. SAFETY-CLUTCH FOR INCLINED RAILWAYS.** MALCOLM C. LITTLEWORTH, Duluth, Minn. Filed Oct. 19, 1892. Serial No. 449,405. (No model.)



*Claim.*—1. In a clutching mechanism for inclined railways, a housing having flanges extending inward horizontally toward each other, a T-rail under the head of which the said flanges bear at proper times, an eccentric placed within the housing and above the said rail, a lever connected with the pin or shaft of the eccentric, a main cable, and means connected with said cable and with the lever for automatically operating the mechanism, thereby arresting a car when the cable breaks, substantially as described.

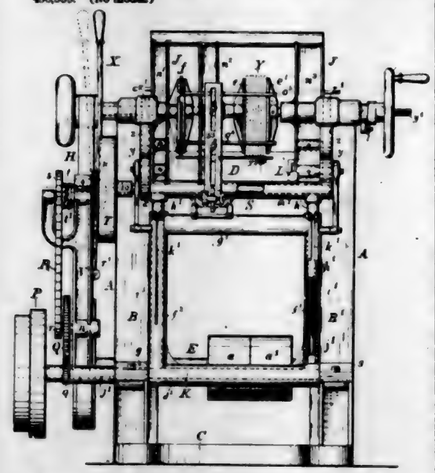
2. In a clutching mechanism for inclined railways, the combination with the main cable, of an eccentric, a weight, a rope connecting the eccentric and weight, a lever pivoted by one of its ends to the weight and a rope connected to the lever, and by its other end to the main cable, a flanged housing and a T-rail, whereby, when the main cable breaks, the eccentric will be automatically caused to impinge upon the rail and thrust the housing upward, substantially as described.

3. In a clutching mechanism for inclined railways, the combination with the main cable and the tracks, of an auxiliary T-rail C placed in between the main track, a flanged housing, an eccentric O adapted to bear upon said auxiliary track automatically in the event



of the cable breaking and thrust the housing upward, a weight F, a rope connecting the eccentric and weight, a lever H pivoted by one of its ends on the car frame and attached by its other end to a weight, and an auxiliary cable E' connected by one of its ends to the lever H and by its other end to the main cable, substantially as described.

**502,421. SOLE-ROUNDING MACHINE.** HENRY LOEWER, Rochester, N. Y., assignor, by direct and mesne assignments, to the Loewer Sole-Rounder Company, same place. Filed Oct. 29, 1892. Serial No. 450,335. (No model.)



*Claim.*—1. The combination, in a sole-rounding machine, of a rotating cutter, a vibrating carriage, revolving sole-clamps and former, and means substantially as described for shifting the sole-clamps while revolving out of the path of their vibration relative to the cutter, substantially as described.

2. The combination, in a sole-rounding machine, of a rotating cutter, a vibrating carriage, revolving sole-clamps and former, and means for shifting the sole-clamps while revolving across the path of their vibration relative to the cutter, substantially as described.

3. The combination, in a sole-rounding machine, of a relatively movable rotating cutter and revolving sole-clamps and former, and means substantially as described for shifting the cutter and clamps relative to each other out of the path of their relative motion, substantially as described.

4. The combination, in a sole-rounding machine, of a relatively movable rotating cutter and revolving sole-clamps and former, a vibrating carriage or frame consisting of two relatively adjustable portions, and mechanism substantially as described for shifting one of the said parts relatively to the other, substantially as described.

5. The combination, in a sole-rounding machine, of a rotating cutter, a movable carriage carrying revolving sole-clamps and a former, and consisting of two relatively movable portions, one of which is provided with a revoluble eccentric or cam acting upon a part of the other portion, substantially as described.

6. The combination, in a sole-rounding machine, of a main frame, supporting a rotating cutter, a movable carriage supported thereon and carrying revolving sole-clamps and a former, and consisting of two relatively movable portions, and mechanism for shifting the portion carrying the sole-clamps and the former while these parts revolve, substantially as described.

7. The combination, in a sole rounding machine, of the frame A carrying rotating cutter G, the movable carriage J, formed of the frame N and the relatively adjustable frame O, supporting the revolving sole-clamps *e e'* and former *f*, and a revolving cam or eccentric operating to produce a relative movement of the frames, substantially as described.

8. The combination, in a sole-rounding machine, of a rotating cutter, and a carriage supporting revolving sole clamps and a former, the cutter and carriage being relatively movable in one direction to cause the cutter to dress the soles to the shape of the former, and also relatively adjustable in a lateral direction while the clamps revolve and reciprocate under the influence of the former, substantially as described.

9. The combination, in a sole-rounding machine, of a relatively movable rotating cutter, a suitable vibrating carriage, and revolving sole-clamps and a former, and mechanism substantially as described, adapted to revolve the sole-clamps at a variable speed, whereby the rotation of the sole-clamps is retarded, while the cutter is dressing the toe and heel, substantially as described.

10. The combination, in a sole-rounding machine, of a relatively movable rotating cutter, a suitable vibrating carriage, and revolving sole-clamps and a former, and variable speed gearing substantially as described arranged to revolve the sole-clamps at a varying rate, whereby the rounding of the heel and toe is effected at a reduced speed, substantially as described.

11. The combination, in a sole-rounding machine, of a relatively movable rotating cutter and revolving sole-clamps and a former, and an elliptical or elliptoid gear arranged to transmit rotary motion to the sole clamps at a variable speed, substantially as described.

12. The combination, in a sole-rounding machine, of a rotating cutter, the pivoted frame carrying revolving sole-clamps and a former, the elliptical or elliptoid gear T, and a movable arm carrying a gear meshing with said gear T, substantially as described.

13. The combination, in a sole-rounding machine, of a relatively movable rotating cutter and carriage, supporting revolving sole clamps and a former, mechanism for revolving the sole-clamps at a variable speed, and mechanism for shifting the cutter and carriage relatively to each other while the clamps revolve and reciprocate under the influence of the former substantially as described.

14. The combination, in a sole-rounding machine, of a relatively movable rotating cutter and a pair of sole-clamps, a suitable carriage and a former, one of the clamps being rigid on its shaft and the other pivoted on its shaft so as to revolve therewith but movable at its ends relative to the rigid clamp to compensate for stock different in thickness at the heel and toe, substantially as described.

15. The combination, in a sole-rounding machine, of the sole-clamps, the rotating cutter and a guard applied thereto and provided on its edge with an inclined or eccentric groove or flange, substantially as described.

16. The combination, in a sole-rounding machine, of the sole-clamps, the rotating cutter, and a guard applied thereto and provided on its edge with an inclined or eccentric groove or flange, and with an inwardly projecting inclined or eccentric flange or rib, substantially as described.

17. The combination, in a sole-rounding machine, of the sole-clamps, a rotating cutter, and two guards applied to the cutter and provided on their opposing edges with inclined or eccentric grooves or flanges, substantially as described.

18. The combination, with the revolving sole clamps *e e'*, of the cutter-shaft F, knives C' $C^2$, and heads D' E' one of which is self-adjusting, substantially as described.

19. The combination, with the revolving sole-clamps *e e'* of the cutter shaft F, head D', self-adjusting head E', sleeve or collar L', and clamping nut M', substantially as described.

20. The combination, with the cutter-shaft F, of the knives C' $C^2$, head D', self-adjusting head E', sleeve L', and adjustable guard *d*, substantially as described.

21. The combination, with the cutter-shaft F, of the knives C' $C^2$, head D', self adjusting head E', sleeve L', and adjustable guards *c* and *d*, substantially as described.

22. The combination, with the cutter G, of the adjustable guards *c* and *d*, and means for operating them simultaneously, substantially as described.

23. The combination, with the cutter G, of the adjustable guards *c* and *d*, levers $o^4$ and $t^4$, rod $w^3$ and treadle lever T', substantially as described.

24. The combination with the sole clamps *e e'*, of the cutter-shaft F, knives C' $C^2$, heads D' E', one of which is self-adjusting, and the adjustable guard *d*, adapted to carry uncut portions of the stock into the cutters, substantially as described.

25. The combination, with a rotating cutter, of the movable carriage carrying the revolving sole-clamps and former, gearing at each side for revolving the sole-clamps and the former, the shaft S, and means for imparting rotary motion at a variable speed to the said shaft, substantially as described.

26. The combination, with a rotating cutter, of the movable carriage, carrying the revolving sole-clamps and former, gearing at each side for revolving the sole-clamps and the former, the shaft S, elliptical or elliptoid gear T, and movable driving pinion *w*, substantially as described.

27. The combination, with a rotating cutter, of the movable frame carrying the revolving sole-clamps and former, the gearing at each side for revolving the sole-clamps and the former, the shaft S, the elliptical or elliptoid gear T, movable driving pinion *w*, movable support V and means for driving the pinion, substantially as described.

28. The combination, with a rotating cutter, of the movable frame J, consisting of two relatively movable portions, one of which carries the revolving sole-clamps and the former, and is provided with two trains of gearing, the shaft S, and the eccentrics or cams P P, adapted

to produce a reciprocating motion between the two portions of the frame, substantially as described.

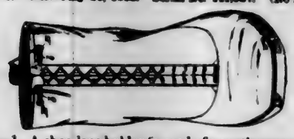
29. The combination, with a rotating cutter, of the movable frame J consisting of two relatively movable portions, one of which carries the revolving sole-clamps and former, and is supported on the other by a spring or springs, and means for reciprocating the relatively movable portion, substantially as described.

30. The combination, with a rotating cutter, of the movable carriage carrying the revolving sole-clamps and former, and the adjustable guide Z, arranged to be adjusted in two directions at right angles with each other, and means for shifting the sole-clamps and former relatively to the cutter while revolving under the influence of the former, substantially as described.

31. The combination, with a rotating cutter, of a movable carriage carrying the sole-clamps and former, a variable speed gear and suitable intermediate driving mechanism, and a movable gear supported on a movable supplementary carrier and arranged to impart rotary motion to the variable speed gear, substantially as described.

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**502,422. SHOE-LACE FASTENER.** WILLIAM H. MASON, Dunellen, N. J. Filed July 26, 1892. Serial No. 441,537. (No model.)

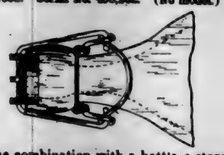


*Claim.*—1. A shoe lace holder formed of a continuous metal strip bent in the form of an eyelet with elongated spring arms extending therefrom with free ends, and forming a slot whose inner sides are nearly adjacent, the edges of the blank being bent outward to form retaining flanges adapted to retain and hold between them the edges of the material and thereby secure the holder in the shoe.

2. A shoe lace fastener formed of a continuous metal blank bent and formed into an eyelet and parallel spring arms whose inner edges are in normal contact and a re-inforcing spring applied to the outer ends of the arms to increase their effective pressure on the inserted lace.

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**502,423. BOTTLE-STOPPER.** DANIEL O'KANE, Boston, Mass. Filed Oct. 28, 1892. Serial No. 450,292. (No model.)



*Claim.*—1. The combination with a bottle, a stopper to the bottle, a swinging bail hung on the neck of the bottle and devices to swing and place said bail across and off from the stopper, of a confining plate for the stopper hung on said bail and having an aperture that is open at the edge thereof, substantially as described, for the purpose specified.

2. The combination with a bottle, a stopper to the bottle, a swinging bail hung on the neck of the bottle and devices to swing and place said bail across and off from the stopper, of a confining plate for the stopper hung on said bail and having an aperture open at the edge thereof and lugs engaging said bail at either side of its hanging thereon, substantially as described, for the purposes specified.

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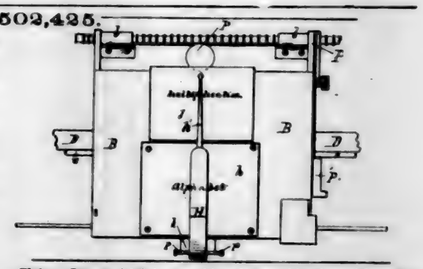
**502,424. PROCESS OF OBTAINING META OR PYRO PHOSPHORIC-ACID COMBINATIONS.** HENRICH PRECHT, Neu-Staasfurt, Germany. Filed June 16, 1892. Serial No. 436,945. (No specimens.)

*Claim.*—1. The herein-described process of obtaining meta or pyro-phosphoric acid combinations from phosphate salts of the metals of the alkalies, which consists in melting the insoluble salt or salts and rapidly cooling the same to prevent crystallization for the purpose set forth.

2. The herein-described process of obtaining meta or pyro-phosphoric acid combinations, from phosphate salts of the metals of the alkalies, which consists in melting the insoluble salt together with a salt of the metals of the alkalies, and rapidly cooling the same to prevent crystallization for the purpose set forth.

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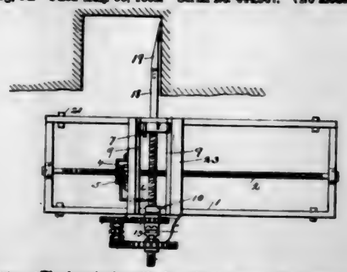
**502,425. MULTIPLYING-MACHINE.** JOHN SAWYER, London, England. Filed Aug. 24, 1892. Serial No. 444,018. (No model.)



*Claim.*—In a multiplying machine the combination with a type writer of an index plate a type plate having type which print characters representing the product of numerals multiplied together and a pointer mounted over said index plate and connected to said type plate to actuate the latter substantially as set forth.

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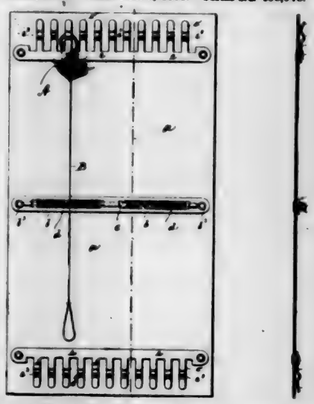
**502,426. COAL-MINING MACHINE.** BENJAMIN F. WILSON, Pittsburg, Pa. Filed Aug. 30, 1892. Serial No. 444,567. (No model.)



*Claim.*—The herein described coal mining machine, consisting of the frame 1, the threaded shaft 2 mounted thereon, the carriage 23, operating along said frame, the shaft 17 having a threaded portion and attached to the cross-head 8, the gearing 15—16 for operating said shaft to drive the tool forward, the gearing 13—14 to reverse the movement of the said shaft 17, the clutch 12 to engage with the hube of said gearing, a motor 24 mounted on the top of the carriage and means substantially as described for feeding the carriage evenly along the frame, all arranged for service substantially as set forth.

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**502,427. FLY-BOOK FOR ANGLERS.** ANTON E. ZANGENBERG, New York, N. Y. Filed Feb. 4, 1893. Serial No. 460,970. (Model.)



*Claim.*—1. In a fly book, the combination of a leaf, a plate, slotted along its length, secured thereto, a wire extending along the slot having its ends held in position by said plate, and a coiled spring encircling said wire and received within said slot, substantially as described.

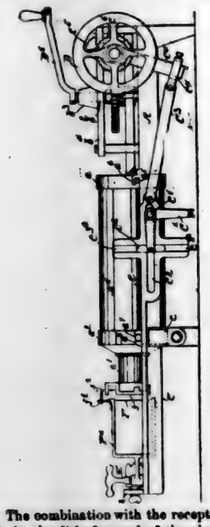
2. In a fly book, the combination of a leaf, a plate, slotted along its length, secured at its ends to said leaf, and having bulged portions forming sockets, a wire, the ends of which are received in said sockets, and a coiled spring encircling the wire, and partly received within the slot, the diameter of said spring being greater than the width of said slot, substantially as described.

3. In a fly book, the combination of a leaf, a comb-shaped plate secured thereto, provided with teeth, each having an inner portion resting against the leaf, an upturned end or outer portion, and a U-shaped intermediate portion, the latter adapted to receive the hook and prevent the same from moving in either direction longitudinally of the book, substantially as described.

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**502,428. BUTTER WORKER AND MOLD.** EDWARD S. BOYNTON, Brooklyn, N. Y., assignor, by mesne assignments, to the American Butter Machine Company. Filed June 9, 1892. Serial No. 436,071. (No model.)



*Claim.*—1. The combination with the receptacle of the plunger, having the air hole, the disk forward of the plunger the cutter, the die a reciprocating bar having an arm on which the die is adjustably mounted and mechanism substantially such as described comprising a crank for operating said movable parts, in both directions substantially as specified.

2. In a machine of the character described, the combination of the cylindrical receptacle having the reduced outlet, a plunger, provided with an air hole, operating in said receptacle, a disk forward of the plunger and movable in the receptacle a plunger-rod having a rack portion, a reciprocating bar and mechanism between said bar and plunger-rod whereby a forward movement is imparted to the plunger during a forward movement of the bar, substantially as specified.

3. The combination with the receptacle of the plunger having the rod provided with a rack, the vertical shaft having the gear engaging with said rack, a worm wheel on said shaft, a worm engaging therewith, a ratchet wheel on the worm shaft, a dog, a lever on which the dog is mounted, a reciprocating bar, a link-bar pivoted at one end thereto, and at the other end having an adjustable connection with the dog lever, substantially as specified.

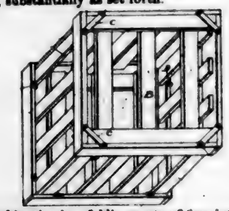
4. The combination with the receptacle of the plunger, the plunger operating mechanism, comprising a reciprocating bar a cutter movable across the outlet of the receptacle, a frame carrying the cutter and pivoted to the said reciprocating bar, an arm or pin extending from said frame, and a keeper to engage with said arm or pin to return the cutter and frame to a normal position, substantially as specified.

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**502,429. FOLDING SHIPPING-CRATE.** CHARLES A. DANIELS, Waterville, N. Y. Filed Apr. 28, 1892. Serial No. 431,003. (No model.)

*Claim.*—1. The combination in a folding crate of four rigid similar, interlocking sides held to each other by straps C pivoted to the edge of each of the sides and spanning the angle or corner of the ends of the crate, and a rack or end piece adapted to fit in the ends of the crate, formed by the four sides and held in place by the straps C passing across the corner of the end piece on the outside thereof, substantially as set forth.

2. The combination in a folding crate of four rigid, similar interlocking sides held to each other by straps C pivoted to the edge of each of the sides and spanning the angle or corner on the ends of the crate, the straps being of a length to allow the two sides at the separating edge to be folded together, and the two thus folded inserted between the remaining two sides, whereby the four sides will all lie parallel with and upon each other, and a rack or end piece adapted to fit in the ends of the crate, formed by the four sides, and held in place by the strap C passing across the corner of the end piece on the outside thereof, substantially as set forth.



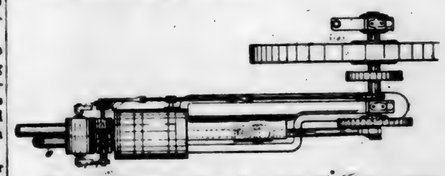
3. The combination in a folding crate of four interlocking similar rigid sides connected adjacent to each end by four straps pivoted to the edge of each of the sides, (excepting the end of one strap, which is detachable to allow folding and the introduction of the end piece) and spanning the corners of the crate, and rigid end racks adapted to be received in the ends of the crate and held in position by the straps engaging the corners of the rack on the outside, substantially as set forth.

4. The combination in a folding crate of four folding rigid, similar sides A secured together by straps C pivoted to the edge of each of the sides and spanning the corner when the crate is in extended position, one end of one of the straps being detachable to permit the crate being folded, and the introduction of the end pieces, a thumb screw passing through one of the slats of the side of the crate from the inside outward, and engaging the detachable end of one of the straps C, and end pieces adapted to enter the end of the crate and be retained in position by the strap C, substantially as set forth.

5. The combination in a folding crate of four rigid sides, each composed of a series of slats and two cross slats on the inside, one of the cross slats being flush with the ends of the slats and the other a little removed from the ends of the slats, whereby, when the crate is in extended position the over-reaching end of the slats will pass by the end of the next side, and the cross slat will abut against the cross slat of the next side, a strap C pivoted to the edges of the sides and spanning the corners of the crate, and end racks adapted to enter the end of the crate and be retained in position by the strap C, the crate being capable of folding by detaching one end of the strap C at the same corner on each end of the crate, removing the end pieces and turning in the side pieces at the separated corners upon the connected side pieces and folding the connected side pieces down upon each other, substantially as set forth.

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**502,430. CARBONIC-ACID OR OTHER GAS ENGINE.** ADAM DABBER and GEORGE ROTHENBÜCHER, New York, N. Y. Filed Feb. 14, 1893. Serial No. 462,268. (No model.)



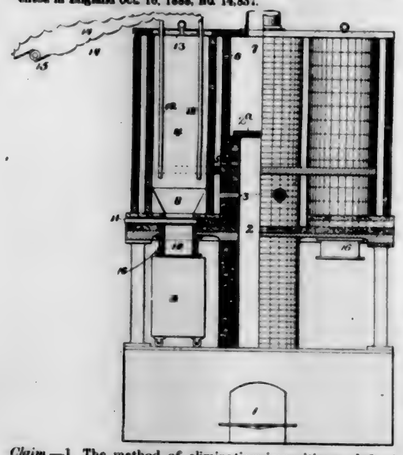
*Claim.*—1. The combination of the cylinder, the piston, connecting rod and fly-wheel of an engine, with the inlet and outlet pipes arranged parallel to each other and entering the end of the cylinder, the inlet and outlet valves arranged alongside each other and provided with extending handles, and with the governor consisting of a shaft operated directly by the fly-wheel and sleeve splined to said shaft and weighted elbow levers pivoted to said shaft and adapted to slide said sleeve on said shaft, said shaft and sleeve being adapted to operate respectively the outlet and inlet valves, substantially as described.

2. The combination of the cylinder *b*, piston *d*, connecting rods *e* and fly-wheel *a*, with the shaft *l*, mechanism whereby the fly-wheel rotates said shaft, the drum *n*, keyed to said shaft, elbow levers *r r* controlled by spring *t* and pivoted to said drum, a sliding sleeve *o* splined to said shaft *l* and adapted to be operated by said levers *r r*, and arms *v* and *p* carried respectively by the shaft *l* and sleeve *o*, and with the inlet pipe *e*, outlet pipe *f*, arranged parallel with each other and entering the ends of the cylinder, inlet valve *g*, outlet valve *i*, said

inlet and outlet valves being provided with projecting spring controlled handles *h* and *j* respectively, all arranged so that when said sleeve *o* and shaft *l* are rotated they will alternately operate said valves *g* and *i* by the arms *v* and *p* alternately engaging and throwing over the handles *j* and *h* respectively, substantially as described.

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**502,431. PROCESS OF DESULPHURIZING METALLIC ORES.** HENRY H. EAMES, Baltimore, Md., assignor, by direct and mesne assignments, to the Eames Purifying and Separating Company, of West Virginia. Filed Apr. 30, 1888. Serial No. 272,308. (Specimens.) Patented in England Oct. 16, 1888, No. 14,837.



*Claim.*—1. The method of eliminating impurities and foreign substances from metallic ores, by placing them in an entirely closed vessel and subjecting them while so inclosed to the action of heat insufficient to fuse the ore and an electric current.

2. The method or process of purifying or refining sulphide ores or minerals containing sulphur, by inclosing said minerals or ores in a receptacle out of contact with the atmosphere and subjecting the same while so inclosed to the action of heat and an electric current, whereby the sulphur is discharged in a liquid or semi-liquid form and the gold and some other metals are left in the gangue or matrix in a pure or approximately pure condition.

3. The method or process of obtaining sulphur from minerals or metallic ores which contain it, by first placing the ores in a closed receptacle to exclude the air and subjecting them while so inclosed to the action of an electric current and a heat sufficient to liquidize the sulphur, whereby the sulphur is discharged in a liquid or semi-liquid form.

4. The method or process of purifying or refining oxide ores containing sulphur by inclosing said ores with a suitable quantity of lime or limestone in a receptacle out of contact with the atmosphere, and subjecting them while so inclosed to the action of an electric current and a heat sufficient to eliminate the sulphur without fusing the metals whereby the metals are left in the gangue or matrix in a pure or approximately pure condition.

5. The method or process of purifying or refining oxide ores containing sulphur by mixing them with carbon and lime or limestone then inclosing the ores in a receptacle out of contact with the atmosphere and then subjecting them while so inclosed to the action of an electric current and a heat insufficient to fuse the metals in the ores, whereby the metals are left in a pure or approximately pure condition in the gangue or matrix.

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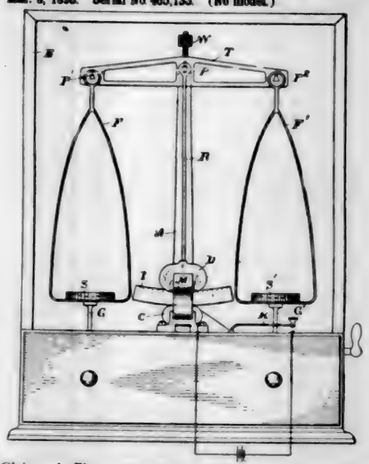
**502,432. GARMENT-FASTENER.** DOROTHEA M. FLOERCKEY, Philadelphia, Pa. Filed Mar. 16, 1893. Serial No. 466,234. (No model.)



*Claim.*—A garment fastener composed of the skeleton head C of inverted conical form, and the sustaining core D within the same, and the flat peripheral perforated base flange E on said head, and the member B with a socket therein, and a flat peripheral perforated base rim, said parts being combined substantially as described.

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**502,433. BALANCE.** JOHN W. GIBBONEY, Lynn, Mass. Filed Mar. 8, 1893. Serial No. 465,133. (No model.)



*Claim.*—1. The combination in a balance of a beam, a support therefor, a scale pan or platform connected with the beam, an electric generator, comprising a field magnet and an electric conductor, such as a metal plate, adapted to move near the pole of said magnet without touching the same, and a connection or connections from the beam to a moving part of said electric generator, for dampening or checking the oscillations of the beam.

2. The combination in a balance of a poised lever, a pivoted scale pan, and a device for arresting their oscillation consisting of a magnet and a conducting plate in relative movable arrangement and cooperating therewith.

3. In a scale or balance, the combination of the beam, the scale pan, or platform the index, a conducting plate moving therewith, and a magnet, permanent or not, for setting up electric currents in the plate, for the purpose mentioned.

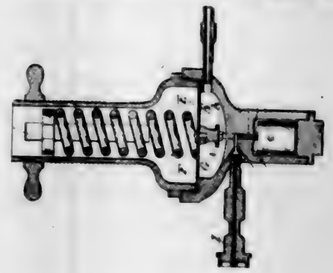
4. The combination in a scale or balance of a poised or pivoted beam, the scale pan, the conductor plate supported by the beam and moving therewith, a magnet disposed when energized to set up electric currents in the moving conductor plate, a source of electric current, and a key or switch for closing a circuit and energizing said magnet.

5. The combination in a balance or scale of a poised or pivoted beam or lever, a scale pan pivotally supported from the beam, a metal conducting plate also carried by the beam or moving therewith, a magnet adapted to set up currents in the plate when it is in motion and means for putting the plate and magnet in inoperative relation, substantially as described.

6. The combination in a scale or balance of a scale pan or platform supported on a poised beam or lever, a field magnet and electric conductor adapted to be moved relatively by the oscillations or movements of the beam or lever and to retard or check such oscillations by setting up electric currents in said conductor, a source of current, and a switch controlling a circuit including coils wound upon or influencing said magnet.

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**502,434. PRESSURE-REDUCING VALVE.** HOUDD D. W. GIBSON, Detroit, Mich. Filed Mar. 27, 1893. Serial No. 467,845. (No model.)

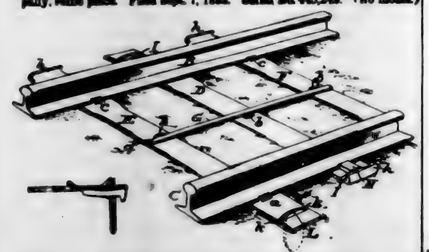




*Claim.*—In a pressure reducing valve the combination of a casing, composed of two sections having enlarged inner ends with hollow centers forming a diaphragm chamber, a threaded connection between the sections, a diaphragm secured between the meeting edges of the sections, a tubular extension on the upper section, a spring in said extension, means for regulating the tension of the spring, a tubular extension on the lower section, a valve chamber therein, a partition between the valve chamber and the diaphragm chamber having a passage way leading from the valve chamber to the inlet of the casing and other passage ways leading from said valve chamber into the diaphragm chamber, a valve in the valve chamber, rods secured to the valve passing through the partition into the diaphragm chamber, and secured to the diaphragm, an outlet from the diaphragm chamber and a removable plug in the bottom of the valve chamber, substantially as described.

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**502,435. COMBINED METALLIC TIE AND TRACK-FASTENING.** GEORGE P. GUNN, Ilion, N. Y., assignor of one-half to the Atlas Gun Company, same place. Filed Sept. 7, 1892. Serial No. 445,249. (No model.)



*Claim.*—1. A metallic tie provided with two outer ears for engaging the rails both of said ears projecting in the same direction, and a single ear midway of the tie projecting in the opposite direction, substantially as and for the purpose set forth.

2. In combination with a pair of rails, three or more ties each provided with two ears projecting in one direction to engage with the rails, and each having a central ear projecting in an opposite direction, the said ties being arranged so as to cause their ears to project alternately in opposite directions, with a spring bar G driven or forced between the alternating central ears of the separate ties, whereby the outer ears of each tie are made to clasp the rails, the ties locked in place, and provision is made for the expansion and contraction of the ties as set forth.

3. In combination with a rail, a tie provided with an upturned end, and an ear to bear against said rail, a block to bear upon the rail flange, and a spring wedge interposed between said block and the upturned end of the tie.

4. In combination with a tie provided with an opening or slot, a plate passed through said opening and provided with a head *k* and an opening *m*, and a spring wedge passed through said opening and adapted to bear against the under face of the tie.

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**502,436. DRESS-STAY.** MARTHA E. KELLOGG, Battle Creek, Mich. Filed June 27, 1892. Serial No. 438,130. (No model.)



*Claim.*—A dress stay consisting of a steel having a marginal series of perforations on opposite sides arranged in pairs, the perforations on one side being staggered with reference to those of the opposite side, and a covering for the steel having a series of indicating marks thereon arranged directly over the perforations in the steel, substantially as described.

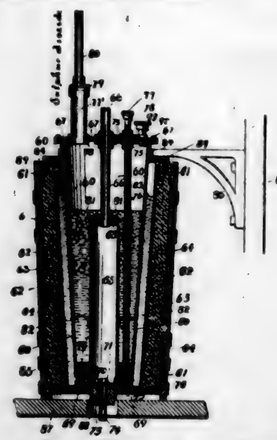
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**502,437. REFRIGERATING APPARATUS.** EDWARD D. KENDALL, Jamaica, N. Y. Filed Mar. 4, 1891. Serial No. 383,805. (No model.)

*Claim.*—1. In a cold producing apparatus the combination of the tub, a contained vessel 61, a non-conducting packing 63 between the tub and contained vessel, the said vessel having a downwardly extending annular ring 72, and a bung 73 in said annulus, substantially as described.

2. In a cold producing apparatus, the combination of a tub, a downwardly tapering vessel contained therein, a non-conducting packing between the tub and the contained vessel and in direct contact therewith, and a downwardly tapering vessel contained within the other vessel, leaving a space between them in which the ice is formed, substantially as described.

3. In an ice producing apparatus, the combination of an outer vessel comprising a tub, a vessel for holding water to be frozen and a non-conducting packing between the water holding vessel and the tub, an inner vessel for containing a refrigerant, the vessels being so disposed as to leave a space between them for containing the water to be frozen, and stops limiting the motion, relative to the ice formed, of the inner vessel in one direction, and of the outer vessel in the opposite direction, substantially as described.



4. In an ice producing apparatus the vessel 60 having the sealing cover 67 at the top and 69 at the bottom thereof, means for conveying a refrigerant to and from said vessel, and a vessel 65 smaller in diameter than the vessel 60 disposed within it and sealed therefrom, with pipes leading to and out from the said vessel 65, substantially as described.

5. In an ice producing apparatus the vessel 60 having the sealing covers 67 at the top and 69 at the bottom thereof, means for conveying a refrigerant to and from the said vessel, a vessel 65 smaller in diameter than the vessel 60 disposed within it and sealed therefrom, a perforated diaphragm 82 disposed about the vessel 65 and pipes leading to and out from the said vessel 65, substantially as described.

6. In an ice producing apparatus the vessel having the sealing covers 67 at the top and 69 at the bottom thereof, a pipe 76 passing through the cover 67 and extending toward the bottom of said vessel, a pipe 80 leading into said vessel, an inner vessel 65 smaller in diameter and disposed within the vessel 60 and sealed therefrom, a pipe 66 passing through the cover 67 into the vessel 65 and a pipe 74 leading from the bottom of said last mentioned vessel, substantially as described.

7. In a cold producing apparatus, a tube 62, a contained vessel 61, a non-conducting packing 63 between the tub and contained vessel the said vessel having an annular ring 72 extending downwardly through the tub, a bung 73 closing said annulus, combined with the vessel 60 disposed within the vessel 61 with a space between them, said vessel 60 having the sealing covers 67 at the top and 69 at the bottom thereof, means for conveying a refrigerant to and from the said vessel, and a vessel 65 smaller in diameter than the vessel 60 disposed within it and sealed therefrom, pipes leading to and out from said vessel 65 and a perforated diaphragm disposed about the last mentioned vessel, substantially as described.

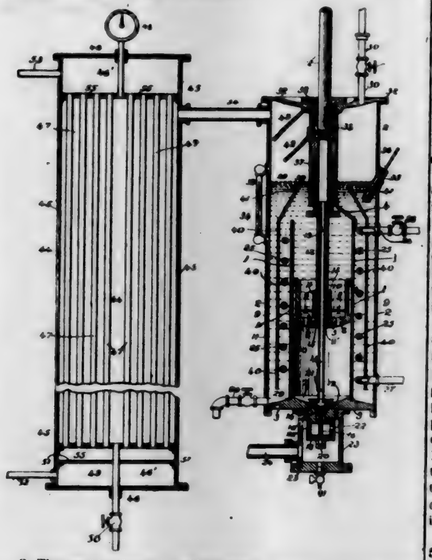
8. In a cold producing apparatus, a tub 62, a contained vessel 61, a non-conducting packing 63 between the tub and contained vessel, the said vessel having an annular ring 72 extending downwardly through the tub, a bung 73 closing said annulus, combined with the vessel 60 disposed within the vessel 61, said vessel 60 having the sealing covers 67 at the top and 69 at the bottom thereof, a pipe 76 passing through the cover 67 and extending downwardly, a pipe 80 leading into said vessel, an inner vessel 65 smaller in diameter disposed within the said vessel, a pipe 66 passing through the cover 67 into the vessel 65 and a pipe 74 leading from the bottom of said last mentioned vessel and bung 73, substantially as described.

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**502,438. APPARATUS FOR PRODUCING COLD AND ICE.** EDWARD D. KENDALL, Jamaica, N. Y. Original application filed Mar. 4, 1891, Serial No. 383,805. Divided and this application filed June 24, 1891. Serial No. 397,273. (No model.)

*Claim.*—1. The combination in an ice producing apparatus, of a closed outer vessel containing an inner compression cylinder said compression cylinder having a movable piston, and a piston rod extend-

ing out through said outer cylinder, a sheath or covering surrounding the piston rod and extending down into the outer cylinder and a non-volatile fluid within the said outer cylinder covering one end of said sheath, substantially as described.



2. The combination, in a cold producing apparatus, of a gas compressor having a piston and hollow piston rod, a stuffing box at its piston end, a tubular valve rod extending through the piston rod and stuffing box, a valve flexibly secured to the valve rod, apertures in the valve rod, a spindle on the valve, and nuts on the spindle for limiting the upward movement of the valve, substantially as described.

3. The improvement in cold producing apparatus, which consists in the cylinder 40 surrounding the compression cylinder 1 and immersed in a non-volatile liquid contained within an outer cylinder 2, the cylinder 40 being so secured and disposed as to effect the circulation of the said liquid, and a movable piston within the compression cylinder 1, and means for operating it, substantially as described.

4. In a refrigerating apparatus, the combination of the outer cylinder 2, having the downwardly extending sheath 37 containing packing, a pump cylinder 1 open at the top and disposed within the said outer cylinder, a plunger movable in the pump cylinder, a piston rod 12 secured to the plunger and passing through the said sheath, and a liquid surrounding the lower edge of the sheath and cooling and sealing the same, substantially as described.

5. The combination of the pump cylinder 1, having the plunger 5 movable therein, a piston rod 12 hollow for a portion of its length secured to said plunger with a hollow and perforated valve stem 13 within the piston rod, and valve 14 operated by the said plunger, substantially as described.

6. The combination of the pump cylinder 1, having the plunger 5 movable therein, a piston rod 12 hollow for a portion of its length secured to said plunger, a hollow perforated valve stem 13 within the piston rod, and valve 14 operated by the said plunger, the said valve having a downwardly extending spindle 16, nuts 20 on its spindle, and means for arresting the upward motion of the valve, substantially as described.

7. The combination of the pump cylinder 1, having the plunger 5 movable therein, a piston rod 12 hollow for a portion of its length secured to said plunger with the hollow perforated valve stem 13 within the piston rod, a valve 14 operated by the said plunger, downwardly extending spindle 16 on the valve, nuts 20 on the spindle, means for arresting the upward motion of the valve, the chamber 18 with perforations 22 secured to the bottom of the pump cylinder, and another chamber 23 secured to the bottom of the pump cylinder and surrounding the chamber, substantially as described.

8. The combination of the pump cylinder 1, having the plunger 5 movable therein, a piston rod 12 secured to said plunger and hollow for a portion of its length with the hollow perforated valve stem 13 within the piston rod, and valve 14 secured to said valve stem, the valve being operated by the said plunger, a downwardly extending spindle 16 on the valve, nuts 20 on the spindle, means for arresting the upward motion of the valve, a chamber 18 with perforations secured to the bottom of the pump cylinder, another chamber 23 secured to the bottom of the pump cylinder and surrounding the chamber 18, an auxiliary cylinder 40 disposed about the pump cylinder 1, and a pipe coil 25 disposed about the pump cylinder and between it and the auxiliary cylinder, substantially as described.

9. The combination of the pump cylinder 1, having the plunger 5 movable therein, a centrally disposed ring 11 on said plunger, packing 15 in said ring and means for compressing the same, a piston rod 12 hollow for a portion of its length secured to said ring, valves and ports in said plunger with the valve 14 seated in the bottom of said pump cylinder 1 and a hollow valve stem 13 with perforations 21 passing through the packing 15 in the said plunger, substantially as described.

10. The combination of the pump cylinder 1, having the plunger 5 movable therein, a centrally disposed ring 11 on said plunger, packing 15 in said ring and means for compressing the same, a piston rod 12 hollow for a portion of its length secured to said ring, valves and ports in said plunger, the valve 14 seated in the bottom of said pump cylinder 1, a hollow valve stem 13 with perforations 21 passing through the packing 15 in said plunger, the valve 14 having a downwardly extending spindle 16, nuts 20 on the said spindle, and means for arresting the upward motion of the valve, substantially as described.

11. The combination of the pump cylinder 1, having the plunger 5 movable therein, a centrally disposed ring 11 on said plunger, packing 15 in said ring and means for compressing the same, a piston rod 12 hollow for a portion of its length secured to said ring, valves and ports in said plunger, with the valve 14 seated in the bottom of said pump cylinder 1, and a hollow valve stem 13 with perforations 21 passing through the packing 15 in the said plunger, a downwardly extending spindle 16 on the valve 14, nuts 20 on the spindle, a chamber 18 with perforations 22 secured to the bottom of the pump cylinder, the spindle of the valve 14 passing through said chamber 18 the bottom of which arrests the upward motion of the valve, and another chamber 23 secured to the bottom of the pump cylinder and surrounding the chamber 18, substantially as described.

12. The combination of the pump cylinder 1, having the plunger 5 movable therein, a centrally disposed ring 11 on said plunger, packing 15 in said ring and means for compressing the same, a piston rod 12 hollow for a portion of its length secured to said ring, valves and ports in said plunger, the valve 14 seated in the bottom of said pump cylinder 1, a hollow valve stem 13 with perforations 21 passing through the packing 15 in the said plunger, the valve 14 being provided with a downwardly extending spindle 16, nuts 20 on the spindle, a chamber 18 with perforations 22 secured to the bottom of the pump cylinder, the spindle of the valve passing through this chamber the bottom of which arrests the upward motion of the valve, and another chamber 23 secured to the bottom of the pump cylinder and surrounding the chamber 18, an outer closed cylinder 2 in which the pump cylinder is located, a downwardly extending sheath 37, through which the piston rod 12 passes, and a liquid 39 surrounding the sheath and pump cylinder, substantially as described.

13. The combination of the pump cylinder 1, having a plunger 5 movable therein, a centrally disposed ring 11 on said plunger, packing 15 in said ring and means for compressing the same, a piston rod 12 hollow for a portion of its length secured to said ring, valves and ports in said plunger with the valve 14 seated in the bottom of said pump cylinder 1, a hollow valve stem 13 with perforations 21 passing through the packing 15 in the said plunger, the valve 14 being provided with a downwardly extending spindle 16, nuts 20 on the spindle, a chamber 18 with perforations 22 secured to the bottom of the pump cylinder, the spindle of the valve passing through this chamber the bottom of which arrests the upward motion of the valve, and another chamber 23, secured to the bottom of the pump cylinder and surrounding the chamber 18, an outer closed cylinder 2 in which the cylinder 1 is located, a downwardly extending sheath 37, through which the piston rod 12 passes, a liquid 39 surrounding the sheath and pump cylinder, an auxiliary cylinder 40 disposed between the outer cylinder 2 and pump cylinder 1, and a pipe coil 25 disposed between the pump cylinder 1 and the auxiliary cylinder 40, substantially as described.

14. In a refrigerating apparatus a pump cylinder, a plunger movable in said cylinder, and having a centrally disposed stuffing box, a hollow piston rod secured in said stuffing box in combination with a valve seated in the bottom of the pump cylinder, a perforated and hollow valve rod secured to said valve and passing through the said stuffing box into the hollow piston rod said valve being operated by the motion of the plunger, substantially as described.

15. The improvement in cold producing apparatus, which consists in an outer cylinder with closed ends, containing a pump adapted to receive and compress within said cylinder a liquefiable gas and containing cooling pipes conducting cold water around said pump, the said pipe being immersed in a non-volatile liquid, with suitable openings in and connections with the said cylinder for operating the pump and admitting and discharging the gas or refrigerating agent and the non-volatile liquid, substantially as described.

16. The combination of the outer cylinder 2, pump cylinder 1, open at the top and disposed within the outer cylinder a plunger 5 movable within the pump cylinder, a piston rod 12 and means for actuating the same secured to the plunger, an auxiliary cylinder 40 disposed between the outer and pump cylinders and a cooling coil 25 between the auxiliary and pump cylinders one end of the coil coming from a suitable source of supply and the other end leading to a drain, substantially as described.

17. The combination of the outer cylinder 2, pump cylinder 1 open at the top and disposed within the outer cylinder, a plunger 5 movable within the pump cylinder, a piston rod 12 and means for actuating the same secured to the plunger, an auxiliary cylinder 40 disposed between the outer and pump cylinders, a cooling coil 25 between the auxiliary and pump cylinders one end of the coil coming from a suitable source of supply and the other leading to a drain; deflector plates 42, 43, extending down into the outer cylinder and a pipe 54 leading from said outer cylinder, substantially as described.

18. The combination of the outer cylinder 2, a pump cylinder 1 open at the top and disposed within the outer cylinder, a plunger 5 movable within the pump cylinder, a piston rod 12 and means for actuating the same secured to the plunger, an auxiliary cylinder 40 disposed between the outer and pump cylinders and having an upwardly projecting conical top 41, and a cooling coil 25 between the auxiliary and pump cylinders and located below the conical top and the auxiliary cylinders the ends 26, 27, of the cooling coil passing out through the shells of the auxiliary and outer cylinders the ends 26 being provided with a valve 28, substantially as described.

19. The combination of the outer cylinder 2, deflector plates 42, 43, secured to the outer cylinder and extending downwardly therein, a pipe 54 leading from the outer cylinder opposite the deflector plates, a pump cylinder 1, open at the top and disposed within the outer cylinder, a plunger 5 movable within the pump cylinder, a piston rod 12 and means for actuating the same secured to the plunger, and auxiliary cylinder 40 disposed between the outer and pump cylinders and having an upwardly projecting conical top 41 and a cooling coil 25 between the auxiliary and pump cylinders, and located below the conical top of the auxiliary cylinder, the ends 26, 27, of the cooling coil passing out through the shells of the auxiliary and outer cylinders, the ends 26 being provided with a valve 28, substantially as described.

20. An outer cylinder for a gas compressor, comprising the cylinder 2 having the downwardly extending and elongated sheath 37 secured in the upper head 32, packing and means for compressing the same 38 in the upper end, like devices 39 in the lower end of the sheath, a lower head or bottom 3 having the valve seat and port 17, a casing 18 screwed to the head 3 having openings 22, a casing 23 screwed to the head 3, and surrounding the casing 18, and a pipe 24 leading from the casing 23, substantially as described.

21. An outer cylinder for a gas compressor, comprising the cylinder 2, having the downwardly extending and elongated sheath 37 secured in the upper head 32, packing and means for compressing the same 38 in the upper end, and like devices 39 in the lower end of the sheath, the lower head or bottom 3 having the valve seats and ports 17, a casing 18 screwed to the head 3 having openings 22, a casing 23, screwed to the head 3 and surrounding the casing 18 a pipe 24 leading from the casing 23, a pipe 30 leading into the outer cylinder 2, a temperature casing 35 adapted to hold a thermometer extending into the outer cylinder 2, a pipe 90 leading from near its bottom and a cock 91 leading from the bottom of the casing 23, substantially as described.

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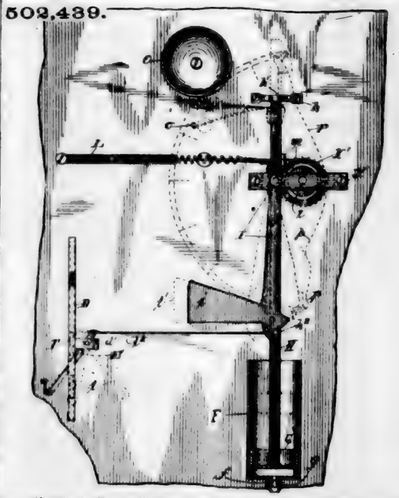
**502,439. COIN-CONTROLLED LUNG-TESTING MACHINE.** LOUIS KERR, Chicago, Ill. Filed Jan. 31, 1893. Serial No. 460,490. (No model.)

*Claim.*—1. The combination of a box or casing having on its outer surface a graduating scale or gage and a slot for the deposit of a coin, with a slotted guide or chute, a tripping lever to operate in the slot of the chute, a cylinder having a tubular projection at its bottom, a piston to operate in said cylinder, a piston-rod having and carrying therewith a stop-pin and a power-spring, a pulley mounted on an axle, said axle extending through the casing and having on its outer end an index pointer, the power-spring secured at one end of the piston rod and at its other to the pulley, a return spring connected at one end to the casing and at its other end to the pulley, a weighted swinging lever pivotally secured at its top and connected at its bottom to the trip-lever, and a blowing-pipe or tube connected to the tubular projection of the cylinder, all constructed, arranged and operating substantially as set forth.

2. The combination of a box or casing having on its outer surface a graduated scale and a slot for the deposit of a coin, with a slotted guide or chute, a tripping-lever to operate in the slot or the chute, a cylinder, a piston to operate in said cylinder, a piston-rod having and carrying therewith a stop-pin, a power-spring and a spring



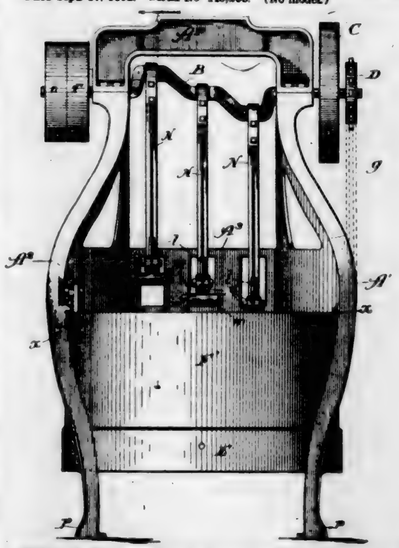
**502,439.**



to strike the bell, a pulley mounted on an axle, said axle extending through the casing and having on its outer end an index pointer, the power-spring secured at one end to the piston-rod and at its other to the pulley, a return spring connected at one end to the casing, and at its other end to the pulley, a weighted swinging lever pivotally secured at its top and connected at its bottom to the trip lever, a trip-pin and bell secured to the casing, the former adapted to engage the striking spring and the latter to be struck thereby, and a blowing-tube or pipe connected to the cylinder, all constructed, arranged and operating substantially as and for the purpose set forth.

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**502,440. MEAT-CHOPPING APPARATUS.** HERMAN LEINEWEBER, Chicago, Ill., assignor to the Chicago Meat-Chopper Company, same place. Filed Sept. 17, 1892. Serial No. 446,200. (No model.)



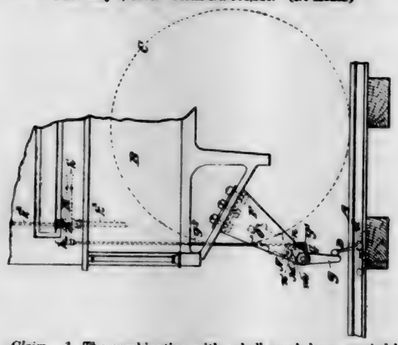
*Claim.*—1. In a meat-chopping apparatus, the combination, with a rotary block F, of an upper crank-shaft B, a pitman N connected with a crank on the shaft and terminating at its lower end in a head M' having the openings *k*, a cutter K provided with the bars *l* fastened in the said openings *k*, a crank-shaft B' behind the cutter and geared to the crank-shaft B, and a pitman N' connecting the shaft B' from a

crank thereon with the cutter, the upper crank-shaft operating to actuate the cutter up and down with relation to the block and the rear crank-shaft to actuate it through an undulatory plane and produce therewith a draw-cut, substantially as described.

2. A meat-chopping apparatus comprising, in combination, a frame A formed with the parts A', $A^2$ and $A^3$, and carrying a stationary base E, a rotary block F pivotally supported on the base and provided with a rack G, a rotary shaft H journaled in the frame and carrying a worm G' meshing with the rack, a crank-shaft B journaled in the upper portion of the frame, cutters K having heads M provided with bars *l*, pitmen N connected with the shaft B and terminating at their lower ends in heads M' having openings *k* in which the bars *l* are inserted and fastened, a crank-shaft B' journaled in the frame behind the cutters and geared to the shaft B, and pitmen N', connecting the shaft B' with the cutters, the whole being constructed and arranged to operate substantially as described.

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**502,441. RAILWAY-SIGNAL.** ARTHUR G. LEONARD, New York, N. Y. Filed May 1, 1891. Serial No. 391,229. (No model.)



*Claim.*—1. The combination with a bell crank lever carried by the locomotive and pivotally secured thereto so that one of its arms may be swung into and out of position to engage a trip at the side of the track, a signal and a valve for operating the signal, of a lever for operating the valve, a rod connecting one end of the valve operating lever with the other arm of the said bell crank lever, the opposite arm of said valve operating lever being under the control of the engineer to operate it and hence set the bell crank lever, and means for holding the bell crank lever in different adjustments, substantially as set forth.

2. The combination with a signal operating lever carried by the locomotive, and an angular projection secured to rock with the lever, of a yielding plunger having a recessed head adapted to engage the angular projection and hold it in its different adjustments, substantially as set forth.

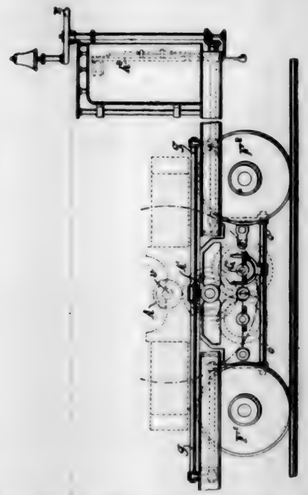
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**502,442. TRAMWAY-VEHICLE.** CARL LÜBRIG, Dresden, Germany. Filed Oct. 11, 1892. Serial No. 448,580. (No model.) Patented in Luxemburg Aug. 26, 1892, No. 1,630.

*Claim.*—1. In a tram car the combination of the motor engines mounted under the seats of the car upon suitable removable frames, hinged flaps or doors opening outwardly on the sides of the car for removing the motor engines, a driving gear, substantially as described, mounted in suitable hangers removably secured to the bottom of the car, whereby both engines and driving gear are rendered independently exchangeable, and the penetration of obnoxious gases to the interior of the car is prevented, substantially as described.

2. In a tram car a driving gear mounted to be exchangeable, and consisting of a shaft B in connection with the driving shaft of the engine, and provided with two loose gears H Q of unequal diameter, a clutch coupling playing between said gears, a coupling shaft N G' provided on one part N with two loose gears M P and an intermediate coupling O, and on its other part with transmission wheels U connected respectively with the axles of the cars, a third or countershaft K provided first with a fast gear J meshing into the gear H of shaft B; secondly, with a fast gear R meshing with gear Q of shaft B and with gear P of shaft N G', and thirdly, with a fast gear L meshing with gear M on shaft N G', and means for operating the several couplings, substantially as described.

3. In a tram car, the combination of a motor, a coupling shaft consisting of two parts N G' and an intermediate coupling S S' uniting said parts, two loose gears P, M, mounted on the part N, a coupling O intermediate of said gears, an operative connection between the axle of the car and the second part G' of the coupling shaft;—all constructed and arranged so that the motion of the motor is transmitted to the axle only when said coupling O is thrown into connection with either of said gears P M and the parts of the shaft coupling S S' are in connection; otherwise the transmission runs idle, substantially as described.



4. In a tram car, a transmission gear comprising a separate gear transmission for each of the several speeds and direction of motion to be imparted to the car, to wit: first, a transmission by gears H J L and M, for a slow forward motion; secondly, a transmission by gears Q R L and M, for a quick forward motion; thirdly, a transmission by gears H J R Q and P for a slow backward motion; and fourthly, a transmission by gears Q P for a quick backward motion, all constructed and arranged as specified, so that gears which are not in use run idle and thereby permit rapid changes from one motion to another, substantially as described.

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**502,443. LOCOMOTIVE-VEHICLE.** CARL LÜBRIG, Dresden, Germany. Filed Oct. 11, 1892. Serial No. 448,581. (No model.) Patented in Luxemburg Sept. 3, 1892, No. 1,653.

*Claim.*—1. A tram car having hollow side walls and the spaces beneath the longitudinal seats closed on all sides, and provided with openings in the outside walls closed by suitable doors, and motor engines (one or more) disposed under the seats within the inclosed spaces with their fly wheels arranged to project into the hollow side walls,—whereby the available space of the car is not reduced; the engine parts are protected, and the penetration of odor into the car is prevented, substantially as described.

2. A tram car having the spaces beneath the longitudinal seats closed on all sides, motor engines disposed under the seats within the inclosed space with their fly wheels arranged to project into the hollow walls, a driving gear located beneath the floor of the car, and gas collectors placed in the hollow end walls,—the side and front panels of said car being constructed to open up to gain access to the several parts, substantially as and for the purpose specified.

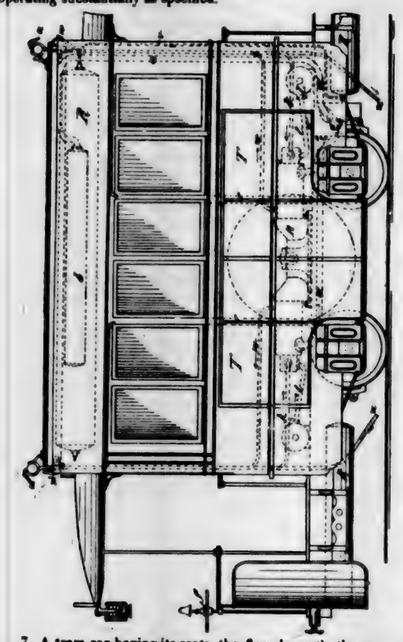
3. In a tram car having its side walls removable and the spaces beneath the longitudinal seats inclosed, one or more motors having their frames arranged to slide upon suitable supports within said inclosed spaces, whereby the motors can be removed from the outside of the car on opening the side walls, substantially as described.

4. In a tram car the means described for obtaining a substantially noiseless and odorless exhaust consisting of a sound dampener S *c A* placed in connection with the exhaust of the engine, a perforated receiver containing dry filtering and purifying material, and a connection between said receiver and the sound dampener, substantially as described.

5. In a tram car the combination with the motor engines and the receiver G' for the cooling water, of a coiled discharge pipe U connected to said vessel permitting the water to overflow only at the highest level when the car is in an oblique position and a tube *u* connected with the coil of the discharge pipe to prevent the liquid from being siphoned off, substantially as described.

6. A tram car having the spaces beneath the longitudinal seats closed on all sides and provided with openings in the outside walls closed by suitable doors, motor engines (one or more) disposed under the seats within the inclosed spaces, a driving gear located beneath the floor of the car, gas holders distributed beneath the platforms, ventilating shafts for the several inclosed spaces, and sound dampeners and filters through which the exhaust gases are led, all arranged and operating substantially as specified.



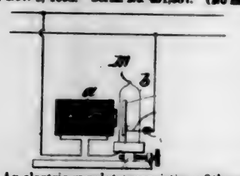


7. A tram car having its seats, the floor beneath the same and the side walls capable of being opened up, engines located within the spaces inclosed by the seats, floor and side walls, and ventilating shafts for said spaces, substantially as described.

8. In a tram car the combination of the motor engines disposed within the inclosed spaces beneath the seats, gas or petroleum holders located beneath the platform of the car, a driving gear connected with the engines and located beneath the car, pressure regulators D, bags G arranged in the hollow front walls of the car, sound dampeners S *c A*, purifying vessels *b* disposed on the top of the car, a manometer *m*, a water receiver G', on the roof of the car connected with the water jackets of the engines, and ventilating shafts for the inclosed spaces, substantially as described.

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**502,444. ELECTRIC REGULATOR.** DANIEL M. MOORE, New York, N. Y. Filed Nov. 8, 1892. Serial No. 451,357. (No model.)



*Claim.*—1. An electric regulator consisting of the combination of a magnet, a vibratory armature therefor, a bulb containing an inert fluid or vacuum, and attached to said armature, electric terminals in the bulb, and in contact with each other one of which is more flexible than the other, and means for regulating the distance of the armature from the magnet, the said terminals and magnet being in circuit with one another.

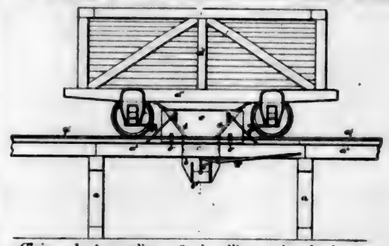
2. An electric regulator consisting of the combination of a magnet, a bulb evacuated or containing a fluid inert in reference to electrical conductors, an armature and electric terminals in said bulb and in circuit with said magnet, and means for varying the pressure between the terminals.

3. An electric regulator consisting of the combination of a magnet, a bulb evacuated or containing an inert fluid, a vibratory armature in said bulb, a fixed electric terminal passing into the bulb and pressing upon the armature and means for moving the bulb and its contents to and from the magnet.

4. An electric regulator, consisting of the combination of a magnet, a bulb evacuated or containing an inert fluid, a vibratory armature in said bulb, a fixed electric terminal passing into the bulb and pressing upon the armature, means for moving the bulb and its contents to and from the magnet, and means for regulating the distance of the armature from the magnet.

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**502,445. COAL-HANDLING APPLIANCE.** HENRY K. MORRISON, Jersey City, N. J., assignor to the United Gas Improvement Company, Philadelphia, Pa. Filed Dec. 22, 1892. Serial No. 456,024. (No model.)

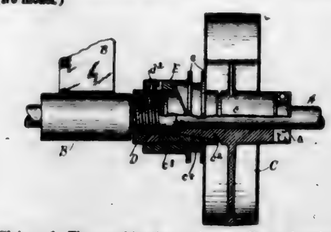


*Claim.*—1. An appliance for handling coal and other matter or material, comprising a trestle provided with stringers having rails, a discharge hopper suspended between the rails and having its lower portion converging and slanting toward a discharge opening, a sliding-door for said opening, lugs connected with the side-walls of the hopper and projecting upward above said rails and into range of the dump-doors of a coal-car and guide boards or shields ranging transversely of the ends of the dump-doors and provided with spikes and spiked brace-rods adapted for insertion in the trestle, substantially as and for the purposes set forth.

2. An appliance for handling coal and other matter or material, comprising a trestle provided with stringers having rails, a discharge-hopper suspended between the rails and having its lower portions converging and slanting toward a discharge opening, a sliding-door for said opening, lugs connected with the side walls of the hopper by slots and pins and provided at one of their extremities with notches adapted to detachably engage said pins, and guide boards or shields ranging transversely of the ends of the dump-doors and provided with spikes and spiked brace rods adapted for insertion in the trestle, substantially as and for the purposes set forth.

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**502,446. FRICTION-CLUTCH.** HENRY E. HOTTINGHAM and ANDREW TUCKER, Cincinnati, Ohio. Filed Oct. 1, 1892. Serial No. 447,475. (No model.)



*Claim.*—1. The combination, substantially as hereinbefore set forth, of a shaft or spindle, a pulley journaled thereon, and having formed integral with it one member of a friction clutch, the opposite member of said clutch sleeved to slide over said shaft or spindle to couple or uncouple the shaft and pulley, the screw, $c^2$, a nut D, the sliding sleeve E having an inclined slot, and the pin, $d^3$, secured in the nut and projecting into the slot in the sleeve, whereby the nut is partially rotated to couple or uncouple the friction members by sliding the sleeve E.

2. The combination of the spindle A, the pulley C journaled thereon, and having a friction member formed integral with it, the screw $c^2$, the nut D engaging said screw, the sleeve E having an inclined slot and groove to receive the end of a shifting lever, the pin, $d^3$, secured in the nut and traversing the slot in the sleeve, and the sliding friction member, substantially as shown and described.

3. The combination, in a lathe head, of the spindle, the pulley loosely mounted thereon, the pinion, *c'*, carried by the pulley, the disk

C', also mounted upon the spindle, and having a flange adapted to be brought into frictional contact with the edge of the pulley, and an extended hub passing through a fixed friction bearing in the stock, and having its end screw-threaded, the nut engaging the screw on the hub, the collar *d* fixed upon the spindle, and the sleeve fixed upon the hub to prevent the longitudinal movement of the nut, the pin, $d^3$, secured in the nut, the sliding sleeve E having an inclined slot into which said pin projects, and grooved to receive a shifting lever to slide said sleeve, the gear F, fixed upon the spindle, the stud, *g*, fixed in the friction disk, the pinions and gears, G, G', journaled upon said studs, said gears meshing with the pinions, *c'*, and said pinions meshing with the gear F, substantially as shown and described.

4. The combination in a lathe head of the head stock, the live spindle journaled therein, cone pulley and friction disk loosely mounted upon said spindle, said disk having a cone shaped hub which passes through a fixed bushing in the head, a pinion fixed to the pulley, and a gear fixed upon the spindle within said pulley, the attached pinions and gears journaled upon studs in the friction disk, said gears meshing with the pinion fixed to the cone pulley, and said pinions meshing with the gear fixed upon the spindle, and means such as shown to lock the disk to the pulley or the fixed bushing, for the purpose of varying the speed of the spindle, substantially as hereinbefore set forth.

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**502,447. WHEEL.** GEORGE B. OUT, Syracuse, N. Y., assignor of one-third to Rudolph C. Vetter, same place. Filed Nov. 5, 1892. Serial No. 451,080. (No model.)



*Claim.*—1. In a wheel, a tire having separated edges, a rim having side shoulders for engaging the outer faces of the tire edges, and a pair of bands encircling the rim and having their adjacent sides interlocked and their outer edges provided with shoulders for engaging the inner faces of the tire edges, substantially as and for the purpose set forth.

2. In a wheel, a tire having separated thickened edges, a rim having side shoulders for engaging the outer faces of said thickened tire edges, a pair of bands encircling the rim and having their adjacent sides interlocked and their outer edges provided with shoulders for engaging the inner faces of the tire edges, and an inflated pneumatic sack between the tire and the bands, substantially as and for the purpose specified.

3. In a wheel, a tire having separated edges, a rim having side shoulders for engaging the outer faces of the tire edges, a band encircling the rim and having its outer edge provided with a shoulder for engaging the inner face of the adjacent tire edge and having its opposite edge bearing against the outer face of the rim, and a second band encircling the rim and having its outer edge provided with a shoulder for engaging the inner face of the opposite tire edge and having its opposite edge bearing against the outer face of the adjacent side of the former band, substantially as and for the purpose set forth.

4. In a wheel, a tire having separated edges, a rim having side shoulders for engaging the outer faces of the tire edges, and a pair of bands encircling the rim and inclining inwardly from their outer edges toward the adjacent face of the rim and having their adjacent edges interlocked and their outer edges provided with shoulders for engaging the inner faces of the tire edges, substantially as and for the purpose specified.

5. In a wheel, a tire having separated edges, a rim having side shoulders for engaging the outer faces of the tire edges, a band encircling the rim and having its outer edge provided with a shoulder for engaging the inner face of the adjacent tire edge and having its opposite edge bearing against the outer face of the rim and formed with a shoulder on its outer face in proximity to said opposite edge, and a second band encircling the rim and having its outer edge provided with a shoulder for engaging the inner face of the opposite tire edge and having its opposite edge bearing against said shoulder formed in proximity to the adjacent edge of the former band, substantially as and for the purpose set forth.

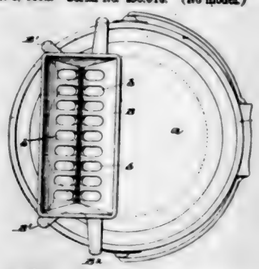
6. In a wheel, a tire having separated edges, a rim having side shoulders for engaging the outer faces of the tire edges and formed with an inwardly extending shoulder at its central portion, a band encircling the rim and having its outer edge provided with a shoulder for engaging the inner face of the adjacent tire edge and having its opposite edge bearing against the inwardly extending shoulders upon the outer face of the rim, and a second band encircling the rim and having its outer edge provided with a shoulder for engaging the inner face of the opposite tire edge and having its opposite edge bearing against the outer face of the adjacent side of the former band, substantially as and for the purpose specified.

7. In a wheel, a tire having separated edges, a rim having side shoulders for engaging the outer faces of the tire edges, and a pair of broken bands encircling the rim and formed of spring metal and having the edges of their adjacent ends movable toward and away from each other, said bands encircling the rim and having their adjacent sides interlocked and their outer edges provided with shoulders for engaging the inner faces of the tire edges, substantially as and for the purpose described.

8. In a wheel, a tire having separated edges, a rim having side shoulders for engaging the outer faces of the tire edges, a pair of broken bands encircling the rim and formed of spring metal and having the edges of their adjacent ends movable toward and away from each other, said bands encircling the rim and having their adjacent sides interlocked and their outer edges provided with shoulders for engaging the inner faces of the tire edges, and a tie for engaging the adjacent ends of one of said bands, substantially as and for the purpose specified.

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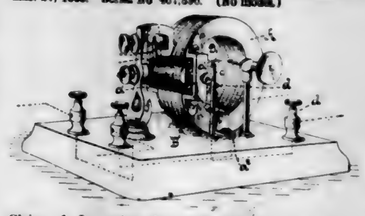
**502,448. MOP-WRINGER.** WILLIAM F. ULMAN, New York, N. Y. Filed Nov. 1, 1892. Serial No. 450,616. (No model.)



*Claim.*—As an improved article of manufacture, the mop-wringer described, consisting of a metallic vessel B, having inclined sides with vertically disposed openings *b*, extending from the bottom to about the mid height, adapted to allow a flat mop to be forced down therein and to express the water therefrom by such movement, a pair of horizontally disposed arms B' and a pair of longer horizontal arms $B^3$ formed with hook-ends adapted to rest on and engage hook-wise with the rim of a bucket, the arms being at the mid-height of the vessel so as to hold the vessel half immersed, the whole being arranged as shown so as to confine the vessel to one side of the interior of the bucket and to leave a liberal space in the center and in the opposite side of the bucket, all substantially as and for the purposes herein specified.

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**502,449. RELAY.** HORACE S. L. VERLEY, Hoboken, N. J. Filed Mar. 27, 1893. Serial No. 467,896. (No model.)



*Claim.*—1. In a relay, the combination of a magnet, a pivoted coil disposed between the poles of the magnet and placed in connection with the line circuit, a contact arm projecting from the coil, a contact arranged on one side of the contact arm and in connection with the local circuit, a stop on the opposite side of said arm and a spring for drawing the arm toward the stop, substantially as described.

2. In a relay, the combination of a magnet, a stationary armature, located between the poles of the magnet, and a pivoted coil arranged about the same and provided with means for closing a circuit, substantially as described.

3. In a relay, the combination of a magnet, a coil arranged to vibrate between the poles of the same, a stationary armature disposed within the coil, a bracket secured to the maguet and provided with a contact, and a contact arm secured to the coil and carried opposite to the bracket contact, substantially as described.

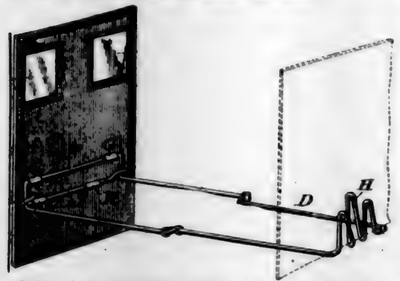
4. In a relay, the combination of a magnet, a stationary supplementary magnet disposed between the poles of the magnet, a pivoted coil arranged about the supplementary magnet and provided with a contact arm arranged opposite a contact point, a spring in connection with the coil and a stop, substantially as described.

5. In a relay the combination of a magnet A, brackets *a'* secured to opposite sides of the poles thereof, a coil in connection with the line circuit pivoted to said brackets, a contact arm secured to the coil, a contact, a stop and a spring for drawing the arm toward the stop, substantially as described.



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**502,450. STEREOSCOPE.** ARTUS WAGNER, Philadelphia, Pa. Filed Jan. 12, 1893. Serial No. 458,099. (No model.)



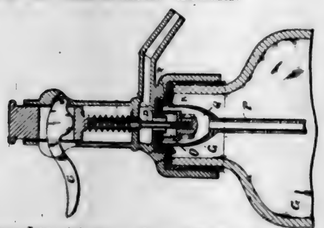
*Claim.*—1. A stereoscope consisting of a plate having lenses therein, a picture holder formed of extensible parts connected by suitable eyes, one of said parts having a limb mounted in eyes on the said plate, and the other part having at its outer end a picture clamp, and a locking bar for said holder secured to said frame, said parts being combined substantially as described.

2. A stereoscope having a plate with lenses, a picture holder secured to and adapted to be folded against said plate, and a catch journaled in eyes on said plate and having ends adapted to contact with the side portions of said holder, said parts being combined substantially as described.

3. In a stereoscope, a lock for the picture holder thereof consisting of a rod journaled in eyes on the plate of said stereoscope, and having a hook on one end and a crank on the other, substantially as described.

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**502,451. SIPHON-TOP.** CHARLES WALTER, Stapleton, N. Y. Filed Dec. 15, 1892. Serial No. 455,296. (No model.)



*Claim.*—In a siphon top, the combination, with a faucet stem having a tubular neck, of a packing ring held in the top of said neck, a cup-shaped valve below said packing ring, and a spring actuated stem, to the lower end of which the valve is screwed, the open end of said valve being at the top and the closed end at the bottom, said upper open end of the valve seating against the packing ring, substantially as set forth.

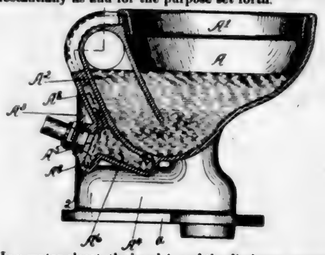
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**502,452. WATER-CLOSET.** FRANK A. WELLS, New York, N. Y. Filed July 14, 1892. Serial No. 439,868. (No model.)

*Claim.*—1. In a water closet, the bowl and the siphonic discharge passage thereof, the down limb of the discharge passage being substantially vertical and merging directly in a horizontal passage, said horizontal passage being set off or deflected at substantially a right angle and leading to the final discharge; whereby the outgoing water is twice turned abruptly at a right angle in its course to the final discharge as and for the purpose set forth.

2. In a water closet, the bowl and the siphonic discharge passage and the water supply passages, the down limb of the discharge passage being substantially vertical and merging directly in a horizontal passage, said horizontal passage being set off or deflected at a right angle and leading to the final discharge, the water passage which enters the crown of the siphon being directed toward the bottom of the vertical down limb, substantially as and for the purpose set forth.

3. In a water closet, the bowl and the siphonic discharge passages, and the water jet passages formed integrally; the down-limb of the discharge being turned side-ward from the up-limb, as distinguished from outward, the water supply passage entering in the depression between the up-limb and down-limb entirely below the water line, and with a general downward direction corresponding to the slope of the up limb, said passage being divided into three passages, one of which continues down in the interval between the two limbs of the siphon, and thence under the up-limb, discharging upwardly thereinto toward the crown of the trap; another passage extending upwardly to the crown of the siphon and discharging downwardly into the down-limb; and the third passage extending up in the depression between the two limbs and thence over the crown of the trap into the flushing rim: substantially as and for the purpose set forth.



4. In a water closet, the bowl A, and the discharge passage therefrom having the inclined up-limb $A^2$; the vertical down-limb $A^3$, turned side-ward from the up-limb, and the horizontal off-set $A^4$ underneath the bowl; and the water jet $A^5$, lying in the depression between the two limbs, and having three branches,—$A^6$, leading to the bottom of the up-limb; $A^7$, leading to the top of the down-limb, and $A^8$, leading to the flushing rim; all said bowl, discharge passages and water passages being formed integrally of earthenware: substantially as set forth.

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**502,453. SPICE-BOX.** ANDREW J. WORTHEN, Murphysborough, Ill. Filed Nov. 11, 1892. Serial No. 451,650. (No model.)



*Claim.*—1. A revoluble polygonal case having a plurality of compartments and supplemental compartments within the same and having movable partitions, as set forth.

2. A revoluble case having a plurality of compartments, and supplemental compartments within the same and provided with movable slides and hoppers at their upper ends, as set forth.

3. A polygonal case having a plurality of separate compartments and rotatably mounted, and provided with independent removable inner compartments with hopper-shaped upper ends, and movable slides, as and for the purpose specified

4. The combination with the rotatable polygonal case having a plurality of compartments with movable slides, of a removably supported funnel beneath the case, as and for the purpose specified.

5. The combination with a pyramidal compartment, of a smaller compartment within the same and having at its upper end a hopper conforming to the shape of the outer compartment, and movable slides in the smaller compartment and accessible from outside the outer compartment, as set forth.

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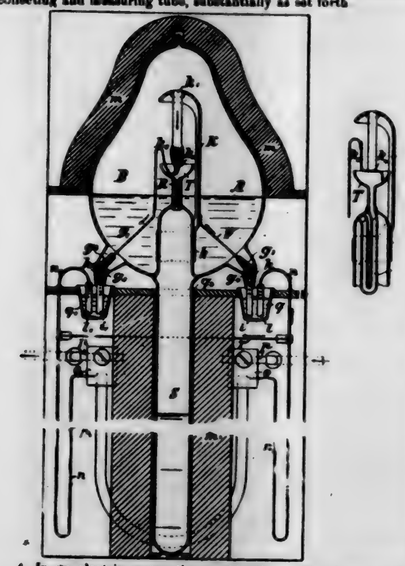
**502,454. METHOD OF AND APPARATUS FOR MEASURING ELECTRICITY.** ALOAR ARPPE, Helsingfors, Finland. Filed Jan. 10, 1893. Serial No. 457,880. (No model.) Patented in Finland Feb. 23, 1892. No. 411.

*Claim.*—1. The method herein described of measuring electricity, which consists in producing an atmosphere of saturated vapors around a Peltier-conductor, conducting a portion of the current to be measured through said conductor in such a direction as to produce a cooling action in said conductor and collecting and measuring the liquid condensed on said conductor, substantially as set forth.

2. In an electric meter, the combination, with a hermetically closed vessel which is partially filled with a volatile liquid, of a Peltier-conductor arranged above the liquid in said vessel, a drip-cup located

between the conductor and the said liquid and a collecting and measuring tube connected with the drip-cup substantially as set forth.

3. In an electric meter, the combination, with a hermetically-closed vessel partly filled with a volatile liquid, of a Peltier-conductor arranged above the liquid, resistances connecting the main electric conductor with the Peltier-conductor, a drip-cup between the Peltier-conductor and the liquid in said vessel, a collecting and measuring tube connected with the drip-cup and means substantially as described for preventing the escape of the vapors from the closed vessel and the collecting and measuring tube, substantially as set forth.

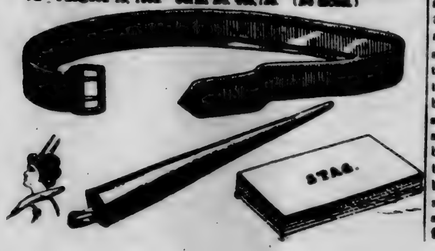


4. In an electric meter, the combination, with a hermetically-closed vessel partly filled with a volatile liquid, of a shunt-circuit composed of two resistances which are connected through said vessel, a Peltier-conductor interposed between said resistances, above the volatile liquid, a short-circuiting wire connecting the shunt-circuit outside of the closed vessel, a drip-cup located between the Peltier-conductor and the liquid and a collecting and measuring tube connected with said drip-cup, substantially as set forth.

5. In an electric meter, the combination, with a hermetically-closed vessel which is partly filled with a volatile liquid, of a Peltier-conductor arranged above said liquid, resistances connecting said conductor with the main circuit, a drip-cup below the Peltier-conductor, a collecting and measuring tube connected with said drip-cup and means for enlarging the condensing surface of the Peltier-conductor at the point of connection of its metal rods, substantially as set forth.

6. In an electric meter, the combination, with a hermetically-closed vessel which is partly filled with a volatile liquid, of a Peltier conductor arranged above said liquid, resistances connecting said Peltier-conductor with the main circuit, a drip-cup arranged between the Peltier-conductor and the liquid, a collecting and measuring tube connected with the drip-cup and non-conducting protecting layers or jackets surrounding the closed vessel above the liquid and the collecting and measuring tube, substantially as set forth.

## 502,455. GAME APPARATUS. MARY B. ANDREWS, Philadelphia, Pa. Filed Oct. 13, 1892. Serial No. 448,736. (No model.)




*Claim.*—A game apparatus consisting of a number of cards having names of objects thereon, a number of horns each having a loop at one end and a belt adapted to pass through said loops for securing said horns on the head of a player of said game, substantially as described.

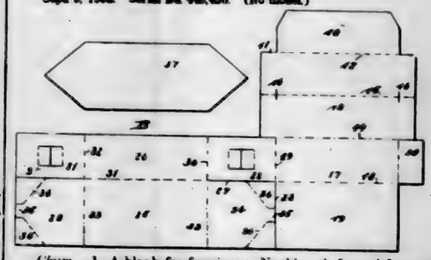
## 502,456. CURLING-IRON HOLDER. EDWARD E. CHAPMAN, Boston, Mass. Filed Mar. 23, 1893. Serial No. 467,391. (No model.)



*Claim.*—1. A holder for curling irons, consisting of a single piece of wire twisted to form a ring-like seat for the iron, the ends of the wire being slightly bent adjacent thereto and extending parallel to each other beyond said seat, and turned back upon themselves to form a rigid body, the free ends being bent over outwardly in front of and inclined toward the body, to form a spring clip, substantially as described.

2. A holder for curling irons, consisting of a single piece of wire twisted to form a ring-like seat for the iron, the ends of the wire being slightly bent adjacent thereto and extended parallel to each other beyond said seat, and turned back upon themselves to form a rigid body, the free ends being bent over outwardly in front of and inclined toward the body to form a spring clip, one end of said wire being bent back to a point below the seat, and thence being bent outwardly and rearwardly, to form a rest for the handle of the iron, substantially as described.

## 502,457. PAPER BOX. JOSEPH T. CRAW, Jersey City, N. J. Filed Sept. 9, 1892. Serial No. 445,430. (No model.)



*Claim.*—1. A blank for forming a Noah's ark formed from an L-shape sheet the body forming member B of which is creased and subdivided into bottom, side, and triangular end-forming sections 23—24, the said end forming sections provided at their opposite ends or points with roof locking projections 35 and the roof forming member A having a longitudinal folding line 15 for the ridge of the roof, transverse slits 16 intersecting said line 15 to receive the projections 35, substantially as set forth.

2. In a paper box adapted to be shaped substantially as a Noah's ark, a blank of essentially L-shape, one member comprising a bottom and a top locking section located at opposite ends of the member, and an intermediate side and a roof section, the sections of the member being divided by score lines, the other member of the blank comprising a centrally located bottom and a side section, end and stay sections located at the ends of the side and bottom sections, the stay sections being provided with cuts of angular shape adjacent to the ends of the bottom section, and score lines dividing the several sections of said member, whereby the bottom section when the stay sections are folded up therefrom, will have projections from its ends, substantially as and for the purpose set forth.

3. In a paper box adapted to be shaped essentially as a Noah's ark, a blank of essentially L-shape, one member A, comprising a bottom and a top locking section located at opposite ends of the said member, and two intermediate sections, a roof and a side section, the several sections being separated from one another by score lines, and the roof section having a score line through its center and cuts across the said line, and the member B of the blank comprising a central bottom and a side section one arranged at one side of the other and separated by score lines, end sections located one at each side of the side section and separated from the side section and from the member A by score lines, a stay section located at each end of the bottom section and separated from the end sections and from the member A by cuts, the said stay sections being provided with cuts arranged to form tabs, and score lines extending diagonally across the stay sections from said cuts, substantially as and for the purpose specified.

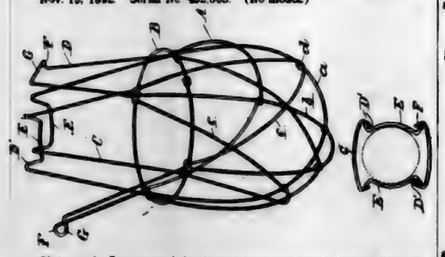


4. A paper box comprising sides and ends, a bottom and an angular cover, and tabs projected from the ends and carried upward through the cover, the ends being shaped to conform to the inner contour of the cover, as and for the purpose set forth.

5. A paper box consisting of sides, ends and a bottom, the bottom having extensions projecting beyond the ends, and the sides being beveled at their upper edge at each side of the center and provided with tabs emanating from their central portion, and a cover angular in cross section and provided with openings adapted to receive the tabs of the sides, substantially as shown and described.

6. A paper box constructed of one piece of material and comprising sides and ends, a bottom provided with extensions projecting beyond the end portions of the box, stay pieces in close conjunction with the inner faces of the sides and extending upward beyond them, the said stay pieces having their edges inclined in opposite directions and provided with tabs extending upward from the inclined surfaces, a locking strip located upon the bottom, between the stay strips, a cover having a hinged connection with one of the sides and provided with a locking flap, the cover being shaped in cross section to correspond to the shape of the stay strips at their upper edges, the cover being also provided with the openings to receive the tabs, as and for the purpose set forth.

## 502,458. LAMP-GUARD. EMIL GAHLAU, Detroit, Mich. Filed Nov. 18, 1892. Serial No. 452,365. (No model.)

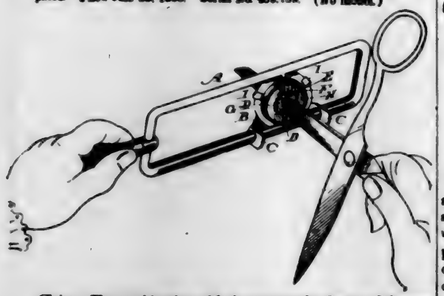


*Claim.*—1. In a guard for incandescent electric lamps, the combination of the bulb shaped frame A terminating in the ring B at its upper end, of a clamp for the socket comprising two opposite tapering clamping frames hinged to the ring, the two opposite locking frames hinged to the ring and interlocking means integral with the frame engaging with the approximate limbs of the adjacent frames, substantially as described.

2. In a guard for incandescent lamps, the combination of the open-work frame A, the ring B at the upper end thereof, the opposite tapering frames C hinged to the ring B and having the bends D' at their upper ends, the curved connecting bars E connecting these bends, the locking frames D having the off-sets F at their upper ends and a spring bar G connecting these off-sets, substantially as described.

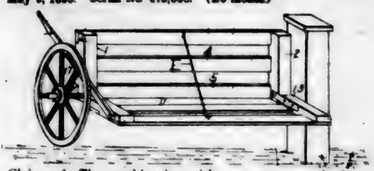
3. In a guard for electric lamp bulbs, the bulb shaped frame A, composed of opposite curved main wires *a b*, the ring B to which the ends of these wires are secured, the inclined wires *c* likewise secured to the ring at their ends, and to the main wires at the point of intersection, and the clamping frames C and D, hinged between the locking ends of the inclined and main wires, substantially as described.

## 502,459. TOOL-SHARPENER. WILLMAN R. GIBB, Baltimore, Md., assignor of two-thirds to William K. Isaacs and Harry L. Isaacs, same place. Filed Jan. 25, 1893. Serial No. 459,759. (No model.)



*Claim.*—The combination with the rectangular frame, of the carriage having lateral brackets overlocking one of the rails thereof, the annular frame arranged to rotate in said carriage and the grinding annulus, confined in said frame, substantially as specified.

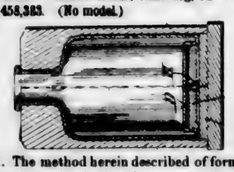
## 502,460. GATE. JAMES H. HASKIN, Three Oaks, Mich. Filed May 9, 1893. Serial No. 473,608. (No model.)



*Claim.*—1. The combination with a gate composed of an upper and lower section, of a wheel mounted on an axle formed on the projecting end of one of the rails of the upper section, substantially as described.

2. In a gate the combination, with an upper section, and a lower section pivoted to the upper section, of a raising lever pivotally attached to the lower section and provided with a central slot, a bolt passing through the slot and secured to the upper section, and means for holding the lever in its vertical position, substantially as described and for the purpose set forth.

## 502,461. ORNAMENTAL GLASS ARTICLE AND METHOD OF MAKING SAME. JOHN S. IRWIN, Saltsburg, Pa. Filed Jan. 14, 1893. Serial No. 458,383. (No model.)

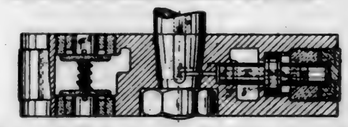


*Claim.*—1. The method herein described of forming ornamented glass articles consisting in placing the ornamenting material upon a suitable base, then placing a clear glass on top of the same and amalgamating said glass and ornamenting material, then inverting the base thus formed so as to bring the ornamenting material on top, and then applying to and amalgamating with said ornamenting material glass to form the body of the article to be produced, substantially as and for the purposes described.

2. The method herein described of forming ornamented glass articles consisting in placing the ornamenting material upon a suitable support, then applying a clear glass to said material and pressing the same with a stamp having a pin or projection to amalgamate the material and glass and form a depression in the glass, then inverting the base thus formed to bring the ornamenting material on top and the depression in the opposite face over a pin or stud on the bottom of a mold so as to center the base formed as specified, and then applying to and amalgamating with the ornamenting material the glass which is to form the body of the article, substantially as and for the purposes described.

3. A hollow article of glass ware formed with a double bottom or base composed of a lower and an upper surface of glass with an ornamenting material interposed between the surfaces and amalgamated with both, substantially as and for the purposes described.

## 502,462. PISTON. THEODOR JELLINGHAUS, Cannon, Germany. Filed Oct. 22, 1892. Serial No. 449,580. (No model.) Patented in Germany Sept. 28, 1890, No. 57,529, and June 28, 1892, No. 67,376.



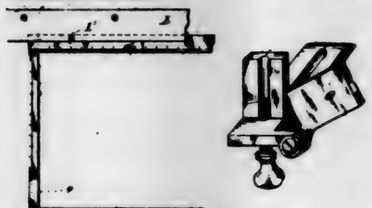
*Claim.*—1. The combination, with a hollow piston, of a series of auxiliary pistons in the same, a sectional packing ring on which the auxiliary pistons can act, self-closing valves for admitting the medium under pressure from the hollow piston, the stems of the auxiliary pistons being provided with channels for the back pressure, which channel in the stems of the auxiliary valves communicate with the channels in the hub of the main piston and in the rod of the main piston, substantially as set forth.

2. The combination, with a hollow piston provided with a series

of cylinders in its interior, of auxiliary pistons in said cylinders in the main piston, stems on said auxiliary pistons, which stems have longitudinal bores and side apertures in front of the auxiliary pistons, the hub of the main piston and the rod of the main piston being provided with bores communicating with the stems in the auxiliary pistons and self closing valves for admitting the medium under pressure into the main piston, substantially as set forth.

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**502,463.** FABRIC-HOLDER FOR EMBROIDERING-MACHINES. JOSEPH KELLENBERGER, West Hoboken, N. J. Filed Dec. 28, 1892. Serial No. 456,566. (No model.)



*Claim.*—1. The combination, with two end-bars having pins formed on their outer edges, of a flanged cross-bar having upwardly-projecting pins on its flange, a bottom cross-bar, a stretching bar mounted between the end-bars and movable between the top and bottom bars, means for locking said stretching bar in place on the end-bars and means for holding the fabric to said stretching bar, substantially as set forth.

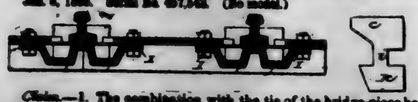
2. The combination, with end-bars having pin projections on their outer edges, of a top cross-bar uniting the end-bars and having a flange provided with upwardly-projecting pins, a bottom bar uniting the end-bars, a stretching bar between the end-bars and having grooved clips through which the end-bars pass, screws in said clips for locking the stretching bar in place, a holding rod in a longitudinal groove of the clamp-bar and buttons for holding said holding rod in place, substantially as set forth.

3. In an embroidering machine, the combination, with the main-frame, of angle-clips on the same, wings pivoted to said angle-clips, screws passed through the angle-clips behind the said wings and means for holding the upper parts of a fabric-holding frame to the bars of the main-frame, substantially as set forth.

4. In an embroidering machine, the combination, with an angle-clip having an upwardly projecting lug provided with a groove in its front surface, of a wing pivoted to the clip in front of said lug, which wing is also provided with a longitudinal groove in its rear surface, and a screw screwed through the bottom of the clip, between the wing and said lug, substantially as set forth.

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**502,464.** METALLIC RAILWAY-TIE. JOHN F. LANCASTER, Cleveland, Ohio, assignor of thirty-three sixty-fourths to Samuel Prentiss and Frederick Alexander, Brooklyn, N. Y. Filed May 21, 1892. Renewed Jan. 6, 1893. Serial No. 457,949. (No model.)



*Claim.*—1. The combination with the tie of the bridge-piece below the first top, having a cushioned saddle bearing against the under side of that part of the tie on which the rail is to be bedded, substantially as and for the purpose set forth.

2. The combination of the slotted tie, the removable keys, the locking-plate, and the bridge-piece, substantially as and for the purpose set forth.

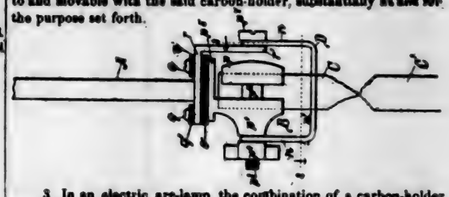
3. The combination of the tie constructed as described; the keys comprising the heads adapted to overlap and bind against the rail-flanges, a narrow middle-part or neck, and a wedge-shaped bottom part or shoe; the bridge-piece having a central raised part or saddle with sloping sides; the locking-plate and the bolts; all constructed and arranged to operate substantially as and for the purpose shown and set forth.

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**502,465.** MEANS FOR PROTECTING THE CARBON-HOLDERS OF ELECTRIC-ARC LAMPS. JAMES F. HERRON, Chicago, Ill. Filed Oct. 5, 1892. Serial No. 448,214. (No model.)

*Claim.*—1. In an electric arc-lamp, the combination of a movable carbon-holder and an automatic circuit-breaker forming a portion of the normally closed arc-producing circuit in the lamp and interposed in the plane of the arc and attached to and movable with the carbon-holder, substantially as and for the purpose set forth.

2. In an electric arc-lamp, the combination of a movable carbon-holder and an automatic circuit-breaker comprising a fusible conductor forming a portion of the normally closed arc-producing circuit in the lamp and interposed in the plane of the arc and attached to and movable with the said carbon-holder, substantially as and for the purpose set forth.



3. In an electric arc-lamp, the combination of a carbon-holder supported by and insulated from the lamp-frame, and a circuit-breaker of conducting material attached to and electrically connecting the said insulated parts and interposed between its ends in the plane of the arc, substantially as and for the purpose set forth.

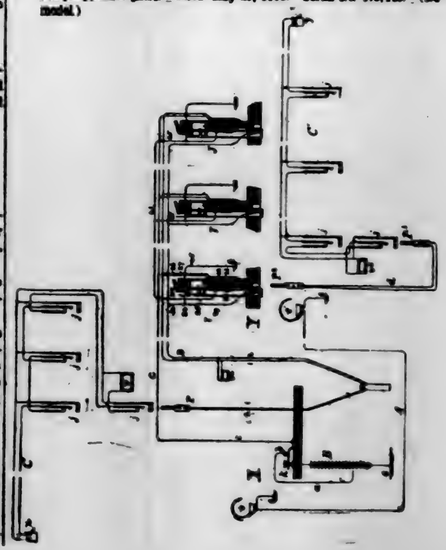
4. In an electric arc-lamp, the combination of a movable carbon-holder supported by and insulated from the lamp-frame, and an automatic circuit-breaker comprising a fusible strip of conducting material attached at its opposite ends to and electrically connecting the insulated parts and movable with the said carbon-holder and bent to extend between its ends across the plane of the carbon, substantially as and for the purpose set forth.

5. In combination, the insulated carbon-supporting clamp B of an electric arc-lamp, comprising the connected adjustable jaws $p$ and $p'$ and a protector D, comprising a conducting wire electrically connecting the clamp in the circuit and normally extending across the plane of the carbon between the clamp and carbon-point, substantially as and for the purpose set forth.

6. In combination, the carbon-supporting clamp B of an electric arc-lamp, comprising the movable jaw $p$ having a threaded stem $p^4$ carrying an adjusting nut $p^6$, and the stationary jaw $p'$ on the said stem and provided with a head $p^5$, the feeding-rod A terminating in a plate $r$ fastened to and insulated from the said head and provided with an extension $r'$ having a lug $p^3$ carrying an adjusting-nut $p^7$, and a protector D comprising a conducting wire fastened at opposite ends to the lug $p^3$ and stem $p^5$, extending thence downward and across the plane of the carbon-pencil and bent to conform to the contour of said pencil, substantially as and for the purpose set forth.

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**502,466.** TELEPHONE CIRCUIT AND APPARATUS. JAMES L. MCGHARRIE, Boston, Mass., assignor to the American Bell Telephone Company, same place. Filed May 20, 1893. Serial No. 475,448. (No model.)





*Claim.*—1. In a trunk line extending between two telephone switchboards, the combination of a circuit provided at one terminal with a clearing out annunciator and a connecting plug, and at its other terminal with one or more spring jacks, each having a movable circuit controller in its plug orifice, and an electro magnetic locking and tripping device, with an associated normally open circuit provided with a source of electricity; and a key or circuit switch at one terminal; whereby the said source of electricity is included in said circuit when either of said spring jacks are looped to a substation line, for the purposes set forth.

2. In a trunk line extending between two telephone switch boards, the combination of a metallic circuit provided at one terminal with a clearing out annunciator and a connecting plug and at its other terminal with a spring jack having a movable circuit controller in its plug orifice and an electro magnetic locking and tripping device; with an associated circuit grounded through a circuit switch and a source of electricity at one end and connected by a normally open branch to the said spring jack; whereby when a substation line is looped to said spring jack its connecting plug may be automatically disconnected as set forth.

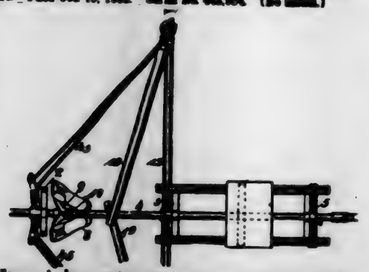
3. In a trunk line extending between two telephone switch boards, the combination of a metallic circuit provided at one terminal with a clearing out annunciator and a connecting plug, and at its other terminal with one or more spring jacks each having a movable circuit controller in its plug orifice and an electro magnetic "line-in-use" indicating device; with an associated circuit grounded through a source of electricity at one end and connected by normally open branches to the said spring jacks; whereby when a substation line is looped to one of said spring jacks, the said circuit controller closes the said source of electricity to ground and operates the said line-in-use indicating devices, as set forth.

4. The combination with a trunk line extending between two telephone switchboards, consisting of a metallic conversation and signaling circuit, provided at one terminal with a clearing out annunciator and a connecting plug, and at its other terminal with one or more springjacks, each having a longitudinally movable circuit controller in its plug orifice, and provided with electro magnetic locking, tripping, and line-in-use indicating devices; with an associated circuit grounded through a circuit switch and a minor portion of a source of electricity at one end, and connected by normally open branches to the said springjacks; whereby when a substation line is looped at one of the said springjacks, the said circuit controller closes the said minor source of electricity to ground and operates the said line-in-use indicating device; and whereby when the said circuit switch is operated to include the major portion of the said source of electricity, the said substation line is disconnected and the said line-in-use indicators are restored to their normal condition, as set forth.

5. In a trunk line, an tending between two telephone switch boards, the combination of a metallic circuit provided at one terminal with a clearing out annunciator and a connecting plug, and at its other terminal with one or more springjacks, each having a movable circuit controller in its plug orifice, with an associated circuit, provided at one end with a shunt-branch grounded through a circuit switch, and a normally open branch including a source of electricity, and connected at its other end by normally open branches to the said spring jacks, whereby when a sub-station line is looped to one of said springjacks, its connecting jack will be ejected from said spring jack upon the closure of said circuit switch with the said branch including the source of electricity.

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**502,467.** ROWING APPARATUS. WILLIAM ROEHLER, St. Louis Mo. Filed Oct. 10, 1892. Serial No. 448,864. (No model.)



*Claim.*—1. In a rowing apparatus, the combination with braces of oar locks supported thereby, and having extensions formed thereon; a pivoted seat frame; connecting rods secured to the said extension and to a fixed bracket, and connecting rods having their inner ends secured to the seat frame and their opposite ends pivotally secured to the extension of the oar locks above the first named rods, substantially as described.

2. In a rowing apparatus the combination with braces, of oar locks supported thereby and having slotted extensions formed thereon; a pivoted seat frame; connecting rods extensibly secured to the said slotted extension and to a fixed bracket, and connecting rods having their inner ends secured to the seat frame and their opposite ends pivotally secured to the extension of the oar locks above the first named rods, substantially as described.

3. In a rowing apparatus, the combination with a suitably mounted shaft, of a seat frame and a crosshead mounted thereon, oar locks having dependent extensions thereon; braces connecting the said crosshead and oar locks, connecting rods secured to the said seat frame and pivotally secured to the said oar locks, and connecting rods having their outer ends secured to the extensions on the oar locks, and their opposite ends secured to a fixed support, substantially as described.

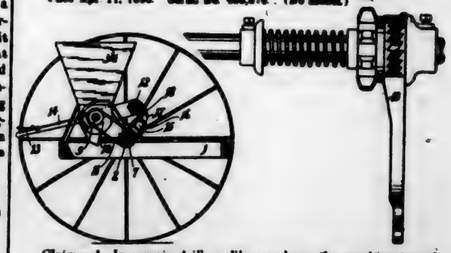
4. In a rowing apparatus, a lock provided with a cavity 30, a spring located in the same, a bearing or bearings formed with or attached to the upper portion of said lock, a shaft 18 forming a part of the oar and adapted to be turned in said bearings, and flat surfaces 40 and 41 formed on said shaft adapted to be successively brought in contact with the medium portion of said spring, substantially as set forth.

5. In a rowing apparatus, a shaft 4 mounted on suitable bearings, pieces 5 fixed to the said shaft supporting guides 6, a bracket 12, connecting rods 13 attached to the said bracket, connecting rods 15 attached to the ends of one of the pieces 5, locks 17 for the oars provided with a rounded extension 20, a casting 16 to which the said extension is movably attached, a slotted extension 23 formed with the said locks for receiving the slotted ends of the connecting rods 13, the said rods 15 being attached to the castings 16 above the slotted connections, and braces 45 connecting the said castings 16 with the casting 44 fixed to the shaft 4, substantially as set forth.

6. In a rowing apparatus a shaft 4 mounted in bearings, a casting 9 adjustable upon said shaft, supporting foot rests 8, pieces 5 fixed to the said shaft supporting suitable guides 6 for the seat, castings 16 having rods 15 attached to the same and to one of the said pieces 5, braces 45 attached to the opposite sides of the said castings 16 and attached to the ends of the casting 44 mounted upon the shaft 4, locks 17 movably secured to the said castings 16, slotted extensions 23 depending from the said locks, a stationary bracket 12, connecting rods 13 movably fixed to the said bracket, slots 14 formed in the opposite ends of the rods 13, and bolts 25 passing through the said slots 14 and slotted extensions 23 of the locks for adjustment, substantially as set forth.

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**503,468.** GRAIN-DRILL. SAMUEL W. ROWELL, Beaver Dam, Wis. Filed Apr. 11, 1893. Serial No. 469,876. (No model.)

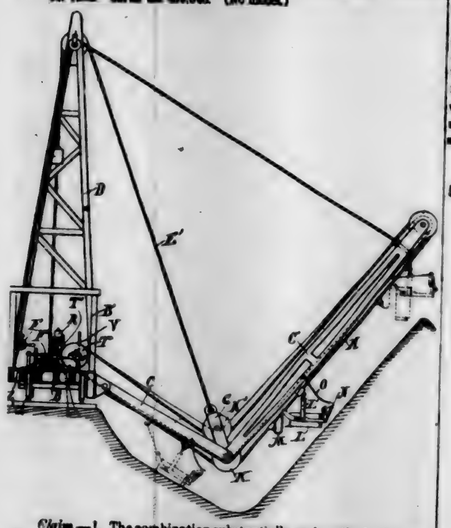


*Claim.*—1. In a grain drill, or like machine, the combination of a seed-box, a feed cylinder shaft therein, having a sprocket wheel mounted thereon, a roller or bar, means for rotating the same, a main axle, a clutch-head fixed upon the axle, a spring pressed clutch-head loose thereon, the latter formed with sprocket teeth, a chain connecting said sprocket teeth with the sprocket wheel of the feeding cylinder shaft, and a connection between the roller or bar and the feeding cylinder, said connection constructed to normally hold the loose clutch in engagement with its companion fixed clutch, and to throw said loose clutch out of engagement, when the bar or roller is actuated, substantially as set forth.

2. In a grain drill, or like machine, the combination, of a seed-box, a feeding cylinder shaft therein having a sprocket wheel mounted thereon, a roller or bar, means for rotating the same, a main axle a clutch-head fast upon the axle, a spring-pressed clutch-head loose thereon, the latter formed with sprocket teeth, a chain connecting said sprocket teeth with the sprocket wheel of the feeding cylinder shaft, and a link having one end pivotally connected to the roller or bar and its opposite end formed into an elongated opening through which the shaft passes, the link inclined or cammed and constructed

to normally hold the loose clutch in engagement with its companion fixed clutch, and to throw said loose clutch out of engagement, when the bar or roller is actuated, substantially as set forth.

## 502,469. EXCAVATOR. EDWIN ROUD, Kenosha, Wis. Filed Jan. 11, 1893. Serial No. 459,062. (No model.)



*Claim.*—1. The combination substantially as described, of a car, a boom pivoted to the car and projecting laterally therefrom which boom is formed of two members pivoted to each other medially, a vertical mast fixed on the car, cables attached to the boom at its free end and medially, which run on pulleys in the mast, and means for winding the cables.

2. The combination substantially as described, of a car, a boom pivoted to the car and projecting laterally therefrom, which boom is formed of two members pivoted to each other medially, means for supporting the boom adjustably at its extremity and medially, a conveyer cable running reversibly on the boom a tiltable excavating bucket secured to and carried on the cable, and means for operating the cable.

3. The combination of a car, a boom supported on the car, and projecting laterally therefrom, a conveyer cable running reversibly on the boom, a tiltable bucket supported and carried on the cable and means for operating the cable reversibly, substantially as described.

4. The combination of a car, a boom supported on and projecting from the car, a conveyer cable running on the boom, a tilting bucket supported on and traveling with the cable, a swinging latch adapted to engage the bucket and hold it against tilting, another cable running on the boom independently of the former cable, but normally concurrently therewith, to which latter cable the swinging latch is connected, and means for stopping temporarily the motion of the latter cable, substantially as described.

5. The combination with a car, and a laterally projecting boom supported thereon, of pulleys in the boom, a drum on the car, a cable running on the drum and pulleys, a tiltable bucket supported and carried on the cable, and means for rotating the drum and thereby running the cable alternately back and forth with its bucket, substantially as described.

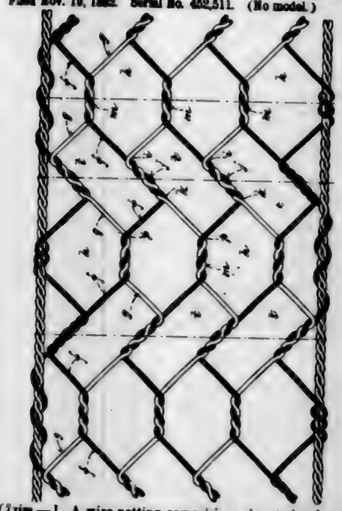
6. The combination in an apparatus of the character described, of a car, a boom projecting from the car, a rotatable drum on the car, a cable running on the drum and on the boom, adapted to carry a bucket, a pulley loose on the drum axle, a spring holding the pulley yieldingly to the drum, a cable running on the pulley and alongside the former cable, and a brake for holding the pulley against rotation with the drum, substantially as described.

7. The combination in an apparatus of the character described, of a car, a mast erected thereon, a medially jointed boom pivoted to the car and projecting laterally therefrom adapted to support a traveling bucket thereon, a cable attached to the outer extremity of the boom and running over a pulley on the mast, another cable attached to the boom medially and running over a pulley on the mast, and independent means on the car for winding up the boom supporting cables, substantially as described.

8. The combination in an apparatus of the character described, of a car, a laterally projecting jointed boom pivoted to the car, a winch journaled on the car, a cable attached medially to the boom running thence over an elevated pulley and winding on the winch, a pinion fixed on the axle of the winch, a worm loose on a driving shaft on the car, a clutch splined on the driving shaft and means for shifting the clutch into engagement with the worm, substantially as described.

9. The combination in an apparatus of the character described, of a car, an engine mounted thereon, a drum also mounted on the car and carrying a conveyer cable running on a boom projecting from the car, a winch mounted on the car adapted to wind a cable arranged to support the boom adjustably, a train of wheels gearing with an axle of the car, a driving shaft driven by the engine, and means substantially as described for connecting the shaft operatively severally to the drum, to the winch, and to the train of wheels.

## 502,470. WIRE-NETTING. BENJAMIN J. SCABLER, Clinton, Mass. Filed Nov. 10, 1892. Serial No. 452,511. (No model.)



*Claim.*—1. A wire-netting comprising wires twisted together to form approximately hexagonal meshes and parallelogrammic meshes running diagonally of the fabric, substantially as described.

2. A wire-netting comprising approximately hexagonal meshes with an interposed series of parallelogrammic meshes with reverse twists running diagonally of the fabric.

3. A wire-netting comprising approximately hexagonal meshes with interposed series of parallelogrammic meshes arranged diagonally of the fabric, the meshes of succeeding series being at an angle to those of the preceding series.

4. The herein described netting comprising the selvage wires and the mesh-forming wires, *f*, *g*, twisted to form the approximately hexagonal meshes, A, and alternating approximately rectangular meshes, *t*, arranged diagonally to said selvage wires.

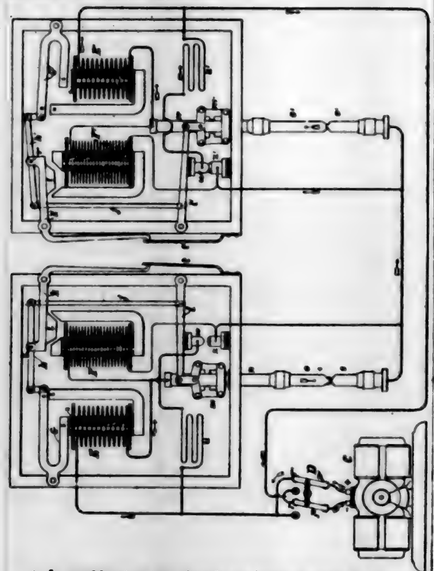
## 502,471. ELECTRIC-ARC LAMP. CHARLES R. SCRIBNER, Chicago, Ill., assignor to the Western Electric Company, same place. Filed Mar. 4, 1891. Serial No. 383,779. (No model.)

*Claim.*—1. The combination in an electric arc lamp of a main lifting magnet and an armature controlled thereby adapted to actuate the lifting mechanism of the lamp, a portion of the magnetic circuit of said electromagnet being permanently polarized, whereby the lifting mechanism is actuated by current in a particular direction only through the lifting electromagnet, substantially as described.

2. In combination, two arc lamps connected in series in the same circuit, each provided with an electro magnet having a permanently magnetized armature which, when it is attracted to the magnet, actuates mechanism operating to separate the carbons of the lamp to form the arc, and having the relative magnetizations of their respective lifting magnets and polarized armatures, so arranged that the armature in one lamp shall be attracted to its electro-magnet and that in the other shall not be attracted to its electro magnet when a current is sent through the circuit of both lamps, in the manner and for the purpose specified.

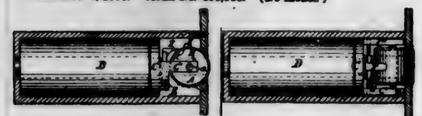


3. Two arc lamps connected in series in reverse order in the same circuit, each being provided with an electro magnet included in the main circuit or in a branch circuit therefrom, and with a permanently magnetized armature adapted to be attracted to the electro magnet when the magnetization of the electro magnet is in one direction, and when so attracted to actuate mechanism operating to separate the carbons to form the arc, and each having the relative magnetizations of its polarized armature and its electro magnet so arranged that a current of given direction sent through both lamps shall cause the electro magnet of one lamp to attract its polarized armature, and the electro magnet of the other lamp to leave its polarized armature unattracted, in combination with a source of electricity included in the same circuit with the lamps, and a switch or other suitable means for reversing the direction of the current through the lamps, in the manner and for the purpose specified.



4. In combination, two electric arc lamps in series in the same circuit, lifting magnets in each of said lamps and a movable armature for each of said lifting magnets controlling the lifting mechanism of its particular lamp, some portion of the magnetic circuit of each of said lifting magnets being permanently polarized, the polarity of the different magnets being so arranged with respect to each other that one attracts its armature while the other does not, whereby the lifting mechanism of only one lamp is energized when a current is sent through both, substantially as described

## 502,472. ELECTRIC ANNUNCIATOR. THEODORE SPENCER, Cambridge, assignor to the American Bell Telephone Company, Boston, Mass. Filed Feb. 7, 1893. Serial No. 461,368. (No model.)



*Claim.*—1. An electric annunciator comprising in combination, an electro-magnet, and a magnetized indicator of cylindrical form, rotatable in front of an aperture so as to display different portions of its surface through said aperture, substantially as described.

2. An electric annunciator consisting of an electro magnet, and a locking and releasing armature, with a magnetized rotative indicator in inductive proximity to the helix of said electro magnet.

3. An electric annunciator consisting of an electro-magnet and a magnetized indicator of cylindrical form, journaled in bearings in inductive proximity to the core of said magnet and rotatable upon an axis at right angles to the axis of the magnet, substantially as described.

4. An electric annunciator consisting of an electro magnet and a locking and releasing armature with a magnetized rotative indicator in inductive proximity to the said electro magnet and with its axis of rotation at right angles to the axis thereof.

5. An electric annunciator consisting of an electro magnet and a locking and releasing armature with a magnetized rotative indicator in inductive proximity to the said electro magnet, the said indicator having one side weighted and being provided with means for limiting its rotation in both directions as set forth.

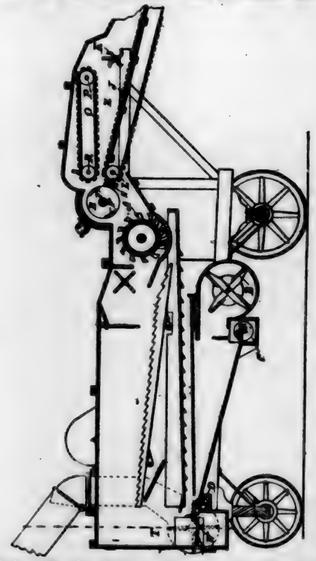
6. The combination of a main telephone circuit extending between a substation and a central station; of an electric annunciator consisting of an electro magnet with a magnetized rotative indicator in inductive proximity thereto in a bridge across the sides of the said main circuit, at the central station; a locking armature normally holding said indicator from rotation, and means at the central station for energizing said magnet and thereby releasing the indicator, substantially as described.

7. The combination with a main telephone circuit terminating at the central station in normally open branches, of an electric-annunciator in a bridge across the sides of said circuit, said annunciator comprising an electro-magnet, an inductive magnetized indicator overweighted on one side so as to rotate when released, and a catch actuated by the armature of said magnet so as to release said indicator when the magnet is energized, substantially as described.

8. The combination with a main telephone circuit extending between a substation and a central station, of an electric annunciator in a bridge across the sides of said circuit and comprising a rotative magnetized indicator, an electro-magnet adapted when energized to reset and hold said armature, a catch actuated by the armature of said magnet and engaging the indicator when the magnet is de-energized, an answering plug and looping cord at the central station, and a source of electrical energy, whereby upon the connection of said plug to a terminal of the main circuit the magnet of the annunciator will be energized, substantially as described.

9. The combination of a main telephone circuit extending between a substation and a central station, and terminating at the latter station in normally open line terminals; of an electric annunciator consisting of an electro magnet with a magnetized rotative indicator in inductive proximity thereto in a bridge across the sides of the said main circuit, said indicator being rotated for resetting the same by the attraction of said magnet with a main circuit transmitter battery common to a number of main line circuits, and an answering plug and looping cords whereby the circuit of said magnet is closed through said battery when a plug is inserted in a terminal of the main circuit to which said annunciator belongs, substantially as described.

## 502,478. THRASHING-MACHINE. WILLIAM H. SPRINGER, Portville, Ind. Filed Feb. 20, 1893. Serial No. 463,045. (No model.)

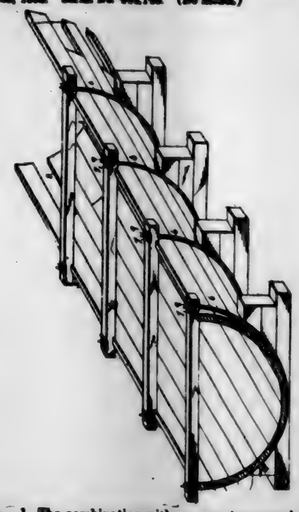


*Claim.*—In a thrashing-machine, the combination with the thrashing-cylinder, a revoluble cutter arranged to cut the straw into short lengths on its way to said cylinder, and suitable separating mechan-

ism arranged to receive the straw and grain after it leaves the thrashing-cylinder, of a closed chamber arranged to receive the straw and chaff after it leaves the separating mechanism, an exhaust-fan arranged to draw the material from said chamber, and a discharge-spout leading from said exhaust-fan, all combined and arranged to co-operate substantially as set forth.

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**502,474.** CONDUIT. GUY SEERLING, North Yakima, Wash. Filed Aug. 26, 1892. Serial No. 444,146. (No model.)



*Claim.*—1. The combination with an open top, round sided conduit, of a tie beam, and a hoop, screw threaded at its ends and adapted to be secured by nuts to the tie beam, substantially as and for the purpose specified.

2. The combination with the open top, round sided conduit, composed of separate staves, of a tie beam spanning the top thereof, and a hoop adapted to be secured upon the end of the tie beam for the purpose of uniting the staves together, and means for securing the ends of the hoops, substantially as and for the purpose specified.

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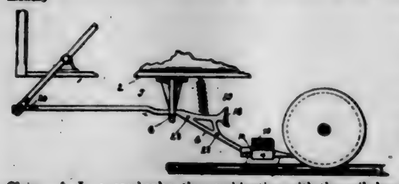
**502,475.** AUTOMATIC RAILWAY-SWITCH. GEORGE W. STEVENS, New Orleans, La. Filed Nov. 22, 1892. Serial No. 452,826. (No model.)



*Claim.*—The combination with an automatic switch, of the switch box having slots, the lever E, jointed with an arm adapted to engage the said slots, the tie bar, the lever D, connected to the tie bar and to the said lever E, and means attached to a locomotive to engage the said arm for operating the switch as set forth.

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**502,476.** CAR-BRAKE. DANIEL H. SULLIVAN and WILLIAM H. GREGG, Rochester, N. Y. Filed May 27, 1893. Serial No. 475,729. (No model.)



*Claim.*—1. In a car-brake, the combination with the rail-shoe, of the rail-gripping lever pivoted thereon having the downward extension for engaging the side of the rail and the tread engaged by the wheel, substantially as described.

2. In a car brake, the combination with the wedge-shaped rail-shoe, of the gripping lever pivoted thereon having the extensions on opposite sides, one for engaging the wheel and the other the rail, substantially as described.

3. In a car-brake, the combination with the rail-shoe, of the rail-gripping lever pivoted thereon having the tread for the wheel, and the downward extension engaging the side of the rail, and the spring for turning the lever on its pivot, substantially as described.

4. In a car-brake, the combination with the wedge-shaped rail-shoe, of the gripping lever pivoted thereon having the tread for the wheel, and the extension engaging the side of the rail, the bar supporting the rail-shoe, and operating means for moving it between the rail and wheel, substantially as described.

5. In a car-brake, the combination with the rail-shoe, and its support, and the stop on the support for engaging the wheel and limiting the movement of the rail-shoe, of the rail-gripping lever pivoted on the rail-shoe having the tread for the wheel, and the extension engaging the side of the rail, substantially as described.

6. In a car-brake, the combination with the longitudinally movable bar having the rail-shoe and the rail-gripping lever thereon, of the supporting spring connected to the bar, the guide or support for the bar, and the operating lever, substantially as described.

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**502,477.** LOCK-NUT. LEWIS TOLAS, Jr., and FRANCIS L. MORTON, Philadelphia, Pa. Filed Apr. 25, 1893. Serial No. 471,745. (No model.)



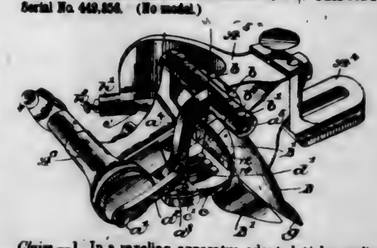
*Claim.*—1. In a lock nut, the combination of a female nut provided with an annular groove, and a male nut provided with an annular projection adapted to jam in the groove of the female nut, substantially as shown and described.

2. In a lock nut, a female nut having the annular cylindrical projections C. D., slit or divided at intervals, in combination with a male nut having the annular cylindrical projection A. adapted to compress the projection C. and expand the projection D. by jamming between them, as shown and described.

3. In a lock nut a female nut having two concentric annular projections, beveled or increasing in thickness from the top down, divided at intervals by saw kerfs, and the inner surface of the outer projection corrugated, in combination with a male nut having one annular projection beveled and the outer surface corrugated, adapted to jam between the two projections of the female nut, substantially as shown, described and for the purpose specified.

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**502,478.** ATTACHMENT FOR MACHINES FOR SEWING LOOPED FABRICS. ADELBERT L. TRAVER, Mellenville, N. Y. Filed Oct. 24, 1892. Serial No. 449,854. (No model.)



*Claim.*—1. In a raveling apparatus adapted to be applied to a running-off machine having stitch points, the combination with the frame-work, the horizontal stud $a^3$, the vibrating lever $a^4$ mounted on said stud, the loop-destroying plate attached to said lever, a rotating shaft, intermediate devices to actuate said lever, the slotted guide-plate B', the short guide-plate B having the vertical edge 8 across which the loop-destroying plate travels, and the raveling plate, one edge of which acts as a support for one face of the material above but close to the stitch pins, combined with a yielding picking-out finger carried by said lever $a^4$ and serrated at its under side and adapted to act against the part of the material containing the destroyed loops, push said material over the top of the raveling plate, and detach the yarn of the destroyed loops, substantially as described.

2. In a raveling apparatus adapted to be applied to a running-off machine having stitch points, the combination with the frame-work, the horizontal stud $a^3$, the vibrating lever $a^4$ mounted on said stud, the loop destroying plate attached to said lever, a rotating shaft, intermediate devices to actuate said lever, the slotted guide-plate B



the short guide-plate B having the vertical edge 8 across which the loop destroying plate travels, and the raveling plate, one edge of which acts as a support for one face of the material above but close to the stitch pins, combined with yielding picking-out fingers carried by said lever $a^4$, and devices to adjust the position of the free ends of the fingers vertically with relation to the edge of the raveling plate, substantially as described.

3. In a raveling apparatus adapted to be applied to a running-off machine having stitch-points, the combination with the frame-work, the horizontal stud $a^3$, the vibrating lever $a^4$ mounted on said stud, the loop-destroying plate attached to said lever, a rotating shaft, intermediate devices to actuate said lever, the slotted guide-plate B', the short guide-plate B having the vertical edge 8 across which the loop-destroying plate travels, and the raveling plate, one edge of which acts as a support for one face of the material above but close to the stitch pins, and provided with the throat piece c, combined with a yielding picking-out finger carried by said lever $a^4$ and serrated at its under side and adapted to act against the part of the material containing the destroyed loops, push said material over upon the top of the raveling plate and detach the yarn of the destroyed loops, substantially as described.

4. In a raveling apparatus adapted to be applied to a running off machine having stitch points, the combination with the frame-work, the horizontal stud $a^3$, the vibrating lever $a^4$ mounted on said stud, the loop destroying plate attached to said lever, a rotating shaft, intermediate devices to actuate said lever, the slotted guide-plate B', the short guide-plate B having the vertical edge 8 across which the loop-destroying plate travels, and the raveling plate, one edge of which acts as a support for one face of the material above but close to the stitch pins, combined with yielding picking-out fingers carried by said lever $a^4$, devices to adjust the position of the free ends of the fingers vertically with relation to the edge of the raveling plate, and springs to keep said fingers down in working position, substantially as described.

5. In a raveling apparatus adapted to be applied to a running-off machine having stitch points, the combination with the frame-work, the horizontal stud $a^3$, the vibrating lever $a^4$ mounted on said stud, the loop-destroying plate attached to said lever, a rotating shaft, intermediate devices to actuate said lever, the slotted guide-plate B', the short guide-plate B having the vertical edge 8 across which the loop-destroying plate travels, and the raveling plate, one edge of which acts as a support for one face of the material above but close to the stitch pins, combined with a yielding picking-out finger carried by said lever $a^4$ and serrated at its under side and adapted to act against the part of the material containing the destroyed loops, push said material over upon the top of the raveling plate, and detach the yarn of the destroyed loops, and with a deflector to keep the work down as described while the loop destroyer acts, substantially as described.

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**502,479.** WINDMILL. RICHARD URBE, Ripley, Mich. Filed July 15, 1892. Serial No. 440,120. (No model.)



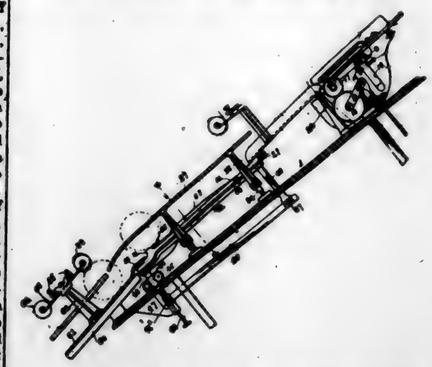
*Claim.*—1. In wind-mills, the combination with the revolving wheel and with the pump-bar reciprocated thereby, of the piston-rod, the shifting connector secured intermediate said pump-bar and rod and the counter-poise leak-tank sustained from said connector and automatically fed by the variable play of said piston-rod, substantially as described.

2. In wind-mills, the combination with the revolving wheel and with the pump-bar reciprocated thereby of the piston rod, the suspended cross-bar pivotally joined by sliding-block thereto, and the counter-poise leak-tank sustained from said cross-bar, substantially as described.

3. In wind-mills, the combination with the wheel-shaft and its pitman and with the pump-bar, of the piston-rod, the suspended cross-bar pivotally joined by sliding block thereto, the leak-tank and the counter-poise sustained respectively from said cross-bar, and the pump discharging into said leak-tank, substantially as described.

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**502,480.** CAN-LABELING MACHINE. CHARLES A. BURT, Rochester, N. Y. Filed Jan. 9, 1892. Serial No. 417,808. (No model.)



*Claim.*—1. In a labeling machine the combination with can supports and a pasting device for applying paste to the cans, of a stationary label support over which the cans pass, a movable plate adapted to engage the labels on the support and movable can supports extending above the labels and connected to said plate, substantially as described.

2. In a can labeling machine, the combination with the label support, of the movable plate for engaging the end of a label, the movable can supports extending above the labels and connected to said plate; substantially as described.

3. In a can labeling machine, the combination with the label support, of the movable plate for engaging the end of a label, the movable can supports extending above the labels connected to said plate and a spring for lifting said plate; substantially as described.

4. The combination of the label support, the vertically movable frame, having a can support thereon, the two connected plates movable on the frame arranged in different planes one of said plates engaging the labels and located in substantially the plane of the support on the frame; as set forth.

5. The combination of the label support, the vertically movable frame, the two connected plates movable on the frame arranged in different planes the higher one engaging the labels on the support; substantially as described.

6. The combination of the label support, the vertically movable frame, the two connected plates on the frame and the spring for moving them in one direction, said plates being arranged in different planes and the higher one engaging the labels on the support; substantially as described.

7. The combination of the label support, the vertically movable frame, the plate engaging the labels on the support and the spring connection between the plate and frame, substantially as described.

8. The combination of the label support, the vertically movable frame, the plate engaging the labels on the support the spring connection between the plate and frame and the adjustable clamp for regulating the movement of the frame, substantially as described.

9. The combination of the label support, the vertically movable frame, having two supports thereon in different planes the two connected plates movable on the frame and in proximity to the first mentioned supports, one of said plates engaging the labels on the label support, substantially as described.

10 The combination of the label support, the vertically movable frame having two supports thereon in different planes, the two connected plates movable on the frame and in proximity to the supports, one of said plates engaging the labels on the label support and can supports connected to the plates and extending above the level of the labels, substantially as described.

11 The combination of the label support, the vertically movable frame having two supports thereon in different planes the two connected plates movable on the frame and in proximity to the supports, one of said plates engaging the labels on the label support, can supports connected to the plates and arranged above the level of the labels on the support and the adjustable friction device for governing the movement of the movable frame, substantially as described.

12. The combination of the label support, the vertically movable frame having two supports thereon in different planes the two connected plates movable on the frame and in proximity to the supports one of said plates engaging the labels on the label support, a spring interposed between the plates and frame, can supports connected to the plates and arranged above the level of the labels on the support, substantially as described.

13. The combination with the movable frame, the label support and the can supports at the sides thereof, of the plate connected to said supports engaging the label at one end and the gage on the frame engaging the other ends of the labels; substantially as described.

14. The combination of the label support, the movable frame surrounding it, a plate engaging the labels on the support located on the frame, the vertical rods connected to the frame, the bar connecting them and an adjustable friction clamp operating on one of the rods, substantially as described.

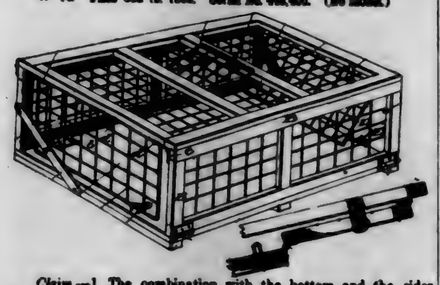
15. In a can labeling machine, the combination with a paste supplying device for the cans, of a label holding device embodying a vertically adjustable frame and the pivoted inclined way between the pasting and label applying devices, substantially as described.

16. The combination with the mechanism for applying paste to the can of the label support over which the can passes, and a pressure roller arranged over the forward end of the label support, substantially as described.

17. In a can labeling machine, the combination of the label support, the frame 42 having the plate 51 thereon, the supports 53 pivoted to the frame and the plates 54 and 55 secured to it, the rods 43 and 49 and the bar 48 connecting them and the adjustable friction clamp 44, substantially as described.

18. In a can labeling machine in which paste is applied to the can bodies, the combination with a label support, of a paste receptacle, a roller therein, and a normally stationary paste belt arranged in contact therewith adapted to apply paste to the can bodies as they pass over it, positive connections as gearing between the roller and the belt for actuating them at the same surface speed, thereby applying paste in stipple to the belt, and also to the can as the latter rolls over it and means, substantially as described, for moving the belt and roller intermittingly, as set forth.

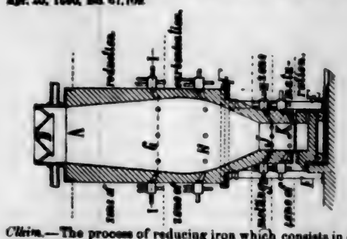
## 502,481. FOLDING CRATE. SAMUEL I. BUTTERS, Clarksburg, W Va. Filed Oct. 10, 1892. Serial No. 448,602. (No model.)



*Claim.*—1. The combination with the bottom and the sides hinged thereto, and a top hinged to the sides, of a spring catch on the end bar of the top, and a pin projecting from the end bar of the adjacent side in the direction of the length of the crate and adapted to engage said catch as the crate is folded into its closed position, substantially as specified.

2. The herein described folding crate comprising a bottom, sides hinged thereto with the hinges at the top and bottom of said sides upon opposite sides thereof, a top having a hinged door with spring-wire catch, ends hinged to the top spring wire catches on the bottom for said ends, diagonal braces pivoted to the bottom and sides and jointed at their centers, a spring catch upon the top bar at one end and a pin projecting from the end of the adjacent side in the direction of the length of the crate to automatically engage said catch as the parts are folded and hold the same in their closed position, substantially as specified.

## 502,482. PROCESS OF MAKING IRON. AUGUST DARDER, Bochum, Germany. Filed June 18, 1890. Serial No. 355,869. (No specimens.) Patented in Germany Sept. 19, 1889, No. D 4,005; in France Oct. 4, 1889, No. 201,107; in Luxemburg Apr. 28, 1890, No. 1,281, and in Belgium Apr. 25, 1890, No. 87,709.



*Claim.*—The process of reducing iron which consists in charging into a blast furnace, a mixture of ore and flux, without carbon, and introducing into the furnace at the zone of preparation a heated gas containing oxygen, at the zone of carburization, carbon superheated steam and heated air; at the zone of melting, a heated combustible gas, superheated steam, air and carbon, and into the crucible containing molten metal a mixture of gas, superheated steam and air.

## 502,483. CALENDAR. WILLIAM E. DAVIS, Philadelphia, Pa. Filed Oct. 28, 1892. Serial No. 450,041. (No model.)




*Claim.*—1. In a calendar, an outer disk provided with a straight slot extending inward from the outer edge toward the center and with the two first century figures arranged in a column at one side of said slot, in combination with an inner disk having the remaining two figures of the said years arranged in columns on lines corresponding to the century slot in the outer disk, and a stationary front provided with a slot of a width corresponding to the combined width of the slot and figure column in the first disk whereby the adjustment of one of said disks with reference to the other will bring any one of said columns on the inner disk to exposure at the slot in the outer disk and so complete the year indications at the slot in the stationary front, substantially as described.

2. In a calendar, the stationary front A provided with the slot $a^3$ having substantially parallel edges, in combination with the disk C provided with slot $c'$ and column $c^3$ of half-year figures at one side thereof, an inner disk D having upon its face columns $d^3$ of the two remaining year figures, and mechanism whereby said disks may be adjusted to bring two half-year columns together side by side at the opening $a^3$ to form complete year indications, substantially as described.

3. In a calendar, the stationary front A provided with segmental slot $a'$, slot $a^3$ running inward therefrom and segment B containing the days of the month, in combination with the outer disk C provided with slot $c'$ and column $c^3$ of half-year figures, the inner disk D provided with annular space $d$ containing the days of the week and columns $d^3$ containing the last two figures of the year and mechanism whereby the said disks may be rotated together, or one independently of the other, substantially as described

4. In a calendar, an inner disk D secured to a pivot pin E, in combination with an outer disk C mounted loosely on said pivot pin, a clutch device connecting the two disks to rotate together positively in one direction and permitting the inner disk to be rotated in the opposite direction independent of the outer, and a stop device to arrest the movement of the outer disk on the said reverse rotation at a fixed point, substantially as described.

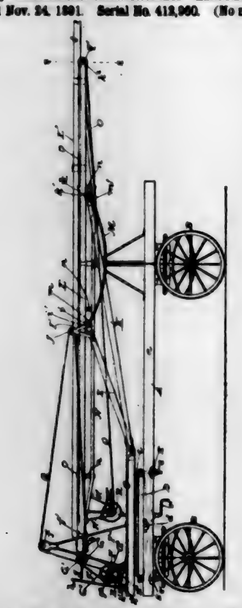
5. In a calendar, the inner disk D, in combination with a pivot pin E to which it is secured, an outer disk C mounted loosely on said pivot pin, and a wire clutch G secured to the front disk and provided with an arm $g$ extending outward on a secant line and having a hook $g'$ at its extremity adapted to engage the outer edge of the inner disk D, substantially as described.

6. In a calendar, an inner disk D, in combination with a pivot pin E to which it is secured, an outer disk C mounted loosely on said pivot pin, a spring wire clutch G fastened to the disk C and having a hooked arm $g$ extending outward on a secant line to engage the edge of the inner disk and another arm $g^3$ extending outward in the opposite direction and provided with bent extremity $g^3$, and a stop block K arranged in the path of the said bent end $g^3$, substantially as described.

7. In a calendar, the stationary front A provided with segmental slot $a'$ and slot $a^3$ leading inward therefrom, and the monthly day segment B, in combination with a pivot pin E mounted in said front, an outer disk C mounted loosely on said pivot pin and provided with a slot $c'$, half-year column $c^3$ and month spaces $c^3$, an inner disk D secured to said pivot pin and having on its face the week day annulus $d$ and straight columns $d^3$ of half-year figures, the wire clutch G fastened to the disk C and having a hooked arm $g$ and stop arm $g^3$, and the stop block K fastened to the back of the front A just below the slot $a^3$, substantially as described.



## 502,484. EXTENSION FIRE-LADDER. LEVI DEDERICK, Albany, N. Y. Filed Nov. 24, 1891. Serial No. 412,990. (No model.)



*Claim.*—1. In a fire ladder, the combination with a truck frame which is supported from the front and rear wheels without liability of being tilted at will in any direction, a leveling frame, a shaft pivoting said leveling frame with the truck frame, so that the former may be tilted only in direction backwardly, and forwardly, a turn platform, a metallic circle interposed between the said turn platform and leveling frame, a vertical king bolt pivoting the turn platform central in relation to the said interposed circle and with the said leveling frame, mechanism, described, interposed between the truck frame and said leveling frame, and capable of being operated at will for tilting the latter forwardly or rearwardly in relation to the direction of said truck frame, substantially as and for the purposes set forth.

2. In a fire ladder, the combination with a truck frame which is supported from the front and rear wheels without liability of its being tilted sidewise in either direction, the leveling frame D jointed with the said truck frame so as to be capable of being changed from a horizontal to an inclined position in either way in direction of the length of the truck frame, a turn platform supported parallel with the said leveling frame and revolving horizontally on the latter, a ladder which has its foot end pivotally connected with standards which are secured to the upper side of the said turn platform, neighboring its axis of rotation, of the co-acting wedges $d'$ $d'$ interposed between the truck frame and said leveling frame and having their inclines running toward each other and connected together by the longitudinal piece $d^3$ and a screw shaft $d^3$ holding with a bracket which is secured with the truck frame and screwing into a screw-threaded bracket connected with the connecting piece $d^3$ substantially as and for the purposes set forth.

3. The combination with a turn platform, a leveling frame, a metallic circle interposed between said turn platform and leveling frame, a vertical king bolt arranged central in relation to said circle, and pivoting the said turn platform with said leveling frame, a truck frame rigidly supported by the wheel gearing of the carriage, a horizontal shaft pivoting said leveling frame with said truck frame, so that the leveling frame and turn platform mounted thereon can be tilted only forwardly and rearwardly in relation to the truck frame, mechanism, described, interposed between the truck frame and the said leveling frame and operated at will for leveling said leveling frame and turn platform mounted thereon, and standards, rigidly secured to said turn platform, for pivoting and holding the foot end of a ladder at all times within the circle of the circle interposed between the leveling frame and said platform, substantially as and for the purposes set forth.

4. In a fire ladder the combination with a ladder having its base end pivoted with a platform, of bracing levers pivoted by their foot ends to the same platform and having with their free ends friction rollers which are applied to the lower sides of the side rails of the ladder and having forwardly projected arms, each carrying a sheave, of hoisting cables having their ends connected with the foot end of the ladder and running over the said sheaves and then to over friction rollers mounted on a plane above the foot end of the ladder to a windlass or spools for winding up said hoisting cables, substantially as and for the purposes set forth.

5. In a fire ladder the combination with a ladder having a pivoted connection with a platform, a pair of bracing levers having their foot ends pivoted to the same platform and receiving by their free moving ends the weight of the ladder, of bracing standards pivoted also to the same platform with their free moving ends so applied as to lift said ladder when they are moved upwardly and forwardly, of a draft chain or connection between the free ends of the said bracing standards and those of the bracing levers and hoisting cables connecting the free ends of said bracing levers with a windlass or spools which may be revolved at will, substantially as and for the purposes set forth.

6. In a fire ladder the combination with a ladder having a pivot connection with a platform and capable of having its rear end elevated or lowered, of the longitudinal bars N arranged parallel with the side rails of the ladder at a short distance from their lower edges and secured at their ends to said side rails—and at intervals by tie posts n n, whereby the ladder may be stiffened and friction rollers working between said side rails and longitudinal bars will be held in place, substantially as and for the purposes set forth.

7. In a fire ladder, the combination with the main ladder of an extension member having grooves in the lower side edges of its side rails, of sheaves mounted on a shaft so as to revolve directly opposite said grooves, and friction rollers made in sections and mounted on the same shaft with the sheaves between said sections of the friction rollers, substantially as and for the purposes set forth.

8. In a fire ladder the combination with a ladder which is capable of being elevated at will, of a platform extended at an angle out from the ladder and capable of supporting a fireman when in service from the ladder, of runners having bearing on the rounds of the ladder and holding the said platform free from contact with said ladders so that hose may be held in place between, substantially as and for the purposes set forth.

9. In a fire ladder, the combination with a ladder of a platform extended at an angle out from the same, a guard between the ladder and said platform and extended upwardly with provision for holding hose, and runners having bearing on the ladder and holding the platform and guard off from the ladder and provision for holding said platform and guard in secure connection with the ladder, substantially as and for the purposes set forth.

10. In a fire ladder, the combination with a ladder having its

foot end pivoted to a platform, and its free end capable of being elevated toward a vertical position, of bracing devices having their foot ends set wider apart than the width of the ladder and pivoted to the said platform at points distant from the point of pivoting of the said ladder, with the bodies of said bracing devices inclined relatively inwardly with their free ends secured with the ladder substantially as and for the purposes set forth.

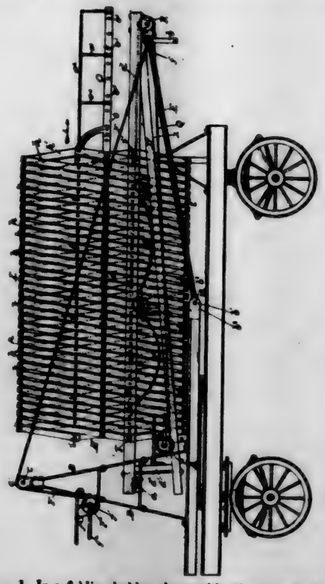
11. In a fire ladder, the combination with the windlass of the hoisting cable of the main ladder, and brake shoe H carried by lever H' pivoted by one of its ends to a piece fixed to the platform, of the pivoted eccentric K' arranged beneath the free end of said lever and secured to hand lever A so as to be turned by the same, substantially as and for the purposes set forth.

12. In a fire ladder, the combination with the ladder capable of being elevated from a horizontal position toward a vertical one, of the platform S capable of being adjusted to a horizontal position, guard-panel S' and adjustable connecting rods $s^3$ between the outer ends of said platform and the said guard panel, substantially as and for the purposes set forth.

13. In a fire ladder, the combination with a ladder having midway between its side rails L L, the middle rail L', of the platform S, guard panel S' and runners $s$ $s$, substantially as and for the purposes set forth.

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**502,485.** FOLDING OR EXTENSION FIRE-LADDER. LEVI DEDRICK, Albany, N. Y. Filed July 19, 1892. Serial No. 440,402. (No model.)



*Claim.*—1. In a folding ladder, the combination with the folding sides H H composed of the two series of bars as A A', pivoted together by pivots $i$ $i'$ as described, and the rounds G G secured by their ends alternately to the said bars A A' of the respective folding sides of the ladder, of the holding devices T securing the foot ends of the said folding sides from moving while the bodies of the said folding sides are allowed to be freely extended and contracted at will, substantially as and for the purposes set forth.

2. In a folding ladder the combination with the folding sides H H composed each of two series of bars as A A' pivoted together by pivots as described, and the rounds G G secured by their ends alternately to bars A A' of the respective folding sides and without serving as pivots, of the guide rails D holding and guiding the said folding sides in their movements when being extended or contracted, and devices described securing the foot ends of said folding sides fixed with the said guide rails, with permission for the free movement of the bodies of the said folding sides in direction of the length of the ladder, substantially as and for the purposes set forth.

3. In a folding ladder the combination with the folding sides H H, pivoted together by the horizontal bars I I I while their bars A A' are pivoted together by the pivots $i$ $i'$, and the studs $i^3$ $i^3$ projecting from the outer ends of said sides, of the pivoted guide rails D D calculated to be raised at will from a horizontal position to or toward a vertical one and the reverse and co-acting with said studs, and the holding devices T securing the foot ends of the said folding sides from being moved in relation to said guide rails, and the means described for applying force to the said folding sides, in a line of direction away from the foot holding device T, and at points rearward and distant from the said foot holding device, substantially as and for the purposes set forth.

4. In a folding ladder, the combination with the folding sides H H having a series of bars I I secured at their ends in a pivotal manner with the said folding sides, and provided with the rounds G G, by which individuals may ascend or descend when the ladder is elevated and extended without using the bars I, guiding devices $i^3$ $i^3$ secured with the outer sides of the said folding sides, of guide rails D, coacting with guiding devices for guiding the said folding sides in their movements of extension and contraction, a device as described for holding the foot ends of said folding sides fixed with the said guide rails, devices for serving as pivots for pivoting the said guide rails to suitable pieces fixed to a platform, and a hoisting mechanism for elevating the free or rear ends of said guide rails, substantially as and for the purposes set forth.

5. In a folding ladder, the combination with the folding sides H H having rounds G G secured to the members or bars A A', composing said sides, but not serving the purpose of pivots for the joints between said bars or said folding sides, guiding devices secured to the outer sides of said folding sides, guide rails D coacting with said guiding devices, the means described for securing the foot ends of said folding sides fixed to the foot ends of the said guide rails, means described for hinging the foot ends of said guide rails with suitable pieces which are fixed to a platform, of the hoisting mechanism described for raising the free ends of said guide rails, and the mechanism described for applying force to the body of the said folding ladder in direction of its length and in a line from the foot end of said ladder toward its free or rear end, substantially as and for the purposes set forth.

6. In a folding ladder, and in combination with its folding sides H H, which unitedly carry the rounds G G described, and having a series of transverse bars secured by their ends between the said sides, of guiding rails made with a truss form of construction and hinged by their connected foot ends with suitable pieces which are secured to a platform and having their rear or free ends free to be elevated at will, and the guiding devices described secured to the outer sides of the folding sides of the said ladder, and co-acting with the said guide rails for guiding the said sides in their movements in direction of the length of said guide rails, substantially as and for the purposes set forth.

7. In a folding ladder and in combination with its folding sides H H having a series of bars secured between, and provided with guiding devices $i^3$ $i^3$, and the co-acting guide rails D D hinged at their foot ends with pieces fixed to a platform, of the inclined bars D' D' secured to said guide rails and inclining outwardly and downwardly in relation to the latter, a sliding mechanism for applying power to said inclined bars, and hoisting or draft lines connecting the said sliding mechanism with a windlass, substantially as and for the purposes set forth.

8. The combination with the guide rails D D, of a folding ladder composed of the folding sides H H and rounds G G working between said guide rails, hinging device connecting the foot ends of said guide rails with pieces secured to a platform, lifting props having their foot ends hinged to the said platform, and their free ends applied against the free ends of the said guide rails and capable of sliding in relation to the same when power is applied to elevate the free ends of said lifting props, substantially as and for the purposes set forth.

9. The combination with the guide rails D D hinged to pieces secured to a platform, and a folding ladder constructed as described, held and guided by said guide rails and having its foot end secured fixedly to the front ends of the same with provision for the free movement of the body away from the fixed ends thereof, of the lifting props E E, having their foot ends secured by a jointed connection to the platform the said guide rails are hinged with, friction rollers supported from the free ends of the said lifting props and having bearing against the said guide rails or adjuncts thereto, from their lower sides, a windlass and a hoisting rope connecting the free ends of said props with said windlass, mechanism for holding the windlass from uncoiling the hoisting rope, a windlass secured to the foot end of the guide rails with mechanism to prevent it turning back, a hoisting or draft line having one end secured to the said windlass and extended to the free ends of the guide rails and running over a wheel or pulley mounted on either of said guide rails and thence toward the fixed foot end of the folding ladder and engaging with it at one or more points rearward of the point of its fastening with said guide rails, substantially as and for the purposes set forth.

10. In combination with the hinged guide rails of a folding ladder and the inclined bars D' D' secured to said guide rails, of the lifting props E E having their foot ends jointed to a stationary piece and their free ends in sliding contact against the lower sides of the said bars D', a windlass having a cone form drum, a friction roller mounted in bearings on a plane above the plane of the axis of the said windlass and a hoisting rope having one end secured to said cone like drum and then running to and over the said friction roller, and thence to the free ends of the said lifting props, substantially as and for the purposes set forth.

11. The combination with a folding ladder composed of the folding sides H H and rounds G G, all as described, and guiding rails securely holding the foot ends of the said folding ladder sides, from moving, and guiding the extendible portions of said sides in their movements when being extended and contracted, of a draft line secured to the extension portion of the said ladder so as to be capable of pulling on the same in direction of the length of the ladder and at points rearwardly of the points at which the foot ends of the folding sides are held with the guiding rails, a windlass provided with a ratchet wheel and pawl for operating said draft line, and a brake under control of an operator, the said windlass being carried by the said guide rails, in all its movements from a horizontal position to a vertical one and the reverse, substantially as and for the purposes set forth.

12. The combination with the folding sides H H of a ladder, and rounds G G secured with the members A A' of said folding sides without serving as pivots and arranged between said sides, of the bars I I pivoting the members A A' of said folding sides together and holding each side with the other and permitting the said rounds G G to be used for ascending and descending the said ladder when extended and in a vertical or an inclined position, substantially as and for the purpose set forth.

13. The combination with the folding sides H H composed of the two series of bars or members A A', pivots $i$ $i'$ and horizontal bars I integral with the pivots $i'$ of the rounds G G secured alternately by their ends with said bars A and A' without operating as pivots on which said bars may work, substantially as and for the purposes set forth.

14. The combination with the folding sides H H composed each of two series of bars A A' secured together in a jointed manner by pivots $i$ $i$ $i'$, and connected together by bars I I, and rounds G G held between said folding sides, of studs $i^3$ $i^3$ provided with friction thimbles, and guide rails D D co-acting with the said studs for supporting the moving portions of the bodies of the said folding sides and means for securing the foot ends of said folding sides fixed to the guide rails, substantially as and for the purposes set forth.

15. The combination with the guide rails D D and the inclined stiffening bars D' D' secured to the latter and a platform and a hinge connection between the said guide rails and said platform, of the lifting props E E composed of the pieces $e$ $e'$ $e^3$ and the rods, and hinge joints between the said platform and the foot ends of the said lifting props and friction rollers $E^3$ $E^3$ mounted in bearings secured by the free ends of said lifting props, and having bearing against the lower side edges of the inclined bars D' D', substantially as and for the purposes set forth.

16. The combination with the folding ladder L capable of being extended at will and elevated, of the supplemental ladder O and platform O' pivoted with said supplemental ladder, and capable of being folded at will, substantially as and for the purpose set forth.

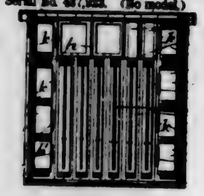
17. The combination with a folding ladder capable of being extended and contracted at will, of the supplemental ladder O provided with extended slotted side rails $o$, and the platform O' pivoted to said supplemental ladder and curved guide pieces guiding the movement of said platform, substantially as and for the purposes set forth.

18. The combination with the folding sides H H of a folding ladder composed of bars A A' pivoted together and the cross bars I I connecting each of the said folding sides with the other, of the folding slats $m$ $m$, pivots $n$ $n$ and pivots $n'$ holding said folding slats pivoted with said cross bars I I substantially as and for the purposes set forth.

19. The combination with a folding ladder of the supplemental ladder O formed by side rails $o$ and rounds $o'$, the said side rails being provided with slots $s$ for engagement with the rounds of the folding ladder, substantially as and for the purposes set forth.

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**502,486.** BEEHIVE. DANIEL A. DEWEY, Columbia, Pa. Filed Mar. 22, 1893. Serial No. 467,923. (No model.)





*Claim.*—1. A bee-hive composed of a series of frames and doors closing the sides of the frames, the said frames and doors being hinged together at one side of the hive, and detachably secured together at the opposite side, substantially as described.

2. A bee-hive composed of a series of frames, doors closing the sides of the frames the said frames and doors being hinged together at one side of the hive and an elastic securing device at the opposite side, substantially as described.

3. A bee-hive composed of a series of frames, doors closing the ends of the frames, and a top, the said frames and doors inclosing a space for surplus frames above the main body of the hive, substantially as described.

4. A bee-hive composed of a series of frames, and doors closing the ends of the frames, said frames and doors being separately hinged together at one side of the hive, and detachably secured together at the opposite side, substantially as described.

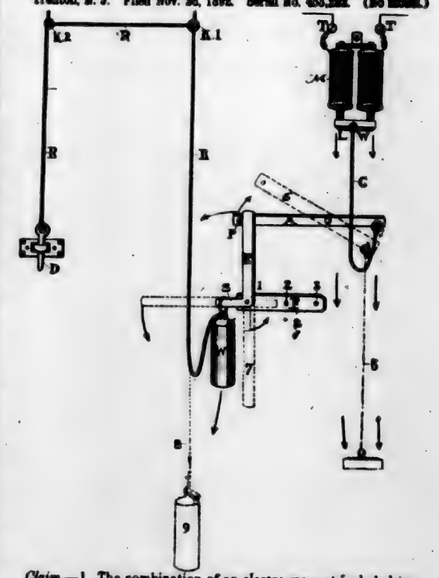
5. A bee-hive composed of series of main hive frames, a storage frame and door at each side of said main hive frames, the said main hive frames, storage frames and doors being separably hinged at one side of the hive and a detachable securing device at the opposite side of the hive, substantially as described.

6. In a bee-hive the combination with the main hive frames extending above the main body of the hive and shouldered at the top as described, of the doors closing the ends of the frames having the ridges, the covering board and flanged top, substantially as described.

7. A bee-hive frame having its top bar composed of two parts, one of said parts being rigidly secured to the standards at one side of the center of said standards, and the other part detached from the standards and adapted to be secured to the other part forming therewith a complete top bar the full width of the standards and holding the comb foundation between them, substantially as described.

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**502,487.** TRIP FOR RELEASING HORSES. CHARLES C. DRAKE, Trenton, N. J. Filed Nov. 26, 1892. Serial No. 453,282. (No model.)



*Claim.*—1. The combination of an electro-magnet included in a closed circuit, a weighted armature held normally raised thereby, and a tripping mechanism consisting of the lever A. pin P. lever E. with arm S. arranged to be actuated by the fall of the armature on a break in the circuit, thereby releasing the heavy weight W substantially as set forth.

2. The combination of an electro-magnet included in a closed circuit, a weighted armature held normally raised thereby, a tripping mechanism consisting of lever A. pin P. lever E. arm S. arranged to be actuated by the fall of the armature on a break in the circuit, the heavy weight W. cord R. and fastening D. as shown and described.

3. The combination of an electro-magnet included in a closed circuit, a light weighted armature held normally raised thereby, the cord C. lever A. lever E. arm S. weight W. cord R. and fastening D. substantially as set forth.

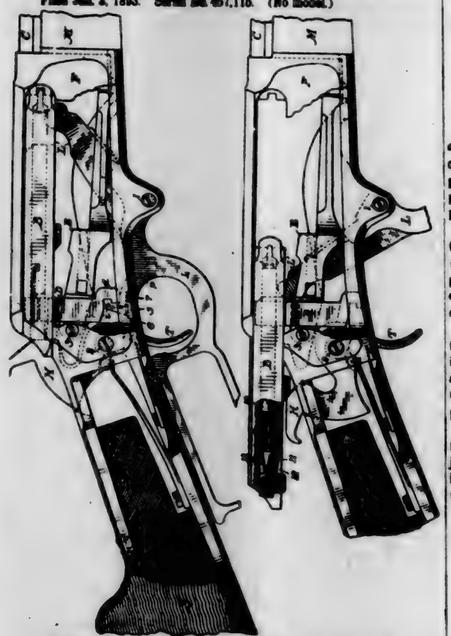
**502,488. SPRING-TOOTH FOR HARROWS.** HORATIO GALE, Albion, Mich., assignor to the Gale Manufacturing Company, same place. Filed May 13, 1891. Serial No. 392,603. (No model.)



*Claim.*—1. An arched flat spring tooth for harrows having a broad surface presented to the line of draft throughout the main portion of its length, and having at its lower extremity a detachable point or main earth engaging portion and a narrower earth engaging portion between said point and the main body of the tooth, said narrower portion being detachable from the main body of the tooth and separable from the point, but rigidly secured to each, substantially as described.

2. An arched spring tooth for harrows having a broad surface presented to the line of draft throughout the main portion of its length and having at its lower end a detachable point and having a narrower portion extending from the main body to the said point, said narrower portion being detachable from the main body and having a recess at its upper end to receive the end of the main body, substantially as described.

**502,489. BREECH-LOADING GUN.** LEWIS L. HEPBURN, New Haven, Conn., assignor to the Marlin Fire Arms Company, same place. Filed Jan. 3, 1893. Serial No. 457,115. (No model.)



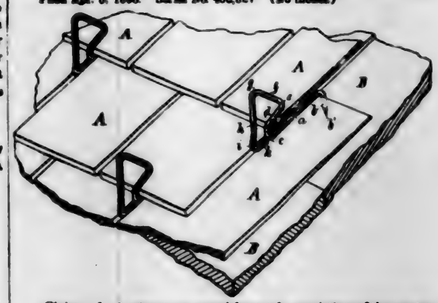
*Claim.*—1. The combination of the sliding breech bolt, B, the locking bolt, D, arranged to move substantially at right angles to the breech bolt and enter a recess to lock the same, provided with a recess, 4, on its rear side, and the lever, L, provided with the projection, i, arranged to engage with said recess draw down the locking bolt D and disengage itself therefrom while moving the breech bolt backward, substantially as described.

2. The combination of the sliding breech bolt, B, the locking bolt, D, arranged to move substantially at right angles to the breech bolt and enter a recess to lock the same, provided with a recess, 4, on its rear side, the lever L provided with the projection, i, arranged to draw down the locking bolt D and disengage itself therefrom while moving the breech bolt backward, and the frictional locking bolt, 5, arranged in the lever L below the projection, i, in position to engage with the notch, 6, in the frame substantially as described.

3. The combination of the sliding breech bolt, B, provided with a longitudinal passage through or in it for the firing pin, and with a recess or notch, 12, for the locking bolt, the locking bolt, D, arranged to enter said recess and lock the breech bolt, the part, 10, of the firing pin extending backward to said recess, 12, and the part of the firing pin, 11, arranged to drop downward in said recess and bear against the forward side of the same when the locking bolt is withdrawn, substantially as described.

4. The combination of the sliding breech bolt, B, provided with a longitudinal passage through or in it for the firing pin, and with a recess or notch, 12, for the locking bolt, the locking bolt, D, arranged to enter said recess and lock the breech bolt, the part 10 of the firing pin extending backward to said recess 12, the part, 11, of the firing pin arranged to drop downward in said recess and bear against the forward side of the same when the locking bolt is withdrawn, and the spring, 13, arranged to press the part, 11, of the firing pin behind the shoulder of the recess substantially as described.

**502,490. SNOW-GUARD.** JOHN R. HILLER, Hyde Park, Mass. Filed Apr. 3, 1893. Serial No. 468,827. (No model.)



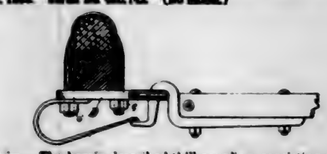
*Claim.*—1. A wire snow guard for roofs, consisting of the portion a adapted to rest in the joint between two adjoining slates or shingles of a course, the part *b b'* to secure the guard to the roof, and the portions *d*, *f* and *h* projecting above the roof and forming the guard proper, the portion *h* forming a brace to strengthen and support the portions *d* and *f*, substantially as set forth.

2. A wire snow guard for roofs, secured to the roof by suitable fastening devices as described and having the portion *d* projecting upward from the surface of the roof, the portion *f* extending in a line parallel with the courses of the slates or shingles and the portion *h* extending obliquely from the portion *f* to the roof below the portion *d*, for the purpose set forth.

3. A wire snow-guard for roofs, secured to the roof by suitable fastening devices as described, having the portions *d*, *f* and *h* projecting above the roof, forming the guard proper, the portion *h* forming a brace to strengthen and support the portions *d* and *f* and the portion *k* extending along the surface of the roof to the portion *d* for the purpose set forth.

4. A wire snowguard for roofs, secured to the roof by suitable fastening devices as described, having the portions *d*, *f* and *h* projecting above the roof, forming the guard proper, the portion *h* forming a brace to strengthen and support the portions *d* and *f*, substantially as set forth.

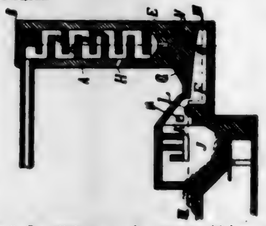
**502,491. THILL-COUPLING.** JOHN F. HERPEL, Grand Rapids, Mich., assignor of one-half to Swan J. Turnvall, same place. Filed Jan. 23, 1893. Serial No. 460,142. (No model.)



*Claim.*—The herein-described thill-coupling, consisting of the ordinary clip, designed to partially encircle the axle of the vehicle; a bar, designed to engage the ends of the limbs of said clip and projecting forward beyond said clip, said bar having an opening in its said projecting end; a strap, designed to be secured to the thill and having at its rear end an inverted U-shaped hook engaging the forward end of said bar, the inner member of said hook extending through the opening in said bar and being formed with a rearward extension; a loop spring, having in its rear end an opening through which a limb of the clip projects, said rear end of the spring being located in contact with said bar and the forward end thereof pressing against the upper side of said extension of the hook; and nuts on the ends of the limbs of the clip for removably securing the spring, clip and bar in position, substantially as set forth.



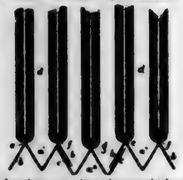
**502,492. PROCESS OF REFINING IRON AND APPARATUS USED THEREFOR.** HERMANN HÖVEN, Hagen, Germany. Filed July 16, 1892. Serial No. 440,288. (No model.) Patented in Germany Sept. 16, 1891, No. 62,879; in France Oct. 3, 1891, No. 216,582, and in Belgium Mar. 16, 1892, No. 74,671.



*Claim.*—1. In refining iron the process which consists in leading the fluid metal in a thin stream through a zigzag channel forming cataracts and in causing the reducing and heating gases to pass also through the said channel in opposite direction along and through the metal stream.

2. The furnace consisting of a vertical part A having a feeding channel B, alternately arranged steps C and passages between their open edge and the corresponding wall of the furnace, the metal channels G leading from the bottom E of the upright part A into the hearth F below the said part A, and the gas channel N making a communication between the upper space in the hearth and the space below the lowest one of the steps C, in combination with a gas generator I placed in front of the hearth F.

**502,493. BOOKBINDING.** DANIEL E. HOWE, Portland, Oreg. Filed Apr. 29, 1892. Serial No. 431,210. (No model.)



*Claim.*—A book having a stub-strip consisting of a series of separate alternating sections, *a'* and *a*$^{4}$, made of suitable material, each of said sections having unattached ends, *b*, and *c*, projecting conversely with respect to each other, the end folds of the respective sections adapted, when attached to the bridge strips, to interlock with each other, substantially as described and set forth.

**502,494. ELECTRICAL HEATER.** CHARLES E. JONES, Elgin, Ill. Filed Aug. 1, 1892. Serial No. 401,348. (No model.)



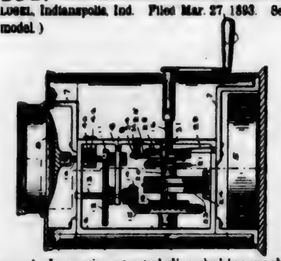
*Claim.*—1. The combination of a body of iron or other metal possessing electrical conductivity, an insulated electric circuit coiled around two or more portions of said body in opposite directions and an electric generator connected with said circuit, whereby conflicting molecular action may be excited in said body and heat generated; all substantially as shown.

2. The combination of a hollow base, provided within its chamber with a series of projections connected therewith, an electric circuit a portion of which is insulated and coiled around said projections in opposite directions; a top plate or cover having a handle and openings for the introduction of said circuit; means for firmly attaching said top plate or cover to and upon said hollow base, and an electric generator connected with said circuit; all substantially as described.

3. The combination of a hollow base, provided within its chamber with a series of projections connected therewith, an electric circuit a portion of which is insulated with a nonelectric and nonheat conducting material and coiled around said projections in opposite directions; a top plate or cover having a handle and openings for the introduction of said circuit; means for firmly attaching said top plate or cover to and upon said hollow base, and an electric generator connected with said circuit; all substantially as described.

4. The combination of a hollow base provided within its chamber with a series of projections connected therewith; an electric circuit a portion of which is insulated and coiled around said projections respectively in opposite directions; a top plate or cover having openings for introducing said circuit and provided with a handle whose ends are supported in hollow thimbles having openings in their lower edges and attached to said top plate or cover; means for firmly attaching said top plate or cover to and upon said hollow base; and an electric generator connected with said circuit; all substantially as shown.

**502,495. COIN-CONTROLLED DICE-SHAKING MACHINE.** OSCAR G. KLOSEL, Indianapolis, Ind. Filed Mar. 27, 1893. Serial No. 467,740. (No model.)



*Claim.*—1. In a coin actuated dice shaking machine a slot and way through which the deposited coin passes, an inclined extension and a vertically extending lip formed on the lower end of such way, a pivoted lever having arms on either side of such lip and extension adapted to engage with and be moved by the deposited coin whereby such lever is first disengaged from a locking wheel of the operating mechanism, the movement of such mechanism turning such wheel which further moves the lever and releases the coin from the arms of the lever and the lip of the way.

2. In a coin actuated dice shaking machine, a way through which the deposited coin passes, a pivoted lever having arms on either side of a lip, and an inclined extension of such way, a receiver below such extension to receive the coin from such way, and in which it may be viewed, a movable rod closing the bottom of such receiver, and means for operating such rod for releasing the coin, the arms of the lever above catching the coin when first deposited, such coin being released after the receiver below is empty and its bottom closed.

3. In a coin actuated dice shaking machine, a receiver in which the deposited coin may be viewed, a rod working across its open bottom to hold each coin therein, one end of such rod pivoted to a spring lever, such lever centrally pivoted and its end engaging with a pin on one of the wheels of the operating mechanism, whereby it is tripped and the coin in the receiver withdrawn.

4. In a coin actuated dice shaking machine, a pivoted lever having arms on either side of a lip and inclined extension to the end of the coin way or channel, and adapted to receive and be moved by the deposited coin, the inner end of such lever engaging with a tooth on a disk of the operating mechanism, the engagement of the coin with the arm of such lever tilting it and disengaging it from the toothed disk, the movement of such mechanism further tilting such lever, whereby the coin is released from the way.

5. In a coin actuated dice shaking machine, a frame, a shaking cup mounted on a vertical shaft having bearings therein and operated through suitable connections by a spring actuated sleeve loosely mounted on a horizontal shaft below, a disk mounted on such shaft having a pawl engaging with a tooth on such sleeve, whereby it may be turned against the tension of its spring with the shaft, and a roller for engaging such pawl and thereby allowing the sleeve to be revolved, and through its connections the dice shaker.

6. In a coin actuated dice shaking machine, a frame, a vertical shaft having bearings in such frame with a shaking cup mounted thereon, such shaft connected by pinions and gears with a gear loosely mounted on a horizontal shaft having bearings in such frame, a spring actuated sleeve loosely mounted on such shaft, and a toothed wheel thereon engaging with pawls on such gear, a stop engaging with a

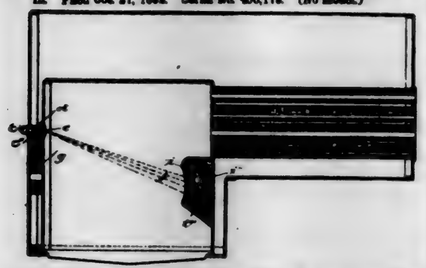
tooth on a disk formed on the other end of such sleeve, and means for turning such sleeve and releasing such pawl from engagement with its disk, whereby the shaking cup is revolved.

7. In a coin actuated dice shaking machine, a frame, a vertical shaft having bearings in such frame with a shaking cup mounted thereon, a pinion on such shaft gearing with a larger one mounted on a shorter shaft, a beveled gear also mounted on the latter shaft engaging with a larger one loosely mounted on a horizontal shaft, pawls on the face of such gear engaging a toothed wheel on a spring actuated sleeve loosely mounted on such shaft, and a brake bearing on the shaking cup shaft, whereby the shaking cup and its connections will be moved in but one direction.

8. In a coin actuated dice shaking machine, a frame, a shaking cup mounted on a shaft having bearings therein and operated through suitable connections by a spring actuated sleeve loosely mounted on a shaft below, a toothed wheel and a disk mounted on such shaft, such disk having a pawl engaging a tooth on such sleeve, and a roller engaging such pawl and allowing the sleeve to be revolved by its spring, a fixed spring engaging such toothed wheel, and means for turning such shaft and with it the sleeve against the tension of its spring.

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**502,496. SMOKE-PREVENTER.** WILLIAM LAWRENCE, Chicago, Ill. Filed Oct. 27, 1892. Serial No. 450,179. (No model.)

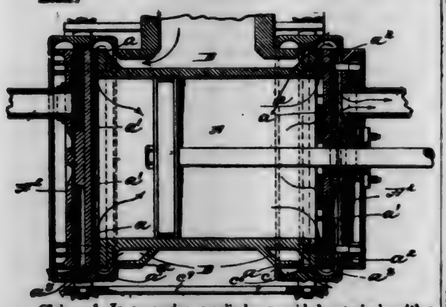


*Claim.*—1. In a smoke preventing device for steam generators, the combination of the steam pipe (*a*) having a valve (*b*) and coupling device (*c*''), the distributing steam pipe (*c*), the horizontal or nearly horizontal branch steam pipes (*c*') each of which is provided with a nozzle having two holes drilled in such way that the axes of the holes are divergent and inclined downward so as to strike bridge wall above the grate bars, and the inclosing sleeves or tubes for branch pipes to permit of their easy and simultaneous withdrawal, substantially as specified herein.

2. The combination in a boiler of the internally fired or firebox type, of the smoke preventing device having a steam pipe, a distributing pipe, and branch pipes, with a fire resisting protector supported against the fire box plates to receive the impact of steam jet and thereby protecting the said plates from injury.

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**502,497. STEAM-ENGINE VALVE.** HORACE W. LOUDENBY, Wilkesbarre, Pa. Filed Sept. 27, 1892. Serial No. 447,010. (No model.)



*Claim.*—1. In an engine, a cylinder provided exteriorly with a steam chamber, the cylinder heads hollowed out to form exhaust chambers, the inlet and exhaust ports located between the ends of the cylinder and the heads thereof and the sleeve valves controlling said ports and having packing rings forming the valves proper, as specified.

2. In an engine, the cylinder provided with an annular steam chamber, the cylinder heads hollowed out to form exhaust chambers and ports, the inlet ports between the cylinder ends and heads, the sleeve valves arranged exterior to the said cylinder and steam chamber and provided with annular grooves and central packing rings forming the valves proper, as specified.

3. In an engine, the combination with a steam chamber arranged exterior to the cylinder and forming inlet ports and passages, of the sleeve valves controlling said ports and being provided with annular grooves forming continuations of said passages, the cylinder heads hollowed out to form exhaust chambers and ports and the radially disposed blocks secured between the inner faces of said heads and the ends of the cylinder, as specified.

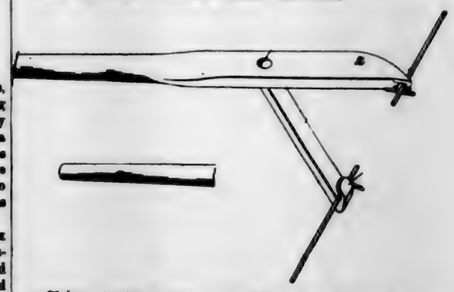
4. In an engine, the combination with a cylinder of an annular steam chamber arranged exterior to the same, inlet passages *a* between the said cylinder and chamber, the cylinder heads hollowed out to form exhaust ports and chambers and secured to said cylinder forming admission ports *a'*, the sleeve valves controlling said exhaust admission and inlet ports, provided with annular grooves and packing rings, the latter being located between said grooves, as specified.

5. In an engine, the cylinder A, the steam chamber B, the heads $A^1$ and the inlet, admission and exhaust ports *a*, *a'*, $a^3$, as described, and the sleeve valves arranged exterior to said cylinder and controlling said ports, provided with two or more annular grooves and the packing rings forming the valves proper arranged between said grooves, as specified.

6. In a valve gear, the cylinder being provided exteriorly with a steam jacket, the radially disposed admission ports or communicating passages between said cylinder and jacket, the exhaust ports adjacent to said admission ports, and the sleeve valves being provided with annular grooves and packing rings between said grooves, the central ring thereof forming the valve proper, substantially as and for the purpose described.

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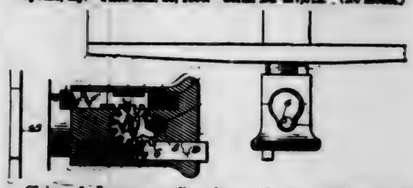
**502,498. WIRE-STRETCHER.** JOSHUA C. PALMER, Dufflin, Tex. Filed Mar. 9, 1893. Serial No. 465,333. (No model.)



*Claim.*—A wire stretcher comprising a lever having one end rounded to form a heel and bifurcated to form a claw, and a rigid arm having one end removably pivoted intermediate of the ends of the lever, and extending from the pivot to the claw end of the lever, and having its outer end bent laterally of the stretcher and back on itself to form a catch, at one side of it substantially as described.

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**502,499. CAR-COUPLING.** CHARLES W. PATTON, Olds Falls, Ind., assignor of two-thirds to John J. Ramsey and Thomas J. Ramsey, Shelbyville, Ky. Filed Mar. 23, 1892. Serial No. 427,312. (No model.)



*Claim.*—1. In a car coupling, the combination of a draw-head, a pinion provided with a lug for engaging a coupling pin, and a rack-bar mounted on the draw-head and meshing with the pinion and projecting from the draw-head to be forced inward in coupling, substantially as and for the purpose described.

2. In a car coupling the combination of a draw-head, a pinion provided with a lug for engaging a coupling pin, a rack-bar mounted on the draw-head and meshing with the pinion and projecting from the draw-head to be forced inward in coupling, and a spring for holding the lug in engagement with the coupling pin, substantially as described.

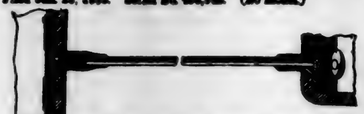


3. In a car coupling, the combination of a draw-head, a pinion provided with a lug to engage a coupling pin to hold the latter elevated, the oppositely arranged rack-bars meshing with the pinion and projecting beyond the draw-head at the front and back of the same, and a spring for holding the lug in engagement with a coupling pin, substantially as described.

4. In a car coupling, the combination of a draw-head provided with ways and having a recess, a pinion mounted in the recess and provided with a lug to engage a coupling pin, oppositely disposed rack-bars meshing with the pinion and projecting from the front and back of the draw-head and provided with recesses, pins arranged in the recesses, and spiral springs arranged at the inner ends of the rack-bars, substantially as described.

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**502,500. CYCLE-WHEEL.** ALBERT PERKINS, Chicopee, Mass., assignor to the A. G. Spalding & Brothers, New York, N. Y., and the Lamb Knitting Machine Manufacturing Company, Chicopee Falls, Mass. Filed Jan. 28, 1893. Serial No. 459,942. (No model.)

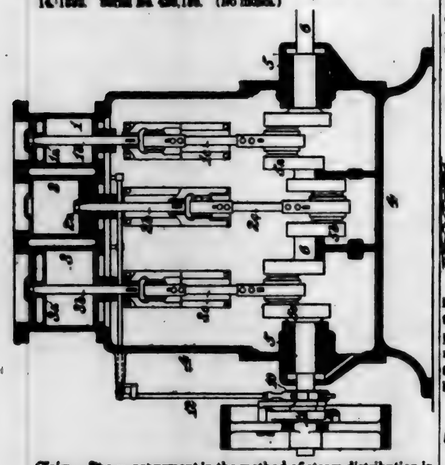


*Claim.*—1. The combination with the hub having the spoke flanges provided with radial perforations, of metallic eyelets headed at their inner ends, fitting said perforations and projecting out through said flanges, and spokes fitting in said eyelets and having at their inner ends heads resting against the inner ends of the eyelets.

2. The combination with the hub having spoke flanges provided with radial perforations spherically reamed upon the inner side of the flange, of headed eyelets fitting the spherically reamed perforations and projecting out through the flanges, and spokes of uniform diameter fitting in said eyelets and provided at their inner ends with heads preventing withdrawal outward therefrom.

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**502,501. METHOD OF STEAM DISTRIBUTION IN TRIPLE EXPANSION ENGINES.** FRANCIS M. RITES, Allegheny, Pa. Filed Apr. 14, 1893. Serial No. 470,196. (No model.)

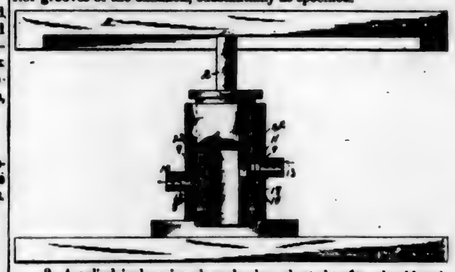


*Claim.*—The improvement in the method of steam distribution in triple expansion engines which consists in expanding steam in all the cylinders, intermediately expanding through a receiver from the high pressure to the intermediate cylinder, effecting a double high pressure compression, that is to say, a compression in both the receiver and in a high pressure clearance space to initial pressure in each case, effecting intermediate cylinder compression to initial pressure, directly expanding from the intermediate to the low pressure cylinder, and effecting a low pressure cylinder compression which is variable both in period and degree, substantially as set forth.

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**502,502. DIRECT-ACTING ENGINE.** WALTER H. RENO and MONTHEL D. RENO, Fulton, N. Y. Filed July 20, 1892. Serial No. 441,094. (No model.)

*Claim.*—1. In combination with a cylindrical piston or plunger provided with inlet and exhaust ports, of a longitudinally slidable ring-valve embracing the piston or plunger and provided in its inner surface with longitudinal grooves or channels, and in its outer surface with annular channels which communicate at intervals with the interior grooves of the channels, substantially as specified.



2. A cylindrical or ring-shaped valve adapted to fit a shouldered and ported piston or plunger and provided with interior longitudinal grooves or flutes and exterior intersecting steam channels, substantially as specified.

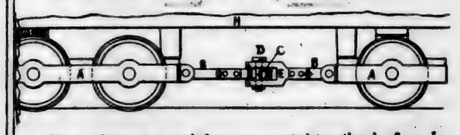
3. The combination of a cylinder provided with interior annular steam channels connected, respectively, with inlet and exhaust ports, the piston or plunger provided with an interior cavity, and inlet and exhaust ports, and a sliding ring-valve mounted upon the piston, provided with exterior inlet and exhaust channels, and ports which communicate with the interior of the piston, substantially as specified.

4. The combination of a cylinder provided with interior steam-channels and inlet and exhaust ports, the piston having an interior cavity and provided with a reduced portion having a shoulder at its upper end and a piston-head forming a shoulder at its lower end, and the sliding ring-valve mounted on the reduced portion of the piston and provided with annular exterior steam channels communicating with the interior of the piston through ports, substantially as specified.

5. The combination with a cylinder provided with inlet and exhaust ports, and annular steam channels, of a ported piston or plunger having a reduced portion terminating at opposite ends in shoulders or stops, a slidable ring-valve fitting said reduced portion and provided with steam-ports, and pressure-springs attached to the inner walls of the cylinder to bear against the outer surface of said ring-valve.

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**502,503. TRUCK FOR STREET-CARS.** HENRY F. SHAW, Boston, Mass., assignor to the Shaw Radial Car Truck Company, same place. Filed Oct. 20, 1892. Serial No. 450,367. (No model.)



*Claim.*—Street car truck frames connected together by four oblique bars, the outward ends of which are pivoted to the opposite truck frames and their inward ends adjustably connected to the opposite ends of short central bars having a sliding pivotal joint connection, whereby the said central sliding pivotal joint may be adjusted to a point eccentric to the pivots of the said truck frames to the car body, substantially as described, as and for the purposes set forth.

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**502,504. PROCESS OF MAKING PARA-PHENETOL CARBAMIDE.** HERMANN THOMS, Berlin, Germany. Filed Nov. 18, 1892. Serial No. 452,468. (Specimens.)

*Claim.*—1. The process of obtaining paraphenetol carbamide, by the reaction of a para salt of phenetidin on a substance such as common urea in about the proportions set forth.

2. The process of obtaining para-phenetol-carbamide, which consists in boiling an aqueous solution of para-phenetidin-hydrochlorid with common urea in about the proportions set forth.

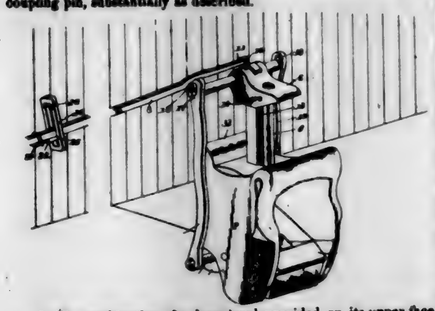
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**502,505. CAR-COUPLING.** FREDERICK TIEMANN, Rice, Minn. Filed Apr. 24, 1893. Serial No. 471,816. (No model.)

*Claim.*—1. In a car coupling, the combination of a draw-head, a coupling pin, means for holding a coupling pin elevated, and a pivoted clamp mounted in the draw-head and having its rear portion extended upward and adapted to be engaged by a link, whereby the

clamp is turned on its pivot and is caused to clamp the link, substantially as described.

2. In a car coupling, the combination of a draw-head, a swinging weight mounted beneath the draw-head, link bars arranged at the sides of the draw-head and having their lower ends connected with the weight, a block connected with the upper ends of the link bars, a coupling pin secured to the block, and a lever for raising the coupling pin, substantially as described.



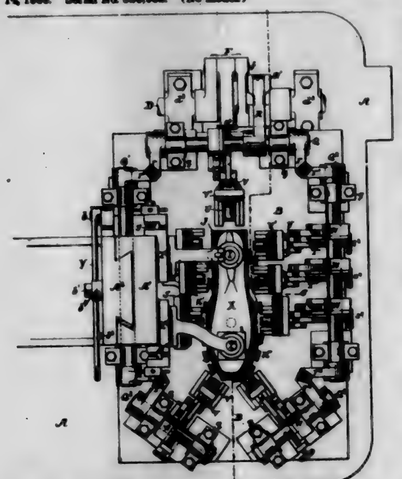
3. The combination of a draw-head provided on its upper face with an upwardly extending guide bar, a block slidingly mounted on the guide-bar, a coupling pin secured to the block and carried thereby, a swinging weight connected with the block, and an operating lever connected with the block, substantially as described.

4. The combination of a draw-head provided with depending sides, a pivoted link clamp mounted in the draw-head, a swinging weight journaled between the lower ends of the sides, a guide bar extending upward from the draw-head, a sliding block mounted on the guide-bar, a coupling pin secured to the block, link bars connecting the block with the swinging weight, and means for raising the block, substantially as described.

5. The combination of a draw-head, a swinging weight mounted beneath the same, a block connected with the weight and provided with an eye, a coupling pin secured to the block, an operating lever fulcrumed between its ends, and provided at its inner end with a recess engaging the eye of the block, and provided at its outer end with a sliding latch, and a keeper receiving the outer end of the operating lever and provided with upper and lower notches to be engaged by said latch, substantially as described.

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**502,506. LASTING-MACHINE.** EDWARD WHITTEN, Hammonton, and DAVID LAKE and VINCENT P. LAKE, Pleasantville, assignors to the Whitten-Lake Lasting Machine Company, Pleasantville, N. J. Filed Oct. 14, 1892. Serial No. 448,962. (No model.)



*Claim.*—1. The combination in a shoe lasting machine, of the last support, mechanism for vertically raising said support, lasting nippers mounted around the said support to engage with the upper of the shoe to be lasted, mechanism for closing the jaws of said nippers upon the upper, pressing pads also arranged around the last beyond the nippers, with mechanism for moving said pads first against the sides of the upper when it is tightly stretched upon the last and for turning said pads under the last when the upper is released from control of the lasting jaws, substantially as specified.

2. The combination in a lasting machine, of the nippers for engaging the upper, said nippers being independently mounted in the machine, each nipper being provided with a smooth face which will slide upon the upper, and a shoulder or rib for engaging with the upper, with mechanism for closing said nippers, substantially as specified.

3. The combination in a lasting machine, of the last support, the series of nippers arranged around the last, mechanism for operating the jaws of the nippers, with mechanism substantially as described whereby the jaws are automatically and independently confined to the upper, substantially as described.

4. The combination in a machine for lasting ribbed uppers, of the last support, a series of independent nippers arranged around the last, the jaws of said nippers having lips forming a recess back of the lips, with mechanism for closing said jaws upon the upper, said jaws automatically engaging with the upper when they reach the rib, substantially as specified.

5. The combination in a shoe lasting machine, of the last supporting mechanism, the slides J and M', the slide M' situated below the slide J, the slide J carrying the hollow spindle K, the slide M' carrying an extension of the rod L, jaws carried by the rod L, and levers connected to said slides so that one slide will move independently of the other, substantially as described.

6. The combination in a shoe lasting machine, of the last supporting mechanism, and the clamp jaws carried by a rod, a spindle through which the rod passes having a fixed and a movable collar, a spring interposed between said collars, said collars being rounded on their outer faces and adapted to countersunk portions in the slide J, substantially as described.

7. The combination in a shoe lasting machine, of the last supporting mechanism, the clamp, jaws, and the hollow spindle carrying the same, a rod L, carrying mechanism for operating the said jaws, a rod M pivoted to said rod L, a slide M' through which the rod M passes, a nut on the lower end of the rod, and a spring interposed between the nut and the slide, substantially as and for the purpose set forth.

8. The combination in a lasting machine, of the last support, a series of nippers on each side of the last for engaging with the upper, a plate, the movable jaws of the nippers being attached to the plate, with means for moving said plate, each jaw having a smooth surface for sliding on the upper, and shoulders or ribs for engaging with the upper after the slipping movement is completed, each nipper acting independently of the other nippers, substantially as specified.

9. The combination in a lasting machine, of the last supporting mechanism, the jaws, mechanism for operating said jaws, with blocks V carrying pressing pads, with a cam plate carrying said block, and an arm provided with a forked projection adapted to engage with a pin on the presser block so as to force it against and under the last, substantially as described.

10. In a lasting machine, the combination of the last supporting mechanism, the lasting jaws, the presser block, the pivoted cam plate having cam-ways *u*, *u'* substantially as described, the pin *v* on the block adapted to the cam-way *u'* and supported on a post U, a rock shaft and an arm W carrying a forked bar, a pin on the presser block adapted to engage with the prongs of said bar, with a pin *x'* on the fork adapted to the cam ways *u*, and mechanism for operating said parts so that the presser block will press against the last and under the same, substantially as described.

11. The combination in a lasting machine, of the last support, lasting jaws for the upper, presser pads for forcing the upper onto the insole, a block carrying each pad, a hinged cam plate carrying said block, cams in said plate cut substantially as described, a pin on the block engaging with one cam, a forked bar having a pin entering the other cam, an arm carrying said forked bar, a rock shaft to which the arm is secured, a regulating screw for adjusting the bar on the arm, and a spring between the arm and bar, substantially as described.

12. The combination in a lasting machine, of the cam plate T', a block V supported thereby, and an arm W adapted to act upon the said block, with a pivoted block T, mechanism for adjusting the plate upon the said block, substantially as described.

13. The combination in a shoe lasting machine, of the presser block, cam plate T' substantially as described, with a post U carrying at its upper end a friction roller supporting the presser block, with a socket U', and a spring $U^5$ between the post and the socket, the whole acting substantially as and for the purpose set forth.

14. The combination in a lasting machine, of the last support, a series of independent nippers arranged on each side of the last support, a plate for supporting the series of nippers, and a plate connected to the movable jaws of the nippers, the jaw of each nipper having a smooth surface for sliding upon the upper, and a shoulder or rib for engaging with the upper after the slipping movement is completed, with mechanism for operating the movable jaw controlling plate whereby the jaws are closed, said jaws acting independently and automatically to engage the upper when they reach a given point in respect to the edge of the upper, substantially as specified.

15. The combination in a shoe lasting machine, of the last supporting mechanism, clamping mechanism, and the pressing mechanism, with a crank shaft having cranks F and G, the crank F operating upon the last supporting mechanism, the crank G being connected to and operating the presser pads, with cams E, F on said shaft, longitudinal rock shafts having pins engaging with said cams, and arms acting upon the clamping mechanism, the whole constructed and combined substantially as described.

16. The combination in a shoe lasting machine, of the last supporting mechanism, the nippers and pressers, the vertically adjustable stop rods Z, Z' for the last, and independently adjustable bearings for the said rods, substantially as and for the purpose described.

17. The combination in a lasting machine, of the last supporting devices, mechanism for operating said devices, stop rods Z, Z', a pad *z* on the stop rod Z', bearings for said rods adjustable toward or from each other, a slide on which the bearings are mounted, and with mechanism for raising said slide, substantially as described.

18. The combination in a shoe lasting machine, of the centrally situated last supporting devices, clamps surrounding said last, mechanism for operating said clamps, pressure blocks, also surrounding said last, with the main rock shaft connected to the crank shaft of the machine, longitudinal rock shafts Q' $Q^3$, and inclined rock shafts $Q^2$ $Q^4$, the whole geared substantially as and for the purpose set forth.

19. The combination in a lasting machine, of the last support, the independent nippers arranged on each side of the last support for engaging with the upper to be lasted, a plate supporting said nippers, a yielding connection between the plate and the nippers, a plate with which the movable jaw of each nipper is connected, with a yielding connection between each jaw and the plate, substantially as described.

20. The combination in a shoe lasting machine, of the last support, the nippers engaging with the upper to be lasted, mechanism for operating said nippers, mechanism for moving one of said parts away from the other, with presser pads on each side of the last beyond the nippers, and mechanism whereby the presser pads confine the upper to the edge of the last after it is stretched thereon and for turning the presser pads with the edge of the upper under the last after the nippers have released the upper, substantially as described.

21. The combination in a lasting machine of the last support, the independent nippers arranged on each side of the support, the supporting plate for the nippers, and a controlling plate for the movable jaws, mechanism for operating the same, pressing pads arranged on each side of the machine beyond the lasting nippers, and mechanism whereby the said jaws first impinge upon the edge of the last and turn thereunder, the mechanism being so timed that the jaws confine the upper until the pressers impinge upon and confine the upper to the last, when the nippers are released and the pressers turn under the last and turn the upper, substantially as specified.

22. The combination in a lasting machine, of the last support, mechanism for turning the upper upon the last, with presser pads, mechanism for giving said pads a lateral motion toward the sides of the last and for giving it a rolling motion under the last, the edge of the last acting as a pivot, the bearing surface of the pad having two faces, one face corresponding to the contour of a portion of the side of the last, and the other portion corresponding to the contour of a portion of the bottom of the last, substantially as described

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**502,507. LASTING-NIPPERS.** EDWARD WHITTEN, Hammonton, and DAVID LAKE and VINCENT P. LAKE, Pleasantville, N. J. Filed June 23, 1892. Serial No. 437,712. (No model.)

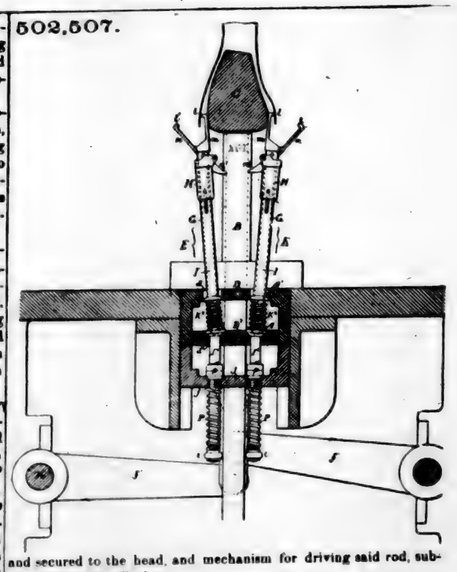
*Claim.*—1. The combination in nippers for lasting boots and shoes, of the hollow spindle, mechanism for actuating said spindle, a jaw fixed upon the spindle, a movable jaw pivoted thereto, a sleeve or head adapted to slide on the spindle and act upon the movable jaw, with a rod contained within the hollow spindle, said rod being connected to the sleeve or sliding head, whereby, on the vertical movement of the rod the head will open or close the nippers, substantially as specified.

2. The combination in nippers for lasting boots and shoes, of the hollow spindle, a sliding plate engaging with a collar on the spindle, a jaw fixed on the spindle, a sleeve or head adapted to slide on the spindle and act upon said movable jaw, with a rod contained within the hollow spindle and attached to the sliding head, substantially as specified.

3. The combination of the hollow spindle G, carrying at its upper end a lipped jaw *m*, with a movable jaw *n'*, pivoted thereto, also provided with a lip and having an arm *n'*, with a head H, adapted to slide on the spindle G and having a bar $n^5$ adapted to engage with the arm on the movable jaw, with a bar I passing through the hollow spindle



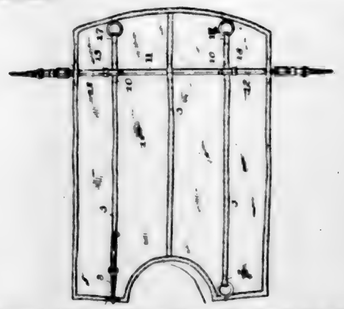
**502,507.**



and secured to the head, and mechanism for driving said rod, substantially as described

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**502,508. HORSE-BLANKET.** HENRY B. CLEVELAND and WILBUR E. TULLER, Prophetstown, Ill. Filed Apr. 29, 1893. Serial No. 472,341. (No model.)



*Claim.*—1. In a horse blanket, the combination with the blanket proper, of stays extending longitudinally thereof from end to end at the opposite sides and center and having loops therein adjacent to the rear of the same, a snap-hook attached to the front end of one of the side-stays, a ring or eye attached to the front end of the opposite side-stay, rings or eyes attached to the rear ends of both of said side-stays, and a securing-strap extending across the rear part of the said blanket and having snap-hooks on the projecting ends thereof that are adapted to removably engage the rings or eyes at the rear ends of said side-stays, substantially as described.

2. In a horse-blanket, the combination with the blanket proper, of stays extending longitudinally of the same at opposite sides and in the center thereof and having loops formed near the rear ends thereof, leather loops attached to the opposite edges of the blanket in line with the said loops in the stays at the rear thereof, a securing-strap extending transversely across the rear part of the blanket and passing through the loops in the stays and at the edges of the blanket, billet straps and loops applied to said securing-strap to hold the latter in place, snap-hooks connected to the opposite projecting ends of said securing-strap a snap-hook attached to the front of one side-stay and held downwardly in position by another loop passing thereover, a ring or eye attached to the front end of the opposite side-stay, a pair of rings or eyes attached to the rear ends of the side-stays, and a binding surrounding the edge of the blanket, the said blanket at the rear being cut inwardly on curved lines, substantially as described

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**502,509.** AUTOMATIC DROP-LID FOR BINS OR BOXES. BASIL BARLEY, San Marcos, Tex. Filed Jan. 25, 1893. Serial No. 459,709. (No model.)



*Claim.*—1. The combination of a receptacle having a front opening and inclined sides at the opposite edges of said opening, an automatic sliding drop lid adapted to inclose said front opening and having a stop block at its lower edge adapted to rest on the upper edge of the front wall of the receptacle when closed, guides for said lid, lid supports attached to the lid near its upper edge and adapted to engage the upper edge of the front wall of the receptacle, said lid being adapted to fall of its own weight when said retaining block is disengaged from the front wall, substantially as set forth.

2. The combination of a receptacle having a front top opening cut at an angle, opposite guide strips arranged to project above opposite edges of said opening, an automatic drop lid arranged to work between said guide strips and having a retaining block near its lower edge adapted to rest on the upper edge of the front wall of the receptacle, and opposite hooks secured to the lid near its upper edge and adapted to embrace the upper edge of the front wall of the receptacle when the lid drops, substantially as set forth

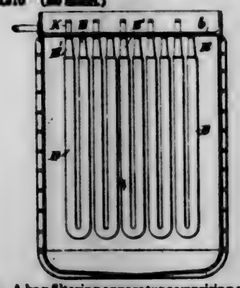
**502,510.** COMBINED STOCK BRIDGE AND DOOR. HERBERT O. DUNN, South Sioux City, Nebr. Filed Aug. 13, 1892. Serial No. 443,041. (No model.)



*Claim.*—1. In a stock car, the combination with vertical guides or ways arranged at the sides of the door, of a combined bridge and guard, pivotally connected at one end to a slide-rod, whose extremities are slidably mounted in said guides or ways, and swinging catches pivotally connected to the bridge near its free edge and adapted to engage in said guides or ways, the extremities of the catches being beveled to lock the bridge or guard at any part of the door opening, substantially as described.

2. In combination with a stock-car, the vertical guides or ways arranged at opposite sides of a door and extending from top to bottom thereof, the reversible bridge or guard provided with a slide rod fitting slidably in said guides or ways, and means for locking the bridge or guard at any desired elevation, substantially as described.

**502,511.** BAG-FILTER. THOMAS O. EASTON, ALEXANDER WATT, and JAMES BUCHANAN, Jr., Liverpool, England. Filed Apr. 23, 1892. Serial No. 430,310. (No model.)



*Claim.*—1. A bag filtering apparatus comprising a filtering chamber and a substantially U-shaped bag pendent therein, the extremities of the bag providing respectively an inlet for the liquor to be filtered and an air outlet substantially as set forth.

2. A bag for a filtering apparatus comprising two upright portions connected by a liquid passage at one end and at their other ends provided respectively with an air escape passage and a liquid inlet substantially as described.

3. In a filter, the combination with a filtering vessel A having a tank cover B of a filtering bag comprising two upright branches connected by a liquid passage at their lower ends, and at their upper ends secured to the bottom plate of the cover and a tube K mounted in the upper end of one of said branches and forming an air outlet substantially as set forth.

4. An apparatus for bag filtration, comprising a chamber A, a removable tray-like cover B, for same, substantially U-shaped filtering bags suspended from said cover, and means for emptying said bags while they are still attached to the cover, substantially as set forth.

5. In a bag filter, the combination with the bottle plate *b*, of the bottle E screwed into it in the ordinary manner and a second bottle E' and tube K projecting above the liquor in the tank, the bag of one bottle being connected below with that of the other whereby the liquor shall run into the bag through bottle E and the air shall escape through tube K.

6. In a bag filtering apparatus, the combination of a tank B to contain the liquor, a bottle E, open to the liquor in the tank, a bottle E', open to the air above the liquor in the tank, whereat the air can escape, and a filtering bag suspended by its upright portions from said bottles, said upright portions of the bag being connected at their lower ends by a liquid passage.

7. A filtering apparatus comprising a stationary filtering chamber, a removable tank like cover or top, B, for the same, the filtering bags suspended from said cover, the tray C, and means for suspending said tray from the cover when the latter is hoisted for removal, as set forth.

8. The combination of the filtering chamber A, tank top B, bottles E' and E, one adapted for receiving the liquor and the other for emitting the air, and the U-shaped bags D substantially as described.

**502,512.** METALLIC FENCING. ISAAC L. ELLWOOD, De Kalb, Ill. Filed Feb. 25, 1893. Serial No. 463,735. (No model.)



*Claim.*—1. In a fence of the character described, the combination with a visible strip composed of a suitable mesh, of a barbed wire or wires connected thereto so as to form a unitary structure, substantially as described.

2. The herein-described fence comprising in combination a visible strip or band composed of strand wires and interlacing mesh wires, a barbed wire or wires and tie wires connecting the visible strip with the barbed wire, substantially as described.

3. The herein-described fencing comprising a visible strip or band composed of strand wires connected by mesh wires and forming the lower portion of the fence, a barbed wire or wires constituting the upper portion of the fence and tie wires connecting the barbed wires and the strip, substantially as described.

4. The herein-described fence composed of visible strips having continuous strands or border wires and connecting mesh wires, barbed wires, and tie wires connecting the barbed wires and strip, the strips and barbed wires alternating with each other, substantially as described.

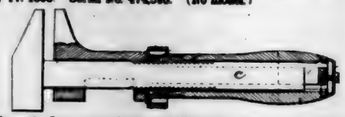
**502,513.** HORSE-BRUSH. SOPHIA GIESECKE, St. Louis, Mo. Filed Mar. 6, 1893. Serial No. 464,791. (No model.)





*Claim.*—The improved horse-brush, having tufts of brush-material arranged in three separate rows, two of which have tufts of the same length arranged to form double rows, of inclined tufts which cross each other rows of bracing tufts having a less length than that of said double rows, each of said bracing tufts being constructed wide to act as a brace for two crossing tufts of said double rows, and the long tufts on the right of the double rows being directed obliquely to the left, and those on the left of the double rows being directed obliquely to the right, so that the tufts of one of these rows wholly cross those of the other row, substantially as shown and described.

**502,514.** WRENCH. HARRY V. GORELEY, Norfolk, Va. Filed May 17, 1893. Serial No. 474,593. (No model.)

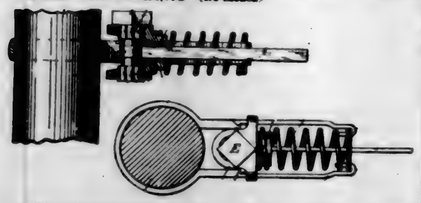


*Claim.*—1. In a wrench the combination of the fixed jaw having the handle attached thereto; a stem sliding through said fixed jaw, and bearing the movable jaw, and having a portion of its length screw-threaded; and a spring, sectional-nut revoluble on a bearing on the fixed jaw and normally engaging said screw-threads on the stem, but adapted to be thrown out of such engagement.

2. In a wrench the combination of the fixed jaw; a handle; a bearing having a longitudinal slot and located between the fixed jaw and handle; a stem sliding through a continuous perforation in the fixed jaw, bearing and handle, and having screw-threads which project through the slot in the bearing; and a sectional-nut revoluble on the bearing and around the stem, and engaging the said screw-threads on the stem, as and for the purpose set forth.

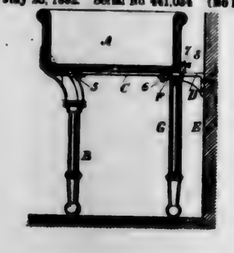
3. In a wrench the combination of the fixed jaw; the casing attached thereto; the handle inclosing and secured to the casing; a bearing formed at one end of the casing and having a longitudinal slot; a stem bearing the sliding jaw and movable in a straight, continuous peforation through the fixed jaw, bearing, and, casing; and having screw-thread which project through the slot in the bearing and a spring, sectional nut, engaging the screw-thread on the stem and adapted to turn on said bearing, the said nut comprising two intersliding members each bearing a half nut, substantially as described and for the purpose set forth.

**502,515.** WIRE-STRETCHER. THOMAS C. GREBBE, Liberty, assignor of one-half to Charles F. Cleaveland, Indianapolis, Ind. Filed Dec. 30, 1892. Serial No. 456,764. (No model.)



*Claim.*—In a wire-stretcher, the combination of the frame adapted to be secured to a fence-post, the windlass arranged to slide on said frame, and the spring secured at one end to said frame and connected at the opposite end to said windlass so as to form a yielding support therefor, substantially as shown and described.

**502,516.** SINK. EDWARD HANMANN, Brooklyn, and THEODORE SUESSMIL, New York, assignors to The J. L. Mott Iron Works, New York, N. Y. Filed July 23, 1892. Serial No. 441,084. (No model.)



*Claim.*—1. The combination with the sink having rounding corners, of front legs having vertical segmental flanges for receiving the corners of the sink, radius bars connected with the upper portions of the legs and extending diagonally beneath the sink and brackets to which the back ends of the radius bars are pivoted, substantially as set forth.

2. The combination with a sink, of front legs beneath the corners of the sink, brackets at the back and connections between the front legs and the brackets, there being flanges on the brackets to hold the sink at the proper distance from the wall, substantially as set forth.

3. The combination with the sink, of a leg set back beneath each front corner, connections from the upper ends of the legs extending diagonally and backwardly, and brackets to which the connections are pivoted, and a column for supporting the back part of the sink, substantially as set forth.

4. The brackets adapted to be connected to the wall and provided with vertical flanges, and screws and the bearer extending from one bracket to the other, in combination with a column beneath the bearer for supporting the back part of the sink, legs set back beneath the front corners of the sink, and connections between the legs and the brackets, substantially as set forth.

5. The combination with the front legs having vertical segmental flanges and flat bearing surfaces beneath the sink, of radius bars pivoted at one end to the legs, brackets to which the other ends of the radius bars are pivoted, and flanges upon the brackets and set screws for holding the sink firmly against the segmental flanges of the front legs, substantially as set forth.

6. The combination with the sink, of front legs having vertical flanges for receiving the corners of the sink, diagonal radius bars connected with the upper portions of the legs beneath the sink and fastenings for the back ends of the radius bars, substantially as set forth.

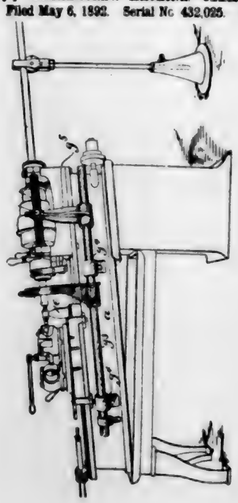
7. The brackets adapted to be connected to the wall and provided with vertical flanges, and the bearer extending from one bracket to the other, in combination with a column beneath the bearer for supporting the back part of the sink, legs beneath the front corners of the sink, and connections between the legs and the brackets, substantially as set forth.

8. The combination with the sink, of a leg set back beneath each front corner, connections from the upper ends of the legs extending backwardly, supports to which the back ends of the connections are secured, and a column for supporting the back part of the sink, substantially as set forth.

9. The combination with the sink, of front legs having vertical flanges for receiving the corners of the sink, bars connected with the upper portions of the legs beneath the sink, and fastenings for the back ends of the bars, substantially as set forth.

10. The combination with the sink, of front legs having vertical flanges for receiving the corners of the sink and curved backwardly beneath such flanges, bars connected with the upper portions of the legs beneath the sink, and fastenings for the back ends of the bars, substantially as set forth.

**502,517.** METAL-SCREW MACHINE. JAMES HARTNESS, Springfield, Vt. Filed May 6, 1892. Serial No. 432,025. (No model.)



*Claim.*—1. The improved lathe or screw machine, comprising in its construction a bed, a chuck, a turret-slide mounted to move thereon toward and from the chuck, and provided with a tool-holding turret arranged to be presented to the stock held and rotated by the chuck, a stop to arrest backward movement of the turret, and a movable stock-stop or gage connected with the turret-slide and movable independently of the slide into and out of its operative position, said stop being arranged to be in its operative position when the turret-slide is at the end of its backward movement, as set forth.

2. In a lathe or screw machine, the combination with the bed, the chuck, the turret-slide and the turret, of a stop to arrest backward movements of the turret, a stock-stop pivotally connected with the slide at a point in advance of the turret, and adapted to swing or oscillate substantially at right angles with the direction of movement of the slide, into and out of its operative position, said stop being so located on the slide that it is in its operative position when the slide is at the end of its backward movement, as set forth.

3. A turret lathe comprising in its construction a bed, a chuck, a turret-slide, a turret mounted on said slide, an independent sliding bar on the bed, and an independent tool-carrier pivotally supported by said independent sliding bar, as set forth.

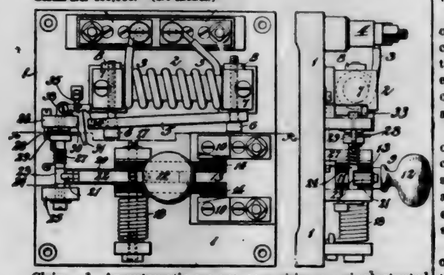
4. A lathe or screw machine comprising in its construction a bed, a chuck, a turret slide, a turret on said slide, an independent die carrier arranged to present a die to the stop at a point between the turret and the chuck, said die carrier having a plurality of tools, and means for moving said carrier independently, as set forth.

5. A lathe or screw machine, comprising in its construction a bed, a chuck, a turret-slide, a turret on said slide, and an independent tool-holder mounted on a carriage movable lengthwise of the bed, and mounted to swing in a plane substantially at right angles with the axis of the chuck, and provided with a plurality of tools adapted to be brought successively into operative position by the swinging movement of the carrier, the latter being arranged to present the said tools to the stock at a point between the chuck and turret, as set forth.

6. In a lathe or screw machine, the combination of the bed, the chuck, a single rod movable lengthwise in guides on the bed and adapted to turn in said guides, the die-carrier rigidly affixed to said rod, the lead-screw rotated by the power of the machine, and an arm also rigidly affixed to said rod and provided with a lead-nut adapted to engage said lead-screw, as set forth.

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**502,518. AUTOMATIC CUT-OUT.** CARL HOFFMANN, Berlin, Germany, assignor to Siemens & Halske, same place. Filed Apr. 11, 1893. Serial No. 469,889. (No model.)



*Claim.*—1. An automatic cut-out comprising a spring-actuated switch lever having a spring held trip plate, contacts from which the lever is thrown by its spring, a cut-away shaft carrying a latch plate, a spring normally rotating the shaft and latch plate to a stop, a trip device adapted to engage the latch plate, and an electro magnet disengaging the trip device by its energized armature, substantially as described.

2. In an automatic electrical cut-out, the combination, with an electro-magnet having an armature 5, contacts 10, 10, a switch lever adapted to said contacts and having a spring pressed trip-plate 21, a shaft 24 having a cutaway portion 23, and a spring 27; and a latch plate 28 having a shoulder 30; a stop 29 for the plate 28, and a trip lever 32 adapted to the plate 28, and the armature, substantially as shown and described.

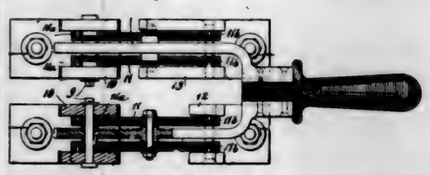
3. In a cut-out device of the character described, the electro magnet having adjustable screws or pins in its pole pieces, and an armature loose on said screws or pins, substantially as described.

4. In a cut-out device of the character described, the electro magnet having in its pole pieces adjustable screws or pins provided with locking nuts; and having an armature loose on said screws or pins, substantially as described.

5. In a cut out device of the character described, the switch lever provided at one end with contacts formed of series of laminated plates 13, having comblike extremities 14, and provided at the other end with a stop shoulder, a pivoted trip plate 21, a spring 22, retaining said trip plate in normal position, and a detent for said trip plate substantially as described.

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**502,519. TWO-POLE SWITCH.** CARL HOFFMANN, Berlin, Germany, assignor to Siemens & Halske, same place. Filed Apr. 11, 1893. Serial No. 469,890. (No model.)



*Claim.*—1. In an electrical switch, the switch lever fulcrumed to lugs forming conductive contact faces, said lever carrying independent conductive contacts which bear constantly upon opposing contact faces of the fulcrum lugs, substantially as described.

2. In an electrical switch, the switch lever fulcrumed to lugs forming conductive contact faces, said lever carrying independent conductive contacts made of elastic material and bearing constantly upon opposing contact faces of the fulcrum lugs, substantially as described.

3. In an electrical switch, the switch lever fulcrumed to lugs forming conductive contact faces, said lever carrying side conductive contacts made of elastic material and having out-bent ends which bear constantly upon opposing contact faces of the fulcrum lugs, substantially as described.

4. In an electrical switch, the switch lever fulcrumed to lugs forming conductive contact faces, said lever carrying side conductive contacts made of elastic material longitudinally split and having out-bent ends which bear constantly upon opposing contact faces of the fulcrum lugs, substantially as described.

5. The combination in an electrical switch, of a binding post or plate having lugs forming opposing contact faces, a switch lever fulcrumed to and between said lugs, independent conductive contacts held at the sides of the lever and bearing constantly upon opposing faces of the fulcrum lugs of the lever, and independent outer binding post or plate contact lugs or faces beyond said fulcrum lugs and to which also the lever contacts are adapted, substantially as described.

6. An electrical switch, comprising four line wire terminal contacts opposed in pairs, a bifurcated switch lever fulcrumed to one pair of contacts, the other pair of contacts having longer and shorter contact segments or faces; and contact plates held to both lever arms and engaging contact faces next the lever fulcrum and adapted to either or both long or short contact faces beyond said fulcrum, substantially as described.

7. An electrical switch, comprising four line wire terminal contacts opposed in pairs, a bifurcated switch lever fulcrumed to one pair of contacts, the other pair of contacts having longer and shorter contact segments or faces; and elastic contact plates held to both lever arms and engaging contact faces next the lever fulcrum and adapted to either or both long or short contact faces beyond said fulcrum, substantially as described.

8. An electrical switch, comprising four line wire terminal contacts opposed in pairs, a bifurcated switch lever fulcrumed to one pair of contacts, the other pair of contacts having longer and shorter contact segments or faces; and elastic contact plates having outbent ends and held to both lever arms and engaging contact faces next the lever fulcrum and adapted to either or both long or short contact faces beyond said fulcrum, substantially as described.

9. An electrical switch, comprising four line wire terminal contacts opposed in pairs and each having an opposing pair of contact faces, a bifurcated switch lever fulcrumed to one pair of contacts and between their pairs of contact faces, the opposing pairs of contact faces of the opposite contacts removed from the lever fulcrum being longer and shorter, and contacts on opposite faces of each arm of the switch lever constantly engaging the four contact faces next the lever fulcrum, and adapted also for successive engagement with the longer and shorter pairs of contact faces removed from the lever fulcrum, substantially as described.

10. An electrical switch, comprising four line wire terminal contacts opposed in pairs and each having an opposing pair of contact faces, a bifurcated switch lever fulcrumed to one pair of contacts and between their pairs of contact faces, the opposing pairs of contact faces of the opposite contacts removed from the lever fulcrum being longer and shorter, and elastic contacts on opposite faces of each arm of the switch lever constantly engaging the four contact faces next the lever fulcrum and adapted also for successive engagement with the longer and shorter pairs of contact faces removed from the lever fulcrum, substantially as described.

11. An electrical switch, comprising four line wire terminal contacts opposed in pairs and each having an opposing pair of contact faces, a bifurcated switch lever fulcrumed to one pair of contacts and between their pairs of contact faces, the opposing pairs of contact faces of the opposite contacts removed from the lever fulcrum being longer and shorter, and elastic contacts on opposite faces of the two arms of the switch lever and having out-bent ends constantly engaging the four contact faces next the lever fulcrum and adapted also for successive engagement with the longer and shorter pairs of contact faces removed from the lever fulcrum, substantially as described.

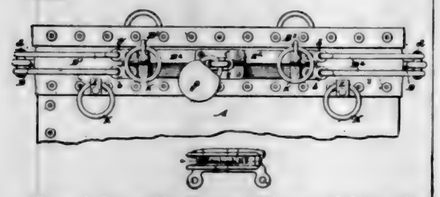
12. In an electrical switch, the switch lever fulcrumed to and between lugs having opposing contact faces, said lever carrying at its opposite sides independent conductive contacts which bear constantly upon the opposing contact faces of the fulcrum lugs, and a spring actuated detent located between said lugs and adapted to engage the lever and hold it at varying adjustments, substantially as described.

13. In an electrical two-pole switch, the combination with a base 7, of contacts 1, 2, 3, 4, a bifurcated switch lever 8, pivoted to parts 10 of the contacts 1, 2, said contacts 3, 4 having parts 12, 12, 13, 13; and contact plates 11, 11 held to each arm 8ª of the lever and adapted to the contacts 10, 12, 13, substantially as described.

14. In an electrical switch, the combination with the base 7, of contacts 1, 2, 3, 4, a bifurcated switch lever 8 pivoted to parts 10 of the contacts 1, 2, and having recesses 14; said contacts 3, 4, having parts 12, 12, 13, 13; contact plates 11 held to each arm 8ª of the lever and adapted to the contacts 10, 12, 13, and spring actuated detent 15 on the base, adapted to the lever recesses 14, substantially as described for the purposes set forth.

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**502,520. MAIL-BAG.** JOHN W. LATCHER, Edinburg, N. Y. Filed Aug. 26, 1891. Renewed June 30, 1893. Serial No. 479,306. (No model.)



*Claim.*—1. In a mail-bag having rigid frames as B' B² extending a portion of the breadth of the mouth, links of rigid material hinged to such frame and to each other, adapted to compress the soft material of the bag for the remainder of the breadth, substantially as herein specified.

2. The combination with a bag having rigid frames of a case G, having a cavity for holding a label J and a device applying in said cavity for holding the label and allowing it to be easily inspected and connections from each end of such case to the said frames, whereby it will serve both as a label-holder and a handle for the bag, as herein specified.

3. The mail-bag described having the flexible material A, trough-like frames B' B², links D' D² hinged to said frames and to each other and arranged to compress the soft material and hold it firmly when the bag is closed and to present a rectangular mouth when open, in combination with each other and with the eyes *e* rings F and case G, the latter equipped to serve the double functions of a label holder and handle, all arranged to serve substantially as herein specified.

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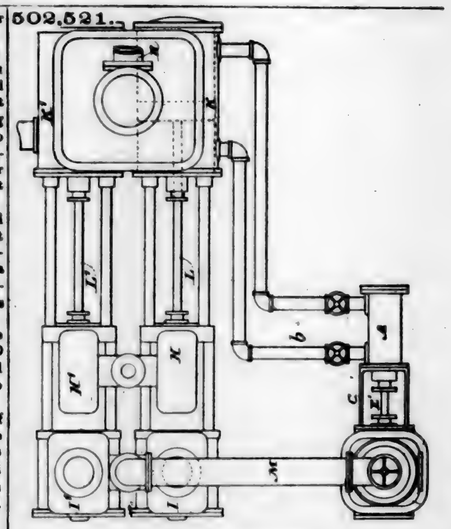
**502,521. PUMPING-ENGINE.** GEORGE DE LAVAL, Warren, Mass., assignor to the Geo. F. Blake Manufacturing Company, New York, N. Y. Filed Nov. 3, 1892. Serial No. 450,810. (No model.)

*Claim.*—1. The combination in a pumping engine, of a pump for raising a liquid, a steam engine to actuate the same, a vacuum or air pump, a power cylinder and its piston for actuating the air pump and pipes leading from the water pump at opposite sides of the piston to the power cylinder at opposite sides of its piston whereby the air or vacuum pump is driven in the ordinary operation of pumping a liquid, substantially as set forth.

2. The combination with an air or vacuum pump, of a power cylinder and a connection between the piston of the pump and of the power cylinder, a main pumping engine and water pipes leading from the cylinder of the main pumping engine at opposite sides of its piston to the power cylinder of the vacuum or air pump at opposite sides of its piston whereby the vacuum or air pump is driven by the liquid of the ordinary pump, substantially as set forth.

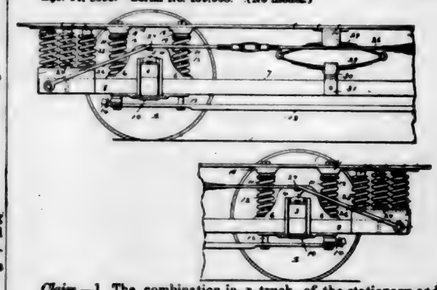


**502,521.**



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**502,522. CAR-TRUCK.** JOSEPH L. LEVY, New York, N. Y. Filed Apr. 11, 1893. Serial No. 469,963. (No model.)



*Claim.*—1. The combination in a truck, of the stationary and movable frames, and springs for resiliently supporting a car comprising a series adapted to primarily support the car, and an additional series adapted to offer a successive resistance to the downward movement of the car, substantially as described.

2. The combination of a truck frame having an element thereof for supporting the car springs, and a resilient or spring support for the car comprising the usual springs about or adjacent to the axle boxes, and a set of springs independent of the axle box springs adapted to be successively compressed, substantially as described.

3. The combination in a truck, of the movable and stationary frames, the axle box springs supporting the movable frame on the stationary frame, and a nest of graduated springs extending between portions of the movable and stationary frames, which portions lie outside of the axles of the track at both ends thereof, substantially as described.

4. The combination in a car truck of a stationary frame and a movable frame or car body, and car supporting springs located about or adjacent to the axle boxes, and an additional set or series of graduated springs located between the stationary and movable frames and outside of the axles of the truck, said additional set of graduated springs being adapted to be successively compressed by the motion of the car body thereon, substantially as described.

5. The combination in a truck, of the movable and stationary frames, the axle box springs supporting the movable frame on the stationary frame, and a nest or series of graduated springs extending between the movable and stationary frames and lying outside of the axles, the axle box springs being adapted to be compressed by the downward movement of the car body prior to the compression of any one of the said nest of graduated springs, each single spring of each series or nest being successively compressed by said motion of the car body, substantially as described.

6. The combination of the movable and stationary frames, of the axle box springs about or adjacent to the axle boxes, and an additional set or series of springs grouped together for successive action, each spring of said set or series being adapted to offer a varying resistance to the downward movement of the car body thereon, substantially as described.

7. In a truck, the combination of the movable and stationary frames, axle box springs about or adjacent to the axle extending between the stationary and movable frames, and an intermediate spring lying between the axle box springs and extending between the stationary and movable frames, said spring being adapted to offer a resistance to the downward movement of the car body and varying as to its time of co-action with the axle box springs, substantially as described.

8. The combination in a truck, of the movable and stationary frames, the axle box springs located adjacent to or about the axle box and extending between the movable and stationary frames, and a spring auxiliary to said springs extending between the frames and lying between the innermost of said axle box springs, said auxiliary spring being adapted to be compressed subsequent to the compression of the axle box springs, substantially as described.

9. The combination in a truck, of the stationary and movable frames, the axle box springs extending between said frames, an additional spring lying between said frames, differing in character from the axle box springs, and a nest of springs adapted to be brought into successive compression extending between said movable and stationary frames, substantially as described.

10. The combination of a truck having a movable and stationary frame, of the axle box springs extending between the same, a spring intermediate of the axle box springs and extending between said frames, and a nest or series of springs adapted to be brought into successive compression extending between the movable and stationary frames and lying outside of the wheel base of the truck, substantially as described.

11. The combination in a truck, of the stationary and movable frames, the axle box springs extending between both frames, an additional spring intermediate of the axle box springs and extending between both frames, the said intermediate spring being adapted to be compressed subsequent to the compression of the axle box springs, and a series or nest of springs adapted to be brought into successive compression extending between the extended portions of the stationary frame and the movable frame or car body, substantially as described.

12. The combination in a truck, of the movable and stationary frames, the axle box springs, the spring intermediate of the axle box spring adapted to be compressed subsequent to the compression of the axle box springs, and a nest or series of springs extending between the extended portion of the stationary frame and the movable frame or car body, the said nest of springs being adapted to be brought into compression subsequent to the compression of the axle box springs, the compression of all of said nest or series taking place prior to or contemporaneously with the compression of the said intermediate springs, substantially as described.

13. In a truck, the combination of the movable and stationary frames, the axle box springs extending between said frames, additional resilient elements adapted to offer successive resistance to the downward movement of the car extending between the extended portions of the stationary frame and the movable frame or car body, and a resilient element auxiliary to the said last mentioned springs which is adapted to be compressed to resist the unequal compression and elevation of the car on its supporting springs, substantially as described.

14. The combination in a truck, of the movable and stationary frames, the axle box springs, and a nest or series of springs adapted to be brought into successive compression, said nest extending between the movable and stationary frames outside of the wheel base of the truck, and a spring auxiliary to said nest or series of springs adapted to be compressed by the unequal depression of the movable frame at the opposite end of the truck, substantially as described.

15. In a truck, the combination with the car springs, of the additional springs 34, the upper chord or car body, the springs 34, and an abutment therefor, and means for connecting the springs 34 with the upper chord, substantially as described.

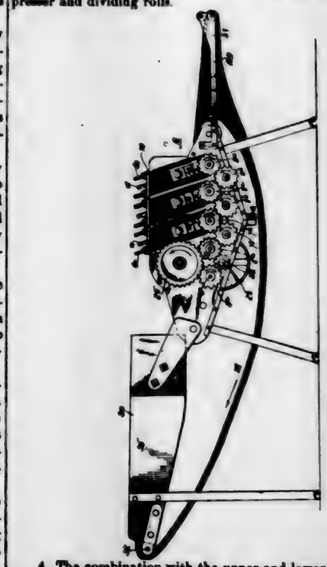
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**502,523.** PRESS. CHARLES C. LOCKHARDT, Chicago, Ill. Filed Apr. 13, 1892. Serial No. 428,918. (No model.)

*Claim.*—1. A press comprising a plurality of presser rolls, a ribbed dividing roll, gearing for driving said rolls, and a traveling belt or conveyer located between said rolls.

2. A press comprising a plurality of lower presser rolls, a plurality of upper presser rolls, a ribbed dividing roll, gearing for driving said rolls, and a traveling belt or conveyer located between said upper presser rolls and dividing roll and the lower presser rolls.

3. A press comprising a plurality of lower presser rolls geared to each other and to a source of power, a plurality of upper presser rolls and a dividing roll, said dividing roll and one of said upper presser rolls being also geared to said source of power, and a traveling belt or conveyer located between said lower presser rolls and said upper presser and dividing rolls.



4. The combination with the upper and lower presser rolls of a press, and gearing for driving the same, of a traveling belt or conveyer located between said presser rolls and having enlargements along its edges, devices for folding said belt or conveyer into a plurality of folds before it passes between said rolls, annular grooves in said rolls to receive said enlargements of the belt and devices for unfolding said belt or conveyer after it passes from between said rolls.

5. The combination with the upper and lower presser rolls of a press and gearing for driving the same, of a traveling belt or conveyer located between said presser rolls and having enlargements along its edges, devices for folding said belt into a plurality of folds before it passes between said rolls, annular grooves located near the outer ends of said lower rolls to receive said enlargements, and devices for unfolding said belt or conveyer after it passes between said rolls.

6. The combination with the upper and lower presser rolls of a press and gearing for driving the same, of a traveling belt or conveyer located between said rolls, devices for folding and unfolding said belt or conveyer before and after passing between said rolls respectively and an idler that is smaller at its middle portion located in front of said presser rolls and adapted to support a section of the belt or conveyer.

7. The combination with the frame of a press, upper and lower presser rolls, and gearing for driving the same, of a traveling belt or conveyer having enlargements 29 on its edges and located between said rolls, a frame 30 in front of said rolls having an enlarged outer end, a guide bar 33 located near the outer end of said frame and away from the bottom and sides of the same, bends in said guide bar to receive the said enlargements of the belt, hooks on the sides of the frame and adjacent the rolls to receive said enlargements 29, and devices for unfolding said belt or conveyer after it passes between said rolls.

8. The combination with the frame of a press, upper and lower presser rolls, and gearing for driving the same, of a traveling belt or conveyer having enlargements 29 on its edges and located between said rolls, a frame 30 in front of said rolls having an enlarged outer end, a guide bar 33 located near the outer end of said frame and away from the bottom and sides of the same, said guide bar being bent inwardly and outwardly upon itself at each side of the frame and having an eye 62 at its bends to receive said enlargements 29, hooks on the sides of the frame and adjacent the rolls to receive said enlargements 29, and devices for unfolding said belt or conveyer after it passes between said rolls.

9. The combination with the frame of a press, upper and lower presser rolls, and gearing for driving the same, of a traveling belt or conveyer having enlargements 29 on its edges and located between said rolls, a frame 30 in front of said rolls having an enlarged outer end, a guide bar 33 located near the outer end of said frame and away from the bottom and sides of the same, a hook 37 on the side 35 of the frame and near the rolls to receive one of said enlargements 29, a cross bar 39 extending from said side 35 of the frame toward the side 41 thereof and provided with a hook 38 near said side 41 to receive the other of said enlargements 29, and devices for unfolding said belt or conveyer after it passes between the rolls.

10. The combination with the frame of a press, upper and lower presser rolls, and gearing for driving the same, of a traveling belt or conveyer having enlargements 29 on its edges and located between said rolls, a frame 30 in front of said rolls having an enlarged outer end, a guide bar 33 located near the outer end of said frame and away from the bottom and sides of the same, bends in said guide bar to receive the said enlargements of the belt, a pair of grooved rollers 37 on the side 35 of the frame and near the rolls to receive one of said enlargements 29, a cross bar 39 extending from said side 35 of the frame toward the side 41 thereof and provided with a pair of grooved rollers 38 near said side 41 to receive the other of said enlargements 29, and devices for unfolding said belt or conveyer after it passes between the rolls.

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**502,524.** PIANO. JOHN W. MACY, Cincinnati, Ohio. Filed June 15, 1892. Serial No. 436,790. (No model.)



*Claim.*—1. A fixed bridgeplate *d*, cast integral with the metal frame A, the upper edge of which conforms to the shape of the scale and along said edge are cast the two down bearings *e* and *f* for the strings, substantially as described and set forth.

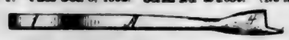
2. A fixed bridgeplate *d*, along the upper edge of which are cast the two down bearings for the strings *e*, and *f*, said bearings being separated by an intervening portion having a concave surface inclined from the top of the bearing *e* to the bottom of the bearing *f*, substantially as herein described and set forth.

3. A capo tasto bar *m*, on the under side of which are cast a series of lugs *n*, formed so as to correspond to the shape of the concave portion *g*, of the bridgeplate *d*, on which they rest when supporting the bar in position substantially as set forth.

4. The combination of the capo tasto bar *m*, and the bridgeplate *d*, the bar being secured to the plate by the screws *i* in the manner described, by which the lugs *n*, are held in contact with the bearing *f*, substantially as set forth.

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**502,525.** COMBINATION-TOOL. WILLIAM H. MENEHAN, Kingston, N. Y. Filed Dec. 6, 1892. Serial No. 454,059. (No model.)

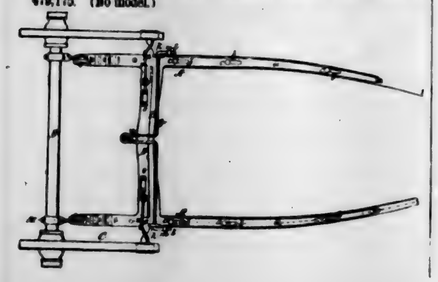


*Claim.*—1. The herein described combination tool comprising the body —A— having diagonally extending arms at one end, a screw-driver at its opposite end and a spindle lifter adjacent thereto, tapered inwardly, as set forth.

2. The herein described combination tool, comprising the body —A—, having the diagonally extending arms at one end, the inner edge of one of said arms having ratchets therein, a screw-driver at its opposite end and the spindle-lifter adjacent thereto, tapered inwardly as set forth.

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**502,526.** AUTOMATIC BRAKE. EDWARD A. MERRIMAN, Madison, Me. Filed July 25, 1892. Renewed June 29, 1893. Serial No. 479,175. (No model.)



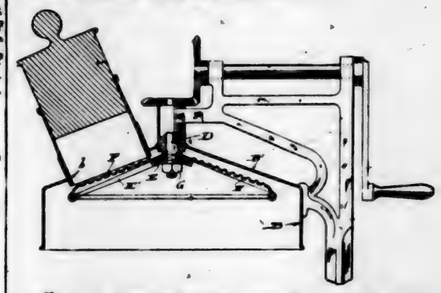


*Claim.*—1. In combination with an automatic brake for carriages—the locking device, consisting of the rod G with its hooks *l* and the shafts A with their lugs *k* and studs *m*, and a means of disengaging the hooks from the studs *m* in order to liberate the brake, as specified.

2. The rod G with its hooks *l* and weighted loop *n* and the shafts A with their lugs *k* and studs *m*, in combination with the strap *p* and rein-holder *r*, as and for the purpose set forth.

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**502,527.** VEGETABLE-GRATER. ROBERT ULP, Manitowoc, Wis. Filed Apr. 8, 1893. Serial No. 469,511. (No model.)

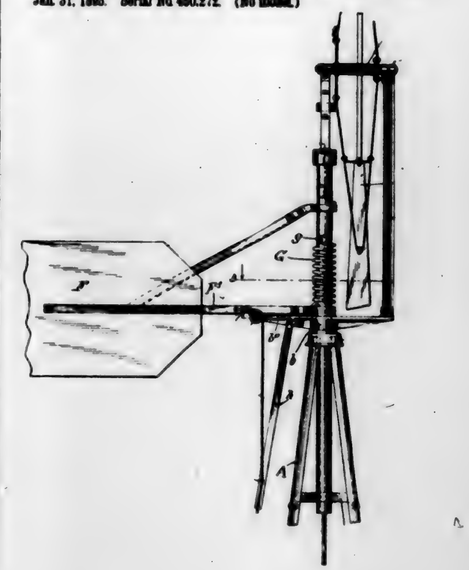


*Claim.*—1. A vegetable grater comprising a suitable frame or support, a housing secured thereto and provided with a suitable feeding aperture, a drive shaft journaled in said frame or support, and a revoluble grater journaled within said housing and operatively engaged with said shaft said grater being provided with radial corrugations or ribs each having a series of perforations and abrading edges or points, substantially as set forth.

2. A vegetable grater comprising a suitable frame or support, a housing secured thereto and having its top in the form of an obtuse cone, provided with a suitable feeding aperture, a drive shaft journaled in the frame or support and a grater revolubly supported within said housing and operatively connected with said drive shaft, and also constructed in the form of an obtuse cone, having its inclined walls upon an angle corresponding with the incline of the top of the housing and provided with a series of radial corrugations or ribs, each having a row of perforations and abrading edges or points, substantially as set forth.

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**502,528.** WINDMILL. THOMAS O. PERRY, Chicago, Ill. Filed Jan. 31, 1893. Serial No. 460,272. (No model.)



*Claim.*—1. In combination with the tower, the tubular stem B extending down through the center of the tower and journaled vertically and supported on the tower top, and journaled at a point at a distance below the top, and extending up above the tower top, and provided at the upper end with a support for one end of the wheel axle; and a rigid arm extending out from the said stem above the tower top, and an upright standard at the end of said arm provided at its upper end with a support for the wind wheel axle; and the wind wheel on said axle between said stem and upright bar, substantially as set forth.

2. In combination with the tower, a turn-table comprising a vertical stem extending down through the center of the tower and vertically journaled at the tower top, and having a further journal bearing at a distance below the tower top, and having the portion which extends above the tower forming one side of a rigid rectangular frame, the upper bar of which constitutes the wind wheel axle, substantially as set forth.

3. In combination with the turn-table comprising the tubular stem B, and the horizontal arm $b^3$ and axle *d*, both rigid therewith; the wind wheel journaled on the axle, and the upright standard *b'* in front of the wheel and connecting the arm $b^3$ and the axle; said upright being made of a thin metal bar bent at a longitudinal line to render its rear portion a lip oblique to the plane of the wheel, substantially as set forth.

4. In a wind mill, a support for the forward end of wheel axle or shaft consisting of a thin metal bar bent at a longitudinal line to render its rear portion a lip oblique to the plane of the wheel, as and for the purpose set forth

**502,529.** HOOK. HARRY S. PIGGINS, Milwaukee, Wis. Filed Apr. 11, 1893. Serial No. 469,872. (No model.)



*Claim.*—1. A hook formed integrally of sheet metal, consisting of a principal member comprising a tang, a shank having a slot, a bend, and a bill, and an exterior reinforcing member co-extensive longitudinally with the principal member of the hook, including a spring and stop formed in the reinforcing member by bending and projecting it inwardly through the slot in the shank of the principal member toward and near to the bill of the hook, substantially as described.

2. The combination in a hook formed integrally of sheet metal, of a principal member having a tang provided with a laterally elongated slot, an outer reinforcing member conforming to the bill and the bend, and provided with a projection extending toward the bill through a slot in the principal member forming a spring and a stop, and provided with a slot registering with the slot in the tang of the principal member, and a tongue cut from the slot of the reinforcing member, turned upwardly against the rear edge of the wall of the slot in the tang and over on to the rear part of the tang of the principal member, substantially as described.

3. A hook formed integrally of sheet metal, comprising a tang provided with a laterally elongated slot, a shank having a slot, a bend, a bill, an exterior reinforcing member coextensive longitudinally with the principal member, a spring and stop formed in the reinforcing member by bending and projecting it inwardly through the slot in the shank of the principal member toward and near to the bill of the hook, and a tongue cut from the tang of the reinforcing member forming a slot therein registering with the slot in the principal member, which tongue is turned through the slot in the principal member against the rear wall of the slot and down upon the outer surface of the rear part of the principal member, substantially as described

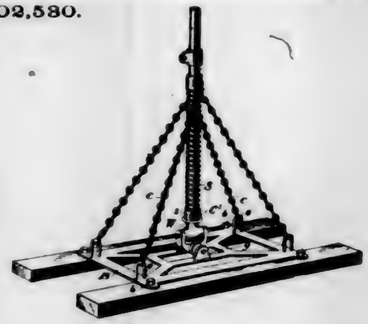
**502,530.** ELECTRIC-RAILWAY TROLLEY BASE. OTTO RAU, Jersey City, N. J., assignor of one-half to Robert S. Dobbie, New York, N. Y. Filed Oct. 31, 1891. Serial No. 410,545. (No model.)

*Claim.*—1. A trolley pole secured to a base or support by a universal joint, guys or stays for holding the pole in a vertical position, said guys being attached to a yielding or spring supported collar, substantially as described.

2. A trolley pole support consisting of a tube pivotally secured to a base or support and sustained by guys or stays attached to the base and to a collar attached to a yielding spring surrounding the tube and adapted to slide vertically thereon, substantially as described.

3. A trolley pole support consisting of a short tube connected to a base by a universal joint and provided with guys or stays connected to the base and to a collar surrounding the tube and resting on an adjustable coiled spring.

**502,580.**



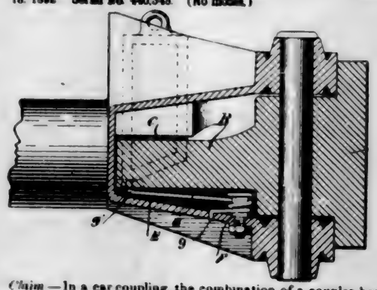
**502,531.** GAS-MIXER. GEORGE J. ROBERTS, Dayton, Ohio. Filed Mar. 6, 1893. Serial No. 464,847. (No model.)



*Claim.*—1. In a gas mixer, the combination with the inclosing part A, of the nozzle B with the annular flange *c* upon which the part A is supported, and a central opening of uniform diameter, the plug *e*, provided with a smooth part or ring on its median portion that retains the widest diameter of the plug, and an inclined or beveled portion, substantially as herein specified.

2. In combination with the part A, the nozzle B provided with an annular flange *c* to support said part A, and a central opening of uniform diameter and partially screw-threaded, the plug *e* with external screw threads to engage with those in the nozzle, an enlarged part or ring on the median portion of said plug which is adapted to engage with the inner surface of the nozzle and thereby prevent any lateral movement of the plug, said plug also having the diameter as at *g* and the beveled part as at *h*, substantially as herein described.

**502,532.** CAR-COUPLING. FITZ WILLIAM SARGENT, Chicago, Ill., assignor to the Congdon Brake Shoe Company, same place. Filed July 18, 1892. Serial No. 440,345. (No model.)

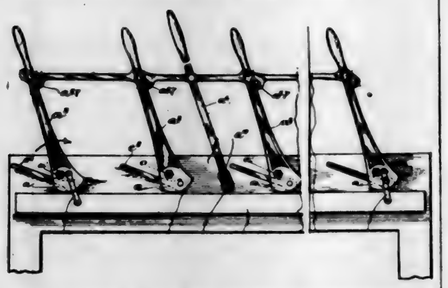


*Claim.*—In a car coupling, the combination of a coupler head, a rotatable knuckle or hook arranged therein provided with a knuckle arm, a vertically sliding locking pin provided with a beveled end beneath which the knuckle arm passes in locking, and a coil spring arranged in the recess beneath the knuckle arm and the bottom plate of the coupler head, having one end engaging with the coupler head through the instrumentality of a stud situated as near as practicable to the pivotal point of the knuckle, and the other end having a sliding engagement with the extreme end of the knuckle arm, substantially as described.

**502,533.** FURNITURE CLAMP OR PRESS. CARRI H. SCALES, Leominster, Mass. Filed July 22, 1892. Serial No. 440,911. (No model.)



*Claim.*—1. In a clamp or press, the combination with a caul or platen, of a series of cams pivoted to a fixed support above the caul and arranged to approach and recede from the caul when moved on their pivots, each cam having a lever, and a rod connecting the series of levers whereby the cams may be moved in unison, and sliding connections between the levers and rod, whereby each lever and cam are permitted to move independently of the rod, as set forth.



2. In a clamp or press, the combination with a caul or platen, of a series of cams pivoted to a fixed support, each cam having a lever, a rod extending across the series of levers and provided with a series of slots, and pins or studs on the levers adapted to play in said slots, the said slots enabling either lever to be given an additional pressing movement independently of the others, as set forth.

3. In a clamp or press, the combination with a caul or platen, of a series of cams pivoted to a fixed support, each cam having a lever, a rod extending across the series of levers and provided with a series of slots, pins or studs on the levers adapted to play in said slots, and an operating lever pivotally connected near one end with a fixed support and connected also with said rod, said operating lever having a slot receiving the pivot that connects it with the fixed support, as set forth.

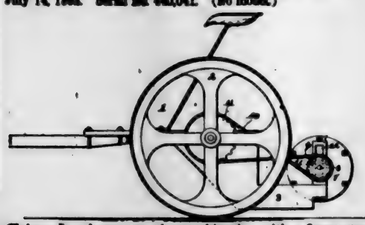
4. In a clamp or press, the combination of a series of primary cams, each having a lever, a rod connecting said levers in a series whereby the cams may be caused to exert pressure simultaneously, and a series of auxiliary cams pivoted to the main cams and provided with independent operating levers whereby additional pressure may be cumulatively exerted, as set forth.

5. A primary cam pivoted to a fixed support and provided with an operating lever, combined with an auxiliary cam pivotally connected with the primary cam and provided with an operating lever, as set forth.

6. The combination of a primary cam pivoted to a fixed support and provided with an operating lever, an auxiliary cam pivotally connected with the primary cam and provided with an operating lever, and a retarding device whereby loose movement of the auxiliary cam is prevented, as set forth.

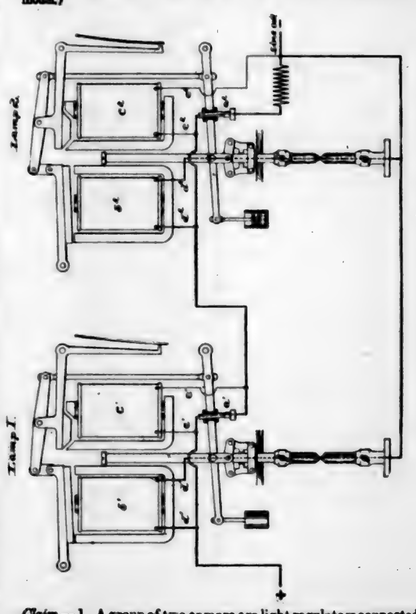
7. A primary cam pivoted to a fixed support and provided with an operating lever and with a slot having a series of seats or bearings, combined with an auxiliary cam having a trunnion adapted to be engaged with either of said bearings, as set forth.

**502,584.** HARVESTER. GEORGE W. SCOTT, Belton, Mo. Filed July 14, 1892. Serial No. 440,041. (No model.)



*Claim.*—In a harvester, the combination with a frame structure and suitable driving mechanism, of a vertically adjustable transverse reel composed of circular disks mounted upon a cylindrical shaft, and circular rods secured at the peripheries of said disks and adapted to press the heads of clover between said cylindrical rods and the edge of the frame, whereby the seeds are pressed from the clover heads into the vehicle, and in consequence of the cylindrical form of the reel rods and the blunt edge of the frame between which the heads are pressed, the severing of the heads is prevented, substantially as specified.

**502,585.** CIRCUIT-CONTROLLING MECHANISM FOR ARC LAMPS. CHARLES E. SCRIBNER, Chicago, Ill., assignor to the Western Electric Company, same place. Filed July 26, 1890. Serial No. 360,062. (No model.)



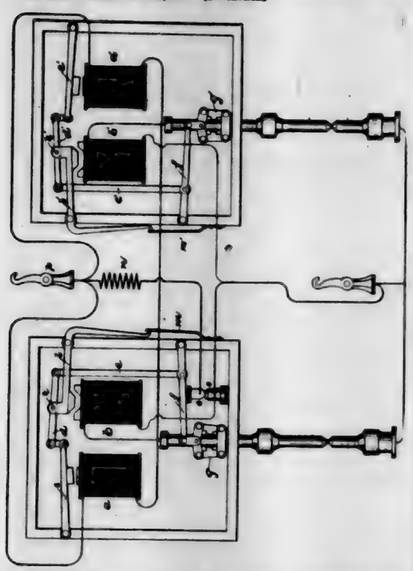

*Claim.*—1. A group of two or more arc light regulators connected with the same circuit, one branch of said circuit being connected directly through a cut out device of each of the lamps, each lamp being separately provided with an electro-magnetic device for separating the carbons and an electro-magnetic device connected in shunt of the arc for feeding the carbons together, as consumed said feeding device being connected in each lamp with the cut out to close the same when the arc becomes abnormally long, whereby the said lamps will be caused to burn automatically one after the other; substantially as specified.

2. Two or more electric arc regulators connected with the same circuit, said circuit extending through a cut out of each of the lamps and each lamp being provided with a lifting electro magnetic device included in a branch circuit extending from the line in through said lifting device to its carbons and thence to the line out, and a feeding electro magnetic device included in a shunt around the carbons, the cut out of each lamp when closed serving to short circuit such feeding magnet, whereby when current is established the first lamp will be lighted and the succeeding lamps will be disconnected from the circuit while the first lamp is burning, while upon the interruption of the branch circuit through the feeding device of the first lamp its cut out will be closed and the arc transferred to the next lamp of the group, substantially as and for the purpose specified.

3. In combination, several arc lamps, each having a lifting magnet in the main circuit with its carbons, a feeding magnet in shunt of its carbons, feeding mechanism actuated thereby, and contact points carried by said mechanism arranged to be closed together when the arc becomes abnormally long, and conductors connecting like members of the carbons of all the lamps together in parallel, and other conductors connecting said cut out contacts of the different lamps together in series, the remaining carbon of each lamp being connected with one contact point of its own cut out; substantially as described.

4. In combination several arc lamps, each having an electro-magnet in series with its carbons and an electro-magnet in shunt of its carbons and cut out contacts arranged to be actuated by said series magnet to be separated when said magnet is energized, and by said shunt magnet to be closed together when said shunt magnet is abnormally energized, one limb of the main circuit joining one member of each lamp in parallel with the like members of the other lamps, another limb of the main circuit extending through all the cut outs in series, the remaining member of each lamp being connected with the main circuit at its own cut out; substantially as described.

**502,586. ELECTRIC-ARC LAMP.** CHARLES E. SCRIBNER, Chicago, Ill., assignor to the Western Electric Company, same place. Filed Mar. 13, 1891. Serial No. 384,763. (No model.)



*Claim.*—1. Two electric lamps having each a lifting magnet and a pair of carbons, and each having a feeding magnet in a shunt around both the carbons, of circuits connecting the lifting magnets and the pairs of carbons in series multiple, substantially as and for the purpose specified.

2. In an electric arc lamp system the combination with the lifting magnets of two different lamps connected in parallel circuit with one another, the sets of carbons of the two lamps connected in parallel circuit with one another and the two parallel circuits thus formed being in series, whereby both lifting magnets are energized to suspend their carbon rods no matter which lamp is burning.

3. The combination of two arc lamps connected in parallel circuit, the rod of the lifting carbon of each lamp being provided with a stop, feeding electro magnets in the shun of each lamp to regulate the feeding of the carbons, and circuits, substantially as described, to cause both lamps to lift their carbons no matter which lamp takes the arc.

4. The combination with two arc lamps connected in parallel circuit, of means for lifting the different carbon rods no matter which lamp takes the arc, and feeding magnets for feeding the different carbon rods, whereby the lamps are made to burn in succession, substantially as specified.

5. The combination with two electric arc lamps in parallel branches of an electric circuit, each lamp having a feeding magnet in shunt of its own carbons, of a pair of cut out contact points controlled by one of the feeding magnets adapted to close a third parallel branch; whereby either lamp may be cut out, substantially as described.

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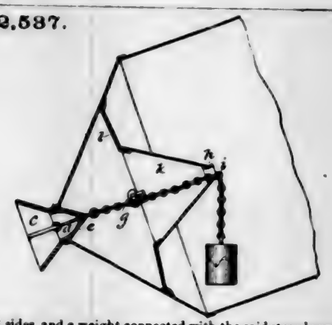
**502,587. SELF-CLOSING CAN.** WILLIAM A. SEXTON, Boston, Mass. Filed Mar. 20, 1893. Serial No. 466,797. (No model.)

*Claim.*—1. A self-closing can provided with a flaring mouth, a stopple for closing the can, a weight, a flexible connection between the same and the stopple, and a guide in the interior of the can for guiding the said flexible connection and weight, the length of the said flexible connection and weight being less than the distance from the stopple, through the guide, to the nearest side of the can as set forth.

2. A self-closing can provided with a mouth, a cylindrical neck below the mouth a stopple having a conical point and slightly inclined sides, a weight, a flexible connection between the weight and stopple, a guide in the interior of the can for guiding the said flexible connection and weight, the length of the said flexible connection and weight being less than the distance from the stopple, through the guide, to the nearest side of the can as set forth.

3. A self-closing can provided with a flaring mouth, a cylindrical neck below the mouth, a stopple having a conical point and slightly

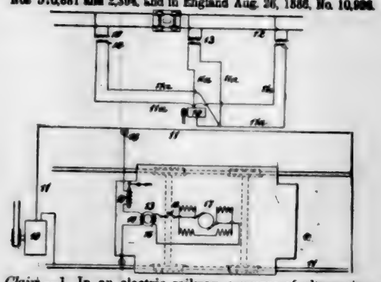
**502,587.**



inclined sides, and a weight connected with the said stopple and pendent in the can, as set forth.

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**502,588. CONVERTER SYSTEM FOR ELECTRIC RAILWAYS.** GEORG W. VON SIEMENS, Berlin, Germany, assignor to Siemens & Halske, same place. Filed Mar. 29, 1893. Serial No. 468,176. (No model.) Patented in Austria-Hungary Aug. 7, 1886, Nos. 31,923 and 2,522, and Nos. 570,681 and 2,394, and in England Aug. 26, 1886, No. 10,926.



*Claim.*—1. In an electric railway, a source of alternating currents, a moving vehicle upon a line of railway, a motor mounted upon said vehicle to propel the same, an inductional transformer interposed between the generator and motor for modifying the current from the generator, and means for supplying energy from the generator to the motor, substantially as described.

2. In an electric railway, a source of alternating currents, conductors extending from said source, a number of moving vehicles upon a line of railway, motors mounted on said vehicles to propel the same, and a number of current modifying inductional transformers connected to said conductors and interposed between the generator and the motors for modifying the current supply from the generator to the motors.

3. In an electric railway, the combination of an alternating generator, a vehicle or vehicles moving along the track, a motor or motors mounted upon said vehicle or vehicles, an inductional transformer or transformers interposed between the generator and the motors for changing the tension of the current from the generator, and means for regulating the supply of energy to the motors.

4. In an electric railway, the combination of an alternating generator, a moving vehicle or vehicles upon a line of railway, a motor or motors mounted upon said vehicle or vehicles, inductional devices for changing the tension of a current interposed between the generator and the motors, and connections composed wholly or in part of the rails for carrying the current from the tension changing devices to the motors.

5. In an electric railway, a source of alternating currents, feeder conductors extending therefrom, a number of transformers distributed along the way having their primary coils electrically connected with said feeder conductors, working conductors also extending along the way and electrically connected with the secondary coils of said transformers, a vehicle or vehicles upon the said line of railway, an electric motor or motors on said vehicle or vehicles, and means for supplying current from the working conductors to the motor or motors in such a way as to energize said motor or motors and cause them to propel the vehicle or vehicles.

6. In an electric railway, an alternating generator, feeder conductors extending therefrom, a number of transformers distributed along the way and connected to the feeder conductors in parallel arc, working conductors extending along the way and electrically connected with the secondary coils of the transformers, a vehicle or vehicles on the said line of railway, and electric motor or motors on said vehicle or vehicles which receive energy from the working conductors in such a way as to be energized by the current from said working conductors.

7. In an electric railway, a source of alternating currents, feeder conductors extending therefrom, a series of transformers distributed along the way and having their primary coils electrically connected with said feeder conductors, working conductors also extending along the way and electrically connected with the secondary coils of said transformers, a vehicle, and an electro motor on said vehicle through which an alternating current is transmitted, in operative relation with said working conductors.

8. In an electric railway, a source of alternating currents, feeder conductors extending therefrom, a series of transformers distributed along the way and having their primary coils electrically connected with said feeder conductors, sectional working conductors also extending along the way and electrically connected with the secondary coils of said transformers, a vehicle, and an electro motor on said vehicle through which an alternating current is transmitted, in operative relation with the section of the working conductors over which it is traveling.

9. In an electric railway, a source of alternating currents, feeder conductors extending therefrom, a series of transformers distributed along the way and having their primary coils electrically connected in parallel arc with said feeder conductors, working conductors also extending along the way and electrically connected with the secondary coils of said transformers, a vehicle, and an electro-motor on said vehicle, through which an alternating current is transmitted, in operative relation with said working conductors.

10. In an electric railway, a source of alternating currents, feeder conductors extending therefrom, a vehicle having an electro motor mounted thereon, through which an alternating current is transmitted, and a transformer interposed between said feeder conductors and said electro motor and in operative relation therewith.

11. In an electric railway, a source of alternating currents, feeder conductors extending therefrom, a vehicle having an electro motor mounted thereon, through which an alternating current is transmitted, a transformer interposed between said feeder conductors and said electro motor, and in operative relation therewith, and means for modifying the current transmitted through the electro motor.

12. In an electric railway, a source of alternating currents, feeder conductors extending therefrom, a vehicle having an electro motor mounted thereon, through which an alternating current is transmitted, a transformer interposed between said feeder conductors and said electro motor, and in operative relation therewith, and means carried by the vehicle for varying the current transmitted through the motor.

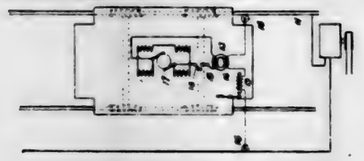
13. In an electric railway, the combination with a generator of alternating currents, a vehicle having a propelling electro motor mounted thereon, through which an alternating current is transmitted, and a current transformer having a primary and a secondary coil, said primary coil in operative relation with said generator, and said secondary coil in operative relation with said electro motor.

14. In an electric railway, the combination with a generator of alternating currents, a vehicle having a propelling electro motor mounted thereon, through which an alternating current is transmitted, a current transformer having a primary and a secondary coil, said primary coil in operative relation with said generator, and said secondary coil in operative relation with said electro motor, and means for modifying the current transmitted through the motor.

15. In a system of electrical distribution, a source of alternating currents, feeder conductors extending therefrom, a series of transformers distributed along said feeder conductors and having their primary coils electrically connected thereto, sectional working conductors having each separate section connected with the secondary coil of one transformer, and translating devices in said section through which an alternating current is transmitted.

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**502,589. ELECTRIC-RAILWAY SYSTEM.** GEORG W. VON SIEMENS, Berlin, Germany, assignor to Siemens & Halske, same place. Filed Mar. 29, 1893. Serial No. 468,177. (No model.) Patented in Austria-Hungary Aug. 7, 1886, Nos. 31,923 and 2,522 and Nos. 570,681 and 2,394, and in England Aug. 26, 1886, No. 10,926.





*Claim.*—1. In an electric railway, a source of alternating currents, feeder conductors extending therefrom, a vehicle, an electro motor adapted to be actuated by alternating currents, and a transformer located on said vehicle and having its primary coil in operative relation to said feeder conductors and its secondary coil electrically connected to the motor.

2. In an electric railway, a source of alternating currents, feeder conductors extending therefrom, a vehicle, an electro motor adapted to be actuated by alternating currents, a transformer located on said vehicle having its primary coil connected to said feeder conductors and its secondary coil electrically connected to the motor, and means for modifying the current supplied to the motor.

3. In an electric railway, the combination of a source of alternating currents, conductors extending therefrom, a number of vehicles moving along the said line of way, transformers located on said vehicles, motors also located on said vehicles and electrically connected with the secondary circuits of the transformers, and means for conveying current from the conductors leading from the generator to the primary circuits of the transformers.

4. In an electric railway, the combination of a source of alternating currents, conductors extending therefrom, a number of vehicles moving along the said line of way, transformers located on said vehicles, motors also located on said vehicles and electrically connected with the secondary circuits of the transformers, means for conveying current from the conductors leading from the generator to the primary circuits of the transformers, and means for regulating the supply of energy transmitted through the primary coil of the transformer.

5. In an electric railway, a source of alternating currents, conductors extending therefrom, a moving vehicle or vehicles upon the line of railway, transformers located on said vehicles connected to said conductors, motors also located on said vehicles, means for conveying current from the generator to the motors, and a counter-electro motive force coil also located on the vehicles to regulate the supply of energy to the motor.

6. In an electric railway, a source of alternating currents, conductors extending therefrom, a moving vehicle or vehicles upon the line of railway, transformers located on said vehicles connected to said conductors, motors also located on said vehicles, and a counter-electro motive force coil connected to the primary coil of the transformer, said motive force coil having an adjustable core to regulate the supply of energy to the motor.

7. In an electric railway, a source of alternating currents, conductors extending therefrom, a vehicle or vehicles moving along the line of railway, transformers connected to said conductors and located on said vehicle or vehicles, motors also located on said vehicle or vehicles, and traveling contacts moving along the conductors and carried by the vehicle or vehicles, said contacts being in circuit with the primary of the transformer, the secondary circuits of the transformer being connected to the motors.

8. In an electric railway, a source of alternating currents, overhead conductors connected to said source and extending along the line of railway, a vehicle or vehicles moving along the line of railway, transformers located on said vehicle or vehicles, motors also located on said vehicle or vehicles, means for conveying the current from the overhead conductors to the transformers, and means to regulate the supply of energy to the motors.

9. In an electric railway, a source of alternating currents, overhead and surface conductors connected to said source and extending along the line of railway, a vehicle or vehicles moving along the line of railway, transformers located on said vehicle or vehicles, motors also located on said vehicle or vehicles, means for conveying the current from the overhead and surface conductors to the transformers, and means to regulate the supply of energy to the motors.

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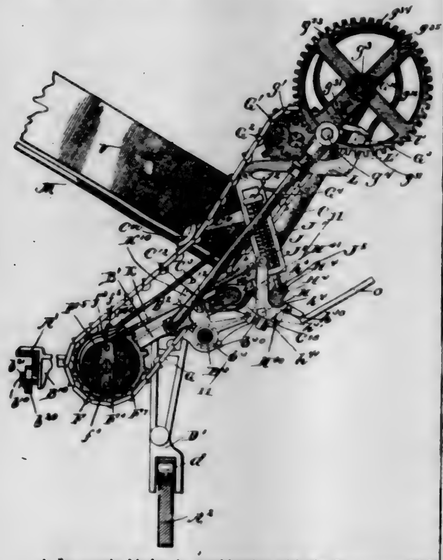
**502,590. GRAIN-BINDER.** ANDREW STARK, Chicago, Ill., assignor of one-half to the Warder, Bushnell & Glessner Company, same place, and Springfield, Ohio. Filed Feb. 27, 1892. Serial No. 423,048. (No model.)

*Claim.*—1. In a grain binder, a frame supported directly on the harvester frame and having bearings for the packer-crank-shaft, and a binder-gearing-standard frame having a bearing for the needle-rock-shaft, said frames being hinged together at a horizontal fore-and-aft line and thereby adapted to fold together: substantially as set forth.

2. In a grain binder, the frames on which are journaled respectively the needle-rock-shaft and the packer-crank-shaft, said frames having each two pairs of lugs in corresponding situations on the two frames, bolts which secure the corresponding lugs together; the bolts which pertain to one pair of lugs being out of line fore-and-aft with those of the other pair, whereby the frames are rendered rigid with each other by all said bolts, one pair of bolts being axially in horizontal fore-and-aft line, whereby they constitute hinge connections between

the frames when the other lugs are disconnected: substantially as set forth.

3. In a grain binder, the frames on which are journaled respectively the needle-rock-shaft and the packer-crank-shaft, said frames having hinge connections at a horizontal fore-and-aft line, whereby they are adapted to fold together; the mechanism mounted on the two frames respectively, and a drive chain which transmits power from one to the other, and a tightener for said chain resting thereon at substantially the point at which the chain will fold when the frames are folded together; whereby the chain is retained on the sprocket wheels when the frames are so folded: substantially as set forth.



4. In a grain binder, in combination with the frames on which are journaled respectively the packer-crank-shaft and the needle-rock-shaft, said frames being horizontally hinged together and adapted to fold, the latter frame containing all the tripping and compressing mechanism and the former frame containing the clutch, the connection between the tripping mechanism and the clutch being made by an arm unattached to any part on the packer-crank-shaft frame and power being transmitted from the mechanism on one frame to that on the other by a drive chain; whereby the said driving and tripping connections from the mechanism on one frame to the mechanism on the other do not impede the folding of the frames together: substantially as set forth.

5. In combination with the knotting mechanism the needle and compressor, and their actuating mechanisms respectively, the compressor-controlling mechanism being adapted to cause the compressor to recede stubbleward while the needle is penetrating the grain, and thereby cause the bundle to take an excess of cord at the stubbleward side, and then to cause the compressor to advance grainward and continue its advance after the needle commences to retreat: substantially as set forth.

6. In a grain binder, in combination with a rock shaft having the trip and compressor arm mounted thereon in the path of the bundle, two levers beyond the path of the bundle, one rigid with said shaft and the other rocking loosely about the same axis; a spring reacting between said levers, and stop shoulders on said levers respectively which limit their relative motion in the direction resisted by the spring; the rigid lever having connections which control the clutch and the loosely mounted lever having connections to the compressor spring, whereby the tripping movement of the trip and compressor may be performed before the shoulders of the rigid and loose levers collide, and its compressing action is effected while said shoulders are stopped against each other: substantially as set forth.

7. In a grain binder, in combination, substantially as set forth, the fore-and-aft shaft H, having a trip and compressor arm thereon in the path of the bundle, and having rigid with it the lever arm $H^3$ and loosely mounted upon it the lever arm $H^4$; a spring reacting between said levers, and stop shoulders on said levers limiting their relative motion in the direction resisted by said spring; the trip rod connected to the rigid lever $H^3$, and the compressor spring connected to the loosely mounted lever $H^4$; the cam $G^{28}$ on the binder-drive-wheel $G^2$, and the lever L, actuated by said cam and connected to the compressor spring; and the clutch on the packer crank-shaft whose latch is controlled by the trip rod K: substantially as set forth.

8. In combination with the trip-lever $H^3$, and the clutch on the packer-crank-shaft; the trip-rod K, connected to the lever and adapted to trip the clutch latch; a guide for said trip rod, through which said rod is adapted to slide, mounted rigidly with the needle-rock-shaft; whereby the trip rod is held out of the path of the clutch latch until the needle has receded almost to its position of rest: substantially as set forth.

9. In combination with the lever $H^3$, the trip rod K, and the clutch which it trips; the guide-bearing K′ for said rod, adjustably mounted on the needle-crank-shaft: substantially as and for the purpose set forth.

10. The lever $H^3$ on the trip and compressor-shaft; the trip rod K connected thereto, and the clutch which it trips; the needle-rock-shaft having rigid with it the stop projection E to stop the lever when the needle is at the position of rest, and revolving out of the way of the lever when the needle is encompassing the bundle: whereby the trip and compressor may be advanced farther grainward while compressing the bundle than it is permitted to stand while operating as a trip: substantially as set forth.

11. In a grain binder, in combination with the needle and the compressor, an arm located in approximately the same vertical plane and underneath the bundle space, said arm being pivoted at its inner end to the needle and extending from said pivotal connection stubbleward over the needle and fulcrumed over the compressor rock shaft: substantially as and for the purpose set forth.

12. In a grain binder, in combination with the deck, on which the grain lies prostrate a gate at the discharge side, extending lengthwise of the grain, and thereby adapted to obstruct it at both heads and butts and mechanism which holds it in grain-obstructing position during the accumulation of the bundle, and which tilts it stubbleward but holds it still in position to check the heads and butts during the compression of the bundle: substantially as set forth.

13. In combination with the needle and binder deck, the gate hinged to the deck and the arm P connected to the needle and to the gate; whereby the rocking of the needle actuates the gate: substantially as set forth.

14. In combination with the binder-deck and the gate hinged thereto rifted in the plane of the needle rift of the deck; a link which connects the gate to the needle, whereby it is operated; the trip and compressor located in the plane of said rifts in deck and gate; the yoke $F^2$ extending across the rift in the gate and adapted to stop the trip and compressor when it is freed from the action of the compressor cam, and to lift said compressor before the cam commences to actuate it to return it to position of rest: substantially as set forth.

15. In combination with the deck, the needle and the gate; the arm P, which connects said gate and needle; the trip and compressor located in the plane of said arm P, and having a flange upon its hub which affords a fulcrum for said arm, said fulcrum being eccentric to the axis of the arm: substantially as and for the purpose set forth.

16. In a grain binder, a needle having a guide for the cord intermediate the heel and the point of the needle, consisting of a hook $E^{20}$, located opposite the aperture $E^{19}$ of the needle web, and curved away from the plane of said web between its root and point, the margins of the apertures of the web being curved in the opposite directions: substantially as set forth.

17. In combination with the bracket $B^1$, having the hooked lug $b^{40}$, the tension latch R, adapted to be hooked onto said lug; the bolt $R^2$ inserted through the bracket and the latch, and the spring above the latch on the bolt provided with the adjusting and stopping nut; whereby said bolt and spring afford means for regulating the tension and at the same time retain the latch on the bracket: substantially as set forth.

18. The head-board hinged to the harvester and swinging freely on its pivotal connection, combined with a spring attached to the binder, and moving with it, arranged and adapted to hold the head-board in proper adjustment: substantially as set forth.

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**502,541.** ELECTRIC SAFETY-FUSE. CARL THALACKER, Charlottenburg, assignor to Siemens & Halske, Berlin, Germany. Filed May 14, 1893. Serial No. 474,085. (No model.)



*Claim.*—1. In an electric safety fuse, the combination of a main safety fuse, an auxiliary safety fuse, and a box or casing completely enveloping the main fuse, but so constructed as to permit the condition of the auxiliary fuse to be seen.

2. In an electric safety fuse, the combination of a main fuse, an auxiliary fuse, and a casing completely enveloping the main fuse, but only partially enveloping the auxiliary fuse.

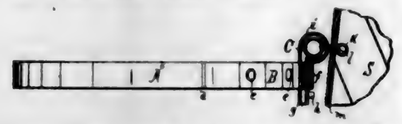
3. In an electric safety fuse, the combination of a main fuse, an auxiliary fuse, and a detachable casing therefor, said casing wholly surrounding the main fuse and partially surrounding the auxiliary fuse.

4. In an electric safety fuse, the combination of a main fuse, an auxiliary fuse, overlying and underlying portions of insulating material, and an inclosing casing, said casing provided with an opening through its top portion whereby the condition of the auxiliary fuse may be observed.



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**502,542.** MAST-HOOP. CALVIN P. H. VARY, Newark, N. Y. Filed Aug. 12, 1892. Serial No. 443,003. (No model.)



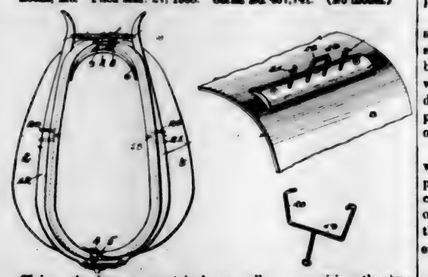
*Claim.*—1. The combination of a mast hoop provided with an opening, *b*, and a slot, *c*, with a lug-bolt, C, provided with a lug, *h*, and an eye, *i*, substantially as described.

2. The combination of a mast hoop having a lap-stay provided with an opening, *b*, and a slot, *c*, with a lug-bolt, C, provided with a lug, *h*, and an eye, *i*, substantially as described.

3. A lug-bolt provided with a ring or eye, *i*, the center of which is without the axis of the bolt, and having a lug, *h*, and secured to the sail, S, said lug-bolt adapted to be attached to a mast hoop substantially as and for the purposes herein set forth.

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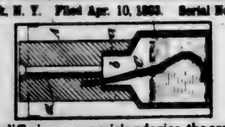
**502,543.** HORSE-COLLAR. EDWIN R. WILLIAMSON, Chain of Rocks, Mo. Filed Mar. 27, 1893. Serial No. 467,741. (No model.)



*Claim.*—An improvement in horse collars comprising the two members of said collar, means for holding the lower tapered extremities in connection with each other, said members readily detachable at their lower extremities, under and over lapping flaps upon the upper extremities, a separable flap provided with projections adapted to engage in openings in the flaps upon the extremities of the members, the hames adapted to be normally held in connection with the members of the collar and adapted to be held together by straps connecting the upper ends of same through one of the projections upon the separable flap, and straps holding the lower ends of said hames together, substantially as set forth.

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**502,544.** DISINFECTING OR VAPORIZING DEVICE. REGINALD C. WOODCOCK, New York, N. Y., and CHARLES T. KINGZETT, London, England, assignors to the American and Continental Sanitas Company, Limited, New York, N. Y. Filed Apr. 10, 1893. Serial No. 469,805. (No model.)

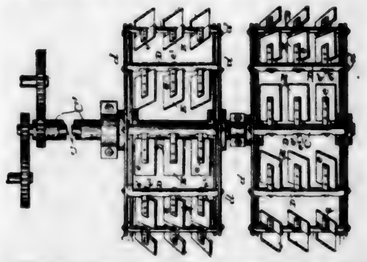


*Claim.*—1. In diffusing or vaporizing device, the combination with a body of absorbent material such as plaster of paris for diffusing the disinfectant and a reservoir for containing a supply of liquid to be diffused, of a flexible capillary attachment embedded at one end within the body of absorbent material and adapted to enter into the supply of liquid, substantially as set forth.

2. In diffusing or vaporing device, the combination with a reservoir for the liquid to be diffused, of a body of absorbent material supported on the reservoir, and having an opening therethrough for filling the reservoir and a piece of wick embedded at one end in the body of absorbent material and extending into the liquid in the reservoir for transmitting the liquid to the absorbent material by capillary attraction, substantially as set forth.

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**502,545.** PROPELLER-WHEEL. LEWIS G. BOOTHBY, Galesburg, Ill. Filed Sept. 16, 1892. Serial No. 446,048. (No model.)



*Claim.*—1. A propeller wheel, embodying in its structure, a shaft, radiating arms or spokes, rims, bars approximately parallel with the shaft, and blades fixed to said bars, from which they project tangentially, and are inclined to the wheel axle, substantially as described.

2. A propeller wheel, embodying in its composite structure, substantially as hereinbefore described, an axial shaft, blade-supports fixed to said shaft, and a circular series of blades located at or near the periphery of the wheel, each of which blades is fixed to the blade support in such position that in one direction across the blade it lies in a plane tangential to, or approximately tangential to, the orbital path of its inner end, and in a direction transversely thereof lies in a plane oblique to the axle shaft.

3. A propeller wheel comprising in its composite structure, substantially as hereinbefore described, an axial shaft, parts fixed to said shaft and extending outwardly therefrom, and one or more series of blades, each series of which blades is disposed circumferentially of the wheel to revolve in a circular orbit, and each blade of which series is disposed transversely of the wheel axis, in a plane tangential or approximately so to its orbital path of revolution, and disposed axially of the wheel in a plane oblique to the axis of the wheel.

4. A propeller wheel, comprising in its composite structure, a wheel frame, with a circumferential series of blades mounted on its periphery, each blade arranged approximately tangential to the circular path of their inner ends when revolving, and inclined to the axis of the wheel, and adjustably connected with the wheel frame, whereby their inclination in planes oblique to the axis of the wheel can be lessened or increased, as desired, substantially as described.

5. A propeller wheel, comprising in its composite structure, a wheel frame, with a circumferential series of blades mounted on its periphery, each blade arranged approximately tangential to the circular path of their inner ends when revolving, and transversely of the blade, inclined or oblique to the axis of the wheel, in combination with another similar wheel with paddles arranged in a reverse direction from those of its fellow wheel, both of which wheels revolve on the same axial line, and means for revolving said wheels in opposite directions, substantially as described.

6. A propeller wheel, comprising a carrying shaft, radial arms or spokes, rims, *a*, arms D, and blades E, fixed to the bars D, in planes axially of the wheel, oblique thereto, and in planes circumferentially of the wheel, tangentially or approximately so to the periphery of the wheel, substantially as described.

7. A propeller wheel, comprising a carrying shaft, radial arms or spokes, rims *a* formed of parts *a′*, between which the outer ends of the spokes are secured, bars D, secured to the rims *a*, and blades E, mounted on the bars D tangentially to the wheel, and oblique to the carrying shaft, substantially as described.

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**502,546.** MANUFACTURE OF PYROXYLINE COMPOUNDS. CHARLES L. BOSSERTER, Rahway, N. J. Filed May 13, 1893. Serial No. 474,113. (No specimens.)

*Claim.*—1. A solvent for pyroxyline consisting of oil of lemongrass and an operative diluent which may be solvent or non-solvent of pyroxyline.

2. A solution of pyroxyline consisting of pyroxyline dissolved in oil of lemongrass.

3. A solution of pyroxyline consisting of pyroxyline dissolved in oil of lemongrass and an operative diluent which may be solvent or non-solvent of pyroxyline.

4. A solution of pyroxyline made in oil of lemongrass and diluted with acetate of amyl.

**502,547.** PYROXYLINE COMPOUND. CHARLES L. ROSENSTEIN, Rahway, N. J. Filed May 23, 1893. Serial No. 475,464. (No specimens.)

*Claim.*—1. A pyroxyline solution or compound which consists of pyroxyline dissolved in the oil of cedar-leaf.

2. A pyroxyline solution or compound which consists of pyroxyline dissolved in an amyl alcoholic solution of the oil of cedar-leaf.

**502,548.** SUPPORT OR HOLDER FOR DECORATED PLATES. EDMUND H. ROCHESTER, Newark, N. J. Filed Dec. 21, 1892. Serial No. 456,872. (No model.)

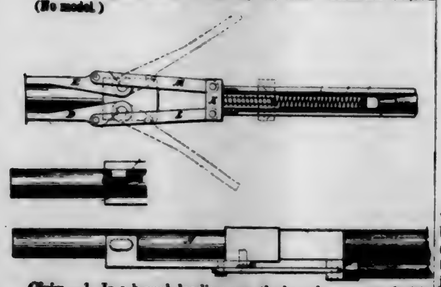


*Claim.*—1. The plate support for holding the plate vertically edgewise herein described combining therein a transverse rear connection for the arms *d*, *d*, the ends of said connections forming bearings, $a^3$, enabling the plate support to maintain its position, the arms *d*, *d*, being centrally raised or bent and forming inclined bearings, *c*, for the back of the plate, the forward ends of said arms being upwardly curled to engage the front of the plate, all said parts being of one integral piece of wire, substantially as set forth.

2. The plate support for holding the plate vertically edgewise comprising arms *d*, *d*, connected at the rear and having the free extremities, at the front, curled upwardly to form front bearings for the plate, the said front bearings being integrally connected with the rearwardly connected arms, substantially as set forth.

3. The improved support for holding the plate vertically edgewise consisting of a single piece of wire comprising arms *d*, *d*, centrally raised from the plane of the floor and forming inclined bearings *c*, *c*, the opposite ends of said arms forming bearings *a'*, *a'*, $a^3$, $a^3$, at or in said floor plane, the rearward extremities being integrally connected and the free forward extremities being curled as at *f*, substantially as set forth.

**502,549.** GAS-OPERATED BREECH-LOADING GUN. JOHN M. BROWNING, Ogden, Utah. Filed July 11, 1892. Serial No. 439,574. (No model.)



*Claim.*—1. In a breech-loading gun, the barrel constructed with openings into it in rear of its muzzle end, the openings being substantially diametrically opposite each other, combined with devices substantially such as described adapted to receive the action of the gases within the barrel through said openings, and in opposite directions, with mechanism between said devices and the breech-mechanism of the gun, and a spring substantially as described whereby in the opening movement of said devices the breech mechanism will be opened and the spring compressed, the reaction of the spring operating to return the said devices and mechanism to their closed or normal position.

2. In a breech-loading gun, the barrel constructed with openings into it in rear of its muzzle end, the openings being substantially diametrically opposite each other, two levers hung upon pivots stationary with the barrel, the free ends of the levers adapted to substantially close the said openings in the barrel, and whereby the force of the gases of explosion will be exerted upon said levers through the said openings, but in opposite directions, combined with mechanism substantially such as described between said levers and the breech mechanism of the gun, whereby the outward swinging movement of the said levers will produce the opening of the breech mechanism, and the return of said levers will produce the closing movement of said mechanism.

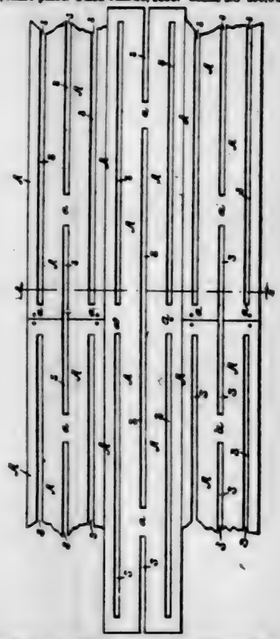
**502,550.** HEEL-NAIL. GEORGE A. CURTIS, Malden, assignor to Charles F. Baker, Boston, Mass. Filed May 31, 1893. Serial No. 476,048. (No model.)



*Claim.*—1. As a new article of manufacture, a nail for fastening heels, having a collar intermediate of its ends and an awl-shaped point, substantially as described.

2. As an improved article of manufacture, a collar-nail having a round part above the collar and beyond which the latter projects on all sides, and pointed spurs projecting from opposite sides of said round part.

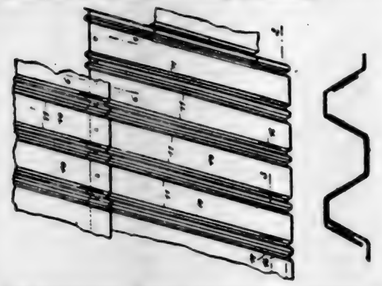
**502,551.** WOODEN LATHING. CALVIN F. DARNELL, Indianapolis, Ind., assignor of one-half to Eugene F. Harris and Charles A. Bookwalter, same place. Filed Jan. 28, 1893. Serial No. 460,043. (No model.)



*Claim.*—Sections of lathing consisting of boards or panels provided with a series of longitudinal slits extending in parallel lines, braced and supported by short uncut sections of the material between the adjacent ends of the slits in each row or line of slits, said slits being arranged so that those in adjacent rows will overlap or break joints, the row of slits nearest each edge of the board or panel being formed a distance from said edge equal to half the distance between the other rows, whereby a uniform width of lath is secured regardless of longitudinal position of the boards or panels in relation to each other, all substantially as described and for the purposes specified.

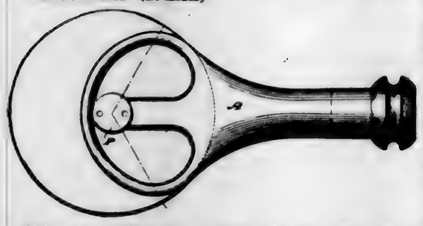
**502,552.** METAL ROOFING. BENOIT B. DESCHAMPS, Chênée, Belgium, assignor to the Société Anonyme des Mines and Fonderies de Zinc de la Vieille Montagne, same place. Filed Mar. 21, 1893. Serial No. 467,093. (No model.) Patented in Belgium Feb. 20, 1894, No. 94,221 R, and in France Oct. 20, 1894, No. 235,079.

*Claim.*—1. A roofing sheet having a series of ribs and provided on the inner side of a rib near one edge of the sheet with a tongue extending upwardly parallel with the wall of the rib and on the exterior surface of a rib on the opposite edge of the sheet with a tongue extending downwardly parallel with the wall of the rib, whereby the tongues of the sheets will interlock to prevent the sheets from being lifted from the wall or roof, substantially as described.



2. In metal roofing, the roofing sheet having parallel hollow ribs thereon, an upwardly-inclined tongue on the inner surface of a rib near one edge of the sheet, a downwardly-inclined tongue on the exterior surface of a rib near the opposite edge of the sheet, the tongue of one sheet being adapted to engage the tongue of an adjacent sheet, and tongues on the inner surfaces of the metal ribs of the sheet, the tongues being arranged near one edge of the sheet so as to receive the edges of the ribs on the sheet below, substantially as described.

**502,553.** TROLLEY-HEAD. ROBERT S. DOBBIE, Jersey City, N. J., assignor of one-half to Otto Rau, Milwaukee, Wis. Filed Oct. 31, 1891. Serial No. 410,544. (No model.)



*Claim.*—1. A trolley arm or support made of two pieces of semi tubular centrally ribbed struck up metal constituting a fork which carries the trolley, said pieces being joined together at their lower ends in the nature of a tube, substantially as described.

2. A trolley arm or support constructed of two divided struck up metal portions of curvilinear form in cross section throughout their length said parts being secured together at their lower ends and by the trolley pivot, at their upper ends substantially as described.

3. A trolley arm or support made of two thin struck up semi-tubular parts united together at their lower ends and constituting a fork, in the upper end of which the trolley is pivoted substantially as described.

4. A trolley arm or support made of two semi-tubular struck up pieces of metal united together at their lower ends to form a tube and ribbed as described to give them greater strength.

5. A trolley arm made of two semi-cylindrical struck up pieces of metal united together in the form of a tube and constituting a fork or support at their upper ends in which the trolley is pivoted, substantially as described.

6. A trolley arm or support made of two semi-tubular pieces of metal united together and divided at their upper ends into a U or Y-shape, so as to form a seat for the trolley, said seat being integral with the pole substantially as described.

7. A trolley arm or support consisting of a fork of two semi-tubular pieces of metal having a goose-neck shape and united together, substantially as described.

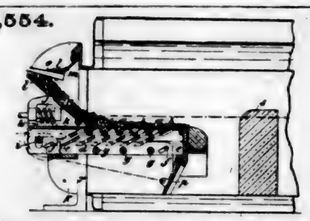
8. A trolley arm or support made of two pieces of struck up metal surrounded with a metallic thimble E, substantially as described.

**502,554.** GRATE. WILHELM S. DOBIS, Vienna, Austria-Hungary. Filed Oct. 18, 1892. Serial No. 449,235. (No model.)

*Claim.*—1. In a horizontal furnace grate, the combination with fixed step grate bars, having spaces between them, of sliding bars located in said spaces, and means for moving said sliding bars in both horizontal and vertical planes, whereby the fuel may be fed forward and the grate cleaned, substantially as set forth.



**502,554.**



2. In a horizontal furnace grate, the combination of the fixed bars *a*, the sliding bars *b*, mounted in the guide rails *d*, and the inclined planes *c*, with means for reciprocating said bars and rails upon the inclined planes, substantially as described.

**502,555.** APPARATUS FOR PILING COAL. JAMES M. DODGE, Philadelphia, Pa., assignor to the Dodge Coal Storage Company, same place. Filed Mar. 6, 1893. Serial No. 464,726. (No model.)



*Claim.*—1. The combination in apparatus for removing piles of material, of the floor having a central discharge opening, with a movable conveyer adapted to travel on the floor around the center and remove the material therefrom, substantially as described.

2. The combination of a piling floor, a horizontal conveyer pivoted in the center thereof and adapted to travel entirely around the floor, and a discharge for the conveyer, substantially as described.

3. The combination in apparatus for removing piles of material, of the floor having a central discharge opening, with a movable conveyer pivoted at the center and adapted to travel on the floor around the center and remove the material therefrom, substantially as described.

4. The combination of the piling floor having a central discharge opening, a discharging conveyer into which material flows from said opening, with a pivoted conveyer mounted on the floor and adapted to travel in a circular path and remove the material from the floor, substantially as described.

5. The combination of the piling floor having a central discharge opening, a tunnel under the floor, extending to the central discharge opening, a conveyer in said tunnel receiving material from said discharge opening, openings in the floor above the conveyer in the tunnel, so that the conveyer will receive material from said openings, a pivoted conveyer mounted on the floor and pivoted at the center thereof so as to travel in a circular path, said conveyer when at rest being situated above the tunnel so that when the material of the pile flows through the openings in the floor above the tunnel, the pivoted conveyer will be exposed, substantially as described.

6. The combination of the piling floor, central discharge opening therein, a vertical shaft at the center of the piling floor, an endless chain conveyer adapted to a wheel on said shaft and to a driving wheel, said conveyer mounted in a tunnel under the piling floor, with a pivoted conveyer, conveyer chain mounted on said pivoted conveyer and driven by a wheel on said central shaft, substantially as described.

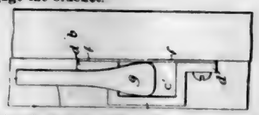
7. The combination of the piling floor, the central shaft, the tunnel under the piling floor, the endless conveyer adapted to travel in said tunnel, and geared to the central shaft, a pivoted conveyer mounted on the piling floor, a conveyer chain geared to the central shaft and mounted on said pivoted conveyer, and apparatus for moving the movable conveyer around its pivot, said apparatus being also geared to the shaft, substantially as described.

8. The combination of the piling floor, a tunnel, and underground conveyer in said tunnel, a roof for said floor, a post at the center of the piling floor extending to the roof, a hollow shaft or sleeve mounted on said post, a chain wheel at the base of said shaft, a conveyer in the tunnel passing around the chain wheel and giving motion to the shaft, a pivoted conveyer adapted to travel on the piling floor, and having a conveyer chain thereon, a chain wheel on the shaft engaging with the conveyer chain, substantially as described.

**502,556.** SASH-FASTENER. JOHN E. DOLBER, Manchester, N. H. Filed Apr. 5, 1893. Serial No. 469,172. (No model.)

*Claim.*—1. A fastening device comprising a bracket secured to a

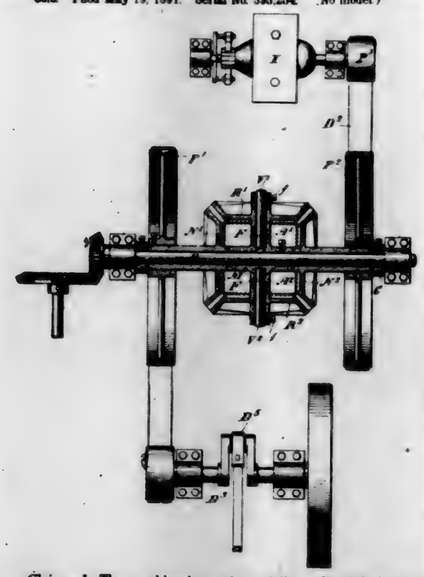
movable object, a locking lever having a handle, a pin for engaging a socket in a stationary object, and a cam between said pin and handle adapted to engage the bracket.



2. A fastening device comprising a bracket and a wearing plate secured to a movable object, a locking lever having a handle, a pin for engaging a socket in a stationary object, and a cam between said pin and handle adapted to engage the bracket and wearing plate.

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**502,557.** SPEED-GOVERNOR. CLARENCE E. DOOLITTLE, Aspen, Colo. Filed May 19, 1891. Serial No. 393,254. (No model.)



*Claim.*—1. The combination, substantially as hereinbefore set forth with the motor to be governed, and a second motor running at a constant speed, of a governing device composed of two sets of parts rotating loosely upon a shaft connected with the supply valve of the impelling medium of the motor to be governed, one of which set of parts is connected with the governed motor and the other with the constant speed motor, and each of which engages with a device for causing the shaft to rotate and control the supply valve of the governed motor, when the speed relations of the two motors vary.

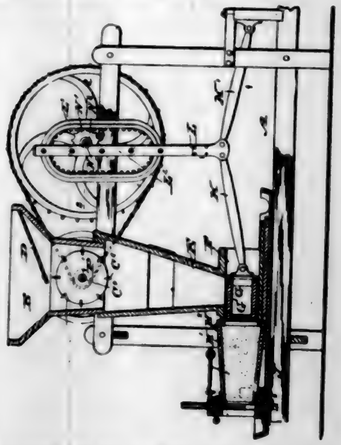
2. In a governing device for motors the combination substantially as hereinbefore set forth of a rotating shaft actuating the controlling valve of a prime mover to be governed, a loose gear wheel on said shaft actuated by the prime mover to be governed, a second loose gear wheel on said shaft actuated in an opposite direction by a second independent prime mover moving at a constant speed, and means substantially as described for causing said gear wheels to rotate the shaft and so operate the controlling valve of the first prime mover when the velocity of the first prime mover varies.

3. In a governing device for motors the combination substantially as hereinbefore set forth of a rotating shaft coupled to the controlling valve of the motor, two beveled gears rotating loosely on said shaft, one of which is driven from the shaft of the motor to be governed and the other of which is driven in an opposite direction from an independent source of constant speed, vertical arms keyed to the loose shaft between the gears and a beveled gear engaging with the beveled gears on the loose shaft attached loosely to said vertical arms for the purpose set forth.

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**502,558.** CIDER-MILL. CLEMENT W. GEET and ENOCH G. GEET, Brazier, Ohio. Filed June 30, 1892. Serial No. 438,491. (No model.)

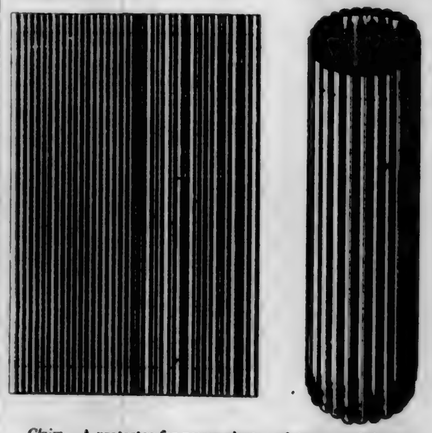
*Claim.*—1. In a cider mill, the combination with a hopper containing a grinding wheel and a chute leading from the said hopper, of a subjacent chamber communicating with the said chute, a reciprocating plunger held in the said chamber, a press box made in the shape of the frustum of a cone and connected at its large end with one end of the said chamber so that the reciprocating plunger discharges the crushed apples into the said press box, a gate held on the small end of the said press box, and a bearing carrying the said gate and formed with a circular opening into which projects the small end of the said press box, substantially as shown and described.



2. In a cider-mill, the combination with a hopper containing a grinding wheel and a chute leading from the said hopper, of a subjacent chamber communicating with the said chute, a reciprocating plunger held in the said chamber, a press box made in the shape of the frustum of a cone and connected at its large end with one end of the said chamber so that the reciprocating plunger discharges the crushed apples into the said press box, a gate held on the small end of the said press box, a bearing carrying the said gate and formed with a circular opening into which projects the small end of the said press box, and means, substantially as described, for supporting the said gate at any desired height, as set forth.

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**502,559.** PLANT OR TREE PROTECTOR. BENJAMIN F. GILMAN, San Francisco, Cal. Filed June 24, 1892. Serial No. 437,887. (No model.)



*Claim.*—A protector for young plants and trees consisting of a cylindrical hollow casing formed of tule reeds stitched together in a sheet with interstices between the reeds for the circulation of air, said sheet having its edges brought together and secured to form a cylinder adapted to encircle the tree or plant, substantially as herein described.

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**502,560.** SAFETY-ENVELOPE. JOSEPH J. GLEASON, New York, N. Y. Filed Feb 27, 1893. Serial No. 463,927. (No model.)

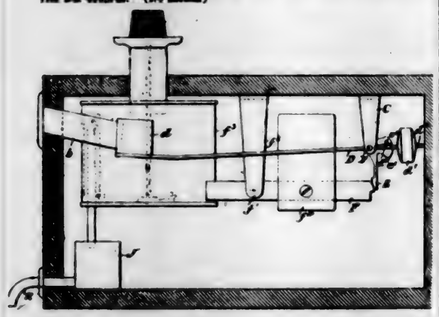


*Claim.*—1. The combination with an envelope, of a fastener therefor, consisting of the part *c* carried by the body of the envelope, said part consisting of a disk *d* resting against the face of the envelope and formed with an inwardly projecting contractible tubular shank *d'*, said shank being provided on its inner end with an annular flange *d²*, beveled on its outer edge, a washer sprung on shank *d'* for securing said part to the envelope, and another part *c'* carried by the flap of the envelope and consisting of a plate *e* resting against one face of the flap and provided with a short contractible tubular shank *e'*, provided with an annular shoulder *e²*, on its inner end and a washer sprung on the shank *e'* between shoulder *e²* and the flap, thereby fastening said part to the flap whereby the shank of part *c* may be sprung or passed through the shank of the part *c'* to permit its beveled shoulder to engage over the outer end thereof, substantially as described.

2. In a fastening device for envelopes, &c., the combination of a part *c'* carried by one part of the envelope, said part *c'* consisting of a disk *e'* formed integral with a tubular shank *e*, said shank being slitted longitudinally and flanged, and a securing washer sprung over shank *e'* and held thereon by said flange, and another part *c* carried by the other part of the envelope and consisting of a disk *d* carrying a tubular shank *d'* slitted longitudinally and shouldered at its end, and means for clamping it to the envelope, substantially as described.

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**502,561.** COIN-CONTROLLED APPARATUS FOR VENDING LIQUIDS. HARRY W. GORE, Washington, D. C. Filed Sept. 19, 1891. Serial No. 406,243. (No model.)



*Claim.*—In a coin controlled apparatus for vending liquids, the combination with a movable liquid carrier, a filling valve opened by the ascent of the same, a catch for normally retaining the carrier in its lowered position, a coin actuated lever for releasing said catch and allowing the carrier to ascend whereby the filling valve is opened, and a siphon discharge for the carrier thrown into operation when the liquid therein reaches a certain predetermined height, substantially as described.

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**502,562.** WATER-COOLING ATTACHMENT FOR REFRIGERATORS. JOHN E. GUENTHER, Owensborough, Ky. Filed Jan. 18, 1893. Serial No. 458,722. (No model.)

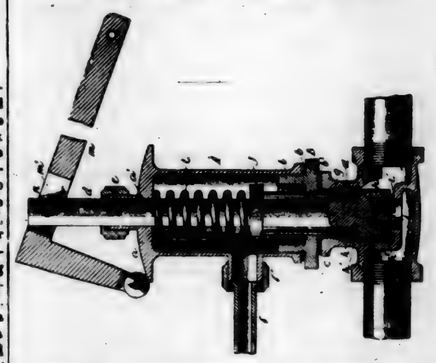


*Claim.*—1. The combination with a water cooling attachment consisting of a high reservoir and a low and flat closed box or tank attached to one side of and on a level with the reservoir, of the removable brace located in said box, substantially as described.

2. In a water-cooling attachment for refrigerators comprising a flat closed cooling-box or tank and a feed-tank or supply reservoir connected therewith, the removable interior brace or support consisting of a box square in cross-section, and provided with a bail-handle at one end, substantially as and for the purpose shown and set forth.

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**502,568.** STOP AND WASTE VALVE. JOB W. KILL, Manchester, N. H. Filed Dec. 1, 1892. Serial No. 453,706. (No model.)



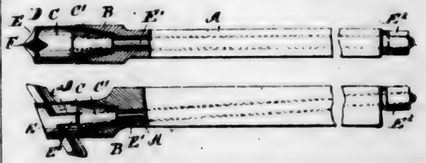
*Claim.*—1. In a stop and waste valve, the combination of a barrel, passages leading to said barrel, a valve having a gasket for closing said passages, a valve stem having a collar thereon and pins between said collar and gasket to prevent the displacement of the latter substantially as described.

2. In a stop and waste valve, the combination of a barrel having a waste outlet, a coupling for connecting the supply and service pipes and having a passage therein, a nut connecting the barrel and coupling and having a series of perforations therein, a double-acting valve provided with gaskets for alternately closing the perforations and the passages in the coupling, a valve stem having a collar thereon, pins operating with said collar to prevent the displacement of the upper gasket, a spring between the collar and the top of the barrel, and means substantially as described for raising said valve and stem against the action of the spring, substantially as described.

3. In a stop and waste valve, the combination of a barrel having a waste outlet, a flange having a convex surface, and a stuffing box arranged above the same, a coupling connecting the supply and service pipes, having a passage therein, a nut connecting the barrel and coupling, and having a series of perforations therein, a valve having gaskets for closing alternately the perforations and the passage in the couplings, a valve stem, a collar on said stem, pins *k* for preventing the displacement of the upper gasket, spring *l*, the lever having pivotal connection with the upper end of the valve stem, the lug on the end of the lever, and the friction roller for engagement with the upper surface of the flange, substantially as set forth.

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**502,564.** TOOL-HOLDER. JOHN C. HUSTER, San Francisco, Cal. Filed Oct. 31, 1892. Serial No. 450,574. (No model.)



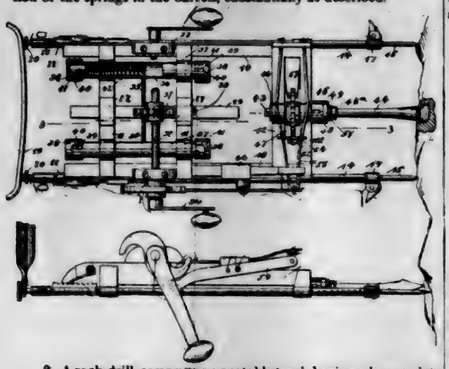
*Claim.*—A tool holder comprising the longitudinally bored stock A having a socket B in its outer end, the head section C having a longitudinal bore, a shank C' fitting the socket B, and provided with transverse intersecting recesses or grooves across its front face, the rod F extending through the head section C and the stock and formed at its outer end with the outer head section E having a flat portion $E^3$ entering one transverse recess $C^3$ in the section C and having a transverse opening and an intersecting groove receiving the tool or cutter, and a nut on the opposite end of the rod to draw the head section E inwardly and bind the tool in the opposed transverse recesses in the two head sections, substantially as set forth.

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**502,565.** ROCK-DRILL. HARVEY P. JONES, Denver, Colo. Filed Sept. 21, 1892. Serial No. 446,203. (No model.)

*Claim.*—1. A rock drill, comprising a portable frame, a drill holder carried by the frame, a reciprocating hammer held to slide between

anti-friction rollers and adapted to strike upon the drill in the drill holder, spring barrels arranged parallel with the hammer and provided with insulating cushions in the ends, springs arranged in said barrels, arms secured to the hammer and held to slide in slots in the spring barrels, the arms being pressed forward by the springs in said barrels, and a crank and gear mechanism for moving the arms against the tension of the springs in the barrels, substantially as described.

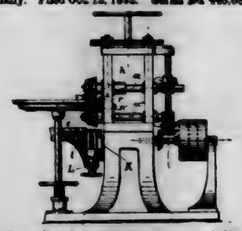


2. A rock drill, comprising a portable track having a breast plate at one end, a frame held to slide on the track and having a ratchet connection therewith which holds it forward thereon, a revoluble drill holder journaled in the frame, a reciprocating hammer held to slide at right angles to the hammer, a mutilated gear wheel carried by the longitudinal row of teeth thereon, a revoluble driving shaft extending in the frame and strike the drill in the holder, the hammer having a shaft and held to mesh with the teeth on the hammer, outwardly extending arms secured to the hammer, and springs arranged to engage the arms and throw the hammer against the drill, substantially as described.

3. The combination with the drill frame, the revoluble drill holder carried by the frame and the ratchet wheel secured to the drill holder, of a revoluble driving shaft arranged to drive a hammer against a drill in the holder, cams secured to the driving shaft, a tilting lever fulcrumed on the side of the frame and operated by the cams, a second spring lever secured to one end of the tilting lever and fulcrumed on the frame, the spring lever extending opposite the ratchet wheel, and a hook pawl secured to the spring lever and arranged to engage the ratchet wheel, substantially as described.

4. In a rock drill, the combination of a tubular track, extension rods fitting the tubes at the front ends thereof, for extending the track, a guard at the rear of the track adjustably held thereto by rods carried by the guard, and a frame adapted to slide on the tubes, and carrying the drilling devices, substantially as described.

**502,566. METAL-EMBOSSING MACHINE.** GUSTAV KLUMPP, Esslingen, Germany. Filed Oct. 12, 1892. Serial No. 448,689. (No model.)



*Claim.*—1. In embossing machines, a conical die-roller, in combination with a turn-table, provided on its upper surface with a die-ring and on its lower with a bevel-gear and a second bevel-gear meshing with the first, substantially as set forth.

2. In an embossing machine, two parallel shafts, a conical die-roller mounted on one shaft and a bevel-cog-wheel having the same taper as the die-roller, and the diameter of whose pitch line is equal to the diameter of the die-roller, in combination with a turn-table extending between the die-roller and the bevel-cog and provided at its upper face with a die-ring whose upper surface is an accurate development of the convex surface of the die-roller, and on its lower face with a beveled gear meshing with the aforesaid bevel-cog, substantially as set forth.

3. In an embossing machine, two parallel horizontal shafts mounted in sliding bearings, each provided with a worm-wheel, and one shaft provided, moreover, with a roller die while the other shaft is provided with a bevel cog-wheel in combination with a vertical shaft having worms mounted thereon, said worms being adapted to slide with the bearings of the horizontal shafts, and a turn-table bearing a counter-die-ring and a bevel-gear meshing with the bevel-cog aforesaid, substantially as set forth.

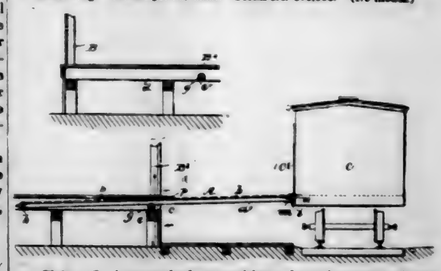
**502,567. HAIR-CRIMPER.** CHARLES A. KRUTSCH, Logansport, Ind. Filed Apr. 29, 1892. Serial No. 431,160. (No model.)



*Claim.*—1. The herein described hair crimper consisting of the single straight stem A having the two loops projecting in opposite directions from one end thereof, the link B at one end thereof pivoted to the opposite end of the stem, as shown, and bar C at one end thereof pivoted to the outer end of said link so that the bar has a free swing around the end of the stem to either side thereof and the free end of the bar can be held by said loop, as shown and described.

2. The herein described hair crimper consisting of a single straight stem A having the two rigid loops D projecting laterally in opposite directions from one end thereof, the straight link B at one end thereof pivoted to the opposite end of the stem, and the clamping bars C, C, at corresponding ends pivoted to the outer end of said link so that said bars can swing around the end of said stem to either side thereof and be held by either loop, as shown and described

**502,568. WAREHOUSE GANG-PLANK.** LOHARD KUCKARTS, Portland, Oreg. Filed Apr. 17, 1893. Serial No. 470,663. (No model.)



*Claim.*—1. A gang plank, comprising a framed structure sloped on its top edges at one end, a wedge shaped apron hinged thereto, and a flap plate hinged to said apron and which may be outwardly folded to form a longitudinal extension for the apron, substantially as described.

2. A gang plank, comprising a framed structure, sloped at one end, a sloped apron hinged thereto and adapted to fold on the sloped face and render the frame edges parallel at their sloped ends and also adapted to fold away from the end of the frame and provide an extension therefor, substantially as described.

3. A gang plank, comprising a framed structure, sloped on top at one end, a facing plate secured on said sloped surface, and a slope faced apron hinged to the sloped end of the frame structure, that when folded thereon affords a level top for the sloped edges of the frame, and when extended provides a continuous longitudinally extended sloped surface therefor, substantially as described.

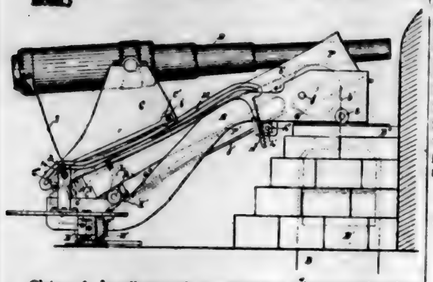
4. In a gang plank, the combination with a frame structure sloped on top at one end, and hooks below thereon at said end, of a slope faced apron hinged by one edge to the sloped end of the frame and adapted to fold and render the frame level on top at said frame end, or be extended from the frame and afford a continued sloped face therefor, substantially as described.

5. In a a gang plank, the combination with a rectangular framed structure sloped at one end on its top face, of a slope faced apron hinged thereto at said end, a facing plate on the slope face of the frame, a facing plate on the sloped face of the apron, and hooks on the frame and below said apron, substantially as described

6. The combination with rollers on shafts journaled in timbers of a building below its floor, of a gang plank adapted to travel on said rollers through an aperture in the building wall, and an apron hinged above the aperture to said wall and adapted to rest on the extended gang plank when said gang plank is extended and form a part of the top surface thereof, substantially as described.



**502,569. DISAPPEARING-GUN CARRIAGE.** SAMUEL M. MANSFIELD, U. S. Army. Filed Oct. 24, 1892. Serial No. 449,746. (No model.)



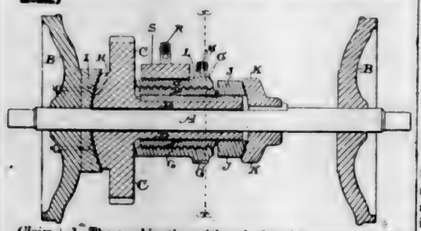
*Claim.*—1. In a disappearing gun-carriage, a lower carriage having pivoted to its upper end a chassis, and an upper carriage adapted to move on the chassis and connected to a counterpoise, substantially as and for the purpose set forth.

2. In a disappearing gun carriage, a lower carriage and a chassis pivoted to the latter and having longitudinal grooves combined with an upper carriage adapted to move on the chassis, and a shaft having rollers adapted to roll against the chassis and lower carriage for the purpose of constraining the descent of the gun substantially as specified.

3. In a disappearing gun carriage, a lower carriage, upper carriage and intervening chassis pivoted to the lower carriage and serving as a support for the upper carriage, combined with slotted bars adjustable on the lower carriage and links pivoted to the gun and to the upper carriage, substantially as and for the purpose set forth.

4. In a disappearing gun carriage, an upper and lower carriage and an intervening chassis pivoted to the forward part of the lower carriage, and acting as a support for the upper carriage combined with clutches on the latter, a roller shaft interposed between the chassis and lower carriage and means substantially as described for automatically releasing said clutches as and for the purpose set forth and described.

**502,570. FRICTIONAL MOTION-TRANSMITTER.** WILLIAM H. MASTERMAN, Oakland, Cal., assignor of two-thirds to W. M. Rank and F. H. Meyers, same place. Filed Dec. 3, 1892. Serial No. 454,497. (No model.)

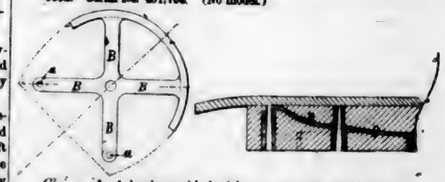


*Claim.*—1. The combination with a shaft and parts to be driven, of frictional devices fixed thereto, a gear to which power is to be applied having a sleeve rotating loosely upon the shaft between said frictional devices, opposing frictional devices rotating with the sleeve and movable inwardly and outwardly with relation to the frictional devices fixed upon the shaft, and screw-threaded sleeves turning upon each other and acting to force the movable frictional devices into and out of contact with the opposing fixed ones, substantially as herein described.

2. A shaft to be driven having friction disks fixed to rotate with the shaft, a gear having a sleeve which turns loosely upon the shaft, through which power is applied from a motor, movable disks having faces corresponding with those of the disks fixed to the shaft and, rotating with the gear and sleeve, a second sleeve surrounding the gear sleeve movable longitudinally thereon by means of a feather, and having its outer circumference screw-threaded, a second sleeve having its inner circumference screw-threaded to fit the exterior of the first named sleeve, a clamping shoe, and a lever by which it is forced into contact with the exterior sleeve so that the interior one rotates with the gear-wheel, and the exterior one remains stationary, whereby the two are moved longitudinally in opposite directions to force the frictional surfaces into contact, substantially as herein described.

3. A shaft and connected parts to be driven having a gear provided with a sleeve to rotate loosely thereon, disks fixed to revolve with the shaft exterior to the gear and its sleeve at opposite ends, correspondingly faced disks rotating with the driving gear and movable longitudinally so as to be forced into contact with the stationary disks or withdrawn therefrom, a sleeve movable upon a feather longitudinally upon the gear sleeve having its exterior screw-threaded, a correspondingly screw-threaded sleeve fitting outside of the first named one, a frictional clamp or brake by which the exterior sleeve is held stationary while the interior one rotates within it whereby the two are moved in opposite directions so as to force the frictional surfaces into contact, and a longitudinally moving bar M, with foot lever whereby it is actuated and a pawl L adapted to engage the toothed periphery of the outer sleeve and move it backward so as to release and disengage the frictional surfaces, substantially as herein described.

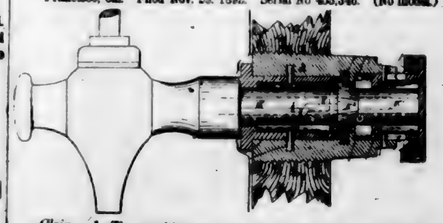
**502,571. HEEL.** HENRI MEDIER, Paris, France. Filed Nov. 12, 1892. Serial No. 451,763. (No model.)



*Claim.*—1. A heel provided with a protecting metal plate or attachment having an arm or arms embedded therein, yielding in the vertical direction and unyielding in the lateral direction, said arm or arms adapted to be rigidly attached to the sole, whereby the plate is capable of participating in the elasticity of the material of which the heel is made, substantially as described.

2. A heel composed of compressible material with a flexible metallic plate consisting of a semicircular protecting or wearing piece at the lower back part of the heel, having a flexible arm or arms passing through the heel and rigidly attached to the sole at one end, substantially as described.

**502,572. BUSHING AND FAUCET.** GEORGE H. MERRICK, San Francisco, Cal. Filed Nov. 28, 1892. Serial No. 453,346. (No model.)



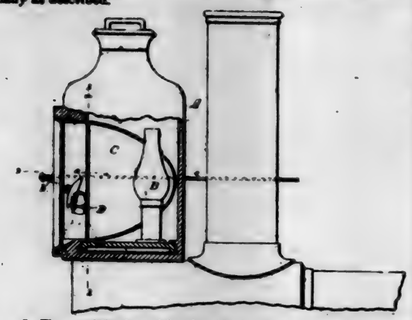
*Claim.*—1. The combination with the bushing, of the valve, the faucet for opening and closing the valve, the inwardly projecting pins secured within the bushing, the rotatable sleeve secured on the faucet, and the elongated slots formed within the sleeve, said slots terminating in inclined slots, which slots are engaged by the bushing pins, said sleeve when rotated, serving to force the faucet in or out so as to open or close the valve.

2. In a lock faucet, the combination with the bushing, of the valve, the slots formed in said valve, the pins for holding the valve within the bushing, the faucet provided with an end key, the lugs projecting inwardly from the valve, and the elongated slots formed in the key, said slots terminating in right-angular slots, said slots adapted to engage the valve lugs in order to open or close the valve.

**502,573. LIGHTING APPARATUS.** ARTHUR B. MOORE, GEORGE W. RUE, CORAL D. SMITH, FRANK H. ROEBUCK, JOHN F. MEZA, and JOHN R. KIRK, East Las Vegas, N. Mex. Filed Jan. 12, 1893. Serial No. 458,156. (No model.)

*Claim.*—1. The combination with a head or other light, of a tube extending from the light, a concave reflector on the inner end of the tube within the light casing, and a light distributer on the outer end

of the tube, the said light distributer comprising a casing secured to the tube and provided with an opening in one side, a plano-convex lens in the said opening, and a convex reflector in the casing, substantially as described.



2. The combination with a head light, of a tube projecting into the same, a reflector hinged to the end of the tube in the head light and adapted to be operated from the cab, and a light distributer on the outer end of the tube, substantially as described.

3. The combination with a head light, of a tube projecting into the same, a concave reflector hinged to the end of the tube in the headlight, and adapted to be operated from the cab, and a light distributer on the other end of the tube and consisting of a casing provided with an aperture in one side, a lens in said aperture, and a reflector in the casing, substantially as described.

4. The combination with a head light, of tubes projecting into the head light on opposite sides, a concave reflector hinged to the end of each tube in the head light, means for operating the reflector, and a light distributer on the outer end of each tube, the said light distributer comprising a casing having a neck for connecting it with the tube and provided with an opening in one side, a plano-convex lens in the opening, and a convex reflector in the casing opposite the neck, substantially as herein shown and described.

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**502,574. COMBINED WRITING-TABLET AND COPY-HOLDER.** GEORGE H. HUMPHREYS and GEORGE B. HAINES, New York, N. Y., Assignors to said Humphreys and Charles A. B. Frost, same place. Filed Oct. 11, 1892. Serial No. 448,548. (No model.)



*Claim.*—1. A combined writing tablet and copy holder comprising a tablet provided with a holder pivoted to swing either to the front or back of the tablet and with a support also pivoted to swing either to the back or front of the tablet, substantially as described.

2. A combined tablet and copy holder provided with a U shaped support pivoted to swing either to the front or back of the tablet, said support being adapted to fit around the lower side edges and the bottom edge of the tablet, substantially as described.

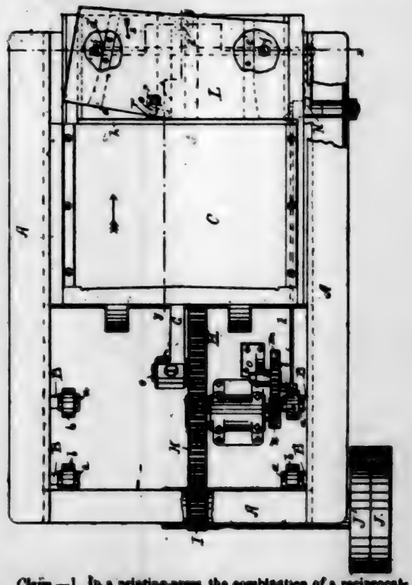
3. A combined writing tablet and copy holder, comprising a tablet, a support for the said tablet and pivoted thereon, and keepers secured on the said tablet at the pivot ends of the said support, the said keepers being each provided with angular shoulders or offsets to limit the outward movement of the support in either direction, substantially as shown and described.

4. A combined writing tablet and copy holder, comprising a tablet, a support for the said tablet and pivoted thereon, keepers secured on the said tablet at the pivot ends of the said support, the said keepers being each provided with angular shoulders or offsets to limit the outward movement of the support in either direction, and bushings secured in the said tablet at the side edges thereof, the said bushings being engaged by the pivot ends of the said stand, substantially as shown and described.

5. A combined writing tablet and copy holder, comprising a tablet, a bar pivoted near one end of the said tablet and mounted to swing to the front or rear of the same, the said bar being adapted to be engaged by the book, a stand made in U-shape and adapted to fold on the side edges and bottom edge of the said tablet, the ends of the support being formed with trunnions mounted to swing in bearings formed in the side edges of the tablet, and keepers secured to the side edges of the tablet at the pivot ends of the said support, the said keepers being each provided with angular offsets to limit the outward movement of the support in either direction, substantially as shown and described.

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**502,575. INK-DISTRIBUTING APPARATUS FOR PRINTING-PRESSES.** GEORGE P. MCLENNAN, Boston, Mass., assignor of one-half to James W. McLennan, same place. Filed Jan. 23, 1893. Serial No. 459,054. (No model.)

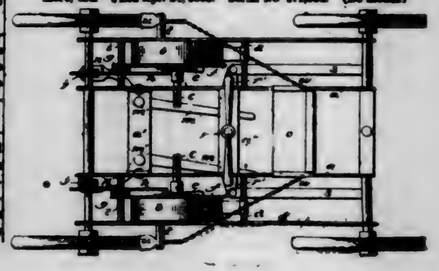


*Claim.*—1. In a printing-press, the combination of a reciprocating type bed; an ink distributing table connected to said bed by a vertical pivot; and mechanism controlled and operated by the movements of said bed, and having provision for moving said table about its pivot, alternately in opposite directions, during the rearward movements of said type bed.

2. In a printing press provided with an impression cylinder and a reciprocating type-bed, the combination with said type bed of the ink distributing table L pivoted to said bed; the cam pieces *e* and *f* formed upon or secured to the under side of said table; the trucks *f'* and *f''* mounted upon the stems or rods *g* and *g'*; the levers M and N; rod *h*; crank-pin *i*; and the gears *m* and *n*, all arranged and operating substantially as described.

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**502,576. BRAKE FOR VEHICLES.** CHARLES H. NEWBAR, Baltimore, Md. Filed Apr. 21, 1893. Serial No. 471,332. (No model.)



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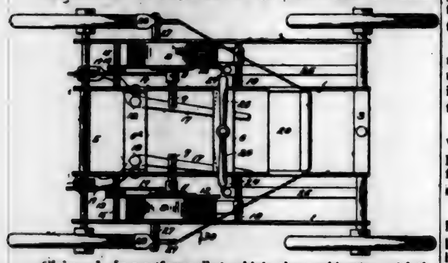
*Claim.*—1. In a vehicle, the combination, with separate brake shoes, of a sliding seat for the rider, and means for connecting said sliding seat and brake shoes, substantially as described.

2. In a vehicle, the combination, with separate brake shoes, of a sliding seat and a chain or cord connecting the seat and brakes substantially as described.

3. In a brake for vehicles, the combination, with the brake shoes having weighted lever ends, of a sliding seat and a chain or rope connected to the weighted ends of said shoes and passing free around the back of the seat, substantially as described.

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**502,577. SPRING-PROPELLED VEHICLE.** CHARLES H. NEWBAR, Baltimore, Md. Filed Apr. 21, 1893. Serial No. 471,333. (No model.)



*Claim.*—1. In a self propelled vehicle, the combination, with the frame, of a sliding seat, the brakes operated thereby, a steering device, a pair of shifting levers, each controlling a pinion on the front axle, and a train of gear engaging each pinion and an independent spring motor, arranged and controlled by the rider, substantially as described.

2. In a self propelled vehicle, the combination, with the duplex spring motors, of the front axle having a sliding pinion thereon for each motor, a train of gear separately engaging said pinions and spring motor, and a pair of levers for independently shifting said pinions, having each a tooth or stud adapted to engage and disengage the said separate motor trains, substantially as described.

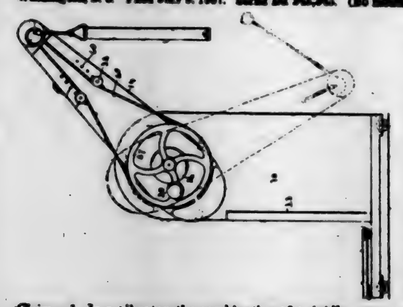
3. In a self propelled vehicle, the combination of the frame composed of the separate side bars mounted in pairs at their rear ends upon the bolster and at their front ends upon a driving axle, a spring motor and gear train mounted in each frame, a pinion sliding on said axle for engaging each train, a foot lever for engaging each pinion, and a tooth or stud on each lever for engaging each motor train, substantially as described.

4. In a spring propelled vehicle the front axle having gear each and a sliding pinion, in combination with a spring propelled gear train, suitable means for separately shifting said pinions to engage and disengage said motor train and suitable means for separately locking said gear train when disengaged from said pinion, substantially as described.

5. In a self propelled vehicle, the combination, with the front axle having sliding pinions, an independent spring driven motor train engaging each pinion, a shifting lever for each pinion, and the steering cross bar supporting said levers, substantially as described.

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**502,578. MOVEMENT-CURE APPARATUS.** JOHN W. OSBORNE, Washington, D. C. Filed July 9, 1887. Serial No. 243,843. (No model.)



*Claim.*—1. In a vibrator, the combination of a rigidly supported upright, with an arm pivoted thereon movable in a vertical plane, and locking mechanism for securing it in any adjusted position, and with reciprocating mechanism mounted on the end of said arm, and a fly-wheel or pulley for actuating said mechanism; substantially as described.

2. In a vibrator, the combination of a flat base adapted to carry the operator standing thereon, and sustaining an upright, rigidly connected thereto; with an arm swinging on said upright, and bearing driving and reciprocating mechanism; substantially as described.

3. In a vibrator, an arm pivoted upon a support and carrying reciprocating mechanism; in combination with clamping mechanism for holding the swinging arm rigidly against said support in any desired position; substantially as described.

4. In a locomotive vibrator, the combination of a platform carrying the vibrating mechanism and provided with casters; with brake plungers for the caster wheels and a lever flap folding over the platform and actuating the brake plungers by the weight of the body of the operator, substantially as described.

5. In a locomotive vibrator, the combination of a platform carrying the vibrating mechanism and provided with casters; with spring mounted brake plungers for the caster wheels, and a lever flap folding over the platform and actuating the plungers by the weight of the body of the operator, substantially as described.

6. In the reciprocating mechanism of a vibrator, a rotary head with a circular disk eccentrically journaled in the same, a wrist pin projecting eccentrically from the disk, and a single clamping screw for fixing the disk in its bearing in any adjusted position, substantially as described.

7. In the reciprocating mechanism of a vibrator a revolving head provided with a conical adjusting disk, fitted into a conical cavity placed eccentrically on the face of the disk, as described; said disk bearing an eccentrically placed crank-pin, and a central clamping screw; as set forth.

8. In the reciprocating mechanism of a vibrator, the combination of a rotary head, and an eccentrically mounted rotatable disk carrying a wrist pin eccentrically mounted thereon, whereby the length of stroke of the pin can be adjusted; with a scale on the head representing rectilinear differences of stroke, substantially as described.

9. The reciprocating mechanism of a therapeutical vibrator comprising a revolving head formed with a conical cavity eccentrically disposed in the head, a conical disk journaled in said cavity and having a crank-pin eccentrically mounted thereon, an elastic cushion interposed between the end of the disk and the bottom of the cavity, and a clamp for forcing the disk against its seat, substantially as described.

10. In a vibrator, a driven shaft carrying two wrist pins each independently adjustable with reference to the axis of the shaft so as to vibrate with a difference of phase, substantially as described.

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**502,579. COMBINED SOFA, TABLE, AND BED.** DENNIS W. PALMER, Hermon, Me. Filed Oct. 12, 1892. Serial No. 448,688. (No model.)



*Claim.*—1. The combination, with the sofa having vertical frame heads $A^3$, $A^4$, of the board, C, having cleats, C', the pair of links B, which are pivoted to the cleats, and to the upper edges of the frame heads at points between the transverse middle and rear sides of the latter, and the links B', pivoted to the board cleats and the rear lower portions of said frame heads, whereby, when the board is in horizontal position, it rests on the frame heads and the links B lie nearly parallel to it, and the links B' stand vertical, as specified.

2. A piece of furniture comprising a frame having heads each provided with a hinged auxiliary head, a board connected with the said frame heads by links and adapted to form a back or table for the said frame, and a bottom arranged in the said frame and made in sections hinged together, one of the sections being also hinged to the frame, substantially as shown and described.

3. A piece of furniture comprising a frame having heads each provided with a hinged auxiliary head, a board connected with the said frame heads by links and adapted to form a back or table for the said frame, a bottom arranged in the said frame and made in sections hinged together, one of the sections being also hinged to the frame, and legs held on one of the said sections to support the same when extended, as described.

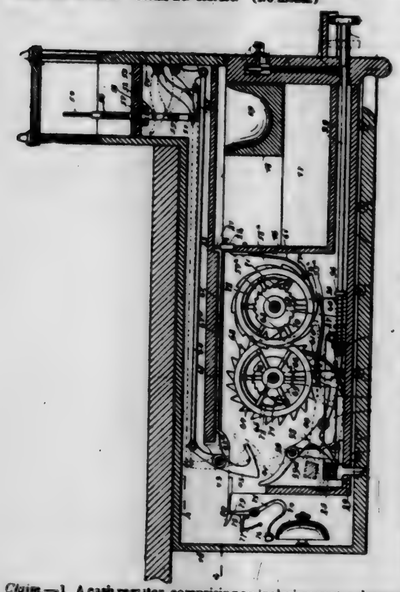
4. In a piece of furniture of the class described, the combination with a frame having heads, of a bottom for the said frame and head

in sections hinged together, one of the said sections being pivoted to the ends of the said frame, legs secured on the section hinged to the frame and adapted to rest on the rails of the latter, and a set of pivoted legs held on the other section, substantially as shown and described.

5. A piece of furniture comprising a frame having heads each provided with a hinged auxiliary head, a board connected with the said frame heads by links and adapted to form a back or table for the said frame, a bottom arranged in the said frame and made in sections hinged together, one of the sections being also hinged to the frame, legs held on one of the said sections to support the same when extended, and locking devices for fastening the said auxiliary heads to the frame heads or to the outermost bottom section, substantially as shown and described.

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**502,580. CASH-REGISTER.** CHARLES J. PARKER, Seward, Nebr. Filed Feb. 23, 1892. Serial No. 423,020. (No model.)



*Claim.*—1. A cash register, comprising an inclosing case, a drawer held to slide therein, locking mechanism to hold the drawer closed, display signs held to move upward in the case and into view, the signs being appropriately marked as described, registering number wheels arranged within the drawer, a plurality of push buttons arranged on the drawer and numbered to correspond with the number wheels and display signs, and mechanism operated by the pushing of the buttons to unlock the drawer, raise the display signs and turn the number wheels, substantially as described.

2. A cash register, comprising an inclosing case, a slidable drawer held in the case, a gravity lock carried by and adapted to hold the drawer closed, a series of numbered push buttons arranged on the front of the drawer, registering number wheels for each push button, within the drawer an upwardly moving display sign for each number wheel and button, the sign being marked to correspond with the button, and mechanism operated by the pushing in of a button and adapted to unlock the drawer, turn a number wheel, and raise a display sign, substantially as described.

3. A cash register, comprising a case having an upwardly extending front portion with a transparent upper end, a drawer held to slide in the case, a lock to hold the drawer closed, a series of numbered push buttons arranged on the front of the drawer, a series of registering number wheels arranged within the drawer, a series of vertically movable display signs adapted to move up into the transparent upper portion of the case, the signs being numbered to correspond with the push buttons, and mechanism operated by the pressing of a button for releasing the lock, turning a number wheel, and raising a sign, substantially as described.

4. In a cash register, the combination with the case having a recess in its bottom, of the drawer held to slide in the case, and the registering mechanism carried by the drawer the swinging lock bar having a bolt thereon adapted to extend through the drawer bottom and into the recess in the case, a push button arranged in the front of the drawer, a slide rod connected with the push button, and with the registering mechanism and a swinging lever operated by the slide rod and having an arm extending below the lock bar and in contact therewith, substantially as described.

5. In a cash register, the combination with the inclosing case the drawer held to slide therein, the registering mechanism carried by the drawer of a swinging lock bar adapted to lock the drawer to the case, a toothed registering wheel mounted on the drawer and having numbers thereon, the distances between the numbers corresponding to the distances between the teeth, a push button arranged in the front of the drawer, a slide rod operated by the push button, a swinging lever pivotally connected with the slide rod and having an arm to raise the lock bar, and a pawl also operated by the slide bar and held to engage the teeth of the number wheel, substantially as described.

6. In a cash register, the combination of the case having a recess in the bottom, the sliding drawer held to move in the case, the swinging lock bar held in the drawer, a bolt carried by the lock bar and extending downward through the drawer bottom and into the recess of the case, the push button held to slide in the front of the drawer, the slide rod operated by the push button, the swinging lever pivotally connected with the slide rod and having an arm extending beneath the lock bar, the revoluble toothed number wheel, and the spring pawl operated by the slide bar and adapted to engage the teeth of the number wheel, substantially as described.

7. The combination in a cash register, of the revoluble crank shaft, the number wheels loosely mounted thereon, mechanism for turning the number wheels, the mutilated ratchet wheels secured to the shaft adjacent to the number wheels, and pawls carried by the number wheels and adapted to engage the ratchet wheels, substantially as described.

8. The combination with a cash drawer and its lock, of a registering mechanism within the drawer, push rods extending through the drawer front and connected with the lock and the registering mechanism for simultaneously operating them, and a lock on the drawer front for locking the push rods, said lock being adapted to be operated from the exterior of the drawer, substantially as set forth.

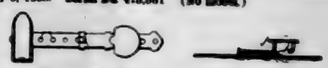
9. The combination with a cash drawer and its lock, of a registering mechanism within the drawer, a push rod extending through the drawer front and connected with the lock and the registering mechanism for simultaneously operating them substantially as set forth.

10. In a cash register, the combination, of the numbered push buttons, the vertically movable signs numbered to correspond with the push buttons, the slide rods movable by the push buttons, the oscillating levers actuated by the slide rods, the tilting arms held in the paths of the levers and actuated thereby, the swinging bell crank connected by pitmen with the tilting arms, upwardly swinging arms movable by the bell cranks, means for moving the signs by the movements of the upwardly swinging arms, and a fastening device to hold the signs in a raised position, substantially as described.

11. The combination with the sliding drawer and the registering mechanism contained in the drawer, of the push buttons arranged in the drawer front and adapted to operate the registering mechanism, and the guard plate secured to the drawer front and extending above the push buttons, substantially as described.

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**502,581. CUFF-HOLDER.** JOHN V. FILCHER, Louisville, Ky. Filed May 8, 1893. Serial No. 473,381. (No model.)



*Claim.*—The combination in a cuff-holder, of a bar having a series of indentations; means for attaching the said bar to a sleeve; a button fitted to slide upon the bar, and a spring located between the bar and the sliding body of the button and provided with a nib to engage the said indentations; the spring being provided with a tang which extends outward through the body of the slide and bears on the outer side thereof in opposition to the action of the spring, and holds the spring to the slide, substantially as described.

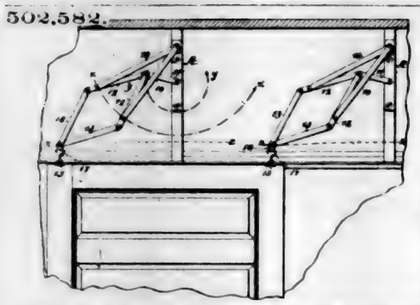
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**502,582. DOOR-HANGER.** THEODORE C. PROUTY, St. Joseph, Mich. Filed Dec. 12, 1892. Serial No. 454,898. (No model.)

*Claim.*—1. In a door hanger, the combination with a door and its frame, of a frame formed of upper and lower bars pivoted together, pivoted to the door frame and to the upper arms, and diverging bars pivoted to the door frame above the pivot of the said short arm and to the upper bars of the said frame a short distance from their outer ends, substantially as and for the purpose set forth.



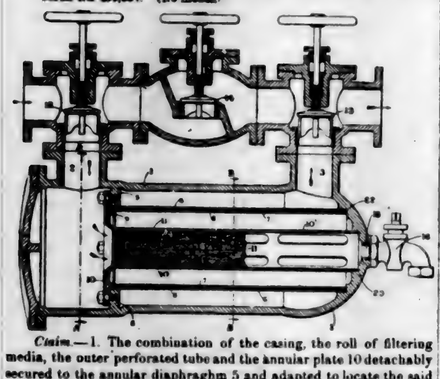
**502,582.**



2. The herein described door hanger, comprising the base plate or bar A, a frame consisting of the upper and lower arms 12 and 13 pivoted together, the short arm 11 pivoted to the base plate and the arms 12, and the converging arms 10 pivoted to the base plate above the pivot of the short arm 11 and to the arms 12 near their outer ends, substantially as herein shown and described.

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**502,583. APPARATUS FOR FILTERING WATER.** DAVID A. RANKINE, Waterloo, near Liverpool, England. Filed July 13, 1892. Serial No. 439,857. (No model.)



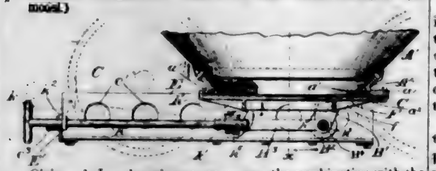
*Claim.*—1. The combination of the casing, the roll of filtering media, the outer perforated tube and the annular plate 10 detachably secured to the annular diaphragm 5 and adapted to locate the said roll and tube in position and having an inner perforated tubular extension provided with a wire gauze liner both the said inner and outer perforated tubes being seated against the end wall of the casing substantially as described.

2. The herein described filtering media which consist of a sheet of wire gauze of suitable dimensions with two metallic strips 18 at opposite sides having eyelets 19 and a sheet of flannel, cotton or linen fabric attached to said sheet of gauze by means of the eyelets 19, skewers 20 and pins 21 substantially as described.

3. In combination, the casing, the roll of filtering media, the outer perforated tube, and the inner perforated tube having a plate 10, at one end adapted to be attached to the casing both the inner and outer tubes being seated against the end wall of the casing, substantially as described.

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**502,584. OUTLET-VALVE FOR GARBAGE-CARS.** JULIUS E. REITIO, Washington, D. C. Filed Feb. 2, 1893. Serial No. 460,676. (No model.)



*Claim.*—1. In a dumping car or wagon, the combination with the car body provided with a valve seat at the bottom thereof, of a frame attached to said car and carrying a track arranged beneath said valve seat, a valve truck adapted to travel on said track, toggle lever arms pivoted to said valve truck and to the valve, and a valve supported by the said toggle lever arms and adapted to be pressed upward on said valve seat as said valve truck advances, substantially as and for the purposes described.

2. In a dumping car, the combination with a tank forming the car body, and provided with a valve seat at the bottom thereof, of a frame attached to the car and carrying a track beneath said valve seat, a valve truck adapted to travel on said track, a flat valve mounted upon said truck, a stop piece and lip to check the forward motion of said valve, toggle lever arms connecting said valve and said truck, and means for holding said truck when said valve is closed, substantially as described.

3. In a dumping car or wagon the combination with a tank forming the car body, and provided with a valve seat at the bottom thereof, of a frame attached to the car and carrying a track beneath said valve seat, a valve truck adapted to travel on said track, a flat valve mounted upon said truck, a stop piece and lip to check the forward motion of said valve, toggle lever arms pivoted to said valve and to said truck and provided with shoulders adapted to engage beneath said valve when the valve is lowered a sufficient distance, and means for holding said truck when said valve is closed, substantially as described.

4. In a dumping car, the combination with a tank forming the car body, and provided with a valve seat $A^3$ at the bottom thereof, the said valve seat having the flange $a$ and packing ring $a'$, of a frame attached to the car and carrying a track beneath said valve seat, a valve truck adapted to travel on said track, a flat valve F mounted upon said truck; a stop piece $a^3$ and lip to check the forward motion of said valve, toggle lever arms H' connecting said valve and said truck, and means for holding said truck when said valve is closed, substantially as described.

5. In a dumping car the combination with a tank forming the car body, and provided with a valve seat $A^3$ at the bottom thereof, the said valve seat having the flange $a$ and packing ring $a'$, of a frame attached to the car and carrying a track beneath said valve seat, a valve truck adapted to travel on said track, a flat valve F mounted upon said truck, a stop piece $a^3$ and lip to check the forward motion of said valve, toggle lever arms H' pivoted to said valve and to said truck and provided with shoulders $h'$ adapted to engage beneath said valve when the valve is lowered a sufficient distance, and means for tightening the valve and holding said truck when said valve is closed, substantially as described

6. In a dumping car, the combination with a tank forming the car body, and provided with a valve seat $A^3$ at the bottom thereof, the said valve seat having the flange $a$ and packing ring $a'$, of a frame attached to the car and carrying a track beneath said valve seat, a valve truck adapted to travel on said track, a flat valve F mounted upon said truck, a stop piece $a^3$ and lip to check the forward motion of said valve, toggle lever arms H' pivoted to said valve and to said truck and provided with shoulders $h'$ adapted to engage beneath said valve when the valve is lowered a sufficient distance, the bar K adjustably connected to said valve truck and having a collar $k^2$, and the plate E having groove $e'$ with sides adapted to engage said shoulder, substantially as and for the purposes described.

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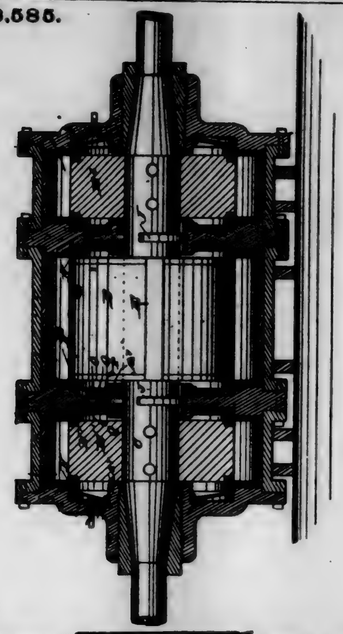
**502,585. ROTARY ENGINE.** WENTWORTH RICE, Rapid City, S. D. Filed Oct. 10, 1892. Serial No. 448,483. (No model.)

*Claim.*—1. A rotary engine comprising a main cylinder, two auxiliary cylinders on opposite sides thereof and taking steam at an opposite side to that of the main cylinder, pistons in said cylinders and provided with abutments, a driving shaft carrying the pistons and provided, within recesses in the inner cylinder heads, with cams, a cut off valve turning in each cylinder; the ends of the main valve and the inner ends of the valves of the auxiliary cylinders being provided with cranks connected by links extending across the main shaft through recesses in the inner cylinder heads, and spring pressed pins mounted in the inner cylinder heads in the path of the said cams and pivotally connected with the cranks of the valves of the auxiliary cylinders, substantially as set forth.

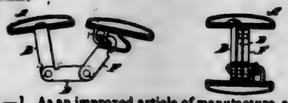
2. In a rotary engine, the combination with a piston and a packing ring abutting thereagainst, of a traveling nut mounted on an externally threaded projection on the inner face of the cylinder head concentric with the axis of the piston, a dished ring on said projection engaging said packing ring with its rim and engaged at its outer convex face by said nut, and means for rotating the nut from the exterior of the cylinder, substantially as set forth.

3. The combination with the cylinder having an externally threaded projection on the inner face of its head concentric with its piston rod opening, the rotary piston and a packing ring, of the dished ring upon the said projection and bearing against the packing ring, a nut mounted on the said projection and bearing against the outer convex face of the ring; said nut also provided with gear teeth, and a shaft entering the cylinder and geared to said nut, substantially as set forth.

502,585.



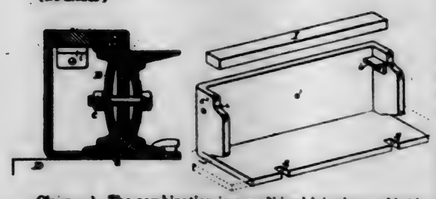
502,586. COMBINATION CUFF-BUTTON AND LINK. LEWIS S. SARPOOS, New York, N. Y. Filed Apr. 20, 1892. Serial No. 471,177. (No model.)



*Claim.*—1. As an improved article of manufacture, a button consisting of a head A provided with a shank composed of a link section B, a link section D pivoted to the latter, and a link section F pivoted to said section D and having its free end provided with a fastening for engaging the base, and a catch secured to the base for engaging and holding the link sections when they are folded beside one another, substantially as described.

2. As an improved article of manufacture, a button comprising a head provided with a shank composed of jointed or folding sections provided with recesses or shoulders adapted to correspond when the sections are folded, a base having a catch or fastening adapted to engage said shoulders, and a hook or fastening on the outer shank section adapted to engage the base, substantially as described.

502,587. BOX-BRIDGE JOINT FOR RAILWAY-RAILS. EDWARD SAMUEL, Philadelphia, Pa., assignor to the William Wharton, Jr., & Company, Incorporated, same place. Filed Jan. 5, 1893. Serial No. 457,366. (No model.)



*Claim.*—1. The combination in a combined joint box and bridge for railway rails of the flat bottom plate adapted to pass between the rails and the ties and extending from one tie to another, with a side plate forming the strengthening member of the bridge, and end plates forming with the bottom and side plates the inclosing box, substantially as described.

A blank for an inclosing box for joint plates for railway rails, the same consisting of the central section $c'$, the section $c$ extending from the side of the section $c'$, and end sections $c^2$ extending from each end of the central section, substantially as described.

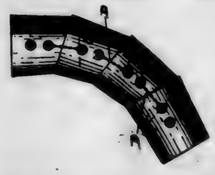
3. A combined box and bridge for railway rail joints made of wrought metal shaped and bent, forming a bottom plate $c$ extending under the rails, and secured to the tie, with a vertical section $c'$ and end sections $c^2$, said end sections conforming to the shape of the rails, with a cover plate for the box thus formed, substantially as described.

4. The combination of the wrought metal box for the joints of railway rails, said box consisting of a bottom plate $c$ extending under the rails and secured to the ties, the side plate $c'$ and end plates $c^2$, brackets $i$ secured to the end plates, and a cover plate fitting between the rails and the side plate, and supported by the brackets $i$, substantially as described.

5. The combination in a combined box and bridge joint, of the box formed of a bottom plate, side plate and end plates, said bottom plate extending beyond the end plates, substantially as described.

6. An inclosing box for railway joints consisting of the flat bottom plate extending under and beyond the rails and from one tie to another, a side plate extending from the bottom plate to the surface of the highway, end sections and a cover plate with securing devices passing through the bottom plate and into the ties, substantially as set forth.

502,588. CONVEYER. CHARLES S. SCHENCK, New York, N. Y. Filed Oct. 15, 1892. Serial No. 448,215. (No model.)



*Claim.*—A flexible spout consisting of a series of overlapping bucket shaped parts or casings C studs $c'$ on each of said parts, short chains D, running from stud to stud and having rings E for encircling the latter and fastening devices for holding said rings in place substantially as set forth.

502,589. CONSTRUCTION OF IMAGES. SAMUEL H. SCHWAB, Jr., New York, N. Y. Filed Mar. 1, 1893. Serial No. 464,233. (No model.)



*Claim.*—1. As an improved article of manufacture a covering for stuffed figures consisting in a front and a back piece each formed on its lower end with an integral base forming extension adapted to fold under the figure when stuffed and be united; the marginal edges of the said pieces being adapted to be united, substantially as set forth.

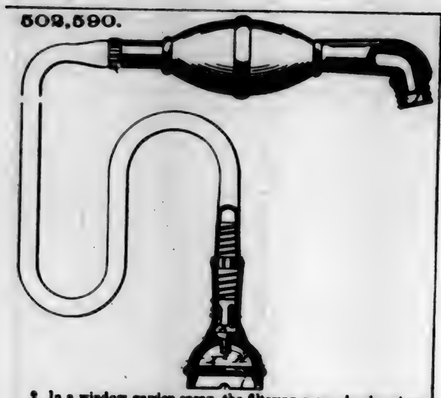
2. As an improved article of manufacture a stuffed figure consisting in a front and a back piece each formed with an integral base forming extension; the edges of the said two pieces being united from the top to the lower ends of the said extensions and said extensions being folded inwardly across the base of the figure and united, and a filling or stuffing, substantially as set forth.

502,590. WINDOW-GARDEN SPRAY. BENJAMIN F. SILL, Long Island City, N. Y. Filed Sept. 3, 1892. Serial No. 444,977. (No model.)

*Claim.*—1. In a window garden spray, the elastic pressure bulb constructed as shown, with a bent-up delivery-nozzle, both in one piece of elastic material, the interior of the extremity of the delivery nozzle being enlarged to form a valve chamber and therein provided with an outwardly opening valve, said nozzle being also constructed with an exterior elastic screw thread upon which a perforated cap screws, which forms a delivery rose and a protection for the valve, all combined as herein shown and described.

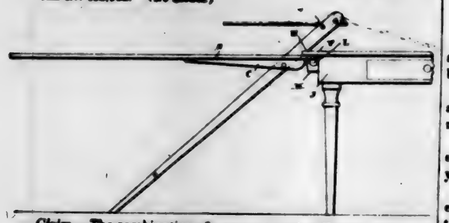


502,590.



2. In a window garden spray, the filtering cup and valve chamber constructed in one piece of elastic material, the valve chamber having inward projecting valve lugs made of and integral with the elastic material, in combination with the valve constructed of elastic material, and a filter ring with its filter cloth set within the mouth of the filtering cup and held in place by the elastic pressure of the material composing the cup, and protected therein by the projecting rim or extremity of the filtering cup, as and for the purposes herein shown and described.

502,591. IRONING-TABLE. JONAH T. SMITH, WILLIAM S. SMITH, and WILBUR F. SMITH, East Liverpool, Ohio. Filed Feb. 18, 1893. Serial No. 462,902. (No model.)



*Claim.*—The combination of a support, socket K secured thereto, top A, strip L secured to its under side which rests in said socket, and legs pivoted between their ends to the top A, and which are adapted to engage the support in conjunction with top A, in the manner shown and described.

502,592. SAND-CUTTER AND FEEDER FOR THRASHING-MACHINES. JOHN H. STONER, Carthage, Mo. Filed Feb. 28, 1893. Serial No. 464,066. (No model.)

*Claim.*—1. In combination with a thrashing machine having sills at its receiving end, a band cutter and feeder having beams resting on said sills and having one of its shafts pivoted to said sills whereby the inner end of the cutter and feeder can be raised from said receiving end of the thrasher, substantially as specified.

2. In combination with a thrashing machine a band cutter and feeder, having its main shaft located intermediate of its ends, and journaled in bearings on said machine to form a pivotal connection between the latter and the feeder and cutter, as set forth.

3. In combination with a thrashing machine having hangers depending from sills at its receiving end, a band cutter and feeder pivoted to said hangers, and having beams resting upon said sills as shown.

4. In a band cutter and feeder in combination with a grain board or feeder, an adjustable support therefor comprising a transverse plate or bar at its delivery end and pivoted bars to which said plate is attached, as shown.

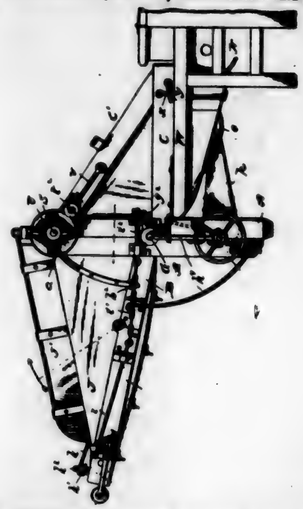
5. A band cutter and feeder having a movable grain board, and provided with a movable plate having a horizontal extension overlapping the edge of the board, as shown.

6. A band cutter and feeder having an adjustable movable grain board or feeder, and provided with a plate pivoted at one end and having a horizontal portion overlapping the edge of the board.

7. A band cutter and feeder having its bundle conveying and cutting platform formed of hinged sections, and having a knife supported on the inner end of a detachable bar that extends inward over the platform.

8. In combination with two bundle conveying and cutting mechanisms, a cutting device placed between said mechanisms, as shown.

9. In combination with two bundle conveying and cutting mechanisms, and the removable partition between them, a cutting device adapted to be rendered operative by the removal of said partition as shown.



10. In combination with two bundle conveying and cutting mechanisms, the removable partition between them and a knife adapted to be housed thereby when said partition is in its place, as shown.

11. In combination with two independent conveyers having each a clutch mechanism, a rod or bar connected loosely with both clutch mechanisms to operate either or both simultaneously, as shown.

12. In combination with the spreader shaft the collars on said shaft and the cam engaging said collars, one of the latter being held yieldingly against said cam, as shown.

13. In combination, the main shaft, the two independent conveyers, the driving shaft therefor having a clutch mechanism for each, the sprocket wheel on said driving shaft, the sprocket wheel on the main shaft, the reciprocable feeder the pitman and eccentric connection between it and the main shaft, the beater shaft having a sprocket wheel, and the chain connecting all of said sprocket wheels, as shown.

14. In combination with the cylinder and concave of a thrashing machine having a throat leading thereto, on whose side are sills a band cutter and feeder having its feeder mechanism extended in said throat and provided with thin side walls, and beams on the cutter and feeder resting on said sills, as shown.

502,593. FURNACE FOR HEATING CHAIN-LINK BLANKS, &c., FOR WELDING. PHILANDER H. STANDEN, St. Mary's, Ohio. Filed May 2, 1892. Serial No. 431,610. (No model.)

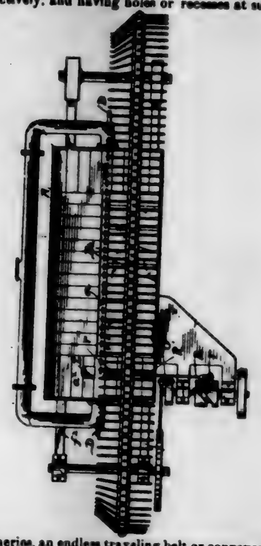
*Claim.*—1. The combination of the heating-chamber of a furnace of the variety indicated, having a slot, in the top wall of the furnace and in open relation with and extending the entire length or approximately the entire length of the heating-chamber, the lower portion of said slot being gradually enlarged toward its inner end, a conveyer, and holders from which the articles to be heated are suspended substantially as shown and described.

2. The combination with a furnace having a suitable heating-chamber open at the top, and a slot in the top wall and extending lengthwise of said chamber, of a traveling-belt or conveyer at one side of and parallel with said slot, and holders or carriers, for receiving the blanks or articles to be heated, secured at regular intervals to said belt or conveyer, the arrangement of parts being such that said holders or carriers shall be adapted to convey the blanks or articles to be heated through the heating-chamber of the furnace, substantially as set forth.

3. The combination with a heating-furnace, of a traveling-belt or conveyer, holders or carriers from which the blanks or articles to be heated are suspended, and clamps for securing said holders or carriers to the aforesaid traveling-belt or conveyer, said clamps being recessed or grooved transversely to receive said holders or carriers

and prevent lateral displacement of said holders, substantially as and for the purpose set forth.

4. The combination with a furnace having a heating-chamber open at the top, of two wheels supported at opposite ends of the furnace, respectively, and having holes or recesses at suitable intervals



in their peripheries, an endless traveling belt or conveyer leading over said wheels and provided with sprockets or projections for engaging the holes or recesses in the peripheries of the aforesaid wheels, holders or carriers, upon which the blanks or articles to be heated are suspended, secured at suitable intervals to said endless belt or conveyer, the arrangement of parts being such that, in operation the blanks or articles to be heated will be conveyed through the heating-chamber of the furnace, and a guide, as at S, for said endless belt or conveyer, said guide being grooved longitudinally, as at S', and so arranged relative to the traveling-belt or conveyer, that the sprockets or projections in the traveling-belt or conveyer will enter or engage the longitudinal groove in the guide-rail and thereby maintain the alignment or parallelism of said traveling-belt or conveyer with the top of the heating chamber of the furnace, substantially as set forth.

5. The combination with a heating furnace, of an endless traveling-belt or conveyer and holders or carriers, upon which the blanks or articles to be heated are suspended, secured at suitable intervals to said belt or conveyer, and suitable mechanism for intermittently propelling said belt or conveyer, the arrangement of parts being such that said holders or carriers will convey the blanks or articles to be heated through the aforesaid furnace, substantially as set forth

6. The combination with a furnace having a heating-chamber open at the top the entire length or approximately the entire length of the same, of an endless traveling-belt or conveyer arranged parallel with said longitudinal opening in the top of the furnace, holders or carriers secured at suitable intervals to said belt or conveyer and means, substantially as shown, for imparting an intermittent motion to said traveling belt, the arrangement of parts being such that the aforesaid holders or carriers will convey the blanks or articles to be heated to the heating-chamber of the furnace, substantially as set forth.

7. The combination with a furnace having a heating-chamber open at the top and extending the entire length or approximately the entire length of the furnace, of a traveling-belt or conveyer arranged parallel with said longitudinal opening in the top of the furnace, holders or carriers secured at regular intervals to said belt or conveyer, the top of the furnace casing at opposite ends of the heating-chamber being offset downwardly, as at $a^2$, a pocket, as at L, in the one downwardly offset portion of the top of the furnace casing, suitable means for intermittently actuating said traveling-belt or conveyer to bring the heated blanks or articles adjacent said pocket and suitable means or mechanism for automatically removing the heated blank or article from its holder into said pocket, the arrangement of parts being such that the traveling-belt or conveyer-actuating mechanism and the heated-blank-removing mechanism will be actuated alternately, substantially as and for the purpose set forth.

8. The combination with the heating-chamber of a furnace, and a pocket or receptacle in suitable proximity to the delivering-end of the heating-chamber, of an endless traveling-belt or conveyer and holders or carriers from which the blanks or holders to be heated are suspended, secured at regular intervals to said belt or conveyer, a ratchet-wheel operatively connected with said traveling-belt or conveyer, a driving-shaft, a crank-wheel or crank and a cam-wheel operatively mounted on said driving-shaft, a pawl operatively connected with said crank, substantially as described and adapted to actuate the ratchet-wheel, and a reciprocating-fork adapted to be actuated by the aforesaid cam-wheel and adapted to engage the heated blanks or articles upon the passage of the latter from the heating chamber of the furnace, and remove the same from their supporting-holders or carriers into the aforesaid pocket or receptacle, the parts being so arranged and timed that the endless traveling-belt or conveyer and the reciprocating-fork will be alternately actuated, substantially as and for the purpose set forth.

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**502,594. FURNACE FOR HEATING CHAIN-LINKS.** PHILANDER H. STANDISH, St. Mary's, Ohio. Filed May 20, 1892. Serial No. 433,785. (No model.)



*Claim.*—1. The combination with a furnace having a semi-circular or U-shaped heating chamber, the top wall whereof has a slot or opening for the passage through the furnace of the blanks or articles to be heated, of a wheel adapted to rotate in a horizontal plane above the furnace, suitable means for operating said wheel, holders or carriers, from which the blanks or articles to be heated are suspended, secured at suitable intervals to the rim of said wheel, the arrangement of parts being such that said holders or carriers shall be adapted to convey the blanks or articles to be heated through the heating-chamber of the furnace, substantially as set forth.

2. The combination with a semi-circular or U-shaped heating furnace, of a wheel adapted to rotate in a horizontal plane, suitable means for operating said wheel, holders or carriers from which the blanks or articles to be heated are suspended, secured at suitable intervals to, and arranged radially with the axis of, said wheel, the arrangement of parts being such that said holders or carriers shall be adapted to convey the blanks or articles to be heated through the heat of the furnace, substantially as set forth.

3. The combination with a heating-furnace, provided with a semi-circular heating chamber having an opening in its top wall of a wheel adapted to rotate in a horizontal plane, suitable means for operating said wheel, holders or carriers, from which the blanks or articles to be heated are suspended, arranged at suitable intervals about the rim of said wheel, and eye-bolts for securing said holders or carriers to the wheel-rim, the arrangement of parts being such that, in operation, the blanks or articles to be heated will be carried through the heat of the furnace, substantially as set forth.

4. The combination with a heating-furnace, provided with a semi-circular heating chamber having an opening in its top wall of a wheel adapted to rotate in a horizontal plane, suitable means for operating said wheel, holders or carriers, from which the blanks or articles to be heated are suspended arranged at suitable intervals about the rim of said wheel, said wheel-rim being recessed or grooved transversely and radially with the wheel-axis for receiving said holders or carriers, and suitable means for tightly holding said holders or carriers within said grooves or recesses, the arrangement of parts being such that, in operation, the blanks or articles to be heated will be carried through the heat of the furnace, substantially as set forth.

5. The combination with a furnace having a semi-circular or U-shaped heating-chamber and a slot, as at $a$, in the top wall and extending lengthwise of said heating-chamber, of a wheel adapted to rotate in a horizontal plane above the furnace, suitable means for operating said wheel, and holders or carriers, from which the blanks or articles to be heated are suspended, secured at suitable intervals to and arranged radially with the axis of said wheel, the arrangement of parts being substantially as indicated and the wheel having such a diameter relative to the aforesaid slot that said wheel does not extend over said slot, substantially as and for the purpose set forth.

6. The combination with a furnace having a semi-circular or U-shaped heating-chamber, the top wall whereof is slotted or open for the passage, through the furnace, of the blanks or articles to be heated, of a horizontally-rotating blank holder carrying-wheel, a shaft for supporting said wheel, a worm-wheel operatively mounted on said shaft, a driving-shaft, and a worm on said driving-shaft and in mesh with the aforesaid worm-wheel, the location of the blank-holder carrying-wheel, relative to the opening in the top of the heating-chamber of the furnace, being such that the blanks or articles to be heated, will be carried through the furnace, substantially as set forth.

7. The combination with a furnace having a semi-circular or U-shaped heating-chamber, the top wall whereof is slotted or open for the passage, through the furnace, of the blanks or articles to be heated, of holders for the blanks a horizontally-rotating blank-holder carrying-wheel, a shaft for operatively supporting said wheel, the arrangement of parts being substantially as described, suitable means for rotating said shaft, and suitable means for elevating and lowering the blank-holder carrying-wheel, substantially as and for the purpose set forth.

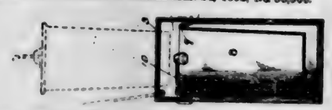
8. The combination with a furnace having a semi-circular or U-shaped heating-chamber, the top wall whereof is slotted or open for the passage, through the furnace, of the blanks or articles to be heated, of a vertical-shaft having a groove $g^2$, a blank-holder carrying wheel operatively supported on the upper end of said shaft, a worm-wheel on said shaft and having a feather or key engaging said groove, the latter being of sufficient length to accommodate the movement of the shaft in a vertical plane, a horizontal driving-shaft, a worm on said driving-shaft in mesh with the aforesaid worm-wheel, a lever operatively connected with the lower end of the aforesaid upright shaft for elevating and lowering the same, and means substantially as indicated for preventing said worm-wheel from moving up and down with said upright shaft, the arrangement of parts being substantially as shown and described.

9. The combination with a heating-furnace and traveling holders or carriers for conveying the blanks or articles to be heated through said furnace, of a block, plate or member at the delivering end of the furnace, said block, plate or member being arranged with one of its sides at an angle or obliquity to the path of, and in such position relative to, the heated blanks or articles, that the side specified of said block, plate or member will engage and cause the removal, from the holders or carriers, of the heated blanks or articles, substantially as set forth.

10. The combination with a heating furnace and a holder or carrier for conveying the blank or article to be heated through said furnace, of a pocket or receptacle at the delivering-end of the furnace, and an angular block, plate or member located at the mouth of said pocket or receptacle, the arrangement and location of said block, plate or member and the aforesaid pocket or receptacle being such relative to the path of the holder or carrier that the heated blank or article shall be engaged by said angular block, plate or member and removed, from the holder or carrier, into the aforesaid pocket or receptacle, substantially as set forth.

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**502,595. DIRT OR GARBAGE RECEPTACLE.** PERCIVAL W. ST. GEORGE, Montreal, Canada. Filed Mar. 7, 1892. Serial No. 424,078. (No model.) Patented in Canada Mar. 24, 1892, No. 36,566.



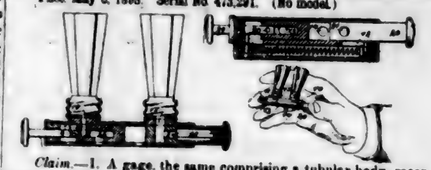
*Claim.*—1. In a street sweepings bin, the combination of a sunk cylindrically-shaped body section and a square head section, having its top flush with the sidewalk, and formed with downwardly projecting sides and a bottom and lugs adapted to fit over said cylindrical body section, such bottom having a circular opening in it to allow of the insertion of a removable bucket or receptacle.

2. The combination with a sunken cylindrical body-portion having an open upper end, of a detachable hollow rectangular cap provided with depending lugs or ears engaging the sides of said body-portion and having a horizontal bottom provided with a central circular opening surrounded by a horizontal supporting flange which extends inward over the top of the body-portion, a lid or cover closing the top of said cap, and a removable receiver fitting snugly in the said circular opening in the bottom of the cap and provided at its upper edge with an outstanding peripheral lip which lies upon the said supporting flange to support the receiver in the container, substantially as specified.

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**502,596. APPARATUS FOR MEASURING PROPORTIONAL PARTS FOR MIXTURES.** ALEXANDER K. SUDDOTH, Memphis, Tenn. Filed May 6, 1893. Serial No. 473,291. (No model.)



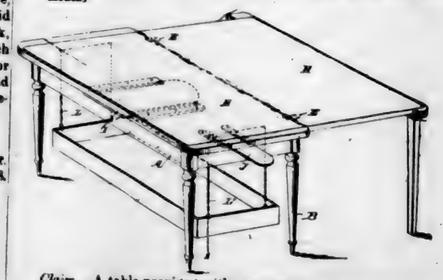
*Claim.*—1. A gage, the same comprising a tubular body, receptacles in communication with the body, the body being provided with discharge openings out of alignment with the discharge openings of the receptacles which lead into the body, and spring-controlled valves adapted for exterior manipulation, said valves normally registering with the discharge openings of the receptacles and being capable of registering with the discharge openings of the casing, substantially as shown and described.

2. In a gage, the combination, with a body and receptacles located in communication with the interior of the body, said body being provided with discharge openings out of alignment with the communicating openings of the receptacles, of valves located in the ends of the body, provided with pockets or openings normally registering with the discharge openings in the receptacles, said valves being capable of inward movement until their openings or pockets reach the discharge openings in the casing, and means, substantially as shown and described, for regulating the valves, as and for the purpose specified.

3. In a gage, the combination, with a tubular casing, receptacles removably connected with the casing and having discharge openings in communication with the body interior, the said body being provided with discharge openings out of alignment with the discharge openings of the receptacles, of a plunger located within the body and having spring-controlled movement therein, said plunger being provided with an opening normally in registry with a discharge opening in one of the receptacles, and means, substantially as described, for diminishing the area of said opening, and a valve also having a spring-controlled movement in the body and provided with a pocket normally in registry with the discharge opening of the other receptacle, the plunger and valve being adapted when forced inward, to discharge through the discharge openings in the casing, as set forth.

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**502,597. COMBINED KITCHEN AND IRONING TABLE.** JOHANNA VOOS, New York, N. Y. Filed Jan. 31, 1893. Serial No. 460,296. (No model.)



*Claim.*—A table provided with a box supported on chains from the table top, and hooks held on the box and adapted to be engaged by the said chains to lock the box in place on the under side of the table top, substantially as shown and described.

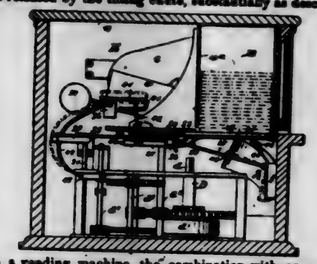
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**502,598. VENDING-MACHINE.** OWNBEY H. WOODFILL, Nevada, Mo., assignor of two-thirds to John Blue and Richard Elliott Ash, same place. Filed Feb. 8, 1893. Serial No. 461,453. (No model.)

*Claim.*—1. In a vending machine, the combination with a motor and a tilting coin chute, of an arm pivoted to the chute and provided with a finger projecting across the lower end of the said chute, and a pivoted trip lever engaging the said arm and adapted to be operated by the motor, substantially as and for the purpose set forth.

2. In a vending machine, the combination with a motor, and a tilting coin chute, of an angle arm journaled upon the chute, and provided at one end with a finger projecting across the lower end of the chute and at its other end with a loop, and a pivoted trip lever, having a straight body and cranked ends, one of which enters the loop of the angle arm, the said trip lever being operated by the motor, substantially as described.

3. In a vending machine, the combination with a motor, of a tilting coin chute having a brake connection with the said motor, an arm pivoted on the chute and provided with a finger projecting across the lower end of the said chute, and a pivoted trip lever engaging the said arm, and adapted to be operated upon by the motor when said motor has been released by the tilting chute, substantially as described.



4. In a vending machine, the combination with an actuating mechanism, of a coin chute formed in sections, one section being pivoted and counter-balanced and the lower section provided with a gate, a finger projecting across the lower end of the tilting section of the chute, and means for successively operating the gate of the lower section and the finger of the tilting section, substantially as and for the purpose set forth.

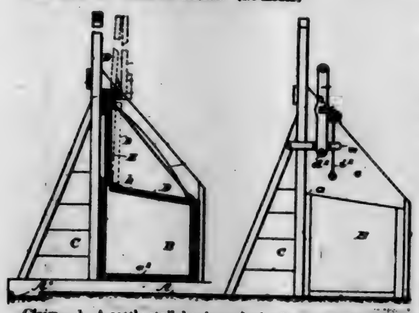
5. In a vending machine, the combination with a casing provided with a glass panel, and an actuating mechanism, of a coin chute formed of two stationary sections and an intermediate pivoted and counter-balanced section, the lower section projecting past the glass panel of the case and provided with a display opening opposite the said panel and with a pocket at its lower end, a hinged gate for closing the said pocket, an arm pivoted on the pivoted chute section and provided with a finger projecting across the lower end of the said chute section, and means for successively operating the said gate and finger, substantially as herein shown and described.

6. In a vending machine, the combination with a storage compartment, a plunger in the compartment, and a motor, of a coin chute formed in sections, one section being pivoted and the lower section provided with a gate, a brake carried by the tilting section and operating upon the motor, a finger projecting across the lower end of the tilting section, and mechanism for operating the plunger, gate and finger from the motor, when the said motor is released by the tilting of the said chute section, substantially as described.

7. In a vending machine, the combination, with a storage compartment provided with an outlet of springs below the compartment, pins secured to the springs, and projecting into the outlet a plunger having sliding movement in the compartment, and a trip device carried by the plunger and adapted to depress the pins connected with the springs in advance of the movement of the plunger, as and for the purpose specified.

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**502,599.** CATTLE-STALL. JACOB AMMERLY, St. Paul, Minn. Filed Feb. 20, 1893. Serial No. 463,013. (No model.)



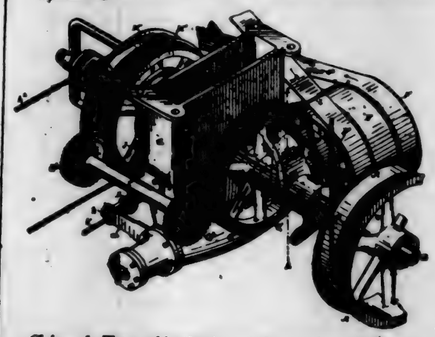
*Claim.*—1. A cattle stall, having a feed crib protected by a pendent gate, a cover hinged to the lower edge of said gate, a rotatable shaft attached to the gate, and a flexible device on the cover which by manipulation, will adjust said cover toward or from the feed crib, substantially as described.

2. A cattle stall and feed crib therefor, comprising a stall having a platform or base, a feed crib at the head of the stall, a pendent gate between the top of the feed crib and the stall, a crib cover hinged to the lower edge of the gate, and devices adapted by manipulation to elevate the gate and fold the cover upon said gate, substantially as described.

3. A feed crib for a cattle stall, and attachments for said crib, comprising a rectangular crib at the head of a stall, a transverse shaft journaled in the upper part of the side walls of the crib, a gate attached by one edge to the shaft and pendent therefrom, a crib cover hinged by one edge to the lower edge of the gate, a flexible device for the cover to raise or lower it, a handle bar on the end of the shaft, and a hitch-piece therefor, substantially as described.

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**502,600.** HOISTING MECHANISM FOR ELEVATORS. CHARLES E. ALLEN, Philadelphia, Pa. Filed Jan. 21, 1893. Serial No. 460,008. (No model.)



*Claim.*—1. The combination in a winding machine, of the winding drum, a shaft carrying the same, a radial arm secured to said shaft, a driving shaft and an arm on said driving shaft adapted to be brought into contact with the arm on the drum shaft, and a yielding connection between the two arms normally tending to hold them apart substantially as specified.

2. The combination of the winding drum, a shaft carrying the same, an arm, as D, thereon, a lug on said arm, a driving shaft, an arm, as C, thereon adapted to be brought into contact with the arm of the drum shaft, a pawl carried by said arm C, and normally held in inoperative position by the lug on the arm D, a belt shifting cam, driving mechanism controlled thereby, gearing connecting said cam to a ratchet wheel and a ratchet wheel with which said pawl may be brought into contact, substantially as specified.

3. The combination of the drum shaft, the drum thereon, an arm, as D, carried by said shaft, a lug thereon, a driving shaft, an arm, as C, thereon, a pawl pivoted to said arm C and normally held in inoperative position by the lug on the arm D, a spring acting on said pawl, a spring connecting the arms C and D, a ratchet wheel with which said pawl may be brought into contact, a cam, devices connecting said cam with the starting and stopping mechanism, and gearing connecting said cam to the ratchet wheel, substantially as specified.

4. The combination of the winding drum, a shaft carrying the same, an arm D on said shaft, a driving shaft, an arm C secured thereto, a hub on said arm C supporting one end of the shaft of the winding drum, a gear wheel mounted loosely on the driving shaft, ratchet teeth formed thereon, a pawl pivoted to said arm C, a spring acting on said pawl, a lug on the arm D normally holding said pawl out of contact with the ratchet teeth, a cam, mechanism connecting the same to the starting and stopping mechanism and gearing connecting said cam to the loose gear wheel, substantially as specified.

5. The combination with the winding mechanism, of the driving belts and pulleys, the shifting rods, a grooved cam adapted to effect the reciprocation of said rods, pivoted levers J J', connected to said rods, antifriction rollers carried by said levers, and adapted to the cam groove having pockets at the end thereof, and a tension spring connecting the two levers, substantially as specified.

6. In a winding mechanism, a belt shifting device, a brake mechanism, a gear wheel mounted upon the winding shaft and having on one face thereof a cam groove for operating the belt shifting mechanism and also a cam groove, on the same face for operating the brake mechanism, in combination with levers having studs provided with antifriction rollers, adapted to run in said grooves, two of said levers operating said belt shifting device and the other one said brake mechanism, substantially as described.

7. The combination with winding mechanism and the belt shifting device of the driving shaft, a brake wheel thereon, a friction band made in two sections, each of said sections having one end secured to a fixed point, and its opposite end secured to a weighted lever O, a cam, a lever P', adapted to be acted upon by the cam, and a jointed link connecting said lever P' to the weighted lever O, substantially as specified.

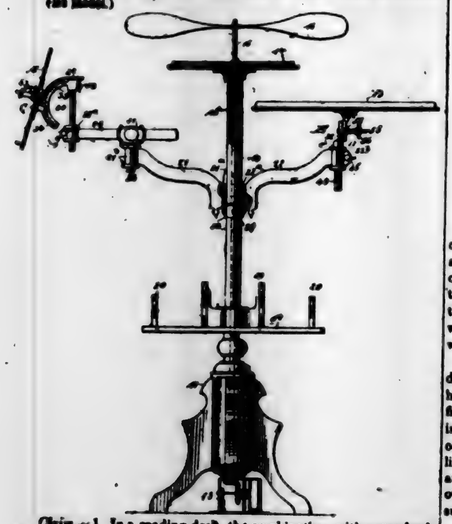
8. In a winding machine, the combination of a drum shaft, a driving shaft in line with said drum shaft, a fast and a loose pulley, connections between said fast pulley and said driving shaft, an arm on the driving shaft, an arm on the drum shaft which normally bears against said driving shaft arm so as to compel the two shafts to rotate together, and means whereby the belt shifting device is operated to shift the belt from the fast to the loose pulley when the driving shaft rotates independently of the drum shaft, substantially as described.

9. In a winding machine, the combination of a drum shaft, a driving shaft in line with said drum shaft, an arm on the driving shaft, an arm on the drum shaft which normally bears against said driving shaft arm so as to compel the two shafts to rotate together, and means whereby the rotation of the driving shaft is stopped by the rotation of said shaft independently of said drum shaft, substantially as described.



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**502,601.** READING-STAND. FRANCIS J. ANDERSON and WILLIAM H. INGE, Gainesville, Tex. Filed May 26, 1892. Serial No. 434,422. (No model.)



*Claim.*—1. In a reading desk, the combination, with a standard, a bracket adjustable upon the standard, a segmental rack provided with a guard over its toothed surface, and a stud vertically located and adjustably connected with the bracket, of a desk provided with retaining devices, extending between the guard and the rack and adapted for engagement with the teeth of the rack, said desk being provided with clamping devices for the reception of a book, substantially as shown and described.

2. In a reading stand, the combination, with an adjustable bracket and a desk, of an adjusting mechanism connecting the desk and the bracket, said mechanism consisting of retaining devices attached to the desk and located at its under face, a post attached to the bracket, a segmental rack carried by the post and receiving the retaining devices of the desk, said segmental rack being provided with a guard over its teeth, between which guard and the teeth said retaining devices may have movement, as and for the purpose specified.

3. In a reading stand, the combination, with a central support, a bracket adjustable vertically and swinging laterally upon the support, and a bar adjustable in the bracket, of a desk, an adjusting mechanism connected with the desk and sliding upon the bracket, said adjusting mechanism consisting of retaining devices attached to the desk, said devices comprising two spaced arms, one being of yoke-like construction, a post adjustably located in the sliding bar, a segmental rack adjustably connected with the post and receiving the retaining devices of the desk, the segmental rack occupying substantially a vertical position, a flanged bar of greater width than the body of the rack, located over its teeth and extending virtually from end to end of the rack, forming an inclosed channel over the teeth of the rack for the reception of the retaining devices, substantially as and for the purpose specified.

4. In a reading stand, a desk provided with plates located thereon and having under-cut grooves, spindles having sliding movement in the under-cut grooves, knobs loosely mounted upon the spindles yet capable of frictional engagement therewith, and springs carried by the knobs and adapted to extend in a curved line in direction of one another over the under-cut grooves, as and for the purpose set forth.

5. In a reading stand, a desk provided with grooves extending from the sides in direction of the center, spindles having movement in the grooves and extending outwardly therefrom, knobs capable of sliding movement on the spindles and of frictional engagement therewith, binding springs emanating from the knobs and adapted to extend substantially in a curved line over the under-cut grooves and adapted to hold a book or like article in an open position upon the desk, and supplemental springs carried by the knobs and having pivotal engagement therewith, said springs being adapted to bear normally upon the main or binding springs of the knobs, the auxiliary springs being adapted also to clamp the leaves of a book, as and for the purpose set forth.

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**502,602.** CYLINDER DRAIN-VALVE. EDWARD BENSIN, Davenport, Iowa. Filed Mar. 30, 1893. Serial No. 468,272. (No model.)



*Claim.*—1. The combination with the cylinder, the drain valve casing directly attached thereto, the valve stem playing freely therein, and supported and guided by the valves on its ends the drain valve on one end of said stem interposed between the interior of casing and the interior of cylinder but exterior to the casing and seating against the inner end thereof, and the valve on the other end of the stem working in a closed chamber which is in continual communication with the steam space of the boiler, substantially as described.

2. The combination with the cylinder and piston therein, the drain valve casings, one secured to each end of the cylinder and each having a valve seat at each end, the double valves in said casing, fitted to said seats one interposed between the casing outlet and cylinder, and the other working in a closed chamber and a valve stem connected and guided by said valves with the pipes for conducting live steam to said closed chambers, whereby the inner or drain valve at the "idle" end of cylinder is automatically opened by the pressure of live steam against the outer valve connected to the drain valve, substantially as described.

3. The herein described drain valve consisting of the casing formed in two parts $B'$, $B^2$, having opposite valve seats $b$, $b'$ formed on its ends, and of different size, and intermediate drip opening, the stem D, the valve $d$ on one end of said stem but exterior to the casing engaging seat $b$, and the smaller adjustable valve E secured on the other end of the stem engaging seat $b'$, said valves forming the only guides and supports for the stem; in combination with the cylinder and the steam pipe G, all constructed and arranged to operate substantially as and for the purpose specified.

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**502,603.** GREEN-BLUE ALIZARIN DYE. RENÉ BOHN, Mannheim, assignor to the Badische Anilin und Soda Fabrik, Ludwigshafen-on-the-Rhine, Germany. Filed Oct. 6, 1892. Serial No. 448,003. (Specimens.)

*Claim.*—The new greenish-blue alizarin dye hereinbefore described which can be derived by the successive treatment of di-nitro-anthra-quinone first with fuming and afterward with concentrated sulfuric acid and which when dry appears in the form of a dark-colored powder soluble in alcohol, practically insoluble in ether and benzene, slightly soluble in cold water, somewhat more soluble on boiling, giving a blue violet non-fluorescent solution which changes in color to blue on addition of an alum solution, substantially as described.

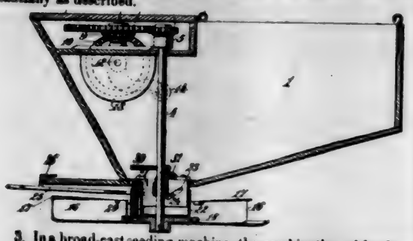
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**502,604.** BROADCAST SEED-SOWER. CORNELIUS BOLLINGER, Harrisburg, Pa. Filed Mar. 9, 1893. Serial No. 465,982. (No model.)

*Claim.*—1. In a broad-cast seeding machine, the combination with a hopper, and a horizontally revolving disk or plate having blades, of a telescopic tubular cut-off extending from the hopper bottom, and having its adjustable tubular section movable vertically to and from the upper surface of the revolving disk or plate to deliver

the seed directly from its lower open end upon the central part of said upper surface of the disk or plate, substantially as described.

2. In a broad-cast seeding machine, the combination with a hopper, and a revolving disk or plate having blades, of a telescopic tubular cut-off extending from the hopper bottom, and having its adjustable tubular section movable vertically to and from the upper surface of the revolving disk or plate to deliver the seed directly from its lower open end upon the central part of said upper surface of the disk or plate, a rotary driving shaft extending through the telescopic tubular cut-off and secured to the disk or plate, and gearing housed in the upper part of the hopper for rotating said driving shaft, substantially as described.



3. In a broad-cast seeding machine, the combination with a hopper, of a suspended horizontally revolving disk or plate having rotary blades, and provided at its center with a circular plate interposed between the inner ends of the blades, and a telescopic tubular cut off extending from the hopper bottom, and having its adjustable tubular section movable vertically to vary the distance between its lower open end and the surface of said circular plate, substantially as described.

4. In a broad-cast seeding machine, the combination with a hopper, and a horizontally-revolving disk or plate, of a cut-off composed of an upper tubular section secured to the hopper, and a lower tubular section adjustable vertically along the length of said upper section, and having a lower open end which delivers the seed directly upon the central part of the revolving disk or plate, substantially as described.

5. In a broad-cast seeding machine, the combination with a hopper or box, of a horizontally revolving distributing disk or plate and a cut-off composed of an upper tubular section secured to the hopper, and a lower tubular section adjustable vertically along the length of said upper section, and having a lower open end which delivers the seed directly upon the central part of the revolving disk or plate, provided with blades extending radially in lines which pass outside the axis of the disk or plate, substantially as described.

6. In a broadcast seeding machine, the combination with a hopper or box, of a horizontally-revolving seed-distributing disk or plate, a cut-off interposed between the latter and the hopper or box, and composed of telescopic tubular sections, one of which slides vertically on the other, and a handle or lever for moving one section vertically to vary the distance between its lower open end and the upper surface of the revolving disk or plate, substantially as described.

7. In a broad-cast seeding machine, the combination with a hopper or box, of a horizontally revolving seed distributing disk provided with an annular groove, a cut-off interposed between the hopper or box and the disk and composed of telescopic tubular sections, the lower one of which is adapted to enter the groove in the seed distributing disk, and a handle or lever for raising and lowering the lower tubular section, substantially as described.

8. In a broad-cast seeding machine, the combination with the hopper or box, and a horizontally revolving seed distributing disk or plate, of an adjustable cut-off provided with telescopic tubular sections which place the hopper or box in communication with the disk or plate, means for adjusting one telescopic tubular section to and from the disk or plate, and a vertical agitating arm carried by the disk or plate and moving in a circular path in the tubular cut-off, substantially as described.

9. In a broad-cast seeding machine, the combination with a hopper or box, and a horizontally revolving seed distributing disk or plate, of a cut-off interposed between the hopper or box and the disk or plate and composed of telescopic tubular sections, one of which is provided with oblique or inclined slots and the other with pins engaging said slots, and a handle or lever for turning one of the tubular sections to move it vertically to and from the upper surface of the revolving disk or plate for varying the distance between said turning section and a disk or plate, substantially as described.

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**502,605.** VEHICLE-SPRING. EBENEZER H. BOOTH, Kirkwood, N. Y. Filed Mar 23, 1893. Serial No. 467,337. (No model.)

*Claim.*—1. In a vehicle spring, the combination with a section B, having slots in its end portions, of a section C placed farther underneath the vehicle body than is the section B, said section C having

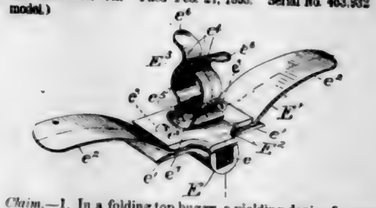


horizontally bent end portions engaging said slots, and loosely secured therein, substantially as specified.

2. The combination with the spring B having the slots at its end portions, and the lug or block secured to said spring over said slots, and also slotted or recessed, of the spring C having the bent ends loosely engaging said slots and secured therein by a pivot bolt or pin, substantially as specified.

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**502,606.** SPRING-SUPPORT FOR BUGGY-TOPS. STEPHEN BOGGIS, Marinette, Wis. Filed Feb. 27, 1893. Serial No. 463,932. (No model.)



*Claim.*—1. In a folding top buggy, a yielding device for supporting and steadying the top when lowered, comprising a spring projecting upward from the side of the buggy, and a resilient holding device mounted above said spring, substantially as and for the purposes described.

2. In a folding-top buggy, a yielding device for supporting and steadying the top when lowered, comprising the spring E' secured to the side of the buggy and provided with wings $e^2$, and a resilient holding device mounted transversely over said spring and between said wings, substantially as and for the purposes described.

3. In a folding top buggy, a yielding device for supporting and steadying the top when lowered, comprising a spring projecting upward from the side of the buggy and adapted to bear beneath the bows of the top and a spring clutch adapted to engage the lower bow and to hold it firmly but to yield to jars or jolts, substantially as and for the purposes described.

4. In a folding top buggy, a yielding device for supporting and steadying the top when lowered comprising the spring E' secured to the side of the buggy and provided with wings $e^2$ and the spring clutch $E^3$ mounted over said spring E' and between said wings $e^2$, the said clutch E being provided with resilient upwardly projecting arms flaring outward as at $e^4$ and curved as at $e^5$ and $e^6$ to form a holder for the rear bow of the buggy top, substantially as and for the purposes described.

5. The device for supporting the rear bow of a folding buggy top when lowered, comprising the arm f projecting from the buggy, the plate E, the spring E' having wings $e^2$, the holding plate $E^3$, and the spring clutch $E^3$, substantially as described.

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**502,607.** BUGGY-TOP SUPPORT. STEPHEN BOUGIE, Marinette, Wis. Filed Apr. 17, 1893. Serial No. 470,684. (No model.)



*Claim.*—1. In a folding top buggy, the combination with the prop of a yielding device for supporting and steadying the top when lowered, comprising a spring attached to the lower bow of the buggy top, beneath said bow, and a resilient holding device riveted to said spring and beneath the same, and adapted to engage said prop, substantially as and for the purposes described.

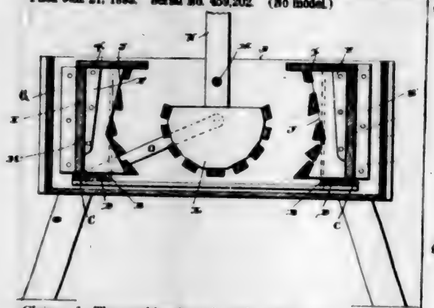
2. In a folding-top buggy, the combination with the prop and a rubber sheathing thereon, of a yielding device for supporting and steadying the top when lowered, comprising a spring attached to the lower bow of the buggy top, beneath said bow, and a spring clasp riveted beneath said spring and adapted to clasp said rubber sheathing, substantially as and for the purposes described.



3. In a folding top buggy, the combination with the prop, of a yielding device for supporting and steadying the top when lowered comprising the spring E secured to the lower bow of the buggy, the spring clasp F secured beneath the said spring and provided with curved arm f adapted to slip over and hold said prop, substantially as and for the purposes described.

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**502,608.** WASHING-MACHINE. DAVID W. BOYER, Tama, Iowa. Filed Jan. 21, 1893. Serial No. 459,202. (No model.)



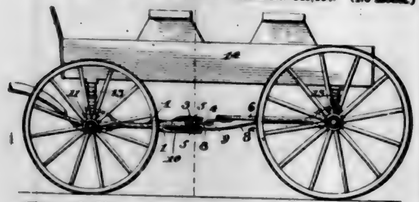
*Claim.*—1. The combination of a tub, a frame swung therein, a removable bottom supported by said frame, and a rubber pivotally supported over said bottom, substantially as shown and described.

2. In a washing machine, the combination, of a tub, frame C swung therein, removable frame D for said frame, a movable rubber arranged over the said bottom and links connecting the bottom C and the said rubber, substantially as shown and described.

3. In a washing machine the combination of a tub, a rubber pivoted therein, a swinging bottom beneath the agitator, a connection between the latter and the rubber, strips E and F upon opposite sides of the interior of the tub forming guideways, removable rubbing sections, and capping boards therefor which project at their ends so as to rest on the upper ends of said strips so as to support said sections substantially as shown and described.

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**502,609.** RUNNING-GEAR FOR WAGONS. HARVEY J. BRACE, Rogers, Ark. Filed Oct. 22, 1892. Serial No. 449,697. (No model.)



*Claim.*—1. The combination in a wagon, of pivoted front and rear axles, an arc projecting rearwardly from the forward axle, a bridge secured to the said arc, a collar pivoted between the said arc and bridge, an arc secured to the rear axle, a pole hinged to and moving vertically from the last named arc and projecting forwardly therefrom through the said collar, and a reach pivoted to the forward and rear axles and passing through a fork in the forward arc, substantially as described.

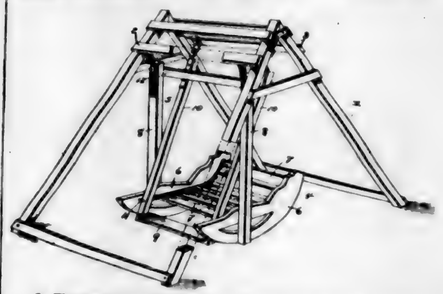
2. The combination in a wagon, of pivoted front and rear axles, of an arc projecting rearwardly from the forward axle, a bridge secured to the said arc, a collar pivoted between the said arc and bridge, and a pole having a hinged connection to the rear axle and moving vertically therefrom and passing through the said collar, substantially as described.

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**502,610.** SWING. JOHN J. BRYDSON and JOHN A. GREATHOUSE, Temple, Tex. Filed Nov. 30, 1892. Serial No. 453,640. (No model.)

*Claim.*—1. The combination with a support, of a seat provided with ways, pendulum bars hinged at their upper ends to the support and having their lower ends secured to the seat, a foot rest independent of the seat side bars arranged in said ways and having their lower ends secured to the foot rest and extending upwardly and rearwardly therefrom and crossing the pendulum bars and having their upper ends hinged to the support in rear of the upper ends of the pendulum bars, substantially as described.

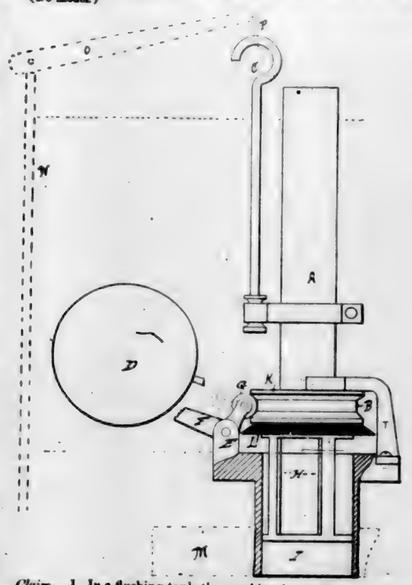
2. The combination with a support, of a seat composed of segmental side pieces and connecting slats and provided on the inner faces of the side pieces in advance of the slats with projections forming with the adjacent slat ways, pendulum bars having their lower ends secured to the seat and their upper ends hinged to the support, a foot rest independent of the seat and arranged in advance of the same and side bars secured at their lower ends to the foot rest and arranged in said ways and extending rearward and crossing the pendulum bars and having their upper ends hinged to the support, substantially as described.



3. The support or framework, combined with the seat, pendulum bars rigidly attached to the seat and hinged at their upper ends to the support or framework, the bars 10 also hinged to the framework in rear of the point of attachment of the pendulum bars, crossing the latter at an intermediate point and having their lower ends connected by a foot bar 9 independent of and arranged below the seat and moving between the side bars thereof, as set forth.

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**502,611.** DISCHARGE-VALVE FOR WATER-CLOSET TANKS. DAVID D. BUICK, Detroit, Mich. Filed Sept. 8, 1892. Serial No. 445,327. (No model.)



*Claim.*—1. In a flushing-tank the combination with a valve-seat, a valve, and means for raising said valve, of a bell-crank lever pivoted within the tank and a float on one arm of said lever normally urging the other arm of said lever toward the valve, and a roll upon the end of the latter arm adapted to engage and sustain the valve when lifted, and to rest upon said valve and hold it to its seat, when the float rises by the filling of the tank, substantially as shown and described.

2. In combination with the valve-seat I, the valve A L, having thereon the groove B and the shoulder K, and the bell-crank lever F

carrying on one arm the float D, and upon the other arm a roll G, substantially as shown and described.

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**502,612. DOOR-BELL.** Charles M. Burdsall, New Britain, Conn., assignor to the Russell & Erwin Manufacturing Company, same place. Filed Jan. 31, 1893. Serial No. 460,594. (No model.)



*Claim.*—1 The combination of a bell, a revolving hammer carrier mounted eccentrically to said bell and having transverse hammer guides, a longitudinal sliding hammer loosely mounted within said guides, and left free to be thrown outwardly by centrifugal force, and a train of gearing for operating said hammer carrier, substantially as described and for the purpose specified.

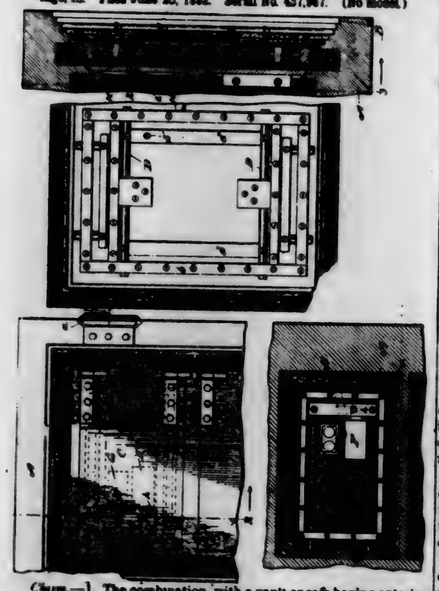
2 In combination with suitable driving mechanism, the hammer carrier 22 having slotted guiding lugs the hammer consisting of a bar like body, hammer-head and stop with the side walls of the slot in said lugs bent over the body of the hammer for holding it in place, substantially as described and for the purpose specified.

3. In combination with a bell and suitable driving mechanism, the hammer carrier having hammer guides, the hammer consisting of a bar like body loosely mounted in said guides and having the hammer head at one end and a stop of less projection that does not engage the bell, substantially as described and for the purpose specified.

4. In combination with a bell and suitable driving mechanism, the revolving and sliding hammer having a hammer head at one part only, a revolving hammer carrier upon which said hammer is loosely mounted and guided to slide out and in for striking said hammer head against said bell, substantially as described and for the purpose specified.

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**502,613. SAFE-LOCKING DEVICE.** Augustus G. Burton, Chicago, Ill. Filed June 25, 1892. Serial No. 437,967. (No model.)



*Claim.*—1. The combination, with a vault or safe having exterior and interior doors, of an automatic device for casting and retracting the bolts, mechanical connection between the bolt systems of the two doors whereby the two systems are operated by a bolt throwing device located upon one of the doors, and a time piece for releasing the detent mechanism of the bolt throwing device, substantially as described.

2. The combination, with a safe or vault having exterior and interior doors, of an automatic device for throwing the bolts out and in, a timepiece for releasing the detent mechanism of the bolt throwing device, and mechanical connection between the bolt systems of the two doors, comprising a spindle journaled in an aperture in the inner door, crank arms fixed upon the ends of the spindle and studs on the crank arms for engaging apertures respectively in the carrying bars of the bolt systems of the inner and outer doors, substantially as described.

3 The combination with a safe or vault having exterior and interior doors of an automatic device for throwing the bolts out and in, located upon the outer door, a timepiece located inside of the inner door for releasing the detent of the automatic bolt throwing device, and mechanical connection between the time-piece and the automatic device, substantially as described.

4 The combination, with a safe or vault having exterior and interior doors, of an automatic bolt throwing device located inside of the inner door, mechanical connection between said device and the bolt system of the outer door whereby the automatic device casts and retracts the bolts of the outer door, and a time piece for releasing the detent mechanism of the bolt throwing device, substantially as described.

5 The combination with a safe or vault having exterior and interior doors, and with the bolt system of the outer door of such safe or vault, of an automatic bolt throwing device located on the inner side of the inner door, a spindle journaled in an aperture in the inner door, and having a crank arm fixed upon each of its ends, the outer crank arm being adapted to engage the carrying bar of the bolt system of the outer door, and the inner crank arm being actuated by the bolt throwing device, and a time piece for releasing the detent mechanism of the bolt throwing device, substantially as described.

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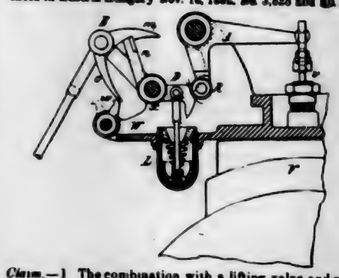
**502,614. CLEAT FOR INSULATED WIRES.** Edward H. Clarke, Lynn, assignor of one-half to Solomon Eaton, Boston, Mass. Filed Mar. 8, 1893. Serial No. 465,169. (No model.)



*Claim.*—As a new article of manufacture a wiring cleat composed of two parts, each part having correspondingly grooved ends, with grooves or depressions extending lengthwise of the cleats, located within the grooves of the ends, as described.

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**502,615. VALVE-GEAR.** Alfred Collmann, Vienna, Austria-Hungary. Filed Mar. 7, 1892. Serial No. 424,939. (No model.) Patented in Austria-Hungary Nov. 16, 1892, No. 3,838 and No. 44,678.



*Claim.*—1 The combination with a lifting valve and valve stem of a lever connected to the said valve stem, a reciprocating cam having a cam face of increasing curvature bearing on the said lever, a catch adapted to move the cam in one direction and to release it, and means for returning cam, substantially as described.

2. The combination with a lifting valve and valve stem, of a lever connected to the said valve stem, a cam having a cam face of increasing curvature bearing on the said lever, a catch adapted to retract the said cam, a detent adapted to disengage the catch from the said cam, and means for returning the cam, substantially as described.

3. The combination with a lifting valve and valve stem, of a lever connected to the said valve stem, a cam having a cam face of increased curvature bearing on the said lever, a catch adapted to retract the said cam, a governor, a detent connected therewith and moved thereby and adapted to disengage the catch from the said cam and means for returning the cam, substantially as described.

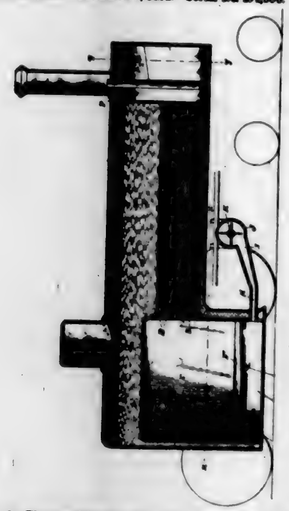
4 The combination with a steam valve V and valve stem v, of a lever J, having one arm connected to said valve stem, a cam D, bearing on the opposite end of the said lever, a dash pot connected with the said cam, a catch adapted to engage the said cam, an eccentric connected with the said catch and retracting it, a governor, and a detent controlled by the said governor and releasing the said catch from the said cam, substantially as described.

5. The combination with the steam valve V and valve stem v, of the bell crank lever J, having one arm connected to said valve stem and the other arm provided with a roller; the cam D and dash pot L connected thereto, an eccentric and catch operated thereby for reciprocating said cam D; the exhaust valve and stem, the lever J'' connected at one end to said exhaust valve stem and provided with a roller R''' at the other end; the pivoted cam D'' adapted to engage said roller R''', and an eccentric rod connecting said eccentric, and cam D'' whereby a variable motion is given to both steam and exhaust valves, substantially as and for the purposes described.



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**502,616. STEAM-BOILER FURNACE.** Anderson B. Corey, Richmond, Va., assignor of two-thirds to Mark M. Strauss and Samuel Proskauer, same place. Filed Dec. 7, 1892. Serial No. 454,356. (No model.)



*Claim.*—1. The combination in a flue boiler having a fire-box, a tight smoke-box and a tight ash-pit, of a fan, a flared air-trunk connected with said fan and leading to the ash-pit under the grate and of a width substantially equal thereto, a diaphragm arranged within the smoke-box between the smoke escape and the upper line of flues and having a draft opening, and a perforated damper arranged to work in said opening, substantially as described.

2. The combination in a flue boiler having a tight smoke-box and a tight ash-pit, of a fan, a flared air-trunk diverging from the fan and leading into the ash-pit below the grate, said air-trunk being substantially equal to the width of the fire-box, transverse air dividing and deflecting plates arranged under the grate and of a width equal thereto, and a perforated diaphragm placed in the smoke-box between the top line of flues and the smoke escape, substantially as described.

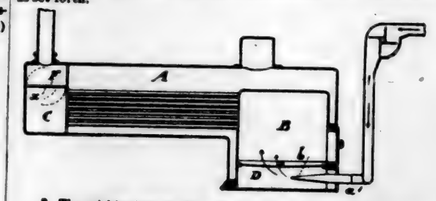
3. The combination in a flue boiler having a tight smoke-box and a tight ash-pit, of a fan having an enlarged discharge, a flared air-trunk diverging from the fan discharge and leading to the ash-pit below the grate, said air-trunk being substantially equal to the width of said ash-pit, a transverse curved plate constituting an air deflector arranged under the grate at one end and curved therefrom to the bottom of the ash-pit, a curved transverse plate, of less depth depending from the grate between the first named transverse plate and the air-trunk, a diaphragm arranged within the smoke-box between the top line of flues and the smoke escape and having an opening therein, and a perforated damper arranged to work within said opening, substantially as set forth.

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**502,617. STEAM-BOILER FURNACE.** Anderson B. Corey, Richmond, Va., assignor of two-thirds to Mark M. Strauss and Samuel Proskauer, same place. Filed May 2, 1893. Serial No. 472,777. (No model.)

*Claim.*—1. The herein described method of economizing fuel by producing the proper combustion thereof in a boiler furnace and preventing loss of heat resulting from the too free escape of the heated incombustible elements released in the process of combustion of the fuel, which otherwise should have communicated their heat to the water in the boiler, the same consisting in feeding fuel to the furnace, feeding air, the latter under pressure, below the fire temporarily arresting the incombustible gases in the smoke box, below the water line of the boiler and allowing their escape in a degree proportioned to the combustion produced in the furnace, substantially as set forth.

2. The herein described method of producing the proper combustion of fuel in a boiler furnace and preventing the loss of heat resulting from such combustion and thus economizing fuel, the same consisting in feeding fuel to the furnace, feeding air under pressure, below the fire in such proportions as shall effect the combustion practically without loss, temporarily arresting the incombustible products of combustion in the smoke box, below the water line of the boiler and freeing them from the smoke box by a draft proportioned only to the work of carrying off the said incombustible gases, substantially as set forth.



3. The within described method of economizing fuel by producing the proper combustion thereof in a boiler furnace and preventing loss of heat resulting from the too free escape of the incombustible gases released in the process of combustion of the fuel, the same consisting in feeding fuel to the furnace, maintaining air under pressure below the fire, causing the ascent of the compressed air through the fire into the combustion chamber, heating said air and causing it to mingle with the products of combustion evolved, temporarily arresting the incombustible gases in the lower portion of the smoke box in or near the plane of their entrance thereto from the flues, or at a point practically at the water line of the boiler, and allowing the escape of said incombustible gases in a degree proportioned to the combustion produced in the furnace, substantially as set forth.

4. The combination herein described in a boiler having a tight ash-pit and a tight furnace, of a fan or similar pressure producer, means for delivering the compressed air under the grate, an adjustable diaphragm or damper which in its normal position shall stand in the smoke box above the top row of flues or practically at the water line of the boiler and close the space between the tube sheet and the head of the smoke box, and shall be entirely closed except as to minute openings for the escape of incombustible gases, and a chimney or stack for conveying off said incombustible gases, substantially as set forth.

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**502,618. INKING APPARATUS FOR PRINTING-PRESSES.** Joseph L. Cox, Battle Creek, Mich., assignor to the Duplex Printing Press Company, same place. Filed Dec. 9, 1892. Serial No. 454,654. (No model.)

*Claim.*—1. In a printing press the combination of a type bed, ink fountain at each end thereof, a reciprocating impression cylinder, a set of form and distributing rollers, and a ductor roller journaled in swinging hangers at each side of the impression cylinder and traveling therewith, and means for driving said distributing rollers while being reciprocated with the cylinder, substantially as described.

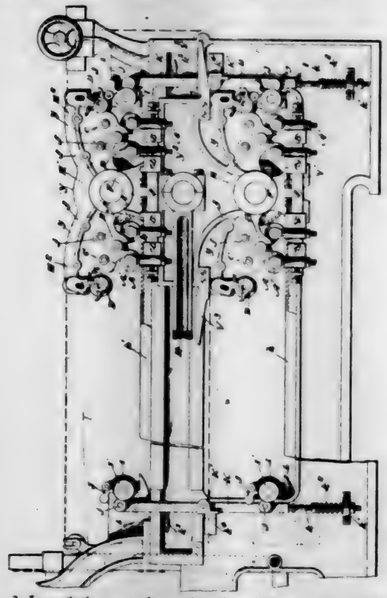
2. In a printing press the combination of a type bed, ink fountains at each end thereof, a reciprocating impression cylinder, a set of form and distributing rollers, and a ductor roller journaled in swinging hangers at each side of the impression cylinder and traveling therewith, and means for driving said distributing rollers while being reciprocated with the cylinder, and means for rotating the fountain rollers when the ductors contact therewith, substantially as described.

3. The combination with a type bed and ink fountains at each end thereof, and a reciprocating cylinder traveling thereon, with form and distributing and ductor rollers and web guide rollers mounted on each side of and traveling with the reciprocating cylinder, the ductor rollers being journaled in vibrating supports and adapted to respectively contact said ink fountains, and means for positively driving said distributing rolls during their reciprocation, substantially as described.

4. In a printing press the combination of two type beds ink fountains at each end thereof, two reciprocating impression cylinders, a set of form and distributing rollers, and a ductor roller journaled in vibrating supports at each side of each impression cylinder and traveling therewith, and gearing for driving said distributing rollers from the cylinders while being reciprocated therewith, substantially as and for the purpose specified.

5. In a printing press the combination of a type bed, an ink foun-

tain at each end thereof, a reciprocating impression cylinder, form and distributing inking rollers at each side of and traveling with said cylinder, and ratchets on the ends of the fountain rollers, the rocking pawls engaging these ratchets, vibrating bars connected to said pawls, and cam arms on the carriage adapted to alternately depress said bars, thereby intermittently rotating the fountain rollers to supply ink to the distributing rollers, substantially as described.



3. In a printing press the combination of a type bed, an ink fountain, at each end thereof, a reciprocating impression cylinder, a set of form and distributing rollers, and a ductor roller suspended in swinging hangers at each side of the impression cylinder and traveling therewith, and means for positively rotating the fountain rollers as the ductor contacts therewith, substantially as described.

7. In a printing press the combination of two type beds, ink fountains at each end thereof, two reciprocating impression cylinders, a set of form and distributing rollers, and a ductor roller at each side of each impression cylinder and traveling therewith, and means for driving said distributing rollers while being reciprocated with the cylinders, and ratchets on the ends of the fountain rollers, the rocking pawls engaging these ratchets, vibrating bars connected to said pawls, and cam arms on the carriage adapted to alternately depress said bars thereby positively rotating the fountain rollers as the cylinders reach the adjoining ends of the beds, substantially as and for the purpose described.

8. The combination of a type bed, an ink supply at each end thereof, a reciprocating cylinder and its carriage, form and inking rollers journaled in said carriage at each side of the cylinder, the swinging hangers D on the carriage, and the ductor rollers journaled therein, substantially as described.

9. The combination of an ink fountain roller, a ratchet on the end thereof, a rocking arm carrying a pawl engaging said ratchet, and a reciprocating spring-controlled bar for vibrating said arm; with a reciprocating carriage and ink rolls carried thereby, and a cam arm thereon adapted to depress said bar, all constructed and arranged to operate substantially as and for the purpose described.

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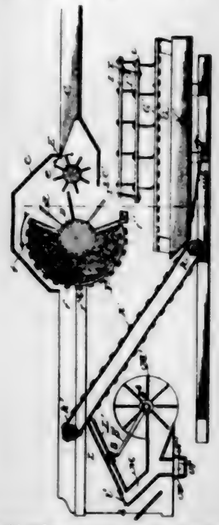
## 502,619. MACHINE FOR SEPARATING PEANUTS FROM THE VINE AND FOR STEMMING, CLEANING, AND GRADING SAME.

WILLIAM A. CROCKER, Rumerton, Va. Filed Jan. 24, 1893. Serial No. 459,633. (No model.)

*Claim.*—1. In a machine for separating peanuts from the vines, the combination with the beater having radial arms, of the slatted casing having the segmental netting partitions between which the arms revolve substantially as described.

2. In a machine for separating peanuts from the vines, the combination with the beater having radial arms, of the casing having the slatted exterior and the segmental wire netting partitions co-operating with the beater cylinder at the inner edge and between which the arms revolve as set forth.

3. In a machine for separating peanuts from the vines, the combination with the casing having the openwork partitions, of the beater cylinder having grooves for the reception of the edge of the partitions and the radial arms on said cylinder revolving between the partitions as set forth.



4. In a machine for separating peanuts from the vines, the combination with the beater and openwork casing having partitions, of the grating below said beater, the tray below the grating and the vine conveyer above the grating substantially as described.

5. In a machine for separating peanuts from the vines, the combination with the beater and openwork casing having partitions of the grating below said beater the tray below the grating and the vine conveyer above the grating consisting of the rake bars having rearwardly curved teeth and mounted on oppositely cranked shafts, as set forth.

6. In a machine for separating peanuts from the vines, the combination with beater and casing, of the grating below the same for separating the vines and peanuts consisting of the transverse lower slats and longitudinal upper slats and a conveyer for moving the vines longitudinally of the upper slats, as set forth.

7. In a machine for separating peanuts from the vines the combination with the beater and partitioned casing, the grating for separating the vines and nuts and a conveyer for the nuts of a shaking screen, a chute for the nuts from the screen and an air blast apparatus for directing a blast of air through said chute in the opposite direction to that in which the nuts are traveling as set forth.

8. In a machine for separating peanuts from the vines, the combination with the beater grating conveyer and shaking screen having the fingers at the lower end of the inclined chute for the nuts having its mouth beneath the fingers and an air blast apparatus for directing a current of air through said chute in the direction opposite the direction in which the nuts are traveling whereby the lighter particles are blown out and away as set forth.

9. In a machine of the character described, the combination with the stemming cylinder having the transversely arranged curved slats of the stemmer having the radial arms arranged in pairs connected by netting as set forth.

10. In a machine of the character specified the combination with the stemming cylinder having the transversely arranged curved slats of the rotary stemmer having the radial arms arranged in pairs connected by netting, the leading arm of each pair being toothed or serrated as set forth.

11. In a machine of the character specified the combination with the stemming cylinder having the curved slats of the rotary stemmer, having the radial arms arranged in pairs connected by netting, the ends of the arms being arranged to pass between the slats as set forth.

12. In a machine of the character specified, the combination with the stemming cylinder having the curved slats of the rotary stemmer, having the radial arms toothed and curved at the ends and the supports for the slats notched or cut away between the slats for the passage of the ends of the arms substantially as described.

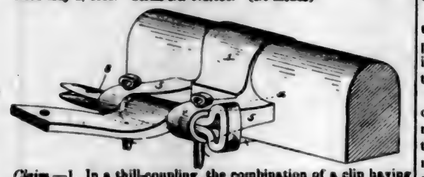


13. In a machine of the character specified the combination with the stemmer cylinder having the discharge opening at one end and the entrance at the opposite end of the stemmer rotating in said cylinder and having the radial arms arranged in pairs one in front of the other and connected by netting whereby said stemmer acts as a conveyer to move the peanuts from the entrance to the discharge end.

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## 502,620. THILL-COUPLING.

ABSEL W. FISHER, Charlotte, Mo. Filed May 2, 1893. Serial No. 472,636. (No model.)



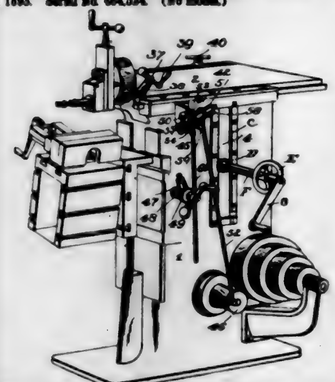
*Claim.*—1. In a thill-coupling, the combination of a clip having arms projecting forwardly therefrom that are spaced apart and have transverse openings therethrough with vertical openings communicating with said transverse openings, an enlarged spring-pin having recesses in the back thereof aligning with the vertical openings in the said arms and removably fitted in the said transverse openings of the said arms, and vertical pins removably seated in said vertical openings and engaging said recesses of the larger pin, substantially as described.

2. In a thill-coupling, the combination of arms having transverse openings extending therethrough, a split spring pin mounted in said transverse openings and arranged to be readily removed, and a vertical retaining pin of smaller form engaging the rear part of the aforesaid pin, substantially as described.

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## 502,621. SHAPING-MACHINE.

WILLIAM B. FOX, Grand Rapids, Mich., assignor to the FOX Machine Company, same place. Filed Mar. 3, 1893. Serial No. 464,524. (No model.)



*Claim.*—1. In combination, the ram, the pitman pivotally connected thereto at its upper end and depending from and supported by said pivot, the crank having a sliding connection with the lower end of the depending pitman and the adjustable fulcrum arranged between the crank and the upper pivoted end of the pitman, substantially as described.

2. In combination, the ram or moving part, the oscillating pitman pivotally connected thereto at its upper end, and depending therefrom, the fulcrum for the pitman, and the operating means, said pitman having longitudinal movement in relation to its fulcrum, and being supported by its pivot, substantially as described.

3. In combination, the ram, the pitman pivotally connected thereto at its upper end, the fulcrum shaft passing through the pitman and the rectangular box or bearing thereon having a shifting connection with the pitman, substantially as described.

4. In combination the ram, the pitman pivotally connected thereto at its upper end and depending from and supported by said pivot, the crank having a sliding connection with the lower end of the pitman, the vertically adjustable fulcrum for the pitman the means adapted to be positively operated for lifting or lowering the fulcrum and the clamp for fixing the fulcrum in any desired position, substantially as described.

5. In combination, the moving part, the pitman connected thereto with means for oscillating the same, the adjustable fulcrum comprising the rotary shaft carrying a gear and adapted to travel lengthwise of the pitman, the rack on the frame engaging the gear and the means for rotating the shaft, substantially as described.

6. In combination, the moving part, the pitman connected thereto with means for oscillating the same, the adjustable fulcrum comprising the shaft with means for moving the same up or down and the clamping means comprising the sleeve on the shaft and the nut on the shaft engaging the same, substantially as described.

7. In combination, the moving part, the pitman connected thereto, with means for oscillating the same, the adjustable fulcrum comprising the shaft with means for adjusting it up or down and the clamping means for drawing upon the shaft longitudinally to clamp it to the frame, substantially as described.

8. In combination, the moving part, the pitman, the means for oscillating the pitman, the adjustable fulcrum comprising the shaft movable vertically in ways of the frame, and lengthwise of the pitman, the racks on the frame, the gears on the shaft engaging the same, the means for rotating the shaft, and the clamping sleeve and nut on the shaft, substantially as described.

9. In combination, the moving part, the pitman for operating the same with means for oscillating the pitman, the frame comprising the sides having ways, the shaft movable vertically in said ways, the means for clamping the shaft and the yoke within the frame and extending from side to side thereof, substantially as described.

10. In combination, the moving part, the pitman with operating means therefor, the shaft movable vertically in said ways, the clamping means and the yoke carried by the shaft and movable therewith to bear on the inner sides of the frame, substantially as described.

11. In combination, the moving part, the pitman with operating means, the shaft movable vertically in said ways, the blocks in said ways receiving the shaft, the clamping means, the yoke and the pin connection between the same and one of the boxes, substantially as described.

12. In combination, the column having ways, the pitman slotted at its upper and lower ends, the rotary fulcrum shaft passing through the upper part of the pitman, the means for adjusting the shaft, and the crank having a sliding connection with the slotted lower end of the pitman, substantially as described.

13. In combination, the ram having the opening extending longitudinally thereof, the means for driving the ram, the adjustable connection thereto comprising the screw shaft and nut, the binding spindle engaging said nut and extending through the longitudinal opening in the ram and the hand wheel on the upper end of said spindle, substantially as described.

14. In combination, the ram, the work table, the feed shaft and feed disk and the adjustable driving connection comprising the oscillating arm, the block adjustable thereon and the pitmen connected with the block and arm respectively substantially as described.

15. In combination the ram, the work table and the adjustable feed mechanism therefor comprising the oscillating arm having a rack, the sliding block carrying a pinion, and its shaft the handle on the pinion shaft for turning and holding the same, and the pitman connected to the sliding block, substantially as described.

16. In combination, the ram, the work table and the adjustable feed mechanism therefor comprising the oscillating arm having a rack, the sliding block having a boss, the spindle passing through the same and having a pinion at its inner end and a toothed handle at its outer end and the pitman having a collar at its upper end surrounding the boss of the sliding block, substantially as described.

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## 502,622. LAMP-FILLING DEVICE.

ALBERT GOLDSMITH, Salem, Mass. Filed Mar. 31, 1893. Serial No. 468,494. (No model.)

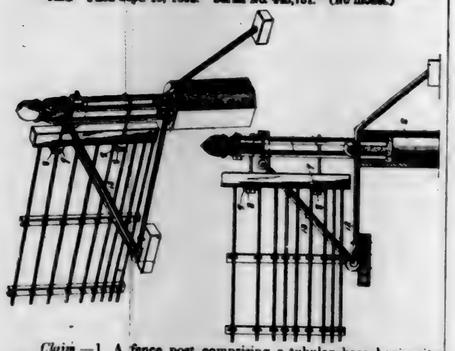


*Claim.*—A lamp-filling device, consisting of a filling tube A, provided with a lateral filling orifice B at a point below its upper end, a laterally extending supporting projection C at a point below the filling

orifice and a bearing on the inner side, a longitudinally movable float-carrying rod E supported by the bearing at one side of the lateral filling opening to avoid obstructing the insertion of an oil can nozzle into the latter, and a leaf spring D mounted on the exterior of the filling tube to enter an opening in a lamp fount or bowl and cooperating with the laterally extending projection to support the filling tube therein, substantially as described.

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**502,623.** FENCE-POST. ABRAHAM C. HARRISON, Grand Rapids, Ohio. Filed Sept. 13, 1892. Serial No. 445,731. (No model.)



*Claim.*—1. A fence post comprising a tubular base having its upper end closed with cement, the pairs of rods having their lower ends embedded in the upper portion of the base, the rods of each pair being formed integral with each other and the top having a shank secured between the upper ends of the rods, substantially as described.

2. A post comprising a tubular base having its upper end closed with cement, the pairs of rods each constructed of a single piece of metal and having their lower ends indented in the base, the top having a shank secured between the upper ends of the rods, an anchor rod secured between its ends to the post and having an outer inclined portion, and an inner horizontal portion, and the inclined brace extending from the end of the horizontal portion of the anchor rod to the top of the post and having parallel sides adapted to receive a fence panel or section, substantially as described.

3. A fence post comprising a tubular base, the pairs of rods having their lower ends embedded in the base, the top having a shank secured between the upper ends of the rods, an anchor rod having a horizontal and an inclined portion and provided near its center with an eye arranged between said rods and provided at the end of the horizontal portion with an eye, a securing device passing through the eye at the center of the anchor rod and securing the latter to the post, and the inclined brace having parallel sides and having its upper end secured to the post and its lower end engaging the eye of the horizontal portion of the anchor rod, substantially as described.

4. The combination with a fence section or panel, of a fence post provided near its top with an eye, an anchor rod disposed longitudinally of the fence and centrally secured to the post near the bottom thereof and provided at its ends with blocks and having at one end an eye, and the inclined brace having parallel tubular sides receiving the fence section or panel between them and having their ends connected by staples inserted in them and engaging the eye of the post and the eye of the anchor rod, substantially as described.

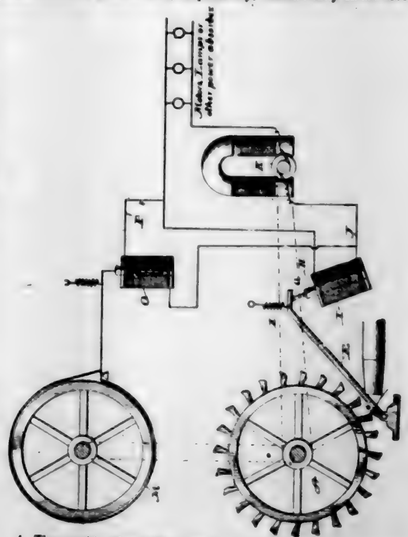
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**502,624.** ELECTRIC WATER-WHEEL REGULATOR. EUGENE R. HOLCOMB, Portland, Oreg. Filed Jan. 21, 1893. Serial No. 459,180. (No model.)

*Claim.*—1. The combination with a water wheel; of stream regulating devices for said wheel, brake mechanism for the wheel, an electric generator driven from said water wheel, an external working circuit supplied by the generator, a solenoid arranged in said external circuit and having its movable core connected with said stream regulating devices, an auxiliary circuit shunted from said external circuit, and a solenoid arranged in the shunt circuit and connected with said brake mechanism, substantially as set forth.

2. The combination with a water wheel and the stream nozzle therefor; of a curved stream deflector or splitter arranged in front of the nozzle and having a lever connected to one end thereof, a dynamo driven by said water wheel, the external working circuit, a solenoid in series with the circuit, a connecting arm connecting said lever with the movable core of the solenoid, and an automatic electrically controlled speed checking device, substantially as set forth.

3. In an electrical regulator for water wheels and dynamos driven thereby, the combination with the water wheel, the stream nozzle therefor, and a band brake connected with the driving shaft of the water wheel; of a movable stream deflector or splitter arranged in front of said nozzle, the dynamo driven by said water wheel, the external working circuit, for lamps, motors &c., an auxiliary circuit shunted from said external circuit and having a predetermined resistance, and separate solenoids arranged in said external and shunt circuits and having their movable cores connected with the stream deflector or splitter and said band brake, respectively, substantially as set forth.

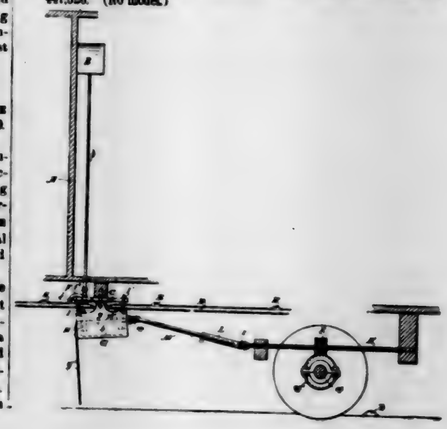


4. The combination with a prime motor carrying a brake wheel, and an electrical generator driven by said prime motor; of a band brake arranged over said brake wheel, and a solenoid arranged in the generator circuit and having its core connected with said band brake, substantially as set forth.

5. In an electrical regulator for water wheels and dynamos driven thereby, the combination with the water wheel and the dynamo driven thereby; of a stream regulator for said water wheel, a band brake for the water wheel shaft, the external working circuit, a shunt circuit arranged on the external circuit and solenoids arranged in the external and shunt circuits, one of which is connected to the stream regulator and the other of which is connected to said band brake, respectively, substantially as set forth.

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**502,625.** STATION-INDICATOR. HENRY G. KRASKY, San Francisco, Cal., assignor, by direct and mesne assignments, to the United States Indicator Company, of California. Filed Oct. 1, 1892. Serial No. 447,526. (No model.)





*Claim.*—1. In combination with the actuating mechanism of a car indicator or exhibitor, a movable rack carried by the car, means for actuating the rack, a succession of cams thereon and intervening means actuated by the cams to operate the indicator or exhibitor mechanism, substantially as herein described.

2. In a car indicator or exhibitor and in combination with the indicating or exhibiting mechanism thereof and a rod for operating it, a movable rack carried by the car having cams upon it means for actuating said rack and a swinging arm within the path and operated by said cams to operate the rod of the indicating or exhibiting mechanism, substantially as herein described.

3. In a car indicator or exhibitor and in combination with the indicating or exhibiting mechanism thereof and a rod for operating it, a movable rack carried by the car having cams upon it, a swinging arm located within the path and operated by said cams to operate the rod of the indicating or exhibiting mechanism, and power transmitting connections from the axle of the car to operate the rack, substantially as herein described.

4. The combination of a movable rack carried by the car, a rocking frame adjacent to said rack and carrying a revoluble shaft, reversed pinions on said shaft adapted to be thrown by the rocking of the frame alternately into and out of gear with the rack, means for rotating said pinions, catches for holding the pinions to their engagements and means on the rack for tripping said catches, substantially as herein described.

5. In combination with the actuating mechanism of a car indicator or exhibitor, a movable rack carried by the car and adapted to operate said mechanism, a rocking frame carrying a revoluble shaft, reversed pinions on said shaft adapted by the rocking of the frame to be alternately thrown into and out of engagement with the rack means for rotating said pinions, catches on the frame for holding the pinions to their engagement and trips on the rack for releasing said catches, substantially as herein described.

6. In combination with the actuating mechanism of a car indicator or exhibitor, a movable rack, carried by the car a succession of cams on said rack, a swinging arm within the path of and operated by said cams and a rod operated by said arm to actuate the indicator or exhibitor mechanism, a rocking frame carrying a revoluble shaft, reversed pinions on said shaft adapted by the rocking of the frame to be alternately thrown into and out of engagement with the rack, means for rotating said pinions, catches on the frame for holding the pinions to their engagement and trips on the rack for releasing said catches, substantially as herein described.

7. In a car indicator or exhibitor, the combination of the bracket C fixed to the car, the rack mounted in said bracket, the cams on the rack and the swinging arm actuated by said cams, the rocking frame pivotally suspended from the bracket, the revoluble shaft in said frame, the reversed worm pinions carried by said shaft and adapted to alternately engage the rack, means for rotating said pinions, the catches alternately engaging the bracket and the trip pins on the rack for releasing the catches, substantially as herein described.

8. In a car indicator or exhibitor, the combination of the revolving shaft A carrying the reversed worm pinions, means for rotating said pinions, the rocking frame pivoted to the car and in which said shaft is mounted whereby the pinions are thrown alternately into and out of action, the catches for holding the rocking frame, the rack with which the pinions engage and from the movement of which the indicator or exhibitor is driven, one end of said rack being toothless whereby its engagement with one of the pinions ceases at the limit of its movement, and the trip pins on the rack for alternately releasing the catches of the rocking frame, substantially as herein described.

9. In a car indicator or exhibitor, the combination of the movable rack carried by the car for transmitting power to the indicator or exhibitor mechanism, the rocking frame or box weighted on one end whereby it swings by gravity in one direction, the contact arm and fixed lug whereby the frame or box is swung positively in the opposite direction, the revoluble shaft and reversed pinions carried by the frame or box and adapted to be alternately thrown into and out of engagement with the rack, means for rotating said pinions the catches for holding the frame or box at each limit of its rocking movement to maintain the engagement of the pinions with the rack and the trip pins on the rack for releasing the catches, substantially as herein described.

10. In a car indicator or exhibitor, the movable rack carried by the car for operating the indicator or exhibitor, said rack having at one end a toothless portion, the shaft A having the reversed worm pinions alternately engaging the rack, power transmitting connections from the axle of the car to rotate shaft A, the rocking frame carrying said shaft and having the alternately engaging catches and the trip pins on the ends of the rack to release said catches, substantially as herein described.

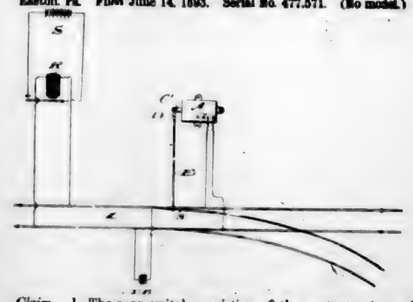
11. In a car indicator or exhibitor the movable rack carried by the car for operating the indicator or exhibitor, said rack having at one end a toothless portion, the shaft A having the reversed worm pinions alternately engaging the rack, power transmitting connections from the axle of the car to rotate shaft A consisting of the adjustably connected and jointed shaft series geared to the axle, the rocking frame carrying said shaft and having the alternately engaging catches and the trip pins on the ends of the rack to release said catches, substantially as herein described.

12. In a car indicator or exhibitor, the combination of the reciprocating rack carried by the car for transmitting power to operate the indicator or exhibitor, the rocking frame with its rotating shaft and reversed pinions, means for rotating said shaft the catches for holding the frame, and the trip pins on the rack for releasing the catches, one of said pins being adjustable on the rack, substantially as herein described.

13. In a car indicator or exhibitor, the combination with the actuating mechanism of the indicator or exhibitor, of the movable rack, means for actuating the rack the succession of cams adjustably mounted on said rack whereby their positions may be regulated and suitable connections operated by said cams to actuate the indicator or exhibitor, substantially as herein described.

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**502,626.** ELECTRIC SIGNAL APPARATUS. JACOB W. LATTIG, Easton, Pa. Filed June 14, 1893. Serial No. 477,571. (No model.)



*Claim.*—1. The snap switch consisting of the contact strips and the lever-operating crank arm, in combination with the contact lever provided with the jaw U bounded on the one side by the prong i having a short straight portion which is operated on by the crank arm to throw the lever immediately upon commencement of the outward movement of said arm, and a curved portion beyond said straight portion over which the arm travels without further affecting the lever, and on the other side by the prong A upon which the crank arm acts only when it has nearly completed its inward or return movement.

2. In combination, the jawed contact lever, the crank arm for operating the same, the contact strips beneath which the lever moves, and the guide rail for supporting and upholding the outer or free end of the lever, substantially as and for the purposes hereinbefore set forth.

3. The box A, the spindle C with its outer and inner crank arms $C'$, $C^2$, the pivoted jawed contact lever, the contact strips beneath which said lever moves, and the guide rail for supporting the free end of the lever—these parts being constructed and arranged together for joint operation substantially as hereinbefore shown and described.

4. The combination substantially as hereinbefore set forth, of an insulated track section, a track circuit completed through the rails of said section, a snap switch interposed in said circuit, a track switch, and connections whereby the snap switch is operated by or from the track switch immediately the latter starts to move from its normal position.

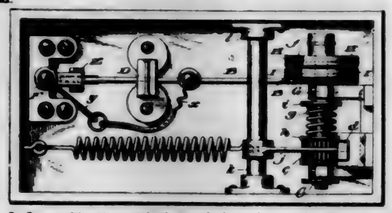
5. The combination of the insulated track section; the constantly closed track circuit completed through the rails of the section and including a relay; the track switch; a snap switch interposed in the track circuit; and connections between the track switch and snap switch whereby the latter is caused to close the track circuit through it and thus cut out the relay whenever and as soon as the track switch begins to move from its normal position, substantially as and for the purposes hereinbefore set forth.

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**502,627.** RAILWAY-TRACK ELECTRIC ANNUNCIATOR. JACOB W. LATTIG, Easton, Pa. Filed June 14, 1893. Serial No. 477,572. (No model.)

*Claim.*—1. In combination with the rock shaft and mechanism for imparting movement thereto, two disks, one fast on the shaft, the other loose thereon and spring pressed toward its fellow, the contact lever carried by the loose disk, and stops for limiting the movement of said lever, substantially as and for the purposes hereinbefore set forth.

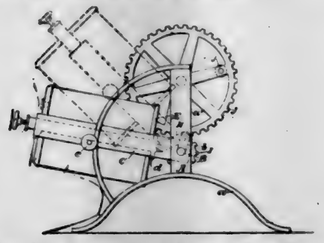
2. The combination with the rock shaft, the pinion thereon, and the sliding rack-bar engaging the pinion, of the friction joint comprising the two disks H, I, the one fast on the shaft, the other loose thereon and spring pressed toward its fellow, the contact lever or arm carried by the loose disk, and stops for limiting the movement of said contact arm, substantially as and for the purposes hereinbefore set forth.



3. In combination with the rack bar, the mechanism operated thereby, the rail, and connections between said rail and rack bar, the spring pressure device for taking up lost motion, arranged to exert constant pressure upon the rack bar in a direction opposite to that in which the bar is caused to move by the depression of the rail to which it is connected, substantially as and for the purposes hereinbefore set forth.

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**502,628. CHURN.** ROSS A. LUDLOW, Globe, assignor of two-thirds to Lionel C. F. Wynne and Owen H. O. Wynne, Hanford, Cal. Filed Apr. 20, 1893. Serial No. 471,204. (No model.)



*Claim.*—1. A churn consisting of a stand, a frame pivoted to said stand, means for securing the said frame to the stand at various angles, a liquid containing vessel supported to slide in said frame, at various angles to the stand, and means for reciprocating said vessel, substantially as hercin described.

2. A churn consisting of a stand, arms pivoted to said stand means for securing them at various angles, slides carried by said arms, and having cross-bars, a liqcid containing vessel secured between said bars and a drive shaft and connections with the cross-bar of the slides whereby they and the liquid containing vessel are reciprocated, substantially as herein described.

3. A churn consisting of a stand, a drive shaft mounted in said stand and having cranks, the arms pivoted on said shaft, and adapted to be turned to and secured at various angles, the slides fitted to said arms and having the cross-bars, the liquid containing vessel secured between the cross-bars and the rods connecting the cranks of the drive shaft with the cross-bar of the slides, substantially as herein described.

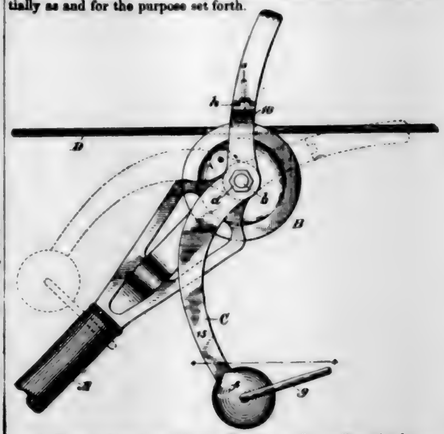
4. A churn consisting of a stand, having the quadrant guides, the drive shaft mounted in said stand and having the cranks, the arms pivoted on said shaft and having the binding screws whereby said arms are adapted to be turned to and secured in various positions on the quadrant guides, the slides fitted to said arms and having the cross-bars, the liquid containing vessel secured between the cross-bars and the rods connecting the cranks of the drive shaft with the cross-bar of the slides, substantially as herein described.

5. A churn consisting of a stand, a drive-shaft mounted in said stand and having cranks, the arms pivoted on said shaft and adapted to be turned to and secured at various angles, the slides fitted to said arms and having the lower cross-bar and the upper cross-head, the rest or platform secured to the lower cross-bar, the liquid containing vessel supported upon said rest, the screw in the upper cross-head for binding on the top of the vessel and the rods connecting the cranks of the drive shaft with the lower cross-bar, substantially as herein described.

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**502,629. TROLLEY-GUARD.** GEORGE MOORE, Boston, Mass. Filed Aug. 22, 1892. Serial No. 443,773. (No model.)

*Claim.*—1. The combination with a trolley-arm and a trolley-wheel carried thereby, of the pivoted weighted guide levers C C, having their upper arms normally extended above the trolley-wheel, and each of said upper arms having a spring joint or hinge whereby it is permitted to yield laterally or at right angles to the line of the circuit-wire in either direction on encountering an obstruction, substantially as and for the purpose set forth.

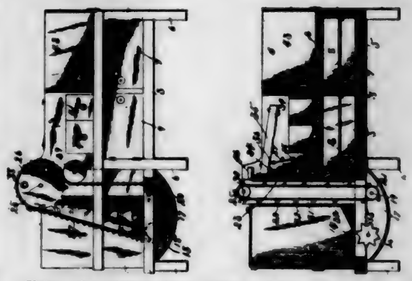


2. The combination with a trolley-arm and a trolley-wheel carried thereby, of a guide consisting of a pair of yielding weighted levers C C fulcrumed at *b* and having their upper arms 10 inclined outward and normally extended above the trolley-wheel, and each of said upper arms 10 being provided with a joint or hinge *h*, and a spring *k*, the latter seated in the lower portion of the arm and extending up into a recess *i* in the upper portion of the same, whereby said arm is permitted to yield laterally or in a direction at right angles to the line of the circuit-wire, substantially as described.

3. The combination with the trolley-arm A and the trolley-wheel B mounted thereon, of the two guide-levers C C, pivoted to the trolley arm at *b* and provided at their lower ends with weights *f f*, and the looped or V-shaped wire *g* extending between and connecting said weights *f f* and forming a stop to limit the upward movement of the lower weighted arms of the guide-levers C C, all constructed and arranged to operate substantially as and for the purpose set forth.

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**502,630. COMBINED KITCHEN-TABLE AND FLOUR-SIFTER.** ICHABOD P. MORRILL, Noble, Mich. Filed Jan. 23, 1893. Serial No. 458,365. (No model.)

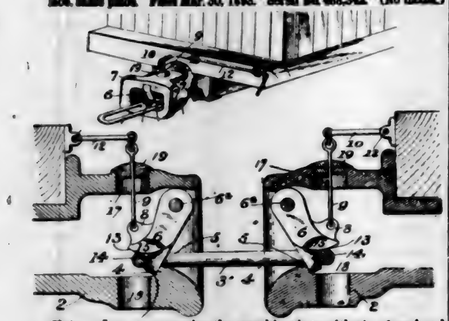


*Claim.*—A combined kitchen table and flour sifter, comprising the table with receptacles or compartments therein, the extension and housing, the flour bin supported on said extension provided with a valve in its bottom, the transverse shaft 15, located beneath said bin and provided with a fluted feed roller 16, and a sprocket wheel 18, at one end, the rectangular box 23, supported on said table, the transverse shafts 19 and 25, journaled therein, provided with sprocket wheels 20 and 26, the chain 27, passing over said wheels, the elevator belt 31, provided with buckets 32, the rollers 21 and 30, over which said belt passes, the vibrating sieve, the crank shaft having a friction wheel 39, over which chain 27 passes and the arms connecting said shaft and sieve, substantially as described.

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**502,631. CAR-COUPLING.** CHARLES W. MCMILLEN and HOWARD F. MCMILLEN, New Castle, Pa., assignors of one-half to Charles S. Wallace, same place. Filed Mar. 30, 1893. Serial No. 468,342. (No model.)



*Claim.*—In a car coupler the combination with the drawhead formed with a central beveled or curved lug in its front end, and with aligned apertures in the top and bottom, of the pivoted gravity coupling arm, cut away on each side on a curved line at its free end, formed with rearwardly and outwardly extending flanges between which the coupling link is adapted to engage, and also formed with a lug, the vertical connecting rod connected with said lug and passing through the upper aperture in the drawhead, the disk loosely mounted on said rod, and the opening shaft connected with said rod, substantially as described.

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**502,632. PENCIL-SHARPENER.** ERNST HORELL, New York, N. Y., assignor to the Eagle Pencil Company, same place. Filed Apr. 27, 1893. Serial No. 472,009. (No model.)



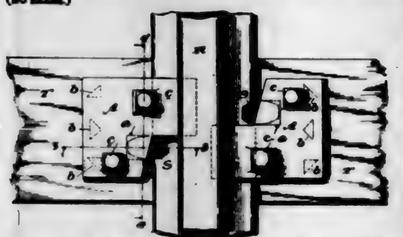
*Claim.*—1. A sheet metal sharpener attachment for lead pencils, formed in one piece, with a tubular neck to fit on the body of the pencil, a conical longitudinally slotted body surmounting the neck, and a knife bed bordering one edge of the slot, a knife blade being applied and secured to the bed, substantially as hereinbefore set forth.

2. A sheet metal sharpener attachment for lead pencils having a tubular clasping neck to fit on the body of the pencil, a conical longitudinally slotted body *b*, a knife bed composed of two lips *d* fastened together and bordering one edge of the slot, and a knife blade placed between the two lips and secured thereto, as set forth.

3. The pencil sharpener sheet metal blank, comprising essentially the prongs *a a*, the body part *b*, the slot *c* and the lip portions *d*, *d*, as herein shown and described.

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**502,633. SAFETY-PLATE FOR RAILWAY-RAILS.** GEORGE P. OSBORNE, New York, N. Y. Filed May 6, 1893. Serial No. 473,363. (No model.)



*Claim.*—1. The combination with a railway rail, a tie and a spike securing the rail to the tie, of a safety plate having a flat base which rests upon the tie, an offset portion which overlaps and bears upon the flange of the rail, a recess to engage the spike, and spurs projecting from the base to enter the tie, substantially as hereinbefore set forth.

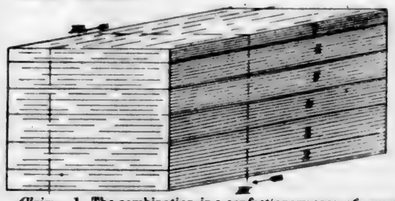
2. The combination with a railway rail, a tie and a spike securing the rail to the tie, of a safety plate having a flat base which rests upon the tie, an offset portion which overlaps and bears upon the rail flange, and at its inner end meets and bears against the rail web, a recess to engage the spike, and spurs projecting from the base to enter the tie, substantially as hereinbefore set forth.

3. A safety plate for railway rails, having a flat base to rest on the tie, an offset portion to overlap and fit upon the rail flange, a recess to engage the spike, spurs projecting from the base to enter the tie, and one or more bolt holes to receive the bolts or screws by which it is held in place, substantially as hereinbefore set forth.

4. A safety plate for railway rails, having a flat base to rest upon the ties, an offset portion to overlap and fit upon the rail flange, and a pocket formed in said offset portion to receive the head of the spike by which the rail is secured to the tie, as and for the purposes hereinbefore set forth.

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**502,634. CONFECTIONERY-CASE.** CHARLES R. OVERBAUGH, St. Louis, Mo. Filed May 31, 1892. Renewed June 19, 1893. Serial No. 478,176. (No model.)

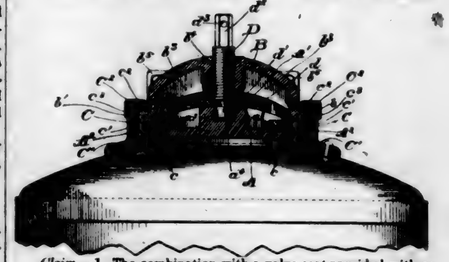


*Claim.*—1. The combination, in a confectionery case, of a number of boxes, each box having a rabbet, an independent bottom, and a lip or flange extending beneath the bottom to fit the rabbet on the box beneath; the whole presenting a smooth even surface all substantially as and for the purpose set forth.

2. The combination, in a confectionery case, of a number of boxes, each having a rabbet, a bottom and a lip or flange extending beneath the bottom to fit the rabbet of the box beneath, a lid adapted to cover the top box, the whole presenting a smooth even surface, and a label adapted to cover and seal the joints between the different boxes, substantially as and for the purpose set forth.

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**502,635. INLET-VALVE FOR DIGESTERS.** JULIUS E. RETTIG, Washington, D. C. Filed Nov. 7, 1892. Serial No. 451,232. (No model.)



*Claim.*—1. The combination with a valve seat provided with an annular rib and an annular recess surmounted by alternate lugs and depressions exterior to said rib; of a valve provided with a ring of yielding material adapted to bear on said annular rib, a valve cover having a plurality of lugs adapted to slip into said annular recess and to engage beneath said lugs in the valve seat, the said valve cover having a female screw in the center thereof, and a screw revolubly connected to said valve and passing through said female screw in the valve cover, substantially as and for the purposes described.

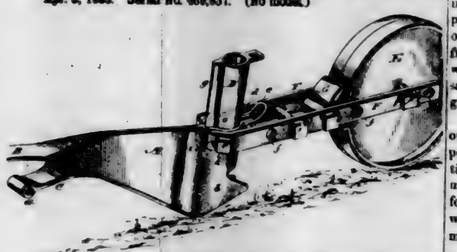
2. The combination with a valve seat C provided with an annular rib *c*, and an annular recess $c^1$ surmounted by alternate lug $c^2$ and depressions $c'$ and stop bolts $c^3$ and $c^4$, the said lugs and depressions being exterior to the said rib *c*; of a valve A provided with a lead ring $A^3$ adapted to bear on said rib *c* and a collar A′ rigidly attached to said valve, a valve cover B having a plurality of lugs *b′* adapted to slip into said annular recess and to engage beneath said lugs in the valve seat, and lugs $b^3$ for turning said valve cover and the said valve cover having a female screw $b^4$ in the center thereof; and a screw D having a head $d^2$ held beneath said collar A′ and engaging in said female screw $b^4$, substantially as and for the purposes described.

3. The combination with a valve seat C provided with an annular rib *c*, and an annular recess $c^1$ surmounted by alternate lugs $c^2$ and depressions $c'$, the said lugs and depressions being exterior to the said

rib *c*, of a valve A provided with a lead ring $A^3$ adapted to bear on said rib *c*, and a collar $A'$ rigidly attached to said valve; a valve cover B having a plurality of lugs $b'$ adapted to slip into said annular recess and to engage beneath said lugs in the valve seat and the said valve cover having a female screw in the center thereof; and a screw D having a head $d'$ held beneath said collar $A'$, and engaging in said female screw $b^4$, substantially as and for the purposes described.

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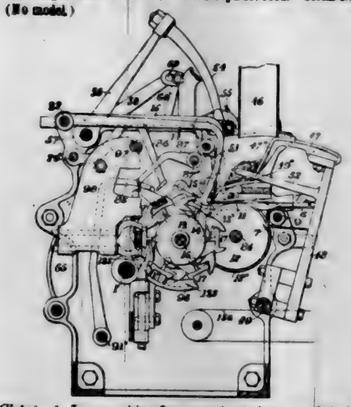
**502,636.** GRAIN-DRILL. ANDREW ROSANDER, Vale, S. D. Filed Apr. 3, 1893. Serial No. 469,637. (No model.)



*Claim.*—A grain-drill consisting of a suitable runner formed in one piece with arms at its front end terminating in sleeves, at its rear end spring clamping-plates, a grain-tube removably held between the clamping plates, a suitable wheel or other coverer, and bars connecting the coverer with the runner, substantially as and for the purpose set forth.

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**502,637.** MACHINERY FOR MAKING UP TOBACCO INTO PACKETS. WILLIAM ROSE, Gainsborough, England, assignor to Richard Harvey Wright, New York, N. Y. Filed Sept. 13, 1892. Serial No. 445,824. (No model.)



*Claim.*—1. In a machine for wrapping tobacco and similar articles in packets of rectangular form, the combination substantially as described and shown, with mold boxes or recesses in which the packets are formed, of means for feeding wrappers in an unfolded condition to the mold boxes, devices for gripping the wrappers and carrying them into position in the mold boxes, and mechanism for feeding the tobacco or like material into and pressing it in the mold boxes.

2. In a machine for forming rectangular packets of tobacco or other material, the combination substantially as described and shown, with mold boxes in which the packets are formed, and means for feeding to the mold boxes the material to be packed, of a plunger for compressing the material in the mold boxes, a rotary device for cleaning the plunger, and means for operating said device.

3. In a machine for forming rectangular packets of tobacco and other material, the combination substantially as described and shown, with mold boxes in which the packets are formed, of an endless band or chain carrying propellers or attachments by which the wrappers are carried into position to be engaged by gripping disks which propel them into position to be inserted in the mold boxes and wrapper-edge guides between which the endless belt or chain travels.

4. In a machine for forming rectangular packets of tobacco or other materials, the combination substantially as described and shown, with mold boxes in which the packets are formed, of an endless band or chain carrying propellers or attachments for feeding the wrappers into the machine, gripping disks 11 and 12 which receive the wrappers from the endless band or chain and convey them into position over the mold boxes, disks $11^a$ and $12^a$ for releasing the wrappers from the gripping disks 11 and 12, means for inserting the wrappers into the mold boxes and means for operating the wrapper-feeding, gripping and inserting parts or devices.

5. In a machine for forming rectangular packets of tobacco or other materials, the combination substantially as described and shown, with mold boxes in which the packets are formed, of an endless band or chain carrying propellers or attachments for feeding the wrappers into the machine, gripping disks 11 and 12 which receive the wrappers from the endless band or chain and convey them into position over the mold boxes, disks $11^a$ and $12^a$ for releasing the wrappers from the gripping disks 11 and 12, and gripping devices 14 and 15 which retain the wrappers in position over and press them into the said mold boxes, and means for operating the wrapper-feeding and gripping devices.

6. In a machine for forming rectangular packets of tobacco or other materials, a wheel provided with recesses or mold boxes in its periphery, each mold box having one of its sides movable, in combination with means for moving the said movable side away from the mold boxes and returning it into position again, and a folding finger for folding one edge of the wrapper against the material of the packet when the movable side of the mold box is removed therefrom, and means for operating the same, substantially as described and shown.

7. In a machine for forming rectangular packets of tobacco or other materials, the combination substantially as described and shown, with mold boxes in which the packets are formed, of movable plates or projections 39 for temporarily extending the front sides of the mold boxes and means for feeding the wrappers into the mold boxes.

8. In a machine for forming rectangular packets of tobacco or other materials, the combination substantially as described and shown, with movable bars, blocks or plungers 80 for compressing the material endwise in the mold boxes and devices for operating the same, of devices for folding the wrappers sidewise around and pressing them against the said bars, blocks or plungers, and means for operating the said devices.

9. In a machine for forming rectangular packets of tobacco or other materials, the combination substantially as described and shown, with mold boxes provided with movable sides in which the packets are formed, and plungers 80 which press the material endwise into the mold boxes and means for operating the same, of folding fingers 85, 86, 87 and 88, and means for operating the same, whereby the wrappers are folded around the material in the mold boxes and around the plungers 80, for the purpose described.

10. In a machine for forming rectangular packets of tobacco or other materials, the combination substantially as shown and described, with mold boxes each having a movable side, of a folding finger constructed and arranged to fold one edge of the wrapper into the position upon the material occupied by the movable side, and mechanism for operating the said movable side and the folding finger.

11. In a machine for forming tobacco or other materials in rectangular packets, the combination substantially as described and shown, with means for feeding wrappers and material to be inclosed thereby into mold boxes in which the packets are formed, and fingers or folders for folding the wrappers around the material, of fingers 99, 110, 111, 112, 113 and 126, constructed and arranged to operate to fold the ends of the packet by a movement given to the operative surface of the fingers by a partial rotation of their axes, the said fingers being also geared together in pairs as described, so as to fold both ends of the packet simultaneously, and means for operating the said fingers.

12. In a machine for forming rectangular packets of tobacco and other materials, fingers 99 which make the first fold in the ends of the packet, having their faces which fold the wrapper against the material concaved, whereby the wrappers are permitted to bulge when making the fold, substantially as described and shown.

13. In a machine for forming rectangular packets of tobacco or other materials, fingers 110, 111, 112, and 113, which make the second folds in the ends of the packet, provided with a flat surface against which the tabs which form the last fold of the packet are pressed and flattened, in combination with fingers 126, constructed and arranged to press the tabs which form the last fold down upon the flat surface of fingers 110, 111, 112 and 113 before said tabs are folded into position upon the packet, and means for operating the said fingers, substantially as described and shown.

14. In a machine for forming rectangular packets of tobacco or other materials, fingers 126 for folding the last tabs of the packet, in combination with fingers 110, 111, 112 and 113, the said sets of fingers being constructed and arranged whereby fingers 126 fold and flatten the last tabs against the surfaces of fingers 110, 111, 112 and 113, and then fold said tabs against the ends of the packets, and means for operating the said fingers, substantially as described and shown.

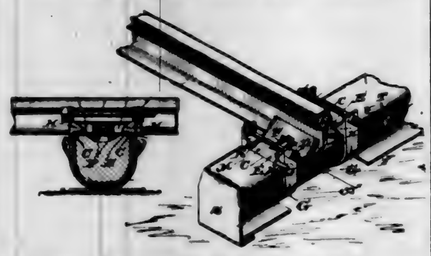
15. In a machine for forming rectangular packets of tobacco and other materials, the combination substantially as described and shown, with a wheel provided with recesses or mold boxes in its periphery in which the packets are formed, of a curved plate partially surrounding the mold wheel and provided with flanges at its edges to retain the packets in the mold boxes and prevent the end folds of the packets from becoming unfolded.

16. In a machine for forming rectangular packets of tobacco and other materials, the combination substantially as described and shown, with a wheel provided with recesses or mold boxes in its periphery, of a curved plate partially surrounding the mold box wheel, and plungers 136 and 137 constructed and arranged for indenting or creasing the ends of the packets and means for operating the same.

17. In a machine for forming rectangular packets of tobacco and other materials the combination of a wheel (13) having recesses or mold boxes therein in which the packets are formed, an endless band or chain (6) carrying propellers (7) for feeding into the machine the wrappers in which the material is to be inclosed, gripping disks (11 and 12) for conveying the wrappers from the propellers into position over the mold boxes, means for releasing at the required periods the wrappers from the grip of the disks, a gripping device (14, 15) for pressing the wrappers into the mold boxes, an endless chain of buckets (42) for conveying the charges of material into a hopper (46) provided with a removable bottom or sliding plate (47) which temporarily supports a charge of material and then pushes it into a mold box, a plunger (54) for pressing the material down in the mold boxes, bars or plates (39 and $41^a$) forming temporary extensions to the front and rear sides of the mold boxes, while the wrappers and material are being pressed therein, plungers (80) for compressing the material endwise in the mold boxes, and for forming a temporary support round which the wrappers are folded to form the creases at the angles of the packets, fingers or folders (85, 86, 87, 88) for folding the wrappers round the material, curved plate (96) for retaining the packets in the mold boxes, fingers or folders (99, 110, 111, 112, 113 and 126) for forming the end folds in the wrappers and pressing them against the ends of the packets, sides or flanges 135 on the curved plate 96 for the purpose of retaining the folds in the ends of the packets, plungers or creasers (136, 137) for indenting the ends of the packets for the purpose of securing the folds therein; an ejector 155 for forcing the finished packets from the mold boxes, and means for imparting to the several parts their necessary movements substantially as hereinbefore described.

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**502,638.** RAILROAD-TIE AND FASTENING. HORACE B. ROWLAND, Philadelphia, Pa., assignor of one-third to Jacob I. Bothwell, same place. Filed June 18, 1892. Serial No. 437,112. (No model.)



*Claim.*—1. The combination of a tie, a rail, a cheek piece, a strap encircling said tie and having flanges bearing on the cheek piece, and fastening means for said strap, substantially as described.

2. A rail fastening consisting of a cheek piece, a strap adapted to bear against said cheek piece, and a fastening bolt and nut for said strap, said parts being combined, substantially as described.

3. The combination of a tie, a cheek piece adapted to embrace the upper and lower sides of the base of a rail, a strap or clamp encircling said tie and cheek piece, and a fastening bolt and nut for said strap, substantially as described.

4. The combination of a support, a cheek piece adapted to embrace the upper and lower sides of the base of a rail, and having in one side a recess, and a strap with one end fitted within said recess, and encircling said support and cheek piece, substantially as and for the purpose set forth.

5. The combination of a tie, a cheek piece adapted to embrace the upper and lower sides of the base of a rail, and having a recess in one side, a strap with a flange adapted to bear upon said cheek piece, and a fastening bolt and nut for said straps, substantially as and for the purpose set forth.

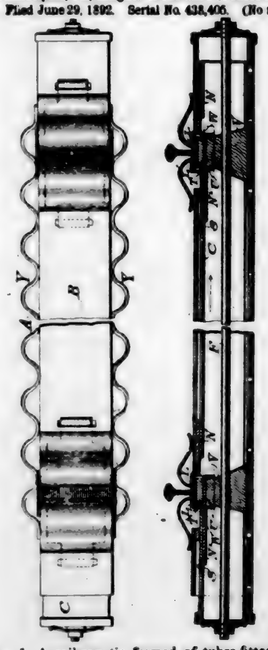
6. A railroad tie consisting of a single piece of sheet metal having a top, sides and base flanges, and provided with a recess for the seating of a rail, and a reinforce at said recess integral with the tie, said parts being combined substantially as described.

7. A railroad tie consisting of a single piece of sheet metal having flanges at the bases of its sides, and provided with end pieces, the latter covering the end and projecting under the ends of the said flanges, said parts being combined, substantially as and for the purpose set forth.

8. A railroad tie consisting of sheet metal, and having a recessed portion in its top, and a reinforced portion on the under side opposite said recessed portion, substantially as and for the purpose set forth.

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**502,639.** RAILWAY-TIE AND FASTENING. HORACE B. ROWLAND, Philadelphia, Pa., assignor of one-third to Jacob I. Bothwell, same place. Filed June 29, 1892. Serial No. 438,406. (No model.)



*Claim.*—1. A railway tie formed of tubes fitted to each other telescopically, and each engaging with a cheek piece, said tubes being movable in opposite directions, whereby the cheek pieces are clamped to the rail, substantially as described.

2. A railway tie formed of tubes fitted to each other telescopically, and each engaging with a cheek piece, a rod connected with the ends of said tubes, and means for forcing said tubes in opposite directions, substantially as described.

3. A railway tie, tubes fitted to each other telescopically and cheek pieces each connected with one of said tubes, a rod attached to the ends of said tubes, and a nut on the rod, for connecting the tubes and forcing the cheek pieces in opposite directions against the rail, substantially as described.

4. In a railway tie, cheek pieces formed of shoulders, and tails, and tubes which engage with said tails and are movable in opposite directions, thus forcing the cheek pieces against the rail, substantially as described.

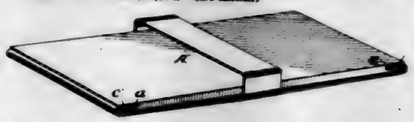
5. A railway tie formed of tubes fitted to each other telescopically, a tightening rod connecting said tubes a nut on said rod, and a spring washer interposed between said nut and the adjacent end of one of the tubes, substantially as described.

6. In a railway, a metallic cross tie consisting of tubes fitted telescopically, means substantially as described for closing said tubes on each other, clamps formed of laterally projecting heads adapted to rest on the outer tube, shoulders resting on the base of a rail, and laterally projecting bases, one of said bases extending freely between said tubes, and having a lip projecting upward through an opening in the outer tube, and the other base being under the inner tube and having a lip entering an opening in said tube, said parts being combined substantially as described.

7. In a railway, a metallic cross tie formed of telescoping tubes

having openings below the rail, cheek pieces with shoulders thereon, wooden cushions on which the rail is seated, metallic plates supporting said cushions, and standards supporting said plates, said parts being combined substantially as described.

**502,640. BLOTTER.** JOHN H. RUSSELL, Melrose, Mass. Filed Apr. 4, 1893. Serial No. 468,994. (No model.)



*Claim.*—1. A blotting pad, comprising a body portion, absorbing material secured thereto and a rubbing device interposed between the body and absorbing material; substantially as described.

2. A blotting pad, comprising a body portion, an elastic material and an absorbing material secured to the body, and a rubber interposed between the body and the elastic and absorbing material: substantially as described.

3. A blotting pad, comprising a body portion, an absorbing material covering one side of the body portion and secured to the ends thereof, and a rubber embracing the body portion and arranged to slide between said portion and the absorbing material; substantially as described.

4. A blotting pad, comprising a rectangular plate or body, absorbing material secured to the ends thereof, and a rubber comprising a band embracing the body portion and extending between the under side thereof and the absorbing material; substantially as described.

5. A blotting pad, the body of which has parallel sides or surfaces, absorbing material secured to the body and covering one of the parallel sides and a rubber for the absorbing material; substantially as described.

**502,641. LAWN-SPRINKLER.** THOMAS SCHEEN, Oakland, Cal. Filed Aug. 15, 1892. Serial No. 443,130. (No model.)



*Claim.*—1. In a lawn sprinkler, a cylindrical head having a central opening extending axially into it from one end, and the opposite end closed and forming a flat inclined surface, an inclined segmental slot made through the side of the head, essentially parallel with the end thereof and intersecting the central opening in convergent lines which meet said opening in a plane above the axis thereof substantially as herein described.

2. In a lawn sprinkler, a cylindrical head having a central opening extending into it axially from one end, and the opposite end closed and forming a flat inclined surface, an inclined segmental slot made through the side of the head approximately parallel therewith and converging from the sides toward the central opening which it intersects above its axis, the rear faces E, G and H of the central and discharge opening intersecting each other at obtuse angles, substantially as herein described.

**502,642. ILLUMINATING HYDROCARBON GAS.** EDWIN TATHAM, London, England. Filed May 5, 1893. Serial No. 473,137. (No specimens.) Patented in England Oct. 14, 1889, No. 16,142.

*Claim.*—1. As an article of manufacture, an illuminating gas of a comparatively fixed or permanent character composed of pure or substantially pure oxygen and a heavy carbonaceous gas substantially such as described in the proportions set forth.

2. In the manufacture of illuminating gas, the improvement which consists in combining pure or substantially pure oxygen in the proportions stated with a gas whose density and percentage of carbon are sufficiently high to render said gas unsuitable for illuminating purposes by itself.

3. In the manufacture of illuminating gas, the improvement which consists in combining pure or substantially pure oxygen in the proportions stated with a gas whose density and percentage of carbon are sufficiently high to render said gas unsuitable for illuminating purposes and effecting the admixture while said heavy gas is still hot, but at a temperature not usually exceeding 300° Fahrenheit.

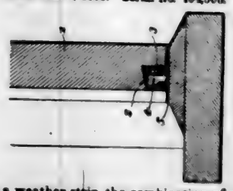
4. In the manufacture of illuminating gas, the improvement which consists in resorting at a low temperature carbonaceous materials substantially such as described capable of producing heavy carbonaceous gases, and combining with the gas so obtained pure or substantially pure oxygen in the proportions set forth.

**502,643. BOX FOR SECONDARY BATTERIES, ELECTRIC CELLS, &c.** CHARLES TERRY and ALFRED ORLAMEB, Paris, France. Filed Dec. 1, 1892. Serial No. 453,775. (No model.) Patented in France Apr. 26, 1892, No. 221,204; in Switzerland Oct. 24, 1892, No. 6,030; in Belgium Oct. 24, 1892, No. 101,872; in Italy Oct. 25, 1892, XXVII, 32,886; in Spain Oct. 26, 1892, No. 13,906, and in England Oct. 26, 1892, No. 19,242.



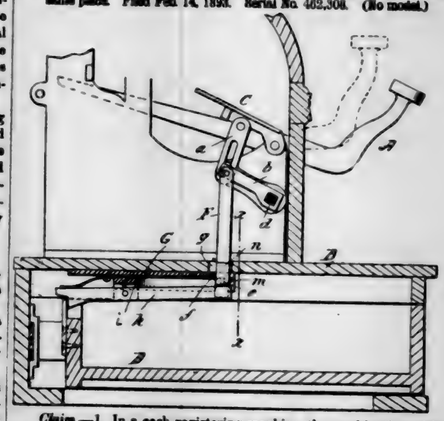
*Claim.*—A battery tank or vessel provided with a continuous lining of agglomerated cellulose and hermetically closed by a cover of transparent celluloid, substantially as described.

**502,644. WEATHER-STRIP.** WILLIAM T. VALLANDINGHAM, Rose Hill, Iowa. Filed Mar. 3, 1893. Serial No. 464,560. (No model.)



*Claim.*—In a weather strip, the combination of a door provided at its lower edge with a longitudinal recess having a vertical inner wall, a strip of elastic material secured to the vertical wall of the recess and housed in the same and forming an elastic packing, and a sheet metal strip secured to the sill of the door and arranged longitudinally thereof and being T-shaped in cross-section to form a vertical flange to be engaged by the vertical wall of the recess of the door, substantially as described.

**502,645. CASH-REGISTERING MACHINE.** JEROME J. WEBSTER, Northampton, Mass., assignor to the Boston Cash Register Company, same place. Filed Feb. 14, 1893. Serial No. 462,308. (No model.)



*Claim.*—1. In a cash registering machine, the combination with a drawer, of a pivotally mounted catch-lever therefor, a bar movable endwise and actuated by any of the keys of the machine, and also having a transversal play, and having an abutment portion which, as the key is given its working movement, is brought to assume a position of engagement with the catch-lever, and which, moving in conjunction with the return of the key, causes the releasing swing of the catch-lever, substantially as described.

2. In a cash registering machine, the combination with a drawer, of a pivotally mounted catch-lever therefor, a bar movable endwise and actuated by any of the keys of the machine, and also having a transversal play, and having an abutment portion which, as the key

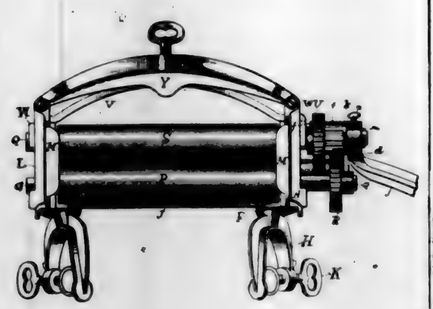


is given its working movement, is brought to assume a position of engagement with the catch-lever, and which, moving in conjunction with the return of the key, causes the releasing swing of the catch-lever and means for forcing the bar from engagement with the catch-lever after the latter has been given its releasing swing, substantially as described.

3. In a cash registering machine, the combination with a drawer, of a pivotally mounted catch-lever therefor, an endwise movable bar actuated by any of the key-levers of the machine and having the step-formed lower end portion and the cam thereabove, the spring which forces the bar in a direction angularly to its endwise play, and a part against which the cam may impinge, all substantially as described for the purpose set forth.

4. In a cash registering machine, the combination with the rock-shaft, movable in conjunction with the key-levers having the arm, *b*, and the drawer, of the plate, G, supported above the drawer with the aperture, the drawer-catch-lever, A, pivoted at the under side of the plate, the bar hung to said rock-shaft-arm, to move endwise and also free to play transversely through said aperture, and having the cam surface, *n*, and the step-formed-extremity, *m*, and the spring, *o*, for the bar, and the spring, *j*, for the catch-lever, substantially as described.

**502,646. CLOTHES-WRINGER.** CYRENUS WHEELER, Jr., Auburn, N. Y. Filed Oct. 9, 1891. Serial No. 408,214. (No model.)



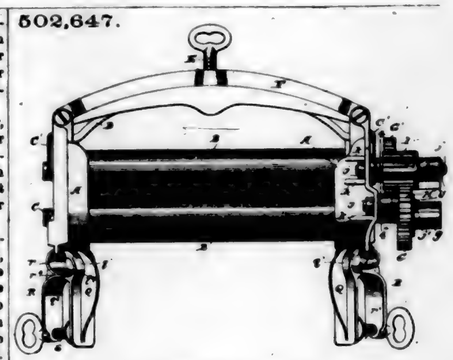
*Claim.*—1. In a clothes wringer having the frame with slotted end pieces and rollers in bearings in said slots, and gear wheels at their ends, substantially as shown, the two fixed axles on one of said end pieces upon which are mounted the intermediate gear wheels which mesh with the gear wheels upon the roller shafts and with each other, the smaller intermediate gear wheel together with one of the gears on the roller shafts being adapted to receive a hand crank, as and for the purposes substantially as described.

2. In a clothes wringer having the frame with slotted end pieces and rollers in bearings in said slots and with gear wheels on the roller shafts, substantially as shown, the two fixed axles on one of the said end pieces, upon which are mounted the intermediate gear wheels which mesh with the gear wheels upon the roller shafts and with each other, the smaller, upper intermediate gear wheel and one of the gears upon the roller shafts being adapted to receive a hand crank, the key or pin which holds the upper intermediate gear wheel in place upon its axle bearing against the end of the hub, *g*, upon which the crank handle is adapted to fit, but not projecting beyond the periphery of the hub, whereby the crank handle is adapted to be passed freely over the said pin or key as it is placed on or removed from the hub, and the thumb screw by which the crank handle is secured on the said hub and held thereon independently of the said pin or key, substantially as set forth.

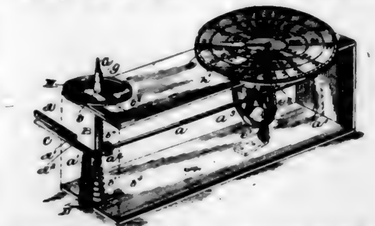
**502,647. CLOTHES-WRINGER.** CYRENUS WHEELER, Jr., Auburn, N. Y. Filed Aug. 19, 1892. Serial No. 443,540. (No model.)

*Claim.*—In a clothes wringer having the frame with slotted end pieces, the rolls carrying gear wheels on their shafts and having bearing in said slotted end pieces and intermediate gear wheels mounted on fixed axles projecting from one of the end pieces, the frame piece at the gear end of the machine having the fixed axles for the intermediate gear wheels arranged in front of the rolls and made hollow, the screw bolts passing through the hollow axles and securing the gear wheels thereon and the screw nuts upon the bolts arranged between ribs on the end frame piece, substantially as set forth.

**502,647.**



**502,648. JEWEL AND PIVOT GAGE.** JOSEPH E. ADCOCK, Lebanon, Oreg. Filed July 5, 1892. Serial No. 439,434. (No model.)



*Claim.*—1. A gage for jewels and arbors, pivots and the like, having a dial of the character stated, the index hand moving thereover, a movable bar having an upper reduced end for the jewels, a pair of calipers connected with said bar, and suitable connecting mechanism between said bar and said index hand, substantially as set forth.

2. The herein-described improved gage for jewels and arbors, comprising the vertically disposed movable bar, the horizontal rotary shaft operated thereby, the vertical arbor having an index hand and operated by said shaft, and the dial having an arrangement of figures thereon of the character herein-described, substantially as set forth.

3. The herein-described improved gage for jewels and arbors, comprising the vertically disposed movable bar having an upper reduced end, guides therefor forming a stop, the horizontal rotary shaft operated by said bar, the arbor operated by said shaft and having an index hand on its upper end, and the dial over which said hand travels, substantially as set forth.

4. The herein-described improved gage, comprising the movable bar having a cone end, tubes through which said bar is passed, a collar designed to rest on one of said tubes and inclose said cone end, the rotary shaft operated by said arbor, the bar operated by said shaft and having an index hand, and the dial, substantially as set forth.

5. The herein-described improved gage, comprising the movable bar, the tubes guiding the same, the spring holding said bar, the rotary shaft movable with said bar, the dial, the arbor having an index hand extending over said dial, the spring supporting said arbor, and the connection between said arbor and shaft, as set forth.

6. The herein-described improved gage for jewels and arbors, comprising the vertical bar having teeth, the horizontal rotary shaft having a pinion meshing with said teeth, the arbor carrying an index hand at its upper end and operated by said shaft, the dial, and the removable cone on the upper end of said bar, as set forth.

7. The herein-described improved gage, comprising the vertically disposed movable bar, the horizontally disposed calipers having one of its parts movable with said bar, the rotary shaft operated by said bar, the dial, and the arbor carrying an index hand and operated by said shaft, as set forth.

8. The herein-described improved gage, comprising the box having a slot in one side, the movable bar having teeth, the calipers extended through said slot and having one part secured to said box, the other part being attached to said bar, the rotary shaft having a pinion engaging said teeth, the crown-wheel on said shaft, the arbor having a pinion in engagement with said crown-wheel, the dial, and the index hand secured to said latter bar, substantially as set forth.

9. The herein-described improved gage, comprising the box, the

tubes secured to the top and bottom thereof, the bar having a spring support, and provided with teeth, the cone on the upper end of said bar, the inclosing collar, the rotary shaft having a pinion meshing with said teeth, the crown-wheel on said shaft, the dial, the arbor having an index-hand over said dial, the pinion on said arbor, and the spring supporting the latter, substantially as set forth.

10. A jewel gage of the character herein-described, having a movable bar on which the jewels are fitted, and a removable cup-like plate encircling said bar beneath the upper end thereof, as set forth.

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**502,649. SPEED-INDICATOR FOR SHAFTING.** HARE C. ANDERSON, Cambridge, assignor of one-half to Thorwald Hansen, West Somerville, Mass. Filed Nov. 25, 1892. Serial No. 453,023. (No model.)



*Claim.*—1. In a speed indicator, a spindle adapted to be rotated in either direction by the object whose speed is to be measured, registering mechanism, and connecting means between it and the spindle, combined with a time-movement, and a locking device therefor, including a movable projection or pin, said projection or pin also acting to throw the connecting means into engagement with the spindle and registering mechanism by the winding of the time-movement, substantially as described.

2. In a speed indicator, a spindle adapted to be rotated in either direction by the object whose speed is to be measured, registering mechanism, and connecting means between it and the spindle, combined with a time-movement, a locking device therefor, including a movable projection or pin, said projection or pin also acting to throw the connecting means into engagement with the spindle and registering mechanism when the time-movement is wound, and releasing mechanism controlled by rotation of the spindle to free the time movement from detention by the locking device, substantially as described.

3. In a speed indicator, a spindle adapted to be rotated in either direction by contact with the object whose speed is to be measured, registering mechanism, intermediate devices, including an actuating lever and its detent, between said mechanism and the spindle to connect them during a fixed period of time, a time-movement adapted to run for said period, and a stop on a moving part of said time-movement, said stop, at the end of the period of time being brought into position to move the said detent away from the actuating lever, to thereby disconnect the spindle and registering mechanism and stop the latter at the end of the period, substantially as described.

4. In a speed indicator, a spindle adapted to be rotated in either direction by the shaft whose speed is to be measured, registering mechanism, connecting means between it and the spindle adapted to be thrown into and out of engagement, a time-movement, a rotatable part thereof adapted when said movement is wound to actuate said connecting means positively and throw the registering mechanism into operative connection with the spindle, and a stop pin rotated by said time movement when running to throw said means out of operative connection automatically at the end of a fixed period of time, a locking device including a detent for the time-movement, and a releasing mechanism controlled by the said registering mechanism, to move said detent to free the time movement substantially as described.

5. In a speed indicator, registering mechanism, a spindle rotatable in either direction, a clutch mechanism between the spindle and registering mechanism, means controlled by the winding of a time-movement, to operate the clutch in one direction to connect the spindle and registering mechanism, and separate means controlled by the unwinding of the time movement to automatically operate the clutch in the other direction and disconnect the spindle and registering mechanism at the end of a fixed period of time, substantially as described.

6. In a speed indicator, mechanism including rotatable hands, a catch on one to at times engage the other of said hands, a graduated dial over which the hands move, and a train of gears connecting said hands, combined with manually operated mechanism rotatable with one of said hands to set the registering hands simultaneously at zero by means of said catch, and a positively actuated stopping device included in said train of gears to prevent the movement of said hands beyond zero when manually operated, substantially as described

7. In a speed indicator, a rotatable spindle, registering mechanism therefor including rotatable hands and a dial, and manually rotated mechanism positively moving with one of said hands to set the hands simultaneously at zero, combined with a time-movement adapted to run for a fixed period of time, means to wind it manually independent of the position of the hands, and a locking device, including a detent, for the time-movement, said detent being controlled by the position of the hands and maintained inoperative thereby until they have been brought to zero, substantially as described.

8. In a speed indicator, a time-movement and means for manually winding it, and a detent adjacent thereto, combined with a pin or projection on a rotatable part of said time-movement adapted to be moved into operative engagement with and to be held by said detent when the movement is wound to lock the same, substantially as described.

9. In a speed indicator, a time-movement, a detent normally in the path of movement of a locking pin, and a locking pin or projection on a rotatable part of said time-movement, moved by rotation of said part into operative engagement with and held by said detent when the movement is wound, combined with independent means to move said detent and release said locking pin or projection and free the time-movement, substantially as described.

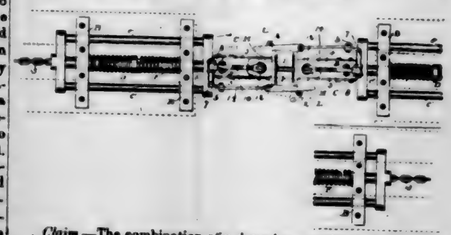
10. In a speed indicator, a registering mechanism including a units hand, actuating mechanism therefor, a hundreds hand, gearing connecting said hands, and a graduated dial, combined with a setting device on the extended shaft of one of said hands to rotate it manually to set it, a yielding catch on the said hand and a beveled projection on the other hand, whereby when the hands are mechanically rotated the catch rides over the projection and one hand can pass the other, and when the setting hand is manually rotated the catch engages the side of said projection and rotates the other hand simultaneously, substantially as described.

11. In a speed indicator, a spindle rotatable in either direction, registering mechanism therefor, a clutch intermediate said spindle and mechanism, and a shouldered lever to move the clutch, combined with a time-movement, a locking pin moving therewith to engage and actuate said shouldered lever when the time-movement is wound, and place the clutch in operative position, a detent to co-operate with said pin and hold the time-movement, and means to withdraw the detent from co-operation with the pin to thereby free the time movement, and to move said detent into engagement with the shouldered lever to prevent vibration of the detent and maintain the time-movement free, substantially as described.

12. In a speed indicator, a spindle rotatable in either direction, registering mechanism therefor, a clutch to connect them, and an actuating lever for the clutch combined with a disk rotatable by and forming part of a time-movement, a locking pin, and a separate stopping pin or projection on said disk, a detent lever adapted to be moved successively by said pins, one end of said detent lever co-operating with the clutch actuating lever and locking pin to maintain them stationary, and a rotatable cam to engage and turn the detent lever away from and to free the locking pin, the stopping pin thereafter moving the lever out of engagement with and releasing said clutch actuating lever, substantially as described.

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**502,650. CAR-COUPLING.** DAVID BELLON, McKownville, N. Y. Filed May 1, 1893. Serial No. 472,526. (No model.)



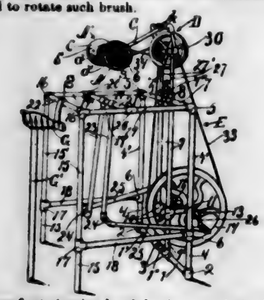
*Claim.*—The combination of a draw-bar provided with a longitudinal mortise in its outer end; said mortise being arranged to receive a coupling link, a bumper-head, jointed to said draw-bar by means of screw-threaded sleeves which are arranged to afford the full height of said mortise between the adjacent ends of said sleeves; the latter forming an opening for receiving a coupling pin; each of said bumper-heads being provided with a forwardly-projecting hook that is arranged to move laterally with the bumper-head to which it belongs and is fitted to engage with the bumper-head of a conjoining coupler, a rocker shaft journaled on said draw-bar and connected to the corresponding hook; said rocker-shaft having an arm arranged to automatically lift said coupling-pin when said hook is moved outwardly, and a coupling-link provided with openings fitted to receive the coupling-pins of two conjoining couplers, as and for the purpose herein specified.

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**502,651. ORANGE OR FRUIT CLEANING MACHINE.** JOHN L. BLOCKBURGER, Pasadena, Cal. Filed Nov. 11, 1892. Serial No. 451,594. (No model.)



*Claim.*—1. A fruit cleaning machine having a rotary brush provided with a semispherical concave brushing surface and having its bristles arranged pointing toward a common center, and means adapted and arranged to rotate such brush.



2. A rotary fruit cleaning brush having a semispherical concave brushing surface, and having its bristles arranged pointing toward a common center.

3. The combination of a brush holder and two segmental brushes having concave brushing surfaces adapted and arranged to form conjointly a concave semi-spherical brushing surface, and means for securing such segmental brushes in the brush holder.

4. The combination of the semi-spherical brush holder; the segmental brushes having the concave brushing surfaces, and means for securing such segmental brushes in the brush holder.

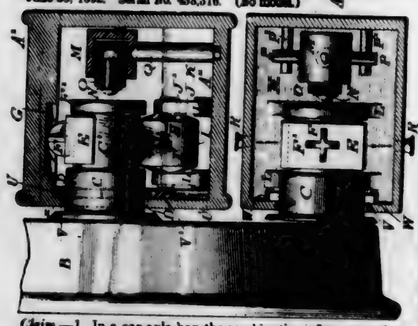
5. The fruit cleaning brush having a hemispherical concave brushing surface and having its bristles pointing toward a common center.

6. The combination of the driving shaft; the brush carrying arm journaled co-axial with such shaft; the brush carrying shaft journaled on such arm; the brushes mounted upon such brush carrying shaft and provided with the concave brushing surfaces; the driven pulley fixed upon the brush carrying shaft; the driving pulley upon the driving shaft; the band connecting the band pulley and driving pulley, and means for rotating the driving pulley.

7. In a fruit cleaning machine substantially such as set forth having the brush supporting arm and the driving mechanism and having its driving shaft journaled in the T's $h$, $h_1$; the arm supporting frame comprising the combination set forth of the two journaled members $d$ $d$ screwed into the journal T's $h$ $h_1$; side members $d'$ $d'$ secured to the journal members by elbows $i$; the top members $d''$ $d''$ screwed to side members by elbows $j$.

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**502,652. CAR-AXLE BOX.** RUSSELL BREWER, Chicago, Ill. Filed June 28, 1892. Serial No. 438,316. (No model.)



*Claim.*—1. In a car-axle box the combination of an upper bearing block E for the axle journal, provided with crossed curved ribs P P'; top A' of the box provided with concavity G in its lower face and checks T T, in which concavity the ribs P P' set, all arranged and operating substantially as described.

2. A car axle box provided interiorly with a bumper M, spring O, and bar N, arranged and operating substantially as described.

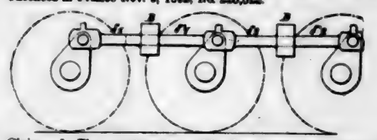
3. A car axle box, provided with a bumper M, spring O, said bumpers setting by a cavity beneath, upon a round headed standard Q; whereby the bumper is permitted to oscillate, substantially as described.

4. A car axle box provided with a bumper M, spring O, said bumper setting by a cavity beneath upon a round headed standard Q, and provided with side projections or trunnions P P, supported on guides or bars P' P'; whereby said bumper may oscillate in various directions, substantially as described.

5. A car axle box, provided interiorly with a hollow, revolving, lubricating cylinder, setting against the axle journal, and provided with trunnions setting in supports, and with an orifice adapted to be opened and closed at will; whereby the interior of the cylinder may be provided with a cooling agent, substantially as and for the purposes described.

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**502,653. COUPLING-BAR FOR LOCOMOTIVES.** LOUIS A. DREER, Paris, France. Filed June 8, 1893. Serial No. 476,936. (No model.) Patented in France Nov. 9, 1892, No. 225,522.



*Claim.*—1. The combination with the drive-wheel axles, of a coupling-rod connecting the cranks of said axles, said rod being formed of two parts whose adjacent ends overlap, a junction-box connecting the two segments and permitting movement thereof relatively to each other in a plane parallel with the axles, and means as specified for keeping the segments always parallel to the rolling plane, substantially as described.

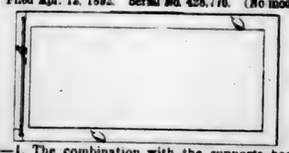
2. The combination with the drive-wheel axles, of a coupling-rod composed of two segments whose adjacent ends overlap, a junction-box connecting the two segments rigidly in a vertical direction, but permitting relative movements of the sections longitudinally and laterally, in a horizontal plane or plane parallel with the axles, substantially as described.

3. The combination with three or more drive-wheels, of a coupling-rod connecting the axles of said wheels, said coupling-rod being composed of two parts connected by a joint between two adjacent wheels permitting relative movement of the two parts in a plane parallel with said axles, one part of said rod connected to the crank of an intermediate wheel being rigidly attached to, or of one piece with, the rod on the other side of said wheel, substantially as described.

4. The combination with the axles of three or more drive-wheels, of a coupling-rod connecting the cranks of said axles, said rod being composed of parts or segments whose adjacent ends overlap, and a horizontal pivot pin passing through the ends of two overlapping segments, said pin being of such length as to permit lateral play of the two segments relatively to each other, substantially as described.

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**502,654. EXTENSION CURTAIN-ROD AND BRACKET.** JOHN G. BROTHWELL, Torrington, Conn., and FREDERICK K. PHILLIPS, St. Louis, Mo., assignors, by direct and mesne assignments, to the Turner & Seymour Manufacturing Company and H. L. Judd & Company, New York, N. Y. Filed Apr. 12, 1892. Serial No. 428,776. (No model.)

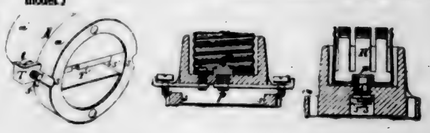


*Claim.*—1. The combination with the supports having round heads, of an extensible rod having contracted hollow ends, the walls of the said ends being formed of resilient material to allow the ends to expand and receive the heads, substantially as set forth.

2. The combination with the extensible rod having hollow contracted ends slit longitudinally and cut away in proximity to the ends of the slits, of the supports having round heads adapted to be received within the contracted ends of the rod and necks adapted to seat within the recessed or cut away portions of the ends of the rod, substantially as set forth.

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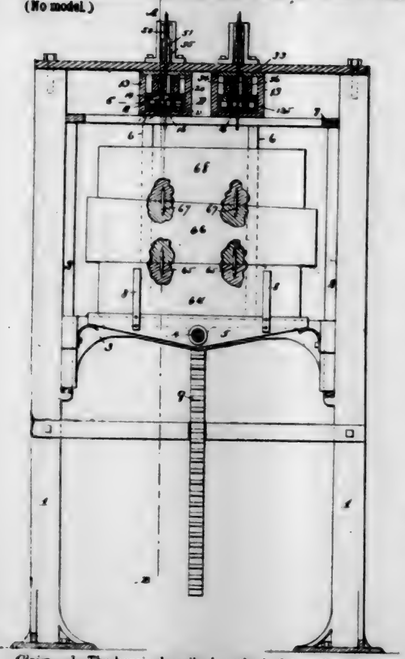
**502,655. SOCKET FOR INCANDESCENT ELECTRIC LAMPS.** WALDO C. BRYANT, Bridgeport, Conn., assignor to the Bryant Electric Company, same place. Filed May 6, 1893. Serial No. 473,274. (No model.)



*Claim.*—1. A wall socket for incandescent electric lamps, consisting of an insulating body having a pocket containing contacts for the base of the lamp and having a base part provided with lateral openings, through which freely pass separate metal plates carrying at one end binding screws for the conductors and secured at the other end to the body of the socket by the same means which secure the lamp contacts, substantially as described.

2. A wall socket for incandescent lamps consisting of an insulating body having a pocket containing contacts for the lamps and a base provided with a slot or recess in the bottom, bridge pieces closing the ends of the slot and lateral openings over the bridge pieces for the passage of the metallic connecting plates, substantially as described.

**502,656. METHOD OF AND MACHINE FOR DOWELING.** HENRY CAMPBELL, Baltimore, Md. Filed Mar. 24, 1892. Serial No. 426,296. (No model.)



*Claim.*—1. The herein described method of doweling which consists in first causing the end of a continuous dowel strip, rod or wire to be inserted in one of the pieces to be joined, then severing the wire at a distance from said piece, and then forcing said piece, and the other piece to be joined, together, substantially as set forth.

2. The herein described method of doweling which consists in first causing the end of a continuous dowel strip, rod or wire to be inserted in one of the pieces to be joined, then severing the wire at a distance from said piece and forming cutting edges on the wire at each side of the point of severance, and then forcing said piece, and the other piece to be joined, together, substantially as set forth.

3. In a doweling machine, the combination of a holder or rest for the work, means for holding the pieces to be joined in line with each other devices for cutting and holding the dowels, and mechanism for causing said holder and devices to approach each other to insert the dowels, substantially as set forth.

4. In a doweling machine, the combination with the dowel cutting and holding devices and means for holding the pieces to be joined in line with each other, of a freely oscillatory work holder mounted upon a pivot or hinge, substantially as set forth.

5. In a doweling machine, the combination of a work holder, means for holding the pieces to be joined in line with each other, cutters for forming the dowels, and feeding and gripping devices for supplying the material for the dowels from a continuous wire or rod, substantially as set forth.

6. In a doweling machine, the combination with means for holding or supporting the work, of doweling cutters having four co-operating cutting edges operating to sever the dowels and form on each of the same at the point of severance a central chisel edge, and mechanism for causing said dowels and the work to be forced together, substantially as set forth.

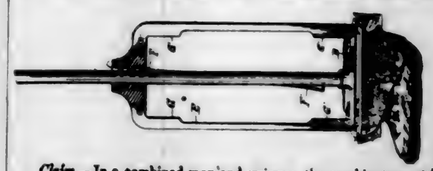
7. In a doweling machine, the dowel-cutting devices comprising opposite dies having a longitudinal passage for the material from which the dowels are to be formed, and having faces beveled to a central line, and beveled cutters or dies correspondingly beveled to fit said faces and movable transversely of the first mentioned cutters or dies, substantially as set forth.

8. The combination with the dowel holding devices of the vertically movable work holder, mechanism for actuating the same, and the guide 6 along which the pieces to be joined together are adapted to slide, substantially as set forth.

9. In a doweling machine the combination with the dowel holding devices, of a frame movable toward and from said devices, the pivot 4 carried by said frame, a work holder mounted on said pivot, springs for maintaining said holder in a normal or average position but adapted to yield to enable the work to be presented properly to the dowels, and mechanism for moving said frame, and guides for the pieces of work to be joined, substantially as set forth.

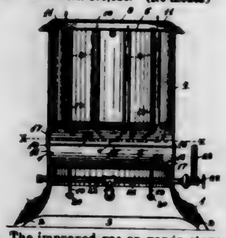
10. In a doweling machine the combination of a work holder movable as described, guides 6 arranged parallel to its line of movement, and adapted to maintain in line with each other the pieces to be joined, holding devices for the dowels, and cutters movable transversely to said work holder and adapted to produce chisel edges upon the dowels extending crosswise to the grain of the pieces to be joined, substantially as set forth.

**502,657. COMBINED MOP AND WRINGER.** CHARLES A. CRISSOLM, Gardeau, Pa. Filed Nov. 4, 1892. Serial No. 450,984. (No model.)



*Claim.*—In a combined mop and wringer, the combination with the mop head having means for attaching the mop, of parallel guide arms extending out from opposite ends of the head, inwardly extending flanges on the opposite ends only of the arms, an apertured connecting bar at the outer end of the arms, a handle passing through the said bar, a cross head on the lower end of the handle having grooves in its ends in which the flanges of the arms engage and means for locking the handle in position, substantially as described.

**502,658. PARLOR GAS-FURNACE.** JOHN W. COWPERTHWAIT, St. Louis, Mo., assignor of one-half to Henry Martini, same place. Filed Apr. 17, 1893. Serial No. 470,629. (No model.)



*Claim.*—1. The improved gas or vapor stove, constructed with a base 1 having a vertical passage therein, a body 4 having its upper end closed by a head 5 and its lower end open and mounted upon said base with its open end in communication with the passage in the base, a horizontal burner 21, located at the lower portion of said body and provided with apertures 22 for discharging fuel upward into said body, a valve 24 connected to said burner to regulate the supply of fuel thereto, a vertical pipe 25, the interior of which communicates with the interior of the upper portion of the body 4, said pipe being located upon the exterior of and separated a distance from said body, a horizontal pipe 26 having one end connected to the lower end of said pipe 25 and its opposite end connected to said burner at the base of the stove, and a valve or faucet 28 applied to drain said pipes, substantially as herein specified.

2. The improved gas or vapor stove, constructed with a base 1, which is hollow and provided with a space 3 beneath it, a vertical body 4 having its lower end open and mounted upon said base, a head 5 mounted upon the upper end of said body, a heating cylinder or drum 6 mounted within the body 4 at a point adjacent its lower open end and extending in a horizontal direction from end to end of the stove with its body intermediate of its ends separated from said body to form a passage 7 upon each side of said cylinder or drum, a series of tubes 8 located vertically within said body with their lower ends connected to said cylinder or drum and their upper ends connected to said head 5, the interior of said tubes being in communication with said cylinder or drum, an inlet opening 16 for cold air formed in the stove opposite one end of said cylinder or drum and communicating with the interior thereof, means for partly closing said opening, and a burner 21 located in the base of the stove beneath the said cylinder or drum, substantially as herein specified.



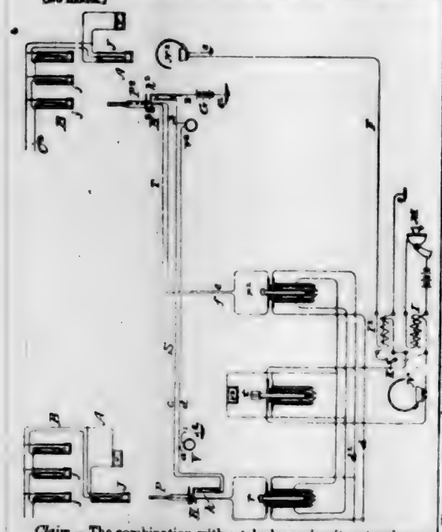
3. The improved gas or vapor stove constructed with a vertical body 4, a cylinder or drum 6 mounted in said body and extending across same horizontally, a horizontal partition 12 located in said drum or cylinder and dividing same into an upper chamber 13 and a lower chamber 14, said partition having an opening 15 therein about midway of its length by means of which the upper and lower chambers are placed in communication, an inlet opening 16 for cold air formed in the body of the stove opposite each of the ends of the lower chamber and communicating therewith, means for closing said openings, and a burner located beneath the lower chamber 14 in said body substantially as herein specified.

**502,659. CURTAIN-ROD AND BRACKET.** JOHN DAY, New York, N. Y., assignor of one-half to the Turner & Seymour Manufacturing Company, Torrington, Conn. Filed Sept. 24, 1892. Serial No. 446,773. (No model.)



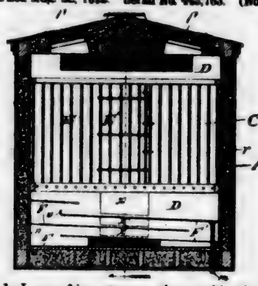
*Claim.*—The combination of two brackets, having bases adapted to be connected to the inside or outside of a window or similar frame, the brackets having spring arms terminating in rounded parts *b'*, a curtain rod having at each end a corresponding part *a*, one set of said parts (that is the rounded parts on the brackets, or the corresponding parts on the curtain rod) being balls, and the other set being sockets—said sockets being cut away at one side, and being open at the ends, so that the brackets may stand at an angle with the rod, or in line with it, substantially as described.

**502,660. ELECTRIC SWITCHBOARD-SIGNAL.** FRANCIS W. DUBBAR, New York, N. Y., assignor to the American Telephone and Telegraph Company, of New York. Filed May 15, 1893. Serial No. 474,348. (No model.)



*Claim.*—The combination with a telephone circuit or trunk conductor extending between two points and provided terminally with plug and springjack switch devices; of a normally open associated main signaling circuit including an electric generator; a self setting annunciator in said signaling circuit at each terminal point; a normally open shunt circuit round one of the said annunciators; and two automatic circuit controllers governing the continuity of the said main and shunt circuits respectively, and actuated by connections and disconnections made by means of said terminal plugs respectively; whereby one of the said annunciators is made to display its signal when both main and shunt signal circuits are closed, and whereby both of said annunciators are made to display their signals when the main circuit only is closed.

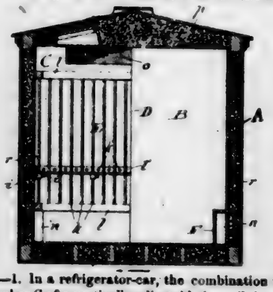
**502,661. REFRIGERATOR-CAR.** WILLIAM E. EASTMAN, Boston, Mass. Filed Aug. 22, 1892. Serial No. 443,763. (No model.)



*Claim.*—1. In a refrigerator-car, the combination with the intercommunicating merchandise and ice-storage chambers of a circuitous air flue in the ice storage-chamber having its two or more contrarily directed turns located below the plane of the ice-supply and leading into the base of the merchandise storage-chamber, substantially as and for the purpose set forth.

2. In a refrigerator-car, the combination with the merchandise and ice storage-chambers B and C communicating through an opening *o* and separated by a partition D, of a circuitous air flue in the base of the chamber C formed with the alternating, oppositely inclining shelves F, F' all located below the ice supply, a drip pipe *m* leading from the upper end of the uppermost shelf F', and an outlet G in the base of the partition, through which the flue opens into the chamber B, substantially as and for the purpose set forth.

**502,662. REFRIGERATOR-CAR.** WILLIAM E. EASTMAN, Boston, Mass. Filed Aug. 22, 1892. Serial No. 443,764. (No model.)



*Claim.*—1. In a refrigerator-car, the combination with the ice-storage chamber C of a vertically adjustable ice-crib in said chamber, substantially as and for the purpose set forth.

2. In a refrigerator-car, the combination with the ice-storage chamber C, of an ice-crib in said chamber having an adjustable base, substantially as and for the purpose set forth.

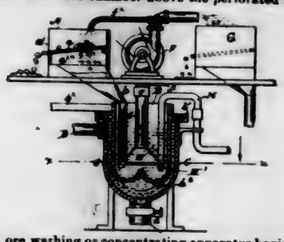
3. In a refrigerator-car, the combination with the ice-storage chamber C, of an ice-crib E in said chamber formed with frames *l* and *l'* and bars *k* and *k'*, the frame *l'* being supported and vertically adjustable on the bars *k*, substantially as and for the purpose set forth.

**502,663. ORE WASHER AND CONCENTRATOR.** GRIFFITH M. ELDRIDGE, Philadelphia, Pa. Filed Apr. 14, 1893. Serial No. 470,275. (No model.)

*Claim.*—1. In an ore concentrator and washer having a receiving chamber with a perforated bottom or partition, a pipe connected with said receiver and supplying water to the space between said bottom and partition, which water passes up through the latter and a

pump with a suction-pipe projecting into said chamber to a point immediately above the perforated bottom, the combination therewith of a pipe adapted to receive a current of water and having a nozzle adapted to project a stream of water into said chamber above the perforated bottom.

2. In an ore concentrator and washer having a receiving chamber with a perforated bottom or partition and a pump with a suction-pipe projecting into said chamber to a point immediately above the perforated bottom the combination therewith of a pipe adapted to receive a current of water and having a nozzle adapted to project a stream of water into said chamber above the perforated bottom.
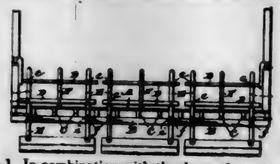


3. In an ore washing or concentrating apparatus having a rotating perforated receiver and a pump having a suction-pipe projecting into said receiver the combination therewith of a pipe adapted to receive a current of water and having a nozzle adapted to project a stream of water into said receiver in a direction opposite to the direction of motion of the receiver.

4. In an ore washer and concentrator having a rotating receiving chamber with a perforated bottom or partition and a pump with a suction pipe projecting into said chamber to a point above the perforated bottom, the combination of a pipe adapted to receive a current of water and having a nozzle adapted to project a stream of water into said chamber above the perforated bottom in a direction opposed to the direction of rotation of the chamber and perforations in said bottom or partition tapering from the bottom to the top thereof.

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**502,664. BRIDGE-GATE.** CHARLES E. FOLLETT and GEORGE SIMPSON, Oshkosh, Wis. Filed Mar. 15, 1893. Serial No. 466,105. (No model.)

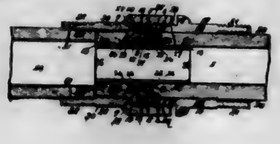


*Claim.*—1. In combination with the draw of a bridge, a folding gate consisting of horizontal bars pivotally connected to upright posts, which latter are pivoted to the bridge frame or abutment below the roadway, outwardly extending projections on said gate, and the lower end of the gate weighted, whereby the gate is adapted to swing laterally and fold together by the draw striking the projections on the gate in closing and permit the gate to unfold as the draw opens, substantially as described.

2. In combination with a draw, a gate comprising two or more folding sections, which are arranged slightly out of line with each other so as not to interfere with each other in folding and unfolding and to completely close the approach to the draw when raised, each section consisting of horizontal bars pivotally connected to upright posts, which latter are pivoted to the bridge frame or abutment below the roadway, outwardly extending projections on said sections, the lower ends of the sections being weighted; and a draw provided with a transversely arranged operating bar which extends laterally from the side of the same and is beveled on its outer end, substantially as described.

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**502,665. COMBINATION HARD AND SOFT METAL PIPE COUPLER.** SAMUEL M. FRIEDE, St. Louis, Mo., assignor of one-half to Isaac G. Brown, same place. Filed Apr. 17, 1893. Serial No. 470,611. (No model.)



*Claim.*—1. In a pipe coupler, the combination of the lead pipe 1 having the bevel lip 2, the intermediate lead collar 6 having the bevel lip 7, the intervening hard metal gasket 12, the minor screw coupling collar 16, and the major screw coupling collar 25; substantially as described.

2. In a pipe coupler, the combination of the lead pipe 1, having the expansion lip 2 with the inner bevel 3 and the outer bevel 4, the intermediate lead collar 6, having the expansion lip 7, with the inner bevel 8, and the outer bevel 9, the intervening hard metal bevel swage gasket 12, the said gasket having the bevel side extension edges 15, and the rectangular peripheral extensions 14; the minor screw coupling collar 16, having the bevel 17, and the major screw coupling collar having the bevel 28; substantially as described.

3. In a pipe coupler, the combination of the lead pipe 1, having the inner and outer bevels, the intermediate lead collar 6 having the expansion inner and outer bevels, the hard metal gasket 12 having the bevel faces 15, the spurs 33 on said bevels, the said hard metal spurs providing their own recess seats 34, in said lead pipe and in said lead collar, the swaged joint surface 35, and the minor and major coupling screw collars, with their bevel seats; substantially as described.

4. In a pipe coupler, the combination of the lead pipe 1 having the bevel lip, the lead collar 6 having a bevel lip, the hard metal gasket having the bevels 15, spurs 33 and peripherally extending rim 12, the minor coupling collar 16 having the bevel 17 and coupling screw thread 27 at its front end and the inner screw thread 20, and the outer screw thread 21, at its rear end, the major coupling collar 25, having the bevel 28 and the inner screw thread 26 at its front end, and the inner screw thread 31 and the outer screw thread at its rear end, and the iron pipe 24, having the outer screw thread 22, that engages with the inner screw thread 20 of said minor coupling collar and with the inner screw thread 31 of said major coupling collar; substantially as described.

5. In a pipe coupler, the combination of the lead pipe 1 having the bevel lip, the lead collar 6, having the expansion bevel lip, the hard metal gasket having the expansion bevels 15, spurs 33 and peripherally extending rim 12, the said spurs, swaging into their recessed seats 34 in the lead pipe and lead collar, and said rim 12 swaging its seat 25 in the expansive lip 2 of said lead pipe 1, the minor coupling collar 16, having the bevel 17 and coupling screw thread 27 at its front end, and the inner and outer screw threads 20 and 21 at its rear end, the major coupling collar 25 having the bevel 28, and the inner screw thread 26 at its front end, and the inner screw thread 31 and the outer screw thread 32 at its rear end, and the hard metal pipe having the inner screw thread 23, that engages with the outer screw thread 21, of said minor coupling collar, and with the outer screw-thread 32 of said major coupling collar; substantially as described

6. In a pipe coupler, the combination of the lead pipe 1, having the bevel expansion lip 2, the intermediate lead collar 6, having the bevel expansion lip 7, the intervening hard metal gasket 12 having the rectangular peripheral extension 14, the minor screw coupling collar 16 having the screw threads 20, 21 and 27, the projecting peripheral rim 18 and the wrench seat 19, the major coupling collar 25 having the bulge projection 29 of its coupling end, the screw threads 26, 31, and 32, and the wrench seat 30, substantially as described.

7. In a pipe coupler, the combination of the lead pipes 1 and 6, the bevel gasket 12, and the internal reinforcing and spanning tube-shell 36; substantially as described.

8. In a pipe coupler, the combination of the lead pipe 1, having the bevel expansion lip 2, the intermediate lead collar 6, having the bevel expansion lip 7, the intervening hard metal gasket 12, having the swaging spurs 33, the minor screw coupling collar 16, the major screw coupling collar 25, and the internal reinforcing tube-shell 36, substantially as described.

9. In a pipe coupler, the combination of the lead pipe 1, having the bevel expansion lip 2, the intermediate lead collar 6, said collar having the beveled expansion lip 7, the intervening hard metal gasket 12, said gasket having the swaging spurs 33, the bevels 15, and the peripheral rim 14, the inner screw coupling collar 16, having the bevel 17, and coupling screw-thread 27 at its front end, and the inner screw-thread 20 and outer screw-thread 21 at the rear end, the major coupling collar 25, having the bevel 28, and the inner screw-thread 26 at its front end, and inner screw-thread 31 and outer screw-thread 32 at its rear end, the hard metal pipe 24, having a screw-thread that engages with one of said coupling collars, and the reinforcing internal tube-shell; substantially as described.

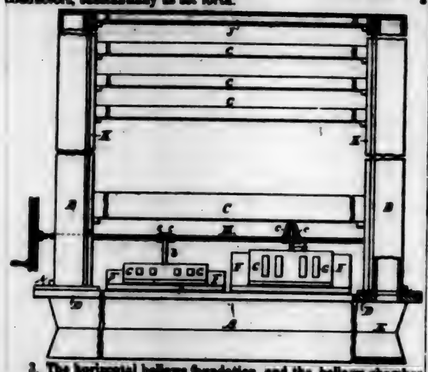
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**502,666. REED-ORGAN.** LEVI K. FULLER, Brattleborough, Vt., assignor to the Estey Organ Company, same place. Filed Apr. 4, 1893. Serial No. 468,973. (No model.)

*Claim.*—1. The main wind-conductors, and the wind-chests connected therewith, in combination with the bellows with which each of said main wind-conductors near one end connects, and the transverse open wind-conductor connecting the said main wind-conductors near their other ends, substantially as set forth.



2. The horizontal bellows foundation, the bellows chamber below the same, and the vertically-extending main wind conductors rising from near the opposite ends of said bellows foundation and communicating with said bellows chamber, in combination with the exhausters located above said bellows foundation and between said main wind conductors, substantially as set forth.



3. The horizontal bellows foundation, and the bellows chamber below the same, in combination with the reinforcing plates above and at the opposite ends of said bellows foundation, and the vertically-extending main wind conductors resting upon said reinforcing plates and communicating therethrough and through the bellows foundation with the bellows chamber, substantially as set forth.

4. The bellows foundation, the bellows chamber on one side thereof, and the independently-operating multiple exhausters on the opposite side thereof, in combination with the blow-pedals connected with a portion of said exhausters, and an operating mechanism independent of said blow-pedals connected with other of said exhausters, substantially as set forth.

5. A bellows foundation, in combination with a pair of exhausters, the inner of said exhausters being hinged at one edge to said foundation, and the outer of said exhausters being hinged to the free edge of the inner exhauster, and independent means for operating said inner and outer exhausters, substantially as set forth.

6. A horizontal bellows foundation, a bellows chamber below the same, and vertical wind conductors rising from opposite ends of said foundation and communicating with said bellows chamber, in combination with two pairs of exhausters, each pair comprising an inner exhauster hinged at its front edge to said foundation and an outer exhauster hinged at its rear edge to the rear free edge of said inner exhauster, blow pedals connected with the free front edges of said outer exhausters, and a rotary horizontal operating shaft having cranks connected with the free rear edges of the inner exhausters, substantially as set forth.

7. A wind conductor having an air port or opening, and a wind chest, in combination with a mute frame between the wind conductor and the wind chest, said mute frame having a slot or opening establishing communication from the vertical wind conductor to the wind chest, substantially as set forth.

8. A wind conductor having an air port in its face, and a wind chest, in combination with a mute frame between the wind conductor and wind chest and having a slot or opening opposite the air port in the face of said wind conductor, whereby communication is established between said wind conductor and the interior of said wind chest, and a mute controlling said air port and located in the slot or opening in said mute frame, substantially as set forth.

9. A wind conductor having an air port in its face, and a wind chest, in combination with a mute frame between the wind conductor and wind chest and having a slot or opening opposite the air port in the face of said wind conductor, whereby communication is established between said wind conductor and the interior of said wind chest, and a swinging mute controlling said air port and located in the slot or opening in said mute frame, substantially as set forth.

10. A wind conductor having an air port in its face, and a wind chest, in combination with a mute frame between the wind conductor and wind chest and having a slot or opening opposite the air port in the face of said wind conductor, whereby communication is established between said wind conductor and the interior of said wind chest, and a swinging mute controlling said air port, said mute being pivoted to the face of the wind conductor adjacent to said air port and being located and swinging in said slot or opening in said mute frame, substantially as set forth.

11. A wind conductor having an air port in its face, and a wind chest, in combination with a mute frame between the wind conductor and wind chest and having a slot or opening opposite the air port in the face of said wind conductor, whereby communication is established between said wind conductor and the interior of said wind chest, a swinging mute controlling said air port, said mute being pivoted to the face of the wind conductor adjacent to said air port, and located and swinging in said slot or opening in said mute frame, and an oscillating shaft connected with said mute to swing the same, said shaft being secured to the face of the wind conductor and extending outside of the mute frame, substantially as set forth.

12. A wind conductor having an air port in its face, and a wind chest, in combination with a mute frame between the wind conductor and wind chest and having a slot or opening opposite the air port in the face of said wind conductor, whereby communication is established between said wind conductor and the interior of said wind chest, a swinging mute controlling said air port, said mute being pivoted to the face of the wind conductor adjacent to said air port and located and swinging in said slot or opening in said mute frame, and said mute having at one end a projecting stud *s*, an oscillating operating shaft N lying alongside the face of the wind conductor and extending through an opening *k* in the mute frame, said shaft having within the slot or opening of the mute frame a crank-arm *r* co-operating with the stud *s* on the mute, and having exterior to the mute frame an operating crank-arm *t*, substantially as set forth.

13. A wind conductor having a plurality of air ports in its face, a plurality of swinging mutes controlling said air ports respectively, each mute being pivoted to the face of the wind conductor below its corresponding air port, and a plurality of oscillating operating shafts one for each mute, each shaft being mounted upon the face of the wind conductor, in combination with a mute frame having a plurality of slots or openings *l*, and a plurality of apertures *k*, whereby said mute frame may be placed against the face of the wind conductor, each of its slots or openings *l* overlying one of the mutes, and each of its apertures *k* overlying one of the operating shafts, substantially as set forth.

14. A wind conductor having an air port, and a wind chest communicating with said conductor through said air port, in combination with a swinging mute controlling said air port, substantially as set forth.

15. A wind conductor the inclosed chamber of which is wholly unobstructed, said wind conductor having an air port, a wind chest the inclosed chamber of which is wholly unobstructed, a mute frame between said wind conductor and wind chest having a slot or opening opposite said air port establishing communication between said wind conductor and wind chest, and a mute controlling said air port and located within the slot or opening in said mute frame, in combination with a reed set exterior to said wind chest, the reed cells whereof communicate with said wind chest, external valves for the reed cells, and actions for said valves wholly disconnected from said wind chest, substantially as set forth.

16. A wind chest, a reed set exterior thereto, and a valve for each reed cell pivoted to the reed set, in combination with a longitudinally-movable action-rod, and an adjustable lifter on said action-rod co-operating with said valve, substantially as set forth.

17. A wind chest, a reed set external thereto, and a valve for each reed cell pivoted to the reed set, said valve having a forwardly-extending operating projection, in combination with a longitudinally-movable action-rod located in front of said valve with the operating projection thereof extending in front of said action-rod, and a laterally-extending lifter on said action-rod co-operating with said projection, substantially as set forth.

18. A reed set, and a valve for each reed cell pivoted to the reed set, said valve having at one side a forwardly-extending operating projection which extends in a plane parallel with that in which the valve swings, in combination with an action-rod located in front of the reed set but between adjacent reed cells and at one side of its valve, said action-rod having a laterally-extending lifter co-operating with the operating projection of the valve, substantially as set forth.

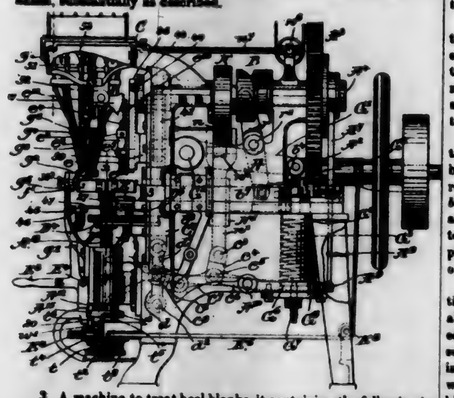
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**502,667. REEL COMPRESSING AND LOADING MACHINE.** CHARLES W. OLDROYD, Lynn, assignor to James W. Brooks, trustee, Cambridge, Mass. Filed May 7, 1892. Serial No. 433,167. (No model.)

*Claim.*—1. In a machine for treating heels, a gang of drivers, and operating devices therefor, combined with a circularly movable table having a series of heel seat dies and a circularly movable table having a series of nail boxes, the centers of motions of said tables being at opposite sides the path in which the said drivers reciprocate, the said tables being also arranged in different horizontal planes or one above the other, whereby a loaded nail box may be interposed be-

tween the heel seat die containing a heel blank and the lower ends of the drivers, substantially as described.

2. In a machine for treating heels, a gang of drivers, and operating devices therefor; combined with a circularly movable table having a series of heel seat dies, and a circularly movable table having a series of nail boxes, the centers of motions of said tables being at opposite sides the path in which the said drivers reciprocate, the said tables being also arranged in different horizontal planes or one above the other, and with a heel compressing die and a nail presenting mechanism, substantially as described.



3. A machine to treat heel blanks, it containing the following instrumentalities, viz:—a separable mold to receive a heel blank to be compressed from side edge to side edge; devices to open and close said separable mold; a series of heel seat dies; and an intermittingly movable revolving carrier therefor to place one heel seat die after another in co-operative position with the said mold, substantially as described.

4. A machine to treat heel blanks, it containing the following instrumentalities, viz:—a separable mold to receive a heel blank to be compressed from side edge to side edge; devices to open and close said separable mold; a series of heel seat dies; an intermittingly movable revolving carrier therefor to place one heel seat die after another in co-operative position with the said mold; a series of nail boxes; an intermittingly movable carrier for said nail boxes; a nail presenting mechanism to supply said nail boxes in succession with nails; and a gang of drivers to drive the nails from one of the said series of nail boxes into a heel resting on one of the said heel seat dies then under it, whereby one heel blank may be compressed at one point, and another be loaded with nails at another point, and an empty nail box be supplied with nails at yet another point, substantially as described.

5. A machine to treat heel blanks, it containing the following instrumentalities, viz:—a rotatable series of heel seat dies, a compressing mold with which they co-operate, an awl plate having a gang of awls to prick the compressed blank; a templet to guide said awls; a series of nail boxes independent of the templet; a gang of drivers to drive the nails from one of the nail boxes into the pricked heel, and nail presenting mechanism to automatically and successively provide the nail boxes with nails, and actuating mechanism for said mold, awls, dies, nail boxes and drivers, whereby a heel may be compressed and pricked at one point, a pricked heel may be loaded with nails at another point, and an empty nail box be supplied with nails at another point, substantially as described.

6. A series of vertically movable heel seat dies, and a yielding abutment between which the heel is compressed vertically and an edge compressing mold with which said dies co-operate in succession, combined with actuating means to impart to the series of heel seat dies a step by step movement to bring one die after another into position to have the heel blank laid upon it and then to place said blank within the said compressing mold, substantially as described.

7. A vertically movable bed; a rotatable die carrier mounted thereon and provided with a series of heel seat dies; and a separable mold and yielding abutment detached from said bed, combined with a series of levers, and co-operating impaling pins adapted to be actuated by said levers, and a device to actuate one of the said levers at one descent of the said bed, and the other at a subsequent descent thereof to thus withdraw in succession the impaling pins, substantially as described.

8. A heel compressing mold, a rotatable die plate provided with a series of heel seat dies; a series of levers, one for each die, impaling pins adapted to be actuated by the said levers, devices to actuate said levers in succession preparatory to or while compressing the heel to thus thrust the impaling pins into the heel blank preparatory to feeding the same, and devices to move the series of heel seat dies intermittingly, substantially as described.

9. In a machine for treating heel blanks, a pair of die or jaw-carrying levers having die cavities diverging toward the breast of the die, and a pair of compressing dies shaped externally to conform to the sides of the die cavity, whereby the strain exerted on the dies by the said carrying levers while compressing the heel blank is applied in the direction to maintain the dies in place and obviate outward slipping thereof on the said levers, substantially as described.

10. In a machine for treating heels, the following instrumentalities, viz:—a heel support; a breast plate, a two-part compressing die, each part adapted to act on the heel from its rear part substantially to its breast corner, and actuating devices therefor, whereby movement is imparted to the side compressors in a direction diagonal to a vertical plane drawn centrally through the heel from its rear part to the center of its breast, substantially as described.

11. In a machine for treating heels, a heel seat die, a support therefor, and a breast-plate to sustain the breast of the heel blank, combined with side compressing dies adapted to act on the heel from its rear part substantially to its breast corners, and their carrying levers $b^7$; mounted on vertical pivots beyond the rear side of the breast-plate, and actuating devices for said levers whereby movement is imparted to the said side compressing dies in a direction diagonal to a vertical plane drawn centrally through the heel from its rear part to the center of its breast, substantially as described.

12. In a machine for treating heels, the following instrumentalities, viz:—a series of vertically movable heel seat dies and a yielding abutment between which the heel is compressed vertically, and an edge compressing mold with which the heel seat dies co-operate in succession; and devices for actuating the die carrier or plate and closing the compressing mold in time and order, substantially as described, whereby the heel seat die is first operated to effect the placing of the blank in the open compressing mold, the compressing mold is then closed, the continued vertical movement of said die carrier or plate resulting in the completion of the compression of the heel blank.

13. In a machine for treating heels, the rotating shaft $A^4$ having a crank pin; an awl-slide; an awl-plate having a gang of awls; connections between the said crank pin and awl slide; a secondary crank pin carried by the said shaft; and a driver bar having an irregular cam groove; combined with a gang of drivers, substantially as described.

14. In a machine for treating heels; a driver bar composed of two parts, one of which is made laterally movable with relation to the other; and a driver plate also made laterally movable with relation to the driver-bar; and a gang of drivers carried by the driver plate; combined with a nail box having a series of holes to operate, substantially as described.

15. A driver-bar; and a co-operating driver-plate having a series of drivers; and a nail box actuator, combined with a nail box having a hole to be entered by the said actuator; and a carrier for the said nail-box, the nail box actuator effecting the registration of the holes in the nail-box with the holes in the nail-box carrier and with the path of movement of the drivers, substantially as described.

16. A driver-bar; and a co-operating driver plate having a series of drivers; and a nail-box actuator; combined with a nail-box having a hole to be entered by the said actuator; and a support or carrier for the said nail-box, the nail box actuator effecting the registration of the holes in the nail box with the holes in the said carrier and with the path of movement of the drivers; and with a spring to restore the nail box into its normal position thereby enabling the nails in the loaded nail box to be retained in position until they are driven out therefrom by the driver, substantially as described.

17. In a machine for treating heel blanks, a compressing mold composed of edge compressors made movable one toward the other, and having a co-operating stationary breast plate beveled at the entering end of the mold, combined with a movable heel seat die adapted to force the heel blank into the mold, and with devices to close the side edge compressing mold, substantially as described.

18. A machine for treating heels, it containing the following instrumentalities, viz:—nail-assorting mechanism; an awl-carrying bar; and intermediate connections between the said awl-carrying bar and nail assorting mechanism whereby the assorting mechanism is operated at proper times with relation to the movements of the awl bar, substantially as described.

19. In a machine for treating heel blanks a pair of compressing jaws adapted to substantially surround the heel to the breast carrier, combined with carriers therefor pivoted beyond the breast plate and adapted to move said jaws diagonally toward the breast plate whereby the acting faces of said jaws are made to resist the outward as well as the lateral thrust on said carriers of said jaws, substantially as described.

20. A series of lifters, and a series of nail discharging devices; a series of fixed tubes as $g^9$, into which the said nails are delivered, combined with an independent detachable series of tubes $g^3$; and a stand for supporting the tubes $g^3$ independently of the tubes $g^9$ and the parts holding them, substantially as described.



21. A heel blank comprising mold and a sidewise movable heel support, combined with one or more impaling pins carried by said heel support, and actuating mechanism for said support and pins, substantially as described.

22. A heel compressing mold and a series of heel supports, and one or more impaling pins carried by and co-operating with each of said supports, and actuating mechanism for said supports and pins, substantially as described.

23. In a machine for treating heels, nail assorting devices; nail presenting mechanism composed of a series of stationary and co-operating series of removable tubes; an independent support for the series of removable tubes; a spindle located at one side of the lower end of the removable series of tubes; a nail box carrier connected therewith; a series of nail boxes mounted on said carrier, and devices to actuate both the nail assorting device and to actuate the spindle to bring the said nail boxes in succession under the ends of the removable series of tubes, substantially as described.

24. The shaft $A^{13}$, the rotatory nail box carrier connected to its upper end, and a gear $D^9$ on said shaft below said carrier; and a series of nail boxes mounted on said carrier; combined with a rotatory die carrier or plate having teeth to be engaged by gear $D^9$, and with a series of heel seat dies, substantially as described.

25. The shaft $A^{13}$; the circularly movable nail-box carrier connected to its upper end, and a gear $D^9$ on said shaft below said carrier; and a series of nail boxes mounted on said carrier, combined with a circularly movable die carrier or plate having teeth to be engaged by the gear $D^9$, a series of heel seat dies, and a separable mold, substantially as described.

26. In a machine for treating heels, the following instrumentalities, viz:—a two-part side edge compressing-mold; a heel blank support; heel blank pricking awls, and a heel blank feeder to feed a heel blank into position to be put into the said mold, substantially as described.

27. A movable carrier having a series of heel seat dies; an edge compressing mold; a heel blank feeder, and a clutch mechanism and intermediate devices to actuate the said carrier and feeder intermittingly, substantially as described.

28. In a machine for treating heels, the following instrumentalities, viz:—nail assorting mechanism and nail presenting mechanism including a series of tubes terminating in a foot provided with a series of holes for the discharge of nails, a rotatable table having a series of nail boxes, devices to operate said table and bring said nail boxes in succession under the said tubes, a series of heel seat dies adapted to carry heels to be loaded with nails from the said nail boxes, nail drivers, a reciprocating plunger and devices intermediate the plunger and the nail assorting mechanism to automatically operate the nail assorting mechanism, for the purposes set forth.

29. In a machine for treating heels, a gang of drivers, and operating devices therefor; combined with a circularly movable table having a series of heel seat dies and a circularly movable table having a series of nail boxes, the centers of motions of said tables being at opposite sides the path in which the said drivers reciprocate, the said tables being also arranged in different horizontal planes or one above the other; nail assorting mechanism; nail presenting mechanism; and devices to actuate the nail assorting mechanism, whereby a nail box may be automatically loaded with nails and a loaded nail box may be interposed between the heel seat die containing a heel blank and the lower ends of the drivers, substantially as described.

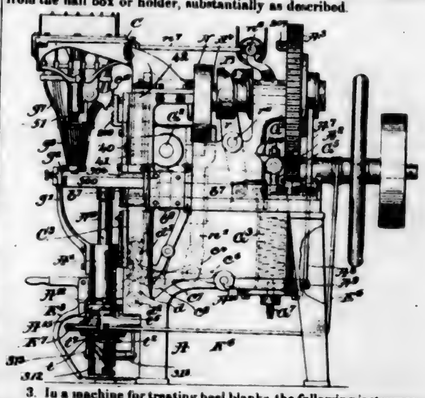
30. In a machine for treating heels, a gang of drivers, and operating devices therefor; combined with a circularly movable table having a series of heel seat dies and a circularly movable table having a series of nail boxes, the centers of motions of said tables being at opposite sides the path in which the said drivers reciprocate, the said tables being also arranged in different horizontal planes or one above the other; nail assorting mechanism; and devices to actuate the nail assorting mechanism, whereby a nail box may be automatically loaded with nails and a loaded nail box may be interposed between the heel seat die containing a heel blank and the lower ends of the drivers, substantially as described.

## 502,668. HEEL COMPRESSING AND LOADING MACHINE.

CHARLES W. GILDDEN, Lynn, assignor to James W. Brooks, trustee, Peterboro, Mass. Filed Jan. 3, 1893. Serial No. 457,094. (No model.)

*Claim.*—1. In a machine for treating heel blanks, the following instrumentalities, viz:—a vertically movable plunger having a heel seat die adapted to mold the heel seat end of the heel blank; a vertically movable driver bar having a series of drivers and a driver guide plate, both arranged directly above the said heel seat die; and a rotatable carrier having a series of nail boxes or holders adapted to be brought in succession into the space between the said heel seat die and driver guide plate whereby a heel blank after having been compressed vertically and while the carrier yet remains in the position in which the heel blank was compressed vertically, may have nails driven directly into it from the nail box or holder then in position, substantially as described.

2. In a machine for treating heel blanks, the following instrumentalities, viz:—a vertically movable plunger having a heel seat die to mold the heel seat end of a heel blank; a vertically movable driver bar having a series of drivers, and a yielding abutment, the said drivers being arranged directly above the said heel seat die; and a rotatable carrier having a series of nail boxes or holders which are adapted to be brought one after another into the space between said heel seat die and abutment, whereby a heel blank may be compressed vertically, and while yet in the same position have a series of nails driven into it from the nail box or holder, substantially as described.



3. In a machine for treating heel blanks, the following instrumentalities, viz:—jaws to compress a heel blank from edge to edge, a vertically movable plunger having a heel seat die shaped substantially as described to mold the heel seat end of the blank and located directly in line with the space between said edge compressing jaws; a vertically movable driver bar having an attached series of drivers, and an abutment, the said parts being located at the opposite side of the space between said edge compressing jaws, and a rotatable carrier having a series of nail boxes or holders, and means to move the same, whereby the said nail boxes or holders may be put successively in position between the said abutment and drivers on the one side and the said edge compressing jaws, and means to actuate the plunger carrying the heel seat die to project a heel into the space between the said jaws and compress the same while the nail box or holder is in position under the abutment and nail drivers, to operate, substantially as described.

4. In a machine for treating heels, the following instrumentalities, viz:—a reciprocating driver-bar; a series of drivers, a heel seat die, and a vertically movable plunger on which it is mounted, combined with an intermittingly rotatable carrier having a series of nail boxes, which are put in succession in the space between said drivers and heel seat die, edge compressing jaws, and a yielding guide plate to co-operate with the heel seat die during the vertical compression of the heel blank, substantially as described.

5. In a machine for treating heels, the following instrumentalities, viz:—a reciprocating plunger having a heel seat die; a rotatable carrier shaped to support a series of nail boxes and provided with holes to act as a templet and bear against the tread end of the heel, and a series of nail boxes mounted thereon, combined with a guide-plate to act upon and co-operate with the nail box to keep it and the templet down during the vertical compression of the heel blank, substantially as described.

6. In a machine for treating heels, a carrier, a nail box mounted thereon, combined with a driver-bar; a series of drivers, and an independent driver guide-plate adapted to co-operate with the nail box and keep the same in place during the nail driving and heel compressing operations, substantially as described.

7. In a machine for treating heels, a carrier, a nail box thereon, and a guide plate arranged at one side the nail box, combined with devices to move the guide plate away from the nail box when the carrier with its nail box is to be moved, and with a heel seat die, a plunger to move it, edge compressing dies, and a yielding abutment, substantially as described.

8. A nail driver bar having projections, combined with a driver guide plate having notches to be engaged by said projections, to operate substantially as described.

9. In a machine for treating heels, a driver bar and a series of drivers, a carrier, a series of nail boxes thereon, a portion of the carrier

serving as a templet, combined with a plunger, a heel seat molding die carried thereby, shaped substantially as represented to mold the heel seat end of the heel blank, impaling pins, and devices to actuate the same, substantially as described.

10. In a machine for treating heels, a driver guide plate, combined with a yielding abutment, and means for automatically releasing the abutment to permit the guide plate to be moved, substantially as described.

11. In a machine for treating heels, a driver guide plate, combined with a yielding abutment, and means for automatically releasing the abutment to permit the guide plate to be moved, and a movable carrier having a series of nail boxes, substantially as described.

12. In a heel blank treating machine, a cam, a clutch to operate the cam intermittingly, compressing-dies for a heel blank, combined with a heel blank support, a guide-way in which it is adapted to slide, a pusher, a carriage upon which it is mounted, and actuating devices between said cam and carriage, to operate, substantially as described.

13. In a heel treating machine, a heel blank feeder consisting of an adjustable heel support to thereby adapt it to heels of different sizes, combined with a carriage, and a pusher adjustably mounted thereon, to operate, substantially as described.

14. In a machine for treating heels, a heel blank feeder comprehending a sliding carriage, a heel support, and a yielding connection between said carriage and support, to operate, substantially as described.

15. In a machine for treating heels, a feeder comprehending a support for the heel, a carriage having a pusher, and adjusting devices to enable the normal position of the pusher with relation to the support to be changed according to the size of the heel, substantially as described.

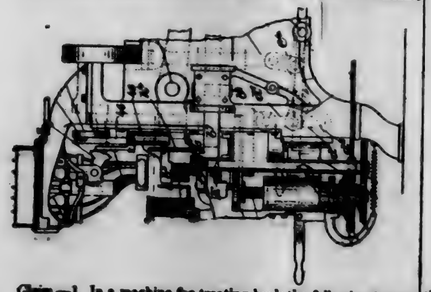
16. In a machine for treating heel blanks, compressing jaws to compress the blank from edge to edge, an independent breast gage against which the edge compressing jaws force the breast of the blank during the edge compressing operation, combined with a heel seat die a templet, and a reciprocating driver-bar having a gang of drivers to drive nails directly from the templet into the blank while yet held between the compressing jaws and breast gage, substantially as described.

17. In a machine for treating heels, the following instrumentalities, viz:—edge compressing jaws; a breast support; a heel seat molding die to enter the space between the said jaws, a templet to close the opening between said jaws opposite the heel seat die, a nail box supported by said templet, and an independent guide-plate as 304, adapted to bear upon said nail box and hold it in place during the driving operation, combined with a gang of drivers and actuating means therefor, substantially as described.

18. In a machine for treating heel blanks, an edge compressing mold, a vertically movable plunger having a heel seat die and adapted to place a heel in position in the said mold, combined with a movable series of nail boxes or holders adapted to be brought in succession at one side of said mold and opposite the heel seat die, a vertically movable driver bar having a series of drivers, and an abutment located immediately above the path of movement of the said heel seat die and co-acting with the nail box or holder to resist the upward pressure of the heel seat die and to aid in retaining the said nail box or holder in place during the driving operation, substantially as described.

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**502,669. HEEL-NAILING MACHINE.** CHARLES W. GILDDEN, Lynn, assignor to James W. Brooks, trustee, Peterham, Mass. Filed May 27, 1892. Renewed June 16, 1893. Serial No. 477,906. (No model.)



*Claim.*—1. In a machine for treating heels the following instrumentalities, viz:—a nail box; a stationary series of main road-ways located and terminating at a distance above said nail-box; an independent auxiliary series of nail-guiding road-ways adapted to be moved alternately into and then out of line with the holes in the main road-ways and into and out of the space between said main road-ways and nail-box; a series of drivers also adapted to be moved into and out of the space between the said main road-ways and nail-box, and actuating devices for effecting said movements of said auxiliary road-ways and drivers, to operate substantially as described.

2. In a machine for treating heels the following instrumentalities, viz:—a nail-box; a stationary series of main road-ways located and terminating at a distance above said nail-box; an independent auxiliary series of nail-guiding road-ways adapted to be moved alternately into and then out of line with the holes in the main road-ways and into and out of the space between said main road-ways and nail-box; a series of drivers also adapted to be moved into and out of the space between the said main road-ways and nail-box, and actuating devices for effecting said movements of said auxiliary road-ways and drivers; and a heel support, to operate substantially as described.

3. In a machine for treating heels the following instrumentalities, viz:—a nail-box; a stationary series of main road-ways located and terminating at a distance above said nail-box; an independent auxiliary series of nail guiding road-ways adapted to be moved alternately into and then out of line with the holes in the main road-ways and into and out of the space between said main road-ways and nail-box; a series of drivers also adapted to be moved into and out of the space between the said main road-ways and nail-box, and actuating devices for effecting said movements of said auxiliary road-ways and drivers; and a nail assorting mechanism, and connecting devices between it and the driver actuating mechanism for automatically operating the nail assorting mechanism, substantially as described.

4. In a machine for treating heels the following instrumentalities, viz:—a nail-box; a stationary series of main road-ways located and terminating at a distance above said nail-box; an independent auxiliary series of nail-guiding road-ways adapted to be moved alternately into and then out of line with the holes in the main road-ways and into and out of the space between said main-road-ways and nail-box; a series of drivers also adapted to be moved into and out of the space between the said main road-ways and nail box, and actuating devices for effecting said movements of said auxiliary road-ways and drivers; and a gate located between the main road-ways and the independent auxiliary nail guiding road-ways, to operate substantially as described.

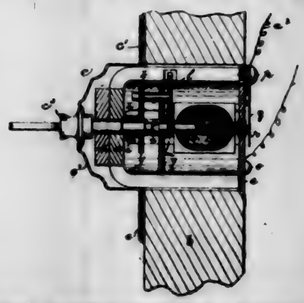
5. In a machine for treating heels, the following instrumentalities, viz:—a support for a heel blank; a stationary nail box; a series of stationary nail tubes; a vertically movable driver bar; a driver carrier movably connected with relation to the said driver bar, and actuating devices whereby the said driver bar has imparted to it a vertical movement and the driver carrier has imparted to it a movement to put it into operative position between the stationary roadways and the said nail box and then put it out of operative position with relation to the said devices, substantially as described.

6. The auxiliary roadway and the driver plate carrier, combined with a connecting device whereby the said parts may be moved in unison, substantially as described.

7. The auxiliary roadway and the driver plate carrier, combined with a connecting device whereby the said parts may be moved in unison, and with actuating devices for imparting intermitting movement to said carrier, substantially as described.

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**502,670. MAGNETO-ELECTRIC MACHINE.** FRANK X. HOUBAUER, Newark, N. J. Filed Oct. 22, 1892. Serial No. 449,566. (No model.)



*Claim.*—1. A magneto-generator, such as described, combining therein the magnets *d*, *d*, having the four arms curved to approach closely the annular path of the rotary armature, and said armature, operated by the finger-piece, substantially as set forth.

2. In combination, the cap $c^2$, finger-piece $c^3$, horseshoe magnets *d*, having a centrally perforated head, plates *e*, *f*, armature and speed gears arranged between the arms of said magnet and operated by said finger piece, substantially as set forth.

3. The improved magneto-generator herein described, combining therein a permanent magnet having the perforated head, a finger-piece extending through said perforated head, and an armature and speed gears arranged between the arms of the magnet and operated by the finger-piece, substantially as set forth.



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**502,671. PIPE-COUPLING.** WARREN S. JOHNSON, Milwaukee, Wis., assignor to the Johnson Electric Service Company, same place. Filed July 5, 1892. Serial No. 439,294. (No model.)



*Claim.*—1 In a pipe coupling a member having an aperture in one side, a perforated face plate larger than said aperture, and a diaphragm interposed between said member and face plate and attached at its inner edge to said member and at its outer edge to said face plate, whereby an expansible space is produced between said diaphragm and face plate, substantially as and for the purposes set forth.

2. A pipe coupling comprising two members having apertures in their meeting faces, perforated face plates provided around the openings therein with bearing surfaces, and diaphragms interposed between said face plates and members and attached at their inner edges to said members and at their outer edges to said face plates, whereby an expansible space is produced between said diaphragms and face plates, substantially as and for the purposes set forth.

3. A pipe coupling, comprising two members having apertures in their meeting faces and annular recesses around said apertures, perforated face plates provided with packing rings around the openings therein and loosely inserted in the recesses in the meeting faces of said members, and perforated flexible diaphragms interposed between said face plates and members and attached at their inner edges to said members around the apertures therein, and at their outer edges to said face plates, substantially as and for the purposes set forth.

4. A pipe coupling, comprising two members having apertures in their meeting faces, perforated face plates provided with outwardly projecting bearing surfaces around the openings therein, perforated flexible diaphragms interposed between said face plates and members, secured at their inner edges to said members by flanged rings screwed into the apertures therein and attached at their outer edges to said face plates by spinning the outer edges of said face plates over them, substantially as and for the purposes set forth.

5. A pipe coupling, comprising two members having apertures in their meeting faces, perforated face plates provided around the openings therein with outwardly projecting bearing surfaces and perforated flexible diaphragms interposed between said face plates and members, to which they are attached at their inner edges around the apertures therein, flaring outwardly from said apertures and attached at their outer edges to said face plates, substantially as and for the purposes set forth.

6. A pipe coupling, comprising two members having apertures in their meeting faces and provided on opposite sides thereof with interlocking male and female lugs, perforated face plates provided around the openings therein with outwardly projecting bearing surfaces and perforated flexible diaphragms interposed between said face plates and members and attached at their inner edges to said members around the apertures therein, and at their outer edges to said face plates, substantially as and for the purposes set forth.

7. A pipe coupling, comprising two members A A, having apertures *a' a'* in their meeting faces and provided with interlocking lugs B and C, perforated face plates D D and perforated flexible diaphragms F F interposed between said face plates and members and attached at their inner edges to said members and at their outer edges to said face plates, substantially as and for the purposes set forth.

8. In a pipe coupling, a member having an aperture in one side, a perforated face plate having a bearing surface on the outside around the opening therein, and a perforated flexible diaphragm attached at its outer edge to said face plate and at its inner edge to the member around the aperture therein, substantially as and for the purposes set forth.

9. In a pipe coupling the combination with a chambered member having an opening in one face and a bearing ring, of a perforated diaphragm and a perforated plate attached to each other at their outer edges, whereby an expansible space is produced between them, and attached at their inner edges, one to said member around the opening therein, and the other to said bearing ring, substantially as and for the purposes set forth.

10. In a pipe coupling, the combination with a hollow member having an opening in one face, of a perforated flexible diaphragm and a perforated plate attached to each other at or near their outer edges, whereby an expansible space is produced between them, one being attached at its inner edge to said member around the opening therein, and the other being provided around the opening therein with an external bearing, substantially as and for the purposes set forth.

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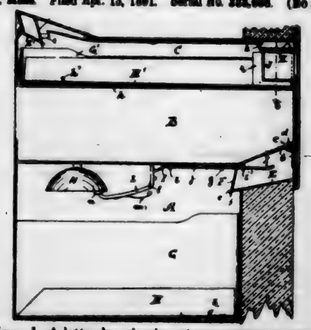
**502,672. DEVICE FOR BINDING CORN-SHOCKS.** HARRISON JOHNSON, Dennison, Ohio, assignor to James Godfrey, Pittsburg, Pa. Filed Jan. 21, 1893. Serial No. 459,270. (No model.)



*Claim.*—A device for binding corn shocks, consisting of two semi-circular pieces of wire hinged together and provided with clamps for holding the twine in position, also hook or clasp for holding the two semi-circular pieces together, and the bag for holding the ball of twine, all substantially as described.

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**502,673. HOUSE-DOOR LETTER-BOX.** HOSEA W. LIBBEY, Boston, Mass. Filed Apr. 13, 1891. Serial No. 388,668. (No model.)



*Claim.*—1. A letter box having three compartments arranged one above the other, each provided with two openings and one of said compartments being provided with a movable receptacle, and the other two compartments being provided with a common door for one of the openings in each of said boxes, substantially as set forth.

2. In combination with a letter box of the character described, the front end of which is provided with an indicator to show the presence of mail within the box, of a drawer to receive the letters deposited in the box, said drawer consisting of a rectangular frame having the bottom pivoted thereto so that when the drawer is pulled out the bottom will tip and deliver the contents, the front end of said drawer being provided with means for engaging with the indicator, substantially as set forth.

3. A letter box having two compartments, one to receive letters and one to receive newspapers, the entrance to both compartments

being closed by a flap or door fulcrumed at the junction of the two compartments, so that when pressed in to open one compartment, the other portion will be forced out and open the other compartment substantially as set forth.

4. In combination with a letter box having a compartment to receive mail matter for collection and an indicator compartment at one end, a flap pivotally secured within said indicator compartment having the word mail or other sign thereon, a bent arm projecting into the mail compartment provided with a collar, a spring upon the arm, one end of which bears against the casing of the indicator compartment, and the other end bears against the collar for forcing the arm and flap laterally, a support for the arm, and means for removing the support from under the arm when mail is inserted into the box, substantially as set forth.

5. In combination with a letter box having a compartment to receive mail matter for collection, a drawer G, having an opening at its front end, a casing J, around said opening, and a flap K, bearing a suitable sign, and having an extended arm *k*, that is raised by a block *r*, and lowered by a flap F, through a lever M, when letters are inserted into the compartment substantially as set forth.

6. In a letter box the inwardly inclined flap P, hung at its upper end, and its lower end provided with an outwardly projecting lip to fit over a ridge upon the plate against which it rests to protect the box from rain, snow or dust, substantially as set forth.

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**502,674.** CAST-OFF FOR SUSPENDERS. ALLAN A. MACDONALD, Newark, N. J., assignor to the John A. Riley & Sloan Company, of New Jersey. Filed Mar. 11, 1893. Serial No. 465,564. (No model.)



*Claim.*—A buckle or cast-off for suspenders consisting of a main-plate extending downwardly in a practically straight line and gradually decreasing in width toward its lower end, where it is curved forwardly and upwardly forming a hook, the bottom of which is convex in the direction of its width, a rigid looped extension on said plate, in the form of a wire, the separated ends of which are joined to the plate, a supplemental plate adapted to overlap the end of the hook on the main plate, and having an extension thereof which fits between and corresponds with the separated ends of the extension of the main-plate, a pivot pin passing through said extension on the supplemental plate and into the separated ends of the extension of the main-plate, and a nipple on the outer face of the upper end of the hook adapted to engage an opening in the overlapping end of the supplemental plate, substantially as described.

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**502,675.** SCREW-CUTTING MACHINE. MATTHEW MACDOUGALL, Elizabeth, N. J., assignor to The Singer Manufacturing Company of New Jersey. Filed May 31, 1892. Serial No. 435,012. (No model.)



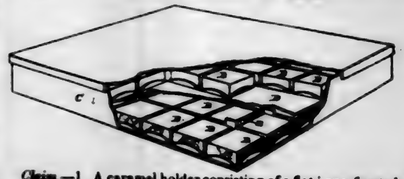
*Claim.*—1. In a screw-threading machine, the combination with a rotating stock-holding and clutch-carrying sleeve, a screw-forming tool-carrier and its actuating mechanism, of an automatic mechanism for shifting the stock held by the jaws of the said clutch eccentric to the rotating clutch-carrying sleeve, at times, and an auxiliary and independently movable cutting tool to form the eccentric shank or portion of the screw.

2. In a screw-threading machine, the combination with a rotating clutch-carrying spindle, of a sliding sleeve within the same serving to operate the clutch jaws and provided near its forward end with an eccentric portion, mechanism for giving an additional forward movement to said sleeve, at times to cause the said eccentric portion to operate the clutch to shift the stock eccentric to the clutch carrying sleeve, a slide carrying the usual milling or cutting tool, and a supplemental slide carrying the cutting tool which latter is caused to engage the stock when the latter is shifted eccentrically, to form the eccentric shank portion of the screw.

3. The combination with the rotating clutch-carrying spindle F, and the clutch jaws at the forward end thereof, of the sliding clutch-operating sleeve G rotating with the said sleeve F and provided near its forward end with an eccentric portion, cams or tappets for giving the normal forward and backward movements to the said sleeve G to cause it to clamp and release the clutch jaws, and cams or tappets for giving the said sleeve additional forward and backward movements to bring its eccentric portion in contact with the projections on the clutch-lever, to shift the stock eccentrically at times and to return it to its normal position, a slide carrying the usual cutting tool for forming the concentric portion of the screw shank, a supplemental and independently moving slide carrying a supplemental tool for forming the eccentric portion of the screw shank, and mechanism for operating said slides.

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**502,676.** CARAMEL-HOLDER. GEORGE MILLER, Baltimore, Md. Filed Jan. 14, 1893. Serial No. 458,343. (No model.)



*Claim.*—1. A caramel holder consisting of a flat imperforate bottom, of the same size as one side of the caramel, having flanges integral therewith and of a length equal to the side of the bottom, said flanges diminishing in height toward each end, so as to leave the corners open to display the entire thickness of the caramel, substantially as described.

2. A caramel holder consisting of a flat imperforate bottom, of the same size as one side of a caramel, having upturned flanges integral therewith, and of a length equal to the side of the bottom, the upper edges of said flanges running down to the level of the bottom at each end and being slightly flared outwardly at the middle, substantially as described.

3. The combination with a tray, adapted to hold two or more superimposed layers of confections, of a sheet of stiff material to lie between the layers, and supports for said sheet, composed of a strip of stiff material, bent twice at an angle, so as to fit between the confections, substantially as described.

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**502,677.** INSULATOR. LOUIS MCCARTHY, Boston, Mass. Filed Sept. 23, 1892. Serial No. 446,030. (No model.)



*Claim.*—1. A trolley wire insulator having a case composed of a metallic shell and having an exterior layer of insulating material, a portion of the metallic shell being extended to form the edge of the skirt of the case, substantially as and for the purposes set forth.

2. A trolley wire insulator having a case composed of a metallic shell and an exterior layer of insulating material, a portion of the metallic shell being extended to form the edge of the skirt and being provided at said edge with flanges against which the exterior covering is molded, substantially as and for the purposes set forth.

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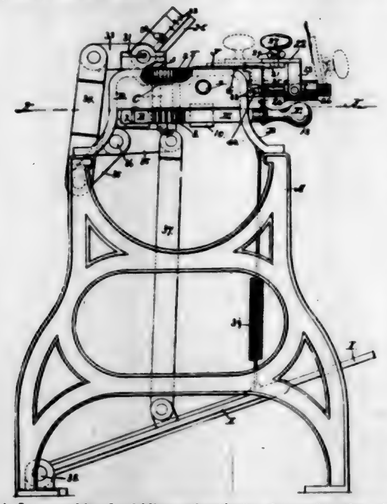
**502,678.** MACHINE FOR FOLDING COLLAR OR CUFF BLANKS. GEORGE R. BONAR, Berlin, Canada., assignor of one-half to Fred H. Berrin, Troy, N. Y. Filed Dec. 29, 1891. Serial No. 416,468. (No model.)

*Claim.*—1. In a machine for folding collar-blanks, the combination of a pair of vertical shafts having a semi-rotative movement and each being provided with a crank-disk at its upper extremity, a folding-plate connected to said crank-disks; whereby said folding-plate is moved in a semi-circular path, and a feeding-plate arranged to deliver a blank into the opening of the folding-plate as and for the purpose herein specified.

2. In a machine for folding collar-blanks, the combination of a pair of vertical shafts, C, each having a gear-wheel, 3, secured thereto and having at its upper end a crank-disk, 2, having an eccentrically arranged stud, 4, a sliding-rack, D, provided with gear-teeth fitted to mesh into said gear-wheels, a hand-lever, E, fulcrumed to said machine and jointed to said rack, a folding-plate, F, connected to said studs, and a feeding plate G the said parts being constructed and arranged to operate substantially as and for the purpose herein specified.

3. In a machine for folding collar-blanks, the combination of a folding mechanism—consisting of a folding-plate moving in a semi-circular path while its front edge is maintained in parallelism in respect to the front of the machine, and a feeding-plate provided with tongues which are integral therewith; said feeding-plate having an outline-form which corresponds to the form of a folded-collar-blank and being hinged to bosses fitted to slide on guides on the base-piece of the machine so as to operate substantially in the manner and for the purpose herein specified.





4. In a machine for folding collar-blanks, the combination of a blank feeding mechanism, a blank-folding mechanism; both of the latter being constructed and arranged to operate substantially as herein described, a presser-plate journaled on the base-piece of the machine, and a treadle connected to said presser-plate, said parts being constructed and arranged to operate substantially as and for the purpose herein specified.

5. In a machine for folding collar-blanks, the combination of a pair of crank-disks having a semi-rotative movement on their axes in unison; each of said disks being provided with a stud or wrist-pin arranged eccentrically to the axis of the disk, a folding-plate provided with openings fitted to engage on said wrist-pins, and a feeding-plate arranged to deliver blanks into said folding plate as and for the purpose herein specified.

6. In a machine for folding collar-blanks, a feeding-plate having the outline of the folded collar-blank and provided with tongues, 19, having shoulders, 20, said tongues and shoulders being integral with said feeding-plate, and the said shoulders forming guides for the lower edge of the collar blank as and for the purpose herein specified.

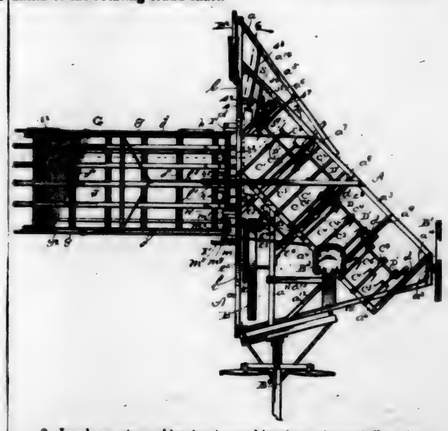
7. In a machine for folding collar-blanks the combination of a folding-plate, F, and fingers, J, fitted to retain said folding-plate in position on the base-piece of the machine; one of said fingers being fitted to preliminarily retain the fold at one end of the collar-blank in an approximately erect position, as and for the purpose herein specified.

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**502,679.** HAY RAKE AND LOADER. MADISON REW, Grinnell, Iowa, assignor of one-third to the Chambers, Boring, Quinlan Company, Decatur, Ill. Filed Jan. 6, 1893. Serial No. 457,460. (No model.)

*Claim.*—1. In a hay rake and loader, in combination, substantially as hereinbefore described, with a hay rake in which a rotary crank-shaft which is journaled on the machine oblique to its line of travel receives its rotary motion by gear connection with a driving wheel, and carries and gives orbital revolutions to the rakes while held by suitable mechanism in upright working positions, to collect and deliver the hay at the side of the machine, and a hay elevator connected with said machine at one side thereof, where it will receive the hay as it is delivered by the rakes, carry it laterally and elevate it, by means of elevating mechanism operated by gear connection with the driving mechanism of the rotating crank-shaft.

2. In a hay rake and loader, in combination, substantially as hereinbefore described, with a hay rake in which a rotary crank-shaft which is journaled on the machine oblique to its line of travel, receives its rotary motion by gear connection with a driving wheel, and carries and gives orbital revolutions to the rakes while they are held by suitable mechanism in upright working positions, to collect and deliver the hay at the side of the machine, a hay elevator connected with said machine and at one side thereof, where it will receive the hay as it is delivered by the rakes, carry it laterally at right angles to the line of travel of the machine, and elevate it by means of elevating mechanism operated by gear connection with the driving mechanism of the rotating crank-shaft.



3. In a hay rake and loader, in combination, substantially as hereinbefore described, with a hay rake in which a rotary crank-shaft which is journaled on the machine oblique to its line of travel, receives its rotary motion by gear connection with a driving wheel, and carries and gives orbital revolutions to the rakes while held by suitable mechanism in upright working positions, to collect and deliver the hay at the side of the machine, and a hay elevator connected with said machine at one side thereof, where it will receive the hay as it is delivered by the rakes, and carry it laterally and elevate it by means of elevating mechanism operated by gear connection with the driving mechanism of said crank shaft, a doctor or feeder, located where it will act upon the hay as delivered by the rakes and aid its passage to the elevator.

4. In a hay rake and loader, in combination substantially as hereinbefore described, with a hay rake in which a rotary crank-shaft which is journaled on the machine oblique to its line of travel, receives its rotary motion by gear connection with a driving wheel, and carries and gives orbital revolutions to the rakes while held by suitable mechanism in upright working positions, to collect and deliver the hay at the side of the machine, and a hay elevator connected with said machine at one side thereof, where it will receive hay as it is delivered by the rakes, and carry it laterally and elevate it by means of mechanism operated by gear connection with the driving mechanism of said crank-shaft, a crank-shaft located across and above the hay receiving end of the elevator, rotated by gear connection with the driving mechanism of the rakes and elevator, and provided with forks to which it gives orbital revolutions, while they are held in upright working positions, to act in feeding the hay to the elevator.

5. In a hay rake and loader, in combination substantially as hereinbefore described, with a hay rake substantially of the side delivery class herein described, and a hay elevator projecting laterally therefrom, a crank shaft, located across and above the hay receiving end of the elevator, rotated by gear connection with the driving mechanism of the hay rakes, and provided with forks, the prongs of which are spirally coiled on the crank of said shaft, and the handles of which pass through a rock-bar to hold them in upright working positions, while they are revolved in orbital planes by the crank shaft, substantially as described.

6. In a hay rake and loader, in combination substantially as described, with a hay rake substantially of the side delivery class described herein, and a hay elevator projecting laterally therefrom, a crank shaft *n* carrying forks R pivotally mounted thereon, and with their upper ends or handles seated in holes in a rock bar $r^2$, said crank shaft having a pinion $n^2$ which gears with a pinion $m^3$ on a shaft $m^2$ which carries pinions $m'$ and $m^4$, the pinion $m'$ in gear with a pinion $m$ which receives motion from the drive wheel B, and the pinion $m^4$ in gear with a sprocket wheel on the shaft H which carries the sprockets for operating the elevator belt,

7. In a hay rake and loader, in combination, substantially as hereinbefore described, with a hay rake substantially of the side delivery class herein described, and a hay elevator projecting laterally therefrom, a doctor or feeder, located across the mouth of the elevator, and

adapted to act on the hay as it is delivered from the rakes, and aid its passage to the elevator.

8. In a hay-rake and loader, in combination substantially as hereinbefore described, with a hay rake of the side delivery class substantially such as hereinbefore described, and a hay elevator extending laterally from the delivery side of said rake or raking machine, an auxiliary rake or fork located in rear of the series of rakes between them and the elevator, for the purpose specified, and operated by a crank-shaft, substantially as described.

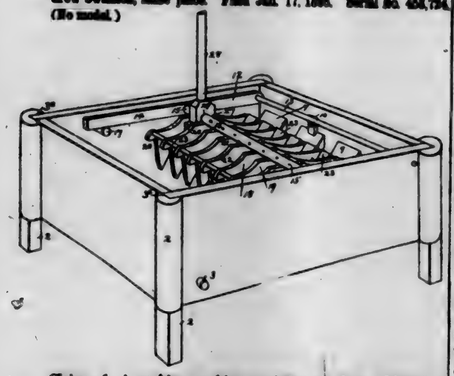
9. In a hay rake and loader, in combination substantially as hereinbefore described, with a hay rake of the side delivery class substantially such as hereinbefore described, and a hay elevator extending laterally from the delivery side of said rake or raking machine, an auxiliary rake or fork located in rear of the series of rakes, and between them and the elevator, pivotally connected with a crank-shaft, which is at an angle to, and is rotated by gear connection with the crank-shaft D, to give orbital revolutions to the auxiliary rake or fork, and means for holding said auxiliary rake or fork in upright working positions.

10. In a hay rake and loader, in combination substantially as hereinbefore described, with a hay-rake of the side delivery class substantially such as hereinbefore described, and a hay elevator extending laterally from the delivery side of said rake or raking machine, an auxiliary rake or fork, such as *s*, pivotally connected with a crank-shaft S, which is located substantially as shown and described, at an angle to the crank-shaft D, with which it is geared by bevel pinions $s^6$, $s^7$, shaft $s^8$, sprocket wheels $s^9$, $s^{10}$, and chain $s^{11}$, and means for holding said auxiliary rake or fork in upright working position.

11. In a hay-rake and loader, in combination substantially as hereinbefore described, with a hay-rake of the side delivery class substantially such as hereinbefore described, a hay elevator extending laterally from the delivery side of said rake or raking machine, and a doctor or feeder located between the series of rakes and the elevator, and operated by gear connection with the drive wheel, an auxiliary rake or fork, such as *s*, carried on a crank-shaft which is at an angle with and is geared with and operated by the crank-shaft D, the rake or fork being held in upright working positions by a suitable check-bar or link.

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**502,680.** WASHING-MACHINE. GARRET SWAN, Buffalo, N. Y., assignor to Alfred Swanson, Peter Swanson, Frank Swanson, and Andrew Swanson, same place. Filed Jan. 17, 1893. Serial No. 458,734. (No model.)



*Claim.*—1. A washing machine consisting of a box, a hinged or pivoted rubber-supporting frame and a rubber having a series of strips or plates having front and rear downwardly-curved fingers or teeth and a series of depending strips interposed between said fingers and converging inwardly therefrom, substantially as and for the purpose set forth.

2. A washing-machine, consisting of a box having inwardly-extending rocker or rubber-supporting pins, a rubber-supporting frame or hanger having pivotal bearing within said box, a rocker-shaft pivotally journaled in said frame or hanger, a rocker or rubber secured to said rocker-shaft and composed of a series of strips or plates having down-curved fingers or teeth at their front and rear edges and a series of depending, inwardly-converging strips interposed between said fingered plates, and an operative lever or handle connected with said rocker-shaft and rocker, substantially as and for the purpose set forth.

3. A rubber for washing-machines, consisting of a rocking-shaft, an operative lever or handle having a bifurcated lower end, a series of strips or plates attached to said shaft and having front and rear downwardly-extending curved teeth or fingers, blocks interposed between one pair of said strips or plates and adjacent to said shaft to grippingly receive the bifurcated end of said lever or handle, and a plurality of depending and inwardly converging strips interposed between said strips or plates, substantially as and for the purpose set forth.

4. A rubber for washing-machines, consisting of a rocking shaft, an operative lever or handle, a series of strips, or plates secured to said shaft and having downwardly-curved fingers or teeth at their front and rear edges, a series of strips interposed between said fingered strips or plates and extending downwardly and inwardly therefrom said downwardly-extending strips being spaced between their lower edges and also between their ends to form transverse and longitudinal ways in the bottom of said rubber for the passage of water, substantially as set forth.

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**502,681.** SADDLE FOR VELOCIPEDES. EDWARD L. SMITH, Springfield, Mass. Filed July 19, 1892. Serial No. 440,494. (No model.)



*Claim.*—1. In a velocipede saddle, a saddle frame consisting of a single piece of suitable spring wire which, beginning at the front, extends longitudinally rearward constituting the section, *d*, then laterally turned and forwardly continued in a bowed side member, then transversely turned across and near the forward extremity of said section, *d*, and then rearwardly continued in another bowed side member the rear terminal thereof being turned inwardly, and a medium of connection between the adjacent forward portions of the saddle frame, substantially as and for the purpose set forth.

2. In a velocipede saddle, a saddle frame consisting of a single piece of suitable spring wire which, beginning at the front, extends longitudinally rearward constituting the section, *d*, then laterally turned and forwardly continued in a bowed side member, then transversely turned across and near the forward extremity of said section, *d*, and then rearwardly continued in another bowed side member the rear terminal thereof being turned inwardly, and means for imparting an endwise force upon the intermediate member, substantially as and for the purpose set forth.

3. In a velocipede saddle, a saddle frame consisting of a single piece of suitable spring wire which, beginning at the front, extends longitudinally rearward constituting the section, *d*, then laterally turned and forwardly continued in a bowed side member, which comprises a coil, then transversely turned across and near the forward extremity of said section, *d*, and then rearwardly continued in another bowed side member which also comprises a coil, the rear terminal thereof being turned inwardly, and a medium of connection between the adjacent forward portions of the saddle frame and means for imparting an endwise force upon the intermediate member, substantially as and for the purpose set forth.

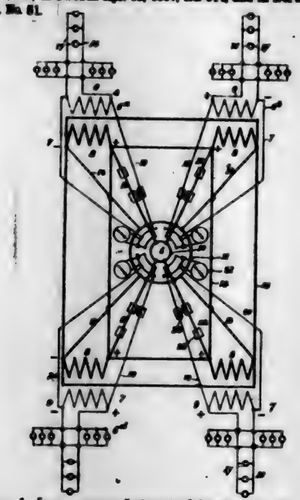
4. In a velocipede saddle, a saddle frame consisting of a single piece of suitable spring wire which has its forward end screw threaded and extended longitudinally rearward constituting the section, *d*, then laterally turned and forwardly continued in a bowed side member then upwardly transversely, and downwardly turned, forming a loop



which loosely embraces the forward extremity of said member, *d*, and rearwardly continued forming the other bowed side member, and the apertured plate, resting against the said loop with the extremity of the member, *d*, passing therethrough, and the nut all arranged for operation, substantially as and for the purpose set forth.

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**502,682.** DISTRIBUTION OF ALTERNATING ELECTRIC CURRENTS. WILHELM VON SIEMENS, Berlin, Germany, assignor to Siemens & Halske, same place. Filed July 18, 1892. Serial No. 440,265. (No model.) Patented in Austria-Hungary Dec. 28, 1889, Nos. 703 and 36,918 and 17,903 and 30,690; in England Dec. 30, 1889, No. 18,088; in Belgium July 15, 1890, No. 72,585; in France Oct. 20, 1890, No. 176,794; in Italy Dec. 30, 1890, Nos. 20,191 and 361; in Germany Jan. 14, 1892, No. 56,980; in Sweden Apr. 15, 1892, No. 314, and in Norway June 30, 1892, No. 61.



*Claim.*—1. In a system of electrical distribution, the combination of a source of alternating currents, a plurality of independently located transformers, and an independent and separate supply circuit for each transformer from the source of energy.

2. In a system of electrical distribution, the combination of a source of alternating currents, a plurality of independently located transformers, an independent supply circuit for each transformer, and a pair of equalizing conductors connecting the like poles of all of the transformers.

3. In a system of electrical distribution, the combination of a source of alternating currents, a plurality of independently located transformers, an independent supply circuit for each transformer, resistance devices in each supply circuit, and devices energized by variations of current in the secondaries of the respective transformers to vary the resistance in the supply circuits.

4. In a system of electrical distribution, the combination of a source of alternating currents, a plurality of independently located transformers, an independent supply circuit for each transformer, a pair of equalizing conductors connecting the like poles of all of the transformers, and independent consumption circuits for each of said transformers.

5. In a system of electrical distribution, the combination of a source of alternating currents, a plurality of independently located transformers, an independent supply circuit for each transformer, resistance devices in each supply circuit, mechanism energized by variations of current in the secondaries of said transformers to vary the resistance in the supply circuits, and automatic circuit rupturing devices in the supply circuits.

6. In a system of electrical distribution, the combination with the primary coil of a plurality of current transforming devices, of means substantially as described for equalizing the current in said primary coils, resistance devices in the primary coils of said devices, and mechanism actuated by variations in the secondary coils of said transformers and which serve to vary the resistance of the primary circuits, and thereby modify the current transmitted to the primary coils of the separate transformers in proportion to the work done in the respective secondary circuits.

7. In a system of electrical distribution, the combination of a source of alternating currents, a pair of main conductors, a plurality of distributing conductors connected in multiple to and branching in different directions from points of same potential on said main conductors, and a plurality of independently located transformers, each transformer connected in multiple of one pair of distributing conductors.

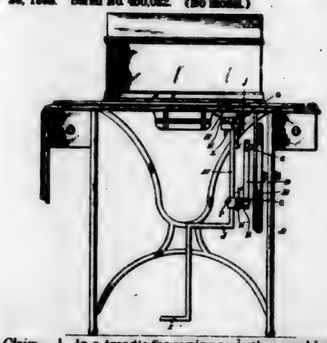
8. In a system of electrical distribution, the combination of a source of alternating currents, a pair of main conductors closed upon themselves leading therefrom, and a plurality of independently located transformers connected in multiple, but independently of each other, to said main conductors.

9. The herein described method of distributing electrical energy throughout an alternate current distribution system constructed and arranged substantially as described, which consists in dividing the generated current between the sub-districts, transferring the surplus of energy from that district or districts in which the work required is the smallest to such district or districts where the work required is the largest, and at the same time varying automatically the resistance of the supply conductors to the district or districts where the work done is the smallest.

10. The herein described method of distributing electrical energy, which consists in dividing the generated current between a number of transforming stations at which are located inductional transformers, and in varying automatically the current fed to the respective stations in proportion to the demand in the local distribution circuits from ch stations.

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**502,683.** TREADLE. JOHN H. STEWART, Danville, Va. Filed Oct. 26, 1892. Serial No. 450,082. (No model.)



*Claim.*—1. In a treadle for sewing and other machines, the combination with the drive wheel and the pitman of the machine; of an attachment plate, a bifurcated pivot or bearing block removably secured in said plate, a swinging treadle lever pivoted at its upper end in said block and having an angled treadle portion disposed to the front and center of the machine, lever returning springs connected at one end to said attachment plate, a sliding tension adjusting bar longitudinally adjustable on the treadle lever and receiving the other ends of the springs, which are fast therein, and a crank-rod adjustably clamped to the lever, and connected to said pitman, substantially as set forth.

2. In a treadle, the combination, with a drive wheel having a pitman, of a swinging spring-returned angled treadle-lever pivotally and removably suspended from a suitable point of attachment, a double clamp adjustable on the treadle lever and having right-angularly disposed orifices, one of which is adapted to embrace the treadle-lever, an adjustable crank bar or rod adjustably mounted in the other orifice of said clamp at one end and having at its outer end a right-angularly disposed crank-pin pivotally receiving the free end of the pitman, substantially as set forth.

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**502,684.** SHEET-METAL FOLDER. JOHN T. STORY, Buffalo, N. Y. Filed July 25, 1891. Serial No. 400,683. (No model.)



*Claim.*—1. In a sheet metal folder, the combination, with a folder, and an operating treadle, of a differential cam, carried by one of the trunnions of said folder and connected with said treadle, said cam being approximately rectangular in shape and having its axis at one side of a central longitudinal plane; substantially as and for the purpose set forth.

2. In a sheet metal folder, the combination, with a folder, and an operating treadle, of a differential cam carried by one of the trunnions of said folder, said cam being approximately rectangular in shape and having its axis at one side of a central longitudinal plane, a belt connecting said cam and the treadle, and a spring adapted to return the cam to its normal position; substantially as set forth.

3. In a sheet metal folder, the combination, with a folder provided upon one of its trunnions with a cam, and an operating treadle, of a lever fulcrumed at one end, a belt connecting the opposite end of the lever with the cam, a connection between the treadle and the lever intermediate its ends, and means for returning the folder to its normal position; substantially as and for the purpose set forth.

4. In a sheet metal folder, the combination, with a folder provided upon one of its trunnions with a cam, substantially as described, and an operating treadle, of a lever fulcrumed at one end, a belt connecting the free end of said lever with the cam, a rod connecting the treadle with the lever and at a point upon the latter intermediate its ends, and a spring connected by a belt with the cam and adapted to return the folder to its normal position; substantially as and for the purpose set forth.

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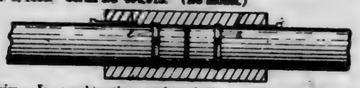
**502,685. TYPE-WRITING MACHINE.** SOCRATE TERRY, Ithaca, N. Y., assignor to Schuyler Grant, same place. Filed May 15, 1893. Serial No. 474,273. (No model.)



*Claim.*—A finger guide as a new article of manufacture, comprising a bar, means for securing it to the frame of a machine and finger pieces secured thereto and adapted to be adjusted so as to vary the angle transversely across the key-board, as set forth.

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**502,686. SHAFT-COUPLING.** WESLOCK G. TILTON, New Bedford, Mass., assignor of one-half to Oliver H. Gardner, same place. Filed Mar. 8, 1893. Serial No. 464,915. (No model.)



*Claim.*—In combination with a shaft coupling having annular grooves in its inside surface; and corresponding grooves in the ends of the shafts to be coupled; an open spring ring, adapted to fit in each of said grooves when the coupling is adjusted and secured in place; as and for the purpose shown and described.

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**502,687. ARC-LAMP FRAME.** AUGUST WEBER, Schenectady, N. Y. Filed Sept. 8, 1892. Serial No. 445,251. (No model.)



*Claim.*—1. An arc lamp frame consisting of a top and bottom plate forming the mechanism chamber and corrugated sheet metal legs whereby a receptacle is formed for the negative wire as described.

2. An arc lamp frame, both legs of which are formed from the same sheet of metal, the metal being corrugated in places to give rigidity to the structure and protection to the negative wire as described.

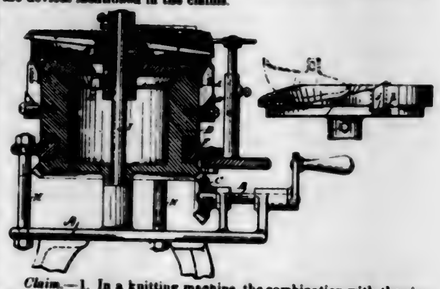
3. In an arc lamp frame the combination of the upper plate (5) having a flange at its edge and grooved or corrugated legs 6, 10 and 12 fastened thereto and a second plate (7) provided with flanges (9) fastened to said legs (6, 10 and 12).

4. In an arc lamp frame the combination of the upper plate (5) a tube (3) centrally fastened thereto and grooved or corrugated legs 6, 10 and 12 also fastened to said plate (5), a bottom plate (7) fastened to said legs forming the bottom to the mechanism chamber and a cover to inclose said mechanism chamber as described.

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**502,688. CIRCULAR-KNITTING MACHINE.** NATHANIEL W. WHITCOTT, Providence, R. I., assignor to himself and JAMES M. GOFF, same place. Filed Sept. 12, 1892. Serial No. 445,668. (No model.)

*Brief.*—The bars for shedding the stitches are pivoted at their inner ends upon a loose ring and are actuated at their outer ends by the devices mentioned in the claims.



*Claim.*—1. In a knitting machine, the combination with the circular series of needles, and the intervening series of clearing bars, of the lifting cam, provided with an adjustable nose piece for shedding the stitches from the needles, substantially as described.

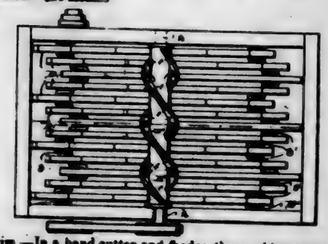
2. In a knitting machine, the combination with the circular series of needles and the intervening series of clearing bars, of the lifting cam provided with a yielding adjustable nose piece for shedding the stitches, substantially as described.

3. In a knitting machine, the combination with the circular series of needles, the intervening series of clearing bars, and the presser wheel, of the cam for lifting the said bars at the presser wheel, and the downward recess in the cam beyond the presser wheel, substantially as described.

4. In a knitting machine, the combination with the circular series of needles of the intervening series of clearing bars, the cam for raising the outer ends of the clearing bars, and the loose ring for supporting the inner ends of the same, substantially as described.

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**502,689. COMBINED FEEDER AND BAND-CUTTER FOR TERRAPIN-MACHINES.** JAMES G. WILLIAMS, Glasgow, Ky., assignor of one-half to A. J. Christmas, same place. Filed Nov. 26, 1892. Serial No. 453,231. (No model.)



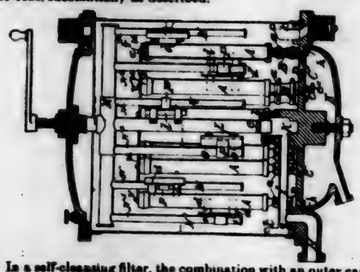
*Claim.*—In a band cutter and feeder, the combination of a series of rising and falling feeder bars notched or serrated upon their upper edges, said bars forming the table, the crank shafts carrying said bars, and having their cranks set at various angles whereby substantially all of said bars are in different planes of movement at any given time, a rotary cylinder journaled above said feeder bars, and capable of a vertical movement in its bearings, a spring-actuated bail engaging said cylinder, and a pair of continuous spiral cutters on said cylinder, substantially as specified.

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**502,690. SELF-CLEANSING FILTER.** OMAR ASSET, Paris, France, assignor to the Société du Nettoyeur O. Asset Appliqué au Filtre Chamberland Système Pasteur, same place. Filed Mar. 25, 1892. Serial No. 426,305. (No model.) Patented in France Nov. 26, 1890, No. 209,522.

*Claim.*—1. In a self-cleansing filter, the combination with an inclosing casing and one or more circular series of porous cells arranged therein, of a hollow carrier mounted to rotate concentrically with the series of cells and open to the liquid inlet to the filter, scrapers of flexible material on the hollow branches of said carrier and adapted to scrape the walls of the cells as the carrier rotates, mechanism substantially as described for causing said scrapers to move in a helicoidal path when the carrier rotates, the hollow arms bearing the scrapers having in them jet apertures and granulated cork between the scrapers and the cells, substantially as described.





2. In a self-cleansing filter, the combination with an outer casing and a porous cell arranged therein, of a scraper adapted to be drawn over the surface of said cell, mechanism for operating said scraper, and granulated cork, interposed between the said scraper and the wall of the cell, for scouring the surface of the latter, as set forth.

3. In a filter, the combination with an inclosing casing and a circular series of elongated porous cells arranged therein, of a carrier mounted to rotate concentrically with said series of cells, said carrier having a pendent arm arranged within the circle of cells and another pendent arm arranged without the circle of cells, scrapers secured to said arms, that on one arm being adapted to scrape the lower portions of the cells and that on the other adapted to scrape the upper portions of the cells when the carrier rotates, and mechanism for imparting to said scrapers a helicoidal movement, as set forth.

4. In a filter, the combination with an exterior casing and a circular series of cells A mounted therein, a rotatively mounted carrier in the casing, and scrapers *d*, of soft rubber, secured to the arms of said carrier, said scrapers having a Y-shape, substantially as and for the purposes set forth.

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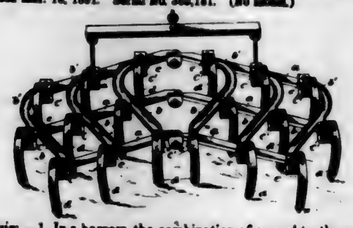
**502,691. METHOD OF AND MEANS FOR SCREWING SOCKETS UPON PIPES.** WILLIAM S. MCNAIRN and JOHN A. HOCK, South Chester, Pa. Filed Sept. 13, 1892. Serial No. 445,763. (No model.)



*Claim.*—The method of forcing home a threaded socket upon the threaded end of the pipe, said parts having as to each other a gain taper, which consists in inserting within one end of said socket a supporting screw plug, limiting the distance to which said screw plug shall enter the socket, and then turning the screw plug and pipe relatively to each other to forcibly seat the parts on each other; substantially as described.

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**502,692. HARROW.** CHARLES PERRIN, Dayton, Ohio, assignor, by direct and mesne assignments, to Charles La Dow, Albany, N. Y. Filed Mar. 16, 1891. Serial No. 385,161. (No model.)



*Claim.*—1. In a harrow, the combination of curved teeth, and an angle iron frame beam having a curved, bowed or pointed front portion connected integrally with rearwardly extending arms or tooth-carrying portions, the flanges of the beam serving to strengthen the curved, bowed or pointed portion thereof and to hold the shanks of the teeth in an elevated position above the ground.

2. A harrow having a frame bar provided with a flange and brackets rising above the flange, in combination with cross pieces or rods supported in the brackets and teeth having their ends bent around said cross pieces and secured thereto in such manner that the strain of the teeth is communicated directly to the cross pieces.

3. In a float harrow, an angle iron beam in combination with teeth hinged directly to the upwardly projecting flanges of the beam, or to brackets rigidly fixed thereto, whereby the teeth may be rocked on an elevated center of motion supported by a rigid portion of the frame.

4. A harrow frame structure composed of a longitudinal metal beam formed integrally with a vertical rib or flange, in combination with a transverse rod supported by two ribs or flanges, in combination with a tooth mounted on the rod and secured thereto in such manner that the strain of the tooth is communicated directly to the rod.

5. In a harrow, the combination of a pair of sections hinged together at their adjacent edges, so as to be capable of folding over upon each other, a series of diverging bars *b* on each of said sections, each of said bars being provided with a series of integral rearwardly extending arms *c*, these arms having formed on their rear ends pairs of integral clamping plates *c'*, and spring-teeth adjustably secured between the said clamping-plates, substantially as described.

6. The combination in a harrow of the two sections hinged together, each section being constructed of draft-bars and oblique intersecting tooth carrying bars bolted thereto, the tooth carrying bars of one section diverging from those of the other section and being turned or bent inwardly near their forward ends, tooth holding arms carried by these latter bars and extending rearwardly therefrom the tooth holders of the front row alternating with the holders in the rear, and teeth carried by the said tooth holding arms, substantially as described.

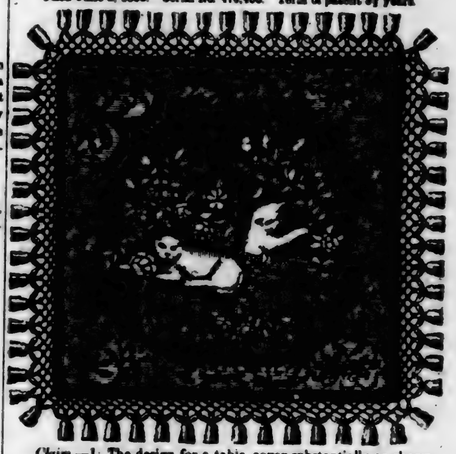
7. The combination with an arm provided with a pair of plates and a horizontal bolt connecting these plates, of a spring harrow-tooth having formed on its forward end a hook engaging under the said bolt the tooth being extended rearwardly from the said bolt, and from thence bent rearwardly, the end of the said arm extending in under the said hook, as at X, and means carried by the rear ends of the wings for adjusting and holding the tooth in its adjusted position, substantially as described.

8. The combination of channel-iron frame-bars provided with vertical flanges and spring harrow teeth having their shanks secured longitudinally directly between said flanges, substantially as described.

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# DESIGNS.

**22,650. TABLE-COVER.** ADOLPH PETSOLD, Philadelphia, Pa., assignor to John H. Bromley, Joseph H. Bromley, and Edward Bromley. Filed June 2, 1893. Serial No. 476,400. Term of patent 3½ years.



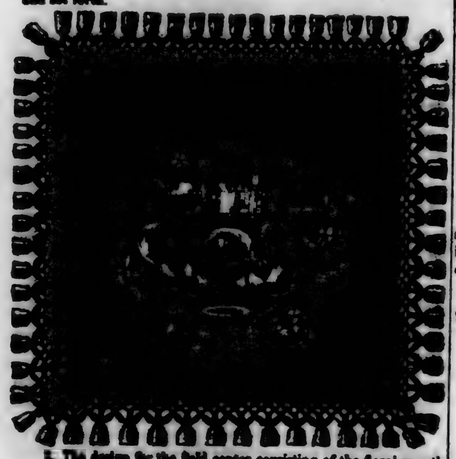
*Claim.*—1. The design for a table cover substantially as shown and set forth.

2. The design for the field center consisting of the wreath of roses and leaves and the kittens surrounded thereby; substantially as shown and set forth.

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**22,651. TABLE-COVER.** ADOLPH PETSOLD, Philadelphia, Pa., assignor to John H. Bromley, Joseph H. Bromley, and Edward Bromley. Filed June 2, 1893. Serial No. 476,399. Term of patent 3½ years.

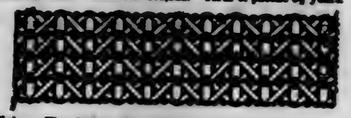
*Claim.*—1. The design for a table cover substantially as shown and set forth.



2. The design for the field center consisting of the floral wreath inclosing the dogs couchant; substantially as shown and set forth.

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**22,652.** DRESS-STIFFENING. HARRY HOUT, Philadelphia, Pa. Filed June 22, 1892. Serial No. 478,052. Term of patent 3½ years.



*Claim.*—The design for a trimming substantially as shown and described.

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**22,653.** METALLIC FASTENER. GEORGE W. HOWELL, New York, N. Y. Filed July 6, 1892. Serial No. 478,707. Term of patent 14 years.



*Claim.*—The design for a metallic fastener having a round head provided with a convex upper surface having a central boss with cornlop-shaped ribs radiating therefrom and terminating within a rim or border, and a lower surface from the center of which extend two superimposed prongs, substantially as shown and described.

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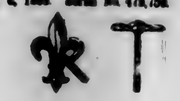
**22,654.** METALLIC FASTENER. GEORGE W. HOWELL, New York, N. Y. Filed July 6, 1892. Serial No. 478,706. Term of patent 14 years.



*Claim.*—The design for a metallic fastener having an oval or elliptical-shaped head provided with a convex upper surface having a central boss with cornlop-shaped ribs radiating therefrom and terminating within a rim or border, and a lower surface from the center of which extend two superimposed prongs, substantially as shown and described.

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**22,655.** METALLIC FASTENER. GEORGE W. HOWELL, New York, N. Y. Filed July 6, 1892. Serial No. 478,708. Term of patent 14 years.



*Claim.*—The design for a metallic fastener having a flour-de-lis shaped head, fashioned on its upper surface in relief, and extending from its under surface two superimposed prongs, substantially as shown and described.

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**22,656.** TYPE. ELIJAH BUTLER, Painesville, Ill. Filed Mar. 7, 1893. Serial No. 465,081. Term of patent 14 years.



*Claim.*—The design for type herein shown and described, the same consisting of a series of parallel bars, and a diagonal bar crossing the series of parallel bars and extending from corner to corner of the field or series, substantially as specified.

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**22,657.** FRAME &c. ROBERT GOLDE, Brooklyn, assignor to the Royal Metal Manufacturing Company, New York, N. Y. Filed June 24, 1892. Serial No. 478,794. Term of patent 3½ years.



*Claim.*—The design for frames, and the like, substantially as herein shown and described.

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**22,658.** SEAL. FERDINAND MACHONNIER, Paris, France, assignor to the Niagara Falls Power Company, New York, N. Y. Filed May 10, 1892. Serial No. 473,784. Term of patent 14 years.



*Claim.*—The design for seals as herein shown and described, consisting essentially of an Indian, paddling a canoe, surrounded by an ornamental border substantially as described.

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**22,659.** BADGE. CHARLES G. WILSON, Reading, Pa. Filed Apr. 14, 1892. Serial No. 470,332. Term of patent 14 years.



*Claim.*—1. In the design for a badge, the obverse, substantially as shown and described.

2. In the design for a badge, the reverse, substantially as shown and described.

3. The design for a badge substantially as shown and described.

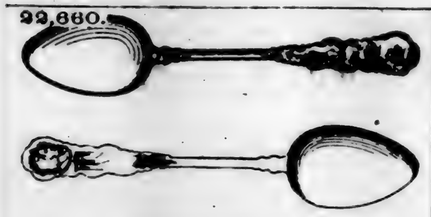
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**22,660.** SPOON. WILLIAM A. MONTAGUE, Dubuque, Iowa. Filed Mar. 18, 1893. Serial No. 466,717. Term of patent 3½ years.

*Claim.*—The design for a spoon, substantially as shown and described.



**22,660.**



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**22,661.** SPOON. CHARLES E. PRENAT, Waterbury, Conn., assignor to the Rogers & Hamilton Company, same place. Filed May 12, 1893. Serial No. 474,052. Term of patent 14 years.



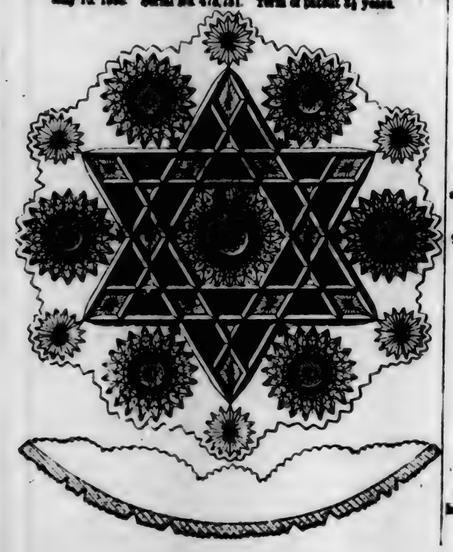
*Claim.*—1. In the design for handles for spoons, &c., the obverse side, substantially as shown in the accompanying drawings.

2. In the design for handles for spoons, &c., the reverse side, substantially as shown in the accompanying drawings.

3. The design for handles for spoons, &c., substantially as shown in the accompanying drawings.

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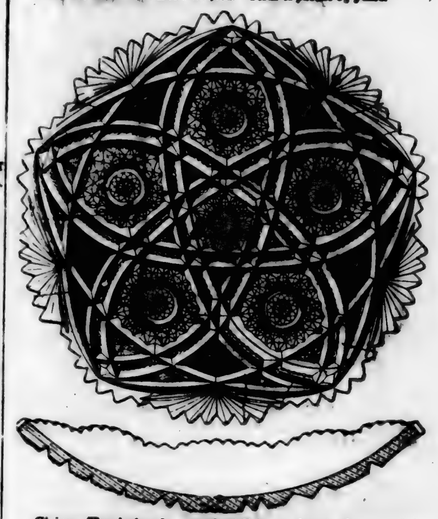
**22,662.** CUT-GLASS DISH. DANIEL FORBES, Brooklyn, N. Y. Filed May 10, 1892. Serial No. 473,731. Term of patent 3½ years.



*Claim.*—The design for cut glass dishes, substantially as shown and described.

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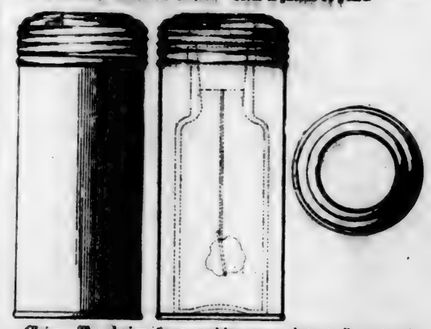
**22,663.** CUT-GLASS DISH. DANIEL FORBES, Brooklyn, N. Y. Filed May 10, 1892. Serial No. 473,732. Term of patent 3½ years.



*Claim.*—The design for cut glass dishes as herein shown and described.

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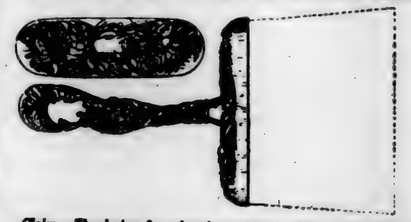
**22,664.** PACKING-CAN. ROBERT L. BUTLER, Brooklyn, N. Y. Filed May 24, 1892. Serial No. 475,272. Term of patent 14 years.



*Claim.*—The design for a packing can, substantially as herein shown and described.

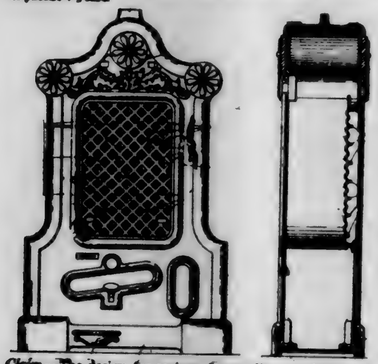
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**22,665.** BRUSH-HANDLE. FREDERICK L. THOMPSON, New Bedford, Mass. Filed Jan. 12, 1892. Serial No. 454,866. Term of patent 7 years.



*Claim.*—The design for a brush or other handle, substantially as herein shown and described.

22,666. CASING FOR VENDING-MACHINES. JOHN R. ROWLANDS, Syracuse, N. Y., assignor of two-thirds to Warren H. Boies and Walter H. Wales, same place. Filed July 10, 1893. Serial No. 480,093. Term of patent 7 years.



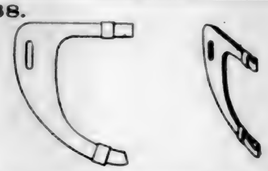
*Claim.*—The design for casings for vending machines, substantially as herein shown and described.

22,667. STOVE. HENRY D. HELLER, St. Louis, Mo., assignor to the Bridge & Beach Manufacturing Company, same place. Filed July 1, 1893. Serial No. 479,203. Term of patent 7 years.



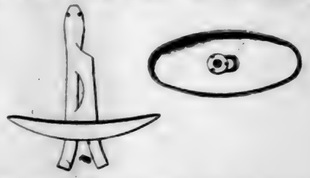
*Claim.*—The design for a stove, substantially as herein shown and described.

22,668. DENTAL CLASP. JOHN KERR, Detroit, Mich., assignor to the Detroit Dental Manufacturing Company, same place. Filed June 5, 1893. Serial No. 476,673. Term of patent 7 years.



*Claim.*—The design for a dental clasp substantially as herein shown and described.

22,669. SYRINGE. CHARLES W. TREVERTON, Scranton, Pa. Filed Apr. 29, 1891. Serial No. 391,015. Term of patent 7 years.



*Claim.*—The design for a vaginal syringe as herein shown and described.

22,670. WHIFFLETREE-CLIP. HENRY C. SWAN, Oshkosh, Wis. Filed Feb. 25, 1893. Serial No. 463,762. Term of patent 14 years.



*Claim.*—The design for whiffletree clips, substantially as herein shown and described.

22,671. REACH FOR BICYCLES. STERLING ELLIOTT, Newton, Mass. Filed Dec. 5, 1892. Serial No. 454,173. Term of patent 14 years.



*Claim.*—The design for a reach for bicycles, substantially as herein shown and described.

# TRADE-MARKS

## REGISTERED AUGUST 1, 1893.

28,422. MEN'S AND BOYS' OUTER CLOTHING AND SHIRTS, COLLARS, CUFFS, NECKWEAR, AND UNDERWEAR. VOGEL BROTHERS, New York, N. Y. Filed June 14, 1893.




*Essential feature.*—The words "WHITE ELEPHANT" and the representation of an elephant. Used since April 15, 1893.

28,423. MEN'S OVERALLS AND COLORED AND WHITE SHIRTS. GANTER & GRUNSELL, Lebanon, N. H., and Boston, Mass. Filed June 26, 1893.

SHAKER

*Essential feature.*—The word "SHAKER." Used since January 1, 1893.

28,424. TROUSERS. CLAY FAULKNER, McKinneyville, Tenn. Filed June 26, 1893.

GORILLA

*Essential feature.*—The word "GORILLA." Used since January 1, 1893.

28,425. KNEE-PANTS. SAMUEL SCHWERIN & CO., Philadelphia, Pa. Filed July 11, 1893.



*Essential feature.*—The representation of two steamboats pulling in different directions and having a hawser running from each boat to the legs of a pair of knee pants, the hawsers and pants being stretched taut. Used since June 1, 1893.

28,426. HOSIERY. JOHN RICOG & CO., Philadelphia, Pa. Filed July 11, 1893.

28,426.



*Essential feature.*—The representation of a shield, a lion upon the shield, and the shield surmounted by a helmet above which is a lion's head. Used since June 1, 1893.

28,427. SHOULDER-BRACES AND SUSPENDERS. KNICKERBOCKER BRACE COMPANY, Easton, Pa. Filed July 10, 1893.

KNICKERBOCKER

*Essential feature.*—The word "KNICKERBOCKER." Used since May, 1862.

28,428. RUBBER-LINED HOSE. CORNELIUS CALLAHAN, Canton, Mass. Filed June 12, 1893.

CCC

*Essential feature.*—The letters "CCC." Used since March 20, 1893.

28,429. WHEAT-FLOUR. CORNELIUS DORE & SON, Boston, Mass. Filed July 7, 1893.

TOWN TALK

*Essential feature.*—The words "TOWN TALK." Used since 1875.

28,430. WHEAT-FLOUR. TROUPSON MILLING COMPANY, Lockport, N. Y. Filed June 26, 1893.

23,430.

PRIDE OF NIAGARA

*Essential feature.*—The words "PRIDE OF NIAGARA." Used since November 1, 1890.

23,431. CANNED FRUIT AND VEGETABLES. CHARLES EDWIN RASSETT, Pennsville, N. J. Filed May 19, 1893.

MARINER'S

*Essential feature.*—The word "MARINER'S." Used since August, 1887

23,432. COMPOUND USED AS A SUBSTITUTE FOR BUTTER AND LARD. PARKER, WEBB & COMPANY, Detroit, Mich. Filed June 12, 1893.

GOLDEN SHORTENING.

*Essential feature.*—The words "GOLDEN SHORTENING." Used since May 15, 1893.

23,433. LAGER-BEER. WILLIAM GERST, Nashville, Tenn. Filed May 31, 1893.



*Essential feature.*—The capital letter "G," within which is the representation of a dove, with outstretched wings, grasping in its claws a sheaf of barley, and a sprig in its bill. Used since January 25, 1893.

23,434. WHISKY. PATRICK DOHERTY, Boston, Mass. Filed Mar. 6, 1893.



*Essential feature.*—The representation of a nondescript animal standing upon its hind legs, with fore paws extended, wearing a serrated head piece and a collar having pendants, about the neck. Used since July, 1890.

23,435. MEDICINAL ESSENCE OF HERBS AND ROOTS AND WINE AND ALCOHOL. NAHUM SPERY, New York, N. Y. Filed June 21, 1893.



*Essential feature.*—A portrait of the registrant, NAHUM SPERY. Used since May 6, 1886.

23,436. HERB TEA USED AS A REMEDY FOR INDIGESTION, ERUPTIONS OF THE SKIN, &c. SHUYLER C. WELLS, Le Roy, N. Y. Filed June 5, 1893.



*Essential feature.*—The words "KARL'S CLOVER ROOT" and the representation of the face of a girl. Used since August, 1892.

23,437. LIQUID PREPARED FOOD FOR MEDICINAL PURPOSES. COLEMAN & COMPANY, LIMITED, Norwich, England. Filed June 20, 1893.

WINCARNIS

*Essential feature.*—The word "WINCARNIS." Used since February 17, 1890.

23,438. REMEDY FOR KIDNEY DISEASES, GENERAL DEBILITY, AND LIVER TROUBLES. JOHN B. DAVIS, Atlanta, Ga. Filed May 6, 1893.

WINTER'S
Life Elixir

*Essential feature.*—The words "WINTER'S LIFE ELIXIR." Used since July 4, 1876.

23,439. REMEDIES FOR DISEASES OF THE KIDNEYS, BLADDER, AND URINARY ORGANS. THE BUKEE PILL COMPANY, Bangor, Me. Filed May 22, 1893.



*Essential feature.*—A fac simile signature of the registrant, "DR. B. O. BUKEE" and the representation of the face of a man. Used since 1886.



23,440. LINIMENT. CHARLOTTE W. HAWES, Boston, Mass. Filed Apr. 19, 1893.



*Essential feature.*—The word "NERVITA" displayed in the representation of a crown. Used since 1889.

23,441. CERTAIN NAMED MEDICAL AND DISINFECTING COMPOUNDS AND APPARATUS. THE VAPO-CRESOLENE COMPANY, Stanley, N. J., and New York, N. Y. Filed June 12, 1893.

CRESOLENE.

*Essential feature.*—The word "CRESOLENE." Used since April 1, 1879.

23,442. MEDICINAL PREPARATIONS OF AN ANTISEPTIC, DEODORANT, OR GERMICIDE CHARACTER. PEPTINE MILLS, Syracuse, N. Y. Filed June 8, 1893.



*Essential feature.*—The word "MELPINE," and the representation of a man engaged in battle with imaginary creatures which are typical of the germs of disease, represented as being in the air. Used since April 1, 1893.

23,443. MEDICATED PLASTERS. SAMUEL H. GUNDER, Fairmount, Ill. Filed June 21, 1893.

CAMPHOCINE

*Essential feature.*—The word "CAMPHOCINE." Used since April 11, 1890

23,444. TOILET FACE-WASH. DAVID WICK, JR., & CO., Lancaster, Pa. Filed July 6, 1893.

Electric Beautifier

*Essential feature.*—The words "ELECTRIC BEAUTIFIER." Used since June 1, 1893.

23,445. TOILET POWDERS AND DENTIFRICES. GEORGE B. EVANS, Philadelphia, Pa. Filed June 15, 1893.

VIOLETINE.

*Essential feature.*—The word "VIOLETINE." Used since September 1, 1884.

23,446. LAUNDRY BLUING. AUGUSTUS J. CONROE, Savannah, N. Y. Filed June 28, 1893.



*Essential feature.*—A monogram composed of the letters "C L B." Used since June 1, 1893

23,447. WASHING-POWDER. REUBEN R. STOWERS, Ocala, Fla. Filed June 23, 1893.

SOFTENE.

*Essential feature.*—The word "SOFTENE." Used since December, 1892.

23,448. OIL-STONES AND WHETSTONES. THE PIKE MANUFACTURING COMPANY, Haverhill, N. H. Filed July 6, 1893.

LILY WHITE

*Essential feature.*—The words "LILY WHITE." Used since January 1, 1888.

23,449. BOXES CONTAINING IMPLEMENTS FOR SHOE REPAIRS. LOUIS SACKS, Newark, N. J. Filed June 30, 1893.

THE GEM

*Essential feature.*—The words "THE GEM." Used since January 1, 1889.

**23,450.** BICYCLES, TRICYCLES, AND PARTS THEREOF. HENRY WILLIAM JAMES, Birmingham, England. Filed Mar. 16, 1893.

THE JAMES

*Essential feature.*—The words "THE JAMES." Used since March 1, 1884.

**23,451.** CRIBS, CRADLES, AND CHILDREN'S BEDS. THE KENOSHA CRIB COMPANY, Kenosha, Wis. Filed June 3, 1893.

**23,451.**



*Essential feature.*—The representation of a crib, with a child therein in the act of rising, and holding to the side of the crib. Used since January 1, 1892.

# DECISIONS

OF THE

# COMMISSIONER OF PATENTS

AND OF

# UNITED STATES COURTS IN PATENT CASES.

## COMMISSIONER'S DECISIONS.

### EX PARTE MISSISSIPPI GLASS COMPANY.

*Decided July 24, 1893.*

TRADE-MARK—REGISTRATION OF THE WORD "FLORENTINE" GRANTED.

The registration of the word "Florentine" as a Trade-Mark for glass granted, as Florence is not noted as a place for the manufacture of glass, and therefore no deception as to the quality or origin of the manufacture can occur.

ON petition.

TRADE-MARK FOR ROLLED SHEET-GLASS.

Application of the Mississippi Glass Company filed February 20, 1893.

*Mr. Paul Bakewell* and *Mr. F. W. Ritter, Jr.*, for the applicant.

FISHER, *Assistant Commissioner:*

This is a petition taken from the action of the Examiner of Trade-Marks in refusing to register the word "Florentine" as a Trade-Mark for rolled plate-glass.

The Examiner bases his refusal on—

the general principle that geographical terms are not entitled to be monopolized as Trade-Marks. Many such are registered, but always for special reasons given why they should be considered exceptions to the rule. The word "Florentine" is actually a geographically-descriptive adjective when applied to any merchandise, indicating that it is of Florentine origin, as being manufactured in the city of Florence, or having a Florentine character, as being like the productions of that city.

In *ex parte Green*, (8 O. G., 729,) where the Examiner had refused the registration of the words "German Syrup," the Commissioner laid down a rule that bears directly upon this case. He said:

Unquestionably a geographical name, as a rule, cannot be a lawful Trade-Mark, for the reason that, ordinarily, it is descriptive of the article to which it is applied. Wherever it is descriptive, it cannot be made a lawful Trade Mark; but a geographical name, like any other word, may be chosen and arbitrarily applied, and in such instance may be a lawful Trade-Mark. The Examiner must judge in each particular case whether or not the word be descriptive. In this case I think it cannot be called purely descriptive. If the article were purely a German product, then it would be naturally and in the ordinary use of the word designated as German; but, obviously, it is not. It is simply a medicated compound, evidently designated "German" for lack of a better term, and, I think, should be registered as a Trade-Mark.

In accord with this rule, as above stated, Commissioner Doolittle decided, in *ex parte Marsching & Co.* (C. D., 1878, 143) that inasmuch as the French are well known for their skill in preparing fine fancy paints the word "French" as a Trade-Mark for paints would have the sole function of pointing to the quality of the article, and the registration was refused.

In *ex parte Cornwall & Brothers* (12 O. G., 312) the same Commissioner, applying the same rule, held that the word "Dublin" as a Trade-Mark for soaps was registrable, inasmuch as there were no soaps on the market known as "Dublin" soaps and Dublin was not a place noted for the manufacture of soaps, and, since the manufacturer did not live at Dublin, as here applied, it was not intended as and had not the effect of a geographical word. (See, also, *Dover Stamping Co.*, 51 O. G., 1784, and *ex parte Jenkins*, 53 O. G., 759.)

In the present case the applicant's manufactory is not at or near Florence. That city is not noted as a place for the manufacture of glass. If the application were for the registration of the word "English" or "French," to be applied to rolled glass, it would be proper to refuse it because French rolled glass or English rolled glass is well known in the arts; but in the case of the word "Florentine" no deception as to the quality or origin of the manufacture can occur; and in accordance with the rule in *ex parte Green, supra*, and the references above cited no objection is seen to registration.

The petition is granted.

## DECISIONS OF THE U. S. COURTS.

### U. S. Circuit Court of Appeals—Second Circuit.

WATERMAN *v.* SHIPMAN *et al.*

*Decided April 18, 1893.*

1. PATENTS—MORTGAGE—TRANSFER OF TITLE.
   A mortgage by a patentee vests in the mortgagee the whole title to the patent rights, subject only to be defeated by performance of the condition, or by redemption by bill in equity within a reasonable time after default, and the right of possession to the incorporeal property is, in legal effect, delivered to the mortgagee at the time of the recording of the mortgage at the Patent Office.
2. SAME—RECITAL OF LICENSE—NOTICE TO PURCHASER.
   The recital in a mortgage of patent rights of the existence of a license is notice to the mortgagee and purchasers of the patent rights under the mortgage of all the terms and conditions of the license.
3. SAME—ASSIGNMENT OF LICENSE—SUPPLEMENTARY PROCEEDINGS IN AID OF EXECUTION.
   In the absence of words showing that it was intended that the license might be assigned, a license conferring the exclusive right to manufacture and sell patented articles is not assignable, and does not vest in a receiver of the property of the licensee, appointed in proceedings supplementary to execution under the New York Code of Civil Procedure.

4. SAME—INFRINGEMENT—SUIT BY EXCLUSIVE LICENSEE AGAINST OWNER OF PATENT.

A licensee who has the exclusive right to manufacture and sell a patented article can maintain a suit in equity against the patentee, if the latter is guilty of an infringement by making and selling himself, to redress the wrong occasioned thereby, and such suit arises under the patent laws of the United States.

5. SAME—INFRINGEMENT—SUIT BY LICENSEE—COMBINATION BETWEEN OWNER AND CODEFENDANTS.

If the bill of the licensee who has the exclusive right to manufacture and sell a patented article alleges a combination between the owner of the patent and other persons, who are made parties defendant with the owner, to deprive the complainant of the benefits and advantages of his license, and the evidence shows that a license granted by the owner of the patent to his co-defendants was granted by him, and procured by them, for the paramount purpose of preventing the complainant from enjoying the monopoly conferred by his license, the defendants are joint infringers of the complainant's rights, and he is entitled to relief against all the parties defendant.

6. SAME—VALIDITY—WANT OF NOVELTY—EVIDENCE.

If defendants in a suit for infringing Letters Patent plead want of novelty and set up in their answer and offer in evidence a large number of patents prior in date to those of the complainant, the court will not examine these patents, in the absence of expert testimony to explain them or to indicate what they contain to negative the novelty of the complainant's patents, unless the character of the invention has so little complexity that expert testimony is not required for that purpose.

7. SAME—WANT OF NOVELTY—EVIDENCE.

In a suit for the infringement of Letters Patent defendants introduced in evidence a pamphlet of about twenty-five pages, published two years after the patents were issued, entitled "An Exposé of the Assumptions and Business Methods of a Dealer and Reputed Inventor," which was prepared and published by a rival manufacturer apparently for the purpose of discrediting the inventions of the complainant and his personal character and business methods. The greater part of the pamphlet was scandalous matter irrelevant to the issues. The author testified that, so far as it referred to the patents he had studied, the pamphlet correctly expressed his views respecting the same. *Held*, that the contents of the pamphlet could not be considered competent evidence upon the issue of novelty, and that complainant's counsel was justified in refusing to cross-examine the author.

APPEAL from the Circuit Court of the United States for the Southern District of New York.

Bill by Lewis E. Waterman against Asa L. Shipman (who died before final hearing, and whose executor has been substituted) and James D. Shipman and Edward L. Shipman, his sons, copartners by the firm-name of Asa L. Shipman's Sons, alleging the infringement of certain Letters Patent. The circuit court dismissed the bill. Complainant appeals. Reversed.

*Mr. Salter S. Clark* for the appellant.
*Mr. A. v. Briesen* for the appellees.

Before WALLACE and SHIPMAN, Judges.

WALLACE, *J.*:

This is a bill in equity alleging the infringement of two patents for fountain-pens—No. 293,545, dated February 12, 1884, and No. 303,735, dated November 4, 1884—each granted to Lewis E. Waterman as inventor. The defendants were originally Asa L. Shipman (who died before final hearing, and whose executor has been substituted) and James D. Shipman and Edward L. Shipman, his sons, who were copartners by the firm-name of Asa L. Shipman's Sons. The questions which have been principally litigated are those in respect of the title to the patents, it being insisted for the defendants that the title at the time of the commencement of the suit was in Asa L. Shipman, and consequently that the complainant could not maintain the bill. The facts bearing upon this branch of the case are these: Prior to November 20, 1884, the title to the patents had been assigned by the complainant to Sarah E. Waterman, his wife, and on November 20, 1884, she granted to him an exclusive license to manufacture and sell the patented improvements throughout the United States. By the terms of the license he agreed to make full returns on the 1st day of every month of all fountain-pens containing the patented improvements manufactured by him, and to pay to her the sum of twenty-five cents as a license fee for every pen so manufactured, on or before the 5th day of every month, for the pens manufactured during the preceding months. The license provided that—

upon a failure of the licensee to make returns after thirty days or to make payment of the license fees after ninety days from the time when such returns and payments are due, then the said Sarah E. Waterman may terminate this license by serving a written notice upon the said licensee; but that will not discharge him from any liability for any license fees due when such notice was given.

November 25, 1884, Mrs. Waterman executed to Asa L. Shipman's Sons a mortgage of the two patents as collateral security for the payment of a note of $6,500 made by her and the complainant, payable in three years. By this instrument Mrs. Waterman assigned to the mortgagees all her right, title, and interest in the inventions and the patents upon the express condition that the assignment should be null and void if she and her husband, or either of them, should pay the note at maturity. It contained also a recital that the interest conveyed was free from all incumbrances except a license to this complainant to manufacture and sell pens under both patents. The mortgage was duly recorded in the Patent Office December 29, 1884, and from the time of its execution until November 25, 1887, the complainant continued to manufacture and sell the patented improvements, making returns to Mrs. Waterman and paying royalties to her, under his license, until the 16th day of April, 1888, when she executed to him an assignment of all her right, title, and interest in the patents. The note given to secure the mortgage became due November 28, 1887, and was not paid, and shortly thereafter Asa L. Shipman granted to the firm of Asa L. Shipman's Sons an exclusive license to manufacture and sell the patented pens. He also brought suit upon the note in the Supreme Court of the State of New York, and on the 23d day of December, 1887, duly obtained judgment thereon against the complainant and Mrs. Waterman for the full amount with interest. After the execution of the license to the firm of Asa L. Shipman's Sons, and about April 1, 1888, they began to manufacture and sell as the patented pens an article identical with those which the complainant had made and sold under his license. They were manufacturing these pens when the present bill was filed, and continued to do so until May 10, 1888. The judgment obtained against the complainant and his wife not having been paid, supplementary proceedings pursuant to the code of civil procedure of the State of New York were instituted, which resulted in the appointment of a receiver, who, on the 10th day of April, 1888, duly qualified and became vested under the provisions of the





code with all the property, legal and equitable, belonging to the complainant. On January 9, 1888, Asa L. Shipman sent the complainant a letter giving him notice—

that the license given you by Mrs. Waterman is revoked, and suit will be brought against you for infringement of said patents.

On April 26, 1888, he sent the complainants another letter, stating—

that, in addition to the notice already handed to you, the license agreement executed by Sarah E. Waterman to you, dated November 18, 1884, is hereby revoked, on account of your failure to make due returns thereunder on the 1st day of January, 1888, and also on February 1, 1888, and also for your failure to pay the royalties under said agreement, which became due to me on December 5, 1887; also on January 5, 1888.

On April 27, 1888, the complainant made a tender to the attorney of Asa L. Shipman of the full amount of the judgment obtained upon the note, together with the costs of the suit; but this tender did not include anything for the fees of the receiver in the supplementary proceedings. On the 5th day of May the present suit was brought. The circuit court dismissed the bill, without a written opinion, apparently upon the ground that the legal title to the patent was in Asa L. Shipman at the time of the commencement of the suit.

It is entirely clear, upon the authority of *Waterman* v. *Mackenzie*, (39 O. G., 122; 138 U. S., 252; 11 Sup. Ct. Rep., 334,) that by virtue of the mortgage the whole title to the patents at the time of the execution of the instrument became vested in the mortgagees, subject only to be defeated by performance of the condition or by redemption of the bill in equity within a reasonable time, and that the right of possession to the incorporeal property was in legal effect delivered to the motgagees at the time of the recording of the mortgage in the Patent Office. We do not consider it necessary to determine whether a tender of the mortgage debt, made after the day of payment, entitled the complainant, as the assignee of the mortgagor, to a reconveyance of the patents. Nor do we deem it necessary to determine whether the tender made by him April 27 was a sufficient one or whether it should have included a sum sufficient to cover the fees of the receiver in the supplementary proceedings. We regard it as entirely immaterial, for the purposes of the present suit, whether the legal title to the patents was or was not in the complainant at the time of the commencement of the suit. The mortgage of Asa L. Shipman was subject to the license which had previously been granted to the complainant and could in no manner operate to restrict or curtail the exclusive right of the complainant to make and sell the patented improvements, so long as the license should remain unrevoked. The recital in the mortgage of the existence of this license was notice of all its terms and conditions. It is familiar doctrine that a purchaser will have constructive notice of everything appearing in any part of the deed or instrument constituting the title purchased, which is of such a nature that, if brought directly to his knowledge, it would amount to actual notice, for the right of a purchaser can in no case go beyond his own title, and whatever appears on the face of the title papers forms an integral part of the title itself. Such notice, therefore, is of the most conclusive nature, and is insusceptible of being explained away or rebutted.

The bill of complaint alleges that the license granted to the complainant was in full force at the time of the commencement of the suit. This averment is not denied by the answer, and the answer makes no issue setting up the invalidity of the license, or any revocation by reason of failure to make returns or pay royalties, or for any other reason. There is evidence in the record, however, which has been referred to, of letters sent by Asa L. Shipman to the complainant, one of the date of January 9, 1887, and one of the date of April 26, 1888, giving notice of the revocation of the license. Under the issues made by the pleadings we ought not to notice this evidence. It is proper, however, to say that the letter of January 9 did not assign any reasons for revoking the license and the letter of April 26, 1888, assigned grounds for revoking it which do not appear to have been correct in fact. The complainant was not in default for failure to make returns on the 1st day of January, 1888, or on the 1st day of February, 1888, or for not paying royalties on the 5th of December, 1887, or on January 5, 1888. He did not manufacture at all in the months of December or January, and if any royalties became due on December 5 or on January 5 the fact does not appear.

Even if it were open to the defendants, under their answer, to assert that at the time when the suit was commenced the complainant's interest in the patent had vested in the receiver in supplementary proceedings, the contention would be untenable. The license was not assignable. No license is assignable by the licensee to another unless it contains words which show that it was intended to be assigned. (*Factory* v. *Corning*, 14 How., 193; *Rubber Co.* v. *Goodyear*, 9 Wall., 788; *Adams* v. *Howard*, 22 Blatchf., 47; 22 Fed. Rep., 656; *Baldwin* v. *Sibley*, 1 Cliff., 150.) The present license contained no such words and was purely a personal license to the complainant. Consequently the receiver could not acquire it.

If the owner of the legal title to the patent had not been made a party to the suit, undoubtedly the bill by the complainant could not be sustained against the other defendants. A mere licensee cannot sue strangers who infringe. In such a case redress is obtained through or in the name of the owner of the patent. But there is no reason or authority for the proposition that a licensee who has the exclusive right to manufacture and sell a patented article cannot maintain a suit in equity against the owner of the patent, if the latter is guilty of an infringement by making or selling himself, to redress the wrong occasioned thereby or that such a suit does not arise under the patent laws of the United States. The case of *Littlefield* v. *Perry* (7 O. G., 964; 21 Wall., 205, 223) is a direct authority in favor of the right of the licensee to maintain such an action. In that case the Supreme Court said:

A court of equity looks to substance rather than form. When it has jurisdiction of the parties, it grants the appropriate relief without regard to whether they come as plaintiff or defendant. In this case the person who should have protected the defendant against all infringements has become himself the infringer. He held the legal title to the patent in trust for his licensees. He has been faithless to his trust, and courts of equity are always open for the redress of such a wrong. This wrong is an infringement. Its redress involves a suit, therefore, arising under the patent laws, and of that suit the circuit court has jurisdiction.

If the licensees' rights have been infringed by the owner and third persons confederating with the owner, there is no reason why all the infringers should not be

joined as defendants. *Perry* v. *Littlefield*, (17 O. G., 51; 17 Blatchf., 272, 285.) In such a case it is quite immaterial to the other defendants whether the owner, when made a party to the suit, is a complainant or a defendant. It suffices, so far as they are concerned, that all the parties are present who have any interest in the controversy, and that a decree will definitely determine their rights as between themselves and the owner of the patent, as well as between themselves and the complainant.

The bill in this case alleges a combination between the defendants to deprive the complainant of the benefits and advantages of his license, and the evidence shows that the license granted by Asa L. Shipman to his sons, the other defendants, was granted by him and procured by them for the paramount purpose of preventing the complainant from enjoying the monopoly conferred by his license. The defendants therefore are joint infringers. We conclude that there is no impediment arising from the fact that the complainant is merely a licensee to preclude him from obtaining the relief sought by his bill.

The proof of infringement of the patents is very meager, and we find no evidence in the record that the pens made by the defendants infringe any of the claims of either patent, except the first claim of Patent No. 307,785. Undoubtedly the defendants, in manufacturing their pens, intended to copy the pens made by the complainant; but the record does not show whether the pens made by the complainant embodied any of the inventions of the other claims.

To sustain the defense of want of novelty, the defendants have set up in their answer and offered in evidence a large number of patents prior in date to those of the complainant. In the absense of any expert testimony to explain these patents or indicate what they contain tending to negative the novelty of the complainant's patents, we do not feel called upon to examine them. There may be cases in which the character of the invention has so little complexity that such expert testimony is not necessary to aid the court in understanding whether one patent, or several patents considered together, describe the devices or combination of devices which are the subject-matter of a subsequent patent; but this is not one of them.

The defendants also introduced in evidence a pamphlet entitled "An Exposé of the Assumptions and Business Methods of a Dealer and Reputed Inventor," consisting of some twenty-five printed pages, published in 1886. This pamphlet was prepared and published by a rival pen-manufacturer apparently for the purpose of discrediting the inventions of the complainant and his personal character and business methods. The author was called as a witness for the defendants, and asked this question:

Does this pamphlet, so far as it refers to the patents which you have studied, correctly express your views respecting the same?

The witness answered:

In so far as it goes, I suppose it does. It was so intended.

The pamphlet was then offered in evidence, and made an exhibit in the cause, against the objections of the complainant. The statements contained in this pamphlet are relied upon by the defendants as evidence upon the issue of novelty. We decline to consider anything contained in it as competent evidence upon this issue. The counsel for the complainant was justified in refusing, as he did, to cross examine the witness in regard to its contents. The greater part of it was scandalous matter, entirely irrelevant to the present controversy, and he was under no obligation to undertake to read and analyze its contents to see whether it contained anything bearing upon the issue worthy of a cross-examination.

As to the defense resting upon the prior invention of Fisher, it suffices to say that no such defense is set up in the answer, and if all that is asserted in respect to the defense is true only the third claim of Patent No. 307,735 would be defeated by it.

We conclude that the complainant is entitled to a decree for an accounting and an injunction. The decree of the circuit court is reversed, with costs, and the cause remanded to that court with directions to enter a decree for the complainant in conformity with this opinion.

## U. S. Circuit Court—Northern District of New York.

AMERICAN PATENTS COMPANY *et al.* v. DE BEER.

*Decided July 21, 1893.*

1. BROWN—MACHINE FOR MAKING BALLS OUT OF LEATHER SCRAPS AND SIMILAR ARTICLES—WANT OF PATENTABILITY.
Letters Patent No. 216,305, dated June 10, 1879, issued to Samuel Brown, for a machine for making balls out of leather scraps and similar material by pressure, examined in view of the state of the art, and *Held* that it did not require invention to make a machine with a cup-shaped die—a die with a cavity "somewhat less than a hemisphere."
2. SAME—SAME.
*Held*, further, that all that was necessary to do after observing that the ball pressed in a round mold expanded upon removal on the line of pressure would be to compress the ball into a space less than a sphere, so that the expansibility of the material would cause it to expand into a round ball, and this was obviously to be done by making the dies shallower.

FINAL hearing in equity.

*Mr. Alfred W. Kiddle* for the complainants.

*Mr. Andrew J. Nellis* for the defendant.

COXE, *J.*:

This is an action of infringement founded upon Letters Patent No. 216,305, granted to Samuel Brown, June 10, 1879, for a machine for making balls out of leather scraps and similar material by pressure.

The object of my invention is to produce a ball of accurate and uniform shape with great rapidity and ease of manipulation.

The scraps to be pressed are placed in a bell-mouthed vertical cylinder, in which move two closely-fitting dies having a cavity which is somewhat less than a hemisphere. Of these the patentee says:

The dies A and A′ are preferably made of steel, and fit very accurately in the cylinder C. Their edges are sharp, and the cavity in each, though a portion of a true sphere, is somewhat less than a hemisphere, so that when the two are brought in contact, as shown in Fig. 2, the mold formed by them nearly resembles in shape an oblate spheroid. This is an important feature of my improvement, since the expansion of the material when the pressure is released tends to loosen and throw out the ball, instead of binding it tightly within the die, as is the case when the cavity in each is a true hemisphere.

When pressure is applied the material is compressed in the mold formed by the two dies into the shape of an oblate spheroid. The upper die is then lifted and the ball is forced up and out of the cylinder by raising the lower die. After the pressure has been removed the elasticity of the material makes the ball assume a spherical shape. In short, the leather scraps are put into a cylinder and pressed between dies into the desired shape. This is all.

The claims involved are as follows:

1. In a machine for making balls from scraps or other elastic material by pressure, a die having its cavity substantially of the form specified and shown, whereby the expansion of the material on the removal of pressure frees the ball from the die.
2. In a machine for making balls from scraps or other elastic material by pressure, a die having air-holes, substantially as and for the purpose set forth.
3. In combination with the dies, closely fitting therein, the cylinder C having a beveled or flaring mouth, substantially as described and shown.

The defenses are want of novelty and patentability, non-infringement, and insufficiency of specification.

If the record were not full of machines operating on principles similar to the patented machine, the court would take judicial knowledge of the fact that the process of pressing material to be molded between two dies of the desired shape is old. It is unnecessary to consider these machines, for it was conceded at the argument that the precise structure shown and described would be devoid of patentability if the cavity formed by the dies when brought together were a true sphere. This concession is in exact accordance with the proof. The simple question is: Did it require invention to make a cup-shaped die—a die with a cavity "somewhat less than a hemisphere?"

This is not a patent for a process or a product, but for a die. Patentability must be found, therefore, if at all, in the die or mold. Soap or wax or celluloid could be molded in the patented machine with perfect impunity. If this identical machine had been used for pressing such materials—and similar machines did exist—could Brown have obtained a patent for it simply because he used it to press leather instead of wax? Assuredly not.

A chemist may make a new and useful compound in a mortar a century old; but he is not entitled to a patent for the mortar.

There is nothing new about the machine of the patent. It operates in precisely the same way whether it presses clay or pulp, wax or leather.

If the theory of the complainants is correct, the next person who uses such a machine, on discovering that the material which he has occasion to compress contracts on the line of pressure, may make the dies "somewhat 'more' than a hemisphere" and have a patent for that.

There was no invention in making a cup-shaped mold; but it is urged that in the art of ball-making, the object being to produce a round ball, the mechanic would naturally make a round mold in which to compress the material; that such a mold would not operate successfully, because when the pressure is taken off the material expands into an elongated ball, and that it required invention to make a mold which produced a perfectly round ball. Conceding that such an argument can be legitimately applied to a claim which is not for a ball or for a process of making balls, but is limited to a die of designated conformation, the conclusion by no means follows. Would it not occur to the ordinary workman, after he had removed the ball from the round mold and had observed that it expanded on the line of pressure, that the proper thing to do would be to compress it into a space less than a sphere, so that the resiliency of the material would cause it to expand into a perfect ball? When he had discovered that the round mold would not squeeze the material tight enough, the perfectly obvious thing for him to do was to squeeze it tighter. This could only be done by making the dies shallower.

The court is of the opinion that the first claim is void for want of patentable novelty. (*Butler* v. *Steckel*, 137 U. S., 2, 11 Sup. Ct. Rep., 25; *Baumer* v. *Wild*, 53 Fed. Rep., 373; *Brush* v. *Fox*, 38 Law and Eq. Rep., 1; *Hailes* v. *Stove Co.*, 8 Sup. Ct. Rep., 262; *Marchand* v. *Emken*, 132 U. S., 195.)

The second claim is for an air-hole, and the third is for a bell-mouthed cylinder in combination with the dies. Of course there is no invention in making an air-hole or a cylinder with a flaring mouth.

The bill is dismissed.

## U. S. Circuit Court—District of New Jersey.

BAINBRIDGE *et al.* v. KITCHELL EMBOSSING COMPANY.

*Decided July 17, 1893.*

BAINBRIDGE.

Letters Patent No. 452,911, dated May 26, 1891, issued to Richard W. Bainbridge for an "improvement in material for picture-mats," *Held*, in view of the prior state of the art to be void for want of patentable invention.

*Messrs. Cowen, Dickerson, Nicoll & Brown* for the appellants.

*Mr. Henry D. Donnelly* for the appellee.

ACHESON, *J.*:

This bill charges infringement of Letters Patent No. 452,911, dated May 26, 1891, granted to Richard W. Bainbridge for an "improvement in material for picture-mats."

In the specification the patentee states that the—

improvement consists in a picture-mat material composed of a backing or body of soft paper and an embossed facing attached thereto,

and that—

preferably there will be a facing on each side of the soft paper.

He further says:

By this improvement I am enabled to produce a material of ornamental appearance sufficiently thick to form a mat and yet of such character as to be readily cut to the shape requisite for a mat.

Describing the manner in which the mat material is made, the specification states:

A designates a number of sheets of soft paper forming a backing or body, and $A' A^2$ designate facings attached thereto. The different sheets or layers of the paper constituting the backing or body, may be united by paste or other adhesive substance, and the facings may be attached in the same way to the backing or body.

It is further stated that—

the backing or body gives the thickness desired for a mat, and being soft enables any one to readily cut through it to form a mat.

It is also set forth that—

the embossing of the facings $A' A^2$ is done after their attachment to the backing or body A,

and that this is possible because the material forming the backing or body is of such a soft character that it will serve as the equivalent of a counter-die, and consequently enable the embossing of each facing to be done by a single die. This is said to be very important, because the material composed of the backing or body and facing may be rolled out flat after being

united, which would be impossible if the embossing were done before the attachment of the facing, for the reason that the operation of rolling out the material flat would in such case smooth out the embossing. This is the whole substance of the specification.

The claims of the patent are as follows:

1. As a new article of manufacture, a material for a picture-mat, having a backing or body portion consisting of layers of soft paper united together by an adhesive substance and a facing of ornamental paper secured thereto, substantially as specified.
2. As a new article of manufacture, a sheet of material for picture-mats, composed of a backing or body of soft material and facings of ornamental paper attached to the outer sides thereof, substantially as specified.
3. The process of making material for picture-mats, consisting in forming a backing or body of suitable soft paper and attaching thereto a facing of ornamental paper and in subsequently embossing such paper, the backing or body serving as a counter-die, substantially as specified.

The defendant, among other defenses, sets up anticipation, and in one instance at least that defense has been made out. It is very clearly proved by trustworthy and uncontradicted testimony that in the years 1887 and 1888, the dates being fixed by book entries, before the date of Bainbridge's alleged invention, the A. M. Collins Manufacturing Company, of Philadelphia, made for and sold and delivered to George Barrie, of Philadelphia, and to Allen & Ginther, of Richmond, Va., mat-boards for pictures, in considerable quantities, which were made by pasting together several sheets of soft paper to form the body of the mat, which was then faced with ornamental paper and the facing subsequently embossed without the use of a counter-die. The process of manufacture there pursued was identical with the method set forth in the Bainbridge patent, and the article produced, of which original specimens are exhibits in this case, corresponds substantially with the description of the patent. Hirner, a mat-maker, who cut a portion of that material into picture-mats for Barrie, testifies that—

it was an easy-cutting board; it hadn't a hard inner surface to it.

The rebutting proofs really go no farther than this, that these exhibits are inferior to the article now manufactured by the plaintiffs; but it appears that the plaintiffs are using "wood pulp" or "wood-pulp board" for their backing or body, and in their printed brief they say:

Our position is that the patent is really for a mat material having a backing or body of wood pulp and a facing or facings applied thereto and embossed after their union, this material being superior to any other ever produced for the same purpose.

Of this, however, the patent contains not a hint. Moreover, it appears that the material spoken of in the evidence indifferently as "wood pulp" and "wood-pulp board," which is made of different thicknesses, as desired, was a well-known article on the market at the time of Bainbridge's alleged invention, and it has long been used to form the backing or body of card and mat boards; and it was no unusual thing for mat-makers to paste together several sheets of wood-pulp board to form a thick mat. It was old to form the middles of card and mat boards out of straw board, a soft material, and also of layers of soft paper pasted together. It was common to face the mat material made in any of these ways by pasting thereon plain ornamental paper or embossed paper. Furthermore, it is shown that as early as 1873, and since, De Jonge & Co., in the city of New York, made mat material for pictures out of wood-pulp board and at first faced the material with tinted paper and embossed the paper after it was pasted thereon; but subsequently they omitted the tinted paper and coated the wood-pulp board and embossed the coating.

It will be perceived that the patent in suit gives no particular instructions as to the method of embossing and suggests no new instrumentalities. It merely states that by reason of the softness of the body of the material the embossing can be done by a single die; but that was no patentable discovery, and, in fact, was not new in practice. Aside from the mat material made by the A. M. Collins Manufacturing Company, it appears that prior to Bainbridge's alleged invention bristol-boards, although composed of sheets of hard paper, were embossed without a counter-die. Again, the patents to George W. Ray, No. 54,404, No. 61,100, and No. 63,177, dated, respectively, May 1, 1866, January 8, 1867, and March 26, 1867, disclosed a process of embossing paper and materials made out of paper without the employment of a counter-die. As far as I can see, there is no substantial difference between the process of embossing shown by Ray and the method actually practiced by the plaintiffs and the defendant, respectively. The following extract is from the cross-examination of Mr. Bainbridge, the patentee, when on the stand in this case:

142. X-Q. How long have you been familiar with the process of embossing papers between plates on one of whose faces patterns consisting of cloth were pasted, and the running the same between heavy rollers?
A. About ten years.
143. X-Q. How does that process differ from the process which you employ for the purpose of embossing your material?
A. The process is the same.

The defendant presents a number of other prior patents here pertinent, but which I will not particularly mention. As already seen, the evidence with respect to the material made by the A. M. Collins Manufacturing Company furnishes a complete defense to the bill; but independent of that instance of clear anticipation, the proofs, I think, well warrant the conclusion that, in view of the prior state of the art, the patent in suit did not disclose any patentable invention or discovery.

Let a decree be drawn dismissing the bill, with costs.



THE
# OFFICIAL GAZETTE
OF THE
# United States Patent Office.
[BY AUTHORITY OF CONGRESS.]

VOL. 64.—No. 6. TUESDAY, AUGUST 8, 1893. PRICE—$5 per year.

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## Attorneys.

DEPARTMENT OF THE INTERIOR,
OFFICE OF THE SECRETARY,
*Washington, D. C., August 4, 1893.*

SIR: The Secretary of the Interior has ordered that John W. Van Natta, of Erie, Pa., be not recognized after this date as agent or attorney in the prosecution of any claim or other matter before this Department or any Bureau thereof.

Very respectfully,

J. J. S. HASSLER,
*Chief Clerk.*

The Commissioner of Patents.

## Indexes to Patents on Electricity.

Indexes to patents relating to electricity, covering the period of time from July 1, 1882, to June 30, 1890, have been issued, and are for sale. These indexes, arranged alphabetically, numerically, and by classes, comprise the following volumes, the prices of which are given below:

Vol. 1. Index to patents relating to electricity granted by the United States prior to June 30, 1881, with an appendix, July 1, 1881, to June 30, 1882. One volume, 250 pages. In paper covers, $3; bound, $5.
Vol. 2. Appendix No. 2, July 1, 1882, to June 30, 1883. One volume, 80 pages. In paper covers, $1.50.
Vol. 3. Appendix No. 3, July 1, 1883, to June 30, 1884. One volume, 60 pages. In paper covers, $1.50.
Vol. 4. Appendix No. 4, July 1, 1884, to June 30, 1885. One volume, 60 pages. In paper covers, $1.50.
Vol. 5. Appendix No. 5, July 1, 1885, to June 30, 1886. One volume, 54 pages. In paper covers, $1.50.
Vol. 6. Appendix No. 6, July 1, 1886, to June 30, 1887. One volume, 58 pages. In paper covers, $1.50.
Vol. 7. Appendix No. 7, July 1, 1887, to June 30, 1888. One volume, 68 pages. In paper covers, $1.50.
Vol. 8. Appendix No. 8, July 1, 1888, to June 30, 1889. One volume, 78 pages. In paper covers, $1.50.
Vol. 9. Appendix No. 9, July 1, 1889, to June 30, 1890. One volume, 84 pages. In paper covers, $1.50.
Vol. 10. Appendix No. 10, July 1, 1890, to June 30, 1891. One volume, 96 pages. In paper covers, $1.50.
Vol. 11. Appendix No. 11, July 1, 1891, to June 30, 1892. One volume, 86 pages. In paper covers, $1.50.

## Notice of Interference.

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
*Washington, D. C., July 13, 1893.*

*William J. Bennetts, his heirs, assigns, or legal representatives, take notice:*

An interference having been declared by this Office between the application for patent of Arthur W. Robinson, of Bucyrus, Ohio, and a patent to William J. Bennetts, of Bucyrus, Ohio, and the notices of said declaration, mailed by the Patent Office in the usual manner to the said William J. Bennetts, having been returned undelivered, notice is hereby given to the said William J. Bennetts, his heirs, assigns, or legal representatives, that if he or they desire to contest the said interference they should immediately put themselves in communication with the Commissioner of Patents, in order that the notices heretofore sent by and returned to the Office may be forwarded to them. This notice will be published in the OFFICIAL GAZETTE for six consecutive weeks.

JOHN S. SEYMOUR,
*Commissioner.*

## Construction of Statutes Relating to the Registration of "Prints" and "Labels."—Amended.

In the publication of this Office entitled "United States Statutes Concerning the Protection and Registration of Trade-Marks and Labels, with the Rules of the Patent Office Relating Thereto, Edition of January 4, 1892," the following matter on page 17 is hereby canceled:

The words "prints" and "labels," as used in this act, so far as it relates to registration in the Patent Office, are construed as synonymous, and are defined as any device, picture, word or words, figure, or figures (not a trade-mark) impressed or stamped directly upon the articles of manufacture, or upon a slip or piece of paper or other material to be attached in any manner to manufactured articles, or to bottles, boxes, and packages containing them, to indicate the contents of the package, the name of the manufacturer, or the place of manufacture, the quality of goods, directions for use, etc.

By the words "articles of manufacture" (to which such print or label is applicable by this act) is meant all vendible commodities produced by hand, machinery, or art.

But no such print or label can be registered unless it properly belongs to an article of commerce, and be as above defined; nor can the same be registered as such print or label when it amounts to a lawful trade-mark, or when its use in connection with the article to which it is applied is arbitrary or fanciful.

And the following is substituted therefor:

These sections of statute (referring to sections 3, 4, and 5 of the act of Congress relating to patents, trade-marks, and copyrights, approved June 18, 1874, 18 Statutes at Large, p. 78) are construed as authorizing the registry of "prints" and "labels." A label is a device or representation borne by an article of manufacture or vendible commodity. A print is a device or representation not borne by an article of manufacture or vendible commodity, but in some fashion pertaining thereto—such, for instance, as a pictorial advertisement thereof. A label cannot be registered if it bear a device capable of sequestration as a trade-mark until after such device is registered as a trade-mark. Both labels and prints, in order to be entitled to registry, must be intellectual productions in the degree required by the copyright law.

The note on page 19 is canceled.

## The Official Gazette.

THE OFFICIAL GAZETTE is published every Tuesday, simultaneously with the weekly issue of patents. From January 1, 1872, (the commencement of its publication,) to June 30, 1883, it was published and bound in semi-annual volumes; since July 1, 1883, in quarterly volumes. All subscriptions must commence with the beginning of a volume; none taken for less than three months. Terms: To all subscribers within the United States and Canada, $5 per annum; to foreign subscribers, $7; single copies, 10 cents; bound semi-annual volumes, (prior to June 30, 1883,) full sheep, $4 per volume; bound quarterly volumes, (subsequent to July 1, 1883,) full sheep, $2.75 per volume. No club rates. *Payment in advance.* All orders should be addressed to "The Commissioner of Patents, Washington, D. C."

## Issue of August 8, 1893.

| | |
|---|---|
| Patents | 423—No. 502,603 to No. 503,114, inclusive. |
| Designs | 21—No. 22,672 to No. 22,692, inclusive. |
| Trade-Marks | 25—No. 23,452 to No. 23,477, inclusive. |
| Labels | None. |
| Prints | None. |
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| Total issue | 472 |

TO CITIZENS OF THE UNITED STATES.

| States. | Patents and Designs. | Trade-Marks and Labels. | States. | Patents and Designs. | Trade-Marks and Labels. |
|---|---|---|---|---|---|
| Alabama | 2 | .... | Nevada | .... | .... |
| Arizona Territory | .... | .... | New Hampshire | 4 | .... |
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| California | 17 | 1 | New Mexico Ter | .... | .... |
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| Maine | 2 | .... | Washington | .... | .... |
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| Michigan | 15 | .... | Wyoming | .... | .... |
| Minnesota | 5 | .... | U. S. Army | .... | .... |
| Mississippi | 1 | .... | U. S. Navy | .... | .... |
| Missouri | 15 | 1 | | | |
| Montana | 1 | .... | Total to citizens of the United States | 403 | 23 |
| Nebraska | 6 | .... | | | |

TO CITIZENS OF FOREIGN COUNTRIES.

| Countries. | Patents and Designs. | Trade-Marks and Labels. | Countries. | Patents and Designs. | Trade-Marks and Labels. |
|---|---|---|---|---|---|
| Austria-Hungary | 2 | .... | Mexico | .... | .... |
| Belgium | .... | .... | Netherlands | .... | .... |
| Bermuda | .... | .... | Newfoundland | .... | .... |
| Brazil | .... | .... | New South Wales | .... | .... |
| Canada | 9 | .... | New Zealand | 1 | .... |
| Ceylon | .... | .... | Norway | 1 | .... |
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| Denmark | .... | .... | Scotland | .... | .... |
| Ecuador | .... | .... | South Australia | .... | 1 |
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| France | 4 | .... | Sweden | .... | .... |
| Germany | 11 | 1 | Switzerland | 1 | .... |
| India | .... | .... | Victoria | .... | .... |
| Ireland | .... | .... | | | |
| Italy | .... | .... | Total to citizens of foreign countries | 40 | 3 |
| Japan | .... | .... | | | |

## APPLICATIONS UNDER EXAMINATION.

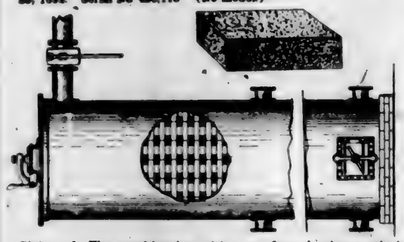
*Condition at Close of Business August 1, 1893.*

| Division No. | Subjects of invention. | Oldest new application and oldest action by applicant awaiting office action. New. | Amended | No. of applications awaiting action. |
|---|---|---|---|---|
| | *In arrears.—Under one month.* | | | |
| 31 | Gas, Painting, Leather, Tanning, Alcohol, Oils, Fats, and Glue, etc. | July 20 | July 31 | 18 |
| 2 | Farm Stock, Products, etc | July 3 | July 28 | 100 |
| 13 | Metal-Working, Arms and Projectiles, etc. | July 3 | July 24 | 69 |
| | *Between one and two months.* | | | |
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| 12 | Mechanical Engineering, Stores, etc. | June 3 | July 25 | 175 |
| 27 | Brushing and Scrubbing, Grinding and Polishing, Laundry, etc. | June 10 | July 20 | 128 |
| 19 | Stoves and Furnaces | June 2 | July 20 | 259 |
| 11 | Boots and Shoes, Clasps, Buckles, and Buttons, Harness, Hose and Belting. | June 3 | July 18 | 275 |
| 10 | Carriages and Wagons and Railway-Cars. | June 1 | July 17 | 384 |
| 30 | Lamps, Gas-Fittings, Type-Writers, Matrix-Making Machines. | June 17 | July 8 | 194 |
| 6 | Chemistry, Medicines, Fertilizers, Preserving, Photography, Sugar and Salt, etc. | June 15 | July 7 | 133 |
| | *Between two and three months.* | | | |
| 24 | Sewing-Machines and Apparel | May 22 | July 26 | 103 |
| 3 | Metallurgy, Metal Founding, Coating, Annealing and Tempering, Electro-Chemistry, etc. | May 1 | July 26 | 183 |
| 8 | Furniture, Toilet, Umbrellas, and Canes, etc. | May 22 | July 18 | 307 |
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| 5 | Fine Arts, Stationery, Bookbinding, Music, etc. | Apr. 12 | June 19 | 286 |
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| 22 | Fire-Arms, Navigation, Signals, etc. | Mar. 16 | July 18 | 272 |
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| | *Between eight and nine months.* | | | |
| 26 | Electricity, Generation, Distribution, etc. | Nov. 21 | June 3 | 367 |
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| | Designs | July 26 | July 31 | 11 |
| | Trade-Marks | July 27 | July 25 | 45 |

# PATENTS

## GRANTED AUGUST 8, 1893.

**502,693. TILE FOR USE IN APPARATUS FOR THE MANUFACTURE OF GAS.** JOHN B. ARCHER, Washington, D. C. Filed Mar. 28, 1892. Serial No. 426,110. (No model.)



*Claim.*—1. The combination with a gas fixer, having a suitable casing and gas inlets and outlets, of a filling of tiles each of which is composed essentially of refractory material and iron, as and for the purposes described.

2. The combination with a gas fixer, having a suitable casing and gas inlets and outlets, of a filling of titles each of which is composed essentially of fire clay and iron, as and for the purposes described.

3. A brick or tile, for use in apparatus for the manufacture of gas, consisting of fire clay and small pieces or filings of iron mixed together and baked, substantially as and for the purposes described.

**502,694. SHOE-LACE FASTENER.** WILLIAM D. BALDWIN, Washington, D. C., administrator of Frederick H. Smith, deceased, assignor to Isabella Sheppard Smith, Bromley, England. Filed Feb. 2, 1893. Serial No. 460,653. (No model.)



*Claim.*—1. A grip consisting of two coned disks with their apices placed end to end, and having central connecting pin and with a groove between them, attaching devices for the grip, and a hooked arm $a^3$ extending laterally from the outer edge of one of the disks and turned inwardly and extending toward the plane of the other disk.

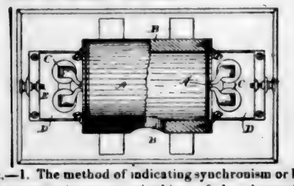
2. A grip consisting of two coned disks having radial ribs or projections with their apices placed end to end, and having a central connecting pin and having a groove between them, attaching devices carried by the disks, and a pip or projection $b^3$ on one of the disks, within its outer edge and extending toward the other disk to retain the lace or cord in the groove, substantially as described.

3. A grip consisting of two coned disks with their apices placed end to end, and with a groove between them, securing devices carried by the disks, a hooked arm $a^3$, on the lower disk projecting from the outer edge thereof and extending toward the upper disk and a projection $b^3$ on the upper disk extending toward the lower one and acting in conjunction with the arm $a^3$ to retain the lace or cord in the groove, substantially as described.

4. A grip consisting of two coned disks with their apices placed end to end and with a groove between them, attaching devices carried by the disks, a hook-like arm $a^3$ on the lower disk and extending laterally therefrom and turned toward the upper disk to retain the lace in the groove, and a projection within the disks to prevent the crossing of the lace or cord in the groove, substantially as described.

5. A grip consisting of the upper and lower disks $a$ and $b$, a rivet $c$, connecting them, said lower disk having radial ridges $a'$ on its inner face, and prongs $a^3$ on its outer face and having also a hooked arm $a^3$, projecting laterally from its outer edge and turned toward the upper disk and said upper disk having radial ridges $b'$ on its inner face and also projections $b^3$ and $b^3$, on its inner face, substantially as described.

**502,695. SYNCHRONISM-INDICATOR.** LOUIS BELL, Boston, Mass., assignor to the General Electric Company, of New York. Filed Dec. 24, 1892. Serial No. 456,236. (No model.)



*Claim.*—1. The method of indicating synchronism or lack of synchronism between two or more machines of the alternating current type, which consists in setting up sound waves corresponding in periodicity with the current waves of the respective machines, which sound waves are free to interfere with one another and give rise to beats if of unequal periodicity so that the resulting sound beats indicate inequality in speed of the machines, as set forth.

2. The method of indicating synchronism or lack of synchronism between two or more electric machines of the alternating current type, which consists in setting up by the magnetic effects of the currents of such machines distinctive series of sound waves corresponding respectively in periodicity with the current waves of such different machines, which sound waves by their interference, if unequal in period, give rise to beats, and thereby indicate audibly the presence or absence of synchronism, as described.

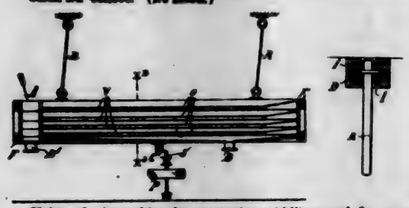
3. An indicator for indicating synchronism between two or more alternating current electric machines consisting of diaphragms or vibrators in an acoustic medium, and means whereby each machine imparts to a corresponding diaphragm or vibrator, vibrations corresponding in periodicity to the current waves of such machines, for the purpose described.

4. An indicator for indicating synchronism or lack of synchronism between two or more alternating current machines which consists of separate magnets responding respectively to the current waves of the different machines, and a magnetic diaphragm in intimate magnetic relation to each such magnet, whereby equality or inequality in the periods of the sound waves caused by the diaphragms may be detected by the ear to indicate synchronism of the machines.

5. An indicator for indicating synchronism between two or more alternating current machines consisting of magnetic diaphragms placed opposite one another in a more or less confined sounding chamber, a magnet in intimate magnetic relation to each diaphragm, and circuit connections from the different machines whereby the magnet impulses in the magnets respond accurately to the current waves of the respective machines.

6. The combination in an indicator for the purpose described, of transformers the primaries of which respectively are in circuit with the machines, and magnets connected respectively in the secondary circuits thereof, with means for indicating audibly synchronism of the machines, comprising vibrators whose vibrations are caused by and keep time with the magnetic impulses produced in said magnets by reason of their connections with the machines.

**502,696. MACHINE FOR SEPARATING MIDDLINGS AND FLOUR.** HANS BETTENSON, Regensburg, Germany. Filed Oct. 11, 1892. Serial No. 448,866. (No model.)



*Claim.*—1. A machine for separating middlings and flour, comprising a frame containing horizontal sieves, means for vibrating said frame in a horizontal plane, rods, provided with elastic joints, for holding the frame, covers above the sieves adapted to oscillate automatically up and down, and means for delivering the particles driven through the meshes of the sieves and those remaining on the same through separate chutes, for the purposes set forth.

2. In a machine of the kind described: the frame F, having longitudinal superposed side channels H and $H^1$, central channel $H^2$, openings E affording a communication between both, sieves V, and covers O above the same, said covers being fastened longitudinally to the frame F and inclined transversely to the same, substantially as described, for the purpose specified.

3. In a machine of the kind described, the rods R provided at their ends with collars D, held between two buffers of an elastic material arranged within a casing O, for the purpose set forth.

4. In a machine of the kind described, the rods R, provided at their ends with collars D, held between two rings of an elastic material arranged within a casing O, substantially as and for the purpose described.

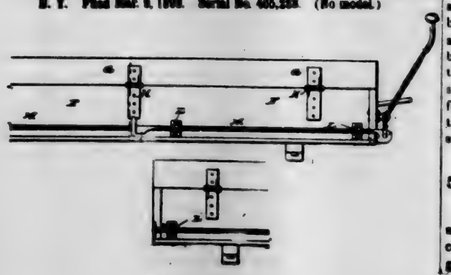
5. In a machine of the kind described, the suspension rods R rigidly connected on their ends to corrugated plates E, for the purpose as described.

**502,697. PLOW.** JOHN RUSCH, Elmendorf, Tex. Filed Dec. 23, 1892. Serial No. 456,531. (No model.)



*Claim.*—The combination with the plow beam having horizontal shoulder at its front end, of the loop secured to the front end of said beam, the clamp adjustable on the loop with its rear ends supported on said shoulder, and having coincident slots in its parallel portion the vertical bar passing vertically through the slots said clamp, the set screw passed through the front portion of said clamp and bearing against the vertical bar and binding the same against the front end of the beam the standard, and the draft rod pivotally connected with the said standard and at its forward end carrying the draft appliances and loosely connected with the vertical bar, substantially as specified.

**502,698. DUMPING-WAGON.** FRANKLIN BOOKER, Far Rockaway, N. Y. Filed Mar. 9, 1892. Serial No. 425,253. (No model.)



*Claim.*—1. In a dumping wagon, the wagon body having opposite bottom inclines and side openings, swinging spring-closed doors arranged to normally inclose said side openings, and locking devices for said doors, substantially as set forth.

2. The combination of a wagon body having opposite diverging bottom inclines, and side openings, an angular wear plate capping the meeting edges of said inclines, corresponding wear strips or plates at the lower bottom edges of said inclines, stationary guides arranged at opposite sides of the body, spring closed doors arranged to move over said guides and to inclose said openings, and locking devices for said doors, substantially as set forth.

3. A wagon body having opposite longitudinal side openings, off-standing curved guide arms projecting outwardly from opposite bottom sides of the body, and opposite swinging spring closed side doors arranged to work over said guide arms, substantially as set forth.

4. In a dumping wagon, the wagon body having opposite side openings, opposite off-standing curved guide arms having a series of perforations therein, opposite longitudinal side doors hinged at their upper edges on spring hinges to the bottom edges of the body sides and normally closed by said hinges, said doors having perforations embracing the guide arms over which they swing, limiting pins adapted to be inserted in the perforations of said guide arms, and locking devices for said doors, substantially as set forth.

5. In a dumping wagon, the combination of the body having opposite side openings, opposite off-standing curved guide arms having locking notches in their upper edges and adjustable limiting pins, opposite swinging spring-closed side doors inclosing the opposite side openings of the body and having perforations loosely embracing the curved guide arms over which they swing, a series of aligned guide brackets attached to the doors, opposite longitudinal sliding locking bars moving in said guide brackets and having intermediate locking lugs adapted to engage and disengage the locking notches in said guide arms, and a locking device for one end of said locking bars, substantially as set forth.

6. In a dumping wagon, the combination of the opposite off-standing guide arms having locking notches, the swinging side doors arranged to swing over said arms and carrying a series of guide brackets, a catch plate arranged at one end of the wagon body, and opposite longitudinal sliding locking bars having intermediate locking lugs and end inturned locking tongues adapted to engage and disengage the notch in said guide arms and said locking plates respectively, substantially as set forth.

7. In a dumping wagon, the combination of the opposite swinging side doors carrying guide brackets, opposite longitudinally sliding locking bars arranged to move in said brackets and having suitable locking devices and perforations at one end, and a suitably journaled rock shaft arranged at one end of the wagon body and having an upwardly extending handle lever and opposite crank ends adapted to engage the perforated ends of said locking bars when the side doors are closed, substantially as set forth.

**502,699. METHOD OF WEAVING ELASTIC FABRICS.** SAMUEL BROWN, Easthampton, Mass. Filed June 21, 1892. Serial No. 437,469. (Specimens.)

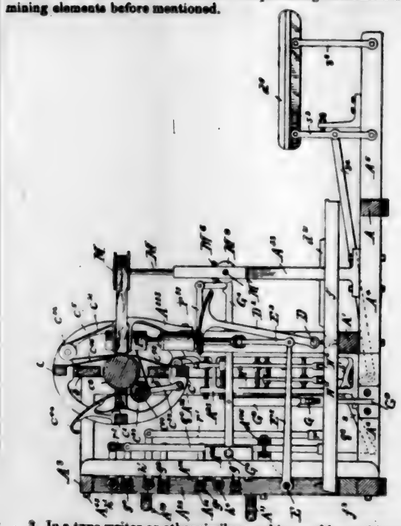


*Claim.*—The method of producing an elastic fabric having a superposed frill the body and frill being united at their longitudinal centers by a single weft thread, the same consisting in dividing the warps into four sets, two for the body some of which are elastic and two for the frill, then shedding the first set of body warps and the opposite set of frill warps, introducing a weft thread from left to right through the threads of both of said sets, then shedding the same sets of threads and returning the weft therethrough from right to left, then shedding both sets of body warps and passing the weft from left to right through all of the body threads of both sets, then shedding the second set of body warps and the opposite or first set of frill warps then passing the weft thread from right to left through both of said sets, then shedding the same two sets of warps and returning the weft thread from left to right, then shedding both sets of body warps and passing the weft thread from right to left through the said body warps, substantially as set forth.

**502,700. TYPE-WRITING MACHINE.** THADDEUS CAHILL, Washington, D. C. Filed May 5, 1892. Serial No. 431,869. (No model.)

*Claim.*—1. In a type writer or other similar machine, a movement synthesizer embracing (*a*) a plurality of independently reciprocating movement determining elements, and (*b*) a movement aggregator formed of parts positively connected for to-and-fro motion with each other and with the reciprocating movement determining elements before mentioned so that each movement, whether forward or backward, of any of the before mentioned movement determining elements, results in a corresponding motion of the movement aggregator.

2. In a type writer or other similar machine, and in combination, a plurality of keys; and a movement synthesizer embracing (*a*) a plurality of independently reciprocating movement determining elements corresponding with and controlled by the keys, and (*b*) a movement aggregator, formed of elements positively connected for to-and-fro motion with each other and with the reciprocating movement determining elements before mentioned.



3. In a type writer or other similar machine, and in combination, a type-form; and a movement synthesizer embracing (*a*) a plurality of independently reciprocating movement determining elements, and (*b*) a movement aggregator interposed between said reciprocating movement determining elements and the type-form, said movement aggregator being formed of parts positively connected for to-and-fro motion with the type-form, and with the before mentioned movement determining elements, and with each other, so that no considerable movement of the type-form can take place in the same arc or plane as that in which it moves in consequence of the action of the movement determining elements before mentioned, without a corresponding movement of one or more of said movement determining elements.

4. In a type writer or other similar machine and in combination, a plurality of keys; a type-form; and a movement synthesizer embracing (*a*) a plurality of independently reciprocating movement determining elements connected with, and controlled by, the keys, and (*b*) a movement aggregator interposed between said independently reciprocating movement determining elements and the type-form, said movement aggregator being formed of parts positively connected for to-and-fro motion with the movement determining elements before mentioned and with the type-form, and with each other, so that no considerable movement of the type-form can take place in the same arc or plane as that in which it moves in consequence of the action of the movement determining elements before mentioned, without a corresponding movement of one or more of the said movement determining elements.

5. In a type writer or other similar machine, and in combination a plurality of controllers, a part ultimately to be moved into different positions in the same arc or plane by the controllers before mentioned acting singly and in various combinations, and a movement synthesizer having (*a*) a plurality of independently reciprocating movement determining elements connected with the controllers before mentioned, and (*b*) a movement aggregator interposed between said movement determining elements and the before mentioned part ultimately to be moved into different positions, said movement aggregator being formed of parts positively connected for to-and-fro motion with the movement determining elements before mentioned, and with the part ultimately to be moved into different positions as before mentioned, and with each other, so that no considerable movement of the type-form (or other part ultimately to be moved), can take place in the same arc or plane as that in which it moves in consequence of the action of the movement determining elements before mentioned, without a corresponding movement of one or more of the said movement determining elements, before mentioned.

6. In a type writer or other similar machine, a movement synthesizer having a plurality of double-acting versed-sine transmitters.

7. In a type writer or other similar machine, and in combination, a plurality of controllers, a part to be moved into different positions in the same arc or plane by said controllers acting separately and acting together in various combinations; and a movement synthesizer, for this purpose, having a double-acting versed-sine transmitter connected with one of the controllers before mentioned and with the part to be moved into different positions as before mentioned.

8. In a type writer or other similar machine, and in combination, a plurality of keys; a type-form, to be moved into different positions in the same arc or plane by said keys acting singly and acting together in various combinations; and a movement synthesizer, for this purpose, having a double-acting versed-sine transmitter connected with one of the keys before mentioned and with the type form.

9. In a type writer or other similar machine and in combination, a plurality of controllers, a part to be moved into different positions in the same arc or plane by the separate and by the combined action of the controllers before mentioned; and a movement synthesizer interposed between the controllers before mentioned and the part to be by them moved into different positions, said movement synthesizer embracing a plurality of double acting versed-sine transmitters (for example, cranks and links, or pairs of links), each of said versed-sine transmitters being connected with one of the controllers before mentioned in such a manner that it is moved thereby, said versed-sine transmitters being positively connected for to-and-fro motion with the type-form in such a manner that each of said versed-sine transmitters communicates substantially the same movement to the type-form whether any other of said versed-sine transmitters is communicating motion to it or not, so that when a plurality of said versed-sine transmitters act simultaneously, they communicate to the type-form, a movement substantially equal to the sum of the movements which each communicates to it when acting singly.

10. In a type writer or other similar machine, and in combination, a plurality of keys; a type-form; and a movement synthesizer interposed between the keys before mentioned and the type-form, said movement synthesizer embracing a plurality of double acting versed-sine transmitters each of said versed-sine transmitters being connected with one of the keys before mentioned in such a manner that it is moved thereby, said versed-sine transmitters being positively connected with the type-form for to-and-fro motion in such a manner that each of said versed-sine transmitters communicates substantially the same movement to the type-form whether any other of said versed-sine transmitters is communicating motion to it or not, so that when a plurality of said versed sine-transmitters act simultaneously they communicate to the type-form a movement substantially equal in magnitude to the sum of the movements which each communicates to it when acting singly.

11. In a type writer or other similar machine, and in combination, a plurality of controllers, a part to be moved into different positions in the same arc or plane by said controllers acting separately and acting together in various combinations; and a movement synthesizer, for this purpose, having a plurality of double-acting versed-sine transmitters each formed by two stiff parts, lying normally substantially parallel or in line with each other, and being connected with each other, and with the part to be moved into different positions by the before mentioned controllers, and with one of said controllers, the controller serving to move the different parts of the versed-sine transmitter from their positions of parallelism or alignment with each other, so that they, by such their departure from parallelism or alignment with each other, move the type-form or other part to be moved into different positions by the controllers.

12. In a type writer or other similar machine, and in combination, a plurality of keys; a type-form; and a movement synthesizer having a plurality of double-acting versed-sine transmitters, each formed by two stiff parts lying normally substantially parallel or in line with each other, and being connected with each other, and with the type form, and with one of the keys, the key serving to move the different parts of the versed-sine transmitter from their positions of parallelism or alignment with each other, so that they, by such their departure from parallelism or alignment with each other, move the type-form.

13. In a type writer or other similar machine, and in combination, a plurality of controllers, a part to be moved into different positions in the same arc or plane by the separate and by the combined action of the controllers before mentioned; a movement synthesizer for the purpose including one or more double-acting versed-sine transmitters, ...mbination, formed of two stiff parts suitably connected with each other ...lity of finger said parts being fulcrumed or centered upon a fixed part, ... synthesizer. being fulcrumed or centered upon a movable part connected ... in combination, before mentioned part to be moved into different positi... movement synversed-sine transmitter being connected with one of the c... the type-form; ... carriage includ-

before mentioned so that said controllers impart motion to said versed-sine transmitter which in turn moves the part ultimately to be moved.

14. In a type writer or other similar machine, and in combination, a plurality of keys; a type-form; a movement synthesizer including one or more double-acting versed-sine transmitters formed of two stiff parts suitably connected with each other one of said parts being fulcrumed or centered upon a fixed point, the other being fulcrumed or centered upon a movable part connected with the type-form; said versed-sine transmitter being connected with one of the keys before mentioned so that said key imparts motion to the versed-sine transmitter, which in turn moves the type-form.

15. In a type writer or other similar machine, a movement synthesizer embracing (*a*) a movement aggregator, and (*b*) a plurality of independently reciprocating movement determining elements, positively connected for to-and-fro motion with the movement aggregator, and normally locked against the thrusts and pressures transmitted by the movement aggregator.

16. In a type writer or other similar machine, and in combination, a plurality of controllers, a part, ultimately to be moved into different positions in the same arc or plane by said keys, acting singly and acting together in various combinations; a movement aggregator, for this purpose, formed of parts positively connected for to-and-fro motion with the type-form or other part ultimately to be moved, and with each other; and reciprocating connections between the keys and the movement aggregator, normally locked against the thrusts and strains resulting from the operation of the device.

17. In a type writer or other similar machine, and in combination, a plurality of keys; a type-form, to be moved into different positions in the same arm or plane by said keys, acting singly and acting together in various combinations; a movement aggregator, for this purpose, formed of parts positively connected for to-and-fro motion with the type-form and with each other; and reciprocating connections beneath the keys and the movement aggregator, normally locked against the thrusts, strains or pressures resulting from the operation of the device.

18. In a type writer or other similar machine, and in combination, a plurality of controllers; a movement synthesizer embracing (*a*) a plurality of independently reciprocating movement determining elements connected with and controlled by the controllers before mentioned, and (*b*) a movement aggregator positively connected for a to-and-fro motion with the movement determining elements before mentioned; and a stop or stops for said movement determining elements; the parts being constructed, arranged and combined in such a manner that the movement determining elements before mentioned are first moved by the controllers, so that they effect a movement of the movement aggregator, and are then pressed by the controllers against the stop or stops before mentioned, so that they determine the movement of the movement aggregator, thus effected.

19. In a type writer or other similar machine, and in combination, a plurality of keys; a movement synthesizer embracing (*a*) a plurality of independently reciprocating movement determining elements connected with and controlled by, the keys, and (*b*) a movement aggregator positively connected for to-and-fro motion with the movement determining elements before mentioned; and a stop or stops for said movement determining elements; the parts being constructed, arranged and connected in such a manner that the movement determining elements before mentioned are first moved by the keys, so that they effect a movement of the movement aggregator, and are then pressed by the keys against the stop or stops before mentioned, so that they determine the movement of the movement aggregator thus effected.

20. In a type writer or other similar machine, and in combination, a plurality of controllers; a type-form; a movement synthesizer embracing (*a*) a plurality of independently reciprocating movement determining elements, connected with and controlled by the controllers before mentioned, and (*b*) a movement aggregator interposed between the before mentioned movement determining elements and the type-form, said movement aggregator being positively connected for to-and-fro motion with the type-form and with the movement determining elements before mentioned; and a stop or stops for the movement determining elements before mentioned; the parts being constructed, arranged and connected in such a manner that the movement determining elements before mentioned are first moved by the controllers before mentioned, so that they effect a movement of the type-form, and are then pressed by the controllers against the stop or stops before mentioned, and held firmly by the joint action of such stop and [illegible]ntrollers.

[illegible]In a type writer or other similar machine, and in combination, [illegible] of keys; a type-form; a movement synthesizer embracing [illegible]ty of independently reciprocating movement determining [illegible]nnected with the keys before mentioned, and (*b*) a move[illegible]gator interposed between said movement determining ele[illegible]se type-form, said movement aggregator being positively [illegible]r to-and-fro motion with the type-form and with the movement determining elements before mentioned; and a stop or stops for said movement determining elements; the parts being constructed, arranged and connected in such a manner that the aforesaid movement determining elements are first moved by the keys before mentioned, so that they effect a movement of the type-form, and are then arrested by the stop or stops, and held firmly by the joint action of such stop and the keys; so that they determine the movement of the type form thus by them effected.

22. In a type writer or other similar machine and in combination, a plurality of controllers; a part to be moved into different positions in the same arc or plane by the before mentioned controllers acting singly and acting together in various combinations; and a movement synthesizer for this purpose interposed between this controllers and the part ultimately to be moved thereby, and embracing (*a*) a plurality of independently reciprocating movement determining elements connected with the controllers before mentioned so that they (the aforesaid movement determining elements), are moved thereby, and (*b*) one or more levers positively connected for to-and-fro motion with the movement determining elements before mentioned and with the type-form or other part ultimately to be moved.

23. In a type writer or other similar machine, and in combination, a plurality of keys; a type-form to be moved into different positions in the same arc or plane by said keys acting singly, and acting together in different combinations; and a movement synthesizer for this purpose interposed between the key and the part ultimately to be moved thereby, and embracing, (*a*) a plurality of independently reciprocating movement determining elements connected with the keys before mentioned, so that they (said movement determining elements) are moved thereby, and (*b*) one or more levers positively connected for to-and-fro motion with the independently reciprocating movement determining elements before mentioned and with the type-form.

24. In a movement synthesizer for a type-writer or other similar machine, and in combination, a plurality of controllers, a part to be moved into different positions in the same arc or plane by the joint and several action of such controllers; and a lever interposed between said controllers and the before mentioned controlled part, one or more of the said controllers being connected with the lever at one point, one or more of said controllers being connected with the lever at another point, the type-form or equivalent being connected with the lever at a third point, so that the controllers are capable of acting each independently of the other to determine a movement of the type-form or equivalent, and jointly to determine a movement of the type-form compounded of their several movements.

25. In a type writer or other similar machine, and in combination, a plurality of keys; a type-form; and a lever interposed between the keys and the type form, one or more of the keys being connected with the lever at one point, one or more of the keys being connected with the lever at another point, and the type-form being connected with the lever at a third point, so that the keys are capable of acting each independently of the other to determine a movement of the type-form and jointly to determine a movement of the type form compounded of their individual movements.

26. In a type writer or other similar machine, and in combination, a plurality of controlling parts; and a selecting device having two levers, hereinafter termed for distinction's sake, the first lever and the second lever, said first lever being connected in a suitable manner with one or more of the controlling parts before mentioned at one point in its (said first lever's) length, for convenience' sake hereinafter termed the point $1^b$, and being also positively connected for to and fro motion with the second lever, at another point in its (said first lever's) length, for convenience hereinafter termed the point $1^c$; the second lever being connected with the first lever at one point in its (said second lever's) length as before mentioned, and being also suitably connected with one or more of the controlling parts before mentioned, in a suitable manner at another point in its (said second lever's) length; all the parts being constructed, arranged and connected in such a manner that the first lever has two simple motions and a compound motion to-wit, a simple motion on the before mentioned point $1^c$, as a fulcrum, when the controlling part or controlling parts connected with the aforesaid first lever at the point $1^b$ act; a simple motion on the point $1^b$, before mentioned, as a fulcrum when the controlling part or controlling parts before mentioned connected with the aforesaid second lever act; and a compound motion composed of the two motions before mentioned, when the controlling parts connected with said first and second levers act simultaneously.

27. In a type writer or other similar, machine and in combination, a plurality of keys; and a selecting device having two levers, hereinafter termed for distinction's sake the first lever, and the second lever, the first lever being connected in a suitable manner with one or more of the keys before mentioned at one point in its (said first lever's) length, for convenience' sake hereinafter termed the point $1^b$, and being also positively connected for to-and-fro motion with the second lever at another point in its (said first lever's) length, for convenience hereinafter termed the point $1^c$; the second lever being connected with the first lever at one point in its (said second lever's) length as before mentioned, and being also suitably connected with one or more of the controlling parts before mentioned, in a suitable manner at another point in its (said second lever's) length; all the parts being constructed, arranged and connected in such a manner that the first lever has two simple motions and a compound motion to-wit, a simple motion on the before mentioned point $1^c$, as a fulcrum, when the controlling part or controlling parts connected with the aforesaid first lever at the point $1^b$ act; a simple motion on the point $1^b$, before mentioned, as a fulcrum when the controlling part or controlling parts before mentioned connected with the aforesaid second lever act; and a compound motion composed of the two motions before mentioned, when the controlling parts connected with said first and second levers act simultaneously.



ing connected with the first lever at one point in its (said second lever's) length as before mentioned, and being also suitably connected with one or more of the keys before mentioned, at another point in its (said second lever's) length; all the parts being constructed, arranged and connected in such a manner that the first lever has two simple motions and a compound motion to-wit, a simple motion on the before mentioned point $1^c$, as a fulcrum, when the key or keys connected with the aforesaid first lever, at the point, $1^b$ act; a simple motion on the point, $1^b$, before mentioned, as a fulcrum, when the key or keys before-mentioned connected with the second lever act; and a compound motion composed of the two motions before mentioned, when the keys connected with the first and second levers act simultaneously.

28. In a type writer and other similar machine, and in combination, a plurality of keys; a type-form; and type-form positioning mechanism including two levers, hereinafter termed for distinction's sake the first lever, and the second lever, said first lever being positively connected for to-and-fro motion with the type-form at one point in its (said first lever's length) for convenience' sake hereinafter termed the point $1^b$, and connected with one or more keys in a suitable manner at another point, for convenience' sake hereinafter termed the point $1^b$, and positively connected for to-and-fro motion with the second lever at a third point in its (said first lever's) length for convenience' sake hereinafter termed the point $1^c$; said second lever being connected with the first lever at one point in its (said second lever's) length, as before mentioned, and being also suitably connected with one or more of the keys at another point in its length; all the parts being constructed, arranged and connected in such a manner that the aforesaid first lever has two simple motions and a compound motion, to-wit, a simple motion on the before mentioned point $1^c$, as a fulcrum, when the key or keys connected with said first lever, at the point $1^b$, act; a simple motion on the point $1^b$, before mentioned, as a fulcrum, when the key or keys before mentioned connected with the aforesaid second lever act; and a compound motion composed of the two motions before mentioned, when the keys connected with the first and second levers act simultaneously.

29. In a type writer or other similar machine, and in combination, a plurality of controlling parts; and a selecting device having two levers hereinafter termed for distinction's sake the first lever and the second lever, said first lever being connected in a suitable manner with one or more of the controlling parts before mentioned at one point in its (said first lever's) length, for convenience' sake hereinafter termed the point $1^b$, and being also positively connected for to-and-fro motion with the second lever at another point in its (said first lever's) length, for convenience' sake hereinafter termed the point $1^c$, said second lever being connected with the first lever at one point in its (said second lever's) length, as before mentioned, and being also suitably connected with different ones of the controlling parts before mentioned at two other points in its (said second lever's) length, for convenience' sake hereinafter termed $2^a$ and $2^b$ respectively; whereby said second lever has two simple motions and a compound motion, to-wit, a simple motion on the point $2^a$, as a fulcrum, when controlling part connected with said second lever at point $2^a$ acts; a simple motion on the point $2^b$, as a fulcrum, when controlling part connected with said second lever at point $2^b$ acts; and a compound motion composed of the two simple motions before mentioned, when the controlling parts connected with said second lever at points $2^a$ and $2^b$ act simultaneously; the aforesaid first lever having also two simple motions and a compound motion, to-wit, a simple motion on the point $1^c$ as a fulcrum when controlling part connected with said first lever at point $1^b$ acts; a simple motion on the part $1^b$ as a fulcrum when either or both of the controlling parts connected with the before mentioned second lever at points $2^a$ and $2^b$ act; and a compound motion, composed of the before mentioned simple motions, when controlling part connected with the before mentioned first lever at point $1^b$ acts simultaneously with one or more of the controlling parts connected with the before mentioned second lever at points $2^a$ and $2^b$.

30. In a type writer or other similar machine, and in combination, a plurality of keys; and a selecting device having two levers, hereinafter termed for distinction's sake the first lever, and the second lever, said first lever being connected in a suitable manner with one or more of the keys before-mentioned at one point in its (said first lever's) length, for convenience' sake hereinafter termed the point $1^b$, and being also positively connected for to and-fro motion with the second lever at another point in its (said first lever's) length, for convenience' sake hereinafter termed the point $1^c$; said second lever being connected with the first lever at one point in its (said second lever's) length, as before mentioned, and being also suitably connected with different ones of the keys before mentioned at two other points in its (said second lever's) length, for convenience' sake hereinafter termed $2^a$ and $2^b$ respectively; whereby said second lever has two simple motions and a compound motion, to-wit, a simple motion on the point $2^a$, as a fulcrum, when key connected with said second lever at point $2^a$, acts; and a compound motion composed of the two simple motions before mentioned, when the keys connected with said second lever at points $2^a$ and $2^b$ act simultaneously; the aforesaid first lever having also two simple motions and a compound motion, to wit, a simple motion on the point $1^c$ as a fulcrum, when key connected with said first lever at point $1^b$ acts; a simple motion on the point $1^b$, as a fulcrum, when either or both of the keys connected with the second lever at points $2^a$ and $2^b$ act; and a compound motion composed of the before mentioned simple motions, when key connected with the first lever at point $1^b$ acts simultaneously with one or more of the keys connected with the second lever at points $2^a$ and $2^b$.

31. In a type writer or other similar machine, and in combination, a plurality of keys; a type-form; and type-form positioning mechanism including two levers hereinafter termed for distinction's sake the first lever, and the second lever, said first lever being positively connected for to-and-fro motion with the type-form at one point in its (said lever's) length, for convenience' sake hereinafter termed the point $1^a$, said first lever being also connected in a suitable manner with the key at another point in its (said lever's) length, hereinafter termed for convenience' sake the point $1^b$; said first lever being positively connected for to-and-fro motion with the second lever at a third point in its (said first lever's), length, for convenience' sake hereinafter termed the point $1^c$; the aforesaid second lever being connected at one point in its length with the first lever, as before mentioned, and being also suitably connected with different keys at two other points in its (said second lever's) length, for convenience' sake hereinafter termed $2^a$ and $2^b$, respectively; whereby said second lever has two simple motions and a compound motion for positioning the type-form to-wit, a simple motion on the point $2^a$, as a fulcrum, when key connected with said second lever at point $2^a$, acts; a simple motion on the point $2^b$, as a fulcrum, when key connected with said second lever at point $2^b$, acts; and a compound motion composed of the two simple motions before mentioned, when the keys connected with said second lever at points $2^a$ and $2^b$ act simultaneously; the aforesaid first lever having also two simple motions and a compound motion for positioning the type-form, to-wit, a simple motion on the point $1^c$ as a fulcrum, when key connected with said first lever at point $1^b$ acts; a simple motion on the point $1^b$, as a fulcrum, when either or both of the keys connected with the aforesaid second lever at points $2^a$ and $2^b$ act; and a compound motion composed of the before mentioned simple motions, when key connected with aforesaid first lever at point $1^b$ acts simultaneously with one or more of the keys connected with the aforesaid second lever at points $2^a$ and $2^b$.

32. In a type writer or other similar machine, and in combination, a plurality of controllers; a part to be moved into different positions in the same arc or plane by the individual and by the combined action of the controllers before mentioned; a plurality of rock-shafts connected with and controlled by the controllers; and a movement aggregator interposed between said rock-shafts and the type-form or other part to be moved into different positions by the before mentioned controllers.

33. In a type writer or other similar machine, and in combination, a plurality of keys; a type-form to be moved into different positions in the same arc or plane by the individual and by the combined action of the keys before mentioned; a plurality of rock-shafts connected with and controlled by the keys; and a movement aggregator interposed between said rock-shafts and the type-form.

34. In a type writer or other similar machine, and in combination, a plurality of controllers and a movement synthesizer formed of rock-shafts, rock-shaft arms and levers, suitably connected.

35. In a type writer or other similar machine, and in combination, a plurality of keys and a movement synthesizer formed of rock-shafts, rock-shaft arms and levers suitably connected.

36. In a type writer or other similar machine, and in combination, printing mechanism and a movable arm-rest connected therewith and serving as a shift, so that different characters are printed when the arm rest is in one position from what are printed when it is in another position.

37. In a type writer or other similar machine, a type-form and an arm key, the parts being connected in such a manner that a movement of the type-form is effected by a movement of the arm key.

38. In a type writer or other similar machine, and in combination, movement synthesizer mechanism and a movable arm-rest connected therewith.

39. In a type-writer or other similar instrument, an arm-rest key, as herein described.

40. In a type writer or other similar machine, and in combination, a type-form; movement synthesizer mechanism; a plurality of finger keys and an arm key connected with the movement synthesizer.

41. In a type-writer or other similar machine and in combination, a type-form; a plurality of type-form controlling keys; movement synthesizer mechanism interposed between the keys and the type-form; a paper carriage; spacing mechanism for the paper carriage includ-

ing (*a*) a suitable toothed part connected with the carriage, (*b*) a loose dog or equivalent, (*c*) a fast dog, (*d*) a movable stop for the loose dog or equivalent, and (*e*) connections between the before-mentioned type-form controlling keys and the spacing mechanism; and a space key, connected with the before mentioned movable stop for the loose dog or equivalent, said space key serving when acted upon to move the movable stop before mentioned so as to permit of an onward movement of the carriage large enough for a character to be printed and for a space between two words in addition thereto.

42. In a type writer or other similar machine, and in combination, a type-form; a plurality of type-form controlling keys, movement synthesizer mechanism interposed between said keys and the type-form; a paper carriage; letter spacing mechanism connected with the paper carriage and with the type-form controlling keys and serving when brought into action by the type-form controlling keys to effect a lateral movement of the paper carriage through a certain space or distance; a space enlarger, serving when brought into action for that purpose to augment the last mentioned space; and a space key, serving when acted upon by the operator to bring the before mentioned space enlarger into action for the purpose before mentioned, the parts being constructed, arranged, and connected in such a manner that the space key before mentioned can be acted upon by the operator substantially simultaneously with the type-form controlling keys and an inter verbal space made at the same time that a space is made for the printing of a letter.

43. In a type writer or other similar machine, and in combination, a type-form; a plurality of type-form controlling keys; movement synthesizer mechanism interposed between the type-form controlling keys and the type-form; a paper carriage; letter spacing mechanism for the paper carriage including (*a*) a suitable toothed part positively connected with the paper carriage, (*b*) a space determiner, serving normally to bear the pressure of the carriage motor-spring or equivalent and to hold the carriage from moving in the direction in which it is urged by such spring, (*c*) a releaser serving when moved from its normal position to relieve the space determiner of the pressure exerted on it by the carriage, (*d*) means serving when the before mentioned space determiner is released from the pressure of the carriage to move said space determiner in the opposite direction to that in which the carriage presses it, (*e*) a movable stop or space enlarger for increasing the movement of the space determiner before mentioned, said movable stop or space enlarger serving when in one position to permit a certain movement of the space determiner sufficient to allow, on the return of the releaser before mentioned to its normal position, of a movement of the carriage large enough to make room for a letter to be printed, and when in another position to permit a movement of the space determiner sufficient to allow, on the return of the releaser before mentioned to its normal position, of a movement of the carriage large enough to make room for a letter to be printed and for an inter-verbal space in addition thereto; and a space key; the type-form controlling keys and the space key before mentioned being both suitably connected with the spacing mechanism, the parts being constructed, arranged, and connected in such a manner that the movable stop or space enlarger occupies its first mentioned position when the type-form controlling keys alone are acted upon and its other position when the space key is acted upon by the operator simultaneously with the type-form controlling keys.

44. In a type writer or other similar machine, and in combination, a type-form; a plurality of type-form controlling keys; movement synthesizer mechanism interposed between the type-form controlling keys and the type-form; a paper-carriage; letter spacing mechanism for the paper carriage including (*a*) a suitable toothed part positively connected with the paper carriage, (*b*) a space determiner serving normally to bear the pressure of the carriage motor-spring or equivalent and to hold the carriage from moving in the direction in which it is urged by such spring, (*c*) a releaser serving when moved from its normal position to release the space determiner from the pressure exerted on it by the carriage, (*d*) means serving when the before mentioned space determiner is released from the pressure of the carriage to move said space determiner in the opposite direction to that in which the carriage presses it, (*e*) a movable stop or space enlarger for increasing the movement of the space determiner before mentioned, said movable stop or space enlarger serving when in its normal position to permit a certain movement of the space determiner sufficient to allow (on the return of the releaser before mentioned to its normal position), of a movement of the carriage large enough to make room for a letter to be printed and serving when moved from its normal position to permit a movement of the space determiner sufficient to allow a movement of the carriage (on the return of the releaser to its normal position) large enough to make room for a letter to be printed and for an inter-verbal space in addition thereto; and a space key connected with the movable stop or space enlarger before mentioned, the type-form controlling keys being connected with the releaser before mentioned in such a manner that the same moves (or is moved) from its normal position when the type-form controlling keys are acted upon by the operator.

45. In a type writer or other similar machine, and in combination, a type-form; a plurality of type-form controlling keys; movement synthesizer mechanism interposed between the type-form controlling keys and the type-form; a paper carriage; letter spacing mechanism for the paper carriage including (*a*) a suitable toothed part positively connected with the paper carriage, (*b*) a space determiner serving normally to bear the pressure of the carriage motor-spring or equivalent and to hold the carriage from moving in the direction in which it is urged by such spring, (*c*) a releaser serving when moved from its normal position to relieve the space determiner of the pressure exerted on it by the carriage, (*d*) means serving when the before mentioned space determiner is released from the pressure of the carriage to move said space determiner in the opposite direction to that in which the carriage presses it, (*e*) a movable stop or space enlarger for increasing the movement of the space determiner before mentioned, said movable stop or space enlarger serving when in its normal position to permit a certain movement of the space determiner sufficient to allow (on the return of the releaser before mentioned to its normal position), of a movement of the carriage large enough to make room for a letter to be printed and serving when moved from its normal position to permit a movement of the space determiner sufficient to allow a movement of the carriage (on the return of the releaser to its normal position) large enough to make room for a letter to be printed and for an inter verbal space in addition thereto; a single-space key; and a double-space key; the type form controlling keys and the space keys before mentioned being suitably connected with the spacing mechanism, the parts being constructed, arranged and connected in such a manner that the movable stop or space enlarger occupies its first mentioned position when the single-space key or the type form controlling keys alone are acted upon, and occupies its normal position when the double-space key is acted upon by the operator simultaneously with the type-form controlling keys.

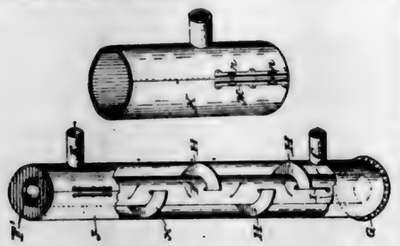
46. In a type writer or other similar machine, and in combination, a type-form; a plurality of type-form controlling keys; movement synthesizer mechanism interposed between the type-form controlling keys and the type-form; a paper carriage; letter spacing mechanism for the paper carriage including (*a*) a suitable toothed part connected with the paper carriage, (*b*) a space determiner serving normally to bear the pressure of the carriage motor-spring or equivalent, and to hold the carriage from moving in the direction in which it is urged by such spring, (*c*) a releaser serving when moved from its normal position to release the space determiner from the pressure exerted on it by the carriage, (*d*) means serving when the before mentioned space determiner is released from the pressure of the carriage to move said space determiner in the opposite direction to that in which the carriage presses it, (*e*) a movable stop or space enlarger for increasing the movement of the space determiner before mentioned, said movable stop or space enlarger serving when in its normal position to permit a certain movement of the space determiner sufficient to allow (on the return of the releaser before mentioned to its normal position), of a movement of the carriage large enough to make room for a letter to be printed and for an inter verbal space in addition thereto; a single-space key; and a double-space key; the single space key and the type-form controlling keys before mentioned being connected with the releaser before mentioned in such a manner that said releaser moves (or is moved) from its normal position when the single space key or one or more of the type-form controlling keys are acted upon by the operator; the double space key being connected with the space enlarger before mentioned and serving when acted upon by the operator simultaneously with the type-form controlling keys to increase the space made by the carriage at its next movement.

47. In a type writer or other similar machine, and in combination, a type-form; a plurality of type-form controlling keys; movement synthesizer mechanism interposed between the type-form controlling keys and the type-form; a paper carriage; letter spacing mechanism for the paper carriage including (*a*) a suitable toothed part connected with the paper carriage, (*b*) a space determiner serving normally to bear the pressure of the carriage motor, spring or equivalent and to hold the carriage from moving in the direction in which it is urged by such spring, (*c*) a releaser serving when moved from its normal position to relieve the space determiner of the pressure exerted on it by the carriage, (*d*) means serving when the before mentioned space determiner is released from the pressure of the carriage to move said space determiner in the opposite direction to that in which the carriage presses it, (*e*) a movable stop or space enlarger for increasing the movement of the space determiner before mentioned, said movable stop or space enlarger serving when in one position to permit a certain movement of the space determiner sufficient to allow (on the return of the releaser before mentioned to its normal position) of a movement of the carriage large enough to make room for a letter to be printed, and serving when moved from its normal position to increase the play of the loose dog; and a space key connected with the movable loose dog stop.

48. In a type writer or other similar machine, and in combination, a type-form; a plurality of type-form controlling keys; movement synthesizer mechanism interposed between the type-form controlling keys and the type-form; a paper carriage; letter spacing mechanism for the paper carriage including (*a*) a suitable toothed part connecting with the paper carriage, (*b*) a space determiner serving normally to bear the pressure of the carriage motor spring or equivalent and to hold the carriage from moving in the direction in which it is urged by such spring, (*c*) a releaser serving when moved from its normal position to release the space determiner from the pressure exerted on it by the carriage, (*d*) means serving when the before mentioned space determiner is released from the pressure of the carriage to move said space determiner in the opposite direction to that in which the carriage presses it, (*e*) a movable stop or space enlarger for increasing the movement of the space determiner before mentioned, said movable stop or space enlarger serving when in its normal position to permit a certain movement of the space determiner sufficient to allow (on the return of the releaser before mentioned to its normal position), of a movement of the carriage large enough to make room for a letter to be printed, and serving when moved from its normal position, to permit a movement of the space determiner sufficient to allow a movement of the carriage (on the return of the releaser to its normal position), large enough to make room for a letter to be printed and for an inter verbal space in addition thereto; a single-space key; and a double-space key; the single-space key and the type-form controlling keys before mentioned being connected with the releaser before mentioned in such a manner that said releaser moves (or is moved) from its normal position when the single-space key or one or more of the type-form controlling keys are acted upon by the operator; the double-space key being connected with the space enlarger before mentioned and serving when acted upon by the operator simultaneously with the type-form controlling keys to increase the space made by the carriage at its next movement; a movable stop for the loose dog before mentioned, serving when moved from its normal position to increase the play of the loose dog; and a space key connected with the movable loose dog stop.



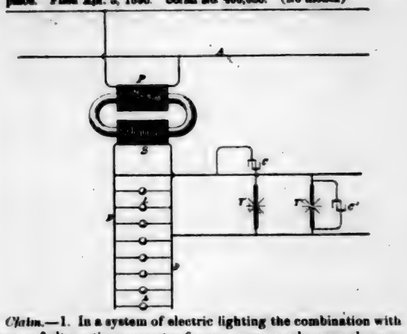
**502,701. HEATER.** HARDY W. CAMPBELL, Aberdeen, S. D., assignor to Theron H. Green, Minneapolis, Minn. Filed Sept. 6, 1892. Serial No. 445,164. (No model.)



*Claim.*—1. The means for heating adjoining rooms which consists a stove arranged in one of said rooms in connection with the smoke pipe of said stove, leading through the wall separating the rooms a long, vertical drum arranged in the second room, and extending from the floor to a point near the ceiling of said room, the smoke pipe of said stove leading into said drum a flue or chimney a connection with the upper end of said drum, a vertical open duct F, arranged within said drum and adapted to take the air from the floor line and a series of segmental, inclined wings arranged between said duct F, and the wall of the drum, substantially as described.

2. The combination in a heating device, of the long drum and air duct F, arranged therein, a smoke pipe leading into opposite ends of said drum, the inclined wings H secured upon said duct and extending between the same and the inner walls of said drums, the lower wing H provided with downwardly projecting partitions I, said drum formed of single sheets of metal, having their edges brought together and held by the angle castings M and short bolts n, substantially as described.

**502,702. ELECTRIC-LIGHTING SYSTEM.** CUMMINGS C. CHESNEY, Pittsfield, Mass., assignor to the Stanley Laboratory Company, same place. Filed Apr. 3, 1893. Serial No. 468,825. (No model.)



*Claim.*—1. In a system of electric lighting the combination with a source of alternating currents of one or more arc lamps and a condenser associated with each of said lamps and of a capacity of value to neutralize the self-induction of said lamps and prevent the extra drop in the electro-motive force due thereto.

2. In a system of electric lighting the combination with a generator of alternating currents, of incandescent lamps in parallel in the circuit of the generator, one or more arc lamps also connected with such circuit and a condenser associated with each of said arc lamps and of a capacity or value to neutralize the self-induction of such lamp and prevent the extra drop in the electro-motive force due thereto.

3. In a system of electric lighting, the combination with the secondary circuit of a transformer, of incandescent lamps, one or more alternating current arc lamps, and a condenser associated with each of said arc lamps and of a capacity or value to neutralize the self-induction of such lamp and prevent the extra drop in the electro-motive force due thereto.

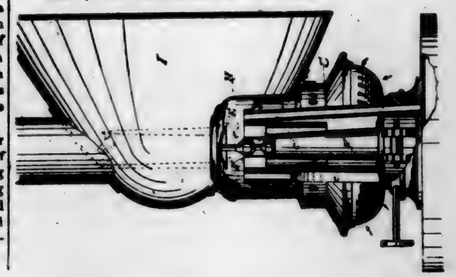
4. In combination, a circuit from or including the secondary of an alternating current transformer, incandescent lamps in parallel in said circuit, one or more alternating current arc lamps also included in said circuit, and a condenser associated, as described, with each arc lamp and adapted to prevent the extra drop in the electro-motive force in the circuit produced by said lamp, as set forth.

**502,703. REIN-SUPPORT.** THOMAS R. CLARK, Des Moines, Iowa. Filed Nov. 17, 1892. Serial No. 452,256. (No model.)



*Claim.*—A rein holding device for harness comprising a single piece of spring metal having its central portion adapted to be connected with the hip strap of a harness and its end portions bent upwardly then inwardly and then downwardly to engage the central portion of the device and form two loops with a space between them and with the end portions of the device normally held in engagement with the central portion thereof by the resiliency of the metal for the purposes stated.

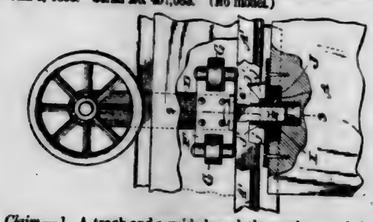
**502,704. LAMP-BURNER.** JAMES B. COLT, New York, N. Y. Filed Mar. 11, 1891. Serial No. 384,676. (No model.)



*Claim.*—1. In combination, an Argand or central draft burner, a central button supported above the wick thereof, for projecting the flame beyond the annular wick, and an opaque deflector extending above the said button and over the said wick, substantially as set forth.

2. The combination of an Argand lamp burner provided with a central deflecting disk or button for expanding the flame immediately above the wick, and provided with an opaque deflecting cone or screen extending above the button and over the wick, and a paraboloidal reflector provided with a transparent front and forming a combustion chamber for the said burner, substantially as, and for the purposes set forth.

**502,705. DOOR-HANGER.** GEORGE A. COLTON, Chicago, Ill., assignor to the Munger-Colton Manufacturing Company, same place. Filed Jan. 3, 1893. Serial No. 457,053. (No model.)



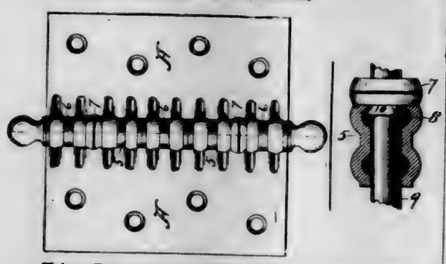
*Claim.*—1. A track and a guide board, the track extended above the upper face of the guide board and the guide board extended below the lower face of the track, the guide board and the track being in different vertical planes and the latter in vertical line over the opening between the soffits, substantially as specified.

2. A track and guide board, the track extended above the face of the guide board and the guide board extended below the lower face of the track, the guide board and track being in different vertical planes and the latter in vertical plane over the opening between the soffits, the upper face of the track being beveled toward the guide board, combined with a hanger having its upper end bent toward the vertical plane of the track and carrying a flanged wheel, substantially as specified.

3. The combination with the hanger plate having its lower end bent horizontally, of the bar passed through a slot in the horizontal portion thereof and threaded, a socket for attachment to the upper face of a door and provided with shouldered lugs, and a nut rotatably held in said socket and engaging the bar and held against displacement by the shoulders of said lugs, substantially as specified.

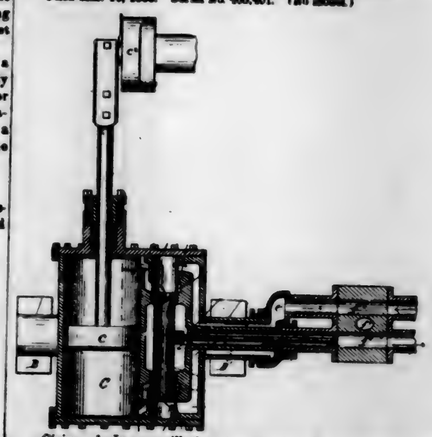
4. The combination with a track and the guide board, the track extended above the upper face of the guide board and the guide board extended below the lower face of the track and the upper face of the track being beveled toward the guide board, of a plate bent inward above the track, a wheel journaled in the upper end of said plate with its flanged bar against the side of the track above the guide board, rollers carried by said plate and engaging the face of the guide board below the track and door attaching device detachably supported on the lower end of said plate, substantially as specified.

**502,706. HINGE.** THOMAS CORSCADEN and FRANKLIN HOLLAND, New Britain, Conn., assignors to the Stanley Works, same place. Filed May 3, 1893. Serial No. 472,879. (No model.)



*Claim.*—The herein described anti-friction hinge consisting essentially of a hinge knuckle having a chamber with overhanging walls, the anti-friction devices 7, and a sleeve extending therefrom into the chamber of the knuckle and having its end enlarged for holding the parts in place, substantially as described and for the purpose specified.

**502,707. STEAM-ENGINE.** FRANK M. DAVIS, Oskaloosa, Iowa. Filed Mar. 10, 1893. Serial No. 465,401. (No model.)

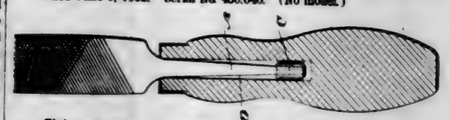


*Claim.*—1. In an oscillating steam-engine, the combination with a cylinder, of a hollow steam-conducting trunnion, an immovable valve stem extending through the same, and a valve pivotally connected to the stem so as to oscillate thereon, the conditions of the valve being changed by the oscillations of the cylinder.

2. In an oscillating steam-engine, the combination with the cylinder, of a hollow steam-conducting trunnion having two passages for the live and exhaust steam respectively, an immovable valve stem extending through the said trunnion, and a valve pivotally secured to the stem so as to oscillate thereon, the conditions of the valve being changed by the oscillations of the cylinder.

3. In an oscillating steam engine the combination of a cylinder, two steam conducting pipes fitting one within the other and arranged for the live and exhaust steam, formed integral with or rigidly fastened to the cylinder and forming the cylinder trunnion, and a stationary socket into which the steam conducting pipes are fitted and adapted to oscillate, the steam being fed to the sockets and thence to the pipes substantially as described.

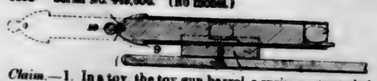
**502,708. TOOL-FASTENING.** ROBERT DOUGLAS, Fall River, Mass. Filed June 9, 1892. Serial No. 436,040. (No model.)



*Claim.*—1. The combination with the tool having a tapering shank, of the cylindrical hard metal collar C having smooth tapering bore fitting the lower end of the shank and provided with rounded edges; the extremity of the shank being upset or riveted over the lower end of the collar to secure the said collar permanently in place, substantially as set forth.

2. The combination with the tool handle having a bore D, of the tool having a flat tapering shank A the upper wide portion of which fits the upper end of the bore to prevent turning, and the cylindrical hard metal collar C having a tapering bore receiving the lower end of the tang and rounded at its upper and lower edges to facilitate entrance and exit of the collar into and out of the bore; the lower end of the shank being upset or riveted over the collar to permanently secure it in place, substantially as set forth.

**502,709. TOY.** JOHN EVANS, Bridgeport, Conn. Filed Oct. 22, 1892. Serial No. 449,654. (No model.)

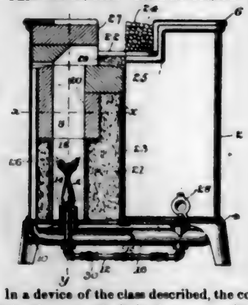


*Claim.*—1. In a toy, the toy gun barrel, a spring-actuated plunger therein of greater length than the barrel, said plunger having a ledge which projects from its lower side and in front of the toy gun barrel when the plunger is in its forward position, so that the projectile may be placed on said ledge and the plunger then drawn back to carry the projectile within the barrel, all substantially as described.



2. A toy game apparatus consisting essentially of a board with an inclined butt or stop at one end, target figures to rest on the board, and a toy gun swiveled to the board at the end remote from said butt, said gun having a spring plunger provided with a ledge at its lower edge which ledge projects from the gun when the plunger is in forward position, all substantially as described.

**502,710. HYDROCARBON-FURNACE.** ROBERT FERGUSON, St. Paul, Minn. Filed Mar. 31, 1891. Serial No. 387,194. (No model.)



*Claim.*—1. In a device of the class described, the combination of the combustion chamber, a vertical air pipe arranged therein, an oil pipe arranged within said air pipe, a gravity valve seated over the end of said oil pipe, means for directing a flow of oil through said pipe to lift said valve, and means for forcing air through said air pipe to comminute and carry said oil upward, substantially as and for the purposes set forth.

2. The combination with a suitable combustion chamber, of a burner arranged therein comprising in combination a body of substantially the form of an inverted cone, having a vertical opening therethrough connecting with a supply pipe, a flat lift valve seated upon the end of said body closing said opening, an air pipe surrounding said burner, and means for forcing air therethrough, substantially as described,

3. In a hydro carbon burner, the combination of a body of substantially the form of an inverted cone, having a vertical opening therethrough, a flat lift valve seated upon the upper end of said body closing said opening, an open end pipe surrounding said burner the intermediate passage being constricted adjacent said opening, and means for forcing an air blast therethrough, substantially as described.

4. In a hydro-carbon burner, the combination of the open end vertical oil pipe, the lift valve seated thereon, and the air pipe surrounding said oil pipe, and having the passage adjacent the end of the oil pipe constricted, substantially as described.

5. The combination with the hydro-carbon burner, having a horizontal circumferential opening for the emission of oil, of a valve for closing said opening adapted to be operated by the pressure of the oil in the pipe, and a vertical air pipe surrounding the burner having the intermediate passage constricted oppposite the opening, substantially as described.

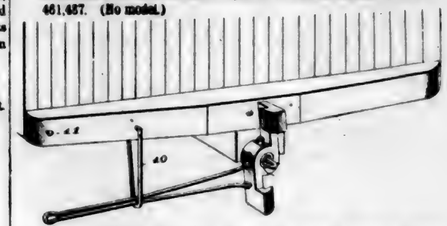
6. The combination of a hydro carbon burner having a horizontal circumferential opening, automatic means for adjusting the flow of oil therethrough, and a vertical air blast pipe surrounding said burner having its passage constricted approximately opposite said opening, substantially as described.

7. In a device of the class described, the combination of the vertical combustion chamber 8, having the brick walls 20, the burner A at the bottom of said chamber, the vertical air blast pipe 14 surrounding said burner, the air blast 26 communicating with said chamber at or near its top, and the hearth 22 at the side of which said combustion chamber opens, substantially as described.

8. In a furnace, the combination of one or more vertical combustion chambers having fire brick walls and leading to a suitable hearth upon the top of the furnace, vertical burner pipes at the bottom of said chambers, a feed air pipe underneath said furnace, a vertical blast pipe connecting with said feed air pipe and surrounding each of said burner pipes, air flues connecting with said feed air pipe and entering said combustion chamber near the top and directed toward said hearth, and means for controlling the flow of air and oil through said blast and burner pipes, substantially as described.

9. A hydro-carbon burner comprising in combination, the oil pipe, the circumferential oil outlet, the valve for closing said outlet adapted to be opened by the pressure of the oil in the pipe, the air pipe surrounding and coaxial with said oil pipe having the passage between it and the oil pipe constricted opposite the oil outlet, substantially as described.

**502,711. CAR-COUPLING.** JOHN FISCHER, Scottdale, Pa., assignor of one-half to J. R. Stauffer, same place. Filed Feb. 8, 1893. Serial No. 461,487. (No model.)

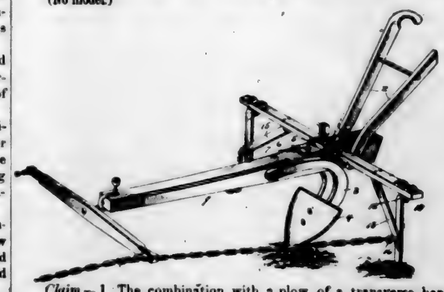


*Claim.*—1. In a car coupling, the combination of a rotary tubular draw-bar adapted for the storage of coupling links and provided at its front end with transversely-aligned perforations, a twin jaw draw-head provided with a central opening fitted upon the draw-bar and having perforations which register with those in the draw-bar, a coupling-pin engaging said registering perforations and also adapted for the engagement of a coupling-link, and a torsional actuating spring operatively connected to the draw bar to hold the draw-head in its engaging position, substantially as specified.

2. In a car-coupling, the combination of a rotary draw-bar provided with a torsional actuating spring, a twin jaw draw-head having a central opening which is fitted upon the front of said draw-bar, and a coupling-pin engaging registering perforations in the draw-head and draw-bar, whereby the former is fixed to the latter for rotation therewith and is detachable therefrom upon the disengagement of said coupling pin, substantially as specified.

3. In a car coupling, the combination of a rotary draw-bar, a draw head fixed to the front end of the draw-bar, an actuating spring connected to the draw-bar to hold the draw-head normally in its operative position, an uncoupling lever fixed at one end to the draw-head whereby the latter may be rotated against the tension of said spring, and a fixed keeper in which the free end of the lever swings, and which serves to limit the rotation of the draw-head when not in engagement with an opposing draw-head, substantially as specified.

**502,712. MARKING ATTACHMENT FOR PLOWS.** GEORGE W. FREEMAN, Maple Grove, Ala. Filed Nov. 30, 1892. Serial No. 453,644. (No model.)



*Claim.*—1. The combination with a plow, of a transverse bar mounted adjustably thereon, marking-arms depending from and hinged to the bar, and means for securing either of the arms in a rigid depending position with relation to the bar, substantially as specified.

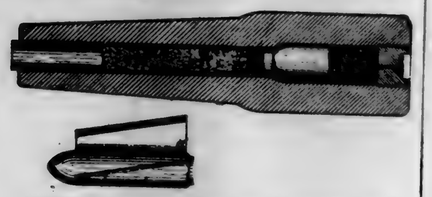
2. The combination with a plow, of a bar transversely disposed with relation to and mounted on the beam, hinged marking-arms depending from the ends of the bar, and draft-chains terminating in hooks secured to the arms and adapted to engage with the trace-chains of a harness, substantially as specified.

3. The combination with a beam of a plow, the inverted U shaped clip bolted thereto and the binding-bolt passed through the clip, of the transverse bar having the depending clips 10 near its ends, the marking-arms terminating at their upper ends in eyes loosely engaging the clips and having their lower ends pointed, the staples depending from the bar at the inner sides of the clip, the strap-braces loosely connected with the staples, eye-bolts passed through the lower end of the strap-braces and the marking-arms, chains connected to the eye-bolts, and trace-chain-engaging hooks connected to said chains, substantially as specified.

**502,713. PROJECTILE.** LOUIS GATHMANN, Chicago, Ill. Filed Apr. 19, 1892. Serial No. 429,809. (No model.)

*Claim.*—1. A projectile having a hollow forward end portion to receive an explosive charge and provided with wings inclined upwardly toward the front end of the projectile.

2. A projectile having a hollow forward end portion to receive an explosive charge and provided with wings inclined laterally upward toward their outer edges.



3. A projectile having a hollow forward end portion to receive an explosive charge and provided with wings inclined upwardly toward their front ends and toward their outer edges.

4. A projectile having a hollow forward end portion to receive an explosive charge and provided with horizontally arranged wings and with a weighted bottom portion.

5. A projectile having a hollow forward end portion to receive an explosive charge and provided with wings inclined upwardly toward the front end of the projectile and with a weighted bottom portion.

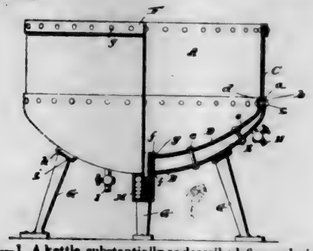
6. A projectile having a hollow forward end portion to receive an explosive charge and provided with wings inclined laterally upward toward their outer edges and with a weighted bottom portion.

7. A projectile having a hollow forward end portion to receive an explosive charge and provided with wings inclined upwardly toward their front ends and toward their outer edges, and with a weighted bottom portion.

8. A projectile provided at its forward end portion with wings inclined upwardly toward the front end of the projectile, and with a hollow rear end portion to receive a propelling charge.

9. A projectile provided at its forward end portions with wings inclined upwardly toward the front end of the projectile, and a weighted bottom portion, and with a hollow rear end portion to receive a propelling charge.

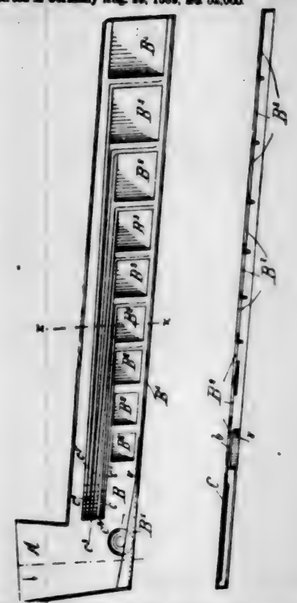
## 502,714. RENDERING-KETTLE. CHARLES A. GLOECKLER and ROBERT MUNROE, Jr., Pittsburg, Pa. Filed Sept. 7, 1892. Serial No. 445,284. (No model.)



*Claim.*—1. A kettle, substantially as described, for rendering lard, or the like, comprising the lower or outer concave section B, having the vertically disposed flange *a*, the upper or inner concave section D, dished less than the section B, so as to form the steam jacket E, and having the vertically disposed flange *d*, the vertical section C, unbent throughout its width and having its lower edge interposed between the vertical flanges *a*, and *d*, of the sections B, D, and bolts or rivets taking through said flanges and the vertical section and serving to connect the same together, substantially as and for the purpose set forth.

2. A kettle, substantially as described, for rendering lard or the like, comprising the lower or outer concave section B, having the vertically disposed flange *a*, and the central threaded opening, the upper or inner concave section D, dished less than the section B, so as to form the steam jacket E, and having the central threaded opening and the vertically disposed flange *d*, the vertical section C, unbent throughout its width and having its lower edge interposed between the vertically disposed flanges of the sections B, D, the bolts or rivets taking through said flanges and the vertical section and serving to connect the same together, and the exteriorly threaded nipple taking through the threaded openings of the sections B, D, and having the flange at its upper end, all substantially as and for the purpose set forth.

## 502,715. COIN-ASSORTING APPARATUS. ADAM R. GÜNTHER, Berlin, Germany. Filed Nov. 18, 1892. Serial No. 452,437. (No model.) Patented in Germany Aug. 29, 1889, No. 52,005.



*Claim.*—1. In a coin-assorting apparatus, the combination, with a chute A, of an inclined longitudinal channel B having an inclined front wall C, and openings $B^3$ in this wall, the size of these openings decreasing gradually toward the chute A, of the guide-laths $c\ c'\ c^2$ . . . each terminating with a vertical portion after one of the openings $B^3$, the chutes D located below each of the openings, and the receptacles E provided at the lower ends of the chutes D, for the purpose set forth.

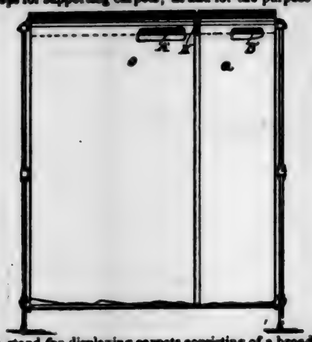
2. In a coin-assorting apparatus, the combination, with a chute A and a spring-actuated plate *k* hinged to the top of the same, of an inclined longitudinal channel B, having an inclined front wall C, and openings $B^3$ in this wall, the size of these openings decreasing gradually toward the chute A, of the guide-laths $c\ c'\ c^2$ . . . each terminating with a vertical portion after one of the openings $B^3$, the chutes D located below each of the openings, and the receptacles E provided at the lower ends of the chutes D, for the purpose set forth.

3. In a coin-assorting apparatus, the combination with a chute A and a spring-actuated plate *k* hinged to the top of the same, of an inclined longitudinal channel B, having an inclined front wall C, and openings $B^3$ in this wall, the size of these openings decreasing gradually toward the chute A, of a plate *v* arranged at the bottom of channel B near one of the openings $B^3$ in such a manner as to leave a narrow channel *b* along the front wall C, the guide-laths $c\ c'\ c^2$ . . . each terminating with a vertical portion after one of the openings $B^3$, the chutes D located below each of the openings, and the receptacles E provided at the lower ends of the chutes D, for the purpose set forth.

4. In a coin-assorting apparatus, the combination, with a chute A and a spring-actuated plate *k* hinged to the top of the same, of an inclined longitudinal channel B, having openings B' in its bottom, an inclined front wall C, and openings $B^3$ in this wall, the size of these openings decreasing gradually toward the chute A, of a plate *v* arranged at the bottom of channel B near one of the openings $B^3$ in such a manner as to leave a narrow channel *b* along the front wall C, the guide-laths $c\ c'\ c^2$ . . . each terminating with a vertical portion after one of the openings $B^3$, the chutes D located below each of the openings, and the receptacles E provided at the lower ends of the chutes D, for the purpose set forth.

## 502,716. STAND FOR DISPLAYING CARPETS. CHARLES HAFKENSEYER, Chicago, Ill. Filed Mar. 3, 1893. Serial No. 464,603. (No model.)

*Claim.*—1. A stand for displaying carpets consisting of a suitable main stand support as described, a roller mounted thereon in combination with metal supports extending round each end of the roller and loop wires pivoted to turn laterally in said metal supports, suitable catches engaging the free ends of the loops and rings strung on the loops for supporting carpets; as and for the purpose specified.



2. A stand for displaying carpets consisting of a broad foot portion and an adjustable upper portion and two rollers mounted on a single shaft and both ends of each roller provided with annular metal band supports in combination with loop wires, one end of each pivoted to said metal supports, and the other end engaging catches affixed to the same supports as the loop wires, and the loop wires carrying rings for the support of carpets as specified and shown.

## 502,717. VELOCIPEDE. AUGUSTUS L. HAHL, Chicago, Ill. Filed June 24, 1892. Serial No. 437,031. (No model.)



*Claim.*—1. As a means for driving bicycles and the like, in combination with the strap drum, and a pivoted pedal lever having its free end extending toward the drum, the strap connected with the lever and drum, and a projecting shoe on the lever, above and away from the point of attachment of the strap, to engage and bend the strap about it only during a portion of the movement of the lever, substantially as and for the purpose specified.

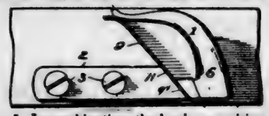
2. As a means for driving bicycles and the like, in combination with the strap drum, and a pivoted lever having its free end extending toward the drum, the strap connecting the drum and lever, and extending downward and forward from the drum to the lever, the pedal standing in, or substantially in, a vertical line above the point of attachment of the lever and strap, and the projecting shoe on said lever between said point of attachment, and the pedal, to engage and bend the strap about it only during the concluding portion of the movement of the lever, substantially as and for the purpose set forth.

3. In a velocipede, in combination with the frame and the wheel to be driven, a strap drum for driving such wheel, a lever pivoted at its forward end in advance of the wheel axis and extending rearward, the strap extending from the drum downward and forward and attached to the lever at a point, which, when the latter is raised, is below a line between the lever pivot and part of the drum from which the strap passes to the lever, a suitable foot piece or pedal on the lever, and a projecting shoe on the latter between the foot piece and the point of attachment of the strap to the lever, and away from said point of attachment, to engage the strap only during a portion of the downward movement of the lever, substantially as and for the purpose shown.

4. In a velocipede, in combination with the frame and one of the wheels, the combined brake and step consisting of a pivoted piece having a portion to engage the wheel tire and the two arms to receive the brake applying downward pressure, each situated, so that it will be within reach of one of the feet of the rider, and shaped so as to form a step to support the foot, when it has been depressed by the latter to apply the brake, substantially as and for the purpose shown.



## 502,718. HOLDBACK FOR VEHICLES. JOHN F. HAINES, Ringtown, Pa. Filed Apr. 14, 1892. Serial No. 470,234. (No model.)

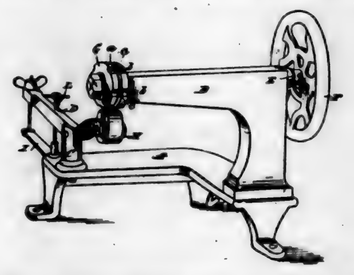


*Claim.*—1. In combination, the hook comprising the base plate and hook portion extending back over the same and the inclined spring retainer having its outer free end bearing on the end of the hook and inclining forward toward the base of the hook and secured to the base plate, substantially as described.

2. In combination, the hook comprising the base plate and hook portion having a thickened end with the hook thereon and a cut away part forming a shoulder, and the spring retainer bearing on said shoulder and having its lower end bifurcated and extending through slits in the plate, the ends of the prongs being clinched to the plate, substantially as described.

3. In combination, the hook comprising the base plate having the hook at one end and the spring retainer having a bifurcated end passing through the base plate and clinched thereto, substantially as described.

## 502,719. SEAM-FINISHING MACHINE. ISRAEL HAYES, Farmington, N. H. Filed May 1, 1893. Serial No. 472,491. (No model.)



*Claim.*—1. A seam-finishing machine embodying the combination of a table A: an arm B secured to the table and overhanging the edge thereof: a revolving shaft E mounted in said arm: a seam-pressing roll G, secured to said shaft and rotated thereby: a presser-lever D mounted upon the table and overhanging the edge thereof at right angles to arm B: a work-supporting roll H pivoted in the end of said lever and arranged to uphold and press the work against roll G: a spring I arranged to act on lever D to produce said pressure: and means for revolving the shaft E; all substantially as specified.

2. A seam-finishing machine embodying the combination of a table A, formed as described: an overhanging arm B secured to the table: a revolving shaft E having its bearings in said arm: a roll, adapted to the purpose of finishing seams, secured to, and revolved by, said shaft: a suitable roll arranged to support the work and uphold the same, with the requisite pressure against said revolving roll: a lever secured to, and projecting from the table, and supporting said under roll: a spring I arranged to actuate said lever: and a treadle mechanism connected with the lever whereby the rolls may be separated by the foot of the operator; all substantially as specified.

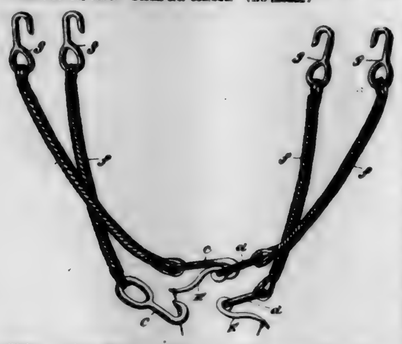
3. The combination of table A: arm B: shaft E: roll G positively rotated by said shaft: the friction device consisting of block S, spring P', loop P and screw R: lever D: roll H upheld by said lever and turned by frictional contact with the moving seam: screw L threaded into said lever and bearing against the table: spring I attached at one end to the table and having its opposite end connected with the lever: and a treadle mechanism arranged to lift the end of said lever: all operating together and relatively to each other, substantially as and for the purposes specified.

## 502,720. HOE. ELZIE B. HAZEL, Orange Mills, Fla. Filed Nov. 28, 1892. Serial No. 453,379. (No model.)



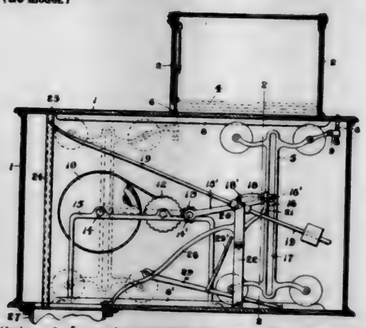
*Claim.*—A hoe provided on its rear side with a longitudinal central cutting fin having a sharpened cutting edge, said fin extending from the eye of the hoe to the cutting edge of the blade and tapering from said eye to the edge of said blade, substantially as shown and described for the purpose set forth.

## 502,721. HAY-SLING. LEWIS J. HELLAND, Mansfield, Minn. Filed Feb. 14, 1893. Serial No. 462,338. (No model.)



*Claim.*—A hay sling comprising a cross-beam provided with suspending chains, load-supporting ropes having hooks at one end adapted to be attached to said chain, said ropes being provided at the other end with a trip device consisting of a hook, a link, and a strap the construction and arrangement being such that by the rotation of the strap the hook is detached from the link, substantially as and for the purpose set forth.

## 502,722. COIN CONTROLLED VENDING APPARATUS. CHARLES A. HOWE, Buchanan, Mich. Filed Feb. 15, 1893. Serial No. 462,475. (No model.)



*Claim.*—1. In a coin controlled apparatus the combination of a case having a slotted top, tracks interiorly situated at the top and bottom of said case, an envelope receptacle situated above said top having a narrow slot at the bottom of its front side, fingers projecting through said slots in the top of the case and devices for moving the fingers to push an envelope out of the receptacle consisting of the carriage with upper and lower wheels, the tracks and a motor for moving the carriage back and forth, substantially as set forth.

2. In a coin controlled apparatus a carriage provided with a delivery finger and with upper and lower track wheels and having a slot 17, a carriage moving arm 15' provided with a stud or wheel movable in said slot and with a laterally situated pinion, a spur gear meshing with said pinion and a motor, all combined substantially as set forth whereby the carriage is moved back and forth.

3. In a coin controlled apparatus a carriage provided with a delivery finger and with upper and lower track wheels and having a slot 17, a carriage moving arm 15' provided with a stud or wheel movable in said slot and with a laterally situated pinion, a spur gear meshing with said pinion, a fusee and a motor consisting of a spring coiled about the axis of the fusee, all combined substantially as set forth whereby the carriage is moved back and forth.

4. In a coin controlled apparatus a carriage provided with a finger made adjustable to adapt it to extend above the edges of objects of different thicknesses and having its front hollowed to embrace said edges in combination with a receptacle and a support therefor slotted to permit the passage of the finger, substantially as set forth.

5. In a coin controlled apparatus the lever 19 and its shaft 20 in combination with a motor, a slotted carriage, a carriage moving arm 15' and a sliding detent 18 said shaft being provided with a connection with the detent whereby when it is rocked the detent is withdrawn from the outer end of the said carriage moving arm, substantially as set forth.

6. In a coin controlled apparatus the case, the parallel bents 15 fixed in said case, the spring drum, the fusee, the gear wheel, and the pinion, each having its axis provided with journals having bearings in said bents, the arm 15' fast on the axis of the pinion and connected to move the finger carriage and said carriage movable in a plane at the side of the bents, substantially as set forth.

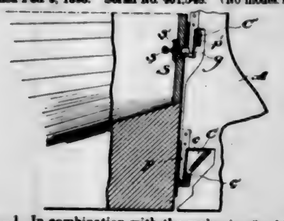
7. In a coin controlled apparatus the case, the parallel bents 15 fixed in said case, the spring drum, the fusee, the gear wheel, and the pinion, each having its axis provided with journals having bearings in said bents, the arm 15' fast on the axis of the pinion and connected to move the finger carriage and said carriage movable in a plane at the side of the bents, the posts 12, the counter-balanced lever 19 journaled in said posts and situated on the side of the carriage path opposite the carriage-moving mechanism and a carriage detent rendered inoperative by the movement of the lever under the influence of a coin, substantially as set forth.

8. In a coin controlled apparatus the coin controlled lever, a crank shaft and arm, mechanism adapted to revolve said shaft and arm, a pivoted bar in the path of the crank said bar having a lateral arm adapted to underrun and lift the lever to its initial position after it has been depressed by a coin and to be dropped from the crank arm at or near its highest elevation, substantially as set forth.

9. In a coin controlled apparatus the coin chute having its front and rear walls slotted and its floor inclined and having a slot in its edge at the foot of said inclined floor, the lever adapted to be moved in said front and rear slots, and mechanism for positively raising said lever in the slots after it has been operated by a coin, substantially as set forth.

10. In a coin controlled apparatus the coin chute having an inclined floor and having front and rear slots extending below said floor combined with a coin operated lever provided with a fulcrum above the level of the floor and having its end bent to give it an approximately level position within the slots at its lowest situation, substantially as set forth.

## 502,723. RUDDER CONNECTION. ELIOT G. JACKSON, Philadelphia, Pa. Filed Feb. 9, 1893. Serial No. 461,545. (No model.)



*Claim.*—1. In combination with the male pin of a hinge joint a joint having an opening or mouth of enlarged diameter, an interior base bearing for the end of the male pin, a reduced lower interior diameter only slightly greater than the diameter of the end of the lower portion of the male pin adapted to engage therein, the interior diameter of the said joint gradually decreasing from the mouth toward said lower bearing substantially as described.

2. In a rudder attachment for boats in combination with a hinge-joint, C, and male pins, *p*, *p'*, a joint, C, having an interior base-bearing of a diameter about equal to the diameter of the lower end of the pin, *p*, adapted to engage therein, and a mouth of greatly enlarged diameter gradually decreasing to the base-bearing substantially as described.

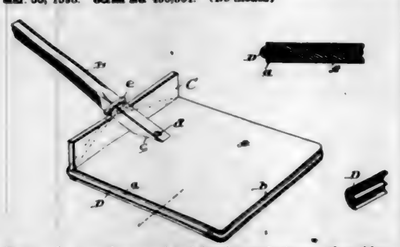
3. In a rudder attachment for boats in combination with the hinge joint, C, and pins, *p*, *p'*, a lower joint, C, having an interior base-bearing and a lower interior bore, *c'*, of a diameter slightly greater than the diameter of the pin, *p*, adapted to engage therein, and a mouth, *c*, of enlarged diameter gradually decreasing to the diameter of the bore, *c'*, substantially as described.

4. In a rudder attachment for boats the combination of pin *p* and lower hinge-joint, C, having lower interior bore, *c'*, and enlarged mouth, *c*, gradually decreasing in diameter to the bore, *c'*, upper joint, C', having vertical orifice provided therein, pin, *p'*, secured to the rudder, shouldered groove, *g*, provided in said pin, *p'*, and pawl, S, provided in a guide or casing in the stern of the boat, B, pin, *s*, and spiral spring, *s'*, engaging thereon, substantially as described.

5. In a rudder attachment for boats a funnel-shaped hinge-joint, C, hinge-joint, C', pins, *p*, *p'*, provided upon the rudder engaging respectively in the joints, C, C', groove, *g*, provided in the pin, *p'*, and pawl connection adapted to engage in said groove, *g*, consisting of a slide-pawl, S, pin, *s*, and spiral spring, *s'*, substantially as described.



## 502,724. SNOW-SHOVEL. JOHN KAERCHER, Baraboo, Wis. Filed Mar. 30, 1893. Serial No. 468,301. (No model.)



*Claim.*—1. As an improved article of manufacture, a shovel having a wooden blade with its sides and forward edge wired, by a continuous piece of wire, substantially as specified.

2. As an improved article of manufacture, a shovel having a wooden blade with its lateral and forward edges provided with a groove, and a wire arranged in said groove, and its free ends looped around the handle, substantially as specified.

3. The combination with the blade; of the handle secured thereto, and the wire passed around the lateral and forward transverse edge, and its free ends looped around the handle and secured, substantially as specified.

4. The combination with the blade, having the groove in its lateral and forward transverse edge; of the wire arranged in said groove and having its engaging or contact portion roughened or pointed, substantially as specified.

## 502,725. TILE. MAX KAESTNER, Herzogenrath, assignor to William Zimmermann, Cologne, Germany. Filed Apr. 8, 1893. Serial No. 469,626. (No model.)



*Claim.*—A cement tile, having along two adjacent edges an upwardly extending ledge or beading and along the opposite adjacent edges a downwardly extending beading or ledge, one of said ledges or beadings being fluted at its point of juncture with the ledge of the next tile engaging with it in the manner substantially as described and shown.

## 502,726. PEN-EXTRACTOR. JOHN L. KRAGLE, Clearfield, Pa. Filed Oct. 6, 1892. Serial No. 448,019. (No model.)

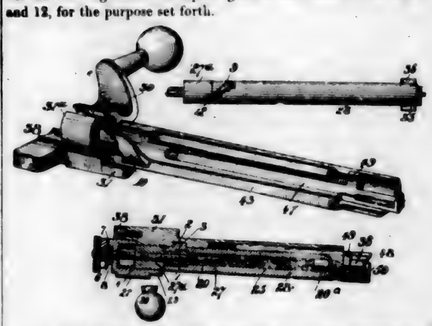


*Claim.*—The herein described pen extractor, the same consisting of the block, oblong in plan, and provided at its ends and flush with its upper face with perforated screw-receiving flanges, and between its ends and its upper side with an oblong recess, one end of which is rounded and undercut, a jaw pivoted in the opposite end of the recess and having is free end rounded and beveled to conform to and abut against the under side or end of the recess and a spring interposed between the bottom of the recess and the free end of the jaw, substantially as specified.

## 502,727. STRAIGHT-PULL BREECH-BOLT FOR FIREARMS. OLE H. J. KRAG and ERIK JØRGENSEN, Kongsberg, Norway. Filed Dec. 31, 1892. Serial No. 456,938. (No model.) Patented in Norway Feb. 24, 1892, No. 2,553, and in Italy Oct. 8, 1892, No. 32,722.

*Claim.*—1. The combination, with the breech bolt, the firing pin screw-threaded at its rear end, the actuating spring for said firing pin, and an abutment within the bolt for the rear end of said spring; of the sleeve, 4, provided with a rib having a full cock notch formed therein, said sleeve having at its rear end an interior annular recess and a peripheral slot merging into said recess and the lock nut, 5, screwing onto the threaded end of the firing pin and provided with a collar fitting into the annular recess of the sleeve, for the purpose set forth.

2. A straight pull breech bolt provided with a spiral rib, as 9, the locking sleeve, 27, fitting into the bolt and provided on its enlarged rear projection with a rib, 12, forming a continuation of said rib, 9, and a lever handle provided with a sleeve encompassing the breech bolt and having an interior spiral groove into which fit the ribs, 9 and 12, for the purpose set forth.



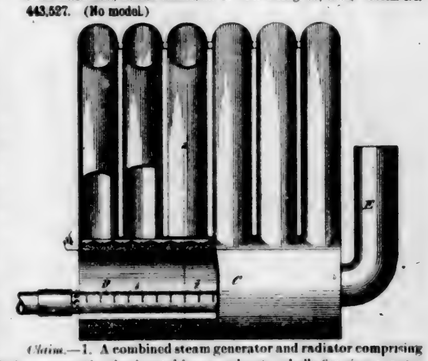
3. In a breech loading gun, an extractor carrier constructed to form a dust cap for the receiver, said carrier provided with a sleeve bearing for the breech bolt, and a lever handle projecting from said sleeve bearing, said parts being formed integral.

4. The combination with the breech bolt provided with a spiral rib near its rear end, of means for imparting a partial rotation to the bolt and for extracting the empty shell from the breech, comprising a sleeve having an interior spiral groove into which fits the spiral rib on the bolt, said sleeve having an arm projecting forwardly, and a lever handle projecting radially therefrom, said forwardly projecting arm provided on its under side with a longitudinal groove and an extractor movably seated in said groove, for the purpose set forth.

5. The combination with the breech bolt provided at its outer end with a radial lug, 26, and near its rear end with a peripheral spiral rib; of means for imparting a partial rotation to the bolt and for extracting the empty shell from the breech, comprising a sleeve bearing for the bolt provided interiorly with a spiral groove into which fits the spiral rib on the bolt, said sleeve having an arm projecting forwardly and a lever handle projecting radially therefrom, said forwardly projecting arm having a longitudinal groove in its under side, and an extractor movably seated in the said groove and provided near its forward end with a radial arm, 49, for the purpose set forth.

6. The combined extractor carrier and dust cap, the bearing sleeve, 31*, provided with a longitudinal locking rib, 31 and a radial lever, 30, said parts being formed integral.

## 502,728. COMBINED STEAM GENERATOR AND HEATER. ARNOLD KREUSLER, Staten Island, N. Y. Filed Aug. 19, 1892. Serial No. 443,527. (No model.)

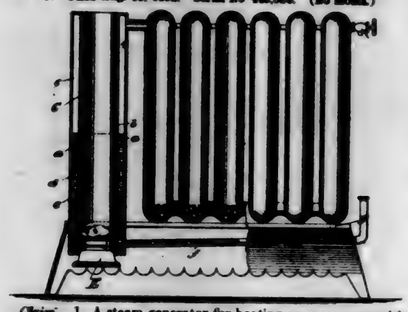


*Claim.*—1. A combined steam generator and radiator comprising in its construction horizontal inner and outer shells forming a water and steam space between them, capillary material located in said space, a radiator connected with the upper portion of said space, and means for heating the inner shell, substantially as and for the purpose described.

2. A combined steam generator and radiator comprising in its construction horizontal inner and outer shells forming a water and steam space between them, capillary material located in said space,

a screen surrounding the capillary material and holding it in contact with the inner shell, a radiator connected with the upper portion of said space, and means for heating the inner shell, substantially as and for the purpose set forth.

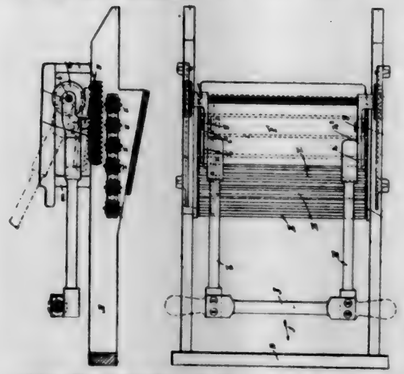
**502,729. STEAM-GENERATOR.** ARNOLD KESSLER, Staten Island, N. Y. Filed Aug. 19, 1892. Serial No. 443,522. (No model.)



*Claim.*—1. A steam generator for heating purposes, comprising in its construction upright tubular shells *a* and *b* having a water and steam space *c* between them and having inlet and outlet connections with a radiator, and having capillary material arranged in said space, and means for heating the space inside the inner shell, substantially as and for the purpose set forth.

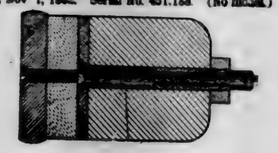
2. A steam generator for heating purposes, comprising in its construction upright tubular shells *a* and *b* having a water and steam space *c* between them and having inlet and outlet connections with a radiator, and having capillary material arranged in said space, a screen surrounding said capillary material and holding it in contact with the inner shell, and means for heating the space inside the inner shell, as and for the purpose set forth.

**502,730. WASHING-MACHINE.** FREDERICK A. LALLEMAND, Montreal, Canada. Filed July 9, 1891. Renewed Nov. 18, 1892. Serial No. 452,361. (No model.)



*Claim.*—The combination, with the supporting frame, the corrugated rollers, and the belts connecting the said rollers in pairs, of the corrugated board provided with a handle for reciprocating it, the wheels carried by the said handle, and the guides for the said wheels to engage with, substantially as and for the purpose set forth.

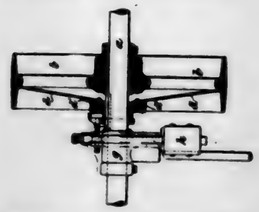
**502,731. CUSHION-TIRE.** WOODBURN LANGMUIR, Toronto, Canada. Filed Nov 7, 1892. Serial No. 451,153. (No model.)



*Claim.*—1. An improved cushion tire, comprising an inner metal band bolted to a felly by a hollow bolt, an outer metal band, a rubber band placed between said inner and outer bands, and a bolt projecting through the rubber and metal bands and into the hollow bolt, substantially as described.

2. An improved cushion tire, consisting of an inner metal band bolted to the felly by a hollow bolt, an outer metal band, a rubber band placed between the inner and outer metal bands, a bolt projecting through the metal and rubber bands and held in position by a nut and spring; substantially as and for the purpose specified

**502,732. CLUTCH.** WILLIAM H. LINDSAY, Bristol, England. Filed Apr. 18, 1893. Serial No. 470,856. (No model.)

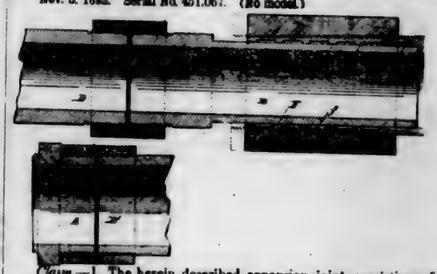


*Claim.*—1. The combination of a shaft, a pulley free to turn on the shaft but prevented from moving endwise, a sleeve free to move endwise on the shaft but turning with it, a flexible dished disk fixed to the sleeve with its edge bearing against the inner surface of a rim on the pulley, a fixed tube or bearing in which the shaft works and mechanism connecting the sleeve and the tube or bearing by which the former can be moved endwise on the shaft.

2. The combination of a shaft, a pulley free to turn on the shaft but prevented from moving endwise, a grooved sleeve free to move endwise on the shaft but turning with it, a flexible dished disk fixed to the sleeve with its edge bearing against the inner surface of a rim on the pulley, a fixed tube or bearing in which the shaft works, a screw with a circularly notched head lying in the groove of the sleeve, a nut carried by the tube or bearing and working on the screw, and means for turning the nut.

3. The combination of a shaft, a pulley free to turn on the shaft but prevented from moving endwise, a grooved sleeve free to move endwise on the shaft but turning with it, a flexible dished disk fixed to the sleeve with its edge bearing against the inner surface of a rim on the pulley, a fixed tube or bearing in which the shaft works, a plate in the groove of the sleeve, a rod having one end pivoted to the plate and the other end to a lever pivoted to the tube or bearing, and means for turning the lever about its pivot.

**502,733. EXPANSION-JOINT.** JOSEPH LISTER, Chicago, Ill. Filed Nov. 5, 1892. Serial No. 451,067. (No model.)

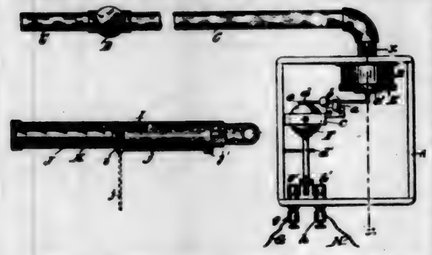


*Claim.*—1. The herein described expansion joint, consisting of two telescopically connected metal pipes, the outer one of which has a tapering surface on the exterior and a series of ring-like contact surfaces on the interior, in combination with an external clamp adapted to fit the said tapered surface and to be forced longitudinally along the same to crowd the outer pipe against the inner, substantially as set forth.

2. In an expansion joint, the combination of the inner pipe the outer taper surfaced pipe, provided with a screw thread on the taper surface and formed with a series of ring-like contact surfaces on the interior, and a hollow taper threaded clamp engaging with the aforesaid thread on the outer pipe, substantially as set forth.



**502,734. FIRE-ALARM APPARATUS.** SAMUEL W. LUDLOW, Madisonville, Ohio. Filed Nov. 1, 1892. Serial No. 450,691. (No model.)



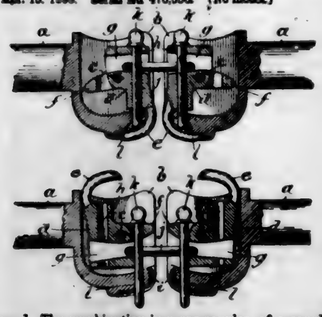
*Claim.*—1. In a fire-alarm, the combination of the gas pipes containing illuminating gas in the building to be protected, means for giving an alarm exposed to pressure of said gas, pressure-inducing devices connected at various points with the pipes containing said gas, and means for holding said pressure-inducing devices normally inert till heated, whereby the gas becomes the medium for actuating the alarm by transmission of impulses imparted by the pressure-inducing device, substantially as set forth.

2. In a fire-alarm, the combination of air or gas pipe, an alarm-actuating device operating by concussion, connected to said pipe and a thermostat containing an expansible medium having communication with the pipe and held normally inactive by a fusible medium, whereby upon melting of the fusible medium, the expansible medium is set in operation and an impulse is imparted through the pipe by compression or concussion of its contents, substantially as explained.

3. In a fire-alarm, the combination of gas or air pipes, thermostats attached to said gas or air pipes, which when actuated by heat causes a compression or concussion in the contents of said pipes, the drum B having a diaphragm E exposed to the pressure in said pipes, the lever *b* having a button *a* resting against said diaphragm, the weight *f* normally retained by said lever, contact points *g'*, *h'* forming terminals in an alarm circuit and upon which the weight is adapted to fall and close the circuit, substantially as described.

4. A fire-alarm consisting of gas or air pipes, thermostats attached to said gas or air pipes in combination with the drum B having a flexible diaphragm E, the lever *b* actuated by said diaphragm the weight or ball F, having a stud or pin *d* and metallic plate *c*, and the contact for connection with an electric circuit and upon which the weight falls to close said circuit, all substantially as described.

**502,735. CAR-COUPLING.** ALEXANDER C. MARFIN, Chicago, Ill. Filed Apr. 15, 1893. Serial No. 470,550. (No model.)



*Claim.*—1. The combination in a car-coupler, of a coupling device consisting of a hook and loop integral with each other and pivoted within the draw-head, a link-socket formed within said coupling device substantially at right angles to the body of the hook, and a pin-socket having its axis substantially at right angles to that of said link-socket.

2. The combination with a draw-head, of an elbow-shaped coupling device pivotally mounted therein, said device having a hook upon one part and a slotted arm or loop upon the other, a link-socket therein arranged substantially at right angles to the body of the hook, a pin-socket substantially at right angles to said link-socket, and a socket in the bottom of the draw-head, whereby a detachable link may be used either above or below the pivotal point of said elbow-shaped coupler, substantially as described.

3. The combination with a draw-head, of an elbow-shaped coupling device pivoted therein having a hook upon one part and a loop upon the other, link-socket *g* and pin-socket *h*, substantially as described.

4. The combination with a draw-head open at the top and front, of an elbow-shaped coupler having a hook upon one part and a link upon another, of the link-socket *g*, pin-socket *h*, and the cut-away portion *i*, whereby the hook may be protected from impact while the link is used in connection with the socket *g*.

5. The combination with a draw-head, of a pivoted hook-and loop coupling device and double link sockets, one of which is formed in the pivoted coupling device itself and the other in the bottom of the draw-head beneath the loop, substantially as described.

6. A car-coupler consisting of two elbows pivotally secured in opposite draw-heads which are open at the front and top respectively, each of said elbows having a hook upon the extremity of one arm and a corresponding loop or opening at or near the extremity of the other, said elbows being provided with link-sockets therein substantially at right angles to the bodies of the hooks, pin-sockets arranged substantially at right angles to the axes of said link-sockets, and pin-sockets in the bottoms of said draw-heads in alignment with said loops, substantially as set forth.

7. The combination with a draw-head, of the pivoted coupling device *d*, having loop *f*, a space beneath for the reception of a link, link and pin sockets *g h*, respectively, and a pin-socket in the bottom of the draw-head and in vertical alignment either with the pin socket *h* or loop *f*, according as said coupling device is in one or the other of its extreme positions, substantially as described.

**502,736. TYPE.** MORTIMER O. MERRITT, Springfield, Mass., assignor to the Yost Writing Machine Company, New York, N. Y. Filed Oct. 24, 1888. Serial No. 289,020. (No model.)



*Claim.*—1. Type for type-writing machines in which the shanks of the type bear the same relation in position or distance to the common center of the alphabet or font; substantially as set forth.

2. Type for type-writing machines having their shanks positioned relatively to the common center of the alphabet and coincidently therewith; as set forth.

3. Type-writing machines, consisting each of a bed, a shank, and a printing character and in which all of the shanks are of uniform size and bear the same relation in position or distance to the common center of the alphabet or font; substantially as set forth.

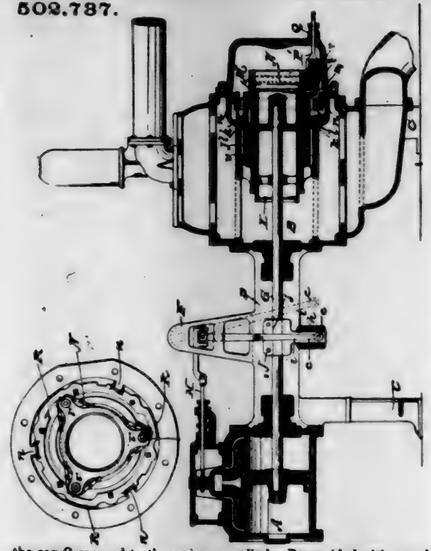
**502,737. DUPLEX STEAM-PUMP.** CASSIUS M. MILLER, Canton, Ohio. Filed June 13, 1892. Serial No. 436,471. (No model.)

*Claim.*—1. In a duplex steam pump, the combination with the casing or cylinder B, having an inwardly projecting flange or rim *k*, and a series of inwardly extending lugs *n* at its outer end, a packing box cylinder J, located in said casing, having a peripheral flange *l* intermediate its ends, the ring K, embracing the packing box cylinder near its outer end, and the bolts *o*, passing through said ring and abutting against the flange *l*, for forcing the ring against the lugs *n*, substantially as described.

2. In a duplex steam pump, the combination with the casing or cylinder B, of the packing box cylinder J, located therein, having a series of lugs *m* at its outer end, the plunger L located and working in said packing box cylinder, the follower M, embracing the outer end of said plunger and provided with a series of lugs *r*, the sprocket nuts *s* journaled therein, the chain engaging with said nuts, and the screw bolts *t*, connected with the lugs *m*, and engaging with screw threaded apertures in the sprocket nuts, substantially as described.

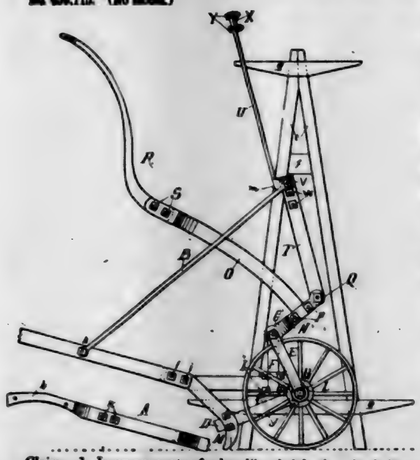
3. In a duplex steam pump, the combination with the casing B of the packing box cylinder J located therein, the plunger L working in cylinder J, the follower M, embracing the outer end of said plunger, and provided with a series of lugs *r*, the sprocket nuts *s*, journaled in said lugs, the chain N engaging with said nuts, the screw bolts *t* engaging with said sprocket nuts and with lugs *m* on said follower,

502,787.



the cap O, secured to the casing or cylinder B, provided with a packing box Q, and the winding wrench passing through said box and connected with one of the sprocket nuts, substantially as described.

502,788. BRICK-TRUCK. JAMES F. MOCK, Muncie, Ind., assignor of one-half to John D. Mock, same place. Filed Jan. 21, 1893. Serial No. 458,115. (No model.)



*Claim.*—1. In an apparatus for handling brick, the wheeled carrier consisting in an axle D, of the shape and position specified, the fulcrum-posts F, combining a part thereof and joined thereto, the arms N, in union with the fulcrum-post spindles J, and bolts Q, forming toggle-joints at same, and stud-bolts V, and extensions U, their peculiar shape and application, and operating lever R and lever arms O and lifting-post T, and the means for operating the same substantially as shown and described.

2. In an apparatus for handling brick, a brick-rack carrier-truck as herein described in combination with a brick pallet rack consisting of the main posts c suitably braced and provided with brackets *g*, and the beam *f* by which the rack is suspended, substantially as shown and described.

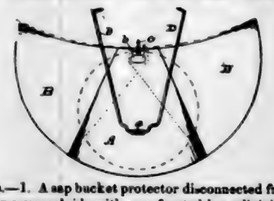
3. An apparatus for handling brick, the combination of the wheeled carrier formed and constructed as specified with the brick pallet rack, consisting of the legs c, the ties *d*, the braces *e*, and the beam *f* of the shape specified, as and for the purpose shown and described.

502,789. NAPKIN-HOLDER. GEORGE S. MOCK, Lebanon, Ky. Filed May 6, 1893. Serial No. 473,270. (No model.)



*Claim.*—The improved bib and napkin holder described, comprising a piece of spring wire or the like, bent into an open ring, and having its opposite ends pointed, and provided with stops upon both branches at a suitable point in their length substantially as specified.

502,740. SAP-BUCKET COVER. MARVIN R. MOSS, Huntsburg, Ohio. Filed Oct. 24, 1892. Serial No. 449,822. (No model.)



*Claim.*—1. A sap bucket protector disconnected from the bucket and having a curved side with a perforated lug adjoining the same, a screw adapted to pass through the lug and enter the tree, and a bail secured at its middle to the cover and having its divergent free ends pointed and adapted to be driven into the tree, substantially as described.

2. The combination in a sap bucket protector of a main section provided with means of attachment to the tree, and extensible sections folding upon the main section and adapted when extended to cover and protect the bucket, substantially as described.

3. The combination in a sap bucket protector of a main section provided with means of attachment to the tree, and extensible sections pivoted to the main section and having curved edges to fit the tree, substantially as described.

4. The combination of a main section having a lug and thumbscrew and a hooked bail for attaching the cover to a tree, and wing-sections pivoted to the main section and having a curved side to fit the tree when extended, substantially as described.

502,741. WHEEL-TIRE. HENRY MYERS, Philadelphia, Pa. Filed July 7, 1892. Serial No. 439,236. (No model.)



*Claim.*—1. A wheel tire comprising a metal felly made in two annular sections and forming a V shaped annular groove, two loose rings within said groove, and an elastic tire held within said groove and by the said rings substantially as and for the purpose set forth.

2. A wheel tire comprising a metal felly made in two annular sections and forming a V shaped annular groove, two rings within said



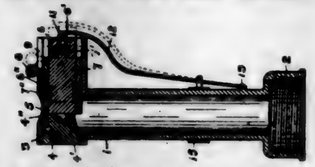
groove, and an inflatable tire formed of a flat endless sheet of elastic material held within said groove and by the said rings substantially as and for the purpose set forth.

3. A wheel tire comprising a metal felly having an annular groove, two rings within said groove, and an inflatable tire formed of a flat endless sheet of elastic material, held within said groove and by the said rings, substantially as and for the purpose set forth.

4. A wheel tire comprising a metal felly having an annular cavity two rings within said cavity an inflatable tire formed of an endless sheet of elastic material held in the said cavity by the said two rings and against longitudinal displacement by corrugations substantially as and for the purpose set forth.

5. A wheel tire comprising a metal felly having an annular groove two rings within said groove an inflatable tire formed of an endless sheet of elastic material and having an inner tubing said inflatable tire held in the said groove by two rings and against longitudinal displacement by corrugations substantially as and for the purpose set forth.

502,742. SPRAYING-NOZZLE. JOHN J. MCGOWEN, Forest Home, N. Y. Filed Jan. 26, 1893. Serial No. 459,905. (No model.)



*Claim.*—1. In a spraying nozzle a pipe, an outlet 5 communicating directly with the pipe, a valve movable transversely of the pipe and outlet and adapted to partially close said outlet and adjusted to be automatically opened by interior pressure, a spring to hold the valve partially closed except when its tension is overcome by pressure within the supply pipe, and a distinct cut off valve To entirely close said outlet 5 at will all combined substantially as set forth.

2. In a spraying nozzle the combination of the tube 3 stopped at one end by plug 4, the piston valve 6, the sleeve 7 surrounding the piston and adjustable independently thereof, and the spring adapted to yield to permit the piston valve to move out of the path of the current or of an obstruction, substantially as set forth.

3. In a spraying nozzle the combination of the tube 3 stopped at one end by plug 4, the piston valve 6, the sleeve 7 surrounding said piston and adjustable independently thereof, and the spring, said sleeve being adapted in one position to be held together with the piston in yielding manner by the spring and under such adjustment to be moved lengthwise by pressure in the pipe and also adapted to be relieved from the spring and held against such pressure, substantially as set forth.

4. In a spraying nozzle the tube 1 having cross tube 3, the piston 6 having slot 6', the sleeve 7 having projections 7' and the spring secured on tube 1 and provided with a head to engage the slot, substantially as set forth.

5. In a spraying nozzle the tube 1 having cross tube 3, the piston 6 having slot 6', the sleeve 7 having projections 7' and the spring secured on tube 1 between the lugs and provided with a head to engage the slot, and the tension adjusting sleeve, substantially as set forth.

6. In a spraying nozzle the tube 1 having cross tube 3 provided with an exit orifice and slots 9 and 10, the piston, the sleeve having the knob adapted to move in either of said slots and the spring to hold the piston in closed position, substantially as set forth.

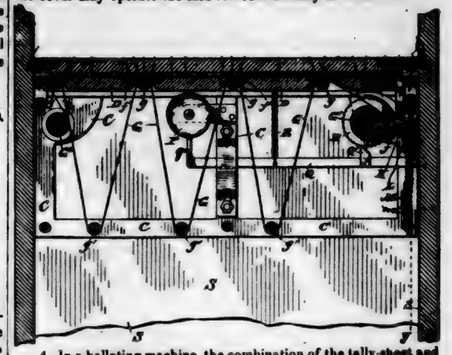
7. In a spraying nozzle the tube 1 provided with cross tube 3 the latter being provided with an outlet orifice and stopped at one end with a plug having the inclined face 4' and shoulder 4'', the piston and piston sleeve and a spring tending to hold said piston and sleeve against the shoulder under the orifice, substantially as set forth.

502,748. BALLOTING DEVICE. JOHN MCTAMMANY, Spencer, Mass. Filed Oct. 6, 1892. Serial No. 448,011. (No model.)

*Claim.*—1. In voting mechanism, a fixed part provided with a list of candidates and having slots arranged opposite these names, but not in a continuous line with each other, in order that the voter's marks made through them on the tally sheet may be at different points longitudinally of the latter, to prevent detection of voters substantially as set forth.

2. In combination with a tally sheet and means for automatically feeding the same, a slotted plate above the said sheet, having its slots arranged in two or more rows, but not in a continuous line with each other in order that the voter's marks made through them on the tally sheet may be at different points longitudinally of the latter and corresponding in position to the names of the candidates on two or more lists, and supporting rolls over which the said tally-sheet passes in a zigzag path, one of these rolls being arranged under each row of slots substantially as set forth.

3. In combination with a tally-sheet and its winding and rewinding rolls, a fixed part of the machine above the said sheet, having slots arranged in two or more rows but not in a continuous line with each other in order that the voter's marks made through them on the tally sheet may be at different points longitudinally of the latter and corresponding to the names of the candidates on two or more lists, rolls over which the said sheet passes in a zigzag path, one roll being under each row of slots, a movable cover and feeding devices between the said cover and winding roll, in order that the moving of the cover may operate the said roll substantially as set forth.



4. In a balloting machine, the combination of the tally-sheet and its winding and unwinding rolls and feeding devices, with upper rolls arranged to support the said sheet in position to be written on from above, lower rolls arranged to divide the sheet into portions corresponding to the lists of candidates, a fixed plate above said sheet, having slots arranged in two or more rows, but not in a continuous line with each other, in order that the voter's marks made through them on the tally-sheet may be at different points longitudinally of the latter, and mechanism for actuating the feeding devices arranged to be operated by the voter before he can vote substantially as set forth.

5. In combination with a ballot-box having its top provided with lists of candidates and series of slots individually corresponding thereto, a tally-sheet running under the said slots, a winding roll for the said sheet, ratchet-wheel or ratchet-wheels on the said winding roll one or more pawls acting on the said ratchet-wheels, a shaft or rod connecting these pawls, a cam-faced lever arranged to depress the said shaft and a sliding cover provided with a device which depresses the said lever when the cover is moved back to open the box substantially as set forth.

6. In combination with a ballot-box having its top provided with lists of candidates and series of slots individually corresponding thereto, a tally sheet running under the said slots, a winding-roll for the said tally-sheet, a ratchet-wheel carried by the said roll, a feeding pawl engaging the said ratchet-wheel, a pivoted arm to which the said pawl is attached, a cam-faced lever operating the said arm, a replacing spring for the said lever, and a sliding cover carrying a pivoted trip which acts on the cam-face of the said lever to operate the said pawl and ratchet in opening the ballot box for voting substantially as set forth.

7. In voting mechanism, the combination of a traveling tally-sheet, its winding roll and a pair of ratchet-wheels on the ends of the said roll, with pawls which engage the said ratchet-wheels, pivoted arms carrying the said pawls, a rod or bar connecting these arms to each other, a perforated guide-block attached to this bar, a guide-rod on which the said block slides up and down, a replacing spring which bears against this guide-block, a lever having a cam-face which bears on the said block and also an upwardly presented cam face, a sliding cover for the tally sheet, and a pivoted trip attached to this cover and arranged for contact with the said upwardly presented cam substantially as set forth.

8. In voting mechanism, the combination of a tally-sheet its winding roll and pawl, and ratchet devices for turning the latter and feeding the said sheet, a sliding block and connections for actuating the said devices, a replacing spring acting on the said block, a sliding cover and a lever provided with two cam faces, one of which is acted on by an attachment of the said sliding cover, the other cam-face acting on the said block to feed the said sheet through the intervening devices substantially as set forth.

9. In combination with a ballot box having its top provided with lists of candidates and a series of slots individually corresponding

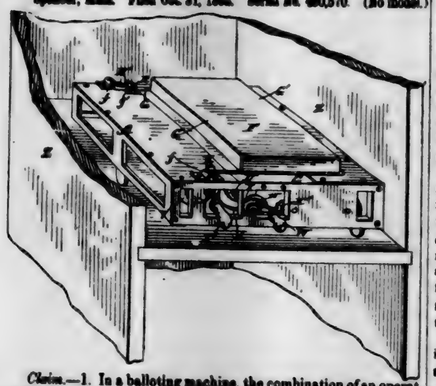
hereto, a tally-sheet arranged to pass under the lists and rows of slots, feeding devices for the said tally sheet, a sliding cover, means for operating the said feeding devices by the sliding of the cover, the winding and rewinding rolls of the said tally-sheet, a ratchet-wheel carried by the said winding-roll, and a ball arranged to be operated by the said ratchet wheel when the said tally sheet is wound forward thereon substantially as set forth.

10. In a balloting machine, the combination of a traveling tally-sheet with its winding and rewinding rolls, a ratchet-wheel turning with one of the said rolls, a pawl engaging the said ratchet wheel, a movable lid or cover, a cam faced lever arranged to operate said ratchet wheel, a pivoted strip mounted in said cover so as to engage said cam lever, and a bell-hammer lever provided with a dog and arranged to be struck by the said ratchet-wheel, when the said cover is opened substantially as set forth.

11. In a balloting machine the combination of a tally-sheet and means for feeding the same with a plate or piece arranged over the same and provided with a series of slots corresponding to the names of the candidates on a ticket and a raised rib or guide parallel to and near the said series of slots in order that a pencil may be guided by it down the line of the latter substantially as set forth.

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**502,744. VOTE-RECORDING MACHINE.** JOHN MCTAGGART, Spencer, Mass. Filed Oct. 31, 1892. Serial No. 450,570. (No model.)



*Claim.*—1. In a balloting machine, the combination of an operating lever attached to a fixed part, a winding roll provided with means engaged by an attachment of said lever, a tally sheet wound on the said roll, an apertured plate arranged below the said tally sheet and constituting a bed therefor, a guide plate located above the said sheet and bed and having apertures coinciding with apertures in the lower plate, a puncturing device adapted to pass through the said apertures and the tally sheet and a list of candidates located in proximity to the said lower plate and having its names arranged to correspond with the apertures therein substantially as set forth.

2. In combination with a tally sheet and a pair of rolls on which it is wound, a lever and connections for operating the said rolls and sheet, a movable cover provided with means for actuating the said lever, and a handle attached to the said lever for adapting it to be operated also by hand substantially as set forth.

3. A tally sheet and rolls upon which it is mounted, in combination with wheels turning with the said rolls, devices arranged to turn one or the other of said wheels as they are thrown into or out of engagement therewith, and operating in reverse directions, a movable cover, and connections between the said cover and the said devices, in order that they may be actuated by moving the said cover from over the said sheet substantially as set forth.

4. A tally-sheet and rolls upon which it is mounted in combination with ratchet wheels turning with the said rolls, a lever carrying pawls which are arranged to engage at will the said ratchet wheels and to operate in opposite directions for reversing motion, a hinged cover, and a link bar connecting the said cover to the said lever in order that the raising of the former may feed the tally-sheet substantially as set forth.

5. A tally sheet and rolls on which it is mounted in combination with a cover the raising of which allows access to the said tally sheet for puncturing it, a hook bar engaging with a stud on the said cover, a bell-hammer lever attached to the said hook bar, and a spring connected to the said lever for operating the bell when the hook slips off from the said stud substantially as set forth.

6. In a balloting machine the combination of a movable cover, with a list of candidates arranged below the said cover, on the top of the box, a rib or guide casing having holes or slots corresponding with the names on the said slip and extending within the said casing, a plate provided with apertures arranged respectively below the holes or slots in the said guide casing, a tally sheet which passes between these parts, and punching devices operated through the said holes or slots to perforate the said sheet substantially as set forth.

7. In combination with a tally sheet and a fixed list of candidates or objects to be voted for in proximity thereto, a series of punching stems or blades provided with interchangeable push buttons which are marked with initials indicating the respective parties in contest substantially as set forth.

8. In combination with a fixed list of candidates provided with open spaces at intervals, a main tally sheet an auxiliary tally sheet, means for feeding the said tally sheet under these openings in order that they may be written on substantially as set forth.

9. In combination with the main tally sheet and feeding and marking mechanism therefor, an auxiliary tally sheet or voting sheet arranged in line therewith and a plate or top piece above the same provided with slots or openings over each of these sheets, the openings over the supplemental tally sheet being of such size as to allow names to be written on it through them, and arranged opposite some of the slots in the series above the main tally sheet substantially as set forth.

10. In combination with a slotted plate having some of its slots left open and the others occupied by the names of a list of candidates or objects to be voted for, a table arranged under the said sheet to allow it to be written on through the open slots, and means for feeding the said sheet substantially as set forth.

11. In a voting machine the combination of a traveling tally-sheet and rolls on which it is wound in either direction with two fixed parts of the machine which leave a narrow passage or guideway between them, a ticket or list of candidates attached to a fixed part of the machine, a series of punches or cutting blades corresponding in number and position to the candidates on the said list and arranged to operate through the passages aforesaid substantially as set forth.

12. In a voting machine the combination of a traveling tally sheet and rolls on which it is wound in either direction with feeding devices for the said rolls and sheet, two fixed parts of the machine through which the sheet passes, a list of candidates arranged on the said machine, and a series of hand operated punches or cutting blades corresponding in number and position to the candidates on the said list and operating through passages in one of the said two parts to perforate the said sheet, the feeding of the latter being unaffected by the action of the said punches but proceeding substantially as and for the purpose set forth.

13. In combination with a tally sheet and a pair of rolls on which it is wound, a lever and connections for operating the said rolls and sheet, a movable part provided with means for actuating the said lever, and a handle attached to the said lever for adapting it to be operated also by hand substantially as set forth.

14. In voting mechanism the combination of a tally sheet and a hinged cover with connections whereby the lifting of the cover feeds the said sheet, a supplemental sheet or sheets, and means for feeding the latter by hand, the said sheets being arranged and provided with means to secure indications corresponding in position with respect to each other and the names of the fixed ballot substantially as set forth.

15. In voting machines the combination of two tally sheets arranged in line with each other and means for independently feeding them with a plate located over the said sheets, and provided with openings *a* and *A'* arranged as shown, some of the former openings being left uncovered while the remaining ones are filled with the names of a list of candidates for the purpose set forth.

16. In a balloting machine a friction spring *m*, in combination with a traveling tally-sheet its winding and rewinding rolls, the inclosing casing and puncturing devices, the said spring being attached to the shaft of one of the said rolls, and located between one end of the said roll and the said casing substantially as set forth.

17. In a voting machine, the combination of a traveling tally sheet and rolls on which it is wound in either direction, with feeding devices for the said rolls and sheet, two fixed parts of the machine between which the sheet passes, a list of candidates arranged on the said machine, and a series of hand operated punches or cutting blades, corresponding in number and position to the candidates on mid list and operating through passages in one of the said two parts to perforate the said sheet, the feeding of the latter being unaffected by the action of the said punches but proceeding substantially as and for the purpose set forth.

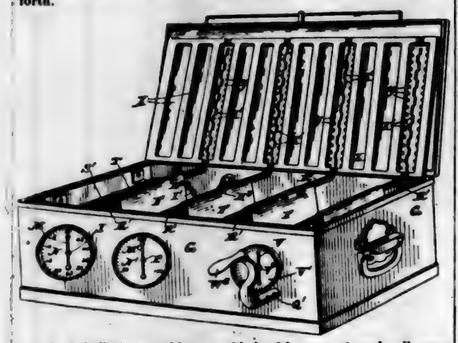
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**502,745. VOTING-MACHINE.** JOHN MCTAGGART, Spencer, Mass. Filed Mar. 17, 1893. Serial No. 466,462. (No model.)

*Claim.*—1. A balloting-machine having its list-holding plates provided with rows of tongues for overlapping the said lists and holding them in place while allowing their convenient removal substantially as set forth.



2. A balloting-machine provided with a roughened surface, over which the tally-sheet passes, in combination with feeding mechanism for the said sheet the roughening of the surface serving to insure the peculiar character of the voter's mark thereon substantially as set forth.



3. A balloting-machine provided with a roughened roll, over which the tally-sheet passes, in combination with feeding mechanism for the said sheet the roughening of the roll serving to insure the peculiar character of the voter's mark thereon substantially as set forth.

4. A balloting-machine provided with a tally sheet and feeding mechanism therefor in combination with an ink-supplying device arranged to spread a thin film of ink over the tally-sheet after the voter's mark is thereon substantially for the purpose set forth.

5. In a balloting-machine, the combination of the winding-roll its actuating mechanism and the tally-sheet with an ink-distributing roller arranged to be in contact with the sheet wound on the said roll substantially as set forth.

6. In a balloting-machine, the combination of the winding-roll actuating mechanism and tally-sheet with an ink-distributing roller in contact with the said sheet on the said roll, an inking roller resting on the said ink-distributing roller, to supply the latter, and swinging bearings for the said rollers substantially as set forth.

7. In a balloting machine the combination with a tally-sheet and its winding roll of a platform arranged to be depressed by a voter's foot on entering the booth, and connections between the said platform and the said roll to operate the said sheet substantially as set forth.

8. In a balloting-machine, the combination of a tally-sheet and its winding-roll and actuating mechanism with weighted locking pawls, engaging a ratchet on the shaft of the said roll, but easily removed therefrom by tilting up the case of the machine for the purpose set forth.

9. In a balloting-machine, the combination of a tally-sheet and its winding-roll and actuating mechanism with an index or pointer and dial and connecting devices between the said index and the feeding mechanism for the tally sheet, the said index being operated by the rotation of the said roll and indicating the number of voters substantially as set forth.

10. In a balloting-machine, the combination of a tally-sheet and winding-roll with a pointer turning with the said roll, a dial over which it travels, a second pointer, shaft and intermediate gearing and a second dial over which the latter pointer travels to indicate a greater number of voters, substantially as set forth.

11. In a balloting-machine, the combination of the tally-sheet and its unwinding roll, with a ratchet wheel carried by the latter and a locking or braking pawl, engaging the said ratchet wheel, to prevent the said roll from turning backward substantially as set forth.

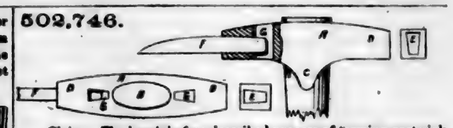
12. In a balloting-machine, the combination of the tally-sheet and its unwinding roll with a ratchet-wheel on the shaft of the said roll and a bell hammer arranged to be operated by the said ratchet wheel substantially as set forth.

13. In a balloting-machine, the combination of the tally sheet and the unwinding roll with a pointer and dial operated by the latter and the necessary actuating and connecting devices substantially as and for the purpose set forth.

14. In a balloting-machine, the combination of the unwinding roll with a crank-handle on the shaft of the latter outside of the casing a shaft and pointer rotated by the said roll-shaft, intermediate gearing and a dial over which the said pointer travels substantially as set forth.

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**502,746. MANUFACTURE OF PICKS.** WILLIAM H. H. HEAVE, Sheffield, England. Filed Aug. 30, 1891. Serial No. 403,189. (No model.) Patented in Belgium Jan. 15, 1891, No. 93,437, and in England Jan. 21, 1891, No. 1,096.



*Claim.*—The hereinbefore described process of forming cast pick heads for detachable points consisting in casting the heads with openings extending longitudinally of the head, reheating said head, driving into the socket while the casting is hot, a mandrel of the exact size of the opening desired; withdrawing said mandrel after the casting is cool, and fitting the removable points to said socket, substantially as described.

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**502,747. TOOL FOR SHARPENING PLOWS.** ERICK HELSON, St. Paul, Minn. Filed Dec. 14, 1891. Serial No. 415,054. (No model.)



*Claim.*—1. In a tool for sharpening or shaving the edges of metal instruments, hardened steel disk-shaped dies each having a tapering peripheral face and an annular concave groove upon the larger plane face adjacent to said peripheral face, substantially as and for the purpose specified.

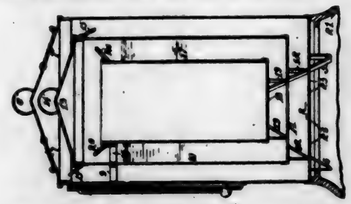
2. In a tool for sharpening or shaving the edges of metal instruments, a pair of hardened steel disk-shaped dies having tapering peripheral faces and rotatively mounted in juxtaposition in the same plane, one of said dies having its peripheral face flattened or straightened for a short distance, substantially as and for the purpose specified.

3. In a tool for sharpening and finishing the edges of metal instruments, a pair of studs eccentrically mounted upon a suitable base or standard, and convexly-tapered steel rollers rotatively mounted upon said studs, the position of said studs being such that when so mounted the larger part of the peripheral surfaces of said rollers may be in juxtaposition, substantially as and for the purpose specified.

4. A combination tool for sharpening, finishing and setting the edges of metal instruments, consisting of a base plate to which a handle may be attached, an upright bracket upon one side of said plate, a pair of dies having cutting peripheral faces or edges rotatively and eccentrically mounted in juxtaposition upon the faces of said bracket, a pair of studs eccentrically or adjustably mounted upon the opposite side of said plate, a pair of convexly-tapered steel rollers rotatively mounted upon said studs, and jaws formed by a recess in said plate, substantially as and for the purpose herein specified.

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**502,748. CULINARY UTENSIL.** JOHN H. NORTON, St. Louis, Mo. Filed May 23, 1892. Serial No. 434,758. (No model.)



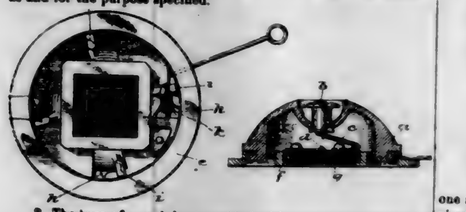
*Claim.*—In a culinary utensil, the combination, with an outer receptacle having a reticulated bottom, and provided with a cover, of an imperforate receptacle disposed therein and provided with a cover said receptacle being adapted to contain a heat absorbing substance, a second imperforate receptacle disposed in said imperforate receptacle, and means for retaining each interior receptacle elevated above the bottom of the inclosing receptacle and free from contact with the sides of the latter; substantially as and for the purpose set forth.

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**502,749. CIRCUIT-CLOSER.** AUGUSTUS J. OSBORNE, Chicago, Ill., assignor to the Western Electric Company, same place. Filed Feb. 7, 1893. Serial No. 386,983. (No model.)

*Claim.*—1. The combination with the base provided with the openings *h*, of the cap provided with lugs adapted to be inserted through said openings and a spring *k* provided with a slot *l* adapted

to receive one of said lugs and an opening in said cap opposite said spring, whereby the cap on its lugs being inserted through said openings and turned, is securely held in place but made readily removable on the insertion of a wire to compress said spring, substantially as and for the purpose specified.



2. The base of a push key provided with a seat upon which rests a block of insulating material carrying the contacts of said key, a removable cap locked to said base by a spring carried upon said base and engaging with a portion of said cap and adapted to be depressed by the insertion of a wire to unlock said cap whereby the cap is unlocked, said cap provided with a knob which is adapted to be pressed against a spring forming one of said contacts to close the same, substantially as and for the purpose specified.

3. The cap *a* provided with the lugs *i* in combination with the base *e* provided with openings *h* corresponding to said lugs, a locking spring *k* provided upon said base, whereby the cap may be locked to the base when the lugs are inserted through said openings and the cap turned, substantially as and for the purpose specified.

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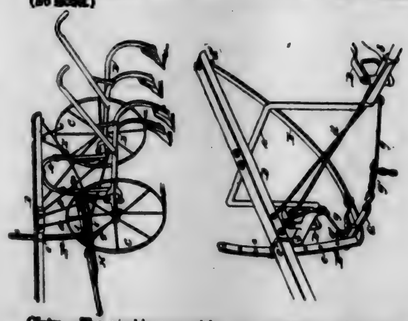
**502,750. VALVE FOR OIL-WELL PUMPS.** JOSEPH O'NEIL, Taylorstown, Pa. Filed Mar. 6, 1893. Serial No. 464,831. (No model.)



*Claim.*—The herein described working check valve for oil and other pumps, consisting of the shell 2, having a recess 1 formed at one or more sides of the same, the valve openings 7 formed in the said recess, the washers 10 surrounding said valve, the annular recesses 9 having inwardly tapering sides to confine the said washers, the plate 11 covering the said valve openings, the spring 13 and means for holding the same in position, and means for preventing the said spring from turning, all arranged and combined for service, substantially as and for the purpose described.

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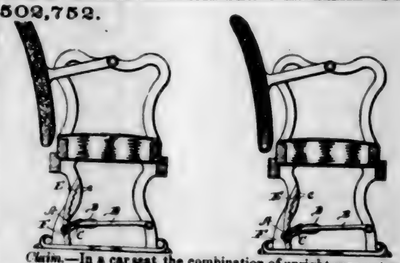
**502,751. DRAFT APPARATUS FOR CORN-PLOWS.** EDWARD B. PARKER, Delmar, Iowa. Filed July 28, 1892. Serial No. 441,463. (No model.)



*Claim.*—The combination with a corn-cultivator, of the tongue extended back of the arch, a coupling-bar attached at one end to the rear extension of the tongue, and having a vertically adjustable portion at the forward end, with means substantially as described for connecting the same with the tongue, whiffletrees connected therewith by an evener, and an adjustable bail centrally secured to the cross-bar and terminally connected with the front ends of the plows, substantially as described.

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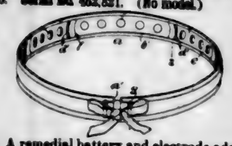
**502,752. FOOT-REST.** JAMES W. PATTERSON, Chicago, Ill., assignor to the Adams & Westlake Company, of Illinois. Filed Nov. 9, 1891. Serial No. 411,573. (No model.)



*Claim.*—In a car seat, the combination of upright segment-racks one at each end of the seat, a foot rest extending between said racks, pivoted arms secured to the ends of said rest, a shaft journaled in said arms, pawls on the ends of said shaft engaging said racks, and a toe piece for rotating said shaft, substantially as set forth.

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**502,753. ELECTRIC BODY-WEAR.** WILLIAM H. PAYNE, Philadelphia, Pa., assignor of one-half to Gustav G. Altorfer, same place. Filed Feb. 18, 1893. Serial No. 463,231. (No model.)



*Claim.*—1. A remedial battery and electrode adapted to be worn in contact with the skin and comprising a band or annulus consisting of superposed strips of electro-positive and electro-negative materials separated from each other by interposed insulating material and the edges of the external strip and insulating material folded over onto the inner face of the internal strip, whereby both strips contact with the skin of the wearer and create a difference in potential, substantially as and for the purposes set forth.

2. A remedial battery and electrode adapted to be worn in contact with the skin and comprising a band or annulus having a gap or hiatus and consisting of superposed strips of electro-positive and electro-negative materials separated from each other by interposed insulating material and the edges of the external strip and insulating material folded over onto the inner face of the internal strip, whereby both strips contact with the skin of the wearer and a difference in potential is created near the gap or hiatus, substantially as and for the purposes set forth.

3. A remedial battery and electrode, comprising a band or annulus having a gap or hiatus and consisting of superposed strips of electro-positive and electro-negative materials separated from each other by interposed insulating material and the edges of the external strip and insulating layer being folded inward onto the internal strip and the insulating layer and internal strip being perforated, whereby both strips contact with the skin of the wearer, substantially as and for the purposes set forth.

4. A remedial battery and electrode, comprising a band or annulus having a gap or hiatus and consisting of superposed strips of electro-positive and electro-negative materials, whereof the edges of the external strip are folded inward onto the internal strip, and whereof the internal strip is perforated, bars of a different electro-positive or electro-negative material inserted beneath the folded edges of the external strip, and layers of insulating material interposed between each of said electro-positive and electro negative materials and the insulating material perforated opposite the perforations in the internal strip to permit all of said strips to contact with the skin of the wearer, substantially as and for the purposes set forth.

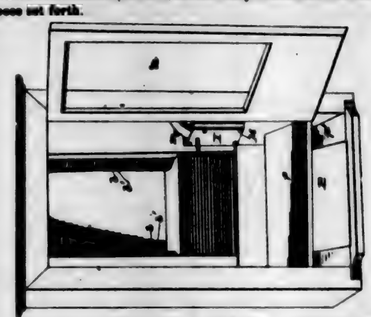
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**502,754. COIN-CONTROLLED VENDING APPARATUS.** ALBERT F. PEACOCK, Rushsaco, Mich. Filed Apr. 11, 1892. Serial No. 429,262. (No model.)

*Claim.*—1. In a coin-controlled vending machine, the combination, with a pair of vertical shafts, of a pair of spirals arranged on each shaft with the threads of one intermediate those of the other and the end of the last thread of one spiral being diametrically opposite the end of the last thread of the other, substantially as described and for the purpose set forth.

2. In a coin-controlled vending machine, the combination, with a crank-shaft a coin-receiver mounted on the crank shaft, and a casing having a coin-channel, of a wheel rotated by the crank-shaft, a pair of pins fixed in the top of the wheel, and a spring-held throw-plate engaging the pins, whereby the coin-receiver is yieldingly held in its proper relation to the coin-channel, substantially as described and for the purpose set forth.

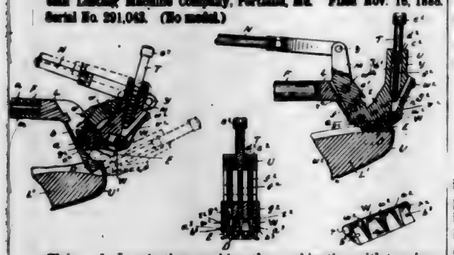
3. In a coin-controlled vending machine, the combination, with a crank-shaft, a coin-receiving disk mounted on the crank-shaft, a pair of side-plates on each side of the disk and provided with a coin-channel, and a casing having a coin-slot in line with the channel, of a wheel rotated by the crank-shaft, a pair of pins fixed in the top of the wheel, a bolt, a pair of bearings in which the bolt is mounted, a throw-plate fixed to the bolt, and a spring pressing the bolt to hold the throw-plate against the wheel, whereby the coin-receiver is held in its proper relation to the coin-channel and slot, substantially as described and for the purpose set forth.



4. In a coin-controlled vending machine, the combination, with a central disk cut away at its periphery to a depth less than the diameter of the coin, a pair of outer disks provided with long segmental notches, and a crank-shaft on which said disks are fixed, of a catch having a coin contacting-surface located over the central disk, the catch being also provided with a slotted detent, and a spring normally holding the detent into engagement with the notches in the outer disks, substantially as described and for the purpose set forth.

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**502,755. MACHINE FOR LASTING BOOTS OR SHOES.** ALBERT F. PRESTON, Lynn, Mass., assignor, by mesne assignments, to the Columbian Lasting Machine Company, Portland, Me. Filed Nov. 16, 1888. Serial No. 291,043. (No model.)



*Claim.*—1. In a lasting machine, the combination with two jaws pivoted to a suitable support for operation substantially as described, a tube or tubes $b^5$, a rod or driver, one of said jaws provided with two pivoted plates W, having a groove or grooves $w^3$, on their contiguous faces and a pin or pins or projection, on the support for the plates to abut against for the purpose specified.

2. In a lasting machine, the combination with two jaws pivoted to a suitable support for operation substantially as described, a tube $b^5$, a rod or driver $f^3$, one of said jaws provided with two pivoted spring plates W, having a groove or grooves $w^3$, on their contiguous faces, a pin or pins or projection on the support for the plates to abut against substantially as and for the purpose specified.

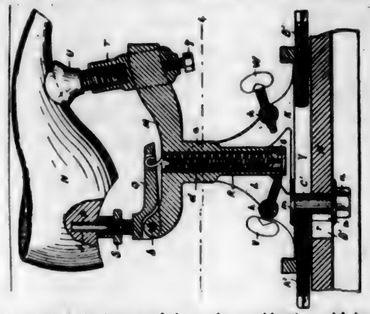
3. The combination with two jaws, pivoted to a suitable support having grooved and raised edges on their contiguous or operating faces adapted to mesh or interlock with each other of a spring $r^4$, secured to the raised edge of one jaw to project into the contiguous groove of the other jaw for the purpose specified.

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**502,756. JACK FOR BOOTS OR SHOES.** ALBERT F. PRESTON, Lynn, Mass., assignor, by mesne assignments, to the Columbian Lasting Machine Company, Portland, Me. Filed Nov. 30, 1888. Serial No. 291,331. (No model.)

*Claim.*—1. In a jack for boots and shoes, the combination with a base plate, provided with a pin C, of a slot D, in the table or support, having a central or middle portion *r*, and two backward extending portions or bearings *t*, *u*, for the jack by its pin to move and rest therein for the purpose specified.

2. In a jack, for boots and shoes, the combination with its base plate provided with a pin C, of a slot D, in the table or support, consisting of a central or middle portion *r*, two backward extending portions or bearings *t*, *u*, and a central forward extended portion *v*, for the jack by its pin to move and rest therein, for the purpose specified.

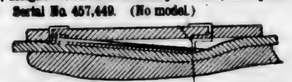


3. In a jack for boots and shoes, the combination with its base provided with adjustable stops V, W, and having an elongated slot Y, and provided with an adjustable stop projecting into said slot in the same vertical plane, and an arm or support M, for the last, provided with a downward extension R, and arranged to swing on a pivot for said extension to abut against said stops V, W, of a pin C, secured to a suitable support and engaging with said slot for the purpose specified.

4. In a jack for boots and shoes, the combination with its base provided with adjustable stops V, W, and having an elongated slot Y, and provided with an adjustable stop projecting into said slot in the same vertical plane and arm or support M, for the last provided with a downward extension R, and arranged to swing on a pivot for said extension to abut against said stops V, W, of a pin C, engaging with said slot, arranged in a slot D, in the table or support having a central or middle portion *r*, and two backward extending portions or bearings *t*, *u*, for the jack by its pin to move and rest therein, for the purpose specified.

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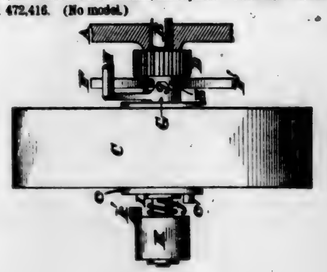
**502,757. NECKTIE-FASTENER.** HERBERT S. PULLMAN, Meriden, Conn., assignor of one-half to Henry L. Allen, same place. Filed Jan. 6, 1893. Serial No. 457,449. (No model.)



*Claim.*—As an article of manufacture a necktie fastener consisting of a plate of sheet metal substantially rectangular in shape, and provided at its four corners with means as shown for securing the same in place, a right-angle offset in said plate and near one end thereof, a longitudinal slot in the vertical portion of said offset, a spring needle, or pin secured to, and beneath the free end of the longer of the offset portions the said needle, or pin extending forward through the slot in the vertical portion, the point of said needle, or pin resting normally within a recess formed in the top of the shorter, and forward of said offset portions; said needle, or pin adapted to be raised from out the said recess in the said forward portion substantially as and for the purpose set forth.

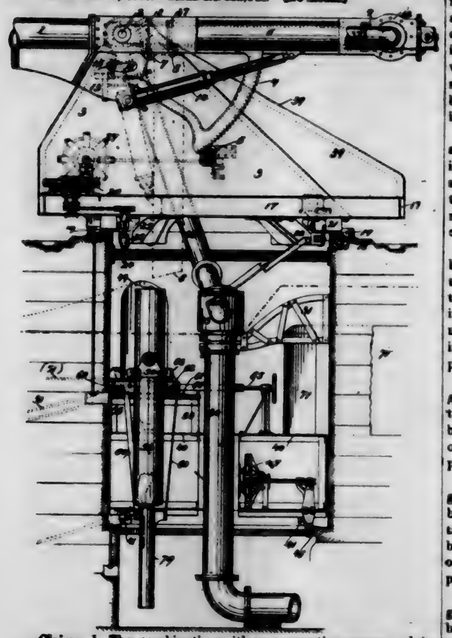
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**502,758. CLUTCH.** SILAS H. RANDALL, Wyoming, Ohio assignor of one-half to James D. Randall, same place. Filed Apr. 29, 1893. Serial No. 472,416. (No model.)



*Claim.*—The combination, in a clutch, of frame A, shaft B, journaled therein, loose pulley C, mounted upon said shaft and provided with a stud $c'$, member D, fastened to said shaft, stationary cam-collar E $e$, traversed by said shaft and bearing against the member D and located between it and pulley C, rotatable cam-collar G $g$, traversed by said shaft, said rotatable cam-collar engaging with stationary cam-collar E $e$, and in contact with pulley C, a spring J which constantly forces said pulley C against cam-collar G $g$, and a gland K, secured to said shaft and having a lug $k'$ operated by said stud $c'$, substantially as described.

**502,759. PNEUMATIC CANNON.** JOHN RAPHEY, New York, N. Y. Filed Nov. 30, 1889. Serial No. 332,041. (No model.)



*Claim.*—1. The combination with a pneumatic cannon, and its carriage, of a swinging breech section of the gun barrel pivoted at its forward end to the permanent part of the gun barrel and having its axis movable, independent of the gun barrel from an alignment therewith to an alignment with a projectile loading mechanism in which the projectile is out of alignment with the gun barrel.

2. The combination with a pneumatic cannon and its carriage, of a gun barrel, a separated butt thereof supported in permanent alignment upon frames having an interspace open at the side, and a movable breech section of the gun barrel pivoted between said frames supplemental to the space between the gun barrel and the butt thereof.

3. The combination in a pneumatic cannon, of a trunnioned gun barrel and a swinging breech section thereof pivoted on a common axis with the gun barrel trunnions, the said breech section being capable of alignment with a projectile loading mechanism in which the projectile is out of alignment with the gun barrel.

4. In a pneumatic cannon, the combination with a gun barrel, and trunnions thereof, of a pneumatic pipe or pipes connected to the breech of the gun and having trunnions independent of the gun barrel trunnions but in a common axial line therewith.

5. In a pneumatic cannon, the combination of a gun barrel, trunnions and trunnion supporting frames thereof, a pneumatic pipe or pipes connected to the breech of the gun and trunnions in axial line with the latter and trunnion supporting frames for said pipes independent of those of the gun barrel.

6. The combination in a pneumatic cannon of a swinging breech section of the gun barrel pivoted at its forward end to a permanent part or to the trunnions of the gun barrel to move in an arc as described, and a hydraulic motive cylinder and plunger pivotally connected to a rigid part of the gun barrel frame aside from the pivotal center of the breech section, and to a suitable portion of the moving extremity of the said breech section

7. The combination in a pneumatic cannon, of a pivoted movable breech section, permanent sections of the gun barrel to which the movable breech section is intermediate, and oblique jointing surfaces between the permanent sections and the movable section adapted for the purpose described.

8. The combination of a trunnioned gun barrel, a movable breech section thereof, a rotary gun carriage, a turn table below the carriage, a projectile conveying truck adapted to said turn table and an elevating ram beneath the turn table and radially adjustable together with the projectile truck at different distances from the center of the turn table, substantially as described.

9. In loading mechanism for ordnance the combination of a trunnioned gun barrel, a swinging breech section thereof pivoted aside from the axis of the trunnions, a rotary gun carriage, a table below and suspended from the gun carriage and having a circular track concentric with the axis of the said carriage, a projectile truck bearing frame movable upon said circular track, and having receiving ways for the truck radial to the table center, and an elevating ram radially adjustable in the table in a plane common to that of the gun barrel to correspond vertically with the vertical position of the swinging breech.

10. In loading mechanism, for ordnance the combination of a gun and its carriage, a rotary turn-table below the gun carriage, receiving ways radially adjustable thereon a projectile truck adapted to said ways, a stop to determine the position of the truck with relation to the receiving ways and an elevating ram suspended from the radially adjustable receiving ways at a position beneath the projectile carried by the truck.

11. In pneumatic ordnance the combination of a trunnioned gun barrel a swinging breech section thereof pivoted on an axis common to the trunnions, a rotary gun carriage, the vertical axis whereof intersects the horizontal axis of the trunnions, pneumatic pipes connecting a stationary reservoir with the movable gun barrel having an annular rotary joint in the vertical axis of the gun carriage beneath and in line with the lowered position of the swinging breech for the purposes specified.

12. In loading mechanism for ordnance, the combination, with a gun barrel, of a projectile truck consisting of a carrying cylinder trunnioned at a point intermediate of its length to horizontal wheeled-bearing side frames, within which the cylinder is movable in the arc of a circle to bring said cylinder in alignment with the gun barrel or portion thereof, substantially as described.

13. In loading mechanism for ordnance, the combination with a gun barrel, of a rotary turn-table and a projectile truck adapted to be received by said turn-table and consisting of a carrying cylinder trunnioned at a point intermediate of its length to horizontal wheeled-bearing side frames within which the cylinder is movable in the arc of a circle to bring said cylinder in alignment with the gun barrel or portion thereof, substantially as described.

14. In loading mechanism for ordnance, the combination with a gun barrel, of a turn-table rotative independent of and below the gun barrel, and a loading truck adapted to said turn-table whereby the gun may be loaded in any position thereof, substantially as described.

15. The combination with a gun barrel, of a movable breech section and a catch therein for holding the projectile in position, substantially as described.

16. The combination with a gun barrel, a movable breech section, a catch therein for the projectile, a loading truck having a cylinder for sustaining the projectile in alignment with the breech section and having a catch for holding the projectile, substantially as described.

17. The combination with a gun barrel, of a movable breech section, and a cylinder for holding the projectile in position to be moved into the breech section and adapted to form a continuation of said movable breech section whereby the gun is loaded under cover, substantially as described.

18. The combination with a gun barrel, and its carriage having an opening below the gun breech, of a movable breech section to the gun adapted to move down into the opening in the carriage, substantially as described.

19. The combination with a gun barrel, its carriage, a centrally arranged pipe joint connected with a pressure supply and with the gun and provided with a central opening, of a movable breech section to the gun barrel adapted to move down in alignment with said central opening of the pipe joint, substantially as described.

20. In pneumatic ordnance, the combination with the trunnioned gun barrel, its carriage sustaining the trunnions of the barrel, and a pressure supply pipe leading to the breech of the gun and sustained by the gun carriage independent of that portion sustaining the trunnions of the gun, of a rotary pipe joint interposed in said pressure supply pipe, one part of which is movable with the gun barrel and its carriage and the other part fixed with respect thereto, substantially as described.

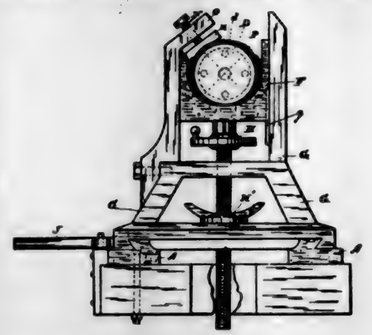
21. In pneumatic ordnance, the combination with a trunnioned gun barrel, a carriage supporting the trunnions of the barrel a pressure supply pipe or pipes connected with the gun barrel in axial alignment with said trunnions, and supports therefor from the carriage independent of the gun trunnion supports, substantially as described.

22. In pneumatic ordnance, the combination with a gun barrel and its carriage, of a centrally arranged pressure supply stand-pipe mounted independent of the carriage and fixed with respect thereto, of supply pipes leading from said central pipe to the opposite sides of the gun barrel and connected with its breech and movable with the gun and carriage, substantially as described.

23. The combination with a gun barrel, and its trunnion block having depending webs, of a gun carriage, the side frames of which support the trunnion block, and a tie bolt for said side frames passing through an opening in the depending webs, substantially as described



**502,760. ATTACHMENT FOR LATHES.** FRANK S. RICHTSMEIER, Dayton, Ohio. Filed Apr. 4, 1892. Serial No. 427,693. (No model.)



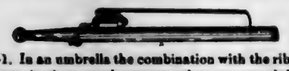
*Claim.*—1. In an attachment to lathes, a trough, having removable extension, consisting of a longitudinal plate, attached thereto, in combination with supporting pieces, having adjusting screws, and a lever whereby the trough may be moved back and forth, in a longitudinal direction, substantially as herein shown and described.

2. An attachment for lathes consisting of a trough adapted to hold abrasive substance, and be adjusted both vertically and laterally beneath a rotated column of stone secured between the centers of a lathe, substantially as described.

3. The trough F, provided with the extension O, and the adjustable grinding plate M, said trough adapted to hold a loose abrading material, and be subjected to a vertical and lateral adjustment, as herein described.

4. The combination with the table G, of a trough provided with the longitudinal ribs (f) and adapted to hold a loose abrading material that may be kept in close proximity to a rotating column of stone by means for adjusting said trough both laterally and vertically, and the longitudinal grinding plate M, by means of which the area of abrading surface may be increased or diminished, substantially as herein described.

**502,761. DETACHABLE UMBRELLA-COVER.** ANDREW J. ROBINSON, Boston, Mass. Filed Oct. 17, 1892. Serial No. 449,081. (No model.)



*Claim.*—1. In an umbrella the combination with the ribs or bows thereof having projections or enlargements thereon toward their outer ends, of a detachable cover and means for securing the margins of the cover to the ends of the bows, said means comprising a metallic fastening having a body portion attached to the cover, bent to engage and partially encircle the bow, an extension beyond said body portion arranged at an oblique angle thereto, having a hole through it for the end of the bow and of sufficient size to enable the fastening to become caught and held by the aforesaid projections or enlargements, while the pull of the material causes the body to become clamped upon the bow, substantially as described.

2. In an umbrella the combination with the ribs or bows thereof having projections or enlargements thereon toward their outer ends, of a detachable cover and means for securing the margins of the cover to the ends of the bows, said means comprising a metallic fastening having a body portion attached to the cover, bent to bear on and partially encircle the bow, an extension beyond said body portion in engagement therewith, having an intermediate part adapted to bear on the rib, the outer end of said extension being bent downwardly and having a hole through it for the end of the bow, and of sufficient size to enable the fastening to become caught and held by the aforesaid projections or enlargements, substantially as described.

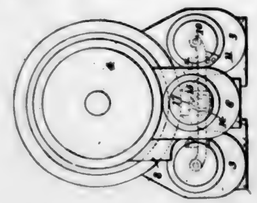
3. In an umbrella the combination with the ribs or bows thereof having projections or enlargements thereon, of a detachable cover and means for securing the margins of the cover to the bows, said means comprising a metallic fastening having a body portion attached to the cover, bent to bear on and partially encircle the bow, and an extension beyond said body portion in engagement therewith, having an intermediate part adapted to bear on the rib in alignment with the contacting surface of the body portion, the outer end of said extension being bent downwardly and having a hole through it for the end of the bow, substantially as described.

**502,762. WATER-CLOSET SEAT.** JOSEPH P. RUNDLE, Milwaukee, Wis. Filed Nov. 21, 1892. Serial No. 452,670. (No model.)



*Claim.*—A detachable integral metal closet-seat hood having a lower substantially straight edge adapted to fit and rest on the lid plate at a distance from its rear edge, an upper substantially parallel edge at a distance therefrom and rearwardly thereof, ends turned rearwardly and terminating in the vertical plane of the upper edge, a medial guard extending forwardly in the upper portion of the hood adapted to fit about a flushing pipe, the outer surface of the hood being otherwise oblique retreating upwardly from its lower edge, the hood being adapted to inclose a space in and cover the actual or approximate right angle at the junction of the wall and lid plate at a distance therefrom, substantially as described.

**502,763. STEAM-ENGINE.** JOHN W. SARGENT, Scranton, Pa. Filed Apr. 13, 1893. Serial No. 470,223. (No model.)



*Claim.*—1. In a steam engine the combination of a double-valved cylinder and a single valved cylinder arranged tandem, the steam chests of the former cylinder being separated and arranged with the space between them opposite the steam chest of the latter cylinder, and a single crosshead to which each of the valve stems of said cylinders is connected, substantially as described.

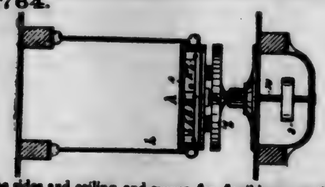
2. In a steam engine the combination of a double-valved cylinder and a single-valved cylinder arranged tandem, the steam chests of the former cylinder being separated and arranged with the space between them opposite the steam chest of the latter cylinder, and a crosshead having its extremities connected to the valve-stems of the double-valved cylinder and a central arm extending between the steam chests of said cylinder and connected to the valve stem of the single-valved cylinder, substantially as described.

3. In a steam engine the combination of a double-valved cylinder and a single-valved cylinder arranged tandem, the steam chests of the former cylinder being separated and arranged with the space between them opposite the steam chest of the latter cylinder, and a crosshead having a central arm arranged between the steam chests, of a double-valved cylinder, the said crosshead being provided with guides 13 and a guide 14 for the arm, substantially as described.

**502,764. FLOUR-SIFTING SIEVE.** ADOLF SCHLER, Hagenow, Germany. Filed Jan. 5, 1893. Serial No. 457,353. (No model.)

*Claim.*—In a bolter having a shaking or swinging motion, the compartments formed of sifting surfaces not only on the bottom, but

502,764.



also on the sides and ceiling and means for flexibly supporting said compartments to allow free vibration substantially as and for the purpose set forth.

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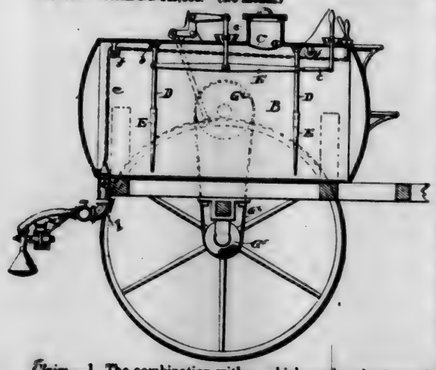
502,765. BLUE ALIZARIN DYE. ROBERT E. SCHMIDT, Elberfeld, Germany, assignor to the Farbenfabriken, vormals Fr. Bayer & Co., same place. Filed May 11, 1892. Serial No. 432,612. (Specimens.) Patented in England Mar. 12, 1892, No. 4,871.

*Claim.*—1. The process of producing a new alizarin derivative by treating the herein described hexaoxyanthraquinone with ammonia preferably in the presence of oxygen or atmospheric air.

2. The new product herein described, which is a dark colored paste, insoluble in water, soluble in sodium carbonate with violet-blue, in ammonia liquid with blue, in soda-lye with greenish-blue color, in hot baryta water with indigo-blue color, in glacial acetic acid with bluish-red color, in alcohol with bluish-red color showing a more violet tinge, and in concentrated sulfuric acid with a current-red color, from which on adding water a brown precipitate is separated; these solutions in glacial acetic acid and alcohol when looked at in the spectroscope show two absorption bands, the one in the yellow part, the other in the green part of the spectrum, and its solution in concentrated sulfuric acid two absorption bands which are displaced toward the violet part of the spectrum; the dye-stuff produces on wool mordanted with alumina salts blue shades, and on wool mordanted with chromium salts greenish-blue shades.

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502,766. APPARATUS FOR DISTRIBUTING SOLUTIONS FOR DESTROYING INSECTS. JACOB SCHERZER, Louisville, Ky. Filed Aug. 20, 1892. Serial No. 443,608. (No model.)



*Claim.*—1. The combination with a vehicle, and a wheel or pulley carried by the hub of one of the wheels thereof, of a tank carried by the vehicle, agitators suspended in said tank, a rod connecting said agitators, a pivoted lever connected at one end to said rod, a bell-crank-lever, a pitman connecting said bell-crank-lever and pivoted lever, a wheel or pulley, a pitman connected at one end eccentrically to said wheel or pulley, and a band or chain passing over said wheels or pulleys, substantially as and for the purpose set forth.

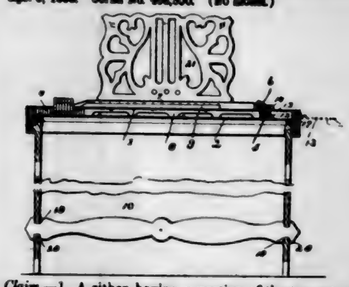
2. The combination with a tank, a discharge pipe, and flexible tubes having sprinklers thereon extending from the pipe, of a bar having elongated slots therein running longitudinally of the bar and intersecting each other, brackets located in one set of the slots adapted to hold the sprinkler, and devices passing through the intersecting slots for holding the bracket adjustably in the slot, whereby the position of the sprinklers may be changed.

3. The combination with a tank, and a water discharge pipe, of a cross bar having intersecting elongated slots therein extending longitudinally of the bar, flexible pipes leading from the water discharge pipe and having spraying devices on their free ends, brackets for supporting the spraying devices, said brackets provided with elongated slots and adapted to be inserted in slots in the cross bar, and bolts passed through slots in the cross bar and in the brackets for adjustably holding the brackets with their attached spraying devices in position, substantially as set forth.

4. The combination with a vehicle, and a tank thereon, of agitators pivoted inside of the tank and adapted to swing therein, a bar connecting the agitators, a hand lever and power mechanism, connected with the agitators whereby they may be vibrated by hand or by power, substantially as set forth.

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502,767. ZITHER. FRANK SCHWARZER, Washington, Mo. Filed Apr. 3, 1893. Serial No. 468,850. (No model.)



*Claim.*—1. A zither having a portion of the top cut away and the pin block located below said cut away portion, and a cover for said cut away portion, substantially as set forth.

2. A zither having a portion of the top cut away and the pin block located below the cut away portion, and a cover hinged at one end of the zither, and adapted to fit within the cut away portion and be even with the upper surface thereof, substantially as set forth.

3. A zither having a portion of the top cut away and the pin block located below the cut away portion, a cover for the cut away portion, and a hand rest at the inner end of the cover adjacent the string rest, substantially as set forth.

4. A zither, provided with a sound hole located substantially midway of the top, and with additional sound holes, located adjacent the strings, substantially as set forth.

5. The combination with a zither, the frame of which is extended below the bottom board, of legs pivotally secured to and adapted to be folded within said extended portion of the frame, and a cross bar detachably secured to the lower portion of the legs and adapted to be placed within the extended portion of the frame between the legs and the bottom of the zither, substantially as set forth.

6. The combination with a zither, the frame of which is extended below the bottom board, of a block across each end of the frame, the lower edges of which are at different distances from the bottom of the frame, a leg pivotally secured to each block, the lower end of which is provided with a slot, and adapted to be folded within the extended portion of the frame, one upon the other, and a cross bar each end of which is notched and adapted to be passed through the slot in the leg, whereby the shoulders formed by the notches will engage with the sides of the legs and brace them against lateral movement, substantially as set forth.

7. The combination with a zither, of legs adapted to be folded against the bottom and a music rack hinged to the top and provided with a block of a greater thickness than the height of the strings, a box and cover for the zither, and straps and a handle for transporting the same, substantially as set forth.

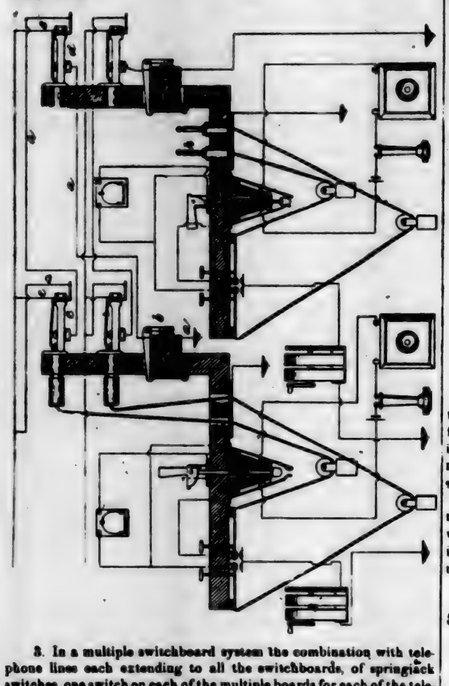
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502,768. TEST-CIRCUIT FOR MULTIPLE SWITCHBOARDS. CHARLES E. SCRIBNER, Chicago, Ill., assignor to the Western Electric Company, same place. Filed Dec. 27, 1890. Serial No. 223,701. (No model.)

*Claim.*—1. In a multiple switch board system of telephone exchange, a telephone line permanently connected with the insulated frames of spring jack switches, one on each of the boards, and the circuit from said line through the contacts of all of said spring jacks to ground at the central office, in combination with a telephone and test battery included in a normally open ground circuit, switching apparatus for first closing said circuit to the frame of a spring jack and then opening the portion of the circuit including the springs of the switches; whereby it may be determined whether the line is in use or connected at any of the other boards.

2. In a multiple switch board system, the combination of spring jack switches, one switch on each of the multiple boards, connections from the subscriber's line to the frame of each spring jack switch, a branch circuit through the springs and contact points of the jacks to ground, the operator's telephone circuit including battery and switching apparatus for connecting the telephone circuit to the line and breaking the branch circuit to ground; whereby the operator can determine whether a line has been previously connected at any other board.





3. In a multiple switchboard system the combination with telephone lines each extending to all the switchboards, of springjack switches, one switch on each of the multiple boards for each of the telephone lines, connections from each subscriber's line to the frame of the springjack switches of the line, a branch circuit through the springs and contact points of the springjack switches of each line to ground, the operator's telephone circuit including battery at each of the boards and a plug and its cord connected with a telephone at each board, the plugs being provided with a tip of insulating material and a metallic shank whereby, on inserting the plug in any switch upon either of the boards, the operator listening at the telephone may determine whether or not the line of the springjack with which connection is made is in use.

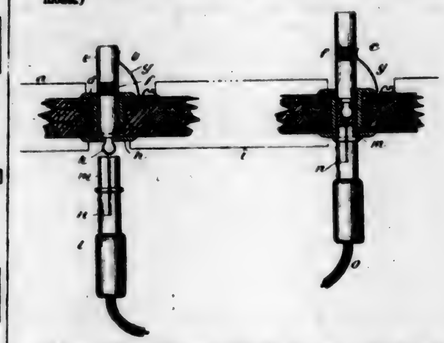
4. A line connected with two or more switches on different boards, a branch of the line being connected with normally open contact pieces of the springjack, another branch of the line being connected through the circuit closing portion of each springjack to ground, a test plug connected to a telephone and test battery to ground, said test plug being constructed to first make contact with the normally open contact piece of the springjack and immediately thereafter to break the circuit of the branch to ground; whereby the operator may determine on inserting a plug into any springjack switch of a line whether the line is or is not in use.

5. A telephone line branched to two portions of several springjacks, one branch connecting with the frames of the several springjacks, the other branch connecting through the circuit closing springs of said springjacks and to ground, a test plug connecting with a telephone and battery to ground, the said test plug being provided with a metallic shank to make contact with the frame of the springjack, and a tip of insulating material to lift the circuit closing spring of the springjack; whereby an operator may determine whether the branch circuit through the springjacks to ground is completed, to tell whether a line is in use.

6. A telephone line extending from a subscriber's station to a central office, said line extending in one branch to the insulated frames or test pieces of springjack switches, one on each of the boards, and another branch of said line extending through the spring and contact of said switches to ground, in combination with a test plug connecting with a telephone and battery to ground, said plug being provided with a metallic portion, and a portion of insulating material, whereby, on inserting the plug in any springjack of the line, the operator listening at the telephone may determine whether the line is connected or in use at any other of the boards.

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502,769. LOCK-SWITCH FOR ELECTRIC SWITCHBOARDS. CHARLES E. SCRIBNER, Chicago, Ill., assignor to the Western Electric Company, same place. Filed Nov. 19, 1887. Serial No. 255,507. (No model.)

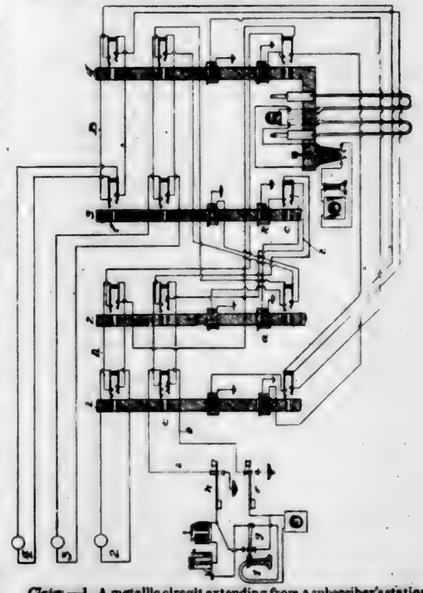


*Claim.*—1. The combination with the clamp upon the plug, of the movable piece to which the clamp is fitted, and the plug socket from which the movable piece normally projects, said plug socket being adapted to receive the clamp and hold the same locked to the movable piece while the plug is being reciprocated within the socket, substantially as and for the purpose specified.

2. The combination with a plug socket, of a movable pin inserted therein, a spring which normally holds said pin extended, a detent which locks the pin in this normally extended position, and a connecting plug provided with a clamp adapted to fit over the pin to move the same, substantially as and for the purpose specified.

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502,770. TELEPHONE-EXCHANGE APPARATUS. CHARLES E. SCRIBNER, Chicago, Ill., assignor to the Western Electric Company, same place. Filed Oct. 15, 1888. Serial No. 288,139. (No model.)



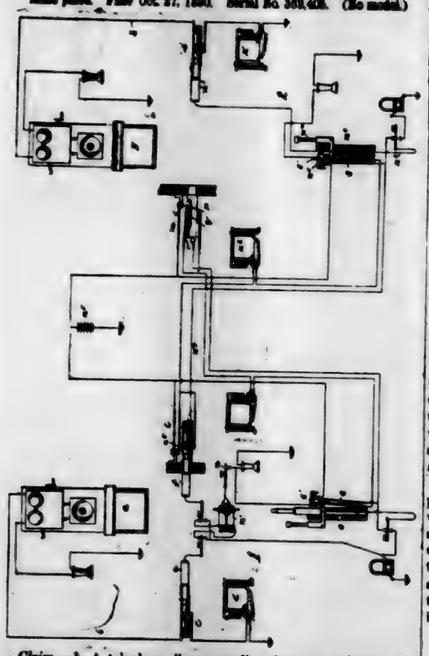
*Claim.*—1. A metallic circuit extending from a subscriber's station to a telephone exchange central office, in combination with multiple switchboards in groups or divisions, both limbs of said metallic circuit extending through and being connected with a different switch upon

each of the boards of one division and with a switch upon one board of the other division, one limb of said circuit containing an individual annunciator upon a board of one division and the other limb of said circuit containing an individual annunciator on a board of the other division, and signaling apparatus; whereby either individual annunciator may be operated from the subscriber's station of the line.

3. The combination with two telephone line wires extending from a substation to a central station, of terminal springjacks upon each of two switchboards connected with both line wires, an annunciator upon each of said switchboards connected to different line wires, and contact points included in both lines adapted to be separated by the insertion of a plug in any springjack, whereby both annunciators are disconnected when connection is made to the line, substantially as described.

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**502,771. TRANSFER SYSTEM FOR SWITCHBOARDS.** CHARLES E. SCRIBNER, Chicago, Ill., assignor to the Western Electric Company, same place. Filed Oct. 27, 1890. Serial No. 369,609. (No model.)



*Claim.*—1. A telephone line extending from ground at a subscriber's station thereon through an annunciator as *n'* at one board of an exchange and thence through a switching device as *n*⁴ at another board of the exchange and thence through a battery to ground, whereby on opening the circuit at said switching device the battery is disconnected from the annunciator at the first board, substantially as and for the purpose specified.

2. The combination with a telephone line extending from earth at a substation to an exchange and connected with a conductor terminating in a connecting plug thereat, of a spring jack into which said plug is inserted, normally separated contact points on said jack closed together by said plug, and a local branch circuit extending from said terminal plug through an annunciator and said normally open contact points to earth, substantially as described.

3. The combination with a transfer line of a signaling circuit normally closed at the sending end thereof, but adapted to be opened when connection is made with the transfer circuit at that end, and normally open at the receiving end thereof but adapted to be closed when connection is made to that end of the signaling circuit, an indicator at the receiving end and a source of electricity in the signaling circuit, substantially as described.

4. In combination with the signaling circuit of a transfer line terminating at one end in a spring jack, and at the other end in a terminal plug, of contact points controlled by the spring jack to open the signaling circuit when a plug is inserted into the jack, a cord switch for the terminal plug adapted to close the signaling circuit when the plug is removed from the socket, and an indicator at the receiving end of the transfer line in the signaling circuit, substantially as described.

5. The combination in a signaling circuit for a transfer system, of a switch at each end thereof adapted to be actuated by the act of establishing connection with the trunk line to alternate between two contact points, one contact of each switch being connected to one pole of a grounded battery, and the other contact of each switch being connected to earth, and a conductor including an indicator joining the levers of the said switches, whereby the circuits are altered to actuate the indicator when either switch is operated, substantially as described.

6. The combination with a transfer line terminating in a spring jack at one end, and in a terminal plug at the other, of a switch controlled by the spring jack, and a cord switch controlled by the terminal plug, each of said switches having a lever adapted to be alternated between a ground contact and a contact connected to one pole of a grounded battery, both of said contacts being connected to the same pole of the same battery, or to similar poles of an equal battery, and a conductor including an indicator at the receiving station connecting the said levers, whereby when either switch is in its normal position, the other being in its alternate position, the said indicator is operated, substantially as described.

7. The combination with a spring jack at one switchboard, of a local branch circuit extending from said spring jack to earth through an annunciator at another switchboard and a battery, and normally open at contact points upon said spring jack adapted to be closed together by the insertion of a plug into said jack, and a grounded terminal plug adapted for insertion into said jack, substantially as described.

8. The combination with a spring jack at one switchboard, of a grounded connecting plug thereat adapted for insertion into said jack, circuit connections from said jack to a terminal plug at another switchboard, an annunciator thereat, a cord switch socket for said terminal plug, and local circuit connections extending from said terminal plug to earth through said annunciator, the contact points of said switch, and a source of electricity, substantially as described.

9. The combination with a spring jack at one switchboard, of a terminal plug connected therewith at another switchboard, a normally closed cord switch socket for said plug, and an annunciator thereat, normally open contact points upon said spring jack adapted to be closed together when a plug is inserted into the jack, and a conducting circuit including said contact points upon the spring jack, the contact points of the cord switch, said annunciator, and a battery, whereby the annunciator is operated when a plug is inserted into the spring jack and its circuit is opened when the terminal plug is removed from its socket, substantially as described.

10. The combination with a spring jack at one switchboard, provided with normally closed contact points adapted to be separated when a plug is inserted into the jack, of a terminal plug at another switchboard connected with the line spring of said jack, an annunciator at said second board, a local circuit extending from ground through said contact points on the spring jack, the annunciator, and a source of electricity and connected with said terminal plug, and a telephone line connected to earth and terminating in a spring jack into which said terminal plug is inserted, substantially as described.

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**502,772. TEST-SIGNAL FOR MULTIPLE SWITCHBOARDS.** CHARLES E. SCRIBNER, Chicago, Ill., assignor to the Western Electric Company, same place. Filed Feb. 24, 1891. Serial No. 382,264. (No model.)

*Claim.*—1. For providing a sonorous test-signal for multiple switch boards, the combination of a telephone, with a vibrating circuit breaker placed in shunt around the telephone and actuated by a shunted portion of the test current, substantially in the manner specified.

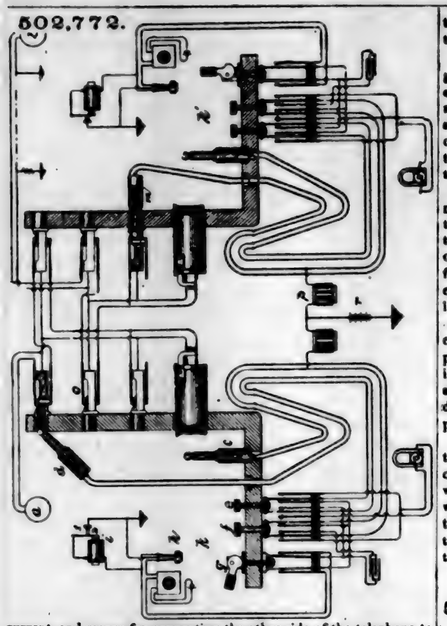
2. For providing a sonorous test signal, the combination of a test circuit, with a telephone, a vibrating circuit breaker placed in shunt around the telephone, and actuated by a portion of the test current, and a battery or other source of electricity included in the test circuit, substantially in the relation specified.

3. The combination of electrically connected test rings, means for crossing the test rings to earth, and a battery or other source of electricity included in circuit between the test ring and earth, with a telephone connected at one side to earth, a vibrating circuit breaker in shunt around the telephone, and actuated by a shunted portion of the test current, and means for connecting the other side of the telephone to a test ring, for the purpose and in the manner described.

4. The combination of electrically connected test rings, means for crossing the test rings to earth, a battery and a retardation coil included in circuit between the test ring and earth, with a telephone connected at one side to earth, a vibrating circuit breaker in shunt around the telephone, and actuated by a shunted portion of the test



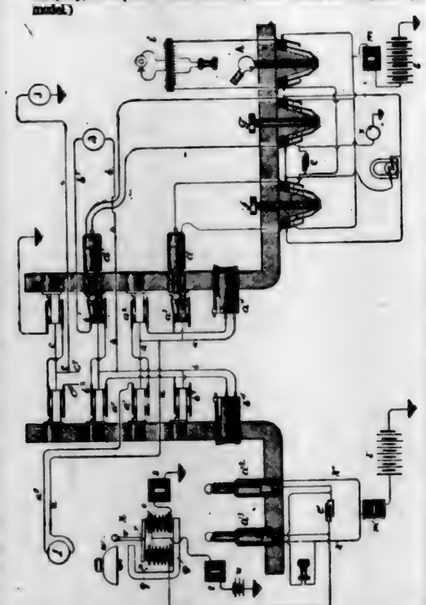
**502,772.**



current, and means for connecting the other side of the telephone to a test ring, for the purpose and in the manner described.

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**502,773. TESTING SYSTEM FOR MULTIPLE SWITCHBOARDS.** CHARLES E. SCRIBNER, Chicago, Ill., assignor to the Western Electric Company, same place. Filed June 29, 1891. Serial No. 397,902. (No model.)



*Claim.*—1. In a test circuit, the combination with a series of test rings electrically connected together, of a polarized responsive device having two coils adapted to act upon a pivoted armature, a branch extending through both coils in series to earth, a branch extending through both of the coils in parallel and including a battery, substantially as and for the purpose specified.

2. In combination, a series of test rings electrically connected together, a branch connection extending from one of the test rings to earth and including a source of electricity, a branch connection from another test ring to earth, through both coils of a polarized responsive device, having two magnets adapted to act in opposition to each other upon an armature and a branch connection from a point between the two coils of the responsive device to earth through a battery, substantially as and for the purpose described.

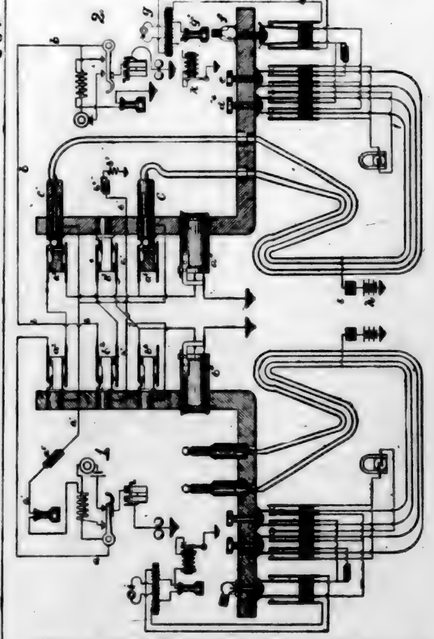
3. As an element in a test circuit, two permanently polarized magnet cores adapted to act upon a pivoted armature in opposite directions, in combination with helices having two of their ends connected together, upon the cores, a connection to earth from the free end of one of the helices, a conductor terminating in a test plug connected to the free end of the other helix, and a grounded battery connected to the connected ends of the two helices, substantially for the purpose and in the manner described.

4. In a test system, the combination with a series of electrically connected test rings, of a branch through the sleeve of a connecting plug and a test battery *l* to earth, a second branch connection extending from the test plug $d^3$ through coils *p* and *o* of a polarized responsive device *s* to earth, and a grounded battery *u* connected to the conductor joining the two coils *o* and *p* substantially as and for the purpose specified.

5. In a test system for multiple switchboards, a source of electricity adapted for connection through a retardation coil to any line of a switchboard, another source of electricity adapted for connection with any line of the system through a testing device, the current which flows through the testing device being conducted differentially through said device when connection is made with a line, whereby a test may be made and the device caused to respond to currents from the first mentioned source of electricity.

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**502,774. TEST-CIRCUIT FOR MULTIPLE SWITCHBOARDS.** CHARLES E. SCRIBNER, Chicago, Ill., assignor to the Western Electric Company, same place. Filed July 7, 1891. Serial No. 398,718. (No model.)



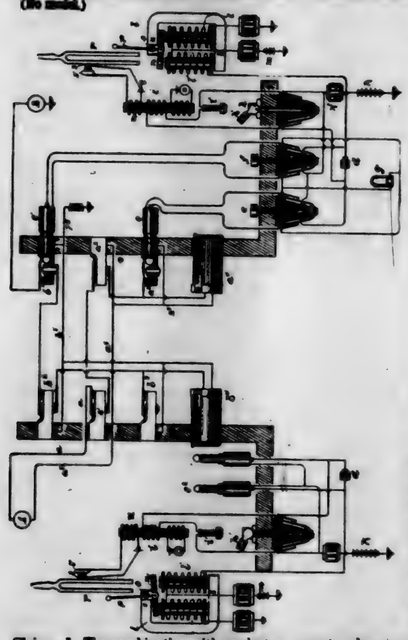
*Claim.*—1. In combination, telephone lines extending from a substation, spring jacks having line springs connected to one of the lines and test rings connected to the other of the lines, and a condenser included in the circuit between the test rings of the spring jacks and the line to the substation, substantially as and for the purpose described.

E. In combination, telephone lines *a* and *a'* extending from a substation, calling apparatus at the substation included in a connection between line *a* and earth, and a switch adapted to connect the line *a* through a telephone set to line *a'*, spring jack switches having line springs connected to line *a* and test rings connected to E conductor, a condenser included between the said conductor and line *a'*, and an auxenciator included in a branch connection from line *a* to earth.

3. In combination, two telephone lines extending from a substation, calling apparatus at the substation normally included in a branch from one of said lines to earth, a switch adapted to disconnect the said line from earth and to connect it through a telephone to the other line, and at the exchange, spring jacks having line springs electrically connected to that line which is normally grounded at the substation, and test rings electrically connected through a condenser to the other line, a branch connection extending from one of the test rings through a source of electricity to earth, and another branch connection extending from another of the test rings through an electro magnetic responsive device to earth, substantially as and for the purpose described.

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**502,775.** TESTING APPARATUS FOR MULTIPLE SWITCH-BOARDS. CHARLES E. SCRIBNER, Chicago, Ill., assignor to the Western Electric Company, same place. Filed Aug. 1, 1891. Serial No. 401,270. (No model.)



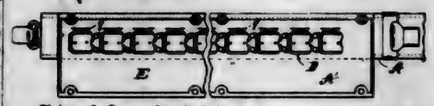
*Claim.*—1. The combination with an electro magnet and a movable armature therefor, of a resonant body adapted to be struck by said armature, microphone contacts bearing upon some vibrating portion of said resonant body, and a local circuit including a battery and said microphone contacts and adapted to act inductively upon a telephone, substantially as described.

2. The combination with the test circuit of a multiple switch-board system, of an electro magnet included in said test circuit, a pivoted armature adapted to be actuated by said electro magnet, a resonant body adapted to be struck by said armature, microphone contacts bearing upon said resonant body, and a local circuit including a battery and the microphone contacts and adapted to act inductively upon a telephone, substantially in the manner described.

3. The combination with a test system, comprising an electrically connected series of test rings of spring jacks, a branch from one test ring to earth including a battery, and a second branch to earth including a battery of the same polarity as the first, of an electro-magnet having one coil included in said second branch circuit, and another coil included in a connection from the grounded end of the first coil, a centrally pivoted polarized armature adapted to be actuated by the electro magnet, a resonant body adapted to be thrown into vibration by said electro magnet, microphone contacts bearing upon the resonant body, and a local circuit including a battery and the microphone contacts and adapted to act inductively upon a telephone, substantially as described.

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**502,776.** ELECTRIC BELT. JEAN H. DE CHEVRELL, Jefferson, Ohio, assignor to Henry H. Bancroft, same place. Filed June 15, 1892. Serial No. 436,662. (No model.)

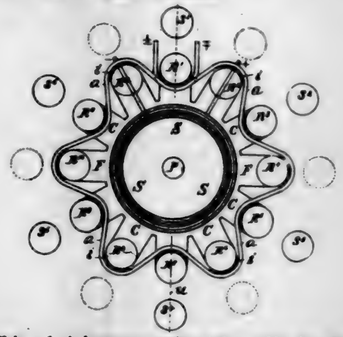


*Claim.*—1. In an electric belt, the battery cells composed of a plate of copper *m* provided with an open loop *m'* and incased within felt or its equivalent with a zinc plate clasping the exterior of the felt, in combination with the spring hinge connection *p*, connecting the copper of one cell with the zinc of the next, substantially as and for the purpose set forth.

2. The coupling C consisting of a metallic plate, provided with a loop to receive the wire *d* or *e* and two side loops forming guides for the connecting pin, in combination with the electrodes and battery cells of an electric belt substantially as and for the purpose set forth.

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**502,777.** ALTERNATING-ELECTRIC-CURRENT GENERATOR. SAMUEL SHELDON and JOHN J. ROONEY, Brooklyn, N. Y. Filed Sept. 28, 1892. Serial No. 447,201. (No model.)



*Claim.*—1. A dynamo consisting of the combination of wave or zigzag shaped stationary convolutions of an electric conductor, energized polar extensions of a given constant polarity, arranged alternately within and without the convolutions; and polar extensions of a different number from those of the first set, of an opposite constant polarity arranged within inductive action of the extensions first named; the two sets of polar extensions being relatively movable.

2. A dynamo consisting of the combination of a stationary field magnet, a field magnet winding F thereon, a central pole S, and concentric polar extensions $n'$, $n^2$, $n^3$ &c. forming a part of the stationary field magnet, a coil of an electric conductor passing alternately to the inner and outer sides of the successive extensions $n'$, $n^2$, $n^3$ &c., and an iron armature rotary relatively to the field magnet, and having a central pole opposite the pole S, and concentric poles $s'$, $s^2$, $s^3$ &c. opposite the said poles $n'$, $n^2$, $n^3$ &c., in number equal to one half or twice that of the poles $n'$, $n^2$, $n^3$ &c.

3. A dynamo consisting of the combination of a stationary zigzag or wave like electric conductor, a stationary field magnet having poles of a given constant polarity, arranged successively on opposite sides of the conductor within the waves thereof, and a movable armature whose poles are of an opposite constant polarity, and are arranged within inductive action of the first named poles, and are in number less or greater than that of the first named poles.

4. A dynamo consisting of relatively movable sets of polar extensions respectively of different constant polarities, and a stationary electric conductor within inductive action of the same and extending alternately to opposite sides of the successive extensions of one set.

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**502,778.** BOOTH OR STALL FOR VOTING. JOHN W. SERAGUE and GUSTAVUS A. SERAGUE, Cincinnati, Ohio. Filed Jan. 20, 1892. Serial No. 418,632. (No model.)

*Claim.*—1. A booth or stall for voting, writing, and other similar purposes, composed of a circular cluster or series of upright radial partitions, and horizontal shelves interposed between and supported by said partitions each of said shelves being pivotally secured to one partition and adapted to be detachably secured to the adjacent partition, and said partitions and shelves forming a circular cluster or series of apartments or inclosures, substantially as and for the purpose specified.



2. In a booth for voting, writing and other similar purposes, the combination with two or more radially disposed partitions, each being provided with a notch or recess in its inner edge of a horizontal triangular shelf for each partition, the latter being hinged at the edge to the upper wall of the recess of one partition, and adapted to be detachably connected, at its other inner edge, with the adjoining partition, whereby the structure may be readily disconnected and folded in small compass when not in use, substantially as and for the purpose specified.

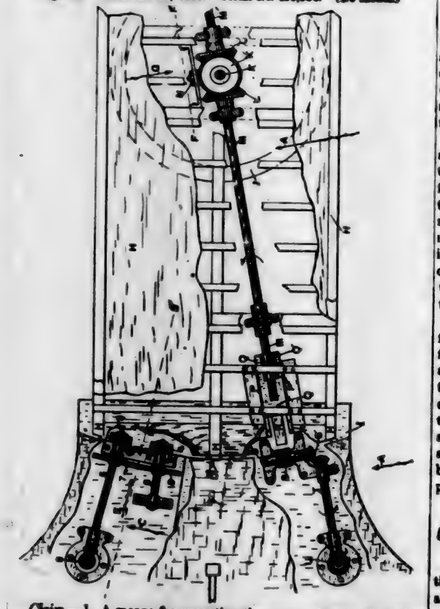
3. In a booth for voting, writing and other similar purposes, the combination of two or more upright radial partitions, and one or more horizontal triangular shelves, the latter being cut from the former, and supported thereby, substantially as herein set forth.

4. In a booth for voting, writing and other similar purposes, the combination of two or more upright radial partitions pivotally connected together at their inner ends and radiating from a common center, by means of hinges or other similar suitable devices, each of said partitions being provided with a notch or recess upon its inner edge, a socket upon one side of the partition, a portion of which socket overlaps the recess and one or more horizontal, triangular shelves supported by said partitions, each of said shelves being provided with a recess on the side adjacent the socket, substantially as herein set forth.

5. In a booth for voting, writing, and other similar purposes, the combination with a circular series of radial partitions and horizontal, triangular writing-shelves, of a recess or opening E, constructed in the partitions adjacent the inner corners of said shelves and adapted to receive an ink-well *e* to be used by the occupants of all the inclosures in common, substantially as herein set forth.

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**502,779.** BRIDGE-GATE. SOLOMAN SIMON and JOHN PLETKA, Chicago, Ill. Filed Jan. 23, 1893. Serial No. 459,256. (No model.)

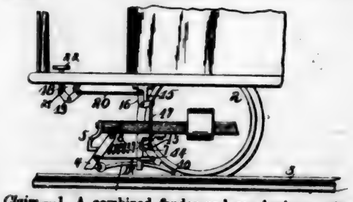


*Claim.*—1. A means for operating the approach gate of a swing draw bridge comprising a shaft disposed horizontally and substantially radially from the pivotal center of said bridge, said shaft operated by means near the said pivotal center of said bridge, the outer end of said shaft screw threaded, and said screw threaded portion fitted to impart a rectilinear movement to a cog rack which cog rack is capable of gearing with and imparting a rotary motion to a cog wheel which is secured to a shaft which is mounted upon the bridge abutment, said shaft geared to mechanism for operating said gate substantially as shown and described in combination with but independent of said exit gates as stated.

2. A means for operating the exit gate at one end of a swing draw bridge comprising a segment cog rack attached to the end of the bridge, two shafts mounted upon the abutment of said bridge which are geared together to revolve in opposite directions, said segment cog rack, by virtue of the motion of said bridge, being capable of gearing with and revolving either one of said cog wheels, one independent of the other, one of said shafts geared to operate the exit gate in combination with means independent thereof for operating the approach gate substantially as shown and described.

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**502,780.** COMBINED FENDER AND CAR-BRAKE. FRANK W. SMITH, St. Louis, Mo. Filed Mar. 8, 1892. Serial No. 424,112. (No model.)



*Claim.*—1. A combined fender and car brake, consisting of a fender or guard, brake levers movably attached to said guard one end of which is adapted to be brought in contact with the rails and wheels of the car, guides for the said levers, and mechanism attached to the said fender for operating the same from the platform of the car, substantially as set forth.

2. A combined fender and car brake, consisting of a fender or guard, brake levers movably attached to the same, one end of which is adapted to be brought in contact with the wheels of the car and rails, guides for said levers, and a spring for releasing said brake levers, substantially as set forth.

3. A combined fender and car-brake consisting of a fender adapted to be movably attached to the truck of the car, brake-levers movably attached to the said fender or guard, guide-plates also secured to the said truck for holding and guiding the said brake-levers, and a spring or springs for holding the said guard or fender in its proper position and holding the said brake-levers out of contact with the wheels and the rails, substantially as described.

4. A combined fender and car-brake, consisting of a fender movably secured to the truck-frame of the car, guide-rods also secured to the said truck-frame and adapted to pass through suitable openings formed in the said fender for guiding the same, guide-plates 7 secured to the under-surface of the said truck, coil springs encircling said guide-rods and interposed between the said fender and plates, brake levers movably secured to the said fender and passed through suitable openings formed in the lower ends of the said plates, and wedges formed on the free ends of the said levers and adapted to be interposed between the wheels and the rails when pressure is applied to the front of the said guard or fender, substantially as described.

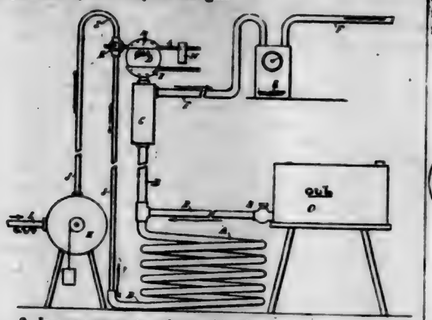
5. A combined fender and car-brake consisting of a guard or fender 4 movably secured to the truck-frame of the car, openings 6 formed in the said guard, guide-rods 5 secured to the said truck-frame, and adapted to pass through said opening 6, guide-plates 7 secured to the said truck-frame and provided with openings 11, coil-springs 8 encircling said guide-rod and interposed between the said plates and the said fender, brake-levers 9 rigidly attached to the said fender and adapted to be passed through the said openings 11, and wedges such as 10 formed on the free ends of the said levers and adapted to be brought in contact with the wheels and rails simultaneously for stopping the momentum of the car, substantially as described.

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**502,781.** CARBURETOR. EDWARD A. SMITH, Hamilton, Ohio. Filed Mar. 30, 1892. Serial No. 426,810. (No model.)

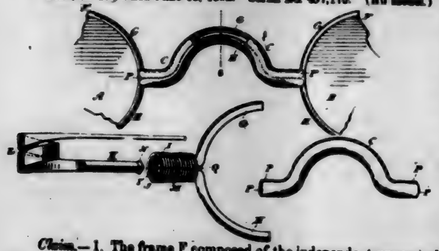
*Claim.*—1. In a gas generator, the combination with a substantially U shaped coiled pipe, both ends of which extend above the coil and one end provided with a shallow oil supply adapted to keep both ends of the pipe filled with oil level with the surface of the oil within the supply, whereby the air is carbureted by its passage through a volume or body of oil, of an air compressor and a regulator connected with the inlet of the pipe for admitting air into the coiled portion of

the pipe, and mechanism connected with the outlet of the pipe and with the regulator of the inlet pipe, whereby the admission of the air is governed by the escape of the gas.



2. In a gas generator, the combination, with a coiled pipe, each end of which is extended substantially parallel one with the other, and one of them is provided with a chamber and is connected with a gas outlet, and the other one is connected with an air supply and is provided with a valve, a concaved pan on the top of the chamber provided with an extension, a lever connected with the valve and extended over the chamber and provided with an inverted concaved portion, a collapsible bag between the two concaved portions and communicating with the interior of the chamber, a weight on the lever, adapted to engage with the extended portion of the pan, and an oil supply connected with the pipe between the chamber and the coil.

## 502,782. FRAME FOR SPECTACLES. JOHN S. SPENCER, New York, N. Y. Filed June 18, 1892. Serial No. 437,173. (No model.)



*Claim.*—1. The frame F composed of the independent upper and lower sections G H, grooved on their facing edges and at their outer portions inclosing the lenses, combined with the tubular nose piece C encircling the upper and lower sections throughout their length between the lens inclosing portions to cover the joint between the two sections, substantially as and for the purposes described.

2. The frame F composed of the independent upper and lower sections G H grooved on their facing edges and at their outer portions inclosing the lenses combined with the encircling tubular nose piece C extending from one lens to the other, and having an opposite sides of its ends the covering lips P, P, substantially as and for the purposes described.

3. The spectacle frame having the sectional lugs at its ends, combined with the temples whose shanks are within said lugs, and the securing sleeves upon said lugs; substantially as set forth.

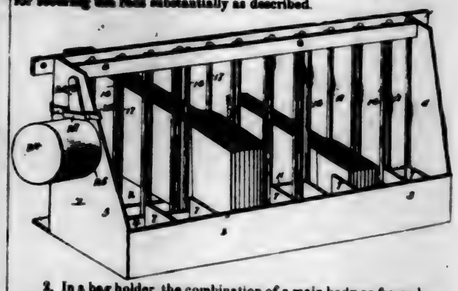
4. The spectacle frame having the sectional lugs at its ends, combined with the temples, whose shanks are within said lugs and headed at their inner end, and the securing sleeves upon said lugs; substantially as set forth.

5. The spectacle frame having the sectional lugs at its ends, the hollow interior thereof being angular in cross-section, combined with the temples whose shanks are also angular in cross section and secured within said lugs; substantially as set forth.

6. The spectacle frame composed of the upper and lower grooved sections inclosing the opposite edges of the lenses and forming hollow lugs at the end of the frame, combined with the temples having shanks within said lugs and spring coils adjacent thereto, and the securing sleeves upon said lugs; substantially as set forth.

## 502,783. PAPER-BAG HOLDER. GEORGE STALEY, Vermilion, Kan., assignor of one-half to Charles H. Mason, same place. Filed Mar. 3, 1893. Serial No. 464,483. (No model.)

*Claim.*—1. In a bag holder, the combination of a main body or frame, provided with a series of partitions to form bag compartments a series of vertically-disposed rods at the entrances of the compartments, one of each of said rods being yieldingly mounted, and means for securing the rods substantially as described.



2. In a bag holder, the combination of a main body or frame having a trough or box at the lower part thereof with a series of partitions therein, and vertically-disposed rods at the back of said body or frame, one of said rods of each pair being yieldingly mounted, substantially as described.

3. In a bag holder, the combination of a main body or frame, upper strips or rails arranged parallel, a lower vertical wall, a keeper in rear of said wall hinged at one end, and pairs of vertically-disposed rods adjacently arranged in pairs and having their ends between the said strips or rails and the said wall and keeper, one of each pair of said rods being yieldingly mounted, substantially as described.

4. In a bag holder, the combination of a main body or frame having a box or trough wider at one end than at the other, and a front wall higher than the rear wall, a series of partitions in said box or trough gradually increasing in length toward the wider end of the latter, a series of vertically-disposed rods arranged in pairs, one of each pair of said rods being yieldingly mounted, and means for holding said rods in position, substantially as described.

5. In a bag holder, the combination of a main body or frame having a box or trough formed in the bottom thereof with a rear wall of less height than the front wall, said box or trough being wider at one end than at the other, ends projecting above the said box or trough, strips or rails connected to the inner opposing parts of the said ends, a series of vertically-disposed rods arranged in pairs, one of each pair being yieldingly mounted, a keeper to close against the lower ends of said rods, and pivotally-mounted angle plates in rear of said keeper to hold the latter in position when closed, substantially as described.

6. The combination with a bag holder having a tapering wedge shaped end, of a cord receptacle provided with an arm extended upward from the receptacle and pivoted to the tapering end, said receptacle having its side or end adjacent to the end of the bag holder open and adapted to be closed by the bag holder when in position, and a clasp provided at its ends with hooks to engage the tapering wedge shaped end of the bag holder and provided intermediate of its ends with an offset portion receiving and confining the arm of the cord receptacle, substantially as described.

## 502,784. PAPER-BAG MACHINE. ARTHUR L. STEVENS, Philadelphia, Pa., assignor to the Diamond Paper Bag Company, Wilmington, Del. Filed Oct. 28, 1890. Serial No. 369,636. (No model.)

*Claim.*—1. The combination in a machine for making paper articles from a continuous strip, of feeding rollers, severing device, and gripping rolls moving at a uniform speed, one of said gripping rolls having a flattened or depressed portion, substantially as described to withdraw the support from the strip at the time it is cut, for the purpose set forth.

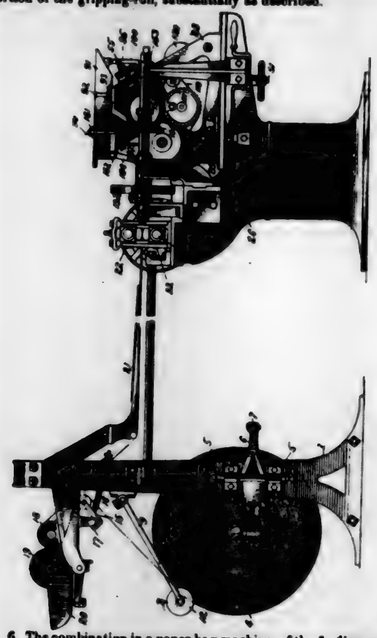
2. The combination in a machine for making paper articles from a continuously moving strip, of feed rolls having uniform speed, a severing device gripping rolls also having a uniform speed but a greater surface velocity than the feed rolls, one of the gripping rolls being provided with a depressed or flattened portion whereby the curved support for the body of the tube is momentarily withdrawn during the action of the severing device, substantially as described.

3. The combination in a machine for making paper bags from a continuously moving tube, of feed rolls having a uniform speed, bottom gripping rolls of larger diameter also having a like uniform speed, but a surface velocity greater than that of the feed rolls, the lower gripping roll being provided with a cut-away portion, substantially as described.

4. The combination in a machine for making bags from a continuously moving tube, of feed rolls having a uniform speed, bottom gripping rolls also moving at a uniform speed and provided with gripping blocks, the lower gripping roll being cut-away or flattened adjacent to its block, and a severing device timed to act during the time the tube is above the flattened part of the roll, substantially as described.

5. The combination in a machine for making paper bags from a continuously moving tube, of feed rolls and bottom gripping rolls all having a uniform speed of rotation and one of the gripping rolls having a cut-away portion, fixed folding bar, vibrating tucking blade, and a severing device timed to act as the tube passes onto said cut-away portion of the gripping-roll, substantially as described.





6. The combination in a paper bag machine, of the feeding mechanism, severing device, and gripping rolls, one of said rolls having a cut-away portion, supporting pulleys adjacent to said cut-away portion of the gripping roll and in the line of the latter, and carrying tapes, substantially as described.

7. The combination in a paper bag machine, of the feeding and severing mechanism, bottom gripping rolls one of which has a cut-away portion and is composed of three sections, pulleys intermediate of the sections, and carrying tapes, substantially as described.

8. The combination in a paper bag machine, of feed rolls and bottom gripping rolls having a constant speed of rotation, one of the gripping rolls provided with a cut-away portion, and carrying tapes, substantially as described.

9. The combination in a paper bag machine of feed rolls and bottom gripping rolls having a constant speed of rotation, and one of the gripping rolls provided with a cut-away portion adjacent to the point where it grips the pilot end of the bag, a printing cylinder, and carrying tapes extending between the gripping rolls and around the printing cylinder, substantially as described.

10. The combination in a paper bag machine, of feed rolls, bottom gripping rolls the lower one of which has a cut-away portion, printing cylinder, carrying tapes, severing device, fixed folding bar, tucking blade and a pasting device, substantially as described.

11. The combination in a paper bag machine, of feed rolls having a constant speed, bottom gripping rolls having a constant speed, the lower gripping roll provided with a cut-away portion, printing cylinder, guide roll, carrying tapes, fixed folding bar, tucking blade, vibrating paster, and a severing device timed to act as the bag length passes onto said cut-away portion of the gripping-roll, substantially as described.

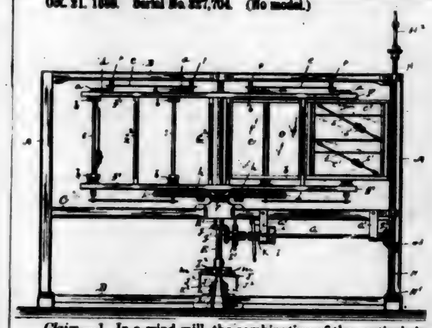
12. The combination in a paper bag machine, of the bottom gripping rolls, paste receptacle, paster blade, bell-crank lever pivoted to the receptacle and connected at one end to the blade, an eccentric on the shaft of one of said rolls, and a connection between the other end of said lever and said eccentric, substantially as described.

13. The combination in a paper bag machine, of the frame, the paste receptacle, bearings on its sides having sharpened lower ends supported on the frame, and a link at the rear of the receptacle securing it adjustably to the frame, substantially as described.

14. The combination in a paper bag machine, of the frame, the adjustable bearings thereon, paste receptacle, bearings on its sides having sharpened ends resting on said adjustable bearings, a link connecting the rear of the receptacle to the frame, and an adjusting screw, substantially as described.

15. The combination of the frame, the shafts 131 and 42, gear wheels thereon, a stationary plate 146 having a segmental slot with under cut sides, a bearing piece 143 adjustable in said slot, a stud 141 supported by the piece 143 and terminating in a handle, and a gear wheel on the stud and meshing with the gear wheels on said shafts, substantially as described.

## 502,785. WINDMILL. JAMES STINPSON, Baldwinville, Mass. Filed Oct. 21, 1889. Serial No. 327,704. (No model.)



*Claim.*—1. In a wind mill, the combination of the vertical shaft E, radial arms F attached to said shaft, sails *c* carried upon shafts journaled in said radial arm, hollow shaft E' inclosing the shaft E and placed below said sails and radial arms F, a gear $f$ upon the upper end of said hollow shaft and operatively connected with said sail shafts, a gear $g$ upon the lower end of said hollow shaft, a vertical shaft H journaled eccentrically to said hollow shaft E' and carrying a vane $H^3$ and a gear $g^3$, a horizontal shaft G carrying the gears $f'$ and $g^2$ engaging the gears $g$ and $g^3$ respectively, substantially as described.

2. In a wind mill, the combination of the vertical shaft E, radial arms F attached to said shaft, sails *c* carried upon shafts journaled in said radial arm, hollow shaft E' inclosing the shaft E and placed below said sails and radial arms F, a gear $f$ upon the upper end of said hollow shaft and operatively connected with said sail shafts, a gear $g$ upon the lower end of said hollow shaft, a vertical shaft H journaled eccentrically to said hollow shaft and carrying a vane $H^3$ and a gear $g^3$, and intermediate connecting mechanism between said gear $g^3$ and said gear $g$ comprising a clutching mechanism, whereby said sail shafts and said vane shaft are connected and disconnected at will, substantially as described.

3. In a wind mill, the combination of the two parallel and vertical shafts E and H supported upon step bearings and journaled in the frame-work of the mill, radial arms carried by said shaft E, sail bearing shafts journaled in said radial arms, a hollow shaft E' inclosing said shaft E below said radial arms and journaled in the frame-work of the mill, said hollow shaft being operatively connected with said sail-shafts, a vane carried by said shaft H, whereby it is turned by a change in the direction of the wind and a horizontal shaft G connecting said hollow shaft E' and said vane shaft, substantially as described.

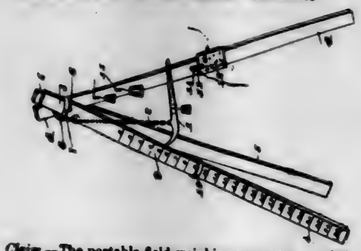
4. In a wind mill, the combination with a sail pivoted by a horizontal axis dividing said sail into two sections of unequal area, with the lower of said sections the larger, of the rod *e* attached at its ends to the upper and lower sections of the sail and preferably in an oblique position, or diagonal to said sail, and a weight *e'* adjustably attached to said rod, substantially as described.

5. In a wind mill, the combination of a vertical shaft E, provided with radial arms F, sails carried upon shafts journaled in said arms, a hollow shaft E' inclosing said shaft E below said radial arms and operatively connected with said sail-shafts, a gear $g$ carried by said hollow shaft, a horizontal shaft G, a gear $f'$ turning on said shaft G and having a clutch connection therewith and engaging said gear $g$, the hub of said gear $f'$ being provided with a graduated surface, a shaft H carrying a vane $H^3$ and operatively connected with said horizontal shaft, a wheel I attached to said horizontal shaft and having its face graduated to correspond with the graduated hub of the gear

$f'$, pointers supported by the fixed frame-work of the mill and extending over said graduated surface and a hand wheel $F'$ applied to the hub of the gear $f'$, substantially as described.

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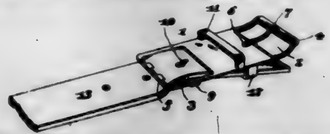
**502,786. PORTABLE SCALE.** JULIUS W. STOREY, Dallas, Tex. Filed Sept. 2, 1892. Serial No. 444,981. (No model.)



*Claim.*—The portable field weighing apparatus, consisting in the tripod, graduated upon one of its legs with the tally scale 9, provided with the sliding indicator 10, and having the suspensory link for sustaining the weighing scales, and the clip 11 for holding the tally slate, all substantially as shown and described.

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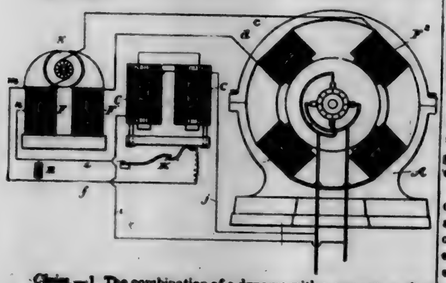
**502,787. BUCKLE.** FRANK W. SWIGART, Arroyo Grande, Cal., assignor of two-thirds to T. A. Branga and A. Briegor, same place. Filed May 20, 1893. Serial No. 475,581. (No model.)



*Claim.*—The herein described improved buckle, the same consisting of the oblong plate having the openings 2 and 3 formed adjacent to its front and rear ends respectively, and formed with the end bars 4 and 5, the latter being provided with the inwardly curved teeth 8, the central cross-bar 9 located in the opening 3, depressed below the same, and provided upon its upper side at its center with the curved tapered stud 10, the buckle tongue 7 hung in the opening 2, and the inner and outer keepers 11 and 22 formed in rear and in advance of their respective openings 2 and 3, substantially as specified.

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**502,788. REGULATOR FOR ELECTRIC GENERATORS.** ELIHU THOMSON, Swampscott, Mass., assignor to the Thomson-Houston Electric Company, of Connecticut. Filed May 23, 1892. Serial No. 434,076. (No model.)



*Claim.*—1. The combination of a dynamo with a separate exciter therefor, and an electric circuit controlling the potential of the exciter, a switch adapted to close or break said circuit, and an electromagnetic device responsive to changes in the potential of the main circuit and controlling said switch in the regulating circuit, as set forth.

2. The combination of a dynamo with a separate exciter therefor, means for regulating the potential of said exciter, and an electromagnetic device controlling said regulating means, said device comprising an electro-magnet arranged to respond to changes of potential in the main circuit, and a closed coil or circuit movable under the influence of said magnet.

3. The combination with a dynamo, of a separate exciter, and means, substantially as described, whereby a portion of the field winding of the exciter is rendered operative or inoperative by the change in potential of the main circuit.

4. The combination with a dynamo, of a separate exciter, having a portion of its field winding included in a shunt, said shunt being controlled by the varying potential of the main circuit, substantially as set forth.

5. The combination with a dynamo, of a separate exciter, having a portion of its field magnet included in a shunt, and an electro magnet arranged to open and close said shunt, said magnet being controlled by a change in potential of the main circuit, substantially as set forth.

6. The combination with a dynamo, of a separate series-wound exciter, having a portion of its field magnet included in a shunt, an electro magnet controlling said shunt, said magnet being in turn controlled by a change in potential of the main circuit, substantially as described.

7. The combination with a dynamo, of a separate exciter having a portion of its field winding included in a shunt, an electro magnet arranged to respond to changes in the potential of the main circuit, and an axially movably helix concentric with said magnet, and adapted to close and open said shunt, substantially as described.

8. The combination with a dynamo of a separate exciter having a portion of its field winding included in a shunt of no resistance, an electro magnet responsive to variation in the potential of the main circuit, an axially movable helix concentric with said electro magnet, and controlling the said shunt, and means for adjusting the movement of the helix, substantially as set forth.

9. The combination with an exciter E, F, F', having the shunt $e, f$ provided with the contact K, of an electro magnet C, C, responsive to variations in the main circuit, and the axially movable helices C', C', supported by the adjustable spring Z, and arranged to close the contact K, when the magnets C, C, are excited to a predetermined degree, substantially as set forth.

10. The combination of a coil, as C, a second coil as $C^3$, adapted to respond to variations of potential in the main circuit of a dynamo, and a third coil as C', repelled by the coils C and $C^3$, and arranged to close a shunting switch; whereby an increase of load acts to increase the potential of the delivered current.

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**502,789. LATCH.** FRED W. TOBEY, Grand Rapids, Mich. Filed Mar. 6, 1893. Serial No. 464,866. (No model.)



*Claim.*—1. In a latch, the combination with a post, having an angular opening, of a push-pin, having an angular head at its outer end, and a block, secured to the inner end of said push-pin and formed with a groove designed to receive the part of the latch operated by said push-pin, substantially as described.

2. In a latch, a push pin having a hexagon head, a post having a hexagon opening in its axis, a screw thread on said pin, a block having a threaded opening and longitudinally adjustable on said pin, and a groove in the end of said Block engaging the part of the latch operated by said push pin, substantially as described.

3. In a latch, a longitudinally movable push pin operating the bolt of the latch, a transverse groove in said pin, a slide engaging said groove, a head on said slide having a curved slot, and a lug to engage the key, a key stud passing through said curved slot, and a spring engaging said head, substantially as described.

4. In a latch, the combination with a post, having an angular opening, a push-pin, extending through said opening and having an angular head at its outer end, and a block, secured to the inner end of said push-pin and formed with a groove, of the bolt, and a lever engaging said bolt intermediate of its ends and having its inner end engaged with the groove in said block, substantially as described.

5. In a latch, the combination with a longitudinally-movable bolt, a roller on said bolt, a lever, pivoted to the case at one end and bent intermediate of its length, said bent portion of the lever engaging the roller on the bolt, and a push-pin having a block at its inner end, said block having a groove receiving the movable end of said lever, substantially as described.

6. In a latch, the combination of the longitudinally-movable bolt, a roller thereon, a lever, pivoted to the case at one end and bent intermediate of its length, said bent portion of the lever engaging the roller on the bolt, a threaded push-pin, and a block, having a threaded opening engaging said push-pin, said block also having a groove engaging the free end of said lever, substantially as described.

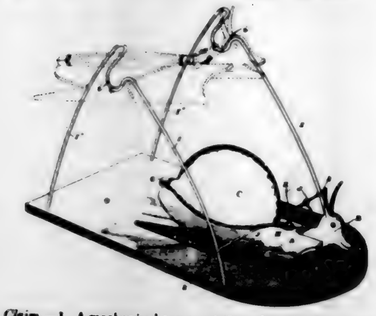


7. In a latch, the combination with the case, having a notch in one end, a bolt longitudinally movable in said notch and laterally removable therefrom, a roller on said bolt, and a push pin having a grooved block at its inner end, of a lever, having its rear end received by the groove in said block and at its rear end lateral arms pivoted to the case, said lever engaging said bolt near its forward end and having intermediate of its ends a bent portion engaging the roller on said bolt, substantially as described.

8. In a latch, a longitudinally movable bolt, a guide pin rigidly attached to the same, a spring surrounding said pin and forcing said bolt forward, a roll on said bolt, a pivoted lever having an inclined movable part, engaging said roll, a push pin having a longitudinally adjustable screw threaded end, having a groove engaging the end of said lever, a hexagon head on said push pin, and a post having a hexagon opening to receive said push pin, and lateral projections on said post, substantially as described.

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**502,790. MECHANICAL TOY.** JACOB W. TURNER, Van Wert, Ohio. Filed Aug. 31, 1892. Serial No. 444,634. (No model.)



*Claim.*—1. A mechanical toy consisting of a jack, shaped like an animal, bird or in any other form, in combination with an automatic whistle thereon, a spring actuated hammer, means for temporarily holding said hammer and a connection between the hammer and the whistle so that when the hammer is released, the device as well as the whistle will be simultaneously actuated

2. The combination of the jack, a whistle thereon having an inflated bag and a plug, the spring actuated hammer on the jack, adhesive means for holding said hammer temporarily in a retracted position and a connection between the hammer and the aforesaid whistle plug, substantially as described.

3. In a mechanical toy, the combination of a mechanical figure, shaped to represent a bird, animal or other creature, in combination with a balloon secured thereto, said balloon having an automatic valve at one end and a whistle at the other, which whistle is provided with a plug, a spring actuated hammer secured to the mechanical figure, adhesive means for temporarily holding the hammer in a retracted position and a connection between the hammer and the whistle plug so that when the hammer is released the latter will be set in violent motion and the whistle at the same time caused to blow, substantially as described.

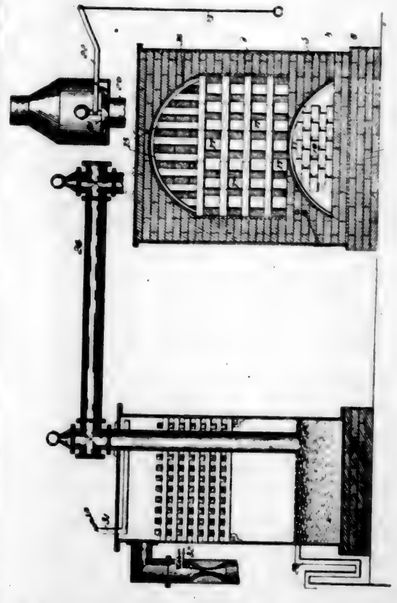
4. The combination with a whistle-provided automatic operating mechanical figure having a horizontal rod thereon, of the bent rods combined with a flat base, said rods having loops at their upper portions which receive the rod on the mechanical figure and permit the same to revolve at that point under the action of its automatic mechanism, substantially as described.

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**502,791. APPARATUS FOR THE MANUFACTURE OF GAS.** STEPHEN W. VAN STOKEL, Hopewell, N. J. Filed Feb. 11, 1892. Renewed Jan. 11, 1893. Serial No. 458,094. (No model.)

*Claim.*—1 A gas generator, provided at its base with a combustion chamber having a filling of refractory material; a series of superposed sets of horizontal multiple flues communicating with the combustion chambers, the members of each set being arranged side by side, and opening at their ends into a cross flue which in turn communicates with the proximate ends of the next succeeding set; a superheater composed of a set of multiple flues having flue-walls of varying heights, surmounted by an arch; and oil and steam supply pipes entering the combustion chamber, substantially as described.

2. A gas generator, provided at its base with a combustion chamber, having a filling of refractory material; a series of superposed sets of multiple horizontal flues the flooring between each set being made up of single courses of fire-brick, and the side walls of the flues being made up of single courses of fire-brick arranged between the floorings and spaced apart to form the flues; cross-flues at alternately opposite ends of the multiple horizontal flues thereby connecting the sets in zigzag order, a super-heater composed of a set of multiple flues separated from each other by fire-brick walls of varying heights, surmounted by an arch, and oil and steam supply pipes entering the combustion chamber, substantially as described.



3. A gas generator, provided at its base with a combustion chamber surmounted by an arch and having a filling of refractory material; a steam pipe, having a portion of its length embedded in the generator above said arch, so as to be subjected to heat therefrom but protected from the products of combustion, and having a branch extending along in front of the generator and depending pipes from said branch; oil injector burners entering the combustion chamber and supplied with steam by the depending pipes; an oil pipe for supplying oil to said injector burners, superposed sets of multiple flues communicating with the combustion chamber and connected in zig-zag order; and a superheater composed of a set of multiple flues having flue-walls of varying height, surmounted by an arch; substantially as described.

4. A gas generator comprising a basal combustion chamber surmounted by an arch and containing refractory material; a superposed series of sets of multiple flues said sets being connected in zig-zag order above said arch; a superheater composed of multiple flues of varying heights surmounted by an arch, and a metallic casing surrounding and inclosing the generator body, substantially as described.

5. In a gas generator, a fixing chamber consisting of sets of multiple horizontal flues arranged above each other in zig-zag order, and a superposed set of flues of varying heights supported by the lower flues, and surmounted by an arch; substantially as described.

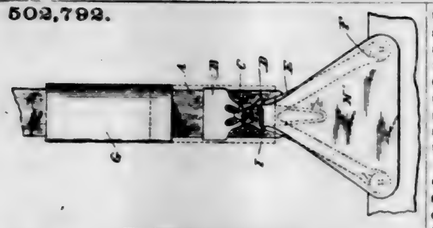
6. In a gas generator, a fixing chamber consisting of sets of multiple horizontal flues arranged above each other in zig-zag order and communicating by means of single cross-flues, and a superposed set of flues of varying heights supported by the lower flues, and surmounted by an arch; substantially as described.

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**502,792. SUSPENDERS.** JACOB C. VOLLMAR, Port Huron, Mich., assignor of two-fifths to George Frank, same place. Filed Apr. 16, 1892. Serial No. 429,439. (No model.)

*Claim.*—In a suspender, a buckle having the spring jaw C, the combination of the eye D, on the jaw, straps E secured to the eye and extending down at an incline in opposite directions, and a guard flap for the straps extending over and beyond the same having its upper end attached to the eye and provided at its lower end with a cross strap projecting over the straps E, substantially as described.

**502,792.**

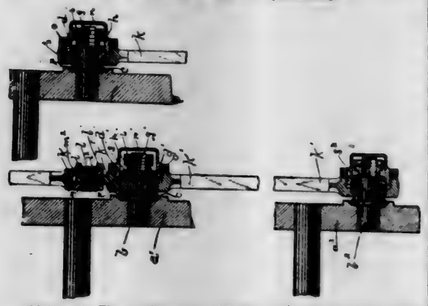


**502,793.** FECE-YOKE. JAMES R. WADE, Millfield, Ohio. Filed Mar. 15, 1893. Serial No. 466,169. (No model.)



*Claim.*—A carriage pole yoke having a corepiece with the middle *b*, shoulders *b' b'* and ends *b² b²*, the loose end-sleeves C C with swiveled eyebolts, the loose middle sleeve D with bifurcated swivel E, and the polering F having a shank pivoted between the prongs of the swivel E, all substantially as shown and described.

**502,794.** COUPLING-ROD CONNECTION. ERNEST P. WARNER, Chicago, Ill., assignor to the Western Electric Company, same place. Filed June 21, 1892. Serial No. 437,503. (No model.)



*Claim.*—1. The combination with the crank pin provided with a filleted shoulder, of a brass in which the crank pin is adapted to bear provided with a rounded end adapted to bear against said filleted shoulder, said crank pin being also provided with a threaded projection upon its end, a spring encircling said projection, a washer upon the end of said brass, a nut screwed upon said threaded projection, between which washer and nut said spring is adapted to act to press the brass against the shoulder of the crank pin, the check nut screwed upon said threaded projection, the cap attached to the coupling rod and incasing the end of the crank pin, substantially as described.

2. The combination with a crank pin provided with a shoulder, of a brass whose end is adapted to bear against said shoulder; a spring adapted to bear against said brass and press the same against said shoulder by its reaction upon a nut screwing upon the end of the crank pin, said nut, and a cap adapted to incase the end of the crank pin, substantially as described.

3. The combination with a crank pin provided with a shoulder, of a brass adapted to bear against said shoulder; a spring encircling a threaded projection upon the end of said crank pin and adapted to hold said brass against said shoulder by its reaction upon a nut screwed upon said projection; and said nut, substantially as described.

4. The combination with a crank pin provided with a shoulder, of a brass adapted to bear against said shoulder, and means provided for pressing said brass against said shoulder with yielding pressure, substantially as described.

5. The combination with a crank pin provided with a collar, of a brass adapted to bear against the shoulder of said collar, the portion of said brass adjacent to said collar being of the same diameter as the collar said brasses being provided with a convex outer surface; a strap fitting over said portion and said collar, a coupling rod and a cap, each provided with corresponding concave surfaces between which said brass is adapted to be held; a check nut for holding said cap in position; a nut screwing upon a threaded projection provided upon the end of said crank pin, a check nut adapted to hold said nut in position; a spring adapted to react upon said nut and press said brass against the shoulder upon the crank pin, and a washer between said brass and said spring, substantially as described.

6. The combination with a brass whose outer surface is non-cylindrical, of a coupling rod and a cap provided with corresponding surfaces between which said brass is adapted to be held whereby the coupling rod is held in position and the end of the crank pin is protected from the entrance of foreign substances, substantially as described.

7. The combination with a crank pin provided with a shoulder, of a brass adapted to be yieldingly pressed against said shoulder, said brass being provided with a non-cylindrical outer surface; a coupling rod and a cap, each provided with corresponding surfaces and adapted to hold said brass between said surfaces, substantially as described.

8. The combination with a crank pin provided with a collar, of a brass adapted to bear against the shoulder of said collar, a portion of said brass adjacent to said collar being of the same diameter as the collar; said brass being provided with a spherical outer surface, a strap fitting over said portion and said collar, a coupling rod and a cap, each provided with corresponding spherical surfaces and adapted to hold said brass in position; a check nut for holding said cap in position; a nut screwing upon a threaded projection provided upon the end of said crank pin; a check nut adapted to hold said nut in position; a spring adapted to react upon said nut and press said brass against the shoulder upon said crank pin, and a washer between said brass and said spring, substantially as described.

9. The combination with a brass whose outer surface is spherical, of a coupling rod and a cap provided with corresponding spherical surfaces between which said brass is adapted to be held whereby the coupling rod is held in position and the end of the crank pin is protected from the entrance of foreign substances, substantially as described.

10. The combination with a crank pin provided with a shoulder, of a brass adapted to be yieldingly pressed against said shoulder, said brass being provided with a spherical outer surface; a coupling rod and a cap each provided with corresponding spherical surfaces and adapted to hold said brass between said surfaces, substantially as described.

11. The combination with a crank pin provided with a collar, of a brass the end of which is of the same diameter as the collar upon the crank pin; a band adapted to encircle and bear upon said collar and said brass, substantially as described.

12. The combination with a coupling rod provided with a bifurcated end, of a coupling rod provided upon its end with a tongue, said tongue adapted to fit between the members of said bifurcation; a pin passing through the members and the tongue, said pin being attached to the member of the fork by screws passing through a flange provided upon the end of said pin, substantially as described.

13. The combination with the crank pin *a'*, of the coupling rod *k'* attached thereto in the manner described by the brass *d'* whose outer surface is that of two frustums of cones placed base to base, thus holding the axes of the coupling rods always perpendicular to the axis of the crank pin; said brass *d'*; the crank pin $b^3$ upon the wheel $a^3$ attached to the other end of the coupling rod *k'* by the spherical brass in the manner described; said spherical brass; the coupling rod *k* attached to the coupling rod *k'* by the forked members $m'$ $m^3$ and tongue *m* and flange pin *l*; the crank pin *b* upon the wheel *a* attached to the coupling rod *k* by the spherical brass *d*, and said brass *d*, substantially as described.

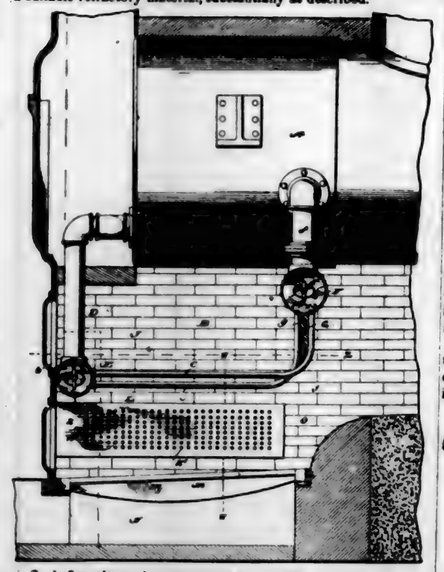
14. The combination with a crank pin upon the armature shaft disk, of a brass whose outer surface is that of two frustums of cones placed base to base; a coupling rod connected with said brass; a crank pin upon one of the wheels; a spherical brass in which said crank pin is adapted to bear, said brass being attached to the other end of said coupling rod; a crank pin upon the other car wheel upon the same side of the truck; a spherical brass in which said crank pin is adapted to bear; a coupling rod attached to said brass and a pivotal connection between the ends of said coupling rods, substantially as described.

**502,795.** STEAM-BOILER FURNACE. GEORGE H. WATSON, St. Louis, Mo. Filed Dec. 30, 1892. Serial No. 456,759. (No model.)

*Claim.*—1. A fire place whose grate-bars are in the form of water tubes extending from the front of the fire place toward the rear end thereof and there turned and carried upward, the spaces between the upturned ends thereof being closed to prevent the passage of draft through the same, substantially as described.



2. A fire place whose grate-bars are in the form of two sets of water tubes, an upper and under set, and extending from the front of the fire-place to the rear end thereof and there turned and carried upward, and the spaces between the upturned parts being filled with a suitable refractory material, substantially as described.



3. A fire place whose rear end is partially closed by means of water tubes, and completely closed by the same and a filling of a refractory material arranged between said tubes, said tubes extending upward and downward, and at the lower end thereof being extended forward to support the fuel, substantially as described.

4. A fire place whose grate bars are in the form of water tubes extending from the front of the fire place toward the rear end thereof, and there turned and carried upward, all of said tubes being exposed to the direct heat of the furnace throughout their length, and being separated from each other throughout their length, and the spaces between the upturned ends of the tubes being filled with refractory material, substantially as described.

5. The combination in a down draft furnace of the boiler and the water tubes, said water tubes at their ends being connected with said boiler to enable the water thereof to circulate through them, and said tubes between their ends being bent or turned, and the space between the upturned rear ends of said tubes being filled to prevent longitudinal air currents through the same, substantially as described.

6. The combination of the boiler and the water tubes, said tubes at their ends being connected with said boiler to enable the water thereof to circulate through them, and being extended substantially horizontally to form the grate of the boiler furnace, said tubes at their rear ends being bent and carried upwardly to form with a filling of the refractory material arranged between them, the rear end of the fire box, the outer surfaces of said pipes being exposed, substantially as described.

7. The combination in a furnace of the upper water grate, with a lower grate, an intermediate combustion chamber, an escape duct leading therefrom, draft opening being provided above said upper grate and beneath said lower grate, the inclosing walls, air ducts K arranged in the sides thereof and having the fine perforations leading into the sides of said combustion chamber, substantially as and for the purpose specified.

8. A down draft grate composed of water tubes connected with a reservoir, said tubes being arranged in two alternated sets and all being bent up at their rear ends, the ends of the upper set being projected through between the upturned ends of the lower bars, all in combination with a refractory filling arranged between the upturned ends of said bars or tubes and supported in the crotch or seat so formed, substantially as described.

9. A down draft grate composed of water tubes connected with a reservoir, said tubes being arranged in two alternated sets and all being bent at their rear ends, the ends of the upper set being projected through between the upturned ends of the lower bars, all in combination with a refractory filling arranged between the upturned ends of said bars or tubes and supported in the crotch or seat so formed, and wire netting embedded in said filling as and for the purpose specified.

**502,796.** VARIABLE EXHAUST-NOZZLE FOR LOCOMOTIVES. GEORGE H. WATSON, St. Louis, Mo. Filed Jan. 23, 1893. Serial No. 458,483. (No model.)



*Claim.*—1. The combination with an exhaust nozzle having suitable ways therefor, of a movable plate furnished with a series of graduated openings adapted to be severally positioned over the nozzle, and yielding ways for the plate, whereby the plate is rendered easily movable notwithstanding unequal expansion, corrosion &c, substantially as set forth.

2. The combination with an exhaust nozzle having suitable ways therefor, of a sliding plate D furnished with a series of graduated openings, and springs acting downwardly upon the plate, thus easing its operation and allowing for unequal expansion of the parts, corrosion &c, substantially as set forth.

3. The combination with an exhaust nozzle having suitable ways therefor, of a sliding plate D furnished with a series of graduated openings, and with springs and anti-friction rollers adapted to ease its movements, substantially as set forth.

**502,797.** TUMBLING-BARREL. JOHN H. WHITING, Detroit, Mich. Filed Mar. 7, 1893. Serial No. 464,975. (No model.)



*Claim.*—1. In a longitudinally divisible tumbling barrel, the combination with the barrel having closed sides of means for clamping the parts together, and continuous ribs and grooves for holding the articles to be cleaned in fixed position within, substantially as described.

2. In a tumbling barrel, the combination of two imperforated halves, means for clamping the halves together, and separated continuous bearings in each half, of a shape corresponding to the periphery of a car wheel, substantially as described.

3. In a tumbling barrel, the combination of the heads, of two semi-cylindrical imperforated halves, consisting of segmental circular sections clamped together and secured to the heads, substantially as described.

4. The combination of two heads, of shafts centrally secured to said heads and means for imparting motion thereto, and two semi-cylindrical imperforated halves composed of segmental circular sections, clamped together and secured to heads and means for securing the two faces together, substantially as described.

5. In a tumbling barrel, the combination of the heads, the two semi-cylindrical halves, detachably secured together and to the heads, each half composed of a series of segmental circular sections having complementary grooves and flanges *a* and *b*, substantially as described.

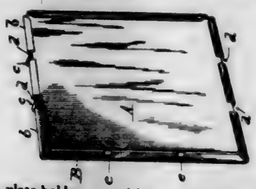
6. In a tumbling barrel, the combination of the heads of the semi-cylindrical halves composed of sections D having the centrally apertured ribs E, the tie bolts F passing through said ribs and clamping the sections together, the marginal apertured ribs J and flanges K on the alternate sections and the tie bolts M passing through the ribs and over the flanges and the clamping bolts L, substantially as described.

**502,798.** DRIVING-BELT. SAMUEL J. WILBUR, Penn Yan, N. Y. Filed Oct. 6, 1892. Serial No. 448,007. (No model.)



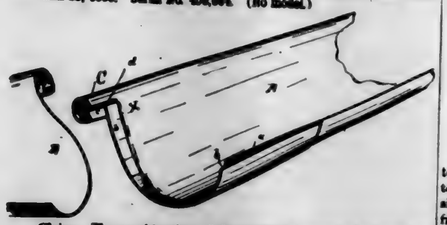
*Claim.*—In a belt, the combination with the links —2— provided with a tongue and tenon, of the eye and bolt connection between the links, the frictional bearing pieces —*b*— secured thereto, the securing bolts and the wearing and clamping plates —*c*—, as specified.

**502,799. PHOTOGRAPHIC-PLATE HOLDER.** CHARLES B. WITTENOVER, Janesville, Wis. Filed Feb. 27, 1893. Serial No. 463,875. (No model.)



*Claim.*—A plate-holder comprising a plate B slotted along its edge and having the intermediate metal bent backward to form an arm *c* and a recess *d*.

**502,800. EAVES-TROUGH.** JOHN WOOL, Canton, Ohio. Filed Jan. 25, 1893. Serial No. 459,664. (No model.)



*Claim.*—The combination of the sections A, one end of each section provided with the groove *a*, formed substantially as shown and described, the bead C, extended from one end of each section and provided with the opening *d*, located directly above the lipe *c*, and the guide *b*; the guide *b*, extended past and beyond the first bend of the section A, substantially as and for the purpose specified.

**502,801. EAR-RING.** JULIUS WODISKA, New York, N. Y. Filed May 7, 1891. Serial No. 391,916. (No model.)



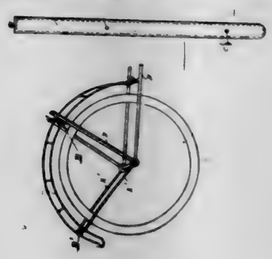
*Claim.*—1. In an ear-ring the main continuous wire A and catch E, combined with the post D which is adapted to traverse the loop formed by the continuous wire A, substantially as described.

2. In an ear-ring the main continuous wire A, the catch E, and the movable post D, all arranged so that said post can be moved away from the lobe of the ear and behind said lobe, substantially as described and for the purposes specified.

3. In an ear-ring the main wire A combined with the post D, the catch E, and pendant G, substantially as and for the purposes specified.

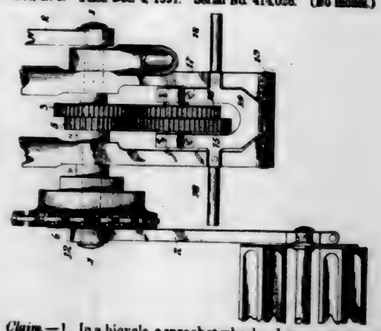
4. In an ear-ring, the combination with the ear-wire of a movable post attached intermediate of the arms of the ear-wire and adapted to traverse the loop formed by the wire.

**502,802. MUD-GUARD FOR VELOCIPEDES.** RICHARD M. WOODHEAD, Nottingham, England. Filed Mar. 21, 1892. Serial No. 425,789. (No model.) Patented in England June 20, 1891, No. 10,560, and in Germany Feb. 21, 1892, No. 64,912.



*Claim.*—A mud guard for a velocipede wheel, consisting of folding supports pivoted to the frame near the axle of the wheel and adapted to be turned back against the frame when not in use, a curved skeleton frame carried by the said supports, and a flexible cover attached to the said frame, substantially as set forth

**502,803. BICYCLE SPEED-GEARING.** JAMES L. ABBOTT, Fort Lee, N. J. Filed Dec. 4, 1891. Serial No. 414,026. (No model.)



*Claim.*—1. In a bicycle, a sprocket wheel and spur gear mounted to loosely rotate in one direction on the main shaft a clutch arranged to prevent rotation in the opposite direction, a spur gear of different size secured on said shaft, two differential spur gears mounted on a frame pivotally secured between the projecting ends of the fork and adapted to be engaged with or disengaged from said first mentioned spur gears, said frame having projecting studs or stops, substantially as and for the purpose described.

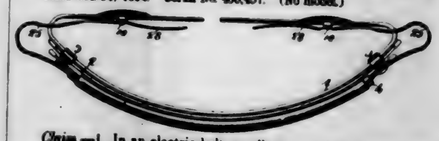
2. In a bicycle, the combination with the main shaft, of a sprocket wheel and spur gear secured on a loose sleeve on said shaft, a clutch located in a recess in the face of the sprocket wheel and normally arranged to run freely on the shaft in one direction and to grip it in the other, a larger spur gear secured on the said shaft, and two differential gears mounted in a swinging frame and adapted to engage with the spur gears on the main shaft, the larger of said differential gears meshing with the smaller gear on the sleeve, as and for the purpose specified.

3. In a bicycle speed varying mechanism comprising a sprocket wheel and a spur wheel carried by a sleeve, the latter being mounted loosely on the main shaft and the said spocket wheel having a clutch arranged in a recess formed in the face thereof, a larger spur wheel being secured on the main shaft, a frame pivotally secured between the lower projecting ends of the fork and provided with lateral studs, said frame carrying differential gears, the smaller of which engages the large pinion on the main shaft and the larger engages the small pinion on the sleeve, substantially as specified.

4. In a bicycle, the combination with a main shaft 1, of the differential gears 3, 5 and sprocket wheel 6 mounted thereon, a clutch located in a recess formed in the said sprocket wheel, a pivotally secured frame 14 carrying differential gears 15, 16, engaging the said gears 3, 5, and the laterally projecting studs 18 of the frame 14 as specified.

5. In a bicycle, the combination with the main shaft 1, of the recessed driving wheel 6 secured on one end of a loosely mounted sleeve 4 the clutch 8, 9, 10 and 11 located in said recess 7, a gear 5 secured on the opposite end of said sleeve, a second gear 3, mounted adjacent to the latter to revolve with the said shaft 1, the swinging frame 14 carrying the differential gears 15, 16, the said frame being pivoted between the projecting ends of the forks and the laterally extending studs 18, whereby the said gears carried by the frame 14 may be thrown into or out of engagement with the gears 3, 5, as specified.

**502,804. ELECTRIC BELT.** DUANE P. ANDRUS, St. Louis, Mo. Filed Oct. 31, 1892. Serial No. 450,457. (No model.)



*Claim.*—1. In an electric belt, a cell composed of an outer copper casing forming one element thereof, and an inclosure for the oxidizable metal and absorbent material, a wire hinged to the same forming a connection and support for the oxidizable metal, said oxidizable metal being U-shaped and adapted to be withdrawn from the copper inclosure, and also adapted to embrace said wire, substantially as set forth.

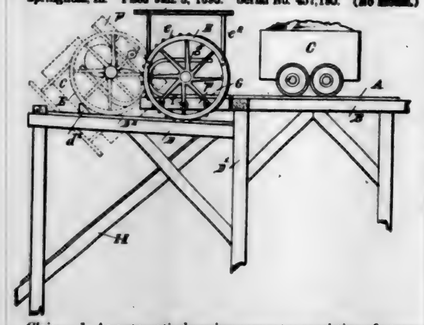
2. In an electric belt a cell composed of a copper inclosure 15, a loop 16 formed in one edge thereof, a wire 17 received by said loop having its contiguous ends in contact for a portion of their length, and bent back in opposite directions on said loop, the oxidizable metal 20 composed of two U-shaped parts 21 and 23 respectively, the former of which parts is in contact with the said wire 17 and absorbent material 22 located between said parts, and adapted to be wrapped around the whole, substantially as set forth.

3. In an electric belt, an electrode having its edge turned, a lip 10 formed with the same, and a steel bar 12 one end of which is adapted to be received by the said edge and the other end by the said lip leaving a space between said bar and electrode for the belt, substantially as set forth.

4. In an electric belt a strip of material 2 carrying metallic bands 5 for the passage of the belt, a pocket 3 fixed to the said strip and having open ends, a casing 4 removably located within the same for the reception of the battery, and snap fasteners, one member of which is carried by one end of the said casing, and the other member carried by the metallic band 5, whereby the said casing is held in position within the pocket, and adjustable in any position upon the belt, substantially as set forth.

5. In an electric belt, a cell composed of a copper casing 15, one end of which is provided with a loop 16, a wire 17 received by the said loop and forming a movable connection, the contiguous ends 19 of said wire being in contact for a portion of their length, and bent back in opposite directions on the loop formed by said wire, an oxidizable element 20 supported by said wire and located within the casing 15, a U-shaped part 21 normally in contact with the said wire and adapted to be removed from one end of the cell, a second U-shaped part 23 inserted into the cell from the opposite side of the same, absorbent material 22 located between the said parts, and adapted to be wrapped around the said oxidizable material, and the wire, openings formed in the said parts for the passage of the liquid, and cutaway portions 24 formed in the said copper 15 opposite the loop 16, substantially as set forth.

**502,805. ROTARY TIPPLE FOR DUMP-CARS.** IRVING BARKER, Springfield, Ill. Filed Jan. 3, 1893. Serial No. 457,195. (No model.)



*Claim.*—1. An automatic dumping apparatus consisting of a tramway supported on trestle work, the upwardly inclined sills supported below the level of said tram-way, the notched rails supported on said sills, the toothed wheels adapted to run on said notched rails, the platform secured to the sides of and rotatable with said wheels, the tramway on said platform upon the same level as and in line with the tramway on the trestle, the car adapted to run on said tramways, the means for retaining said car on said platform while being dumped, and the hood supported on said wheels, as set forth and for the purpose stated.

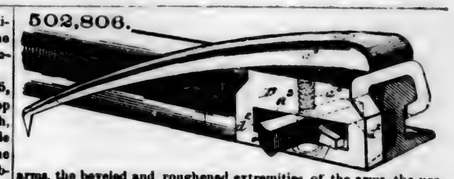
2. In a rotary tipple for dump cars, the combination of the trestle work, the tramway supported thereon, the car adapted to run on said tramway, the upwardly inclined sills below the level of said tramway, the rails on said sills, the wheels running on said rails, the platform secured to said wheels, the tramway on said platform and the stops at the end of said tramway, as set forth and for the purpose stated.

**502,806. CAR-REPLACER.** JOHN H. BLOMFIELD, West Bay City, Mich. Filed Jan. 13, 1893. Serial No. 458,946. (No model.)

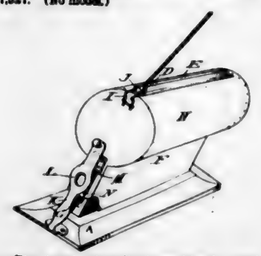
*Claim.*—In a car replacer, the combination with a shoe adapted for loosely clasping the rail, of a rotatably mounted cam having two arms, the beveled and roughened extremities of the arms, the projecting and squared head of the cam, and the horizontally adjustable rail pivotally secured on the shoe, as specified.



**502,806.**



**502,807. COMBINED MATCH-SAFE AND CIGAR-CUTTER.** CHAS. BRUBBER and JOHN H. GOODWIN, Peru, Ill. Filed Apr. 1, 1892. Serial No. 427,327. (No model.)



*Claim.*—The herein described combined match safe and cigar cutter having base plate A, upright standard B, provided with grooves C, C, at its edges. Notch D, and groove E, at its top and upright standard K, provided with a circular opening L, combined with a sleeve F, retaining screws G, G, match receptacle H, spring I, friction roller J, and metal plate M, rigidly attached end O, and sharpened end N, all constructed, arranged and operated substantially as set forth

**502,808. TIRE FOR CARRIAGE-WHEELS.** GEORGE W. BRYAN, Rowayton, Conn. Filed Mar. 20, 1893. Serial No. 466,857. (No model.)



*Claim.*—The combination with a wheel having a felly and a half round metal tire around the same, of a rubber tire of less annular diameter than said wheel, said rubber tire being convex on the outside and concave on the inside to conform to the metal tire and provided with inwardly curved clamping lips tapered toward their extremities and convex on the outside and concave on the inside, said lips embracing the sides of the felly in a straight line, and to be held thereon by frictional contact, substantially as shown and described.

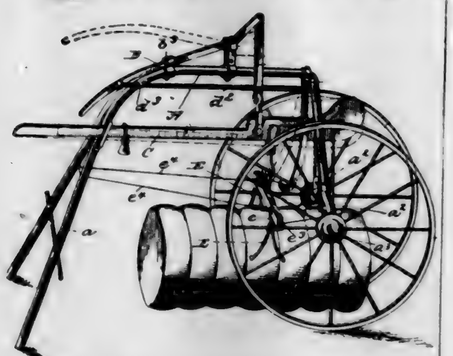
**502,809. SHEARS.** PASCHAL G. CASPIAN, Brooklyn, N. Y. Filed Feb. 28, 1893. Serial No. 464,660. (No model.)



*Claim.*—The combination with the lower member consisting of the rear loop 3, the front blade 4, the intermediate body-portion recessed at 5 in its outer face and upon its rear face having the front and rear lugs 6 and 7 respectively, of the movable member consisting of the blade 8 recessed as at 9 to receive the lugs 6 and 7 and provided intermediate said lugs with the projecting face 10, said blade being provided at its rear end with a curved slot 11, the headed-stud 12 extending through the slot from the rear lug 7, the force or lever-arm 13 having a rear loop 14, said lever-arm being provided upon its rear face near its front end with recesses 15, to receive the lugs 6 and 7 and the intermediate face 16 meeting the face 10, and the pivots 17 and 18, the former passed through the force or lever-arm and blade 8 at the meeting faces 10 and 16 thereof, and the latter pin passed through

the front lug 6 of the lower member and the front end of the force-arm or lever, the said rear lug 7 having its inner face provided with a countersunk threaded perforation, and a set-screw seated therein and at its outer end bearing against the rear end at the inner face of the movable blade 8, substantially as specified.

## 502,810. CART-SCALE. BENJAMIN C. COUPLAND and FRANKLIN T. HOUSE, Rusk, Tex. Filed Jan. 5, 1893. Serial No. 457,622. (No model.)



*Claim.*—1. The combination with a scale beam of an angular supporting frame mounted upon wheels and having its forward ends bent downwardly and diverging to an approximate V-form, as specified.

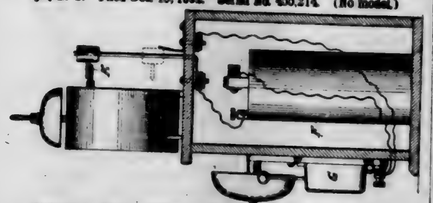
2. The combination with a scale beam, of an angular supporting frame terminating at its rear end in wheel receiving spindles and provided at its forward end with a V-shaped rest, as specified.

3. The combination with a supporting frame terminating at its rear end in wheel receiving spindles and provided at its forward end with a V-shaped rest, of an elevating lever supported above the frame, the scale beams detachably connected with the said lever, the grab hooks suspended from a cross bar, and the hook and eye connection between the cross bar and the beam as specified.

4. The combination with a supporting frame as described, of a scale beam, and an elevating lever adapted for raising and lowering the beam, the engaging hooks suspended from the beam, a relief hook and a draw-rod for operating said relief hook, as specified.

5. The combination with a scale beam, of an elevating lever, the engaging hooks detachably suspended from the beam, a relief hook and a draw-rod adapted for operating the said relief hook to disengage and support said engaging hooks, as specified.

## 502,811. ELECTRIC ALARM-CLOCK. WILLIAM H. DRAKE, Brooklyn, N. Y. Filed Dec. 15, 1892. Serial No. 455,214. (No model.)

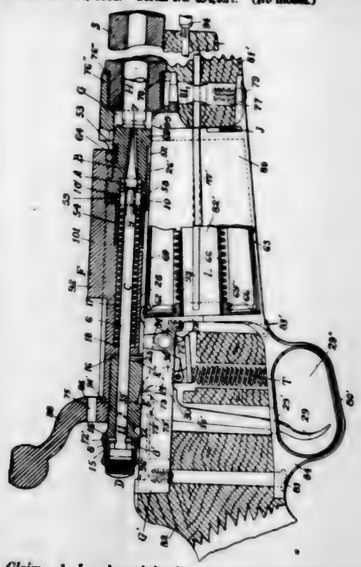


*Claim.*—1. The combination with an alarm clock of a rod, a weight adapted to slide over said rod, a projection upon said weight adapted to be supported by an extension of the winding arbor of the alarm mechanism, and an electric circuit including an electric generator and bell adapted to be closed by the weight when it descends.

2. The combination with an alarm clock of a vertical rod, a weighted circuit-closer adapted to slide freely upon said rod, an extension of an arbor of the alarm mechanism adapted to normally support said circuit-closer and to release the same when the alarm mechanism is set free, and an electric circuit including a battery and electric bell, the terminals of which are closed by the weight when it descends.

3. The combination with an alarm clock of a vertical rod, a weight adapted to slide freely upon the rod, an extension of an arbor of the alarm mechanism adapted to normally support said weight and to release the same when the alarm mechanism is set free, and an electric circuit including a battery and electric bell controlled by the weight when it falls.

## 502,812. MAGAZINE-GUN. MURRAY H. DURST, Wheatland, Cal. Filed Dec. 12, 1892. Serial No. 454,927. (No model.)



*Claim.*—1. In a breech-loading gun, the combination with a rotary-reciprocating bolt and non-rotating bolt-head carried thereby, of an extractor carried upon the bolt-head longitudinally thereof, an extractor-cam operable substantially as set forth for throwing out and releasing the extractor, and means on the bolt for engaging the extractor-cam to actuate the same for releasing the extractor, substantially as described.

2. In a breech-loading gun, the combination with a rotary-reciprocating bolt, and a non-rotating bolt-head carried thereby, of an extractor carried by the bolt-head longitudinally thereof, an extractor-lock operable substantially as set forth for locking one of the extractors, and means on the bolt for actuating the extractor-lock to engage the same with the extractor, substantially as described.

3. In a breech-loading gun, the combination with the bolt constructed in two parts, of which one part is adapted to be turned relatively to the other part, of the extractor, an extractor-cam operable for throwing out and releasing the extractor, means for operating the cam to throw the extractor outward, and means on the rotary part of the bolt constructed to engage and retract the cam for releasing the extractor, whereby the extractor, when thrown outward, is released on the locking movement of the bolt, substantially as described.

4. In a breech-loading fire-arm, the combination with the reciprocatory bolt, of two coacting extractors, and an extractor-actuator carried on the bolt and operating one of the extractors, whereby the cartridge is withdrawn from the barrel by both extractors and afterward released from one of the extractors, substantially as described.

5. In a breech-loading gun, the combination with the reciprocatory bolt, of the two oppositely-disposed extractors, and the combined extractor cam-and-lock constructed and operating on one movement thereof to lock one of the extractors, and on the other movement thereof to release the first extractor and throw out the other extractor, substantially as described.

6. In a breech-loading gun, the combination with a receiver adapted for carrying a longitudinally-reciprocating bolt-mechanism, and having thereon a cam for operating in one direction the extractor-cam of the bolt-mechanism, of the rotary-reciprocating bolt having a non-rotating head furnished with two extractors, the extractor cam-and-lock arranged to be turned in one direction (on the retraction of the bolt-mechanism) by the aforesaid receiver-cam, and a part on the bolt engaging the extractor-cam to reversely operate the same on the locking movement of the bolt in its forward position, substantially as described.

7. In a breech-loading gun, the combination with a reciprocatory bolt-mechanism carrying two extractors, of the extractor-actuator carried by said mechanism and operable for throwing out one of the extractors, the ejector, and means for actuating the extractor-actuator to throw out the extractor previous to the cartridge striking the ejector, substantially as described.

8. In a bolt-mechanism, the combination with a bolt-head carrying an extractor and having therein a guide-way transversely to the bolt, of the extractor-lock movable in said guide-way, and constructed when moved in one direction to lock the extractor, and when moved in the other direction to unlock the extractor, substantially as described.

9. In a bolt-mechanism, the combination with a bolt-head carrying the spring-extractor and having therein a guide-way substantially as described, of an extractor-actuating cam movable in said guide-way and constructed when moved in one direction to throw the extractor into an inoperative position, and when moved in the other direction to release the extractor and permit the same to resume its operative position, substantially as described.

10. In a bolt-mechanism, the combination with a bolt-head carrying two oppositely-disposed extractors and having a transverse guide-way between said extractors, of the combined extractor-lock and extractor-actuator fitted to slide in said guide-way and constructed on one movement thereof to unlock one extractor and throw the other extractor into its inoperative position, and on the other movement thereof to lock the first extractor in its operative position and release the second extractor from its inoperative position, substantially as described.

11. In a bolt-mechanism, the combination with the bolt bored for receiving the stem of the bolt-head, and having a catch for engaging a projection of the bolt-head, of the bolt-head having a stem adapted to turn in said bore, and having a projection engaging said bolt-catch, and an extractor-carrying ring carried upon the bolt-head stem forward of the bolt, and provided with one or more extractors, substantially as described.

12. In a bolt-mechanism, the combination with a bolt constructed for engaging the bolt-head substantially as set forth, of the bolt-head revolubly supported in the bolt and adapted to be turned from and into engagement with the bolt, means for normally preventing the rotation of the bolt-head when the bolt-mechanism is assembled in the gun, one or more extractors carried on the bolt-head, and an extractor-actuator carried on the bolt-head and operable by the turning movement of the bolt relatively to the bolt-head, substantially as set forth.

13. In a bolt-mechanism, the combination with the normally non-rotating bolt head, of the extractor 57′ on said head, the extractor-lock shiftable from and into engagement with said extractor, and a rotary-reciprocating bolt adapted for carrying the bolt-head and constructed to engage the extractor-lock for closing the same on the rotary movement of the bolt in one direction, substantially as described.

14. In a bolt-mechanism, the combination with the bolt-head, constructed substantially as described for carrying a pair of extractors, and having the circumferential guide-way enlarged on one side thereof between the extractors, and under-cut as set forth on the other side thereof between the extractors, of the combined extractor-lock and extractor-actuator movable in said under-cut guide-way and constructed, (when the extractors are removed from the bolt-head,) to be slid around the bolt-head and removed through the widened portion of the guide-way, whereby said combined lock-and-actuator is retained in place by the extractors, substantially as described.

15. In a breech-loading gun, the combination with a receiver adapted for carrying a longitudinally-reciprocating bolt mechanism and having thereon a cam for operating (in one direction) the extractor-cam of the bolt-mechanism, of the rotary-reciprocating bolt provided with a non-rotating bolt-head, an extractor carried upon the bolt-head longitudinally thereof, a rotary-reciprocating extractor-cam carried by the bolt-head, and means on the bolt for actuating the extractor-cam in a direction opposite to the said receiver cam, whereby said extractor-cam is operated in one direction on the retraction of the bolt-mechanism and in the other direction by the turning of the bolt, substantially as described.

16. In a breech-loading gun, the combination with the receiver adapted for carrying the longitudinally-reciprocatory bolt-mechanism, of the reciprocating bolt adapted to have a rotary unlocking movement and carrying the non-rotating bolt-head provided with a firing-pin-retracting cam, the firing-pin constructed for engaging said cam on the turning of the firing pin in the bolt-head, and means for turning the firing-pin with the bolt, whereby the firing-pin is retracted by said cam on the rotary unlocking-movement of the bolt, and the firing of the gun thereby prevented until the bolt is turned to its locked position, substantially as described.

17. In a breech-loading gun, the combination in the bolt-mechanism thereof, with a rotary-reciprocating bolt and non-rotating bolt-head provided with a retracting-cam substantially as described, and having the stop-face for limiting the forward movement of the firing-pin, of the firing-pin constructed to engage said stop-face for limiting its forward movement and having a cam-bearing constructed for engaging said retracting-cam to retract the firing-pin through the turning thereof within the bolt-head, substantially as described.

18. In a breech-loading gun, the combination with the bolt-mechanism, having a severable head furnished with a guide-projection on one side thereof, and with the receiver having the groove for said projection, and having said groove widened at one point in its length to form a recess for said projection, of the longitudinally-and-rotary-reciprocating bolt adapted to be turned from and into locking engagement with the receiver, and constructed for engaging the severable head when the bolt is unlocked, whereby said head is operated by the bolt longitudinally, and may be turned to carry its said projection into said recess and the head out of engagement with the bolt, for effecting the separation of the two parts of the bolt-mechanism, substantially as described.

19. In a bolt-mechanism, the combination with the bolt having the longitudinal segmental opening in one side of and at the rearward end thereof, of the spring-actuated firing-pin longitudinally movable in the bolt, and the firing-pin head having on one side thereof an enlargement fitted to slide in said side-opening, said firing-pin head being constructed, when this is retracted beyond its normal stroke and turned relatively to the bolt, to engage the rearward end of the bolt, whereby the firing-pin may be withdrawn to and held in an inoperative position, substantially as described.

20. In a bolt-mechanism, the combination with the bolt having the longitudinal segmental opening in one side of and at the rearward end thereof, and having at its rearward end opposite to said opening a firing-pin-head-engaging notch or recess, of the spring actuated firing-pin longitudinally movable in the bolt, and the firing-pin head having on one side thereof an enlargement fitted to slide in said side-opening and having at the forward end of said enlargement a catch adapted for engaging said bolt-notch or recess, whereby the firing-pin, when its head is retracted beyond its normal stroke and turned relatively to the bolt, may be locked in an inoperative position, substantially as described.

21. In a breech-loading gun, the combination with the longitudinally-reciprocatory bolt, and with the sear, of the firing-pin, and the firing-pin head movable longitudinally of the bolt and rotary therewith substantially as set forth, and having at one end thereof the full-cock notch, and adjacent to said notch having a safety-catch adapted, when the firing-pin is in the full-cock position and the bolt is turned out of its locked-position, to engage the sear for preventing the firing of the gun, substantially as described.

22. In a breech-loading gun, the combination with the receiver adapted for carrying the longitudinally-reciprocatory bolt-mechanism, and with the sear, of the reciprocating bolt adapted to have rotary locking and unlocking movements, the firing-pin, and the firing-pin head movable longitudinally of the bolt and rotary therewith substantially as set forth, and having the full-cock notch, and rearward of said notch having the half-cock notch constructed for engaging the end and also the side of the sear, whereby the sear when the firing-pin is at the half-cock position is locked against action, and whereby the sear at the same time locks the firing-pin head and bolt against rotation, substantially as described.

23. In a breech-loading gun, the combination with the receiver adapted for carrying the longitudinally-reciprocatory bolt-mechanism, and with the sear, of the reciprocating bolt adapted to have rotary locking and unlocking movements and carrying the non-rotating bolt-head provided with a firing-pin-retracting cam, the spring-actuated firing-pin carried by the bolt and constructed for engaging said cam on the turning of the firing-pin in the bolt-head, the firing-pin head constructed for longitudinal movement in the bolt and normally partaking of the rotary movements of the bolt, and having on the forward end thereof the full-cock sear-catch, and at one side of the full-cock sear-catch having the sear-engaging flange or notch, and means for simultaneously turning the bolt and firing-pin relatively to the bolt-head, whereby, when the bolt is turned with the firing-pin at full-cock, said pin is turned to its safety-position relatively to the bolt-head cam simultaneously with the locking of the sear against action by said catch or flange on the firing-pin head, substantially as described.

24. In a breech-loading gun, the combination with the receiver adapted for carrying the longitudinally-reciprocatory bolt-mechanism, and with the sear and the safety-bolt connected and operating therewith, of the longitudinally-reciprocating bolt adapted to have rotary locking and unlocking movements, the firing-pin, and the firing-pin head movable longitudinally of the bolt and rotary therewith substantially as set forth, and having adjacent to the sear (when the bolt is closed and locked) its surface cut away, for permitting the operation of the sear to withdraw said safety-bolt out of engagement with the main-bolt, whereby after the firing of the gun the main-bolt is unlocked by the releasing of the trigger and sear, substantially as described.

25. In a breech-loading gun having a longitudinally-reciprocating bolt-mechanism comprising a rotary-reciprocating main bolt of

the sear, and a safety-bolt connected for operation simultaneously with the sear and constructed to engage the bolt on the first movement of the sear, whereby the main-bolt is locked against rotary movement before the disengagement of the sear from the firing-pin of the bolt-mechanism, substantially as described.

26. In a breech-loading gun, the combination with a longitudinally-reciprocating bolt-mechanism comprising the rotary-reciprocating main-bolt, of the sear, the safety-bolt, and a shaft and lever operating said bolt from the sear, the main-bolt having a stop-face, interrupting the safety-bolt on the first rotary unlocking movement of the main-bolt for preventing the premature firing of the gun, substantially as described.

27. In a gun, the combination with the sear and with the ejector both pivotally supported substantially as described, of the ejector similarly supported, a bearing-plate pivotally supported at one end upon the sear and at the other bearing upon the ejector, and a spring acting against said plate, whereby the force of the spring is transmitted to both the ejector and the sear, substantially as shown and described.

28. In a breech-loading gun, the combination with a receiver adapted substantially as described for carrying the longitudinally-reciprocating bolt-mechanism comprising the rotary-reciprocating main-bolt, and having a bore, 75', for carrying a safety-bolt, of the rotary-reciprocating and longitudinally-reciprocating main-bolt, the safety-bolt carried in said receiver bore 75', the sear-shaft operatively connected with said safety-bolt, and means for holding in place and actuating said shaft to throw the safety-bolt from and into engagement with the main-bolt, substantially as described.

29. In a magazine-gun, the combination with the receiver adapted for carrying a longitudinally reciprocating bolt-mechanism and having a cartridge passage-way underneath the path of said mechanism, of a cartridge-magazine substantially as described supported underneath the receiver with its discharge-opening normally coinciding with said cartridge passage-way, and means for shifting the magazine to carry its discharge-opening out of alignment with said passage-way and thereby hold the magazine-supply of cartridges in reserve, substantially as described.

30. In a magazine-gun, the combination with the receiver adapted for carrying a reciprocating bolt mechanism, and for carrying a rotatory magazine, of the rotatory magazine located underneath the path of the bolt-mechanism, and having a discharge-outlet normally coinciding with the passage-way in the receiver, through which the magazine may be filled and emptied, and a shifting arm connected with the magazine for turning the same to bring its discharge-opening out of and into alignment with the cartridge passage-way in the receiver, substantially as described.

31. In a magazine-gun, the combination with the receiver and with the barrel of the gun, of the centrally-perforated rotatory magazine carried by the receiver rearward of and below the line of the gun-barrel, said perforation being in a line with the passage-way in the stock of the gun, whereby space is obtained for carrying a cleaning rod longer than the gun-barrel, substantially as described.

32. In a magazine for breech-loading guns, the combination with the outer shell having a central core and having supports for the heads and points of the cartridges constructed to hold the cartridges free of the central core, of the spiral spring carried upon the central core and constructed at its free end to engage the cartridges for carrying forward the same, substantially as described.

33. In a magazine for breech-loading guns, the combination with the outer shell having the discharge passage-way 69, the head 65' constructed for supporting the points of the cartridges, and the central core having the head 66 and constructed for supporting the heads of the cartridges, of a spring within the cartridge-chamber for carrying forward the cartridges, and means for holding the central core and its head into engagement with the outer shell and its head, substantially as described.

34. In a magazine for breech-loading guns, the combination with the outer shell having the discharge-outlet 69, the stop 69', and having the head constructed for supporting the points of the cartridges, of the central core and its head, and the spring carried upon the central core and constructed and operating for carrying the cartridges against said stop, said spring being accessible through the discharge-opening, substantially as described.

35. In a magazine-gun, the combination with a receiver adapted substantially as described for carrying the rotatory magazine and having in the cover thereof an opening for the shifting-arm of the magazine, of the rotatory magazine carried within the receiver and its cover, the shifting-arm fixed to the magazine and extending through said opening, and a detent engaging the receiver for holding the magazine in its operative or inoperative position, substantially as described.

36. In a magazine-gun, the combination with a receiver or frame-work, substantially as described, having therein the opening for a shifting-arm, of a rotatory magazine substantially as described, and the shifting-arm J fixed to said magazine and extending through said opening and constructed substantially as described for covering said opening, substantially as described.

37. In a breech-loading gun, and as a safety device therefor, the combination with the frame fitted for carrying a longitudinally-reciprocating bolt and having rearwardly of the bolt-bearing a fixed stop, of a longitudinal-and-rotary-reciprocating bolt, the firing-pin, and a firing-pin head longitudinally movable in the rearward end of the bolt and projecting therefrom and having a stop in position to be turned out of alignment with said fixed stop on the turning of the bolt to unlock the same, and standing in position forward of said fixed stop when the bolt is in its locked position.

38. In a magazine for breech-loading guns, the combination with a casing having a longitudinal opening in one side thereof and having a central core and a passage-way extending around said core to said opening, of a spring in said passage-way and adapted to bear against the cartridges therein for forcing the same through the passage-way to said casing-opening, substantially as described.

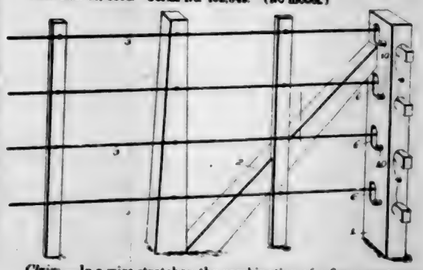
39. In a magazine for breech-loading guns, the combination with a casing having a cartridge passage-way therein and provided at one end thereof with a circular support for the heads of the cartridges and at the other end thereof with a circular support for the points of the cartridges, of a revolving spring-actuated cartridge feeder within the casing between said cartridge-supports, substantially as described.

40. In a magazine-gun, the combination with a framework comprising a receiver adapted for carrying a reciprocating bolt-mechanism and having underneath the path of the bolt-mechanism a passage-way for the cartridges, and having underneath said passage-way an inclosed magazine-space, of a separate magazine removably inclosed in said space and comprising an exterior casing with a side-opening corresponding to said cartridge passage-way of the receiver, and means within the magazine for ejecting the cartridges therefrom into said receiver passage-way, substantially as described.

41. In a magazine-gun, the combination with the receiver adapted for carrying a reciprocating bolt-mechanism and having underneath the path of the bolt-mechanism a cartridge passage-way, of a magazine located below said receiver passage-way and comprising a casing having an opening in one side thereof and containing means for ejecting the cartridges therefrom, and the magazine-cover under the magazine and joining at its edges the lower edges of the receiver for inclosing the magazine, substantially as described.

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**502,813.** WIRE-STRETCHER. ELIJAH J. FOX, Broadway, Ohio. Filed Feb. 18, 1893. Serial No. 462,849. (No model.)



*Claim.*—In a wire stretcher, the combination of a fence post provided with a series of transversely arranged horizontally disposed cylindrical bearing openings not extending through the post and having a vertical series of elongated wire openings communicating with the bearing openings, said post being provided with a vertical series of perforations arranged between said wire openings and the corner of the post and intersecting the bearing openings, a series of winding shafts journaled in the bearing openings and extended beyond the post and provided with wire and locking pin perforations, and a series of locking pins arranged in the perforations of the post and engaging the locking pin perforations of the shafts and retaining the shafts in the journal openings, substantially as described.

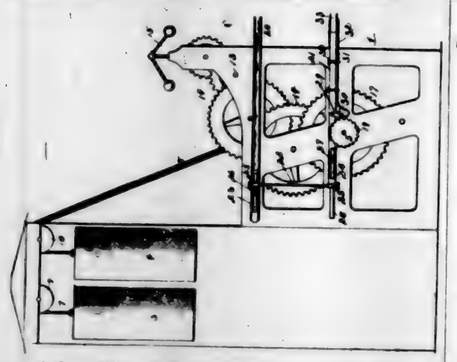
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**502,814.** WEIGHT-MOTOR. DIEDRICK J. FREESE, Higginsville, Mo. Filed June 17, 1893. Serial No. 477,935. (No model.)

*Claim.*—1. In a weight motor, the combination of a main frame, a power shaft journaled therein, a drum mounted on the power shaft, a drive shaft journaled on the frame, a train of gears connecting the drive and power shafts, a clutch connecting the drum with the train of gears and comprising a pawl and ratchet wheel, a weight, a cable connecting the weight with the drum, a platform fulcrumed on the frame intermediate of its ends and provided with an actuating pawl engaging the ratchet wheel, and a lever fulcrumed on the main frame and located above the platform and connected at a point in advance of its fulcrum with the platform in rear of the fulcrum of the latter, substantially as described.



2. In a weight motor, the combination of a main frame, a power shaft journaled therein, a drum mounted on the power shaft, a drive shaft journaled on the frame, a train of gears connecting the drive and power shafts, a clutch connecting the drum with the train of gears and comprising a pawl and ratchet wheel, a weight, a cable connecting the weight with the drum, a platform fulcrumed on the frame and provided with an actuating pawl engaging the ratchet wheel, and a lever fulcrumed on the frame and located above the platform and connected therewith, substantially as described.



3. In a weight motor, the combination of a main frame, drive and power shafts journaled thereon, a train of gears connecting the shafts, a drum mounted on the power shaft, a clutch connecting the drum with the train of gears and composed of a pawl and a ratchet wheel, a longitudinally adjustable platform fulcrumed on the main frame and provided with a pawl to engage said ratchet wheel, a longitudinally adjustable lever fulcrumed on the frame, and an adjustable rod connecting the lever with the platform and attached to the former in advance of the fulcrum, and to the latter in rear of the fulcrum, substantially as described.

4. In a weight motor, the combination of a main frame, drive and power shafts journaled thereon, a train of gears connecting the shafts, a drum mounted on the power shaft, a clutch connecting the drum with the train of gears and composed of a pawl and a ratchet wheel, a platform fulcrumed on the main frame and provided with an actuating pawl to engage the ratchet wheel and having a hinged section adapted to be swung upward, and means for connecting the hinged section with the actuating pawl, whereby when the hinged section is swung upward the actuating pawl will be drawn from engagement with the ratchet wheel, substantially as described.

5. In a weight motor, the combination of a main frame, drive and power shafts journaled thereon, a train of gears connecting the shafts, a drum mounted on the power shaft, a clutch connecting the drum with a train of gears and composed of a pawl and a ratchet wheel, a platform fulcrumed on the main frame and having a hinged outer section adapted to be swung upward, an actuating pawl mounted on the platform and engaging the ratchet wheel, a rod slidingly mounted on the platform and having a curved resilient rear end connected with the actuating pawl, and a link connecting the front end of the rod with the upwardly swinging section of the platform, substantially as described.

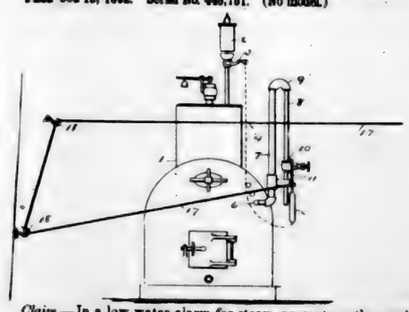
6. In a weight motor, the combination of a main frame, drive and power shafts journaled thereon, a train of gears connecting the shafts, a clutch composed of a pawl and a ratchet wheel, a drum mounted on the power shaft and connected with the train of gears by said clutch, a platform fulcrumed on the main frame and provided with an actuating pawl engaging the ratchet wheel, said platform having an upwardly swinging outer section, a lever fulcrumed on the frame and arranged above the platform and provided with an outer telescoping section, and means for connecting the platform and the lever, substantially as described.

7. In a weight motor, the combination of a main frame, drive and power shafts journaled thereon, a train of gears connecting the shafts, a drum mounted on the power shaft, a clutch connecting the drum with the train of gears and composed of a pawl and a ratchet wheel, a longitudinally adjustable platform fulcrumed on the main frame and provided with a longitudinal slot to receive the fulcrum and having a rearward extension, an actuating pawl carried by the platform and engaging the ratchet wheel, a longitudinally adjustable lever fulcrumed on the main frame and located above the platform and having a longitudinal slot to receive the fulcrum, and a connecting rod provided at its ends with clips arranged on the lever in advance of its fulcrum, and on the rearward extension of the platform, substantially as described.

8. In a weight motor, the combination of a main frame, drive and power shafts journaled thereon, a train of gears connecting said shafts, a governor connected by a train of gears with the drive shaft, a drum mounted on the power shaft, a pulley roll located below the power shaft, cables wound around said drum, one of the cables extending upward from one side of the drum, and the other cable extending downward from the opposite side of the drum, and passing around the pulley roll, and weights connected with the cables, substantially as described.

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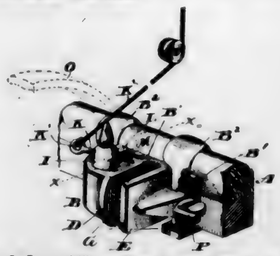
**502,815.** LOW-WATER ALARM. NELSON GUYER, Cygnet, Ohio. Filed Oct. 13, 1892. Serial No. 448,781. (No model.)



*Claim.*—In a low water alarm for steam generators, the combination of the U-shaped expansion pipe, one arm of which is adapted for connection with the water gage of the generator and the other arm of which is provided with a valve, the bracket 15, adjustably secured to that arm of the expansion pipe which is connected to the water gage, and having an opening for the passage of the other arm of said pipe and having a set screw beyond said opening, a trip-lever pivoted to the valve in said pipe and having two arms, one of which is arranged to engage said set screw on the bracket and a weight loosely mounted on the other of said arms and adapted to be connected to the whistle levers substantially as set forth.

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**502,816.** THILL-COUPLING. JOSEPH H. HANSON, Crystal Falls, Mich., assignor of one-half to William J. Brown, Joseph F. Hocking, Frank Scadden, and George E. Voos, same place. Filed Dec. 19, 1892. Serial No. 455,633. (No model.)



*Claim.*—1. In a thill coupling, in combination with the thill adapted to have its end placed between lugs or projections carried by the axle, a ball adapted to move into engagement with the portion of the thill between the lugs and hold the same substantially as described.

2. In a thill-coupling, in combination with the casting adapted to be secured to the axle, and provided with a slot to receive the end of the thill, of a ball seated in a cavity in said casting and held in engagement with such thill end to pivot and hold the same, substantially as shown and described.

3. In a thill-coupling, in combination with the casting adapted to be secured to an axle and provided with a slot to receive the thill end, a ball seated in a cavity in said casting, and a rotary bolt to move said ball into engagement with the thill-end, substantially as shown and described.

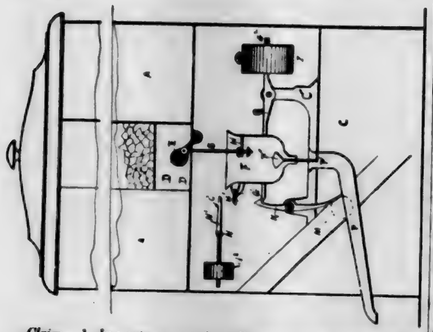
4. In a thill-coupling, in combination with the casting adapted to be secured to an axle, and provided with a slot to receive the thill end, a ball seated in a cavity or recess in said casting, and a rotary notched bolt to co-operate with said ball to move the same into en-

gagement with and permit its disengagement from the thill end, substantially as specified.

5. In a thill-coupling, in combination with the casting having the two lugs D and E, the thill-iron having a cavity between said lugs, the ball movable into said cavity and the rotary bolt to move said ball, both the ball and the bolt being in the lug D, substantially as and for the purpose described.

6. In a thill-coupling, in combination with the casting provided with a slot to receive the thill end, the ball movable into engagement with the latter, the rotary bolt to co-operate with said ball, and the locking device to hold said bolt, substantially as and for the purpose described.

## 502,817. COIN-CONTROLLED VENDING-MACHINE. HENRY HOSMER, Omaha, Nebr. Filed Apr. 17, 1893. Serial No. 470,800. (No model.)

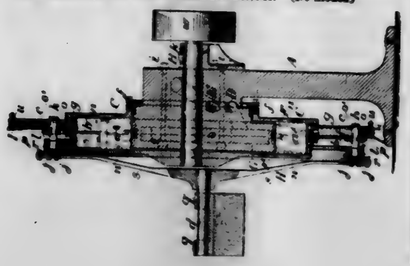


*Claim.*—1 In a coin operated vending machine, the combination with the casing, the delivery tube and coin chute, of the following instrumentalities to wit a supporting standard, a pivoted vending cup provided with a valve, a coin lever adapted to detachably hold said cup in one of its extreme positions, an auxiliary scale beam adapted to hold said cup in its other extreme position, a spring actuated dog adapted to lock upon said scale beam, and a rod connecting said vending cup to a valve of the reservoir, all of said effects being arranged to operate substantially as and for the purpose set forth.

2. In a coin operated vending machine, the combination with a reservoir delivery tube and coin chute of a pivoted and vertically oscillating vending cup, said cup having a central valve and being provided with an adjustable counterpoise and a hooked coin operated gravity actuated lever, a spring actuated dog secured to said cup and adapted to engage the free end of an auxiliary scale beam adapted to detachably hold said cup while in its extreme upward position, a valve within said reservoir, an adjustable rod connecting said reservoir valve and vending cup, and a stop to open the valve in said vending cup when in its lowest position, all substantially as and for the purpose set forth

3 The combination with the reservoir A, having the central ice chamber B, of the auxiliary valve chamber D, the valve E secured to said valve chamber, the weighted and pivoted beam G, supporting the cup F, said cup being provided with a valve F', ear H and spring actuated dog H', the gravity actuated coin controlled lever K adapted to engage said cup beam G, the auxiliary scale beam N' adapted to engage the dog H', and the adjusting rod S, connecting said valve E and cup F, all substantially as and for the purpose set forth

## 502,818. ROTARY ENGINE. HENRY P. HOLLAND, San Francisco, Cal. Filed Sept. 24, 1892. Serial No. 446,546. (No model.)



*Claim.*—1. A rotary engine consisting of shaft B, with driving pulley *w*, mounted in the bed piece A, and carrying at its end a cylinder C, with inlet port D, and exhaust port E, having the spider wheel H, fastened on small shaft *d*, operating as an eccentric with main shaft B, with arms *s*, *s*, attached at their outer ends to rotating ring slides or cam-way *j*, *j* which inclose slides *h* to which the piston rods *b*, *b*, are fastened for moving the pistons in and out as the engine revolves and through which the guiding rods pass and are joined to the outer ring I, the springs *b*, *b*; the packed joint *f*, and packed box *g*, substantially as herein described.

2. In a rotary engine, the combinations of the shaft B, the cylinder C, (formed by rotating wall F, fixed wall G, and circumference wall *v*,) mounted on bed piece A, the pistons $a' a^2 a^3 a^4 a^5 a^6$ for sliding in and out of the cylinder, upon which the power employed acts for rotating the engine, the piston rods *b*, *b*, fastened in slides *h*, in the opening *o'*, the guiding rods *c*, *c*, passing through opening *o*, in slides *h*, and joined at their ends to the outer ring I; with the spider wheel H, attached to small shaft *d*, rotated by and working as an eccentric with main shaft B, the arms of which are joined at their outer ends to rotating ring slides or cam-way *j*, *j*, which inclose the slides *h*, to which the piston rods are joined, and by means of which the pistons are moved in and out as the power employed for propelling the engine passes into and through the cylinder, substantially as herein described.

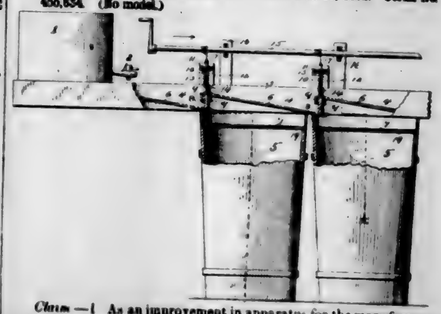
3. In a rotary engine the combination of the inlet and exhaust ports D and E, with the pistons $a' a^2 a^3 a^4 a^5 a^6$ sliding in and out of the cylinder C, as the main shaft B, revolves and rotates the cylinder, the piston rods *b*, *b*, the slides *h*, guiding rods *c*, *c*, outer ring I, the rotating ring slides or cam-way *j*, *j*, the spider wheel H on small shaft *d*, having arms *s*, *s*, attached to and rotating the ring slides by means of which said pistons are operated in the cylinder so that the power employed to rotate the engine may act upon them and be set free to escape, substantially as herein described.

4. In a rotary engine the combination of the spider wheel H, attached to small shaft *d*, having arms *s*, *s*, fastened at their outer ends to rotating ring slides or cam-way *j*, *j*, operated as an eccentric with main shaft B, and cylinder C, with the pistons $a' a^2 a^3 a^4 a^5 a^6$ piston rods *b*, *b*, slides *h*, inclosed in said rotating ring slides, or cam-way the guiding rods *c*, *c*, and outer ring I, moved and operated by steam, water, compressed air, gas or other power passing into and out of inlet and exhaust ports D, and E, through cylinder C, substantially as herein described and set forth.

5. In a rotary engine the combination of the pistons $a' a^2 a^3 a^4 a^5 a^6$ in a cylinder as C, mounted on a shaft as B, the piston rods *b*, *b*, inclosing slides *h*, rotating rings or cam-way *j*, *j*, with a spider wheel fastened upon small shaft *d*, outside of the cylinder operating said pistons and rotating rings slides or cam-way moved and carried by the revolutions of shaft B, when the steam or other power employed is admitted to and passes through and out of the cylinder C, through inlet and exhaust ports D and E, substantially as herein described and set forth

6. In a rotary engine the combination of the outer ring I, to which the ends of the guiding rods are joined, the guiding rods *c*, *c* and slides *h*, with the cylinder C, main shaft B, for the purpose of operating and carrying the spider wheel H, on small shaft *d*, the arms of which are attached to rotating rings or cam-way *j*, *j*, inclosing slides *h*, to which piston rods $a' a^2 a^3 a^4 a^5 a^6$ are attached, thereby moving them in and out as the shaft B, revolves, substantially as herein described

## 502,819. APPARATUS FOR THE MANUFACTURE OF VINEGAR. RUSSELL M. HUGHES, Louisville, Ky. Filed Dec. 19, 1892. Serial No. 455,634. (No model.)



*Claim.*—1 As an improvement in apparatus for the manufacture of vinegar, the combination, with the charging box and the series of generators, of a fixed charging trough divided into compartments, one for each generator and discharging directly into the latter, valves for controlling the discharge of said compartments, and means for simultaneously and positively operating the series of valves to discharge the contents of the compartments, substantially as set forth.

2. As an improvement in apparatus for the manufacture of vinegar, the combination, with the generators, of a feed trough divided into compartments, each compartment having an inclined bottom projecting over the head of one of the generators, and valve gates operating in conjunction with said inclined bottoms, substantially as set forth.

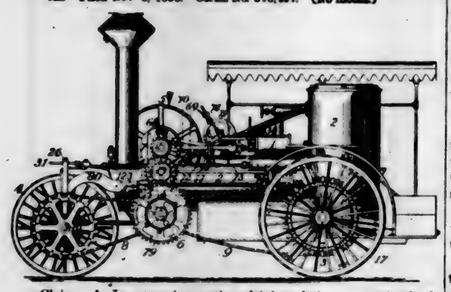
3. As an improvement in apparatus for the manufacture of vinegar, the combination, with the generators, of the feed trough divided into the compartments 4 adapted to be successively filled by the overflow from one compartment to another, each compartment being provided with an inclined bottom inclined toward the adjoining generator and terminating over the head of the same, and valves provided at the rear end of the bottom portions of each compartment and adapted to control the discharge of the adjoining compartment, substantially as and for the purpose set forth.

4. As an improvement in apparatus for the manufacture of vinegar, the feed trough divided into compartments, each compartment having an inclined bottom inclined toward the next compartment in successive series and there terminating in a discharge end, and means for controlling the discharge of said compartments, substantially as and for the purpose set forth.

5. An improved apparatus for the manufacture of vinegar, comprising the generators, and a charging compartment therefor having an inclined bottom pitched downwardly toward the generator and terminating in a discharge end projecting over the head of the latter, and valve gates for controlling the discharge from said inclined bottom, whereby the force of the charge of the wash or liquid is regulated by the pitch of the inclined bottom and a good distribution over the head of the generator is secured, substantially as set forth.



## 502,820. TRACTION-ENGINE. BYRON JACKSON, San Francisco, Cal. Filed Nov 6, 1890. Serial No. 370,497. (No model.)



*Claim.*—1. In a traction engine, driving chains connecting both the rear bearing and the front bearing and steering wheels to the driving power, so that all the wheels of the engine may be driven when required, said rear wheels being mounted upon movable bearings so that they can be adjusted to compensate for the wear of the driving chains, together with the steering yoke, arranged in connection with the front wheel, substantially as described.

2. In a traction engine, driving chains connecting front and rear driving wheels to the power so that the front bearing and rear steering wheels can be driven faster than the rear wheels when all are connected so as to turn the engine quickly in a curve, the said rear wheels being mounted upon movable bearings so that they can be adjusted to compensate for the wear of the driving chains, and said front wheel being mounted on the front axle by means of a gimbal bearing free to turn in any direction in a horizontal plane, substantially as specified.

3. In a traction engine, the connecting chains for driving both the front and rear bearing wheels so that they may be driven at the same or at different times and speeds, said rear wheels being mounted upon movable bearings so that they can be adjusted to compensate for the wear of the driving chains, substantially as described.

4. In a traction engine, the front bearing or steering wheel mounted on front axle by means of a gimbal bearing, free to turn in any direction in a horizontal plane or held in a vertical plane by means of a steering yoke connected to the gimbal by a universal bearing, the said yoke being supported at its top by a bow-frame bearing on the front main axle, substantially as described.

5. In a traction engine, a front bearing and steering wheel connected with the driving power mounted on the front axle in the manner described, a pivoted yoke frame spanning the rim of the wheel at the top and attached by a swivel bearing to a second bow frame hinged on the main axle, a wheel connected with the steering gear and capable of turning in any direction in a horizontal plane, substantially as described.

6. In a traction engine, a front bearing and steering wheel, connected with the driving power and mounted on the front axle by means of a gimbal bearing, a pivoted yoke frame supporting the rim of the wheel at the top and attached by a swivel bearing to a second bow frame hinged on the main axle and a hydraulic piston connected to the yoke frame so as to turn the wheel about its vertical axis and thus steer the engine, substantially as described.

## 502,821. SUBWAY FOR ELECTRIC-RAILWAY CONDUCTORS. ISAAC LA RUE JOHNSON, Washington, D. C. Filed Oct. 10, 1890. Renewed Dec. 16, 1892. Serial No. 455,359. (No model.)



*Claim.*—1. In an electric railway, the rails, the subway, the ties having their ends overhanging said subway, and the guard plate forming, with one of said rails, the trolley slot, substantially as described.

2. A subway for railways, located beneath one of the rails and supporting the same, and having the ends of the ties overhanging said subway, and forming, with the rails thereon, one side of the trolley slot, and a vertical guard plate which forms the opposite side thereof.

3. A subway for railways located beneath one of the rails, and having the ties thereof overhanging said subway, the rail on that side, and a parallel guard plate forming the trolley slot, and having bracket pendants secured to the under side of the ties at desired intervals for supporting the conductor brackets.

4. A subway for railways located beneath one of the rails thereof, cross ties having their ends overhanging said subway, a rail forming one side of the trolley slot, and an adjustable guard plate the opposite side thereof, pendants secured to the under side of the ties within the subway, and brackets on said pendants for supporting a conductor.

5. A subway for railways located beneath one of the rails and contiguous thereto, ties overhanging the same, and forming with the rail thereon, one side of the slot, and having a bracket supporting pendant bolted to the under side of the ties and secured to the conduit to give steadiness to the ties, and rails thereon.

6. A subway for railways, having one side edge thereof provided with longitudinal flanges for attachment to the ties, the opposite side thereof prolonged and supporting a guard plate.

7. A trolley having a longitudinal pivot slot therein, and a longitudinal bore through its lower arm to receive a conductor which communicates with a contacting pulley on its lower end and with the car motor, through an opening near the pivot slot.

8. A subway or conduit for railways, located partly under one of the rails and outside of the tracks, and having the cross ties thereof overhanging said subway, said cross ties, together with the rail of said track and its support forming a covering for said subway or conduit, and protecting the same from injury by heavily loaded wagons passing over or across it.

## 502,822. PROCESS OF PREPARING OXIDE-OF-ZINC PIGMENT. GEORGE T. LEWIS, Philadelphia, Pa. Filed July 17, 1891. Serial No. 399,821. (No specimens.)

*Claim.*—The method of preparing zinc oxide containing sulphate and sulphite of zinc for use as a pigment in such a manner as to save all the zinc, which consists in treating the impure zinc oxide with water containing a caustic alkali in solution whereby the sulphur salts of zinc may be dissolved by the water and the zinc combined with sulphur reprecipitated by the alkali as zinc oxide.

## 502,823. HANGER FOR CURTAIN-FIXTURES. WILLIAM MARTIN, Salem, Mass. Filed Nov. 9, 1892. Serial No. 451,462. (No model.)



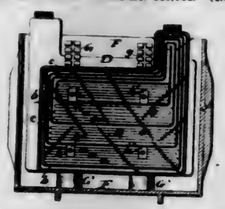
*Claim.*—1. The improved holder or support for curtain fixtures comprising a slotted base-plate A, a clamping-member c at the back

thereof, a clamping-strip *f* at the front thereof between which and the surface of the base-plate the foot or feet of a curtain-fixture may be slipped, and the headed screw *h* passed through the said clamping-strip, through the slot in the base-plate, and through the clamping-member *c*, substantially as described.

2. The improved holder or support for curtain-fixtures comprising a slotted base-plate A, a clamping-member *c* at the back thereof provided with a neck-portion projecting through the slot in the base-plate and constituting a stop for the curtain-fixture, a clamping-strip *f* at the front thereof between which and the surface of the base-plate the foot or feet of a curtain-fixture may be slipped, and the headed screw *h* passed through the said clamping-strip, through the slot in the base-plate, and through the clamping member *c*, substantially as described.

3. The improved holder or support for curtain fixtures comprising a slotted base-plate A, a clamping-member *c* at the back thereof provided with a neck-portion projecting through the slot in the base-plate and having an enlarged head, it constituting a stop for the curtain-fixture, a clamping-strip *f* at the front thereof between which and the surface of the base-plate the foot or feet of a curtain-fixture may be slipped, and the headed screw *h* passed through the said clamping-strip, through the slot in the base-plate, and through the clamping-member *c*, substantially as described.

## 502,824. SECONDARY BATTERY. LANSING MORSE, Brooklyn, N. Y. Filed July 25, 1892. Serial No. 441,113. (No model.)



*Claim.*—1. A secondary-battery element or electrode having its body consisting of a series of narrow strips of lead of different thicknesses folded together in zig-zag order substantially as described.

2. In a secondary battery, an element or electrode having its body consisting of a series of narrow strips of lead of different thicknesses folded together in zig-zag order and surrounded by a lead strip having a portion bent upward above said folded strips of different thicknesses substantially as described.

3. In a secondary battery, an element or electrode having its body consisting of a series of narrow strips of lead folded together in zig-zag order and forming a bunch surrounded by a lead strip having a portion bent upward above said bunch, a similarly constituted bunch of strips of lead folded together in zig-zag order, and a strip of lead surrounding both bunches and having a portion bent upward substantially as described.

4. In a secondary battery, an element or electrode having its body consisting of a series of narrow strips of lead of different thicknesses folded together and surrounded by a lead strip having a portion bent upward above said folded strips, the edges of said strips being fused together on narrow lines substantially as described.

5. In a secondary battery, an element or electrode having its body consisting of a series of narrow strips of lead having their surfaces provided with transverse grooves and ridges and folded together and surrounded by a lead strip having a portion bent upward above said folded strips substantially as described.

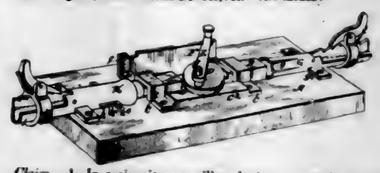
6. In a secondary battery the combination of the positive electrode having its body consisting of a series of narrow strips of lead folded together in zig-zag order and a strip of lead surrounding the bunch of zig-zag folded strips, and a similarly inclosed bunch of zig-zag folded strips located under the first bunch, with a similarly constructed negative electrode having its ends and top extended beyond the ends and top of the positive electrode substantially as described.

7. In a secondary battery the combination of a positive electrode and a negative electrode with an insulator between them consisting of a standard having a broad foot to support said electrodes, and a series of horizontal grooves in the sides of said standard substantially as described.

8. In a battery the combination of a positive electrode, a negative electrode, and an insulator between them consisting of a standard having vertical grooves, and grooves intercepting them in the sides thereof substantially as described.

9. In a battery the combination of a positive electrode having its body consisting of a series of narrow strips of lead folded together and a strip of lead surrounding the bunch of narrow strips, a similarly constructed negative electrode longer and higher than the positive electrode, grooved standard-insulators between the electrodes, and bolts of insulating material passing through the standard insulators through the negative electrode; and through the positive electrode, in large perforations substantially as described.

## 502,825. ELECTRIC SWITCH. LANSING MORSE, Brooklyn, N. Y. Filed Aug. 22, 1892. Serial No. 443,741. (No model.)



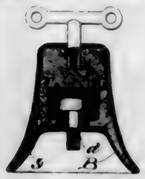
*Claim.*—1. In a circuit controlling device or switch, the combination of a circuit terminal having its inner end longitudinally slitted and its outer end provided with a trough-like jaw and a pivoted jaw provided with teeth on its top and bottom edge, a ring and pivoted dog riding on the pivoted jaw, a second circuit terminal provided with a trough-like jaw, a toothed pivoted jaw, and a ring and dog thereon, with a longitudinally sliding switch-bolt permanently in electric connection with one of the circuit terminals, and means to slide said bolt substantially as described.

2. In a circuit controlling device or switch, the combination of a horizontally sliding switch-bolt permanently in electrical connection at one end with a pair of jaws closed by a ring, and at the other end with a circuit-terminal having a pair of jaws at its outer end, and in its inner end a cavity of larger diameter than the end of the switch-bolt substantially as described.

3. In a circuit controlling device or switch, the combination of a horizontally sliding switch-bolt permanently in electrical connection at one end with a circuit terminal, and at the other with a circuit terminal having a pair of jaws at its outer end, and within the inner end a cavity of larger diameter than the end of the switch-bolt, and a disk and spring within said cavity substantially as described.

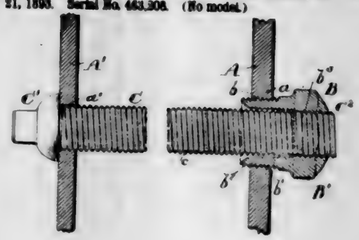
4. In a circuit controlling device or switch, the combination of a horizontally sliding switch-bolt, with circuit terminals in line with said bolt, each terminal having a trough like jaw, a pivoted jaw provided with teeth on its upper edge a ring encircling said jaws and a spring dog pivoted to said ring substantially as described.

## 502,826. TROLLEY-WIRE INSULATOR. LOUIS MCCARTHY, Boston, Mass. Filed Mar. 27, 1893. Serial No. 467,724. (No model.)



*Claim.*—An insulator for overhead conductors having a bell shaped case and projecting skirt, inclosing a metallic connection and insulated from said connection by mica and having an exterior layer or covering of insulating material molded thereon and conforming to the exterior shape thereof, to wholly or partially cover the exterior surface, substantially as set forth.

## 502,827. STAY-BOLT. JOSEPH NIXON, Altoona, Pa. Filed Feb. 21, 1893. Serial No. 463,208. (No model.)





*Claim.*—1. The method of securing stay bolts in boilers which consists in forming holes *a*, *a'* opposite to each other in the sheets to be secured together, screwing a sleeve B in the hole *a* in one of the sheets, then tapping the hole *a'* in the other sheet and a hole $b^3$ in the sleeve at the same time and with the same tool, and then screwing a bolt in the said holes *a'* and $b^3$.

2. A stay bolt sleeve B having an external thread *b* a barrel *b'* adapted to fit over the threads of the bolt and provided with a flared mouth $b^3$ and a contracted head $b^4$ adapted to be threaded to engage the bolt.

3. A stay bolt sleeve B having an external tapered thread *b* a barrel *b'* adapted to fit over the threads of the bolt and provided with a flared mouth $b^3$ and a contracted head $b^4$ adapted to be threaded to engage the bolt.

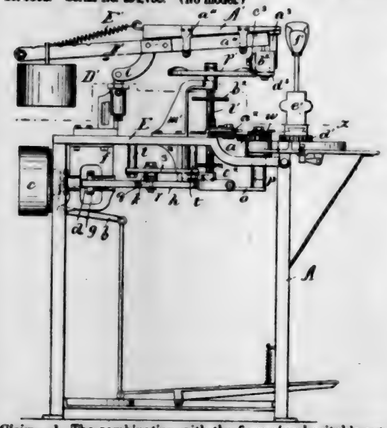
4. The combination with plates A, A' of a boiler of a sleeve B screwing into the outer plate and having a flaring mouth $b^3$ adapted to clear the bolt and a bolt C screwing into the plate A' and into the sleeve B.

5. The combination with plates A, A' of a boiler of a sleeve B screwing into the outer plate and having a flaring mouth $b^3$ adapted to clear the bolt and a bolt C screwing into the plate A' and into the sleeve B at a point outside of the plane of the plate A.

6. The combination with plates A, A' of a boiler of a sleeve B screwing into the outer plate and formed with a barrel *b'* adapted to fit neatly over the bolt, a flared mouth $b^3$ and a threaded head $b^5$ and a bolt C screwing into the plate A and into the head $b^5$ of the sleeve.

7. The combination with plates A, A' of a boiler of a tapered sleeve B screwing into the outer plate and formed with a barrel *b'* adapted to fit neatly over the bolt, a flared mouth $b^3$ and a threaded head $b^5$ and a bolt C screwing into the plate A' and into the head $b^5$ of the sleeve.

## 502,828. MECHANICAL MOVEMENT. ENOS PATTEE, Lynn, Mass., assignor to Augustus J. Hoyt, trustee, same place. Filed May 23, 1892. Serial No. 434,705. (No model.)



*Claim.*—1. The combination with the form *p'* and suitable actuating mechanism therefor of the pivoted frame B' and the sliding table A' mounted on said frame, substantially as set forth.

2. The combination with the pivoted frame B' having a sliding table mounted thereon of the form *p'*, the oblong gear *d'* and actuating mechanism intermediate the said form and the oblong gear whereby both are operated from the same shaft, for the purposes and substantially as set forth.

3. The combination with the form *p'* and its shaft, the movable table operated by said form and the oblong gear *d'*, of a gear *a* which engages said oblong gear, a pawl and ratchet for operating said gear *a*, the lever *h*, and its actuating cam for operating said ratchet, and connecting gears intermediate the said gear *a*, and the shaft of the form *p'*, substantially as shown and described.

4. The combination with the form *p'* and its shaft *l'* of the gear *d'*, a train of connecting gears intermediate the said shaft *l* and the gear *d'*, a pawl and ratchet mechanism for operating said gears, an actuating lever and its cam for said ratchet, said actuating lever having a movable fulcrum whereby its throw may be increased or diminished, substantially as described.

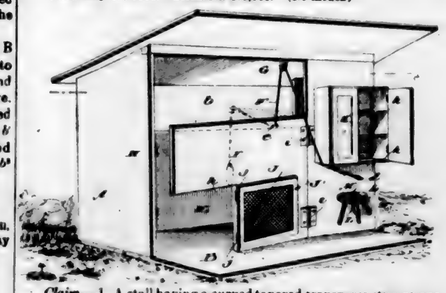
5. The combination with the form *p'* and its actuating shaft, of the gear *k'*, on said shaft, the gear *a*, its operating pawl, ratchet and lever, intermediate gears having movable arbors whereby by moving the arbors one gear may be thrown into or out of the train and the movement of the form reversed, substantially as set forth.

6. The combination with the form *p'* and suitable actuating mechanism therefor, of the counter-balanced, pivoted frame B', a sliding table A' mounted thereon, and suitable connecting means intermediate the said table and the said form whereby the table will be moved horizontally as the form revolves, substantially as set forth.

7. The combination with the form *p'* and suitable actuating mechanism therefor of the counter-balanced, pivoted frame B', a sliding table A' mounted thereon, and suitable connecting means intermediate the said table and the said form whereby the table will be moved horizontally as the form revolves, substantially as set forth.

8. The combination with the form *p'* and its actuating mechanism of the pivoted frame B' the sliding table A' mounted thereon, the spring E' the projection $a^3$ on said table and cam rolls $c^3$ $d^3$ engaging the face and periphery of said form *p'* substantially as shown and described

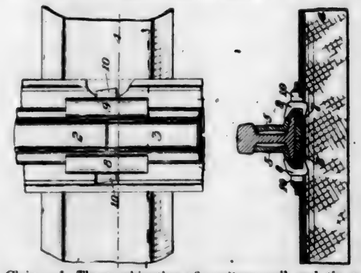
## 502,829. ANIMAL-STALL. DUNKLIN S. PHILLIPS, Florence, Ala. Filed May 12, 1893. Serial No. 473,965. (No model.)



*Claim.*—1. A stall having a curved tapered transverse strip at one end provided with pins and a hinged door, as and for the purpose specified.

2. The stall described having a rear door hinged at one end, a front door hinged at the opposite end and having a smaller door hinged thereto to close a space at its lower corner, a cord connected with the rear door and extended to the front over a pulley, with a space above both of said doors, all substantially as shown and described.

## 502,830. RAIL-SECURING DEVICE. JOHN L. POPE, Cleveland, Ohio. Filed Nov. 1, 1892. Serial No. 450,640. (No model.)



*Claim.*—1. The combination of a railway rail and tie or other rail-support, a clip or hook, a wedge which acts lengthwise of the rail, and automatic means adapted to actuate the wedge lengthwise of the rail by down pressure upon the rail, to press the clip or hook against the rail; substantially as described.

2. The combination with a railway rail and tie or other rail support, of a clip or hook connecting these parts, a beveled plate adapted to be moved transversely by downward pressure of the rail, and a wedge actuated by motion of the plate to bind the clip; substantially as and for the purposes described.

3. The combination with a railway rail and tie or other rail support, of a clip or hook connecting these parts, a wedge, and means operatively connecting the wedge and rail and causing downward pressure of the latter to actuate the wedge; substantially as and for the purposes described.

4. The combination with a railway rail and tie or other rail support, of a clip or hook connecting these parts, a beveled plate adapted to be moved transversely by downward pressure of the rail, and a

wedge set in oppositely tapering slots in plate and tie and movable longitudinally by transverse pressure of the plate; substantially as and for the purposes described.

5. The combination with a railway rail and tie or other rail support, of clips or hooks connecting these parts, oppositely beveled plates on which the rail sets, which plates are adapted to be moved inwardly by downward pressure thereon, and wedges actuated by motion of the plates to bind the clips; substantially as and for the purposes described.

6. The combination of a rail joint having fish-plates, a tie or other support, a clip or hook bearing on a fish-plate to clamp it to the rail and tie, and a wedge movable in the direction of the length of the rail and bearing on the clip or hook to hold the same in position: substantially as and for the purposes described.

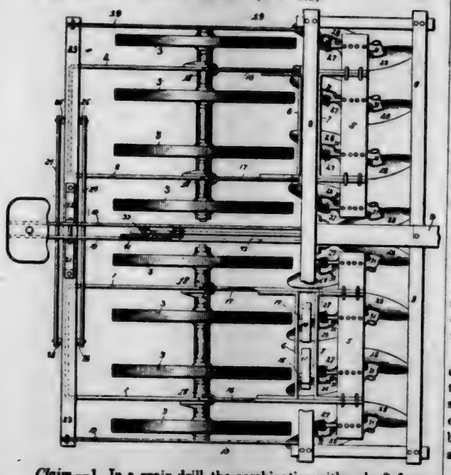
7. The combination of a rail joint having fish-plates, a tie, or other support, a clip or hook bearing on a fish-plate to clamp it to the rail and tie, a beveled plate adapted to be moved transversely by downward pressure of the rail, and a double wedge bearing against oppositely inclined surfaces on the plate and tie, and adapted to be actuated by the plate to hold the clip; substantially as and for the purposes described.

8. The combination of a railway tie or other rail-support, having oppositely beveled faces, and beveled plates bearing thereon, and having downwardly-projecting flanges between the ties; substantially as and for the purposes described.

9. In a rail-joint, the combination of fish-plates, a tie or other rail-support, a clip or hook bearing on the fish-plate to clamp it to the rail and tie, and a beveled plate adapted to be moved transversely by downward pressure of the rail to hold the clips in place; substantially as and for the purposes described.

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**502,831.** GRAIN-DRILL. JOHN W. RHODES, Havana, Ill. Filed Aug. 15, 1892. Serial No. 443,101. (No model.)



*Claim.*—1. In a grain drill, the combination with a draft frame, of one or more combined wheel and furrow opener frames, extending to the rear of the wheels upon which it is mounted, and coupling devices uniting said draft frame with the rear frame or frames, substantially as described.

2. In a grain drill, the combination with a draft frame, and one or more combined wheel and furrow opener frames, of coupling devices uniting said two frames, said coupling devices permitting a tilting side motion of said wheel and furrow opener frame or frames, substantially as and for the purpose specified.

3. In a grain drill, the combination with a draft frame, and one or more combined wheel and furrow opener frames, of couplings connecting said wheel and furrow opener frames to said draft frame and permitting the vertical tilting of said wheel and furrow opener frames, and means for tilting said wheel and furrow opener frames, whereby the furrow openers may be thrown into or out of the ground, substantially as described.

4. In a grain drill, the combination with a draft frame, of one or more combined wheel and furrow opener frames extending to the rear of the wheels upon which it is mounted, coupling devices uniting said draft frame with the rear frame or frames, a seat frame, a distributing bar supporting the rear end of the seat frame from said combined wheel and furrow opener frame or frames, devices supporting the forward end of the seat frame, and a hopper carried by the seat frame, substantially as described.

5. In a grain drill, the combination with a frame 1, and a beam 5 connected to the forward end of the frame, of wheels 3 carried by the said frame, furrow openers carried by the beam, a draft frame, and tilting coupling devices connecting the frame 1 with the draft frame for permitting vertical tilting of both of said frames, substantially as described.

6. In a grain drill, the combination with a frame 1, beam 5, cross bars 6 and 7, and pins 14 and 15 carried by said cross bars, of a draft frame, couplings 10 and 11 carried thereby, said couplings having slots 12 and 13 adapted to receive the pins 14 and 15, wheels carried by the frame 1, and furrow openers carried by the beam 5, substantially as described.

7. In a grain drill, the combination with a combined wheel and furrow opener frame, of a draft frame 8, coupling devices connecting the draft frame with the combined wheel and furrow opener frame and permitting vertical tilting of the latter, a lever 39 pivoted on the combined wheel and furrow opener frame, a bar 43 connected at its forward end with the draft frame, and a link 42 connecting the rear end of the said bar with the pivoted lever, substantially as described.

8. In a grain drill, the combination with a wheel frame, wheels carried thereby, and disk supporting devices, of disks 28 arranged in pairs in front of each wheel, said disks being inclined to cause the lower front portions thereof to lie in substantially vertical positions, substantially as described.

9. In a grain drill, the combination with a wheel frame, wheels carried thereby, and disk supporting devices, of disks 28 arranged in pairs in front of each wheel, said disks being outwardly inclined at the top and inwardly inclined at the front to cause their lower front portions to be substantially vertical and the portions which first enter the ground to lie parallel to the line of motion of the drill, substantially as and for the purpose specified.

10. The combination with a supporting standard, and a disk 28, of a sleeve 29, bolt 30, plate 32, and nut 33, substantially as and for the purpose specified.

11. The combination with a standard 31, and a disk 28, of means for securing said disk upon the standard, and a flange 44 on said disk for protecting the bearing from sand and dirt, substantially as and for the purpose specified.

12. In a grain drill, the combination with a wheel frame, wheels carried thereby, and a disk supporting frame, of disks 28 arranged in pairs in front of each wheel, each pair of disks being provided with a standard connected with the disk supporting frame and adapted to be partially rotated on its axis, and means for rigidly securing the standard in a fixed position after adjustment, substantially as described.

13. The combination with disk supporting devices, of disks arranged in pairs, one of the disks in each pair being forward of the other, said disks being outwardly inclined at the top and inwardly inclined at the front, so as to cause their lower froot portions to be substantially vertical, and the portions of the two disks which first enter the ground to lie substantially parallel to the line of forward motion, substantially as and for the purpose specified.

14. The combination with disk supporting devices, of a pair of disks oppositely arranged one behind the other in such a manner that the portions of the two disks which first enter the ground lie substantially parallel to the line of forward motion, being approximately on the same line, and standards supporting said disks, said standards being adapted to be partially rotated on their axes, substantially as and for the purpose described.

15. The combination with disk supporting devices, of two disks located one behind the other and arranged to throw the dirt out on each side of the furrow to be opened, substantially as and for the purpose specified.

16. A furrow opener comprising two disks arranged one behind the other, and a presser wheel arranged to follow directly behind the disks, substantially as described.

17. The combination with disk supporting devices, of a gang of disks, said disks being arranged in pairs, one disk in each pair being located back of the other, and arranged to throw the dirt out on each side of the furrow to be opened, said pairs of disks being similarly arranged, whereby a clear space will be presented for the passage of stones and rubbish between said pairs of disks, substantially as described.

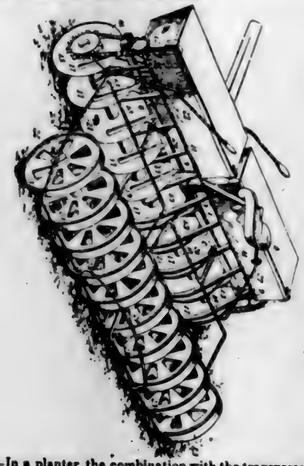
18. The combination of a series of furrow openers, each of said furrow openers consisting of two disks arranged in pairs one behind the other so as to throw the dirt out on each side of the furrow to be opened, the front disks of each gang throwing the dirt out in one direction, and the rear disks of each gang throwing the dirt out in an opposite direction, substantially as and for the purpose specified.

19. In a grain drill, the combination with a wheel frame or frames, of a wheel or wheels carried thereby, disk supporting devices, and disks arranged in pairs one behind the other in front of each wheel, so as to open a furrow by throwing the dirt out on each side of the furrow to be opened, substantially as described.



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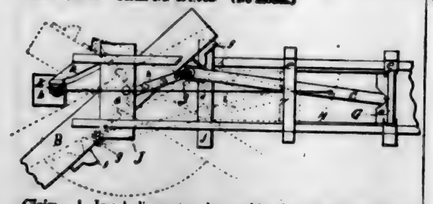
**502,832.** PLANTER. WILLIAM G. SAYR, La Harpe, Ill. Filed Dec. 10, 1892. Serial No. 454,774. (No model.)



*Claim.*—In a planter, the combination with the transverse beam, the tongue extending therefrom, the lever fulcrumed on the tongue, of the harrow-bars loosely connected between their ends to the ends of the transverse beam, harrow-disks located below and supported by the bars, connections between the inner ends of the shafts of the disks and the lever, independent hoppers supported above the bars, seed-tubes leading from the hoppers to the disks, agitator shafts for the hoppers, means for communicating motion from the disk-shafts to the agitator-shafts, rectangular frames loosely pivoted at their centers to the centers of the harrow-bars, transverse shafts mounted in the frames, packing-wheels mounted on the shafts in rear of the disks, and a loose connecting-bar between the rear ends of the frames, substantially as specified.

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**502,833.** BALING-PRESS. GEORGE SCHUBERT, Walnut, Tex. Filed Nov. 14, 1892. Serial No. 451,902. (No model.)



*Claim.*—1. In a baling press, the combination with a lever B having the set-blocks *g, g*, and the tripping blocks *f, f*, in connection with a plunger-bar C and a rebounding plunger, as and for the purpose described.

2. In a baling press, the combination with a lever B having the set-blocks *g, g*, and the tripping blocks *f, f*, in connection with a rebounding plunger and plunger-bar the free end of said plunger-bar C anchored to the frame of the press, by a linked-strap A or its equivalent as and for the purpose described.

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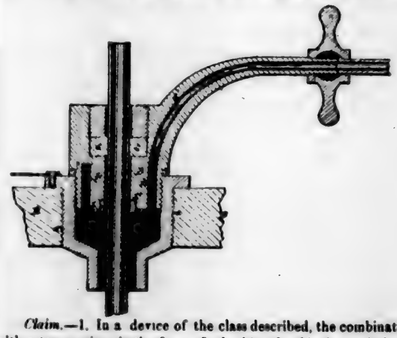
**502,834.** SLEEVE OR COLLAR BUTTON. THOMAS W. F. SUTTER, Brooklyn, N. Y. Filed Nov 16, 1892. Serial No. 452,114. (No model.)



*Claim.*—A sleeve or collar button adapted to be inserted and removed from the garment at will, having an oblong and concave back plate and a post, the lower portion of which post conforms throughout the extent of the bottom of the post, both to the transverse and to the longitudinal shape of the back plate, the post and the back plate being rigidly attached together, substantially as set forth.

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**502,835.** PORTER OR BEER TAP. CHARLES I. SNYDER, Philadelphia, Pa. Filed Dec. 19, 1892. Serial No. 455,553. (No model.)



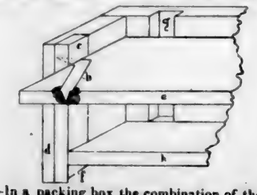
*Claim.*—1. In a device of the class described, the combination, with a tap receiver in the form of a bushing fixed in the tap hole of a keg or barrel and provided with a central interior screw-threaded bore, and a detachable top or cover—of a detachable tap externally screw threaded at its lower end to engage the screw-threaded bore of the receiver, whereby the tap proper can be removably secured in operative position in the tap receiver, substantially as described.

2. In a device of the class described, a tap for beer kegs or barrels having an axial vertical bore adapted to receive a tap rod; an annular chamber formed outside of, and concentric with, the axial bore, an automatic check valve at the bottom of the air chamber and located at the lower terminal point of the tap; and a lateral air inlet conductor connecting at its inner end with the top of the annular chamber, all arranged whereby the entrance of slime, &c., from the beer keg or barrel into the air pipe is prevented, substantially as described.

3. A tap for beer kegs or barrels made in one piece of metal and having an axial vertical bore; an annular air chamber outside of, and concentric with said bore; an automatic check valve at the bottom of said chamber, and a laterally curved inlet conductor forming a handle or lever for turning the tap, substantially as described.

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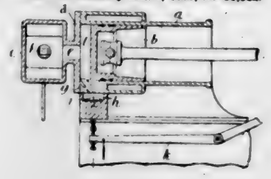
**502,836.** TOBACCO AND PACKING BOX. CHARLES E. SPEAKER, Louisville, Ky. Filed Feb. 17, 1893. Serial No. 462,747. (No model.)



*Claim.*—In a packing box the combination of the sides *d* composed of a single thickness of lumber and provided with the slots *g* the battens *c* fitted in said slots, the grains of said battens being crossed with those of said sides, the top *e* and the locks *b* having the teeth *a, a'* for securing said top to said sides, substantially as set forth.

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**502,837.** ENGINE OPERATED BY THE EXPLOSION OF MIXTURES OF GAS OR HYDROCARBON VAPOR AND AIR. HERBERT A. STUART, Bletchley, assignor of one-half to Charles Richard Binney, London, England. Filed Sept. 15, 1891. Serial No. 405,748. (No model.) Patented in Germany Dec. 7, 1890, No. 59,882.



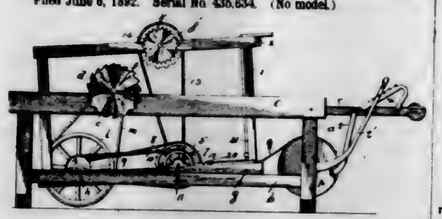
*Claim.*—1. In an engine operated by the explosion of a gaseous mixture such as described, a chamber at the rear of the cylinder adapted to be highly heated for vaporizing and igniting the explosive mixture, said chamber being combined with and communicating directly with the working cylinder by a contracted passage always open to the said cylinder, a hydro-carbon inlet for said chamber and an air-inlet valve located at the end of the cylinder, whereby the air on entering is prevented from passing into the vaporizing chamber until compressed by the return stroke of the piston, by which arrangements premature ignition is rendered almost impossible, substantially as and for the purposes specified.

2. An engine of the kind above described having an explosive chamber communicating with the working cylinder through a contracted passage at all times freely open and in which the combustible liquid, vapor, or gas and the air are introduced separately, namely, the one into the combustion chamber and the other into the cylinder as set forth, the explosive chamber serving by means of its hot surfaces, to ignite an explosive charge, substantially as described

3. In combination, the explosion chamber *c* formed integral with the cylinder cover *d*, and having a nozzle *f*, and free passage *e*, the cylinder *a*, having the air passage *g*, piston *b*, and the chamber *h* provided with valves *i* and *j*, the combination being and operating substantially as set forth.

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**502,838. SAWING-MACHINE.** FREEMAN M. TREGUARDEN, Colfax, Ind., assignor to the Chief Manufacturing Company, same place. Filed June 6, 1892. Serial No. 435,634. (No model.)



*Claim.*—1. In a sawing machine, the stationary frame, in combination with the vertically swinging feed frame, a wheel mounted in the stationary frame having its periphery connected to the free end of the movable frame so that said wheel will rotate as the feed frame swings, a weighted lever above said wheel at its inner end fulcrumed to the stationary frame, and a link pivoted to said lever between its ends and to said wheel between its center and periphery.

2. In a sawing machine, the combination of the main frame provided with the saw, the vertically movable feed frame carrying the feed wheel and having the counterweighting mechanism for its free end comprising the wheel, a flexible connection with the movable frame, an independently fulcrumed counterweighted lever, and a link from said lever to said wheel, substantially as described.

3. In a sawing machine, the combination of the main frame, the vertically movable feed frame, the wheel mounted in the main frame and connected with the movable frame, the counterweighted lever connected by a link with said wheel to control the movement of said wheel and counterweight the free end of the frame and provided with the rack, and the locking lever pivoted to the stationary frame and adapted to engage said rack and lock said lever.

4. In a sawing machine, the combination of a saw, a main frame, a freely swinging frame mounted on the main frame and provided with feeding mechanism, a counterweight mechanism connected with the free end of said swinging frame to normally permit the same to freely rise and fall comprising a vertically swinging lever, and a pivoted latch arranged to swing into engagement with said lever and prevent upward swing thereof and thereby limit or prevent the free swing of said swinging frame, substantially as described

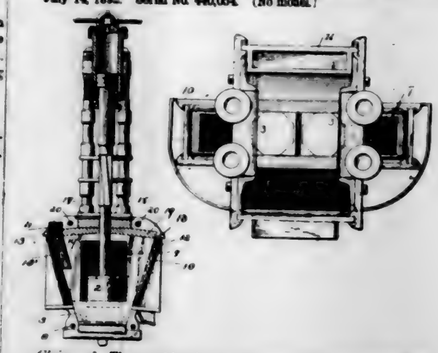
5. In a sawing machine, the combination of a saw a main frame, a freely swinging frame mounted therein, provided with a feeding mechanism a counterweight mechanism for said frame to normally permit free rise and fall thereof comprising a counterweighted lever fulcrumed to the main frame and provided with a series of notches, and a latch pivoted to the main frame so that it can be swung to rest above the lever in one of said notches, as and for the purposes substantially as described.

6. In a sawing machine, the combination of a main frame, a saw mounted therein, a swinging frame mounted in the main frame, a feed wheel carried by the swinging frame, a drive shaft in the main frame connected with the saw and on which said swinging frame swings, a counter shaft mounted in said swinging frame and connected with the feed wheel, a series of gears rigid on said drive shaft, a corresponding series of gears loose on the counter shaft, opposite gears being connected, clutches on said counter shaft to alternately lock the loose gears to the countershaft, and levers fulcramed in the front portion of the swinging frame and connected to said clutches to operate the same as described.

7. In a sawing machine, the combination of an upright frame, a feed wheel carried thereby, variable gearing arranged to drive said feed wheel and comprising a shaft having a series of gears loose thereon, clutches to alternately lock said gears to the shaft, horizontal levers at their front ends pivoted to the frame and at their opposite ends loosely connected to their respective clutches, each lever having an eye between its ends and the vertical shafts mounted in the frame and having handles at their upper ends, and lateral arms at their lower ends loosely extending into the eyes of their respective levers, substantially as described.

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**502,839. STAMP.** CHARLES W. TREMAIN, Portland, Oreg. Filed July 14, 1892. Serial No. 440,054. (No model.)



*Claim.*—1. The combination in a battery of a mortar adapted to receive a die or dies in its bottom, and end pieces or frame sections 6 adapted to be affixed to said mortars, and when affixed to constitute a frame adapted to receive and hold screens on three sides thereof and a hopper in the remaining side, one or more of such screens being interchangeable with the hopper for the purposes specified, substantially as described.

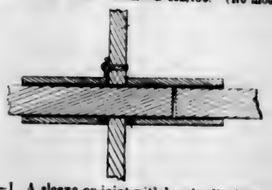
2. In a stamp-battery in combination, a mortar adapted to receive the die or dies in its bottom, end-pieces or frame-sections 6 adapted to be affixed to said mortar, and when affixed to constitute a frame adapted to receive and hold screens on three sides thereof, and a hopper on the remaining side, one or more of such screens being interchangeable with the hopper, suitable screens and hopper, and means for securing said parts in place, all substantially as and for the purposes set forth.

3. The combination in a stamp battery, of the mortar 3 having projecting end ribs 15, the end-plates 6 having grooves 14 to receive the ribs 15, the bolts 8, and nuts 9, substantially as described.

4. In a battery, the end-plates 6, provided with grooves 11, in combination with the interchangeable hopper and screen secured in said grooves, substantially as and for the purpose specified.

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**502,840. JOINT FOR FENCES.** JOSEPH T. WARD, Philadelphia, Pa. Filed Feb. 17, 1893. Serial No. 462,736. (No model.)



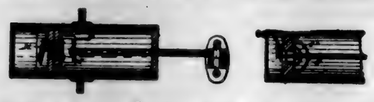
*Claim.*—1. A sleeve or joint with longitudinal tube for rods, and transverse slot, larger at the bottom than at the top, for post, with lip or flange on sleeve for riveting the post, substantially as described.

2. The combination with a post of a sleeve or joint with longitudinal tube for rods, and rods meeting within the sleeve at a point an inch more or less to one side of post, substantially as described.

3. The combination with a post of a sleeve or joint with longitudinal tube for rods and transverse slot for post, and rods meeting within the sleeve at a point an inch more or less to one side of the post, substantially as described.



**502,841. PNEUMATIC DOOR-CHECK.** JEROME W. WESTBROOK, Erie, Pa., assignor to the Van Wagoner & Williams Company, Jersey City, N. J. Filed June 20, 1893. Serial No. 99,194. (No model.)



*Claim.*—1. In a pneumatic door check, the combination substantially as hereinbefore described, of an air cylinder, a bracket adapted to be applied to a door frame below its top and by which said cylinder is supported in a horizontal position for service, and on which said cylinder is centrally pivoted and capable of oscillating as on a vertical central axis during the movements of a door, a piston, and its rod provided with a pivoted arm at its outer end.

2. In a pneumatic door check, the combination with the air cylinder and its piston, of an automatically operated valve for releasing compressed air, just prior to the terminal air compressing movement of the piston.

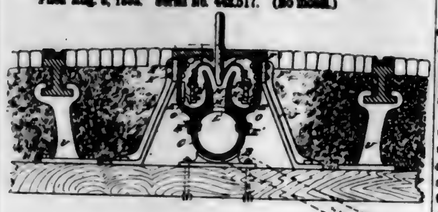
3. In a pneumatic door check, the combination with the air cylinder and its piston, of an adjustable automatically operated valve for releasing the air pressure, substantially as described.

4. In a pneumatic door check, the combination of the air cylinder, the piston, a normally closed valve for controlling compressed air, and a lever actuated by the piston for opening said valve, substantially as described.

5. In a pneumatic door check, the combination substantially as described, of the air cylinder, the piston, the normally closed valve thereon, the lever on said piston attached to said valve, and an adjusting screw serving as a variable abutment for contact by said lever during the terminal air compressing movement of the piston, and causing said valve to open for releasing the compressed air.

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**502,842. ELECTRIC-RAILWAY CONDUIT.** ROBERT R. ELLI, Baltimore, Md., assignor of one-half to Henry C. Kirk, Jr., same place. Filed Aug. 8, 1892. Serial No. 442,517. (No model.)



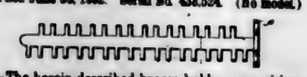
*Claim.*—1. In a system for propelling cars an underground conduit having a continuous drain pipe with perforations along the top of said pipe, and a slot rail, in combination with water deflectors attached to said drain pipe and adapted to deflect and guide the water entering through said slot rail to the said drain pipe, substantially as set forth.

2. In an electric conduit in combination a drain pipe having perforations along its top, a slot rail, water deflectors attached to said drain pipe and adapted to deflect and guide the water entering through said slot rail to the said drain pipe, trolley rods located in said conduit, and a trolley adapted to contact with said rods in said conduit, and suitable insulators for the said rods, substantially as set forth.

3. In an electric conduit a drain pipe having perforations along its top, a slot rail, water deflectors attached to said drain pipe and adapted to deflect and guide the water entering through said slot rail to the said drain pipe, the said slot rail along the slot being pointed to assist in directing the water to the said drain pipe, substantially as set forth.

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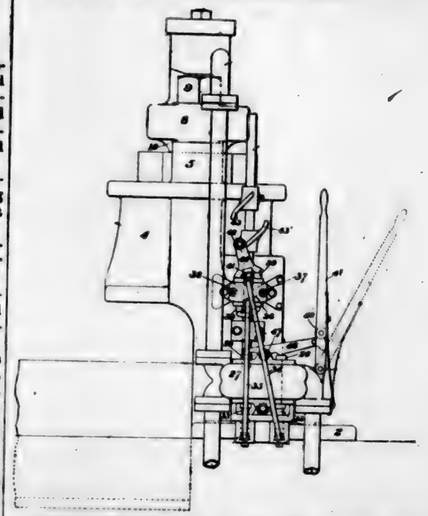
**502,843. BROOM-HOLDER.** CORNELIUS H. ADDISON, Grand Haven, Mich. Filed June 30, 1892. Serial No. 438,524. (No model.)



*Claim.*—The herein described broom holder, comprising a plate A provided with means for its attachment to a suitable support, an elongated horizontal bar projecting from said plate, and a series of clasps or fingers integral with said bar, and projecting at right angles from each lateral face thereof, said clasps or fingers being arranged in pairs separated from each other a short distance along the bar, said pairs being arranged alternately on the two sides of the bar, substantially as specified.

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**502,844. HYDRAULIC MOTOR.** HENRY AIKEN, Pittsburg, Pa. Filed Apr. 23, 1892. Serial No. 431,052. (No model.)



*Claim.*—1. The combination with hydraulic mechanism, such as shears, of main piston-valves having oppositely acting pistons, mechanism connecting them and adapting them to move in unison, separate single acting motors having pistons which act on the main valve pistons, and auxiliary valve-mechanism connected with the motors and adapted to operate them alternately; substantially as described.

2. The combination with hydraulic mechanism, such as shears, of main piston-valves having oppositely acting pistons, mechanism connecting them and adapting them to move in unison, separate single-acting motors having pistons which act on the main valve pistons, and auxiliary valve-mechanism connected with the motors and adapted to operate them alternately, said auxiliary valve-mechanism being constructed and arranged to be operated by motion of the hydraulic-mechanism; substantially as described.

3. The combination with hydraulic mechanism such as shears, of a main valve or valves, a motor or motors for operating the same, auxiliary valve mechanism controlling the motor or motors, said auxiliary valve mechanism being constructed and arranged to be operated by motion of the hydraulic mechanism, and locking mechanism for the main valve or valves; substantially as and for the purposes described.

4. The combination with hydraulic mechanism, such as shears, of main piston-valves having oppositely acting pistons, mechanism connecting them and adapting them to move in unison, motors which act on the main valve pistons, auxiliary piston-valves which control the motors, and a lever which connects the pistons of the auxiliary valves and causes them to move together, said lever being operated by the hydraulic mechanism; substantially as described.

5. The combination with hydraulic mechanism such as shears, of main piston valves, motors acting thereon, auxiliary piston-valves controlling the motors, and a lever connecting the pistons of the main valves adapting them to move together: substantially as and for the purposes described.

6. The combination with hydraulic mechanism such as shears, of main piston valves, motors acting thereon, auxiliary piston valves controlling the motors, a lever connecting the pistons of the main valves, and a hand locking-lever, adapted to lock the main valves; substantially as and for the purposes described.

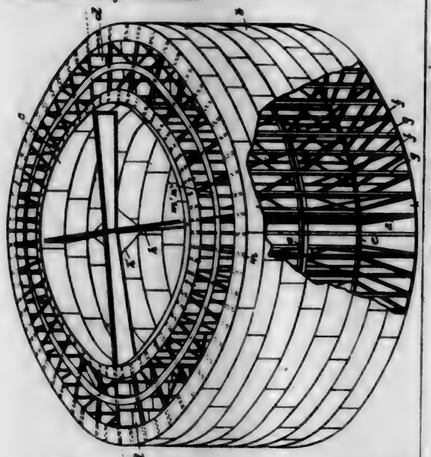
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**502,845. FOUNDATION FOR LIGHT-HOUSES AND OTHER HEAVY STRUCTURES IN DEEP WATER.** GEORGE BLANCHARD, Newburg, N. Y. Filed Jan. 13, 1893. Serial No. 458,257. (No model.)

*Claim.*—1. In a foundation for light houses and other heavy structures, the combination of the base *a*, outer and inner vertical walls *b c*, concentrically arranged, and rising from said base, and a

bulkhead *d* placed between and secured to the outer and inner walls *b*, *c*, substantially as described.

2. In a foundation for light houses and other heavy structures, the combination of the base *a*, outer and inner vertical walls *b*, *c*, bulkheads *d*, placed between and secured to the outer and inner walls *b*, *c*, and intermediate frames also placed between and secured to said walls, substantially as described.



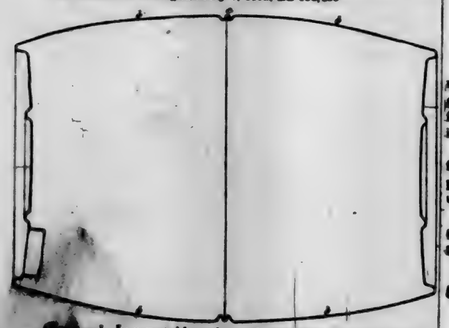
3. The combination of the base *a*, outer and inner walls *b*, *c*, joined together by braces, and flukes *n*, projecting diagonally downward from the under side of said base *a*, substantially as described.

4. The combination of the base *a*, outer and inner walls *b*, *c*, and interposed braces, and the cross bars *h*, and foot plate *h'*, substantially as described.

5. The combination of the base *a*, outer and inner walls *b*, *c*, bulkheads *d*, having holes therethrough, stringers *e* passing through said holes, and frames *f*, *g*, placed between and secured to said walls, substantially as described.

6. The combination of the base *a*, outer and inner walls *b*, *c*, bulkheads *d* having holes therethrough, stringers *e* passing through said holes, and intermediate frames placed between and secured to said walls, and the top plates *m* *m'*, *m*², substantially as described.

## 502,846. MANUFACTURE OF METAL BARRELS OR OTHER LIKE VESSELS. DAVID CAIRD, London, England. Filed Oct. 14, 1892. Serial No. 448,798. (No model.) Patented in England Aug. 7, 1891, No. 11,573, and in Belgium July 6, 1892, No. 100,400

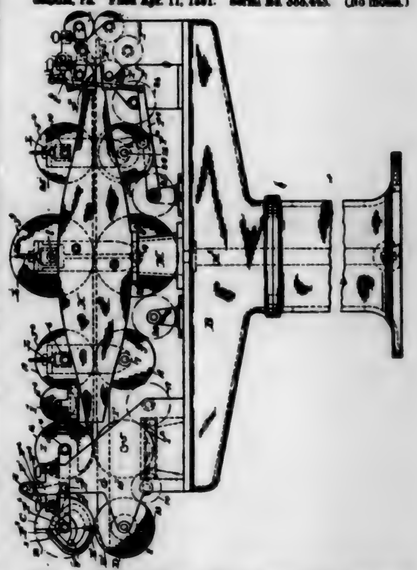


*Claim.*—1. In a metal barrel, or other similar vessel, a body consisting of two substantially hollow tubular circular parts having each an [illegible] laterally extending recess in its outer surface and an annular flange [illegible] beyond said recess, and abutting against and connected to the like flange of the other part, said flanges being of less projection than the depth of said recesses, whereby the joint between said parts is within their outer surface, substantially as and for the purpose [illegible].

2. In a metal barrel or other similar vessel, a body consisting of two substantially circular hollow tubular parts *b* *b*, one of said parts having a laterally extending annular flange *c'* at its end having an outer abutting face, and the other of said parts having a like laterally extending annular flange *c* at its end of greater width than said flange *c'*, and having a like outer abutting face, the said faces of said flanges abutting against each other, and said flange *c* embracing both sides of said flange *c'*, whereby said parts are connected together, substantially as and for the purposes set forth.

3. In a metal barrel or other similar vessel, a body consisting of two substantially circular hollow tubular parts *b* *b* each having an annular peripheral recess *d* near its end, one of said parts having a laterally extending annular flange *c'* at its end having an outer abutting face and of less projection than the depth of the recess *d* of such part, and the other of said parts having a like laterally extending annular flange *c* at its end of greater width than said flange *c'* and having a like outer abutting face, the said faces of said flanges abutting against each other, and said flange *c* embracing both sides of said flange *c'*, whereby said parts are connected together, and the joint between said parts is within their outer peripheries, substantially as and for the purposes set forth.

## 502,847. PAPER-BAG MACHINE. EDWARD E. CLAUSEN, Hartford, Conn., assignor to the Union Paper Bag Machine Company, Philadelphia, Pa. Filed Apr. 11, 1891. Serial No. 388,443. (No model.)



*Claim.*—1. The combination with a grooved roll D and a segmental roll C, having a folder plate E connected therewith, of the fingers F and finger actuating mechanism as described and whereby the fingers are moved inward between the rolls aforesaid after the paper is creased thereby.

2. The combination with the suction formers F F of a series of feed rolls J' J' J² J², &c., extended between the formers and the upper roll of each pair held against the lower one by a yielding pressure substantially as and for the purpose specified.

3. In a suction former the forming face N having diverging grooves on their operative faces and perforations formed in said grooves, substantially as and for the purpose specified.

## 502,848. TWO-PART HORSESHOE. WILLIAM G. CLARAMT, Lenox, Mass. Filed Mar. 20, 1893. Serial No. 466,860. (No model.)





*Claim.*—In a two-part horse-shoe, the combination with a permanent shoe having clamps at its ends and recesses in its face; of a removable shoe having openings, and calks fitting the openings and extending into the recesses, and means for securing the two parts together; substantially as described.

## 502,849. APPARATUS FOR TREATING SPRUNG LEGS IN HORSES. ALPHONSE COTÉ, Brooklyn, N. Y. Filed Aug. 5, 1892. Serial No. 442,202. (No model.)



*Claim.*—1. In a stall for animals, a yielding pad G arranged to receive the knee and to press gently backward so as to straighten the leg, substantially as herein specified.

2. A stall for animals, having in combination with the manger A² and sides A¹ an inclined plane adapted to support the foot and to cause it to move forward, and a pad G adapted to receive the knee and press it backward, as herein specified.

3. A stall for animals, having in combination with the manger A² and sides A¹ an inclined plane adapted to support the foot and to cause it to move forward, and provided with a series of rollers to facilitate such movement of the foot, and a pad G, adapted to receive the knee and press it backward, as herein specified.

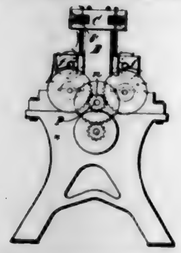
4. A stall for animals, having in combination with the manger A² and sides A¹ an inclined plane adapted to support the foot and to cause it to move forward, and a pad G adapted to receive the knee and press it backward, with provisions as the hinged flap E and screw I for adjusting its prominence, all arranged for joint operation substantially as herein specified.

5. The stall described, having a partial floor A', sides A¹, tank B, inclined series of rollers D, fender B' pad G and manger A², combined and arranged to serve substantially as herein described.

6. In a stall, a tank B adapted to contain a bathing liquid, a removable frame C mounted therein, and a series of rollers D arranged to form an inclined plane, in combination with each other and with a fender B' in the interior of the tank near the foot of the incline, and the pad G, all arranged to serve substantially as herein specified.

7. In a stall, a plane to support the fore feet of the animal, inclined forward as shown, a fender to arrest the feet near the bottom of the plane and a pad at a proper height above arranged to press against the knees of the animal and hold them gently backward, in combination with each other and with the fixed flooring A' at or near the level of the rear portion of the incline, and with doors J adapted to cover the incline and make the whole into an ordinary stall when desired, all substantially as herein specified.

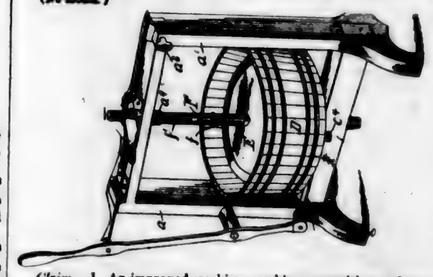
## 502,850. MEANS FOR EMBOSSING WOOD. SPENCER L. DAVIS, Brooklyn, N. Y. Filed July 27, 1891. Serial No. 400,891. (No model.)



*Claim.*—1. In a machine for embossing wood, feed rollers having a fixed position with relation to their supporting frame, in combination with duplicate embossing-rollers, one of which rollers carries the initial die and the other the finishing die, vertically movable journal-boxes in which the rollers are supported, a screw shaft connected with each of the said boxes and carrying a worm-wheel at its free end, a screw in mesh with the said wheel, gears carried by each of the said screws, an intermediate pinion in mesh with both gears, and a crank carried by the said pinion, substantially as described.

2. In a machine for embossing wood or other materials, a supporting-frame carrying duplicate feed-rollers arranged in parallel relation with each other, duplicate vertical screw-shafts arranged on each side of the frame, journal-boxes carried by the said shafts, and embossing rollers journaled in the boxes, in combination with a screw-gear carried by each of the said duplicate shafts, a worm meshing with each of the said gears, and mechanism for rotating the worms, whereby one of the shafts may be rotated to adjust one of the embossing rollers independently of the other embossing roller, as set forth.

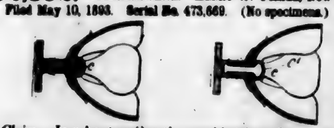
## 502,851. WASHING-MACHINE. PATRICK DIGGS and PATRICK MCLAUGHLIN, Bloomington, Ill. Filed Nov. 7, 1891. Serial No. 411,137. (No model.)



*Claim.*—1 An improved washing machine comprising a frame provided with a tub support and a cross-bar above said tub support, a dasher having a shaft extending loosely through the cross-bar and provided with a longitudinal slot, a crank arm passing loosely through said slot and a guard for preventing vertical movement of the crank arm, substantially as described

2. An improved washing machine comprising a frame provided with a tub support and two uprights rising above said tub supports, a cross bar pivotally attached at one end to one upright and adapted to be detachably connected at its other end to the other upright, a dasher having a dasher shaft extending loosely through the cross bar and comprising two parts connected by a flexible joint whereby the dasher may clear the second upright when the cross bar is raised, a longitudinal slot provided in the upper part of said shaft, a crank arm passing loosely through said slot and a guard for preventing vertical movement of the crank arm, substantially as described.

## 502,852. BOUTONNIÈRE. HENRY W. FISHEL, New York, N. Y. Filed May 10, 1893. Serial No. 473,669. (No specimens.)



*Claim.*—In a boutonnière the combination of a stem or post, an artificial flower or like device, a pin passing through the latter and a cross-pin or piece engaging the stem or post and the first mentioned pin together, substantially as specified.

## 502,853. BOUTONNIÈRE. HENRY W. FISHEL, New York, N. Y. Filed May 10, 1893. Serial No. 473,670. (No specimens.)



*Claim.*—1. In a boutonnière, the combination of a stem or post having a hollow at one end, an artificial flower or analogous device, and a pin passing through the latter and expanded into the hollow of the stem or post, substantially as specified.

2. In a boutonnière, the combination of a stem or post, having a hollow at one end, an artificial flower or analogous device, and a pin having diverging portions which, after being passed through the flower or like device, is expanded outwardly to engage recesses or a groove in the hollow of the stem or post, substantially as specified.

## 502,854. BOUTONNIÈRE. HENRY W. FISHEL, New York, N. Y. Filed May 10, 1893. Serial No. 473,664. (No specimens.)

*Claim.*—1. The combination with a flower, of a stud made in one

integral piece and having a stem or post, a back plate or shoe, a socket and a nipple made in one integral structure, the nipple being passed through the flower to fasten it to the stud, substantially as specified.

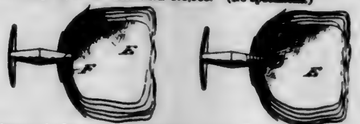


2. The combination with a flower, of a stud made in one integral piece and having a stem or post, a back plate or shoe, a socket and a nipple made in one integral structure, the nipple being passed through the flower and provided with a lateral projection inside the flower for fastening the flower to the stud, substantially as specified.

3. The combination with a flower, of a stud made in one integral piece and having a stem or post, a back plate or shoe, a socket and a nipple made in one integral structure, the nipple being passed through the flower and split at the end and bent laterally to fasten it to the stud, substantially as specified.

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**502,855.** BOUTONNIÈRE. HENRY W. FISKEL, New York, N. Y. Filed May 26, 1892. Serial No. 475,503. (No specimens.)

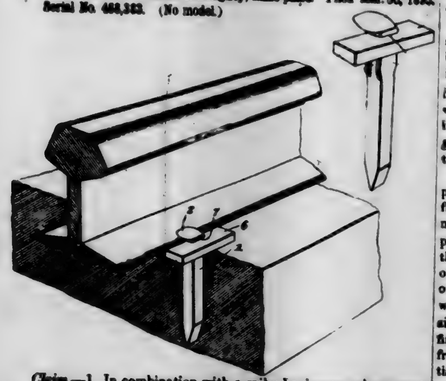


*Claim.*—1. In a boutonnière, the combination with a flower, of a stud having a stem or post tapering toward its forward end, a socket consisting of an independent plate fitted to the stem or post, so that the stem or post will extend upward of it to form a nipple and a lateral projection applied to the nipple inside the flower, substantially as specified.

2 In a boutonniere, the combination with a flower, of a rearwardly tapering stem or post and a shoe consisting of an independent plate fitted thereto, substantially as specified.

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**502,856.** SPIKE. WILLIAM R. FUSE, Lexington, Nebr., assignor of one-fourth to William T. Doughty, same place. Filed Mar. 30, 1893. Serial No. 468,383. (No model.)



*Claim.*—1. In combination with a spike having an enlargement formed under the head thereof, a transverse brace provided with a side recess that is fitted over said enlargement on the outer side of the spike below the head and transversely inseparable therefrom and extending the bearing surface of the same, substantially as described.

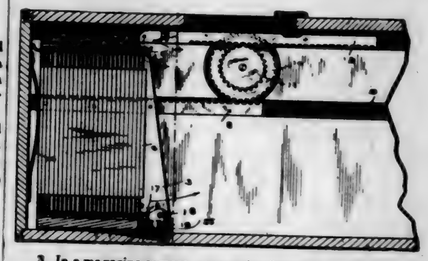
2. In combination with a spike having an enlargement under the head thereof with grooves in opposite edges of the same, a brace having a recess therein with inwardly-projecting tongues at the mouth or entrance of said recess arranged to movably fit the said grooves in the enlargement, substantially as described.

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**502,857.** PHOTOGRAPHIC CAMERA. FREDERICK A. HEYBERGER, Indianapolis, Ind., assignor to the United States Camera Company, same place. Filed Oct. 17, 1892. Serial No. 449,050. (No model.)

*Claim.*—1 In a magazine camera, reciprocating actuating racks mounted in the camera casing, actuated racks secured to the magazine frame, and pinions mounted on shafts in the camera casing and meshing with such racks, substantially as shown and described.

2. In a magazine camera, a reciprocating actuating rack, an actuated rack secured to the magazine frame, and two pinions of different sizes rigidly mounted on a shaft having bearings in the camera casing, the smaller of such pinions meshing with the actuating rack and the larger with the actuated rack, substantially as shown and described.



3. In a magazine camera, a magazine frame adapted to contain a series of plate carriers, hooks within the camera adapted to catch and hold the front plate carrier when it is moved forward, and means for moving the magazine frame and the hooks simultaneously in opposite directions, substantially as shown and described.

4. In a magazine camera, a reciprocating actuating rack, a hook on one end thereof adapted to engage and hold the forward plate carrier when it is moved forward, an actuated rack secured to the magazine and supported in a recess in the magazine casing, and two pinions of different sizes rigidly mounted on a shaft having bearings in the camera casing, the smaller of such pinions meshing with the actuating rack, and the larger one with the actuated rack, substantially as shown and described.

5. In a magazine camera, a reciprocating frame, brackets on the sides of such frame adapted to support a series of plate carriers and having up-turned ends, hooks within the camera adapted to catch and hold the forward plate carrier when it is moved forward, and means for moving the magazine frame and the hooks simultaneously in opposite directions, until the withdrawn plate carrier is caught by the rear up-turned ends of the brackets in the magazine frame and drawn off the hooks and deposited at the rear of the series of plate carriers, substantially as shown and described.

6 In a magazine camera, a magazine frame adapted to contain a series of plate carriers, hooks within the camera adapted to catch and hold the front plate carrier when it is moved forward, means for moving the magazine frame and the hooks simultaneously in opposite directions, a pivoted finger in the lower part of the magazine frame, with its point resting beneath the forward plate carrier, and a catch in the lower part of the camera casing adapted to engage such finger and raise it when the magazine frame is moved forward, substantially as shown and described.

7 In a magazine camera, a magazine frame containing a series of plate carriers, hooks within the camera adapted to catch and hold the front plate carrier when it is moved forward, means for moving the magazine frame and the hooks simultaneously in opposite directions, pivoted fingers in the lower front part of the magazine frame with their points resting normally beneath the forward plate carrier, lugs on the under sides of such fingers, a catch mounted in the lower part of the camera casing adapted when the magazine frame is moved forward to engage such lugs and lift such fingers, and pins in the magazine frame extending into a recess therein and adapted to engage such fingers on the return of the magazine frame and prevent such catch from operating such fingers during the return movement, substantially as shown and described.

8. In a magazine camera, a pair of actuating racks connected by a cross strip, a headed pin movably mounted on such cross strip and extending through a slot in the camera casing, in which it may be reciprocated, a notch at the forward end of such slot in which such headed pin is adapted to be lodged, pinions mounted rigidly on shafts having bearings in the camera casing, actuated racks secured to the magazine frame, such pinions meshing with the actuating racks above and the actuated racks below, means for preventing the plate carriers from being pushed forward out of the magazine frame and a spring at the rear of the camera casing adapted to bear against the rearmost plate carrier in the magazine frame, substantially as shown and described.

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**502,858.** SUPPLY SYSTEM FOR ELECTRIC RAILWAYS. WILTON P. JENKINS, Richmond, Va. Filed June 3, 1892. Serial No. 435,440. (No model.)



*Claim.*—1. In an electric railway and as an improved article of manufacture a feed wire having an insulating covering formed at intervals with short bared contact portions bent or doubled upon themselves and projected laterally all substantially as and for the purposes set forth.



2. In an electric railway an insulated feed wire having at intervals contact portions combined with a clamp by which to secure such wire adjacent to its contact portion directly to and against the rail substantially as set forth.

3. In an electric railway the improved wire holder herein described comprising the insulating block formed to receive the contact portion of the feed wire and the clamp frame receiving said block and conformed to the hollow of the rail substantially as set forth.

4. In an electric railway an insulated feed wire provided at intervals with laterally bent contact portions and having removable caps fitted on the ends of said contact portions whereby to protect the same from wear, substantially as set forth.

5. In an electric railway the combination with the rail of the insulated feed wire having at intervals bared contact portions and clamps securing said wire directly to and against the rail at points adjacent to said contact portions all substantially as and for the purposes set forth.

6. In an electric railway, the combination of the rail, the feed wire having the laterally projected contact portion, the insulating block having an aperture for the said contact portion and the frame fitted over the insulating block and secured to the rail substantially as set forth.

7. In an electric railway, the combination of the feed wire, the insulating block and the clamp frame having a shed like plate extended over and beyond the insulating block substantially as set forth.

8. In an electric railway, the combination of the rail the insulating block having an opening, the feed wire having a looped or bent contact portion extended through said opening, the cap or cover fitted on the end of said contact portion, and the clamping frame fitted over the insulating block and secured substantially as set forth.

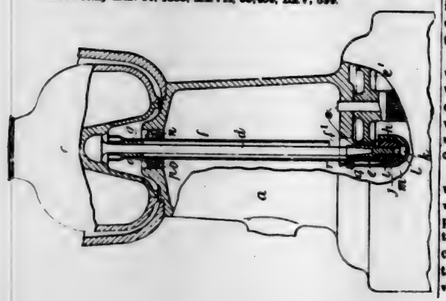
9. In an electric railway the combination with the rail the feed wire and the insulating block of the clamp frame fitted over the block and having its base plate extended under and secured to the base of the rail all substantially as and for the purpose set forth.

10. The improvement in electric railways herein described consisting of the rail, the delivery feed wire having the bared contact portion the insulating block, the clamp frame fitted over the insulating block and having its base plate extended under the base of the rail, the supplemental feed wires arranged on the opposite side of the rail from the delivery feed wire and the clamp plate for securing the supplemental feed wires to the frame all substantially as and for the purposes set forth.

11. The combination of the rail, the wire having the lateral bared contact portion, the insulating block fitted to the rail and having an opening for the passage of the said bared contact portion and securing devices by which to hold the block and the wire to the rail substantially as set forth.

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**502,859.** CENTRIFUGAL MACHINE. ROBERT A. LISTER and MIKAEL PEDERSEN, Dursley, England. Filed May 5, 1893. Serial No. 473,475. (No model.) Patented in Belgium Jan. 14, 1893, No. 102,975, and in Italy Mar. 31, 1893, XXVII, 33,438, LXV, 399.



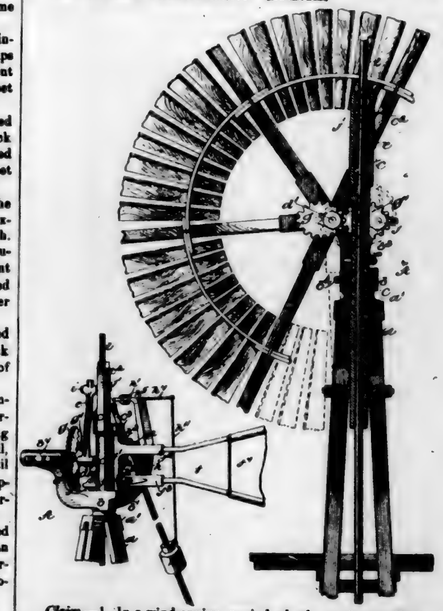
*Claim.*—1. In a centrifugal machine, a footstep bearing for the vertical spindle provided at its base with a seat for a roller, on which a ball forming the bearing point of said spindle runs, in combination with such ball and roller.

2. In a centrifugal machine, the combination with the vertical spindle and with its pinion and driving wheel, of a tube or sleeve inclosing said spindle and having the spherical lower end carrying the footsteps and main bearings therefor, the said tube or sleeve having a seat for an elastic bushing or collar near its upper end, and having at its lower end an opening for allowing the pinion to gear with the driving wheel and to allow the lower or pinion end of the spindle to be easily removed and put in its place;—and a lug or projection to prevent the rotation of the tube or sleeve, all substantially as described.

3. In a centrifugal machine, the combination with the tube or sleeve and its spindle bearing provided with a lug or projection, the main frame constructed with a hanger having a seat for the spherically-shaped end of said tube or sleeve, and with a notch or slot to receive such lug or projection to prevent the sleeve from rotating.

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**502,860.** WIND-ENGINE. GEORGE A. MUSSELMAN, Richland County, Ohio, assignor of one-half to John Walters, same place. Filed June 14, 1892. Serial No. 436,699. (No model.)



*Claim.*—1. In a wind-engine, a wind-wheel; a primary elliptical gear-wheel, eccentrically attached upon the shaft or journal of the wind-wheel, and revoluble therewith; and a secondary elliptical gear-wheel, engaging the primary gear-wheel, eccentrically pivoted, revoluble in bearings parallel with the shaft of the wind-wheel, and carrying an eccentrically pivoted arm, which is by its opposite extremity connected with the lifting-rod of the engine, in combination, substantially as set forth.

2. In a wind-engine, a vertical wind-wheel, an elliptical gear-wheel which by one extremity is fixed upon the shaft of the wind-wheel; a secondary elliptical gear-wheel which is fixed upon a shaft or journal which is mounted in bearings alongside the shaft of the wind-wheel; and a crank-arm or lever which is eccentrically pivoted upon the outer face of the secondary gear-wheel;—and is operatively connected with the lifting rod of the engine.

3. In a wind-engine, the base or bearing $b$, having the arm $b^1$, which is provided with bearings $b^2$ and $b^3$; the vertically-arranged wind-wheel $d$, having shaft $d'$, journaled in the bearing $b^3$, and the primary elliptical gear wheel $g$, eccentrically fixed upon the inner extremity of the shaft $d'$ of the wind-wheel, and revoluble therewith, combined with the secondary elliptical gear-wheel $g'$, which is eccentrically journaled in the bearing $b^2$ of the arm $b^1$, and which is provided with an operating-arm $e$, which by its lower extremity is eccen-

trically-pivoted to the inner face of such secondary elliptical wheel, and which by its upper extremity is operatively connected with the lifting-rod *l* of the engine.

4. In a wind-engine, a base *b*, which is provided with an arm $b^2$, which has journal bearings $b^4$ and $b^5$, and has the wind wheel and power wheels with their shafts mounted in the bearings, and has a support $b'$, for the tail-vane; and an arm A, which has perforated bearings A' and $A^2$, receiving the inner portions of a weight-carrying rod $A^3$, and of an adjusting-rod $A^4$—$A^{11}$, substantially as specified.

5. In a wind-engine, a base *b* which is provided with a vertically-perforated bearing $b'$, and a cylinder or sleeve *c* which encircles the lifting-rod of the engine and which is provided with a vertically-perforated bearing $c^1$; in combination with a tail-vane which is pivoted at its foot in the bearing $b'$ of the base, and at its top in the bearing $c^3$ of the encircling sleeve *c*, and which has an upper and a lower arm, an intermediate web, and terminal divergent wings $f^3$ and $f^4$, at the rear extremity of the web.

6. In a wind-engine, a tail-vane the vertical journal of which is mounted in bearings upon the base *b*, and upon the sleeve or cylinder *c* of the lifting rod *l* and an arm $f^5$ of which is provided with an extension $f^6$ which partially encircles such rod-sleeve, combined with a pivoted weight-carrying rod $A^3$ which is pivoted upon a fixed supporting-arm, A which is connected to the extension $f^6$ upon the arm of the vane, and which has means substantially as set forth for adjusting in or out, the weight upon the pivoted rod.

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**502,861. HARVESTING-MACHINE.** EZRA A. PECK, Harvey, Ill., assignor to Charles P Craver, same place. Filed July 18, 1892. Serial No. 440,340. (No model.)



*Claim.*—1. In a harvesting machine of the class described, the combination with the driving wheels and axle, of a platform pivotally connected to the axle and adapted to rock thereon, and a rigid tilting lever fulcrumed at the axle and having its forward end projected over and pivotally connected to the platform and its rear end projected to the driver's seat, whereby the front of the platform may be adjusted as to height without varying its relation to the moving parts of the machine, substantially as described.

2. In a harvesting machine of the class described, the combination with the main axle and driving wheels, of a platform having standards or uprights rigidly connected to the rear edge of the platform, said standards being projected up in front of the axle and pivotally connected at their upper ends thereto, a tilting lever fulcrumed over the axle and projected forward over the platform, and hangers pivotally connecting the forward end of said tilting lever with the platform, substantially as described.

3. In a harvesting machine of the class described, the combination with a rotatable driving axle and ground wheels, bearings in which said axle turns, a beam mounted upon said bearings above and parallel to the axle, a platform, standards rigidly connected with the platform at their lower ends and pivotally connected at their upper ends with the bearings which support the beam, a tilting lever fulcrumed upon the beam, and a hanger adjustably connecting the forward end of the tilting lever and the platform in front of the beam and axle, substantially as described.

4. In a harvesting machine of the class described, the combination with the driving axle and ground wheels, of grain platform standards pivotally connected to the driving axle at their upper ends and rigidly connected to the platform at their lower ends, a beam mounted parallel to and above the main axle and a tilting lever composed of three members, two of which are fulcrumed over said beam and diverge at their forward ends and the third member being pivotally connected at its forward end above the beam and its rear end projected to the driver's seat, and hangers rigidly connected to the platform at their lower ends and pivotally connected to the projected ends of the tilting members substantially as described.

5. In a harvesting machine of the class described, the combination with the driving wheels and axle, of a platform pivotally connected to the axle and adapted to rock thereon as an axis, a tilting lever composed of three tubular beams, one pivoted at its forward end at the axle and extended rearwardly at right angles thereto to the vicinity of the driver's seat, and the other two of said beams being rigidly connected with the first, fulcrumed over the axle and arranged diagonally thereto, said diagonal beams having one side of their ends flattened, sleeves adapted to said ends, struts mounted on the beams, and truss rods connected to the sleeves and tensioned by the struts, substantially as described.

6. In a harvesting machine of the class described, the combination with the driving wheels and axle, of a platform pivotally connected to the axle and adapted to rock thereon as an axis, a tilting lever composed of three tubular beams, one pivoted at its forward end at the axle and extended rearwardly at right angles thereto to the vicinity of the driver's seat, and the other two of said beams being rigidly connected with the first, fulcrumed over the axle and arranged diagonally thereto, said diagonal beams having one side of their ends flattened, sleeves flattened to adapt them to the ends of the beams and provided with lugs, truss rods connecting the lugs at the respective ends of the beams, and struts mounted upon the beams and tensioning the truss rods, substantially as described.

7. In a harvesting machine of the class described, the combination with a pivoted platform, of a hanger secured at its lower end to the platform, a tilting lever composed of beams pivoted over the axle, sleeves applied to said beams, truss rods for confining the sleeves to the beams, said sleeves having apertures for the passage of the platform hanger and a lug on the sleeves to provide a fulcrum whereby the platform may be adjusted by the application of a pry to the hanger over said fulcrum, substantially as described.

8. In a harvesting machine of the class described, the combination with a main axle, ground wheels and tilting platform, of a tubular beam mounted parallel to and above the axle, and bearings mounted on the axle and having seats therein for the beam and a lateral portion forming a bearing from which the platform is pivotally supported, substantially as described.

9. In a harvesting machine, the combination with the axle, of a beam mounted parallel to and above the axle, of the bearing 30 having the lateral projection 36, the cap 31 and the clamping bolt 32, substantially as described.

10. In a harvesting machine of the class described, the combination with the axle and ground wheels, of a tubular beam mounted above and parallel to the axle, a casting clamped upon the beam, a pivot bolt mounted in lugs on said casting, a rest block mounted upon said bolt, a tilting lever mounted in said rest block, a strut mounted on the tilting lever, a U-bolt for clamping the strut and rest block together, and a truss rod for the beam which is tensioned by the strut, substantially as described.

11. In a harvesting machine of the class described, the combination with the grain platform, of an A frame member composed of a continuous metal bar, one portion of which is arranged vertically and the other diagonally and both secured at their ends to the platform and in line with the rear edge thereof, an elevator hinged to the end of the platform, a brace extending diagonally across and secured to the diagonal portion of the A frame and below its apex, a sheave carried by the upper end of said brace, and a suspension cable for the elevator running over said sheave and extending back to the driver's platform, substantially as described.

12. In a harvesting machine of the class described, the combination with an A frame composed of metal bars, of a T bar reel support connected to said A frame, a driving belt for the reel and a belt tightener comprising sheaves to receive the strands of the belt, a bolt passing through one of said sheaves and through the web of the reel support and angular washers carried by the bolt and adapted to be clamped thereby into the angle of the A frame bar, a slotted arm carrying the other sheave and the reel support being notched or cut away to receive the slotted arm, substantially as described.

13. In a harvesting machine of the class described, the combination with a rotatable driving axle, ground wheels and gear connections, of a beam mounted above and parallel to the axle, castings through which the axle is adapted to be drawn by means of a threaded bolt whose head is secured with one of said castings, the threaded



end whereof is passed through a thimble and a lug, of a collar mounted upon the axle and nuts whereby the axle may be drawn through the castings and secured to insure the proper enmeshment of the gears, substantially as described.

14. In a harvesting machine of the class described, the combination with a driving axle secured with one of the ground wheels and rotatable in the hub of the other, of a beam mounted upon the axle and supporting the platform, a casting secured with the beam and through which the axle may slide and a take-up device between the axle and the casting carrying the beam whereby the axle may be moved longitudinally to secure proper adjustment of the gearing, substantially as described.

15. In a harvesting machine of the class described, the combination with a rotatable driving axle, ground wheels and gear connections, of a beam mounted above and parallel to the axle, castings through which the axle is adapted to be drawn by means of a threaded bolt whose head is secured with one of said castings, the threaded end whereof is passed through a lug of a collar mounted upon the axle and nuts whereby the axle may be drawn through the castings and secured to insure the proper enmeshment of the gears, substantially as described.

16. In a harvesting machine of the class described, the combination with a tilting platform, of a tilting lever and a perforated hanger for connecting the front end of said tilting lever with the platform and a lug on the front of the tilting lever forming a fulcrum for a detached hand lever when inserted in the perforations of the hanger, substantially as described.

17. In a harvesting machine of the class described, the combination with the tilting lever 40 having branch levers 41, 42, a sleeve 48 applied to the rear end of lever 40, said sleeve having a slot therein for a standard, and a lug for the truss rod, a standard passing through said slot, a truss rod for confining said sleeve and a spring actuated dog to engage the standard, substantially as described

18. In a harvesting machine of the class described, the combination with a tilting platform, of a tilting lever therefor and a counterbalancing spring connected with the tilting lever and to a fixed part of the frame and arranged diagonally to the tilting lever and adapted to swing therewith, substantially as described

19. In a harvesting machine of the class described, the combination with a tilting platform and a tilting lever therefor, a push pole, a brace bar, a bracket, and a U-bolt for clamping the brace bar to the push pole, and a counter-balancing spring connected with the tilting lever at one end and at the other to an extension of said bracket, substantially as described.

20. In a harvesting machine of the class described, the combination with the axle, of a beam mounted above and parallel to the axle, a casting clamped to said beam, a rest block pivoted in said casting, a tilting lever mounted on said rest block, and a main brace having a bearing on said casting, substantially as described

21. In a harvesting machine of the class described, the combination with the main frame, of a beam mounted above and parallel thereto, a push pole and a tilting lever, and a three part casting clamped to the beam and push pole and forming a bearing for the axle and pivotally connected to the tilting lever, substantially as described.

22. In a harvesting machine of the class described, the combination with the main axle, of a beam mounted above and parallel thereto, a push pole and a tilting lever, of a three part casting clamped to the beam and push pole and forming a bearing for the axle and pivotally connected to the tilting lever, said casting being also vertically slotted to receive a gear shifting lever, and a clamping bolt passing through two parts of the casting and the push pole and transversely through said slot to provide a pivot for the shifting lever, substantially as described.

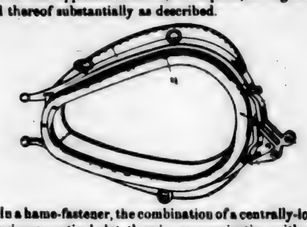
23. In a harvesting machine of the class described, a tilting lever composed of three tubular metallic members, two of said members being pivotally and detachably connected to the other, substantially as described.

24. In a harvesting machine of the class described, the combination with the grain platform, of standards rigidly connected with the rear edge thereof, said standards being arranged in pairs slightly separated and one of them being provided with locking notches in its front edge, a main axle, a collar on said axle, a U-shaped bearing on said collar, a U-shaped clamping bolt embracing said bearing and having its ends projected between the standards, a clamping plate confined to the front edges of the standards by the U-bolt, and a set screw or equivalent device carried by said clamping plate and adapted to enter the locking notches of the standard, substantially as described

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**502,862. HAME-FASTENER.** ISAAC PENNINGTON, Tiffin, Ohio. Filed Oct. 31, 1892. Serial No. 450,533. (No model.)

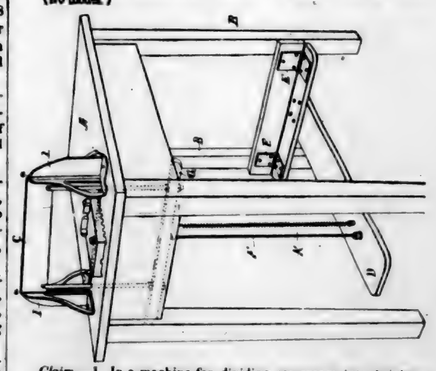
*Claim.*—1. In a hame-fastener, the combination of a centrally-located cam-plate having slots therein, hook-arms having their inner ends freely movable in the slots of said cam-plate, and a slotted operating-arm at the opposite end of said cam-plate, having a hook at the free end thereof substantially as described.



2. In a hame-fastener, the combination of a centrally-located cam-plate having a vertical slot therein communicating with a cross-slot at the upper portion thereof, hook-arms having inner bifurcated ends embracing said cam-plate and provided with pins or posts extending across said bifurcations within the slots of said cam plate, rollers on said posts or pins, and a slotted operating arm pivotally attached to the free end of said cam-plate and having a hook at the opposite end thereof, substantially as described.

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**502,863. APPARATUS FOR CUTTING ICE-CREAM, &c.** WILLIAM FRIEGE, Flushing, N. Y. Filed Apr. 6, 1893. Serial No. 469,240. (No model.)



*Claim.*—1. In a machine for dividing ice cream into bricks or blocks of uniform size, the combination substantially as described, of a vertically reciprocating knife, a carrier or holder provided with transverse gage grooves upon its bottom, and a gage rod or bar fixed upon the top of the table or support beneath the knife, as and for the purpose described.

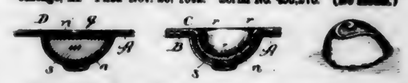
2. In an apparatus for dividing ice cream or similar material into blocks or pieces of uniform size, the combination substantially as described, with the cutter or knife, of a block or carrier adapted to receive the mass of material to be divided, and provided on its bottom with one or more longitudinal and transverse gage grooves or spaces

3. In a machine for dividing ice cream or similar material into bricks or pieces of uniform size, the combination substantially as described, of the table, a knife C, a treadle D, connected with said knife the guide standards I, and the block or carrier L, provided with grooves or notches upon its bottom adapted to register or engage with a suitable gage bar or rod upon the table, as and for the purpose described

4. In a machine for cutting ice cream or similar material into bricks or pieces of uniform size, a movable gage block or carrier L, provided with longitudinal and transverse grooves or gage spaces upon its bottom, in combination with a gage bar or rod and a cutter mounted upon a suitable table or support, as and for the purpose described

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**502,864. CANDY-MOLDING APPARATUS.** ERNST ROSENBERGER, Chicago, Ill. Filed Nov. 26, 1892. Serial No. 453,270. (No model.)



*Claim.*—1. Candy molding apparatus, comprising, in combination, a plate A provided with receptacles *s*, a plate D provided with core-

guides *r*, and a plate C provided with cores *t*, the plates being adapted to fit one upon the other as described, and the parts carried thereby to co-operate substantially as set forth

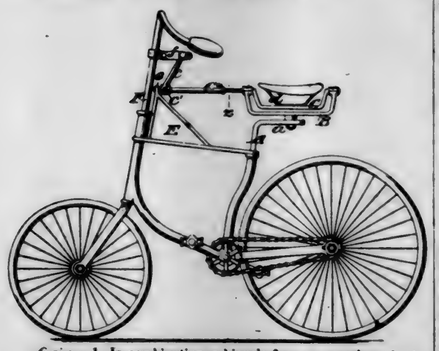
2. Candy molding apparatus comprising in combination a plate A provided with receptacles *s*, a plate B provided with core guides *r*, a plate C provided with cores *t*, and a plate D provided with smoothing surfaces *q*, the plates being adapted to fit one upon the other as described and the parts carried thereby to co-operate substantially as set forth.

**502,865.** ANIMAL-SHEARS. JACOB A. SCHMIDT, Barmen, Germany. Filed Mar. 17, 1892. Serial No. 425,430. (No model.) Patented in Germany Feb. 2, 1892, No. 64,966, and in England Feb. 3, 1892, No. 2,118.



*Claim.*—A pair of shears consisting of two separable members each of which comprises a blade, part of a handle and a spring having a straight terminal prolongation, the said prolongation of one member having in it transversely arranged curved slots on opposite sides of a common center and that of the other member having hooks to pass through and overlap said slots, and the two said prolongations being provided with a snap lock, substantially as herein set forth.

**502,866.** BICYCLE. OSCAR SCHMIDEL, Bethany, W. Va. Filed Sept. 23, 1892. Serial No. 446,545. (No model.)



*Claim.*—1. In combination, a bicycle frame, a steering wheel, a laterally swinging saddle frame suspended from the bicycle frame and a connection between the steering wheel and the saddle frame, whereby the wheel is operated by the swinging of the said saddle frame, substantially as set forth.

2. In combination, a steering wheel, a steering bar connected therewith, a saddle, a laterally swinging drop frame upon which the saddle is secured, the drop frame being extended forwardly and having a connection with the steering bar, whereby, as the drop frame is swung it rotates the steering bar and thereby turns the steering wheel, substantially as set forth.

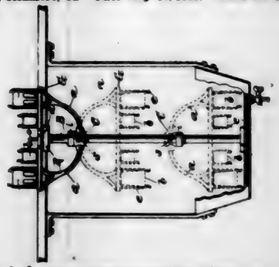
3. In combination, a steering wheel a saddle, a drop frame upon which the saddle is mounted, a supporting bar in which the drop frame is pivotally secured, the saddle being so mounted on the drop frame that its horizontal plane passes substantially through the axis of rotation of the drop frame, and a connection between the drop frame and the steering wheel whereby the latter is operated substantially as set forth.

4. In combination, a steering wheel, a steering bar connected therewith, a collar or clip rigidly secured to the steering bar and having a vertically swinging link pivoted thereto, a saddle post, a supporting bar secured thereto, a laterally swinging drop frame mounted in bearings in the supporting bar, the said drop frame extending forwardly toward the steering bar and an adjustable arm on the forward part of the drop frame having a ball and socket connection with the said vertically swinging link whereby as the drop frame is swung, the steering wheel is positively turned, substantially as set forth.

**502,867.** FIREPROOFING COMPOUND. LINA SCHÜLER, Whitestone, N. Y., assignor to MAX Bachert, Boston, Mass. Filed Nov. 26, 1892. Serial No. 453,262. (Specimens.)

*Claim.*—As a new article of manufacture a fire-proofing composition composed of phosphate of ammonia and sulphate of ammonia in a solidified form and in about the proportions specified.

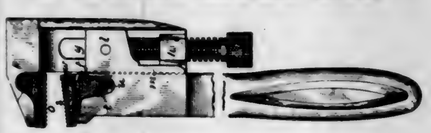
**502,868.** APPARATUS FOR WASHING GLASSES. WILLIAM B. TAYLOR, Glenmore, Ga. Filed May 17, 1893. Serial No. 474,521. (No model.)



*Claim.*—1. In an apparatus for washing glasses, the combination of a trough to hold the water, a post placed over said trough, a reversible carrier to hold the glasses and slide on said post, with means to hold the carrier at any point thereon, substantially as described.

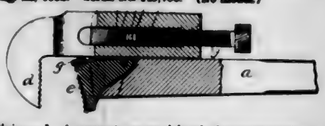
2. An apparatus for washing glasses, consisting of a trough arranged to be suspended from a counter, a post attached to said trough and arranged to be made fast to a counter, a sliding block on said post having openings in its sides to receive the ends of arms supporting a carrier for holding the glasses, said arms and carrier, means for fastening the block at any point on the post, and means for securing the carrier to the counter, substantially as described

**502,869.** MONKEY-WRENCH. WILLIAM E. BADGER, Quincy, Mass. Filed Aug. 22, 1892. Serial No. 443,752. (No model.)



*Claim.*—A monkey wrench having a fixed jaw and handle provided with ears and flanged guideways, a movable jaw and shank having an elongated slot and arranged between said guideways, a socketed nut pivoted in said ears, and arranged in said elongated slot, a screw permanently and rotatively connected to said socketed nut and adapted to adjust the movable jaw, and a spring interposed between the fixed jaw or handle and the shank of the movable jaw at a point above the pivotal point of connection between said fixed and movable jaws, as set forth.

**502,870.** WRENCH. WILLIAM E. BADGER, Quincy, Mass. Filed Aug. 22, 1892. Serial No. 443,753. (No model.)

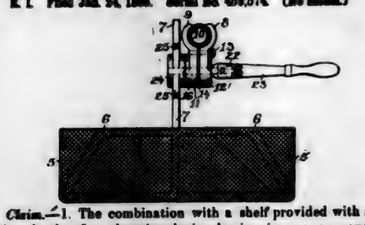


*Claim.*—1. A wrench, comprising in its construction, a handle, a jaw pivoted in the end of the handle, a rocking jaw movable longitudinally of the handle, a screw independent of the handle and arranged parallel with the same for adjusting the rocking jaw only, and a spring interposed between the two jaws beyond the pivotal point of the rocking jaw and pressing with equal force against the two jaws to separate them, as set forth.

2. A wrench comprising in its construction a handle and jaw pivotally connected therewith, a longitudinally movable jaw and its shank pivoted on the handle, said shank being provided with a slot, a socketed nut through which the pivot pin of the shank passes, and an adjusting screw tapped through a nut forming part of said shank, and connected with the socketed nut, as described.



**502,871.** RADIATOR-SHELF. ALBERT J. BENNETT, Woonsocket, R. I. Filed Jan. 24, 1893. Serial No. 459,574. (No model.)



*Claim.*—1. The combination with a shelf provided with a supporting-shank, of a clamping-device having jaws, a cam-operated clamping-bar movable in perforations in the bases of said jaws and having a slotted enlargement to receive the shelf-shank, and a block transversely slotted and having a central-opening, as described.

2. The combination with the jaws 8 and 9 extending from the perforated-bases 11 and 12, the screw 13 for partially securing the same, the ratchet 16 on the base 11, the ratchet-block 24 transversely and centrally slotted having braces 25 and 26, the clamping-bar 17, having the slotted-end 18 and thread 19, extending through the perforations in the bases, the check-nut 20 and the sliding-block 21 pivoted between the cam-arms of the frame 22 which is provided with a handle, of the shelf 5, the frame 6 secured thereto, and the shank 7 adapted to be clamped in the block 24, as described.

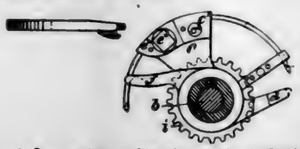
**502,872.** POINTING-TROWEL. CYRUS M. BENSON, Portland, Me. Filed June 18, 1891. Serial No. 396,716. (No model.)



*Claim.*—1. A pointing trowel having a long narrow blade with parallel sides, a suitable handle and a shank having a right or left set off therein, substantially as and for the purposes set forth.

2. A pointing trowel having a long narrow blade with parallel sides and a short narrow blade arranged at an angle to said long blade, substantially as and for the purposes set forth.

**502,873.** SOLE-SEWING MACHINE. JOSEPH E. BERTRAND, Boston, assignor of one-half to Mellen Bray, Newton, Mass. Filed Sept. 17, 1892. Serial No. 446,208. (No model.)



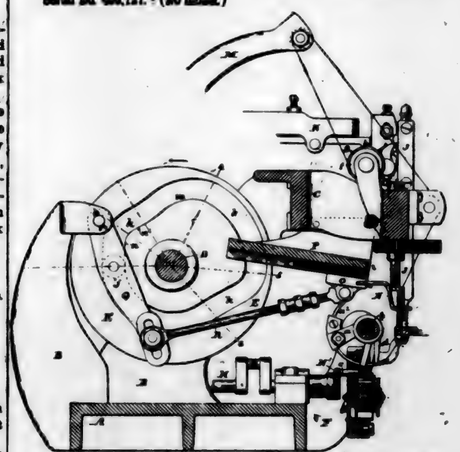
*Claim.*—1. In a sewing machine the combination with a needle constructed and arranged to enter the work and then be moved laterally to feed the work, and mechanism for moving said needle laterally, of a needle guide on the side of the work that the needle enters the same, and a needle stay or support upon the opposite side of the work said guide and stay both being movable laterally with said needle.

2. In a sewing machine the combination with a work support and a presser-foot, of a needle constructed and arranged to enter the work from the side that rests upon the work support and a needle stay or supporting arm upon the opposite side of the work and constructed and arranged to be moved laterally with said needle to feed the work.

3. The combination of a work support a needle constructed and arranged to enter the work at the side thereof that rests upon said work support; a presser foot constructed and arranged to press upon the side of the work opposite to said work support; a needle stay or support upon the same side of the work as, and connected to, the presser-foot so as to be movable therewith when said presser foot is raised or depressed and adapted to be moved laterally independently of said presser foot, and means having provision for moving said needle and needle stay laterally to feed the work.

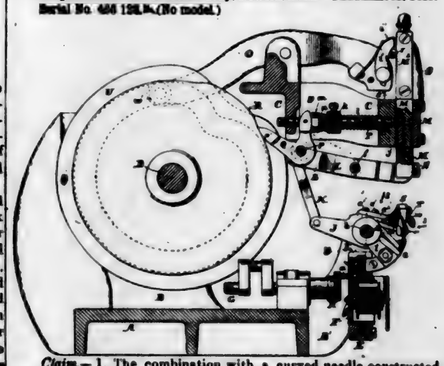
4. The combination in a sewing machine of a needle and awl operating shaft mounted in bearings so as to be revoluble and movable endwise therein; a single radius arm or segment formed in one piece with or firmly secured to said shaft so as to be revoluble and movable endwise therewith; a curved needle mounted in and projecting from one side of said arm or segment; a curved awl mounted in and projecting from the opposite side of said arm or segment; a grooved collar fixed on said shaft, a loop spreader and two needle guides or supports mounted on said shaft and movable about its axis said needle guides or supports being arranged upon opposite sides of the work; a shipper arm engaging said grooved collar; means having provision for reciprocating said shipper arm to move said shaft endwise; and mechanism for oscillating said shaft to cause the needle and awl to alternately pierce the work.

**502,874.** SEWING-MACHINE. JOSEPH E. BERTRAND, Boston, assignor of one-half to Mellen Bray, Newton, Mass. Filed Mar. 15, 1893. Serial No. 466,127. (No model.)



*Claim.*—In a sewing machine the combination with a work support and presser foot, a needle and awl constructed and arranged to be reciprocated about a common axis and a rotary shuttle, of a loop measuring and stitch tightening finger mounted in a reciprocating cross-head, a pivoted lever, a link connecting said cross-head to the movable end of said pivoted lever, and a cam provided with a path having two outward and two inward throws adapted to impart to said looper finger a long and short rearward and forward reciprocation.

**502,875.** SEWING-MACHINE. JOSEPH E. BERTRAND, Boston, assignor of one-half to Mellen Bray, Newton, Mass. Filed Mar. 15, 1893. Serial No. 466,128. (No model.)



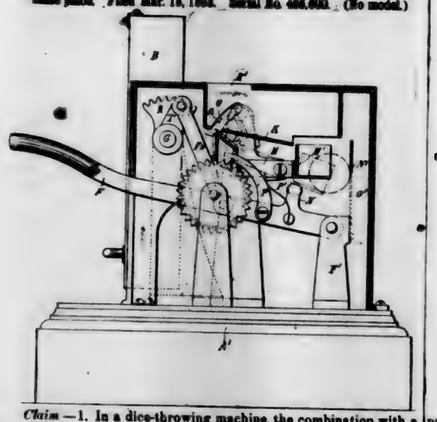
*Claim.*—1. The combination with a curved needle constructed and arranged to reciprocate in an arc of a circle, of a lever mounted upon and movable about the same shaft as said needle; a presser-foot secured to said lever and movable therewith; a second lever fulcrumed upon a fixed part of the machine; a link connecting the rear ends of said two levers; a vertically movable bar pivoted at its lower end to said second lever; means for automatically lifting said bar and through it the presser-foot; and means having provision for automatically locking said bar and presser-foot in position to clamp the work

2. The combination with a curved needle constructed and ar-

ranged to be reciprocated in an arc of a circle, of the levers J and L; the link K; the presser-foot J' carried by the lever J and movable in a plane concentric to the axis of motion of said needle; the bar M provided with the lifting ratchets $M^2$ and $M^2$ and the toothed locking block $j$ and connected at its lower end to the lever L; the lever O; the lifting pawls $i$ and $i'$ carried by said lever O; the cam U for operating said lever; the locking bolt P and means having provision for automatically reciprocating said bolt to lock and unlock the presser-foot.

2. In combination with a vertically reciprocating presser-foot operating bar; a toothed surface formed upon or secured to said bar; the locking bolt P; the fixed collar $k$, the loose collar $m$ and the springs $l$ and $n$ all mounted on said bolt; the elbow lever Q; and the cam R all constructed and arranged to operate substantially as described.

**502,876. COIN-CONTROLLED DICE-THROWING MACHINE.** WILLIAM CARCOK, Jr., New York, N. Y., assignor to Willard B. Young, same place. Filed Mar. 10, 1893. Serial No. 466,009. (No model.)



*Claim.*—1. In a dice-throwing machine, the combination with a box or casting having a transparent front plate and divided by partitions into vertical die compartments and supported in suitable bearings by trunnions, mechanism for oscillating the said box or casting from and back to a vertical position.

2. The combination with a box or casting mounted to oscillate on a horizontal axis and divided by partitions into vertical die compartments, of a hinged shutter in each compartment and near the bottom thereof and a spring for each shutter acting to retain the same in either a closed or open position, as set forth.

3. The combination with a box or casting mounted to oscillate on a horizontal axis and divided by partitions into vertical die compartments, of a hinged shutter in each compartment and near the bottom thereof, springs acting on the rods or spindles of said shutters for retaining the same in either an open or closed position, and a bar or plate movable transversely to the said spindles and adapted to turn the same whereby all the shutters when closed may be simultaneously opened or raised, as set forth.

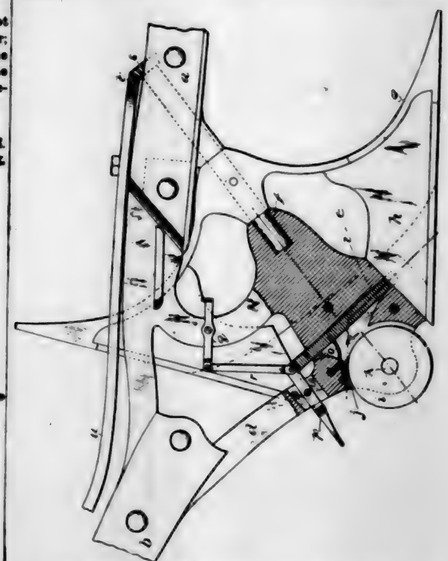
4. The combination with an oscillating box or casting divided by partitions into a series of die compartments and mounted on trunnions, of an oscillating lever and connections between said lever and the box whereby the same may be oscillated by the movement of the lever.

5. The combination with a series of oscillating die receptacles, of an oscillating lever, connections between the same and the die receptacles, a segmental or mutilated ratchet moving with the die receptacles and a pawl adapted to engage therewith and prevent the return of said ratchet before it has made a complete movement, as set forth.

6. The combination with the oscillating lever of a dice-throwing machine, of a ratchet wheel, a pawl carried by the lever and engaging with said wheel, a coin-controlled locking and releasing lever, a stud or projection on the oscillating lever and in position to arrest the movement of the coin-controlled lever as soon as the latter has released the ratchet but before it has reached the point at which the coin is disengaged therefrom.

**502,877. PLOW.** HENRY O. CHENEY, Hopkinton, assignor of one-third to Charles F. Pike, Woodville, Mass. Filed Oct. 14, 1892. Serial No. 448,822. (No model.)

*Claim.*—1. A reversible plow comprising in its construction a beam, handles, and a frame all rigidly secured together; a rotatable bolt supported by the frame and beam; a double mold-board fixed on said bolt; a pinion fixed on the bolt; and a lever fulcrumed on the beam and having a segment at its end in mesh with said pinion, the opposite end of said lever arranged to be vibrated between the handles of the plow, whereby the mold-board is reversed in the manner described.



2. The combination, with the double furrow turning means each provided with a land-side having a catch $n$, of a spring-pressed latch-bolt or bar, notched at its lower end to engage the said catch, and beveled opposite its notched point, as described.

3. The combination, with the double furrow turning means, each provided with a land-side having a catch $n$, of a spring-pressed latch-bolt or bar, notched at its lower end to engage the said catch, and beveled opposite its notched point, a lever fulcrumed on the frame, engaged at its inner end with said bolt and adapted at its outer end to have the foot of the plowman placed thereon to depress the said outer end and raise the inner end, as described.

4. The combination, with the double furrow turning means, of the plates $j$ bolted to the frame at the heel of the land-side and provided with depressions, and the wheel provided with bosses arranged in said depressions between the said plates, as described.

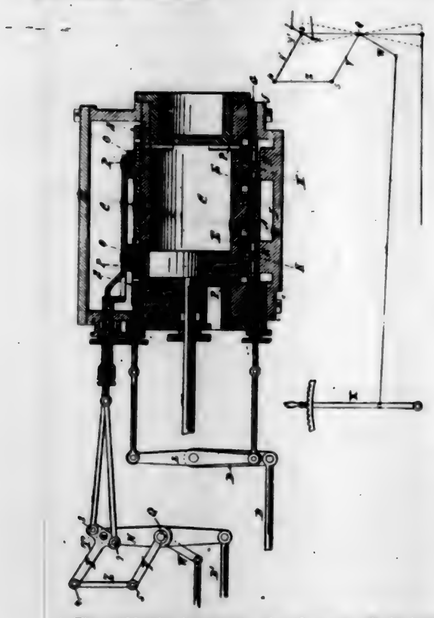
**502,878. VALVE-GEAR FOR STEAM-ENGINES.** EDWARD H. DICKERSON, New York, N. Y. Filed Mar. 7, 1889. Serial No. 302,322. (No model.)

*Claim.*—1. The combination in a steam cylinder having two independent steam and two independent exhaust ports, four independent valves controlling the passage of steam through said steam and exhaust ports, cut off valves moving across the steam valves, means for alternately opening and closing corresponding steam and exhaust valves, and the driving arm N, the cut off valve regulator T, pivoted thereupon at or about the middle of the cut off valve controlling arm and connected at its two ends with the cut off valve rods, and the parallel motion devices controlled from the shaft Q, substantially as described.

2. The combination in a steam cylinder having two independent steam and two independent exhaust ports, four independent slide valves controlling the passage of steam through said steam and exhaust ports, means for operating said valves, cut off valves and operating devices therefor, the latter consisting of the driving arm N, regulator T, stationary shaft Q, and the parallel motion devices controlled from said stationary shaft, substantially as described.

3. The combination in a steam cylinder having two independent steam, and two independent exhaust ports passing directly through the walls of the cylinder, and close to the ends thereof in diametrically opposite positions, four independent valves controlling the passage of steam to said steam and exhaust ports, cut off valves for cutting off the steam supply to the cylinder, independent connections for operating said cut-off valves, the driving arm N, the regulator T, pivoted thereto and connected at its two ends with the cut off valve rods, and the parallel motion devices controlled from the stationary shaft Q, substantially as described.





4. The combination in a steam engine of a steam cylinder having two steam slide valves, and two flat exhaust slide valves, said exhaust valves being approximately diametrically opposite the steam valves; a valve stem operating the two exhaust valves and projecting beyond the cylinder; a valve stem operating two steam valves and similarly projecting beyond the cylinder and at the same end thereof; and an operating lever one end thereof being connected with the steam valve rod, and the other with the exhaust valve rod, and itself pivoted at a point centrally of its connection with said steam and exhaust valve rods, substantially as described.

5. The combination with the steam cylinder provided with steam ports and valves and cut off valves, of the exhaust ports P, P, the flat sliding exhaust valves E, E, operated by a single exhaust valve stem, the plate G, having the exhaust valve ports, and supporting said exhaust valves and provided with an opening or openings for the passage of the connections from the exhaust valve rod which operates the exhaust valves, the casing J, outside of the said plate G, and containing an exhaust steam passage, and the driving arm N, for the cut off valves, the regulator pivoted to the said arm and connected at its ends with the cut off valve rods, and the parallel motion devices F, G, Y, controlled from the stationary shaft Q, substantially as described.

6. The combination in a steam engine of two sliding steam valves having passages therethrough, two cut off valves cutting off the steam passing through said passages and driven by two independent rods, the said rods being both connected to an external vibrating driving arm, and mechanism under control of the operator in the cab, which is carried upon said arm for adjusting the cut off valve with reference to each other during the operation of the engine, substantially as described.

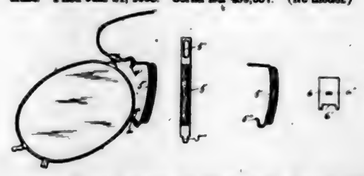
7. The combination with the steam cylinder, of the flat sliding steam valves S, S, the cut off valves O, O, controlled by independent driving shafts, the driving arm N, and the additional arm pivoted thereon and connected to each of said driving rods, and the parallel motion devices constructed arranged and operated from the stationary shaft Q, substantially as described.

8. The combination in a steam engine, of a steam cylinder having two independent steam and two independent exhaust ports, four independent valves controlling the passage of steam through said steam and exhaust ports, means for operating the valves for the respective ports, cut off valves, the stationary shaft Q, the parallel motion devices and intermediate connections between the cut off valve-rods, and the rod extending to the cab of the engine for controlling said cut off valves, substantially as shown and in the manner set forth.

9. In a steam engine the apparatus herein shown for simultaneously driving and adjusting two cut-off valves, which consists of the driving arm N, the cut-off valve regulator T pivoted thereupon at or about the middle of the cut-off valve controlling arm and connected at its two ends with the cut-off valve rods, and the parallel motion F Z Y controlled from stationary shaft Q, substantially as described.

10. In a steam engine the apparatus herein shown for simultaneously driving and adjusting two cut-off valves, which consists of the driving arm N, the cut-off valve regulator T pivoted thereupon at or about the middle of the cut-off valve controlling arm, and connected at its two ends with the cut-off valve rods, and the parallel motion F Z Y controlled from stationary shaft Q, and the arm W for operating said shaft Q and itself controllable by the engineer in the cab, substantially as described.

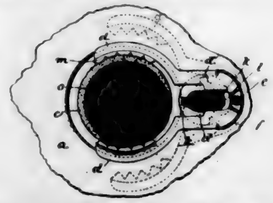
**502,879. EYEGLASSES.** WILLIAM H. ECCLESTON, Southbridge, Mass. Filed Jan. 21, 1893. Serial No. 459,037. (No model.)



*Claim.*—1. In an eyeglass, the combination with the frame, and a nose guard adjustably connected at its upper end to said frame, of means for securing the lower end of the nose guard to the frame, consisting of a bracket or arm secured at its inner end to the eyeglass rim, and provided at its outer end with a notched or cut out portion, into which the lower end of the nose guard extends, and a hole therein through which the tongue on the lower end of the nose guard projects, and is bent over to rigidly attach the lower end of the nose guard to said bracket or arm, for the purpose stated, substantially as shown and described.

2. In an eyeglass, the combination with the frame, and a bracket or arm secured to the eyeglass rim, of a nose guard adjustably connected at its upper end to the frame, and rigidly secured at its lower end to said bracket or arm, by extending in a notched or cut out portion in the outer end of said bracket, and having the tongue on the lower end thereof extend through a hole in said bracket, and bent over, for the purpose stated, substantially as shown and described.

**502,880. LAMP.** WILLIAM H. HEDALL, Brooklyn, N. Y. Filed Feb. 15, 1893. Serial No. 462,392. (No model.)



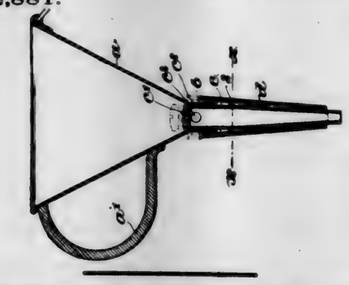
*Claim.*—1. In a wick raising device for lamps, the combination of pivoted spring pressed shouldered jaws $d$, wick raising, rod $i$, cam $k$, attached to said rod and lug $k'$ on said cam, adapted to abut against the shoulders on the jaws $d$ to limit the movement of the cam, substantially as and for the purposes specified.

2. In a wick raising device for lamps, the combination of spring-pressed, pivoted jaws $d$, having shoulders $d'$ thereon, wick raising rod $i$, cam $k$ attached to said rod and lug $k'$ on said cam, adapted to abut against the shoulders $d'$ on the jaws $d$ to limit the movement of the cam and a spring $s$ bearing against the rod $i$ to hold it in its adjusted position, substantially as specified

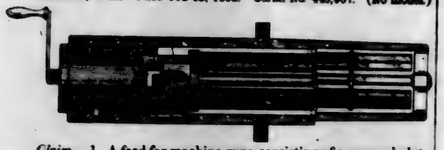
**502,881. FUNNEL.** CLARENCE W. FOX, Saugus, Mass. Filed June 18, 1891. Serial No. 396,720. (No model.)

*Claim.*—The body $a$, and valve for opening and closing its exit, consisting of a hollow cylindrical plug $c$, having a closed top $c'$, and side openings $c^2$, combined with the independent nozzle $d$ connected to said plug $c$, and presenting a free passage between them to serve as an air vent, substantially as described.

502,881.



502,882. FEED FOR MAGAZINE-GUNS. RICHARD J. GATLING, Hartford, Conn. Filed Oct. 15, 1892. Serial No. 448,967. (No model.)



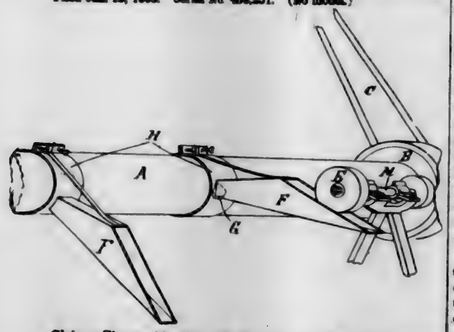
*Claim.*—1. A feed for machine guns, consisting of a grooved plate for receiving cartridges set into an opening in a gun, and a slide held by the plate adjacent to the cartridge groove and reciprocated longitudinally by the revolution of the gun when in action, substantially as specified.

2. A feed for machine guns, consisting of a grooved plate for receiving cartridges set into an opening in a gun, and slides supported by the plate on each side of the cartridge groove reciprocated longitudinally by the revolution of the gun when in action, substantially as specified.

3. A feed for machine guns, consisting of a grooved plate for receiving cartridges, a slide supported by the plate adjacent to the cartridge groove, and a lever connected with the slide and reciprocated longitudinally by the revolution of the gun when in action, substantially as specified.

4. A feed for machine guns, consisting of a grooved plate for receiving cartridges, slides held in mortises in the side walls of the cartridge groove, a lever pivoted to the plate and connected with the slides and reciprocated by the revolution of the gun when in action, substantially as specified.

502,883. DUST-COLLECTOR. AARON P. GOULD, Canton, Ohio. Filed Jan. 13, 1893. Serial No. 458,251. (No model.)




*Claim.*—The combination with the pipe A, having a side aperture as G, of the open ended spout F, secured to the band H, said band to embrace the pipe A, and means for securing the band and spout, in desired adjustment about said pipe, substantially as described and for the purpose set forth.

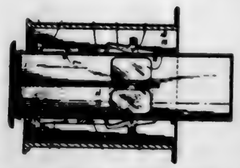
502,884. WATCH-winding DEVICE. ISAAC GRAMET and AUGUST METLAN, Geneva, Switzerland. Filed Oct. 4, 1892. Serial No. 447,793. (No model.) Patented in Switzerland May 28, 1892, No. 5,019.

*Claim.*—1. The combination with the watch plate, of a winding stem and crown, a helical spring around the stem, a pinion with which one end of the spring is connected, a ratchet wheel and pawl for holding the stem and a bridge across the stem for holding the same in position in the watch plate substantially as specified.



2. The combination with the winding crown, of an axis connected with the crown, a helical main spring around said axis, a pinion for giving motion to the watch works and with which pinion one end of the main spring is connected, a ratchet wheel connected with the other end of the main spring, and a bridge for holding the axis to the watch plate, and a spring pawl formed integral with the bridge at one end thereof, substantially as specified.

502,885. CASH REGISTER AND INDICATOR. JOHN T. GREEN, Chicago, Ill. Filed Nov. 14, 1892. Serial No. 451,995. (No model.)



*Claim.*—1. In a cash indicator, a vertically reciprocating frame provided with a vertical passage way into which checks may be dropped, and suitable means operated by the reciprocation of such frame and adapted to move in and out of such passage way for holding such checks in their passage and afterward discharging the same, substantially as described.

2. In a cash indicator, a stationary frame, a spring supported frame vertically movable in such stationary frame provided with a vertical passage way into which checks may be dropped, openings in the sides of both frames corresponding with each other, and suitable valves operated by the reciprocation of such movable frame and adapted to move in and out of such passage way for holding such checks at such openings and afterward discharging the same, substantially as described.

3. In a cash indicator, a stationary frame, a frame vertically movable in such stationary frame provided with a vertical passage way into which checks may be dropped, and a valve shaped like a bent lever pivoted at the bend to the movable frame, one arm being loosely joined to the stationary frame and the other arm provided at its end with a finger adapted when the movable frame is operated to move in and out of such passage way to catch or discharge a check, substantially as described.

4. In a cash indicator, a stationary frame, a frame vertically movable in such stationary frame provided with a vertical passage way into which checks may be dropped, and two valves pivoted one above the other to such movable frame, the upper valve provided with an arm loosely joined to the stationary frame and another arm having a finger on its end adapted to move in and out of such passage way, and the other valve similarly mounted near suitable openings in such frames for displaying checks and provided with upwardly and downwardly extending arms on the end of each which is a finger adapted to move in and out of such passage way, the valves being so constructed relatively to each other that when such movable frame is reciprocated the lower finger of the lower valve and the finger of the upper valve will extend into such passage way while the upper finger of the lower valve does not and vice versa, substantially as described.

5. In a cash indicator, the combination of a suitable casing, a spring supported vertically reciprocating frame provided with a vertical passage way adapted to receive and convey checks, valves adapted to move in and out of such passage way, a bell, and means of ringing such bell by the reciprocation of such frame, substantially as described.

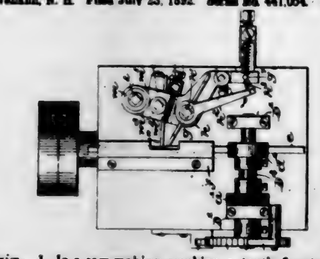
6. In a cash register and indicator, the combination of a suitable casing, a spring supported vertically reciprocating frame, provided with a vertical passage way into which checks may be dropped, valves adapted to move in and out of such passage way to hold such checks in their passage at an opening for inspection, and afterward discharging the same, a check receptacle below such passage way into which such checks are discharged, and a bell adapted to be rung by the reciprocation of such movable frame, substantially as described.

7. In a cash register, the combination of a suitable casing, a spring supported vertically reciprocating frame provided with a vertical passage way into which checks may be dropped, valves adapted to move in and out of such passage way, a spring actuated money drawer in the lower part of such casing locked by a spring latch, and a rod extending from such movable frame adapted to release such latch and the drawer by the operation of the reciprocating frame, substantially as described.



8. In a cash register and indicator, the combination of a suitable casing, a spring supported vertically reciprocating frame provided with a vertical passage way into which checks may be dropped, valves adapted to move in and out of such passage way for holding such checks in their passage at an opening for inspection and afterward discharging them, a locked check receptacle into which checks are discharged, a spring actuated money drawer locked by a spring latch, and a bell, such drawer adapted to be released and such bell rung by the reciprocation of such movable frame, substantially as described.

502,886. MANUFACTURE OF SAWS. GEORGE W. GRIFFIN, Franklin, N. H. Filed July 23, 1892. Serial No. 441,054. (No model.)



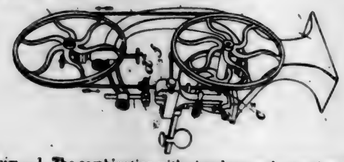
*Claim.*—1. In a saw making machine, a tooth forming tool to enter the edge of a metal ribbon to form a tooth therein, combined with a staking tool to act upon the tooth and change the angle of its cutting edge, substantially as described.

2. In a saw making machine, feeding mechanism to feed a metallic ribbon, a guide for the said ribbon to expose one of its edges, and a tooth forming tool and a staking tool, combined with actuating devices for the said tools, whereby the tooth is first formed by the forming tool and the angle of its cutting edge thereafter changed by the staking tool, substantially as described.

3. The herein described improved method of manufacturing saws which consists in cutting into the edge of a metallic strip to form a tooth, and thereafter setting the said tooth back to change the angle of its cutting edge, substantially as described.

4. The herein described improved method of manufacturing saws which consists in cutting into the edge of a metallic strip to form a tooth, and thereafter staking the bottom of the notch between the back of one tooth and the front of an adjacent tooth to round or broaden the same, substantially as described.

502,887. BAND-SAW MACHINE FOR CUTTING METAL, &c. GEORGE W. GRIFFIN, Franklin, N. H. Filed Oct. 13, 1892. Serial No. 448,732. (No model.)



*Claim.*—1. The combination with a band saw and actuating mechanism therefor, and guides to turn the band saw out of the plane tangent to the wheels supporting said band saw; of a vise to hold or support the work to be acted upon by the saw, said vise being adapted to turn in a horizontal plane, substantially as described.

2. The combination with a band saw and its actuating devices, of a loosely mounted vise, and means to move the same automatically against the teeth of the band saw to effect the feeding of the work being sawed, substantially as described.

3. The combination with a band saw and actuating devices therefor, of a vise adapted to turn about a horizontal pivot and mounted upon a foot plate adapted to turn about a vertical pivot, substantially as described.

4. A band saw and its actuating wheels, and a vise supported upon a vertical pivot C and adapted to be rotated in a horizontal plane as described, combined with a band saw guide which may be turned in a horizontal plane to thus twist or turn the band saw out of the plane tangent to the face of the wheel about which the band saw travels, whereby the line of cut of the band saw may be adapted to the angle of presentation of the work by the vise to thus insure a right angled cut through a bar or rod, substantially as described.

5. The combination with a band saw and its actuating devices, of a vise adapted to turn about a horizontal and a vertical pivot, and a removable table held by it, the said table being provided with a throat to receive the band saw, to operate, substantially as described.

502,888. BURIAL APPARATUS. LINCOLN S. MAY, West Hartford, Conn. Filed Nov. 18, 1892. Serial No. 452,419. (No model.)



*Claim.*—1. A burial apparatus consisting of a frame, rotary shafts supported by the frame, checking rollers and drums bearing straps, secured to the shafts, checking levers pivoted to the frame and a foot-operating lever pivoted to the frame and adapted to force the checking levers against the rollers, substantially as specified.

2. A burial apparatus consisting of a frame, rotary shafts supported by the frame, checking rollers and drums bearing straps, secured to the shafts, checking levers pivoted to the frame with a part adapted to retard and a part adapted to stop the rotation of the checking rollers, and a foot-operating-lever pivoted to the frame and adapted to force the checking levers against the rollers, substantially as specified.

3. A burial apparatus consisting of a frame, rotary shafts supported by the frame, checking rollers and drums bearing straps, secured to the shafts, said rollers having a roughened periphery, checking levers pivoted to the frame with a part adapted to retard and a part adapted to stop the rotation of the checking rollers, and a foot operating-lever pivoted to the frame and adapted to force the checking levers against the rollers, substantially as specified.

4. A burial apparatus consisting of a frame, rotary shafts supported by the frame, checking rollers and drums bearing straps, secured to the shafts, said rollers having a roughened periphery, checking levers pivoted to the frame spanning the rollers with friction arms on one side and toothed arms on the other side, and a foot operating-lever pivoted to the frame adapted to force the checking levers against the rollers, substantially as specified.

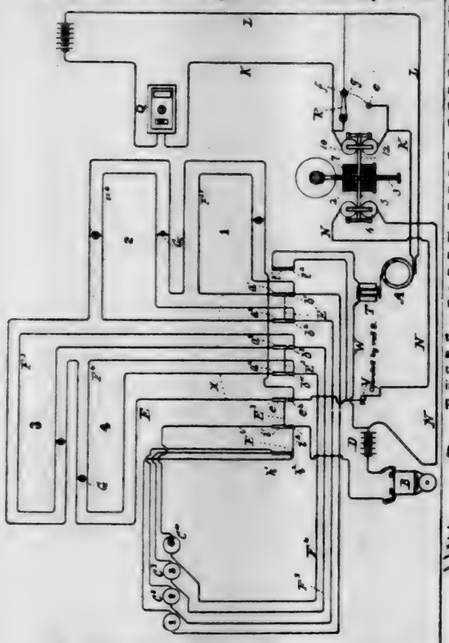
502,889. CIRCUIT TESTING APPARATUS. FRED S. PALMER, Boston, Mass. Filed Mar 30, 1893. Serial No. 468,921. (No model.)

*Claim.*—1. In circuit-testing apparatus, a continuous outside wire common to all floors, a group of inside wires, one for each floor electrically arranged in multiple, combined with a switch adapted to change such systems of wires from multiple to series in the act of testing, substantially as and for the purposes explained.

2. In circuit-testing apparatus, a thermostat alarm system composed of a single outside wire and a number of independent floor wires electrically arranged in multiple, combined with a fire alarm system, a transmitter which electrically unites said systems at specified times, and a switch adapted to change the thermostat systems from multiple to series in the act of testing both systems simultaneously, substantially as specified.

3. In circuit-testing apparatus, a continuous outside wire hav-

ing separable terminals, a group of independent floor wires likewise with separable terminals, and a group of alarm drops in the independent wires, combined with an operating switch shunt post $d'$ $d^3$, and wires $E'$ $E^3$ therefrom to one set of terminals in the independent floor wires, together with test recording mechanism, substantially as stated.



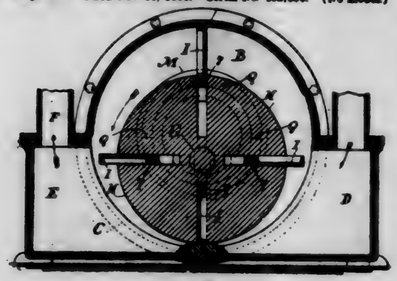
4. In electric-testing apparatus, the combination with a thermostat alarm system, test-recording mechanism, an electro-magnet, and an operating register lever in said system, of a fire alarm system, an electro-magnet, and operating register-lever in said system, together with a switch and switch door whereby the act of opening the door and rocking the switch serves to test simultaneously both systems, substantially as described.

5. In circuit testing apparatus a continuous outside wire common to all floors, a group of inside wires, one for each floor, and arranged in multiple, combined with thermostats adapted to unite the inside wires with the common outside floor wire at specified times, and a transmitter operated at such times to connect with a fire alarm system, substantially as explained.

6. In circuit testing apparatus, a continuous outside wire common to all floors, a group of inside wires one for each floor electrically arranged in multiple, combined with a switch adapted to change such systems of wires from multiple to series, and a recording cylinder as described to receive a continuous and uninterrupted register of the changes of said systems from multiple to series, substantially as stated.

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**502,890.** ROTARY BLOWER. EDWARD P. REICHELM, Jersey City, N. J. Filed Feb. 18, 1893. Serial No. 462,838. (No model.)



*Claim.*—1. The combination with the driving shaft and blower case, of a drum within the case and surrounding the driving shaft and slotted, and fans within the slots, rings with annular grooves introduced into annular grooves in the heads of the case, the fans within the slots of the drum and provided with projecting pivots and ring segments receiving such pivots and being within the annular recesses of the rings, substantially as set forth.

2. The combination in a rotary blower, of a case having heads with annular grooves in their inner faces, a driving shaft eccentric to the case, rings within the annular grooves of the case, a slotted drum around the driving shaft, fans within the slots, and connections between the fans and the rings in the annular grooves in the heads of the case, substantially as set forth.

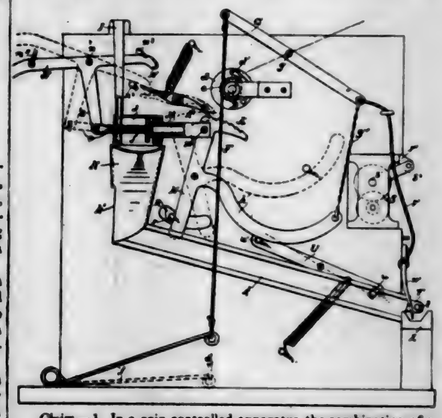
3. The combination in a rotary blower, of a case, a shaft eccentric to the case, a slotted drum around the shaft, fans within the slots in the drum and having legs projecting toward the driving shaft, and rings concentric with the case to which the fans are connected for moving them in the slots of the drum, substantially as set forth.

4. In a rotary blower, the combination with the case having heads with annular grooves, of a shaft eccentric to the case, a drum around the shaft slotted radially, fans within the slots of the drum and having legs projecting toward the driving shaft, recessed rings within the annular grooves in the heads and pivotal projections upon the fans entering the recesses of the rings, substantially as set forth.

5. The combination in a rotary blower, of a case, a shaft eccentric to the case, a slotted drum around the shaft, fans within the slots and rings within the case and at each end of the fans and with which the fans are connected, said rings rotating around circular bearings in the inner faces of the case heads and through which the shaft passes, substantially as specified.

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**502,891.** COIN-CONTROLLED APPARATUS. GUSTAV F. W. SCHULTZE, Berkeley, Cal. Filed May 22, 1893. Serial No. 475,129. (No model.)



*Claim.*—1. In a coin controlled apparatus, the combination of a rotatable disk, a power device, a connection between said device and the disk whereby the latter is rotated, connections controlled by the insertion of a coin for setting and tripping the power device, and a means comprising a wheel with depressions of different depths, and a lever to engage the same controlled by the position of said disk when in a state of rest for retaining or returning a deposited coin, substantially as herein described.

2. In a coin actuated apparatus, the combination of a rotatable disk, a shaft on which it is mounted, a sleeve loosely mounted on said shaft and having a pawl and ratchet connection therewith, a power device and a cord or line connecting said device with the sleeve whereby they are reciprocally operated, an operating lever, and intervening mechanism comprising a ratchet lever and means for operating and controlling it and a second lever connected with an arm of the ratchet lever and with the cord or line, said mechanism being controlled by the deposit of a coin for winding up and tripping said sleeve, whereby the disk is rotated, substantially as herein described.

3. In a coin actuated apparatus, the combination of a rotatable disk, a shaft on which it is mounted, a sleeve loosely mounted on said shaft and having a pawl and ratchet connection therewith, a power device and a cord or line connecting said device with the sleeve whereby they are reciprocally operated, an operating or main lever and intervening mechanism controlled by the deposit of a coin for winding up and tripping said sleeve, consisting of a ratchet lever, a plunger and hollow rod receiving an intervening coin whereby the ratchet lever is operated by the main lever, a pawl for controlling said ratchet lever and operated by the main lever, an arm of said ratchet lever and a pivoted lever connected with said arm and with the cord or line of the sleeve, substantially as herein described.

4. In a coin controlled apparatus, the combination of a rotatable wheel carrying an indicating disk, said wheel having annular series of alternating depressions of different depths, a lever adapted to enter and to be limited at different distances by said depressions according to the position in which the wheel comes to a state of rest, a coin runway, and a stop operated by the lever according to its position of engagement with the wheel to retain or discharge the coin from said runway, substantially as herein described.

5. In a coin controlled apparatus, the combination of a rotatable wheel carrying an indicating dial, said wheel having annular series of alternating depressions of different depths, a lever adapted to enter and to be limited at different distances by said depressions according to the position in which the wheel comes to a state of rest, a coin runway and a stop operated by the lever according to its position of engagement with the wheel, to retain or discharge the coin from said passage, consisting of the bell crank lever having the pin in the path of the coins and the pin in the path of the lever, substantially as herein described.

6. In a coin controlled apparatus, the combination of a rotatable disk with carrying wheel having series of alternating depressions of different depths in its periphery, a coin runway having an exterior discharge, a stop controlling said discharge, a lever Q adapted to engage the depressions of the carrying wheel and to be limited thereby at different distances, means for holding the lever away from its engagement while the plate is rotating, means for tripping said lever to allow it to return to its engagement when the wheel is in a state of rest, and means operated by the lever for actuating the stop controlling the coin runway only when the lever engages the deeper depressions of the carrying wheel, substantially as herein described.

7. In a coin-controlled apparatus, the combination of a rotatable disk with carrying wheel having series of alternating depressions of different depths in its periphery, a coin receptacle and setting and tripping means for rotating the disk through the deposit of a coin, a coin runway having a discharge to the exterior, a stop controlling said discharge, a lever Q adapted to engage the depressions of the carrying plate and to be limited at different distances thereby, means operated by the setting and tripping mechanism for forcing back said lever from its engagement previous to the rotation of the disk and wheel, a spring-controlled shaft of a clock-work mechanism operated by the setting and tripping mechanism, a ratchet bar for holding the lever Q withdrawn while the wheel is rotating, a means operated by the clock-work mechanism in exhausting, for tripping the ratchet bar to allow the lever to return to its engagement after the wheel and disk have come to a state of rest, and means operated by the said lever in returning for actuating the stop controlling the coin runway only when the lever engages the deeper depressions of the carrying wheel, substantially as herein described.

8. In a coin-controlled apparatus, the combination of the rotating disk and the notched and slotted carrying wheel C, the lever Q engaging it, the coin runway with exterior discharge, the stop controlling said runway, and the lever T actuated by the lever Q for operating the stop, means for rotating the wheel C, including the lever G, the gravity safety stop W, at the end of the coin runway and the cord connecting it with the lever G, substantially as herein described.

9. In a coin-controlled apparatus, the combination of the rotating disk, the coin runway having the exterior discharge, a setting and tripping mechanism for rotating the disk, including the lever H with its swinging arm $h^1$ and the swinging lever U operated by the arm A and having a stop pin controlling the passage of the coin through the runway, substantially as herein described.

10. In a coin-controlled apparatus, the combination of the coin runway having the exterior discharge and an automatic stop controlling said discharge and the funnel communicating with the head of the runway and having a back discharge to the interior of the apparatus through which the coins drop when the runway is full, substantially as herein described.

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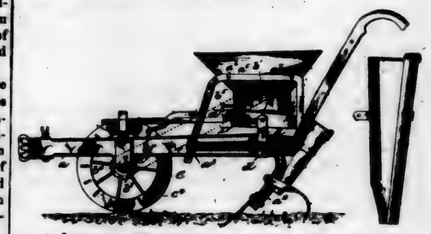
**502,892.** CONVERTIBLE SEED OR FERTILIZER DISTRIBUTER. WILLIAM R. H. SEABOY, Griffin, Ga. Filed Oct. 19, 1892. Serial No. 449,200. (No model.)

*Claim.*—1. In a convertible seed planter and fertilizer distributer, the combination of a hopper, of a pivoted shoe beneath the hopper and a seed-chute adjacent to the shoe, having a detachable corrugated plate therein, substantially as described.

2. In a convertible seed planter and fertilizer distributer, the combination of a hopper with a seed-chute having a detachable corrugated plate secured therein, substantially as described.



3. In a convertible fertilizer distributer and seed planter, the combination of the frame, of a hopper thereon, a pivoted shoe arranged beneath the hopper, a seed-chute adjacent to the hopper, an agitator within the hopper, a driving-wheel near the forward end of the frame provided with a series of ribs or flanges, suitable gearing connecting the driving-wheel with the agitator whereby motion is imparted thereto, and a knocker-iron secured at one end to the shoe and having a pivoted angle-bar at its other end which engages the ribs or flanges of the driving-wheel, substantially as described.



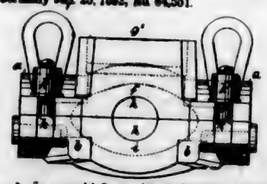
4. In a convertible seed planter and fertilizer distributer, the combination of the frame, with a hopper, of a shoe pivoted beneath the hopper, a seed chute arranged adjacent to the shoe, a driving-wheel journaled on the frame and having a series of ribs or flanges thereon, and a knocker-iron secured at one end to the shoe and having a pivoted angle-bar at its other end which engages the ribs or flanges on the driving wheel for imparting an oscillating movement through the knocker-iron to the pivoted shoe, while the planter moves forward, substantially as described.

5. In a convertible seed planter and fertilizer distributer, the combination of a main frame, of a supplemental frame secured thereon, of a hopper supported in said supplemental frame, capable of vertical adjustment to increase or diminish the seed supply, an agitator within the hopper, a driving-wheel, and a belt or chain connecting the agitator with the driving-wheel, the driving wheel being adjustably secured on the main frame, to permit the loosening or tightening of the said chain or belt, substantially as and for the purpose described.

6. In a convertible seed planter and fertilizer distributer the combination of a frame, of a hopper supported thereon, capable of vertical adjustment to increase or diminish the seed supply, an agitator within the hopper, a shoe pivoted beneath the hopper, a seed chute adjacent to the shoe, having a detachable corrugated plate therein, a driving wheel, a belt or chain connecting the agitator with the driving wheel, the driving wheel being adjustably secured on the frame to permit the loosening or tightening of the chain or belt, and a connection between the driving wheel and the pivoted shoe whereby a reciprocating movement is imparted to the latter, substantially as described

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**502,893.** MOLD FOR MAKING PLUMBERS' JOINTS. FREDERICK TYLER, Nottingham, England. Filed Jan. 9, 1893. Serial No. 457,808. (No model.) Patented in Belgium Jan. 23, 1891, No. 98,035; in England Mar. 10, 1891, No. 4,300; in France Jan. 21, 1892, No. 218,838, and in Germany Jan. 23, 1892, No. 64,551.



*Claim.*—1. In a mold for making plumbers' branch or T-joints, the combination of the upper part *a*, and the lower part *b*, pivoted together, corresponding semi-circular recesses *d*, *d*, formed in said parts and adapted to receive a piping, corresponding semi-circular recesses *h*, *h*, adapted to receive a branch or connection extending at an angle to the said piping, and enlarged recesses *e*, *e*, also formed in said parts *a*, and *b*, and adapted to receive molten metal, as described for the purpose specified.

2. A mold for making plumbers' branch or T joints formed in two parts *a* and *b*, with recesses *d d* for the pipe, recess *h* for the branch or connection and enlarged recess *e*, provided with runners *g* substantially as described.

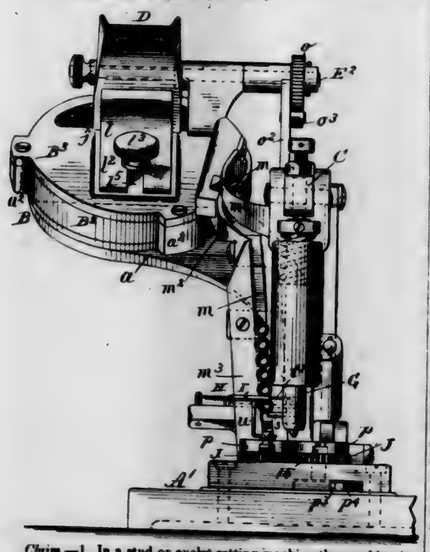
3. In a mold for making plumbers' branch or T-joints, the combination of the upper part *a*, and lower part *b*, provided with corresponding recesses to receive a piping, a detachable part *f*, carried by the upper part, a semi-circular recess in the lower side of said part *f*

adapted to cooperate with a like recess of the part *b* to receive a branch or connection extending at an angle to the said piping, corresponding enlarged recesses in the parts *a*, *b*, and adapted to receive molten metal, and runners communicating with the said enlarged recesses, the inner surface of the part *f*, meeting the part *a*, at the point where the said runners are located, for the purpose specified

4. In a mold for making plumbers' branch or T-joints, the combination of the upper part *a*, and the lower part *b*, pivoted together, corresponding semi-circular recesses formed in said parts and adapted to receive a piping, corresponding semi-circular recesses adapted to receive a branch or connection extending at an angle to said piping, enlarged recesses in the parts *a*, *b*, adapted to receive molten metal, runners in the part *a*, communicating with said enlarged recesses, and a hollow extension *a'* on part, *a*, forming a cup or box in communication with the runners, for the purpose specified.

5. In a mold for making plumbers' branch or T-joints, the combination of the upper part *a*, and lower part *b*, hinged together, corresponding recesses in said parts to receive a piping, a detachable part *f*, carried by the part *a*, a detachable part *i*, carried by the part *b*, corresponding semi-circular recesses in said detachable parts and adapted to receive a branch or connection extending at an angle to the said piping, and enlarged recesses in the parts *a*, *b*, adapted to receive molten metal, for the purpose specified.

## 502,894. SETTING LACING-STUDS, EYELETS, &c. CHARLES E. VAN NORMAN, Springfield, Mass. Filed Feb. 29, 1892. Renewed Feb. 2, 1893. Serial No. 460,784. (No model.)



*Claim.*—1. In a stud or eyelet-setting machine the combination with a dish-shaped hopper having a circular groove in its bottom near its circular wall, of an arc-formed flange or rib at the top having its lower edge a short distance above the inner boundary of the groove, and an outlet and guide way leading from adjacent one end of said rib, substantially as described.

2. In a stud or eyelet-setting machine the combination with a rotatable dish-shaped hopper having in its bottom near its circular wall concentric grooves *f f*, separated by the rib, *g*, of a stationary arc formed rib or flange having its lower edge a short distance above the inner boundary of the groove and an outlet way leading from adjacent one end of said arc-formed flange, substantially as described.

3. In a stud or eyelet-setting machine the combination with a dish-shaped hopper mounted for rotation with its bottom inclined and having in its bottom a circular groove, of a fixed arc-formed rib or flange having its lower edge a short distance above and substantially parallel with the inner boundary of the groove, and a guideway terminating at and leading outwardly from adjacent one end of said flange, and means substantially as described for imparting an intermittent rotary motion to the hopper, substantially as and for the purpose set forth.

4. In a stud or eyelet-setting machine the combination with a rotatable dish-shaped hopper having in its bottom a circular groove, of a fixed plate or lid above the rotatable hopper having an opening and provided with the depending rib or flange, and a depending guard as *i*, and a guide-way terminating adjacent the rib and leading outwardly from the hopper, substantially as and for the purposes set forth.

5. In a stud or eyelet-setting machine the combination with a plate or support, *a*, having the upwardly extended border lugs, $a^3$, of a dish shaped hopper, having a depending shaft projected through said support and provided with a ratcheted wheel, and having in its bottom a circular groove near its side wall, a stationary arc-formed rib above and at a short distance from the inner border of the said groove, a guide way leading from adjacent the end of the rib out from the hopper, and a working pawl mounted for a reciprocatory movement on the said support and means for imparting its movement thereto, substantially as described.

6. In a stud or eyelet setting machine the combination with a rotary stud arranging and delivering hopper having an opening therein and a conveyer way leading therefrom for the properly arranged studs, of a stud receptacle and chute mounted with its bottom inclined for delivering into the hopper opening and a rotatable brush or gate at the delivery end of said chute and having its circumferential portions at a slight distance above the chute bottom, and means substantially as described for imparting a rotary movement to the brush or gate substantially as described.

7. In a stud or eyelet setting machine the combination with a rotary hopper having an opening thereinto, of a stud receptacle and chute mounted with its inclined bottom for delivery into the hopper opening, and a rotatable brush or gate at the delivery end of said chute having its circumferential portion at a slight distance above the chute bottom, means substantially as described for imparting the rotary movement to the brush or gate and means substantially as described for confining the said receptacle-chute with its bottom in variable adjusted relations to the brush axis, substantially as and for the purpose set forth.

8. In a stud or eyelet setting machine the combination with a hopper having an entrance opening through its top, of the angular bracket, *l*, with the slotted member, *l'*, the chute or receptacle, D, having its bottom secured to the other member of said angular bracket, the set screw, *l'*, and the rotary brush, all arranged substantially as shown.

9. In a stud or eyelet setting machine the combination with a hopper having an upper entrance opening and an inclined receptacle and chute above the hopper, having an exit opening at its lower end for delivering into the hopper, of a shaft having a brush or rotary gate supported thereby within the chute near its bottom at its delivery end, and a ratchet wheel on said shaft a swinging operating lever, C, and a pawl and carrier therefor connected to said operating lever, substantially as described.

10. In a lacing stud setting machine the combination with stud supporting and centering devices and a reciprocating setting tool and a lever for operating the tool, of a suitable fixed support having thereon a rotatable dish-shaped hopper with a depending shaft or stud having thereon a ratchet wheel, and said hopper having in its bottom a circular groove near its side wall, a stationary arc shaped rib or flange having its lower edge at a short distance above the inner border of said groove a slotted way having one end adjacent the end of the flange and thence leading to the setting devices, a reciprocating pawl carrier movably supported on said hopper support and having the pawl, the angular lever engaging said pawl carrier and having the slotted arm, and a member on said operating lever which engages said arm, substantially as described.

11. In a stud or eyelet-setting machine the combination with a slotted guide way, of two fingers having their ends the one above the other, and said fingers extended from their superposed ends in opposite directions and adapted for concurrent reciprocatory movements adjacent and across the guiding direction of said way, and means substantially as described for imparting the movements to said fingers all whereby studs coming down the way will be released for delivery one at a time, substantially as described.

12. In a stud or eyelet-setting machine the combination with a slotted way of a plate pivotally mounted having two projecting fingers located with their ends the one above the other, the said fingers having a direction from their superposed ends in opposite directions, and an operating cam having an actuating engagement with said plate, substantially as described.

13. In a stud setting machine the combination with a slotted stud guide way of the plate, *t*, having the fingers, *r* and *s*, with the end of one above that of the other, said fingers being from said ends oppositely extended and the plate having the lug, *t'*, and the retracting spring, the slide bar, *l'*, having the cam surface, *l''*, and an operating lever connected to the cam slide-bar substantially as described and shown.

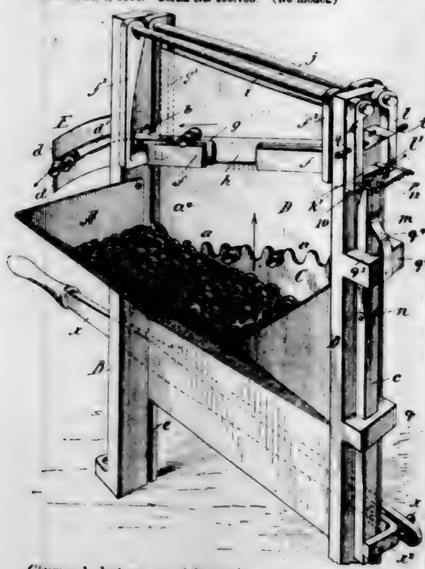
14. In a stud or eyelet setting machine, the combination with a stud conveyer way, of a pair of horizontal disks mounted for rotation, edge to edge, and both having uniformly spaced peripheral depressions, and one of said disks having its periphery in proximity to the terminal of the conveyer way, and means substantially as described, for imparting intermittent rotary movements to the disks, whereby a peripheral depression of one of said disks will periodically come adjacent such conveyer terminal, and whereby depressions of both disks will successively come into matching relations to constitute a stud surrounding and retaining pocket, a setting device, over, and in alignment with, the center of the matching disk depressions, and an arc formed surface slightly separated from the periphery of the receiving disk and extended from adjacent its stud receiving position to adjacent the stud setting position, substantially as described.

15. In a stud or eyelet setting machine the combination with a conveyer way for the studs having a downward inclination and having its direction at its terminal deflected to deliver the studs axially vertical, of a horizontal disk having in its periphery a series of stud receiving pockets, another horizontal disk geared to the first named disk, and also having a series of peripheral depressions, a curved surface extending from adjacent the terminal of the conveyer way around the periphery of the receiving disk and in the direction of its movement, means for imparting intermittent rotational movements to the disks, and a finger and actuating devices therefor, operating to insure, after the delivery of a stud from the conveyer, the positive placing and retention thereof in the pocket, substantially as described.

16. In a stud setting machine the combination with a conveyer way and a setting mechanism of a pair of horizontal edge-contacting and gear-connected disks having series of peripheral pockets, and one having an axially extended stud with a ratchet wheel thereon, a sliding bar having thereon a pawl engaging the ratchet wheel, a wheel having a crank pin, and an operating lever having a connecting rod secured thereto and to a cranked portion of said wheel, substantially as described.



## 502,895. HOPPER AND DELIVERY MECHANISM FOR STUDS. CHARLES E. VAN NORMAN, Springfield, Mass. Filed May 9, 1892. Renewed Feb. 2, 1893. Serial No. 460,785. (No model.)



*Claim.*—1. In hopper and delivering mechanism for lacing-studs or eyelets, the combination with a hopper, of a vertically reciprocatory plate having its upper edge inclined and serrated, playing through the hopper chamber, a track-way for the studs above the hopper, consisting of inclined and normally slightly separated bars which range in parallelism next to and at either side of the plane of movement of the plate, and means for imparting separating movements to said bars, substantially as described.

2. In hopper and delivering mechanism for lacing-studs, the combination with a hopper of a vertically reciprocatory plate, having its upper edge serrated, playing through the hopper chamber, a track-way for the studs above the hopper consisting of normally slightly separated bars which range in parallelism next to and at either side of the plane of movement of the plate, rock-shafts carrying arms on which said bars are supported, and also having arms provided with cam-impingement portions, means for reciprocating the serrated plate, and a bar adapted to be reciprocated, and, by impingement against said portions of the rock-shaft arms, to effect the separation of the track bars, substantially as described.

3. In a hopper and delivering mechanism for lacing-studs, the combination with a hopper, of a vertically reciprocatory serrated plate having a movement through the hopper chamber, separated bars, *f*, *g*, and the carrying arms, $f^2$, $g^2$, the rock-shafts, *i* and *j*, the arms *k* and *l*, fixed thereon having cam-impingement members, $k^2$ and $l^2$, the bar, *m*, having a movement between said members, $k^2$, $l^2$, and adapted for the swinging movement of withdrawal from between said members, and a spring for bringing the arms, *k* and *l*, together, substantially as and for the purposes described.

4. In hopper and delivering mechanism for lacing-studs, in combination, a hopper, a vertically reciprocatory, serrated plate, the rock-shafts, *i* and *j*, having the arms, $f^2$, $g^2$, supporting the track bars, *f*, *g*, and the arms, *k* and *l*, having cam-impingment portions, an abutment piece between said arms, and screws adjustable to limit the degree of approach of said arms, and the spreading bar, *m*, substantially as described.

5. In hopper and delivering mechanism for lacing studs, in combination, a hopper, a vertically reciprocatory plate, the rock-shafts, *i* and *j*, having the arms, $f^2$, $g^2$, carrying the track bars, *f*, *g*, and the arms, *k* and *l*, having cam-impingement portions, and a retracting spring for each thereof, the abutment piece, *o*, and the slide bar, *c*, having the bar, *m*, pivoted thereto, and the spring, $d^3$, guiding devices for said bars, and means for imparting reciprocatory movements to the serrated plate and said bars, substantially as and for the purposes set forth.

6. In hopper and delivering mechanism for lacing-studs, the standards, B, B, the hopper, A, the serrated plate, C, adapted for a reciprocatory movement through the hopper, the cam-operating bar *c*, movable on the side of one of the standards and the angle-piece connecting said bar and the serrated plate, and a reciprocating device connected to said angle piece, substantially as described.

7. In hopper and delivering mechanism for lacing-studs, in combination, the standards, B, B, one thereof having the aperture, *b*, through it, and the feed-way, E, leading outwardly from said aperture, the plate C, with the inclined and serrated upper edge, and the separable inclined track-bars, *f* and *g*, at each side of and normally adjacent the said plate, and leading to said aperture, substantially as described.

8. In hopper and delivering mechanism for lacing-studs, in combination, the standards, B, B, one thereof having the aperture, *b*, through it, and the feed-way, E, leading outwardly from said aperture, the plate, C, with the inclined and serrated upper edge, and said plate, having its edge at the end toward said aperture formed with the downwardly and inwardly inclined portion, $a^4$, and the separable inclined track-bars, *f* and *g*, at each side of and normally adjacent the said plate, and leading to said aperture, substantially as described.

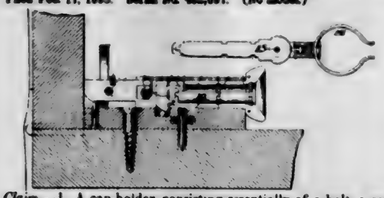
## 502,896. DEVICE FOR AMUSEMENT AND FOR ADVERTISING. JAMES S. VINE, Cincinnati, Ohio, assignor of one-half to the Strobridge Lithographic Company, same place. Filed June 13, 1892. Serial No. 436,494. (No model.)



*Claim.*—1. A blank for an advertising device consisting of a rectangular blank of foldable material having separated printed or painted portions representing the exterior face of a creature and the interior of the mouth of the same, the said blank being capable of being folded to bring together the portions representing the creature's face concealing the portion representing the interior of the mouth but permitting the opening of the mouth, substantially as described.

2. An advertising device consisting of a series of pockets of foldable material capable of lying closely together, said pockets being open but connected at the back and closed but separated at the front, the exterior of said pockets being printed or painted to represent a creature's face when the pockets are brought together, and the adjacent sides of the pockets being provided with advertising matter, whereby fingers can be inserted into the said pockets to separate them at the front to resemble the opening of the mouth of the creature to display the advertising matter, substantially as described.

**502,897. CAN-HOLDER.** ARTHUR L. WHITTEMORE, Boston, Mass. Filed Feb. 17, 1893. Serial No. 462,697. (No model.)



*Claim.*—1. A can-holder consisting essentially of a bolt, a case therefor, a slot-closer to co-operate with the inner end of the bolt when protruded, and a connection under control of the bolt to retain a can, combined with a locking device concealed within the case for and to maintain the bolt protruded, a key to act upon said device to unlock the bolt, and a retaining device to connect the key and bolt while the bolt is unlocked, movement of the key at such time moving the bolt longitudinally in the case, substantially as described.

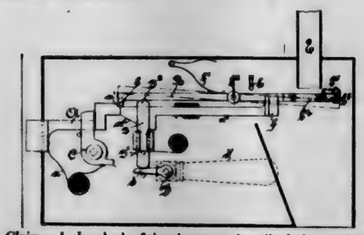
2. A can-holder consisting essentially of a bolt, a case in which it is movable, and a slot-closer, combined with a connection under the control of the bolt to retain a can, the inner end of the bolt being adapted to co-operate with the slot-closer to retain the connection in its locked condition, and with a locking dog for the bolt and a key to release said dog to thus enable the bolt to be withdrawn by the holder of the key, substantially as described.

3. A can-holder consisting essentially of a bolt having a key receiving opening, a retaining device therein, a locking dog for the bolt, a case in which said bolt moves, and a connection under the control of the bolt to retain the can, the inner end of the bolt being adapted to abut against or terminate next a movable part of a building and be held in such position by the dog, the movement of said part to open it exposing the inner end of the bolt for the removal of the can from the said connection, combined with a key adapted to enter the opening in the bolt to release the dog, the retaining device holding the key in place while the bolt is unlocked—substantially as described.

4. In a can-holder, a case having two notches, combined with a bolt provided with a key receiving opening, and a spring actuated dog adapted to be moved against the action of the spring by a key inserted in said opening, one of said notches being engaged by the dog when the bolt is in operative condition, the other notch engaging the dog when the bolt has been unlocked, to prevent the withdrawal thereof from the case, substantially as described.

5. A can-holder, consisting of a case, a bolt adapted to slide therein and provided with a spring-actuated dog, a flexible connection connected with said case and adapted to co-operate with the end of the bolt, a key consisting of a blade provided with a pivoted head, and a locking device intermediate the handle and blade to enable the angle of the blade to be changed with relation to the handle, substantially as described.

**502,898. COIN-FREED LATCH.** FRIEDRICH E. ZECHERLIG, Dresden, Germany, assignor to August Karl Maria Hermann Eyler, same place. Filed Mar. 6, 1893. Serial No. 464,839. (No model.) Patented in Germany Jan. 25, 1891, No. 60,537, and July 8, 1891, No. 62,436; in France Mar. 28, 1891, No. 212,404, and in Austria-Hungary Sept. 15, 1891, No. 15,636 and No. 36,764.



*Claim.*—1. In a lock of the character described, the combination, of a latch or bolt, a lever adapted to engage with the same to lock it when projected outwardly, and to release the said latch when tilted, an arm and an operating handle therefor adapted to be operated to withdraw the latch when released, and a second arm and an operating handle for the same also adapted to be operated to tilt the lever and withdraw the latch, as and for the purpose specified.

2. In a lock of the character described, the combination of a sliding latch or bolt, a pivoted locking lever adapted to engage at one end the said latch to lock it when projected outwardly, and at its opposite end adapted to be acted upon by a coin to release the latch, an oscillating arm mounted upon one end of a spindle, an operating handle mounted upon the other end of said spindle and adapted to operate the said arm to cause it to engage the latch when released by the lever and withdraw it, a second arm mounted upon a spindle, and an operating handle mounted also upon said spindle and adapted to cause the said second arm to tilt the lever and withdraw the latch inwardly, as described.

3. In a lock of the character described, the combination of a latch or bolt, a lever adapted to engage at one end said latch to lock it when projected outwardly, said lever being also adapted to release the latch when acted upon by a coin an incline on said latch, a sliding bolt or arm also provided with an incline adapted to bear against the incline on the latch, said sliding bolt bearing at its upper end against the lever, and an oscillating arm adapted to operate the said sliding bolt to cause it first to tilt the lever and release the latch, and then to retract the latter, as and for the purpose specified.

4. In a lock of the character described, the combination of a latch or bolt, a locking lever adapted to engage at one end with the latch to lock it when projected outwardly, an expansible coin-receptacle at the other end of the lever, means for tilting the locking lever to free the latch and for withdrawing the same inwardly, and means carried by the latch adapted to expand the coin receptacle to release a coin when said latch is withdrawn as described, for the purpose specified.

5. In a lock of the character described, the combination with a sliding latch or bolt, of a locking lever adapted to engage at one end the latch to lock it when projected outwardly, said lever being provided at its opposite end with an outwardly-curved integral arm, a like arm pivoted to the same, a spring adapted to maintain said arms normally together, a wedge on the rear end of the latch adapted to spread the arms apart when the latch is withdrawn inwardly, and means for operating the latch when released by the locking lever in the manner described, for the purpose specified.

6. In a lock of the character described, the combination with a sliding latch or bolt provided with a shoulder, of a locking lever adapted to engage at one end with said shoulder to lock the latch when projected outwardly, a coin receptacle carried by the said lever at its other end, a vertically-arranged sliding bolt bearing at its upper end upon the locking lever, an inclined surface on the latch, an inclined surface on the sliding bolt adapted to engage with the incline of the latch, an arm mounted upon a spindle and adapted to raise the sliding bolt, an operating handle also mounted upon said spindle a second arm mounted upon a spindle and adapted to engage the latch to withdraw the same when released by the locking lever, and an operating handle also mounted on the latter spindle, as and for the purpose specified.

**502,899. HEATER FOR INCUBATORS.** ELMER P. ALEXANDER, Youngstown, Pa. Filed Dec. 31, 1892. Serial No. 456,911. (No model.)



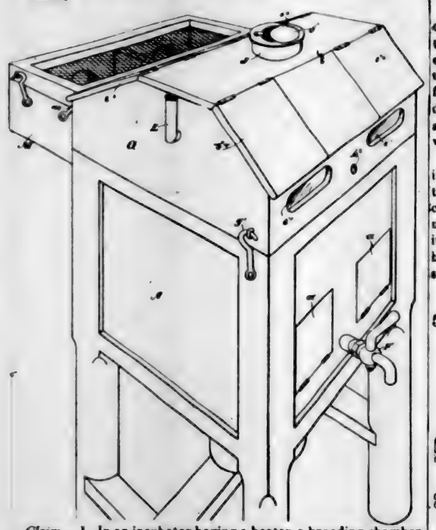
*Claim.*—1. The combination in an incubator, of the parallel series of the horizontal connected water coils arranged one above the other within said incubator, the adjacent heater having an inner conical water chamber provided with separate communicating water spaces, and an outer inclosing conical heat jacket, and water circulating pipes connected with the separate water spaces of the heater and with the upper and lowermost heating coils, respectively, substantially as set forth.

2. The combination in an incubator, of a heater comprising an inner conical water chamber having a bottom hot water space, a vertical heater tube connected with said hot water space and passing through the top of said water chamber, a larger conical heat jacket surrounding the entire conical water chamber, and hot water circulating pipes, substantially as set forth.

3. A heater comprising a conical water chamber having a closed base, a supplemental perforated bottom arranged within the water chamber above the closed base, a vertical heater tube connected at its lower end to the perforated bottom and meeting the apex of the water chamber in a closed joint, said tube being provided with perforations near its upper end, a larger conical heat jacket entirely surrounding the conical water chamber and provided with a downwardly tapered base portion terminating in a neck to receive the burner of a lamp, and hot water circulating pipes connected with the upper end of the vertical heater tube and with the water chamber directly over the perforated bottom therein, substantially as set forth.



**502,900. COMBINED INCUBATOR AND BROODER.** JAMES W. ATKINSON, San José, Cal. Filed Apr. 17, 1893. Serial No. 470,723. (No model.)



*Claim.*—1. In an incubator having a heater, a brooding chamber and a passage contiguous and exposed to said heater and communicating with said brooding chamber and with the outer air, whereby fresh air is heated and supplied to the brooding chamber, substantially as herein described.

2. In an incubator having a heater, a brooding chamber, a passage contiguous and exposed to said heater and communicating with the brooding chamber and with the outer air for supplying warm fresh air to the chamber, and an outlet from said brooding chamber for the foul air, substantially as herein described.

3. In an incubator, a brooding chamber in the upper portion, an underlying heater for furnishing the necessary hatching heat, and a passage connecting said chamber with the outer air, said passage being exposed in its course to the heater whereby fresh warm air is supplied to the brooding chamber, substantially as herein described.

4. In an incubator, a brooding chamber in the upper portion, an underlying heater, a chamber directly above and exposed to said heater, a passage connecting said chamber with the outer air and a passage connecting said chamber with the brooding chamber, substantially as herein described.

5. In an incubator, a brooding chamber in the upper portion, an underlying heater, a chamber directly above and exposed to said heater, a passage connecting said chamber with the outer air, a passage connecting said chamber with the brooding chamber, and an outlet passage from said brooding chamber, substantially as herein described.

6. In an incubator, the combination of its frame having an egg drawer below, and a brooding chamber above, an intervening heater, a chamber directly above and exposed to said heater, a passage connecting said chamber with the outer air and a passage connecting said chamber with the brooding chamber, substantially as herein described.

7. In an incubator, having a suitable frame with contained heater, the brooding chambers formed in the cover of the frame above said heater, the chambers $N$ in said cover exposed to the heater, the passages connecting said chambers with the outer air and the pipes connecting them with the brooding chambers, substantially as herein described.

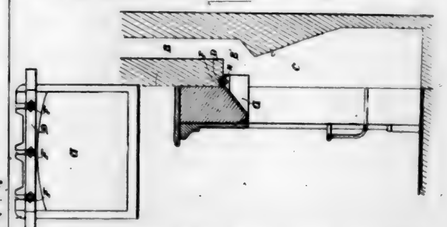
8. In an incubator, the combination of the frame having a cover, and a contained heater, with a chimney flue passing up through the cover, the brooding chambers formed in the ends of the cover above the heater, the chambers in the cover exposed to the heater, the passages connecting said chambers with the outer air, and the pipes adjacent to the chimney flue of the heater and connecting said chambers with the brooding chambers, substantially as herein described.

9. In an incubator, the combination of the frame having the egg drawers below and the cover above adapted to close and open its top, the heater seated loosely in the frame under the cover and above the egg drawers, the heating drum of the heater passing down through the base of the frame and projecting above the heater, and the chimney flue in the cover fitting over the projecting upper end of the heating drum, substantially as herein described.

10. In an incubator, the combination of the frame having the egg drawers below and the cover above adapted to close and open its top, the heater seated loosely in the frame under the cover and above the egg drawers, the heating drum of the heater passing down through the base of the frame and projecting above the heater, the chimney flue in the cover fitting over the projecting upper end of the heating drum, the circulatory pipes of the heater and drum and the removable drain faucet connected with one of said pipes and extending outwardly through the frame, substantially as herein described.

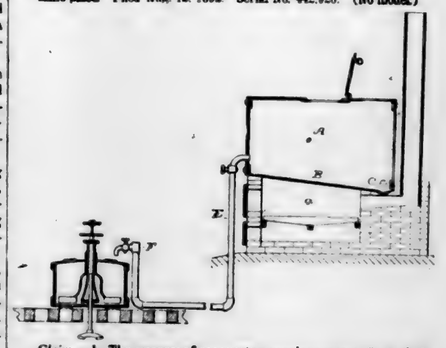
11. A combined incubator and brooder consisting of a frame having suitable egg receivers in its lower portion, and a heater above them freely fitted therein, whereby it can be easily removed, a hinged cover or lid for said frame adapted to open its top to permit the removal of the heater, said cover having brooding chambers formed in it above the heater, and passages in said cover or lid exposed to the heater and connecting the brooding chambers with the outer air, substantially as herein described.

**502,901. CHIMNEY.** LEONARD E. CLAWSON, San Francisco, Cal. Filed Apr. 17, 1893. Serial No. 470,724. (No model.)



*Claim.*—In a chimney, the flue, fireplace opening, and connection with the flue, the arched bar set in the top of the flue connection having bolts projecting downwardly therefrom, an arched and inclined shell fitting against the lower side of the arch bar having slots made in it whereby it is adjustable upon the bolts, and nuts whereby it is secured in place, said shell forming a bond and connection between the chimney and mantel and preventing the separation of the two, substantially as herein described.

**502,902. AMALGAMATION OF PRECIOUS METALS.** GEORGE R. EVANS, San Francisco, Cal., assignor of one-half to Benedict Zehnder, same place. Filed Aug. 12, 1892. Serial No. 442,926. (No model.)



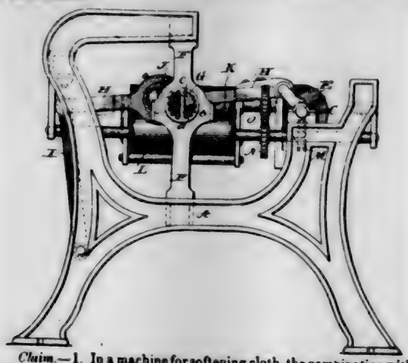
*Claim.*—1. The process of recovering precious metals from their ores, consisting in introducing a saponaceous compound into the amalgamating pans with the pulp and mercury, substantially as herein described.

2. The process of recovering precious metals from their ores consisting in introducing into the amalgamating pans with the pulp and mercury the compound consisting of soda, lime and an oleaginous substance, substantially as herein described.

3. The apparatus consisting of a tank having an inclined bottom with a depression and discharge cock at one side, a furnace whereby the contents of the tank are heated, a pipe leading from the side of the tank opposite the depression and having branch discharge pipes and cocks leading to the amalgamating pans whereby the contents of the tank may be drawn off and delivered to the pans, substantially as herein described.

## 502,903. MACHINE FOR SOFTENING CLOTH. John W. Fries, Salem, N. C. Filed Mar. 18, 1893. Serial No. 466,639. (No model.)

*Brief.*—The cloth is softened by being passed through the stationary dies G G and the reciprocating die J, located between the stationary dies. The cloth then passes between the rollers K and L out of the machine.



*Claim.*—1. In a machine for softening cloth, the combination with two dies each having an opening with rounded or blunt inwardly-projecting teeth; of means for reciprocating one of said dies relatively to the other.

2. In a machine for softening cloth, the combination with two dies each comprising a toothed ring *a* and a toothed bar *c*; of means for reciprocating one of said dies relatively to the other.

3. In combination with the posts F F having the dies G, and the reciprocating bar H having die J; the guide roller *d*; the feed rollers K and L geared together; a shaft B; a crank D thereon for imparting motion to bar H; and a worm C also secured to the shaft B and engaging a worm wheel M on the shaft of roller L.

4. In combination with the fixed and movable dies, and the guide roller; the geared feed rollers K and L; and the roller P arranged in proximity to the feed rollers.

## 502,904. ATOMIZER. Isaac G. Gurney, Butler, N. J., assignor to the Butler Hard Rubber Company, New York, N. Y. Filed Jan. 13, 1893. Serial No. 458,754. (No model.)



*Claim.*—1. The combination of an air pipe, an adjustable sleeve located therein having a thumb-piece, and a scale-piece upon the air tube.

2. The combination of a liquid tube, an air tube concentric with the liquid tube, an air supply tube leading thereto, and a plug or stop-sleeve slipped upon the liquid tube above the air-supply tube, adapted to close air-tight the passage through the air tube.

3. The combination of a liquid tube, an air tube, a supply tube leading to the latter, a stop in the air tube above said supply tube, and a channel communicating with said air tube above and below the stop.

4. The combination of a liquid tube, an air tube a supply tube leading to the latter, a stop in the air tube above said supply tube, a channel communicating with said air tube above and below the stop, and a valve in said channel.

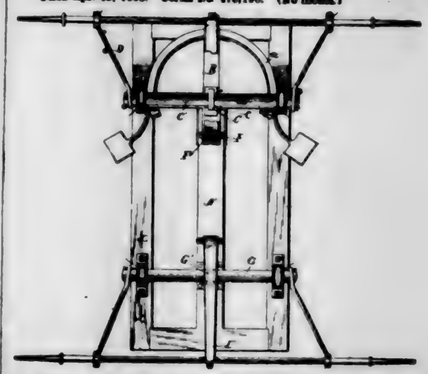
5. The combination of a liquid tube, an air tube concentric with the liquid tube throughout the length of the air tube, a bushing or sleeve within the air tube concentric with both the liquid and air tube, and having a port therein, and a channel leading from the air tube to said port.

6. The combination of a liquid tube, an air tube, having an air-supply connected thereto, and a sleeve in the latter having a lengthwise movement for graduating the connection between the air and supply tubes.

7. The combination with a liquid tube, an air and an air-supply tube, of a scale upon the supply tube, a rotary valve in the supply tube, and a pointer or index upon the valve adapted to traverse the scale.

8. The combination of an air-supply tube, a liquid tube, an air tube, a bushing or sleeve within the air tube and outside the liquid tube, and concentric with both the air and liquid tubes, said bushing having an axial opening therethrough and a lateral opening therein, the latter communicating with the air supply tube.

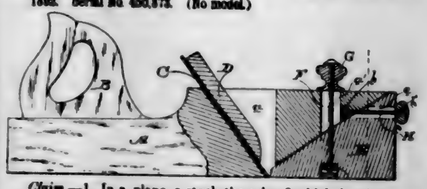
## 502,905. VEHICLE-GEAR. Christian Hansen, Rockford, Ill. Filed Apr. 13, 1893. Serial No. 470,190. (No model.)



*Claim.*—1. In a vehicle gear, the combination of an axle, a pair of rods connected to the axle, a torsion spring extending parallel with the axle and fixed at its middle to the vehicle body and connected at its ends to the rods of the axle, and a leaf-spring fixed to the vehicle body and extending longitudinally across the torsion spring to a point directly under the axle, the axle and free end of the leaf spring being connected, substantially as described.

2. In a vehicle gear, the combination of an axle, a pair of rods connected to the axle, a torsion-spring extending parallel with the axle and fixed at its middle to the vehicle body, the end of said spring being connected to the rods of the axle, a bearing embracing each end of the torsion spring whereby the movements of said ends are limited, the bearing having its inner surface provided with a rubber lining for preventing friction, and a leaf-spring fixed to the vehicle body and extending longitudinally across the torsion spring to a point directly under the axle, the axle and free end of the leaf-spring being connected, substantially as described.

## 502,906. PLANE. Louis Hardy, Yuba City, Cal. Filed Nov. 3, 1892. Serial No. 450,873. (No model.)



*Claim.*—1. In a plane, a stock the sole of which in advance of the main-body-portion and the bit-iron is vertically and longitudinally adjustable with respect to the main body-portion and bit-iron the adjustment in one direction causing the adjustment in the other direction, whereby the depth of the cut and capacity of the throat are simultaneously increased, substantially as herein described.

2. In a plane, a flat soled stock having its forward end undercut on an upward incline in combination with a movable front piece forming the sole of the stock having a downward inclined upper surface in advance of the bit-iron, said piece having a downward inclined upper surface fitted under the inclined front of the stock, whereby it may move forwardly and upwardly to increase the exposure of the cutting edge of the iron and the capacity of the throat, substantially as herein described.

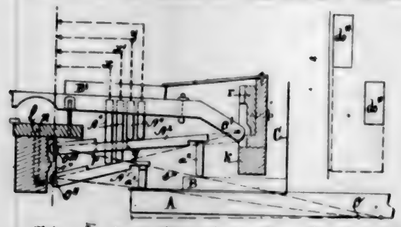


3. In a plane, a flat-soled stock having its forward end undercut on an upward incline, in combination with a movable front piece forming the sole of the stock in advance of the bit-iron, said piece having a downward inclined upper surface fitted under the inclined front of the stock whereby it may move forwardly and upwardly to increase the exposure of the cutting edge of the iron and the capacity of the throat, and suitable bolts connecting said front piece to the front of the stock, substantially as herein described.

4. In a plane, the combination of the flat-soled stock with its upward inclined undercut front, the flat-soled movable front piece E of the stock having a downward inclined upper surface fitted to the inclined undercut front, and the securing bolt F fitted to said piece and movable in the front of the stock whereby the depth of the cut and the capacity of the throat are simultaneously increased, substantially as herein described.

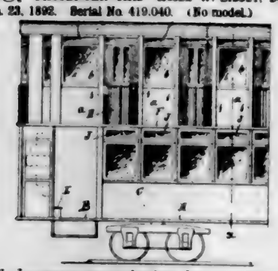
5. In a plane, the combination of a flat sole stock with its upward inclined undercut front, the flat sole movable front piece E of the stock having a downward inclined upper surface fitted to the undercut front the securing bolt F fitted to said piece and movable in the front of the stock, and the horizontal stay bolt F fitted to the front of the stock and piece E, whereby the depth of the cut and the capacity of the throat may be simultaneously increased, substantially as set forth.

## 502,907. TRANSPOSING DEVICE FOR PIANOS. Louis A. Ivon, Paris, France. Filed Jan. 21, 1893. Serial No. 459,908. (No model.)



*Claim.*—In a transposing mechanism, the combination with front and rear fixed and sliding rails, of a key-board comprising white and black keys pivoted to the rear sliding rail, a series of levers pivoted at their forward ends and provided at their rear ends with pins adapted to depress the white keys of the instrument a second series of levers pivoted at their forward ends and provided at their rear ends with pins adapted to depress the black keys of the instrument, pins carried by the keys of the transposer and adapted to operate the described two series of levers, a series of perforations in the front fixed rail, and a pin carried by the front sliding rail, adapted to engage any of said perforations, in the manner and for the purpose specified.

## 502,908. PASSENGER-CAR. Hosea W. Libbey, Boston, Mass. Filed Jan. 23, 1892. Serial No. 419,040. (No model.)



*Claim.*—1. In a passenger car having a lower and upper compartment, the side and end walls of the upper compartment having permanently closed portions, and open spaces, doors each consisting of a half solid portion and the other half consisting of slats so that the slatted portion will be turned to overlap the solid portion when the doors are open said doors sliding within the closed portions whereby the open spaces may be closed substantially as set forth.

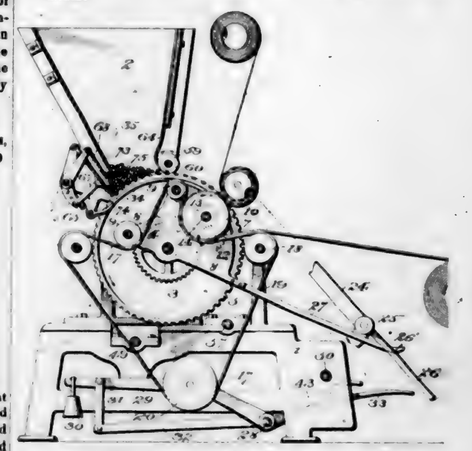
2. In a passenger car having a lower and upper compartment, the side walls of the upper compartment having permanently closed portions and open spaces, sliding doors whereby said open spaces may be closed, the floor at each open space projecting beyond the side in a circular form and fitted with a guard rail substantially as set forth.

3. In a passenger car having a lower and upper compartment, two spiral stairways each starting from the outer side of the platform, and near the top terminating in one common step in the center of the upper floor, substantially as set forth.

4. In a passenger car having a lower and upper compartment and two spiral stairways as described; a driver's compartment between the said spiral stairways substantially as set forth.

5. In a passenger car having a lower and upper compartment, seats arranged transversely in the central portion of the upper compartment and a foot way around the entire upper compartment said upper compartment being inclosed by walls consisting of solid and open portions, said open portions being closed by sliding doors adapted to turn so that the end will fold over the other portion, thereby occupying but a small space substantially as set forth.

## 502,909. MACHINE FOR BUNCHING MATCH-STICKS. Martin Moul, Hanover, Pa. Filed Feb. 25, 1893. Serial No. 463,721. (No model.)



*Claim.*—1. In a machine for bunching match-sticks, a hopper, a two-part feed-roller, a rocking frame journaled within the feed-roller and bearing a friction-surface, and a swinging frame carrying a bunching-spool adapted to contact with the said surface.

2. In a machine for bunching match-sticks, a hopper, a two-part feed-roller, a rocking frame journaled on the feed-roller bearing and carrying a friction-roller, and a swinging frame carrying a bunching-spool coacting with the friction roller.

3. In a machine for bunching match-sticks, a hopper, a serrated feed-roller mounted below the same, a friction-roller within the feed-roller and a bunching-spool adapted to co act with the said friction-roller.

4. In a machine for bunching match-sticks, a hopper, a serrated feed-roller mounted below the same, a friction-roller within the feed-roller, a friction-belt co-acting with the friction-roller, and a bunching-spool adapted to co-act with the latter roller.

5. In a machine for bunching match-sticks, a hopper, a serrated feed-roller mounted below the same, a positively-actuated friction-roller within the feed-roller, a friction-belt co-acting with the friction-roller, and a bunching-spool co-acting with the latter roller

6. In a machine for bunching match-sticks, a hopper, a serrated feed-roller mounted below the same, a positively-actuated friction-roller within the feed-roller, a frictionally-driven belt co-acting with the friction-roller, and a bunching-spool adapted to co-act with the latter roller.

7. In a machine for bunching match-sticks, a hopper, a feed-roller mounted below the same, a rocking-frame journaled within the said roller and carrying a friction-roller, a swinging frame carrying a bunching-spool adapted to co-act with the latter roller, and a tension-belt co-acting with the friction-roller.

8. In a machine for bunching match-sticks, the combination with a hopper and a serrated feed-roller journaled below the same, of a swinging frame carrying a bunching-spool, a rocking-frame journaled within the feed-roller and carrying a friction-roller and mechanism for imparting motion thereto, and a tension-belt in contact with the friction-roller.

9. In a machine for bunching match-sticks, the combination with a feed-roller and a drive-belt adapted through intermediate mechanism to impart motion thereto, of a swinging frame carrying a bunching-spool, a rocking-frame journaled within the feed-roller and carry-

ing a friction roller adapted to co-act with the bunching-spool, a projection on the swinging frame with which the rocking-frame contacts a shaft carrying an arm bearing a band-pulley adapted to bear against the drive-belt, a toothed-sector carried by the shaft, and a pawl designed to engage the said sector to hold the band-pulley in engagement with the said belt, the free end of the pawl being arranged in the path of movement of the swinging frame, whereby the latter is caused to contact with the pawl to throw it out of contact with the sector, thus allowing the band-pulley to drop and remove the tension from the drive-belt.

10. In a machine for bunching match-sticks, a two-part feed-roller, a frame housed within the roller and carrying a positively-actuated friction-roller, and a bunching-spool co-acting directly with the friction-roller.

11. In a machine for bunching match-sticks, a two-part feed-roller, a frame housed within the roller and carrying a positively-actuated friction-roller, and a positively-actuated frictionally-controlled bunching-spool co-acting directly with the friction-roller.

12. In a machine for bunching match-sticks, a two-part feed-roller, a frame housed within the roller and carrying a positively-actuated friction-roller, a friction-belt in contact with the friction-roller and a bunching-spool co-acting directly with the latter roller.

13. In a machine for bunching match-sticks, a two-part feed-roller, a frame housed within the roller and carrying a friction-roller, and a bunching-spool co-acting with the friction-roller.

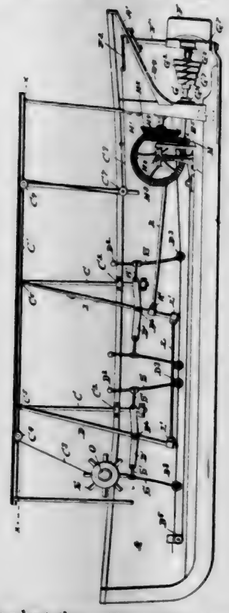
14. In a machine for bunching match-sticks, a two-part feed roller, a rocking-frame within the roller, a friction-roller carried by the frame, and a bunching-spool.

15. In a machine for bunching match-sticks, a two part feed-roller, a rocking frame within the roller, a friction-roller carried by the frame, and a swinging frame carrying a bunching-spool coacting with the friction-roller.

16. In a machine for bunching match-sticks, the combination with a hopper having a resilient rear wall, of a series of agitators, and mechanism for imparting rectilinear vibratory motion to one of the agitators in the direction of the bottom of the hopper, and a vibratory motion to the other agitator and to the rear wall.

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**502,910. PROPELLER.** THOMAS O'BRIEN, New York, N. Y. Filed Aug. 23, 1892. Serial No. 443,855. (No model.)



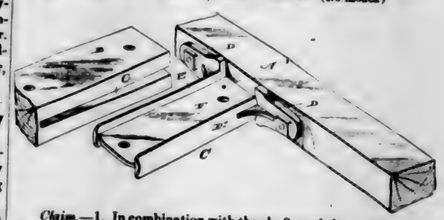
*Claim.*—1. In a boat, the combination with a rotary propeller, of a pendent seat hung from a suitable support and having a swinging movement in the direction of the length of the boat, and mechanism intermediate of the seat and the propeller, such mechanism being adapted to convert the swinging motion of the seat into rotary motion of the propeller shaft, substantially as specified.

2. In a boat, substantially as described, the combination with a rotary propeller: of a series of swinging seats; means for connecting the seats so that they will move together, an endless fulcrum or purchase chain; the levers connected to the chain and with the seats, and mechanism intermediate of the seats and the propeller, adapted to convert the oscillatory motion of the seats into rotary motion of the propeller shaft, substantially as and for the purpose set forth.

3. In a boat, substantially as described, the combination with a rotary propeller; of the seats, the hangers suspending the seats, the rods connecting the hangers of the seats, the endless fulcrum or purchase chains, the foot rests connected to said chains, the levers connected to the foot rests, the links connecting said levers to the seats, and mechanism intermediate the seats and the propeller adapted to convert the oscillatory motion of the former into rotary motion of the latter substantially as specified.

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**502,911. VEHICLE SHAFT-IRON.** JOHN H. OSBORNE, Union City, Ind. Filed Sept. 24, 1892. Serial No. 446,799. (No model.)



*Claim.*—1. In combination with the shafts and the cross-bar having a kerf or slot in each end of the shaft irons secured to the shafts and having a web fitting in said kerfs or slots and bolts passing through the cross-bar and webs to secure the parts together.

2. In combination with the thills and cross bar, the casting having the lugs or ears for attachment to the thill's, the arms engaging the sides of the cross bar and the central web arranged in the recesses in the ends of the cross-bar, in the manner described.

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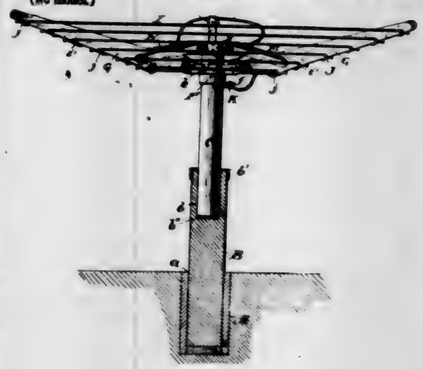
**502,912. BLACK AZO DYE.** ALCIDE F. POIRRIER and DANIEL A. ROSENSTIEHL, Paris, France. Filed June 27, 1892. Serial No. 438,196. (Specimens.) Patented in France Mar. 15, 1889, No. 196,793; in England Mar. 19, 1889, No. 4,825, and in Germany Mar. 25, 1889, No. 52,616.

*Claim.*—1. The herein described process for the production of coloring matters, said process consisting in combining diazo derivative of the specified mono and disulphonic acids, with naphthylamin, again diazotizing the compound obtained, and combining it with an alkylized secondary or tertiary meta-diamin (such as meta-phenylene-diamin) as set forth.

2. The described coloring matter, being a secondary diazo or twice-diazotized derivative of alkylized meta-diamin, of a black or dark color, but slightly soluble in water, characterized by great coloring power and the property of dyeing wool in very deep colors that resist the action of soap, the atmosphere and light, as set forth.

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**502,913. CLOTHES-DRIER.** JOHN F. SCHMIDT, Blue Earth City, Minn. Filed Oct. 22, 1891. Renewed Apr. 10, 1893. Serial No. 469,856. (No model.)

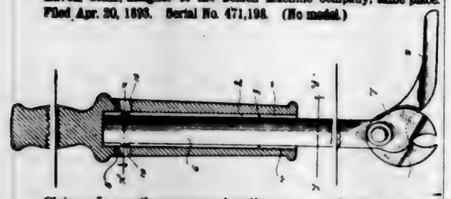


*Claim.*—In a clothes drier, the ground box A adapted to be sunk into the earth, the post B fitted in said ground box and having the socket *b* in its upper end, said post and ground box having horizontal openings at the bottom of the sockets therein to permit foreign matter to be discharged, a metallic cap *b'* arranged over the upper edge of the post B to protect the same, a washer *b''* in the bottom of the socket *b* and the supporting pole C, carrying the radial arms, fitted in said socket and adapted to turn easily therein on the washer, substantially as described.



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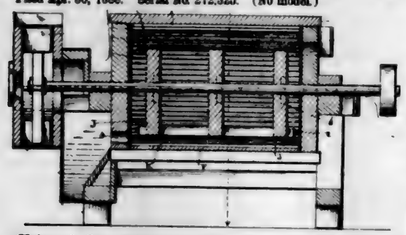
**502,914. NAIL EXTRACTOR.** GEORGE H. SCRANTON, Jr., New Haven, Conn., assignor to the Belden Machine Company, same place. Filed Apr. 20, 1893. Serial No. 471,198. (No model.)



*Claim.*—In a nail extractor a handle or rammer having the usual socket provided with a transverse hole 5, and having at its lower end an internal shoulder with slots 4 through it, in combination with fixed and movable jaws the latter having a bearing lever, and a shank by which the jaws are carried, the upper end of said shank having lugs 10 formed upon the metal thereof at a distance below the upper end of the shank, said lugs being adapted to pass through slots 4 and when twisted sidewise acting to retain the shank within the socket.

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**502,915. WHEAT-SCOURER.** JOHN D. SHEAFFER, Avilla, Ind. Filed Apr. 30, 1888. Serial No. 272,325. (No model.)



*Claim.*—1. In a grain scourer, the combination of an imperforate and tight scouring cylinder lined with metal plates which are roughened on their inner sides, a rotatable shaft having spiders, and beater bars roughened on both sides and adapted to be reversibly attached to the outer ends of the arms of the said spiders, extending parallel with and nearly the full length of the cylinder, and set obliquely in cross section to radii of the said cylinder, substantially as and for the purpose set forth.

2. The herein shown and described grain scourer composed of an imperforate and tight scouring cylinder made in halves and lined with metal plates which are roughened on their inner sides, and having a grain inlet at one end and a grain outlet at the opposite end, a fan located at the delivery end of the scouring cylinder and adapted to remove the chaff and light stuff from the grain as it leaves the cylinder, a rotatable shaft journaled between the meeting edges of the halves of the cylinder ends and carrying the said fan, spiders mounted on the shaft and beater bars roughened on both sides and adapted to be reversibly attached to the outer ends of the arms of the said spiders, extending parallel with and nearly the full length of the cylinder, and set obliquely in cross section to radii of the said cylinder, substantially as herein shown and described.

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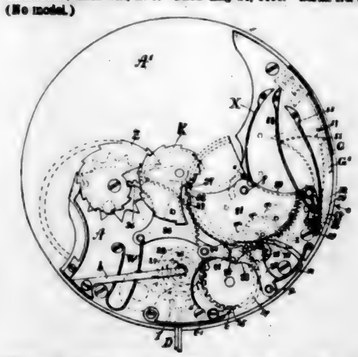
**502,916. CHANGEABLE-SPEED DEVICE FOR BICYCLES.** WILLIAM B. SWAN, Seymour, Conn. Filed June 8, 1892. Serial No. 436,043. (No model.)



*Claim.*—The combination with the pedal shaft having pinion 7, of a driving sprocket adapted to turn independently of the shaft and having internal gear teeth, divided into sections by a circular groove, an intermediate pinion a second intermediate pinion engaging the first intermediate pinion and pinion 7, suitable means for connecting or disconnecting the driving sprocket to pinion 7 for the purpose set forth, and anti-friction rollers within the sprocket engaging the circular groove.

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**502,917. REPEATING MECHANISM FOR TIMEPIECES.** FRED TERTSCH, Elizabeth, N. J. Filed May 21, 1890. Serial No. 352,654. (No model.)



*Claim.*—1. In a repeating watch, a device for releasing one or more racks or ratchets so that they can be set to a striking position, a gear-wheel forming part of the winding mechanism provided with a projection or guide-device for actuating the said device to release one or more racks, a winding-pinion and suitable gearing for operating the said gear-wheel, substantially as specified.

2. The combination of a winding-pinion, suitable gearing connected therewith for operating a gear-wheel, a gear-wheel forming part of the winding mechanism provided with a stud or guide-device, a spring-controlled releasing-lever for releasing the ratchets that operate the striking devices and the said lever engaged by the said stud of the gear-wheel for releasing the said ratchets, substantially as specified.

3. The combination of a winding-pinion, suitable gearing for transmitting the motion of the said pinion to a repeater motor-spring for retracting the same, a gear-wheel forming part of the transmitting gearing for retracting the motor spring provided with one or more projections or guide-devices for operating a releasing device for releasing the racks to a striking position, substantially as specified.

4. The combination of a device for releasing the racks or ratchets to a striking position, a gear-wheel provided with a device or devices for disengaging the said releasing lever, a winding-pinion and suitable gearing for operating the said gear-wheel and a spring-actuated click engaging the said wheel for holding it in place, substantially as specified.

5. The combination of a device for releasing the racks to a striking position, a gear-wheel provided with a projection or guide device for operating the said releasing-device, the said gear-wheel suitably connected with a motor spring to retract the same, a winding-pinion and suitable gearing for operating the said gear-wheel and a spring-actuated click for holding the said gear-wheel, substantially as specified.

6. The combination of a gear-wheel provided with a projection or guide-device, a releasing-device for releasing the racks to a striking position and operated by the said projection of the gear-wheel, and a device for stopping the motion of the said gear-wheel when the same has operated the releasing-device for the racks, substantially as specified.

7. The combination of a winding-pinion, suitable gearing connected therewith for operating a gear-wheel to retract a motor-spring of a repeating mechanism, the said gear-wheel provided with a projection or guide-device, a releasing-device for releasing the racks to a striking position and operated by the said projection of the gear-wheel, a device for stopping the motion of the said gear-wheel, when the same has operated the releasing-device for the racks, a motor-spring for returning the racks to their normal position and a device for setting the stop-mechanism away from the projection of the said gear-wheel, substantially as specified.

8. The combination of a winding-pinion, a gear-wheel provided with a projection or suitable guide-device, suitable gearing that connects the winding-pinion with the said gear-wheel for operating the same, a device for releasing one or more racks to a striking position, the said releasing-device operated by the projection of the said gear-wheel, a stop-lever for stopping the motion of the said gear-wheel and operated by one rack, when the same is being released, a motor-spring for returning the rack to the normal position, and the said

stop-lever automatically moved out of the way and from the projection of the said gear-wheel, substantially as specified.

9. The combination of a pivoted rack provided with gearing, a shifting pinion that is engaged thereby and operated by a releasing-lever, the said lever adapted to move the pinion in and out of gear with a toothed spring-barrel, a gear-wheel provided with a projection or guide-device for operating the said releasing-lever to disconnect the pinion from the spring-barrel, thereby releasing the rack to a striking position and connecting the said pinion with the spring-barrel when the releasing-lever has been operated by the said gear-wheel, and the said spring-barrel actuated by a motor-spring for turning the pinion and returning the rack to the normal position, substantially as specified.

10. The combination of a device for releasing the racks to a striking position, a stop-piece arranged on the releasing-device for checking the escapement of the moderating-gear, a gear-wheel provided with a suitable projection for operating the said releasing-device, the said gear-wheel suitably connected with a motor spring to retract the same, a winding-pinion and suitable gearing for operating the said gear-wheel, that comes in contact with the said releasing-device and which checks the moderating-gear during the time it is engaged by the projection of the said gear-wheel, substantially as specified.

11. The combination of a spring-barrel 27, pinion 28 on a releasing-lever 32 provided with a stop-attachment 61 for the escapement *l*, moderating gear *m*, gear wheel 25 with stud 34 and the gearing between the said wheel and winding-pinion *l*, substantially as specified.

12. A repeating-watch, provided with pivoted striking-racks operating the striking devices for the hour and its divisions, a motor-spring for the same, suitable gearing connected therewith and with the winding-pinion for retracting the said motor-spring, a spring-controlled device and a pinion mounted on the same for releasing the racks, the said device operated by the winding gear that retracts the motor-spring when the same has been sufficiently retracted thereby, to return the striking-racks to their normal position, substantially as specified.

13. The combination in a repeating watch having separately-operated racks for operating the striking devices for the hour and its divisions, a toothed sector provided with an hour or snail-piece approximately in line with the circle of its gearing, an hour rack provided with suitable gearing, said gearing arranged thereto approximately in line with the circle of its rack-teeth and the said sector engaged thereby, substantially as specified.

14. The combination of a pivoted hour-striking rack and suitable gearing connected therewith, said gearing arranged approximately in line with the circle of the rack-teeth and engaged by a toothed sector, provided with a snail-piece projecting on the said sector approximately in line with the circle of its teeth and a spring for setting the said sector against the hour-snail, substantially as specified.

15. In a watch or other time-piece, the combination of a single winding-pinion operated by a stem without intermediate gearing, separate motor-springs for operating a repeating mechanism and a time mechanism, the said motor-springs retracted by the said pinion, gearing for transmitting the motion of the said pinion to a time-motor and gearing for transmitting the motion of the said pinion to a repeater-motor, and in direct communication with said winding pinion substantially as specified.

16. In a watch or other time-piece, the combination of two motor-springs, one for operating a time mechanism and the other one for operating a repeating mechanism, gearing for retracting the said time motor-spring connected with a single winding-pinion and gearing for retracting said repeater motor-spring connected with the same pinion, the said winding-pinion operated by a stem without intermediate gearing, substantially as specified.

17. In a watch or other time-piece, the combination of a single winding-pinion connected with and operated by a stem without intermediate gearing, a motor-spring of a repeating mechanism and gearing interposed between the said pinion and the repeater-motor for retracting the same, a motor-spring of the time mechanism and gearing interposed between the said pinion and the time-motor for retracting the same, substantially as specified.

18. The combination of a stem connected with a single winding-pinion without intermediate gearing and operating the same for retracting separate motor-springs, suitable gearing for transmitting the motion of the said pinion to a time-motor, and suitable gearing for transmitting the motion of the said pinion to a repeater-motor, substantially as specified.

19. The combination of a single winding-pinion in gear with two gear-wheels, one wheel for transmitting the motion of the said pinion to a time-motor and the other wheel for transmitting the motion of the said pinion to a repeater-motor, substantially as specified.

20. In a repeating watch the combination of a winding pinion in engagement with a gear wheel 2 forming part of the time-motor-winding mechanism with a gear wheel 20 forming part of the repeater winding mechanism, substantially as specified.

21. The combination with a winding-pinion, a gear-wheel engaged thereby, an arbor adapted to be engaged by the said gear-wheel and provided with a gear-wheel for transmitting the motion of the said pinion to a repeater-motor, substantially as specified.

22. The combination with a winding pinion, of an arbor and two wheels applied thereto, one of the said wheels in gear with the winding pinion of the other wheel arranged to be connected with and disconnected from the said gear-wheel by the said arbor, moving longitudinally through the center-hole of the one wheel, substantially as specified.

23. In a repeating watch the combination of a winding pinion, a gear-wheel forming part of a repeater winding mechanism engaged by the said pinion, an arbor and a wheel attached thereto, the said parts provided with a coupling-device and a spring for keeping the said wheels coupled together, substantially as specified.

24. The combination of a winding-pinion, a gear-wheel engaged by the said pinion, an arbor and wheel attached thereto, a motor-winding wheel engaged by the said wheel, and means for breaking the connection between the said motor-actuating wheel and the said gear-wheel that is engaged by the winding-pinion, substantially as specified.

25. The combination of a winding-pinion, a gear-wheel engaged thereby, an arbor and a wheel attached thereto, the said parts provided with a coupling-device, a spring for keeping the said gear-wheels coupled together and a spring-actuated wedge for breaking the connection between the said wheels by engaging the said arbor, substantially as specified.

26. The combination of a winding pinion and suitable gearing connected therewith for retracting a motor-spring of a repeating mechanism, a wedge for breaking the connection between the said pinion and the repeater-motor, a stem for operating the said wedge, when the said stem is moved longitudinally, substantially as specified.

27. The combination of a longitudinally-movable stem for operating a winding and setting mechanism of a watch, of suitable gearing for operating a repeating mechanism by turning the said stem, a wedge for disengaging the said gearing from the winding mechanism and operated by the said stem, when the same is moved longitudinally, substantially as specified.

28. The combination of a longitudinally movable stem for operating a winding and setting mechanism of a watch, of suitable gearing for operating a repeating mechanism by means of the said stem, a spring-actuated wedge for disengaging the said gearing from the winding mechanism and the said spring-actuated wedge having no connection with the winding stem but adapted to automatically follow the longitudinal motion of the said stem, when the same is drawn out, substantially as specified.

29. The combination of a longitudinally movable stem, a winding-pinion, a push-piece $d^9$ in engagement with a wedge for breaking the connection between the winding pinion and a repeater-motor, substantially as specified.

30. The combination of a yoke-lever setting mechanism of a watch, a wedge F, having a pin $f^3$, whereby it is engaged with the said mechanism and operated thereby to disengage the actuating gearing of a repeater-motor from the stem-winding mechanism, when the said yoke-lever is being adjusted to its hand-setting position, substantially as specified.

31. The combination of two hammers, pivoted on the same center one above the other, of hammer-teeth for actuating the hammers, and pivoted ratchets or racks engaging and operating the said striking devices, substantially as specified.

32. The combination of a winding-pinion, gear-wheel 2, gear-wheel U, arbor T and wheel V engaging a wheel 25 to transmit the motion of the winding-pinion to a repeater motor-spring, the said arbor T arranged through the watch-plates A' and A for connecting the wheels U and V, substantially as specified.

## 502,918. REPEATING MECHANISM FOR TIMEPIECES.

Peter Testerman, Elizabeth, N. J. Filed June 16, 1890. Serial No. 355,671. (No model.)





*Claim.*—1. A stem-winding watch having a rotatable and longitudinally movable stem, the rotatable movement for operating a stem winding mechanism of a watch and the longitudinal movement for actuating a repeating mechanism, substantially as specified.

2. A stem winding and setting watch having a rotatable and longitudinally movable stem, the rotatable movement for operating a winding and setting mechanism of a watch and the longitudinal movement for operating a repeating mechanism substantially as specified.

3. A repeating-watch provided with a winding-pinion for operating a motor-spring of a time mechanism, a longitudinally-movable stem for operating the said pinion and the said stem adapted by its longitudinal motion to actuate a repeating mechanism, substantially as specified.

4. A stem winding watch provided with a lever for setting a repeating mechanism, in combination with a stem placed in the pendant of the watch case and having a rotary motion for winding the watch, and a longitudinal motion to operate the repeating mechanism, substantially as specified.

5. In a repeating-watch, the combination with a longitudinally-movable stem for operating a winding and setting mechanism of a watch, of a lever for actuating a repeating mechanism, that is operated by a lengthwise motion of the said stem, substantially as specified.

6. The combination of a winding-pinion, wheels 2 and 3 and barrel arbor wheel 4, of a stem, that operates the said wheels, when the same is turned, and a lever for actuating a repeating mechanism and operated by the same stem, when the same is moved lengthwise, substantially as specified.

7. The combination of a winding-pinion, wheel 2, setting-wheel 5 and suitable dial-wheels, a stem that operates the said wheels, when the same is turned, and a lever for actuating a repeating mechanism and operated by the same stem, when the same is moved lengthwise, substantially as specified.

8. In a stem-winding watch, the combination with a winding-pinion, of a longitudinally movable stem for operating the same, the said stem being provided with a suitable device for engaging a lever that actuates a repeating mechanism, and a lever, interposed between the said device and the repeating mechanism which is operated by the lengthwise motion of the said stem, substantially as specified.

9. In a stem-winding watch, the combination with a winding-pinion, of a longitudinally-movable stem for operating the same, a push-pin placed in the said pinion, that is engaged by the end of the said stem, and a lever for actuating a repeating mechanism and which is operated by the lengthwise motion of the said stem, substantially as specified.

10. In a repeating-watch, the combination of a longitudinally-movable stem for operating a winding mechanism of a watch, and a lever for actuating a striking rack directly, the said lever being operated by moving said stem lengthwise, substantially as specified.

11. In a stem-winding watch, the combination with a winding-pinion, of a longitudinally-movable stem for operating the same, a lever for actuating a repeating mechanism, that is operated by the lengthwise motion of the said stem in one direction, and a suitable lever-spring engaging the said lever and returning it with the said stem in the opposite direction, substantially as specified.

12. In a repeating-watch, the combination of a lever L that actuates a repeating mechanism, of a lever-spring L' engaging the said lever, a longitudinally-movable stem, that operates the said lever and moves it in one direction, and the said spring L' for moving the said lever and stem in the opposite direction, substantially as specified.

13. The combination of a winding-pinion, a lever for actuating a repeating mechanism, a suitable stem that operates the winding-pinion, when the same is turned and which when moved lengthwise operates the said lever, substantially as specified.

14. In a repeating-watch, the combination of a stem attached to a shiftable crown $c'$ arranged on a pendant of a watch-case, a winding-pinion that is operated by the said stem by turning the same, and a lever for actuating a repeating mechanism that is operated by the said stem by moving its crown lengthwise, substantially as specified.

15. In a repeating-watch, a stem provided with a slot $c^8$ in combination with a push-pin T for operating a case-spring V, and a crown C' that is shiftable over the pendant substantially as specified.

16. The combination with a push-pin T, having a head T, of a crown attached to a stem, the said crown provided with a seat $T^9$ for the said head T, substantially as specified.

17. The combination with a watch-case pendant of a hollow stem, a stem *g* placed through the same, the said stem *g* adapted to operate a repeating mechanism by moving it lengthwise, substantially as specified.

18. In combination with the hollow stem D, of a stem *g* placed through the same for actuating the lever of a repeating mechanism, the said stem *g* provided with a suitable projection by which the same is held in the stem D, substantially as specified.

19. The combination with a watch-case pendant, of a winding-stem, provided with a suitable collar or shoulder $d^7$, a shiftable sleeve that is moved by the said collar of the stem, a lever for actuating a repeating mechanism engaged by the said sleeve and operated thereby when the said stem is moved lengthwise, substantially as specified.

20. In combination with a watch-case provided with a stationary pendant fastened to the center of the case, and a shiftable pendant provided with a winding stem and crown, the said stem adapted to operate a winding pinion of a watch by turning the same by its crown, and adapted to actuate a repeating mechanism by moving it lengthwise by its shiftable pendant, substantially as specified.

21. The combination of a winding-stem for operating a winding-pinion of a watch, the said stem provided with a crown by which the same is turned, of a shiftable pendant, that is movable lengthwise with the crown and stem and adapted to actuate a repeating mechanism, substantially as specified.

22. The combination of a shiftable pendant provided with a stem attached to a crown, the said stem having an annular groove, that is engaged by a screw of the shiftable pendant and held thereby in the same, the said stem arranged to operate a winding-pinion of a watch, by turning the same by its crown and adapted to actuate a repeating mechanism by moving the same lengthwise by its pendant, substantially as specified.

23. The combination of a shiftable pendant, a stationary pendant of a watch-case provided with a suitable guide, which engages the said shiftable pendant and insures a lengthwise motion to the same, of a winding stem, that is placed through the said shiftable and stationary pendant and arranged to be turned therein for operating a winding pinion of a watch and adapted to actuate a repeating mechanism by moving the same and the shiftable pendant lengthwise, substantially as specified

24. In a repeating-watch, the combination of a longitudinally-movable stem, a lever for actuating a repeating mechanism and operated by the said stem, when the same is drawn or pulled out, substantially as specified.

25. In a watch the combination with a stem winding mechanism of a longitudinally movable stem D with a crown $d'$ attached thereto and provided with a sleeve $d^7$, and a repeater operating lever engaged by the said stem D substantially as specified.

26. In a stem-winding watch the combination of a longitudinally-movable stem for operating a winding mechanism of a watch, by turning the said stem, a lever for actuating a releasing device of a striking rack, suitable mechanism and a striking-rack that is held by a releasing-device, the said releasing-device being released and the repeating mechanism thereby started when the stem is moved lengthwise, substantially as specified.

27. In a stem-winding watch, the combination of a longitudinally-movable stem for operating a winding mechanism of a watch by turning the said stem, of a lever for retracting a motor-spring of a repeating mechanism, and a motor-spring that is caused to be brought in tension when the said stem is moved lengthwise, substantially as described.

28. The combination of a longitudinally-movable stem for operating a winding pinion by turning the said stem, of a lever pivoted to plate A' and that retracts a motor-spring placed in a seat and between the plates A' and A for operating a repeating mechanism, when the said stem is moved lengthwise, substantially as specified

29. In a stem-winding watch, the combination of a longitudinally-movable stem, a lever for actuating a repeating mechanism and provided with teeth $e^3$, the said lever operated by the said stem, when the same is moved lengthwise, substantially as specified.

30. The combination in a moderating-gear of wheel $N^3$ having a pinion 14, in gear with a shiftable pinion or wheel 10 pivoted to a lever 11 controlled by spring 12, wheel $N^3$ attached to pinion *c* and which is turned by the wheel N' that is operated by a motor-spring, the said shiftable pinion 10 adapted to disengage the said wheel $N^3$ when the motor-spring is retracted and to engage and rotate with the said wheel, when the motor-spring actuates the said wheels N' and $N^3$ backward, substantially as specified.

31. In a repeating mechanism the combination of wheel $N^3$ attached to pinion *c* in gear with a shiftable wheel or pinion 10, pivoted to a lever 11 controlled by spring 12, of wheel N' that engages the said pinion 10 and rotates the same when moved in one direction and disengages the said pinion 10 when moved in the opposite direction, substantially as specified.

32. The combination of a wheel O provided with a projection or shoulder $o^3$, of a spring controlled lever R, provided with the step $r'$ that is engaged by the said shoulder $o^3$ of wheel O and moved thereby parallel to the plate, substantially as specified.

33. The combination of a releasing-lever having a step $r'$ and hook or catch $r^6$, a wheel O provided with a projection $o^3$ that operates the releasing lever and a rack that is released thereby, substantially as specified.

34. The combination of an hour-rack P provided with a notch

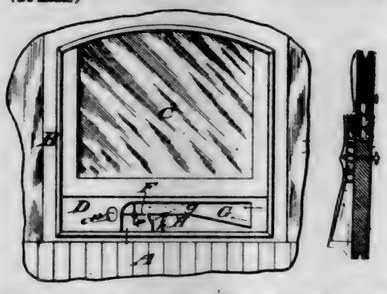
or shoulder $p^3$, of a lever R having a hook or catch $r^4$ and which engages the shoulder $p^3$ of the rack P, when the same is in its normal position, substantially as specified.

35. The combination of a repeater-plate B provided with a seat $B^6$ on its under side with a toothed lever S seated therein, that engages a pinion m of the arbor N, substantially as specified.

36. The combination of a repeater-plate B provided with a seat $B^7$ on its upper side and having a stud s for the star-wheel Z' of an hour-snail Z, and the jumper J, all the said parts being placed in the said seat $B^7$, substantially as specified.

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**502,919. WINDOW-VENTILATOR FOR RAILWAY-CARS.** GEORGE L. THOMAS, Brooklyn, N. Y. Filed Oct. 27, 1892. Serial No. 450,108. (No model.)



*Claim.*—1. A car window ventilator comprising a removable frame adapted to close the space between a partially opened window and its casing, said frame being provided with an air passage therethrough, an air exhausting device for forcing the air through said passage-way, a wind motor for operating said air exhausting device and a conduit independent of the exhaust passageway for directing a current of air to one side of the motor as the car moves, substantially as set forth.

2. The ventilator comprising the frame with an air passage therethrough, an air exhausting device located in said passage-way, a cut off device for said passage-way, a wind motor for operating the air exhausting device, the conduit for directing a current of air upon one side of the motor and bent to shield the motor from the current of air in the opposite direction and a cut-off device for closing the conduit against the advance of the current of air to the wind motor, substantially as set forth.

3. The ventilator comprising an air exhausting device, a wind motor for operating it, a conduit for directing a current of air to the wind motor and a cut-off device arranged to simultaneously close the conduit to the motor and open it to the outside air, substantially as set forth.

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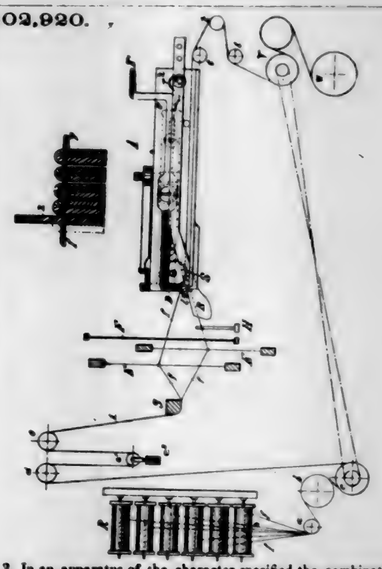
**502,920. LOOM FOR WEAVING CHENILLE STRIPS.** FRITZ WATELAWIK, Reichenberg, Austria-Hungary. Filed Nov. 27, 1885. Serial No. 184,061. (No model.) Patented in Germany Sept. 27, 1885, No. 37,251, and in England Oct. 24, 1885, No. 12,779.

*Brief.*—The warps are arranged in the loom in groups of a small number each. The weft is presented at one side of the warps and is drawn through the sheds in the groups by a nipper. It is then beaten up and by a series of knives cut between the adjacent groups. One of the projecting ends of the cut weft is turned into the next shed, forming a U-shaped loop. When wefts of different colors are used, they are presented by a series of tubes converging at the point where the nipper engages the weft.

*Claim.*—1. In an apparatus of the character specified, the combination with the shed forming mechanism and with the reed for beating up the weft, of a gripper for seizing the weft thread and drawing it through the open shed, a fixed support for the weft-thread, a movable knife for cutting the weft-thread into suitable lengths, a thread holder, and a slide provided with a pivoted spring-operated finger for turning the projecting end of the thread into the next succeeding opening of the shed, substantially as and for the purpose specified.

2. In an apparatus of the character specified the combination with the shed forming mechanism, and the reed for beating up the weft, of the gripper for seizing the weft thread and drawing it through the open shed, a series of guide tubes $c'$ $c'$ for the weft threads, all movably secured in a frame and converging to one point, and means substantially as described for holding the tubes at a proper distance from the converging point and moving any one of them to the gripper, substantially as and for the purpose specified.

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3. In an apparatus of the character specified the combination with the shed forming mechanism and the reed for beating up the weft, of a gripper for seizing the weft and drawing it through the shed, a series of guide tubes $c'$ $c'$, for the weft threads mounted in a frame so as to converge toward one point, spring $d'$ which normally hold the guide tubes away from the converging point, chain e, levers $h'$ and $i'$, springs $o'$, reciprocating bar $l'$, and means substantially as described for engaging any one of the levers $i'$ with the reciprocating bar, substantially as described.

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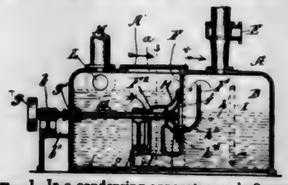
**502,921. MANUFACTURE OF PYROXYLINE COMPOUNDS.** CHARLES L. DORSEMEYER, Rahway, N. J. Filed May 13, 1893. Serial No. 474,114. (No specimens.)

*Claim.*—1. The process of manufacturing compounds of pyroxyline which consists of dissolving pyroxyline in artificial or synthetical oil of cassia.

2. A compound of pyroxyline consisting of pyroxyline dissolved in synthetical or artificial oil of cassia.

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**502,922. CONDENSING APPARATUS.** NIELS A. CHRISTENSEN, Chicago, Ill. Filed May 31, 1892. Serial No. 434,895. (No model.)



*Claim.*—1. In a condensing apparatus, a shaft mounted on suitable bearings, a cone-shaped shell composed of an outer and inner disk, curved outwardly on different curves and separated from each other by a space gradually diminishing in width outward to a thin slit extending around their outer edges, and partitions dividing the space between the disk curved to a point, in combination with a chamber for receiving and condensing steam, and a chamber for receiving the condensed steam with gases, said chambers being so arranged with reference to each other and with reference to said shell that the water may be taken from the first chamber into said shell and thrown by the revolution of said shell into the second chamber, substantially as described.

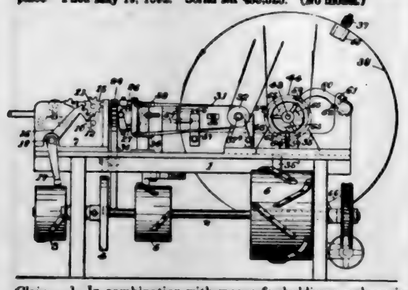
2. In a condensing apparatus, an outer casing separated into two compartments with suitable openings in the same, an inlet pipe leading from a steam compartment to be exhausted into one of said chambers with a cold water pipe leading in said inlet pipe, and a cone-shaped shell composed of an outer and inner disk curved outwardly on different curves and separated from each other at their inner edges with a space gradually diminishing in width to a thin slit at their outer edges, and partitions dividing the space between the disks also curved to a point, the inner disk being concave on its inner surface, and the outer disk being concave on its outer surface, the said disks and partitions being cast in one piece, and a shaft on which said shell is mounted with suitable means for actuating said shaft, the said shell and shaft being so arranged as to receive the condensed steam from one chamber and throw it into the second chamber, exhausting the condensed steam from the first chamber, and suitable waste pipes for the water thrown into said chamber, substantially as described.

3. In a condensing apparatus the shaft G, having bearings $a'$, $b'$ and the pulley $g$ for actuating said shaft and the shell H mounted on the shaft G and composed of two disks $A^5$, and $A^6$ curving outwardly on different curves, and gradually approaching each other, so as to leave a thin slit at their outer edges and the casing A having the partition F, the chambers B and C, with the hood $F^6$ so arranged with reference to the chamber B as to admit water into the shell H, when the shell H is revolved by the shaft G, substantially as described.

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**502,923. SCREW-MACHINE.** EDWARD E. CLAUSEN, Hartford, Conn., assignor of one-half to Emil F. Linke and George Mortson, same place. Filed May 19, 1892. Serial No. 433,525. (No model.)



*Claim.*—1. In combination with means for holding a rod or wire from rotating, a series of revolving spindles, and an intermittently rotating turret on which those spindles are journaled, arranged and operating to present those spindles successively to that rod or wire, all substantially as described.

2. In combination with means for holding a rod or wire from rotating, a series of revolving spindles radially journaled on a turret or head which is capable of intermittent rotation, a revolving shaft concentric with the axis of that turret, and gears by means of which a rotary motion is communicated from that shaft to those spindles, substantially as described.

3. In combination with means for holding a rod or wire from rotating, a series of revolving spindles journaled on an intermittently rotating turret, and a reciprocating slide on which that turret is mounted, arranged and operating to advance and retract those spindles to and from the rod as they are successively presented to it substantially as described.

4. The combination of a revolving carrier having oppositely disposed cranked tool arms pivoted thereon, a threaded face plate adjacent to that carrier and mechanism for rotating that plate face upon its thread whereby it is advanced against the bearing ends of those arms substantially as described.

5. In combination with means for holding a rod or wire from rotating, a revolving carrier having oppositely disposed tool arms pivoted thereon, and a threaded face plate adapted to be rotated and advanced upon its thread against the bearing ends of those arms, and operating to force their tool carrying ends toward the center of the rod for the purpose set forth, all substantially as described.

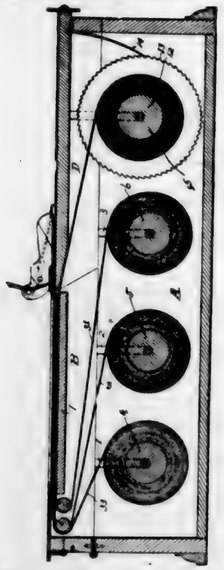
6. In combination with means for holding a rod or wire from rotating, an oscillating arm or carrier 21 provided with a chuck, the pinion gear 23 rigidly connected with that arm, the sector gear 24 and the cam 5, all adapted to swing that chuck into alignment with the rod or wire after one end of a blank has been operated upon by a series of principal tools located in the plane of the rod, and operating to seize and reverse that blank and to present its reverse or unfinished end to the action of auxiliary tools in another plane, substantially as described.

7. An intermittently rotating turret having journaled thereon a series of revolving principal spindles located in the plane of the blank to be operated upon, and carrying also an auxiliary revolving spindle which lies in a different plane from that of the principal spindles, an oscillating arm adapted to engage the blank when the principal spindles have performed their work thereon and operating to carry that blank from the plane of the principal spindles and to present its reverse or unfinished end to the action of the auxiliary spindle, substantially as described.

8. In combination with means for holding a rod or wire from rotating, an intermittently rotating turret provided with the spindle 39, a slide on which that turret is mounted, gears 50 and 51 with means for rotating them continuously in opposite directions, the clutch 55, lever 56, and stops 57 and 58, whereby the spindle 39 is rotated with the gear 50 or with the gear 51, all substantially as described and for the purpose specified.

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**502,924. AUTOGRAPHIC REGISTER.** CHARLES FOX, Hinsdale, Ill. Filed Apr. 1, 1893. Serial No. 468,743. (No model.)



*Claim.*—1. In an autograph register, the combination with the casing having the paper-holding rollers and the take-up roller, of sliding actuating devices mounted upon said casing and geared to said take-up roller to actuate the same and having a clutch to hold the paper slips of the paper-holding rollers, substantially as described.

2. In an autograph register, the combination with a casing having paper-holding rollers and a take-up roller, of sliding actuating devices mounted upon the casing and geared to said take-up roller and carrying a clutch blade to hold the slips from one or more of the paper-holding rollers, substantially as described.

3. In an autograph register, the combination with a casing having paper-holding rollers, and a take-up roller, of sliding actuating devices mounted upon the casing and geared to said take-up roller and consisting of a plate having a pivoted clutch blade yieldingly held against said plate, substantially as described.

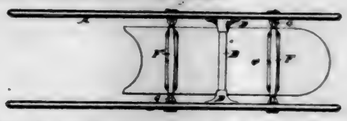
4. In an autograph register, the combination with a casing having paper-holding rollers and a take-up roller, of sliding actuating devices mounted upon the casing and geared to said take-up roller and consisting of a plate having a clutch blade pivoted upon projections thereon and provided with a handle and yieldingly held against said plate, substantially as described.

5. In an autograph register, the combination with a casing having paper-holding rollers and a take-up roller, of sliding actuating devices mounted upon the casing and geared to said take-up roller, and consisting of a plate having a clutch blade pivoted upon projections on the plate and provided with a handle, an arm or projection 28 upon said clutch blade, and a spring bearing against said arm or projection to hold the blade against the plate, substantially as described.

6. In an autograph register, the combination with the casing having the paper-holding rollers, a take-up roller, and a gear wheel geared to said take-up roller to cause said take-up roller to revolve with said gear wheel in one direction only, of sliding actuating devices mounted upon the casing and geared to said gear wheel and carrying a clutch blade yieldingly held against the plate of said actuating devices, substantially as described.

7. In an autograph register, the combination with the casing, having the paper-holding rollers, the take-up roller, a gear wheel mounted upon the shaft of said take-up roller and geared to the same by a pawl and ratchet connection, of sliding actuating devices mounted upon the casing and having a rack to engage said gear wheel and provided with a clutch blade yieldingly held against a plate of said sliding actuating devices, substantially as described.

**502,925.** SLED. ARCHIBALD W. IVES, Boston, Mass. Filed Dec. 7, 1892. Serial No. 454,337. (No model.)



*Claim.*—1. A sled having two longitudinally rocking runners A A and the axle B supporting the seat E, with the rocker H supported by the cross-piece F', and seat E, substantially as described.

2. The combination in a sled of the rocking runners A A, the shaft B, shaft bearings D D fixed to the runners on their inner sides with mechanism as described to support the seat E, substantially as and for the purpose specified.

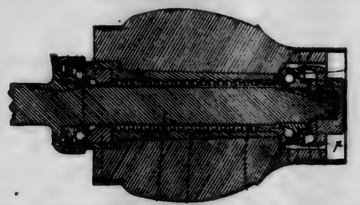
3. The combination in a sled of the rocking runners A A, shaft B, bearings D D, with the rigid cross-piece F fixed to the seat E, and the cross-piece F', rocker H loosely pivoted thereto and fixed to the lower side of the seat E, substantially as and for the purpose specified.

**502,926.** CAP FOR FILLING-NIPPLES OF LAMP-FOUNTS. JOSEPH JAUCH, Meriden, Conn., assignor to the Bradley & Hubbard Manufacturing Company, same place. Filed Oct. 15, 1892. Serial No. 448,959. (No model.)



*Claim.*—In a lamp-fount, the combination with a filling-nipple set into the top thereof, of a cap adapted to fit into the said nipple, a pin secured to the said cap at or near the edge thereof, and extending downward through the nipple by the inner edge of the same, a bracket depending within the fount, below and in line with the edge of the nipple, and forming a bearing for the said pin, and a spring applied to the said pin and bracket so as to constantly pull the cap downward, substantially as set forth, and whereby the center on which the cap swings is located within the nipple, and the nipple left practically unobstructed by the bracket.

**502,927.** BALL-BEARING FOR VEHICLE-WHEELS. EDWARD A. JONES, Tonawanda, N. Y. Filed Feb. 16, 1893. Serial No. 462,573. (No model.)



*Claim.*—1. In a ball bearing for vehicle wheels, the combination with the sleeve or axle box, of a fixed cone arranged at one end of the axle box, an opposing adjustable cone capable of sliding on the axle spindle toward and from the fixed cone, but held against turning thereon, a ring connecting the two cones, whereby the adjustable cone is retained in place when the axle box is removed from the spindle, and an adjusting nut connected with the sliding cone, for adjusting the latter relatively to the fixed cone, substantially as set forth.

2. In a ball bearing for vehicle wheels, the combination, with the axle spindle having a longitudinal groove, of the axle box having a fixed cone at one end, an opposing adjustable cone sliding on the axle spindle and having a screw thread and a projection engaging in the groove of the spindle, an adjusting nut engaging with the screw thread of the sliding cone and a lock nut for retaining the parts on the spindle, substantially as set forth.

3. In a ball bearing for vehicle wheels, the combination with the axle box carrying an inner cone of an outer cone, a ring connecting the two cones, and a lock nut applied to the axle spindle and having a dust cap or shield overlapping said connecting ring, substantially as set forth.

**502,928.** APPARATUS FOR VENTILATING CARS. CHARLES KNAPP, St. Louis, Mo. Filed Oct. 6, 1892. Serial No. 447,986. (No model.)



*Claim.*—1. A car ventilator, serving as an eductor, consisting of a T shaped coupling, the vertical arm of which enters the car, and the opposite horizontal members of which are flanged, of two long gradually flared pipes, the smaller ends of the said pipes resting within the opposite flanged ends of the horizontal members of the said coupling, and projecting therefrom longitudinally of the car, to approximately a great distance therefrom, whereby the current of air passing through the pipes will educt the air from the car, hangers supporting the ends of the said pipes and secured to the car and a graduating damper at the projecting end of the vertical member of the coupling adapted to regulate the proper amount of suction, substantially as described.

2. A car ventilator, serving as an eductor, consisting of a T shaped coupling, the vertical arm 7 of which enters the car, and the opposite horizontal members 9 of which are flanged, of two long gradually flared pipes 11, the smaller ends of the said pipes resting within the opposite flanged ends of the horizontal members of the said coupling, and projecting therefrom longitudinally of the car, to approximately a great distance therefrom, whereby the current of air passing through the pipes will educt the air from the car, hangers supporting the ends of the said pipes and secured to the car, a valve composed of a plate 15 secured in the floor of the said car above the said vertical member, and having a circular depression therein provided with a central depression 21, and radially arranged openings, a circular plate contained in the said circular depression, having a central projecting part 19 contained in the central depression 21, and being radially slotted, and a bolt 22 passing through the center of the central depression 21 and secured to the projecting part 19 of the circular plate, substantially as described.

**502,929.** FOLDING TABLE. WILLIAM J. MADDOX, Jamestown, N. Y., assignor to George D. Lane, Susquehanna, Pa. Filed Dec. 5 1892. Serial No. 454,047. (No model.)



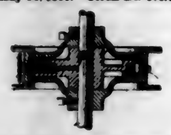
*Claim.*—1. In a folding table, the combination with the top or bed provided on its under side with an abutment, of a pair of legs hinged to the under side of the top, a rigid cross piece connecting said legs and provided with a beveled lower edge, and a rigid inclined brace pivoted at its lower end to the beveled edge of said cross piece and capable of folding laterally, parallel with the cross piece, and adapted to bear with its free upper end against the abutment of the table top, substantially as set forth.

2. In a folding table, the combination with the top or bed, of a block secured to the under side of the top and having a recess extending to one end thereof and provided with an inclined bottom, a pair of legs pivoted to the under side of the table top and connected by a rigid cross piece having a beveled lower edge, and a rigid inclined brace pivoted at its lower end to the beveled edge of the cross piece by an oblique pivot and bearing with its free upper end against the inclined bottom of said recess, substantially as set forth.

3. In a folding table, the combination with the top provided on its under side with transverse end rails having longitudinal portions at their ends, of a pair of folding legs, arranged on the inner side of each end rail between the longitudinal portions thereof, horizontal pivots passing through said longitudinal portions and entering the legs, an abutment arranged on the under side of the table top, and a rigid inclined brace pivoted at its lower end to the connecting piece of the legs and bearing with its upper end against said abutment, substantially as set forth.



**502,930.** DROP-PRESS PULLEY. FRANK MOSHERG, Attleborough, Mass. Filed May 31, 1893. Serial No. 476,108. (No model.)

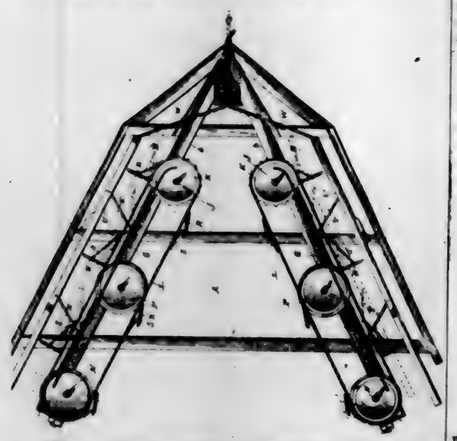


*Claim.*—1. A pulley for use in drop presses, for the purpose of raising the drop, said pulley consisting of two independent, substantially similar parts fast on a shaft, a flanged hub inclosed between said parts and adapted to run loosely on the shaft, and a ring formed of independent sections pressed outwardly from the center of the pulley, substantially as described.

2. The combination of a pulley having a circular channel in its periphery, a loose hub inclosed in said pulley, and having an annular groove made in its periphery, and a series of ring sections held in said annular groove, free from contact with said pulley at all times, with means for pressing those sections outward from the center of the pulley, substantially as described.

3. The combination of a pulley fast on a shaft, with a loose hub, a ring formed in sections, and means to press them outwardly, substantially as described.

**502,931.** CURRENT-MOTOR. LEMUEL C. NEAL, Lewiston, Idaho. Filed Jan. 21, 1893. Serial No. 459,213. (No model.)



*Claim.*—1. In a current motor, a horizontal open V-shaped frame comprising opposite connected diverging side frames, imperforate guard or fender boards arranged longitudinally in each of the opposite side frames, opposite diverging divider or bow boards arranged on opposite sides of the apex of the frame to lead the water onto said guard or fender boards, and opposite endless chains moving through the opposite side frames and having feathering paddles or blades moving in rear of and over the guard or fender boards therein, substantially as set forth.

2. In a current motor, the combination of a horizontal V-shaped frame, opposite endless chain paddle wheels moving in opposite sides of the frame, horizontal cross-braces having extended ends projecting beyond the sides of the frame, and parallel guard rails secured to the extremities of said extended ends, substantially as set forth.

3. In a current-motor, a V-shaped frame comprising opposite diverging side frames connected at their front ends by a pointed bow piece, guard or fender boards arranged in each of the opposite side frames, opposite divider or bow boards arranged on opposite sides of the bow piece and leading to said guard or fender boards, upper and lower horizontal cross-braces connecting the side frames and having extended ends projecting beyond the same, parallel side guard rails connected to the extremities of said extended ends, opposite diverging front guard rails connected to the bow-piece and the front ends of the side rails, and the opposite diverging endless chain paddle wheels substantially as set forth.

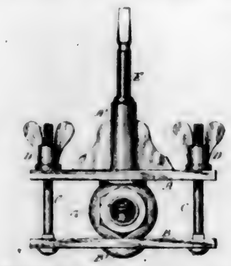
4. In a current motor, opposite diverging open wheel frames, stationary vertical drive shafts journaled inside of each frame near their meeting ends and carrying upper and lower sprocket wheels, horizontally adjustable bearing boxes arranged at one end of said frames, vertical roller shafts journaled in said adjustable boxes and carrying flanged end rollers, parallel sprocket chains passing over said sprocket wheels and flanged end rollers, being supported in position by the flanges of the latter, intermediate flanged guide rollers arranged horizontally to support and guide said chains, feathering paddles or blades pivotally attached to said sprocket chains and having stay chains or ropes, and closing devices for said feathering paddles or blades, substantially as set forth.

5. In a current motor, a V-shaped frame, opposite endless chain paddle wheels arranged to work in opposite sides of said frame and carrying feathering paddles or blades, swinging paddle closing frames arranged to work outside of the opposite sides of said frame, and means for simultaneously controlling said paddle closing frames, substantially as set forth.

6. In a current motor, opposite horizontal diverging frames, the endless paddle chains moving through said frames, feathering paddles or blades attached to said chains, opposite rectangular swinging paddle closing frames adapted to move parallel with the diverging frames onto and away from the outstanding paddles, and a single operating rope connected to the front ends of said swinging frames, substantially as set forth.

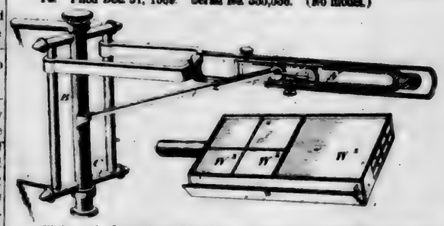
7. In a current motor, opposite horizontal diverging frames, the endless paddle chains moving through said frames, feathering paddles or blades attached to said chains, opposite pairs of U-shaped swinging wire frames pivotally connected to and embracing the opposite diverging frames, opposite rectangular swinging-paddle closing frames loosely connected to said opposite pairs of U-shaped wire frames and adapted to move parallel with said opposite diverging frames, said paddle closing frames being provided with stops upon their outer faces, suitably arranged vertical stop bars adapted to be engaged by said stops, and a single operating rope connected to the front ends of said paddle closing frames, substantially as set forth.

**502,932.** GRINDING GLOBE-VALVE SEATS. WILLIAM C. PARSELLS, Waterville, N. Y. Filed Aug. 10, 1892. Serial No. 442,665. (No model.)



*Claim.*—The combination with the bottom clamp B, provided with the globular depression B', the top clamp A, having its lower surface accurately faced, and provided on its top surface, and at perfect angle with said faced surface, with the hollow extension A', and means for holding said clamp pieces in position on a pipe fitting, of a grinder provided with a stem working through said extension A', substantially as described.

**502,933.** DENTAL BRACKET. ELIHU B. PETTIT, Philadelphia, Pa. Filed Dec. 31, 1889. Serial No. 335,536. (No model.)



*Claim.*—1. In a dental bracket, a support, a rigid arm movably attached to said support, to have a vertical and lateral adjustment, an automatically operating eccentric in connection with said arm, for

locking the same in a horizontal position at varying heights, and an arm S attached to said eccentric and said support, substantially as described.

2. In a dental bracket, a support, a rigid arm supporting a table movably attached to said support, so as to be adjustable laterally and vertically, a slotted bar mounted in said arm, an automatic locking attachment located in said slotted bar, and an arm movably secured at its ends respectively to said locking attachment, and to said support, substantially as described.

3. In a dental bracket, an adjustable arm supporting a table, a bar connected to said arm, an automatically operating locking attachment carried by said bar, and screws engaging opposite sides of said bar, for adjusting the same, substantially as described.

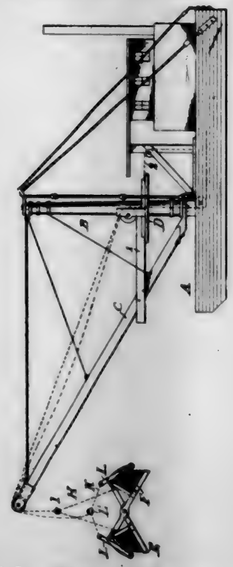
4. In a dental bracket, an adjustable bar attached to an arm supporting a table, combined with a locking device consisting of a locking eccentric, a roller attached to said eccentric, and an arm attached to said roller, and to the support of the bracket, substantially as described.

5. In a dental bracket, an arm supporting a table having a lateral adjustment, a slotted bar adjustably attached to said arm, a locking device mounted in said bar, and an arm secured to said locking device and pivotally attached to a support, substantially as described.

6. A table for dental purposes provided with a V-shaped hinged piece attached to one side thereof, having apertures therein for tools, and adapted to be folded back in a recess in said table, said V-shaped piece having an outside flap or strip adapted to be locked against the side of the table, substantially as described.

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**502,934.** DREDGING-MACHINE. William B. Fless, San Francisco, Cal., assignor to the Fless Dredging and Reclamation Company, of Nevada. Filed Sept. 21, 1892. Serial No. 446,391. (No model.)



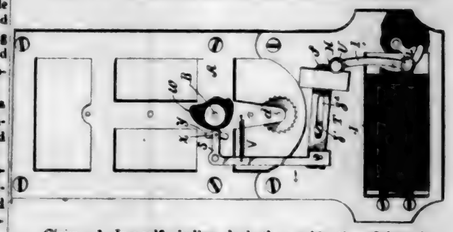
*Claim.*—1. In combination with the boom of a dredge having sheaves for duplicate chains, a dredge bucket composed of two sections each having an arm G with outwardly bent extensions G', links L pivoted to the outer ends of these extensions, and connected at their upper ends by a ring to a chain M, a chain J connected by chains H to the corners of the bucket sections, the chains J and M being arranged on the boom sheaves, all substantially as described.

2. In combination with the bucket sections, an arm G fixed to each side of each section, and having an outwardly bent extension, a link composed of two bars pivoted on the outer end of each extension and connected at its upper end by a chain to a ring, and a chain M, connected to said ring; all substantially as described.

3. In a dredging machine, a swinging boom, in combination with a loose sleeve and cap at its extremity a suspended bucket, and hoisting chains from said bucket passing over sheaves journaled in said cap, substantially as set forth.

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**502,935.** SELF-WINDING ELECTRIC CLOCK. Frederick M. Schmidt, Brooklyn, assignor to the Self Winding Clock Company, New York, N. Y. Filed Jan 19, 1893. Serial No. 458,911. (No model.)



*Claim.*—1. In a self winding clock, the combination of the going barrel, a spring drum and an electric motor having an oscillating or reciprocating armature, a rotative crank connected therewith, and mechanism between said crank and said going barrel for turning the latter by the former, substantially as described.

2. In a self winding clock, a motor comprising a magnet, and armature, and a rotative crank connected with the latter, combined with winding mechanism between said crank and the drum or going barrel and with a circuit closer controlled by the hour wheel or arbor, substantially as described.

3. In a self winding clock, a motor comprising a magnet and armature, a circuit controller actuated by said armature, a rotative crank also actuated by said armature and mechanism between said crank and the going barrel for driving the latter by the former, and a circuit closer actuated by the hour wheel or arbor to close the circuit for said magnet, substantially as described.

4. In a self winding clock, an electric motor and connections therefor, combined with a contact to be actuated by the train of gearing, an arm hung loosely on an arbor of the train of mechanism, said contact being pivotally carried by said arm, a projection for holding said contact in operating position, a contact $N^3$ to be engaged by said other contact to close the circuit through the motor and means for carrying said contact away from said contact $N^3$, substantially as described.

5. In a self-winding clock, an electric motor and connections therefor, combined with a contact P, a loosely hung arm to which said contact is pivoted, a contact $N^3$ in the circuit to be engaged by said contact P, a loosely hung arm and connections between it and the spring drum or going barrel for moving one by the other, and with connections between said arms, for moving the contact-carrying arm by the other arm, substantially as described.

6. In a self winding clock, an electric motor and a crank connected therewith for winding the main spring of the clock combined with means for throwing said crank from the dead center, substantially as described.

7. In a self winding clock, an electric magnet and armature and a crank connected therewith for winding the clock main spring combined with means for throwing said crank from the dead center, substantially as described.

8. In a self winding clock, an electric motor and connections therefor, combined with a crank connected with said motor for winding the clock spring, a lever for throwing said crank from the dead center, and means connected with the clock train for tripping said lever to move said crank, substantially as described.

9. In a self winding clock, an electric motor and connections therefor, combined with a crank connected therewith for winding the clock spring, a lever to throw the crank from the dead center, a projection connected with the clock train to co-act with said lever to trip the latter, and a spring to move said lever, substantially as described.

10. In a self winding clock, the combination of an electric motor and a crank connected therewith, a lever S, a projection connected with the clock train to trip said lever, a spring to move said lever and a bar R connected with said lever and acting on said crank to throw it from the dead center, substantially as described.

11. In a self winding clock an electro magnet and armature and a crank connected therewith for winding the clock main spring combined with gearing between said spring and said crank and a fly wheel for continuing the winding while the armature retreats from the magnet, substantially as described.

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**502,936.** ELEVATOR-GATE-OPERATING DEVICE. Edwin F. Shaw and Joseph H. Lorio, Philadelphia, Pa. Filed May 10, 1893. Serial No. 473,673. (No model.)

*Claim.*—1. A device for operating an elevator safety gate, comprising a pair of trip-slides connected to move together in opposite directions and also connected with the gate, and provided with cam-slots and adjacent offsets, a finger on the elevator car adapted to engage the offset of one or the other of the pair of trip-slides, and fixed pins which periodically engage the cam-slots to disengage the finger and trip-slides, substantially as described.





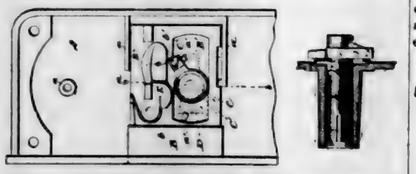
2. A device for operating an elevator safety gate, comprising a pair of trip-slides connected to move together in opposite directions and also connected with the gate, and provided with longitudinal slots which terminate in cam-slots at opposite ends of the respective slides, guides in which said slides are movable lengthwise, pins on said guides engaging the slots and which pins cause the said slides to move laterally when entering their cam-slots, offsets on the said slides opposite their cam slots, and a finger on the elevator car traveling in a right line between the slides and in the line of their offsets, substantially as described.

3. A device for operating an elevator safety gate, comprising a pair of trip-slides connected to move together in opposite directions and also connected with the gate, and provided with longitudinal slots which terminate in cam-slots, the cam-slot of one slide being at the end opposite that in the other slide, offsets on adjacent sides and at opposite ends of the respective slides, guides in which the slides are capable of longitudinal and also of lateral movement, springs interposed between the slides and their guides which normally press the slides toward one another, pins on the guides entering the slots in the slides, and a finger on the elevator car adapted to engage the offsets, substantially as described.

4. A device for operating an elevator safety gate, comprising a pair of trip-slides connected to move together in opposite directions and also connected with the gate, means on the elevator car to engage one or the other of such slides and move it in the direction in which the elevator car is traveling and thereby open the gate, and means to move the said slide so engaged laterally away from and out of engagement with its elevator car connection and to move the other slide into engagement with the car connection to effect the closing of the gate, substantially as described.

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**502,937.** LOCK. William E. Sparks, New Haven, Conn., assignor to the Sargent & Company, same place. Filed Mar. 27, 1893. Serial No. 467,734. (No model.)



*Claim.*—1. In a lock, the combination with the bolt thereof, of a rotatable hub having a bit arranged to engage with the bolt to throw the same and lock it in both of its positions, and a key-mechanism having two projections constructed to alternately engage with the said bit to act through the same in throwing the bolt, and also having means for locking the said projections in position to clear the bit, substantially as set forth.

2. In a lock, the combination with the bolt thereof, of a rotatable hub having a bit arranged to engage with the bolt to throw the same and lock it in both of its positions, and a key-mechanism having two projections constructed and arranged to alternately engage with the said bit to act through the same in throwing the bolt by a quarter turn in either direction, and also having means constructed to normally lock the said projections in position to clear the said bit and to retain the key until the said projections have been brought into such position before it can be removed from the lock, substantially as described.

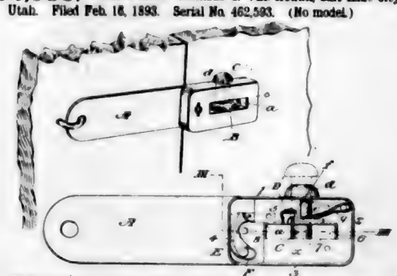
3. In a lock, the combination with the bolt thereof, of a knob having a hub furnished with a bit which engages with the bolt to throw the same, and a key-mechanism including a cylinder, furnished at its inner end with two oppositely extending projections, arranged to alternately engage with the said bit for throwing the bolt, and also including means for normally holding the said projections in line with the length of the bolt so as to clear the said bit, substantially as described.

4. In a lock, the combination with the bolt thereof, of a knob having a recessed hub, and furnished with a bit which engages the bolt to throw the same, and a key-mechanism including a cylinder, having its inner end adapted to fit into the recess in the said hub, and furnished with two oppositely extending projections arranged to alternately engage with the bit for throwing the bolt, and also including means for normally holding the said projections in line with the length of the bolt so as to clear the said bit, substantially as described.

5. In a key-mechanism, the combination with a key-cylinder constructed at its inner end with an arm having a locking pin, and with a transverse slot located in line with the said pin, of tumblers located in the said cylinder, and having their inner ends notched and exposed through the said slot, and a spring-actuated pivotal locking plate having a D-shaped opening through which the said cylinder passes, and constructed with a centrally notched double cammed edge located opposite the straight edge of the said opening, the said plate being located in the plane of the slot in the cylinder with its straight edge normally standing in front of the said slot, and with its notch normally receiving the said pin, substantially as described.

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**502,938.** HASP-LOCK. Charles S. Van Auker, Salt Lake City, Utah. Filed Feb. 16, 1893. Serial No. 462,593. (No model.)

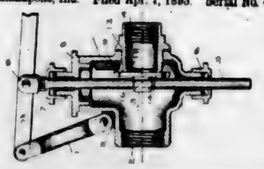


*Claim.*—1. A lock comprising a bolt, shoulders formed immediately upon said bolt, a spring bearing at one end against the lock casing and at the other against one of the shoulders of the bolt, and a counter-bolt adapted to engage with the other shoulder; substantially as described.

2. A lock comprising a bolt, shoulders upon said bolt, a spring bearing at one end against the lock casing and at the other against one of the shoulders of the bolt, a counter-bolt adapted to engage with the other shoulder, a tumbler at one end attached to the free end of the counter-bolt and at the other end connected to the casing, and a spring bearing at one end against the casing and at the other end against the tumbler; substantially as described.

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**502,939.** THROTTLE-VALVE. Benjamin F. Van Matre and George H. Van Matre, New Castle, assignors of one-third to James O. Miller, Indianapolis, Ind. Filed Apr. 7, 1893. Serial No. 469,489. (No model.)



*Claim.*—1. In a valve, a vertical stem extending entirely through the valve chamber thereof, and its middle squared, a valve having a curved bottom, and a lug on its top to limit its upward movement, projections on the back of such valve engaging with the squared portion of the stem, such valve held against a removable seat by the steam pressure from behind, substantially as set forth.

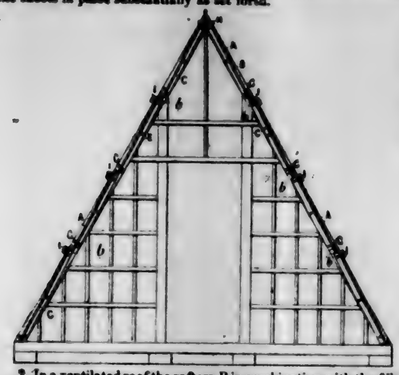
2. In a valve, a casing inclosing a valve chamber, a valve therein mounted loosely on a vertical valve stem and held against a removable seat by the steam pressure from behind, a number of brackets formed on the sides of the valve casing, and a link connected to a lever pivoted to the valve stem for operating the same, such link adapted to be pivoted to any of such brackets, whereby the lever may be set at any desired angle for working the valve, substantially as set forth.

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**502,940.** ROOF. Thomas Weare, Kumeo Junction, New Zealand. Filed Jan. 7, 1893. Serial No. 457,590. (No model.) Patented in New Zealand June 1, 1891, No. 5,031.

*Claim.*—1. In a ventilated roof the rafters in combination with

roofing-material-supporting-fillets fixed thereto with intermediate lateral spaces and with a suitably greater rise or angle than that of the rafters, sheets of roofing material, of a less width than the clear space between the rafters and overlapping each other in such manner that a space is left in height between the upper edge of one sheet and the lower edge of the next following upper sheet, and means for holding the sheets in place substantially as set forth.



2. In a ventilated roof the rafters B in combination with the fillets C fixed thereto by means of screws or nails E with washers F between rafter and fillet, the latter having a suitably greater rise or angle than that of the rafter sheets A, of roofing material of a less width than the clear space between the rafters so as to form lateral air spaces *a* and overlapping each other in such manner that a height space *b* is left between the upper edge of one sheet and the lower edge of the next following upper sheet, the pegs G for holding the lower ends of the sheets in place, and the wires H with staples for holding the upper ends of the sheets in place, substantially as set forth.

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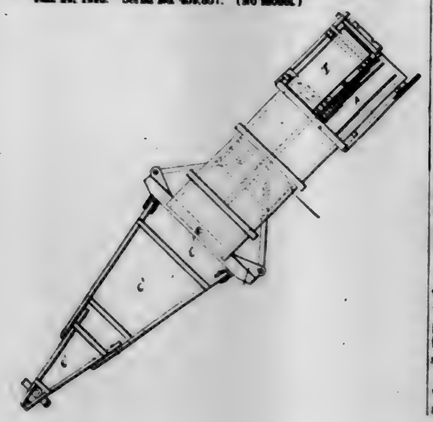
**502,941.** MANUFACTURE OF STOCKINGS. Louis M. D. Williams, Philadelphia, Pa., assignor of one-half to Robert W. Scott, same place. Filed Dec. 19, 1892. Serial No. 455,637. (No model.)



*Claim.*—The mode herein described of making stockings having feet with seamless heel and toe portions, said mode consisting in forming the leg tube upon an ordinary circular machine and the foot portion with its seamless heel and toe pockets upon a circular seamless machine, by transferring the cylinder of one machine, with the partially formed stocking upon it, to the other machine for the completion of the stocking, substantially as specified.

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**502,942.** HAY-PRESS. Arbin Witte, Brenham, Tex. Filed Jan. 26, 1893. Serial No. 459,857. (No model.)

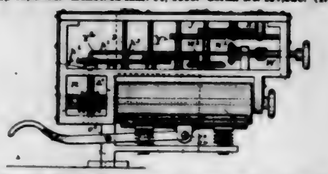


*Claim.*—1. The combination, with two press-chambers arranged side by side, and separated by a central longitudinal partition, alternately reciprocating followers in said press-frames, a top-lid for each press-frame hinged to the central partition, pivoted bails applied to the side-walls for locking said lids in position and a block pivoted to the end of the central partition and means for locking said end-block to the ends of the press-chambers, substantially as set forth.

2. The combination, of two press-chambers arranged side by side, being separated by a central longitudinal partition, reciprocating followers located in said press-frames, means for alternately operating said followers, a lid for each press-chamber hinged to the central partition, pivoted bails applied to the side-walls of the press chambers for locking said lids in closed position, each lid being adapted to be moved over the lid of the adjacent press-frame and a common end-block pivoted to the rear end of the longitudinal partition, provided with a projecting central bar having projecting stops, bails pivoted to fixed side-bars of the press-frame for locking the end-block in position at the end of one press-chamber or the other, substantially as set forth.

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**502,943.** CLOTH-MEASURING MACHINE. Robert M. Wren and Andrew J. Oliver, Oakland, Cal.; said Oliver assignor to said Wren; Eva I. Wren administratrix of said Robert M. Wren, deceased. Filed Aug. 12, 1891. Renewed Mar. 11, 1893. Serial No. 467,520. (No model.)

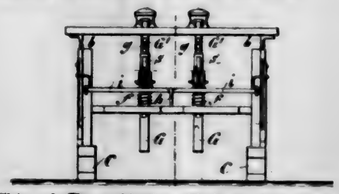


*Claim.*—1. In a cloth-measuring machine, the combination of the measuring-roller, spring-pressed clamp to hold the cloth to the roller, the pointer-shafts carrying pointers in their ends, dials having divisions corresponding with linear measure, gearing connecting the first or units pointer-shaft to the shaft of the measuring roller, and the other shafts to the first pointer-shaft, as described, and reversing mechanism or means whereby the pointer shafts are reversed and the pointers are turned back to zero or the starting points on the dials, and the cloth roller thrown out of gear as described.

2. The combination with a cloth measuring roll and a spring controlled shoe or clamping plate, of the worm operated by said roll, a train of registering gears, a movable pinion mounted upon a suitable support, and having a suitable shifting rod for throwing said pinion into and out of gear with the train of registering gears, the registering devices or indicators secured in the casing of the machine, and the push rod W provided at its inner end with the gear W', whereby the registering devices or indicators may be set or manipulated in any desired way, as set forth.

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**502,944.** PEDAL-STOOL. Cender Zender, Berlin, Germany. Filed Mar. 18, 1893. Serial No. 466,647. (No model.)



*Claim.*—1. The combination with the standards, of the foot rest vertically adjustable thereon, the auxiliary pedals pivoted to said foot rest, the longitudinally adjustable coupling rods connected at their upper ends to said auxiliary pedals and with their lower ends in position to engage the pedals of an instrument, and means for retracting said rods, substantially as set forth.

2. The combination with the standards, of the foot rest provided with vertical racks, dogs on said standards engaging said racks, vertically movable connecting rods, each composed of a rack bar and a tubular portion embracing said rack bar, said tubular portion being provided with a dog engaging the teeth of said rack bar and having its lower end in position to engage one of the pedals and retracting springs for said connecting rods, substantially as set forth.

3. The combination with the standards, of the foot rest, provided with vertical racks, dogs on said standards engaging said racks, the auxiliary pedals pivoted to said foot rest, vertically movable connecting rods each having its upper end connected with one of said auxiliary pedals and its lower end in position to engage the pedal of an instrument, said connecting rods being each composed of a rack bar and a tubular portion embracing said rack bar said tubular portion being provided with a dog engaging the teeth of the rack bar and retracting springs for said rods, substantially as set forth.

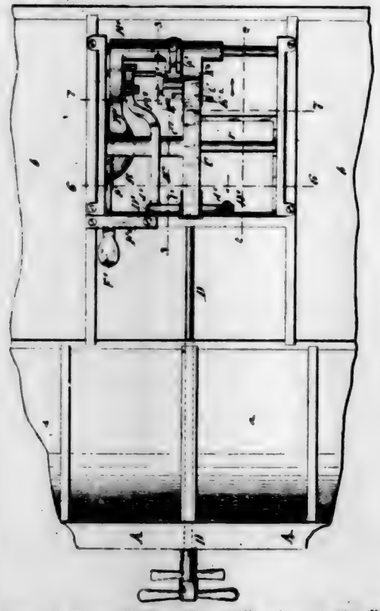


4. The combination with the standards, each provided with a guide plate having upturned vertical racks engaging said guide plates, dogs on said standards engaging said racks, vertically movable connecting rods each having its lower end in position to engage one of the pedals of an instrument, said connecting rods being composed of a rack bar and a tubular lower portion embracing and provided with a dog engaging said rack bar and retracting springs for said connecting rods, substantially as set forth.

5. The combination with the standards, of the foot rest provided with vertical racks, dogs on said standards engaging said racks, vertically movable connecting rods each composed of a rack bar and a tubular portion embracing and provided with a dog engaging said rack bar, said connecting rods having their lower ends in position to engage the pedals of an instrument, a rock shaft provided with an operating arm and with arms to which said dogs on the standards and connecting rods are connected and retracting springs for said connecting rods, substantially as set forth.

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**502,945.** TILL-ALARM. Peter Riegler, Brooklyn, N. Y. Filed Jan. 17, 1893. Serial No. 458,659. (No model.)



*Claim.*—1. The combination with a spindle and an actuating-disk on said spindle provided with a radial recess, of an alarm-device operated by said disk, a fulcrumed locking lever arranged in one plane with the spindle of the actuating disk, a spindle for operating said locking lever, a stop or abutment for the locking lever and mechanism interposed between said spindle and the locking lever so as to move the same into the recess of the actuating-disk for clearing the stop when the till is to be opened, substantially as set forth.

2. The combination, of an actuating-disk, having a radial recess, a spindle for turning said disk, an alarm device operated by said disk, a fulcrumed locking lever arranged in one plane with the spindle of the disk, a stop for the locking lever, a spindle for operating the locking lever, a cam on said spindle, an intermediate pivot-arm engaged by said cam, said arm being adapted to lift the rear-end of the locking lever and place its front-end into the recess of the actuating-disk, so as to clear the stop for opening the till, substantially as set forth.

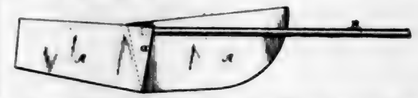
3. The combination, with an actuating-disk having projections near its circumference, of a spindle for turning said disk, an alarm-bell, a spring-actuated tongue for ringing said bell, a fulcrumed lever interposed between the spring-tongue and the projections of the actuating-disk and means for locking the spring-tongue in raised position so as to discontinue the ringing of the bell by the actuating disk, substantially as set forth.

4. The combination, of an actuating disk having projections near its circumference, a spindle for turning the disk, an alarm-bell, a spring-actuated tongue, a fulcrumed lever interposed between the spring-tongue and the actuating-disk, a fulcrumed bell-crank lever adapted to engage the spring-tongue, a thumb-piece pivoted to the front-end of said elbow-lever and a stop-shoulder for retaining said thumb-piece and elbow-lever in depressed position, while the spring-tongue is supported in raised position, so as to prevent the ringing of the bell by the actuating-disk, substantially as set forth.

5. The combination, of an actuating-disk, having projections near its circumference and a radial recess, a spindle for turning said disk, an alarm-device adapted to be operated by said disk, a fulcrumed locking lever located in one plane with said spindle, a second spindle below the disk-spindle, a cam on the lower-spindle, said cam being provided with stop-lugs, a transverse bar arresting the lugs of said cam and a pivoted arm riding in said cam and engaging the rear-end of the locking lever, so as to raise the same and lower the front-end of the lever, substantially as set forth.

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**502,946.** MINER'S SQUIB. James Beadle, Shickshinny, assignor of one-half to Esther A. Daddow, St. Clair, Pa. Filed Jan. 14, 1892. Serial No. 418,091. (No model.)



*Claim.*—A miner's squib consisting of a rolled strip of paper having a transverse fold *a* extending entirely across the same thereby forming a partition, and a twisted portion *b* which forms the match end of the squib, substantially as specified.

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**502,947.** MEANS FOR ADVERTISING. Arthur T. Bond, Wilmington, Mass. Filed Feb. 23, 1893. Serial No. 463,348. (No model.)

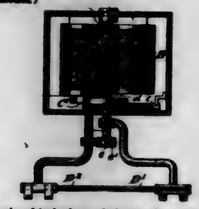



*Claim.*—1. A label holder adapted to be engaged by its outer longitudinal edges in two grooved moldings one at the top and one at the bottom of said label holder, and provided with one or more grooves parallel to its edges, whereby it is divided into longitudinal panels, which label holder carries upon its face the permanent or standing part of any advertisement, in combination with a removable label adapted to be engaged with said groove, which removable label carries the ephemeral part of an advertisement, of which the label holder presents constantly the permanent part, substantially as and for the purpose described.

2. A label holder combined by its longitudinal edges with two overlapping moldings which retain it in place, and formed by striking up or otherwise, into two or more panels one or more of which panels has an edge overlapping the next adjacent panel, and separated from the surface of the next adjacent panel by a recess, within which recess the edge of a removable label may be engaged, in combination with a removable label adapted to be combined with said label holder and to be engaged by its edges with said grooves which form the boundaries of said panels, said label holder carrying upon that part of its surface which is not covered by the label a permanent or standing advertisement, and said label carrying upon its surface a temporary and removable advertisement connected with and germane to the permanent advertisement on the label holder, substantially as and for the purpose described.

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**502,948.** ELECTRIC-ARC LAMP. LUTHER H. BUCHANAN, Pasadena, Cal. Filed Sept. 25, 1891. Renewed Jan. 5, 1893. Serial No. 457,209. (No model.)



*Claim.*—1. A pair of disk shaped electrodes eccentrically mounted on sustaining arms and each having an area greater than a half circle, substantially as shown and described.

2. A pair of disk shaped electrodes having each an area greater than three-fourths of a circle and sustained by supporting arms attached near their outer edges, substantially as shown and described.

3. In an arc lamp a pair of disk shaped electrodes each approximating a complete circle in area and sustained by an arm located near the outer edge of the disk, in combination with regulating mechanism for establishing the arc and regulating the length thereof, substantially as described.

4. An arc lamp regulator consisting of a disk shaped armature eccentrically and loosely mounted on a shaft in the magnetic field of a series of electro-magnetic poles, in combination with a pair of electrode sustaining arms and connections between the armature and the movable electrode sustaining arm whereby the arc is established and regulated, substantially as described.

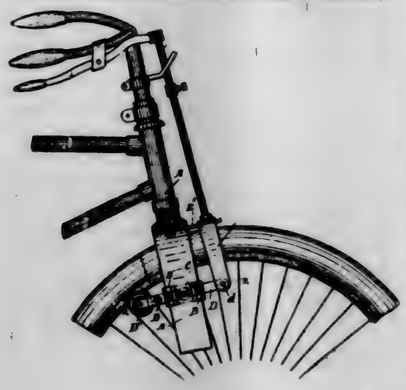
5. In an arc lamp a series of regulating electro-magnets having curvilinear poles and a disk armature eccentrically mounted on a shaft and lying in the magnetic field of said poles, in combination with a pair of electrode sustaining arms one fixed and the other movable and mechanical connections between the armature and the movable arm whereby the arc is established and regulated substantially as described.

6. An arc lamp having a pair of disk shaped electrodes sustained each by an arm, a pair of regulating magnets, the poles of which surround a disk like armature having mechanical connections with one of the electrode sustaining arms and an automatic cut out device carried by the armature and adapted to shunt the lamp for abnormal currents, substantially as described.

7. In an arc lamp the combination with a rotary carbon feeding rod of a disk pivoted eccentrically upon said rod a plurality of electro-magnets arranged around the periphery of said disk and adapted to turn the same on its pivot and connections between the disk and carbon rod whereby the latter is caused to partake of the movement of the disk, substantially as described.

8. In an arc lamp the combination with the rotary carbon feeding rod and a wheel rigid thereon, of a disk pivoted eccentrically upon said rod, a plurality of electro-magnets arranged around the periphery of said disk and adapted to turn the same on its pivot, and connections between the disk and the wheel on the carbon rod whereby the latter is caused to partake of the movement of the disk, substantially as described.

**502,949.** BRAKE FOR BICYCLES. ORRIAN R. BURNS, San Francisco, Cal. Filed Jan. 25, 1893. Serial No. 459,656. (No model.)

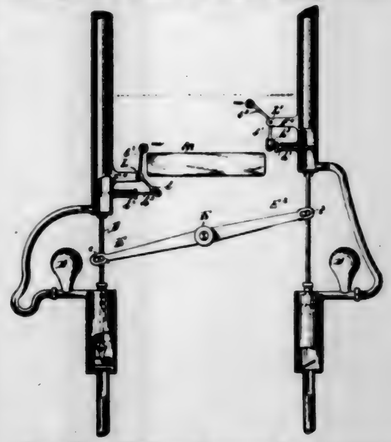


*Claim.*—1. In a brake mechanism for bicycles, the combination with the wheel and a forked tiller, of the brake-levers carrying friction wheels pivotally connected to the forked arms of the tiller and brake-stem or handle, as described.

2. In a bicycle-brake the combination with the tiller and brake-stem composed of forked-arms placed astride the wheel, of the strap-plates having pivotal points for the brake-levers and connected to forked arms of the tiller by bolts and nuts, as described.

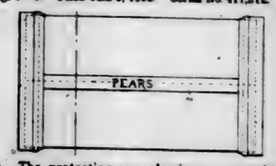
3. The combination and arrangement in a bicycle wheel, of the tiller stem, brake stem, brake-levers carrying friction rollers and pivotally connected to forked arms of the tiller and brake-stem for joint action, as described.

**502,950.** HYDRAULIC PUMP. WILLIAM CAMERON, Milpitas, Cal. Filed Apr. 11, 1892. Serial No. 428,564. (No model.)



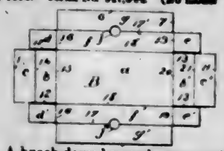
*Claim.*—The combination with the pumps, pistons working therein, walking beam for alternately raising and lowering the pistons, stand pipes connected to the pistons and carried thereby, and of the flexible connection between the pumps and stand pipes.

**502,951.** GLASS-FRUIT-JAR PROTECTOR. MARY E. CLARK, Corning, N. Y. Filed Jan. 6, 1892. Serial No. 417,212. (No model.)




*Claim.*—The protecting cover having a removable cap at each end and provided with interior compressible ribs and having longitudinal and circumferential joints sealed with thin adhesive strips in an air tight manner in combination with a fruit jar whereby when the circumferential strips are cut both caps can be removed and the cover can be taken off and the jar removed or replaced without destroying the cover and whereby when all the strips are cut the cover can be closely packed for storage or transportation, substantially as set forth.

**502,952.** DOUBLE TELESCOPE BOX. JOSEPH T. CRAW, Jersey City, N. J., assignor of one-half to Brown & Bailey, Philadelphia, Pa. Filed Oct. 4, 1892. Serial No. 447,844. (No model.)



*Claim.*—1. A knock-down box and cover, each having side and end flaps adapted to turn down inside the box and cover and extending to the bottoms of the same, and a clamping piece adapted to clamp said side and end flaps, substantially as described.

2. A box and cover, each having turn-in side and end flaps extending to the bottom thereof, and a separate clamp piece, engaging said flaps, substantially as described.

3. A telescoping box and cover, each having turn-in side and end flaps and an inside clamp piece of the same finish as said side and end flaps and adapted to clamp the same, substantially as described.

4. In knock-down boxes and covers, and in combination with side and end flaps which will turn in and down to the bottoms of said boxes and covers, separate bottoms for locking said flaps, substantially as described.

5. In blanks for knock-down box covers the combination with side flaps and turn-in side flaps of holes situated to be bisected by the scores between the said side flaps and turn-in side flaps and so that when the last named flaps are turned in the halves of said holes will register and form thumb notches in the sides of the cover, substantially as described.

6. A telescoping box and cover having side flaps, turn-in side flaps shorter than said side flaps, end flaps, inside end flaps narrower than said end flaps, turn-in end flaps wider than said end flaps, and an inside clamp piece adapted to clamp said turn-in side and end flaps, substantially as described.

7. A knock down box having turn-in side and end flaps extending to the bottom of the box and showing within the same finish as the exterior of the box, and also having a separate bottom adapted to be inserted within the box and clamp said turn-in flaps and showing the same finish as the exterior of the box, substantially as described.

8. A knock down box cover having turn in side and end flaps extending to the bottom of the cover and showing the same finish within as the exterior of the cover, and also having a double bottom adapted to be inserted in the cover and clamp said turn-in flaps and showing within the same finish as the exterior of the cover, substantially as described.



**502,953.** SAFE. FRANK CRAWFORD, North Urbana, N. Y. Filed May 3, 1893. Serial No. 473,736. (No model.)



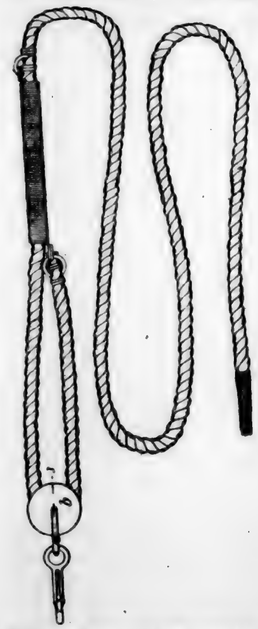
*Claim.*—1. In a safe door, a block having sliding movement therein and adapted to contain an explosive compound, and operated by the locking bolt of the door, a hammer located adjacent to the cartridge block, a trip lever connected with the hammer, and a trip mechanism adapted for engagement with the lever, which trip mechanism is concealed within the door, as and for the purpose set forth.

2. In a safe door, a spring-controlled cartridge block located therein, a spring-controlled hammer located over the cartridge block, a lever having locking engagement with the hammer, and a plate having movement within the door, the plate being located near the front thereof, which plate is adapted to engage with the lever connecting with the hammer and trip said lever, releasing the hammer, as and for the purpose specified.

3. The combination, with a safe door constructed in sections, the sections having a hinge connection, and a trip plate located between the sections, of a cartridge block having movement in one of the sections adjacent to the plate, a spring-controlled hammer located above the cartridge block, a spring-controlled lever connected with the cartridge block and adapted to be operated upon by the locking bolt of the door, and a lever having locking engagement with the hammer, which lever is tripped or removed from the hammer when engaged by the said plate, as and for the purpose specified.

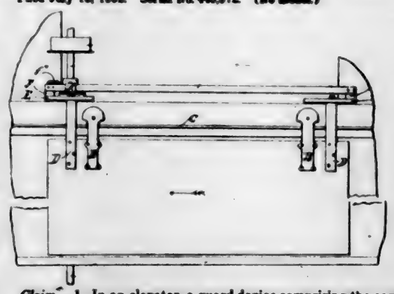
4. The combination, with a safe door constructed in sections, the sections being separate and provided with a hinged connection, and a spring-controlled plate located at the back of the forward section and essentially corresponding in area to the area of said section, a spring-controlled cartridge block held to slide in the rear section, a locking bolt acting upon the cartridge block, a spring controlled hammer pivoted above the cartridge section of the block, and a spring-controlled lever having locking engagement with the hammer, which lever is forced out of engagement with the hammer, releasing the same when the plate is forced rearward or inward, as set forth.

**502,954.** TETHER OR HALTER-STRAP. HENRY T. CRESMAN, Portland, Me. Filed Mar. 18, 1893. Serial No. 466,503. (No model.)



*Claim.*—A tether or halter-strap comprising in its construction an attaching device, a pulley connected therewith, a doubled portion of the tether passed about the pulley, and a helical spring surrounding the single portion of the tether and at one end connected thereto, and attached at its other end to the doubled over end thereof, as set forth.

**502,955.** ELEVATOR-GUARD. ORION L. DAVIS, Rochester, N. Y. Filed July 18, 1892. Serial No. 440,372. (No model.)



*Claim.*—1. In an elevator, a guard device comprising the combination of a revolving wheel means for producing revolution of said wheel, a movable door, a friction device comprising a strip of suitable material and of suitable cross-section and connected to said door, and means for making and breaking contact between the friction device and said wheel, substantially as described.

2. In an elevator, a guard device comprising the combination of a revolving wheel means for producing revolution of said wheel, a movable door, a friction device fastened to said door whereby said revolving wheel is adapted, by frictional contact with said friction device, to move said door, and means for making and breaking contact between said friction device and said wheel, substantially as described.

3. In an elevator, a guard device comprising the combination of a revolving friction wheel, means for producing revolution of said wheel, a movable door, a friction device composed of strips of suitable material and of suitable cross section connected at both ends to said door, and means for making and breaking contact between the same and said wheel, substantially as described.

4. In an elevator, a guard device comprising the combination of a revolving friction wheel means for producing revolution of said wheel, a movable door, a pair of parallel straps connected to said door and placed one on each side of said wheel, and means for producing or breaking contact of one or the other of said straps with said wheel, substantially as described.

5. In an elevator, a guard device comprising the combination of a revolving friction wheel means for producing revolution of said wheel, a movable door, a pair of parallel straps connected to said door and placed one on each side of said wheel, a pair of idlers one on the outer side of each of said straps, and means for pressing one or the other of said idlers against its strap and thereby to cause the said strap to make contact with the friction wheel, substantially as described.

6. In an elevator, a guard device comprising the combination of a revolving friction wheel means for producing revolution of said wheel, a movable door, a pair of parallel straps connected to said door and placed one on each side of said wheel, a movable plate, a pair of idlers mounted on said plate and placed one on the outer side of each of said straps, and means for moving said plate whereby to press one or the other of said straps against said wheel, substantially as described.

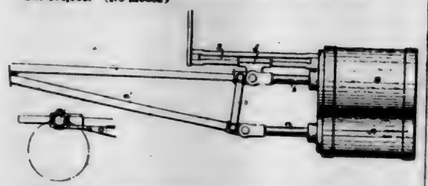
7. In an elevator, a guard device comprising the combination of a revolving friction wheel means for producing revolution of said wheel, a movable door, a pair of parallel straps connected to said door, a movable plate having guide lugs, a pair of idlers mounted on said plate and placed one on the outer side of each of said straps, a base plate having guides fitted to said lugs, an actuating lever connected to said plate, and means for moving said lever, substantially as described.

8. In an elevator, a guard device comprising the combination of a revolving friction wheel means for producing revolution of said wheel, a movable door, a pair of parallel straps fixed to said door, means for tightening said straps, and means for aligning the same with reference to said door or relatively to said friction wheel, and means for producing or breaking contact of one or the other strap with said wheel, substantially as described.

9. In an elevator, a guard device comprising the combination of a revolving shaft, a movable door, a pair of parallel straps fastened to said door near the ends thereof and having a recess in the inner side of one of said straps near its end and a recess in the inner side of the other of said straps near its opposite end, a friction wheel fixed on said shaft and between said straps, an idler on the outer side of each of said straps, means for constantly pressing said idlers in one direction, and means for pressing said idlers at will in the opposite direction, whereby to make or break contact of either strap with said wheel, substantially as described.

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**502,956.** DRIVING CONNECTION FOR COMPOUND ENGINES. HENRY D. DUNBAR, North Hartland, Vt. Filed Apr. 19, 1893. Serial No. 471,009. (No model.)



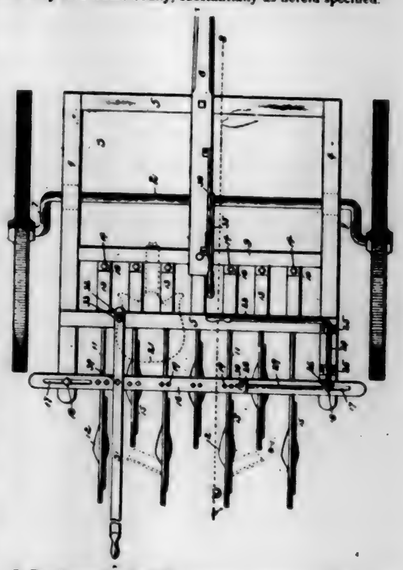
*Claim.*—1. The combination, in a compound engine having superposed cylinders, of the two piston rods, two connecting rods, one for each piston rod, a guide for one of said rods, and means for preserving the outer ends of the piston rods at the proper distance from each other without preventing independent longitudinal movement, substantially as specified.

2. The combination, in a compound engine having superposed cylinders, of the two piston rods, the two connecting rods one for each piston rod, a guide for one piston rod, and a spacing link or yoke uniting the two connecting rods, substantially as specified.

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**502,957.** CULTIVATOR. HARRY P. EDE, St. Louis, Mo., assignor of one-half to John P. Bolin, Vandalia, Ill. Filed May 8, 1893. Serial No. 473,374. (No model.)

*Claim.*—1. The improved wheeled implement constructed with ground wheels 1, a cranked axle 2, a rectangular main frame made up of longitudinal bars 4, transverse bars 5 and a pole 6 all mounted upon said axle, the cranks 7 located adjacent the ground wheels and exterior of said frame, bearings 8 in which said axle is secured so as to be capable of a rocking movement therein, the rear cross bar 5 affixed to the side bars 4 at some distance from the rear ends of said side bars so as to leave the same projecting free rearward and a space between said projecting portions, a cross bar 9 extending across the space between the side bars 4 at a point intermediate of the rear cross bar 5 and the front bar of the frame, a series of perforated ears 10 projecting rearward from the rear vertical face of this cross bar 9 in horizontal alignment, a series of beams 11 having their forward ends pivotally connected to said ears, a sliding bar 16 loosely-mounted upon the projecting rear ends of the side bars 4 and provided with longitudinal slots 17 adjacent each end, bolts 18 which are loosely engaged by the slot in the sliding bar 16 and loosely secure said bar in the position described and permit it to have a transverse movement with relation to said side bars, each of said beams loosely secured to the sliding bar 16 at a point in the rear of the cross bar 9, means for sliding the bar 16 transversely of the frame, and means for rocking the axle 2 in its bearings and raising or lowering all the parts carried by said frame bodily, substantially as herein specified.



2. The improved wheeled implement constructed with a main frame 4, ground wheels, an axle upon which said frame is mounted, a series of beams 11 having their front ends pivotally secured to said frame, a cross bar to which each of said beams is loosely secured in the rear of its pivotal-point, a hand lever 23 having its upper end free, a longitudinal shaft or bar 24 mounted in bearings 25 upon the frame and to which the lower end of said hand lever 23 is secured, a crank 26 secured to said shaft, and a connecting rod or bar 29 having one end connected to said sliding bar 16 and its opposite end connected to said crank, whereby said beams may be simultaneously moved laterally of said frame, substantially as herein specified.

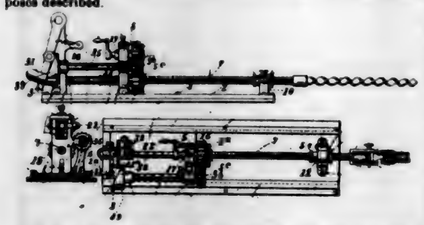
3. In a cultivator, a series of beams 11 pivotally connected at their forward ends to the frame of the machine, shovels 12 carried by some of said beams, plow-shares 39 having a transverse width in excess of said shovels, and having their inner ends secured to said beams to project laterally therefrom, one toward each side of the machine, with their outer ends free, a hand lever for moving said shovels and said plow-shares laterally without moving the frame of the machine, rods 40 one end of which is connected to the free end of the plow-shares and the upper ends of which are screw-threaded, and nuts 42 which engage the screw-threaded ends of said rods above a cross-bar of the frame and connect said rods to said bar, substantially as herein specified.

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**502,958.** EARTH BORING AND DRILLING MACHINE. WALTER E. EVERITT, Buffalo, N. Y. Filed Apr. 12, 1893. Serial No. 470,006. (No model.)



*Claim.*—1. In an earth boring machine, the combination with a screw bar, 7, having its rear end extending back beyond the frame in which it is mounted, of a collar 5ª, located on the screw bar at the front of the supporting frame, a spiral spring at the rear of the supporting frame, 5, for holding the screw bar back until stopped by the collar 5ª, a sliding carriage on which the rear end of the screw bar and its operating gearing is mounted in a suitable frame adapted to receive it, a longitudinally movable screw threaded sleeve mounted in a stationary support at the front of the machine in which the screw bar operates and moves said carriage, a spur gear wheel adapted to gear in with the screw bar gear wheel and secured to a horizontal shaft mounted in suitable boxes on the sliding carriage, a pivoted swinging hammer mounted on a support on said sliding carriage, a spiral spring for drawing it forward and a cam wheel on the horizontal shaft for operating said hammer, substantially as and for the purposes described.

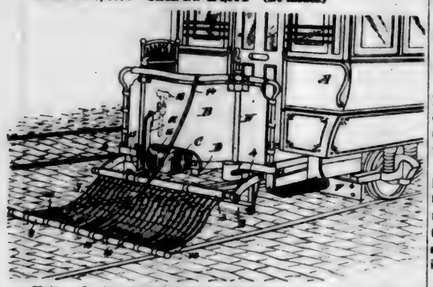


2. In a boring machine, the combination with the screw bar, 7, of a removable holding swivel consisting of two pivoted holding hook bars, a thumb screw for securing them when placed on the front of the screw bar and a means secured by a swivel to the hook bars and provided with an internal screw thread adapted to receive the screw end of the extension auger boring bar, as and for the purposes described.

3. In an earth boring machine, the combination with the screw bar, 7, having its front end mounted so as to operate in a screw sleeve connected with a stationary support, and its rear end mounted so as to turn in a supporting frame mounted on a movable carriage adapted to be drawn forward by said screw bar, 7, a gear wheel mounted and rigidly secured on said screw bar, 7, and connecting with another gear wheel mounted above it in the same frame, means for operating it, and a gear wheel secured to a horizontal shaft so as to gear in with the gear wheel on the screw shaft and mounted in boxes in a frame rigidly secured to the sliding carriage, a cam wheel, 39, connected to the opposite end of said shaft and means for releasing said wheel from the horizontal shaft to stop the operation of the said cam wheel and hammer, 31, substantially as described.

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**502,959.** CAR-FENDER. MILLARD F. FIELD, Taunton, Mass. Filed Dec. 9, 1892. Serial No. 454,564. (No model.)



*Claim.*—1. A car-fender composed of a series of parallel spring rods or fingers mounted upon a common pivot, and adapted to be swung up against the dash-board substantially as specified.

2. In combination with a car, a fender composed of a series of parallel spring rods mounted upon a pivot attached to the car end and adapted for three adjustments in position; viz, to be swung up against the dash-board, to be held slightly raised above the road-bed, and to rest upon the track, together with means for effecting such changes substantially as set forth.

3. In combination with a car, an open fender composed of a series of spring rods or fingers, pivotally attached to the car end and a flexible connecting device adapted to form the front edge of the fender and unite the several fingers as a unit, substantially as stated.

4. A fender for street-car service composed as follows, a transverse bar, or rear rod pivotally attached to the car, a series of curved rods provided with a flexure at 5, and a flexible connection—as a rubber band or tube—which is attached to the individual fingers at their extremities, substantially as described.

5. The combination with a car, of an open fender composed of parallel spring rods or fingers and pivotally attached to the car-front and adapted to be normally held with its front end above the track, together with means to cause said front end to drop, and bear upon the road-bed, substantially as explained.

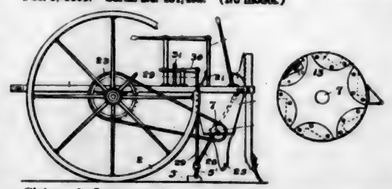
6. In combination with a car, the lateral supporting plates 4, a pivotal fender thereupon composed of curved spring rods or fingers, and a flexible bar adapted to unite said fingers, a releasing lever pivoted upon the car front, and a lug 15 secured to the fender pivot, and adapted to engage the releasing lever substantially as specified.

7. In combination with a car, and a projecting fender, releasing mechanism to operate said fender and composed of a rocking lever furnished at one end with a presser-plate to be operated by the knee of the driver, and with the lower extremity adapted to engage with the fender, substantially as set forth.

8. In combination with a car, a pivotal fender having its point of support above its projecting end, when the latter rests upon the track, and composed of parallel spring rods adapted to be swung up against the dash-board, a yielding connection which unites the extremities of the several rods, elastic rollers interposed between said fingers and mounted on said yielding connection, together with means for adjusting the fender in the several positions, substantially as herein specified and explained.

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**502,960.** SEEDER. ALVIN G. GEXELER, Frostburg, Md. Filed Feb. 8, 1893. Serial No. 461,492. (No model.)



*Claim.*—1. In a seed planter the seed conveying wheel having seed pockets formed by notches extending transversely across the periphery of the same and closed at the sides by plates sunk in the face of the wheel to the level of its surface and having the same curvature as the wheel, substantially as set forth.

2. In a seed planter the seed conveying wheel having seed pockets formed by notches extending transversely across the periphery of the same and closed at the sides by plates sunk in the face of the wheel to the level of its surface and having the same curvature as the wheel, and an adjustable plate secured in the bottom of the pocket, substantially as set forth.

3. In a seed planter the seed wheel provided with notches having in their bottoms hinged plates one of which is secured to the bottom of the notch and a screw bolt and coil spring adapted to adjustably hold the other leaf in a yielding manner, substantially as set forth.

4. The combination of a hopper, the shaft passing through said hopper and suitably journaled in the cart body, the ratchet wheel fast on said shaft, the pawl and lever for operating said ratchet and shaft, and a seed wheel also on said shaft having pockets adapted to convey seed through the floor of the hopper, substantially as set forth.

5. The combination of a hopper, the shaft passing through said hopper and suitably journaled in the cart body, the ratchet wheel fast on said shaft, the pawl and lever for operating said ratchet wheel and shaft and a seed wheel also on said shaft having pockets adapted to convey seed through the floor of the hopper, a gear wheel on said shaft and a gear wheel on the cart shaft whereby seed can be planted in hills or continuously as desired, substantially as set forth.

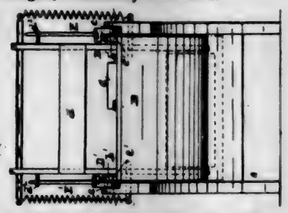
6. In a seed planter the combination of a hopper, a wheel having pockets, and the stationary approximately pyramidal device having a curved face conforming to the wheel and arranged in its apex near the central plane of said wheel and adapted to throw surplus seed laterally with respect to the wheel, substantially as set forth.

7. In a planting machine the combination of the furrow-opening shovel and the coverers having two approximately vertical blades inclined to each other and situated in planes on opposite sides of the shovel point, the pivoted suspending rods and the adjusting lever extending to a point above the cart frame, all substantially as set forth whereby the coverer can be swung and raised from the ground.

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**502,961.** WASHING-MACHINE. JOSEPH GOSSOREK, Detroit, Mich. Filed Aug. 31, 1892. Serial No. 444,628. (No model.)

*Claim.*—1. In a washing machine, the combination, with a support, of an oscillatory receptacle pivotally secured thereto at the sides, an oscillatory lever arm pivotally secured to each side of the support above the pivotal point of the receptacle, the lower end of which engages with the receptacle above the point of support of the latter, an oscillatory vertically movable hanger pivotally secured at each point of support of the receptacle, the upper portion of each of which engages with the upper portion of the lever arm, a handle at the upper end of the hangers, and a rubber journaled in the lower end of the hangers, substantially as set forth.



2. In a washing machine, the combination, with a support, provided with an inwardly projecting pin at each side, an oscillatory receptacle journaled upon said pins, oscillatory lever arms secured to the sides of the support, and to the sides of the receptacle, a slotted, spring actuated hanger pivotally secured upon each of the pins, the upper portion of each of said hangers engaging with the upper portion of said lever arms, and provided with a handle, and the lower ends of said hangers being provided with a rubbing roller, substantially as set forth.

3. In a washing machine, the combination, with a support provided with internally projecting pins at its sides, an oscillatory receptacle journaled upon said pins, an oscillatory lever arm pivotally secured at each side of the support and engaging with the receptacle, a slotted hanger pivotally secured upon each pin, and engaging with the lever arm, a rubber journaled in the lower ends of said hangers, a handle at the upper ends of the hangers the ends of which handle project beyond the hangers, and a spring secured to the projecting ends of the arms and to the outer ends of the pins upon the sides of the support, substantially as set forth.

4. In a washing machine, the combination, with a support, of an oscillatory receptacle pivotally secured therein, the cover of which receptacle is provided with an elongated slot and upwardly extending shoulders at each end, a hanger arm through each slot and pivotally secured within the receptacle, a rubber journaled to the lower ends of said hangers, the upper ends of said hangers being provided with projections upon the outer sides thereof and with a handle, an oscillatory lever arm pivotally secured to each side of the support, the lower end of which engages with the shoulders upon the sides of the cover, and the upper end engages with the projections upon the hangers, substantially as set forth.

5. In a washing machine, the combination, with a support, of an oscillatory receptacle pivotally secured therein, an oscillatory rubber journaled concentrically with said receptacle, the upper ends of which is provided with a handle, and lever arms pivotally secured to the support, the lower ends of which engage with the receptacle and the upper ends engage with the handle of the rubber, substantially as set forth.

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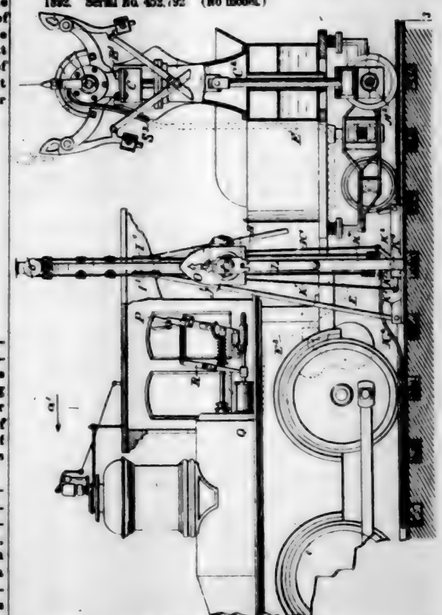
**502,962. LOOP-FASTENER.** HERMAN GREBE, New York, N. Y. Filed Feb. 23, 1893. Serial No. 463,336. (No model.)



*Claim.*—1. A loop fastener composed of a burr A having prongs $a^1$, $a^2$, adapted to be turned down upon the loop to hold the same, and a head B to co-operate with said burr A and secure the same to the fabric, the said burr and head being united by a shank, substantially as shown and described.

2. A loop fastener composed of a burr A having the body $a$ with a central aperture $a'$, an extention $a^2$, and prongs $a^1$, $a^3$, to hold the loop, and a head B having a shank $b$ to pass through the fabric and the aperture $a'$ of the part A and to be swaged down to hold the two firmly together on opposite sides of the fabric, substantially as shown and described.

**502,963. TRAIN-STOPPING DEVICE.** JOHN B GROSS, Hoboken, N. J., assignor of one-half to Louis Finke, same place. Filed Nov. 22, 1892. Serial No. 452,792. (No model.)



*Claim.*—1. A train stopping mechanism comprising a valve connected with the train pipe to let air out of the same to apply the brakes, means for inflexibly supporting the said valve direct from the axle of the locomotive or tender, and a lever for the said valve and adapted to be actuated from a track mechanism, substantially as shown and described.

2. A train stopping device comprising a cylinder containing a valve connected with the train pipe and provided with an operating lever adapted to be actuated by a track mechanism, a cross head supporting the said cylinder and provided with an arm, a rod pivotally connected with the said arm and provided with a head, and a casing loosely mounted on one of the axles and engaging the said head, substantially as shown and described.

3. A train stopping device comprising a cylinder containing a valve connected with the train pipe and provided with an operating lever adapted to be actuated by a track mechanism, a cross head supporting the said cylinder and provided with an arm, a rod pivotally connected with the said arm and provided with a head, and a casing loosely mounted on one of the axles and engaging the said head, substantially as shown and described.

4. In a train stopping device, the combination with a cylinder containing a rotary valve and connected with the train pipe to let air out of the same, a lever held on the stem of the said valve and adapted to be engaged by a track mechanism, a spring pressed pin held in the said lever and a fixed notched segment adapted to be engaged by the said spring pressed pin to hold the said lever in position until swung to one side when engaging the said track mechanism substantially as shown and described.

5. In a train stopping device, the combination of a lever adapted to be shifted by the arm of a track mechanism, a valve carrying the said lever and connected with the train pipe, and levers mounted on the sides of the said lever for the valve and adapted to swing inward toward the said lever and also adapted to be engaged by the said arm, substantially as shown and described.

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**502,964. COMPOSITION FOR FORMING LITHOGRAPHIC TRANSFERS.** CHARLES F. HABEDANK, Jersey City, N. J. Filed Mar. 13, 1893. Serial No. 466,756. (No specimens.)

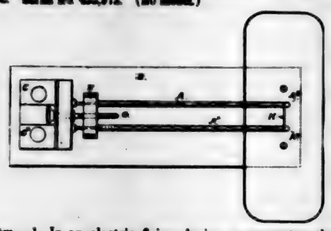
*Claim.*—1. A composition to be applied to lithographic transfer stones, which consists of water, partly neutralized nitric acid and tannic acid, substantially as specified.

2. A step in the process of making lithographic transfers, which consists in applying the design with transfer ink to the stone and then covering the stone with a composition of water, partly neutralized nitric acid and tannic acid, substantially as specified.



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**502,965. ELECTRODE FOR FIRING EXPLOSIVES.** JOSEPH H. HARRISON and HENRY J. HARRISON, San Francisco, Cal. Filed June 8, 1892. Serial No. 436,972. (No model.)



*Claim.*—1. In an electric firing device or apparatus, the electrodes, enlarged heads or tips on the outer ends thereof, and sleeves or tubular parts upon said electrodes, and means for operating said sleeves, as and for the purpose set forth.

2. In an electric firing device consisting of electrodes formed of two parallel rods which are terminals of the poles of an electric battery, fixed heads or tips on the adjacent ends of said rods, sliding sleeves or parts on said rods adapted to clamp a fusing wire between the ends and the tips of the electrodes, and means for setting up said parts on the rods, substantially as described.

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**502,966. PACKAGE-ENVELOPE.** MARTIN HESS, New York, N. Y. Filed Oct. 15, 1892. Serial No. 448,967. (No model.)



*Claim.*—1. An envelope provided with a series of scallop-like projections along its margin and extending therefrom, said scallops being adapted to receive a cementing compound, and a line of perforations dividing the scallop-like projections from the body of the envelope, as and for the purpose set forth.

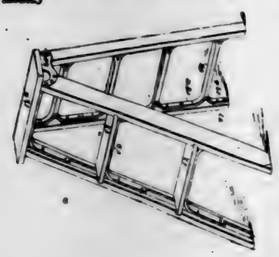
2. An envelope provided with a series of marginal projections, lines of perforations separating the body of the envelope from the projections, and a flap adapted to close the mouth of the envelope, as and for the purpose specified.

3. A blank for envelopes consisting of an outer section provided with marginal projections and a line of perforations dividing such projections from the body, and an inner section having attaching flaps adapted to be gummed to the outer section, at a point inside the aforesaid line of perforations when the two sections are joined to form the envelope, substantially as and for the purpose described.

4. A package envelope formed of a blank folded to form overlapping sections A B, the section B having marginal projections whereby it can be secured to the page, such section having lines of perforations separating the projections from the body of the section B, the section A having its edges gummed to the section B at a point inside the aforesaid perforations, all substantially as and for the purpose described.

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**502,967. LADDER.** RUSSELL D. HETRICK, WILLIAM T. WILSON, and EDWARD ROWE, Indiana, Pa. Filed Apr. 12, 1893. Serial No. 470,027. (No model.)



*Claim.*—1. In a step ladder, the combination with the sides and step of the U shaped brace, the bow of said brace being secured to the under face of the step and the members secured to the opposite side pieces of the ladder, substantially as shown and described.

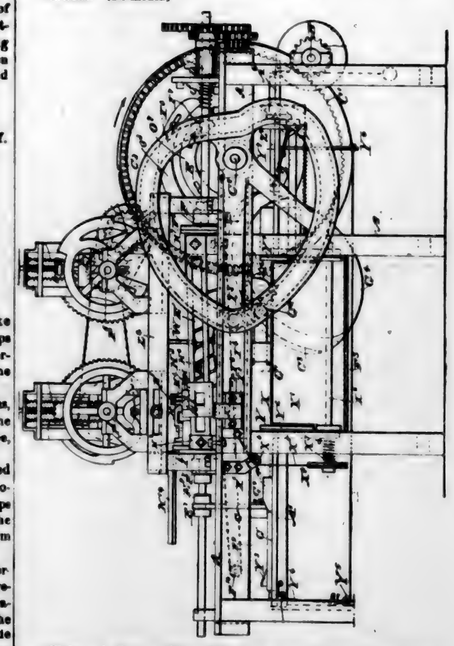
2. In a ladder, the combination with the sides and the steps thereof, of an essentially U-shaped brace of bent wood, the body of the brace engaging with the under face of a step and its members with opposite faces of the sides of the ladder, and fastening devices securing the braces to the sides and the steps of the ladder, as and for the purpose specified.

3. In a step ladder, the combination, with the sides thereof and the step, of a continuous brace constructed of bent wood, secured to the sides of the ladder and to the under surface of the step, substantially in the manner herein set forth.

4. In a step ladder, the combination with the sides and the steps thereof, of continuous braces of bent wood, said braces engaging with the under faces of the steps and the sides of the ladder, and nails passed through the braces into the sides of the ladder, the pointed ends of the nails being clinched, substantially as shown and described.

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**502,968. MACHINE FOR MAKING SPIRAL WIRE SPRINGS.** WILLIAM B. JACKSON, Portland, Oreg. Filed May 24, 1892. Serial No. 434,185. (No model.)



*Claim.*—1. In a machine of the class described, a spring band on the base end of the spring-forming cone and adapted to receive the end coil of the spring, substantially as shown and described.

2. In a machine of the class described, a spring-band on the base end of the spring-forming cone and adapted to receive the end coil of the spring, and means for opening the said spring band to take up the recoil of the formed spring, substantially as shown and described.

3. In a machine of the class described, the combination with a spring-forming cone, of a spring band secured at the base end of the said cone and coiled around it, substantially as shown and described.

4. In a machine of the class described, the combination with a spring-forming cone, of a spring band secured at the base end of the said cone and coiled around it, and means, substantially as described, for opening the said band to take up the recoil of the formed spring, as set forth.

5. In a machine of the class described, the combination with a spring-forming cone, of a spring band secured at the base end of the said cone and coiled around it, and means, substantially as described, for opening the said band to take up the recoil of the formed spring, the spring band being formed with a spiral groove to receive the wire for forming the base end of the spring, as set forth.

6. In a machine of the class described, the combination with a spring-forming cone, of a spring band secured at the base end of the said cone and coiled around it, means, substantially as described, for opening the said band to take up the recoil of the formed spring, and a lock adapted to engage the free end of the said spring band to hold it in an open position, as set forth.

7. In a machine of the class described, a spring band secured at one end to the base of the spring-forming cone and encircling the same, and an arm formed on the free end of the band and projecting over the fastened end to clamp the wire, substantially as shown and described.

8. In a machine of the class described, a spring band secured at one end to the base of the spring-forming cone and encircling the same, an arm formed on the free end of the band and projecting over the fastened end to clamp the wire, and a lever for holding the said spring shut to securely clamp the wire between the arm and fastened end of the band, substantially as shown and described.

9. In a machine of the class described, the combination with a spring-forming cone, of a spring band secured at one end to the base of the said cone and encircling it, an arm formed on the free end of the band and projecting over the fastened end to clamp the wire previous to coiling it on the said cone, and a spiral groove formed in the said band and continuing into the spiral groove on the cone, substantially as shown and described.

10. In a machine of the class described, the combination with a spring-forming cone, of a spring band secured at one end to the base of the said cone and encircling it, an arm formed on the free end of the band and projecting over the fastened end to clamp the wire previous to coiling it on the said cone, and a lever for holding the said spring shut to securely clamp the wire between the arm and the fastened end of the band, and a locking bolt adapted to engage the said lever to lock the same in position to hold the spring shut, substantially as shown and described.

11. In a machine of the class described, the combination with a spring-forming cone, of a spring band secured at one end to the base of the said cone and encircling it, an arm formed on the free end of the band and projecting over the fastened end to clamp the wire previous to coiling it on the said cone, and a spring-pressed bolt fitted to slide in the said cone and adapted to engage the free end of the said spring band to lock the latter in an open position, substantially as shown and described.

12. In a machine of the class described, the combination with a spring-forming cone, of a spring band secured at one end to the base of the said cone and encircling it, an arm formed on the free end of the band and projecting over the fastened end to clamp the wire previous to coiling it on the said cone, a spring-pressed bolt fitted to slide in the said cone and adapted to engage the free end of the said spring band to lock the latter in an open position, and mechanism for pressing the said bolt inward to disengage it from the free end of the spring, substantially as shown and described.

13. In a machine of the class described, the combination with a spring-forming cone, of a spring band secured at one end to the base of the said cone and encircling the same, an arm formed on the free end of the said band, and a pivoted arm formed with a lug adapted to swing in the path of the arm on the spring band so that when the cone revolves the spring band is opened, substantially as shown and described.

14. In a machine of the class described, the combination with a spring forming cone, of a spring band secured at one end to the base of the said cone and encircling the same, an arm formed on the free end of the said band, a pivoted arm formed with a lug adapted to swing in the path of the arm on the spring band so that when the cone revolves the spring band is opened, and a spring-pressed bolt held on the said cone and adapted to engage the free end of the said spring band when opened by the said lug, substantially as shown and described.

15. In a machine of the class described, the combination with an obliquely arranged guide, of a feed carriage for the wire and fitted to slide on the said guide, a disk mounted to turn on the said carriage and through which passes the wire, and a pawl pivoted on the said disk and resting, with its free end, on the wire to prevent an outward movement of the same, substantially as shown and described.

16. In a machine of the class described, the combination with a guide arranged obliquely to the cones and inclined, of a feed carriage for the wire and fitted to slide on the said guide, a disk mounted to turn on the said carriage and through which passes the wire, and means, substantially as described, for imparting motion to the said carriage, as set forth.

17. In a machine of the class described, the combination with a revolving cam wheel, of a slide carrying a friction roller engaging the cam groove in the said cam wheel, a feed carriage connected with the said slide, a guide arranged obliquely to the cones and carrying the said feed carriage, and an arm connecting the said slide with the said feed carriage, substantially as shown and described.

18. In a machine of the class described, the combination with two spring-forming cones abutting at their small ends, of a feed carriage for feeding the wire to the said cones, the feed carriage traveling obliquely to conform to the sides of the said cones, substantially as shown and described.

19. In a machine of the class described, the combination with the spring-forming cone, of a spring band J secured to and encircling the cone and provided with a projection J' on its free end, a spring bolt $K^2$ arranged radially in the cone, the pivoted arm $K^3$, the adjacent lugs, the pivoted lever $K^4$, and means for rotating the cone and co-operating with the other parts to form a coil and knot, as shown and described.

20. In a machine of the class described, the combination with a spring-forming cone formed at its base end with a recess, of a knotting device adapted to pass into the said recess, substantially as shown and described.

21. In a machine of the class described, the combination with a spring-forming cone formed at its base end with a recess, of a slide fitted to slide vertically and adapted to pass in the said recess, the said slide being formed with a transversely extending notch for the passage of the ends of the wire coiled on the said cone, and a knotting wheel mounted to revolve in the said slide and carrying the free end of the wire around the first coil, substantially as shown and described

22. In a machine of the class described, the combination with a slide having a vertical sliding motion and formed with a transversely extending slot in its lower end, of a knotting wheel mounted to revolve in the said slide and formed with a transverse slot adapted to register with the slot in the said slide, substantially as shown and described.

23. In a machine of the class described, the combination with a slide having a vertical sliding motion and formed with a transversely extending slot in its lower end, of a knotting wheel mounted to revolve in the said slide and formed with a transverse slot adapted to register with the slot in the said slide, the hub of the said wheel being formed with a central opening leading to the said slot, substantially as shown and described.

24. In a machine of the class described, the combination with a slide having a vertical sliding motion and formed with a transversely extending slot in its lower end, of a knotting wheel mounted to revolve in the said slide and formed with a transverse slot adapted to register with the slot in the said slide, the hub of the said wheel being formed with a central opening leading to the said slot, and a segmental gear wheel adapted to engage the said knotting gear wheel to turn the same in the said slot to carry the free end of the wire around the first coil, substantially as shown and described.

25. In a machine of the class described, the combination with a slide having a vertical sliding motion and formed with a transversely extending slot in its lower end, of a knotting wheel mounted to revolve in the said slide and formed with a transverse slot adapted to register with the slot in the said slide, the hub of the said wheel being formed with a central opening leading to the said slot, and means, substantially as described, for imparting a vertical sliding motion to the said slide, as set forth

26. In a machine of the class described, the combination with a spring-forming cone, formed at its base end with a recess, of a slide mounted to slide vertically and provided with a clamping plate having two recesses engaging the ends of the wire to hold the same in place at the base end of the cone, substantially as shown and described.

27. In a machine of the class described, the combination of the pivoted swinging lever, and the knife $R^2$ fixed on its free end, the knife $R^3$ pivoted to the lever adjacent to such fixed knife, springs for retracting both knives, and the wheel Q having a cam which acts on the lever, all cooperating as shown and described.

28. In a machine of the class described, the combination with a spring-forming cone formed with a recess at its base end, of a slide mounted to slide vertically and formed with a transverse slot, and a point projecting from the lower end of the said slide to engage the end of the crossed wire to pass the latter into the said slot, substantially as shown and described.

29. In a machine of the class described, the combination with a spring-forming cone formed with a recess at its base end, of a slide mounted to slide vertically and formed with a transverse slot, a point projecting from the lower end of the slide to engage the end of the crossed wire to pass the latter into the said slot, and a knotting gear wheel mounted to turn in the said slide and having a transverse slot registering with the slot in the slide and adapted to receive the end of the wire, substantially as shown and described

30. In a machine of the class described, the combination with two spring-forming cones abutting at their small ends and mounted to slide from each other, of an arm mounted to swing and adapted to pass between two adjacent coils of the spring held on the said cones, previous to their opening movement, substantially as shown and described

31. In a machine of the class described, the combination with the shafts carrying the cones and mounted to revolve, of a disk held on the said shaft, a spring connected with the said disk at one end and having its free end extending transversely, and a lever mounted to swing and adapted to be passed into the path of the free end of the said spring, substantially as shown and described.



32. In a machine of the class described, the combination with the shafts carrying the cones and mounted to revolve, of a disk held on the said shaft, a spring connected with the said disk at one end and having its free end extending transversely, a lever mounted to swing and adapted to be passed into the path of the free end of the said spring, and a cam wheel provided with a cam projection to actuate the said lever to move it into the path of the free end of the said spring or to disengage it from the said free end, substantially as shown and described.

33. In a machine of the class described, the combination with the shafts carrying the cones and mounted to revolve, of a disk held on the said shaft, a spring connected with the said disk at one end and having its free end extending transversely, a lever mounted to swing and adapted to be passed into the path of the free end of the said spring, and a spring-pressed lever adapted to engage a lug or stop on the said disk to lock the latter in position, substantially as shown and described.

34. In a machine of the class described, the combination with two slides connected with each other by a cord and adapted to move simultaneously in opposite directions, means for imparting a sliding motion, in one direction, to one of the said slides, plungers carried by the said slides, and a spring-receiving box adapted to receive the said plungers, substantially as shown and described.

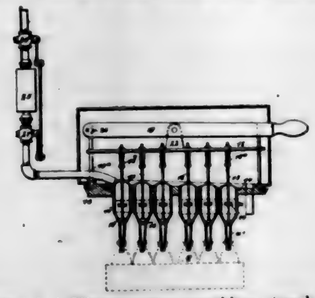
35. In a machine of the class described, the combination with two slides connected with each other by a cord and adapted to move simultaneously in opposite directions, means for imparting a sliding motion, in one direction, to one of the said slides, plungers carried by the said slides, a spring-receiving box adapted to receive the said plungers, and a weight for imparting a return movement to the said slides, substantially as shown and described.

36. In a machine of the class described, the combination with two slides connected with each other by a cord and adapted to move simultaneously in opposite directions, means for imparting a sliding motion, in one direction, to one of the said slides, plungers carried by the said slides, a spring-receiving box adapted to receive the said plungers, a spring-pressed core fitted to slide in one of the said slides and adapted to pass into the said spring receiving box and into the central opening of the spring, previous to the compressing of the latter by the said plungers, substantially as shown and described.

37. In a machine of the class described, the combination with two slides connected with each other by a cord and adapted to move simultaneously in opposite directions, means for imparting a sliding motion, in one direction, to one of the said slides, plungers carried by the said slides, a spring receiving box adapted to receive the said plungers, a spring-pressed core fitted to slide in one of the said slides and adapted to pass into the said spring receiving box and into the central opening of the spring, previous to the compressing of the latter by the said plungers, and a retaining and releasing mechanism for the said core, substantially as shown and described.

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## 502,969. BOTTLE-FILLING APPARATUS. JOHN JACKSON, Lonsdale, R. I. Filed Jan. 5, 1893. Serial No. 457,311. (No model.)



*Claim.*—1. A filling apparatus, comprising a trough having a series of dependent tubes provided with valves, a shifting lever connected with the valves, reservoirs connected with the troughs, valves located above and below the reservoirs, and a shifting device connected with both sets of valves, whereby when one set of valves is closed the other set is simultaneously opened, as and for the purpose specified.

2. In a bottle-filling apparatus, the combination, with supply tubes and reservoirs connected therewith, of valves located above and below the reservoirs, a frame having a link connection with both sets of valves, the frame being located between the sets, whereby when one set of valves is closed the other set is opened, said action taking place simultaneously with the movement of the frame, and vents located in the reservoirs, as and for the purpose set forth.

3. The filling apparatus, comprising a trough having a series of dependent tubes provided with valves, the tubes being made in two sections removably connected, the vertically yielding spring pressed valve rods extending upward from the valves, a sliding frame to which the upper ends of the valve rods are movably connected, guides upon which the frame moves, a pivoted lever crossing the frame, an attachment between the frame and the lever, and a supply mechanism leading to the trough, substantially as shown and described.

4. In a bottle-filling apparatus, the combination, with a trough, a series of tubes extending from the trough, each tube being adapted to contain a predetermined amount of liquid, the tubes being arranged in sets and the sets located in separate compartments of the trough, valves located within the tubes, and a lever connected with the valves whereby they are operated, of reservoirs corresponding in number to the compartments in the trough, each reservoir being adapted to contain sufficient liquid to properly supply all of the tubes of a set, and a supply connection between the compartments of the trough and the reservoirs, as and for the purpose set forth.

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## 502,970. PICKER-STICK CHECK FOR LOOMS. JOHN JOHNSON, Chester, Pa. Filed Jan. 31, 1893. Serial No. 460,389. (No model.)

*Brief.*—The springs are successively compressed to arrest the movement of the picker-stick and prevent the picker striking the inner end of the shuttle-box



*Claim.*—1. A loom provided with a picker stick, a spring device connected with the picker stick and adapted to counteract the movement of the same in one direction, and return the picker stick, said spring device being formed of two portions and a stop whereby one portion of the spring device is relieved of further strain before the end of the movement of the picker stick, and the remaining portion subjected to a suddenly increasing tension, so as to check the movement of the picker stick and prevent breakage of the picker, substantially as shown and described.

2. A loom provided with a picker stick, a sliding rod connected therewith, a spring device pressing on the rod and adapted to be compressed on the outward movement of the rod, said spring device being formed of two portions and a stop whereby one portion of the spring device is relieved of further compression before the end of the movement of the picker stick, and the remaining portion subjected to a suddenly increasing compression, so as to check the movement of the picker stick and prevent breakage of the picker, substantially as shown and described.

3. A loom provided with a picker stick a bearing, a rod fitted to slide in the bearing and connected with the picker stick, a follower held loosely on the said rod and having a limited sliding movement in the said bearing, a spring coiled in the bearing around the said rod and pressing against the said follower, a second spring pressing on the head of the follower, and an adjustable device on the end of the said rod for engaging the said second spring, substantially as shown and described.

4. A loom provided with a picker stick a bearing, a rod fitted to slide in the bearing and connected with the picker stick, a follower held loosely on the said rod and having a limited sliding movement in the said bearing, a spring coiled in the bearing around the said rod and pressing against the said follower, a second spring pressing on the head of the follower, an adjustable device on the end of the said rod for engaging the said second spring, and a third spring inclosed within the said second spring and adapted to be actuated after the second spring is pressed, substantially as shown and described.

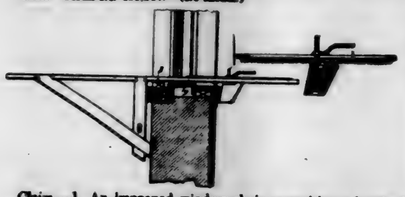
5. In a loom, the combination, with the picker and the picker stick, of a stationary bearing, a rod fitted to slide in the bearing and connected with the picker stick, a follower held loosely on the said rod and fitted to slide in the said bearing, said follower being provided with a head outside the bearing, a spring coiled in the bearing around the said rod and pressing against the said follower, a washer held on the follower in contact with its head and adapted to strike against the bearing and thereby limit the movement of the follower, a second spring pressing on the head of the follower in the opposite direction to the first spring, and an adjustable device on the end of the said rod for engaging the said second spring, substantially as described.

6. In a loom, the combination, with the picker and the picker stick, of a stationary bearing, a rod fitted to slide in the bearing and connected with the picker stick, a follower held loosely on the said

rod and fitted to slide in the said bearing, said follower being provided with a head outside the bearing, a spring coiled in the bearing around the said rod and pressing against the said follower, a washer held on the follower in contact with its head and adapted to strike against the bearing and thereby limit the movement of the follower, a second spring pressing on the head of the follower in the opposite direction to the first spring, an adjustable device on the end of the said rod for engaging the said second spring, a third spring inclosed within the said second spring and adapted to be actuated after the second spring has been compressed to a certain extent, and a sleeve surrounding the said rod to limit the distance between the said adjustable device and the head of the follower, substantially as described.

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**502,971.** WINDOW-CHAIR. Franklin J. Knee, Allentown, Pa., assignor of one-fourth to Fred G. W. Rank, same place. Filed Apr. 5, 1892. Serial No. 428,217. (No model.)



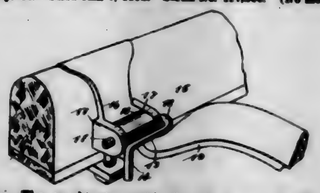
*Claim.*—1. An improved window chair comprising a longitudinally slotted platform, a plate on the upper side thereof having racks which depend in the slot of the platform, a clamping block, teeth on the upper side thereof which are adapted to extend upward into the slot of the platform and engage the rack of the said plate, and a means for securing together the block and platform, substantially as shown and described.

2. An improved window chair comprising a longitudinally slotted platform, a correspondingly slotted plate on the upper side thereof, parallel racks on the under side of the plate which depend into the slot of the platform, a clamping block, parallel series of teeth on the upper side thereof which are adapted to engage the said racks, and a clamping bolt extending vertically through the block and the platform and plate, substantially as shown and described.

3. An improved window chair comprising a longitudinally slotted platform, a longitudinally slotted plate on the upper side thereof, parallel racks extending from the plate into the slot of the platform, a clamping block, a plate secured to the upper side thereof, parallel and transverse series of teeth *e*, upon the upper side of the plate, a clamping bolt which is adapted to extend vertically through the said block and through the slotted platform and plate, and a nut for the upper end of the bolt, substantially as shown and described.

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**502,972.** THILL-COUPLING BOLT. Calhoun L. Kelley, Kennett, Mo., assignor of two-thirds to Charles O. Hoffman and Jost P. Tribble, same place. Filed Jan. 7, 1893. Serial No. 417,266. (No model.)



*Claim.*—The combination with the clip having the ears with apertures therein and the thill iron formed with a knuckle with an aperture therein aligned with the apertures in the ears, of the bolt consisting of the two parallel members 11 and 13, and the downwardly extending arm 14, at right angles thereto, the member 11 passing loosely through the apertures in said ears and knuckle, and the member 13 and arm 14, resting upon the top and one side of the thill iron and moving therewith substantially as described.

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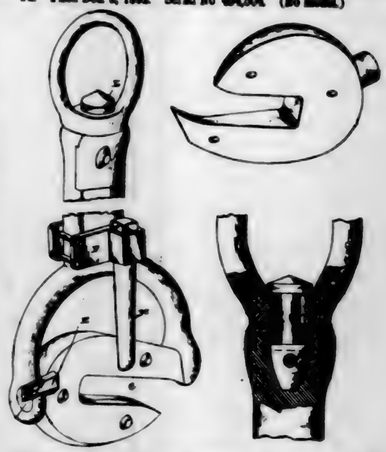
**502,973.** SHOE. Frazier J. Kirk, Baltimore, Md. Filed June 9, 1893. Serial No. 477,045. (No model.)

*Claim.*—A shoe comprising an upper or leather; a water-proof lining adjoining the upper and covering the foot; an outer sole, E; a cork layer, F; a layer of water-proof material G, between the outer sole and the cork-layer; a leather inner-sole, D, attached to the upper and having its lower surface in contact with the upper surface of the cork-layer, and provided with a number of perforations, *d*, so that moisture from the foot will pass through said perforations and be absorbed by the cork layer, as described.



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**502,974.** SUCKER-ROD ELEVATOR. Harvey Knox, Rixford, Pa. Filed Dec. 5, 1892. Serial No. 454,004. (No model.)



*Claim.*—1. A sucker rod elevator comprising a stem, a fork at its lower end, two longitudinal hook sections, a means for securing them together to form a complete elevating hook, and trunnions D on opposite ends of the hook sections which bear in the arms of the fork, substantially as shown and described.

2. A sucker rod elevator comprising a stem, a fork at its lower end, an elevating hook within the fork, and the tapering and beveled lug E removably secured to and projecting inward from one of the fork arms, substantially as shown and described.

3. A sucker rod elevator comprising a stem having a recess near its upper end, a head therein, a stem extending outward from the head, a link secured thereto, a plate for confining the head in position and a bolt extended through the plate, head and stem for binding the same together, substantially as shown and described.

4. An elevator comprising a stem, a fork at its lower end, a hook formed of longitudinal separable sections having oblique adjacent faces, a trunnion on the thicker end of each section which trunnions bear in openings in the prongs of the fork, and a means for holding the thing grasped within the hook, substantially as shown and described.

5. A sucker rod elevator comprising a stem having a recess at its upper end, a swivel stem, a projection at its lower end which is adapted to be confined in the recess of the stem, a link secured to the outer end of the swivel stem, and a rod grasping device at the lower end of the stem, substantially as shown and described.

6. An elevator comprising a stem having a recess in its upper end, a swivel stem, a pear shaped projection at its lower end which fits said recess, a removable plate for closing said recess and confining the projection therein, a link having a pear shaped opening in its lower end through which the said stem extends, and an elevating hook at the lower end of the stem, substantially as shown and described.

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**502,975.** BRIDGE-GATE. August Koehler, Chicago, Ill. Filed May 19, 1893. Serial No. 474,755. (No model.)

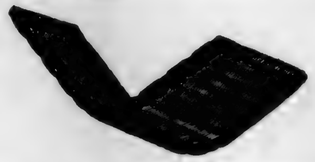
*Claim.*—1. In a bridge-gate, the combination of a bridge having at each end a right and left ratchet-piece or bar, with a right and left ratchet-gear to engage said pieces or bars, said gear being mounted on a shaft having its bearings on the abutment, the gate-arms having at their lower ends segmental gears and pivotally secured to a support or frame, the operating levers fulcrumed on said frame and having at their upper portions segmental gears to engage the gears on the gate arms, and in their lower portions longitudinal slots, and the operating wheels H, and H', having the pins or projections to engage the slots in said levers, substantially as described.



2. In a bridge-gate, the combination with the gate-arms F, having the segmental gears F', and pivotally secured at their lower ends to a support, of the levers G, having the segmental gears *g*, to engage the gears on the gate-arms, the wheels H, and H', eccentrically connected to said levers, and adapted to give them a reciprocating motion, and having means to engage the bridge in its movements, substantially as described.

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**502,976.** BELTING. Karl Kochler, Aussig, Austria-Hungary, assignor to Bernard Heller, New York, N. Y. Filed Nov. 23, 1892. Serial No. 452,906. (No model.)



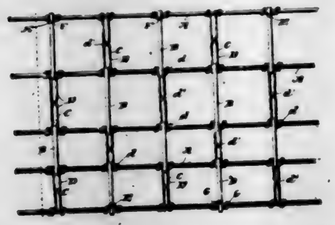
*Claim.*—1. As an improved article of manufacture, woven belting formed of wire and fibrous material interwoven to present the wire to one face and the fibrous material to the opposite face of the belt, as set forth.

2. As an improved article of manufacture, woven belting formed of wire and fibrous material interwoven to present the wire to one face and the fibrous material to the opposite face of the belt, the fibrous material being carried over to form the edge of the belt, as specified.

3. As an improved article of manufacture, woven belting formed of wire and fibrous material interwoven to present the wire to one face and the fibrous material to the other face of the belt, the fibrous material being carried over to form the selvage of the belt, and a protective border secured to the outer face of the edges, as set forth.

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**502,977.** WIRE FENCE. Amos M. Kubes, Union Deposit, Pa. Filed Dec. 13, 1892. Serial No. 455,056. (No model.)



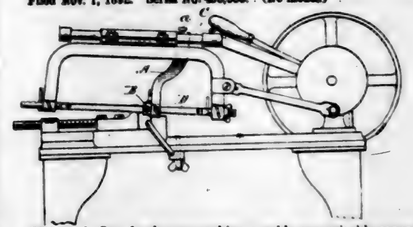
*Claim.*—1. In a wire fence, the combination of the parallel running wires and a series of flexible and rigid stays arranged between and connected to such wires, said rigid and flexible stays being arranged alternately in vertical alignment with each other and alternately in longitudinal alignment between the wire, substantially as set forth.

2. In a wire fence the combination of the parallel running wires, of an alternate vertical and longitudinal series of rigid and flexible stays, said flexible stays comprising separate U-shaped loops looped through each other at their closed ends between the wires and having their other ends coiled on the two adjacent running wires, and said rigid stays having notched ends taking over the running wires between the coiled ends of the loops, and retaining loops secured to the top and bottom wires at points to engage the ends of the rigid stays taking over such wires, substantially as set forth.

3. In a wire fence, the combination with the parallel running wires; of the rigid and flexible stays, said rigid stays having end wire notches and perforations adjacent to the top and bottom wires, and retaining loops passed through the perforations of the rigid stays and looped onto the wires on each side thereof, substantially as set forth.

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**502,978.** HACK-SAW MACHINE. Herbert D. Lawair, Miller's Falls, Mass., assignor to the Miller's Falls Company, same place. Filed Nov. 1, 1892. Serial No. 450,688. (No model.)

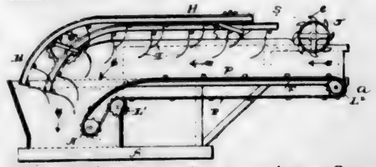


*Claim.*—1. In a hack saw machine, a guide arm suitably secured to the machine, a guide consisting of a body adjustably socketed in the lower end of the guide arm, and adapted to be held by a suitable set screw and having a central longitudinal slot, for the reception of the saw blade, the slot so arranged that the center of the width of said slot, will fall in the center of the round socketed end of said body, combined and adapted to operate substantially as set forth.

2. In a hack saw machine, the guide E, provided with the slot *x*, the indicating and adjusting projection *d* the guide bolts *b*, *b*, and socketed end *e*, *e*, in combination with the guide arm A, adapted to receive the socket end of guide body, and the set screw *a'* for securing the same, all substantially as and for the purposes set forth.

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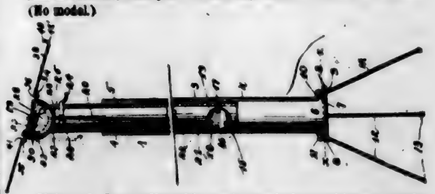
**502,979.** ATTACHMENT FOR THRASHING-MACHINES. John C. Lundy, Winnipeg, Canada, assignor of one-half to Frank Alanson Fairchild, same place. Filed Oct. 4, 1892. Serial No. 447,858. (No model.)



*Claim.*—In a thrashing machine, a curved apron F, sprocket wheels N, L' and L², and an endless carrier traveling on said sprocket wheels and around said apron, in combination with a band cutter at one end of said endless carrier, and curved bars H, curved to correspond with the apron and working over the same at the rear of said cutter, connected to cranks G and supporting spring tines I, substantially as described and shown.

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**502,980.** ADJUSTABLE MUSIC-STAND. Charles J. MacRae, St. Louis, Mo., assignor of three-fourths to Edmund J. Piper and Herman H. Bollman, same place. Filed Aug. 15, 1892. Serial No. 443,154. (No model.)



*Claim.*—1. In an adjustable music stand, the combination, with a tubular support, an adjustable member working therein, and a music table pivotally mounted on said adjustable member and carrying a

segmental rack plate, of a locking cam carried by the adjustable member, a rod having one end pivoted to the cam and the opposite end adapted to engage said rack plate, and means for operating said rod; substantially as and for the purpose set forth.

2. In an adjustable music stand, the combination, with a tubular support, and a tubular adjustable member working therein and provided at one side its periphery and near its lower end with a vertical slot, of a cam journaled in said adjustable member opposite the slot, said cam being adapted to automatically bind against the inner surface of the support, and means for releasing the cam; substantially as and for the purpose set forth.

3. In an adjustable music stand, the combination, with a tubular support, a tubular adjustable member working therein and provided near its lower end with a slot, and a music table pivotally mounted on said adjustable member and provided with a segmental rack plate, of a vertically-arranged, spring-held cam mounted in said adjustable member and opposite the slot therein, a rod pivotally connected at one end with the cam and having its opposite end adapted to engage the rack-plate, and an operating lever fulcrumed within the adjustable member and secured to the rod; substantially as and for the purpose set forth.

4. An adjustable music-stand having a barrel 2 a barrel 3, a slot 15 in the periphery of the barrel 3 near its lower end, an eccoentrically pivoted vertically arranged cam mounted upon a pivot 17, within said barrel 3, and protruding through said slot 15 to bind against the inner surface of the barrel 2, with its roughened periphery 18, substantially as set forth.

5. An adjustable music-stand having telescoping barrels 2 and 3, a music table carried by the latter and provided with a segmental rack-plate 30 a cam 16 operative to hold the barrel 3 in which said cam is pivoted, in a fixed position within said barrel 2, a shaft 19, a rod 20 mounted upon the latter and having its free end adapted to engage the rack plate 30, a spring 21 fastened to said shaft 19, the opposite end of said spring 21 secured to a lug 22 upon the interior of the barrel 3, and said spring 21 assisting the cam 16 in its tendency to permanently engage the surface of the barrel 2, substantially as set forth.

6. An adjustable music-stand having telescoping barrels 2 and 3, a music table carried by the latter and provided with a segmental rack plate 30 a cam 16, a shaft 19 near its upper periphery, a rod 20 secured to said shaft 19, the upper end of said rod 20 being shaped in the form of a pawl 23, a thumb-lever 24 secured to said rod, said thumb lever pivoted at one end to lugs 26 upon the interior of the barrel 3, and the operation of said thumb-lever releasing the engagement between the cam 16 and the interior of the barrel 2, substantially as set forth.

7. An adjustable music-stand having a barrel 3 provided upon its upper end with projecting standards 28, an open space between said standards 28, terminating in slots 25 and 27 in said barrel 3, a shaft 29 in bearings in said standards 28 a toothed-segment 30 mounted upon said shaft 29, a music table carried by said segment, a pawl 23 adapted to engage said segment, and means for operating the pawl substantially as set forth.

8. An adjustable music-stand having a number of table-rods 37, 38, and 39, one end of each rod provided with a bent portion 41, said rods 39 having bent portions 41' at their opposite ends to prevent the sliding of the music from the table, and both ends of said rods 37, 38, and 39 provided with enlarged portions or balls 40, substantially as set forth.

9. As an improvement in music stands, a music table comprising a plate 34 provided with apertured ears 36, and rods working in said apertures and provided with headed ends and a bent retaining portion 41, said rods being of varying lengths whereby when adjusted a table of rectangular outline is formed; substantially as and for the purpose set forth.

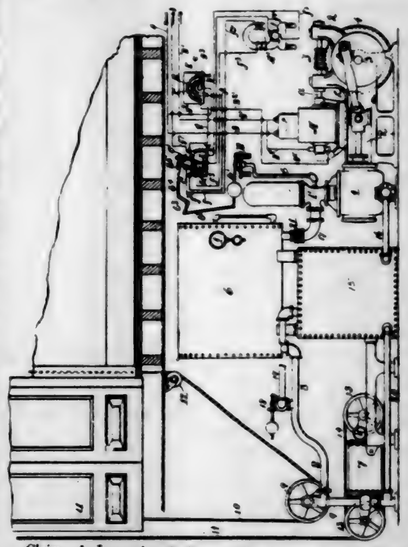
10. In an adjustable music stand, the combination, with a support provided with a cap 7 at its lower end, said cap having radially-arranged slots 9, of a collar 10 sliding on the support, and supporting standards 12 pivoted to said collar and passing respectively through the slots 9; substantially as and for the purpose set forth.

11. In an adjustable music stand, the combination, with a support provided at its lower end with radially-projecting, slotted lugs 8, of a collar 10 sliding on said support, and supporting standards 12 pivoted to said collar and projecting through the slots in the respective lugs, said standards being provided with yielding or elastic feet; substantially as and for the purpose set forth.

12. An adjustable music-stand having a barrel 2, a cap 7 provided with projecting ears 8 having slots 9 a collar 10, having a number of standards 12 depending therefrom, through said slots 9 and a thumb-screw 14 in said collar 10 and said collar and accompanying parts slidingly adjustable upon the outside of said barrel 2, substantially as set forth.

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**502,981. ELECTRICALLY-OPERATED HYDRAULIC ELEVATOR.** ELIAS MARSHALL, Boston, Mass. Filed Nov. 19, 1892. Serial No. 452,580. (No model.)



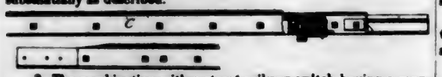
*Claim.*—1. In an electrical means for the purpose as described, a driving motor engaged with a pump through suitable mechanical means, so as to efficiently actuate such; having its fields permanently charged and its armature in circuit with a rheostat segment as described, and with the finger thereof, such finger being charged with the armature supply wire of the driving motor, and from the main supply wire, and engaged with the rheostat segment and with two other segments on the rheostat, arranged as shown and described; such segments being insulated from each other and the intermediate one being in circuit with the contact point ($f''$), and the inner segment with the contact point ($g'$), and such being conductors and engaged with the rheostat finger as described: a double contact piece ($f^3$) arranged as shown, in circuit with the fields of a motor to actuate the rheostat finger as described; a lever ($e$) as described being in circuit with the return wire of said motor, and acting as a means to supply and reverse the current through the armature of said motor in conjunction with the points ($f^4$) and ($f^5$); a double contact piece ($f^6$) arranged as shown, and in circuit with the under brush of said motor; the intermediate contact point ($f^7$) arranged as shown, and in circuit with the upper brush of said motor, and such with the armature and lower brush thereof; the lever ($e'$) as described, such acting as a return circuit connector for the armature of the last mentioned motor, in conjunction with the points ($f^4$) and ($f^5$); the horizontal circuit connector and breaker (C) as described, such being suitably sustained by the levers ($e$) and ($e'$) and engaging with such contacts as described; the lever ($e'$) or the lever ($e$) being engaged with a suitable snapping device, or actuated by such for the purpose as described; the lever ($e$) being engaged with a suitable rod as described, and such being engaged with suitable levers for the purpose as described; and the lever of a suitable diaphragm being engaged with said levers, and the diaphragm being in communication with the pressure receptacle of a pump, and said pump with said diaphragm, substantially as set forth.

2. The combination with a hydraulic elevator system, its pump, and suitable machinery to actuate said pump in conjunction with an electric motor, of an electric motor being engaged by such with the pump, and so actuated by a pressure diaphragm engaged as described, three point snap switch, rheostat and governor motor as described; as to automatically keep a certain pressure in the pressure tank of said system, through the pressure in the pressure receptacle of the pump, substantially as described.

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**502,982. TRAMWAY-SWITCH.** JULIUS MEYER, New York, N. Y., and GRAHAM P. STARKWEATHER, Chicago, Ill., assignors to the Paige Iron Works, Chicago, Ill. Filed Apr. 1, 1892. Serial No. 427,321. (No model.)

*Claim.*—1. The combination with the movable tongue of a street railway-switch; of a locking device adapted to hold said tongue from rising, consisting of a slide entering a recess in the pivot pin and a pin passing through said slide and adapted to prevent its withdrawal, substantially as described.

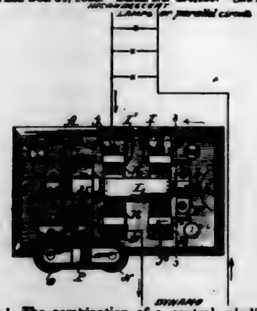


2. The combination with a street railway switch having a movable tongue and having an aperture forming the bearing for the pivot-pin of said movable tongue, and having a second aperture intersecting the pivot-pin bearing; of a slide fitted to the latter aperture and projecting into a recess in said pivot-pin; and a locking pin entering said slide and adapted to prevent its withdrawal, substantially as described.

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**502,983. ELECTRIC SWITCH.** JOSEPH H. MCEVOY, Waterbury, Conn. Filed Dec. 31, 1892. Serial No. 456,895. (No model.)



*Claim.*—1. The combination of a central winding shaft with ratchet wheel thereon, a fixed pawl, a coil spring attached at one end to the shaft, a drum or cap inclosing the spring and connected to its other end and provided with stop lugs on its periphery, a sleeve connected to the drum and encircling the winding shaft, rotary contacts mounted upon the sleeve, spring contact bars arranged upon opposite sides of the disk, and a shifting stop device for the drum substantially as shown and described.

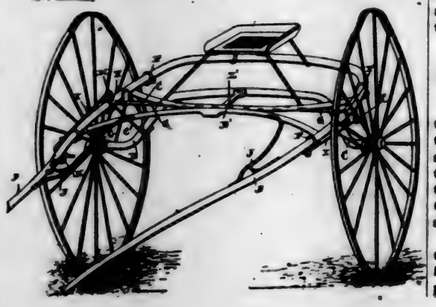
2. The combination of the winding shaft B, spring C, ratchet and E pawl *a*, drum D with lugs *l*, sleeve H with contact disks I I', contact bars J J' J² J³, stop lever M, attached armature P, and oppositely acting electro-magnets N O substantially as shown and described.

3. The combination with the rotary disks having peripheral contacts; of the contact bars J² J³ having binding posts $j^3$ $j^3$ formed of enlarged bases or feet made in one piece with the contact bars and provided with wire inlets and binding post screws substantially as shown and described.

4. The combination of an actuating drum for electrical contacts having lugs *l l* on its periphery placed alternately at opposite edges, a stop lever M pivoted at its lower end and arranged to catch endwise against the lugs *l*, an armature bar P also pivoted at its lower end and connected by pin *p* with the stop lever, and the two electro magnets N and O arranged upon opposite sides of the armature bar P to positively operate the same in opposite directions substantially as shown and described.

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**502,984. TRACK-SULKY.** HARRY A. MCINTOSH and THOMAS W. MCINTOSH, Brownsville, Ind. Filed Mar. 7, 1893. Serial No. 464,960. (No model.)



*Claim.*—1. As a new article of manufacture, a sulky comprising an axle a frame pivotally supported thereon, and a mechanism for turning the axle beneath said frame and at any desired angle to the line of draft, substantially as shown and described.

2. An improved sulky comprising the shafts, bars movable longitudinally thereon, an axle and rod connecting the opposite ends of the axle with the respective bars, substantially as shown and described.

3. An improved sulky consisting of the shafts, an axle, longitudinally movable bars on the shaft which are connected to the opposite ends of the axle, and a means for moving the said bars simultaneously in opposite directions, substantially as shown and described.

4. An improved sulky consisting of the shafts, an axle, bars movable longitudinally on the under side of the shaft, rods connecting the opposite ends of the axle with the said bars, a revoluble shaft extending across the under side of the vehicle shafts, oppositely projecting cranks at the ends of the said revoluble shaft, a connection between the said cranks and the forward ends of the said bars, and a means for rotating the said revoluble shaft, substantially as shown and described.

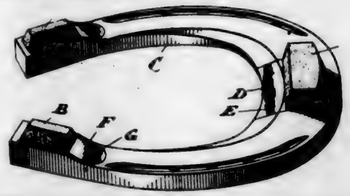
5. An improved sulky consisting of the shaft, an axle, longitudinally movable bars on the shaft rods connecting the said bars with the axle, and a spring for holding the said bars normally in a given position with relation to the said shaft, substantially as shown and described.

6. The combination of the vehicle shafts, bars movable longitudinally thereon, an axle, rods connecting the said bars with the axle, a revoluble shaft extending across the said vehicle shafts, oppositely extending cranks on the respective ends of the said revoluble shaft, rods connecting the said cranks with the forward ends of the said bars, a foot crank or treadle, and a connection between the same and one of the bars, substantially as shown and described.

7. An improved sulky consisting of the shafts, bars movable longitudinally on the under side thereof, an axle, rods connecting the opposite ends of the axle with the respective bars, a revoluble shaft extending across the vehicle shafts, oppositely extending cranks at the respective ends of the said shaft, rods connecting the said crank with the forward ends of the bars, a double foot crank or treadle secured to the shaft to which one of the said bars is connected, and a spring for holding the said bars normally in a given position, substantially as shown and described.

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**502,985. CALKER-HORSESHOE.** OWEN MCGUILLIN, Toronto, Canada, assignor of one-half to William Alexander Verner, same place. Filed Jan. 9, 1893. Serial No. 457,754. (No model.)




*Claim.*—1. As a new article of manufacture, a horseshoe blank having dovetailed recesses therein, blocks adapted to fit in part said recesses, pins against which the blocks abut, and calks made of spring material and forced into said recesses and adapted to hold themselves in said recesses by their pressure against the blocks and pins, substantially as described.

2. As a new article of manufacture, a horseshoe blank having a dovetail recess therein, a calk provided with dovetail sides and fitted in said recess, a block with a dovetail side fitted in said recess and against one side of the calk, and a pin riveted in the shoe and holding the block against the calk, substantially as described.

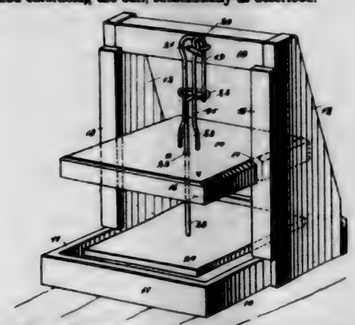
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**502,986. ANIMAL-TRAP.** JOSEPH HIBSON, Seneca, Ill. Filed Apr. 12, 1893. Serial No. 470,014. (No model.)

*Claim.*—1. A trap, comprising a vertically movable weight held to slide between suitable guides, and provided with an upwardly extending bail having a locking arm pivoted thereon, a stationary pin supported at one side of the bail, a tripping platform arranged beneath the weight and having a suspending rod extending upward through the weight, and a loop formed on the suspending rod and arranged to embrace the bail and engage the locking arm, substantially as described.

2. A trap, comprising a base, a guide frame extending upward from the base, a vertically movable weight held to slide in the guide frame, a bail extending upward from the weight and provided with a pivoted locking arm at the top, a stationary pin projecting from the

frame near the ball, a tripping platform arranged to move vertically beneath the weight, a suspending rod extending upward from the platform through the weight, and a loop formed on the suspending rod and embracing the ball, substantially as described.

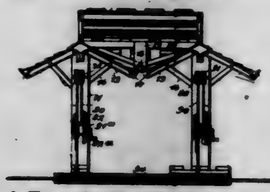


3. The combination with the frame having a supporting pin, a vertically sliding weight and a supporting and locking mechanism carried by the weight and engaging said pin to hold the weight raised, of a vertically movable platform under the weight and upon which the animal steps to release the weight and cause it to crush it upon the platform, and a releasing and supporting device carried by the platform, engaging the weight supporting and locking mechanism and holding the same locked, and also releasing it when the platform is depressed by the weight of an animal thereon, substantially as set forth.

4. A trap, comprising a base having upwardly extending flanges thereon, a guide frame projecting upward from the base, a weight held to slide vertically in the guide frame, a bail projecting upward from the weight, a locking arm pivoted on the bail, a pin secured to the frame near the bail, a vertically movable tripping platform arranged beneath the weight, a suspending rod secured to the platform and extending upward through the weight, and a loop formed on the suspending rod and arranged to embrace the bail and engage the locking arm, substantially as described.

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**502,987. BRICK-PROTECTOR.** ELIAS OLSON, Superior, Wis. Filed Jan. 28, 1893. Serial No. 460,104. (No model.)



*Claim.*—1. The combination with the protector supports, the swinging wings pivoted on the supports, and the vertically movable sheaves pivotally connected with the wings, of stops or hangers arranged to limit the upward movements of the sheave blocks and consequently of the wings, substantially as described.

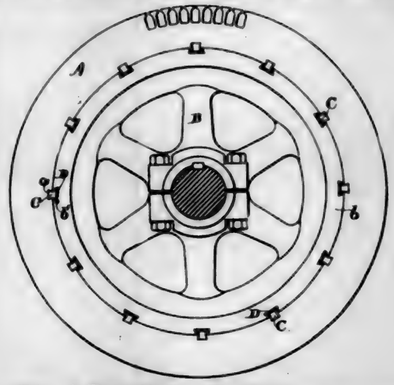
2. In a brick protector, the combination with the series of protectors or sheds, each protector comprising supporting posts, oppositely arranged and vertically swinging wings, vertically movable sheave blocks, and links pivoted to the sheave blocks and to the wings, of horizontally movable pulley blocks arranged near the ends of the protectors, hoisting ropes connecting the pulley blocks with the sheave blocks so as to operate the same, a windlass arranged at each protector, a winding cable extending adjacent to the protectors, and operating ropes secured to each windlass and to the cable extending around the pulleys of the pulley blocks, substantially as described.

3. The combination with the parallel protectors having vertically swinging wings, of gutters secured to the free edges of adjacent wings, and a shield supported over the adjacent edges of the gutters, substantially as described.

4. The combination with the series of protectors comprising vertical posts and wings pivoted thereon, said protectors being arranged in groups, so as to leave an alley between each two groups of a removable roof extending from one group of protectors to the other over the said alley and arranged to discharge upon the protector wings, substantially as described.

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**502,988. ARMATURE AND METHOD OF CONSTRUCTING SAME.** HORACE F. PARSHALL, Lynn, assignor to the General Electric Company, Boston, Mass. Filed Apr. 10, 1893. Serial No. 469,895. (No model.)



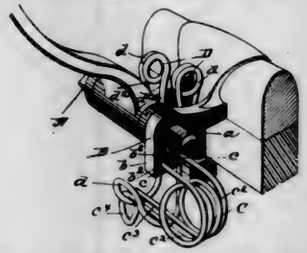
*Claim.*—1. The combination with an annular armature core and spider, of keys projecting from one of said parts and babbitted in grooves provided therefor in the other part, as set forth.

2. The combination with an annular armature core having internal undercut grooves, of a supporting shell having corresponding undercut grooves, keys fitting snugly into one set of grooves and loosely into the other set, and Babbitt or similar material filling the space between said keys and said latter set of grooves, substantially as set forth.

3. The method of building up an armature core which consists in forming dovetail grooves in the surface of a carrier, placing in said grooves loose dovetail keys, slipping over said keys the armature laminæ provided with dovetail notches to fit said keys, then pouring Babbitt metal into the grooves in the carrier to secure the keys therein, substantially as described.

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**502,989. THILL-COUPLING.** GEORGE H. PERRY, Franklin, Tenn. Filed Dec. 14, 1892. Serial No. 455,156. (No model.)



*Claim.*—1. In a thill coupling, the combination with a thill and axle clip, of the threaded bolt, the nut on the bolt having an extended portion apertured to receive the ends of the spring C, the said spring comprising the bent up ends $c$, $c$, the coils $c^3$, $c^3$, the pressure arm $c^4$, and the downwardly bent loop $c^5$, engaging the anti-rattler spring D, as specified.

2. In a thill coupling, the combination with the thill and axle clip, the threaded bolt, the removably secured nut engaging the threaded bolt and apertured and grooved to receive the bent up ends of the spring C, the anti-rattler spring D, and the interlocking loops $c^5$, $d$, of said springs C, D, as specified.

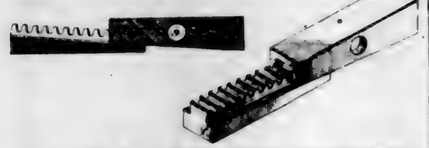
3. In a thill coupling the combination with the thill and axle clip, of the bolt and nut, the latter being apertured and grooved to receive the bent up ends of the spring C, the anti-rattler spring D, and the interlocking loops $c^5$, $d$, as specified.

4. In a thill coupling, the combination with the thill and axle clip, of the threaded bolt, the nut engaging the threads and being provided with a recessed extension, as specified.

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**502,990. QUOIN.** JOHN F. PERRY, Chicago, Ill. Filed Jan. 19, 1893. Serial No. 458,892. (No model.)

*Claim.*—1. In a quoin, an upper wedge having a longitudinal dovetail slot, a lower wedge having a longitudinal dovetail rib adapted to slide freely within the slot, said lower wedge being also provided with a groove on each side of the dovetail rib, one groove commencing at one end of the wedge and terminating near the other end of the wedge, and the other groove commencing at that end of the wedge where the first one terminates, and terminating at that end where the other groove begins, and a pair of stop-pins secured to the under side of the upper wedge, each stop-pin projecting into one of the grooves, substantially as described and for the purpose set forth.



2. In a quoin, the combination, with an upper wedge having a longitudinal dovetail slot and a circular socket wholly within said wedge, said socket being midway between the ends of the wedge and opening into the dovetail slot, of a lower wedge having a longitudinal cogged rib arranged to slide freely within the slot, said lower wedge being also provided with a groove on each side of the dovetail rib, one groove commencing at one end of the wedge and terminating near the other end of the wedge, and the other groove commencing at that end of the wedge where the first groove terminates, and terminating at that end where the other groove begins, and a pair of stop-pins secured to the under side of the upper wedge, each stop-pin projecting into one of the grooves, the distance between the end of each groove and the end of the wedge being such that the stop-pins will limit the movement of the wedges when the last cog of the rib is in line with the transverse socket, substantially as described.

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**502,991. COPY-HOLDER.** JAMES M. PHILLIPS, Waxahachie, Tex., assignor of one-third to Samuel P. Langsford, Robert G. Phillips, and Jonathan F. Phillips, same place. Filed Nov. 30, 1892. Serial No. 453,647. (No model.)



*Claim.*—In a copy holder, the combination with a base-block having a hemispherical socket therein, of a partially spherical hood standing above and over a part of the said socket and secured to the said base, and having a threaded opening $g^2$ extending therethrough at an angle of inclination, said hood being also formed with an upper central semicircular opening concentric with the vertical axis of the socket and having a peripheral depending flange of semi-circular form, a screw adjustably mounted in the said threaded opening, a hemispherical head loosely mounted in the socket and provided with an upper horizontal flat surface from which a standard centrally rises, a yoke secured to the upper end of the standard, and perpendicular to the latter and a copy-supporting table mounted on the yoke, said table being arranged to be adjusted and held in a horizontal plane by having the standard rest vertically in the semicircular opening and against the depending flange thereof, the adjusting-screw being adapted to engage either the spherical or the upper horizontal flat surface of the hemispherical head, substantially as described.

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**502,992. CIGAR-PIPE.** EDWARD J. PHILLIPS and JOHN A. LINSARD, Baltimore, Md. Filed Feb. 23, 1893. Serial No. 463,723. (No model.)

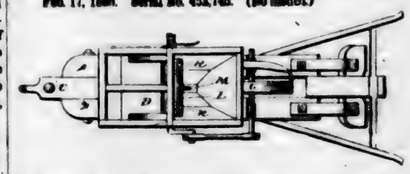


*Claim.*—As an article of manufacture, a cigar pipe consisting of an outer shell having the general shape of a cigar, a mouth piece having the general shape of a cigar holder, the two screwed together, one provided with a nicotine chamber and the other with a removable nipple which projects into the nicotine chamber, and a lining fitted in the bore of the shell and projecting beyond the outer end thereof whereby the pipe has the appearance of a cigar holder and cigar with ashes on its outer end, substantially as set forth.

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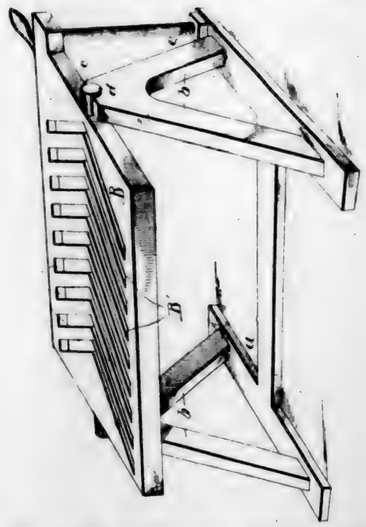
**502,993. PLANTER.** JAMES V. PETLEY, Kosciusko, Miss. Filed Feb. 17, 1893. Serial No. 462,740. (No model.)



*Claim.*—In a planter, the combination of a main hopper, a roller having recesses varying in size adjacent its respective ends, a removable hopper formed in two compartments which is adapted to fit within the main hopper, the lower corner of the said removable hopper being cut away to admit communication with the said recessed roller, and a suitable operating means, substantially as shown and described.

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**502,994. OSCILLATORY CHILL.** ROBERT A. POOLE, Hoboken, Pa. Filed Mar. 7, 1893. Serial No. 464,949. (No model.)

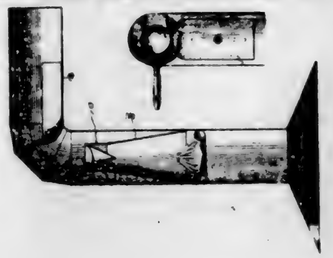


*Claim.*—1. The combination with an I-shaped base, and A-shaped standards having bearings at their apexes, of an oscillatory chill having molds formed therein, said chill having trunnions supported in the bearings in the standards, substantially as set forth.

2. The combination with a support, of an oscillatory chill journaled in the support, a rod screwed into the base of the support to serve as an adjustable stop, and a nut on the inner threaded end of the rod capable of being turned securely against the base whereby the rod is held fast to the base, substantially as set forth.

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**502,995. SANITARY VENTILATOR.** WILSON L. POTTER, Hartford, Conn. Filed Nov. 18, 1892. Serial No. 452,406. (No model.)



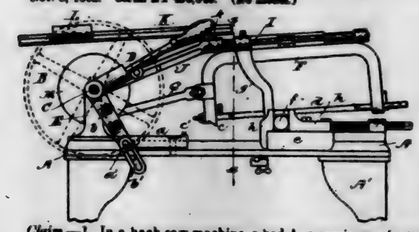
*Claim.*—1. A sanitary ventilator consisting of a tube adapted to pass from the interior to the exterior of a room, a burner in the interior of the tube, a truncated cone placed above the burner in the tube, and an inverted cone having a base larger in diameter than the top of the truncated cone placed just above and secured thereto within the tube, substantially as specified.

2. A sanitary ventilator consisting of a tube adapted to pass from the interior to the exterior of a room, a burner in the interior of the tube, a truncated cone placed above the burner in the tube, a disk larger in diameter than the top of the truncated cone placed just above and secured thereto within the tube, substantially as specified.

3. A sanitary ventilator consisting of a tube adapted to pass from the interior to the exterior of a room, a burner in the interior of the tube, a truncated cone placed above the burner in the tube, a disk larger in diameter than the top of the truncated cone placed just above and secured thereto within the tube, and a deflector located in the tube above the disk and adapted to be moved to open or close the passage through the tube, substantially as specified.

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**502,996. HACK-SAW MACHINE.** HENRY L. PRATT, Brooklyn, N. Y., assignor to the Miller's Falls Company, Miller's Falls, Mass. Filed Nov. 3, 1892. Serial No. 450,842. (No model.)



*Claim.*—1. In a hack saw machine, a bed A; a carriage, adapted to move on said bed and having a projection *c'*, an arm suitably connected with said carriage, and adapted to move a cam lever, a power wheel and power shaft, a suitable clutch for locking the wheel and shaft together, a cam lever, adapted to operate said clutch, and a saw frame with a suitable projection or part adapted to catch or interlock with projection *c'*, on carriage, and all combined substantially as and for the purposes set forth.

2. In a hack saw machine, the device herein described for automatically stopping the saw at the end of the forward stroke and consisting of the sliding carriage *a*, suitably arranged to be automatically engaged and moved by the saw frame, and the lever *b*, suitably connected with said carriage and adapted to be actuated by it, and said lever *b*, also suitably connected with and arranged to operate and disengage the cam mechanism from the driving pulley, all substantially as herein set forth.

3. In a hack saw machine, a power shaft, an arm pivoted or fulcrumed on said shaft and having a sliding connection with the saw, a lever secured to said arm and an adjustable weight adapted to move on said lever to the front and rear of the fulcrum of the arm, and all combined and adapted to operate, substantially as and for the purposes set forth.

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**502,997. MONKEY-WRENCH.** EDWIN S. PRATT, Petty Sound, Canada. Filed Mar. 23, 1893. Serial No. 467,236. (No model.)



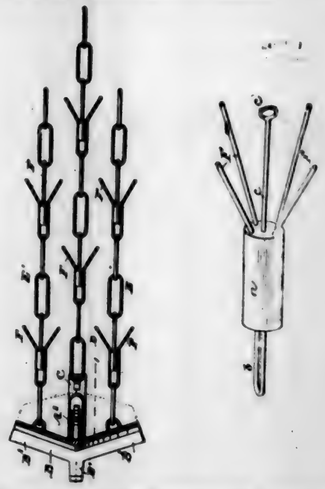
*Claim.*—The combination in a monkey wrench, of a shank, a loose head adjustable thereon, a rack on said shank, a plate E carrying the screw G and pivoted to the loose head so that the screw may be moved in and out of gear with the rack on the shank, a cup on said plate E, and a spring bolt G working in a recess in the movable head and adapted to enter said cup, substantially as described.

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**502,998. POTATO-DIGGER.** HAMILTON PRAT, Clove, N. Y. Filed Feb 15 1892. Serial No. 422,512. (No model.)

*Claim.*—1. In a drag chain for potato diggers, a link formed of a body provided at one end with an eye and at its other end with prongs and a central rod having an eye, substantially as described.

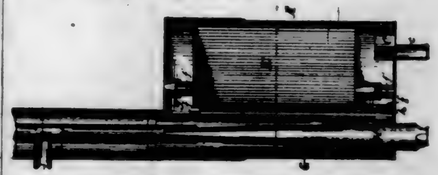
2. In a potato digger, a chain formed of ordinary links, and one or more links formed of a body provided at one end with an eye and at its other end with prongs and a central rod having an eye at its end, said eye being at right angles to the eye at the other end of the body, substantially as herein shown and described.



3. In a potato digger, the combination with a plow share having lateral wings or flanges, and a rearwardly extending shoe, of drag chains secured to the wings of the share and shoe, each chain being formed of ordinary links and one or more links formed of a body provided at one end with an eye and at its other end with prongs and a central rod having an eye at its end, said eye being at right angles to the eye at the other end of the body, substantially as herein shown and described.

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**502,999. HEATING-DRUM.** ROBERT PUSS, Camelton, N. D., assignor of one-half to Wallace Grovenor, same place. Filed Mar. 24, 1893. Serial No. 467,453. (No model.)



*Claim.*—1. The combination of the drum, the partition dividing it into two chambers, between which there is a communication near the top of the drum, the smoke pipe entering the bottom of one of the chambers, the air-heating casing situated in the said chamber directly over the said smoke pipe, and the exit pipe G opening into the other chamber near its bottom, substantially as set forth.

2. The combination of the drum, the air-heating casing situated within the drum and having one wall which forms a partition dividing the drum into two chambers of unequal size which communicate with each other only near the top of the drum, the said air-heating casing extending across the larger of the said chambers, the smoke pipe entering the larger chamber directly below the casing, and the exit pipe opening into the smaller chamber near its lower end or bottom, substantially as set forth.

3. The combination, with the drum A, the inlet pipe C, and the exit pipe G, of an air-heating casing within the drum having communication at its top and bottom with the air of the apartment, and a pipe H extending longitudinally, for a portion of its length, through the exit flue, and opening into the apartment near the floor surface, and having its upper end provided with an opening into the apartment and also with an opening into the smoke flue, substantially as set forth.

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**503,000. TRUSS.** HOWARD C. RAND, Salina, Kans., assignor to the Natural Body Brace Company, same place. Filed Aug. 4, 1892. Serial No. 442,116. (No model.)



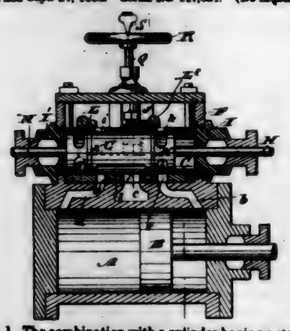
503,000.



*Claim.*—In a truss, the combination, with a pad plate having lugs stamped upward from the pad plate, the ends of said lugs being bent outward, of a clamp having a circular opening less in diameter than the distance between the outer ends of the lugs and larger in diameter than the distance between the bases of said lugs and a slotted opening forward of a circular opening connected therewith, substantially as described and for the purpose set forth.

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**503,001. STEAM-ENGINE VALVE.** AUGUSTUS ROCKE, Butte, Mont. Filed Sept. 27, 1892. Serial No. 447,021. (No model.)



*Claim.*—1. The combination with a cylinder having a steam chest open at its top and provided with a removable cover, threaded openings in the ends of the chest, threaded stuffing boxes in said openings, and inlet ports *a b*, and exhaust port *c*, of the casing C secured in the bottom of the chest, removable through its open top and provided with ports *i k d e f*, a piston valve operating in said casing removable through said threaded openings and controlling the said ports, substantially as set forth.

2. The combination with the cylinder and its steam chest, of the casing therein having ports *i k d e f*, and longitudinal ways along its outer sides, of the saddle-like cut off on the upper side of the casing having ribs entering said ways and provided with a rack, the shaft Q having a pinion meshing with said rack, and means for operating the shaft, and the piston valve in the casing, substantially as set forth.

3. The combination with the cylinder, and steam chest having ports *a b c*, removable stuffing boxes in the ends of the chest and a removable cover for the top of the chest, of the open ended valve casing C removable through the top of the chest and having flanges bolted to the bottom of the chest, and ports *d e f* and *i k*, the cylindrical valve G in the casing removable through the openings in the ends of the chest and provided with transverse ports *g h* through its ends to connect ports *e d—k l* and recessed on its lower side to connect ports *d e* with the exhaust, substantially as set forth.

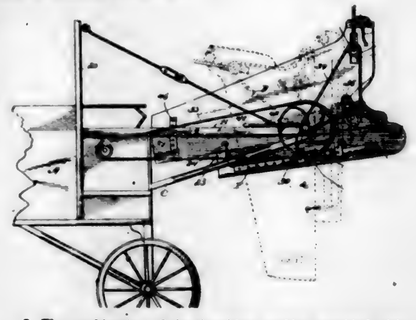
4. A steam engine valve comprising a casing adapted to be secured in the steam chest and provided with ports leading to the interior of the steam chest and registering with the cylinder ports, a cylindrical valve fitted to slide in the said casing and provided with inlet ports and an exhaust cavity, and a cut off mechanism substantially as described, for regulating the amount of motive agent passing from the steam chest to the said ports of the casing, substantially as shown and described.

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**503,002. BAND-CUTTER AND FEEDER FOR THRASHING-MACHINES.** DAVID C. REYN, Halstead, Kans. Filed June 24, 1892. Serial No. 437,899. (No model.)

*Claim.*—1. The combination of the thrasher frame, the band-cutter and feeder attachment provided with supporting pivots projecting from its sides at points between its ends and nearer to its outer or forward end, suitable bearings upon the thrasher frame in which the supporting pivots are journaled, suitable means of engagement between the inner end of the pivoted attachment and the thrasher frame, and means for operating the attachment, whereby the attachment can be held at any desired operative angle or allowed to swing away from the thrasher into vertical position, substantially as and for the purpose herein set forth.

2. The combination of the thrashing machine provided with a supporting frame projecting therefrom, the band cutter and feeder attachment pivoted thereto and provided with a pair of co-operating feeding aprons supported on suitable rollers, sprocket wheels on the projecting journal ends of the driving rollers, a main drive shaft journaled to rotate on the center upon which the attachment is pivoted and provided with a sprocket wheel, the auxiliary feeder attachment pivoted to the main feeder and provided with a sprocket wheel on the projecting journal end of its driving roller, a sprocket chain engaging said sprocket wheels, a drive pulley on the drive shaft, and a band communicating power from the thrashing machine to the power shaft, substantially as set forth.



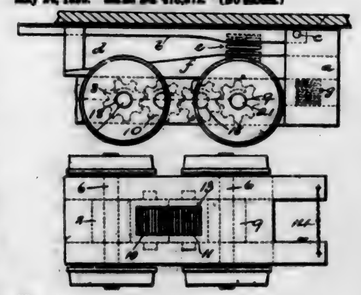
3. The combination of the thrashing machine provided with a supporting frame projecting therefrom, a band-cutter and feeder attachment provided with supporting pivots projecting from its sides between its ends and journaled in the supporting frame, a series of perforations in the sides of the attachment, perforations in the supporting frame with which they register and a pin adapted to enter said perforations for holding the attachment at the desired angle, substantially as and for the purpose set forth.

4. The combination of the thrashing machine having the supporting frame projecting therefrom, a band cutter and feeder attachment, a tubular shaft passing through said band cutter and feeder attachment and having threaded ends, recesses in the supporting frame, metal plates covering said recesses and having openings for the passage of the shaft, lock nuts engaging the ends of the tubular shaft and said metal plates, the drive shaft journaled in said tubular shaft, a drive pulley on said shaft, a band communicating between the thrasher and said pulley, and suitable gearing between said shaft and the operative parts of the attachment substantially as set forth.

5. The combination of the thrashing machine having the supporting frame projecting therefrom, a band cutter and feeder attachment pivotally supported upon said frame at points between its ends, co-operating feeding aprons supported on suitable rollers, sprocket wheels on the projecting journal ends of the driving rollers, a main drive shaft journaled to rotate on the center upon which the attachment is pivoted and provided with a sprocket wheel, a sprocket chain engaging said sprocket wheels, the auxiliary feeder attachment pivoted at the outer end of the main feeder and adapted to be folded back under the main feeder, a sprocket wheel on the projecting journal of the drive roller of the auxiliary feeder attachment adapted to engage the sprocket chain, and suitable means for transmitting power from the thrashing machine to the main feeder shaft, substantially as set forth.

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**503,003. CAR-BRAKE.** JOHN W. BOSHAR, McKeesport, Pa. Filed May 24, 1893. Serial No. 475,372. (No model.)

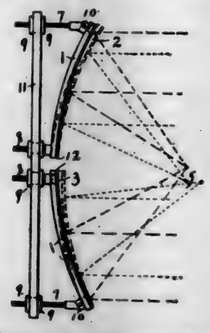


*Claim.*—1. Brake-mechanism consisting of a truck adapted to be secured to a vehicle or other moving body with capability of vertical movement at one end relatively to said vehicle, brake-wheels journaled in said truck, and a connected train of oppositely-rotating cog gearing mounted, respectively, on the journals or axles of said brake-wheels and mediately thereof, substantially as and for the purposes set forth.

2. A brake-mechanism for vehicles and the like, consisting of a truck, a bolt or equivalent device connecting said truck with the vehicle with freedom of vertical movement at one end, raising and lowering mechanism attached at one end of said truck for the purpose of raising and lowering said end, brake-wheels journaled in said truck, cogs centrally mounted upon the wheel journals and cogs journaled in the truck mediately of the wheel journals and intermeshing with the cogs on said journals and having rotary movement in a direction opposite to that of the adjacent cog, substantially as and for the purpose set forth.

3. A brake-mechanism for the purpose described, consisting of a truck composed of two side beams each formed of two longitudinal sections and having concaved journal bearings a beam bracing top platform, brake-wheels journaled in said side beams, a train of intermeshing reversely-rotating cog gearing connecting the journals or axles of said brake-wheels, and a raising and lowering device connected with one end of said truck for the purpose of raising and lowering said end, substantially as and for the purposes set forth.

## 503,004. REFLECTOR FOR RADIANT ENERGY. MELVIN L. SEVERY, Boston, Mass., assignor to Francis Doane, Charles F. Crowell, and Melvin L. Severy, trustees, same place. Filed Nov. 10, 1892. Serial No. 451,553. (No model.)



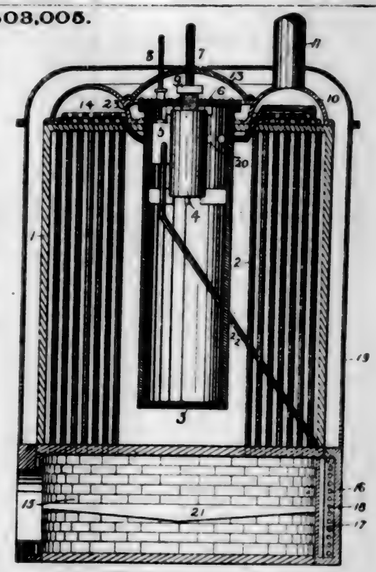
*Claim.*—A reflector composed of substantially parallel rows of segments, the segments in each row being arranged side by side and also individually and independently adjustable to vary the position of its focus, and means for varying the position of the segments comprising a frame, and two rods 7, 8 supporting and pivotally connected with each segment and movably secured to the frame, substantially as shown and described.

## 503,005. STEAM-BOILER. MELVIN L. SEVERY, Boston, Mass., assignor to Francis Doane, Charles F. Crowell, and Melvin L. Severy, trustees, same place. Filed Feb. 6, 1893. Serial No. 461,533. (No model.)

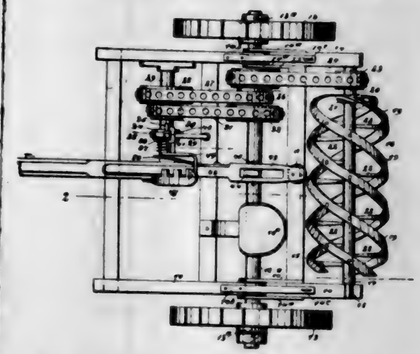
*Claim*—1. In the herein-described apparatus, the combination, to wit, the boiler 1, the steam chest or chamber 3 located in the boiler, the steam cylinder 4 within said steam chest, the air jacket 19 inclosing the boiler, the fire box, a feed-water chamber surrounding the fire-box, an air chamber intermediate the fire-box and the feed-water chamber, the heating pipe or coil 18 in the feed-water chamber, and the pipe 22 extending from the exhaust port of steam cylinder 4 through the interior of the boiler and connected with the coil 18, substantially as shown and described.

2. The herein-described apparatus comprising, to wit, the tubular boiler 1, the steam chest or chamber 3 located in the boiler, the steam cylinder 4 within said steam chest, the steam superheater 14 arranged in the path of the flues of the boiler, the air jacket 19 inclosing all of the foregoing parts, the fire-box, a feed-water chamber surrounding the fire box, an air chamber intermediate the fire-box and the feed-water chamber, the heating pipe or coil 18 in the feed-water chamber, and the pipe 22 extending from the exhaust port of steam cylinder 4 through the interior of the boiler and connected with the pipe or coil 18, in combination, substantially as shown and described.

## 503,006.



## 503,006. LAND-PULVERIZER. BENJAMIN S. SKINNER, Cincinnati, Ind. Filed Apr. 1, 1893. Serial No. 468,669. (No model.)



*Claim.*—1. The combination with the main frame and its drive wheels and axle, of the vertically swinging frame hung on the axle and carrying the rotary pulverizer operated from said drive wheels, the longitudinally extending lever connected at its rear end with the swinging frame, staples on the side bars of the swinging frame and the bars extending rearwardly from the sides of the main frame and provided with apertures to receive said staples when the swinging frame is swung up and permit of locking the same by passing keys or pins through the staples, substantially as set forth.

2. The combination with the main frame and its drive wheels and axle, of the vertically swinging frame carrying a rotary pulverizer operated from the drive wheels, a longitudinally extending adjustable lever, a spiral spring connecting the rear end of the lever with the swinging frame and a chain extending through the spring and also connected to the lever and swinging frame, substantially as set forth.

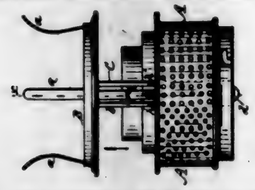
3. The combination with the main frame, its drive wheels and axle, of the vertically swinging frame hung on the axle and carrying the rotary pulverizer, an adjusting lever for raising and lowering said swinging frame, the sprocket wheel 23 on the pulverizer shaft, connected sprockets 25, 26 loose on the main shaft, a fixed sprocket 32 also on the main shaft, a chain connecting the sprockets 23, 25, a counter shaft 29 journaled on the main frame in front of the axle and provided with a fixed sprocket 28 chained to the sprocket 26 and a loose sprocket 30 chained to the sprocket 32, and a clutch mechanism for connecting the sprocket 30 with its shaft, substantially as set forth.

4. A rotary pulverizer consisting in the shaft 51 provided with series of short spring blades or cutters 53 curved longitudinally and laterally, substantially as shown.

5. A rotary pulverizer consisting in the squared shaft 51, pairs of collars 55 having squared openings receiving the shaft and the longitudinally and laterally curved blades the straight inner edges of which are held between said collars and rest transversely on the shaft, substantially as shown.



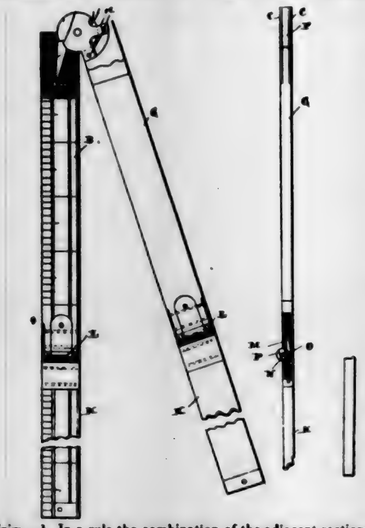
## 503,007. LAMP-BURNER. HENRY B. SHAFFER, Rochester, N. Y. Filed Aug. 5, 1893. Serial No. 482,871. (No model.)



*Claim.*—1. The combination, with the burner and chimney-cap, of the standard C constructed with the spring tongue *m* and reverse spring bends *k k' k'* in its body portion engaging with an opening in the top of the burner, and the projecting guide end *b* below said spring tongue, resting in bearings in the bottom of the burner, as shown and described and for the purpose specified.

2. The combination, with the burner and chimney cap, of the standard C, constructed with the spring tongue *m* and reverse spring bends *k k' k'* in its body portion, engaging with an opening in the top of the burner, a projecting guide end *b* below said spring tongue resting in bearings in the bottom of the burner, a right-angled seat *c* above said spring tongue supporting the chimney cap, and a tongue *a* extending through a slot of the chimney cap and forming a chimney holder, as herein shown and described.

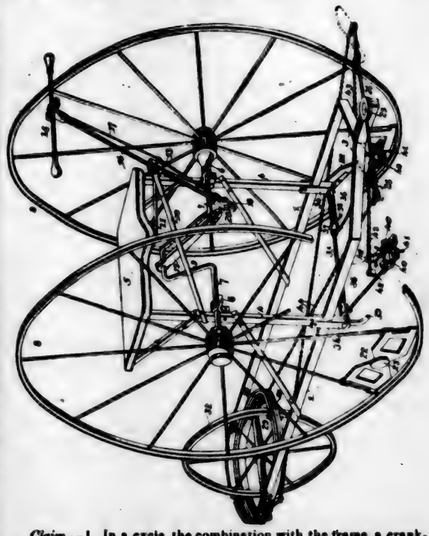
## 503,008. FOLDING POCKET-RULE. PERCIVAL W. SHEPPARD, East Liberty, Pa. Filed Jan. 17, 1893. Serial No. 458,099. (No model.)



*Claim.*—1. In a rule the combination of the adjacent sections, a hinge connecting their adjacent ends, circular head N concentric with the turning point of the hinge and formed with surfaces O, P, on opposite sides of its center, and spring M carried by one of the sections which at its free end is adapted to engage the said flat surfaces, substantially as shown and described.

2. In a rule, the combination of the adjacent sections, pivotal pin Q for connecting their adjacent ends, head N mounted concentrically on said pin and formed with notch R which is engaged by the end of one of the sections thereby preventing the head from turning on said pin, flat surfaces O and P on said head and spring M carried by one of the rule sections and adapted to engage at its free end the said surfaces, substantially as shown and described.

## 503,009. TRICYCLE. ADDISON V. SMITH, Cortland, N. Y. Filed Mar. 17, 1893. Serial No. 466,496. (No model.)



*Claim.*—1. In a cycle, the combination with the frame, a crank-axle, ground-wheels having spokes, and means for propelling the same of a pair of spider-frames clamped to two adjacent spokes of the wheels, and weights secured to the centers of the spider-frames, substantially as specified.

2. In a cycle, the combination with a frame, and a steering-wheel, of an axle, ground-wheels, means for propelling the ground-wheels, a pair of levers suspended from the frame, stops arranged in rear of the levers, connecting devices between the levers and the steering-wheel, and pivot-wheels located upon the levers at the free ends thereof and adapted to contact with the ground when depressed and thus elevate the ground-wheels, substantially as specified.

3. In a cycle, the combination with a frame, an axle, ground-wheels and means for driving the axle, of a steering-wheel, a tiller-bar pivoted to the framework, tiller-chains between the tiller-bar and the steering-wheel, levers pivoted between the ground-wheels, connecting-chains between the tiller-bar and the wheels, stops arranged in rear of the levers, pivot-wheels journaled in the lower ends of the levers, and connecting-chains between said levers and the tiller-bar, substantially as specified.

4. In a cycle, the combination with the frame having the rear rounded end, the stationary ring secured and conforming to said rounded end, the swivel ring L-shaped in cross-section located within and under said stationary ring and provided with keepers overlapping the latter, bearings in the opposite sides of the swiveled ring, a shaft mounted in the bearings, a steering-wheel mounted on the shaft, lugs extending from the bearings, and a tiller-bar pivoted to the opposite or front end of the frame, of an axle, ground-wheels, means for operating the same, a transverse shaft supported by the frame between the ground-wheels, levers loosely suspended from the shaft, springs for normally depressing the levers, stops arranged in rear of the levers, pivot-wheels having their journals mounted in bearings at the free ends of the levers, tiller-chains crossing each other and connecting the lugs of the swiveled ring with the extremities of the tiller-bar, and connecting-chains between said tiller-bar and the free ends of the levers, substantially as specified.

## 503,010. SAW-TEMPLET. BENJAMIN F. SPOONER, Orange, Tex. Filed Feb. 6, 1893. Serial No. 461,305. (No model.)

*Claim.*—1. A saw templet comprising a stock or holder, and a flexible band or blade held adjustably therein, substantially as shown and described.

2. A saw templet comprising a stock or holder, a flexible band

**503,010.**



or blade held in the said stock or holder, and means, substantially as described, for adjusting the band to the desired curve, substantially as shown and described.

**503,011.** PEN OR PENCIL HOLDER. ISAAC H. STATHER, New Orleans, La. Filed Mar. 23, 1893. Serial No. 467,297. (No model.)



*Claim.*—1. A pen and pencil holder comprising an adjustable finger ring and a spring clamp adapted to hold a pencil and revolubly attached to said adjustable finger ring, substantially as and for the purposes described.

2. A pen and pencil holder comprising an adjustable ring A made of resilient material having ends *a* and *a'* and keepers A' and $A^2$ attached to said ends respectively, and the spring clamp B revolubly connected to said ring A and provided with spring holding arms *b'*, substantially as and for the purposes described.

**503,012.** ATTACHMENT FOR DRILLING-MACHINES. JOHN J. STEVENS, Galt, Canada. Filed Nov. 25, 1892. Serial No. 453,002. (No model.)



*Claim.*—1. In a drilling machine, a spindle B, a gear-wheel E fixed thereon, a gear-wheel F, meshing with said gear-wheel E and fixed to the shaft G, a gear-wheel I loosely held on said shaft G, a spindle M adapted to receive a chuck, and a gear-wheel fixed to said spindle M and meshing with said gear-wheel I, in combination with means for holding gear-wheel I to shaft G by friction, substantially as described.

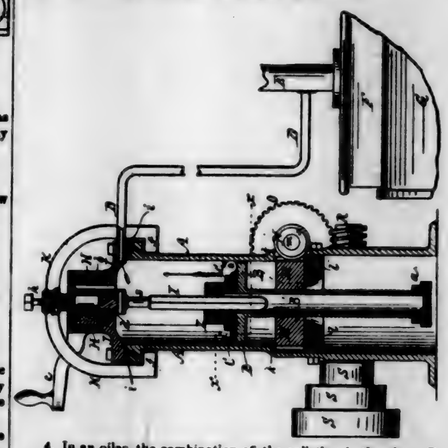
2. In a drilling machine, a spindle B, a spindle M adapted to carry a chuck and geared to said spindle B by the gear-wheels E, F, I and L, a friction washer placed on each side of said gear-wheel I, and a nut K placed on the shaft thereof and adapted to regulate the amount of friction between said washers and gear-wheel, substantially as described.

**503,013.** LUBRICATOR. DRAPER STONE, Rochester, N. Y. Filed July 19, 1892. Serial No. 440,493. (No model.)

*Claim.*—1. In an oiler, the combination of the cylinder, the piston resting therein, the screw threaded tube attached to the piston, the worm wheel through which the tube passes, a nut attached to the piston provided with a square opening, and a fixed rod passing through the nut and into the tube, as and for the purpose specified.

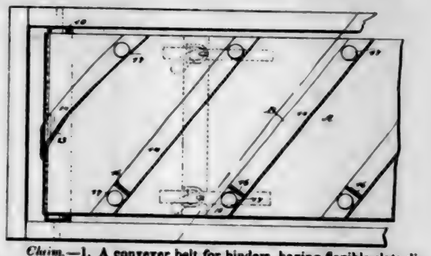
2. In an oiler, the combination of the cylinder, the piston resting therein, the screw threaded tube attached to the piston, the worm wheel through which the tube passes, a nut attached to the piston provided with a square opening, and a fixed rod passing through the nut and into the tube, said rod being provided near its top with a section of smaller diameter than the body of the rod, as and for the purpose specified.

3. In an oiler, the combination of the cylinder, the piston resting therein, the screw threaded tube attached to the piston, the worm wheel through which the tube passes, a nut attached to the piston provided with a square opening, a fixed rod passing through the nut and into the tube, and a cap capable of rotary motion, to which cap the rod is attached, as and for the purpose specified.



4. In an oiler, the combination of the cylinder A, the piston B, the screw threaded tube B', the nut L, the fixed rod I passing through the nut and into the tube, the cap H to which the rod is attached, and the gearing consisting of the worm wheel M, pinion N, worm wheel O, and pinion R, as shown and described and for the purpose specified.

**503,014.** CONVEYER-BELT FOR HARVESTERS. DELOS W. STORER, Western, Nebr. Filed Mar. 7, 1893. Serial No. 464,906. (No model.)



*Claim.*—1. A conveyer belt for binders, having flexible slats diagonally located thereon, substantially as shown and described.

2. A conveyer belt for binders, provided with flexible slats located diagonally thereon, and of greater thickness at the grain end than at any other point throughout their length, as and for the purpose set forth.

3. In a conveyer belt for binders, the combination, with the belt, of slats located diagonally thereon, the said slats consisting of a body of leather and a capping of sheet metal, as and for the purpose set forth.

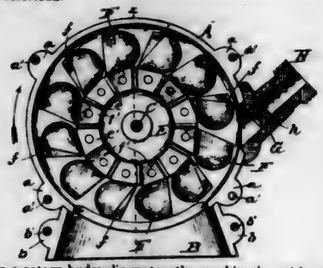
4. In a conveyer belt for binders, the combination, with a belt, of slats secured upon the belt, of greater thickness at their grain end than at any other point throughout their length, as and for the purpose specified.

5. In a conveyer belt for grain binders, the combination, with a belt, of slats located diagonally thereof, the said slats being of greater thickness at their grain ends than at any other point throughout their length, said slats being also constructed of a leather body and a capping or covering of sheet metal, as and for the purpose specified.

**503,015.** HYDRAULIC MOTOR. OLIVER F. TEED, Covington, Ky., assignor of one-half to W. H. Glore, same place. Filed May 17, 1893. Serial No. 474,568. (No model.)

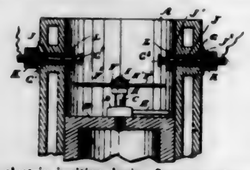
*Claim.*—1. In a rotary hydraulic motor, the combination with a suitable case open at the bottom, and a delivery pipe connected thereto at one side thereof, in the direction of a chord of the circle described by the rotary wheel; of a shaft mounted in said case, a hub mounted on said shaft and cup-shaped buckets F having shanks attached to said hub alternately on opposite sides thereof, and cut away helicoidally along their forward edges, substantially as and for the purpose described.





2. In a rotary hydraulic motor, the combination with a suitable case open at the bottom, and a delivery pipe connected thereto at one side thereof, in the direction of a chord of the circle described by the rotary wheel, of a shaft mounted in said case, a hub mounted on said shaft, cylindrical buckets with hemispherical ends attached to said hub alternately on opposite sides thereof, and cut away helicoidally leaving a shoulder *f* and an angular mouth or outlet adjacent thereto in approximately the circles of maximum diameter of the two parallel groups of buckets, substantially as and for the purposes described.

**503,016.** ELECTRIC IGNITING DEVICE FOR GAS-ENGINES. FRANK E. TREMPER, New York, N. Y., assignor to the Safety Vapor Engine Company, of New Jersey. Filed Feb. 8, 1893. Serial No. 461,456. (No model.)



*Claim.*—An electric igniting device for gas engines, comprising permanently separated rigid electrodes insulated in the cylinder, said electrodes being formed with sharp-edged heads at their inner ends, inside the cylinder, and a flexible sparking strip held insulated on the reciprocating piston and adapted to make contact with the heads of the said electrodes, substantially as shown and described.

**503,017.** CAR-COUPLING. WILLIAM T. VAN DORN, Lincoln, Nebr. Filed Dec. 5, 1892. Serial No. 454,189. (No model.)



*Claim.*—1. In a car-coupling, the drawhead having a flat surface on the face and provided with the pin holes *a'* *a''* and openings *a*, *a'*, in the side, substantially as shown and described.

2. In a car-coupling, a coupling bar having a catch at each end and a perforation at the center, through which a pin passes and thus balances the bar for automatic coupling at either end, substantially as shown and described.

3. In a car coupling, a retaining device formed by a spring seated in openings in one side of the drawhead and braced by the part of the side of the drawhead between the openings, substantially as shown and described.

4. The combination, with a coupling-bar having a catch at each end, and a drawhead having means for engaging the catches, of a retaining device formed by a spring seated in one side of the drawhead, substantially as shown and described.

5. The combination, with a coupling-bar having a lateral catch at each end and a perforation in the center, of a drawhead having a flat surface on the face and provided with means for engaging the catches, substantially as shown and described.

**503,018.** LUBRICATOR FOR CAR JOURNALS. SAMPSON WALKER, Winnipeg, Canada. Filed May 16, 1893. Serial No. 474,385. (No model.)

*Claim.*—1. The combination, with the journal and the journal box adapted to hold oil, of a hanger suspended from the top of the box and having a horizontal member extending longitudinally beneath the journal, and a loose roller held to turn and slide on the horizontal member of the hanger and adapted to fit against the lower face of the journal, substantially as described.



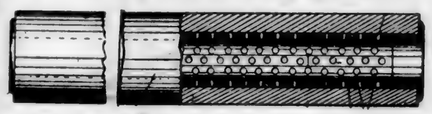
2. The combination, with the journal box and the journal held to turn therein, of the hanger suspended from the top of the box and having a horizontal member extending longitudinally beneath the journal, a roller carried by the horizontal member of the hanger and adapted to turn against the journal, and an adjusting device secured to the box and clamping the vertical member of said hanger, substantially as described.

3. The combination, with the journal box and the journal arranged to turn therein, of an L-shaped hanger held in the top of the box and extending downward beneath the journal, the hanger having a horizontal bearing portion parallel with the journal, a nut on the upper end of the vertical member of the hanger and a spring between the nut and the top of the journal box and an oil roller held to turn on the bearing portion of the hanger and to contact with the face of the journal, substantially as described.

4. The combination, with the journal box and the journal held to turn therein, of the hanger suspended at one end of the journal and having a bearing portion extending parallel with the journal, the roller held to turn on the bearing portion of the hanger, and the adjustable clamping bolt mounted in one end of the box and having a forked inner end engaging the vertical member of the hanger, substantially as described.

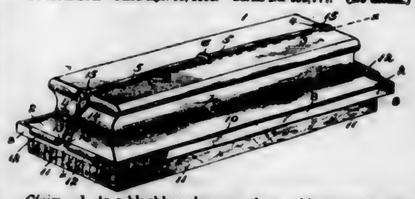
5. The lubricating attachment for journal boxes comprising an L-shaped hanger having an offset 21, 22, in its round horizontal member and a nut on the free end of said member, a lubricating roller turning and sliding on said member between the nut and offset, a supporting spring on the upper end of the vertical member and a horizontal bolt provided with jam nuts and a forked inner end engaging the vertical member of the hanger, substantially as set forth.

**503,019.** WRINGER-ROLLER. OTTO W. WALSCHIED, Jersey City, N. J. Filed Aug. 20, 1892. Serial No. 443,655. (No model.)



*Claim.*—The combination with a rubber roller of a wringer, of a bearing sleeve held within the roller and adapted to turn loosely on the shaft of the wringer, and end nuts screwed into the sleeve and provided with flanges to abut with the ends of the roller, substantially as described.

**503,020.** BLACKBOARD-ERASER. WILLIAM J. WEAVER, Royersfordville, Pa. Filed Apr. 10, 1893. Serial No. 469,777. (No model.)



*Claim.*—1. In a blackboard eraser, the combination of a frame removably supporting pieces or strips of erasing material, and having clasps at the opposite ends thereof, and a hand block or grip removably engaging said frame and provided with catches adapted to be engaged by the said clasps, substantially as described.

2. In a blackboard eraser, the combination of a frame removably supporting pieces or strips of erasing material, and provided with bars or slats in the bottom thereof that are engaged by the said pieces or strips, and also having a surrounding flange, clasps movably connected to the opposite ends of said frame, and a hand block or grip

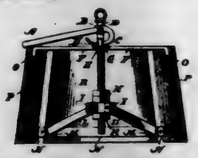
provided with a lower flange that is removably seated in the said frame, and having catches at the opposite ends thereof adapted to be engaged by the said clasps, substantially as described.

3. In a blackboard eraser, the combination of a metallic frame having bars or slats in the bottom thereof and a surrounding flange, pieces or strips of erasing material removably mounted over the said bars or slats, clasps movably attached to the opposite ends of said frame and provided with outer looped ends, a wooden hand block or grip formed with a lower flange arranged to enter the upper part of the said frame, said hand block or grip being also formed with a longitudinal groove having recesses at the opposite terminations thereof, and an elongated spring mounted in said groove and having the opposite ends thereof projecting over the said recesses and formed with catches which are adapted to be engaged by the said outer looped ends of the clasps, substantially as described.

4. The eraser frame 8 having a series of slats or bars 9 surrounded on all sides by a vertical flange 10, the folded pieces 11 of erasive material fitted over the bars or slats, and the removable handle held in place by means substantially as described and resting on the erasive material within the flange, substantially as described.

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**503,021. BARREL-HOOPING MACHINERY.** ROBERT WELSH, Keokuk, Iowa. Filed Apr. 26, 1892. Renewed June 23, 1893. Serial No. 479,174. (No model.)

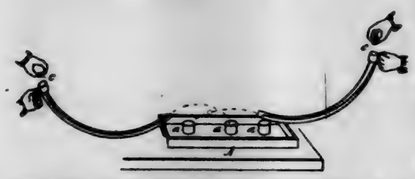


*Claim.*—1. The main body of the guide and truss consisting of the hoop O, having cross transoms F and G, hoop-sections N, and connecting side-sections P, in combination with the operating mechanism consisting of the lever A, provided with a hooked end forming a cam C, and being pivoted to a shaft D, provided with a screw thread, said shaft and the sleeve H, adjustable thereon and the arms L, communicating between the sleeve and the hoop-sections N, substantially as described and for the purpose specified.

2. The operating mechanism for a guide and hoop truss in a barrel making machine, consisting of the lever A, pivotally connected to the screw shaft D, and provided with a hooked end forming a cam C, in combination with said shaft, the sleeve H, upon said shaft, and the arms L, connecting the sleeve and shaft with the hoop-sections N, substantially as described and for the purpose specified.

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**503,022. GAME APPARATUS.** DANIEL WHITBURN, London, England. Filed Apr. 26, 1893. Serial No. 471,935. (No model.) Patented in England Mar. 31, 1892, No. 6,233.



*Claim.*—In a game apparatus, the combination with the herein described tray provided with a series of cups or cavities of a curved trough protector unattached to the table or board and adapted to be adjusted and guided by the hand to direct a marble or ball toward or into one of the said cups, substantially as herein set forth.

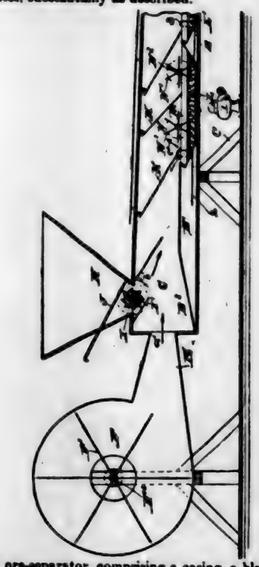
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**503,023. ORE-SEPARATOR.** CHARLES F. WILLEY, Ogden, Utah. Filed June 13, 1892. Serial No. 436,610. (No model.)

*Claim.*—1. An ore separator, comprising a casing, a hopper at one end of the casing, a blast fan connected with one end of the said casing, a series of connected pans containing quicksilver arranged on the bottom of the casing, agitating wheels mounted to revolve in the pans, and a series of hinged gates above the pans, substantially as described.

2. An ore separator, comprising a casing, a blast fan connected with one end of the casing, a series of connected pans on the bottom of the casing and containing quicksilver, the last pan having its outer end extended upwardly and outwardly and coated with amalgam, agitating wheels mounted to revolve in the pans, and a series of adjustable gates in the upper part of the casing over the pans, substantially as described.

3. An ore separator, comprising a casing, a blast fan connected with one end of the casing, a forwardly inclined discharge chute in the casing, a hopper above the chute, a series of connected pans on the bottom of the casing and containing quicksilver, the last pan having its outer end inclined upwardly and outwardly and coated with amalgam, agitating wheels mounted to revolve in the pans, a series of hinged gates above the pans, and means for adjustably holding the gates, substantially as described.

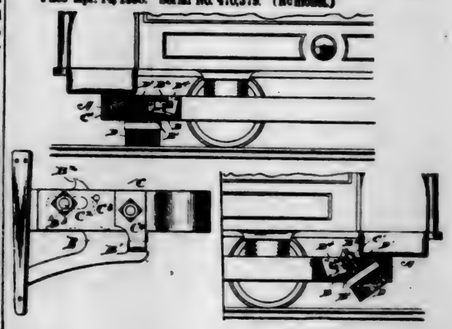


4. An ore-separator, comprising a casing, a blast fan connected with one end of the casing, a feed hopper discharging into the casing in front of the air blast, a series of connected pans containing quicksilver, the last pan having its outer end extended upwardly and outwardly and coated with amalgam, revolving agitating wheels, adjustable gates above the pans, and a revoluble wheel having amalgamated wings and arranged at the end of the casing, substantially as herein shown and described.

5. An ore separator, comprising a casing having a hinged outer end, a blast fan connected with one end of the casing, a forwardly inclined chute in the casing, a hopper above the chute, a feed wheel in the hopper, a series of connected pans on the bottom of the casing, and containing quicksilver, the last pan having its bottom inclined upwardly and outwardly and coated with amalgam, agitating wheels in the pans, adjustable gates above the pans, an amalgamated roller in the last pan, and a wheel having amalgamated wings arranged at the end of the casing, substantially as shown and described.

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**503,024. ATTACHMENT FOR STREET-RAIL BROOMS.** ALFRED E. WILSON, Rockford, Ill., assignor to James S. Ticknor, same place. Filed Apr. 14, 1893. Serial No. 470,379. (No model.)



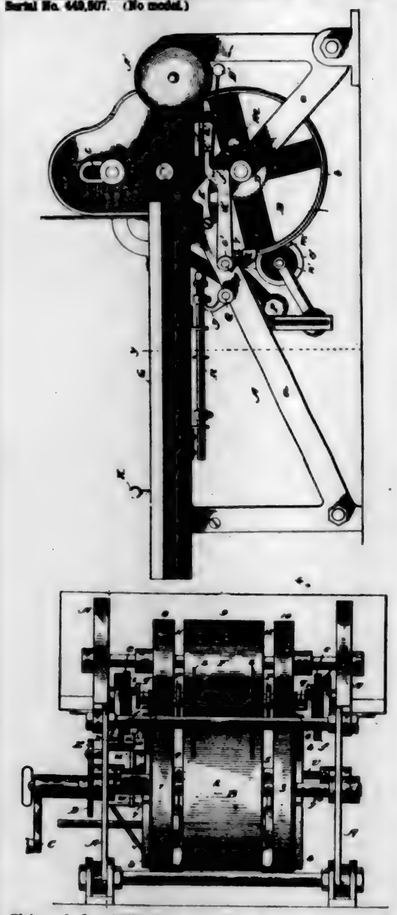
*Claim.*—1. In an attachment for street rail brooms, in combination, a bracket having a latch-stop and a suspending-lug thereon and an elongated bearing therein, and a broom holder, mounted by one end thereof on a pivot, adapted to be slid in the elongated bearing in the bracket, and provided with a latch, arranged to engage said latch-stop on said bracket, whenever the broom-holder is in operative position, substantially as and for the purpose specified.

2. In an attachment for street-rail brooms, in combination the bracket, provided with a latch-stop $B'$, a suspending-lug $B^2$, and an elongated bearing $B^3$, and a broom holder, having a socket $C'$ in the free end thereof, being mounted on a pivot $C^2$ adapted to be freely slid in the elongated bearing $B^3$ in the bracket, and having a latch $C^3$ for locking the broom-holder in operative position, and a pin or projection $C^4$ for engaging the suspending-lug $B^2$, to retain the broom-holder and its broom, when not in use, out of operative position, substantially as and for the purpose specified.



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**503,025. CANCELING, PERDING, AND LOCKING DEVICE FOR BALLOT-BOXES.** JOHN Q. ADAMS, Newton, Mass. Filed Oct. 24, 1892. Serial No. 449,507. (No model.)



*Claim.*—1. In a ballot box or machine, the combination of the support upon which the ballot is placed and roller or cylinder for feeding the ballot through the machine, a movable flap adapted to move toward and from the support for the ballot and the lock for the roller or cylinder connected with the said flap, the parts being disposed as described whereby when the ballot is upon its support the flap cannot be moved down thereon into position to lock the roller or cylinder, substantially as set forth.

2. In a ballot box or machine a table or support for the ballot having a sunken portion H into which the ballot is placed, and a movable flap adapted to fit closely in the said sunken portion when it is empty and to be obstructed and prevented from entering therein when a ballot is placed therein, substantially as described.

3. In a ballot box or machine, a table or support for receiving a ballot, a hinged or movable flap closing down upon said ballot, means for feeding the ballot through the machine and means operative from the ballot feeding mechanism for automatically raising or elevating said flap, substantially as described.

4. In a ballot box or machine, a table or support having a sunken portion for receiving a ballot, a hinged or movable flap closing down upon such ballot, a revolving drum or cylinder, which operates to feed the ballot to the machine and intermediate mechanism for automatically raising said flap on a single revolution of said drum or cylinder, substantially as described.

5. In a ballot box or machine, a table or support adapted to close down upon the ballot, a hinged or movable flap, a revolving cylinder, intermediate mechanism for automatically elevating the flap, and means for locking said cylinder against movement when the flap is down, substantially as described.

6. In a ballot box or machine, a table or support adapted to close down upon the ballot, a hinged or movable flap, a revolving drum or cylinder, intermediate mechanism for automatically lifting the flap on revolution of the cylinder, and means for locking said cylinder after completing such revolution, substantially as described.

7. In a ballot box or machine, a table or support adapted to close down upon the ballot, a hinged or movable flap, a revolving drum or cylinder, intermediate mechanism for automatically elevating the flap, and means for separately locking said cylinder against movement when the flap is both raised and lowered, substantially as described.

8. In a ballot box or machine, a table or support adapted to close down upon the ballot, a hinged or movable flap, a revolving drum or cylinder, and intermediate mechanism for elevating the flap, consisting of opposite pairs of gear-wheels, and a longitudinally movable rack bar, operated by a pin on the cylinder, substantially as described.

9. In a ballot box or machine, a table or support for the ballot, a rock shaft carrying a flap which closes down upon the ballot, a revolving cylinder, and locking devices supported on the shaft which engage with said cylinder when the flap is down, substantially as described.

10. In a ballot box or machine, a table or support for the ballot, a rock shaft carrying a flap which closes down upon the ballot, a revolving cylinder provided with notches in its edges, and movable locking arms formed with catches which enter the notches of the cylinder when the flap is down, substantially as shown and for the purpose described.

11. In a ballot box or machine, the combination with the support for the ballot, the movable flap, the cylinder, and the locking arms which engage the cylinder when the movable flap is down, of the fingers supported by said arms and which serve to prevent engagement of the same whenever a ballot is properly inserted, substantially as described.

12. In a ballot box or machine, the combination with the support for the ballot, the movable flap, the cylinder, and the locking arms which engage the cylinder when the movable flap is down, of means for raising or elevating said arms, simultaneously with the raising of such flap, substantially as described.

13. In a ballot box or machine, a table or support having a sunken portion, a hinged or movable flap closing down into such portion, a revolving cylinder, intermediate gearing the connections between the flap and the intermediate gearing and a rack bar operated by said cylinder, a vertically movable impression roller, and means for elevating such roller simultaneously with the raising of the flap, substantially as described.

14. In a ballot box or machine, the combination of the revolving cylinder, the impression cylinder mounted in bearings which are movable toward and from the said cylinder, a movable flap by means of which the box is opened and closed and connections between the flap and the impression roller whereby the latter is moved toward and from the cylinder as the flap is moved to open and close the box, substantially as set forth.

15. In a ballot box or machine, a table or support having a sunken portion, a rocking-shaft carrying a hinged or movable flap folding down into such portion, the gear wheels also carried by said shaft, the additional gear wheels supported on the stub shafts and carrying cams or eccentrics on their sides, the revolving cylinder, the rack-bar operated by said cylinder, and the impression roller located above the cylinder in vertically elongated bearings, substantially as described.

16. In a ballot box or machine, the combination with the cylinder and the locking arms therefor connected by a rod or strip, of the inwardly projecting fingers supported by said strip and adapted to rest upon a ballot when the same is inserted, and thereby hold the lock-

ing arms out of operative position substantially as and for the purpose described.

17. In a ballot box or machine the combination with the cylinder, of the guards which prevent the ballot from passing the cylinder when the latter is at rest, and automatic connections whereby the guards are removed from the path of the ballot when it is placed in the machine, substantially as set forth.

18. In a ballot box or machine, a table or support having a sunken portion, a hinged or movable flap closing down into such portion, a revolving cylinder, intermediate mechanism for elevating the flap on a single revolution of the cylinder, and means for engaging or locking said cylinder when so revolved, substantially as described.

19. In a ballot box or machine, a table or support having a sunken portion, a hinged or movable flap closing down into such portion, a revolving cylinder, means for locking the cylinder when the flap is down, intermediate mechanism for elevating the flap on a single revolution of the cylinder, and means for engaging or locking said cylinder after the same has been so revolved, substantially as described.

20. In a ballot box or machine, a table or support, a hinged or movable flap closing down on said table, means for automatically raising said flap, the revolving cylinder having the notches 6, 6, and 7, 7, and also having a portion of its rim cut out on one end, the upper set of locking devices engaging said notches 6, 6, when the flap is down, and the lower set of locking devices which engage the notches 7, 7, when the flap is raised, substantially as described.

21. In a ballot box or machine, the table or support having the sunken portion, a hinged or removable flap closing down into such portion, the revolving cylinder having the notches 7, 7, intermediate mechanism for automatically raising the flap, weighted or gravitating catches for engaging the notches when the flap is raised, and means for automatically releasing such catches, when the flap is lowered, substantially as described.

22. In a ballot box or machine, the combination of the table or support, the hinged or movable flap, the revolving cylinder and intermediate mechanism for automatically raising the flap, the weighted or gravitating catches for engaging said cylinder when the flap is raised, and devices for releasing or throwing the catches out of engagement when the flap is lowered, substantially as described.

23. In a ballot box or machine, the combination with the revolving cylinder, and the intermediate gearing operated thereby, of the slotted arms connected to such gearing, the rock-shaft carrying the weighted lever and the catches for engaging the cylinder, the additional rock-shaft carrying the cranks upon which the slotted arms work, and also having the toe centrally arranged thereon, and the rod R working against said weighted lever and operated by said toe, substantially as described.

24. In a ballot box or machine the ink roller contained in a semi-cylindrical case formed with the notch in the lower edge of its open portion, and the loosely suspended holder for said case, the same being formed with the lip for engaging such notch, substantially as shown and for the purpose described.

25. In a balloting machine, the combination of the shafts v carrying the catches and weighted lever, the shaft Q carrying the cranks or wrist pins as well as the centrally arranged toe, and the rod R having the adjustable collar, substantially as described.

26. In a ballot box or machine, the combination with the main frame and revolving cylinder, of the gong or bell, the pivoted lever normally resting upon the end of the cylinder-shaft and having its free end curved upwardly, the clapper pivoted to the side of the casing with its stem engaging beneath the free end of the lever, and means for imparting a lifting action to the lever each time the cylinder is revolved, substantially as described.

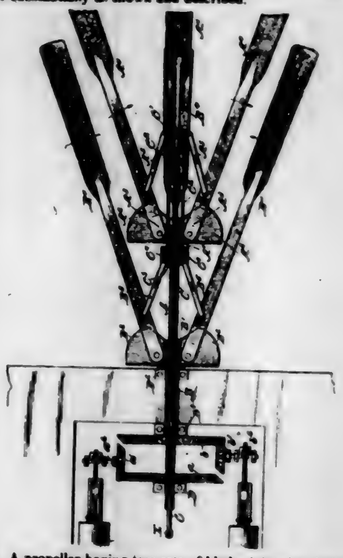
27. In a balloting machine, the combination with the longitudinally movable or reciprocating rack-bar having the hooked extension, of the rock-shaft arranged at the forward end of the machine and carrying the guards, and the hooked arm or crank engaging the extension of said bar, substantially as shown and for the purpose described.

28. In a balloting machine, the combination of the cylinder B, the impression roller, the cylinder and roller being longitudinally divided into a number of sections with spaces between them, the movable guards adapted to be moved into the said spaces in the path of the ballot to intercept the same when the cylinder and the roller are at rest and connections whereby the guards are removed from the path of the ballot when the cylinder and roller are revolved, substantially as set forth.

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**503,026.** SCULL-PROPELLER. GEORGE O. ADAIR, Firth, Nebr. Filed Oct. 28, 1892. Serial No. 449,892. (No model.)

*Claim.*—1. A propeller having two sets of sculling blades arranged to revolve in opposite directions with their axes located above the level of the water the said blades being arranged to open or expand and descend partly into the water or to close up out of contact with the water substantially as shown and described.

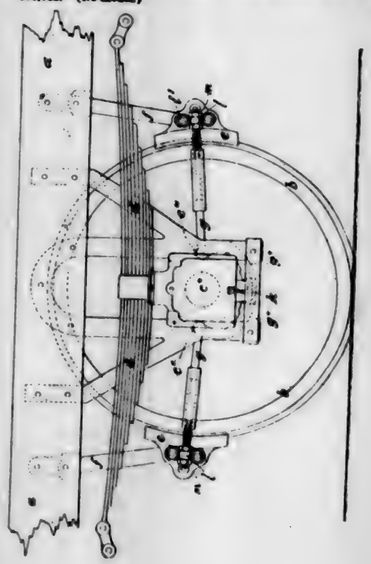


2. A propeller having two sets of blades jointed to independent hubs and arranged to revolve in opposite directions, the said blades being hinged or pivoted to open and shut, means for opening and closing the same, and a swivel joint interposed in the length of said adjusting devices substantially as shown and described.

3. The scull propeller herein described consisting of the concentric tubular shafts A and B having respectively propellers consisting of hubs $A^2$ $B^2$, wings $A^3$ $B^3$ and forked blades $A^4$ $B^4$ jointed to the wings, the toggle arms $A^5$ $B^5$, and the central adjusting rod C with head $C^2$, rods $C^3$ and swivel joint $C^3$ $C^4$, substantially as shown and described.

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**503,027.** RAILWAY-CAR BRAKE. THOMAS A. AINSCOUGH, Manchester, England, assignor of two-thirds to Charles Napier Ainscough and James Ainscough, same place. Filed Apr. 25, 1893. Serial No. 471,783. (No model.)

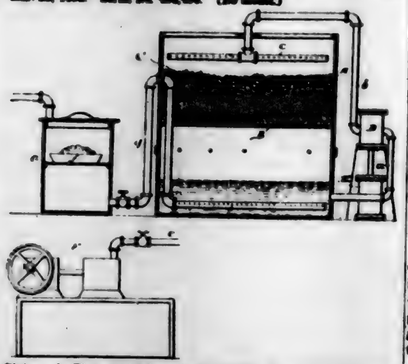


*Claim.*—The combination with the brake block, of an arm so arranged that it works in a radial direction on the axis of the wheel as a center, thereby causing the brake block to move always in a curve parallel to and equidistant from the circumference of the wheel or nearly so, the said arm being provided with means for contraction and extension in the direction of its length to allow of the application and withdrawal of the block to and from the periphery of the wheel, substantially as and for the purposes hereinbefore set forth.

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**503,028.** METHOD OF AND MEANS FOR EXTRACTING HYDROCARBONS FROM BITUMINOUS ROCKS. GEORGE ARCHBOLD, Washington, D. C., assignor to Herbert L. Terrell, New York, N. Y. Filed Mar. 25, 1892. Serial No. 426,492. (No model.)



*Claim.*—1. The within described method of separating earthy matters from the hydro carbons in bituminous rock the same consisting in subjecting a mass of said rock to the action of sulphurous acid, substantially as set forth.

2. In the treatment of bituminous rock which separates the earthy matters and the hydro-carbons, subjecting a mass of said rock to the action of sulphurous acid in both a liquid and gaseous condition, substantially as set forth.

3. The combination of a tank having a support for bituminous rock, a pump and pipe arranged to pump sulphurous acid onto the rock from a position below said support, means for generating sulphurous acid gas and for conducting the same to a body of water below said support, substantially as set forth.

4. The combination with the tank supporting a mass of bituminous rock a receptacle for water below said mass and a pump for pumping the liquid from the receptacle to the top of the mass, a casing G with a support for burning sulphur and a pipe connecting said casing with the water receptacle, and means for pumping the air under pressure into the casing, substantially as and for the purpose described.

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**503,029.** CAN FILLING MACHINE. JOHN BAKER, Muscatine, Iowa. Filed Mar. 18, 1891. Serial No. 385,514. (No model.)

*Claim.*—1. The combination, with a fixed, circular frame, provided with a hopper and spout, of a perforated rim, mounted on a rotative shaft and fitting in said frame, a series of cups, carried by said rim, each of said cups being made in two parts, the bottom part being constructed to slide on the other part and provided with a slot, whereby the said cups may be adjusted in their receiving capacity, and a circular disk mounted on said shaft and provided with pins which extend into the slots in the cups, substantially as and for the purpose described.

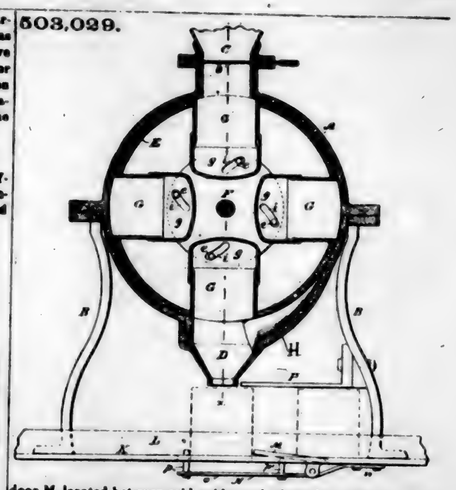
2. The combination, with a rotative shaft, of a perforated rim E, mounted thereon, cups G, *g*, which are severally made in two parts, the bottom parts being provided with slots *i* and constructed to slide on the other parts which are secured to said rim, a disk I, mounted on said shaft and provided with handles for turning said disk, pins extending from said disk into the slots in the cups, and a frame A, fitting about the rim E and provided with a hopper and a spout, substantially as set forth and described.

3. The combination, with a can-filling machine, of a perforated bed, two guides secured thereto to form a passage for cans, a pivoted trap door, located in said bed, between said guides and adapted to assist in retaining a can in position, a guide bar, fixed in position over said passage, and a spring constructed to raise said trap-door and being provided with pins in position to extend through apertures in said bed, substantially as set forth and described.

4. A can-filling device provided with a discharge spout, in combination with a bed-plate K, provided with guides L, a pivoted trap-door M, located between said guides and adapted to assist in retaining a can in position, a spring N, secured to said bed-plate and provided with pins *p*, in position to extend through apertures in said bed-plate, and pins *p'*, in position to press upward said trap-door, and fixed guide-bar P, extending over the passage between guides L, substantially as set forth and described.

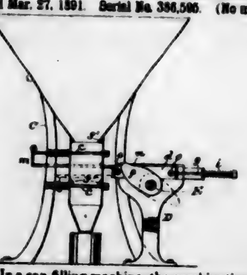
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**503,029.**



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**503,030.** CAN-FILLING MACHINE. JOHN BAKER, Muscatine, Iowa. Filed Mar. 27, 1891. Serial No. 386,595. (No model.)



*Claim.*—1. In a can-filling machine, the combination with a hopper, provided with a downward, tubular passage, of two slides placed one above another and constructed to severally open and close said passage, two horizontal, rectangular yokes, and guides in which said yokes have sliding movements, each yoke being connected, at one end, with one of said slides by a rod and provided with a retracting spring at its opposite end, a rotative shaft extending under said yokes, two cams secured to said shaft, each cam being in position to act within and against one of said yokes, and mechanism for driving said shaft, substantially as and for the purposes described.

2. The combination with a hopper, provided with a downward, tubular passage, of two slides *c*, constructed to close said passage, a frame D, provided with guides, two yokes *d*, having movement in said guides and provided with rollers *o*, each of the said yokes being connected at one end by a rod *m* with one of said slides, and provided at its opposite end with a rod *g* and a retracting spring, a rotative shaft, extending under said yokes, and two cams *f* on said shaft, each of said cams being in position to act within one of said yokes, substantially as set forth and described.

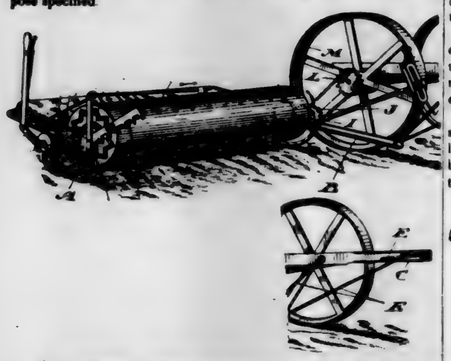
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**503,031.** PEA-HARVESTER. JOHN BEARMAN, Elderslie, Canada. Filed Mar. 7, 1893. Serial No. 465,056. (No model.)

*Claim.*—1. In a harvester a revolving cylinder or roller suspended above the cutter bar and revolving in a direction opposite to that of the driving wheels, and fingers projecting from said rollers, in combination with a traveling apron set in proximity to a revolving cylinder or roller and made to travel at right angles to the forward movement of the machine, substantially as and for the purpose specified.

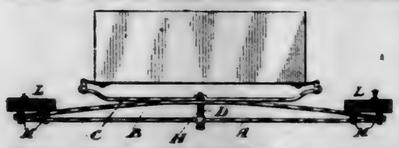
2. In a harvester a revolving cylinder or roller suspended above

the cutter bar and revolving in a direction opposite to that of the driving wheels, fingers projecting from said roller and arranged in rows and mechanism by which said fingers are at stated intervals made to protrude from and recede into the surface of the cylinder or roller in combination with a traveling apron set in proximity to a revolving cylinder or roller and made to travel at right angles to the forward movement of the machine, substantially as and for the purpose specified.



3. A revolving cylinder or roller suspended above the cutter bar and provided with fingers arranged in rows and with mechanism by which they are at stated intervals made to protrude from and recede into the surface of the cylinder or roller, a supplemental finger bar projecting in front of and at the end of the frame B, above the cutter bar A, in combination with mechanism for operating the knife of the said cutter bar, substantially as and for the purpose specified.

## 503,032. RUNNING-GEAR FOR VEHICLES. WILLIAM BONHAM, Bolton, Canada. Filed Nov. 25, 1892. Serial No. 453,008. (No model.)

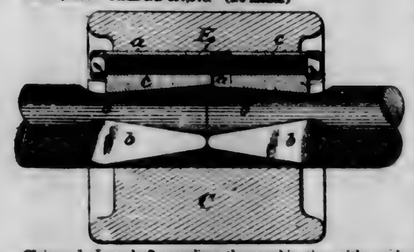


*Claim.*—1. The hammer brace D, fast to the bolster C, and supporting in suitable bearings the king bolt H, in combination with the axle A, and truss B, pivoted on the king bolt H, by suitable lugs or clips; substantially as and for the purpose specified.

2. The hammer brace D, fast to the bolster C, and pivoted on the end of the reach I, in combination with the king bolt H, and the axle A, and truss B, pivoted on the said king bolt H, by suitable lugs and clips; substantially as and for the purpose specified.

3. The axle A, connected by the lugs M, to the bottom of the bearing box L, in combination with the truss B, extending from the end of the axle through the lugs M; substantially as and for the purpose specified.

## 503,033. SHAFT-COUPLING. DAVID BOORMAN, Altoona, Pa. Filed Mar. 28, 1893. Serial No. 467,570. (No model.)



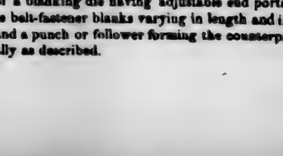
*Claim.*—1. In a shaft coupling, the combination with a pair of shafts the adjacent ends of which each have key-seats formed therein, of a collar having key-seats therein, and a series of keys made to conform to the shape of the openings formed by the key-seats in the shafts and collar, and means for locking the keys passing through every two keys for holding the shafts against displacement, substantially as set forth.

2. In a shaft coupling, the combination with a pair of shafts having key-seats formed therein, of a collar having key-seats therein, and a series of keys having bolt holes therein said keys made to conform to the shape of the openings formed by the key-seats in the shafts and collar, and a bolt adapted to be passed through the holes in each pair of keys, whereby the latter are drawn toward each other, substantially as set forth.

3. In a shaft coupling, the combination with a pair of shafts the ends of which are provided with inclining key seats, of a collar in which the ends of the shaft are placed, keys fitted in each of the seats and means passing through every two keys for drawing the keys toward each other, substantially as set forth.

4. In a shaft coupling, the combination with a pair of shafts, and a collar, said parts each provided with key seats, of keys of unequal lengths, located in the seats, the longer keys overlapping the ends of both shafts, and bolts passed through the keys whereby they are drawn toward each other, substantially as set forth.

## 503,034. ORE-AMALGAMATOR. CONANT B BRIERLY, Boise City, assignor of one-half to Abraham Friedline, Moscow, Idaho. Filed Mar. 23, 1893. Serial No. 467,365. (No model.)

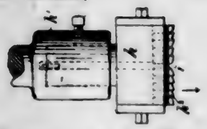


*Claim.*—1. The combination with a sluice box, of a series of wire screens arranged in said sluice box and having combined silver-plated and amalgamated surfaces, substantially as set forth.

2. The combination with a sluice box; of separate groups of amalgamated metal screens arranged in said sluice box, each group of screens comprising a central vertically arranged screen, and inclined screens disposed at opposite angles on both sides of the vertical screen, substantially as set forth.

3. The combination with a sluice box; of separate groups of silver plated and amalgamated copper wire screens arranged in said sluice box, each group of screens comprising a central vertically arranged screen, and inclined screens disposed at opposite angles on both sides of the vertical screen, substantially as set forth.

## 503,035. METHOD OF AND MACHINE FOR MAKING SHEET-METAL BELT-FASTENERS. EDWARD L. BUDLONG, Chicago, Ill., assignor to Walter O. Talcott, Providence, R. I. Filed June 27, 1892. Serial No. 438,103. (No model.)



*Claim.*—1. The improvement in the manufacture of sheet metal belt-fasteners, the same consisting first, in punching a fastener-blank from the stock or plate; next, cutting or slitting the blank obliquely along its longitudinal edges to form teeth and partially bending them, then bending the teeth at substantially right angles with the base, and finally inclining the teeth from the plane of the perpendicular, substantially as described.

2. The improvement in the manufacture of sheet metal belt-fasteners, the same consisting in cutting a series of oblique slits in the sides of the blank or piece of sheet metal, then bending said slitted portions so as to form teeth standing at substantially right angles with the plate or base, and then inclining the teeth from the plane of the perpendicular, substantially as described.

3. In a machine or mechanisms for making sheet metal belt-fasteners, the combination of a male and female die for cutting the blank from the stock; a male and female die for obliquely slitting the blank and partly bending the teeth; a male and female die for bending the teeth at substantially right angles with the fastener base, and dies for inclining the thus bent teeth from the plane of the perpendicular, substantially as described.

4. In a machine for making sheet metal belt-fasteners, the combination of a blanking die having adjustable end portions arranged to produce belt-fastener blanks varying in length and in the number of teeth, and a punch or follower forming the counterpart of the die substantially as described.

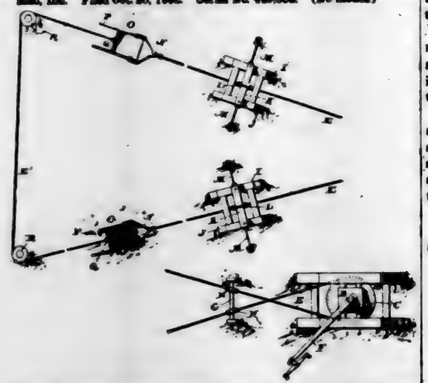


5. In a machine for making sheet metal belt-fasteners, the combination of a fixed die arranged to receive a belt-fastener blank, an adjustable stop arranged to engage the blank and hold it in position in the die, and a punch or follower provided with a series of cutters arranged to slit the fastener-blank and partially bend the teeth, substantially as described.

6. In a machine for making sheet metal belt-fasteners, the combination of a bending die provided with adjustable stops arranged to engage the end of the fastener-blank, and a punch or male die having its opposite longitudinal sides provided with a series of V-shaped grooves and ribs parallel with its axis and fitting the bending die, substantially as described.

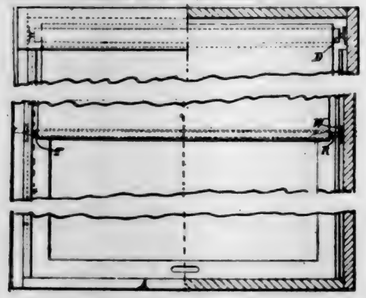
7. In a machine for making sheet metal belt-fasteners, the combination of an adjustable die or base arranged to receive the belt-fastener inverted, and a follower punch or male die having its face provided with a series of inclined ribs arranged to engage the points of the fastener teeth and gradually incline them from the plane of the perpendicular, substantially as described.

## 503,036. DITCHING-MACHINE. TRAFTON P. CONCANNON, Winamac, Ind. Filed Oct. 20, 1892. Serial No. 449,532. (No model.)



*Claim.*—In a ditching machine, the combination with a sliding sled frame capable of being moved from point to point; of a double drum or windlass journaled on the said sled frame, a movable ground pulley jack arranged adjacent to the double drum and having separate guide pulleys loosely secured thereto, separate rope derricks removably braced to the ground independent of each other and beyond the pulley jack, guide pulleys loosely suspended from the upper ends of said rope derricks, reversely moving drag ropes or chains winding upon separate portions of said double drum or windlass and crossing each other between the same and said pulley jack, said drag ropes or chains passing under the separate guide pulleys of the ground pulley jack and over the loosely suspended pulleys of the derricks, ditching scoops or shovels attached to said drag ropes or chains beyond the rope derricks, opposite spaced ground pulleys arranged beyond each scoop, and an auxiliary rope or chain passing continuously over said ground pulleys and connected at its extremities to the handle ends of said scoops, substantially as set forth.

## 503,037. CURTAIN-FIXTURE. GEORGE A. CRIMMIN, Tarrytown, N. Y., assignor of one-half to James H. Dickey, Philadelphia, Pa. Filed Jan. 9, 1893. Serial No. 457,772. (No model.)



*Claim.*—1. The combination of a window-frame and curtain with a rotary rod having a frictional connection with the curtain and a gear connection of the rod with the frame to cause the said rod to turn as the curtain is raised or lowered, substantially as set forth.

2. The combination of a window-frame and curtain having a tube at its lower end, with a rotating rod passing through the tube in frictional contact therewith, and a gear connection between the frame and rotary rod, to cause the latter to rotate within the tube as the curtain is raised or lowered, substantially as set forth.

3. The combination of a window-frame and curtain having a metal tube at its lower end, with a rod passing through the tube in frictional contact therewith, and a gear connection between the rod and the frame to cause the rod to rotate as the curtain is raised or lowered, substantially as set forth.

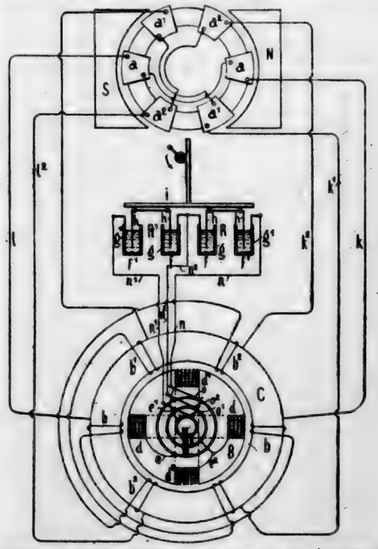
4. The combination of a window frame and curtain with a rotary rod having a frictional connection with the curtain and having wheels at its opposite ends geared to the frame to cause the said rod to turn as the curtain is raised or lowered, substantially as set forth.

5. The combination of a window-frame and curtain with a rotary rod having frictional connection with the curtain and having friction wheels at its opposite ends frictionally geared to the frame to cause the rod to rotate as the curtain is raised and lowered, all substantially as set forth.

6. The combination of a window-frame and curtain with a rotary rod having frictional connection with the curtain and having wheels at its opposite ends, the side pieces of the frame having slotted grooves in which the said wheels may travel in gear with the frame, substantially as set forth.

7. The combination of a window-frame and curtain with a rotary rod having frictional connection with the curtain and having wheels at its opposite ends, the side pieces of the frame having vertically slotted grooves in which the said wheels may travel, the rod bearing against one face of each slot to keep the adjacent wheel in gear with the frame, all substantially as set forth.

## 503,038. REGULATION OF ALTERNATING-CURRENT MOTORS. MICHAEL VON DOLIVO-DOBROWOLSKY, Berlin, Germany, assignor to the Allgemeine Elektricitäts Gesellschaft, same place. Filed Dec. 23, 1890. Renewed Feb. 17, 1893. Serial No. 462,780. (No model.) Patented in Luxemburg Dec. 20, 1890, No. 1,388; in Belgium Dec. 31, 1890, No. 93,088; in Italy Mar. 14, 1891, LVI, 172; in France Mar. 25, 1891, No. 210,231; in England Apr. 14, 1891, No. 20,425; in Spain Apr. 20, 1891, No. 11,746; in Austria-Hungary Apr. 22, 1891, No. 56,909 and No. 15,090, and in Switzerland Sept. 30, 1892, No. 3,062.



*Claim.*—In an alternating current motor, the combination of a field-magnet provided with three or more coils or sets of coils, a like number of circuits connected to the said coils or sets of coils, means for supplying the circuits with differential-phase alternating currents, a rotative armature having coils or sets of coils which are independent of each other, adjustable resistances equal in number to that of the

coils or sets of coils of the armature, contact-rings on the armature, brushes and conductors whereby each coil or set of coils of the armature is separately brought in circuit with one of the resistances, and a regulating-mechanism common to all the resistances, substantially as described.

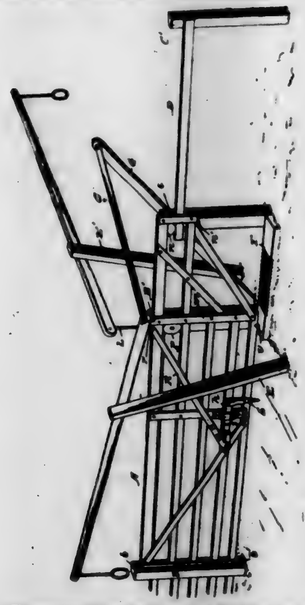
**503,039.** CONDUCTOR SUPPORT AND INSULATOR. WILLIAM B. SMITH, Hanley, Nebr. Filed Feb. 1, 1893. Serial No. 460,611. (No model.)



*Claim.*—1. The insulator for underground trolley wires, comprising the support of non-conducting material, having an opening extending therethrough, in combination with the conducting or trolley wire, and a brace extending through said opening and bracing said conducting or trolley wire in position, substantially as set forth.

2. The insulator for underground trolley wires, comprising the support of non-conducting material, having an opening extending therethrough, in combination with the conducting or trolley wire, shoes secured to said wire and a brace passed through said opening and connecting with said shoes, substantially as specified.

**503,040.** SLIDING GATE. SOLOMON F. FAHNESTY, Saybrook, Ill. Filed Apr. 15, 1893. Serial No. 470,572. (No model.)

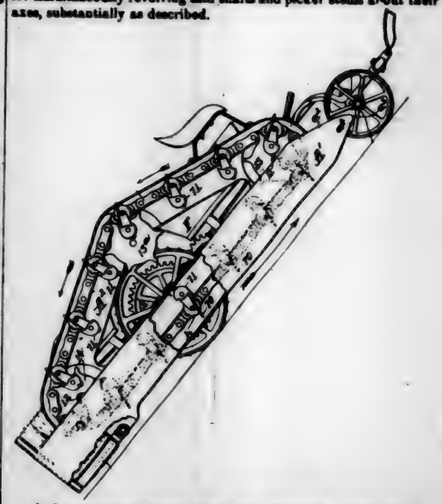


*Claim.*—The combination of the gate and the hand levers, and a lever pivoted on the side of the gate and carrying an operating pawl, and connected to the hand levers by a suitable rod, with a tooth block adapted to engage the pawl, in the manner set forth and for the purpose specified.

**503,041.** COTTON-HARVESTER. BENJAMIN GARE, Brooklyn, assignor to John C. Calhoun, New York, N. Y. Filed Aug. 25, 1892. Serial No. 444,041. (No model.)

*Claim.*—1. In a cotton harvester, the combination of a plurality of picker stems, means for moving the said picker stems first upward through the cotton plants and then downward through the plants, and at the same time moving the picker stems backward at approximately the same speed that the harvester moves forward, so that the operative picker stems may move approximately in a vertical direction relative to the ground, and means for simultaneously revolving said picker stems about their axes, substantially as described.

2. In a cotton harvester, the combination of a plurality of picker stems mounted on horizontal shafts, means for moving the said picker stems and shafts first upward through the cotton plants and then downward through the plants, and at the same time moving the picker stems backward at approximately the same speed that the harvester moves forward, so that the operative picker stems may move approximately in a vertical direction relative to the ground, and means for simultaneously revolving said shafts and picker stems about their axes, substantially as described.



3. In a cotton harvester, the combination with a suitable framework, of an endless sprocket chain stretched over sprocket wheels journaled in said framework; a plurality of picker stems mounted on horizontal shafts journaled in said sprocket chain, pinions keyed on said shafts, a rack fixed in said framework inclined upward and then downward from the front of the harvester and adapted to engage said pinions, and mechanism for dragging said sprocket chain and pinions backward over said rack, substantially as and for the purposes described.

4. In a cotton harvester, the combination with a suitable framework of a sprocket chain moving over sprocket wheels set in said framework, the said sprocket chain being inclined first upward and then downward; a plurality of picker stems mounted on shafts journaled in said sprocket chain, the said picker stems having a plurality of movable teeth with means of adjusting the same; pinions keyed on to the shafts of the said picker stems; and a fixed rack mounted in said framework beneath said pinions and adapted to engage said pinions and to revolve said picker stems as said picker stems ascend and descend through the cotton plants, substantially as described.

5. In a picker stem for use in a cotton harvester, the combination with a central shaft and means for revolving the same; of a corrugated cylinder fixed on said shaft, and having cylindrical holes parallel to said shaft at the base of said corrugations, rods loosely mounted in said holes and having teeth projecting between said corrugations; a crank and crank pin at the end of said rods, and an adjustable head held against turning and having a cam groove therein engaging said crank pins and moving said rods and the teeth thereon, substantially as and for the purposes described.

6. In a picker stem for use in a cotton harvester, the combination with a central shaft and means for revolving the same; of a corrugated cylinder fixed on said shaft and having cylindrical holes parallel to said shaft at the base of said corrugations, rods loosely mounted in said holes and having teeth projecting between said corrugations, a crank and crank pin at the end of said rods; an adjustable head having a cam groove therein adapted to engage said crank pins, and a clamp screw for clamping said head in any desired position, substantially as and for the purposes described.

7. In a cotton harvester of the character described, a revolving picker stem having movable teeth adapted to catch in the cotton at one part of its revolution and to drop the cotton at another part of the revolution, a pivoted receptacle dependent from the picker stem and adapted to catch said cotton when it is dropped, a tripping device for tilting and emptying said receptacle, and means for moving said picker stem in a direction or directions at right angles to its axis and for revolving said picker stem about its axis, substantially as and for the purposes described.



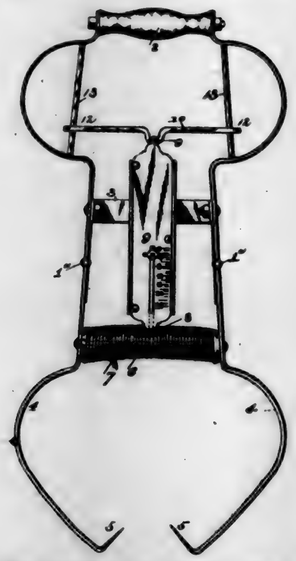
8. In a cotton harvester of the character described, a revolving picker stem having movable teeth adapted to catch in the cotton at one part of its revolution and to drop the cotton at another part of the revolution, a receptacle consisting of two curved troughs connected by a spring dependent from the picker stem and traveling therewith, adapted to catch said cotton when it is dropped, a tripping device for emptying said receptacle, and means for moving said picker stem in a direction or directions at right angles to its axis and for revolving said picker stem about its axis, substantially as and for the purposes described.

9. In a cotton harvester of the character described, a revolving picker stem having movable teeth adapted to catch in the cotton at one part of its revolution and to drop the cotton at another part of its revolution, a receptacle dependent from the picker stem and adapted to catch said cotton when it is dropped, a tripping device for emptying said receptacle, an endless apron for carrying off the cotton so emptied, and means for moving said picker stem in a direction or directions at right angles to its axis and for revolving said picker stem about its axis, substantially as and for the purposes described.

10. In a cotton harvester of the character described, a picker stem formed of a corrugated cylinder with teeth protruding between but not beyond said corrugations, and having a rod extending over the axis of said picker stem and in the plane of motion of the axis of said stem relative to the ground to guard the teeth thereof, means for projecting said teeth relative to said corrugated cylinder, and means for revolving said picker stems, substantially as and for the purposes described.

11. In a picker stem for use in a cotton harvester, the combination with a central shaft and means for revolving the same; of a corrugated cylinder fixed on said shaft, and having cylindrical holes parallel to said shaft at the base of said corrugations, rods loosely mounted in said holes and having teeth projecting between said corrugations; a crank and crank pin at the end of said rods, an adjustable head held against turning and having a cam groove therein engaging said crank pins and moving said rods and the teeth thereon; and a rod above said picker stem and parallel to the axis thereof, to guard the teeth, substantially as and for the purposes described.

**503,042.** COMBINED ICE-TONGS AND WEIGHING-SCALES. THOMAS GLYNN, Philadelphia, Pa. Filed Jan. 10, 1893. Serial No. 457,910. (No model.)



*Claim.*—The combined ice tongs and spring scales herein described comprising the arms provided with guide-rods, the curved jaws hinged thereto, having spurs at their free ends, the coiled spring connecting said jaws, the spring balance connected with said spring and the bar embracing said guide-rods and connected with the upper end of the spring balance, substantially as and for the purpose specified.

**503,043.** SLING FOR HOLDING CORN-SHOCKS, HAY, &c. DAVID H. GOOD, Canada, Kans. Filed Mar. 27, 1893. Serial No. 467,794. (No model.)



*Claim.*—1. In a sling for corn-shocks, the combination with the bar having a detachable thimble provided with an eye at one end, and an elongated slot at the opposite end, of the block having a pulley, the rope passing around said pulley and through the eye in the said bar, the rope secured to said block and adapted to pass through the slot in said bar, and means for detachably connecting said ropes together, substantially as described.

2. In a sling for corn-shocks, the combination with the bar having an eye in one end and an elongated slot in the opposite end, of the block having a pulley, a rope passing around said pulley and through said eye, and provided with a hook at its free end, the rope secured to said block and adapted to pass through the slot in said bar, the box secured to the free end of said rope having a lug on its inner wall, the movable pin having a coiled spring, and the releasing rope, substantially as described.

**503,044.** CAR-TRUCK. JOHN H. CRAHAM, Boston, Mass., assignor to the Consolidated Railway Supply Company, same place, and Providence, R. I. Filed Feb. 6, 1893. Serial No. 461,373. (No model.)



*Claim.*—1. In a car-truck the combination of a semi-elliptical spring supported on an axle-box; springs of less resistance than the semi-elliptical spring supported therefrom and a pedestal supported by said springs.

2. In a car truck a semi elliptical spring supported on an axle-box in combination with coiled springs supported from the ends thereof and a pedestal supported by said coiled springs, substantially as described.

3. In a car-truck the combination of a frame-supporting pedestal; a semi-elliptical spring mounted on the car-axle; rods pendent from the ends of said spring; coiled springs supported by said rods and carrying said pedestal.

4. In a car-truck, the combination with the semi-elliptical spring secured to the axle-box, of the T-rods pendent therefrom; the coiled springs supported on said rods and the pedestal supported by said springs.

5. The pedestal, H, flanged to receive the truck-frame in combination with the semi-elliptical spring, *k*, supported on an axle-box; rods pendent from the ends of said spring; coiled springs mounted on said rods and supporting said pedestal.

6. The combination with the wheels, axle and journal-boxes of an inverted semi elliptical spring supported on said boxes, coiled-springs supported from the ends of said semi-elliptical spring and the pedestal, H, bearing on said coiled springs and supporting the truck-frame.

7. In a car truck, the pedestal, H, provided with the groove, *g*, in combination with the frame, D, secured in said groove; the semi-elliptical springs, *k*, mounted centrally on an axle-box; the rods, *q*, pendent from the ends of said springs and the coiled-springs mounted on said rods and supporting said pedestal, substantially as described.

8. In a car-truck, an electric-motor connected with an axle of said truck; flanged locks grooved to receive the truck-frame; dovetailed blocks for locking said frame therein and an arch-bar mounted in said flanged-box and supporting said motor.

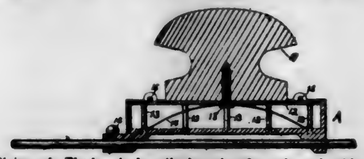
9. In a car-truck, the combination with the frame of the flanged blocks, 16; the dovetailed blocks, 19, for locking said frame therein and the arch-bar, 15, supported in said block, 16, substantially as and for the purpose set forth.

10. The combination with a car-body of a truck-frame; vertically curved pivot-blocks on said frame and bearings for said blocks on the car-body.

11. The combination with a car-body of a truck; the pivot-blocks, v, on the frame of said truck; the castings, y, on said car forming steps for said blocks and secured thereto.

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**503,045. MARKER FOR WINDOW-FRAMES.** WILLIAM GRESHAM, Bristol, Conn. Filed Nov. 28, 1892. Serial No. 453,534. (No model.)

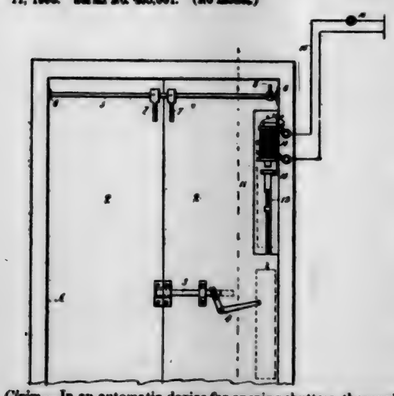


*Claim.*—1. The herein described marker for sash cord guides consisting of the box or case A having guiding lugs adapted to be received in the parting groove of the window frame, and a perforated bottom; the plate 12 confined within said case or frame and having marking points in correspondence with said perforations, and the spring or springs 14 for holding said plate and points in their normal position, substantially as described and for the purpose specified.

2. The combination of the box or case A having guiding lugs 5 and 6; the spring plate 12 having marking points adapted to project through said case, and the longitudinally adjustable gage rod 8 adapted to gage from the end of the window frame being marked, substantially as described and for the purpose specified.

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**503,046. FIRE-SHUTTER FASTENER.** ALEXANDER GROSCH, ALBERT ALLENBERG, and CHARLES BUSELING, Cincinnati, Ohio. Filed Mar. 11, 1893. Serial No. 465,661. (No model.)



*Claim.*—In an automatic device for opening shutters, the combination of an electro-magnet and armature; a thermostat adapted to govern the action of the magnet; a rotatable shaft 5 actuated by a crank lever 8 and provided with dependent arms bearing upon the shutters; a weight attached to said crank lever by a slack-used chain and normally upheld by a lever 12 interposed between the weight and the armature and the lever 4, and the sliding bolt actuated thereby—all constructed and arranged substantially as and for the purpose herein set forth.

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**503,047. CAR-VENTILATOR.** JOHN HARRIS, Rutherford, N. J. Filed Mar. 23, 1893. Serial No. 467,317. (No model.)



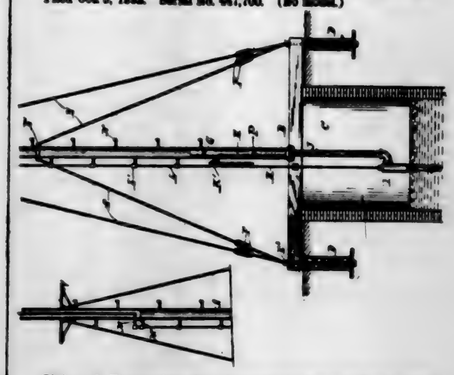
*Claim.*—1. The combination with the substantially triangular casing having openings at its three angles and upon its upper side, of a longitudinal shaft loosely journaled in the two longitudinally opposite openings, the two wheels carried by the shaft a cap arranged over the upper opening, and a damper pivoted in the casing between the longitudinally opposite openings and extending diagonally across said casing, whereby either of said longitudinally opposite openings may be thrown into communication with the lower opening, substantially as specified.

2. The combination with the triangular casing 1 having the longitudinally opposite openings 2, 2' the lower inlet opening 3 and the upper exit-opening 7, of the cap 8 arranged over the opening 7 and out of contact with the casing, the shaft 11 passing through the casing, the damper 12 loosely mounted below its center on the shaft, the diagonally opposite pairs of stops 9 and 10, the former arranged at opposite sides of the opening 7, the gutter or trough arranged around the interior of the casing below the damper and opposite perforations formed in the casing, the cross-bars 13 in the openings 2 and 2', the shaft connecting the cross-bars and passing through the damper, the exhaust-fan-wheels mounted on and adapted to revolve with the shaft in the openings 2 and 2', and the register at the lower end of said casing, substantially as specified.

3. In a car ventilator, the casing having openings at opposite ends and at the bottom, the bottom opening communicating with the interior of the car, and the end openings serving in one case as an inlet and in the other as an outlet, in combination with the fans or wheels located in the end openings, and the automatically controlled damper pivoted intermediately between the end openings so as to shut off communication between the same and at the same time establish communication between the bottom opening and one of the end openings, substantially as specified.

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**503,048. WINDMILL-TOWER.** CHARLES C. JACOBS, Amboy, Ill. Filed Oct. 3, 1892. Serial No. 447,700. (No model.)



*Claim.*—1. The combination of a vertical column, hollow in whole or in part, an air compression chamber formed therein, a pump co-operating with the air chamber, and means for actuating the pump, all substantially as described.

2. The combination of a hollow column, a portion of which is partitioned from the remaining part, thereby forming an air compression chamber, a pump co-operating therewith, and means for actuating said pump, substantially as described.

3. The combination of a vertical column, guys for steadying the same, an air compression chamber formed in the column, a pump co-operating with the said chamber, a pumping rod extending parallel with the column, and designed to actuate the pump, and a rod coupling for attaching or detaching the rod and pump piston, all substantially as described.

4. The combination of a series of sunken piers or standards, girders mounted thereon and securely fastened thereto, a vertical column mounted on the girders, guys for steadying said column, an air chamber formed in the column, a pump and means for operating the same substantially as described.

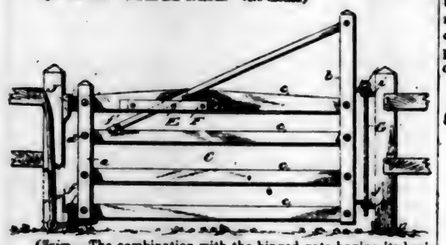
5. The combination of a vertical standard, a pump operating therewith, a pumping rod extending parallel with the said column, a series of recessed arms or girders for holding the rod, and a second series of arms on the opposite side of the rod in such juxtaposition to the first that they will form or complete a ladder extending up the column.

6. The combination with a vertical column, of a pipe connected thereto and extending below the same into a well or cistern, a pumping rod extending parallel with the column and a pump connected to an offset of the pipe whereby the said rod and pump are brought in vertical alignment, substantially as described.



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**503,049. FARM-GATE.** WALTER KENNEDY, Milan, Ill. Filed Apr. 18, 1893. Serial No. 470,842. (No model.)



*Claim.*—The combination with the hinged gate having its horizontal rails pivoted at their ends and means for automatically holding the same in its elevated position, of a lever having a portion extended under the gate and integral handles extending upon opposite sides of the latch-post, substantially specified.

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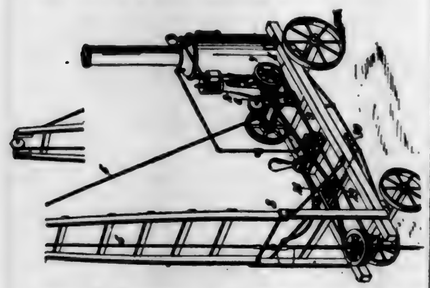
**503,050. ATTACHMENT FOR SQUARES.** WILLIAM F. LAPPE, Akron, Ohio. Filed Apr. 17, 1893. Serial No. 470,592. (No model.)



*Claim.*—An attachment to squares, consisting of a gage having two horizontal and parallel clamping-plates and a set-screw for holding the attachment to the square, the upper one of said clamping-plates extending beyond the lower one and terminating in a downwardly extending arm having a knife-edge, said arm being integral with the plate, substantially as and for the purpose set forth.

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**503,051. APPARATUS FOR DRILLING WELLS.** SAMUEL MACBACHEN, Scranton, Pa., assignor of one-half to Thomas J. Foster, same place. Filed Jan. 16, 1893. Serial No. 458,525. (No model.)



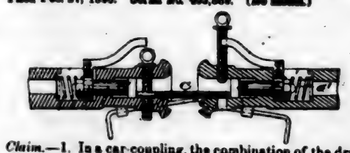
*Claim.*—1. In an apparatus for drilling wells and other like purposes, the combination with a main driving-pulley mounted upon a suitable driving shaft, of a drill-pulley mounted on the drill-stem, or spindle, a non-positive cable-belt connecting said pulleys, one of the two oppositely moving portions of said belt lying substantially in the plane of revolution of the driving-pulley said plane being tangent to one side of the drill-pulley, and an adjustable belt-tightening pulley engaging the other or second portion of said belt and drawing the same into, or nearly into, the said plane of revolution and toward the different plane of revolution of the drill-pulley, substantially as described.

2. In an apparatus for drilling wells and like purposes, the combination with a main driving-pulley and a drill-pulley having their axes at an angle to each other, of a non-positive cable belt connecting said pulleys, a belt-tightening pulley engaging one portion of said belt and drawing it into, or nearly into the plane of the other portion, a non-circular drill-stem, or spindle, longitudinally movable in a central opening in the drill-pulley, and a movable bearing for the latter, whereby the drill-pulley and spindle may be removed to enable the hoisting-devices to have access to the core, or other part to be hoisted, substantially as described.

3. In an apparatus for drilling wells and like purposes, the combination with a main driving pulley and a drill pulley having their axes at an angle to each other, of a non-positive cable-belt connecting said pulleys, a belt-tightening pulley engaging one portion of the said belt and drawing it practically into the plane of the other portion, a non-circular drill-stem or spindle longitudinally movable in a central opening in the drill pulley, and a bearing for the latter having one part movable to receive and release a prolongation of the hub of the drill-pulley, substantially as described.

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**503,052. CAR-COUPLING.** JOHN MACHENHEIMER, Sr., Nauvoo, Ill. Filed Feb. 27, 1893. Serial No. 463,889. (No model.)

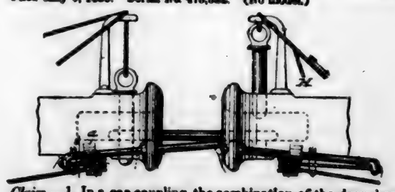


*Claim.*—1. In a car-coupling, the combination of the draw-head, the adjustable link-support longitudinally adjustable and movable outward to uphold the link or inward to be out of the way of the opposing draw head, the link, the spring-actuated thrust-bar, the spring arm, and the pin, substantially as described.

2. In a car-coupling the combination of the draw-head, slotted as described, the spring actuated thrust bar, the spring arm attached to said thrust bar, and the coupling-pin, said arm at its inner end being connected with said thrust-bar and extending thence outward and upward to bring its outer end above the coupling pin when that part is in engagement with the coupling link and below the head of the coupling pin when that part is uplifted to admit the coupling link, substantially as described.

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**503,053. CAR-COUPLING.** JOHN MACHENHEIMER, Sr., Nauvoo, Ill. Filed May 6, 1893. Serial No. 473,322. (No model.)



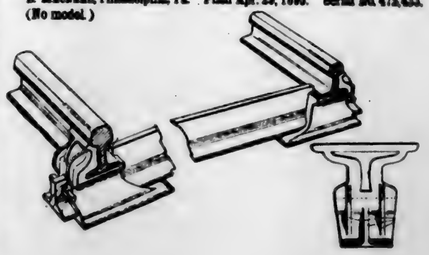
*Claim.*—1. In a car-coupling, the combination of the draw-head, the longitudinally adjustable link-support, the bearing upon the draw-head, and the flexible ties leading from the link-support around said bearing, substantially as described.

2. In a car-coupling the combination of the draw-head, the longitudinally adjustable link-support, the stop for limiting the outward movement of the link-support, the bearing upon the draw-head, and the ties leading from said link-support around said bearing, substantially as described.

3. In a car coupling, the combination of the draw-heads, A and A', the coupling pins, the bearings respectively above said pins, the ties leading past said bearings to said pins respectively, the adjustable link supports, the bearings upon said draw-heads respectively and the ties respectively leading from said link supports and around said bearings respectively, substantially as described.

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**503,054. METALLIC RAILWAY TIE OR SLEEPER.** CHARLES B. MACNEAL, Philadelphia, Pa. Filed Apr. 29, 1893. Serial No. 472,433. (No model.)



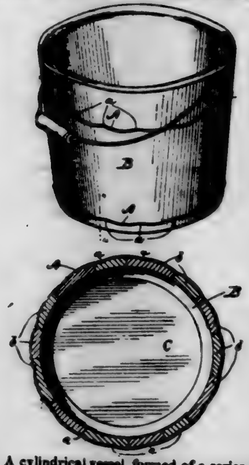
*Claim.*—1. In a metallic railway tie or sleeper the combination of end portions having overhanging projecting ribbed braces upon their upper surfaces, with a cross piece of an inverted T shaped cross section adapted for connection at its ends with the end portions, as specified.

2. In a metallic railway tie or sleeper the combination of end portions having projecting ribbed overhanging braces upon their upper surfaces, an inverted T shaped slot through their bodies with a connecting inverted T shaped cross piece having offsets a substantial distance from its ends adapted to engage the inner flange of a rail, as specified.

3. In a metallic railway tie or sleeper the combination of the end portions having their bodies provided with a penetrable inverted T shaped slot, with the connecting inverted T shaped cross section adapted at its ends to fit into and protrude through the slots of the end portions and provided contiguous to its ends with a hole adapted to receive a key or pin to secure the end portions and cross piece together as specified.

4. In a metallic railway tie or sleeper, the combination of the rails, the inverted T shaped slotted end portions, the inverted T shaped cross section, with a pin or key to secure the end portions and cross piece together and lock the rails in place at the proper gage, as specified.

**503,055.** CYLINDRICAL STAVED VESSEL. CHARLES L. MAHR, Milwaukee, Wis. Filed June 3, 1892. Serial No. 435,424. (No model.)

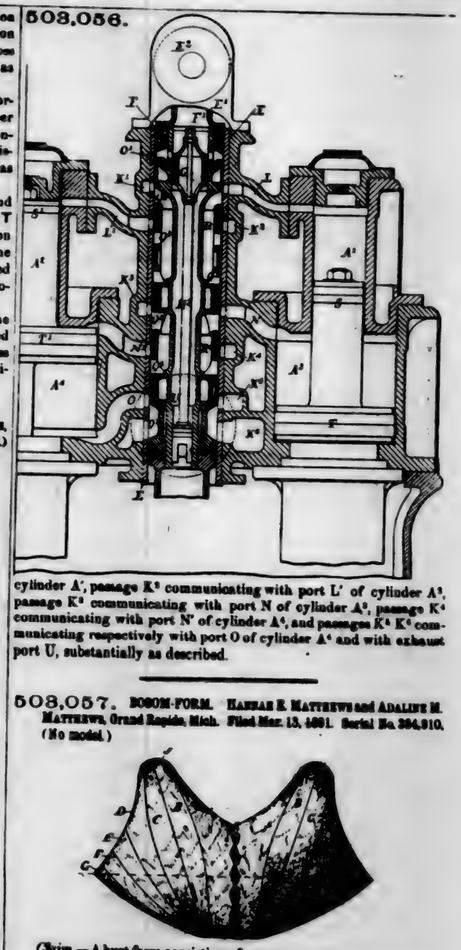


*Claim.*—1. A cylindrical vessel, formed of a series of staves having a smooth uniform outer surface in combination with a series of hoops, each formed of wire having its ends welded together to form an unbroken interior surface, substantially as set forth.

2. A cylindrical vessel, formed of a series of staves having a smooth uniform outer surface in combination with a series of hoops, each formed of a wire having its ends welded together to form an unbroken interior surface, indented and embedded into the staves of the vessel, at intervals, substantially as set forth.

3. A pail, tub, or analogous cylindrical vessel comprising a suitable bottom, and a series of staves having a smooth uniform outer surface, and rounded off on their outer bottom edges and united by hoops, each formed of a wire having its ends welded together to form an unbroken interior surface, the lower hoop being at a considerable distance above the bottom of the said staves and in line with the bottom of the vessel, substantially as set forth.

**503,056.** QUADRUPLE-EXPANSION ENGINE. JAMES MARSHALL, Leeds, England. Filed Aug. 31, 1892. Serial No. 444,678. (No model.) Patented in England Sept. 2, 1891. No. 14,857.



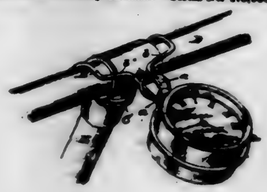
*Claim.*—In quadruple expansion engines, the combination of a cylindrical main slide valve F having a port Q' controlled by a central cylindrical expansion valve and communicating with port L of high pressure cylinder A', ports $Q^3$, $Q^4$, $Q^5$ connected by annular passage R communicating with port L of cylinder A', port L' of second cylinder $A^2$, and port N of third cylinder $A^3$, ports $Q^3$ and $Q^6$ connected by annular passage R' communicating with port N of third cylinder $A^3$ and ports N' and O of cylinder $A^4$, and a cylindrical valve chamber B having annular passage K' communicating with port L of cylinder A', passage $K^3$ communicating with port L' of cylinder $A^2$, passage $K^3$ communicating with port N of cylinder $A^3$, passage $K^4$ communicating with port N' of cylinder $A^4$, and passages $K^4$ $K^5$ communicating respectively with port O of cylinder $A^4$ and with exhaust port U, substantially as described.

**503,057.** BOSOM-FORM. HANNAH E. MATTHEWS and ADALINE M. MATTHEWS, Grand Rapids, Mich. Filed Mar. 13, 1891. Serial No. 384,910. (No model.)



*Claim.*—A bust form consisting of two connected concavo-convex lobes, each constructed of a long base gore, obtuse at the upper end, diverging thence upon convex lines to the longitudinal center, thence converging in like manner to a point at the lower end, a center gore straight upon the inner line, broad at the lower end, thence diverging from the center line upon a convex line to the upper end of the base gore sufficiently to hold the center line of said base gore at an angle of about twenty degrees from the perpendicular, and the several outer gores, each broad at the upper end to form the line J, D, E, F, G thence each converging by curved lines to a point at the lower end, each outer gore united to, and drawing slightly upon each successive inner gore to form the desired curvature both longitudinally and laterally, substantially as and for the purpose set forth.

**503,058.** ATTACHMENT FOR BICYCLES. THOMAS E. A. MCGRATH, Chicago, Ill. Filed May 12, 1893. Serial No. 473,860. (No model.)

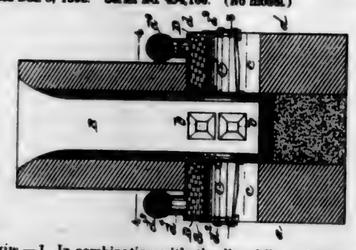




*Claim.*—1. An attachment to a bicycle for holding articles, consisting of a device constructed of wire or other suitable material and having a frame to embrace the handle of the bicycle and a clip to embrace the post or standard thereof, said clip terminating in screw threaded extensions, and a clamping plate and thumb-nuts for forcing the plate against the post or standard, substantially as and for the purpose set forth.

2. An attachment to bicycles for holding articles, consisting of a device formed of wire or other suitable material and bent to form a holding ring, a frame, and a clip, said clip terminating in screw threaded extensions, and a clamping plate and thumb-nuts, substantially as and for the purpose described.

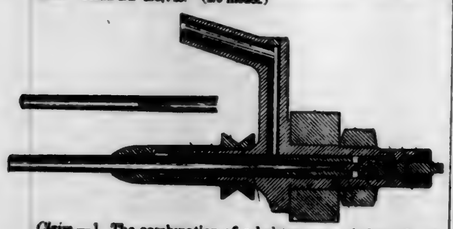
**503,059.** LIMEKILN. PATRICK MCLOON, Sulphur Springs, Mo. Filed Dec. 5, 1892. Serial No. 454,166. (No model.)



*Claim.*—1. In combination with the lime kiln and its stack B, the fire places C, C', each having a steam boiler setting D, provided with top portion *d*, and legs *d'*, and the overhead drums $d^2$, each connected with one of the main boilers by leg $d^3$, each of said fire places having an opening *e'*, at the inner end into the stack, substantially as shown and described.

2. The combination of the stack, and the fire places at each side of its base, and each delivering the main portion of its heat at its inner end into the stack, and each fire place having a steam boiler setting, as described, and over head steam drums connected therewith and said drums connected with each other by means of pipes $d^5$, $d^6$, substantially as described.

**503,060.** SPINDLE-SUPPORT. JAMES H. NORTHROP, Hopedale, Mass., assignor to George Draper & Sons, same place. Filed Dec. 1, 1892. Serial No. 453,745. (No model.)



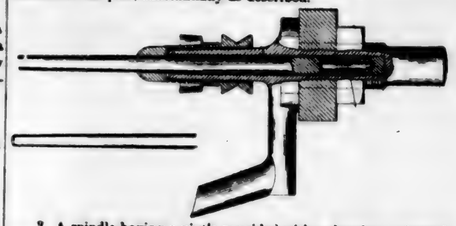
*Claim.*—1. The combination of a bolster case, a bolster therein tapered internally and screw-threaded at its lower end and adapted to receive a spindle, a screwthreaded step fitted to the screwthreaded end of the bolster and having an operating connection extending outside of the bolster case and adapted to be rotated to adjust the bolster longitudinally and a friction device located within the bolster case and acting upon the operating connection of the step to restrain the rotation of the step, substantially as described.

2. A bolster support provided at a point below the end of the bolster with a packing, said packing being located within said bolster support, a bolster tapered internally to receive the tapered pintle of a spindle, and a step connected to the bolster by a screwthread, combined with a key engaging the step and extended through said packing to the outer side of the bolster support, whereby the step may be turned to adjust the bolster without removing the spindle, the packing referred to preventing the escape of oil, substantially as described.

**503,061.** SPINDLE-BEARING. JAMES H. NORTHROP, Hopedale, Mass., assignor to George Draper & Sons, same place. Filed Apr. 23, 1892. Serial No. 471,394. (No model.)

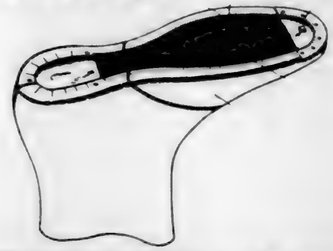
*Claim.*—1. A spindle, and a lateral bearing therefor, combined with an unattached loosely mounted post to support the end of the pintle of the spindle, substantially as described.

2. A spindle having a pintle provided with a central opening; and a lateral bearing for the spindle; combined with a post entering said opening loosely to provide for lateral movement of the spindle on the post, said post sustaining the weight of the spindle and being free to be rotated by the friction between the bottom of said opening and the end of the post, substantially as described.



3. A spindle having a pintle provided with a chamber; a lateral bearing and a step, combined with a post centered loosely at one end in the step, and entering loosely a chamber in the end of the pintle, substantially as described.

**503,062.** METHOD OF LASTING BOOTS OR SHOES. BENJAMIN A. NORWOOD, Boston, Mass., assignor, by mesne assignments, to the Eureka Process Lasting Company, same place. Filed Oct. 3, 1892. Serial No. 447,675. (No model.)



*Claim.*—1. The improved method of lasting hereinbefore described, the same consisting in placing an uppper having the described lasting sole on an inner sole, suitably mounting the same, then stretching and shaping the upper by applying outward pressure to the inner surface of the upper, the direction of such pressure being substantially at right angles with the sole, then wiping the toe portions of the upper over upon the exposed portion of the inner sole, and securing said toe portion to the inner sole.

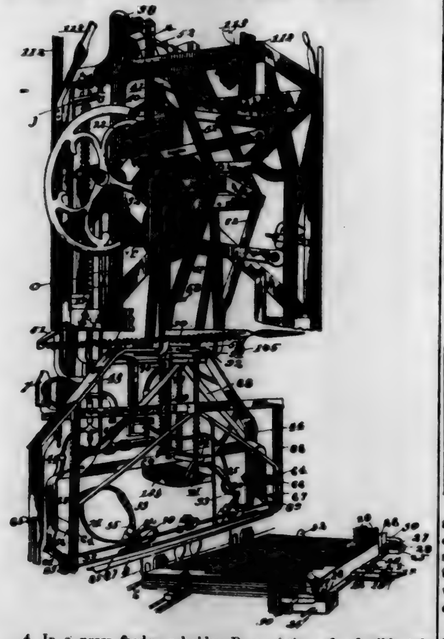
2. The improved method of lasting hereinbefore described, the same consisting in placing an upper having the described lasting sole on an inner sole, then stretching and shaping the upper by internal pressure, then wiping the toe portion of the upper over the exposed toe portion of the inner sole and cementing the wiped over portion to the inner sole, and then temporarily attaching the wiped over portion of the upper to the inner sole while the cement is setting, as set forth.

**503,063.** FEEDER FOR PRINTING PRESSES. LEVI OSBER, Galveston, Tex. Filed Oct. 10, 1892. Serial No. 328,661. (No model.)

*Claim.*—1. In a feeder for machine power printing the combination of the horizontally swinging lever A, suspended from a rock shaft consisting of two downwardly projecting bent arms, and connecting bars; the horizontal bar 43 having its ends bent downward and terminating in two downwardly projecting slotted arms 44, the arm 45 on the inside of the truss and provided with a friction roller bearing against a cam 47 mounted on the shaft 48, the coiled springs 49 and 50 the bars 64 secured to the bars 86 at one end and to the bars 44 at the other, the said bars 44 and 86 being slotted for the connecting pins 65 and 66 of the bars 64 the parts 63 bolted to said bars the bars and parts 83 and the rods 78, whereby the holders D are operated to bear upon the pile of paper substantially as specified.

2. In a press-feeder, the adjustable retaining plates arranged at the front edge of the feed-board, and consisting of blocks having upright bolts provided with thumb screws, a horizontal-rod, 6, perforated at its ends to slip over the upright-bolts and adapted to be clamped thereon, a guard-bar, 9, secured to arms mounted on said horizontal-rod, sleeves 10 mounted on the rod 6, and carrying pins provided with thumb screws, and the brushes having horizontal slotted arms 15 adapted to be held adjustably on said pins by the thumb screw, substantially as specified.

3. The combination with the feed-board formed with a groove, 16, and metal strips set in on each side of said groove to form a slot, 18, of an adjustable retaining-plate, arranged at the rear side of said feed-board and consisting of a plate, 20, carrying pins projecting into a gage-block, 19, and a bolt, 23, passing through said gage-block and provided with a thumb-screw, the gage block carrying a horizontal-rod 24, having sleeves 25 mounted thereon, said sleeves carrying plates adapted to rest against the rear sides of the pile of paper, and carrying pins provided with thumb-screws, and brushes carried by arms having bent slotted portions adapted to be adjustably held on said sleeves by the thumb-screws, substantially as specified.



4. In a press feeder, a holder D, consisting of a flexible tube adapted to be clamped to sleeves mounted on the rod 78 and provided at its end with a flaring collar, joined to the tube a little above its end, the free end of said tube provided with perforations to form communication between the interior of the tube and the space under the collar to operate in connection with a vacuum producing mechanism, substantially as specified.

5. The combination with the horizontal swinging frame A and vertically reciprocating frame B of a turner mechanism C, consisting of a horizontal rod 78, having sleeves 79 held by thumb screws, the sleeves having double clamping plates to carry the holders D and to carry rests, levers 83 secured to the ends of the horizontal rod 78 having slots in their forward ends, in which pins 67 are adapted to move; their rear ends pivoted on pivot pins carried by vertical bars 86, being connected together by foot-rod 87 and horizontal bar 88, carrying at its center a sheave block, secured in which is a vertical guide rod 90 and having braces extending from the sheave-block to the foot rod; and vertical bars, having slots, in which the pins 66 are adapted to move the lower end of the guide-rod, adapted to move in the guide sleeve 76, the upper end in the guide sleeve 77 with sleeve 91 and set screw 92, washers 95, counterpoise spring 96 on lower part of guide rod to balance part of the weight of the turner C substantially as described.

6. In a feeder machine for power printing presses the combination with the frames A and B and turner-mechanism of an air blast mechanism, consisting of a cylinder E, piston, piston-rod G, reacting spring, brace attached to the frame 1, guide J through which piston rod is adapted to move, sleeve K, held by set screw on piston rod G above the guide, shoulder M attached to piston having pins to which are pivoted connecting rods O, a lever P with friction roller pivoted to the frame 1, its forward end forked, carrying pins on which the connecting rods O are pivoted, a cam T to operate with the friction roller to raise the lever, thus forcing the piston up, which being released by the cam, is forced down by the spring H with washers U to cushion the stroke, air blast W, pipe V, projecting up in the cylinder with flexible tubes to convey the blast to tubes X with lugs Y bolted to sleeves 79, by bolts and nuts, tubes 33 flexible branch tubes, nipples b, attached by cords d to clamping plates to turn and move with the sheet of paper, substantially as described.

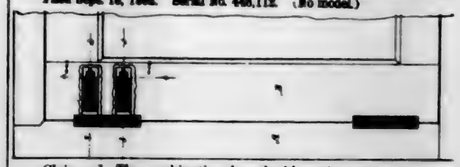
7. In a press-feeding machine, the combination, with the feed-board thereof, of an adjustable retaining-device arranged at the front edge of said board and comprising movable sleeves mounted on a horizontal-rod, said sleeves carrying vertical retaining-plates and adjustable brushes, and adjustable retaining plates arranged on the board at the sides and rear edges thereof, substantially as specified.

8. In a feeding machine for printing-presses, the combination, with the feed-board thereof, of a retaining-device, arranged on said board at the front edge thereof, comprising movable sleeves carrying vertical retaining-plates and adjustable brushes, said sleeves mounted on a horizontal rod secured to the feed-board, retaining-plates adjustably secured to the sides of the feed-board, and a retaining device arranged on the feed-board at the rear thereof, comprising an adjustable gage-block operating in a slot made in the feed-board and carrying a horizontal-rod on which are mounted two movable sleeves carrying retaining-plates and adjustable brushes, substantially as specified.

9. In a feeder machine for power printing presses, the combination with holders to operate in connection with a vacuum pump to hold a sheet of paper while being transferred, of nipples to operate in connection with an air blast producing mechanism in combination with the frames A and B and turner C having sleeves adapted to carry the vacuum holders in the manner and for the purpose; substantially as described.

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**503,064. SPRING-HINGE.** FRANCIS D. ROBERTS, Somerville, Mass. Filed Sept. 16, 1892. Serial No. 446,112. (No model.)



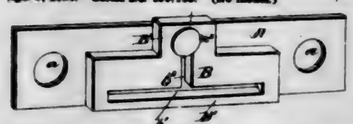
*Claim.*—1. The combination, in a double acting spring hinge, of attaching plates, one of which is provided with tubes, link-plates pivotally connecting the attaching plates, springs supported by the tubes, nuts bearing against the springs and movable along and guided by the tubes, screw bolts engaging the nuts, rotatable chains connected with the link-plates and the screw bolts and means for rotating the chains to adjust the nuts, substantially as described.

2. The combination, in a double acting spring hinge, of attaching plates, one of which is provided with tubes, link-plates pivotally connecting the attaching plates, springs supported by the tubes, nuts bearing against the springs and movable along and guided by the tubes, screw bolts engaging the nuts, chains connected with the screw bolts, and rotatable notched heads carried by the link-plates and secured to the chains for rotating the latter and adjusting the nuts, substantially as described.

3. A double acting spring hinge, consisting of attaching plates C and D, longitudinally slotted tubes $f$ and $f'$ arranged one above the other and both extending in the same direction from one of said attaching plates, the independent link-plates E and E' pivotally connecting the attaching plates, the chains G and G' connected respectively with the link-plates, and springs I and I' supported by the tubes and acting upon the inner ends of the chains whereby the springs are alternately compressed by the action of the independent link-plates when the door is swung in opposite directions, substantially as described.

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**503,065. NUT-LOCK.** HARRIS TAYLOR, White Wright, Tex. Filed Apr. 5, 1893. Serial No. 469,185. (No model.)



*Claim.*—The herein described improved nut lock, comprising the under or base plate, A, having the permanent rivet consisting of the shank $a'$ and the flat cylindrical disk $a^2$ forming the rivet head; and the smaller outer plate, B, permanently secured to the base plate by the cylindrical rivet head and provided with the short vertical slot $b^2$ and the longitudinally-extended horizontal slot $b'$ extending nearly from end to end of the body portion of the plate B, said slots being narrower in width than the diameter of the permanent cylindrical rivet head; whereby the smaller outer plate is permanently connected with the base plate and is adapted to be turned at an angle thereto by means of the longitudinally-extended slot, the whole forming a complete device in which all the elements or parts are permanently secured together but are adjustable with relation to each other; substantially as set forth.



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**503,066. SALICYLATE OF PARA-TOLYLDIMETHYLPYRAZOLON.** HERMANN THOMS, Berlin, Germany. Filed Nov. 17, 1892. Serial No. 452,337. (Specimens.)

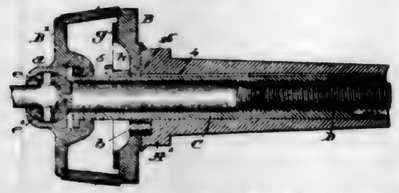
*Claim.*—1. The process of producing salicylate of para-tolyldimethylpyrazolon, which consists in melting together para-tolyldimethylpyrazolon and salicylic acid in about the proportions set forth.

2. The process of producing salicylate of para-tolyldimethylpyrazolon, which consists in combining para-tolylhydrazin with acetic acid ether, heating the compound, methylating the resulting para-tolyldimethylpyrazolon and combining with the para-tolyldimethylpyrazolon thus obtained salicylic acid in about the proportions set forth.

3. The herein described chemical, salicylate or para-tolyldimethylpyrazolon, which crystallizes readily, melts at about 101° centigrade, is not readily soluble in water, but readily so in alcohol, or ether, or acetic acid ether, and yields salicylic acid and para-tolyldimethylpyrazolon respectively when treated with strong acid or a soda lye.

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**503,067. ROTARY CUTTER.** HENRY W. WINTER, Boston, assignor to James W. Brooks, trustee, Petersham, Mass. Filed Mar. 13, 1893. Serial No. 465,762. (No model.)



*Claim.*—1. The hollow sleeve-like spindle for the cutter-head; the internally threaded clamping-bar C; and blade holding heads through which the said bar is extended; combined with longitudinally adjustable blades held between said heads; and a screw extended longitudinally into the rear end of said sleeve and into said bar, to operate, substantially as described.

2. The hollow sleeve, the internally threaded clamping bar and blade or cutter holding heads through which the bar is extended, combined with blades or cutters located between said heads, and a screw extended longitudinally into the said sleeve from one end and into said bar, and a locking device between the end of the sleeve and the inner head of the rotary cutter, substantially as described.

3. In a rotary cutter, the blade holding heads, and cutter blades, combined with a clamping bar located at the center of motion of the said heads, the said bar having a two-part head which is kept closed by its entrance into a socket in the outer side of the outer cutter head, substantially as described.

4. In a rotary cutter, the blade holding heads, the cutter blades located between them, a clamping bar located at the center of motion of said heads, the said bar having a two-part head which is kept closed by its entrance into a socket in the outer side of the outer cutter-head, combined with the two-part concavo-convex bushing, and with a T-shaped rod or shaft embraced thereby, substantially as described.

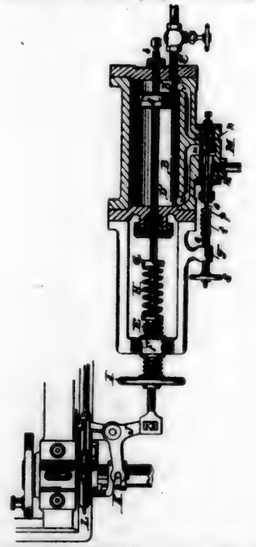
5. The hollow sleeve, the inner head of the cutter having a notch in its central opening, the clamping bar provided with a key to enter said notch, and devices to hold the clamping bar in the sleeve, combined with cutter blades and with a locking device between the head and sleeve, substantially as described.

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**503,068. PRESSURE-REGULATOR FOR PUMPING-ENGINES.** EUGENE AUSTIN, Detroit, Mich., assignor of one-half to John Trix, same place. Filed July 13, 1892. Serial No. 439,962. (No model.)

*Claim.*—1. In a pressure regulator for pumping engines, a pressure valve in combination with a cylinder and piston connected with the pressure main, and with the cut off mechanism, or the throttle of a steam pumping engine, so arranged that when the pressure rises to any degree determined by the adjustment of the pressure valve, communication shall be opened between the ends of the cylinder on opposite sides of the piston, allowing it to be urged by the spring in a direction to diminish the admission of steam, substantially in the manner and for the purposes described.

2. A pressure regulator for pumping engines, consisting of the piston A, cylinder B, rod D, threaded sleeve E, yoke F, spring H, and pressure valve M, to be connected with the pressure main and with the cut off mechanism or throttle of a steam pumping engine, to operate in the manner and for the purposes substantially as described.



3. In a pressure regulator for pumping engines, a piston in a cylinder connected directly with the pressure main, an adjustable spring and the cut-off mechanism or the throttle of a steam engine so arranged as to be urged by the pressure from the main in a direction to increase the admission of steam, and by the spring in a direction to diminish the admission of steam, in combination with means adapted to balance the device when the prescribed pressure is reached, substantially as described.

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**503,069. PULP BEATING AND MIXING ENGINE.** EDWIN W. BARTOS, Lawrence, Mass. Filed Aug. 6, 1892. Serial No. 442,387. (No model.)



*Claim.*—1. In a pulp beating and mixing engine, the combination with a tub, a vertically adjustable roll carrying shaft, a back-fall, and a bed-plate in juxtaposition to the roll, of a deflector located above the back-fall and connected with the roll carrying shaft to partake of the rising and falling movements thereof, substantially as described.

2. In a pulp beating and mixing engine, the combination with a tub, a vertically adjustable roll carrying shaft, a back-fall, a bed plate located in the tub in juxtaposition to the roll, and a hood or cover arranged above the roll, of a deflector arranged beneath the hood or cover and above the back-fall and connected with the roll carrying shaft to partake of the rising and falling movements thereof, substantially as described.

3. In a pulp beating and mixing engine, the combination with a tub, a vertically adjustable roll carrying shaft, and a back fall arranged in front of the roll, of a deflector arranged above the back fall, and a pivoted lever connected with the deflector and bearing against the roll carrying shaft, substantially as and for the purpose described.

4. In a pulp beating and mixing engine, the combination with the tub, of two longitudinal walls arranged therein and forming three channels, one in the center and the others at the sides, and a roll, bed-plate and back-fall located in the center channel between said walls, the floors of the channels and the bed plate being on substantially the same level, as and for the purpose described.

**508,070. PROCESS OF COATING WITH ALUMINUM OR ALLOYS THEREOF.** Edward G. Broadwell, Philadelphia, Pa., assignor of one-third to Matthew J. Grier, same place. Filed Jan. 10, 1893. Serial No. 457,965. (Specimens.)

*Claim.*—1. The method of plating with aluminum or aluminum alloys which consists in treating the metal to be coated with a flux containing tin combined with an element of the chlorine group and then dipping the metal thus treated in a bath of molten aluminum or alloy of aluminum substantially as described.

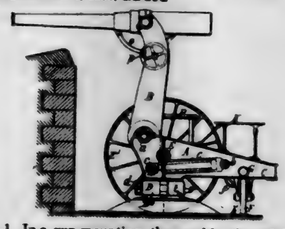
2. The method of plating with aluminum or aluminum alloys which consists in treating the metal to be coated with a flux containing tin and zinc combined with an element of the chlorine group and then dipping the metal thus treated in a bath of molten aluminum or alloy of aluminum substantially as described.

**508,071. RAILWAY-JOINT.** John S. Brown, Galveston, Tex. Filed Dec. 31, 1892. Serial No. 456,907. (No model.)



*Claim.*—The combination with the rails having longitudinal slots 19 in their webs, and chairs 3 having dove-tailed channels in their inner faces, of an adjustable head-block 17 fitting the slots in the rail-webs and formed with dove tailed projections 18 which engage the dove-tailed channels, and are of such dimensions as to pass laterally through the slots in the rail webs, whereby the head-block with its dove-tailed projections can be removed and replaced laterally with respect to the rails by detaching either one of the chairs, substantially as described.

**508,072. GUN CARRIAGE OR MOUNTING.** Jean B. G. A. Canet, Paris, France, assignor of one-half to the Sir Joseph Whitworth & Company, Limited, Manchester, England. Filed July 13, 1892. Serial No. 439,886. (No model.) Patented in France Oct. 17, 1889, No. 201,386, and in England Jan. 6, 1890, No. 214.



*Claim.*—1. In a gun-mounting, the combination of the frame A, the axle E, the wheels E', the coupling comprising the attachment D' secured to the said frame, the portions $D^3$ hinged to the said attachment and the bolts *d* by which the free ends of the said portions $D^3$ are secured together, and a fixed pivot *k* adapted to fit the said coupling, substantially as described.

2. In a gun-mounting, the combination of the frame A, the axle E, the wheels E', the coupling comprising the attachment D' secured to the said frame, the portions $D^3$ hinged to the said attachment and the bolts *d* by which the free ends of the said portions $D^3$ are secured together, a fixed pivot *k* adapted to fit the said coupling and provided with a racer path F' concentric with the pivot, substantially as set forth.

3. In a gun-mounting, the combination of the frame A, the wheels E' the coupling comprising the parts D' and $D^3$ having flanges at their lower edges, the bolts *d* by which the parts $D^3$ are secured together, and a fixed flanged pivot *k* adapted to be engaged by the said coupling substantially as described.

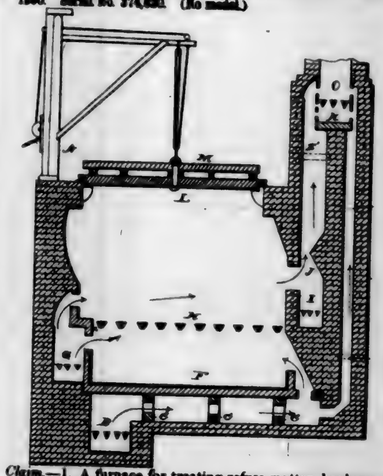
4. In a gun-mounting, the combination of the frame A, the wheels E', the coupling D, the fixed pivot *k* adapted to engage said coupling, the racer path F' and the roller F carried in bearings which are hinged to the frame A and adapted when lowered to roll on said racer path, substantially as described.

5. The combination of the frame A, the wheels E' the rotary drums I and their ratchet gear upon the axle of the fore-carriage, and ropes or chains secured to the drums I and temporarily connected to the wheels E', substantially as hereinbefore described for the purpose specified.

6. The combination of the frame A, beam B, wheels E', drums I and their ratchet gear upon the axle of the fore-carriage, and ropes or chains secured to the drums I and temporarily connected to the wheels E', and the bar *v* engaging the spokes of the wheels and the beam B, substantially as hereinbefore described for the purpose specified.

7. The combination of the frame A, beam B, wheels E' drums I and their ratchet gear upon the axle of the fore-carriage of the frame A, ropes or chains secured to the drums I and temporarily connected to the wheels E', the bar *v* engaging the spokes of the wheels E' and the beam B and a gun trunnioned upon the beam B, substantially as hereinbefore described with reference to the drawings for the purpose specified.

**508,073. APPARATUS FOR TREATING REFUSE MATTER.** Thomas W. Carrico, San Antonio, Tex., assignor of one-third to Francis A. Carrico and Thomas W. Carrico, Jr., same place. Filed Dec. 13, 1890. Serial No. 374,620. (No model.)



*Claim.*—1. A furnace for treating refuse matter, having a main furnace and grate for the refuse to be treated; a supplemental furnace communicating with the main furnace both above and below the grate of the latter, and a furnace located in the flue of the main furnace, the arrangement being such that the vapors and gases arising from the refuse matter under treatment will pass through said furnace, substantially as shown and described.

2. In an apparatus for treating refuse matter the combination of a main furnace for the reception of the refuse; a supplemental furnace communicating with said main furnace through openings both above and below the grate of the latter; a furnace below the main furnace connected with a separate flue and also with the flue of the main furnace by a passage into the latter; and a furnace located in the main flue, the arrangement being such that the vapors and gases arising from the matter under treatment will pass through the last named furnace, substantially as shown and described.

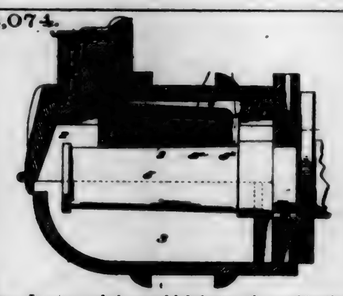
3. In an apparatus for treating refuse matter the combination of a main furnace and grate for the reception of the matter to be treated; a supplemental furnace at one side of the main furnace and communicating therewith through openings both above and below the grate thereof; a furnace below the main furnace having a separate flue leading into the flue of the main furnace and also connected with the latter by a separate passage; a furnace in the lower part of the flue of the main furnace, and a furnace above the latter at the junction of the branch flues, the arrangement being such that all the vapors and gases arising from the matter under treatment will pass through the last named furnace to be re-burned and purified, substantially as shown and described.

4. In an apparatus for treating refuse matter the combination of a main furnace and grate, for the reception of the refuse, having a flue opening at one side, a supplemental furnace at the side opposite the flue opening communicating with the main furnace both above and below the grate of the latter flue and a furnace in the main flue, substantially as shown and described.

**508,074. AXLE-LUBRICATOR.** Harrison V. Conway, Boone, Iowa, assignor of one-half to Isaac H. Throckmorton, same place. Filed June 13, 1892. Serial No. 436,907. (No model.)

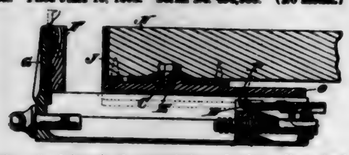


**508,074.**



*Claim.*—In a car axle box and lubricator, the combination with the axle, of the brass mounted thereon and having oil ducts leading to the inner portion of the axle, the box or casing inclosing the axle having the oil channel or feeding groove of substantially horse shoe shape with the closed or toe end arranged at the forward end of the box and the channels leading from the closed end to the inner end of the box for directing the oil to the inner portion of the axle and having the ducts communicating with the ducts of the brass, the oil reservoir mounted on the forward end of the box having the feed opening directly over the closed or toe end of the feeding groove of the axle box and the ball for controlling the flow of oil through said opening, as shown and described.

**508,075. QUICK-ACTION VISE.** James R. Dunham, Grand Rapids, Mich. Filed June 16, 1892. Serial No. 436,983. (No model.)



*Claim.*—1. A bench vise, consisting of a laterally swinging jaw G, a metallic framework J having two right angled perpendicular sides and a bed, a bench screw and swivel supported by the bed of the said framework, said screw moving with the laterally swinging jaw, substantially as described.

2. A bench vise provided with a swinging jaw, a metallic framework having two right angled perpendicular sides and a bed adapted, to support the swinging jaw and its adjunctive mechanism, a bench screw and swivel supported upon the bed of the said framework, and having no projection or bolt connection directly with the bench, said jaw adapted for use at either side or end of the table, substantially as described.

3. The combination of a frame having two perpendicular sides at right angles to each other, a bottom or bed, a frame for supporting the swinging jaw, having an upward projection integral therewith, passing through the bed of the frame, a screw and washer for attaching the same to the bed or frame, and entire swinging mechanism supported from the bed of the metallic frame or stationary jaws, substantially as and for the purpose described.

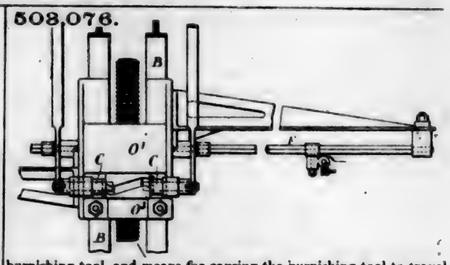
4. In a quick action vise, the combination of a bench screw, a nut, a swiveled ratchet-bar located above the bench screw, an oscillating dog supported by said nut and having its forward end provided with a toothed part, a projection upon the bench screw adapted to engage with the rear projection of the dog and to disconnect the same from engagement with the ratchet bar when placed in proper position and adapted to move out of place so as to not operate or disconnect said dog; substantially as described.

5. The combination with a metallic framework J adapted to be secured to a bench and provided with a bed, of a ratchet bar O swiveled to the bed, a laterally swinging jaw G provided with a screw D having a projection A, a nut K engaging the screw, and a pivoted dog having a projection P, said ratchet bar, jaw, screw, nut and pawl adapted to swing together for the operation of the jaw at different sides of the metallic framework, substantially as described.

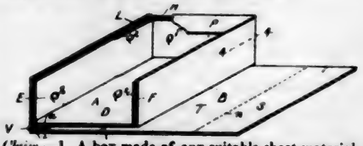
**508,076. APPARATUS FOR THE ELECTROLYTIC MANUFACTURE OF TUBES.** Alexander S. Elmore, Leeds, assignor to the Elmore's American & Canadian Patent Copper Depositing Company, Limited, London, England. Filed Sept. 21, 1888. Serial No. 446,426. (No model.) Patented in England Oct. 15, 1891, No. 17,631.

*Claim.*—In an apparatus for the electrolytic manufacture of tubes, the combination with a revolving mandrel, of an oscillatory burnishing tool, and means for causing the burnishing tool to travel along the mandrel, and for causing said tool to oscillate with relation to said mandrel during its travel, substantially as described.

**508,078.**



**508,077. PAPER BOX.** William Forsyth, Fresno, Cal. Filed July 21, 1892. Serial No. 440,803. (No model.)



*Claim.*—1. A box made of any suitable sheet material, consisting of a bottom, sides and ends, corner pieces, one to each side or end and each secured to the end, or side next thereto, a cover having two flaps, one at each side adapted to fold over and fit the sides and top of the box and secured at and along the edge of one flap to the lower edge of one side of the box.

2. A box made of any suitable sheet material, consisting of a bottom, sides, and ends, corner pieces, one to each side or end, and each secured to the end or side next thereto, a flap on each end to fold over on the top of the box, a cover having two flaps adapted to fold over and fit the sides and top of the box, one at each side, and secured at and along the edge of one flap to the lower edge of one side of the box.

3. A box made of any suitable sheet material consisting of a bottom, sides and ends, corner pieces, one to each side or end, and each secured to the end or side next thereto, a cover having two flaps, one at each side adapted to fold over and fit the sides and top of the box, and a strip of flexible sheet material secured to and along the edge of one flap and to and along the lower edge of one side of the box.

4. A box made of any suitable sheet material, consisting of a bottom, sides, and ends, corner pieces to each side or end and each secured to the end or side next thereto, a flap on each end to fold over on the top of the box, a cover having two flaps, one at each side, adapted to fold over and fit the sides and top of the box, and a strip of flexible sheet material secured to and along the edge of one flap, and to and along the lower edge of one side of the box.

5. A box made of any suitable sheet material, consisting of a bottom, sides, and ends, a flap of each end to fold over on the top of the box, strengthening or stiffening pieces secured to each side and end, corner pieces to each end secured to and between their respective side and strengthening pieces, a cover having two flaps one at each side, adapted to fold over and fit the sides, and top of the box, and a strip of flexible sheet material secured along the edge of one flap, and along the lower edge of one side of the box, substantially as and for the purpose specified.

6. A blank for a box, having a central portion D for the bottom, side portions E, F, end portions G, H, strengthening pieces to the sides and ends, corner pieces, J, K, L, M, to the end pieces to be secured to their respective sides, flaps N, P, to each end piece respectively, and scoring or indenting lines between the several parts on which they are folded.

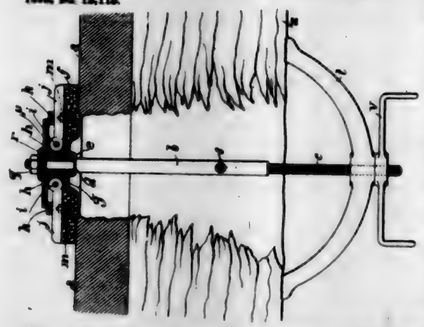
**508,078. EARTH-AUGER.** John Frame, Buffalo, N. Y., assignor to himself and August G. Renner, same place. Filed Apr. 20, 1893. Serial No. 471,148. (No model.)



*Claim.*—An earth auger, consisting of a handle *h*, and its vertical supporting bar, 2, a suitable holding portion attached to the bottom of the vertical supporting bar and having a transverse rectangular opening through it, in combination with two curved tapering auger cutting blades each having an arm which projects upward from a point near its cutting edge, and is then bent horizontally or nearly so, so that both are adapted to pass in opposite directions into and through the rectangular opening in the holding piece, and a set screw located centrally at the under side of the holding portion for tightening them rigidly in place when adjusted, substantially as described.

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**508,079. LEAK-STOPPER FOR SHIPS.** JOHN E. GOWEN, Paris, France. Filed Jan. 26, 1893. Serial No. 459,868. (No model.) Patented in France June 30, 1892, No. 223,640, and in England June 30, 1892, No. 12,113.



*Claim.*—In a leak stopper, a rod *b*, a bracket *f* and an operating handle *v*, in combination with a collapsible rubber disk *f* secured to pivoted arms *j* by means of clips *k* bolts *m* and strips *n*, substantially as described and shown.

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**508,080. VELOCIPEDE.** ASHBURN L. HALL, Chicago, Ill. Filed July 18, 1892. Serial No. 440,222. (No model.)



*Claim.*—1. In a driving device for velocipedes and the like, in combination with the strap and the lever to which the driving power is to be applied, the second lever pivoted to the latter, and having the strap attached to one of its arms, a bearing engaged by without being attached to the other arm of the lever, adapted to detain such arm, as the driving lever is swung on its pivot, substantially as and for the purpose specified.

2. In a driving device for velocipedes and the like, in combination with the strap, and the lever to which the driving power is to be applied, the second lever pivoted to the latter, and having the strap attached to one of its arms, and the bearing for engaging and detaining the other arm, as the first lever swings, made adjustable toward and from the pivotal point of the second lever, substantially as and for the purpose shown.

3. In a driving device for velocipedes and the like, in combination with the strap and the lever to which the driving power is to be applied, the second lever pivoted to the first one, and having the straps connected with one of its arms, and the roller, on a support independent of either lever, engaging the other arm of the second lever, at a point between the pivotal connection between the levers, and the pivot of the first lever substantially as and for the purpose set forth.

4. In a velocipede in combination with the wheel to be driven, and a suitable frame, the strap drum connected with the wheel, a lever pivoted directly to the frame, and extending toward the drum, a second lever pivoted to the first lever, the strap connected with the rearwardly extending arm of the second lever, and wound upon the drum, and a bearing, independent of the levers, engaging the forward arm of the second lever, so as to detain such arm; as the first lever is depressed, substantially as and for the purpose described.

5. In a velocipede in combination with the wheel to be driven, and a suitable frame, the strap drum connected with the wheel, the pedal lever pivoted to the frame, the second lever pivoted to the pedal lever, the strap wound upon the drum and connected with one arm of the second lever, and the bearing engaging the other arm of such lever, made adjustable toward and from the pivot of the second lever, on a support independent of either lever, substantially as and for the purpose specified.

6. In a velocipede in combination with a suitable frame, the wheel to be driven, and the strap drum connected with such wheel, the pedal lever pivoted directly to the frame and extending rearward therefrom, the second lever pivoted to the pedal lever, the strap wrapped upon the drum and connected with the rear arm of the second lever, and a roller bearing, on a support independent of the levers, engaged by the forward arm of second lever, substantially as and for the purpose shown.

7. In a velocipede, in combination with a suitable frame, the wheel to be driven, and the strap drum connected with such wheel, the pedal lever pivoted to the frame, and extending rearward toward the drum, and having its pedal or foot piece above the level of the lever pivot, when such lever is raised, the second lever pivoted to the pedal lever having its rear arm extending rearward, to a point below a line between the pedal lever pivot and the drum, a strap wrapped on the drum, and connected with the second lever below such line, and a bearing independent of the levers upon which the forward arm of the second lever rests, at a point between the pivots of the two levers, substantially as and for the purpose set forth.

8. In a velocipede, in combination with a suitable frame, the wheel to be driven, and the strap drum connected with such wheel, the pedal lever pivoted to the frame, the second lever pivoted to the pedal lever, and having an end extended to a point below the foot engaging part of the pedal lever, and the strap connecting such portion of said second lever, and the drum, substantially as and for the purpose shown.

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**508,081. GLOVE-FASTENER.** FRANK R. HALL, Newton, Mass., assignor, by mesne assignments, to the Consolidated Fastener Company, Portland, Me. Filed Feb. 1, 1893. Serial No. 460,545. (No model.)



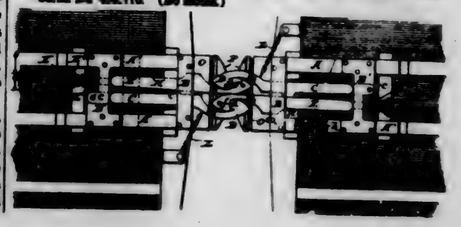
*Claim.*—1. In the button hole member of a spring fastener for gloves and other articles, a stud receiving chamber, in combination with a spring plate provided with an annular corrugation and having slits passing from the central opening of said spring nearly to the outer edge thereof, whereby downwardly and inwardly projecting folded spring ears are formed, said spring plate being firmly held in said chamber by its outward edge, a riveting plate D, and dome with riveting devices, whereby the spring chamber is secured to the material substantially as described.

2. In the button hole member of a spring fastener for gloves and other articles, a stud receiving chamber provided with a bottom plate, in combination with a slitted annularly corrugated spring plate having downwardly and inwardly projecting folded spring ears, said spring plate being held by its outer edges to the said bottom plate, and a dome or cover provided with a rivet engaging with said stud-receiving chamber, substantially as described.

3. In the button hole member of a spring fastener for gloves, a stud receiving chamber consisting of the plate C and plate B having the ears *b'*, in combination with a slitted, annularly corrugated spring plate having downwardly and inwardly projecting spring ears, and riveting devices, whereby the stud receiving chamber is secured to the material substantially as described.

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**508,082. CAR-COUPLING.** JOHN M. HENDERSON, Salem, assignor of one-half to James Johnson, New Albany, Ind. Filed Dec. 1, 1892. Serial No. 453,772. (No model.)





*Claim.*—1. An automatic double twin jaw car coupler comprising two sets of draw bars of the same length with a cylindrical and a hollow curved bearing jaw in each set acting together to form a full double coupling, and means for operating one jaw of each set to hold it out of engagement forming a single lock coupling, substantially as described.

2. An automatic double twin jaw car coupler, comprising a pivoted draw bar having a cylindrical jaw, the longitudinally moving draw bar having a curved jaw, both draw bars and jaw being connected to the same lug iron and mounted between the draft timbers of the car, substantially as described.

3. An automatic double twin jaw car coupler, comprising a frame in which are mounted a pivoted draw bar and a longitudinally movable draw bar and springs tending to hold the draw bars in contact, substantially as described.

4. An automatic double twin jaw car coupler, comprising a frame having a lug iron to which one draw bar is pivoted and in which another draw bar slides longitudinally, a spring for controlling the longitudinal movement of the draw bar, and springs tending to hold the draw bars in contact, substantially as described.

5. An automatic double twin jaw car coupler, comprising a frame, a pivoted draw bar having a cylindrical jaw, a longitudinally moving draw bar having a curved jaw, springs tending to hold the draw bars in contact, and a lug on one of the draw bars to separate the same, substantially as described.

6. In an automatic double twin jaw car coupler, the combination with the frame, of a pivoted draw bar, and a longitudinally moving draw bar, springs tending to hold them in position and means connected to the pivoted jaw for drawing it laterally sidewise for uncoupling, substantially as described.

7. In an automatic double twin jaw car coupler, the combination with the frame, including the draft timbers, the pivoted draw bar and the longitudinal draw bar, the frame and draw bars being provided with a slot for the reception of a bar to form the continuous draw bar attachment, substantially as described.

8. In an automatic double twin jaw car coupler, the combination with the frame of the draw bars, one of the bars being provided with a cylindrical jaw, and the other draw bar provided with a curved jaw, the cylindrical jaw of one coupling being arranged to engage automatically with the curved jaw of the complementary coupling, substantially as described.

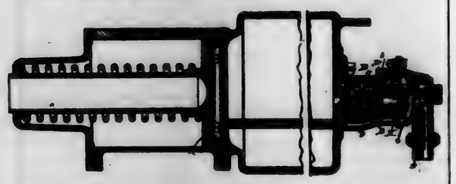
9. In an automatic double twin jaw car coupler, the combination with the frame, of two draw bars, one of which is fixed against longitudinal movement, while the other is arranged to allow longitudinal movement against a spring, and jaws secured to each of the draw bars, substantially as described.

10. The combination with a double automatic twin jaw car coupling, of a bumper arranged above the coupling comprising a segmental buffing head provided with a stud P' having a central slot for the pin, and a case provided with studs O', supporting coil springs, substantially as described.

11. In an automatic double twin jaw car coupler, the cylindrical and hollow curved jaws mounted on drawbars, a bumper mounted above the jaws and arranged to allow the jaws to couple on cars of different heights within certain limits and yet preventing the coupling being unlocked by any vertical motion, substantially as described.

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**508,083. AIR-BRAKE MECHANISM FOR RAILWAY-CARS.** CHARLES W. HOUGH, Fernwood, Ill., assignor, by direct and mesne assignments, of three-fourths to Jacob B. Knudson and Harold B. Knudson, same place, and Leonard C. B. Holmboe, Chicago, Ill. Filed Apr. 18, 1890. Serial No. 348,462. (No model.)



*Claim.*—1. The combination of a triple valve body having a suitable slide valve chamber and a suitable piston valve chamber, and having an air supply passage or channel leading from said slide valve chamber to a passage or channel connecting with the brake cylinder, a slide valve within said slide valve chamber provided with a passage or channel communicating with the auxiliary reservoir, and adapted to be brought coincident with the air-supply channel that connects with the brake cylinder, a suitable piston within the piston valve chamber, a perforated cap for said valve body, having channels or passages for connecting the train-pipe with the channel or passage of the valve body that leads to the brake-cylinder, an emergency valve located within said cap, and having a stem extending into position to be struck by the piston in its backward movement, and a graduating spring adapted to move said piston after said emergency valve has been restored to its seat, and by which the shifting of the slide valve can be effected to close the passage between the auxiliary reservoir and the channel that leads to the brake-cylinder, substantially as described.

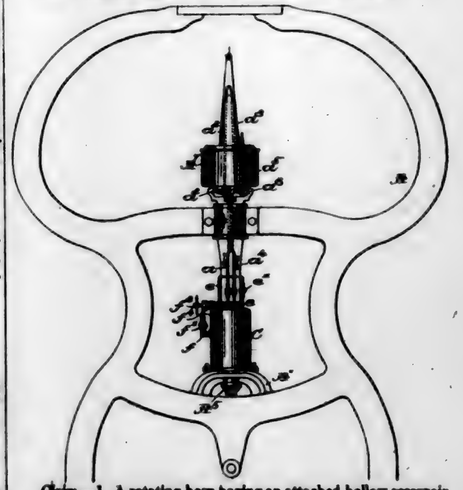
2. The combination of a triple valve body having a slide valve chamber and a piston valve chamber and having an air supply passage leading from said slide valve chamber to a passage or channel connected with the brake cylinder, a slide valve within said slide valve chamber provided with a passage or channel communicating with the auxiliary reservoir and adapted to be brought coincident with the air supply channel that connects with the auxiliary reservoir, a piston within the piston valve chamber, to which piston the slide valve is fixed so that the valve shall partake of the entire movement of the piston, a graduating spring and a buffer with which said piston will contact, and a passage or channel connecting the triple valve body with the train pipe, substantially as described.

3. In triple valve mechanism, the combination with a suitable valve body, having a piston valve chamber, and a suitable slide valve chamber, and a suitable piston and slide valve located within said chambers, of a perforated cap for said valve body, said cap being provided with passages or channels for the flow of air from the train pipe to a passage or channel that leads to the brake cylinder, an emergency valve for obstructing the flow of air through the passages of said cap, a spring for holding said emergency valve to its seat, and a graduating spring independent of the emergency valve, and adapted to effect the movement of the piston and slide valve, without any shift of the emergency valve, substantially as described.

4. In triple valve mechanism, the combination, with a valve body having a slide valve chamber and a piston valve chamber and suitable ports and passages, and a slide valve and a piston within their respective chambers, and a cap for said body of an emergency valve arranged to be struck by the piston about the extreme of its movement, and a graduating spring arranged to operate independently of the emergency valve and adapted to effect the movement of the slide valve in ordinary operation without unseating the emergency valve, substantially as described.

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**508,084. SOLE-SEWING MACHINE.** WILLIAM O. HILDRETH, Lawrence, assignor to the Stanley Manufacturing Company, Boston, Mass. Filed Mar. 6, 1893. Serial No. 464,729. (No model.)

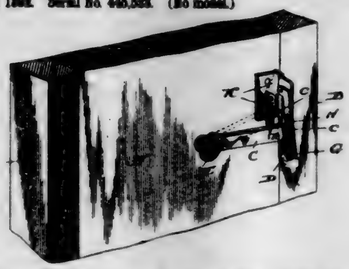


*Claim.*—1. A rotating horn having an attached hollow reservoir for the reception of a liquid,—and pipes leading liquid therefrom to the part of the horn to be heated and back therefrom into said reservoir, combined with an inclosing hollow jacket adapted to heat the liquid in the said reservoir by conduction, as described.

2. A rotating horn having an attached hollow reservoir for the reception of a liquid,—and pipes leading liquid therefrom to the part of the horn to be heated and back therefrom into said reservoir, and the inclosing hollow jacket, combined with a non-conducting gasket between the horn spindle and reservoir, substantially as described.

3. The stationary hollow jacket, its auxiliary outlet pipe provided with an open delivery nozzle, and the horn spindle, its hot water reservoir, and auxiliary pipe *e* connected with said reservoir and provided with a valve, combined with means to put the delivery nozzle of said auxiliary outlet pipe and said auxiliary pipe *e*, into communication with each other, as and for the purposes set forth.

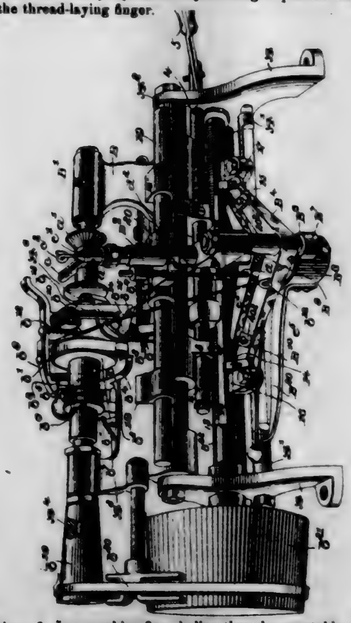
**503,085. LATCH.** SAMUEL P. HODGES, Pittsfield, Ill. Filed Sept. 10, 1892. Serial No. 445,523. (No model.)



*Claim.*—The combination of a longitudinally slotted guide plate D, adapted to be attached to the front edge of a door and project beyond one side thereof, a pivoted latch bar having its forward end extending into the slot in the guide plate, and a detent, G, pivotally connected to the guide plate and provided with a shoulder adapted to support the forward end of the latch bar when the latter is lifted, substantially as described.

**503,086. MACHINE FOR WINDING THREAD ON SPOOLS.** DAVID F. HUNT, Antrim, N. H., assignor of one-half to Howard P. Elwell, Gloucester, Mass. Filed Sept. 3, 1892. Serial No. 444,947. (No model.)

*Brief.*—The thread-laying finger rests on the spool and is fast to a rock-shaft which shifts the half-nuts when the laying-finger contacts with the spool-heads. A belt-shifter and brake are released when the spool is full by an adjustable lug on a rod which rises with the thread-laying finger. The upward movement of the laying-finger is stopped when the spool is full. The rock-shaft on which the thread-laying finger is fixed has a piston on its lower end which fits in a vessel full of heavy liquid, the object being to prevent the jumping of the thread-laying finger.



*Claim.*—1. In a machine for winding thread, a rotatable spindle to rotate a spool having the inner sides of its head inclined; a screw shaft; a pivoted frame having half-nuts at its opposite ends to co operate with said screw shaft; a pivot for said frame, said pivot being located at right angles to the center of rotation of the screw shaft; a slide-frame having bearings for said pivot; combined with a sliding and rocking rod *d* arranged in bearings in said slide frame and occupying a position substantially at right angles to the center of rotation of the screw shaft, and a thread-laying finger, and an actuating device, both fixed to said sliding and rocking rod said actuating device being adapted to act upon and shift the half-nut carrying frame whenever, in the movements of the sliding frame, the thread-laying finger attached to said sliding and rocking shaft contacts directly with the beveled inner face of one of the heads of the spool, to thus partially rotate said sliding and rocking shaft, substantially as described.

2. In a thread winding machine, the following instrumentalities, viz:—a rotating spindle to rotate the spool to receive the thread, a rock shaft having a fixed thread-laying finger and provided at its lower end with a piston and also with an actuating device; a traverse frame in which said rod is mounted, a cylinder containing a fluid through which the said piston is adapted to be moved, a rotating screw shaft and a frame carrying half nuts, the said frame being turned in one or the other direction by the actuating device connected with the said rock shaft whenever the thread laying finger comes directly in contact with the head of the spool, substantially as described.

3. The combination with the rotating spindle and horizontal sliding traverse frame, of a vertically movable rod having fixed to it a thread laying finger and also a piston, combined with a cylinder containing a liquid in which said piston is immersed to thereby obviate jumping of the thread carrying finger on or with relation to the mass of thread being wound, substantially as described.

4. A rotating spindle adapted to carry a spool upon which thread is to be wound; a vertically movable rod having an attached thread laying finger; a rod as *d* moved in unison therewith and provided with a lug; a belt shipper; a frame in which said rods reciprocate at right angles to the length of the spool; and means to reciprocate said frame; combined with stopping mechanism acted upon by the said lug when the spool has been filled with thread, substantially as described.

5. A rotating spindle to carry a spool, a traverse frame, a vertically movable rod therein having a fixed thread laying finger, combined with a device movable in unison with the said rod and adapted to arrest its upward motion when a predetermined quantity of thread has been wound upon the spool, substantially as described.

6. A rotating spool-carrying spindle, a fast and loose pulley thereon, a belt shipper, a stopping mechanism consisting of a latch and an arm provided with a controlling device, said controlling device being adjustable; combined with a vertically movable rod *d* having a lug which is gradually raised as the mass of thread increases in diameter upon the spool until the predetermined amount of thread having been wound upon the spool, the said lug meets the said controlling device and effects the stopping of the machine, substantially as described.

7. In a spool-winding machine, the shipper; stop mechanism co-operating with said shipper and provided with an adjustable regulating device; combined with a traverse mechanism, a lug as $b^{17}$ moved in unison with it, and devices to move the lug toward the plane occupied by the end of the regulating device whereby when the desired length of thread has been wound, the said lug strikes the regulating device and effects the release of the shipper so that it may move and cause the machine to be stopped, substantially as described.

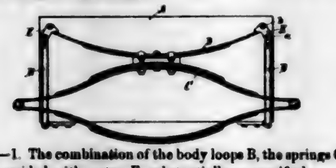
8. In a machine for winding thread on commercial spools, a spindle to rotate a spool; a screw shaft; a sliding or traverse frame having a pivot, a frame, as $B^4$, mounted on said pivot and provided with half nuts and with adjustable ears 202, combined with a rod *c'* mounted in said frame and adapted to both slide and rock therein, a thread-laying finger attached to one end of said rod, and an actuating device attached to the other end of said rod, said actuating device being adapted to strike the said ears when the thread-laying finger contacts with the spool heads to operate the frame carrying the said half nuts, as and for the purpose set forth.

9. In a machine for winding thread on commercial spools, a spindle to rotate a spool; a screw shaft; a sliding or traverse frame having a pivot; a frame, as $B^4$, mounted on said pivot and provided with half nuts and ears 202; a rod *c'* mounted in said frame and adapted to both slide and rock therein; a thread-laying finger attached to one end of said rod, and an actuating device attached to the other end of said rod, said actuating device being adapted to strike said ears when the thread laying finger contacts with the spool heads to operate the frame carrying the said half nuts, combined with a locking device consisting of a spring and of a notched arm, substantially as described.

10. In a machine for winding thread on spools of commerce, a shaft having right and left hand screw threads, means to rotate said shaft, a slide or traverse frame, a stud $B^5$ mounted therein, the frame $B^4$ adapted to turn about said stud and provided with half nuts, and having adjustable fingers 14, 15, combined with a slide rod having an attached cam bar $B^3$ provided with cam surfaces to co-operate with said pivoted frame, and a spring *f* to normally hold the said fingers pressed toward the said cam bar $B^3$, substantially as described.



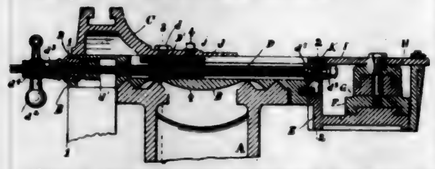
**503,087. COMBINED SPRING AND SHACKLE.** HOWARD K. JAMES and LOUIS G. MAYER, Lawrenceburg, Ind. Filed May 4, 1893. Serial No. 472,906. (No model.)



*Claim.*—1. The combination of the body loops B, the springs C, D, shackle E provided with a stop F, substantially as specified.

2. In combination with the spring D, the body loops B, provided with an eye G, and the shackle E provided with the stop F, substantially as specified.

**503,088. TAPER ATTACHMENT FOR LATHES.** WILLIAM T. S. JOHNSON, Cincinnati, Ohio, assignor to Jacob O. Stewart, same place. Filed Apr. 5, 1893. Serial No. 469,068. (No model.)



*Claim.*—1. The combination of the lathe bed, the carriage, the tool holder mounted to slide thereon, the inclined guide G, the sliding block or shoe H fitted to slide thereon, the bar pivoted upon said block, the screw shaft D, coupled to the bar, the stud nut D' connecting the tool holder and screw, and means of turning the screw for the purpose of moving the tool holder independently of the bar, substantially as shown and described.

2. The combination of the lathe bed, the carriage mounted to slide thereon, the tool holder mounted to slide across the carriage, the inclined guide G and *g*, the sliding shoe or block H, mounted thereon, the slotted bar I, pivoted upon said shoe, the screw D, the bearing K, for coupling the screw and bar I, the screw threaded nut D', to couple the bar and tool holder, and the lever $d^9$, to turn the screw for the purpose of adjusting the tool holder with relation to the work, substantially as shown and described.

3. The combination of the lathe bed, the carriage, the laterally moving tool holder, the inclined guide G, the block H, mounted to slide thereon, the slotted bar I, pivoted upon said block, the screw D, the bearing K, coupling the screw and bar I, the screw threaded stud D', to couple the bar and tool holder, the stud J, and cap screw *j*, to permit adjustment of the tool holder to the work required, and lock the bar and tool holder together, substantially as shown and described.

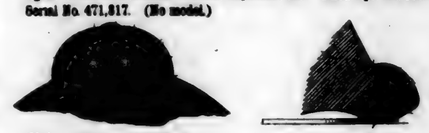
4. The combination of the lathe bed, the carriage, the tool holder fitted to slide across said carriage, the support E, for the taper attachment secured to the carriage, the bar F mounted in guide ways upon said support, the clamp L to hold said bar stationary while the carriage moves, the guide G pivoted upon said bar F, the shoe fitted to slide upon said guide, the slotted bar I, pivoted upon said shoe and passing under the tool holder, and clamping stud J, and screw *j* to adjustably couple the tool holder and the bar, substantially as shown and described.

5. The combination of the bed, the carriage, the sliding tool holder mounted thereon, the taper attachment support E, secured to the end of the carriage, the bar F, mounted in ways upon said support and having the inwardly projecting end *f*, the clamp L, secured upon the lathe bed, and having slotted edge to embrace the end *f*, of bar F, the guide G, pivoted upon bar F, the shoe H, fitted to slide upon said guide, the bar I, pivoted upon said block and coupled to the tool holder, substantially as shown and described.

6. The combination of the lathe bed, the carriage, the laterally moving tool holder, the inclined guide G, the block H fitted to slide thereon, the slotted bar I, pivoted upon said block and adapted to slide in the carriage, the screw shaft D, the stud K, for coupling the screw to the bar, the screw nut D' and screw *d*, to couple the tool holder and screw, the sleeve *d*, splined upon the screw shaft, the bushing $d^8$ secured in the carriage and furnishing the bearing for the sleeve *d*, and the lever $d^9$ secured upon the sleeve, substantially as shown and described.

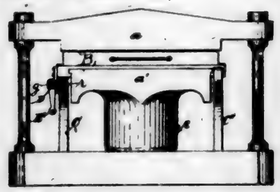
7. In a taper attachment for lathes, the combination of the sliding carriage, the fixed bearing E secured to the end thereof, the bar mounted in ways upon said bearing, and having the inturned ends *f*, the clamp L embracing the end *f* of the bar, and the screw L' to hold said clamp rigidly to the lathe bed, or permit it to slide thereon, whereby the attachment may be held while the carriage moves or permit it to slide with it, and the end permitted to play vertically in the clamp to compensate for wear of the lathe slides, substantially as shown and described.

**503,089. TOE-WEIGHT.** JAMES D. KELLER, Detroit, Mich., assignor of one-half to John F. Shiel, Seymour, Ind. Filed Apr. 26, 1893. Serial No. 471,817. (No model.)



*Claim.*—A toe-weight for horses consisting of a semi-oval base provided with a screw-hole near its center, and a spur extending to the rear from the center of its lower edge, each triangularly situated with reference to recesses sunk near the lower edge of the base and having screw-holes at their lower extremities, and a detachable shell having a cavity in its rear side made to closely embrace the base and provided with projections extending from such cavity and adapted to fit the recesses of the base, and having a screw-hole through which a screw passes into the screw-hole near the center of the base, substantially as described and for the purposes specified.

**503,090. AUTOMATIC LOCKING DEVICE FOR PRESS-OPERATING MECHANISM.** WILLIAM KRUTSCH, Dayton, Ohio, assignor to the Buckeye Iron and Brass Works, same place. Filed Feb. 20, 1893. Serial No. 463,120. (No model.)



*Claim.*—1. In a press, the combination with one or more movable molding boxes, and the press operating mechanism, of a rotary lock-rod or shaft journaled parallel to the line of travel of the molding boxes and connected with the press operating mechanism, and a locking device carried by each molding box and adapted to automatically interlock with said lock-rod or shaft and render the press inoperative when the molding box is not in a proper position, substantially as described.

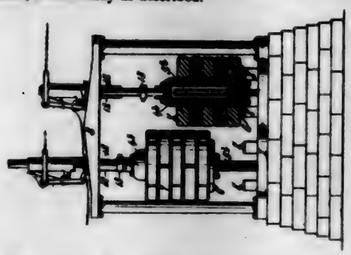
2. In a press, the combination with a series of movable molding boxes, and the press operating mechanism, of a rotary lock-rod or shaft journaled parallel to the line of travel of the molding boxes and connected with the mechanism for operating the press, said lock-rod or shaft having alternately arranged polygonal and cylindrical portions, and forked locking lugs secured to the molding boxes in position to straddle said lock-rod or shaft and adapted to closely embrace or interlock with the polygonal portions of said rod or shaft and thereby prevent it from being turned when a molding box is not in proper position, substantially as described.

3. In a press, the combination with the valve gearing or press operating mechanism, of a rotary lock-rod or shaft connected with said gearing or operating mechanism and provided with alternately arranged cylindrical and polygonal portions, a crank handle for operating said shaft, and a locking lug carried by a movable molding box or movable part of the press and adapted to interlock with a polygonal portion of the lock-rod or shaft and prevent it from being turned, substantially as described.

**503,091. HYDRAULIC ACCUMULATOR.** WILLIAM KRUTSCH, Dayton, Ohio, assignor to the Buckeye Iron and Brass Works, same place. Filed Mar. 11, 1893. Serial No. 465,567. (No model.)

*Claim.*—1. In a hydraulic accumulator, the combination with a reciprocating cylinder and a guide rod or shaft attached thereto, of a tubular sliding guide surrounding a portion of said rod or shaft, lift pins on which said tubular guide is normally supported, a wedge bar carried by the sliding guide, a swinging support having a roller mounted therein in position to be engaged by the wedge bar, a chain

connected with said roller to stop a pump from which the accumulator cylinder is supplied with working fluid, and a collar mounted on the cylinder guide rod or shaft to actuate the lift pins and tubular guide and thereby cause the wedge bar to engage the roller and pull the chain, substantially as described.



2. In a hydraulic accumulator, the combination of a vertically movable cylinder, a sliding guide adapted to be lifted by the cylinder, a wedge bar carried by said sliding guide, a swinging support having a roller mounted therein in position to be engaged by the wedge bar, and a chain connected with said roller and adapted to be pulled when the roller is swung outward, to stop a pump or engine from which the accumulator cylinder is supplied with working fluid, substantially as described.

3. In a hydraulic accumulator, the combination of a weight vertically movable cylinder, a stationary tubular plunger constituting an inlet and exit for working fluid to and from said cylinder, a sliding guide adapted to be lifted by the cylinder, a wedge bar carried by said sliding guide, a swinging support having a roller mounted therein in position to be engaged by the wedge bar and a connection leading from said roller to a pump or engine from which the accumulator cylinder is supplied with working fluid, whereby the pump or engine is stopped when the cylinder lifts the wedge bar into engagement with the roller, substantially as described.

4. In a hydraulic accumulator, the combination of an inverted vertically movable cylinder, a stationary tubular plunger constituting an inlet and exit for working fluid, a guide rod or shaft carried by the cylinder and provided with an adjustable collar, a cross beam having a boss through which the cylinder guide rod is extended, lift pins suspended in said boss and having their lower ends in the path of the collar on the cylinder guide rod, a tubular sliding guide supported on said lift pins and carrying a wedge bar, a roller mounted in a swinging support in position to be engaged by the wedge bar, and a flexible connection leading from said roller to the pump or engine from which the accumulator cylinder is supplied with working fluid and through which said pump is stopped when the cylinder lifts the wedge bar into engagement with the roller, substantially as described.

5. In a hydraulic accumulator, the combination with an inverted vertically movable cylinder having a guide rod provided with an adjustable collar, of a cross beam having a boss through which said guide rod is extended, lift pins suspended in said boss in the path of the collar on the guide rod, a sliding tubular guide supported on the lift pins and provided with an adjustable wedge bar, an adjustable annular plate supported on the boss of the cross-beam and provided with a pair of lugs, radius bars having their lower ends pivoted to said lugs, a roller journaled between the upper ends of said bars, a yoke connected with the roller shaft or journals, and a chain or flexible connection leading from said yoke to a pump from which the accumulator cylinder is supplied with working fluid, substantially as described.

6. In a hydraulic accumulator, the combination with an inverted vertically movable cylinder, of a regulator mechanism actuated from said cylinder and comprising a swinging roller and a vertically movable wedge bar adapted to actuate said roller, and a chain or flexible connection for connecting said roller with a pump or engine from which the accumulator is supplied with working fluid, substantially as described.

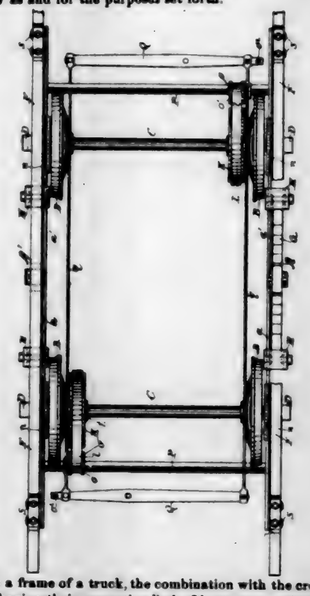
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**503,092.** TRUCK FOR MOTOR-CARS. GEORGE W. LACY, Kingston, N. Y., assignor, by mesne assignments, to Elmda Lacy, same place. Filed Nov. 3, 1892. Serial No. 451,301. (No model.)

*Claim.*—1. In a truck, the combination with the housings of the axle journals of the truck wheels of side frames A and A′ each containing within its length two diamond form trusses, located one at each pedestal in the frame and an X form truss located in the middle portion of each frame and between the said housings, the said frames being formed of the members described, arranged and secured together substantially as and for the purposes set forth.

2. In a truck, a side frame composed of bars *a a′* provided each with angular limbs 1 and 2, and crossing each other at the middle of the length of the frame, bars *b b′*, pedestals holding the housings of the axle journals and tie pieces *c c* the said members being secured together substantially as and for the purposes set forth.

3. In a truck, a side frame formed by the combination with the pedestals receiving the housings of the axle journals, of the bars *a a′* secured each to the upper portion of the web of a pedestal with one limb of each said bars extending, after crossing that of the other, to the inner horn of the other pedestal and secured thereto, with the other limbs of the same bars extended to the respective ends of the frame, and the bars *b b′* secured respectively to the outer horns of the pedestals and the outer end limbs of said bars *a a′* and all secured together by tie plates *c c* and rivets which are headed on both sides, substantially as and for the purposes set forth.



4. In a frame of a truck, the combination with the crossed members *a a′* having their respective limbs 2 bent at an angle with limbs 1 and extended each to the end of the frame, and the members *b b′* arranged each at an angle with the respective limbs 2 of the said members *a a′*, of the pedestals E E, the tie pieces *c c* and *d*, and rivets driven and headed red hot, and securing the said members and pedestals and tie pieces together, substantially as and for the purposes set forth.

5. In a frame of a truck, the combination with the members *a a′* and *b b′* formed and arranged in relation to each other as above described, of pedestals E E made of tough metal described and provided with flanges *n n*, the tie pieces *c* and *d* also made of similar metal and provided with flanges *n′ n′*, and rivets which are headed while red hot, substantially as and for the purposes set forth.

6. In a truck, the combination with the side frames A A′ each composed of the members above described and containing within its length two diamond form trusses, one at each pedestal, and an X form truss midway between the said pedestals, and the horizontal bolster bars F F, of the equalizing springs between the said bolster bars and the portions of the said side frames between their pedestals, and the end springs between the end portions of the said bolster bar and ends of the side frames, substantially as and for the purposes set forth.

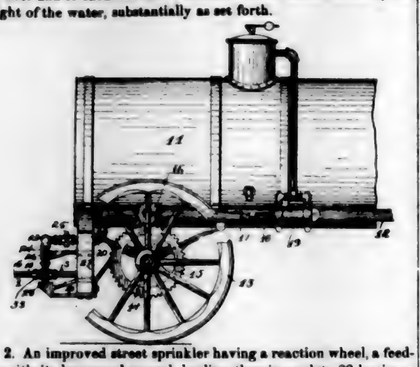
7. In a truck, the combination with the side frames A A′ each constructed of members as described, and containing at each pedestal a diamond form truss and having an X form truss midway between the said pedestals, the bolster bars F F, equalizing springs G and end springs S S, of the vertical pins U U and their coacting sleeves U′ U′ secured to said bolster bars and frames, substantially as and for the purposes set forth.

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**503,093.** STREET-SPRINKLER. GOTTHOLD LANGER, St. Louis, Mo., assignor to Henry G. Stiebel, Jr., same place. Filed Nov. 3, 1892. Serial No. 451,251. (No model.)

*Claim.*—1. An improved street sprinkler having a reaction wheel, comprising a number of radially projecting curvilinear chambers, formed by walls curving from points near the center of said wheel, spouts terminating said chambers, and a feed pipe inserted into the center of the lid of said wheel, said pipe giving a curved entrance to the water in order that it will strike the inwardly projecting wall of a chamber and of each successive chamber as the wheels rotate by the weight of the water, substantially as set forth.



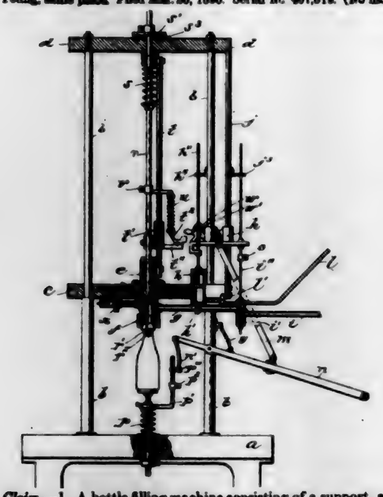


2. An improved street sprinkler having a reaction wheel, a feed-pipe with its lower end curved, leading therein, a plate 32 having a projecting portion 37, said annular projection 37 exteriorly screw-threaded, said projection provided with an interior bore 38 and having a downwardly inclined face 39, a rim or shell 40 adapted to fit over the pipe 24 packing interposed between the portion 37 and the rim or shell 40, and a gland 42 interiorly screw-threaded adapted to be placed over the pipe 24 and screwed down upon the shell 40 to compress the packing located between the face 39 of the counter-bore 38 and the lower face of the shell 40, substantially as set forth.

3. An improved street sprinkler having a reaction wheel 1 provided with projections 4, a pipe 24 having its lower end 36 curved, a brace 26 secured to the wagon and adapted to support said pipe in a vertical position, a plate 33 secured to the lower side of said wheel 1 and having a downwardly-projecting bearing 34, a casting 29 secured to the wagon and provided with a bearing socket 35 in which is journaled the bearing 34, a plate 32 secured to the upper side of the wheel, and bolts passing through said plates 32 and 33 and the projections 4 of the wheel; substantially as set forth.

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**503,094.** BOTTLING-MACHINE. CARL F. MACK, York, Pa.; REBECCA M. Stough, guardian of said Mack, assignor of one-half to Charles P. Young, same place. Filed Mar. 23, 1893. Serial No. 467,319. (No model.)



*Claim.*—1. A bottle filling machine consisting of a support, a cylinder mounted thereon, means for holding the head of a bottle in one end of the cylinder, means connected to the cylinder for charging the bottle, a reciprocating rod, one of its ends passing through the cylinder and into the bottle and adapted to carry a stopper therein, a reciprocating slide, means connected to this slide whereby the charging mechanism is operated on one stroke of said slide, devices connected to said slide for automatically engaging the stopper-carrying rod whereby said rod is operated and the bottle corked on the reverse movement of the slide, and means for operating this slide, substantially as described.

2. A bottle filling machine consisting of a support, a vertical cylinder mounted thereon, means for holding the head of the bottle in the lower end thereof, means for charging the bottle connected to this cylinder, a vertically moving rod supported by the frame, its lower end passing through the cylinder into the bottle and adapted to carry a stopper therein, a vertically reciprocating slide carried by the frame, said slide operating the bottle charging mechanism on its downward stroke, and raising the stopper carrying rod on its upward stroke, and trip mechanism connected to the rod, whereby it is automatically released from the slide when the bottle is corked; substantially as described.

3. A bottle filling machine consisting of a support, a vertical charging cylinder supported thereon, a spring controlled bottle support for forcing the head of the bottle into the lower end of the cylinder, a vertically moving rod constructed as described and adapted to carry a stopper at its lower end within the bottle, a vertically moving slide carried by the frame, said slide operating to raise the stopper carrying rod, trip mechanism connected to said rod whereby it is automatically released when the bottle is corked, and devices connecting the slide and the bottle support whereby the bottle is released from the cylinder simultaneously with the release of the stopper carrying rod, substantially as described.

4. A bottle filling machine consisting of a support, a cylinder *c*, a bottle support, charging mechanism connected to the cylinder, a stopper-carrying rod *r* its lower end extending into the bottle and adapted to carry a stopper therein, a slide *k* carried by the frame, said slide on its upward movement raising the stopper carrying rod, tripping mechanism connected to and carried by said rod, said trip mechanism consisting of a pivoted two-armed lever, one arm of which is engaged by devices carried by the slide, its other arm being connected to a spring which is carried by the rod, substantially as described and for the purpose set forth.

5. A bottle filling machine consisting of a support, a charging cylinder, as *c*, a spring supported bottle support, charging mechanism connected to the cylinder *c*, the stopper carrying rod *r*, the cross-head or slide *k*, said slide operating the charging mechanism on its downward stroke, trip mechanism carried by the stopper carrying rod and operated on by devices carried by the slide *k*, a lever pivoted on the frame and connected on one side of its pivot to the slide *k* and on the other side thereof to the bottle support, whereby on the downward stroke of said lever the charging mechanism will be operated, and on its upward stroke the bottle corking mechanism, and simultaneously with the release of the stopper-carrying rod, the bottle support will be depressed, substantially as described.

6. A bottle filling machine consisting of a supporting frame, cylinder *c*, a bottle support, a corking device, charging mechanism connected to the cylinder *c*, said mechanism consisting of pipe *g*, a pipe *i* connected thereto, a valve *i′* placed at the connection of said pipes, the stem of this valve extending upwardly and carrying an adjustable stop, a sirup pump connected to pipe *g* between valve *i′* and cylinder *c*, a cross head or slide mounted in the frame, said slide being connected to the piston of the pump, and adapted to strike the stop on the stem of the valve *i′*, and means for reciprocating said slide, substantially as described.

7. A bottle filling machine consisting of a supporting frame, a charging cylinder, and charging mechanism connected thereto, a bottle support, the stopper carrying rod *r*, a vertically reciprocating cross-head mounted in the frame, tripping mechanism carried by the rod *r* and the cross-head, said mechanism consisting of the lever *w* carried by the cross-head the lever *f*⁸ carried by the rod *r*, and the spring *u* connected to the lever *f*⁸ and to the rod *r*, substantially as described and for the purpose set forth.

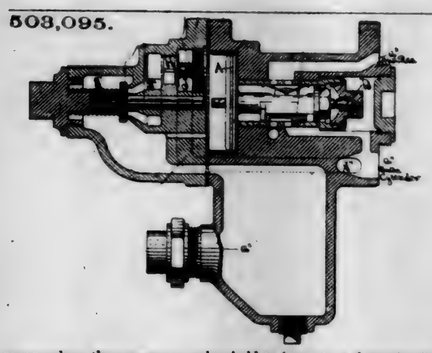
8. A bottle filling machine consisting of a supporting frame, a charging cylinder mounted therein, and charging mechanism connected to said cylinder, a bottle support, a stopper carrying rod, its lower end extending into the bottle and carrying a stopper therein, a vertically reciprocating slide, said slide operating the charging mechanism on its downward stroke and raising the stopper carrying rod on its upward stroke, and yielding trip mechanism connected to said rod and operated by the slide whereby when the stopper has been drawn into the neck of the bottle and the bottle is corked, the trip mechanism will yield to the resistance caused by said stopper in the neck of the bottle and release the stopper carrying rod substantially as described.

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**503,095.** TRIPLE VALVE FOR BRAKE SYSTEMS. ALBERT P. MASSEY, Watertown, N. Y. Filed Apr. 29, 1892. Serial No. 431,122. (No model.)

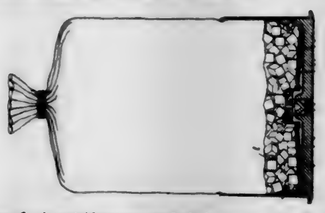
*Claim.*—In a quick action triple valve the combination of a chambered partition between the triple valve piston and the cover

503,095.



gency valve; the emergency valve held to its seat on the train pipe side of that partition, by train pipe pressure; the stem of the emergency valve extending through the partition, and in the path of the triple valve piston; the triple valve piston; and ports connecting the chamber in the partition on one side with the train pipe, and on the other side with the brake cylinder; all the parts being arranged to operate substantially as and for the purpose specified.

503,096. CARTRIDGE. FREDERIK MOER, Magdeburg, Germany, assignor to the Grusonwerk, same place. Filed Feb. 21, 1893. Serial No. 460,679. (No model.) Patented in Germany Apr. 29, 1892, No. 71,433, and in Belgium Sept. 7, 1892, No. 101,355.



*Claim.*—1. A cartridge composed of a bag containing the charge, and a metallic case; the case being formed with a shoulder extending inwardly from its outer cylindrical wall and the bag being provided with the attaching disk which engages said shoulder, as and for the purpose set forth.

2. In a cartridge, the combination of a metallic shell having a shoulder extending transversely within it, and a bag containing the charge, and provided with an elastic flexible attaching disk, arranged to be compressed in forcing past the shoulder and to then expand behind it to unite the parts of the cartridge, as explained.

3. A cartridge, consisting of the metallic case, formed with the inner transverse shoulder, and a bag containing the charge provided with the attaching disk, concaved to make it elastic at the edge whereby it is adapted to be forced past the shoulder and expand to engage behind the shoulder, as explained.

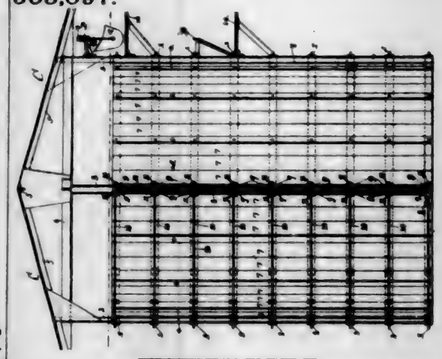
4. In a cartridge, the combination of the metallic shell having the inner transverse shoulder, and the charge-bag having the attaching disk, concaved for operation as explained and supplemented by the reinforce disk, all substantially as and for the purpose set forth.

503,097. POCKET OR BIN FOR THE STORAGE OF COAL, GRAIN, &c. THOMAS E. MURRAY, Albany, N. Y., assignor of one-half to William McEwan, same place. Filed Dec. 7, 1892. Serial No. 454,367. (No model.)

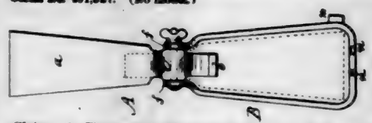
*Claim.*—1. The combination of a series of cylindrical bins arranged in a continuous line, a loading-scaffold, a continuous scaffold running along one side of the series of bins, and a track arranged above said scaffold and running in a corresponding direction to the latter, as and for the purpose herein specified.

2. A cylindrical pocket or bin divided into two equal compartments by means of a diametrically-arranged partition which practically extends to the top of said bin and is stayed by means of metallic braces which connect with one side of said bin and to said partition, and a roof arranged over the top of said bin to leave a clear space between the top of the bin and the roof to allow the dumping of coal or other material into said compartments; the upper end of the latter being open to the atmosphere, as and for the purpose herein specified.

503,097.



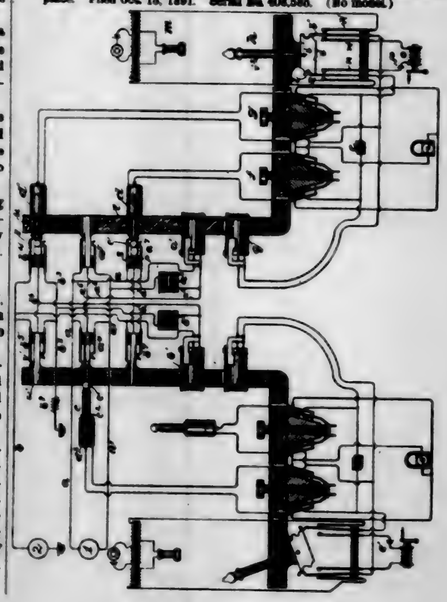
503,098. PUTTY-KNIFE. JAMES M. NEWTON, Dansville, N. Y., assignor of one-half to Wiley R. Newton, same place. Filed Feb. 8, 1893. Serial No. 461,527. (No model.)



*Claim.*—1. The putty knife hereinbefore described, consisting of the knife A and loop-shaped handle B, provided with knuckles having serrations which fit together, and a tightening bolt for clamping the knuckles, whereby the knife can be set at an angle to the handle, as herein shown and described.

2. The putty knife, consisting of a blade having an integral chisel at the opposite end, said blade being adapted to be set and locked at different angles with respect to the handle, the handle consisting of a loop approximating the shape of the blade, and a clamping screw securing said parts together, the whole so arranged that the blade can be turned into and inclosed by the handle, as herein shown and described.

503,099. MULTIPLE-SWITCHBOARD SYSTEM. CHARLES E. SCRIBNER, Chicago, Ill., assignor to the Western Electric Company, same place. Filed Oct. 13, 1891. Serial No. 408,586. (No model.)





*Claim.*—1. The combination of the spring jack having two line springs of different lengths and a frame insulated from the line springs with a plug having two contact pieces, one adapted to make contact with one of the line springs, and the other to make contact with both the other line spring and the frame of the jack, substantially in the manner and for the purpose specified.

2. In combination telephone lines extending from a substation, connected together through a retardation coil and an annunciator and connected one line wire to corresponding line springs of several spring jacks, and the other line wire to the remaining line springs of the same spring jacks, a plug provided with two contact pieces one of which is adapted to make contact with one of the line springs of a jack, and the other to make contact with both the other line spring and the frame of the jack, and a connection extending from the frames of the jacks to a point of the branch connection joining the two lines intermediate between the retardation coil and the annunciator, whereby the annunciator is short circuited when the plug is thrust into a jack, substantially in the manner and for the purpose specified.

3. In combination two connecting plugs each having two contact pieces, corresponding contact pieces being electrically connected one pair directly and the other pair through a condenser, keys adapted to disconnect both contact pieces of either plug from the corresponding contact pieces of the other and to connect them to the poles of a calling generator, an annunciator in a branch circuit between the two contact pieces of the plugs, a key capable of being placed in three positions, and provided with contacts adapted when in one of its positions to connect the telephone set in a branch circuit between the two pairs of corresponding contact pieces, and when in another position to connect the test battery and a low resistance electro magnetic signaling device in a similar branch circuit, and when in its intermediate position to disconnect both the telephone set and battery and sounder from the pairs of corresponding contact pieces, substantially in the manner and for the purpose specified.

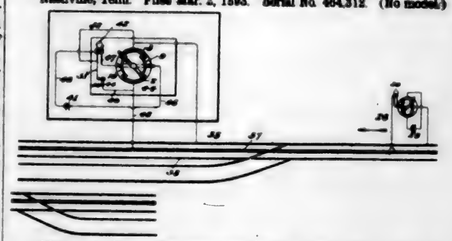
4. In combination telephone lines extending from two substations, each pair of line wires being connected one to similar line springs of several spring jacks and the other to the remaining line springs of the same spring jacks, and being connected together through a retardation coil and an annunciator, and having a branch circuit extending from a point intermediate between the annunciator and the retardation coil to the frames of the several spring jacks of its own line, two connecting plugs one in a spring jack of each of the telephone lines, each plug being provided with two contacts, one of which engages with one of the line springs of the jack into which it is thrust, and the other of which engages with both the other line spring and the frame of the same jack, whereby a short circuit is completed around the annunciator of that line, conductors connecting corresponding contact pieces of the two plugs and a clearing out annunciator in a branch circuit between the conductors, substantially in the manner and for the purpose specified.

5. In combination telephone lines extending from two substations, each pair of line wires being connected one to similar line springs of several spring jacks, and the other to the remaining line springs of the same spring jacks, and being connected together through a retardation coil and an annunciator, and having a branch circuit extending from a point intermediate between the annunciator and the retardation coil to the frames of the several spring jacks of its own line, two connecting plugs one in a spring jack of each of the telephone lines, each plug being provided with two contacts, one of which engages with one of the line springs of the jack into which it is thrust, and the other of which engages with both the other line spring and the frame of the same jack, whereby a short circuit is completed around the annunciator of that line, conductors connecting corresponding contact pieces of the two plugs, a test battery and an electro magnetic signaling device in the branch circuit between the two conductors joining the corresponding contact pieces of the loop plugs, and a key adapted to disconnect the branch circuit containing the signaling device and the test battery from the conductors, substantially in the manner and for the purpose specified.

6. In a test circuit for multiple switch boards, in combination, a spring jack furnished with a line spring and a frame insulated therefrom, a plug provided with a contact piece, making contact with both the line spring and the frame of the jack, a second spring jack having a similar line spring electrically connected to the line spring of the first spring jack and a frame electrically connected to the frame of the first spring jack, a loop plug having two contact pieces, one of which makes contact with the line spring and the other with the frame of the second spring jack, and a test battery and an electro magnetic signaling device included in a branch circuit between the two contact pieces of the second plug, substantially as and for the purpose specified.

7. The combination, with a metallic circuit telephone line extending from a substation to a central station, of line terminals at the central station each having two contact pieces connected to the different sides of the line respectively, an electric indicator and a retardation coil included in a bridge between the two sides of the line, and contact pieces adapted to short-circuit the electric indicator when a connection is made to one of the line terminals, substantially as specified.

503,100. ELECTRICAL RAILWAY-SIGNAL. BENJAMIN C. SEATON, Nashville, Tenn. Filed Mar. 2, 1893. Serial No. 464,312. (No model.)



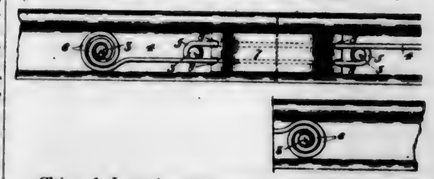
*Claim.*—1. In a railway train signaling system of the class described, the combination with a suitable insulated section or block of the track comprising track-rails and an insulated sectional track circuit; of two or more locomotives severally equipped with a source of electricity, a traveling contact-device in electrical connection with the said track circuit, an annunciator, and a pole-changing controlling switch adapted to be operated to cut out the annunciator and battery in its locomotive and to complete the circuit through such locomotive for the battery current of the other locomotive on the same block or section; and suitable electrical connections, substantially as specified.

2. In a railway train signaling system of the class described, the combination with a suitably connected insulated block or section of track; of a locomotive traveling on said block or section and normally in electrical connection with the same; a source of electricity carried by said locomotive; an annunciator in circuit with said source of electricity; a pole-changing switch controlling said battery and capable of cutting out the annunciator and battery and establishing a complete circuit through said locomotive independent of the said battery and bell; another traveling vehicle included in the circuit and carrying a suitable source of electricity and annunciating apparatus and arranged to close the circuit through the locomotive when it enters a common block or section, and suitable electrical connections, substantially as specified.

3. In a railway signaling system of the class described, the combination with an insulated block or section of track suitably electrically connected with a station and with a traveling locomotive; of a locomotive provided with a source of electricity, an annunciator, suitable electrical connections, and a pole-changing switch capable of cutting out its battery and bell to complete an independent circuit through the locomotive; and a station equipped with a suitable source of electricity, an annunciator, a pole-changing switch, and a key included in a shunt loop; and suitable electrical connections, all arranged whereby reciprocal signaling is established between the said station and trains traveling in either direction toward the same, substantially as specified.

4. In a railway train signaling system of the class described, the combination with a controlling switch comprising a double set of pole-changing contacts adapted to be engaged by bridging contacts on the switch-lever and a set of short-circuit contacts also adapted to be bridged by the contacts of the switch-lever, of a source of electricity controlled by said switch, annunciating apparatus also controlled by said switch, and a circuit including another source of electricity and independent of the other source of electricity, substantially as specified.

503,101. ELECTRIC RAIL-BOND. BENJAMIN C. SEATON, Nashville, Tenn., assignor of one-half to William S. Barkley, Indianapolis, Ind. Filed Mar. 2, 1893. Serial No. 464,313. (No model.)



*Claim.*—1. In an electrical conducting rail joint, a bond or connection between the meeting ends of the rails, comprising a plurality of rods on each side of the rails and having their terminals severally connected to the bolts on opposite sides of the joints; the said rods on

each side of the rail being concealed and protected by the fish plates.

2. A bond or connector concealed and protected by the fish-plates and consisting of a plurality of rods connected to the bolts and having an elastic play of action.

3. A bond or connector consisting of overlapping connections having bent terminals engaging the bolts of both rails, and capable of a longitudinal movement or play.

4. A bond or connector concealed and protected by the fish plates and consisting of a series of conducting rods each having one end formed with a spring coil for engaging the outer bolt of one rail and the other end formed with a bend or hooks for engaging the inner bolt of the opposite rail.

5. A bond or connector concealed and protected by the fish plates and consisting of a series of rods having their outer ends severally engaging the rails and their inner ends overlapping and in contact and severally engaging the rails to form the circuit.

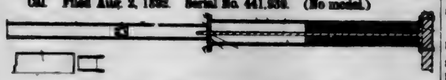
6. The combination with the rails, bolts, and fish plates of conducting rods having their outer ends severally connected to the outer bolts and their inner ends severally connected to the inner bolts, and the plate or plates bearing on the rods and all covered by the fish plates.

7. In a device of the class described, the combination with the adjacent ends of the rails; the fish plates and a plurality of nuts and bolts on each side of the rail joint; of a plurality of elastic connections, each spanning from an outer bolt on one side to an inner bolt on the opposite side and in electrical connection with both bolts.

8. In a device of the class described, the combination with the adjacent rail-ends; the fish plates; and a plurality of nuts and bolts on each side of the rail joint; of a plurality of connecting rods running from an outer bolt on one side to an inner bolt on the opposite side of the joint; said rods being mutually in contact at a plurality of points.

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**503,102. PIPE-MACHINE.** FRANCIS M. SPEED, San Francisco, Cal. Filed Aug. 2, 1892. Serial No. 441,930. (No model.)



*Claim.*—1. In a pipe-machine having a molding flask and a core operating axially, to compress and mold plastic material therein, a rod in the flask upon which the core is guided, substantially as herein described.

2. In a pipe-machine having a molding flask and a core operating axially to compress and mold plastic material therein, a rod in the flask upon which the core is guided, and an interior fixed guide within said core fitting over the rod, substantially as herein described.

3. In a pipe-machine having a molding flask and a core operating axially, to compress and mold plastic material therein, a movable plate in the base of the flask and a rod secured to said plate and passing through the flask, said rod forming both a guide for the core and a means for moving the plate to withdraw the pipe, substantially as herein described.

4. A pipe making machine consisting of the molding flask having the removable cover with vents, the reciprocating core operating through said cover into the flask, the movable plate in the base of the flask, the rod rising therefrom and passing through the base of the core, and the fixed guide within the core operating over the rod, substantially as herein described.

5. A pipe machine having a flask closed at the bottom and open at the top and having a removable flask top provided with a central aperture to receive the core; the removable plate arranged within the flask on the base of the flask and provided with an upwardly projecting guide rod extending to the top of the flask and adapted for withdrawing the plate and the molded pipe from the flask, and the core provided in its bottom with a suitable central hole to receive such rod, and provided within the core intermediate its length with a perforated guide of a conical or funnel shape arranged to receive and engage such guide rod to center the core within the flask when the core is forced downward into the flask.

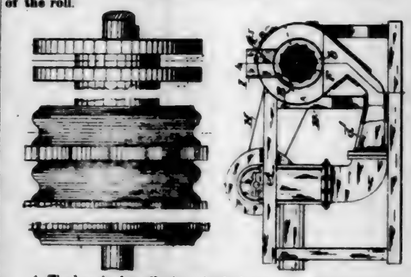
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**503,108. METHOD OF AND APPARATUS FOR DELINTING COTTON-SEED.** ABNER D. THOMAS, Little Rock, Ark., assignor to the Thomas Manufacturing Company, same place. Filed Feb. 13, 1893. Serial No. 462,109. (No model.)

*Claim.*—1. The herein described method of separating lint from seed which consists in forming the lint-bearing seed into an annular roll and then subjecting such roll internally to a rubbing or cutting action whereby the link is separated from the seed.

2. The herein described method of separating lint from seed which consists in forming the lint-bearing seed into an annular roll, revolving the same on its axis, and, while so moving, subjecting it internally to a rubbing or cutting action, whereby the lint is separated from the seed.

3. The herein described method of separating lint from seed which consists in forming the lint-bearing seed into an annular roll, revolving the same on its axis, and while so moving, subjecting it internally to a rubbing or cutting action, whereby the lint is separated from the seed, and discharging the separated lint at the external surface of the roll.



4. The herein described method of separating lint from seed which consists in forming the lint-bearing seed into an annular roll, revolving the same on its axis, and at the same time stirring the roll, and, while so moving it, subjecting the roll internally to a rubbing or cutting action, whereby the lint is separated from the seed, and discharging the separated lint at the external surface of the roll.

5. In a seed-delinter, the combination of a horizontally-arranged, rotating cylinder and an outer casing, said casing being perforated to provide an outlet for the separated lint and seed, and said cylinder having channeled and shouldered portions to effect the movement of the seed in the form of a roll and the separation of the lint therefrom, substantially as described.

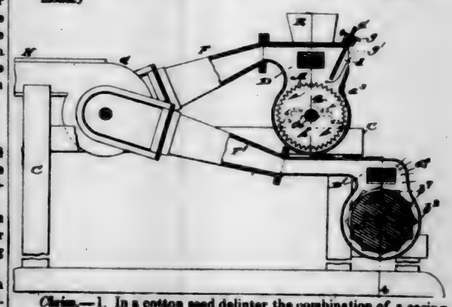
6. In a seed-delinter, the combination of a horizontally-arranged rotating cylinder and an outer-casing, said casing being constructed and arranged to provide for the formation of an annular roll of lint-bearing seed around said cylinder, and being perforated to provide an outlet for the separated lint and seed, and said cylinder having projecting portions to effect the rotation of said roll as described and having cutting or abrading surfaces to effect the separation of the lint from the seed.

7. In a seed-delinter the combination of a horizontally-arranged, rotating cylinder, an annular lint-bearing seed receptacle surrounding said cylinder, a lint-discharge flue without said seed receptacle and an air moving apparatus, said receptacle having an inlet for the lint-bearing seed and an outlet for the denuded seed, and its casing being perforated to provide an outlet for the separated lint, and said cylinder having projecting portions to effect the rotating of said roll as described and having cutting or abrading surfaces to effect the separation of the lint from the seed, substantially as described.

8. In a seed-delinter a horizontally arranged cylinder in combination with a surrounding, annular, seed receptacle, said cylinder having channeled surfaces for effecting the separation of the lint from the seed and having pointed or shouldered portions for effecting the rotation of the lint-bearing seed around said cylinder, said channeled portions being deeper at the seed-delivery end of the cylinder.

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**503,104. APPARATUS FOR DELINTING COTTON-SEED.** ABNER D. THOMAS, Little Rock, Ark., assignor to the Thomas Manufacturing Company, same place. Filed Mar. 6, 1893. Serial No. 464,650. (No model.)



*Claim.*—1. In a cotton seed delinter the combination of a casing having a cylindrical lower portion, a lint cutting cylinder adapted to revolve in said lower portion, said casing having an unobstructed chambered portion above said cylinder wherein the seed may be thoroughly agitated, an air-inlet in one side of said chamber, and a lint-outlet in the opposite side of said chamber, and means for producing a current of air from said air-inlet through the chamber to said outlet, substantially as described.

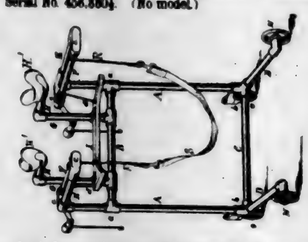
2. In a cotton seed delinter the combination of a revolving cylinder, a casing therefor having a free unobstructed chambered portion above said cylinder in which the seed is agitated, an air-inlet in one side of the chamber, a lint-outlet in the opposite side of the chamber, an outlet for the denuded seed, and means for producing a current of air through said chamber, whereby the lint is separated from the seed as the latter are agitated in the chamber, substantially as described.

3. In a cotton seed delinter the combination of a revolving cylinder, a casing therefor having an unobstructed chambered portion above said cylinder in which the seed is agitated, an air-inlet in one side of the chamber, a lint outlet in the opposite side of the chamber, an outlet for the denuded seed, means for producing a current of air through said chamber, and means for regulating said air current, whereby the lint is separated from the seed as the latter are agitated in the chamber, substantially as described.

4. The combination in a device for separating lint from cotton seed of a lint cutting or detaching device, and a separate means for abrading the seed connected thereto, whereby, as the longer lint is detached, the partly denuded seed is discharged into the abrading device, an exhaust or lint-conveying passage connected to each of said devices and separated from each other throughout, and means for producing a current of air through such passages, substantially as described.

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**503,105. LIFTING-MACHINE OR INVALID-LIFTER.** JOHN TIDSLEY, Brockton, Mass., assignor to the Mascotte Invalid Lifting Chair Company, New York, N. Y. Filed June 20, 1890. Renewed Dec. 31, 1892. Serial No. 456,580. (No model.)



*Claim.*—1. A frame, the arms E supported thereon, windlasses mounted on said arms, the lifting strap S having its ends connected with said windlasses, and the crutch heads H' on the frame, said parts being combined substantially as described.

2. A frame for supporting invalid lifting mechanism, consisting of vertical posts, feet extending from the base of the posts, and having side extensions forming heel and toes with rollers thereon, cross pieces connecting said vertical posts, and arms supported on the posts, said feet forming a base open on one side, adapted to admit a chair or other movable invalid support, said parts being combined substantially as described.

3. A frame with supporting arms E, windlasses mounted on said arms, the lifting straps S having an adjustable back and breast support guided in said frame, said strap and support being connected with the said windlasses so as to be simultaneously operated, substantially as described.

4. A frame with a base, windlasses mounted on the upper part of said frame, a lifting strap connected with said windlasses, an adjustable back and breast strap guided on said frame, and connected with said windlasses, and crutch heads supported on the frame, said parts being combined substantially as described, forming an improvement in devices for lifting helpless or invalid persons as stated.

5. A frame with a projecting base having a recess in the front thereof, a back and breast support guided on the said frame, and having mechanism for raising and lowering the same, said parts being combined substantially as described.

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**503,106. ARMATURE FOR DYNAMO-ELECTRIC MACHINES AND MOTORS.** SCHUYLER S. WHEELER, New York, N. Y., assignor to the Crocker Wheeler Electric Company, of New Jersey. Filed Apr. 24, 1893. Serial No. 471,676. (No model.)

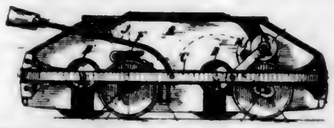
*Claim.*—1. An armature for electric motors and dynamos, the core of which is made up of two parts, each composed of laminations of unequal lengths of arc, the longer laminations overlapping the shorter ones at both ends, and the long and short laminations of one part being complementary in lengths of arc to the short and long laminations respectively of the other part, and reversed in position relatively thereto, so that the two parts fit together with a mortise joint and the laminations form complete rings when the parts are fitted together, substantially as described.



2. An armature for electric motors and dynamos, the core of which is made up of two parts, each composed of laminations having teeth, and of unequal lengths of arc, the longer laminations overlapping the shorter ones at both ends, and the long and short laminations of one part being complementary in lengths of arc to the short and long laminations respectively of the other parts, and reversed in position relatively thereto, so that the two parts fit together with a mortise joint, and the laminations form complete rings when the parts are fitted together, substantially as described.

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**503,107. CARPET-SWEEPER.** CHARLES O. ALLEN, Grand Rapids, Mich. Filed June 29, 1892. Serial No. 438,291. (No model.)



*Claim.*—1. In a carpet sweeper a rotary brush, a driving wheel journaled on a bearing, adapted to move away from the shaft of said brush on the back or return stroke, a rotatable shaft having teeth engaging said brush and journaled in a pivoted lever, connected to said movable bearing, substantially as described.

2. In a carpet sweeper a rotary brush, a driving wheel journaled on a bearing attached to one end of a spring, said spring also pivoted to the case to swing said bearing away from the brush shaft, a bell crank lever having a slotted opening in one arm, engaging said driving wheel bearing and rotating comb journaled in the other arm of said bell crank, and having a pulley engaging said driving wheel, substantially as described.

3. In a carpet sweeper a rotary brush, having pulleys at each end, drive wheels engaging said pulleys, and journaled on each end of a rod, springs attached to one end of said rod arranged both horizontally and vertically, and a spring attached to the other end of said rod arranged to swing away from said brush shaft on the backward stroke, and a rotating shaft having teeth engaging said brush, and journaled in a pivoted lever connected to the end of said rod last named, substantially as described.

4. In a carpet sweeper the combination of a divided case and two brushes arranged to operate in succession, dust pans at the same side of each brush, said pans pivoted at their sides adjacent to said brushes, and also opening in the same direction, and connected to open simultaneously, substantially as described.

5. In a carpet sweeper, the combination of the case, the driving wheels journaled on vertically movable bearings, and dust pans pivoted to and supported on said bearings of the driving wheels, substantially as described, whereby the pans will not descend with the case when the latter is lowered, as specified.

6. In a carpet sweeper, the combination of the case, a rod, flexible supports for said rod, said supports being attached to said case, driving wheels journaled on said rod, and a dust pan, pivoted upon said rod at one side and engaging the case at the other side, substantially as described and for the purpose specified.

7. In a carpet sweeper the combination of a rod passing through the case, driving wheels journaled on the ends of said rods, a dust pan and a wire attached to said pan, having a coil surrounding said rod, and an upwardly extending arm, engaging mechanism to open and close said pan, substantially as described.

8. In a carpet sweeper, parallel rods extending through the case, driving wheels journaled on said rods, dust pans having wires attached said wires having coils surrounding said rods and upwardly extended arms, and a slide arranged to move longitudinally and having loops engaging said arms, and a loop extending through the case, and engaging mechanism for holding said slide, substantially as described.

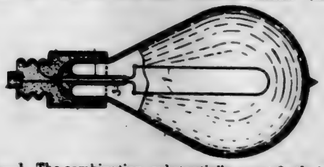
9. In a carpet sweeper, parallel rods having driving wheels journaled thereon, dust pans journaled on said rods and having upwardly projecting flexible arms, a wire arranged to move longitudinally having loops engaging said arms and a loop engaging a lever pivoted to the case at one end and engaging a catch or stop near the other end, substantially as described.

10. In a carpet sweeper, the combination of the case, a rod extending through said case, driving wheels journaled on the ends of said rod, a rotary brush having pulleys engaging the driving wheel, a bail having outwardly turned ends, and bars C secured to said case and having openings receiving and forming bearings for the journals of said brush shaft and bail arms, said bars also having flanges engaging the hubs of said driving wheels and against which the ends of said rod abut, substantially as described, whereby the parts may be removed simply by detaching said bars, as specified.

11. In a carpet sweeper in combination with a brush shaft having end bearings, a rod extending through the case, driving wheels journaled on the ends of said rod, and a rotary comb journaled in one arm of a bell crank, the other arm of which engages said rod, guard bars detachably secured to the case, having bearings for the brush shaft, and abutting against the ends of said rods and the hubs of said wheels, and having said bell crank pivoted thereto, substantially as described.

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**503,108. INCANDESCENT ELECTRIC LAMP.** JAMES H. BATES, Hoboken, N. J. Filed Jan. 19, 1893. Serial No. 458,859. (No model.)



*Claim.*—1. The combination, substantially as set forth, in an incandescent lamp, of a bulb provided with an inward tapering neck, a tapered collar fitting in said neck, a solid tapered plug fitting in said collar, a packing of paraffine or equivalent material surrounding the collar and the plug, and the terminals of the filament extending through the plug.

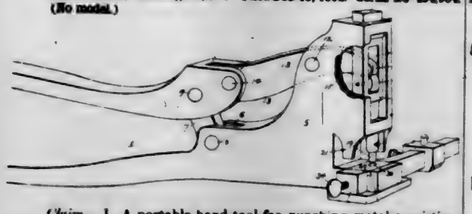
2. The combination, substantially as set forth, of a lamp bulb provided with a neck tapering inward, a tapered collar fitting therein, a solid tapered plug fitting in the collar, and carrying the leading-in wires, a packing of paraffine or equivalent material surrounding the plug and the collar, and a lamp base secured to the neck of the bulb.

3. The combination, substantially as set forth, of a bulb provided with an open neck, a collar fitting in said neck, a solid tapered plug and filament terminals carried by and passing through the plug fitting into the collar, both collar and plug being held in place by the outside atmospheric pressure.

4. The combination, substantially as set forth, of a lamp bulb provided with an open neck tapered inward, a tapered collar fitting said neck, a solid tapered plug fitting said collar, the collar and plug being adapted to form an air-tight closure for the hub, and a base secured to the neck of the bulb.

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**503,109. PORTABLE HAND-PUNCH.** ROBERT DAVIS and WILLIAM BUTLER, Washington, D. C. Filed Dec. 13, 1892. Serial No. 454,994. (No model.)



*Claim.*—1. A portable hand tool for punching metal consisting of a pair of handles rockingly pivoted together by link connection, a plunger-head, plunger and punch carried by the lower of said handles, a die having removable seat bearing in said lower handle, a gage-carrying bar adapted to be clamped to said lower handle, a pin gage having adjustable bearing upon said bar and a pivoted lever connecting the upper handle and the plunger, substantially as and for the purpose set forth.

2. A portable hand punch for punching metals, consisting of a pair of handles having hand-grasps and link-pivot connection, the lower of said handles having an upwardly and forwardly-extending slotted offset, a plunger having guide-bearings within said offset, a punch removably secured to said plunger, a roller journaled within said plunger, a lever connecting with the upper of said handles and having pivotal bearing within said offset and loose bearing upon said roller, a slotted die having removable seating within a recess in the front end of the lower handle, a gage-carrying bar adapted to clamp said die in position and a gage slide having an upwardly extending gage-pin and adapted to be adjustably held in position upon said gage-carrying bar, substantially as and for the purpose set forth.

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**503,110. SEAL.** WILLIAM G. DENNEY, South St. Paul, Minn. Filed Sept. 6, 1892. Serial No. 445,170. (No model.)



*Claim.*—1. In a seal, in combination with a locket having a locking chamber, a shackle formed of wire or strip having a latch to enter the latter, and covering by the motion of the wire or strip adjacent to the latch the opening into the chamber from the outside of the locket, substantially as and for the purpose specified.

2. In a seal, in combination with a chambered locket having internal locking shoulders, a shackle formed of metal wire or strip comprising two connected side pieces from each of which projects a latch to enter the locket, and each being stiff, and covering the latch entering opening of the locket, substantially as and for the purpose set forth.

3. In a seal, in combination with a locket having a locking chamber a shackle formed of metal wire or strip having a straight side piece from which projects a latch to enter such chamber, formed by bending the end of the wire or strip so as to have an inward, an upward and an outward extension thereby enabling said side piece to cover the chamber opening when the latch is therein, substantially as and for the purpose shown.

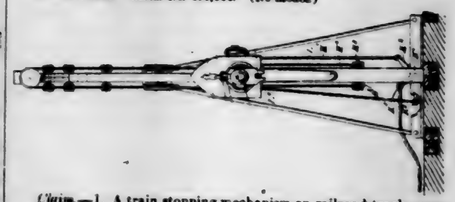
4. In a seal, in combination with a locket having two horizontally disposed chambers separated at their inner ends by a wall or partition, and having each a locking shoulder, a shackle having a latch to enter each chamber and engage its shoulder, substantially as and for the purpose specified.

5. In a seal, in combination with a locket having two horizontally disposed chambers separated at their inner ends by a wall or partition, and having each a locking shoulder, a shackle formed of metal wire or strip having two connected straight side pieces from the end of each of which projects a latch to enter one of said chambers, such latch being made by bending the wire or strip so as to have an inward, an upward and an outward extension, which lie in the same plane as the side piece, thereby enabling it to cover the open end of the locket chamber when the latch is therein, substantially as and for the purpose set forth.

6. As a new article of manufacture, a seal locket provided with a locking chamber to receive and engage a shackle latch, and made of friable material, and having all of its surface, adjacent to the latch inclosing portion, lined or corrugated, to prevent undetected access to the latch by the removal of portions of the locket, substantially as and for the purpose shown.

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**503,111. TRAIN-STOPPING MECHANISM FOR RAILROAD-TRACKS.** JOHN B. GROSS, Hoboken, N. J. Original application filed Nov. 22, 1892, Serial No. 452,792. Divided and this application filed Jan. 11, 1893. Serial No. 458,066. (No model.)



*Claim.*—1. A train stopping mechanism on railroad tracks comprising an arm mounted to swing and adapted to move into the path of an obstruction on the locomotive or train, a bracket erected on the railroad ties and carrying the said arm, a drum connected with the shaft of the said arm and adapted to be revolved when the arm is moved by an obstruction on the locomotive or train, and means for connecting the drum shaft with the switch or draw, substantially as shown and described.

2. A train stopping mechanism on railroad tracks comprising an arm mounted to swing and adapted to move into the path of an obstruction on the locomotive or train, a bracket erected on the railroad ties and carrying the said arm, a drum connected with the shaft of the said arm and adapted to be revolved when the arm is moved by an obstruction on the locomotive or train, means for connecting the drum shaft with the switch or draw, a pivoted pointer, a pin for locking the pointer in a fixed position, and means substantially as described, for imparting a swinging motion to the said pointer from the drum to shear off the said pin, substantially as shown and described.

3. In a train stopping mechanism on railroad tracks, the combination with an arm mounted to swing and carrying on its shaft a pulley, of a rope connected with the said pulley, a drum connected with the said rope so that when the drum is turned one strand of the rope is wound up and the other unwound to shift the said arm, means for connecting the drum shaft with the switch or draw, a hand lever pivoted on a sleeve held loosely on the drum shaft, and a fixed collar on the said drum shaft and adapted to be engaged by a lug on the said lever, substantially as shown and described.

4. In a train stopping mechanism on railroad tracks, the combination with an arm mounted to swing and carrying on its shaft a pulley, of a rope connected with the said pulley, a drum connected with the said rope so that when the drum is turned one strand of the rope is wound up and the other unwound to shift the said arm, means for connecting the drum shaft with the switch or draw, a hand lever pivoted on a sleeve held loosely on the drum shaft, a fixed collar on the said drum shaft and adapted to be engaged by a lug on the said lever, and a pointer adapted to be actuated by the said fixed collar when the latter is turned, substantially as shown and described.

5. In a train stopping mechanism on railroad tracks, the combination with an arm mounted to swing and carrying on its shaft a pulley, of a rope connected with the said pulley, a drum connected with the said rope so that when the drum is turned one strand of the rope is wound up and the other unwound to shift the said arm, means for connecting the drum shaft with the switch or draw, a hand lever pivoted on a sleeve held loosely on the drum shaft, a fixed collar on the said drum shaft and adapted to be engaged by a lug on the said lever, a pointer for indicating the direction of the moving train, a cam held on the shaft of the said pointer, and a pin held on the flange of the said drum to actuate the said cam, substantially as shown and described.

6. In a train stopping mechanism on railroad tracks, the combination with an arm mounted to swing and carrying on its shaft a pulley, of a rope connected with the said pulley, a drum connected with the said rope so that when the drum is turned one strand of the rope is wound up and the other unwound to shift the said arm, means for connecting the drum shaft with the switch or draw, a hand lever pivoted on a sleeve held loosely on the drum shaft, a fixed collar on the said drum shaft and adapted to be engaged by a lug on the said lever, a pointer adapted to be actuated by the said fixed collar when the latter is turned, and a pin for connecting the said pointer with the said collar or sleeve carrying the hand lever, the said pin being adapted to be sheared off by the pointer, substantially as shown and described.

7. In a train stopping mechanism, the combination with a housing, of a drum shaft carrying a drum and journaled in the said housing, a collar held loosely on the said shaft, a hand lever pivoted on the said collar and adapted to be locked to the said housing, a pointer pivoted on the said collar and adapted to be locked thereto by a pin, and a second collar fixed to the said drum shaft and adapted to engage and impart a swinging motion to the said pointer to shear off the said pin, substantially as shown and described.

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**503,112. BRAKE FOR VELOCIPEDES.** GEORGE HANCOCK, Providence, R. I. Filed June 20, 1892. Serial No. 437,377. (No model.)



*Claim.*—The combination with the rubber tire, of the grooved brake roller, the friction spring adapted to bear against the periphery of the roller, and the adjusting screw, substantially as described.





**503,118. BAG-FASTENER.** ADOLPH OPPERLON, Richmond, Va., assignor to Yeamans Smith Marriott, Baltimore, Md. Files Oct. 17, 1892. Serial No. 449,062. (No model.)

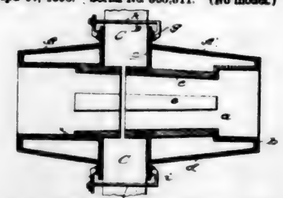


*Claim.*—1. A bag, the mouth whereof is provided with two wire bails as A, B, hinged together so as to open or close the same, said bails having integral engaging fastenings formed by bending or shaping the bail itself, substantially as described.

2. A bag mouth controlling device consisting of a pair of wire bails hinged together so as to move to and from each other, which bails are provided with integral fastenings for engaging and locking them together, which consist of loops, hooks or projections bent or shaped out of the bail itself, substantially as described.

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**503,114. WHEEL-HUB.** JESSE G. ROBERSON, Cincinnati, Ohio. Filed Sept. 17, 1890. Serial No. 365,311. (No model.)



*Claim.*—1. In a wheel hub, the combination with two sections having the flanges *c*, provided with depressions or seats on their outer sides: of the connecting links D, respectively comprising the bolt A, having one of its ends threaded and having an angular branch at its opposite end provided with a knob or enlargement for engaging the depression or seat of the flange, the arm loosely mounted upon the threaded end of the bolt and also having a knob or enlargement, and a nut securing said arm upon the bolt, substantially as and for the purpose set forth.

2. In a wheel hub, the combination of the sections A, A′, respectively comprising the sleeve *a*, the end wall *b*, and the peripheral flange *c*, formed in one piece, and the covering sleeve or collar *d*, detachably connected to the end wall *b*, and a suitable means for connecting the said sections together, substantially as specified.

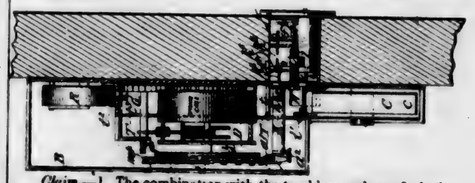
3. In a wheel hub, the combination with the sections A, A′, respectively comprising the sleeve *a*, the end wall *b*, the peripheral flange *c*, having the depressions or seats upon its outer side and the covering sleeve or collar *d*, detachably connected to the end walls *b*, of the links for connecting the said sections, comprising the bolt having the angular branch adapted to engage the seat or depression in the flange of one section, the arm mounted on the bolt and adapted to engage the seat or depression in the flange of the other section, and a suitable means for securing said arm in position, substantially as specified.

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# REISSUES.

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**11,355. TIME-LOCK.** EDWIN S PERLEE, Leavenworth, Kans. Filed Apr. 19, 1893. Serial No. 471,043. Original No. 486,603, dated Nov. 22, 1892.



*Claim.*—1. The combination with the tumblers or dogs of a lock, of a clock mechanism for moving one or more of the tumblers or dogs to allow the use of different keys during different periods of time, substantially as described.

2. In a device of the class described, the combination of a key hub guarded by tumblers with a clock mechanism for raising one or more of said tumblers to allow the use of different keys during the different periods of time and the bolt operated by the said hub, substantially as described.

3. In a locking device the combination of a key hub guarded by tumblers, the bolt operated by the said hub, the moving dial, the extension arms carried by the said dial, and the intermediate mechanism connecting the said arms with the said tumblers, substantially as described.

4. In a locking device, the combination with tumblers or dogs, of a moving dial, extension arms carried by the said dial, and intermediate mechanism connecting the said arms with one or more of said tumblers or dogs, substantially as described.

5. In a locking device the combination of the key hub guarded by tumblers, the bolt operated by the said hub, the clock mechanism for raising or lowering one or more of the said tumblers and the recording mechanism to register the turning of the said hub, substantially as described.

6. In a locking device the combination with the tumblers or dogs and a bolt, of mechanism for moving one or more of the tumblers or dogs, and recording mechanism to register the movement of the bolt, substantially as described.

7. In a locking device the combination with mechanism permitting the unlocking of the device at a predetermined time by the use of one key and its unlocking at any time by a master key, of a registering device recording the time when the device is unlocked, substantially as described.

8. In a locking device the combination with a bolt and tumblers or dogs which must be operated to permit the movement of the bolt, of a time mechanism and registering mechanism for recording and indicating the time when the bolt is moved, substantially as described.

9. In a locking device the combination of the casing, the key-hub journaled therein, the bolt operated by the said hub, the tumblers seated in the said casing, the arm engaging with one or more of the said tumblers, and the mechanism for moving the said arm to raise or lower the said tumbler or tumblers, substantially as described.

10. In a locking device the combination of the casing, the key-hub journaled therein, the bolt operated by the said hub, the tumblers seated in the said casing to lock the hub relatively thereto, the rotatable disk mounted on the casing, the arm carried by the disk and engaging with one or more of the said tumblers, the shaft connected with the said disk, the arm attached to the front end of the said shaft, the moving dial plate, the extension arms secured thereon and adapted to bear against when extended the arm connected with the shaft, substantially as described.

11. In a locking device the combination of the casing, the key-hub journaled therein, the bolt operated by the said hub, the tumblers seated in the said casing to lock the hub relatively thereto, the disk rotatably mounted on the casing, the arm carried by the disk and engaging with one or more of the said tumblers, the shaft connected with the said disk, mechanism for partly rotating the said shaft, the segment mounted on the said shaft, having cam faces, and the spring adapted to press upon the cam, substantially as described.

12. In a locking device the combination of the lock proper consisting, essentially, of a bolt and a dog for moving the same, the said dog having a rack formed on its upper edge, and the rotatable lantern gear meshing with the said rack, substantially as described.

13. In a locking device the combination of the lock proper consisting, essentially, of a bolt and a dog for moving the latter, the said dog having a rack formed on its upper edge, the lantern gear meshing with the said rack, the key-hub, and the shaft connecting the said hub with the lantern gear, substantially as described.

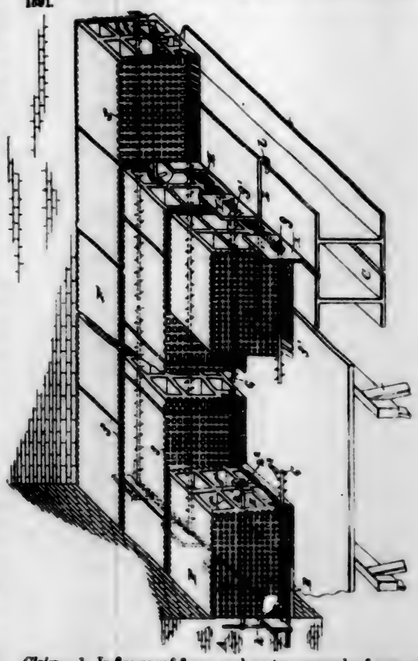
14. In a locking device, the combination of the lock proper consisting essentially, of a bolt and a dog for moving the latter, the said dog having a rack formed on its upper edge, the rotatable lantern gear meshing with the said rack, the key-hub provided with arms to operate the said dog to disengage it from the lantern gear, substantially as described.

15. In a locking device the combination of the lock proper consisting, essentially, of a bolt and a dog for moving the same, the said dog having a rack formed on its upper edge, the lantern gear meshing with the said rack, the key hub, the shaft carrying the said lantern gear, the inner ends of the said shaft and key hub having diametrical slots, and the plate with its ends seated in the said slots, substantially as described.

16. In a locking device, the combination of the lantern gear, adapted to be rotated by the key-hub, the pin eccentrically mounted on the outer end thereof, the lever engaging with the said pin at its lower end and having a punch attached to its upper end, the tape roll, the guide, and the guide rolls, substantially as described.

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**11,856. FIREPROOF FLOOR.** THOMAS A. LEE, New York, N. Y., assignor to the Lee Fire Proof Construction Company, of Colorado. Filed June 3, 1893. Serial No. 476,545. Original No. 461,029, dated Oct. 13, 1891.



*Claim.*—1. In fire-proof floors and roofs composed of separate courses of hollow floor-blocks in contiguity, having a cavity in the base of each block and extending the length of and registering with each other in each course, the combination of a tension-rod cemented within the said registering cavities of a course of said blocks and a link connecting the said course of blocks with each other, substantially as described.

2. In fire proof floors and roofs composed of separate courses of hollow floor-blocks in contiguity, having a cavity in the base of each block and registering with each other, the combination of a tension-rod cemented within the said registering cavities of adjacent courses of said blocks and a vertical dowel uniting the courses, substantially as described.

3. In fire proof floors and roofs composed of separate courses of hollow floor-blocks having registering cavities in the base of the blocks extending the length of each course, the combination of two adjacent courses having meeting cavities, and a tension-rod cemented within the said meeting cavities, substantially as, and for the purposes, described.

4. In combination in a floor or roof, hollow floor blocks cemented together and tension-rods cemented in the base of the said floor, the upper parts of the said cemented floor-blocks forming the compression resisting portion of the floor, and the said cemented tension-rods forming with the base of the floor the tension resisting portion united and parallel with but separated from the said compression resisting portion by the hollows and walls of the said blocks, substantially as, and for the purposes, set forth.

5. In fire-proof floors and roofs composed of courses of floor blocks in contiguity, one or more tension-rods cemented within the base of the said floor or roof, and a vertical dowel uniting the courses, substantially as, and for the purposes, set forth.

6. In a fire-proof floor or roof composed of courses of floor blocks in contiguity, one or more tension-rods cemented within the base of the said floor or roof, and one or more metal links connecting the said blocks and rods with each other transversely, substantially as, and for the purposes, set forth.

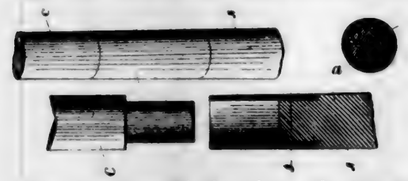
7. In a floor or roof, hollow floor blocks cemented together and tension rods formed with irregular surface to insure better grasp for the cement and cemented in the base of the said floor to increase its tension resisting strength, whereby the use of I-beams, trussing, or other transverse support, is obviated, the upper parts of the said floor-blocks forming the compression resisting portion of the floor,



and the said tension-rods with the base of the floor forming the tension resisting portion, united and parallel with, but separated from, said compression resisting portion by the hollows and walls of the said block, substantially as and for the purposes, set forth.

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**11,857. FERRULE.** FREDERICK LATULIP, Syracuse, N. Y., assignor to the Syracuse Specialty Manufacturing Company, of New York. Filed June 17, 1893. Serial No. 478,019. Original No. 467,979, dated Feb. 2, 1892.




*Claim.*—1. As a new article of manufacture, a ferrule, composed of rawhide wound flatwise in successive overlapping adhesive layers, and then dried, substantially as set forth.

2. As a new article of manufacture, the hereinbefore described ferrule, composed of rawhide treated substantially as hereinbefore set forth, wound flatwise in successive overlapping adhesive layers, and then dried, hardened, and polished, as set forth, to adapt it for connecting the abutting ends of articles.

3. The combination, substantially as hereinbefore set forth, of the joint or section with the rawhide ferrule composed of successive overlapping adhesive layers shrunk thereon and adapted to receive the abutting end of the adjacent section or joint, as set forth.

4. The combination of the section or joint A, its reduced end or shoulder *a*, the rawhide ferrule composed of successive adhesive overlapping layers wound flatwise upon each other and upon the shoulder and shrunk thereon and the projecting end of the ferrule constituting a socket for the reception of the shoulder *c* of the corresponding joint or section C, as set forth.

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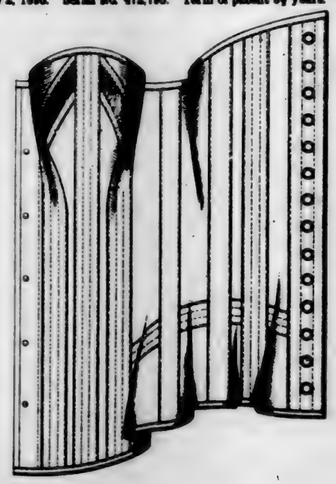
# DESIGNS.

**22,672. DRESS TRIMMING.** JULIUS DREYFUS, New York, N. Y. Filed June 10, 1893. Serial No. 477,243. Term of patent 3½ years.



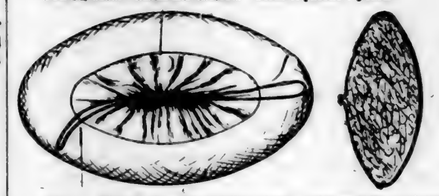
*Claim.*—The design for a dress trimming, substantially as herein shown and described.

**22,673. CORSET.** DE VER H. WARNER, Bridgeport, Conn. Filed May 2, 1893. Serial No. 472,793. Term of patent 3½ years.



*Claim.*—The design for a corset, substantially as herein shown and set forth.

**22,674. TOBACCO-BAG.** DARIUS FERRY, Jr., Brooklyn, N. Y. Filed Feb. 24, 1893. Serial No. 463,631. Term of patent 7 years.



*Claim.*—The design for tobacco bags, substantially as herein shown and described.

**22,675. MEDAL.** EDGAR J. HAHN, St. Louis, Mo. Filed Mar. 30, 1893. Serial No. 468,403. Term of patent 3½ years.



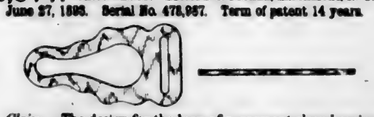
*Claim.*—The design for a medal substantially as herein described.

**22,676. FINGER-RING.** MAURICE L. POWERS, New York, N. Y. Filed June 3, 1893. Serial No. 476,522. Term of patent 3½ years.



*Claim.*—The design for a finger ring herein shown and described.

**22,677. CLASP-LOOP.** EDMUND C. TOOKER, Larchmont, N. Y. Filed June 27, 1893. Serial No. 478,987. Term of patent 14 years.



*Claim.*—The design for the loop of a garment clasp herein shown and described one end of which is expanded and the other end contracted, the inner edges of the loop being plain or smooth, and the outer edges at the sides thereof having a wavy or serrated outline.

**22,678. SPOON.** WILLIAM H. JABOUHEAU, Newark, N. J., assignor to R. F. Morris, Alister & Co., Chicago, Ill. Filed Apr. 6, 1893. Serial No. 469,264. Term of patent 3½ years.



*Claim.*—1. In the design for a spoon as herein shown and described, the obverse.

2. In the design for a spoon, the reverse herein shown and described.

3. The design for a spoon as herein shown and described.

**22,679. SPOON.** JOSEPH VERSCHUUR, Jersey City, N. J. Filed May 1, 1893. Serial No. 473,794. Term of patent 3½ years.



*Claim.*—1. The design for the obverse of a spoon as shown and described.

2. The design for the reverse of a spoon as shown and described.

3. The design for a souvenir spoon as shown and described.

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**22,680.** FORK, &c. SIDNEY SMITH, Bridgeport, Conn., assignor to the Holmes & Edwards Silver Company, same place. Filed June 26, 1893. Serial No. 478,897. Term of patent 7 years.



*Claim.*—1. The design for a handle for forks, and like articles, substantially as shown and described.

2. In a design for a handle for forks, and like articles, the obverse substantially as shown and described.

3. In a design for a handle for forks, and like articles, the reverse substantially as shown and described.

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**22,681.** KNIFE-HANDLE, &c. JOSEPH H. CROSBY, Jr., Jacksonville, Fla. Filed July 5, 1893. Serial No. 479,658. Term of patent 7 years.



*Claim.*—The design for handles of knives and similar articles, substantially as herein shown and described.

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**22,682.** PAPER-WEIGHT. WILLIAM DORSAM and LOUIS DORSAM, Millville, N. J. Filed June 12, 1893. Serial No. 477,376. Term of patent 7 years.



*Claim.*—The herein described design for a paper weight substantially as shown and described.

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**22,683.** ATOMIZER-BODY. WILLIAM J. EVANS, New York, N. Y., assignor to McKesson & Robbins, same place. Filed June 22, 1893. Serial No. 478,519. Term of patent 14 years.



*Claim.*—The design for an atomizer body, substantially as described and shown.

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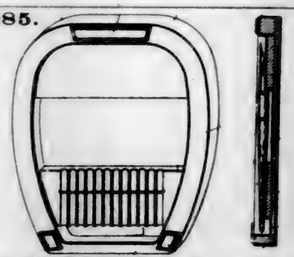
**22,684.** INSULATOR. LAWRENCE R. GRAY, Boston, Mass. Filed June 22, 1893. Serial No. 478,521. Term of patent 14 years.



*Claim.*—The design for an insulator herein shown and described.

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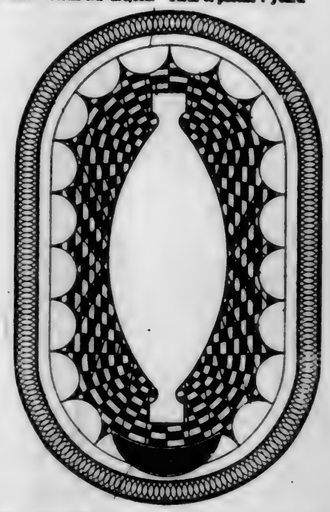
**22,685.** TRAY. FRANK T. PEARCE, Providence, R. I. Filed May 15, 1893. Serial No. 474,707. Term of patent 7 years.



*Claim.*—The design for a tray, or similar article, as herein shown and described.

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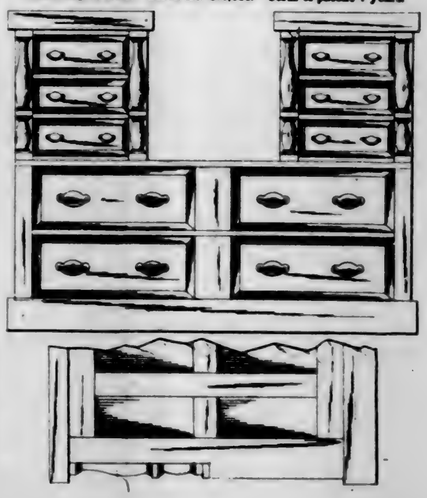
**22,686.** GAME-BOARD. JOHN H. GARMON, Peoria, Ill. Filed Feb. 11, 1893. Serial No. 421,122. Term of patent 7 years.



*Claim.*—The design for a game board, as herein described and shown.

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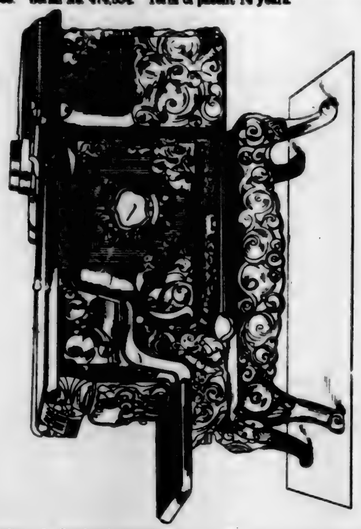
**22,687.** DRESSING-CASE. HENRY C. SWAIN, New York, N. Y. Filed July 5, 1893. Serial No. 479,680. Term of patent 7 years.



*Claim.*—The design for a dressing case, substantially as shown and described.

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**22,688.** STOVE. WILLIAM J. KEEP, Detroit, Mich. Filed May 15, 1893. Serial No. 474,354. Term of patent 14 years.



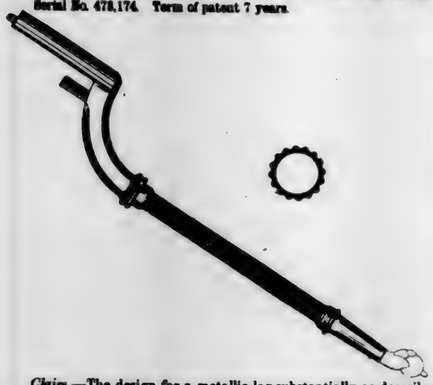
*Claim.*—1. In the design for a stove, the base as shown and described.

2. In the design for a stove an oven door as shown and described.

3. In the design for a stove, the water tank and warming oven as shown and described.

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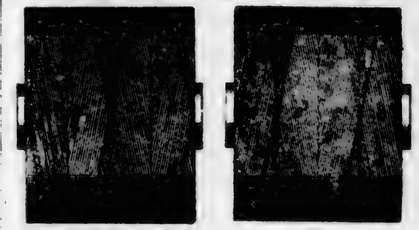
**22,689.** LAVATORY-LEG. EDWARD HANEMANN, Brooklyn, assignor to The J. L. Mott Iron Works, New York, N. Y. Filed June 19, 1893. Serial No. 478,174. Term of patent 7 years.



*Claim.*—The design for a metallic leg substantially as described and represented.



**22,690.** COP. SIMON W. WARDWELL, Jr., Boston, Mass. Filed Feb. 20, 1893. Serial No. 423,255. Term of patent 14 years.



*Claim.*—A design for a cop, substantially as shown.

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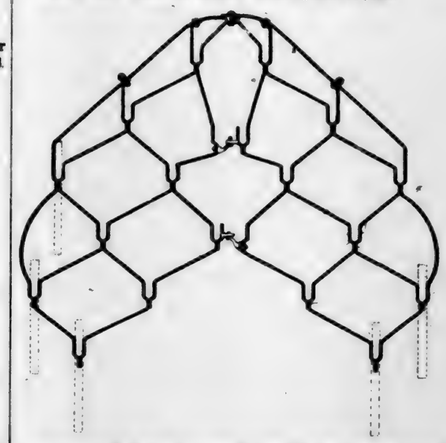
**22,691.** SULKY-AXLE. STERLING ELLIOTT, Newton, Mass. Filed Aug. 15, 1892. Serial No. 443,090. Term of patent 14 years.



*Claim.*—The design for a sulky axle, substantially as herein shown and described.

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**22,692.** HARROW-FRAME. MARQUIS J. TODD, Buffalo, N. Y. Filed June 1, 1893. Serial No. 476,296. Term of patent 14 years.



*Claim.*—The design for a harrow-frame, substantially as herein shown and described.

# TRADE-MARKS

## REGISTERED AUGUST 8, 1893.

**28,452.** CERTAIN GARMENT-SUPPORTERS. GEORGE H. BUCK, Mattoon, Ill. Filed May 13, 1893.

KEYSTONE

*Essential feature.*—The word "KEYSTONE." Used since May, 1893.

**28,453.** CERTAIN GARMENT-SUPPORTERS. GEORGE H. BUCK, Mattoon, Ill. Filed June 29, 1893.



*Essential feature.*—The representation of a keystone. Used since May, 1893.

**28,454.** OVERCOATS. ALFRED BENJAMIN & Co., New York, N. Y. Filed July 8, 1893.

MUNSTER

*Essential feature.*—The word "MUNSTER." Used since January 1, 1893.

**28,455.** RUBBER GOODS, LEATHER GOODS, AND WATERPROOF OILED FABRICS. GOODYEAR RUBBER COMPANY, New York, N. Y. Filed June 12, 1893.




*Essential feature.*—The word "BADGER," together with the representation of the animal called the "badger." Used since 1882.

**28,456.** RUBBER GOODS, LEATHER GOODS, AND WATERPROOF OILED FABRICS. GOODYEAR RUBBER COMPANY, New York, N. Y. Filed June 12, 1893.




*Essential feature.*—The word "PIONEER," together with the representation of an ax. Used since 1889.

**28,457.** ARTISTS' COLORS, VARNISHES, AND DRIERS. J. G. MÜLLER & Co., Stuttgart, Germany. Filed Mar. 8, 1893.



*Essential feature.*—The representation of the branch of a pear tree with leaves and fruit thereon. Used since February 23, 1892

**28,458.** SPORTING-GUNPOWDER. AMERICAN POWDER MILLS, Boston, Mass. Filed July 14, 1893.

DEAD SHOT

*Essential feature.*—The words "DEAD SHOT." Used since March 7, 1863.

**28,459.** CIGARETTES AND SMOKING-TOBACCO. SARLARHOS SOHNAM, New York, N. Y. Filed June 19, 1893.



*Essential feature.*—The representation of an ancient Greek coin, bearing upon its face a representation of the Emperor Coedandasco. Used since January 1, 1893.

**28,460.** ALE AND BEER. GEORGE W. WIEDENMAYER, Newark, N. J. Filed July 15, 1893.

Chevalier

*Essential feature.*—The word "CHEVALIER." Used since June 25, 1893.

**28,461.** WINES AND LIQUORS MANUFACTURED FROM GRAPE-JUICE. GEORGE WEST, Stockton, Cal. Filed June 12, 1893.

EL PINAL



*Essential feature.*—The words "EL PINAL." Used since 1865.

**28,462.** VERMOUTH WINE. THE JNO. PEARD VERMOUTH COMPANY, New York, N. Y. Filed Apr. 22, 1893.




*Essential feature.*—The words, "CRISTOFORO COLOMBO" surrounding the bust picture of Columbus. Used since April 1, 1893.

**28,463.** CANNED CORN. ILLINOIS CANNING CO., Hoopeston, Ill. Filed Apr. 10, 1893.

Cream of the Prairie.

*Essential feature.*—The words "CREAM OF THE PRAIRIE." Used since 1886.

**28,464.** CANNED CORN. ILLINOIS CANNING CO., Hoopeston, Ill. Filed Apr. 10, 1893.

Baby Bunting

*Essential feature.*—The words "BABY BUNTING." Used since 1886.

**28,465.** CANNED VEGETABLES. ILLINOIS CANNING CO., Hoopeston, Ill. Filed Apr. 10, 1893.

ONE OF THE FINEST

*Essential feature.*—The words "ONE OF THE FINEST." Used since 1887.

**28,466.** CANNED FRUITS, VEGETABLES, FISH, MEATS, OYSTERS, CATSUP, AND SOUP. THE ALBERT F. REMY CO., Mansfield, Ohio. Filed July 11, 1893.

*WHITE FROST*

*Essential feature.*—The words "WHITE FROST." Used since February, 1892.

**28,467.** ARTIFICIALLY-DIGESTED FOOD OR PEPTONE. FAIRCHILD BROS. & FOSTER, New York, N. Y. Filed July 7, 1893.

PANOPEPTON

*Essential feature.*—The word "PANOPEPTON." Used since June 1, 1893.

**28,468.** EUCALYPTUS OIL AND EXTRACT. Woods & Co., Kangaroo Island, South Australia. Filed Feb. 9, 1893.




*Essential feature.*—The words "LUBRA BRAND," and the representation of an Australian woman carrying a papoose upon her back. Used since December, 1892.

**28,469.** BLOOD-PURIFYING MEDICINE. EDWARD S. BATCHELDER, Springfield, Mass. Filed July 17, 1893.

LIVO-CURO

*Essential feature.*—The word "LIVO-CURO." Used since April 8, 1893.

**28,470.** ALARM-CLOCKS. ELECTRICAL REMINDER COMPANY, Chicago, Ill. Filed July 5, 1893.

ELECTRICAL·REMINDER.

*Essential feature.*—The words "ELECTRICAL REMINDER." Used since July 17, 1890.

**28,471.** GRANITE-WARE ARTICLES FOR HOUSEHOLD USE. VIENNA ENAMEL AND STAMPING COMPANY, Chicago, Ill., and Porter, Ind. Filed July 5, 1893.



*Essential feature.*—The representation of a teapot upon a triangular background, and an outside triangle, parallel with the sides of this triangular background. Used since June, 1891.

**28,472.** FOLDING CLOTHES-DRIER. WILLIAM F. REDDING, King's Station, N. Y. Filed June 24, 1893.



*Essential feature.*—The representation of a globe having the parallels and meridian lines on it, and surmounted by a folding clothes drier. Used since June 23, 1893.

**28,473.** HEAT-RADIATORS. GURNEY HOT WATER HEATER COMPANY, Boston, Mass. Filed July 13, 1893.

YALE

*Essential feature.*—The word "YALE." Used since July 1, 1893.

98,474. COOKING, HEATING, AND GAS STOVES. FRANK A. ELAINE, Cincinnati, Ohio. Filed June 20, 1893.

OMAHA

*Essential feature.*—The word "OMAHA." Used since 1883.

98,475. WRENCHES. Joseph W. Peck, St. Louis, Mo. Filed July 17, 1893.

IDEAL

*Essential feature.*—The word "IDEAL." Used since January 1, 1880.

98,476. GRAIN-BINDERS. ADAMS HARVESTER COMPANY, Pekin, Ill. Filed July 3, 1893.

HODGES

*Essential feature.*—The word "HODGES'." Used since 1870.

98,477. ALL GARMENTS WORN BY MEN, WOMEN, AND CHILDREN. DR. JAEGER'S SANITARY WOOLLEN SYSTEM CO., LIMITED, London, England. Filed May 31, 1893.

WAR-PUR

*Essential feature.*—The word "WAR-PUR." Used since March 8, 1892.

# DECISIONS

OF THE

# COMMISSIONER OF PATENTS

AND OF

# UNITED STATES COURTS IN PATENT CASES.

## COMMISSIONER'S DECISIONS.

### WEBB *v.* BLICKENSDERFER.

*Decided June 21, 1893.*

REOPENING OF CASE FOR ADDITIONAL TESTIMONY—WHEN TOO LATE.

Where a contestant in interference was put upon notice at the time of the hearing before the Examiner of Interferences that there was a weak point in his evidence, and notwithstanding this he waited until an appeal had been taken to the Board of Examiners-in-Chief and thence to the Commissioner before making an effort to amend his testimony, *Held* that it was then too late to have the case reopened for the purpose of introducing evidence known and accessible to him at the time his testimony was taken.

APPEAL on motion.

TYPE-WRITING MACHINE.

Application of George B. Webb filed December 2, 1891, No. 413,756. Application of George C. Blickensderfer filed October 29, 1891, No. 410,231.

*Mr. Henry D. Donnelly* for Webb.

*Messrs. Hallock & Halleck* for Blickensderfer.

FISHER, *Assistant Commissioner:*

This is an appeal from the decision of the Examiner of Interferences granting a motion brought on behalf of Blickensderfer to reopen the interference, after a decision by the Commissioner on the question of priority, for the purpose of taking additional testimony.

The interference was decided by the Examiner of Interferences in favor of Blickensderfer on July 25, 1892, and his decision was affirmed by the Examiners-in-Chief on September 3, 1892. This decision was reversed by the Acting Commissioner November 18, 1892, and a motion for rehearing was denied by the Commissioner December 29, 1892.

No contention is made by the moving party that the evidence sought to be introduced is newly discovered; but the motion is substantially based upon the ground of surprise.

It appears from the records of the interference that it was contended on behalf of Webb, not only at the hearing before the Acting Commissioner, but also at the hearings before the Examiner of Interferences and the Examiners-in-Chief, that the type-writing machine referred to in the present motion was not in evidence, and that there was no testimony in the case showing when it was made. It thus appears that Blickensderfer was apprised as early as July 8, 1892, the date of the hearing before the Examiner of Interferences, of this alleged weak point in his evidence, even though he had believed prior to that time that the best possible evidence had been presented.

Under such a state of facts it is clear that the motion to reopen was not made with due diligence. It is the duty of a contestant in an interference to present the best possible evidence in support of his case, and if by reason of ignorance or negligence such evidence is not presented it is held to be too late to have the case reopened, after decision by the Commissioner, for the purpose of introducing evidence known and accessible to him at the time his testimony was taken, merely because he was in error in the assumption that his evidence already in the case was sufficient to enable him to secure a decision in his favor.

The allegations made on behalf of Blickensderfer, that there was an understanding between counsel that the machine now sought to be introduced in evidence might be used at the hearing with the same force and effect as if regularly introduced in evidence as an exhibit at that time, if true, are immaterial in view of the finding of the Commissioner, that there is no evidence establishing the time when such machine was made.

Under all the facts in the case I am unable to arrive at the conclusion that sufficient grounds for reopening the case have been presented.

The decision of the Examiner of Interferences granting the motion to reopen is overruled.

### EX PARTE MCDONALD.

*Decided July 18, 1893.*

1. RULES 133 AND 145—WHAT MAY BE REVIEWED ON PETITION.

The question whether or not an Examiner should cite as a reference an applicant's former patent, the application for which was copending with the present application, is one pertaining to the merits of the invention and therefore not reviewable by the Commissioner on petition.

2. SAME—SAME.

*Ex parte Mullen and Mullen* (50 O. G., 837) and *ex parte Rogers* (49 MS. Dec., 418) discussed and held not to indicate a different practice.

ON petition.

HOLDER FOR MANIFOLD BOOKS AND CARBON-SHEETS.

Application of James S. McDonald filed June 27, 1892, No. 438,139.

*Messrs. Elliott & Hopkins* for the applicant.

FISHER, *Assistant Commissioner:*

This is a petition taken from the action of the Primary Examiner in citing applicant's own patent, which was pending at the same time with the present application, as a reference for certain features of claims in said application.

The facts as shown by the record are as follows: Applicant's patent is for a "combined book and carbon-sheet holder." This patent issued after applicant had made claims 5, 6, and 7 of the present application. These claims are to combinations of a specific book-clamp, not shown in applicant's former patent, and a carbon-sheet holder. The Primary Examiner rejected these claims as covering illegitimate combinations and cited certain patents as showing that the segregated features included in the claims were old. Among the patents cited was applicant's own patent, above referred to, as showing that "a combined clip (book-clamp) and (carbon) holder was old." The applicant contends that the Examiner should not cite his former patent against this application and prays that the Examiner be directed to eliminate the prior patent from the record, and in support of his position cites *ex parte Mullen and Mullen*, (50 O. G., 837,) in which the Commissioner took jurisdiction of this question on petition and said:

There can be no presumption of dedication arising out of a failure to claim in a given application what could not have been lawfully claimed in that application, and it is believed that no obstacle exists in such a case to obtaining a patent otherwise allowable upon any application that may be filed before the invention has been in public use or on sale for more than two years and before actual abandonment.

Applicant also cites *ex parte Rogers*, (MS. Dec., vol. 49, p. 418,) in which the Commissioner held:

It is improper to cite applicant's own patent if it issued after the pending application was filed.

The Examiner holds that this is a question involving the merits of the invention and therefore appealable to the Examiners-in-Chief and not petitionable to the Commissioner.

I am inclined to think that the Examiner is right. It is true that in *ex parte Mullen and Mullen*, *supra*, the Commissioner did pass upon a similar question on petition; but the petition in that case was taken on a different issue from the one in the present case, it having been taken from a refusal of the Examiner—

to enter upon an examination of applicants' claims, assigning as a reason that they cover subject-matter shown, but not claimed, in an earlier patent granted to the same inventors seven days prior to the present application. The Examiner further states that applicants' only remedy lies in a reissue of the patent.

I do not find that the question whether or not it was petitionable to the Commissioner was raised in that case, whereas in *ex parte Woodward*, (C. D., 1890, 169,) decided a short time after *ex parte Mullen and Mullen* and by the same Commissioner, this same question was presented in an appeal to the Examiners-in-Chief, was passed upon by them, and appealed to the Commissioner, and he did not indicate any objection to that practice.

In the case of *ex parte Rogers*, *supra*, cited by the applicant, I find that the Examiner originally objected to examining certain claims of that application on the ground that—

the mode of forming the headed and pointed screw-blank as herein claimed is fully set forth in the patent to applicant for the machine shown in Fig. 1, No. 386,091, "wood screw machines," July 10, 1888, and the mode of forging the thread thereon is completely described in the following patents, also to applicant: No. 370,353, "wood-screw machines," September 20, 1887, which is for the machine shown in Fig. 14; No. 370,354, "screw-swaging machines," September 20, 1887, which is for the dies shown in Figs. 10, 11, 12, and 13, and No. 329,900, "screws," November 10, 1885, which is for the method.

The applicant thereupon, on petition to the Commissioner, averred that—

the Examiner in thus refusing to consider the merits of claims 2, 3, and 4 has failed to make an examination, as required by the statute, and prays that the Examiner may be directed to make such an examination, allowing or rejecting the claims referred to.

The Commissioner, in acting upon this petition, said:

Whatever pertains to the question whether a claimant is entitled to a patent under the law pertains to the examination.

If the Examiner is still of the opinion that the claimant is not entitled to a patent under the law for the definitely-expressed claims which he asks, he will reject such claims for all the reasons which are pertinent to "examination" and allow the applicant to take his appeal to the Examiners in-Chief.

The claims of the application were then rejected, partly on applicant's former patent, the same question arising as the one in the present application; but from said rejection an appeal was taken to the Board of Examiners-in-Chief and then to the Commissioner. This case, therefore, would seem to sustain the Examiner in his action.

Moreover, to hold this to be a question appealable to the Examiners-in-Chief would be in conformity with the latest practice. (See *ex parte Feister*, 61 O. G., 152; *ex parte Cahill*, 63 O. G., 1695.)

The petition is dismissed.

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### EX PARTE PORTLAND-CEMENT-FABRIK "GERMANIA" H. MANSKE & CO.

*Decided July 24, 1893.*

TRADE-MARK—REGISTRATION OF MERE WORDS BY GERMAN CITIZENS.

A Trade-Mark consisting of the word "Germania" may be registered in the United States by a German citizen, under the provisions of Article XVII of the Convention of December 11, 1871, although the German statutes make no provisions for the registration of mere words as Trade-Marks.

ON petition.

TRADE-MARK FOR PORTLAND CEMENT.

Application filed May 28, 1892.

*Mr. Henry Orth* for the applicant.

FISHER, *Acting Commissioner:*

This is a petition taken from the action of the Primary Examiner in refusing registration of the word "Germania" as a Trade-Mark for Portland cement.

The Examiner states, in his answer to the petition, that—

it is probable that no objection would be made to this registration if asked for by an American citizen residing in this country. The refusal is based upon the conditions of section 5 of the act of 1881, by which a certificate of registration ceases to have force in this country at the time the Trade-Mark ceases to be exclusive property elsewhere.

Section 5 of the act of 1881, referred to by the Examiner, is as follows:

Sec. 5. That a certificate of registry shall remain in force for thirty years from its date, except in cases where the Trade-Mark is claimed for and applied to articles not manufactured in this country, and in which it receives protection under the laws of a foreign country for a shorter period, in which case it shall cease to have any force in this country by virtue of this act at the time that such Trade-Mark ceases to be exclusive property elsewhere. At any time during the six months prior to the expiration of the term of thirty years such registration may be renewed on the same terms and for a like period.

This section is analogous in its provisions to section 4887, Revised Statutes of the United States, relating to the limitation of the terms of patents for inventions which have been previously patented in a foreign country, and it seems to be a labored and unnatural construction of the first-named section to hold that the terms of registration in this country of a Trade-Mark for an article manufactured in a foreign country, if not registered in that country, would be limited by the laws of such foreign country, or that registration in such foreign country is a necessary condition precedent to registration here.





Section 1 of the act of 1881 provides—

that owners of Trade-Marks used in commerce with foreign nations or with the Indian tribes, provided such owners shall be domiciled in the United States or located in any foreign country or tribes, which, by treaty, convention, or law, affords similar privileges to citizens of the United States, may obtain registration of such Trade-Marks by complying with the following requirements:

The first question to be determined, in view of this provision, is, Does the German Empire afford the privilege of registration of Trade-Marks to citizens of the United States? The answer to this question is found in Article XVII of the Convention of December 11, 1871, between the United States and the German Empire, which is as follows:

Art. XVII. With regard to the marks or labels of goods, or of their packages, and also with regard to patterns and marks of manufacture and trade, the citizens of Germany shall enjoy in the United States of America, and American citizens shall enjoy in Germany, the same protection as native citizens.

The further question arises, however, by reason of section 3 of the German act of November 30, 1874, cited by the Examiner, under which registration of a Trade-Mark is refused if the mark consists entirely of letters or words. This is a restriction which, if applied to citizens of the United States, might perhaps properly be held to warrant a refusal to register such Trade-Marks in this country for owners residing and doing business in Germany. It satisfactorily appears, however, from an examination of a copy of the *Fünfte Beilage zum Deutschen Reichs-Anzeiger und Königlich Preutzischen Staats-Anzeiger* that the German Empire grants registration of Trade-Marks, consisting of words only, to citizens of the United States.

The Examiner states, as a further reason why registration should be refused in the present case, that—

the German law requires that an American Trade-Mark must be first registered at home before it can have registration and protection in Germany.

Whatever may or may not be desirable in the matter of legislation in this connection, it does not appear to be advisable to refuse registration in this country on the ground that the Trade-Mark sought to be registered here has not been registered in the country of which the owner is a citizen, in the absence of any law establishing such a procedure. In view of the privileges accorded to citizens of the United States in the matter of the registration of Trade-Marks, as above set forth, and in view of what appears to be the plain intent of the United States statutes bearing on this subject, I am unable to reach any other conclusion than that the applicant's Trade-Mark should be registered, unless reasons to the contrary exist other than those given by the Examiner.

The petition is granted.

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### EX PARTE MYERS.

*Decided August 7, 1893.*

DESIGN—OBJECTION—REJECTION.

An *objection* to a claim for a design that it is not single; that it fails to set up any article of manufacture, but, on the contrary, calls for three separate articles aggregated, is one pertaining to the merits and should therefore have been a *rejection*.

ON petition.

DESIGN FOR A LAMP-STOVE.

Application of John F. Myers filed December 15, 1892, No. 455,306.

*Mr. John L. Boone* for the applicant.

FISHER, *Acting Commissioner:*

This is a petition taken from the action of the Examiner of Designs, in which he holds that the following claim—

The design for a lamp stove, consisting of a lamp supported on a raised base so that its reservoir can be seen both above and below the base, a semi-cylindrical body with open front, a cylindrical top surmounting the semi cylindrical body, and an ornamental top-piece, all as hereinbefore described—

"is not single. It fails to set up any article, on the contrary calling for three separate articles aggregated."

The Examiner further states that—

if from this claim were erased the clause "a lamp supported on a raised base so that its reservoir can be seen both above and below the base," the same would be formal, would set up a design unambiguous and single, and, as at present advised, new and original.

Upon consideration of the action of the Examiner as above set forth, I am convinced that said action should have been a *rejection* instead of an *objection*. It is well settled that where two or more designs are described and claimed separately in a single application the applicant will be required to elect the one to be retained in the pending application and to cancel the others, and an appeal from such requirement of the Examiner will lie to the Commissioner, under Rule 145. (See *ex parte Petzold*, 55 O. G., 1651.) But the question under consideration is an entirely different one. There is only one claim in the case. Applicant contends that the claim covers a unitary design—

that the lamp is an essential feature of the lamp-stove, and is what gives to the lamp-stove its peculiar and distinctive appearance.

The Examiner holds that—

the claim is not single, * * * calling for three separate articles aggregated.

The objection to the subject-matter of this claim corresponds exactly with an objection to a claim for a mechanical invention which is drawn to an aggregation of elements. Such objection is always in the form of a rejection, under Rule 133, and appealable to the Examiners-in-Chief. If the Examiner, therefore, is still of the opinion that this claim covers an aggregation of articles instead of a single design, he will reject for that reason and allow the applicant to appeal to the Examiners-in-Chief.

The petition is dismissed.

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## DECISIONS OF THE U. S. COURTS.

U. S. Circuit Court—Eastern District of Missouri, Eastern Division.

### SIMPKINS *v.* PERRY PIE COMPANY *et al.*

*Decided May 16, 1893.*

1. PATENT—INFRINGEMENT.

Letters Patent No. 355,568, issued to Alvin T. Simpkins January 4, 1887, are not infringed by a device having return-flues beneath the baking-chamber and a ledge at the inner ends of these flues, which forms a part of the back wall of the oven, and which extends six inches farther forward than the inner end of the baking-chamber.

2. PATENT—EVIDENCE.

Where there is a difference between the construction of a patent and the construction used by the defendant, it is evidence of non-infringement where the device of the defendant does not accomplish the results of the patent.

*Mr. William M. Eccles* for the complainant.
*Mr. George H. Knight* for the defendants.

HALLETT, *J.*:

Complainant's oven is heated through the walls and not by carrying the flames of the furnace into the chamber of the oven. There are chambers above and below the oven, which are divided into flues, through which the products of combustion pass backward and forward until at length they reach the chimney, which is at the front near the center of the oven. There are upright flues at the front and in remote corners of the oven, connecting the lower and upper chambers.

At the date of complainant's invention, January 4, 1887, the use of such chambers for heating an oven through the hearth and roof was well known; but the method then prevailing resulted in overheating the back part of the chamber of the oven, so that the process of baking proceeded much more rapidly in the back than in the front of the oven.

To equalize the heat in all parts of the oven, complainant transferred the upright flues connecting the upper and lower chambers from the back wall of the oven to the front. He thus closed the back wall of the oven from all contact with the flames and hot air of the furnace, and made an important step toward reducing the temperature of that part of the oven; but he claimed nothing in the way of invention on account of this change.

The new feature of complainant's oven is an upright wall traversing the lower chamber near the back, which shortens the chamber somewhat and prevents the blast of the furnace from going to the back wall. In the opinion of complainant it was necessary to prevent the products of combustion from going to the back wall of the oven, and for that purpose he inserted a wall in the lower chamber "a suitable distance" in front of the back wall. The claims of the patent, two in number, read as follows:

1. In bakers' ovens, the upright wall *c*, in combination with oven *a* and side walls, *d*, of brick setting, substantially as shown, and for the purpose described.
2. In bakers' ovens, the upright wall *c*, horizontal flues *i j*, vertical flues *k*, and horizontal flues *l l'*, in combination with oven *a*, substantially as shown, and for the purpose described.

As to the upright wall *c* here referred to, it is obvious that its proper position in the lower chamber would depend very much upon the length of the oven. In the case of a short oven the flames of the furnace immediately in front of the chamber would go to the back wall of the chamber, which is also the back wall of the oven, with great force, and it might be overheated. By extending the oven, and thus removing the back wall to a greater distance from the furnace, the danger of overheating would be diminished until it would entirely disappear. The scale of the drawings accompanying complainant's patent is not given, and therefore we cannot say to what length of oven the wall *c*, traversing the lower heat-chamber, is applicable. In the description of the oven it is said that the wall is to be placed "at a suitable distance forward from the rear wall," without stating what shall be a suitable distance for any length of oven. Respondent has several ovens of the same pattern, which are alleged to infringe complainant's patent. They are all fourteen feet long, and the rear wall extends six inches under the oven. There is no wall separate from the rear wall, as described in complainant's patent. A ledge is added to the rear wall for the purpose, it is said, of supporting the hearth or floor of the oven, and the ledge is the feature on which complainant relies as infringing his patent.

In an oven of the length of fourteen feet I am of the opinion that the ledge mentioned has no important function toward equalizing the temperature of the oven. If the ledge were removed and the heat turned toward the front by the back wall alone, the operation of the oven would be the same.

I am therefore constrained to say that respondents have not infringed complainant's patent, and the bill ought to be dismissed, with costs.

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## U. S. Circuit Court—Northern District of New York.

PARRY MANUFACTURING COMPANY *v.* HITCHCOCK MANUFACTURING COMPANY *et al.*

*Decided July 24, 1893.*

1. CLAIM—LIMITED BY PRIOR ART—BY REFERENCE-LETTERS.
In addition to the limitations made necessary by the prior art the language employed narrows the first claim of Letters Patent No. 266,895 to the precise mechanism of the patent. Every element is restricted by a reference-letter to the structure described and shown. A claim so explicit cannot be enlarged by construction.
2. SAME—SECOND CLAIM.
The second claim is invalid for want of patentable novelty.
3. SAME—THIRD CLAIM.
The third claim, if confined strictly to the mechanism described, is in the same predicament. A construction, however, can be placed upon this claim which will uphold it; but if so construed the defendants do not infringe.

FINAL hearing in equity.

*Mr. William M. Eccles* for the complainant.
*Mr. Irving H. Palmer* and *Mr. J. W. Suggett* for the defendants.

COXE, *J.*:

This is an equity action for infringement based upon Letters Patent No. 266,895, granted October 31, 1882, to John Robinson for improvements in sulky road-wagons. The specification says:

My invention has for its objects to secure ease and comfort in riding, and to relieve the back of the animal from undue weight, while at the same time the usual jar upon the wheels is avoided; and with these ends in view my invention consists of the peculiar construction and arrangement of parts hereinafter fully described and specifically claimed.

* * * * * * *

E is the body of the wagon, which is secured at its forward end to the cross-bar C by means of hooks F, which engage with loops G, secured to the cross-bar. The loops G, as seen more particularly at Fig. 1, are wider than the hooks F for the purpose of permitting a sufficient lateral movement of the body in an obvious manner.

The claims are as follows:

1. In combination with the cross-bar C and body E, the hooks F and loops G, the latter constructed, as described, to permit lateral movement of the body, as set forth.
2. The spring H, connected to the under side of the body A, and having its ends connected to the rear portions of the shafts by double shackles I, whereby vertical and lateral motions are permitted, substantially as set forth.
3. In a two-wheeled wagon in which the body is pivotally connected at its forward end, a spring, H, arranged between such pivotal connection and the axle, as and for the purpose set forth.

The defenses are lack of patentability and non-infringement.

The field of invention is exceedingly narrow. For centuries improvements in vehicles drawn by animals have been going on in both hemispheres. It is manifest that a broad invention in this art is well-nigh impossible. Improvements may be made from time to time; but patents therefor must be strictly construed and the claims limited to the precise advances made by the inventor. (*Derby* v. *Thompson*, 61 O. G., 1950; 146 U. S., 476; *McCormick* v. *Talcott*, 20 How., 402; *Railway Co.* v. *Sayles*, 15 O. G., 243; 97 U. S., 564; *Handy* v. *Harrow Co.*, 54 Fed. Rep., 493.)

The novel feature of the patent is the combination which, in addition to the vertical motion of the spring, permits a lateral motion of the body of the cart, thus insuring comfort to the traveler and durability to the wheels. If confined to this feature, the patent may be sustained.

In addition to the limitations made necessary by the prior art it will be observed that the language employed narrows the first claim to the precise mechanism of the patent. Every element is restricted by a reference-letter to the structure described and shown. A claim so explicit cannot be enlarged by construction. (*Keystone Bridge Co.* v. *Iron Co.*, 12 O. G., 980; 95 U. S., 274; *Sutter* v. *Robson*, 38 O. G., 230; 119 U. S., 530; *Snow* v. *Railroad Co.*, 39 O. G., 1081; 121 U. S., 617; *Bunching Co.* v. *Williams*, 44 Fed. Rep., 190, 194.)

The hooks F and loops G are not found in the defendants' cart. The body of their cart is secured to the cross-bar by L-shaped bolts or hinges, which do not permit lateral motion at that point. Certainly they do not permit the loose swaying motion of the patent. The complainant is not entitled to the benefit of the doctrine of equivalents; but even if it were, these bolts or hinges would not infringe the hook and loop connection of the patent.

Regarding the second claim, it is thought that it is invalid for want of patentability. A spring having its ends connected to the shafts and adjacent parts by shackles is old. Substantially the same construction is shown in the patents of Soulé, Jenkins, and Winecoff.

The third claim, if confined strictly to the mechanism described, is in the same predicament.

There is no patentable novelty in a spring arranged as stated.

A construction can, however, be placed upon this claim which will uphold it. It may fairly be construed to include the novel feature referred to—viz., the devices which permit the swaying motion of the body of the cart; but if so construed the defendants do not infringe. They do not have the hooks and loops and their spring is not arranged between the pivoted connection and the axle.

The bill must be dismissed.

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## U. S. Circuit Court—District of New Jersey.

VINCENT *et al. v.* RIGBY.

*Decided July 28, 1893.*

1. POYTON—WEATHER-STRIP—ONLY ENTITLED TO THE NARROWEST CONSTRUCTION.
Letters Patent granted to Charles R. Vincent, assignee of Josiah Poyton, No. 381,166, dated April 17, 1888, for improvements in weather-strips, examined and construed in view of the state of the art, and *Held* to be entitled to receive the narrowest construction only, being limited to the precise improvement described.
2. SAME—SAME—NO ELEMENT OF THE CONSTRUCTION IMMATERIAL.
The first and second claims embody specifically as an element a reinforcing rib consisting of an independent cord or strip *s*, laid longitudinally on the outer surface of one side of the lapped edges of the cushion and secured thereto by stitching. *Held* that the "edge-binding ridge or cord *s*" is not immaterial or useless, as the combination is an entirety, and if one of the elements is given up the thing claimed disappears. (*Vance* v. *Campbell*, 1 Blatchf., 427-429.) and this principle prevails even where the patentee has claimed more than is necessary to the successful working of his device. (*McClain* v. *Ortmayer*, 57 O. G., 1129; 141 U. S., 419-435.)
3. SAME—NOT INFRINGED BY LETTERS PATENT No. 434,890.
Defendant's alleged infringing device, made under and in accordance with Letters Patent No. 434,890, granted to Clifford Saville August 19, 1890, and which shows a narrow reinforcing-strip of rubber or the like inserted between the lapped edges of the tubular cushion and secured thereto by course stitching passing through the lapped edges and inserted piece, does not infringe complainants' patent, since the defendant does not employ one of the specified elements—the cord *s*—of the complainants' construction.
4. COMPLAINANTS NOT ENTITLED BROADLY TO THE BENEFIT OF THE DOCTRINE OF EQUIVALENTS.
Complainants are not entitled to claim, broadly, the benefit of the doctrine of equivalents, which is rightly applicable to inventions of a primary character, Poyton being a mere improver, structurally, of an old and commonly-used device and applied no new principle and produced no distinctively-new result.

*Messrs. Cowen, Dickerson, Nicoll & Brown* for the complainants.
*Mr. J. E. M. Bowen* for the defendant.

ACHESON, *J.*:

This suit is founded on Letters Patent No. 381,166, granted April 17, 1888, to the plaintiff Charles R. Vincent, assignee of Josiah Poyton, for improvements in weather-strips.

The specification, after stating that Poyton had "improved the weather-strip in which a tubular cushion is employed as the weather-protecting strip," and that the improvement consists in "the particular construction of the device" whereby it is rendered more durable in maintaining its tubular form and its connection with its metallic supporting part is rendered strong and firm and of simple construction, proceeds thus:

The precise improvement consists in the provision whereby the joined edges of the tubular cushion are re-enforced by a binding rib or cord of textile material, and the provision of a metallic binding-plate adapted by its peculiar construction to be bound over and upon the re-enforced edges of the tubular cushion and to form a bearing upon the outer side only of the lapped edges of the cushion part, as I will now describe, and make such precise improvement the subject of my claims.

Describing the manner of constructing the device, the specification states:

First form the cushion *c* into shape by bringing the longitudinal edges together and stitching the same onto the textile strip or cord *s*.

* * * * * * *

It will be noticed that the binding-strip *s* is secured to the outer side of the lapped parts of the tubular cushion and at the top re-enforced edges of such lapped parts, and that the upper edge of the binding-plate is so bent and formed as to grasp this re-enforced edge, part so that the re-enforcing rib will lie in a hollow on the inner side of the grasping-edge of the plate, with the latter on one side only of the cushion-lapping parts, as shown in Fig. 5.

The plaintiffs allege infringement of the first and second claims of the patent. The first claim is as follows:

1. A weather-strip cushion consisting of a tubular part, *c*, having its edges lapped and re-enforced by an edge-binding ridge or cord, *s*, in combination with a metallic binding-plate having one edge grasping the re-enforced lapped edges of the cushion, its other edge having a closed lap or fold forming a bearing upon the tubular part of the cushion at one side only of its lapped parts, substantially as described, for the purpose specified.

The second claim differs from the first only in stating that the tubular-formed cushion is made of "rubber" and that the metallic binding-plate is provided with "a longitudinal ridge corrugation forming a bearing upon the outer side only of the cushion-lapped parts."

In view of the prior art, as disclosed by this record, it is very difficult to see any patentable invention in "the particular construction" here shown. (*Atlantic Works* v. *Brady*, 23 O. G., 1330; 107 U. S., 192, 200.) Weather-strips composed of a tubular cushion formed by folding a strip of rubber or other flexible material longitudinally, in combination with metallic backings of divers forms, were old. The prior patent to Cosper not only shows this combination, but also the locking of the two parts together by looping the strip of flexible material around a wire or other filament, so as to longitudinally secure or anchor the strip within the embracing portion of the metallic base. The Browne patent of 1862 shows a weather-strip composed of a flexible pad or cushion of rubber or other elastic substance, in combination with a metallic binding-plate, which latter is substantially the same in form and function as the metallic binding-plate of the patent in suit. The Osgood patent of 1876, for an improved weather-strip, while not showing a metallic backing, does show a tubular cushion of rubber or other elastic material formed by bringing together the longitudinal edges of the flexible strip and reinforcing them by a binding-strip laid along one side of the lapped parts and secured thereto by sewing, riveting, or cementing. Now it is hard to concede that there is any invention in combining the Osgood cushion and Browne's metallic binding-plate.

But if the patent in suit can be sustained it must receive the narrowest construction. (*Railway Co.* v. *Sayles*, 15 O. G., 243; 97 U. S., 554, 556; *Duff* v. *Sterling Pump Co.*, 23 O. G., 1622; 107 U. S., 636; *Snow* v. *Lake Shore, &c., Railway Co.*, 39 O. G., 1081; 131 U. S., 617.) Not only in view of the prior state of the art, but by reason of the very terms of the specification, the plaintiffs must be limited to the "precise improvement" described. (*Ibid.*) The textile strengthening "ridge or cord *s*" is specifically an element of each of the claims here involved. The illustrative drawings represent, and the text of the specifications describes, the reinforcing-rib as an independent cord or strip laid longitudinally on the outer surface of one side of the lapped edges of the cushion and secured thereto by stitching, and it is set forth that the upper edge of the binding-plate is so fashioned as to grasp this reinforced edge part, so that—

the re-enforcing rib *s* will lie in a hollow on the inner side of the grasping-edge of the plate.

The interlocking of the two parts is thus effected by the coaction of the added strengthening "cord *s*" and the "coiled recess" of the metallic plate. It is idle to say that the appended lateral "edge-binding ridge or cord *s*" is immaterial or useless. (*Vance* v. *Campbell*, 1 Blatchf., 427, 429.)

The combination is an entirety. If one of the elements is given up, the thing claimed disappears. (*Ibid.*)

And this principle prevails even where the patentee has claimed more than is necessary to the successful working of his device. (*McClain* v. *Ortmayer*, 141 U. S., 419, 425.)

As the patent in suit shows both the laid-on cord *s* and a line of stitching, it is quite inadmissible to say that the latter may be used to the exclusion of the former. A careful reading of the specifications, it seems to me, can lead to no other conclusion than that the strengthing-cord *s*, laid on one side of the folded strip, was supposed to be the efficient means to the proposed end. Indeed, under the proofs, it is very doubtful whether any ordinary stitching, however coarse the thread used, would aid appreciably in keeping the rubber cushion within the metallic binding-plate; but at all events, by the terms of these claims, the "ridge or cord *s*" is a specific end, therefore an indispensable element.

The defendant's alleged infringing device is made under and in accordance with Letters Patent No. 434,890, granted to Clifford Saville on August 19, 1890, for an improved weather-strip, in which a narrow reinforcing-strip of rubber or the like is inserted between the lapped edges of the rubber cushion and firmly secured thereto by coarse stitching passing through the lapped edges and the inserted piece, in combination with a metallic housing or backing, one edge of which embraces the stitching of the flexible cushion. The specification states that the inserted strip, in conjunction with the "coarse stitching," facilitates the retention of the edges of the cushion within the metallic backing. One of the plaintiffs' experts thinks that the inserted strip performs no such function; but the defendant's expert is of opinion that it does act as stated in the specification, and evidently this was the finding of the Patent Office.

Upon the strict construction which, as we have seen, must be given to the patent in suit (if it be sustainable at all) no invasion of the plaintiffs' exclusive rights is shown. (*Railway Co.* v. *Sayles, supra*; *Hoff* v. *Iron Clad Mfg. Co.*, 40 O. G., 1244; 139 U. S., 326; *Derby* v. *Thompson*, 61 O. G., 1950; 146 U. S., 476, 482.) In the last-cited case the Court said:

But the fact that the defendants have been able by a skillful contrivance to dispense with one of the elements of the Konna claim does not make the device an infringement.

Poyton, at best, was a mere improver, structurally, of an old and commonly-used device. He applied no new principle. His claims are for combinations—all the constituents of which had previously been used in this art—and he produced no distinctively-new result.

The defendant does not employ one of the specified elements—the cord *s*. The cases above stated show that the plaintiffs are not entitled to claim, broadly, the benefit of the doctrine of equivalents which is rightly applicable to inventions of a primary character. Here the defendant does not make or use the specific form of device shown in the patent in suit, and therefore the plaintiffs have no just cause of complaint.

Let a decree be drawn dismissing the bill, with costs.



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[BY AUTHORITY OF CONGRESS.]

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## Changes in Classification.

(ORDER No. 839.)

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
*Washington, D. C., August 14, 1893.*

The sub-classes in Class 47, Trees, Plants, and Flowers, Division I, are hereby abolished and the following sub-classes are established in said class:

15. Blanching.
16. Dress attachments.
17. False stems
18. Flower-holders.
19. Flower-pots
20. Flower-work.
21. Garden-beds.
6. Grafting.
22. Hand-screens.
23. Hanging baskets.
13. Hedge-training.
7. Hop-culture.
24. Lawn-vases.
25. Plant-stands.
26. Revolving.
27. Plant frames and houses.
28. Root-guards.
29. Sap-buckets.
11. Sap-spouts.
30. Seed-testers.
31. Stays and props.
32. Strawberry-growing.
33. Tree-covering.
34. Transplanting-pots.
35. Trap-belts.
36. Treatment.
37. Implements.
12. Trellises.
38. Trunk-guards, cattle.
39. Vermin.
40. Turpentine-gathering.
41. Window-gardens.

The sub-class of Flexible shafting, in Class 64, Journal-Boxes, Pulleys and Shafting, Division XXII, is abolished and new sub-classes are established in the said class, as follows:

28. Journal-boxes, lubricating, coolers.
29. Shafting—
80. Flexible.

The following sub-classes are added to Class 48, Gas, Division XXXI:

Class 48. Gas—
23. Distribution—
46. Leakage,
47. Preventing leakage,
Gas—
Distribution—
48. Regulating pressure,
49. Separators.

JOHN S. SEYMOUR,
*Commissioner.*

(ORDER No. 840.)

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
*Washington, D. C., August 14, 1893.*

The following changes in the Classification of Inventions are hereby authorized to be made:

The following classes are hereby transferred from Division III to Division XIII:

Class 134. Metal-Tube Manufacture.
Class 205. Metal-Drawing.
Class 206. Metal-Welding.

In Class 175, Electricity, Special Applications, Division XVI, sub-class 168, Metal-working, is transferred to Class 206, Metal-Welding, Division XIII.

In Class 53, Hardware-Making, Division XIII, sub-classes 5, Fence-barbs of sheet metal, and 19, Tie-bands, are transferred to Class 164, Metal Punching and Shearing, in Division XIV.

In Class 53, Hardware-Making, Division XIII, sub-classes 12, Pens, pencils, and holders, and 23, Lamp-work, are transferred to Class 118, Sheet-Metal Ware, Making, Division XIV.

The following classes are hereby transferred from Division VIII to Division XXIV:

Class 132. Toilet.
Class 135. Umbrellas and Canes.

The following sub-classes are hereby transferred from Class 40, Advertising, Division XXXII, to Class 45, Furniture, Division VIII:

23. Coat-hangers.
24. Counters.
29. Display-racks—
30. Adjustable-arm,
31. Enclosed,
32. Hanging,
33. Roll,
34. Rope,
35. Rotary—
36. Enclosed,
37. Sample-sheet—
38. Rotary.
39. Display-stands.
42. Dummies.
17. Map-holders.
51. Paper-bag holders.
13. Show-cases—
53. Cabinet,
55. Lid-lifters,
54. Revolving.
68. Store-shelving.
69. Trousers-hangers.
70 Vending devices—
71. Bins,
72. Grocers' cabinets,
74. Spool-cabinets.

In Class 40, Advertising, Division XXXII, sub-class 44, Garment-loops, is transferred to Class 2, Apparel, Division XXIV.

Class 191, Electricity, Electric Railways, is hereby transferred from Division XXVI to Division XXX.

JOHN S. SEYMOUR,
*Commissioner.*

## DISCLAIMER.

366,621.—*Brackett G. Corser*, Brattleboro, Vt. IMPROVEMENT IN OVERALLS. Patent dated July 12, 1887. Disclaimer filed August 14, 1893.

Enters his disclaimer to that part of the claim in said specification which is in the following words, to wit:

"7. A pair of overalls provided with a pocket made by sewing a piece to the inside of the body of the overalls at the side and bottom and to the waistband at the top, and provided with a piece of lining stitched over said first-named inside piece above the pocket-opening, whereby different goods can be used for the inner wall of the pocket and concealed from view above the opening."

## Publishers' Catalogues.

This Office would be pleased to receive from manufacturers and publishers such catalogues, circulars, price-lists, or other advertisements relating to the sciences and mechanical arts as are published by them for gratuitous distribution; but notice is hereby given such manufacturers or dealers who feel disposed to send their publications that not less than three copies should be forwarded in order that the subjects may be properly indexed, classified, and subclassified in the Scientific Library for convenient and ready reference.

## Notice of Interference.

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
*Washington, D. C., July 13, 1893.*

***William J. Bennetts, his heirs, assigns, or legal representatives, take notice:***

An interference having been declared by this Office between the application for patent of Arthur W. Robinson, of Bucyrus, Ohio, and a patent to William J. Bennetts, of Bucyrus, Ohio, and the notices of said declaration, mailed by the Patent Office in the usual manner to the said William J. Bennetts, having been returned undelivered, notice is hereby given to the said William J. Bennetts, his heirs, assigns, or legal representatives, that if he or they desire to contest the said interference they should immediately put themselves in communication with the Commissioner of Patents, in order that the notices heretofore sent by and returned to the Office may be forwarded to them. This notice will be published in the OFFICIAL GAZETTE for six consecutive weeks.

JOHN S. SEYMOUR,
*Commissioner.*

## Issue of August 15, 1893.

| | | |
|---|---|---|
| Patents | 453 | No. 503,115 to No. 503,567, inclusive. |
| Designs | 28 | No. 22,693 to No. 22,715, inclusive. |
| Trade-Marks | 38 | No. 23,478 to No. 23,515, inclusive. |
| Labels | None. | |
| Prints | None. | |
| Reissues | 4 | No. 11,358 to No. 11,361, inclusive. |
| Total issue | 518 | |

TO CITIZENS OF THE UNITED STATES.

| States. | Patents and Designs. | Trade-Marks. | States. | Patents and Designs. | Trade-Marks. |
|---|---|---|---|---|---|
| Alabama | 4 | .... | Nevada | .... | .... |
| Arizona Territory | .... | .... | New Hampshire | 4 | .... |
| Arkansas | 1 | .... | New Jersey | 20 | .... |
| California | 16 | 1 | New Mexico Territory | .... | .... |
| Colorado | .... | .... | New York | 64 | 9 |
| Connecticut | 20 | .... | North Carolina | .... | .... |
| Delaware | .... | .... | North Dakota | .... | .... |
| District of Columbia | 7 | .... | Ohio | 28 | 5 |
| Florida | 1 | .... | Oregon | 3 | .... |
| Georgia | 3 | .... | Pennsylvania | 47 | 1 |
| Idaho | 2 | .... | Rhode Island | 3 | .... |
| Illinois | 47 | 4 | South Carolina | .... | .... |
| Indiana | 9 | .... | South Dakota | .... | .... |
| Indian Territory | 1 | .... | Tennessee | 4 | .... |
| Iowa | 3 | 1 | Texas | 8 | 1 |
| Kansas | 3 | 1 | Utah Territory | 1 | .... |
| Kentucky | 3 | 1 | Vermont | 1 | 1 |
| Louisiana | .... | .... | Virginia | 3 | .... |
| Maine | .... | .... | Washington | 1 | .... |
| Maryland | 3 | 1 | West Virginia | 2 | .... |
| Massachusetts | 48 | 4 | Wisconsin | 11 | .... |
| Michigan | 14 | .... | Wyoming | .... | .... |
| Minnesota | 9 | .... | U. S. Army | .... | .... |
| Mississippi | 2 | .... | U. S. Navy | .... | .... |
| Missouri | 16 | 1 | | | |
| Montana | 3 | .... | Total to citizens of the United States | 420 | 31 |
| Nebraska | 5 | .... | | | |

TO CITIZENS OF FOREIGN COUNTRIES.

| Countries. | Patents and Designs. | Trade-Marks. | Countries. | Patents and Designs. | Trade-Marks. |
|---|---|---|---|---|---|
| Argentine Republic | .... | .... | Netherlands | .... | .... |
| Austria-Hungary | 1 | .... | Newfoundland | .... | .... |
| Belgium | 3 | .... | New South Wales | .... | .... |
| Bermuda | .... | .... | New Zealand | .... | .... |
| Brazil | .... | .... | Norway | .... | .... |
| Canada | 3 | .... | Queensland | .... | .... |
| Chile, Republic of | .... | .... | Russia | .... | .... |
| Costa Rica | .... | .... | Scotland | .... | .... |
| Cuba | .... | .... | South Africa | .... | .... |
| Denmark | .... | .... | South Australia | .... | .... |
| Ecuador | .... | .... | Spain | 1 | .... |
| England | 23 | 4 | Sweden | .... | .... |
| France | 5 | .... | Switzerland | 2 | .... |
| Germany | 17 | 2 | Venezuela | .... | .... |
| Guatemala | .... | .... | West Australia | .... | .... |
| Ireland | 1 | 1 | | | |
| Italy | .... | .... | Total to citizens of foreign countries | 56 | 7 |
| Mexico | .... | .... | | | |

## APPLICATIONS UNDER EXAMINATION.

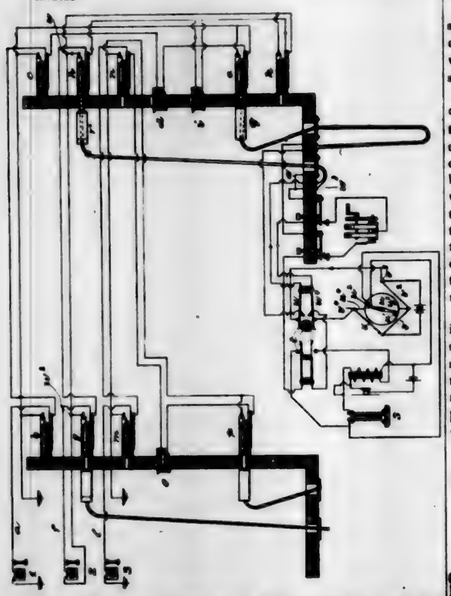
*Condition at Close of Business August 8, 1893.*

| Division No. | Subjects of invention. | Oldest new application and oldest action by applicant awaiting office action. New. | Amended. | No. of applications awaiting action. |
|---|---|---|---|---|
| | *In arrears.—Under one month.* | | | |
| 2 | Farm Stock, Products, etc | July 12 | Aug. 7 | 60 |
| 31 | Gas, Painting, Hides, Skins, and Leather, Alcohol, Oils, Fats, and Glue, etc. | July 31 | Aug. 8 | 31 |
| 13 | Metal Working, Arms and Projectiles, Nails and Spikes, Needles and Pins, etc. | July 11 | July 23 | 61 |
| | *Between one and two months.* | | | |
| 21 | Textiles, etc. | June 12 | Aug. 2 | 124 |
| 14 | Metal-Bending, Wire-Working, Coin-Controlled Apparatus, Farriery, Nut and Bolt Locks, etc. | June 9 | Aug. 2 | 97 |
| 16 | Telegraphy, Telephony, Electric Lighting and Signaling. | July 3 | Aug. 1 | 58 |
| 32 | Advertising, Aeration and Bottling, Baggage, Packing and Storing Vessels, etc | June 10 | Aug. 1 | 200 |
| 27 | Brushing and Scrubbing, Grinding and Polishing, Laundry, etc. | June 19 | July 31 | 97 |
| 20 | Builders' Hardware, Cutlery, Safes, Dentistry, Surgery, Undertaking, Artificial Limbs, etc. | June 12 | July 29 | 227 |
| 11 | Boots and Shoes, Clasps, Buckles and Buttons, Harness, Hose and Belting, and Leather Working Machinery | June 8 | July 29 | 250 |
| 19 | Stoves and Furnaces | June 9 | July 25 | 249 |
| 10 | Carriages and Wagons and Railway-Cars | June 8 | July 20 | 366 |
| 6 | Chemistry, Explosives, Medicines, Fertilizers, Preserving, Photography, Sugar and Salt, etc | July 6 | July 17 | 147 |
| 30 | Lamps, Gas-Fittings, Linotyping, Matrix-Making Machines, and Type-Writing Machines. | June 24 | July 15 | 190 |
| | *Between two and three months.* | | | |
| 24 | Sewing-Machines, Crinoline and Corsets, and Apparel | May 22 | July 31 | 118 |
| 12 | Mechanical Engineering, Stores-Service, etc. | June 6 | July 25 | 183 |
| 7 | Harvesters, Games and Toys, and Velocipedes. | June 1 | July 24 | 348 |
| 8 | Furniture, Toilet, Umbrellas and Canes, etc. | May 26 | July 24 | 292 |
| 25 | Artesian and Oil Wells, Butchering, Mills and Thrashing, Stone-Working, Vegetable Cutters and Crushers. | May 11 | July 24 | 219 |
| 17 | Paper-Manufactures and Printing | May 8 | July 14 | 279 |
| 9 | Hydraulics, Fire-Extinguishers, etc. | May 15 | July 11 | 331 |
| 4 | Civil Engineering, Fire-Proof Buildings, Fire-Escapes and Ladders, etc. | May 27 | June 23 | 337 |
| | *Between three and four months.* | | | |
| 3 | Metallurgy, Metal-Founding, Coating, Annealing and Tempering, Electro-Chemistry, etc. | May 6 | Aug. 2 | 164 |
| 18 | Steam-Engineering, etc | Apr. 17 | July 29 | 258 |
| 1 | Tillage and Fences | Apr. 8 | July 29 | 232 |
| 23 | Instruments of Precision, Acoustics, Optics, etc. | Apr. 26 | July 26 | 309 |
| 29 | Wood-Working Machines, Carpentry, Coopering and Roofing, etc. | May 2 | July 17 | 282 |
| 15 | Plastics, Paper-Making, Paving, Glass, Fuel, Bread-Making, etc. | Apr. 14 | July 14 | 307 |
| 5 | Fine Arts, Stationery, Book-Binding, Music, etc. | Apr. 12 | June 19 | 282 |
| | *Between four and five months.* | | | |
| 22 | Fire-Arms, Fishing and Trapping, Navigation, Signals, etc. | Mar. 25 | July 25 | 266 |
| | *Between five and six months.* | | | |
| 28 | Pneumatics, Refrigeration, Air and Gas Engines, etc. | Feb. 24 | July 29 | 398 |
| | *Between eight and nine months.* | | | |
| 26 | Electricity, Generation, Distribution, Electric Railways, etc. | Nov. 21 | June 3 | 375 |
| | Total number of applications awaiting action | | | 7,155 |
| | *Under one month in arrears.* | | | |
| | Designs | Aug. 8 | Aug. 5 | 10 |
| | Trade-Marks | Aug. 2 | Aug. 1 | 38 |

# PATENTS

## GRANTED AUGUST 15, 1893.

**503,115. TEST SYSTEM FOR MULTIPLE SWITCHBOARDS.** WILLIAM D. ALLISON, Chicago, Ill., assignor to the Western Electric Company, same place. Filed May 14, 1888. Serial No. 273,864. (No model.)



*Claim.*—1. The combination with a Wheatstone bridge or balance connected with a loop switch of a telephone exchange, of telephone lines, each line connected with two or more different springjack switches on different switchboards, each including an individual annunciator of given resistance, one side of the bridge containing more resistance than two other sides thereof, but less than the resistance of the individual annunciator or any line, the resistance of the different telephone lines being each substantially twice the resistance of the individual annunciator, and switching apparatus; whereby, on testing a line, the circuit of the fourth side of the bridge is made to contain more resistance than that of the fixed resistance of the side which is highest in resistance, if the line tested be connected or in use.

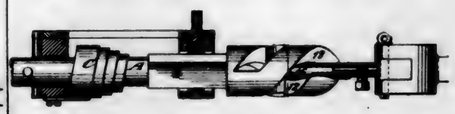
2. The Wheatstone bridge or balance having its two sides, $v$, $v'$ of the same resistance, say, ten ohms each, and its third side, $v^2$, of high resistance, say, ninety-five ohms, the remaining side, that is, between points $v^3$ and $v^4$, containing different strands of a cord terminating in a loop plug $r$, the point $v^3$ being connected with one terminal of the plug and the other point $v^4$ being connected with the other terminal of the plug, in combination with a telephone line extending through two or more switches, the switches being on different switchboards, the individual annunciator included in the circuit of said telephone line having a resistance greater than the resistance of the third side of said bridge, say, one hundred ohms, and the resistance of said telephone line, exclusive of that of the annunciator, being more than twice the resistance of the third side of said bridge; whereby, on touching a terminal of said plug to the spring of one of the springjacks in the telephone line, it may be determined whether a connection has been made at any other of the springjacks of said line.

3. The combination with a telephone line connected with different springjack switches on different boards, of a loop plug inserted in one of said switches, and indicating apparatus adapted to indicate when the line is busy, a resistance in the line less than the normal substantially as described.

4. A loop switch provided with springs having their free ends on opposite sides of a pivoted leader, the springs being mounted in pairs, the portion of the lever opposite the spring being thicker than the distance between the springs when in their normal position, said pairs of springs being each provided with contact points; said contact points being outside their respective springs and in the path of said springs when spread apart whereby, on moving the lever in one direction, the members of one pair of springs are spread apart to close upon their respective contacts, while, on moving it in the opposite direction, the members of the other pair of springs are spread apart and disconnected from one another and closed upon their respective contacts, said pairs resuming their normal positions when the lever is upright, substantially as described.

5. The combination with springs $c'$, $c^2$, mounted upon a block of insulating material and normally connected together, of the pair of springs $b'$, $b^2$, placed with their free ends opposite the free ends of said springs $c'$ $c^2$ respectively and mounted upon a block of insulating material and normally pressing against different contact points $f'$, $f^2$, and a lever or wedge between the free ends of said springs; whereby either pair of springs may be spread apart according to the position of the wedge or lever, substantially as described.

**503,116. CAR-COUPLING LINK.** GERARD BEEKMAN, New York, N. Y. Filed Apr. 15, 1893. Serial No. 470,635. (No model.)



*Claim.*—1. A coupling link provided with a head at one end adapted to engage with a rotary coupling head having spiral projections, and provided with means for securing its opposite end to another coupling head in a non-rotary position.

2. A coupling link provided at one end with a transverse projection adapted to engage with a rotary coupling head having spiral projections, and provided with means for securing its opposite end to another coupling head in a non-rotary position.

3. A coupling link provided at one end with a perforation adapted for the reception of a coupling pin to support it in a non-rotary position, and at its opposite end provided with a head adapted to engage with a rotary coupling head having spiral projections.

4. A coupling link having in combination, a shank portion or portions to engage a coupling head, and a head portion on the shank or shanks, substantially wedge shaped in cross-section and arranged at a lateral incline relatively to the shank or shanks.

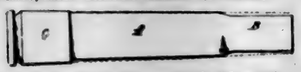
5. A coupling link having in combination, a shank portion adapted to engage a coupling pin, a head portion on the shank adapted to engage a coupling head, and the yielding plate.

6. In a coupling link, the combination of the shank portion constructed to engage a coupling pin, a head portion on the shank con-

structed to automatically engage a coupling head, a yielding plate secured to the shank portion and means for adjusting the same.

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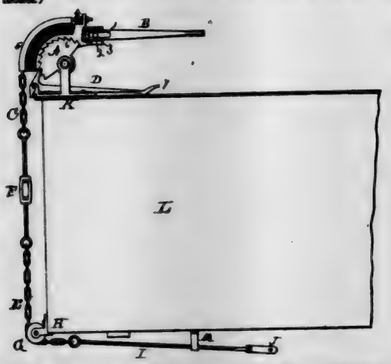
**503,117.** CARTRIDGE-SHELL. THOMAS G. BENNETT, New Haven, Conn., assignor to the Winchester Repeating Arms Company, same place. Filed Oct. 3, 1892. Serial No. 447,949. (No model.)



*Claim.*—A cartridge-shell constructed with an enlargement from its rear end forward, the said enlargement terminating at its forward end in an annular shoulder around the body of the shell, the surface of the said enlargement tapering from the rear end forward on lines which strike the shell near its forward end, and the said enlargement near its rear end having an annular groove formed therein to produce a rim around the rear end of said enlargement, but of substantially the same diameter as the body of said enlargement forward of said rim, and substantially as described.

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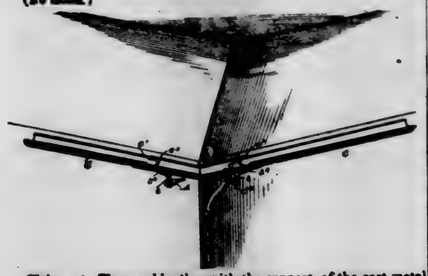
**503,118.** DEVICE FOR OPERATING CAR-BRAKES. HERMAN H. BERRAUM, Dayton, Ohio. Filed Apr. 28, 1892. Serial No. 471,911. (No model.)



*Claim.*—In a device for operating car-brakes the combination of the standards or frame K with suitable bearings, the operating part A with groove mortise and segmental ratchet, the movable slotted hand-lever B, the pawl-lever D, to engage said ratchet with suitable connections with the lever of a car brake, substantially as set forth.

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**503,119.** EAVES-TROUGH AND SUPPORT. MURRAY M. BLACKER, Amelia Court-House, Va. Filed Sept. 14, 1892. Serial No. 445,874. (No model.)



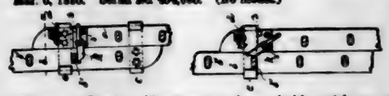
*Claim.*—1. The combination with the support, of the cast metal eaves trough composed of detachable sections, the one end of each section inclosing the other end of the next adjoining section, and a projection on each side of one of said sections engaging corresponding parts of the other said section, whereby they are detachably secured against displacement as described.

2. A cast metal eaves trough composed of duplicate sections the one end of each section being inclosed in the other end of the other section when in position one section having a pintle near one end and the other section having pintle seats in the other end, said sections being coupled and uncoupled only when in an unusual position, substantially as set forth.

3. A cast metal eaves trough composed of duplicate sections, the one end of each section being inclosed in the other end of the next adjoining section, each section having a short pintle on each side near one end and corresponding pintle seats in the other end, and one end being curved as shown, whereby said sections may be coupled and uncoupled only when in an unusual position, substantially as set forth.

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**503,120.** LADDER. EUGEN BLANKENBURG, Duesseldorf, Germany. Filed Mar. 6, 1893. Serial No. 464,696. (No model.)

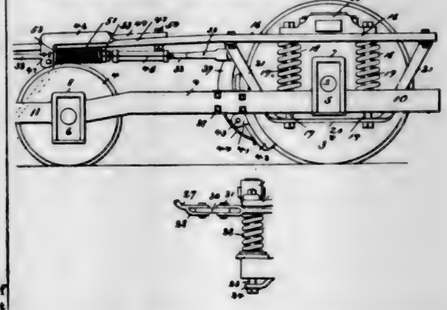


*Claim.*—1. The combination of a lower ladder with an upper sliding ladder, an embracing strap, a lever secured to the lower ladder and projecting beneath the rungs of the upper ladder and with a stop that engages the upper edge of the lever, substantially as specified.

2. The combination of a lower ladder and an upper ladder, with the lever *k*, pivoted to the side bar of the lower ladder and adapted to be projected beneath the rungs of the upper ladder and with diagonally arranged stops *s*, *s'*, on opposite sides of the lever and a catch *d*, substantially as specified.

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**503,121.** CAR-BRAKE. JOHN A. BRILL, Philadelphia, Pa. Original application filed Oct. 22 1892, Serial No. 449,607. Divided and this application filed Apr. 6, 1893. Serial No. 469,253. (No model.)



*Claim.*—1. The combination, in a brake mechanism, of fulcrumed and upright brake levers, shoes supported on the levers below their fulcrums, rods leading from the said brake levers on each side of the truck, and secured to the same above their fulcrums both rods being transversely united by a cross bar, and a rod leading from the source of power directly to the cross bar, the arrangement being such that the movement of the shoes to or from the wheel will be in the reverse direction to that of the operating rods, substantially as described.

2. In a brake mechanism, the combination with the shoes and levers on the truck, of the longitudinal rods having a segmental equalizing bar pivotally secured to the ends thereof, and a brake rod leading from the source of power, movably secured to the said bar, substantially as described.

3. The combination with the upright levers fulcrumed to the truck adjacent to the wheels, the shoes secured directly to said levers below their respective fulcra, brake rods leading from said rods above their fulcra, an equalizing bar between the ends of said rods, and a connecting lever leading from the source of power to said bar, and movably connected thereto substantially as described.

4. The combination with the shoes and levers on the truck, of the brake rods leading from said levers, an equalizing bar uniting said rods, a spring about said rods, an abutment for said spring, and a rod leading from the equalizing bar to the source of power, substantially as described.

5. In combination with a brake mechanism, of means for supporting the brake shoe adjacent to the face of the wheel, comprising the block 35 secured to the truck frame, the outwardly extending boss 36, the lever 39 fulcrumed on said boss, and a brake shoe 42 secured to the lower arm of said lever, substantially as described.

6. The combination with the lever 39 fulcrumed upon the truck, rods leading from the upper portion of the said lever to the operating device, a shoe 42 movably secured to the lever below its fulcrum, and a spring 44 fixed at one end to said lever, its free end bearing against the shoe below its union with said lever, substantially as described.



7. In a brake mechanism having the rods 32, an equalizing bar 30, connecting rod 27, of the sleeve nuts 43 for adjusting the length of said rods, substantially as described.

8. In a brake mechanism, the combination of the equalizing bar 30, the parallel rods 32 connected with said equalizing bar, the brake shoes supported upon the truck, and a spring adapted to offer a resilient resistance to the movement of said rods, substantially as described.

9. The combination with a brake mechanism having the rods 32, of a support for the same comprising the hanger 47 secured to the upper chord of the truck, substantially as described.

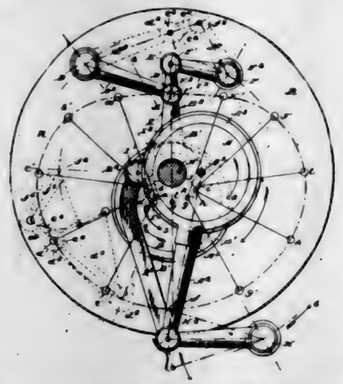
10. In a brake mechanism, the combination with the equalizing bar 30, parallel rods 32, brake shoes supported on the truck frame, the levers 39 connecting the brake shoes with the rods 32, the hanger 47 for supporting the rods 32, and springs 51 on the rods 32 having a suitable abutment for one end and abutting against the hanger 47 at the other, substantially as described.

11. In combination with the car truck having springs extending between the cross bar of the axle box frame and the upper chord or car sill, and a brake mechanism carried by the truck, of a segmental equalizing bar connecting with the brake mechanism and located outside of the end springs, and a connecting rod leading from the source of power and movably connected with said equalizing bar, the location of said equalizing bar being such as to permit of a movement between said bar and connecting rod without the truck frame, substantially as described.

12. The combination with a brake mechanism supported on the truck, of the equalizing bar 30 without the truck, and a rod 27 carrying an anti-friction roller in contact with said bar substantially as described.

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**503,122.** MECHANICAL MOVEMENT. SAMUEL G. BROWNE, Savannah, Ga. Original application filed Jan. 20, 1892, Serial No. 418,731. Divided and application filed Dec. 1, 1892. Serial No. 453,768. Again divided and this application filed Dec. 29, 1892. Serial No. 456,734. (No model.)



*Claim.*—1. In a mechanical movement, a support, a driving eccentric, means for driving said eccentric, a working eccentric loose on the shaft of the driving eccentric, and connections between said eccentrics, whereby said driving eccentric controls through said connections the operation of the working eccentric to produce a variable motion.

2. In a mechanical movement, a support, a driving eccentric, a working eccentric having its center of rotation coincident with the center line of the shaft of the driving eccentric, and connections between the said eccentrics.

3. In a mechanical movement, a rotary disk, a driving shaft, a driving eccentric operated by said shaft, a working eccentric, and a toggle-joint controlled by the working eccentric, and a connecting-rod for controlling the working eccentric, the latter being operated by the driving eccentric, whereby a variable motion is obtained.

4. In a mechanical movement, a rotary disk, a driving shaft, a driving eccentric operated by said shaft, a working eccentric a toggle-joint consisting of two levers and a connecting-rod, said toggle-joint being controlled by the working eccentric, and a connecting-rod operated by the driving eccentric and controlling the working eccentric.

5. In a mechanical movement, a rotary disk, a driving eccentric, means for operating said eccentric, a working eccentric, connections between said eccentrics, and a toggle-joint controlled by the working eccentric, said driving eccentric controlling through said connections the operation of the working eccentric to produce a variable motion.

6. In a mechanical movement, a support, a shaft, a driving eccentric mounted thereon, a working eccentric loosely mounted on said shaft and oscillating thereon, and connections between said eccentrics.

7. In a mechanical movement, a rotary disk, a shaft, a driving eccentric mounted thereon, a working eccentric mounted on said shaft and oscillating thereon, connections between said eccentrics, and a toggle-joint controlled by said working eccentric.

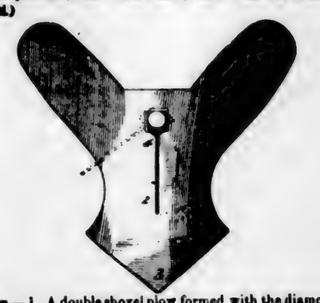
8. In a mechanical movement, a support, a shaft, a working eccentric loosely mounted on said shaft and oscillating thereon, and means for oscillating said eccentric.

9. In a mechanical movement, the combination of a driving eccentric, an oscillating eccentric having its center of oscillation coincident with the center line of the shaft of the driving eccentric, and a connecting rod for controlling the oscillating eccentric through the driving eccentric.

10. In a mechanical movement, the combination of a driving eccentric and an oscillating working eccentric upon the same shaft, and connections whereby the driving eccentric operates the working eccentric.

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**503,123.** DOUBLE TURNING SHOVEL AND COLTER. JOHN H. COLE, Tylertown, Miss. Filed Oct. 1, 1892. Serial No. 447,575. (No model.)

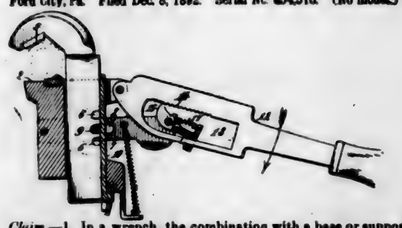


*Claim.*—1. A double shovel plow formed with the diamond point 3, the wings 1 rising above the central portion, said central portion being vertically concave and slightly convex across the face of the shovel, said center narrowed above the cutting edge, thence expanding into the wings, substantially as shown and described.

2. The double shovel plow formed as described and shown in combination with the crescent-shaped colter 4, secured to the plow and adapted to be turned to one side to serve as a fender, substantially as shown and described.

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**503,124.** PIPE OR NUT WRENCH. WILLIAM H. CONVER, Emlenton, assignor of two-thirds to Andrew C. Bailey and Jackson D. Bailey, Ford City, Pa. Filed Dec. 8, 1892. Serial No. 454,510. (No model.)



*Claim.*—1. In a wrench, the combination with a base or support provided with a stationary jaw and a guideway, of a movable jaw slidable in the guideway and provided with a series of notches, a longitudinally slotted link pivoted at one end to the base or support, a pin or bolt movable in the slotted part of the link into and out of the notches of the movable jaw, a swinging handle pivoted to the base or support, and a pivotal connection between the handle and the slotted link, substantially as described,

2. In a wrench the combination with a base or support provided with a stationary jaw and a guide-way, of a movable jaw sliding in said guide-way and provided with a series of notches, a swinging link provided with a slotted part and pivotally connected to said base or support, a pin movable in the slotted part of said link and adapted to engage the notches of the movable jaw, and a lever for swinging said slotted link and the pin carried thereby, substantially as described.

3. In a wrench the combination with a base or support provided with a stationary jaw and a guide-way, of a movable jaw sliding in said guideway and provided with a series of notches, a slotted swing-

ing link connected to said base or support, a pin movable in the slot of said link and adapted to engage the notches of the movable jaw, a slide for retaining the pin in engagement with the notches of the movable jaw and a lever connected with said link to swing the same, substantially as described.

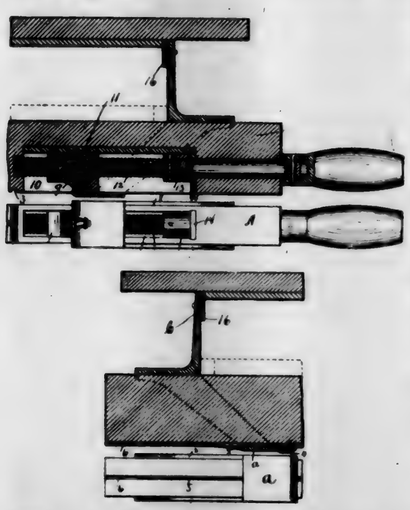
4. In a wrench, the combination with a base or support provided with a stationary jaw and a guideway, of a movable jaw slidable in the guideway and provided with a series of notches, a longitudinally slotted link pivot d at one end to the base or support, a pin or bolt movable in the slotted part of the link into and out of the notches of the movable jaw, a swinging handle pivoted to the base or support, and an adjustable pivotal connection between the handle and the slotted link, substantially as described.

5. In a wrench the combination with a base or support provided with a stationary jaw and having guide arms, of a movable jaw sliding in the guide-way formed by said arms, a swinging link connected to said base or support, means carried by said link to engage said movable jaw, a lever connected to said guide arms and said link and provided with a slot and ratchet teeth, and a dog or pawl pivoted to the swinging link and adapted to engage the ratchet teeth, substantially as described.

6. In a wrench the combination with a base or support provided with a stationary jaw and having guide-arms, of a movable jaw sliding in the guide way formed by said arms and provided with a series of notches, a swinging link connected to said base or support, a pin movable in said link and adapted to engage said movable jaw, a lever connected to said guide arms and said swinging link and provided with a slot and ratchet teeth, and a dog or pawl pivoted to the swinging link and adapted to engage the ratchet teeth, substantially as described.

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**503,125. CLAMP.** WILLIAM H DANA, Chicago, Ill., assignor to the Chicago Clamp Company, same place. Filed Mar. 4, 1892. Serial No. 423,786. (No model.)



*Claim.*—1. In a clamp, a bar, having a longitudinal recess in its lower face, a sliding jaw; a clamping jaw having an arm extending to the lower edge of said bar and provided with an upwardly extending nut located within said recess in said bar, and a revoluble screw threaded rod engaging said nut.

2. In a clamp, a bar having a longitudinal recess in its lower face, a sliding jaw, a clamping jaw having a bifurcated arm embracing the sides of said bar and extending to the lower face of the bar and carrying a nut at its lower end that extends upwardly into said recess, and a revoluble screw-threaded rod engaging said nut.

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**503,126. RELIEF-VALVE FOR SUCTION OR BLAST PIPES.** HENRY L. DAY, Minneapolis, Minn. Filed Feb. 24, 1891. Serial No. 382,608. (No model.)

*Claim.*—1. The combination in a relief valve, of a valve chamber, a deflector and outlet opening to which the material is directed by said deflector, an outlet opening through which the surplus air escapes, a plate extending the full width of the valve chamber and separating said outlet openings, and an outlet pipe connected with both of said outlet openings.

2. The combination in a device of the class described, with the valve chamber, of an inlet pipe connected with said valve chamber, outlet openings for said valve chamber, two or more pipes each connected with both of said openings, a plate in said valve chamber separating said outlet openings, a deflector arranged to direct the material to one of said openings while the surplus air escapes through the other, and a valve or valves arranged to direct said material into said pipes in the desired proportions.

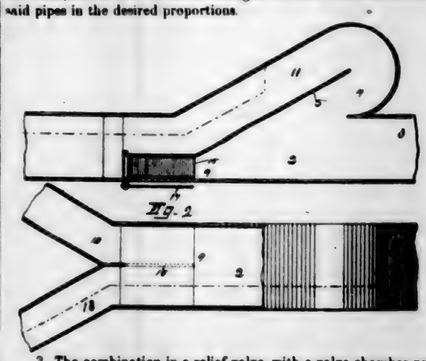


Fig. 2.

3. The combination in a relief valve, with a valve chamber provided with a suitable inlet and with suitable outlets, of a series of pipes connected with said outlets, one or more valves controlling the admission of material to said pipes, and a deflector for directing the material to one of said outlets while the surplus air is permitted to escape through the other outlet, substantially as described.

4. The combination in a relief valve, of the valve chamber provided with a suitable inlet, an outlet for material of less area than said inlet, a deflector arranged to direct the material into said outlet, said valve chamber being also provided with an outlet for the surplus air, a plate arranged in said valve chamber and separating said outlets, and a pipe having one or more branches connected with both of said outlets, and valves for directing the material into said pipe or branches in the desired proportions.

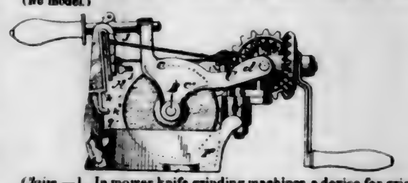
5. The combination with a valve chamber, of the inlet pipe 3 and the outlet pipes 13, the deflector arranged in said valve chamber, an outlet opening to which material is directed by said deflector of less area than said inlet pipe said opening connecting with said pipes 13, and an outlet from said valve chamber into said pipes 13 into which the surplus air can escape without passing under said deflector and a plate arranged in said valve chamber and separating said outlet openings.

6. The combination in a relief valve, of the valve chamber provided with a suitable inlet, a transverse deflector arranged in and extending across said valve chamber, an outlet opening below said deflector to which the material is directed by the deflector, an outlet opening above said deflector through which the surplus air escapes, a pipe or pipes connected to both of said outlet openings.

7. The combination in a relief valve chamber provided with a suitable inlet, one or more outlets in the lower portion thereof, an inclined deflector arranged in and extending across said valve chamber to direct the material to said outlets, a valve or valves to regulate the quantity of material passing to each of said outlets, an outlet opening arranged above said deflector through which the surplus air escapes, and an outlet pipe connected to all of said openings to which the material is directed by the deflector.

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**503,127. MACHINE FOR GRINDING MOWER-KNIVES.** RUFUS DUTTON, New York, N. Y. Filed Jan. 17, 1891. Serial No. 378,337. (No model.)



*Claim.*—1. In mower knife grinding machines, a device for grinding knives of different bevels on the same machine, consisting of a knife clamp and its frame, a grinding wheel journaled in an arm which is swiveled with respect to the knife clamp frame by a pivot that is perpendicular to the axis of the grinding wheel, and is distant from the grinding face of the wheel a greater distance than the diameter of the grinding wheel, and stops on the base for limiting the lateral swing of the arm, so placed that the chord of the arc through which the grinding face of the wheel swings is greater than the breadth of a knife section measured parallel to the knife-clamp frame, as described.

2. In a mower knife grinding machine, a knife clamp and its frame, a grinding wheel and its frame, and the said frames swiveled with respect to each other by a pivot, which is positioned at the intersection of the perpendiculars respectively drawn from the line of a beveled edge of one knife section and from the line of the opposite beveled edge of the next knife section but one, and from points on said lines which are each distant outwardly from the ends of said beveled edges a distance equal to one-half the width of the face of the grinding wheel, as and for the purpose described.

3. In a mower knife grinding machine, a water trough, a grinding wheel horizontally journaled in an arm which is hinged parallel to the axis of the grinding wheel on a wheel frame that is swiveled over the rear end of the water trough by a pivot which is horizontally distant behind the grinding face of the wheel, a distance greater than the diameter of the grinding wheel, a knife clamp having horizontal brackets to support a knife back, and the brackets located on the knife clamp, so that the height of the bottom of the V-notch between two knife-sections above the water-level of the trough is greater than half the diameter of the grinding wheel, as described.

4. The combination in a mower knife grinding machine, of a knife clamp adapted to hold a knife blade in a substantially vertical plane, a grinding wheel, horizontally journaled in a wheel arm which is hinged parallel to the axis of the grinding wheel on a wheel frame swiveled on a stationary part of the machine by a pivot which is distant horizontally behind the knife clamp a greater distance than the diameter of the grinding wheel, a hand lever fixed on the front end of the aforesaid wheel arm for the purpose of oscillating said wheel arm laterally, and also of reciprocating said wheel arm vertically, and a stop on the wheel arm and a corresponding stop on the wheel frame for limiting the vertical movement of the wheel arm, as described.

5. In a mower knife grinding machine, means for holding a knife section on the face of the grinding wheel, consisting of a lever pivoted on a handle attached to the grinding wheel arm, and the free end of the lever connected with one end of a flexible connection which is guided around a sheave journaled on the wheel arm, and has its other end attached to the knife-clamp, as described.

6. In a mower knife grinding machine, means for reciprocating a hinged knife-clamp to and from a grinding wheel, which means consist of a lever pivoted on the hand lever attached to the wheel arm, and the free end of the lever connected with one end of a flexible connection which is guided around a sheave journaled on the wheel arm, substantially over the center of the lateral oscillation of said arm, and has its other end connected with the knife clamp, and a spring interposed between the knife clamp and a stationary part of the machine and actuating the knife clamp in a direction opposite to the pull of the flexible connection, as described.

7. In a mower knife grinding machine, a wheel arm supporting a grinding wheel and hinged parallel to the axis of the grinding wheel, on a wheel frame which is swiveled on a stationary part of the machine, by a pivot which is perpendicular to the axis of the grinding wheel, a projection on said wheel frame oscillating in a recess in the stationary part, which recess is in form an arc of a circle, and shoulders on said stationary part which engage the projection on the wheel frame at its extreme lateral positions, as described.

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**503,128. SHUTTER-FASTENER.** JOHN S. EGERY, Brooklyn, N. Y. Filed Jan. 17, 1893. Serial No. 458,676. (No model.)



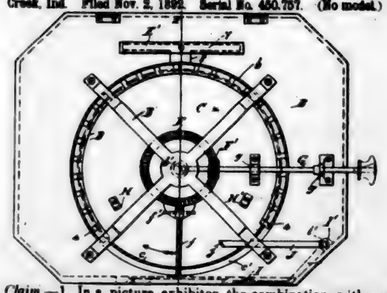
*Claim.*—1. In a shutter fastener, the bracket G, in combination with a vertically swinging dog E, pivoted thereto on a horizontal axis, and when swung to an outward position projecting behind the adjacent hinged edge of the shutter, and a stop maintaining said dog in its outward position, substantially as and for the purpose set forth.

2. In a shutter fastener, a bracket G, and horizontal stud F, in combination with the vertically swinging dog E, constructed with outer portion *a*, eye *c* for receiving said stud, and tail *d* constructed to engage said bracket to limit the motion of said dog.

3. In a shutter fastener, the bracket G, having stud F, and adapted to be fastened to the frame of a window, in combination with the dog E, of sheet metal, having straight outer portion *a*, bent around the stud F at *c*, and extending rearwardly as a tail *d*, substantially as and for the purpose set forth.

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**503,129. PICTURE-EXHIBITOR.** ROBERT C. ELLIOTT, Prairie Creek, Ind. Filed Nov. 2, 1892. Serial No. 450,757. (No model.)



*Claim.*—1. In a picture exhibitor, the combination, with a circular track, of a series of hangers depending from the track, and driving mechanism operating to move the hangers around the track, substantially as set forth.

2. In a picture exhibitor, the combination, with a circular track, of a series of hangers depending from the track, the revoluble cards carried by the hangers, and driving mechanism operating to move the hangers around the track and to turn the cards on their axes, substantially as set forth.

3. In a picture exhibitor, the combination, with a circular track, and a series of hangers provided with ratchet teeth and adapted to slide around the track, of a horizontal pawl pivoted centrally of the track, and driving mechanism for oscillating the pawl, whereby the said hangers are moved around the track, substantially as set forth.

4. In a picture exhibitor, the combination, with a circular track, and a series of hangers sliding thereon, of a plate provided with a hole surrounding the hangers and slots for permitting their removal, and a removable cover fitting the said slots, whereby the hangers are retained on the track, substantially as set forth.

5. In a picture exhibitor, the combination, with a circular track, and a series of hangers depending from the track and provided with ratchet teeth, of a beveled toothed wheel journaled in the center of the track, a horizontal pawl pivoted to the said wheel and operating to move the hangers around the track, stops for limiting the motion of the said wheels and pawl, and a crank-shaft and a beveled pinion for driving the said wheel, substantially as set forth.

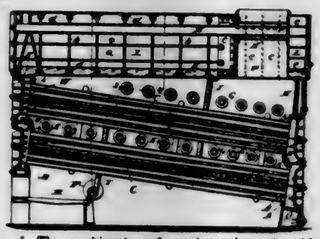
6. In a picture exhibitor, the combination, with a circular track, a series of hangers sliding thereon, and the revoluble cards carried by the said hangers, of an inclosing case provided with a window arranged in close proximity to the said track, whereby the cards are turned parallel with the window as they approach it, and driving mechanism operating to move the cards around the track, substantially as set forth.

7. In a picture exhibitor, the combination, with a circular track, a series of hangers sliding thereon, and the revoluble cards carried by the said hangers, of an inclosing case, a spring supported by the case, a rod journaled in bearings secured to the case, an arm secured to the lower end of the rod and passing behind the spring, an arm secured to the upper end of the said rod, and driving mechanism provided with a pawl adapted to move the said hangers around the track and to come in contact with the said upper arm and thereby cause the said spring to partially revolve the cards, substantially as set forth.

8. In a picture exhibitor, the combination, with a supporting track, of a hanger provided with a frame having two small grooves adapted to hook over the said track, and two cards arranged back to back and revolubly connected to the said frame, substantially as set forth.

9. In a picture exhibitor, the combination, with a track, of a hanger provided with a frame having two small grooves adapted to hook over the said track and a round stem depending from the said frame and having a button at its lower end, the double clips journaled on the said stem, and the cards carried by the said clips, substantially as set forth.

**503,130. WATER-TUBE SAFETY-BOILER.** HENRY W. PEACKHAM, Scranton, Pa. Filed June 23, 1891. Serial No. 397,190. (No model.)



*Claim.*—1. The combination of two irregular prismoidal water boxes, the ends of which form trapeziums with the connecting inclined water tubes, each prismoidal water box having one separate cover opposite the tube carrying side, with openings in the other four sides, two of which form trapeziums, by which water and steam communication is formed with the water spaced sides, the ends of said front and back irregular water boxes forming trapeziums being in communication with the water spaced sides, all as described.

2. The combination of back irregular water-box and cover, with the tubes connecting back irregular water-box and safety steam room, a front water-box, with inclined tubes connecting back and front water-boxes, these connecting tubes forming communication between front and back irregular water boxes and the safety steam room, all as specified.

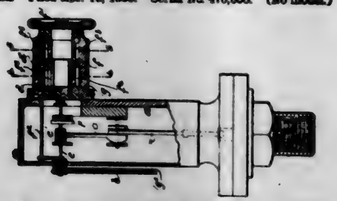
3. The combination of a double cone shaped water chamber with a furnace of a boiler, the double cone shaped water chamber forming a water back at the after end of furnace, and connected to the inner side of the water spaced sides, so that water and steam communicate between double cone shaped water back and water spaced sides, all as described.

4. The combination of double cone shaped water chambers with the water spaced sides, through which there are water and steam communications with the water spaced sides and safety steam room, all as specified.

5. The combination of the safety steam room, connected with the front and back irregular prismoidal water boxes and the water spaced sides, with the smoke-box passing through it, with a super-heating pipe inside of smoke-box, with a steam dry pipe in the steam room and in the super-heating pipe, with holes in after and upper side of dry pipe, all substantially as described.

6. The combination of front and back irregular prismoidal water boxes, connected with inclined tubes, with water spaced sides; with a furnace under and after the front water box, with a double cone shaped water-back, with double cone shaped water chamber, connecting the water spaced sides with a safety steam room and its smoke-box passing through it, with a super-heating pipe in smoke-box, with a steam dry pipe and its holes in the upper side of after end, with tubes connecting safety steam room and back water boxes, with a mud-drum, all substantially as described.

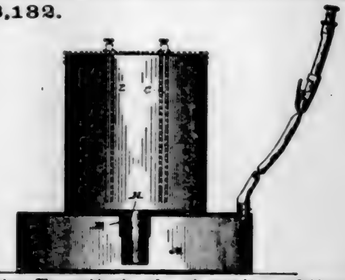
**503,131. GAS-REGULATOR.** LAWRENCE GARDNER, Manchester, England. Filed Apr. 13, 1893. Serial No. 470,855. (No model.)



*Claim.*—In a gas regulator serving to maintain a constant steam pressure in a boiler heated by a gas flame, the combination with a steam pressure gage; of a cylindrical valve operated by the said gage; a cylindrical shell surrounding the valve and capable of being turned independently of the valve; ports or passages in the valve and in the shell; an index or pointer moving with the shell; and a scale indicating the position of the shell and hence the steam pressure at which the gas is turned off substantially as described.

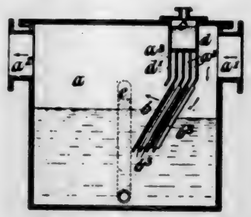
**503,132. BATTERY-JAR.** ALVAH M. GEE, Edgar, Nebr. Filed Feb. 18, 1893. Serial No. 462,872. (No model.)

**503,132.**



*Claim.*—The combination of an air-tight battery fluid reservoir having a central opening in its top and an interior neck depending inwardly from said opening, a battery cell or jar adapted to rest flatly at its bottom on top of said reservoir and provided with an integral fluid tube H, depending centrally from its bottom and removably projecting through said neck into the reservoir to a point near the bottom of the latter, and a valved air tube connected to the top of said reservoir and communicating with the interior thereof, substantially as set forth.

**503,133. APPARATUS FOR PURIFYING GAS.** JOSEPH GOSTE, Berlin, Germany. Filed Feb. 17, 1893. Serial No. 462,763. (No model.)



*Claim.*—1. A gas purifier comprising a closed separating chamber provided with gas inlet and outlet ports and with an overflow port at a lower level than said inlet and outlet ports, and a series of interspaced and longitudinally slotted partitions extending across the separating chamber between the inlet and outlet ports and from the top of said chamber to a point below the level of the aforementioned ports, the solid or unslotted parts of one partition lying in front of and overlapping the slots in the partitions next preceding, and means for causing a liquid to flow over said partitions, substantially as and for the purpose set forth.

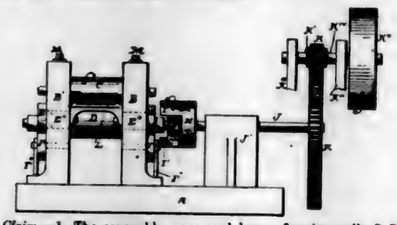
2. In a gas purifier, the combination with a closed purifying chamber provided with gas inlet and outlet ports in opposite walls thereof, and with an overflow below the said inlet and outlet ports, of vertically slotted interspaced partitions depending from the roof toward the floor of the chamber to a point below the level of the aforesaid ports, said partitions arranged relatively to each other so that a solid portion of one partition will lie opposite and overlap the slot in the adjacent partition, and means for feeding a liquid in a divided state as in the form of jets onto each of said partitions at the upper end thereof, for the purpose set forth.

3. A gas purifier comprising a closed separating chamber provided with gas inlet and outlet ports and with an overflow port at a lower level than said inlet and outlet ports, and a series of interspaced inclined separating partitions extending across said chamber between the gas inlet and outlet ports and from the top of said chamber to a point below the level of the aforementioned ports, said partitions constructed of rows of interspersed channeled plates the channeled side of all of said plates facing toward the gas inlet and the plates of one partition facing and overlapping the spaces between the plates of the partition next preceding, and means for causing a liquid to flow over each of said partitions, substantially as and for the purpose set forth.

4. In a gas purifier the combination with a casing, *e*, having gas inlet and outlet ports and an overflow port arranged as set forth, of the reservoir, *c*, extending across the chamber, said reservoir provided with a feed port, with a perforated bottom, and with depending cross partitions, as *d'*, and the interspaced partitions constructed of interspaced rows of channeled plates *b*, one end of which is secured to said depending cross partitions, substantially as and for the purpose set forth.



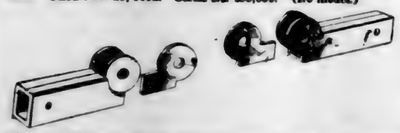
**503,134. ROLLING-MILL.** HENRY J. GOELING, Philadelphia, Pa., assignor to George Barnett and Henry Barnett, same place. Filed May 14, 1892. Serial No. 433,005. (No model.)



*Claim.*—1. The separable upper and lower forming rolls C D, mounted in housings B B'; said housings being provided with slots E" E", in which slots the journals of the lower roll D set; said journals being provided with cams E E'; idler rollers F F', upon which said cams set; whereby, by the revolution of said lower roll D the motion of the cams on said idler rollers will serve to raise said lower roll and permit it to fall; carrier G provided with a lug G' and set on the end of one of the journals of the lower roll; and revolving driver H provided with a striker arm I, all combined and operating substantially as and for the purposes described.

2. The combination of the upper and lower forming-rolls C D; housings B B' in which they are mounted, said housings being provided with slots E" E" in which the journals of the lower roll D set; cams E E' set upon or near the ends of said journals; and idler rollers F F' upon which said cams rest, substantially as described.

**503,135. CARRIAGE-TOP JOINT.** JOHN T. GROVER, Cincinnati, Ohio. Filed Nov. 25, 1892. Serial No. 453,039. (No model.)



*Claim.*—1. In a carriage top joint, the combination with the solid joint ends having reduced extremities; of the hollow stump joint secured upon said ends, each member of which joint is stamped from a single blank of sheet metal having its two opposite edges brought together at one side to form a tubular body, and parallel disk ears at one end, one of which is stamped in from the plane of its side, substantially as set forth.

2. In a carriage top joint, the stump joint composed of two members stamped from a single sheet of metal and having at one end parallel perforated disk ears, one of which is stamped in from the plane of its side, and being disposed oppositely to the corresponding disk ear of the other member, both of said disk ears working between the other flush disk ears of the joint, substantially as set forth.

3. In a carriage top joint, the tubular stump joint members having an inwardly stamped disk ear working inside of the flush disk ear of the opposite member, and separate disk washers mounted within each of the joint members and arranged in the space between the two inwardly stamped ears, substantially as set forth.

4. In a carriage top joint, the tubular stump joint members each having an inwardly stamped disk ear working inside of the flush disk ear of the opposite member, and separate disk washers arranged in the space between the inclosed inwardly stamped disk ears and having extended tongues or stems registering with the inner bore of one of the members, substantially as set forth.

5. The combination with the carriage top props having adjacent tongue ends; of a connecting hollow stump joint consisting of a single blank of sheet metal stamped into a tubular body to embrace at one end the tongues of said top props, and having its two opposing edges brought together into a brazed or similar joint, said blank having integral perforated disk ears formed therewith and disposed at one end of the tubular body in parallel planes with respect to each other, substantially as set forth.

**503,136. TROLLEY-WHEEL.** JOHN F HALL, Lincoln, Nebr. Filed Apr. 1, 1893. Serial No. 468,667. (No model.)

*Claim.*—1. A trolley wheel comprising opposite side disks having perforated hollow journals and telescoping flanges inclosing an interior oil chamber, and a renewable contact ring arranged on the telescoping flanges and removably clamped between said side disks, substantially as set forth.

2. A trolley wheel comprising opposite side disks having inwardly projecting circular rim flanges telescoping with each other to inclose an interior oil chamber, and outwardly extending hollow journals having oil openings, one of said side disks being further provided with an off-standing oil box or filling opening leading into the inclosed oil chamber, and a renewable grooved contact ring removably fitted onto the rim flanges between the side disks, and clamping screws or bolts connecting the side disks, substantially as set forth.



3. A sectional wheel having an interior oil chamber and hollow perforated journals extended from opposite sides thereof and communicating with the interior oil chamber, substantially as set forth.

4. A sectional wheel having an inclosed oil chamber and laterally extended hollow perforated journals, and a renewable contact ring fitting the periphery of the wheel, substantially as set forth.

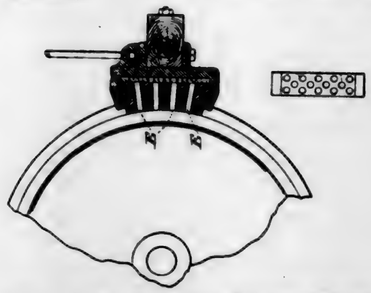
**503,137. SULKY.** WILLIAM J. HAMILL, St. Catharines, Canada. Filed Apr. 22, 1893. Serial No. 471,379. (No model.)



*Claim.*—1. The combination with a sulky axle of two like arched parts, of toothed arms carried by the lower ends of said parts, the spindles, the toothed and slotted arms carried thereby, and the binding means for said arms, as set forth.

2. The improved sulky described, composed of an arched axle of two parts connected by transverse braces, the toothed metallic arms supported by the lower ends of the two parts of the axle, the shafts supported on the axle, the seat, the braces, the wheels and their spindles, the toothed and slotted arms on the spindles, and the binding means held in one set of said arms and passed through the slots of the other set and provided with nuts, substantially as shown and described.

**503,138. BRAKE-SHOE.** ERNEST HOFFMANTTER, Jr., and HENRY STILLEBAUER, New York, N. Y. Filed Nov. 30, 1892. Serial No. 453,630. (No model.)



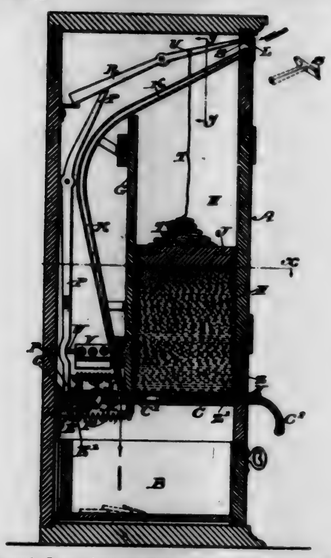
*Claim.*—1 The brake shoe having holes in the surface that is in contact with the wheel, such holes being in ranges, with the holes in one range in line with the spaces between the holes in another range so as to act with uniformity on the tread of the wheel substantially as specified.

2. The brake shoe of cast iron having holes extending outwardly from the operative surface of such shoe and their outer ends closed

by leather or other suitable material intervening between the shoe and the holder substantially as specified.

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**503,139. COIN-CONTROLLED VENDING APPARATUS.** HARRY L. HOSE, Philadelphia, Pa., assignor to the Hose Postal Facility and Supply Company, of West Virginia. Filed Sept. 10, 1892. Serial No. 445,523. (No model.)



*Claim.*—1. In a coin-controlled vending apparatus, a box with a coin entrance slot and an article discharging slot, a chute leading from said coin slot to a coin receiving box, a sliding discharging tray provided with a returning spring, a tilting dog having an opening of varying width, means for locking said dog, a pivoted arm in rear of said chute adapted to be engaged by the tray, and an arm engaged by said pivoted arm, and provided with a tooth for closing said coin entrance slot, said parts being combined substantially as described.

2. In a coin-controlled vending apparatus, a box with coin slot and an article discharging slot, an article receptacle within said box, a sliding tray below said article receptacle, with means for discharging said articles, a chute leading from said coin slot, a tilting dog with an opening of varying width therein, a serrated bracket for locking said dog, a pivoted arm operated by the movement of said tray, and a second pivoted arm operated by the last-mentioned arm and provided with a tooth for closing the coin slot, said parts being combined substantially as described.

3. A box with a coin slot and an article discharging slot, a vertical partition forming an article receptacle, a sliding tray with means for discharging said articles, a chute leading from said coin slot, a tilting dog with a coin opening therein, locking means for said dog, a pivoted arm operated by the movement of said tray, a second pivoted arm with tooth closing said coin slot, a follower in said article receptacle, and a cord secured to said last-mentioned pivoted arm and said follower, said parts being combined substantially as described.

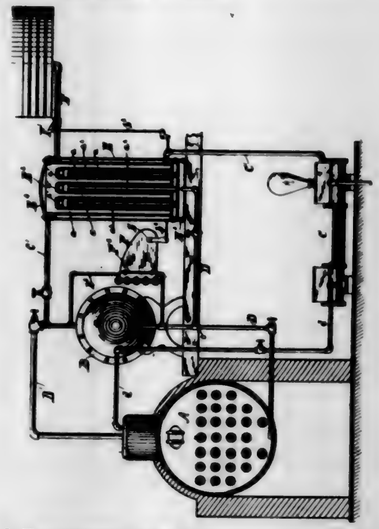
4. The gravitating arm R, with the tooth S adjacent to the slot and induction end of the coin conveying slot, and the swinging arm P adapted to engage with said arm R, in combination with the discharge tray C of the apparatus, and the spring X connected with said arm P, whereby the latter receives motions in opposite directions, substantially as described.

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**503,140. APPARATUS FOR PURIFYING WATER.** JOHN J. HOPPES, Springfield, Ohio. Original application filed Mar. 6, 1888, Serial No. 266,774. Divided and this application filed July 10, 1889. Serial No. 317,088. (No model.)

*Claim.*—1. In a water purifying apparatus, the combination with a steam boiler and purifier connected thereto above and below the water line in said boiler, a discharge pipe connected between the said purifier and the lower boiler connection leading to the tank or reservoir, substantially as set forth.

2. In an apparatus for purifying water consisting of a steam boiler and purifier connected thereto, above and below the water line in said boiler a supply pipe leading to said purifier and a discharge pipe connected to the lower boiler connection between said boiler and purifier, a cooling device having two compartments in proximity to each other, one of said compartments being adapted to form a passage for the water which passes to the said purifier and the other adapted to form a passage for the water which is discharged from said purifier, substantially as set forth.



3. The combination with a feed water heater and purifier, of a cooling device provided with an outer chamber and an inner depending cylinder, a series of tubes extending into said inner chamber from said outer chamber, and a removable head in said inner chamber, the said inner chamber being connected with the supply of said heater, and the outer chamber to the discharge, substantially as set forth.

4. The combination with a feed water heater and purifier, of a cooling device having an outer chamber connected to the discharge of said purifier, and an inner chamber connected to the supply of said purifier, a series of tubes extending upwardly into said inner chamber and connected through said outer chamber, and a series of inner circulating tubes in said upwardly extending tubes through which the water is adapted to pass, said inner chamber being provided with a removable head and a discharge opening, substantially as set forth.

5. The combination with a feed water heater and purifier connected to a steam boiler above and below the water line, a discharge pipe leading from said lower boiler connected to a storage tank, a water chamber connected to the purifier above and below the water line and provided with a float, said float being connected to a valve in the discharge pipe, substantially as set forth.

6. The combination with a steam boiler, of a purifier connected thereto, said purifier being provided with a discharge pipe leading to the storage tank, a cooling device through which the water is adapted to pass on its way to said storage tank, said cooling device having an inner chamber through which the water supply for said purifier is adapted to pass, an automatic regulator connected to said purifier and a valve in the discharge pipe operated by said regulator, substantially as set forth.

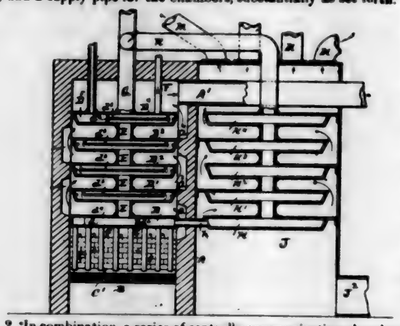
7. The combination with a purifier connected with a steam boiler, and a discharge pipe leading therefrom to the storage tank, a cooler in said discharge pipe, a pump adapted to force the water into said purifier through an inner chamber in said cooling device, an automatic regulator connected to said heater and a valve in said pump supply pipe operated by said automatic regulator, substantially as set forth.

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**503,141. HEATER.** CHARLES A. HOWARD, Pontiac, assignor, by direct and mesne assignments, to the Peninsula Heater and Radiator Company, Detroit, Mich. Filed Sept. 10, 1892. Serial No. 445,602. (No model.)

*Claim.*—1. In combination, a series of centrally communicating chambers arranged one above the other, each chamber except the bottom one being provided with a horizontal perforated diaphragm, and the lower chamber being provided with an interior substantially U shaped wall extended about the communicating orifice of said chamber, and a supply pipe for the chambers, substantially as set forth.



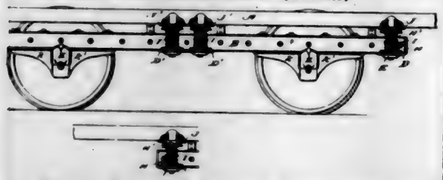


2. In combination, a series of centrally communicating chambers arranged one above the other and each of them provided with a diaphram and the upper one being provided with an upright wall across one end, whereby an independent chamber is formed, a damper regulator pipe communicating with said independent chamber and a supply pipe communicating with the other portion of said top chamber, substantially as set forth.

3. In combination, a heater, the walls of which are alternately recessed, a series of chambers located therein the edges of which extend to said recessed portions of the walls whereby passages are formed for the products of combustion, a series of tubes depending from the lower chamber, and a filling between said pipes extending from the grate nearly to the chamber, and a supply pipe for the chambers, substantially as set forth.

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**503,142. STREET-CAR GEAR.** MOSES G. HUBBARD, Chicago, Ill. Filed Sept. 26, 1892. Serial No. 446,944. (No model.)



*Claim.*—1. In a truck for four wheel, electric or cable cars, a wheel piece extended beyond the journal boxes at either end to form an extended spring base truck frame, in combination with journal boxes having long double wings extending out laterally therefrom, and the springs located on each side and beyond the ends of the said wings, substantially as and for the purposes described.

2. In a car truck for four wheel, electric or cable cars, a wheel piece extended beyond the journal at either end to form an extended spring base truck frame, in combination with springs supported by the wheel piece and arranged in such manner as to adapt them to carry more than one third of the weight of the car body load at or near the longitudinal center of the truck and car body and less than one third at each outer end of the extended spring base, whereby the longitudinal rocking of the car body is diminished, substantially as described.

3. In a car truck, the wheel pieces extending along the sides of the truck and having spring seats attached to their lower faces and projecting laterally on both sides thereof, in combination with springs located on both sides of the wheel pieces and adapted to permit the truck to vibrate horizontally, substantially as described.

4. The combination of the car, the wheel pieces having laterally extended spring seats attached thereto and located on both sides thereof, with rocker caps and springs adapted to permit greater lateral vibration of the car truck, substantially as described.

5. The spring seat plates on the lower sides of the wheel pieces adapted to support the springs and to lock the wheel pieces and cross sills together to form a diagonally stiff frame, substantially as described.

6. The projecting cross sills located under the wheel pieces and attached thereto in combination with the spring seats, substantially as described.

7. The combination of two coil springs of different stiffness located one above the other with the ring I formed with upwardly and downwardly projecting annular flanges for holding them in proper relative position, substantially as described.

8. The combination of the triple nut-lock-plate with the three bolts and nuts, securing the wheel piece, cross sill and spring seat, substantially as described.

9. The horizontal flexible draft links attached, one to each end of the truck frame near the center of the end sill and its opposite end to the car body, substantially as described.

10. In an extended spring base truck, the combination of I-beam shaped wheel pieces with cross sills having flat upper surfaces projecting beyond the wheel pieces, to which they are firmly secured by the lock and rocker plates shown at Fig. 9.

11. The combination with car springs located along the sides of the wheel pieces, of the upper spring seats projecting both inwardly and outwardly from the car body side sill and having permanent stiffening brackets on the plate on one side and adjustable stiffening brackets located on the other side of the car body sill, for stiffening the upper spring seats, substantially as described.

12. A car truck having an extended spring base, in combination with the vertical spiral end spring composed of two sections, one section being adapted to vibrate more rapidly and freely than the other, substantially as and for the purpose described.

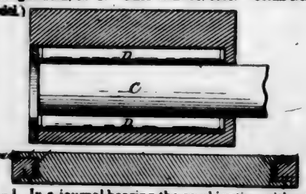
13. In an extended spring base car truck, the combination of the wheel pieces with the journal boxes having long, double wings extended laterally therefrom along under the wheel pieces and firmly secured thereto, and the springs located beyond the ends of said wings and arranged to support less than one third of the weight of the car body and load at each outer end of the extended spring base and more than one third at or near the centers of the wheel pieces, substantially as described.

14. A double or compound spring, made in two parts united by a ring formed with upwardly and downwardly projecting, annular flanges, in combination with and interposed between the car body and car wheels, substantially as and for the purposes described.

15. In an extended spring base car truck, the combination of the straight, extended wheel piece resting upon and secured to the long, projecting wings of the journal box, with springs located on both sides of said wheel piece and resting upon spring bases secured to the under side of said wheel piece substantially as and for the purposes described.

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**503,143. ANTIFRICTION JOURNAL-BEARING.** MATHIAS B. JONES, Binghamton, N. Y. Filed Jan. 31, 1893. Serial No. 460,414. (No model.)



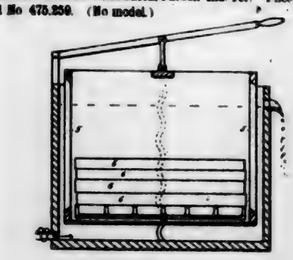
*Claim.*—1. In a journal bearing the combination with a box provided with the cap having a plane inner surface, of the journal, the anti-friction bearing rollers each provided with a leather cap at its opposite ends, a receptacle between such cap and the roller and sulphur within such receptacle, substantially as and for the purpose described.

2. A journal bearing comprising the rollers, D, each provided with end anti-friction paddings, in combination with the box and its removable head, having an inner plane surface against which said padded ends may contact, substantially as described.

3. The box in combination with the journal and the anti-friction rollers, said rollers provided with the receptacles, and combustible material in said receptacles, substantially as described.

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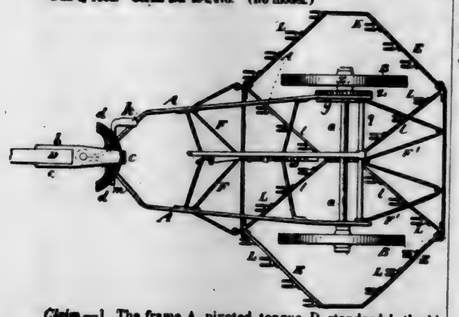
**503,144. PHOTOGRAPHIC WASHING APPARATUS.** STEPHEN A. KEH and EDWARD FREDERICK, Purcell Ind Ter. Filed May 23, 1893. Serial No. 475,250. (No model.)



*Claim.*—In an apparatus for washing, toning and fixing photograph prints, the combination with the herein described tank or receptacle having inlet and outlet openings, of an interior receptacle provided with a series of removable perforated racks or shelves forming cells whereby the prints are separately and simultaneously exposed to the action of the washing and toning solutions, and means as described for imparting a vibratory movement to the inner receptacle and the racks, substantially as and for the purpose herein set forth.

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**503,145. CULTIVATOR.** JOHN KILLEFER, Redlands, Cal. Filed Dec. 8, 1892. Serial No. 454,475. (No model.)



*Claim.*—1. The frame A, pivoted tongue D, standard *b*, the bifurcated hook plate *c* and segmental plate *d*, in combination with the sliding plate *e* and shaft *m*, the latter having a stud *n* and footpiece *k* as and for the purpose set forth.

2. The combination with the wheels, axle pivoted tongue, and main frame A, of the suspended harrow frame E, the W-shaped brace and connecting bars F F, and the pivotal connecting bars *r*, substantially as shown and for the purpose set forth.

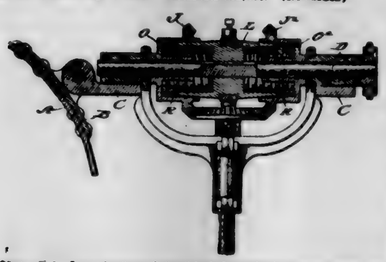
3. The combination, with a frame, of a series of tooth-couplings secured thereto, each of which couplings is provided with two lugs which are connected by cross-pieces, a series of teeth, each of which is provided with a hollow head, placed on and detachably secured to the shank of the tooth, the said head being provided with projections adapted to connect with said cross-pieces, substantially as set forth and described.

4. The combination, with a frame, of a tooth coupling secured thereto, said coupling being provided with two lugs and cross-pieces connecting said lugs, a tooth provided with a hollow head, placed on the shank of said tooth and removably secured thereto, the said head being adapted to connect with said cross-pieces, and a pivoted dog, mounted between said lugs and adapted to lock the said tooth in place, substantially as set forth and described.

5. The combination, with a frame, of a tooth coupling secured thereto, said coupling being provided with two lugs connected by cross pieces, a tooth provided with a removable hollow head, the said head being provided with a hook 10 and a rear projection 9, and a pivoted dog 3, in position to be turned to bear against said head, substantially as and for the purposes described.

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**503,146. STEERING-GEAR FOR TRACTION-ENGINES.** GEORGE W. KRAMER, Peoria, Ill., assignor to the Hart Weigher Company, same place. Filed May 1, 1893. Serial No. 472,516. (No model.)



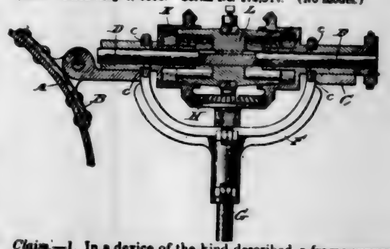
*Claim.*—1. In a device of the kind described, a frame supported by the boiler; a shaft journaled thereon; two oppositely disposed beveled gears loosely mounted on said shaft; and a clutch mounted upon said shaft and adapted to move longitudinally to co-act with either of said gears; in combination with springs at each end of said clutch adapted to normally hold the same in a central position between the two gears, and not in contact with either; substantially as described.

2. In a device of the kind described, the frame C, the shaft D, the beveled gears J J', loosely mounted on said shaft, and the longitudinally movable clutch L, having a central recess in either end; in combination with the springs O O', arranged at the ends of the clutch within said recess and adapted to normally hold the clutch out of contact with either of said gears; substantially as described.

3. In a device of the kind described, the frame C, the shaft D, the gears J J', each having a central recess and a centrally extending boss R, and the clutch L having a central recess in each end; in combination with the springs O O', arranged at the ends of the clutch within the cavities formed, and encircling the bosses, adapted to normally hold the clutch out of contact with either of said gears; substantially as described.

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**503,147. STEERING-GEAR FOR TRACTION-ENGINES.** GEORGE W. KRAMER, Peoria, Ill., assignor to the Hart Weigher Company, same place. Filed May 1, 1893. Serial No. 472,517. (No model.)



*Claim.*—1. In a device of the kind described, a frame supported by the boiler; a shaft carried thereby; two oppositely disposed beveled pinions mounted upon said shaft; and a clutch also mounted upon the shaft adapted to be moved longitudinally to co-act with said beveled pinions; in combination with a pivoted yoke adapted to move in the arc of a circle whose center is the shaft; an intermediate beveled pinion supported by the yoke in such a manner as at all times to be in mesh with both of the other pinions; a shaft extending through the yoke and so connected to the intermediate pinion as to revolve therewith; a take-up drum adapted to control the front wheels of the engine, and means for connecting the rotary driven member with the take-up drum; substantially as described.

2. In a device of the kind described, the frame C; the shaft D carried thereby; the pinions J J' loosely mounted on the shaft; the clutch L, feathered on said shaft and adapted to move longitudinally thereon to operate either of the pinions J J'; in combination with the swinging yoke F, adapted to move in the arc of a circle whose center is the shaft; the intermediate pinion H; the shaft G actuated by the pinion H; and means for imparting the rotary motion of the shaft G to the take up drum; substantially as described.

3. In a device of the kind described, the frame C; the shaft D; the beveled pinions J J' loosely mounted thereon; the clutch L, feathered upon said shaft and adapted to move longitudinally to operate either of said pinions; in combination with the swing yoke F, mounted on the bosses *c c* and carrying the pinion H; the shaft G operated by the pinion H; and a worm-screw upon the shaft G by means of which the take-up drum is operated; substantially as described.

4. In a device of the kind described, the frame C; shaft D; pinions J J'; clutch L, and intermediate pinion H, properly supported so as to mesh with both the pinions J J', in combination with the shaft G, connected to the intermediate pinion in such a manner as to revolve therewith and also permit of a slight longitudinal movement; and means for imparting the rotary motion of said shaft to the take-up drum; substantially as described.

5. In a device of the kind described, the frame C; shaft D; pinions J J'; clutch L; yoke F, and intermediate pinion H, in combination with the shaft G, feathered in the pinion H; a worm-screw upon said shaft, and the take-up drum operated by said worm-screw; substantially as described.

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**503,148. SUBSTANTIVE BROWN DYE.** RICHARD LAUCH, Elberfeld, Germany, assignor to the Farbenfabriken, vormals Fr. Bayer & Co., same place. Filed Feb. 10, 1893. Serial No. 461,805. (Specimens.) Patented in Germany Jan. 6, 1890, No. 61,950; in France Feb. 21, 1891, No. 187,365, and in England Feb. 25, 1891, No. 3,439.

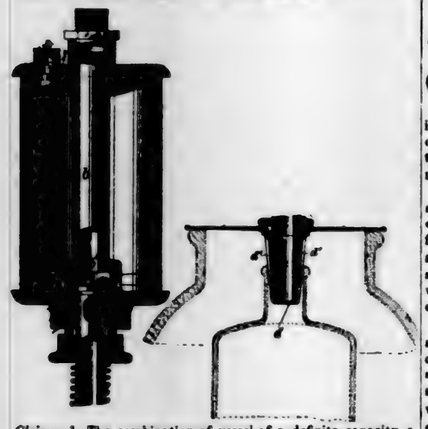
*Claim.*—1. The process of producing a new substantive dye-stuff by combining one molecular proportion of tetrazodiphenylchlorid with one molecular proportion of salicylic acid and with one molecular proportion of alphanaphthylamin, by subsequently sulfonating the thus obtained tetrazo compound and coupling one molecular proportion of the diazo derivative of this sulfo product with one molecular proportion of alphanaphthylamin.

2. As a new product the coloring-matter, forming a grayish-black powder, soluble in ammonia with brown color; difficultly soluble in alcohol with red-brown color; difficultly soluble in carbonate of soda and caustic soda at ordinary temperature, easily on heating with reddish-brown color; almost insoluble in dilute hydrochloric and sulfuric acids; easily soluble in water with brown color, which on addition of ammonia or sodium carbonate turns slightly redder, and on addition of caustic soda turns at first redder, and finally separates dark reddish-brown flakes, while dilute hydrochloric or sulfuric acid changes the aqueous solution to a dull brownish black, and causes a precipitation of brownish-black flakes; soluble in concentrated sulfuric acid with violet color, which, on addition of ice water becomes at first a dull-brown, and on addition of a large excess of ice water turns almost colorless; dyeing unmordanted cotton and half woolen fabrics an intense brown; and having the qualities substantially as specified.



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**503,149. MEASURING APPARATUS FOR LIQUIDS.** JAMES LEWIS, Penarth, England. Filed May 8, 1893. Serial No. 473,814. (No model.) Patented in England Oct. 31, 1892, No. 19,572.



*Claim.*—1. The combination of vessel of a definite capacity, a supply pipe adapted to supply liquid into the said vessel, a port at the bottom end of the said pipe, a delivery pipe from the bottom of the said vessel and a valve adapted to normally hold the delivery pipe closed when in one terminal position and open the latter and close the port above mentioned when it is pushed off its seat into the other terminal position, as set forth.

2. The combination of measuring vessel, supply pipe adapted to deliver liquid into the said vessel at or near the bottom level thereof, a delivery pipe from the bottom of the said vessel, their adjacent ends being axially aligned with each other, ports in the said delivery pipe, a valve fixed on the head of the said delivery pipe capable of motion between two terminal positions and adapted when in one to hold the supply pipe closed and the delivery pipe open, and vice versa, a spring device for keeping the delivery pipe closed, and an automatic device for providing for the escape of air from the measuring vessel and preventing the overflow of liquid from it, as set forth.

3. The combination with a measuring vessel of a pipe adapted to supply liquid to the said vessel, a chamber within the said vessel and being an extension of the said pipe, a port being the end of the said pipe, ports in the side of the said chamber, a delivery pipe from the bottom of the said chamber, a valve, being fast to the top of the said delivery pipe, adapted to close either the said end of the supply pipe or the delivery pipe according to its terminal position, a stuffing box through which the delivery pipe works and ports in the said delivery pipe adapted to open to the said chamber, a spring adapted to keep the delivery pipe closed by the said valve, a nozzle being the bottom end of the delivery pipe adapted to receive the pressure of the bottle or jar to be filled, and an automatic device adapted to allow of the escape of air from the measuring vessel and to close it against the overflow of liquid, as set forth.

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**503,150. NECK-YOKE.** FRANK J. LITTLE, Humboldt, Nebr. Filed Mar. 31, 1893. Serial No. 468,427. (No model.)

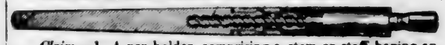
*Claim.*—1. The combination with a neck-yoke having a center movably attached thereto and provided with an opening adapted to receive a pole-tip, of a rod applied to the under side of the yoke and adapted to rock thereon, means for securing the rod in position, said rod having its center shaped to engage and pass through the neck-yoke center, and at its ends provided with loops for the reception of the breast-straps, substantially as specified.



2. The combination, with a neck-yoke having a groove extending longitudinally thereof, of a wire rod movably mounted in said groove and having loops at the opposite ends thereof and at the center of the same, a tongue attached to the neck-yoke and having the lower part thereof secured to the center loop of the wire rod and formed with an opening or slot therein, bands surrounding the neck-yoke to hold the wire rod in place, and a pole tip or end engaging the said tongue, the said end-loops of the wire rod being arranged to receive the yoke-straps of the harness, substantially as described.

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**503,151. PENHOLDER.** JAMES R. MACMILLAN, Menominee, Wis. Filed Nov. 12, 1892. Serial No. 451,728. (No model.)



*Claim.*—1. A pen-holder, comprising a stem or staff having an internally screw threaded socket, a sleeve revoluble upon said stem or staff, but immovable thereon longitudinally and a spindle screw-threaded to engage the socket and having longitudinally movable and non-revoluble connection with the sleeve, substantially as described.

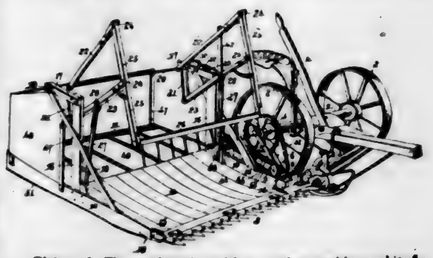
2. A pen-holder, comprising a stem or staff having a longitudinal and internally screw-threaded socket in its end and having also an extension of said end, a sleeve embracing said extension so as to turn freely thereon, but immovable longitudinally thereon and a groove-and-shoulder connection between the sleeve and the extension, and a spindle having longitudinally movable and non-revoluble connection with the sleeve and provided with an externally screw-threaded stem entering and working within the socket, substantially as set forth.

3. A pen-holder, comprising a stem or staff having a longitudinal and diametrically reduced extension at one end, an external shoulder carried by said extension, an internally screw-threaded longitudinal socket extending through the extension and into the stem or staff, a sleeve embracing the extension and its shoulder loosely so as to revolve thereon, a spindle having an externally threaded screw-stem engaging the socket, and a rib-and-groove connection between the spindle and sleeve, to prevent relative rotation thereof, substantially as described.

4. A pen-holder, comprising a stem or staff having a longitudinal and diametrically reduced extension at one end, an external shoulder carried by said extension, an internally screw-threaded longitudinal socket extending through the extension and into the stem or staff, a sleeve embracing the extension and its shoulder so as to revolve thereon, a spindle having a head and an externally threaded screw-stem engaging the socket, and a rib-and-groove connection between the spindle and sleeve, to prevent relative rotation thereof, substantially as described.

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**503,152. RAKE ATTACHMENT FOR MOWERS.** JOHN MARSHALL, Mentone, Ind. Filed Feb. 18, 1893. Serial No. 462,838. (No model.)



*Claim.*—1. The combination with a mowing machine and its finger-bar, of a platform connected to and located in rear of the finger-bar and at the side of the machine, a rake supported over the plat-

form, an endless carrier in rear of and transverse to the platform, and adapted to deliver in rear of the machine and driving means between the rake, carrier and axle of the mower, substantially as specified.

2. The combination with a mower and its finger-bar, of a platform having a rounded bottom secured to the finger-bar, a rake arranged thereover, an endless-carrier arranged in rear of the platform and adapted to move transversely thereto, and to deliver in rear of the machine and means for driving the rake and moving the platform, substantially as specified.

3. The combination with a mower having a finger-bar, of a platform arranged in rear of and connected to the finger-bar, a rake arranged over the platform, a transversely movable carrier arranged in rear of the platform and adapted to receive the discharges therefrom, of means for alternately operating the rake and moving the carrier, substantially as specified.

4. The combination with a mower and its finger-bar, of a platform hinged at its front edge to the finger-bar, said platform having a supporting framework extending in rear thereof, a caster wheel for supporting the rear end of the platform, a rake supported over the platform, an endless carrier arranged in rear of the platform and adapted to receive its discharges, and driving means between the axle and mower, the rake and carrier for alternately operating the rake and carrier, substantially as specified.

5. The combination with a mower and its finger-bar, of a framework connected to the latter, a platform arranged in rear of the finger-bar within the framework, a transversely-movable carrier one shaft of which is provided with a gear-wheel, a rake-head arranged over the platform, a shaft for operating the rake-head, a gear-wheel on the shaft, a lower countershaft, a loose wheel thereon, gearing between the wheel and that of the crank-shaft, a toothed hub upon the wheel of the countershaft, a sprocket-wheel arranged on the countershaft and adapted to move therewith, a gear-wheel splined on the countershaft, a lever for operating the gear whereby the same is in engagement with the gear of the carrier or out of engagement with the latter and in engagement with the wheel of the countershaft, and a sprocket-belt engaging the fixed sprocket-wheel of the countershaft, and driving connections between the same and the axle of the mower, substantially as specified.

6. In an attachment of the class described, the combination with the rectangular frame, the platform arranged thereon, the standards rising from the frame, the crank-shaft supported by the standards, of the arms 22 and 23 having their rear ends loosely connected with the crank-shaft and the cranks thereof, respectively, the outer bars 25 pivotally connected to the outer ends of the arms, the rake-head secured to the lower ends of said bars, the standards rising from the framework in front of the first-mentioned standards and pivotally connected with the arms 23, and means for rotating said crank-shaft, substantially as specified.

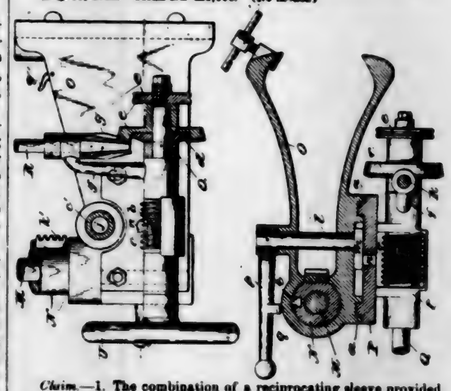
7. The combination with a mower, of the rake attachment loosely hinged to the finger bar thereof, a caster-wheel for supporting the rear end of the attachment, a platform arranged in rear of the finger-bar, a rake, means for operating the same, a bracket-arm depending from the axle of the mower, and a loose rod extending rearwardly from the bracket-arm and connected with the attachment, substantially as specified.

8. The combination with the mower comprising the axle, ground-wheels, and finger-bar, of the sprocket-wheel 5 upon the axle, the bracket-arm C depending from the axle, a short shaft 7 journaled on the bracket-arm and having the inner and outer gears 8 and 9 respectively, the sprocket-wheel 52 connecting the gears 5 and 8, the attachment comprising the opposite bars 10 and cross-bars 11, 12 and 13 arranged at one side of the mower in rear of and loosely connected with the finger-bar, the standards rising from the side bars, of the frame and provided with cross-heads 17, the crank-shaft 20 journaled in the cross-heads, the rake carried and operated by the shaft, the gear 30 mounted on the shaft, the small gear 32 engaging therewith the shaft 31 of said small gear, a sprocket wheel 33 mounted on the shaft 31, the lower countershaft 35, the sprocket-wheel 36 at the inner end of the same, the chain 54 connecting the sprocket-wheels 33 and 36, the sprocket-wheel 37 on said shaft 35, and the sprocket-chain 53 leading from the sprocket-wheel 9 to said sprocket-wheel 37, substantially as specified.

9. The combination with a mowing machine and its finger-bar, of a platform connected to the latter, an endless carrier arranged in rear and adapted to move transverse to the platform, a gear-wheel arranged at the inner end of the carrier, a rake arranged over the platform, a shaft arranged adjacent to the inner end of the carrier and below the rake, a loose wheel on the shaft and provided with a ratchet-hub, means for transmitting motion from the loose wheel to the rake, means for conveying motion from the mower to the shaft, a gear-wheel splined upon the shaft adjacent to the loose wheel and provided upon its rear face with a ratchet-hub adapted to engage that of the loose wheel and when out of such engagement to engage the gear of the endless-carrier, a lever fulcrumed above the gear and having a yoke engaging the same, and a spring arranged against the lever and adapted to press the lower end of the same inward, whereby the gear is maintained normally in engagement with the loose wheel, substantially as specified.

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**503,153.** DRILL-PRESS. ARTHUR J. F. MILL, Aurora, Ind. Filed May 16, 1892. Serial No. 433,166. (No model.)



*Claim.*—1. The combination of a reciprocating sleeve provided with a rack, a head in which said sleeve is guided, a shaft journaled in said head and having fast thereon a worm wheel and a pinion engaging with said rack, a worm shaft journaled in a vertically movable worm box on the side of the head and having a worm engaging the worm wheel, driving mechanism for the worm shaft, a second shaft for holding up the worm box and provided with an arm, a latch upon the head for engaging said arm, and an adjustable trip on the sleeve for disengaging the latch and arm to permit the worm box and worm to drop to stop the feeding of the sleeve, substantially as described.

2. In a drill press, the combination of the head O, the worm box P vertically movable thereon, the worm shaft Q journaled in the worm box and having the gear *c*, the pinion *g* constantly meshing with the gear *c* and fast on the shaft R, the tool shaft operatively connected with the said shaft R to be driven therefrom, and the bearing *f* for the shaft R carried by the worm box, substantially as described.

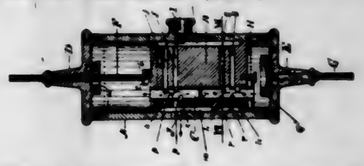
3. The combination of the shaft *j*, the worm wheel *i*, a split ring in the bore of said worm wheel, the lever T and wedging key *g'* actuated by said lever to make the worm wheel fast or loose with the shaft *j*, substantially as described.

4. The combination of the shaft *j*, the sleeve *c'*, fast on said shaft, the split ring *d'* surrounding the sleeve in the bore of the worm wheel *i*, and the lever T pivoted to the sleeve *c'* and carrying a wedging key *g'* engaging the split ring, substantially as described.

5. The combination of the shaft *j*, the sleeve *c'* fast on said shaft, the split ring *d'* surrounding the sleeve in the bore of the worm wheel *i*, the lever T pivoted to the sleeve *c'* and carrying a wedging key *g'* engaging the split ring, and a locking bolt for the lever, substantially as described.

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**503,154.** ENGINE. HENRY C. MILLER, Fort Wayne, Ind. Filed Dec. 3, 1892. Serial No. 453,954. (No model.)



*Claim.*—1. An engine consisting of a cylinder A provided with a piston chamber, an inlet port I and an exhaust port J, a working piston B adapted for longitudinal movement in said cylinder and having a valve chamber adapted for the valve C, and air chamber *n*, a longitudinal groove *m*, the supply channels *f* and *g* connecting the air space *n* with said valve chamber, the exhaust channels *p* and *r*, leading from said valve chamber to said groove *m*, a longitudinal groove *s* fitted for the adjustment of the set screw N, a lug *b* upon the forward end thereof adapted to secure the rod F, and a set screw H or equivalent device for limiting the play of the valve C in said chamber, a valve C open at both ends and having a partition at or near its center, a flanged top and apertures or slots in its sides adapted to register with the said supply and exhaust channels, and a stroke regulating-rod G, all substantially as set forth and described.

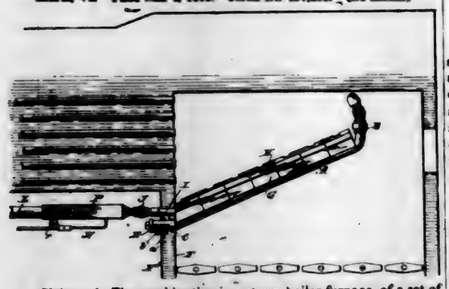
2. A valve C having a suitable flanged top, and a central opening with a partition *l* at or near its center, suitable apertures *i*, *k*, *k* and *o*, adapted to register with the channels *f*, *p*, and *g* respectively, all substantially as described.

3. A power cylinder provided with a piston chamber, inlet and exhaust ports, a working piston adapted for longitudinal movement in said chamber, and having a valve channels adapted for the valve C, the said piston being provided with an annular surrounding air chamber *n*, and also with proper transverse supply and exhaust channels connecting the air chamber *n* with said valve chamber and with the inlet and exhaust ports, a valve C having a flanged top and apertures or slots in its sides adapted to register with the said supply and exhaust channels, and a stroke regulating rod G, all substantially as set forth and described.

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**503,155.** LOCOMOTIVE-BOILER FURNACE. JOHN MILTON, Alexandria, Va. Filed Jan. 4, 1893. Serial No. 457,290. (No model.)



*Claim.*—1. The combination in a steam boiler furnace, of a set of water pipes arranged in the fire box above the fire and having communication at both ends with the water space of the boiler, two layers of detachable fire brick having cavities in their adjacent faces and supported upon the water pipes, and a set of perforated air pipes arranged between the two layers of fire brick substantially as shown and described.

2. The combination in a furnace, of the supporting water pipes A, the two layers of fire brick H G having central opening *c* and seats or recesses for the air pipes upon each side of said opening, and the air pipes I perforated on each side, and arranged between the layers of fire brick on each side of the opening substantially as shown and described.

3. The combination in a furnace, of the supporting water pipes A, the two layers of fire brick H G having central opening *c*, shoulders *e*, and cavities or recesses in their adjacent faces, and the perforated air pipes I arranged between the fire brick on each side of the central opening, substantially as shown and described.

4. The combination with a locomotive furnace; of an air feeding device consisting of funnels and pipes arranged to create a forced draft by the motion of the locomotive, and a compound air and steam injector valve arranged in the pipe that leads the air to the furnace, the said air and steam valve being connected together and arranged to automatically operate in an alternate manner, the opening of the air valve from the motion of the locomotive serving to close the steam valve, and the steam valve being arranged to open and the air valve to close when the locomotive stands still, substantially as shown and described.

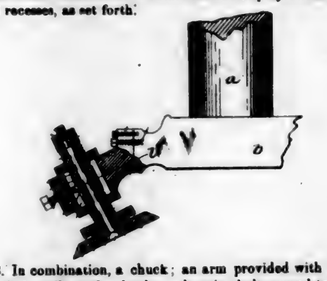
5. The air feeding device consisting of a pipe having a funnel at its forward end, a casing P with lip *e* and opening *o*, the air valve M having lip *v*, the steam pipes N with injector nozzle *w* and butterfly valve *m*, and crank arm *n*, weight *r*, and link *t* connecting the steam valve to the air valve for alternate action, substantially as shown and described.

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**503,156.** STONE-CUTTING MACHINE. ALEXANDER MCDONALD, Cambridge, Mass. Filed Apr. 8, 1893. Serial No. 469,313. (No model.)

*Claim.*—1. In a machine for cutting stone, a cutter head mounted in a hole in an arm of a revoluble chuck and carrying a cutter, said cutter head having screw threads on its upper and lower portions, nuts on said threads adapted to bear upon the upper and lower surfaces of said chuck, and a longitudinal undercut groove in said cutter head and engaged by a beveled head on an adjusting screw in the said arm, whereby said cutter is adjusted radially and toward and away from the stone, substantially as described.

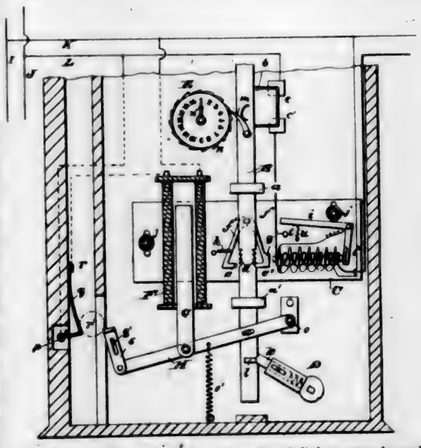
2. In combination, a cutter head; a spindle journaled therein, projecting above and below the cutter head, a plurality of radial projections on the lower end of the spindle; a cutting disk carried by the spindle and provided on its under surface with a plurality of radial recesses, which are engaged by the radial projections; a squared portion on the upper end of the spindle; a washer upon the squared portion resting upon the cutter-head, and a nut threaded upon the spindle above the washer so as to retain the radial projections within the radial recesses, as set forth.



3. In combination, a chuck; an arm provided with a slot and secured pivotally on the chuck; a clamping bolt secured to the chuck and projecting through the slot; a cutter-head supported by the arm; check-nuts upon the cutter-head engaging the opposite sides of the arm; a spindle having a bearing in the cutter-head and projecting above and below the same, a squared portion upon the upper end of the spindle; a washer upon the squared portion; a check nut upon the spindle above the washer, and a cutter carried by the lower end of the spindle, substantially as described.

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**503,157.** SWITCH FOR ELECTRIC CIRCUITS. WILLIAM MCNEILL and JAMES H. TINDER, Winchester, Ky., assignors to the McNeill-Tinder Electric Company, same place. Filed May 31, 1892. Serial No. 434,973. (No model.)



*Claim.*—1. The method of metering electric light service, by making at stated intervals extremely short interruptions of the circuit, and causing such interruptions to produce a record in the house circuit during the time the house circuit is taking current from the main or distributing circuit, as herein specified.

2. The method of metering electric light service, which consists in breaking the main circuit at stated intervals for a period of such short duration as to not perceptibly affect the lights on the circuit, and causing such interruptions to make a record, as herein specified.

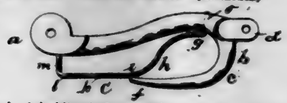
3. In an electric switch, the combination of a sliding bar provided with ratchet teeth and a switch arm, a pair of contacts in the path of the switch arm, pallets arranged to engage the ratchet teeth, an armature carried by the pallet arm, a releasing electro-magnet arranged to act upon the armature, a pawl pivoted to the sliding bar, and an indicating disk for registering the movements of the bar, substantially as specified.

4. In a circuit controlling switch, the combination with the main circuit wires, of a switch arm, a switch operating magnet provided with a coil of low resistance connected in series with the lamps, and

a coil of high resistance held normally out of the circuit and arranged to be thrown into the circuit by momentarily interrupting the circuit of the coil of low resistance, substantially as specified.

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**503,158. HOLDBACK FOR VEHICLES.** CLARENCE A. PACKARD, Richmond, Va., assignor of one-half to Fred H. Holladay, same place. Filed Feb. 17, 1893. Serial No. 462,723. (No model.)



*Claim.*—1. A holdback for vehicles provided with a hook, a lug at the end of the shank, and a lug on the curved portion of the hook for attaching the holdback to a thill.

2. A holdback for vehicles provided with a hook, separate lugs on the end of the shank and the curved portion of the hook and a spring secured to the inside of the curved portion of the hook and extending to the end of the bill of the hook.

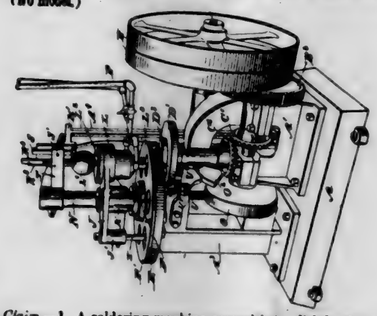
3. The combination of a hook a spring secured to the inside of the curved portion of the shank of the hook, and curved outward from the shank to the end of the hook and extending beyond said end.

4. A holdback for vehicles provided with a hook, a lug at one end of the hook and a lug on the curved portion of the hook, in combination with a spring secured to the inside of the curved portion of the shank of the hook curved outward to the bill of the hook extending beyond the hook, and its free end supported in a flange under the front lug.

5. A holdback for vehicles provided with a flange *n*, a hook *c*, separate lugs *a* and *d* at opposite ends of the hook, in combination with a spring secured to the shank *g* on the inside of the hook and having an arm *m* to engage flange *n*.

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**503,159. SOLDERING-MACHINE.** FRANK H. PALMER, Brooklyn, N. Y. Filed Feb. 27, 1892. Renewed Jan. 16, 1893. Serial No. 458,625. (No model.)



*Claim.*—1. A soldering machine comprising a disk having an intermittent rotary motion and formed with a series of openings arranged in a circle and adapted to receive the articles to be soldered, and a soldering pot for containing the solder and provided with a movable valve forming a soldering iron adapted to pass into the said openings to solder the parts together, substantially as shown and described.

2. A soldering machine provided with a soldering pot for containing the molten metal and a valve fitted to slide in the said pot and arranged to carry the molten solder from the pot to the article to be soldered, the end of the valve forming both a delivery for the molten solder and a soldering iron for soldering the part as soon as the solder is delivered, substantially as shown and described.

3. A soldering machine provided with a soldering pot containing the molten metal, and a valve forming a soldering iron and fitted to slide in the said pot, the said valve being provided at its soldering end with an opening, and being also formed with a recess adapted to register with the interior of the pot to carry the molten metal to a resting place in the pot for delivery to the said opening, which finally carries the solder to the point of the soldering iron, substantially as shown and described.

4. A soldering machine provided with a soldering pot containing the molten metal and formed with an inclined opening and a valve forming a soldering iron and fitted to slide in the said soldering pot, the valve being provided at its soldering end with an opening and being also formed with a recess adapted to register with the interior of the pot and with the opening in the pot, to carry the molten metal from the interior of the pot to the said opening which is also adapted to register with the opening in the soldering end of the valve, substantially as shown and described.

5. A soldering machine provided with a soldering pot containing the molten metal and formed with an inclined opening and a valve forming a soldering iron and fitted to slide in the said soldering pot, the valve being provided at its soldering end with an opening and being also formed with a recess adapted to register with the interior of the pot and with the opening in the pot, to carry the molten metal from the interior of the pot to the said opening which is also adapted to register with the opening in the soldering end of the valve, and a weight held on the upper end of the said soldering valve, substantially as shown and described.

6. In a soldering machine the combination with a disk having an intermittent rotary motion and formed with a series of openings arranged in a circle and adapted to receive the cover to be soldered, each opening being formed with grooves for the reception of the bail, a female die held in each opening at the center thereof and formed on top with a recess to receive the clip, and a male die mounted to slide vertically and adapted to act in conjunction with the said female die to press the free ends of the clip apart and upon the cover, substantially as shown and described.

7. A soldering machine comprising a disk having an intermittent rotary motion and formed with a series of openings arranged in a circle, adapted to receive the articles to be soldered, of an acid pot arranged to slide vertically and adapted to pass acid onto the articles in the said opening, and a soldering pot arranged to slide with the said acid pot and adapted to solder the articles together after the acid has been deposited, substantially as shown and described.

8. In a soldering machine, the combination with a disk having an intermittent rotary motion and formed with a series of openings arranged in a circle and adapted to receive the articles to be soldered, of a plate mounted to slide vertically, a male die held on the said plate and adapted to operate in conjunction with a female die in the openings of the said disk, an acid pot held in the said plate and adapted to pass acid on the articles to be soldered, and a soldering pot provided with a sliding valve forming a soldering iron and adapted to carry the molten metal to the soldering point of the iron, the said male die, the acid pot and soldering pot, being arranged in a circle corresponding to the circle in which the openings in the disk are arranged, substantially as shown and described.

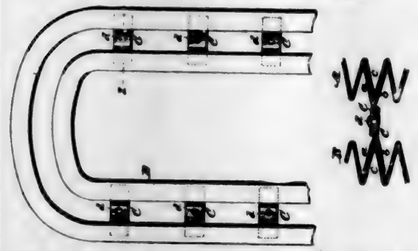
9. In a soldering machine, the combination with a disk having an intermittent rotary motion and formed with a series of openings arranged in a circle and adapted to receive the articles to be soldered, of a plate mounted to slide vertically, a male die held on the said plate and adapted to operate in conjunction with a female die in the openings of the said disk, an acid pot held in the said plate and adapted to pass acid on the articles to be soldered, a soldering pot provided with a sliding valve forming a soldering iron and adapted to carry the molten metal to the soldering point of the iron, the said male die, the acid pot and soldering pot, being arranged in a circle corresponding to the circle in which the openings in the disk are arranged, and means, substantially as described, for imparting an intermittent rotary motion to the said disk, and a vertical sliding motion to the said plate, as set forth.

10. In a soldering machine, the combination with a disk having an intermittent rotary motion and formed with a series of openings arranged in a circle and adapted to receive the articles to be soldered, of a plate mounted to slide vertically, a male die held on the said plate and adapted to operate in conjunction with a female die in the openings of the said disk, an acid pot held in the said plate and adapted to pass acid on the articles to be soldered, a soldering pot provided with a sliding valve forming a soldering iron and adapted to carry the molten metal to the soldering point of the iron, the said male die, the acid pot and soldering pot, being arranged in a circle corresponding to the circle in which the openings in the disk are arranged, substantially as shown and described, and adapted to discharge the finished article from the respective opening in the disk, as set forth.

11. In a soldering machine, the combination with a disk having an intermittent rotary motion and formed with a series of openings arranged in a circle and adapted to receive the articles to be soldered, of a plate mounted to slide vertically, a male die held on the said plate and adapted to operate in conjunction with a female die in the openings of the said disk, an acid pot held in the said plate and adapted to pass acid on the articles to be soldered, and a soldering pot provided with a sliding valve forming a soldering iron and adapted to carry the molten metal to the soldering point of the iron, the said male die, the acid pot and soldering pot, being arranged in a circle corresponding to the circle in which the openings in the disk are arranged, a discharging device, substantially as described, and adapted to discharge the finished article from the respective opening in the disk, and means, substantially as described for imparting an intermittent rotary motion to the said disk and a vertical sliding motion to the said plate, as set forth.



**503,160. VESTIBULE FOR CARS.** EDWARD L. PERRY, Paterson, N. J. Filed May 3, 1893. Serial No. 472,838. (No model.)



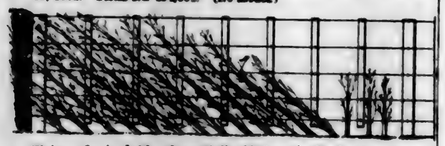
*Claim.*—1. In a bellows fold coupling, an outer and inner diaphragm and suitable stays connecting them together, substantially as and for the purpose set forth.

2. In a bellows-fold coupling, the combination with the outer and inner diaphragms thereof, of suitable stays thereon which are connected together by rivets or other suitable means, substantially as and for the purpose described.

3. A stay for connecting the outer and inner diaphragms of a bellows-fold coupling, having double flaps to embrace the sides of the folds, substantially as and for the purpose specified.

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**503,161. HEDGE-CLIP.** RICHARD RABY, York, Pa. Filed Dec. 12, 1892. Serial No. 454,861. (No model.)



*Claim.*—1. A rigid substantially U-shaped clip having the reversely arranged projections on one end between which the wire is passed and having the hook on the opposite end; substantially as described.

2. A rigid substantially U-shaped clip having the reversely arranged projections on one end between which the wire is passed, said projections being just out of line, and the hook at the opposite end, substantially as and for the purpose specified.

3. A rigid substantially U-shaped clip, having the reversely arranged projections on one end, between which the wire is passed, and a hook on the opposite end, one of said projections being formed with an overhanging projection, as and for the purpose set forth.

4. A rigid substantially U-shaped clip having the reversely arranged projections at one end between which the wire is passed and having the hook on the opposite end bent up out of the general plane of the body of the clip in a direction opposite the operative face of the nearer one of the projections; substantially as described.

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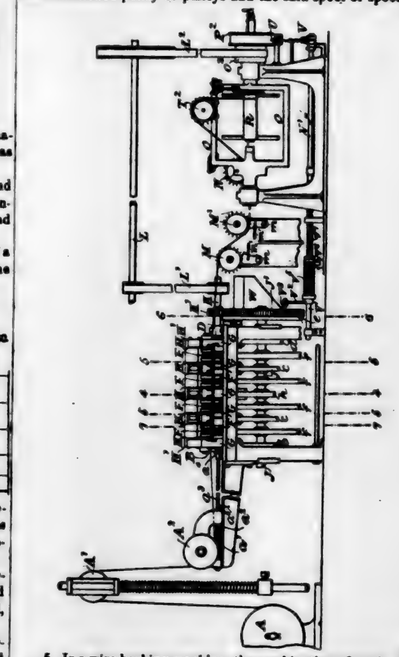
**503,162. WIRE-BARBING MACHINE.** JOHN S. REID, London, England. Filed Mar. 1, 1893. Serial No. 464,940. (No model.)

*Claim.*—1. In a wire barbing machine, the combination of mechanism for intermittently drawing lengths of an unbarbed main wire or wires into the machine, mechanism for simultaneously forming two or more barbs upon such main wire or wires, and mechanism for alternately moving such main wire or wires laterally relatively to the barbing mechanism to bring the wire or wires into and out of the range of operation of the barbing mechanism.

2. In a wire barbing machine, the combination of mechanism for intermittently drawing lengths of unbarbed main wires into the machine, mechanism for twisting together such main wires after they have been barbed, mechanism for simultaneously forming two or more barbs upon such main wires, and mechanism for alternately moving such main wire or wires laterally relatively to the barbing mechanism to bring the wire or wires into and out of the range of operation of the barbing mechanism.

3. In a wire barbing machine, the combination of a spool or spools on which an unbarbed main wire or wires are wound, mechanism for intermittently drawing lengths of such main wire or wires into the machine, mechanism for simultaneously forming two or more barbs upon such main wire or wires, a pulley or pulleys round which such main wire or wires pass situated between the said spool or spools and the barbing mechanism, and mechanism for alternately holding and releasing such pulley or pulleys.

4. In a wire barbing machine, the combination of a spool or spools on which the unbarbed main wire or wires are wound, mechanism for intermittently drawing lengths of such main wire or wires into the machine, mechanism for simultaneously forming two or more barbs upon such main wire or wires, a pulley or pulleys round which such main wire or wires pass situated between the said spool or spools and the barbing mechanism, mechanism for alternately holding and releasing such pulley or pulleys, and a pulley or pulleys over which such main wire or wires pass mounted on springs and situated between the first mentioned pulley or pulleys and the said spool or spools.



5. In a wire barbing machine, the combination of mechanism for intermittently drawing lengths of an unbarbed main wire or wires into the machine, mechanism for simultaneously forming two or more barbs upon such main wire or wires, guides between which such main wire or wires lie while being barbed, and two plates one at each end of the barbing mechanism which reciprocate lengthwise of the guides alternately forcing such main wire or wires along the guides into the position in which they are barbed and allowing them to escape from the guides after having been barbed.

6. In a wire barbing machine, the combination of mechanism for intermittently drawing lengths of an unbarbed main wire or wires into the machine, mechanism for simultaneously forming two or more barbs upon such main wire or wires, guides between which such main wire or wires lie while being barbed, and plates at the two ends of the machine and between each set of barbing mechanism reciprocating lengthwise of the guides alternately forcing such main wire or wires into the position in which they are barbed and allowing them to escape from the guides after having been barbed.

7. In a wire barbing machine, the combination of mechanism for intermittently drawing lengths of unbarbed main wires into the machine, guides between which such main wires lie while being barbed, two plates one at each end of the barbing mechanism which reciprocate lengthwise of the guides, two edges upon one of the plates and one edge upon the other plate each edge abutting against one or more of the main wires separating them and alternately forcing them along the guides and allowing them to escape from the guides, mechanism for inserting barbing wires between the main wires, mechanism for twisting the barbing wires around the main wires, and mechanism for cutting off the barbing wires.

8. In a wire barbing machine, the combination of mechanism for intermittently drawing lengths of unbarbed main wires into the machine, the main wire lifting plates B, C and D, mechanism for raising the end plates B and D in advance of the plates C, the barb feeding carriages E, the intermittently rotating barb twisting cylinders F, the fingers F* within the cylinders, the fixed lower shear blocks G with

the longitudinal slots, eyes *g* and transverse holes through them, and the reciprocating upper shear blades H.

9. In a wire barbing machine, the combination of mechanism for simultaneously forming two or more barbs upon the main wires, a rotating flier for twisting together the main wires after they have been barbed, a spool upon the flier normally rotating with it, and an intermittently operated brake acting on the spool causing it to revolve relatively to the flier and wind up the wire which has been barbed and draw the unbarbed main wires into the machine.

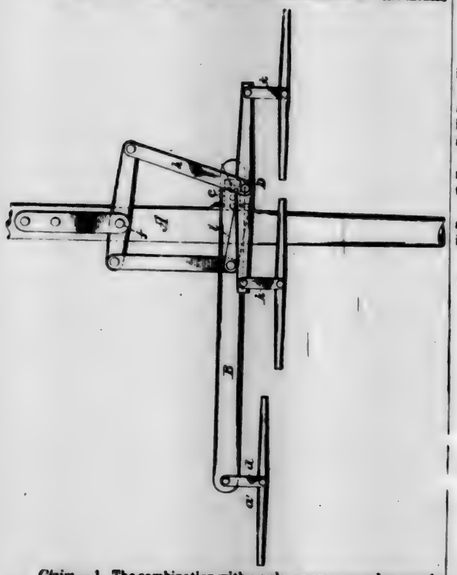
10. In a wire barbing machine, the combination of mechanism for simultaneously forming two or more barbs upon the main wires, a rotating flier for twisting together the main wires after they have been barbed, a spool upon the flier, a brake strap acting on the spool, the lever U fixed to the strap, the arm V, fixed to the rocking shaft V' and operating the lever U through a spring, the arm $V^2$ also fixed to the shaft V', and the cam W operating the arm $V^2$.

11. In a wire barbing machine, the combination of mechanism for simultaneously forming two or more barbs upon the main wires, a rotating flier for twisting together the main wires after they have been barbed, a spool upon the flier, the wheel P' fixed to the spool, the pinion S' gearing with the wheel P', the pinion $S^2$ upon the same shaft as the pinion S' and gearing alternately with the pinions *s* and *s'* fixed to the sleeve $s^2$, the screw rod $s^3$ within the sleeve and connected to it by a groove and feather, the carriage T traversed by the screw rod $s^3$, the guide roll $T^2$ upon the carriage, the plate $s^4$ in which the sleeve $s^2$ is free to rotate but not to move longitudinally, the plate $s^5$ connected to the plate $s^4$, the double incline $s^7$ upon the plate $s^5$, the spring catch $s^6$ fixed to the frame of the flier, and the springs $s^8$ upon the screw rod $s^3$ forming abutments for the carriage T.

12. In a wire barbing machine, the combination of mechanism for simultaneously twisting two or more barbing wires or sets of barbing wires around both of two main wires so forming two or more barbs upon the main wires, mechanism for twisting the main wires together, and mechanism for preventing the main wires from being twisted in the barbing mechanism.

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**503,163. THREE-HORSE EQUALIZER.** JOSEPH C. RICE, Grundy Centre, Iowa. Filed Nov. 17, 1892. Serial No. 452,334. (No model.)



*Claim.*—1. The combination with a pole, an evener, and an equalizing bar both pivotally connected with the pole, of a whiffletree, a pair of draft bars, one pivotally connected with the equalizing bar on each side of the latter's pivot, one draft bar pivotally connected with the evener and the other pivotally connected with the whiffletree, and a connecting bar or link pivotally connected with the evener and whiffletree, substantially as set forth.

2. The combination with a pole, and an evener adjustably pivoted to the pole, of an equalizing bar, a whiffletree, draft bars pivotally connecting the evener and the whiffletree with the opposite ends of the equalizing bar, and a connecting bar or link pivotally connecting the evener and whiffletree together, substantially as set forth.

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**503,164. MARINER'S COMPASS.** EDWARD S. RITCHIE, Newton, Mass. Filed Jan. 16, 1893. Serial No. 458,476. (No model.)



*Claim.*—1. The combination in a compass of the card E, the lever *i*, the lever *c*, the flexible plate *d*, and the lever *o*, substantially as described.

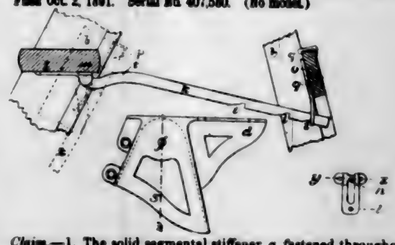
2. The combination in a compass of the card E, the pivot *a*, the lever, *i*, the flexible plate, *d*, and the lever, *o* and connections between the levers *o* and *i*, substantially as set forth.

3. The combination in a compass of the bowl A, the pivot *a*, the card E, the flexibl plate *d*, the lever *o*, with connectious for transmitting external pressure to the card E, and the expansive chamber *w*, substantially as set forth.

4. The combination in a compass of the bowl A, the flexible plate, *d*, and the expansive chamber, *w*, substantially as set forth.

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**503,165. STEP-LADDER.** CAMPBELL RIVERS, St. Joseph, Mo. Filed Oct. 2, 1891. Serial No. 407,580. (No model.)



*Claim.*—1. The solid segmental stiffener *a* fastened throughout its length, both to steps and ladder strings.

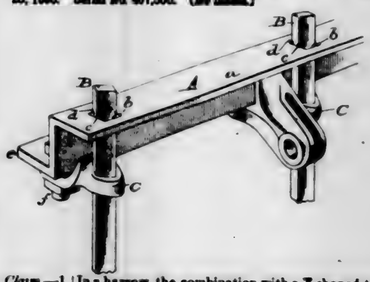
2. The hinge joint casting *c* forming with side piece of ladder a receptacle and hinge for end of swinging leg and sides *g* and *h* forming stops for the leg, the rear one being longer than the front one, and connected thereto by the side "S" substantially as shown.

3. The brace bar "*k*," in combination with the stepladder; with reversed curves at connecting end, the radius of the end curve being two-thirds that of the interior curve.

4. The form of staple for holding brace bar which can be spread apart, with the bosses *m*, *m*, to prevent its spreading when fastened in place.

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**503,166. HARROW.** HANS H. SATER, Madison, Wis. Filed Mar. 25, 1893. Serial No. 467,550. (No model.)



*Claim.*—1. In a harrow, the combination with a Z-shaped tooth-beam or bar, of a tooth carried by the upper flange of said beam, and a clip secured to the lower flange and engaging the tooth.

2. In a harrow, the combination with a tooth-beam or bar having a hole *b*, of a tooth mounted in said hole and provided with a reduced neck *c* and with shoulders *d* at the upper and lower ends of the neck to embrace the beam, and a clip for holding the tooth.

3. In a harrow, the combination with a tooth-beam or bar having a hole *b*; of a tooth having a reduced neck and of a form above and below the neck corresponding with the hole; and means for holding the tooth against turning; said reduced neck being of a height equal to the thickness of the metal through which it passes, substantially as shown and described.

4. In a harrow, the combination with a tooth-beam or bar having a square hole *b*; of an angular tooth B provided with a reduced neck *c* and shoulders *d*, and a clip C secured to the bar and engaging the tooth; said shoulders engaging the upper and lower faces of the beam or bar.

5. In combination with a tooth-beam or bar, a tooth adapted to move lengthwise and to turn axially within the said hole; shoulders on said tooth for preventing longitudinal movement of the tooth up or down, and means for preventing the turning of the tooth.

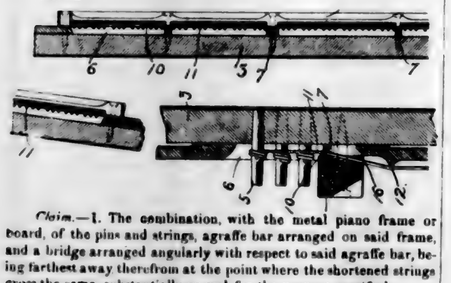
6. In combination with a tooth-beam or bar; a tooth mounted therein and adapted, when turned axially to register with the hole in the beam, to move lengthwise through the hole; and a clip for holding the tooth against such axial rotation.

7. The method of inserting and securing harrow teeth in their beams, which consists in passing a tooth having a reduced neck, practically through a beam having a hole corresponding in form to the cross-section of the tooth; then turning the tooth axially, and finally fastening the tooth to prevent its turning, all substantially as described.



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**503,167. AGRAFFE.** FRIDOLIN SCHIMMEL and SEARICK F. NELSON, Minneapolis, Minn. Filed Sept. 27, 1892. Serial No. 447,018. (No model.)



*Claim.*—1. The combination, with the metal piano frame or board, of the pins and strings, agraffe bar arranged on said frame, and a bridge arranged angularly with respect to said agraffe bar, being farthest away therefrom at the point where the shortened strings cross the same, substantially as and for the purpose specified.

2. The combination, with the piano frame, of the single cast metal agraffe bar, provided with the continuous rib on its under side, the strings, and the bridge 12 departing from said bar as described, and both being curved, substantially as and for the purpose specified.

3. The combination with the metal piano frame and the pin block, of a bridge, the pins, the strings extending therefrom over said bridge, the seats 7 arranged upon said metal frame and an agraffe consisting of a single inflexible metal bar, having a broad and substantially flat back provided with an integral sharp rib 10 to engage the strings, and said bar having the shoulders or projections 16 to rest upon said seats and five screws extending therethrough into the seat portions substantially as and for the purpose specified.

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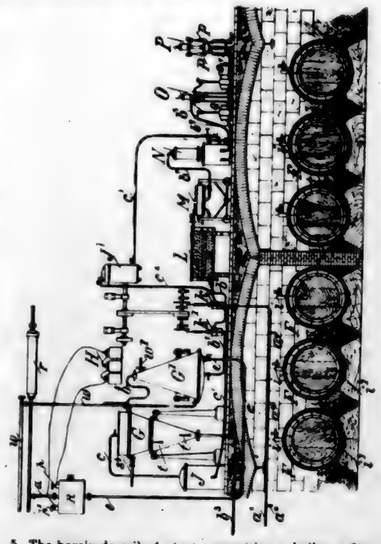
**503,168. BREWING BEER.** GUSTAV H. SCHNEIDER, Hamburg, Germany. Filed July 23, 1892. Serial No. 441,010. (No model.) Patented in France Apr. 21, 1890, No. 205,165, and June 9, 1891; in England Apr. 28, 1890, No. 6,480, and in Germany Apr. 17, 1891, No. 58,993.

*Claim.*—1. In the manufacture of beer, the improvement which consists in boiling the wort under pressure, after addition of hops, filtering and fermenting the boiled wort, filtering the fermented beer, subjecting the same to a pasteurizing temperature, aerating the pasteurized beer with ozonized air, charging the beer with carbonic acid, and storing the same, the operations being carried out under exclusion of atmospheric air.

2. In the manufacture of beer, the improvement which consists in boiling the wort under pressure after addition of hops, filtering and fermenting the boiled wort, filtering the fermented beer, subjecting the same to a pasteurizing temperature, aerating the pasteurized beer with ozonized air, charging the beer with carbonic acid and storing the same, the operations being carried out under exclusion of atmospheric air and the circulation of the beer during said operations being effected by sterilized air pressure.

3. The herein-described plant comprising a boiler, a filter, one or more fermenting vats, a second filter, a pasteurizing vessel and an aerating and cooling vessel, said elements connected in series, a compressed air main connected with the boiler, filters, fermenting vats and aerating and cooling vessel; in combination with an air sterilizing apparatus interposed in the air main in advance of its connections with the described elements, for the purpose set forth.

4. The herein-described plant, comprising a boiler; a filter, one or more fermenting vats, a second filter, a pasteurizing vessel and an aerating and cooling vessel, said elements connected in series, and a compressed air main connected with the boiler, filters, fermenting vats and aerating and cooling vessel; in combination with an air sterilizing apparatus interposed in the air main in advance of its connections with the described elements, a carbonic acid gas receiver connected with the pasteurizing vessel, means for returning the carbonic acid gas collected in the receiver into the circulation, and an ozonizing apparatus connected with the air main and aerating and cooling vessel respectively, for the purpose set forth.



5. The herein-described plant, comprising a boiler, a filter, one or more fermenting vats, a second filter a pasteurizing vessel and an aerating and cooling vessel, said elements connected in series, a receiver, a carbonic acid gas reservoir connected with the pasteurizing vessel, and pumps connecting the aerating and cooling vessel with the receiver and carbonic acid gas reservoir, respectively; in combination with a compressed air main connected with the boiler, filters, fermenting vats and aerating and cooling vessel respectively, an air sterilizing apparatus interposed in the air main in advance of its connection with said elements, and an ozonizer interposed in the branch connecting the air main with the aerating and cooling vessel, for the purpose set forth.

6. The herein-described plant, comprising a boiler, a filter, one or more fermenting vats, a second filter, a pasteurizing vessel and a cooling and aerating vessel, said elements connected in series, a carbonic acid reservoir connected with the pasteurizing vessel, and an auxiliary cooler, filter, mixing vat and bottling machine, also connected in series, and a pressure reservoir connected with said mixing vat; in combination with pumps connecting the cooling and aerating vessel with the auxiliary cooler and the carbonic acid reservoir with the pressure reservoir respectively, for the purpose set forth.

7. The herein-described plant, comprising a boiler, a filter, one or more fermenting vats, a second filter, a pasteurizing vessel, a cooling and aerating vessel, said elements connected in series, a carbonic acid reservoir connected with the pasteurizing vessel, and an auxiliary cooler, filter mixing vat and bottling machine, also connected in series, and a pressure reservoir connected with said mixing vessel, in combination with pumps connecting the cooling and aerating vessel with the auxiliary cooler, and the carbonic acid reservoir with the pressure reservoir, respectively, a compressed air main connected with the boiler, filter, fermenting vats and cooling and aerating vessels, an air sterilizing apparatus interposed in the air main in advance of its connections with said elements, and an ozonizing apparatus interposed in the connection between the air main and the cooling and aerating vessel, for the purpose set forth.

8. In a plant of the class described, a pasteurizer comprising a vessel having the form of an inverted truncated cone provided with an inlet for the liquid to be pasteurized at the lower narrower, and an out-let at the upper larger end thereof, perforated diaphragms interposed between the ends of said vessel, connected steam coils above and below said diaphragms and conforming to the configuration of the ves-

sel, the initial of the coil at the upper end of the vessel connected with a source of steam supply whereby the liquid entering the vessel rises therein at a gradually decreasing velocity, the upward flow being further retarded by said diaphragms, while said liquid is subjected to a gradually increasing temperature.

9. In a plant of the class described, a pasteurizer, comprising a vessel having the form of an inverted truncated cone provided with an inlet for the liquid to be pasteurized at the lower narrower, and an outlet at the upper larger end thereof, perforated diaphragms interposed between the ends of said vessel, a layer of comminuted glass on one of the diaphragms, connected steam coils above and below said diaphragms and conforming to the configuration of the vessel, the initial of the coil at the upper end of the vessel connected with a source of steam supply whereby the liquid entering the vessel rises therein at a gradually decreasing velocity, the upward flow being further retarded by said diaphragms and layer of comminuted glass, while said liquid is subjected to a gradually increasing temperature.

10. In a plant of the class described, a pasteurizer comprising a vessel having the form of an inverted truncated cone provided with an inlet for the liquid to be pasteurized at the lower narrower, and an outlet at the upper larger end thereof, perforated diaphragms interposed between the ends of said vessel, a filtering medium interposed between the upper diaphragm and outlet, connected steam coils above and below said diaphragm and conforming to the configuration of the vessel, the initial coil at the upper end of the vessel connected with a source of steam supply whereby the liquid entering the vessel rises therein at a gradually decreasing velocity, the upward flow being further retarded by said diaphragm, while said liquid is subjected to a gradually increasing temperature.

11. In a plant of the class described, a pasteurizer comprising a vessel having the form of an inverted truncated cone, provided with an inlet for the liquid to be pasteurized at the lower, narrower, and an outlet at the upper, larger end thereof, and a cooler above said outlet, perforated diaphragms arranged within and dividing said vessel, connected steam coils above and below said diaphragms and conforming to the configuration of the vessel, the initial of the coil at the upper end of the vessel connected with a source of steam supply whereby the liquid entering the vessel is gradually heated to a pasteurizing temperature and then partially cooled before leaving the vessel.

12. In a plant of the class described, a conical jacketed cooling and aerating vessel, means for supplying the beer to the vessel at its narrower end and exhausting the same at its wider end, means for causing a cooling agent to circulate through the jacket in a reverse direction, and means for spraying a gaseous agent into the lower wider end of the vessel, for the purpose set forth.

13. In a plant of the class described, the combination with a pasteurizing apparatus, of a conical jacketed cooling and aerating vessel connected with the pasteurizer at its upper narrower end, an exhaust pipe at the lower wider end of said vessel, and means for supplying a cooling agent to the lower part of the jacket and exhausting the same from the upper part, in combination with a perforated air pipe arranged in the wider end of the vessel and an ozonizer interposed in the connection between said perforated pipe and the air supply pipe, for the purpose set forth.

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**503,169.** GRATE. ANDREW SHEARER, Philadelphia, Pa. Filed Nov. 15, 1892. Serial No. 452,074. (No model.)

*Claim.*—1. A hollow grate bar composed of a hollow body portion having slots in the top and bottom in communication with the hollow interior, removable side sections, said side sections having projections and grooves behind the projections, and means for holding the sides and body portion together, substantially as set forth.

2. A grate bar comprising a body composed of two sections adapted to be secured together, said sections having a hollow interior and slots at top and bottom, and removable sides having grooves in their inside faces, and means for securing the sides to the body portion, substantially as set forth.

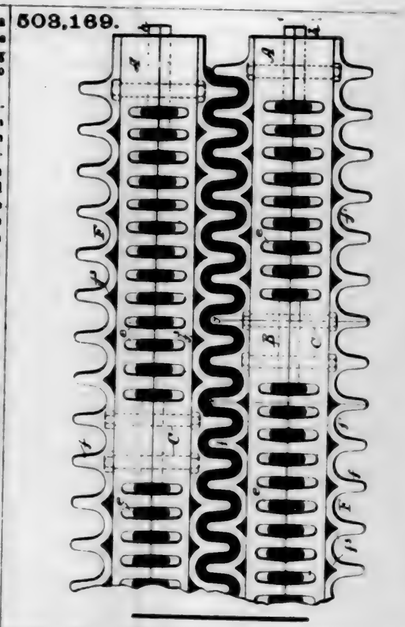
3. A hollow grate bar consisting of a body made of two longitudinal sections, and removable side sections each section having projections adapted to rest between projections on next adjacent bar.

4. A hollow grate bar consisting of a body made in two sections, and removable sides, each side being composed of a series of sections, the said sides and body sections being secured together, substantially as set forth.

5. A grate bar having removable side sections, the latter being provided with projections arranged at regular intervals and with slots located at the bases of said projections.

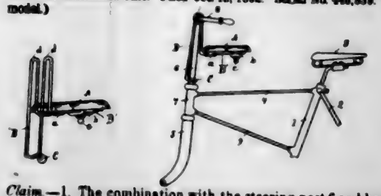
6. A grate bar having flat top and bottom, and curved or concaved sides and removable sections secured to said concaved sides, the said removable sections having projections at their upper and lower edges the outer faces of said sections being concentric with the outer side faces of the bar.

**503,169.**



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**503,170.** SUPPLEMENTARY SEAT FOR BICYCLES. MORRIS S. SHIPLEY, Cincinnati, Ohio. Filed Oct. 13, 1892. Serial No. 448,839. (No model.)



*Claim.*—1. The combination with the steering post 6 and handle bar 8, of the U-shaped stirrup B supported upon the handle bar and engaged at its lower end with the steering post, said stirrup having substantially horizontal arms which solely support an auxiliary saddle A, substantially as described.

2. The combination with the steering post 6, and handle bar 8, of the U-shaped stirrup B supported upon the handle bar and having its upper extremities extended substantially horizontal and solely supporting an auxiliary saddle A, and a coupling E secured to the steering post and provided with eyes *e* with which the lower ends of the stirrup arms engage, substantially as described.

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**503,171.** SPARK-ARRESTER. GEORGE H. SHOEMAKER, South Bend, Ind. Filed Oct. 20, 1892. Serial No. 450,069. (No model.)



*Claim.*—1. In a spark arrester, the combination of the cylinder C, with the inverted screen cone H, and the rim A, covering the ends of the cylinder and the cone, substantially in the manner and for the purposes set forth.

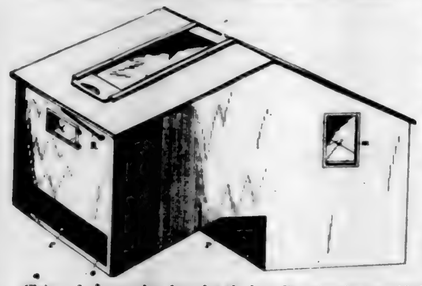
2. In combination of the screen cone H, with the cylinder C, having openings B, near its upper end and the spark receiving chamber E,



formed of pieces *e*, *e*, placed at an angle on the sides of the cylinder and over said openings B, and the tube I, connected at its upper end to the lower side of the said chamber and having at its lower end the detachable and perforated section D, all as and for the purposes set forth.

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**503,172.** POULTRY-BROODER. HENRY P. SNYDER, Chambersburg, Pa. Filed Oct. 20, 1892. Serial No. 449,460. (No model.)



*Claim.*—1. In a poultry-brooder, the brooding-chamber provided at its sides with vertical imperforate flues, a subjacent heating-chamber, a heating-cylinder located at the center of the heating-chamber in contact with the interposed imperforate main floor of the brooding-chamber, horizontal distributing tubes in contact with the under surface of said main floor of the brooding-chamber, communicating at their inner ends with the heating cylinder and at their outer ends with the lower ends of the vertical flues, a perforate removable floor arranged above and separated from the main floor, and means for supplying heat to the heating-cylinder, substantially as specified.

2. In a poultry brooder a brooding-chamber provided with a perforated floor having a central horizontal portion and side portions which are inclined toward the center to prevent crowding in the corners, substantially as specified.

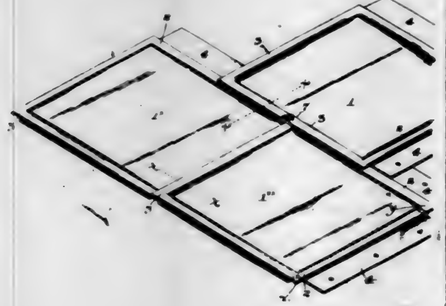
3. In a poultry brooder, the combination with the brooding-chamber provided with an imperforate floor, of a perforated and raised platform resting upon and supported by said floor and comprising a central horizontal and side inclined sections, substantially as specified.

4. In a poultry brooder, the feeding chamber having its floor partly cut away to form an opening, an inclined way located beneath the floor of the feeding chamber and having a similar opening near its upper end, a swinging leaf adapted to fit either of said openings, to complete either the floor of the feeding-chamber or the inclined way, and means to operate said leaf, substantially as specified.

5. In a poultry brooder, the box provided with an intermediate vertical partition, a brooding-chamber at one side of said partition and a feeding-chamber at the other side thereof, said chambers communicating through an opening in the partition, an inclined way leading from said opening near the plane of the floor of the feeding-chamber to an exit, a swinging leaf adapted to fit in openings in either the inclined way or the floor of the feeding chamber, and means to operate said leaf, substantially as specified.

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**503,173.** METALLIC ROOFING-TILE. ADAM A. SPARNER, Jr., Philadelphia, Pa., assignor, by mesne assignments, of one-half to Frank Skinner and Albert Glemeke, same place. Filed July 11, 1892. Serial No. 439,736. (No model.)



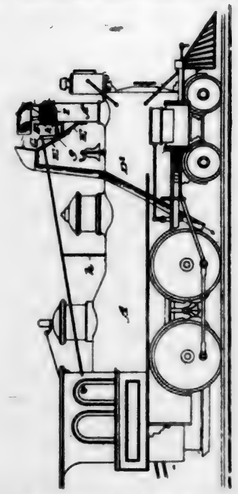
*Claim.*—1. A metallic roofing plate or shingle having one edge bent, shaped or formed to substantially a U-shape by twice doubling or folding the metal upon itself, leaving a space between the surfaces of the metal on the second double or fold only; the opposite edge of the plate or shingle on the same side or surface similarly bent, shaped or formed and the metal of the second double or fold continued or extended away from and on the same plane with the body portion of the plate or shingle to form a nailing flange, the whole as constructed adapted to lock down with similar plates or shingles substantially as described.

2. A rectangular shaped metallic roofing plate or shingle its four edges formed to substantially a U-shape on the same side of the plate and on the same plane with the body portion thereof; two adjacent edges of the same having nailing flanges extending away from and on the same plane with the body portion of the plate or shingle, said nailing flanges being a continuation or integral portion of the metal forming their respective U-edge, the whole as constructed adapted to lock down on all four sides with similar plates or shingles, as shown and described.

3. The method of making metallic roofing plates or shingles having their four edges formed to substantially a U-shape on the same side of the plate and on the same plane with the body portion thereof, two adjacent edges of the same having nailing flanges extending away from and on the same plane with the body portion of the plate or shingle, said nailing flanges being a continuation or integral portion of the plate blank forming their respective U-edge, and so as to lock down on all four sides with similar plates or shingles, which consists in first cutting out the respective four corners of the metal blank to the double right angle Q, and then twice doubling the respective edges of the blank upon itself to substantially a U-shape, two adjacent corners of the metal blank having a deeper cut than the neighboring corners thereby providing for two adjacent nailing flanges, substantially as described.

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**503,174.** SPARK-ARRESTER. NATHANIEL W. SPENCER, Centralia, Ill. Filed Nov. 29, 1892. Serial No. 453,522. (No model.)



*Claim.*—1. An attachment for the smoke-stack of a locomotive, comprising a portion for connection with the smoke-stack, a hood carried thereby and having contracted outlet, a spout, an interposed mouth piece, and a vertically-movable shield below the hood, substantially as specified.

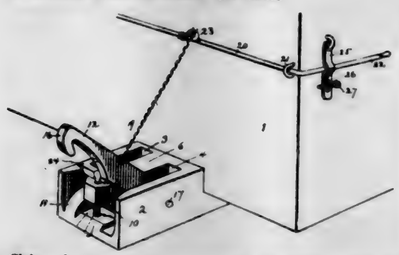
2. An attachment for a smoke-stack of a locomotive comprising a tubular portion to connect with the smoke-stack, a hood carried thereby and having contracted outlet, a spout and interposed mouth, a shield vertically-movable over the upper end of the smoke-stack, and connections extending to the cab whereby said shield is under the control of the person in the cab substantially as specified.

3. The combination with the smoke-stack and the short tube, detachably connected therewith, of a hood carried by said tube and having contracted outlet at the rear, a spout with flaring mouth supported from the smoke-stack, a vertically-movable shield under the control of the engineer, and a reticulated connection between the hood and mouth, as set forth.

4. The combination with the smoke-stack, of a bracket secured thereto, a spout with flaring mouth supported from said bracket, a hood supported above the smoke-stack, a shield vertically-movable around the smoke-stack, a lever pivoted on the bracket and having operating means extending to the cab, and carrying means for actuating said shield, as set forth.

5. A smoke-stack attachment provided with a vertically-movable perforated shield adapted to surround a smoke stack and with operating means under the control of the person in the cab, as set forth.

**503,175. CAR-COUPLING.** DAVID SPRENGER, Richview, Ill. Filed May 5, 1893. Serial No. 473,173. (No model.)



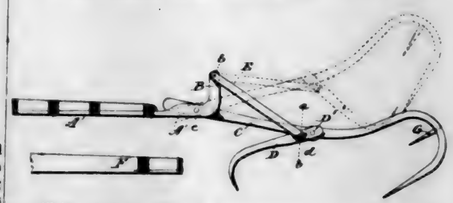
*Claim.*—1. An automatic car-coupling, consisting of a draw-head having two longitudinal grooves or ways adjacent to each side of the draw-head and having open tops, a curved, rearwardly-extending hook-shaped catch located in the mouth of one of said slotted ways and having a beveled or inclined front face and, in its rear face a hook-receiving recess, a hook-coupling pivotally supported at its rear within the other slotted way and having a notched or toothed rear and bottom edge and near its upper edge chain attaching device, as an eye or a transverse slot or hole, a notched slide or rack to engage with the notched under edge of hook-coupling, a transverse rod having right-angled hand-grasps at either end and an eye formed by twisting said rod in a portion of its length, eyed bearing supports for said rod secured to the end of the car, a chain connecting the hook coupling and said eyed lifting-rod and a hinged latch, with suitable latch securing devices adapted to hold the ends of said lifting rod, and a pivoted dog adapted to automatically drop and rest upon the upper edge of the coupling-hook when in locked position, substantially as and for the purposes set forth.

2. A combined automatic link and hook-car-coupling consisting of a draw-head having, adjacent to each side thereof an open topped longitudinal grooved way extending the length of the drawhead, a central bevel-floored recess to receive a coupling liuk, a central bridge having a vertical coupling-pin-receiving hole, a coupling-pin extending through said hole, a rearwardly curved, bevel-faced incline or hook located in the mouth of one of said side grooved ways and having in its rear edge a hook-receiving recess, a pivoted dog journaled in the draw-head and adapted to normally assume a depressed position and rest upon the top of the coupling-hook, a coupling-hook located within the other grooved side way and having a toothed rear and bottom edge, a toothed rack located in the bottom of the draw-head with which the toothed portion of the coupling-hook engages a chain attachment forwardly of its center of gravity, said hook coupling being weighted in advance of its center of gravity, a pivot removably securing said hook coupling within the draw-head, eyed bearings attached adjacent to each side of the car, a transversely extending lifting-rod journaled in said eyed bearings and having a re-curved eyed portion in its length in line with the grooved way in the draw-head containing the hook-coupling, and right-angled hand-grasps, and a pivoted latch and securing device, substantially as described, adapted to secure said hand grasps and a lifting-chain respectively secured to the chain attachment on the coupling-hook and to the eyed portion of the lifting-rod, substantially as and for the purposes set forth.

3. A combined automatic link and hook car-coupling consisting of a draw-head having adjacent to each side thereof an open-topped longitudinal grooved way extending the length of the draw-head, a beveled coupling-link receptacle, a central bridge having a vertical coupling-pin receiving-hole, a coupling-pin extending through said hole, a rearwardly-curved bevel-faced incline or hook located in the mouth of one of said side grooved ways and having in its rear edge a hook-receiving recess, a coupling hook located within the other grooved side way and having a toothed rear and bottom edge a toothed rack located in the bottom of the draw-head with which the toothed portion of the coupling-hook engages a chain attachment forwardly of its center of gravity, said hook-coupling being weighted in advance of its center of gravity, a pivot removably securing said hook-coupling within the draw-head, eyed bearings attached adjacent to each side of the car, a transversely extending lifting-rod journaled in said eyed bearings and having a re-curved eyed portion in its length in line with the grooved way in the draw-head containing the hook-coupling, and right-angled hand-grasps, and a pivoted latch and securing device, substantially as described, adapted to secure said hand-grasps, and a lifting chain, respectively secured to the chain attachment on the coupling-hook and to the eyed portion of the lifting-rod, substantially as and for the purposes set forth.

4. In an automatic car-coupling, the combination of a draw-head a rearwardly-extending hook-shaped horn located therein, a toothed rack located in said draw-head, a coupling-hook pivoted in said draw-head, and having a toothed bottom and rear edge, a lifting device, as a chain and actuated rod, connected with said coupling-hook, substantially as and for the purposes set forth.

**503,176. GAFF-HOOK.** GILBERT A. STANTON, Long Lake, N. Y., assignor of one-fourth to George B. Terry, Waterbury, Conn. Filed Nov 28, 1892. Serial No. 453,364. (No model.)



*Claim.*—1. In a gaff-hook, the combination with a frame-piece having a shank and an arm located at the outer end thereof, and extending at an angle to it, a long-shanked primary hook, pivoted to the outer end of the said frame-piece, and turning in the opposite direction from the arm thereof, a secondary or striking hook pivoted to the primary hook in opposition to the curved and pointed end of the same, and a link connecting the outer end of the said arm with the secondary hook, and thereto extending diagonally across the rear end of the shank of the primary hook, substantially as described.

2. In a gaff-hook, the combination with a frame-piece having a shank and an arm located at the outer end thereof, and extending at an angle to it, a long-shanked primary hook, pivoted to the outer end of the said frame-piece, and turning in the opposite direction from the arm thereof, a secondary or striking-hook pivoted to the primary hook in opposition to the curved and pointed end of the same, a link connecting the outer end of the said arm with the secondary hook, and thereto extending diagonally across the rear end of the shank of the primary hook, and a stop for limiting the opening of the secondary hook, substantially as described.

**503,177. FIFTH-WHEEL.** GARLAND B. ST. JOHN, Kalamazoo, Mich. Filed Mar. 30, 1892. Serial No. 427,140. (No model.)



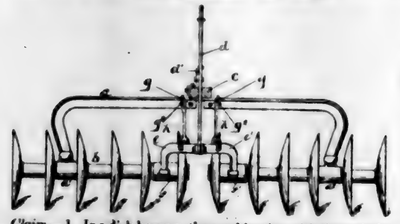
*Claim.*—1. The combination with the front axle, having a gain formed therein to receive the socket-iron, of the socket-iron B enveloping the gained portion of the axle and terminating at the bottom of the part so gained, and having a socket B′ closed at the bottom and opening upwardly, formed at one side of the longitudinal center, clips securing said socket-iron to the axle and covering the joint at the ends, the reach and bolster or head-block, substantially as described, and the reach-iron F with a downwardly extending cone F′ engaging with said socket, substantially as and for the purpose set forth.

2. The combination with a reach and bolster provided with a downwardly extending conical pin or lug, substantially as described, of the front axle A having the gain *a* and recess *a′* formed therein, the socket-iron B having the socket B′ formed with a closed bottom, and partly within and partly without said socket-iron, and clips adapted to secure the socket-iron to the axle and cover the joints at the ends substantially as and for the purpose set forth.

3. The combination in a vehicle, of the reach having a downwardly extending cone attached thereto, the front axle having a socket-iron secured thereto, the socket coinciding with said cone, and a spring hook extending from the reach under the axle and bearing thereon, whereby the parts are prevented from rattling when in normal position, and are permitted to separate in case the vehicle overturns.



**503,178. DISK HARROW.** JOHN H. THOMAS, Springfield, Ohio. Filed Nov. 21, 1892. Serial No. 452,734. (No model.)



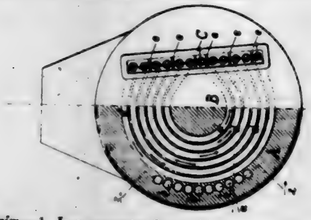
*Claim.*—1. In a disk harrow, the combination with the main frame and a disk gang adapted to be shifted to different positions, of a pressure bar having an adjustable bearing seat and loose connections, said pressure bar being adapted, as the gang is moved to an angular position, to be brought to a substantially vertical position, and thus form a connection from the gang to the frame, substantially as specified.

2. The combination, with the main frame and the disk gangs journaled therein, a shifting lever having link connections to said disk gangs, and pressure bars from said lever to said frame having adjustable bearing seats and loose connections, said pressure bars being adapted, as the link connections are moved longitudinally, to engage at each end with the main frame and the said links respectively, substantially as specified.

3. The combination, with the main frame and the disk gang, a shifting lever and a connecting link, a pressure bar having an adjustable bearing and a curved slotted extension, a projection on said bar adapted to fit in said slotted extension, said bar being bifurcated at its lower extremity and provided with slotted openings, as described, and a rounded bearing face adapted to bear on said link, substantially as specified.

4. The combination, with the adjusting lever and a link connection, of a pivoted pressure bar having a screw-threaded adjustable bearing therein, a bearing block on the frame and a rounded bearing adapted to engage said link, slotted openings in the respective ends of said bar, and a disk gang connected to the said link, substantially as specified.

**503,179. CONVERTER.** CHARLES VATTIER, Paris, France. Filed Mar. 6, 1893. Serial No. 464,900. (No model.)



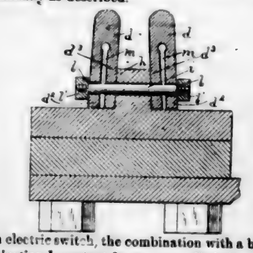
*Claim.*—1. In a converter for smelting copper, the combination with the refractory lining of a water jacket consisting of pipes through which water is made to circulate, situated at the part near the tuyeres and at the two ends which are difficult to repair, substantially as and for the purposes described.

2. In a converter for smelting copper, the combination with the lining of a water jacket composed of pipes *b* connected by external elbow pieces *c*, situated near the tuyeres *a*, and of curved pipes *d* connected to a box C and to the pipes *b*, for affecting a continuous circulation of water through both sets of pipes, substantially as and for the purposes described.

**503,180. ELECTRIC SWITCH.** ERNEST P. WARNER, Chicago, Ill., assignor to the Western Electric Company, same place. Filed Oct. 29, 1892. Serial No. 450,371. (No model.)

*Claim.*—1. The combination with a switch board, of a standard attached to said board, a lever pivoted to said standard and provided with a blade, one or more base plates attached to said board and each provided with a projection, contact fingers normally held against the faces of said projections with their ends at a less distance apart than the width of said lever blade, bolts passing freely through said projections and said contact fingers, shoulders upon said bolts against which nuts are adapted to screw to bear against said contact fingers, transverse slots in said contact fingers in planes approximately parallel to the plane of said blade of the lever, substantially as described.

2. In an electric switch, the combination with a lever provided with a blade of one or more base plates, each provided with a projection, contact fingers normally held against the faces of said projections, bolts passing freely through said projections and said contact fingers, shoulders upon said bolts against which nuts are adapted to screw to bear against said contact fingers, transverse slots in said contact fingers in planes approximately parallel to the plane of said blade of the lever, substantially as described.



3. In an electric switch, the combination with a base plate *a*, of a tapering projection *A*, contact fingers normally held against the tapering faces of said projection, a bolt *i* passing freely through said projection *A* and said contact fingers, shoulders *l l* upon said bolts, nuts *l′ l′* adapted to screw against said shoulders and bear against said contact fingers, transverse slots in said contact fingers in planes approximately perpendicular to said bolt *i*, substantially as described.

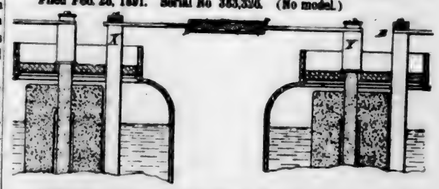
4. The combination with a blade adapted to be inserted between contact fingers whose free ends normally rest at a distance apart less than the width of the blade, of said contact fingers, provided at their fixed ends with transverse slots lying in planes approximately parallel to the plane of motion of the blade, bearing points provided upon each side of said slotted ends and adapted to permit the lateral yielding of the free ends of the contact fingers by the partial closing of said slots, substantially as described.

5. The combination with a blade adapted to be inserted between contact fingers whose free ends normally rest at a distance apart less than the width of the blade, of said contact fingers provided at their fixed ends with limbs, bearing points provided for said limbs upon each side of said contact fingers and adapted to permit the lateral yielding of the free ends of the contact fingers by the approaching of said limbs, substantially as described.

6. In an electric switch or connection, a contact finger provided with a transverse slot at one end, points of support upon each side of said slotted end adapted to react approximately at right angles to the plane of said slot, and to permit the lateral movement of the free end of said contact finger by the partial closing of said slot, substantially as described.

7. In an electric switch or connection, a contact finger provided with limbs $d^3$, $d^3$, upon one end, points of support upon each side of said limbs adapted to react approximately at right angles to the lengths of said limbs and to permit the lateral movement of the free end of said contact finger by the approaching of said limbs, substantially as described.

**503,181. CONNECTOR.** HERBERT L. WEBB, New York, N. Y. Filed Feb. 28, 1891. Serial No. 383,396. (No model.)



*Claim.*—1. A wire or strip coupling consisting of a metal sleeve in combination with the crimped or corrugated free ends of the wires or strips to be joined, said corrugated ends being interlocked by overlapping, and held against lateral displacement by the surrounding sleeve, substantially as specified.

2. A wire or strip coupling consisting of a metal sleeve in combination with the crimped or corrugated free ends of the wires or strips to be joined, said corrugated ends being interlocked by overlapping, and held against lateral displacement by the surrounding sleeve, and means for the prevention of the longitudinal displacement of the sleeve, substantially as specified.

3. A wire or strip coupling consisting of a sleeve inclosing the ends of the wires or strips to be joined, the sleeve and inclosed wires or strips being crimped or corrugated, but not twisted whereby said wires or strips are bound tightly together in metallic contact with each other, and the sleeve caused to conform to the external surface of said corrugated wires or strips, substantially as specified.

4. The combination of the crimped meeting ends of electric conductors, with an inclosing sleeve provided with an insulating covering, the said sleeve being adapted to hold the wire or strips against lateral displacement, and itself prevented from being displaced longitudinally, substantially as specified.

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**503,182. COMBINATION-TOOL.** GEORGE W. WEBB, Brooklyn, N. Y. Filed Dec. 21, 1891. Serial No. 415,715. (No model.)



*Claim.*—1. A belt-cutting device, consisting of a plate or block provided with two substantially parallel openings or grooves therein, as at $a'$ and $a^2$, the cutting blade $c$ adapted to move across said two openings at each operation of the same, and a handle or lever for operating the blade $c$ substantially as described and for the purpose set forth.

2. A belt-cutting and perforating device, consisting of a plate or jaw provided with two substantially parallel openings or grooves therein as at $a'$ and $a^2$, a perforating device or punch for moving across one of said openings, the cutting blade $c$ for moving across or past the ends of said two openings at each operation of the same, and a handle or lever for carrying said perforating device and cutting-blade, substantially as described and for the purpose set forth.

3. A tool or device for perforating belts and securing the hook fastening for connecting the ends of the same, consisting of a supporting plate provided with a belt opening therein, and a second opening or guide-way extending at right angles or nearly so to said belt-opening and connecting therewith, a perforating device located and operating in said guide-way to move across the said belt-opening, a clamping device, consisting of a stationary jaw located or formed upon said supporting plate and a movable jaw adapted to operate in a line with said stationary jaw, and a handle for operating said perforating device and movable clamping jaw, substantially as described and for the purpose set forth.

4. A tool or device for cutting and perforating belts and securing the hook fastening for connecting the ends of the same, consisting of a supporting block or plate provided with a belt-opening therein, a perforating device and a cutting device carried by a movable support or lever and adapted to operate or move across said belt-opening simultaneously, a clamping device consisting of a stationary jaw located on said supporting plate and a movable jaw carried by the said movable support or lever and adapted to move in a line with said stationary jaw, and a suitable handle for operating the said cutting, perforating and clamping devices, substantially as described and for the purpose set forth.

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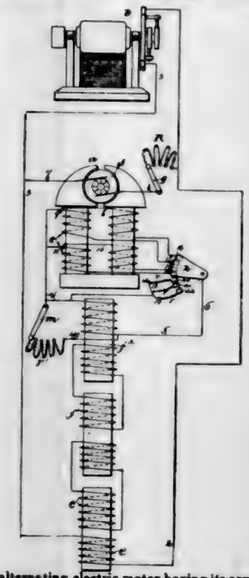
**503,183. ALTERNATING-CURRENT ELECTRIC MOTOR.** FERDINAND A. WENZEL, Boston, Mass. Filed Apr. 3, 1888. Serial No. 269,477. (No model.)

*Claim.*—1. In a non-synchronous alternating current motor the combination with the main leads for supplying an alternating current, of an electric motor having an armature connected with said leads, and one or more induction coils or converters having a primary coil connected with the main leads, and a secondary coil connected with and supplying alternating currents continually to the field magnet coil of the motor and adjusted as described so as to alternate the polarity of each pole thereof, synchronously with the alternations of the armature, substantially as described.

2. The combination with the main leads for supplying an alternating current, of an electric motor having a continuous current armature and commutator therefor of any usual type supplied with alternating current from said leads, an alternating field magnet for said motor energized by said main and having its coils in a circuit separate from the armature, and one or more induction coils or converters having a primary coil connected with the main leads and a secondary connected with the coil of a field magnet, and adjusted as described to cause alternations synchronous with those of the armature as and for the purpose described.

3. The combination with an electric motor of the continuous current type, of a connection through the armature from an alternating supply wire or source, a separate field energizing circuit in which the alternations coincide with those of the supply wire, and intermediate retarding or lagging devices between the same and the field coil adjusted as described to bring the alternations of field magnetism into practical coincidence with the alternations in the armature.

4. The combination with an electric motor of the continuous current type, of a field and armature therefor fed from separate or independent alternating current branches taken from main supply wires, and auxiliary means connected to one of said branches for retarding the phases of the alternations to bring the field and armature alternations into coincidence, as and for the purpose described.



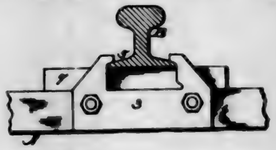
5. In an alternating electric motor having its armature and field energized by separate connections taken from alternating current wires or mains, the herein described method of bringing the times of maximum and minimum strength of the field magnetism into coincidence with the times of maximum and minimum electro-motive-force in the armature, consisting in lagging or retarding the alternations taken from the mains to excite the machine in proper amount to produce the desired coincidence of effect in the two parts of the machine, as and for the purpose described.

6. The herein described method of obtaining two sets of alternations of magnetism or current of the desired relation of phase, consisting in producing such alternations directly or indirectly from a common alternating source, and introducing an artificial or auxiliary lag between the alternating source or supply wire and the final circuit or device, adjusted, as described, to bring about the desired phase relation, as and for the purpose described.

7. The main line or leads for supplying an alternating current and an electro motor having its armature connected directly with said leads; a converter or induction coil having its primary coil connected with the said leads and a secondary with the primary of another converter, the secondary of which is connected with another, and so on, the secondary of the last converter of the set having one terminal divided into a number of branches connected with portions of the coil of the field magnet of the motor and with other branches containing resistance, and its other terminal connected within a switch which completes the connection with a portion of said branches, substantially as and for the purpose described.

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**503,184. RAILROAD-RAIL TIE AND CHAIR.** PHILLIP WHEELER, Branchport, N. Y. Filed June 23, 1892. Serial No. 437,751. (No model.)

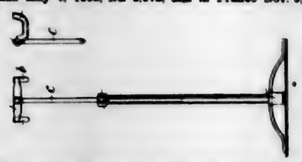




*Claim.*—The combination with a tie, and the side plates —3— having recesses —c— and —b— therein, inwardly projecting lips upon the upper face, means for securing said plates to the tie, and the shim interposed between it and the bottom of the rail, as described.

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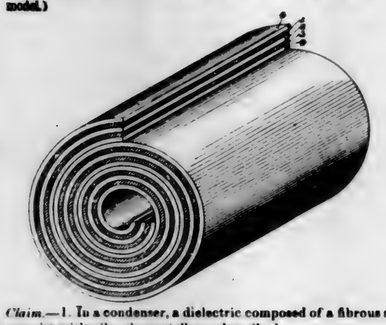
**503,185. STAND FOR CYCLES.** EDWIN WOOD, Warminster, England. Filed Mar. 17, 1893. Serial No. 466,545. (No model.) Patented in England May 7, 1892, No. 8,672, and in France Nov. 9, 1892, No. 225,533.



*Claim.*—In a stand for cycles, the combination of the two curved arms covered with india rubber on the cross-head pivoted to the upright and the collar and set screw fixed to the standard on the base substantially as herein described and according to the accompanying drawings.

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**503,186. ELECTRICAL CONDENSER.** ALEXANDER WURTH, Pittsburg, Pa., assignor to the Westinghouse Electric and Manufacturing Company, same place. Filed Oct. 5, 1892. Serial No. 447,973. (No model.)



*Claim.*—1. In a condenser, a dielectric composed of a fibrous substance moist with oil, substantially as described.

2. In a condenser a dielectric composed of cotton moist with oil, substantially as described.

3. In a condenser a dielectric composed of a fibrous substance moist with a hydrocarbon oil, substantially as described.

4. In a condenser, a dielectric composed of a fibrous substance moist with elaine oil, substantially as described.

5. In a condenser, a dielectric composed of cotton moist with elaine oil, substantially as described.

6. A condenser composed of sheets of metal foil separated by a dielectric consisting of a fibrous substance moist with elaine oil, substantially as described.

7. A condenser composed of sheets of metal foil separated by a dielectric consisting of cotton moist with elaine oil, substantially as described.

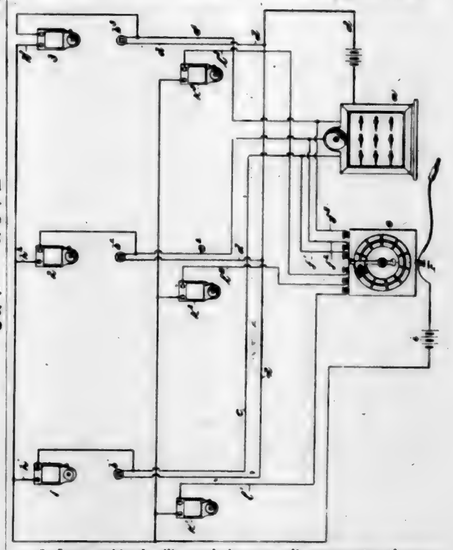
8. A condenser consisting of sheets of metal foil separated by a fibrous substance moist with oil, the whole being rolled as described.

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**503,187. FIRE-ALARM AND INDIVIDUAL ELECTRIC CALL.** JOHN YOUNG, Chicago, Ill., assignor to the Western Electric Company, same place. Filed July 18, 1884. Serial No. 138,010. (No model.)

*Claim.*—1. The combination with different bell circuits, of terminal segments, one for each bell circuit, arranged in a circle or series of concentric circles, a source of electricity to one side of which the bell circuits are connected in multiple, a circuit closer connected to the other side of said source of electricity and adapted to move over said terminal segments to consecutively close said source of electricity through said bell circuits, and to consecutively open the same whereby a general alarm may be sounded without unduly taxing said source of electricity by consecutively ringing said bells; substantially as described.

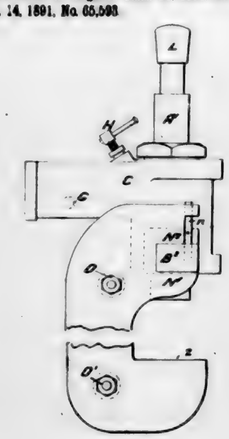
2. The combination with different bell circuits, of terminal segments, one for each bell circuit, arranged in a circle or series of concentric circles, a source of electricity to one side of which the bell circuits are connected in multiple, a circuit closer connected to the other side of said source of electricity and adapted to move over said terminal segments, a clock mechanism for moving said circuit closer, a stop normally in the path of said circuit closer adapted when removed from said path to permit the circuit closer to pass over the terminal segments to close the bell circuits consecutively and to consecutively open the same, whereby said bells may be rung consecutively and one at a time to sound a general alarm without unduly taxing said source of electro-motive force; substantially as described.



3. In a combined calling and alarm sounding apparatus, the combination with the annunciator placed in the office and connected with push buttons in the different rooms by circuit wires, of branches, one from each of said circuit wires having their terminals arranged in a circle or series of concentric circles, branches from said circuit wires through bells situated in the respective rooms to a common battery wire, a battery and a terminal of said battery wire mounted upon a flexible cord to close a circuit through a bell to sound an answer back call, a contact closer held in position by a stop and connected to said battery wire, and adapted, when the stop is removed, to consecutively close said circuits through the bells to sound a general alarm without unduly taxing the battery, substantially as described.

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**503,188. BOLT FORGERS.** DAVID T. YOUNG and HARRY W. YOUNG, Birmingham, England. Filed Nov. 10, 1892. Serial No. 451,543. (No model.) Patented in England June 26, 1891, No. 10,384, and in Germany Dec. 14, 1891, No. 65,593.

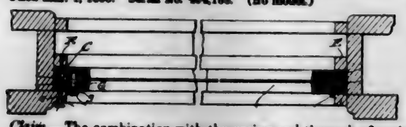


*Claim.*—1. A portable bolt forcer, comprising a hooked frame adapted to engage with the coupling flange, a hydraulic cylinder secured to the frame, a piston provided with a stem projecting through the upper end of the cylinder, and a pump secured against the side of the cylinder clear of the said stem, whereby a blow may be delivered on the center line of the said stem and piston to start the bolt while under hydraulic pressure.

2. The combination, with a bifurcated frame, of a hydraulic cylinder, a piston working in the cylinder and provided with a tubular piston rod, and a stem passing through the said rod, substantially as and for the purpose set forth.

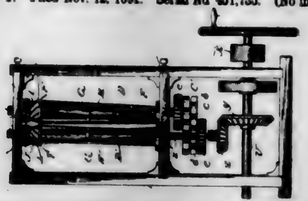
3. The combination, with the hydraulic cylinder provided with rectangular projecting lugs, of the bifurcated frame provided with jaws adapted to engage with the said lugs, and the retractible pins for connecting the said frame and lugs, substantially as set forth.

**503,189. WINDOW.** FRANK C. ARMBRUSTER, Milwaukee, Wis. Filed Mar. 1, 1893. Serial No. 464,183. (No model.)



*Claim.*—The combination with the casing and the sash of a window, of vertically disposed strips engaged with opposite sides of said casing, a hinged connection between one of said strips and one stile of the sash, screw-threaded pins in the other strip, apertures in the other stile of the sash for the reception of said pins, and nuts for detachably holding said latter strip in engagement with the said stile, substantially as set forth.

**503,190. HOP-PICKING MACHINE.** BACKUS A. BEARDSLEY, Waterville, N. Y. Filed Nov. 12, 1892. Serial No. 451,735. (No model.)



*Claim.*—1. A hop-picking machine comprising suitable feeding and stripping mechanism; the latter consisting of a pair of rotary rolls, each having projecting stripping surfaces, each of which extends across the face of the roll in a plane intersecting any axial plane of the roll at an angle, substantially as specified.

2. A hop-picking machine comprising suitable feeding and stripping mechanism; the latter consisting of a pair of rotary rolls, each having projecting stripping surfaces spirally disposed around the roll, and each stripping surface extending across the face of its roll in a plane intersecting any axial plane of the roll at an angle, substantially as specified.

3. A hop-picking machine comprising suitable feeding and stripping mechanism; the latter consisting of a pair of rotary rolls, each having rounded projecting stripping surfaces, and each rounded stripping surface extending across the face of the roll in a plane intersecting any axial plane of the roll at an angle, substantially as specified.

4. A hop-picking machine comprising suitable feeding and stripping mechanism; the latter consisting of two oppositely situated cooperating rolls, each having its stripping surface composed of a series of ribs or rods supported around the roll, and each rib or rod lying in a plane intersecting any axial plane of the roll at an angle, substantially as specified.

5. A hop-picking machine comprising suitable feeding and stripping mechanism; the latter consisting of a pair of rolls, each having a series of spirally disposed rods or ribs arranged around the same, and out of contact with the surface of the roll, substantially as specified.

6. A hop-picking machine comprising suitable feeding and stripping mechanism; the latter consisting of a pair of co-operating stripping rolls, each having a series of stripping-rods or ribs severally disposed obliquely across the face of the roll, substantially as specified.

7. In a hop-picking machine, the combination, with each stripping roll having a flange at both ends of greater diameter than the roll,—of a series of stripping ribs or rods secured at their extremities respectively to said flanges, and extending across the face of the roll obliquely,—and means for feeding and actuating said rolls, substantially as specified.

8. In a hop-picking machine, the combination, with a stripping roll having a flange at both ends and one midway its length,—of a series of ribs or rods secured severally at their extremities to said flanges at the ends of the roll, and stayed at their central points by the intermediate flange, substantially as specified.

9. In a hop-picking machine, the combination, with a pair of stripping rolls,—and suitable feed mechanism therefor,—of a roughened clamping roll on one extremity of each stripping roll, substantially as specified.

10. In a hop-picking machine, the combination, with a pair of stripping rolls,—and suitable feed mechanism therefor,—of a roughened clamping roll on one extremity of each stripping roll, and capable of traveling in a direction opposite to its corresponding stripping roll, substantially as specified.

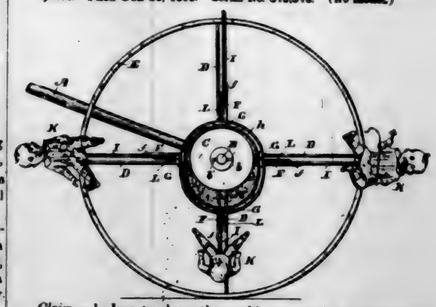
11. In a hop-picking machine, the combination, with suitable stripping and withdrawing rolls adapted to travel in opposite directions,—of a clamping roll on one extremity of each stripping roll, and mechanically connected to the withdrawing rolls, substantially as specified.

12. A hop-picking machine comprising a pair of rotary stripping rolls,—a clamping roll on one extremity of each stripping roll,—and a pair of withdrawing rolls in operative relation to the said stripping rolls, substantially as specified.

13. A hop-picking machine comprising a pair of rotary stripping rolls,—a clamping roll on one end of each stripping roll and independently rotatable with relation to its stripping roll,—a pair of rotary withdrawing rolls,—and a motion-transmitting-connection between the clamping and withdrawing rolls, substantially as specified.

14. A hop-picking machine comprising a pair of elastically journaled stripping rolls, each carrying a number of spirally disposed ribs or rods,—a pair of elastically journaled withdrawing rolls in operative relation to said stripping rolls,—and means for actuating both pair of rolls, substantially as specified

**503,191. TOY HOOP.** WILFRID W. BLACKSHAW, Duluth, Minn., assignor of one-eighth to Edward Totman and Victor P. Wardwell, same place. Filed Dec. 20, 1890. Serial No. 375,378. (No model.)



*Claim.*—1. In a toy hoop the combination with the pivoted arms provided on their outer ends with figures and having pivotal connection with the rotating hoop, of a non rotatable cam plate, and a link connection between the cam plate and the inner ends of the pivoted arms, and a handle attached to said cam plate at the hub of the hoop, all substantially as described and set forth.

2. In a toy hoop the combination with the pivoted arms provided with figures or images on their outer ends and pivoted to the pins F between their ends, of a non rotatable cam plate, connections between the inner ends of the arms and the cam plate, and a handle attached to said cam plate at the hub of the hoop, as described and set forth.

3. In a toy hoop the combination with pivoted arms pivoted to the rotating hoop and provided with figures, a non rotatable cam plate and connections between the said arms and cam-plate whereby the figures are moved relatively to the hoop, as described and set forth.

4. In a toy hoop the combination with the pivoted arms pivoted to the rotating hoop and provided with figures, of a non rotatable cam plate, a link and slide connection between said arms and cam plate as described and set forth.

5. In a toy hoop the combination with the pivoted arms having figures at their outer ends, of links L, pins F to support the pivoted arms, and slide G, pins *g*, working in cam groove and a non rotatable cam plate, all substantially as described and set forth.

6. In a toy hoop with wheel frame work, the combination with pivoted arms having pivotal connection with the pins F at *f*, and connected with a non rotatable cam plate, whereby figures or images attached to the pivoted arms move relatively with the hoop according to the shape or form of cam used, all substantially as described.

7. In a toy hoop with wheel framework, hub and spokes, the combination with the pivoted arms, with images or figures a non-rotatable cam-plate, links L, pins F, driven into or nailed to the hoop hub C, slides G with pins *g*, a hub, shaft, and suitable handle, all substantially as described.

8. In a toy hoop, with wheel frame-work, in combination with a shaft upon which the hub of the hoop is mounted, a non-rotatable cam-plate attached to a handle, pivoted arms, having figures at their outer extremities links L, slides G with pins *g* extending into the cam groove and pins F driven into the hoop hub for support, all substantially as described and set forth.



**503,192. EXTENSION-TABLE SLIDE.** RICHARD G. BLANTON, Watertown, Wis. Filed Nov. 22, 1892. Serial No. 452,704. (No model.)

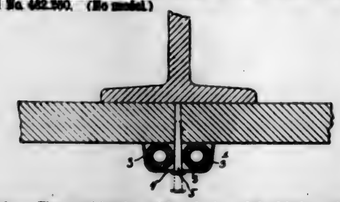


*Claim.*—1. A guide-block for extension table slides, the same consisting of a wooden base of the same depth at all points of its length, and a spring-metal face-plate having struck-out retaining lips that engage corresponding kerfs in the base as well as longitudinal portions bent in from the outer plane of said base on opposite sides of the same intermediate of said lips and the extremities of said plate, substantially as set forth.

2. A guide block for extension table slides, the same consisting of a wooden base of the same depth at all points of its length, and a spring-metal face plate having at least one end bent outward, struck-out retaining lips that engage corresponding kerfs in the base and longitudinal portions bent in from the outer plane of said base on opposite sides of the same intermediate of said lips and the ends of said plate, substantially as set forth.

3. A guide-block for extension-table slides the same consisting of a ⊢ shaped wooden base of the same depth at all points of its length, and a spring-metal plate having struck out retaining lips that engage corresponding kerfs in the base as well as longitudinal portions bent in from the stem of the base on opposite sides of the same intermediate of the lips and extremities of said plate, substantially as set forth.

**503,193. GLEAT.** DOUGLAS B. BRAMAN, Chicago, Ill., assignor of one-half to Thomas K. Wrigley, same place. Filed Feb. 14, 1893. Serial No. 462,990. (No model.)



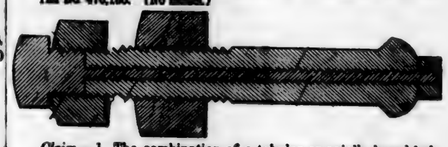
*Claim.*—The combination with a device of the kind specified for securing conduits and the like and consisting of a cross piece 2 with a perforation 4 about midway between its ends, the length of said cross piece 2 approximating twice the diameter of the conduit to be held thereby, and legs 3 on the ends of said cross piece 2, the length of said legs 3 approximating the diameter of the conduit to be held thereby, of a headed nail or pin 5 to pass through said perforation 4 and between the conduits held by the cross piece 2 and legs 3 and into the wall or the like to which the conduits are to be secured, substantially as described.

**503,194. FORGE-TRAY.** RUFUS S BURNETT, Dallas, Tex. Filed Mar. 9, 1893. Serial No. 465,333. (No model.)



*Claim.*—In a forge tray, the combination of a horizontal metallic plate adapted to be placed upon a masonry pedestal and provided with depending cleats or bars to engage the sides thereof, said plate being provided with a central depressed fire basin or cavity and a communicating grooved rest below the surface of the plate, and a removable hood having an open front side and provided throughout its surface with small perforations or vents, a draft hole or opening 5 being arranged at the center or lowermost point of the fire basin or cavity, substantially as specified.

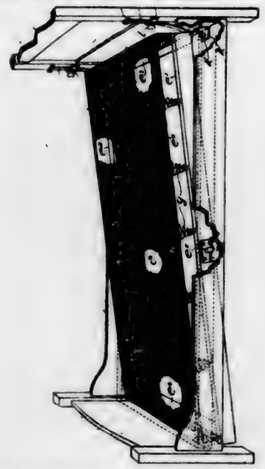
**503,195. NUT AND BOLT LOCK.** NATHANIEL T. CLARK and JUDSON K. HAYNIE, Sherman Heights, Tenn. Filed May 31, 1893. Serial No. 476,186. (No model.)



*Claim.*—1. The combination of a tubular or axially bored bolt, a nut threaded exteriorly upon said bolt, a left hand jam nut engaging a reduced left hand threaded terminal portion of said bolt, an axial screw provided with a left hand thread to engage the correspondingly threaded bore of the bolt and having an enlarged and left hand threaded shoulder to engage within the outer end of the jam nut, and a retaining nut threaded upon the projecting free terminal of the axial screw, substantially as specified.

2. The combination of a tubular or axially bored bolt, which is provided with a continuous interior left hand thread which extends from one end of its bore to the other, a nut threaded exteriorly upon a right hand threaded portion of said bolt, a left threaded jam nut engaging a reduced left threaded terminal portion of the bolt, an axial screw of greater length than the bolt and provided with a continuous left hand thread which is engaged throughout its length with the threaded bore of the bolt, such screw being provided with a left hand threaded shoulder of equal diameter with the reduced left threaded portion of the main bolt and adapted to engage in the outer end of said jam nut, and a retaining nut threaded upon the upper projecting terminal of the axial screw, substantially as specified.

**503,196. BEDSTEAD.** ALBERT D. COOKE, Philadelphia, Pa. Filed Feb. 7, 1893. Serial No. 461,401. (No model.)



*Claim.*—The combination, in a bedstead, of head and foot boards supported in position by side-rails having between their centers and the foot-board bearing plates provided with V-shaped recessed seats, a bed-bottom frame provided with end and side strips, plates provided with lateral tapering pins secured to the strips of the bed-bottom frame and detachably engaging in the recessed seats of said bearing-plates, straps attached to the end strip of the bed-bottom frame and adapted for insertion through staples secured to the head-board and provided with set-screws, and angle irons or brackets secured to the head-board, and provided with vertical pins or studs adapted to engage in openings

provided in the upper end strip of the bed-bottom frame, all arranged as shown and for the purposes described.

## 503,197. FISH-TRAP. JOHN R. CRAWFORD, Hewitt, Ala. Filed Mar. 18, 1893. Serial No. 466,090. (No model.)



*Claim.*—1. In a trap for fish and other water game, the side walls foldably connected at their upper edges, duplicate floor-sections foldably connected together at their inner edges and to the side walls at their outer edges, and means for preventing the egress of the game, substantially as specified.

2. In a trap for fish and other water game, the side walls hinged or foldably connected at their upper edges, the duplicate floor sections connected at their adjacent edges to each other and at their outer edges to said side walls, and a re-entering pocket arranged between the front ends of the side walls, substantially as specified.

3. In a trap for fish and other water game, the side walls loosely connected at their upper edges, the floor sections connected to each other and to the lower edges of said side walls and elevated at their inner edges above the plane of the lower edges of said side walls, and a re-entering pocket between the front ends of the side walls, substantially as specified.

4. In a trap for fish and other water game, the combination of the side walls hinged together at their upper edges, the duplicate floor sections hinged together and to the lower edges of said side walls, the duplicate wings arranged between the front ends of the side walls to form a pocket, and flaps foldably connected to said wings and at their lower edges to the sub-adjacent edges of the floor sections, substantially as specified.

5. In a trap for fish and other water game, the combination of the side walls hinged together at their upper edges, the floor sections hinged together and to the lower edges of said side walls, and provided with tapered front ends, the wings arranged between the front ends of the side walls, hinged at their front edges and at their upper edges to said side walls, and provided with guide-rods, and flaps arranged in the intervals between the lower edges of the wings and the divergent edges of the tapered front ends of the floor sections, mounted slidably upon said guide-rods, and hinged to the edges of the floor sections, substantially as specified.

6. In a trap for fish and other water game, the combination, with side walls hinged together at their upper edges, floor sections hinged together and to the lower edges of said side walls, a folding pocket arranged between the front ends of the side walls, and the adjusting rod connected at its lower end to the inner edges of the floor sections, extending vertically between the edges of the said walls and provided with a detent, substantially as specified.

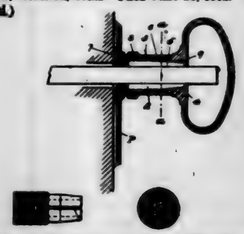
7. In a trap for fish and other water game, the combination, with side walls having their upper edges connected together, a sectional floor having its center arranged above the plane of the lower edges of the side walls, and adapted to be depressed by a captured animal, and a pocket comprising wings and connected flaps, whose lower edges are connected to said floor, whereby, when the latter is depressed the opening between the rear ends of the wings and flaps is contracted, substantially as specified.

8. In a trap for fish and other water game, the side walls, the floor sections, the wings arranged between the front ends of the side walls, and the flaps connecting the lower edges of said wings to the floor sections, combined with barbs arranged upon the rear edges of said wings and flaps and projecting rearward, substantially as specified.

9. In a trap for fish and other water game, the combination of the side walls, floor sections, and foldable pocket, with the rings fitting in corresponding perforations in the adjacent edges of such parts or members to hinge the same together, substantially as specified.

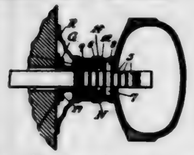
10. A trap for fish and other water game, composed of foldable sections or members hinged together at their meeting edges and consisting of the metallic frame of sheet metal, whose inner edges are folded to form clips and whose outer edges are provided with stiffening rods, and a screen fitting and secured at its edges in said clips, substantially as specified.

## 503,198. KNOB ATTACHMENT. CHARLES F. DOEBLER and CHARLES K. BRYANT, Hartford, Conn. Filed June 28, 1892. Serial No. 438,207. (No model.)



*Claim.*—In a knob-attachment, the combination with the spindle, of the compressible-sleeve, one end of which is tapered or conical and the other end of which has screw-threads of uniform diameter formed thereon, an internally tapered knob-stem having screw-threads to correspond with, and fit the screw-threads upon the sleeve, and a check-nut having internal threads of uniform diameter to fit and turn upon the sleeve to bind the knob-stem upon said sleeve, substantially as described.

## 503,199. KNOB ATTACHMENT. CHARLES F. DOEBLER, Hartford, Conn., assignor of one-half to Charles K. Bryant, same place. Filed Oct. 11, 1892. Serial No. 448,588. (No model.)



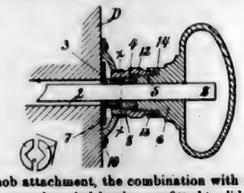
*Claim.*—1. In a knob-attachment, the combination with the squared or angular spindle, of the knob-stem internally squared to fit the spindle, the adjustable sleeve squared to fit said spindle and engaging the knob-stem by a screw-thread, as set forth, and a removable key for holding the knob-stem in place on the spindle, substantially as described.

2. In a knob-attachment, the combination with the spindle, the knob-stem, and a removable key for connecting said spindle and stem, of the adjustable bearing-sleeve fitted to slide, but not to rotate, on the spindle, and a locking-sleeve adapted for holding said key in place when uncovering the key and to lock the bearing-sleeve in place, substantially as set forth.

3. In a knob-attachment, the combination with a squared spindle, of the internally-squared knob-stem, the internally-squared sleeve adjustable longitudinally of the knob-stem, a key for connecting the knob-stem and spindle, and means as specified for locking the key in place within the knob-stem and spindle, substantially as described.

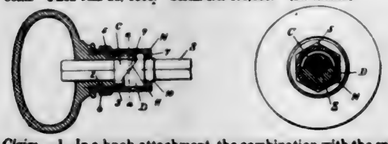
## 503,200. KNOB ATTACHMENT. CHARLES F. DOEBLER, Hartford, Conn. Filed Nov. 16, 1892. Serial No. 452,152. (No model.)

*Claim.*—1. In a knob-attachment, the combination with the spindle, of the externally screw-threaded knob-stem fitted to slide upon the spindle, a conical and compressible spindle-clamp loosely and independently mounted upon the spindle and adapted to bear at its end against the knob-stem as set forth, and a clamp-sleeve internally-threaded at one end to screw upon the knob-stem and conically-bored internally at its opposite end to hold in place and compress the spindle-clamp, whereby the knob-stem may be secured in proper position upon the spindle without longitudinal movement thereof, substantially as described.



2. In a knob attachment, the combination with the spindle and the externally screw-threaded knob-stem fitted to slide upon the spindle, of a conical spindle-clamp, slotted or divided its entire length and loosely and independently mounted upon the spindle with its end bearing against the knob-stem, as set forth, and a clamp-sleeve internally-threaded at one end to screw upon the knob-stem and internally conically bored at its opposite end to hold in place and compress the spindle-clamp, substantially as and for the purpose described.

## 503,201. KNOB ATTACHMENT. CHARLES F. DOEBLER, Hartford, Conn. Filed Jan. 28, 1893. Serial No. 460,019. (No model.)

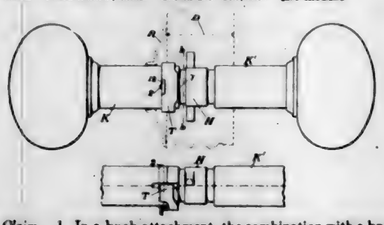


*Claim.*—1. In a knob-attachment, the combination with the spindle, and with the knob-stem fitting thereon, of the clamp-nut and a spindle-clamping device intermediate to the nut and knob-stem and comprising a laterally-movable clamp-ring and a wedge through which said ring is actuated by the clamp-nut, substantially as described.

2. In a knob-attachment, the combination with the spindle, of a knob-stem and spindle-clamping-device, comprising two members having inclined adjacent faces and fitted to slide upon said spindle, one of which members is capable of lateral movement, and a clamp-nut engaging with, and pressing said members together in a direction longitudinally of the spindle, substantially as and for the purpose described.

3. In a knob-attachment, the combination with the spindle, of a knob having an externally-threaded stem fitted to slide on said spindle, a clamp-nut having at its end an internally-projecting flange and being internally screw-threaded to fit the knob-stem; a movable clamp-ring having an inclined face and bearing against the end of the knob-stem and a wedge sleeve having a reduced end projected through the flange of the clamp-nut to form a shouldered bearing and having its opposite end inclined to correspond to the inclination of the face of the movable clamp, all substantially as and for the purpose described.

## 503,202. KNOB ATTACHMENT. CHARLES F. DOEBLER, Hartford, Conn. Filed Feb. 2, 1893. Serial No. 460,675. (No model.)

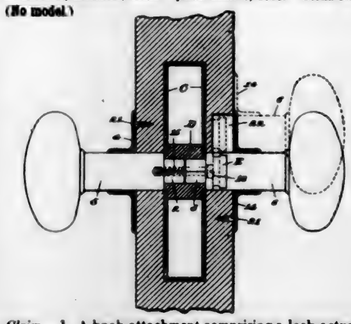


*Claim.*—1. In a knob-attachment, the combination with a knob-stem and spindle rigidly connected together, said spindle being adapted for carrying a second knob-stem, of the coupling adapted to engage the hub of a lock and to turn freely on the spindle, and a sliding spring-catch carried on the first knob-stem and adapted to slide thereon from and into engagement with the coupling, substantially as described.

2. In a knob-attachment of the class specified, the combination with the spindle, of the hub to be actuated thereby, the coupling engaging said hub and having longitudinal slots in the periphery thereof, the knob-stem fixed on the spindle and having longitudinal slots corresponding to the said slots of the coupling, a sliding locking device carried on the knob-stem and engaging in the slots thereof and adapted to slide in said slots from and into the slots of the coupling, and means for detaining the sliding locking device in its working position, substantially as set forth.

3. In a knob-attachment, the combination with the lock-actuating hub having an angular hole therethrough, of a screw-threaded spindle of less diameter than the diameter of the hole in the hub through which it is extended; a knob-stem screwed upon the threaded end of the spindle and having a square inner-end projected into the hole in the hub; a hub-stem fixed to the opposite end of said spindle; a coupling loosely mounted upon the spindle and interposed between the end of the fixed knob-stem and hub with an angular portion projected into the hole in said hub, and a removable spring-catch engaging said coupling and fixed knob-stem to prevent accidental turning of the spindle in the hub, substantially as described.

## 503,203. KNOB ATTACHMENT. CHARLES F. DOEBLER and CHARLES K. BRYANT, Hartford, Conn. Filed Mar. 6, 1893. Serial No. 464,680. (No model.)

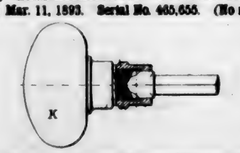


*Claim.*—1. A knob-attachment comprising a lock-actuating hub having an angular recess, an internally screw-threaded knob-stem fitting said recess at one end, a coupling having a stem at one end fitting said hub recess and having tongues and grooves at its opposite end, a screw engaging said coupling and knob-stem, and a knob-stem having tongues and grooves at its end for engagement with the tongues and grooves of the coupling, and, when in engagement, abutting against the head of the screw to prevent turning thereof, substantially as described.

2. In a knob-attachment, the combination with the angularly recessed lock-actuating hub, of the internally screw-threaded knob-stem fitting the hub recess at one end, the centrally bored coupling engaging said hub and having its end face grooved transversely to receive a longitudinal projection upon an adjacent knob-stem, a screw engaging the internally threaded knob-stem and coupling and having an elongated or angular head, and a knob-stem having longitudinal projections to engage the coupling and embrace the screw-head, whereby the parts are locked together and the screw prevented from turning, substantially as described.

3. The combination with the door B recessed at 22 at one side, as described, and having the usual lock-receiving mortise and transverse knob-stem openings, of the lock-actuating hub having the angular recess, the knob-stem 5 fitted in said recess at one end, the coupling E secured to said knob-stem by a screw and bearing against the hub and having the tongues and grooves in its end face as described, the knob-stem 6 having tongues and grooves at its end to engage the coupling and head of the screw, and the bearing-plate 14 engaging the knob-stem and covering the recess 22 in the door, all substantially as and for the purpose described.

## 503,204. KNOB ATTACHMENT. CHARLES F. DOEBLER, Hartford, Conn. Filed Mar. 11, 1893. Serial No. 465,655. (No model.)

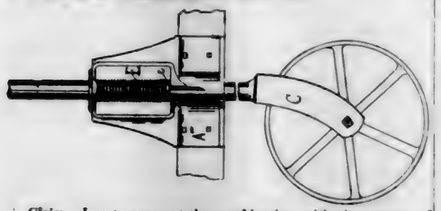


*Claim.*—In a knob-attachment, the combination with the spindle, of the knob and its externally-threaded stem fitted to slide on the spindle and having transversely of the end thereof a spindle-clamp-engaging groove or key-way, the compressible spindle-clamp eng-g-

ing with the grooved end of the knob-stem, and a clamp-sleeve internally threaded at one end to screw upon the knob-stem, and at the other end engaging the spindle-clamp for compressing the same upon the spindle and holding it in non-rotative engagement with the knob-stem, substantially as described.

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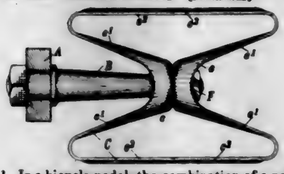
**503,205. TONGUE-SUPPORT.** DON C. EHRESMAN, Peoria, Ill. Filed Dec. 10, 1892. Serial No. 454,790. (No model.)



*Claim.*—In a tongue rest the combination, with the tongue of the upright frame formed of parts A A' A'' perforated at the top, the base $A'''$, integral therewith, vertically perforated, the whole frame work attached to the side of the tongue, the solid bar B, projecting upwardly through the perforation in the base $A'''$, and through the perforation in the top of the frame work, the spiral spring E, surrounding the said bar, the bifurcated arms C, on the bar B, the wheel D and the clamp *e*, adjustably secured upon bar B, extending nearly around the bar B, and provided with a bolt bearing through perforations in outwardly extending ears, for drawing the clamp together to secure it upon the bar, all substantially as described and set forth.

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**503,206. BICYCLE-PEDAL.** ARTHUR L. GARFORD, Elyria, Ohio. Filed Oct. 18, 1892. Serial No. 449,234. (No model.)



*Claim.*—1. In a bicycle pedal, the combination of a pedal frame, two ball cups arranged back to back near the center of the pedal frame, and arms forming a part of the frame and connecting said cups to the sides thereof, with a crank pin which passes centrally through both cups, two cones secured on the crank pin and forming with the two cups two independent ball channels, and two sets of balls confined in said channels, substantially as set forth.

2. In a bicycle pedal, the combination of two cups arranged back to back, diverging arms integral with said cups, and side pieces with which said arms are connected, with a crank shaft which passes centrally through said cups, two cones secured to the shaft co-acting with said cups to form two independent ball channels, and two sets of balls confined in said channels, substantially as set forth.

3. In a bicycle pedal, a frame consisting of two metallic pieces each comprising the following integral parts;—a cup *c*, two arms *c*' diverging therefrom, and side pieces $c^3$, combined with a crank pin, a cone rigid therewith and a conical nut, substantially as set forth.

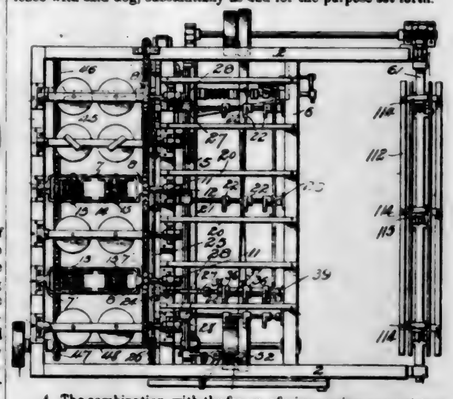
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**503,207. WIRE-AND-PICKET-FENCING MACHINE.** HENRY J. OEHRADT, Minneapolis, Minn. Filed Aug. 8, 1892. Serial No. 442,458. (No model.)

*Claim.*—1. The combination, with wire carriers and twisters, of longitudinally unyielding picket-stops for holding the fence, means for lowering said stops, a yielding dog to be engaged by the fence, and a reel adapted to draw out the fence, and means for operating said reel, said means being connected with said yielding dog and controlled thereby; whereby an even and uniform tension is automatically maintained upon the fence, substantially as described.

2. The combination, with the frame, of wire-carriers and twisters arranged thereon, means for operating the same, two or more transverse rows of fixed picket-stops to hold the fence, one or more yielding dogs, means for forcibly drawing out the fence when released from said picket-stops, and a connection between the drawing out mechanism and said yielding dog or dogs for stopping the action of said mechanism when said dog is engaged by the fence, substantially as described and for the purpose specified.

3. The combination, with wire-carriers and twisters, of means for operating the same intermittently, a reel arranged to operate when said twisters are stopped, two or more rows of vertically movable picket stops for holding the fence against the tension of said reel, means for lowering said stops when said twisters are stopped, a yielding dog or dogs to be engaged by the fence when moving between said stops, and a connection between said yielding dog and the reel mechanism whereby said reel is stopped by the engagement of the fence with said dog, substantially as and for the purpose set forth.



4. The combination, with the frame, of wire-carriers and twisters arranged thereon, means for operating the same, a series of vertically movable picket-stops or holders, one or more vertically movable and longitudinally yielding dogs to be engaged by the fence, the bundle reel, the operating shaft connected therewith, fixed and loose pulleys on said shaft, the power-belt, a belt shifter therefor, means for shifting said belt onto the fixed pulley, a stop for holding the same in such position, and means connected with said yielding dog or dogs for disengaging said stop and the belt shifter, substantially as and for the purpose specified.

5. The combination with the frame, of a series of wire carriers and twisters arranged thereon, means for operating the same, longitudinally arranged rotatable shafts bearing fixed picket-stops, another longitudinal rotatable shaft, a yielding picket-dog or dogs arranged thereon, the bundle reel, the operating shaft connected therewith, fixed and loose pulleys thereon, the power belt, and a belt shifter, means for shifting said belt upon the fixed pulley, a stop for holding the same in such position, and means connected with said yielding picket dog or dogs for disengaging said stop and the belt shifter, substantially as described.

6. The combination with a frame, of wire carriers and twisters arranged thereon in connection with means for operating the same, supports for the slats, longitudinally arranged shafts, two or more of said shafts provided with fixed picket-stops and one of the same provided with yielding dogs, a cushion spring therefor, a bundle reel, the operating shaft connected therewith, means for driving said shaft, means provided in connection with said yielding dog or dogs for controlling the action of said operating shaft, and an automatic stop-mechanism connected with said wire carriers and twisters, substantially as described.

7. The combination, with the frame, of the spool-frames arranged thereon, the twister-heads provided in connection therewith, a driving shaft, the shorter shaft 42, the belt extending between said shafts, the sprocket-wheel loosely journaled on the shaft 42, the friction pulley fixed on said shaft, the separable clutch parts pivoted upon said sprocket-wheel, a spring tending to force apart the said parts of said pulley, a pry bar extending between the same, a movable stop arranged in the path of said bar, and a sprocket-belt passing over said wheel to operate said spools and twisters, substantially as described.

8. The combination with the frame, of the spool-frames and spools, the twister heads and the sprocket-wheels arranged thereon, the shaft 42, the large sprocket-wheel 41, the sprocket-chain passing therefrom over the wheels on said spool-frames, the friction pulley provided on said shaft 42, the clutch parts pivoted on said sprocket wheel and having the lugs and the compressing spring, the pry-bar provided between said lugs, the movable stop pawl, a treadle connection between the frame and said pawl for disengaging said pawl from said pry-bar, the power shaft connected with the shaft 42, the bundle reel, the operating shaft connected therewith, fixed and loose pulleys thereon, the belt extending over the same from said power shaft, the cam lever arranged to be operated by the revolution of said clutch parts, picket-stops to be operated by said cam lever, a belt shifter to move said belt and adapted to be operated by said cam lever to move said belt on the fixed pulley, yielding picket dogs and a connection between the same and said shifter whereby said shifter is released to shift said belt upon the loose pulley, substantially as and for the purpose specified.

9. The combination with the frame, of wire carriers and twisters arranged thereon longitudinally, the longitudinally arranged shafts having the adjustable picket stops, an additional shaft, a slidable sleeve and picket dog arranged thereon, a cushion spring bearing against the end of said sleeve to force the same forward, means for simultaneously rotating said shafts to lower said stops, the bundle reel, the operating shaft 55 therefor, a fixed and a loose pulley on said shaft, a belt 52, the belt shifter, a spring connected therewith for normally throwing said belt on the loose pulley, means for positively shifting the belt upon the fixed pulley, and a rod 105 having an arm 108 to engage said sleeve and having a stop arm adapted to engage said shifter substantially as and for the purpose specified.

10. The combination with a frame, of the rotatable spool frames and twister heads arranged thereon, means for operating the same, bars 20 for supporting the pickets, the longitudinally arranged rotatable shafts, the picket stops arranged thereon, said shafts provided with crank arms 24, a common connecting bar 25, a pivoted lever arranged in connection with said bar, and means for automatically and periodically operating said lever to throw said bar, substantially as described.

11. The combination with the frame, of the wire carriers and twisters, the longitudinally arranged shafts provided with the picket stops, said shafts having crank arms, the rod 25 connected therewith, a pivoted cam lever 83 pivotally connected with said rod, the shaft 42, a wheel loosely journaled thereon and a friction pulley 62 fixed on said shaft, the semi-circular clutch parts pivoted on said wheel, a spring arranged to normally press said parts upon said friction pulley, means for periodically releasing said clutch parts and permitting the same to make a single revolution, and a lug carried thereon and adapted to engage said cam lever and thereby operate the picket stops, substantially as described.

12. The combination with the frame and the wire carriers and twisters arranged thereon, the sprocket wheels 8 thereof, the power shaft 48 and the shaft 42, means for driving the latter from the former, a large sprocket wheel 41 journaled upon the shaft 42, a sprocket belt passing therefrom around the several sprocket wheels 8, the friction pulley arranged on said shaft, the pivot pin secured upon the wheel 41 and having the end piece 65, the semi-circular clutch parts 66 and 67 pivoted on said pin and having lugs 69, a bolt passing therethrough and provided with the spring 70, the pry-bar arranged between said lugs, the gravity pawl 75 arranged in the path of said pry-bar, means for lifting said pawl, picket stops arranged to be operated by the revolution of said clutch parts, and a drawing out mechanism, substantially as described.

13. The combination with the frame, of the wire carriers and twisters arranged thereon, the rotatable shafts provided with the picket stops, the power shaft, a shaft 42, a sprocket wheel 41 journaled thereon and adapted to operate said twisters, a friction pulley 62 provided on said shaft 42, the semi-circular clutch parts pivoted on said wheel 41, a spring to normally press the same together, the pry-bar 73, the pawl 75 having the rubber stop to engage said bar, a treadle, a rock shaft, picket pushers arranged to be operated therefrom, and an arm provided on said rock shaft and by means of which said pawl 75 is disengaged from said pry-bar, substantially as described.

14. The combination, with the frame, of the wire carriers and twisters provided thereon, means for operating the same, a clutch-mechanism arranged in connection therewith, rotatable shafts 21 and 38, and means for simultaneously operating said shafts, the former provided with picket-stops 22, and the shaft 38 being provided with a yielding dog or dogs, a cushion spring for holding said dogs normally forward, the bundle reel, the shaft 55 for operating the same, fixed and loose pulleys on said shaft 55, a constantly running belt arranged on said pulleys, a shifter rod having arms to engage the sides of said belt, a spring for normally forcing back said rod to throw the belt upon the loose pulley, means in connection with said clutch for automatically shifting said belt onto the fixed pulley, a lug or arm 103 on said shifter-rod, a rocking-rod 105 provided with an arm 104 to engage said lug and having on its upper end an arm to be operated by the movement of said yielding dog, substantially as described.

15. The combination, with the frame, of the wire carriers and twisters carried thereon, and a collapsible reel composed of a bar or shaft 61 provided with inclined shoulders, the parallel bars, and links connecting said bars with said shaft 61 and adapted to rest against said inclined shoulders, whereby the bars are supported, substantially as described and for the purpose set forth.

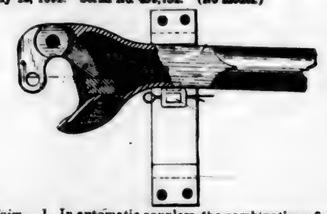
16. The combination with a head or chuck 60, of a shaft 61 provided with inclined shoulders 115, the parallel rods or bars 112, and the pivotal links 114 pivoted on said shaft and said bars and adapted to rest against said inclined shoulders, substantially as described.



17. The combination, in a fence machine, of means for advancing the fence intermittently, the picket supporting bars 20, the picket-stops provided between said bars, an elevated rock-shaft arranged above the same, arms arranged on said rock-shaft, a saw or saws mounted upon said arms, means for dropping or forcing down said arms and saws while the pickets are held by said stops, and means for driving said saws continuously, substantially as described.

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**503,208. CAR-COUPLING.** JAMES A. HIBBON, Chicago, Ill. Filed July 12, 1892. Serial No. 439,732. (No model.)



*Claim.*—1. In automatic couplers, the combination of a drawbar head adapted to receive knuckles of different forms, and knuckles of different forms interchangeably insertible into the head, substantially as described.

2. In automatic couplers, the combination of a drawbar head adapted to receive knuckles of different forms movable laterally to one side or the other, means for holding the head in its position of lateral adjustment, and knuckles of different forms interchangeably insertible into the head, substantially as described.

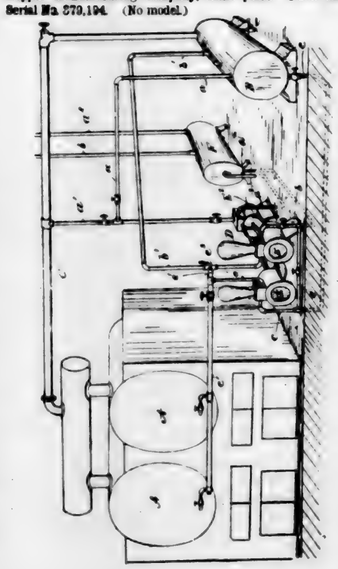
3. In automatic couplers, the combination of a drawbar head adapted to receive knuckles of different forms, knuckles of different forms interchangeably insertible into the head, and means for locking the knuckles in their position of use, substantially as described.

4. In automatic couplers, the combination of a drawbar head adapted to receive knuckles of different forms, knuckles of different forms interchangeably insertible into the head and provided with projecting arms, and locking pins provided with a cam surface against which the knuckle arms bear before they are moved into position of use, substantially as described.

5. In automatic couplers, the combination of a drawbar head adapted to receive knuckles of different forms, knuckles of different forms interchangeably insertible into the head, locking pins for locking the knuckles in their place of use, and means for raising the pins to permit the knuckles to move out of their locking position, substantially as described.

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**503,209. DEVICE FOR PURIFYING FEED-WATER.** JOHN J HOPPES and EDWARD C. GWYN, Springfield, Ohio, assignors to the Hoppes Manufacturing Company, same place. Filed Jan. 26, 1891. Serial No. 379,194. (No model.)

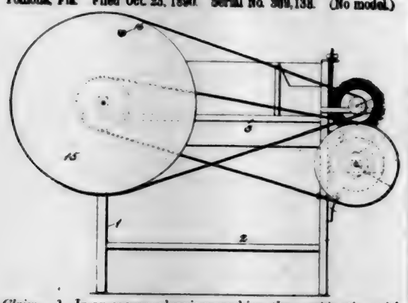


*Claim.*—1. The combination with a steam boiler and a purifier connected directly thereto, of a pump for supplying said purifier, and a simultaneously operated pump for discharging water from said purifier into the boiler, and a branch connection between the supply pipes of the respective pumps, and suitable supply-valves in said branch connection, substantially as specified.

2. The combination with the steam boilers and a purifier connected directly thereto, of two simultaneously operated pumps adapted to discharge respectively into the purifier and into the boilers, the supply-pipe of one of said pumps being connected to the purifier and provided with a branch connection to the supply-pipe of the other pump, and a branch connection with suitable stop-valves between the discharge pipes of the respective pumps, substantially as specified.

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**503,210. ORANGE-CLEANING MACHINE.** HENRY LEARNED, Pomona, Fla. Filed Oct. 23, 1890. Serial No. 369,138. (No model.)



*Claim.*—1. In an orange-cleaning machine, the combination with a feed-way, of a trough, a feed-screw arranged in the trough, a brush arranged above the screw, and means for rotating said screw, substantially as specified.

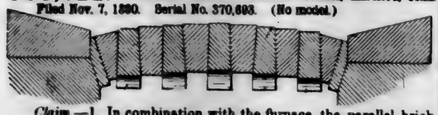
2. In an orange cleaning machine, the combination with a feed-way, of a trough arranged in front of the same and communicating therewith, a feed-screw rotatably mounted in the trough, means for revolving the screw, a superimposed rotary brush, and means for revolving the brush, substantially as specified.

3. In an orange cleaning machine, the combination with a feed-way, of a trough arranged in front of the same and communicating therewith, a feed-screw rotatably mounted in the trough, means for revolving the screw, a rotary brush arranged above the screw, and means for rotating and adjusting the same relative to the screw, substantially as specified.

4. In an orange cleaning machine, the combination with a framework, a hopper having a discharge opening at one corner thereof, a trough arranged in advance of the hopper and communicating with the opening, a feed-screw journaled in the trough, a spout at one end of the screw, the shaft of the screw being extended beyond one of its bearings, a pulley arranged on said end, a rear main shaft, a driving pulley arranged thereon, a smaller pulley arranged thereon, a belt between the latter and the pulley of the screw carrying shaft, a superimposed brush shaft, a rotary brush arranged thereon, a small pulley arranged upon the brush-shaft, and a belt between the small pulley and the driving-pulley, substantially as specified.

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**503,211. FURNACE-GRATE.** BURDETT LOOMIS, Hartford, Conn. Filed Nov. 7, 1890. Serial No. 370,693. (No model.)

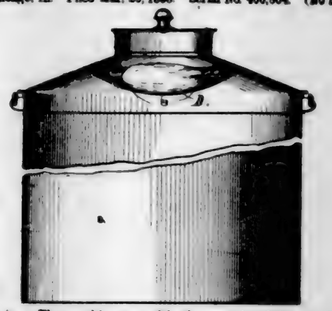


*Claim.*—1. In combination with the furnace, the parallel brick arches and the main transverse arch composed of brick constructed to interlock and form a bond with the brick of the parallel arches, substantially as described.

2. In a furnace the grate composed of parallel brick arches B and a main transverse intersecting brick arch D, containing brick *c* at the intersections with the parallel arches of less diameter than the brick of such arches, and the brick *d* of arch D, interlocking with the brick *b* of arches B to form a bond, substantially as described.

3. In a furnace the grate composed of parallel brick arches B, formed of bricks *b*, *c*, and the main transverse intersecting brick arch D formed of brick *d* and of brick *e*, placed at the intersections of the arches, and which are narrower at their upper ends than the bricks *b*, *c*, of the arches B, whereby the bricks of the parallel arches and the intersecting arch are caused to interlock and form a bond, substantially as described.

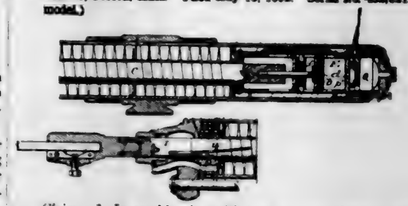
**503,212. GARBAGE-RECEPTACLE.** CHARLES J. L. MACLEOD, Chicago, Ill. Filed Mar. 20, 1893. Serial No. 466,804. (No model.)



*Claim.*—The combination with the can, A, of the top, B, fitting in the can and formed with a central opening, the cover, C, adapted to close said opening, and the perforated diaphragm, D, supported beneath the opening, the space between the cover and the diaphragm being a chamber adapted to contain disinfecting material; substantially as shown and described.

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**503,213. ELECTRICAL RECIPROCATING MOTOR.** HENRY S. MCKAY, Boston, Mass. Filed May 13, 1892. Serial No. 432,821. (No model.)



*Claim.*—1. In combination with two or more electro magnetic devices, an armature adapted to be reciprocated by said devices, the reciprocating stock secured to said armature and having a spiral groove or grooves and longitudinally parallel groove or grooves, two ratchets inclosed in a casing and each provided with a spline or splines, with the spline or splines of one ratchet engaging with the spiral groove or grooves in the stock, and the spline or splines of the other ratchet engaging with the longitudinally parallel groove or grooves, and spring dogs extending through the casing and engaging with the teeth of both ratchets all as and for the purposes set forth.

2. In an electro-magnetic reciprocating tool or engine, the combination with the armature, a commutator composed of a sliding frame and fixed contacts, said frame adapted to be directly operated by the armature or by a longitudinal extension thereof, but insulated from the armature, said frame supporting yielding contact pieces and a conducting medium connecting said pieces and said pieces adapted to slide over and make electrical connection with the fixed contact to alternately energize and short circuit the magnetic devices, all as and for the purposes set forth.

3. In an electro-magnetic reciprocating tool or engine, the combination with the armature, a commutator composed of a sliding frame and fixed contacts, said frame provided with yielding contact pieces extending on opposite sides thereof, and a conducting medium connecting said pieces, and said fixed contacts also situated on opposite sides of the sliding frame and adapted for electrical connection with the yielding contacts during their sliding movement, whereby the magnetic devices are alternately energized and short circuited, all as and for the purposes set forth.

4. In an electro-magnetic reciprocating tool or engine, the combination with the armature, a commutator composed of a sliding frame and fixed contacts, said frame adapted to be operated by the armature or by a longitudinal extension thereof, yielding contact pieces extending from opposite sides of said frame, and a conducting medium connecting said pieces, and the fixed contacts also situated on opposite sides of the frame for electric connection with the yielding pieces, and said fixed contacts of both sides with the interposed insulation serving as guides for the yielding contact pieces, and the combination serving to alternately energize and short circuit the magnetic devices as set forth.

5. In an electro-magnetic reciprocating engine, the combination of the armature, a sliding frame connected with said armature and having yielding contact pieces extending from said frame and connected by a conducting medium, contact plates *m n* secured to one side of the slide support and insulated therefrom, and separated by an insulated plate which forms the slide bearing for one of the yielding contacts between the two fixed contact plates, and a contact plate having its contact surfaces opposite those of the plates *m* and *n*, and insulation separating said surfaces,—and said contact plates, surfaces and insulated seperator serving as guides for the yielding contacts, and for the purposes set forth.



6. In combination with a sliding contact, the three stationary plates *m n* and *o*, the two plates *m* and *n* being at some distance apart, and the plate *o* overlapping the plates *m* and *n*, and having an inwardly extending portion interposed between the adjacent edges of the plates *m n*, all of said plates *m*, *n* and *o* separated from each other by insulation, and with the contact surfaces of all of said plates with interposed insulation being in a continuous line with the movement of the sliding contact and presenting an unbroken surface, all as set forth.

7. A compound electric contact plate, composed of a part having a recess on its contact side, another plate fitted into said recess and insulated from the recessed part, and with the contact surfaces of both of said plates in the same plane, as and for the purposes set forth.

8. In combination with electro-magnetic devices and an armature adapted to be reciprocated by said devices, a non-circuit breaking commutator consisting of a sliding portion and fixed contacts, said sliding portion connected with the end of a reciprocating armature or with a longitudinal extension thereof on a line with the axis of said armature, and adapted to slide with the same, and the operation of said commutator causing the magnetic devices to be alternately energized and short circuited as set forth.

9. The combination with the electro-magnetic devices, an armature adapted to be reciprocated by said devices, and a non-circuit breaking commutator consisting of a sliding portion and fixed contacts and situated entirely beyond the end of the armature, a rod longitudinally adjustably secured to the end of the armature extending beyond the same and passing loosely through said sliding portion of the commutator, and provided with a lateral projection at or near its free end, whereby the operation of the armature and commutator will cause the magnetic devices to be alternately energized and short circuited as set forth.

10. In combination with the electro-magnetic devices and a reciprocating armature adapted to be reciprocated by said magnetic devices, a non-circuit breaking commutator composed of fixed contacts and a sliding frame of conducting material connected with said armature or with a longitudinal extension thereof, but insulated from the armature, and said frame having yielding outwardly extending contact blocks for making electric connection with the fixed contacts, whereby an electric current can pass from said contacts through said blocks and frame, and cause the magnetic devices to be alternately energized and short circuited as set forth.

11. In combination with electro-magnetic devices and a reciprocating armature adapted to be reciprocated by said magnetic devices, a non-circuit breaking commutator consisting of a sliding portion and fixed contacts, the sliding portion connected with said armature or with a longitudinal extension thereof, a slide secured to said sliding part of the commutator, and extending from opposite sides of said armature or extension, and parallel guide ways with which the ends of the slide engage, all as set forth.

12. In an electro-magnetic reciprocating tool or engine, the combination with the armature, a commutator composed of a sliding frame and fixed contacts, said frame adapted to be directly operated by the armature or by a longitudinal extension thereof, but insulated from the armature, said frame supporting yielding contact pieces and a conducting medium connecting said pieces, and said pieces adapted to slide over and make electrical connection with the fixed contacts to alternately energize and short circuit the magnetic devices, a casing inclosing the above mechanism of a diameter about that of the magnetic devices, and means for making electric connection between the electrical parts in the casing and an outside electric circuit.

13. In combination with two wires of an electric circuit, two or more electro-magnetic devices, an armature adapted to be reciprocated by said devices, and said magnetic devices connected with the circuit wires in series, a sliding commutator connected with the end of the armature or with a longitudinal extension thereof, contact points or surfaces situated in the line of movement of the commutator contacts, and electric connections made between said circuit wires, magnets and contacts, whereby the current is caused to pass through short circuits alternately, and alternately energize and cut out the magnets without breaking the circuit or the armature losing its magnetism.

14. An electro-magnetic reciprocating engine, having two or more electro-magnetic devices, an armature adapted to be reciprocated by said devices, a piston connected with said armature, and the piston cylinder, all inclosed in the engine casing, an opening in the side of the cylinder communicating with the chamber between said cylinder and engine casing, and passage-ways leading from said chamber to and around the electro-magnetic devices and to the outside air, and means extending to the outside of the casing for regulating the withdrawal of air from the cylinder, all as set forth.

15. An electro-magnetic reciprocating engine having two or more electro-magnetic devices, an armature adapted to be reciprocated by said devices, a piston connected with said armature, and the piston cylinder, all inclosed in a casing, a compartment inclosed between the walls of the cylinder and outside casing and two transverse walls, an opening in the side of the cylinder communicating with said compartment, and passage-ways leading from said compartment to and around the magnetic devices and to the outside air, all as and for the purposes set forth.

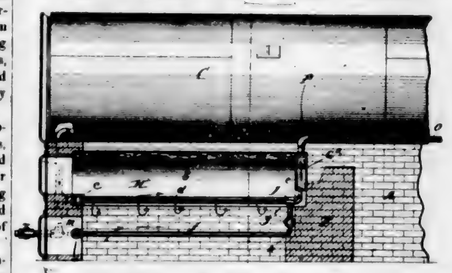
16. An electro-magnetic reciprocating engine having, two or more electro-magnetic devices, an armature adapted to be reciprocated by said devices, a piston connected with said armature, and the piston cylinder, all inclosed in a casing, a compartment inclosed between the walls of the cylinder and outside casing and two transverse walls, an opening in the side of the cylinder communicating with said compartment, and passage-ways leading from said compartment to and around the magnetic devices and to the outside air, and means extending to the outside of the casing for regulating the withdrawal of air from the cylinder, all as set forth.

17. An electro-magnetic reciprocating engine having two or more electro-magnetic devices, an armature adapted to be reciprocated by said devices, a piston connected with said armature, and the piston cylinder, all inclosed in a casing, the box O inclosed between the cylinder and outer casing, the opening $c^3$ in the cylinder and communicating with said box, and the valves $c^3$ and $y^3$ all as and for the purposes set forth.

18. An electro-magnetic reciprocating engine having two or more electro-magnetic devices, an armature adapted to be reciprocated by said devices, a piston connected with said armature, and the piston cylinder, all inclosed in a casing, the box O inclosed between the cylinder and outer casing, the opening $c^3$ in the cylinder and communicating with said box, and the valves $c^3$ and $y^3$ and a valve extending to the outside of the casing for regulating the withdrawal of air through the opening of valve $c^3$, all as set forth.

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**503,214. STEAM-BOILER FURNACE.** ORLAND D. ORVIS, Chicago, Ill. Filed Oct. 31, 1892. Serial No. 450,478. (No model.)



*Claim.*—1. The combination in a down-draft furnace, of grate bars, a fire chamber, an arch inclosing said fire chamber, a direct updraft passage at the side of said arch, and a water heating chamber internally of the arch, substantially as described.

2. In a down draft furnace the combination of the grate bars, an arch spanning the same, a direct updraft passage at one side of and extending the length of said arch, and a water heating chamber internally of and extending throughout said arch, substantially as described.

3. In a down draft furnace, the combination with the grate bars, of an arch or arches inclosing the same, and arranged to provide a direct updraft passage at one side of and extending substantially the length of said arch or arches, substantially as set forth.

4. In a down draft furnace, the combination with an arch or arches spanning the grate bar surface and inclosing the fire chamber, which said arches are so arranged as to provide a direct draft passage at one side of and extending substantially the length of said arch or arches, and a water chamber inclosed by the opposing surfaces and extending substantially throughout said arch or arches, substantially as set forth.

5. In a steam boiler furnace, the combination with the grate bars, of a closed arch or arches spanning but not surrounding the grate bars and inclosing the fire chamber, a water chamber forming a closed arch internally of said arch or arches, and pipe connections between said chamber and the boiler whereby a continuous circulation of water from and through the boiler and said arch or arches and the

grate bars, is maintained, substantially as and for the purpose described.

6. In a furnace, the combination with hollow grate bars, of a closed arch spanning but not surrounding the grate bars, and provided throughout its length with an internal water chamber forming a closed arch connected with said grate bar surface, and also with a suitable source and supply whereby a continuous circulation of water is maintained through the hollow grate bars and arch water chamber substantially as and for the purpose described.

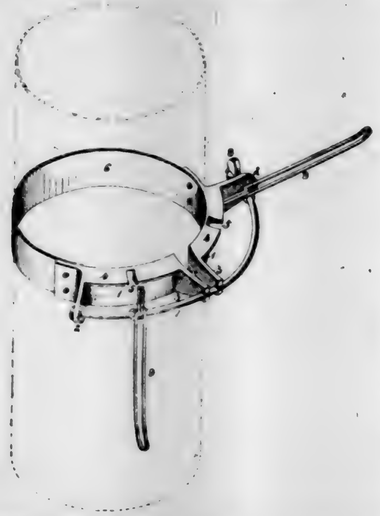
7. In a down draft steam boiler furnace, the combination of hollow grate bars, an arch or arches spanning the same, inclosing the fire chamber and arranged to provide a direct draft passage at one side of and extending the length of said arch or arches, a supply and discharge pipe connection between said arch or arches and the boiler, and a water connection between said arch or arches and the grate bar surface or surfaces thereof whereby a continuous circulation of water in the boiler and in said arch or arches and grate bars is maintained, and the initial and subsequent heating of the boiler water is promoted, substantially as set forth.

**503,215.** PIPE-WRENCH. THOMAS H. OXNAM, JAMES JOYCE, and JOSEPH FRANCIS, De Lamar, Idaho. Filed Apr. 14, 1893. Serial No. 470,331. (No model.)



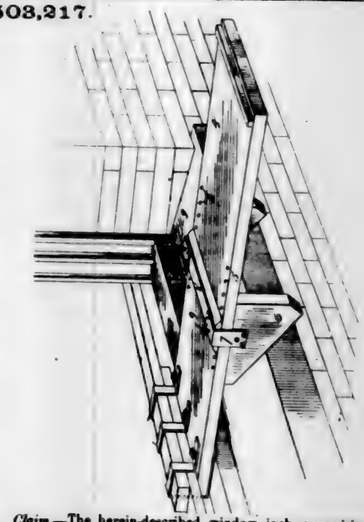
*Claim.*—In a pipe wrench, the main lever A threaded at the outer end, and terminating in a dentated, quadruple gripping jaw C, having radial, concentric recesses *a a*; the nut E, adapted to engage the threaded end of lever A and provided with recesses *f f*; the supplemental lever J having spurs K, L, L; the lug F provided with bearings *e*; and the yoke G, provided with bearings I I seated in said recesses *f f*, and terminating outwardly in the curved, dentated jaw H, the whole co-operating as and for the purpose set forth.

**503,216.** STOVEPIPE-RACK. PETER E. PETERSON, Beloit, Wis. Filed Oct. 7, 1892. Serial No. 448,118. (No model.)



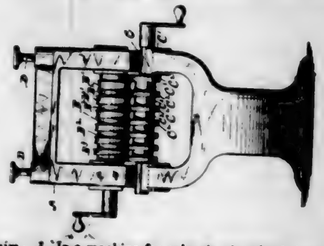
*Claim.*—A stove pipe rack consisting of two base pieces, having outwardly extending lugs and a flange with a vertical notch, these base pieces connected by a band of flexible material and a rod connecting the base pieces upon which are supported arms and a thumb nut having a screw thread connection with one end of the rod.

**503,217.** WINDOW-JACK. MICHAEL PRENDERGAST, Chicago, Ill. Filed Nov. 19, 1892. Serial No. 452,517. (No model.)



*Claim.*—The herein-described window jack comprising a flat platform provided with a series of pin holes in line with its side edges, and with stirrups at its end whose openings are in line with the end of the platform, beveled blocks adapted to rest on the window ledge, brackets connected to said blocks and extending above the plane of the platform, a cleat extending transversely above the platform and secured with the brackets and provided with pin holes to register with those of the platform, pins to secure the cleat in position and bars passing through the stirrups and adapted to slide upon each other and to be adjusted to the window, substantially as described.

**503,218.** JEWELER'S ROLL. JOHN C. ROCHELEAU, Worcester, Mass. Filed June 5, 1890. Serial No. 354,401. (No model.)



*Claim.*—1. In a machine for enlarging jewelers' rings, the combination of an upper wall provided with annular grooves $B^3$ forming, between said grooves, an annular flange having on its periphery a concave groove $B'$, adapted to fit the outer surface of a ring and a lower roll provided with radial flanges $C^3$ entering the annular grooves $B^3$ in the upper roll and having the space between said radial flanges corresponding with the width of said concave groove $B'$, whereby the ring to be enlarged is held from lateral displacement, and having between said radial flanges a cylindrical surface $C^3$ to bear upon the inside of the ring, substantially as described.

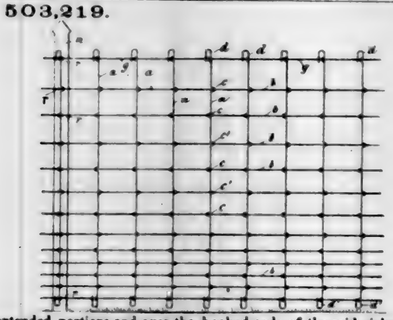
2. In a machine for enlarging jewelers' rings, the combination of an upper roll, provided with a projecting surface bearing upon the outer surface of the ring to be enlarged, a lower roll provided with screw threaded sections, and flanged nuts carried upon said screw threaded sections and inclosing the ring, whereby it is held from lateral displacement, substantially as described

**503,219.** WIRE FENCE. PETER SOMMER, JOHN SOMMER, and PETER W. SOMMER, Tremont, Ill. Filed Dec. 3, 1892. Serial No. 454,305. (No model.)

*Claim.*—The combination with the cables *b*— and *g* the bars *a*—, formed with the oppositely, alternately looped extensions *c*— *e*— and provided with the hooked head *d*, the said looped picket held in position by the wires of the cables bearing over the same at the looped

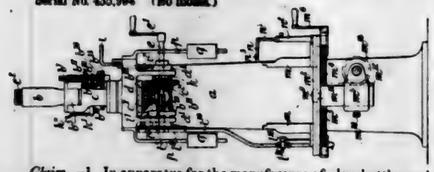


**503,219.**



extended portions and over the hooked ends of the said picket, all substantially as described and set forth.

**503,220.** APPARATUS FOR THE MANUFACTURE OF GLASS BOTTLES. BARNARD A. SPAULL, London, England. Filed June 8, 1892. Serial No. 435,994. (No model.)



*Claim.*—1. In apparatus for the manufacture of glass bottles and the like, a cylindrical vessel such as shown at *b*, which I term a marver adapted to be rotated, and serving to roll the parison or bloom to bring it into shape before it enters the finishing mold, all substantially as described.

2. In a machine for making glass bottles and the like provided with a marver such as above described, the combination with said marver, of a frame carrying the same and mounted on a shaft whereby the marver can be swung from a vertical to a horizontal and other positions, substantially in the manner described.

3. In a machine for the manufacture of glass bottles and the like, a marver formed in two parts pivotally mounted on horizontal spindles in order that they may both be moved away from each other in vertical planes to enable the parison or bottle contained by the marver to be removed therefrom, substantially as described.

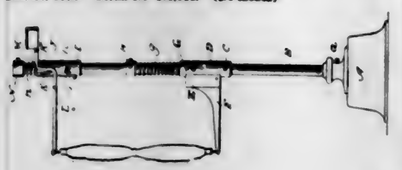
4. In combination with the marver mounted and pivoted as described, means substantially as shown and described whereby the marver shall be revolved by the act of and during its movement from its vertical to its horizontal position.

5. In a machine for making glass bottles and the like, the combination with a marver constructed of two pivoted portions $b'$, $b^3$, each having a projecting portion $b^3$ provided with a slot $b^4$, to receive a square spindle, of tongs adapted to support the bottle when the marver is opened, all substantially as described.

6. In a machine for making glass bottles and provided with a rotating marver as hereinbefore described mounted on a pivoted frame adapted to swing the marver to a vertical position, means substantially as described serving to blow the glass contained by such marver, all substantially as set forth.

7. In a machine for making glass bottles and the like, the combination with a rotating two-part marver, of a pivoted frame supporting the same and adapted to carry the marver from an upright to an inverted position; and a molding apparatus serving to receive the parison from the marver and to hold it while air is blown into the parison to finish the bottle.

**503,221.** MAIL-CRANE. JACOB TESTER, Hagerstown, Ind. Filed Dec. 22, 1892. Serial No. 456,065. (No model.)



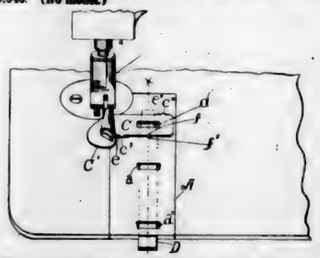
*Claim.*—1. In a mail bag supporting crane the combination with a vertical mast of upper and lower sleeves loosely mounted thereon, horizontally rotating vertically swinging arms pivoted to the latter, and spring-pressed pintles or projections engaging the sleeves for yieldingly holding them against accidental rotation, substantially as described.

2. In a mail bag supporting crane the combination with a vertical mast of adjustable collars secured thereto, an upper and lower arm journaled upon the mast, and a compression spring surrounding the mast above each arm for holding the latter in contact with its adjacent collar to prevent accidental rotation of the arms, substantially as described.

3. In a mail bag supporting crane the combination with a vertical mast of adjustable collars C, H secured thereto; a horizontally rotating and vertically swinging spring-pressed arm interposed between the collars; a similar arm pivoted upon a sleeve surrounding the mast above; and a collar having an inclined upper edge upon which said sleeve is held by action of a spring, substantially as described.

4. In a mail bag supporting crane the combination with a vertical mast of a horizontally rotating and vertically swinging lower arm; a collar above adjustably secured to the mast and having an inclined upper edge; a sleeve having a similar lower edge also surrounding the mast; and an over-balanced upper arm pivoted upon said sleeve and constructed with an angular bend near its pivoted point to facilitate a vertical movement of the arm, substantially as described.

**503,222.** ATTACHMENT-HOLDER FOR SEWING-MACHINES. GEORGE TUCKER, Los Angeles, Cal., assignor, by mesne assignments, of one-half to Almon Shoup, same place. Filed Jan. 21, 1893. Serial No. 459,046. (No model.)



*Claim.*—1. An attachment holder for sewing machines comprising a shuttle-race slide having a transverse slot extending therethrough, a bolt arranged in guides upon said slide and adapted to be reciprocated across the transverse slot, and a plate having an attachment secured thereto and provided on its under side with a loop which projects through the slot in the slide and is engaged by the bolt to secure the plate to the slide.

2. An attachment holder for sewing machines comprising a shuttle slide provided with bolt guides and with a transverse slot; an attachment plate provided with a loop arranged to project through the slot; and a flat bolt arranged in the bolt guides and formed of a spring metal strip having an inclined end and adapted to reciprocate across the slot and to engage the loop.

3. The combination of the shuttle slide provided with the bolt guides, the lug receiving slots and the transverse fastening slot adapted to receive a loop therein; the attachment plate provided with a loop adapted to enter the slot in the slide, and provided with the guide lugs arranged to enter the lug receiving slots and a bolt arranged in the bolt guides and adapted to reciprocate across the slot and to engage the loop.

**503,223.** TRUSS. ANDREW YOST, Steelton, Pa. Filed Jan. 19, 1893. Serial No. 458,925. (No model.)



*Claim.*—In a truss the combination with a belt provided with loops, of a superimposed spring provided at one end with a ring adapted

to be passed through one of the loops and at the other with a slot, and a pad adjustably secured within the slot, substantially as specified.

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**503,224.** AUGER-BIT. ABE L. ADAMS, Bridgeport, Conn. Filed Nov. 16, 1892. Serial No. 452,157. (No model.)



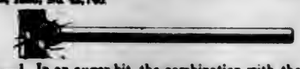
*Claim.*—1. In an auger-bit, the combination with the head, of the scoring-ring detachably secured thereto and having a continuous unbroken circular chisel-edged cutting-edge.

2. In an auger bit, the combination of the head threaded exteriorly, with the scoring-ring interiorly threaded, said head and ring having conforming beveled portions, substantially as set forth.

3. The combination with the bit head with the detachable scoring ring, said head and ring having abutting beveled portions and provided with securing threads which extend in a direction reverse to the axial rotation of the bit, substantially as set forth.

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**503,225.** AUGER-BIT. ABE L. ADAMS, Bridgeport, Conn. Filed Mar. 29, 1893. Serial No. 468,095. (No model.) Patented in Canada Apr. 25, 1893, No. 42,740.



*Claim.*—1. In an auger-bit, the combination with the shank, of the head having a slot or recess extending at an angle to the shank, a continuous chisel-edged scoring-ring on the head, and a cutter knife detachably secured within the recess.

2. The combination of the head having an open recess for the leading away of the chips, the continuous chisel edged scoring ring secured around said recess, the removable cutter knife within said recess, the pin adapted to slide and to be guided within the head, and the screw driven into said head against the pin whereby the latter is forced firmly against the knife, substantially as shown and described.

3. In an auger bit comprising a shank a head and a continuous chisel-edged scoring ring thereabout which head is recessed for the purpose of leading away the chips, a cutter knife detachably secured within such recessed part of the head and capable of adjustment therein substantially as shown and set forth.

4. The combination of the head, the scoring ring secured around said head, the cutter knife within the head, and the auxiliary cutter knife secured to the outside of said ring in close proximity to the edge thereof, substantially as set forth.

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**503,226.** PIPE-ORGAN. VICTOR ANDERSON, Chicago, Ill., assignor of one-half to Christian H. Christensen, same place. Filed Apr. 3, 1893. Serial No. 468,794. (No model.)

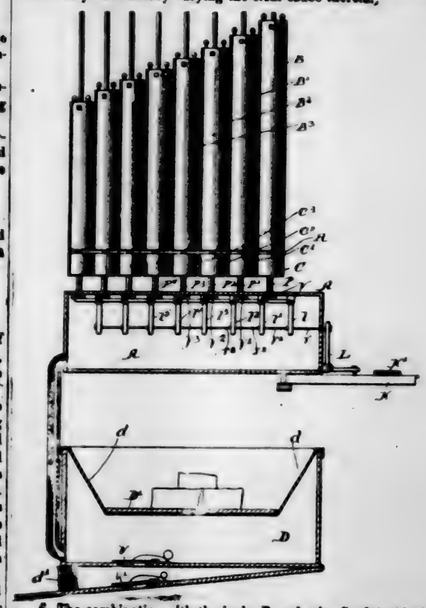
*Claim.*—1. An organ pipe constructed substantially as described and comprising a tubular body closed at its upper end, a tube in alignment with the body and separated from its open end by a suitable space, a block set in the upper end of the tube and separated from the wall thereof by a narrow annular space, an air-space communicating with said annular opening and means for supplying air under pressure to said air space and forcing it from said opening into the mouth of said tubular body.

2. An organ pipe constructed substantially as described and comprising a tubular body means for closing the upper end thereof, a tube in alignment with said body and separated from its open end by a suitable space, a block set in the upper end of the tube and separated from the wall thereof by a narrow annular opening, an air space communicating with said annular opening, means for admitting air under pressure to said air space, and means for longitudinally adjusting the device which closes the upper end of the tubular body, whereby the clear space therein may be regulated.

3. The combination with the tubular body, B, having the block, E, in its upper end of the tube, C, the block, E', seated in the tube and formed with the annular recess, *c'*, the tubular opening, F, admitting air to the recess and the annular opening, *c*, permitting escape thereof and the rod, R, connecting the blocks, E, E', and securing the body, B, and tube, C, in proper relation to each other.

4. The combination with the tubular body, B, of the block, E, set in its upper end and formed with the conical opening, *c*, the tube, C, in alignment with the body, B, and separated from its open end by a suitable space, the block, E', set in the tube, C, and adapted to permit escape of air under pressure through an annular opening, *c*, at its upper end, the rod, R, set at its lower end in the block, E', and at its upper end in the opening, *c*, and means substantially as shown and described for adjusting the upper end of the body, E, upon the rod, thereby securing perfect alignment of the body, B and tube C.

5. The combination with the tubular body, B, of the block, E, set in its upper end, tube, C, in alignment with the body and separated from its open end by a suitable space, the recessed block, E', set in the tube, C, and adapted to permit the passage of air under pressure, the rod R, set in the blocks, E, E', and connecting the two parts of the pipe, the block, $E^3$, lying within the body and longitudinally adjustable therein and means for adjusting the position of the block, $E^3$ in the body and thereby varying the clear space therein.,



6. The combination with the body, B, and tube, C, of the blocks, E, E', $E^3$, formed substantially as described, the set screws, *s*, *s*, and the rods, R', R', adapted to fix the position of the block, $E^3$, substantially as and for the purpose set forth.

7. In an organ, the combination with a suitable air-chest and means for supplying it with air under pressure, of a series of pipes adapted to produce the musical notes of a scale and each provided with an inlet from said air-chest and a valve controlling said inlet, and a series of keys connected with said valves respectively and adapted to operate the same and admit air to said pipes, each of the pipes being constructed substantially as shown and described and comprising a tubular body closed at its upper end, a tube in alignment with the body and separated from its open end by a suitable space, a block seated in the tube and separated at its upper end from the wall thereof by an annular opening, an air space communicating with said annular opening and with the air-chest and means substantially as shown and described for holding the tubular body and tube in alignment and in proper relation; substantially as shown and described

8. The combination with the air-chest, the pipes, B, C, B', C', &c. and the tubes, P, P', &c. connecting said pipes, respectively, with the air-chest of the valves, V, V', &c. closing the ends of said tubes, the levers, *l*, *l'*, &c. the rods *r*, *r'*, &c. the levers, L, L', &c. and the keys, K, K', &c., said pipes being constructed and adapted to operate substantially as shown and described.

9. The combination with the air-chest, a series of pipes connected therewith and means for controlling the communication between said air-chest and pipes, of means substantially as shown and described for supplying said air-chest with air under pressure and comprising the box, D, connected with the air-chest by a tube, T, top, D', having all its edges connected by flexible folds, *d*, *d*, with the walls of the box, the moving wall, $D^3$, connected with the bottom of the box by flexible folds, *d'*, and the valves, *v*, *v'*, adapted to admit and retain air

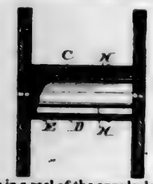
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**503,227.** WIRE-ROPE DRUM-REEL. ARTHUR D. BENHAM, Chicago, Ill. Filed June 23, 1892. Serial No. 437,708. (No model.)

*Claim.*—1. The combination in a knock-down reel of the detachable heads having annular grooves on their inner faces the drum composed of connected segmental sections, and the bolts whereby the parts are clamped together when assembled substantially as specified



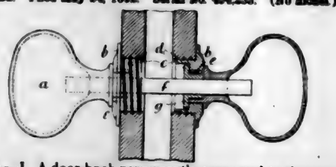
**503,227.**



2. The combination in a reel of the annularly grooved heads, the segmental drum sections arranged together "edge to edge" connecting wires and staples F, by which the segments are held together when the parts on the drum are disassembled, and the bolts by which the assembled parts are clamped together substantially as specified.

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**503,228.** KNOB ATTACHMENT. MICHAEL M. BROPHY, London, England. Filed May 24, 1892. Serial No. 434,233. (No model.)

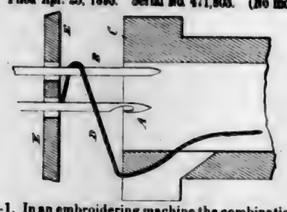


*Claim.*—1. A door-knob permanently connected to the rose, and the rose itself provided with a screw-threaded cylinder adapted to be fixed by screwing it into a suitable aperture in the door, the knob or handle being connected to the rose by a flanged nut, and made with a hole corresponding with the shape of the spindle, so that when the spindle is passed through the nut into the handle the said nut can not turn relatively to the handle.

2. The combination with a door-knob permanently connected with a rose having a cylindrical screw-threaded portion as described, of a screw-threaded spindle having the collar *h* and the nut *j* thereon, substantially as described.

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**503,229.** EMBROIDERING-MACHINE. ROBERT CORBELY, Paris, France. Filed Apr. 25, 1893. Serial No. 471,803. (No model.)

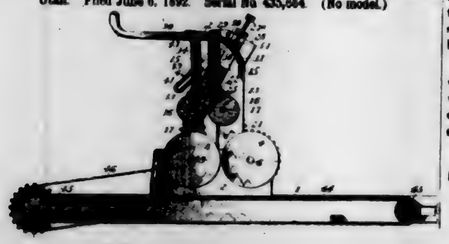


*Claim.*—1. In an embroidering machine the combination with the hook-needle and thread-carrier, of a pull-off consisting of an oscillating pin or rod piercing the fabric at each oscillation and around which the thread is wound by the thread-carrier on the under side of the bed-plate in the formation of each stitch, substantially as described.

2. In an embroidering machine the combination with the loop-forming hook-needle and a thread-carrier, of a pull-off consisting of a pin or rod oscillating with the needle, piercing the fabric at each oscillation, and around which the stitch forming thread is wound by the thread carrier on the under side of the bed-plate in the formation of each stitch, substantially as described.

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**503,230.** MACHINE FOR ROLLING, CUTTING, AND SHAPING CANDY OR THE LIKE. LEMUEL P. DOBYNS and ALFRED BROWN, Ogden, Utah. Filed June 6, 1892. Serial No. 435,664. (No model.)



*Claim.*—1. The combination with a frame, cutters and shapers, reducing mechanism and driving mechanism, of automatic stock dropping mechanism adapted to drop the stock upon the cutters and shapers after the completion of the operation of the reducing mechanism, substantially as set forth.

2. In a machine for shaping plastics, the combination with the cutters and shapers, of superimposed reducing rollers and a yielding press roller above the reducing rollers first named adapted to automatically separate them, substantially as set forth.

3. In a machine for shaping plastics, the combination with reducing, dropping and shaping mechanisms in the same vertical plane, of an endless conveyer beneath, and at right angles thereto, and driving mechanism operatively connected with the reducing, dropping and shaping mechanisms and with the conveyer, substantially as set forth.

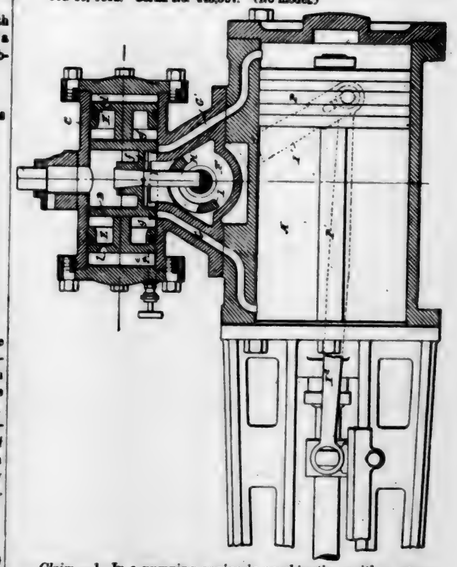
4. The combination with a frame, cutters and shapers, and driving mechanism, of reducing rollers operatively connected with the driving mechanism, and a yielding press roller also connected therewith, substantially as and for the purpose specified.

5. The combination with the frame, cutters and shapers, reducing rollers, a rigid roller frame, a spring-actuated sliding press-roller frame, a press-roller carried thereon, and driving mechanism, all organized together, substantially as and for the purpose specified.

6. The combination with the frame, cutters and shapers, reducing roller, rigid roller frame and driving mechanism, of a sliding roller frame carried in the rigid roller frame and yieldingly connected with the driving mechanism, a spring roller frame and roller connected with the driving mechanism, a shaft upon the rigid roller frame, a catch-lever adapted to hold the swinging roller frame, and a set-screw in the sliding roller frame located in the path of the catch-lever, substantially as and for the purpose specified.

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**503,231.** DIRECT-ACTING ENGINE. WILLIAM A. DREWETT, Brooklyn, N. Y., assignor to Marshall T. Davidson, same place. Filed Oct. 11, 1892. Serial No. 448,507. (No model.)



*Claim.*—1. In a pumping engine in combination with a steam chest, of a valve mounted therein adapted to be oscillated and partially reciprocated mechanically, and to be further reciprocated by steam pressure, the valve being provided with vent holes whereby it is balanced on all sides, substantially as described.

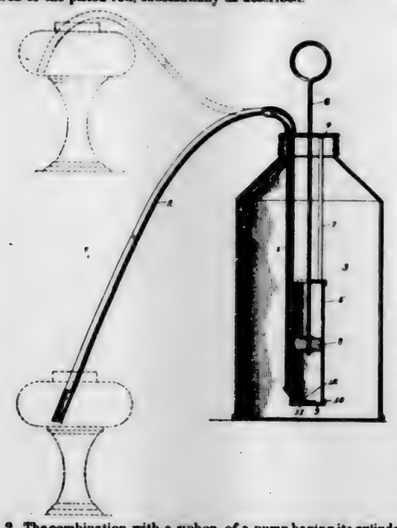
2. In a pumping engine the combination with the steam chest, of a valve and pistons mounted therein, the pistons being provided with vent holes, the valve piston ports extending from either end of the chest to about the center thereof, and controlled by the valve, substantially as described.

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**503,232.** SIPHON-PUMP FOR OIL-CANS. EDWARD A. FRANKLIN, Austin, Tex., assignor to the Texas Invention Company, same place. Filed Feb. 23, 1893. Serial No. 463,391. (No model.)

*Claim.*—1. The combination with a receptacle, of a siphon h..v-

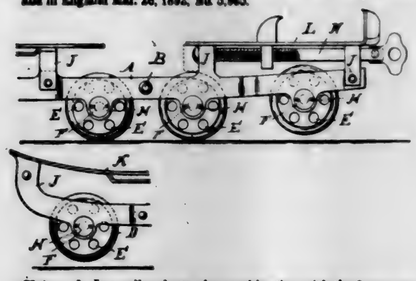
ing a rigid leg arranged in the receptacle and an outer flexible leg, a cylinder shorter than the rigid leg of the siphon and located below the top, a screw-cap secured to the rigid leg of the siphon near the upper end thereof, a brace having its upper end secured to the screw cap and its lower end fastened to the cylinder, a piston rod passing through the screw cap and extending into the cylinder, and a piston secured to the piston rod, substantially as described.



2. The combination with a siphon, of a pump having its cylinder communicating with the siphon and provided in its lower cylinder head with a valve opening and having integral tongues, and a flexible valve disk arranged over the valve opening and secured beneath the tongues, substantially as described.

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**503,233. ROLLER-SKATE.** FRIEDRICH FRANKENBERG, Berlin, Germany. Filed Apr. 30, 1892. Renewed May 24, 1893. Serial No. 475,384. (No model.) Patented in Germany Feb. 10, 1892, No. 66,893, and in England Mar. 26, 1892, No. 5,965.

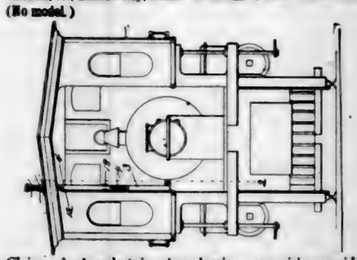


*Claim.*—1. In a roller skate, the combination with the frame consisting of the parts A, said parts being provided with the outwardly-bent portions *a*, forming spaces for the rollers, and the portions *a'* lying against each other, screw-bolts passing through said portions *a'* and provided with nuts whereby the parts A may be readily detached from each other, a series of bearings provided in the portions *a*, the inner bearings being in a lower horizontal plane than the outer ones, of the rollers provided with axles journaled in the said bearings, the inner rollers thereby occupying a position in a lower horizontal plane than the outer rollers, and all of said rollers being arranged in the same vertical plane and longitudinally of the skate, as and for the purpose specified.

2. In a roller skate, the combination with the frame consisting of the two parts A said parts being provided with the outwardly-bent portions *a*, whereby to form spaces for the rollers, and the portions *a'* lying against each other, the screw-bolts B passing through the portions *a'*, the nuts C on said bolts B, the boxes H carried by said parts A on their outer sides and filled with absorbent material, and the bearings G formed in said parts A, the inner ones of which are in a lower horizontal plane than the outer ones, as described, of the rollers D having rounded edges and provided with axles F journaled in the bearing G and extending within the boxes H, the two inner rollers being arranged in close proximity to each other and somewhat removed from the outer rollers, and in a lower horizontal plane than said outer rollers.

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**503,234. ROCKET-HOLDER FOR RAILWAY-CARS.** JOHN GALLAGHER, Jr., Kansas City, Kans. Filed Jan. 6, 1893. Serial No. 457,507. (No model.)



*Claim.*—1. A rocket signal mechanism, comprising a guide sleeve, consisting of an upper stationary section or member projecting through the roof of the car, and having a beveled lower end, and a lower movable section or member, having a beveled upper end, adapted to bear against the beveled lower end of the upper section or member, and a spring-clip, secured to the car and adapted to hold the lower movable section or member in alignment with the upper section or member, substantially as set forth.

2. A rocket signal mechanism, comprising an upper stationary member or section, secured through the roof of the car, and a lower movable member or section, pivoted at its lower end and adapted to be thrown into and out of alignment with the upper member or section, and a slot provided in said lower member or section, substantially as described.

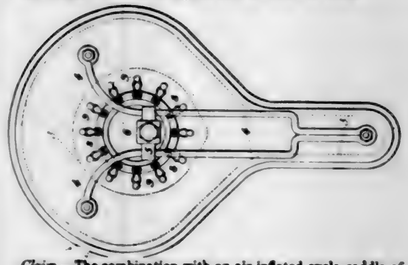
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**503,235. ART OF PREPARING HIDES.** FELIX CROSSET, Courbevoie, France. Filed June 20, 1892. Serial No. 437,307. (No specimens.) Patented in France Jan. 6, 1890, No. 202,985.

*Claim.*—The herein described composition of matter for treating hides, consisting of clay, talc, and protoxide of barium or baryta.

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**503,236. CYCLE-SADDLE.** THOMAS GUTHRIE and WILLIAM T. HALL, South Shields, England. Filed Mar 16, 1893. Serial No. 466,553. (No model.) Patented in England Sept. 28, 1892, No. 17,280.



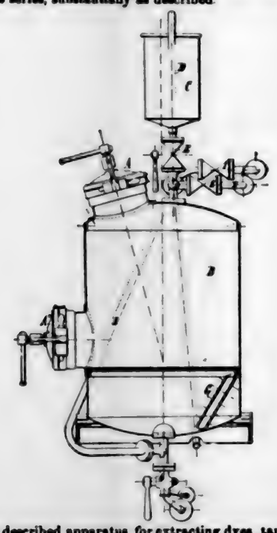
*Claim.*—The combination with an air inflated cycle saddle of a leather tube or cylinder 6 secured at 7 to the saddle casing and having eyelets 8 adapted to be hooked or unhooked to or from the hooks 9 the parts being arranged and adapted to operate substantially as and for the purposes herein set forth.

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**503,237. PROCESS OF AND APPARATUS FOR MAKING EXTRACTS.** MAURICE HEPTNER and GEORGES BERARD, Paris, France. Filed Jan. 12, 1893. Serial No. 458,160. (No model.) Patented in France May 17, 1892, No. 221,712; in Belgium Nov. 9, 1892, No. 102,096; in Germany Nov. 11, 1892, No. 65,503; in England Nov. 15, 1892, No. 20,677; in Switzerland Nov. 22, 1892, No. 6,484, and in Austria-Hungary Mar. 26, 1893, No. 57,780 and No. 66,552.

*Claim.*—1. The method herein described of extracting progressively dyeing or tanning liquids from stock containing them, by introducing such stock into a series of connected vessels, admitting water or liquid to the first of these vessels, boiling the same in the first vessel, opening communication between the first and second vessels, forcing liquid under pressure into the first vessel, thereby driving the liquid previously boiled therein into the second vessel, boiling the liquid in both vessels, and so continuing until all the vessels of the series are connected and in operation, then removing the first vessel from the battery and charging it with fresh stock and so on successively with each vessel of the series, substantially as described.

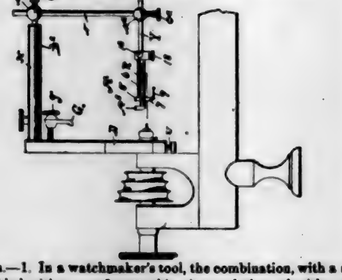




2. The described apparatus for extracting dyes, tanning liquors and the like, said apparatus comprising a group of extractors or vessels connected in series, that is, the discharge pipe of one being connected to the admission orifice of the next, and being also connected with the common discharge pipe for the concentrated solution, a water supply pipe branching to each extractor, and an expansion chamber valve and cock for each extractor, all arranged substantially as and for the purpose set forth.

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**503,238. WATCHMAKER'S GAGE.** JOSHUA D. HOWELL, Livonia, N. Y. Filed Aug. 29, 1892. Serial No. 444,471. (No model.)



*Claim.*—1. In a watchmaker's tool, the combination, with a support provided with means for attaching it to a lathe and with means for holding an article to be measured, of a gage adjustably secured adjacent one side of said support, whereby the article may be located between the gage and the support substantially as set forth.

2. In a watchmaker's tool, the combination, with a support provided with a standard at one end a screw at the other, of means intermediate the standard and the screw for securing an article to said support, and a gage adjustably secured to the standard, adjacent one side of the support substantially as set forth.

3. In a watchmaker's tool, the combination, with a support provided with risers near one end thereof and a clamping nut adjustably secured to the support near the other end for holding an article to be measured and means for attaching the support to a lathe, of a standard at one end of the support and a gage adjustably secured adjacent one side of said support, substantially as set forth.

4. In a watchmaker's tool, the combination, with a support provided with means for holding an article to be measured, of means for attaching the support to a lathe, a tubular standard at one end of the support, a vertically adjustable spindle therein, and a gage adjustably secured to the spindle as specified.

5. In a watchmaker's tool, the combination, with a support provided with an opening and a set screw for attaching it to a lathe, and with clamps for securing an article to be measured, of a tubular standard, a rotatably mounted spindle vertically adjustable in the standard and a gage adjustably supported therefrom, as specified.

6. In a watchmaker's tool, the combination, with a support adapted to be attached to a lathe and provided with clamps and a tubular standard having a longitudinal slot therein, of a rotatably mounted and vertically adjustable spindle in the standard, a socket piece in which the spindle is stepped, a set screw engaging an extension of the socket piece, and a gage adjustably supported from the spindle, substantially as set forth.

7. In a watchmaker's tool, the combination, with a support adapted to be attached to a lathe and provided with a telescoping standard comprising a base section, an inner section and a socket piece vertically adjustable in the base section and having a threaded projection passing through a slot therein and a binding nut engaging the threaded projection, the inner section of the standard being rotatably mounted in the socket piece, of a gage adjustably supported therefrom, substantially as set forth.

8. In a watchmaker's tool, the combination, with a support provided with a telescoping standard comprising a base section and a rotatably mounted inner section, of a rod adjustably connected with said inner section and having a spherical head at one end thereof, and a gage adjustably secured in said head, substantially as set forth.

9. In a watchmaker's tool, the combination, with a support, of a gage adjustably connected therewith, said gage comprising a tubular body portion and a longitudinally movable adjustable scale rod mounted in the body portion, substantially as set forth.

10. In a watchmaker's tool, the combination, with a support, of a gage adjustably connected therewith, said gage comprising a tubular body portion, a rod mounted thereon a graduated scale bar carried by the rod projecting through a slot in the body portion, and the angular jaws at the extremities of said body portion and rod, substantially as set forth.

11. In a watchmaker's tool, the combination, with a support, of a gage adjustably connected therewith, said gage comprising a tubular body portion provided at one end with a T-head—and having the longer arm of an L-shaped rod adjustably secured in the bore of said body portion, a graduated scale bar carried by said L-shaped rod and a fixed scale adjacent the same, substantially as set forth.

12. In a watchmaker's tool, the combination, with a support, of a gage adjustably connected thereto, said gage comprising a movable and a stationary member, each being provided with a graduated scale bar, means for adjusting and retaining said movable member, a jaw at one end of the latter, and a T-head of the stationary member adjacent to said jaw, substantially as set forth.

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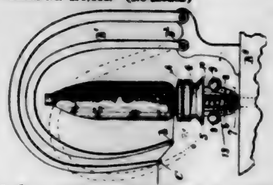
**503,239. RAILWAY-RAIL-JOINT CONNECTION.** MARTIN HUBBELL, Mount Kisco, N. Y. Filed Apr. 6, 1892. Serial No. 427,982. (No model.)



*Claim.*—1. A rail joint comprising the two angle plates A having lateral depending flanges *c' c'* and provided with notches *g*, the notched base plate *d* on which the base of the rail and the flanges *c'* rest, the clamp bars having inwardly projecting hooks *g' g'*, at their ends to engage the lateral portions *c* of the plates A, and the wedge keys *h* adapted to be driven between the vertical shoulders *g*[4] of the hooks *g* and the outer longitudinal edges of the base plate *d* and flanges *c'*, substantially as set forth.

2. The combination, with adjacent end portions of two aligned track rails, of two angle plates which loosely bear upon opposite web faces of the track rails, a depending flange on the horizontal edge portion of each angle plate, a base plate on which said flanges rest transverse bolts passing close through holes in the angle plates and loosely through longitudinal slots in the track rails, two clamps, the hooked ends of which engage notched edges of the angle plates and base plate, and wedge-shaped keys introduced between shoulders on the other ends of the clamps and edges of the angle plates and base plate, which keys are held in place by bending their thin ends over the corners of the angle plates, substantially as described

**503,240. SPINDLE ATTACHMENT.** LEONARD W. HUTCH, Rochester, N. Y., assignor of one-half to Ethan Allen, same place. Filed Jan. 21, 1892. Serial No. 418,183. (No model.)



*Claim.*—1. In a yarn-holder for spindles, the combination with the separable yarn-holding jaws and a spring for closing them, of an automatic device for separating said jaws by the rotation of the spindle, substantially as described.

2. In a yarn-holder for spindles, the combination with the separable yarn-holding jaws, of an automatic device for separating said jaws by the rotation of the spindle, substantially as described.

3. In a yarn-holder for spindles, the combination with the separable yarn holding jaws and a spring for closing them, of a rotary governor device connected to one of the jaws and separating them when the spindle is in motion, substantially as described.

4. In a yarn-holder for spindles, the combination with the separable yarn-holding jaws and a spring for closing them, of the toggle arms connected to the spindle and operating on one of the jaws, one of the arms of each toggle being weighted, substantially as described.

5. In a yarn-holder for spindles, the combination with the separable yarn-holding jaws, the ring engaging one of the jaws, and the spring for moving it, of the toggles formed by the weighted arms and links pivoted together and also pivoted to the spindle and ring, substantially as described.

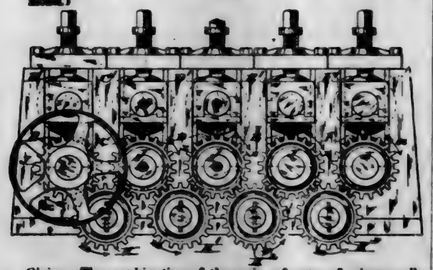
6. As an article of manufacture, a yarn-holder adapted to be applied to a spindle, consisting of a tubular body having a bobbin holding device and separable yarn-holding jaws thereon, of a jaw-opening device operated by the movement of the spindle operating to separate the jaws when the spindle is rotated, substantially as described.

7. As an article of manufacture, a yarn-holder adapted to be applied to a spindle, consisting of a tubular body having bobbin holding devices thereon and separable yarn-holding jaws, the jaw next the bobbin being relatively smaller than the other one and smaller than the base of the bobbin, and a spring for closing the jaws, substantially as described.

8. As an article of manufacture, a yarn-holder adapted to be applied to a spindle, consisting of a tubular body having bobbin holding devices and the lower split portion, yarn-holding jaws on said body, the collar encircling the lower split portion having the securing screw, weighted toggle arms connected to the collar and operating on the movable yarn-holding jaw, and the spring arranged between the collar and the yarn-holding jaw for holding it closed, substantially as described.

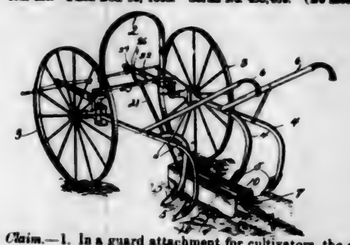
9. In a yarn-holder, the combination with two separable jaws, the upper one relatively smaller than the lower, and smaller than the base of the bobbin, and a spring for holding said jaws together, whereby the jaws may be separated and the bobbin removed by a single tool, substantially as described.

**503,241. APPARATUS FOR ROLLING SHEET METAL.** JOHN JENKINS, St. Louis, Mo., assignor of one-half to the St. Louis Stamping Company, same place. Filed Dec. 15, 1892. Serial No. 455,238. (No model.)



*Claim.*—The combination of the series of pairs of wiping rolls, hot rolls, and cold rolls, the series of gear wheels J, the series of gear wheels K, K', &c., the heating pipes G, and the housing, substantially as described.

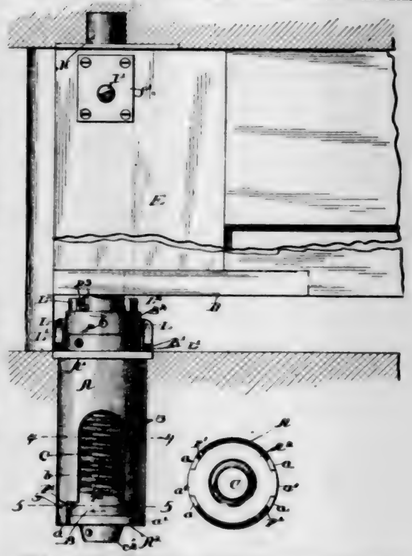
**503,242. FENDER ATTACHMENT.** JOHN T. T. KNEISER, Jr., Bolton, Mo. Filed Dec. 16, 1892. Serial No. 455,409. (No model.)



*Claim.*—1. In a guard attachment for cultivators, the combination with a fender constructed as described, and a bar 21 pivotally connected to the fender, of a bar 22 slotted near each end, and spring-bars adapted to fit against opposite sides of the U-frame of the cultivator, and bolts passing through said spring-bars and through the slots of the bar 22, and bolts passing through the outer ends of the spring-bars, and engaged by nuts to clamp said spring-bars against the U-frame of the cultivator, substantially as set forth.

2. In a guard attachment for cultivators, the combination with a fender constructed as described, and a bar carried by the frame of the cultivator, and having a central opening, of a strap 24 passing through said opening and pivotally engaging said bar, and a bar 21 pivotally connected to the fender and pivotally connected to the strap 24, so that a lateral and vertical movement may be obtained, substantially as set forth.

**503,243. SPRING HINGE.** RUDOLPH LABUDDE and FRED HASSE, Freeport, Ill. Filed Jan. 31, 1893. Serial No. 460,236. (No model.)



*Claim.*—1. The combination with the tubular case, A, of the plates B, B', B², the spring, S, having its ends in engagement with the plates, B, B', means substantially as shown and described, for connecting the plates, B', B², stops limiting the movements of the plates, B, B', the spindle, C, journaled in the plates, B, B', B², and having the non-circular head, C', and means substantially as shown and described, connecting the spindle with the plates, B', B², whereby rotation of the spindle in one direction may rotate one of said plates and its rotation in the opposite direction may rotate the other plate, the rotation of either of the plates by the spindle being adapted to increase the tension of the spring; substantially as shown and described.

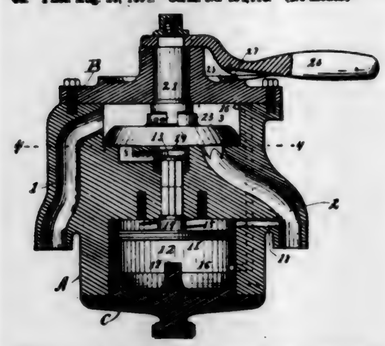
2. The combination with the tubular shell, A, of the plate, B journaled in the lower end of the shell and having the upwardly extending neck, *b*, formed with lugs, *b'*, *b'*, the plate, B', journaled in the upper end of the shell, the spring, S, having its ends in engagement with the plates, B, B', respectively, the plate, B², connected with the plate, B', and formed with lugs, L², L², the spindle C, journaled in the plates, B, B', B², and provided with pins, P², P², adapted to engage the lugs, *b'*, L², and stops adapted to limit the rotation of the plates, B, B', B², the rotation of the spindle, C, in opposite directions being adapted to rotate the plates, B, B', alternately, and the rotation of either of said plates being adapted to increase the tension of the spring; substantially as shown and described.

3. The combination with the tubular shell, A, provided with the plate, A', at its upper end, of the plate, B, journaled in the lower end of the shell and provided with pins, P', engaging shoulders on the shell and limiting the rotation of the plate, the plate, B', journaled in the upper end of the shell, the spring, S, having its ends in engagement with the plates, B, B', the plate, B², adjustably connected with the plate, B', and having lugs, L, L, engaging lugs, L', L', on the plate, A', and limiting the rotation of the plates, B', B², the spindle, C, journaled in the plates, B', B², and having the head, C', and the plate, D, adapted to be attached to a door and formed with an opening adapted to engage the head, C'; substantially as shown and described.

4. The combination with a door and a spring-actuated pivot for the lower end thereof, of a pivot for the upper end thereof, embracing the shell, F, set in the upper end of a door, a socket, H, set in the jamb above the door, a vertically sliding recessed plate, G, lying within the case and provided with a bolt, G', adapted to enter the socket, H, an eccentric I, lying in the recess in the plate, G, and an eccentric stem, I', projecting from the face of the door and serving as a means for rotating the eccentric and thereby raising and lowering the plate, G, and bolt, G', substantially as shown and described.



**503,244. AIR-BRAKE VALVE.** HERBERT M. LOFTON, Savannah, Ga. Filed Aug. 29, 1891. Serial No. 404,118. (No model.)

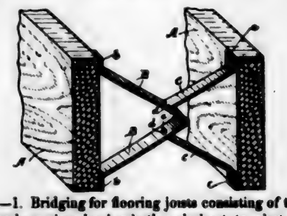


*Claim.*—1. In a device of the class specified, as a means of automatically exhausting air from the train pipe, an oscillating valve having a pocket port 6, and means for operating it, the ports 8 and 9 through the seat of said valve, the puppet valve 14 attached to a piston that is operated by a pressure of air in the direction that will close said puppet valve, an air passage connecting the train-pipe with the said valve 14 and said piston, a passage that connects said valve 14 with said port 8, and a port connecting the pocket port 6 with the passage that will connect the chamber of the valve 3 with the cylinder of the said piston on the side of the piston opposite the valve 14, substantially as described.

2. In a device of the class specified, as a means of automatically increasing the air pressure in the train-pipe a piston having on one side the locomotive-reservoir pressure and on the other the pressure in the train pipe and a spring-pressure, a puppet valve that will contact with and be forced open by the piston on said reservoir pressure, overcoming the pressure of the train-pipe and the pressure of the said spring, the port 8 and a valve that will open and close communication between said port and the locomotive reservoir, substantially as described.

3. In a device of the class specified, as a means of automatically reducing the pressure in the train pipe, a cylinder and a piston sliding therein, a port 8 communicating between the upper end of said cylinder and a passage leading to the open air, a valve adapted to close said port 8 at its embouchure into said passage, a valve 14 carried on the piston and set in and adapted to close said port 8 on the piston reaching its point of ultimate elevation, a spring 15 acting to move said piston away from said upper end of the cylinder, a passage 16 connecting the lower end of the cylinder with the air supply, and a passage 18 connecting the upper end of the cylinder with the train pipe substantially as and for the purpose specified.

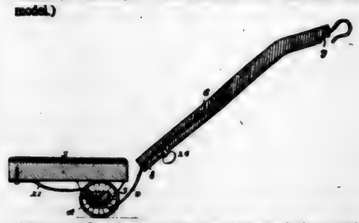
**503,245. BRIDGING FOR FLOORING-JOISTS.** FREDERIC H. MOORE, Boston, Mass. Filed July 12, 1892. Serial No. 439,847. (No model.)



*Claim.*—1. Bridging for flooring joists consisting of three pieces of metal, one long piece having both ends bent to abut against the joists, and two short pieces having their outer ends bent to abut against the joist, and their inner ends formed to interlock with the long piece substantially as set forth.

2. Bridging for flooring joists consisting of a V shaped piece of metal having both ends bent to abut against the joists, and holes or notches near its apex, and two short pieces of metal their outer ends being bent to abut against the joist, and their inner ends having a tenon, or halved to fit into the holes or notches in the V shaped piece to lock the parts together substantially as set forth.

**503,246. FOOT-REST FOR ROCKING-CHAIRS.** WILLIAM MCQUILLEN, Woodland, Pa. Filed Jan. 26, 1893. Serial No. 459,788. (No model.)



*Claim.*—1. In a device of the class described, the combination of a platform, a rock shaft mounted thereon and carrying rotatable rollers, an arm provided at one end with a clamp to engage the rung of the rocking chair, spring connection between said arm and the rock shaft, and a pressure spring fixed at its rear end to the rock shaft and at its front end to the under side of the platform, substantially as specified.

2. In a device of the class described, the combination of a platform, a rock-shaft mounted thereon and carrying rollers, a pressure-spring connecting said rock-shaft with the platform near its front edge, an arm provided with means for attachment to the rung of a chair and having a bifurcated lower end, and a spring attached at one end to said rock-shaft, fitted at the other end in the bifurcation of said arm and engaged by a thumb-screw, substantially as specified.

3. In a device of the class described, the combination of a platform, depending hangers or shields let into the side edges of said platform, a rock-shaft mounted in bearings in said hangers or shields, rollers mounted upon the reduced ends of said rock-shaft, a pressure-spring 11 connecting an intermediate portion of the rock-shaft to the front edge of the platform, a bifurcated bar provided at its upper end with a snap or spring-clamp to engage the rung of a chair, and a spring adjustably fitted at its upper end in the bifurcation of said bar, and fixed at its lower end to the rock-shaft, substantially as specified.

**503,247. ENAMELED SHEET-METAL WARE.** GEORGE W. NIEDERINGHAUS, St. Louis, Mo. Filed Mar. 24, 1893. Serial No. 467,496. (No model.)



*Claim.*—The combination of the handle and the hinge said hinge being attached to said handle by a rivet being passed through the hinge-leaf into the handle and clinched between the upper and lower portions thereof, substantially as described.

**503,248. ENAMELED SHEET-METAL WARE.** GEORGE W. BIEDERMANN, St. Louis, Mo. Filed Mar. 24, 1893. Serial No. 467,447. (No model.)

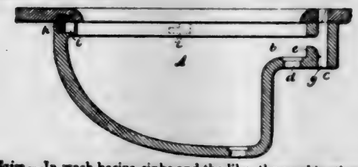


*Claim.*—1. The combination of the crimped and slotted lid and the folded part E, substantially as described.

2. The combination of the slotted and crimped lid, the folded part E, and the rivet, substantially as described.

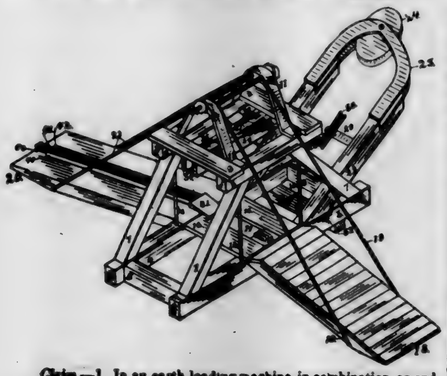
3. In enameled sheet-metal ware, an enameled lid or cover having a surface to which a hinge can be soldered in combination with a hinge, substantially as described.

**503,249. WASHBASIN, BATH-TUB, &c.** ARTHUR O'BRIEN, Helena, Mont. Filed May 7, 1892. Renewed July 13, 1893. Serial No. 480,422. (No model.)



*Claim.*—In wash basins, sinks and the like, the combination with a bowl formed with a waste outlet; a chamber extending to the rear, an overflow passage in the bottom of said chamber, an abutment adjacent to and extending above said passage, an auxiliary overflow at the rear of the abutment, and an air vent above said auxiliary overflow communicating therewith and with the chamber, all substantially as and for the purposes set forth.

**503,250. EARTH-LOADING MACHINE.** JOSEPH OPPOLD, Grant, Iowa. Filed May 3, 1893. Serial No. 472,915. (No model.)



*Claim.*—1. In an earth loading machine, in combination, an endless chain, an elevator track, an elevating bucket attached to the chain and a projection from the chain for connecting the propulsive power thereto to rotate the same and to move the bucket.

2. In an earth loading machine, in combination, an endless chain, a bucket connected therewith, an elevator track, supporting wheels for the bucket to engage the track, sheaves for supporting the chain and a projection from the chain for engaging the propulsive power.

3. In an earth loading machine, in combination, a supporting frame, an endless chain mounted on sheaves therein, an elevator track in the frame, an elevator bucket having a connection with the chain, wheels on the track for supporting the bucket and a projection from the endless chain for engaging the propulsive power.

4. In an earth loading machine, in combination, a main frame, two inclining ways pivotally connected therewith, an inclining elevator frame in the main frame, an elevator track thereon, an endless chain, supporting sheaves therefor, an elevator bucket having a connection with the endless chain, supporting wheels for the bucket for running on the elevator track and a projection from the chain for engaging the propulsive power.

5. In an earth loading machine, in combination, a main frame, two inclining ways pivotally connected therewith, an inclining elevator frame in the main frame, an elevator track thereon, an endless chain in the main frame and in one of the inclining ways, an elevator bucket connected with the chain, sheaves for supporting the chain and a projection from the chain extending above the surface of the inclining way for engaging the propulsive power.

6. In an earth loading machine, in combination, a main frame, two inclining ways pivotally connected to the sides thereof an inclining elevator frame in the main frame, an elevator track thereon, an endless chain in the main frame and in one of the inclining ways, an elevator bucket connected to the chain, supporting wheels for the bucket and a two arm dog, running on the before mentioned way, having a link connection with the endless chain for engaging the doubletrees of the outgoing team and thereby to elevate the buckets.

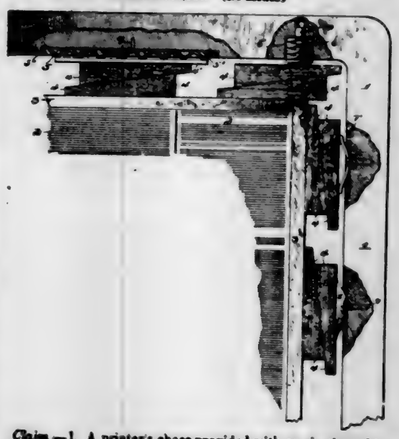
7. In an earth loading machine, in combination, a main frame, supporting wheels therefor, two inclining ways pivotally connected to the sides thereof, an inclining elevator frame on the main frame, an elevator track thereon, an endless chain in the main frame and in one of the inclining ways, a two arm dog, bearing rollers journaled on the sides thereof, a supporting track for the rollers upon the inclined way, and an opening in the track at its outer end to admit the passage of certain ones of the rollers mentioned.

8. In an earth loading machine, in combination, a main frame, supporting wheels therefor, two inclining ways pivotally connected to the sides thereof, a track upon one of the ways, an inclining elevator frame on the main frame, an elevator track thereon, an endless chain in the main frame and a portion thereof also extending parallel with the track on the inclining way, a dog on the chain having a pivotal connection therewith, supporting rollers for the dog for bearing upon the track, an opening in the outer end of the track through which the forward bearing rollers may pass, a guide shield underneath the inner end of the rails and a pivoted section therein for readmitting the rollers to run upon the track.

9. In an earth loading machine, in combination, a main frame supporting wheels therefor, two inclining ways pivotally connected to the sides thereof, an inclining elevator frame on the main frame, an elevator track thereon, an endless chain in the main frame, supporting sheaves therefor, a bell crank lever pivoted on the frame, a weight depending from one arm thereof one of the beforementioned supporting sheaves pivoted upon the other arm of the bell crank lever, a bow extending from one side of the endless chain upon which bow this sheave runs to pass the connection with the elevator bucket.

10. In an elevating device, in combination, an elevator track, two elevators thereon, a switch in the track having a fixed center and tongues pivoted at each end thereof, an arm extending from the center piece, a link connection between the free ends of the arm and the two pivotal tongues whereby they are moved in relatively opposite directions when motion is imparted to either.

**503,251. PRINTER'S CHASE.** JOHN W. OSBORNE, Washington, D. C., assignor of one-third to Carl Edelheim, Philadelphia, Pa. Filed Oct. 13, 1890. Serial No. 367,987. (No model.)



*Claim.*—1. A printer's chase provided with an elastic cushion on its inner edges, substantially as described.



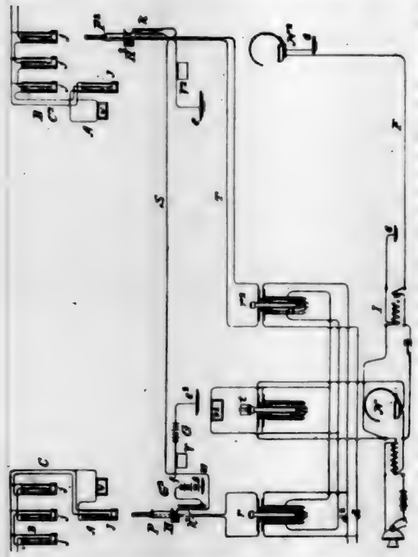
2. A printer's chase composed of a rigid frame and spring cushions on its inner edges, substantially as described.

3. In a printer's chase, the combination of a rigid frame having recesses formed on its inner edges, and compressible springs seated in said recesses and projecting beyond the same, substantially as described.

4. In a printer's chase, the combination of a rigid frame having recesses in its inner edges, and compressible springs held in said recesses and projecting beyond the same.

5. In a printer's chase, the combination of a rigid frame, with recesses formed in the inner edge thereof, and sinusoidal leaf-springs seated in said recesses and projecting with their convex portions beyond said recesses, substantially as described.

**503,252. ELECTRIC SWITCHBOARD-SIGNAL.** FRANK A. PICKERELL, Newark, N. J., assignor to the American Telephone and Telegraph Company, of New York. Filed May 15, 1893. Serial No. 474,320. (No model.)



*Claim.*—1. The combination of an electric circuit; a high resistance and a low resistance signal included therein; a source of current also included therein; a normally closed branch or derived circuit shunting the said high resistance signal and the said source of current, and including an independent and equal source of current, so connected that the two sources oppose each other through the said signal, as long as the said branch is closed; and circuit controllers in the signal and branch circuits respectively, controlling the continuity thereof, and thereby the operation of said signals; substantially as described.

2. The combination in a reciprocal signaling system, of a main signaling circuit extending between two stations and divided at one of the said stations into two normally closed terminal branches containing respectively independent and equal electrical generators, having like poles to line, and thereby opposed in the said branches; a self setting annunciator of relatively high resistance in one of the said branches; a circuit controller in the other, normally maintaining the continuity thereof; a self setting annunciator of relatively low resistance and a second circuit controller in the main signaling circuit at the other station, the latter maintaining the same normally open; the high resistance annunciator in the branch circuit alone being caused to give its signal when the other branch is opened, and the main circuit closed; both annunciators being made responsive to the closure of both branch and main circuit; and both being withdrawn or adapted to reset their signals when the main circuit is opened, and the branch closed, by their respective circuit controllers; substantially as specified.

3. The combination of a main signaling circuit extending between two stations and containing an electrical generator and a key or circuit controller; a relatively high resistance annunciator at one station, and a relatively low resistance annunciator at the other, whereby when the said key is closed the high resistance annunciator alone is enabled to respond; with a branch circuit at the first named station including a second key or circuit controller, and an independent and substantially equal generator having the same pole to line at the first and thereby acting in opposition to and adapted to neutralize the effect of the first upon the said high resistance annunciator when the main circuit key is open, and the second key closed, but adapted to energize and actuate the low resistance annunciator when the main circuit key is closed: substantially as described and for the purposes specified.

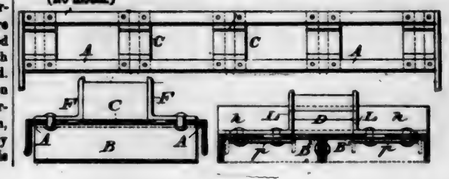
4. The combination of two switchboards, or of two switchboard sections; with a reciprocal signaling circuit extending between them provided at one of the said switchboards with a relatively high resistance annunciator, and at the other with a relatively low resistance annunciator, the former maintained normally inert by being connected between two equal and opposed batteries, and the latter by being on open circuit; keys or circuit controllers at both switchboards, one controlling the continuity of the signaling circuit and adapted when alone closed to actuate the high resistance annunciator only; and the other controlling the connections of one of the said equal batteries, whereby when both keys are closed, the low resistance annunciator also may be actuated, substantially as described.

5. The combination of two telephone switchboards; a trunk conductor extended between them having a terminal plug at each; two circuit changers actuated by the manipulation of said plugs respectively; a main signaling circuit between the said two switchboards; two annunciators of differing resistance serially connected in the main signaling circuit one at each of the said switchboards; a branch circuit permanently connected with the said main signaling circuit at a point thereon between the two annunciators; and two equal batteries connected in parallel with each other and included in the said main and branch signaling circuits respectively, with like poles to the said main circuit, but on opposite sides of the relatively high resistance annunciator; whereby the signals may be displayed or withdrawn, to indicate the use or disuse of the trunk conductor plugs, substantially as described.

6. The combination of a trunk conductor extending between two switchboards or sections of switchboards and terminating at each in a connecting plug or its equivalent, and sockets for the said plugs; of a reciprocal signaling circuit therefor, having a relatively low resistance annunciator at one of the said switchboards; an energizing battery; a normally closed branch; an independent and equal battery in said branch and in parallel with the first; and a relatively high resistance annunciator interposed between the like poles of the said two batteries at the other switchboard; and main line and branch keys or circuit controllers the former normally closed, and the latter normally open, so mounted in the said sockets respectively that they are operated by the withdrawal or replacement of the said plugs, and thereby enabled to operate one or both of the said annunciators to give and restore their signals as desired, substantially as specified herein.

7. The combination of an answering switchboard; a connection making switchboard; a trunk line extending from one to the other, and having a connecting plug, and a resting socket therefor at each end; an associated signaling circuit also extending between the said two switchboards; visual signal indicators as indicated herein connected therewith, one at each switchboard; and an energizing battery therefor; a key controlling the continuity of said circuit mounted in the resting socket of the connection board plug, and held open thereby; and a second key controlling the connection of a normally closed branch including an auxiliary battery connected in parallel with the first, mounted in the resting socket of the call receiving board plug and normally held closed thereby; whereby the visual signal indicator at the answering board is enabled to become operative regardless of the position of the answering board plug, whenever the connecting board plug is absent from its socket, while the indicator at the connecting board can only become operative when the answering board plug only is in its socket; and whereby both signals are automatically withdrawn, when both plugs are replaced, substantially as specified herein.

**503,253. METALLIC CROSS-TIE AND RAILWAY-SUPPORT.** JAMES M. PRICE, Philadelphia, Pa., assignor to the Price Railway Appliance Company, of Pennsylvania. Filed Mar. 14, 1892. Serial No. 424,818. (No model.)



*Claim.*—1. The combination of parallel angle bars having vertical limbs, cross pieces on which said bars rest, metal plates seated on said cross pieces, and tie rods, substantially as described.

2. The combination of parallel angle bars having vertical sides, cross pieces on which said bars rest, plates seated on said cross pieces, a cushion on said plates for the rail, and chairs on the bars and sides of the plate, substantially as described.

3. A double girder consisting of four angle bars of metal, the middle pair riveted to each other back to back, all four attached to several cross pieces of angle bar or T seated upon them in such manner as to bind all securely together, the structure carrying blocks of wood or its equivalent, upon which a rail is seated and secured as a railway support, substantially as described.

4. Double longitudinal girders of metal to underlie and support railway rails, consisting each of four longitudinal angle bars crossed by shorter pieces of angle bar or T seated upon and riveted to them, these girders or frames carrying chairs or angles riveted or bolted to them to prohibit the rails from spreading, in combination with blocks of wood or its equivalent, upon which the rails are seated, clamps and bolts and T bars or tie rods across the track attached to these girders to maintain gage, substantially as described.

5. A double frame or girder formed of two pairs of longitudinal angle bars, the central pair being vertically under the rail, back to back, and riveted together, and cross pieces of angle bar seated on all of said longitudinal angle bars and secured thereto, said parts being combined substantially as described.

6. Four parallel angle bars constituting a long frame of metal when secured by bolts or rivets to transverse pieces of angle bar or T, and clamps with the middle pair notched on the edges to accommodate said clamps binding the rail placed above them upon intervening blocks of wood or its equivalent, as a railway support, said parts being combined substantially as described.

7. Longitudinal gridiron frames of metal composed of one or more pairs of angle bars, supporting between metal angles or chairs a railway rail upon blocks, secured by its flanges to the metallic frames underneath by clamps and bolts, said parts being combined substantially as described.

8. Longitudinal metallic frames consisting of a pair of angle bars, placed between a pair of angle bars, upon which metallic seats between chairs are placed to support a double headed rail wedged tightly between the chairs with plugs or wedges of wood or metal, and tie rods maintaining gage by securing opposite frames together, said parts being combined substantially as described.

9. Longitudinal gridiron frames of metal, consisting of four parallel angle bars of the same length secured together by riveting them to cross pieces or angle bar, the middle pair supporting metal blocks on which with intervening packing is seated a double headed rail secured between metallic chairs by wedging of suitable material, the frames maintained at gage by tie-rods or T's across the track, substantially as described.

10. Longitudinal frames or girders of metal composed of a gridiron construction of angle bars, carrying a railway rail midway between chairs and connected together by clamps of wide pressure upon the flanges of the rail, and clamped or linked together endwise in series by plates, bars or clamps, to forbid creeping of the entire structure and the supported rail, substantially as described.

## 503,254. TRUSS RAIL-JOINT. James M. Price, Philadelphia, Pa., assignor to the Price Railway Appliance Company, of Pennsylvania. Filed Apr. 18, 1892. Serial No. 429,586. (No model.)



*Claim.*—1. A metallic truss for a rail joint composed of plates having heads with end shoulders adapted to rest upon the cross ties, and a body or web portion provided with ribs, substantially as described.

2. Two joint plates of the general shape of an angle bar topped by a head deeply grooved and adapted to embrace in its grooves the flanges of two meeting T or other rails, the body thereof being ribbed along its edges and in the middle, adapted to hang between terminal shoulders resting upon both rails and cross ties, to carry the two rails like a "beam truss" at the point of their meeting, the joint plates being bolted together firmly beneath the rails, substantially as described.

3. A joint consisting of two ribbed and shouldered joint plates, having heads deeply guttered to embrace the meeting rails by firmly grasping their flanges in the grooves, feet shaped in section like an angle bar and meeting midway under the rails, shoulders at their ends resting upon both rails and ties, and a body suspended between the ties, bolted to each other beneath the rails and thus constituting a "beam truss" to grasp and carry the rails at their point of meeting, substantially as described.

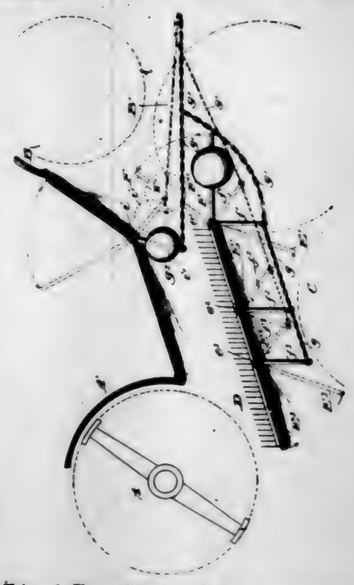
4. A pair of joint plates each shaped like an angle bar with heads embracing firmly in deep grooves the flanges of two T or other railroad rails at and near their point of meeting, the plates terminating at each end in a shoulder resting in part upon the rail and in part on the cross tie supporting the rail, the body, being stiffened and strengthened by ribs along its edges and in the middle, to carry the rails like a "beam truss" at the point of meeting, being bolted to its fellow beneath the rails, with space or allowance in the grooves and outside of the flange to drive them closer as the surfaces wear, substantially as described.

5. Two ribbed and shouldered angle bars comprising heads deeply guttered to embrace the flanges of railway rails, having depth to that groove or gutter beyond the point to which the flange at first can penetrate, carrying the rails as a joint between the ties upon which the rails rest, the shoulders of the angle bars or plates resting upon both rail and tie, while their body carries the two rails as a truss at their meeting point, substantially as described.

6. An angle bar joint with heads which embrace the rail flange firmly in a deep groove extending beyond the edge of the flange when tightly gripped at first, so as to admit of further entrance as the surfaces wear, the body of the joint being stiffened at its edges and center by stout ribs, hanging between the ties and carrying the rails as a truss over the intervening space, substantially as described.

## 503,255. DAMPER FOR COTTON OPENERS AND LAPPERS. Robert Schaellbaum, Lowell, Mass. Filed Nov. 23, 1892. Serial No. 453,410. (No model.)

*Brief.*—The device includes a dust-trunk for cotton-openers, &c., having a damper made in several independently hinged sections, so connected that all can be opened simultaneously. A door is also provided in the cover of the machine in front of one of the cages, which door is connected with the dampers so that the door and dampers are opened by the same mechanism, the door a little before the dampers. Thus, when opened, air will be drawn through the door instead of the dampers. Door and dampers are so weighted as normally to remain closed.



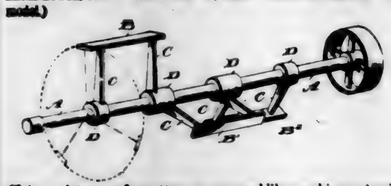
*Claim.*—1. The combination with the opener and opener cylinder, the collecting cages, and the grid extending between the opener cylinder and the cages, of a damper for the grid, damper operating mechanism, and a door in the case inclosing the cages connected to and operated by the damper operating mechanism at the time and in the manner substantially as hereinbefore set forth.

2. The combination of the grid and damper therefor, the opener cylinder, opener and collecting cages, a door in the case inclosing the collecting cages, and operating mechanism connected to the damper and door, substantially in the manner hereinbefore set forth so that the said mechanism shall open the door slightly in advance of opening the damper, as and for the purposes stated.

3. The combination of the opener cylinder and opener, the cages, the grid between the opener cylinder and cages, individually hinged and counterweighted damper sections for said grid, a counterweighted door closing an opening in the case surrounding the cages, and rods, cords or chains connecting the door and damper sections to an operating handle by which both the door and the dampers are opened at the time and in the manner substantially as hereinbefore set forth.

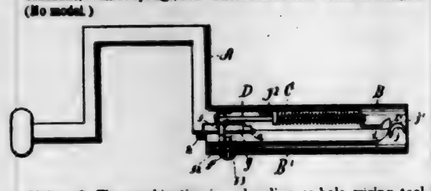


## 503,256. BEATER FOR COTTON-OPENERS. Robert Schaellbaum, Lowell, Mass. Filed Nov. 23, 1892. Serial No. 453,411. (No model.)



*Claim.*—A beater for cotton openers and like machinery, having a single blade, divided into sections which taken together constitute practically a single beater blade extending the working length of the beater, and arranged relatively to one another around the axis of the beater to balance each other, substantially as and for the purpose hereinbefore set forth.

## 503,257. METAL-BANDING OR BALE-WIRING TOOL. George Schubert, Walnut Springs, Tex. Filed Feb 20, 1893. Serial No. 462,947. (No model.)



*Claim.*—1. The combination in a banding or bale wiring tool, formed of a shank, formed of two halves, a sweep formed on the upper end of one of said halves, a perforation $D^3$ in the lower end of one of said halves, a plunger within said perforation, a spring C on the plunger-rod D, clamping jaws *j* and *j'*, and cutting jaws *i* and *i'* near the lower end of the shank levers *f*, *f'*, a stud in one of said levers for the purpose described.

2. The combination in a banding or bale wiring tool, formed of a shank of two halves, a perforation $D^3$ in the lower end of the shank, a rod D pivoted to the lever *f* and adjustably secured in the plunger D', a spring C on said rod, D, a slot *g*, as shown, clamping jaws *j* and *f*, and cutting jaws *i* and *i'*, levers *f* and *f'*, a stud in one of said levers, means to rotate said shank for the purpose described.

3. The combination in a banding or bale wiring tool, formed of a shank of two halves, a perforation $D^3$ in the lower end of the shank, a rod D pivoted to the lever *f* and adjustably secured in the plunger D', a spring C on said rod D, a slot *g*, as shown, clamping jaws *j*, and *j'*, and cutting jaws *i* and *i'*, levers *f* and *f'*, a slot $f^6$ in the free end of one of said levers, a stud $f^6$ secured adjustably in said slot $f^6$, means to rotate said shank as and for the purpose described.

## 503,258. DENTAL DISK AND CARRIER. Rufus G. Stanbrough, New York, N. Y. Filed Jan. 29, 1892. Renewed Jan. 18, 1893. Serial No. 458,818. (No model.)



*Claim.*—1. A disk for operative dentistry provided with a central elongated opening and slits at either end of said central opening, and at right-angles thereto, substantially as described.

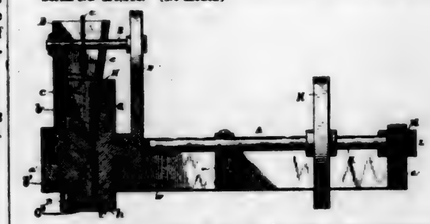
2. A disk for operating dentistry provided with a central elongated opening and slits at either end of said central opening, and at right-angles thereto, and a guard plate provided with a central aperture to correspond with the central opening in the disk and flanged lugs entering and protruding through the slits in said disk, substantially as described for the purposes set forth.

3. A disk for operative dentistry provided with a central elongated opening and slits at either end of said central opening and at right-angles thereto, and a guard plate provided with a central aperture to correspond with the central opening in the disk and flanged inwardly inclined lugs adapted to enter the slits in said disk, substantially as described for the purposes set forth.

4. A tool for operative dentistry comprising a shank having a reduced extension carrying a T-head; a lock plate comprising a circular portion, having oppositely arranged lugs, working over said reduced extension and held in position by a coil spring, substantially as described.

5. In a tool for operative dentistry, a shank having a reduced extension carrying a T-head, a lock plate comprising a circular portion having oppositely arranged lugs, working over said reduced extension and held in position by a spring in combination with a disk provided with a central elongated opening adapted to engage and lock the T-head of the carrier, and slits at either end of said central opening and at right-angles thereto, a plate provided with a central aperture to correspond with the central opening in the disk, and flanged lugs adapted to enter the slits in said disk and engage the flanges in the lock plate, of the carrier, substantially as described.

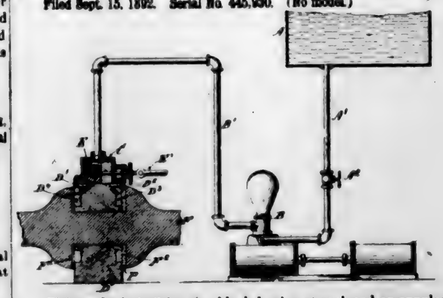
## 503,259. COTTON-SEED GRINDER. John T. Tullia Chip, Ark., assignor of one-half to John Burress, same place. Filed Oct. 28, 1892. Serial No. 450,212. (No model.)



*Claim.*—1. In a machine of the class described, the combination with a stationary grinder, of a peripheral flange or shell fixed to the stationary grinder, a rotary grinder adapted to bear against the free edge of said flange or shell and provided with a reduced core or cheek to fit within the flange or shell and carrying the opposite grinding surface, and a spindle carrying the rotary grinder and fixed to the outer side thereof whereby the grinding surfaces are unbroken, substantially as specified.

2. In a machine of the class described, the combination with the frame-work, of the stationary grinder provided with a forward projecting peripheral flange or shell, the superimposed hopper communicating with an opening in said flange or shell, the rotary grinder provided with a reduced core or cheek to fit within said flange or shell and having a shoulder, *h*, to bear against the edge of the same, the spindle attached to and terminating in the center of the rotary grinder, whereby the grinding surfaces are unbroken, and the pressure spring engaging the spindle to press the rotary grinder toward the stationary grinder, substantially as specified.

## 503,260. THRUST-BEARING. Arthur K. Watt, Flatbush, N. Y. Filed Sept. 15, 1892. Serial No. 445,930. (No model.)



*Claim.*—1. A shaft-bearing block having at each end an annular groove, a shaft passing through said block and having shoulders or bearing faces adapted to surround a portion of said block and cover the grooves therein, and means for automatically forcing liquid under pressure to one or the other of said annular grooves upon the starting or reversal of the engine, substantially as described.

2. A shaft having two shoulders, each of which is provided with an annular groove, and with an inwardly projecting annular flange, in combination with a shaft bearing block located between said shoulders and provided at each end with two concentric annular grooves, the inner grooves corresponding approximately to the grooves in the shoulders, and each outer groove adapted to receive the corresponding flange on said shoulders, and means, substantially as described, for forcing liquid under pressure to the grooves at one end or the other of the bearing block upon the starting or reversal of the engine, for the purposes set forth.

3. A shaft bearing block, a shaft passing through the same and having on each side a shoulder; a packing ring between said shoulders and block on each side, and means for automatically forcing liquid under pressure through ports in said block to one or the other shoulder, upon the starting or reversal of the engine, substantially as described.

**503,261.** BILLIARD OR POOL TABLE. HENRY A. BERRUYER, New York, N. Y. Filed Mar. 13, 1893. Serial No. 465,720. (No model.)



*Claim.*—1. A table comprising a legged base frame, a vertically movable table body yieldingly supported on said base frame, means for raising and lowering the table body and for securing it in raised position, substantially as shown and described.

2. A table consisting of a base frame provided with legs, a table body yieldingly supported and vertically movable on said base frame, slidable frames in said base frame, links pivoted to the base frame and the slidable frames, and means for sliding said latter frames, substantially as shown and described.

3. A table, consisting of a base frame resting on legs, a table body yieldingly supported and vertically-movable on said base frame, slidable frames in said base frame, links pivoted to the base frame and slidable frames, bearing rollers carried by the links, and means for moving the slidable frames substantially as shown and described.

4. A table, consisting of a base frame having legs, a table body yieldingly supported and vertically-movable on said base frame, a disk rotatable in said base frame, frames adapted to slide in said base frame, rods pivoted to said movable frames and pivoted eccentrically to said disk, links carrying bearing rollers, pivoted to said base frame and the movable frames, and means for rotating said disk, substantially as shown and described.

5. A table, consisting of a base frame having legs, a table body yieldingly supported and vertically-movable on said base frame, a disk mounted to rotate in guides in said base frame, frames adapted to slide in said base frame, rods pivoted at one end to said movable frames and pivoted eccentrically to said disk at their other ends, links pivoted to the base frame and movable frames, bearing rollers carried by said links, limiting lugs carried by the movable frames, and an operating lever centrally pivoted on the rotatable disk beneath the base frame, substantially as shown and described.

6. In a table, the combination, with a base frame provided with legs, and a table body vertically-movable on said base frame, of cushion supports intervening the base frame and table body, and means for raising and lowering the table body, substantially as shown and described.

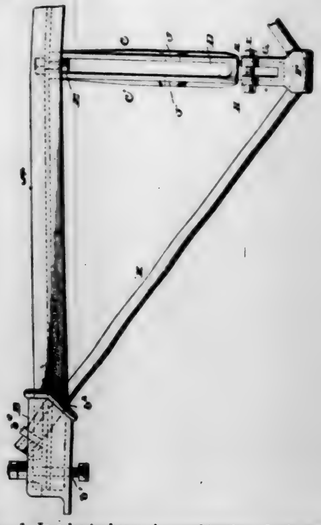
7. In a table of the character described, the combination, with the stationary base frame and the vertically-movable table body, of spring cushions intervening the base frame and table body, substantially as shown and described for the purposes specified.

**503,262.** WASHBOILER. WASHINGTON P. BURKE, Guttman, Ga. Filed Jan. 26, 1893. Serial No. 459,797. (No model.)



*Claim.*—In a wash boiler, the combination of a body provided at its upper edge with a supporting flange, an inner boiler having a flange to rest upon that of the body and provided at its bottom with a valve and at its top with perforations and forming a space between it and the body, a horizontal tube arranged at the middle of the boiler and having its ends secured to the same and communicating with the space outside the boiler and provided with perforations, and a cover, substantially as described.

**503,263.** BRAKE-BEAM FOR RAILROAD-CARS. FRANCIS J. COLE, Baltimore, Md. Filed Apr. 11, 1893. Serial No. 469,945. (No model.)



*Claim.*—1. In a brake-beam the combination of a brake-beam, truss-rods and king-post, the king-post consisting of two parts, a post and a socket therefor, said socket being provided with means for rigidly clamping the post in the socket in any desired position.

2. In a brake-beam the combination of a brake-beam, truss-rods and king-post, said king-post being constructed in two parts, a post and a socket, said socket being provided with means for clamping it upon the post in any desired position, the other end of said post being secured to the brake-beam by means of an axial bolt, which may be loosened and tightened to allow a change of position of the king-post and its rigid fixation in any desired position.

3. In a brake-beam the combination of a brake-beam consisting of a "U-shaped" channel-iron, a king-post secured to the center of the brake-beam, and a truss-rod secured to the two ends of the brake-beam and passing over the extremity of the king-post.

4. In a brake-beam the combination of a brake-beam consisting

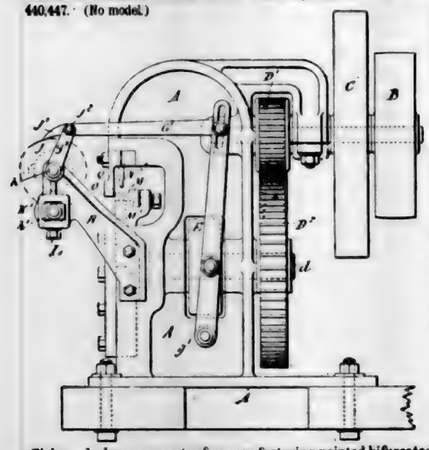


of a "U-shaped" channel-iron, a head secured to either end thereof, a king-post secured to the center of the brake-beam, and a truss-rod secured to the two heads of the brake-beam and passing over the extremity of the king-post.

5. In a brake-beam the combination of a brake-beam consisting of a "U-shaped" channel-iron, a head secured to either end thereof, consisting of a block of metal fitting the channel-iron and filling the space between the walls thereof.

6. In a brake-beam the combination of a brake-beam, a head secured to either end thereof, a king-post secured to the center of the beam and truss-rods, provided with heads or nuts on one end which are secured in sockets in the under sides of the beam-heads, the other ends of which pass through the lower end of the strut and are secured thereto by nuts.

**503,264.** MACHINE FOR THE MANUFACTURE OF STAPLES. SAMUEL C. DAVIDSON, Belfast, Ireland. Filed July 19, 1892. Serial No. 440,447. (No model.)



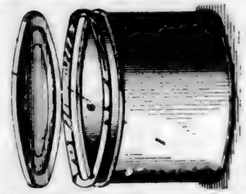
*Claim.*—1. In an apparatus for manufacturing pointed bifurcated rivets or two pronged U shaped fasteners, the combination substantially as set forth of a punch and die, mounted to reciprocate the one relatively to the other, the punch having the same outline as the interior surfaces of the prongs of the rivet, and the die having drawing working faces embracing the punch, sliding over the working faces thereof as the punch enters the die, and having the shape of the exterior outline of said prongs, and the punch exactly filling the die at the points of the prongs, and entering the die until the points of the prongs are within the working faces thereof whereby when a length of wire is forced into the die by the punch, such wire is bent and drawn into the shape of the space between the working faces of the punch and die, and is thereby shaped into a rivet, and the excess of metal in such wire is shaved off by said die, thereby pointing the rivet, all substantially as set forth.

2. In an apparatus for manufacturing pointed bifurcated rivets or two pronged U shaped fasteners, the combination substantially as set forth of a punch and die, mounted to reciprocate the one relatively to the other, the punch having the same outline as the interior surfaces of the prongs of the rivet, and the die open at both ends and having the shape of the exterior outline of said prongs, and the punch exactly filling the die at the point of the prongs, whereby when a length of wire is forced into the die by the punch, such wire is bent and drawn into the shape of the space between the working faces of the punch and die, and is thereby shaped into a rivet, and the excess of metal in such wire is shaved off by said die, one of the outer sides of said die having a cutting edge, and a cutter plate acting against said cutting edge and having an orifice for the passage of the wire to be formed into rivets, whereby in the forward stroke a length of wire is cut off by said plate and then forced into the die by the punch, bent and drawn into the shape of a rivet, and forced out of the opposite end of the die, where, by reason of its springing slightly open the ends catch against the die on the return movement and the rivet is thereby drawn off the punch, all substantially as set forth.

3. In an apparatus for manufacturing bifurcated rivets or two pronged U-shaped fasteners, the combination with a reciprocating punch and a reciprocating die adapted to bend and shape a length of wire into a rivet, of an anvil bearing a device the counterpart of which is required in the rivet head, means whereby the punch is given a forward motion to press the wire against the anvil and means whereby the die is then given a forward motion to bend and shape the wire into a rivet substantially as set forth.

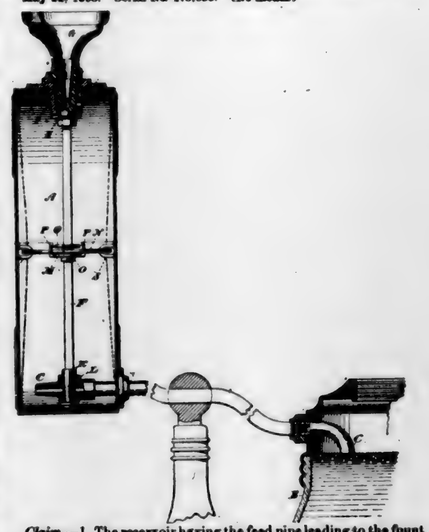
4. In an apparatus for manufacturing bifurcated rivets or two pronged U-shaped fasteners, the combination substantially as set forth of a reciprocating punch, an anvil adapted to act in conjunction with said punch to impress a device upon the center of a piece of wire which is to be formed into a rivet, a reciprocating die adapted to act in conjunction with said punch to bend and shape the said wire into a rivet, one of the outer sides of said die having a cutting edge, and a cutter plate adapted to act in conjunction with said cutting edge all substantially as hereinbefore described and shown.

**503,265.** TIN CAN. WILLIAM HAAKER, New York, N. Y. Filed May 20, 1892. Serial No. 433,687. (No model.)



*Claim.*—The combination with a can having an outwardly extending annular flange at its edge, of a cover therefor having a depressed central portion bounded by a perpendicular wall having a right-angled flange of a width greater than that of the can body, and a paper washer interposed between the flanges of the can and the body and having a width greater than that of the flange of the can body and less than that of the flange of the cover, the said washer fitting closely against the said perpendicular wall, whereby it may be clamped in three directions and held securely in place during the process of curling and uniting the flanges in the manner as hereinbefore set forth.

**503,266.** LAMP. GEORGE P. KATO, Jr., Jersey City, N. J. Filed May 22, 1893. Serial No. 475,035. (No model.)



*Claim.*—1. The reservoir having the feed pipe leading to the fount, and the inlet and outlet valves connected by a rod within the reservoir, combined with the key on said rod, and the eccentric on the said rod and connected with the opposite sides of the reservoir, the said key being adapted to engage the said eccentric during the rotation of the rod and cause it to draw toward or force outward from each other the opposite sides of said reservoir; substantially as and for the purposes set forth.

2. The reservoir having the feed pipe, and the inlet and outlet valves connected by a rod and so timed with respect to each other that the opening of one valve will be followed by the closing of the other, combined with connections intermediate said rod and the sides

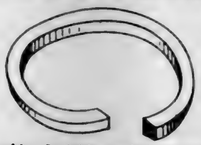
of the reservoir whereby on the rotation of the rod the sides of the reservoir are drawn toward each other preparatory to the filling of the latter and are thereafter forced outward to create a vacuum in the reservoir; substantially as and for the purposes set forth.

3. The reservoir having the feed pipe, and the inlet and outlet valves connected by a rod, combined with the key M having arms P, P, and secured on the said rod, and the eccentric N, having slots Q, Q, and R, R, and connected with the opposite sides of the reservoir; substantially as and for the purposes set forth.

4. The reservoir having the feed pipe, and the inlet and outlet valves, combined with means whereby the opposite sides of the reservoir may be drawn toward each other preparatory to the reservoir being filled and then forced outward to create the vacuum; substantially as and for the purposes set forth.

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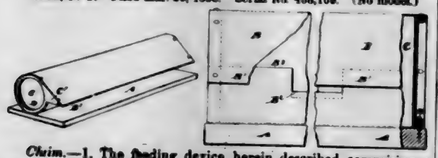
**503,267. CUSHION FOR INKING-PADS.** JOHN R. KEATINGE, Brooklyn, N. Y. Filed May 23, 1892. Serial No. 433,993. (Specimens.)



*Claim.*—In a cushion for inking pads for type-writing-machines the combination of silken fiber with woolen fiber felted and saturated with ink as and for the purposes herein shown and set forth.

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**503,268. POISON-FEEDING DEVICE.** MICHAEL KELLY, New York, N. Y. Filed Mar. 29, 1893. Serial No. 468,169. (No model.)



*Claim.*—1. The feeding device herein described comprising a trough of imperforate material and having an overhanging hood projecting forward and downward below the alignment of a longitudinal slot in said trough all substantially as herein specified.

2. The feeding device herein described having a longitudinal opening therein, a foot or support for said trough, a hood or overhang in proximity to said slot, and guards or screens at the extremities of said slot adapted to prevent access to the trough at those points all arranged to serve substantially as herein specified.

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**503,269. SEWING-MACHINE SHUTTLE.** LEE A. MILLER, Milwaukee, assignor to Samuel R. Fuller, Watertown, Wis. Filed Nov. 29, 1892. Serial No. 453,309. (No model.)



*Claim.*—1. A sewing-machine shuttle shell having solid sides, and a slot in its upper surface intermediate between the ends thereof, a tension-spring secured to said shell, and having a free end yielding vertically within said slot, a superimposed shuttle-spring, and a threading slit extending from the rear of the shell to, and terminating at, the rear wall of the said slot, substantially as set forth.

2. A sewing-machine shuttle having a threading-slit, and a slot, in its upper surface in communication with each other, a tension-spring provided with a raised portion intermediate of its ends, and secured at its rear end only to the shuttle, and adapted to yield within said slot, the free end of said spring beyond said raised portion having a slot in communication with the shuttle slot, and a superimposed shuttle-spring normally resting on said raised portion of the tension-spring and secured to the shuttle at each end, substantially as set forth.

3. In a sewing-machine shuttle, the combination with the shell, having a slot in its upper surface and a threading slit extending from the rear of said shell to, and terminating at, the rear wall of said slot, of a vertically-yielding tension-spring secured at its rear end to said shell back of said slot, and projecting forward toward the front end of said shuttle and a superimposed shuttle spring, normally in contact with said tension-spring, and secured at both ends to said shell, substantially as set forth.

4. In a sewing machine shuttle, the combination with the shell, having a slot in its upper surface and a threading slit extending from the rear of said shell to, and terminating at, the rear wall of said slot, of a vertically-yielding forward-projecting tension-spring of less length than said slot, and secured at its rear end back of the rear wall of the slot, whereby clogging at the free end of said tension-spring is prevented and all accumulations of foreign matter rendered capable of ready removal, without prior removal of said tension-spring, and a superimposed shuttle-spring, normally in contact with said tension-spring, and secured at both ends to said shell, substantially as set forth.

5. In a sewing-machine shuttle, the combination with the shell, having a slot in its upper surface and a threading slit extending from the rear of said shell to, and terminating at, the rear wall of said slot, of a vertically-yielding forwardly-projecting tension-spring removably secured at its rear end to said shell back of said slot, and a superimposed shuttle-spring, normally in contact with said tension-spring, and secured at both ends to said shell, independently of the attachment of the said tension-spring thereto, substantially as set forth.

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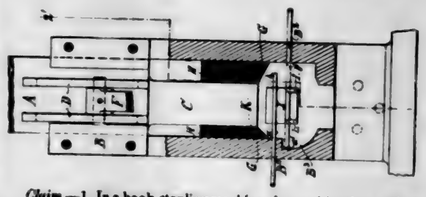
**503,270. SAFETY-BUFFER FOR RAILWAY-TRAINS.** WILLIAM NEUMAN, Ashland, Wis. Filed Apr. 8, 1893. Serial No. 469,590. (No model.)



*Claim.*—A safety appliance for railway trains consisting of an air cylinder closed at both ends and rigidly mounted upon a truck or car, in combination with a piston rod rigidly mounted upon another car or truck and projecting into one end of said cylinder, a piston attached to the rod and located in said cylinder, and springs interposed between the piston and the head of the cylinder through which the piston rod passes, whereby either a draft or a compressing force is applied between the piston and cylinder for the purpose set forth.

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**503,271. BOOK-STAPLING MACHINE.** JULIUS T. O. OETLOFF, Heidelberg, Germany. Filed Nov. 18, 1892. Serial No. 452,451. (No model.)



*Claim.*—1. In a book-stapling machine, the combination, with the driver C, plunger A, and its guide-frame B, having a horizontal channel $B'$, and another horizontal channel $B^3$, at a level below the same, of the anvil I, having a groove $I'$, in line with $B'$, another groove $I^3$, in line with $B^3$, and recesses L, means for cutting the wire, led into the grooves $I'$ or $I^3$, and for bending it into staples, and means for driving the staples through the paper, substantially as described, for the purpose set forth.

2. In a book-stapling machine, the combination, with the guide-frame B, having a horizontal channel $B'$ and a vertical channel $B^3$ at a level below the same, and another horizontal channel $B^3$, in line with the upper end of channel $B^3$, of the plunger A and driver C located laterally of the vertical center-line of the guide-frame B, the anvil I having groove $I'$, in line with $B'$, another groove $I^3$, in line with $B^3$, and recesses L, means for cutting the wire, led into the grooves $I'$ or $I^3$, and for bending it into staples, and means for driving the staples through the paper, substantially as described, for the purpose set forth.

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**503,272. SLICER AND GRATER.** CHARLES F. SPERY, Hermann, assignor to William J. Giessler, Alexander Kilpatrick, and Frank J. Hunseth, St. Louis, Mo. Filed Mar. 10, 1893. Serial No. 465,447. (No model.)



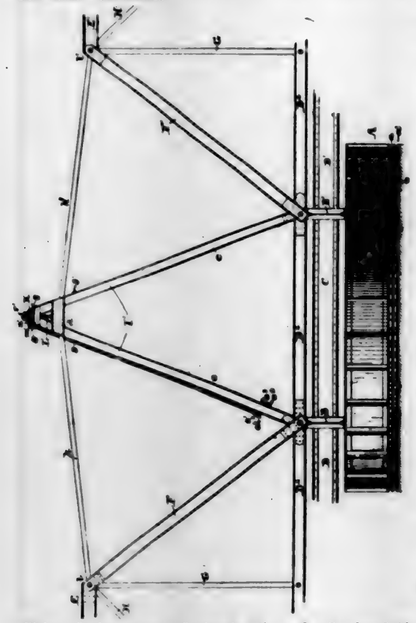
*Claim.*—1. The combination of the grater having at its side edges respectively the guides as described, and the slicer slotted and equipped with one or more knives as described, said slicer being adapted to be inserted in and withdrawn from said grater guides, substantially as described.

2. The combination of the grater having the guides, the slotted cross-bar, and the slicer slotted and provided with the knives and spring tongue, substantially as described.

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**503,273. DRAWBRIDGE.** CLAUDE A. P. TURNER, Ashton, R. I., and PHILIP A. WARNER, West Newton, Mass. Filed Mar. 7, 1891. Serial No. 384,085. (No model.)



*Claim.*—1. As a means of adjusting the ends of a drawbridge to its bearings upon the abutments a system of toggle links forming the central portions of the upper chords of the trusses of said bridge in combination with screw eye bolts connected to the centers of said toggles,—nuts fitted to revolve on said screws,—and suitable gears and shafting connecting said nuts whereby said nuts may be revolved in unison to raise or lower the centers of said toggles substantially as described.

2. In a drawbridge the combination with the trusses of the two arms of the bridge of a system of toggle links at each side of the bridge, each toggle forming the connecting link between the upper chords of the trusses of said two arms,—a triangular strut or frame at each side of the bridge over the turn-table,—a screw eye bolt connected to and extending upward from the center of each toggle,—a nut fitted to each of said screw bolts and supported upon the upper end of said triangular struts or frames,—gears and shafting connecting said nuts so that they may be revolved in unison,—a driving shaft and suitable gears connecting the same to one of said nuts,—and means substantially as described for applying power to said shafting to revolve said nuts whereby the ends of the bridge may be raised or lowered.

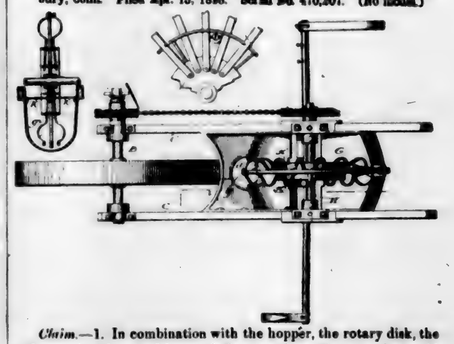
3. In a drawbridge, the combination with the trusses of the two arms of the bridge of a system of toggle links forming the central portions of the upper chords of the trusses of said bridge, a triangular strut or frame at each side of the bridge over the turn-table,—a screw threaded eye-bolt connected to and extending upward from the center of each toggle,—a nut fitted to each of said screw bolts and revoluble thereon, and supported upon the upper end of said triangular strut or frame,—gears and shafting for rotating said nuts in unison,—and a stop or check nut on the upper end of each of said screw eye-bolts above the gear operated nuts for limiting the downward movement of the center of said toggles.

4. In a drawbridge, the combination with the trusses of the two arms of the bridge, of the triangular struts or frames I and I' provided with the vertical guideways *j j*,—the toggle links *k k'* pivoted at their outer ends to the upper ends of the inner inclined struts F and F' respectively of the arm trusses, and at their inner ends connected together,—the vertical screw eyebolts L and L',—the geared nuts K and K',—the toggle pins *i* and *i'* fitted to be movable vertically in the guideways *j j* and connecting the inner ends of the toggle links and the vertical screw eye bolts,—the shafts *o* and *p*,—and the gears *m*, *m'* *n*, and *n'* all constructed, arranged and operating substantially as and for the purposes described.

5. In a drawbridge, the combination with the trusses of the two arms of the bridge of the toggle links *k* and *k'* pivoted at their outer ends to the upper ends of the inclined struts F and F' of the arm trusses respectively, and provided at their inner ends with eyes made oblong in the direction of the length of said links,—the triangular struts or frames I and I',—the vertical screw-eye-bolts L and L',—the toggle pins *i* and *i'* connecting said bolts and toggle links,—the nuts K and K',—the gears *m*, *m'* *n* and *n'*,—and the shafts *o* and *p*, all constructed, arranged and operating substantially as and for the purposes described.

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**503,274. SEEDING-MACHINE.** JAMES B. WILLIAMS, Glastonbury, Conn. Filed Apr. 13, 1893. Serial No. 470,207. (No model.)



*Claim.*—1. In combination with the hopper, the rotary disk, the seed grasping fingers fulcrumed thereon, the springs to close said fingers, and the cams arranged to act on their inner ends to rock them on their fulcra.

2. In combination with an opening cam, a rotary disk, seed-grasping fingers inserted through and fulcrumed in openings in the disk, pins on which the fingers are guided and by which their withdrawal is prevented, and springs seated on said pins and acting to close the fingers, substantially as described and shown.

3. The rotary disk with seed supporting shoulders, in combination with seed-grasping fingers operating substantially as described, and annular flanges in which the fingers are fulcrumed, said rings secured to the disk and adapted for limited rotary adjustment thereon substantially as described whereby the relation of the fingers to the shoulders on the disk may be varied at will.

4. The feed wheel consisting of the disk, its flange with openings therein, and the pins in combination with the springs, and the elastic fingers inserted through the openings and sprung into place upon the pins against the springs.

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**503,275. SHEET-FEEDING MECHANISM.** BURR F. BARNES and JACOB G. SMITH, Circleville, Ohio. Filed June 18, 1892. Serial No. 437,128. (No model.)

*Claim.*—1. In combination with a paper-support, the clamping device consisting of two arms one of which is stationary and one movable relative to the other, the rock-shaft carrying the movable arm, the mechanism connected with said shaft to rock it and to reciprocate said clamping device to and from the paper support, and stops to limit the rocking of the rock-shaft and thereby cause the reciprocation of the clamping device, substantially as shown and described

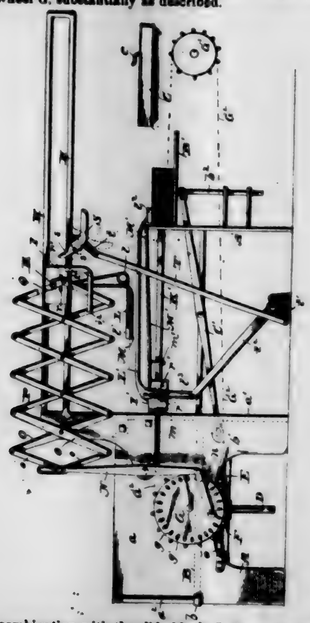
2. In combination a paper support, the paper clamp comprising a stationary and movable member, the rock shaft carrying the latter, the crank on said shaft, the stop to engage the crank to limit the motion of the shaft, and the reciprocating mechanism connected to said crank.

3. In combination a paper support, the sheet clamp comprising a stationary and a movable member, the rock shaft carrying the latter, the slide block journaling said shaft, the crank on the latter, the stop pins for said crank, the vibratory lever and the lazy tongs between the latter and said crank.

4. In combination the sheet clamp, having a movable member, the rock shaft carrying the same the slide block journaling said shaft, the crank on the latter the stop pins for the crank, the vibratory lever N connections between the latter and said crank the toothed wheel connected with said lever, the paper table and gearing between said

wheel and the latter to raise the same, substantially as shown and described.

5. In combination with a paper-table, the toothed wheel E, a screw connecting these, the wheel G having pins to drive said wheel E, said pins being adapted to be rendered inactive, and means to rotate the wheel G, substantially as described.



6. In combination with the slide block, I, the projections i' and i³ carried thereby, the pivoted lever S and the sheet carrying devices connected with the lever S.

7. In combination the pivoted clamping lever, as L', the slide block as I, carrying the same, the guide for said block, the rod as M' having collars m and m' to be engaged by said block.

8. In combination, the vertically movable table to hold blank paper, the vertically movable table to receive printed paper, means for moving one of said tables, and connections between it and the other table, to move the latter by means of and in a reverse direction from the other table, substantially as described and for the purpose specified.

9. In combination the vertically movable table, to hold blank paper, the vertically movable table to receive printed paper, the mechanism to convey the paper from the former to a press and from said press to the latter table, and the lever connecting said tables, to cause them to simultaneously move in opposite directions.

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**503,276.** SHEET-FEEDING MECHANISM. BURR F. BARTON and JACOB G. SMITH, Circleville, Ohio. Filed Oct. 22, 1892. Serial No. 449,682. (No model.)

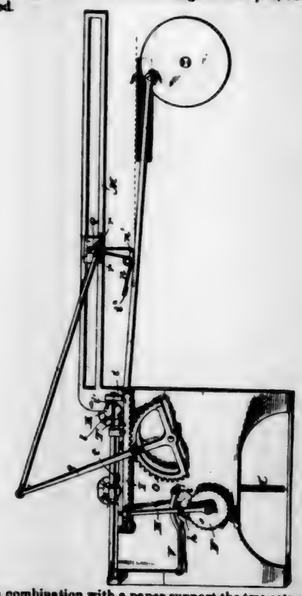
*Claim.*—1. In combination with a vertically movable paper support or table, the gearing for raising the same, comprising in part a worm, a pawl and a ratchet wheel for rotating the latter, the pawl carrying arm, the sliding bar, the paper-carrying mechanism and connections between said mechanism and said bar through which the latter actuates said mechanism, substantially as described.

2. In combination with a vertically movable table, the gearing for raising the same comprising in part a worm, a pawl and a ratchet-wheel to rotate the latter, the pawl carrying arm, the sliding rack-bar, the connection between said arm and said bar, the gear engaged by said bar, the arm on said gear and paper-carrying mechanism connected with said arm, substantially as described.

3. In combination with a vertically movable table, the gearing for raising the same, the pawl and ratchet mechanism to actuate said gearing, the sliding rack-bar connected with said mechanism, the carrying mechanism connections between the latter and said rack-bar, and the pitman connected to said bar and the moving part of a press to slide the bar, substantially as and for the purpose described.

4. In combination with a suitable paper support, the two sets of reversely rotating wheels having each flat and convexly curved surfaces, substantially as described.

5. In combination with a paper-support, the devices to engage and move a sheet of paper from a pile at its forward edge, and reversely acting devices at the rear edge of the pile, substantially as described.



6. In combination with a paper-support the two sets of reversely rotating wheels, having each flat and convexly curved surfaces, the actuating wheel for each set, and the sliding bar having a pawl for each actuating wheel, substantially as described.

7. In combination with the worm wheel the worm shaft, the pivoted journal for the latter the movable block also journaling said shaft and the cam or eccentric to move said block, substantially as described.

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**503,277.** WINDING-MACHINE. ARTHUR A. BRIGHAM, Weston, Mass. Filed Mar. 7, 1892. Serial No. 424,061. (No model.)

*Brief.*—To allow of the use of the spindle-holder to wind either a cone or a cylinder or for use with a conical or cylindrical drum, one end of the spindle is held in a block, which is adjustably held in one arm of the holder.



*Claim.*—1. A spindle-holder, or bracket, for a winding machine, having two arms to support the spindle, one of said arms being provided with a movable block to receive a journal of the spindle, and a screw to move said block, substantially as and for the purpose set forth.

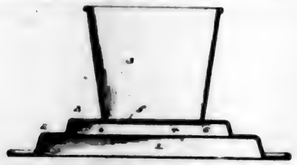
2. A spindle-holder, or bracket, for a winding machine, having two arms, one of which is provided with a slot to receive one journal of the spindle, the other arm being provided with a block to receive the other journal of the spindle, and a screw to move said block and to secure the same in position, substantially as and for the purpose set forth.

3. In a spindle-holder, or bracket, for a winding machine, provided with bearings for a rod or shaft, and a spring adjustably secured to the holder or bracket to press on said rod or shaft, the combination with two arms for supporting the spindle, of a movable block forming a bearing for a journal of the spindle at one of said arms, and a screw for moving said block, substantially as described.

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**503,278.** DISH-DRAINER. JAMES CRAIG, Rochester, N. Y. Filed Sept. 15, 1892. Serial No. 445,986. (No model.)

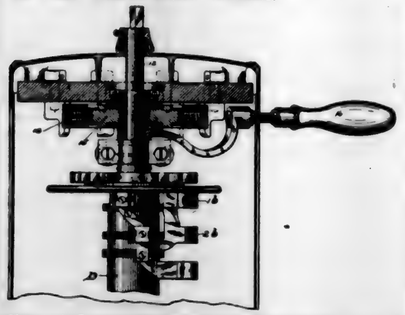
*Claim.*—1. A dish drainer, consisting of a base piece 1 having successive ledges or steps 2, and a central portion 4 formed with perforations 5, which are struck downward to provide a grater at the under side of the base piece, and a rim or receptacle 3 having its lower edge secured to the stepped base piece outside the perforated grater portion thereof, substantially as described.



2. A dish-drainer, consisting of a base piece 1, having successive ledges or steps 2, slots 7, and a central portion 4, formed with perforations 5, struck downward to provide a grater at the under side of the base piece, and a rim or receptacle 3 having tongue pieces 6, extending through the slots in the base piece and bent laterally, substantially as described.

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**503,279.** CONTROLLING-SWITCH FOR ELECTRICALLY-PROPELLED VEHICLES. HARRY P. DAVIS, Pittsburg, Pa., assignor to the Westinghouse Electric and Manufacturing Company, same place. Filed Jan. 7, 1893. Serial No. 457,617. (No model.)



*Claim.*—1. In a reversing switch, a circular series of studs, a body pivoted at the center of said circle and having half as many recesses as there are studs, bridging pieces fitting over said recesses, on the periphery of said body, and springs within said body adapted to force said bridging pieces outward, substantially as described.

2. A controller for a motor or motors, consisting of a revolving drum carrying commutating strips and contact buttons cooperating with said strips; in combination with a body loosely pivoted upon the axle of said drum, conducting bridging strips on the periphery of said body, and studs cooperating with said bridging strips, and connected with said motor or motors to reverse the direction of current in a part of the same, substantially as described.

3. In a street car, a motor or motors; in combination with a single acting controlling drum therefor, and a rotating reversing switch for said motor or motors, pivoted upon the axis of said drum, substantially as described.

4. In a car having a driving motor, a controller for said motor, and reversing switch consisting of a stud connected with one terminal of the motor field magnet, a stud on each side thereof connected each to a motor brush, said studs being placed in the arc of a circle and means for connecting either brush stud to a source of current, and the other to the field magnet stud simultaneously, substantially as described.

5. In a car having a driving motor, a controller for said motor, and a reversing switch consisting of a circular series of studs, one of the series being connected with a motor field magnet terminal, a stud on each side thereof being connected to each brush of the motor and the two outer studs being mutually electrically connected and also connected to one terminal of the car circuit; in combination with a rotating series of bridging pieces for making connection between contiguous studs in pairs, substantially as described.

6. In a reversing switch for two motors, a rotating series of bridging pieces; in combination with two pairs of motor brush studs, two field magnet studs separating the members of each pair of brush studs, and two spanning studs; in combination with bridging pieces for connecting said studs in pairs, substantially as described.

7. In combination with the two driving motors of an electric car, a reverser consisting of two sets of studs, each consisting of two brush studs and a field magnet stud between them, and means for electrically connecting said sets, substantially as described.

8. In combination with two motors for driving an electric car, a reverser consisting of two sets of studs, each consisting of two brush studs and a field magnet stud between them, and two spanning studs electrically connected and adapted to be brought into alternate connection with the brush studs of each motor, substantially as described.





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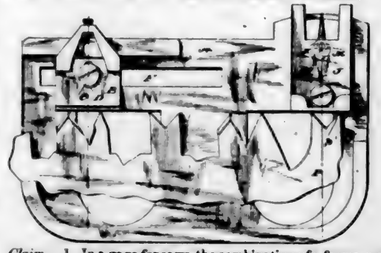
**503,280.** PORTABLE LETTER-PRESS. CHARLES R. EISELE, Philadelphia, Pa. Filed Sept. 30, 1892. Serial No. 447,396. (No model.)



*Claim.*—In a device of the character set forth, the combination of a tubular head or support having a series of transverse aligned openings extending therethrough, a series of tissue copying leaves eyeleted together and mounted in a back or cover and adapted to receive a subsequent binder, and a tape or cord passed through the said eyelets of the leaves and the openings of said head or support and removably attaching the said leaves to the said head or support, substantially as described

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**503,281.** GAGE FOR SAWS. CHESTER F. FOWLER, St. Helen, Oreg. Filed Nov. 26, 1892. Serial No. 453,209. (No model.)



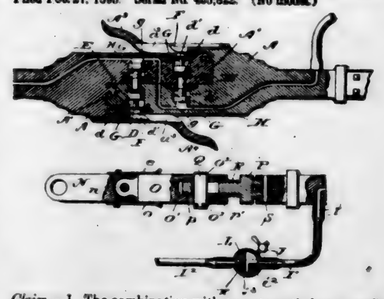
*Claim.*—1. In a gage for saws, the combination of a frame, a plate pivoted to said frame, and a secondary piece adjustable on said frame, substantially as and for the purpose set forth.

2. In a gage for saws, the combination of a frame, a plate pivoted to said frame, a secondary piece adjustable on said frame, said former plate carrying an index, substantially as and for the purpose set forth.

3. In a gage for saws, the combination of a frame, a plate pivoted to said frame, a secondary piece adjustable on said frame, and a handle secured to said frame, substantially as and for the purpose set forth.

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**503,282.** HOSE OR PIPE COUPLING. WILLIAM C. GEBHARDT, Luling, Tex., assignor of one-half to Otis McGaffey, Jr., same place. Filed Feb. 27, 1893. Serial No. 463,822. (No model.)



*Claim.*—1. The combination with an automatic hose coupling of a conduit for gas or fluid pressure connecting through said hose coupling and a locking device released by gas or fluid pressure connected

to said conduit, both conduit and locking device inclosed within said coupling, substantially as described.

2. In an automatic hose coupling having matching parts, the combination with an inclosed conduit connecting said hose through said parts, of a locking bolt or piston inclosed within one part and in communication with said conduit in the other part, as described.

3. In an automatic coupling consisting of intermatching parts, a registering steam channel within each part, in combination with a communicating chamber containing a releasing piston released by steam or other fluid pressure within one coupling part, and a spring sustained locking bolt within the other part, substantially as described.

4. In an automatic hose or pipe coupling having matching jaws, the combination with an automatic locking device inclosed within one matching jaw, of means inclosed within the other matching jaw for releasing said locking device by steam or other pressure, substantially as described.

5. In an automatic hose or pipe coupling having matching jaws, a matching jaw having a locking device located therein and adapted to lock with the opposite jaw and a steam operated releasing device similarly located and adapted to release the locking device of the opposite jaw, substantially as described.

6. In an automatic hose or pipe coupling having matching jaws, a matching jaw having an automatic locking bolt located therein and adapted to be depressed by and locked into the opposite jaw, a spring adapted to engage with, depress and lock the bolt on the opposite jaw, and a steam operated releasing device similarly located within the jaw and adapted to release the locking bolt of the opposite jaw, substantially as described.

7. In an automatic hose or pipe coupling, having two coupler heads, the combination with the coupler head having parts constructed to match with the twin coupler and inclosed pipe communication therethrough, and an inclosed automatic locking device, of means on the other coupler head to release the locking device by steam or other fluid pressure.

8. The combination with an automatic hose or pipe coupling adapted to couple a series of pipes and having an uncoupling device actuated by steam or fluid pressure, of a valve having suitable hose connections with the coupler pipes and the uncoupling device, said valve being adapted to close the coupling pipes when it opens the uncoupling pipe, and vice versa, substantially as described.

9. In an automatic hose or pipe coupling, the combination with a coupler head having a jaw and shoulder, with inclosed pipe communication therethrough, adapted to match with the twin coupler head, of an automatic inclosed locking device released by steam or fluid pressure and connected with an inclosed pipe inclosed within said jaw and adapted to lock with said twin coupler jaw, substantially as described.

10. In an automatic hose or pipe coupling, the combination with a coupler head having a jaw and a shoulder with inclosed pipe communication therethrough, adapted to match with its twin coupler head, of an automatic locking device located within said jaw and adapted to, lock with said twin coupler jaw, a steam pressure operated unlocking device similarly located for releasing the locking device on said twin coupler jaw, and suitable inclosed pipe communication therewith, substantially as described.

11. In an automatic hose or pipe coupling having twin coupler heads, the combination with the coupler head A having the shoulder A′ and the jaw $A^3$ provided with the passages B, the bolt D located in the transverse passage C of the jaw, its spring E located in an enlargement in said chamber between the piston *d* of the bolt and the end of the chamber, of the twin coupler head $A^3$ having the matching jaw and shoulder provided with similar passages, a recess in the jaw to engage with the bolt D, the slotted guide $A^2$ and the locking spring F lying in the path of the bolt D and adapted to ride over and lock the same, substantially as described.

12. In an automatic pipe or hose coupling having twin coupler heads, the combination with the coupler head A having the shoulder A′ and the jaw $A^3$ provided with the passages B, the locking bolt D located in the transverse passage C of the jaw, its spring E located in an enlargement in said chamber between the piston head *d* and the end of the chamber, of the twin coupler head having the matching jaw and shoulder provided with similar passages, the unlocking piston H and spindle A located in the transverse chamber G in the jaw on the same axial line with the locking bolt, the slotted guide $A^2$, the locking spring F lying in the path of the bolt and adapted to ride over and lock it and the pipe connection I through said coupler heads with said unlocking piston H, substantially as described.

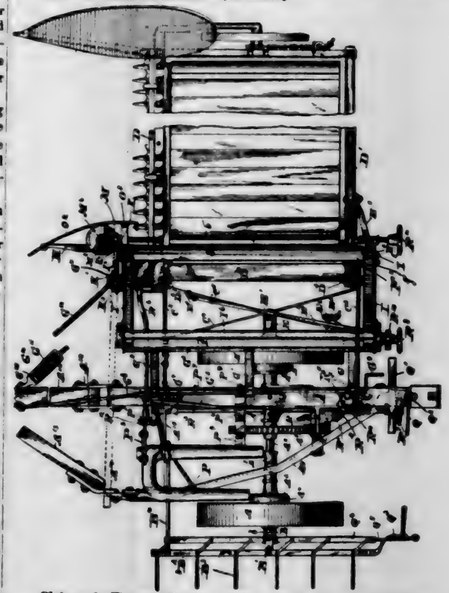
13. The combination with a hose or pipe coupling having matching twin coupler heads, of the coupler head A having the shoulder A′ and the jaw $A^3$ provided with the passages B, the locking bolt D located in the transverse passage C of the jaw, its spring E located in the enlargement of the passage C as described, the unlocking piston H and the spindle A located in the transverse chamber G in the jaw, the slotted guide $A^2$, the locking spring F lying in said slot, the pipe connection I with said unlocking piston H, and the top and bottom guides $A^4$, substantially as described.

14. The combination with a hose or pipe coupling having matching twin coupler heads, of the coupler head A having the shoulder A′ and the jaw $A^3$ provided with the passages B, the locking bolt D located in the transverse passage C in the jaw, its spring E located in the enlargement of the passage C as described, the unlocking piston H and the spindle A located in the transverse passage G in the jaw, the pipe connection I with said unlocking piston H, the slotted guide $A^2$, the locking spring F lying in said slot, the top and bottom guides $A^4$, the valve case K having the entrance and exit ports $B'$ $B^2$ $I'$ $I^2$, its spindle K′ having the ports $b^3$ $i^3$ as described, the cock J, suitable flexible pipe connection between the exit ports and the coupler head tubes, and means to operate the valve, substantially as described.

15. The combination with an automatic hose coupler, of the flexible shank having the pivoted bar N the link O hinged thereto and adapted to swing in one direction, the arm P having the spindle *p* sliding longitudinally in the tubular end *o′* of the link O and secured in place by the bolt Q through the slots $o^1$ $o^2$ and the slot *p′* in the spindle, the spring R located between the end of the link O and the shoulder of the arm P, the hose or pipe coupler head A hinged to said arm P and adapted to swing in the other direction, and the flat springs *o o r r*, on each side of said hinges, substantially as described.

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**503,283. SELF-BINDING HARVESTER.** PAUL HARMS, Chicago, Ill., assignor to the William Deering & Company, same place. Filed Jan. 16, 1890. Serial No. 337,065. (No model.)



*Claim.*—1. The combination of the axle, the two ground-wheels A A′, the main-frame sustained thereby, the grain-platform at the side of the wheel A′, the coupling-frame consisting of the bars $C^3$ and $C^5$, relatively fixed and extending in front and in rear of the wheel A′, the lever $E^3$, sustained by a horizontal fulcrum on the end of the axle, the link $E^5$, connected to one end of said lever and to the front end of the coupling-frame, the chain connected to the opposite end of the coupling-frame and means for connecting said chain at different points in its length to the free end of the lever.

2. The combination of the main frame, the grain-platform coupled thereto to fold upward, the reel, the reel-post, sustaining the same and pivoted at its lower end on the grain receiving platform to swing forward and backward, the brace O, pivoted at its lower end in advance of the reel-post, and adjustably connected thereto at its upper end and the elevator frame in rear of the reel-post: whereby the latter may be first thrown forward to carry the adjusting lever clear of the elevator-frame and then folded down bodily as the platform is raised.

3. The reel post K, having the horizontal pivot N, the reel supporting bracket N′ mounted thereon, the quadrant $N^3$ also secured thereto, the lever $N^2$ pivoted to the said quadrant, and connected to the reel-supporting bracket the adjustable brace O, and a latch, located upon the said quadrant, and adapted to lock the brace O thereto, whereby fore and aft and also vertical adjustments are produced, all combined substantially as described.



4. The combination of the axle, the ground-wheels, the main-frame, the platform hinged to fold upward, the bar H, extending in a fore and aft direction at the inner end of the grain platform and having its forward end extended beyond the same, the finger-bar and shoe mounted on said bar H, the reel-post pivoted at its lower end on the shoe, and the reel brace O, having its lower end pivoted to the forward end of the bar H, and its upper end adjustably connected to the reel-post.

5. The combination of the reel spider with the series of reel arms pivoted thereto in pairs and so arranged that the inner end of one of the arms of each pair engages its companion in such manner as to hold it against the spider.

6. The combination with the reel spider provided with a series of slots, of the arms L L′ arranged in pairs and pivoted in said slots, the arm L′ which supports the outer part of the fan, arranged to be engaged by the arm L, which supports the inner end of the fan and to bind said arm tightly against the spider.

7. The combination of the platform pivotally connected to the coupling frame, the reel pivoted to the said platform, and adapted to be folded therewith, and a locking device adapted to engage the reel post, and thereby lock the platform in an elevated position, substantially as described.

8. The combination of the coupling frame, the platform pivotally connected thereto, the reel post mounted upon the said platform and adapted to be folded over upon the tongue, in combination with the tongue brace $G^3$, serving as a locking mechanism, to engage the reel-post and hold it and the platform in the folded position, substantially as described.

9. The combination of the main platform, having the canvas slide J, the said platform pivotally connected to the coupling frames, and also pivotally connected to the elevator frames carrying the roller 3, the said canvas slide J being cut away so as to permit the platform to be folded to a high position, substantially as described.

10. The main axle, the sheaf carrier finger supporting bar supported thereon, and the main frame also supported upon the main axle, and having the outreaching bar $B^4$ connected to the said finger supporting bar, all combined substantially as described.

11. The combination of the main frame, the coupling frame and the platform, the latter adapted to be raised or lowered to vary the height of cut, the tongue pivoted to the said main frame, and the elastically extensible brace $G^{12}$ connected to the said platform, and to the tongue whereby the variation in the distance from the point of the attachment of the brace to the tongue and the point of pivotal attachment to the platform resulting from a vertical adjustment of the latter is compensated for, substantially as described.

12. The combination of the ground-wheels, the axle, the main-frame mounted to rock thereon, the tongue pivoted to the forward portion of the main-frame, and the divided brace connected at its ends respectively to the tongue and the main-frame, and extensible longitudinally, and the spring connected to the two portions of the brace and tending to resist the longitudinal extension of the same.

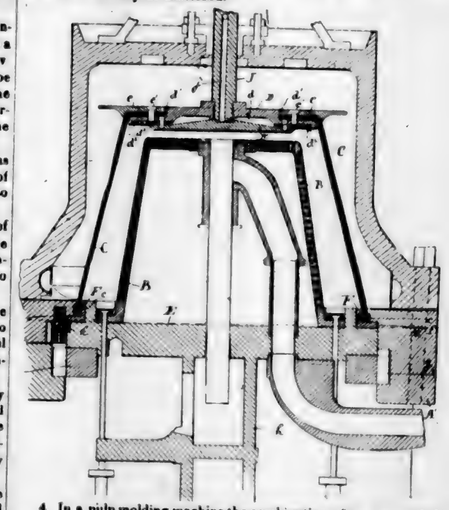
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**503,284. MACHINE FOR FORMING HOLLOW PULP ARTICLES.** FRANK E. KEYES, Lockport, N. Y., assignor to the United Indurated Fibre Company of New Jersey, same place. Filed Apr. 20, 1893. Serial No. 471,078. (No model.)

*Claim.*—1. In a machine for forming pails or other articles of pulp, an elastic diaphragm, a head for securing the upper edge of the same, composed of an upper and an under plate secured together face to face with a space or chamber between them, said head having on its under side a drainage surface connected by ducts with the space between said plates, the upper edge of the diaphragm extending up over said upper plate and a plate for securing it in place, in combination substantially as described.

2. In a machine for forming pails or other like articles of pulp, an elastic diaphragm, a head for securing the upper edge of the same, composed of an upper and an under plate secured together face to face with a space or chamber between them, said head having on its under side a drainage surface connected by ducts with the space between said plates, the top of the upper plate being provided with a recess at its outer edge within which recess the upper edge of the diaphragm fits and a plate for securing it in place, in combination substantially as described.

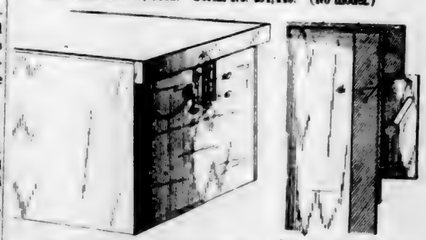
3. In a pulp molding machine the combination of an open ended dome or case, a male die or former fitting within said dome or case, a movable base to which said former is secured fitting the open end or base of said dome, an annular two sided recess extending around the inner surface of said dome adjacent to its open end, an elastic diaphragm between said former and said dome the lower end of said diaphragm fitting said recess, a flanged ring for holding said diaphragm in said recess and means for removably securing said ring to said dome, substantially as described.



4. In a pulp molding machine the combination of an open-ended dome or case, a male die or former fitting within said dome or case, a movable base to which said former is secured fitting the open end or base of said dome, an annular two-sided recess extending around the inner surface of said dome adjacent to its open end, an elastic diaphragm between said former and said dome the lower end of said diaphragm fitting said recess, a flanged ring for holding said diaphragm in said recess, and screws in the lower end of said dome and adjacent to said ring for holding the same in place, the flange of said ring impinging on the inner edge of the head of each of said screws, one side of said head being cut away to allow the removal of said ring when the screw is turned to the proper position, substantially as described.

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**503,285. BOX-FASTENER.** WILLIAM H. LOWRY, Mountain Grove, Mo. Filed Nov. 9, 1892. Serial No. 451,449. (No model.)



*Claim.*—1. A fastener comprising a hasp provided at its lower end with an outwardly extending lug, oppositely disposed parallel plates adapted to receive the hasp between them and provided with slots, and a key having a flange and adapted to be inserted in the slots and to be turned to bring its flange in engagement with the lug of the hasp, substantially as described.

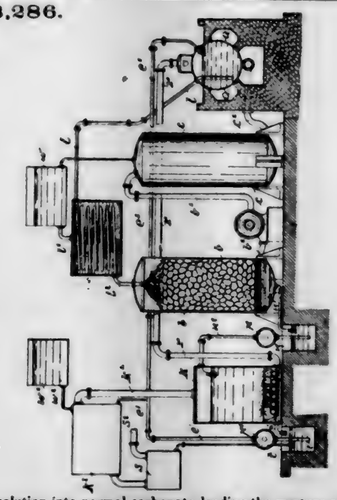
2. A fastener comprising a hasp provided at its lower end with an outwardly extending lug, opposite parallel side plates adapted to receive the hasp between them, and provided with inverted inclined key hole slots, and a key having a longitudinal flange provided with recesses adapted to receive the side plates whereby the key may be turned to bring its flange in engagement with the lug of the hasp, substantially as described.

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**503,286. PROCESS OF MAKING CARBONIC ACID.** EDGARD LUBMANN, Andernach, Germany. Filed July 11, 1891. Serial No. 399,251. (No specimens.)

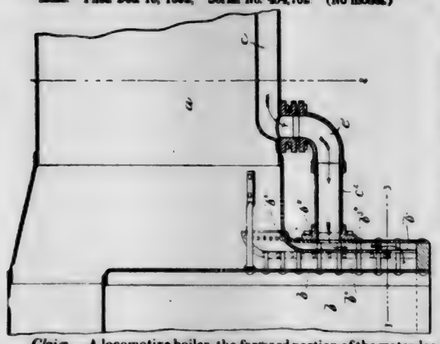
*Claim.*—The method of producing carbonic acid consisting in boiling a solution of alkaline carbonate and bicarbonate, thereby partly evaporating the solution, expelling carbonic acid, and convert-

503,286.



ing the solution into normal carbonate, leading the mixture of steam and carbonic acid to another vessel containing a solution of an alkaline carbonate saturated with carbonic acid, and thence through a condenser, from which the carbonic acid is conducted into a gasometer, then cooling the solution of normal carbonate obtained and intimately mixing it with the products of combustion until saturated with carbonic acid, as described.

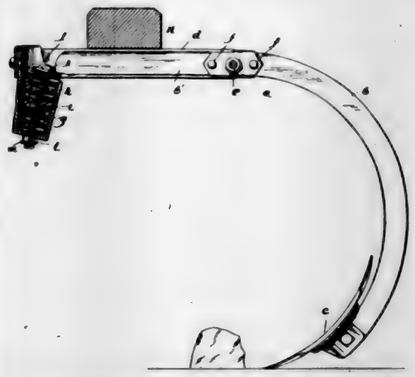
503,287. LOCOMOTIVE-BOILER. WILLIAM B. MACK, Boston, Mass. Filed Dec. 10, 1892. Serial No. 454,702. (No model.)



*Claim.*—A locomotive boiler, the forward portion of the water-leg of which is subdivided into an outer and an inner vertical compartment by a vertical partition, extending to the bottom of the water-leg, and having openings $b^4$ $b^4$ at its opposite edges and another opening $b^5$ at its central portion, all arranged to distribute the water flowing through the outer compartment, the outer openings causing two streams of said water to enter the lower portion of the inner compartment at points coinciding with the side portions of the water-leg, while the central opening causes another stream to enter the lower portion of the inner compartment at its center; combined with a passage or conduit, extending along the bottom of the boiler, and communicating at one end with the forward lower portion of the boiler, and at its other end with the outer compartment, said outer compartment constituting a water distributing continuation of the conduit, whereby water conducted backwardly by the conduit is distributed at the bottom of the water leg and caused to flow through the side portions as well as through the forward portion of the water-leg; as set forth.

503,288. SPRING-TOOTH FOR CULTIVATORS. GILPIN MOORE, Moline, Ill., assignor to the Deere & Company, same place. Filed June 10, 1892. Serial No. 436,259. (No model.)

*Claim.*—1. The combination with a pivoted tooth shank, of a spring normally acting upon said shank to hold it an operative position and to impart to it a tremulous motion when traversing the soil, said spring being adapted to be thrown out of operation under extraordinary backward pressure upon said shank, substantially as described.



2. The combination with a pivoted tooth shank, of a stop acting normally to hold said shank in operative position and to be thrown out of operation to permit said shank to swing under extraordinary backward pressure thereupon, said shank and stop being adapted to return by the action of gravity into engagement with each other to bring said shank to its operative position after the pressure is removed, substantially as described.

3. The combination with a yoke or support, of a tooth shank *b* pivoted to the yoke or support and having the extension *b'* in front of its pivot, and a spring trip located beneath the front end of the said extension for causing a tremulous motion of the tooth shank and releasing the forward extension thereof under extraordinary back pressure on said tooth shank, substantially as described.

4. The combination with a pivoted tooth shank, of a spring trip located under the forward end of said shank in front of the pivot thereof for holding the shank normally in operative position, said spring trip being moved out of engagement with the shank by extraordinary back pressure on said shank and the latter being returned by gravity to its normal position when the back pressure is removed, substantially as described.

5. The combination with a yoke and a rigid tooth shank pivotally mounted therein, and adapted to swing in a vertical plane, said shank having an extension *b'*, of a spring stop under said extension for holding the tooth in operative position under normal pressure, said stop being adapted to be disengaged from said extension under extraordinary pressure to permit the tooth to swing freely, substantially as described.

6. The combination with the swinging shank *b*, having extension *b'*, of devices for supporting said shank, and a spring *i* under the end of the extension *b'*, the upper end of said spring being inclined toward said extension, and being adapted to be pressed away therefrom, substantially as and for the purpose specified.

7. The combination with the swinging shank *b*, having extension *b'*, of the yoke *d*, pocket *g*, having an inclined bottom and sides, slot *h* in said pocket, and spring *i*, substantially as and for the purpose specified.

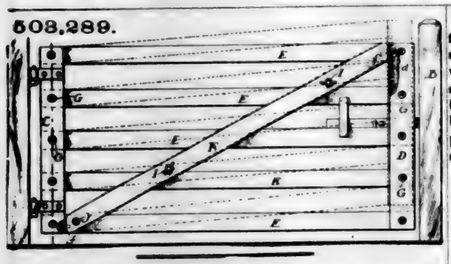
8. The combination with the swinging shank *b*, having extension *b'*, of the yoke *d*, pocket *g*, having an inclined bottom and sides, slot *h* in said pocket, spring *i*, plate *j*, rod *k* and key *m*, substantially as and for the purpose specified.

503,289. FARM-GATE. ALEXANDER M. MURRAY, Chicago, Ill. Filed Oct. 30, 1891. Serial No. 410,338. (No model.)

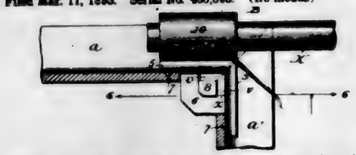
*Claim.*—In a gate, the combination of a pair of uprights C and D, each consisting of two pieces of timber, bolts G and nuts H by which said timbers are held together, said nuts being countersunk, a number of bars E having their ends inserted between the timbers of the uprights and perforated for the passage of the bolts G, a diagonal brace F consisting of two pieces of timber placed against opposite sides of the bars E, clamp-screws I by which said timbers are held in place, the bolt J upon which said brace is pivoted at its lower end, the spur *f* on the inner end of said brace, engaging the upright C, the spur *f'* on the outer end of said brace, and the series of holes *d* formed in the outer upright D and adapted to be engaged by the spur *f'*, substantially as set forth.



503,289.



503,290. FOUNDRY-FLASK. PETER R. MCGREGOR, Hillburn, N. Y. Filed Mar. 11, 1893. Serial No. 465,593. (No model.)



*Claim.*—1. The combination with the meeting sides of a frame having corresponding recesses *v* of a corner piece having two plates at right angles to each other, and lugs extending between the plates and recessed to receive a key, substantially as set forth.

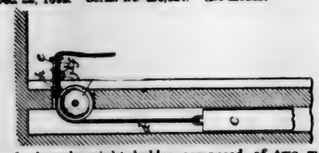
2. The combination with the separable sides of a frame having each one or more notches in the end, of a corner piece consisting of two plates at right angles to each other with one or more lugs extending between the plates, and having recesses to receive a key, and projections 7 on the inner faces of the corner piece, substantially as and for the purpose set forth.

3. The combination with the meeting sides of a frame having each one or more recesses, of a corner piece having two plates at right angles to each other, with one or more lugs between them recessed to receive a key, and a key consisting of two sections 8, 9 with beveled meeting ends, substantially as set forth.

4. The combination with the meeting sides of a frame having notches or recesses, of a corner piece consisting of plates at right angles to each other, with lugs adapted to the openings formed by the recesses, the said corner pieces having handles connected therewith, and keys for securing the corner pieces, substantially as set forth.

5. The combination of the meeting sides of a frame having notches, and corner pieces having lugs and openings to receive keys, and socketed projections to receive handles, substantially as set forth.

503,291. SASH-WEIGHT HOLDER. JOHN NEIL, New York, N. Y. Filed Dec. 22, 1892. Serial No. 456,027. (No model.)



*Claim.*—1. A sash-weight holder composed of two members adapted to grasp the sash-cord and having a tapered end to be inserted between the sash-cord pulley and the frame, substantially as shown and described.

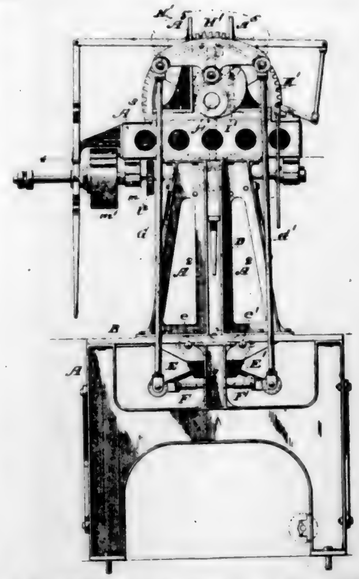
2. A sash-weight holder composed of two members adapted to grasp the sash-cord and hinged together at one edge, each of said members having one end formed with a tapered enlargement, substantially as shown and described.

3. A sash-weight holder composed of two members adapted to grasp the sash-cord and hinged together at one edge and a latch upon one member adapted to engage the other member, substantially as shown and described.

4. A sash-weight holder composed of two members adapted to grasp the sash-cord and hinged together at one edge, an overweighted looped latch carried by one member, and a hook carried by the other member to be engaged by said latch, substantially as shown and described.

503,292. PLATE-METAL-FOLDING MACHINE. WILLIAM F. HEDDINGHAUS and CHARLES A. WITTEMOEL, St. Louis, Mo., assignors to the St. Louis Stamping Company, same place. Filed July 21, 1892. Serial No. 440,736. (No model.)

*Claim.*—1. A plate metal folding machine having a table, a former, and a tapered bearing beneath said table, said table having an opening for the plate to be folded therethrough, said former being wedge-shaped, and having a reciprocating movement into and out of said opening, and said tapered bearing consisting of jaws adjusted to be moved apart from or to be closed upon each other, and when brought sufficiently close to each other providing an opening for the plate when folded to be discharged therethrough, substantially as described.



2. In a plate metal folding machine, a pair of jaws said jaws being relatively shaped and arranged to form a tapered recess to receive a partially folded plate, and being adjustable toward and from each other, by means of the connecting rods, cams, yoke and rollers, as described for the purpose of compressing said plate and discharging it thereafter, substantially as described.

3. The combination of the former, the table beneath it having an opening, the jaws E, E', having respectively bearing faces $e^3$, $e^3$, the rods G, G', connected with said jaws by links, the yoke at the upper part of the machine connecting with said rods, and the rollers, cams, shafts and gears, all operated as and for the purposes set forth.

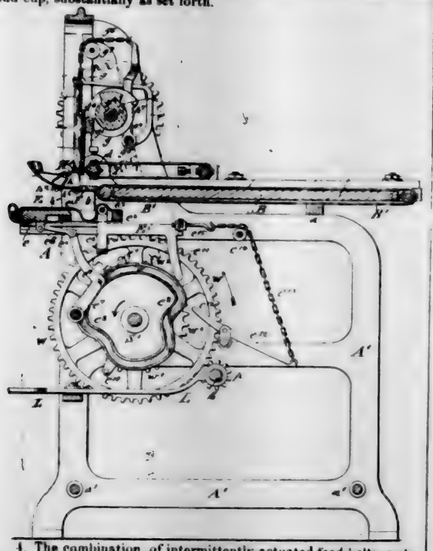
4. The combination of the former, the table having an opening, the adjustable jaws beneath the opening, the rods G, G', and the links connecting the rods and jaws, the yokes connecting with the rods, and the cams, at the upper part of the machine, the shafts J, J', operating said cams, and the gears, the wrist pin, the rods $d^2$, and the cross head *d*, connected to the former, the several parts operating in the manner and for the purposes set forth.

503,293. CIGAR-BUNCHING MACHINE. EMANUEL PISCO, New York, N. Y., assignor of five-eighths to Joseph Seidenberg and Francis A. Schleiff, Jr., same place. Filed July 7, 1893. Serial No. 479,668. (No model.)

*Claim.*—1. The combination, with intermittently actuated feed-belts, of a stationary table or bridge in front of and on a level with the lower feed belt; a vertically reciprocating gate having a serrated lower edge above the stationary table and an intermittently oscillating receiving cup located in front of the table and provided with a pivoted and spring-actuated gripping-jaw, substantially as set forth.

2. The combination, of intermittently actuated feed-belts arranged one above the other, of a stationary table in front of and on a level with the lower feed-belt, a vertically reciprocating gate above the said table, said gate having a serrated lower edge, a receiving cup arranged in front of said table, a spring-actuated gripping-jaw pivoted to the receiving-cup, means for pressing said gripping-jaw on the tobacco projecting beyond the gate, and means for tilting the cup after the gripping-jaw is moved in downward direction, so as to separate or tear off a quantity of tobacco necessary for a filler, substantially as set forth.

3. The combination, with intermittently-actuated feed-belts, a stationary table or bridge in front of and on a level with the lower feed-belt, a vertically-guided gate having a serrated lower edge, means for imparting reciprocating motion to said gate, a receiving-cup pivoted in front of the stationary table or bridge and provided with a fixed lip or abutment at some distance from its edge, a spring-actuated gripping-jaw pivoted to the receiving-cup above said lip, and a rolling mechanism arranged below the receiving cup for delivering thereon the tobacco torn off by the joint action of the gripping jaw and cup, substantially as set forth.



4. The combination, of intermittently-actuated feed-belts, a stationary table or bridge in front of the lower feed-belt, a vertically-guided gate having a serrated lower edge, means for imparting reciprocating motion to said gate, a pivoted receiving cup in front of the stationary table provided with a lip or abutment at some distance from its edge, a spring-actuated gripping-jaw pivoted to the receiving-cup, means for lowering the gripping jaw and pressing the same on the tobacco projecting beyond the gate and table, means for tilting the receiving cup so as to separate or tear off the projecting quantity of tobacco and a rolling mechanism below the tilting cup so as to form a bunch after the quantity of tobacco necessary for a filler is dropped into the pocket or bight of the apron of said rolling mechanism, substantially as set forth.

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**503,294.** FASTENER FOR THE MEETING-RAILS OF SASHES. ADELBERT RAYMOND and FRANK S. NORTH, Detroit, Mich. Filed Nov. 7, 1892. Serial No. 451,250. (No model.)



*Claim.*—1. In a sash fastener, the combination of the upper sash having a key plate, a detachable key having means for securing it in said plate, and a stem extending over the lower sash, a wing on said stem having a curved bearing and a wearing plate on the meeting rail of the lower sash against which said wing is adapted to bear, substantially as described.

2. In a sash fastener, the combination of the upper sash having a vertical series of key plates, a detachable key having means for securing it in said plate, and a stem extending over the lower sash, a wing on said stem having a curved bearing, a wearing plate on the meeting rail of the lower sash, against which the curved bearing is adapted to be turned and a cam shaped lug on the wearing plate against which the side of the wing bears to draw the meeting rails together, substantially as described.

3. In a sash fastener, the combination of the upper sash having vertical series of key plates, a key adapted to engage and be detachably secured therein, and a stem extending free into the path of the lower sash, substantially as described.

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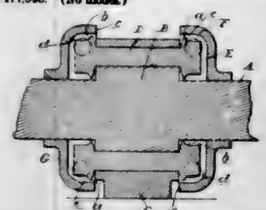
**503,295.** HEXAOXYANTHRAQUINONE AND PROCESS OF MAKING IT. ROBERT R. SCHMIDT, Elberfeld, Germany, assignor to the Farbenfabriken, vormals Fr. Bayer & Co., same place. Filed Nov. 18, 1891. Serial No. 412,304. (Specimens.)

*Claim.*—1. The process of producing a new anthraquinone derivative, hexaoxyanthraquinone, by oxidizing with a body containing $SO_3$ as described: alizarin, quinizarin, anthrachrysone or symmetrical dihydroxybenzoic acid, alizarin bordeaux, purpurin, purpuroxanthin or purpurin bordeaux, which latter product results when purpurin or purpuroxanthin is treated with fuming sulfuric acid, substantially as described.

2. The new hexaoxyanthraquinone, which crystallises out of nitrobenzene or glacial acetic acid in dark needles of metallic luster, is insoluble in water, and dissolves in sodium carbonate with bluish-red color, and in soda-lye with violet color, which latter solution when exposed to the air at first turns blue and dark flakes gradually separate; and which hexaoxyanthraquinone dissolves in ammonia with bluish-red color, the resulting liquid slowly assuming a violet color when it is allowed to stand in the air; and which hexaoxyanthraquinone is dissolved by pure concentrated sulfuric acid with bluish-violet color; which solution shows two characteristic absorption bands in the spectroscope and turns yellow when mixed with water, from which yellowish brown flakes are finally separated; the said hexaoxyanthraquinone dyes wool mordanted with alumina, violet, and mordanted with chromium salts, blue shades.

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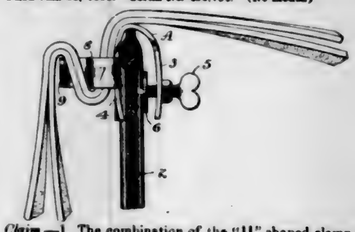
**503,296.** ANTIFRICTION JOURNAL-BEARING. FRANCIS G. SEMMEL, Detroit, Mich., assignor of one-half to Augustus Torrey, Adolph Barthel, and James Whittemore, same place. Filed Apr. 24, 1893. Serial No. 471,593. (No model.)



*Claim.*—In a roller bearing, the combination of a shaft having an enlarged journal, a casing or box forming a concentric bearing thereto, rollers interposed between said journal and bearing the enlarged heads E on said rollers outside of the journal and bearing, and provided at their inner ends only with the peripheral concave flanges *a* having convex inner sides *b*, the balls F interposed between the enlarged roller heads, and the cap G secured to the shaft and provided with concave flanges *c* confining the balls in position against the outer faces of the enlarged roller heads and forming the ball race, substantially as described.

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**503,297.** REIN-HOLDER. VACHON L. TALBOT, St. Paul, Minn. Filed Jan. 26, 1893. Serial No. 459,781. (No model.)



*Claim.*—1. The combination of the "U" shaped clamp adapted to be fitted over the top of a dash board, the set screw threaded in one member thereof, and the "S" shaped hook rigidly attached to the other member thereof, substantially as described.

2. The combination of the "U" shaped clamp, the set screw for securing the same to a dash board and the hook consisting of a double or reverse bend rigidly attached to said clamp and lying in a horizontal plane, substantially as described.

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**503,298.** VETERINARY TOOTH-CUTTER. GEORGE W. TEUFEL, Philadelphia, Pa. Filed May 22, 1893. Serial No. 475,008. (No model.)

*Claim.*—1. The combination, in a veterinary cutter, of a rod provided with a flaring skeleton seat or holder having a double beveled edge blade and an operating device therefor, substantially as and for the purposes set forth.



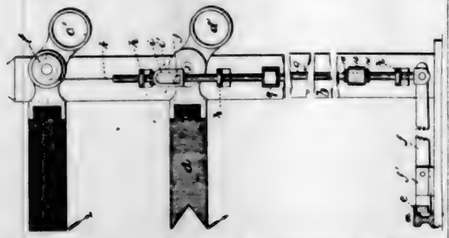
2. The combination, in a veterinary cutter, of a rod provided with a skeleton seat or holder having a detachable blade or cutter, a barrel applied to said rod and having an anvil mounted therein, and a plunger provided with a bumper adapted to engage with the anvil of said barrel, substantially as and for the purposes set forth.

3. The combination, in a veterinary cutter, of a rod provided with a slotted holder having a beveled edge blade detachably connected therewith, a barrel provided with an anvil and a detachable back-stop and a plunger afforded a range of movement in said barrel, substantially as and for the purposes set forth.



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**503,299.** RAILWAY-SIGNAL. JAMES WAYLAND, Newark, N. J. Filed June 26, 1891. Renewed June 23, 1893. Serial No. 478,660. (No model.)



*Claim.*—1. In a railway signal, the combination of a home and cautionary semaphore arranged on a standard or post, a flexible connection, *k*, arranged therebetween, and connections with the railway governing the said semaphores, substantially as set forth.

2. In a railway signal, the combination of the home and cautionary weighted semaphores joined by a flexible connection and connected with the railway whereby the said weighted semaphores are controlled by the passing train substantially as set forth.

3. In a railway signal, the combination with a post, *b*, and semaphores *c*, *d*, pivotally movable thereon, a lever *f*, a rod, *g*, movable upward thereby and connecting with said semaphores, a pneumatic bell controlled in its initial operation by said rod and in its return operation adapted to release a catch, and said catch adapted to hold the semaphore, *d*, in a position of danger, a flexible connection *k* joining the said rod *g* and semaphore *c*, all said parts being arranged and adapted to operate substantially as and for the purposes set forth.

4. In a railway signal, the combination with a signal-post and home and cautionary semaphores pivoted thereon, the home signal having a weight heavier than the blade and the cautionary semaphore having a blade heavier than the weight and also having a projection or pin *j*, of a rod *g* adapted to be operated at the passing of a railway train and provided with a slot, *i*, to receive said projection and having a flexible connection with the home semaphore, substantially as and for the purposes set forth.

5. In combination with a post, *b*, a "home" semaphore signal and a "cautionary" semaphore signal, the first being movable to a position indicative of safety by the gravity of a weight 13, and the latter by its own weight, a catch, 15, and a rod or wire, 16, extending away from said post and controlling the operation of the "home" semaphore, a catch, 4, and a pneumatic bell controlling said catch 4, and the cautionary semaphore, all said parts being arranged and adapted to operate substantially as and for the purposes set forth.

6. In combination, lever *f*, post *b* rod *g*, flexible connection *k*, weighted semaphores *c* and *d*, yoke *i'*, arm *g*, pneumatic trough containing quicksilver, bell *m*, rod *r* having shoulders, *s*, and projection 10, catch-lever *v*, spring 5, crank, *w*, of semaphore *d*, bearing *u*, adapted to be engaged by said catch lever, all said parts being arranged and adapted to operate substantially as and for the purposes set forth.

7. In combination, in a railway appliance, a pneumatic trough containing mercury, a bell in said mercury and having an opening, *o*, to allow the slow exit of air, and connecting means operable by the passing train for throwing the said bell entirely free of the mercury whereby the said bell is charged with air, and a catch connected with said bell for controlling the railway appliance substantially as set forth.

8. In combination in a railway appliance, a trough *n*, bell *m*, opening *o*, rod *r*, and means for raising the same, bearing, *u*, connected with the portion to be held temporarily, catch 4, on lever, *v*, and projection 9, all arranged and adapted to operate substantially as and for the purposes set forth.

9. In a railway signal, in combination with the semaphore signals and rod controlling the same, a catch 13, a cooperating catch, 15, having tube section 17, a cooperating tube section, 18, arranged on a suitable fixture, a spring, 21, and rod 20, all arranged and adapted to operate substantially as and for the purposes set forth.

10. In combination with the semaphore signal and rod controlling the same, a catch, 15, having section, 17, a slotted tube section, 18, serving as a guide for the catch, and a spring arranged within said tube section, substantially as set forth.

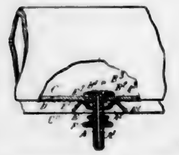
11. In a railway signal, the combination with the home semaphore having a blade lighter than the weight thereof and having a wheel or drum at its pivotal center, a cautionary semaphore having a weight lighter than the blade thereof and a flexible connection with the said home semaphore, and means controlling the operation of said semaphores whereby they are operated at the passing of a train, substantially as set forth.

12. In combination with two weighted semaphores one of which has its blade heavier than the weight and the other having its weight heavier than its blade, a vertical rod having an elongated slot or opening, and having a flexible connection with the latter of said weighted semaphores a projection from the other of said semaphores working in said opening, the said rod being free to drop with one of said signals without affecting the other, substantially as set forth.

13. In a signal, the combination of the post *b*, rod *g*, and means for operating the same at the passing of the train, a cautionary signal having a blade heavier than the weight thereof and having a projection *j*, loop *i'* flexible connection *k*, home semaphore *c* having the weight *c'* heavier than the blade thereof and having a pivotal drum on which the said pivotal connection is secured, all said parts being arranged and adapted to operate substantially as and for the purposes set forth.

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**503,300.** VALVE FOR PNEUMATIC TIRES. CHARLES K. WELCH, Coventry, England, assignor to the Pneumatic Tyre and Booth's Cycle Agency, Limited, Dublin, Irpland. Filed May 2, 1893. Serial No. 472,808. (No model.)



*Claim.*—1. The combination, with a receptacle for containing fluid under pressure, of a valve the flanged head of which is placed inside the said receptacle and the stem of which projects through the wall thereof, the said stem being provided with an axial hole communicating with the interior of the receptacle by an orifice in that face of the head which comes in contact with the wall of the receptacle, and means for forcing the said wall against the said face of the head, substantially as, and for the purposes, set forth.

2. The combination, with the air tube of a pneumatic tire, of a valve constructed with a flanged head placed inside said air tube and a stem projecting through the wall of the air tube, said stem being provided with an axial hole which communicates with the interior of the air tube by an orifice in that face of the head which comes in contact with the wall of the air tube, and means for forcing the said wall of the air tube against the said face of the head, substantially as, and for the purposes, set forth.

3. The combination, with the air tube of a pneumatic tire, of a valve constructed with a flanged head placed inside said air tube and a stem projecting through the wall of the air tube, said stem being provided with an axial hole which communicates with the interior of the air tube by an orifice in that face of the head which comes in contact with the wall of the air tube, and by a second orifice in another part of the head which orifice is covered with a piece of elastic material adapted to be deformed when air is pumped into the air tube and which constitutes a non-return valve, and means for forcing the under side of the head against the wall of the air tube, substantially as described.

4. The combination, with the air tube of a pneumatic tire, of a valve constructed with a flanged head having an orifice in that face which comes in contact with the wall of the air tube, and a washer adapted to be pressed against the air tube and thus force the wall of said air tube against the said face of the valve head, substantially as, and for the purposes, specified.

5. The combination of the rim of a wheel, the air tube of a pneumatic tire secured thereto, a valve constructed with a flanged head having an orifice in that face which comes in contact with the wall of

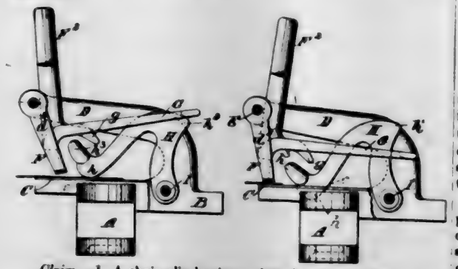
the air tube, a washer adapted to slide on the valve stem and a nut adapted to be screwed against the rim of the wheel and draw the valve head outward so as to clamp the wall of the air tube between the head of the valve and the washer on the stem, substantially as, and for the purposes, set forth.

6. The combination, of the rim of a wheel, the air tube of a pneumatic tire secured thereto, a valve constructed with a flanged head having an orifice in that face which comes in contact with the wall of the air tube, a washer adapted to slide on the valve stem, a nut adapted to be screwed against the rim of the wheel and draw the valve head outward so as to clamp the wall of the air tube between the head of the valve and the washer on the stem, and an arm secured to said nut and adapted to engage with a spoke of the wheel whereby the nut which operates the valve is prevented from slacking back when in use, as and for the purposes, specified.

## 503,301. CHAIN-CLIP FOR CLOTH-STRETCHING MACHINES.

ALFRED A. WHITLEY, Bury, England. Filed Feb. 17, 1893. Serial No. 462,771. (Model.) Patented in England Feb. 17, 1890, No. 2,529.

*Brief.*—The clip has a slotted lower jaw C fixed to a bracket B and a movable jaw F, pivoted on said bracket at E. Also pivoted to the bracket at I is a lever H provided with a tail-piece $A^2$, whose free end *A* rests on the cloth over the stationary jaw, the free end having attached thereto a lug $A^3$. Connected to the movable jaw is an arm G, having a slot adapted to pass over the lever H, and also having a projection *g* to prevent the lever H from turning too far on its pivot. The end of the arm G rests upon the tail-piece $A^2$ as long as the end *A* of the lever is upon the cloth, thus counterbalancing the weight of the lever.



*Claim.*—1. A chain clip having a slotted stationary jaw, a movable jaw, and a lever to rest on the edge of the fabric above the slot in the stationary jaw and support the movable jaw to hold it out of action as long as the lever rests on the fabric, the said movable jaw bearing on the said lever to counterbalance the weight of the lever on the fabric, but free to close on the stationary jaw when the fabric is withdrawn from the said lever, substantially as set forth.

2. A chain clip having a slotted stationary jaw and a movable jaw provided with an arm G, in combination with a lever having a free end *A* adapted to rest on the edge of the fabric above the slot in the stationary jaw, and provided with a tail $A^3$ with which the said arm G engages to counterbalance the weight of the free end *A*, the said tail $A^3$ maintaining the movable jaw out of action so long as the lever rests on the fabric, substantially as set forth.

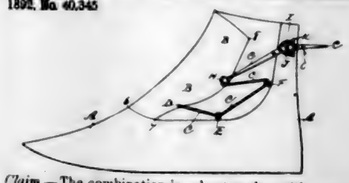
3. A chain clip having a slotted stationary jaw and a movable jaw provided with an arm G, in combination with a lever having a free end *A* adapted to rest on the edge of the fabric above the slot in the stationary jaw, the said lever being provided with a tail $A^3$ with which the said arm G engages to counterbalance the weight of the free end *A*, the said tail $A^3$ maintaining the movable jaw out of action so long as the said lever rests on the fabric, the said lever being also provided with a projection $A^2$ with which the said movable jaw engages, all substantially as and for the purposes set forth.

4. A chain clip having a slotted stationary jaw and a movable jaw provided with an arm G, in combination with a lever having a free end *A* adapted to rest on the edge of the fabric above the slot in the stationary jaw, the said lever being provided with a tail $A^3$ with which the said arm G engages to counterbalance the weight of the free end *A*, the said tail $A^3$ maintaining the movable jaw out of action so long as the said lever rests on the fabric, the said lever being also provided with a projection $A^2$ with which the movable jaw engages, and a projection *g* on the movable jaw to prevent the lever from turning too far on its pivot, all substantially as and for the purposes set forth.

5. In a clip or holder for use in machines for stretching and finishing woven fabrics, the combination of the lower slotted jaw C, the lever H with the lug or projection $A^3$ for the jaw F to act upon to raise the lever out of the slot *c*, in the jaw C, and the projection *g* on the arm G to prevent the lever from turning too far on its fulcrum, substantially as hereinbefore described.

## 503,302. BOOT OR SHOE.

GEORGE L. WILLIAMS, Galt, Canada, assignor of one-half to Alexander Hume, same place. Filed Apr. 10, 1893. Serial No. 469,704. (No model.) Patented in Canada Sept. 14, 1892, No. 40,345.



*Claim.*—The combination in a boot or shoe with outer side overlap and continuously attached tongue, of the lace attached to said overlap, the eyes attached to the upper as at E and F, the hook attached to overlap as at H, and the fastener with its projecting pin and partially detached bar, substantially as described and set forth.

## 503,303. CARVING-FORK GUARD.

EDWARD E. WOOD, Jr., Northampton, Mass. Filed July 21, 1892. Serial No. 440,774. (No model.)

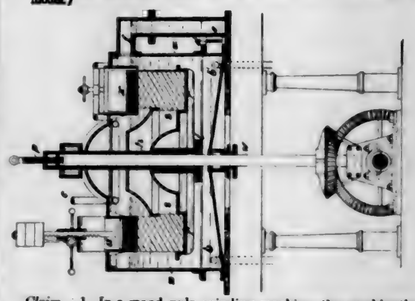


*Claim.*—1. In a carving fork, the combination with a shank, of a guard pivotally mounted thereon, and a bow spring, the guard having a recess, the upper end of which receives the spring snugly fitted therein so as to be stationarily mounted in the guard, but the lower end of the recess being enlarged to permit the vibration of the bow spring, the shank of the fork being indented or recessed to receive the free end of the spring, substantially as described.

2. In a carving fork, the combination, with a shank, of a guard pivotally mounted thereon, and a bow spring, the guard having a recess, the upper end of which is curved or crooked and receives the spring snugly fitted therein so as to be stationarily mounted in the guard, but the lower end of the recess being open on one side to permit the vibration of the bow spring, the shank of the fork being indented or recessed to receive the free end of the spring, substantially as described.

## 503,304. WOOD-PULP-GRINDING MACHINE.

FRIEDRICH ANDRÉ, Hildesheim, Germany. Filed Apr. 22, 1893. Serial No. 471,408. (No model.)



*Claim.*—1. In a wood pulp grinding machine, the combination, with a grinding-stone mounted to rotate in a horizontal plane, a compartment surrounding said grinding-stone, means for conducting water into the bottom of the compartment and drawing it off from the top, substantially as set forth.

2. In a wood pulp grinding machine, the combination, with a grinding-stone mounted to rotate in a horizontal plane, a compartment surrounding the stone, pressure-boxes and followers in the top of the compartment, an inlet for water at the bottom of the compartment, and an outlet for the water at the top of the compartment, substantially as set forth.

3. In a wood pulp-grinding machine, the combination, with a grinding stone mounted to rotate in a horizontal plane, a compartment surrounding the stone, pressure boxes and followers on the top of the compartment, and inlets and outlets for the water both at the top and bottom and a gate for controlling the bottom water outlet, substantially as set forth.



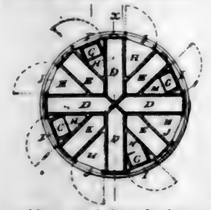
## 503,305. ORANGE DYE.

FRITZ BENDER, Mühlheim, Germany, assignor to A. Leonhardt & Co., same place. Filed Mar. 4, 1892. Serial No. 423,773. (Specimens.)

*Claim.*—As a new article of manufacture the basic orange coloring matter herein described derived from acridin, which dissolves in water or spirit giving orange colored solutions and which dissolves in concentrated sulfuric acid giving a yellowish solution with a green fluorescence, the said acid solution when diluted with water turning from red to orange and the watery solution being precipitated by the addition of caustic soda lye yielding yellow flakes of the free base of the coloring matter which dissolves in ether with a greenish fluorescence.

## 503,306. GLOVE-CABINET.

ALEXANDER BEVER, Spokane, Wash. Filed Oct. 5, 1892. Serial No. 447,936. (No model.)



*Claim.*—A glove cabinet, consisting of a base, a case having a rotary movement thereon, series of drawers at right angles to and meeting at the axis of the case, intermediate series of drawers located between the first mentioned series, and a series of drawers parallel with the axis and located between the first and second mentioned series, substantially as set forth.

## 503,307. MEAT-BROILER.

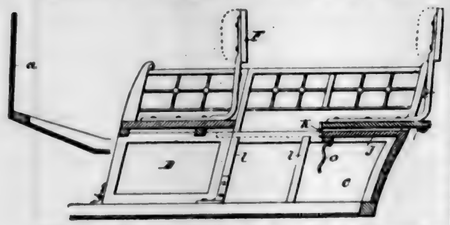
FRANCES M. BLANYER, Olema, Cal. Filed Aug. 23, 1892. Serial No. 443,907. (No model.)



*Claim.*—The herein described improved broiler consisting of a flat rectangular base of sheet metal with longitudinal slats extending longitudinally thereof and terminating inside of the opposite ends and turned up sides which are bent over in opposite directions to form guides, and a pair of independent slides entering said guides of the base from opposite ends and having their inner opposing ends provided with arms that overlap and which are located on opposite sides of curved recesses which unite to form a single central opening which is adapted to be increased or decreased in accordance with the adjustment of the slides, substantially as described.

## 503,308. TWO-SEATED VEHICLE.

CHRISTOPHER C. BRADLEY, Syracuse, N. Y. Filed May 2, 1893. Serial No. 472,705. (No model.)



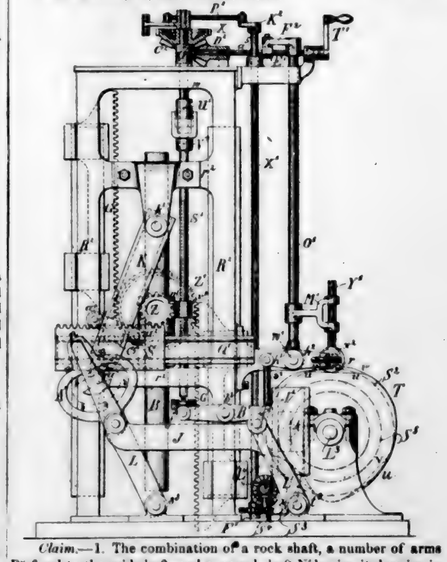
*Claim.*—1. The combination with the vehicle body having its side panels arranged in rear of the front seat and a deck panel covering the rear portion of the body, of a rear seat hinged at its front to the front of the deck panel to fold forwardly, and a front seat having side panels rigidly secured thereto and hinged at their fronts to the body to tilt forwardly, substantially as set forth.

2. The combination with the vehicle body having its side panels arranged in rear of the front seat and a deck panel covering the rear portion of the body, of a rear seat hinged at its front to the front of the deck panel to swing forwardly, and a front seat having side panels rigidly secured thereto and hinged at their fronts to the body, said front seat being arranged higher than said deck panel and overlapping with its rear portion the front portion of the rear seat when the latter is folded down, substantially as set forth.

3. The combination with the vehicle body, of a front seat hinged at its front to the body to tilt forwardly, a bracket or loop secured to the bottom of the body, and a depending hook attached to the tilting seat and engaging against said bracket and limiting the forward movement of the seat, substantially as set forth.

## 503,309. EMBROIDERING-MACHINE.

EDWARD BUSS, St. Gall, and ADOLPH SAURER, Arbon, Switzerland. Filed Nov. 24, 1891. Serial No. 412,997. (No model.) Patented in England Nov. 5, 1889, No. 17,583, and in Germany Sept. 17, 1890, No. 57,317.



*Claim.*—1. The combination of a rock shaft, a number of arms $P^x$ fixed to the said shaft, and a second shaft N' having its bearing in the said arms $P^x$, with arms $D^x$ carrying the catcher bars, and pivoted to the said arms $P^x$ and intermediate connections between the said arms $D^x$ and the said shaft N', all substantially as and for the purposes set forth.

2. The combination of a rock shaft provided with arms $P\,P^x$ fixed thereto, and a second shaft N' having its bearings in the said arms $P\,P^x$ and provided with spur wheels, with a link D' pivoted to the arm P, arms $D^x$ carrying the catcher bars, and pivoted to the said arms $P^x$ the said link D' and arms $D^x$ each provided with a rack segment gearing with the said spur-wheels on the shaft N', all substantially as and for the purposes set forth.

3. The combination of a rock shaft, an arm $P^x$ fixed thereto, a spur-wheel $p^x$ having the bearings for its shaft in the said arm $P^x$, with an arm $D^x$ carrying the catcher bar $G^2$, the said arm $D^x$ being pivoted to the said arm $P^x$ and provided with a rack segment $M^x$ gearing with the said spur-wheel, and a beam or bearer E provided with an opening for the passage of the said rack-segment, all substantially as and for the purposes set forth.

4. The combination of the thread catchers, a slotted lever K and connections between the lever K and the said thread catchers, with a lever L provided with cam surfaces to act upon the said lever K and impart thereto a vibratory motion with a dwell at each end, and a reciprocating bar J connected to the lever L and having a slotted cross-head J' an adjustable revolving crank *k* and a lever L to give a parallel ruler motion, all substantially as set forth.

5. The combination of the thread catchers, the slotted lever K provided with rollers $a$, $a'$ and $a^3$ and connections between the said lever K and the said thread catchers, with the reciprocating lever L having a head provided with a locking tooth adapted to engage between the rollers $a'$, $a^3$ the said head also provided with a cam groove 1, 2, 3, 4, 5 in which the roller $a$ works to give to the lever K a vibratory motion with a dwell at each end, substantially as and for the purpose set forth.

6. The combination of the thread catchers, the catcher drivi..

device and its controlling devices, with means for producing a clearing movement of the catchers, the said means consisting of a bell crank connection between the catchers and their controlling devices, a locking device to lock the said bell crank rigid with the controlling devices during the drawing of the threads and adapted to release it at the proper time, and devices for turning the bell crank lever when released independently of the controlling devices all substantially as set forth.

7. The combination, with the thread catchers, the catcher driving device and means for automatically shortening the "long movement" thereof in proportion to the gradual shortening of the thread, of a driving cam (T) and connections whereby the said catcher driving device is given an additional and gradually changing reciprocating motion as and for the purpose set forth.

8. The combination of the catcher driving device and means for automatically shortening the movement thereof in proportion to the gradual shortening of the thread, with a cam drum T whose surface presents gradually changing profiles from one end of the drum to the other end thereof, a touching device brought successively in contact with the said changing profiles in proportion to the said shortening movement of the said driving device and connections between the touching device and catcher driving device, all substantially as and for the purpose set forth.

9. The combination of the catchers, tension device and intermediate mechanism with a ratchet, a regulating pawl and a catch holding the said regulating pawl in engagement with the ratchet at the beginning of its effective movement and releasing it earlier or later in accordance with the consumption of thread as set forth.

10. The combination of the catchers, the tension device the shortening device and means such as rods Q and $Q^2$ which are alternately placed in and out of contact with the catch of the regulating pawl enabling that outstroke of the tension device which takes place under unvarying spring pressure to be utilized to produce the shortening of the long movement.

11. The combination of the catcher bars, the catcher driving device and the controlling devices for producing the long movement of the catcher bars, the shortening device and means (such as a screw and a nut for example) for producing a progressive movement of the catcher driving device in proportion to the gradual shortening of the thread whereby the said device imparts a proportionally diminishing length of stroke to the catcher bars substantially as set forth.

12. The combination of the thread catchers a support B carrying the gear wheel Z' and provided with a nut $v^4$ means for rotating the said gear wheel, gearing with racks G connected with the thread catchers with a screw S' working in the nut $v^4$ and means for rotating the said screw in proportion to the gradual shortening of the thread all substantially as and for the purposes set forth.

13. The combination of thread catchers, driving device, a driving cam T, a touching device and connections between the said touching device and the driving device, with means for automatically shortening the movement of the controlling devices and at the same time gradually changing the position of the said touching device relatively to the said driving cam in the direction of the axis of the driving cam in proportion to the consumption of thread at each stitch all substantially as set forth.

14. The combination of the thread catchers, the driving device provided with a screw S' with a cam drum touching device and suitable lever connections whereby the motion of the said touching device is changed into a to-and-fro axial movement of the said screw, all substantially in the manner and for the purposes set forth.

15. The combination of the thread catchers, controlling devices and intermediate connection adapted to be rigidly locked to the said controlling devices but released at the proper time, with a reciprocating rod provided with forks, which engage with the released intermediate connection to produce the clearing movement, all substantially as set forth.

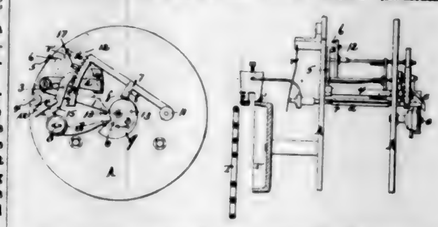
16. The combination of the thread catchers and controlling devices having a rod F to produce the clearing movement of the catchers with a cam disk describing one and a half revolution to a single stitch and suitable intermediate connections to transmit the movement of the said cam to the said rod.

17. The combination of the thread catchers, controlling devices and intermediate connections with a locking disk r' to lock the said connections with the controlling device and a guide rail $f^3$ for the said disk, the said rail $f^3$ being bent at an angle at its upper part to produce the rotation of the locking disk to release the said connections, all substantially as and for the purposes set forth.

18. The combination of the thread catchers, driving devices and a screw S' to control by its rotation the length of movement of the controlling devices, with pawl and ratchet devices to rotate the screw and disengaging devices controlled by the varying outstroke of the tension device, substantially as and for the purposes set forth.

19. The combination of the thread catchers the shortening device and tension device with a ratchet provided with a regulating pawl e actuated by a stop $c^4$ a spring $g^{x}$ and a catch q with a tooth i to cause the said pawl to automatically escape from the said tooth at periods of the stroke of the tension devices after each stitch varying in proportion to the amount of thread consumed at each stitch, all substantially as described.

## 503,310. CLOCK STRIKING MECHANISM. LOUIS E. COURTIS, Paris, France. Filed July 20, 1892. Serial No. 440,604. (No model.)



*Claim.*—1. In striking clocks, the combination with the striking mechanism of means for automatically repeating the hour numbers at the half hours, and means for sounding a bell or gong at the half hours different from that sounded at the hours, all substantially as described.

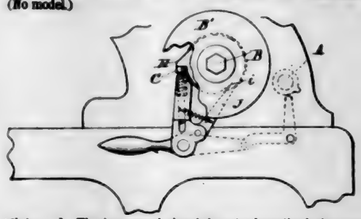
2. In striking clocks, the combination of two bells and one hammer, with means substantially as described for automatically repeating the hour numbers at the half hours, and means for shifting the hammer from one bell to the other, substantially as and for the purpose set forth.

3. In striking clocks, the combination of two bells, and an arbor carrying the hammer, with a lever provided with a cam at one end adapted to move the said arbor longitudinally and a pin on one of the dial wheels adapted to act upon the said lever, all substantially as and for the purposes set forth.

4. In striking clocks, the combination of the rack 14 and mechanism for maintaining the rack out of the position it would naturally take, with two diametrically opposite pins on one of the wheels of the dial train and equidistant from the center of the wheel and adapted to act on the said mechanism to release the rack every half hour, all substantially as set forth.

5. In striking clocks, the combination of the two bells and one hammer, with two diametrically opposite pins on one of the wheels of the dial train and equidistant from the center of the wheel, and adapted to act alike at each half hour on the striking mechanism, and means for shifting the hammer from one bell to the other, substantially as and for the purposes set forth.

## 503,311. CLUTCH FOR SEWING-MACHINES. CHARLES A. DAHL, Lynn, Mass., assignor to the Globe Buttonhole Machine Company, Kittery, Me., and Boston, Mass. Filed June 1, 1893. Serial No. 476,251. (No model.)

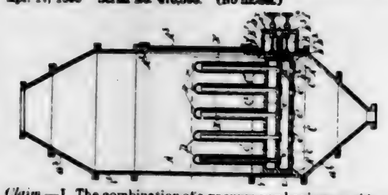


*Claim.*—1. The improved clutch herein described, the same comprising a driving pulley having an annular recess in one face, the cam block having inclines of the character specified contained in said recess and fastened to the shaft, a plate having a limited degree of rotation upon said shaft, provided with roll holders to extend into said recess between the cam edge and the wall of the recess, rolls carried thereby, a spring to bear against the roll holder plate and move it in one direction and a stop for limiting its movement in the reverse direction, a stop finger or arm extending from said roll holder, and a latch movable out of and into the path of rotation of said finger or arm, substantially as described.

2. The combination of the driving pulley free to rotate on its shaft and having in one face an annular recess, a cam block fast to said shaft within said recess, the roll holder having a limited rotation upon the shaft and provided with fingers for holding rolls between the cam and the bearing surface of the driving pulley, the said roll holder having an outwardly extending projection or finger and a projection or pin which enters an annular recess in a plate fast to the shaft, a stop in said recess for limiting the extent of rotation of the roll holder in one direction and a spring in said recess to bear against the roll holder pin or projection, as and for the purposes described.



## 503,312. VACUUM-PAN. JOHN H. DUNCAN, Syracuse, N. Y. Filed Apr. 17, 1893. Serial No. 470,563. (No model.)



*Claim.*—1. The combination of a vacuum pan having one side provided with an inlet and an outlet chamber, a closed head arranged within the vacuum pan and provided with inlet and outlet chambers, connections, substantially as described, at one end of said head between the corresponding chambers of said pan and head, and independent valves for opening and closing said connections provided with operating pieces at the outside of the chambers of the vacuum pan, substantially as and for the purpose set forth.

2. The combination of a vacuum pan having one side provided with an inlet and at outlet chamber, a closed head removably secured within the vacuum pan and provided with inlet and outlet chambers, a door for the vacuum pan for permitting entrance and removal of the head, and connections, substantially as described, at one end of said head between the corresponding chambers of said pan and head, substantially as specified.

3. The combination of a vacuum pan having one side provided with an inlet and an outlet chamber, a closed head removably secured within the vacuum pan and provided with inlet and outlet chambers, a door for the vacuum pan for permitting entrance and removal of the head, connections, substantially as described, at one end of said head between the corresponding chambers of said pan and head, and valves for opening and closing said connections provided with operating pieces at the outside of the chambers of the vacuum pan, substantially as and for the purpose set forth.

4. The combination of a vacuum pan having one side provided with an inlet and an outlet chamber, a series of closed heads removably secured within the vacuum pan and provided with inlet and outlet chambers and with projecting heating tubes, a door for the vacuum pan for permitting entrance and removal of the closed heads, and connections, substantially as described, at one end of said heads between the corresponding chambers of said pan and closed heads, substantially as and for the purpose described.

5. The combination of a vacuum pan having one side provided with an inlet and an outlet chamber arranged one above the other, a series of closed heads supported within the vacuum pan and provided with inlet and outlet chambers arranged one above the other and with projecting heating tubes, connections arranged one above the other at one end of said heads between the corresponding chambers of said vacuum pan and closed heads, and valves disposed one above the other for opening and closing said connections and provided with operating pieces at the outside of the chambers of the vacuum pan, substantially as and for the purpose specified.

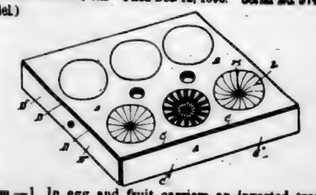
6. The combination of a vacuum pan having one side provided with an inlet and an outlet chamber, a closed head within the vacuum pan formed separable from the pan and provided with inlet and outlet chambers and an intervening partition, connections at one end of said head between the corresponding chambers of said vacuum pan and closed head, a tube extending outwardly from said head and having its outer end closed and its opposite end connected to the outlet chamber of the head, a pipe extending outwardly from the inlet chamber of the head and having its outer end discharging into said tube and its opposite end connected to said inlet chamber, a hollow plug removably secured to the partition for supporting said pipe, and a solid plug aligned with the hollow plug and removably secured to the wall of said head, substantially as and for the purpose set forth.

7. The combination of a vacuum pan, a hollow shell or frame removably secured to the wall of said vacuum pan and provided with a partition extending from opposite sides thereof, whereby said shell or frame in connection with the adjacent portion of the wall of the vacuum pan forms an inlet and an outlet chamber, a closed head arranged within the vacuum pan and formed separable therefrom and provided with inlet and outlet chambers, and connections, substantially as described, at one end of said head between the corresponding chambers of said pan and head, substantially as specified.

8. The combination of a vacuum pan having one side provided with inlet and outlet chambers and with openings aligned with said chambers and formed at their outer ends with valve seats, a closed head arranged within the vacuum pan and formed separable therefrom and provided with inlet and outlet chambers, pipes opening from the chambers of said head and having their outer ends secured in the inner ends of said openings in the wall of the vacuum pan, and valves movable toward and away from said valve seats for regulating the passage to the chambers of the closed head, substantially as and for the purpose specified.

9. The combination with a vacuum pan having opposite substantially flat upright walls and rounding ends, one side being provided with an inlet and an outlet chamber arranged one above the other; of a series of independent closed heating heads formed separate from said vacuum pan and removably supported therein, said heads standing parallel with each other and extending lengthwisely between said substantially flat upright walls, each head being provided with inlet and outlet chambers, connections at one end of said heads between the corresponding inlet and outlet chambers of the pan and heads, a valve in each connection, a number of tubes rising from the outlet chamber of each head and having their upper ends closed, a number of pipes rising from the inlet chamber of each head into said tubes and discharging within the closed end thereof, and means for conveying a heated fluid to the inlet chamber of the pan, as and for the purpose set forth.

## 503,313. KNOCKDOWN EGG OR FRUIT CARRIER. THADEUS S. FITCH, Alameda, Cal. Filed Dec. 12, 1890. Serial No. 374,494. (No model.)



*Claim.*—1. In egg and fruit carriers an inverted tray having pockets or cells formed therein of spirally cut holders or retaining arms, as set forth and specified.

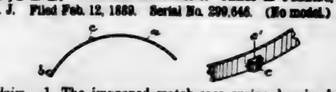
2. In an egg and fruit carrier an inverted tray having pockets or cells formed therein of radially cut holders or retaining arms, as set forth.

3. The herein described tray blank A, having the side pieces $C^{x}$, $C^{x}$, the wings E, E, of less height than the side pieces $C^{x}$, $C^{x}$, the end pieces $D^{x}$, $D^{x}$, having the notches G, G, at their outer corners, and the folding flaps H, H, of less length than the end pieces $D^{x}$, $D^{x}$, all constructed and arranged substantially in the manner and for the purpose set forth.

4. The herein described tray blank A having its under side covered with muslin, and provided with pockets and air inlets, the side pieces $C^{x}$, $C^{x}$, the wings E, E, of less height than the side pieces $C^{x}$, $C^{x}$, the end pieces $D^{x}$, $D^{x}$, having the notches G, G, at their outer corners, and the folding flaps H, H, of less length than the end pieces $D^{x}$, $D^{x}$, all constructed substantially in the manner and for the purpose set forth.

5. In a knockdown carrier for eggs and fruit an inverted tray having pockets or cells formed therein of spirally cut holding or retaining arms with a central hole or opening therein, as set forth.

## 503,314. WATCHCASE-SPRING. JAMES H. FLEMING, Newark, N. J. Filed Feb. 12, 1889. Serial No. 299,646. (No model.)



*Claim.*—1. The improved watch-case spring herein described, consisting of a curved piece of spring metal adapted to lie in the watch case center and having a spur or lock to engage the lid or cover of the case and having at its convex side a projecting loop, c, to receive the holding pin, and, back of said loop, opening through the body of the spring to the concave side thereof, having a tool passage or opening, $c'$, to enable the workman to pass his tool from the interior of the case to the pin lying concealed at the convex side of the spring, substantially as set forth.

2. The improved watch case spring herein described, consisting of a spring having an integral loop pressed outward from the convex side of the spring above or away from the lower edge of the spring to allow the insertion of the holding pin to a position back of the body of the spring.

**503,315.** GUN-CARRIER FOR BICYCLES. PETER GENDRON, Toledo, Ohio. Filed Feb. 11, 1893. Serial No. 461,919. (No model.)



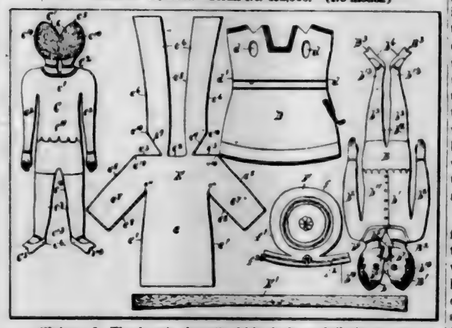
*Claim.*—1. In a bicycle, the combination with a gun-barrel support, of a stock support consisting of a cross bar secured to the rear frame, a hook shaped bar extending rearwardly and downwardly from said bar and having a bent bar at its lower end, an angle bracket on the cross bar and a leather pocket adapted to receive the gun stock secured to said angle bracket and hook shaped bar, substantially as described.

2. In a bicycle, the combination with a gun support, of a barrel support consisting of a U-shaped bracket having an offset clamped to the back bone of the bicycle, a flexible portion secured to the bracket and adapted to encircle the gun barrel, a catch on the bracket, a clamp on the free end of the flexible portion adapted to engage the catch, substantially as described.

3. In a bicycle, the combination with a gun support, of a barrel support consisting of a U-shaped bracket clamped to the back bone of the bicycle, a flexible portion secured to the bracket adapted to encircle the gun barrel, a catch on the bracket and a spring clamp on the free end of the flexible portion adapted to engage the catch consisting of a rod, a nut on the end of the rod, a casing on the rod, and a spring sleeved on the rod having its ends respectively bearing against the casing and nut, substantially as described.

4. In a bicycle the combination with the frame thereof, of a gun barrel support at the forward end of the frame, a bar connected to and extending across the rear of the frame, a lateral support on the bar and a pocket for a gun stock carried by the bar above the support, substantially as described.

**503,316.** DOLL-PRODUCING BLANK. IDA A. GUTSELL, Ithaca, N. Y. Filed Feb. 16, 1893. Serial No. 462,599. (No model.)



*Claim.*—1. The herein described blank for a doll, the same comprising a front body section having side edges, and having a head portion formed with a central cut out extending downwardly from the upper edge of said head portion, whereby the doll head is provided with raised realistic features when the edges of said cut out are secured together and the doll is made up, and a back body section having side edges for securement to the side edges of the front body section when the doll is made up, substantially as and for the purpose set forth.

2. The herein described blank for a doll, the same comprising a front body section having side edges, and a back body section having side edges for securement to the side edges of the front body section when the doll is made up, said back body section having a head portion formed with a cut out extending downwardly from the upper edge of the head section, whereby flatness of the rear portion of the doll head is prevented when the edges of said cut out are secured together and the doll is made up, substantially as and for the purpose specified.

3. The herein described blank for a doll, the same comprising a front body section having side edges, and a back body section having side edges for securement to the side edges of the front body section when the doll is made up, said back body section having a head portion formed with a cut out extending downwardly from the upper edge of its head section and formed with a second cut out beneath the former, whereby a realistic appearance is given to the rear portion of the doll head when the edges of said cut outs are secured together and the doll is made up, substantially as and for the purpose set forth.

4. The herein described blank for a doll, the same comprising a front body section having side edges, and having a head portion, formed with a central cut out extending downwardly from the upper edge of said head portion, whereby the doll head is provided with raised realistic features when the edges of said cut out are secured together and the doll is made up, and a back body section having side edges for securement to the side edges of the front body section when the doll is made up, said back body section having a head portion formed with a cut out extending downwardly from the upper edge of its head section and formed with a second cut out beneath the former cut out, whereby a realistic appearance is given to the rear portion of the doll head when the edges of said cut outs are secured together and the doll is made up, substantially as and for the purpose specified.

5. The herein described blank for a doll, the same comprising a front body section having side edges and leg and foot portions, and a back body section having side edges for securement to the side edges of the front body section, and having leg and foot portions, the lower extremities of said leg portions being formed of greater width than the corresponding portions of the front body section, whereby the foot portions of said sections are twisted or inclined forwardly when the doll is made up, substantially as and for the purpose set forth.

6. The herein described blank for a doll, the same comprising a front body section having side edges, and leg and foot portions, the foot portion being formed with a cut out extending inwardly from its front edge, whereby a realistic appearance is given to the corresponding part of the doll's foot when the edges of said cut out are secured together and the doll is made up, and a back body section provided with side edges for securement to the side edges of the front body section, and having leg and foot portions, the foot portion being formed with a cut out extending inwardly from its front edge whereby a realistic appearance is given to the corresponding part of the doll's foot when the edges of said cut out are secured together and the doll is made up, substantially as and for the purpose specified.

7. The herein described blank for a doll, the same comprising a front body section having side edges and leg and foot portions, the foot portion being formed with a cut out extending inwardly from its front edge, whereby a realistic appearance is given to the corresponding part of the doll's foot when the edges of said cut out are secured together and the doll is made up, and a back body section having side edges for securement to the side edges of the front body section when the doll is made up and having leg and foot portions, the lower extremities of each of said leg portions being formed of greater width than the corresponding portions of the front body section, whereby the foot portions of said sections are twisted or inclined forwardly when the doll is made up, said foot portions of the back body section being formed with a cut out extending inwardly from its front edge, whereby a realistic appearance is given to the corresponding part of the doll's foot when the edges of said cut out are secured together and the doll is made up, substantially as and for the purpose set forth.

8. The herein described blank for a doll, the same comprising a front body section having side edges and head, leg and foot portions, the head portion being formed with a central cut out extending downwardly from the upper edge of said head portion, whereby the doll head is provided with raised realistic features when the edges of said cut out are secured together and the doll is made up, and a back body section having side edges for securement to the side edges of the front body section when the doll is made up and having head, leg and foot portions, the lower extremities of said leg portions being formed of greater width than the corresponding portions of the front body section, whereby the foot portions of said sections are twisted or inclined forwardly when the doll is made up, substantially as and for the purpose specified.

9. The herein described blank for a doll, the same comprising a front body section having side edges, and head, leg and foot portions, and a back body section having side edges for securement to the side edges of the front body section when the doll is made up, and having head, leg and foot portions, the head portion being formed with a cut out extending downwardly from the upper edge of the head section and formed with a second cut out beneath the former, whereby a realistic appearance is given to the doll head when the edges of said cut outs are secured together and the doll is made up, and the lower extremities of said leg portions being formed of greater width than the corresponding portions of the front body section, whereby the foot portions of said sections are twisted or inclined forwardly when the doll is made up, substantially as and for the purpose set forth.

10. The herein described blank for a doll, the same comprising a front body portion having side edges and having head, leg and foot portions, the head portion being formed with a central cut out extending downwardly from the upper edge of said head portion whereby the doll head is provided with raised, realistic features when the edges of said cut out are secured together and the doll is made up, and the foot portions being formed with a cut out extending inwardly from the front edge whereby a realistic appearance is given to the corresponding part of the doll's foot when the edges of said cut out are secured together and the doll is made up, and a back body section having side edges for securement to the side edges of the front body section when the doll is made up and having head, leg and foot portions, the head portion being formed with a cut out extending downwardly from its upper edge and with a second cut out beneath the former, whereby a realistic appearance is given to the rear portion of the doll's head when the edges of said cut outs are secured together and the doll is made up, the lower extremities of said leg portions being formed of greater width than the corresponding portions of the front body section, whereby the foot portions of said sections are twisted or inclined forwardly when the doll is made up, and the foot portions being formed with a cut out extending rearwardly from its front edge, whereby a realistic appearance is given to the doll's foot when the edges of said cut out are secured together and the doll is made up, substantially as and for the purpose specified.

11. The herein described blank for a dressed doll, the same comprising a front body section having side edges and having arm and head portions, the head portion being formed with a central cut out extending downwardly from the upper edge of said head portion, whereby the doll head is provided with raised realistic features when the edges of said cut out are secured together and the doll is made up, and a back body section having side edges for securement to the side edges of the front body section when the doll is made up, and having arm and head portions, said head portion being formed with a cut out extending downwardly from the upper edge of the head section, whereby flatness of the rear portion of the doll's head is prevented when the edges of said cut out are secured together and the doll is made up, and a garment section having openings for receiving the arm portions of the front and rear body sections, when the doll is made up and having longitudinal side edges lapping upon the rear body section when the doll is made up, substantially as and for the purpose set forth.

12. The herein described blank for a dressed doll, the same comprising a front body section having arm portions and side edges, and a back body section having arm portions and having side edges for securement to the side edges of the front body section when the doll is made up, and a garment section having a back body portion provided with side edges and a front portion composed of corresponding divisions formed integral with the upper part of the back section and formed with outer side edges for securement to the side edges of the back section of the garment when said garment is made up, and sleeve portions formed integral with the back portion and having side edges for securement to each other when the garment is made up, substantially as and for the purpose specified.

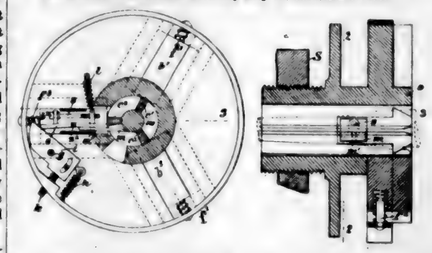
13. The herein described blank for a dressed doll, the same comprising a front body section having side edges and having a head portion formed with a central cut out extending downwardly from the upper edge of said head portion, whereby the doll head is provided with raised realistic features when the edges of said cut out are secured together and the doll is made up, and a back body section having side edges for securement to the side edges of the front body section when the doll is made up, said back body section having a head portion formed with a cut out extending downwardly from the upper edge of the head section, whereby flatness of the rear portion of the doll head is prevented when the side edges of said cut out are secured together and the doll is made up, and a head covering section consisting of a body having a rounding edge and projecting arms for securement to said rounding edge when the head covering section is made up, substantially as and for the purpose set forth.

14. The herein described blank for a doll, the same comprising a front body section having side edges and leg and foot portions, and a back body section having side edges for securement to the side edges of the front body section and having leg and foot portions, the inner sides of the lower extremities of said leg portions being separated a greater distance than the similar extremities of the corresponding portions of the front body section, whereby the foot portions of said sections are twisted or inclined forwardly when the doll is made up, substantially as and for the purpose specified.

15. The herein described blank for a dressed doll, the same comprising front and back body sections having arm portions, and a garment section having a back body section provided with side edges and with top edges —$c^1$—$c^1$—, a front section composed of corresponding divisions formed integral with the upper part of the back section and formed with outer side edges for securement to the side edges of the back section of the garment when said garment is made up, and provided with edges —$c^2$—$c^2$— for securement to the edges $c^2$—$c^2$—, and sleeve portions formed integral with the back portion and inclining from its side edges at an angle less than a right angle, substantially as and for the purpose set forth.



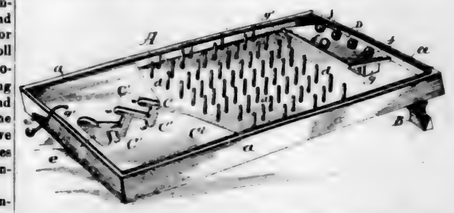
**503,317.** REVOLVING KNIFE-BLOCK FOR SHAPING COMBS. JOSEPH HAINDL, Riesa, Germany. Filed Apr. 25, 1893. Serial No. 471,706. (No model.) Patented in Germany May 12, 1892, No. 66,430.



*Claim.*—1. In a cutter-head for turning conical bodies, the combination, with radial slides, of a pivoted plate on one of the slides, a knife held on said plate, a spring acting on the knife-holding plate and a block in the head, against which block the outer end of the knife-holding plate rests, substantially as set forth.

2. In a cutter-head for turning conical bodies, the combination, with radial slides, of a pivoted plate on one of the slides, a knife held on said plate, a spring acting on the knife-holding plate, a block in the head against which the outer end of the knife-holding plate rests and means for adjusting said block according to the taper of the piece to be acted on, substantially as set forth.

**503,318.** GAME-BOARD. FREDERICK W. HAWKES, Chicago, Ill. Filed Sept. 28, 1892. Serial No. 447,099. (No model.)



*Claim.*—1. In a game board, the combination with a board adapted to be disposed of in an inclined position, of an alley and pockets communicating with said alley in such manner that spherical bodies allowed to gravitate down the inclined board will enter said pockets in regular order.

2. In a game board, the combination with a board adapted to be disposed in an inclined position and means at the upper end of said board for receiving and releasing spherical bodies, of a zig-zag passage or alley at the lower end of said board, and pockets located at the turns of said passage or alley, substantially as set forth.

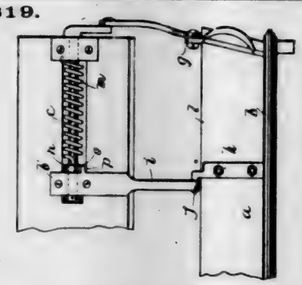
3. In a game board, the combination with a board adapted to be disposed in an inclined position and means for supporting and releasing spherical bodies, of a zig-zag passage or alley terminating in a pocket, and pockets located at the turns of said passage or alley, substantially as set forth.

4. In a game board, the combination with a board adapted to be disposed in an inclined position and means for supporting and releasing spherical bodies, of a zig-zag passage at the inner end of said board, pockets at the turns of said passage, and inclined ways leading to said passage, substantially as set forth.

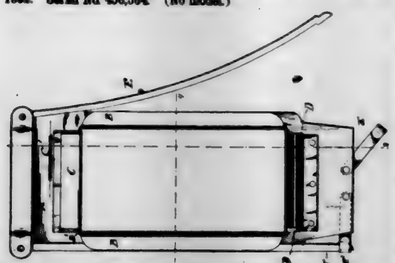
**503,319.** SPRING-BACK FOR VEHICLE-SEATS. HARRISON B. HERRICK, Merrimac, N. H. Filed Dec. 24, 1892. Serial No. 456,262. (No model.)

*Claim.*—A back for vehicle seats comprising in its construction pivotal supports, a rock rod provided with a crank having bearings in the back, a spring for exerting torsional strain upon said rod, and the seat arm pivotally connected with said crank and the seat, as set forth.

503,319.



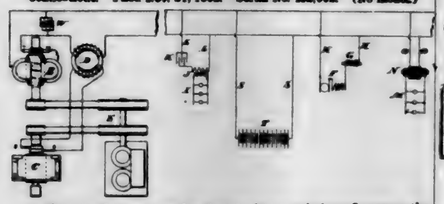
503,320. FABRIC-HOLDING FRAME FOR EMBROIDERING-MACHINES. HENRY HOCHREUTHER, New York, N. Y. Filed Dec. 28, 1892. Serial No. 456,584. (No model.)



*Claim.*—1. A fabric holding frame for embroidering-machines, composed of a main-frame having U-shaped keepers at its sides and top, a transverse clamping device at the lower part of said main-frame, an elastic packing located in the side and top keepers, spring-bars pivoted to the upper part of the main-frame and locking devices for retaining the lower ends of the spring-bars in position, substantially as set forth.

2. A fabric holding frame for embroidering-machines, consisting of an open main-frame, having U-shaped keepers at its sides and top a transverse flange and spring-clamp at the lower part of the main-frame, an elastic packing extending around the side and top keepers, spring-bars pivoted to the upper corners of the main-frame and latches pivoted to the lower end of the main-frame and adapted to lock the lower ends of the spring-bars, substantially as set forth.

503,321. METHOD OF AND APPARATUS FOR THE TRANSMISSION OF ELECTRICAL ENERGY. RUDOLPH M. HUNTER, Philadelphia, Pa., assignor to the Thomson-Houston Electric Company, of Connecticut. Filed Nov. 21, 1892. Serial No. 452,602. (No model.)



*Claim.*—1. In a system for electrical transmission of energy, the combination of a line circuit, a continuous current generator connected directly to the line circuit, an alternating current generator, and a transformer having one of its coils in circuit with the line and its other coil in circuit with the alternating current generator.

2. In a system for electrical transmission of energy the combination of a line circuit, a continuous current generator connected directly to the line circuit, an alternating current generator, a transformer having one of its coils in circuit with the line and its other coil in circuit with the alternating current generator, a local circuit connecting with the line, an electric motor in said circuit and a choking coil or self induction device also in said local circuit.

3. In a system for electrical transmission of energy, the combination of a line circuit, a continuous current generator connected directly to the line circuit, an alternating current generator, a transformer having one of its coils in circuit with the line and its other coil in circuit with the alternating current generator, and a distantly located transformer having its fine wire coil connected with the line through a condenser and having its coarse wire coil connected with a local circuit containing a current consuming device.

4. In a system for electrical transmission of energy, a line circuit, a continuous current generator directly connected with the line, a transformer having one of its coils in the direct circuit with the line, an alternating current generator connected with the other coil of the transformer, and a power device for maintaining proper relative speeds to the continuous and alternating current generators.

5. In a system for electrical transmission of energy, a line circuit in combination with a high tension continuous current generator directly connected with the line, an alternating current generator, a converter or transformer having one of its coils connected in the line circuit and the other of its coils connected with the alternating current generator, and suitable translating devices connecting with the line circuit at a distant place, the two generator machines being so proportioned that the induced current generated by the alternating current generator and transformer shall have a less potential than the potential of the current generated by the continuous current generator.

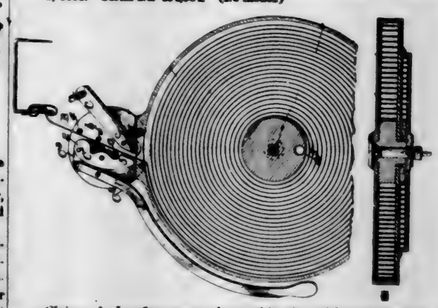
6. The herein described method for the transmission of electrical energy which consists in generating and supplying to a line circuit a continuous current of high potential, generating alternating currents of uniform periods, and by induction generating induced currents of the same period as the alternating current but of lower potential than the potential of the continuous current in the line circuit and causing the same to flow over the line, whereby the current traversing the line shall be undulatory.

7. The herein described method for the transmission of electrical energy which consists in generating and supplying to a line circuit a continuous current of high potential, generating alternating currents of uniform periods, and by induction inducing thereby currents of the same period but of lower potential than the current in the line circuit, whereby the current traversing the line circuit shall be undulatory and of higher potential than the potential of the continuous current and shall be wholly external to the alternating current generator circuit.

8. The herein described method for the transmission of electrical energy which consists in generating and supplying to a line circuit a continuous current of high potential, generating alternating currents of uniform periods, and by induction inducing thereby currents of lower potential in the line circuit, whereby the current traversing the line circuit shall be uniform and undulatory, and maintaining the relative relations between the continuous and alternating induced potentials.

9. The herein described method for the transmission of electrical energy which consists in supplying to a line circuit a continuous current of high potential, causing said current to flow through one coil of a transformer, generating alternating currents of uniform periods and causing them to flow through the other coil of the transformer whereby the alternating currents so generated shall not be directly impressed upon the continuous current flowing in the line but the direct continuous and induced alternating current resulting and passing through the line shall be undulatory and uniform in its character.

503,322. FIRE-ESCAPE. JOHN R. JONES, Fresno, Cal. Filed Mar. 2, 1892. Serial No. 424,384. (No model.)



*Claim.*—1. In a fire escape, the combination with a main tape and case, of its axle and the supplemental tape wound thereon, the hubs on which said tapes are wound being provided with aligned openings, and a crank secured to the projecting end of said axle and having a handle adapted to be forced into said openings in the hubs substantially as shown and described.



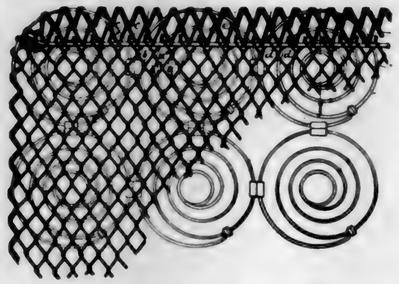
2. In a fire escape, the combination, with a main tape and case, of a friction device having friction levers on each side of the tape, a hand lever for controlling speed, a supplemental tape adapted to wind up the main tape, an axle, on which said tapes are wound provided with openings and a crank on the projecting end of the axle having a handle to engage said openings of the hubs and lock the device against rotation substantially as shown and described.

3. In a fire escape, the combination, with a main tape and case, of a hand lever, and friction lever connected therewith, and a second lever to which the harness is attached, adapted to bear upon the tape, and operate the first mentioned friction lever, substantially as shown and described.

4. In a fire escape, the combination, with a tape, of the circular plates, the friction lever on each side of the tape, the friction rolls also on each side of the tape, the hand lever, and link connecting said lever and one of the friction levers, and the harness attached to the other friction lever, substantially as shown and described.

5. In a fire escape, the combination of a main tape a casing inclosing said tape, two circular plates secured to the upper part of said casing, a lever C pivoted at its lower end between said plates and having an eye at its upper end, a second lever $C'$ pivoted between the plates opposite the said lever C, a hand lever $C^3$ pivoted near its upper end between said plates and connected to the upper end of lever $C'$, a series of friction rollers extending from one plate to the other, a supplemental tape, and a rectangular hook secured to the end of the main tape, substantially as described.

503,323. BED-BOTTOM. WILLIAM L. KEEPHART and JACOB C. HACKETT, Wilkes-Barré, Pa. Filed June 12, 1893. Serial No. 477,265. (No model.)



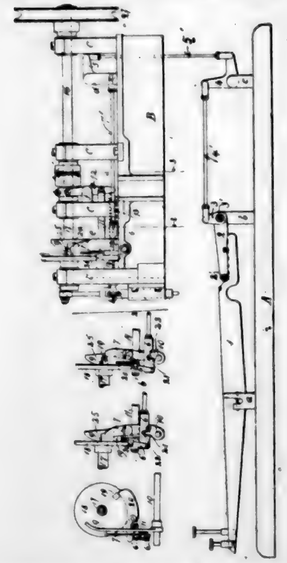
*Claim.*—1. A section of woven wire fabric having a series of parallel coils or wires intercoiled together and connected in pairs at each end by twisting together the free ends of the adjacent successive pairs, thereby forming at each end of the fabric a transverse row of loops *d* having rough ends *e* projecting beyond said loops, a rod or wire running through the row of transverse loops at each end of the fabric, and a caging coil extending across at each end of the fabric and united thereto by being coiled around said rod between the said end loops and twisted ends *e*, thereby caging at each end of the fabric the rough projecting twisted ends of the parallel wire coils, substantially as described.

2. A bed bottom consisting of a series of vertical spirals connected together, a woven wire fabric supported on said spirals and composed of a series of parallel wire coils intercoiled together and connected in pairs at each end by spirally twisting together the adjacent ends of parallel coils, thereby forming at each end of the fabric a transverse row of loops *d*, wires or rods D extending across the ends of the fabric through the loops *d*, caging coils E intercoiled with the wires D between the loops *d*, and connecting coils G intercoiled with the caging coils and with the supporting spirals, substantially as described.

503,324. MATRIX-MAKING MACHINE. ALBERT J. KLETZKER and JOHN G. GOESEL, St. Louis, Mo. Filed July 19, 1892. Serial No. 440,471. (No model.)

*Claim.*—1. In combination with a driving-shaft and a driven shaft, of a disk mounted on the driven shaft and provided with a stop-pin, a lever adapted to engage with said stop-pin to control the rotation of the driven shaft, another lever, adapted to operate a clutch between said shafts and to be controlled by the stop-pin on the disk: substantially as and for the purposes described.

2. In combination with a power-driven and rotatable shaft, a clutch adapted to operatively connect said shafts, a disk mounted on the rotatable shaft, a stop-pin on the disk, a lever adapted to engage and stop said pin, another lever adapted to rest against the stop pin when in its normal position, and means for operatively engaging the clutch, releasing the stop-pin, and forcing the lever which rested thereagainst toward the disk: substantially as and for the purposes specified.



3. In combination with a driving shaft, a driven shaft and a clutch therebetween, of a disk mounted on the driven shaft provided with a stop pin, a lever adapted to engage with said pin and determine the revolution of the same, a second lever by which the clutch is operated, adapted (first) to be held in a position of non-engagement of the clutch by the stop pin when the stop pin is in its normal position of rest, (second) to engage the clutch when the stop pin is released by the first lever, and (third) to be returned to its normal position of non-engagement of the clutch by the revolution of the stop pin, and means for actuating the first lever, substantially as described.

4. In combination with a driving shaft and a driven shaft and a clutch therebetween, of a disk mounted on the driven shaft provided with a stop pin, a lever adapted to engage with the stop pin and determine the revolution of the same, a second lever by which the clutch is operated, adapted to engage with the stop pin and be held, in the normal stationary position of the stop pin, in a position of non-engagement of the clutch, and so formed on its engagement surface with the stop pin, as to start the same in revolution when it is released by the stop lever, and formed with an inclined surface adapted to be engaged by the stop pin, in its revolution, throwing and retaining the said lever back to its normal position of non-engagement of the clutch, and means for actuating the stop lever, substantially as described.

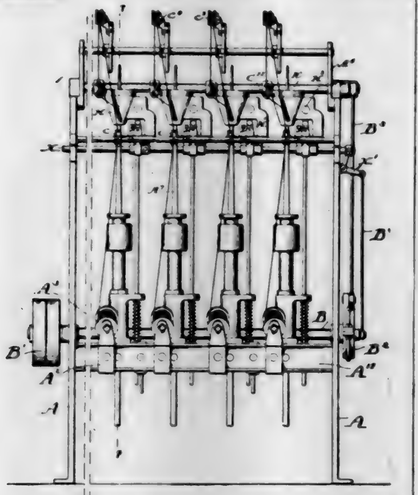
5. The combination with a driving shaft and a driven shaft and a clutch therebetween, of a disk mounted on the driven shaft provided with a stop pin, a stop lever for determining the revolution of the stop pin, a second lever adapted to engage with and be actuated by the stop pin to connect and disconnect the clutch, a notched rod, and means for operating the rod, connected with the stop lever and adapted to disengage the same from the stop pin, and means, actuated by the stop pin in its revolution, for disengaging the said actuating rod from the stop lever, whereby the lever is allowed to automatically assume its normal position of engagement with the stop pin, substantially as described.

503,325. COP AND BOBBIN WINDING MECHANISM. OSWALD LEVER and WILLIAM S. GRUNDY, Philadelphia, Pa. Filed May 12, 1892. Serial No. 432,715. (No model.)

*Brief.*—The cop-spindles are mounted in a hollow shaft which has slots engaging with pins on the driving gear. The gear is free to move up and down, and is held in register with the hollow shaft by a rod and cam. The cam is in such a position that when a yarn breaks the guide is reciprocated to the right, upsetting the cam and stopping the machine. The yarn is drawn from a reel adjustably held in position by a pin riding in a slot.

*Claim.*—1. The combination with the supporting frame A, $A'$, $A^{12}$,

the horizontal driving shaft B, its gearing C', horizontal cog gearing C, C² driven thereby, a series of horizontal cogs D actuating cop and bobbin forming spindles arranged to be driven directly and uniformly from said central driving gear C', and devices secured to the frame adapted to separately support and maintain each of said actuating cog gears D in register with the central driving gear C²; substantially as described.



2. The combination with the vertical cop winding spindle, its actuating shaft $A^3$, recessed on its under face at *b*, the supporting sleeve $A^5$ in which it is mounted, the horizontal cog wheel D with the pin $A^{10}$ on its upper face, the collar F, the prong F, the spring controlled rod $A^6$ mounted therein, and mechanism mounted on said rod $A^6$ operating to release the rod and thereby stop the rotation of the spindle when a thread breaks, by dropping the pins 10 on the face of the cog D out of register with the recesses in the tubular shaft $A^3$; substantially as described.

3. In combination, a vertically mounted cop winding spindle and its tubular driving shaft, actuating devices adapted to gear with said shaft, a spring controlled rod supporting said actuating devices, a cop forming device provided with a recessed supporting arm through which said spring controlled rod may pass, a cam resting on said supporting arm of the cop forming device and pivoted to the end of the spring controlled rod, and a yarn guide with the reciprocating shaft on which it is mounted, said guide carrying a stop pin adapted to contact with said cam and upset it on the breaking of a thread and release the spring controlled rod; substantially as described.

4. The combination with the supporting frame A its extension $A^{20}$, and with cop-winding mechanism, of yarn supplying devices consisting of a reel E, mounted upon a pivoted arm E', a lever $E^3$ provided with a locking pin $e^4$, a frame $E^5$ slotted at $E^4$ in an arc of a circle and recessed at its upper extremity at $e'$ to receive said locking pin and support the reel in an upright position; substantially as described.

## 503,326. CONVEYER. HENRY MOCK, New York, N. Y. Filed May 6, 1893. Serial No. 473,207. (No model.)

*Claim.*—1. The combination of a vertically-guided frame, a platform pivoted to the lower part of said frame, chains for supporting said platform in inclined position, a counter-balancing weight applied to a wire rope, connected with the vertically guided frame for counter-balancing the weight of the guide-frame and platform, and a pneumatic brake, adapted to be operated by the vertically guided frame, when the same arrives at its uppermost and lowermost positions, substantially as set forth.

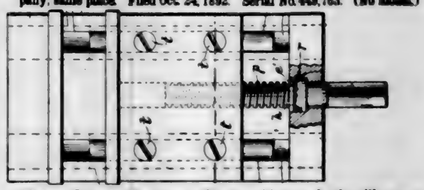
2. The combination of a vertically-guided frame, a platform pivoted to the lower end of said frame, chains for supporting said platform in an inclined position, a shaft for the conveying device and a padded wall, a partition on the other side, hinged doors in said partition at the different floors, and a pneumatic brake, that is operated by the vertically guided frame when the same arrives at its terminal positions, substantially as set forth.

3. The combination of a shaft having a padded wall at one side and a partition, having hinged doors, at the other side, hinged doors in said partition, inclined planes or chutes adjacent to the hinged doors in the partition, a vertically-guided frame, a platform pivoted to the lower end of the frame, chains for supporting the same in an inclined position, a stop at the lower part of the padded wall for tilting the platform when the same arrives in its lowermost position, and a pneumatic brake operated by the vertically guided frame and adapted to arrest the same when the same arrives in its terminal positions, substantially as set forth.



4. The combination of a vertically-guided frame a platform hinged to said frame, a partition wall having hinged doors at the different floors, a fulcrum latch adapted to engage a projecting bar on the hinged door, a projection on the frame, to release the latch from the bar of the hinged door, so as to permit the automatic opening of the same by the weight of the goods placed against the same, so that the article can pass on to the platform, substantially as set forth.

## 503,327. VISE FOR MILLING-MACHINES. FRANK MOSBERG, Attleborough, Mass., assignor to the Mosberg Manufacturing Company, same place. Filed Oct. 24, 1892. Serial No. 449,763. (No model.)



*Claim.*—In a vise for use on milling machines and other like purposes, slides for the movable jaw, consisting of plain round bars fitted to slide in holes made in the bed-plate, and connected with said jaw by fastenings extending through channels made in the bed-plate, substantially as specified.

## 503,328. BURNER FOR SAWDUST OR REFUSE FUEL. RUSSELL H. NOGAR, Dundee, Mich., assignor of one-half to Barnet E. Bullock, Toledo, Ohio. Filed Aug. 13, 1892. Serial No. 442,995. (No model.)

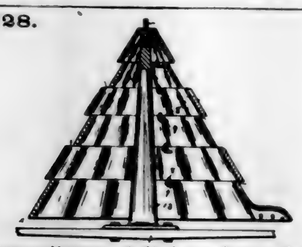
*Claim.*—1. A burner for sawdust and the like, conical in shape, and composed of a series of corrugated truncated conical sections, arranged one above the other, the corrugations alternating, providing a series of non aligning air passages.

2. In a burner for saw dust and the like, the combination with a grate, of a cone shaped burner, revolubly arranged thereon, and the wings formed upon the lower portion of the cone shaped burner, to clear the grate when said burner is revolved.

3. In a burner for saw dust and the like, the combination of a grate of a standard thereon a cone shaped burner journaled upon the said standard and adapted to be revolved by a key.

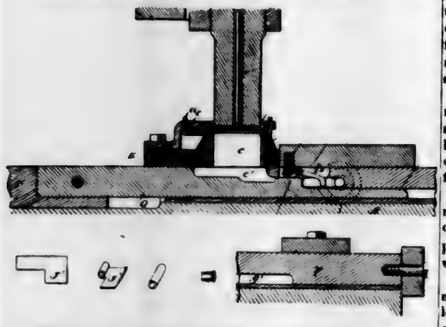


## 503,328.



4. An improved burner, conical in shape and composed of a series of tapering ring sections, each section having an interior pin and hook whereby the said ring sections are connected with one another

## 503,329. MACHINERY FOR MAKING SOLID OR TUBULAR RIVETS. HENRY S. REYNOLDS, Brooklyn, N. Y. Filed Dec. 7, 1891. Renewed Jan. 16, 1893. Serial No. 458,621. (No model.)



*Claim.*—1. In a machine for making rivets from sheet metal the combination of blank cutting mechanism, blank coiling mechanism, blank swaging mechanism, and means whereby the successive blanks as they are cut are delivered automatically from the cutting to the coiling mechanism, and, after having been coiled, from the coiling to the swaging mechanism—the combination being and acting substantially as set forth.

2. In a machine for making rivets from sheet metal, the combination of blank coiling mechanism, by which the sheet metal blank is rolled up or formed into a coil, with mechanism for swaging the coiled blank into rivet form, and means for delivering the coiled blank from the coiling mechanism to the swaging mechanism, substantially as hereinbefore set forth.

3. The coiling device consisting of the two members Q, 7, overlapping each other to provide inclosing walls for the blank during the progress of the coiling operation, and having opposed concaved shoulders which when brought together form a cylindrical case for the coiled blank—these parts being constructed and arranged for joint operation, substantially as hereinbefore set forth.

4. The pivoted blank holding finger $i^3$, in combination with the coiling device consisting of the two members Q, 7, overlapping each other to provide inclosing walls for the blank during the progress of the coiling operation, and having opposed concaved shoulders which when brought together form a cylindrical case for the coiled blank—the combination being and acting substantially as hereinbefore set forth.

5. In a machine for making tubular or solid rivets, the combination of the vertically-reciprocating blank-cutter, the walking beam to which the upper end of the cutter is suspended, and means for operating said beam from the drive-shaft, the slotted arm having its bearing on said beam, the rod suspended in the slots of said arm, and the springs working in connection with said arm for both maintaining the same downward and then lifting it, substantially as described.

6. In a machine for making tubular or solid rivets, the combination of a vertically-reciprocating blank-cutter, a die therefor, and a blank coiling mechanism the moving member of which reciprocates in a plane beneath said die, substantially as and for the purpose described.

7. In a machine for making tubular or solid rivets, the combination of a vertically-reciprocating blank-cutter, a rod working through said cutter and having a reciprocating movement independent of the same, and a reciprocating coiler which moves in a horizontal plane at right angles to the path of movement of said rod and cutter, substantially as described.

8. In a machine for making tubular or solid rivets, the combination of a vertically-reciprocating blank-cutter, a die therefor, a rod working through said cutter and having a reciprocating movement independent thereof, and a reciprocating coiler which moves horizontally in a plane beneath said die and in a path at right angles to the cutter and rod, substantially as described.

9. In a machine for making tubular or solid rivets, the combination of a vertically-reciprocating blank-cutter, and independently-reciprocating rod working through said cutter, a die for the cutter, and a coiling device for the rivet moving in a plane beneath the die, the said rod having a movement beyond or in excess of the movement of the cutter, substantially as described.

10. In a machine for making tubular or solid rivets, the combination with the vertically-reciprocating blank-cutter, and means for operating the same, of the horizontally-reciprocating coiler formed with the tongue and compound curved portion intersected by the straight rib, and the stationary or fixed coiling member having the recess for receiving the tongue, substantially as described.

11. In a machine for making tubular or solid rivets, the combination with the trough for feeding a strip of sheet metal, and the vertically-reciprocating blank-cutter, of a feeding foot having movable or sliding bearings, a spring for normally retracting or holding said foot back, a lever urging the foot forward on elevation of the cutter, and a spring for restoring the lever when the cutter descends, substantially as described.

12. In a machine for making tubular or solid rivets, the combination with the movable punch having the recessed plate secured to the side of its stock, of the movable feeding-foot, the pivoted bell-crank-lever, one arm of which works in the recessed plate and the other operating against the foot, the restoring spring, and the notched arm forming a stop, substantially as described.

13. In a machine for making tubular or solid rivets, the combination with the vertically-reciprocating blank-cutter, and means for operating the same, of the rod working therein, the slotted lever supporting said rod, and the two springs operating, respectively, to elevate and depress the lever, substantially as described.

14. In a machine for making tubular or solid rivets, the combination of a stationary heading or upsetting die, an ejecting device located on the face thereof for ejecting the finished rivet, and two oppositely opposed reciprocating heads the one carrying a header, and the other a plunger, substantially as described.

15. In a machine for making tubular or solid rivets, the combination with the stationary heading or upsetting die, of the plunger working therein from the rear, a spring surrounding said plunger and interposed between the head of the plunger and said die, and means for reciprocating the plunger, substantially as described.

16. In a machine for making tubular or solid rivets, the combination with the stationary upsetting or heading die, of the spring-actuated lever pivoted to the face thereof and adapted when struck to eject the finished rivet from said die, and the reciprocating head carrying the arm for striking said lever, in the manner shown and described.

17. In a machine for making tubular or solid rivets, the combination with the reciprocating coiler, of the pivoted lever, the two arms of which are in different horizontal planes and united by a sleeve or tube which turns on a common fulcrum, and the grooved cam operating said lever from the shaft, substantially as described.

18. In a machine for making tubular or solid rivets, the combination with the plunger operating behind the rivet, and the head in which said plunger is held, of the rock-shaft located in the front of the machine, the cam carried by said shaft and working in the cam-plate, an eccentric on the end of said shaft, and a connecting rod or pitman connecting said eccentric with the grooved cam on the drive-shaft, substantially as described.

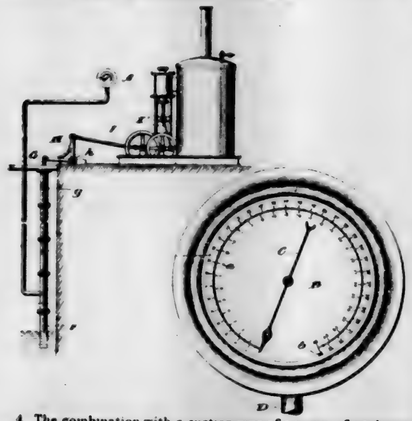
19. In a machine for making tubular or solid rivets, the combination of a vertically-reciprocating blank-cutter, a rod working in said cutter and having a reciprocating movement independent of the same, a horizontally reciprocating coiler, an automatic feed, a die, and a plunger and a header operating from opposite ends of the die in a plane at right angles to the path of the coiler, substantially as described.

## 503,330. VACUUM-GAGE. WILLIAM A. ROCKLEY, Ramsey, Mont. Filed Apr. 25, 1893. Serial No. 471,821. (No model.)

*Claim.*—1. A gage of the class described graduated to indicate the inches or degrees of vacuum and the height of water, substantially as specified.

2. A gage of the class described provided with graduations relatively proportioned to indicate simultaneously the inches or degrees of vacuum and the height of water in a suction pipe of a pump, as set forth.

3. A gage of the Bourdon type having its dial provided with two sets of graduations, one to indicate inches or degrees of vacuum and the other the height of water in the suction pipe of a pump, the graduations being proportioned relatively to each other to designate the vacuum and height simultaneously, as set forth.

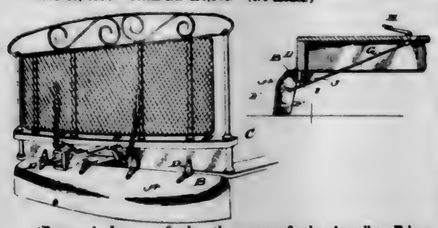


4 The combination with a suction pipe of a pump, of a tube connected therewith, and a gage of the Bourdon type on the end of said tube and provided with two sets of graduations one to indicate the vacuum and the other the height of water in the suction pipe, said graduations being relatively arranged to designate the vacuum and height of water simultaneously, substantially as specified.

5. The combination with the suction pipe of a pump and its piston, of a tube connected with the suction pipe below the piston, a gage connected with said tube and provided with two sets of graduations, one to indicate the vacuum and the other the height of water in the suction pipe, said graduations being relatively proportioned to designate the vacuum and the height of water simultaneously, and a two armed lever pivotally mounted and having one arm connected with the pump rod and a connection between the other arm of said lever and the crank pin of an engine, substantially as specified.

6. The combination with the suction pipe of a pump and its piston, of a tube connected with the suction pipe below the piston, a gage connected with said tube and provided with two sets of graduations, one to indicate the vacuum and the other the height of water in the suction pipe, said graduations being relatively proportioned to designate the vacuum and the height of water simultaneously, a two armed lever pivotally mounted and having one arm connected with the pump rod and a connection between the other arm of said lever and crank pin of an engine, the pump rod having a joint between the piston and the connection with the lever, substantially as specified.

**503,331. FENDER.** JOSEPH P. ROWAN, Los Angeles, Cal. Filed Oct. 29, 1892. Serial No. 450,370. (No model.)



*Claim.*—1. In a car fender, the convex fender A, rollers E lazy-backs I and J and means for raising or lowering the fender, substantially as and for the purpose set forth.

2. In a car fender, the convex fender A hinged at its upper end to a car and having at its lower end rollers E, in combination with arm F, link G, and foot lever H, substantially as and for the purpose set forth.

**503,332. WHIP.** FREDERICK A. SANFORD, Westfield, Mass. Filed Apr. 5, 1892. Serial No. 427,810. (No model.)



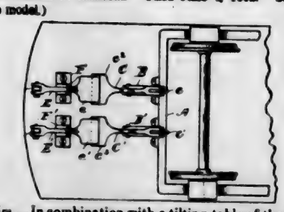
*Claim.*—A whip having a loop at its tip and a snap secured thereto by having its end passed through the loop and then doubled upon itself, and a strand of wire also passed through the said loop and wound about the snap continuously from its point of contact with the whip loop to some distance upon or beyond its turned back end, substantially as set forth.

**503,333. BOTTLE-STOPPER.** HERMANN SPRIESEL, Konigsberg, Germany. Filed Dec. 23, 1892. Serial No. 456,201. (No model.)



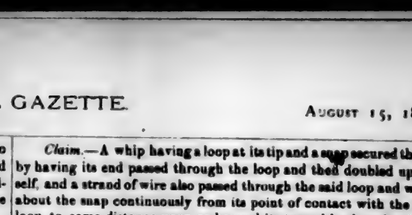
*Claim.*—A bottle stopper comprising the metallic cap having a seating of elastic material, a covering layer of impervious material upon said elastic material, said cap being also provided with guides, a pair of arms movably engaging said guides having their upper ends connected by a cross piece above said cap and their lower ends provided with hooks for engaging a shouldered portion of the bottle and a spring interposed between the cross piece and said cap, substantially as described.

**503,334. SWITCH-ACTUATOR.** WILLIAM F. STEDMAN and WILLIAM C. STEDMAN, Boston, Mass.; said William C. Stedman assignor to said William F. Stedman. Filed June 4, 1892. Serial No. 435,505. (No model.)



*Claim.*—In combination with a tilting table of the kind above described, one or more switch throwers each consisting of two disconnected levers, one attached to the car truck and the other to the car platform, the lower end of each upper lever and the upper end of each lower lever being broadened out, said ends lying within reach of each other during all the usual positions of the truck with relation to the car, all as set forth.

**503,335. LUMBER-LOADING JACK.** EDGAR L. STOCKING, Buffalo, N. Y. Filed Nov. 12, 1892. Serial No. 451,723. (No model.)



*Claim.*—1. The combination with the standard, of a horizontal lumber rest having upper and lower pivots whereby it is journaled to said standard, the upper pivot of the rest being offset or arranged in a different vertical plane from the lower pivot, whereby the rest is caused to return automatically to its initial position when released by the removal of the lumber, substantially as set forth.

2. The combination with the standard, of a number of sets of stationary eyes or brackets arranged at different elevations on the standard, and a vertically adjustable lumber rest having upper and lower pivots detachably seated in said eyes, substantially as set forth.

3. The combination with the standard, of a vertical series of stationary brackets arranged on the standard and each having inner and outer openings or eyes arranged at different distances from the standard, and a horizontally swinging lumber rest having upper and lower pivots, arranged out of vertical line with each other, the inner one of said pivots being adapted to engage in the inner opening of one of said brackets, and the outer pivot in the outer opening of another of said brackets, substantially as set forth.

4. The combination with the standard, of one or more upper brackets arranged on the standard and each having an eye, one or more lower brackets also arranged on said standard and each having an eye arranged inwardly beyond said upper eyes, intermediate brackets each having an outer eye arranged in line with the eyes of said upper brackets and an inner eye arranged in line with said lower brackets, and a swinging lumber-rest having upper and lower pivots which engage with a set of said eyes, substantially as set forth.

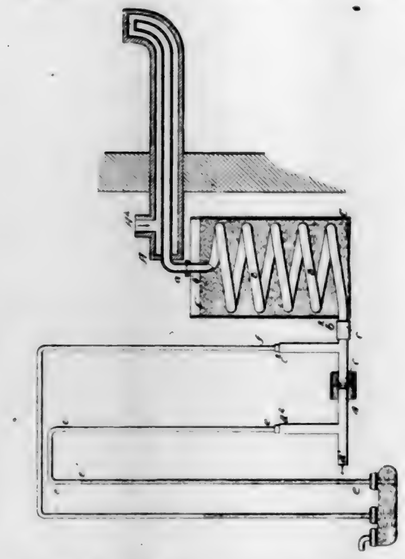
5. In a lumber jack, the combination with a removable standard provided at its upper end with a hook for engaging the roof of a car, of a bracket for confining the lower end of the standard consisting of a horizontal bar provided at its outer end with a loop which embraces the standard, and at its inner end with an angular lip, and a clamping screw passing through said lip bearing against the car frame or body and a lumber rest attached to the standard, substantially as set forth.



**503,336. COMPOSITION OF MATTER FOR ROOFING.** GEORGE A. TURNBULL, Chicago, Ill. Filed Sept. 7, 1892. Serial No. 445,258. (No specimens.)

*Claim.*—A tempering fire-proof mixture for roofing material, consisting of gypsum, plaster of paris, powdered salt, and flowers of sulphur, in about the proportions specified.

**503,337. PYROMETER.** EDWARD A. UEHLING and ALFRED STEINBART, Birmingham, Ala. Filed Apr. 20, 1893. Serial No. 471,107. (No model.)



*Claim.*—1. The herein described method of determining the temperature which consists in passing a gas through a tube or chamber having two apertures, the gas entering one aperture at the degree of temperature to be indicated and flowing through the other aperture at a constant temperature, the change in the tension of the gas between the two apertures being the measure of the temperature to be indicated.

2. The herein described method of determining the temperature which consists in passing a gas through a tube or chamber having two apertures, the gas being raised to the degree of temperature to be indicated prior to entering one of the apertures, then reducing the gas to a normal degree before it flows through the other aperture, the change in the tension of the said gas between the said apertures being a measure of the temperature to be determined.

3. The herein described means for determining temperature, consisting of a tube having two apertures, means for passing a gas through the tube under pressure, the gas entering one aperture at the degree of temperature to be determined and a reducing device to bring the gas to a normal temperature before flowing through the other aperture, the change of tension of the gas between the two apertures being a measure to determine the degree of temperature to be ascertained.

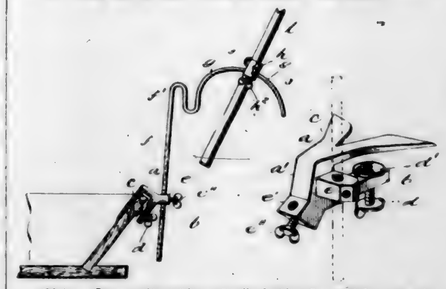
4. The herein described means for determining temperature consisting of a tube having two apertures means for passing the gas under pressure through the tubes, the gas being raised to the degree of temperature to be ascertained before entering one aperture, a reducing device to bring the gas to a normal temperature before flowing through the other aperture and a register having connection with the tube to indicate the change in tension between the said two apertures and the degree of temperature to be determined.

5. A pyrometer consisting of a chamber in which a gas is raised to the degree of temperature to be ascertained, a tube having a portion projecting into the said chamber and having two apertures, a reducing device applied to the other portion of the said tube to bring the gas to a normal temperature before leaving the tube, a register having connection with the said tube to indicate the change in tension of the gas between the said apertures and means for passing a gas through the said tubes under pressure substantially as and for the purpose set forth

6. A pyrometer consisting of a tube having two small apertures and adapted to be connected at one end to a pressure or partial vacuum chamber, a gage to indicate the tension of the said chamber, the gas being raised to the degree of temperature to be determined before entering one aperture, a cooling device to reduce the temperature of the gas to a normal or certain degree before flowing through the other aperture, and a register to indicate the change in tension of the gas between the said apertures, substantially as described.

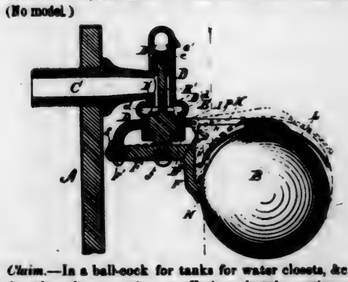
7. The herein described pyrometer consisting of a chamber having an inlet at or near one end, and a tube having a portion inserted within the said chamber, and having two apertures, a cooling device applied to the other portion of the tube to reduce the gas passing through the same to a normal temperature before leaving said tube through the outlet aperture, means for creating a tension on the gas in the tube, and registers to indicate the primary tension of the gas and the differences in tension between the said two apertures, substantially as described.

**503,338. UMBRELLA-SUPPORT.** ANDREW M. WOODS, Gainesville, Ala. Filed Mar. 15, 1893. Serial No. 466,091. (No model.)



*Claim.*—In an adjustable umbrella holder for vehicle seats, the combination of a seat clamp provided with the clamping fingers *b* and *c* and the lateral lugs *e e'*, said lugs being provided with apertures set obliquely to each other, said fingers and lugs being provided with set-screws, the vertical rigid staff *f*, secured adjustably in one of the lugs *e e'* and formed integral with a rigid curved part *g'*, an S-shaped spring being formed between said parts, and a clamp *h* rotatively and longitudinally adjustable on said curved part, substantially as and for the purpose described.

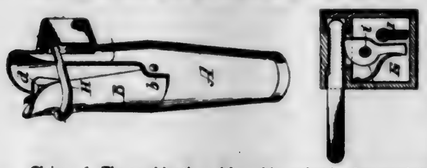
**503,339. BALL-COCK FOR TANKS FOR WATER-CLOSETS, &c.** JOHN R. ALLAN, Boston, Mass. Filed Mar. 6, 1893. Serial No. 464,785. (No model.)



*Claim.*—In a ball-cock for tanks for water closets, &c., in combination, the valve-operating arm F pivoted to the stationary portion D of the apparatus and having the float secured to its free end, said arm being provided with a check or stop, as 8, and the lever E N piv-

oted to the casing and consisting of the substantially horizontal long arm K provided at its outer end with the cup or disk L, and the nearly vertical short arm N provided with the projecting foot or toe N' for engaging said arm F at the extreme edge thereof, and adapted to be tripped to release said arm by the rise of the said cup or disk, substantially as set forth.

## 503,340. WHIP-SOCKET. FRANK M. BRIDLER, Upper Sandusky, Ohio. Filed Oct. 14, 1892. Serial No. 448,862. (No model.)



*Claim.*—1. The combination with a whip-socket having one rigid jaw and a hinged jaw, the latter resting on the upper edge of the socket, of a lock carried by one jaw and a hasp carried by the other jaw, the said hasp engaging the lock for the purpose described.

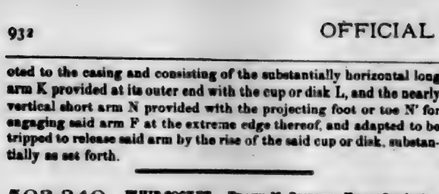
2. The combination with a whip-socket having an upwardly projecting rigid jaw and a movable jaw resting on the upper edge of the socket, of a spring for normally holding the movable jaw in its open position, and a lock for holding the movable jaw in its closed position, substantially as set forth.

3. A whip socket composed of a pair of jaws hinged together whereby a receptacle is formed, a spring secured at one end to one of the jaws and terminating at its free end near the upper ends of the jaws and means for locking the jaws, substantially as set forth.

4. The combination with a pair of jaws hinged together to form a socket or receptacle, of a spring secured to one jaw and bearing upon the other whereby to hold the jaws normally open, a spring jaw secured to one jaw and terminating at its free end at or near the outer ends of the hinged jaws and means for locking the jaws, substantially as set forth.

5. The combination with a socket having an upwardly extending rigid jaw, a hinged jaw, a spring for holding the hinged jaw normally open, and a spring jaw located between the hinged and rigid jaws, of a lock carried by the rigid jaw and a hasp carried by the hinged jaw, substantially as set forth.

## 503,341. MACHINE FOR CUTTING PACKING-RINGS. MORRIS E. BARGE, St. Louis, Mo. Filed May 2, 1893. Serial No. 472,739. (No model.)



*Claim.*—1. In a machine for cutting packing rings, the combination with a suitable knife, and a support therefor of a carrier upon which the packing material is received, which carrier is provided with a clamping device for securing the end of the packing, a scale for indicating the diameter of the shaft, arranged so that the movement of the carrier can be regulated thereby, and a scale for indicating the increased length required to compensate for the varying circumferences of the packing when shaped in the form of a ring, due to their varying resiliences and differences in bulk, substantially as and for the purposes described.

2. In a machine for cutting packing rings, the combination with a suitable knife pivotally mounted, of a movable carrier provided with a clamping device in which the end of the packing is secured, a scale for determining the distance between the knife and the clamping device which scale is marked with the diameters of different sized pistons, a movable indicator for said scale, and a scale for said indicator, for determining the increased length necessary for packings of different thicknesses, substantially as and for the purposes described.

3. In a machine for cutting packing, the combination with a drum formed with a knife slot, of a knife mounted on said drum at an angle, a circular carrier provided with handles, and a clamping device mounted upon said carrier, substantially as and for the purposes described.

4. In a machine for cutting packing, the combination with a circular drum formed with a guide flange and provided with a knife slot, of a knife mounted thereon at an angle, a carrier plate concentrically mounted with relation to said drum, a clamping device mounted on the carrier, and a scale on the carrier for determining the length of movement necessary for the clamping device from the knife, for shafts or pistons of different diameters, substantially as and for the purposes described.

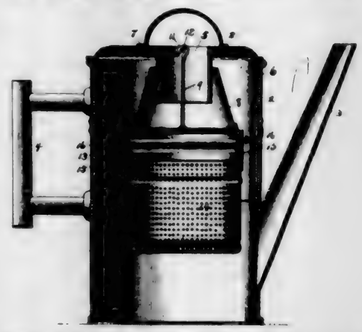
5. In a machine for cutting packing, the combination with a circular drum provided with a knife slot, of a knife mounted thereon at an angle, a carrier ring concentrically arranged relative to the drum, a clamping device mounted on the carrier, a scale for said carrier for determining the length of movement necessary for the clamping device from the knife, for shafts or pistons of different diameters, a scale mounted on the drum for indicating the position of a movable pointer to determine the lengths required for different thicknesses of packing, substantially as and for the purposes described.

6. In a machine for cutting packing the combination with a drum provided with a knife slot of a knife mounted thereon at an angle, a carrier mounted on the drum, a clamping device on the carrier, and a stop block on the clamping device having its abutting face arranged at an angle corresponding to the blade of the knife, substantially as and for the purposes described.

7. In a machine for cutting packing the combination with a drum provided with a knife slot, a knife mounted thereon, a face plate formed with a shoulder clamped to the front end of the drum, through bolts for clamping said plate, a carrier ring revolubly mounted on the shoulder of the face plate, and a clamping device mounted on said ring and extending over the drum, substantially as and for the purposes described.

8. In a machine for cutting packing, the combination with a suitable knife and carrier, of a clamping device comprising a rigid jaw, a stop block formed with an inclined operating face mounted on the rigid jaw, a pivoted clamping jaw, a threaded bolt passing therethrough, said bolt being pivoted on the rigid jaw, a spring surrounding the bolt for forcing the jaws apart, and a thumb nut on the bolt for forcing the jaws together, substantially as and for the purposes described.

## 503,342. COFFEE-POT. WILLIAM P. CARLIN, Jeffersontown, Ky., assignor of one-half to Jesse M. Martin, Dawson, Ga. Filed Mar. 15, 1893. Serial No. 466,095. (No model.)



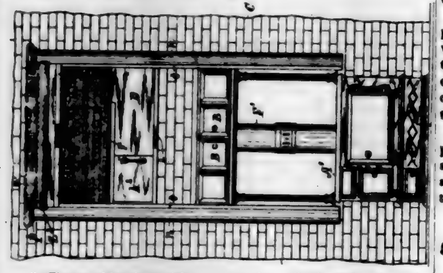
*Claim.*—The combination with a coffee pot, of a cover having a central opening and provided with an elongated cylindrical flange, a tube depending from the cover at the central opening thereof and provided at its top with a horizontal cross-rod, a water-seal cup provided with a suspension rod having a hook at its upper end and engaging the cross-rod, a cover 13 secured to the bottom of the cup and carried thereby and provided at opposite sides with laterally extending headed projections, and a foraminous coffee receptacle or strainer provided with oppositely disposed hooks adapted to engage the headed projections whereby the cover 13 is secured on the coffee receptacle or strainer, and the latter is suspended in the coffee pot, substantially as described.

## 503,343. MOVABLE HOOD FOR STOVES OR RANGES. BENJAMIN F. CARPENTER, Roselle, N. J., assignor to the Heat and Odor Extinguisher Company, of New Jersey. Filed Jan. 24, 1893. Serial No. 459,577. (No model.)

*Claim.*—1. The combination, with a range, of a wall adapted to form the rear of a ventilating passage, guides upon the front of such wall forming the sides of such passage, an outlet flue for such passage, a hood fitted movably to such guides with means to counterbalance and raise the hood, a spring curtain roll mounted at the top of the guides and a curtain fitted movably upon the guides and attached to the top of the hood, as set forth.



2. The combination, with a range, of a wall adapted to form the rear of a ventilating passage, guides upon the front of such wall forming the sides of such passage, an outlet flue in such wall between the guides, a hood fitted movably to such guides with cords and weights to balance the same, a spring curtain roll mounted at the top of the guides and a curtain fitted movably upon the guides and provided at the bottom with a stiffening bar having a handle and means to engage the top of the hood, as set forth.



3. The combination, with a range, of a wall adapted to form the rear of a ventilating passage, an outlet flue in such wall, vertical guides upon the front of such wall, a hood movable to and from the top of the range upon such guides, and a top piece and flexible curtain for inclosing the passage between the guides, substantially as herein set forth.

4. The combination, with a range, of a wall adapted to form the rear of a ventilating passage, an outlet flue in such wall, vertical guides upon the front of such wall, a hood movable to and from the top of the range upon such guides, a top piece and flexible curtain for inclosing the passage between the guides, and a damper in such outlet flue, as set forth.

5. The combination, with a range, of a wall adapted to form the rear of a ventilating passage, an outlet flue in such wall, vertical pockets attached to such wall with guides at their inner and outer edges and a counterbalanced hood fitted to the guides at the outer edges, with wheels at its top and bottom fitted to the guides, as herein set forth.

6. The combination, with a range, of a wall adapted to form the rear of a ventilating passage, an outlet flue in such wall, wooden plates *m* provided with grooves *m'* and attached to the wall as described, vertical pockets *n* secured upon the plates, wooden guides attached to the outer edges of the pockets, a hood fitted to the outer guides with wheels fitted to such outer guides and to the grooves *m'*, and means for counterbalancing and raising the hood, substantially as set forth.

7. The combination, with a range, of a wall adapted to form the rear of a ventilating passage, an outlet flue in such wall, wooden plates *m* provided with grooves *m'* and attached to the wall as described, vertical pockets *n* secured upon the plates, wooden guides attached to the outer edges of the pockets, a hood fitted to the outer guides, trolleys projected back from the opposite edges of the hood, the wheels *x*, and *x'*, pivoted upon the trolleys, the pulleys $o^3$ at the tops of the pockets, the cords *o'* attached to the trolleys and carried over the pulleys, and the weights *o* for counterbalancing the hood, as herein set forth.

8. The combination, with a range or stove, of a wall adapted to form the rear of a ventilating passage, an outlet flue in such wall, vertical guides *l* and *m* of non-resonant material attached to the wall, a hood movable to and from the top of the stove with wheels fitted to such guides, and an extensible connection to the outlet flue, substantially as herein set forth.

9. The combination, with a range or stove, of a wall adapted to form the rear of a ventilating passage, an outlet flue in such wall, guides upon the front of the wall, a hood fitted movably to such guides, a top piece and curtain for inclosing the chamber between the guides, and a packing inserted between the wall and the guides, substantially as set forth.

10. The combination, with a range or stove, of a wall adapted to form the rear of a ventilating passage, an outlet flue in such wall, guides upon the front of the wall, a hood counterbalanced and fitted movably to such guides, a spring curtain roll mounted at the top of the guides, a curtain fitted movably upon the guides, and detachably connected at the bottom of the hood, and chains or cords for limiting the separation of the curtain and hood, as set forth.

11. The hood fixtures for a range or stove, consisting of the wooden plates *m* adapted for attachment to a chimney breast and provided with suitable guides and vertical pockets *n*, the top piece P, the curtain roller *r*, the curtain *g*, the hood movable upon the guides, and the means, as cords and weights for balancing the hood, substantially as set forth.

12. The hood fixtures for a stove or range, consisting of the wooden plates *m* adapted for attachment to a chimney breast and provided with the grooves *m'*, the sheet metal partition P, the guide *l*, and the metallic pocket *n* having its edge adapted to scribing upon the brick work, the top piece *p*, the curtain roller *r*, the curtain *g*, the hood movable upon the guides, and the cords and weights for balancing the hood, as set forth.

13. The hood fixtures for a range or stove, consisting of the wooden plates *m* adapted for attachment to a chimney breast, and provided with suitable guides and vertical pockets *n*, the top piece P, the curtain roller *r*, the curtain *g*, the hood movable upon the guides, the cords and weights for balancing the hood, and the plates, guides, curtain, and all combustible parts being chemically treated to render them incombustible, as set forth.

14. The combination, with a range, of a supplemental wall supported by the range to form the rear of a ventilating passage, guides attached to the range and to the front side of such wall, a hood movable vertically upon the guides, and outlet flue in the wall and an extensible connection from the hood to such outlet flue, as set forth.

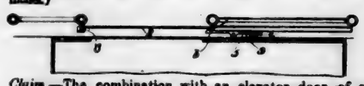
## 503,344. WASHER-FASTENER FOR HOSE-COUPLINGS. JAMES W. FLETCHER, Knoxville, Tenn. Filed Oct. 10, 1892. Serial No. 449,353. (No model.)



*Claim.*—1. A fastener adapted to be arranged longitudinally in the tubular body of a hose coupling, and comprising separate pairs of oppositely disposed duplicate spring arms, each of which arms terminate at their extremities in laterally extending hooks, both pairs of said spring arms diverging from a point intermediate of the ends of the fastener so as to dispose the hooks of both pairs of arms beyond the ends of the tubular body in which the fastener is arranged, one pair of hooks being adapted to be sprung into engagement with the outer face of the washer, and the other pair of hooks into engagement with the opposite end of the tubular body on which the washer is placed, substantially as set forth.

2. A washer fastener formed of a single blank and having separate oppositely disposed duplicate pairs of spring arms, the arms of each pair diverging from a common central point and terminating at their extremities in laterally extending engaging hooks, and a V-shaped spring arranged between one pair of arms and comprising a central spring coil and diverging spring arms extended from the coil and united with the extremities of the pair of arms between which it is arranged, substantially as set forth.

## 503,345. MEANS FOR OPERATING ELEVATOR-DOORS. LOUIS FREAS, Pittsburg, Pa. Filed Apr. 11, 1893. Serial No. 469,889. (No model.)



*Claim.*—The combination with an elevator door, of a latch adapted to engage the door at the front and rear edges thereof, and a cam on the elevator car having two outer projections and an intermediate projection of different degree of prominence, said cam being adapted to engage the latch and to operate it when the elevator reaches the floor or landing; said latch having holding-portions of different degrees of prominence adapted to be brought successively into action by operation of the cam; substantially as described.

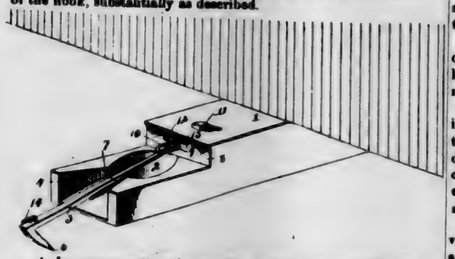
## 503,346. CAR-COUPLING. CHARLES T. HARRISON, Falling Spring, W. Va. Filed Apr. 27, 1893. Serial No. 472,075. (No model.)

*Claim.*—1. In a car coupling, the combination of a draw-head having an opening and provided in rear thereof with a shoulder having a link cavity, a link detachably secured in the cavity and projecting therefrom, and a hook detachably connected to the link and adapted to engage the opening of a similar draw-head, substantially as described.

2. In a car coupling, the combination of a draw-head having an

opening, a link detachably secured to the draw-head and located at the back of the opening, and a hook detachably secured to the link and adapted to engage the opening of a similar draw-head, substantially as described.

3. In a car coupling, the combination of a draw-head having an opening and provided in rear thereof with a link cavity, a link detachably secured in the cavity and projecting forward therefrom, and a hook detachably secured to the link and having the rear end of its shank extending upward through the link and provided with a cross-bar located above the link and projecting laterally from the shank of the hook, substantially as described.



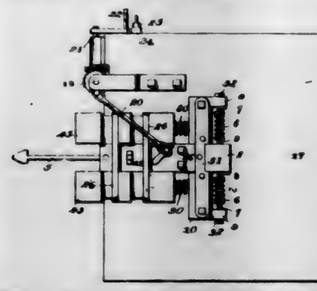
4. In a car coupling, the combination of a draw-head having an opening and provided in rear thereof with a shoulder having a link cavity, a link arranged in the cavity and projecting forward from the shoulder, a removable bolt passing through the draw-head and the link and securing the latter in the cavity, and a hook having the inner end of its shank extended upward through the link and provided with a cross-bar arranged above the link and projecting laterally from the opposite sides of the shank of the hook, substantially as described.

5. In a car coupling, the combination of a draw-head provided with an opening, a coupling hook connected at its inner end to the draw-head and adapted to engage the opening of a similar draw-head and provided at its outer end with an outwardly extending L-shaped arm forming an outwardly opening catch adapted to be engaged by a rod and having a free unobstructed opening to receive the rod, whereby cars of a train may be cut off without liability of the rod becoming accidentally retained by the catch after such uncoupling, substantially as and for the purpose described.

6. In a car coupling, the combination of a draw-head having an opening with a concaved downwardly and forwardly inclined front wall and provided with a mouth 4 having an inclined bottom and converging sides, said draw-head being provided in rear of the opening with a shoulder having a link cavity, a link detachably secured in the link cavity and projecting therefrom, a coupling hook having the inner end of its shank bent upward and provided with a cross bar and engaging the link, an angle arm mounted on the hook and forming an outwardly opening catch, and a hooked rod for engaging the catch to lift the coupling hook, substantially as described.

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**503,347.** CAR-COUPLING. DANIEL W. HAUSAM, Dallas, Tex. Filed Apr. 28, 1893. Serial No. 472,220. (No model.)



*Claim.*—1. In a car-coupling, the combination of a draw-head, pivoted jaws mounted in the draw-head and capable of lateral spreading, springs disposed transversely and connected with the rear ends of the jaws and provided with adjusting screws, substantially as described.

2. In a car-coupling, the combination of a draw-head, a car, pivoted jaws mounted in the draw-head, and transversely-disposed springs arranged at the rear end of the jaws and provided at their ends with screws, the screws at the inner ends of the springs being connected with the jaws and those at the outer ends of the springs being connected with the car, substantially as described.

3. In a car-coupling, the combination of a draw-head composed of upper and lower plates and having open sides, a transverse partition arranged between the sides and provided with lateral extensions, jaws pivoted between the sides and having recesses to receive the extensions, and springs connected with the jaws, substantially as described.

4. In a car-coupling, the combination of a draw-head, jaws pivoted in the draw-head, and spring-actuated bumpers arranged at the sides of the draw-head and provided at their inner sides with recesses to permit the spreading of the jaws, substantially as described.

5. In a car coupling, the combination of a draw-head, jaws pivoted in the draw-head, and bumpers arranged at the sides of the draw-head and having their outer ends beveled to direct a link into the mouth of the draw-head, substantially as described.

6. In a car-coupling, the combination of a draw-head provided in its lower face with transverse recesses, pivoted jaws mounted in the draw-head, spring-actuated bumpers arranged at the sides of the draw-head and provided with elongated recesses, and rectangular clips extending across the bottoms of the draw-head and the bumpers and arranged in the recesses thereof and extending up the outer sides of the bumpers, substantially as described.

7. In a car-coupling, the combination of a car, a draw-head provided with spring actuated jaws, a crank mounted on the draw-head and provided with arms interposed between the jaws, a vertical shaft mounted on the car and provided at its lower end with a crank, a rod connecting said cranks, a horizontal shaft, gearing connecting the shafts, a crank-handle arranged at the outer end of the horizontal shaft, and a swinging rack-bar mounted on the car and arranged to engage the crank-handle, substantially as and for the purpose set forth.

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**503,348.** LEATHER-EDGE TRIMMER. JOSEPH HOOK, Grand Rapids, Mich. Filed Apr. 28, 1893. Serial No. 472,232. (No model.)



*Claim.*—1. The combination, in a French edger, of a cutting tool having side guards, one of said guards having a broad upper surface, for the reception of a gage, the lower outer corner of which is beveled to give the proper form to the corner of the material being worked, and an adjustable upper gage having a spring body and a downwardly projecting head that projects below the side guards to, and directly over the cutting edge of the tool, substantially as shown.

2. The combination, in a French edger, of a cutting tool having side guards, one of which has a broad upper surface, and has its lower outside corner beveled, a top gage adjustably secured to the broad surface of the side guard, the body of said gage being a spring having a head that projects to one side of and below said guide to, and directly over the cutting edge of the tool, and an antifriction roller in said head, substantially as shown.

3. The combination, in a French edger, of a cutting tool having side guards, one of said guards having a broad upper surface, and its lower outside corner beveled, a spring gage adjustably attached to the upper surface of said side guard, and having a solid head projecting below said guard to, and directly over the cutting edge of the tool, and an adjustable side gage substantially as shown and described.

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**503,349.** INCANDESCENT-LAMP SOCKET. CHARLES T. LEE, Boston, Mass. Filed May 3, 1892. Serial No. 431,551. (No model.)



*Claim.*—1. A molded socket for incandescent lamps provided between the mouth thereof and the terminals with a ring of rubber, which projects into the cavity of the socket for the purposes and substantially as set forth.

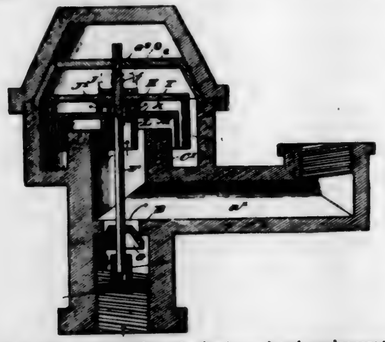
2. A molded socket for incandescent lamps, provided between the mouth thereof and the terminals with a ring of rubber, said ring of rubber being secured in an annular recess in said socket, substantially as set forth.

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**503,350.** GAS-GOVERNOR. LEONARD W. MARTYR and HILLIARY ELDRIDGE, Houston, Tex. Filed Feb. 11, 1893. Serial No. 461,923. (No model.)

*Claim.*—1. In a gas-governor, the combination of the casing having a lower interiorly threaded inlet neck, an interior valve seat and an upper single mercury well in a line with and above the inlet neck, the outer wall of the well having an inner shouldered seat, an inclosing tapered or conical cover removably connected to the outer well wall, an upper spider valve stem guide having angled ends clamped into said shouldered seat by the conical cover, an exteriorly threaded valve stem guide adjustably engaging the threads of the inlet neck and having an upwardly projecting guide tube, a weighted valve stem having its upper and lower ends working in the upper spider and lower guide tube respectively, a bell-shaped valve attached to the valve stem and working onto the interior valve seat, and separate inverted pressure cups floated in the single mercury well, one of said cups being attached to the valve stem and the other lower cup being entirely disconnected from the valve stem and the upper cup and provided with a central gas passage leading into said upper cup, substantially as set forth.



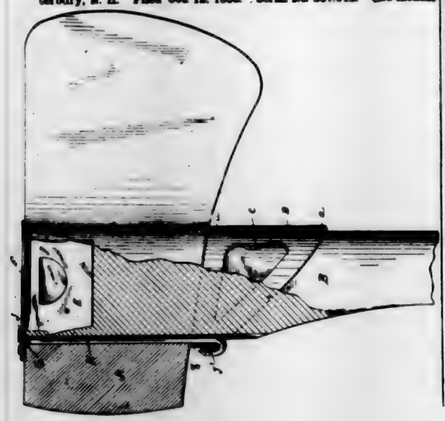


2. In a gas governor, the casing having an interior valve seat the inlet and outlet necks and an upper mercury well, the valve stem carrying a valve, separate inverted pressure cups floated in said well, one of said cups being attached directly to the valve stem and the other cup being independent thereof and provided with a central gas passage leading to the former and a legged tap secured to the stem between the two cups and forming a spacing rest for the unattached cup, substantially as set forth.

3. In a gas governor, the casing having an interior valve seat an inlet and an outlet neck and an upper mercury well, the valve stem guided in said casing and provided with a valve and an exteriorly threaded portion at its upper end, an inverted pressure cup arranged on the upper end of said valve stem and floated in said well, upper and lower taps threaded onto the threaded portion of the valve stem above and below said upper cup, the lower of said taps being provided with an outer series of depending rest legs and a concentric inner series of longer guide legs, and a lower smaller inverted pressure cup arranged inside of the upper cup and bearing on said rest legs, said lower cup being disconnected from the stem and provided with a central neck embracing the lower ends of said longer guide legs and forming a gas passage into the upper cup, substantially as set forth.

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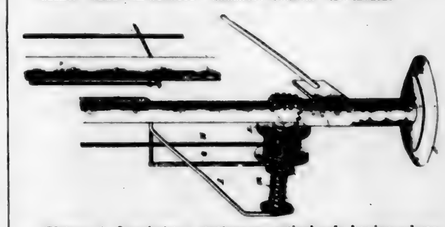
**503,351.** AX WEDGE AND GUARD. GEORGE F. MORRILL, Canterbury, N. H. Filed Oct. 12, 1892. Serial No. 447,912. (No model.)



*Claim.*—The combination of the annular guard D, inclosing the helve and consisting of an integral band with the portion *a*, *a*, on the lower, or front side of the helve the widest and with the portion at the opposite, or rear side of the helve contracted into a narrow band *b*, a wedge inserted in the end of the helve and provided with a flanged head F extending over and resting upon the ax head and the bolt H passing through the flanged head F and embedded in the edge of the helve, said bolt being provided with a head J resting upon the flanged head F, and a hooked end J' turned over the narrow portion *b* of the guard D and connecting said guard and flanged head, substantially as described.

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**503,352.** HAY-ELEVATOR. SAMUEL A. MCAMULTY, Glenn's Ferry, Idaho. Filed Jan. 31, 1893. Serial No. 460,313. (No model.)



*Claim.*—1. In a hoist, a stationary vertical pole having a bearing box at its base, a bearing bracket extended to one side of said pole, a rotating winding shaft journaled at its ends in the pole and said bearing bracket and having a pinion at one end, a sweep controlled gear sleeve loosely turning on said pole and said bearing box and having teeth at its upper edge meshing with said pinion, a winding drum loosely mounted on said shaft, clutch devices for said drum and means for throwing said drum out of gear with the shaft and holding the same out of gear, substantially as set forth.

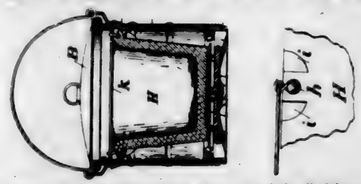
2. In a hoist, the combination of a vertical pole, a bearing bracket extended to one side of said pole, a winding shaft journaled in the pole and said bearing bracket and having a bearing pinion at one end, a clutch collar fast on said shaft, a winding drum mounted loosely on the shaft and having a clutch face at one side, a spring arranged at one side of said drum to hold the same normally in engagement with said collar, a gear sleeve embracing and turning on said pole, said gear sleeve being provided at its upper edge with gear cogs meshing with said pinion and also having an extended arm, a sweep connected to said arm, and means for relieving said drum from the tension of said spring, substantially as set forth.

3. In a hoist, the combination of a winding shaft, a winding drum loosely mounted on said shaft and having a grooved collar at one end, clutch devices for said drum to connect the same with said shaft, an upright lever pivoted to a suitable point of attachment and having its lower end loosely engaging the grooved collar of said winding drum, a controlling pull rope attached to the upper end of said lever and passing over suitably arranged guide pulleys, and a suitably arranged catch device for said rope to hold the drum out of engagement with its clutch devices, substantially as set forth.

4. In a hoist, the combination of a suitably arranged winding drum, clutch devices for said drum, a suitably arranged controlling lever loosely connected at one end with the drum to throw the same in and out of gear with its clutch devices, a pull rope connected to the other end of said lever, and having at a suitable point thereon a knot or stop projection, suitably arranged guide pulleys for said rope, and a catch wire arranged over one of said pulleys and provided with a raised loop portion adapted to permit the knot or stop projection of the pull rope to pass therethrough, substantially as set forth.

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**503,353.** COOKING-VESSEL. CHARLES J. PARKER, Havre de Grace, Md. Filed Mar. 27, 1893. Serial No. 467,716. (No model.)



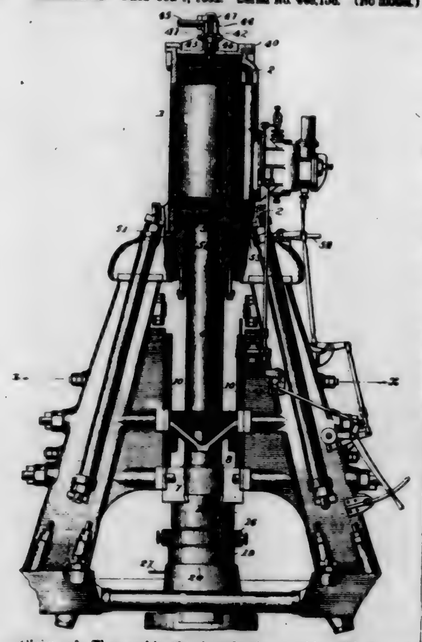
*Claim.*—1. The combination of the open ended cylindric casing; a ring fitting within and secured to the casing at the bottom thereof; a bridge or support secured to the ring above the bottom of the casing;

a false bottom, F, secured above the bridge or support and leaving a clear space between said false bottom and the support; and a cooking vessel resting on the false bottom, substantially as described.

2. In a cooking vessel the combination of the exterior cylindric casing; the porcelain or earthen ware cooking-vessel in said casing leaving an annular space between the two; the ear knobs, *h*, on said vessel; a guard, *i*, at each side of the ear-knob; the bail, *k*, which rests on the top edge of said vessel, and the links, *j*, connecting the ear-knobs and bail, for the purpose described.

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**503,354. STEAM FORGING-MACHINE.** WILLIAM A. PEARSON, Scranton, Pa. Filed Oct. 7, 1892. Serial No. 448,153. (No model.)



*Claim.*—1. The combination in a forging machine with the main frame, of a cylinder supported by the frame, an enlarged piston rod forming the weight necessary for striking the blow, said piston rod having a comparatively light piston and tup attached thereto, and guideways upon the main frame constructed to guide the tup during its entire stroke, substantially as described.

2. The combination in a forging machine with the main frame, and an anvil, of an enlarged piston rod forming the weight necessary for striking the blow, a comparatively light piston and tup upon said rod, guideways upon the main frame for guiding the tup throughout its stroke, and a pair of dies, one of said dies being connected to the tup and the other to the anvil, substantially as described.

3. The combination in a machine for forging, of a lower die, an upper die having a projection adapted to produce a depression in the forging for centering a punch, a tapered punch having its larger end constructed to fit said depression, and a separable head for the punch having a similar depression to receive the projection on the die, said die being thus adapted for use as a hammer for the punch, substantially as described.

4. In a machine for forging, the combination with the upper die and with a punch, of the lower die provided with an interchangeable punch die and solid disk, substantially as described.

5. In a machine for forging the combination with the upper die having a projection 15, and with the punch, of the lower die having a well and the interchangeable punch die and solid disk, both adapted to fit within the well, substantially as described.

6. In a machine for forging the combination with the lower die having a well, of a hydraulic lift in the lower part of the well, the interchangeable punch die and solid disk fitting within the upper part of the well, and a suitable support for said die and disk, substantially as described.

7. The combination with the lower die having a well, of the cup-shaped disk arranged upon a suitable support within the well and having a peripheral flange at its upper edge, and the interchangeable punch die and solid disk having their lower ends reduced to fit within the flange of the cup-shaped disk, substantially as described.

8. The combination of the upper die, the punch having a cylindrical projection 50 and a shoulder upon its upper end, and the punch head having a recess on its lower side adapted to fit upon the projection and a flange fitting upon the shoulder of the punch, substantially as described.

9. The combination of the upper die having a projection, the punch having a head into which said projection fits, the lower die having a well, the punch die within the well and having a tapered opening, the cup-shaped disk below the punch die, and a suitable support for said disk, substantially as described.

10. In a forging machine the combination of the lower die having a well, and a hydraulic lift consisting of a movable cylinder fitting loosely in the well, and a stationary hollow piston and piston rod resting upon the anvil, substantially as described.

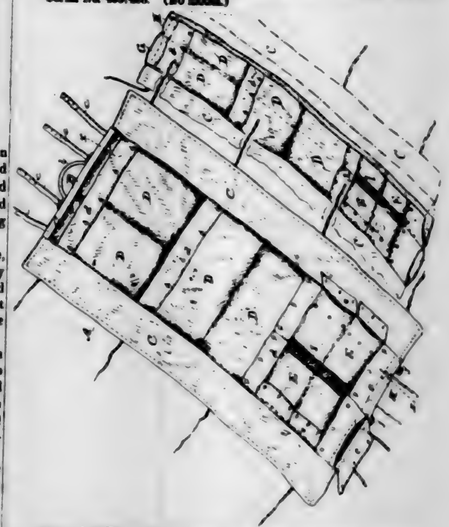
11. In a forging machine the combination with the lower die having a well and a hydraulic lift in said well surrounded by a cylindrical support of the cup shaped disk resting upon said support, and the interchangeable punch die and solid disk, each adapted to fit within the well and to be centered upon the cup shaped disk, substantially as described.

12. In a forging machine the combination with the lower die having a well of the cylindrical base and support 23, 24, at the bottom of the well, and the hydraulic lift consisting of a movable cylinder fitting loosely within said base and support, and a stationary hollow piston and piston rod within the cylinder and resting upon the anvil, substantially as described.

13. In a forging machine the combination with the die having a well, of a hydraulic lift within the well consisting of a hollow piston rod resting upon the anvil of the die, a piston at the upper end of the piston rod, a follower upon the upper side of the piston having a reduced end to receive the blows of the cylinder, an asbestus packing ring between the follower and the piston, a movable cylinder surrounding the piston and closed at its upper end, and an inwardly projecting flange or shoulder at the lower end of the cylinder, substantially as described.

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**503,355. COMBINED SHAWL-STRAP AND TRAVELING-COMPANION.** ANNA B. S. PHILLIPS, Salina, Kans. Filed Feb. 22, 1893. Serial No. 463,438. (No model.)



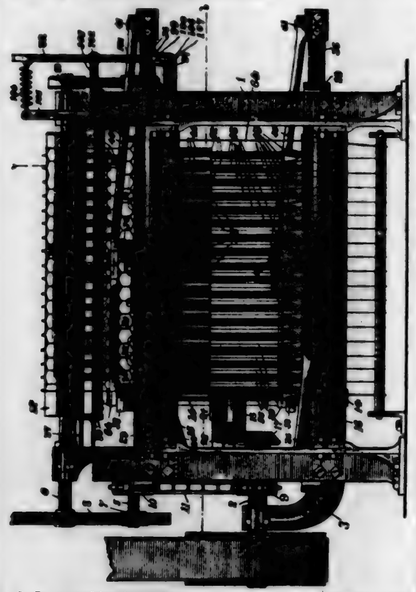
*Claim.*—The combined shawl strap and traveling companion herein described, consisting of a bar B having handle A and straps *c* with a covering A of flexible material, and provided on its inner side with the pockets G and H, extending the entire length of the receptacle, and a number of smaller pockets D, E, having flaps *d*, *e* and the side flaps C, all constructed as shown and specified.

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**503,356. WIRE-NETTING MACHINE.** JOHN RADY, Georgetown, Conn. Filed Oct. 22, 1892. Serial No. 449,625. (No model.)



*Claim.*—1. In a machine for making wire netting, the combination of the shaft 14 with the bevel gear mounted thereon and meshing with a bevel-gear on the drive-shaft 2, whereby rotary movement is imparted to said shaft 14, of the crank 38 mounted on said shaft 14, lever 36 pivoted on the frame and connected to the cranks 38 by pitman 39 and the connecting-rod 40 pivoted at one end to the rack-bar 35 for rotating the divided gears and having at the other end an elongated slot 42 within which extends the stud 43 on the lever 36, substantially as and for the purpose set forth.



2. In a machine for making wire netting, the combination of the shaft 14 with the bevel gear mounted thereon and meshing with a bevel-gear on the drive-shaft 2, of the eccentric 21 on the shaft 14, the lever 23 having in one end an elongated slot 24 and connecting said eccentric with the crank 20, the shaft 19 upon which said crank is secured, and the rocker-bar 25 and pitmen 26, and 27, whereby said rocker-bar is connected to the slides 28, and 29, substantially as and for the purpose set forth.

3. In a machine for making wire netting, the combination of the feed-roll 12, the sprocket-wheels 9, and 10, ovoidal in shape and eccentrically mounted on the shafts 2, and 5, and the sprocket chain 11, whereby a variable speed is imparted to said feed-roll, substantially as described.

4. In a machine for making wire netting, the combination of the upper and lower series of divided gears journaled within the reciprocatory slides, the bobbin-holders, the sections 32 of the upper series of divided gears having tails 34 which extend within recesses 47 in the heads of the bobbin-holders, and the sections $32^a$ of the lower series of divided gears having tails $34^a$ which extend within the annular recesses 50 in the blocks 49 on the spindles of the bobbin-holders, whereby said bobbin-holders are loosely journaled between the sections 32 and $32^a$ of the upper and lower series of divided gears, substantially as set forth.

5. The combination of the divided gear sections 32 and $32^a$, the bobbin-holder loosely journaled between said gear sections, the bobbin loose on the spindle 45 of the bobbin-holder, the hood 52 depending from the head of the bobbin holder and provided with perforations 53 and 54, the head 46 of the bobbin-holder having the perforation 61 communicating with a perforation 59 having a flared mouth in the divided gear section 32, whereby the wire may be drawn from the bobbin, substantially as and for the purpose set forth.

6. The combination of the bobbin-holder, the bobbin loose on the spindle 45 of said holder, the spindle squared at its lower end and having fitting thereon the block 49, said block having a series of depressions 63 adapted to be engaged by a teat 62 formed on the adjacent end of the bobbin, substantially as and for the purpose set forth.

7. The combination of the shaft 65 journaled in bracket 66, the disk 67 keyed on said shaft and carrying the spools of wire 70 for forming the selvage, said shaft 65 having in its end perforations $70^a$ through which the wires from said spools 70 are threaded, means for rotating said shaft, and the gears 71, 72, and 73, for imparting a rotary movement to said spools 70, substantially as and for the purposes specified.

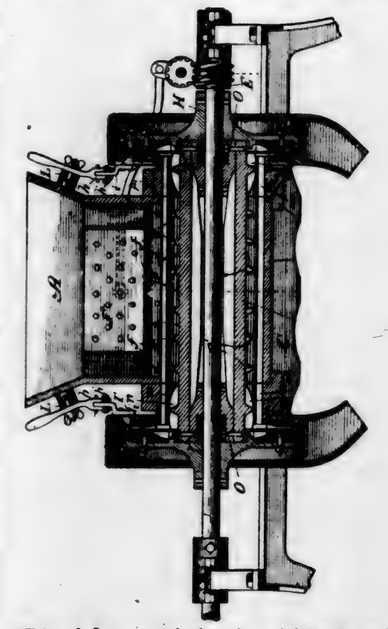
8. The combination of a device connected to the net forming mechanism so as to reciprocate in harmony therewith, a series of pivoted dogs whose noses are normally upheld by the wire netting and whose tails are below the field of action of said device, clutch mechanism capable of being connected with and disconnected from the power pulley, and appliances which operatively connect the net forming mechanism and clutch mechanism when the tails of the dogs are elevated to obstruct said device, substantially as set forth and described.

9. The combination of the shaft 87, the bell-crank 88 and arms 89 rigidly mounted thereon, the flat rod 90 secured to said arms and adapted to be oscillated back and forth in close proximity to the heel ends of the dogs 83, the lever 91 loosely connected to said bell-crank, and the reciprocatory slide 29 carrying the wedge, substantially as and for the purpose specified.

10. The combination of the lever 91 with means for holding said lever against oscillation when any of the wires which form the netting have become broken as described, of the wedge 94 adapted to be depressed to engage the toe of a push-finger 97, the bevel nosed dog 99 limited in its movement by the shoulder 107 projecting from the frame, and the clutch lever held in engagement with the power-pulley 80, substantially as described.

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**503,357. CORN AND COB CRUSHER AND GRINDER.** FRED S. RICE, Sycamore, Ill. Filed Mar. 18, 1892. Serial No. 426,469. (No model.)



*Claim.*—1. In a corn and cob crusher and grinder, in combination with the cylindrical outer grinding surface, a roller having at its ends, respectively, oblique, elongated grinding teeth having their base lines in a cylindrical surface co-axial with the surface of the cylindrical roller upon which they are mounted, and crushing teeth mounted on said roller intermediate of the ends serving to cooperate with the outer grinding surface to crush cobs and feed them onward, and said oblique teeth serving still further to crush and grind the material, substantially as described.

2. In a corn and cob crusher and grinder in combination with the outer grinding surface, the roller having in one part crushing teeth arranged at intervals on spiral lines around the roller and at its extremities a series of oblique elongated teeth alternately longer and shorter and all terminating at the edge of the roller, substantially as described.

3. In a corn and cob crusher and grinder the combination with the outer grinding surface of an inner grinding device comprising a series of alternately longer and shorter oblique elongated teeth having a side vertical to the plane of the axis of rotation and the other side warped and rounded in the direction of the feed, substantially as described.

4. In a corn and cob crusher and grinder the combination with the outer grinding surface of an inner grinding device composed of sections adjusted and held together to produce a ring, each section having thereon alternately longer and shorter oblique elongated teeth having a straight side vertical to the axis and a warped and rounded side in the direction of the feed, the parts being adjusted together substantially in the manner and for the purpose set forth.

5. In a grinding machine the combination with the revolving shaft and the plate secured to revolve therewith and carrying on its face a serrated grinding ring and with a stationary body provided at intervals with oblique lugs of a ring carrying serrations mounted on said stationary body to be capable of moving thereon and held from revolution during the revolution of the shaft, hooks on said ring and inclined lugs on said ring adjacent to the hook, said hooks adapted to embrace the inclined lugs on the stationary body thereby bringing the inclined sides of the lugs respectively in contact with each other, and a lever secured to said ring for turning the same, substantially as described.

6. In a grinding machine the combination with the revolving shaft and a plate mounted to revolve thereon and carrying grinding serrations on its inner face and with a stationary body such as the ring G of a ring H' carrying on its inner face a serrated grinding ring to cooperate with the grinding surface on the revolving plate, hook lugs at intervals on the outer surface of said ring and inclined lugs adjacent to said hook lugs, inclined lugs on the stationary body engaged by said hook-lugs, a lever secured to said ring H', a slot arm secured to a stationary part of the machine and an adjustable connection between said lever and slot arm in the slot thereof, substantially as and for the purpose set forth.

7. In a grinding machine employing a grinding surface revoluble with the shaft and a separably mounted cooperating grinding surface adjustable toward and from its companion grinding surface through the medium of a hand lever, the connection between said lever and adjustable grinding device comprising a pivot bolt h' and a readily broken plug i' passing through the members to prevent their turning on the pivot afforded by said bolt, substantially as described.

8. In a corn and cob crusher and grinder the combination with the hopper and crushing cylinder of a revolving shaft E, blocks O on said shaft, each having an inner recess to produce an annular space around the shaft to receive the bolt heads sectional crushing roller D carrying crushing teeth and having the interior strengthening ribs and bolted to said blocks, substantially as described.

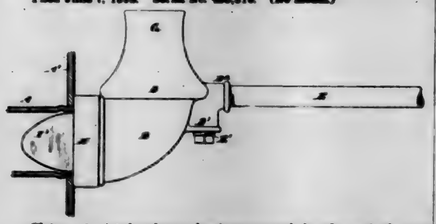
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**503,358. COMPOSITION OF MATTER FOR COATING WITH SILVER.** THEODORE Z. H. ST. CYR, Thompsonville, Conn., assignor to the Westfield Plate Company, same place. Filed Dec. 27, 1892. Serial No. 456,404. (No specimens.)

*Claim.*—A solution for coating metals, consisting of silver-cyanide, potassium-cyanide, and water, the amount of metallic silver in the solution being from three-one-hundred-and-thirty-sixths to five-one-hundred-and-thirty-eighths of the total weight.

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**503,359. BOILER-TUBE CLEANER.** RICHARD THOMPSON, New York, N. Y., assignor to the Thompson & Bushnell Company, same place. Filed June 7, 1892. Serial No. 436,216. (No model.)

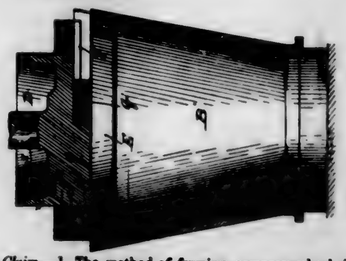


*Claim.*—1. A tube-cleaner having a central chamber or body, one end contracted to match within the boiler tube and the other end adapted to match on the boiler-shell exterior to the tube, and provided with the annular steam chamber D, with inclined orifices *e*, leading from the latter into the interior of the chamber, adapted to eject steam therefrom toward the contracted end G, and the whole arranged to receive gases through the end H, and to deliver them mingled with steam through the end G, in combination with each other, and with the two screw threaded nozzles D', D², standing at an angle relatively to each other, and with the screw threaded pipe E, engaged exchangeably in either one of said nozzles, capable of serving both as a conduit for the steam and as a handle for holding the device when in operation, and with means, as the screw plug E', for tightly closing the other nozzle, all arranged for joint operation substantially as herein specified.

2. A tube cleaner having provisions for injecting currents of steam to induce an active movement, and screw-threaded interiorly, in combination with the thin tapering nose I' and ring I, the latter being screw-threaded on its exterior to match the screw-threads in the receiving end, all arranged for joint operation substantially as herein specified.

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**503,360. METHOD OF AND APPARATUS FOR FORMING COMPRESS-WHEEL RIMS.** LIBARIUS M. TOUP, Chicago, Ill., assignor to the Compress Wheel Company, same place. Filed Apr. 7, 1893. Serial No. 469,471. (No model.)



*Claim.*—1. The method of forming compress-wheel rims, comprising flatwise abutting sections extending crosswise of the circumference of the rim, which consists in assembling the rim sections in proper annular relation in a form of comparatively large diameter, forcing them therefrom laterally through a gradually diminishing aperture, whereby they are compressed centripetally, into a form of comparatively small diameter, and finally providing annular shoulders on opposite sides of the rim, substantially as described.

2. In an apparatus for reducing the diameters of annular bodies by centripetal compression, the combination of a contracting-box formed with an aperture progressively diminishing toward one end, a follower comprising concentric telescoping sections, means for forcing the follower through the said aperture, and engaging means common to the follower sections operating to disengage sections as the follower is advanced through the contracting box, substantially as and for the purpose set forth.

3. In an apparatus for reducing the diameters of annular bodies by centripetal compression, the combination of a contracting-box, formed with an aperture progressively diminishing toward one end, a follower formed with concentric telescoping annular sections, means for forcing the follower through the said aperture, and radially sliding bars on the follower, engaging the said sections, and operating, as the follower is advanced through the contracting box, to release the said sections consecutively, substantially as and for the purpose set forth.

4. In an apparatus for reducing the diameter of annular bodies by centripetal compression, the combination of a contracting-box, formed with an aperture progressively diminishing toward one end, a sectional follower, comprising a central disk and a series of telescoping rings about the disk, means for forcing the follower through the said aperture, centripetally movable engaging means for the follower sections, operating as the follower advances through the contracting box to release the sections consecutively, and section take-up means on the follower operating as the follower is withdrawn from the contracting-box to telescope and take-up the sections consecutively, substantially as and for the purpose set forth.

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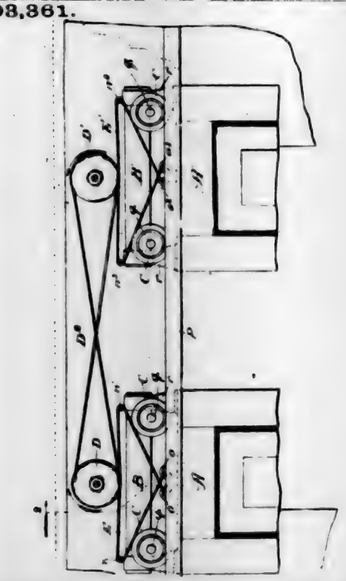
**503,361. DEVICE FOR SIMULTANEOUSLY MOVING DOUBLE DOORS.** BERNHARD J. H. DE VRY, Chicago, Ill. Filed Mar. 20, 1893. Serial No. 466,822. (No model.)

*Claim.*—1. In a device for simultaneously moving double sliding doors, the combination with the doors of the double-grooved pulleys D and D' having the crossed-belt connection D², the carrier-bars B and B' by which the doors are hung on the track *p*, and cables E and E', passed respectively about the said pulleys and over guides and fastened at their ends to the respective doors, substantially as and for the purpose set forth.

2. In a device for simultaneously moving double sliding doors, the combination with the doors A and A' of screw-eyes in the upper ends of the doors, hanger bars B and B' on rollers and by which the



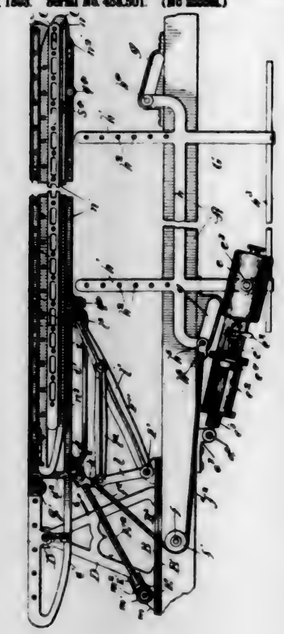
**503,361.**



doors are hung on the track *p*, double-grooved pulleys D and D' above the doors and connected by a crossed belt D², a cable E fastened at its opposite ends to the screw-eyes on the door A and passing over guides *n* and *n'* about the pulley D, and a cable E' fastened at its opposite ends to the screw-eyes on the door A and passing over guides *n*³ and *n*⁴ about the pulley D', the whole being constructed and arranged to operate substantially as and for the purpose set forth.

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**503,362. FIRE-LADDER.** FRANK A. REED, Chicago, Ill. Filed Jan. 16, 1893. Serial No. 458,501. (No model.)

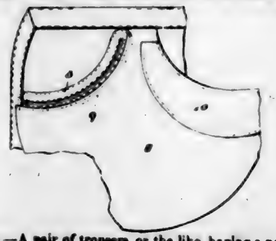


*Claim.*—1. The combination with a fire-ladder and truck upon which the ladder is pivotally mounted at its lower end-portion, of means upon the truck for raising the ladder on its pivot, and counterbalance mechanism for the ladder on the truck, comprising a movable frame for ladders mounted in guides on the truck, and connected with the ladder to lower in its guides as the ladder is raised, substantially as described.

2. The combination with a fire-ladder and truck upon which the ladder is pivotally mounted at its lower end-portion, of main raising mechanism on the truck for the ladder, and supplemental raising means for the ladder on the truck comprising a compressed air reservoir, a cylinder, a piston in the cylinder, and means for directing compressed air from the reservoir against the piston to move the latter, the cylinder and piston being connected respectively with the said truck and ladder, whereby movement of the piston under the expansive force of the compressed air will tend to assist the operation of the said main ladder raising mechanism, substantially as described.

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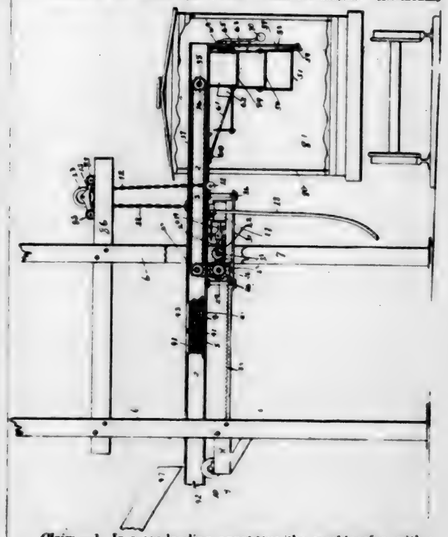
**503,363. POCKET FOR TROUSERS.** BENJAMIN BRIDGER, Chattanooga, Tenn. Filed Mar. 21, 1893. Serial No. 466,963. (No model.)



*Claim.*—A pair of trousers, or the like, having a pocket-incision bounded by a continuous line, a reinforcing welt having an incision of like contour with the pocket incision for reinforcing the same at all points, said welt being constructed of a single seamless piece of material, and a pocket-blank secured to the said trousers and carrying a pocket-facing adapted to form a covering for the pocket-incision.

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**503,364. CAR-LOADING APPARATUS.** DARWIN C. BOYCE, Quinniment, W. Va. Filed Apr. 8, 1893. Serial No. 469,499. (No model.)



*Claim.*—1. In a car loading apparatus the combination with a suitable framework, of a conveyer frame, an endless conveyer therein, rotary supports 10 on said framework upon the rear portion of which said conveyer frame is adapted to rest and run, traveling shaft carrying brackets or carriage 15 upon said framework above said conveyer frame, suitable pulleys 13 on said shaft chains 12 passing over

said pulleys and connected with reels on said conveyer frame and an engine 17 supported from said conveyer frame and means for driving said conveyer from said engine substantially as and for the purpose specified.

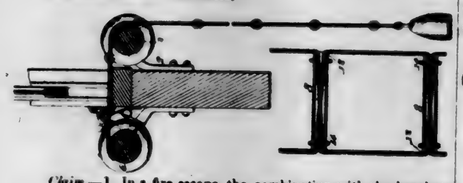
2. In a car loading apparatus the combination of the framework, a sliding conveyer frame supported thereby, an endless conveyer in said frame, an engine supported from said frame, a shaft 21 operated substantially as described from said engine, a gear wheel 27 on said shaft and a rack bar 45 connected with said supporting framework, the teeth of said rack bar being in engagement with said wheel 27 substantially as and for the purpose specified.

3. In a car loading apparatus the combination with a suitably supported sliding conveyer frame and an endless conveyer running therein, of fixed chutes 49 leading downward and outward from the forward end of said conveyer frame, and jointed chute sections 50 and 51 jointedly connected with said fixed sections 49 and means for supporting said jointed sections at an incline from the conveyer substantially as and for the purpose specified.

4. In a car loading apparatus the combination with a suitably supported sliding conveyer frame and an endless conveyer running therein as described, of supported fixed chutes 49 leading outward and downward from the open forward end portion of the conveyer frame, jointed side chute sections jointedly connected with said chute 49 and communicating therewith, a chute 62 supported beneath said forward end of the conveyer and having its inner end pivoted to the frame of the latter, a permanent end gate 68 which normally closes the outer end of said chute 62 as described, pivoted weight arms 65 fulcrumed above said chute and supporting chains connecting the upper ends of said weight arms with said chute 63 substantially as and for the purpose specified.

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**503,365. FIRE-ESCAPE.** HENRY J. CLARK, Ironton, Ohio, assignor of one-half to Charles L. Dennsler, same place. Filed Mar. 24, 1893. Serial No. 467,406. (No model.)



*Claim.*—1. In a fire escape, the combination with the brackets secured to the outside of a building and the flanged roller journaled therein, of the reel journaled in brackets secured to the inside of the building, the cables secured to said reel, and the tubes having notches at each end through which said cables pass alternately from opposite sides, substantially as described.

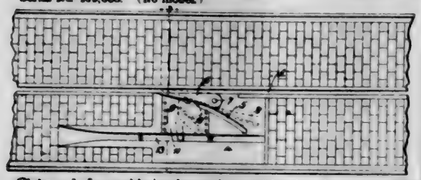
2. A ladder for fire escapes consisting of the tubes or rounds having notches or recesses at their ends and the cables passing through said tubes, alternately, at opposite sides, substantially as described.

3. A ladder for fire escapes, consisting of the tubes or rounds having notches or recesses at the ends, the rings encircling the same, and the cables passing through said tubes, alternately, from opposite sides, substantially as and for the purpose specified.

4. In a fire escape, the combination with the flanged roller on the outside of a building, the reel on the inside thereof and the ladder secured thereto, of the arm on the shaft of said reel the spring arm provided with a block which said shaft arm is adapted to strike during the rotation of said reel, and an electric push button depressed by the movement of said block, substantially as described.

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**503,366. CABLE RAILROAD.** JOHN W. DOYNOR, Chicago, Ill., assignor of one-half to Richard J. Clark, same place. Filed Apr. 5, 1893. Serial No. 469,080. (No model.)



*Claim.*—1. In a cable roadway, the combination therewith of the metal plate or casting 4, solidly attached to said roadway, said plate provided with a slot or opening 5, and said slot or opening communicating and connecting with the grip slot 1 of said cable roadway the switch bar 6, movably attached to said metal plate, and means adapted to move said switch bar upon said plate and across said grip slot, substantially as and for the purpose specified.

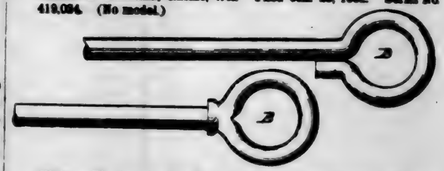
2. The combination in a cable roadway of the metal plate 4, provided with the switch slot or opening 5, said switch slot communicating with the grip slot 1, in said roadway, the switch bar 6, pivotally attached to said metal plate and adapted to be moved thereon and across said grip slot, and means adapted to hold said switch bar in its normal or closed position, and said switch bar adapted to form a side portion of said grip slot, substantially as and for the purpose specified.

3. In a cable roadway the combination of the metal plate 4, solidly supported therein, said metal plate provided with the switch slot 5, and also provided with the chamber or opening 12 and channel 13, said switch slot communicating with the grip slot 1 in said roadway, and said channel adapted for the passage of the bar 14 attached to a cable grip car on said roadway, said bar vertically adjustable on said car, the cam lever 9, pivotally attached to said metal plate in said chamber and adapted to be moved therein by said bar 14, and the switch bar 6, movably attached to said metal plate and adapted to be moved thereon by means of said cam lever, substantially as and for the purpose specified.

4. In a cable roadway or railroad the combination comprising the grip slot 1, adapted for the passage of a cable grip 3, the metal plate 4, solidly attached to said roadway or conduit castings 2 in said roadway, and provided with a switch slot or opening 5, communicating or connecting with said grip slot, and said metal plate also provided with the chamber or opening 12 and the longitudinal channel 13, the switch bar 6, pivotally attached to said metal plate by means of the stud bolt 7, and provided with the spring bar 8, adapted to hold said switch bar in its normal or closed position and to return it to said position, the cam lever 9, pivotally attached to said metal plate by the stud bolt 10, and adapted to be turned in a direction to force said switch bar across said grip slot, by the bar 14 attached to the front end of a grip car, and to be turned in a reverse direction by the cable grip of said car, when said grip is switched into the said switch slot, substantially as and for the purpose specified.

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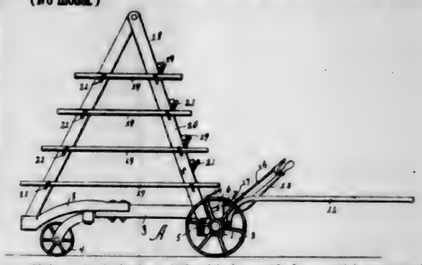
**503,367. METHOD OF MANUFACTURING END-GATE RODS.** GEORGE B. FREEMAN, Racine, Wis. Filed Jan. 23, 1892. Serial No. 419,094. (No model.)



*Claim.*—The herein described method of forming end gate rods, consisting in first bending one end of the rod so as to form a ring or eye but with a surplus of metal at the extremity of said bent portion, then heating said bent portion to a welding temperature and then upsetting the surplus metal at the extremity of said bent part to form an integral collar or flange at the base of the ring or eye and solidly welding said end to the straight portion of the rod, substantially as set forth.

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**503,368. HAY DRIER AND STACKER.** CHARLES A. OTIS and AUGUST E. RICHTER, Chicago, Ill. Filed Aug. 23, 1892. Serial No. 443,918. (No model.)



*Claim.*—1. A device of the kind specified comprising a truck having an axle 1 provided with wheels 2, a beam 3 pivoted to said axle provided with a supporting wheel 4, and devices for moving said axle relatively to said beam upon the pivoted connection between said parts.

2. A truck comprising an axle 1 having guide plates 7 secured thereto and provided with slots 6, wheels 2 for supporting said axle, a beam 3 having its forward end located between said guide plates 7 and provided with pins 5 located within said slots 6, a supporting wheel for said beam, a lever 12 pivoted upon said beam and connected by means of a link 15 with said axle, and sockets in said axle and beam for supporting a suitable frame.

3. A truck comprising an axle 1 provided with guide plates 7 having slots 6 therein, supporting wheels for said axle, a beam 3 having a supporting wheel 4 and having its forward end located between said guide plates and provided with pins 5 located within said slots 6, a lever 12 pivoted within the forward bifurcated end of the beam 3 and connected by means of a link 15 passing through said bifurcated portion with the axle 1, and sockets 9 and 10 in said beam and axle.

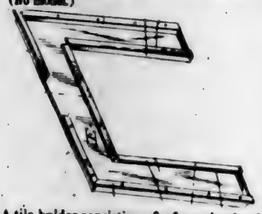
4. A truck comprising an axle provided with supporting wheels 2, sockets 10 in the upper side of said axle and at the rear edge of the same, a beam pivoted at its forward end to said axle and provided with a supporting wheel, a rearwardly extending arm 8 upon said beam provided at its rear end with a socket 9, and devices for moving said axle with relation to said beam.

5. A device of the kind specified comprising a truck consisting of an axle and supporting wheels, a beam pivoted to said truck, a supporting wheel for said beam, sockets in said truck and beam, devices for turning said axle, and a frame 18 having legs resting within the sockets of the axle and beam.



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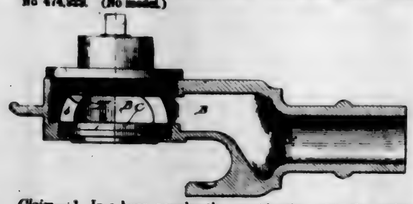
**503,369. TILE-FRAME.** GEORGE H. HOLLIDAY, Ironton, Ohio, and DAVID A. BRAWLEY, Charleston, W. Va.; said Holliday assignor to Dan B. Brawley, Charleston, W. Va. Filed July 22, 1892. Serial No. 440,686. (No model.)



*Claim.*—A tile holder consisting of a frame having its outer edges bent at right angles to the body portion and then outward forming flanges cutaway or formed with a recess to receive the tiles, and the inner edges bent at right angles to the body portion and then inward to form flanges or detents integral with the frame, substantially as and for the purpose set forth.

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**503,370. HOSE-COUPLING.** JAMES T. HAYDEN, Chicago, Ill., assignor to the Crane Company, same place. Filed May 20, 1893. Serial No. 474,923. (No model.)



*Claim.*—1. In a hose coupler the combination with the gasket compressor and the back cap of the adjuster turning freely in and working through said cap and having a screw thread engagement with the compressor, substantially as described.

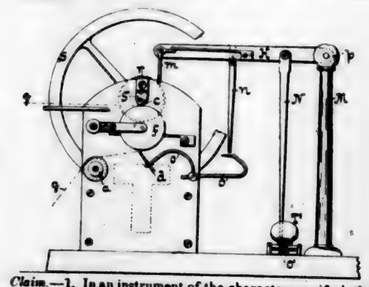
2. In a hose coupler, the combination with the compressor provided with a screw-threaded stem and the back cap of an adjuster turning freely in and working through the back cap and provided with a screw-threaded socket for the reception of the stem of the compressor, substantially as described.

3. In a hose coupler, the combination with the compressor provided with a screw-threaded stem, the back cap and means for preventing the rotation of the compressor, of an adjuster working through and rotating freely in the back cap provided with a screw-threaded socket for reception of the stem of the compressor and a washer interposed between a flange or projection on said adjuster and the back cap, substantially as described.

4. In a hose coupler the combination with the gasket compressor, the curved arms thereof, the screw-threaded stem projecting from said arms, the back cap and lugs on said cap embracing the arms on the compressor, of an adjuster provided with a screw-threaded socket for reception of the stem of the compressor and comprising a cylindrical body journaled in and working through the back cap, a squared end projecting beyond the back cap and a flange on the inner end thereof and a washer interposed between said flange and the back cap, substantially as described.

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**503,371. WRITING-RECEIVER.** ALBRECHT HEIL, Frankisch Crumbach, Germany. Filed Jan. 21, 1893. Serial No. 459,267. (No model.)



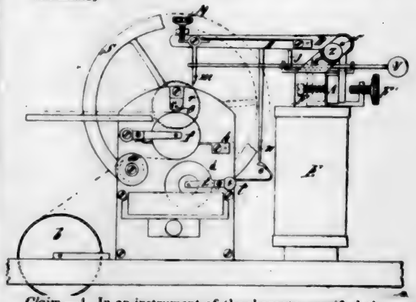
*Claim.*—1. In an instrument of the character specified, the combination of a platen and feed roll for the tape, a pencil or style lever adapted to the platen, a key, and operative connection between the key and the feed roll for advancing the tape on the depression of the key, and a tappet arranged to engage with the pencil or style lever and in operative connection with the key, substantially as described.

2. In an instrument of the character specified, the combination of a key, a feed roll and platen for the tape, a ratchet wheel for the feed roll, a pencil or style lever adapted to the platen, a lever provided with a pawl arranged to engage the ratchet wheel, and with a tappet arranged to engage the pencil or style lever, and a connection between the key and said lever, substantially as described.

3. In an instrument of the character specified, the combination of a key, a platen, a feed roll *c*, a fly wheel S and ratchet wheel on the shaft of the latter, a pencil or style lever, a lever H provided with a pawl engaging the ratchet and with a tappet adapted to engage the pencil or style lever, and a link connecting the key and lever H, substantially as described.

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**503,372. TELEGRAPHIC APPARATUS.** ALBRECHT HEIL, Frankisch Crumbach, Germany. Filed Feb. 13, 1893. Serial No. 462,188. (No model.)



*Claim.*—1. In an instrument of the character specified, the combination of the feed rolls for the tape, a ratchet wheel for the feed rolls, a marking lever adapted to the tape, an electro-magnet adapted to said lever, tappets attached to the lever and disposed to engage respectively with the ratchet wheel and with the marking lever, and a fly wheel mounted on the shaft of one of the feed rolls, substantially as described.

2. In an instrument of the character specified, the combination of the feed rolls for the tape, a ratchet wheel for the feed rolls, a marking lever adapted to the tape, an armature lever, an electro-magnet adapted to said lever, and tappets *m* and *n* attached to the lever, and disposed to engage respectively with the ratchet wheel and with the marking lever, substantially as and for the purpose set forth.

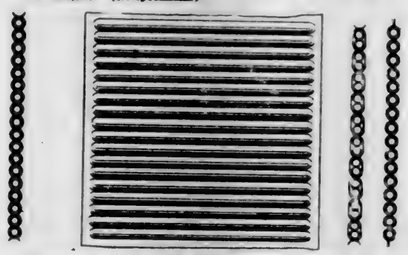
3. In an instrument of the character specified, the combination of the feed rolls for the tape, a ratchet wheel for the feed rolls, a marking lever adapted to the tape, an armature lever, an electro-magnet adapted to said lever, tappets *m* and *n* attached to the lever

and disposed to engage respectively with the ratchet wheel and the marking lever, and a slide v connected with the tappet m and carrying a pin J for limiting the motion of the lever, substantially as described.

4. In an instrument of the character specified, the combination with the feed rolls for the tape and the ink roller, of the bent lever H, tappets secured to one arm of said lever and adapted to operate the feed rolls and ink roller, an armature secured to the second arm of the lever, and an electro-magnet adapted to said armature, substantially as described.

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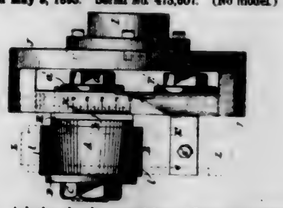
**503,373.** BUOYANT FABRIC. JOHANN G. SEIBEL, Gera, Germany, and CARL H. REINHUTH, Rockville, Conn. Filed Nov. 15, 1892. Serial No. 452,060. (No specimens.)



*Claim.*—As a new article of manufacture, a buoyant fabric consisting of two ordinary fabrics having inclosed parallel pockets formed between them by interweaving of the threads, and quills arranged in said pockets, substantially as set forth.

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**503,374.** LATHE-CHUCK. JAMES R. HOWGATE, Schenectady, N. Y. Filed May 9, 1893. Serial No. 473,607. (No model.)



*Claim.*—1. A lathe chuck comprising a frame, a holder, an adjustable taper pin, and an expansible bushing mounted thereon.

2. A lathe chuck comprising a frame, an adjustable taper pin, an expansible bushing mounted thereon, and an adjustable holder also mounted on the frame.

3. A lathe chuck comprising a slotted frame, a taper pin adjustably secured to the slotted frame, a split bushing mounted on the taper pin, a screw for adjusting the taper pin toward and from the axis of the chuck, and an adjustable holder carrying set screws for attaching it to the eccentric blank.

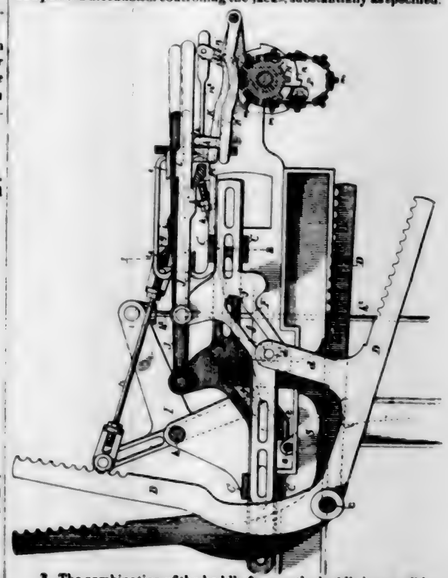
4. A lathe chuck comprising a slotted frame, an adjustable holder having arms provided with set screws for attachment to an eccentric blank, a taper pin having a shank extending through a slot in the frame, a screw for adjusting the taper pin, a split bushing mounted on the taper pin, and means for holding the bushing in place.

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**503,375.** SHEDDING MECHANISM FOR LOOMS. EDMUND INGRAHAM, Philadelphia, Pa. Filed Mar. 23, 1891. Serial No. 386,053. (No model.)

*Claim.*—1. The combination of the heddle frames, bell crank levers each having one arm connected to the top and the other arm to the bottom of its respective heddle frame, a stud projecting from one arm of each bell crank lever and having an antifriction roller at its outer end, slides each comprising horizontal end portions and an inclined central portion with slot having offset ends for the reception of said antifriction roller, guides for the horizontal portions of said slides, jacks hung to the slides and having lugs at top and bottom, upper and lower reciprocating bars acting on said jacks, the upper bar being pivoted, and pattern mechanism for controlling the engagement of the jacks with said bars, substantially as specified.

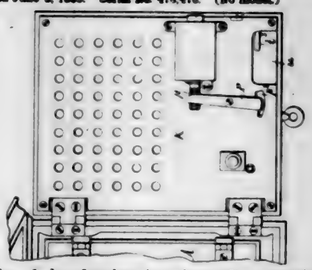
2. The combination of the heddle frames, the heddle levers, slides having inclined slots and beveled edges, upper and lower bars having beveled notches for receiving and guiding the beveled edges of the slides, jacks hung to said slides, reciprocating bars acting on said jacks, and pattern mechanism controlling the jacks, substantially as specified.



3. The combination of the heddle frames, the heddle levers, slides having inclined slots for receiving projections on said heddle levers, jacks hung to said slides, and having projecting lugs reciprocating bars acting on one side only of said lugs, pattern mechanism controlling said jacks, and a lever having a rod for acting upon the slides of the depressed heddles independently of the ordinary reciprocating mechanism, substantially as specified.

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**503,376.** FIRE-ALARM BOX. JOHN G. KRAUS, Buffalo, N. Y. Filed June 3, 1893. Serial No. 476,478. (No model.)



*Claim.*—1. In a fire alarm box, the combination with the body of the box and the outer or main door, of a local alarm gong, a hammer for sounding the gong and its actuating mechanism, all arranged on the main door, a stop or detent adapted to engage with said actuating mechanism, and a retractible retaining pin for holding the detent in engagement with the actuating mechanism, attached to the main door and bearing against the body of the box when the main door is closed, whereby said pin is held in engagement with the detent by the door, substantially as set forth.

2. In a fire alarm box, the combination with the body of the box and the outer or main door, of a local alarm gong, a hammer for sounding the gong and its actuating mechanism, all arranged on the main door, a stop or detent adapted to engage with said actuating mechanism, a movable retaining pin attached to the main door, adapted to engage with said detent and bear against the body of the box when said door is closed, and a spring whereby said pin is withdrawn from said detent, when the door is opened, substantially as set forth.

3. In an alarm box, the combination with the body of the box and the main door, of a local alarm gong, a hammer for sounding the gong, and its actuating mechanism, a stop or detent for arresting said actuating mechanism, a movable retaining pin arranged on the door



and adapted to engage with said detent when the door is closed, a bearing block of insulating material arranged on the body of the box, against which said pin bears, and a spring for retracting said pin when the door is opened, substantially as set forth.

4. In a fire alarm box, the combination with the body of the main door having a bolt or latch, of a local alarm gong, a hammer for sounding the gong and its actuating mechanism, a detent for arresting said actuating mechanism, a retractible locking device adapted to engage with said detent, to permit the door to be opened without ringing the gong, and a connection between said locking device and the door latch or bolt, whereby the door is unlocked by the movement of locking the detent to prevent the alarm from ringing, substantially as set forth.

5. In a fire alarm box, the combination with the body and the main door having a bolt or latch, of a local alarm gong, a hammer for sounding the gong and its actuating mechanism, a detent for arresting said actuating mechanism, a retractible locking lever adapted to engage with said detent, a shifting bar for actuating said lever, and an operating lever connected with the door-latch or bolt and having a lip or projection arranged adjacent to said shifting bar, whereby the door is unlocked by the movement of locking the detent to prevent the alarm from ringing, substantially as set forth.

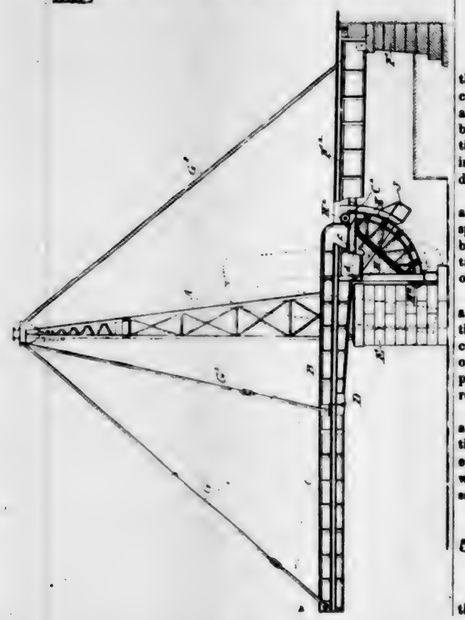
6. In a fire alarm box, the combination with the door having an opening, a bolt or catch and a handle for operating said catch, arranged in rear of said opening, ways arranged above and below said opening on the rear side of the door, a slot arranged in the edge of the door in line with said ways, and a frangible plate arranged in said ways, substantially as set forth.

7. In a fire alarm box, the combination with the door having an opening, a bolt or catch and a handle for operating said catch, arranged in rear of said opening, ways arranged above and below said opening on the rear side of the door, a slot arranged in the edge of the door in line with said ways, a frangible plate arranged in said ways, and a movable lid or guard applied to said slot for confining the frangible plate, substantially as set forth.

8. In a fire alarm box, the combination with the door having an opening, a bolt or catch and a handle for operating said catch, arranged in rear of said opening, ways arranged above and below said opening on the rear side of the door, a slot arranged in the edge of the door in line with said ways, a frangible plate arranged in said ways, a lid or guard bar pivoted to the inner side of the door and adapted to close said slot, and means for retaining said lid in place, substantially as set forth.

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**503,377.** COUNTERBALANCE FOR BRIDGES. ROBERT P. LAMONT, Chicago, Ill. Filed Nov. 25, 1892. Serial No. 452,977. (No model.)



*Claim.*—1. In a bridge the combination with a section of a bridge pivoted so that when power is applied one end is elevated, and the other end is depressed, of a counter-weight engaged to one end of said bridge when the bridge is closed and adapted to contribute its weight during the initial movement in opening, and a stop in the path of the weight to prevent the latter from bearing on the bridge during the entire movement in opening, substantially as described.

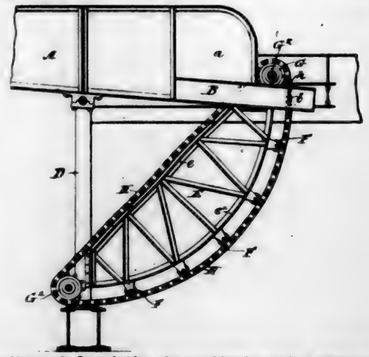
2. In a bridge the combination with a section of the bridge of a weight suspended from one end of said bridge by arms, and a stop in the path of the weight to prevent the latter from contributing its weight to the bridge section throughout the entire movement of the latter, substantially as described.

3. In a bridge the combination with a tilting section thereof, of an arm extending there from, a weight suspended from said arms by arms K, said weight caused to travel in the arc of a circle by the arm J', and a stop to prevent the arms K from bearing on the bridge section throughout the length of its travel, substantially as described.

4. In a bridge the combination with a tilting section thereof, of the arm C' extending from the rear end thereof, the weight J suspended from said arm by the arms K, a space being left between the arms K through which the arm C' can travel after the arms K have been stopped in their movement, and a spring between the upper ends of said arms K, against which the arm C' can bear, substantially as described.

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**503,378.** DRIVING MECHANISM FOR BRIDGES. ROBERT P. LAMONT, Chicago, Ill. Filed Nov. 25, 1892. Serial No. 452,978. (No model.)



*Claim.*—1. In a bridge the combination with a tilting section thereof, of mechanism for tilting said section consisting of a flexible connection engaged to the end of said section to be depressed, pulleys above and below said section around which the connection passes, bearings between said pulleys for holding said connection substantially on the line traveled by the depressible end, and means for causing said flexible connection to move in either direction to elevate or depress the end to which it is engaged, substantially as described.

2. In a bridge the combination with a tilting section thereof of a sprocket chain engaged to the end of said section to be depressed, sprocket wheels above and below said end to be depressed, bearings between said wheels for holding said chain substantially on the line traveled by the depressible end, and means for causing one or both of said sprocket wheels to revolve, substantially as described.

3. In a bridge the combination with a tilting section thereof of an endless sprocket chain engaged at one point to the end of said section to be depressed, sprocket wheels above and below said point of connection with the section, bearings between said wheels for holding one side of said chain substantially on the line traveled by the depressible end, and means for causing one of the sprocket wheels to revolve, substantially as described.

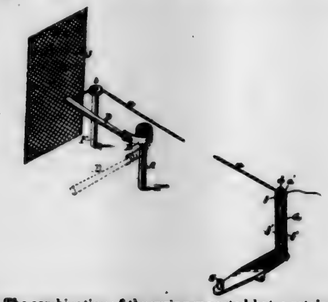
4. In a bridge the combination with a tilting section thereof of an endless sprocket chain engaged at one point to the end of said section to be depressed, sprocket wheels above and below said point of engagement, means for applying power to revolve one of said sprocket wheels and a series of rollers arranged on the arc of a circle on which said sprocket chain bears, substantially as described.

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**503,379.** GAME OR EXERCISING APPARATUS. WILLIAM P. LYLE, Philadelphia, Pa., assignor of one-half to William J. Simpson, same place. Filed Aug. 16, 1892. Serial No. 443,196. (No model.)

*Claim.*—1. The within described bat and ball game apparatus, the same comprising a spring-mounted bat, a retaining device for said

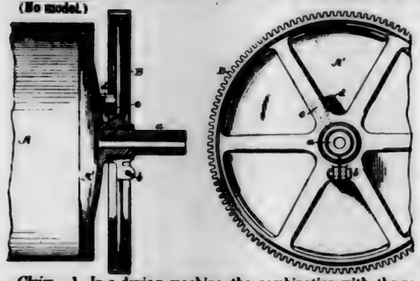
bat, and a releasing device provided with a stud adapted to be depressed by the foot of the person throwing the ball, substantially as specified.



2. The combination of the spring-mounted bat, a retainer for said bat, a tripping stud adapted to be operated by the foot of the person throwing the ball, and a cord extending from the point at which the bat is located to the point at which the pitcher stands, and serving to connect the mechanism at such separated points, substantially as specified.

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**503,380.** DRIVING-GEAR FOR DRYING-ROLLS. WILLIAM G. MACKINNEY, Philadelphia, Pa., assignor to the H. W. Butterworth & Sons Company, same place. Filed Nov. 19, 1892. Serial No. 452,563. (No model.)



*Claim.*—1. In a drying machine, the combination with the rotating cylinder provided with a journal, of a gear loosely mounted on said journal, said cylinder and gear having on the same circumferential line lugs adapted to engage each other, with coupling mechanism for coupling the gear to said cylinder after adjustment, substantially as described.

2. In a drying machine having a series of rotating cylinders or drums provided with journals, of gears loosely mounted upon said journals, and having lugs adapted to engage with corresponding lugs upon the heads of said cylinders or drums, with the clamp by which the gear can be secured to the journal after adjustment, whereby the cylinders may be adjusted to rotate without lost motion between them, substantially as and for the purpose set forth.

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**503,381.** CONVEYING APPARATUS. THOMAS S. MILLER, South Orange, N. J. Filed Apr. 27, 1892. Serial No. 473,145. (No model.)

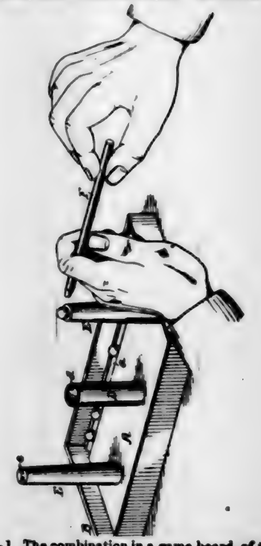


*Claim.*—1. In a conveying apparatus in combination, a cable, a carriage, a clamp stop on the cable adapted to arrest the travel of the carriage, a rope drum, a rope extending from said drum to the carriage, whereby the cable may be drawn taut by said rope acting through the carriage against said stop, substantially as described.

2. In a conveying apparatus in combination a cable part *c*, a cable part *c'*, a coupling, a carriage, a clamp stop on the cable part *c'* adapted to arrest the travel of the carriage, a rope drum, a rope extending from said drum to the carriage, whereby the cable part *c'* may be drawn taut by said rope acting through the carriage against said stop, substantially as described.

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**503,382.** GAME APPARATUS. ARSETTA MYERS, Ashbourne, Pa. Filed Apr. 19, 1893. Serial No. 471,098. (No model.)



*Claim.*—1. The combination in a game board, of the base, a post having a pocket therein, with a second post adapted to receive a ball or marble, substantially as described.

2. The combination of the base, with a central post having a pocket in its upper portion adapted to receive a ball or marble, with a post on each side of the central post each side post being recessed at the top to receive a marble, substantially as described.

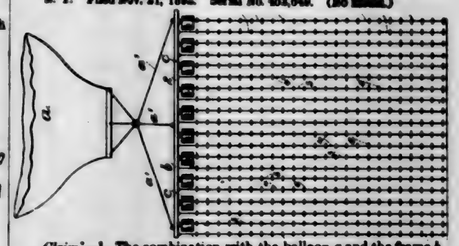
3. The combination of the base A, the side walls B, grooves on each side of the base for the reception of marbles, a central post D having a pocket *d* and a side post or posts recessed at the top upon which the marble can be mounted, substantially as described.

4. The combination of the base having side walls, the detachable central post having a pocket, with detachable side post or posts upon which a marble may be mounted in playing the game, substantially as described.

5. The combination of the base, the post E upon which a marble is mounted, with a post D having a central upper pocket and one or more side pockets, substantially as described.

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**503,383.** PYROTECHNIC DEVICE. HENRY J. FAIR, New York, N. Y. Filed Nov. 21, 1892. Serial No. 452,649. (No model.)



*Claim.*—1. The combination with the balloon *a* and the frame *b*, of receptacles *c* connected to the frame *b*, pyrotechnic devices in lengths connected to the frame *b* and coiled within the receptacle *c*, substantially as specified.

2. The combination with the balloon *a*, the frame *b* and the safety fuse carried by said frame, of the receptacles *c* arranged at intervals along the two parallel and longest members of the frame *b*, pyrotechnic devices in lengths connected at their respective ends to the frame *b* and coiled with their lighting ends in the same plane and received within the receptacles *c* and protected by a cap upon the receptacles, substantially as set forth.



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**503,384.** CLEAT FOR ELECTRIC WIRES. JACOB PAWLOWSKI, Cincinnati, Ohio. Filed Jan. 7, 1893. Serial No. 457,805. (No model.)



*Claim.*—1. The combination in an insulating cleat of the clamping strips recessed to receive insulating bushings and perforated to receive securing screws, and the insulating bushings clamped in position by said strips, substantially as shown and described.

2. The combination of the clamping strips A and A', each recessed to receive one half of the insulating bushing B, and perforated to receive fastening screws, and the two part insulating bushings secured between said clamps, substantially as set forth.

3. The insulating bushings B, having projections *b*, the clamps having recesses counter to the exterior contour of said bushings, and the screws to secure the clamp pieces together and to their supports, combined and arranged substantially as shown and described.

4. The combination with the wiring cleat, of the character described, of the insulating anchor cleat D, adapted to fit over the cap piece of said cleat, substantially as and for the purposes set forth.

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**503,385.** BRAKE-LEVER. FRANK P. PFLEGHAR, New Haven Conn., assignor to English & Mersick, same place. Filed May 1, 1893. Serial No. 472,471. (No model.)

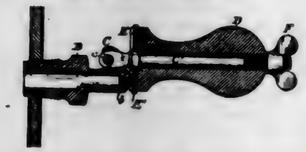


*Claim.*—1. A lever for carriage-brakes, having a transverse slot to receive a segmental rack over which the lever moves, and a longitudinal chamber extending from the upper end of the lever down into the said slot, a pawl for engagement with the rack, located in the said chamber, and having a shank projecting out of the upper end thereof, a spring located within the chamber, and operating upon the pawl to throw it toward the rack, and a handle-lever connected with the projecting end of the shank of the pawl, and pivoted to the upper end of the said lever within which the said pawl is entirely located, substantially as described.

2. A lever for carriage-brakes, having a transverse slot formed in it to receive a segmental rack over which the lever moves, and a longitudinal chamber formed in the upper end of the lever, and at its lower end intersecting the said slot, a pawl for engagement with the rack, located in the said chamber, and having a shank projecting out of the upper end of the same, a sleeve located in the upper end of the chamber and surrounding the shank of the pawl for which it forms a bearing, a spring interposed between the pawl and the inner end of the said sleeve, and arranged to move the pawl toward the rack, and a pivotal hand-lever connected with the projecting outer end of the shank of the pawl and pivoted to the said lever, within which the said pawl is entirely located substantially as described.

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**503,386.** GAGE-COCK. ROBERT P. ROSS, Bethlehem, Pa. Filed Dec. 3, 1892. Serial No. 453,905. (No model.)



*Claim.*—In a gage cock, a nipple having a discharge orifice, a rotatable weighted handle having a diametrically grooved valve face and adapted to be lifted, separately removable packing strips held in such groove and a bolt C' extending through and supporting said weighted handle with supporting lugs C on said nipple adapted to engage with and hold the bolt in proper position, substantially as specified.

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**503,387.** TOY. MARGARET SCHOFIELD, Camden, N. J. Filed Mar. 13, 1893. Serial No. 465,686. (No model.)



*Claim.*—1. The within described toy, consisting of a ball composed of more than two separable segments hinged at their upper ends, and a suspending cord connected at its lower end to each of said segments independently, substantially as specified.

2. The within described toy, consisting of a ball composed of more than two separable segments hinged at their upper ends, the suspending cord connected at its lower end to each of said segments independently, and springs tending to close the segments against each other, substantially as specified.

3. The within described toy, consisting of a ball composed of separable segments hinged at their upper ends, a suspending cord connected at its lower end to each of said segments independently, and a suspended weight moving with the ball but supported within the same so as to be free from contact with the segments, the point of connection of the weight with each segment being above the point of connection of the cord therewith, substantially as specified.

4. The within described toy, consisting of a ball composed of separable segments hinged together at their upper ends, a cap piece having fingers connected to said segments, and a suspending cord connected to said cap piece, substantially as specified.

5. The within described toy, consisting of a ball composed of more than two separable segments hinged at their upper ends, and an elastic suspending cord connected at its lower end to each of said segments independently, substantially as specified.

6. The within described toy, consisting of a ball composed of more than two separable segments hinged at their upper ends, an elastic suspending cord connected at its lower end to each of said segments independently, and springs tending to close the segments against each other, substantially as specified.

7. The within described toy, consisting of a ball composed of separable segments, an elastic suspending cord, a cap piece having fingers connected to the segments of the ball, a ring to which the upper end of each of said segments is pivoted, a second ring carrying springs for acting upon the segments to close the same, and a weight suspended from said second ring, substantially as specified.

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**503,388.** FLUE-STOPPER. CHARLES H. SCHOLLE, Cincinnati, Ohio. Filed Jan. 11, 1893. Serial No. 458,009. (No model.)



*Claim.*—1. In a flue-stopper, a dished and flanged plate which impinges against the outer wall surface, and is provided with retaining lugs, in combination with an outer plate which is designed to engage with said lugs and be retained or released thereby, whereby there is provided a space intermediate between the inner and outer plates, substantially as shown and described, and for the purposes specified.

2. In a flue-stopper, a dished inner plate and an outer plate, which is secured in place or released by means of slots and lugs on said inner and outer plates respectively, whereby there is formed an intermediate space, in combination with spring and vent apertures whereby a spring, as S, can be readily attached and detached, expanded or contracted, substantially as described and for the purposes specified.

3. A double-plated flue-stopper, with an intermediate space formed by dishing one of the plates, and having the other secured in place flush, or substantially so, with the flanged surface of the dished plate, in combination with a retaining spring, as S, capable of being held in place by slots, which also subserve the purpose of permitting the superheated air to escape, substantially as shown and described.

4. In a double-plated flue-stopper provided with an intermediate space, a pronged spring which impinges against the interior of the flue and is retained in slots on the inner plate, whereby expansion and contraction are obtained, substantially as shown and described, and for the purposes specified.

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**503,389. TOY.** JOHN SHEPPARD, San Francisco, Cal. Filed Apr. 6, 1893. Serial No. 469,550. (No model.)



*Claim.*—1. A box having an opening in the front face thereof, a movable mirror primarily occupying said opening, and a representation of an animal, &c., on the box, back of said opening and mirror, substantially as described.

2. A box containing a movable mirror and having an opening in its face in front of said mirror, a representation of an animal, &c., on the box, back of said opening and mirror, and a tongue connected with the mirror adapted to interlock with the box, substantially as described.

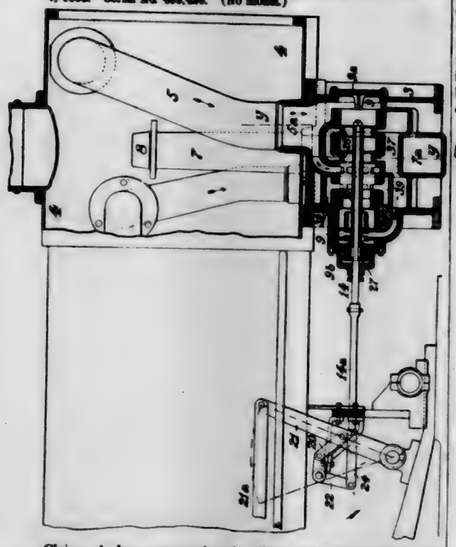
3. A box containing a mirror and representation of an animal, &c., back of said mirror, the face of the box in front of the mirror being open, in combination with a tongue connected with the mirror for holding the latter, in elevated position, and a spring connected with the mirror and box for lowering said mirror, substantially as described.

4. In a toy substantially as described, a movable mirror having flanges on the sides of its rear face, and a locking tongue connected with the mirror in the chamber formed by said flanges, as stated.

5. A box with a partly open face, a movable mirror in said box, a representation on the back of the box behind the opening in the face thereof, a spring connected with the mirror and box for lowering said mirror, and an elastic tongue connected with the mirror and adapted to interlock with the box for holding said mirror in elevated position, and create pressure against the mirror, substantially as described.

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**503,390. STARTING APPLIANCE FOR COMPOUND ENGINES.** HENRY J. SMALL and CHARLES T. HOYER, Sacramento, Cal. Filed Apr. 7, 1893. Serial No. 469,426. (No model.)



*Claim.*—1. In a compound engine, the combination of a balanced piston valve directly controlling the admission of boiler steam to the low pressure cylinder, a valve controlling independent exhaust from the high pressure cylinder, a chest in a cylinder saddle in which said valves operate and actuating mechanism connecting said valves with the reversing gear of the engine, substantially as set forth.

2. In a compound engine, the combination of a balanced piston valve directly controlling the admission of boiler steam to the low pressure cylinder, a valve controlling independent exhaust from the high to the low pressure cylinder, a chest in a cylinder saddle in which said valve operates and actuating mechanism connecting said valves with the reversing gear of the engine, substantially as set forth.

3. In a compound engine, the combination of a saddle or bed plate, high and low pressure cylinders formed or fixed thereon, a valve chest in said saddle, a balanced piston low pressure direct supply valve fitted to work on said valve chest and controlling a port in the saddle establishing communication between a boiler steam supply connection to said chest and the low pressure cylinder steam supply passage of the saddle, a valve stem upon which said valve is secured, and actuating mechanism connecting said valve stem with the reversing gear of the engine, substantially as set forth.

4. In a compound engine, the combination of a saddle or bed plate, high and low pressure cylinders formed or fixed thereon, a valve chest in said saddle, a balanced piston high pressure independent exhaust valve fitted to work in said valve chest and controlling a port establishing communication between the exhaust passage of the high pressure cylinder and a passage in the saddle leading to the low pressure exhaust passage therein, a valve stem upon which said valve is secured, and actuating mechanism connecting said valve stem with the reversing gear of the engine, substantially as set forth.

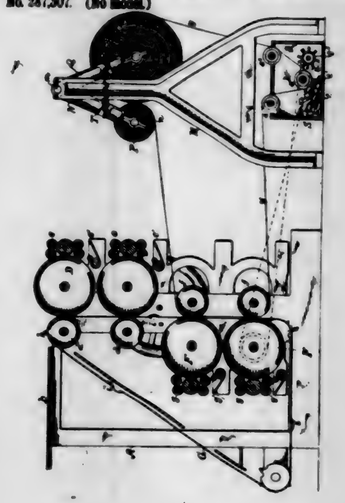
5. In a compound engine, the combination of a saddle or bed plate, high and low pressure cylinders formed or fixed thereon, a valve chest in said saddle, a balanced piston intercepting valve fitted to work in said valve chest and controlling a port establishing communication between the exhaust passage of the high pressure cylinder and the low pressure cylinder steam supply passage of the saddle, a valve stem upon which said valve is secured, and actuating mechanism connecting said valve stem with the reversing gear of the engine, substantially as set forth.

6. In a compound engine, the combination of a saddle or bed plate, high and low pressure cylinders formed or fixed thereon, a valve chest in said saddle, a low pressure direct supply valve, a high pressure independent exhaust valve, and an intercepting valve, all of said valves being balanced pistons and fitted to work in and control appropriate ports and passages in the valve chest, and saddle a valve stem upon which said valves are secured, and actuating mechanism connecting said valve stem with the reversing gear of the engine, substantially as set forth.

7. In a compound engine, the combination of a saddle or bed plate, high and low pressure cylinders formed or fixed thereon, a valve chest in said saddle, a low pressure direct supply valve, a high pressure independent exhaust valve, and an intercepting valve, all fitted to work in and control appropriate ports in the valve chest, a valve stem upon which said valves are secured, a bell crank or angle lever working in a fixed bearing, a link coupling the valve stem to one arm of said bell crank, and a link coupling the other arm of said bell crank to a connection with the reverse lever, substantially as set forth

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**503,391. OFFSET MECHANISM FOR PRINTING-MACHINES.** WILLIAM H. R. TOYE, Philadelphia, Pa., assignor, by direct and mesne assignments, to the Simultaneous Chromogravure Printing Machine and Manufacturing Company, Camden, N. J. Filed Oct. 5, 1892. Serial No. 447,907. (No model.)





*Claim.*—1. The combination in a printing machine, of the delivery drum carrying the set off paper to be fed from the drum by the printing machine, with a receiving drum on which the set off paper is wound, said receiving drum being driven from the delivery drum by friction, substantially as set forth.

2. The combination of the delivery shaft and receiving shaft for the set off paper, with a spring for drawing one toward the other so that as the paper is unwound from the delivery shaft the paper will be wound upon the receiving shaft by friction, substantially as set forth.

3. The combination of the frame, arms N, N, pivoted thereto carrying the delivery roll for the set off sheet, arms Q, Q, also pivoted to the frame and carrying the receiving roll, with a spring connecting the arms N and Q, substantially as and for the purpose set forth.

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**503,392. ELEVATOR-SHAFT.** GEORGE VARIAR, Jr., New York, N. Y. Filed Mar. 23, 1893. Serial No. 467,246. (No model.)

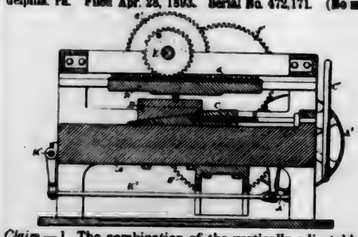


*Claim.*—1. In an elevator shaft, the combination of the metal corner risers L shaped in cross-section, the intermediate risers, the inner and outer walls of metal lathing or netting secured to said risers and the plastering, substantially as specified.

2. In an elevator shaft, the combination of the metal corner risers, the intermediate risers, the metal cross-braces, the inner and outer walls of metal lathing secured to the risers, and the plastering, substantially as specified.

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**503,393. BOLT-ROLLING MACHINE.** WILLIAM VOLLMER, Philadelphia, Pa. Filed Apr. 28, 1893. Serial No. 472,171. (No model.)



*Claim.*—1 The combination of the vertically adjustable bed, a movable platen mounted above said bed and adapted to a fixed bearing, a rack on said platen, a shaft, a pinion on said shaft engaging with said rack and gearing by which the said shaft is driven, substantially as described.

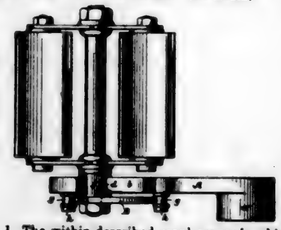
2. The combination of the frame A, the bed having a plain upper surface and an inclined under surface, a wedge mounted between the bed and the frame of the machine, a hand wheel and a screw shaft for moving the wedge under the bed, side bolts for retaining the bed in the adjusted position, a movable platen adapted to fixed bearings mounted above the bed, a rack on said platen, a pinion gearing with said rack and mechanism for driving said pinion, substantially as described.

3. The combination of the frame A, the vertically movable bed B, a wedge on which the bed rests and by which it is adjusted, securing bolts for locking the bed in its adjusted position, a movable platen adapted to traverse the bolt over the bed, a rack on said platen, a pinion meshing with the rack and reducing gear by which the platen is driven, a driving shaft, loose belt pulleys on said shaft, a clutch for throwing one or the other of said pulleys in gear with the shaft, with automatic shifting mechanism controlling the clutch and actuated by the platen, substantially as described.

4. The combination of the frame A, the vertically adjustable bed B, a wedge for adjusting said bed and bolts for locking the bed in the adjustable position, a movable platen mounted above the bed and between which and the bed the bolt is rolled, a rack on the upper portion of the platen, a shaft E, a pinion on said shaft engaging with the rack, the shafts F, G and H geared together and to the said shaft E, loose pulleys on the shaft H, a clutch on the shaft engaging one or the other of said loose pulleys and automatic shifting mechanism controlled by the platen for shifting the clutch, substantially as described.

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**503,394. CRANK-POWER FOR MACHINERY.** ALFRED WAYNE, Philadelphia, Pa., assignor of one-half to Henry C. Hipkins, same place. Filed May 6, 1893. Serial No. 473,223. (No model.)



*Claim.*—1. The within described crank power in which are combined a slotted crank, a crank pin free to slide in said slot, a cam carried by one of said elements and bearings for said cam on the other element, whereby, as the crank is rotated, the crank pin will be moved toward and from the axis of the crank, substantially as specified.

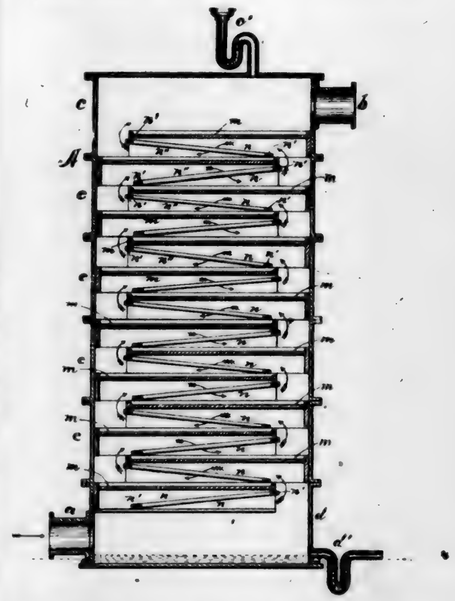
2. The combination of the slotted crank, the crank pin, a cam secured to the end of the latter, and bearings for said cam secured to the crank, substantially as specified.

3. The combination of the slotted crank, the crank pin carrying an antifriction roller running in said slot, the cam secured to the end of said crank pin, and antifriction rollers carried by the crank and serving as bearings for the cam, substantially as specified.

4. The combination of the slotted crank, a crank pin free to slide in said slot, a cam carried by one of said elements and having concentric and eccentric portions, and bearings for said cam carried by the other element, substantially as specified.

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**503,395. GAS WASHING AND SCRUBBING DEVICE.** AUSTIN C. WOOD and JOHN H. TUPPS, Syracuse, N. Y. Filed Mar. 23, 1893. Serial No. 467,250. (No model.)



*Claim.*—1. A gas washer and scrubber comprising an outer casing, a series of water pans mounted therein, and a series of slat frames mounted in the casing and alternately arranged with said pans creating a zig-zag passage, in combination as set forth.

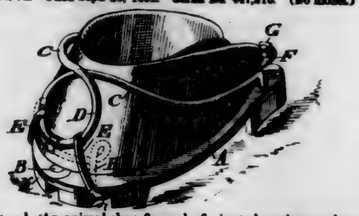
2. A gas washer and scrubber comprising an inclosing case, water pans, and inclined frames composed of headers and longitudinal slats secured together, both mounted and arranged in alternation with each other, and separate inlet and outlet pipes for gas and water, in combination.

**503,396. BANJO-BRIDGE.** CHARLES F. ALBERT, Jr., Philadelphia, Pa. Filed Feb 20, 1893. Serial No. 462,967. (No model.)



*Claim.*—A banjo bridge having its bottom or feet provided with a coating of emery or equivalent material, substantially as described.

**503,397. HORSESHOE-FASTENING.** ISAAC W. ALLYN, Landowne, Pa. Filed Sept. 29, 1892. Serial No. 447,216. (No model.)



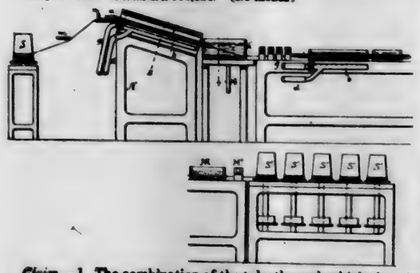
*Claim.*—1. An animal shoe formed of pivoted sections and provided with means for securing said sections in fixed position, in combination with a spring adapted to be secured to said shoe, and embrace the hoof of the animal to which said shoe is secured, and a clamp attached to said spring and shoe, substantially as described

2. The spring C having its ends connected with the heel ends of the sections of a shoe, and formed with a coil in front, the spring being adapted to embrace the hoof, and the coil to rest thereupon as a broad bearing and increasing the resiliency of the spring, substantially as described.

3. A shoe formed in sections pivoted together, and toggle arms connected with the heel ends of the sections, in combination with a spring which is adapted to embrace the hoof, and having its ends secured to said heel ends, and a nut on said arms for locking said heel ends, substantially as described.

4. An animal shoe in combination with a spring having end portions secured thereto, and an enlarged portion bearing on the hoof of the animal to which the shoe is attached, and a clamp secured to said enlarged portion and shoe, substantially as described.

**503,398. APPARATUS FOR HARDENING AND TEMPERING STEEL WIRE.** DANIEL C. BATEMAN, Cleckheaton, England. Filed July 8, 1891. Serial No. 398,831. (No model.)



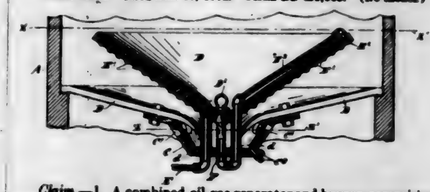
*Claim.*—1. The combination of the tube through which the wire is drawn, with heating devices for the tube and means for closing the end of said tube, said means comprising an elastic tube applied to and projecting beyond the end of the heating tube and an elastic plug closing the end of said elastic tube, substantially as specified.

2. The combination in apparatus for hardening and tempering steel wires of draft mechanism for the wires, the inclined tubes, a furnace for heating the same, a hardening bath in which the lower ends of said tubes are submerged, tempering tubes through which the wires pass after leaving said hardening bath, means for heating said tempering tubes and means for preventing the access of air to the interior of the heated portions of both sets of tubes, substantially as specified.

3. The combination of the metal bath, the tempering tubes passing through the same and each having a yielding plug at the inlet end, means for heating said bath and a cooling bath through which said tubes also project, substantially as specified.

4. The combination in apparatus for hardening and tempering steel wires, of draft mechanism for the wires, the inclined heating tubes, the furnace for heating the same, the hardening bath in which the lower ends of said tubes are submerged, presser pads for cleaning the wires as they emerge from said bath, a metal tempering bath having tempering tubes passing through the same, means for heating said bath a tray containing powdered lime or chalk through which the wires pass after leaving the tempering tubes and yielding devices for closing the heating and tempering tubes against the passage of air, substantially as specified.

**503,399. COMBINED OIL-GAS GENERATOR AND BURNER.** MICHAEL RECK, Minneapolis, assignor of one-half to John Wohlfeld, Long Lake, Minn. Filed Dec. 19, 1892. Serial No. 455,003. (No model.)
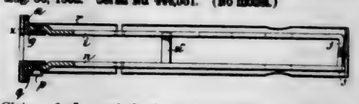


*Claim.*—1. A combined oil-gas generator and burner, comprising a conical support acting as a deflector, positioned apex downward, a burner below the apex of said support, and a supply pipe or conduit leading to said burner, having a generating section wound into a conical helix about the under side of said support.

2. A combined oil-gas generator and burner, comprising a conical support positioned apex downward, a burner below the apex of said support, and a supply pipe or conduit leading to said burner, having a generating section wound about the said support and embedded therein on its under surface, in the form of a conical helix, substantially as described.

3. The combination with the conical support, arranged apex downward, provided with a central passage and a removable stopper therein, of the burner below the apex of said support, and the supply pipe or conduit, having a generating section wound about the under surface of said support in the form of a conical helix, substantially as and for the purpose set forth.

4. The combination, with a fire-pot, as A B, of the central conical support D, the central casting C, with air-passages C', the hollow supporting legs *d*, secured to the conical support D, and, the central casting C, the supply pipe E E' E², having its generating section E', wound about and partially embedded in the under surface of the support D, the burner F, the removable plug D', and the drip C², all the said parts being arranged and operating, substantially as described.

**503,400. LOCK-CASE.** FREDERICK J. BIGG, London, England, assignor to the Tubular Lock Syndicate, Limited, same place. Filed Aug. 30, 1892. Serial No. 444,551. (No model.)



*Claim.*—1. In a tubular lock, the combination with a fixed side plate, and a detachable side plate, of a fore plate *a*, of stamped sheet metal, having rearwardly bent tongues *g g*, bolt hole *h* between said tongues, apertures *d d* in said tongues, said fixed side plate fixed to one of said tongues *g*, and said detachable side plate having a pin engaging said hole *d* in the other tongue *g*, all combined and arranged substantially as set forth.

2. In a tubular lock, the combination with a fore plate having a bolt hole *h* and rearwardly projecting tongues *g* at side thereof, said tongues having apertures *d*, of a fixed side plate *i*, of stamped sheet metal, having an outwardly bent end *m* fitting against the outer side of one of said tongues *g* and fixed thereto, having the key slot *k*, the rearmost hole *l*, and the inwardly bent end *j* having the tongue *s*, and a removable side wall *n* fitting against the outer side of the other tongue *g*, detachably connected thereto, extending rearwardly, and having a slot *t'* at its rear end, receiving and engaging said tongue *s* of the fixed side plate, all combined and arranged substantially as and for the purpose set forth.

3. In a tubular lock, a fore plate *a*, having bolt hole *h*, and rearwardly projecting tongues *g* at sides of said hole, said tongues having perforations *d*, in combination with a fixed side plate *i*, engaging the outer side of and fixed to one of said tongues *g* and extending thence rearwardly and having an inwardly projecting rear end *j* having rearmost hole *l*, a detachable plate *n* having outwardly bent end *m* constructed with an inwardly projecting pin and an outwardly projecting stud *p*, said end *m* fitting against the outer side of the other tongue *g* and its pin engaging the aperture *d* thereof, said detachable side plate constructed of stamped sheet metal, extending rearwardly across the end of and engaging the rear end of said fixed plate *i*, and a tubular casing sliding over and inclosing said side plates, having a groove *q* at its front end sliding over said stud *p*, and a hole *t* in its rear end coinciding with said hole *l* in said fixed side plate, whereby by tapping a screw into said hole *l* through said hole *t* the casing and side walls can be locked together and their relative rotation will be prevented by said stud *p*, said side walls having beveled edges contacting with the interior of said shell at top and bottom, all combined and arranged, substantially as and for the purpose set forth.



**503,401. PYROXYLINE SOLVENT AND ITS COMPOUNDS.** CHARLES L. BORGHETER, Rahway, N. J. Filed May 25, 1893. Serial No. 475,663. (No specimens.)

*Claim.*—1. An improved active solvent of pyroxyline which consists of an ethyl-alcoholic solution of the oil of caraway-chaff.

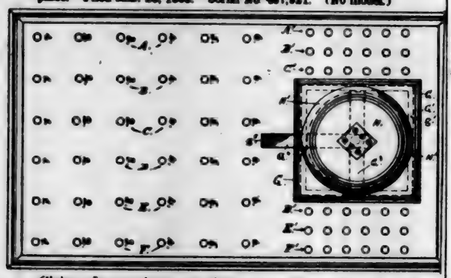
2. A pyroxyline solution or compound which consists of pyroxyline dissolved in an ethyl-alcoholic solution of the oil of caraway-chaff.

**503,402. PYROXYLINE SOLUTION OR COMPOUND.** CHARLES L. BORGHETER, Rahway, N. J. Filed May 25, 1893. Serial No. 475,665. (No specimens.)

*Claim.*—1. A pyroxyline solution or compound which consists of pyroxyline dissolved in oil of clove-buds.

2. A pyroxyline solution or compound which consists of pyroxyline dissolved in an ethyl-alcoholic solution of oil of clove-buds.

**503,403. APPARATUS FOR A PARLOR GAME.** OSCAR F. BRINKMAN, Lancaster, Pa., assignor of one-half to Kirkbride Johnson, same place. Filed Mar. 23, 1893. Serial No. 467,921. (No model.)



*Claim.*—In a parlor game, the apparatus comprising the following instrumentalities: a base-board having two sets or series of pin-orifices in its upper face, one set of orifices marked respectively, 1, 2, 3, 4, 5, 6, for counting, and the other set for scoring said counts; pins provided to engage said orifices; an agitator box secured to the top at one end of said board having sets of said scoring orifices on each side thereof; a die agitating disk loosely placed on top of said box, and a rod having one end securely affixed to the under face of said disk, said rod projected downwardly through its top into the body of the box having means provided to guide said rod in position; a lever fulcrumed and projected through a side of the box, and having its inner end swivel jointed to the lower end of the rod of the disk; a cubical die placed on top of the disk; and a glass receiver placed over said die and disk and having the edge of its open end secured to the top of the agitator box; all substantially as described and for the purpose hereinbefore set forth.

**503,404. TOE-WEIGHT.** JOHN BURGENER, Battle Creek, Mich. Filed Oct. 24, 1892. Serial No. 450,031. (No model.)

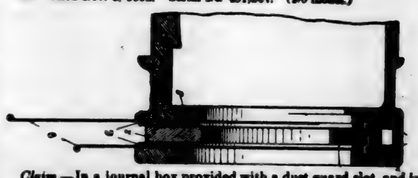


*Claim.*—1. The combination with the fixed plate provided with means of attachment to the hoof and having a projecting bar on its outer face, the face of said bar having a semi-cylindrical groove extending from its upper end to near its base, said groove having a contracted semi-cylindrical upper end, of a removable weight adapted for engagement with said bar, said weight having a set-screw adapted to engage the groove therein, substantially as set forth.

2. The combination with the fixed plate provided with a projecting bar on its outer face, the face of said bar having a longitudinal groove extending from its upper end downward, and a screw set through said bar and plate at the lower end of said groove, said screw serving as a means of attachment of the fixed plate to the hoof and also forming a shoulder at the base of said groove, of a removable weight adapted to be secured to said bar, said weight having a set-screw adapted to engage the groove therein, substantially as set forth.

3. The combination with the fixed plate provided with means of attachment to the hoof and having a projecting bar arranged on its outer face, said bar having under-cut sides and a longitudinally grooved face, the under-cutting of the sides and the longitudinal groove of the face extending from the upper end of said bar and ending above its base, whereby a shoulder is formed at the lower end of each groove, of a removable weight having a longitudinal dovetail slot adapted to receive said bar on the fixed plate, the lower end of said slot being enlarged to receive said shoulders at the lower ends of said grooved sides of the bar, said weight being provided with a set-screw which engages the groove in the face of said bar, as set forth.

**503,405. CAR JOURNAL-BOX.** JACOB J. BOESENBERG, Rock Island, Ill. Filed Nov. 8, 1892. Serial No. 451,287. (No model.)



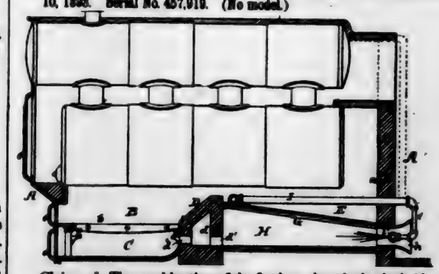
*Claim.*—In a journal box provided with a dust guard slot, and in combination with the diaphragm and linings, the metal plates 9—9 for the purpose of placing said diaphragm and linings in position in said slot, substantially as described.

**503,406. BELL-CORD HANGER FOR RAILWAY-CARS.** GEORGE F. S. CLAMER, Philadelphia, Pa., assignor to the Stewart & Mattson Manufacturing Company, same place. Filed Feb. 15, 1893. Serial No. 462,352. (No model.)



*Claim.*—The combination of the ceiling plate A, the forked projection thereon, the arms *d* of said projection having openings, pivot pins *e* adapted to said openings, a coupling ball hung on the pivot pins between the arms, a hanger F having a forked head G, the arms *g* of said head being arranged at right angles to the arms *d* of the ceiling plate, pivot pins adapted to said arms and to the coupling ball, with an eye piece H rigidly attached to the lower end of the hanger F, substantially as described.

**503,407. FURNACE.** JOSEPH DAVIES, Bridgeport, Pa. Filed Jan. 10, 1893. Serial No. 457,919. (No model.)



*Claim.*—1. The combination of the fire box, the ash pit, the bridge wall, said bridge wall being hollow forming a chamber therein, the combustion chamber beyond the bridge wall, a boiler mounted above

the combustion chamber, a plate or plates extending across the combustion chamber forming a hot air passage the full width of the furnace, an air inlet through said passage, passages communicating with the chamber and bridge wall, and passages forming communication between the said chamber and the ash pit, a steam pipe in the combustion chamber connected to the steam space of the boiler, a nozzle attached to said steam pipe, and situated in the inlet of the air passage, substantially as described.

2. The combination of the fire box, the ash pit, the bridge wall, the combustion chamber beyond the bridge wall, an air passage below the combustion chamber, plates G separating said air passage from the combustion chamber, said plates being inclined from the bridge wall to the back of the furnace, an air inlet in the back of the furnace communicating with said passage, a passage through the bridge wall forming a communication between the passage H and the ash-pit, a steam pipe in the combustion chamber communicating with the steam generator, a nozzle attached to said pipe and entering the air inlet to the passage H, substantially as described.

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**503,408.** DRAFT-SPRING. NATHAN H. DAVIS, Philadelphia, Pa. Filed Apr. 15, 1893. Serial No. 470,498. (No model.)



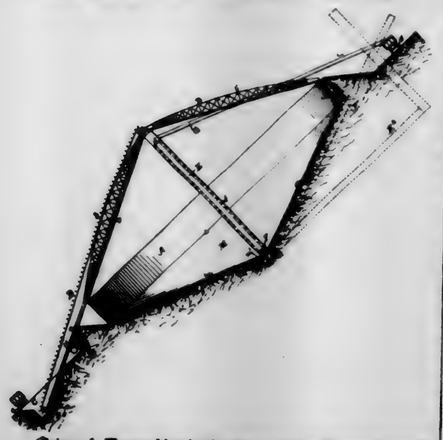
*Claim.*—1. Crossing loops, caps within said loops having grooves for seating said loops, and ears for guiding the same, and a spring between said caps and within said loops, each of said loops having an eye on one end thereof, said parts being combined substantially as described.

2. A frame consisting of crossing loops, a cap forming a seat for one end of each of said loops, the other end of each of the loops constituting an eye outside of the cap, braces within said eyes and a spring within said frame, said parts being combined substantially as described.

3. Crossing loops forming a frame, caps having grooves and ears forming seats and guides respectively for said loops in combination with a spring bearing against said caps, each of said loops having an eye at one end with a brace therein provided with fastening means, said brace being of open form and cut away at its sides, substantially as described.

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**503,409.** APPARATUS FOR PILING COAL. JAMES M. DODGE, Philadelphia, Pa., assignor to the Dodge Coal Storage Company, same place. Filed Mar 2, 1893. Serial No. 464,367. (No model.)



*Claim.*—1. The combination in apparatus for piling coal or analogous material, of the piling floor in the form of a basin with sides inclining toward a point of discharge, a receiver and discharging conveyer whereby the material will flow by gravity to the receiver and be discharged by the conveyer, substantially as described.

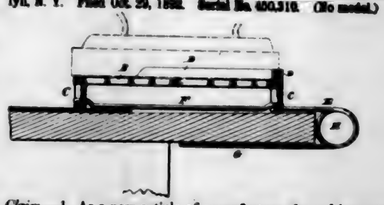
2. The combination in apparatus for piling coal or analogous material, of the shear structure and adapted to receive material from the said structure as it is carried up and discharged by the conveyer, substantially as described.

3. The combination of the basin M having an inclined bottom forming a conical bottom, a shear structure mounted above said basin, a conveyer for carrying material up said structure and discharging it under the truss, with a centrally situated discharge conveyer having its receiver at the lowermost point of the basin so as to receive material at this point and carry it away from the pile, substantially as described.

4. The combination of the shear structure, a piling conveyer carried by said shear structure, a delivery chute also carried by said shear structure, with a vertical discharge conveyer adapted to receive material at its base and carry it up to the delivery chute, substantially as described.

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**503,410.** STAND FOR SAD-IRONS. MARY S. EVERETT, Brooklyn, N. Y. Filed Oct. 29, 1892. Serial No. 450,510. (No model.)



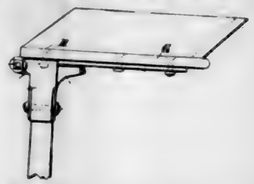
*Claim.*—1. As a new article of manufacture the sad iron stand adapted to rest upon the ironing board and be supported thereon, combined with the spring clamp secured to the said stand with its jaws opening toward the same to clamp the board while the stand is thereon; substantially as and for the purpose set forth.

2. As a new article of manufacture, the sad iron stand having legs, and the spring clamp secured thereto and forming clamping sections F, G, substantially as and for the purposes set forth.

3. As a new article of manufacture, the sad-iron stand having legs, and the spring wire clamp secured to said legs and forming the upper and lower clamping sections F, G, and coils H; substantially as and for the purposes set forth.

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**503,411.** WAGON-SEAT. CHARLES C. FIELD, New York, N. Y. Filed May 2, 1893. Serial No. 472,745. (No model.)



*Claim.*—1. In a wagon seat support the tubular socket A, provided at opposite sides of its upper end with forwardly projecting lugs D, the upper edges of which also project above the top of the socket to form guide ways, and the rearwardly extending rest I on the upper end of the socket; the whole being formed in a single piece, substantially as set forth.

2. The combination with the tubular socket adapted to receive the upper end of a post and provided at its upper end with forwardly projecting apertured lugs and a rearwardly extending rest; the whole formed in a single piece, of the seat bar hinged between the said lugs and extending rearwardly across the top of the socket and rest, substantially as set forth.

3. The combination with the tubular socket having a pair of parallel apertured lugs projecting forwardly and upwardly from its upper end and forming hinge knuckles and guides, and the integral rearwardly projecting rest, of the seat bar hinged to the said knuckles and extending rearwardly between the guides and across the said rest, substantially as set forth.

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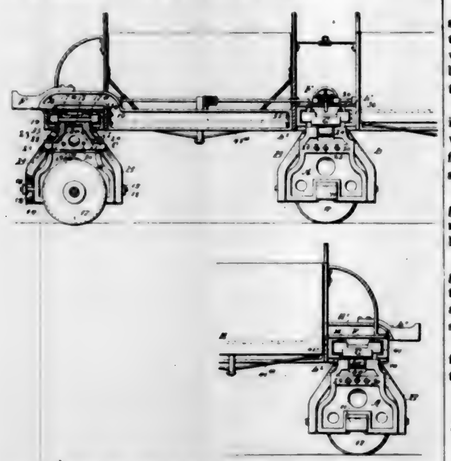
**503,412.** CAR-TRUCK. GEORGE F. FISCHER, Rochester, N. Y. Filed Mar. 2, 1893. Serial No. 464,365. (No model.)

*Claim.*—1. In the construction of cars, the combination, with a platform having slide-ways therein, curved upwardly at opposite sides of their middle portions of a truck provided with bearings fitted to the said slide-ways of the platform, as and for the purpose set forth.

2. In the construction of cars, the combination, with a platform having slide-ways formed therein and curved upwardly from the center thereof, of a truck provided with friction rollers, the rollers being adapted for engagement with a wall of the slide-way of the platform, substantially as shown and described, whereby the platforms will automatically center themselves upon the truck when passing from a curved to a straight line of track, as and for the purpose set forth.



3. In the construction of cars, the combination, with a platform having slide-ways therein and gates located at the ends thereof, of a truck having movable bearings, entering and sliding in the slide-ways of the platform, as and for the purpose specified.



4. In the construction of cars, the combination, with a truck provided with a centering bearing and friction rollers connected therewith, of a platform provided with slide-ways receiving the friction rollers of the truck, and gates pivoted in the end portions of the platform and crossing the slide-ways, the said gates being removably attached to the platforms, as and for the purpose set forth.

5. In the construction of cars, a truck, the same consisting of standards, saddles connected with the standards, a spring truss connecting the standards, and a bracket connecting the saddles and supported by the truss, as and for the purpose specified.

6. In the construction of cars, a truck comprising standards, saddles connected with the standards, the standards forming the sides of the truck and the saddles the front and back, a spring truss connecting the standards, an adjusting mechanism connected with the truss, and a bracket connecting the saddles, supported by and connected with the truss, as and for the purpose set forth.

7. In the construction of cars, a truck, the same consisting of standards adapted to receive the boxes of the wheel axles, saddles essentially V-shaped in general contour, having a sliding movement upon the standards and connecting the standards, the saddles being oppositely located, a bracket spacing and connecting the standards, and a truss having a spring action, connecting the standards at their upper ends and having bearing against the bracket, the truss being adjustably connected with the standards, as and for the purpose set forth.

8. In a car truck, the combination, with side standards, and saddles of approximately V-shape connecting the front and rear edges of the standards, the saddles having vertical movement upon the standards, of a bracket connecting the saddles, a spring truss comprising a spring bar attached to anchorage bars on the standards, and rods above and below the bar, the spring bar and lower rod being curved in the same direction and the upper rods oppositely curved, the rods and bars of the truss engaging with and supporting the bracket, as and for the purpose set forth.

9. In the construction of cars, the combination, with platforms and trucks having sliding movement in the platforms, of coupling beams connecting the several platforms, the said coupling beams being curved around the outer platforms, as and for the purpose set forth.

10. The combination with a transverse platform or bolster formed of parallel channel irons spaced apart and curved upwardly at their ends, of a truck having antifriction rollers traveling in the curved ways formed by the channels, substantially as set forth.

11. The combination with the transverse parallel channel irons curved upwardly from the middle of a non-pivotal truck having front and rear anti friction rollers traveling laterally and upwardly in the said channels substantially as set forth.

12. The combination with a plurality of rigidly connected platforms or bolsters each having guide ways curved upwardly at opposite sides of their middle portions, of a non-pivotal truck for each platform or bolster and provided with anti friction rollers traveling in said guideways, substantially as set forth.

13. The combination with the platforms or bolsters formed of parallel channel irons curved upwardly from the middle, of longitudinally extending beams rigidly connecting said platforms or bolsters and holding them against pivotal movement, substantially as set forth.

14. The combination with the rigidly connected platforms or bolsters all having guide-ways curved upwardly from the middle, of a truck for each platform consisting of standards, saddles connected with the standards, a spring truss connecting the standards and a bracket connecting the saddles and supported by the truss, substantially as set forth.

15. The combination with the rigidly connected front, rear and intermediate platforms or bolsters all having guideways curved upwardly from the middle of end and intermediate trucks having anti-friction rollers traveling in said guideways; said trucks being held against horizontal turning or pivotal action, substantially as set forth.

16. The combination with a car body or frame having transverse guideways on its under side curved upwardly at both sides of the middle, of spring trussed trucks provided with anti friction rollers or bearings traveling in said ways, substantially as set forth.

17. The combination with a platform or bolster provided with guideways curved upwardly at both sides of the middle, of a spring trussed truck having anti friction bearings traveling in said ways and adjusting rods or bolts for relieving the spring truss of the weight supported or throwing the weight thereon, substantially as set forth.

18. The bolster connecting beams bowed or arched to cross the front and rear bolsters and adapted at their outer ends to support the drawheads, substantially as set forth.

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**503,413.** AUXILIARY MOLD-BOARD, &c. CHARLES E. FOX, Natchez, Miss., assignor to himself and Thomas J. Junkin, same place. Filed Oct. 19, 1892. Serial No. 449,341. (No model.)

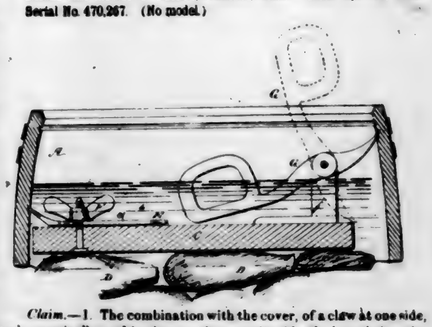


*Claim.*—1. A turning attachment for ordinary plows, the same consisting of a mold board, shallow as to width and provided with a graduated over-hanging upper edge, which edge is curved upward and outward from the body, the forward end of the overhanging section of the mold board meeting the front edge of its body portion, while the rear section of the over-hanging portion is arched over the rear upper edge of the body, substantially as shown and described.

2. In a plow, the combination, with the ordinary mold board and the point seat or fork thereof, of an auxiliary turning attachment connected with the fork and resting upon the ordinary mold board, said auxiliary mold board being constructed more shallow in width than the board upon which it rests, and being provided with a graduated outwardly extending upper overhanging section, projecting outward from yet not in communication with the corresponding part of the ordinary mold board, and a point forming a continuation of the lower end of the auxiliary mold board, substantially as shown and described, as and for the purpose specified.

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**503,414.** INSIDE COVER FOR BARRELS, &c. JOHN J. FRIEDRICHS and HENRY C. FLEGE, Calumet, Mich. Filed Apr. 14, 1893. Serial No. 470,267. (No model.)



*Claim.*—1. The combination with the cover, of a claw at one side, and a vertically rocking lever at its opposite side, the lever being pivoted intermediate its length, the inner end forming a handle and the

opposite end projecting beyond the cover and having a spar or point, substantially as described.

2. The combination with the cover, of an adjustable plate projecting beyond the cover at one side and formed with claws, a standard near the opposite side, and a vertically rocking lever pivoted intermediate its length on said standard, the inner end of the lever being formed into a vertically disposed loop forming a handle, and the opposite end projecting beyond the cover and formed with an upwardly disposed spur, substantially as described.

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**503,415. ELECTRIC DRY CELL.** RAMON GARARDO, Barcelona, Spain. Filed Jan. 18, 1893. Serial No. 458,862. (No model.) Patented in Spain July 21, 1892, No. 13,377, and Feb. 22, 1893, No. 14,012.



*Claim.*—A galvanic dry cell consisting of an outer vessel of zinc, a layer of wax or equivalent insulating material in the base thereof, a central electrode of carbon in said vessel, a composition comprising sal ammoniac, chloride of zinc, oxide of zinc, sulphate of magnesia, water, clay and ivory black in substantially the proportions set forth, between the carbon and zinc and a sealing of resin or equivalent insulating material filling the upper part of said vessel as illustrated and described.

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**503,416. STOP-WATCH.** ALFRED C. GUBE, Geneva, Switzerland. Filed Jan. 25, 1893. Serial No. 459,036. (No model.)



*Claim.*—1. In a stop watch, the combination with the push lever, pawl and cam wheel, of a hammer N, a spring R having downward projections $r'$ $r^2$ on its under side adapted to be acted upon by the hammer N in its extreme movements, the arbor D' and friction disk P upon said arbor, a sleeve around said arbor and the disk Q and the seconds hand D connected therewith, said spring R maintaining contact between the disks P and Q and the hammer N raising said spring to separate said disks, substantially as and for the purposes set forth.

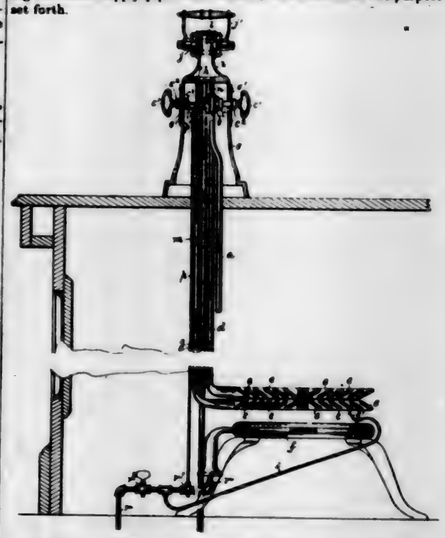
2. In a stop watch, the combination with the push lever, pawl and cam wheel, the auxiliary dial and its hands $c'$ $c^2$ and the independent seconds hand D, of the hammer or lever N, the spring M having projections $m$ $m^2$ and a concave portion M', the disks Q and J upon the arbors of said hands and having roughened edges adapted to be engaged and their rotation arrested by the aforesaid projections $m$ $m^2$ and the hands stopped when the end of the hammer N is moved into the concave portion $m'$, substantially as and for the purposes set forth.

3. In a stop watch, the combination with the auxiliary dial C and its hands $c'$ $c^2$, the pusher, pawl and cam wheel, of the arbor C', the pinions $C^2$ and H on the arbor C', the spring A, the disk J and heart cam $j$ and their tubular arbor carrying the minute hand $c'$, the toothed wheel K and heart cam $k$ and their tubular arbor carrying the hand $c^2$, means for stopping and releasing the disk J, gears and means for moving the same into or out of contact with the pinion H and wheel K, substantially as and for the purposes set forth.

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**503,417. WATER-FOUNTAIN.** FRANKLIN P. HINDS, Boston, Mass., assignor to the Hot Water Fountain Company, of Maine. Filed Mar. 15, 1893. Serial No. 466,013. (No model.)

*Claim.*—1. In a water fountain a three-way valve, a water supply pipe attached thereto, a heater, communication between the valve and heater, a faucet, communication between the heater and faucet and between the valve and faucet, a vent communicating with the faucet open at all times except when drawing water from the faucet; the three-way valve governing the flow of water from the supply pipe to the faucet, either direct or through the heater according to whether hot or cold water is desired to be drawn from the faucet and also closing the water supply pipe when desired, all combined for the purpose set forth.

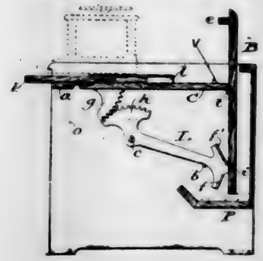


2. In a water fountain a three-way valve, a water supply pipe attached to the valve, a heater, a communication between the valve and the heater, a faucet, communication between the valve and faucet and between the heater and faucet, the three-way valve governing the flow of water from the supply pipe to the faucet either direct or through the heater according to whether hot or cold water is desired to be drawn from the faucet, said valve also closing the supply pipe when desired, for the purpose set forth.

3. In a water fountain, a water supply-pipe, a water heater, a faucet to draw the water from the fountain, communication between the heater and faucet open at all times, the three-way valve $b$ $c$, the pipe $d$ forming communication between the valve and the heater and the pipe $a$ forming communication between the valve and faucet, whereby the water from the supply-pipe may be caused to flow from the supply-pipe to the faucet, either through the pipe $d$ and heater or direct through the pipe $a$ by the manipulations of the valve $b$ $c$ according to whether hot or cold water is desired to be drawn from the faucet, combined with a gas-supply pipe, a gas stove attached to the gas supply-pipe, the valve $r'$ in the gas supply-pipe to open and close the same, the valve rod $p$, the bevel gear $p'$ on the rod and the bevel gear $c^3$ on the valve stem of the valve $b$ $c$ which governs the flow of the water from the water supply-pipe meshing into the gear $p'$ whereby a flow of gas to the stove and of water to the heater is caused by the movement of the valve $b$ $c$ in one direction and is discontinued by the movement of the valve $b$ $c$ in the opposite direction, and a pilot burner lighted at all times to light the gas stove when gas is supplied thereto, for the purpose set forth.

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**503,418. TYPE-WRITER CABINET.** WILLIAM HORROCKS, Herkimer, N. Y. Filed Apr. 14, 1893. Serial No. 470,307. (No model.)





*Claim.*—1. The combination in a cabinet, of the shelf C having its front edge hinged to the cross bar or shelf $a$ and provided with the segmental rack $g$, the pivoted lever L provided at one end with a segmental rack A arranged to engage with said rack $g$, and the lid B, pivoted to the opposite end of the levers L, substantially as shown and described.

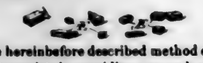
2. The combination in a type writer cabinet of a hinged shelf C arranged to have its rear edge swing upward, and a lid B arranged to swing downward in rear of said shelf, and having a projection $l$ thereon arranged to engage under the rear edge of the shelf and support it when raised, substantially as shown and described.

3. The combination in a type-writer cabinet, of the swinging platform C hinged at its front edge to the cross bar $a$, and the sliding plate or base board I, with the metal clips $l$ and $l'$, said plate or base board being arranged to slide forward and rest upon the fixed cross bar, substantially as shown and described.

4. In combination with the platform C, the sliding plate or base board I provided with notches $m$, and the clip $l$ with the curved spring $r$ arranged to engage in said notches substantially as and for the purpose set forth.

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**503,419. PREPARING DENTAL FILLINGS.** ALBERT W. JOHNSTON, New Brighton, N. Y., assignor to the S. S. White Dental Manufacturing Company, Philadelphia, Pa. Filed Jan. 16, 1893. Serial No. 458,489. (No model.)

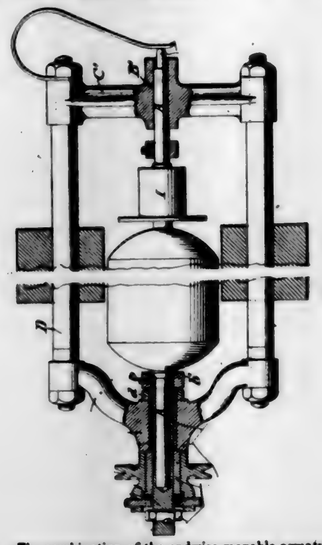


*Claim.*—1. The hereinbefore described method of preparing dental gold filling, which consists in providing a smooth surfaced annealed sheet or slab of electrolytically deposited gold, applying gold foil to the surface of such sheet or slab, heating to unite the foil and the body sheet or slab, and without compression of the material cutting it into strips and severing the strips into filling blocks with their bodies exposed or uncoated with foil at the edges, substantially as set forth.

2. A dental gold filling block consisting of the body of electrolytically deposited or matte gold in mass of homogeneous structure and uniform density throughout, surfaced on one or two sides with gold foil integrally connected therewith, and exposed or uncoated with foil for the remainder of its surface, substantially as set forth.

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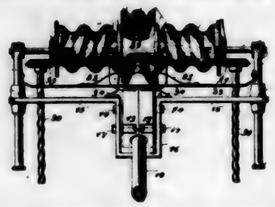
**503,420. CLUTCH FOR ELECTRIC MOTORS.** WILLIAM A. JOHNSTON and ARTHUR W. BROWNE, Prince's Bay, N. Y., assignors to the S. S. White Dental Manufacturing Company, Philadelphia, Pa. Filed Mar. 3, 1893. Serial No. 464,514. (No model.)



*Claim.*—The combination of the endwise movable armature, the pulley, the sleeve surrounding the armature shaft at one end and upon which the pulley is mounted, the clutch connections between the armature shaft and the pulley, the spring secured to the motor frame and acting upon the armature shaft to move it forward and unclutch it from the pulley, and the field pole pieces which when excited draw backward the armature and its shaft to cause engagement of said shaft with the pulley by the clutch connections, substantially as set forth.

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**503,421. TROLLEY-WIRE FINDER.** HENRY C. JOHN, Montgomery, Ala. Filed May 31, 1893. Serial No. 476,065. (No model.)



*Claim.*—1. A trolley guide, comprising the usual trolley pole and wheel, the oppositely arranged spools supported on the trolley pole and provided with spiral threads having an inward pitch, a loose pulley journaled between the inner ends of the spools, and a screw mechanism actuated by the turning of the spools and adapted to raise the spools and their support, substantially as described.

2. The combination, with the trolley pole and trolley wheel, of horizontally extending spools supported on the pole and provided with spiral threads having an inward pitch, a loose pulley journaled between the inner ends of the spools, vertically movable washers arranged between the pulley and the spools, vertically movable washers arranged between the spools and the loose pulley, the screw mechanism actuated by the movement of the screws and adapted to raise the spools, and a device to limit the movements of the washers on the upward movement of the guide, substantially as described.

3. The combination, with the trolley pole and trolley, of a bracket carried by the pole, a vertically movable shaft journaled in supports on the bracket, spiral guide spools secured to the shaft and provided with threads having an inward pitch, a loose pulley journaled on the shaft between the guide spools, and screw shafts supported in the bracket and geared to the guide spools, substantially as described.

4. The combination, with the trolley pole and trolley, of a bracket supported thereon and provided with terminal sleeves, vertically movable posts held to slide in the sleeves, a shaft supported in the posts, guide spools secured to the shaft and provided with inwardly-extending threads, a loose pulley mounted on the shaft between the guide spools, and screw shafts supported in the bracket and geared to the guide spools, substantially as described.

5. The combination, with the trolley pole and trolley, of a bracket supported on the pole, vertically movable posts carried by the bracket, a shaft supported on the posts and extending horizontally above the trolley pole, guide spools secured to the shaft and provided with threads having an inward pitch, a loose pulley journaled on the shaft between the guide spools, a screw mechanism for raising the guide spools and their supporting posts by the movement of the spools, and vertically movable washers between the loose pulley and the inner ends of the spools, substantially as described.

6. The combination, with the trolley pole and trolley, of the vertically movable guide spools mounted horizontally on the trolley pole and provided with threads having an inwardly extending pitch, means for raising the spools by their rotary movement, and a loose pulley journaled between the spools, substantially as described.

7. The combination, with the trolley pole and trolley, of the vertically movable guide spools mounted on the trolley pole and provided with threads having an inward pitch, means for raising the spools by their rotary movement, a loose pulley journaled between the inner ends of the spools, upwardly pressed washers arranged between the spools and the loose pulley, and means for stopping the washers during the upward movement of the spools, substantially as described.

8. The combination, with the trolley pole and trolley, of a clamping piece secured to the trolley pole, a bracket pivoted on the clamping piece and provided with means for fixing its position in relation to the pole, and the guide mechanism supported on the bracket, substantially as described.

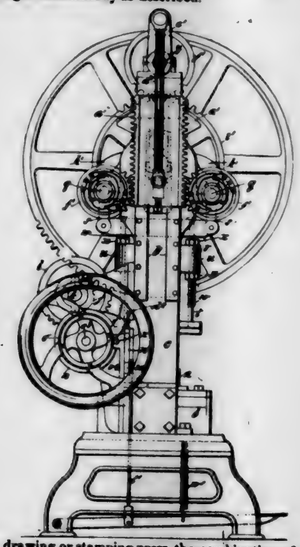
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**503,422. DRAWING OR STAMPING PRESS.** EDMUND JORDAN, Brooklyn, N. Y. Filed Feb. 13, 1893. Serial No. 462,094. (No model.)

*Claim.*—1. In a drawing or stamping press, the combination of a reciprocating plunger, a reciprocating and pausing blank holding die, and intermittingly or pausing but only forwardly moving rotatory crank-shafts for operating said holding die, and holding it for holding the blank substantially as described.

2. In a drawing or stamping press, the combination of a reciprocating plunger, a reciprocating and pausing blank holding die, inter-

mittingly or pausing rotating crank-shafts for operating said holding die, and holding it for holding the blank, and means for rotating said pausing crank-shafts in unison with the rotations of the shaft actuating the plunger substantially as described.



3. In a drawing or stamping press, the combination of a reciprocating plunger, a reciprocating and pausing blank holding die, intermittingly or pausing rotating crank-shafts for operating said holding die, and holding it for holding the blank, the reciprocating rack, and the forwardly driving and backwardly idle pinions for rotating said crank-shafts substantially as described.

4. In a drawing or stamping press the combination of a reciprocating plunger, a reciprocating and pausing blank holding die, intermittingly pausing rotating crank shafts for operating said holding die, and holding it for holding the blank; the reciprocating rack, the forwardly driving, and backwardly idle pinions for rotating said crank-shafts, and the crank-shaft connected with the rack and having double the speed of the stamping die actuating shaft substantially as described.

5. In a drawing or stamping press the combination with the clutch shifting bell-crank, and the spring-actuated hook connecting it with the automatic tripping mechanism subject to the tappet on the main crank shaft, of the bell-crank shifter coupled with the foot treadle, and having the stud controlling said spring-actuated hook substantially as described.

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**503,423. MANUFACTURE OF GLAZED IRON.** JOHN W. KIDWELL, Washington, D. C. Filed Oct. 18, 1892. Serial No. 449,946. (No specimens.)

*Claim.*—1. The process of forming on iron surfaces a titanium glaze, by applying a titanic mineral compound to the surface of the iron in close contact therewith, and heating the same, substantially as described.

2. The described process of forming in or upon the surface of iron bodies an incorrodible coating or glaze, by first forming a paint or mixture of pulverized titanic mineral herein specified and asphalt, and applying the same to the surface of the body, and heating until a union between the iron and titanium is effected, substantially as described.

3. As a new product, an iron sheet or body having on its surface a glaze composed of a titanium compound combined with the iron, as set forth.

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**503,424. MANUFACTURE OF PIGMENT OR PAINT.** JOHN W. KIDWELL, Washington, D. C. Filed Oct. 18, 1892. Serial No. 449,947. (No specimens.)

*Claim.*—1. The described mineral pigment or paint-stock, for painting or coating the surface of various articles, said pigment or paint-stock being an inoxidizable, mineral, in pulverulent form, composed of titanium oxides very rich in titanium, as set forth.

2. A mineral paint composed of titanic oxides such as specified mixed with asphalt, substantially as described.

3. A mineral paint composed of the specified titanium ore pulverized and mixed with hydrocarbon, substantially as described.

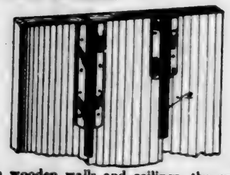
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**503,425. NON-CORRODIBLE PLASTIC COMPOSITION.** JOHN W. KIDWELL, Washington, D. C. Filed Oct. 18, 1892. Serial No. 449,948. (No specimens.)

*Claim.*—The described composition of matter for building-blocks and similar purposes composed of the specified titanic minerals, and asphaltum, containing about eight parts of the former to two parts of the latter, substantially as described.

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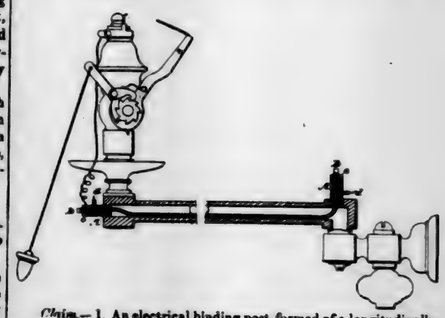
**503,426. BATTEN AND PADDING FOR CLOSING JOINTS IN BUILDINGS.** GEORGE KNOWER, Greenwood, Wis. Filed Feb. 2, 1892. Serial No. 420,063. (No model.)



*Claim.*—In wooden walls and ceilings, the combination, with boards or panels constituting the walls or ceilings arranged with their longitudinal edges abutting to form a joint, of a padding of paper material laid over and covering the joints, said padding having an arched surface, and a batten of a pliable waterproof material placed over the paper material, said batten comprising a body corresponding essentially in cross sectional shape to that of the padding, and flanges located at the sides of the body and adapted to be secured to the boards or panels at each side of the seam, substantially as shown and described, whereby when the seams open the battens will laterally expand and force the padding into the space created by the opening of the seam, thereby preserving a wind, cold and waterproof connection at the seams, as and for the purpose set forth.

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**503,427. BINDING-POST FOR ELECTRICAL CONNECTIONS.** ARNOLD KOHL, Centralia, Ill. Filed Mar. 24, 1893. Serial No. 467,477. (No model.)



*Claim.*—1. An electrical binding post, formed of a longitudinally-bored body, a clamping screw inserted in the side of the body and adapted to clamp an insulated wire within the binding post, a contact screw inserted in the end of the binding post, and a clamping nut on the contact screw, substantially as specified.

2. An electrical binding post, formed of a body of insulating material bored axially and provided with a clamping screw, an axially bored contact screw inserted in the end of the post, and a clamping nut placed on the contact screw, substantially as specified.

3. The combination, with a gas fixture or any pipe, of binding posts inserted in the fixture and provided with clamping and contact screws, substantially as specified.

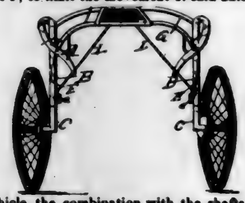
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**503,428. SULKY.** DANIEL W. LOCKE, Bucyrus, Ohio. Filed May 13, 1893. Serial No. 474,101. (No model.)

*Claim.*—1. In a sulky, the combination with the shafts having their extreme ends bent downward to form vertical portions, and provided with tubular ends, and springs located in said ends, and L, shaped axles located in said ends and bearing against said springs, substantially as herein described.



2. In a sulky, the combination with the shafts having tubular downwardly extending ends provided with slots *a'*, springs located in said tubular ends, and L shaped axles bearing against said springs, and seat screws P, to limit the movement of said axles.

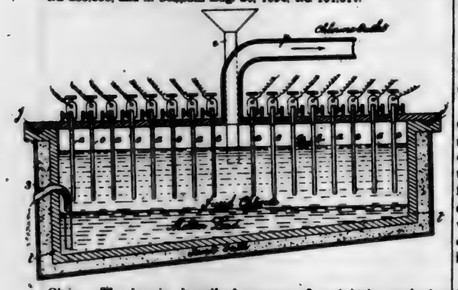


3. In a vehicle, the combination with the shafts having downwardly projecting ends, axles secured thereto, wheels journaled on said axles, a curved cross bar secured to the upright of said shafts, a second curved bar secured to the horizontal portions of said shafts, a seat supported by said bars and a brace wire extending from the lower vertical portions of said shafts to one of the seat bars and provided with a device for tightening the wire.

4. In a sulky, having adjustable springs and axles, slots and keys to hold the same into position, in combination with front and rear arches supporting the seat attached to both sides of the sulky, and stirrups by which means the driver may hold himself in position, all constructed and arranged as and for the purpose described.

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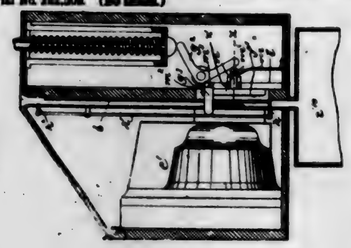
**503,429. PROCESS OF PRODUCING CHLORINE AND PURIFYING LEAD.** FARNHAM M. LYTE and CECIL H. M. LYTE, London, England. Filed Apr. 10, 1893. Serial No. 469,901. (No specimens.) Patented in England Oct. 16, 1891, No. 17,745; in France Aug. 19, 1892, No. 233,880, and in Belgium Aug. 20, 1892, No. 101,017.



*Claim.*—The herein described process of conjointly producing chlorine, purifying metallic lead, and recovering silver, based upon the decomposition of a soluble chloride such as herein specified by nitrate of lead, the said process consisting in the following cycle of operations viz—decomposing the soluble chloride with pure lead nitrate to form lead chloride and a nitrate, then, on the one hand decomposing the lead chloride electrolytically while in a fused condition to produce chlorine and refined lead, and on the other hand decomposing the nitrate to obtain nitric acid, oxidizing metallic lead (which has been freed from zinc), dissolving lead oxide in the nitric acid, and precipitating silver from the nitrate of lead solution to form pure nitrate of lead, with which to continue the cycle of operations, all substantially as herein specified.

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**503,430. APPARATUS FOR RECORDING THE TIME OF WORKMEN.** MORRIS MARTIN, Malden, Mass., assignor to the Automatic Time Stamp and Register Company, Portland, Me. Filed Aug. 13, 1888. Serial No. 282,502. (No model.)



*Claim.*—1. In an imprinting machine printing dies, a cooperating imprinting device inclosed within a case, a closed receptacle to receive the card after the imprinting has taken place, and a guiding chute or chamber extending from the outside of the said case and through the interior thereof to the said closed receptacle, in combination with a movable supporting or arresting device located in the said chute or chamber and normally acting to prevent the passage of the card into the said closed receptacle, substantially as set forth.

2. In an imprinting device a stamp, a platen inclosed within a case which is provided with an opening for the introduction of the cards to be imprinted, a closed receptacle connected to said case for receiving the cards after the imprinting has taken place, and a chute or chamber leading from the said opening between the said stamp and platen into the said receptacle, and a movable supporting or arresting device normally standing in the path of the card for supporting it in an imprinting position, and for preventing the passage of the card into the said closed receptacle until the said supporting or arresting device has been moved out of its normal position, in combination with mechanism connected to the said platen and said arresting device adapted to actuate the platen to cause an imprint on the card, and to remove the arresting device, substantially as set forth.

3. In an imprinting machine a receptacle for receiving cards, a stamp, a platen, a movable arresting device for holding a card in position preparatory to receiving an imprint inclosed in a case, and a plate for closing the opening in the said case through which the cards are introduced, a pivoted lever to which the arresting device and the said plate are connected, in combination with mechanism adapted to actuate the platen to cause an imprint on the card, and to actuate the said lever whereby the arresting device is removed and the opening into the case closed by the said plate, substantially as set forth.

4. In a recording apparatus a receptacle for receiving cards, a chute or chamber for guiding or conducting a card into the said receptacle, a movable supporting or arresting device near the lower end of the said chute or chamber for arresting the descent of the card into the said receptacle and supporting it in position preparatory to receiving an imprint, a pivoted lever to which the said arresting device is connected, and an imprinting device in combination with mechanism adapted to move the card and the imprinting device into contact and to remove the said supporting or arresting device, substantially as set forth.

5. In a recording apparatus a receptacle for receiving cards, a chute for the introduction of a card into the said receptacle, a stamp, a platen, a movable arresting device near the lower end of the said chute for holding a card between the platen and the stamp preparatory to receiving an imprint, a plate near the upper end of said chute for closing the opening therein, a pivoted lever to which the arresting device and the said plate are pivotally connected, in combination with mechanism adapted to actuate the platen to cause an imprint on the card, to remove the arresting device, and to close the opening in the chute, substantially as set forth.

6. In a recording apparatus, a receptacle for receiving cards, a chute or chamber for the introduction of a card into the said receptacle, a movable arresting device in said chute or chamber, normally acting to prevent the descent of the card into the said receptacle, stationary printing dies, and a movable cooperating imprinting device near the lower end of the said chute, in combination with mechanism for moving the said arresting device from its normal position, and impressing the falling card between the said imprinting device and the said stationary printing dies, substantially as set forth.

7. In a recording apparatus, printing devices inclosed in a case consisting of stationary printing dies, and a movable platen cooperating with the said dies and adapted to be operated from the outside of the said case, a chute or chamber within the said case, having an opening outwardly through the said case, adapted to receive a card and to guide it between the said stationary dies and the said platen into position to receive an imprint, in combination with a movable arresting device controlled from the outside of the said case and normally acting to prevent the passage of the said card or ticket through the said chute, substantially as set forth.

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**503,431. EGG-CUTTER.** CHARLES MICHEL, New York, N. Y. Filed Apr. 12, 1893. Serial No. 470,077. (No model.)



*Claim.*—1. An egg-cutter having a helical cutting edge immovably secured thereto, substantially as described.

2. An egg-cutter having immovably secured thereto an internal helical cutting edge, adapted to receive the end of an egg within said helix, substantially as described.

3. An egg-cutter having a cutting edge of a configuration to encompass the egg and contact with it all round, all the parts being fixed relatively to each other, substantially as described.

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**503,482.** PIPE-FITTING. JOHN McINTYRE, Jersey City, N. J. Filed Oct. 15, 1892. Serial No. 448,942. (No model.)



*Claim.*—1. A pipe fitting comprising a coupling member formed with an annular recess and branch openings leading from the said recess to the pipe section, a packing ring held in the said annular recess and having branch arms extending through the said branch openings to the pipe section, substantially as shown and described.

2. A pipe fitting comprising a coupling member formed with an annular recess and branch openings leading from the said recess to the pipe section, a packing ring held in the said annular recess and having branch arms extending through the said branch openings to the pipe section, and means, substantially as described, for compressing the said packing ring and its branch arms to force the latter into firm contact with the pipe section, substantially as described.

3. A pipe fitting comprising a coupling member formed with an annular recess and branch openings leading from the said recess to the pipe section, a packing ring held in the said annular recess and having branch arms extending through the said branch openings to the pipe section, and a nut having an interior and exterior screw thread engaging the threaded concentric walls of the said annular recess to screw in the said coupling member to compress the said packing ring and its branch arms, substantially as described.

4. A pipe fitting comprising a coupling member, a metallic packing arranged in the said coupling member and comprising the two concentric rings and radial branch arms connecting the two rings with each other and means for compressing the outermost of the said concentric rings to force the innermost ring into contact with the pipe section, substantially as shown and described.

5. The combination with the pipes provided on their ends with exterior annular recesses, of a pipe fitting engaging the adjacent ends of the said pipes and comprising coupling members having connected annular recesses connected by branch openings with the said annular recesses of the said pipes, a packing engaging the said connected recesses, and the branch openings and pipe recesses and means for compressing the said packing, substantially as shown and described.

6. A pipe fitting provided with annular recesses connected with each other, and from which extend branch openings leading to the pipes, substantially as shown and described.

7. A pipe fitting provided with annular recesses connected with each other, and connected with annular recesses in the pipes, a packing material held in the said recesses, and a nut screwing in one of the said recesses to compress the said packing, substantially as shown and described.

8. A pipe fitting comprising coupling members screwing on the threaded ends of the pipes, and each formed with annular recesses, longitudinal openings connecting the recesses with each other, and radial openings leading from the outermost recess to recesses in the pipes, substantially as shown and described.

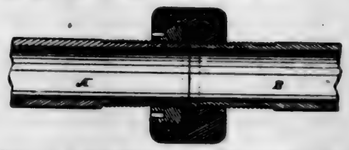
9. A pipe fitting comprising coupling members screwing on the threaded ends of the pipes, and each formed with annular recesses, longitudinal openings connecting the recesses with each other, radial openings leading from the outermost recess to recesses in the pipes, and a nut screwing in the outermost recess of one of the coupling members, substantially as shown and described.

10. A pipe coupling, comprising two coupling members formed at their adjacent faces with registering annular recesses, a packing material held in the said registering recesses, and a nut screwing in one of the said members for compressing the said packing material, substantially as shown and described.

11. A pipe coupling comprising a body formed with an annular threaded recess from which lead branch openings to a recess in one of the pipes screwing on the said body, a channel formed in the said body by a number of connected annular recesses of which one is connected by branch openings with the first named threaded recess, the said channel being also connected by branch openings with a recess in the other pipes screwing in the said body, and a nut screwing in the first named threaded recess to compress the packing material contained in the several recesses, channels and openings in the body, substantially as shown and described.

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**503,483.** PIPE-FITTING. JOHN McINTYRE, Jersey City, N. J. Filed Nov. 8, 1892. Serial No. 451,350. (No model.)



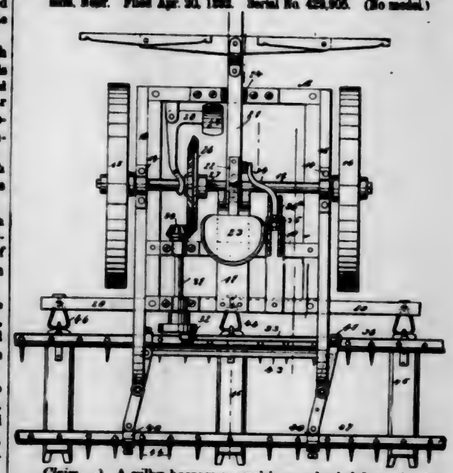
*Claim.*—1. A pipe fitting provided with a coupling device comprising two nuts screwing one upon the other and both adapted to screw on the adjacent edges of the pipes to be coupled, the said coupling device forming a simultaneous compressing device and drawing device, the former for compressing the packing and the drawing device for drawing the parts to be coupled toward each other to embed the adjacent edges thereof one in the other to form a tight joint, and a packing ring arranged in the said coupling and adapted to be compressed therein by adjusting the members of the coupling, the compression of the packing ring being exteriorly on the said joint and simultaneous with drawing the edges of the parts to be coupled toward each other, the said packing ring presenting an interior screw thread to the exterior screw threads of the abutting coupled parts, substantially as shown and described.

2. A pipe fitting provided with nuts having differential screw threads and screwing one in the other, and both on the adjacent ends of the pipes, and a packing between the two nuts and pressed in contact with the joint of the pipes when the nuts are screwed up one on the other, substantially as shown and described.

3. A pipe fitting provided with a coupling comprising two nuts having differential screw threads, and screwing one on the other and a packing ring presenting screw threads to threads of the abutting parts to be coupled and to one of the said nuts, substantially as shown and described.

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**503,484.** HARROW. AUGUSTUS NEAL and ROBERT H. SOMER, Ashland, Nebr. Filed Apr. 20, 1892. Serial No. 429,905. (No model.)



*Claim.*—1. A sulky harrow comprising a wheeled frame having downward curved extensions *a* at its rear end, links or straps pivoted between their ends to the said extensions, parallel toothed bars 36, 37 pivotally connected at the ends of said links or straps and gearing operated from the drive shaft for reciprocating the bars in opposite directions, substantially as set forth.

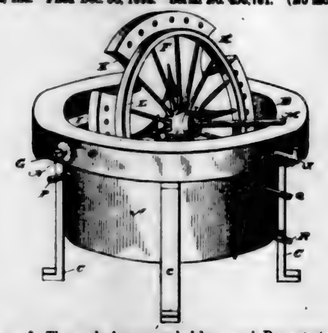
2. A sulky harrow comprising a wheeled frame having downward curved rear extensions *a*, provided with vertical sleeves 19, links or straps having central vertical pivots 42 mounted in said sleeves, transverse parallel toothed bars 36, 37 pivotally connected with the ends of said links or straps, a bar 43 connecting the links or straps, a crank shaft 31 geared to the drive shaft and a pitman 33, connecting the crank pin with the bracket 41 on one of the links or straps, substantially as set forth.



3. A harrow comprising the wheeled frame A, the downward curved extensions *a a* at the rear end thereof provided with vertical bearings 19, the links or straps having central vertical pivots mounted in said bearings, the parallel toothed bars 36, 37 carried by said links or straps, gearing for reciprocating said bars in opposite directions from the drive wheels, links 46, suspended from the rear cross bar 20 of the frame and the longitudinally extending guards pivotally secured at their forward ends to the lower ends of said links 46 and extending transversely beneath the toothed bars to protect the plants from injury by the teeth, substantially as set forth.

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**503,485.** TIRE-SETTING APPARATUS. PATRICK O'BRIEN, South Bend, Ind. Filed Dec. 30, 1892. Serial No. 456,781. (No model.)



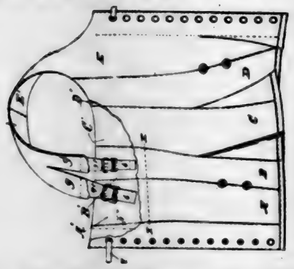
*Claim.*—1. The tank A surrounded by a curb B supported as described, in combination with the wheel rack F mounted upon a rock shaft or journals G within the curb, and means as described for maintaining the rack when desired in a horizontal position, as hereinbefore set forth.

2. In combination with the tank A, curb B and rack F pivoted within the curb, the ratchet and pawl N—O for supporting the wheel rack at any degree of obliquity, substantially as and for the purpose set forth.

3. The curb B and wheel rack F, in combination with the tank A formed with compartments E, E', and provided with inlet and outlet pipes P, Q, and emptying cock R, substantially as and for the purposes set forth.

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**503,486.** UNDERWAIST. EMMELINE W. PHILBROOK, Boston, Mass. Filed Apr. 17, 1893. Serial No. 470,696. (No model.)



*Claim.*—1. The combination with a garment of the kind described having upwardly opening pockets formed in the breast portion thereof, of a yoke extending forwardly over the shoulders in the form of straps, and means for connecting the lower ends of the latter to the lower portion of the inner face of said pockets, substantially as and for the purpose set forth.

2. The combination with a garment of the kind described having upwardly opening pockets formed in the breast portion thereof, of a yoke extending forwardly over the shoulders in the form of straps having divided lower ends branching to opposite edges of the pockets, and means for securing said branching ends to the inner faces of said pockets, substantially as described.

3. The combination with a garment of the kind described having upwardly opening pockets in the breast portion thereof of a yoke extending forwardly over the shoulder in the form of straps having divided lower ends branching to opposite edges of the pockets, auxiliary straps secured to said branching ends, straps or loops secured to the inner face of said pockets near the bottom thereof, and means for adjustably connecting the same with the auxiliary straps, substantially as described.

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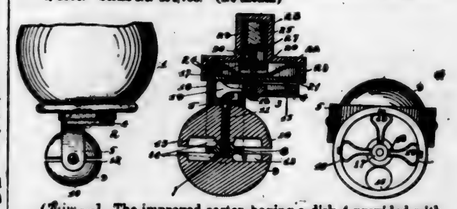
**503,487.** BRACE. GEORGE M. PILCHER, Logansport, Ind. Filed Jan. 16, 1893. Serial No. 458,507. (No model.)



*Claim.*—A brace consisting in the open ended tube A, a plug closing the outer end of said tube, a bearing block C connected with said plug by a universal joint the pivots or axes of which are at right angles to each other, the head D screwed upon the inner end of the tube and having a removable outer annular section provided with an inwardly extending flange, the nut E having an annular flange held within the annular space formed within the head D, the screw rod F, extending through said nut into the tube and having a bearing block H connected with the outer end by two pivots or axes at right angles to each other, substantially as set forth.

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**503,488.** CASTER. THOMAS POLSTER, St. Louis, Mo. Filed Mar. 6, 1893. Serial No. 464,788. (No model.)



*Claim.*—1. The improved caster, having a disk 4 provided with downwardly-extending arms, a ball pivotally-mounted between said arms with its center at one side of the center of said disk, pear-shaped openings being formed in said disk, with the larger portion of each opening outward in each instance, rollers 19 having substantially the same form in plan-view as said openings and mounted therein, a circular plate above said disk and engaged by said rollers 19, a vertical pin 20 upon which both disk and plate are mounted, a plate 22 above said circular-plate and arranged to be fixed to a piece of furniture, and a spring for yieldingly holding said plate 22 a distance above said circular-plate, substantially as herein specified.

2. The improved caster, having a disk 4 provided with downwardly-extending arms, a ball pivotally mounted to turn between said arms, said disk 4 having a large circular-opening 15 at one point in its surface adjacent its edge and at the three other equi-distant quadrant-points with a pear-shaped opening 16, a raised annular-rim and bosses 17 located on said disk, said rim and said bosses at the extremities of said openings being provided with depressions 18, rollers 19 mounted to turn in said bearings and in said openings, a pin 20 extending upward through the bosses 17, a circular-plate 21 which rests and revolves upon said rollers, a plate 22 having a depending annular-rim 23 forming a hollow construction and mounted above said circular-plate, two flat steel springs 24 mounted in said hollow-construction between said plates, a portion 25 projecting upward from the center of plate 22 and hollow and circular in cross-section, a circular-plate 27 mounted on said pin adjacent the upper end thereof, a piece of elastic-material 28 mounted above this plate 27 in said hollow portion, a coil-spring 29 also mounted in said hollow portion and embracing said elastic material, a top 26 for said hollow portion, means for limiting the downward-movement of plate 27 and attached parts, and means for use in attaching the plate 22 to the piece of furniture, substantially as herein specified.

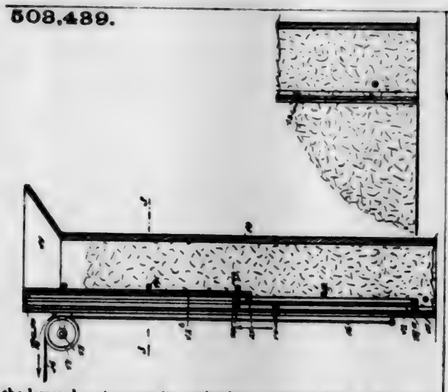
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**503,439.** COAL-CHUTE. JOHN F. SCHNADDER, Brooklyn, N. Y. Filed Apr. 28, 1893. Serial No. 472,412. (No model.)

*Claim.*—1. A coal chute open at its top to receive the coal and having one side open and a series of vertically sliding doors closing the open side of the chute and adapted to be successively raised beginning with the lowermost door, substantially as set forth.

2. A coal chute open at its top to receive the coal and having one side open, and a series of vertically sliding parallel doors closing the said open side at different heights, projections on the doors to be engaged successively as the lower door is raised and means for raising

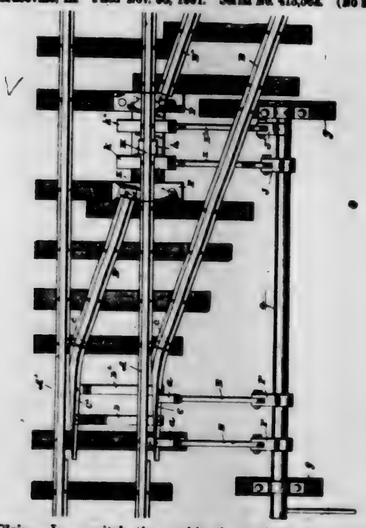
**503,439.**



the lower door to cause its projection to engage that of the second door and so on successively, substantially as set forth.

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**503,440.** PROGRESS RAILWAY-SWITCH. FRED SCHULER, Jr., Braceville, Ill. Filed Nov. 30, 1891. Serial No. 413,562. (No model.)



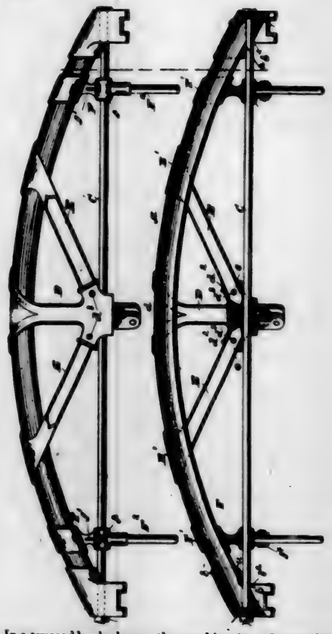
*Claim.*—In a switch, the combination with the short swinging rails C, C', connected by parallel tie bars D, D', and the short centrally pivoted rail section H, of the rock-shaft G, having near each end two reduced eccentric portions *f*, *f*, lying within the diameter of the shaft, arms F, F, and J, J', journaled one on each of said eccentric portions, and projecting inwardly toward the track, and the switch bar links E, E, and I, I', connected respectively to said arms F, F, and J, J', and at their other ends to arms respectively secured to the rail C and to the rail H, and projecting outwardly therefrom, substantially as specified.

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**503,441.** BRAKE-BEAM. THOMAS H. SIMPSON, Detroit, Mich. Filed May 14, 1892. Serial No. 432,963. (No model.)

*Claim.*—1. In a trussed brake beam, the combination of a compression member curved in the arc of a circle and having its ends cut off square to its axial line, brake heads having oblique sockets formed with seats for the ends of said compression member in planes radial to the arc of said member, and a straight-tension member, substantially as set forth.

2. In a trussed brake-beam, the combination of a compression member curved in the arc of a circle and having its ends cut off square to its axial line and formed with holes in its concave side near its ends, brake heads formed with oblique sockets having seats for the ends of the compression member in planes radial to the arc of said member and having holes in the inner sides of the sockets and in the outer sides of the heads, and a straight tension member having its ends passed through the holes in the sockets, through the holes in the compression member, through the ends of the compression member, and through the outer sides of the heads, and secured, there, substantially as set forth.



3. In a trussed brake beam, the combination of an arched tubular compression member having holes in its concave side near its ends, brake heads having sockets for the ends of the compression member formed with registering holes and with holes in their outer sides, and a straight tension member having its ends inserted through two registering holes in the ends of the tube and in the sockets, through the ends of the tube and through the outer sides of the heads and secured there, substantially as set forth.

4. In a trussed brake beam, the combination with an arched compression member and a straight tension member, of a strut having a tubular head for the middle of the compression member and a transverse bore for the tension member, and oblique brace rods having tubular heads for the compression member and united to the strut at the tension member, substantially as set forth.

5. In a trussed brake beam, the combination with an arched compression member and a straight tension member, of a strut having a tubular head for the middle of the compression member and a transverse bore for the tension member and having oblique sockets opening into said bore, and oblique brace bars having tubular heads for the tension member and having their ends secured in the oblique sockets and abutting against the tension member, substantially as set forth.

6. In a trussed brake beam, the combination with a compression member and a tension member, of a wheel guard clip having holes at an angle to each other for the insertion of said members, substantially as set forth.

7. In a trussed brake beam, the combination with a compression member and a tension member, of wheel guard clips each having an oblique hole for the arched chamber and a transverse hole for the straight member, substantially as set forth.

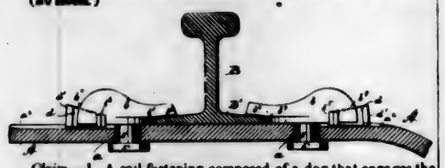
8. In a trussed brake beam, the combination with an arched compression member and a straight tension member, of wheel guard clips each having an oblique sleeve for the arched compression member and a transverse sleeve for the straight tension member, substantially as set forth.

9. In a brake beam, the combination of an arched compression member, a straight tension member, wheel guard clips having oblique sleeves for the compression members and transverse sleeves for the tension member provided with clamping jaws and guard fingers removably secured in said jaws, substantially as set forth.

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**503,442.** RAIL-FASTENING. BENJAMIN F. SPARR and HILLARD F. SPARR, Brooklyn, N. Y. Filed July 15, 1892. Serial No. 440,107. (No model.)



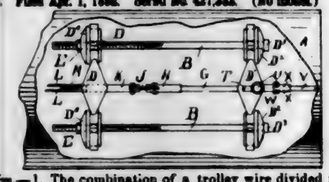
*Claim.*—1. A rail fastening composed of a dog that engages the tie and the rail flange and has a rearwardly opening groove and of a key received by said groove and extending longitudinally through the dog and at right angles to the rail, substantially as specified.

2. A rail fastening composed of a dog having a shank adapted to engage the tie, a nose and shoulder adapted to engage the rail and a divided rearwardly opening groove adapted for the reception of a split key, substantially as specified.

3. The combination of a grooved and slotted metallic tie with a dog having a nose $b^3$, shoulder $b^1$, a rearwardly opening divided groove and with a split key adapted to enter said groove, substantially as specified.

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**503,443.** TROLLEY-WIRE SWITCH. ELMER A. SPERRY, Chicago, Ill., assignor to the Sperry Electric Railway Company, Cleveland, Ohio. Filed Apr. 1, 1892. Serial No. 427,382. (No model.)



*Claim.*—1. The combination of a trolley wire divided into sections with a series of switches placed at the opposed ends of successive sections, said switch normally open but adapted to be closed by the trolley when it moves in one direction and to be opened by it when the trolley moves in the other direction, so that all the sections on one side of the trolley are in circuit and all on the opposite side are out of circuit.

2. The combination of successive main sections of trolley wire with short intermediate sections of trolley wire normally out of circuit, short insulated conductors permanently connecting such main sections around such short section and a two part circuit closer associated with such short section and having one part arranged in the path of the trolley wheel, whereby the circuit closer is adapted to throw the short section into circuit when the trolley is moving toward the same, and to throw it out of circuit when the trolley is moving away from it.

3. The combination of successive sections of trolley wire electrically disconnected from each other, with a coupling therefor consisting of parts which grasp the ends of such sections and are adjustably connected together, but insulated from each other and a circuit closing switching device adapted to connect the sections when the trolley moves in one direction, but to disconnect them when the trolley moves in the other direction.

4. The combination of successive sections of trolley wire electrically disconnected from each other with a coupling consisting of parts which grasp each one end of one section, screw rods which connect such parts, but are insulated therefrom, and nuts on such screw rods whereby the parts may be moved to and from each other, and a circuit closing switching device and connector adapted to be operated by the trolley to connect the two sections when the car moves in one direction, and to disconnect them when it moves in the opposite direction.

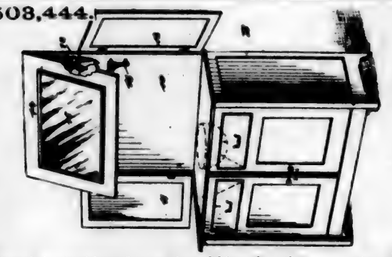
5. The combination of successive main sections of trolley wire with a short intermediate trolley wire, switches one at each end of such trolley wire, and cross connections from each switch to the other, whereby when the trolley moves toward the short section, one switch is operated to place the short section in circuit, and when the trolley moves from the short section the same switch is operated to cut the section out of circuit.

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**503,444.** CABINET. WILLIAM S. STANLEY, Washington, D. C. Filed Mar. 2, 1893. Serial No. 464,391. (No model.)

*Claim.*—An article of manufacture, consisting of a suitable support, a backboard erected upon the support, provided with attached brackets, side panels adapted for use as splash boards, hinged to the

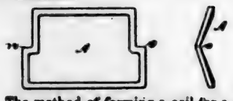
**503,444.**



sides of the backboard, a top board hinged to the upper edge of the backboard, a mirror panel hinged to the front edge of the backboard and adapted at times to rest against the brackets and be maintained thereby in an inclined position, and locking devices maintaining at times the top board in vertical alignment with the backboard, as and for the purpose set forth.

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**503,445.** METHOD OF WINDING COILS FOR DYNAMO-ELECTRIC ARMATURES. ELIHU THOMSON, Swampscott, assignor to the General Electric Company, Boston, Mass. Filed Apr. 19, 1893. Serial No. 470,962. (No model.)



*Claim.*—1. The method of forming a coil for a dynamo electric armature as herein described, which consists in winding a coil on a form into a trapezoidal shape, then removing it from the form, and then distorting or bending the trapezoid into two incomplete rectangles with their common side missing.

2. The method of forming a coil for a dynamo electric armature, which consists in winding the coil upon a form into trapezoidal shape, then removing it therefrom and distorting the trapezoid into two incomplete rectangles, and then bending the rectangles into different planes, substantially as described.

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**503,446.** SNAP-HOOK. HARRY W. TUFTS, North Attleborough, Mass. Filed Nov. 25, 1892. Serial No. 452,961. (No model.)

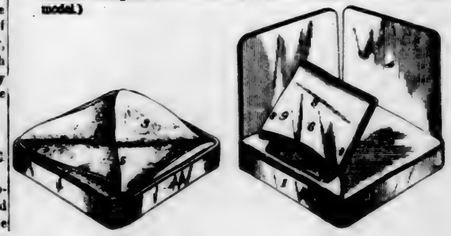


*Claim.*—1. The improved snap hook herein described, consisting of the stem A, having the slot *c*, the sliding head B, having a slot and a central bore, in the latter of which the said stem is mounted and movable, the jaws D pivotally mounted upon the sliding head B within the slot thereof, and each having a curved portion *g*, which passes through the slot *c* of the stem A, and the spring E within the bore of the sliding head B, surrounding the stem A and having one end bearing on said sliding head and the other bearing on said stem, substantially as shown.

2. In a snap hook, the combination with a stem, of a sliding head, mounted and movable upon said stem, and jaws pivotally mounted upon said sliding head and engaged with said stem, substantially as specified.

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**503,447.** COIN-PURSE. CHARLES B. WOODBURY and OSCAR GREENBAUM, Washington, D. C. Filed July 19, 1892. Serial No. 440,561. (No model.)



*Claim.*—1. A purse with bottom and tubular sides, having lengthwise outfolds and diagonal infolds in its sides, arranged to collapse by bending at the folds with a twisting motion, and a flat band around the bottom and projecting above the folded edges of the sides when closed, to protect them, formed by an up and a down and an up bend of the material between the bottom and sides.

2. A purse having bottom and tubular sides with lengthwise outfolds and diagonal infolds in its side parts arranged to collapse by bending at the folds by a twisting motion, all formed of one integral piece of material, and having a flat band around the bottom, with substantially straight side walls, extending above the plane of the folded edges of the sides of the purse when the purse is closed, to protect them from wear.

3. A purse having a bottom and tubular sides, with alternate lengthwise outfolds and diagonal infolds in its sides arranged to close by folding at the bends by a twisting motion, and a flat band around the bottom projecting above the folded edges of the sides when closed, to protect them, and a receptacle for tickets or bills on the opposite face of the purse bottom.

4. A purse having a bottom and tubular sides with lengthwise outfolds and diagonal infolds arranged to close by bending at the folds with a twisting motion, and a band about the bottom of the sides having substantially straight side walls, from which the sides of the purse separate at a distance below its top edge in bending to close the purse, to enable the band to protect such edges from wear.

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**503,448.** GATE. DANIEL RAPPER, Waverly, Ill. Filed Mar. 13, 1893. Serial No. 466,776. (No model.)



*Claim.*—1. The combination with a swinging gate, of a lever arm secured to the upper end of the inner end post thereof, a U-shaped lever fulcrumed on the inner end of said lever arm, and the operating levers connected with said U-shaped lever.

2. The combination with the gate having a spring latch, of the lever arm secured upon the inner end post thereof, a U-shaped lever fulcrumed on the inner end of said lever arm, the operating levers connected with the U-shaped lever, and connections between said lever and the latch.

3. The combination with a gate having a spring latch, of a lever arm secured upon the inner end post thereof, a U-shaped lever fulcrumed on the inner end of the said lever arm, the operating levers connected with the U-shaped lever, a bell-crank lever on the end post connected with the latch and a Y-shaped link connecting said bell-crank lever with the U-shaped lever.

4. The combination with the bell-crank lever having a notch in its upper end, a lever arm on the gate, a U-shaped lever fulcrumed on said lever arm and having studs on its upper side, and a Y-shaped link having its rear or outer end engaging the notched end of the bell-crank lever and its inner end provided with longitudinal slots engaging the studs on the U-shaped lever, all arranged and operating substantially as described.

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**503,449.** METHOD OF WINDING COILS FOR DYNAMO-ELECTRIC ARMATURES. JOHN B BLOOD, Lynn, assignor to the General Electric Company, Boston, Mass. Filed Apr. 19, 1893. Serial No. 470,934. (No model.)



*Claim.*—The method of forming coils for dynamo electric armatures, which consists in winding the coil upon a trapezoidal form, then removing it therefrom, then bringing its parallel sides together, then bringing its ends to an approximate right angle with such parallel sides, and then opening the coil to form two incomplete rectangles lying in different planes, substantially as described and set forth herein.

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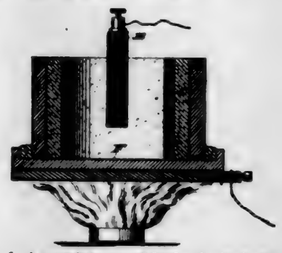
**503,450.** KNOB ATTACHMENT. CHARLES H. BURDICK, New Britain, Conn., assignor to the Russell & Erwin Manufacturing Company, same place. Filed May 20, 1893. Serial No. 474,894. (No model.)



*Claim.*—The herein described knob attachment, consisting of the screw threaded knob shank having a beveled face at its end, the collar carrying a holding jaw, and the threaded sleeve for forcing said jaw against the spindle, substantially as described and for the purpose specified.

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**503,451.** APPARATUS FOR ELECTROLYSIS OF FUSED SALTS. WILLARD H. CARE, Auburn, N. Y. Filed Jan. 17, 1891. Renewed Jan. 21, 1893. Serial No. 459,493. (No model.)



*Claim.*—1. A containing vessel for fused salts during electrolysis having an inner wall of electrically non-conducting material, and an outer surrounding envelope therefor, and a bottom both of electrically conducting material; the said envelope and bottom being insulated from one another.

2. A containing vessel for fused salts during electrolysis having a wall of metal, a lining of solidified salt, a bottom of metal and a layer of solidified salt interposed between said bottom and said wall.

3. A containing vessel for fused salts during electrolysis having a wall of electrically non-conducting material, a surrounding envelope therefor, and a bottom of electrically conducting material; said bottom and said envelope being insulated from each other.

4. A containing vessel for fused salts during electrolysis comprising a surrounding wall of solidified salt, a bottom of the metal to be deposited, in solid condition the inner metallic surface of said bottom being exposed, and a protecting exterior shield of heat-resisting material outside of said bottom.

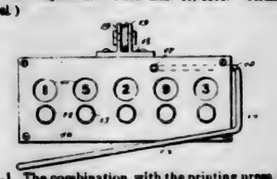
5. In an electrolytic bath for fused salts, a containing vessel having a wall of solidified salt, an envelope therefor of electrically conducting material, an anode supported within said vessel, and a bottom of electrically conducting material forming the cathode and insulated from said envelope.

6. The combination in a containing vessel for fused salts during electrolysis of the outer metal envelope A, the metal bottom B, the cylinder C of solidified salt, and the interposed layer of solidified salt D between said envelope and said bottom.

7. The combination in an electrolytic bath for fused salts of the metal envelope A, the bottom F of the metal to be deposited, the cylinder C of solidified salt, the interposed layer D of solidified salt between said envelope and said bottom, the shield or outer bottom B and the anode E the said bottom F forming the cathode.

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**503,452.** REGISTER FOR PRINTING-PRESSES. HERBERT D. CLAYTON, Hill City, Kans. Filed Mar. 15, 1893. Serial No. 466,018. (No model.)



*Claim.*—1. The combination, with the printing press, of a counter hinged to a fixed portion of the press, and having an operating lever extending into the path of a movable portion of the press which moves in unison with the platen, substantially as described.



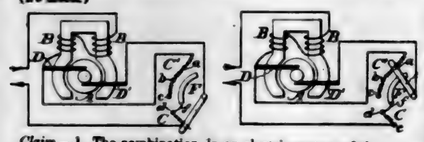
2. The combination, with the printing press having a swinging platen, of a counter hinged to the press and provided with an operating lever, and a contact finger carried by the platen and adapted to strike the lever of the counter, substantially as described.

3. The combination, with the printing press having a swinging platen, of a standard secured to one side of the press, a counter hinged to the standard and provided with an operating lever, and a finger carried by the platen and adapted to strike the lever of the counter, substantially as described.

4. The combination with a printing press, of a counter hinged to the press and having an operating lever extending into the path of a movable portion of the press, which moves in unison with the platen, the operating lever being movable with the counter when the latter is swung on its hinge, to throw the said counter out of or into operative position, substantially as described.

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**503,453.** REGULATOR FOR ELECTRIC MOTORS. JOHN C. DAVIDSON, Prince's Bay, N. Y., assignor to the S. S. White Dental Manufacturing Company, Philadelphia, Pa. Filed Mar. 8, 1893. Serial No. 465,123. (No model.)

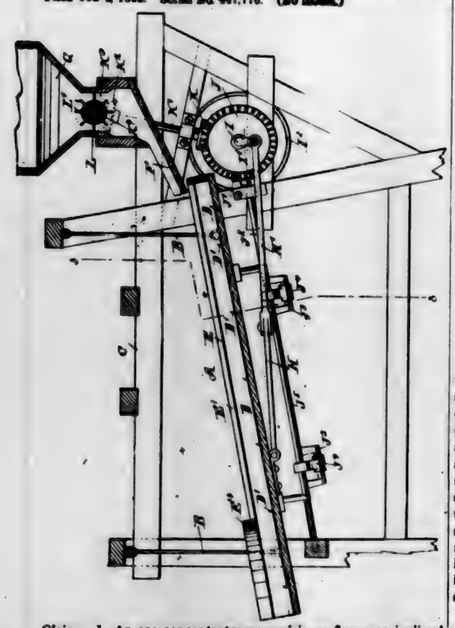


*Claim.*—1. The combination, in an electric motor, of the motor armature, and the resistance partly in series and partly in shunt with the armature, substantially as set forth.

2. The combination, in an electric motor, of the motor armature, the variable resistance in shunt with the armature, the resistance in series with the armature and shunt resistance, and the switch lever for varying the resistance, substantially as set forth.

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**503,454.** ORE-SEPARATOR. ROBERT DILWORTH, El Paso, Tex. Filed Oct. 4, 1892. Serial No. 447,776. (No model.)



*Claim.*—1. An ore concentrator comprising a frame an inclined table A having imperforate pans D provided with transverse riffles D' on their upper sides and an outlet at the lower end of the table for the lighter tailings, links suspending the table loosely within the frame, a screen secured on the table over its riffles and having an outlet at its lower end delivering separately from the table outlet and mechanism for imparting a combined longitudinal and lateral oscillation to the table and its screen, substantially as set forth.

2. An ore concentrator comprising the frame, the inclined table suspended loosely therein, a transverse crank shaft having a gear wheel J at one end, a longitudinal crank shaft having a pinion J' meshing with wheel J, connections between the table and said two shafts for imparting a combined longitudinal and lateral oscillation, an upwardly extending shaft K' having a pinion K also meshing with wheel J, a hopper delivering to the upper end of the table and provided with a stirrer geared to the shaft K', substantially as set forth.

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**503,455.** SPRAYING DEVICE. JOHN J. DUGAN, Salem, Oreg. Filed Mar. 23, 1893. Serial No. 467,320. (No model.)

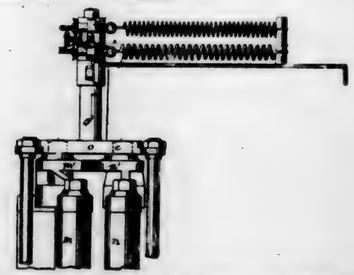


*Claim.*—1. A spraying device, comprising a hollow handle, a horizontal head or coupling in fixed relation to the handle and forming a water chamber complementary to the bore or chamber of the handle, a pipe rotatably held to the coupling and communicating with its interior, a substantially straight nozzle on said pipe, and a counterbalance arm on the pipe, such counterbalance arm being adapted to gravitate below the plane of the handle when the latter is raised and form a rest for permitting a tilting movement of the apparatus when desired, substantially as described.

2. A spraying apparatus, comprising a hollow handle, from which the following devices are supported and by which the apparatus is manipulated, to wit: a hollow head communicating with the bore or chamber of the handle, a pipe rotatably held to the head, communicating with the interior of the latter, and having an upward extension at its outer end, and a T connected with the upper end of such extension and having a spring-actuated valve the stem of which depends from the upright member of said T, substantially as described.

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**503,456.** DOUBLE TENSION DEVICE FOR LOOMS. ABRAM D. EMERY, Taunton, Mass. Filed Sept. 29, 1890. Renewed Dec. 1, 1892. Serial No. 453,683. (No model.)



*Claim.*—1. The combination as herein set forth of the harnesses, the lay and a whip-roller, with a radius-arm tightly affixed to the shaft of said whip-roller, a comparatively light spring for exerting a constant strain upon the free end of said tightly affixed arm, in one direction, a radius arm loosely mounted upon the whip-roller shaft and having a bend or projection extending across the path of motion of a part of said tightly affixed arm, a comparatively strong spring connected with the free end of said loosely mounted arm for exerting a strain in the same direction as that exerted by the said light spring upon the said tightly affixed arm, and a stop for arresting the motion of said loosely mounted arm, and thereby making its possible range of motion, in obedience to the action of said comparatively strong spring, less than the possible range of motion of the said tightly affixed arm in obedience to the action of the said comparatively light spring, substantially as and for the purposes described.

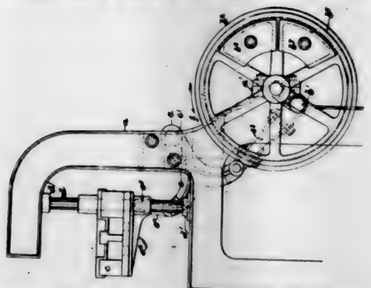
2. The combination, as herein set forth, of the harnesses, the lay and the whip roller of a loom, with the radius arm, *k*, loosely mounted upon the whip-roller shaft, *j*, the spring, $k^4$, exerting its pull upon the free end of the loosely mounted arm, *k*, a stop, $k^5$, for arresting the motion of the said radius arm, *k*, in obedience to the pull of its spring, the radius arm, *l*, tightly affixed to the whip-roller shaft, *j*, the spring, $l^3$, exerting a constant pull upon the free end of the arm, *l*, the set screw, $k^2$, inserted through the diagonally upward extension of the loose arm, *k*, and adapted to bear upon the face of the similar diago-

nally upward extension of the tightly affixed arm, *l*, for the purpose of transmitting to the loose arm, *k*, more or less of the movement of the arm, *l*, in opposition to the pull of its spring, *l*⁵, and thereby regulating the stage in the rocking motion of the whip-roller, *c*, at which the arm, *k*, is moved from its stop, *k*⁴, and the spring, *k*⁵, is enlisted into action to resist the rocking movement of the whip-roller, *c*.

3. The combination, as herein set forth, of the lay, harnesses, and the whip-roller, *c*, with the arm, *k*, loosely mounted upon the whip-roller shaft, *j*, and the arm, *l*, tightly secured thereto, the screw bolts *k*⁷ and *l*⁶ the springs, *k*⁵, and *l*⁵, and the adjusting nuts, *k*⁶, and *l*⁷, for adjusting the tension of said springs respectively.

## 503,457. LAY-DRIVING MECHANISM FOR VERTICAL LOOMS.

ABRAM D. EMERY, Taunton, Mass. Filed Oct. 6, 1890. Renewed Dec. 1, 1892. Serial No. 453,694. (No model.)

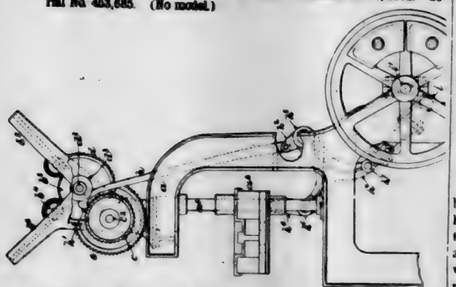


*Claim.*—1. The combination as herein set forth of a vertically reciprocating lay upon the front side of an upright loom, with a crank shaft in the rear thereof and below the level of the lay and two trains of mechanism for carrying the weight of said lay and for transmitting from said crank shaft motion to drive said lay, each of which trains of mechanism embraces essentially a bell crank lever pivoted to the frame of the loom between the crank shaft and lay and links connecting the lay and one of the cranks on said crank shaft with the free extremities respectively of said bell crank lever.

2. The combination, as herein set forth, of a vertically reciprocating lay upon the front side of an upright loom, a crank shaft in the rear thereof and below the level of said lay, trains of mechanism for carrying the weight of said lay and for transmitting from said crank shaft motion to drive said lay, each of which said trains of mechanism embraces essentially a bell-crank lever pivoted to the frame of the loom between the crank shaft and lay, and links connecting the lay and one of the cranks on said crank shaft with the free extremities, respectively, of said bell-crank lever; and means for counterbalancing said lay.

## 503,458. TAKE-UP MECHANISM FOR LOOMS.

ABRAM D. EMERY, Taunton, Mass. Filed Oct. 10, 1890. Renewed Dec 1, 1892. Serial No. 453,685. (No model.)

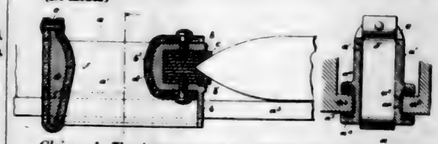


*Claim.*—1. The combination with the weaving mechanism of a loom for weaving two fabrics side by side, of primary and secondary sand rollers, gears for driving the said sand rollers at like surface speed respectively in opposite directions, and a cloth roll or rolls for taking from the secondary sand roller two superimposed pieces of fabric delivered from the primary sand roller; when the primary sand roller is so arranged relatively to the secondary sand roller that the superimposed fabrics pass around less than one half of the periphery of the primary sand roller, substantially as and for the purposes set forth.

2. The combination of the sand rollers $b^3$ and $b^4$, geared to each other by the intermeshing pinions *g* and *g'*, the overhanging ends, $c^4$ and $d^3$, of the shafts of said sand rollers, the gear *e*, affixed to the overhanging end $d^3$ of the sand roller $b^4$, and the toothed wheels *c* and $c^3$, *d* and $d^4$, removably mounted upon the overhanging ends $c^4$ and $d^3$ of the shafts of the sand rollers $b^3$ and $b^4$, respectively, as and for the purposes set forth.

## 503,459. PICKER FOR LOOMS.

ABRAM D. EMERY, Taunton, Mass. Filed Nov. 21, 1890. Renewed Dec. 1, 1892. Serial No. 453,696. (No model.)

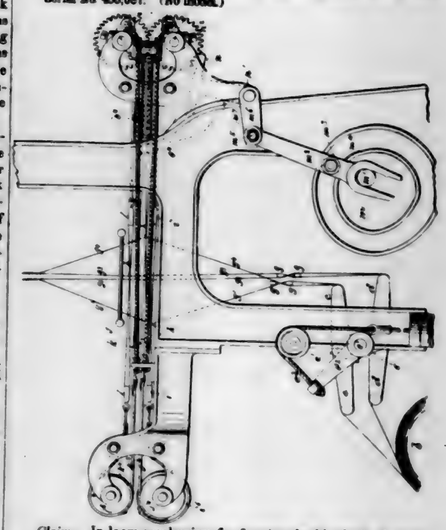


*Claim.*—1. The improvement in pickers for looms herein described, the same consisting of an aluminum frame or cushion-carrier combined with guard strips of tough material such as raw hide deposited in recesses formed in the body of the metal, substantially as and for the purposes set forth.

2. A picker substantially of the character described, composed of an aluminum frame or cushion-carrier provided with the longitudinal grooves $a^3$ $a^3$ and with guard strips $a^4$ $a^4$ seated in the recesses formed in the opposite faces of each of said grooves in combination with the tongues $a^3$ $a^3$ and the guard strips $a^4$ $a^4$ as and for the purposes set forth.

## 503,460. SHEDDING MECHANISM FOR LOOMS.

ABRAM D. EMERY, Taunton, Mass. Filed Dec. 17, 1890. Renewed Dec. 1, 1892. Serial No. 453,687. (No model.)



*Claim.*—In loom mechanism for forming double sheds, the combination, as herein set forth, of harness mechanism for forming sheds, harness driving mechanism directly connected thereto, manually detachable clutch mechanism for disengaging the harness mechanism at will, and equalizing tension devices for subjecting all the groups of warp threads to the same degree of tension whereby on the detachment of the clutch mechanism the warp threads are brought into parallelism, substantially as described.

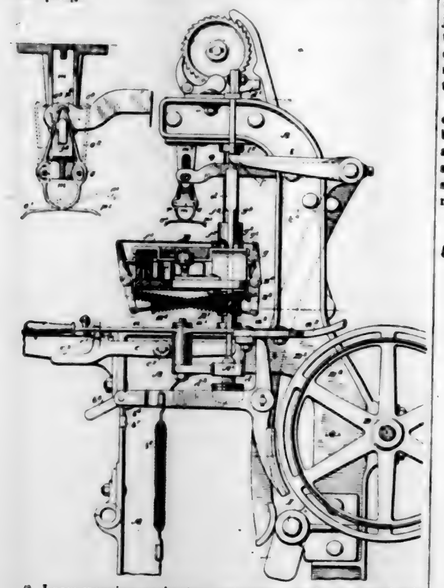
## 503,461. STOPPING MECHANISM FOR LOOMS.

ABRAM D. EMERY, Taunton, Mass. Filed Feb. 7, 1891. Renewed Dec. 1, 1892. Serial No. 453,683. (No model.)

*Claim.*—1. Loom-stopping mechanism, embracing a spring-operated belt shifter, a spring-operated brake, a vertically-sliding tripping rod for releasing said belt shifter and brake to the action of their respective springs, and a tappet upon the said tripping-rod, in



combination with take-up mechanism a pawl for actuating said take-up mechanism, so arranged with relation to said tappet that the upward motion of the said tripping rod disengages the said pawl from the prime wheel of the take-up mechanism, and hence stops the take-up whenever the belt shifter and brake are released to the action of their springs.



2. Loom-stopping mechanism, embracing a spring-operated belt shifter, a spring-operated brake, and a vertically sliding tripping rod, in combination with a manually-operative stopping lever engaged by the said tripping rod, and provided with a chock for holding the said belt shifter out of action during the normal operation of the loom, and a handle, forming a part of the said stopping lever, for facilitating the manual operation of the same for the purpose of releasing the said belt shifter and brake to the action of their respective springs, and thereby stopping the loom.

3. A spring-operated belt shifter, a spring-operated brake, a tripping rod to release said shifter and brake, a fixed arm, through which the tripping rod slides, and a collar, affixed to the tripping rod, for arresting the upward movement of the tripping rod by collision with the said arm, in combination with a train of devices mounted upon the lay and embracing a lifting pawl for engaging and lifting said tripping rod if the shuttle fails to box properly, for the purpose of enabling the said tripping rod, by the collision of the said collar with the said arm, to act as a chock and arrest the continued upward movement of the lay after the initial portion of such movement, by having been communicated to the said tripping rod, has caused the said belt shifter and brake to be released to the action of their respective springs.

4. A spring-actuated belt-shifter, a spring-actuated brake, a cam connected with and operated by the belt shifter to throw and hold the brake out of action while the belt is on the driving pulley, a vertically-movable tripping rod, a vertically-reciprocating lay, a lifting pawl on said lay, means to throw said pawl into and out of engagement with the tripping rod, and a chock for holding the belt-shifter against the action of its spring, the said chock being operatively connected with the tripping rod.

5. A spring-operated belt shifter, a spring-operated brake, a cam operatively connected with the belt-shifter to throw and hold the brake out of action while the loom is in operation, a sliding tripping rod, a reciprocating lay, a lifting device on said lay, means to throw said device into and out of engagement with the tripping rod, and means for locking the belt-shifter in its adjusted position, said means being both manually operative and operatively connected with the tripping rod for releasing the belt-shifter and its connections to the action of its spring and thereby the brake mechanism to the action of its spring.

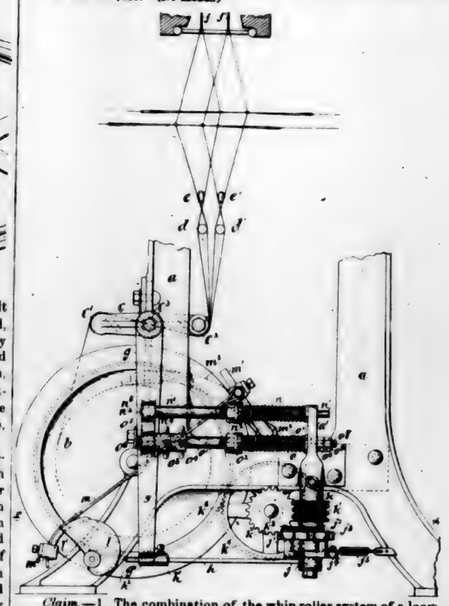
6. The combination of a main train of spring-operative stopping mechanism, a stopping lever provided with a projection near one end, a vertically-sliding tripping rod supported on the other end, whereby the projection is normally held in the path of movement of the stopping mechanism, a reciprocating lay and means carried thereon adapted to lift the tripping rod when a shuttle fails to box and thereby releasing the stopping mechanism, substantially as described.

7. The combination of a main train of spring-operated stopping mechanism a manually-operative stopping lever provided with a projection near one end, a vertically-movable tripping rod connected to the opposite end, whereby the projection is normally held in the path of the stopping mechanism, a vertically-reciprocating lay, a pawl carried thereby and adapted to engage and lift said tripping rod when the shuttle fails to box, substantially as described.

8. The combination of a spring-operated belt shifter, a spring-operated brake, a vertically movable tripping rod for releasing said belt-shifter and brake to the action of their respective springs, with a vertically-reciprocating lay carrying a lifting pawl, means to throw said pawl into engagement with said tripping rod, whereby the belt-shifter and brake are released and a stop for limiting the upward movement of said tripping rod and lay, substantially as described

## 503,462. LET-OFF MECHANISM FOR LOOMS.

ABRAM D. EMERY, Taunton, Mass. Filed Apr. 25, 1891. Renewed Dec. 1, 1892. Serial No. 453,689. (No model.)



*Claim.*—1. The combination of the whip roller system of a loom with a primary spring adjusted to exert a moderate force upon said whip roller system in opposition to the force exerted thereon by the warp threads during the formation of the sheds, and a secondary spring adjusted to exert an additional and increasing force upon said whip roller system in opposition to the force exerted thereon during the beat.

2. The combination, as herein described, of the radius arm *g*, affixed to the main axis of the whip roller system of a loom, the spring *n* and connections between the same and the whip roller system, the rod *o'*, the nut $o^3$ adjustable on said rod for regulating its operative length and the secondary spring *o* for operating upon said rod only at the instant of the beat, substantially as described.

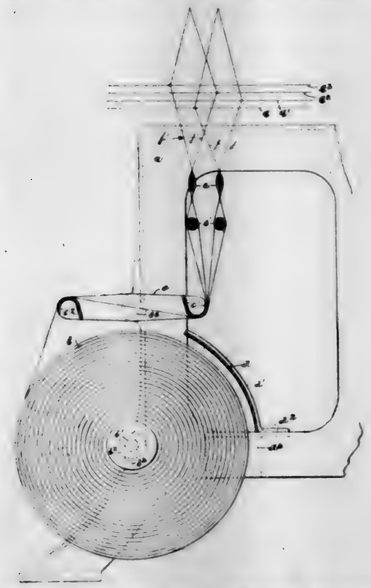
3. In a loom for weaving, the combination of let off gearing, means for operating said gearing, a regulator cam for varying the range of operation of said means for operating said gearing, a governor lever adapted to bear upon and be supported by the surface of the roll of warp, and connections between the governor-lever and cam, consisting of the rock-shaft $m^3$, crank-arm *m'* mounted on said shaft, strap *m* connecting said arm and cam, and adjusting-clamp $m^4$ for coupling the strap and cam, whereby the governor-lever not only controls the movement of the cam and the let-off as the warp roll diminishes in diameter, but provision is made for conveniently adjusting the let-off to compensate for varying conditions of the warp threads due to atmospheric changes or other causes.

4. The combination of a warp-roll, a governor-lever adapted to bear upon and be supported by the surface of the roll of warp, a regulator cam, and suitable adjustable connections between the governor-lever and the regulator cam, substantially as and for the purposes set forth.

5. The combination of a warp roll, a governor-lever adapted to bear upon and be supported by the surface of the roll of warp, the setting-bar A, the radius arm *g*, connected directly to the whip roller system, the regulator cam and adjustable connections between the governor and the cam, substantially as described and for the purposes set forth.

6. The combination of a warp roll, the governor-lever $m^3$, adapted to bear upon and be supported by the surface of the warp roll, the rock shaft, $m^3$, the crank arm $m'$, the strap, *m*, the involute cam, *l*, and the clamp, $m^4$, for adjustably connecting the cam, *l*, to the strap, *m*, as and for the purposes set forth

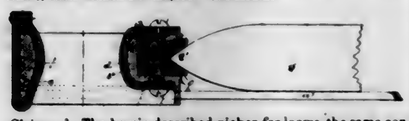
## 503,463. FLUFF-CATCHER FOR VERTICAL LOOMS. ABRAM D. EMERY, Taunton, Mass. Filed Sept. 18, 1890. Renewed Oct. 2, 1891. Again renewed Dec. 1, 1892. Serial No. 453,690. (No model.)



*Claim.*—1. The combination in a vertical loom of a warp core for carrying a toll of warp threads, a system of harnesses for forming the sheddings, a system of lease rods beneath the harnesses, and a whip-roller, the inner bar of which is in the shape of a round bottomed trough open at the top, for guiding the warp threads to the lease rods, and for catching the fluffing which may fall from the front side of the sheddings.

2. In a loom, the combination of a whip roller, a warp roll arranged beneath said whip roller and a shield fastened to the frame of the loom and extending partly over said warp roll into the space between said warp roll and the inner bar of said whip roller, as and for the purpose set forth.

## 503,464. PICKER FOR LOOMS. ABRAM D. EMERY, Taunton, Mass. Filed Sept. 29, 1890. Renewed Nov. 6, 1891. Again renewed Dec. 1, 1892. Serial No. 453,691. (No model.)



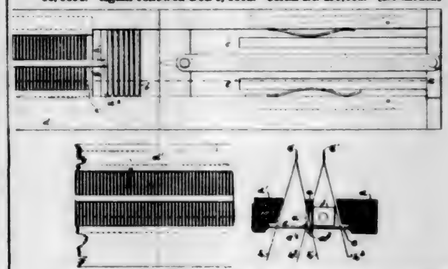
*Claim.*—1. The herein described picker for looms, the same consisting of a metallic carrier slotted to admit the extension through it of the picker shaft, and adapted to slide back and forth in the shuttle box, and composed of two longitudinal walls having parallel inner faces, and of two end walls having their inner faces convexly curved and covered with removable cushions of leather or other suitable material, and having in the outer face of one of its end walls a cylindrical recess, and a cylindrical roll of leather or other suitable material confined within said recess, and presenting its exposed end for receiving the impacts of the end of the shuttle.

2. The metallic carrier, *a*, presenting for the passage through it of the picker staff an opening, the opposed faces of the side walls, *a' a'*, of which are parallel, and the opposed faces of the end walls, *b*, and *c* of which are convex, in combination with the removable cushions, *d* and *f*, of leather or other suitable material.

3. The metallic carrier *a* having the end wall *c* and provided with a cylindrical recess *b'* formed in the outer face of its end wall *b*, the cylindrical shuttle buffer *c*, contained within said recess, and the cushion strip *d*, extending along the top and bottom and around the convex inner face of the wall *b* in combination with the set-screws *d' d'* for fastening the cushion strip *d* to the end wall *b*, and for confining the cylindrical shuttle buffer within its recess *b'*.

4. The metallic carrier *a* having the end wall *c* provided with an upward extension *c'* and having its inner face convexly curved in combination with the cushion strip *f* and the clamping bolt *f''*.

## 503,465. RACE-RAIL FOR DOUBLE-SHED VERTICAL LOOMS. ABRAM D. EMERY, Taunton, Mass. Filed Sept. 18, 1890. Renewed Nov. 10, 1891. Again renewed Dec. 1, 1892. Serial No. 453,692. (No model.)

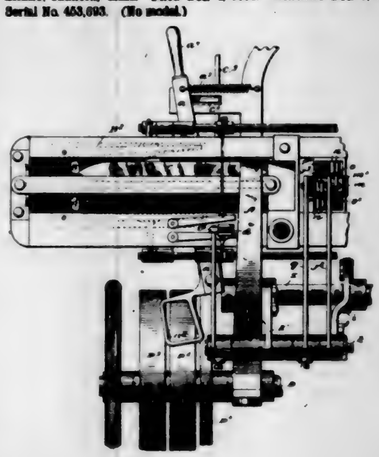


*Claim.*—1. In combination with the front and rear bars of the lay of a double shed vertical loom, a center race rail elevated a prescribed distance above the reed, substantially as and for the purposes set forth.

2. In combination with the lay of a double shed vertical loom, the center race rail, *a*, having downwardly converging sides and elevated a prescribed distance above the reed, substantially as and for the purposes set forth.

3. In combination with the lay of a double shed vertical loom, a center race rail elevated a prescribed distance above the reed and fastened to and forming a part of said lay.

## 503,466. WEFT-STOP MECHANISM FOR LOOMS. ABRAM D. EMERY, Taunton, Mass. Filed Dec. 4, 1891. Renewed Dec. 1, 1892. Serial No. 453,693. (No model.)





*Claim.*—1. In a duplex loom employing two simultaneously-operated shuttles, a main train of loom stopping mechanism, embracing a spring-operated belt-shifter, a spring-operated brake, and an endwise-sliding tripping rod, in combination with a constantly rotating cam, a disconnectible lever system for transmitting from said cam the motion to trip the said tripping rod, and two independently tiltable weft forks, adapted to be tilted by the wefts, respectively, as the lay rises to deliver the beat, each of which forks when not tilted, serves as a link connecting to each other two consecutive members of the said lever system, as and for the purposes set forth.

2. The combination with a main train of spring-actuated stopping mechanism, of means for holding and releasing said stopping mechanism, a longitudinally movable tripping rod connected with and controlling said means, guides on the loom frame, a movable cage supported in said guides, a continuously-operated shaft, a bell-crank lever operated thereby, a weft fork pivotally connected with said cage and adapted to be tilted by the weft threads and when not so tilted to engage said vibrating bell-crank lever and means connected with and operated by the movable cage for actuating the tripping rod, substantially as described.

3. The combination with a train of spring-actuated stopping mechanism, means for holding and releasing said stopping mechanism, a longitudinally movable tripping rod connected with said means, a guide-way on the loom frame, a movable cage supported thereby, two connected radius arms, one being connected to said cage and the other adapted to engage and move the tripping rod, a bell-crank lever, a continuously rotating cam for operating said lever, and a weft fork pivotally connected to said movable cage to normally engage an arm of the bell-crank lever and to be tripped and held out of engaging position by the weft thread, substantially as described.

4. The combination with a main train of stopping mechanism comprising a spring-operated belt shifter, a spring operated brake, a cam operated by the belt shifter to hold and release the brake, a locking lever to hold the belt shifter against the action of its spring, and a tripping rod provided with a tappet and connected with the locking lever, of a rotating cam, a bell-crank lever operated thereby, a movable cage carrying a weft fork loosely pivoted thereto and adapted to be moved by said bell-crank lever, and two connected radius arms, one of which is connected to said cage and the other of which is adapted to engage said tappet on the tripping rod, substantially as described.

5. In a weft stop motion for a vertical loom adapted to weave two fabrics side by side, the combination of slotted brackets provided with guides and secured to the loom frame, a cage adapted to slide in said guides and provided with two loosely pivoted weft forks, a vibrating bell-crank lever, one arm of which projects between said brackets and carries a pin, two radius arms, one of which is connected with and is moved by the said cage, and means operated by the said arms to stop the loom, substantially as described.

## 503,467. LOOM. ABRAM D. EMERY, Taunton, Mass. Filed Oct. 9, 1890. Renewed Jan. 4, 1892. Again renewed Dec. 1, 1892. Serial No. 453,694. (No model.)

*Brief.*—Two fabrics are woven side by side in a vertical loom in which is used a single reed unobstructed from side to side in order to allow the warp-threads of the two fabrics to be crossed above the reed, whereby a very narrow reed may be employed.

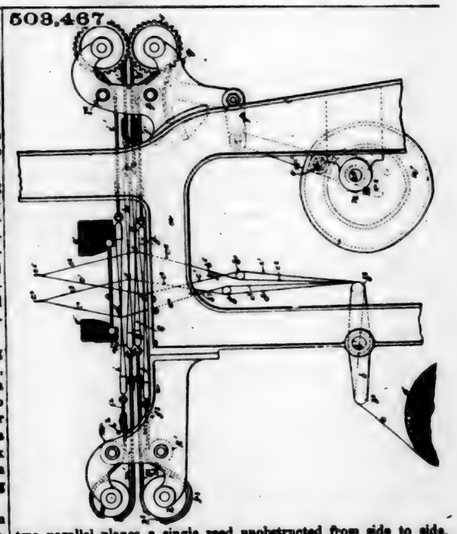
*Claim.*—1. The combination in a loom for simultaneously weaving two fabrics side by side, of a single warp roll for supplying all the warp threads, a single whip roller for delivering all the warp threads in a common line, and a single reed, unobstructed from side to side, for simultaneously beating up the wefts of the two fabrics, with harness cords provided with eyes for controlling and maintaining the warp threads in four equal groups, and means for imparting to said harness cords reciprocating motions of prescribed ranges, whereby in the formation of a succession of double sheds the warp threads of the two separate fabrics are vibrated in parallel paths which partly interlap above the lower side of the reed.

2. The combination, in a loom for simultaneously weaving two fabrics side by side, of a single warp roll, a single whip roller and a single reed unobstructed from side to side with shedding mechanism for forming a succession of double sheds by vibrating the warp threads in four equal groups in parallel paths which partly interlap above the lower side of the reed.

3. In a vertical loom means for supplying, under suitable tension, the two pairs of groups of warp threads of two separate fabrics, a single reed unobstructed from side to side shedding mechanism for forming a succession of double sheds by vibrating said two pairs of groups of warp threads in parallel paths which partly interlap above the lower side of the reed and means for reciprocating said reed in a vertical path for simultaneously weaving said two pairs of groups of warp threads, respectively, into two separate fabrics.

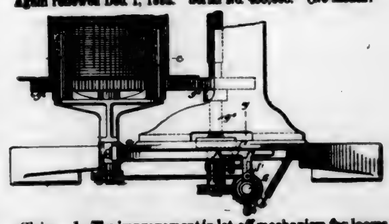
4. In a loom for simultaneously weaving two separate fabrics in

## 503,467.



two parallel planes, a single reed unobstructed from side to side, means for appropriately supplying four groups of warp threads to suitably arranged heddle eyes, means for imparting to said heddle eyes prescribed ranges of reciprocating motions in parallel and partly interlapping paths whereby in the formation of a succession of double sheds, the warp threads of the two fabrics partly interlap above the lower side of said reed, and means for vibrating said reed in a vertical path.

## 503,468. LET-OFF MECHANISM FOR LOOMS. ABRAM D. EMERY, Taunton, Mass. Filed Dec. 2, 1890. Renewed Jan. 19, 1892. Again renewed Dec. 1, 1892. Serial No. 453,695. (No model.)



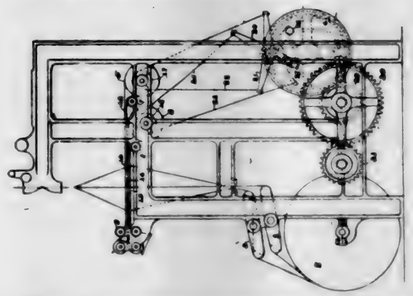
*Claim.*—1. The improvement in let-off mechanism for looms herein described, the same consisting, essentially, of a worm for imparting motion to the train of gearing by which the warp roll is unwound, a ratchet wheel affixed to the shaft of said worm, a driving pawl for engaging the teeth of said ratchet wheel, a spring for forcing said driving pawl forward against the ratchet tooth on which it bears, a radius arm connected to the sleeve of said pawl, a stop arranged in the path of motion of said radius arm for arresting the backward motion of said driving pawl and thereafter holding the same against the force of said spring, a setting bar, for bearing at one end against the said radius arm connected to said sleeve, and for receiving at its opposite end the impact of a radius arm affixed to the shaft of the whip roller for governing the tension of the warp threads, and thereby transmitting motion derived from the beat to set back said driving pawl and store up in said spring force to actuate the let-off gearing at the conclusion of the beat.

2. A worm shaft, constituting the prime member of a train of gearing for imparting unwinding motion to the warp roll of a loom, a ratchet wheel affixed to said shaft, a driving pawl carried upon a sleeve loosely mounted upon said shaft and adapted to engage the teeth of said ratchet wheel, a spring for giving the forward or driving motion to said driving pawl, a radius arm affixed to the whip roller shaft, a setting bar, for transmitting at the instant of the beat, motion derived from said whip roller to rock said sleeve and thereby set back said driving pawl, and coincidently store up in said spring an additional amount of force for reacting upon said driving pawl, in combination with a movable stop for arresting the forward or actuating movement of said driving pawl, and thereby varying the stage in the

swinging motion of said radius arm affixed to said whip roller shaft at which its motion is communicated to said setting bar, and hence varying the range of setting movement imparted to said driving pawl, and consequently the range of unwinding motion communicated to the warp roll.

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**503,469. SHEDDING MECHANISM FOR LOOMS.** ABRAM D. EMERY, Taunton, Mass. Filed Aug. 22, 1890. Renewed Jan. 19, 1892. Again renewed Dec. 1, 1892. Serial No. 453,696. (No model.)



*Claim.*—1. The combination in a shedding mechanism of the four-throw cam, 19, the rocking levers, 20 and 21, provided with the cam pin rollers, 26 and 27; the heddle-operating rollers 5 and 6, connected respectively with the said rocking levers, 20 and 21, and the heddles 13, 14, 15, and 16, as and for the purposes described.

2. The combination in a shedding mechanism of the cam 19; the rocking levers, 20 and 21, provided with the cam pin rollers 26 and 27; the heddle-operating rollers 5 and 6; the cords 22, 23, 24 and 25, respectively connected with the opposite ends of the said levers and with the said heddle-operating rollers for giving the same the described intermittent motions; and the heddles 13, 14, 15 and 16, respectively connected with and partaking of the motions of, the said heddle-operating rollers 5 and 6.

3. The combination in a shedding mechanism of the heddle-operating roller 5 and the stretcher roller 11; the heddles 13 and 14 deriving their motions from said roller 5; the heddle-operating roller 6 and the stretcher roller 12; the heddles 15 and 16, deriving their motions from said roller 6; and means for giving the heddles, respectively, a series of intermittent motions first, two steps in one direction and then two steps in the opposite direction, substantially as set forth.

4. The combination in a shedding mechanism of the rollers 5 and 11; the heddles 13 and 14, connected at their opposite ends, respectively, with said rollers 5 and 11; the idler rollers 7 and 9, for holding taut and properly aligning the heddles 13 and 14, and the rollers 6 and 12 the heddles 15 and 16, connected at their opposite ends, respectively, with the said rollers 6 and 12, and the idler rollers 8 and 10 for holding taut and properly aligning the heddles 15 and 16, substantially as described.

5. The combination in a shedding mechanism, as herein set forth, of the cam, 19, provided with a single cam groove, 33; and the rocking levers 20 and 21, having a common axis and provided, respectively with cam pins of like radius carrying the rollers 26 and 27, and so arranged that the arcs of motion described by the said cam pin rollers are on opposite sides of and equi-distant from a line intersecting the axis of the cam and the axis of the said rocking levers.

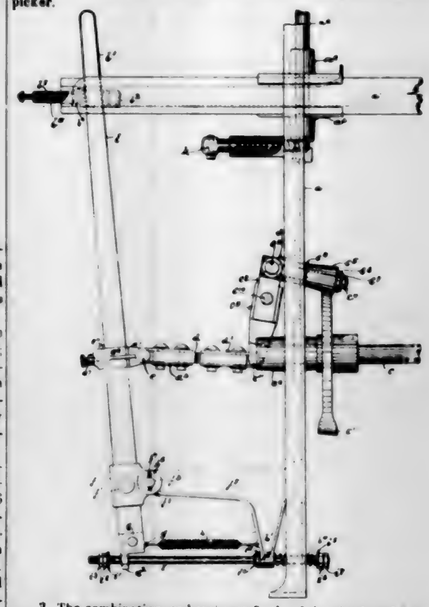
6. The combination in a shedding mechanism as herein set forth of the cam, 19, having a single cam groove, 33; for engaging the cam pin rollers 26 and 27; the rocking levers 20 and 21, with which the said cam pin rollers are connected; the rollers 5 and 6; the cords 22, 23, 24, and 25, connecting the said rollers 5 and 6, respectively, with the opposite ends of said rocking levers, 20 and 21, for operating the heddles by imparting to them a series of intermittent motions, each series consisting of two steps in one direction, followed by two steps in the opposite direction.

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**503,470. PICKING MECHANISM FOR LOOMS.** ABRAM D. EMERY, Taunton, Mass. Filed Oct. 18, 1892. Renewed Feb. 25, 1892. Again renewed Dec. 1, 1892. Serial No. 453,697. (No model.)

*Claim.*—1. A picker, a picker staff, an endwise-reciprocating pitman, and a strap and wrist-pin connection for connecting said pitman to said picker staff, in combination with an adjustable yielding check for opposing, at a prescribed stage near the conclusion of the forward movement or working stroke of said picker staff, a prearranged degree of resistance to the continued movement of a part of said picker staff relatively near the axis of oscillation of said picker staff, and thereby causing a whip-like springing action of the free end of said picker staff, for imparting to the picker the concluding portion of its working stroke.

2. A picker, a picker staff, a cam, and suitable connections for imparting to said picker staff its forward movement or working stroke, and a spring for imparting to said picker staff its return movement, in combination with an adjustable check collar for opposing, at a prescribed stage in the forward movement or working stroke of said picker staff, a prearranged degree of resistance to the continued movement of a part of said picker staff relatively near the axis of oscillation of said picker staff, and thereby causing a whip-like springing action of the free end of said picker staff, and a resultant strong and quick initiation of the return movement of said picker staff and picker.



3. The combination, as herein set forth, of the check rod $i$, provided with the stationary collar $i^2$, the perforated boss $A^9$, through which said check rod extends, the spiral spring $i^3$, the adjustable collar $i^4$, for adjusting the tension of the spring $i^3$, the adjustable check collar $i^5$, and the shoe $g$, secured to the lower end of the vibrating picker staff $b$, and provided with the flange $g^3$, perforated to admit the extension through it of a part of the check rod, $i$, between the adjustable check collar $i^5$ and the stationary collar $i^2$, as and for the purpose set forth.

4. The picker mechanism, for a loom in which two shuttles are simultaneously thrown through two parallel paths for the weaving of two fabrics side by side, hereinadescribed, consisting of a lay having at each end two parallel shuttle boxes provided at their outer extremities with resilient buffers for cushioning the return strokes of pickers adapted to slide in said shuttle boxes, respectively, and at each side of the loom two picker staffs for actuating said pickers, respectively, and a single cam with suitable connections, embracing a bifurcated pitman for simultaneously imparting to said two picker staffs their forward movements or working strokes.

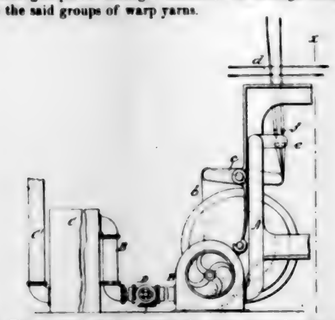
5. The picker mechanism, for a loom in which two shuttles are simultaneously thrown through two parallel paths for the weaving of two fabrics side by side, hereindescribed, consisting of a lay having at each end two parallel shuttle boxes, four pickers adapted to slide in said shuttle boxes, respectively, and at each side of the loom two picker staffs for actuating said pickers, respectively, and a single cam with suitable connections, embracing a bifurcated pitman for simultaneously imparting to said two picker staffs their forward movements or working strokes.

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**503,471. FLUFFING-DISCHARGER FOR LOOMS.** ABRAM D. EMERY, Taunton, Mass. Filed Apr. 14, 1892. Renewed Dec. 1, 1892. Serial No. 453,698. (No model.)

*Claim.*—1. The herein described method of effecting the dislodgment and removal of fluffing from the warp yarns of a loom, between the warp beam and the harnesses, which consists in separating the warp yarns into groups and forcing a current of air through the spaces between the said groups of warp yarns.





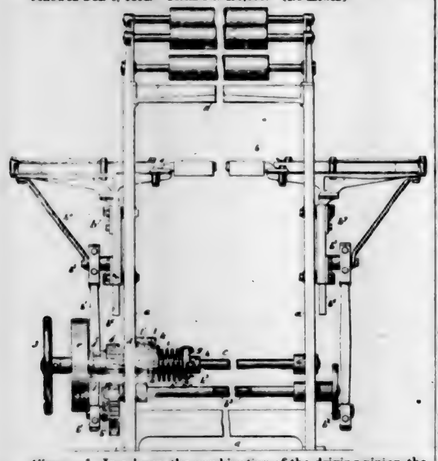
2. The method of dampening the warp yarns in a loom, herein described, which consists in separating the warp yarns into groups and forcing through the space between said groups of warp yarns a current of moist air or vapor.

3. The combination, as herein set forth, of the warp beam of a loom and means for guiding the yarns from the warp beam to the harnesses, with a compressed air service pipe, a nozzle for discharging a blast of air into and through the space between the groups of warp yarns and means for supplying compressed air to said service pipe.

4. The combination, as herein set forth, of the warp beam of a loom and means for guiding the yarns from the warp beam to the harnesses, with a compressed air service pipe, a nozzle for discharging a blast of air into and through the space between the groups of warp yarns, and means for supplying moist air under pressure to said service pipe.

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**503,472. LOOM.** ABRAM D. EMERY and WILLIAM T. DONNELLY, Taunton, Mass. Filed Oct. 7, 1889. Renewed Jan. 27, 1892. Again renewed Dec. 1, 1892. Serial No. 453,699. (No model.)



*Claim.*—1. In a loom, the combination of the driving pinion, the shaft upon which said driving pinion is loosely mounted, a spring connected at one end to said shaft, and at the other end to a stationary part of the loom structure, means for gearing said driving pinion to and ungearing the same from its prime mover, and means for gearing said pinion to said shaft at the moment when the said pinion is ungeared from its prime mover, as and for the purposes set forth.

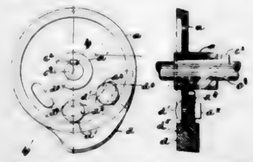
2. In a loom, the combination, as herein set forth, of a driving pulley, a shaft upon which said driving pulley is loosely mounted, a sleeve splined to said shaft; a spring, at one end connected to said shaft, and at the other end connected to a stationary part of the loom structure; a driving pinion, loosely mounted upon said shaft between said pulley and said sleeve and provided upon the opposite faces of its hub with clutch teeth, adapted to engage similar clutch teeth in the opposed faces of said driving pulley and the said sleeve respectively, the axial length of the hub of said driving pinion being such that when unshifted for the purpose of ungearing it from said driving pulley, its clutch teeth at one end partially engage the clutch teeth of said sleeve before the clutch teeth at its opposite end are fully disengaged from the teeth of said driving pulley.

3. In a loom, the combination of a driving pulley and a driving pinion, both loosely mounted on the same shaft; a sleeve splined to said shaft, the said driving pinion having clutch teeth upon the opposite faces of its hub, and the said driving pulley and the said sleeve having similar clutch teeth, respectively, on those of their faces which are toward the said driving pinion; a crank-plate fast on said shaft, a spring surrounding said shaft and having one of its ends secured to said crank-plate and its opposite end sustained by a stationary part of the loom structure, and means for varying the tensional stress of said spring upon said crank-plate.

4. In a loom, the combination of a driving pulley and a driving pinion, both loosely mounted on the same shaft; a sleeve splined to said shaft, the said driving pinion having clutch teeth upon the opposite faces of its hub, and the said driving pulley and the said sleeve having similar clutch teeth, respectively, on those of their faces which are toward said driving pinion; a ratchet wheel loose on said shaft; a detent for preventing said ratchet wheel from partaking of the forward movement of said shaft; a crank-plate fast on said shaft, a spring having its ends attached to said ratchet wheel and said crank-plate, respectively, and a hand wheel affixed to said shaft for manually effecting the backward rotatory movement of said shaft and the parts attached thereto.

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**503,473. PICKER-CAM FOR LOOMS.** ABRAM D. EMERY, Taunton, Mass. Filed Sept. 24, 1890. Renewed Mar. 17, 1893. Serial No. 466,541. (No model.)



*Claim.*—1. The adjustable picker cam for looms herein described, the same consisting of a circular face plate having a conical periphery rigidly fastened to the picker cam shaft, a cam toe provided with a concentric shoulder shaped correspondingly to the periphery of the face plate, and adapted to bear thereupon, and means for clamping said shoulder tightly against the periphery of the said face plate, substantially as and for the purpose set forth.

2. The face-plate $a$ rigidly keyed to the cam-shaft $c^2$, having its periphery conical and its web transversely perforated by a concentrically curved slot or slots, in combination with the inwardly projecting flange $d^2$, and the concentrically curved flaring shoulder $d^3$, of the cam toe $d$ and a screw-bolt or bolts extending through said concentrically curved slot or slots for bolting said flange $d^2$ to said face plate, and thereby clamping the flaring shoulder $d^3$ of the cam toe upon the conical periphery of said face plate $c$ substantially as set forth.

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**503,474. TRAMWAY-SWITCH.** AUGUSTIN C. L. EBSTFELD, Memphis, Tenn. Filed July 8, 1892. Serial No. 439,387. (No model.)

*Claim.*—1. An automatic switching device comprising a vertically movable rotatable bar suitably mounted upon a car, means for lowering said bar into engagement with the switch tongue, and means for simultaneously rotating said bar for shifting the switch tongue, substantially as set forth.

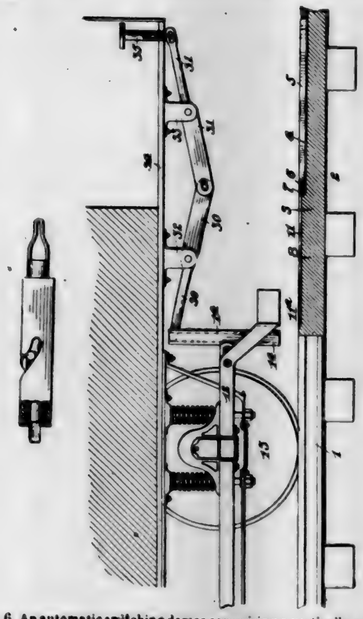
2. An automatic switching device comprising a vertically movable casing mounted on the car and formed with a slanting or inclined slot, a vertically movable rotatable bar working in said casing and provided with a lug working in said slanting slot, and means for moving said casing and bar vertically, whereby the bar can be lowered into engagement with the switch and simultaneously rotated for shifting the switch tongue, as set forth.

3. An automatic switching device, comprising a vertically movable casing mounted upon the car and formed with a slanting slot, a vertically movable rotatable shifting bar located in said casing and provided with a lug which engages said slanting slot and a supporting loop on its upper end, and a suitable lever engaging said supporting loop for supporting the bar and casing and moving them vertically, substantially as and for the purpose set forth.

4. An automatic switching device, comprising a vertically movable rotatable bar provided with a twisted supporting loop attached to its upper end, means for rotating said bar, and the supporting operating lever engaged in said twisted loop, whereby the rod can be supported in its normal position by the lever and be rotated without interfering

with the connection between the lever and the loop, substantially as set forth.

5. An automatic switching device, comprising a vertically movable rotatable bar provided with a supporting loop extending diagonally across its upper end, means for rotating said bar, and the supporting operating lever engaging said loop, whereby the bar can be moved vertically and rotated without interfering with the connection, as set forth.



6. An automatic switching device comprising a vertically movable rotatable bar having a blade at its lower end and a supporting loop at its upper end, means for rotating said bar, and a supporting and operating lever engaging in said loop and adapted to move the bar vertically, as set forth.

7. An automatic switching device, comprising a suitable boxing mounted upon the car and formed with a square chamber and slot in its front wall, a vertically movable square casing supported in said square chamber and formed with a cylindrical opening through it and a slanting slot in its wall, a vertically movable rotatable shifting bar working in the cylindrical opening of said vertically movable casing and formed with a lug which engages said slanting slot, and means for moving said bar vertically, substantially as set forth.

8. In an automatic switching device, the combination of a vertically movable casing mounted on the car, and a rotatable shifting bar supported in said casing and adapted to be rotated simultaneously with the lowering of the casing, with the switch frog formed with the deep recess in which the pivoted tongue works and the shallow lead grooves leading to the said deep recess, substantially as and for the purpose set forth.

9. In a switching device, the combination of a vertically movable rotatable shifting bar suitably mounted upon the car, with the switch frog formed with the recess having inclined walls, the tongue pivoted in said recess and having its forward end tapered or inclined at a more pronounced angle than the inclined walls of the recess, and lead grooves extending to said recess, substantially as set forth.

10. In an automatic switching device, the combination of the vertically movable rotatable shifting bar suitably mounted upon the car, the switch frog formed with the recess and the tongue pivoted in said recess, and lead grooves in the frog leading to the recess, the recess being deeper than the lead grooves, substantially as and for the purpose set forth.

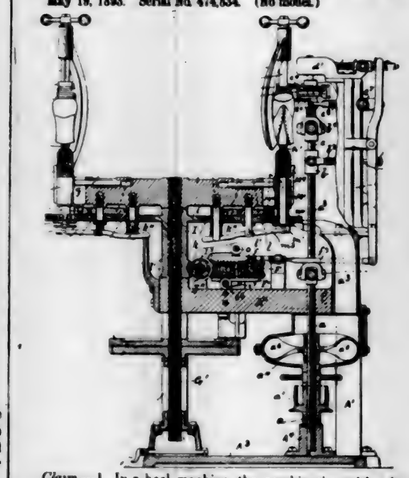
11. In an automatic switching device, the combination of the vertically movable casing suitably mounted upon the car and formed with the slanting or inclined slot, and a vertically movable rotatable bar working in said casing and provided with a lug working in said slanting slot, with a switch frog formed with the deep recess in which the tongue is pivoted, and shallow lead grooves leading to the deep recess, substantially as and for the purpose set forth.

12. In an automatic switching device, the combination of the vertically movable casing suitably mounted upon the car and formed with a central cylindrical bore and the slanting slot or groove, a vertically movable rotatable shifting bar supported in said casing and provided with a lug which engages said slanting slot or groove, means for moving said bar and casing vertically, with a frog casting formed with the recess, the tongue pivoted in said recess, and lead grooves leading to said recess, the recess being deeper than the lead grooves, substantially as and for the purpose set forth.

13. In an automatic switching device for tram cars, the combination of the truck frame, a supporting plate rigidly attached to said truck frame and slot in the upper end of said supporting plate, a retaining strap or loop at the lower end of said supporting plate, the supporting casing of a shifting device inclosed by said strap or loop, and the bolt or pin extending from the upper end of said casing and engaging in the slot in said supporting plate, substantially as set forth.

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**508,475. HEEL-TRIMMING MACHINE.** ALFRED R. FOWLER and GEORGE E. WARREN, Exeter, N. H. Filed May 11, 1891. Renewed May 19, 1893. Serial No. 474,534. (No model.)



*Claim.*—1 In a heel machine, the combination with a boot or shoe holder, of a vertical rotary drive shaft, a secondary shaft universally jointed to the drive shaft and rising vertically therefrom, a rotary trimmer connected with and rotated by the secondary shaft, a pivoted vibratory lever having a spring yielding connection with the secondary shaft, a horizontally rotating cam, and a horizontally swinging lever acted on by the cam and having a link connection with the vibratory lever for automatically vibrating the latter at intervals to swing the secondary shaft and thereby withdraw the rotary trimmer from contact with the boot or shoe, substantially as described.

2. The combination with a shoe holder, of a vertical rotary drive shaft, a secondary shaft universally jointed to the drive shaft and rising vertically therefrom, a rotary trimmer connected with and rotated by the secondary shaft, a pivoted vibratory lever connected with the secondary shaft for swinging the same laterally, a horizontally rotating cam, and a horizontally swinging lever acted on by the cam and having a link connection with the vibratory lever for operating the latter at intervals to automatically swing the secondary shaft and thereby withdraw the rotary trimmer from contact with the boot or shoe, substantially as described.

3. The combination with a boot or shoe holder, of a rotary drive shaft, a secondary shaft universally jointed to the drive shaft, a cutter shaft universally jointed to the secondary shaft and provided with a longitudinally sliding cutter splined thereon, a pair of vibratory levers having independent spring connections with the secondary shaft and cutter shaft, and means for automatically vibrating the levers at intervals to automatically swing the secondary shaft and the cutter carrying shaft for withdrawing the rotary cutter from contact with the boot or shoe, substantially as described.

4. The combination, with a boot or shoe holder, of a rotary drive shaft, a secondary shaft universally jointed to the drive shaft, a cutter shaft jointed to the secondary shaft and provided with a trimming cutter rotating therewith a pair of vibratory levers having independent spring yielding connections with the secondary shaft and the cutter shaft, a rotating cam, and a lever operated by the cam and connected with the pair of vibratory levers for operating them to automatically swing the secondary shaft and the cutter shaft and thereby withdraw the rotary cutter from the boot or shoe, substantially as described.



5. The combination with an intermittently rotating jack frame having a series of oscillatory boot or shoe holders, of a rotary drive shaft, a secondary shaft universally jointed to the drive shaft, a rotary trimming knife connected with and rotated by the secondary shaft, a vibratory lever having spring yielding connections with the secondary shaft, a rotating cam, and a swinging lever acted on by the cam and having a link connection with the vibratory lever for automatically vibrating the latter at intervals to swing the secondary shaft and thereby withdraw the rotary cutter from contact with the boot or shoe, substantially as described.

6. The combination with an intermittently rotating jack frame, radially movable bearings thereon, oscillatory shoe holder shafts carrying shoe holders and supported by the radially movable bearings, and means for radially adjusting the bearings and oscillating the shoe holder shafts as the jack frame rotates, of an upright drive shaft, a secondary shaft forming a vertical continuation of the drive shaft and universally jointed thereto, a rotary trimming cutter connected with and rotated by the secondary shaft, a vibratory lever having spring yielding connections with the secondary shaft, a horizontally rotating cam, and a horizontally swinging lever having a link connection with the vibratory lever for automatically vibrating the latter at intervals to automatically swing the secondary shaft and thereby withdraw the rotary cutter from contact with the boots or shoes, substantially as described.

7. The combination with an intermittently rotating jack frame provided with radially movable and oscillatory shoe holders, of an upright rotary drive shaft, a secondary shaft universally jointed to the drive shaft, a cutter shaft universally jointed to the secondary shaft and provided with a trimming cutter rotating therewith, vibratory levers having spring yielding connections with the secondary shaft and cutter shaft, and means for automatically vibrating the levers at intervals to swing the secondary shaft and cutter shaft and thereby withdraw the rotary cutter from contact with the boots or shoes, substantially as described.

8. The combination with a rotary drive shaft, a secondary shaft universally jointed to the drive shaft, a rotary trimming cutter connected with and rotated by the secondary shaft, and means for automatically swinging the secondary shaft to move the rotary cutter into and out of contact with a boot or shoe, of an intermittently rotating jack frame, radially movable bearings on the jack frame, oscillatory shoe holder shafts provided with irregular gears, cams engaging the movable bearings and provided with gears meshing into the irregular gears, and means for transmitting rotary motion to the gears of the cams, substantially as described.

9. The combination with a longitudinally and laterally yielding rotary trimmer, of a jack spindle G' provided with a sleeve I having a gear *i*, means for rotating the sleeve on the jack spindle, a jack frame G secured to the jack spindle and provided with radially movable bearings M', oscillatory shoe holder shafts M journaled in the bearings and provided with irregular gears *m*, cams L engaging the bearings and provided with gears *l*, and gears *k* transmitting motion from the sleeve on the jack spindle to the gears of the cams, substantially as described.

10. The combination with a longitudinally and laterally yielding trimmer, of a jack spindle, a sleeve mounted on the jack spindle, a jack frame secured to the jack spindle and provided with radially movable bearings, oscillatory shoe holder shafts carried by the bearings and provided with irregular gears, independent cams each provided with a gear meshing into one of the irregular gears and operated by a gear connection with the sleeve, and means for turning the sleeve, substantially as described.

11. The combination with a longitudinally and laterally yielding trimmer, of a jack spindle, a sleeve journaled on the spindle and provided with a gear, a jack frame secured to the spindle and provided with a series of radially movable bearings, oscillatory shoe holder shafts carried by the bearings and provided with irregular gears, independent cams mounted on the jack frame and each provided with a gear meshing into one of the irregular gears, gears transmitting motion from the sleeve on the jack spindle to the gears on the cams, and worm mechanism for turning the sleeve on the jack spindle, substantially as described.

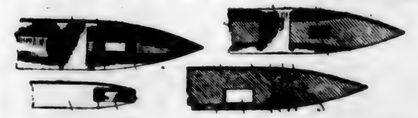
12. The combination with a yielding heel trimmer, of a jack spindle, a jack frame secured to the spindle and provided with radially movable bearings, oscillatory shoe holder shafts carried by the bearings and provided with irregular gears, independent cams mounted on the jack frame and each provided with a gear, a sleeve mounted on the jack spindle and geared to the gears of the cams, a clutch acting in connection with each irregular gear, clutch levers for moving the clutches into and out of engagement with the irregular gears, and a cam for operating the clutch levers, substantially as described.

13. The combination with a boot or shoe support, of a heel clamping sleeve, and a heel templet having a sliding engagement with the sleeve and provided on its upper side with an attached stop projection to bear against the sleeve and on its lower side with a stop projection to bear against the heel breast, substantially as described.

14. The combination with a boot or shoe jack, of an upright drive shaft, a secondary shaft universally jointed to the drive shaft and constituting a vertical continuation thereof, a cutter shaft jointed to the secondary shaft, a trimmer splined on the cutter shaft to move longitudinally therealong but rotating therewith, lever mechanism for swinging the secondary shaft and cutter shaft laterally, and a horizontally rotating cam for automatically operating the lever mechanism, substantially as described.

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**508,476. ART OF MAKING NEEDLES.** SVA J. HALL, Stillwater, Minn., assignor to the St. Croix Manufacturing Company, Hudson, Wis. Filed Mar. 28, 1892. Serial No. 426,583. (No specimens.)



*Claim.*—1 As an improvement in the art of making quick threading sewing machine needles, the process which consists in making an opening through the needle body independent of the eye in the same with an enlargement on one side of the body in the form of a longitudinal groove along the same, providing the eye closing spring with a tongue, passing the latter through the opening in the needle body, and bending its outer end down into the enlargement at the farther end of the opening, so as to make an oblong head fitting and extending along within the enlargement and having its outer face flush with or below the periphery of the needle body, substantially as and for the purpose specified.

2. As an improvement in the art of making quick threading sewing machine needles, the process which consists in making in the needle body an opening independent of the eye, with enlargements at its opposite ends in the form of longitudinally extending grooves, providing the eye-closing spring with a tongue and a longitudinally extending web, passing such tongue through the opening in the needle body so as to bring the web into engagement with the groove on the spring side of such needle body, and heading down the outer end of the tongue into the groove on the farther side of the body so as to form an elongated head engaging such groove, substantially as and for the purpose described.

3. As an improvement in the art of making quick threading sewing machine needles, the process which consists in cutting longitudinal grooves in opposite sides of the needle body, punching through between the bottoms of such grooves, an opening having its largest diameter parallel with the axis of the needle body, providing the eye-closing spring with a tongue, passing the latter through the opening in the needle body, and heading it down so as to make it fit said opening and form a head engaging the groove on the side of the needle body away from the spring, substantially as and for the purpose described.

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**508,477. FAUCET.** WILLIAM F HARRIS San Francisco, Cal. Filed Oct. 18, 1892. Serial No. 449,271. (No model.)



*Claim.*—1 A faucet consisting of a fixed ported valve seat the inner surface of said seat having the concentric grooves spaced apart by radial ribs having cross beads said ribs and the walls of said grooves forming segmental chambers $a^5$, a ported oscillatory valve fitted to said seat upon its hub and having a discharge pipe attached, said valve having on its inner surface the concentric beads and the intervening ported compressible washer, substantially as herein described.

2. A faucet consisting of a ported valve seat having a central hub, the inner surface of said seat having the concentric grooves, a ported oscillatory valve fitted to said seat upon its hub, and having a discharge pipe attached, said valve having on its inner surface the concentric beads, and the intervening ported compressible washer substantially as described.

3. A faucet consisting of a ported valve seat having a central hub, the inner surface of said seat having the radial ribs, a ported

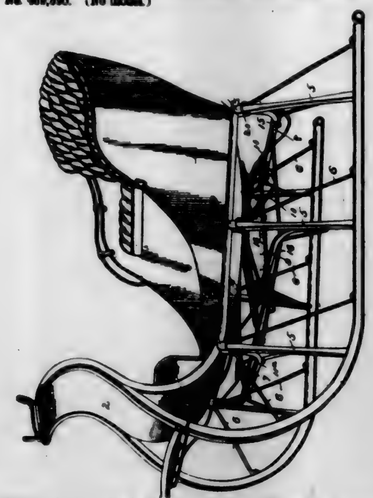
oscillatory valve fitted to said seat upon its hub, and having a discharge pipe attached, and the intervening compressible washer substantially as described.

4. A faucet consisting of a ported valve seat having a central hub, the inner surface of said seat having the radial ribs with cross beads, a ported oscillatory valve fitted to said seat upon its hub and having a discharge pipe attached, and the intervening compressible washer substantially as described.

5. A faucet consisting of a ported valve seat having a central hub, the inner surface of said seat having the concentric grooves, and the radial ribs with cross beads, a ported oscillatory valve fitted to said seat upon its hub and having a discharge pipe attached, said valve having on its inner surface the concentric beads, and the intervening ported compressible washer substantially as described.

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**503,478. SLEIGH.** JOHN C. F. HARRIS, Littleton, N. H., assignor of one-half to Henry Merrill, same place. Filed Apr. 11, 1893. Serial No. 469,895. (No model.)



*Claim.*—1. In a sleigh, the combination of runners, knee-posts rising from the runners, raves secured to the upper ends of the knee-posts, transverse bars connecting the knee-posts and having their ends curved, longitudinally disposed side springs secured to the transverse bars, the brace bars disposed longitudinally of the sleigh and secured to the transverse bars, and a body supported on the springs, substantially as described.

2. In a sleigh, the combination of runners, raves, knee-posts secured to the runners and supporting the raves, the transverse bars connecting the knee posts and having their ends curved, the curved ends of the end transverse bars extending upward and those of the intermediate transverse bar extending downward, the semi-elliptic leaf springs having their ends secured to the end transverse bars, and a body supported upon the springs, substantially as described.

3. In a sleigh, the combination of runners, raves, knee-posts supporting the raves, front, rear and intermediate transverse bars, longitudinally disposed leaf springs extending from one end transverse bar to the other and having their rear ends extending downward beneath the rear transverse bar and curved upward back of the same, clips mounted on the rear transverse bar and having ears receiving the rear ends of the springs, and links connecting the front ends of the springs with the front transverse bar, substantially as described.

4. In a sleigh, the combination of runners, raves, knee-posts supporting the raves, transverse bars connecting the posts, the longitudinally-disposed leaf springs having their front ends connected to the front transverse bar and having their rear ends curved downward beneath the rear transverse bar and upward back of the same and attached thereto, and a body supported upon said springs, substantially as described.

5. In a sleigh, the combination with a rave and a post, of a socket receiving the upper end of the post and provided with depending extensions, said socket having a perforation in its top and provided with upwardly extending flanges arranged at right angles to the extensions, a fastening device passing through the perforation of the top and securing the socket to the rave, and means for fastening the extensions to the posts, substantially as described.

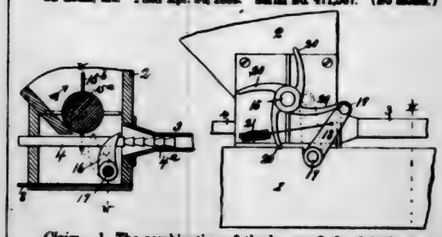
6. In a sleigh, the combination of runners, raves, knee-posts secured to the runners and supporting the raves, the transverse bars connecting the knee-posts and having their ends curved, the curved ends of the end transverse bars extending upward and those of the intermediate transverse bar extending downward, and the body supported on springs within the space between the raves, substantially as described.

7. In a sleigh, the combination of runners, raves, knee-posts secured to the runners and supporting the raves, the transverse bars connecting the knee-posts and having their ends curved, the curved ends of the end transverse bars extending upward and those of the intermediate transverse bar extending downward, the brace bars disposed longitudinally of the sleigh and secured to the transverse bars, and the body supported on springs within the space between the raves, substantially as described.

8. In a sleigh, the combination of the body runners, raves, knee-posts and transverse bars, the longitudinally disposed leaf springs secured to the body and hinged at their front ends to one of the transverse bars by means of links, and the rear ends of the springs extending downward beneath the transverse bars and then curving around the same and hung by a pivot bolt to the rear side of said bar whereby horse motion is obviated, substantially as described.

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**503,479. COLLAR-STUFFING MACHINE.** HENRY HILDEBRAND, St. Louis, Mo. Filed Apr. 24, 1893. Serial No. 471,567. (No model.)



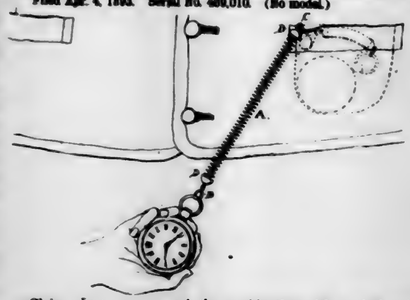
*Claim.*—1. The combination of the hopper 2, fixed feed tube 3, vertically moving feed pins 15ᵇ, horizontally reciprocating fingers 16, and reciprocating plunger 4, as and for the purpose set forth.

2. The combination with the hopper 2 and feed tube 3, of the reciprocating plunger 4, operating wheel 10, and crank and pitman connections between them for operating said plunger, and the oscillating packing fingers 16 and cam mechanism, substantially as described, for operating said fingers whereby a number of strokes are imparted to said fingers, to each complete stroke of the plunger.

3. The combination of the hopper 2, the feed-tube 3, the reciprocating packing plunger 4, the operating wheel 10, the crank and pitman connections for operating said plunger, the oscillating packing fingers 16, the cam mechanism, the sliding carriage 22, and the weight 25 and cord 26, substantially as shown and described.

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**503,480. WATCH-GUARD.** HENRY S. HOPPER, Detroit, Mich. Filed Apr. 4, 1893. Serial No. 469,010. (No model.)



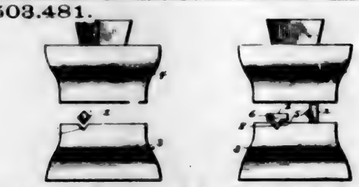
*Claim.*—In a watch-guard, the combination with a spiral spring adapted to fit into the pocket with the watch when collapsed, and means for attaching one end of same to the watch, of a hook or pin engaged with the opposite end, whereby it is attached to the garment at or about the inside of the watch-pocket, substantially as described.

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**503,481. METHOD OF FORGING AXLES.** FERDINAND HORN, Coshocton, Ohio. Filed Dec. 20, 1892. Serial No. 455,773. (No model.)



503,481.



*Claim.*—The herein described method of forging axles from blanks, rectangular in cross-section, the same consisting in placing the blank with its corner in a V-shaped groove and swaging out one angle of the blank, and subsequently squaring the edges thereof, substantially as described.

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**503,482. STEM WINDING AND SETTING WATCH.** GEORGE E. HUNTER, Elgin, assignor to the Elgin National Watch Company, Chicago, Ill. Filed Jan. 25, 1893. Serial No. 459,696. (No model.)



*Claim.*—1. A stem winding and setting watch in which are combined, a rotatable, longitudinally movable, stem arbor, a train driven thereby adapted to alternately communicate its motion to the winding and the dial wheels, and mechanism adapted only by a partial inward movement of the stem arbor after the same has been drawn outward, to place said stem driven train in setting engagement, substantially as and for the purpose specified.

2. A stem winding and setting watch in which is combined a stem arbor that has no positive connection with the movement, and is adapted to be moved longitudinally and to be rotated, a stem driven train which is in winding engagement when said stem arbor is at either limit of its longitudinal motion, and is in setting engagement when said stem arbor is at a point between such limits, and mechanism adapted only by a partial inward movement of the stem arbor to produce setting engagement, substantially as and for the purpose shown.

3. A stem winding and setting watch, in which are combined, a rotatable longitudinally movable stem arbor, a train driven thereby adapted to be alternately placed in connection with the winding, and the dial wheels, and a pivoted block having its movements controlled by the stem arbor, adapted to shift said train to setting engagement only by the partial inward movement of the stem arbor, substantially as and for the purpose set forth.

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**503,483. MECHANISM FOR SETTING WATCH-JEWELS.** GEORGE E. HUNTER, Elgin, assignor to the Elgin National Watch Company, Chicago, Ill. Filed Aug. 22, 1892. Renewed July 19, 1893. Serial No. 480,903. (No model.)



*Claim.*—1. As an improvement in mechanism for mechanically setting jewels, a holder having a jewel receiving opening to receive and hold a number of jewels, and a detent, or stop, movable into and out of the path of a jewel in making its exit from said opening substantially as and for the purpose specified.

2. As an improvement in mechanism for mechanically setting jewels, a holder having a longitudinal passage or chamber to receive and hold a number of jewels in line with each other, and a detent that normally prevents the exit of such jewels, substantially as and for the purpose shown.

3. As an improvement in mechanism for mechanically setting jewels a holder, having a longitudinal, jewel-receiving opening for holding a number of jewels and at one end several spring actuated detents that normally extend over the opening to prevent the exit of a jewel; substantially as and for the purpose set forth.

4. As an improvement in mechanism for mechanically setting jewels, a holder having a longitudinal jewel receiving opening and several spring actuated detents that normally extend over the opening, each of which has an abrupt inner face, and a beveled outer face, substantially as and for the purpose described.

5. As an improvement in jewel setting mechanism, a holder having a passage to receive and contain a number of jewels that is normally closed against the exit of jewels, and is adapted to be automatically opened, and means to cause the exit of a jewel when it is opened, substantially as and for the purpose specified.

6. As an improvement in jewel setting mechanism, the combination of a jewel holder having its jewel exit barred by a detent or stop movable into and out of the path of a jewel a support for such holder adapted to engage and hold said detent out of the path of a jewel, substantially as and for the purpose shown.

7. As an improvement in jewel-setting mechanism, the combination of a jewel holder having its jewel exit barred by a detent or stop movable into and out of the path of a jewel, a support for said holder to engage and hold said detent or stop out of such path, and a second movable detent or stop adapted to prevent the exit of a jewel after said first named detent has been moved to allow it, substantially as and for the purpose set forth.

8. As an improvement in jewel setting mechanism, the combination of a jewel holder having its jewel exit barred by a detent or detents, each of which has a beveled face, a support for such holder having a projection to engage the beveled faces of said detents, substantially as and for the purpose described.

9. As an improvement in jewel setting mechanism, the combination of a jewel holder having its jewel exit barred by a detent or detents, each of which has a beveled face, a support for such holder having a projection to engage the beveled faces of said detents, and a movable plate adapted to cover and uncover the jewel exit, substantially as and for the purpose specified.

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**503,484. BASEMENT-VENTILATOR.** PETER H. JACKSON, San Francisco, Cal. Filed Mar. 25, 1893. Serial No. 467,626. (No model.)

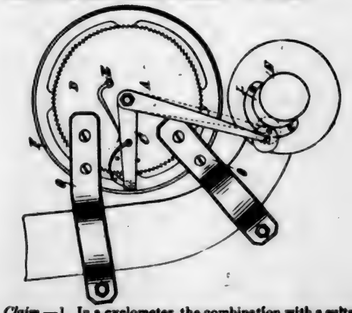


*Claim.*—1. A ventilating device consisting of the metal grating fixed in the surface above the chamber to be ventilated, a metal tube secured thereto and extending downwardly into the upper part of the chamber, a pan with upturned sides having larger area than the bottom of the tube, and upwardly projecting lugs or handles on opposite sides, and rods passing through the handles and through holes in the bottom of the tube whereby the pan is suspended therefrom, and a space provided for the ingress of air to the tube, substantially as herein described

2. A ventilating device for apartments consisting of a metal grating fixed in the surface above the apartment, a tube extending downwardly from said grating into the upper part of the aparment beneath, a pan with upturned sides of larger area than the bottom of the tube, removably suspended from the bottom of the tube and inclosing the same, and stops extending between the tube and the pan whereby the latter is prevented from tilting or upsetting, substantially as herein described.

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**503,485. CYCLOMETER.** GUSTAV R. KÜHN, Schmölln, Germany. Filed Feb. 23, 1893. Serial No. 463,429. (No model.)



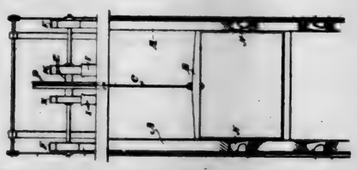
*Claim.*—1. In a cyclometer, the combination with a suitable case having distance indicating mechanism, of a rotating spindle having a ratchet wheel, gearing by which motion is transmitted from the spin-

dle to the distance indicating mechanism, a bell-crank lever fixed on the spindle, and having one arm adapted to be moved by an eccentric or projection on the wheel axle of a vehicle, and also adapted to be swung and held out of the path of said eccentric or projection, and the other arm carrying a pawl which engages the ratchet wheel on the spindle, and means for holding the lever arm out of the path of the eccentric or projection, substantially as described.

2. The combination with a case and indicating mechanism comprising the pointer I, a train of gearing for transmitting motion to the pointer, a wheel H, and a pinion G engaging the latter, of a spindle B having a ratchet wheel D, and a crown wheel F which engages said pinion, and a bell crank lever fixed on the spindle, and having one arm adapted to be moved by an eccentric or projection on the wheel axle of a vehicle, and the other arm carrying a pawl which engages the ratchet wheel on the spindle, substantially as described.

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**503,486. ELEVATOR SAFETY ATTACHMENT.** CHARLES B. LABATT, San Francisco, Cal. Filed Apr. 8, 1893. Serial No. 469,591. (No model.)



*Claim.*—1. An elevator safety attachment consisting of movable stops held normally out of the line of travel of the elevator cage, an elevator cage moving in a vertical wall, a shaft loosely mounted in bearings to move upward, a pulley fixed to said shaft, a suspending-and-hoisting rope secured to said cage and supported by said pulley, ropes connected to the ends of said shaft and passing over pulleys above it and having weights upon their depending ends, said ropes being connected with the stops so as to throw them outward in the line of travel of the elevator when the ropes are moved by the weights, substantially as herein described.

2. An elevator cage moving in a vertical well, a suspending-and-hoisting rope passing over a pulley above the line of travel of the cage, a shaft, the journal boxes of which rest loosely in open topped supports and normally retained therein by the weight of the elevator cage, ropes connected with the outer ends of said shaft, passing over pulleys above it, and having weights upon their outer depending ends, which weights are less than that of the elevator cage, gravity stops contained in chambers situated along the line of travel of the elevator cage, lever arms connecting the ropes of the suspended weights with said stops, whereby a breakage of the cage suspending rope allows the supplemental weights to move the ropes to which they are attached and throw the stops outward into the line of travel of the cage, substantially as herein described.

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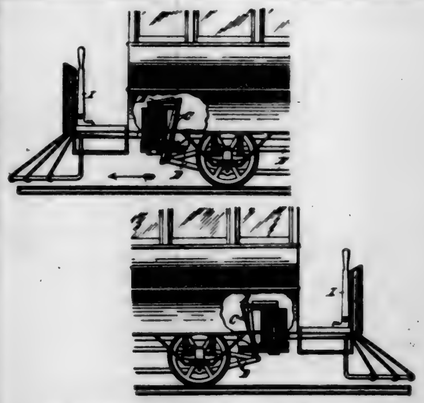
**503,487. ELECTRIC ENGINE.** WILLIAM LAWRENCE, New York, N. Y., assignor to the Lawrence Electric Company, same place. Filed Aug. 17, 1892. Serial No. 443,322. (No model.)

*Claim.*—1. In an electric propelling apparatus one or more pairs of electro magnets secured in and to a suitable bed, an armature for said magnets, an arm connected to and operated by said armature, a rod pivotally secured to the lower end of said arm and connecting with a rod which is journaled to the cranks formed directly on the axis, all substantially as and for the purposes shown and described.

2. In an electric propelling apparatus an electro magnet secured in and to a suitable bed, an armature for said magnet, an arm connected to and operated by said armature, a rod pivotally secured to said arm and connecting with cranks for turning axles, contact points suitably secured to the axles for opening and closing circuits, electric contact brushes secured to the bed and a rod or bar for operating said brushes, and levers connected with said rod or bar for controlling the movement of same, and thereby the current of electricity, substantially as shown and described.

3. In an electric propelling apparatus one or more pairs of electro magnets secured in and to a suitable bed, an armature for said magnets, an arm connected to and operated by said armature and magnets, a rod pivotally secured to the lower end of said arm and connecting with a rod which is journaled to the cranks formed directly on the axle, contact points suitably secured to the axle for opening and closing the circuits, electric contact brushes secured to the bed and operated by a rod or bar and levers and controlling the movement of said brushes, substantially as shown and described.

4. The improvements in electric controlling apparatus consisting of a forked brush formed from a continuous strip or piece, an arm connected with said brush, for moving the latter, a rod or bar connected with said arm and adapted to be operated from either end, and a lever for operating said rod or bar to control the movement of the apparatus and also the current of electricity substantially as shown and described.

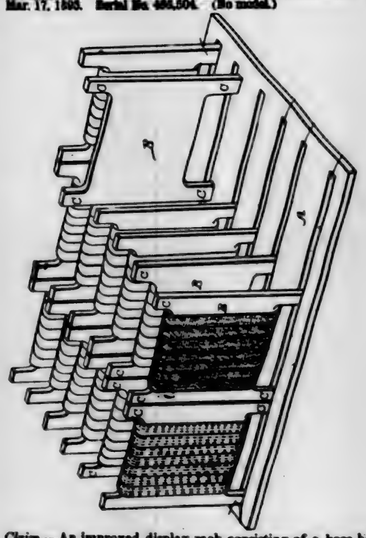


5. The improvements in electric controlling apparatus consisting of a forked brush formed from a continuous strip or piece pivoted to the bed of the machine, an arm secured to said pivot for moving the brushes vertically, which arm is connected to a rod or bar and adapted to be operated from either end of the apparatus by a lever, and thereby control the movement of the apparatus, substantially as shown and described.

6. Four or more sets of magnets, armatures therefor cranks and connections between said armatures and said cranks, said cranks being set at angles to each other, combined with contacts and brushes therefor, said brushes being arranged to be moved to bring one member at a time into engagement with said contacts, whereby the cranks will be moved in opposite directions according to the positions of said brushes, substantially as described.

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**503,488. BRAID-RACK.** AUGUST H. MARTIN, San José, Cal. Filed Mar. 17, 1893. Serial No. 466,504. (No model.)



*Claim.*—An improved display rack consisting of a base having parallel slots or openings extending horizontally along the same, and the racks having a central body portion for the articles to be displayed and provided with corner extensions adapted to engage said slots, said extensions having a length sufficiently greater than the depth of the slots to maintain the racks in a vertical position on edge with the articles upon the body portion out of contact with the base, substantially as herein described.

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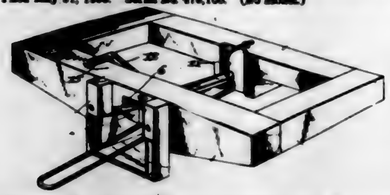
**503,489. STREET OR OTHER SIGN.** SERVATIUS NICOLAI, St. Louis, Mo. Filed Jan. 23, 1893. Serial No. 459,349. (No model.)



*Claim.*—A sign comprising a supporting frame 1, a projecting portion 2, and a flange 3, the glass 4, the projecting plate 5 and the holders 6; each holder having a lip 7 located between the flange and the glass, a lip 9 located between the glass and the plate, and a lip 8 retaining the plate against the lip 9; substantially as described.

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**503,490. CAR-COUPLING.** THOMAS H. NUNN, Hughesville, Pa. Filed May 31, 1893. Serial No. 476,105. (No model.)

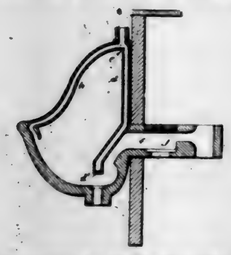


*Claim.*—1. In a car-coupling, the combination of a frame carrying a draw-head, a draw-hook, a link projecting from the draw-head and adapted to engage the hook of a similar coupling, a horizontal lever fulcrumed on the frame and arranged above the draw-hook and connected therewith, and an operating-lever fulcrumed on the frame and engaging the horizontal lever for lifting the draw-hook, substantially as described.

2. In a car-coupling, the combination of a frame carrying a draw-head, a draw-hook, a link projecting from the draw-head, a horizontal lever fulcrumed at one end on the frame and connected intermediate of its ends with the draw-hook and located above the same, and an operating-lever fulcrumed at its lower end on the frame and provided with a foot arranged beneath the free end of the horizontal lever and adapted to engage and hold the horizontal lever elevated, substantially as and for the purpose described.

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**503,491. URINAL.** ARTHUR O'BRIEN, Helena, Mont. Filed May 7, 1892. Renewed July 13, 1893. Serial No. 480,422. (No model.)



*Claim.*—1. In a urinal, the combination with a bowl having a flushing rim, a water inlet and outlet a channel communicating with the inlet and extending downward to a point near to and over the outlet, and a passage between the upper ends of the rim and channel for the purposes set forth.

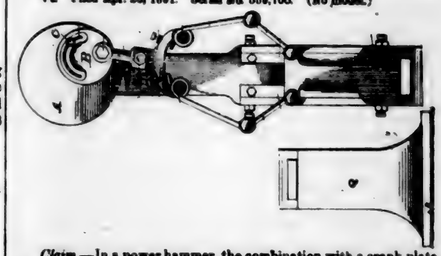
2. In a urinal, the combination with a bowl having a water inlet and outlet and a flushing rim, a chamber extending outward from the rear of the bowl and communicating therewith, an overflow passage in said chamber, an opening above said passage and a removable plug for said opening, for the purposes set forth.

3. In a urinal, the combination with a bowl having a water inlet and outlet, and a flushing rim, a chamber extending outward from the rear of the bowl, and having an overflow passage leading to the waste pipe, and a second overflow leading to the sewer, for the purpose set forth.

4. In a urinal, the combination with a bowl having a water inlet and outlet and a flushing rim, a chamber extending outward from the rear of the bowl, and having an overflow leading to the waste pipe, an opening above said overflow, a removable plug for said opening, a second overflow leading to the sewer, a dam between the two overflows, and an air vent to the rear of the chamber, all for purposes set forth.

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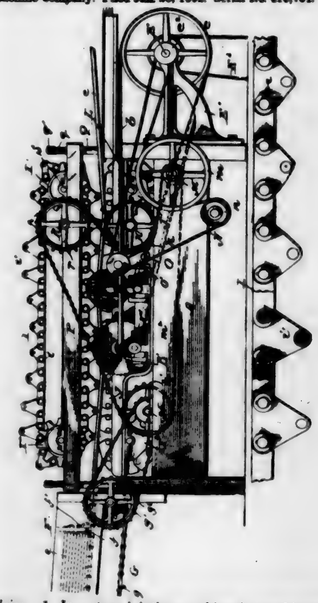
**503,492. POWER-HAMMER.** ORRIN W. OROUTT, St. Johnsbury, Vt. Filed Apr. 20, 1891. Serial No. 389,700. (No model.)



*Claim.*—In a power hammer, the combination with a crank plate mounted on a driving shaft, and an adjustable disk and adjusting devices mounted on the crank plate, of a connecting rod secured to the pin of the crank disk, the double springs secured to the shoulders of the sleeve on the connecting rod, and connected to the hammer, and the set screws bearing against the free ends of the springs, whereby their tensions may be regulated, substantially as specified.

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**503,493. STAVE-JOINTING MACHINE.** JAMES PLEUKHARP and WILLIAM K. LIGGETT, Columbus, Ohio, assignors to the Pleukharp Barrel Machine Company. Filed Jan. 20, 1892. Serial No. 418,701. (No model.)



*Claim.*—1. In a stave jointing machine the combination of complementary endless chain formers, each former of the lower chain having a continuous convex outline, and having a projection *j*, the links composing the upper chain formers being connected by pins which have their ends projected beyond the sides of the links, rollers mounted on the projecting ends of the said pins, and beds to support the opposing portions of the chain formers against the tension of the blanks, the upper bed having portions to embrace the sides of the upper chain former and receive the stress of the said rollers, substantially as described.

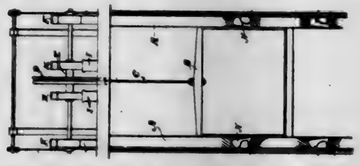
2. In a stave jointing machine the combination of endless formers, and jointing cutters, of a bed *j'* located between the side bars of the links comprising the lower former, and a bed comprising side bars P to embrace the upper former, substantially as described.

dle to the distance indicating mechanism, a bell-crank lever fixed on the spindle, and having one arm adapted to be moved by an eccentric or projection on the wheel axle of a vehicle, and also adapted to be swung and held out of the path of said eccentric or projection, and the other arm carrying a pawl which engages the ratchet wheel on the spindle, and means for holding the lever arm out of the path of the eccentric or projection, substantially as described.

2. The combination with a case and indicating mechanism comprising the pointer I, a train of gearing for transmitting motion to the pointer, a wheel H, and a pinion G engaging the latter, of a spindle B having a ratchet wheel D, and a crown wheel F which engages said pinion, and a bell crank lever fixed on the spindle, and having one arm adapted to be moved by an eccentric or projection on the wheel axle of a vehicle, and the other arm carrying a pawl which engages the ratchet wheel on the spindle, substantially as described.

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**503,486. ELEVATOR SAFETY ATTACHMENT.** CHARLES R. LAFAYE, San Francisco, Cal. Filed Apr. 3, 1893. Serial No. 469,591. (No model.)



*Claim.*—1. An elevator safety attachment consisting of movable stops held normally out of the line of travel of the elevator cage, an elevator cage moving in a vertical wall, a shaft loosely mounted in bearings to move upward, a pulley fixed to said shaft, a suspending-and-hoisting rope secured to said cage and supported by said pulley, ropes connected to the ends of said shaft and passing over pulleys above it and having weights upon their depending ends, said ropes being connected with the stops so as to throw them outward in the line of travel of the elevator when the ropes are moved by the weights, substantially as herein described.

2. An elevator cage moving in a vertical well, a suspending-and-hoisting rope passing over a pulley above the line of travel of the cage, a shaft, the journal boxes of which rest loosely in open topped supports and normally retained therein by the weight of the elevator cage, ropes connected with the outer ends of said shaft, passing over pulleys above it, and having weights upon their outer depending ends, which weights are less than that of the elevator cage, gravity stops contained in chambers situated along the line of travel of the elevator cage, lever arms connecting the ropes of the suspended weights with said stops, whereby a breakage of the cage suspending rope allows the supplemental weights to move the ropes to which they are attached and throw the stops outward into the line of travel of the cage, substantially as herein described.

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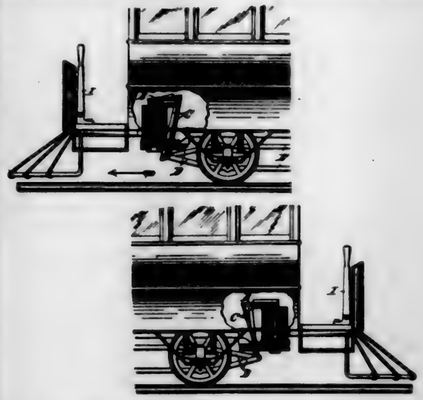
**503,487. ELECTRIC ENGINE.** WILLIAM LAWRENCE, New York, N. Y., assignor to the Lawrence Electric Company, same place. Filed Aug. 17, 1892. Serial No. 443,393. (No model.)

*Claim.*—1. In an electric propelling apparatus one or more pairs of electro magnets secured in and to a suitable bed, an armature for said magnets, an arm connected to and operated by said armature, a rod pivotally secured to the lower end of said arm and connecting with a rod which is journaled to the cranks formed directly on the axis, all substantially as and for the purposes shown and described.

2. In an electric propelling apparatus an electro magnet secured in and to a suitable bed, an armature for said magnet, an arm connected to and operated by said armature, a rod pivotally secured to said arm and connecting with cranks for turning axles, contact points suitably secured to the axles for opening and closing circuits, electric contact brushes secured to the bed and a rod or bar for operating said brushes, and levers connected with said rod or bar for controlling the movement of same, and thereby the current of electricity, substantially as shown and described.

3. In an electric propelling apparatus one or more pairs of electro magnets secured in and to a suitable bed, an armature for said magnets, an arm connected to and operated by said armature and magnets, a rod pivotally secured to the lower end of said arm and connecting with a rod which is journaled to the cranks formed directly on the axle, contact points suitably secured to the axle for opening and closing the circuits, electric contact brushes secured to the bed and operated by a rod or bar and levers and controlling the movement of said brushes, substantially as shown and described.

4. The improvements in electric controlling apparatus consisting of a forked brush formed from a continuous strip or piece, an arm connected with said brush, for moving the latter, a rod or bar connected with said arm and adapted to be operated from either end, and a lever for operating said rod or bar to control the movement of the apparatus and also the current of electricity substantially as shown and described.

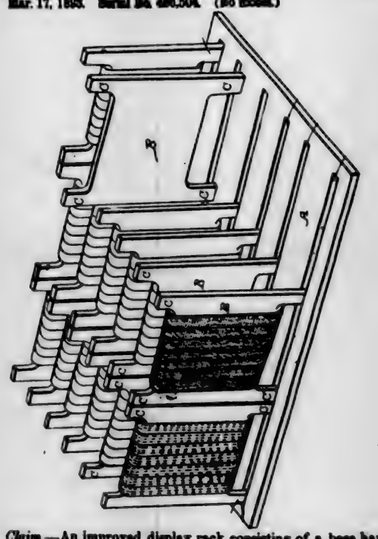


5. The improvements in electric controlling apparatus consisting of a forked brush formed from a continuous strip or piece pivoted to the bed of the machine, an arm secured to said pivot for moving the brushes vertically, which arm is connected to a rod or bar and adapted to be operated from either end of the apparatus by a lever, and thereby control the movement of the apparatus, substantially as shown and described.

6. Four or more sets of magnets, armatures therefor cranks and connections between said armatures and said cranks, said cranks being set at angles to each other, combined with contacts and brushes therefor, said brushes being arranged to be moved to bring one member at a time into engagement with said contacts, whereby the cranks will be moved in opposite directions according to the positions of said brushes, substantially as described.

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**503,488. BRAID-RACK.** ADOLPH H. MARTEN, San José, Cal. Filed Mar. 17, 1893. Serial No. 466,504. (No model.)



*Claim.*—An improved display rack consisting of a base having parallel slots or openings extending horizontally along the same, and the racks having a central body portion for the articles to be displayed and provided with corner extensions adapted to engage said slots, said extensions having a length sufficiently greater than the depth of the slots to maintain the racks in a vertical position on edge with the articles upon the body portion out of contact with the base, substantially as herein described.

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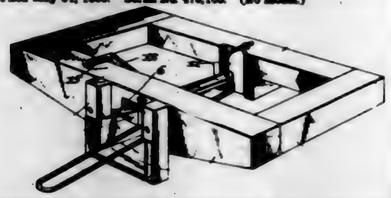
**503,489. STREET OR OTHER SIGN.** SERVATIUS NICOLAI, St. Louis, Mo. Filed Jan. 22, 1893. Serial No. 459,349. (No model.)



*Claim.*—A sign comprising a supporting frame 1, a projecting portion 2, and a flange 3, the glass 4, the projecting plate 5 and the holders 6; each holder having a lip 7 located between the flange and the glass, a lip 9 located between the glass and the plate, and a lip 8 retaining the plate against the lip 9; substantially as described.

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**503,490. CAR-COUPLING.** THOMAS H. HUNT, Hughesville, Pa. Filed May 31, 1893. Serial No. 476,105. (No model.)

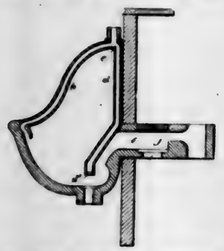


*Claim.*—1. In a car-coupling, the combination of a frame carrying a draw-head, a draw-hook, a link projecting from the draw-head and adapted to engage the hook of a similar coupling, a horizontal lever fulcrumed on the frame and arranged above the draw-hook and connected therewith, and an operating-lever fulcrumed on the frame and engaging the horizontal lever for lifting the draw-hook, substantially as described.

2. In a car-coupling, the combination of a frame carrying a draw-head, a draw-hook, a link projecting from the draw-head, a horizontal lever fulcrumed at one end on the frame and connected intermediate of its ends with the draw-hook and located above the same, and an operating-lever fulcrumed at its lower end on the frame and provided with a foot arranged beneath the free end of the horizontal lever and adapted to engage and hold the horizontal lever elevated, substantially as and for the purpose described.

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**503,491. URINAL.** ARTHUR O'BRIEN, Helena, Mont. Filed May 7, 1892. Renewed July 13, 1893. Serial No. 480,422. (No model.)



*Claim.*—1. In a urinal, the combination with a bowl having a flushing rim, a water inlet and outlet a channel communicating with the inlet and extending downward to a point near to and over the outlet, and a passage between the upper ends of the rim and channel for the purposes set forth.

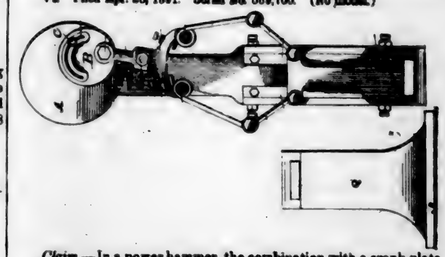
2. In a urinal, the combination with a bowl having a water inlet and outlet and a flushing rim, a chamber extending outward from the rear of the bowl and communicating therewith, an overflow passage in said chamber, an opening above said passage and a removable plug for said opening, for the purposes set forth.

3. In a urinal, the combination with a bowl having a water inlet and outlet, and a flushing rim, a chamber extending outward from the rear of the bowl, and having an overflow passage leading to the waste pipe, and a second overflow leading to the sewer, for the purpose set forth.

4. In a urinal, the combination with a bowl having a water inlet and outlet and a flushing rim, a chamber extending outward from the rear of the bowl, and having an overflow leading to the waste pipe, an opening above said overflow, a removable plug for said opening, a second overflow leading to the sewer, a dam between the two overflows, and an air vent to the rear of the chamber, all for purposes set forth.

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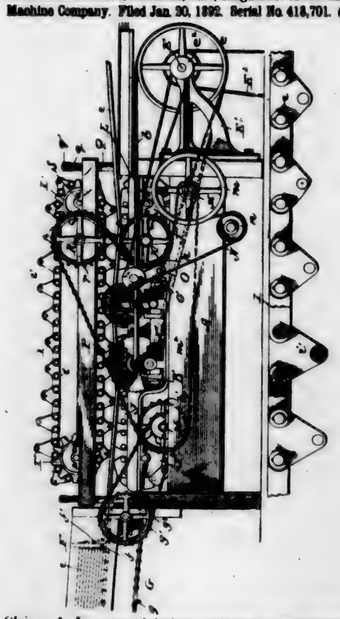
**503,492. POWER-HAMMER.** ORRIN W. ORCUTT, St. Johnsbury, Vt. Filed Apr. 20, 1891. Serial No. 389,700. (No model.)



*Claim.*—In a power hammer, the combination with a crank plate mounted on a driving shaft, and an adjustable disk and adjusting devices mounted on the crank plate, of a connecting rod secured to the pin of the crank disk, the double springs secured to the shoulders of the sleeve on the connecting rod, and connected to the hammer, and the set screws bearing against the free ends of the springs, whereby their tensions may be regulated, substantially as specified

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**503,493. STAVE-JOINTING MACHINE.** JAMES PLEUKHARP and WILLIAM K. LISSETT, Columbus, Ohio, assignors to the Pleukharp Barrel Machine Company. Filed Jan. 30, 1892. Serial No. 418,701. (No model.)



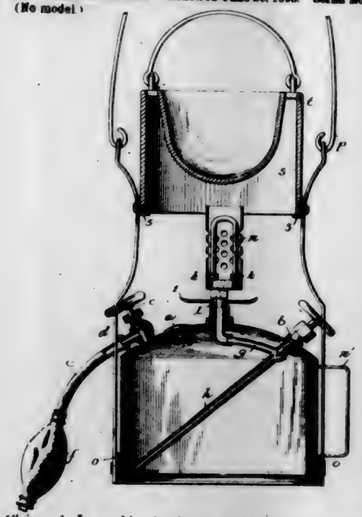
*Claim.*—1. In a stave jointing machine the combination of complementary endless chain formers, each former of the lower chain having a continuous convex outline, and having a projection *j*, the links composing the upper chain formers being connected by pins which have their ends projected beyond the sides of the links, rollers mounted on the projecting ends of the said pins, and beds to support the opposing portions of the chain formers against the tension of the blanks, the upper bed having portions to embrace the sides of the upper chain former and receive the stress of the said rollers, substantially as described.

2. In a stave jointing machine the combination of endless formers, and jointing cutters, of a bed *j'* located between the side bars of the links comprising the lower former, and a bed comprising side bars P to embrace the upper former, substantially as described.

3. In a stave jointing machine the combination with the jointing cutters, of endless chain formers to shape the stave blanks and carry them between the jointing cutters, a frame carrying one of the formers, standards for supporting the said frame and provided with stops to limit the movement of the said frame in one direction, springs to hold the frame yieldingly against the said stops, and nuts for adjusting the tension of the said springs, substantially as set forth.

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**503,494. PORTABLE FURNACE.** ROBERT REACH, Philadelphia, Pa. Filed Oct. 29, 1891. Renewed June 26, 1893. Serial No. 478,898. (No model.)



*Claim.*—1. In combination in a portable furnace, a container or receptacle, a burner arranged centrally of the container a fluid supply consisting of the pipes *g* and *h* entirely within the receptacle and a valve *b* at one side of the receptacle for controlling the flow of the fluid, the said pipe *g* extending from the central connection with the burner inside the receptacle to one side of the same where it joins the pipe *h* and valve within the receptacle; substantially as described.

2. In combination the receptacle having a central burner, the carrier frame for holding the receptacle removably consisting of a flanged base with standards extending upwardly therefrom above the receptacle the melting pot arranged centrally over the burner and consisting of the depending outer part *s* open at the bottom and connected with the upper part of the standards and the interior part supported from the outer part with openings between them, substantially as described.

3. In combination a receptacle having a central burner, the pipe *g* connected thereto, inside the receptacle, and extending to one side thereof, the pipe *h* connected with the pipe *g* and extending diagonally to the opposite lower side of the receptacle and the valve at the junction of the two pipes, substantially as described.

4. In combination, the receptacle having the burner, the base, and the standards, the melting pot consisting of the outer depending shell, and the inner part connected thereto, the said standard having lugs 5, engaging the lower edge of the depending part, and secured thereto, and having extensions above the lower edge to which the handle is attached, substantially as described.

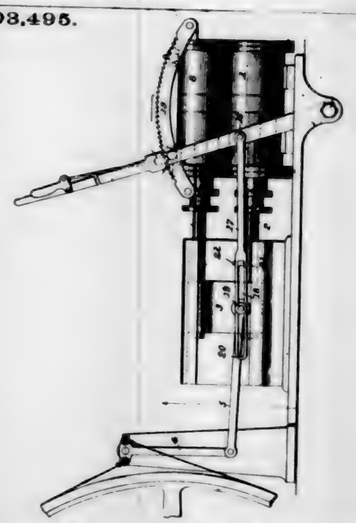
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**503,495. MACHINE-BRAKE.** BERNARD T. REILLY, Ashley, Pa., assignor to Morris R. Zehnder, same place. Filed Feb. 18, 1893. Serial No. 463,894. (No model.)

*Claim.*—1. The combination with a brake device, and a power cylinder, piston and piston rod for applying the brake, of a cross-head connected to the piston rod, an air cylinder having its piston rod also connected to the cross-head, a hand lever, a slotted link connected to the hand lever, a pin passing through the slot in the link and connected to the cross-head, and a toothed quadrant and detent for holding the hand lever in any desired position, substantially as described.

2. The combination with a brake device, and a power cylinder, piston and piston rod for operating the brake, of a hand lever, a slotted link connected to the hand lever, an adjustable bearing block in the slot of the link, and a pin passing through the slot in the link

**503,495.**



and connected with the piston rod of the cylinder, substantially as described.

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**503,496. CIGAR-TIP CUTTER.** IRA C. C. RIBBHART, Kansas City, Mo. Filed July 13, 1892. Serial No. 439,912. (No model.)



*Claim.*—1. In a cigar end cutter the combination with an actuating spring, a cutter disk, a case having an opening for the insertion of a cigar, and a trigger arranged beside said opening to be deflected by the cigar end, of an independent rotary escapement disconnected from the trigger, and a detent connected to the trigger and operating upon the escapement substantially as shown and described.

2. In a cigar end cutter, the combination with an actuating spring, the case having an opening for the insertion of the cigar, and a central shaft C, of the disk D with cutting blades *d* and gear wheel E connected by a sleeve upon said shaft C, the trigger G hung upon said sleeve and having pins projecting at right angles and lying within the cutter blades *d*, the spring actuated detent *i* hung to the trigger and having notched end, the escapement disk H with lug *r*, and the gear wheels *n o p* connecting the disk to the gear wheel E of the cutter disk substantially as shown and described.

3. The combination in an automatic cigar end cutter, of a case having a hollow base A' with pins *a* at its lower edge, and a removable cup or receptacle B corresponding in shape to said hollow base and contained within the same, and having in its edge a slot *a'* to permit the cup to be passed above the pins *a* and then be locked by turning substantially as shown and described.

4. The combination of the case A, with opening *e*, the coil spring B, shaft C, cutter disk D, with blades *d* and gear wheel E, ratchet wheel F with pawl *f*, trigger G, and the escapement consisting of wheels *n o p*, disk H, with lug *r*, and notched detent *i* connected to the trigger, substantially as shown and described.

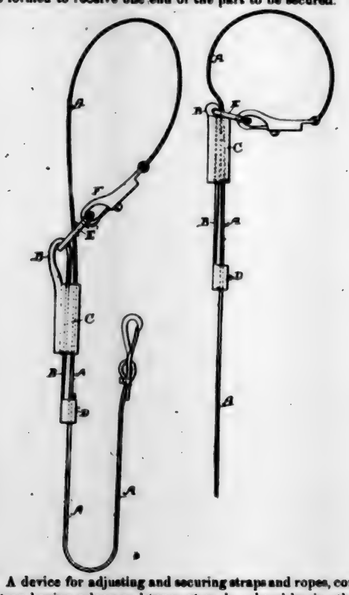
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**503,497. STRAP OR ROPE ATTACHMENT.** EDWARD R. ROBBINS and LU L. WALRATH, Sacramento, Cal. Filed Feb. 23, 1893. Serial No. 463,446. (No model.)

*Claim.*—1. A device for adjusting and securing straps and ropes, comprising loops or keepers, and the intermediate portion returned upon itself and passed through one of said loops or keepers to form a bight or loop adapted to receive one end of the part to be secured.



2. A device for adjusting and securing straps and ropes, comprising a strap having a loop or keeper at each end adapted to be slidably mounted upon the part to be secured, said strap being returned upon itself and passed through one of the loops, whereby a bight or loop is formed to receive one end of the part to be secured.

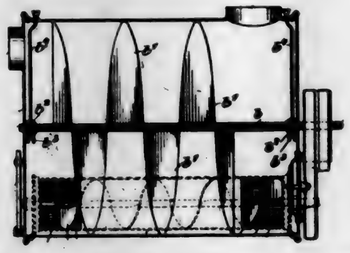


3. A device for adjusting and securing straps and ropes, comprising a strap having a loop or keeper at each end and having the portion between said loops or keepers made tapering or wedge-shaped and returned upon itself to form a bight or loop, said loops or keepers adapted to receive the part to be secured, and said bight adapted to receive one end of said part to clamp and secure the same when the loops or keepers are drawn apart.

4. The combination with the strap or rope to be adjusted and secured, of a strap having loops or keepers at opposite ends adapted to have the strap or rope to be adjusted passed through them, and having an intermediate portion returned upon itself to form a bight or loop at one end and made wedge-shaped or tapering to bind against the strap or rope to be secured, and an attachment on the end of the strap or rope to be secured adapted to be passed through and clamped by the bight or loop when the loops or keepers are drawn apart.

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**503,498. EVAPORATING-PAN.** FRANCIS M. ROBERTSON, Fulham, England. Filed Apr. 4, 1892. Serial No. 427,707. (No model.) Patented in Germany Feb. 18, 1893, No. 67,182.



*Claim.*—1. An apparatus for evaporating or drying consisting of a closed chamber provided at one end of its upper part with an inlet and at the opposite end with an outlet, a screw formed by a continuous blade located within such chamber and of such diameter as to fit as closely as possible therein but so as to be free to revolve and means for permitting the return of the material under treatment from the forward end of the chamber back to the initial end, substantially as herein shown and described.

2. The combination of the fixed cylindrical chamber having combined feed and air inlet *a'* and exhaust opening $a^2$ the transverse girders $b^2$ having bearings $b^3$, the shaft *b* provided with a screw conveyer *b'* and mounted in the bearings, a door through which the material is removed, and a conduit connecting the ends of the cylindrical chamber; substantially as described.

3. The combination of the fixed cylindrical chamber having combined feed and air inlet *a'* and exhaust opening $a^2$ the transverse girders $b^2$ having bearings $b^3$, the shaft *b* provided with a screw conveyer *b'* and mounted in the bearings, a door through which the material is removed, and a conduit connecting the ends of the cylindrical chamber at the base thereof; substantially as described.

4. The combination of the fixed cylindrical chamber *a*, having combined feed and air inlet *a'*, and exhaust opening $a^2$, the transverse girders $b^2$ having bearings $b^3$ the shaft *b* provided with a screw conveyer *b'* and mounted in the bearings, a door through which the material is removed, the two tubular conduits $a^3$ located upon the exterior of the cylindrical chamber at each side and at the lower part thereof and the ways $a^4$ connecting the cylindrical chamber with the conduits; substantially as described.

5. An evaporator consisting of a fixed cylindrical chamber *a* having combined feed and air inlet *a'* and exhaust opening $a^2$, the transverse girders $b^2$ having bearings $b^3$, the shaft *b*, provided with a screw conveyer *b'* and mounted in the bearings, a door through which the material is removed, the two tubular conduits $a^3$ located upon the exterior of the cylindrical chamber at each side of the lower part thereof and the ways $a^4$ connecting the cylindrical chamber with the conduits; substantially as described.

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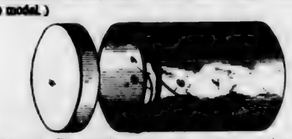
**503,499. SNAP-BUCKLE.** GUSTAVE F. C. SCHRÖTER, Redding, Cal. Filed Feb. 2, 1892. Serial No. 420,136. (No model.)



*Claim.*—An improved combined buckle and snap hook consisting of an open frame or loop having the side bars with upwardly curved ends, the upper cross bar *c*, the lower cross bar *d* at one side of the vertical plane of the latter, the cross bar *b* at the opposite end of the frame having the outwardly extending slotted bar provided with a hook, a spring actuated tongue or catch pivoted within the slot of said hook bar and adapted to close the throat of the hook, the cross bars *g* and *h* occupying the upper and lower portions of the frame or loop between the bars *b* and *d*, the oppositely extending tongues mounted on said bars *g* and *h* and to engage the strap connections, one of said tongues adapted to be seated against the cross bars contiguous to their free ends, substantially as herein described.

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**503,500. UNSEALING ATTACHMENT FOR CANS.** STEPHEN W. SIMMONS, Clinton, Mass. Filed Feb. 6, 1893. Serial No. 461,239. (No model.)



*Claim.*—1. The combination of a can, the cover having a flange fitting over the end of the can, the cord or wire wound around the can, and having its inner end secured between the upper end of the can and the flange of the cover and its free end projecting beneath the edge of the cover, and the wrapper pasted around the can and cover for sealing the package, substantially in the manner and for the purposes set forth.

2. In a sealed package, the combination of the can having the notched upper end as shown, the cord having its inner end secured in said notch, the cover having a flange fitting over the inner end of the cord and the upper end of said can, and the wrapper pasted over the can and its cover for sealing the package; said cord having an end projecting beneath the edge of the cover, and from beneath the wrapper, substantially as and for the purpose set forth.

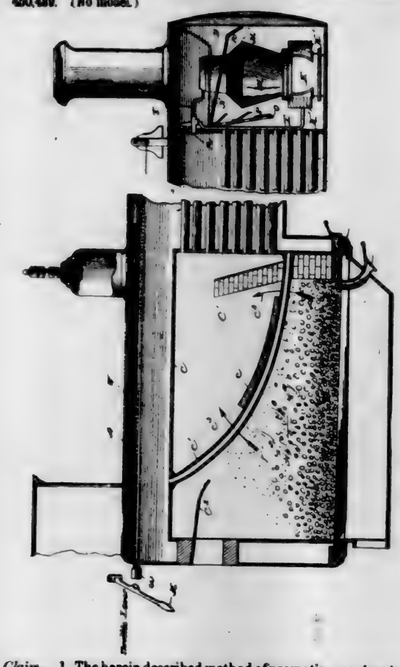
3. In a sealed package, the combination of the can and its flanged cover, the cord secured within the flanged cover over the upper end of the can and passing around the package on the line of severance between the can and its cover, and the wrapper pasted around the can for sealing the package; said cord being previously treated to prevent sticking of the label thereto, whereby mutilation of the wrapper is avoided in unsealing the can, substantially as described.

4. In a sealed package, the combination of the can, having the shoulder and the end above said shoulder, the cover having a flange

fitting over the end of the can and extending down to near the shoulder, the cord secured within the flanged cover over the upper end of the can and passed around the can between the cover flange and the shoulder and the wrapper pasted around the can and cover and inclosing the cord except at one end, substantially as and for the purpose set forth.

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**503,501.** METHOD OF AND APPARATUS FOR CONSUMPTION OF FUEL. JOHN Y. SMITH, Doylestown, Pa., assignor to the Smith Exhaust Pipe Company, same place. Filed Oct. 31, 1892. Serial No. 450,489. (No model.)



*Claim.*—1. The herein described method of promoting combustion consisting in maintaining the fuel in a state of agitation by means of an intermittent draft, the maximum power of which is sufficient to raise said fuel, but the duration too short to carry the fuel out of the fire box and the minimum power of which is insufficient to maintain the fuel above the body of the fire; substantially as described.

2. The combination with a locomotive boiler having the fire pot and bridge wall within the fire pot extending up in front of the flue, of an exhaust pipe having exhaust nozzles arranged to act successively on the column of air, whereby fuel is raised from the body of the fire by each successive impulse but is prevented from escaping from the fire pot into the flues, by the bridge wall; substantially as described.

3. In an exhaust apparatus, the combination with the smoke box, the exhaust pipe located therein having the lateral air openings at the bottom, of the deflector plate N located between the top of the exhaust pipe and lateral air openings; substantially as described.

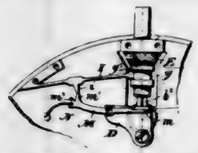
4. In an exhaust apparatus, the combination with the smoke box, the exhaust pipe having the lateral air openings therein and the inverted screen covered cone inclosing the said openings, of the deflector plate N located between the top of the cone and end of the pipe; substantially as described.

5. In an exhaust apparatus, the combination with the fire box, the exhaust pipe located therein having the lateral air openings, and the inverted screen covered cone inclosing said openings, of the inclined deflector N and the screen K located between the top of the cone and end of the pipe; substantially as described.

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**503,502.** STEM WINDING AND SETTING WATCH. JOHN STARK, Waltham, Mass., assignor to Royal E. Robbins, Boston, Mass., and Thomas M. Avery, Chicago, Ill., trustees, for the American Waltham and Elgin National Watch Companies. Filed Mar. 5, 1892. Serial No. 423,872. (No model.)

*Claim.*—1. As an improvement in stem winding and setting watches, in combination with a sliding clutch which is adapted to be engaged with the winding wheel or the dial wheels, a spring arm that holds such clutch with a yielding pressure in engagement with the dial wheels and is provided with a cam lug, a lever which is actuated by a spring and is provided with two cam projections, either of which by the movement of such lever in opposite directions, may be caused to engage with said cam lug and thereby produce winding engagement of said clutch, and a stem arbor which is adapted to be rotated and to be moved longitudinally, and by its longitudinal movements to control the movements of said cam lever, substantially as and for the purpose specified.

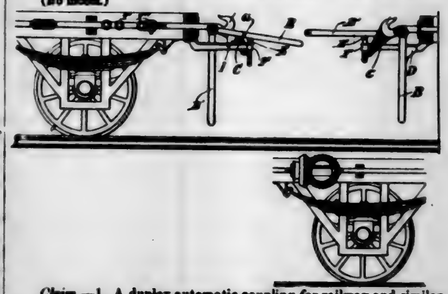


2. As an improvement in stem winding and setting watches, in combination with a sliding clutch which is adapted to be engaged with the winding wheel, or the dial wheels, a spring actuated lever adapted to have its movements controlled by the longitudinal movements of the stem arbor, and operating to move said clutch into winding position when such arbor is at the inner limit of its motion and also when it is wholly freed from the control of said arbor, substantially as and for the purpose shown.

3. As an improvement in stem-winding and setting watches, in combination with a sliding clutch which is adapted to be engaged with the winding wheel, or the dial wheels, an arm engaging said clutch and acting normally to move it into engagement with the dial wheels, a spring actuated lever adapted to engage and move said arm to place said clutch in winding engagement, and a rotatable longitudinally movable stem arbor adapted by its longitudinal movements to control the movements of said lever, the latter operating to cause the clutch to be moved to winding position both when the arbor is at the inner limit of its motion, and when wholly freed from the control of said arbor, substantially as and for the purpose set forth.

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**503,503.** CAR-COUPLING. ARTHUR STRIX, Schlegelmühl, near Aussig, Austria-Hungary. Filed Mar. 22, 1892. Serial No. 427,226. (No model.)



*Claim.*—1. A duplex automatic coupling for railway and similar vehicles consisting of hinged or pivoted links or rings of different widths which come into contact with and pass up inclined planes formed on the coupling hooks and engage therewith upon two carriages being moved together, constructed and arranged substantially as hereinbefore described and as illustrated by the accompanying drawings.

2. In a duplex automatic coupling for railway and other vehicles the combination with a draw bar capable of longitudinal movement of pivoted links, rings, or their equivalents and suitable projections or inclined planes for moving the pivoted links upward; all constructed and arranged substantially as hereinbefore described and as illustrated by the accompanying drawings.

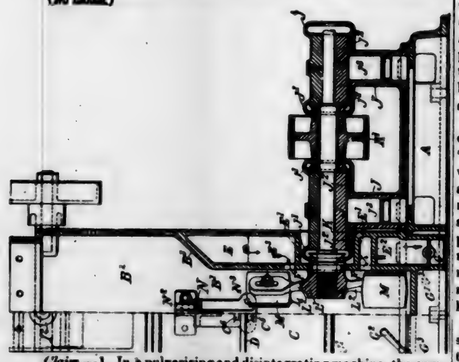
3. A duplex automatic coupling for railway and other vehicles consisting of longitudinally movable draw bars, coupling hooks formed with inclined planes, pivoted links or rings, apparatus for lifting these links or rings, for uncoupling, and apparatus for imparting longitudinal motion to the draw bars; all arranged constructed and operated substantially as hereinbefore described and as illustrated by the accompanying drawings.

4. The combination with the duplex automatic coupling herein described of an indicating device, substantially as hereinbefore described.

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**503,504.** PULVERIZING OR DISINTEGRATING APPARATUS. ROBERT SYMES, London, England, assignor to the Central Cyclone Company, Limited, same place. Filed Apr. 26, 1892. Serial No. 430,713. (No model.)

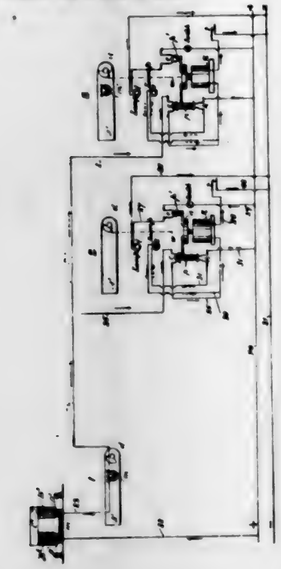


*Claim.*—1. In a pulverizing and disintegrating machine, the combination of an uptake having in its lower portion a disintegrating chamber and in its upper portion a collecting chamber of greater cross sectional area than the disintegrating chamber, the walls of said chambers being wholly vertical but joined on two sides by sloped surfaces, oppositely rotary beaters located in the disintegrating chamber, and valved air chambers each having two semi-circular air passages surrounding the beater shafts and through which they communicate with opposite sides of the disintegrating chamber, substantially as described.

2. In a pulverizing and disintegrating machine, the combination of an uptake having in its lower portion a disintegrating chamber and in its upper portion a collecting chamber, the walls of said chambers being wholly vertical but joined on two sides by sloped surfaces, a hopper located at the upper end of the uptake, oppositely rotary beaters located in the disintegrating chamber, a longitudinally curved angular bar supported transversely in the upper portion of the disintegrating chamber in proximity to the beaters to receive the impact of ascending material, and valved air chambers having semi-circular air openings surrounding the beater shafts and communicating with opposite sides of the disintegrating chamber, substantially as described.

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**503,505.** RAILWAY SIGNALING. ELLIS A. TIBBITS, London, England. Filed Oct. 13, 1892. Serial No. 448,774. (No model.) Patented in England May 6, 1891, No. 7,872.



*Claim.*—1. In automatic signaling apparatus, the combination, with a signal post provided with a projecting bracket, of a signal arm pivoted to the said bracket, a stationary electro-magnet, an arm pivoted to the said post and provided with a weight, a stop for the said arm to rest on, an armature operatively connected with the said arm, and a rod pivoted to the said arm and to the signal arm, the pivot pins of the said arm and rod being arranged to come into line when the arm rests on its stop, whereby the signal arm is locked when raised by the said weight and the armature is free of the electro-magnet, substantially as set forth.

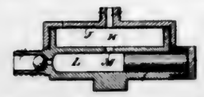
2. In automatic signaling apparatus, the combination, with an electricity generator and its mains, of the "starter" signal 1 and the "home" signal 2 located at one station A, the said signal 1 being provided with a circuit maker *m* adapted to be closed by a passing train, and a contact *m'* adapted to close automatically when the signal 1 is raised; the combined "distant" and "starter" signal 3 at another station B, the similar circuit breakers *l* adapted to be operated by a passing train and located one at each signal 1, 2 and 3, an electro-magnet at each signal, and wires operatively connecting the electro-magnets and the circuit maker with the said mains, whereby the signals 2 and 3 are lowered after the train has passed the station A and has raised the signal 1, substantially as set forth.

3. In automatic signaling apparatus, the combination, with a signal arm provided with means for raising it automatically, of a stationary electro-magnet and its armature operating to lower the said signal arm when the magnet is energized, an electricity generator and its mains, a wire 25 provided with contacts *c* and connecting the electro-magnet with the positive main, the wire 26 provided with a circuit breaker adapted to be operated by a passing train and connecting the said electro-magnet with the negative main, a lamp *s*, a wire 31 provided with contacts *k* and connecting the lamp with the positive main, a wire 30 connecting the said lamp with the wire 25, and a junction-piece carried by the said armature and operating to connect the contacts *c* until the armature is moved to lower the signal arm and cause the said junction-piece to connect the contacts *k*, substantially as and for the purpose set forth.

4. In automatic signaling apparatus, the combination, with a signal arm provided with means for raising it automatically, of a stationary electro-magnet and its armature operating to lower the said signal arm when the magnet is energized, an electricity generator and its mains, a wire 25 provided with contacts *c* and connecting the electro-magnet with the positive main, the wire 26 provided with a circuit breaker adapted to be operated by a passing train and connecting the said electro-magnet with the negative main, a lamp *l* and its connections provided with the contacts *c*, the lamp *s* and its connections provided with the contacts *k*, and the junction-pieces *p* and *p'* carried by the said armature, and connecting the contacts *c* and *c* respectively while the signal arm is raised, the said piece *p* operating to connect the contacts *k* when the signal arm is lowered, substantially as and for the purpose set forth.

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**503,506.** LUBRICATOR. CHARLES E. TRAVIS, Los Angeles, Cal. Filed June 16, 1893. Serial No. 477,854. (No model.)

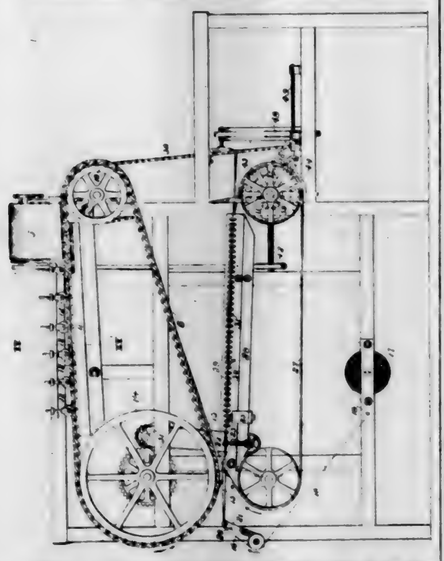


*Claim.*—1. In an oiler, the combination with a feed cup located above the part to be lubricated and connected therewith by a supply passage, of a delivery passage leading from the lower part of the journal, a collecting cup fitted to the lower end of the discharge passage, a transverse chamber situated below the cup, and a passage leading from the cup into this chamber, a reciprocating piston movable within the chamber, and adapted to open and close the opening between the cup and the chamber during its reciprocations, a discharge passage from the end of the chamber, and a pipe connecting said passage with the feed cup above and a check valve fitted in the discharge passage, substantially as herein described.

2. A collecting device and returning pump for lubricators consisting of a cup removably attached to the lower part of the journal having a passage connecting therewith whereby surplus oil passes into the cup, a transverse chamber situated below the cup having a passage through which oil from the cup may flow into the chamber, a reciprocating piston movable in the chamber by the inertia caused by the movements of the journal or part to be lubricated, a removable cap at one end of the chamber, a discharge passage and check valve at the opposite end of the chamber and a pipe connecting this passage with a feed cup above the journal or part to be lubricated whereby a constant circulation of lubricating material is effected, substantially as herein described.

3. An oil collecting and returning pumping attachment for crank pin journals and similar movable parts, consisting of a cup having a removable screw cover and a screen secured between the cover and the cup, a screw-threaded extension from the top of the cover by which the device is attached below the journal, a transverse piston chamber situated below the cup communicating therewith by a hole through which the oil flows by gravitation, a reciprocating piston movable within the chamber adapted to close the opening and act as a valve and to force the oil contained in the chamber out in its capacity as a pump, a check valve in the discharge passage to prevent the return of the oil and a screw cap at the opposite end of the chamber through which the valve may be removed, substantially as herein described.

## 503,507. CONTINUOUS-CIGARETTE MACHINE. JAMES H. VERNERS, Pittsburg, Pa. Filed Feb. 13, 1893. Serial No. 462,060. (No model.)



*Claim.*—1. In a cigarette-machine, a flexible endless feeder having a longitudinal groove, means for compressing tobacco within the groove, and means for stripping the filler therefrom and pressing it upon a wrapper, substantially as described.

2. In a cigarette machine, a flexible endless feeder having a longitudinal groove, means for compressing tobacco within the groove, and means for stripping the filler-rod, turning it over, and depositing it bottom side up on the wrapper; substantially as described.

3. In a cigarette machine, an endless feeder having a longitudinal groove, a stripper-belt within the groove, and means for lifting the belt from the groove at a certain point; and pressing the tobacco upon a wrapper substantially as described.

4. In a cigarette machine, an endless feeder having a groove therein, a stripper-belt within the groove, a stripper outside the groove over which said belt passes; and means for pressing the filler upon a wrapper substantially as described.

5. In a cigarette machine, a flexible endless feeder having a groove therein, a stripper-belt within the groove, a stripper outside the groove over which said belt passes, and compressing rollers beneath which the feeder passes; substantially as described.

6. In a cigarette machine, a flexible endless feeder having a groove therein, a stripper-belt within the groove, a stripper outside the groove over which said belt passes, compressing rollers beneath which the feeder passes, and a rigid support for the feeder beneath said rollers; substantially as described.

7. In a cigarette machine, the combination with an endless feeder having a longitudinal groove therein and a stripper belt within the groove, of a folder having converging sides, said belt passing within the folder in a portion of its path; substantially as described.

8. In a cigarette machine, an endless feeder having a longitudinal groove therein, a stripper-belt within the groove, a paper-folder, and a belt-stripper within the folder; substantially as described.

9. In a cigarette machine, an endless feeder having a longitudinal groove therein, a stripper-belt within the groove, a paper folder, and a belt-stripper within the folder and in front of its overlapping portions; substantially as described.

10. In a cigarette machine, a belt having a longitudinal groove, and grooved sealing rollers arranged to press upon the belt at the sides of the groove and be driven thereby; substantially as described.

11. In a cigarette machine, a belt having a longitudinal groove, and yielding grooved sealing rollers having a groove and side portions arranged to contact with the belt and be driven thereby; substantially as described.

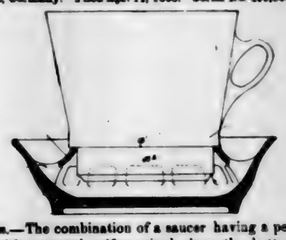
12. In a cigarette machine, a belt having a longitudinal groove, sealing rollers frictionally driven by said belt, and a support for said belt beneath the rollers; substantially as described.

13. In a cigarette machine, an endless chain having a longitudinal groove, wheels for carrying the chain, a stripper belt within the groove, a paper folder adjacent to one of the wheels for the chain, and a belt-stripper in the folder; substantially as described.

14. In a cigarette machine, a paper folder, means for drawing a strip of paper therethrough, a stripper-belt arranged to press a filler upon the paper, and means for cutting the continuous cigarette into lengths; substantially as described.

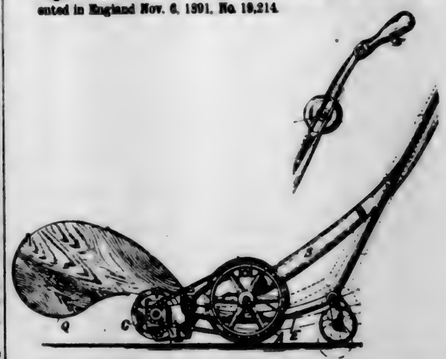
15. In a cigarette machine, a paper folder, a stripper within the same, and a stripper-belt within the folder arranged to press the filler upon the paper and move the paper forward through the folder; substantially as described.

## 503,508. CUP AND SAUCER. OTTO WALTER, Cologne-on-the-Rhine, Germany. Filed Apr. 11, 1893. Serial No. 469,938. (No model.)



*Claim.*—The combination of a saucer having a perforated false bottom with a central orifice raised above the bottom wall of the saucer, and a cup having a surrounding shoulder to rest on the false bottom, and a contracted neck below the shoulder which enters the said central orifice, substantially as and for the purpose described.

## 503,509. LAWN-MOWER. WILLIAM D. WARBROOKE, Lincoln, England. Filed Mar. 22, 1892. Serial No. 425,910. (No model.) Patented in England Nov. 6, 1891. No. 19,214.



*Claim.*—1. The combination with a main frame, a connecting mechanism, and guiding handles connected with the main frame, of a rocking balance frame composed of side levers pivotally mounted on the main frame, carrying a ground roller and rigidly connected at their rear extremities by a connecting cross-rod, a cross-bar connected with the upper portion of the main frame in proximity to the handles and provided with a screw threaded portion and a rigid collar, a lengthwise adjustable bar or rod connected at its lower end with the connecting cross rod of said levers, and having a slotted upper end through which the screw-threaded cross bar extends, and a screw clamping wheel mounted on the threaded portion of the cross-bar for clamping the slotted end of the bar or rod against the collar, substantially as described.



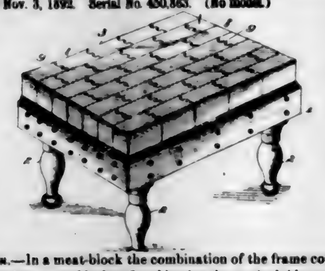
2. The combination with a main frame, a cutting mechanism, and guiding handles connected with the main frame, of a cross bar connected with the upper portion of the main frame in proximity to the handles and provided with screw-threaded portions and a rigid collar, a lengthwise adjustable bar or rod connected at its lower end with the rear end of the balance frame and having a slotted upper end through which the screw-threaded cross bar extends, and a screw-clamping wheel mounted on the threaded portion of the cross-bar for clamping the slotted end of the bar or rod against the rigid collar, substantially as described.

## 503,510. COLLAR-FASTENER. UREAL WATSON, Crawfordsville, Ind. Filed Apr. 24, 1893. Serial No. 471,662. (No model.)



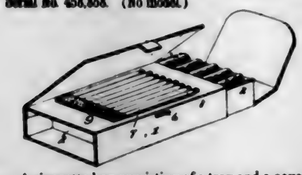
*Claim.*—The herein described improved collar-fastener, the same consisting of a U-shaped keeper having its terminals between its ends provided with upwardly-projecting coils arranged in oppositely situated pairs and beyond the same an extended tongue, and a hook of a similar shape having its terminals between their ends provided with coils to impart resiliency thereto and adapted at its outer transverse end to be engaged with said coils of the keeper, the said keeper and hook each being formed of a single piece of wire and adapted to be secured at their outer ends to the upper ends of a collar, substantially as specified.

## 503,511. MEAT-BLOCK. ANTHONY WEAVER, Hariville, N. Y. Filed Nov. 3, 1892. Serial No. 450,863. (No model.)



*Claim.*—In a meat-block the combination of the frame consisting of the base 4 supported by legs 2 and having the vertical sides or flanges 5, secured to the base by screw 6; and the composite-block 3 consisting of a number of series of blocks lock-jointed and glued together and arranged to break joints, said composite block being secured upon the base 4 between the sides or flanges 5 and held against vertical displacement by screws 7, all substantially as and for the purposes set forth.

## 503,512. CIGARETTE-BOX. THEODORE R. WEBB, South Norwalk, Conn., assignor to Julius Auerbach, New York, N. Y. Filed Jan. 18, 1893. Serial No. 458,558. (No model.)



*Claim.*—A cigarette box consisting of a tray and a cover in which the tray slides longitudinally, formed of a single piece of paper folded laterally around the box to form the four sides with open ends; said cover having mounted upon it a match package, and being perforated at one side adjacent to the side of the tray and having an integral extension which is folded at the edge opposite the perforation, to form a laterally hinging flap and which has a tongue adapted to enter the perforation and project between the tray and cover, to hold the flap in position over the match package, as explained.

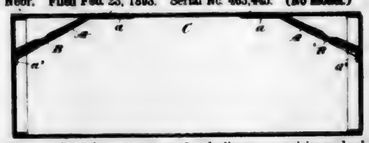
## 503,513. BICYCLE. HENRY S. WILLIAMS, Madera, Cal. Filed Mar. 6, 1893. Serial No. 464,876. (No model.)



*Claim.*—1. In a bicycle or similar vehicle, the combination of wheels, a hinged frame connecting the wheels, a saddle supported thereby and a yielding plate immediately behind the saddle and over the rim of the rear wheel, serving as a combined guard and brake, substantially as herein described.

2. In a bicycle or similar vehicle, the combination of wheels, connecting frame, saddle supported thereby and a yielding plate immediately behind the saddle and over the rim of the rear wheel, serving as a combined guard and brake, substantially as herein described.

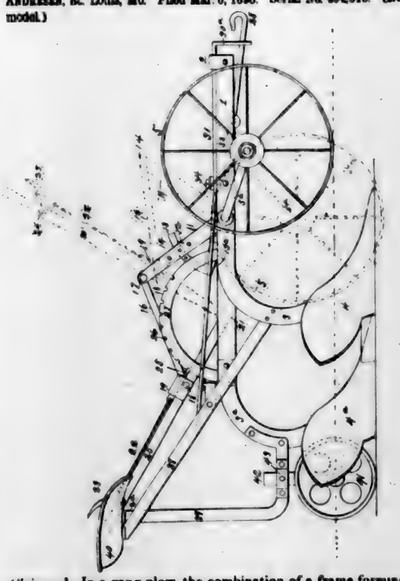
## 503,514. BOILER STAY OR BRACE. JOHN M. WILSON, Omaha, Nebr. Filed Feb. 23, 1893. Serial No. 463,445. (No model.)



*Claim.*—1. A brace or stay for boilers, comprising a body portion whose upper surface is curved convexly, and through which is a perforation or opening, and attaching means at its opposite extremities, substantially as and for the purpose specified.

2. A brace or stay for boilers, comprising a body portion triangular in shape, with its upper surface curved convexly, and having an opening through it, attaching means at the apex of the triangle consisting of a straight extension of the body, and attaching means at the base consisting of two upwardly bent feet, and one downwardly bent foot located between the others, substantially as and for the purpose shown.

## 503,515. GANG-PLOW. ASMUS J. ANDRESEN and ANDREAS C. D. ANDRESEN, St. Louis, Mo. Filed Mar. 6, 1893. Serial No. 464,816. (No model.)



*Claim.*—1. In a gang plow, the combination of a frame forming the plow carriage, plows connected to said frame, an axle composed

of a portion $5^a$, and an arm 7, a bearing on said arm fitting on the portion $5^a$, a collar loosely mounted on the portion $5^a$, an arm on said collar, an arm on said bearing, means of forming rigid connection between the collar, arm and bearing arm, and a lever connected to said collar arm; substantially as and for the purpose set forth.

2. In a gang plow, the combination of the frame, plows connected to said frame, a crank axle carrying the furrow wheel, an arm carrying the land wheel, a bearing on said arm connecting it to said crank axle, a collar loosely mounted on said crank axle, arms on said bearing and collar, perforations in said arms, a bolt removably engaging in said perforations to allow of adjustment between the crank axle and land wheel arm, to permit lowering of the furrow wheel; substantially as and for the purpose set forth.

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**503,516. STEM WINDING AND SETTING WATCH.** CHARLES E. BAGLEY, Thomaston, Conn., assignor, by mesne assignments, to Royal E. Robbins, Boston, Mass., and Thomas M. Avery, Chicago, Ill., trustees. Filed Mar. 29, 1893. Serial No. 468,100. (No model.)



*Claim.*—1. In a stem winding and setting watch, the combination of a pivoted yoke which carries a portion of a stem actuated train and by movement upon its pivotal bearing is adapted to effect the winding and setting engagements, a spring that operates to hold such yoke with a yielding pressure in winding engagement; a longitudinally movable or sliding part which is adapted to be engaged with the edge of said yoke and to lock it in winding and setting engagements; a second stronger spring that holds said sliding part with a yielding pressure in engagement with said yoke, and a stem arbor which has no positive connection with the movement and by longitudinal and rotative movement is adapted to control the engagements of said sliding part with said yoke, substantially as and for the purpose specified.

2. As an improvement in stem winding and setting watches, the combination in a winding and setting train which is actuated by a rotatable, longitudinally movable stem arbor that has no positive connection with the movement, of a pivoted yoke between the stem arbor and the winding and setting wheels, a spring which is adapted to hold such yoke, with a yielding pressure in position for winding engagement and a sliding part that is adapted to be moved into or out of engagement with the notched edge of said yoke by the action of a second, stronger spring and the longitudinal movements of said stem-arbor, substantially as and for the purpose shown.

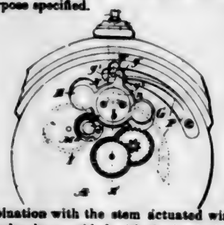
3. As an improvement in stem winding and setting watches, the combination of a pivoted yoke which carries a stem actuated portion of the winding and setting train and is provided upon one edge with a notch and an adjacent, relatively inclined face, a spring that operates to hold such yoke in position for winding engagement, a longitudinally movable or sliding piece which when permitted is adapted to engage with such notch and with such inclined face, a second, stronger spring that is adapted to hold said sliding part with a yielding pressure in engagement with said yoke and a rotatable, longitudinally movable stem-arbor which has no positive connection with the movement and by longitudinal movements is adapted to control the movements of said sliding part, substantially as and for the purpose set forth.

4. In combination with the rotatable, longitudinally movable stem arbor and the longitudinally movable sliding part, the longitudinally adjustable piece which is interposed between said parts, substantially as and for the purpose shown and described.

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**503,517. STEM WINDING AND SETTING WATCH.** CHARLES E. BAGLEY, Thomaston, Conn., assignor, by mesne assignments, to Royal E. Robbins, Boston, Mass., and Thomas M. Avery, Chicago, Ill., trustees. Filed Mar. 29, 1893. Serial No. 468,101. (No model.)

*Claim.*—1. In a stem-winding and setting watch, the combination of the pivoted yoke which carries a portion of the stem actuated train, and is provided with the hook shaped arm having a semi-circular notch and an inclined face, a spring that operates to hold such yoke with a yielding pressure in winding engagement, a longitudinally movable and sliding piece which is adapted to engage with such notch and inclined face, a spring that operates to hold said piece with a yielding pressure in engagement with said yoke arm, and a stem arbor which has no positive connection with the movement and, by longitudinal movements, is adapted to disengage said sliding part from and permit it to engage with said yoke arm, substantially as and for the purpose specified.



2. In combination with the stem actuated winding and setting train, the pivoted yoke provided with the hook-shaped arm, having the notch and inclined face, the longitudinally sliding part provided with the studs, the spring which operates to press such sliding part outward, and the stem arbor that is adapted to move said sliding part to and hold it at the inner limit of its longitudinal motion, substantially as and for the purpose shown.

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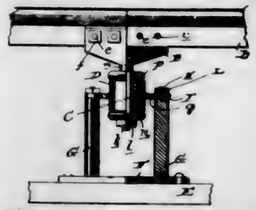
**503,518. GROUND-GLASS ATTACHMENT FOR CAMERAS.** MAX BAUER, Greenville, N. J. Filed Apr. 27, 1893. Serial No. 472,072. (No model.)



*Claim.*—In a ground glass attachment for cameras, the combination with the back frame, the ground glass frame and spring connections between said frames, of a spring actuated arbor mounted in the ground glass frame, toes mounted on this arbor, and a finger piece for turning said arbor against the action of its spring, substantially as described.

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**503,519. CONDUCTOR SUPPORT AND INSULATOR.** DAVID T. BENNETT, Trenton, N. J. Filed May 15, 1893. Serial No. 474,290. (No model.)



*Claim.*—1. The combination with two sections of an electric conductor, having a head *a*, and a web or flange *b*, and also having perforations through the web; of the bracket having the slot and also having holes to register with the holes or apertures in the web of the conductor, and provided with a threaded stem, the insulator surrounding the stem, the nut for securing the stem to the insulator, the band embracing the insulator, and having perforated branches, posts having threaded ends and entering the apertures in said branches, and nuts or the like for securing the branches to the bolts, substantially as specified.

2. The combination with a conductor; of the bracket having the threaded stem *h*, the insulator *c*, surrounding said stem, and having the shoulders *p*, on opposite ends, the band D, embracing the insulator, and arranged between the shoulders thereof, and provided with the diametrically arranged arms *g*, bolts and nuts secured to said arms, and suitable supporting means for the attachment of said bolts, substantially as specified.

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**503,520. UNDERGARMENT.** JOHN A. BENNETT, Cohoes, N. Y., assignor of one-half to Jacob A. Brooks, same place. Filed July 18, 1892. Serial No. 440,303. (No model.)



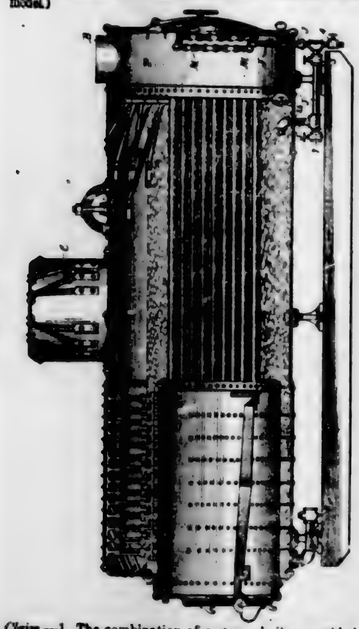


*Claim.*—1. A knit under-garment provided upon its face adjacent to an opening in the garment with a cord or thread extending across the garment in zig-zag lines and secured to the garment at points where the diagonally extending portions of the thread or cord diverge from each other to form a way or channel and to stay the knitted fabric of the garment at diagonally opposite points adjacent to the opening therein, and a gathering cord or tape passing loosely through the way formed as described and adapted to gather the garment, substantially as and for the purposes described.

2. A knit under garment, having a way or channel for a gathering cord or tape formed by a series of cords or threads run across the face of the garment, adjacent to an opening therein and in from the edge thereof, in zig-zag lines and across each other and fastened to the garment at the points where the diagonally extending portions of each cord or thread diverge whereby the way or channel is formed with a closed back and open face and the garment stayed at diagonally opposite points throughout the length of the way or channel along the line of each cord or thread, substantially as and for the purposes described.

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**503,521. FEED-WATER HEATER FOR STEAM-BOILERS.** THOMAS C. BEST, Chicago, Ill. Filed Apr. 18, 1892. Serial No. 429,560. (No model.)



*Claim.*—1. The combination of a steam boiler provided with a heating or combustion chamber; with a main feed water pipe and means for forcing water and steam or either into said pipe; said pipe extended into said chamber; that portion of said main feed water pipe located within said chamber formed into a coil, which is provided with trunnion bearings for said journals or trunnions located and supported in the walls of said chamber; said main feed water pipe extending from said coil and introduced into the steam boiler at a point in the lower portion of the boiler; all substantially as shown.

2. A feed water heater capable of connection with means for forcing water or steam or either into it, consisting of a pipe a coil of pipe provided with journals or trunnions capable of engaging in bearings located in the furnace or combustion chamber of a steam boiler, and a pipe extending from said coil and capable of introduction into such steam boiler at or near the lower portion thereof; all substantially as shown.

3. A feed water heater capable of connection with means for forcing water and steam or either into it, consisting of a pipe a coil of duplicated or multiplied pipes said coil provided with journals or trunnions capable of engagement and support in bearings located in the walls or other supports of a heating chamber of a steam boiler; and a pipe connected with the lower part of said coil and extended, and capable of introduction into the steam boiler at or near the lower portion thereof; all substantially as shown.

4. A feed water heater capable of connection with means for forcing water and steam or either into it, consisting of a main feed pipe provided with a stop cock 2; a steam pipe H arranged to be introduced into the steam chamber of the boiler and having a stop cock 5; a coil of pipe provided with journals or trunnions capable of engagement and support in bearings located in the walls of the heating chamber of the boiler; a second pipe connecting with the lower part of said coil and provided with stop cocks 3 and 4 and extended so as to be capable of being introduced into the boiler at or near the lower portion thereof; all substantially as shown.

5. A feed water heater capable of connection with means for forcing water and steam or either into it consisting of a main pipe provided with two check valves and a pump connection intermediate said check valves and with a suction coupling; a circulating pipe connected with said suction coupling provided with a stop-cock and capable of being introduced into the steam boiler at a point below the water line; a coil of duplicated or multiplied pipes provided with journals or trunnions capable of engaging and being supported in bearings located in the walls or supports of the heating chamber of said steam boiler; and a pipe J connected with the lower end of said coil and provided with the stop cock 4 and connected with the pipe J' having the stop cock 3, and capable of being introduced into the boiler at a point near the lower portion thereof; all substantially as shown.

6. In a feed water heater the combination of a main feed water pipe with a suction coupling provided in its horizontal branch with a spiral core and a circulating pipe connected with the inclined branch thereof and extended so as to be capable of entering the steam boiler at a point below the water line; said main feed water pipe being extended and connected with a coil capable of support in the walls of the heating chamber and thence extended and capable of being introduced into said boiler at or near the lower portion thereof; all substantially as shown.

7. In a feed water heater for steam boilers a suction coupling provided with a spiral core rigidly held in the bore of the main branch thereof, the inclined branch thereof capable of connection with a pipe entering the boiler at a point below the water line, all substantially as shown.

8. In a feed water heater leading from an ejector, and provided with a stop cock 2; a coil connected with said pipe capable of introduction and support, in the heating chamber of the boiler, said coil being provided with the pipes J J' capable of entering the boiler at the lower portion thereof, and being provided with an extension having the stop-cock 4, and the stop cock 3; the steam pipe H connecting with said feed water pipe at 11, and provided with a stop-cock 5; whereby at any time the feeding of water through said coil may be arrested, and by means of the steam pipe H, the water in said coil and pipes may be blown out and the sediment and deposit therein removed, all substantially as described.

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**503,522. COMBINED SAW AND PLANER.** JOHN BOWLES, Washington, D. C., assignor of one-half to Cornelius B. Mitchell, New York, N. Y. Filed Apr. 12, 1892. Serial No. 428,870. (No model.)



*Claim.*—1. In a combined saw and planer, the planer and cutting teeth arranged in groups, each group having its cutting tooth and its planer tooth provided with shaving or paring edges on one side thereof, as and for the purpose described.

2. In a combined saw and planer, the planer and cutter teeth arranged in groups, the cutter tooth of each group provided with a shaving or paring edge which projects laterally beyond the face of the saw plate or blade and the planer tooth having its lateral shaving edge projecting farther beyond the face of the saw plate or blade than the shaving or paring edge of the adjacent cutter tooth, substantially as and for the purpose described.

3. In a combined saw and planer, the cutter and planer teeth arranged in groups, with each cutter tooth having a lateral shaving or paring edge extended beyond one face of the saw plate and the cutter tooth likewise having a lateral shaving edge, the planer tooth of each group having its beveled working face lying at an angle backward to the radius of the saw blade and the corresponding beveled face of the cutter tooth inclined forward of said radius, substantially as and for the purpose described.

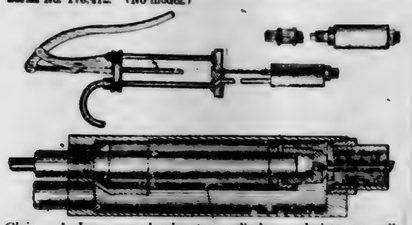
4. In a combined saw and planer, the series of cutter teeth each having its front working face beveled from one side to the other within the incision point thereof and provided with a shaving or paring edge which extends laterally beyond one face of the saw plate, combined with the alternate planer teeth having their outer extremities within the path described by the incision points of the cutter teeth and provided with the planing edges which extend laterally beyond the faces of the saw plate, substantially as described.

5. In a combined saw and planer, the planer and cutting teeth arranged alternately with relation to each other and each pair or group of teeth being provided on one side with lateral planing or shaving edges and the adjacent group or pair of teeth having similar edges on the other side, each pair or group being formed by one planer tooth and one cutting tooth, substantially as and for the purpose described.

6. In a combined saw and planer, the alternate cutting and planing teeth arranged in groups, one group of teeth being set to one side of the plane of the saw blade and the adjacent groups being set to the other side of the plane of the saw blade, for the purpose described.

7. In a saw and planer, a series of cutter teeth provided with shaving or paring edges within the incision points thereof and which project or extend beyond the lateral faces of the saw-blade or plate, combined with a series of planer teeth arranged alternately with relation to the cutter-teeth, substantially as and for the purpose described.

## 503,523. PUMP. JOSEPH H. BRANSON, Belmont, N. Y., assignor to the Sandwich Enterprise Company, Sandwich, Ill. Filed Sept. 7, 1885. Serial No. 176,412. (No model.)



*Claim.*—1. In a pump having two cylinders and pistons, a cylindrical shell of nearly the same diameter as the lower cylinder, and having an internal eccentric cylinder, a pipe of comparatively small diameter connected to the bottom of said shell and to the top of the lower cylinder, substantially in line with the axis of the eccentric cylinder, whereby the piston rod of the lower cylinder may hang under the center of the upper piston, or the connecting pipe bend to one side, as desired, substantially as set forth.

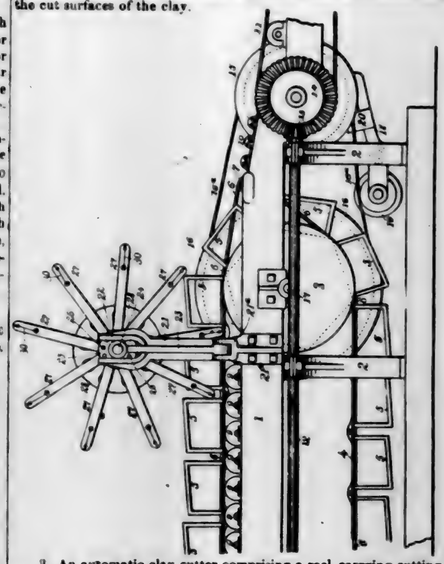
2. In a pump having two cylinders, a cylindrical shell of nearly the same diameter as the lower cylinder, having a cylinder set eccentrically within it, two openings above the discharge pipe and piston rod and an eccentrically-placed opening in its bottom, a pipe of smaller diameter than the lower cylinder, running from said eccentric opening to the lower cylinder, a piston in each cylinder and a connection between said pistons, substantially as described.

3. In a pump having two cylinders, a cylindrical shell of nearly the same diameter of the lower cylinder, having an internal eccentric cylinder, an opening in each end substantially in line with the eccentric cylinder and an opening at one side of the top to receive the discharge pipe, a pipe of smaller diameter than the lower cylinder in line with the eccentric opening in the bottom of the shell and connecting with the lower cylinder, a piston in each cylinder, and a connection between the said pistons having its axis in line with the axis of the upper piston, substantially as described.

## 503,524. AUTOMATIC CUTTER FOR BRICK AND TILE MACHINES. DAVID BROWN, Decatur, Ill., assignor of one-half to the Decatur Leader Manufacturing Company, same place. Filed Mar. 13, 1893. Serial No. 465,672. (No model.)

*Claim.*—1. An automatic clay cutter comprising a reel carrying cutting wires adapted to pass through a moving bar of clay, guides for the reel arms adapted to move with the bar of clay and determine the position and direction of the cuts, and projections on the reel arms adapted to engage the guides, the bearing surfaces of the projections which act on the guides during the cutting operation being cylindrical and concentric with the cutting wires, and the surfaces which act during the withdrawal motion being extended and eccentric, whereby the wires are held from contact with the cut surfaces of the clay.

2. An automatic clay cutter comprising a reel carrying cutting wires adapted to pass through a moving bar of clay, a clay-carrying belt diverging downward from a point below the withdrawal swing of the cutting wires, guides for the reel arms adapted to move with the clay and determine the position and direction of the cuts, and projections on the reel arms adapted to hold the wires at uniform distance from the guides during the cutting operation, and to increase the distance during the withdrawal motion, whereby clearance is made for the passage of the wires and the wires are held from contact with the cut surfaces of the clay.



3. An automatic clay cutter comprising a reel carrying cutting wires adapted to pass through a moving bar of clay, a link-belt run on polygonal pulleys and having guides to determine the position and direction of the cuts, and a clay-carrying belt encompassing the link-belt and extending beyond the same at one or both ends, substantially as set forth.

4. In clay cutters, the combination of a standard having a forked upper end and a lateral extension, and a reel-carrying bracket pivoted to the extension and resting normally in the fork, whereby the reel may rise to prevent breakage.

5. In clay cutters, the combination of a reel carrying cutting wires, a clay-carrying belt, a reel-actuating belt, a power-driven friction belt running loosely on a pulley on a shaft of the clay-carrying and reel-driving mechanism, an idler to take up the slack of the friction belt, and an adjustable weight to regulate the pressure of the idler on the belt, whereby the cutting reel may be made to automatically coincide with the movement of the bar of clay, substantially as set forth.

6. In clay cutters, the combination of a reel carrying cutting wires, a reel-actuating belt, an off-bearing belt, a friction belt loosely connecting the drive shaft of the off-bearing belt with the drive shaft of the reel-actuating belt, an idler to take up the slack of the friction belt, an adjustable weight to regulate the pressure of the idler on the belt, and means, substantially as described, for driving the shaft of the off-bearing belt, whereby the reel-actuating belt is driven from the off-bearing shaft and is governed in its speed by the motion of the bar of clay.

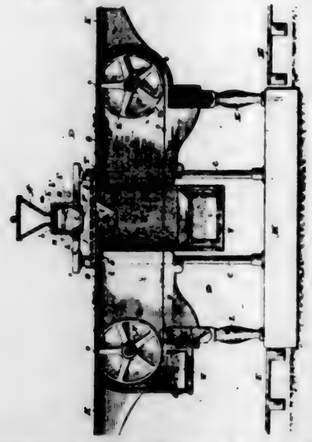
7. In clay-cutting reels, the combination with a reel arm having a wire receiving notch in its end, a lever pivoted on a side of the arm and having a pin to which the wire is attached, and a stop on the arm adapted to arrest the swing of the lever when the pin thereon passes a right line drawn through the notch in the end of the arm and the pivot of the lever, substantially as set forth.

8. In clay cutting reels, the combination of a shaft, disks fixed on the shaft, arms pivotally connected with the disks and provided with cutting wires, cross bars connecting the arms of one disk with the arms of the other disk, and a spider fixed on the shaft between the disks with its legs extended between the cross bars of the arms, substantially as set forth.

## 503,525. APPARATUS FOR ENAMELING DIALS. DAVID R. BUCHANAN, Elgin, assignor to the Elgin National Watch Company, Chicago, Ill. Filed July 19, 1890. Serial No. 359,290. (No model.)



*Claim.*—1. As an improvement in apparatus for enameling dials, the combination of an enamel sifting or showering mechanism, a tray having holders for holding several dial bases, and means to move said tray beneath said mechanism to enable the bases to receive the falling enamel, substantially as and for the purpose shown.



2. As an improvement in the enameling of dials, an apparatus for applying powdered enamel to a dial base in which are combined an enamel sifting or showering mechanism, a sieve beneath the same through which enamel passes to a base, a dial base support, and means for moving the support horizontally beneath said sieve; substantially as and for the purpose set forth.

3. As an improvement in the enameling of dials, an apparatus for applying powered enamel to a dial base in which are combined an enamel reservoir, two sieves, one of which is relatively movable or vibratory, and a support for a dial base or bases; substantially as and for the purpose shown.

4. As an improvement in the enameling of dials, an apparatus for applying powdered enamel to a dial base in which are combined an enamel reservoir discharging to a reciprocable or vibratory sieve, a stationary sieve beneath the latter, and a support for a dial base or bases, substantially as and for the purpose described.

5. In an apparatus for applying powdered enamel to a dial base, in combination, an enamel reservoir, a stationary sieve, a vibratory sieve of finer mesh than the latter and below the same, a dial-base support, and means for moving the latter beneath said vibratory sieve, substantially as and for the purpose set forth.

6. In an apparatus for applying powdered enamel to a dial base, in combination an enamel reservoir, a housing or base having a perforated top below said reservoir, a reciprocable or vibratory sieve in the housing below its top, a sieve below the latter sieve, and a support for a dial base or bases, substantially as and for the purpose specified.

7. As a means for showering powdered enamel, the combination of the hopper-shaped reservoir, the base or housing, the reciprocable or vibratory sieve, and the stationary sieve, substantially as and for the purpose shown.

8. As a means for showering powdered enamel, in combination, the hopper shaped reservoir, the supporting housing the upper and lower sieves, and the rod and crank connected to the upper sieve to reciprocate the same, substantially as and for the purpose described.

9. As a means for supporting dial-bases, the annular holders, the intersecting rods which pass through the lower portions of said holders, and the frame that receives the ends of such rods, substantially as and for the purpose set forth.

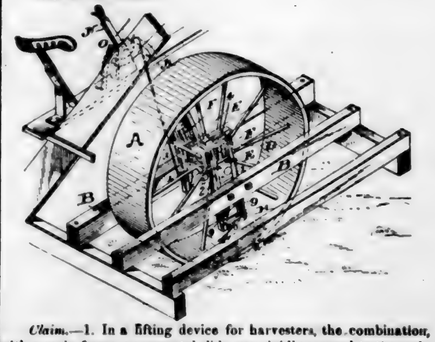
10. In combination with mechanism for sifting powdered enamel, the dial base tray having a number of annular holders and the endless band having studs to engage the tray, said band moving horizontally below the sifting mechanism, substantially as and for the purpose specified.

11. The combination of the supporting table, the transverse shafts and sprocket wheels, the endless bands provided with studs, and means whereby one of said shafts may be rotated at a uniform speed, substantially as and for the purpose shown.

12. In an apparatus for enameling dials in combination, an enamel reservoir, the sieves for sifting enamel therefrom, one of which is reciprocable or vibratory, and the mechanism for moving dial bases beneath the sieves, consisting of a suitably driven carrier and a base holding tray carried by the latter, substantially as and for the purpose described.

13. In an apparatus for applying powdered enamel in a dry state to dial bases, in combination, an enamel reservoir, sieves for discharging enamel from the latter in the form of a shower, a base-holding tray and a table for supporting such tray, mounted on a foundation out of contact with the reservoir and the sieves, substantially as and for the purpose set forth.

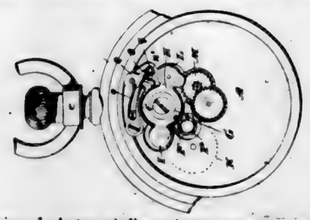
## 503,526. LIFTING DEVICE FOR SELF-BINDING HARVESTERS. FRANK BUROFF, Eldorado, Wis. Filed Mar. 28, 1893. Serial No. 467,996. (No model.)



*Claim.*—1. In a lifting device for harvesters, the combination, with a main frame, a segmental slide way rigidly secured to the main frame, a segmental cross-head movable in the slide way and provided with a central opening, a boxing movable in the central opening, and a main axle journaled in the boxing, of a series of springs between the upper end of the boxing and the upper end of the cross head, a cable attached to the upper end of the cross head, and a pulley journaled near the lower end of the slide way, under which pulley the cable passes, substantially as described.

2. In a lifting-device for harvesting machines, the combination, with a main frame, a segmental slide-way secured to the main frame and provided with an inner groove, a segmental cross-head having an outer groove and a central opening extending from the lower end to near the upper end of the cross-head, said cross-head being movable in the slide-way, a boxing movable in the central opening, a main axle journaled in the boxing, a series of springs between the upper end of the boxing and the upper end of the cross-head, a stop located in the slide-way below the boxing, a bolt across the lower end of the cross-head and closing the central opening, a cable secured to the top end of the cross-head and passing down the grooves in the slide-way and cross-head, a pulley journaled in the lower end of the slide-way under which the cable passes, and means for operating the cable, substantially as described and for the purpose set forth

## 503,527. STEM WINDING AND SETTING WATCH. CHARLES P. CORLISS, Elgin, assignor to the Elgin National Watch Company, Chicago, Ill. Filed Mar. 29, 1893. Serial No. 468,097. (No model.)



*Claim.*—1. A stem winding and setting watch in which the winding and setting engagements are produced by means of a stem arbor that is adapted to be rotated and moved longitudinally, and the stem driven train is locked out of setting engagement by means of a device which may be released by causing said stem arbor to be partially rotated, in either direction, substantially as and for the purpose specified.

2. In a stem winding and setting watch in which the winding and setting engagements are effected by means of a rotatable and longitudinally movable stem arbor, a device for locking the stem driven train out of setting engagement which is adapted to be released by a

partial rotation of said stem arbor in either direction, substantially as and for the purpose shown.

3. In a stem winding and setting watch in which the winding and setting engagements are effected by means of a rotatable, longitudinally movable stem arbor that has no positive connection with the movement, a device for locking the stem driven train out of setting engagement, which is adapted to be released by a partial rotation of said stem arbor in either direction, substantially as and for the purpose set forth

4. In a stem winding and setting watch in which the winding and setting engagements are effected by means of a rotatable, longitudinally movable stem arbor, a device for locking the stem driven train out of setting engagement which is set by a longitudinal movement of the stem arbor, and is adapted to be released by a partial rotation of the same in either direction, substantially as and for the purpose shown and described.

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**503,528. PATTERN-MAKER'S SCALE.** JAMES T. COWLEY, Lowell, Mass. Filed Dec. 12, 1892. Serial No. 454,842. (No model.)

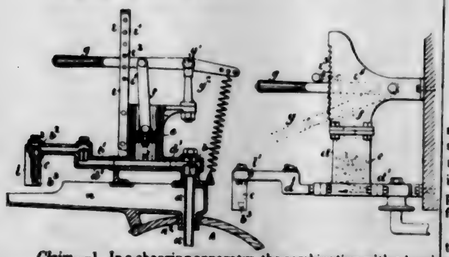



*Claim.*—1. A lineal rule for pattern makers' use, provided with a line at an angle to the edge of the rule and crossing the inch divisional lines, the line being a distance from the edge at each inch line, equal to the lineal shrinkage of a metal in a length indicated at said inch line, substantially as described.

2. A pattern maker's rule provided with inch graduations with a line, as *a*, parallel to the edge thereof, at a distance equal to the shrinkage per foot of a metal used in casting, and with a supplemental line, as *b*, beginning at the end of said line *a*, and at an angle thereto that forms a triangle having a perpendicular equal in a foot of length to the extent of said shrinkage, substantially as described.

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**503,529. MEASURING-PUMP.** SAMUEL T. DUTTON, Worcester, England. Filed Dec. 23, 1892. Serial No. 456,186. (No model.) Patented in England Apr. 3, 1883, No. 4,977; in Germany Feb. 18, 1888, No. 3,730; in Belgium Feb. 19, 1889, No. 85,073; in France Feb. 19, 1889, No. 196,178; in Canada Apr. 4, 1889, No. 31,040; in India June 17, 1889, No. 206; in New South Wales Aug. 14, 1889, No. 1,036, and in Victoria Aug. 20, 1889, No. 7,012.



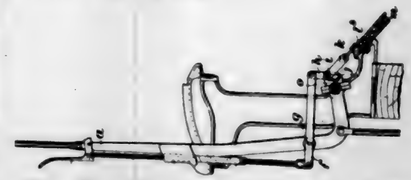
*Claim.*—1. In a charging apparatus, the combination with a hand pump provided with suction and delivery valves, and a suction pipe adapted to be inserted within the storage reservoir, of a spring for forcing the pump piston to its raised position thereby charging the pump barrel with liquid, an adjustable stop limiting the upward movement of the piston, and a delivery pipe provided with a tappet valve normally preventing the discharge of liquid from the said pump barrel, and provided with a central stem adapted to be pressed upward when the said delivery pipe is inserted in the reservoir to be charged, substantially as and for the purpose set forth

2 In a charging apparatus, the combination, with a hand-pump provided with suction and delivery valves, of a spring for forcing the pump piston to its raised position thereby charging the pump barrel with liquid, the base plate for supporting the pump and provided with a tray for catching the drip, a suction pipe passing through the said base plate and pivoting the said pump upon it and a delivery pipe provided with a tappet valve normally preventing the discharge of liquid from the pump until swiveled around clear of the said tray and inserted within the service reservoir, substantially as set forth

3 In a charging apparatus, the combination, with a single acting hand pump provided with suction and delivery valves, of a spring for automatically working the pump in one direction, an adjustable stop for limiting the stroke of the pump so that it may discharge a prearranged quantity of liquid at each outstroke, a hollow base plate or tray for catching the drip provided with a nozzle for returning said drip to the service reservoir, a suction pipe pivoted in the base plate and passing centrally through said nozzle, whereby the pump may be swiveled around upon said base plate, and a depending delivery pipe provided with a separate discharge valve adapted to be opened automatically when the said delivery pipe is inserted within the reservoir to be charged, substantially as and for the purpose set forth.

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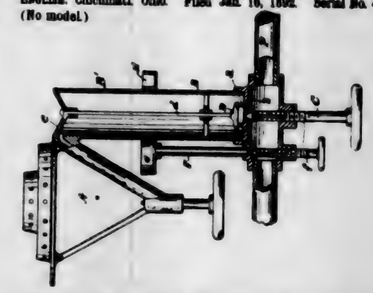
**503,530. INTERLOCKING APPARATUS FOR RAILWAY SIGNALING.** SAMUEL T. DUTTON, Worcester, England. Filed Jan. 14, 1893. Serial No. 458,425. (No model.)



*Claim.*—The combination, with a pivoted operating lever provided with a catch rod, of a crossbar pivotally connected to the said lever and catch rod, a stationary locking box, a tappet sliding in the said box, the links *h* and *k* pivotally connecting the said tappet with the said crossbar, and the projection *o* on the operating lever provided with a slot adapted to guide the meeting ends of the said links, substantially as set forth

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**503,531. HYDROCARBON-VAPORIZING BURNER.** ANDREW J. ENGLISH, Cincinnati, Ohio. Filed Jan. 16, 1892. Serial No. 418,947. (No model.)



*Claim.*—1. The combination of a hydrocarbon heating-burner, a vaporizing retort connected therewith: a feed-pipe connected to said retort, a feed-valve normally closed and actuated to open by means of heat communicated to the retort: and an auxiliary or starting burner having an independent feed-connection with the supply-pipe and arranged to operate upon the retort for the actuation of the feed-valve, substantially as set forth.

2 The combination, with a hydrocarbon heating burner, of a vertical vaporizing retort connected therewith: a feed-pipe leading into the retort: an automatic check-valve governing the feed-aperture opened by heat applied to the retort and closed by withdrawal of heat from retort: an auxiliary or starting burner attached to the retort and communicating independently with the feed-pipe; substantially as set forth

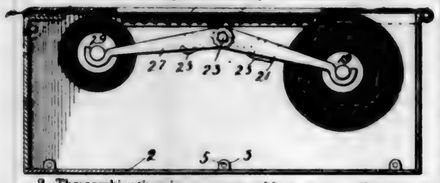
3 In a hydrocarbon heating burner, the combination of the following elements, namely (1) a feed-pipe (2) a vertical stand-pipe rising therefrom: a burner-proper carried adjacent to the stand-pipe connected at the top of the latter: (3) a cut-off valve located at the bottom of the stand pipe adapted to be opened by heat applied to the stand-pipe and closed by withdrawal of heat therefrom and (4) an auxiliary or starting burner adjacent to the stand-pipe and independently connected to the feed-pipe and (5) a valve governing the supply to the auxiliary burner

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**503,532. AUTOGRAPHIC REGISTER.** LUTHER C. FARMER, Minneapolis, Minn., assignor, by direct and mesne assignments, to the Farmer's Autographic Register Company, same place. Filed Oct. 1, 1892. Serial No. 447,460. (No model.)



*Claim.*—1. In an autographic register, the combination with a suitable casing, of a supply roll adapted to carry the several strips, a roll adapted to receive one of said strips, spring bearings supporting said rolls, and means for permitting one or more of the strips to be drawn out of the casing, substantially as described




2. The combination, in an autographic register, with a suitable casing, of a supply roll, spring bearings supporting said roll, a receiving roll, and spring bearings supporting said roll, substantially as described.

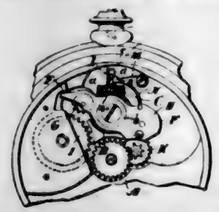
3. The combination with the casing, of the supply roll arranged therein and mounted upon yielding bearings, a receiving roll the cross-plate 11 arranged between said rolls and over which said strips are adapted to pass, and the cover, provided with an opening arranged above said cross-plate, substantially as specified

4. The combination, with the casing provided with the cross-plate and with the cover 13 having an opening arranged over said cross-plate, of the knife-edge 17 arranged at the end of the cover, the shaft 23, the frames 21 and 27 pivotally supported upon said shaft, the spring 25 engaging said frames and the rolls 19 and 29 mounted upon said frames, substantially as described

5 The combination with the casing and the supply roll, of the roll adapted to receive one of the recording strips, and means for holding said receiving roll against the other strips as they are withdrawn from the casing, substantially as described.

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**503,533. STEM WINDING AND SETTING WATCH.** EDWIN H. FLINT, Cincinnati, Ohio, assignor to George S. Prindle, Washington, D. C. Filed Apr. 10, 1893. Serial No. 469,796. (No model.)



*Claim.*—1. As an improvement in stem winding and setting watches, the combination of a rotatable, longitudinally movable stem arbor, winding and dial wheels adapted to be alternately actuated by said arbor, and means shiftable by the rotation of said arbor for producing alternate connection between the stem arbor and said wheels, whose movements are controlled by a part connected therewith having inclined faces adapted for cooperation with a part actuated by the stem arbor, substantially as and for the purpose specified

2. As an improvement in stem-winding and setting watches, the combination of a rotatable, longitudinally movable, stem arbor, winding and dial wheels adapted to be alternately actuated by said arbor and shiftable means for producing alternate connection between the stem arbor and said wheels, whose movements are controlled by a spring arm or bar connected therewith to hold the same yieldingly in engagement with the winding wheel and adapted for cooperation with a part actuated by the stem arbor, substantially as and for the purpose shown

3 A stem winding and setting watch in which is combined a rotatable, longitudinally movable stem arbor a train of wheels adapted by the rotation of said arbor to alternately produce winding and setting engagement, and means controlling the production of such engagement, comprising a part actuated by the longitudinal movement of the stem-arbor, and an arm or bar adapted for engagement thereby so as to be caused to act in either of two directions, substantially as and for the purpose set forth

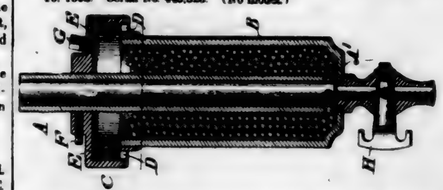
4 A stem winding and setting watch in which is combined a rotatable, longitudinally movable stem arbor, a pivoted, wheel-carrying yoke adapted to be oscillated by the rotation of said arbor to produce winding or setting engagement, and an arm or part connected with said yoke to control its oscillations adapted for cooperation with a part actuated by the stem arbor, said arm being disengaged from and engaged with the stem-arbor actuated part, by the longitudinal movements of said arbor in opposite directions, substantially as and for the purpose described

5 A stem winding and setting watch in which is combined a rotatable, longitudinally movable stem-arbor that has no positive connection with the movement, a stem actuated mechanism which, by the oscillation of a pivoted yoke, is adapted to produce a winding or setting engagement, a spring arm or bar that controls the positions of such yoke, and a slide which is actuated by the longitudinal movement of the stem-arbor, and operates to cause said spring arm or bar to act in either of two practically opposite directions, substantially as and for the purpose set forth

6. A stem winding and setting watch in which is combined a rotatable, longitudinally movable stem-arbor that has no positive connection with the movement, a device which operates to lock the stem-arbor yieldingly at the inner limit of its longitudinal motion, a stem actuated mechanism which, by the oscillation of a pivoted yoke, is adapted to produce a winding or setting engagement, a spring arm or bar that controls the positions of such yoke, and a slide which is actuated by the longitudinal movement of the stem arbor, and operates to cause said spring arm or bar to act in either of two practically opposite directions, substantially as and for the purpose described.

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**503,534. STEAM-MUFFLER.** DANIEL GOFF, Atlantic City, N. J., assignor of one-half to Charles T. Wright, Philadelphia, Pa. Filed Sept. 10, 1892. Serial No. 445,525. (No model.)

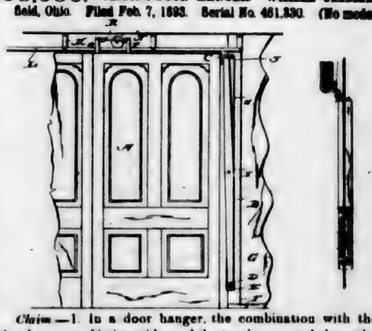



*Claim.*—1. A steam muffler and trap having the cap C with a discharge opening, the casing B connected therewith, the supply pipe A adjustably fitting in said cap and passing through the same into the casing, and the filling material in the casing around said pipe, said cap having its periphery extending beyond that of the casing B forming a chamber above the casing, substantially as described.

2. A muffler formed of a cap with a discharge opening, a casing connected with said cap, a supply pipe passing through the cap into said casing, filling in the casing around said pipe, a discharge cock, and an opening for said filling with a closing plug therein, said cap being of greater diameter than said casing, and said parts being combined substantially as described.

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**503,535. SLIDING-DOOR HANGER.** WILLIAM GRABLER, Mansfield, Ohio. Filed Feb. 7, 1893. Serial No. 461,330. (No model.)

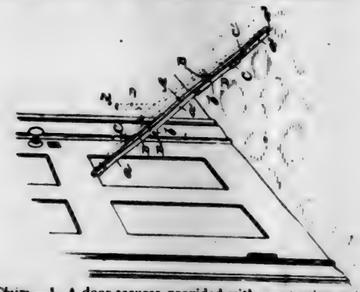


*Claim.*—1. In a door hanger, the combination with the door slidingly mounted in its guides and the track arranged above the same of the standards O P secured at their lower ends to the upper edge of the door and extending up alongside said track, the horizontal bars R and S secured at their ends to the upper ends of said standards, one of said bars being bent outward at its central portion beyond the plane of the track, and a roller journaled between said horizontal bars, substantially as set forth

2 The combination with a door slidingly mounted in its guides, of an angle plate secured to the edge of said door with one arm extending in the plane thereof, a slotted guide plate secured to the standing in the plane of the projecting arm of the angle plate, the lever

B, pivoted at its upper end to the projecting ear of the angle plate and having at its lower end a pin engaging the slot in the guide plate, and a toggle pivoted at its upper end to the studding and at its lower end to the central portion of said lever B, as set forth.

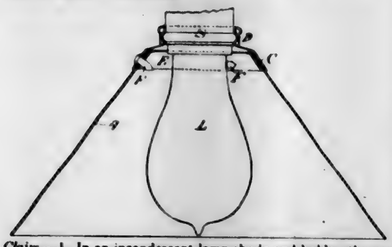
**503,536. DOOR-SECURER.** FRANKLIN J. HALEY, Bush's Store, Ky. Filed Feb. 14, 1893. Serial No. 462,273. (No model.)



*Claim.*—1. A door securer provided with penetrating points at its outer ends and comprising two or more jointed sections, a spring actuated locking bolt provided on one of the sections, a locking bar pivotally connected to another section which is adapted to have its free end brought in contact with the bolt and held by the same, substantially as described.

2. In a door securer, the combination of two or more sections united by suitable joints so that the sections can be compactly folded together, pins passed through the joints and extended laterally from the same, latches on the sections provided with spring actuated bolts, latch bars provided with side notches and pivoted by one of their ends, their free ends being adapted to be brought in contact with the spring actuated bolts and be held from movement by said bolts and the pin which passes through and extends from the joints, substantially as described.

**503,537. SHADE AND SHADE-HOLDER.** HENRY A. C. HELLYER and WILLIAM T. LAWLESS, Ottawa, Canada. Filed Apr. 23, 1893. Serial No. 472,208. (No model.)



*Claim.*—1. An incandescent lamp shade and holder, the combination of a shade A of flexible material with plain upper rim, the rim C having the same bevel as the shade and fitting the top thereof and having perforations $c^4$ and integrally connected by a shoulder $c'$ to a cylindric flexible neck $c$ provided with bead $c''$ and slits $c'''$, the clamp ring D having bead $d$ and fitting the bead $c''$ of the neck $c$, the bevel ring E fitting the interior of the rim C and top of the shade A and provided with perforations $e^4$ and the fasteners passing through said perforations and the shade, substantially as set forth.

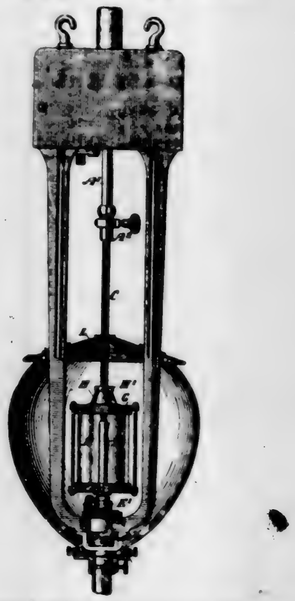
2. In an incandescent lamp shade and holder, the combination of a shade of flexible material with straight upper rim, a metallic rim C having the same bevel as the shade and provided with perforations $c^4$, flexible neck $c$ integrally connected with said rim by a sloping shoulder $c'$ and provided with a bead $c''$ and slits $c'''$, the clamp ring D having bead $d$ at the upper edge and fitting the neck bead $c''$ and the fasteners F passing through said perforations $c^4$, substantially as set forth.

3. In an incandescent lamp-shade-holder, the combination of a beveled rim C provided with perforations $c^4$, the sloping shoulder $c'$ forming the connection between rim and neck, the cylindrical neck $c$ integrally connected by said shoulder to said rim and provided with bead $c''$ corresponding with the bead on the neck of the lamp socket and made flexible by means of a series of slits $c'''$ extending into said shoulder, and a clamp ring D provided with bead $d$ fitting the bead $c''$ of the neck, substantially as set forth.

4. In an incandescent lamp-shade-holder, the combination of a beveled rim C having perforations $c^4$, a beaded and slit neck $c$ integrally connected with said rim, a beaded clamp ring D and a beveled ring E fitting within the rim C and having corresponding perforations, substantially as set forth.

5. In an incandescent lamp-shade-holder, the combination of a beveled rim C, a cylindrical neck fitting the lower end of the lamp socket, and a shoulder integrally connecting said neck and rim, substantially as set forth.

**503,538. ELECTRIC-ARC LAMP.** LOUIS E. HOWARD, Plainfield, N. J. Filed Dec. 20, 1892. Serial No. 455,754. (No model.)



*Claim.*—1. An arc lamp having its arc inclosed within a transparent or translucent envelope, an auxiliary transparent or translucent envelope and feed openings in the envelopes closed on all sides surrounding said arc-inclosing envelope, whereby the two sides of the arc-inclosing envelope are maintained at a comparatively uniform temperature and fracture is avoided.

2. In an electric arc-lamp, the combination with the positive and negative electrodes, of an inclosing cylindrical chamber or envelope of transparent material, surrounding the arc, an auxiliary inclosing transparent chamber closed on all sides, and a conical reflector within the upper end of said chamber encircling the positive carbon.

3. An arc lamp having its arc inclosed within a transparent or translucent envelope provided with a reflecting cap at the top, said envelope being inclosed in an auxiliary outer protective envelope also provided with a reflecting cap, whereby all the rays of light thrown upwardly from the arc are utilized externally of the lamp.

4. In an electric arc-lamp, the combination with the movable positive electrode, of an inclosing globe, and a hood closely fitting the open top of said globe, and provided with a metallic guide in open communication with the atmosphere through which said movable electrode is made to pass for the purpose described.

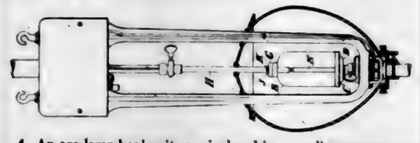
5. An arc lamp having its arc inclosed within a transparent or translucent envelope provided with a separable top, an outer transparent or translucent envelope for the purpose described, said outer envelope being closed on all sides, and being provided with detachable cover.

**503,539. ELECTRIC-ARC LAMP.** LOUIS E. HOWARD, Plainfield, N. J. Filed June 9, 1893. Serial No. 477,056. (No model.)

*Claim.*—1. An arc lamp having the electrodes around the arc inclosed in a small transparent or translucent envelope air-tight at all points below the arc and provided with a normally closed valve above the arc whereby the envelope is filled with a highly luminous gas and the life of the electrodes is prolonged.

2. An arc lamp having its electrodes around the arc inclosed in a small transparent or translucent envelope so arranged as to maintain the gases luminous in said envelope and air-tight against ingress of air but affording egress for the heated gases developed by the arc.

3. An arc lamp having its electrodes around the arc inclosed in a transparent or translucent envelope air-tight at all points below the arc, so arranged as to maintain the gases luminous in said envelope said arc being located near the top of the envelope, means for preventing the ingress of air, and an outwardly opening valve for permitting the discharge of gases.



4. An arc lamp having its arc inclosed in a small transparent or translucent envelope closed air-tight below the arc, so arranged as to maintain the gases luminous in said envelope a closely fitting opening to permit feed of the positive carbon, and an outwardly opening normally closed valve in the top of the envelope adjacent to the heated gases.

5. An arc lamp having its arc inclosed in a transparent or translucent envelope provided with a metallic plug having a closely fitting opening to permit feed of the positive carbon and means for permitting escape of the gases produced by the arc.

6. An arc lamp having its arc inclosed in a transparent or translucent envelope closed air-tight at all points below the arc, and provided with a plug at the top having a closely fitting feed opening for the positive carbon.

7. An arc lamp having its arc inclosed in a transparent or translucent envelope closed air-tight at all points below the arc, a plug in the top of the envelope provided with a closely fitting feed opening for the positive carbon, and a valved opening in said plug.

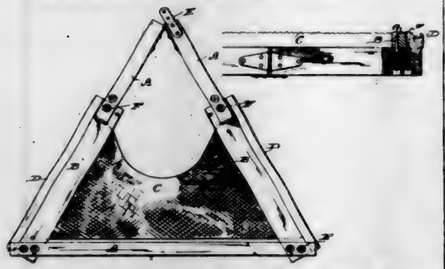
8. An arc lamp having its arc inclosed in a transparent or translucent envelope closed air-tight at all points below the arc, a closely fitting opening in the top of the envelope to permit feed of the positive carbon, and a heat non-conducting wall between the wall of the envelope and the feed opening.

9. An arc lamp having its arc inclosed in a transparent or translucent envelope closed air-tight at all points below the arc, a plug in the envelope above the arc provided with a closely fitting feed opening for the positive carbon, and an outwardly opening gravity valve normally closing a vent for the gases developed by the arc.

10. An arc lamp having its arc inclosed in a transparent or translucent envelope closed air-tight at all points below the arc, a metallic plug in the top of the envelope provided with a feed opening for the positive carbon, and an annular lining of yielding fire-proof material such as asbestus producing a closely fitting wall around the carbon.

11. An arc lamp having its arc inclosed in a glass envelope provided with a closely fitting feed opening for the positive carbon at the top, and a gas-tight metallic cup provided with a threaded rim engaging a thread on the bottom of the glass envelope, said cup having a metallic socket for the negative carbon.

**503,540. BED-BOTTOM.** CHARLES M. HUNT, Milwaukee, Wis. Filed Oct. 10, 1892. Serial No. 448,285. (No model.)



*Claim.*—1. In a bed bottom, arranged for folding and rolling, the combination of the woven-wire fabric C, secured to the end bars B, by means of the binding strips D, the side rails A, connected with the end bars by pivot bolts F, passing through openings in the ends of said bars and rails, and one of said side rails being formed in two sections having a hinged or other flexible connection, the joint arranged to open outwardly, and on the under side of one section a stay-plate E, provided with openings for securing nails or screws, overlapping and attaching to said other section, all as described.

2. In a bed bottom, capable of being folded and rolled up, in combination with the woven-wire fabric C, secured to the end bars B, by the binding strips, the said binding strips D, the said end bars pivotally connected with the ends of the side rails, the pivot pins F, and the side rails A, one formed in two hinged sections, the perforated stay plate E, arranged to connect said sections, and stay bolts G, passing through the ends of the side rails and end bars, when the bed bottom is extended, all constructed, arranged and operating substantially as described.



**503,541. APPARATUS FOR WRINGING MOPS.** ROBERT S. KIRKPATRICK, Des Moines, Iowa. Filed Jan. 14, 1892. Serial No. 418,018. (Model.)



*Claim.*—1. In an apparatus for wringing mops the combination of a rotatable roller yieldingly mounted upon a suitable supporting frame, a rotatable roller mounted on horizontally movable traveling bars supported on such frame, such frame being adapted to have a vessel containing a cleansing fluid or compound placed thereon underneath such rotatable rollers, lever mechanism for actuating the traveling bars and thereby separating and approximating such rollers, and pedally operated mechanism connected with the first named one of the rollers whereby it may be rotated; substantially as described.

2. In an apparatus for wringing mops the combination of a rotatable roller yieldingly mounted upon a suitable supporting frame, a rotatable roller mounted on horizontally movable traveling bars supported on such frame, lever mechanism consisting of a shaft having arms thereon and links connecting such arms with the traveling bars, respectively, for separating and approximating such rollers, the axis of such rollers being parallel and the rollers adapted to have a mop cloth placed between them and to be compressed on such mop cloth, and pedally operated mechanism for operating one of such rollers, such roller actuating by frictional contact therewith with the mop cloth and the other roller.

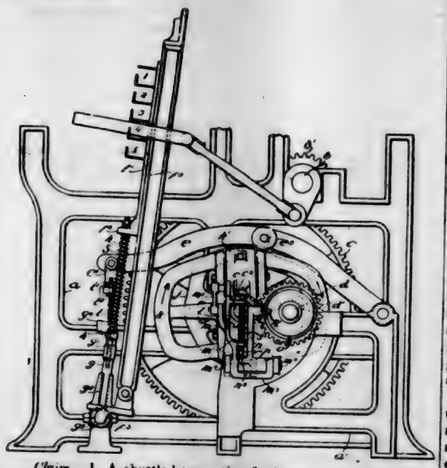
3. In an apparatus for wringing mops the combination of a plurality of rotatable rollers between which the mop cloth is adapted to be held, said rollers being mounted upon a suitable frame and located in juxtaposition to a containing receptacle, mechanism for separating and approximating said rollers, a lever mounted upon one of the rollers, engaging mechanism carried by said lever, a treadle operated by the foot, means of connections between said treadle and the lever by which one of the rollers is pedally rotated and spring actuated mechanism for returning the lever and engaging mechanism to a normal position.

4. In an apparatus for wringing a mop the combination of plurality of rotatable rollers between which the mop cloth is held, said rollers being rotated in juxtaposition to a fluid containing receptacle, mechanism for separating and approximating said rollers, a lever mounted loosely upon one of the rollers, pawl and ratchet mechanism carried, respectively, by the lever and roller, a treadle, connections between said treadle and one end of the lever, an arm pivoted to the frame, a spring acting upon said arm, and connections between the arm and the remaining end of the lever mounted upon the roller.

5. In an apparatus for wringing a mop the combination with a plurality of rollers, and lever mechanism for separating and approximating one of said rollers to the other thereof, of a frame comprising a plurality of springing arms arranged in pairs, one of said rollers being held rigidly upon one pair of said arms, and the other held by horizontally movable traveling bars connected, respectively, by links to the arms of a rotatable shaft, the point of connection of such arms and links being adapted to extend below the center of the shaft when the rollers are approximated by the turning of such shaft, such traveling bars, connecting links and rotatable shaft constituting a separating and approximating lever mechanism which is mounted upon the other of said pairs of arms, whereby said rollers can be compressed on the mop cloth placed between them and will automatically yield to inequalities of thickness of the mop cloth.

**503,542. SHUTTLE-BOX-OPERATING MECHANISM FOR LOOMS.** CHARLES H. KNOWLTON and BENJAMIN F. METER, Camden, N. J., assignors to the M. A. Furbush & Son Machine Company, same place. Filed Apr. 22, 1893. Serial No. 471,454. (No model.)

*Brief.*—Two cams, one fixed and the other movable, on the cam-shaft operate the shuttle-box lever. A screw-cam driven by gearing from the cam-shaft determines the engagement of the movable cam with the lever.



*Claim.*—1. A shuttle-box motion for looms, comprising a lever for calling up shuttle-boxes, a main shaft, a cam-shaft rotated by said main-shaft through the intervention of spur-wheels, a cam keyed to said cam-shaft and provided with high and low portions adapted to contact with a roller carried by said lever, a movable-cam having the hub member mounted on said shaft, spur-gearing, a counter-shaft driven by said cam-shaft through the intervention of said spur-gearing, a positively driven screw-cam mounted on said counter-shaft, two jointed rocker-arms and connections between the same, and means connecting one of said arms and the said movable-cam, whereby said movable-cam is operated from the said screw-cam, substantially as and for the purposes set forth.

2. A shuttle-box motion for looms, comprising a lever for calling up shuttle-boxes, rotating-cams, whereof one is in range of the lever and the other is adapted to be moved into and out of range thereof, main and cam shafts, a counter-shaft driven by the cam-shaft through the intervention of spur-gearing, a pivotal shipper fork for shifting the movable-cam, a positively driven screw-cam, rocker-arms whereof one is provided with a dart engaging the screw-cam, and a link interposed between the shipper fork and the other rocker-arm, substantially as and for the purposes set forth.

3. A shuttle-box motion for looms, comprising a lever for calling up shuttle-boxes, a main-shaft, a cam-shaft rotated by said main-shaft, through the intervention of spur-gearing, a cam keyed to the cam-shaft and disposed in range of the lever, a second movable cam on said cam-shaft, pins connected with the first cam, and extending through openings in the second-cam to permit of the rotary motion thereof and to afford a freedom of movement of the same in the direction of the length of said cam-shaft, a counter-shaft driven by said cam-shaft through the intervention of spur-gearing, a screw-cam mounted on the counter-shaft, a shipper fork for shifting the second cam, rocker-arms adapted to impart motion from the screw-cam to the second cam, a dart applied to one of said rocker-arms and engaging the screw-cam, and a link interposed between the other rocker-arm and the shipper fork, substantially as and for the purposes set forth.

4. A shuttle-box motion for looms, comprising a lever for calling up shuttle-boxes, rotating cams, whereof one is in range of the lever and the other is adapted to be moved into and out of range thereof, a positively driven screw-cam, and spring controlled interlocking rocker-arms whereof one engages the screw-cam and the other shifts the movable-cam, substantially as and for the purposes set forth.

5. A shuttle-box motion for looms, comprising a lever for calling up shuttle-boxes, rotating-cams whereof one is in range of the lever and the other is adapted to be moved into and out of range thereof, a positively driven screw-cam, pivotal rocker-arms interposed between the screw cam and movable-cam and provided respectively with a spring controlled key and pins or projections, substantially as and for the purposes set forth.

6. A shuttle-box motion for looms, comprising a lever for calling up shuttle-boxes, rotating-cams, whereof one is in range of the lever and the other is adapted to be moved into and out of range thereof, a positively driven screw-cam, pivotal rocker-arms interposed between the screw cam and movable-cam and provided respectively with eyes and pins or projections, a key working in said eyes and provided with a depending lip adapted to engage said pins or projections, and a spring for soliciting said lip into engagement with said pins, substantially as and for the purposes set forth.

7. A shuttle-box motion for looms, comprising a lever for calling up shuttle-boxes, rotating cams, whereof one is adapted to be moved into and out of range of said lever, a positively driven screw-cam, pivotal rocker-arms interposed between the screw cam and movable-cams and provided respectively with eyes and pins or projections, a key having a square-shank engaging a corresponding opening in one of said eyes and having a depending lip adapted to engage said pins or projections, and a spring engaging the other eye and also the key at the square portion thereof, substantially as and for the purposes set forth.

8. A shuttle-box motion for looms, comprising a lever for calling up shuttle-boxes, rotating cams, whereof one is in range of said lever and the other is adapted to be moved into and out of range thereof, a positively driven screw-cam, a shipper-fork, a shaft supported by lugs projecting from the main-frame, a rocker-arm provided with eyes and with a yoke journaled to said shaft and the free extremity of said rocker-arm connected with said shipper-fork by means of a link, a second rocker-arm journaled between the arms of said yoke to said shaft and provided with pins or projections, and a spring controlled key carried by the eyes of the first rocker-arm and adapted to engage the pins or projections of the second rocker-arm, substantially as and for the purposes set forth.

9. A shuttle-box motion for looms, comprising a lever for calling up shuttle-boxes, rotating-cams, whereof one is in range of the lever and the other is adapted to be moved into and out of range thereof, a shipper-fork for shifting the movable-cam, a positively driven screw-cam, pivotal rocker-arms, whereof one is provided with a dart engaging the screw-cam and whereof the other is connected with the shipper by a link, and a spring controlled key carried by one of said arms and adapted to engage pins or projections on the other arm, substantially as and for the purposes set forth.

10. A shuttle-box motion for looms, comprising a frame having a lug, a series of shuttle-boxes mounted in said frame which is afforded a range of up and down movement, a traveler working in ways and provided with a socket, a rod working in an opening in the lug of said frame and guided by said socket, a collar attached to said rod and disposed in range of the traveler, a spring interposed between the collar and frame, a chain, a pivotal link attached to the traveler by said chain, rotating-cams, whereof one is in range of said lever and the other is adapted to be moved into and out of range thereof, a positively driven screw-cam, and spring controlled interlocking rocker-arms interposed between the screw cam and movable-cam, substantially as and for the purposes set forth.

11. A shuttle-box motion for looms, comprising a frame having a lug, a series of shuttle boxes mounted in said frame which is afforded a range of up and down movement, a traveler working in ways and provided with a socket, a rod working in an opening in the lug attached to said frame and guided by the socket, a collar attached to said rod and disposed in range of the traveler, a spring interposed between the collar and frame, a chain, a pivotal link attached to the traveler by said chain, a buckle for said chain, rotating-cams, whereof one is in range of said lever and the other is adapted to be moved into and out of range thereof, a positively driven screw-cam, and spring controlled interlocking arms interposed between the screw cam and movable-cam, substantially as and for the purposes set forth.

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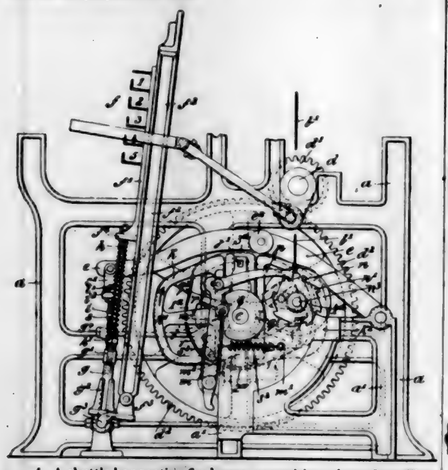
**503,543.** SHUTTLE-BOX-OPERATING MECHANISM FOR LOOMS. CHARLES H. KNOWLTON and BENJAMIN F. MEYER, Camden, N. J., assignors to the M. A. Furbush & Son Machine Company, same place. Filed Apr. 22, 1893. Serial No. 471,625. (No model.)

*Brief.*—Two cams, one fixed and the other movable, on the cam-shaft operate the shuttle-box lever. A screw-cam driven by means of a pawl and ratchet determines the engagement of the movable cam with the lever. The operation of the pawl is controlled by the jacquard.

*Claim.*—1. A shuttle-box motion for looms, comprising a lever for calling up shuttle boxes, a rotating cam adapted to slide into and out of range of said lever, mechanism operated from the main shaft of the loom and adapted to slide said cam, a reciprocating pawl for actuating said mechanism, and a Jacquard tail for lifting said pawl into and out of action, substantially as and for the purposes set forth.

2. A shuttle-box-motion for looms comprising a lever for calling up shuttle boxes, a rotating cam adapted to slide into and out of range of said lever, mechanism for sliding said cam, and a reciprocating pawl for actuating said mechanism, substantially as and for the purposes set forth.

3. In a shuttle-box-motion for looms, comprising a lever for calling up shuttle boxes, a positively driven shaft, a rotating shuttle-box cam adapted to slide endwise of said shaft into and out of range of said lever, a cam and rocker-arms operated by said cam for shifting said shuttle box cam, pawl-and-ratchet connections for controlling the movement of the latter cam, and a Jacquard tail for throwing said pawl-and-ratchet connections into and out of action, substantially as and for the purposes set forth.



4. A shuttle box motion for looms, comprising a lever for calling up shuttle boxes, rotating cams, whereof one is disposed in range of said lever and the other is adapted to slide on its axis into and out of range thereof, mechanism for sliding said cam into and out of range of the lever, a reciprocating pawl for actuating said shifting mechanism, and a Jacquard tail for lifting said pawl into and out of action, substantially as and for the purposes set forth.

5. A shuttle box-motion for looms, comprising a lever for calling up shuttle boxes, a positively driven shaft, a rotating shuttle-box cam adapted to slide endwise of said shaft into and out of range of said lever, a second cam and rocker-arms operated by said cam for shifting said shuttle-box cam, a pawl and a ratchet-wheel for driving the second cam, a Jacquard tail for controlling said pawl, and a spring controlled jointed lever and a cam for actuating said pawl, substantially as and for the purposes set forth.

6. A shuttle box-motion for looms, comprising a lever for calling up shuttle boxes, a positively driven shaft, a shuttle-box cam rotated by said shaft and adapted to slide endwise thereof into and out of range of said lever, a second cam and rocker-arm operated by said cam for shifting said shuttle-box cam, a pawl and a ratchet wheel for driving the second cam, a spring controlled lever and cam for actuating said pawl, and means for adjusting the pivot post of the pawl in respect to said lever, substantially as and for the purposes set forth.

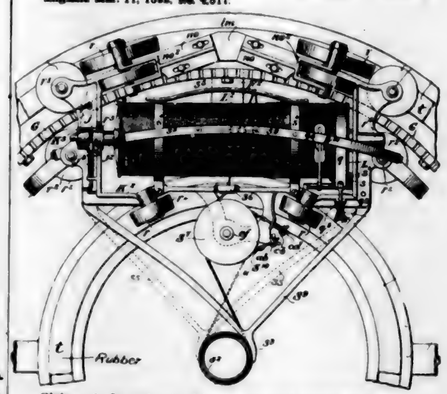
7. A shuttle box-motion for looms, comprising a lever for calling up shuttle-boxes, a rotating cam adapted to slide into and out of range of said lever, mechanism for sliding said cam, a reciprocating pawl and ratchet wheel for actuating said mechanism, and a spring controlled pin having its head in frictional contact with the ratchet-wheel, substantially as and for the purposes set forth.

8. A shuttle box-motion for looms, comprising a frame having a lug, a series of shuttle boxes mounted in said frame and afforded a range of upward and downward movement, a traveler working in ways and provided with a socket, a rod working in an opening in the lug attached to said frame and guided by said socket, a collar attached to said rod and disposed in range of the traveler, a spring interposed between the collar and frame, a chain, a pivotal lever attached to the traveler by said chain, rotating cams, whereof one is in range of said lever and the other is adapted to be moved into and out of range thereof, mechanism operated by the main shaft of the loom and adapted to slide the movable cam on its axis, and a Jacquard tail for throwing said mechanism into and out of action, substantially as and for the purposes set forth.

9. A shuttle box-motion for looms, comprising a frame having a lug, a series of shuttle boxes mounted in said frame and afforded a range of upward and downward movement, a traveler working in ways and provided with a socket, a rod working in an opening in the lug attached to said frame and guided by the socket, a collar attached to said rod and disposed in range of the traveler, a spring interposed between the collar and frame, a chain, a pivotal lever attached to the traveler by said chain, a buckle for adjusting said chain so as to regulate the position of the shuttle boxes, rotating cams, whereof one is in range of said lever and the other is adapted to be moved into and out of range thereof, mechanism operated by the main-shaft of the loom and adapted to actuate the movable-cam, and a Jacquard machine for throwing said mechanism into and out of action, substantially as and for the purposes set forth.

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**503,544.** CIRCULAR LOOM. ALBERT DE LASEL, Cleveland, Ohio. Filed Apr. 10, 1891. Serial No. 388,418. (No model.) Patented in England Mar. 11, 1892, No. 4,817.




*Claim.*—1. In a circular loom, a two rail shuttle track, and radially arranged supports for the two rails which, as shown and described, are arranged so that sufficient space is left between the supports to the inner rail to permit the removal, downwardly, between said supports and the two rails, of the bobbin of a shuttle; substantially as hereinbefore set forth.

2. In a circular loom, the combination with the metallic tracks, having grooves, or circular recesses, therein, of road-ways, composed of rubber compound, or other soft, or yielding, and elastic material and tightly fitted in said recesses, so as to project slightly above the top surfaces of the tracks; all substantially as and for the purposes set forth.

3. In a circular loom, the combination with the circular shuttle-track, of the toothed rim G, arranged about at the inner perimeter of the outer rail of said track, as specified, for the purposes hereinbefore described.

4. In a shuttle mechanism for circular looms, the combination with a shuttle frame, formed, or provided, with a bearing box at each end, of a sliding tail-piece $K^4$, arranged in one of said bearing-boxes, and having a central cavity, or socket, as at $j^4$; a friction head, or wheel, L, the journal of which is mounted to turn in the other one of said bearing boxes, and which is provided, as specified, with one member of a dogging device; a bobbin, the spindle of which, at one end, engages with the socket of said tail-piece, and which bobbin, at the other end, is provided with means for engaging the dogging device member of wheel L; and means for locking in place, endwise, the said sliding tail-piece; all substantially as and for the purposes set forth.

5. In combination with the bobbin and frame of a shuttle mechanism, the reversible spreader $S^9$; and a rotatory tension device, having a reversible and adjustable friction brake device applied thereto; as and for the purposes set forth.

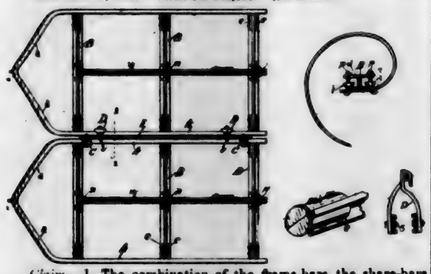
6. In a circular loom, the combination with the shuttle frame, provided, as usual, with the wheels $r^6$, of the spreading-guards $g^4$, arranged at either end of the said frame, as shown, and operating to spread apart the shed threads and guide them clear of the advance parts of the shuttle, as the latter enters the shed; all substantially as and for the purposes set forth.

7. In a circular loom, the combination, with the circular shuttle-track; a shuttle truck provided with wheels to travel thereon, and also with the anti-friction wheels, or idlers, as specified; the central rotatory shaft of the loom; and arms made fast, at their inner ends, to said central shaft, of a shuttle-driving device composed, essentially, of friction-wheels arranged to contact with the said idlers, and mounted so as to rotate about their own axes at the outer ends of said arms; all substantially as hereinbefore set forth.

8. In a circular loom, a shuttle-driving mechanism, comprising, the central shaft of the loom; suitable friction driving-wheels; arms mounted fast, at their inner ends, on the said central shaft; a rim-gear, arranged concentrically with but above the shuttle track of the

loom; and pinions running in engagement with said rim-gear, and that are mounted on the same axes with the said driving-wheels, and that rotate the latter; all substantially in the manner hereinbefore set forth.

**503,545. HARROW.** WILLIAM J. LAWRENCE, Kalamazoo, Mich. Filed Mar. 24, 1892. Serial No. 426,228. (No model.)

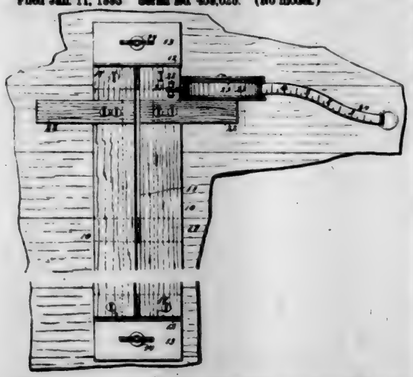


*Claim.*—1. The combination of the frame-bars, the share-bars and the two-part castings headed at their outer ends and recessed to receive the end of the share-bar to which they are bolted, the heads of said castings being sufficiently removed from the ends of the share-bars to form a recess for the frame bars, in holes of which they have direct bearings, by being passed into said holes from the outside.

2. In a harrow, the combination of frame-sections, hinging-arms pivoted thereto and hinged together, and a rod pivotally connecting the hinging arms so they will cant in like direction; substantially as set forth.

3. The combination of a share-bar or tooth bar, stirrups having bolt holes in their upper ends, bolts passed through said holes, a tooth or share having its shank passed through the stirrups and against the tooth-bar or share-bar, a binding clip on said bar, through which clip said bolts pass, and binding nuts; substantially as set forth.

**503,546. OIL-CLOTH CUTTER.** JAMES W. LEWIS, Ganister, Pa. Filed Jan. 11, 1893. Serial No. 458,026. (No model.)

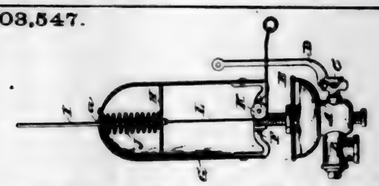


*Claim.*—1. An oil cloth cutter, comprising spaced parallel strips, base plates having vertical flanges to which the ends of the said strips are secured and provided with fastening screws for securing them to a support, abutments secured to the strips at right angles thereto, and a knife fitted to slide between the said strips, substantially as described.

2. In an oil cloth cutter, the combination with a guide, consisting of spaced parallel strips having grooves in their inner edges, of a curved knife having a concave cutting edge and provided with a plate at its lower end sliding in the grooves of the strips, substantially as described.

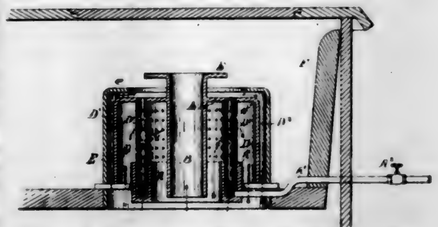
3. An apparatus of the kind described, comprising a guide consisting of parallel separated strips having longitudinal grooves in their inner edges, an abutment on the top of the strips and at an angle thereto, and a knife adapted to slide between the strips and having a guide plate at its lower end to slide in the grooves, substantially as described.

**503,547. STEAM-WHISTLE.** EDMUND H. LOUDEN, Cincinnati, Ohio, assignor to the Louhambotmer Company, same place. Filed Nov. 14, 1892. Serial No. 451,849. (No model.)



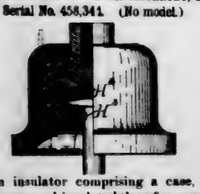
*Claim.*—In a steam-whistle, the combination of the bell G, a spider F with pulley K journaled thereon, the piston H held up by the spring J and provided with the guide rod I, and the operating chain or cord L running into said bell to said piston, for operating the latter, substantially as described.

**503,548. HYDROCARBON-BURNER.** EDWIN O. MUMBREY, Detroit, Mich. Filed Dec. 5, 1892. Serial No. 454,109. (No model.) Patented in Canada Mar. 20, 1893, No. 42,353.



*Claim.*—In a hydro-carbon burner in combination, a vaporizer plate provided with a channel in its upper surface for the reception of fuel, a supply pipe communicating with said channel, a cylindrical perforated air mixer or cylinder, the lower end of which is within the channel of the vaporizer plate, a shell around the air-mixer or cylinder, provided with a closed rim at its top, and having its bottom open, a perforated cylindrical air mixer or cylinder extending from the rim of the shell to the channel of the vaporizer plate, the two cylinders being at a short distance from each other and disconnected from each other at the top, an inclosing case around the shell and a short distance therefrom; said case being open at the bottom and having its upper end provided with an inwardly projecting cup or flange, and an air duct located within the plate, the upper portion of which is provided with two annular flanges, one of which rests upon the top of the inner air mixer or cylinder and closes the top thereof, and the other one is located above the top of the inclosing case, and acts as a spreader, substantially as set forth.

**503,549. INSULATOR.** LOUIS MCCARTHY, Boston, Mass. Filed Jan. 14, 1893. Serial No. 458,341. (No model.)



*Claim.*—1. An insulator comprising a case, metallic portions placed within said case, and insulated therefrom, and from each other by layers of insulating material, substantially as set forth.

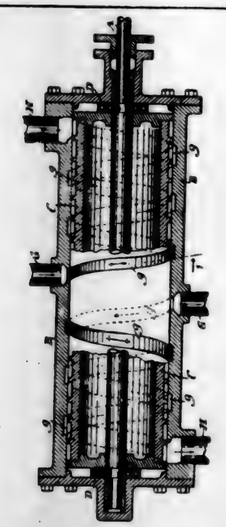
2. An insulator comprising a case, metallic portions placed within said case and separated from each other by an interposed layer of insulating material and having a ring over which the edges of the case are bent to secure the parts together, substantially as set forth.

**503,550. ROTARY ENGINE.** JAMES P. MCELROY, Albany, N. Y., assignor to the Consolidated Car-Heating Company, Wheeling, W. Va. Filed Apr. 17, 1893. Serial No. 470,603. (No model.)

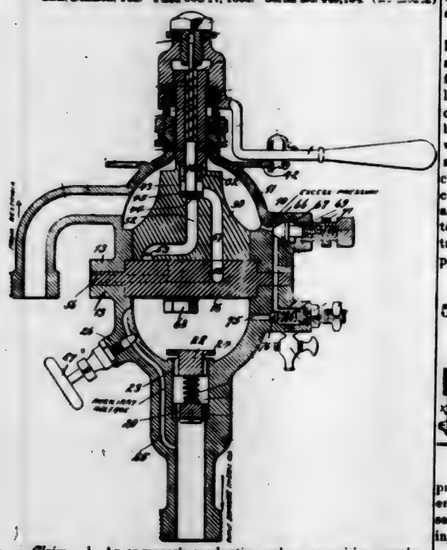
*Claim.*—In a rotary engine, the combination of a shaft, a cylinder secured thereto, a series of pits or pockets in the circumference of said cylinder, a shell enveloping said cylinder, a spiral groove cut in the inner surface of said shell, an inlet pipe communicating with said groove about midway between the ends of the shell, an exhaust pipe communicating with said groove near the end of said shell, substantially as described and for the purpose set forth.



**503,550.**



**503,551. ENGINEER'S GRADUATING-VALVE.** WALTER O. PELHAM, Denison, Tex. Filed Oct. 17, 1892. Serial No. 449,134. (No model.)



*Claim.*—1. An engineer's graduating valve, comprising a casing having a stationary seat therein dividing the casing into two chambers, an inlet pipe connecting with the casing above the seat and adapted to connect with the main reservoir, an outlet below the seat to connect with a train pipe, a service port extending from chamber to chamber through the seat, a discharge port in the upper portion of the seat and opening into the outer air, a lower port opening downward through the seat and controlled by a spring pressed valve, a revoluble valve held to turn flat upon the seat, a port extending downward through the valve and adapted to register with the service port of the seat, a chamber in the top of the valve, a port leading downward from the chamber and adapted to register with the service and discharge ports of the seat, a pop valve held in the chamber and adapted to close the above named port therein, and another port opening from the side of the chamber and adapted to register with the discharge port in the seat, substantially as described.

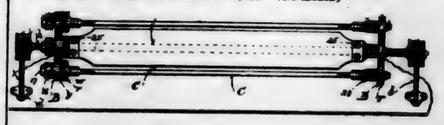
2. An engineer's graduating valve, comprising a casing having one end portion arranged to connect with a compressed air supply and the other end connecting with the train pipes, a stationary seat arranged within the casing and dividing it into two chambers, a revoluble valve held to turn upon the seat and provided with a suitable handle, means for automatically closing the train or brake pipe discharge by the reduction of air pressure in said pipe and ports and a supplemental valve arranged in the main valve and seat, so that by turning the valve the compressed air may be permitted to flow downward through the seat, upward and outward through the seat and valve to the air and may be released in successive regular reductions, substantially as described.

3. In an engineer's valve, the combination of the casing having an inlet for compressed air at one end and an outlet at the other, a stationary valve seat extending transversely across the casing and dividing it into two chambers, a port extending downward through the seat, a spring-pressed valve held to normally close the port, a revoluble main valve held to turn on the seat and having a port therein to register with the seat port, and connected valve-controlled ports opening from above and below the seat and adapted to connect with the governor of an air pump, substantially as described.

4. In an engineer's graduating valve, the combination of the main casing having an inlet at one end and an outlet at the other, and the stationary seat extending across the casing, so as to form two chambers the seat having a service port opening through it between the two chambers and an outlet port opening from its upper side and leading to the outer air, of a revoluble valve held to turn on the seat and provided with a chamber, as described, a port arranged in the valve to register with the service port of the seat and connecting with the chamber of the valve, a discharge port opening from the side of the chamber in the valve and adapted to register with the outlet port in the seat, a spring-pressed pop valve held in the chamber of the main valve and adapted to normally close the service port, a handle arranged to turn the main valve, and a screw mechanism for adjusting the tension of the pop valve spring by a movement of the handle, substantially as described.

5. In an engineer's valve, the combination with the main casing having an inlet for compressed air at one end and an outlet at the other, a stationary flat seat extending centrally across the casing, so as to form two chambers a service port leading through the seat and an outlet port opening from the top of the seat and leading to the outer air of a main valve held to turn on the valve seat, the valve having a chamber therein, a face port produced in the valve and adapted to register with the service port in the seat, a port leading from the face port to a chamber in the valve, a spring-pressed pop valve held to normally close the latter port, a discharge port opening from the side of the chamber and adapted to register with the outlet port of the valve seat, an upwardly extending hollow stem secured to the valve, a cap screwed to the valve casing and connected with the main valve stem so as to turn therewith, the cap serving also as an abutment for the spring of the pop valve, and a handle secured to the cap, substantially as described

**503,552. STREET-CAR SIGN.** LOUIS PYDEET, Boston, Mass. Filed Nov. 19, 1892. Serial No. 452,540. (No model.)



*Claim.*—1. A reversible route sign mechanism for street-cars comprising two supporting brackets or standards having forked bearing-ends, two connected castings provided with rectangular bearings for seating in said brackets and sign-plates mounted to rotate in said castings, substantially as described.

2. A reversible route sign mechanism for street-cars comprising two supporting brackets or standards having forked bearing-ends, two connected castings provided with rectangular bearings for seating in said brackets and sign-plates mounted to rotate in said castings and a tension mechanism for locking said plates, substantially as set forth.

3. A street-car sign, mechanism comprising two standards having sectoral-eyes in their upper ends and two connected castings having rectangular bearings fitted to seat in said eyes, said castings supporting independently rotative sign-plates, substantially as set forth.

4. In a street-car sign mechanism two connected plates or castings mounted to be intermittently rotated on the car in combination with one or more sign-plates journaled in said castings and mechanism substantially as specified for locking said plates against free rotation.

5. In a street-car sign mechanism the standards provided with the sectoral eyes in combination with the connected castings having the

angular bearings seated therein and provided with radiating arms; the reversible sign-plates journaled in corresponding arms and a spring tension mechanism for said plates, substantially as described.

6. The standards, *b*, having the steps, *g*, in combination with the connected castings, B, having the rectangular bearings, *k*, and arms, *r*; the plates, C, journaled to rotate and move longitudinally in said arms and tension mechanism therefor, substantially as described.

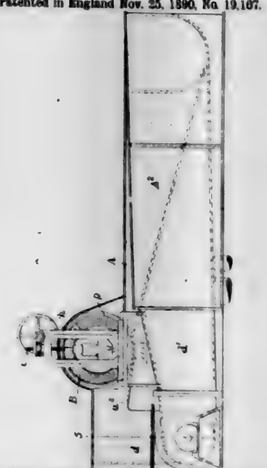
7. A sign mechanism for street-cars comprising a frame mounted to be rotated on the car; locking mechanism therefor and sign-plates independently reversible on said frame, substantially as specified.

8. The standards provided with sectoral eyes in combination with the connected castings having angular bearings, *k*, seating in said eyes; the sliding-bolts journaled in arms on said castings; sign plates supported by corresponding bolts; and a spring-actuated friction-mechanism tensioning said bolts, substantially as described.

9. The revoluble connected castings and their supports in combination with the reversible sign-plates journaled in said castings, one journal of said plates being spring-pulled longitudinally; a friction-plate or disk on said journal engaging a similar surface on the adjacent casting—substantially as described.

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**503,553. PAPER-PULP-BEATING ENGINE.** ALBERT E. REED, Gravesend, England. Filed Oct. 16, 1891. Serial No. 408,923. (No model.) Patented in England Nov. 25, 1890, No. 19,107.



*Claim.*—1. In a pulp beating engine, the combination of a beater-roll, co operating bed knives, a trough inclined away from the beater-roll, a return pipe or channel leading from the lowest level of the trough to the front of the roll and discharging at a level slightly above the bottom thereof, said pipe or channel being contracted until its inclination is directed downwardly in front of the roll, and a device working in said return channel for forcing a circulation of the pulp, substantially as described.

2. The combination with the inclined trough and beater-roll therein, of a return channel leading from the bottom of the trough to the front of the roll, a pump forming part of said return channel, a discharge pipe connected therewith and a controlling cock or valve, substantially as described.

3. The combination with the trough having an inclined bottom, the beater-roll and bed-knives located at that end of said trough where the level is highest, a pipe or channel leading from the other end of the trough and discharging tangentially against the bottom of the roll, and in the direction of its rotation, said pipe or channel being contracted until it discharges against the bottom of the roll, and a forcing device working in said return pipe or channel, substantially as described.

4. In a pulping engine in which the circulation of the paper-stock is effected independently of the beater-roll, the combination of a device for forcing circulation of the pulp with a channel leading the stock from the beater roll downwardly to another also downwardly inclined but gradually contracted channel, so as to convey the paper-stock without resistance due to obstructing or disturbing pockets into a pipe or conduit containing said forcing device, said conduit being a continuation or part of the said channel for discharging the pulp at the bottom of the beater roll, there to be acted upon by the grinders, substantially as described.

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**503,554. VEHICLE-WHEEL.** JESSE G. ROBERSON, Cincinnati, Ohio. Filed Feb. 10, 1890. Serial No. 339,936. (No model.)



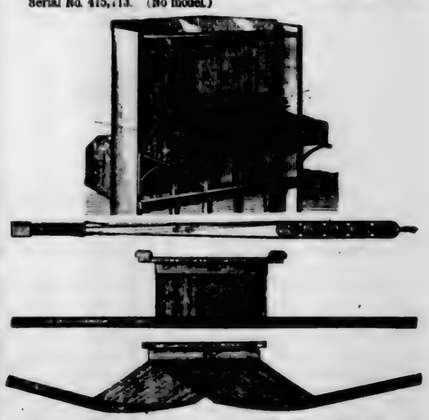
*Claim.*—1. In a vehicle wheel, the combination with a hub, of the spokes B, C, arranged alternately with respect to each other; the spokes B, being provided in their transverse sides at or adjacent to their inner ends with recesses, and the spokes C, having enlargements upon their transverse sides adapted to rest in the recesses of the spokes B, whereby said spokes B, C, will serve mutually to prevent the withdrawal or displacement of each other in a radial direction, substantially as specified.

2. In a vehicle wheel, the combination with a hub comprising two clamping plates and a suitable means for connecting said plates together, of the spokes B, C, placed between the plates of the hub and arranged alternately with respect to each other, the spokes B, being provided in their transverse sides, at or adjacent to their inner ends with recesses and the spokes C, having enlargements upon their transverse sides adapted to rest in the recesses of the spokes B, substantially as and for the purpose set forth.

3. In a vehicle wheel, the combination of a hub, the spokes B, having recesses in their transverse sides, so cut as to form the shoulders *f*, and the spokes C, arranged alternately with respect to the spokes B, and having enlargements upon their transverse sides; the said enlargements forming shoulders adapted to engage the shoulders *f*, of the spokes B, all substantially as and for the purpose set forth.

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**503,555. CABLING SYSTEM FOR MULTIPLE SWITCHBOARDS.** CHARLES E. SCRIBNER, Chicago, Ill., assignor to the Western Electric Company, same place. Filed Oct. 15, 1888. Renewed Dec. 21, 1891. Serial No. 415,713. (No model.)



*Claim.*—1. The combination with multiple switch boards of cables carrying the telephone and test wires extending directly from one board to the other, said cables being placed in layers, the cables in each layer corresponding in number to the number of divisions on each of the switch boards and each cable being connected with corresponding spring jack switches on each board, said cables being composed of sections corresponding in number to the number of boards, the connecting wires with the different strips of spring jack switches being independent, whereby any strip of spring jack switches may be withdrawn to the rear of the mass of cables substantially as described.

2. The combination with multiple switch boards of cables carrying the wires connected with the switches thereon, said cables extending directly from one board to another and each cable being connected with corresponding removable spring jack switches on each of the boards, each cable consisting of as many pieces or parts as there are switch boards and the wires forming the conductors of each part being longer than the direct distance horizontally between the switches, with which



corresponding parts of the same cable are connected, whereby any strip or set of spring jack switches may be withdrawn to the rear of the mass of cables substantially as and for the purpose specified.

3. The combination with the layers of cables at the rear of multiple switch boards, of slings *f* whereby said layers are kept distinct and the strain taken off from the connecting wires substantially as described.

4. The combination with a piece *c* of cable of a corresponding piece *c'*, a strip of spring jack switches *d* and the connecting wires *e e'*, said connecting wires being independent of one another and adapted to be flexed in different directions to permit the pieces or parts *c c'* to be separated substantially as and for the purpose specified.

5. The combination with two or more multiple switch boards of layers of cables supported at the rear thereof, said layers resting directly upon one another, the number of cables in each layer corresponding to the number of divisions in each switch board and the number of layers corresponding to the number of rows or strips of switches in each division and the slings *f* around the different layers for keeping the layers distinct and preventing injury to the connecting wires substantially as described.

6. Groups of cables at the rear of multiple switch-boards, the wires of the cables being connected to spring-jack switches in the usual manner, the cables being slack between the sub-divisions of the switch-board whereby any strip of spring jack switches may be withdrawn to the rear of the mass of cables, as described.

7. The combination with telephone switch boards made up of duplicate divisions, of switches upon the different boards, connecting conductors between the corresponding terminals of corresponding switches, the conductors being arranged in substantially the same plane with the switches with which they are connected and being secured together by bands or slings; substantially as and for the purpose specified.

8. The combination with two or more multiple switch boards with which the same telephone lines are connected, of removable strips of spring jack switches and connecting conductors for connecting corresponding contacts of corresponding switches of different strips of the different boards together, said conductors being placed in substantially the same plane and having their ends bent at right angles and united to the switch terminals and having the parts between the bent portions bound together to form a layer, said layer containing as many sections as there are switch boards, and being of substantially the same thickness as the corresponding spring jack switches placed in the same plane therewith and with which the wires of the layer of cables are connected.

9. The combination in a multiple switch board system of two or more switch boards and switches upon the different switch boards, of wires connecting corresponding switches upon the different boards, said wires being bound together to form a mass composed of sections with their ends turned up to connect with the switches.

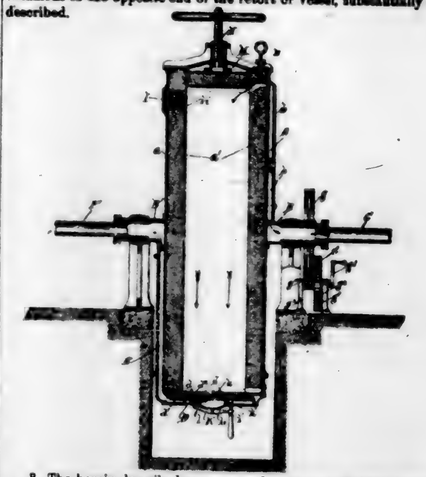
10. The combination in a multiple switch board system, of two or more switch boards and switches upon the different boards, wires connecting corresponding switches upon the different boards, the wires belonging to a line of strips of spring jack switches being arranged in cables in substantially the same plane as said line of strips and combined together to form one integral, whereby the cables at the rear of the board are formed into as many integral parts or layers as there are lines of strips of spring jack switches, substantially as described

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**503,556. APPARATUS FOR TREATING PULVERULENT MATERIALS WITH GASES.** ERNEST SOLVAY, Brussels, Belgium, assignor to the Solvay Process Company, Syracuse, N. Y. Filed Apr. 14, 1890. Serial No. 347,895. (No model.) Patented in Belgium Apr. 19, 1889, No. 85,896; in France Apr. 30, 1889, No. 197,853, and in England May 28, 1889, No. 8,972.

*Claim.*—1. The herein described apparatus, the same comprising an upright retort or vessel for containing the material to be treated, provided with an inlet opening in one end for permitting the entrance of said material and provided with an outlet opening in its opposite end for permitting the removal of said material, removable caps for opening and closing said openings, means, substantially as described, for reversing the positions of the ends of the retort or vessel, a gas inlet passage extending from substantially the central portion of the retort or vessel to the end provided with the outlet opening, and a gas outlet passage extending from substantially the central portion of the retort or vessel to the opposite end thereof provided with the inlet opening, substantially as and for the purpose specified.

2. The herein described apparatus, the same comprising an upright retort or vessel for containing the material to be treated provided with an inlet in its normal lower end for permitting the entrance of the material to be treated and with an outlet in its opposite end for permitting the removal of said material, trunnions provided upon the central portion of said retort or vessel, means, substantially as described, for reversing the position of the ends of the retort or vessel, a gas inlet passage extending from substantially the same plane as the trunnions to the normal upper end of the retort or vessel, and a gas outlet passage extending also from substantially the same plane as the trunnions to the opposite end of the retort or vessel, substantially as described.



3. The herein described apparatus, the same comprising an upright retort or vessel for containing the material to be treated, provided with an inlet in its normal lower end and with an outlet in its normal upper end for permitting the entrance and removal of said material, hollow trunnions provided upon the central portion of said retort or vessel, means, substantially as described, for reversing the position of the ends of the retort or vessel, a gas inlet pipe connected to one trunnion, a gas outlet pipe connected to the opposite trunnion, a gas inlet passage extending from the trunnion connected to the inlet pipe to the normal upper end of the retort or vessel, and a gas outlet pipe extending from the opposite trunnion to the opposite end of the retort or vessel, substantially as and for the purpose specified.

4. The herein described apparatus, the same consisting of a retort or vessel for the material to be treated, an inlet and outlet for passing a current of gas through said material, an inlet and outlet for the material, means, substantially as described, for reversing the position of the ends of the retort or vessel, and a plate movable within said retort or vessel for supporting the material during said reversal, substantially as specified.

5. The herein described apparatus, the same consisting of a retort or vessel for the material to be treated, provided at one end with an inlet, and at the other with an outlet for the material to be treated hollow trunnions for pivoting said retort or vessel, passages leading from said hollow trunnions to the opposite ends of the retort or vessel for forming an inlet and an outlet to admit and withdraw the gas for treating said material, means, substantially as described, for reversing the ends of said retort or vessel, and a plate movable within the receptacle for supporting the material during said reversal, substantially as described.

6. The herein described apparatus, the same consisting of a retort or vessel for the material to be treated, provided with an opening for said material an inlet and an outlet passage for conducting a current of gas through said retort or vessel, a cover for said opening, provided with a passage extending therethrough for permitting the passage of the gas, substantially as specified.

7. The herein described apparatus, the same consisting of a retort or vessel for the material to be treated, provided with an opening for said material an inlet and an outlet passage for conducting a current of gas through said retort or vessel, a movable cover for said opening in the retort or vessel, means, substantially as described, for reversing the opposite ends of the retort or vessel, and a hinged support for holding said cover in its normal position during the reversal of the retort or vessel, substantially as set forth.

8. The herein described apparatus, the same consisting of a retort or vessel for the material to be treated, provided with an inlet in one end and with an outlet in the side wall of its opposite end for permitting the entrance and removal of said material gas inlet and outlet pipes having their adjacent extremities disposed in a plane substantially coincident with the central portion of the retort or vessel, passages extending from said extremities of the pipes to the opposite ends of the retort or vessel for conducting a current of gas therethrough from end to end, means, substantially as described, for re-

versing the ends of said retort or vessel, a plate movable within said receptacle at the extremity opposite to said inlet for supporting the material during said reversal, and substantially as described.

## 508,557. APPARATUS FOR THE DISTILLATION OF HYDROCHLORIC ACID.

ERNEST SOLVAY, Brussels, Belgium, assignor to the Solvay Process Company, Syracuse, N. Y. Filed Nov. 10, 1890. Serial No. 370,956. (No model.) Patented in Belgium Sept. 17, 1890, No. 87,749; in England Oct. 2, 1890, No. 16,881, and in France Dec. 17, 1890, No. 208,062.



*Claim.*—1. The combination of a distilling apparatus for receiving the acid to be distilled and the dehydrating material for attacking the acid, an evaporating receptacle for said dehydrating material composed of greater horizontal area than the distilling apparatus, a heat generator for heating the evaporating receptacle concentrating the dehydrating material, and connecting passages between the distilling and evaporating receptacles for conducting the dehydrating material from one to the other, a pipe for conducting the acid to the distilling apparatus, and a pipe for conducting the distilled gas from said distilling apparatus, substantially as set forth.

2. The combination of a distilling apparatus for receiving the acid to be distilled and the dehydrating material for attacking the acid, an evaporating receptacle for the dehydrating material, a heat generator for heating said evaporating receptacle and concentrating said dehydrating material, separate connecting passages between the distilling apparatus and the evaporating receptacle for conducting the dehydrating material from the evaporating receptacle to the distilling apparatus and vice versa, a pipe for conducting the acid to the distilling apparatus, and a pipe for conducting the distilled gas from said distilling apparatus and means, substantially as described, for effecting the flow of said dehydrating material, substantially as and for the purpose specified.

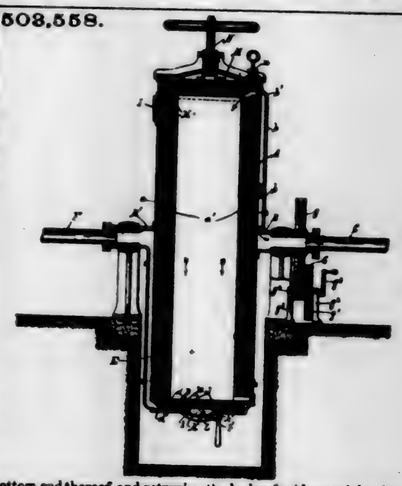
3. The combination of a distilling apparatus for receiving the acid to be distilled and the dehydrating material for attacking the acid, an evaporating receptacle for the dehydrating material, a heat generator for heating said evaporating receptacle and concentrating said dehydrating material, separate connecting passages between the distilling apparatus and the evaporating receptacle for conducting the dehydrating material from the evaporating receptacle to the distilling receptacle and vice versa, a pipe for conducting the acid to the distilling apparatus, and a distilled-gas outlet-pipe opening from the distilling apparatus at a point in proximity to the point from which the outlet pipe for the dehydrating material opens from said distilling apparatus, substantially as described.

4. In an apparatus for distilling hydrochloric acid, the combination of a distilling apparatus for receiving the acid to be distilled, an evaporating receptacle for concentrating the dehydrating material, separate connecting passages between the distilling apparatus and the evaporating receptacle for conducting the dehydrating material from the evaporating receptacle to the distilling apparatus and vice versa, an acid inlet pipe for the distilling apparatus having its opening in proximity to the discharge opening of the inlet passage for conducting the dehydrating material within said distilling apparatus, an outlet for the distilled acid gas, and means for effecting the flow of said dehydrating material through said evaporating receptacle and the distilling apparatus, substantially as described.

## 508,558. TREATING PULVERULENT MATERIAL WITH GASES.

ERNEST SOLVAY, Brussels, Belgium, assignor to the Solvay Process Company, Syracuse, N. Y. Filed Nov. 10, 1890. Serial No. 370,955. (No specimens.) Patented in Belgium Apr. 19, 1889, No. 85,896; in France Apr. 30, 1889, No. 197,853; in England May 28, 1889, No. 8,573, and in Germany June 17, 1890, No. 50,342.

*Claim.*—The herein described process of methodically and continuously treating powdered materials with gases, the same consisting in passing the gas from top to bottom through a body of said material contained within a closed vessel, reversing the ends of the body of said material so that its normal top and bottom ends temporarily become respectively its bottom and top ends, adding fresh material to the normal bottom end of the body of said material when temporarily the top end thereof, removing the material sufficiently treated from the normal top end of the body of said material when temporarily the



bottom end thereof, and returning the body of said material to its first normal position, substantially as and for the purpose described.

## 508,559. STEAM-BOILER-TUBE CLEANER.

RICHARD THOMPSON, New York, N. Y. Filed Apr. 17, 1891. Serial No. 389,286. (No model.)



*Claim.*—1. The reversible tube-cleaner described consisting of the body portion formed with a nozzle $B'$ to match the end of the tube, a nozzle $B^3$ at right angles thereto, and a steam ring between said nozzles having a threaded nozzle $B^4$ at a point distant from the nozzle $B'$, said steam ring being provided with perforations extending in an inclined direction in proximity to the walls of the nozzle $B^3$, means for admitting steam to said ring, a tube secured in the nozzle $B^4$, a handle on said tube, said handle and tube being set at an angle of about forty five degrees to the steam ring whereby the device may be readily reversed to direct the steam either toward or from the boiler by a partial rotation of the said handle, substantially as specified.

2. The reversible tube-cleaner described, consisting of the body portion formed with a nozzle $B'$ to match the end of the tube, a nozzle $B^3$ at right angles thereto, and a steam ring between said nozzles having a threaded nozzle $B^4$ at a point distant from the nozzle $B'$, said steam ring being provided with inclined perforations in proximity to the walls of the nozzle $B^3$, a tube secured in the nozzle $B^4$, a handle on said tube, a side nozzle on the tube and a flexible hose connected with the side nozzle and adapted for connection with a source of steam supply, all substantially as shown and described.

## 508,560. PNEUMATIC TIRE.

GEORGE F. CALLAGHAN, Baltimore, Md., assignor of one-half to Edwin D. Durborow. Filed Mar. 25, 1893. Serial No. 467,611. (No model.)



*Claim.*—1. In a bicycle tire, the combination of the metal rim having a circumferential groove at each side of which is an inturned hook, $d'$, a tire made of segmental air-chambers, each having a longitudinal base bar or rib, $d'$, which projects into the circumferential

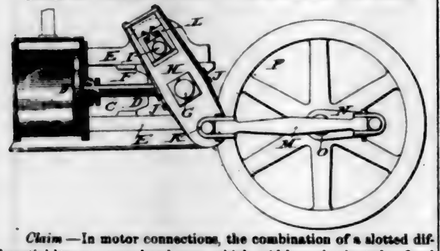


grooves; and a cover inclosing all the air-chambers and having along each edge a beaded hook, $g$, which engages with the said inturned hooks on the rim.

2. In a bicycle tire, the combination of the metal rim having a circumferential groove at each side of which is an inturned hook, $d'$, a tire made of segmental air-chambers each having a positive acting valve which projects into the circumferential groove; and a cover inclosing all the air-chambers and having along each edge a beaded hook, $g$ which engages with the said inturned hooks on the rim.

## 508,561. DIFFERENTIAL LEVER.

ROBERT CAMPBELL, Allegheny, Pa. Filed Dec. 12, 1892. Serial No. 454,932. (No model.)



*Claim.*—In motor connections, the combination of a slotted differential lever, a cross-head upon which said lever is pivoted, a fixed fulcrum, and a fulcrum-bearing on said fixed fulcrum, substantially as set forth.

## 508,562. ELECTRIC TROLLEY-WHEEL.

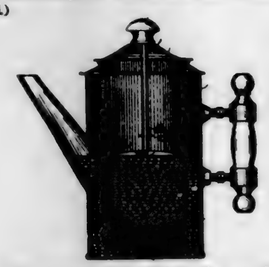
JOHN W. CLARK, Menands, assignor of one-half to Samuel J. Haight, Albany, N. Y. Filed Feb. 23, 1893. Serial No. 463,483. (No model.)



*Claim.*—A trolley-wheel consisting of a hub B, a series of arms, D, radiating from said hub and each having an ice-breaking shoulder, H, formed on its inner face, two annular rims, E, formed on the outer extremities of said arms, and a groove, G, formed at the base of said arms; said groove being fitted to receive and form a close electrical contact with a trolley-wire and the spaces between said arms being carried into and longitudinally across the periphery of said hub for the purpose of forming ice-breakers at the bottom of the groove G, as herein specified.

## 508,563. COFFEE-POT.

EDWARD J. COLBY, Chicago, Ill., assignor to R. Y. Loomis, same place. Filed June 25, 1892. Serial No. 437,980. (No model.)

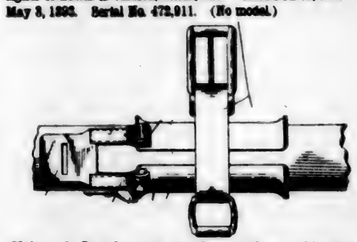


*Claim.*—1. The combination with the coffee pot, of a receptacle adapted to be suspended therein, a rod adapted to pass through an opening in the cover of said pot, and a plate attached to the lower end of said rod and perpendicular thereto to which said receptacle is hinged; whereby said receptacle may be turned to permit the filling or emptying of said receptacle, substantially as described.

2. In a coffee pot, the combination with the receptacle $i$, of the bottom $l$, the bar $d$ provided with the catch $e$ and the knob $f$, the cover $m$ provided with the hooks $k$ $k$, from which the receptacle is suspended, the cover $b$ having the slot $c$, substantially as and for the purpose specified.

## 508,564. SHAFT-TUG.

THOMAS W. DAVIES, St. Louis, Mo., assignor to Edwin L. Carlton, Selma, Ohio. Filed Dec. 23, 1891. Renewed May 3, 1893. Serial No. 472,911. (No model.)



*Claim.*—1. In a harness attachment, the combination with the harness tug, of a metallic sleeve formed of a single blank having its opposite sides curved inward, a connection between the sleeve and the tug, the rear end of the sleeve being constructed with loop openings near its adjacent edges, a forked loop secured to the said openings, the shaft, and a stop thereon, substantially as shown and described.

2. In a harness attachment, the tug, the sleeve, stud C, outwardly bulged loop openings D, a loop connected thereto, the shaft, and a stop thereon, the parts being combined, substantially as shown and described.

## 508,565. PNEUMATIC WHEEL-TIRE.

OTTO F. PERSSON, Saugus, assignor of one-half to Hjalmar C. Sohstin, Boston, Mass. Filed Apr. 12, 1893. Serial No. 470,057. (No model.)



*Claim.*—1. A wheel tire consisting of an endless band B open at $b$ and having the inwardly projecting closing lips B', B', combined with T shaped or equivalent longitudinal grooves $a$, $a$, adapted to fit and receive correspondingly shaped annular edges on the rim of the wheel, substantially as and for the purpose set forth.

2. A wheel tire consisting of an endless band B open at $b$ and having inwardly projecting closed lips B', B', adapted to form a tubular section with said band B combined with a pair of annular strips C, C, secured to the interior of the band B and having their free ends overlapping each other, substantially as and for the purpose set forth.

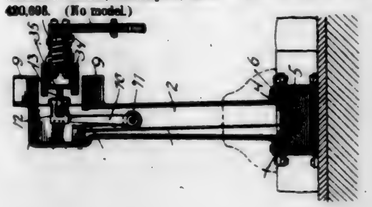
3. A wheel tire consisting of an endless band B having inwardly folding lips B', B', as described, combined with T shaped or equivalent longitudinal grooves $a$, $a$, adapted to fit and receive correspondingly shaped annular edges on the rim of the wheel and a pair of annular strips C, C, secured within the band B, and having their free ends over-lapping each other, substantially as and for the purpose set forth.

4. The combination with an expansive or inflatable wheel tire, of an internal ring armor, consisting of two superposed layers each composed of narrow strips with abutting edges and the strips of one layer breaking joints with the strips of the other layer, and an elastic sheet or band which holds the two layers in proper relation to each other, substantially as and for the purposes described.

5. A wheel tire consisting of an endless open band B, having inwardly projecting closing lips B', B', and having external longitudinal grooves adapted to receive the correspondingly shaped edges of the wheel rim combined with a pair of annular strips C, C, secured to the interior of the band C and having their free ends over-lapping each other, as described and an intermediate ring armor consisting of a series of over-lapping layers and a partial or continuous elastic envelope surrounding said armor, substantially as and for the purpose set forth.

## 508,566. ELECTRICAL SUPPLY SYSTEM FOR RAILWAYS.

JOSEPH W. BATES, Minneapolis, Minn. Filed Feb. 4, 1892. Serial No. 420,696. (No model.)



*Claim.*—1. The combination with a track, and an electric motor car to run thereon, of a series of short posts arranged along the side of said track, and projecting above the same each of said posts having a hollow head provided with an opening in its inner side, a yielding contact device arranged in said post and projecting through said opening, a stationary contact arranged in the post to be engaged by said yielding contact, a feed wire connected with the stationary contacts of said posts, and a contact shoe carried on the side of the car and adapted to project into the openings in the posts to successively close the yielding contacts upon the stationary contacts, substantially as described.

2. The combination with the track and the car to run thereon of the electric motors arranged on said car to drive the same, a long shoe arranged upon the side of the car and having a contact rail in electrical connection with said motor, and a series of short posts arranged at the side of the track and each provided with a pivotal spring arm normally projecting through the side of the post, a stationary contact arranged in each post to be engaged by the pivotal arm thereof, when said arm is forced back by said shoe, and a feed wire extending between the several posts and electrically connected with the stationary contact or contacts of each post, substantially as described.

3. The combination with the street car track and the car, of the electrical apparatus on said car, a long contact shoe carried on the side of the car, said shoe adapted to be placed upon either side of said car, buffer springs arranged between the shoe and the car, the insulating covering of said shoe, the insulated contact rail arranged therein, an electrical connection between said shoe and said apparatus, and a series of posts arranged along the track and having exposed circuit closing devices projecting through the sides of said posts to be engaged by said shoe, substantially as described.

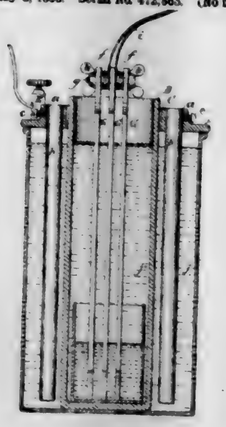
4. The combination with the double track, of a series of posts arranged between said tracks, said posts each provided with a head having openings through its two sides, and a spring pivoted arm having its ends projecting through said openings and toward each track, stationary contacts arranged in said posts, said contacts arranged on said arm to engage the same when said arm is operated, substantially as described.

5. The combination with the feed wire, of a series of posts rising above the surface of the road, each post provided with a head having flaring edges 9, and an opening in its side, a spring contact device in said post, the antifriction roller or wheel thereof, the stationary contact, the track, the car, and a shoe carried on said car to engage said roller, said feed wire being connected with said stationary contact, substantially as described.

6. The combination, with the track, and the car to run thereon, of a contact shoe carried on said car in connection with the electrical apparatus thereon, a series of short posts arranged along the track and each having a hollow open sided head, insulating blocks in each head, a short vertical shaft journaled therein, a contact arm on said shaft projecting from the opening in the head, a spring coiled about said shaft and tending to revolve the same, a stop for said arm, an insulated stationary contact arranged in said head and connected with the feed wire, and a contact spring provided on said arm to engage the stationary contact when the arm is forced back by the pressure of said shoe, substantially as described.

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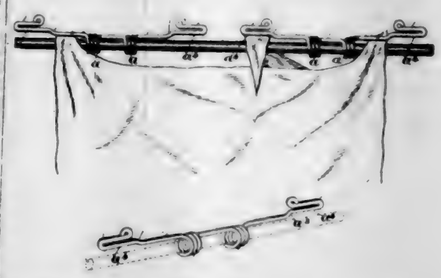
**503,567.** GALVANIC BATTERY. CHARLES H. BROWN, Portland, Oreg. Filed May 3, 1893. Serial No. 472,863. (No model.)



*Claim.*—A galvanic battery, comprising a containing vessel, negative plates, and a positive plate formed of an alloy of aluminum and zinc, substantially as described.

# REISSUES.

**11,858.** CLOTHES-PIN. GABRIEL W. MCCOOLE, St. Louis, Mo. Filed June 27, 1893. Serial No. 478,995. Original No. 488,364, dated Nov. 29, 1892.



*Claim.*—1. A clothes pin comprising two connected coils separated a suitable distance, and adapted to simultaneously encircle a line, and extensions projecting from each coil in opposite directions for co-operating with the line, substantially as set forth.

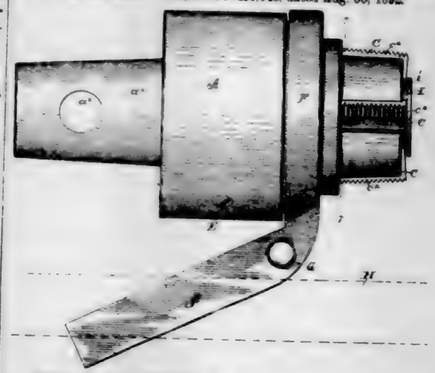
2. A clothes pin or holder comprising a coil of wire having an extension, which has two sections which lie in different planes, each to co-operate with the clothes line to hold clothes of different thicknesses, substantially as set forth.

3. A clothes pin or holder consisting of two coils of wire united by a straight piece and having each an extension comprising two straight sections which lie in different planes and adapted both to co-operate with a clothes line, substantially as set forth.

4. A clothes pin or holder consisting of two coils of wire united by an intermediate piece and having each an extension comprising two straight sections which lie in different planes and adapted both to co-operate with the clothes line, the terminal of each section being bent back upon itself, substantially as and for the purpose set forth.

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**11,859.** COLLAPSIBLE TAP. WILLIAM W. DOOLITTLE, Chicago, Ill., assignor to the Crane Company, same place. Filed Jan. 3, 1893. Serial No. 457,163. Original No. 451,648, dated Aug. 30, 1892.



*Claim.*—1. In a collapsible tap, the main head A, in combination with the cutter-head B, mounted within the former and having a limited free movement therein, the cutters C, mounted in the head B in seats in which they are free to oscillate, a connecting device between said cutters and the main head, and a friction device applied to the cutter-head, whereby a limited differential movement between the main head and the latter is obtained, substantially as described.

2. In a collapsible tap, the main head A, provided with a cylindrical cup *a*, in combination with the cutter-head B, provided with circular longitudinal grooves $b^4$, the cylindrical cutter C, provided with grooves $c'$, the splines D, set in the cup of the main head and engaging with the said grooves in the cutters, and means for connecting the main head with the cutter-head, whereby a limited differential movement is permitted, substantially as described.

3. In a collapsible tap, the cutter-head B, consisting of the cylindrical section *b*, the enlarged central collar-section $b'$, and the front tapering section $b^3$, and having longitudinal grooves $b^4$ running its entire length and passing underneath the central collar, in combination with the cylindrical cutters C, seated within the said grooves and adjustable lengthwise therein, and the flanged disk I, retaining the cutters in their seats, substantially as described.

4. In a collapsible tap, the main cup-shaped head A, in combination with the cutter-head B, provided with longitudinal grooves, the cylindrical cutters C, mounted in said grooves and provided with the short longitudinal grooves $c'$, the splines D on the inside of the cup, engaging with said grooves in the cutters, the stop stud E, arranged to play in the cross-recess $b^5$ of the cutter-head, and friction-band F, applied to the cutter-head and fixed in position by any suitable device, substantially as described.

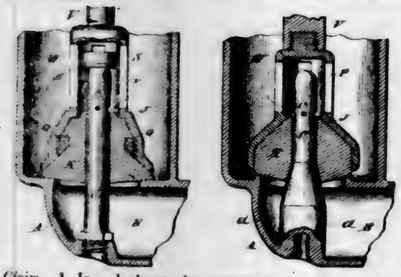
5. In a collapsible tap, the cup shaped head A, in combination with the cutter head B, provided with longitudinal grooves $b'$ and short cross-recess $b^5$ and having an enlarged central collar $b^6$, the cylindrical cutters C, seated in the head B and provided with grooves $c'$ at their rear ends, the splines D on the internal surface of the cup, the stop-stud E, set into the side of the cup, and friction band F, applied to the collar $b'$ and having its ends *f* turned outward horizontally, and the fixed bar H, arranged between the projecting ends of the band, substantially as described.

6. In a collapsible tap, a cylindrical cutter C, provided with a section $c^2$ of cutting-teeth slightly within the circumference of the cylindrical body, and a groove $c^3$, extending the length of the said section and at the front thereof, in combination with a cutter-holder in which said cylindrical cutters are free to oscillate and mechanism whereby in the backward movement of the tap the cutters are oscillated backward out of working position, substantially as described.

7. In a collapsible tap, a cylindrical cutter C, provided with a section $c^2$ of cutting-teeth slightly within the circumference of the cylindrical body, and a groove $c^3$ extending the length of said section at the front thereof, in combination with a cutter-holder in which said cylindrical cutters are free to oscillate, and mechanism whereby the cutters may be turned backward and thus throw the cutting-teeth out of working position, substantially as described.

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**11,860.** HYDRANT-VALVE. SAMUEL W. LEWIS, Brooklyn, N. Y. Filed July 28, 1893. Serial No. 481,464. Original No. 458,079, dated Dec. 13, 1892.



*Claim.*—1. In a hydrant, the combination, with the vertical waste-tube and a suitable valve-seat, of a plunger surrounding said waste-tube and provided with an interior annular sloping surface forming an inclined plane and a valve of corresponding form, which valve when compressed by closure upon its seat or pressure of water upward within said plunger will be forced along said inclined plane toward and around said waste-tube, substantially as described.

2. The combination, with the vertical waste-tube and a suitable valve-seat, of the plunger J, surrounding the said waste-tube and provided with the interior sloping surface, and valve N, wholly filling the space within said sloping surface and bearing upon it in such manner that when compressed upward it will be forced within said plunger and against the waste-tube C, substantially as and for the purpose set forth.

3. In a hydrant, the combination, with the valve-seat, the waste-tube having an inclined enlargement, and a valve-plunger surrounding said waste-tube, of a valve carried by said plunger and surrounding said waste-tube and arranged to engage the inclined enlargement when closed, whereby said valve is caused to pack the waste-tube, substantially as described.

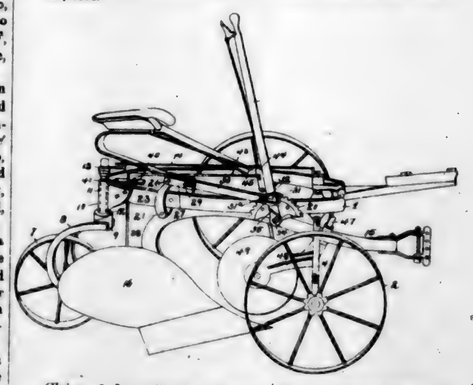
4. In combination with the valve-seat, the waste-tube C, valve N, and plunger J, the adjustable and removable holder Q, divided in sections and connecting the valve and plunger, substantially as described.

5. The combination, with the waste-tube valve surrounding said waste-tube and hollow plunger carrying said valve, of the valve-holder Q Q', fitting into and securing said valve against the inclined plane within the plunger, substantially as described.

6. The combination of the valve-seat, waste-tube C, plunger J, having interior inclined surfaces, and valve N, filling the space within and bearing upon said inclined surfaces, substantially as and for the purposes described.

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**11,861.** SULKY OR RIDING PLOW. NELSON SWAGER, Dubuque, Iowa, assignor to the Norwegian Plow Company, same place. Filed June 26, 1893. Serial No. 478,899. Original No. 466,234, dated Dec. 29, 1891.



*Claim.*—1. In a sulky plow, the combination of a sustaining frame supported on carrying wheels, a plow beam supported near its forward end upon a crank connected with the frame, a lever for operating said crank and a crank-arm mounted upon the frame and loosely connected to the rear of the beam and operated by said beam, whereby, in raising the plow, the point will be first raised and then the heel, and in lowering, the point shall first be lowered and then the heel, as and for the purposes shown.

2. In a sulky plow, the combination with the sustaining frame and carrying wheels, of a crank arm connecting said sustaining frame with the rear of the plow beam, and a rod connected with said crank arm, adapted to engage and be sustained by a stud or pin, for holding the heel of the plow up until the point is lowered to or near the ground and means for releasing said rod from such engagement with said stud or pin and to allow the heel of the plow to descend by its own gravity, after the point has been lowered to or near the ground, as and for the purpose shown.

3. The combination, with the plow-frame and the supporting-wheels therefor, of a crank-shaft supported by said frame, an operating-lever mounted upon one end of said crank-shaft, a plow-beam secured to the crank-shaft, a second crank-shaft supported by the plow-frame and having crank-arms, one of which is secured to the plow-beam and operated thereby, and a connecting-rod secured at one end to the other crank-arm and its other end loosely suspended upon a stud on the operating-lever, but not operated thereby, all arranged for co operation, substantially as described.

4. The combination, with the plow-frame and the supporting-wheels thereof, of a crank-shaft supported by said frame, an operating-lever upon one end of said shaft, a plow-beam secured to the crank-shaft, a second crank-shaft supported by the plow-frame and having crank-arms, one of which is secured to the plow-beam and operated thereby, a rod connected at one end to the other crank-arm and at its other end loosely suspended upon a stud on the operating-lever, but not operated by it, and a tripping device carried by the first mentioned crank-shaft and adapted to release the said rod and permit the heel of the plow to descend by its own gravity when the operating-lever is pushed so far forwardly as to lower the point of the plow to the ground, all arranged for co-operation, substantially as described.

5. In a sulky plow, the combination of a frame supported on carrying-wheels, a crank connected with the frame, an operating-lever attached to the crank, a plow-beam, with plow attached thereto, supported near its forward end upon the crank connected with the frame, and its rear end loosely suspended from the rear of the frame, whereby the point of the plow may be raised and the heel held down, as and for the purposes shown and described.

6. In a sulky plow, the combination of a frame, mounted on carrying-wheels, a crank connected to said frame and a lever attached to the crank for operating the same, a plow-beam with a plow attached thereto, supported near its forward end to the crank and its rear end loosely suspended by a rod from the rear of the frame, and means for locking and unlocking said rod, whereby the heel of the plow is held down in plowing and released when raised, as and for the purposes shown.

7. The combination, with the plow-frame and the supporting-wheels therefor, of a crank-shaft supported by the plow-frame, an operating-lever mounted upon one end of said crank-shaft, a plow-beam secured to the crank-shaft, a second crank-shaft supported by the plow-frame and having crank-arms, one of which is secured to the plow-beam and operated thereby, a rod secured at one end to the other crank-arm and at its opposite end loosely suspended upon a stud on the operating-lever for the purpose of holding up the heel till the point is lowered; a locking device carried by the said beam and adapted to lock the latter when the rear portion thereof is in its lowered position, and means for disengaging the locking device to permit of the rear portion of the beam being raised, substantially as described.

8. In a sulky plow, the combination with a plow-frame mounted on carrying-wheels, of a crank mounted in the frame, a lever for operating said crank, a plow-beam supported by said crank and raised and lowered thereby, a second crank mounted on the frame, and operated by the beam, a rod connected at one end to said second crank and operated thereby, and at the other end loosely attached to a stud and provided with a shoulder, which by the movement of the plow-beam, shall be brought to bear against said stud and hold the heel of the plow in the air, while the point is being lowered, and a trip arranged to release the shoulder from the stud, as and for the purposes shown.

9. In a sulky plow, the combination with a plow-frame mounted on carrying-wheels, of a plow-beam pivotally attached to and locked at its rear to the rear of the plow-frame by a rod, with means for unlocking the same, a portion of the plow-frame carried around at a given height over the front of the beam, whereby the beam shall come in contact with same during a portion of its upward movement, a crank operated by a lever mounted on the frame and so arranged to raise and lower the beam, that in its upward movement it raises the front of the beam to contact with said frame and then raises the heel, and a crank mounted on the plow-frame loosely connected with the beam and operated thereby, for holding up the heel of the plow while the point is being lowered, substantially as shown and described.

10. The combination, with the plow-frame and the supporting-wheels therefor, of a crank-shaft supported by said frame, an operating-lever upon one end of said shaft, a plow-beam secured to the crank-shaft, a second crank-shaft supported by the plow-frame and having crank-arms, one of which is secured to the plow-beam and operated thereby, a rod secured at one end to the other crank-arm and at the opposite end loosely suspended upon a stud on the operating-levers; a rod secured to the rear portion of the plow-beam and having a shoulder, a slotted plate carried by the plow-frame and through which extends the said rod, a horizontal rod secured at one end to the rod connected to the heel of the plow and at its other end to the foot-lever pivoted to the plow-frame, and a spring for retracting the horizontal rod when the same has been pushed forwardly by the foot-lever, all arranged for co-operation, substantially as described.

11. The herein-described clutch, comprising the plate 50, having a socket 52 a perforation 60, and the cut-away portion 53, and the plate 55, having tongues 54 adapted to enter the cut-away portion 53, a socket 56 and a perforation 58, said socket and perforation being adapted to coincide with the socket and perforation of plate 50.

12. The combination, with the plow-frame, of a caster-wheel mounted between supporting-arms, a spindle pivotally connected to the plow-frame, a sleeve surrounding said spindle, and a cam device carried by the supporting-arms and the sleeve and adapted to raise and lower the plow-frame with respect to the caster-wheel when said spindle is turned, as described.

13. The combination, with the plow-frame, of a caster-wheel mounted between supporting-arms 8, the bearing-block 9, having a curved upper surface, the spindle 10, rising from said block, and the sleeve 11, secured to the plow-frame and provided with an enlargement 12, having its under surface curved and bearing upon the block 9, as and for the purposes specified.

# DESIGNS.

**22,693.** TEXTILE FABRIC. CHARLES H. SUMNRALL, Aurora, Ill. Filed May 20, 1893. Serial No. 474,994. Term of patent 7 years.

**22,693.**



*Claim.*—The design for fibrous and textile goods and woven fabrics, substantially as shown and described.

**22,694.** CARPET. EMIL G. SAUER, Brooklyn, N. Y., assignor to the Lowell Manufacturing Company, Lowell, Mass. Filed July 10, 1893. Serial No. 480,071. Term of patent 3½ years.



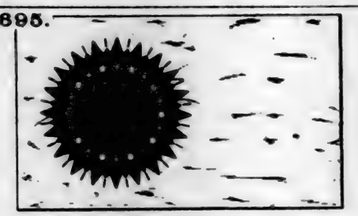
*Claim.*—The design for a carpet, as shown in the accompanying drawing.

**22,695.** CARD. PETER G. MOSER, Buffalo, N. Y. Filed Apr. 20, 1893. Serial No. 471,319. Term of patent 7 years.

*Claim.*—The design for a business card, substantially as herein shown and described.



**22,695.**



**22,696.** BADGE. ABNER A. LOW, Brooklyn, N. Y. Filed June 29, 1893. Serial No. 479,172. Term of patent 14 years.



*Claim.*—The design for badges herein set forth.

**22,697.** SLEEVE-BUTTON OR LIKE ARTICLE. PHILIP H. FRASER, Bayonne, N. J. Filed June 19, 1893. Serial No. 478,172. Term of patent 3½ years.



*Claim.*—The design for a button or like article, substantially as herein shown and described.

**22,698.** SPOON. JOHN T. CURRAN, Brooklyn, assignor to Tiffany & Co., New York, N. Y. Filed Apr. 22, 1893. Serial No. 471,501. Term of patent 3½ years.



*Claim.*—1. In the design for spoons, &c., the handle A, substantially as shown.

2. The design for spoons, &c., consisting of the handle A and the bowl B, substantially as shown.

**22,699.** BOWL FOR SPOONS. ULYSSES RACINE, Providence, R. I., assignor to Watson, Newell & Co., Attleborough, Mass. Filed July 5, 1893. Serial No. 479,661. Term of patent 3½ years.



*Claim.*—The design for a bowl for spoons and similar articles as herein shown and described.

**22,700.** KNIFE. CHARLES F. SMITH, New Britain, Conn., assignor to the Landers, Frary & Clark, same place. Filed July 1, 1893. Serial No. 479,202. Term of patent 7 years.



*Claim.*—1. The design for a knife substantially as herein shown and described.

2. In a design for a knife the design for the handle and ferrule portion, substantially as herein shown and described.

**22,701.** BOX. GEORGE W. MCGILL, New York, N. Y. Filed July 13, 1893. Serial No. 480,909. Term of patent 14 years.



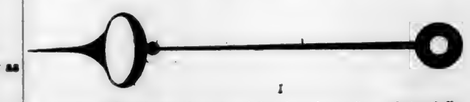
*Claim.*—The design for a box, substantially as herein shown and described.

**22,702.** HAND FOR TIMEPIECES. WEBSTER C. BALL, Cleveland, Ohio. Filed Apr. 26, 1893. Serial No. 471,962. Term of patent 14 years.



*Claim.*—The design for a hand for timepieces, &c., substantially as described and illustrated.

**22,703.** HAND FOR TIMEPIECES. WEBSTER C. BALL, Cleveland, Ohio. Filed Apr. 26, 1893. Serial No. 471,963. Term of patent 14 years.



*Claim.*—The design for a hand for timepieces, &c., substantially as described and illustrated.

**22,704.** BACK FOR BRUSHES OR HAND-MIRRORS. JOSEPH WALTER, New York, N. Y., assignor to John F. Simons, Frederick M. Simons, and Edwin S. Simons, Philadelphia, Pa. Filed July 14, 1893. Serial No. 480,583. Term of patent 7 years.



*Claim.*—The design for the back of a brush or hand-mirror substantially as described and as shown in the accompanying drawing.

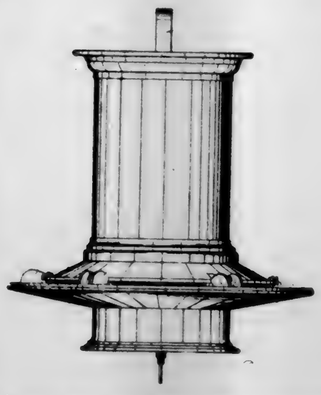
**22,705.** SOAP-DISH. JOHN C. BUSH, Columbus, Ohio. Filed July 10, 1893. Serial No. 480,096. Term of patent 7 years.

22,705.



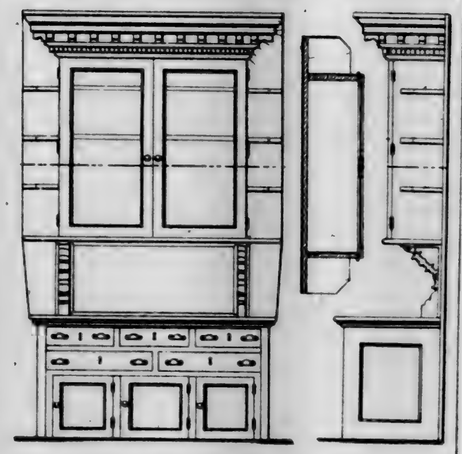
*Claim.*—The design for a soap dish or bracket substantially as herein shown and described.

22,706. HUMIDIFIER-CASING. OTTO HOFFMANN, Manchester, England. Filed June 27, 1893. Serial No. 478,968. Term of patent 7 years.



*Claim.*—The design for humidifier casings herein described and shown.

22,707. CABINET. WILMOR MOWRY, Bristol, R. I. Filed July 14, 1893. Serial No. 480,535. Term of patent 14 years.

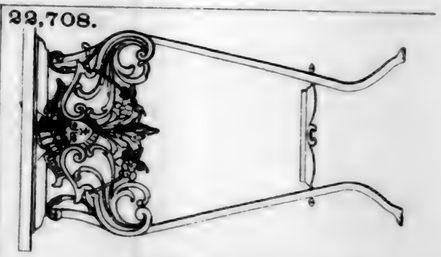


*Claim.*—The design for a furniture cabinet, herein shown and described.

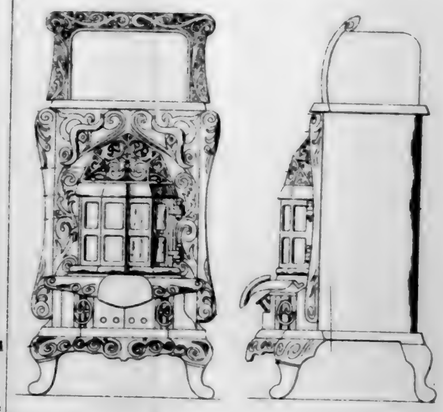
22,708. TABLE. FRANCIS C. KOEHLE, Philadelphia, Pa., assignor to Reinhold G. Ledig, same place. Filed Apr. 18, 1893. Serial No. 470,898. Term of patent 3½ years.

*Claim.*—The design for a table, substantially as shown and described.

22,708.



22,709. STOVE. CHARLES H. BOECK, Jackson, Mich., assignor to Hugh L. Smith, same place. Filed May 31, 1893. Serial No. 476,148. Term of patent 3½ years.



*Claim.*—1. The design for a stove substantially as shown and described.

2. In a design for a stove, the design for the cresting substantially as shown and described.

3. In a design for a stove, the design for the front substantially as shown and described.

22,710. OIL-STOVE. CHARLES W. WIPPLER, Detroit, Mich. Filed July 17, 1893. Serial No. 480,759. Term of patent 14 years.





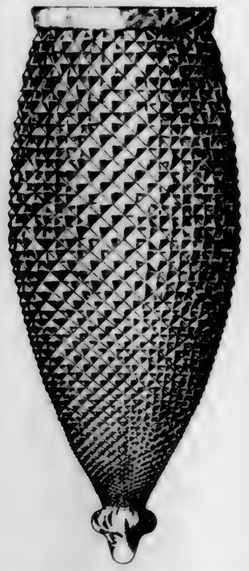
*Claim.*—The design for oil stoves herein described and shown.

22,711. GAS-BURNER. THEODORE H. SCHMITZ, Philadelphia, Pa. Filed May 1, 1893. Serial No. 472,616. Term of patent 7 years.



*Claim.*—The design for a gas burner substantially as shown and described.

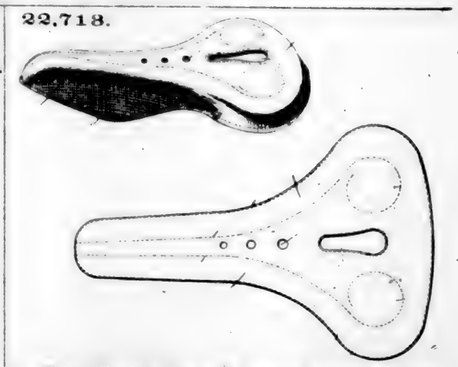
22,712. STALACTITE FOR ELECTRIC LAMPS. ANNIE P. DALZELL, Findlay, Ohio, administratrix of James Dalzell, deceased. Filed July 13, 1893. Serial No. 480,441. Term of patent 7 years.



*Claim.*—The design for stalactites for electric lamps, substantially as herein shown and described.

22,713. SADDLE-SEAT. WALTER B. JOURDAN and JONATHAN A. HUFF, Westborough, Mass., assignors to the Hunt Manufacturing Company, same place. Filed June 22, 1893. Serial No. 478,518. Term of patent 14 years.

22,713.



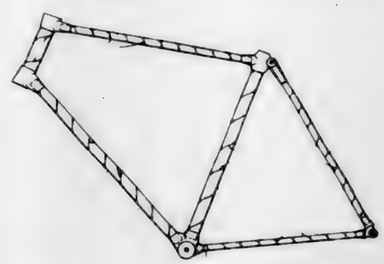
*Claim.*—The design for saddle seats for bicycles, &c., substantially as shown and described.

22,714. SADDLE-POST FOR BICYCLES. WILLIAM HILLMAN, Coventry, England. Filed July 14, 1893. Serial No. 480,532. Term of patent 14 years. Patented in England Jan. 2, 1893, No. 8,393; in France May 16, 1892, No. 221,653, and in Germany Mar. 10, 1893, No. 12,431.



*Claim.*—The design for a velocipede saddle post having the spiral configuration shown.

22,715. VELOCIPEDE-FRAME. WILLIAM HILLMAN, Coventry, England. Filed Feb. 13, 1893. Serial No. 462,905. Term of patent 14 years. Patented in England Jan. 2, 1893, No. 8,393, and in France May 16, 1892, No. 221,653.



*Claim.*—The design for a velocipede-frame having the spiral configuration shown.

# TRADE-MARKS

## REGISTERED AUGUST 15, 1893.

**28,478.** CASINER. HAWLEY & HOWE, New York, N. Y. Filed July 28, 1892.

EMPIRE STATE.

*Essential feature.*—The words "EMPIRE STATE." Used since June 1, 1892.

**28,479.** CHEWING-GUM. WALTER SCOTT ROGERS, Cleveland, Ohio. Filed July 15, 1893.

MOTTO

*Essential feature.*—The word "MOTTO." Used since May 24, 1892.

**28,480.** HAMS, BREAKFAST-BACON, AND SHOULDERS. SWIFT & COMPANY, Kansas City, Kans., Chicago, Ill., South Omaha, Nebr., and East St. Louis, Ill. Filed July 8, 1893.

FOSTER

*Essential feature.*—The word "FOSTER." Used since June 1, 1891.

**28,481.** CANNED CORN. ILLINOIS CANNING CO., Hoopeston, Ill. Filed Apr. 10, 1893.

*Pride of Illinois*

*Essential feature.*—The words "PRIDE OF ILLINOIS." Used since 1891.

**28,482.** CANNED FRUITS, VEGETABLES, FISH, MEATS, OYSTERS, CATSUP, AND SOUP. THE ALBERT F. REMY CO., Mansfield, Ohio. Filed July 11, 1893.

*JACK FROST*

*Essential feature.*—The words "JACK FROST." Used since April, 1893.

**28,488.** CANNED FISH, FRUITS, VEGETABLES, SOUPS, AND MILK. WALTER B. TUBBS, New York, N. Y. Filed July 15, 1893.



*Essential feature.*—A representation of the States of the Republic comprising the figure of a woman arrayed in a gracefully draped costume and holding aloft in one hand a ball and grasping with the other hand a flag staff bearing a furled flag. Used since July 10, 1893.

**28,484.** YEAST-POWDER. SOUTHERN COTTON CO., Louisville, Ky. Filed Apr. 20, 1893.




*Essential feature.*—The representation of a Jersey cow above which is printed the word "JERSEY" and beneath which are the words "CREAM QUICK YEAST." Used since March 15, 1893.

**28,485.** WASHING FLUID. ALLEN S. RAND and GEORGE BELL, Cincinnati, Ohio, and Peoria, Ill. Filed June 24, 1893.

KLO-KLEAN

*Essential feature.*—The compound word "KLO-KLEAN." Used since March 10, 1892.

**28,486.** DENTIFRICE. S. C. WELLS & Co., Le Roy, N. Y. Filed June 9, 1893.



*Essential feature.*—The shaded representation of a scalloped shell, and a short word printed thereon. Used since August, 1892.

**28,487.** MEDICATED OILS FOR EXTERNAL AND INTERNAL USE. CHEMELIUS KEISER, Chicago, Ill. Filed July 7, 1893.




*Essential feature.*—The representation of escutcheons, and the autograph "GEBERS. WAARIRE," and the name "TILLY." Used since May 1, 1893.

**28,488.** OINTMENT. AS-KEE-SHAW MANUFACTURING COMPANY, Oakland, Cal., and Buffalo, N. Y. Filed June 26, 1893.



*Essential feature.*—The words "AS-KEE-SHAW, INDIAN UNIEF," and the representation of an Indian chief. Used since February 10, 1891.

**28,489.** STOMACH BITTERS. THE FIRM OF TH. LAPPE, Neuhaldensleben, Germany. Filed Mar. 29, 1893.



*Essential feature.*—The representation of an anchor, the shank of which is prolonged beyond the stock and of the configuration of a patriarchal cross, the upper cross bar of which is connected with the end of the stock to simulate a figure 4. Used since October 23, 1890.

**28,490.** LAXATIVE OR CATHARTIC SYRUP. FIG HONEY COMPANY, Chicago, Ill. Filed July 14, 1893.

HONEY
OF FIGS

*Essential feature.*—The words "HONEY OF FIGS." Used since June 3, 1893.

**28,491.** REMEDIES FOR DISEASES OF THE HEAD, THROAT, CHEST, AND LUNGS. H. H. BOSCHEE & COMPANY, Chicago, Ill. Filed Aug. 16, 1893.

NEW DISCOVERY

*Essential feature.*—The words "NEW DISCOVERY." Used since September 1, 1869.

**28,492.** REMEDY FOR COUGHS AND COLDS AND ALL INFLAMED CONDITIONS OF THE LUNGS AND AIR-PASSAGES. JOHN B. HUNT, Baltimore, Md. Filed June 28, 1893.

INDIAN
TAR
BALSAM

*Essential feature.*—The words "INDIAN TAR BALSAM," in three lines, the upper and lower of which are in arcs of circles, the word "Tar" having the middle letter much larger than the "T" and the "B," and all the lettering being fanciful. Used since October, 1891.

**28,493.** REMEDY FOR DIABETES. JOHANN EMIL STROSCHEIN, Berlin, Germany. Filed June 1, 1893.



*Essential feature.*—The representation of a crescent shaped figure and two lance flags crossed above the figure in connection with the word "UROBIDIN." Used since October 10, 1892.

**28,494.** LIVER-PURIFIER. A. C. GUNNELS JR. MEDICINE COMPANY, Sherman, Tex. Filed July 13, 1893.



*Essential feature.*—A monogram composed of the letters "A C G Jr." Used since August 12, 1889.

**28,495.** MEDICINES FOR THE CURE OF BLOOD, LIVER, AND KIDNEY DISEASES. ALEXANDER V. YOUNG, Troy, N. Y. Filed May 30, 1893.

KEMP'S

*Essential feature.*—The word "KEMP'S." Used since September 7, 1892.

**28,496.** REMEDIES FOR DISEASES OF THE BOWELS. FREDERICK PERE, Rutland, Vt. Filed July 15, 1893.

TRIED AND TRUE

*Essential feature.*—The words "TRIED AND TRUE." Used since 1853.

**28,497.** MEDICINAL LOTION FOR HUMAN AND ANIMAL USE. MARIA J. ELTON, Dublin, Ireland. Filed June 26, 1893.

ELLOWS
CRYSTAL
BALM

*Essential feature.*—The words "ELLON'S CRYSTAL BALM." Used since November 16, 1888.

**28,498.** INSECT AND VERMIN DESTROYING PREPARATIONS. ADOLPH ISAACSON & SON, New York, N. Y. Filed May 15, 1893.

Sure Pop

*Essential feature.*—The words "SURE POP." Used since 1885.

**28,499.** WATCHCASES. ROSENAU & LEVY, New York, N. Y. Filed July 24, 1893.

SENATOR

*Essential feature.*—The word "SENATOR." Used since June 1, 1893.

**28,500.** WRITING-PAPER AND ENVELOPES. GEORGE B. HURD & Co., New York, N. Y. Filed July 20, 1893.

SUEDE FINISH.

*Essential feature.*—The words "SUEDE FINISH." Used since January 1, 1893.

**28,501.** KNIVES, SCISSORS, POCKET IMPLEMENTS AND TOOLS, AND THE LIKE. THE CHERRY KNIFE COMPANY, Fremont, Ohio. Filed Feb. 2, 1893.

XTY

*Essential feature.*—A monogram composed of the letters "X T Y." Used since September 15, 1892.

**28,502.** WEARING-APPAREL. JOHN MADDOCKS, Bradford, England. Filed June 3, 1893.

**23,502.** "SAINT SWITHIN."

*Essential feature.*—The words "SAINT SWITHIN." Used since October, 1888.

**23,503.** HATS, CAPS, AND BONNETS. JOHN MADDOCKS, Bradford, England. Filed June 3, 1893.

"SAINT SWITHIN."

*Essential feature.*—The words "SAINT SWITHIN." Used since October, 1888.

**23,504.** BOYS' AND CHILDREN'S CLOTHING. DAVID BERG. & ROSA, New York, N. Y. Filed June 13, 1893.



*Essential feature.*—The words "MOTHER'S CHOICE" upon the border of a diamond shaped figure. Used since March 20, 1893.

**23,505.** BOOTS, SHOES, AND LASTS. JOHN MADDOCKS, Bradford, England. Filed June 3, 1893.

"SAINT SWITHIN."

*Essential feature.*—The words "SAINT SWITHIN." Used since October, 1888.

**23,506.** COMBINATION LEATHER FOR BOOTS AND SHOES AND SIMILAR ARTICLES. LYMAN SMITH'S SONS COMPANY, Norwood and Boston, Mass. Filed Apr. 15, 1893.




*Essential feature.*—The representation of a reclining lion with a letter "S" above it and the sun with radiating rays forming a background for both and the words "PERSIAN KID." Used since February 17, 1886.

**23,507.** COMBINATION LEATHER FOR BOOTS AND SHOES AND SIMILAR ARTICLES. LYMAN SMITH'S SONS COMPANY, Norwood and Boston, Mass. Filed June 5, 1893.




*Essential feature.*—The representation of a shield having on it an eagle with extended wings and holding in its beak and grasping with one talon a snake, in the form of the letter "S" and the word "MEXICAN." Used since January 7, 1891.

**23,508.** UMBRELLAS, PARASOLS, AND CANES. JOHN MADDOCKS, Bradford, England. Filed June 3, 1893.

"SAINT SWITHIN."

*Essential feature.*—The words "SAINT SWITHIN." Used since October, 1888.

**23,509.** BRAIDED SASH-CORD. SAMSON CORDAGE WORKS, Boston, Mass. Filed June 26, 1893.

SPOT CORD

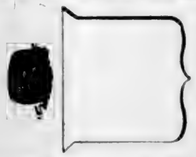
*Essential feature.*—The words "SPOT CORD." Used since June 18, 1893.

**23,510.** ROLLED SHEET-GLASS. MISSISSIPPI GLASS COMPANY, St. Louis, Mo. Filed Feb. 20, 1893.

FLORENTINE.

*Essential feature.*—The word "FLORENTINE." Used since January 1, 1893.

**23,511.** LEAD. CHADWICK LEAD WORKS, Boston, Mass. Filed July 13, 1893.



*Essential feature.*—The representation of a barrel turned on its side, bearing the figures "1840" and a shield. Used since 1840.

**23,512.** MORTAR AND COATINGS FOR WALLS. PERFECTION CHEMICAL AND MANUFACTURING COMPANY, Des Moines, Iowa. Filed July 5, 1893.




*Essential feature.*—The word "PERFECTION" and the representation of an oak leaf. Used since May 1, 1893.

**23,513.** PLASTER, PORTLAND CEMENT, AND ANALOGOUS COMPOSITIONS. THOMAS DRAKE WHITAKER, Philadelphia, Pa. Filed July 19, 1893.




*Essential feature.*—The word "ALPHA." Used since June 10, 1893.

**23,514.** ARC AND INCANDESCENT LAMPS. WILLIAM D. PAIGARD and JAMES W. PAIGARD, Wayne, Ohio. Filed July 7, 1893.

WARREN-LAMP

*Essential feature.*—The word "WARREN-LAMP." Used since May 1, 1893.

**23,515.** WOVEN-WIRE BED-SPRINGS. BENJAMIN FINK, New York, N. Y. Filed July 7, 1893.

ELITE

*Essential feature.*—The word "ELITE." Used since March 5, 1890.

# DECISIONS

OF THE

# COMMISSIONER OF PATENTS

AND OF

# UNITED STATES COURTS IN PATENT CASES.

## COMMISSIONER'S DECISIONS.

STUART MEDICINE COMPANY *v.* GOLDAINE.

*Decided June 15, 1893*

TRADE-MARKS—RULE 13.

Trade-Mark Rule 13, which states that "each applicant and registrant will be held to the date of adoption alleged in the statement filed with his application," *Held* to be not inconsistent with law, and therefore has the force of a statute.

APPEAL from Examiner of Interferences.

TRADE-MARK FOR MEDICINE.

Application of Stuart Medicine Co. filed September 12, 1892.

Trade-Mark of James F. Goldaine registered May 19, 1891, No. 19,759.

*Messrs. Smith & Denison* for the Stuart Medicine Co.
*Mr O. D. Levis* and *Mr. J. D Caplinger* for Goldaine.

FISHER, *Assistant Commissioner:*

This is an appeal from the decision of the Examiner of Interferences in favor of the Stuart Medicine Company. In said decision the Examiner of Interferences holds that Goldaine is bound by the date of October, 1888, which is set up in the statement accompanying his application. The decision upon this point is based upon Rule 13 of the rules relating to the protection and registration of Trade-Marks and labels, which states that—

each applicant and registrant will be held to the date of adoption alleged in the statement filed with his application.

Goldaine contends that this rule is inequitable in the present case because it enables the opposing party to know his earliest date and to overcome it by falsely offering an earlier date. This rule, however, is not thought to be "inconsistent with law," (Rev. Stats., sec. 483,) and it therefore has the force of a statute. Moreover, it follows substantially the practice in interferences arising under the patent law. Besides this, it seems perfectly just. It holds, in effect, that an applicant cannot prove a date earlier than that alleged in his statement. The contention that the publication of this date opens the door to fraud is not thought to be of great importance, since in any interference proceeding in the case of a Trade-Mark the respective dates of adoption are to be proved by evidence, the statements of the applicants not being accepted as conclusive.

The further contention of Goldaine to the effect that the Stuart Medicine Company was not entitled to claim a date earlier than 1892, on the ground that it had not before that time used the Trade-Mark in foreign commerce, cannot be regarded, since this point was settled in *Manitowoc Manufacturing Co. v. Dickerman*, (57 O. G., 1721.)

The decision of the Examiner of Interferences is affirmed. Limit of appeal will expire July 15, 1893.

DIXON *v.* VAN AUKEN.

*Decided June 30, 1893.*

INTERFERENCE—WHEN CLAIMS OF A PATENT AND APPLICATION DO NOT INTERFERE.

Where the claim in a patent contains an element not disclosed in an application involved in an interference with the patent and where the applicant cannot make a claim that will be commensurate in terms with the claim of the patent, no interference in fact exists.

APPEAL on motion.

VALVE.

Application of George E. Dixon filed March 1, 1892, No. 423,395. Patent granted Clarence E. Van Auken June 14, 1892, No. 476,844.

*Messrs. Gridley & Hopkins* for Dixon.
*Mr. Charles T. Brown* for Van Auken.

FISHER, *Acting Commissioner:*

This is an appeal from the decision of the Primary Examiner denying a motion brought on behalf of Dixon for a dissolution of the interference on the ground that no interference in fact exists.

Claim 1 of the Van Auken patent and five claims of the Dixon application are included in the interference under an issue comprising five different counts, each of which is broader in terms than the said claim of the patent.

It is urged in support of the motion that the claim of the Van Auken patent is not only more limited than the claims of the Dixon application, but that it contains an element not shown or described in the said application. This element is set forth as—

a tube in which the expansible post extends, secured in the float.

It clearly appears from an inspection of the Dixon application that no such feature as that just referred to is disclosed. It follows, therefore, that Dixon cannot make a claim in his present application that will be commensurate in terms with the said claim of the Van Auken patent. It cannot properly be held that the limitation referred to is immaterial, for the patentee has made it material by including it specifically in his claim.

In view of the practice as outlined in *Reed v. Landman*, (55 O. G., 1275,) it is clear that the interference

should be dissolved, unless the subject-matter of each case included in the interference, as shown, described, and claimed, is substantially and patentably the same in the one as in the other. If it be assumed, for the purpose of determining this question, that Van Auken is the applicant and Dixon the patentee, does the Dixon case make such a disclosure as to amount to a valid reference on which to reject claim 1 of the Van Auken case? It being important in this case to determine the meaning and scope of the said claim, the following statement, made by the Examiner in his decision respecting the three forms of Van Auken's invention, as shown and described in his patent, is pertinent:

That the patentee intended to cover the construction of Fig. 3, embodied in claim 1, is evidenced by the fact that his other claims contain the same limitation. If claim 1 is so construed as not to cover the construction of Fig. 3, it is evident that the other claims will not apply thereto. That the Office granted a patent containing a figure showing a construction not covered by any claim is not to be presumed, and in the present case the Examiner's personal knowledge is that it was the intention of the Office to allow Van Auken claims which should apply to all his figures.

In view of this interpretation placed by the Examiner upon Van Auken's claim 1 and the structures upon which it is based, it is believed that he would have allowed the said claim if the state of the art had been represented by what is disclosed in the Dixon application. Such being the case, it is clear that if both parties to the interference were applicants Van Auken would be entitled to his claim, even though Dixon should prevail in the interference.

The decision of the Primary Examiner denying the motion to dissolve the interference is overruled.

## EX PARTE HEINE.

*Decided July 26, 1893.*

ABANDONED APPLICATION—REVIVAL.

In order to revive an abandoned application, unavoidable delay in the prosecution thereof must be shown, and such showing must cover the entire period of delay.

ON petition.

KNIT FABRIC

Application filed June 20, 1890, No. 356,183.

*Mr. H. G. Underwood* for the applicant.

FISHER, *Assistant Commissioner:*

This is a petition requesting that the above-entitled case, which became abandoned November 20, 1892, from failure to prosecute the same, be revived.

The reasons offered for delay are that after the first Office letter it was necessary that the inventer and the attorney should have a consultation; that the attorney endeavored to find the inventor, but was unable to do so; that in the fall of 1892 a large fire broke out near the attorney's office and his files were hastily bundled up and stored in a fireproof vault; that after the fire was over the files were returned, but by accident this file and two or three others were overlooked; that the attorney failed to recollect the application until the inventor called upon him and inquired about it; that the file was then found in the vault after a long search, and that it was then discovered that more than two years had elapsed since the last official action.

I cannot regard these reasons as sufficient, especially as it was held in *ex parte Root* (40 O. G., 811) that the showing of unavoidable delay must cover the entire period of two years. This has not been done, and the petition must therefore be and it is hereby denied.

## HUSON *v.* CROWELL *v.* YATES.

*Decided July 31, 1893.*

1. REISSUE APPLICATION—SAME STANDING AS ORIGINAL PATENT AS TO BURDEN OF PROOF.

Since patents are now reissued strictly for the same invention covered by the original patent, the reissue application ought to have the same standing as the original patent as to burden of proof.

2. RULE 116—CONSTRUCTION THEREOF.

Rule 116, as recently amended and construed in the light of decisions bearing upon it, means that he who first made a claim or statement of invention covering the invention in interference should be considered the senior party.

3. REISSUE APPLICATION—WHEN CONSIDERED A CONTINUATION OF THE ORIGINAL APPLICATION.

Where the Office holds an applicant to be entitled to a reissue for broader claims, it in effect holds that it was by reason of inadvertence, accident, or mistake that applicant did not make the broad claims in the patent; that he has been reasonably diligent in applying for such reissue, and therefore that there has been no such dedication to the public of the inventions covered by the broad claims as should prevent the Office from considering the reissue application a continuation of the original application.

APPEAL from Primary Examiner.

MECHANICAL MOVEMENT.

Application of Winfield S. Huson filed March 31, 1892, No. 427,151. Patent granted Luther C. Crowell June 14, 1892, No. 477,045. Reissue application of William B. Yates filed July 25, 1892, No. 441,204.

*Mr. L. W. Southgate* for Huson.

*Messrs. Philipp, Munson & Phelps* for Crowell.

*Messrs. Dayton, Poole & Brown* for Yates.

FISHER, *Acting Commissioner:*

This is an appeal taken by Yates from the action of the Primary Examiner in making him the junior party in this interference.

Yates filed an application for patent November 9, 1891, containing five specific claims for the subject-matter of the present issue. This application resulted in a patent March 22, 1892.

Crowell filed his application February 18, 1892, containing claims broad enough to dominate Yates's claims, and also claims for a species different from that disclosed in Yates's application. Crowell's application was rejected on the patent to Yates, and he filed an affidavit under Rule 75 showing completion of invention before Yates filed his application, and this application resulted in a patent June 14, 1892.

Huson filed his application March 31, 1892, containing generic claims that interfered with Crowell's generic claims, and also specific claims that interfered with Yates's claims, was rejected on the Yates patent, filed an affidavit under Rule 75, satisfactorily showing completion of his invention before the date on which Yates filed his application, and a declaration of interference followed on April 28, 1892, between Huson's application and Yates's patent, in which Huson was the junior and Yates the senior party.

On July 25, 1892, Yates filed an application for the reissue of his patent, which was refused solely on the ground that reissues should not be granted if a second party had in the meantime between the grant of the original patent and the date of the reissue application acquired the right to manufacture or sell or had taken out a patent for what he (the original patentee) had failed to claim, (citing *Topliff* v. *Topliff*, 59 O. G., 1257; 145 U. S., 156, and *ex parte Stanley*, 60 O. G., 735,) and Yates appealed to the Examiners-in-Chief, who reversed the decision of the Primary Examiner and allowed Yates his claims in the present reissue application.

In the meantime the Crowell patent had appeared and Huson moved for an interference between his application and Crowell's patent on the broad claims, and a second interference, the present one, was declared November 5, 1892, between the Crowell and Yates patents and the Huson application.

As soon as the Examiners-in-Chief had allowed Yates's reissue it was substituted for his patent in the interference, The parties then stood *Huson* v. *Crowell* v. *Yates*. Counsel for Huson then moved to shift the burden of proof. This was granted by the Primary Examiner on the ground that the claims of the reissue application were all different from the claims of Yates's original patent and should therefore take the date that the reissue application was filed. From this decision the present appeal was taken.

Counsel for Huson contends—

first, that Yates, coming forward and filing a reissue application containing claims to the issue, which claims were not included in his specific patent, is only entitled to a record date on the day on which the reissue application was filed; second, that the Yates patent was improperly included in the declaration of interference November 5, 1892, between Huson, Crowell, and Yates, on the ground that Yates did not claim the issue of that interference.

The second ground of contention above stated has no bearing upon the case in its present status. The Yates patent has been withdrawn from this interference, and there can be no doubt but that Yates's reissue application does interfere with the Huson application and the Crowell patent, whether the Yates patent interfered with said application and patent or not.

As to the first ground of contention, when it is noted that nowhere has it been assumed by the Primary Examiner or counsel for Huson that Yates claimed anything in his reissue application broadly that was not covered specifically by the claims or statement of invention in his patent, and when it is also noted that the Examiners-in-Chief have held that he is entitled to a reissue of his patent, this case is in principle not unlike that of *Hansen* v. *Davis*, (55 O. G., 998,) in which Mr. Commissioner Mitchell said:

Since patents are now reissued strictly for the invention covered by the original patent, and since the surrender of the original patent does not take effect until the issue of the amended patent, a reissue application ought to have the same standing as to burden of proof as the patent originally has.

As I regard this as reasonable and sound practice in cases of this kind, I shall assume that principle as settled in considering this case; but as that decision was rendered before the last change in Rule 116 was made, which states that—

the several parties will be presumed to have made the invention in the chronological order in which they claimed the same, etc.,

it yet remains to see if said decision is in accord with the spirit of said rule.

Counsel for Huson relies on two decisions for his interpretation of Rule 116; (*Van Depoele* v. *Daft*, 58 O. G., 520, and *Reichenbach* v. *Goodwin*, 63 O. G., 311;) but in the first of these cases, and the one upon which the change in Rule 116 was based, the facts were as follows:

Daft filed an application for patent June 11, 1888, which at no time contained a claim or a statement of invention substantially identical with the interference issue, although it had a drawing and a not very definite description of the subject-matter on which such an issue might be based, which application eventuated in a patent October 8, 1889. Van Depoele filed an application for patent September 7, 1888, which contained a claim substantially identical with the interference issue, which eventuated in a patent December 4, 1888. August 12, 1889, which was eight months after the issue of Van Depoele's patent, Daft, by amendment, inserted in said application, filed June 11, 1888, which became the patent of October 8, 1889, these words: "I do not herein claim the features shown herein and claimed in my application, Serial No. 321,564, which is a division of this case."

The said application, Serial No. 321,564, was filed by Daft August 22, 1889, and in it was made a claim substantially identical with the interference issue.

Further on in the same decision the Commissioner distinctly stated that—

the question which is determined is this: that as regards an interference a divisional application has no standing based upon the earlier application of which it purports to be a division as to any improvement as to which the earlier application makes no claim or statement of invention.

In the second case cited above the Commissioner said, after stating the case, that—

it is found that Goodwin did not claim the improvement in controversy nor make a statement of invention equivalent thereto until after the same was claimed by Reichenbach, wherefore the burden of proof is on Goodwin.

So that in both these cases the Commissioner, in effect, decided that he who first made a claim or statement of invention reaching to the issue should be made the senior party.

Applying the test to the present case, did Yates have in his original application a claim or statement of invention reaching to the present issue? There is no question but that he did. His claims were originally drawn to the same subject-matter as the claims of the reissue application. They were more specific, it is true, but to the same subject-matter. The fact that they were broader in scope or that they were not expressed in the same language as the original claims is immaterial.

There is another point urged by counsel for Yates that I have not overlooked in considering this case, and that is that when Yates's patent went out with the narrow claims therein he thereby dedicated the broad invention claimed in his reissue to the public; but the Examiners-in-Chief in granting Yates a reissue have in effect held that it was by reason of inadvertence, accident, or mistake that Yates did not express his claims broadly in his original application, and that he was reasonably diligent in coming back to the Office and asking for a reissue of his patent, and under those conditions I do not understand that that matter was dedicated to the public in such a sense as would prevent Yates's broad claims in his reissue application from being regarded as a continuation of his original application.

Generally speaking, then, I think the following propositions are sound:

First. That since patents are now reissued strictly for the same invention covered by the original patent the reissue application ought to have the same standing as the original patent as to burden of proof.

Second. That Rule 116, as recently amended, construed in the light of the decisions bearing on it, means that he who first made a claim or statement of invention covering the invention in interference should be considered the senior party.

Third. That where the Office has held that an applicant is entitled to a reissue for the purpose of broadening the claims of his patent it has in effect held that his original patent contained a claim or statement

of invention covering the subject-matter of the broad claims.

Fourth. That where the Office holds an applicant to be entitled to a reissue for broader claims it in effect holds that it was by reason of inadvertence, accident, or mistake that applicant did not make the broad claims in the patent and that he has been reasonably diligent in applying for such reissue, and therefore there has been no such dedication to the public of the invention covered by the broad claims as should prevent the Office from considering the reissue application a continuation of the original application.

Applying these principles to the questions to be determined in the present case, it is clear that Yates should be made the senior party to this interference.

The decision of the Primary Examiner is reversed and the parties are rearranged to stand in this interference as follows: *Huson* v. *Crowell* v. *Yates*

## DECISIONS OF THE U. S. COURTS.

### U. S. Circuit Court—Southern District of New York.

AMERICAN CABLE RAILWAY COMPANY *v.* MAYOR, ETC., OF CITY OF NEW YORK *et al.*

*Decided June 7, 1893.*

1. PATENT—INFRINGEMENT—NEW COMBINATION.
   Claim 6 of Letters Patent No. 271,727, dated February 6, 1883, to Daniel J. Miller, covering two pulleys of a grip so mounted and connected as to insure their being simultaneously raised, thus elevating the section of the cable between the two pulleys so that it can be conveniently grasped by the gripper, *Held* to be for a new combination, and therefore valid.
2. SAME—SIMPLICITY IN CHANGE MADE DOES NOT NEGATIVE PATENTABILITY.
   Simplicity in change of constructions does not negative patentability where the change produced a new and beneficial result never attained before.
3. SAME—ASSIGNMENTS—CERTIFIED COPIES—PROOF OF.
   Certified copies of assignments are sufficient to establish *prima facie* evidence of title to a patent.

Bil by the American Cable Railway Company against the Mayor, Aldermen, and Commonalty of the City of New York and the City of Brooklyn for infringement of a patent.

ON final hearing. Decree for complainant.

*Mr. Charles H. Williams, Mr. Edward W. Cady,* and *Mr. Daniel H. Driscoll* for the complainant.

*Mr. Francis Forbes* and *Mr. William N. Dykman* for the defendants.

COXE, *J.*:

This is an action of infringement of Letters Patent No. 271,727, granted to Daniel J. Miller February 6, 1883, for improvements in the construction of cable railways. The patent is now owned by the complainant. The portion of the invention involved in the present suit relates to a combined cable-support and cable-lifter so arranged that horizontal sections of the cable can be raised sufficiently to be received into the gripper at any desired point. The pulleys which carry the cable are also used as lifters, two of them being mounted on hinged frames and connected by a rod or chain at points along the road where it is necessary to pick up the cable. When the frame of one pulley is raised by any suitable lifting device, the other rises simultaneously, thus elevating the section of the cable between the two pulleys, so that it can be conveniently grasped by the gripper. The sixth is the only claim involved. It is as follows:

6. The two carrying-pulleys D D, mounted and hinged, when connected by a chain or rod, as shown, to insure their being simultaneously raised, for the purpose specified.

The defenses are lack of novelty and invention, non-infringement, and defective title.

The proposition that Miller was the first to raise a horizontal section of a moving railway-cable up to the plane of the gripping apparatus was clearly established at the argument. Did it require invention to do this?

The useful feature of the device is that it holds the cable in a level position, so that the gripper can seize it at any point between the pulleys, thus preventing wear and tear and avoiding many other disadvantages fully described by complainant's expert witness. In prior structures the cable, being raised by a single pulley, fell away in angular sections from either side of the pulley and could be engaged by the gripper at one point only. The benefits derived from the patented apparatus are obvious, especially where, as in defendants' railway, the grip is so large—the gripping-pulleys being three or four feet apart—that it can only operate on the cable when in a horizontal position.

It is said that what Miller did was a simple change within the sphere of the skilled mechanic. Simple it undoubtedly was; but the idea never occurred to any of the myriad of mechanics and inventors who for many years have made the improvement of cable railways their distinctive work. The idea underlying most of the great inventions is a simple one. Such an idea came to the Cornish boy who was employed to manipulate the valves of the old Newcomen steam-engine. One day, anxious to join his comrades at their sports, it occurred to him that the walking-beam vibrating above his head could be made to do his work. Once conceived, it was the easiest of tasks to carry out the idea. An ordinary mechanic could have done it, and yet the embodiment of that idea gave to the world the first automatic steam-engine. So, too, the central ideas underlying the safety-lamp, the sewing-machine, and even the telephone are exceedingly simple. A school-boy can understand them now; but their authors were peerless inventors, nevertheless, and an argument to prove the contrary would hardly be listened to with patience. Miller stands upon a distinctly higher plane than many inventors whose patents have recently been sustained by the Supreme Court. In *Topliff* v. *Topliff* (59 O. G., 1257; 145 U. S., 156; 12 Sup. Ct. Rep., 825) patents were upheld for improvements in connected carriage-springs by means of which the springs move in unison, so that the weight imposed upon them is equalized and side motion to the body of the vehicle is prevented. The prior art approximated much nearer to the patented structures than in the case at bar. In *Krementz* v. *S. Cottle Co.* (13 Sup. Ct. Rep., 719) the Court held that it involved invention to construct a hollow collar-button out of a single continuous plate of sheet metal, and in the *Barbed Wire Case* (58 O. G., 1555; 143 U. S., 275; 12 Sup. Ct. Rep., 443) that it involved invention to produce a coiled barb in combination with a twisted wire by





which it was clamped and held in position, although plain and twisted wires provided with sharp thorns or barbs were known before. (See, also, *Gandy* v. *Main Belting Co.*, 59 O. G., 1106; 143 U. S., 587; 12 Sup. Ct. Rep., 598; *Magowan* v. *New York Belting Co.*, 57 O. G., 845; 141 U. S., 332; 12 Sup. Ct. Rep., 71; *Western Electric Co.* v. *La Rue*, 55 O. G., 571; 139 U. S., 601; 11 Sup. Ct. Rep., 670.) It is thought, therefore, that Miller is clearly within the rule laid down in *Webster Loom Co.* v. *Higgins*, (21 O. G., 2031; 105 U. S., 580.) He has made a new combination and arrangement of known elements and produced a new and beneficial result never attained before.

Do the defendants infringe? That they use two carrying-pulleys mounted, hinged, and connected by a rod to insure their being simultaneously raised is not disputed; but it is argued that this combination is not used in a tunnel, that more than two pulleys are raised at a time, and that the defendants do not use the positive rests for their pulleys described in the specification. These positions are untenable. The inventor was a resident of Chicago. The problem before him was the improvement of cable railways for street-cars. It is more than probable that he did not have in mind when he made the invention such a cable road as that used by the defendants on the Brooklyn bridge, where trains are moved consisting of several heavy cars, and where it is necessary to elevate long sections of the cable. There is nothing, however, in the specification or claim which confines the invention to use in a tunnel. The specification draws a distinct line of demarcation between the combination of the claim in question and the other features of the invention.

The structure covered by the sixth claim is clearly applicable to all cable roads wherever located. To hold that one who appropriates the invention can avoid the consequences of his act by using it above the plane of the rails on a surface road or on an elevated road would be unwarranted. The argument based upon the fact that the defendants raise more than two pulleys is not well founded. That they raise a section of the cable by raising two connected pulleys is self-evident. This constitutes infringement. It is none the less an infringement because more than two pulleys are raised. The defendants cannot raise four pulleys without raising two, and they cannot raise two without infringing the patent. No new result is accomplished by the additional pulleys. Their use was a perfectly-obvious expedient where a long section of cable was to be raised to the gripper. That the defendants use the patented apparatus is too clear for debate, and it is immaterial that they use something in addition to the patented apparatus. The positive rests E E, which the defendants do not use, are no part of the sixth claim and are not at all essential to the successful working of the combination of that claim.

The objection to the title is that it is established by certified copies of assignments. It is well settled that such instruments are *prima facie* sufficient. (*Brooks* v. *Jenkins*, 3 McLean, 432; *Lee* v. *Blandy*, 1 Bond, 361; *National, etc., Paper Co.* v. *American, etc., Box Co.*, decided May 3, 1893, 58 O. G., 1844; 55 Fed. Rep., 488, and cases cited.)

It follows that the complainant is entitled to the usual decree.

### U. S. Circuit Court—Northern District of Ohio, Eastern Division.

EBERHARD MANUFACTURING COMPANY *v.* ELBEL & COMPANY.

*Decided August 8, 1893.*

1. PATENT—NOVELTY—HARNESS-TRIMMINGS.
   Letters Patent to M. E. Zeller, No. 207,791, dated September 3, 1879, for an improvement in drop-hooks and terrets for harness, sustained and *Held* to be infringed.
2. ANTICIPATION—INUTILITY OF PRIOR DEVICES.
   The patent in suit *Held* not to be anticipated by a prior device which was inoperative as to the chief advantage claimed for the patented article.

*Mr. E. A. Angell* and *Messrs. W. Bakewell & Sons* for the complainant.

*Mr. C. R. Miller* and *Mr. M. D. Leggett* for the defendants.

RICKS, *J.*:

The bill is filed for infringement of Letters Patent No. 207,791, granted on September 3, 1879, to Melancthon E. Zeller, for an improvement in harness-trimmings.

The complainant has given to the public a very simple device which combines several elements that are all calculated to make it acceptable and useful. Though it presents no single element evincing great invention, it combines several new features which, taken together, make it a successful device, which has rapidly won its place among articles of useful manufacture. It is easily and cheaply made; so designed and constructed as to be easily put together; each part performs the function claimed for it, and when put into use it is superior to any other article made or designed for the same purpose. It can be made and sold separately; can be readily attached to any kind of harness, and it fulfills the uses for which it was designed. In it the patentee developed as to its leading features that "last step" which completes invention and makes the device a success.

This is particularly striking in comparing the device of the patent in suit with the device of the same patentee in the patent designated "the Zeller patent of 1874." That device was practically inoperative, both because of the expense and difficulties connected with its manufacture, and more particularly because the falling hook, which was designed to receive the checkrein, had such a long vertical end projecting through the elevated plate or passage that when the strain on the checkrein was lessened so as to permit the hook to slip back or to force it back, toward, or over the crupper-loop the ring, instead of falling easily and surely, would catch and remain rigid. One of the principal features claimed for the hook so constructed was that it would readily fall and prevent its destruction in case the horse or mule should fall or roll with the harness on it, so that for the chief advantage claimed it was inoperative.

The chief defense against this patent is that it was anticipated by the manufacture and sale of various articles of common use by nine prior United States patents. The two chiefly relied upon as showing an anticipation are those of J. W. Hinman, dated February 25, 1868, and of M. E. Zeller, of September 15, 1874, just referred to.

The Hinman patent, while it involves the drop-hook and drop-ring in a device intended for an entirely different use, did not disclose those uses in a way to make them any more conspicuous than had been done in other devices in which they had been previously employed or than would suggest such use in a drop-hook such as used in complainant's patent. I do not therefore think that the Hinman patent was an anticipation.

For the reasons stated before I do not think the earlier Zeller patent is an anticipation.

It is intimated in brief of defendants' counsel that the claim in the earlier patent abandoned by Zeller, viz.—

a harness finding consisting of the plate A, upon which is formed the elevation a having an eye or passage A' to receive a terret or ring, a hook or other harness attachment, substantially as and for the purpose set forth—

is substantially the same as the claims of the later patent and should estop him from setting up the same in his present suit. The essence of the later invention is that the parts are cast separately and so made as to be easily and cheaply made and put together and when so combined to furnish a stronger and more satisfactory product. All this is accomplished, and there is no ground for estoppel on the plea that the former claim abandoned is the same device. The defendant has not seen fit to use any of the devices set out in the nine patents pleaded. It has, however, patterned the article it manufactures exactly from that of complainant. It has done this after correspondence and with full information as to complainant's claims. The hook is a clear infringement of the first and third claims of the patent and the terret is of the second claim.

The complainant is entitled to a decree sustaining its patent, finding infringement, and for an accounting.

# PATENT LAW OF SWITZERLAND.

[From *La Propriété Industrielle.*]

Federal law modifying the law of the 29th June, 1888, concerning patents of invention, passed the 23d March 1893.

The Federal Assembly of the Swiss Confederation, in application of article 64 of the Federal Constitution and in view of the message of the Federal Council of the 25th November, 1892.

DECREES.

ARTICLE 1. The hereafter indicated points of the Federal law of the 29th June, 1888, concerning patents of invention (Rec. Off., new series, X 884) are modified in the following manner:

1. The designation "Federal Bureau of Industrial Property" shall be replaced wherever it is found in the law, by that of "Federal Bureau of Intellectual Property."

2. The last sentence of article 9 is altered to read as follows: "The annulment set forth in clauses 3 and 4 above shall be pronounced at the demand of any person who proves an interest, by competent tribunals for infringement trials, (article 30)."

3. The last sentence of article 10 is altered as follows: "An action for nullity can be entered into before competent tribunals, for actions for infringements, (art. 30) by any interested party."

4. The second and third sentences of article 16 are altered as follows: "The provisional patent has for its sole effect the assuring to its proprietor during a period of three years dating from the day of application the right to obtain a complete patent notwithstanding the publicity which may have been given to the invention in the interval. The proprietor of a provisional patent shall have no power of action against persons who copy or utilize his invention. Before the expiration of this period of three years the proprietor of the provisional patent shall by means of the accomplishment of the formality described in article 14, clause 3, file a complete specification in default of which the patent shall become null."

5. In the first sentence of article 20 of the French text the word suive (following) is replaced by anise qui (as well as).

6. The last sentence of article 25 is modified as follows: "The penalties are not applicable when the infringement shall have been committed by a simple error, imprudence, or negligence, the civil indemnity shall remain nevertheless reserved."

7. The first sentence of article 26 is altered as follows: "The civil action can be begun by any person who can show that he has an interest." The French text of the last sentence in the article is altered in the following manner: "No action shall be entered into when more than two years have elapsed since the last infringement."

8. The last sentence of article 29 is altered as follows "Those who have unauthorizedly placed upon their commercial paper, advertisements, or products, an indication tending to raise the belief in the existence of a patent shall be punished on the complaint of the office or of a private person by a fine of from 30 to 500 frs., or by an imprisonment of from 3 days to 3 months, or of both these penalties combined."

ART. 2. The arrangements of article 1, fourth clause, are applicable to all provisional patents which at the moment of the entry into vigour of the present law shall not have attained a duration of two years.

ART. 3. The Federal Council is charged conformably of the disposition of the law of the 17th June, 1874, concerning popular votes upon the laws and Federal decrees to publish the present law, and to fix the period at which it will enter into vigour. Decreed by the Council of State, Berne, the 20th December, 1892.

The President:
SCHALLER.

The Secretary:
SCHATZMANN.

Also decreed by the National Council, Berne, 23d March, 1893.

The Vice President:
L. FARRER.

The Secretary:
RINGIER.



THE
# OFFICIAL GAZETTE
OF THE
# United States Patent Office.
[BY AUTHORITY OF CONGRESS.]

VOL. 64.—No. 8. TUESDAY, AUGUST 22, 1893. PRICE—$5 per year.

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## The Official Gazette.

THE OFFICIAL GAZETTE is published every Tuesday, simultaneously with the weekly issue of patents. From January 1, 1872, (the commencement of its publication,) to June 30, 1883, it was published and bound in semi-annual volumes; since July 1, 1883, in quarterly volumes. All subscriptions must commence with the beginning of a volume; none taken for less than three months. Terms: To all subscribers within the United States and Canada, $5 per annum; to foreign subscribers, $7; single copies, 10 cents; bound semi-annual volumes, (prior to June 30, 1883,) full sheep, $4 per volume; bound quarterly volumes, (subsequent to July 1, 1883,) full sheep, $2.75 per volume. No club rates. *Payment in advance.* All orders should be addressed to "The Commissioner of Patents, Washington, D. C."

## Privileges of the Scientific Library.

Persons who are not employés of the Office may, under the supervision and direction of the Librarian, make extracts, in pencil, from descriptions and drawings contained in the Scientific Library, such extracts, when in the nature of copies, not to exceed one-third of the descriptions or drawings from which the copies are made. Violation of this order will subject all persons and parties concerned in the violation to exclusion from thereafter making any such extracts or copies whatever.

## Names of Applicants.

When the full first name of the applicant does not appear either in his signature or in the preamble to the specification, the Examiner will, in his first official letter, require an amendment supplying the omission, and he will not pass the application to issue until the omission has been supplied, unless an affidavit shall have been filed setting forth that the full first name of the applicant is the one originally given by him.

## Amended Rules of Practice.

Rule 25 and the first paragraph of Rule 122 of the Rules of Practice (edition of April 1, 1892) of the United States Patent Office are hereby amended to read as follows:

Rule 25. In case of the death of the inventor, the application will be made by and the patent will issue to his executor or administrator. In such case the oath required by Rule 46 will be made by the executor or administrator. In case of the death of the inventor during the time intervening between the filing of his application and the granting of a patent thereon, the Letters Patent will issue to *the executor or administrator upon proper intervention by him.*

Rule 122. Motions to dissolve an interference upon the ground that no interference in fact exists, or that there has been such irregularity in declaring the same as will preclude a proper determination of the question of priority, or which deny the patentability of an applicant's claim, or his right to make the claim, should, if possible, be made not later than the twentieth day after the statements of the parties have been received and approved. Such motions *should be noticed for hearing upon a day certain before the Examiner of Interferences upon the question of transmission to the Primary Examiner*, and when in proper form will be transmitted by the Examiner of Interferences, with the files and papers, to the proper Primary Examiner for his determination, *who will thereupon fix a day certain when the said motion will be heard before him upon the merits, and give notice thereof to all the parties. If a stay of proceedings is desired, a motion therefor should accompany the motion for transmission.*

## Construction of Statutes Relating to the Registration of "Prints" and "Labels."---Amended.

In the publication of this Office entitled "United States Statutes Concerning the Protection and Registration of Trade-Marks and Labels, with the Rules of the Patent Office Relating Thereto, Edition of January 4, 1892," the following matter on page 17 is hereby canceled:

The words "prints" and "labels," as used in this act, so far as it relates to registration in the Patent Office, are construed as synonymous, and are defined as any device, picture, word or words, figure, or figures (not a trade-mark) impressed or stamped directly upon the articles of manufacture, or upon a slip or piece of paper or other material to be attached in any manner to manufactured articles, or to bottles, boxes, and packages containing them, to indicate the contents of the package, the name of the manufacturer, or the place of manufacture, the quality of goods, directions for use, etc.

By the words "articles of manufacture" (to which such print or label is applicable by this act) is meant all vendible commodities produced by hand, machinery, or art.

But no such print or label can be registered unless it properly belongs to an article of commerce, and be as above defined; nor can the same be registered as such print or label when it amounts to a lawful trade-mark, or when its use in connection with the article to which it is applied is arbitrary or fanciful.

And the following is substituted therefor:

These sections of statute (referring to sections 3, 4, and 5 of the act of Congress relating to patents, trade-marks, and copyrights, approved June 18, 1874, 18 Statutes at Large, p. 78) are construed as authorizing the registry of "prints" and "labels." A label is a device or representation borne by an article of manufacture or vendible commodity. A print is a device or representation not borne by an article of manufacture or vendible commodity, but in some fashion pertaining thereto—such, for instance, as a pictorial advertisement thereof. A label cannot be registered if it bear a device capable of sequestration as a trade-mark until after such device is registered as a trade-mark. Both labels and prints, in order to be entitled to registry, must be intellectual productions in the degree required by the copyright law.

The note on page 19 is canceled.

## File-Wrappers—Entries On.

It is directed that entries shall not be made on the back of a file-wrapper, containing the application-papers for a patent, of papers or actions which do not become a permanent part of the contents of the file.

A card (Form 2-354 Office Series of blanks, sample hereto attached) will be placed in the file showing all appellate actions.

## DISCLAIMER.

436,668.—*Henry W. Hales*, Ridgewood, N. J. IMPROVEMENT IN SHUTTER ATTACHMENTS FOR PHOTOGRAPHIC CAMERAS. Patent dated September 16, 1890. Disclaimer filed August 18, 1893.

Enters his disclaimer to the following broad combination, to wit:

"The combination, in shutter mechanism for photographic cameras, of a shutter provided with an opening, a spring for throwing the shutter, and a reversible support for the spring, substantially as described."

## Issue of August 22, 1893.

| | |
|---|---|
| Patents | 367—No. 503,568 to No. 503,934, inclusive |
| Designs | 28—No. 22,716 to No. 22,743, inclusive. |
| Trade-Marks | 32—No. 23,516 to No. 23,547, inclusive |
| Labels | None. |
| Prints | None. |
| Reissue | 1—No. 11,362. |
| Total issue | 428 |

### TO CITIZENS OF THE UNITED STATES.

| States. | Patents and Designs. | Trade-Marks and Labels. | States. | Patents and Designs. | Trade-Mark. and Labels. |
|---|---|---|---|---|---|
| Alabama | 1 | .... | New Hampshire | 2 | .... |
| Arizona Territory | .... | .... | New Jersey | 17 | 4 |
| Arkansas | 3 | .... | New Mexico Territ'y | 1 | .... |
| California | 9 | .... | New York | 64 | 4 |
| Colorado | .... | .... | North Carolina | 1 | .... |
| Connecticut | 6 | .... | North Dakota | .... | .... |
| Delaware | 5 | .... | Ohio | 27 | 4 |
| District of Columbia | 5 | .... | Oklahoma Territory | .... | .... |
| Florida | 1 | .... | Oregon | 3 | .... |
| Georgia | 1 | .... | Pennsylvania | 32 | .... |
| Idaho | .... | .... | Rhode Island | 3 | .... |
| Illinois | 31 | 3 | South Carolina | 1 | .... |
| Indiana | 12 | .... | South Dakota | 1 | .... |
| Indian Territory | .... | .... | Tennessee | .... | 1 |
| Iowa | 5 | .... | Texas | 5 | .... |
| Kansas | 3 | 1 | Vermont | 2 | 1 |
| Kentucky | 1 | .... | Virginia | 3 | 1 |
| Louisiana | .... | .... | Washington | 1 | .... |
| Maine | 4 | .... | West Virginia | 2 | .... |
| Maryland | 8 | .... | Wisconsin | 12 | .... |
| Massachusetts | 52 | 1 | Wyoming | 1 | .... |
| Michigan | 15 | .... | United States Army | .... | .... |
| Minnesota | 2 | 1 | United States Navy | .... | .... |
| Mississippi | 1 | .... | | | |
| Missouri | 10 | 2 | Total to citizens of the United States | 359 | 23 |
| Montana | 3 | .... | | | |
| Nebraska | 3 | .... | | | |

### TO CITIZENS OF FOREIGN COUNTRIES.

| Countries. | Patents and Designs. | Trade-Marks and Labels. | Countries. | Patents and Designs. | Trade-Marks and Labels. |
|---|---|---|---|---|---|
| Australia | .... | .... | Germany | 8 | 6 |
| Austria-Hungary | 2 | .... | Guatemala | .... | .... |
| Barbadoes | .... | .... | Ireland | 1 | .... |
| Belgium | .... | 1 | Italy | 1 | .... |
| Bermuda | .... | .... | New Zealand | .... | .... |
| Brazil | .... | .... | Russia | .... | .... |
| Canada | 7 | .... | Scotland | 1 | .... |
| Chili | .... | .... | So. African Republic | .... | .... |
| Colombia, U. S. of | .... | .... | Sweden | 1 | 1 |
| Cuba | .... | .... | West Indies | .... | .... |
| Denmark | .... | .... | | | |
| Ecuador | .... | .... | Total to citizens of foreign countries | 36 | 9 |
| England | 13 | 1 | | | |
| France | 2 | .... | | | |

## APPLICATIONS UNDER EXAMINATION.

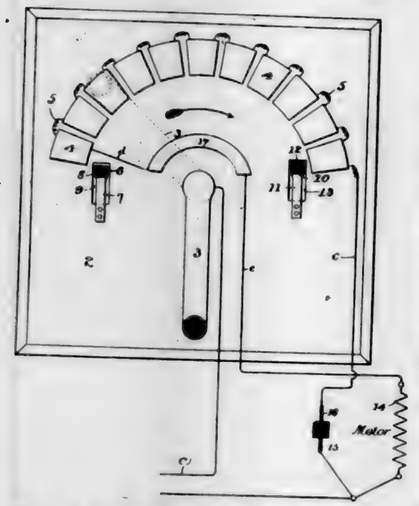
*Condition at Close of Business August 15, 1893.*

| Division No. | Subjects of invention. | Oldest new application and oldest action by applicant awaiting office action. New. | Amended | No. of applications awaiting action. |
|---|---|---|---|---|
| | *In arrears.—Under one month.* | | | |
| 2 | Farm Stock, Products, etc | July 22 | Aug. 14 | 63 |
| 31 | Gas, Painting, Hides, Skins, and Leather, Alcohol, Oils, Fats, and Glue, etc. | Aug. 3 | Aug. 11 | 35 |
| 13 | Metal-Working, Arms and Projectiles, Nails and Spikes, Needles and Pins, etc. | July 17 | Aug. 9 | 50 |
| 16 | Telegraphy, Telephony, Electric Lighting and Signaling. | July 22 | Aug. 5 | 72 |
| | *Between one and two months.* | | | |
| 21 | Textiles, etc | June 19 | Aug 10 | 101 |
| 14 | Metal Bending, Wire-Working, Coin Controlled Apparatus, Farriery, Nut and Bolt Locks, etc. | June 19 | Aug. 9 | 102 |
| 20 | Builders' Hardware, Cutlery, Safes, Dentistry, Surgery, Undertaking, Artificial Limbs, etc. | June 19 | Aug. 7 | 190 |
| 11 | Boots and Shoes, Clasps, Buckles, and Buttons, Harness, Hose and Belting, and Leather-Working Machinery. | June 19 | Aug. 7 | 224 |
| 27 | Brushing and Scrubbing, Grinding and Polishing, Laundry, etc. | June 29 | Aug. 5 | 115 |
| 32 | Advertising, Aeration and Bottling, Baggage, Packing and Storing Vessels, etc. | June 19 | Aug. 1 | 197 |
| 19 | Stoves and Furnaces | June 17 | Aug. 1 | 212 |
| 6 | Chemistry Explosives, Medicines, Fertilizers, Preserving Photography, Sugar and Salt, etc. | July 7 | July 26 | 127 |
| 12 | Mechanical Engineering, Store Service, etc | June 19 | July 25 | 197 |
| 30 | Lamps, Gas-Fittings, Linotyping, Matrix-Making Machines, and Type-Writing Machines. | June 24 | July 22 | 189 |
| | *Between two and three months.* | | | |
| 25 | Artesian and Oil Wells, Butchering, Mills and Thrashing, Stone-Working, Vegetable Cutters and Crushers | May 22 | Aug. 10 | 192 |
| 24 | Sewing-Machines, Crinoline and Corsets, and Apparel. | June 3 | Aug. 7 | 108 |
| 7 | Harvesters, Games and Toys, and Velocipedes. | June 10 | Aug. 3 | 292 |
| 10 | Carriages and Wagons and Railway-Cars. | June 10 | Aug. 3 | 364 |
| 8 | Furniture, Toilet, Umbrellas and Canes, etc. | June 7 | July 26 | 315 |
| 29 | Wood-Working Machines, Carpentry, Coopering, and Roofing, etc. | May 25 | July 17 | 288 |
| 9 | Hydraulics, Fire-Extinguishers, etc | May 15 | July 17 | 349 |
| 4 | Civil Engineering, Fire-Proof Buildings, Fire Escapes and Ladders, etc. | June 6 | June 24 | 330 |
| | *Between three and four months.* | | | |
| 22 | Fire-Arms, Fishing and Trapping, Navigation, Signals, etc. | Apr. 25 | Aug. 7 | 247 |
| 18 | Steam-Engineering, etc | May 1 | Aug. 5 | 260 |
| 3 | Metallurgy, Metal-Founding, Coating, Annealing and Tempering, Electro Chemistry, etc. | May 12 | Aug. 2 | 171 |
| 23 | Instruments of Precision, Acoustics, Optics, etc | May 1 | Aug. 2 | 312 |
| 1 | Tillage and Fences | Apr. 17 | July 31 | 244 |
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| 15 | Plastics, Paper-Making, Paving, Glass, Fuel, Bread-Making, etc. | Apr. 14 | July 20 | 321 |
| | *Between five and six months.* | | | |
| 28 | Pneumatics, Refrigeration, Air and Gas Engines, etc. | Mar. 1 | July 29 | 299 |
| | *Between eight and nine months.* | | | |
| 26 | Electricity, Generation, Distribution, Electric Railways, etc. | Nov. 21 | Aug. 5 | 370 |
| | Total number of applications awaiting action | | | 7,017 |
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| Designs | | Aug. 11 | Aug. 11 | 6 |
| Trade-Marks | | Aug. 11 | Aug. 14 | 14 |

# PATENTS

## GRANTED AUGUST 22, 1893.

**503,568. STARTING DEVICE FOR ELECTRIC MOTORS.** ALTON D. ADAMS, St. Paul, Minn. Filed Oct. 19, 1891. Serial No. 408,142. (No model.)




*Claim.*—1. In a device of the class described, the combination of the series of contacts with intermediate resistances, the pivoted contact arm, and the stop engaging said arm as it breaks the circuit at the contact in circuit with no included resistance, so as to prevent reverse movement of the arm, and compel it to be turned forward through a complete rotation in the same direction to reach said contact again, substantially as described.

2. In a device of the class described, the combination of the series of contacts, the intermediate resistances, the pivoted contact arm, and stop devices for said arm permitting it to be turned to close the circuit at one end of said series, and break it at the other end thereof, but preventing it from making and breaking the circuit by a reverse movement, substantially as described.

3. In a device of the class described, the combination of the series of contacts, the intermediate resistances, the pivoted contact arm, and the stops engaging said arm and preventing it from reverse movement to break the circuit at the first contact, or to close it at the last contact, substantially as described.

4. In a device of the class described, the combination of the series of contacts, their intermediate resistances, the pivoted contact arm, and the stop devices for said arm preventing a reverse movement to break the circuit at the first contact, or to close it at the last contact, and compelling it when the circuit is broken to be turned forward in the same direction to the first contact, substantially as described.

5. In a device of the class described, the combination of the series of contacts, the intermediate resistances, the pivoted contact arm and the spring controlled stops permitting said arm to be turned forward onto the first contact to close the circuit therethrough, but preventing reverse movement to break the circuit thereat, and permitting the arm to be turned forward to break the circuit at the last contact, but preventing reverse movement over it, substantially as described.

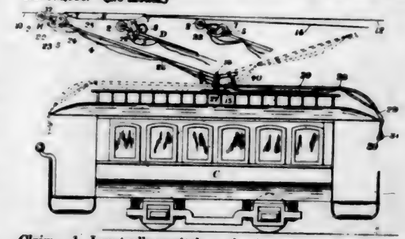
**503,569. SCREW-DRIVER.** GILMAN W. ADEE, Pekin, Ill. Filed Dec. 14, 1892. Serial No. 455,109. (No model.)



*Claim.*—1. In a screw driver, the portion A having its interior hollowed out and provided with the gear wheels G' and D' mounted on the shafts G and D respectively, the tool holder at the outer end of said shaft G, and means for rotating said shaft D, and the caps B and B' secured to the said portion A forming a ball for the purposes herein set forth and described.

2. In a screw driver, the portion A having its interior hollowed out and provided with the beveled gear wheels G' and D' said gear wheel G' mounted on a shaft G journaled in said portion A, said shaft carrying the working tool, the gear wheel D' mounted on a shaft D provided with the knuckle joint E, shaft F and a handle to furnish means for driving said shaft F substantially as set forth and described.

**503,570. ELECTRIC-RAILWAY TROLLEY-SWITCH.** JOHN H ALLISON, Elkhart, Ind., assignor of one-half to John G. Rich, Auburn, N. Y., and Daniel G. Reed, Richmond, Ind. Filed Mar. 3, 1893. Serial No. 464,536. (No model.)



*Claim.*—1. In a trolley switch-mechanism, the combination with the single-line wire and the double-line wires making a junction therewith, and with a switch-guide located alongside of said line wires at the junction thereof, of the trolley-arm adapted to run on the line wires, and a switch-arm movably supported on the trolley-arm and shiftable from and into position for engaging the switch-guide to carry the trolley-arm from the single-line wire to one of the double-line wires, substantially as described.

2. In a trolley switch-mechanism, the combination with the single-line wire and the double-line wires making a junction therewith, and with a switch-guide located alongside of said line-wires at the junction thereof, of the trolley-arm adapted to run on the line-wires, one switch-arm movably supported on the trolley-arm and shiftable from and into position for engaging the switch-guide to carry the trolley-arm from the single-line wire to one of the double-line wires when the trolley is moving in a direction from said single-line wire toward the

double-line wire, and a second switch-arm movably supported on the trolley-arm opposite to said first switch-arm and shiftable from and into position for engaging the switch-guide to carry the trolley-arm from the double-line wire to the single-line wire when the trolley-arm is moving in that direction, substantially as described.

3. In a trolley switch-mechanism, the combination with the single-line wire and the two double-line wires making a junction therewith, and with two switch-guides located one on either side of said line-wires at the junction thereof, of the trolley-arm adapted to run on the line-wires, and two switch-arms supported one on either side of the trolley-arm and shiftable from and into position for engaging switch-guides respectively when the trolley-arm is moving from the single-line wire toward the double-line wires, and means for shifting said switch-arms, independently of each other, from and into their working position, whereby the trolley-arm may be engaged with either one of the switch-guides for carrying said arm from the single-line wire to the corresponding double-line wire, substantially as described.

4. The combination with the trolley-car and the single-line and double-line wires provided with a switch-guide substantially as described at the junction of the wires, of the trolley-arm carried on the car, a switch-arm mounted on the trolley-arm in position for engaging the switch-guide of the trolley-line, and a connecting cord or line running from the switch-arm down the trolley-arm and into position for operation by the motor-man to throw the switch-arm into position for action, substantially as described.

5. The combination with a trolley-car, the trolley-lines having a switch-guide at the junction thereof, and with the trolley-arm and its switch-arm mounted thereon and supported to swing on the car, of the switch-arm-actuating cord support connected with the trolley-arm support and extending toward the end of the car, for carrying the switch-arm actuating cord or cords, substantially as described.

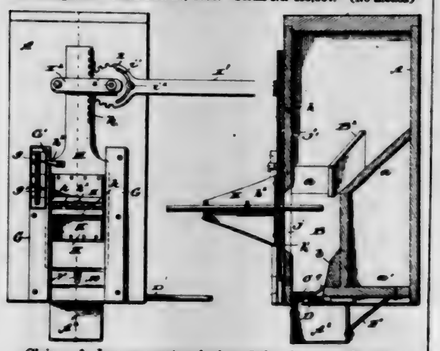
6. In a trolley switch-mechanism, the combination with the trolley-arm, of a swinging switch-arm pivotally supported thereon near the line-engaging end thereof, and means for elevating and lowering the switch-arm on the trolley-arm, substantially as described.

7. The combination, in a trolley-arm adapted for use in connection with a switch-mechanism of the class specified, of the trolley-arm and its roller, a switch-arm shiftably supported on the trolley-arm and carrying a roller, and a guard on the trolley-arm and located alongside of the shiftable roller for guarding this against engagement with falling cross wires, substantially as described.

8. The combination, in a trolley-arm adapted for use in connection with a switch-mechanism of the class specified, of the trolley-arm and its roller, a switch-arm pivotally supported on the trolley-arm and carrying a roller mounted on a stud projecting from the outer side of said switch-arm, and a wire-guard connected at one end with the outer end of said roller-stud and at the other end brought against and secured to the switch-arm, whereby the roller is protected from the engagement thereunder of the line-wires, substantially as described.

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**503,571.** MEASURING-VESSEL. WILLIAM H. BASTIN, Murphysborough, Ill. Filed Feb. 27, 1893. Serial No. 463,867. (No model.)



*Claim.*—1. In a measuring device of the character described, a vertically reciprocative slide carrying a reciprocative cut-off working at right angles thereto in guides thereon, as set forth.

2. In a measuring device of the character described, a vertically-reciprocative slide mounted to move in guides and having mounted to slide therethrough and into the chamber a horizontally-reciprocative cut-off, as set forth.

3. In a measuring device, the combination with the receptacle having a measuring chamber, of a hinged door at the bottom of said chamber, with cam-shaped projections and a movable plate and actuating devices arranged beneath said door to hold the same closed, as set forth.

4. The combination with the receptacle having a measuring chamber and a hinged door at its lower end, of the devices for holding said door in its closed position, the vertically reciprocative slide, and the horizontally-reciprocative cut-off carried by said slide and mounted to move thereon and into the measuring chamber, as set forth.

5. The combination with the receptacle with its measuring chamber, of the slide mounted on the chamber and carrying the cut-off, and means on the outer wall of the chamber for adjusting the slide and cut-off to measure materials of varying specific gravity, as set forth.

6. The combination with the receptacle with its measuring chamber, of the slide mounted to move in guides on the chamber, the cut-off carried thereby, to move at right angles thereto, the adjustable scale plate on the outer wall of the chamber and the means for limiting the movement of the slide, as and for the purpose specified.

7. The combination with the vertically-reciprocative slide and means mounted on the wall of the chamber for actuating the same, of the cut-off carried by and movable in the slide at right angles thereto, as set forth.

8. The combination with the receptacle with its hinged door, of the plate pivoted at one end to move beneath the door, the inclined projection upon the under side of the door, and means pivotally connected with said plate near its center for moving said plate, as and for the purpose specified.

9. The combination with the receptacle, of the slide fitted to move in guides thereon, the cut-off movable in a guide on the slide and having a stop for limiting its outward movement by contact with a portion of the guide in which the cut-off moves, as set forth.

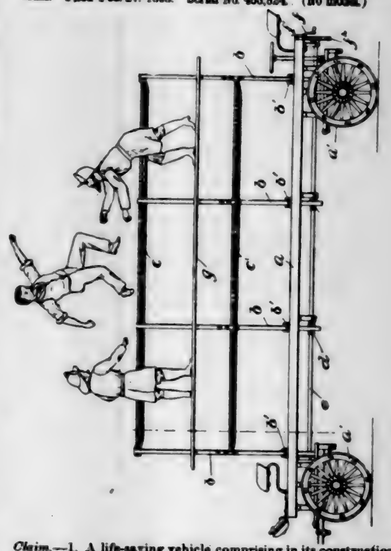
10. The combination with the receptacle and the slide, of the plate adjustably mounted on the chamber and having lateral projections for limiting the movement of the slide, as set forth.

11. The combination with the receptacle, of the slide movable in guides thereon, and the adjustable plate having portions engaging grooves in the slide to limit the movement thereof, substantially as specified.

12. The combination with the receptacle, of the slide having a rack portion, the cut-off carried by said slide, the toothed wheel pivoted to the outer wall of the chamber and provided with a lever and curved slot, and the set screw working in said slot, substantially as and for the purpose specified.

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**503,572.** LIFE-SAVING VEHICLE. WELCOME B. BEAL, Boston, Mass. Filed Feb. 27, 1893. Serial No. 463,824. (No model.)



*Claim.*—1. A life-saving vehicle comprising in its construction, a bed or base-frame, standards pivotally connected with said bed and movable in the direction of width of the vehicle, a sheet of flexible material extending from side to side of the vehicle and the length thereof and supported by the standards, and means for spreading and contracting the latter, substantially as described.

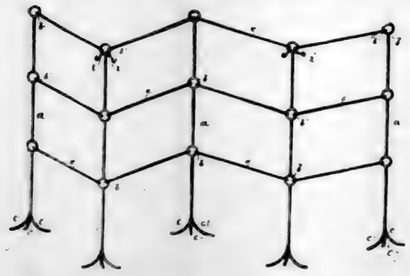


2. A life-saving vehicle comprising in its construction, a bed or base-frame, standards pivotally connected with said bed and movable in the direction of width of the vehicle, a sheet of flexible material extending from side to side of the vehicle and the length thereof and supported by the standards, a rotatable shaft located between the standards, and flexible connections between the latter and said shaft, and arranged to wind on the shaft.

3. A life-saving vehicle comprising in its construction, a bed or base-frame, standards pivotally connected with said bed and movable in the direction of width of the vehicle, ledges supported in the outer sides of said standards, a sheet of flexible material supported between the standards, and means for spreading and contracting the latter.

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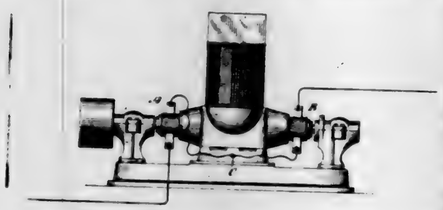
**503,573.** CLOTHES-DRIER. JOSEPH C. BECKLEY, Dayton, Ohio. Filed May 8, 1893. Serial No. 473,439. (No model.)



*Claim.*—In a clothes drier, a series of upright rods provided with eyes formed in the body thereof, and feet at the lower extremity, a series of horizontal rods provided with eyes at both extremities whereby they are linked to the eyes on the upright rods and enabled to be closed therewith so as to occupy a narrow space, substantially as described.

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**503,574.** DYNAMO-ELECTRIC MACHINE OR MOTOR. CHARLES S. BRADLEY, Avon, N. Y. Filed Apr. 15, 1893. Serial No. 470,436. (No model.)



*Claim.*—1. A dynamo electric machine or electric motor provided with a number of independent armature windings carried by the same shaft, commutators connected with the several windings, connections between the several windings coupling them in series, and an electrical connection between the base of the machine and a point of the circuit between the terminal brushes.

2. A dynamo electric machine or electric motor provided with a plurality of armature windings on the same core, and electrical connections with the base of the machine and an intermediate point of the windings and the circuit terminals.

3. A dynamo electric machine or electric motor provided with a plurality of armature windings carried by the same shaft, separate commutators for the several windings, connections between the commutators coupling the several windings in series, and an electrical connection between the base and the middle point of the compound armature circuit.

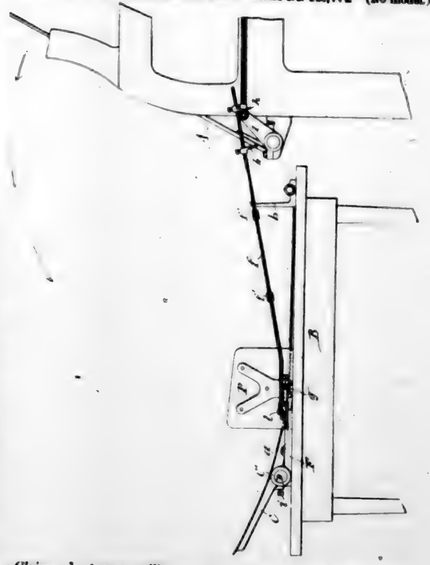
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**503,575.** CYLINDRICAL CASK. CHARLES R. BRATT, Stockholm, Sweden. Filed June 11, 1892. Serial No. 436,411. (No model.) Patented in Sweden July 23, 1891, No. 3,507.

*Claim.*—A cask consisting of a series of staves having parallel edges and two wedge shaped staves for locking all the staves in place and forcing them tightly together, the tapered ends of said staves being turned in opposite directions and driven in between the other staves, substantially as described.

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**503,576.** DEVICE FOR PILING PAPER. THOMAS A. BRIGGS, Arlington, Mass. Filed Sept. 24, 1892. Serial No. 446,774. (No model.)



*Claim.*—1. A paper-piling apparatus comprising a paper receiving bed, abutments rising from said bed to receive one edge of the pile of paper, and vertical plates movable simultaneously in the same direction in lines at right angles to the aforesaid abutments and engaging one at a time opposite edges of the pile of paper as set forth.

2. In combination with the paper transferring fly, a paper-receiving bed having abutments for one edge of the pile of paper adjacent to and parallel with the axis of the fly, and said bed inclined toward the abutments, and laterally joggling plates at right angles to the said abutments and alternately engaging opposite edges of the pile of paper as set forth.

3. In combination with the paper transferring fly, a paper-receiving bed having its paper supporting surface formed with a depression across its center to support the paper in a bent condition and thereby stiffen the side edges thereof, and laterally joggling plates engaging said edges of the paper, as set forth.

4. The combination of an oscillatory paper-delivering fly, a paper receiving bed provided adjacent to said fly with abutments for one edge of the pile of paper and having its paper supporting surface inclined to said abutments and concaved, to bend the paper and thereby stiffen the side edges thereof, and laterally reciprocating vertical plates engaging alternately opposite edges of the pile of paper at right angles to the aforesaid abutments, substantially as set forth and shown.

5. The combination of an oscillatory paper delivering fly, a paper receiving bed provided adjacent to the fly with abutments for one edge of the pile of paper, and having its paper-supporting surface inclined toward said abutments, a longitudinally movable bar extending across the aforesaid bed, vertical plates secured at right angles to and both moving with said bar, a lever imparting reciprocating motion to the bar, and a pitman transmitting motion from the fly to the said lever, as set forth.

6. The combination, with the paper-receiving bed, of a reciprocating bar extending across said bed, and vertical plates mounted on and both moving with said bar and longitudinally adjustable thereon to

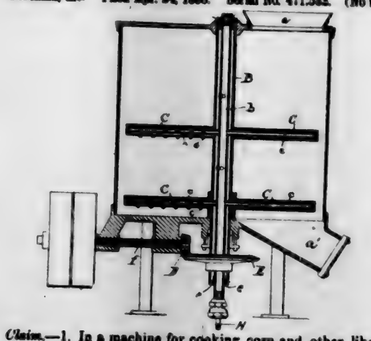
accommodate piles of paper of different widths between said plates as set forth.

7. The combination, with the table —B—, of the shoes —C—C— secured to the top of said table and inclined in one and the same direction, the leaves —c—c— secured lengthwise to the tops of said shoes and resting with their lower ends on the table and the abutments —b—b— secured to said ends of the leaves as set forth.

8. The combination, with the table —B—, and abutments —b— of the shaft —D— secured to the top of the table, the shoes —C—C— mounted laterally adjustable on said shaft, and the leaves —c—c— secured to the tops of said shoes as set forth.

9. In combination with the crank —I— and table —B—, the paper-receiving bed on said table, the bar —g— extending across said table, plates —P— mounted on said bar, the lever —i— operating said bar, the pitman —f— connected at one end to said lever, and the lugs —h—h— connected longitudinally adjustable to said pitman at opposite sides of the wrist-pin of the crank, substantially as and for the purpose set forth.

## 503,577. MACHINE FOR COOKING CORN. George Burnham, Jr., Portland, Me. Filed Apr. 24, 1893. Serial No. 471,582. (No model.)

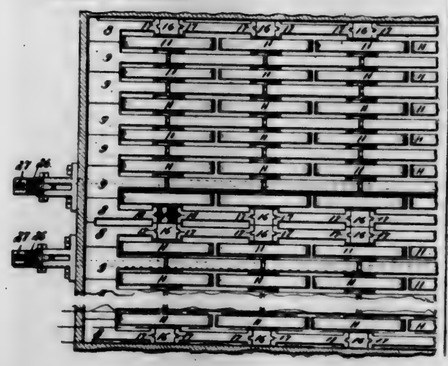


*Claim.*—1. In a machine for cooking corn and other like substances the combination of a hopper a hollow stirrer therein, means for supplying steam to said stirrer having openings for the discharge of steam and having its outer surfaces insulated from its interior, substantially as described.

2. In a machine for cooking corn &c. the combination of a hopper, a stirrer therein having arms or beaters composed of an interior steam pipe an exterior casing surrounding said steam pipe the two parts being separated by an insulating space and ducts for discharging steam from the interior of said arms, substantially as described.

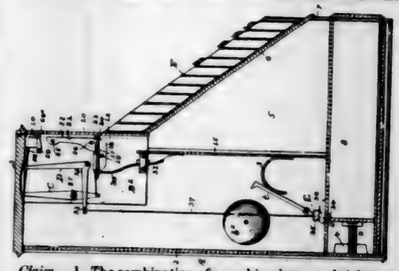
3. In a machine for cooking corn &c. the combination of a hopper a stirrer therein consisting of a rotating steam pipe with radial pipes therewith, an outer casing for said pipes separated therefrom by an air space, air inlets at the lower portion of said air space and air discharge openings at the upper portion thereof and ducts for discharging steam from the interior steam pipes, substantially as described.

## 503,578. INTERLOCKING AND INTERCHANGEABLE ROCKING GRATE-BAR. Richard Carey, Chicago, Ill. Filed May 9, 1892. Serial No. 432,302. (No model.)



*Claim.*—In a grate, the combination with suitable supporting frame bars, of a rocking axle provided with slots or recesses and projecting portions between said recesses, rocking bars having slotted portions adapted to be slipped on said axle and its slotted part and upon the projecting portion between the slots, the slotted bars being of approximately the size of said projecting portion of the axle; stationary bars adapted to be placed immediately over the slotted portion of the rocking axle and between the rocking bars, and means connected with said rocking axle and suitable mechanism for rocking the grate sections, substantially as described and for the purpose set forth.

## 503,579. CASH REGISTER AND TILL. Andrew L. Crawford, Columbus, Ga. Filed Apr. 27, 1893. Serial No. 472,103. (No model.)



*Claim.*—1. The combination of a rocking-lever and ticket-guard fulcrumed to set with one of its arms across the ticket-slot, a lever connected therewith, and a weighted latch-bar connected to the latter named lever, whereby the rocking-lever may be operated by the progress of a ticket in the slot and the latch disengaged from the till.

2. The combination of a rocking-lever fulcrumed to set with one of its arms across the ticket-slot, a lever connected to the rocking-lever, a ticket-bracket secured to form one wall of the ticket slot, a ticket-slide horizontally arranged in the ticket-bracket and connected to the lever, and a spring to push the ticket-slide inward and hold it across the ticket-slot.

3. The combination of a rocking-lever fulcrumed to set with one of its arms across the ticket-slot, a lever D, connected therewith, a weighted-latch connected to the lever D, a second lever C, connected to the rocking-lever, a ticket-bracket arranged to form one wall of the ticket-slot, a horizontally arranged slide in the ticket-bracket and connected to the lever C, and a spring to push the ticket slide inward, whereby when the rocking lever is depressed the latch is lifted and the ticket slide is moved from across the slot.

4. The combination of the rocking-lever 29, a bell-crank lever connected therewith, and a latch E, connected to the bell-crank lever, said latch consisting of a latch-bar vertically arranged and a cross piece on the upper end thereof constituting a weight.

5. In a cash register and till, the combination of the following organized means: a rocking-lever 29 fulcrumed to set across the ticket-slot, a bracket forming the back wall of the ticket-slot and having a horizontal slot therein, a slide in the horizontal slot, a lever connected to the rocking lever to pull the slide from across the ticket-slot, a spring to push the slide back across the ticket-slot, a lever connected to the rocking-lever, and a latch in engagement with the till connected to the last-named lever.

6. In a cash register and till, the combination with the cash-drawer and the ticket-slot leading into the ticket receptacle, of a rocking-lever fulcrumed to set with one of its arms across the ticket-slot, a latch to engage the till, a slide to close the ticket-slot, and levers intermediate of the rocking-lever and the slide and the latch, substantially as and for the purpose specified.

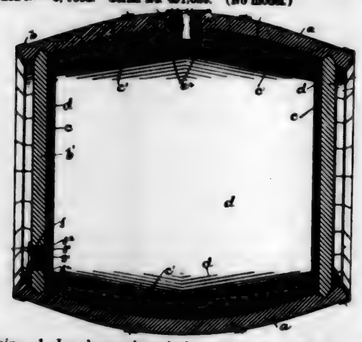
7. In a cash register and till, the combination of a receptacle formed with a ticket-slot, a lever in the path of the ticket-slot, and levers connected to the said lever to actuate a latch on the till-drawer and a ticket-slide projected across the slot.

8. In a cash register and till, the combination of a receptacle formed with a ticket-slot, a lever in the path of the ticket-slot, and levers connected thereto to close the ticket slot and control the movement of the drawer whereby when a ticket is forced down on the lever in the path of the slot the levers of the till and ticket-slide are operated.

9. The combination in a cash-register and till, provided with a ticket slot a ticket-slide to rest across the ticket slot and a latch to control the till of a lever in the path of the ticket slot, and levers connected to the ticket slide and to the till-drawer latch, whereby when a ticket is forced down the slot the levers are actuated, as and for the purpose specified.



## 503,580. BARREL OR KEG. Edmund A. David and Joseph Rath, Columbus, Ohio, assignors of one-third to Joseph P. Merrill, same place. Filed Nov 5, 1892. Serial No. 451,029. (No model.)



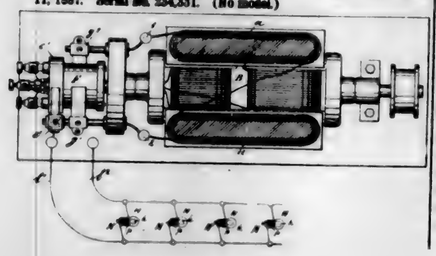
*Claim.*—1. In a keg or barrel, the combination with the outer wooden casing having a suitable opening; of an inner metallic lining having a bung-hole, an exteriorly threaded nipple secured to said lining around the hole and projecting out said opening, and a cap having interior threads for engaging those on the nipple, its exterior being cylindrical and smooth and tightly fitting the opening in the casing, as and for the purpose set forth.

2. In a keg or barrel, the combination with the outer wooden casing having a suitable opening in one end; of an inner metallic lining having a bung-hole, a nipple passed outwardly through said hole and having an enlarged flanged head at its inner end countersunk flush with the inner face of said lining, the tubular neck of the nipple being exteriorly threaded and standing within said opening, and a cap having interior threads for engaging those on the nipple, its exterior being cylindrical and smooth and tightly fitting the opening in the casing, as and for the purpose set forth.

3. In a keg or barrel, the combination with the outer wooden casing having a suitable opening in one end; of an inner metallic lining having a bung-hole, a nipple passed outwardly through said hole and having a flanged head at its inner end countersunk flush with the inner face of said lining, the flanges of the head projecting both inside and outside of the tubular neck of the nipple and the latter being exteriorly threaded and standing within said opening, a cap having interior threads for engaging those on the nipple, a flanged head at the outer end of the cap extending inward to a diameter smaller than that of the interior of the nipple, and a series of washers clamped between the inner flanges of said heads and standing within the nipple, as and for the purpose set forth.

4. In a keg or barrel, the combination with the outer wooden casing having a suitable opening in one end; of an inner metallic lining having a bung-hole, a nipple passed outwardly through said hole and having a flanged head at its inner end countersunk flush with the inner face of said lining, the flanges of the head projecting both inside and outside of the tubular neck of the nipple and the latter being exteriorly threaded and standing within said opening, a cap having interior threads for engaging those on the nipple, a flanged head at the outer end of the cap extending inward to a diameter smaller than that of the interior of the nipple, and a series of washers clamped between the inner flanges of said heads and standing within the nipple, the openings in said washers gradually increasing in size toward the outer end of said nipple, as and for the purpose set forth.

## 503,581. SELF-EXCITING ALTERNATE-CURRENT ELECTRIC GENERATOR. Philip Diehl, Elizabeth, N. J., assignor to the Westinghouse Electric and Manufacturing Company, Pittsburg, Pa. Filed Apr. 11, 1887. Serial No. 234,331. (No model.)



*Claim.*—1. The combination with the field-magnet of an electric generator delivering alternating electric currents and its magnetizing coils, of a single armature core revolved within the field-of-force created by such field-magnets, two coils wound thereon adapted to revolve simultaneously in the same field and means for rendering continuous a portion of the currents generated and transmitting the same through said magnetizing coils.

2. The combination with the field-magnet of an electric generator, its armature core, two sets of coils carried thereby, and adapted to revolve simultaneously in the same field and means for revolving the same within the field of said field-magnet, thereby generating alternating electric currents, of means for rectifying a portion of the currents thus generated, circuit-connections causing such rectified currents to traverse the field-magnet coils, and translating devices operated by the alternating currents.

3. The combination with the field-magnet coils of an electric generator, of an armature constructed with two bobbins of insulated wire, adapted to revolve simultaneously in the same field a commutator with the respective plates of which the terminals of one bobbin are connected, and collecting-plates with which the respective terminals of the other bobbin are connected.

4. The combination with the field-magnet coils of an electric generator, of an armature constructed with two generating circuits, adapted to revolve simultaneously in the same field a commutator with the respective plates of which the terminals of one generating circuit are connected, collecting-plates with which the respective terminals of the other generating circuit are connected and circuit-connections from said commutator through the coils of the field-magnet.

5. The combination in an electric generator of an armature having two circuits, adapted to revolve simultaneously in the same field one delivering alternating currents and the other continuous currents, and connections from the last-named circuit through the field-magnet coils of the generator.

## 503,582. CIGARETTE-MACHINE. James B. Duke, New York, N. Y. Filed Nov. 29, 1892. Serial No. 453,462. (No model.)



*Claim.*—1. A wrapping tube for cigarette machines open at the side rearward of the point at which the edges of the wrapper are brought together, substantially as described.

2. A wrapping tube for cigarette machines open at the side below the filler presser, substantially as described.

3. A wrapping tube for cigarette machines open on both sides rearward of the point at which the edges of the wrapper are brought together, substantially as described.

4. A wrapping tube for cigarette machines having the body of the tube formed in two sections arranged to leave a space between them opposite the filler presser, substantially as described.

## 503,583. PROCESS OF MAKING SMOKELESS EXPLOSIVES. Francis G. du Pont and Pierre S. du Pont, Wilmington, Del. Filed Dec. 21, 1892. Serial No. 455,901. (No specimens.)

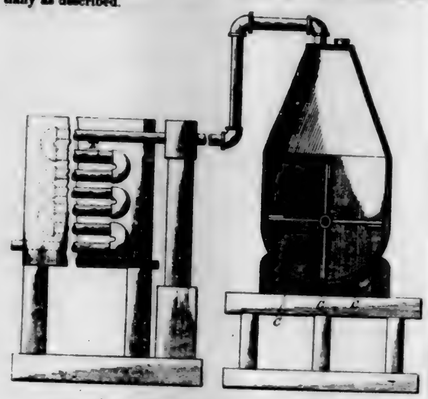
*Claim.*—1. The herein described process of making a smokeless explosive, which consists in suspending nitro-cellulose in a liquid not a solvent of the same, granulating the nitro-cellulose by agitating therewith in proper proportions a suitable solvent not miscible to any great extent in the liquid used to suspend the nitro-cellulose, and solidifying the grains thus formed, substantially as described.

2. The herein described process of making a smokeless explosive, which consists in suspending nitro-cellulose in a liquid not a solvent of the same, granulating the nitro-cellulose by agitating therewith in proper proportions a suitable solvent not miscible to any great extent in the liquid used to suspend the nitro-cellulose, and solidifying the grains thus formed by heat, substantially as described.

3. The herein described process of producing a smokeless explosive, which consists in suspending nitro-cellulose in a liquid not a solvent of the same, granulating the nitro-cellulose by agitating therewith in proper proportions a suitable solvent not miscible to any great extent in the liquid used to suspend the nitro-cellulose, and solidifying the grains thus formed by agitation in an atmosphere of steam, substantially as described.

4. The herein described process of producing a smokeless explo-

sive, which consists in suspending nitro-cellulose in a liquid not a solvent of the same, granulating the nitro-cellulose by agitating therewith in proper proportions a suitable solvent not miscible to any great extent in the liquid used to suspend the nitro-cellulose, and solidifying the grains thus formed by rotation in an atmosphere of steam, substantially as described.



5. The herein described process of producing a smokeless explosive, which consists in suspending nitro-cellulose in a liquid not a solvent of the same, granulating the nitro-cellulose by agitating therewith in proper proportions a suitable solvent not miscible to any great extent in the liquid used to suspend the nitro-cellulose, hardening and rounding the grains thus formed by rotation, and further solidifying the grains by rotation in an atmosphere of steam, substantially as described.

6. The herein described process of producing a smokeless explosive, which consists in suspending nitro-cellulose in a liquid not a solvent of the same, granulating the nitro-cellulose by agitating therewith in proper proportions, accompanied by injection of steam, a suitable solvent not miscible to any great extent in the liquid used to suspend the nitro-cellulose, and solidifying the grains thus formed by agitation in an atmosphere of steam, substantially as described.

7. The herein described process of producing a smokeless explosive, which consists in suspending nitro-cellulose in a liquid not a solvent of the same, granulating the nitro-cellulose by agitating therewith in proper proportions a suitable solvent not miscible to any great extent in the liquid used to suspend the nitro-cellulose, solidifying the grains thus formed, and moderating the action of the same by the addition, during the above operation, of a suitable moderating agent, substantially as described.

8. The herein described process of producing a smokeless explosive, which consists in suspending nitro-cellulose in a liquid not a solvent of the same, granulating the nitro-cellulose by agitating therewith in proper proportions a suitable solvent not miscible to any great extent in the liquid used to suspend the nitro-cellulose, and in which is dissolved a moderating agent, and solidifying the grains thus formed, substantially as described.

9. The herein described process of producing a smokeless explosive, which consists in suspending nitro-cellulose in a liquid, such as water, which is not a solvent of the same, and in which is dissolved a suitable salt, granulating the nitro-cellulose by agitating therewith in proper proportions a suitable solvent not miscible to any great extent in the liquid used to suspend the nitro-cellulose, and solidifying the grains thus formed, substantially as described.

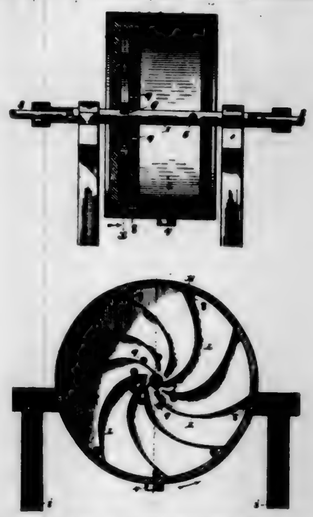
10. The herein described process of producing a smokeless explosive, which consists in suspending nitro-cellulose in a liquid not a solvent of the same, granulating the nitro-cellulose by agitating therewith in proper proportions, during injection of steam, a suitable solvent not miscible to any great extent in the liquid used to suspend the nitro-cellulose and in which is dissolved a moderating agent, and solidifying the grains thus formed by rotation, and afterward by rotation in an atmosphere of steam, substantially as described.

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**503,584. APPARATUS FOR PRODUCING SMOKELESS EXPLOSIVES.** FRANCIS G. DU POST, Wilmington, Del. Filed Dec. 30, 1892. Serial No. 457,154. (No model.)

*Claim.*—1. In a rotating barrel, the combination with the heads of the barrel and an inner bulkhead, in which is formed a peripheral series of openings, placed near one of said heads, of a tubular axis having steam inlet and outlet openings, and means between said inner bulkhead and the head of the barrel for conveying water of condensation to said steam outlet opening, substantially as described.

2. In a rotating barrel, the combination with the heads of the barrel and an inner bulkhead, placed near one of said heads and formed with two concentric series of openings, of a tubular axis having steam inlet and outlet openings, and means between said inner bulkhead and the head of the barrel for conveying water of condensation and steam to said steam outlet opening, substantially as described



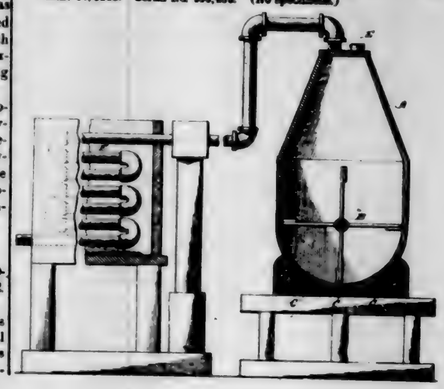
3. In a rotating barrel, the combination with the heads of the barrel, and an inner bulkhead placed near one of said heads and formed with a peripheral series of openings, of a tubular axis having steam inlet and outlet openings, and a series of cycloidal guides or chutes arranged between said inner bulkhead and the head of the barrel, substantially as described.

4. In a rotating barrel, the combination with the heads of the barrel, and an inner bulkhead placed near one of said heads and formed with two concentric series of openings, of a tubular axis having steam inlet and outlet openings, and a series of cycloidal guides or chutes arranged between said inner bulkhead and the head of the barrel, substantially as described.

5. In a rotating barrel, the combination with the heads of the barrel and the inner bulkhead K, formed with the two series of aperture 8 and 9, of the tubular axis I, having steam inlet and outlet openings 5 and 6, and the cycloidal guides or chutes L arranged between said inner bulkhead and the head of the barrel, substantially as described.

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**503,585. PROCESS OF MAKING SMOKELESS EXPLOSIVES.** FRANCIS G. DU PONT and PIERRE S. DU PONT, Wilmington, Del. Filed Mar. 17, 1893. Serial No. 466,488. (No specimens.)





*Claim.*—1. The herein described process for producing a smokeless explosive, which consists in suspending nitro-cellulose in a liquid not a solvent of the same, granulating the nitro-cellulose by agitating therewith in proper proportions a suitable solvent of the same not miscible to any great extent in the liquid used to suspend the nitro-cellulose, and solidifying the grains thus formed by subjecting the same to a heat insufficient to vaporize the solvent but sufficient to vaporize the liquid for removal of the liquid contained in the grains, and then removing the excess of solvent, substantially as described.

2. The herein described process for producing a smokeless explosive, which consists in suspending nitro-cellulose in a liquid not a solvent of the same, granulating the nitro-cellulose by agitating therewith in proper proportions a suitable solvent not miscible to any great extent in the liquid used to suspend the nitro-cellulose, and solidifying the grains thus formed by subjecting the same to a heat insufficient to vaporize the solvent but sufficient to vaporize the liquid for removal of the liquid contained in the grains, and then to a heat sufficient to vaporize the solvent for removal of the excess of solvent, substantially as described.

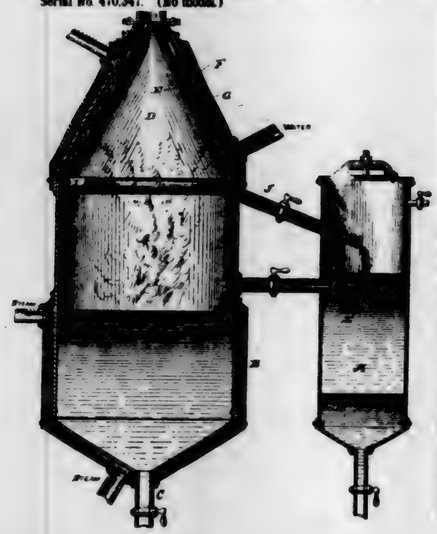
3. The herein described process for producing a smokeless explosive, which consists in suspending nitro-cellulose in a liquid not a solvent of the same, granulating the nitro-cellulose by agitating therewith in proper proportions a suitable solvent not miscible to any great extent in the liquid used to suspend the nitro-cellulose, and solidifying the grains thus formed with removal of liquid contained in the same and excess of solvent by subjecting them to a heat ranging from 120° to 180° Fahrenheit for removal of the liquid, and then boiling them for removal of excess of solvent, substantially as described.

4. The herein described process for producing a smokeless explosive, which consists in suspending nitro-cellulose in a liquid not a solvent of the same, granulating the nitro-cellulose by agitating therewith in proper proportions a suitable solvent not miscible to any great extent in the liquid used to suspend the nitro-cellulose, and solidifying the grains thus formed by subjecting the same to a heat insufficient to vaporize the solvent but sufficient to vaporize the liquid for removal of the liquid contained in the grains, and then to a heat sufficient to vaporize the solvent for removal of the excess of solvent, the latter operation being accompanied by agitation, substantially as described.

5. The herein described process for producing a smokeless explosive, which consists in suspending nitro-cellulose in a liquid not a solvent of the same, granulating the nitro-cellulose by agitating therewith in proper proportions a suitable solvent of the same not miscible to any great extent in the liquid used to suspend the nitro-cellulose, and solidifying the grains thus formed by subjecting the same to a heat insufficient to vaporize the solvent but sufficient to vaporize the liquid for removal of the liquid contained in the grains, and then rotating the grains in an atmosphere of steam for removal of the excess of solvent, substantially as described.

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**503,586. APPARATUS FOR DISTILLING VOLATILE SUBSTANCES.** FRANCIS G. DU POST, Wilmington, Del. Filed Apr. 14, 1893. Serial No. 470,347. (No model.)



*Claim.*—1. In a still, the combination with the conical top of the same provided with refrigerating means, of an inner conical shell suspended within the top, an annular trough arranged so as to collect the distillate, and a delivery pipe for said trough, substantially as described.

2. In an apparatus for distilling volatile substances, the combination with a main still provided with a conical top having refrigerating means, an inner conical shell suspended within said top, and an annular trough arranged so as to collect the distillate, of a reservoir for receiving the distillate, provided with an outlet for one of the condensed products, means for automatically returning the other condensed product to the main still, and a pipe leading from the annular trough of the still to the reservoir for conducting the distillate to the same, substantially as described.

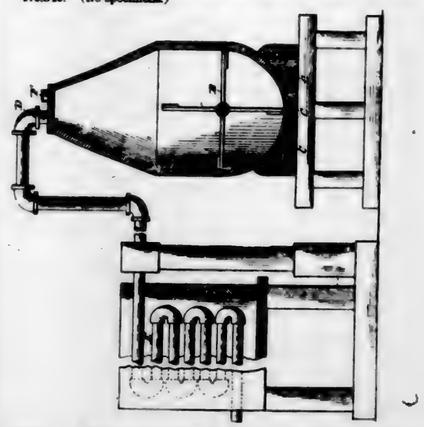
3. In an apparatus for distilling volatile substances, the combination with a main still provided with a conical top having refrigerating means an inner conical shell suspended within said top, and an annular trough arranged so as to collect the distillate, of a reservoir provided with an outlet at its bottom, a pipe conducting the distillate to the reservoir, and a pipe connecting the reservoir with the still at a point above the level of the liquids in the still, substantially as described.

4. In an apparatus for distilling volatile substances, the combination with a main still provided with a conical top having refrigerating means, an inner conical shell suspended within said top, and an annular trough arranged so as to collect the distillate, a reservoir having an outlet opening at its bottom, a pipe conducting the distillate to the reservoir, and a pipe connecting the still with the reservoir at a point above the level of the liquid in the still, and below the point of entrance of the distillate, substantially as described.

5. In an apparatus for distilling volatile substances, the combination with a main still A, provided with the inner shell E and annular trough I, of a reservoir K, having an outlet opening at its bottom for the heavier condensed product, and connected to said still by the distillate-discharge pipe J and the overflow pipe L, substantially as described.

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**503,587. PROCESS OF MAKING SMOKELESS EXPLOSIVES.** FRANCIS G. DU POST, Wilmington, Del. Filed Apr. 15, 1893. Serial No. 470,549. (No specimens.)



*Claim.*—1. The herein described process of producing a smokeless explosive, which consists in suspending nitro-cellulose in a liquid not a solvent of the same, granulating the nitro-cellulose by agitating therewith in proper proportions an emulsion of a solvent of the nitro-cellulose, which is not miscible to any great extent in the liquid used to suspend the same, in a suitable liquid in proper proportions, and solidifying the grains thus formed, substantially as described.

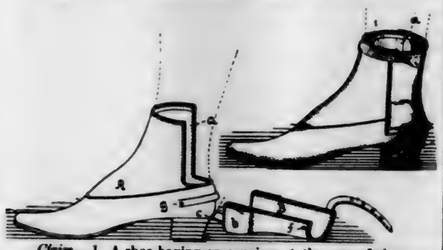
2. The herein described process of producing a smokeless explosive, which consists in suspending nitro-cellulose in a liquid not a solvent of the same, granulating the nitro-cellulose by agitating therewith in proper proportions an emulsion of a solvent of the same, which is not miscible to any great extent in the liquid used to suspend the nitro-cellulose, with water in proper porportions, and solidifying the grains thus formed, substantially as described.

3. The herein described process of producing a smokeless explosive, which consists in suspending nitro-cellulose in a liquid not a solvent of the same, granulating the nitro-cellulose by agitating therewith in proper proportions an emulsion of nitro-benzole, which is not miscible to any great extent in the liquid used to suspend the nitro-

cellulose, with a suitable liquid in proper porportions, and solidifying the grains thus formed, substantially as described.

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**503,588. SHOE.** OTTO P. ELTERICH and GOTTHOLD O. ELTERICH, Maywood, N. J. Filed Jan. 11, 1892. Serial No. 417,729. (No model.)



*Claim.*—1. A shoe having an opening at the rear of the upper leaving the heel portion intact, a closing section hinged to the main section at a point below said opening to swing downwardly to clear the main section and to leave the opening unobstructed, and means for securing the closing section to the main section when closed, substantially as described.

2. A shoe having an opening at the rear of the upper for the insertion of the foot, a closing section, a band hinging the closing section to the main section all constructed to permit the closing section to be swung downwardly to clear the shoe, and upwardly to close the opening and overlap its edges on all sides, substantially as described.

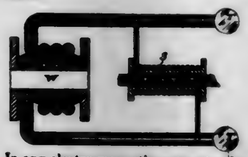
3. A shoe having an opening in the rear of the upper, leaving the heel portion intact, a closing section for said opening adapted to overlap the edges of the same, a flexible band hinging said closing section to the main section to permit the same to be swung downwardly to clear the shoe, and a strap adapted to encircle the upper leg portion of the two sections to unite the same and secure the shoe, substantially as described.

4. A shoe having an opening in the rear for the insertion of the foot, a closing section made to conform to the corresponding part of the foot and to close said opening, stiffeners inserted in the vertical edges of the upper, and a horizontal rib or bead at the heel portion upon which said closing section rests, substantially as described.

5. A shoe having an opening at the rear for the insertion of the foot, a closing section hinged to the main section, and a rib located on the heel portion below the opening, upon which the closing section rests when closed, substantially as described.

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**503,589. ELECTRIC-MEASURING APPARATUS FOR ALTERNATE CURRENTS.** SYDNEY EVERSHED, London, England. Filed Dec. 22, 1891. Serial No. 415,925. (No model.) Patented in England Nov. 1, 1889, No. 17,317.



*Claim.*—1. In any electro-magnetic apparatus for the measurement of electric pressure, power or work, in an alternating current, the combination with the working coil of the said apparatus of a shunt impedence coil, about the said working coil, to produce an effect on the measuring instrument compensating for the errors due to an alternating current.

2. In any electro magnetic apparatus for the measurement of electric pressure, power or work, in any alternating current circuit, a shunt circuit about the working coil of about one-twentieth the area of the coil circuit, inductive iron wire in or about a coil of the said shunt circuit, in combination with the usual operating coil furnished with means for indicating the value of the passing current, substantially as described.

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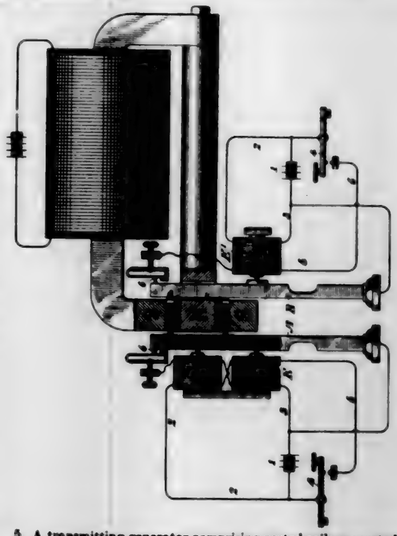
**503,590. TELEGRAPHY.** STEPHEN D. FIELD, Yonkers, N. Y. Filed Jan. 16, 1893. Serial No. 458,503. (No model.)

*Claim.*—1. A transmitting generator for a signaling system containing a chokeless coil supported in a magnetic field, a harmonic vibrator for vibrating the coil across the lines of force of said field said vibrator being normally strained, and a key and controlling magnet for instantly releasing the strain, whereby vibrations are instantly sent to line upon operation of the key.

2. A transmitting generator for a signaling system comprising nested coils supported in a common magnetic field and mounted so as to vibrate harmonically in opposite directions.

3. A harmonic signaling instrument comprising two coils attached to harmonic vibrators of different rates and supported in a magnetic field and interconnected so as to assist each other by mutual induction.

4. A harmonic signaling instrument comprising nested coils supported in a common magnetic field and attached to harmonic vibrators of different rates.



5. A transmitting generator comprising nested coils supported in a common magnetic field and attached to vibrators of different rates and independent means for actuating the several coils.

6. A signaling instrument comprising two coils connected in series and reversely wound in the same magnetic field, said coils being attached to harmonic vibrators of adjustable rates adapted to vibrate them across the field.

7. A signaling instrument for a harmonic telegraph system comprising two connected nested coils supported in the same magnetic field and attached to two harmonic adjustable vibrators having different rates.

8. A transmitting instrument for a harmonic telegraph system comprising a normally strained harmonic vibrator, a coil of wire in a magnetic field attached to said vibrator, a key for releasing the strain, and an electro-magnet and local connections for maintaining the vibrator in operation so long as the key is held closed.

9. A transmitting instrument for a harmonic telegraph system comprising a coil supported in a magnetic field, said coil being attached to a harmonic vibrator, an electro-magnet provided with a normally closed circuit for holding said vibrator in a state of stress, a key and circuit connections for releasing the vibrator and maintaining it in operation when the key is actuated.

10. A transmitting instrument for a harmonic telegraph system comprising a coil supported in a magnetic field, said coil being attached to a harmonic vibrator, a magnet for normally holding the vibrator in a state of stress, and a key for closing a local circuit and releasing the vibrator, and circuit connections including an electro-magnet and interrupter to maintain the vibrator in action while the key is in signaling position.

11. A transmitting instrument for a harmonic telegraph system comprising a generating coil supported in a magnetic field, said coil being attached to a harmonic vibrator, a charged electro-magnet for normally holding the vibrator in a state of stress, a differential winding on said electro-magnet including a signaling key and an interrupter for opening the differential circuit at each vibration of the vibrator.

12. A combined transmitting and receiving instrument for a harmonic signaling system comprising two coils supported in a common magnetic field and attached to harmonic vibrators of different rates.

13. A combined transmitting and receiving instrument for a harmonic signaling system comprising two coils supported in the same magnetic field, one serving as a transmitting agent and the other as a receiving agent, said coils being attached to two harmonic vibrators having different rates.

14. A harmonic telegraph system comprising three or more stations connected in series relation by a continuously closed circuit, chokeless transmitting and receiving instruments at the several stations comprising harmonic vibrators and generating coils for originating electric vibrations, and similar vibrators and receiving coils, the instruments at the several stations having different rates of vibration and their coils being wound to eliminate self-inductive drag.

15. A harmonic telegraph system containing a series of stations connected by a continuously closed circuit, and inductionless or chokeless signal transmitting and receiving instruments at different stations cooperating with harmonic vibrators of adjustable rates of vibration.

16. In a balanced telegraphic circuit such as a duplex or quadruplex, the combination with the terminal stations provided with balanced signaling apparatus, of one or more intermediate stations included in the main circuit provided with chokeless signaling apparatus comprising harmonic vibrators for originating line impulses and harmonic vibrators for receiving line impulses, the several vibrators at different stations being tuned to different rates.

17. A multiplex telegraph system comprising a series of stations at two of which is balanced signaling apparatus, and a series of chokeless harmonic signal transmitting and receiving instruments included in the same circuit comprising harmonic vibrators for originating line impulses and harmonic vibrators for receiving line impulses, the several vibrators at different stations being tuned to different rates.

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**503,591. METHOD OF MAKING ANCHORS.** WILLIAM H. FISHER, Gloucester, Mass. Filed Feb. 5, 1892. Serial No. 420,463. (No specimens.)



*Claim.*—1. The improved method of making an anchor which consists in providing a bar of metal suitable for forging, overturning the end portions thereof and displacing the metal laterally to form as homogeneous members the palms or flukes and forging the metal to otherwise form the blades and points, curving the bar and welding the shank thereto.

2. The improved method of making an anchor from a bar of metal suitable for forging which consists in reducing the thickness of the bar a short distance within its ends by forging, then overturning the end portions, and by forging, displacing the metal laterally to form the flukes as homogeneous members of the arms substantially as described.

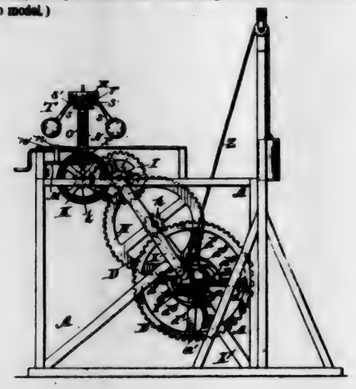
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**503,592. COMPOSITION FOR ARCHITECTURAL PURPOSES.** JEREMIAH PLYER, Syracuse, N. Y. Filed Mar. 20, 1893. Serial No. 466,895. (No specimens.)

*Claim.*—The composition of matter for plastering material consisting of sand or marble dust, plaster of paris, slaked quick lime, talc, mineral pulp and a solution of carbonate of potash and glue absorbed in quick lime in about the proportions set forth.

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**503,593. MECHANICAL MOTOR.** JOHAN GRAM and CHARLES E. HARDIE, County of Lassen, Cal. Filed Aug. 1, 1892. Serial No. 441,904. (No model.)

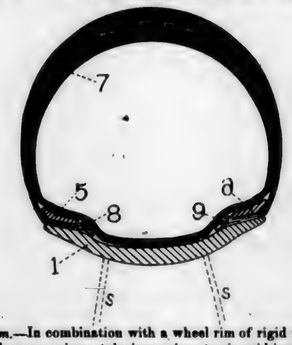


*Claim.*—1. In a mechanical motor of the character described the combination of a shaft B, spool C secured thereon, a flanged or collared ratchet F rigidly secured on said shaft, a cog or gear wheel D loosely mounted on the collar of said ratchet, pawls secured to said cog wheel D for engaging with the ratchet F, and suitable springs for holding the said pawls in engagement with the ratchet, gear rigidly secured to the outer end of said shaft and means for rotating said gear for winding the rope upon the spool, with a series of intermeshing gears and governor connected thereto, the whole suitably mounted for operation, as set forth.

2. The combination with a mechanical motor, as described, of a governor consisting of a bracket M, rod N secured therein, a hollow shaft O surrounding said rod N, a gear on the lower end of said hollow shaft, said hollow shaft having a flanged shaped top having ears or lugs thereon, curved governor arms *s*, auxiliary pieces *s'* secured on the curved portions of the said arms, and an adjustable plate or nut R on the upper end of the rod N, as and for the purpose set forth

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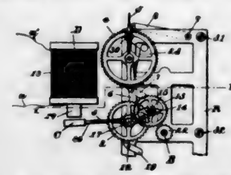
**503,594. PNEUMATIC TIRE.** WILLISTON W. GREENWOOD, New York, N. Y. Filed Apr. 7, 1893. Serial No. 469,487. (No model.)



*Claim.*—In combination with a wheel rim of rigid material supporting thereon an inner tube impervious to air, said inner tube being confined by an inextensible, flexible covering,—clamping devices consisting of continuous, or jointed inextensible, longitudinal bands or hoops of rigid material, which bands effect the clamping of the edges of said inextensible, flexible covering between themselves and said wheel rim by means of the increasing diameter of said rim at its outer edges, the bands being held to their positions against the coned rim on the side away from the axle of said wheel by the tension existing in the covering and induced by virtue of the compressed air within the inner tube, the edges of said inextensible, flexible covering being furthermore prevented from slipping through by enlarged borders; substantially as shown and described in the accompanying specification.

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**503,595. ELECTRIC METER.** FRED L. GREGORY, Niagara Falls, N. Y. Filed May 14, 1892. Serial No. 432,984. (No model.)



*Claim.*—1. In an electric-meter, the combination with the magnet energized by the current to be measured, and with the time-piece having a meter-mechanism actuating-pinion, of a rock-shaft having a hand-wheel and hand connected together and loosely mounted thereon, an arm connected with said rock-shaft, gearing carried by said arm in mesh with the hand-wheel and adapted for engagement with and disengagement from the pinion of the time-piece, as described, an armature operable by the maguet and connected to swing said arm, and means for preventing the retraction of the hand-wheel, all combined and co-operating, substantially as and for the purpose described.

2. In an electric-meter, the combination with the frame, and the magnet energized by the current to be measured, of the clock-hand-carrying shaft B having a pinion thereon, the rock-shaft 17 located in a horizontal plane with relation to, and remote from said shaft B, and having the hand-wheel 2 and a hand 3 loosely mounted thereon, the gear-wheel 13 and pinion 14 carried by a stud secured to a swing-

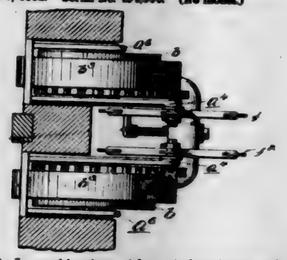
ing-arm 16 fixed at one end to the rock-shaft, and interposed between the hand-wheel 2 and pinion 22, and adapted for engagement therewith, the armature C connected by the arm 20 to the rock-shaft for swinging the arm 16, and connected gearing, into and out from operative engagement with the pinion 22, and means, as specified, for preventing the retraction of the hand-wheel, substantially as described.

3. In a meter of the class specified, the combination with a time-piece and a magnet, of the first meter-hand wheel, shiftable gearing substantially as described intermediate to the time-piece and said first meter-hand wheel, means for connecting and disconnecting the gearing, the second meter-hand wheel, a lever-and-ratchet device arranged to intermittently actuate the second meter-hand wheel, and a lever-actuating device substantially as described carried by the first meter-hand wheel for retracting said lever, substantially as set forth.

4. In a meter of the class specified, the combination with the meter-hand wheel 2 having the cam P and carrying the meter-hand 3, of the second meter-hand wheel 4 carrying the hand 5, dials for said meter-hands respectively, and the lever 6 and pawl 7, all organized and co-acting substantially as shown and described.

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**503,596. SASH-BALANCE.** NOAH HANLET, Little Rock, Ark. Filed Dec. 7, 1892. Serial No. 454,330. (No model.)

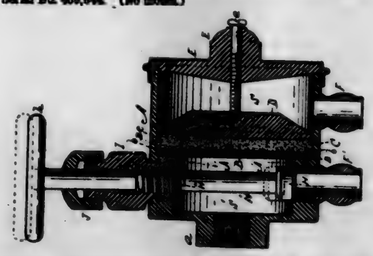


*Claim.*—1. In combination with a window-frame and sash, the combination of the frame A, having in its face a rectangular opening $a^3$, arm $a^4$, having square perforation $a^5$, arm $a^6$, having circular perforation $a^7$; drum B, consisting of the two rabbeted parts $b$, and having a central axle perforation and around its periphery notched ribs $b^2$, and on each side of one of its ribs openings $b^4$, leaving a bar $b^5$; tire $b^6$, fitting around said drum and in the notches of said ribs; axle D, having the perforated square end $d$, circular body $d'$, and longitudinal slot $d^2$; spiral spring C, one end secured in the slot $d^3$, and the other around the bar $b^5$, substantially as shown and described and for the purposes set forth.

2. In combination with a window-frame and sash, the frame A, having in its face a rectangular opening $a^3$, arm $a^4$, having square perforation $a^5$, and arm $a^6$, having circular perforation $a^7$; drum B, consisting of the two rabbeted parts $b$, and having a central axle perforation, axle D, having the perforated square end $d$, circular body $d'$, and longitudinal slot $d^2$; spiral spring C, one end secured in the slot $d^3$, and the other to the periphery of the drum, substantially as shown and described and for the purposes set forth.

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**503,597. WATER-FILTER.** WILLIAM R. HAWES, Wellesley, Mass., assignor of one-half to Joseph R. Sells, same place. Filed Apr. 10, 1893. Serial No. 469,644. (No model.)

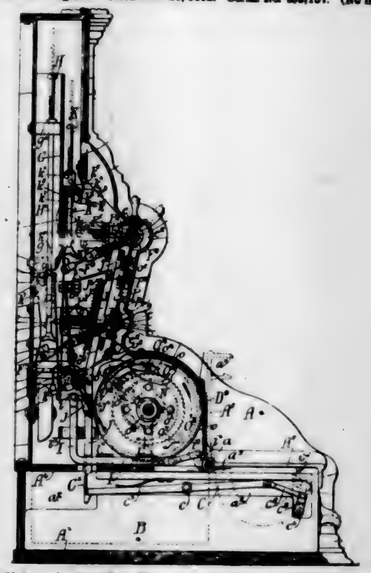


*Claim.*—1. The herein described improved water-filter comprising the case A provided with the internal annular shoulder A', a disk or wall composed of filtering material resting against said shoulder, the spider consisting essentially of the central portion D', spokes D and rim D'', the cap E, screw $e$ extending through said cap horizontally, and resting against said spider, outlet pipes F' F located on opposite sides of the filtering substance, and a valve H whose stem is screw-[illegible] into the casing whereby the valve is adapted to be raised and lowered, substantially as described.

2. In a water-filter, in combination, the case A provided with the annular shoulder A' the surface of which is formed into the annular bead $b$, inlet pipe $a$ and outlet pipes F F', the disk B of felt or analogous material resting against said shoulder, the disk C of plaster-of-paris or analogous material resting against said disk B, the spider D D' D'' pressing against said disk C, the cap E provided with the screw $e$ resting against said spider, and the valve H, seated on the outlet pipe F' and provided with a valve-stem whereby it is adapted to be raised and lowered, substantially as set forth.

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**503,598. CASH INDICATOR AND REGISTER.** ADOLPH C. HANSEN, Chicago, Ill. Filed Nov. 26, 1892. Serial No. 453,187. (No model.)



*Claim.*—1. A cash indicator comprising a rock shaft, an actuating lever movable endwise upon said shaft and turning therewith, a plurality of tablet-supporting slide rods, an arm movable with the actuating lever and adapted to act upon either of the several slide rods, a money receptacle, a locking mechanism for the money receptacle, a slide bar mounted in the machine frame and operatively connected with the locking mechanism, and an arm or projection rigidly attached to the rock-shaft and adapted to engage and move the said slide bar when said rock shaft is turned by force applied to the actuating lever, substantially as described.

2. A cash indicator comprising a rock-shaft, an actuating lever movable endwise upon said shaft and turning therewith, a plurality of tablet supporting slide rods, an arm movable with the actuating lever and adapted to act upon either of said slide rods, an audible signaling device provided with a trip arm, a slide bar mounted on the machine frame and adapted to engage the trip-arm to actuate the signaling device, and an arm or projection rigidly attached to the rock-shaft and adapted to engage and move the slide bar when said rock-shaft is turned by force applied to the actuating lever, substantially as described.

3. A cash indicator comprising a rock-shaft, an actuating lever movable endwise upon said shaft and turning therewith, a plurality of tablet-supporting slide rods, an arm movable with the actuating lever and adapted to act upon either of the several slide rods, a catch-bar movable toward and from the said slide rods, a tilting arm or dog connected with and adapted to actuate said catch-bar, a slide bar adapted to engage and move said tilting arm or dog, and a rigid arm on the rock-shaft adapted to engage and move the slide bar when the rock shaft is turned by force applied to the actuating lever, substantially as described.

4. A cash indicator comprising a rock-shaft, an actuating lever movable endwise upon said shaft and turning therewith, a plurality of tablet supporting slide rods, an arm movable with the actuating lever and adapted to act upon either of the several slide rods, a catch bar movable toward and from the slide rods, a tilting arm or dog connected with and adapted to actuate the said catch bar, a money receptacle, a locking device therefor, a slide bar operatively connected with the locking mechanism and adapted to engage and move the said tilting arm or dog, and a rigid arm on the rock-shaft adapted to engage and move the slide bar when the rock-shaft is turned by force applied to the actuating lever, substantially as described.

5. A cash indicator comprising a rock-shaft, an actuating lever movable endwise upon said shaft and turning therewith, a plurality of tablet supporting slide rods, an arm movable with the actuating lever and adapted to act upon either of the several slide rods, a catch bar movable toward and from the slide rods, a tilting arm or dog connected with and adapted to actuate said catch bar, a money receptacle, a locking mechanism therefor, an audible signaling device provided with a trip arm, a slide bar operatively connected with the locking mechanism and adapted to actuate the said tilting arm or dog and the said trip arm, and a rigid arm on the rock-shaft adapted to engage and move the slide bar when the rock shaft is turned by force applied to the actuating lever, substantially as described.

6. A cash indicator and register, comprising a laterally movable actuating lever, a number of vertically movable tablet supporting slide rods each carrying a spring catch, a spring-pressed catch bar movable toward and from the slide rods, for engaging the catches of said slide rods, the spring of the catch bar being stronger than those of the said catches, a tilting arm or dog having operative connection with said catch-bar, a vertically movable tripping bar for engaging said arm or dog to move the latter in such manner as to disengage the catch bar from the slide rod, and means for actuating said tripping bar at each reciprocation of the actuating lever, substantially as described.

7. A cash indicator and register, comprising a rock-shaft, a vertically movable trip-bar engaged and lifted by the shaft, a tilting arm or dog engaged and lifted by the vertically movable trip-bar, a number of vertically movable tablet carrying slide-rods, and a pendent pivotal catch-bar flexibly connected to the tilting arm or dog and arranged to engage the slide rods and to retain them in tablet-exposing position; said tilting arm or dog, when raised, serving to move the catch bar out of engagement with the slide rods, substantially as set forth.

8. A cash indicator and register comprising a number of sets of vertically movable tablet-carrying slide rods, a plurality of pendent pivotal catch-bars arranged to engage the slide-rods and retain them in position to expose their tablets, a tilting arm or dog flexibly connected to each of the catch bars, and a vertically movable tripping bar engaging the tilting arm or dog so as to raise the same and thus cause the dog to swing the catch bars out of engagement with the tablet supporting slide rods, substantially as described.

9 A cash indicator and register, comprising a money receptacle having a part which is moved to open the receptacle, a number of vertically movable tablet supporting, slide rods, each carrying a spring catch, a spring pressed catch bar movable toward and from the slide rods to engaging the catches of the said slide rods, a tilting arm or dog having operative connection with said catch bar, and a tripping bar for engaging said arm or dog to move the latter in such manner as to disengage the catch bar from the slide rod, said tilting arm or dog being movable bodily toward or from the tripping bar and having operative connection with the movable part of the money receptacle whereby the opening of the receptacle will shift the said arm or dog out of position for engagement with the tripping bar, substantially as described.

10. A cash indicator comprising a casing or housing provided with a movable money receptacle, and a movable lid or cover for said receptacle, a locking mechanism for the receptacle and lid, a number of vertically movable tablet supporting slide rods, each carrying a spring catch, a spring pressed catch bar movable toward and from the slide rods and adapted to engage the catches of the said slide rod, a tilting arm or dog having operative connection with the said locking mechanism and adapted to engage and actuate said tilting arm or dog, said tilting arm or dog being bodily movable and having operative connection with the said lid or cover whereby the dog will be shifted out of position for engagement with the tripping bar when the lid or cover is open, substantially as described.

11 A cash indicator and register, comprising a casing or housing having a money receptacle and a movable lid or cover for said receptacle, a locking mechanism for the receptacle and lid, a number of vertically movable tablet supporting slide rods, each carrying a spring catch, a spring-pressed catch bar movable toward and from the slide rods and adapted to engage the catches of the same, a tilting arm or dog having operative connection with said catch bar, a horizontally sliding bar on which said arm or dog is mounted, said sliding bar having operative connection with the said lid or cover, and a vertically movable tripping bar having operative connection with the locking mechanism and adapted to engage said tilting arm or dog, substantially as described

12. A cash indicator and register comprising a plurality of revoluble registering dials, and pawls and ratchets connecting said dials in series so as to transmit motion from each dial to another dial, a longitudinally movable sleeve through the medium of which said dials are actuated, a grooved wheel giving motion to one of the dials by a pawl and ratchet connection, a flexible strand attached at one end to the said sleeve and at its opposite end to the said grooved wheel, and a retracting spring applied to the grooved wheel to turn the same backward and restore the sleeve to its normal position after each advance movement thereof, substantially as described.

13. A cash indicator and register, comprising a plurality of registering dials or disks, pawl-carrying levers connecting the dials in series and engaging, by their pawls, ratchet-disks carried by the dial-hubs, and also engaging projections of the dial hubs, a plurality of rock-shafts each carrying a longitudinally movable sleeve, grooved wheels carried by the dial hubs and flexible connections between the sleeves and grooved wheels carried by the dial-hubs, substantially as set forth.

14. A cash indicator and register, comprising a plurality of rock-shafts, a longitudinally movable sleeve mounted upon each of said shafts and provided with a slotted arm, a spring-retained and notched locking-bar having inclined ends to engage the slots of the sleeve arms, and detents for engaging the notches of the locking-bar, substantially as set forth.

15. A cash indicator and register comprising a plurality of rock-shafts, vibratory levers for actuating the same, and means for holding one shaft from movement during the time the other shaft is being actuated, operated by the movement of the lever on such other shaft, substantially as described.

16. A cash indicator and register, comprising a plurality of rock-shafts, longitudinally movable sleeves mounted upon each of said rock shafts and provided each with an open-slotted locking-arm, a spring-retained locking-bar having inclined ends to enter the slots of the arms, and spring-pressed detents engaging notches in the locking-bar, substantially as set forth.

17. A cash indicator and register, comprising a rock-shaft having a plurality of grooves and shouldered intermediately of said grooves, and a locking bar movable laterally and longitudinally into and out of engagement with said grooves, substantially as set forth.

18. A cash indicator and register, comprising a rock-shaft having a plurality of grooves and shouldered intermediately of the grooves, a longitudinally and laterally movable locking-bar engaging the grooves, and springs surrounding said bar to resist its longitudinal movement and also to move the locking bar laterally, substantially as described.

19. A cash indicator and register, comprising a rock shaft carrying a vibratory handle, a sliding bar engaged by said handle, a sliding pawl-carrying bar having a pivotal link-connection with the first named sliding bar, and a "ticket" dial carrying a ratchet wheel the teeth of which are engaged by the pawl of the pawl-carrying bar, substantially as set forth.

20. A cash indicator comprising a plurality of tablets, slide rods supporting the same, and means for operating the tablets comprising a laterally movable and oscillating actuating arm, said actuating arm being extensible and retractible and being held in its extended position by a spring, an anti-friction roller on the free end of the arm, and a guide plate arranged parallel with the slide bar, against which guide plate said roller bears so as to maintain the outer end of the actuating arm in engagement with the slide rods, substantially as described.

21. A cash indicator, comprising a plurality of slide rods carrying price-tablets, a bodily movable and vibratory arm for actuating the slide-rods, said arm being extensible and retractible and provided with a spring for effecting its extension, and a bearing or guide surface upon which the free end of the extensible and retractible arm is arranged to travel; this guide surface serving to maintain the extensible and retractible arm in engagement with a slide-rod, substantially as set forth.

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**503,599. VEGETABLE-CUTTER.** JOHN F. HEINLEIN, Richville, Mich., assignor of three-fourths to Henry Luebkert, Michael Nicodemus, and John G. Trump, same place. Filed Apr. 8, 1893. Serial No. 469,502. (No model.)

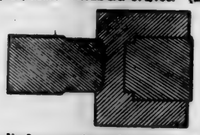
*Claim.*—1. In a vegetable cutter the combination with the main frame provided with a rotary cutter, of a top hinged thereto and provided with a feed opening and an upwardly extending ear, a hopper having an opening in its side communicating with the feed opening the upper edge of said opening embracing the upper surface of the cover, and a brace rod secured to said hopper and supported from the main frame, substantially as herein described.

2. In a vegetable cutter, a cutter wheel having a series of radial openings, plates secured to the recessed walls of said openings, knives secured to the opposite walls and bolts inserted through said knives, walls and plates, substantially as described.

503,599.



503,600. WATCHCASE-DIE. ADOLPH W. HOFFMANN, Brooklyn, N. Y. Filed May 19, 1893. Serial No. 474,736. (No model.)



*Claim.*—1. In a die for manufacturing watch case backs, &c., the combination with the block having the concavity in the top for the reception of the watch case back, and the recess in the bottom extending up into proximity to the concavity in the top, of the hardened plug fitting in said recess and adapted to support the bottom of the concavity; substantially as described.

2. In a die for manufacturing watch case backs, &c., the combination with the die block having the ornamented concavity in the top for the reception of the watch case back, and the recess in the bottom extending up into proximity to the concavity in the top, of the hardened plug fitting in said recess and projecting below the bottom of the die block; substantially as described.

503,601. CURTAIN OR SHADE ROLL. JOHN A. HOWELL, Newark, N. J. Filed Dec. 21, 1892. Serial No. 455,334. (No model.)



*Claim.*—1. The improved shade or curtain roll herein described in which is combined with the end-piece, tube, spindle, and pawl, a sound deadener interposed between said end piece and pawl, substantially as set forth.

2. The improved shade roller, combining therein, a tube, a spindle, cup shaped end piece and an annular cushion lining the annular wall of the end—and adapted to receive the outwardly moving pawl and said pawl, all arranged and adapted to operate substantially as and for the purposes set forth.

3. In combination with the end-piece having the raised pawl bearings and pawls pivoted thereon, of the sound deadener *g*, having the annular flange, A, and recesses, *i*, substantially as and for the purpose set forth.

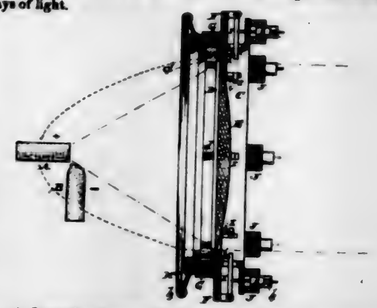
4. In combination with the tube *a*, end piece *d*, and spindle *d*, a felt cushion, fitting into said tube and hugging said spindle, substantially as set forth.

503,602. ELECTRIC SEARCH-LIGHT. RUDOLPH M. HUNTER, Philadelphia, Pa., assignor to the Thomson-Houston Electric Company, of Connecticut. Filed June 18, 1892. Serial No. 478,068. (No model.)

*Claim.*—1. In an electric search light, the combination of an electric lamp adapted to maintain an arc, means to concentrate and direct the rays of light from the arc, and electro magnetic devices thrown into action successively to cause the means for concentrating and directing the rays of light to wabble or vibrate.

2. In an electric search light, the combination of an electric lamp adapted to maintain an arc, means to concentrate and direct the rays of light from the arc, electro magnetic devices thrown into action successively to cause the means for concentrating and directing the rays of light to wabble or vibrate, and means controlled by the hand to vary the extent of the wabble or vibration.

3. In an electric search light, the combination of a lamp for producing an intense light adapted to maintain an arc, means to concentrate and direct the rays of light from the arc, and electro magnetic devices thrown into action successively to cause the means for concentrating and directing the rays of light to wabble or vibrate, means controlled by the hand to vary the extent of the wabble or vibration, and a common support for the electric lamp proper and the means for concentrating and directing the rays of light.



4. In an electric search light, the combination of an electric lamp adapted to maintain an arc, means to concentrate and direct the rays of light from the arc, electro magnetic devices thrown into action successively to cause the means for concentrating and directing the rays of light to wabble or vibrate, means controlled by the hand to vary the extent of the wabble or vibration, an electric motor, and a commutating device operated by the electric motor for throwing electric magnetic devices at intervals into circuit with a source of electrical energy.

5. In an electric search light, the combination of an electric lamp adapted to maintain an arc, means to concentrate and direct the rays of light from the arc, electro magnetic devices thrown into action successively, to cause the means for concentrating and directing the rays of light to wabble or vibrate, means controlled by the hand to vary the extent of the wabble or vibration, an electric motor, a commutating device operated by the electric motor for throwing electric magnetic devices at intervals into circuit with a source of electrical energy, and power devices operated by the electric motor for rotating the positive carbon of the electric lamp simultaneously with the position of the commutating device.

6. In an electric search light, the combination of a lamp for producing an intense light adapted to maintain an arc, means to concentrate and direct the rays of light from the arc, and electro magnetic devices thrown into action successively to cause the means for concentrating and directing the rays of light to wabble or vibrate.

7. In an electric search light, the combination of a lamp for producing an intense light adapted to maintain an arc, means to concentrate and direct the rays of light from the arc, electro magnetic devices thrown into action successively to cause the means for concentrating and directing the rays of light to wabble or vibrate, and means controlled by the hand to vary the extent of the wabble or vibration.

8. In an electric search light, the combination of a lamp for producing an intense light adapted to maintain an arc, means to concentrate and direct the rays of light from the arc, electro magnetic devices thrown into action successively to cause the means for concentrating and directing the rays of light to wabble or vibrate, means controlled by the hand to vary the extent of the wabble or vibration, and a common support for the electric lamp proper and the means for concentrating and directing the rays of light.

9. In an electric search light, the combination of a lamp for producing an intense light adapted to maintain an arc, means to concentrate and direct the rays of light from the arc, electro magnetic devices thrown into action successively to cause the means for concentrating and directing the rays of light to wabble or vibrate, means controlled by the hand to vary the extent of the wabble or vibration, an electric motor, and a commutating device operated by the electric motor for throwing electric magnetic devices at intervals into circuit with a source of electrical energy.

10. The combination of a lamp and frame connected to the lamp and condenser or equivalent, concentrating devices for concentrating and directing the rays of light from the lamp, an elastic or spring support for the condenser or concentrating devices, a series of electro magnets arranged upon the frame and about the condenser or concentrating devices, mechanical connections between the armatures of the electro magnets and the condenser or concentrating devices, and a source of electrical energy, and suitable commutating devices for energizing the electro magnets for the purpose of making them operate to cause the condenser or concentrating devices to wabble or vibrate



11. The combination of a lamp and frame connected to the lamp and condenser or equivalent, concentrating devices for concentrating and directing the rays of light from the lamp, an elastic or spring support for the condenser or concentrating devices, a series of electro magnets arranged upon the frame and about the condenser or concentrating devices, mechanical connections between the armatures of the electro magnets and the condenser or concentrating devices, a source of electrical energy and suitable commutating devices for energizing the electro magnets for the purpose of making them operate to cause the condenser or concentrating devices to wabble or vibrate, and means to adjust the condenser or concentrating devices relatively to the lamp.

12. The combination of a lamp and frame connected to the lamp and condenser or equivalent, concentrating devices for concentrating and directing the rays of light from the lamp, an elastic or spring support for the condenser or concentrating devices, a series of electro magnets arranged upon the frame and about the condenser or concentrating devices, mechanical connections between the armatures of the electro magnets and the condenser or concentrating devices, a source of electrical energy and suitable commutating devices for energizing the electro magnets for the purpose of making them operate to cause the condenser or concentrating devices to wabble or vibrate, and adjusting devices adapted to be controlled by the hand for operating the extent of the movement of the condenser or concentrating devices.

13. In a search light, the combination of the lamp with a condenser or concentrating devices consisting of a frame, an annular ring flexibly supported thereby, a condenser or concentrating device for the rays of light carried by the annular ring, a series of electro magnets supported on the circular frame and arranged about the condenser or concentrating devices, and mechanical connections between the armatures of said electro magnets and the annular ring carrying the condenser or concentrating devices, and means to energize the electro magnets at different times to cause the annular ring to be vibrated.

14. In a search light, the combination of the lamp with a condenser or concentrating devices consisting of a frame, an annular ring flexibly supported thereby, a condenser or concentrating device for the rays of light carried by the annular ring, a series of electro magnets supported on the circular frame and arranged about the condenser or concentrating devices, mechanical connections between the armature of said electro magnets and the annular ring carrying the condenser or concentrating devices, means to energize the electro magnets at different times to cause the annular ring to be vibrated, a supporting frame for the circular, and hand operated devices for moving the circular frame and the annular ring bodily upon the supporting frame for the purpose of varying the extent of action of the several electro magnets.

15. In an electric lamp, the combination of two carbon holders adapted to keep their carbons at an angle to each other, a common supporting frame provided with guides for the two carbon holders, a connection between the two carbon holders consisting of a cord and pulleys substantially as set out, and means to keep one of the carbon holder supports longitudinally upon its guides.

16. In an electric lamp, the combination of two carbon holders adapted to keep their carbons at an angle to each other, a common supporting frame provided with guides for the two carbon holders, a connection between the two carbon holders consisting of a cord and pulley substantially as set out, means to keep one of the carbon holder supports longitudinally upon its guides, a solenoid and core for moving one of the carbons relatively to the other for maintaining the brilliancy of the arc, and a connecting device between the core or its support and the feeding devices whereby the movement of the core or its support automatically operates the feeding devices at intervals to compensate for consumption of the carbons.

17. In an electric search light, the combination of a lamp for producing an intense light adapted to maintain an arc, means to concentrate and direct the rays of light from the arc, electro magnetic devices thrown into action successively to cause the means for concentrating and directing the rays of light to wabble or vibrate, and hand controlled devices for throwing the electro magnetic devices into or out of action.

18. In an electric search light, the combination of a lamp for producing an intense light adapted to maintain an arc, means to concentrate and direct the rays of light from the arc, electro magnetic devices thrown into action successively to cause the means for concentrating and directing the rays of light to wabble or vibrate, means controlled by the hand to vary the extent of the wabble or vibration, and hand controlled devices for throwing the electro magnetic devices into or out of action.

19. In an electric search light, the combination of a lamp for producing an intense light adapted to maintain an arc, means to concentrate and direct the rays of light from the arc, electro magnetic devices thrown into action successively to cause the means for concentrating and directing the rays of light to wabble or vibrate, means controlled by the hand to vary the extent of the wabble or vibration, a common support for the electric lamp proper and the means for concentrating and directing the rays of light, and hand controlled devices for throwing the electro magnetic devices into or out of action.

20. In an electric search light, the combination of a lamp for producing an intense light adapted to maintain an arc, means to concentrate and direct the rays of light from the arc, electro magnetic devices thrown into action successively to cause the means for concentrating and directing the rays of light to wabble or vibrate, means controlled by the hand to vary the extent of the wabble or vibration, an electric motor for throwing electric magnetic devices at intervals into circuit with a source of electrical energy, and hand controlled devices for throwing the electro magnetic devices into or out of action.

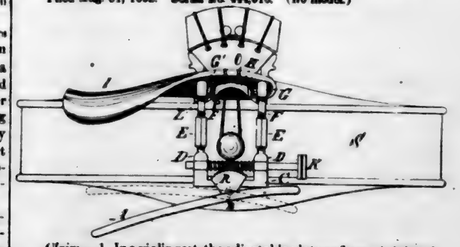
21. In an electric search light, the combination of a lamp for producing an intense light adapted to maintain an arc, means to concentrate and direct the rays of light from the arc, electro magnetic devices thrown into action successively to cause the means for concentrating and directing the rays of light to wabble or vibrate, and hand controlled devices for varying the power of the electro magnetic devices.

22. In an electric search light, the combination of a lamp for producing an intense light adapted to maintain an arc, means to concentrate and direct the rays of light from the arc, electro magnetic devices thrown into action successively to cause the means for concentrating and directing the rays of light to wabble or vibrate, means controlled by the hand to vary the extent of the wabble or vibration and hand controlled devices for varying the power of the electro magnetic devices.

23. In an electric search light, the combination of a lamp for producing an intense light adapted to maintain an arc, means to concentrate and direct the rays of light from the arc, electro magnetic devices thrown into action successively to cause the means for concentrating and directing the rays of light to wabble or vibrate, means controlled by the hand to vary the extent of the wabble or vibration, a common support for the electric lamp proper and the means for concentrating and directing the rays of light, hand controlled devices for varying the power of the electro magnetic devices.

24. In an electric search light, the combination of a lamp for producing an intense light adapted to maintain an arc, means to concentrate and direct the rays of light from the arc, electro magnetic devices thrown into action successively to cause the means for concentrating and directing the rays of light to wabble or vibrate, means controlled by the hand to vary the extent of the wabble or vibration, an electric motor for throwing electric magnetic devices at intervals into circuit with a source of electrical energy, hand controlled devices for throwing the electro magnetic devices into or out of action, and hand controlled devices for varying the power of the electro magnetic devices.

503,603. VIOLIN-REST. FREDERIC H. ISAACS, Newark, N. J. Filed Aug. 31, 1892. Serial No. 444,610. (No model.)



*Claim.*—1. In a violin rest, the adjustable plate or frame A, jointed, by the hinge B, to the clamping-plate C; and suitable devices for adjusting and attaching it to the end of an instrument, in combination with the plate I, substantially as specified.

2. The adjustable plate A, jointed to the clamping-plate C, having upwardly extending posts D, in combination with the posts carrying the plate I, substantially as named.

3. The plate A, jointed to the plate C, and carrying the segment R, to be operated by the screw K, in combination with the posts D, substantially as, and for the purpose specified.

4. The plate I, for a chin rest, having the elevation on the right-hand end, and the depression on the left-hand end, and its rounded upper surface, all substantially as set forth; and, in combination with this plate; the plate A, by means of the segment R, and screw K, in use, adjusted to lie substantially parallel with the plate I; substantially as set forth.

5. The plate I, to which is secured the plate H, having the bosses G, and G', and the screw-post-sections F, in combination with the posts D; and the tongue jointed to the boss G, adapted, when the plate I, is pressed down, to have the end held under the boss G', as set forth.

6. The combination of the plate A, the plate C, segment R, screw K, plate H, and plate I, and suitable connecting and clamping devices, as set forth.

## 503,604. ELECTRIC CABLE. MILO G. KELLOGG, Chicago, Ill. Filed Nov. 15, 1890. Serial No. 371,517. (No model.)



*Claim.*—1. The combination of the individually insulated wires laid up in cable form with their insulations in contact as usual and other wires occupying the angles or spaces between the insulations of the individually insulated wires.

2. The combination of the individually insulated wires laid up in cable form with their insulations in contact as usual and relatively small wires occupying the spaces or angles between the insulations of the other wires.

3. The combination of individually insulated wires, laid up in cable form with their insulations in contact as usual other wires occupying the spaces or angles between the insulations of the same, and an exterior envelope or sheath.

4. The combination of the individually insulated wires laid up in cable form with their insulations in contact as usual, and individually uninsulated wires occupying the spaces or angles between the insulations of the other wires.

5. The combination of the individually insulated wires laid up in cable form with their insulations in contact as usual, individually uninsulated wires occupying the spaces or angles between the insulations of the other wires, and an exterior envelope or sheath surrounding the assemblage of wires.

## 503,605. VEHICLE-POLE. HORACE L. KIMBERLY, Racine, Wis. Filed May 18, 1893. Serial No. 474,625. (No model.)



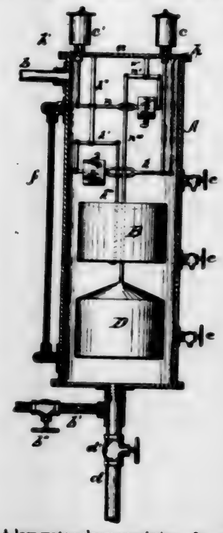
*Claim.*—1. In a vehicle-pole, the combination of a straight forward wooden portion terminating in a flat under rear surface and having the upper rear surface curved or rounded down to a point, and a rear wooden portion of ogee-shape, flattened at its upper end to correspond with the flat under rear surface of said forward portion, with metallic side plates, and bolts passing through said wooden parts and said side plates substantially as set forth.

2. In a vehicle pole, the combination of a straight forward wooden portion terminating in a flat under rear surface and having the upper rear surface curved or rounded down to a point, and a rear wooden portion of ogee-shape, flattened at its upper end to correspond with the flat under rear surface of said forward portion, with a washer, covering and protecting the upper line of juncture of the said two portions, and a bolt passing through said washer, and through the rear end of the forward portion and the upper end of the rear portion of said pole, substantially as set forth.

3. In a vehicle pole, the combination of a straight forward wooden portion, and an ogee-shaped rear wooden portion, with a circle bar, metallic side plates covering the side edges of the ogee-shaped rear portion and forming a socket for the rear end of the forward portion, and secured by transverse bolts to both the forward and rear portions and having bent ends secured to the said circle-bar, a washer covering the upper line of juncture of the said forward and rear portions, and a bolt passing through said washer and through said two portions, substantially as set forth.

4. In a vehicle pole, the combination of a straight forward wooden portion and an ogee-shaped rear wooden portion, a washer covering their point of juncture and a bolt passing through said washer and through said two portions and uniting them at this point, with a circle-bar, metallic side-plates secured to said circle-bar and to said forward and rear portions of the pole, and straight oblique metallic braces secured to the forward portion of the pole and to the ends of the circle-bar, and terminating in pole-eyes, substantially as set forth.

## 503,606. HIGH OR LOW WATER ALARM. WILLARD A. KITTS, Oswego, N. Y. Filed June 13, 1892. Serial No. 436,422. (No model.)



*Claim.*—1. A low water alarm consisting of a cylinder connected to the steam and water chambers of a boiler, and an alarm signal connected to the cylinder, in combination with a lever mounted within the cylinder and connected to the alarm, a weight upon said lever, normally holding the alarm closed, a preponderant weight which is substantially a physical unit, when submerged, connected to said lever to operate said alarm and normally supported at substantially the plane of the low water line in the boiler, and consisting of a cylinder perforated in an end, and a core of absorbent material inclosed within the cylinder.

2. A high water alarm consisting of a cylinder connected to the steam and water chambers of a boiler, and an alarm signal connected to the cylinder, in combination with a lever mounted within the cylinder and connected to the alarm, a weight upon said lever to actuate the alarm, a preponderant weight connected to said lever to hold the alarm closed and normally supported at substantially the plane of the high-water line in the boiler, and consisting of a cylinder closed at the bottom, and having a concaved and perforated top, and a core of absorbent material inclosed within the cylinder, so that said preponderant weight is substantially a physical unit, when submerged.

3. A high and low water alarm for steam boilers, consisting of an upright cylinder connected to the steam and water chambers of a boiler, a lever mounted within the cylinder and connected to the high-water alarm, a weight connected to said lever to open the alarm, a preponderant weight connected to said lever to hold the alarm closed, and normally supported at substantially the plane of the high-water line in the boiler and consisting of a cylindrical shell closed at the bottom and having a concaved and perforated top, and provided with a vertical central aperture, and a core of absorbent material within said shell, another lever mounted within the cylinder and connected to the low-water alarm, a weight upon this lever normally holding the alarm closed, and a preponderant weight connected to said latter lever and supported at substantially the plane of the low-water line in the boiler, consisting of a shell perforated in one end and closed in the other end, and a core of absorbent material inclosed within the shell, and together constituting substantially a physical unit, when submerged.

4. The combination with the cylinder A, of the weight B provided with a central vertical aperture, and its supporting rod operatively connecting it to a high-water alarm mechanism, and the lower weight D, and its supporting rod passing through the aperture in the upper weight and operatively connected to a low-water alarm mechanism.

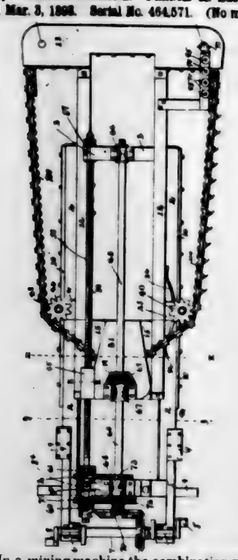
5. In an alarm system, a weight —B—, consisting of a cylinder closed at the bottom, and having a concaved and perforated top, and provided with a vertical central aperture, and filled with a core of absorbent material, not injuriously affected by steam or water.

6. In high or low water alarms, a weight for actuating the alarm composed of a cylinder, perforated in an end, containing a core of absorbent material such that the specific gravity of said weight is substantially a physical unit, when submerged.



7. The combination with the cylinder, of the low-water weight provided with a conical top, a high-water weight above the former, provided with a central aperture to discharge steam and water upon the low-water weight, and a blow-off cock and pipe connected to the bottom of the cylinder.

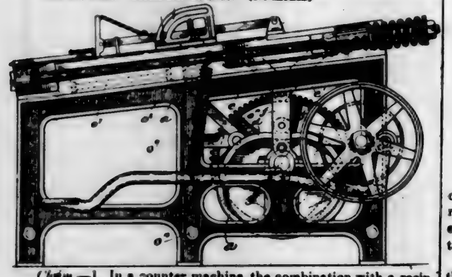
## 503,607. MINING-MACHINE. FRANCIS M. LECHNER, Columbus, Ohio. Filed Mar. 3, 1893. Serial No. 464,571. (No model.)



*Claim.*—1. In a mining machine the combination with a stationary frame, a side cleat 10 thereon, a sliding frame mounted on said stationary frame, sprocket wheels mounted on said sliding frame and a chain cutter carried by said sprocket wheels, of a bracket 25 having parallel arms 26 which terminate in a hook shaped extension 28 as described, said extension engaging with the under side of said cleat 10, a sliding block 30 supported between said arms 26, a spring strip 36 bearing between said sliding block and the machine frame and a pin 32 supported from said sliding block upon which one of said sprocket wheels is loosely mounted substantially as and for the purpose specified.

2. In a mining machine the combination with a stationary and sliding frame, sprocket wheel carrying shafts 15 on the forward portion of said sliding frame, a cutter head on the end of one of said shafts, a following bar supported in rear of said cutter head and rollers journaled on said bar and projecting therefrom substantially as and for the purpose specified.

## 503,608. HEEL-STIFFENER MACHINE. LEMUEL W. LITCH, Swampscott, assignor to the Lynn Counter Company, Lynn, Mass. Filed Oct. 24, 1892. Serial No. 449,745. (No model.)



*Claim.*—1. In a counter machine, the combination with a reciprocating former, of two independently movable half-molds provided with guide-ribs, fixed guides in which said half-molds are movable in a rectilinear path at right angles to the direction of movement of the former, said guides being provided with grooves which receive the guide-ribs of the half-molds, springs behind said half-molds and permitting them to yield independently and accommodate the thickness of the counter blank, and means for pressing the half-molds inwardly against the former.

2. In a counter machine, the combination with two independently movable half-molds, of a reciprocating former, mechanism for alternately projecting and retracting the former, counter-engaging devices or dogs in the former, and means for alternately projecting and retracting said dogs, as set forth.

3. In a counter machine, the combination with the half-molds and the reciprocating former, of the blank magazine, a vertically movable blank-feeding device carrying spurs adapted to engage a blank in said magazine, means for alternately raising and depressing said device, and means for retracting said spurs at the end of their feeding movement and projecting them at or before the beginning of said movement, as set forth.

4. In a counter machine, the combination with the half-molds and the reciprocating former, of the blank magazine having a front plate provided with slots $f^3$, a forked lever having spurs arranged to enter said slots, a pivoted lever $r$ supporting said forked lever, means substantially as described for swinging the lever $r$ vertically, a spring whereby the forked lever is pressed forward to engage its spurs with a blank during its downward movement, and devices whereby the forked lever is retarded during its upward movement, as set forth.

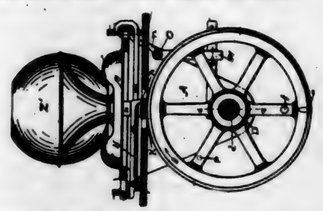
## 503,609. BALL-BEARING FOR SHAFTS. PEDER LOBBEN, Worcester, Mass., assignor to Iver Johnson, same place. Filed Dec. 5, 1888. Serial No. 292,739. (No model.)



*Claim.*—1. In a ball bearing, the combination, with a shaft and an inclosing box, of two series of balls arranged in annular rings around said shaft and interposed between said shaft and its inclosing box, an outer and an inner V shaped track upon which one of the series of balls run, and an outer and an inner track upon which the second series of balls run, one of said tracks being V shaped and the other of said tracks presenting a plain cylindrical surface parallel with the axis of the shaft, said outer V shaped tracks being adjustable in a direction parallel with the axis of said shaft, substantially as described.

2. In a ball bearing the combination with a shaft, of a series of balls arranged concentrically around said shaft, annular rings placed upon opposite sides of said balls and provided with inclined surfaces resting against said balls the outer surfaces of said annular rings being provided respectively with right and left hand screw threads an inclosing box provided with right and left hand screw threads engaging said annular rings, said annular rings being made of different diameters, substantially as described.

## 503,610. PHONOGRAPH. JOHN W. MACKENZIE, Brookline, Mass. Filed Sept. 6, 1892. Serial No. 445,202. (No model.)



*Claim.*—1. In a phonograph, a stationary cylinder-shaft, a record-cylinder normally free to slide longitudinally thereof and to be rotated thereon, independent mechanism to rotate said cylinder, and external mechanism to engage therewith and cause it to move longitudinally on said shaft, substantially as described.

2. In a phonograph, a record-cylinder and driving-mechanism therefor, a stationary axle upon which both are supported and rotated, and a feeding-device which causes said cylinder to move longitudinally of said axle when rotated thereon substantially as described.

3. In a phonograph, a phonogram-cylinder, a supporting-shaft, mechanism to move the cylinder longitudinally of its shaft and mech-

anism for giving the said cylinder and its shaft differential rotary motion for the purpose substantially as described.

4. In a phonograph, a cylinder-shaft, a cylinder which is normally free to slide and to rotate thereon and is provided with a spiral groove of substantial depth upon its periphery, and a record of sound-vibrations within said groove, a feeding-device which engages with the ridges between the cylinder-grooves to control its sliding movement upon the shaft, and driving-mechanism to rotate the cylinder thereon, substantially as described.

5. The combination in a phonograph, of a phonogram-cylinder which has a spiral groove in its periphery, a stationary axle therefor, driving-mechanism to turn the cylinder thereon, and a grooved feeding-device which engages with the grooved surface of the phonogram and gives the cylinder an advancing motion longitudinally upon its axle, substantially as described.

6. In a phonograph, a phonogram-cylinder, a supporting-shaft upon which it is normally free to slide longitudinally, a feeding-device independent of the stylus, and mechanism to cause it automatically to engage with the grooved periphery of the phonogram whenever the reproducing stylus is in contact with the record thereon, substantially as described.

7. In a phonograph, having a diaphragm for reproducing sound-waves, a cylinder which carries a phonogram provided with a spiral-groove with a record of sound-vibrations in the bottom thereof, a ribbed feeding-device held between the said diaphragm and cylinder and adapted to engage with or be disengaged from the ridges on the said cylinder, and a reproducing-stylus normally held in a position with relation to the ribbed feeding-device which will locate the point of the stylus and the apex of one rib of the said feeding-device in a single plane which is perpendicular to the diaphragm, substantially as described.

8. In a phonograph for reproducing sound-vibrations a diaphragm held in a hinged frame, a reproducing point attached to a pivoted lever and supported thereby between the phonogram and the diaphragm, but unattached to the latter; a ribbed feed-block which cooperates with ridges upon the phonogram and an automatically operated disengaging lever by which the diaphragm-frame is first raised and the reproducing point and feed-block are successively disengaged from the phonogram, when it is to be returned to its initial position, substantially as described.

9. In a phonograph, a record-plate provided with a continuous groove of substantial depth in its surface and a record of sound-vibrations in the bottom of said groove, a stylus which substantially fits the record portion of the groove and an independent feeding-device which engages with the tops of the ridges which define the groove and thereby causes a traversing motion between the stylus and record-plate when the phonograph is operated.

10. In a phonograph, a reproducing diaphragm, a phonogram containing a record of sound-vibrations in a groove thereon, and a stylus between said diaphragm and phonogram supported independently of each upon an arm held by a pivot upon which it is adapted to swing in the arc of a circle in a plane parallel to the surface of the diaphragm, substantially as described.

11. In a phonograph, the combination with a phonogram or record of sound-vibrations and a reproducing-stylus, of mechanism which causes the stylus to traverse the said record, and a stylus-cleaning brush which is automatically caused to strike across the point of the said stylus after each complete traversing of the record thereby, substantially as described.

12. In a phonograph, having a record of sound-vibrations and reproducing-stylus, mechanism which causes the stylus to traverse the said record, an automatically operating stylus-cleaning brush and a scraper therefor, substantially as described.

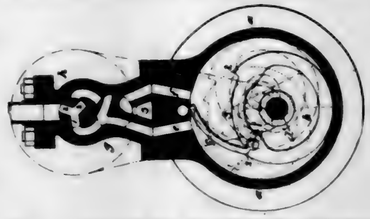
13. In a phonograph, provided with a record-plate containing a record of sound-vibrations in a groove thereon, a reproducing-stylus supported upon an arm held by a pivot upon which it is adapted to swing in the arc of a circle in a plane parallel to the surface of the diaphragm, a stylus-cleaning brush, and a spring to hold the stylus in position for the action of said brush, substantially as described.

14. In a phonograph, the phonogram-cylinder normally free to slide longitudinally of its shaft and provided with a spiral ridge which defines its record groove, and a ribbed feeding-device which has a cylindrically concave contact surface to engage with said spiral ridge and which is supported by pivots which are parallel to its own axis and that of the record cylinder, substantially as described.

15. The combination in a phonograph, of a cylinder provided with a spiral groove upon its record surface, a feeding device provided with a ribbed surface which is the counterpart of a section of the grooved surface of the cylinder and engages therewith, a stationary shaft on which the cylinder may turn and slide, a diaphragm-holder hinged to the phonograph-frame and adapted to be automatically raised by the movement of the said cylinder and thereby successively raise the reproducing stylus and the said feeding-device, substantially as described.

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**503,611. ROTARY ENGINE.** SIEGFRIED MARCUS, Vienna, Austria-Hungary. Filed Oct. 29, 1892. Serial No. 450,605. (No model.)



*Claim.*—1. In combination, the cylinder, the shaft, the rotary piston arranged eccentrically to said shaft, the ports *e*, *f*, to the cylinder and the plate *c*, positively and pivotally connected at its ends to the piston and cylinder respectively said plate being arranged to have lateral oscillatory movement, substantially as described.

2. In combination, the cylinder, the shaft, the rotary piston arranged eccentrically to said shaft, and having a flattened portion 3, and the plate *c*, pivotally connected at its ends to the piston and cylinder and arranged to have oscillatory movement, substantially as described.

3. In combination, the cylinder the shaft, the rotary piston arranged eccentrically to the said shaft and the plate *c*, pivoted to the piston to one side of a line drawn through the piston center and the shaft center said plate being pivoted also to the cylinder, substantially as described.

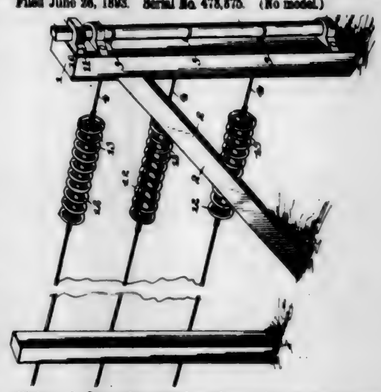
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**503,612. SILVER CLEANING AND POLISHING COMPOUND.** GEORGE R. METTELER, Cincinnati, Ohio. Filed June 13, 1892. Serial No. 436,544. (No specimens.)

*Claim.*—A compound of the kind described containing precipitated whiting, powdered soap-bark, oil of sassafras and carmine, when combined with an ingredient possessing saponifying properties and being of lower degree of volatility than alcholic substances, like ammonia for instance, which remains moist a sufficient length of time to act upon incrusted impurities before the applied compound becomes dry, all parts in the proportions stated, substantially as and for the purposes described.

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**503,613. WIRE-STRETCHER.** JAMES D. MCKEE, Wooster, Ohio. Filed June 26, 1893. Serial No. 478,675. (No model.)



*Claim.*—1. In a wire stretcher, the combination of a fence post provided with bearings, a vertical winding shaft journaled in the bearings and having a polygonal upper portion extended above the fence post, and a combined wrench and holder provided with a recess receiving the upper end of the shaft, and adapted to engage the post to prevent the shaft from turning and to be arranged above the plane of the post to turn the shaft, substantially as described.

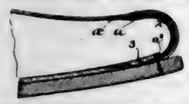
2. In a wire stretcher, the combination of a fence post provided with bearings, a vertical shaft journaled in the bearings and having an upper polygonal end extended above the post, and a detachable combined wrench and holder provided with a recess receiving the



upper end of the shaft and having at its inner side a straight edge to fit against the post and being extended substantially as and for the purpose described.

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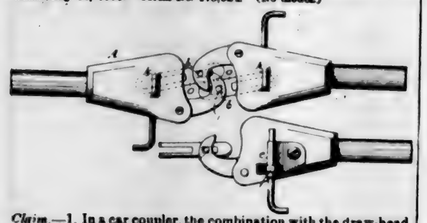
**503,614. BOX-TOE.** JAMES W. PACKARD, Brockton, assignor of one-half to the Bouvé, Crawford & Company Corporation, Boston, Mass. Filed Dec. 5, 1892. Serial No. 454,108. (No model.)



*Claim.*—As an improved article of manufacture, a box toe blank, composed of a backing-piece and a flat elastic body or piece centrally thickened and gradually decreased in thickness in all directions from said central portion toward its edges, said blank being provided with a shoulder or rabbet $a^3$ near its lower edge formed to bear against the toe of the inner sole of a boot or shoe, as set forth.

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**503,615. CAR-COUPLING.** CHARLES S. PARK, Montague, Mass. Filed May 12, 1893. Serial No. 473,934. (No model.)



*Claim.*—1. In a car coupler, the combination with the draw-head, provided with a slot in its bottom as described, of a hook-jaw pivoted in the draw bar having a tongue or tail piece extending well into the cavity of said draw head and a pawl thereto pivoted as described, adapted, when said slot is open, to drop into it and lock the said jaw against lateral movement, as and for the purpose set forth.

2. The combination with the draw-head described, provided with a slot, a cam for unlocking the jaw fixed on a crank rod pivoted to said draw-head, and the pivoted jaw provided with the pawl pivoted thereto, as and for the purpose set forth.

3. The combination with the draw-head, formed as described, the jaw and the pawl pivoted thereto, of a link confined to said jaw, with suitable play, whereby when said jaw, locked to position, and link are approaching a corresponding jaw, said link may perform the function of closing said corresponding jaw by engaging the tongue or tail piece of said jaw, substantially as set forth.

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**503,616. ROLLING-MACHINE.** BENJAMIN F. PEACOCK, Anniston, Ala., and FRANCIS T. PEACOCK, Sparrow's Point, Md. Filed July 30 1892. Serial No. 441,755. (No model.)

*Claim.*—1. The combination of two sets of rolls arranged in an axial line with each other and separated so as to leave a clear space between the sets of rolls, housings for the same, bearings carried in the housings, mechanism for adjusting both of the lower sets of rolls in the line of their length, mechanism for adjusting both of the lower sets of rolls laterally or transversely, and mechanism for adjusting the top roll of each set of rolls vertically.

2. The combination of housings, having rolls mounted therein, means for independently adjusting each of the rolls longitudinally and transversely in the housings, and means for adjusting the housings upon the bed.

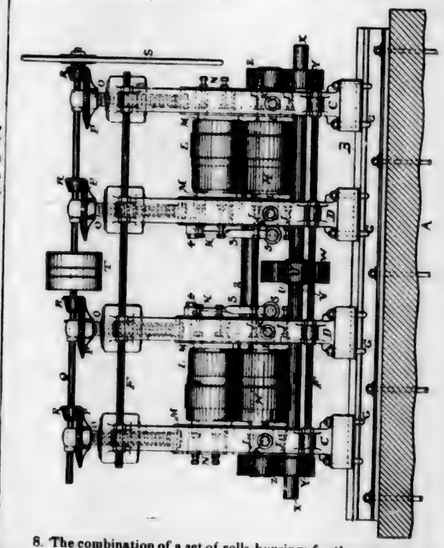
3. A housing adapted to move along a foundation bed, having bearings for a set of rolls and provided with a lateral opening through the housing for feeding the forging to the rolls, combined with a track or way pivoted at one end and connected to the upper roll at the other, whereby the forging may be laterally fed to and removed from the rolls.

4. A housing adapted to be adjusted upon a bed, having bearings for a set of rolls, the top one of which is adjustable and provided with a forging-support adapted to move up and down therewith.

5. The combination of two sets of housings, beds upon which the same are adjusted, a set of rolls carried in each housing, adjustable bearings in said housings for the upper roll, and forging-supports carried by said upper roll so as to move therewith.

6. The combination of two separate sets of rolls, housings for the same, adjustable bearings in the housings for the top rolls of the sets, and forging-supports carried thereby, adjusting screws for said bearings, and gear-connections for the screws whereby said bearings are simultaneously adjusted

7. A set of rolls triangularly disposed, mechanism for vertically adjusting the top roll, mechanism for adjusting each of the lower rolls in the line of its length, and mechanism for laterally or horizontally adjusting each of the lower rolls.



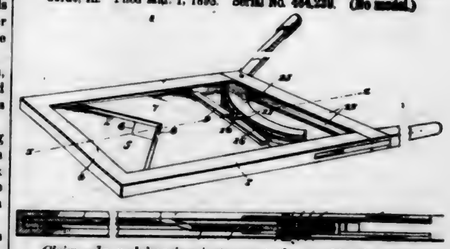
8. The combination of a set of rolls, housings for the same, means for vertically moving the top roll or rolls, a track or way pivoted at one end and connected to the vertically moving roll or rolls at the other, whereby the inner end of the way or track is moved up and down in connection with the top roll or rolls.

9. The combination of two or more housings having bearings for one or more sets of rolls of three rolls each, journal-bearings in the housings for the two lower rolls of each set, means for laterally and longitudinally adjusting said journal-bearings in the housings independently of one another, a vertically moving bearing for the top roll of each set, means for laterally and simultaneously adjusting each of said top rolls, and means for driving said rolls.

10. The combination of a set of rolls, housings for the same, means for vertically moving the top roll or rolls, and a stirrup support connected to and moving up and down with the top roll or rolls, whereby the forging may be fed axially and longitudinally into the rolling machine, adjustably supported therein by said stirrup support or supports and similarly removed therefrom axially or longitudinally.

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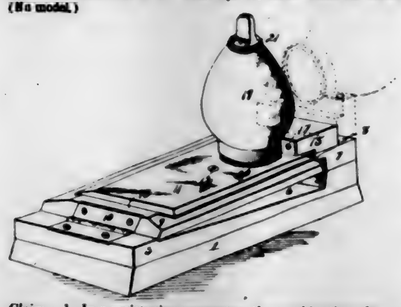
**503,617. DEHORNING IMPLEMENT.** REUBEN G. RADER, Cerro Gordo, Ill. Filed Mar. 1, 1893. Serial No. 464,239. (No model.)



*Claim.*—In a dehorning instrument, the combination with the rectangular frame, the opposite sides of which are provided with ways, and one of said bars being continued to form a stationary handle, of the movable handle pivoted in an opening in the opposite inner corner of the frame, and terminating within the same in an eccentrically disposed curved arm or portion provided upon opposite sides with similarly disposed grooves, the sliding knife mounted in the grooves of the frame and at its rear end borne upon by the eccentric arm, and the clips secured to the rear end of the knife and at their rear

ends inwardly bent to engage loosely with the aforesaid grooves of the eccentric curved arm, substantially as specified.

**503,618. ENVELOPE AND STAMP MOISTENER.** WILLIAM H. RAY, West Coxsackie, N. Y. Filed Apr. 13, 1893. Serial No. 470,196. (No model.)



*Claim.*—1. In a moistening apparatus, the combination of an operating platform, and a pivotally-mounted reservoir coacting with said platform and carrying a vehicle for conveying moisture, the said reservoir being arranged to be swung back from and over upon the said platform, substantially as described.

2. In a moistening apparatus, the combination of a yielding platform, and a pivotally-mounted reservoir containing a vehicle for conveying moisture which coacts with the said platform, substantially as described.

3. In a moistening apparatus, the combination of a weighted base, a body mounted thereon, a movable platform located on said body, and a pivotally-mounted reservoir secured above said platform and containing a moisture-conveying vehicle, substantially as described.

4. In a moistening apparatus, the combination of a base, a body fixed to said base having a recess in the upper side thereof with an inclined bottom to provide a shoulder at one end of the same, a platform having one end hinged to the said body and provided with a glass plate to form an operating surface, a spring interposed between the under side of said platform and the upper side of the said body, a head-block having an overhanging shoulder to limit the upward movement of the said body, and a reservoir pivotally connected to the said block and extending over the upper surface of the said platform and the glass plate carried thereby, said reservoir containing a sponge that projects through the lower end thereof to provide a moistening engaging surface, substantially as described.

5. In a moistening apparatus, the combination of an operating platform provided at its rear end with a flange forming a gage, and a pivotally-mounted reservoir carrying a vehicle for conveying moisture and being arranged to be swung back from and over upon the platform, substantially as described.

6. In a moistening apparatus, the combination of a base, a head-block hingedly connected with the base, an adjusting-screw mounted on the head-block and adapted to project below the same to limit the downward swing of the head-block, and a reservoir mounted on and carried by the head-block, substantially as described.

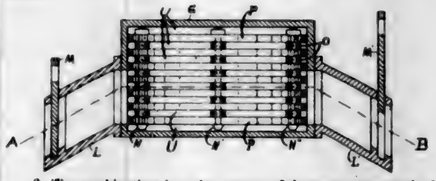
7. In a moistening apparatus, the combination of a base, a head-block hingedly connected with the base and provided in its lower face with a dove-tailed recess, a dove-tail nut arranged in the recess, an adjusting-screw engaging the nut and adapted to project below the block, and a receptacle or reservoir carried by the block, substantially as described.

8. In a moistening apparatus, the combination of the reservoir for containing the sponge, having its lower end open, with the platform pivoted at one end and having its free end arranged below the open end of the reservoir, and a spring for pressing the platform upwardly in contact with the sponge projecting from the reservoir, as set forth.

9. In a moistening apparatus, the combination of the reservoir for containing the sponge, having its lower end open, and means for hinging the reservoir at one side so that it may be swung over out of the way, with the platform pivoted at one end and having its free end arranged below the open end of the reservoir, and a spring for pressing the platform upwardly in contact with the sponge projecting from the reservoir, as set forth.

**503,619. CLAY-SCREEN.** JOHN C. SCHROEDER, Onekama, Mich. Filed Mar. 29, 1893. Serial No. 468,231. (No model.)

*Claim.*—1. In a clay screen, the combination, of the main body portion G, with the slats P, the collars or washers O, the bolts or rivets N, and the pipes I, all substantially as and for the purpose described.



2. The combination, in a clay screen, of the screen composed of the slats P, the collars or washers O, and the bolts or rivets N, with the main body portion G, the pipes L, and the valves M, all substantially as and for the purpose described.

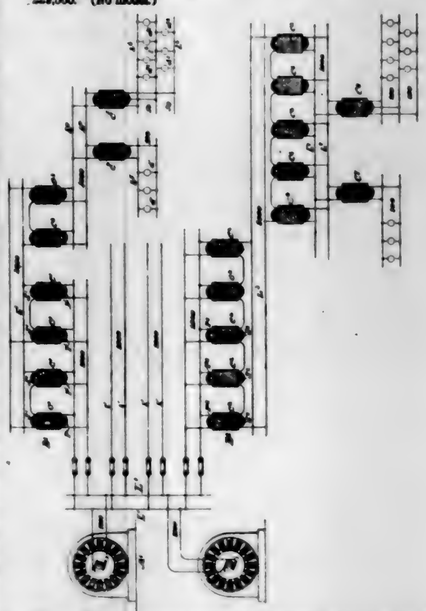
**503,620. LETTER FOR SIGNS.** CHARLES SCHWARTZ, Brooklyn, N. Y. Filed Apr. 10, 1893. Serial No. 469,858. (No model.)



*Claim.*—1. An embossed letter the bars of which are composed of a central straight section and of an outer and an inner grooved section, substantially as specified.

2. An embossed letter the bars of which are composed of a central straight glue receiving section and of an outer and an inner grooved section, the free edges of the grooved sections extending to the face of the central section, substantially as specified.

**503,621. SYSTEM OF ELECTRICAL DISTRIBUTION.** OLIVER B. SHALLENBERGER, Rochester, Pa. Filed Mar. 3, 1887. Serial No. 229,535. (No model.)



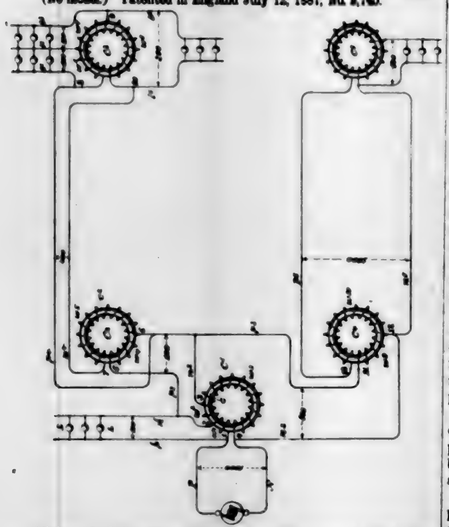
*Claim.*—1. In a system of electrical distribution, the combination with a circuit supplied with alternating electric currents, of a group of converters having a ratio of conversion of one to one and having their primary coils connected in multiple arc and their secondary coils connected in series, substantially as described.

2. In a system of electrical distribution, the combination with a source of electricity with a group of converters having the primary and secondary coils of equal length, and having the primary coils connected with the source of electricity in multiple arc with each other and a secondary circuit in which the secondary coils of the converters are connected in series.

3. In a system of electrical distribution, the combination with a source of alternating or intermittent electric currents, of a circuit supplied therefrom, electric converters having their primary and secondary coils of approximately equal length and having their primary coils connected with said source in multiple arc with each other, and a secondary circuit with which more or less of the secondary coils of said converters are connected in series and converters connected with said secondary circuit reducing the potential of the currents transmitted therethrough, substantially as described.



**503,622. SYSTEM OF ELECTRICAL CONVERSION AND DISTRIBUTION.** WILLIAM STANLEY, Jr., Great Barrington, Mass., assignor, by mesne assignments, to the Westinghouse Electric and Manufacturing Company, Pittsburg, Pa. Filed Mar. 28, 1887. Serial No. 232,630. (No model.) Patented in England July 12, 1887, No. 9,745.

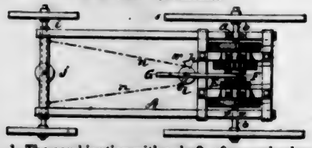


*Claim.*—1. In a system of electrical conversion and distribution, an auto-converter, a feeding circuit including more or less of the coils of said auto-converter, and two or more derived circuits, having their terminals connected across more or less of the coils of said auto-converter, substantially as described.

2. In a system of electrical conversion and distribution, an auto-converter and a feeding circuit including more or less of the coils of said auto-converter; in combination with a second auto-converter having some of its coils in multiple arc with some of the coils of the first auto-converter, and a translating circuit fed by the remaining coils of said second auto-converter, substantially as described.

3. In a system of electrical conversion and distribution, an auto-converter, and a feeding circuit containing all the coils of said auto-converter; in combination with a second auto-converter, having less than half its coils in multiple arc with a portion of the coils of said first auto-converter, and a translating circuit fed by the remaining coils of said second auto-converter, substantially as described.

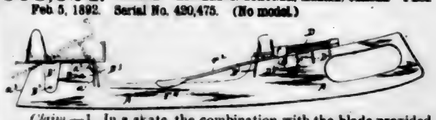
**503,623. MOTOR.** WILLIAM H. STARR, Liberty, Nebr. Filed Feb. 9, 1893. Serial No. 461,655. (No model.)



*Claim.*—1. The combination with a shaft, of gear wheels mounted loosely on said shaft and having recesses in their inner faces, disks secured to said shaft between the gear wheels, dogs carried by said disks and adapted to alternately engage the recesses in the gear wheels when the disks are moved in one direction and alternately ride over them when the disks are moved in the other direction, an axle, gear wheels carried by said axle, one of said gear wheels being adapted to mesh with one of the loosely mounted gear wheels, and a pinion located between the other gear wheel on the axle and other loosely mounted gear wheel, and a lever secured to said disks, substantially as set forth.

2. The combination with a shaft, of gear wheels mounted loosely on said shaft and having recesses in their inner faces, balance wheels secured to said shaft, disks secured to said shaft between the gear wheels, an operating lever secured to said disks, dogs carried by each of said disks, the dogs of each disk being adapted to engage the recesses in the respective gear wheels, alternately when the disks are moved in one direction and ride over them alternately when the disks are moved in the other direction, a pinion meshing with one of said loosely mounted gear wheels, an axle carrying a gear wheel with which said pinion meshes, and another gear wheel on said axle adapted to mesh with the other loosely mounted gear wheel, substantially as set forth.

**503,624. SKATE.** EDWARD G. STAYNER, Halifax, Canada. Filed Feb. 5, 1892. Serial No. 420,475. (No model.)



*Claim.*—1. In a skate, the combination with the blade provided with teeth arranged in an arc of a circle concentric with the pivot of the heel plate, a heel plate hinged to said blade, a sliding clamp bar sliding in ways in said heel plate and provided with teeth engaging the teeth on said blade, a fixed stop on said blade and a latch carried by said heel plate and arranged to engage said stop, whereby the angular movement of the heel plate is limited and the teeth of said clamping bar held in engagement with the teeth on said blade, substantially as described.

2. In a skate, the combination with the blade, of a heel plate hinged to said plate, a clamping mechanism held in said heel plate and arranged to be operated by the angular motion of said heel plate, a fixed stop on said blade and a latch carried by said heel plate and arranged to engage said stop and limit the angular motion of said heel plate, substantially as described.

3. In a skate, the combination of the blade A, heel plate B, pivoted to said blade, elastic blade $a$, attached to said heel plate and provided with a shoulder $a'$, and a stop pin $a^3$, held in said blade A, by which the angular motion of the heel plate is limited, substantially as described.

4. In a skate, the combination with a blade A, of a heel plate B, provided with slots $B^2$, $B^3$, angle plates $B^4$ resting upon the upper surface of said heel plate, and extending through said slots forming lugs B', B', said lugs being pivoted to said blade A, substantially as described.

5. In a skate, the combination with the blade, of the toe plate D attached to, and slightly raised above, said blade, a sliding plate E sliding in ways between said blade and said toe plate, curved clamping bars G, G, sliding in ways between said toe plate D and said sliding plate E, said clamping bars being adapted at their rear ends G' to engage the sole of a boot and having at their forward ends shoulders $G^2$ arranged to be brought in contact with the forward edge of the toe plate, as the clamping bars are moved back, and with lugs $G^3$ arranged to be engaged with the forward edge of said sliding plate and drawn against the boot sole, as the sliding plate is moved forward, and connected mechanism by which said sliding plate E is actuated, substantially as described.

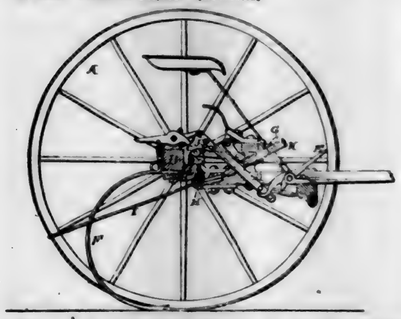
6. In a skate, the combination with the blade, of a toe plate D attached to said blade by a central post $D^3$, a sliding plate E sliding in ways in said toe plate, curved clamping bars G provided with shoulders $G^2$ engaging the forward edge of said toe plate, and lugs $G^3$ engaging the forward edge of said sliding plate, a cam plate pivoted on the post $D^3$ and operatively connected with said sliding plate, substantially as described.

7. In a skate the combination with the blade and a toe plate attached to said blade, of curved clamping bars G provided with lugs $G^3$ arranged to be engaged by the forward end of a sliding plate, and a sliding plate provided with a V-shaped forward end, having a series of notches engaged by said lugs, whereby each of said clamping bars is drawn forward and whereby each of said clamping bars can be independently adjusted, substantially as described.

8. In a skate, the combination with the blade, of a toe plate D provided with a V-shaped forward end, a sliding plate, sliding in ways in said toe plate, curved clamping bars arranged to be engaged by said sliding plate and drawn against the sole of the boot, shoulders

G² projecting from said bars and adapted to slide along the V-shaped edge of said toe plate, substantially as described.

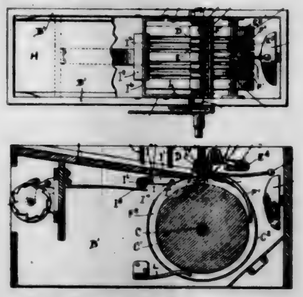
## 503,625. RAKE. William Strait, Elmira, N. Y. Filed Sept. 24, 1892. Serial No. 446,763. (No model.)



*Claim.*—1. In a rake, the combination of a cleaner bar mechanism and a dumping rake teeth mechanism, of interlocking pieces upon the cleaner-bar and draft-dumping mechanism, by means of which the teeth and the cleaner-bars are held up.

2. In a rake, the combination of a rake head having an arm carrying a locking piece thereon, a cleaner-bar provided with a locking piece thereon, and a lever upon the cleaner-bar for holding the rake head and cleaner bar up and interlocked.

## 503,626. REGISTERING AND CANCELING BALLOT-BOX. Edward E. Tolman, Worcester, Mass. Filed May 4, 1893. Serial No. 472,853. (No model.)



*Claim.*—1. The combination with the grooved drum for receiving the ballot on its periphery, and fingers secured to a rock-shaft and adapted to enter into said grooves, and to be ejected therefrom by the ballot on said drum, of a registering apparatus operated by the rocking movement of said rock-shaft, substantially as described.

2. The combination with a roller provided with bands of printing type, and an ink-roller for supplying ink to said type, of a receiving drum imparting rotary motion to said roller, and having in its periphery grooves which are in alignment with said bands of type, and of a depth sufficient to "clear" the type, substantially, and for the purpose set forth.

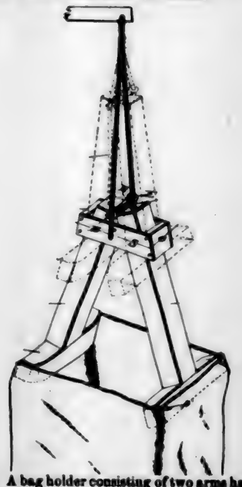
3. The combination with the grooved receiving drum and a pivoted stop lever arranged above and in front of said drum, of a rock-shaft having fingers adapted to enter into and be ejected from the grooves of the drum by the passing of the ballot, and an arm whereby a rocking motion is imparted to the said stop lever from the rock-shaft, substantially as described.

4. The combination with the feed board, a receiving drum, a stop lever, and means for imparting movement to the same, of the guard plates arranged in close proximity to the upper surface of the feed board and one on each side of the stop lever, substantially as described.

5. The combination with the receiving drum, provided with grooves, fingers entering said grooves and adapted to hold the ballot against the surface of said drum, of means, substantially as described, for positively discharging the ballot from the drum, substantially as and for the purpose set forth.

6. The combination with the receiving drum, the counter, and means for imparting movement to the operating lever of said counter, of means whereby a backward movement on the part of said drum is prevented, substantially as described.

## 503,627. BAG-HOLDER. James Travis, Jr., Cascade, Mont. Filed Feb. 15, 1893. Serial No. 462,895. (No model.)

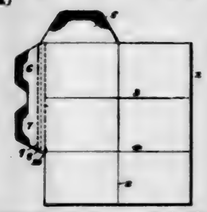


*Claim.*—1. A bag holder consisting of two arms having cross bars at their lower ends carrying outwardly projecting spikes, a hinge connecting their upper ends, the ends of the hinge-pintle being extended into eyes, a partition adapted to slide vertically between said arms, and cords connected with the partition, leading upwardly through said eyes, and secured to an overhead support, all as and for the purpose set forth.

2. A bag holder consisting of two arms carrying outwardly projecting spikes at their lower ends, a hinge connecting their upper ends, the ends of the hinge-pintle being extended into eyes, a collar embracing said arms and adapted to slide vertically thereon, a partition across said collar between the arms, and cords leading from the sides of said collar upward through said eyes, and secured to an overhead support, all as and for the purpose set forth.

3. A bag holder consisting of two arms carrying outwardly projecting spikes at their lower ends, a hinge connecting their upper ends, the ends of the hinge-pintle being extended into eyes, a rectangular collar embracing said arms and having its ends converging upwardly and adapted to slide vertically thereon, a partition across said collar between the arms and having its upper edge rounded, and cords leading from the sides of said collar upward through said eyes, and united above the hinge in a single cord which is secured to an overhead support, all as and for the purpose set forth.

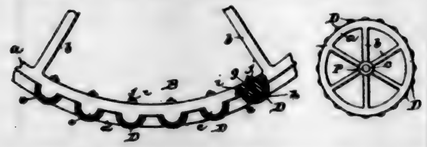
## 503,628. COMBINED ENVELOPE AND LETTER-SHEET. Nicholas W. Weed, Brooklyn, N. Y. Filed Nov. 30, 1892. Serial No. 453,536. (No specimens.)



*Claim.*—The letter-sheet having a vertical and a plurality of transverse fold-lines dividing the sheet into sections, the flap 5 at the upper left hand corner of the sheet and longitudinally disposed, and the double flaps 6 and 7 at the upper left hand corner transversely disposed and occupying the edges of two of the sections at said corner, said flaps being reduced at their point of juncture which occurs opposite the first transverse fold-line, and the double line of perforations arranged at each side of the fold line of the double flap, substantially as specified.



## 503,629. FIELD-ROLLER. John S. Wehrman, Canton, Ohio. Filed Mar. 22, 1892. Serial No. 427,176. (No model.)



*Claim.*—1. A semi-cylindrical concavo-convex crushing bar for a land roller, substantially as set forth.

2. A land roller having heads at its opposite ends, in combination with a plurality of semi-cylindrical concavo-convex crushing bars arranged cylindrically around said heads, each bar having its convex side outside and connected at its opposite ends with said heads respectively, substantially as set forth.

3. A land roller having heads at its opposite ends, in combination with a plurality of semi-cylindrical concavo-convex crushing bars arranged cylindrically around said heads, each bar having its convex side outside and connected at its opposite ends with said heads respectively, and a central strengthening wheel midway between said heads and co-operating with the middle portions of said crushing bars, substantially as set forth.

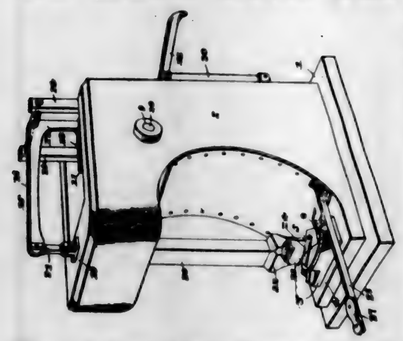
4. A head or wheel of a land roller, having a rim with projecting lugs, in combination with semi-cylindrical concavo-convex crushing bars fitting over said lugs, substantially as set forth.

5. The head having rim *a*, flange *d*, and lugs *e e*, in combination with the semi-cylindrical concavo-convex bars D fitting over said lugs and bolted thereto, substantially as set forth.

6. The head or wheel having a rim with its periphery composed of convex faces, in combination with bars having convex outer faces, substantially as set forth.

7. In a land roller, the front frame, and the reach pivoted thereto, in combination with the rear frames pivoted to said reach on opposite sides thereof, and the brace rods pivotally connected at their front ends to the front part of the reach and at their rear ends to the rear frames respectively, substantially as set forth.

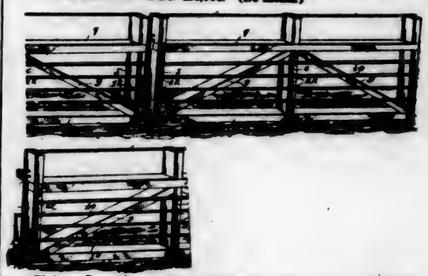
## 503,630. BLACKSMITH'S HAMMER. Casper Weigart, Portland, Oreg. Filed Feb. 23, 1893. Serial No. 464,092. (No model.)



*Claim.*—1. In a device of the class described, the combination with a hollow standard provided with a guide-yoke, of a shaft 10 provided with an arm 11, an operating arm fixed to the shaft 10 and provided with a counterbalancing weight, an angle-lever having a depending arm loosely connected by a link to the free end of the arm 11, and a shank or stem loosely connected at its upper end to the free terminal of the other arm of said angle-lever and fitting slidably in said guide-yoke, substantially as specified.

2. In a device of the class described, the combination with a standard provided with a guide-yoke, a shank or stem slidably fitted in said yoke, a bell-crank lever having one of its arms loosely connected with said shank or stem, a rock-shaft provided with an arm which is connected to the other arm of said bell-crank lever, and an operating handle connected to said shaft, of a foot-lever, an intermediate lever connected at one end by a link to said operating handle and at the other end by a link to said foot-lever, and the pressure spring engaging said intermediate lever to elevate the free end of the foot-lever, substantially as specified.

## 503,631. FENCE. John R. Weitzacker, Shelbyville, Ill. Filed Oct. 10, 1891. Serial No. 408,901. (No model.)



*Claim.*—In a fence, the combination of separate independent fence panels having vertical bars at their ends and provided at the opposed faces of said bars between the ends and the same with vertically arranged staples located within the side faces of the vertical bars in the spaces between the panels, and the horizontally disposed split links engaging said staples and detachably and flexibly connecting the panels, substantially as described.

## 503,632. CUTTER-HEAD FOR WOOD-TURNING MACHINES. Samuel K. Wertz, Chicago, Ill., and Daniel H. Bacon, New York, N. Y. Original application filed Jan. 5, 1892, Serial No. 417,051. Divided and this application filed Jan. 3, 1893. Serial No. 457,129. (No model.)



*Claim.*—The above described cutter head, which consists of a disk provided with internal grooves, in which the enlarged shank of the cutters is loosely inserted, and which grooves are of greater depth than said enlarged shank, whereby said shank constantly tends to press against the outer edge of said grooves, under the action of centrifugal force, during the revolution of the cutter heads, and provided with a compensating device, whereby the loss of material caused by sharpening the cutter is compensated by allowing said enlarged shank to approach nearer the edge of the groove, in proportion to the amount of said loss, substantially as described and shown.

## 503,633. TREADLE-CUSHION. James H. Whitney, Brooklyn, N. Y. Filed Apr. 2, 1891. Serial No. 387,392. (No model.)



*Claim.*—1. In a cushion for the treadle of a sewing machine, the two frames formed of slats constituting the upper and lower pressure planes of the cushion, bolts passing loosely through slots formed for the purpose in the slats, and interposed springs, as herein described and set forth.

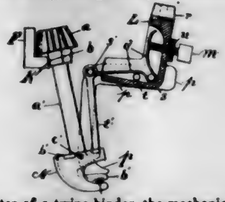
2. In a cushion for a sewing or other machine treadle, the combination of two frames formed of slats constituting the upper and lower surfaces of the treadle cushion, bolts passing loosely through slots in the slats provided for that purpose, and coiled springs strung on the bolts between the upper and lower frames, as herein shown and described.

3. The combination in a cushion for a machine treadle of two frames made of slats, bolts passing through the slats, springs strung upon said bolts, and one or more elastic flanges attached to the edge or edges of one or more of the slats forming the upper pressure plane of the treadle cushion, as herein described and set forth.

4. The combination in a cushion for a machine treadle of two frames formed of slats, bolts passing loosely through slots formed in the slats, coiled springs upon the bolts, and a coiled spring located between said frames, and attached to one of them and acting as a recoil spring in its lateral motion, as herein shown and described.

## 503,634. KNOTTER FOR BINDERS. George W. Whittington, Newmarket, Ind. Filed Aug. 22, 1892. Serial No. 443,730. (No model.)

*Claim.*—1. In the knotter of a twine binder the V shaped bill hook $b'$ thereof, adapted to fit into and be protected on sides and rear by the walls of a reciprocal central pocket in the knotter hook N;—pivoted by a pivotal pin $c'$ in the central part of the upper arm $b^3$;—having a lower arm $b^5$ adapted to grasp the twine and having a small portion of the upper surface thereof adjacent to the inner angle of the two arms struck to a radius $b^3$ $b^5$ concentric with axis of pivotal pin $c'$; said arc adapted to receive the twine placed thereon by the needle G;—having the rear portion of the said upper arm struck to an arc $b^4$ $b^4$ with radius $b^3$ $b^5$ concentric with axis of pivotal pin $c'$;—the upper surface of the upper arm $b^3$ being adapted to receive alternate downward impulses by the plunger $f'$ and a cam surface $b^4$ on the under side of the supporting casting A all substantially as set forth.



2. In the knotter of a twine binder, the mechanical devices for imparting to the bill hook $b'$ an oscillatory motion through a small angle about its pivotal axis $c'$; consisting of a plunger $f'$ adapted to press downward upon the outer end of the upper arm $b^3$ of the bill hook $b'$, operated by the knife arm L through the medium of an adjustable and regulating spring $d$ concealed and protected by a reciprocal opening in the knife arm L; a cam annular like gliding surface concentric with the axis of shaft $a'$ about which axis the bill hook $b'$ is adapted to revolve, said cam gliding surface being adapted to cooperate with plunger $f'$ as the bill hook $b'$ revolves about the axis of shaft $a'$ so as to impart to it one complete oscillation for each revolution about the axis of said shaft $a'$ the compound motion thus produced being so adjusted as to cause the lower arm of the bill hook $b'$ to raise, pass over, and press down upon and firmly grasp the twine at $c^6$ and also to release the said twine immediately after each knot has been tied.

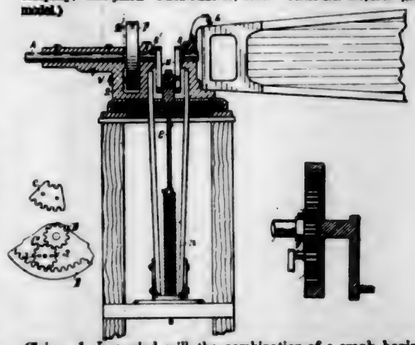
3. In the knotter of a twine binder the devices for protecting the bill hook $b'$ thereof while at the same time permitting and cooperating with said bill hook in properly performing its functions; said protecting devices consisting of a specially devised knotter hook N having an annular raised rim $k^3$ on the upper side thereof concentric with the axis of the shaft $a'$ and revolving with said shaft $a'$; said annular rim $k^3$ fitting into, and revolving in a reciprocal annular groove in the under side of the supporting block A and consisting further of a central reciprocal pocket in said knotter hook N, adapted to receive the bill hook $b'$ and to protect the same at the sides and rear, all substantially as set forth.

4. In the knotter of a twine binder the revolving circular twine holder M thereof, having three grooves in the upper side arranged in the form of an equilateral triangle about its shaft $c'$; the bottoms of said grooves being inclined planes beginning at the upper face of the twine holder M and sloping to the lower edge of a peripheral groove in the circumference of the said twine holder M, and adapted to trail the twine around in the peripheral groove in the circumference of the said twine holder M and against the reciprocal concave face at the tension device Y pressed upon by spring $w$, all substantially as set forth.

5. In the knotter of a twine binder the knife arm L thereof consisting of two branches at right angles to each other, with exposed arm actuated by a cam wheel E on the driving shaft D, causing the other arm thereof, concealed in a reciprocal opening in the supporting cast block A, to oscillate about a pivotal pin $l$; said knife arm being adapted to actuate a knife $p$ to cut the twine immediately after the tying of the knot by the other parts of the knotter, and said knife arm also actuating a plunger $f'$, through the medium of a governing steel spring $d$, to press down upon the upper arm $b^3$ of the bill hook $b'$ in cooperation with other mechanical devices to cause said bill hook $b'$ to oscillate about its pivotal pin $c'$ in performing its functions, all substantially as set forth.

6. In a twine binder the knotter thereof consisting of the combination;—the cast block A, supporting the various working parts of the machine;—the base plate B bolted to the under side of the cast block A;—the driving shaft D revolving in a horizontal aperture in the upper part of the block A;—the principal wheel F rigidly fixed to, and revolving with shaft D, having its face next to supporting block A reciprocally arranged, by an outer and inner section of cogs and gliding surfaces, to operate both a knotter-hook N, and a revolving twine holder M through the medium of shafts $a'$ and $c'$ and cog wheels $e$ and $e^6$ reciprocally adapted to be actuated by the said principal wheel F;—the knife arm L thereof consisting of two branches at right angles to each other and exposed arm L thereof actuated by a cam-wheel E on the driving shaft D, causing the other arm thereof, concealed in a reciprocal opening in the supporting cast block A, to oscillate about a pivotal pin $l$, said knife arm actuating a knife $p$ and plunger $f'$ in the manner and for purposes set forth;—a revolving circular twine holder M, having three grooves $k'$ in the upper face thereof arranged in the manner and for purposes as set forth; the bill hook $b'$ thereof adapted to fit into and be protected on its sides and rear by a reciprocal pocket in the knotter hook N while performing its functions;—and the knotter hook N thereof having a reciprocal central protecting pocket adapted to protect the bill hook $b'$ therein placed, while being also adapted to permit it the necessary freedom in performing its functions properly, all substantially as set forth.

## 503,685. WINDMILL. MALCOLM B. WILLIAMS and WILLIAM H. AYRES, Kalamazoo, Mich., assignors to the Williams Manufacturing Company, same place. Filed June 13, 1892. Serial No. 436,498. (No model.)



*Claim.*—1. In a wind mill, the combination of a crank having the axes, and internal gear attached to the forward one of said axes, a wheel-shaft on a line with the crank axes and provided with a pinion within said internal gear, and an intermediate pinion meshing with the wheel-shaft pinion and the internal gear, said intermediate pinion having a suitable bearing support on the mill head; substantially as set forth.

2. In a wind mill, the combination of a crank having the axes, an internal gear attached to the forward one of said axes, a wheel-shaft on a line with the crank axes and provided with a pinion within said internal gear, and an intermediate pinion or its described equivalent, locking the wheel-shaft pinion with the internal gear; substantially as set forth.

3. In a wind mill, the combination of a crank having the axes, an internal gear attached to the forward one of said axes, a wheel-shaft on a line with the crank axes and provided with a pinion within said internal gear, and means for locking the wheel-shaft pinion with the internal gear; substantially as set forth.

4. In a wind mill, the combination of a crank having the axes, an internal gear attached to the forward one of said axes; said crank, its axes, wrist pin and the internal gear, all being made integral with each other; a wheel-shaft on a line with the crank axes and provided with a pinion within said internal gear, and an intermediate pinion meshing with the wheel-shaft pinion and the internal gear, said intermediate pinion having a suitable bearing support on the mill head; substantially as set forth.

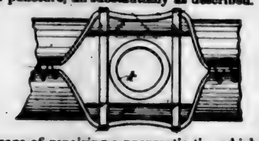
5. In a wind mill, the combination of a crank having the axes, an internal gear attached to the forward one of said axes, said crank, its axes, wrist pin and the internal gear all being made integral with each other, and a wind wheel-shaft gear connected with said internal gear; substantially as set forth.

6. In a wind mill, the combination of a head and hinged vane of a wind mill, a curved seat attached to said vane, the spring having the curved rear end, adjustably clamped in said seat, and flexible means attaching the free end of said spring to the head of the mill; substantially as set forth.

## 503,686. METHOD OF REPAIRING PNEUMATIC TIRES. JOHN J. WILLIAMS, Montpelier, Vt. Filed May 24, 1892. Serial No. 433,236. (No specimens.)

*Claim.*—1. The method of repairing a pneumatic tire of the single tube type which consists in separating the outer covering layer along the inner surface of the tire, opening out the flaps and uncovering the wall of the inner tube, making an opening through the wall of the inner tube and applying a patch to the inner surface of the air tube at a point where the puncture or place of leakage is located, all substantially as described.

2. The method of repairing a pneumatic tire of the single tube type which consists in separating the covering layer along the inner surface of the tire, holding the separated edges of the covering layer apart as by means of braces, making an opening through the wall of the inner tube and distending the opening by means of a frame inserted therein, and then applying a patch to the interior of the tube at the point of puncture, all substantially as described.



3. The means of repairing a pneumatic tire which comprise an extending frame adapted to be inserted in a slit in the wall of the tube and braces adapted to hold the edges of the covering layer apart and provided with means for attachment to the opposite edges of the covering layer, all substantially as described.

4. The means of repairing a pneumatic tire which comprise clamps having means for attachment to the edges of the opening in the tubular tire and the brace operating to hold the edges of the opening distended, all substantially as described.

5. The method of repairing pneumatic tires which consists in deflating the tire so as to remove it from the rim of a wheel, then dividing or severing the outer covering or tread which surrounds the inner air-tube at a point opposite the point desired to be repaired in said inner air-tube, cutting or slitting said inner air-tube a slight distance at a point or place opposite the point to be repaired and pressing the point to be repaired up so that its inner side shall be accessible through the severed portions of said inner tube and outer covering and then repairing the desired portion.

6. The method of repairing pneumatic tires which consists in deflating the tire so as to remove it from the rim, then severing or slitting the outer covering or tread which surrounds the inner tube at a point opposite the point or place in the inner tube which is desired to be repaired, severing or slitting said inner air-tube at a point or place opposite to the point or place in said tube which is to be repaired and holding said severed or slit portions open, then forcing the point or place to be repaired up so that its under side shall be accessible through the severed or slit portions of said inner tube and outer covering and making the necessary repairs thereto.

## 503,687. BOAT-DISENGAGING GEAR. WALTER H. WILSON and WILLIAM J. PIERCE, Belfast, Ireland. Filed Dec. 13, 1892. Serial No. 455,005. (No model.) Patented in England June 1, 1891, No. 9,224.

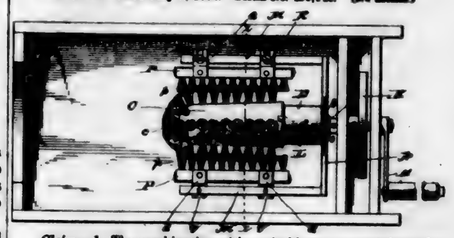


*Claim.*—1. The combination in boat disengaging gear of the pivoted suspending hooks adapted to engage with a pair of rings connected with the hoisting tackle, a shaft in the boat operated by a handle, connections between the shaft and the hooks, pivoted locking pawls arranged opposite the ends or points of the hooks for holding the rings on the hooks while the hooks remain in place, and lugs or stops on the opposite sides of the ends or points of the hooks to hold back the rings while the hooks are being withdrawn from them, the organization being such that the rings may be separately attached to the hooks and may be simultaneously released therefrom.

2. The combination with a boat, of a pair of suspending hooks adapted to engage with rings connected with the hoisting tackle, a shaft mounted in bearings in the boat and adapted to turn axially therein, a handle for operating the shaft, connections between the shaft and the hooks, whereby the hooks may be operated simultaneously, pawls arranged opposite the ends or points of the hooks to hold the rings in position in the hooks, and which are free to move to allow the rings to be engaged with the hooks, while the hooks remain stationary, and stops for holding the rings against lateral movement while the hooks are being moved.

3. The combination with a boat of a pair of suspending hooks having laterally projecting arms F, said hooks adapted to engage rings connected to the hoisting tackle a shaft mounted in bearings in the boat in which it is free to turn axially, rods connecting the shaft with the arms F, whereby the hooks may move simultaneously, stops for holding the rings attached to the hoisting tackle in engagement with the hooks, and lugs or stops for preventing the lateral movement of the rings while the hooks are being moved.

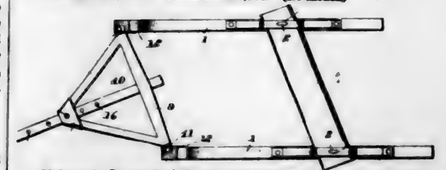
## 503,688. TUMBLER-WASHER. ALEXANDER LAUBER, San Antonio, Tex. Filed July 6, 1892. Serial No. 439,140. (No model.)



*Claim.*—1. The combination with a suitable case or container of a shaft, a brush core carried by said shaft, the parallel arms M M carried by the shaft, and the adjustable brush frames attached to said arms, having slotted clips engaged by thumb-screws on the arms, substantially as specified.

2. The combination with a suitable case or container, of a shaft, a core carrying brush bristles and provided in one end with a socket to receive the end of the shaft, the core being locked upon the end of the shaft by a set-screw, the arms M M carried by a cross-bar which fits upon the shaft and is locked thereon by pins in the end of the core engaging perforations in said bar, and the adjustable brush-frames carried by the said arms, substantially as specified.

## 503,689. BOB-SLEIGH. GEORGE H. ADAMS, Red Lodge, Mont. Filed Mar. 11, 1893. Serial No. 466,561. (No model.)



*Claim.*—1. In a bob-sled, the combination of runners, a tongue having a cross-piece connected at the ends by ball and socket joints with the runners, and knees mounted on the runners and having a forward and backward rocking movement and a sidewise movement, substantially as described.

2. In a bob-sled, the combination of runners provided with vertical rods, a transverse beam provided with openings receiving the rods, knees supporting the beam and having openings to receive the rods, the openings of the beam and knees being sufficiently large to permit a rocking and a laterally swinging motion, a tongue having a cross-bar connected at the ends by ball and socket joints with the runners, and arched braces extending over the transverse beam and secured to the runners, substantially as described.

3. In a bob-sled, the combination of runners, knees mounted on the runners and having a rocking and a laterally swinging motion, a tongue, a cross-bar connected with the tongue and provided with projecting pins terminating in heads, and plates secured to the runners and having openings receiving the pins, the heads of the latter being arranged between the plates and the runners, whereby ball and socket joints are provided, substantially as described.

## 503,640. HORSE-POWER. ANTON AKER, Helena, assignor of one-half to Nickolaus Wagner and Jacob Wagner, Rimini, Mont. Filed Sept. 14, 1892. Serial No. 445,922. (No model.)

*Claim.*—1. The combination, with a sweep, of a hub or wheel, fixed thereto at the pivot, carrying two sets of spokes one above and shorter, and alternating with, the other, and a rock shaft, having two arms, acted upon by said spokes, substantially as shown and described.

2. The combination with a hub or wheel carrying two sets of spokes, one above and shorter, and alternating with the other, of mechanical means to revolve said wheel, and a rock shaft, having arms, adapted to be acted upon by said spokes, substantially as shown and described.

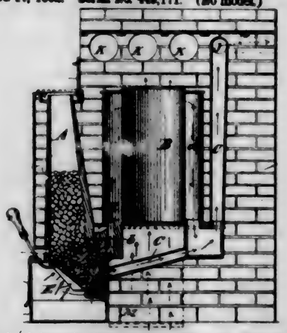
3. The combination with a sweep, of a hub or wheel fixed to said sweep, spokes removably secured to said hub or wheel, a rock shaft,

**503,640.**



and adjustable arms, secured to said shaft, adapted to be acted upon, alternately by said spokes, substantially as shown and described.

**503,641. HEATING-FURNACE.** JOHN A. P. BERG, Moline, Ill. Filed Oct. 17, 1892. Serial No. 449,171. (No model.)



*Claim.*—1. A hot-air furnace comprising the following parts, a fuel magazine, a hot-air drum, a spark chamber, a soot chute, combustion chamber $A'$, $a^3$, around hot-air drum B, revolving grate bars $e$ and grate lever $l$. The lower section being provided with air-inlets and upper with air outlets, with the drum B, said tubes all opening in one air chamber substantially as specified.

2. The combination with a hot air furnace of the fuel magazine A, hot air drum B, spark chamber C, combustion chamber $A'$, $a^3$, soot chute $c$, revolving grate $e$, and grate lever $l$, substantially as specified and set forth.

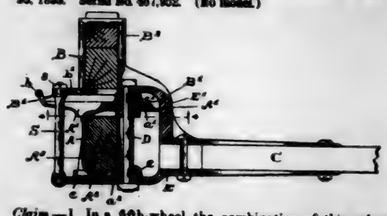
**503,642. FIREPROOF GIRDER AND JOIST.** JOHN H. BLAKELEY, London, England. Filed Oct. 25, 1892. Serial No. 449,997. (No model.) Patented in England Nov. 28, 1891, No. 20,740.



*Claim.*—1. In fire-proofing, the combination of the perforated blocks, tiles and skew-backs with blocks or keys, constructed of fire-clay or of any other fire-proofing material to render floors, roofs, girders and joists fire-proof, substantially as herein described.

2. In fire-proofing, the combination of the perforated block and tile in one, with the skew-backs and blocks or keys, constructed of fire-clay or of any other fire-proof material to render floors, roofs, girders and joists fire-proof, substantially as herein described.

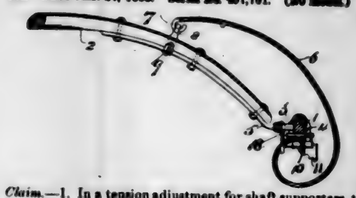
**503,643. FIFTH-WHEEL.** TIMOTHY L. BOBART, Indianapolis, Ind., assignor to the Yaryan Fifth Wheel Company, same place. Filed Mar. 23, 1893. Serial No. 467,952. (No model.)



*Claim.*—1. In a fifth-wheel, the combination of the axle-plate $A^3$ having a lip $a^3$, and a reach iron E having a widened portion containing a semi-circular slot into which said lip extends, substantially as shown and described.

2. The combination, in a fifth-wheel, of the axle, the bolster, the fifth-wheel part A' thickened and having an opening therethrough, a projection on the fifth-wheel part A' passing below and entering the same, and a projection on the reach-iron E' passing above and entering the same, the projections thus approaching each other, and the king-bolt passing through the several parts, substantially as shown and described.

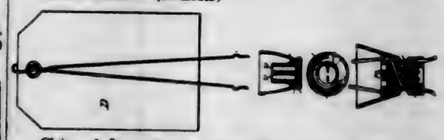
**503,644. THILL-SUPPORT.** GEORGE G. F. BOSWELL, Indianapolis, Ind. Filed Mar. 27, 1893. Serial No. 467,761. (No model.)



*Claim.*—1. In a tension adjustment for shaft supporters, the combination with a vehicle axle, and the shaft pivoted thereto, of a spring holder beneath said axle and having outwardly projecting spring supporting arms, and an upwardly projecting retaining arm, a wedge piece adapted to be moved longitudinally in said holder, and a shaft supporting spring looped over said wedge and passing over said spring supporting arms, and having its free end supporting said pivotal shaft, substantially as set forth.

2. In a tension adjustment for shaft supporters, the combination with, a shaft supporting spring and its holder having the under side of its base or bearing plate recessed to form a T-way or dovetail longitudinal way, said way having a series of notches or serrations formed on its bearing face, of a wedge piece having a T-head or dovetail adapted to loosely fit in said way and to be moved longitudinally therein, said wedge provided with projecting teeth or serrations adapted to interlock and to engage the similarly formed teeth of the holder way, and having suitable spring engaging notches arranged along the outer edge of and extending from the thick to the thin edge of said wedge in regular graduations, substantially as and for the purpose set forth.

**503,645. SEAL.** EDWARD J. BROOKS, East Orange, N. J., assignor to the E. J. Brooks & Company, New York, N. Y. Filed Feb. 17, 1893. Serial No. 462,746. (No model.)

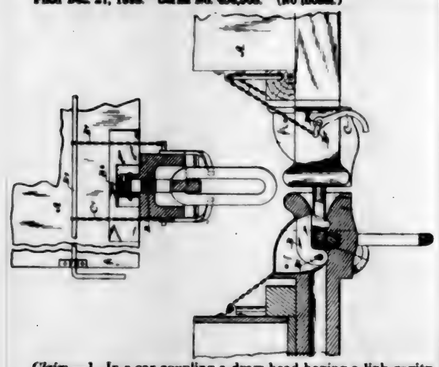


*Claim.*—1. In combination with a flexible sealing shackle, a seal-part having a shackle-securing portion which is pressed to fasten the seal, and a cup-shaped portion with a wide open end which remains open and surrounds the shackle above said shackle-securing portion, substantially as hereinbefore specified, for the purposes set forth.

2. A seal composed of a flexible shackle, a compressible "rivet" which secures both ends of said shackle, and a sheet metal cup, interlocked with said rivet, having an open end which remains open after the seal is pressed and surrounds the shackle above said rivet, substantially as hereinbefore specified.



**503,646. CAR-COUPLING.** ASHER A. BROWER, Des Moines, Iowa, assignor of two-thirds to W. M. McFarland and W. W. Orris, same place. Filed Dec. 27, 1892. Serial No. 454,503. (No model.)



*Claim.*—1. In a car coupling a draw head having a link cavity, a notch in the rear of the link cavity to admit the end of the link and slots in the bottom of the draw head to allow a link having its end in the aforesaid notch to swing to a vertical position and means for elevating the outer end of said link.

2. In a car coupling a draw head having a link cavity a notch in the rear of the link cavity adapted to admit the end of the link and allow it to pass below the bottom of the link cavity for the purposes stated slots in the bottom of the draw head to allow a link when placed in the said notch to swing to a vertical position and means for elevating the outer end of said link.

3. In a car coupling the combination of the following elements, to wit: a draw head having a link cavity adapted to admit a link and allow it to swing from a horizontal to a vertical position, two bent levers pivoted to the opposite sides of the car and having their lower ends adapted to engage the link and means for manually operating the said levers from the side of a car to elevate the outer end of the link for the purposes stated.

4. In a car coupling the combination of the following elements, to wit: a draw bar connected with a car in the ordinary manner a draw head formed thereon and provided with a link cavity, a notch formed in the rear end of the link cavity as set forth, slots formed in the sides of the bottom of the draw head for the purposes stated, a hook fixed to a rock shaft in the rear end of the draw head and adapted to engage the bottom of the link cavity in advance of said notch, two bent levers loosely mounted upon a suitable support at the sides of the draw head and adapted to be brought into engagement with the said link, to elevate its outer end, a rotatable shaft mounted in suitable bearings attached to the end of the car to be manually operated, a chain attached to said shaft and to the rock shaft to which the said hook is fixed and a chain wound upon the said shaft in an opposite direction from the aforesaid one and attached to the bent levers substantially in the manner set forth for the purposes stated.

5. In a car coupling, a draw head having an open-mouthed link-cavity and parallel slots extending from the front of the draw head rearward, a link support extending forward between the said slots and provided with a depression in its top surface to admit the front of a hook, and a hook pivoted in the link cavity and adapted to pass through an open link and enter and rest in the said depression in said link support, in the manner set forth, for the purposes stated.

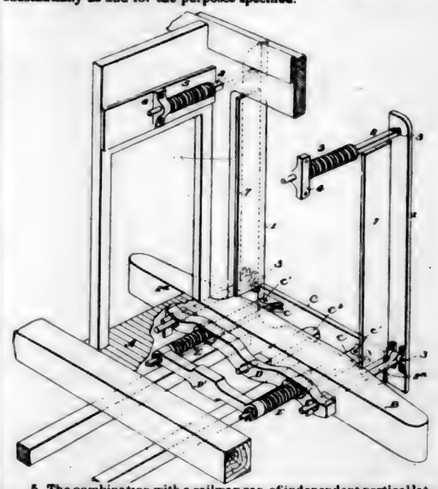
**503,647. BUFFER AND VESTIBULE CONNECTION FOR PASSENGER-CARS.** HARRY C. BURDUP, Chicago, Ill. Filed May 9, 1893. Serial No. 473,533. (No model.)

*Claim.*—1. The combination with a railway car, of independent lateral vertical buffers; substantially as and for the purposes specified.

2. The combination with a railway car, of independent lateral vertical buffers provided with rearwardly extending plates or flanges; substantially as and for the purposes specified.

3. The combination with a railway car, of independent lateral vertical buffers, provided with pivoted or hinged rearwardly extending plates; substantially as and for the purposes specified.

4. The combination with a railway car, of independent lateral vertical buffers, provided with rearwardly extending plates, and a casing and door posts between which said rearwardly extending plates slide; substantially as and for the purposes specified.



5. The combination with a railway car, of independent vertical lateral buffers, and a flexible connection between the tops of said buffers and the top of the car; substantially as and for the purposes specified.

6. The combination with a railway car, of independent lateral vertical buffers, one of said buffers having a curved face and the other a flat face; substantially as and for the purposes specified.

7. The combination with a railway car, of independent lateral vertical buffers, and a horizontal buffer, and means for coupling the same whereby the lateral buffers may operate independently of or conjointly with the horizontal buffer; substantially as and for the purposes specified.

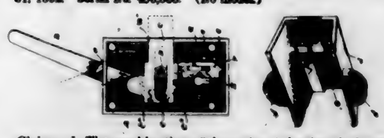
8. The combination with a railway car, of independent lateral vertical buffers, and a spring supported cross bar; substantially as and for the purposes specified.

9. The combination with a railway car, of independent lateral vertical buffers, and a horizontal buffer, of a spring supported cross or equalizing bar, common to all of said buffers; substantially as and for the purposes specified.

10. The combination with a railway car, of vertical buffers having rearwardly extending plates or flanges and which constitute vestibule face plates, and a horizontal buffer connected thereto; substantially as and for the purposes specified.

11. The combination with a railway car, of vertical buffers having rearwardly extending plates or flanges and which constitute vestibule face plates, and a horizontal buffer with hinged or flexible connection; substantially as and for the purposes specified.

**503,648. LOCK.** AARON BURGER, Grand Rapids, Mich. Filed Oct. 31, 1892. Serial No. 450,535. (No model.)

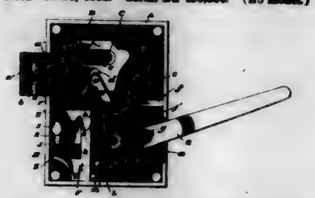


*Claim.*—1. The combination of the casing A, having the longitudinal slots $a$ and $a'$, the bolt C having the elongated slot $c$, the lug D situated within said slot, the indentation or notch $C^3$ on the lower portion of the bolt, the lug C' upon the upper portion thereof, the handle B pivoted to the lug C' and projecting through the slot $a$, the locking slide F adapted to engage the bolt C and provided with the slot $f$, the lug H therein, the indentation M and the lugs $e$ $e$ provided with the spring G, substantially as and for the purpose described.

2. In a lock, the combination with the lock bolt, of a spring catch, consisting of a casing having a flat spring secured on the inner side thereof and adapted to bear against the bolt, substantially as specified.

3. In a lock, the combination with the locking bolt, of the catch consisting of the casing N and the spring O secured therein, substantially as specified.

**503,649. LOCK AND LATCH.** AARON BORDEN, Grand Rapids, Mich. Filed Oct. 31, 1892. Serial No. 450,536. (No model.)



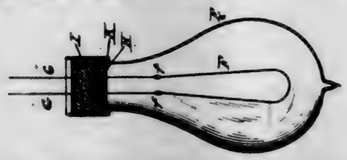
*Claims.*—1. The combination with the casing, of the latch bolt B, having slot *c*, receiving rigid pin C and having also the latch B' and the indentations *d* and E, the spring *e* acting on the inner end of the latch bolt and the long handle G projecting outward from the casing and pivoted within the casing and having an angular extension G' which engages the indentation *d*, substantially as described.

2. The combination with the latch bolt B having the indentations *d* and E on its edge and having the latch B' on its outer end, of a lever handle having a projection that enters the indentation *d*, and the key-operated locking slide F having a projection that enters the indentation E, substantially as described.

3. The combination of the bolt B, having latch B', slot *c*, receiving pin C, indentations *d* and E on its lower edge, the pivoted elongated operating lever G, having extension G' engaging the indentation *d*, locking slide F guided by the lug J and having the key-indentation *k*, substantially as specified.

4. The combination with the casing, of the latch bolt B, having the slot *c*, adapted to receive the pin C and having also the integral latch B' and shoulder *b* and the indentations *d* and E, the spring *e* secured to the casing and acting on the inner end of the latch bolt, the long handle G pivoted to the casing and extending through the slot *a* and provided with the angular extension G' which is adapted to engage with the indentation *d* of the latch plate, the vertically moving locking slide F provided with the projection F' which is adapted to engage the notch or indentation E, said slide F being provided with the rectangular slot A within which is the rectangular lug J, the indentation *k* and the projections K K formed on said slide, and the flat spring L located between the pins *m m* to one of which it is secured and being bent slightly so as to enter the notches *l l* in the edges of the locking slide, substantially as described.

**503,650. INCANDESCENT ELECTRIC LAMP.** EDWARD R. CARY, Boston, and WILLIAM E. NICKERSON, Cambridge, Mass. Filed Apr. 3, 1893. Serial No. 468,928. (No model.)

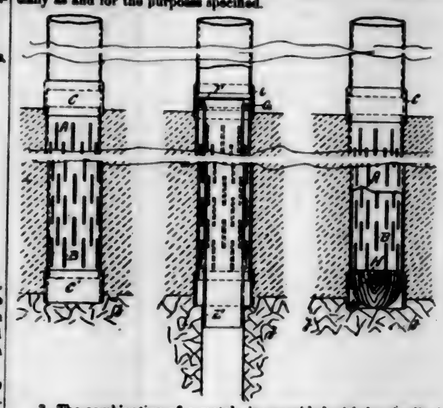


*Claim.*—In an incandescent electric lamp, the combination of the glass bulb E, having a shoulder K between the air-tight sealing plug and the vacuum chamber; with the loosely fitting disk H, filament F, leading-in wires G G, and plug of fusible cement I, substantially as and for the purpose set forth.

**503,651. ARTESIAN WELL.** ROBERT J. CHIPMAN, Paterson, N. J., assignor of one-half to CYRUS P. CRAMER, same place. Filed Mar. 23, 1893. Serial No. 467,257. (No model.)

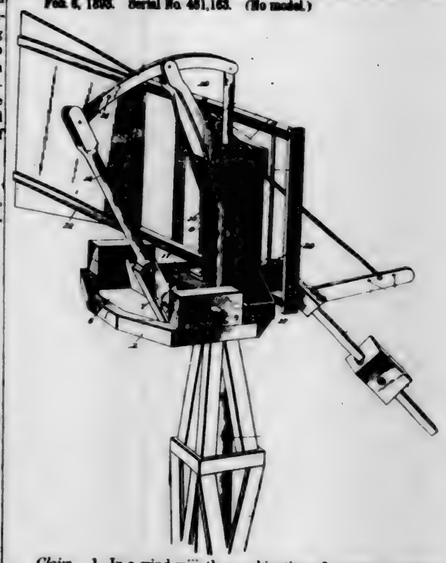
*Claim.*—1. The combination of a longitudinally slotted pipe, no two elongated slots adjoining each other throughout their whole length, and a wooden plug at the bottom of said longitudinally slotted section of pipe, constructed substantially as shown and set forth and for the purpose specified.

2. The combination of a metal pipe provided with longitudinal slots, no two slots adjoining each other throughout their entire length, an adjoining section of pipe, a coupling for connecting said slotted pipe with said adjoining section of pipe, a collar inside of said coupling and between the adjoining sections of pipe, said collar being bevel shaped and an inside metal pipe made bell mouthed at its upper end and provided with an inwardly projecting flange, constructed substantially as and for the purposes specified.



3. The combination of a metal pipe provided with longitudinal slots, no two slots adjoining throughout their entire length, an adjoining section of pipe, a coupling for connecting said slotted pipe with said adjoining section of pipe, a collar inside of said coupling and between the said adjoining sections of pipe, said collar being bevel shaped, and an inside metal pipe made bell mouthed at its upper end, adapted to rest upon and be supported by said bevel shaped collar, and provided with an inwardly projecting flange, and a wooden plug at bottom of slotted pipe, all constructed substantially as shown and set forth and for the purpose specified.

**503,652. WINDMILL.** CHARLES W. CLARK, Hanford, Cal. Filed Feb. 6, 1893. Serial No. 461,163. (No model.)



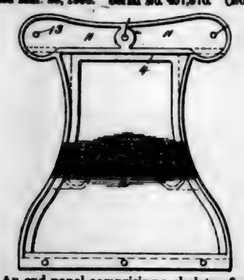
*Claim.*—1. In a wind mill, the combination of a tower, a frame rotatively mounted thereon and having a standard provided at its upper end with a horizontal arm, a vane hinged to the arm and the frame and extended beyond the point of hinging, an upwardly and horizontally swinging bell-crank lever hinged to the extension of the vane and having its lower arm provided with a weight, a link connecting the other arm of the bell-crank lever with the top of the standard, and means for turning the vane against the action of the weight substantially as described.

2. In a wind mill, the combination of a tower, a frame rotatively mounted thereon and provided with a standard and having an arm extending horizontally from the top of the standard, a vane hinged to the arm and the frame and provided with an extension, a rod vertically secured to the extension, a block hinged to the vertical rod, an upwardly and horizontally swinging vertically disposed bell-crank lever hinged to the block and having its lower arm weighted, a link connecting the other arm with the lever with the top of the standard, and a chain for moving the vane against the action of the weight, substantially as described.



3. In a wind mill, the combination of a tower, a horizontal frame provided at one side with a turn table mounted on a tower, a shaft carrying a wind wheel arranged at the opposite side of the frame, a pump rod, means for connecting the pump rod with the shaft, a vane having an extension and hingedly connected to the frame and having the turn table between it and the shaft to counterbalance the frame, an upwardly and horizontally swinging weighted bell-crank lever hingedly connected to the extension of the vane and having one arm connected with the frame, and means for moving the vane against the action of the weight, substantially as described.

**503,653. END PANEL FOR CAR-SEATS.** HENRY COCHRAN, Chester, Pa. Filed Mar. 23, 1893. Serial No. 467,870. (No model.)

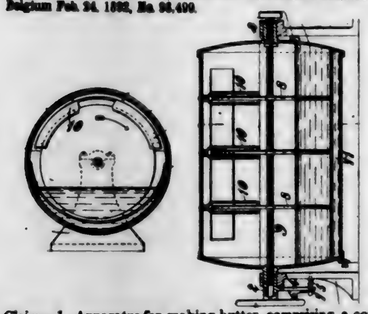


*Claim.*—1. An end panel comprising a skeleton frame composed of top, bottom and sides and provided at the inner edges of its top and sides with grooves, and having in its bottom an opening communicating with said grooves, and a panel arranged in said grooves and inserted therein through the openings of the bottom and secured in place by mounting the end panel in position, substantially as described.

2. An end panel comprising a panel frame constructed of metal and having a panel opening, and provided at its top and sides with grooves, and provided at its bottom with a downwardly and a horizontally extending flange, and having an opening between the flanges, and a panel arranged in the grooves, substantially as described.

3. An end panel comprising a panel frame composed of top, bottom and sides and having at its top and sides grooves, and provided at the bottom with flanges and having an opening between them, registering with the grooves and provided at the top with a flange, the groove at the top forming a ledge on the inner face of the flange, and said ledge being extended entirely across the panel frame, and a panel arranged in the grooves, substantially as described.

**503,654. CHURN.** JOHN H. H. DUNCAN, London, England. Filed Sept. 3, 1892. Serial No. 444,961. (No model.) Patented in England July 24, 1891, No. 12,542, and Dec. 1, 1891, No. 20,989; in Germany Dec. 13, 1891, No. 69,058; in France Feb. 24, 1892, No. 219,641, and in Belgium Feb. 24, 1892, No. 98,499.



*Claim.*—1. Apparatus for making butter, comprising a covered vessel mounted to rotate, a rotary shaft extending through said vessel and carrying a disk, a curved guard of concave form in cross section arranged to partly surround said disk, and a locking device for temporarily fixing said rotary vessel substantially as herein described.

2. Apparatus for making butter, comprising a covered vessel, a rotary shaft located therein, vertically arranged disks fixed to said shaft, and concave guards fixed externally to and concentric with said disks substantially as herein described.

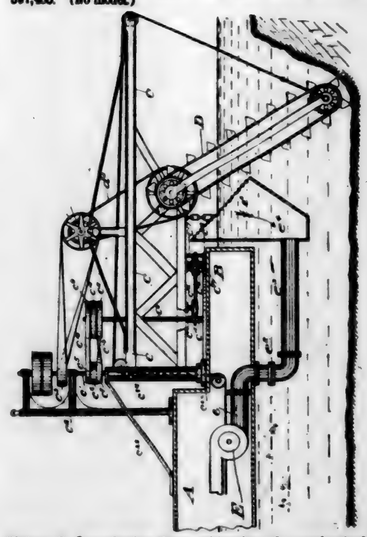
3. Apparatus for making butter, comprising a covered rotary vessel, bearings wherein said vessel can turn, a series of disks fixed upon a shaft mounted to turn in said vessel, concave guards each arranged externally to and concentric with one of said disks and means for temporarily fixing said vessel substantially as herein described.

4. Apparatus for making butter, comprising a rotary cylindrical vessel having a movable cover and a jacketed bottom, standards wherein said vessel can turn, a series of disks fixed upon a shaft mounted to turn within said vessel, concave guards fixed to said cover and each arranged externally to and concentric with one of said disks, and means for temporarily fixing said vessel substantially as herein described.

5. Apparatus for making butter, comprising a rotary cylindrical vessel, a series of vertical disks fixed upon a shaft mounted to turn within said vessel, and a series of fixed guards arranged to partly surround said disks and each provided with one or more baffle plates such as $10^a$, substantially as herein described for the purpose specified.

6. Apparatus for making butter, comprising a rotary cylindrical vessel having a hinged cover and jacket, standards wherein said vessel can turn, means for rotating said vessel, a locking device adapted to temporarily fix said vessel, a series of disks fixed upon a horizontal shaft extending through said vessel, and a series of concave guards fixed externally to and concentric with said disks and each provided with one or more baffles such as $10^a$ substantially as herein described for the purpose specified.

**503,655. HYDRAULIC DREDGER.** CHARLES E. ELLICOTT and FRANCIS ELLICOTT, Lake Roland, Md. Filed June 26, 1891. Serial No. 397,455. (No model.)



*Claim.*—1. In a dredge the combination of a mechanical excavator, a hydraulic discharging apparatus and a suction pipe its mouth being submerged below the surface of the surrounding water, the end of the pipe being provided with a hopper placed in position to receive the mud lifted above the surface of the water and dropped by the digger, which mud in entering the suction pipe must pass back into the water, substantially as described.

2. In a dredge, the combination of a suction pipe the mouth of which is submerged, secured to the front of the boat by a flexible joint and provided on its end with a hopper and opening upward and a chain and bucket digger and elevator and means whereby the elevating excavator and suction pipe are swung back and forth across the end of the boat while remaining in proper relative position to dig a swath of mud with one adjustment of the machine.

3. In a dredge, the combination of a suction pipe the mouth of which is submerged, secured to the front of a boat by a flexible joint and provided on its end with a hopper opening upward, a crane,

mounted upon the boat, a chain and bucket excavator swung from the crane and arranged to swing round the end of the boat, the suction pipe and elevator being connected so as to move together and retain their relative positions, substantially as described.

4. In a dredge, the combination of a suction pipe the mouth of which is submerged secured to the front of a boat by a flexible joint and provided on the end with a hopper opening upward, with a chain and bucket excavator mounted upon a carriage arranged to travel on a track provided for the purpose, and means for propelling the carriage and suction pipe, substantially as described.

5. In a dredge, the combination of a suction pipe the mouth of which is submerged, secured to the front of a boat by a flexible joint and provided on its ends with a hopper opening upward, a derrick pivoted upon a boat, a chain and bucket excavator swung from the derrick and arranged to swing around the end of the boat, a vertical shaft journaled so that its axis is coincident with the axis of the pivot of the derrick, a pulley keyed to said shaft, a belt running upon said pulley and engaging another pulley journaled upon the derrick boom and moving with it, from which pulley the excavator is driven, and power transmitting mechanism connecting the counter-shaft on the boom with the excavator, whereby power is communicated to the excavator from the vertical shaft with equal facility no matter what position the boom and excavator may occupy.

6. In a dredge, the combination of a suction pipe the mouth of which is submerged secured to the boat by a flexible joint and provided on its end with a hopper opening upward, with a chain and bucket excavator mounted on a carriage arranged to travel upon a track provided for the purpose, on the end of the boat, and a device for propelling said carriage, which consists of a vertical shaft journaled in the axial line of the center of rotation of the carriage, a pulley secured to said shaft, a vertical counter shaft journaled upon the carriage and provided upon one end in line with the pulley of the first shaft with a similar pulley, which is connected with the first one by a belt, a worm upon said counter-shaft, and a worm wheel meshing therewith and driving a horizontal counter-shaft also mounted upon the carriage, to which is keyed a gear wheel which meshes with a curved rack, laid upon the front end of the boat whereby the carriage and the device supported by it, that is to say, the excavator and submerged suction pipe, are propelled back and forth across the end of the boat, substantially as described.

7. In a dredging machine the combination with a boat having an excavating device, of a hopper projecting from the boat and provided with an opening to allow the water in which it is partially immersed, to have access to the interior thereof, and means for withdrawing the material deposited from the hopper.

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**503,656. SHANK FOR HOLDING ROTARY CUTTING-TOOLS OR TOOL-HEADS.** STUART E. FREEMAN, Philadelphia, Pa., assignor to Arthur Falkenau, same place. Filed Aug. 5, 1892. Serial No. 442,222. (No model.)



*Claim.*—1. An implement consisting of a mandrel provided with an expansible shank and embodying a bore, a taper pin adapted to be entered within the bore of the shank, a transverse channel in communication with said bore, and a pin adapted to be entered in said channel, substantially as set forth.

2. An implement consisting of a mandrel provided with an expansible shank and embodying a bore, a tapering pin adapted to be entered within said bore, a transverse channel in communication with said bore and in line with the point of the pin when driven home, substantially as set forth.

3. As an article of manufacture, a mandrel provided with an expansible shank, and provided with a projecting stud, a tool head embodying a bore of such size as to receive the unexpanded shank and embodying a recess adapted to receive the stud, and means for expanding the shank, substantially as set forth.

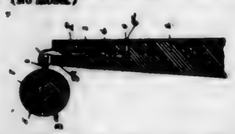
4. In combination with a tool head provided with a bore, a mandrel provided with an expansible shank adapted to be entered in said bore, means for expanding said shank, said head and mandrel each having a face perpendicular to the axis of the said shank which faces are in close contact when the tool head is in position, a groove of gradually diminishing depth formed in one of said faces, and a pin having one straight and one inclined edge adapted to be entered in said groove to occasion the partial separation of the tool head from the mandrel, substantially as set forth.

5. An implement consisting of a mandrel having an expansible shank and a plane face perpendicular thereto, a tool head having a bore adapted to receive the said shank and a face corresponding to the face of the mandrel, which faces are in close contact when the tool head is in position upon the mandrel, means for expanding the shank, means for preventing the rotation of the tool head with respect to the mandrel, said means consisting of a projection on one of said devices taking into a recess in the other, and a groove formed in one of the said faces, substantially as set forth.

6. An implement consisting of a mandrel having an expansible shank, and embodying a bore the inner end of which opens into a transverse channel, a tool head having a bore adapted to receive the said shank, said tool head and mandrel having corresponding opposing faces which are brought into close proximity to each other when the tool head is in position upon the mandrel, one of the said faces being provided with projections and the other with corresponding recesses, a pin adapted to be entered in the bore of the shank to occasion the expansion of said shank, said pin being of such length that when in position its advance end extends within the transverse channel, and a groove of gradually diminishing depth formed in the face of the mandrel, the entrance of a correspondingly shaped pin within which will occasion the starting of the tool head from its seat, substantially as set forth.

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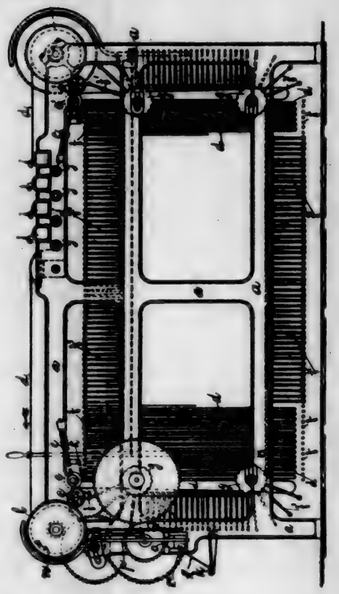
**503,657. NECK-YOKE CONNECTION FOR VEHICLE-POLES.** CHARLES E. FETHERLL, Grand Glaize, Ark. Filed June 30, 1891. Serial No. 398,073. (No model.)



*Claim.*—The combination of a pole provided with a terminal axial socket 3, and a vertical downwardly-extending opening 6, communicating with said socket at its rear end, a smooth coupling-pin 4 fitting removably in said socket and provided at its front end with an upstanding eye 9 adapted to bear against the front end of the pole to limit the insertion of the pin into the socket, whereby its rear end is held flush with the front side of the opening 6, said eye extending vertically to the upper side of the pole, and a yoke provided with a depending eye 8 interlocked with the eye 9, whereby when repressed the yoke contacts with the upper side of the pole, substantially as specified.

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**503,658. MACHINE FOR CUTTING THE PILE OF WEFT PILE FABRICS.** WILLIAM GADD, Manchester, England. Filed Aug. 5, 1892. Serial No. 442,220. (No model.) Patented in England Oct. 17, 1891, No. 17,760.

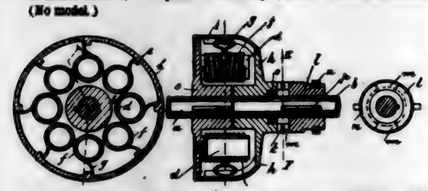




*Claim.*—In machines employed in cutting the pile of weft pile fabrics, or for analogous purposes, the endless chain of levers *f*, the transverse rods *f'* carried thereby, the geared pulleys *g*, actuating the levers, and causing the same to open out at those points where they pass round the said pulleys; for the purpose and in manner substantially as herein shown and described.

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**503,659. CLUTCH.** JOHN GAWRON, Stettin, Germany, assignor to Marie Gawron, same place. Filed May 6, 1891. Serial No. 392,183. (No model.)



*Claim.*—1. The combination, with two shafts arranged in line with each other, each shaft having one half of the clutch operatively connected to it, of a series of springs carried by one half of the clutch and provided with radially projecting ends adapted to engage with projections on the inner wall of the other half of the clutch, substantially as and for the purpose set forth.

2. The combination, with two shafts arranged in line with each other, of the two halves of the clutch operatively connected to the said shafts, and a series of springs carried by the inner half of the clutch and adapted to engage with a series of projections on the inner wall of the outer half of the clutch, substantially as and for the purpose set forth.

3. The combination, with the shaft *a*, and the half *c* of the clutch provided with the spring supports *d* arranged concentric with the said shaft; of the shaft *b*, the half *h* of the clutch operatively connected to the shaft *b* and provided with the projections *i*, and the springs *f* secured to the said spring supports and provided with arms *g* adapted to engage with the said projections, substantially as and for the purpose set forth.

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**503,660. PNEUMATIC TIRE.** THOMAS D GLEN, WILLIAM PURVIS, and STUART SMITH, Glasgow, Scotland. Filed Apr. 6, 1893. Serial No. 469,330. (No model.) Patented in England Nov. 14, 1892, No. 20,456.



*Claim.*—1. In a tire, the combination with the rim having beadings *h*, *h'*, of the rubber tube *a* capable of being inflated, a canvas covering *b* for the tube extending between said beadings around said tube, and the rubber tread *c*, one edge of such canvas covering confined between one of the beadings and one of the edges of the rubber tread, its other edge formed in a lap or fold, and a wire cord or chain *e* passing through such lap or fold, substantially as specified.

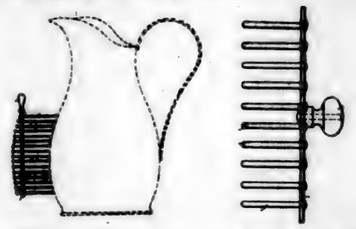
2. In a tire, the combination with the rim having beadings *h*, *h'*, of the rubber tube *a* capable of being inflated, a canvas covering *b* for the tube, and the rubber tread *c*, said canvas covering and said tread made to extend around the outer surfaces of said beadings, one of the edges of said canvas covering fixedly secured to one of said beadings and the other edge provided with a wire cord or chain, whereby such edge is reinforced and a shoulder is provided engaging with the edge of the rubber tread, substantially as set forth.

3. In a tire, the combination with the rim having beadings *h*, *h'*, of the rubber tube *a*, capable of being inflated, a canvas covering outside of such tube having one of its edges constructed in a loop or fold containing a wire cord or chain, and the rubber tread having one of its edges resting against the edge of the canvas so reinforced, substantially as set forth.

4. In a tire, the combination with the rim having beadings *h*, *h'*, of the rubber tube *a*, capable of being inflated, a canvas covering outside of such tube having one of its edges constructed in a loop or fold containing a wire cord or chain and adjustable strips as *s* for confining the edge of the canvas so reinforced in position, substantially as set forth.

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**503,661. METHOD OF MARBLING ENAMELED ARTICLES.** GUIDO GUSTER, Lenzer, Germany. Filed May 16, 1892. Serial No. 474,247. (No specimens.) Patented in Germany Mar. 26, 1891, No. 64,301; in France Apr. 6, 1891, No. 212,290; in Belgium Apr. 6, 1891, No. 94,461; in Austria-Hungary Sept. 3, 1891, No. 35,509 and No. 70,691, and in England Feb. 14, 1893, No. 3,094.



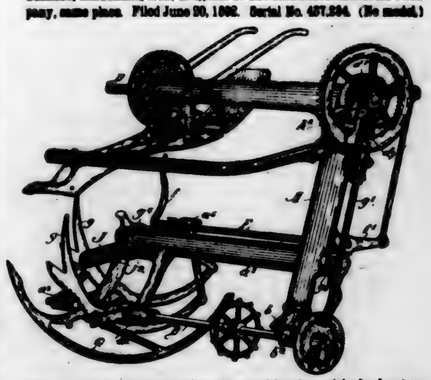
*Claim.*—1. The method herein described of marbling enameled articles, the same consisting in depositing drops of a colored enamel upon the ground provided on the articles treated until the ground is entirely covered with drops of enamel, and then knocking or tapping against the article to cause the drops to run out, whereby a uniform marbling is produced, substantially as set forth.

2. The method herein described of marbling enameled articles, the same consisting in applying to the ground provided on the article, at uniform distances apart, drops of a suitably colored enamel and then knocking or tapping against the article to cause said drops to run out, thus producing a uniform marbling of the surface of the article, substantially as set forth.

3. A tool for applying enamel consisting of a bar a plate and a series of pins fixed through the bar or plate and adjustable in length therein, substantially as set forth.

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**503,662. GRAIN-BINDER.** JAMES A. GRAHAM and EDWARD J. BURNETT, Milwaukee, Wis., assignors to the Milwaukee Harvester Company, same place. Filed June 20, 1892. Serial No. 437,294. (No model.)



*Claim.*—1. In a grain binder, the combination with the knotter shaft, a driving shaft transverse thereto and gearing for connecting said shafts, of the binder frame formed with a hollow upright inclosing said transverse driving shaft and provided at its lower end with a detachable box for said transverse shaft, substantially as and for the purpose set forth.

2. In a grain binder, the combination with the knotter shaft, a driving shaft and a connecting shaft transverse thereto, of the binder frame formed with a hollow upright inclosing said transverse shaft, and boxes for said driving and connecting shafts formed together and detachably secured to said frame, substantially as and for the purpose set forth.

3. In a grain binder, the combination with the knotter shaft, a driving shaft, a connecting shaft transverse thereto and gears connecting said driving and connecting shafts, of the binder frame formed with a hollow upright inclosing said transverse shaft, and detachable boxes for said driving and transverse shafts formed with a housing for said gears, substantially as and for the purpose set forth.

4. In a grain binder, the combination with the knotter shaft, a driving shaft and a connecting shaft transverse thereto of the binder frame formed with a hollow upright inclosing said transverse shaft, and boxes for said driving and connecting shafts formed together with

a shank, which is detachably secured in the open end of said hollow upright, substantially as and for the purposes set forth.

5. In a grain binder, the combination of a bevel driving gear, a mutilated driven bevel gear provided with a laterally movable toothed section pivoted thereto and held in working position by a spring, a cam arranged to hold said toothed section out of engagement with the driving gear, and a trip lever connected with said cam, substantially as and for the purposes set forth.

6. In a grain binder, the combination with the knotter shaft, of a driving gear, a mutilated driven gear mounted on the knotter shaft and provided with a displaceable toothed section and with a cam, an oscillatory trip cam loosely mounted on the knotter shaft, and a trip lever pivoted to the trip cam and having a bearing on the periphery of the gear cam, substantially as and for the purposes set forth.

7. In a grain binder, the combination with the knotter shaft of a driving gear, a mutilated driven gear provided with a displaceable toothed section and with a cam, a spring arranged to hold said toothed section in working position, a trip cam loosely mounted on the knotter shaft and arranged by contact with a projection on said toothed section to hold it out of engagement with the driving gear, stops for limiting the movement of said trip cam, a trip lever pivoted to said trip cam and having an arm provided with a friction roller bearing against the periphery of the gear cam, and a compressor arm connected with said trip lever, substantially as and for the purposes set forth.

8. In a grain binder, the combination of a driving gear or pinion, a mutilated gear provided with a laterally movable toothed section pivoted thereto and held in working position by a spring, a trip cam arranged to move and hold said toothed section out of contact with the driving gear or pinion, and trip mechanism connected with said cam substantially as and for the purposes set forth.

9. In a grain binder, the combination of a driving and a driven gear, means for engaging and disengaging the same, an oscillatory trip cam controlling the engagement of said gears, a compressor arm, a trip lever connected therewith and pivoted to said cam, a locking dog for engaging the driven gear, and a spring interposed between said locking dog and trip cam, substantially as and for the purposes set forth.

10. In a grain binder, the combination of a driving gear; a driven gear provided with a cam and a laterally movable toothed section pivoted thereto, an oscillatory trip cam for holding said toothed section out of engagement with said driving gear, a trip lever pivoted to said trip cam and provided with an arm bearing upon the periphery of the gear cam, a compressor or trip arm connected with said trip lever, a locking dog for engaging the driven gear, and a spring interposed between said dog and trip cam, substantially as and for the purposes set forth.

11. In a grain binder, the combination of a driving gear and a driven gear provided with an inwardly projecting lug, means for engaging and disengaging said gears, an oscillatory trip cam controlling the engagement of said gears, a compressor arm, a trip lever connected therewith and pivoted to said cam, a locking dog pivoted to a suitable support and arranged to ride over and engage with the lug on the driven gear, and a spring interposed between said dog and the trip cam, substantially as and for the purposes set forth.

12. In a grain binder, the combination of a driving gear and a driven gear, provided with a lug, means for engaging and disengaging said gears, a trip cam controlling the engagement of said gears, a compressor arm, a trip lever connected therewith and pivoted to said cam, a locking dog pivoted to a suitable support and arranged to ride over and engage with the lug on the driven gear, a spring interposed between said dog and the trip cam, and a stop arranged to hold said dog out of contact with said gear, except when it engages with said lug, substantially as and for the purposes set forth.

13. In a grain binder, the combination of a driving and a driven gear, means for engaging and disengaging the same, an oscillatory trip cam controlling the engagement of said gears, a trip lever pivoted to said cam, a locking dog working with said driven gear, a spring interposed between said locking dog and trip cam, and a frame provided with a housing inclosing said driving gear, cam, dog and spring, substantially as and for the purposes set forth.

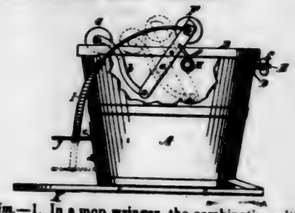
14. In a grain binder, the combination with the binder frame and compressor shaft provided with a compressor arm, of a yoke carrying said shaft adjacent to said compressor arm and having a yielding connection with the binder frame, substantially as and for the purposes set forth.

15. In a grain binder, the combination with the binder frame and a compressor shaft provided with a compressor arm of a yoke provided with a series of bearings for said shaft, and having a yielding connection with said binder frame, substantially as and for the purposes set forth.

16. In a grain binder, the combination with the binder frame and the compressor shaft provided with a compressor arm of a slotted yoke loosely mounted on the lower arm of the binder frame and provided with a series of bearings for said shaft, and a spring interposed between said yoke and the binder frame so as to permit the compressor arm to yield outwardly, substantially as and for the purposes set forth.

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**503,663. MOP-WRINGER.** WILLIAM GRAHAM, Hamilton, Canada, assignor of one-half to William F. Ambaugh, same place. Filed Oct. 17, 1892. Serial No. 448,178. (No model.)



*Claim.*—1. In a mop wringer, the combination with the frame B attached to a pail, of two levers *a*, *a*, pivoted to said frame and carrying a roller F at their upper ends, two levers *b*, *b*, pivoted to the bottom ends of the levers *a*, *a*, and carrying at their upper ends a roller G, and a spring treadle I attached to the upper ends of the levers *a*, *a*, and provided with a foot pad J for operating the rollers, all constructed substantially as and for the purpose specified.

2. In a mop wringer, the combination of the rollers F, G, levers *a*, *a*, *b*, *b*, guides *c*, *c*, with friction rollers *f*, *f*, frame B, springs H, H, treadle I, foot pad J, guide rod *d*, fastening plate D, bolt E, thumb screw C, base K, all constructed substantially as and for the purpose specified.

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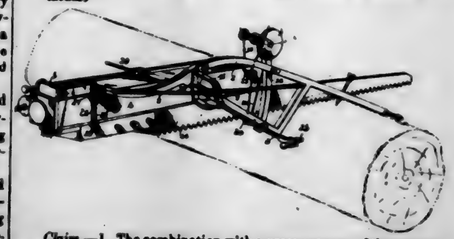
**503,664. HOG-TROUGH.** ISAAC JONES, Lima, Ohio. Filed Mar. 24, 1893. Serial No. 467,444. (No model.)



*Claim.*—In a hog trough, the combination of a base having a series of radially disposed basins with inner contracted ends, a series of removable partitions separating said basins, a removable centrally located tube or pipe with lower feed openings in line with the inner contracted ends of said basins, and an upper conical end or hopper with a funnel below the same, a removable conical distributer over which the lower end of said tube or pipe is fitted, an adjustable collar mounted on said tube or pipe to regulate the openings at the lower end thereof, and a guard rail extending around the said tube or pipe at a distance therefrom and supported by said partitions, substantially as described.

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**503,665. STEAM-POWER CROSSCUT-SAW.** JOHN R. KELLY, Pleasant Home, Oreg. Filed Aug. 13, 1892. Serial No. 443,042. (No model.)



*Claim.*—1. The combination with a cross-cut saw, of the supporting-frame comprising a pivoted supporting-arm provided with a retaining peg, and a dog pivotally connected at one end to a cross-bar fulcrumed to said supporting arm, substantially as specified.

2. The combination with a longitudinally-slotted cylinder, and a piston arranged therein and provided with an attaching arm projecting through the slot in the cylinder, of the flexible strap arranged within the cylinder to cover said slot and passing through a guide in the piston, the saw-head secured to said attaching arm and carrying the saw, and valve-mechanism for operating the piston, substantially as specified.

3. The combination with the cylinder, the piston, the saw-head carrying the saw, and attached to said piston, and the valve-mechanism for operating the said parts, of the supporting-frame loosely connected with said cylinder by a rock-shaft, and spring-actuated crank, substantially as specified.

4. The combination with the cylinder and the steam-actuated saw-head mounted upon said cylinder, of the rock-shaft mounted in a bearing at one end of the cylinder and provided with a crank-arm, the supporting frame fulcrumed upon said crank-arm, and the segmental guide carried by the supporting-frame and engaging the front end of the cylinder, and carrying means to adjust the cylinder with relation to the supporting-frame, substantially as specified.

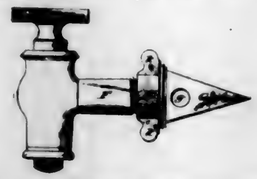
5. The combination with the cylinder and steam-actuated saw-head, of the supporting-frame, the rock-shaft mounted in a bearing at the rear end of the cylinder and carrying a crank-arm, a guide-pin connected to said crank-arm and operating in a guide-eye on the cylinder and provided with a spring, the segmental guide carried by said supporting-frame and operating in a guide upon the front end of the cylinder, and a windlass carrying an endless belt which is connected with the cylinder, substantially as specified.

6. The combination with the cylinder and steam-actuated saw-head, of the rock-shaft mounted upon said cylinder and carrying a crank-arm, the free end of which is connected to the cylinder by a spring-actuated guide-pin, the supporting-arm connected to the free end of said crank-arm, and an adjusting windlass carried by the said arm and connected by a belt to the front end of the cylinder, substantially as specified.

7. The combination with a cylinder provided with a longitudinal slot and communicating guide-groove, the piston carrying an attaching-arm which projects through said slot and groove, means for operating said piston, and a supporting-frame to which said cylinder is pivotally connected, of the saw-head connected to the projecting end of the attaching-arm, the saw carried by said saw-head, and the guide and guide-roller attached to the front end of the cylinder to guide and receive the upward thrust of the saw, substantially as specified.

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**503,666. FAUCET.** FRANK M. MOTT, Perris, Cal., assignor of one-half to John McLaren, same place. Filed May 3, 1892. Serial No. 431,687. (No model.)

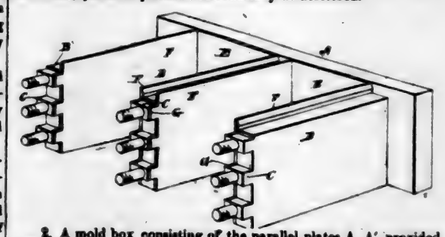


*Claim.*—The herein described improved faucet consisting of a bored plug casing having a threaded opening at one side, a rotatable plug mounted in the bored casing and having a passage communicating with the threaded perforation, the bored stem or tail pipe threaded at and reduced toward its front end and inserted into the plug casing and having its rear end terminating in an enlarged integral pyramidal head forming a series of inclined cutting edges at the four corners thereof which converge to a common piercing point and which serve to pierce the vessel with an even unlacerated squared opening, said head having transverse perforations communicating with the bore of the stem, and the stem in front of the base of the head being inclined or shouldered and in rear thereof provided with threads, a packing ring or gasket encircling the inclination or shoulder, and a countersunk thumb nut threaded on the stem and binding against the gasket, substantially as set forth.

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**503,667. BRICK-MOLD.** JOSEPH B. MOWAT, Mansfield, Ohio, assignor of one-half to J. F. Stine, same place. Filed Nov. 15, 1892. Serial No. 453,065. (No model.)

*Claim.*—1. A mold box formed by two parallel side plates provided with aligned mortises, transverse division walls or plates provided with integral threaded tenons adapted to enter the mortises in the side plates, lining plates arranged in each compartment of the box, said plates being provided with notches and ears or lugs corresponding to the mortises in the side walls of the mold box and the tenons on the division walls, respectively, and nuts screwed on the tenons of the division walls and operating to hold both the division walls and lining plates in position, substantially as described.



2. A mold box consisting of the parallel plates A, A', provided with aligned series of mortises, transverse division plates B provided with tenons adapted to enter the mortises in the plates A, A', and divide the mold box into any desired number of compartments, metallic lining plates arranged in each compartment of the mold box, the lining plates adjacent to the plates A, A', being provided in their side edges with notches which align with the mortises in the plates A, A', and the lining plates adjacent to the division plates B, being provided with projecting ears or lugs corresponding to the tenon C on the division plates, said lining plates being held from endwise movement by lugs or shoulders formed on the tenons C, and nuts screwed on the outer ends of the tenons C and operating to hold both the division plates and lining plates in position, substantially as described.

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**503,668. DRYING ATTACHMENT FOR SCRUBBING-BRUSHES.** JOHN S. MCGUIRE and JOHN B. BEEMER, East Tawas, Mich., assignors of one-third to Willis P. Taft, same place. Filed Nov. 30, 1892. Serial No. 453,642. (No model.)



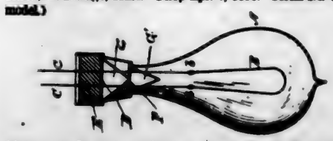
*Claim.*—1. The herein described attachment for scrubbing-brushes consisting of the metal box provided at its rear wall with rearwardly-extending arms, a spring-plate located upon the under side of the box and having arms approximating those of the box, a handle-socket, retaining-screws passed through the spring-arms, the box-arms, and adapted to enter the brush, and a rubber-strip clamped by the plate against the under edge of the box, substantially as specified.

2. The combination with a scrubbing-brush, of the malleable cast-metal box provided at its ends with rearwardly-disposed arms, and a central block having a socket for receiving a handle, said arms and socket-block being provided at their front ends and upon their under sides with recesses and the under edge of the rear wall of the box being corrugated, a metal plate secured removably to the under sides of the arms and extending under the box, and a rubber-strip interposed between the plate and having its rear edge lying in the recesses of the arms and block, substantially as specified.

3. The combination with a scrubbing-brush, of an oblong malleable cast-iron box having an opening at one end and an open lower side, the rear wall of the box being provided with rearwardly-extending arms, and a central handle-receiving block, a metal plate located upon the under side of the box and having arms corresponding to those of the box, spring-leaves located under the arms of the plate, screws passed through the leaves, arms of the plate, arms of the box, and into the brush, and a rubber-strip interposed between the plate and lower edge of the rear wall of the box, substantially as specified.

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**503,669. INCANDESCENT ELECTRIC LAMP.** WILLIAM E. NICKERSON, Cambridge, Mass. Filed Apr. 7, 1893. Serial No. 469,404. (No model.)



*Claim.*—1. In an incandescent electric lamp, the combination of the glass globe A, filament B, leading-in wires C C, fusible cement plug E and cement-supporting disk D, said disk being located between the

cement plug and the vacuous portion of the lamp and forming a part of the inclosing walls of the vacuum chamber and adapted to prevent the cement from running into the lamp when soft; with a coned reflector G, located within the neck of the lamp with its apex toward the filament, adapted to protect the cement supporting disk D from the heat rays of the filament substantially as and for the purpose set forth.

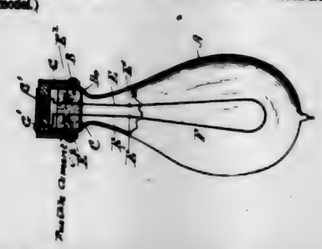
2. In an incandescent electric lamp, the combination of the glass globe A, filament B and cement plug E; with a supplemental disk F, having a chamber between it and the cement plug E and a reflecting cone G', substantially as and for the purpose set forth.

3. In combination with an incandescent electric lamp; a heat reflector made in the form of a cone, with its apex centrally located between the leading-in wires and having holes in its conical surface for the passage of the leading-in wires, substantially as and for the purpose set forth.

4. In an incandescent electric lamp, a heat-reflecting cone having holes located in its sides for the passage of the leading in wires, and cuts or slots from said holes to the base of the cone, substantially as and for the purpose set forth.

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**508,670.** INCANDESCENT ELECTRIC LAMP. WILLIAM R. NICKERSON, Cambridge, Mass. Filed July 19, 1893. Serial No. 480,930. (No model.)

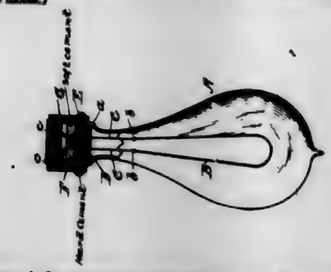


*Claim.*—1. In an incandescent electric lamp in which the neck of the lamp bulb is closed air-tight by a plug of fusible cement, bends in the leading-in wires, located within the cement plug but not at its inner surface and adapted to prevent the said wires from breaking their perfect mechanical contact with the said cement, substantially as and for the purpose set forth.

2. In an incandescent electric lamp, the combination of the glass bulb A having a neck adapted to be closed air-tight by a plug of fusible cement, the plug of fusible cement B, the filament F, and the leading-in wires E E, said wires being provided with the bends $E^2$ $E^3$, located within the cement plug B, but not at its inner surface and adapted to prevent the wires E E from breaking their perfect mechanical contact with the cement, substantially as and for the purpose set forth.

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**508,671.** INCANDESCENT ELECTRIC LAMP. WILLIAM R. NICKERSON, Cambridge, Mass. Filed July 17, 1893. Serial No. 480,731. (No model.)

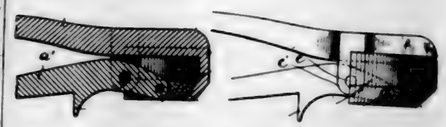


*Claim.*—1. In an incandescent electric lamp, a fusible cement plug for closing the neck of the lamp globe air-tight, said plug consisting of two layers, one comparatively hard and infusible, located nearer the filament, and one comparatively soft and fusible, located upon and outside the hard layer, substantially as and for the purpose set forth.

2. In an incandescent electric lamp, the combination of the glass globe A having a neck adapted to be closed by a plug of fusible cement, the filament B, the leading-in wires C C and the cement-supporting disk D; with the layer of fusible cement E, and the softer and more flexible layer of cement F, substantially as and for the purpose set forth.

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**508,672.** LASTING-PINCHERS. BENJAMIN A. NORWOOD, Boston, Mass., assignor, by mesne assignments, to the Eureka Process Lasting Company, same place. Filed Oct. 3, 1892. Serial No. 447,674. (No model.)



*Claim.*—1. A pair of lasting pinchers, comprising a convex jaw curved and beveled or undercut to conform to the inner surface of the projecting toe portion of a partially lasted upper, a concave jaw curved and beveled to conform to said convex jaw and to the outer surface of said toe portion, and means for operating said jaws, as set forth.

2. A pair of lasting pinchers, comprising two pivotally connected levers, a convex jaw on one lever conforming to the inner surface of the projecting toe portion of a partially lasted upper, and a concave jaw on the other lever conforming to the outer surface of said toe portion, said levers projecting rearwardly over the sole when the jaws are applied to the toe portion of the upper, one of the levers having a fulcrum formed to bear on the sole, as set forth.

3. A pair of lasting pinchers having a concave jaw depending from a head or holder, said jaw having a box-like concavity, a convex jaw fitting the curvature of the concave jaw and movable in said concavity, and means for opening and closing said jaws, as set forth.

4. The combination of the lever *a*, the segmental jaw *b* formed thereon, the lever *a'* pivotally connected with the lever *a*, the jaw *c* pivoted to the end of the lever *a'* and adapted to be operated as described, and the projection *g* formed on the under side of the lever *a'*, as set forth.

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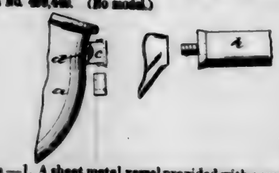
**508,673.** ATTACHING HANDLES TO VESSELS. EDWARD M. PEACOCK, Brooklyn, N. Y. Filed Dec. 7, 1891. Renewed Jan. 23, 1893. Serial No. 459,443. (No model.)



*Claim.*—A vessel provided with handle securing projections comprising an outer cone-shaped portion, an inner portion cut away or channeled, and flanged portions through which it is secured to the vessel body, in combination with a handle having hollow bosses adapted to engage with said projections and screws passing through the bosses and projections and engaging with nuts which wedge in the cones of the projections, substantially as described.

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**508,674.** ATTACHING HANDLES TO VESSELS. EDWARD M. PEACOCK, Brooklyn, N. Y. Filed Dec. 7, 1891. Renewed Jan. 23, 1893. Serial No. 459,443. (No model.)



*Claim.*—1. A sheet metal vessel provided with a projecting bridge or saddle, a nut seated in the saddle, a handle, and a handle securing screw which passes through the saddle and engages the nut therein, as shown and described.

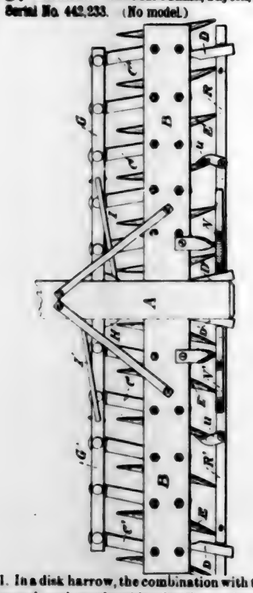


2. A sheet metal vessel provided with a projecting bridge or saddle, a nut seated therein, a shield surrounding the saddle, a handle, and a handle securing screw which passes through the shield and the saddle and engages the nut therein, as shown and described.

3. A sheet metal vessel provided with a projecting bridge or saddle comprising a raised face or portion *b*, walls *c*, flanges *e*, and wings *d*, a nut seated in the saddle, a handle and a handle securing screw passing through the saddle and engaging the nut therein substantially as described.

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**508,675.** HARROW. CHARLES PERRIN, Dayton, Ohio. Filed Aug. 5, 1892. Serial No. 442,233. (No model.)



*Claim.*—1. In a disk harrow, the combination with the cross-beam, of a washer secured to the under side of said cross-beam, said washer provided with a downwardly projecting pin, a standard provided with an integral forwardly extending arm and an aperture adapted to receive the pin of said washer, and thereupon and against said washer become adapted to vibrate on a pivotal point below said cross-beam, by the action of the angling bars G, and G' attached to the forwardly extending arms of the standard, substantially as described.

2. In a disk harrow, the combination with the cross-beam and a washer with a downwardly projecting pin, bolted to the under side of said cross-beam, of a standard provided with a forwardly extending arm integral therewith, and a stud projecting laterally from the lower extremity thereof, affording a bearing for a disk, the pivotal point of said standard with its arm, being on a plane below the cross-beam, the horizontal bars G, and G' rigidly attached to said arms, and intervening means between said bars and the vertical lever P, by which the disks are set at various angles, substantially as herein described.

3. In a disk-harrow, the combination with the cross-beam, and the disk with washer (*g*) forming the box therefor, of a standard with forwardly extending arm, the angle bars G, and G' attached to said arm the said standard also provided with a laterally projecting stud F, by means of which a bearing is afforded the disk E, with the washer (*g*), substantially as herein described.

4. The combination with the beam and the washer (*e*) with the downwardly projecting pin (*o*), of the standards C, and integral forwardly extending arm C', and the laterally projecting stud F, the disk E, with washer (*g*), and the angle bars G, and G' and the rods I, and I' pivoted to said angle bars, and the plate H, pivoted to the lever P, by the bar J, substantially as herein described.

5. The combination with the cross-beam, the washers with downwardly projecting pins, the disks and the standards with laterally projecting studs F, adapted to receive a fleeve washer (*g*) rigidly attached to said disk and comprising the hub thereof, the forwardly extending arms of said standards, adapted to be rigidly attached to the bars G, and G' which bars are in turn pivoted to the angle plate H, by the rods I, and I', and the plate H to the lever P, by the rod J, substantially as herein described.

6. In a disk harrow, the combination with the cross beam, and the washer (*e*) with downwardly projecting pin (*o*), said washer bolted to the under side of said cross-beam, the standards having forwardly projecting arms, and the standards having both forwardly and rearwardly projecting arms, all of which are provided with laterally projecting studs F, at their lower extremities, which studs afford bearings for the disks E, with washer (*g*), substantially as herein described.

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**508,676.** GLASS-BLOWING TUBE. AARON PITNAM, Matawan, N. J. Filed Dec. 3, 1892. Serial No. 453,963. (No model.)



*Claim.*—1. A glass blowing tube composed of a grooved tube *a*, and of a nozzle having inwardly extending projections that enter the grooves, substantially as specified.

2. A glass blowing tube composed of a tube *a*, having a series of grooves that point in opposite directions and of a nozzle having corresponding projections that enter such grooves, substantially as specified.

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**508,677.** WRENCH. SAMUEL W. PUTNAM, Elizabeth, assignor to the American Saw Company, Trenton, N. J. Filed Dec. 29, 1892. Serial No. 456,640. (No model.)



*Claim.*—1. In a wrench, the combination of the wrench stock having an integral fixed jaw and an elongated recess, in combination with an adjustable jaw whose shank lies loosely within the said recess, and a link connection between the two jaws, substantially as described.

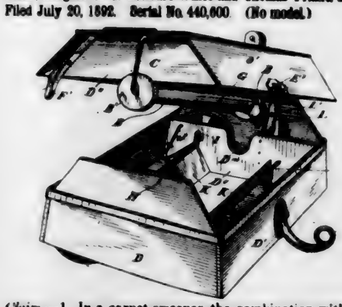
2. In a wrench, the shank A, having a fixed jaw B and the elongated slot C, the movable jaw E, having a shank E', held within the slot C and provided with a stop which limits its outward movement, and the link G connecting the jaws E and B, substantially as specified.

3. In a wrench, the stock A, having fixed jaw B and elongated slot C, the movable jaw E having shank E', provided with transverse plates F F secured thereto, and the inner end of said shank E' having likewise a stop for engaging a shoulder on the projection D of the main wrench stock, together with a link connection between the jaws E and B, substantially as described.

4. The herein-described wrench, consisting in the combination of the handle A, having the slotted handle end A', the fixed jaw B, longitudinal slot C and projection D having shoulder *d*, the adjustable jaw E having shank E' located within the slot C and provided with the parallel transverse plates F F, and a stop engaging shoulder *d*, and the link connection G embracing the jaws E and B and having its ends entering slots A A in the outer edges of the jaws, substantially as described.

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**508,678.** CARPET-SWEEPER. SILAS H. RAYMOND, Grand Rapids, Mich., assignor to T. Stewart White and Thomas Friant, same place. Filed July 20, 1892. Serial No. 440,600. (No model.)

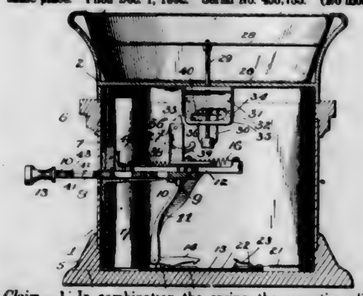


*Claim.*—1. In a carpet sweeper, the combination with the case, driving wheels, a brush shaft having pulleys at its ends engaging said driving wheels, and flexible hangers engaging said case at their upper

to the lower end of said casing, and capable of serving as a platform when turned to a horizontal position, and as a door to close the entrance when turned to a vertical position, mechanism, described, secured to said hinged device D, and capable of securely holding with the latter the vessel E, described and so as to be removable at will, from a secure fastening with said hinged device D for service for which said vessel is intended when removed from said hinged device substantially as and for the purposes set forth.

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**503,686. VENDING AND FORTUNE-TELLING MACHINE.** JOHN SCHOFIELD, Bridgeport, Conn., assignor of one-half to John F. Noble, same place. Filed Dec. 1, 1892. Serial No. 453,735. (No model.)



*Claim.*—1. In combination the casing, the operating slide extending through the same, the pivoted catch connected with the said slide, the delivery slide arranged in the path of the pivoted catch to be engaged thereby, the spring for retracting the delivery slide, the reservoir arranged in the path of the delivery slide, and the means for releasing the pivoted catch from delivery slide at the forward part of the stroke of said slide, the said casing having an opening for the delivery of the articles, substantially as described.

2. In combination, the casing having a delivery opening, the operating slide, projecting through the casing and having a depending arm at its inner end, the pivoted catch carried by said arm, the delivery slide in the path of the pivoted catch, the reservoir in the path of the delivery slide, the means for releasing the catch from the delivery slide, and the retracting spring for the delivery slide, substantially as described.

3. In combination, the casing having the delivery opening, the operating slide projecting through said casing, the pivoted catch connected with said slide, the delivery slide arranged in the path of the catch, the deflector for depressing the catch to engage the slide and the retracting spring for the said slide, substantially as described.

4. In combination, the casing having the delivery opening, the delivery slide and its retracting spring, the operating slide movable through the casing, and held normally outward the detachable connection between the two slides normally disengaged and arranged to connect them when the operating slide is pushed in the spring for forcing the operating slide forward against the pressure of the delivery slide spring and the means for releasing the detachable connection when the delivery slide reaches its forward position, substantially as described.

5. In combination, the casing having the delivery opening, the delivery slide, held normally backward the operating slide movable through the casing, and pressed normally forward the detachable connection between the slides normally disengaged and arranged to connect the two slides when the operating slide is moved fully inward, the catch for obstructing the movement of the operating slide, said slide being adapted to receive a coin on the outside of the machine and to carry the same inside the machine to control the operation of said catch, substantially as described.

6. In combination, the casing having the delivery opening, the delivery slide, held normally backward the operating slide movable through the casing, and pressed normally forward the detachable connection between the two slides normally disengaged and arranged to connect them when the operating slide is moved fully inward and the means for obstructing the inward movement of the operating slide, said means being arranged to be operated by the introduction of a coin to permit the full movement of said slide, substantially as described.

7. In combination, the casing the movable device the pin wheel on the shaft of said device, the spring trigger for operating the pin wheel, the operating slide extending through the casing, the dog thereon for pressing back the trigger and the guide for said trigger, arranged to automatically release the trigger from the dog as the movement of the operating slide continues substantially as described.

8. In combination, the casing, the movable device, the shaft, the pin wheel thereon, the spring trigger having its free end normally below the plane of said pin wheel, the guide having the upper and lower ways and the incline for raising the free end of the trigger into the plane of the pin wheel and the operating slide extending through the casing and arranged to press back the trigger, substantially as described.

9. In combination, the casing, the movable device, the trigger for operating the said device, the slide 10, carrying a dog to engage the trigger and compress the same the means for lifting and releasing the trigger from the dog when the slide approaches its limit of inward movement and the means for obstructing the inward movement of the slide arranged to be controlled by the passage of a coin of proper size, substantially as described.

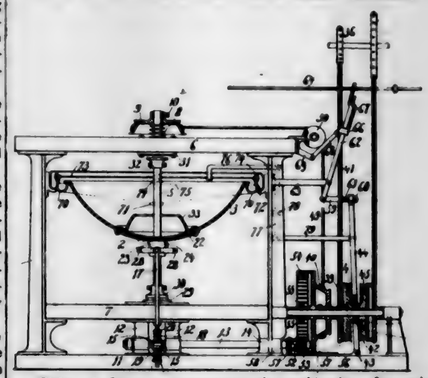
10. In combination, the casing the operating slide, pressed normally outward the delivery slide to be operated thereby held normally backward, the normally disengaged detachable connection between the slides, the movable device carried by the casing and the trigger for operating the same, said trigger being arranged to be operated by the operating slide when it is pushed fully inward, substantially as described.

11. In combination, the casing, the operating coin slide, the catch therefor arranged to be controlled by the passage of a coin, the delivery slide, the detachable connection between the said slides, the means for operating the same, the movable device, the spring trigger for operating the same arranged to be operated by the coin slide, and the means for releasing the trigger as the coin slide reaches the rear limit of its movement, substantially as described.

12. In combination, the casing having the slide in its body portion, the dial and index, the operating connections therefor comprising the shaft the pin wheel the spring trigger arranged to be operated by the slide and the guide plate for guiding said trigger into and out of line with the pin wheel, the hinged cover for the casing, the said index and its operating connections all being carried by the cover and adapted to be moved into line with the slide by closing the said cover substantially as described.

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**503,687. ORE-CONCENTRATOR.** CHARLES E. SEYMOUR, Lake Geneva, Wis. Filed Aug. 3, 1892. Serial No. 442,056. (No model.)



*Claim.*—1. In an ore concentrator, the combination, of a revoluble shaft, a concentrator bowl fixed thereon, a double trough around the outside of the bowl, a ring or band, and means for automatically raising and lowering said ring above and below the top of the bowl, substantially as set forth.

2. In an ore concentrator, the combination of an ore receiving pan, mechanism for revolving the same at a slow rate of speed and then temporarily increasing said rate of speed, a double trough around the outside of the bowl, and a ring or band adapted to be raised above the top of the bowl when the same is revolved at a slow rate of speed, and to be lowered when said pan is revolved at a fast rate of speed, substantially as set forth.

3. In an ore concentrator, the combination, of a rotatable shaft, a concentrator bowl fixed thereon, a double trough around the outside of the bowl, the partition thereof provided with a series of declines, a ring or band provided with a series of rollers adapted to rest upon the edge of the partition, and means for actuating the ring whereby the rollers are made to descend and ascend the declines, substantially as set forth.

4. In an ore concentrator, the combination of a pan supported on a rotatable shaft, bowl supporting mechanism, and a crank shaft connected to the bowl supporting mechanism and constructed to give to the pan a reciprocating or endwise motion, substantially as set forth.

5. In an ore concentrator, the combination, of a pan supported on a rotatable shaft, bowl supporting mechanism, a crank shaft connected to the bowl supporting mechanism and constructed to give to the pan a reciprocating or endwise motion, a clutch splined upon the crank shaft, a motion clutch loose thereon, and means for throwing said clutches into and out of engagement, substantially as set forth.

6. In an ore-concentrator, the combination, of a pan supported on a rotatable shaft, means for jumping the shaft up and down, and a bumping head independent from the jumping mechanism, said bumping head carried by the shaft and constructed, when said shaft is moved vertically by the jumping mechanism, to act against the frame of the machine, whereby a vertical jar or bump is imparted to the bowl and its contents, substantially as set forth.

7. In an ore concentrator, the combination, of an ore receiving pan, mechanism for revolving the same at a slow rate of speed and then temporarily increasing said rate of speed, bowl supporting mechanism, and a crank shaft connected to the bowl supporting mechanism and constructed to act thereon to give the pan or bowl a reciprocating or endwise motion when said pan is revolved at a slow rate of speed, substantially as set forth.

8. In an ore concentrator, the combination, of an ore receiving pan, mechanism for revolving the same at a slow rate of speed and then temporarily increasing said rate of speed, a double trough around the outside of the bowl, a ring or band adapted to be raised above the top of the bowl when the same is revolved at a slow rate of speed and to be lowered when said bowl is revolved at a fast rate of speed, bowl supporting mechanism, a crank shaft connected to the bowl supporting mechanism, and means for actuating the same when the pan or bowl is running at slow speed to give to said pan a reciprocating or endwise motion, substantially as set forth.

9. In an ore concentrator, the combination, of a concentrating pan or bowl supported on a rotatable shaft, said bowl provided with a depending collar through which the shaft passes, said collar formed exteriorly with an annular recess, a ring fitted in said recess, a ring or annulus surrounding the first named ring and pivoted thereto, vertical rods connected to the outer ring, a cross head carried near the ends of said rods, and a crank shaft passing through the cross head and constructed by its rotation to raise and lower the bowl through the connecting rods, substantially as set forth.

10. In an ore concentrator, the combination, of a concentrating pan or bowl supported on a rotatable shaft, rods connected with the pan or bowl, a cross head located near the ends of the rods, springs on the rods above and below the cross head, nuts for adjusting the tension of the springs, and a crank shaft passing through the cross head and constructed by its rotation to raise and lower the bowl through the connecting rods, substantially as set forth.

11. In an ore concentrator, the combination, of a concentrator pan or bowl, a shaft carrying said bowl and provided with a pulley, bowl supporting mechanism, a crank shaft connected to the bowl supporting mechanism, said crank shaft carrying a feathered clutch and a loose pinion clutch, a second shaft, fast and slow wheels loose upon said shaft, a double friction clutch feathered upon the shaft, a lever engaging said clutch and constructed to throw the same into contact with either of the loose wheels, said lever provided with an extension engaging the feathered clutch upon the crank shaft, a pulley also mounted upon the second shaft and having rigid therewith an internal gearing engaged by the pinion clutch, and a belt connecting the pulley with the pulley upon the bowl shaft, substantially as set forth.

12. In an ore concentrator, the combination, of a concentrator pan or bowl, a shaft carrying said pan or bowl having mounted thereon a hollow pulley wheel for conveying the motion thereto, and a spring encircling the shaft, confined between the under face of the hollow wheel and a fixed support, substantially as set forth.

13. In an ore concentrator, the combination of a rotatable pan or bowl provided with an aperture through the bottom thereof for the passage of the bowl shaft, and also with apertures concentric to the shaft aperture, a cup rigid with the bowl and surrounding the shaft and several apertures, a scoop constructed to discharge into the cup through the opening thereof, and troughs or launders beneath the pan or bowl and in line with the apertures to receive the discharge therefrom, substantially as set forth.

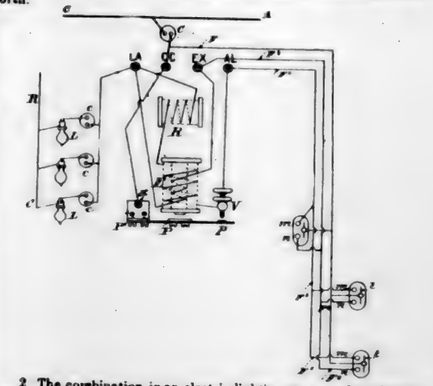
14. In an ore-concentrator, the combination, of a pan supported on a rotatable shaft, means for jumping the shaft up and down, and bumping heads, independent from the jumping mechanism, said bumping heads carried at different points of the shaft and adapted to come in forcible contact with fixed portions of the frame upon the up and down movements, respectively, of the shaft, substantially as set forth.

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**503,688. ELECTRIC-LIGHTING SYSTEM.** LUCIEN VIALET-CHABRAND, Clotat, France. Filed Apr. 2, 1892. Serial No. 427,448. (No model.) Patented in France Oct. 24, 1890, No. 209,101, and in England Oct. 30, 1890, No. 17,304.



*Claim.*—1. The combination in an electric lighting system, of an electric lamp, or lamps, lighting and extinguishing switches, an electro-magnet, its core carrying a lighting coil, and also an extinguishing coil wound in opposite directions, its armature connected with the main circuit, contact point or screw V in the lighting circuit, contact point, or plate, $p$ connected with said armature, the contact $p$ V being closed by the lighting circuit attracting the armature and released by the extinguishing circuit repelling said armature, substantially as set forth.



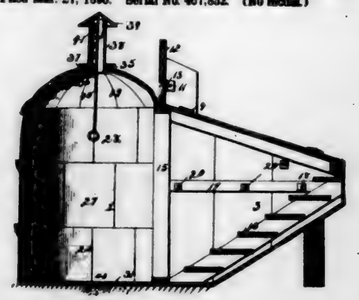
2. The combination, in an electric lighting system, of an electric lamp, or lamps, lighting and extinguishing switches, a continuous circuit from a lighting switch to the lamps containing the contact point V and a coil for energizing an electro-magnet, a branch from the main circuit carrying the contact point $p$ and the armature of such electro-magnet, a continuous circuit from an extinguishing switch to the lamp or lamps and containing a coil for releasing such armature, both coils being wound on the same core and in opposite directions, substantially as set forth.

3. The combination, in an electric lighting system, of an electric lamp, or lamps, lighting and extinguishing switches, a continuous circuit from a lighting switch to the lamps containing a contact point V and a coil for energizing an electro-magnet E, a continuous circuit from an extinguishing switch containing a coil for energizing electro-magnet K, a second coil for deenergizing electro-magnet E, and a resistance X, a branch circuit connecting with main circuit and carrying the armature for electro-magnet E and also contact points $p$ and $q$, a branch circuit connecting with lighting circuit and containing contact point U and a coil for energizing electro-magnet E, and a circuit between the main circuit and the lighting circuit containing armature Z and contact points $s$ and T, substantially as set forth.

4. The combination with an electric lighting circuit, and its electric lamp or lamps, of lighting and extinguishing switches (one or more sets) intermediate electro-magnets and armatures, and conductors connecting said switches with said electro-magnets, one of said electro-magnets being provided with three coils, two of said coils serving to attract and hold the armature to close two circuits and the other coil serving to repel the armature, the other electro-magnet serving by attracting its armature to close a circuit of low resistance around the magnets, and serving to extinguish the lamps, substantially as described.

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**503,689. CYCLONE-CAVE.** ORLANDO O. WALKER, Bedford, Iowa, assignor of two-thirds to R. G. Moon and C. S. McCloud, same place. Filed Mar. 27, 1893. Serial No. 467,832. (No model.)



*Claim.*—1. In a planter, the combination of a cutting box, the knife secured therein, the conveying or sprocket chain composed of links hinged to one another and passing across an opening in the lower part of the said cutting box, the said links being formed to register with the cutting box, and the depositing spout adapted to register with the links after they have passed from the cutting box, substantially as described.

2. In a planter, the combination of the cutting box having a passage therein, the knife secured in the said box parallel with the said passage, the conveying or sprocket chain composed of links hinged to one another and moving across the said passage, the said links being formed to register with the opening in said box, and the depositing spout with its upper opening so situated as to register with the open links after they have left the cutting box, substantially as described.

3. In a planter, the combination of the cutting box having a longitudinal passage therein, the knife secured in the said box parallel with the said passage and flush with the top of the same, the sprocket chain moving in the said passage formed of links of such a shape and size as to register with the cutting box, the depositing spout with its upper opening so situated as to register with the links of the conveyer after they have left the cutting box, and the spring mounted above the upper opening of the depositor to force the seed from the links into the same, substantially as described.

4. In a planter, the combination of the cutting box provided with a longitudinal passage, the conveying chain moving through the said passage, the knife mounted in the said box immediately above the said conveyer and parallel with the same, the parallel shafts, one of which is driven by the carrying wheels, the intermediate gear connecting the said shafts, the sprocket wheels mounted on the said shafts and carrying the said conveying chain, and the depositing spout, substantially as described.

5. In a planter, the combination of the cutting box having a longitudinal passage formed therein, the conveying chain moving through the said passage consisting of links having a shape substantially the same as that of the cutting box and having a side extended to form a hook adapted to engage with the loop formed in an extension of the adjacent side of a preceding link, the knife mounted in the said cutting box, and the depositing spout having its upper opening in a position to register with a link after it has left the cutting chamber, substantially as described.

6. In a planter, the combination of the frame, the wheels carrying the same, the cutting box mounted on the frame and having a longitudinal passage formed therein, the hopper leading to the cutting box, the conveyer moving through the said passage, the depositing spout having its upper opening in such a position as to register with a link after it has left the cutting box and its lower end opening in front of the carrying wheel, the plow fixed to the lower end of the said spout, and the spring mounted above the upper opening of the spout to force the seed from the links of the conveyer into the same, substantially as described.

7. In a planter, the combination with a hopper, of a conveying chain composed of open links hinged to one another by hooks and loops both of which extend below the walls of the links substantially as shown, said links passing across the discharge opening of the hopper, and being formed to register successively with said discharge opening and permit the material to pass through the links, and a depositing spout adapted to receive the material from the links of the conveying chain, substantially as described.

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**503,696.** TILLING-MACHINE. JOHN DAGER, Navarre, Ohio, and WILLIAM F. WAGNER, Rockville, Md. Filed Feb. 20, 1893. Serial No. 462,902. (No model.)



*Claim.*—1. The combination of the sweep A, the bar B, the post C, the connecting bars $d'$ pivotally attached to the sweep A, the hinged sections $d^2$, and $d^3$, the joint sections $d^4$, the tooth bar F, formed in sections, and the crank shaft E, formed in sections, the pinions $e$, the segments $f$, provided with the arms $g$, and the traveling wheels $g'$, substantially as and for the purpose specified.

2. The combination of the sweep A, the connecting bar B, the tooth bar F, having adjustably attached thereto the teeth G or their equivalents, the hinged connecting bars $d$, the connecting bar or rod I, and the lever J, substantially as and for the purpose specified.

3. The combination of the sweep A, pivotally connected to the post C, the traveling wheel N, the crank shaft E, provided with the pinions $e$, the segments $f$, provided with the arms $g$, the traveling wheels $g'$, and means for holding the shaft E against rotation, substantially as and for the purpose specified.

4. The combination of the sweep A, the connecting bar B, the tooth bar F, the plates H, provided with the grooves $k$, and the teeth G, substantially as and for the purpose specified.

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**503,697.** KRAUT-CUTTER. ROBERT L. DORSEY, Indianapolis, Ind., assignor to the Tucker & Dorsey Manufacturing Company, same place. Filed Jan. 24, 1893. Serial No. 459,528. (No model.)



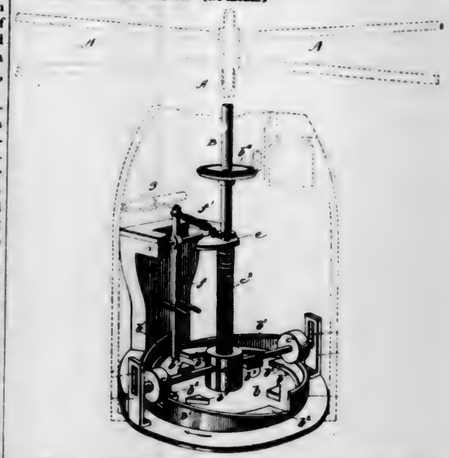
*Claim.*—1. The combination, in a vegetable cutter, of the frame-work, the cutting knives, rocker-shaped bearing pieces seated in the frame work upon which the knives are secured, and bolts connecting the knives and the frame-work and holding them onto the flat surfaces of said bearing pieces, substantially as set forth.

2. The combination, in a vegetable cutter, of the frame-work, the cutting knives, centrally-slotted rocker-shaped bearing pieces for said knives, and bolts passing through the knives the bearing pieces and a portion of the frame work, whereby the said several parts are firmly secured together.

3. The combination, in a vegetable cutter, of the frame-work, flat cutting knives, concave seats in the frame-work, and rocker-shaped bearing pieces convex upon one side and resting in said seats and flat upon the other sides where said knives rest thereon, and bolts or screws whereby the parts are secured together, substantially as set forth.

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**503,698.** TURNSTILE. CLARENCE P. GOTT, Bayonne, N. J., assignor to himself, and J. Seaver Page, New York, N. Y. Filed Dec. 30, 1892. Serial No. 456,840. (No model.)



*Claim.*—1. In a turnstile, the combination of the main rotary shaft carrying the arms, a disk or wheel rotated thereby, a series of ratchet teeth on said disk and a pair of spring pressed rollers bearing upon said ratchet teeth and tending to rotate the shaft, substantially as described.

2. In a turnstile, the combination of the main rotary shaft carrying the arms, a disk or wheel rotated thereby, a series of ratchet teeth on said disk and a pair of spring pressed rollers bearing upon said ratchet teeth and tending to rotate the shaft, a second series of ratchet teeth on said wheel and a pivoted arm resting against the edges of said teeth for the purpose set forth.

3. In a turnstile the combination of the main rotary shaft carrying the arms, a disk or wheel rotated thereby, a series of ratchet teeth on said disk and a pair of spring pressed rollers bearing upon said ratchet teeth and tending to rotate the shaft, a second series of ratchet teeth on said wheel and a pivoted arm resting against the edges of said teeth, and stops carried by the disk and located slightly beyond the respective ends of the second series of ratchet teeth and adapted to strike the end of said arm to stop the movement of the turnstile as described.

4. In a turnstile, the combination of the main rotary shaft carrying the arms, a disk or wheel rotated thereby, a series of ratchet teeth on said disk and a pair of spring pressed rollers bearing upon said ratchet teeth and tending to rotate the shaft, a second series of ratchet teeth on said wheel and a pivoted bar resting against the edges of said teeth, and stops carried by the disk and located slightly beyond the respective ends of the second series of ratchet teeth and adapted to strike the end of said arm to stop the movement of the turnstile, and a registering apparatus operated by said arm, substantially as described.

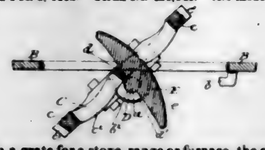
5. In a turnstile, the combination of a main shaft carrying a disk or wheel $b$, the latter provided with ratchet teeth $b'$, a loose hub upon the shaft, said hub carrying two arms $c'$ provided with rollers $c^3$ bearing upon said ratchet teeth $b'$ and a spring $c^4$ forcing the rollers against the ratchet teeth for the purpose set forth.

6. In a turnstile, the combination of the main shaft carrying a wheel or disk $b$ provided with ratchet teeth $b^2$ and stops $b^3$, and the pivoted arm $f$ resting against said ratchet teeth and adapted to impinge against the stops $b^3$ to stop the movement of the turnstile, substantially as described.

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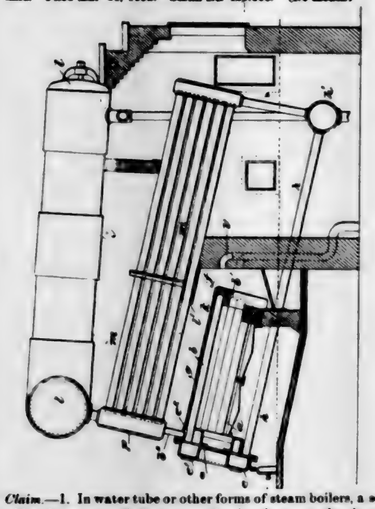
**503,699.** GRATE FOR STOVES, &c. HERMAN GRAEF, Albany, N. Y. Filed Feb. 3, 1892. Serial No. 420,149. (No model.)



*Claim.*—In a grate for a stove, range or furnace, the combination with the grate frame B, provided with the stop $b$ and the bearings $a$ $a$, a main grate section C composed of bars $c$ $c'$ and $c^3$, as described, and provided with catching piece $d$, and the downwardly projected bearings $b'$ $b^2$, of the sub-section E, composed of shaft D, and radial bars $e$ all below the said main grate section, the said shaft being supported in the said bearings $a$ $a$ of the grate frame, and rolling in bearings $b'$ $b^2$ provided with the main grate section, and having an end thereof provided with means for engaging with an operating lever, all substantially as and for the purposes set forth.

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**503,700.** STEAM-BOILER. JOHN E. GRESTY, Manchester, England. Filed Mar. 21, 1892. Serial No. 425,866. (No model.)



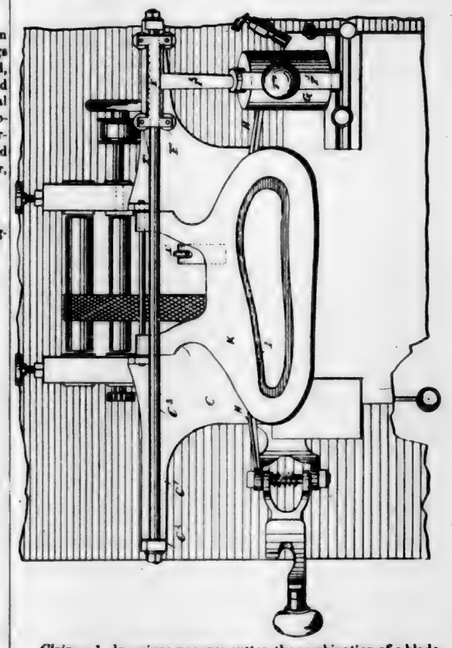
*Claim.*—1. In water tube or other forms of steam boilers, a series of double tubes composed of an outer tube closed at one end and open at the other and a smaller inner tube open at both ends, placed in a longitudinal direction over or surrounding the furnace, with their front ends connected to a water box, slab or header, and their rear ends extending into a combustion chamber formed between the ends of tubes and fire brick wall, the spaces between the outer sides of said tubes being filled in with suitably shaped fire bricks all combined and arranged substantially as set forth in order that the flames from the furnace may be caused to pass along the under or inner side, round the rear ends of said tubes and return along the opposite sides thereof in the manner and for the purpose substantially as herein before described.

2. In a water tube or other form of steam boiler, a series of tubes placed in a longitudinal direction over or surrounding the furnace that is to say, above and on each side thereof with their front ends connected to a water box, slab or header, and their rear ends extending into a combustion chamber, and connected to a header of any convenient shape, the spaces between the outer sides of said tubes being filled in with suitably shaped fire bricks all combined and arranged substantially as set forth, in order that the flames from the furnace may be caused to pass along the under or inner side round the rear ends of said tubes, and return along the opposite sides thereof for the purpose and in the manner substantially as herein before described.

3. In a water-tube or other form of steam boiler, the combination with the combustion chamber, of tubes arranged above and on each side of such chamber and extending into the same and terminating in a header, fire-brick inserted in and filling the spaces between the outer sides of said tubes, and a fire-bridge arranged at the rear of and above the combustion chamber and beneath the boiler, all arranged substantially as described, so that the flames from the furnace shall pass along the under side and around the rear portion of said tubes and along the opposite side thereof, in the manner and for the purpose set forth.

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**503,701.** CIGAR-WRAPPER CUTTER. CARL HESSE and JOHN C. M. STERNBERG, Long Island City, N. Y., assignors of one-half to the Owl Cigar Company, of New York. Filed Sept. 2, 1892. Serial No. 444,866. (No model.)



*Claim.*—1. In a cigar wrapper cutter, the combination of a blade the shape of the desired wrapper, a swinging plate having an opening therein above the blade, means for lowering the same, said swinging plate surrounding the blade when in lowered position, and a roller mounted to pass over the blade, substantially as set forth.

2. In a cigar wrapper cutter, the combination of a table provided with a plate, a wrapper cutter blade on said plate, which blade has the shape of the desired wrapper, a swinging plate having an opening in conformity with the shape of the blade, flexible strips attached to said plate along the edges of its opening, means for raising or lowering said plate, and a roller mounted to pass over the blade and swinging plate, substantially as set forth.

3. In a machine for cutting cigar wrappers, the combination, with a supporting plate, of arms on the same, a rod supported on said arms, a carriage mounted to travel on said rod, a roller supported in said carriage, a cutting blade of the desired shape of the wrapper fixed on

5. An electric signaling device having a casing containing a signal wheel, mechanism rotating the wheel, and electrical connections held to the removable cover of the casing and comprising a laterally adjustable contact lever adapted to the signal wheel, two opposing insulated contact rods and a third insulated contact plate for said lever, two line wire binding posts, wires leading therefrom to one of the two opposing rod contacts and to the third contact plate, wire connections to the other contact rod for a ground circuit, and a resistance wired to the two line wire binding posts, substantially as described.

6. The combination, in an electric signaling device, of a signal wheel having circumferential series of signaling detents, mechanism rotating the wheel, and electrical connections comprising a laterally adjustable contact lever adapted to the wheel detents, two opposing insulated contact rods and a third insulated contact plate for said lever, two line wire binding posts and wires leading therefrom to one of the two opposing rod contacts and to the third contact plate, substantially as described.

7. The combination, in an electric signaling device, of a signal wheel having circumferential series of signaling detents, mechanism rotating the wheel, and electrical connections comprising a laterally adjustable contact lever adapted to the wheel detents, two opposing insulated contact rods and a third insulated contact plate for said lever, two line wire binding posts, wires leading therefrom to one of the two opposing rod contacts and to the third contact plate, and wire connections from the other contact rod to a ground circuit, substantially as described.

8. The combination, in an electric signaling device, of a signal wheel having circumferential series of detents, mechanism rotating the wheel, and electrical connections comprising a laterally adjustable contact lever adapted to the wheel detents, two opposing insulated contact rods and a third insulated contact plate for said lever, two line wire binding posts, wires leading therefrom to one of the two opposing rod contacts and to the third contact plate, wire connections from the other contact rod to a ground circuit, and a resistance wired to the two line wire binding posts, substantially as described.

9. The combination in a signaling device, of a signal wheel 5, having a spring 13, and circumferential series of detents adapted to a lever, retarding mechanism geared with the wheel, a drum or pulley having a stud 14, adapted to the spring 13, and mechanism turning the drum in opposite directions, substantially as described.

10. The combination, in a signaling device, of a signal wheel 5, having a spring 13, and circumferential series of detents adapted to a lever, a drum or pulley having a stud 14 adapted to the spring 13, mechanism automatically turning the wheel in one direction, a crank 7 on the drum or pulley, and a pivoted stop 15 to which the crank is adapted, substantially as described.

11. The combination, in a signaling device, of a shaft 4, a signal wheel 5 loose thereon and having circumferential series of detents and a spring 13, retarding mechanism 17, 18 geared with the wheel, a pulley 8 having a stud 14 adapted to the spring 13, a cord and weight 9, 11, connected to the pulley, a crank 7, on the shaft 4, and a pivoted stop 15 to which the crank is adapted, substantially as described.

12. In an electric signaling device, the combination with a signal wheel, of a lever 18, of insulating material and carrying metallic contacts 19, 21, 35, two opposing insulated contact rods 22, 23, and an insulated contact plate 36, two line wire binding posts 29, 39, a wire 28, connecting the contact 22 and post 29, and a wire 38, connecting the contact 36 and post 39, substantially as described.

13. In an electric signaling device, the combination with a signal wheel, of a lever 18, of insulating material and carrying metallic contacts 19, 21, 35, two opposing insulated contact rods 22, 23, an insulated contact plate 36, two line wire binding posts 29, 39, a wire 28, connecting the contact 22 and post 29, a wire 38, connecting the contact 36 and post 39, a ground circuit wire 34, connected to the rod contact 23, and a resistance wired to the posts 29, 39, substantially as described.

14. In an electric signaling device, the combination with a casing, a signal wheel and mechanism rotating it held within the body portion of the casing; and a laterally movable contact lever for the signal wheel and laterally ranging contacts for said lever held to the removable cover of the casing, of a hand lever held to and outside the casing cover, and an arm connected to said hand lever and engaging the interior contact lever to adjust the latter from outside the casing, substantially as described.

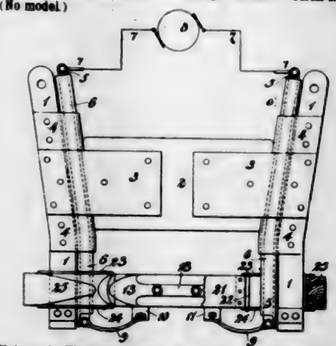
15. In an electric signaling device, the combination with a casing, a signal wheel and mechanism rotating it held within the body portion of the casing; and a laterally movable contact lever for the signal wheel and laterally ranging contacts for said lever held to the removable cover of the casing, of a hand lever outside the casing formed as a pointer and engaging the contact lever to adjust the lever from outside the casing, and an index plate on the casing to which the pointer on the lever is adapted to indicate the position of the contact lever relatively to the signal wheel, substantially as described.

16. In an electric signaling device, the combination with the casing and a laterally movable contact lever therein having a pin 46, a shaft 44, an exterior lever 42 pivoted to the shaft and having a stud 48, adapted to a series of recesses 49 in the casing, and an interior arm 45 on the shaft 44, engaging the contact lever pin 46, substantially as described.

17. In an electric signaling device, the combination with the casing and a laterally movable contact lever therein having a pin 46, a shaft 44, an exterior lever 42 pivoted to the shaft and having an index pointer and a stud 48, adapted to a series of recesses in the casing, an interior arm 45 on the shaft 44, engaging the contact lever pin 46, and an index plate 50 on the casing, substantially as described.

## 503,710. CONTACT FOR CONDUIT ELECTRIC RAILWAYS.

ADOLF WÖRNER, Buda-Pesth, Austria-Hungary, assignor to Siemens & Halske, Berlin, Germany. Filed May 18, 1893. Serial No. 474,671. (No model.)



*Claim.*—1. The combination, in a subway contact, of a supporting frame, electrical conductors having free vertical movement in said frame, and guards preventing injury to the conductors at the roadway slot, substantially as described.

2. A subway contact having electrical conductors which have free vertical movement in the supporting frame, substantially as described.

3. A subway contact having guards preventing injury to its electric conductors at the roadway slot, said conductors having free play in the frame and having support from the electric connections to the motor and contact ship or traveler, substantially as described.

4. A subway contact having a ship or traveler adapted to opposing electric conduits in the subway and a frame for connection to the car made vertically movable in the ship or traveler, substantially as described.

5. A subway contact having a ship or traveler adapted to opposing electric conduits in the subway, a frame for connection to the car, and electric conductors connecting the ship or traveler and the car or vehicle motor, said frame being vertically movable in the ship or traveler and the conductors being vertically movable in the frame, substantially as described.

6. A subway contact having a ship or traveler provided with opposite shoes having <> cross-sectional form adapted to electrical conduits in the subway, said contact having a frame adapted to sustain it from a car or vehicle and made vertically movable in the ship or traveler, substantially as described.

7. A subway contact having a ship or traveler provided with opposite shoes having <> cross sectional form adapted to electrical conduits in the subway and provided with rounded shuttle-like ends, said contact having a frame adapted to sustain it from a car or vehicle and made vertically movable in the ship or traveler, substantially as described.

8. A subway contact having a ship or traveler provided with opposite shoes having <> cross-sectional form adapted to electrical conduits in the subway, said contact having a frame adapted to sustain it from a car or vehicle, and electric conductors connecting the shoes with the motor on the car, said frame being vertically movable in the ship or traveler and the conductors being vertically movable in the frame, substantially as described.

9. A subway contact having a ship or traveler provided with opposing side shoes, and elastically held yielding insulated heads, substantially as described.

10. A subway contact having a ship or traveler provided with opposing side shoes and elastically held yielding insulated heads to which the ship propelling frame is connected, substantially as described.



11. A subway contact having a ship or traveler provided with opposing side shoes having curved shuttle-like ends, and elastically held yielding insulated heads to which the ship propelling frame is connected, substantially as described.

12. A subway contact having a ship or traveler provided with opposing side shoes having <> shaped cross-sectional form at the central parts and having curved shuttle-like ends, and elastically held yielding insulated heads to which the ship propelling frame is connected, substantially as described.

13. A subway contact having a ship or traveler provided with opposing side shoes and elastically held yielding insulated tapering heads, substantially as described.

14. A subway contact having a ship or traveler provided with opposing side shoes and elastically held yielding insulated tapering heads to which the ship propelling frame is connected, substantially as described.

15. A subway contact having a ship or traveler provided with opposing side shoes having <> shaped cross-sectional form at their central parts and having curved shuttle-like ends, and elastically held yielding insulated tapering heads to which the ship propelling frame is connected, substantially as described.

16. A subway contact having a ship or traveler provided with opposing side shoes and elastically held yielding insulated heads, and a frame connecting a car or vehicle to the ship or traveler and made vertically movable in its head, substantially as described.

17. A subway contact having a ship or traveler provided with opposing side shoes having <> shaped cross sectional form, and elastically held yielding insulated heads, and a frame connecting the ship or traveler to a car or vehicle and made vertically movable in the traveler, substantially as described.

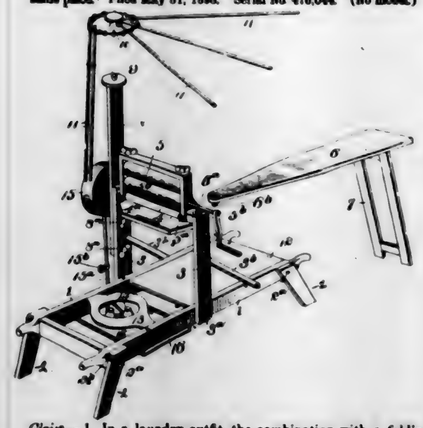
18. A subway contact having a ship or traveler provided with opposing side shoes adapted to electric conduits in the subway and having elastically held yielding insulated heads, a frame connecting a car or vehicle and the ship or traveler and made vertically movable in the traveler heads, and electric conductors connecting the ship shoes with the car or vehicle motor and made vertically movable in the frame, substantially as described.

19. In a subway contact, the combination with the frame 1, 2, 3, 4 and conductors 5 movable therein, of a contact ship or traveler comprising shoes 12, 13, insulating blocks 20, springs 21, 21, held to said blocks, tapering slotted heads 25 held to the springs and loosely receiving the parts 1, 5; connections 7 between the conductors 5 and the car motor, and connections 9, 10, 11 between the conductors and the contact ship, substantially as described.

20. The contact ship or traveler, comprising shoes 12, 13, insulating blocks 20 thereon, springs 21, 21 on said blocks and tapering heads 25 held to the springs, substantially as described.

## 503,711. COMBINATION LAUNDRY OUTFIT.

ALFRED ARMSTRONG, St. Louis, Mo., assignor to Robert H. Clifford and H. L. Haydel, same place. Filed May 31, 1893. Serial No. 476,044. (No model.)

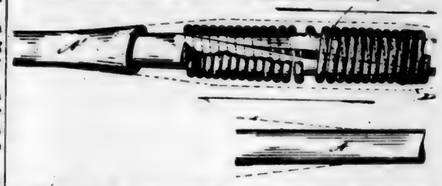


*Claim.*—1. In a laundry outfit, the combination with a folding wash tub stand, provided with standards of an extension detachably secured to one of its standards, a clothes drier revolubly mounted on said extension and an ironing board pivotally and detachably mounted to the cross piece between the standards, substantially as described.

2. In a laundry outfit the combination with a folding base or stand provided with standards 3 and cross piece 4, of a bridge plate mounted upon said base and having an opening therein, heat generators arranged below said opening, a pan beneath said generators, a clothes' wringer which is removably secured to the cross piece 4, which cross piece is formed with a socket 6, an ironing board which is detachably and pivotally mounted in said socket, and a clothes drier which is revolubly mounted on an extension of one of the standards 3, substantially as described.

## 503,712. WIRE-COUPLING.

WILLIAM E. BARTA, Springfield, Ohio. Filed Oct. 5, 1892. Serial No. 447,938. (No model.)



*Claim.*—1. In a wire coupling, the combination with overlapping ends of a line wire, of a gripping connector encircling and mounted on said overlapping ends, and divided into connected portions, and means to swell the size of the joint at the place between said portions of the connector, and effect the gripping engagement thereof.

2. In a wire coupling, the combination with the overlapping ends of a line wire, of a gripping connector consisting of an encircling piece or coil of fixed diameter at or near its ends, and of expansible diameter between said ends, and means to effect the swelling or enlargement of said overlapped ends of the line wire between the ends of the gripping connector mounted thereon.

3. In a wire coupling, the combination with overlapping ends of a line wire, tapered and matching substantially as described, of a gripping connector consisting of an encircling coil having its ends of fixed diameter mounted on said overlapping ends of the line wire, and a key or wedge to enlarge or swell the size of the jointed ends between the ends of said connector, to effect the gripping engagement thereof.

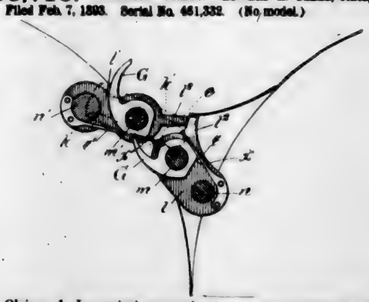
4. In a wire coupling, the combination with overlapping ends of a line wire having serrations thereon, of a gripping connector mounted on said overlapping ends and consisting of encircling pieces adapted to engage with the serrations of the line wire when the overlapping ends of the line wire are swelled or enlarged between the ends of the connector, and a key or wedge to effect said swelling or enlargement.

5. In a wire coupling, the combination with overlapping ends of a line wire, halved and matched substantially as shown and described, of a gripping connector consisting of a coil of wire having its end coils respectively fixed in diameter and adapted to slip readily upon said overlapping ends, a key or wedge adapted to be engaged transversely between said matched ends of the line wire, to expand or swell the joint between the ends of the connector, and an inclosing covering for said coupling, substantially as and for the purpose described.

6. In a wire coupling, the combination with the overlapping ends of a line wire, and means to effect the swelling or enlargement of said overlapped ends, of a gripping connector encircling such overlapped ends or portions of the wire, and expansible so as to enlarge correspondingly to the enlargement of the overlapped ends, whereby the connector grips strongly upon the entire overlapped portions.

## 503,713. PRINTING-PRESS.

EDWARD A. BLAKE, Chicago, Ill. Filed Feb. 7, 1893. Serial No. 461,332. (No model.)



*Claim.*—1. In a printing press having the two rotating cylinders, rotating in the same direction transferring gripper-mechanism on a laterally shifting rocking center on one cylinder, means for actuating the said gripper-mechanism in the rotation of the cylinder, and rock-

pled to the disk 26, for actuating it, wire connections between the two stations and the above named switch levers, electro magnets and contacts, and cams 4, 5, operative by keys inserted at the casings, substantially as described.

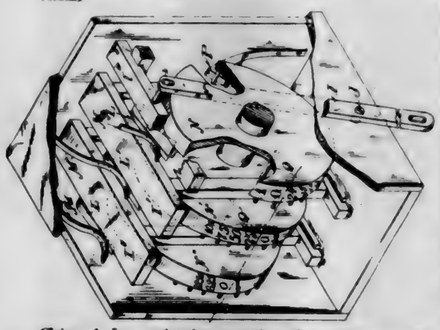
9. An electric block signal apparatus comprising duplicate devices at two railway stations, said devices at each station comprising switch levers 7, 8, 9, and 13, 14, 15; 7 being coupled to 8, by a pin and slot connection, contacts 10, 11, 12, for levers 7, 9, contacts 16, 17, 18, for levers 13, 15, an electro magnet 22, having an armature adapted to catch the lever 7, a disk 26, adapted to display "safety" and "danger" signals, an electro magnet 28, having an armature 27, coupled to the disk 26, for actuating it, wire connections between the two stations and the above named switch levers, electro magnets and contacts, cams 4, 5, operative by keys inserted at the casings and stop devices 24, compelling full rotation of the cams before the key can be withdrawn from the casings, substantially as described.

10. An electric block signal apparatus comprising duplicate mechanism at two railway stations, said devices at each station comprising switch levers 7, 8, 9; 13, 14, 15; and 19; 7 being coupled to 8, by a pin and slot connection; contacts 10, 11, 12, for levers 7, 9, contacts 16, 17, 18, for levers 13, 15, contacts 20, 21, for lever 19; an electro magnet 22, having an armature adapted to catch the lever 7, a disk 26, adapted to display "safety" and "danger" signals, an electro magnet 28, having an armature 27, coupled to the disk 26, for actuating it, and wire connections between the two stations and the above named switch levers, electro magnets and contacts, substantially as described.

11. An electric block signal apparatus comprising duplicate mechanism at two railway stations, said devices at each station comprising switch levers 7, 8, 9; 13, 14, 15; and 19; 7 being coupled to 8, by a pin and slot connection; contacts 10, 11, 12, for levers 7, 9, contacts 16 17, 18, for levers 13, 15, contacts 20, 21, for lever 19; an electro magnet 22, having an armature adapted to catch the lever 7, a disk 26, adapted to display "safety" and "danger" signals, an electro magnet 28, having an armature 27, coupled to the disk 26, for actuating it, wire connections between the two stations and the above named switch levers, electro magnets and contacts, and cams operative by keys inserted at the casings and actuating the lever contacts for controlling the electric circuits, substantially as described.

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**503,719.** REGISTER FOR GRAIN-MEASURES. BENJAMINE F. HALEY, Beatty, Ohio. Filed Sept. 21, 1892. Serial No. 446,441. (No model.)

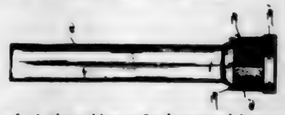


*Claim.*—1. In a registering spout box, the combination with a movable partition mounted in the box and operated according to predetermined quantities of grain passing through the box, of a lever connected to said partition at one side of the pivot, a registering mechanism consisting essentially of a casing, a series of registering wheels, motion transmitting mechanism between a disk of lower order and one of next higher order to intermittently rotate the latter by the rotation of the former, actuating devices for the first of said disks, and a connection between said latter devices and the said lever at the other side of its pivot, substantially as described.

2. In a grain register, the combination with a casing and series of register disks mounted therein, each disk carrying a pin, a sliding frame between each disk of lower order and the next of higher order, the frames having uprights, one of which is operated upon by the pin of the disk of next lower order at one time and the other of which at another time, the pins or teeth carried by each disk, and a pawl by each sliding frame engaging with said pins or teeth, a slide having a pawl for the first disk in the series, and a lever one end of which is pivotally connected with said last named slide.

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**503,720.** LAMP-CHIMNEY. EMMA HAMMOND, Phelps, N. Y. Filed Jan. 3, 1893. Serial No. 457,087. (No model.)

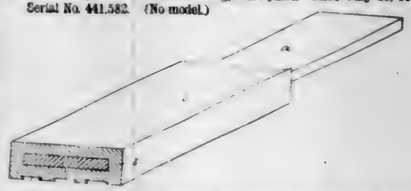


*Claim.*—1. A glass chimney for lamps and burners having the surface of the lower part *a'* even and roughened, substantially as and for the purpose specified.

2. In combination with the socket or holder *b* and clamps *b*, *b*, of a burner, the glass chimney *a*, the base *a'* of which is of even contour but roughened or ground upon its exterior surface substantially as and for the purpose hereinbefore set forth.

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**503,721.** CEILING OR WALL. HEINRICH LEHMANN, New York, N. Y., assignor to Charles Doehring, same place. Filed July 29, 1892. Serial No. 441,582. (No model.)



*Claim.*—A coating for ceilings and walls consisting of an inflexible lath and of an adhering envelope of raw clay that surrounds the lath, substantially as specified.

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**503,722.** BAIT-BOX. JAMES W. LEWIS and WILLIAM J. ESTEP, Canister, Pa. Filed June 15, 1893. Serial No. 477,732. (No model.)



*Claim.*—1. A bait box comprising a casing, a series of partitions within the casing and movable therein, openings in the compartments and an opening in the casing adapted to register with the openings in the compartments.

2. A bait box comprising end pieces, and a perforated body portion, a series of partitions within the casing forming a series of compartments, an end piece secured to the partitions and provided with an opening for each compartment adapted to register with an opening in one of the end pieces.

3. A bait box comprising two end pieces and a cylindrical perforated body portion, a series of partitions secured to one end piece and turning therewith, a supplemental interior end piece provided with openings for the several compartments formed by the partition and adapted to register with an opening in one of the end pieces.

4. A bait box comprising end pieces and a perforated body portion, a series of partitions within the body portion and rotating with one end piece, openings in the compartments formed by the partitions adapted to register with an opening in one of the end pieces, and a supplemental box secured to the outside of the casing and provided with a door, substantially as described.

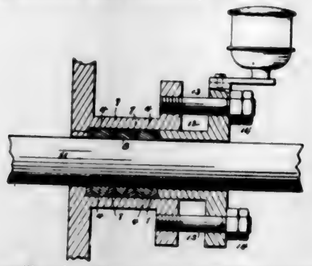
5. A bait box comprising a perforated body portion, an end piece rigidly secured thereto, a rotary end piece, a series of partitions secured thereto and turning therewith, a supplemental end piece adjacent to the stationary end piece, and provided with openings adapted to register with the opening in the stationary end piece, a door in the body portion of the box, a supplemental compartment or box secured to the outside of the body portion of the main box, and provided with a door, substantially as described.

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**503,723.** METALLIC ROD-PACKING. CHARLES LOUSTREET, Philadelphia, Pa., assignor to the United States Metallic Packing Company, same place. Filed Mar. 11, 1893. Serial No. 466,526. (No model.)



*Claim.*—1. A metallic rod packing, comprising end compressing rings having inner concave faces, rings having outer convex faces fitting the inner faces of the end rings and having inclined or inwardly diverging inner faces, and three or more rings having substantially triangular cross section and disposed with apices and bases reversed between the last named rings, substantially as described

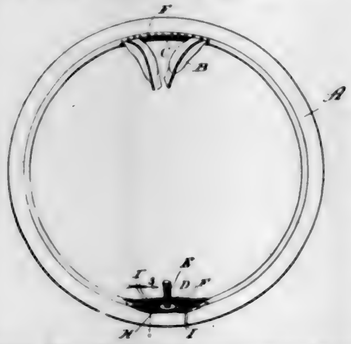


2. A metallic rod packing, comprising unsplit end compressing rings having inner concave faces, split rings having outer convex faces fitting the inner faces of the end rings and having inclined or inwardly diverging inner faces, and three or more split rings having substantially triangular cross section and disposed with apices and bases reversed between the last named rings, substantially as described.

3. A metallic rod packing, comprising end compressing rings having inner concave faces, rings having outer convex faces fitting the inner faces of the end rings and having inclined or inwardly diverging inner faces, three or more rings having substantially triangular cross section and disposed with apices and bases reversed between the last named rings, and springs or elastic cushioning devices outside the end rings, substantially as described.

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**503,724.** PNEUMATIC TIRE. FRANK H. MASON, Akron, Ohio. Filed Feb. 28, 1893. Serial No. 464,020. (No model.)



*Claim.*—1. The combination with the outer envelope having an opening on its seating portion and lacing means for closing said opening, of an inner tube having a strip provided with lacing means secured thereto, the lacing means in the strip and envelope being coincident, whereby the lace may be attached to both.

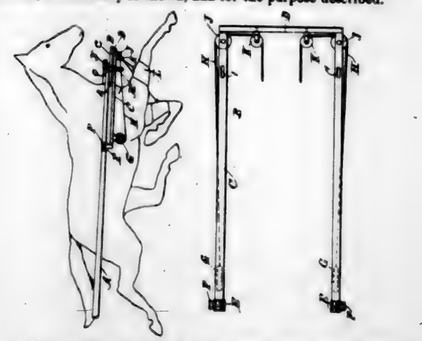
2. A bicycle tire, comprising, in combination, outer envelope A having a slit of limited length and provided with lace holes on the flaps of said slit, inner tube B having the tubular strip H secured by one face to the inner tube and having perforations in the other face, and lace passing through the lace holes in the flaps and strip, substantially as described.

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**503,725.** HARNESS. CHARLES L. PASSMORE, Erie, assignor of one-half to Edwin L. Passmore, Fulton, Ill. Filed Feb. 3, 1893. Serial No. 460,835. (No model.)

*Claim.*—1. The combination of the springs G—G suitably attached to the vehicle, guide pulleys suitably supported from said vehicle at the front of the animal, and cords H attached at one end to said springs, supported intermediately on said pulleys, and attached at their opposite ends to the front limbs of the animal; substantially as shown, and for the purpose described.

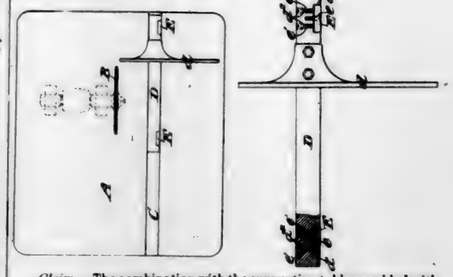
2. The combination of the thills A, the coiled springs G suitably supported thereon, cords H attached thereto and adapted to draw against the resiliency of said springs, forward pulleys supported on said thills supporting the cord H, and the boots L seated on the animal's fore legs and attached, respectively, to the forward ends of the cords H; substantially as shown, and for the purpose described.



3. The combination of thills A, a frame B, adjustably attached thereto, spring cord pulleys carried on said frame in advance of the animal's fore legs, and spring cords attached at one end to the fore legs of the animal, passed intermediately over said pulleys, respectively, and suitably attached at their opposite ends to said frame, substantially as shown and for the purpose specified.

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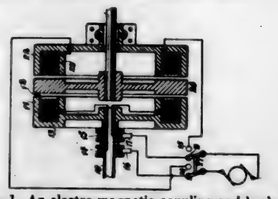
**503,726.** SAW-TABLE GAGE. PAUL PFEIBIL, New York, N. Y. Filed Sept. 17, 1892. Serial No. 446,212. (No model.)



*Claim.*—The combination with the supporting table provided with a groove, of a guide provided with a tongue having a recess in its side and adapted to slide along the groove, a gib having a sliding movement in the recess in the tongue in a direction transverse to the tongue, set screws seated in the tongue and bearing against the gib for forcing it bodily outward and a set screw engaged with the gib and the tongue for holding the gib against the aforesaid outwardly forcing screws, substantially as set forth.

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**503,727.** ELECTRO-MAGNETIC SAFETY-COUPLING. ERNST RICHTER and CARL HOFFMANN, Berlin, Germany, assignors to Siemens & Halske, same place. Filed Jan. 14, 1893. Serial No. 458,428. (No model.) Patented in Germany Jan. 16, 1890, No. 53 879; in Switzerland Apr. 24, 1890, No. 2,208; in Austria-Hungary Apr. 25, 1890, No. 12,109 and No. 42,521; in France May 1, 1890, No. 205,394; in England May 2, 1890, No. 6,793, and in Belgium Sept. 19, 1890, No. 92,039.



*Claim.*—1. An electro-magnetic coupling and brake comprising a driving or power shaft, a shaft to be driven, a portion carrying a coil mounted on the driving shaft, a portion mounted on the shaft to be driven, a stationary portion carrying a coil, a source of electricity

and means for transmitting a current of electricity in either direction through either the coil on the driving or on the stationary portion of said device.

2. In combination with an electro-magnetic coupling and brake, constructed as described, means for shunting the current from the rotating portion into the stationary portion, comprising a weighted and pivoted disk carrying contact plates, a circuit of conductors including a magnet and a battery furnishing a constant current, circuit rupturing devices in said circuit, a pawl adapted to be actuated by said magnet, and a retractile spring connected to the pawl.

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**503,728. SEAT.** BENJAMIN C. SMITH, Brooklyn, N. Y. Filed Nov. 4, 1892. Serial No. 450,954. (No model.)



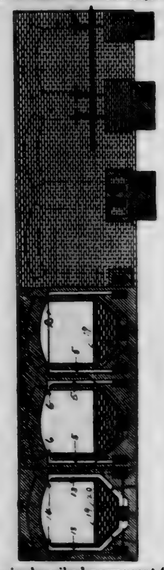
*Claim.*—1. The combination of brackets B, B, whose arms *a*, *a*, are provided with apertures, with a seat having arms D, D, bearings E, E, for said arms and means for securing said bearings in said apertures, whereby they are adjustably connected with said brackets, substantially as described.

2. The combination of brackets B, B, having apertures, a seat, arms D, D, carried thereby, and having bearings *e*, bearings E, E, adjustable in said apertures, and nuts *g* on arms D, D, substantially as described.

3. The combination of a seat, arms D, D, pivotally supporting the same, bearings for said arms, and brackets for said bearings with a cover for said seat, arms G, G, carried by said cover and bearings on the arms D, D, to receive the arms G, G, substantially as described.

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**503,729. REGENERATIVE KILN.** EDWARD WALSH, Jr., St. Louis, Mo. Filed May 3, 1892. Serial No. 431,874. (No model.)



*Claim.*—1. The herein described permanent floor for kilns, consisting of floor tiles having spacing tiles therebetween of less thickness than the floor tiles proper, substantially as described.

2. The herein described permanent floor for kilns, consisting of floor tiles having spacing tiles of less length and thickness arranged between, and at the contiguous ends of the floor tiles proper, and supporting walls for the same consisting of open checker brick work, substantially as described.

3. In a battery of kilns, the combination with the gas and air induction ports leading to the upper part of each kiln, individual draft flues leading from each of said kilns to a common draft flue, an air induction flue leading to each of said kilns, a communicating flue between the main draft flue and the individual air induction flues, and means for controlling the passage between the said main draft flue and the individual air induction flues, and the main draft flues and the individual draft flues, substantially as described.

4. In a battery kiln, the combination with a gas supply flue and branch pipes leading therefrom to each side of individual kilns, of a conduction flue for the products of combustion leading from each kiln to a main draft flue, and deflection gates at the junction of the main draft flue, and the individual draft flues, for permitting the products of combustion to pass out the main draft flue, or direct them into the next kiln, substantially as described.

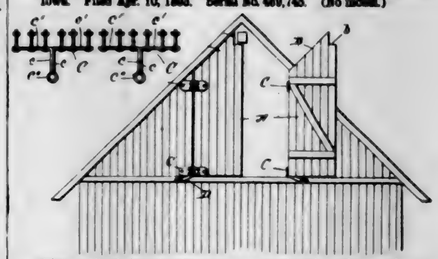
5. In a battery of kilns, the combination with the main draft flue 8 and deflection gates 18, of air flues 11, registers 17, wells 15 and draft tubes 9; substantially as and for the purposes described.

6. In a battery of regenerative kilns, the combination of individual gas and air flues leading to both sides of said kilns, an open checker work floor, an out-draft flue leading from below the floor of said kilns to a common draft flue, a communicating flue between said main draft flue and said air flues, and removable and adjustable gate plates, adapted to direct the draft from the main draft flue to an individual air flue, all combined and operating in the manner and for the purposes specified.

7. In a battery of regenerative kilns, the combination of individual gas and air flues leading to both sides of said kilns, an open checker-work floor, an out-draft leading from below the floor of said kilns to a common draft flue, a communicating flue between said main draft flue and said air flues, removable and adjustable gate plates, adapted to obstruct the continuous passage-way through said main flue and to deflect the draft from said main flue to said air flues, and gate plates to obstruct communication between said individual draft flues and the main draft flue and to close communication between said main flue and said individual air flues, all combined and operating in the manner and for the purposes specified.

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**503,730. DOOR AND HINGE.** NICHOLAS B. WILSON, Thompson, Iowa. Filed Apr. 10, 1893. Serial No. 469,745. (No model.)



*Claim.*—1. A door having an upper portion shaped to conform to the pitch of the roof of the building to which it is hung when closed, in combination with hinges C, having arms *c*, *c'*, and a brace to support the stationary part of the lower hinge, substantially as described and set forth.

2. The combination of a door having an upper triangular shaped portion, hinges C having arms of sufficient length to permit the door when opened to clear the cornice of the roof near which it is mounted, and a brace D, as and for the purposes set forth.

3. A door having a triangular upper portion, mounted in the gable end of a building, hinges having arms to permit the door to swing clear of the cornice of the roof, and a brace for hinges, substantially as described and set forth.

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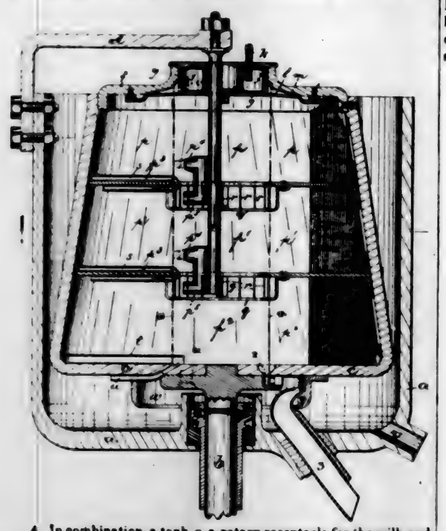
**503,731. CENTRIFUGAL BUTTER-EXTRACTOR.** OSCAR ANDERSON, Newark, N. J. Filed Feb. 19, 1892. Serial No. 422,067. (No model.)

*Claim.*—1. The improved butter extractor herein described combining therein a churn having churning surfaces a centrifugal separator, and a stationary cream collector extending into close adjacency to the churning surfaces and delivering the collected cream directly against the said churning surfaces before rotary motion is imparted to the said cream substantially as set forth.

2. The process of churning cream herein described which consists in feeding cream from a stationary cream collector directly against a rotary churning surface and breaking the buttery globules and simultaneously imparting rotary movement to the cream to separate the buttery particles from the butter milk, substantially as set forth.



3. In combination, a tank *a*, rotary bowl or receptacle *c*, having partitions, $p^3$, and wings to impart rotary motion to the liquid, churns secured to said partitions and stationary cream collectors arranged in said receptacle adjacent to said churns, substantially as set forth.



4. In combination, a tank *a*, a rotary receptacle for the milk and means for imparting motion thereto, partitions $p^3$, churns *q*, *q*, ducts for conveying the butter milk or skim milk from one chamber to the other and from the said receptacle, and a stationary cream collector and a feeder, communicating one with the other and adapted to gather the cream from one chamber and feed it to the churn in the next adjacent chamber, substantially as and for the purposes set forth.

5. In combination, the tank, *a*, having arm *d*, a rotary bowl *c*, having a cover, *f*, with a central aperture therein, a shaft, *e*, arranged on said arm and extending through said cover into said bowl, a churn stationed in said bowl and operating therewith and a cream-gatherer and feeder arranged on said shaft, substantially as set forth.

6. In combination, a tank *a*, having an arm, *d*, a rotary bowl, *c*, having a cover, *f*, with a central aperture therein, a shaft, *e*, arranged on said arm eccentric to the axis of said bowl and extending into said bowl, a churn rotating with said bowl and a cream gatherer or collector, arranged on said shaft and adjustable in relation to the cream wall, substantially as set forth.

7. In combination with a rotary separator having centrally open partitions, with U-shaped ducts taking skim milk from above and delivering it below the partitions, churns formed around said openings and U-shaped pipes stationed in said openings and adapted to collect the cream and deliver it to the churns, substantially as and for the purposes set forth.

8. The process of making butter herein described which consists in imparting rotary movement to the milk to separate the cream therefrom, collecting said cream and stopping the rotary movement thereof, then feeding the cream against rapidly rotating churning surfaces and breaking the globules and at the same time imparting rotary movement to said cream, and separating the butter therefrom, substantially as set forth.

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**503,732. DREDGER.** LINDON W. BATES, Chicago, Ill. Filed May 5, 1892. Serial No. 431,936. (No model.)

*Claim.*—1. In a dredging machine, the combination with a dredger or barge having a pump, of a ponton connected with the barge, and a suction pipe carried by the ponton and connected with the pump.

2. In combination with the barge, a ponton pivotally connected thereto so as to swing laterally, and a suction pipe mounted upon the ponton.

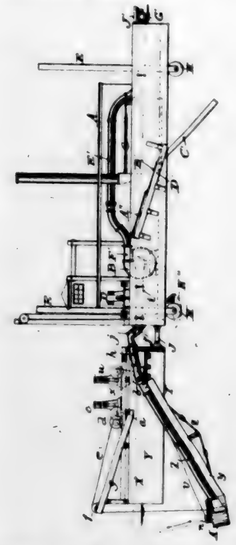
3. In combination with the barge, a ponton connected thereto, and a suction pipe pivoted in the ponton.

4. In combination with the barge, a ponton pivoted thereto so as to swing laterally, and a suction pipe pivoted in the ponton.

5. In combination with the barge, a ponton connected thereto, a suction pipe pivoted in the ponton, and means located upon the ponton for raising and lowering the suction pipe.

6. In combination with the barge, a ponton connected thereto and provided with the vertical space or channel Y, and a suction pipe mounted within the channel.

7. In combination with the barge and the ponton, the hereindescribed connection J comprising the following elements: brackets K and L secured respectively to the ponton and barge; a plate or link R pivotally connected to brackets K; a block P swiveled vertically in the link or plate R, and horizontally in a yoke M, and the said yoke M swiveled in the bracket L.



8. In combination with the barge and a ponton connected therewith, a suction pipe mounted in the ponton, a cutter carried by the pipe, and means located upon the ponton for actuating the cutter.

9. In combination with the suction pipe Z, the cutter A′ provided with the knives or cutting blades *t*, a portion of which face in one direction and the others in the opposite direction.

10. In combination with the suction pipe Z, the mouth-piece *k* provided with bearings *l* and *o*, the cutter A′ journaled therein; the yoke or collar *n* secured to the shaft of the cutter and provided with arms *w w*, the rods or chains or wire rope *v* secured to the arms and means for actuating them.

11. In combination with the ponton, the pivoted pipe Z carrying the oscillating cutter A′, the yoke or collar *n* and the rods or chains *v* for actuating the cutter, and the sheaves or pulleys *x*, substantially as and for the purpose set forth.

12. In combination with a dredge-boat A, and spuds carried thereby, the push-rods C and the pistons and cylinders for actuating the same.

13. In combination with the ponton, the pivoted suction pipe Z provided at its upper end with a lateral neck *b'*; a hose or pipe A affixed in position in the ponton and provided at one end with a lateral neck *b* to engage the neck *b'*, and at its opposite end with a downwardly-turned neck *j*; a boat, and a pipe *i* fixed in position within the boat and provided with an upwardly turned neck *j'* to engage the neck *j* of pipe A, all substantially as shown and described.

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**503,733. DREDGER.** LINDON W. BATES, Chicago, Ill. Filed Sept. 21, 1892. Serial No. 446,443. (No model.)

*Claim.*—1. In combination with a boat, a derrick provided with the oscillating sockets *e*, a pivoted ladder or suction pipe, provided with similar sockets *g*, and the rods or bars *f* mounted in the sockets.

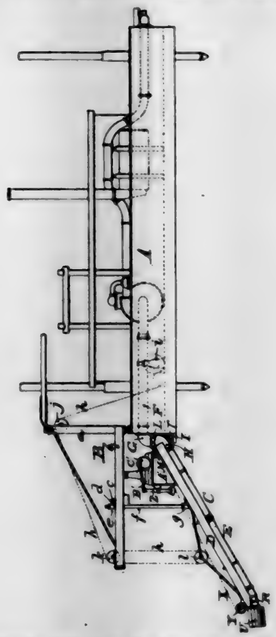
2. In combination with a boat having the downwardly-curved elbow G H, a pivoted suction tube having a telescopic connection with the latter.

3. In combination with a boat having a downwardly-curved pipe G, a curved pipe H fitting against the end of pipe G and adapted to turn about a vertical axis, and a suction tube adapted to slide into and out of the mouth of the pipe H.

4. In combination with a boat having a downwardly-curved fixed pipe G, a curved pipe H fitted to pipe G and provided with a step or bearing *r*, the brackets L L, secured to the boat, and carrying a ring

or band K to encircle the upper end of pipe H; and a suction pipe having a sliding connection with the pipe H.

5. In combination with a boat and the downwardly and outwardly curved pipe section H, a suction pipe having a curved end Q to slide within the pipe H, a shaft M journaled in a bracket on the pipe H, and arms O extending from said shaft to the suction pipe.



6. In combination with a boat, the double curved pipe sections G H', a ladder provided with a suction pipe; and a pivot,—concentric with the curvature of the pipe section that receives the suction pipe,—upon which the ladder is mounted.

7. In combination with a boat having the curved pipe section H, a suction pipe having its end fitted to slide therein; a ladder upon which the suction pipe is carried; and a pivot on the pipe-section H upon which the ladder and suction pipe swing.

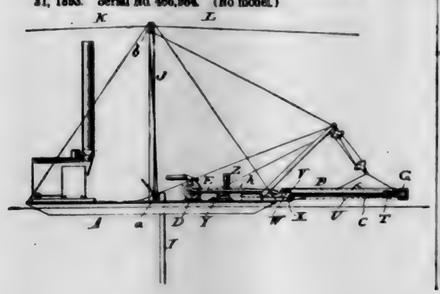
8. In combination with the ladder and the oscillating cutter, the rocker arms, the connecting cables, and an engine.

9. In combination with the suction pipe having the mouth piece or casting R, the sleeve S in the latter, the cutter shaft T carried by the sleeve, the cutter mounted upon the shaft, and means for actuating the cutter.

10. In combination with the suction pipe, the cutter herein described comprising the following elements,—a shaft; a hub *t*, having the lateral arms *y*; a disk *u*; cutting blades *v*; angle irons *w* uniting the blades to the disk and hub, and means connected with the arms *y* for oscillating the cutter

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**503,784. DREDGER.** LINDON W. BATES, Chicago, Ill. Filed Mar. 21, 1893. Serial No. 466,904. (No model.)



*Claim.*—1. In a dredging machine, the combination with a boat or vessel, of a mast J projecting upwardly therefrom and provided at its upper end with sheaves or pulleys *b* and at its lower end with a winch or winches; cables K and L provided respectively with anchorages and winding upon the winch in opposite directions, all substantially as shown and described.

2. In a dredging machine, the combination with a boat or vessel, of a ladder hinged or pivoted thereto and carrying a suction tube, a flexible extension secured to said suction tube at the inner end of the latter, and a block M secured to the ladder and having a bearing face *f* curved longitudinally, all substantially as shown and described.

3. In a dredging machine, the combination with a boat or vessel, of a ladder hinged or pivoted thereto and carrying a suction tube; a flexible hose or pipe secured to the inner end of the said suction tube; and a block carried by the ladder and having a seat *f* to receive the flexible hose or tube,—said seat being curved longitudinally and transversely, all substantially as shown and described.

4. In a dredging machine, the combination with a boat or vessel, of a ladder hinged or pivoted thereto and provided with a suction tube; a flexible hose or tube connected to the said suction tube; and a block carried by the ladder and adapted to support the flexible hose or tube, all substantially as shown and described.

5. In a dredging machine, the combination with a boat, of a ladder hinged or pivoted thereto, a suction pipe C carried by the ladder, and provided with a rotatable section or extension C', a centrally open cutter carried by the extension C', and means for rotating said extension and cutter.

6. In a dredging machine, the combination with a boat or vessel, of a ladder hinged or pivoted thereto; a suction pipe mounted upon the ladder and provided with a rotatable section or extension C', a cutter carried by said extension and having its axis in line therewith; and means for rotating the extension C' and the cutter carried thereby

7. In a dredging machine, the combination with a boat or vessel, of a ladder hinged or pivoted thereto, a suction pipe carried by the ladder and provided with a rotatable section or extension C', a cutter carried by said extension and adapted to turn or rotate therewith; a shaft Q carried by the ladder and provided with a pinion to gear with the pinion upon the extension C'; means for rotating the shaft Q from the boat or vessel; and a countershaft forming an element of said means and located in line with the axis or pivot of the ladder substantially as and for the purpose set forth.

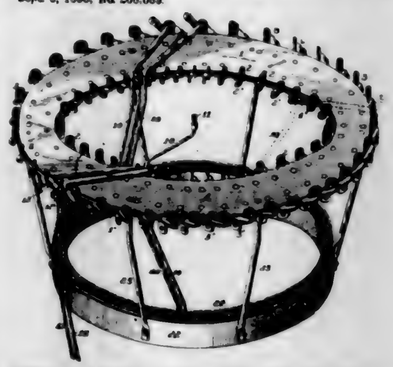
8. In a dredging machine, a cutter comprising two disks or plates *i* and *j*, open at the center, and the tangential blades or knives *l* secured to said disks.

9. In a dredging machine, a cutter comprising the disks or plates *i* and *j*, open at the center, with the outer plate *j* made conical or inclined as shown,—and the blades or knives *l* secured to the periphery of the plates or disks.

10. In a dredging machine, a cutter comprising the disks or plates *i* and *j*, open at the center, the longitudinal knives or blades *l*, and the angle irons *m* secured respectively to the plates or disks and to the cutters.

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**503,735. TYPE-WRITING MACHINE.** ALEXANDER T. BROWN, Syracuse, N. Y. Filed Nov. 16, 1889. Serial No. 330,553. (No model.) Patented in Germany Feb. 23, 1890, No. 55,310; in Belgium Feb 25, 1890, No. 89,636; in England Sept. 1, 1890, No. 13,717, and in France Sept. 5, 1890, No. 208,089.



*Claim.*—1. A type bar or lever consisting of a pivot shaft, a type bearing stem extending obliquely therefrom, and a type on the stem facing in the direction of its swing, substantially as described.



2. A type-bar, comprising a pivot-bar and a type bearing stem, said stem bent or curved obliquely to the pivot bar at or from a point near one end of the axis of the latter.

3. In a machine of the character described, a type bar consisting of an axial shaft, a type bearing stem extending from the shaft in a general direction oblique to the axis of said shaft, and a type on the stem with its face substantially in a plane parallel with the plane of the axis of the shaft.

4. In a type writer, a plurality of type bars or levers of uniform length, grouped about a common center, each bar having a pivotal axis oblique to a line drawn from one end of the type bearing stem to the other.

5. In a type writer or analogous machine, a plurality of type bars or levers of uniform length grouped about a common center, each bar having a pivotal axis and a type bearing stem oblique thereto.

6. The combination with the bearings or supports, of a type bar or lever consisting of a pivot shaft, a type bearing stem extending obliquely therefrom, and a type on the stem facing in the direction of its swing, substantially as described.

7. The combination with the ring or basket of a writing machine, of a rock shaft supported in suitable bearings and extending obliquely across the face of said basket, a type bar projecting from the side of said shaft near the inner end thereof, an operating arm projecting from the rock shaft near the outer end thereof, and a draw rod connected to said arm, substantially as described.

8. The combination with the ring or basket of a typewriting machine, of a series of rock shafts extending obliquely across the face of said ring and overhanging the ring at each end, type levers projecting from the sides of said rock shafts near their inner ends, operating arms projecting from the rock shafts near their outer ends, and draw rods connected to said arms, substantially as described.

9. In combination with a suitable support, a plurality of banks of type bars in different planes, the bars each having a pivot shaft and a type bearing stem extending obliquely therefrom, and type on said stems facing in the direction of their swing.

10. The combination with the ring or basket of a type writing machine, of a series of rock shafts extending obliquely across the upper face thereof, said rock shafts carrying type bars, and a second series of oblique rock shafts below the ring, said second series also having type bars, and suitable connections, whereby the rock shafts and type bars are operated, substantially as described.

11. The combination with the basket ring of a type writer, of a series of rock shafts arranged obliquely across the face thereof, and a series of type bars attached to said shaft at a corresponding obliquity, so that the rocking of the shafts will bring the letter carrying ends of the type bars to the center of the ring, substantially as described.

12. The combination with the flat ring forming the base on which the type bars are supported, of a series of plates secured to said ring and having upturned ears at the outer and inner edges of the ring, and a series of rock shafts journaled in said ears as described, said rock shafts carrying the type bars, as set forth.

13. The combination with the flat rings, as described, of plates secured between said rings, said plates having upturned and downturned ears outside and inside the rings and a series of rock shafts journaled in the ears and carrying type bars, substantially as described.

14. The combination with the type supporting ring of a type writer, of a series of rock shafts arranged obliquely across the face of said ring and having overlapping ends inside and outside the ring, a series of bars arranged inside the ring on the overlapping ends of the rock shafts as described, and a series of crank arms on the outer overlapping ends of the rock shafts, all substantially as described.

15. The combination with a ring or basket of a type writing machine, of a series of rock shafts supported thereon and overlapping at their inner ends, and a type bar projecting obliquely from each rock shaft substantially as described.

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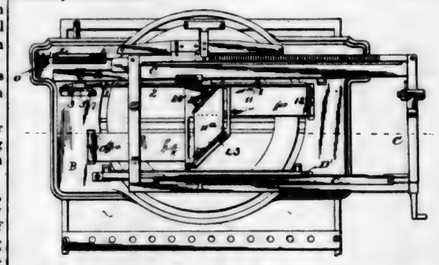
**503,736. RIBBON MECHANISM FOR TYPE-WRITING MACHINES.** ALEXANDER T. BROWN, Syracuse, N. Y. Filed Jan. 25, 1892. Serial No. 419,206. (No model.)

*Claim.*—1. In a type writing machine, a ribbon guide under the carriage having oblique ribbon supporting surfaces, around which the ribbon passes, and means connected to the carriage-moving apparatus for reciprocating said guide longitudinally and automatically during the longitudinal movement of the carriage, all combined substantially as described.

2. In a type writing machine, a ribbon guide over which the ribbon passes, automatic mechanism connected to the carriage moving devices and for shifting said guide lengthwise of the machine, and means for moving the ribbon lengthwise independently of the ribbon guide, in combination substantially as described.

3. In a type writing machine, a ribbon guide having an open center and oblique ribbon bearing surfaces, means for shifting said guide lengthwise of the machine, and a catch by which the guide may be connected to or disconnected from the shifting mechanism, all combined substantially as described.

4. In a type writing machine, a ribbon guide, a longitudinally movable bar to which said guide is connected, with a lever pivotally connected to the frame, and having detachable engagement with said bar, with means for rocking said lever on its pivot, all combined substantially as described.



5. In a type writing machine, the ribbon supporting guide, a lever hung in a frame and connected to said guide to shift the same longitudinally, and a cam connected to the carriage moving mechanism and bearing on said lever, the parts in combination substantially as described.

6. In a type writing machine, the carriage moving pulley and its shaft, a lever having an arm at each side of the shaft, a cam supported on the shaft and engaging said lever, a ratchet wheel connected to the shaft and having pawl engagement with the cam to turn the same in one direction and thus swing the lever, and a ribbon guide connected to said lever and moved thereby, all combined substantially as described.

7. In a typewriting machine, the ribbon supports at opposite ends of the machine, and the ribbon guide between said supports having a plurality of oblique surfaces round which the ribbon is looped, whereby a movement of the guide in the direction of the length of the ribbon moves the loop without slacking or moving the main part of the ribbon.

8. The combination with the supporting frame, of two ribbon reels at opposite ends of the frame, one of said reels being near the front and the other near the rear of the frame, and a ribbon guide over which said ribbon passes, the guide having inclined surfaces about which the ribbon turns obliquely, substantially as described.

9. In a typewriting machine, the ribbon reels supported on relatively stationary bearings near the front and rear of the carriage, the ribbon guide having oblique bearing surfaces respectively near the front and rear of the carriage across which surfaces the ribbon passes, and means for shifting said guide simultaneously with the carriage movement, all combined substantially as described.

10. The combination of the rock shaft 32 having an arm at each end, a pawl pivoted to said arm, the ribbon reels having ratchets with which said pawls engage, and a rock shaft 36 having cams opposite said pawls, serving to engage one pawl and disengage the other with a single movement of the shaft 36, substantially as described.

11. The combination of the ribbon reel having a crown ratchet as described, a pawl having a cross-bar extending across the face of said crown ratchet, and means for actuating said pawl to turn the ribbon reel both with the advance and the retreat of said pawl during the carriage movement, substantially as described.

12 The combination of the reel shaft, the ribbon reel thereon having a crown ratchet at one end, the pawl having a notched cross-bar straddling the spool shaft and the ends of the bar engaging the ratchet teeth at opposite sides and in opposite directions, and means for reciprocating said pawl as the carriage moves, all substantially as described.

13. In a type writing machine, a ribbon guide having bearing surfaces extending obliquely with reference to the sides of the machine and means for transversing said ribbon guide automatically lengthwise of the ribbon, substantially as described.

14. In a type writing machine, the ribbon reels at the ends of the machine having their axes practically parallel, the oblique ribbon guide around which the ribbon passes, and means for adjusting said guide with reference to the ribbon reels, and means for automatically shifting said guide, connected to the guide and carriage shifting mechanism in combination substantially as described.

15. In a type writing machine, the ribbon supports at opposite ends of the machine, an adjustable ribbon guide between said supports round which the ribbon passes with oblique turns, whereby said guide may be moved lengthwise of the ribbon without slacking the tension thereof, and means for holding said guide in its relation to the working

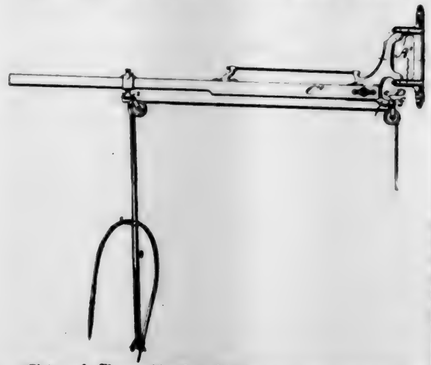
parts, and for shifting it by hand in the direction of the length of the ribbon, all combined substantially as described.

16. In a type writing machine, the ribbon reels, a ribbon guide having oblique surfaces over which the ribbon passes, and a train of driving mechanism connected to said guide and actuated by the carriage movement in one direction only substantially as described so that the ribbon guide completes its movement no matter from what point the carriage may be retracted, substantially as described.

17. In a type writing machine, the ribbon reels, the ribbon guide having oblique bearing surfaces, a bar connected to said guide, and a ratchet and pawl mechanism operating on said bar through suitable intermediates, to shift the ribbon guide as the carriage moves in one direction, but to permit a lost motion as the carriage moves in the other direction, substantially as described.

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**503,737. DENTAL ENGINE.** ARTHUR W. BROWNE, Prince's Bay, N. Y., assignor to the S. S. White Dental Manufacturing Company, Philadelphia, Pa. Filed Apr. 29, 1893. Serial No. 472,289. (No model.)



*Claim.*—1. The combination of the bracket supporting plate having the arms carrying the divided bearings, the bracket arm provided with journals received in said bearings, and the adjusting screws by which the outer or cap sections of the divided bearings may be caused to produce yielding frictional resistance to the swinging movement of the bracket arm, substantially as set forth.

2. The combination of the bracket supporting plate provided with bearings, the swinging bracket arm provided with journals received in said bearings and with a support for cord guide pulleys, the swiveling pulley block, and the cord guide pulley carried thereby and connected by the swiveling pulley block with their support on the bracket arm beneath and in line with the journal bearings of the bracket arm, substantially as set forth.

3. The combination of the bracket arm, the adjustable supporter carried thereby and provided with the hanger portion or downwardly projecting arm, the forked supporter attachment provided with the lug or short arm, the pivot connecting the forked supporter attachment with the hanger portion of the adjustable supporter, the pendent engine arm terminating in forks at its upper end, the pivot connecting said forks with the lug or short arm of the supporter attachment, and the guide pulleys rotating about a pin secured to the engine arm, substantially as and for the purpose set forth.

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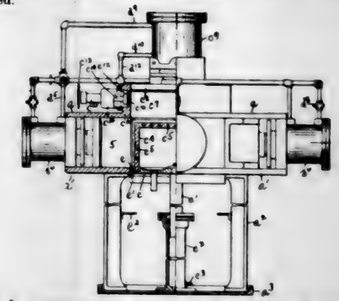
**503,738. APPARATUS FOR MANUFACTURING PULP BOXES.** HENRY CARMICHAEL, Malden, Mass. Filed June 23, 1892. Serial No. 437,703. (No model.)

*Claim.*—1. In an apparatus for producing polygonal-shaped articles from wood or other fluid pulp, the combination of the following instrumentalities, viz.—a plurality of lateral compressor chambers having parallel sides or walls, compressors in said chambers, and means to operate said compressors, substantially as described.

2. In an apparatus for producing polygonal-shaped articles from wood or other fluid pulp, the combination of the following instrumentalities, viz.—a plurality of lateral compressor chambers having parallel sides or walls, compressors in said chambers having their sectional areas equal to or in excess of the corresponding exterior surfaces of the molded article, and means to operate said compressors, substantially as described.

3. In an apparatus for producing polygonal-shaped articles from wood or other pulp, the combination of the following instrumentalities, viz.—a lower table, and an upper table, interposed angle irons or pieces arranged between said tables to form with the same, lateral compressor chambers, compressors in said chambers, and means to operate said compressors, substantially as described.

4. In an apparatus for producing polygonal-shaped articles from wood or other pulp, the combination of the following instrumentalities, viz.—a lower table having a central opening or discharge orifice, an upper table provided with an opening having its side walls extended above the said table to form a casing or chamber, angle irons or pieces interposed between the said tables and forming with the same, lateral compressor chambers, a platen co-operating with the opening in the lower table, a "former" supported on said platen, laterally moving compressors $b$, in the casings or chambers between the tables, and a vertically moving compressor $c^8$, substantially as described.



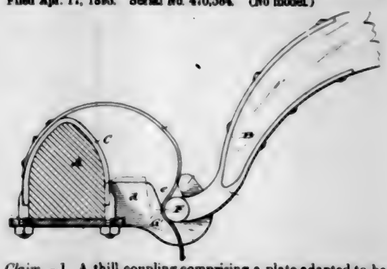
5. In an apparatus for producing polygonal-shaped articles from wood or other pulp, the combination of the following instrumentalities, viz.—a lower table provided with a discharge orifice or opening, an upper table, interposed angle irons or pieces arranged between the said tables to form with the same lateral compressor chambers, compressors in said chambers, and differential plungers connected to said compressors, substantially as described.

6. In an apparatus for producing polygonal-shaped articles from wood or other pulp, the combination of the following instrumentalities, viz.—a lower table, and an upper table, interposed angle irons or pieces arranged between said tables to form with the same, lateral compressor chambers, compressors in said chambers having beveled edges 10, and plungers connected to said compressors, substantially as described.

7. In an apparatus for producing polygonal-shaped articles from wood or other pulp, the combination of the following instrumentalities, viz.—a lower table having a central opening or discharge orifice, an upper table provided with an opening having its side-walls $c^6$ extended above the said table to form a casing or chamber, one of the said walls having a pulp inlet orifice, angle irons or pieces interposed between the said tables and forming with the same, lateral compressor chambers, a platen co-operating with the opening in the lower table, a "former" supported on said platen, laterally moving compressors $b$ in the casings or chambers between the tables, a vertically moving compressor, and a valve to control the admission of pulp through the pulp inlet in the wall $c^6$, substantially as described.

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**503,739. THILL-COUPLING.** HERMAN DROSER, West Bend, Wis. Filed Apr. 17, 1893. Serial No. 470,584. (No model.)



*Claim.*—1. A thill coupling comprising a plate adapted to be secured to the under side of the axle of a vehicle, and provided with forwardly projecting portions terminating in upwardly and rearwardly inclined hooks, an axle clip secured to said plate a metallic piece upon the end of the thill and provided with lateral studs adapted for engagement with said hooks, and a suitable spring secured to the upper part of said clip and arranged to extend forwardly and to bear obliquely against said metallic piece to crowd said studs downwardly into engagement with said hooks, substantially as set forth.

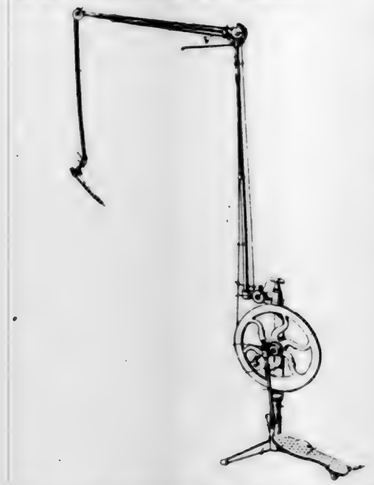


2. The combination with the axle of a vehicle, and a clip embracing the same, of a plate engaged with said clip and arranged to rest against the under side of the axle and provided with forwardly extending arms terminating in upwardly and rearwardly inclined hooks, a thill iron provided with lateral studs adapted for engagement with said hooks, and a spring engaged with the upper rear part of said clip and curved forwardly and downwardly so as to bear obliquely against the end of said thill iron to crowd the lateral studs into engagement with said hooks, substantially as set forth.

3. In a thill coupling, the combination with a flat axle supporting plate having rigid forwardly projecting and rearwardly inclined hooks integral therewith, and a central opening therein, between said hooks, of an axle clip secured to said plate, a metallic thill piece provided with laterally projecting studs for engagement with said hooks, and a curved spring secured to the upper rear part of said clip, and extending forwardly and downwardly between said hooks and thence curved inwardly, downwardly and forwardly for engagement with said thill piece, and projecting through the plate opening, terminating below the plane of said plate, substantially as set forth.

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**503,740. DENTAL ENGINE.** CONSTANT DORIOT, Philadelphia, Pa., assignor to the S. S. White Dental Manufacturing Company, same place. Filed Mar. 2, 1893. Serial No. 464,407. (No model.)



*Claim.*—1. The combination, in a dental engine, of the driving wheel, the frame standard, the upright standard having supporting connection with the frame standard, the driving cord, pulleys at the top of the upright standard, and the cord guide pulley supported over the driving wheel and between the peripheral portion thereof to which the pull side of the driving cord passes, and a line passing vertically through the axis of the driving wheel, substantially as set forth.

2. The combination, in a dental engine, of the driving wheel, the frame standard, the supporting bracket attached to the frame standard and projecting laterally thereto at a right angle or nearly so with the shaft of the driving wheel, the upright standard carried by the supporting bracket, the cord guide pulley mounted on the supporting bracket between the frame standard and upright standard, pulleys at the top of the upright standard, and the driving cord, substantially as set forth.

3. The combination, in a dental engine, of the frame standard, the driving wheel, the supporting bracket projecting laterally to the frame standard and at a right angle or nearly so with the shaft of the driving wheel, the upright standard secured to the supporting bracket, and the hand screw securing the supporting bracket to the frame standard centrally over the driving wheel and serving as a means to lift and move the engine, substantially as set forth.

4. The combination, in a dental engine, of the upright standard, the pulley head at the upper end thereof, the engine arm, the rocking carrier therefor provided with the slot, the stop pin on the pulley head engaging said slot, and the spring acting upon the carrier to yieldingly uphold the engine arm, substantially as set forth.

5. The combination, in a dental engine, of the upright standard, the rocking pulley head at the upper end thereof, the engine arm having supporting connection with the pulley head, and the spring-actuated break bearing upward against the rocking pulley head, substantially as set forth.

6. The combination, in a dental engine, of the upright standard, the rocking pulley head at the upper end thereof, the engine arm having supporting connection with the rocking pulley head, the brake bearing upward against the pulley head, the thrust pin acting upon the brake, and the adjustable spring within the upright standard and acting upon the thrust pin, substantially as set forth.

7. The combination, in a dental engine, of the upright standard, the rocking pulley head at the upper end thereof, the slotted rocking carrier, the engine arm secured thereto, the pin on the pulley head entering the slot in the rocking carrier, the spring acting upon the carrier to yieldingly uphold the engine arm, the brake acting upon the pulley head to yieldingly hold it against rocking, the thrust pin acting upon the brake, and the adjustable spring within the upright standard and acting upon the thrust pin, substantially as set forth.

8. The combination, in a dental engine, of the upright standard having a turning upper section, the engine arm having supporting connection with said turning section, and the incased spring of the upright standard having connection with the turning upper section and a non-turning section of the standard and acting upon the turning section with a tendency to hold it against turning so as to normally maintain the engine arm in inoperative position out of the way, while allowing it to be swung horizontally into operative position, and restoring it to its normal position when released after having been swung into operative position, substantially as set forth.

9. The combination, in a dental engine, of the upright standard, the engine arm having supporting connection therewith, the coiled spring, its slotted casing carried by the upright standard, the turning pin of said standard to which one end of said spring is secured, the loose sleeve provided with the longitudinal slot engaging a pin of the section of the upright standard in which the turning pin fits, and the pin of the loose sleeve engaging the slot of the spring casing, substantially as set forth.

10. The combination, in a dental engine, of the second section of the engine arm provided with the pointed and annularly shouldered end, the wrist-joint section provided with the socket to receive said end, the shouldered spring catch of the wrist joint section, and its push pin, substantially as set forth.

11. The combination, in a dental engine, of the wrist-joint section of the engine arm terminating in the shouldered pin, the hand-piece frame provided with the arm having the socket to receive said pin, and the detachable collar on the wrist-joint pin below said socket, substantially as set forth.

12. The cord guide consisting of the wire coiled to form an eye through which the cord passes, substantially as set forth.

13. The combination, in a dental engine, of the hand-piece casing provided with the annular shoulder, the hand-piece frame having the sleeve about which the hand-piece casing turns freely, and means carried by the hand-piece frame for engaging the shoulder of the hand-piece casing to lock the hand-piece against endwise movement on said sleeve, substantially as set forth.

14. The combination, in a dental engine, of the hand-piece casing provided with the annular shoulder, the hand-piece frame having the long externally unthreaded sleeve entering said casing, the slotted locking piece engaging the shoulder of the hand-piece casing, and the securing screw passing through the slot of the locking piece and engaging the hand-piece frame, substantially as set forth.

15. The combination, in a dental engine, of the hand-piece casing, the rotary tubular spindle therein, the split-ended tool chuck passing entirely through said spindle, projecting therefrom at its rear end and threaded, the clamping nut engaging said threaded rear end of the chuck, and the pulley fast on the rear end of the rotary tubular spindle, substantially as set forth.

16. The combination, in a dental engine, of the hand-piece casing, the rotary tubular spindle having its front bearing in said casing and provided with the inclined shoulders near its front and rear ends, the hand-piece frame having the sleeve entering said casing, and the adjusting sleeve provided with the nut having the internally inclined end acting against the inclined rear shoulder of the spindle and having threaded engagement with the sleeve of the hand-piece frame, substantially as set forth.

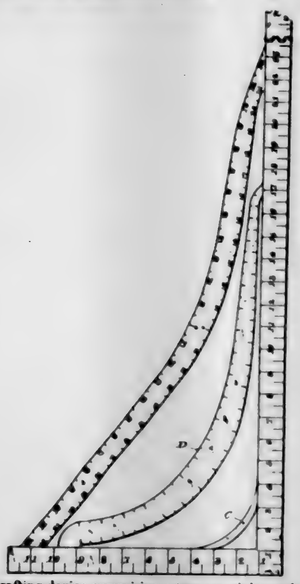
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**503,741. TAILOR'S DRAFTING DEVICE.** ANNIE L. FAERTEL, Milwaukee, Wis. Filed Apr. 10, 1893. Serial No. 469,696. (No model.)

*Claim.*—1. A drafting-device comprising a two arm right-angle square having a series of independent curve bars joining the inner edges of its arms, substantially as set forth.

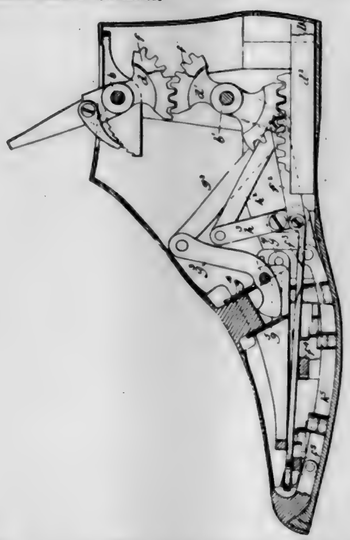
2. A drafting-device comprising a two arm right-angle square having a series of independent curve bars joining the inner edges of its arms, and a folding continuation of one of said arms, substantially as set forth.

3. A drafting-device comprising a two-arm right-angle square, a side form curve bar, and a sleeve curve bar, these curve bars being suitably scaled and joined at their extremities to the inner edges of the square-arms, substantially as set forth.



4. A drafting-device comprising a two-arm right-angle square, a neck and arm curve bar a side form curve bar and a sleeve curve bar, these curve bars being joined at their extremities to the inner edges of the square-arms, substantially as set forth.

## 503,742. SHOE-STRETCHER. James P. Fullum, Everett, Mass., assignor to the Fullum Shoe Stretcher Company. Filed Mar. 7, 1892. Serial No. 423,974. (No model.)



*Claim.*—1. In a stretching last the combination with the body of the last of two pairs of levers, fulcrumed on the body of the last; two side pieces hinged each to the outer ends of a pair of levers; a slotted plate engaging pins on the inner ends of both pairs of levers, and devices substantially such as are shown for moving the slotted plate endwise; all substantially as set forth.

2. In a stretching last, two cross rods, across the rear portion of it; two sets of levers with topthed intermeshing segmental parts; movable portions for stretching the desired parts of the last or shoe; and connections between the inner sets of levers and the movable portions; all substantially as described.

3. A stretching last composed of three main parts A A′ and $g^6$, each substantially as shown, and forming a hollow shell with an interior strengthening piece; movable portions for stretching the desired parts of the boot or shoe; and mechanism substantially such as is described for actuating the movable portions; the hollow shell A A′ and the interior strengthening piece $g^6$ forming a frame for such mechanism; all substantially as set forth.

4. In combination a last; levers $f$ $f'$; link $f^3$; slotted slide $f^4$; levers $f^5$ $f^6$, $f^8$, $f^7$; and side pieces F F′; all substantially as described.

5. In combination a last; levers $g$ $g'$; link $g^2$; lever $g^3$; and instep piece G; the link $g^4$ connecting lever $g'$ with lever $g^3$, and lever $g^3$ engaging the instep piece G; all substantially as described.

6. In combination a last; levers A A′; link $A^2$; lever $A^3$; link $A^4$; slide $A^5$; and toe piece H; the link $A^7$ connecting lever $A^4$ and slide $A^5$; all substantially as described.

7. In combination a last; segmental lever $d$; double segmental lever $d'$; rack $d^3$; and heel piece D; the lever $d$ meshing with the outer segment of lever $d'$, and the inner segment of lever $d'$ meshing with heel piece rack $d^3$, all substantially as described.

## 503,743. LACTYL-PARAPHENETIDID AND PROCESS OF MAKING IT. Friedrich Gerngoss, Winkel, assignor to C. F. Boehringer & Soehne, Waldhof, near Mannheim, Germany. Filed July 21, 1892. Serial No. 440,804. (Specimens.)

*Claim.*—1. In the art of obtaining the lactyl-derivatives of paraphenetidin, the process which consists in heating the lactate of paraphenetidin, until all the water resulting from the heating and the resulting decomposition of the lactate has been separated, substantially as described.

2. The process of obtaining a lactyl derivative of paraphenetidin, which consists in heating the lactate of paraphenetidin obtained by any suitable method to 180° centigrade, and continuing the heating until all the water resulting from the heating and the resulting decomposition of the lactate has been separated, substantially as described.

3. In the art of obtaining the lactyl-derivatives of paraphenetidin, the process which consists in dissolving paraphenetidin in an acid, mixing the same with a solution of a mineral lactate, then removing the resulting mineral salt, and evaporating the residue, consisting of lactate of paraphenetidin to dryness and finally heating the same above the boiling point until no more vapors escape from the fused mass, substantially as described.

4. The process which consists in dissolving paraphenetidin in dilute sulfuric acid, then mixing the same with a solution of lactate of calcium, then precipitating the resulting sulfate of calcium by alcohol, then filtering, then evaporating the filtrate to dryness, and finally heating the residue consisting of lactate of paraphenetidin above the boiling point until no more vapors escape from the fused mass.

5. As a new compound, lactyl-para-phenetidid, having the formula $C_{11}H_{15}NO_3$ whose melting point is 117.5° centigrade, which crystallizes in white needles and is soluble in two hundred and fifty-five parts of water at 30° centigrade and four hundred and thirty-five parts of water at 20° centigrade, and very soluble in alcohol.

## 503,744. DENTAL DRILL. Woodbury S. How, Philadelphia, Pa., assignor to the S. S. White Dental Manufacturing Company, same place. Filed June 26, 1893. Serial No. 478,913. (No model.)



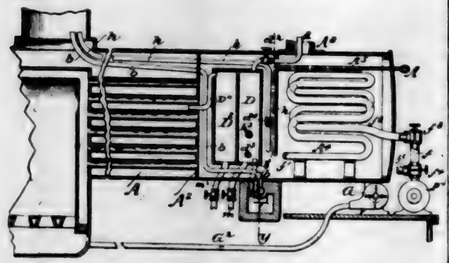
*Claim.*—A drill or boring implement having the shank of varying diameter and made thinnest at a point remote from the cutting head, substantially as set forth.

## 503,745. CAR HEATING AND VENTILATING APPARATUS. Walter Howard, Washington, D. C. Filed Feb. 3, 1893. Serial No. 460,885. (No model.)

*Claim.*—1. In combination with the forward flue-sheet of a steam boiler, the vertical exhaust chamber D in front of said flue-sheet and having a water heating chamber $D^3$ against its rear wall, a pipe $d$ having a valve $d^2$ thereon and leading from the top of said chamber D into the smoke stack, a pipe $d^5$ leading from the side of said chamber D into pipes $d^6$ extended into a car, and air pipes E inclosing said pipes $d^6$ substantially as described.



2. The combination of the forward flue sheet of a locomotive boiler, the vertical exhaust chamber D in front of said flue-sheet and having a water heating chamber $D^3$ against its rear wall, a pipe $d$ having a valve $d^2$ thereon and leading from the top of said chamber D into the smoke stack, a pipe A leading steam from the steam space of the boiler into pipes $d^6$ at the sides of said boiler and conducted into a car in the rear of said boiler, and air pipes E encircling said pipes $d^6$.



3. The combination of the forward flue sheet of a steam boiler, the vertical exhaust chamber D in front of said flue-sheet and having a water heating chamber $D^3$ against its rear wall, a pipe $d$ having a valve $d^2$ thereon and leading from the top of said chamber D into the smoke stack a pipe $d^5$ leading from the side of said chamber D into pipes $d^6$, steam pipes $d^6$ at the sides of said boiler and led into a car in the rear of said boiler, a smoke chamber in front of the exhaust chamber D, coiled air pipes $f^2$ in said smoke chamber and leading into pipes E on the outside of the boiler, and air pipes E encircling the pipes $d^6$ substantially as described.

4. The combination of the forward flue-sheet of a steam-boiler the vertical exhaust chamber D in front of said flue-sheet and having a water heating chamber $D^3$ against its rear wall, a pipe $d$ having a valve $d^2$ thereon and leading from the top of said chamber D into the smoke-stack a pipe $d^5$ leading from the side of said chamber D into pipes $d^6$, steam pipes $d^6$ led into a car in the rear of said boiler, a smoke chamber in front of the exhaust chamber D, a perforated plate $A^6$ in the top of said smoke chamber, a perforated damper $A^6$ upon the plate $A^5$, coiled air pipes $f$ in said smoke chamber, and air pipes E encircling the pipes $d^6$ substantially as described.

5. The combination of the forward flue-sheet of a steam boiler, the vertical exhaust chamber D in front of said flue-sheet and having a water heating chamber $D^3$ against its rear wall, a pipe $d$ having a valve $d^2$ thereon and leading from the top of said chamber D into the smoke stack a pipe $d^5$ leading from the side of said chamber D into train pipes $d^6$, a smoke chamber $A^4$ in front of the chamber D, a fan F in front of the chamber $A^4$, the air pipe E leading to cars, a cylinder H having its piston connected with the shaft of the fan F, and exhaust pipe $h^3$ leading from said cylinder H into the exhaust chamber D substantially as described.

6. The combination of the forward flue sheet of a steam boiler, the vertical exhaust chamber D in front of said flue-sheet and having a water heating chamber $D^3$ against its rear wall, a pipe $d$ having a valve $d^2$ thereon and leading from said chamber D into the smoke stack a pipe $d^5$ leading from the side of said chamber D into train pipes $d^6$, a smoke chamber $A^4$ in front of the chamber D, a fan F in front of the chamber $A^4$, a cylinder H naving its piston connected with the shaft of the fan F, an exhaust pipe $h^3$ leading from said cylinder H into the exhaust chamber D, a live steam pipe $h$ for the cylinder H, a valve upon said pipe $h$ a cog wheel upon the stem of said valve, and a valve operating lever having racks for actuating said valve and extended rearwardly thereof and the pipe E to conduct the heated air to the cars substantially as described.

7. The combination of the forward flue-sheet of a steam boiler, the vertical exhaust chamber D in front of said flue-sheet a pipe $d$ having a valve $d^2$ thereon and leading from the top of said chamber to the smoke stack, a pipe $d^5$ leading from said chamber D into pipes $d^6$ and the latter into a car, and a feed-water reservoir $D^3$ attached to the rear wall of the exhaust chamber substantially as described.

8. The combination of a locomotive, steam pipes $d^6$ leading therefrom to cars, a fan on the front of the locomotive, and air pipes E and $E^3$ leading to cars with pipes $E^4$ under the floor of the car and pipe $E^5$ on top of said floor, said pipes $E^3$ having slotted perforations $k$ and trough-like plates K within the pipe $E^3$ said plates K having slotted perforations $k^2$ and arms $k^3$ substantially as described.

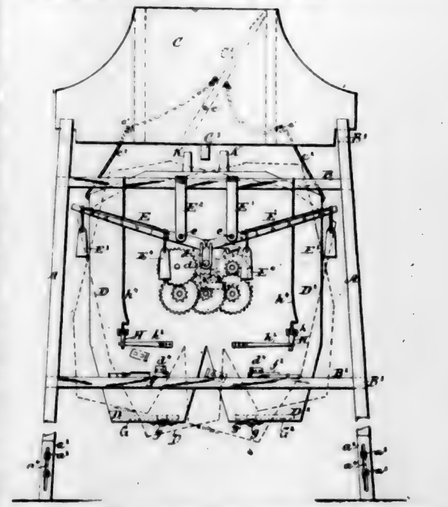
9. The combination of a locomotive, steam pipes $d^6$ leading therefrom to cars, a fan on the front of the locomotive, and perforated air pipes $E^3$ within the cars, trough-like plates K within the pipes $E^3$, steam pipes $d^6$ within the air pipes said pipes $d^6$ and $E^3$ having elbows at their ends, a valve $d^8$ at the end of the pipe $d^6$ and a screw valve-rod passing through said elbows substantially as described.

10. The combination of a locomotive, steam pipes $d^6$ leading therefrom to cars, a fan on the front of the locomotive and perforated air pipes within the cars, trough-like plates K within the pipes $E^3$, steam pipes $d^6$ within the air pipes, and a funnel $g$ upon the air pipes and having a removable cover and faucet substantially as described.

11. The combination of the air pipe E leading from the locomotive to the cars, the air pipes $E^3$ and $E^4$ carried by the cars, the pipes $E^3$ being provided with perforations communicating therewith, the steam pipes $d^6$ extending through pipes E and $E^3$, and the trough-like sliding plates K located within the pipes $E^3$, substantially as described.

12. The combination of the air pipe E leading from the locomotive to the cars the air pipes $E^3$ and $E^4$ carried by the cars, the pipes $E^3$ being provided with perforations communicating therewith, the steam pipes $d^6$ extending through pipes E and $E^3$, and the trough-like sliding plates K located within the pipes $E^3$, said plates K having pins $k^4$ projecting through the air pipes, and angular levers $k^5$ connected with said pins substantially as described.

## 503,746. GRAIN-METER. Walter Howard, Washington, D. C. Filed Mar. 17, 1893. Serial No. 466,489. (No model.)



*Claim.*—1. In a grain meter the combination of a frame having longitudinally adjustable standards, joists uniting them, metal straps $E^3$ suspended from said joists, scale beams suspended from said straps, metal straps $d^9$ suspended from, and uniting said beams, a twin-bin suspended from the straps $d^9$, and two weights upon each scale beam substantially as described.

2. In a grain meter the combination of a frame having longitudinally adjustable standards, joists uniting them, metal straps $E^3$ suspended from said joists, scale beams suspended in pairs from said straps, and a twin-bin suspended from said beams, with a hopper resting on the standards, a grain directing board pivoted within said hopper, and cords having one end secured to the directing board and the other end to the tilting bin, substantially as described.

3. In a grain meter the combination of a frame having standards, joists uniting them, metal straps suspended from said joists, scale beams suspended in pairs from said straps, a twin-bin suspended from said beams, a door pivoted to the bottom of each bin, a metal strap $g^2$ attached to said door and having a perforation in its upper end, a bell-crank lever H pivoted to the bin and having a pointed end in engagement with the strap $g^2$, and a cord $h^4$ having one end secured to the lever H and the other end to the frame of the meter, substantially as described.

4. In a grain meter the combination of a frame having standards, joists uniting them, metal straps suspended from said joists, scale beams suspended in pairs from said straps, a twin-bin suspended from said beams, a hopper resting on the standards, and a beam $C^3$ under said hopper, a bell-crank lever K pivoted to the bin on each side of the beam $C^3$, and rods uniting the lever K to the door of each bin substantially as described.

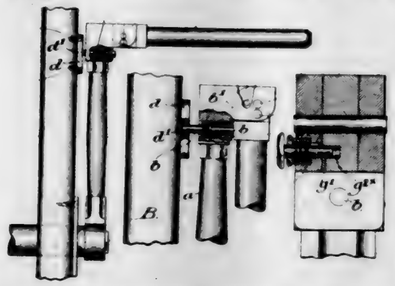
5. In a grain meter the combination of a frame having standards,

joists uniting them, metal straps suspended from said joists, scale beams suspended in pairs from said straps, a twin-bin suspended from said beams, an angular spring-latch $f^2$ pivoted to the lower joist of the frame, and a bracket plate $d^5$ secured to each bin substantially as described.

6. In a grain meter the combination of a frame having standards, joists uniting them, and a tilting twin-bin suspended on scale beams between said joists, with a bag holder resting upon the lower joists $B^1$ of the frame, substantially as described.

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**503,747.** LOCKING DEVICE FOR FOLDING CRANKS. DAVID F. LATIN, Clinton, Mass. Filed Nov. 25, 1892. Serial No. 453,029. (No model.)



*Claim.*—1. In a folding crank, a crank arm, and means to lock the same from rotation in either direction, combined with a handle pivoted to said arm and controlling by its pivotal movement said locking means, substantially as described.

2. In a folding crank, a crank arm having a longitudinally movable locking pin, combined with a crank handle pivoted to said arm, a spring controlled bolt to automatically engage and hold the handle extended, said handle being adapted when closed to co-operate with and force the locking pin into engagement with a suitable catch, and means to withdraw the bolt from the handle, substantially as described.

3. In hoisting mechanism for extensible ladders, the combination with a crank arm, a normally retracted locking pin carried thereby, and a fixed catch, of a pivoted handle adapted to force said pin into engagement with the catch to prevent rotation of the arm, substantially as described.

4. In hoisting mechanism for extensible ladders, the combination with a crank arm, a spring-controlled bolt carried thereby and having its inner end normally in position to enter a recess in a handle, and a locking pin for and carried by the crank arm, of a handle pivoted to the crank arm and provided with a transverse bolt-receiving recess, folding of the handle upon the arm operating said locking pin to prevent rotation of said arm in either direction, substantially as described.

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**503,748.** AMIDO-CROTONYLANILID AND PROCESS OF MAKING IT. LEONHARD LEDERER, Munich, assignor to C. F. Boehringer & Soehne, Waldhof, near Mannheim, Germany. Filed Oct. 11, 1892. Serial No. 448,575. (Specimens.)

*Claim.*—1. The process which consists in treating acetyl-acetanilid with ammonia and allowing the mixture to stand until the amido-crotonylanilid is formed, and then separating the resulting product, substantially as set forth.

2. As a new compound amido-crotonyl-anilid, having the formula $C_{16}H_{10}(NH_2)NO$, which is moderately soluble in most solvents in the cold and crystallizing in colorless needles and having a melting point of 146° to 147°, Celsius, substantially as set forth.

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**503,749.** SECTION-INSULATOR. LOUIS MCCARTHY, Boston, Mass. Filed Apr. 15, 1893. Serial No. 470,444. (No model.)



*Claim.*—1. A section insulator for electric conductors comprising metallic portions to which the proximate ends of the conductor sections are secured, a tie-piece of non-conducting material for the passage of the trolley wheel, an insulated connection extending between the metallic end portions, said insulated connection comprising a series of insulators each of which consists of a metallic case, a connecting piece placed therein and having a screw threaded shank, a cap having a screw threaded socket and insulating material whereby said connecting piece is insulated from said case and said cap, the insulators being connected together by having the shank of one inserted into the socket of the next inner one substantially as set forth.

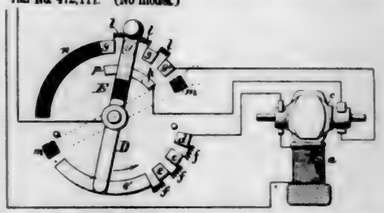
2. A section insulator for electric conductors compriaing metallic end portions, a tie-piece of non-conducting material for the passage of the trolley wheel, screw threaded bolts *c*, *m*, to which the proximate ends of the conductor sections are secured, and an insulated connection between said bolts comprising insulators connected with the bolts and a central portion joining the insulators and provided with threaded sockets, each insulator consisting of a metallic case, a connecting piece placed therein and having a screw-threaded shank, a cap having a screw-threaded socket, and insulatting material whereby said connecting piece is insulated from said case and said cap, the threaded stems of the bolts and connecting pieces entering the sockets aforesaid, substantially as described.

3. A section insulator for electric conductors comprising metallic end portions to which the proximate ends of the conductor sections are secured, a tie-piece of non-conducting material for the passage of the trolley wheel, projections *d* on said end portion, screw bolts *c*, *m*, in said projections, and an insulated connection between said bolts *c m*, said insulated connection consisting of a central portion *j*, and one or more insulators at each end of said central portion, substantially as and for the purposes set forth.

4. The combination with the angle crossing plate $b^2$ of two section insulators, one at either end of said plate, each of said section insulators comprising metallic portions *a*, one connected with said plate and the other with the end of the conductor section, a tie-piece *g* of non-conducting material for the passage of the trolley wheel, said tie-piece being secured between said metallic portions *a*, an insulated connection extending between said metallic portions and secured thereto by screw bolts, said insulated connection comprising two or more insulators each of which consists of a metallic case, a connecting piece placed therein and having a screw threaded shank, a cap having a screw threaded socket and insulating material whereby said connecting piece is insulated from said case and said cap, substantially as set forth.

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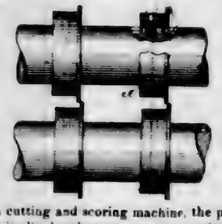
**503,750.** REGULATING APPARATUS FOR ELECTRIC MOTORS. CHARLES H. RICHARDSON, Philadelphia, Pa., assignor to the S. S. White Dental Manufacturing Company, same place. Filed Apr. 27, 1893. Serial No. 472,111. (No model.)



*Claim.*—The combination of the motor, the generator mechanically driven thereby, switch mechanism in the motor circuit, switch mechanism in the generator circuit, and the switch lever by which said mechanisms are simultaneously operated, substantially as set forth.

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**503,751.** PAPER SCORING OR CUTTING MACHINE. JOHN T. ROBINSON, Hyde Park, Mass. Filed Nov. 14, 1892. Serial No. 451,970. (No model.)



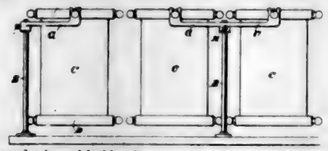
*Claim.*—In a cutting and scoring machine, the parallel rotating shafts having longitudinal undercut grooves; a series of ring-shaped cutters having hubs adapted for the passage of a set screw, and having a sliding fit on said shafts, combined with screws extended through



the hubs, and nuts adapted to be held in said grooves and connected to said screws and free to slide in said longitudinal grooves, a screw and nut for each hub, the loosening of a single screw enabling any cutter to be adjusted laterally on the shaft, the tightening of a screw causing the nut to be strained outwardly from the center of the shaft and clamped thereto to confine the cutter hub by pressure at but one point, substantially as described.

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**503,752.** FRINGE OR TRIMMING HOLDER. JULIUS M. SCHLESINGER, San Jose, Cal. Filed May 5, 1893. Serial No. 473,156. (No model.)



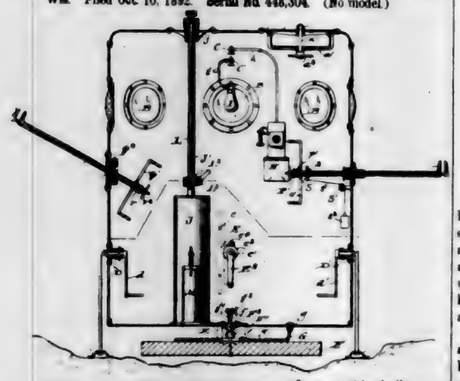
*Claim.*—1. A card-holder for trimmings having transverse perforations made centrally in the posts at the opposite ends, shanks fitting the perforations and studs projecting from the ends of the shank, in combination with vertical standards with slotted arms adapted to receive the studs whereby the cards are removably supported, substantially as herein described.

2. Cards or holders having transverse holes made centrally through the posts, forming the ends of the cards, rectangular shanks removably fitted into said holes having studs formed upon one end, and screw-threads upon the opposite end upon which the corresponding studs are screwed, standards fixed to bases, and having adjustable slotted arms within which the studs of the card-holders are fitted whereby the holders are removably suspended from the standards, substantially as herein described.

3. A device for exhibiting trimmings consisting of flat cards upon which the trimmings are wrapped, posts at the ends of the cards having projecting studs upon the opposite sides of either end, standards having correspondingly slotted arms into which the studs of the cards are adapted to fit, and a supporting base to which the standards are fixed, said base consisting of successive steps rising one above the other whereby a series of cards is removably suspended and exhibited, substantially as herein described.

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**503,753.** DIVING APPARATUS. GEORGE W. SMITH, Milwaukee, Wis. Filed Oct. 10, 1892. Serial No. 448,304. (No model.)



*Claim.*—1. A diving apparatus comprising a suitable shell or casing provided with air induction and eduction pipes, a weight for sinking said shell or casing and provided upon its upper side with an upwardly extending stud, a clamp upon the under side of the bottom of the shell or casing and adapted for detachable engagement with said stud, and suitable mechanism extending through the bottom of the shell or casing for actuating said clamp to grasp or release said stud, substantially as set forth.

2. A diving apparatus comprising a suitable shell or casing provided with air induction and eduction pipes, a weight for sinking said shell or casing and provided upon its upper side with an upwardly extending stud, carrying a ball at its upper end, a pair of jaws each provided with a half socket and adapted for engagement with said ball, arms secured to said jaws and extending through the bottom of the shell or casing and pivotally supported therein, and suitable means within the shell or casing for adjusting said arms and the connected jaws to grasp or release said ball, substantially as set forth.

3. A diving apparatus comprising a suitable shell or casing, a weight for sinking said shell or casing, a detachable ball-and-socket connection between said shell or casing and said weight, suitable means upon the inside of the shell or casing for freeing said weight, suitable legs adjustably engaged with the outside of the shell or casing and adapted for engagement with the ground outside of the same, shafts journaled in the side walls of the shell or casing and having rack-and-pinion engagement with said legs, and crank arms engaged with the inner ends of said shafts for rotating the same to adjust the legs vertically to level the shell or casing, substantially as set forth.

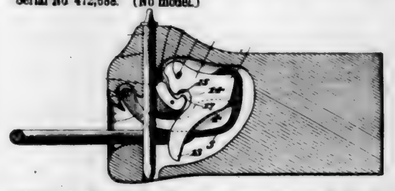
4. A diving apparatus comprising a suitable shell or casing, a weight for sinking the same, detachably pivoted to the bottom thereof, a plurality of shafts journaled in the side walls of said shell or casing, vertically adjustable legs upon the outside of the shell or casing adapted for engagement with the ground and having rack-and-pinion engagements with certain of said shafts, other legs having rigid engagement with the outer ends of the other shafts, and adapted for engagement with the ground, and suitable crank arms upon the inner ends of said shafts for rotating the same to effect a desired movement of either set of legs to level said shell or casing or to adjust it to a desired position, substantially as set forth.

5. A diving apparatus comprising a suitable shell or casing having suitable bull's eyes in its side walls, a weight detachably secured thereto, means for adjusting said shell or casing upon the bottom, one or more tubular arms movably engaged with water tight bearings in the side walls of the shell or casing and each carrying a rigid jaw at its outer end, suitable rods or bars having sliding engagement within said tubular arms and each carrying at its outer end, a jaw opposed to the first mentioned jaw, suitable locking devices upon the inner ends of said arms for securing said rods or bars in their adjusted positions with respect to said tubular arms, and suitable counterbalance weights operatively connected with the inner ends of said arms, for counteracting the inward pressure of the water upon said arms, substantially as set forth.

6. A diving apparatus comprising a shell or casing having suitable bull's eyes in its side walls, a weight detachably secured thereto, a vertically movable standard extending upward through the top of the shell or casing and carrying a horizontal beam, means within the shell or casing for adjusting said beam horizontally, and suitable means for rotating said standard, substantially as set forth.

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**503,754.** CAR-COUPLING. WILLIAM E. STEFFEY, San Diego, Cal., assignor of one-half to G. H. Hardiman, same place. Filed May 2, 1893. Serial No. 472,688. (No model.)

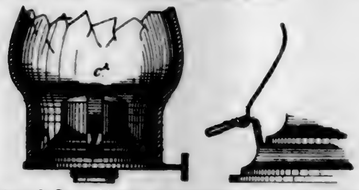


*Claim.*—1. In a car coupling, the combination with the pin and link, of a weight adapted to bear upon the said link and hold the same in horizontal position and comprising arms that are spaced apart, an operating dog movably mounted between the arms of said weight, and having a lower engaging end that extends forwardly, and an upper hook, and a catch in advance of the said dog also having a hook to engage the hook of the dog, said parts being inclosed within a draw-head, substantially as described.

2. In a car coupling, the combination of a draw-head having suitable openings therein, a pin and link, a weight mounted in the draw-head and having arms spaced apart and connected only at their front ends where they are pivoted to the said draw-head, a weighted operating dog loosely mounted on its pivot and moving between the arms of the said weight, the said operating dog having a lower forwardly projecting engaging end, and an upper nose or hook, and a catch pivotally mounted in advance of the said operating dog and having a hook to engage the hook of the dog, said catch being adapted to extend across the pin opening and support the said pin in raised position, substantially as described.

3. In a car-coupling, the combination with a draw-head and a link and pin, of a link-supporting weight inclosed within the draw-head and comprising a pair of rearwardly-extending arms connected at their front ends only and spaced apart to engage opposite sides of the link, the rear ends of said arms being increased in dimension and the connected front ends pivotally attached to the front upper part of the draw-head, substantially as described.

**503,755.** LAMP-BURNER. CLARENCE A. TAPLIN, Forestville, Conn. Filed Jan. 5, 1893. Serial No. 457,356. (No model.)



*Claim.*—1. In combination in a lamp burner, the spring arms pivotally supported on the burner at a point between the ends of each of said arms which are provided with a number of chimney bearing surfaces, all substantially as described.

2. In combination in a lamp burner, a spring arm with its upper end adapted to engage within the swell of the chimney and its lower end adapted to press outward against the bottom of the chimney, said arm being pivoted to the burner at a point between said chimney engaging surfaces, all substantially as described.

3. In combination in a lamp burner, an arm support having its lower end secured to the burner base, and the swinging arm having a number of chimney bearing surfaces and attached to the upper end of said arm support between the chimney bearing surfaces, all substantially as described.

4. In combination with a chimney seat, an arm support having one end secured to said seat, and projecting upward therefrom a spring holding arm provided with a number of chimney bearing surfaces and pivoted to the upper end of said support between said bearing surfaces, and a spring tending to hold the upper end of the arm in position to receive the chimney base, all substantially as described.

5. In combination with a chimney seat, an arm support with one end secured to said seat and the opposite end formed to T-shape and having a flat spring bearing surface, and the holding arm pivoted to the T-shaped end of the arm support and having a spring in bearing contact with the flat spring bearing surface, all substantially as described.

6. In combination with a chimney seat, an arm support having one end secured to said seat and the opposite end formed to T-shape having a flat spring bearing surface, the spring holding arm pivoted to said T-shaped end, the pivot socket located in said holding arm, the spring located on the holding arm and bearing against the flat surface upon the T-shaped end, and the stop located on the holding arm whereby the pivot is held within its socket, all substantially as described.

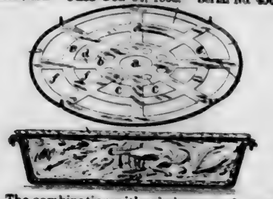
7. In combination with a chimney seat, an arm support having one end secured to said seat and the opposite end formed to T-shape with a flat spring bearing surface, the spring holding arm pivoted to said T-shaped end, the pivot socket located in said holding arm, the engaging slot, the spring located on the holding arm, bearing against the flat surface upon the T-shaped end of the arm support and provided with the stop forming part of one side of the pivot socket whereby said pivot is held within its socket, all substantially as described.

8. In combination in a lamp burner, a chimney holding arm made of a single piece of spring metal having an integral pivot socket, a spring formed by the back turned end of the arm, and an integral stop formed by punching up the substance of the metal, all substantially as described.

9. In combination in a lamp burner, a chimney seat, a support with one end secured to the seat, and the other end bearing a spring actuated holding arm provided with a number of chimney bearing surfaces, all substantially as described.

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**503,756.** CRUST-SUPPORTER FOR POT-PIE PANS. ANNIE UHLACK, Baltimore, Md. Filed Dec. 31, 1892. Serial No. 456,894. (No model.)

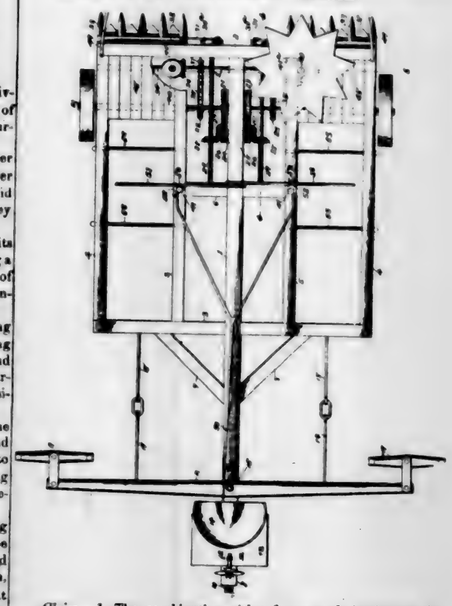


*Claim.*—1. The combination with a bake-pan, of a spider-like or skeleton support for a top-crust, said support extending over the pan and provided with means to prevent it from shifting laterally.

2. The combination with a bake-pan having a flange around its top-rim and a number of openings in said flange, of a spider-like or skeleton support resting on the said top-flange of the pan and provided with prongs which engage the openings in said flange.

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**503,757.** CORN-HARVESTER. EDWARD WARDER, Gypsum, Kans. Filed May 31, 1892. Serial No. 435,038. (No model.)



*Claim.*—1. The combination with a frame-work having an oblong opening, cutting-devices in advance of the platform, a pivoted dropper supported at one side of the opening and extending thereover, an axle, means for communicating motion from the axle to the cutting mechanism, and temporary locking devices for the dropper, of a plurality of bars or rods removably located over the opening in the frame-work, substantially as specified.

2. In a harvester of the class described, the combination with the frame, comprising front and rear beams, 2 and 3, side-beams 4, parallel intermediate beams 5, 5, central beam, 1, carrying the draft attachments and platforms 48, of the twin cutting mechanism located at the front ends of the platforms, transverse rods 55, arranged between bars 4 and 5 in rear of the platforms, gathering reels located above the platforms in rear of the cutting mechanisms, the axle carrying ground wheels, means for conveying motion from the axle to the cutting mechanisms and reels, vertical posts 41 rising from beams 5 in rear of the platforms, droppers pivotally mounted upon said posts, and having concavely curved arms extending laterally over the spaces between the beams 4 and 5 in rear of the platforms, the retaining pawls, and means to operate the same, substantially as specified.

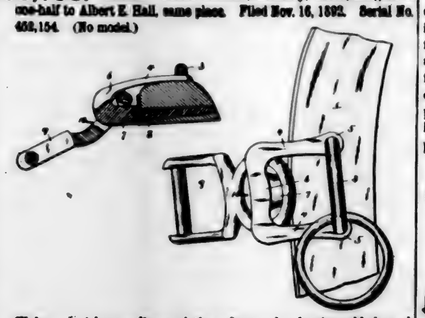
3. In a harvester of the class described, the combination with a rectangular frame having platforms 48, open spaces in rear thereof and a central beam, 1, of the cutting mechanism located at the front edges of said platforms, gathering reels located above the same, droppers arranged above the spaces in rear of said platforms, transverse removable rods 55 arranged in said spaces beneath the droppers, the axle carrying ground-wheels, means for conveying motion from the axle to the cutting mechanism, and a transverse draft-beam secured to a rearward extension of said central beam, in rear of the frame and extending beyond the sides of the latter whereby the draft animals may follow said ground-wheels, out of the line of the droppers and cutters, substantially as specified.

4. In a harvester of the class described, the combination of the framework, the cutting mechanism at the front of the framework, a post rising from the framework in rear of the cutters, arms pivoted to the post and extending over the opening in the frame, means for locking and unlocking the arms, and rods removably covering the opening, substantially as specified.

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**503,758.** HAME. PELEG BARKER, Kearney, Nebr., assignor of one-half to Albert E. Hall, same place. Filed Nov. 16, 1892. Serial No. 452,154. (No model.)



*Claim.*—1. A hame-clip consisting of a member having a U-shaped portion, the terminals of which are perforated, and a centrally opposite lug arranged in a plane different from the terminals of the clip, and a tug clip connected to the lug, and a staple passed through the perforated terminals and adapted for connection with the hame substantially as specified.

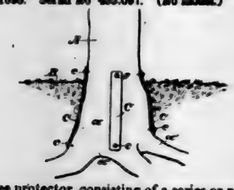
2. The combination with a hame-section having its outer face provided with a pair of perforations and its rear edge between the perforations having a single perforation, of a U-shaped clip having its terminals perforated to agree with the pair of perforations of the hame-section and provided at its transverse center with a fixed stud taking into the single perforation and located out of alignment with the terminals of the clip, a hame connecting-D having an eye for engaging the lug, and a staple having its terminals passed through the perforations in the terminals of the clip and through the hame-section, substantially as specified.

3. The combination with the hame-section, the outer face of which is provided with a pair of perforations and the rear edge of which is provided with a single intermediate perforation, of the hame-clip consisting of the side-bars or terminals 4 having perforations 5 and the outer transverse connecting-bar 6 depressed below the terminals, and further provided with the thick lug 7, for taking into the single perforation, the D-connection having the curved thickened eye for engaging the lug, the staple passed through the perforations in the clip and hame-section, and the ring-engaging staple, substantially as specified.

4. The clip consisting of the opposite sides 4, and the cross-bar 6 having its inner end beveled and provided with the thick lug 7, combined with the tug having the usual D 9 provided with the eye 10 slightly curved and thickened and adapted to engage the lug 7, and securing devices passing through the sides of the clip and into the hame as set forth.

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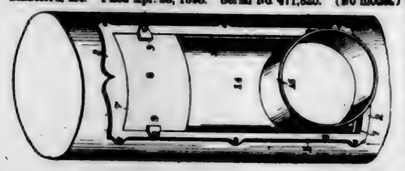
**503,759.** TREE-PROTECTOR. EDWIN H. BLACK, Campbell, Cal. Filed Feb. 20, 1893. Serial No. 463,097. (No model.)



*Claim.*—A tree protector, consisting of a series or number of metallic strips placed and held vertically directly against the base of the tree trunk, said strips being separated from each other and extending from the surface of the ground downwardly to the roots, substantially as herein described.

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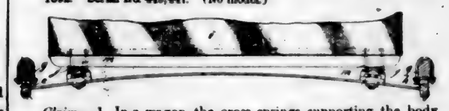
**503,760.** STOVEPIPE ATTACHMENT. GEORGE G. CALDERWOOD, Biddeford, Me. Filed Apr. 25, 1893. Serial No. 471,825. (No model.)



*Claim.*—In a stove-pipe attachment for the purpose described, the combination with the oblong transversely curved metal frame having its rear sides provided with parallel vertical ways extending inwardly from the frame, and its upper and lower transverse portions provided at their inner edges with angular recesses, of a filling or covering plate fitting between the opposite sides of the frame at either end thereof, ears slidably located upon the plate, the slots of the ears being disposed at right angles to those formed in the frame, T-shaped keys for locking the frame and plate together, and a collar-carrying sliding-plate mounted in the ways, substantially as specified.

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**503,761.** VEHICLE-SPRING. GEORGE T. CHAPMAN, New York, N. Y., assignor to William Harvey Merritt, same place. Filed Oct. 20, 1892. Serial No. 449,447. (No model.)



*Claim.*—1. In a wagon, the cross springs supporting the body hooked over and suspended at both ends on supports attached to the side bars or other part of the wagon, with the said ends free to extend by the elongation of the springs, and to hook and lodge directly against the supports by the contraction of the springs substantially as described.

2. In a wagon, the cross springs supporting the body at intermediate points between the center and the ends of the springs, and said springs suspended at both ends on supports attached to the side bars or other part of a wagon, with the said ends free to extend by the elongation of the springs, and to hook and lodge directly against the supports by the contraction of the springs the springs being free to vibrate between the supports of the body thereon substantially as described.

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**503,762.** CUFF. FRANK C. DUMAS, New York, N. Y. Filed Mar. 7, 1893. Serial No. 465,033. (No model.)



*Claim.*—A reversible cuff having two tabs of the same ply as and produced with the cuff body and located on one of the meeting edges of the cuff near the top and bottom of the same and provided with button holes to register with button holes located in the cuff body within the corresponding meeting edge of the same, as set forth.

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**503,763.** FOUNTAIN-PEN. MARVIN M. PENNER, Waupun, Wis., assignor of one-half to James B. Shea, same place. Filed Feb. 24, 1893. Serial No. 463,554. (No model.)



*Claim.*—1. In a fountain pen, the combination with the ink reservoir, of the detachable nozzle having an interiorly tapered bore, an exteriorly tapered cylindrical feed plug adapted to be wedged into the interiorly tapered bore of the nozzle and provided with a pen slit, the pen point, an independent conductor reed adapted to be inserted into the inner open end of the feed plug and project into the ink reservoir, the said reed having its inner end adjacent to but out of contact with the inner end of the pen point, and an ink regulating ball valve arranged to work inside of the feed plug over the inner end of the pen point projecting therein, substantially as set forth.

2. In a fountain pen, the combination with the ink reservoir or barrel, of the interiorly tapered detachable nozzle fitted thereto, an exteriorly tapered hollow feed plug adapted to be wedged into said nozzle and provided with a longitudinally deposed slit extended in from one end thereof, upper and lower feed tongues adapted to embrace both sides of a pen point, and a separate and independent conductor reed adapted to be inserted into the inner end of the feed plug and to project into the ink reservoir or barrel, substantially as set forth.

3. In a fountain pen, the ink reservoir or barrel, the nozzle at one end of said reservoir or barrel, the separate removable hollow feed plug open at its inner end and having upper and lower feed tongues extended from its opposite end and a curved slit extending between the feed tongues and into the closed end of the feed plug to accommodate the pen point, longitudinally disposed ink grooves or channels formed in opposite faces of said tongues above and below the pen point, and a ball valve arranged to work inside of the feed plug over the inner end of the pen point projecting therein, substantially as set forth.

4. The combination of a feed plug for use in fountain pens, consisting of a hollow cylindrical body open at one end and having a combined feed and pen point slit formed in its opposite end, the pen point adapted to be inserted into said slit, and an ink regulating ball valve adapted to work inside of said feed plug on top of the inner end of the pen point projecting therein,—substantially as set forth

5. In a fountain pen, the ink reservoir or barrel, the nozzle at one end of said reservoir or barrel, the separate hollow feed plug open at its inner end and having reduced upper and lower feed tongues extended from its opposite end, a slit extending between the feed tongues and into the closed end of the feed plug to accommodate the pen point, longitudinally disposed ink grooves or channels formed in opposite faces of said tongues, and an air vent formed in the closed end thereof directly under the lower feed tongue, a separate and independent conductor reed inserted in the inner end of the feed plug, and a ball valve arranged to work inside of the feed plug between the pen point and said conductor reed, substantially as set forth

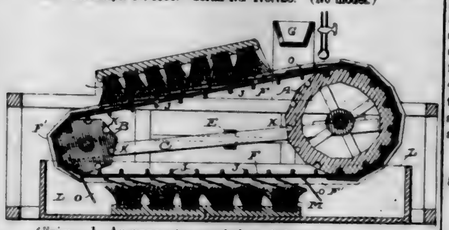
6. The combination of a feed plug for use in fountain pens, consisting of a hollow cylindrical body having extended feed tongues, longitudinally disposed ink grooves or channels formed in opposite faces of each of said tongues, and the pen point slit intersecting the tongue, and an ink regulating ball arranged inside of the plug, substantially as set forth

## 503,764. FLOORING OR CEILING JACK. WILLIAM M. HOLLMAN, Knickerbocker, Tex. Filed Dec. 2, 1892. Serial No. 453,853. (No model.)



*Claim.*—In flooring or ceiling jacks, the combination of a pair of pivoted levers forming tongs, a clamping jaw disconnected from and loose on said levers and provided with openings to receive separately the lower ends of the levers, and stops on the levers for supporting and engaging the clamping jaw, substantially as and for the purpose set forth

## 503,765. AMALGAMATOR. JOSEPH S. JOHNSON, San Francisco, Cal. Filed Apr. 17, 1893. Serial No. 470,725. (No model.)



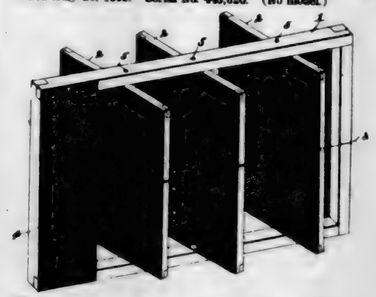
*Claim.*—1. An apparatus consisting of the endless traveling belt, horizontally journaled drums around which the belt passes with an inclination of its upper surface, metallic overlapping plates fixed upon the belt and movable therewith, means for supplying pulp and water at the upper end of the belt, a tank situated beneath the belt into which the plates dip and wherein they are cleansed while returning beneath the rollers, substantially as herein described

2. An apparatus consisting of drums horizontally journaled in a frame, mechanism whereby a side shaking motion is imparted to said frame, an endless traveling belt passing around the drums having the upper surface inclined, metallic overlapping plates attached to the belt by one edge, means for supplying pulp and water upon the upper end of the belt, and brushes secured above the belt so that the ends form a contact with the plates as they pass beneath the brushes and a washing tank situated beneath the belt, substantially as herein described

3. An apparatus consisting of horizontally journaled drums mounted in a frame, and mechanism whereby a side shaking motion is imparted to the frame and drums, an endless traveling belt passing around the drums with the upper surface inclined, metallic overlapping plates extending transversely across the belt and attached thereto by one edge, upturned edges upon each side of the belt, inclining inwardly and adapted to fold down over the edges of the plates by the tension produced by passing around the drums at the upper and lower ends, whereby the plates are retained in contact with the belt until they have passed around the drum, substantially as herein described.

4. An apparatus consisting of an endless traveling belt passing around drums horizontally journaled upon a frame to which a side shaking motion is imparted, metallic plates extending transversely across the belt, overlapping each other, having their upper edges attached to the belt, brushes secured above the belt with their ends in contact with the plates as the latter pass beneath them, a washing tank into which the belt dips as it returns on the lower side, and brushes fixed within said tank so as to brush the surfaces of the plates as they pass through the tank, substantially as herein described.

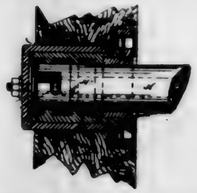
## 503,766. WINDOW-SCREEN. THOMAS C. MAYS, Paragould, Ark. Filed Aug. 20, 1892. Serial No. 443,620. (No model.)



*Claim.*—1. A screen comprising a rectangular main frame designed to be arranged vertically in a window, the narrow stationary horizontally disposed gauze sections 4 secured to the main frame at the ends thereof and located on opposite sides of the same and having their inner edges separated by considerable space, and a horizontally disposed supplemental screen section pivoted between the sides of the main frame in the space between the gauze sections and adapted to turn on its pivots to provide open spaces in the screen and to overlap the gauze sections to form a closed screen, substantially as described.

2. A screen comprising a rectangular main frame designed to be arranged vertically in a window, the narrow horizontally disposed gauze sections 4 secured to the main frame at the ends thereof and arranged on opposite sides of the same, and having their inner edges separated by considerable space, the series of horizontally disposed supplemental screen sections pivoted between the sides of the main frame and arranged in the space between the narrow gauze sections 4 and arranged when closed to overlap one another, and to overlap the narrow gauze sections 4, and means for connecting the pivoted screen sections for moving the same simultaneously, substantially as and for the purpose described.

## 503,767. BUSHING AND FAUCET FOR BARRELS. GEORGE H. MERRICK, San Francisco, Cal. Filed Apr. 20, 1892. Renewed May 4, 1893. Serial No. 473,030. (No model.)



*Claim.*—1. The combination with a retaining ring secured within the barrel opening, of a bushing fitting within said opening and retained therein by said ring, and of a screw threaded lock nut fitting within the end of the bushing and adapted to firmly hold the same within the barrel opening.

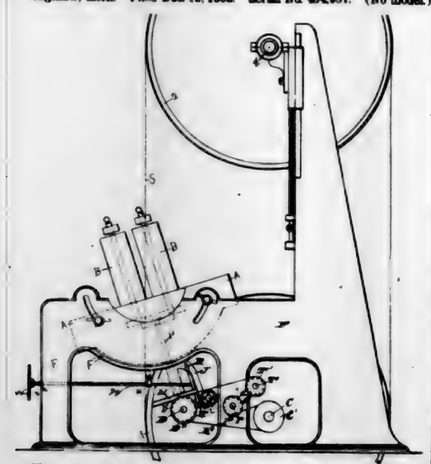
2. The combination with the bushing, having an internally screw threaded end, of the lock nut having a screw threaded stem fitting within the threaded end of the bushing, said nut adapted when unscrewed to bind against a fixed stop in the barrel opening and thereby hold the bushing.

3. The combination with the retaining ring, provided with inwardly projecting lugs, of a bushing having openings therein engaging said lugs, screw threaded locking nut fitting within the bushing, said nut having openings therein corresponding with the bushing openings, and a lock key for rotating said lock nut, as and for the purpose set forth.



4. The combination with an immovable bushing and means for securing the same in place, of a sleeve or valve slidably mounted upon the bushing and provided with a passage or port for the flow of liquid, the valve key mounted within the valve having arms $d^3$ and provided with a threaded shank, and a faucet having its inner end slotted to receive the arms of the valve key and provided with a lateral slot into which said arms are forced whereby the faucet is locked to the valve key so that a further movement of the faucet rotates the valve or sleeve and enables the liquid to be discharged, substantially as herein described.

## 503,768. BAND SAWING-MACHINE. EDWARD C. MERRION, Saginaw, Mich. Filed Dec. 12, 1892. Serial No. 454,957. (No model.)



*Claim.*—1. In a band re-sawing machine, the combination with a tilting frame and feed rolls supported on said frame, of a horizontal friction disk secured to the end of a vertical shaft connected to the gearing of the feed rolls and journaled in and supported by a bracket depending from the tilting frame a friction wheel engaging the friction disk and adapted to be moved laterally across the disk, and means for operating the friction disk, all supported by a bracket depending from the tilting frame and all tilted simultaneously with it, substantially as specified.

2. In a band re-sawing machine, the combination with a main frame supporting shafts carrying driving wheels, an endless band saw running over the wheels, and a concave bed adapted to receive the frame supporting the feed rolls, of the adjustable frame for the feed rolls, the feed rolls, and the driving mechanism for the feed rolls supported by a bracket depending from the adjustable frame, consisting of a horizontal friction disk secured to the end of a vertical shaft connected to the feed roll gearing, a friction wheel engaging the friction disk and adapted to be moved laterally on the face of the friction disk, and a pulley on the shaft of the friction wheel; the main driving shaft, the friction wheel shaft and a line through the center of concavity of the bed, all being parallel and remaining parallel as the adjustable frame is tilted, substantially as specified.

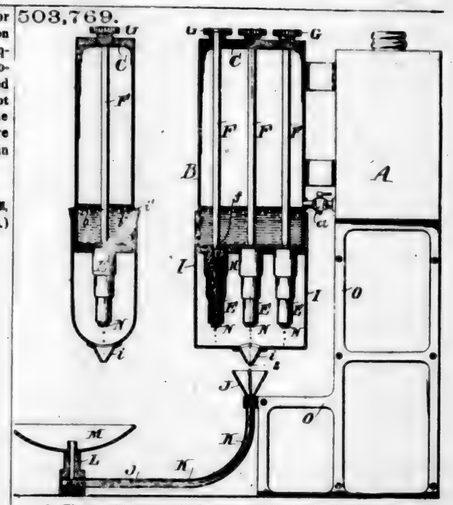
3. In a band re-sawing machine, the combination with a tilting frame carrying feed rolls and having depending therefrom the driving mechanism for the feed rolls, being a friction disk supported on the end of a vertical shaft, a friction wheel engaging the friction disk, and adapted to be adjusted laterally on the face of the friction disk, and a pulley on the friction wheel shaft, all depending from and suspended with the tilting frame in the main frame, and tilting simultaneously with the tilting frame, of the belt E, the pulley C and the intermediate belt tightener, substantially as specified.

## 503,769. VALVE AND PIPE ADJUNCT FOR GRADUATING THE FLOW OF OIL FROM TANKS. GEORGE R. MOORE, Philadelphia, Pa. Filed Nov. 23, 1892. Serial No. 452,940. (No model.)

*Claim.*—1. The combination of a reservoir having a discharge orifice, a drip tube in communication with said orifice and a packing in said tube substantially as described.

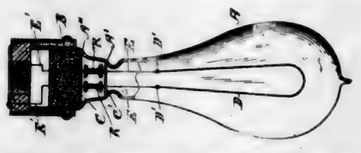
2. The combination of a reservoir having a number of discharge openings, drip tubes in communication with said openings, packing in said tubes and a cup having a discharge opening situated below said drip tubes substantially as described.

503,769.



3. The combination of a burner, the feed tube leading thereto, a wire in said tube, and a drip reservoir for delivering oil to said tube, substantially as described.

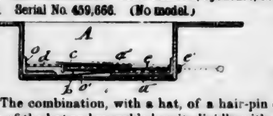
## 503,770. INCANDESCENT ELECTRIC LAMP. WILLIAM E. NICKERSON, Cambridge, Mass. Filed July 3, 1893. Serial No. 479,505. (No model.)



*Claim.*—1. In an incandescent electric lamp, in which the neck of the lamp bulb is closed air-tight by a fusible cement, a section of fusible metal in the circuit as described, whereby the electric current is cut off by the melting of said metal, if the lamp becomes overheated, substantially as and for the purpose set forth.

2. In an incandescent electric lamp, the combination of a glass globe A having a neck adapted to be sealed air-tight by a fusible cement, filament D, leading-in wires E E', E E', cement plug B, and section of fusible metal R in circuit, adapted to melt and break said circuit if the lamp becomes overheated, substantially as and for the purpose set forth.

## 503,771. HAT-FASTENER. JOHN PARSONS, Syracuse, N. Y. Filed Jan. 25, 1893. Serial No. 459,666. (No model.)



*Claim.*—1. The combination, with a hat, of a hair-pin confined within the crown of the hat and movable longitudinally without penetrating the hat, an elastic cord connecting the pin to one side of the interior of the crown, and a cord extending from the pin through the opposite side of the crown substantially as described and shown

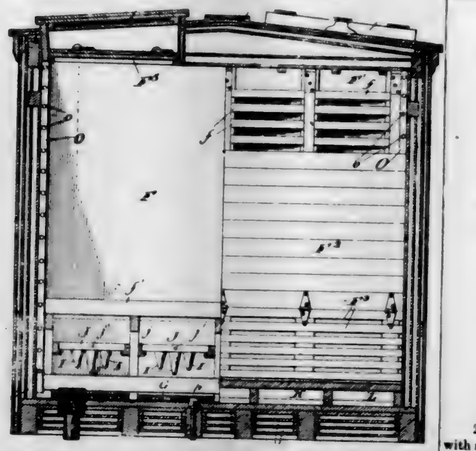
2. The combination, with a hat, of the plate —*a*— provided with the sleeve —*a'*—, the rod —*b*— sliding in said sleeve, the pin —*c*— attached to said rod, the elastic cord —*d*— connecting said rod to one side of the hat, and the cord —*e*— connected to the head of the pin and passing movable through the side of the hat back of the head of the pin, as set forth.

3. The combination, with the hat, of the plates —*a*— and —*o*— attached to opposite sides of the interior of the hat, strings —*a'*—*a'*— connecting the adjacent ends of said plates, the sleeve —*a'*— on the plate —*a*—, the rod —*b*— sliding in said sleeve, the pin —*c*— attached at its head to one end of said rod and pointing toward the opposite end thereof, the elastic cord —*d*— connecting the rod —*b*— to the plate —*o*—, and the cord —*e*— connected to the head of the pin and

passing movable through the adjacent side of the hat, substantially as set forth and shown.

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**503,772.** REFRIGERATOR-CAR. JOHN PLAYER, Topeka, Kans. Filed Feb. 2, 1893. Serial No. 460,712. (No model.)



*Claim.*—1. In a refrigerator car, the combination of an ice box, a stationary pan at the floor of the car beneath such ice box, and a trough rotatably supported at a point beneath such pan and ice box, substantially as described.

2. In a refrigerator car, the combination of an ice box, a series of troughs arranged one within the other and supported beneath the box, such troughs communicating with each other, whereby as the water escapes from the box it will pass successively through the various troughs in the series before escaping from the car, substantially as described.

3. In a refrigerator car, the combination of an elevated ice tank having a bottom provided with openings for the escape of water, a pan beneath such tank, and a series of double troughs supported between such bottom and the pan and communicating with each other, whereby the water which passes from the tank passes through the series of troughs before reaching the pan, substantially as described.

4. In a refrigerator car, a series of troughs placed one within the other, open at their tops, and provided with discharge orifices in their sides, whereby the water falls into the first trough, accumulates therein until it reaches the orifices in its sides, then passes into the next trough, similarly accumulating therein until it reaches the discharge orifices, out through which it passes substantially as described.

5. In a refrigerator car, a series of substantially V-shaped troughs placed one within the other, the innermost trough in the series being open at its top and provided with discharge orifices in its sides, the remainder of the series of troughs being all provided with discharge orifices, whereby the water will accumulate in each successive trough until it reaches the discharge orifices through which it will pass from one trough to another throughout the series, thereby maintaining one or more bodies of cold water within the car substantially as described.

6. In a refrigerator car, the combination of an elevated ice-box, and a series of communicating troughs placed one within the other and carried by a frame pivoted beneath such box, substantially as described.

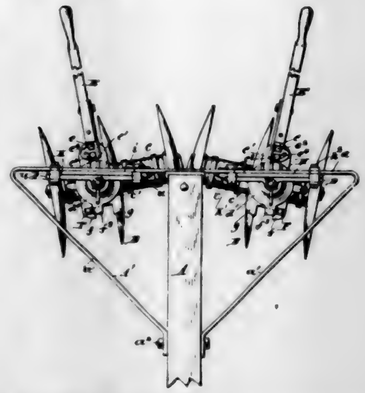
7. In a refrigerator car, the combination of an elevated ice box communicating with the car, a duct beneath the floor communicating with the space beneath the ice box and the space within the car, and a series of troughs placed between the bottom of the ice box and the floor of the car to maintain a body of cold water at this point, whereby the air passing into the duct is brought into contact with the troughs, substantially as described.

8. In a refrigerator car, the combination of an ice box, a stationary frame placed at a point beneath the bottom of this box, another frame rotatably mounted in the stationary frame and a series of communicating troughs supported in the rotating frame, substantially as described.

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**503,773.** DISK HARROW. EDWARD PRIDMORE, Batavia, N. Y., assignor to the Johnston Harvester Company, same place. Filed Nov. 2, 1891. Serial No. 410,622. (No model.)

*Claim.*—1. The combination with the harrow frame, of disk gangs connected with said frame by upright pivots, handles secured to said gangs and projecting rearwardly therefrom, and stops whereby one angular position of each gang is marked, while the gangs are otherwise free to be turned on their pivots by means of the handles, substantially as set forth.



2. The combination with the harrow frame, of yokes connected with said frame by vertical pivots, disk gangs journaled in said yokes, rearwardly extending handles which are pivoted to said yokes, and whereby the position of the handles with reference to the disk gangs can be adjusted, and means whereby the handles can be secured in their adjusted positions, substantially as set forth.

3. The combination with the harrow frame, of a pivoted yoke, a disk gang journaled in said yoke, and a movable stop provided with different faces whereby the turning movement of the yoke can be arrested at different points, substantially as set forth.

4. The combination with the harrow frame provided with a bracket, of a yoke pivoted to said bracket, a disk gang journaled in said yoke, and a revoluble stop arranged on said yoke and adapted to engage against said bracket, substantially as set forth.

5. The combination with the harrow frame provided with a bracket, of a yoke pivoted to said bracket, a disk gang journaled to said yoke, a revoluble stop arranged on said yoke and provided with flat sides arranged at different distances from the center of the stop and adapted to strike against the bracket, substantially as set forth.

6. The combination with the harrow frame and a bracket attached to said frame and provided with an arm or yoke pivoted to said bracket and provided with lugs on opposite sides, a bolt journaled in one of said lugs and having an irregular sided head adapted to strike one side of said arm, an ear formed on said arm and adapted to strike against the opposite lug, and a disk gang journaled on said yoke, substantially as set forth.

7. The combination with the harrow frame, of gangs of concavo-convex disks, transverse brackets to which said gangs are attached, and longitudinal pivots connecting said brackets with the harrow frame and arranged over the convex ends of the gangs, whereby the weight of the frame and load is applied to the convex ends of the gangs, substantially as set forth.

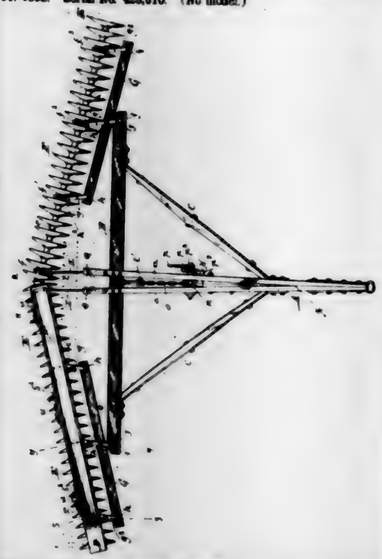
8. The combination with the harrow frame and the disk gang, of a carrier plate secured to said frame and provided with a vertical series of openings, a movable bracket provided with a corresponding opening, and guided with one end upon said plate, a horizontal pivot bolt passing through the bracket and the carrier plate and frame, a fastening pin passing through the corresponding openings of the bracket and carrier plate, and a yoke connected with said bracket by a vertical bolt and provided with journals for the disk gang, substantially as set forth.

9. The combination with the harrow frame and the disk gang, of a carrier plate arranged in front of said frame and provided at one end with bosses, a bar arranged in rear of said frame and secured to said bosses, a clamping bolt arranged in the opposite end of said carrier plate and bearing against said frame, a bracket guided upon one end of the carrier plate by a bar secured to said bosses, a horizontal bolt pivotally attaching the opposite end of the bracket to the carrier and said frame, a hook formed on the carrier plate and overhanging the bracket, and a yoke pivoted to said bracket by a vertical bolt and provided with journals for said disk gang, substantially as set forth.

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**503,774.** DISK HARROW. EDWARD PRIDMORE, Batavia, N. Y., assignor to the Johnston Harvester Company, same place. Filed Apr. 11, 1892. Serial No. 428,610. (No model.)



*Claim.*—1. The combination with the harrow frame, of transverse equalizing bars arranged in rear of the harrow frame, disk gangs arranged in rear of the equalizing bars, longitudinal straps extending from the harrow frame rearwardly to the middle portion of the equalizing bars and connected with the frame and bars by vertical pivots, and longitudinal links and vertical pivots connecting the end portions of the equalizing bars with the disk gangs, substantially as set forth.

2. The combination with the harrow frame, of transverse equalizing bars arranged in rear of the harrow frame, disk gangs arranged in rear of the equalizing bars, longitudinal straps extending from the harrow frame rearwardly to the middle portions of the equalizing bars and connected with the frame and bars by vertical pivots, longitudinal links and vertical pivots connecting the end portions of the equalizing bars with the disk gangs, and longitudinal draft bars connecting the inner ends of the disk gangs with the harrow frame, substantially as set forth.

3. The combination with the disk gangs and the draft bars connected with the inner portions thereof, of a harrow frame provided with a divided pole having its rear portions projecting rearwardly beyond the harrow frame over the draft bars, and provided on their under-sides with filling pieces, whereby the upward movement of the draft bar is restrained, substantially as set forth.

4. The combination with the disk gang, the gang plank, the scraper bar and the scraper, of a shifting lever connected with the scraper bar and pivoted to the gang plank, a stationary support mounted upon the gang plank, and a weighted lever pivoted to the shifting lever and connected with said stationary support, whereby the movement of the shifting lever reverses the position of the weighted lever, substantially as set forth

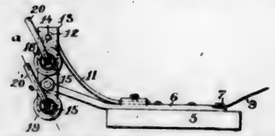
5. The combination with the gang of disks, the gang plank, the scraper bar and scrapers, of a shifting lever pivoted upon the gang plank and connected at its lower end with the scraper bar, a weighted lever pivoted to the shifting lever and provided with a slot in its short arm, and a stationary pin mounted upon the gang plank and engaging in said slot, substantially as set forth.

6. The combination with the gang of disks, the gang plank, the scraper bar and scrapers, of a loop secured to the gang plank and provided with an inwardly projecting pin, a shifting lever pivoted upon said pin and connected at its lower end with the scraper bar, a weighted lever pivoted upon said shifting lever and provided with a slot in its short arm, and a bracket formed on said loop and provided with a stationary pin which engages in said slot, substantially as set forth

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**503,775.** ELECTRICAL CONTACT DEVICE. JAMES E. PRITCHARD, Providence, R. I. Filed Mar. 20, 1893. Serial No. 466,934. (No model.)

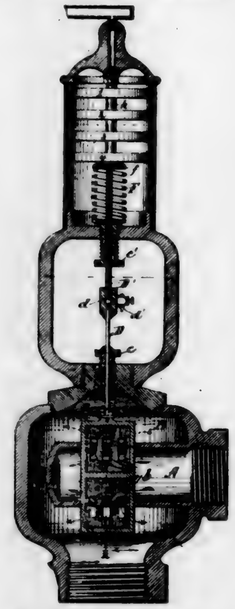
*Claim.*—1. In an electric contact device, peripherally-grooved trolley-wheels mounted in pairs on pivoted-plates electrically connected with one arm of a circuit, and springs for exerting a strain on the plates, as described.



2. The combination with the insulating-base 5, the arms 6—6 secured thereto having the hubs 10—10 and the springs 11—11 secured to the arms and furnished with the stops 12—12, of the plates 13—13 pivoted to the hubs 10—10 having the pins 14—14, the stud-shafts 15—15 secured to the plates 13—13 and having the lubricating-chambers 16—16 and outlets 17, the lubricating-tubes 20—20 secured to said shafts, and the grooved trolley-wheels 18 and 19 journaled on the shafts, as and for the purpose described

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**503,776.** PUMP-GOVERNOR. ALFRED J. SAXE, Chicago, Ill. Filed Feb. 10, 1893. Serial No. 461,766. (No model.)



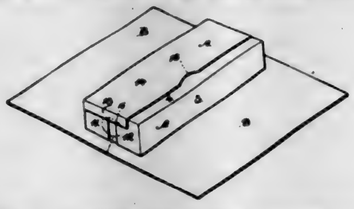
*Claim.*—1. The combination with a governing valve of a steam pump, of a valve stem having its outer end rigidly fixed and being adapted to actuate the valve by its expansion and contraction, a series of internally connected hollow expansible diaphragms forming an integral part of the stem and in position transverse to its length, and means of communication between the pressure to be regulated and the diaphragm chambers whereby the action of the valve is varied with the variations of the pressure, substantially as described, and for the purpose specified.

2. The combination with a steam pump having a regulating valve adapted to be closed by the lengthening and opened by the shortening of its stem, of a series of hollow expansible diaphragms forming a part of the valve stem and rigidly united by tubular connections, the remoter end of the valve stem being rigidly fixed and being tubular and connecting the remotest diaphragm with the pressure tank, substantially as described and for the purpose specified.

3. The combination with a steam pump having a regulating valve adapted to be closed and opened by the longitudinal expansion and contraction of its stem and with a series of hollow, rigidly united and internally connected expansible diaphragms forming a part of the valve stem and being in communication with the pressure tank, of an adjustable spring tending to resist the expansion of the diaphragms, substantially as described and for the purpose specified.

4. The combination with a regulating valve of a steam-pump, of a hollow valve-stem having its chamber in communication with the pressure tank and being adapted by its longitudinal expansion to control the valve, and a drain cock leading from the valve stem chamber whereby the pressure in the tank may be utilized to cleanse said chamber, substantially as described.

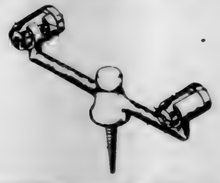
**503,777. WRAPPER FOR BANK-BILLS.** GEORGE A. SUTTON, Brooklyn, N. Y. Filed Apr. 12, 1893. Serial No. 470,048. (No model.)



*Claim.*—1. A wrapper formed of heavy paper or cardboard and having a bottom, sides, two covers and flaps at the ends of the bottom and sides and one cover, to fold up around the package of bills or other articles and to be sealed or otherwise secured at the top and where the ends lap on each other, and the exterior wrapper of strong, heavy paper fastened to the bottom portion of the folding box and adapted to being folded to inclose the box after such box has been secured around its contents, substantially as set forth.

2. The wrapper or package for bank bills and other articles, composed of a box of cardboard or similar material, with a bottom, sides, and two covers folding one on the other, there being end flaps that lap upon each other leaving a central space for the application of sealing wax that comes in contact with all the end flaps for holding them together, and a wrapper of heavy paper fastened to the bottom of the box and adapted to being wrapped around the box and sealed after the box has been entirely closed, substantially as set forth.

**503,778. INSULATOR FOR ELECTRIC WIRES.** WILLIAM D. TRIBBLE, Hancsville, Md. Filed Apr. 14, 1893. Serial No. 470,288. (No model.)



*Claim.*—1. In an insulator-supporting device for electric wires, the combination of the socket, interiorly circular in cross section, having a longitudinal slot, and a slot transverse to said longitudinal slot and extending partly around the socket; and an insulator exteriorly round in cross-section fitting within the socket and adapted to turn therein and having a boss fitting within the transverse slot of the socket.

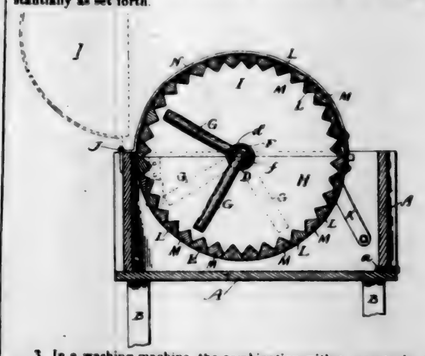
2. As an article of manufacture an insulating supporting device for electric wires, comprising integral arms; sockets upon the arms; insulators fitting within the sockets; and a screw rigidly secured to and projecting from the said arms, whereby the said arms can be used as lever-handles for driving the screw to secure the device in position.

3. In an insulating supporting device for electric wires, the combination of a conical socket having a longitudinal slot and an inclined slot extending from the longitudinal slot partly around the socket; and a split, conical insulator having a longitudinal bore and adapted to turn within the socket, and having an external boss adapted to engage the inclined slot of the socket.

**503,779. WASHING-MACHINE.** HENRY DE WERDT, Chicago, Ill. Filed Feb. 13, 1893. Serial No. 462,068. (No model.)

*Claim.*—1. In a washing machine, a receptacle constructed of heads having notches and having projecting sides lying in the planes of the adjacent sides of the intervening notches in their edges, a number of strips placed in alternate notches, a number of strips placed in the intervening notches and bearing partly on the heads of the receptacle and partly on the first named strips, and means for securing said strips in place, substantially as set forth.

2. In a washing machine, the combination with the box A and a shaft D journaled therein, of a drum formed in two half sections H and I, the lower of which is suspended from said shaft, so as to be movable upon said shaft to an inverted position means for holding the lower section of the drum against tilting, while in use a hinge connecting the upper section of the drum to the box A, and suitable beaters situated within the receptacle and carried by the shaft, substantially as set forth.

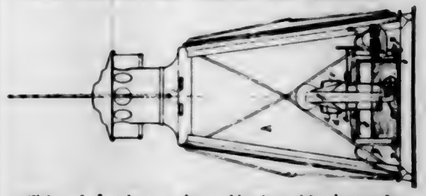


3. In a washing machine, the combination with a receptacle, of a shaft, a number of beaters supported thereby and projecting therefrom, said beaters being free to be moved by gravity with relation to the shaft as it revolves, substantially as set forth.

4. In a washing machine, the combination with a receptacle, of a shaft having a number of openings extending diametrically through it, a beater fitting in each of said openings, and means for limiting the endwise movement of the said beaters, said beaters being free to be moved endwise by gravity with relation to the shaft as it revolves substantially as set forth.

5. In a washing machine, the combination with a receptacle, of a shaft having a number of openings extending diametrically through it, a longitudinally movable beater occupying each of said openings and having longitudinal slots, and pins supported by the shaft and passing through said slots, substantially as set forth.

**503,780. LANTERN.** ALBERT ZIMMERMANN, Stuttgart, Germany. Filed June 1, 1893. Serial No. 475,907. (No model.)



*Claim.*—1. In a lantern, the combination, with a lantern frame, of inverted V-shaped wires fastened on the bottom of the lantern frame, and a lamp provided with protecting eyes that are guided on the inner shanks of said wires, substantially as set forth.

2. The combination, with a lantern frame, of inverted V-shaped wires held on the bottom of the same at the corners, a lamp having eyes mounted to slide on said wires, and a tilting burner cap on the burner of the lamp, substantially as set forth.

3. The combination, with a lantern frame, of a lamp held on the bottom of the same by wires fastened to the lantern frame and passing through eyes of the lamp, a burner shell, and a sliding and tilting burner cap in said shell, substantially as set forth.

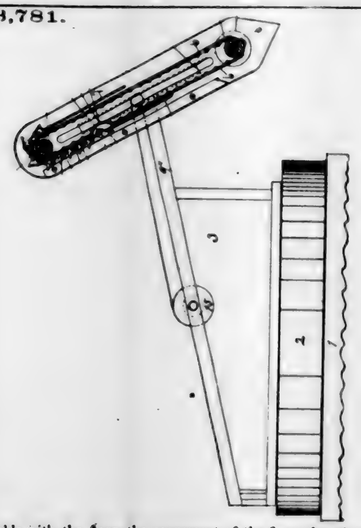
4. The combination, with the lantern frame, of a lamp, wires fastened on the bottom of the lantern frame and passing through eyes of said lamp, a burner shell on the lamp, the top of which burner shell is bent inward to form a flange, and a conical burner-cap in said shell, the bottom edge of said cap being bent outward to form a flange, to permit said cap to slide up and down in the shell and to be tilted in the same, substantially as set forth.

**503,781. ELEVATOR.** WILLIAM F. AUSTIN, Albany, N. Y. Filed Mar. 21, 1893. Serial No. 467,024. (No model.)

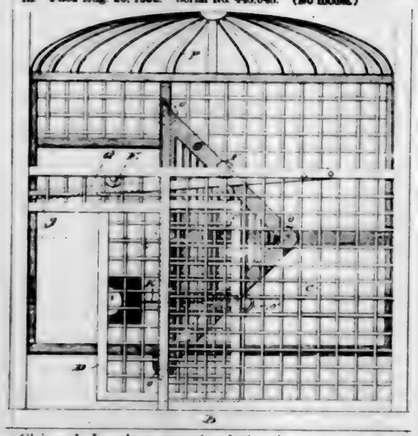
*Claim.*—An elevator having movable conveyers in combination with a flexible adjustable floor, said floor having a trap or opening in it movable with the floor, the movement of the floor changing the point of discharge of the conveyers and having means whereby the floor may be adjusted substantially as described.



**503,781.**



**503,782. DOOR-OPERATING DEVICE.** PAUL BERGER, Chicago, Ill. Filed Aug. 20, 1892. Serial No. 443,643. (No model.)

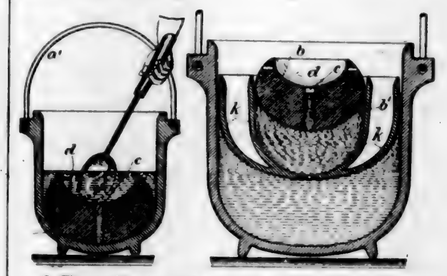


*Claim.*—1. In a door operating device, the combination with a door having hangers applied to its top, travelers carried by said hangers, an inclined track or way for said travelers, the track rail having locking notches, and the door having a locking bar or dog, means, as a spring, normally tending to thrust the dog into locking engagement with the notches on the rail, and means for moving the dog against the action of the spring whereby to unlock the door, substantially as described.

2. In a door operating device for elevators, the combination, with the elevator shaft having openings therein, sliding doors applied to said openings, a lock applied to the front edge of the door, a bar connected with said lock and extending across the door, an anti-friction roller carried by said bar at the rear edge of the door, an elevator cage having an opener loosely mounted thereon and normally held in contact with the wall of the cage by a suitable retaining spring, and means for thrusting said opener outwardly from the wall into the plane of the roller on the door; substantially as described.

**503,783. POT FOR MOLTEN METAL.** CHARLES BUSH, Newburg, N. Y. Filed Sept. 14, 1893. Serial No. 445,638. (No model.)

*Claim.*—1. The combination with a melting pot, of a floating seal adapted to exclude the surface of the melted material from atmospheric action, and having a receptacle in the upper surface from which the melted material can be dipped and a passage way by which the material flows into said receptacle as the seal is depressed substantially as specified.



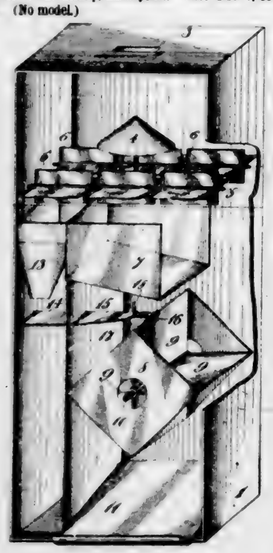
2. The combination with a melting pot for metal, of a floating seal of metal or other suitable material having a convex under side, and a concave upper side forming a receptacle from which the molten metal is dipped when the seal is pushed down substantially as set forth.

3. The combination with a melting pot for metal having a curved bottom, of a floating seal of metal, or other suitable material having a convex under side conforming approximately to the bottom of the pot, a concave upper side forming a receptacle from which the molten metal is dipped when the seal is pushed down there being a channel through the seal for the molten metal to pass through into the receptacle, substantially as and for the purposes set forth.

4. The combination with a melting pot for metal having a curved bottom, of a floating seal *b*, of metal, or other suitable material having a convex under side *b'* a depression or concavity *d*, in the upper side forming a receptacle and a channel *c*, through said seal, and an auxiliary floating seal *k*, with a central perforation substantially as and for the purposes set forth.

5. The combination with a melting pot, of a floating seal having a receptacle in the upper surface from which the molten material can be dipped and a channel for supplying such receptacle as the seal is depressed, and an auxiliary floating seal surrounding the said seal and having an open center for the molten material and in which floats the main seal substantially as specified.

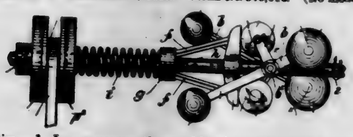
**503,784. FORTUNE-TELLER.** JOHN CARET, New York, N. Y., assignor to W. B. Bishop, same place. Filed Feb. 7, 1893. Serial No. 461,305. (No model.)



*Claim.*—A fortune teller, consisting of a case perforated for the reception of a token, a cone fixed beneath said perforation; a series of rotatable fortune wheels mounted below said cone, and conducting chutes beneath said fortune wheels, the whole combined and arranged to operate, substantially as shown and described.

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**503,785. STEAM-ENGINE GOVERNOR.** EUGEN CONRADY, Morganton, N. C. Filed Nov. 7, 1890. Serial No. 370,618. (No model.)



*Claim.*—1. In a governor, the combination of the shaft, the yieldingly supported crosshead thereon, and the levers mounted intermediate of their ends to oscillate on pivots or bearings attached to the shaft and located at opposite sides thereof, and having weights at both ends, the said levers having arms extending from their pivots at right angles to the direction of the length of the levers and bearing on the top surface of the crosshead, as set forth.

2. The combination of the shaft or spindle, the crosshead fitted to slide thereon and rotatively engaged therewith, a spring yieldingly supporting said crosshead and supported by a fixture on the shaft, and the levers mounted intermediate of their ends to oscillate on pivots at opposite sides of the shaft, each lever being provided at both ends with weights, said levers being also provided at intermediate points with arms having anti-friction rollers bearing on the top surface of the crosshead, as set forth.

3. The combination of the shaft, the cross head rotatively engaged with the shaft and adapted to slide thereon, the weighted levers mounted to oscillate on pivots at opposite sides of the shaft, a series of friction pulleys on said shaft, one being affixed to the shaft, another loose thereon, and the third adapted to rotate with and slide upon the shaft, said loose pulley being connected with a device for transmitting motion, and a spring interposed between the cross head and the sliding pulley whereby the motion of the cross head is caused to impart pressure to the sliding pulley, and the latter is caused to co operate with the fixed pulley in rotating the loose pulley by friction, as set forth.

4. The combination of the shaft, the cross-head rotatively engaged therewith, and adapted to slide thereon, the levers mounted intermediate of their ends on pivots at opposite sides of the shaft, provided with weights at both ends, and having projections which bear on the top surface of the cross-head the said weights being so adjusted that the levers are not actuated by gravitation, a sprung on said shaft yieldingly supporting the crosshead, and means for adjusting said spring to vary the sensitiveness of the governor, as set forth.

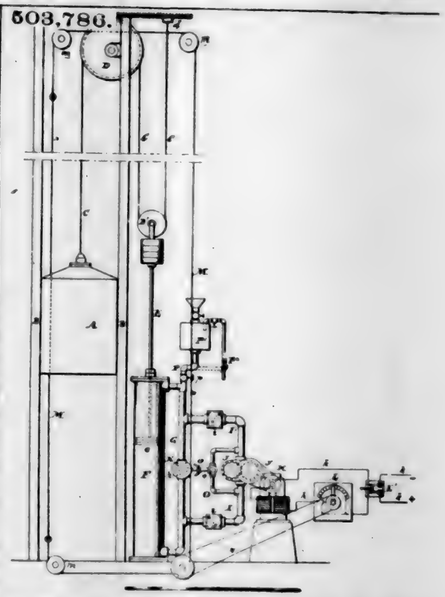
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**503,786. ELEVATOR.** DARWIN E. CROSBY, Philadelphia, Pa. Filed Feb. 14, 1893. Serial No. 462,277. (No model.)

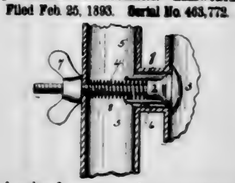
*Claim.*—1. In an elevator, the combination of the cage and lifting cable, a water cylinder, a piston working in said water cylinder and operating the cable, a pipe connecting the two ends of the water cylinder, a valve in said pipe, means extending from the cage to the valve for controlling it, a passageway communicating with the two ends of the cylinder about the valve, a rotary pump arranged to circulate the water through the passageway from one end of the cylinder to the other end thereof, one or more check valves in the passageway which contains the pump to prevent the water circulating through it except in one direction, means to control the operation of the pump from the elevator cage, a shunt pipe about the pump, a valve in said shunt pipe, and operative connections between the valve in the shunt pipe and the valve in the pipe connecting the ends of the cylinder.

2. In an elevator, the combination of the cage and lifting cable, a water cylinder, a piston working in said water cylinder and operating the cable, a pipe connecting the two ends of the water cylinder, a valve in said pipe, means extending from the cage to the valve for controlling it, a passageway communicating with the two ends of the cylinder about the valve, a rotary pump arranged to circulate the water through the passageway from one end of the cylinder to the other end thereof, one or more check valves in the passageway which contains the pump to prevent the water circulating through it except in one direction, means to control the operation of the pump from the elevator cage, a shunt pipe about the pump, a valve in said shunt pipe, operative connections between the valve in the shunt pipe and the valve in the pipe connecting the ends of the cylinder, power devices to continually operate the rotary pump, and means leading from the cage to vary the speed of the rotary pump.

**503,786.**



**503,787. VALVE FOR COOKERS.** ELLSWORTH P. DOTY, Woodsport, N. Y. Filed Feb. 25, 1893. Serial No. 463,772. (No model.)



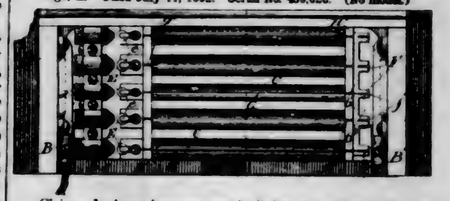
*Claim.*—1. A valve for a steam pipe, comprising a body having a head upon one end, guide-pieces, a threaded shank, a thumb-screw adapted to engage therewith, and a spring interposed between the valve and the thumb-screw, as set forth.

2. The combination with a cooking compartment, the steam pipe, and a duct leading therefrom, of a valve provided with guide-pieces adapted to travel in said duct, and having a head on its inner end, a threaded shank on its outer end, a thumb-screw adapted to engage therewith, and a spring interposed between the valve and thumb-screw, as set forth.

3. The combination with a cooking compartment, a steam pipe, a duct leading therefrom, of a valve having guide-pieces, a head upon its inner end, a threaded shank, a thumb-screw adapted to engage therewith, a spring interposed between the valve and the thumb-screw, and a lug upon the inner face of the duct to prevent the valve from rotating when the set screw is turned, as set forth.

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**503,788. LIGHTNING-ARRESTER.** WILLIAM LE R. EMMET, Chicago, Ill. Filed July 11, 1892. Serial No. 439,626. (No model.)



*Claim.*—1. As an improvement in lightning arresters, the combination of a main portion containing a single pair of terminal connections for line and ground, forming a receptacle and protection for the arrester proper and adapted to isolate the fuse chambers in the arrester proper from each other and the electrodes, and the arrester proper containing several sets of electrodes and fuse wires, adapted to be easily inserted or removed from the receptacle, the whole offering several paths of discharge for one shock of lightning, substantially as described.

2. As an improvement in lightning arresters, an arrester proper composed of several pairs of electrodes one set of which are connected together electrically, and with a line wire terminal, and the opposite set independently connected with the ground contact piece, the individual connections between the electrodes and the ground contact being contained in separate compartments of insulating material, forming part of the arrester proper, and which serves to protect each from the action of the other, substantially as described.

3. As an improvement in lightning arresters, the combination of a main portion containing a single pair of terminal connections for line and ground, and forming a receptacle and protector for the arrester proper, and an arrester proper composed of several pairs of electrodes, one set of which are connected together electrically and with the line wire contact piece, and the opposite set independently connected with the ground contact piece, individual fuse connections between the electrodes and the ground contact, and contained in separate compartments of insulating material, forming part of the arrester proper, and which serves to protect each fuse from the action of the other, substantially as described.

4. As an improvement in lightning arresters, the combination of a main portion containing the terminal connections with the line and ground wires, and forming a receptacle for the arrester proper, the arrester proper adapted to be easily inserted or removed therefrom, and composed of two or more pairs of electrodes, one set of which are connected together electrically and connected with the normal electric circuit, and a series of fine metallic wires, connecting the opposite of electrodes independently with the ground, substantially as described.

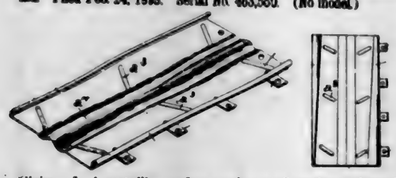
5. As an improvement in lightning arresters, the combination of a main portion containing a single pair of terminal connections for line and ground, and forming a receptacle for the arrester proper, and adapted to isolate the fuse chambers in the arrester proper from each other, apertures in the cover extending in line with and adjacent to the fuse chambers, hinged flaps protecting the apertures, and an arrester proper provided with several fuse chambers, substantially as described.

6. As an improvement in lightning arresters, the combination of terminals B, B' with their grooved rails, a metallic contact piece *b* forming the electrical connection between one set of the electrodes, the flange $b^3$ for contacting the line wire terminal, the metallic contact piece *b'*, with its flanges $b^3$, and the series of fuse wires G connecting the other set of electrodes with the contact piece *b'*, the whole forming several arresters between a single pair of contact flanges, substantially as described.

7. As an improvement in lightning arresters, the combination of a single pair of terminals for line and ground, a single pair of contact flanges adapted to engage the same, two or more arresters between and adapted to electrically connect the contact flanges, substantially as described.

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**503,789. METALLIC ROOFING.** JOHN W. FALLON, Baltimore, Md. Filed Feb. 24, 1893. Serial No. 463,550. (No model.)



*Claim.*—1. A metallic roofing made up of sections adapted to overlap each other—each of said sections comprising a sheet-metal plate having an upturned curl on each of the two parallel side-edges—said curls being tapered in opposite directions, and one of said curls being overturned inwardly and the other being overturned outwardly, with respect to the section, as described.

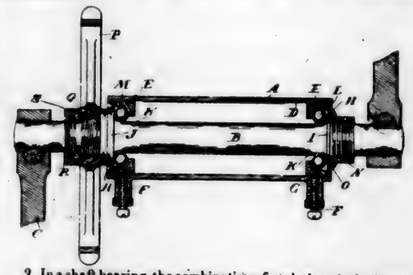
2. A metallic roofing made up of sections adapted to overlap each other—each of said sections comprising a sheet-metal plate having central, longitudinal corrugations therein; two parallel up-turned side-flanges; and a curl on each flange—said curls being tapered in opposite directions; and diagonal ridges struck up in the metallic plate between the central corrugations and the side flanges as described.

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**503,790. CRANK-SHAFT AND BEARING FOR BICYCLES.** PETER GERDSEN, Toledo, Ohio. Filed Mar. 16, 1893. Serial No. 466,192. (No model.)



*Claim.*—1. In a shaft bearing, the combination of a tube interiorly screw threaded at the ends, race rings engaging said threaded portions having ball races on their outer ends, a shaft having collars with ball races on their inner faces, one collar being of a diameter less than the inner bore of the rings and the balls in the races, substantially as described.

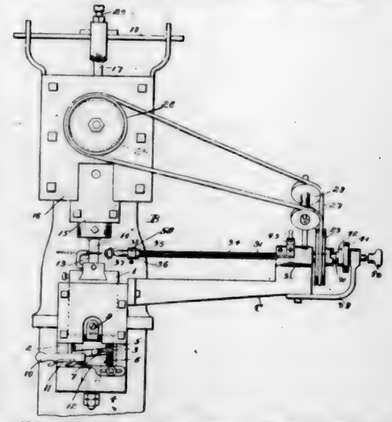


2. In a shaft bearing, the combination of a tube interiorly threaded at the ends, race rings engaging in said threaded portions having ball races on their outer ends, a shaft having collars near the ends, ball races on the inner faces of the collars, one collar being of a diameter less than the inner bore of the rings, the balls in the races, and the nut N having flange O, substantially as and for the purpose described.

3. In a shaft bearing, the combination of the screw threaded adjustable rings, of a set screw for holding them in their adjusted position, and a soft block interposed between the end of the set screw and the screw on the rings, substantially as described.

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**503,791. SPOKE-SWAGING MACHINE.** PETER GERDSEN, Toledo, Ohio. Filed Apr. 4, 1893. Serial No. 468,970. (No model.)



*Claim.*—1. In a metal swaging machine, the combination with the dies, of a chuck, a screw shaft on which the chuck is mounted, a bearing for the shaft, a screw block on the bearing engaging the shaft, a spring for disengaging the block from the shaft, a trip for releasing the spring and an abutment carried directly by the shaft for engaging the trip substantially as described.

2. In a metal swaging machine, the combination with the dies, of a chuck, a screw shaft on which the chuck is mounted, a stationary bearing for the shaft, a screw block hinged to the bearing, a spring for normally holding the block and bearing apart, a catch for locking the same together, a pivoted trip, and an inclined flange on the shaft, for engaging the trip, substantially as described.

3. In a metal swaging machine, the combination with a hammer die, of an anvil die, and means for adjusting the anvil die, consisting of a plurality of cam rings, means for adjusting one ring independently of the other, and a lever for moving the other ring, substantially as described.

4. In a metal swaging machine, the combination with a standard, of an anvil die, a vertically reciprocating hammer die, a cross-spring supported on the standard, a cross head located below and carried by said cross-spring, having the hammer die secured thereto, guides on the standard in which the cross head works, a link connection be-

tween the spring and cross head, a roller in the cross head, a shaft passing through the cross head, and a cam on the shaft engaging the roller, substantially as described.

5. In a metal swaging machine, the combination with the chuck, a screw shaft, to which said chuck is secured, a bearing for the shaft, a screw block, on said bearing, a spring hinge uniting the block, forming a spring for normally holding the block out of engagement with the shaft, a latch for engaging the block with the shaft, and means on the shaft for tripping the latch, substantially as described.

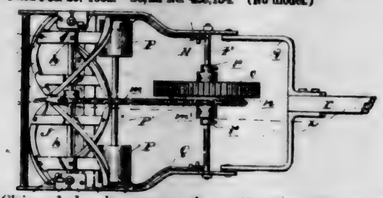
6. In a metal swaging machine, the combination with the chuck, a screw shaft to which said chuck is secured, a sleeve keyed on the shaft, an actuating wheel for the shaft, loosely journaled on said sleeve, a clutch keyed on said sleeve, for engaging the actuating wheel, and a hand wheel swiveled on the clutch for actuating the same, substantially as described.

7. In a spoke swaging machine, the combination of the frame, the anvil die, the anvil block, in which said die is supported, moving in vertical guides, the stem 3 on said block, the rings 5 and 6 having complementary spiral cam ways, means for adjusting one of the rings, and a lever for rotating the other ring to raise and lower the anvil block, substantially as described.

8. In a spoke swaging machine, the combination with the frame, an anvil die, an anvil block, supporting said die, a stem on said block, rings having complementary spiral cam ways, a lever for rotating one ring to raise and lower the anvil block, and a spring pawl for the lever, substantially as described.

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**503,792. LAWN-MOWER.** SIMON P. GRAHAM, Detroit, Mich. Filed Feb. 29, 1892. Serial No. 423,154. (No model.)



*Claim.*—1. In a lawn mower, the combination with a frame consisting of rigid side bars having their rear portions bent slightly inward, of a drive shaft journaled in the rear ends of the frame, a single drive wheel mounted on the shaft between the side bars, a sprocket wheel rigid on the drive wheel, ground rollers adjustably secured to the frame in advance of and below the shaft, a stationary knife on the frames, a cutter shaft extending entirely across the front portion of the frame, and journaled at its opposite ends only, on the side bars blades rigid on the shaft extending from points adjacent to the center to points near the outer ends thereof, a sprocket wheel centrally secured on the cutter shaft, a sprocket chain passing over the sprocket wheels and means for adjusting the chain, substantially as described.

2. In a lawn mower, the combination with the frame consisting of single piece side bars, of a driving shaft journaled in the side bars, a driving wheel on the shaft, a sprocket wheel centrally secured on the shaft, ground rollers on the frame in advance of the shaft, a fixed knife on the frame a rotary cutter shaft extending entirely across the frame, and journaled at its opposite ends only on the side bars centrally separated blades rigid on the cutter shaft, a sprocket wheel directly on the shaft between the blades, and a sprocket chain passing over the sprocket wheels, substantially as described.

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**503,793. GAME APPARATUS.** FRANKLIN R. HOOKSOOK, New Haven, Conn. Filed Aug. 9, 1892. Serial No. 442,578. (No model.)



*Claim.*—1. A game apparatus comprising a support, a lower convex disk with continuous scalloped edge and pockets, and an upper concave disk with openings, around its center as set forth.

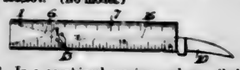
2. A game apparatus comprising a support, a lower convex disk with continuous scalloped edge forming pockets between the scallops and rim, and an upper concave disk with rim and openings, around its center as set forth.

3. A game apparatus comprising a support, a rotatable disk mounted thereon and provided with continuous scalloped edge forming pockets, and an upper concave disk with openings, around its center as set forth.

4. The game apparatus described, consisting of the base with vertical portion, a convex disk supported on the vertical portion and having continuous scalloped edge and rim forming pockets, the upper concave disk with openings around its center, and a sleeve separating the disks resting upon the vertical portion of the base, fitting a central, opening in the lower disk and supporting the upper one, and a vertical portion E passed through the vertical portion of the base and up within the upper disk, as set forth.

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**503,794. COMBINED PENCIL-SHARPENING AND ERASING IMPLEMENT.** OLIVER HOLDEN, Philadelphia, Pa. Filed Mar. 8, 1893. Serial No. 465,207. (No model.)



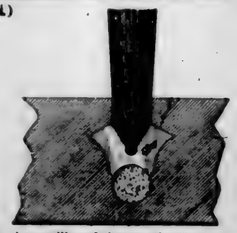
*Claim.*—1. In a combined erasing and pencil sharpening implement, the knife handle provided with scales the conical cup having an open extension or clearance adapted to receive the uncut crayon portion of the pencil, and opening into the space between the scales of said knife handle combined with a tangential blade arranged to remove the surrounding wood without cutting the crayon substantially as set forth.

2. In a pencil sharpening implement, the described and shown conical cup 2 and blade 4, in combination with the sheath or handle provided with scales 7 and 9 and blade 10, constructed and arranged substantially as shown and described.

3. In a pencil sharpening implement, the described and shown conical cup 2, and blade 4 in combination with the blade 10, abrasive slide 12, and connecting scale 7, 8 and 9 arranged to form a handle and sheath substantially as set forth.

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**503,795. BRISTLE-FASTENING FOR BRUSHES.** CHARLES M. KIMBALL, Auburndale, Ohio. Filed Dec. 2, 1892. Serial No. 453,840. (No model.)

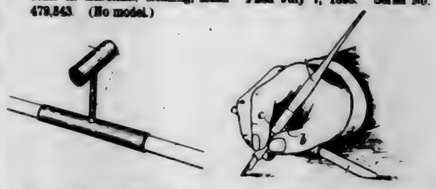


*Claim.*—1. A metallic tuft fastener having a central vertical slot, terminating at its lower end in an enlarged opening, for the purpose set forth.

2. A metallic tuft fastener consisting of a sheet metal plate, having three concaved sides and a slot terminating in its inner end, in an enlarged opening, for the purpose set forth.

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**503,796. APPLIANCE FOR TEACHING PENMANSHIP.** WILLIAM H. KINGMAN, Reading, Mass. Filed July 7, 1893. Serial No. 479,843. (No model.)



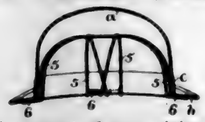
*Claim.*—The improved appliance for teaching penmanship, the same comprising a rod, an arm projecting from said rod at a point about midway of its length, and a pen-stock-holding tube or sleeve affixed to the outer end of said arm and standing substantially at a right angle with the rod, the relative arrangement of the said parts being such that, when a pen-stock inserted in said tube is grasped between the thumb and the first and second fingers, one end of the rod may rest on the third and fourth fingers, and the other end on the paper or



surface on which the pen bears, the pen-stock being thus caused to stand at the desired angle relatively to the body of the user, as set forth.

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**503,797. HAT-SUPPORT.** RICHARD MACOMB, Providence, R. I. Filed June 7, 1893. Serial No. 476,875. (No model.)



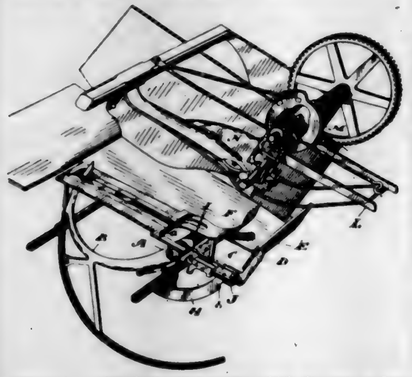
*Claim.*—1. A hat-supporting frame, consisting of radially-extending arms having bent ends adapted to support a hat from the brim.

2. A hat-support consisting of radially-extending and downwardly-curved spring-arms, the ends of which are bent outward, adapted to support a hat from the lower portion without contact with the crown thereof.

3. A hat-support, consisting of curved radially-extending arms 5—5, formed of spring metal, secured together at the central portions and furnished with the bent-ends 6—6 for engaging the hat-brim, as and for the purpose described.

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**503,798. HARVESTER-BINDER.** JOHN S. MERCER and WILLIAM GREATREX, Alliston, Canada, assignors to Mercer Bros. & Co., same place. Filed Oct. 20, 1891. Serial No. 409,287. (No model.)



*Claim.*—1. A hinged trip plate against which the grain to form the sheaf is packed, an upright extending from an arm journaled on the needle shaft and extending below the needle fixed to its shaft, a drop board hinged to the grain table and supported by an extension projecting from the journaled arm, substantially as and for the purpose specified.

2. A hinged trip plate against which the grain to form the sheaf is packed, an upright extending from an arm journaled on the needle shaft, a bolt J, connected to the journaled arm and arranged to engage with the curved plate H, in combination with a heel projecting from the needle, substantially as and for the purpose specified.

3. A bolt, J, connected to the arm, C, and supported by spring, K, a hook formed on the end of the bolt to engage with a curved plate, H, in combination with a heel projecting from the needle, substantially as and for the purpose specified.

4. An arm fixed to a spindle journaled in the knotter frame and arranged to engage with a cam wheel, an arm fixed to the opposite end of the said journaled spindle and arranged to support one end of the plate, V, which extends behind the tension plate, W, where it is supported by the pin Z, extending through the slot, *e*, in the knotter frame, T, in combination with the spring, X, stud, *g*, and nut, *h*, substantially as and for the purpose specified.

5. A knife, Y, pivoted on the inner side of the knotter frame, T, in combination with a pin, Z, extending from the push plate V, into a slot, *f*, made in the knife Y, substantially as and for the purpose specified.

6. A knife, Y, pivoted on the inner side of the knotter frame, T, and having a hook, *m*, formed on its back in combination with a pin, Z, extending from the push plate, V, into a slot, *f*, made in the knife, Y, substantially as and for the purpose specified.

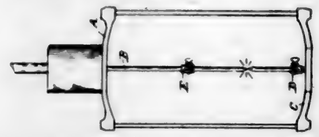
7. In a harvester binder, a vibratory pivoted knife Y having a hook *m*, and a tension plate W formed with an extension *o*, in combination with a push plate V provided with a hook *n* having its acting side slightly inclined as shown, substantially as and for the purpose specified.

8. A breast plate having a half moon recess, *q*, formed on one side of the cord slot, *r*, one end of the plate in which the half moon recess is formed projecting over the plate, *s*, fixed on the opposite side of the said slot and having a curved or hook-shaped point, *t*, projecting in the half moon recess, substantially as and for the purpose specified.

9. A breast plate having a half moon recess, *q*, formed on one side of the cord slot, *r*, one end of the plate in which the half moon recess is formed projecting over the plate, *s*, fixed on the opposite side of the said slot and having a curved or hook-shaped point, *t*, projecting into the half moon recess, the point, *v*, of which having a downward projection, *w*, formed on its bottom, substantially as and for the purpose specified.

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**503,799. ELECTRIC-ARC LAMP.** WALTER W. MILLARD, Fenton, Mich. Filed Apr. 3, 1893. Serial No. 468,867. (No model.)



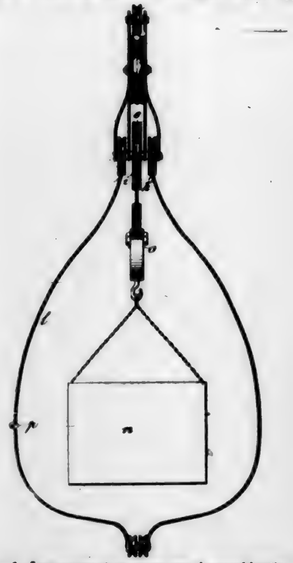
*Claim.*—1. In an electric arc lamp, the combination of the movable carbon rod, a cross head thereon, a detachable connection for the rod and cross head and two carbon sockets on said cross head, substantially as described.

2. In an electric arc lamp, the combination of the movable carbon rod having a socket at the end, a cross head having a central shank on said cross head adapted to be secured in the socket in the rod, and two sockets in the cross head adapted to receive carbons, substantially as described.

3. In an electric arc lamp, having a carbon rod with a terminal socket, and the frame having a carbon socket, of cross heads, adapted to be secured in said sockets, and sockets in the ends of the cross heads adapted to receive carbons, substantially as described.

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**503,800. CONVEYING APPARATUS.** THOMAS S. MILLER, South Orange, N. J. Filed Apr. 29, 1893. Serial No. 472,319. (No model.)



*Claim.*—1. In a conveying apparatus in combination, the head and tail cable supports, a cable extended between them, a loop depending from said cable, a load carriage and a fall rope; said loop being adapted to permit the passage of the load and fall and adapted to support the slack of the fall rope, substantially as described.

2. In a conveying apparatus in combination, a cable or trackway, a carriage, a fall rope, a guide connected with the carriage on each side of the fall rope, two ropes engaging with said guides and stretched between the cable supports and a series of loops suspended from said ropes and adapted to admit of the passage of the load and fall and support the slack of the fall rope, substantially as described.

3. In a hoisting and conveying apparatus, a load carriage, a fall rope whereby the load is suspended from said carriage, a cable or trackway whereby said carriage is supported, two auxiliary ropes parallel or nearly so with the cable or trackway, a fall rope carrier engaging with both of said auxiliary ropes whereby it is supported independently of said cable and means upon the load carriage whereby both of said auxiliary ropes are depressed as the cable is depressed under the load, substantially as described.

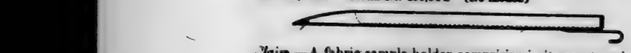
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**503,801. COMPOSITION OF MATTER FOR TEMPERING.** JOHAN E. MILLS, Chicago, Ill. Filed Mar. 3, 1893. Serial No. 464,568. (No specimens.)

*Claim.*—The herein-described composition of matter for the purpose set forth consisting of oak ashes, water, tallow, slaked lime, salt, ground horn and cyanide of potash combined in the proportions set forth.

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**503,802. FABRIC-SAMPLE HOLDER.** JOHN E. MCCARTHY, DENNIS W. MCCARTHY, and STEPHEN J. MCCARTHY, Laconia, N. H. Filed Mar. 18, 1893. Serial No. 466,584. (No model.)



*Claim.*—A fabric sample-holder comprising in its construction a receptacle for strips of samples, having a flat bottom, a top the forward end of which inclines downwardly meeting the bottom and forming a wedge-shaped inner end, a cover for the receptacle, and a catch connected with the receptacle to permit its withdrawal, as set forth.

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**503,803. SPECTACLES.** SUSETTE ORTH, Philadelphia, Pa. Filed May 5, 1893. Serial No. 473,063. (No model.)



*Claim.*—1. The combination in spectacles, of the frame with temples connected thereto, each temple having between the frame and the curved rear end a bent portion extending below a line drawn from the center of the eye to the top of the ear, to rest upon the face between the ear and the eye, substantially as described.

2. The combination in spectacles, of the frame, the temple secured thereto, having an inclined portion *d*, a portion *d'* at an angle to the portion *d*, and a curved portion forming a continuation of the portion *d'*, substantially as described.

3. The combination of the spectacle frame, the temples, each temple having a portion *d'* and a portion *d''* at an angle to the portion *d*, the lower points of the portion *d''* when the temples are extended being nearer together than the upper portion so that when the spectacles are adjusted to the face the lower points of the portions *d''* act as pivots to elevate the bridge piece of the frame off the bridge of the nose, substantially as described.

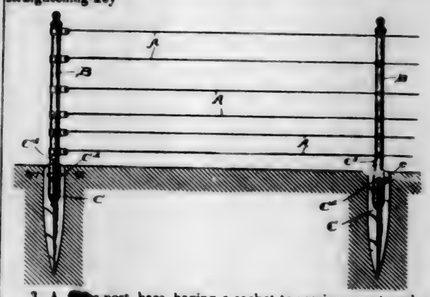
4. The combination of the spectacles, the frame, the temples connected to the frame having inclined portions *d*, upright portions *d'* bent as described, with looped portions adapted to pass back of the ear, substantially as set forth.

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**503,804. POST-BASE.** ROBERT E. POUNDSTONE, Indianapolis, Ind. Filed Aug. 20, 1892. Serial No. 443,628. (No model.)

*Claim.*—1. The combination, with a post, of a base having a socket therefor, a transverse hole intersecting the boundary line of the socket at one side, and a pin adapted to be driven into said hole and dent the post, holding it securely into the socket, substantially as set forth.

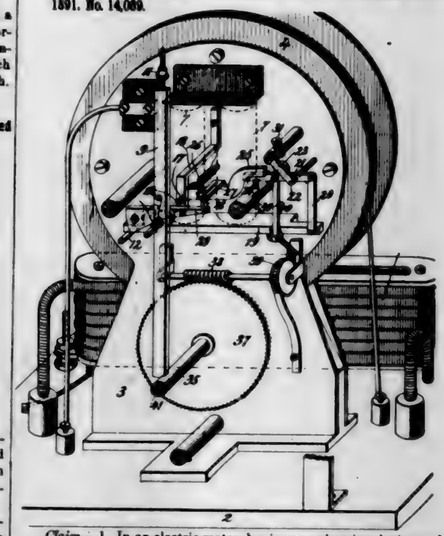
2. A fence-post base provided with a socket for receiving the post, a transverse hole intersecting the boundary line of the socket for a connecting-pin, and a key-way on the opposite side to receive a straightening-key



3. A fence-post base having a socket to receive a post, and a transverse hole intersecting the boundary line of said socket to receive a connecting-key.

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**503,805. ELECTRIC METER.** ANTHONY REICHENAUR, London, England, assignor to James A. Pentz, Philadelphia, Pa. Filed Nov 26, 1892. Serial No. 453,232. (No model.) Patented in England Aug. 30, 1891. No. 14,089.



*Claim.*—1. In an electric meter, having a registering device and an automatic make and break device, an oscillatory bar or beam suspended centrally or substantially centrally and operating to actuate said make and break device in its oscillations a non-magnetically acting device for imparting an impulse to said bar or beam, and mechanism influenced by the current passing through the meter to operate said registering device, substantially as and for the purposes described.

2. In an electric meter having oscillating bars or beams one of which is under the influence of the current passing through the meter and the other is not, and means for registering the difference in the oscillations of the said bars or beams, of a definite weight adapted to move a definite distance to impart an impulse to said bars or beams, substantially as and for the purposes described.

3. In an electric meter having a registering device and an automatic make and break device, an oscillatory bar or beam suspended centrally or substantially centrally and operating to actuate said make and break device in its oscillations, a gravity device for imparting motion to said oscillatory beam or bar, and mechanism influenced by the current passing through the meter to operate said registering device, substantially as and for the purposes described.

4. In an electric meter having a registering device and an automatic make and break device, an oscillatory bar or beam operating



to actuate said make and break device in its oscillations, a gravity device for imparting motion to said oscillatory bar or beam, means for sustaining said gravity device in its normal position, mechanism for moving said sustaining means to permit the gravity device to transmit motion to said beam or bar, said mechanism being actuated by the current passing through the meter, and mechanism influenced by the current passing through the meter to operate said registering device, substantially as and for the purposes described.

5. In an electric meter having a registering device and an automatic make and break device, an oscillatory bar or beam operating to actuate said make and break device in its oscillations, a gravity device for imparting motion to said oscillatory bar or beam, means for sustaining said gravity device in its normal position, mechanism for moving said sustaining means to permit the gravity device to transmit motion to said beam or bar when a current is passing through the meter and said make and break device has made circuit, said mechanism also serving to restore said gravity device to its normal position after the circuit is broken, and mechanism influenced by the current passing through the meter to operate said registering device, substantially as and for the purposes described.

6. In an electric meter having a registering device and an automatic make and break device, an oscillatory bar or beam, a gravity device for imparting motion to said bar or beam, means for sustaining said gravity device in its normal position, said gravity device being connected with said oscillatory bar or beam so as to transmit motion thereto upon its sustaining means being moved to permit it to act thereon, and mechanism for moving said sustaining means when a current is passing through the meter and the circuit is established, substantially as and for the purposes described.

7. In an electric meter having a registering device and an automatic make and break device, an oscillatory bar or beam operating to actuate said make and break device in its oscillations, an arm connected with said oscillatory beam or bar, and a gravity device for transmitting motion to said bar or beam through said arm and sustained independently of said arm, substantially as and for the purposes described.

8. In an electric meter, the combination with an oscillatory bar or beam suspended centrally or substantially centrally, and under the influence of the electric current to be measured to have its oscillations affected thereby, of a second oscillatory bar or beam uninfluenced by the current to be measured and suspended centrally, or substantially centrally, said beams operating synchronously when no current to be measured is passing through the main coil, while when the current is passing through said coil the rate of oscillation of the magnet bar varies and the movements of the other bar remain constant, and means for registering the difference in the oscillations of the bars, substantially as and for the purposes described.

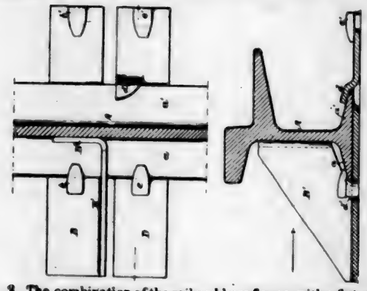
9. In an electric meter, the combination of an oscillatory bar or beam suspended centrally, or substantially centrally, and under the influence of the current to be measured, a second oscillatory bar or beam uninfluenced by the current to be measured and suspended centrally, or substantially centrally, and independent of the first mentioned bar or beam, said beams oscillating synchronously when no current to be measured is passing through the main coil, automatic make and break devices, actuated by said oscillatory beams, gravity devices for imparting motion to said oscillatory bars or beams, means for sustaining said gravity devices in their normal positions, mechanism for moving said sustaining means to permit the gravity devices to transmit motion to said beams or bars when a current is passing through the meter and said make and break devices have made circuit, and means for registering the difference in the oscillations of the bars or beams, substantially as and for the purposes described.

10. In an electric meter, the combination of an oscillatory bar or beam suspended centrally, or substantially centrally, and under the influence of the current to be measured, a second oscillatory bar or beam uninfluenced by the current to be measured and suspended centrally, or substantially centrally, and independently of the first mentioned bar or beam, said bars or beams oscillating synchronously when no current to be measured is passing through the main coil, automatic make and break devices actuated by said oscillatory beams, gravity devices for imparting motion to said oscillatory bars or beams, means for sustaining said gravity devices in their normal positions, mechanism for moving said sustaining means to permit the gravity devices to transmit motion to said bars or beams when a current is passing through the meter and said make and break devices have made circuit, means for registering the difference in the oscillations of the bars or beams, and a case inclosing said several devices and sealed to prevent tampering with the devices, substantially as and for the purposes described.

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**503,806. BRACE TIE-PLATE.** EDWARD SAMUEL, Philadelphia, Pa., assignor to the William Wharton, Jr., & Company, Incorporated, same place. Filed Jan. 5, 1893. Serial No. 457,367. (No model.)

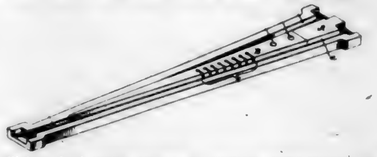
*Claim.*—1. The combination of a rail, a tie plate having a brace adapted to bear against one side or under the head of the rail, a tie plate having a lip adapted to pass over the base flange on the opposite side of the rail, and means for securing the plates to the tie, substantially as described.



3. The combination of the rail and base flange, with a flat plate B having a brace B' adapted to bear against the outside of the rail, said plate being adapted to pass under the rail when aligned, with a plate D at the side of the plate B and having a lip adapted to pass over the base flange of the rail on the inside, the body of the plate being flat so as to pass under the rail, with securing devices for both plates, substantially as described.

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**503,807. TONGUE-SWITCH.** EDWARD SAMUEL, Philadelphia, Pa., assignor to the William Wharton, Jr., & Company, Incorporated, same place. Filed Feb 20, 1893. Serial No. 463,080. (No model.)



*Claim.*—1. A spring tongue of a railway switch having one or both edges serrated allowing the tongue to yield, substantially as described.

2. The combination in a railway switch, of the switch structure, tongue attached to said structure at its root and permanently set to one side, said tongue having serrations in one or both edges, whereby the tongue can be sprung from one side to the other, substantially as described.

3. The combination in a railway switch structure having the main track and siding or turn-out grooves, a switch tongue secured to the structure at its root, and having a series of serrations in one or both sides near the root, so as to give full strength to the tongue at its point at the same time allowing it to yield sufficiently, substantially as described.

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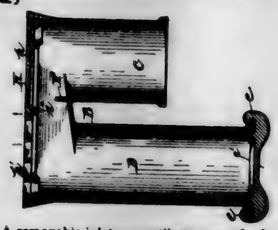
**503,808. NUT-LOCK.** BENJAMIN F. SHAPER, Sr., Wilkinsburg, Pa. Filed May 25, 1893. Serial No. 475,514. (No model.)



*Claim.*—1. A nut-lock, consisting of the combination with a bolt and ratchet-faced nut of a locking-bar having a spring portion which engages with the ratchet-teeth on the nut and a loop one part of which engages with the bolt while the other engages with a flange or stop, substantially as shown, and for the purpose set forth.

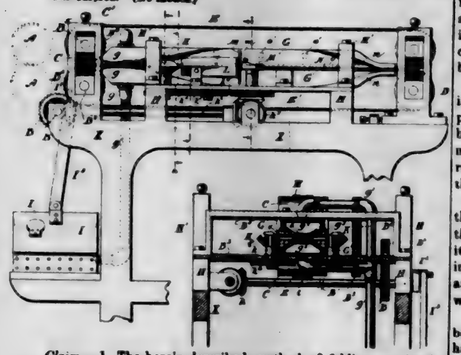
2. In combination with a bolt and ratchet-faced nut, a locking-bar having an eye which is adapted to partially encircle the bolt, that end of the bar which forms a part of the eye being reduced and bent or turned out to engage with the ratchet-teeth of the nut, the locking-bar beyond the eye being looped so that the straight member of thereof will engage with the flange or stop while the other member forming the lower part of the eye will be forced in contact with the bolt, substantially as shown.

**503,809. AIR-INLET FOR PLUMBING PURPOSES.** LAWRENCE SHUSTER, Jr., Philadelphia, Pa. Filed May 24, 1892. Serial No. 434,168. (No model.)



*Claim.*—A removable inlet or ventilating trap for house plumbing purposes consisting of a leg or portion for connection with a house soil pipe, and a catch-all or dirt receptacle, cam flanges on the lower edge thereof, a removable door or bottom for said receptacle, a circular bead or ring *c'* on said bottom and the cam engaging lugs on said removable bottom, a partial height partition in said trap between the upper ends of the leg or pipe and catch-all, and longitudinal supports in the top of said trap for a cover, a partially grated cover resting in the top of said trap, the grated portion of said cover resting over the catch-all and the solid portion over the leg or pipe, the lug on the under side of the cover, and a notch in the cover supports engaging the lug, as set forth.

**503,810. METHOD OF AND APPARATUS FOR FOLDING PAPER BAGS.** EDWARD STANLEY, Bridgeport, Pa. Filed Oct. 15, 1892. Serial No. 449,202. (No model.)



*Claim.*—1. The herein described method of folding previously completed "square bags" so that they will be self opening, which consists in partially opening the bellows-folds on each side, while the center of the bag remains flat, then further spreading or opening the bellows-folds, then pressing the corners of the bag inwardly against the open bellows-folds, then straightening the edge of the inwardly folded corners and finally pressing the bellows-folds together with the inwardly folded corners of the bag between them.

2. The herein described method of folding previously completed "square bags" so that they will be self opening, which consists in partially opening the bellows folds on each side while the central portion of the bag remains flat, then further opening the folds, then folding the corners of the bag inwardly against the opened bellows-folds and finally pressing the bellows-folds together again with the inwardly folded corners of the bag between them.

3. The combination, substantially as set forth, of the rolls C, C, D, D, and endless belts E, E', the suction boxes arranged inside of the belts, the intermittently acting exhaust apparatus for briefly opening the bellows-folds of the bag on each side, means for then mechanically further opening the bellows-folds, means for folding the corners of the bags inwardly against the open bellows-folds, and means for again pressing the bellows-folds together with the inwardly turned corners between them.

4. The combination, substantially as set forth, of the rolls, C, C, D, D, and endless belts E, E', the suction boxes arranged inside of the belts, the intermittently acting exhaust apparatus for briefly opening the bellows-folds of the bag on each side, means for then mechanically further opening the bellows-folds, means for folding the corners of the bags inwardly against the open bellows-folds, means for straightening the edges of the inwardly fold corners, and means for again pressing the bellows folds together with the inwardly turned corners between them.

5. The combination, substantially as set forth of the carrying belts, the suction boxes, the spreader arranged on each side opposite the edges of the adjacent faces of the belts and each consisting of a segmental piece decreasing in thickness from the center outwardly and beveled at its forward end, the corner folding plates each V-shaped in cross section at the end toward which the bag approaches, and gradually changing to a flat face or substantially so at the opposite end, the straighteners for the inwardly folded edges of the bag, each of which consists of a vertical rod or bar arranged at right angles to the horizontal plane of the belts and adapted to be pressed against the edge of the inwardly folded corner to straighten it, the plates for creasing the inwardly folded corners and means for pressing the bellows fold of the bag together with the inwardly folded corners between them.

6. The combination, substantially as set forth, with means for partly opening the bellows-folds of a square bag, of spreaders for further opening them, each spreader consisting of a segmental piece having a wedge shaped peripheral edge as at $s^2$, and a beveled end as at $s'$.

7. The combination, substantially as set forth, with means for partly opening the bellows-folds of a square bag, of devices for further opening said folds and folding plates for folding in the corners of the bag, each folding plate being V-shaped in cross section at that end toward which the bag approaches and gradually changing to a flat form or substantially so at the opposite end.

8. The combination, substantially as set forth, of means for opening the bellows-folds of a square bag, of the folding plate for folding in the corners, and straightening devices acting upon the edges of the inwardly folded corners to straighten them.

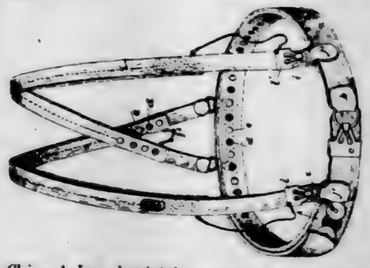
9. The combination, substantially as set forth, of the belts between which the bags are carried, each belt being formed on its outer face with a longitudinal groove to protect the freshly pasted side seam of the bag, means for opening the bellows-folds of a bag while its central part is held between the belts, means for folding in the corners against the open bellows-folds and means for pressing the bellows-folds together with the inwardly folded corners between them.

10. The combination, substantially as set forth, with the carrying belts, and exhaust apparatus, of the suction boxes arranged opposite each other between the belts, the opposite faces of the suction boxes at the center between which the belts pass, being parallel and not perforated, and the sides being perforated, their opposite faces reversely curved in the line of motion of the belts and tapering from the outward edge inwardly.

11. The combination, substantially as set forth, of carrying belts, the opposite frame pieces or castings G, G', located inside of the belts, the friction plate carried by one of the castings, means for adjusting it to vary the pressure of one belt upon the other and means for opening the bellows-folds of a square bag, folding in the corners thereof and pressing the bellows folds together with the corners between them, while the bag is carried forward by the belts.

12. The combination, substantially as set forth, of the varying belts adapted to hold the center of a square bag, suction boxes, exhaust apparatus consisting of an intermittently acting bellow-exhaust, for opening the bellows-folds of the bag, and means for folding in the corners of the bag against the open bellows-folds and again pressing the folds together with the inwardly folded corners between them.

**503,811. ELECTRIC BELT.** ADOLF STEPHENSON and JONAS BACKSTROM, Stromsburg, Nebr. Filed Feb. 23, 1893. Serial No. 463,460. (No model.)

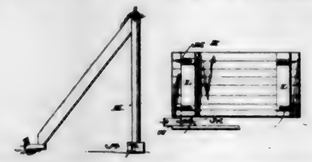


*Claim.*—1. In an electric belt, the combination of elastic webbing, a textile lining such as flannel, and a series of copper and zinc studs inserted in the lining with their larger portions overlapping between the lining and the elastic web, with the convex ends of the studs projecting inwardly through the lining in position to contact with the surface of the body of the wearer substantially as specified.



2. In an electric belt, the combination, with a belt formed of elastic webbing and provided with a lining of textile material and studs inserted in the lining, of shoulder straps formed of elastic webbing and provided with textile lining and having zinc and copper studs inserted in the lining, with the larger portions overlapping between the lining and the webbing, and the electrical connections for completing the circuit between the series of zinc and copper studs, substantially as specified.

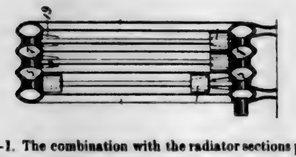
**503,812. PORTABLE BILL-BOARD.** FRANK R. STONE, Middlebury, Vt. Filed Nov. 9, 1892. Serial No. 451,480. (No model.)



*Claim.*—1. The combination with the posts having upwardly projecting pins at their upper ends, of the panels detachably secured to said posts, a cap removably fitted on said pins, and braces provided at their upper ends with plates adapted to engage said pins.

2. The combination with the posts and the panels removably hung thereon, of the braces having their uppers attached to the upper ends of the posts, keepers pivoted to the lower ends of the braces and pegs driven through said keepers.

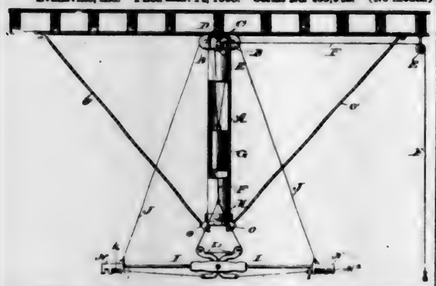
**503,813. RADIATOR.** THOMAS TANGNEY, South Superior, Wis. Filed Sept. 19, 1892. Serial No. 446,251. (No model.)



*Claim.*—1. The combination with the radiator sections provided with the elbows or joint sections adapted to engage each other and form a slip joint, and provided also with inclined lugs, of the locking keys provided with inclined surfaces adapted to engage the lugs on the sections and draw said sections together and hold them in their locked position, substantially as described.

2. The combination with the radiator loop sections provided with the joint sections adapted to engage each other and form a slip joint, of the lugs 19 arranged between the loops at each side of the section, and the keys provided with heads having inclined surfaces adapted to be arranged between said sections and to engage said lugs and thereby draw and lock said sections together, substantially as described.

**503,814. HARNESS-SUSPENDING DEVICE.** LOUIS TOWNSEND, Evansville, Ind. Filed Mar. 14, 1893. Serial No. 465,942. (No model.)



*Claim.*—1. An improved harness suspending device comprising the harness supporting devices, the weight piston connected therewith whereby to counterbalance the same, and the cylinder receiving said weight piston whereby the descent thereof will be air cushioned all substantially as and for the purposes set forth.

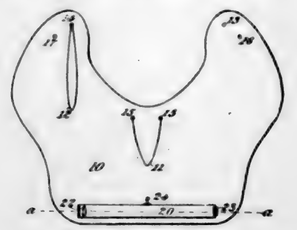
2. In a harness suspending device the combination with the harness supporting devices and the connecting cords of the counterbalance weight piston and the cylinder receiving the same and provided at its lower end with a check valve whereby to retard the descent of the weight piston all substantially as and for the purposes set forth.

3. The improved harness suspending device comprising the cylinder proper, having the top plate provided with the sheaves or guide pulleys the harness bar the weight piston and the connecting cords substantially as set forth.

4. A harness suspending device comprising the counterbalance devices, the harness bar provided at its ends with the spring actuated bolts, and between its ends with pivoted triggers connections between the triggers and the bolts the trigger operating cord and the guide therefor all substantially as set forth.

5. The improved harness suspending device herein described consisting of the cylinder provided with the cap plate having the guide pulleys, and with the bottom plate having the check valve the weight piston operating in said cylinder, the harness bar having at its ends the spring actuated bolts and provided between its ends with the triggers, connections between the triggers and the end bolts, the cords connecting the bar with the weight piston and the trigger cord and its guide all substantially as set forth.

**503,815. CLOTHES-FORM.** ROBERT H. WADE, Washington, D. C. Filed Aug. 11, 1892. Serial No. 442,757. (No model.)



*Claim.*—1. A clothes form consisting of a flexible plate of a shape adapted to be bent to approximately a bust form, and detachable means for retaining said plate in such bust form, said plate adapted when released to assume its normally flat position, substantially as described.

2. A clothes form consisting of a flexible plate having projecting shoulder pieces adapted to be bent together, means for securing the ends of said pieces together and to the main portion of the plate so that said plate will assume a bust form, and means attached to said plate for hanging the same, substantially as described.

3. A clothes form consisting of a flexible plate having projecting shoulder pieces adapted to be bent together, a cord or chain for securing the ends of said pieces together and to the main portion of the plate so that said plate will assume a bust form, a cord or chain attachment to said plate for hanging the same, and an attachment to the main portion of said plate whereby trousers or other garments may be suspended therefrom, substantially as described.

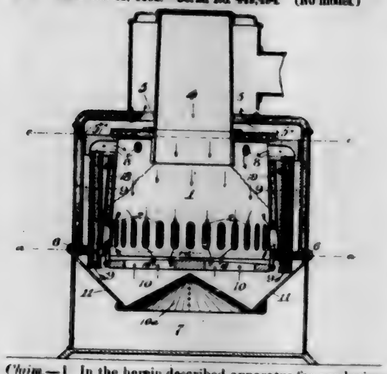
4. A clothes form composed of a flexible plate, a cord or chain for securing the upper ends of said plate together and holding same in a desired relation to the lower portion of said plate, a cord or chain attached to said plate for hanging the same, hinged cleats attached to said plate and means for securing said cleats together for suspending the trousers.

**503,816. PROCESS OF MANUFACTURING STEEL.** CHARLES WALRAND and EUGENE LEGENISEL, Paris, France. Filed Nov. 30, 1891. Serial No. 413,516. (No specimens.) Patented in France June 29, 1891, No. 214,514; in England Sept. 23, 1891, No. 16,178; in Belgium Sept. 23, 1891, No. 96,499; in Germany Sept. 24, 1891, No. 64,950, and in Austria-Hungary Sept. 25, 1891, No. 16,542 and No. 35,534.

*Claim.*—1. An improved step in the manufacture of steel, consisting in treating metal containing silicon to effect primary combustion and oxidation and adding a heat-augmenting agent rich in silicon approximately at the period when the primary combustion of the charge is effected and the oxidizing operation terminates, substantially as set forth.

2. The herein described improvement in the manufacture of steel from metal originally containing silicon, which consists in treating the same to effect primary combustion and oxidation, adding silicon approximately at the period when the primary combustion is effected and the oxidizing operation terminated, and continuing the blowing operation after such addition, substantially as set forth.

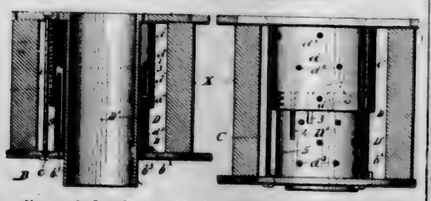
**503,817. APPARATUS FOR PRODUCING AND UTILIZING GAS FOR HEATING PURPOSES.** GEORGE A. WATSON, Toronto, Canada, assignor of sixty-one one-hundredths to William Henry Laird, New York, N. Y. Filed Oct. 20, 1892. Serial No. 449,494. (No model.)



*Claim.*—1. In the herein described apparatus for producing gas and utilizing the produced gas for heating purposes the combination of a combustion chamber, a series of tubes surrounding the outer side of the combustion chamber and extending from the lower extremity to a point at or near the upper extremity thereof the combustion chamber having formed through its wall at or near the upper extremity a series of apertures to connect with the passages through the said tubes, means for connecting the lower extremity of the tubes with the atmosphere said tubes adapted to convey a current of air to the upper portion of the combustion chamber, a gas chamber and means for forming an outlet to the chimney, the combustion chamber having formed at or near its lower extremity a series of openings to the gas chamber, the gases and air in the upper portion of the combustion chamber adapted to be drawn downwardly through the burning fuel and pass through the openings at the lower extremity of the combustion chamber to the outlet to the chimney, substantially as described.

2. In the herein described apparatus for producing gas and utilizing the produced gas for heating purposes the combination of a combustion chamber, a series of tubes surrounding the outer side of the combustion chamber and extending from the lower extremity to the upper extremity thereof, a gas chamber on the outer side of the combustion chamber, an outlet from the gas chamber to the chimney, a series of openings formed at the upper extremity of the combustion chamber to connect with the passages in the said tubes, a series of openings at the lower extremity of the combustion chamber to connect with the gas chamber, a mixing chamber below the combustion chamber, means for connecting the mixing chamber with the lower extremity of the said tubes, means for feeding the mixing chamber with atmospheric air, said tubes adapted to feed a current of atmospheric air from the mixing chamber to the upper extremity of the combustion chamber to combine with the gases thereat, the combined gases and atmospheric air adapted to be drawn downwardly through the burning fuel and pass through the openings at the lower extremity of the combustion chamber to the gas chamber, substantially as described.

**503,818. FLUE-THIMBLE.** JAMES H. WATT, Barnesville, Ohio. Filed Feb. 27, 1893. Serial No. 463,868. (No model.)

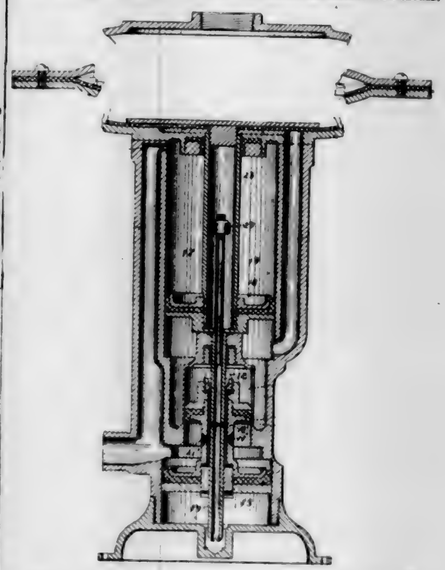


*Claim.*—1. In a flue thimble the combination of the top plate, the collar, the bottom plate fitted loosely on the collar, and the devices for suspending the bottom plate on the top plate; with the adjustable cylinder supported solely on the bottom plate and surrounding the collar and also confined between the plates, said cylinder being formed of an upper and lower part adjustably connected together, substantially as described.

2. The combination of the top plate, the imperforate collar rigidly connected thereto and depending therefrom, the bottom plate, the uniting bolts, and the sectional and adjustable cylinder surrounding the collar confined between the plates and supported on the lower plate formed of two perforated cylindrical parts respectively having stepped slots, and pins on their telescoping ends whereby the length of the cylinder can be regulated, substantially as described.

3. The combination in a flue thimble of the top plate, the collar connected thereto, the bottom plate, loosely mounted on the collar and suspended from the top plate and the cylinder interposed between said plates formed in two relatively adjustable, cylindrical parts telescoping together, one part having a series of studs or pins near its inner end, and the other part having sets of stepped slots adapted to engage said pins, the slots in each set being successively longer or deeper, substantially as and for the purpose set forth.

**503,819. HYDRAULIC AIR-PUMP.** EDWARD H. WEATHERHEAD, Cleveland, Ohio. Filed July 23, 1890. Serial No. 359,667. (No model.)



*Claim.*—1. In a pump to compress or force air by water pressure, the main casing having a valve chamber and a valve therein and a piston to operate the valve, a piston chamber and a piston above said valve chamber, and water passages from one chamber to the other, in combination with an air and water chamber provided with an air opening in its upper portion, and a water passage in its lower portion communicating with the aforesaid valve and piston chambers, and a diaphragm separating the air and water in said chamber, substantially as described.

2. The main casing having a piston chamber in its upper portion, a chamber with a centrally attached flexible diaphragm on said casing, and a piston attached to said diaphragm working in said piston chamber, said casing having passages for the pressure fluid to enter upon both sides of said piston and on the lower side of the diaphragm, and a valve to control the flow of the pressure fluid and a governing piston, substantially as described.

3. The main casing having a valve chamber and valve, a piston chamber and piston above said valve chamber and passages for the pressure fluid leading into said valve chamber and into the piston chamber behind the piston therein, in combination with an air and water chamber having a diaphragm connected with said piston and a water passage between the lower side of the said piston and the lower side of the said diaphragm, substantially as described.

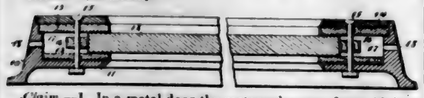
4. In a hydraulic pump, the main casing provided with a water valve and a piston of different area rigidly connected, in combination with a combined water and air chamber having a flexible diaphragm at its center, a piston in the main casing connected with the center of the diaphragm, an auxiliary water valve tube operated by said piston and extending through the aforesaid valve and piston, and fluid passages, substantially as described.



5. The main casing having a piston chamber in its upper portion and a pressure fluid duct leading to the upper portion of said chamber from the main fluid inlet and entering above the piston therein, and a valve chamber beneath said piston chamber having an opening for the passage of pressure fluid to and from the lower portion of said piston chamber and beneath the piston, a piston and a valve in said chambers, respectively, and the diaphragm and the governing piston substantially as described.

6. The main casing having a valve chamber with a lateral opening, a piston chamber, and a combined air and water chamber above the piston chamber, and fluid ducts leading into both of said chambers supplied through the lateral opening in the valve chamber, in combination with a central diaphragm in the air and water chamber, and a valve and piston in the valve and piston chambers respectively, and the governing piston substantially as described.

**503,820. OVEN OR OTHER DOOR.** WALTER R. WEBSTER and JAMES HAMILTON, Pine Grove, Cal. Filed May 10, 1893. Serial No. 473,685. (No model.)



*Claim.*—1. In a metal door the rectangular open frame 10, having series of apertures 18 in its side walls and provided with an inwardly extending flange 11, the inner removable open clamping frame 13 parallel with the flange 11, the frame 13 and flange 11 being connected by bolts to clamp the glass between them and form a space 17 into which said apertures open, substantially as set forth.

2. As an improved article of manufacture, a metal door having a glass window therein, non-conducting packings on opposite sides of the window near the edge, flexible non-conducting washers abutting with the edges of the window, and an air space extending around the edges of the window and in communication with the outer air, substantially as specified.

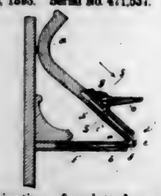
3. As an improved article of manufacture, a metal door, comprising a frame having an inner flange and a central opening, a clamping ring adapted to fit in the outer portion of the frame parallel with the flange, a glass window arranged between the flange and clamping ring, packing pieces arranged between the glass and the flange and clamping ring, bolts to fasten the ring and flange together, flexible non-conducting washers carried by the bolts and abutting with the edges of the glass, and an air space formed in the frame around the edges of the glass and communicating with the outer air, substantially as specified.

**503,821. BRUSH.** EDWARD L. WOHLGEMUTH, Amesbury, Mass. Filed Feb. 21, 1893. Serial No. 463,168. (No model.)



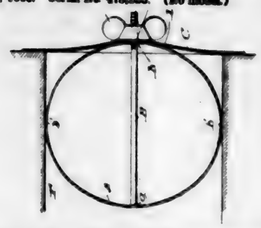
*Claim.*—A brush, consisting of the body having the strip forming a flange, the bristles secured to said body, the strip fitting within the flange of the body and carrying a grasping piece, and the cover having the edge secured between the flange and strip.

**503,822. MUSIC-DESK FOR PIANOS.** JOHN YUEL, New York, N. Y. Filed Apr. 24, 1893. Serial No. 471,537. (No model.)



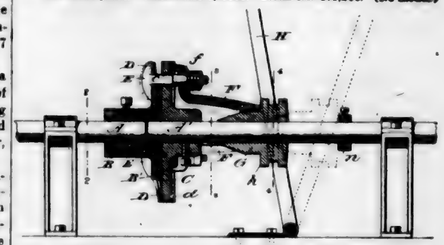
*Claim.*—The combination of a slotted case with a slotted fall, pivotally connected slides *f*, *d*, engaging respectively the case and fall, and with a music desk movably connected to slide *d*, substantially as specified.

**503,823. FLUE-STOPPER.** EDMUND H. ADAMS, Lamar, Mo. Filed May 23, 1893. Serial No. 475,223. (No model.)



*Claim.*—As an improved article of manufacture, the adjustable flue stopper comprising the yielding band, having a transverse hole as described, the plate or disk having a central hole, the rod threaded at one end and passing through the respective holes and fixed at its inner end to the band, at a point opposite the hole therein, and the wing nut, arranged on the threads of the rod, and adapted to bear against the plate and band, substantially as specified.

**503,824. CLUTCH.** WILLIAM G. AUSTIN, Tarkio, Mo., assignor of three-fourths to Samuel Rainey, Joseph C. Culbertson, and Nelson Austin, same place. Filed June 1, 1893. Serial No. 476,210. (No model.)

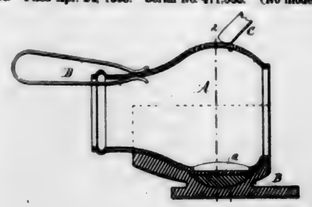


*Claim.*—1. In a friction clutch, the combination, with a disk B' mounted on a shaft as shown, of a disk C mounted on a shaft having a movable sleeve, bolts E E supported by the disk C springs attached to said disk, so as to bear upon the bolts and levers F F which are fulcrumed on the disk C and engage with the bolts, the free ends of said levers being engaged by the movable sleeve, substantially as shown, and for the purpose set forth.

2. In combination with the disks B' and C of different diameters, bolts E E carried by the larger disk so that the heads thereof will engage with the outer edge of the smaller disk, springs attached to the larger disk and bearing against the heads of the bolts, levers F through which the bolts pass the levers being fulcrumed adjacent to the periphery of the larger disk, and means for moving the levers and bolts against the action of the springs, substantially as shown, and for the purpose set forth.

3. In a clutch, a collar having a disk or flange B', a shaft carrying a disk C having rectangular apertures *c*, spring plates D attached to the disk C, bolts E E having rectangular portions and heads so constructed that they will engage with the flange or disk on the collar B and the springs attached to the disk C, arms F F fulcrumed on the bolts and provided with projecting portions which enter recesses in the disk C, said arms having rounded ends which are engaged by a conical sleeve, the parts being organized substantially as shown, and for the purpose set forth.

**503,825. METHOD OF MAKING LENS-GLOBES.** CHARLES J. BOCKIUS, Marion, Ind., assignor to the Canton Glass Company, same place. Filed Apr. 24, 1893. Serial No. 471,553. (No model.)



*Claim.*—The herein described method of producing a globe, or analogous article, having a protruding lens, which consists in dropping the molten glass, for forming the lens, into the lens cavity of an open mold, blowing the globe in a separate mold, and then placing the globe while hot into the open mold containing the molten glass for the lens and uniting the latter with the globe by pressing the globe upon the glass in the lens cavity, substantially as set forth.

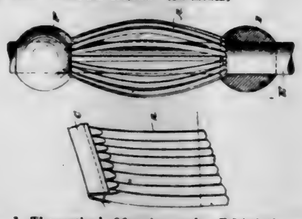
**503,826.** ARTIFICIAL-TOOTH MOLD. ROBERT BREWSTER, New Barnet, England. Filed Apr. 17, 1893. Serial No. 470,679. (No model.)



*Claim.*—1. A mold for the manufacture of artificial teeth having its operative faces formed of hydraulic cement, such as Portland cement or Roman cement.

2. A mold for the manufacture of artificial teeth comprising the parts *a*, *b* and *c*, the parts *a* and *b* comprising frames containing blocks of hydraulic cement, such as Portland or Roman cement, formed with cavities, as described, the part *a* being prolonged upward to form one side of the funnels leading to the cavities, the part *c* forming the other side of the funnel and resting upon the top of the part *b*, substantially as described.

**503,827.** REED-PUFF. CHARLES BUSH, Newburg, N. Y. Filed Mar. 17, 1893. Serial No. 466,516. (No model.)



*Claim.*—1. The method of forming reed puff fabric for ornamenting furniture which consists in clamping a series of reeds around a former to bend them into proper shape and then while the reeds are so clamped beveling their inner faces at their ends, and finally flexibly connecting the beveled ends of the series, substantially as set forth.

2. The method of forming reed puff fabric for ornamenting furniture which consists in clamping a series of reeds around a former to bend them into proper shape, then while the reeds are so clamped beveling and transversely grooving their inner faces at their ends, and finally flexibly connecting the beveled ends of the series by securing flexible connecting strands in said grooves, substantially as set forth.

3. A reed fabric for forming furniture ornaments consisting in a series of bowed reeds beveled on their inner faces at their ends, the beveled faces of each reed lying in the same longitudinal plane, and a flexible connection uniting said beveled ends; whereby a piece of the fabric of suitable length may be made to inclose a rod or other part of a piece of furniture and form an ornamental puff or figure thereon, substantially as set forth.

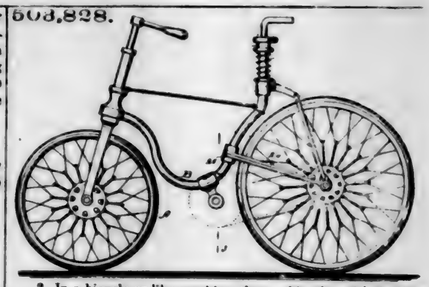
4. A reed fabric for forming furniture ornaments consisting in a series of bowed reeds each beveled on its inner face at both ends and transversely grooved across both beveled surfaces, connecting strands secured within said grooves to flexibly connect the reeds at both ends; whereby a piece of the fabric of suitable length may be made to inclose a rod or other part of a piece of furniture and form an ornamental puff or figure thereon, substantially as set forth.

5. The bowed reed A, having its inner face beveled at both ends; the beveled surfaces lying in the same longitudinal plane and each of said surfaces being grooved transversely, substantially as set forth.

**503,828.** BICYCLE. GEORGE F. CASE, Medina, N. Y. Filed Jan. 23, 1893. Serial No. 460,058. (No model.)

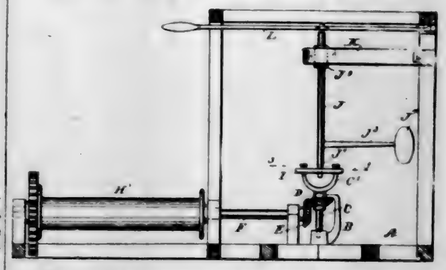
*Claim.*—1. In a bicycle or like machine, the combination, with the frame and the driving wheel thereof, of a yoke having a spring-controlled sliding connection with the frame and provided with bearings for the axle or trunnions of the wheel, and springs rigidly connected with the frame and extending across opposite sides of the wheel, the springs being connected with the extremities of the yoke, substantially as shown and described, whereby the wheel is held in alignment with the frame and the frame is cushioned, as and for the purpose specified.

**503,828.**



2. In a bicycle or like machine, the combination with the frame thereof and the driving wheel, of a yoke in which the wheel is journaled, a sleeve having sliding movement upon the frame and connected with the yoke, an adjusting nut also located upon the frame, a spring bearing against the sleeve and adjusting nut whereby tension upon the yoke may be regulated, and springs connected with the journal sections of the yoke, the said springs extending beyond the periphery of the wheel, one at each side, the side springs being unitedly connected with the frame, whereby both springs are compelled to act in unison, as and for the purpose specified.

**503,829.** MOTOR. FRANK W. CLARK, Mount Desert, Me. Filed Nov. 30, 1892. Serial No. 453,594. (No model.)



*Claim.*—1. A motor comprising a vertical drive shaft, a second shaft having a loose driving connection at its lower end with the upper end of the drive shaft, and provided with a transverse weighted arm, and a horizontally swinging lever in which the upper end of said second shaft is journaled, substantially as set forth.

2. A motor comprising a vertically-disposed shaft connected with the machinery to be driven and provided with a forked upper end, a plate supported on the said fork, a shaft engaging the said plate and provided with a weighted arm and adapted to swing, and springs pressing with their free ends on the said second shaft, substantially as shown and described.

3. A motor comprising a vertically-disposed shaft connected with the machinery to be driven and provided with a forked upper end, a plate supported on the said fork, a shaft engaging the said plate and provided with a weighted arm and adapted to swing, and a lever adapted to receive a swinging motion and in which the upper end of the said second shaft is journaled, substantially as shown and described.

**503,830.** ROLLING-MILL PLANT. LEROY COOK, Worcester, Mass. Filed May 16, 1892. Serial No. 433,085. (No model.)

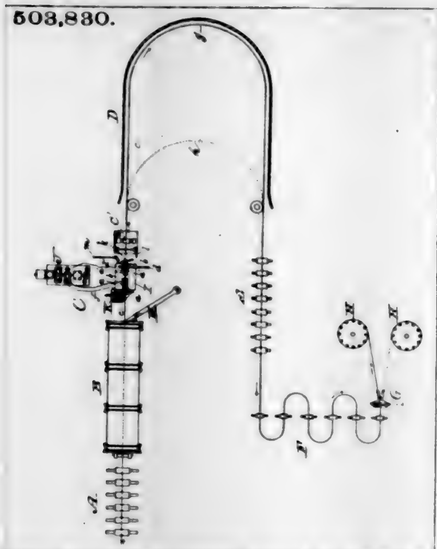
*Claim.*—1. Combined rolling and welding mechanism comprising in combination the following elements, viz: a heating furnace; an electric welding device provided with suitable holding and feed mechanism, and suitable rod reducing rolls, substantially as and for the purpose set forth.

2. Combined rolling and welding mechanism comprising in combination the following elements, viz: a series of billet reducing rolls, a heating furnace; an electric welding device provided with suitable holding and feed mechanism, and suitable rod reducing rolls, substantially as and for the purpose set forth.

3. The combination with the heating furnace and rod reducing rolls of a rolling mill plant, of an electric welding device interposed between said furnace and rolls, consisting of an electric generator or motor and means for applying the current therefrom to the billets to be welded, suitable clamps for holding said billets and means for

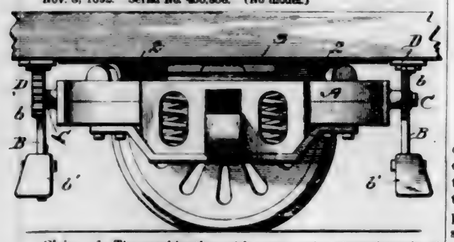


**503,830.**



feeding the same forward, substantially as and for the purpose set forth.

**503,831.** CAR-TRUCK. JOHN W. COOPER, Matawan, N. J. Filed Nov. 3, 1892. Serial No. 450,858. (No model.)

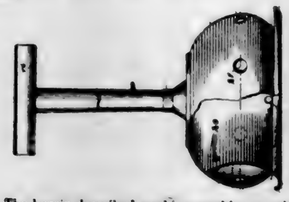


*Claim.*—1. The combination with a car, and a pivoted truck, of a weighted lever adapted to form positive connection between said car and truck and constructed to facilitate the turning of the truck to adapt it to the track, substantially as set forth.

2. The combination with a car, and a pivoted truck, of a rack bar attached to said car, and a weighted lever pivoted to the truck, and having a segmental toothed portion which is adapted to mesh with said rack, substantially as described for the purpose specified.

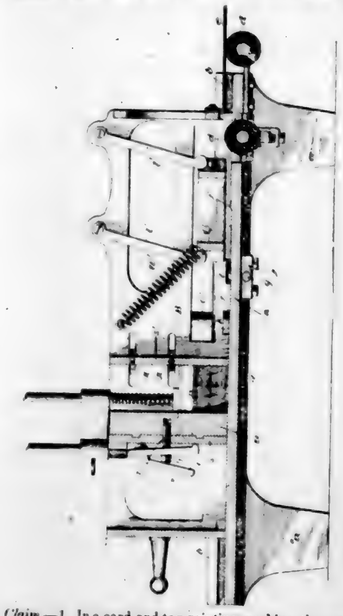
3. The combination with a car, and a pivoted truck, of a rack bar secured to the truck and formed on the arc of a circle having its center co-incident with the vertical axis of the truck, and a weighted lever pivotally supported on the truck frame and having a segmental toothed end to mesh with said rack, substantially as and for the purpose specified.

**503,832.** CLOTHES-POUNDER. SAMUEL DAVIS and FREDERICK G. DAVIS, Las Vegas, N. Mex. Filed Apr. 26, 1893. Serial No. 471,843. (No model.)



*Claim.*—The herein described washing machine, consisting of a circular body, bulging or outwardly curved, and apertured at its bulging portion, and a continuous internal, apertured wall, having both its top and bottom edges joined to the inner surface of the body, forming an air chamber which extends around the body and is closed except as respects its apertured walls, substantially as described.

**503,833.** MACHINE FOR PRINTING CARDS. JOHN B. DENNIS, Ottumwa, Iowa. Filed Sept. 1, 1892. Serial No. 444,782. (No model.)



*Claim.*—1. In a card and tag printing machine, the combination of a suitable base or frame, a movable carriage mounted thereon, a card receptacle carried by the carriage and having its lower end open, through which the cards fall one by one upon the base, means for transferring the card from the receptacle to the base and a die for printing the card while it rests upon the base, substantially as described.

2. In a card or tag printing machine, the combination of a suitable base or frame having its upper surface provided with a depressed portion, a carriage movable over said base, a card receptacle carried by the carriage and having its lower end open and arranged to move over the depressed portions of the base, whereby the cards are fed thereto, one by one, and a die for printing the card while it lies in such depressed portion of the base, substantially as described.

3. In a card and tag printing machine, the combination of a suitable base or frame, a reciprocatory carriage movable thereon carrying a card receptacle, a printing die mounted on and carried by the carriage, means for transferring the card from the receptacle to the base and means for moving the die toward and from the base as the carriage is reciprocated, substantially as described.

4. In a card and tag printing machine, the combination of a suitable base or frame, a reciprocatory carriage mounted thereon, a printing die, the links *l*, *l*, connecting the die with the carriage, a spring for holding the die out of printing position, and the stops which arrest the movement of the die with the carriage, and cause it to move against the force of the said spring, substantially as described.

5. In a card and tag printing machine, the combination of the base or frame upon which the card or tag rests while receiving the impression, a reciprocatory printing die, and a spring actuated card ejector which moves transversely across the face of the base and forces the card from the base or frame after the impression has been made, substantially as described.

6. In a card and tag printing machine, the combination of the base or frame, a reciprocatory carriage, a printing die, a spring actuated card ejector, and a projecting arm carried by the carriage, and adapted to engage with the said ejector and move it out of the way of the card, substantially as described.

7. In a card and tag printing machine, the combination of the base or frame, the reciprocatory carriage, a die for printing the card

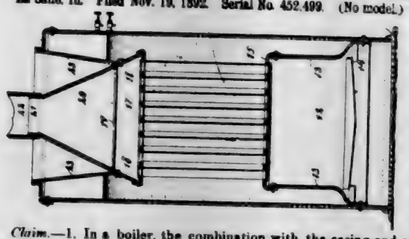
while it rests upon the base, a card ejector having a finger adapted to engage with the card, and an arm *k* carried by the carriage, and adapted to engage with the said finger of the ejector, and to guide it into a groove in the carriage wherein it is held while the card is being printed, substantially as described.

8. In a card and tag printing machine, the combination of the frame or base, a reciprocatory carriage having in one of its side pieces the grooves *n*, *o*, *p*, into which is the break or opening *o'*, a die adapted to print the card while resting upon the base, a spring actuated ejector having a finger *i* projecting through the base, the arm *k* carried by the carriage and adapted to engage with the said finger and to guide it into the said groove in the side piece of the frame, and the spring *m*, which closes the opening through which the finger *i* enters the groove, substantially as described.

9. In a card and tag printing machine, the combination of the base or frame, the reciprocatory carriage, the card receptacle carried by the carriage from which the cards are delivered, one by one, upon the base, the die for printing the cards as they lie upon the base, also carried by the carriage, and the spring actuated card ejector controlled by the movements of the carriage, substantially as described.

10. In a card and tag printing machine the herein described receptacle B in which the blank cards are held, provided with the slotted side piece *s*, and the adjustable end piece *w*, in combination with the screw *v'* which passes through the slot in the piece *s* and into the end piece *w*, the locking lever *y* mounted on the said screw, and the cam lever *v*, substantially as described.

## 503,834. STEAM-BOILER. PHILIP J. DOLL and FRED. W. DOLL, La Salle, Ill. Filed Nov. 19, 1892. Serial No. 452,499. (No model.)

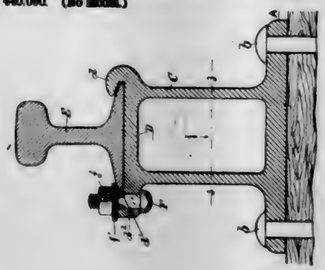


*Claim.*—1. In a boiler, the combination with the casing and a fire box in the lower portion thereof, of a smoke box arranged in the upper part of the casing below the water line, and having inwardly inclined walls, tubes leading from the fire box to the smoke box, a bonnet above the smoke box, and an inner boiler sheet secured to the top of the casing and to the upper edge of the smoke box, substantially as described.

2. In a boiler, the combination with the casing and a fire box in the lower portion thereof, of a smoke box arranged below the water line and having inwardly inclined sides, tubes leading from the fire box to the smoke box, a bonnet removably supported above the smoke box, and an inner boiler sheet tapering inwardly and secured to the top of the casing and to the upper edge of the smoke box, substantially as described.

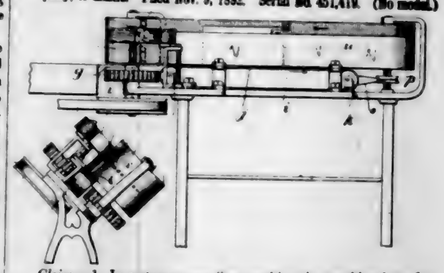
3. In a boiler, the combination with the casing and a fire box in the lower portion thereof, of a smoke box having inwardly inclined sides and an inwardly extending flange at its top, tubes leading from the fire box to smoke box, a conoidal bonnet resting upon the flange of the smoke box, and an inner boiler sheet tapering inwardly and secured to the top of the casing and to the upper edge of the smoke box, substantially as herein shown and described.

## 503,835. RAILWAY-CHAIR. CHARLES H. EARLE, Salem, Mass., assignor to Alonzo H. Smith, same place. Filed July 15, 1892. Serial No. 440,060. (No model.)



*Claim.*—A railway chair consisting of a hollow [ ]-shaped pillar C having at its bottom the flanged base piece A and formed integral at its top with the hook *d* and the vertical offset *d'* opposite the hook, in combination with the rail E resting on the pillar and engaging the hook and the offset, and the bolts F passing through the said offset and provided with washers which extend over the base of the rail, substantially as and for the purpose described.

## 503,836. STAMP-CANCELING MACHINE. MARTIN V. B. EYERIDGE, Everett, Mass., assignor to the American Postal Machines Company, of Maine. Filed Nov. 9, 1892. Serial No. 451,419. (No model.)



*Claim.*—1. In a stamp canceling machine the combination of a carrier, letter engaging projections thereon, and a frictional letter-retarding device whereby a letter deposited on the carrier may be advanced in a given path, then yieldingly arrested or retarded, and then positively moved forward in the same path, as set forth.

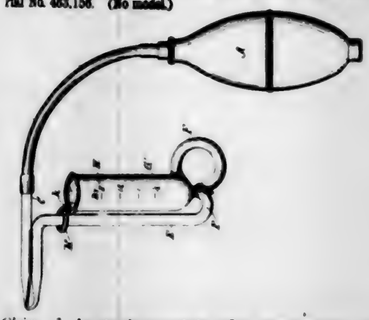
2. In a stamp-canceling machine, a carrier composed of an inclined belt having letter-engaging projections, combined with a letter-retarding device located at the lower edge of said belt and adapted to cause the engagement of the letters with said projections, and a printing device to which the letters are presented by said carrier, as set forth.

3. In a stamp-canceling machine, an inclined letter-carrying belt having letter-engaging projections, combined with a letter-retarding belt located at the lower edge of said carrying belt, a printing device to which the letters are presented by the carrier, and means for moving said carrying and retarding belts in opposite directions, as set forth.

4. In a stamp-canceling machine, the combination of a die cylinder, an inclined carrying belt having letter-engaging projections each divided into upper and lower sections one located above and the other below the die cylinder, and a letter-retarding device, as set forth.

5. In a stamp canceling machine the combination of a carrier, letter engaging projections thereon, a printing device or die cylinder, means for positively engaging the said printing device or die cylinder with the carrier, and a frictional letter retarding device which yieldingly arrests or retards a letter moved by said carrier until said letter is engaged by one of said projections, and permits the letter to be positively moved forward by said projections without lateral change of position, as set forth.

## 503,837. ATOMIZER. WILLIAM J. EVANS, New York, N. Y., assignor to McKesson & Robbins, same place. Filed Feb 21, 1893. Serial No. 463,156. (No model.)



*Claim.*—1. An atomizer consisting of an air and suction tube, a liquid holding cup, an integral connection between the base of the cup and suction tube having a rearward bend thereon constituting a hand piece and an air bulb on the air tube, substantially as described.

2. In an atomizer, the combination with a liquid holding cup, of a suction tube leading out from the base and forming a part thereof, a drip flange on the suction tube having a lip projecting over the edge of the cup, an air pipe and an air forcing device connected to the air pipe, substantially as described.

3. In an atomizer the combination with an open mouth cup, a rearwardly extending handle at the base of the cup, a suction tube leading out from and below the base of the cup and an air tube on the suction tube, substantially as described.



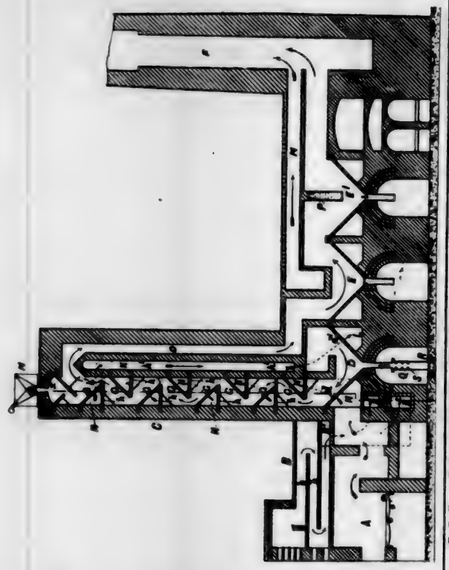
## 503,838. BOOTJACK. LOUIS EVES, Jeffriesburg, Mo. Filed Feb. 23, 1893. Serial No. 463,346. (No model.)



*Claim.*—1. A boot and shoe jack comprising a board, a foot having an opening, a wire having a transverse extension at its inner end and a hook at its outer end and passing through the opening in the foot, a plate having a flange by which the wire is retained and guided beneath the board, and the staple in which the extension works and by which the wire is limited in its movement; substantially as described.

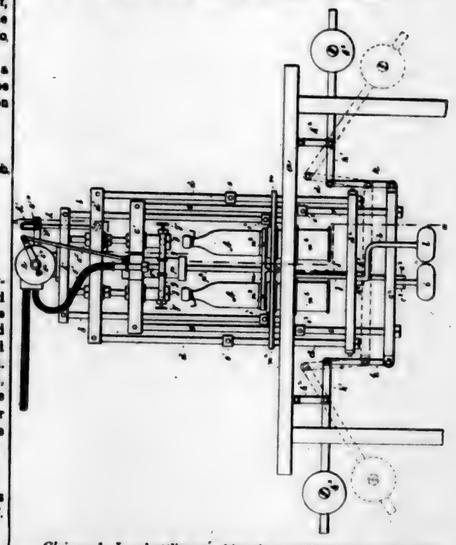
2. A boot and shoe jack comprising a wire provided with a hook, a plate loosely securing the wire to the jack, an opening through the jack proper, through which the wire passes, an extension on the rear end of the wire, and a staple for limiting the endwise movement of the wire; substantially as described.

## 503,839. METHOD OF TREATING REFRACTORY ORES. CHARLES J. FAUVEL, London, England. Filed Jan. 31, 1893. Serial No. 460,267. (No specimens.)



*Claim.*—The herein described method of treating refractory ores, which consists in subjecting the same in the form of a continuously-falling fine stream, first, to a progressively increasing degree of radiated and conducted heat and concurrently therewith to the oxidizing and desulphurizing action of a continuous current of pure hot air and steam flowing in the opposite direction to the falling stream of ore, and then while the particles of ore are in an incandescent condition quenching them in cold water, thereby splitting up the particles, removing adherent scale, and generating steam for assisting the oxidizing and desulphurizing action of the air, the said oxidizing and desulphurizing operations being performed out of contact with furnace gases, as described.

## 503,840. BOTTLING-MACHINE. GEORGE FELTHAM, New York, N. Y. Filed Dec. 12, 1892. Serial No. 454,826. (No model.)



*Claim.*—1. In a bottling machine the combination of a charging slide with a sirup pump secured thereto and with a water valve provided with a perforated movable disk that is connected to the charging slide substantially as specified.

2. The combination of a charging slide and a corking slide, with a water valve connected to both the slides, substantially as specified.

3. The combination of a charging slide and a corking slide, with a water valve provided with two perforated disks, of which one is operated by the charging slide and the other by the corking slide, substantially as specified.

4. In a bottling machine the combination of a charging slide having nozzles with a water inlet valve composed of a pair of perforated disks and which are connected to said nozzles, substantially as specified.

5. The combination of a charging slide and corking slide, with a pair of perforated disks and with a rod having an elongated eye *K'*, secured to the corking slide and operating one of said disks, substantially as specified

6. The combination of a charging slide and corking slide, with a pair of treadles for operating the same and with a knee bar *j*, having nose *j'*, that locks the charging treadle and a projection $d^5$, that engages said nose upon the descent of the corking treadle, substantially as specified.

7. The combination of a charging slide and a corking slide with a pair of treadles, a knee bar *j*, and counterweights operated by one of said treadles and a projection $d^5$, and counterweight $m^3$, operated by the other treadle, substantially as specified.

8. The combination of a charging slide and a corking slide with a pair of treadles, a knee bar *j*, having nose *j'*, rod $j^3$, spring $j^3$, and slide $j^4$, substantially as specified.

9. The combination of a fulcrumed scale frame *n*, with platforms $n^3$ pivoted to said frame, springs $n^4$ beneath the platforms and with a vertically movable plate $n^2$, that supports the scale frame and the springs, substantially as specified.

10. The combination of a vertically movable plate $n^2$, with a balancing platform supported thereby and with rods *d*, corking slide $d^2$, and adjustable collars upon the rods for engaging the movable plate and gaging the corking slide, substantially as specified.

11. In a bottling machine the combination of the following elements: a charging slide, a corking slide, a water valve, a sirup valve, corking plungers, a pair of treadles, and mechanism for causing one treadle to release the other treadle, substantially as specified.

## 503,841. GARMENT-PROTECTOR. EDWARD E. FITLER, Philadelphia, Pa. Filed May 5, 1893. Serial No. 473,076. (No model.)

*Claim.*—A garment protector comprising an overlapping encircling band of inherently elastic material, presenting a smooth flat interior and exterior face, flattened lips, *a*, formed integral with the said

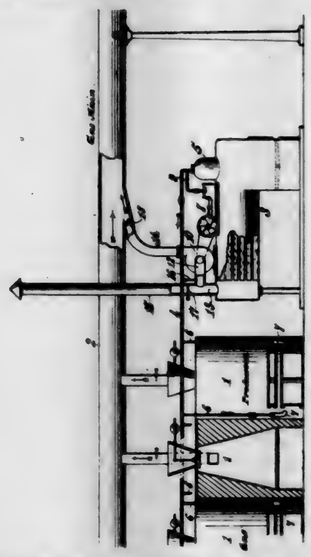
**503,841.**



band at the respective ends thereof, the inner face of said lips impinging against the flattened face of said band and open at the end to allow of disengagement from the band, substantially as described.

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**503,842.** METHOD OF AND APPARATUS FOR PROPELLING PRODUCER-GASES. WILSON H. FORBES, Jeannette, Pa. Filed May 15, 1893. Serial No. 474,217. (No model.)



*Claim.*—1. The herein described method of propelling producer or generator gases and increasing their heating capacity, which consists in passing into a gas main the producer or generator gases from a gas producer or generator, introducing the products of combustion from the burning fuel in a separate furnace into the producer or generator gases in transit through the gas main, and causing said products of combustion to force the generator gases through the main, substantially as specified.

2. The herein described method of propelling producer or generator gases and increasing their heating capacity, which consists in passing into a gas main the producer or generator gases from a gas producer or generator, and delivering under pressure the products of combustion from the burning fuel in a separate furnace into the producer or generator gases in transit through the gas main, substantially as specified.

3. The combination with a gas producer or generator, and a gas main connected therewith for conveying the producer or generator gases therefrom, of a separate furnace having a conduit for its products of combustion connected with said gas main for propelling the producer or generator gases therethrough, substantially as described.

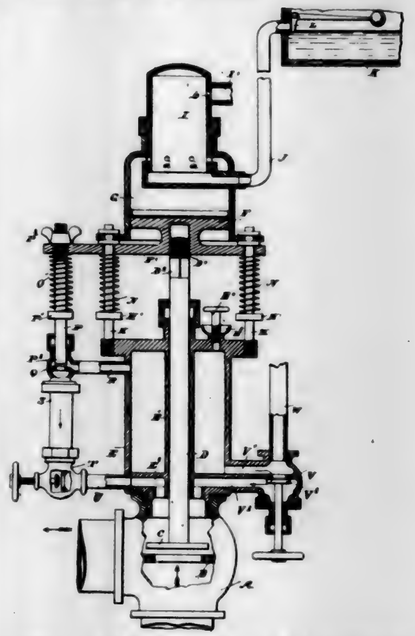
4. The combination with a gas producer or generator, and a gas main connected therewith for conveying the gases therefrom, of a furnace separate from the gas producer and a forcing apparatus connected with the gas main and with said separate furnace for forcing the products of combustion therefrom into the gas main to propel the producer or generator gases in the latter, substantially as described.

5. The combination with a gas producer or generator, and a gas main connected therewith for conveying the gases therefrom, of a boiler furnace separate from the gas producer, and a forcing apparatus connected with the boiler furnace and with the gas main for forcing the products of combustion from the boiler furnace into said gas main to propel the producer or generator gases therethrough, substantially as described.

6. The combination with a gas producer or generator, and a gas main connected therewith for conveying the gases therefrom, of a separate boiler furnace, having steam pipe connections with the producer or generator, and a forcing apparatus connected with the boiler furnace and the gas main for forcing the products of combustion from the boiler furnace into the gas main to propel the producer or generator gases therethrough, substantially as described.

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**503,843.** VALVE. THOMAS P. FORD, Brooklyn, N. Y. Filed Mar. 3, 1893. Serial No. 464,556. (No model.)



*Claim.*—1. In a device of the class described, the combination with a valve carrying a piston on its stem, of a cylinder containing the said piston, a vessel provided with an inlet and an outlet and connected by ports with the upper, closed end of the said cylinder, a water supply tank connected with the inlet of the said vessel, and a float valve arranged in the said tank and adapted to open and close the connection between the tank and vessel, substantially as shown and described.

2. In a device of the class described, the combination with a valve carrying a spring-pressed piston on its stem, of a cylinder containing the said piston, a vessel provided near its lower end with an inlet and at its upper end with a small draining port, the said vessel being also connected by ports with the upper, closed end of the said cylinder, a pipe connected with the inlet of the vessel, an overhead tank connected with the said pipe, and a float valve arranged in the said tank and controlling the said pipe, substantially as shown and described.

3. In a device of the class described, the combination with a valve carrying a piston controlled by fluid pressure, of a lubricant reservoir, a sight feed tube connected with the said reservoir, and a valve for the said sight feed tube and controlled by the said piston, so that when the valve is seated the lubricator is shut off, and when the valve is unseated the lubricator feeds the lubricant, substantially as shown and described.

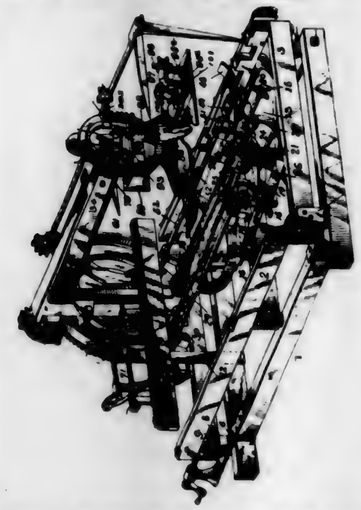
4. In a device of the class described, the combination with a valve carrying a piston controlled by fluid pressure, of a lubricant reservoir, a sight feed tube connected with the said reservoir, a valve for the said sight feed tube and controlled by the said piston, so that when the valve is seated the lubricator is shut off, and when the valve is unseated the lubricator feeds the lubricant, and means for regulating the stroke of the said valve for the sight feed tube, substantially as shown and described.



5. In a device of the class described, the combination with a valve carrying a spring-pressed piston controlled by fluid pressure, of a lubricant reservoir, a sight feed tube connected with the said reservoir, a spring-pressed valve for the said sight feed tube and connected with the said piston, and a wing nut screwing on the stem of the said sight feed tube valve to regulate the stroke thereof, substantially as shown and described.

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**503,844.** TWINE-BINDER. JOHNVILLE F. FOWLER, Alliance, Ohio. Filed Jan. 23, 1893. Serial No. 459,332. (No model.)



*Claim.*—1. In a grain-binder the combination with the oscillating needle arm, of the vertically movable pivoted arms, the sprocket wheels carried thereby, and the packer chains passing over said wheels and provided with packer fingers, substantially as described.

2. In a grain binder the combination with the oscillating needle arm having a hub extension, of the rod or bar connected therewith, the pivoted arms carrying sprocket wheels, the links connecting said arms with the said rod or bar, and the sprocket chains having packer fingers, substantially as described.

3. In a grain-binder the combination with the oscillating needle arm having hub extension, the rod or bar connected therewith, the pivoted arms carrying sprocket wheels, the links connecting said arms with the said rod or bar, and the sprocket chains having packer fingers, of the shaft carrying the needle arm, provided with a mutilated pinion, the cogged lever meshing with said pinion, the stud carried by said lever and the master-wheel having a cam-groove with which said stud engages, substantially as described.

4. In a grain-binder the combination with the oscillating needle arm having a hub extension, the rod or bar connected therewith, the pivoted arms carrying sprocket wheels, the links connecting said arms with the said rod or bar and the sprocket chains having packer fingers, of the needle arm shaft, the trip lever journaled thereon, and adapted to be actuated by the movement of the needle arm, substantially as described.

5. In a grain binder, the combination with the oscillating needle arm having a hub extension and its shaft and means for actuating the same, the rod or bar connected with said hub extension, the pivoted arms carrying sprocket wheels, the links connecting said arms with said rod or bar and the sprocket chains having packer fingers, of the trip lever journaled on said shaft, provided with a loop on its under side, the rock shaft having an arm engaging with said loop, an arm at the opposite end of said rock shaft, the lever having an inclined slot, the main shaft and the disk adapted to be thrown into mesh with a pinion on the main shaft by the movement of said lever, substantially as described.

6. In a grain binder the combination with the oscillating needle arm having a hub extension and its shaft and means for actuating the same, the rod or bar connected with said hub extension, the pivoted arms carrying sprocket-wheels, the links connecting said arms with said rod or bar, and the sprocket chains having packer fingers, of the trip lever journaled on said shaft adapted to be actuated by said hub extension, the loop on the under side of said trip lever, the rock shaft having an arm at its opposite end, the pivoted lever having an inclined slot with which said arm engages, the main shaft the sleeve on said shaft, the disk carried by said sleeve having a spline, the notched hub embracing said sleeve and the pinion carried by said hub, substantially as described.

7. In a grain binder the combination with the trip lever, journaled to the needle arm shaft having bifurcated and curved inner end, the needle arm shaft, the needle arm having a hub extension adapted to engage with and trip said lever when said shaft is actuated, the rock shaft connected with the trip lever, the arm secured to one end thereof, the pivoted lever having an inclined slot with which said arm engages, the cogged master wheel having a peripheral recess, and the arm on the rock shaft engaging with said recess, of the main shaft, the sleeve mounted thereon having a spline, and a disk operated by said lever the notched hub encircling said sleeve, and the pinion carried by said hub engaging with the master wheel, substantially as described.

8. In a grain binder the combination with the needle arm, the intermittently rotating knotter shaft, having a pinion at its rear end, the short shaft having a pinion meshing with the pinion on said shaft, the cam disk having a cam groove and a series of cogs on its rear face, and a stud on its front face, the knotting bill having a pinion engaging with said cogs, the pivoted finger and vertical rod connected with a pivoted lever having a stud working in said groove, the sleeve having a face wheel, with which said stud on the front face of the disk engages, the sprocket wheel and chains, and the cord holding disks, substantially as described.

9. In a grain binder, the combination with the oscillating needle arm, the intermittently rotating knotter shaft having a pinion at one end meshing with a pinion on a shaft carrying a knotter disk, said disk being provided with studs on its front face, of the shaft secured to the supporting frame, the sleeve mounted thereon having a face wheel adapted to engage with one of the studs on said disk, a knife carrying lever fulcrumed on said shaft having a stud adapted to engage with the other stud on the disk, the sprocket wheel on the end of said sleeve, the sprocket chain and the cord holder shaft having a sprocket with which said chain engages, substantially as described.

10. In a grain binder the combination with the binder frame, the three sided supporting frame secured thereto, the oscillating needle arm, the trip lever and connections, the master wheel having a series of cogs or teeth, the knotter shaft provided at one end with a mutilated gear and at the other end with a pinion, the shaft having a gear meshing with said pinion, the disk carried by said shaft, having studs upon one face, and a cam groove and cogs upon the other face, the knotting bill having a pinion intermediate of its ends, the pivoted finger having a vertical rod connected therewith, the lever connected with said rod, having a stud engaging with the groove in the disk, the sleeve connected with the cord holder having a face wheel, the shaft having a lever secured thereto carrying the knife, and the stud on said lever, substantially as described.

11. In a grain binder the combination with the binding mechanism, of a vertically movable and horizontally reciprocating cutter-bar located at the delivery end of the binder, substantially as and for the purpose specified.

12. In a grain binder the combination with the main driving-shaft, the arms 125, journaled thereon, the shaft 127ª, the arm 128 secured thereto, of the finger-bar connected with said arms, the cutter bar and means substantially as described for reciprocating said cutter bar for the purpose specified.

13. In a grain binder the combination with the shaft, the arm adjustably secured thereto, the main shaft, the supporting arms journaled on the main shaft, the finger bar to which said arms are secured, the cutter bar, the pitman, the crank, the shaft having a bevel gear and the bevel gear-wheel carried by the main shaft and meshing with said gear, substantially as described

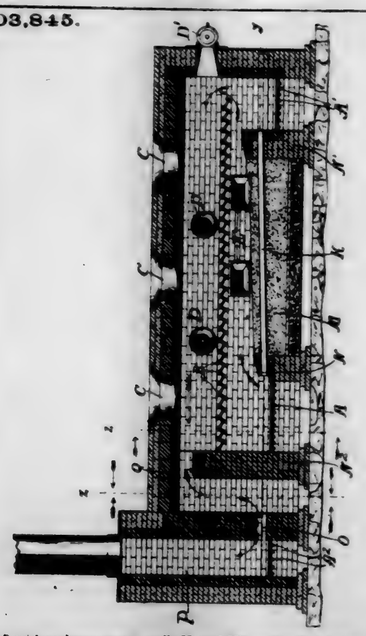
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**503,845.** APPARATUS FOR BURNING GARBAGE, &c. WILLIAM H. GARRETSON, Dallas, and SILAS B. TAUFFER, Gainesville, Tex. Filed May 15, 1893. Serial No. 474,291. (No model.)

*Claim.*—1. An apparatus for burning garbage, comprising a roasting chamber, a garbage grate B extending from one end of said roasting chamber nearly to the other end, grates A and A' beneath the two ends of said garbage grate, walls N and N' terminating below said garbage grate, a filling of absorbent material M between said walls, inclined pipes or flues opening above each of said grates A and A' embedded in said absorbent material, and sloping upward as shown, and means for carrying off the products of combustion after passing along the bottom and top of said grate B, substantially as and for the purposes described.

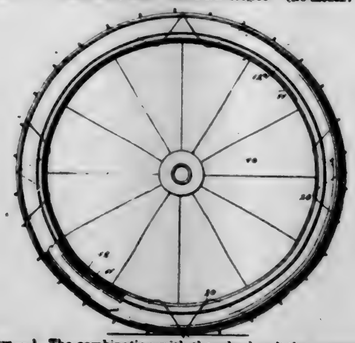
2. An apparatus for burning garbage, comprising a roasting chamber, a garbage grate B extending from one end of said roasting chamber nearly to the other end, grates A and A' beneath the two

503,845.



ends of said garbage grate, walls N and N' terminating below said garbage grate, a filling of absorbent material M between said walls, inclined pipes or flues opening above each of said grates A and A' embedded in said absorbent material, and sloping upward as shown, the wall $N^2$ partly closing one end of said chamber and leaving a passage above it for the products of combustion, the smoke stack P and the grate $A^2$ therein, substantially as and for the purpose described.

503,846. DETACHABLE TIRE. ARTHUR C. GILLETTE, Jersey City, N. J. Filed Feb. 2, 1893. Serial No. 460,653. (No model.)



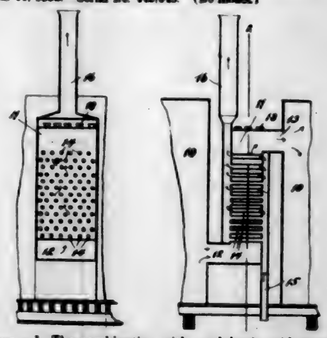
*Claim.*—1. The combination with the wheel and the pneumatic tire thereon, of the flexible tire and guard formed from a single piece of sheet metal provided with spurs upon its face, and the fastening lacings extending from the edges of the tire and guard around the felly of the wheel, substantially as described.

2. As an improved article of manufacture, a detachable tire of a single piece of sheet metal, and provided on its face with projecting spurs and at its ends with fastening devices, substantially as specified.

3. As an improved article of manufacture, a detachable guard and tire of curved cross section, the tire having projecting spurs upon its face and having its ends provided with hooks, the hooks on one end being adapted to engage those on the opposite end the whole formed of a single piece of sheet metal, substantially as specified.

4. As an improved article of manufacture, a detachable tire and guard, formed of flexible material and provided upon its face with projecting spurs, and at its ends with fastening hooks, the fastening hooks being arranged at the outer edges of the tire, said ends being also formed respectively with a button and an apertured tongue intermediate of the said hooks, substantially as specified.

503,847. APPARATUS FOR MAKING SULPHURIC ACID. FRANCIS B. HACKER, Charleston, S. C., and PETER S. GILCHRIST, Baltimore, Md., assignors to themselves, and Albert C. Johnson, Baltimore, Md. Filed Aug. 11, 1892. Serial No. 442,845. (No model.)



*Claim.*—1. The combination with a sulphuric acid apparatus, of a column or case interposed therein and provided with a series of obstructing air pipes, substantially as described.

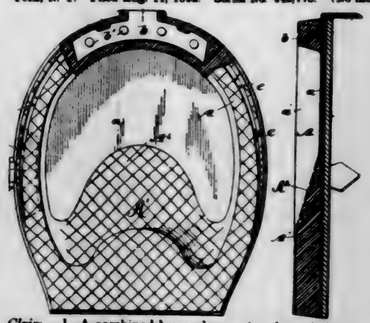
2. In a sulphuric acid apparatus, the combination with lead chambers connected together, of a series of obstructing air pipes in the connection between the said chambers, substantially as described.

3. In a sulphuric acid apparatus, the combination with lead chambers, and a case or column connecting the said chambers, of a series of pipes in the case or column, and means for supplying a current of air through the said pipes, substantially as described.

4. In a sulphuric acid apparatus, the combination with lead chambers, and a case or column connecting the said chambers, of a series of cross pipes arranged in the case or column, an air flue with which one end of the pipes connect, and a stack with which the other end of the pipes connect, substantially as described.

5. In a sulphuric acid apparatus, the combination with lead chambers, and a case or column connecting the chambers, of a series of obstructing air pipes arranged in the said case or column, and moistening lutes on the case or column and delivering upon the said pipes, substantially as described.

503,848. ELASTIC HORSESHOE. MICHAEL HALLAHAN, New York, N. Y. Filed Aug. 11, 1892. Serial No. 442,775. (No model.)



*Claim.*—1. A combined horse shoe and pad consisting of a rubber shoe and an integral rubber pad, the two forming the substantially complete bearing surface, the same being formed with nail holes and having a suitable backing, substantially as described.

2. A horse-shoe formed of rubber, in which nail holes are provided, and metallic clips having integral plates at about right angles to the clips, said plates being embedded in the rubber, substantially as described.

3. A rubber horse shoe having metallic clips each comprising a plate secured at the top or inner side of the shoe and formed with a series of studs projecting therefrom through the rubber and forming strengtheners for the latter, substantially as described.

4. A horse shoe comprising a shoe proper of rubber, and a rubber pad and frog integral therewith, the shoe being continuous to form a complete closure of the hoof, and a backing consisting of a leather plate and an interposed layer of canvas, the whole being united together, substantially as described.

5. A horse shoe comprising a shoe proper formed of rubber and having a rubber pad and frog integral therewith, metallic clips having plates let into the rubber at the top surface thereof, and a backing plate of leather, the clip plates being clamped between the leather and the rubber shoe, substantially as described.

6. The herein described improved foot covering for horses, the same comprising a facing of rubber, an intermediate layer of canvas cemented to the rubber, and a backing of leather, the whole being secured together, and the rubber facing having an integral frog and a bead or rib in the form of a horse-shoe extending from the frog around the front and sides of the shoe in unbroken continuity, substantially as described.



503,849. HORSESHOE AND PAD. MICHAEL HALLAHAN, New York, N. Y. Filed Mar. 29, 1893. Serial No. 468,167. (No model.)



*Claim.*—1. The herein described combined pad and shoe, the pad having a yielding frog and a raised bead, and a flange outside of the same, and the shoe seating on said flange outside the pad and frog and having a reduced thickness at the inside quarter, whereby the surface of the pad will project beyond the shoe at such quarter, substantially as described.

2. The herein described horseshoe pad having a backing of leather and a facing of rubber, said facing comprising a frog, and a bead extending in unbroken continuity around the sides and front of the pad, the pad further having a flange outside the bead, forming a seat for the shoe and adapted to receive the shoe nails for securing the pad in place, substantially as described.

3. The herein described horseshoe pad, having a backing of leather, a facing of rubber, and an interposed metallic plate, substantially as and for the purpose described.

4. The herein described horseshoe pad, comprising a backing of leather, a facing of rubber, and an interposed metallic plate, the leather and rubber being united by a row of stitching extending therearound outside of the metallic plate, substantially as described.

503,850. REED-ORGAN. EDWIN W. HAM, Worcester, Mass. Filed Mar. 6, 1893. Serial No. 464,672. (No model.)



*Claim.*—1. In a reed organ, the combination of a number of reeds arranged in one plane with a number of reeds arranged in a different plane, and passages leading from the reeds in one plane between the reeds in the other plane, whereby the outlets to all the reeds may be arranged in the same plane side by side, substantially as described.

2. A reed board having reeds arranged in different planes, and passages leading alternately from the reeds in one plane down between the reeds in the other plane, substantially as described.

3. A reed-board having the reeds arranged in different planes as at *l* and *l'*, of the passages 11 communicating with the upper set of reeds *l'*, and the passages 10 communicating with the lower set of reeds *l'*, and of passages leading from the upper passages 11 down between the lower passages 10, substantially as described.

4. A reed-board having the reeds arranged in two different planes as at *l* and *l'*, of the passages 11 communicating with the upper set of reeds *l'*, and the passages 10 communicating with the lower set of reeds *l*, of the passages 12 leading from the upper set of reeds *l'* alternately down between the passages 10, whereby the outlets to all the reeds may be arranged in the same plane, substantially as described.

5. A reed-board having the reeds alternately disposed in different planes, passages communicating with said reeds, and passages leading from the upper reeds down between the lower reeds, of a single mute as L' controlling the communication to all of said reeds, substantially as described.

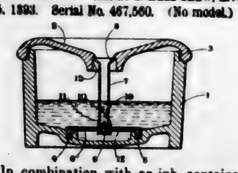
6. A reed-board having the reeds alternately disposed in different planes, of passages communicating with said reeds, and passages leading from the upper set of reeds, between the under set of reeds, whereby the outlets to all the reeds may be arranged in the same plane, of a suitable cover arranged over the top of the upper of said sets of passages, substantially as described.

503,851. SELF-THREADING LOOM-SHUTTLE. STEPHEN M. HAMBLIN, New Bedford, assignor of one-half to Edwin S. Damon, Plymouth, Mass. Filed Oct. 29, 1892. Serial No. 450,408. (No model.)



*Claim.*—A shuttle-body having a funnel-shaped thread-entry or opening C made transversely through its head and terminating about midway of the transverse diameter of the said body, an eye F communicating with the said opening and extending transversely through the body to the side opposite that into which the said entry opens, a port D extending through the wall of the shuttle-body, and a horizontal slot or threadway F extending inward to a point in line with the end of the spindle and connecting the entry C with the port D, substantially as described.

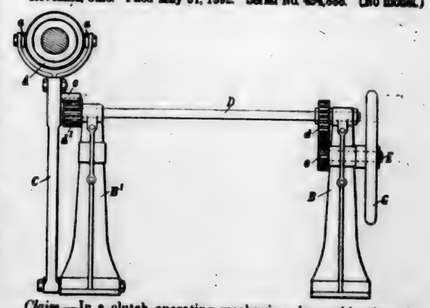
503,852. INKSTAND. HENRY S. HELE-SHAW, Liverpool, England. Filed Mar. 25, 1893. Serial No. 467,560. (No model.)



*Claim.*—1. In combination with an ink container 1, a flexible diaphragm 6 provided with a non-return valve 12 and having a periphery adapted to fit against the inner surface of the container and to inclose a portion of the ink therein below its surface; a tube 7 having a hole 11 through the side thereof, the upper end of the tube forming a dipping cup 8 and the lower end having its bore constricted and being adapted to fit an opening in the center of the diaphragm, and a ball valve 9 which normally closes the bore of the tube against the downward flow of the ink substantially as described and illustrated.

2. In combination with an ink-container and tube 7, a flexible diaphragm 6 having a non-return valve 12 and a depending peripheral flange adapted to fit in an annular groove formed in the bottom of the container substantially as described and illustrated.

503,853. CLUTCH-OPERATING MECHANISM. HARRY W. HILL, Cleveland, Ohio. Filed May 31, 1892. Serial No. 434,853. (No model.)

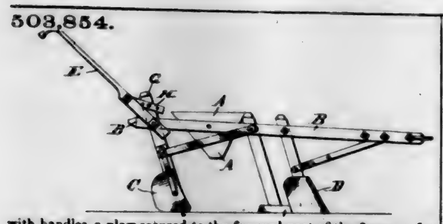


*Claim.*—In a clutch operating mechanism, in combination, the two standards B B', the lever C pivoted at one end to the standard B', a suitable device connecting the other end with the sliding sleeve, the internally geared segment *c* on said lever, the shaft D journaled in both of said standards B B', the pinion *d'* secured to said shaft and meshing with a gear segment *c*, the spur segment *d* secured to said shaft D, the shaft E journaled in the standard B, the spur pinion *e* secured to said shaft E and meshing with said spur segment *d*, and the hand wheel G secured to said shaft E, substantially as and for the purpose specified.

503,854. POTATO-PLANTER. JOHN HORSCROFT, Moberly, Mo. Filed Aug. 26, 1892. Serial No. 444,947. (No model.)

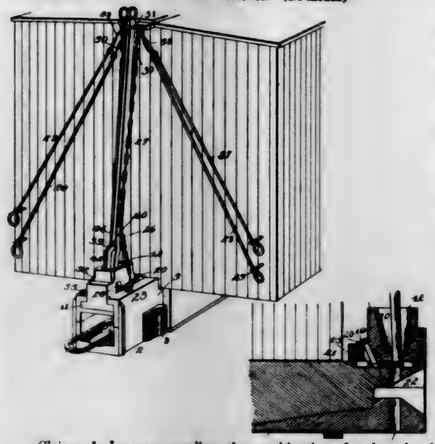
*Claim.*—In a potato planter, the combination of a frame provided

503,854.



with handles, a plow secured to the forward part of the frame, a flat shoe located behind said plow and flaring backwardly therefrom, a covering plow located behind said shoe, and a hopper, located between said shoe and the covering plow; substantially as and for the purpose set forth.

503,855. CAR-COUPLING. EDWARD B HYER, Red Knob, W. Va. Filed Feb. 25, 1893. Serial No. 463,740. (No model.)



*Claim.*—1. In a car coupling, the combination of a draw-head having a coupling pin perforation, a coupling pin, a sliding plate mounted in the draw-head and adapted to extend across the coupling pin perforation when the coupling pin is elevated to support the latter, a rock-shaft mounted on the draw-head and provided with a depending arm connected with the sliding plate to actuate the same, said rock-shaft having another arm loosely connected with the coupling pin, whereby when the latter is elevated the rock-shaft will be turned, substantially as described.

2. In a car coupling, the combination of a draw-head having a coupling pin perforation, a coupling pin, a sliding plate mounted in the draw-head and adapted to extend across the coupling pin perforation when the coupling pin is raised to support the latter, and a rock-shaft provided with a depending arm to engage and actuate the sliding plate, and having a forwardly extending resilient arm provided at its outer end with an inwardly extending portion and loosely connected with the coupling pin, substantially as and for the purpose described.

3. In a car coupling, the combination of a draw-head having a coupling pin perforation and provided in its top with a way, a slide mounted in the way and provided with a cavity arranged vertically and extending through it, a sliding plate mounted in the draw-head and arranged beneath the slide, a coupling pin, a rock-shaft journaled on the slide and having one arm engaging the sliding plate and another arm loosely connected with the coupling pin, and means for advancing the slide when the coupling pin is elevated, substantially as described.

4. In a car coupling, the combination of a draw-head having a coupling pin perforation, a slide mounted on the draw-head and provided with a vertical cavity, a sliding plate arranged beneath the slide, a coupling pin, a rock-shaft mounted on the slide and having a depending arm to engage the sliding plate and provided with a forwardly extending arm loosely connected with the coupling pin, a bell-crank lever pivoted at its angle to the slide and having one arm journaled on the draw-head, and means for actuating the other arm of the lever, substantially as described.

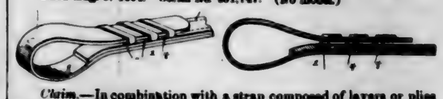
5. In a car coupling, the combination of a draw-head having a coupling pin perforation, a slide mounted on the draw-head and having a vertical cavity, a sliding plate arranged beneath the slide, a coupling pin, a rock-shaft mounted on the slide and having a depending arm engaging the sliding plate and provided with a forwardly extending arm loosely connected with the coupling pin, a bell-crank lever pivoted at its angle to the slide and having one arm journaled on the draw-head, and rods and chains mounted on the end of a car and arranged at opposite sides thereof and at the top and connected with the coupling pin and with the bell-crank lever, substantially as described.

6. In a car coupling, the combination of a draw-head provided at its top with a way and having in the bottom thereof a recess with its rear portion enlarged to form stop shoulders, a slide mounted in the way, a sliding plate arranged in the recess and having lateral projections to engage the stop shoulders, a rock-shaft mounted on the slide and engaging the sliding plate, a bell-crank lever pivoted to the slide and having one arm journaled on the draw-head, a coupling pin, and means for turning the rock shaft and actuating the lever, substantially as described.

7. In a car coupling, the combination of a draw-head having a coupling pin perforation, a slide mounted on the draw-head and provided at one side with a boss, a sliding plate arranged beneath the slide, a rock-shaft journaled on the slide and having one arm engaging the sliding plate and provided with a forwardly extending resilient arm having its outer end bent inward to engage the boss, substantially as and for the purpose set forth.

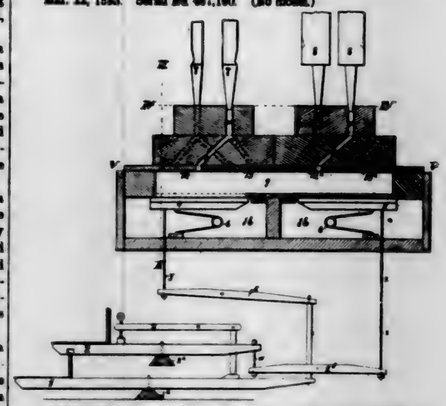
8. In a car coupling, the combination of a draw-head having a coupling pin perforation, a slide mounted on the draw-head and having a coupling pin cavity, a coupling pin provided at its upper end with an inwardly extending curved arm and having between its ends a socket, and an upwardly extending bar having its lower end arranged in the socket and provided between its ends with an opening receiving the curved arm, substantially as described.

503,856. HARNESS-LOOP. CHARLES W. JAMES, Quincy, Ohio. Filed Aug. 5, 1891. Serial No. 401,747. (No model.)



*Claim.*—In combination with a strap composed of layers or plies of the herein described billet loop consisting of a flat helical loop formed from a flat leather strip having outer engaging bars thereof extending diagonally across and away from the said strap at a lesser angle than the inner connecting bars thereof to expose said inner bars between the said outer bars, and fastenings passed through the layers or plies of the strap and the said inner bars to simultaneously secure the said inner bars and strap, substantially as described.

503,857. PIPE-ORGAN. HENRY JÄSCHKE, St. Louis, Mo. Filed Mar. 22, 1893. Serial No. 467,160. (No model.)



*Claim.*—1. An organ having two manuals, independently connected to and speaking the same rank of pipes, through the double channels 9 and $9^a$ and provided with draw stops so arranged that either the upper or lower manual may speak the same rank of pipes, or both manuals be indepeqdently connected to the same rank of pipes at the same time.



2. An organ having two manuals, independently connected to the pallets 4 and 5, which open and close the channels 9 and $9^a$, said channels 9 and $9^a$ connecting with and speaking the same pipe, substantially as described.

3. The combination in a pipe organ provided with two manuals independently connected to and speaking the same rank of pipes, of the double channels 9 $9^a$ connected to each pipe that speaks by both manuals.

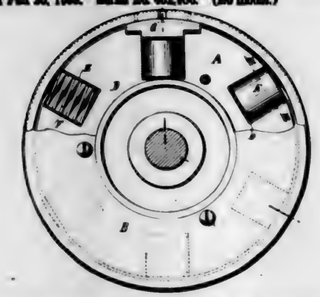
4. An organ having two manuals independently connected to and speaking the same rank of pipes, provided with draw stops whereby either or both manuals may be made to respond at a given time, having separate and independent channels and pallets for each key on the two manuals, and each pipe speaking by both manuals being connected with two channels respectively opened and closed by keys of the two manuals.

503,858. HOLDER FOR CUFFS, &c. RICHARD KATHER, Brooklyn, assignor to Herman Schoner, New York, N. Y. Filed Apr. 17, 1893. Serial No. 470,666. (No model.)



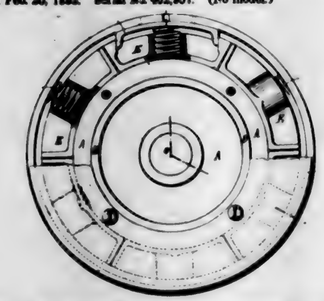
*Claim.*—A holder of the class described, comprising a back, a front, bellows sides connecting the back with the front, longitudinally-extending partitions supported on the said bellows sides and made of different lengths to form step-like openings for the compartments, and a cover adapted to fold over the open end of the compartments, substantially as shown and described.

503,859. PISTON-PACKING. IRVING A. KILMER, Newburg, N. Y. Filed Feb. 20, 1893. Serial No. 462,956. (No model.)



*Claim.*—The combination in a piston, of one or more expansion rings, spiral springs arranged in radial recesses in the body of the piston, which recesses are closed on one side by a follower, and open ended tubular or sleeve supports surrounding the springs and interposed between them and the walls of the recesses, substantially as shown.

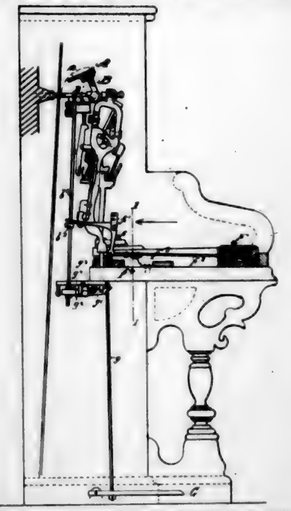
503,860. PISTON-PACKING. IRVING A. KILMER, Newburg, N. Y. Filed Feb. 20, 1893. Serial No. 462,957. (No model.)



*Claim.*—1. The combination in a piston packing of a split ring, spiral springs bearing outwardly against the ring, and a series of spring carrying segmental blocks interposed between said springs and the fixed parts of the piston, and engaging the ring, so that the ring, blocks and springs will rotate in unison, as set forth.

2. The combination with the split ring or rings of a piston packing, and the body portion of the piston, of segmental blocks seated in the body portion and formed with sockets on their outer faces, and radially arranged spiral springs interposed between the ring and the blocks, and seated in said sockets, as set forth.

503,861. PIANO. ORRIN A. KIMBALL and JOSEPH GRAMER, Boston, Mass. Filed Mar. 21, 1892. Serial No. 426,096. (No model.)



*Claim.*—1. In combination, a soft stop rail; action bolts; rocker arms pivoted upon the action bolts; and connections for operating the rocker arms substantially as described.

2. In combination, soft stop rail, A; rocker-arms B secured to the rail; lever, $g^3$; rod, $b^3$; connecting one of the rocker-arms to the lever $g^2$; a spring acting upon lever $g^3$ to elevate the rod $b^3$; lever $g$ loosely connected with the lever $g^2$; spring $g^4$ to depress the lever $g$; pedal G; and connections between the pedal and the lever $g$ substantially as and for the purposes set forth.

3. In combination a soft stop rail, rocker arms fast to it, clamping straps adapted to be clamped on the action bolts, and pivots connecting the rocker arms with the clamping straps, all substantially as described.

503,862. KETTLE-LIFTER. ISAAC B. KOONS, Fogiesville, Pa. Filed May 10, 1893. Serial No. 473,648. (No model.)



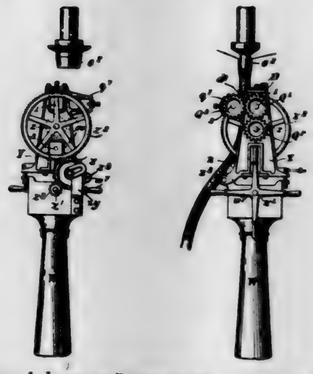
*Claim.*—1. A pot hook having two oppositely disposed, rigidly connected, inwardly opening jaws, and a handle, substantially as and for the purpose described.

2. An implement having two inwardly opening opposite jaws disposed in different planes, and rigidly connected together, and a handle, substantially as described.

3. An implement for the purpose specified, having two V-shaped jaws disposed in different planes and opening toward each other, rigidly connected together, and a handle connected to the upper jaw, substantially as and for the purpose described.

4. The herein described implement having jaws A, B, connected by shank C, a handle D attached to jaw A, and a hook E attached to jaw B, all constructed substantially as and for the purpose set forth.

## 503,868. TAKE-UP MECHANISM FOR CIRCULAR LOOMS. ALBERT DE LASKI, Cleveland, Ohio. Filed Apr. 10, 1891. Serial No. 388,419. (No model.) Patented in England Mar. 11, 1892, No. 4,617.



*Claim.*—1. In a take-off mechanism, the combination with a suitable supporting stand; a vertical shaft arranged therein; the horizontal spindle $s'$ geared to said vertical shaft; the take-off rolls; and a system of gears by which the necessary motion is transmitted from spindle $s'$, to the said take-off rolls, of a hand-wheel applied to said spindle; and a clutch mechanism connecting the lower end of said vertical shaft with a constantly rotating drive-gear and provided with a foot-lever, or treadle; all substantially as and for the purposes set forth.

2. In a take-off mechanism, the combination, with the stand, or column W, provided with a swinging and adjustable head-frame having brackets and bearing boxes, and the removable take-off rolls, of means, for driving said rolls, and a shifting roll-spindle and gear, as specified; whereby the said mechanism may be transposed from one adapted to take off a flattened fabric to one adapted to take off a tubular fabric; all substantially as hereinbefore set forth.

3. In a take-off mechanism adapted to the removal of a finished article in a tubular condition, the combination with a pair of circumferentially grooved take-off rolls, of an elliptically shaped and bent, or warped, guide-ring, for the tubular article, arranged in close proximity to the bite of the said take-off rolls on the article; all substantially as and for the purpose hereinbefore set forth.

## 503,864. FISH-HOOK. DAVID LEHMANN, Halstead, Kans. Filed May 6, 1893. Serial No. 473,283. (No model.)



*Claim.*—1. A fish-hook comprising two hooks having their shanks crossed and pivotally connected together and lying flat against each other, each shank being provided with an eye the one arranged at right angles to the other, substantially as specified.

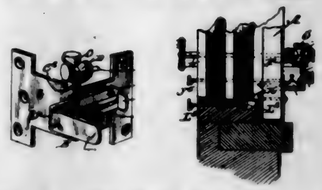
2. The combination with a fish-hook consisting of two hooks having their shanks crossed and pivoted together and each shank formed into an eye with the eyes at right angles to each other, of a cord passed loosely through one of said eyes and made fast to the other the barbs of the two being substantially at right angles to each other, and the two parts at their pivot lying flat against each other, substantially as shown and described.

## 503,865. CRANK. ROBERT S. LOVELACE, Bearsbridge, assignor to W. A. Lloyd & Co., Birmingham, England. Filed Sept. 9, 1891. Serial No. 405,215. (No model.) Patented in England Apr. 19, 1890, No. 5,998.



*Claim.*—In a cycle crank, the crank arm $a$ having at one end a clip, consisting of the gripping band $b^3$, shank end $a^3$, and extension $b^3$, said band being shaped to form a circular or cylindrical eye $b^3$ for the reception of the spindle $c$, and flattened on one of its sides, as indicated at $b^7$, in combination with the screw bolt $d$, and nut $e$, said screw bolt passing through the shank end $a^3$ and extension $b^3$, outside the eye $b^3$ and clear of the spindle, the inner face of the extension $b^3$ and opposing face of the shank end $a^3$ being separated by a space which permits of the adjustment of the extension $b^3$ and of the enlargement or diminution of the eye or spindle opening $b^3$, substantially as described.

## 503,866. SHUTTER-WORKER. THOMAS H. LUPTON, Winchester, Va. Filed Nov. 16, 1892. Serial No. 452,213. (No model.)



*Claim.*—1. In a shutter worker, the combination of a shaft fixed with respect to the shutter and having end rollers, an operating shaft arranged transversely of said first shaft and having end rollers and connections between the end rollers of said shafts, such connections being reversed, substantially as and for the purposes set forth.

2. In a shutter worker, the combination of the hinge provided on its swinging leaf with a shaft having opposite end rollers and a reduced portion between said rollers, a shaft transverse thereto and also having end rollers and an intermediate reduced portion, such reduced portions of the two shafts being fitted together and connections between the end rollers of the two shafts, substantially as set forth.

3. In a shutter worker a hinge having rigid with one leaf a shaft arranged in alignment with the axis or center of motion of the hinge and provided with upper and lower roller surfaces, substantially as set forth.

4. The combination with the hinge having its swinging leaf provided with a shaft arranged in alignment with the axis or center of motion of the hinge and having upper and lower rollers, the second shaft arranged transversely of said first shaft and having end rollers and connections between the rollers of the two shafts whereby the turning of the second shaft may operate to turn the other, substantially as set forth.

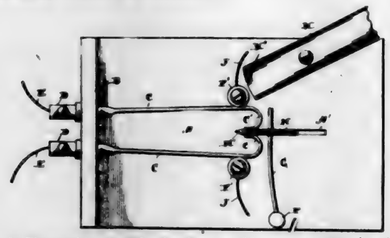
5. The combination with the shutter having a catch and its hinge having a fixed and swinging leaf of the shaft fixed to the swinging leaf of the hinge and provided with upper and lower rollers, the transverse shaft having end rollers connected with the rollers of the first shaft, and the latch pivoted to the fixed leaf of the hinge and arranged to engage the catch on the shutter, substantially as set forth.

6. As a new and improved article of manufacture a hinge having a fixed and swinging leaf, a latch pivoted to the fixed leaf a shaft rigid with the swinging leaf and in alignment with the axis or center of motion of the hinge such shaft provided with end rollers and an intermediate reduced portion and a second shaft transverse of the first having a reduced central portion fitted to that of said roller and the end rollers of the two shafts being connected substantially as and for the purpose described.

## 503,867. ELECTRICAL CUT-OUT. LEWIS B MATSON, Elmira, N. Y. Filed Jan. 19, 1893. Serial No. 458,938. (No model.)

*Claim.*—1. The combination of a main circuit, longitudinal and separable arms therein formed of spring metal which normally engage each other at their free ends, a loop, posts to which the ends of the same are connected, and a means for separating the said springs and moving them in contact with the loop posts, substantially as shown and described.

2. The combination of a main circuit, separable spring arms therein having curved adjacent ends which normally engage each other, a loop, posts to which its ends are secured, and a movable wedge for throwing the said arms outward against said loop posts, substantially as shown and described.

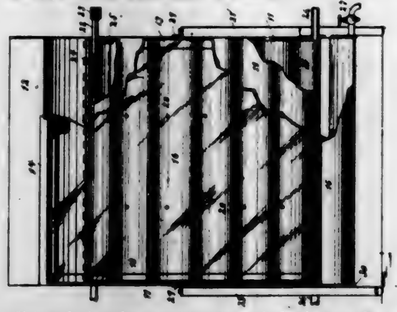


3. The combination of a circuit, separable contact points therein, a cut out consisting of a movable wedge formed of nonconducting material, and a point for the said wedge of conducting material, substantially as shown and described.

4. The combination of a main circuit, separable contact points therein, a cut out consisting of a recessed wedge, and a spring arm extending through the recess of the wedge for moving the same, substantially as shown and described.

5. The combination of a circuit, separable contact points therein, a cut out consisting of a recessed wedge, a spring extending through the recess of the wedge which spring holds the wedge normally between the contact points, and a lever adapted to engage the end of the said spring and withdraw the wedge from the said position, substantially as shown and described.

## 503,868. MILK-COOLER. FRANK J. MEEZ, Seattle, Wash. Filed Dec. 14, 1892. Serial No. 455,124. (No model.)

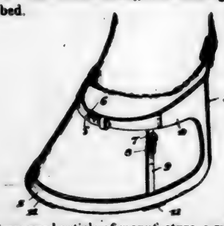


*Claim.*—1. A cooler comprising the vertical end pieces, the vertical chamber B, secured between said end pieces and formed of corrugated plates secured together, a perforated pipe 22, extending across the said chamber within its upper end, a baffle plate 25 beneath the pipe to direct the descending cooling liquid against the opposite walls of said chamber, an outlet in the bottom of the chamber, a hopper 12 secured between the upper ends of said side walls and having two series of outlets in its bottom to direct the liquid to be cooled upon the opposite outer walls of said cooling chamber and a trough under the cooling chamber to receive the cooled liquid, substantially as set forth.

2. A cooler comprising the vertical end pieces 11, having flanges 13, on their adjacent faces and a flange 14 connecting the two end pieces, a hopper 12 between the upper ends of the side pieces and having a V-shape bottom provided with two sets of perforations 17, the serpentine cooling chamber having a supply and outlet for the cooling liquid, the trough 10 below the said chamber and the glass panels 16 secured by the flanges 13, 14 and resting at their lower edges on the longitudinal edges of the trough, substantially as set forth.

## 503,869. HORSESHOE AND QUARTER-BOOT. JOHN D. MUSSET, Dixon, Ill. Filed Apr. 1, 1893. Serial No. 468,643. (No model.)

*Claim.*—1. As an improved article of manufacture, a rubber horseshoe of integral formation comprising a bottom having an outer surrounding tread-surface, and a web at the forward part between opposite portions of said tread-surface that is thinner than the remaining part of the bottom of the shoe to permit the latter to be stretched over the hoof, said bottom being provided with a rear thickened frog portion, and a narrow inwardly inclined rim extending around the front and sides of the shoe and forming an interfering cushion, substantially as described.

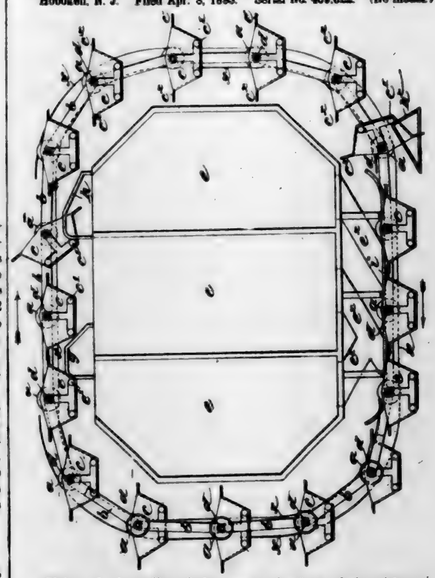


2. As an improved article of manufacture, a rubber horseshoe of integral formation having a bottom with a rim at the edge thereof that extends above the same and inclined inwardly, a rear thickened frog portion, a thin web in advance of said frog portion, and a rear guard, substantially as described.

3. In a device of the class described, the combination of a bottom having a rim rising above the same, and a rear guard with extensions, all of integral formation and constructed of rubber, fastening-straps in connection with said extensions, depending straps secured to said fastening-straps and having buckles thereon, and connecting-straps attached to the opposite sides of the said bottom and arranged to engage the buckles on the said depending straps, substantially as described.

4. In a device of the class described, the combination of a bottom having a rim rising above the same, a thickened frog, a thin web in advance of said frog, and a rear guard, all of elastic material and integrally formed, and the said guard provided with extensions, fastening-straps in connection with said extensions, depending straps secured to said fastening-straps and having buckles thereon, connecting-straps attached to the opposite sides of the said bottom and arranged to engage the buckles on said depending straps, and metallic plates applied to the under side of the said bottom at the toe and quarters thereof, substantially as described.

## 503,870. ENDLESS-CHAIN CONVEYER. GEORGE W. MCCASLIN, Hoboken, N. J. Filed Apr. 8, 1893. Serial No. 469,622. (No model.)



*Claim.*—1. An endless chain conveyer having a chain, with gravity buckets suspended pivotally therein and provided each with a lip at each end, the lips on adjacent buckets overlapping as set forth.

and means, situated at the point where the buckets approach the descending track, for tilting the buckets, the construction and arrangement of said means being such that the overlapping of the lips thereon will be changed, for the reason specified.

2. In an endless chain conveyer, the combination with the track, track-wheels and endless chain, of the gravity buckets suspended at intervals in the chain and provided with overlapping lips as described, and means substantially as described for preventing the collision of the loaded buckets at the point where they pass from the lower track to the ascending track, as set forth.

3. In an endless-chain conveyer, the combination with the track, track-wheels and chain, of the gravity buckets pivotally suspended at equal intervals in the chain and each having a projecting lip at each end, the lips on adjacent buckets overlapping as described, a bucket-tilting cam on the track near the point where the buckets pass onto the descending track, and a guard rail extending up along the descending track and in position to prevent the empty buckets from rocking on their pivots while descending, as set forth.

4. In a conveyer, the combination with an endless track, the track-wheels thereon for carrying the chain, and the endless chain, of gravity buckets *c*, pivotally suspended at equal intervals in the chain, and each provided with dumping lugs, and lips $c^*$, one at each end, the lip on the rear end of a bucket overlapping the lip on the front end of the following bucket when the buckets are moving along a horisontal track, and means substantially as described for tilting the buckets and shifting the lap of said lips when the buckets move onto the descending track, as set forth.

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**503,871. SPROCKET-CHAIN.** SIDNEY H. PRENT, Chicago, Ill. Filed Jan. 25, 1893. Serial No. 459,643. (No model.)



*Claim.*—The combination of a sleeve having irregularly shaped ends, links having correspondingly shaped holes into which said ends are inserted, with a pivot which passes through said sleeve and has transverse notches near its ends, links having holes adapted to fit said notched parts of the pivot, and having also integral tongues adapted to be bent back to enlarge the said holes to permit the insertion of the pivot and to be straightened out and forced into said notches, substantially as and for the purpose set forth.

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**503,872. BAKER'S-OVEN DOOR.** EDWARD A. C. PETERSEN, Chicago, Ill. Filed Apr. 22, 1893. Serial No. 471,429. (No model.)

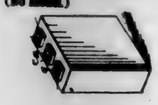


*Claim.*—1. In a door for bakers' ovens, the combination of a shaft carrying the door, a bell-crank lever on said shaft, a counter balance weight flexibly connected to said lever, block 19, and a pulley on said block over which the flexible weight connection runs; substantially as and for the purpose set forth.

2. In combination with the frame of a baker's oven door, a sliding shelf 24 adapted to be set in or out, and serving as a rest for the peel, as explained.

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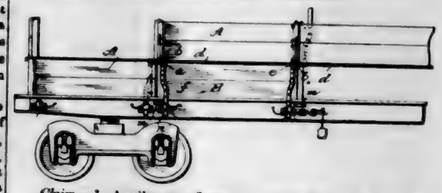
**503,873. ELECTRICAL CONDUIT FOR BUILDINGS.** JAMES J. POWERS and ROBERT VAN BUREN, Brooklyn, N. Y. Filed Apr. 27, 1893. Serial No. 472,056. (No model.)



*Claim.*—In an electrical conduit for buildings, a series of baked clay sections apertured longitudinally and provided with collars around the apertures at one end of the section, and recesses around the apertures at the opposite end of the section for receiving the collars of the adjacent section, the said sections being made of a suitable proportion for laying along with the brick in a brick wall, and glazed interiorly, and left unglazed on the exterior, with a rough surface to adapt it to receive and hold mortar substantially as specified.

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**503,874. FREIGHT-CAR.** ELIAS E. PRATT, New Haven, Conn. Filed May 15, 1893. Serial No. 474,117. (No model.)



*Claim.*—1. A railway car having movable sides, said sides being composed of a series of pivoted sections and each section comprising two parts with their inner hinged edges abutting, substantially as described.

2. A railway car having movable sides, said sides being made up of a series of sections, a hinge rod extending centrally the length of the car said sections comprising upper and lower parts having their inner edges abutting and hinges connecting them with the said rod, substantially as described.

3. In combination with a car, a section comprising two parts, the upper part being movable, and a catch carried by the upper part and adapted to lock the same in its raised or lowered position, substantially as described.

4. In combination with a railway car, a section comprising two parts, both of which are movable and catches adapted to lock the upper part in its raised or lowered position and to lock the lower part in its raised position, substantially as described.

5. In combination in a railway car, movable sides comprising upper and lower parts and locking means for the lower part consisting of a projection thereon, engaging a recessed casting and a wedge piece for confining the same, substantially as described.

6. In combination with the movable sides of a car, a casting or shoe for the end thereof and secured thereto, having a recessed corner and a latch fitted to an opening therein and permitted a limited movement, substantially as described.

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**503,875. FURNACE-DOOR.** CHARLES W. KENEAU, Meridian, Miss., assignor of one-half to John A. Lewis, same place. Filed Feb. 2, 1893. Serial No. 460,752. (No model.)



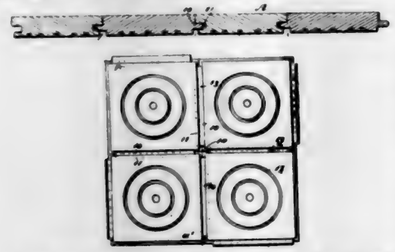
*Claim.*—1. In combination with the furnace opening and a lining having transverse ribs on its sides whereby air spaces are formed between such sides and the wall of the opening, of a door or shutter, having an air inlet, and an air space opening into the air spaces at the sides of the lining and a shield adapted to cover the interior opening of the lining all substantially as and for the purpose described.

2. The combination with the furnace opening, the liner blades E, F and G, the plates G having transverse ribs *g*, on their outer faces such ribs connected at their front ends as at *g'* and formed with bifurcated ears $g^6$, the door H, having an inlet H', the shield J, secured to the door, and held apart whereby an air space K is formed, and means for securing the door to the bifurcated ears $g^6$ all arranged substantially in the manner and for the purposes described.

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**503,876. WOOD-TILE FLOORING.** ANTONIO SALVATICO, Carrosio, Italy. Filed May 27, 1893. Serial No. 475,778. (No model.) Patented in Italy Jan. 13, 1890, LII, 257.

*Claim.*—1. A tile block, the same being provided with tongues of less length than the sides upon which they are located, the tongues being likewise of greater width upon one face than the other, and grooves produced in other sides of the block, and having walls of unequal length, as and for the purpose specified.

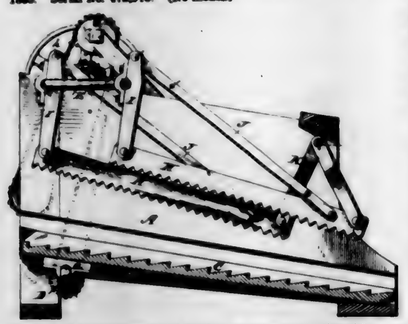


2. A tile block provided with tongues upon its side edges of less length than the edges to which they belong, the tongues being of greater width on one face than on the other, and grooves produced in other sides of the block, and having walls of unequal length, the tongues and grooves being formed between the upper and lower faces of the tiles, nearer one face than the other, as and for the purpose specified.

3. A tile block provided with channels in its under surface, tongues upon its side edges, the said tongues being of less length than the block and being of greater width on their under than their upper faces, and tongues in its other sides and having their lower walls shorter than their upper walls, the tongues and grooves being below the longitudinal center of the edges of the block, substantially as herein shown and described.

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**503,877. BAND-CUTTER AND FEEDER FOR THRASHING-MACHINES.** FRANK H. SCHAFER, Beaver Falls, Minn. Filed Apr. 29, 1893. Serial No. 472,313. (No model.)



*Claim.*—A band-cutter and feeder attachment to thrashing machines, consisting of a suitable frame, tables supported therein and having shouldered or corrugated surfaces extending transversely thereof, cutting blades, yokes upon their respective ends, diagonal braces adjustably connected to the yokes at the rear ends of the cutting blades, and suitable means for imparting to the tables and cutting blades the necessary vibratory or swinging motion, substantially as and for the purpose set forth.

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**503,878. MOTOR.** FRANK SCHRAM, South Bethlehem, Pa. Filed Jan. 12, 1893. Serial No. 458,141. (No model.)



*Claim.*—1. The combination with the vertical shaft of a roundabout and the pulleys fast upon the same, of a casing located at one side of said roundabout, a transverse shaft located in the upper end of the casing, grooved pulleys mounted thereon, a frame located below the shaft, a shaft located in the frame, grooved pulleys mounted thereon and corresponding with those of the upper shaft, weights carried by the frame, an unwinding-rope secured to said weighted frame and passed alternately over the pulleys of the upper and lower series, and finally connected to one of the pulleys of the roundabout, a drum, and crank-shaft, a rope connected to the same, and having its opposite end connected to and reversely wound upon the second pulley of the roundabout, substantially as specified.

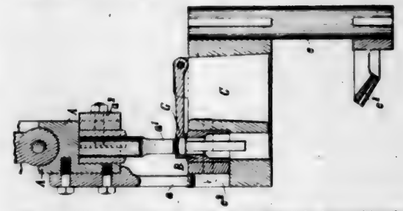
2. The combination with the shaft and pulleys of a roundabout, said pulleys differing in size, of a casing located at one side of the roundabout, a shaft transversely disposed in the upper end of the casing, a series of loose grooved pulleys located on the shaft, a transversely disposed frame located below said upper shaft and provided with a horizontal shaft, and a depending weight-supporting frame, a series of grooved pulleys mounted on the shaft of the frame, a suspension bail connected to the frame, a rope secured to the suspension bail and alternately passed about the upper and lower series of pulleys, and finally secured to the large pulley of the vertical shaft of the roundabout, a pair of bearing-brackets extending from the wall of the casing, a crank-shaft journaled in the brackets and carrying a drum, and a winding-rope secured to and wound upon the drum, and at its opposite end secured to the small pulley of the roundabout and reversely wound thereupon to that rope connected to the large pulley, substantially as specified.

3. The combination with the rotatable shaft, and the roundabout carried thereby and large and small pulleys carried by and secured rigidly to the shaft, of a weight motor, a rope operated thereby and leading therefrom to the said large pulleys, a windlass, and a winding rope leading therefrom to the said small pulley and reversely wound thereon with relation to the weight-operated rope upon its pulley, substantially as specified.

4. The combination with a roundabout, comprising a vertical rotating operating-shaft, and a pair of pulleys located and secured upon the shaft, of a weight-operated motor, an unwinding rope operated by the motor and secured to one of the pulleys, a windlass, and a winding rope secured at one end to the windlass and at its opposite end to the remaining pulley of the roundabout and wound thereon reversely to that which leads from the weight motor is wound upon the pulley, substantially as specified.

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**503,879. MACHINE FOR FINISHING BOLT-HEADS.** CHARLES S. SEATON, Cleveland, Ohio. Filed Aug. 19, 1892. Serial No. 443,469. (No model.)



*Claim.*—1. In a machine for finishing bolt heads, in combination, a vertically reciprocating plunger and mechanism for actuating the same, a horizontal revolving table, an annular row of shearing dies carried thereby, means for imparting to said table a step by step feed movement, locking mechanism for holding said table in proper relation to the plunger, and a centering device adapted to engage with the head of the bolt, whereby the bolt may be driven, shank foremost, past the shearing edges of the dies, substantially as and for the purpose set forth.

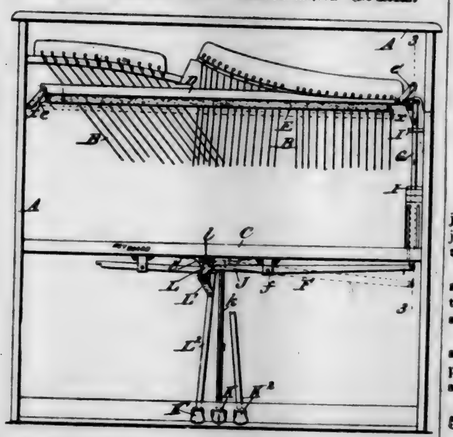
2. In a machine for finishing bolt heads, a vertically reciprocating plunger, mechanism for actuating the same, and a locking bar connected with said plunger, combined with a horizontal revolving table having a series of vertical grooves with which said locking bar engages, an annular series of shearing dies secured to said table, and a series of centering devices secured to said table and adapted to engage with the bolt heads to be finished, and means for imparting to said table a step by step feed movement, substantially as set forth.

3. In a machine for finishing bolt heads, a vertically reciprocating cross-head A, plunger *a'*, a crank shaft F, a horizontal table C, a shaft *c* to which the table is secured, a shaft *d* and the bevel gears *c' d'*, combined with the ratchet wheel D secured to the shaft *d*, the rocker-arm E, pawl *e*, pitman *f*, an annular series of shearing dies secured to the table, a locking device for said table, and a cen-

tering device adapted to engage with the head of the bolt to be finished, substantially as and for the purpose specified.

4. In a machine for finishing bolt heads, in combination, a vertically reciprocating plunger, mechanism for actuating the same, a horizontal revolving table, a series of shearing dies secured thereto, mechanism for imparting to said table a step by step feed movement, a table locking device, and a series of arms G pivoted to the table having holes in their outer ends adapted to engage with the heads of the bolts to be finished, substantially as and for the purpose specified.

**503,880. PIANO PRACTICE-PEDAL.** GEORGE B. SHEARER, Oneonta, N. Y. Filed Dec. 1, 1892. Serial No. 453,771. (No model.)



*Claim.*—1. In a piano the combination of a drop-bar having a muffler secured thereto supported by means capable of movement downwardly, longitudinally and inwardly to move the muffler downward, inward and laterally lengthwise, and mechanism for moving said drop-bar and muffler, substantially as described.

2. In a piano, the combination of a drop bar having a muffler secured thereto, links pivoted above and below said bar and having their ends next to the bar secured thereto to permit the bar to move downward and laterally lengthwise, and mechanism for moving said bar, substantially as and for the purposes described.

3. In a piano, the combination of a drop-bar having a muffler secured thereto, links pivoted above and below said bar and having their ends next to the bar secured thereto to permit the bar to move downward, inward and laterally lengthwise, and mechanism for moving said bar, substantially as and for the purposes described.

4. In a piano, the combination of a drop-bar having a muffler secured thereto adapted to be thrown between the hammers and the strings, the pedal, the spring pressed intermediate lever the rods connecting the ends of said lever with the pedal and drop-bar respectively, and the spring catch adapted to engage with an end of the said lever to lock it in a position to hold the muffler between the hammers and strings, substantially as and for the purposes described.

5. In a piano, the combination of a drop bar having the muffler secured thereto adapted to be thrown between the hammers and the strings, the pedal, the spring pressed intermediate lever, the rods connecting the ends of said lever with the pedal and drop-bar respectively, the automatic catch adapted to engage with an end of the said lever to lock it in a position to hold the muffler between the hammers and strings, the second pedal rod, and the link connecting the said pedal rod near the upper end with the catch, substantially as and for the purposes described.

6. In a piano, the combination of a drop-bar having a muffler secured thereto adapted to be thrown between the hammers and the string, the pedal, the intermediate lever supported beneath and adjacent to the key-board and automatically movable in one direction, and connected at one end with the drop bar, the rod connecting the other end of said lever with the pedal, an automatic catch located adjacent to the key board and adapted to engage with an end of the said lever to lock it in a position to hold the muffler between the hammers and the strings, the second pedal rod, and means for connecting said rod with the automatic catch to release the catch from engagement with the lever, substantially as and for the purposes described.

7. In a piano the combination of the drop-bar, the muffler secured thereto, the lugs having their faces beveled located one above and one below the drop-bar and adjacent to the ends of the same, the swings connecting the ends of the drop-bar with the lugs being pivoted to the beveled faces of the latter, and mechanism for moving the drop-bar, substantially as described.

**503,881. SHIFTING RAIL FOR VEHICLE-SEATS.** HENRY C. SWAN, Oshkosh, Wis. Filed Dec. 29, 1892. Serial No. 456,672. (No model.)

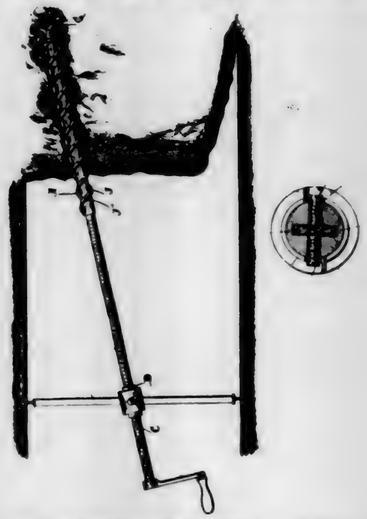


*Claim.*—1. The combination of a back-rail having an end projection, and a side-rail having a lateral hole fitted around said projection, said parts having meeting flanges; and the interfitting portions being of tapering or wedge shape substantially as described.

2. The combination of a back-rail having an end-projecting prop, a side-rail having a socket fitted over the prop, and a projection on the socket adapted to enter a recess in the prop; substantially as described.

3. The combination of a back-rail having an end projection, and a side-rail having a lateral hole fitted around said projection, said parts having meeting flanges with beveled faces; substantially as described.

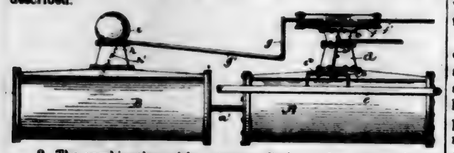
**503,882. AUGER.** OLOF P. SWANSON, Jobs, Ohio. Filed May 22, 1893. Serial No. 475,090. (No model.)



*Claim.*—An improved auger comprising a stem having a socket in its outer end, bits having beveled edges which overlap when in the socket, and a means for holding the same therein, substantially as shown and described.

**503,883. VALVE MECHANISM FOR STEAM-PUMPS.** JOHN W. TEMPLIN, Marion, and JAMES L. TEMPLIN, Kokomo, Ind., assignors to J. G. Templin & Sons, Marion, Ill. Filed Mar. 8, 1893. Serial No. 465,109. (No model.)

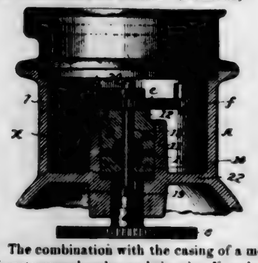
*Claim.*—1. The combination with a main cylinder and a supplemental cylinder and their pistons, of a bar parallel with each of said cylinders and adapted to be reciprocated by the pistons, adjustable collars on said bars and arms connected with the valves of the two cylinders and adapted to be operated by said collars, substantially as described.



2. The combination with a steam cylinder and a pump cylinder having their pistons directly connected together, of a positively actuated valve mechanism for the pump comprising the slotted bar *h* and the bar *g* connecting said bar *h* with the steam cylinder valve mechanism, whereby the direction of flow through the pump may be reversed, substantially as described.

3. The combination with the main and supplemental steam cylinders of the two interposed valve chests and valves, connections from the piston of each cylinder to the valve of the other cylinder, and a single live steam entrance port between the two valves, substantially as described.

**503,884. STUFFING-BOX FOR METERS.** JOHN THOMSON, Brooklyn, N. Y., assignor to the Thomson Hydraulic Company, Newark, N. J. Filed Oct. 23, 1892. Serial No. 449,694. (No model.)



*Claim.*—1. The combination with the casing of a meter having a partition, forming a meter chamber and chamber X, and provided with a stuffing box extending into said chamber and a recess connected with the meter chamber, of one of the driven parts of the meter arranged to extend into the recess, a spindle passing through the stuffing box and directly and detachably connected with said driven part, a detachable register box fitted to cover said chamber X, and forming a bearing for the external end of the spindle, and packing parts which surround the spindle whereby on removing the register box, the spindle and packing parts may be readily removed from the driven parts of the meter, substantially as described.

2. The combination in a meter with a driven part of the meter and with a register box, of a spindle detachably connected with the driven part and having a rounded outer end bearing on the register box, substantially as described

3. The combination of the meter casing, flange 7 and chamber X and register and closing plate 9, and a spindle 18, geared with the register train and having a rounded end bearing on the plate 9, substantially as set forth

4. In a meter the spindle 18 combined with a stuffing box having a recessed gland 12 and recessed piece 14, washers 13, 15, on opposite sides of the piece 14 and packing material in the recesses, substantially as described.

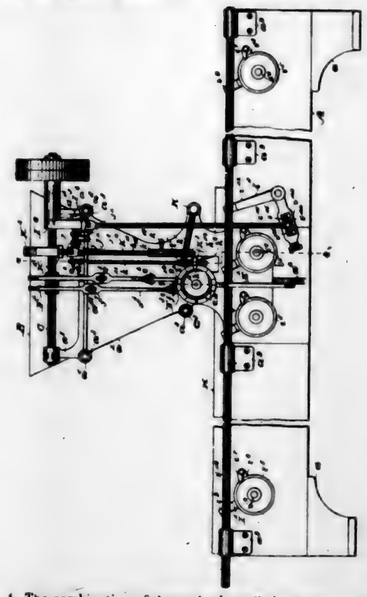
5. The combination of the spindle recessed parts 12, 14, intermediate washer and packing material in the recesses, substantially as described

**503,885. MACHINE FOR MAKING CONFECTIONS.** ALBERT VAN NESS, Lowell, Mass., assignor of one-half to William A. Trow, same place. Filed June 13, 1892. Serial No. 436,456. (No model.)

*Claim.*—1. The combination of the tank, the cylinder, having a series of compartments, each provided with an inlet and with an outlet, a slide arranged and adapted alternately to open and close said inlets, another slide arranged and adapted to keep said outlets closed when said inlets are open and to open said outlets when said inlets are closed, and reciprocating pistons arranged in said compartments, as and for the purpose specified

2. The combination of a tank, a cylinder, having a series of compartments, each provided with an inlet and with an outlet at the same end thereof, a slide arranged and adapted alternately to open and close said inlets, another slide arranged and adapted to keep said outlets closed when said inlets are open and to open said outlets when said inlets are closed, and reciprocating pistons, each arranged in one of said compartments, each compartment being also provided with a vent at the opposite end thereof from said inlets and outlets, as and for the purpose specified.

3. The combination of the tank, the cylinder, having a series of compartments, each provided with an inlet and with an outlet, a slide, arranged and adapted alternately to open and close said inlets, another slide arranged and adapted to keep said outlets closed when said inlets are open and to open said outlets when said inlets are closed, a piston-rod, common to all said compartments, and pistons, each arranged in one of said compartments and fast on said piston-rod, as and for the purpose specified.



4. The combination of the tank, the cylinder, having a series of compartments, each provided with an inlet and with an outlet, a slide, arranged and adapted alternately to open and close said inlets, another slide, arranged and adapted to keep said outlets closed when said inlets are open and to open said outlets when said inlets are closed, a piston-rod, common to all said compartments, and pistons, each arranged in one of said compartments and fast on said piston-rod, a piston-lever, jointed to said piston-rod and provided with a fork at its upper end, and a cam or wiper, arranged to rotate in said fork, to give said lever, piston-rod and pistons a reciprocating movement, as and for the purpose specified.

5. The combination of the tank, the cylinder, having a series of compartments, each provided with an inlet and with an outlet, a slide, arranged and adapted alternately to open and close said inlets, another slide arranged and adapted to keep said outlets closed when said inlets are open and to open said outlets when said inlets are closed, a piston-rod, common to all said compartments, and pistons, each arranged in one of said compartments and fast on said piston-rod, a piston-lever, jointed to said piston-rod and provided with a fork at its upper end, and a cam or wiper, arranged to rotate in said fork, one branch of said fork being adjustable in distance from the other, to take up lost motion between said cam and lever, as and for the purpose specified

6. The combination of a tank, a cylinder, having a series of compartments, each provided with an inlet and with an outlet, a slide, arranged and adapted alternately to open and close said inlets, another slide arranged and adapted to keep said outlets closed when said inlets are open and to open said outlets when said inlets are closed, a piston-rod, common to all said compartments, and pistons, each arranged in one of said compartments and fast on said piston rod, a piston-lever, provided with a hole, through which said piston-rod passes, collars on said rod on opposite sides of said lever, one of said collars being fixed on said rod and the other of said collars being adjustable on said rod, to vary the length of the stroke of said pistons, as and for the purpose specified.

7. The combination of a tank, a cylinder, having an inlet and

outlet, a piston-rod, a piston, located in said cylinder and fast on said piston-rod, a piston-lever, provided with a hole, through which said piston-rod passes, collars on said rod on opposite sides of said lever, one of said collars being fixed on said rod, and a nut, to which the other of said collars is secured, and a sleeve, provided with a screw-thread and turning without advancing on said rod in said nut, to vary the distance between said collars and thereby to vary the length of the stroke of said piston, as and for the purpose specified.

8. The combination of a tank, a cylinder, having an inlet and an outlet, a piston-rod, a piston, arranged in said cylinder and fast on said piston-rod, a piston-lever, provided with a hole, through which said piston-rod passes, collars on said rod on opposite sides of said lever, one of said collars being fixed on said rod, a non-rotary nut, to which the other of said collars is secured, a sleeve, provided with a screw-thread and turning without advancing on said rod, a graduated hand-wheel or dial, turning with said sleeve, and a non-rotary index-finger, to vary the length of the stroke of said piston and to indicate said length, as and for the purpose specified.

9. The combination of the rock-shaft, provided with arms, the printer, carried by said arms, the printing-cam and cam-lever, and a rod, connecting said cam-lever and one of the arms of said rock-shaft, as and for the purpose specified.

10. The combination of the rock-shaft, provided with arms, a spring, to move said rock-shaft in one direction, the printer supported by said arms, the printing cam and cam-lever, a sleeve, connected to one of said arms, a rod, having a lateral projection or stud and pivoted to said lever and sliding in said sleeve, another sleeve, surrounding said rod below said stud and resting on said first-named sleeve and having a vertical slot, in which said stud may have a vertical motion, as and for the purpose specified.

11. The combination of the feed-rolls, provided with friction-wheels, levers turning on the shafts of said rolls, and carrying friction-pawls to engage said friction-wheels, a longitudinally-sliding rod, connecting all said levers, another lever, one arm of which is connected to said rod, a connecting-rod, pivoted at one end to the other arm of said last-named lever and at the other end to a feed-lever, a spring, operating said feed-lever in one direction, and a cam, operating said lever in the other direction, as and for the purpose specified.

12. The combination of the feed-cam, the feed-lever, the longitudinally-sliding rod, a lever, connected to one arm of said last-named lever, a block, sliding in the other arm of said last-named lever, a screw, to vary the distance of said block from the fulcrum of said lever, a connecting-rod, pivoted to said block and to said feed-lever, feed-rolls, having wheels, and other levers, operated by said longitudinally-sliding rod and having pawls to engage said wheels, to vary the amount of movement of said rolls, as and for the purpose specified.

13. The combination of the cylinder, heads dividing said cylinder into compartments, each of which is provided with an inlet and with an outlet, said heads having grooves which form continuations of said inlets and outlets, and reciprocating pistons, arranged in said compartments, as and for the purpose specified.

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**503,886. CAR-ROOF.** JOHN C. WARNE, St. Louis, Mo. Filed Feb. 23, 1893. Serial No. 463,352. (No model.)



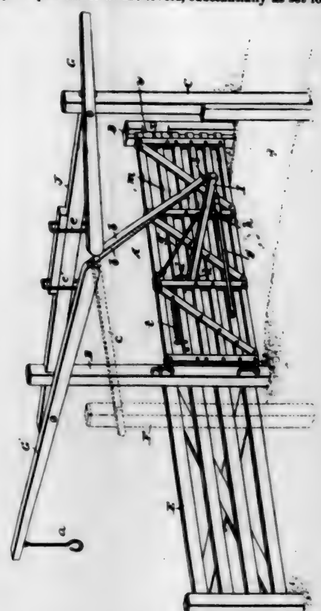
*Claim.*—The combination of a car roof composed of adjacent roof boards and purlins, with a fastener for the same, formed of a U-shaped rod or wire having vertical sides 5 projecting on either side of the purlins and through the meeting edges of said boards, a bottom portion 4 connecting the sides 5 and passing under the purlins, and the ends 6 turned in opposite directions to embrace and hold different but adjacent roof boards, substantially as described.

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**503,887. SWINGING GATE.** WILLIAM R. WHITE, Bloomington, Ill. Filed May 24, 1892. Serial No. 434,136. (No model.)

*Claim.*—1. The combination of a swinging gate, a lock or bolt therefor, the operating levers, G, G', the inner ends of both of which are at one side of the gate, when the gate is closed a rocking arm connected with the said lock or bolt and situated between the ends of the gate, and projecting outward therefrom on that side on which are situated the inner ends of the operating levers and the connecting bar between the inner ends of the operating lever and the said rocking arm, substantially as set forth.

2. The combination of a swinging gate, a lock or bolt therefor, the operating levers, G, G', the inner ends of which are at one side of and at a distance from the side of the gate when it is closed—a rocking arm connected with the said lock or bolt and situated between the ends of the gate and projecting outward, substantially horizontally from the side of the gate and arranged to rock on an axis in line with the length of the said arm, and the connecting bars between the inner ends of the levers and the said rocking arm whereby the gate may be unlocked and opened by a simple downward pull upon either of the levers, and whereby it may be closed by a simple downward pull upon either of the levers, substantially as set forth.



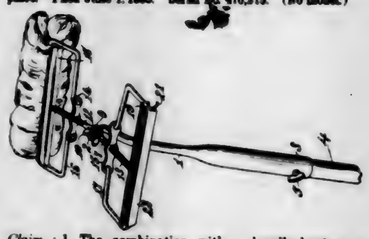
3. The combination of a swinging gate, operating levers, connecting bars, the horizontal rocking arm I, braces *g*, *g*, and *g'* constituting a frame for supporting the rocking arm; and a sliding bolt connected with the rocking arm, substantially as set forth.

4. The combination with the operating levers G, G', of guides for guiding the inner ends of the said levers, consisting of the vertically disposed guide rods *e*, *e'*, and the eyes *f* which engage therewith substantially as set forth.

5. The combination of a swinging gate provided with a lock or latch, and with a movable arm connected directly with the lock or latch and projecting laterally from the side of the gate between its ends, the operating lever, the inner end or portion of which is at one side of the gate and under which the said movable arm swings as the gate is opened and closed, and the bar connected with the said movable arm and with the operating lever, substantially as set forth.

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**503,888. COMBINED MOP AND WINDOW-CLEANER.** CHARLES WIESNER, Waco, Tex., assignor of one-half to Richard W. Penman, same place. Filed June 1, 1893. Serial No. 476,313. (No model.)



*Claim.*—1. The combination with a handle having a screw-threaded head, a duplex holder composed of a bar mounted intermediate its extremities on the screw-threaded stem to rotate in a circular path, and provided at opposite sides of said screw-threaded head with yokes and adjustable cross bars for clamping respectively a mop and a flexible rubber, and a clamping screw nut engaging the screw-threaded stem between said yokes and bearing against the rotatable bar for rigidly clamping the latter in a fixed position on the screw-threaded head of the handle, substantially as described.

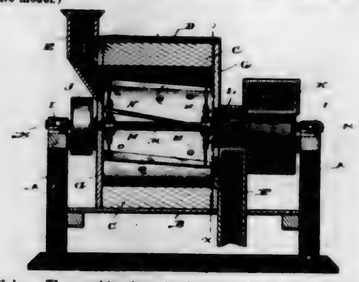
2. The combination of a handle having at one end a head, a holder, consisting of a bar journaled intermediate its extremities to rotate in a circular path on the head, and provided with screw-threaded end portions, a nut engaged with each screw-threaded end of the bar, a cross bar journaled to each outer end of the screw-threaded bar, a yoke loosely engaging each cross bar, and connected with one of the nuts, and means for rigidly securing the holder in a fixed position on the head of the handle, substantially as described.

3. The combination of a handle having at one end a screw-threaded stem, a bar journaled intermediate its extremities on the stem, adapted to rotate in a circular path, and provided with screw-threaded end portions, a clamping screw nut engaging the stem and bearing on the bar for rigidly securing the latter in a fixed position, a cross bar journaled to each end of the screw-threaded bar, a nut arranged on each screw-threaded portion of the bar, and a yoke loosely engaging each cross bar, and connected with one of the nuts on the screw-threaded bar, substantially as described.



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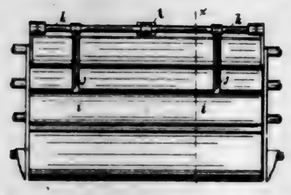
**503,889. GRAIN SCOURING AND POLISHING MACHINE.** JESSE H. WILLIAMSON, Muncie, Ind. Filed June 6, 1892. Serial No. 435,777. (No model.)



*Claim.*—The combination of a horizontal cylinder, ends or caps closing the ends of said cylinder, a concentric shaft, one of the ends or caps having an inlet opening in its upper edge, the opposite end or cap having a concentric dust outlet opening and a grain outlet opening in its lower edge below and adjacent to the dust outlet, a spout for the said grain outlet, a concentric fan casing outside of the said grain outlet spout, a fan upon the shaft within the fan casing, and a horizontal passage way above the grain outlet connecting the fan casing and the concentric dust outlet, all operating in the manner described.

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**503,890. LAPPING-MACHINE.** CHARLES F. AINSWORTH, Horwich, and JOHN HAYDOCK, Bolton, England. Filed Apr. 12, 1892. Serial No. 428,867. (No model.) Patented in England Nov. 17, 1891, No. 19,875.

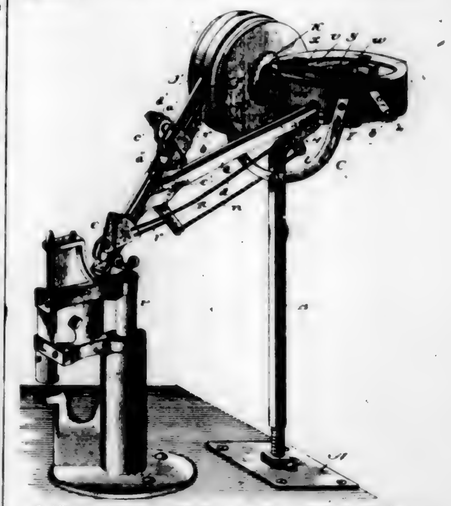


*Claim.*—In a scutcher lap winding machine, the combination, with a plurality of calendering rollers between which the lap passes, and a pair of fluted rollers for driving the lap roller, of the lap roll resting upon and driven by said fluted rollers, the curved smoothing plate *i* held by the arms *j j* connected to the supporting rod *k*, and bearing on the lap as it winds on the roller *g*, and the adjustable weight *l* attached to the rod *k*, for increasing and regulating the pressure of the plate *l* on the said lap, substantially as and for the purposes described.

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**503,891. BUTTON-SETTING MACHINE.** GEORGE W. ALTMAN, Marion, Ind. Filed May 3, 1893. Serial No. 472,842. (No model.)

*Claim.*—1. The combination with a standard having a button feeding cylinder, of the lever Y and spring Z, a staple feeding drum and connected conveying chute for the buttons and staples, substantially as specified.



2. The combination with the supporting standard, of a button feeding drum or cylinder having a stop-spring and a bearing-spring engaging openings in its lower face, of a staple feeding drum having a hook-tooth staple-feeding saw, a hooked feeding-lever in the staple-chute and a button-chute connected with the staple chute at the point where the feeding-lever is fulcrumed, substantially as specified.

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**503,892. WIRE-STRETCHER.** ROBERT C. ANDERSON, Jeffersonville, Ind. Filed Mar. 11, 1893. Serial No. 465,564. (No model.)



*Claim.*—1. A wire stretcher consisting of a back plate adapted to be attached to a fence post, a winding shaft journaled in bearings supported by the back plate and having a ratchet rigidly secured thereon, and a locking piece fitted between the back plate and the winding shaft and having its upper enlarged end extending forward over the ratchet on the winding shaft and provided in its under side with two notches, substantially as and for the purpose described.

2. A wire stretcher consisting of a back plate, a winding shaft journaled in bearings on the back plate and provided with a ratchet, and a locking piece supported on an inwardly extending flange K on the back plate and provided with a lug L that extends through an aperture in the back plate, the locking piece having its upper end extending across the ratchet on the winding shaft and provided in its under side with notches, substantially as and for the purpose described.

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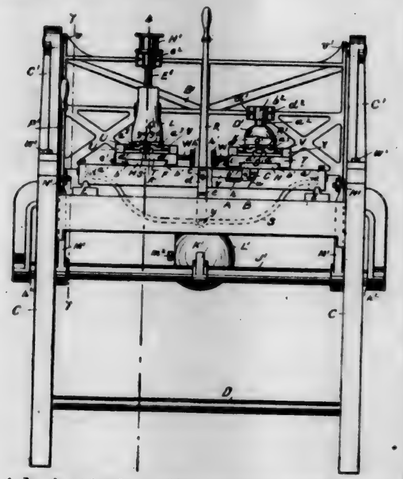
**503,893. MACHINE FOR MANUFACTURING LASTS FOR BOOTS OR SHOES.** WILLIAM H. AUSTIN, Brockton, Mass., assignor to himself, William H. Cary, William Thompson, and Augustus A. Delano, same place. Filed Feb. 2, 1892. Serial No. 420,060. (No model.)

*Claim.*—1. In a last trimming machine, a holder or support for a last pattern and last to be operated upon, a support for said holder on which it is arranged to move reciprocatingly or, forward and backward, a movable frame, a guide or gage on said frame of a ball or globe shape, a revolving shaft on said movable frame and a cutter or cutters on said shaft having its cutting edge or edges in an arc of a circle to correspond to the shape or outline of the guide or gage

2. In a last trimming machine a holder or support for a last pattern and last to be operated upon, a support for said holder on which it is arranged to move reciprocatingly or forward and backward, a swinging frame, a guide or gage on said frame of a ball or globe shape arranged to turn thereon, a revolving shaft on said swinging frame and a cutter or cutters on said shaft having its cutting edge or edges

in an arc of a circle to correspond to the shape or outline of the guide or gage.

3. In a last trimming machine, a holder or support for a last pattern and last to be operated upon, a support for said holder on which it is arranged to move reciprocatingly or forward and backward, a swinging frame pivoted to a suitable support, a guide or gage of a ball or globe shape on said pivoted frame, a revolving shaft on said swinging frame, and a cutter or cutters on said shaft having its cutting edge or edges in an arc of a circle to correspond to the shape or outline of said guide or gage.



4. In a last trimming machine, a support for holding a last pattern and last to be operated upon, adapted to be moved laterally upon a suitable support, and said latter support adapted to be moved forward and backward on a support, a movable frame carrying a guide or gage, a revolving shaft and a cutter or cutters secured thereto, having its cutting edge in an arc of a circle or semi circular form, to correspond to the shape or outline of the guide or gage.

5. In a last trimming machine, a holder or support for a last pattern and last to be operated upon, a swinging frame pivoted to a support adapted to move back and forth on a suitable support, a weighted arm secured to said swinging frame, a guide or gage on said frame, a revolving shaft on said frame, and a cutter or cutters secured to said shaft having its cutting edge or edges corresponding to the shape or outline of said guide or gage.

6. In a last trimming machine, a table or support provided with guide rails, a frame adapted to move back and forth on said rails, rods or bars on said frame at right angles to said guide rails, a support for a last pattern and last to be operated upon, adapted to slide on said rods or bars and a handle on said support for operation of the same.

7. In a last trimming machine the bar R', a piece pivoted thereto having two angular arms, a support for said bar on which it is adapted to slide back and forth, and arranged to be secured from movement thereon.

8. In a last trimming machine, a bar R', a piece pivoted thereto having two angular arms, and an adjusting screw in the end of each arm, a support for said bar in which it is adapted to slide back and forth and arranged to be secured from movement thereon.

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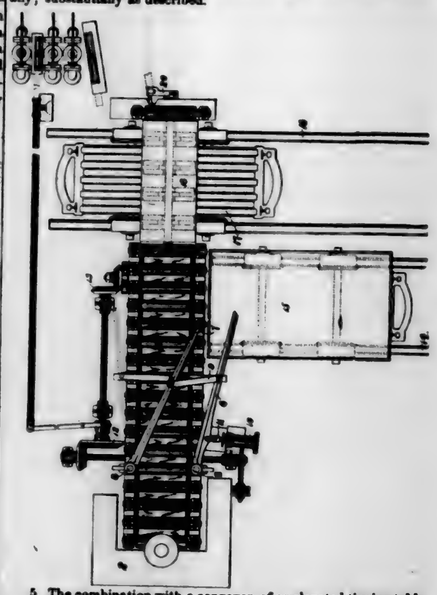
**503,894. BILLET-CONVEYER FOR ROLLING-MILLS.** SEWARD S. BARRETT, Pittsburg, Pa. Filed Nov. 9, 1892. Serial No. 451,635. (No model.)

*Claim.*—1. The combination with a conveying-table, of a laterally-movable deflecting arm; which extends lengthwise of the table substantially as described.

2. The combination with a conveying-table, of a radially-movable deflecting arm; which extends lengthwise of the table substantially as described.

3. The combination with a conveying-table, of laterally-movable deflecting arms pivoted at the sides of the table, and extending lengthwise thereof, and mechanism for moving them radially; substantially as described.

4. The combination, with a conveying table, of a laterally movable deflecting arm which extends lengthwise of the table, and is adapted to cause the discharge of metal pieces at different parts of the table, and a motor connected with the arm and adapted to move it laterally; substantially as described.

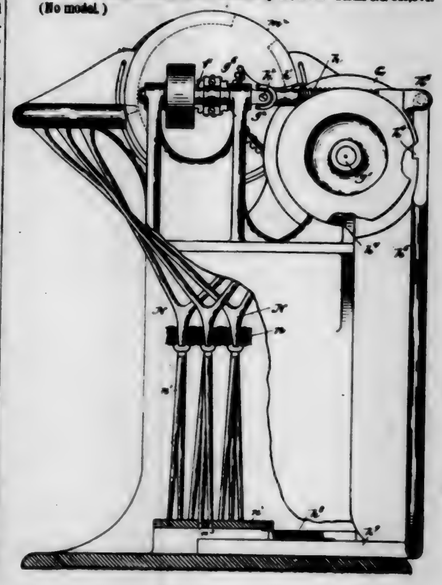


5. The combination with a conveyor, of an elevated tipping table situate at the end thereof and journaled on an axis which extends lengthwise of the conveyor, on which axis the table can be tipped in either direction; substantially as described.

6. The combination of shears, a vertically movable conveying table, a laterally movable deflecting arm thereon, and a motor adapted to move the arm laterally; substantially as described.

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**503,895. NAIL SEPARATING AND FEEDING DEVICE.** JOHN M. BENJAMIN and RALPH C. SIBSON, Lawrence, assignors to Charles F. Brown, trustee, Reading, Mass. Filed July 18, 1892. Serial No. 440,571. (No model.)





*Claim.*—1. In a machine of the character specified a nail separating device comprising a rapidly longitudinally vibrating and oscillating cylinder or case, having one or more pools or pockets in its shell arranged to receive nails from nails held in bulk in the cylinder or case while at or near their lowest position and to raise them from said position to a delivery channel or channels, as and for the purposes described.

2. In a machine of the character specified a vibrating and oscillating cylinder or case adapted to receive and contain nails in bulk, and having as a portion of the cylinder wall or case one or more sets of pools or pockets adapted to receive nails when in their lowest position, and to elevate them by partial rotation of the cylinder to a delivery position, and devices for closing or keeping closed the delivery side or sides of the pool or pools until it or they reach a delivery position, as and for the purposes described.

3. The combination in a machine of the character specified of a cylinder or case adapted to receive and hold nails in bulk and having a sharp vibrating and an oscillating or rotative movement back and forth, with one or more pools or pockets formed in the cylinder wall or case, arranged to open outward, and each of which has an inclined surface $c'$ when in delivery position, as and for the purposes described.

4. The combination in a machine of the character specified of the cylinder or case adapted to receive and hold nails in bulk and having a sharp vibrating, and an oscillating or rotative movement back and forth with one or more pools or pockets formed in the cylinder wall or case, arranged to open outward, and each of which has an inclined surface $c'$ when in delivery position and a nail holding finger or projection $c^4$, as and for the purposes described.

5. The combination of the cylinder or case adapted to receive and hold nails in bulk and having a sharp vibratory and an oscillating movement imparted to it with one or more pool or pocket plates C C' detachably secured in openings in the wall of said cylinder or case, as and for the purposes described.

6. In a nail separating and feeding device a rotary cylinder holding headless nails in bulk, and having a series of nail separating and holding pockets arranged lengthwise the cylinder, each of a size to receive and hold a single headless nail lying horizontally, a finger or detent upon the inner side of each pocket near the center of its length for holding a single nail therein and horizontal openings in the shell behind said pockets which are uncovered after the nails have been lifted from the mass to permit of their escape outwardly from the pockets all arranged whereby without the use of auxiliary nail feeding device the nails are separated and fed from the mass held in the cylinder by means of the pockets which rotate beneath them, as and for the purposes described.

7. In a nail separator a pool or pocket having a narrow finger $c^4$ in the center of the side for the retention of the nail.

8. In a machine of the character specified the cylinder or shell A, adapted to hold nails in bulk, and having an oscillating and rapid longitudinal vibratory movement and one or more pocket or pool plates in the wall or shell of the cylinder, which are straight across the opening or openings in the case or shell in which they are placed, as and for the purposes described.

9. In a machine of the character specified the eccentrically hung cylinder A adapted to receive and hold nails in bulk, and having a sharp longitudinal vibratory movement, and an oscillating movement with one or more straight pool or pocket plates, having two or more lines of pools or pockets, and nail receiving channels for each line, disposed to be brought into operative relation simultaneously with each line of pools as they are moved to the same, as and for the purposes described.

10. In a machine of the character specified, the cylinder A, adapted to receive and hold nails in bulk, and having a rapid longitudinal vibratory movement, and an oscillating movement with one or more plates having pools or pockets arranged in the shell of the cylinder and having outward openings, and a slide plate also having openings arranged to cover the outer ends of the pool or pocket openings while they are receiving and transferring nails, and then to act to uncover said openings when they are brought in line with the nail feed or escape channels, substantially as described.

11. The combination of the shell or cylinder A adapted to receive and hold nails in bulk, having a sharp longitudinal vibratory movement and an oscillating movement, one or more pool or pocket plates in the wall or case of the cylinder, and the covering plate or plates attached to the cylinder to rotate with it, and acting to cover the pool or pocket holes while they are receiving nails and transferring them, as and for the purposes described.

12. The combination in a machine of the character specified of a nail holding case or cylinder having a rapid vibratory movement and an oscillating movement, a nail holding pocket or pockets in the wall or shell of said cylinder opening outward, escape channels, and a nail turning bar between the pool or pools when in delivering position and the escape channels, as and for the purposes described.

13. The combination of the nail holding cylinder A having a rapid longitudinal vibratory movement, and an oscillating movement, a plate C, having one or more lines of nail holding pools or pockets therein in the wall or shell of the case or cylinder, a plate for closing said openings, excepting when the pools or pockets are in delivering position, and which has openings which then coincide with the nail channels and pockets, and nail turning bars in said openings, substantially as described.

14. The combination of the nail holding cylinder A, having a rapid vibratory movement, and an oscillating movement, the pool or pocket plates C C' in openings in said wall or case reversely arranged in relation to each other, and having one or more lines of pools or pockets $c$, their covering plates shaped as described, and two sets of nail receiving channels, one upon each side of the cylinder and adapted to receive nails, one from one set of pools or pockets and the other to receive nails from the other set of pools or pockets, in alternate order, as and for the purposes described.

15. The combination of the nail holding cylinder, having a rapid longitudinal vibratory movement, and an oscillating movement, and one or more lines of pools or pockets in the shells or walls thereof, a cover plate for opening and closing the outlet to the pools, the channels E, and nail turning devices at the lower ends of said channels, substantially as described.

16. The combination of the nail holding cylinder A, having a rapid longitudinal vibratory movement, and an oscillating movement with a pool or pocket plate in its wall or shell having two or more horizontal lines of pools or pockets, a cover plate for the outlets of each line of pools or pockets, and a set of delivery channels one above the other for each line of pools or pockets, as and for the purposes described.

17. The combination of a nail holding cylinder having a rapid longitudinal vibratory movement and an oscillating movement, nail holding pockets or pools in its shell or wall having outlets, and a cover plate to cover said outlets, the channels E, and a slide having nail receiving holders $c'$ arranged to be moved across the lower end of said channels and receive nails head first from said channels and deliver them to the holes $c^3$ over a turning edge $c^4$, as and for the purposes described.

18. As a means for turning nails a slide plate having one or more nail holding pockets arranged upon a plate having holes through which the nails are adapted to escape, and a turning shoulder $c^4$ for temporarily holding one end of a nail when the shoulder and nail holder have been brought into line and while the other end of the nail is turning, as and for the purposes described.

19. The combination of a single nail distributing device adapted to deliver nails alternately to two sets of stationary nail receiving and delivering chutes or passages with said chutes or passages, and a common receiving nozzle or tube for each pair of said nail receiving and delivering chutes or passages, as and for the purposes described.

20. The combination of a plate $n$ receiving the ends of nail distributing tubes or nozzles, plate $n^3$ and the distributing tubes $n'$ vertically movable in relation to the plate $n$ or the nail distributing tubes or nozzles thereof, as and for the purposes described.

21. The combination of the plate $n$, one or more nail delivering nozzles or tubes $n'$, and a distributing tube for each nozzle, the opening of which is bell-shaped or enlarged, and a holding device for attaching the upper end of the tubes $n'$ to the plate while permitting them to have vertical movement in relation thereto, as and for the purposes described.

22. The combination of the nail holding cylinder having pockets or pools in its shell or wall, a crank and connecting device for imparting to it a rapid longitudinal vibratory movement, and a cam and connecting devices for oscillating the cylinder and holding it stationary while the pools or pockets are discharging, substantially as described.

23. The combination of the nail holding cylinder having nail holding pockets or pools in its shell arranged to discharge nails outwardly, means for imparting to the cylinder a vibratory movement, and an oscillating movement, nail delivering channels, nail reversing slides, and one or more cams for reciprocating said reversing slides, as and for the purposes described.

24. The combination of the nail holding cylinder having one or more lines of nail pools or pockets in its shell, means for continuously imparting to said cylinder a vibratory movement, devices for oscillating said cylinder connected with the mechanism for vibrating the cylinder by a make and break connecting device, as and for the purposes described.

25. The combination of the nail holding cylinder, its nail holding pocket arranged in its shell, devices for imparting to it a vibratory movement, mechanism for oscillating the cylinder, and an actuating connection for said last named mechanism adapted to be engaged

with it by hand, and to be automatically disconnected from it, as and for the purposes described.

**503,896.** PEN. IGNAZ BERGMANN, Fort Madison, Iowa. Filed Feb. 21, 1893. Serial No. 463,161. (No model.)

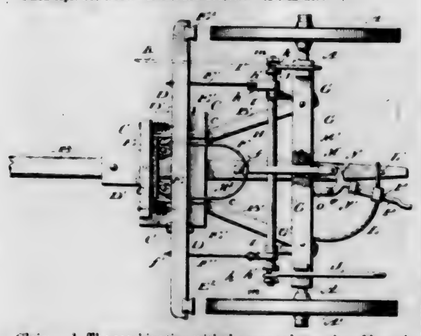


*Claim.*—1. As an article of manufacture, a pen consisting of a head, a shank and two parallel reduced members connecting the head and stem, substantially as and for the purpose described.

2. As an article of manufacture, a pen consisting of a head, a shank, and a neck connecting the head and shank and having a central portion of its body removed to provide two parallel members at the sides of the pen, substantially as and for the purpose described.

3. As an article of manufacture, a pen consisting of a shank, a head extending obliquely to the shank, and two parallel reduced members connecting the shank and head, said members extending in line with the sides of the shank for a portion of their length and bent at an intermediate point of their length to extend to the sides of the head, substantially as and for the purpose described.

**503,897.** VEHICLE-BRAKE. WINFIELD J. BOTTS, Webster, Md. Filed Apr. 25, 1893. Serial No. 471,739. (No model.)



*Claim.*—1. The combination with the rear axle, reach and hounds, of a brake bar with brake shoes, the spring connected therewith, the rock shaft, the arms thereon, the bail secured to the brake-bar and having an eye the connections between the arms and the eye of the bail and means for operating the brake bar from either the side, front or rear of a wagon, as set forth.

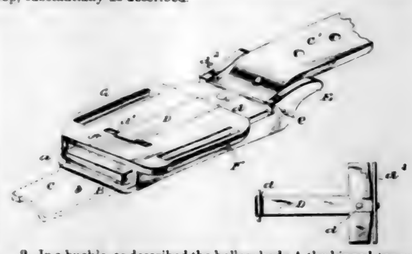
2. The combination with the brake bar with its brake shoes, of the hounds the platform with its ribs, the cross plate, the stop pins rising from the hounds between the brake-bar and cross-plate, and the rock shaft connected with the brake bar and provided with means for operating the same, as set forth.

3. The combination with the brake bar and the rock shaft connected therewith and provided with a pin, of a lever sleeved on the shaft and having a cut away portion and a shoulder to engage said pin, substantially as and for the purpose specified.

4. The combination with the brake bar, the platform with its ribs, the guide hooks on the brake bar, the springs, the stop pins, and the rock shaft with its crank arms, of the connections between said arms and brake bar, and the levers on the rock shaft having a shoulder to engage a pin on the shaft, substantially as and for the purpose specified.

**503,898.** BUCKLE. FRANK CALLIT, Elk Creek, S. D. Filed Apr. 1, 1893. Serial No. 468,656. (No model.)

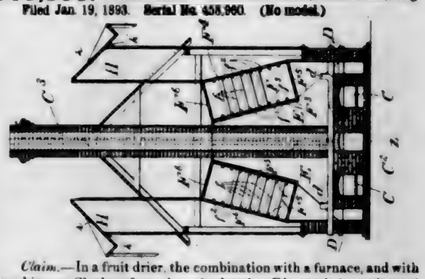
*Claim.*—1. The above described buckle consisting of a hollow body having at one extremity a loop for attachment of one end of the breeching strap, and provided with a hinged tongue having a bolt in its under side adapted to enter the hole in the free end of the strap as it is passed through to the hollow body of the buckle and also a hole in bottom of the frame and having at its front end a spring the ends of which are adapted to engage the ends of the hame tug loop, substantially as described.



2. In a buckle, as described the hollow body A the hinged tongue having a bolt on its under side and a spring on its front end combined with the loop E, having projections *e*, under which said spring ends may be engaged so as to hold the spring down, but slightly projecting beyond so as to be released from engagement therewith when occasion requires, substantially as described.

3. The buckle, as described, consisting of the hollow body A, open at each end and having a hole *a'*, in its bottom, and provided with strap and tug loops B, and E, respectively at opposite ends, the latter of said loops, having projections *e*, and the band loops F, and G, at the opposite sides and the hinged tongue D, having a bolt *d*, on its under side and a spring $d^2$, at its front end to engage under the projections *e*, of the loop E, all constructed and combined as described.

**503,899.** FRUIT-DRIER. ALFRED H. CARSON, Grant's Pass, Oreg. Filed Jan. 19, 1893. Serial No. 458,960. (No model.)



*Claim.*—In a fruit drier, the combination with a furnace, and with the chimney C', therefor, a hot air chamber E located above the said furnace and around the said chimney, a fruit drying chamber F contained in the said hot air chamber on each side of the chimney therein, the said drying chamber having apertured sides and being inclined within the said hot air chamber, and forming separate compartments in the upper corners thereof, hot-air pipes D heated by the said furnace and entering the body of said hot air chamber, below the drying chambers; ranges of trays contained in the said drying chamber between the apertures therein; a series of uptakes connected with the said separate compartments adjacent to the various trays contained in the drying chamber and a damper for each of the said uptakes, substantially as described.

**503,900.** PROCESS OF MAKING ALUMINUM FLUOSULPHATE. WILLARD E. CASE, Auburn, N. Y. Filed Oct. 21, 1891. Renewed Jan. 21, 1893. Serial No. 459,498. (No specimens.)

*Claim.*—The process of producing aluminum fluosulphate, free, or substantially free, from iron, which consists in adding calcium fluoride to an aqueous solution of crude aluminum sulphate, then adding a quantity of the freshly precipitated white product obtained by adding a solution of an alkali-carbonate to an aluminum fluosulphate solution which has been freed of iron, and then separating the resulting ferruginous precipitate from the fluosulphate solution by mechanical means.

**503,901.** PROCESS OF MAKING ALUMINUM COMPOUNDS. WILLARD E. CASE, Auburn, N. Y. Filed Nov. 5, 1891. Renewed Jan. 21, 1893. Serial No. 459,499. (No specimens.)

*Claim.*—1. The process of producing aluminum, or aluminum-sodium, fluosulphate, free, or substantially free, from iron, which consists in treating an aqueous solution of crude aluminum sulphate with nitric and sulphuric acids, adding calcium fluoride, then adding a solution of sodium carbonate to precipitate iron, and then mechanically separating the liquid from the solid products of the reaction.

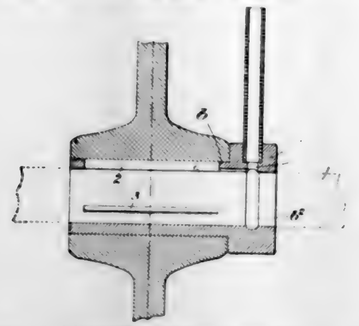
2. The process of producing aluminum, or aluminum-sodium, fluosulphate, free, or substantially free, from iron, which consists in treating an aqueous solution of crude aluminum sulphate with nitric and sulphuric acids, adding calcium fluoride, then adding a solution of sodium carbonate to precipitate iron, and then mechanically separating the liquid from the solid products of the reaction.

3. The process of producing an insoluble aluminum compound, free, or substantially free, from iron, which consists in treating an aqueous solution of crude aluminum sulphate with nitric and sulphuric acids, adding calcium fluoride, then adding a solution of an alkali carbonate to precipitate iron, removing said iron, and then treating said solution with a further quantity of said alkali carbonate to cause precipitation of said aluminum compound.

4. The process of producing an insoluble aluminum compound, free, or substantially free, from iron, which consists in treating an aqueous solution of crude aluminum sulphate with nitric and sulphuric acids, adding calcium fluoride, then adding a solution of sodium carbonate to precipitate iron, removing said iron, and then treating said solution with a further quantity of said sodium carbonate to cause precipitation of said aluminum compound.



**503,902.** LOOSE-PULLEY LUBRICATOR. HENRY J. CHAMBERLAIN, Hyde Park, Mass., assignor to John T. Robinson & Co., same place. Filed Aug. 4, 1891. Serial No. 401,700. (No model.)



*Claim.*—1. A loose pulley connection, adapted to receive a shaft loosely within it, and comprising a stationary sleeve to receive loosely upon it a pulley, said sleeve having a series of slots, and a hub for said sleeve having an interior annular passage or recess, which communicates with one of said slots, and an oil passage through said hub, substantially as described.

2. A loose pulley connection, adapted to receive a shaft loosely within it, and comprising a stationary sleeve to receive loosely upon it a pulley, said sleeve having a slot therein, and a hub for said sleeve having an oil feed tube secured thereto, and an oil passage connecting said feed tube and slot, substantially as described.

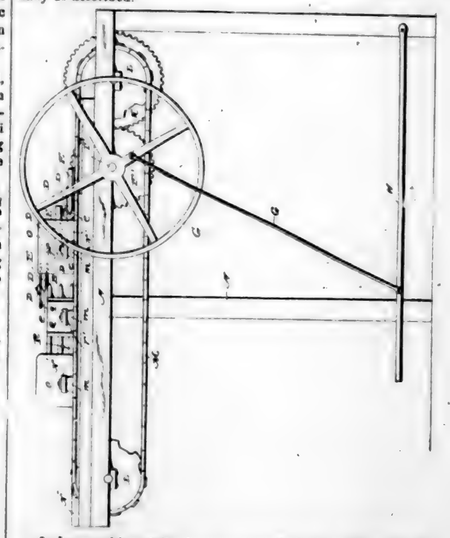
**503,903.** MACHINE FOR SLICING FRUIT. ANDREW J. CURTIS, East Williamson, and WARNER H. CURTIS, Sodus, assignors of one-third to G. Arthur Scullen, East Williamson, N. Y. Filed Feb. 15, 1893. Serial No. 462,426. (No model.)

*Claim.*—1. In a machine of the character described, the combination with a stationary support, of a series of horizontally extending stepped knives carried by the support, and a series of pusher fingers adapted to pass between the stepped knives, substantially as described.

2. In a machine of the character described, the combination with a stationary support, of a series of stationary parallel knives, an endless chain passing around sprockets arranged on opposite sides of the knives, a series of laterally extending pusher fingers carried by the chain and adapted to pass between the knives, and means for driving the endless chain, substantially as described.

3. In a machine of the character described, the combination of a stationary table, a series of parallel knives or cutting blades arranged above the support, an endless chain passing around sprockets arranged in front and in rear of the knives, a series of plates carried by said chain and each provided with a series of projecting pusher fingers adapted to pass between the knives, and means for driving the sprocket chain, substantially as described.

4. In a machine of the character described, the combination of a stationary solid table or support, a plate rigidly secured to said table and decreasing in height from its rear to its forward end, a series of parallel horizontal knives attached at one end to the incline side of said plate, and a series of pusher fingers adapted to be moved longitudinally of the table and pass between the knives or cutters, substantially as described.



5. In a machine of the character described, the combination of a table or support, a triangular plate secured on said table, a series of horizontal parallel knives or cutting blades attached to the inclined side of the triangular plate, plates connecting the free ends of adjacent knives, pusher fingers supported on an endless belt or chain and adapted to pass through the spaces between the connected pairs of knives, and means for driving the endless belt or chain, substantially as described.

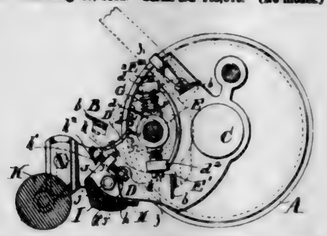
6. In a machine of the character described, the combination of a table or support, a series of knives arranged in pairs, a series of pusher fingers carried by an endless chain or belt and adapted to pass between the pairs of knives, guide blocks attached to the chain or belt, between the pusher fingers thereon, and having fingers also adapted to pass between the pairs of knives, and means for driving the endless chain or belt, substantially as and for the purpose described.

7. In a machine of the character described, the combination of a table or support, a series of knives attached at one end to a stationary plate, plates connecting the outer ends of adjacent knives, a series of plates attached to an endless belt or chain and each having a series of laterally projecting pusher fingers spaced apart sufficiently to pass between the pairs of knives, guide blocks attached to the endless chain or belt, at points between the plates carrying the pusher fingers, and each carrying a series of longitudinal guide fingers adapted to extend between each pair of knives and support the free ends thereof as the pusher fingers are passing between the same, substantially as described.

8. In a machine of the character described, the combination of a table or support, a triangular shaped plate secured to said table and provided with a series of laterally projecting lugs which lie in different horizontal planes, knives or cutting blades detachably connected at one end to said lugs and extending obliquely across the table, plates connecting the outer free ends of adjacent knives, an endless chain or belt arranged beyond the free ends of the knives, plates attached to said chain or belt and each having on its inner side a series of horizontally extending parallel pusher arms adapted to pass between the pairs of knives, and guide blocks attached to the chain, at points between the plates carrying the pusher fingers, and having guide fingers which align with the pusher fingers, and means for driving the endless belt or chain, substantially as and for the purpose described.

9. In a machine of the character described, the combination, of a table or support, a series of stationary cutting blades supported above said table, a sprocket chain passing around aligned sprockets secured on suitable shafts, means for driving said chain, a series of plates each provided on one face with a laterally projecting lug, which is connected to lugs on the driving chain, and on its other face with pusher fingers adapted to pass between the knives or cutters, substantially as described.

**503,904. LAWN-MOWER.** HENRY DECK, Philadelphia, Pa., assignor to John Braun, John F. Braun, and William P. M. Braun, same place. Filed Aug. 13, 1892. Serial No. 443,018. (No model.)



*Claim.*—1. In a lawn mower, the combination with the side frames, of a rotary cutter and its shaft, and journal boxes for the ends of the rotary cutter supported by the side frames on the inner sides thereof, the side frames being provided with open notches *d* wholly independent of the journal boxes to receive the ends of the rotary cutter shaft which project beyond the ends of the journal boxes, whereby the rotary cutter shaft and its journal boxes may be removed together from the side frames.

2. In a lawn mower, the combination with the side frames, of a rotary cutter and its shaft, journal boxes for the ends of the rotary cutter supported by the side frames on the inner sides thereof, the side frames being provided with open notches *d* wholly independent of the journal boxes to receive the ends of the rotary cutter shaft which project beyond the ends of the journal boxes, whereby the rotary cutter shaft and its journal boxes may be removed together from the side frames, and detachable plates for the side frames to close the notches *d*.

3. In a lawn mower, the combination with the side frames, of a rotary cutter and its shaft, journal boxes for the ends of the rotary cutter supported by the side frames on the inner sides thereof, the side frames being provided with open notches *d* wholly independent of the journal boxes to receive the ends of the rotary cutter whereby the rotary cutter shaft and its journal boxes may be removed together from the side frames, and detachable plates for the side frames to close the notches *d* provided with lugs extending down into the notches and partly filling them.

4. In a lawn mower, the combination with the ledger knife, of the rotary cutter having its shaft journaled in automatically yielding bearings whereby the cutter and its shaft may rise automatically.

5. In a lawn mower, the combination of the side frames, the ledger knife, the rotary cutter shaft and cutters, and journal boxes carried by the side frames in yielding supports whereby the cutter and its shaft may yield automatically.

6. In a lawn mower, the combination with the side frames, of the ledger blade, the rotary cutter shaft and its cutters, journal boxes carried by the ends of the cutter shaft and independent of the side frames, and the adjusting supporting screws carried by the side frames and supporting the upper and lower portions of the journal boxes.

7. In a lawn mower, the combination with the side frames, of the ledger blade, the rotary cutter shaft and its cutters, the tubular journal boxes carried by the ends of the cutter shaft and independent of the side frames, the adjusting supporting screws carried by the side frames and supporting the upper and lower portions of the tubular journal boxes, and springs between the journal boxes and upper supporting screws.

8. In a lawn mower, the combination with the rotary cutter shaft, of journal boxes upon the ends of the shaft, a ball and socket support for the lower portions of the journal boxes, and a yielding support for the upper ends of the boxes.

9. In a lawn mower, the combination with the rotary cutter shaft of the journal boxes upon the ends of the shaft, a support for the lower portions of the journal boxes, a supporting pin for the upper portions of the journal boxes, an intermediate block between the supporting pin and upper surface of the journal box movable upon said upper surface, and a spring between the supporting pin and intermediate block.

10. In a lawn mower, the combination with the rotary cutter shaft, of the journal boxes E having the lower recessed lugs *e* and the upper curved ridges *e'*, the blocks F, having the lower curved grooved surface *f'* fitting over the curved ridge *e'* of the boxes, the lower supporting screws E' fitting the recessed lugs *e*, the upper supporting screws F', and the spring G between the upper supporting screws E' and the blocks F.

11. In a lawn mower, the combination with the side frames D having the open notches *d*, of the rotary cutter shaft C received in the notches *d* and free to play therein, and yielding bearings for the cutter shaft independent of the notches *d*.

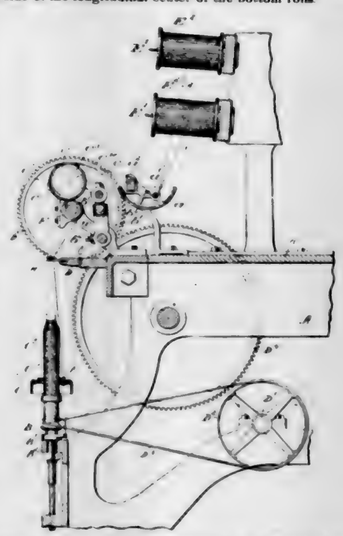
12. In a lawn mower, the combination with the side frames D having the open notches *d*, the yielding journal boxes for the ends of the shaft independent of the frames D, and supports for the boxes carried by the side frames.

13. In a lawn mower, the combination with the rotary cutter and its shaft, of the side frames having open notches *d* extending inwardly from their edges so that the ends of the rotary cutter shaft may be inserted in the side frames or removed therefrom, the open notches being of a size sufficient to permit the ends of the rotary cutter shaft to play vertically, and yielding bearings for the ends of the shaft independent of the notches in the side frames whereby the ends of the shaft when moving with the yielding bearings may rise and fall in the notches *d*.

14. In a lawn mower, the combination with the rotary cutter and its shaft, of the side frames having open notches *d* extending inwardly from their edges so that the ends of the rotary cutter shaft may be inserted in the side frames or removed therefrom, the open notches being of a size sufficient to permit the ends of the rotary cutter shaft to play vertically, yielding bearings for the ends of the shaft independent of the notches in the side frames whereby the ends of the shaft when moving with the yielding bearings may rise and fall in the notches *d*, and detachable plates D' independent of the yielding bearings carried by the side frames and closing the openings of the notches *d*.

**503,905. MACHINE FOR TWISTING OR DOUBLING YARN.** GEORGE A. DRAPER and ALONZO E. RHOADES, Hopedale, Mass., assignors to the Hopedale Machine Company, same place. Filed May 25, 1891. Serial No. 394,407. (No model.)

*Brief.*—The inclined tracks for the top rolls are mounted on a rock shaft, whereby they can be moved so as to place the top roll on either side of the longitudinal center of the bottom rolls.



*Claim.*—1. A twisting frame containing the following instrumentalities, viz.—a bottom roll; a series of top rolls; a track to support the said top rolls normally at one side of the longitudinal center of the bottom roll to enable the top roll to move away from the bottom roll when the yarn breaks; and means to move the said track to place the top rolls at the opposite side of the longitudinal center of the bottom roll when the machine is stopped, the said top rolls in such position continuing to nip the yarn between them and the bottom roll, substantially as described.

2. In a twisting frame, a bottom roll, a series of top rolls, a series of tracks upon which the journals of the said top rolls may travel combined with a rock-shaft for supporting the said tracks, substantially as described.

3. The rock-shaft *b* having the adjustable arms, and tracks moved in unison with the said arms, combined with a bottom front roll, and with a top roll having its journals mounted to travel on the said track, substantially as described.

4. In a twisting frame, a rotating bottom front roll, a top roll, an inclined track upon which the journals of the said roll may travel,

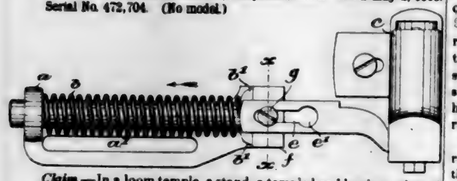


combined with a swinging support for the said track, and with means to swing the said support to positively carry the top rolls out of a line drawn vertically through the center of rotation of the bottom front roll, as and for the purpose set forth.

5. In a twisting frame, a bottom roll; a series of top rolls; and a series of inclined tracks upon which the journals of the top rolls may travel; and means for adjusting said tracks to the desired inclination, substantially as described.

6. A bottom roll; a series of top rolls having journals; a series of inclined tracks to support the journals of the said top rolls, the said tracks being movable about a common center, combined with a pawl or locking device to retain the tracks in position to maintain the journals of the top rolls substantially in vertical line with the center of the bottom roll, the release of the locking device permitting the tracks to be swung in a direction to remove the journals of the top rolls out of vertical line with the center of the bottom roll, as and for the purpose set forth.

**503,906. LOOM-TEMPLE.** DANIEL DURKIN, West Upton, assignor to the Dutcher Temple Company, Hopedale, Mass. Filed May 2, 1893. Serial No. 472,704. (No model.)



*Claim.*—In a loom temple, a stand, a temple head having a slotted shank, and a locking device co-operating with the slot in the shank to retain the shank in the said stand in certain positions of the shank and permit the shank to be removed from the stand and locking device in other positions, for the purposes set forth.

**503,907. PAPER-BOX MACHINE.** LEWIS F. FALES, Walpole, Mass. Filed Jan. 31, 1893. Serial No. 460,370. (No model.)



*Claim.*—1. In a paper box machine, the combination with a continuously revoluble carrier upon which a tubular box blank may be placed with opposite flaps thereof extended endwise, of a stationary plate closely past which the end of the carrier has its travel and against the edge of which the forward flap may be brought to be thereby folded toward the end of the carrier and a folding blade mounted independently of the carrier adjacent the course of the end thereof and adapted periodically to follow and overtake the carrier to force the rear extended flap toward the carrier end, and means for imparting to said blade its accelerated movement, substantially as set forth.

2. In a paper box machine, the combination with a continuous revoluble carrier on which a tubular blank may be placed with a flap thereof extended beyond the carrier end, of an arm mounted for a swinging movement, independently of the carrier with a folding blade, and operating after the carrier has passed the blade to follow and overtake the carrier to force the extended flap toward the carrier end, and means for imparting to said arm and blade their accelerated movement and then a retracting movement, substantially as set forth.

3. In a paper box machine, the combination with a movable carrier upon which a tubular blank may be placed with a flap thereof extended beyond the carrier-end, of a part past which the end of the carrier has its course of movement and which has an outward or lateral inclination, and a glue-roll at one side of the path of the carrier and beyond the said laterally inclined device, substantially as and for the purpose set forth.

4. In a paper box machine, the combination with a movable carrier upon which a tubular blank may be placed and laterally beyond the end of which a flap thereof may be extended, of a glue-roll at one side of the path of the carrier and against the periphery of which the said laterally extended flap may have a contact for receiving a layer of adhesive substance, substantially as described.

5. In a paper box machine, the combination with a movable carrier upon which a tubular blank may be placed and laterally beyond the end of which a flap thereof may be extended, of a glue-roll at one side of the path of the carrier and against the periphery of which the said laterally extended flap may have a contact for receiving an adhesive layer and devices arranged farther along the path of the carrier for inwardly folding the flap toward the end of the carrier.

6. In a paper box machine, the combination with a movable carrier upon which a tubular blank may be placed and laterally beyond the end of which a flap thereof may be extended, of a glue-roll at one side of the path of the carrier and against the periphery of which the said laterally extended flap may have a contact for receiving an adhesive layer and devices arranged farther along the path of the carrier for inwardly folding the flap toward the end of the carrier and a suitable movable body located still farther along relative to the course of travel of the carrier for having an impact to forcibly press the glued flap toward the end of the carrier, substantially as described.

7. In a paper box machine, the combination with a revoluble carrier for tubular blanks, of a separated pair of glue-rolls, E E, arranged with their peripheries adjacent but to one side of the course of movement of the end of the carrier, the curved plate, *d*, having its surface arranged adjacent the circular path of the carrier and having at a portion behind the rolls the sidewise inclined surfaces, 39, 39, and the strips, *g*, *g*, having ends thereof adjacent the periphery of the glue-rolls, and extended at either side of, and in proximity to, said circular path forwardly beyond said rollers, substantially as and for the purposes set forth.

8. In a paper box machine, the combination with the movable carrier for a box-blank, of strips, *g*, *g*, arranged adjacent the course of movement of the carrier-end and provided at the extremities thereof with angular lugs, as $g^4$, $g^4$, which have a degree of separation corresponding to the width of the box.

9. In a paper box machine, the combination with the movable carrier for a box blank, of strips, *g*, *g*, arranged adjacent the course of movement of the carrier-end and having extremities thereof spring-formed for a yielding reaction toward the end of the passing carrier and having the opposing angular lugs, $g^4$, separated by a distance corresponding to the width of the box, substantially as described.

10. In a paper box machine, the combination with a movable carrier for the blank, of the strips, *g*, *g*, arranged adjacent the course of movement of the carrier-end and having the opposing angular lugs, and a support on which said strips, *g*, *g*, are adjustably supported whereby their separation may be changed, as desired, for the purpose set forth.

11. In a paper box machine, the combination with a movable carrier, the plate, *d*, adjacent the course of its movement, the opposing gum-rollers, E E, the oppositely arranged strips, *g g*, with the forwardly converging members, $g^3$, $g^4$, substantially as set forth.

12. In a paper box machine, the combination with the revoluble carrier, the curved plate, supported adjacent the path thereof, having at the rear portion thereof the forwardly diverging surfaces, 39, 39, the separated glue-rolls, E, E, the folder-blade, *f*, having a movement, as described, the separated strips, *g*, *g*, forwardly extended in advance of the glue-rolls and having the converging portions, $g^3$, $g^3$, substantially as and for the purposes set forth.

13. In a paper box machine, the combination with a movable blank carrier, opposing rolls, E, E, and supports on which they are adjusted for a variable degree of separation, as desired, and the strips, *g*, *g*, also adjustably supported and having the converging portions or members, substantially as and for the purpose set forth.

14. In a paper box machine, the combination with a receptacle for an adhesive, of two bars arranged endwise relative to each other

and having the screw-spindles, a slotted support on which said bars may slide and through the slots of which said spindles may be extended, and the set nuts therefor, and the arms, *o*, *o'*, in which are journaled the carrying-shafts for the glue-rolls, substantially as described.

15. In a paper box machine, the combination with a receptacle for an adhesive, of two bars arranged endwise relative to each other and having the screw-spindles, a slotted support on which said bars may slide and through the slots of which said spindles may be extended, and the set nuts therefor, and the arms, *o*, *o'*, in which are journaled the carrying-shafts for the glue-rolls and the ear-lugs on said movable bars, and the right and left screw-spindle engaged therewith and means for turning the spindle, substantially as described.

16. In a paper box machine, the combination with a rotatable support on which are a series of carriers for tubular blanks, and a cam having successive forcing surfaces corresponding in number to the carriers, a pressure-roll and a medium of connection between it and the said cam whereby the roll will be moved against a carrier each time one thereof comes adjacent the roll, for the purpose set forth.

17. In a paper box machine, the combination with a rotatable support having a series of radially extended blank carriers and a cam having a series of forcing surfaces corresponding in number to the carriers, a pressure-roll suitably guided and having toggles connected thereto, a thrust-rod in operative relation to the aforesaid cam and connected to the toggle and a retracting spring, substantially as described.

18. In a paper box machine, the combination with a rotatable support having a series of radially extended blank carriers, of a series of rollers movably mounted, and arranged adjacent the path of the ends of the carriers, and having springs whereby they are normally forced to present their peripheries slightly across and beyond said path, substantially as and for the purpose set forth.

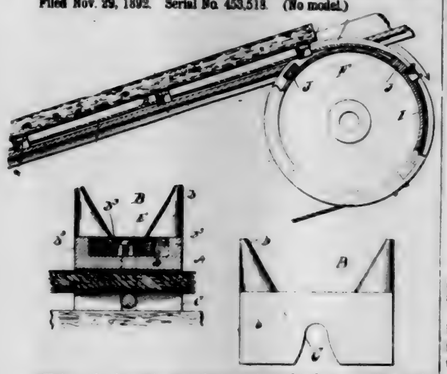
19. In a paper box machine, the combination with a rotatable support having a series of radially extended blank carriers, of a series of rollers movably mounted and arranged adjacent the path traversed by the ends of the carriers and having springs whereby they are normally forced to present their peripheries slightly across and beyond said path and the initial one of said series of rollers having its spring of increased power, and means for forcing the roll against the spring away from said path and periodically permitting it to be subject to the reaction of its said spring, substantially as and for the purpose set forth.

20. In a paper box machine, the combination with a movable support having one or more extensions to constitute blank-carriers, of a series of rolls, the apertured frame, *k*, having the sockets, $k^3$ the springs in the sockets and the journal-boxes for the rolls movable in said apertures toward and away from the path of movement of the carrier, substantially as described.

21. In a paper box machine, the combination with one or more movable carriers of an opposing pair of apertured supports, as *k*, having the sockets, $k^3$, the springs, $k^3$, therein, and the compression regulating screws, $k^4$, the journal boxes, and the rollers, *k*, mounted therein, and the screws, *l*, to constitute adjustable stops, substantially as described and shown.

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**503,908. CABLE HAUL MECHANISM.** JOHN H. HAHN, Jr., Sargent, Mo., assignor of one-fourth to Joseph A. Jeffrey, Columbus, Ohio. Filed Nov. 29, 1892. Serial No. 453,518. (No model.)



*Claim.*—1. A carrier attachment adapted to be secured to a wire cable and to rest independently of the cable upon a floor or guide way, it having projecting parts *b'* upon which rests the log or load, and having the metallic body extending integrally down from said projections to the bottom surface which rests on the guide way, as set forth, whereby the load can be supported upon the attachment and the guideway independently of the cable, and a clamp or fastener bearing entirely against the outer surface of the cable, substantially as described.

2. A carrier attachment, adapted to be secured to a cable, and to have the load arranged centrally and vertically above the cable, and to support the said load, independently of the cable, it extending to lines below the cable whereby it can ride upon a guide way or floor when supporting a load, and having a clamp which frictionally engages with the under side of the cable, substantially as set forth.

3. The herein described carrier attachment, adapted to be secured to a cable, and formed of a metallic block, having a slot or passage way in the bottom, for the introduction of the cable, longitudinally of the latter, said slot or passage being of a depth greater than the diameter of the cable, and a threaded clamp and nut securing it to the cable, substantially as described.

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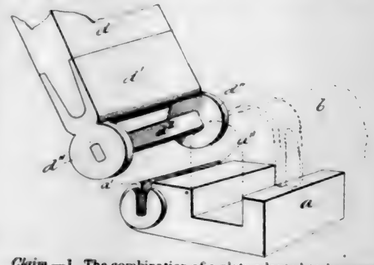
**503,909. CORSET-STAY.** MAX W. HENIUS, Brooklyn, N. Y., assignor to David H. Fanning, Worcester, Mass. Filed Mar. 25, 1893. Serial No. 467,625. (No model.)



*Claim.*—A stay having its point or points of greatest strain reinforced by means of a series of disconnected and independent indentations or pits formed within the outline edges of the stay, substantially as described.

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**503,910. THILL-COUPLING.** ELWIN J. MERRY, Magog, Canada, assignor of one-half to Horace Ralph Merry. Filed Apr. 11, 1893. Serial No. 469,923. (No model.)



*Claim.*—1. The combination of a plate adapted to be secured to an axle and carry an open-ended slotted tube or eye, a longitudinally-grooved roller journaled in said tube and provided with radial flanges at its ends, said flanges bearing against the respective ends of the tube or eye and a thill iron carrying a pair of ears and a rectangular connecting bar, substantially as described.

2. The combination of an eye slotted along its upper side, a longitudinally-grooved roller journaled in said tube and provided with flanges *c'* at its ends, adapted to bear against the ends of the eye, said flanges being beveled away from the groove in the roller, as at $c^3$, thereby forming a mouth leading thereto, substantially as described.

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**503,911. BOLSTER FOR SPINNING-SPINDLES.** JAMES H. NORTHROP, Hopedale, Mass., assignor to George Draper & Sons, same place. Filed Apr. 22, 1893. Serial No. 471,397. (No model.)



*Claim.*—1. A bolster bearing having a series of surrounding grooves, notches or indentations, combined with an elastic cushion applied thereto, substantially as described.

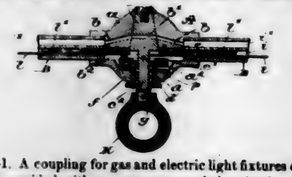
2. A bolster bearing having a series of surrounding grooves, combined with a cushion consisting of a strand wound into and more than filling said grooves the ends of the strand being suitably connected to the bolster, substantially as described.

3. A bolster provided with a screw thread on its exterior, and having a strand of soft material wound on such screw thread, substantially as described.

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**503,912. COMBINED GAS AND ELECTRIC-LIGHT FIXTURE.** JAMES A. O'NEILL, Boston, Mass., assignor of one-half to John C. Hollings, same place. Filed Oct. 29, 1892. Serial No. 450,319. (No model.)



*Claim.*—1. A coupling for gas and electric light fixtures comprising a casing provided with a gas passage and electric circuit wires, combined with a movable gas cock to co-operate with said passage, and a circuit closer carried by and movable independent of said cock, whereby the gas and the electric current are regulated independently, substantially as described.

2. A coupling for gas and electric light fixtures comprising a casing provided with a gas passage, and electric circuit wires, combined with a movable gas cock to co-operate with said passage, a circuit closer normally movable with said cock, and a detachable connection between said cock and circuit closer, whereby the gas and the electric current may be regulated simultaneously or independently, substantially as described.

3. In a combination gas and electric light fixture, a coupling provided with a gas passage, and terminals for the electric circuit within and insulated from the casing, combined with a gas cock supported in the casing, a circuit closer to co-operate with said terminals and normally movable with said cock, and means for disconnecting said cock and circuit closer, substantially as described.

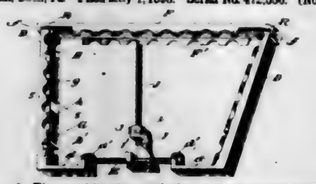
4. In a combination gas and electric light fixture, a coupling having a gas passage and electric circuit terminals, combined with a gas cock, a circuit closer to co-operate with the said terminals and yieldingly supported on said gas cock, and a locking projection and recesses to normally connect said cock and closer to rotate together, substantially as described.

5. A coupling for gas and electric light fixtures comprising a partially hollow casing having a gas passage, a seat, and circuit terminals held in the hollow portion, combined with a gas cock held in said seat, a circuit closer longitudinally movable on the shank of said cock, and means to connect said cock and circuit closer to rotate in unison, substantially as described.

6. A coupling for gas and electric light fixtures comprising a partially hollow casing, circuit terminals secured within and insulated from said casing, a circuit closer to co-operate therewith, and a closure for said casing in which the circuit closer is rotatably and longitudinally movable, combined with means to rotate the circuit closer, substantially as described.

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**503,913. WASHTUB.** FRANK RASNER, Bangor, assignor to Charles Shuman, Bath, Pa. Filed May 1, 1893. Serial No. 472,536. (No model.)



*Claim.*—1. The combination with the side bottom and end pieces of a tub or other structure, of a clamp embracing the same and wedge blocks interposed between members of the clamp and the adjoining surface of the structure, and means for adjusting said wedge blocks whereby the portions of the structure are rigidly bound together, substantially as described.

2. The combination with a tub or like structure, of a sectional and adjustable clamp surrounding the same, and adjustable wedge blocks interposed between the clamp and sides of the tub, and means for adjusting said wedge blocks, substantially as and for the purpose specified.

3. The combination with a tub or like structure, of a clamp composed of uprights applied to the sides of the tub, the top and bottom connection between opposite uprights, and adjustable wedge blocks interposed between the uprights and sides of tub, all constructed substantially as described.

4. The combination with a tub, of the uprights having tapered grooves in their inner faces, the adjustable wedge-blocks in said grooves, and the devices connecting the tops and bottoms of opposite uprights, substantially as described.

5. The combination of the uprights D, connected at their lower ends, the top bars F, the wedge blocks G, and adjusting bolts H, substantially as and for the purpose specified.

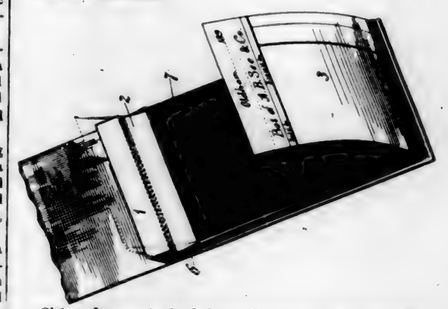
6. The combination of the grooved uprights D, the adjustable connection between the lower ends thereof, the top bar F, the wedge blocks G and bolts H, all constructed substantially as described.

7. The combination of the uprights D having bottom pieces *d*, the bolts E connecting pieces *d* of opposite uprights, the top bar F, the wedge blocks G and bolts H, all substantially as set forth.

8. A tub, formed of sides, bottom and ends, substantially as described, in combination with uprights D at each side thereof, the connections between the lower ends of opposite uprights, the bars connecting the upper ends of opposite uprights, the wedge blocks interposed between the uprights and sides of tub, and the devices for adjusting said wedge-blocks, and the clamp pieces I at the ends of the tub, and the connections of said pieces to the top bars, substantially as and for the purpose specified.

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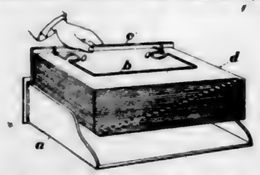
**503,914. MEMORANDUM OR COPYING BOOK.** WILLIAM H. RODDEN, Toronto, Canada, assignor of two-thirds to Fred A. Mulholland and Frederick R. James, same place. Filed Sept. 19, 1892. Serial No. 446,345. (No model.)



*Claim.*—In a copying book the combination of a series of originals, duplicates, and stubs the stubs being suitably bound together, a swinging frame comprised of a substantially rectangular shaped piece of spring metal having one of its sides partially cut away to form two points which are adapted to enter between the stubs and detachably secure the said frame to the book, a transfer sheet secured to the said frame and adapted to be placed between the originals and duplicates said frame arranged to carry the transfer sheet clear of the said stubs in order that the said transfer sheet will lie flat between the original and its respective duplicate, substantially as set forth.

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**503,915. LETTER-FILE.** EZRA H. STAFFORD and FRANK FIELD, Grand Rapids, Mich. Filed Nov. 8, 1892. Serial No. 451,366. (No model.)



*Claim.*—1. In a letter file, the combination with a case *a*, of a vertical, removable head piece *c* fitting into the case, an upper spring clasp *b* connected to said head piece, a lower spring clasp *m* also connected to said head piece, and a series of retaining sheets *d* located between said upper and lower clasps and engaged with vertical supports, said head piece, clasps and sheets being all removable together, substantially as described.

2. In a letter file, the combination with a case *a*, of a vertical, removable head piece *c* fitting in the case against the inner side of the front wall thereof and provided with attached upper and lower spring clasps *b* and *m* between which a series of retaining sheets *d* are located so that the head piece, the upper and lower clasps and the retaining sheets are all removable together, substantially as described.

3. In combination with a case, a head-piece adapted to slip within the case, a wire or suitable support for the letter sheets beneath the same, and a wire spring, having its ends bent inward and downward and secured to the head-piece by staples or other suitable means, substantially as described.

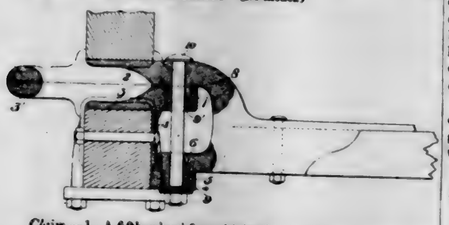
4. The combination of a case, a head-piece having suitable support as *m*, a wire spring as *b*, provided with loops, and having its ends bent obliquely downward and attached to the head piece, and a series of retaining sheets as *d*, all constructed substantially as and for the purpose described.

**503,916. SKELETON WAIST.** LOUISE G. STITT, Chicago, Ill. Filed Oct. 7, 1892. Serial No. 448,108. (No model.)



*Claim.*—As a new article of manufacture the herein described skeleton brace and garment supporter comprising two halves which are counter parts of each other composed of front and back sections joined by shoulder straps forming arm holes, and united at the front and rear by parallel elastic strips with vertical strips uniting the parallel elastic strips and having the waist provided with means for supporting the apparel, substantially as shown and described.

**503,917. FIFTH-WHEEL.** HENRY C. SWAN, Oshkosh, Wis. Filed Apr. 5, 1893. Serial No. 469,174. (No model.)



*Claim.*—1. A fifth-wheel for vehicles, having a head-block-plate, a perch-iron and a guard-stay formed in a single piece; substantially as described.

2. A fifth-wheel for vehicles, having a perch-iron and a guard-stay formed in a single piece; substantially as described.

3. A fifth-wheel for vehicles having a top axle-plate and upper and lower projections integral therewith and extending from the rear of the axle, in combination with a head-block-plate, perch-iron and guard-stay formed of one piece and adapted to bear upon the upper surfaces of said projections, substantially as described.

4. A fifth-wheel for vehicles having upper and lower projections extending from the axle, and a perch-iron and guard-stay made of one piece and bearing on the surfaces of said projections respectively, said parts having interfitting lugs and sockets, substantially as described.

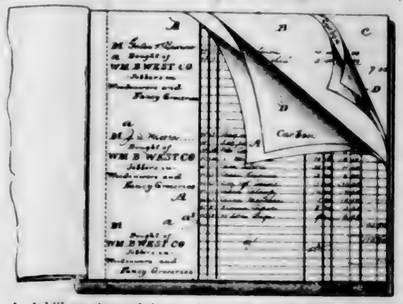
5. A fifth-wheel for vehicles having an axle-plate, with a plate or skirt extending vertically therefrom at the back of the axle, and having upper and lower projections, and a perch-iron and guard-stay made of one piece and bearing on the upper surfaces of said projections respectively, substantially as described.

**503,918. BILL-SHEET.** HENRY F. VAUGHAN, Richmond, Va. Filed Feb. 4, 1893. Serial No. 461,012. (No model.)

*Claim.*—1. A single bill sheet having two or more bill heads printed on one of its side ends, a horizontal tearing space between said bill heads and suitably ruled lines and spaces to one side of the bill heads for writing in items of account whereby the sheet can be used for a single long bill sheet or be separated into two or more shorter bill sheets, substantially as described.

2. A bill book comprising single bill sheets which are held in the book by vertical perforated tearing lines outside the bill heads, each sheet having two or more bill heads printed on one of its side ends, a horizontal tearing space between said bill heads, and suitably ruled lines and spaces to one side of the bill heads for writing in items of account whereby the entire sheet can be used as a single bill sheet or be separated into two or more shorter bill sheets, substantially as described.

3. A bill book comprising bill sheets which are held in the book by vertical perforated tearing lines outside the bill heads, each sheet having two or more bill heads printed on one of its side ends, a horizontal tearing space between said bill heads, and suitably ruled lines and spaces to one side of the bill heads for writing in items of account, whereby each sheet can be used as a single long bill sheet or be separated into two or more shorter bill sheets, a blank sheet under the bill sheet, and a carbon sheet placed in between the blank sheet and the bill sheet, substantially as described.



4. A bill, receipt and day book comprising bill sheets which are held in the book by perforated tearing lines outside the bill heads, each sheet having two or more bill heads printed on one of its side ends, a horizontal tearing space between the bill heads, and suitably ruled lines and spaces to one side of the bill heads for writing in items of account whereby each sheet can be used as a single long bill sheet or be separated into two or more shorter bill sheets, and two or more blank sheets bound beneath the bill sheet, one of the sheets being held in the book by a vertical perforated tearing line near its inner edge and the other sheet imperforated and forming a permanent part of the book, substantially as described.

5. A single bill sheet having two or more bill heads printed on one of its side ends, whereby the sheet is adapted to be used as a single bill sheet or be separated into two or more bill sheets, substantially as described.

**503,919. SPEED-GEAR FOR VELOCIPEDES.** CHARLES VOGEL, Fort Lee, N. J. Filed Feb. 18, 1893. Serial No. 462,854. (No model.)



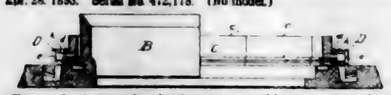
*Claim.*—1. The combination with the stationary cylindrical bearing C, the crank arms and shaft A, of the chain wheel and its internal gear, the carrier plate within the chain wheel, a gear upon the crank shaft and intermediate gears between the said gear and the internal gear, the studs of which intermediate gears are upon the carrier plate, radial clutch slides and teeth thereon for connecting the carrier plate with the internal gear and chain wheel and lugs for engaging the cylindrical bearing, and means for moving the clutch slides inwardly or outwardly substantially as set forth.

2. The carrier plate D and the radial clutch slides therein provided with teeth 13 and studs 4, in combination with the chain wheel and internal gear, the stationary cylindrical bearing 2 with the notches 5, the conical clutch K, grooved collar and connecting rods, and mechanism for actuating the same, the gear wheel I upon the crank shaft and the intermediate gears upon the carrier plate, substantially as set forth.

3. The carrier plate D and the radial clutch slides therein provided with teeth 13 and studs 4, in combination with the chain wheel and internal gear, the stationary cylindrical bearing 2 with the notches 5, the conical clutch K, grooved collar and connecting rods, and mechanism for actuating the same, the gear wheel I upon the crank shaft and the intermediate gears in pairs upon the carrier plate, whereby the crank shaft is rotated in the same direction for propelling the velocipede whether the speed gears are in use or not, substantially as set forth.



**503,920. KNITTING-MACHINE.** LOUIS N. D. WILLIAMS, Philadelphia, Pa., assignor of one-half to Robert W. Scott, same place. Filed Apr. 28, 1893. Serial No. 472,178. (No model.)

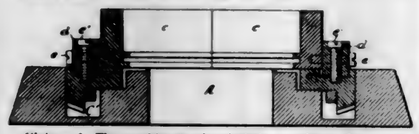


*Claim.*—1. A cam ring having a removable segment and provided with a support to which the removable segment is secured, and a filling block situated between the segment and its support, said filling block being greater in width than the length of the bits of the knitting needles, substantially as specified.

2. The combination in a knitting machine of a cam ring, formed of a continuous series of independently removable segments, and of a ring encircling the same, devices for securing the segments to said ring, and filling blocks provided between such ring and the cam segments, substantially as specified.

3. The combination in a knitting machine, of a cam ring having one or more removable segments, and provided with a base ring encircling such segments, a filling-block provided between each removable segment and the base ring, and devices for securing each segment and its filling block to the base ring, substantially as specified.

**503,921. KNITTING-MACHINE.** LOUIS N. D. WILLIAMS, Philadelphia, Pa., assignor of one-half to Robert W. Scott, same place. Filed May 5, 1893. Serial No. 473,068. (No model.)



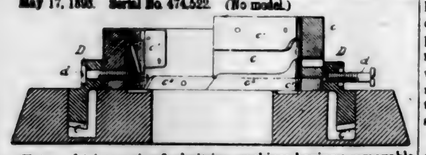
*Claim.*—1. The combination in a knitting machine, of a cam ring having a number of independent segments, and having a bevel gear on which said segments are supported, there being a circular groove in the upper face of said bevel gear, and filling blocks adapted to fit within such groove and hold the segments in working position, substantially as specified.

2. The combination in a knitting machine provided with a removable cam segment, of the supporting gear having a groove in the rear of such segment, and a filling block fitting within the groove between the outer wall thereof and the rear wall of the removable segment, substantially as specified.

3. The combination in a knitting machine, of a cam ring formed of a number of removable cam segments, and having a support therefor having a circular groove in the rear of the segments, filling blocks adapted to such groove and devices for securing the cam segments and the filling blocks to such support, substantially as specified.

4. The combination in a knitting machine, of a cam ring having a removable recessed cam segment, and having a support therefor, provided with a groove in the rear of the removable segment, a filling block adapted to such groove, a projecting rim thereon adapted to a recess in the cam segment, a needle guard above the filling block and cam segment, and a securing screw passing through the needle guard and filling block to the support, substantially as specified.

**503,922. KNITTING-MACHINE.** LOUIS N. D. WILLIAMS, Philadelphia, Pa., assignor of one-half to Robert W. Scott, same place. Filed May 17, 1893. Serial No. 474,522. (No model.)



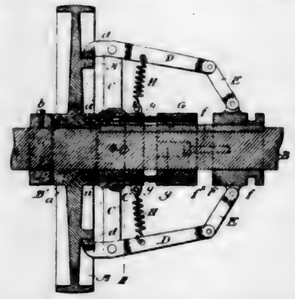
*Claim.*—1. A cam ring for knitting machines, having a removable segment, operating cams formed in two sections, situated respectively above and below the needle bits and forming a groove in which such needle bits may travel, the lower of such sections being detachably connected to the removable segment, and the upper of such sections being secured to the removable segment, substantially as specified.

2. A cam ring for knitting machines, having a removable segment, operating cams formed in two sections, situated respectively above and below the needle bits and forming a groove in which such needle bits may travel, the lower of such sections being detachably connected to the removable segment, and the upper of such sections being secured to the removable segment, and said cam ring having also a base ring forming a rear supporting wall for the segment, substantially as specified.

3. A cam ring for knitting machines, having a removable segment, or comprising a series of removable segments, operating cams formed in two sections, situated respectively above and below the needle bits and forming a groove in which such needle bits may travel, the lower of such sections being detachably connected to the removable segment and the upper of such sections being secured to the removable segment, and said cam having also a base ring forming a rear supporting wall for the segment and to which it is secured substantially as specified.

4. A cam ring having a removable segment, operating cams formed in two sections, situated respectively above and below the needle bits and forming a groove in which such needle bits may travel, the lower of such sections being detachably connected to the removable segment, and the upper of such sections being secured to the removable segment, said cam ring having also a base ring forming a rear support for such segment, and a securing screw extending through such base ring, the segment, and the lower section of the operating cam, substantially as specified.

**503,923. CLUTCH.** JOHN WOLF, Jr., Cincinnati, Ohio, assignor of one-half to Jacob Bloch, same place. Filed May 17, 1893. Serial No. 474,576. (No model.)



*Claim.*—1. The band wheel or pulley provided at one side with a circular flange or ring and having arc slots in the hub thereof, in combination with the hub having radial arms, the sleeve adjacent to said hub carrying locking pins adapted to engage said arc slots, the collar adjacent to said sleeve, clutch levers pivotally supported upon said radial arms and adapted to impinge at one end upon said flange and having their outer ends pivoted to connecting links the opposite ends of which are pivoted to said collar, substantially as described.

2. The band wheel or pulley provided at one side with a circular flange or ring and having arc slots in the hub thereof, in combination with the hub having radial arms, the sleeve adjacent to said hub carrying locking pins adapted to engage said arc slots, the collar adjacent to said sleeve, clutch levers pivotally supported upon said radial arms and adapted to impinge at one end upon said flange and having their outer ends pivoted to connecting links the opposite ends of which are pivoted to said collar, and springs tending to disengage said clutch levers and locking pins, substantially as described.

3. A friction clutch comprising the pulley loose on the main driving shaft, the sliding collar keyed on said shaft, the spider, the pivoted levers carrying the clutch blocks, the links connecting said levers and collar, the intermediate sliding collar or sleeve carrying the locking pins adapted to engage arc slots in the hub of the pulley, and connections between said sliding collar and sleeve, whereby the pulley will be frictionally geared to the driving shaft on the initial movement of the clutch operating collar and locked thereto on the continuation of this movement by said locking pins, substantially as described.

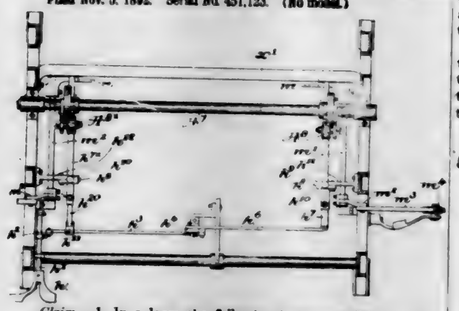
4. In combination with the circular flange, the spider, the pivoted clutch levers provided with the clutch blocks, the sliding collar, the links pivotally connecting said levers and collar, the springs tending to disengage said clutch blocks, the sleeve placed between said collar and spider, and means carried by said sleeve for locking the pulley to the spider at a predetermined point in the movement of the clutch levers, whereby the pulley is first frictionally geared to the driving shaft and then locked thereto, substantially as described.

5. In combination with the loose pulley having arc slots in the hub thereof, the clutch levers and collar and means for frictionally gearing said pulley to the main driving-shaft, mechanism adapted to operate at a predetermined point in the movement of the friction gearing and lock the pulley to the shaft, comprising a sliding sleeve carrying locking pins for engaging said arc slots in the hub of the pulley and connections between said sleeve and collar for operating the same, whereby on the forward movement of said collar said pulley will first be frictionally engaged and caused to turn with the shaft and then locked to the shaft, and vice versa, substantially as described.

6. In a friction clutch, the combination with the pulley loose on the main driving shaft and provided with arc slots in the hub thereof and with a circular flange or ring, of the sliding collar keyed on said shaft, the pivoted levers connected with clutch blocks which are adapted to impinge on said flange, the links connecting said levers and collar, and the intermediate sliding collar or sleeve carrying locking pins adapted to engage said arc slots in the hub of the pulley, substantially as described.

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**503,924.** SHUTTLE-MOTION FOR LOOMS. HORACE WYMAN, Worcester, Mass., assignor to the Crompton Loom Works, same place. Filed Nov. 5, 1892. Serial No. 451,123. (No model.)



*Claim.*—1. In a loom the following instrumentalities, viz:—a rotating cam shaft, provided with picker cam or projection; a horizontally placed picker rock shaft; a horizontally placed sweep lever mounted to turn on a horizontal fulcrum near one end of said sweep lever, and to be moved by the said cam or projection in a vertical plane at right angles to the center of rotation of the said cam shaft; and an arm or connection extended from said picker rock shaft and co-operatively connected with the said sweep lever near the opposite end to that provided with the said horizontal fulcrum, the combination being, and to operate, substantially as described.

2. In a picking mechanism for looms, a cam shaft; a horizontally placed picker rock shaft; connections between the latter shaft and a picker stick to actuate the stick; a horizontally placed sweep lever mounted on a pivot and disconnected from the picker rock shaft; an arm extended from said picker rock shaft in the path of movement of said sweep lever, and devices between said cam shaft and sweep lever to actuate the same and effect the rocking of the picker rock shaft substantially as described.

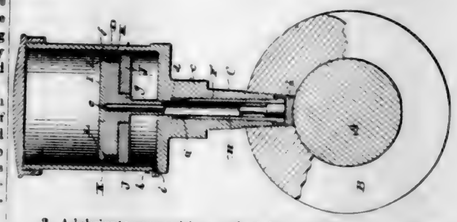
3. In a picker mechanism for looms, a cam shaft; a horizontally placed picker rock shaft; connections between the latter shaft and a picker stick to actuate the stick; a horizontally placed sweep lever mounted near one end on a horizontal pivot independent of and disconnected from the picker rock shaft; an arm extended from said picker rock shaft in the path of movement of that end of said sweep lever most remote from said horizontal pivot, and devices between said cam shaft and sweep lever to actuate the same and effect the rocking of the picker rock shaft; and devices to effect the relative change of position of said sweep lever and arm with relation to the path of the projection on the cam shaft for causing the picker rock shaft to be turned whereby the cam shaft may be rotated and yet the picker rock shaft will not be rocked as when it is desired to stop the picking operation, substantially as described.

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**503,925.** LUBRICATOR. EDWIN D. BAKER, Milwaukee, Wis. Filed Aug. 1, 1892. Serial No. 441,780. (No model.)

*Claim.*—1. A lubricator comprising an air tight cup having a hollow stem for attachment to a rotative device, a centrally perforated piston in the cup a packing compressible in the stem, and a hollow rod that extends, from the perforated portion of the piston through the packing, substantially as set forth.

2. A lubricator comprising an air-tight cup having a hollow stem for attachment to a rotative device, a packing within the stem, a sleeve adjustable in said stem against the packing, a centrally perforated piston in the cup, and a hollow rod that extends from the perforated portion of the piston and engages the sleeve, substantially as set forth.

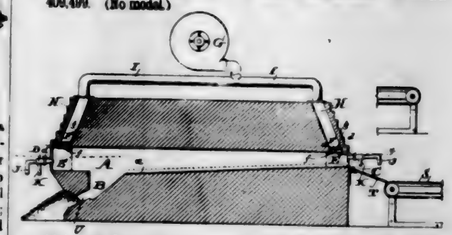


3. A lubricator comprising an air-tight cup having a hollow stem for attachment to a rotative device, a piston within the cup, consisting of a centrally perforated disk having an annular flange, and screw-threaded boss, a clamping-plate run on the boss, and a gasket and expansion ring held between the disk-flange and clamping-plate; and a hollow rod that extends from the perforated portion of the piston to within the cup-stem, substantially as set forth.

4. A lubricator comprising a cup having a hollow stem for attachment to a rotative device and a normally closed vent-hole, a centrally perforated piston in the cup, a hollow rod that extends from the perforated portion of the piston, and a packing compressible in the stem around the rod, substantially as set forth.

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**503,926.** FURNACE FOR WELDING, &c. ROBERT J. BUCK and CHESTER J. BUCK, Bridgeton, N. J. Filed Oct. 22, 1891. Serial No. 409,499. (No model.)



*Claim.*—1. In combination a furnace having a combustion chamber and a vaporization chamber communicating therewith and provided with an opening F, a nozzle opening into the vaporization chamber transversely to the opening F therein, pressure creating devices to blow a blast of oil and air into the vaporization chamber under pressure, and independent air moving devices for blowing a second blast of air through the opening F transversely upon the blast of oil and air and independently of the device for introducing the oil under pressure.

2. A furnace having a combustion chamber A and a vaporization chamber E directly in line with but forming no part of the combustion chamber proper and provided with an opening F transversely to the passage of the vapor and gases through the vaporization chamber, and located immediately adjacent to the entrance of the combustion chamber combined with an oil nozzle opening into said vaporization chamber E, directly in line with the combustion chamber a grating in said opening F, means to blow a jet of oil under pressure from the nozzle into the vaporization chamber, and a fan or blower to blow air through the opening F transversely upon the jet of oil and independently of the means for introducing the oil whereby the oil is thoroughly vaporized in the vaporization chamber immediately before it enters the combustion chamber.

3. The combination of an oil pump, air compressor, pressure equalizing reservoir, pipes leading from the oil pump and air compressor respectively to the reservoir, an oil nozzle D, an oil pipe and an air pipe leading from the reservoir to the nozzle, a furnace into which said nozzle opens adapted to receive a jet of more or less vaporized oil and air from said nozzle, and a fan or blower for blowing a second blast of air upon said jet of oil and air transversely to its line of movement at a comparatively low pressure substantially as and for the purpose specified.

4. A furnace for heating &c., having an opening or aperture in one end and a second opening or aperture in the body of the furnace adjacent thereto, an obstruction in said second aperture to form a series of small passageways or openings, a fan or blower to blow air through said second aperture, an oil nozzle adjacent to the aperture

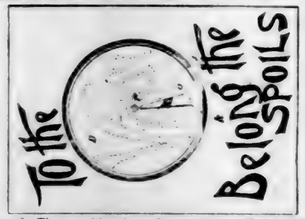


in the end of the furnace, and means to blow a jet of oil and air from said nozzle into the furnace past the second aperture, independently of the air blast through the second aperture and at a relatively high pressure.

5. In a furnace, the combination with a combustion chamber of a vaporizing chamber located in line therewith and immediately adjacent to the end thereof, a nozzle opening into said vaporization chamber and having its orifice in line with the vaporization and combustion chambers, oil and air pipes leading to said nozzle to introduce a mixture of oil and air thereto, pressure creating and equalizing devices to force a jet of oil and air from said nozzle into the vaporization chamber and in line with the combustion chamber, and means independent of the pressure creating devices for the nozzle for introducing a blast of air upon the partly vaporized jet of oil transversely to its line of movement and at a relatively lower pressure.

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**503,927.** THAUMATROPE. JAMES B. COX, Brooklyn, assignor of two-thirds to George B. Hurd and Frank B. Hurd, New York, N. Y. Filed Mar. 18, 1893. Serial No. 466,569. (No model.)



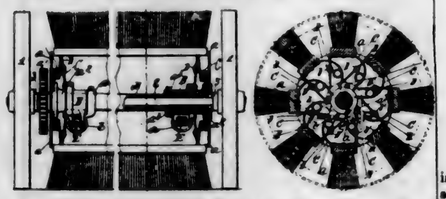

*Claim.*—1. The combination of a stationary flat surface having a word, phrase, symbol or sentence printed or otherwise formed upon it within a circle, other words, phrases or sentences outside of the circle, the entire inscription forming a sentence an opaque rotatable disk mounted on a pivot and covering the matter within the circle, said disk having a sector shaped opening or transparent sector shaped space formed in it, whereby, when the disk is rotated the inscription becomes readable, substantially as specified.

2. The combination of a stationary flat surface having a word, phrase, symbol or sentence printed or otherwise formed upon it within a circle other words, phrases or sentences outside of the said circle, the entire inscription forming a sentence, an opaque rotatable disk mounted on a pivot and covering the matter within said circle, said disk having a sector shaped opening or transparent sector shaped space formed in it, and means for giving an oscillating motion to the disk, whereby when the disk is rotated the matter concealed by the disk is discovered and the entire inscription becomes readable, substantially as specified.

3. The combination of a flat surface having a word phrase, symbol or sentence printed or otherwise formed upon it within a circle, other words, phrases or sentences, outside of the said circle, an opaque rotatable disk mounted on a pivot and covering the matter within said circle, said disk having a sector shaped opening or transparent sector shaped space formed in it and a weight for causing the disk to come to rest with the sector shaped space downward, substantially as specified.

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**503,928.** STREET-SWEEPER. ELMENDORF C. FISHER, Port Richmond, N. Y., assignor to the Universal Street Sweeping Machine Company. Filed Apr. 4, 1893. Serial No. 469,034. (No model.)



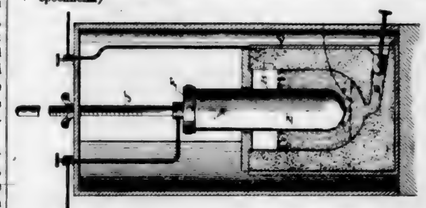
*Claim.*—1. In a rotary brush wheel consisting of several transverse brushes swinging around one common center, a hollow shaft provided with end disks to limit the horizontal movement of the brushes, a suitable gear secured to said hollow shaft for imparting a rotary movement to such, suitable springs having one end retained by the hollow shaft aforesaid, and the other end supporting the brushes, a movable collar fitted loosely on the hollow shaft, stay rods having one end retained pivotally by the movable collar, and the other ends supporting the brushes opposite to the springs aforesaid, a tapped box pivotally retained by such movable collar, a bearing box secured by a fixed collar to the hollow shaft, such fixed collar being on the opposite side of the movable collar, from that of the spring holding collar, a suitable shaft engaging such boxes, and manipulated by a suitable hand wheel, whereby the diameter of the brush wheel is either reduced or enlarged, substantially as set forth.

2. In a rotary brush wheel, consisting of several brushes swinging around a common center, a hollow shaft provided with end disks to limit the horizontal movement of the brushes, a suitable driving gear secured to said hollow shaft, springs having one end retained by the hollow shaft, and the other ends supporting the brushes, and such springs having coiled portions between such connections, a movable collar fitted loosely on the hollow shaft, stay-rods having one end pivotally retained by the said movable collar and the other end suitably supporting, opposite to the above springs, the said brushes, such stay rods having one portion loosely engaging a turn buckle, and the other portion in threaded engagement with such turn buckle, a tapped box pivotally retained by such movable collar, a collar secured to the hollow shaft, next to the movable collar, a bearing box pivotally retained by such fixed collar, a suitable shaft engaging such boxes aforesaid and manipulated by a hand wheel, whereby the diameter of the brush wheel is either reduced or enlarged, substantially as described.

3. In a street sweeping machine, the combination with the vehicle axle, and mechanisms for rotating a wheel brush, of a wheel brush, consisting of several brushes swinging around a common center; a hollow shaft suitably sustained by such axle aforesaid and provided with end disks to limit the horizontal movement of the brushes, a suitable driving gear secured to such hollow shaft, springs connecting the brushes with said hollow shaft, a movable collar fitted loosely on the hollow shaft, stay-rods, adjustable in length, and giving in length, connecting the brushes with such suitable collar, a collar secured to the hollow shaft next to the movable collar, suitable boxes pivotally retained by said movable collar and fixed collar, and a suitable shaft engaging such boxes, and provided with suitable manipulating means, whereby the diameter of the brush wheel is either reduced or enlarged, substantially as described.

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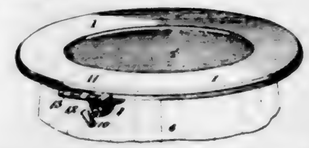
**503,929.** METHOD OF PRODUCING ALUMINUM. JOSEPH B. HALL, Wheeling, W. Va. Filed Aug. 6, 1892. Serial No. 442,304. (No specimens.)



*Claim.*—For the electrolytic production of aluminum from its compounds, a fused bath composed of aluminum chloride, sodium chloride and lithium chloride.

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**503,930.** HINGED COVER FOR SHOW-BARRELS. WILLIAM R. HIND and EDWARD O. HIND, St. Louis, Mo. Filed Jan. 6, 1893. Serial No. 457,536. (No model.)



*Claim.*—1. A hinge appliance for covers of barrels, &c., comprising an attaching member (7) and a pair of hinge members (11 and 12 secured in an adjustable manner to the main attaching member, substantially as set forth.

2. A hinge appliance for covers of barrels, &c., comprising an attaching member (7) and a pair of hinge members (11 and 12) adjustably attached to the main members, and provided with stop lugs (13), substantially as set forth.

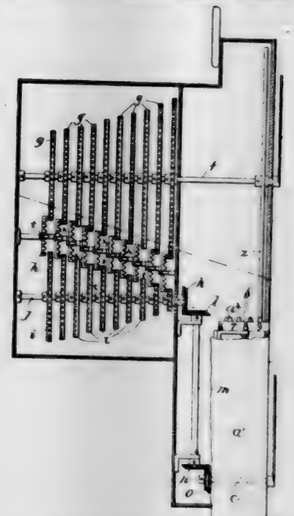
3. A hinge appliance for covers of barrels, &c., comprising an attaching member (7) and a pair of hinge members (11 and 12) adjustably attached to the main member, and a locking key (15) arranged ver-

tically and having a lateral locking finger (16) adapted to engage the hinge plate (12) substantially as set forth.

4. A hinge appliance for covers of barrels, &c., comprising an attaching member (7) a pair of hinge members (11 and 12) provided with openings or slots (17 and 18) and a locking key (15) arranged vertically and having a lateral locking finger (16) adapted to engage the hinge plate (12), substantially as set forth.

5. A hinge appliance for covers of barrels, &c., comprising an attaching member (7) provided with pendent lugs (8) teeth (9) and clamping screw (10) and a pair of hinge members (11 and 12) adjustably attached to the main member, substantially as set forth.

**503,931. COMPUTING WEIGHING-SCALE.** CUMMINGS M. HOLDEN, Tremont, Me., assignor of one-half to Eugene M. Gorden, Everett, Mass. Filed Jan. 3, 1893. Serial No. 457,135. (No model.)

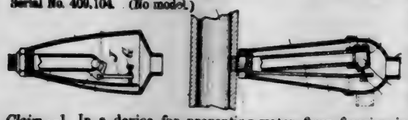


*Claim.*—1. A computing scale, comprising in its construction a weight-indicator, a price-indicator, and a plurality of sets of connections between said two indicators and arranged to be separately rendered operative, whereby the price-indicator may be variously actuated from the weight indicator.

2. A computing spring balance or scale comprising in its construction a weight indicator, a price indicator, a series of adjustable gears of varying size for operating the latter indicator from the former, and means for moving or adjusting the gears, as set forth.

3. A computing spring balance or scale comprising in its construction a weight indicator and a price indicator, a series of gears of graduated size connected with the weight indicator, a series of graduated gears, reversely arranged, connected with the price indicator and a series of independently adjustable intermediary gears to connect and drive any two or pair of gears of the first two series mentioned, as set forth.

**503,932. DEVICE FOR PREVENTING WATER FROM FREEZING IN PIPES.** CHARLES H. KENNEY, Milwaukee, Wis. Filed Oct. 19, 1891. Serial No. 409,104. (No model.)

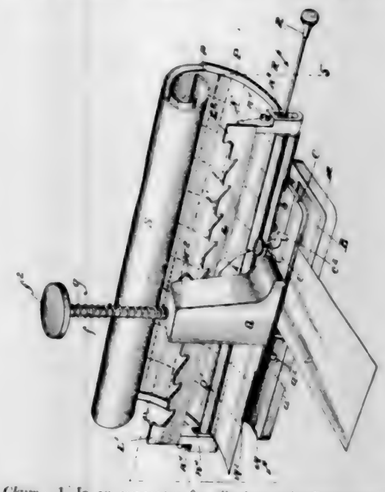


*Claim.*—1. In a device for preventing water from freezing in pipes, the combination, of a pipe having a valve opening therein, a valve closing said opening, a thermostat, and an adjusting screw unconnected with the valve and communicating by contact between the thermostat and the valve and operated by the thermostat to cause the opening of said valve, substantially as set forth.

2. In a device for preventing the water from freezing in pipes, the combination, of a pipe having a valve opening therein, a loose arranged to close in the direction of the flow and by the pressure of the water, and a thermostat, the free end of which is unconnected with the valve and is constructed to force said valve away from its seat when the temperature reaches a certain point and to allow the same to automatically seat itself upon the temperature rising above said certain point, substantially as set forth.

3. In a device for preventing water from freezing in pipes, the combination, of a pipe having a valve opening therein, a loose stem-less valve so arranged with respect to the pipe as to close automatically in the direction of the flow and by the pressure of the water therein, a pivoted bell-crank lever normally out of contact with the valve, a thermostat constructed so as by its contraction to push one arm of the bell-crank in the direction of its movement and cause the other arm thereof to contact with and force the valve away from its seat, said valve, when the pressure of the bell-crank lever is removed, automatically closing in the direction of the flow and by the pressure of the water in the pipe, substantially as set forth.

**503,933. MACHINE FOR AFFIXING POSTAGE-STAMPS TO LETTERS.** ALEXANDER S. KIBBY, Chicago, Ill. Filed Aug. 19, 1892. Serial No. 443,472. (No model.)



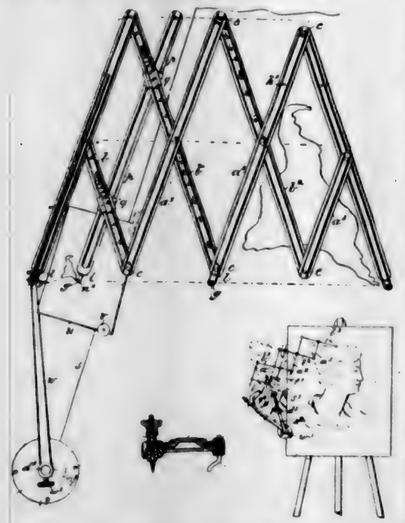
*Claim.*—1. In an apparatus for clipping and affixing postage stamps to envelopes, the combination of a base plate having a recess to receive the envelope, a receptacle for moistening material and a cover for said receptacle and recess, having a guide-way C, for the moistener-carrier, with the die-guide G, the die F, having the shank *f*, hand-piece $f^3$, pin *i*, and spring *g*, the compound lever H, fulcrumed to the die-guide G, and having the arm M, provided with the cam-slot *k'*, and arm $H^3$, having secured to its lower portion the arm K, having the pin *i'*, and the rod *k*, secured at its other end to the carrier C', the said carrier having the spring rod *d*, provided at its free end with a moistener distributer, the stamp-carrier S, having the rollers O, and O', adjustably secured at their ends, and the ratchet L, to engage with the pawl-arm K, all constructed, arranged and operating substantially as and for the purpose set forth.

2. In an apparatus for clipping and affixing postage stamps to envelopes, the combination of the base-plate A, having the recess B, the receptacle *c*, provided with absorbent material *c'*, the recess *c*, having the cushion or seat E, with the cover *b*, having the guide-way C, the die-guide G, having the arm M, provided with the screw *m'*, and pin *m*, the die F, having the shank *f*, hand-piece $f^3$, pin *i*, and spring *g*, the compound lever H, fulcrumed to the die-guide G, and having the arm H', provided with the cam-slot *k'*, and arm $H^3$, having secured to its lower portion the arm K, having the pin *i'*, and the rod *k*, secured at its other end to the carrier C', the said carrier having the spring rod *d*, provided at its free end with a moistener-distributer, the stamp-carrier S, having the rollers O, and O', adjustably secured at their ends, and the ratchet L, to engage with the pawl-arm K, all constructed, arranged and operating substantially as and for the purpose set forth.

3. In an apparatus for clipping and affixing postage stamps to envelopes, the combination of the base-plate A, having the recess B, the receptacle *c*, provided with absorbent material *c'*, the recess *c*, having the cushion or seat E, with the plate or cover *b*, having the guide-way C, the die-guide G, having the arm M, provided with the screw *m'*, and pin *m*, the die F, having the shank *f*, hand-piece $f^3$, pin *i*, and spring *g*, the compound lever H, fulcrumed to the die-guide G, and having the arm H', provided with the cam-slot *k'*, and arm $H^3$, having secured to its lower portion the arm K, having the pin *i'*, and the rod *k*, secured at its other end to the carrier C', the said carrier having the rod *d*, provided at its free end with a roller D, having the absorbent covering D', the stamp-carrier S, having the rollers O, and O', adjustably secured at their ends, the ratchet L, to engage with the pawl-arm K, all constructed, arranged and operating substantially as and for the purpose set forth.



**503,934. PANTOGRAPH.** JOHN G. BRAASTAD, New York, N. Y. Filed July 23, 1892. Serial No. 441,436. (No model.)



*Claim.*—1. Pantograph bars consisting of stamped or struck up sheet metal channel bars, with the sides flaring from the bottom outward, and with outwardly projecting flanges of the outer edges of the sides parallel with the middle or back portion substantially as described.

2. Pantograph bars consisting of stamped or struck up sheet metal channel bars, with the sides flaring from the bottom outward, and with outwardly projecting flanges of the outer edges of the sides parallel with the middle or back portion, and reinforced with eye pieces of thicker metal fitted and secured in the channel substantially as described.

3. In a pantograph, the combination with pantograph bars consisting of stamped or struck up sheet metal channel bars having the sides flaring from the bottom outward, and outwardly projecting flanges of the outer edges of the sides, of adjustable pantograph clamps consisting of bent sheet metal having the middle portion extending across the channel of the bar, and the end portions bent over both the flanges and the flaring sides of the bar, and set to grip the same with a yielding force substantially as described.

4. In a pantograph, the combination with pantograph bars consisting of stamped or struck up sheet metal channel bars having the sides flaring from the bottom outward, and outwardly projecting flanges of the outer edges of the sides, of adjustable pantograph clamps consisting of bent sheet metal having the middle portion extending across the channel of the bar, and the end portions bent over both the flanges and the flaring sides of the bar and set to grip the same with a yielding force, said ends of the clamps being level with the surface of the middle portion of the bar or thereabout substantially as described.

5. The combination with a pantograph bar of the adjustable spring clamp having the eye for the tracer or marker and the eye for the guard substantially as described.

6. The combination with a pantograph, of a pantograph supporting arm having the base plate rigidly connected to it and adapted to be attached on the margin or inside of the margin of the stretcher or table, said base plate being adjustable around its vertical axis for adjusting the same, and means for detachably attaching said base plate substantially as described.

7. The combination with the pantograph, of a pantograph supporting arm, a base plate for the support of said arm and a clamp adapted to fasten said base plate on the stretcher or table, said base plate being adjustable around its vertical axis for adjusting the arm substantially as described.

8. The combination with the pantograph of a pantograph supporting arm, a base plate for the support of said arm, a clamp adapted to engage said base plate centrally and secure it to the stretcher or table, said base plate being adjustable around its vertical axis for adjusting the arm substantially as described.

9. The combination with a pantograph, of the pantograph supporting arm, a base plate for the support of said arm having the central socket, and the clamp adjustably and detachably connected in the said socket substantially as described.

10. The combination with the pantograph and pantograph supporting arm of the vertically adjustable pivot in the end of said arm for connecting the pantograph to the arm the bar of the pantograph being hinged on said pivot substantially as described.

11. The combination with the pantograph and pantograph supporting arm adjustable around the vertical axis of the base support of the vertical pivot and the diagonal tension rod for connecting the pantograph to the said arm said pivot vertically adjustable in said arm substantially as described.

12. The combination with the pantograph, pantograph supporting arm and pivot, of the vertical pivot and the extension diagonal rod and spring clamp connecting the pantograph and arm substantially as described.

13. The combination with the pantograph and pantograph supporting arm of the universally jointed sight plate supporting standard mounted in the socket of said arm substantially as described.

14. The combination with the pantograph and pantograph supporting arm of the universally jointed and extensible sight plate supporting standard substantially as described.

15. The pantograph tracer or stylus holder consisting of the socket having the split taper point end and the thumb-bit on the other end, combined with a holding eye tapered upward, said split taper point end adapted to be inserted in the eye through the small end substantially as described.

16. In a pantograph a guide bulb on a laterally extended arm of a shank adapted to be carried in the tracer eye and combined with said eye substantially as described.

17. The combination of the pantograph supporting arm, the base plate supporting said arm, the universally jointed standard supported on the base plate, and the sight plate supported on and jointed to the top of the standard substantially as described.

18. In a pantograph comprising the bars *a* and *b'*, jointed together at one end and the bars *b* and *a'* also jointed together at one end, and bars *b* and *a'* jointed to bars *a* and *b'*, said bar *b*, jointed to bar *a*

by a clip adjustable along said bar *a*, and said bar *a'* adjustable along the clip by which it is jointed to bar *b'* substantially as described.

# REISSUES.

**11,362.** SHOE. JAMES W. PACKARD, Brockton, assignor of one-half to Bouvé, Crawford & Company, Boston, Mass. Filed June 9, 1893. Serial No. 477,116. Original No. 454,376, dated June 16, 1891.



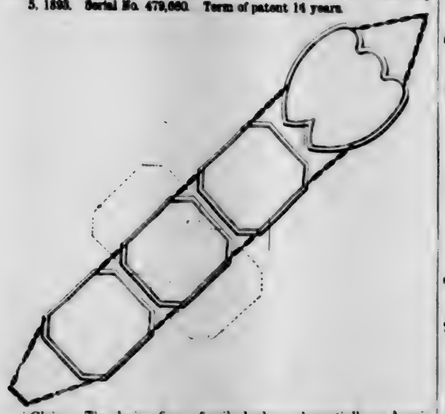

*Claim.*—1. A cap support for boots and shoes consisting of woven or reticulated elastic strands having the property of yielding to a blow and then resuming their original shape, and adapted to be arranged beneath the toe-cap, as set forth.

2. A boot or shoe containing a vamp, a sole, and a toe-cap, combined with a toe-cap support composed of wire-cloth applied outside of the toe and interposed between the upper and toe-cap, substantially as described.

3. A boot or shoe containing a vamp, a sole, and a toe-cap, combined with a toe-cap support composed of wire-cloth applied outside of the toe and interposed between the upper and the toe-cap, the said wire-cloth having its interstices filled with paper or equivalent, substantially as described.

# DESIGNS.

**22,716.** BADGE. HARRISON BROWNE, Sundance, Wyo. Filed July 5, 1893. Serial No. 479,080. Term of patent 14 years.



*Claim.*—The design for a family badge substantially as herein shown and described.

**22,717.** SPOON. DAMON GREENLEAF and JOSEPH H. CROSBY, Jr., Jacksonville, Fla. Filed July 20, 1893. Serial No. 481,058. Term of patent 7 years.



*Claim.*—The design for a spoon herein shown and described.

**22,718.** SPOON. GEORGE T. JACOBS, Washington, D. C., assignor of one-half to Daniel Williams, same place. Filed July 14, 1893. Serial No. 480,537. Term of patent 3½ years.



*Claim.*—The design for spoons herein shown and described

**22,719.** HANDLE FOR SPOONS, &c. CHARLES C. WIENTGE, Providence, R. I. Filed July 28, 1893. Serial No. 481,773. Term of patent 7 years.



*Claim.*—1. In the design for the handle of a spoon, or similar article, the obverse as herein shown and described.

2. In the design for the handle of a spoon, or similar article, the reverse as herein shown and described.

3. The design for handles of spoons, forks, and similar articles as herein shown and described

**22,720.** CANE OR UMBRELLA HANDLE. CHARLES W. KENNARD, Baltimore, Md. Filed Apr. 6, 1893. Serial No. 469,361. Term of patent 3½ years.



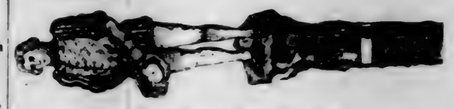
*Claim.*—The herein described design for umbrella or cane handles, substantially as described and shown.

**22,721.** CANE OR UMBRELLA HANDLE. CHARLES W. KENNARD, Baltimore, Md. Filed Apr. 6, 1893. Serial No. 469,362. Term of patent 3½ years.



*Claim.*—The herein described design for umbrella or cane handles, substantially as set forth.

**22,722.** CANE OR UMBRELLA HANDLE. CHARLES W. KENNARD, Baltimore, Md. Filed Apr. 6, 1893. Serial No. 469,863. Term of patent 3½ years.



*Claim.*—The herein described design for umbrella or cane handles substantially as described.

**22,723.** COMPASS-CARD. JOHN J. TOWNSEND, Portsmouth, Va. Filed July 22, 1893. Serial No. 481,229. Term of patent 14 years.

*Claim.*—The design for a compass card substantially as shown and described.



**22,723.**




**22,724.** COFFIN-PLATE. GEORGE H. FORD, New Haven, Conn., assignor to the Grilley Company, same place. Filed July 24, 1893. Serial No. 481,352. Term of patent 7 years.



*Claim.*—The design for a coffin or other plate, as herein shown and described.

**22,725.** BOX-COVER. WILLIAM G. TOLMAN, New Bedford, Mass., assignor to the Fairpoint Manufacturing Company, same place. Filed Mar. 31, 1893. Serial No. 468,015. Term of patent 7 years.



*Claim.*—The design for a pattern for a cover herein shown and described

**22,726.** LABEL-TAG. FRANK P. D'ARCY, Kalamazoo, Mich. Filed June 1, 1893. Serial No. 476,296. Term of patent 3½ years.



*Claim.*—The design for a label tag, substantially as shown and described.

**22,727.** TEA OR COFFEE POT. AUSTIN F. JACKSON, Taunton, Mass., assignor to the Reed & Barton Corporation, same place. Filed June 23, 1893. Serial No. 478,663. Term of patent 14 years.



*Claim.*—1. In the design for the tea and coffee pot as herein shown and described, the design for the body part as shown and described

2. In the design for the tea and coffee pot as herein shown and described, the design for the handle as shown and described

3. In the design for the tea and coffee pot as herein shown and described, the design for the spout as shown and described

**22,728.** HOLDER FOR SOAP-CUPS. LUCETTA BRADFIELD and ROSELMA C. RIGGS, Harrisonville, Ohio. Filed June 23, 1893. Serial No. 478,664. Term of patent 7 years.



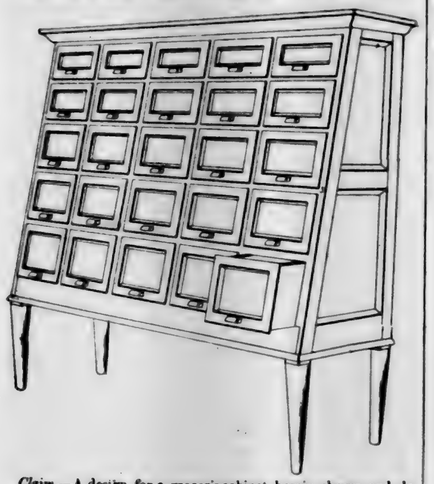
*Claim.*—The design for a holder for soap cups herein shown and described.

**22,729.** BIDET. ROSA GORDEN, Midhurst, England. Filed Nov. 14, 1892. Serial No. 452,009. Term of patent 7 years. Patented in England Aug. 25, 1892, No. 15,291



*Claim.*—The design for a bidet or hip bath stand herein shown and described

**22,730.** GROCER'S CABINET. FRED G. SHOUDY, Rockford, Ill. Filed Apr. 24, 1893. Serial No. 471,700. Term of patent 7 years.



*Claim.*—A design for a grocer's cabinet herein shown and described.

**22,731.** GROCER'S CABINET. FRED G. SHOUDY, Rockford, Ill. Filed Apr. 25, 1893. Serial No. 471,836. Term of patent 7 years.



*Claim.*—The design for a grocer's cabinet herein shown and described.

**22,732.** RIM FOR BICYCLE-WHEELS. ROBERT PERKINS, Rockaway, N. J. Filed Apr. 4, 1893. Serial No. 469,067. Term of patent 7 years.



*Claim.*—The design for a rim for bicycle and other wheels substantially as described and as illustrated in the accompanying drawings.

**22,733.** METALLIC ROSETTE. FREDERIC L. THOMPSON, New Bedford, Mass., assignor to the Fairpoint Manufacturing Company, same place. Filed Jan. 18, 1893. Serial No. 458,865. Term of patent 7 years.



*Claim.*—The design for a metallic rosette herein shown and described.

**22,734.** METALLIC PATTERN-STRIP. FREDERIC L. THOMPSON, New Bedford, Mass., assignor to the Fairpoint Manufacturing Company, same place. Filed Jan. 18, 1893. Serial No. 458,863. Term of patent 7 years.



*Claim.*—The design for a metallic pattern strip herein shown and described.

**22,735.** METALLIC PATTERN-STRIP. FREDERIC L. THOMPSON, New Bedford, Mass., assignor to the Fairpoint Manufacturing Company, same place. Filed Jan. 18, 1893. Serial No. 458,864. Term of patent 7 years.



*Claim.*—The design for a metallic pattern strip herein shown and described.



**22,736.** METALLIC PATTERN-STRIP. FREDERIC L. THOMPSON, New Bedford, Mass., assignor to the Fairpoint Manufacturing Company, same place. Filed Mar. 31, 1893. Serial No. 468,569. Term of patent 7 years.



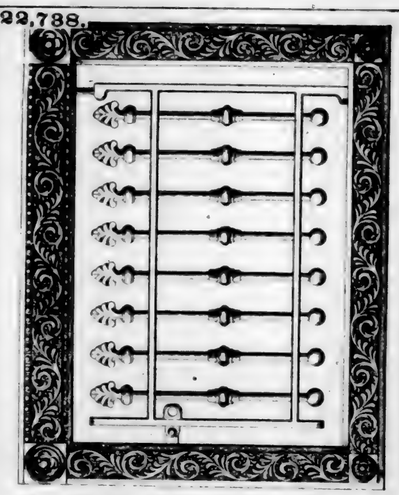
*Claim.*—The design for a metallic pattern strip herein shown and described.

**22,737.** METALLIC PATTERN-STRIP. FREDERIC L. THOMPSON, New Bedford, Mass., assignor to the Fairpoint Manufacturing Company, same place. Filed Mar. 31, 1893. Serial No. 468,570. Term of patent 7 years.



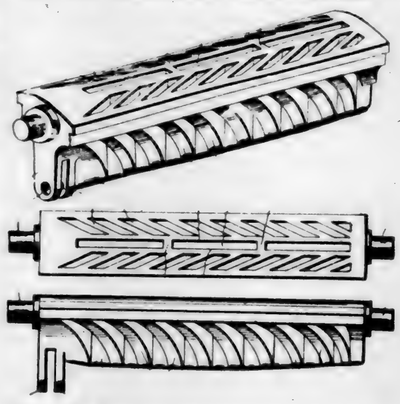
*Claim.*—The herein shown and described design for a metallic pattern strip.

**22,738.** CELLAR-GRATE. FRANCIS A. PETER, Washington, Pa. Filed July 24, 1893. Serial No. 481,263. Term of patent 7 years.



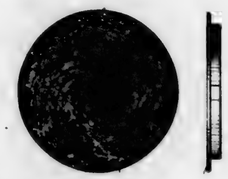
*Claim.*—The design for cellar grates substantially as shown in the accompanying drawing.

**22,739.** GRATE-BAR. WILLIAM F. GREGORY, Buffalo, N. Y. Filed July 17, 1893. Serial No. 480,761. Term of patent 14 years.



*Claim.*—The design for a grate bar herein shown and described.

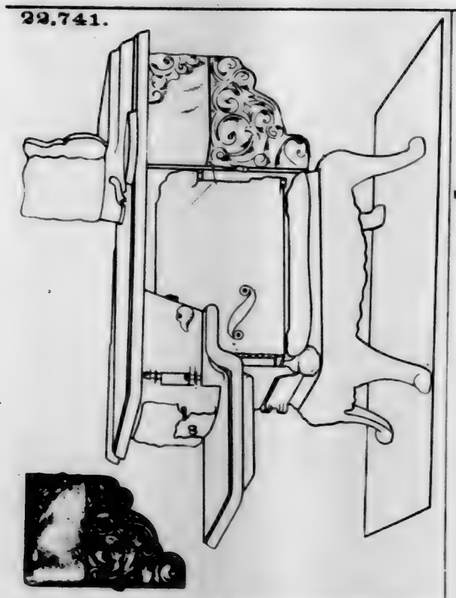
**22,740.** STOVE-LID. ARTHUR W. WALKER, Malden, Mass. Filed May 29, 1893. Serial No. 475,969. Term of patent 14 years.



*Claim.*—The design for a stove lid, substantially as herein shown and described.

**22,741.** WATER-TANK FOR STOVES. WILLIAM J. KERP, Detroit, Mich. Filed May 6, 1893. Serial No. 473,330. Term of patent 14 years.

22,741.



*Claim.*—A design for a water tank of a cooking stove as shown and described.

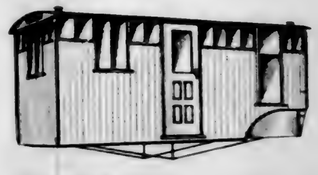
22,742. ROLLER-BASE FOR OIL-STOVES. CHARLES H. BOSCH, Jackson, Mich. Filed May 6, 1893. Serial No. 473,304. Term of patent 7 years.

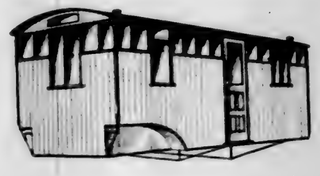
22,742.



*Claim.*—The design for a roller base for oil stoves, &c., substantially as herein shown and described.

22,743. LUNCH-WAGON BODY. THOMAS H. BUCKLEY, Worcester, Mass. Filed June 22, 1893. Serial No. 478,520. Term of patent 7 years.





*Claim.*—The design for a lunch wagon body, substantially as shown and described.

# TRADE-MARKS

## REGISTERED AUGUST 22, 1893.

28,516. PAPER. JOHN DICKINSON & COMPANY, LIMITED, London, England. Filed Feb. 27, 1892.



*Essential feature.*—The representation of a lion rampant and the words "THE LION BRAND." Used since 1888.

28,517. SHIRTS, COLLARS, CUFFS, NECKTIES, UNDERWEAR, AND OUTER CLOTHING. IRA PEREGO & CO., New York, N. Y. Filed June 20, 1893.

Ira Perego & Co.

*Essential feature.*—The words, character, and abreviation, "IRA PEREGO & Co.' in back-hand, quill pen letters of special form, style, and design. Used since 1880.

28,518. LIQUID DRESSING FOR LEATHER GOODS. GEORGE A. WARREN and GEORGE H. PIKE, Worcester, Mass. Filed July 28, 1893.



*Essential feature.*—A monogram, composed of the letters "W" and "P." Used since July 1, 1893.

28,519. CLEANSER FOR WHITE GLOVES AND SHOES AND WHITE GOODS OF ALL DESCRIPTIONS. CLEANSOR MANUFACTURING CO., New York, N. Y. Filed June 22, 1893.




*Essential feature.*—The word "CLEANSOR" between two horizontal lines, all surrounded by a circle. Used since May 31, 1892.

28,520. MINERAL-SPRING WATER. RISSER & MENDELSON COMPANY, New York, N. Y. Filed July 21, 1893.

HUNYADY MATYAS

*Essential feature.*—The words "HUNYADY MÁTYÁS." Used since March 1, 1890.

28,521. CORDIALS. P. W. ENGS & SONS, New York, N. Y. Filed July 26, 1893.

Blackthorn Ambrosial

*Essential feature.*—The words "BLACKTHORN AMBROSIAL." Used since March 22, 1893.

28,522. ALE, PORTER, AND BEER. PETER STUMPF BREWING COMPANY, Richmond, Va. Filed June 19, 1893.



*Essential feature.*—The representation of a tree stump with an eagle perched thereon, a beer keg suspended from the beak of the eagle and the letters "P S" in monogram on the head of the keg. Used since October 1, 1892.

28,523. VINEGAR. THE FIRM OF LARS MOUTÉN, Stockholm, Sweden. Filed July 25, 1893.

Lactica.

*Essential feature.*—The word "LACTICA." Used since March, 1893.

28,524. CHEESE. ANTON C. THURAAS, Minneapolis, Minn. Filed July 25, 1893.



*Essential feature.*—The representation of a beaver. Used since June 20, 1893.

**23,525.** TRIMMINGS FROM THE FORE SHOULDERS OF HOGS. SWIFT & COMPANY, Kansas City, Kans., Chicago and East St. Louis, Ill., and South Omaha, Nebr. Filed July 5, 1893.

FOSTER·BACKS

*Essential feature.*—The word "FOSTER-BACKS." Used since June 1, 1891.

**23,526.** LARD. ANGLO-AMERICAN PROVISION COMPANY, Chicago, Ill. Filed July 14, 1893.

FAUSTO GARCIA CASTRO

*Essential feature.*—The word "YUMURI," in connection with the words "FAUSTO GARCIA CASTRO." Used since June 7, 1893.

**23,527.** SUBSTITUTE FOR LARD. ANGLO-AMERICAN PROVISION COMPANY, Chicago, Ill. Filed July 14, 1893.

LA PALMA

*Essential feature.*—The words "LA PALMA" and the representation of a palm tree. Used since May 21, 1893.

**23,528.** CANDLES, STEARINE OR STEARIC ACID, OLEINE, AND GLYCERINE. DE ROOSAIX, ORDENROYEN & Co., Borgerhout, near Antwerp, Belgium. Filed May 31, 1893.

*Essential feature.*—The representation of a horseshoe. Used since February 15, 1893.

**23,529.** FOODS FOR HORSES, CATTLE, SHEEP, SWINE, AND FOWL. WILLIAM D. CARPENTER, Chicago, Ill. Filed May 5, 1893.

**23,529**

*Essential feature.*—The representation of a horseshoe inclosing the heads of a horse, bullock, sheep, and hog, and a rooster. Used since April 1, 1893.

**23,530.** PREPARATIONS OF IRON DERIVED FROM ANIMAL MATTER KNOWN AS PHYSIOLOGICAL IRON PREPARATIONS. THE FIRM OF E. MERCK, Darmstadt, Germany. Filed Mar. 2, 1893.

HAEMOL

*Essential feature.*—The word "HAEMOL." Used since April 1, 1892.

**23,531.** PREPARATIONS OF IRON DERIVED FROM ANIMAL MATTER KNOWN AS PHYSIOLOGICAL IRON PREPARATIONS. THE FIRM OF E. MERCK, Darmstadt, Germany. Filed Mar. 2, 1893.

HAEMOGALLOL

*Essential feature.*—The word "HAEMOGALLOL." Used since April 1, 1892.

**23,532.** TONICS AND BLOOD-PURIFIERS. BAGLEY DANDELION COMPOUND COMPANY, St. Johnsbury, Vt. Filed May 15, 1893.

BAGLEY'S
DANDELION
COMPOUND

*Essential feature.*—The words "BAGLEY'S DANDELION COMPOUND" each word being arranged in a double curve on a red panel. Used since March 6, 1893.

**23,533.** THERAPEUTIC REMEDIES. CHEMISCHE FABRIK AUFACTIEN, VORMALS E. SCHERING, Berlin, Germany. Filed May 5, 1893.

*Salocoll*

*Essential feature.*—The word "SALOCOLL." Used since April 1, 1893.



**23,534.** MEDICINAL AGENTS FOR NERVOUS DISEASES AND A FEBRIFUGE. THE FIRM OF E. MERCK, Darmstadt, Germany. Filed Apr. 6, 1893.

NEURODIN

*Essential feature.*—The word "NEURODIN." Used since October 1, 1892.

**23,535.** REMEDIES FOR HEADACHE, NEURALGIA, AND RHEUMATISM. CURA CHEMICAL CO., Springfield, Mo. Filed May 16, 1893.

HEAD
CURE

*Essential feature.*—The words "HEAD" and "CURE," with the representation of a human eye between them. Used since May 1, 1893.

**23,536.** REMEDIES FOR WHOOPING-COUGH AND ASTHMATIC DISEASES. THE FIRM OF E. MERCK, Darmstadt, Germany. Filed Apr. 6, 1893.

ANTISPASMIN

*Essential feature.*—The word "ANTISPASMIN." Used since October 1, 1892.

**23,537.** REMEDIES FOR CANCEROUS DISEASES. THE FIRM OF E. MERCK, Darmstadt, Germany. Filed Dec. 17, 1892.

Cancroin

*Essential feature.*—The word "CANCROIN." Used since October 1, 1892.

**23,538.** REMEDIES FOR GONORRHEA AND GLEET. PLANTATION PHARMACAL COMPANY, Memphis, Tenn. Filed July 22, 1893.

"V.I.G."

*Essential feature.*—The letters "V. I. G." Used since June 1, 1893.

**23,539.** GAME IMPLEMENTS CONSISTING OF LARIATS AND TARGETS. LARIAT MANUFACTURING COMPANY, Jersey City, N. J. Filed May 26, 1893.

LASSOLA

*Essential feature.*—The word "LASSOLA." Used since February 15, 1893.

**23,540.** HEEL-PLATES FOR BOOTS AND SHOES. LOUIS SACHS, Newark, N. J. Filed June 30, 1893.

BOSTON

*Essential feature.*—The word "BOSTON" displayed on the representation of a heel-plate, and arranged in a curve corresponding to the curvature of the edge thereof. Used since August 15, 1891.

**23,541.** CIGAR-MOLDS. THE MILLER, DUBRUL & PETERS MANUFACTURING CO., Cincinnati, Ohio, and New York, N. Y. Filed July 27, 1893.

VERTICAL TOP.

*Essential feature.*—The words "VERTICAL TOP." Used since 1876.

**23,542.** CIGAR-MOLDS. THE MILLER, DUBRUL & PETERS MANUFACTURING CO., Cincinnati, Ohio, and New York, N. Y. Filed July 27, 1893.

V.T.

*Essential feature.*—The letters "V. T." Used since 1876.

**23,543.** CIGAR-MOLDS. THE MILLER, DUBRUL & PETERS MANUFACTURING CO., Cincinnati, Ohio, and New York, N. Y. Filed July 27, 1893.

FLANGE TOP.

*Essential feature.*—The words "FLANGE TOP." Used since 1876.

**23,544.** CIGAR-MOLDS. THE MILLER, DUBRUL & PETERS MANUFACTURING CO., Cincinnati, Ohio, and New York, N. Y. Filed July 27, 1893.

F.T.

*Essential feature.*—The letters "F. T." Used since 1876.

**28,545.** STEAM AND HOT-WATER RADIATORS. A. A. GRIFFING IRON COMPANY, Jersey City, N. J., and Chicago, Ill. Filed July 14, 1893.

PRINCESS

*Essential feature.*—The word "PRINCESS." Used since June, 1893.

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**28,546.** STEAM AND HOT-WATER RADIATORS. A. A. GRIFFING IRON COMPANY, Jersey City, N. J., and Chicago, Ill. Filed July 14, 1893.

EMPIRE

*Essential feature.*—The word "EMPIRE." Used since June, 1893.

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**28,547.** CERTAIN NAMED WEARING-APPAREL. HAAR MERCANTILE COMPANY, Kansas City, Mo. Filed May 15, 1893.



*Essential feature.*—The representation of a drake upon the bank of a body of water. Used since April 1, 1893.

# DECISIONS

OF THE

# COMMISSIONER OF PATENTS

AND OF

# UNITED STATES COURTS IN PATENT CASES.

## COMMISSIONER'S DECISIONS.

### EX PARTE FOWLER AND HUTTON.

*Decided August 1, 1893.*

1. JOINT INVENTORS—ASSIGNMENT BY ONE INVENTOR—ISSUE OF PATENT TO ONE JOINT INVENTOR AND ASSIGNEE OF THE OTHER INVENTOR.

Where two joint inventors appoint an attorney to prosecute an application and receive the patent and one of the inventors assigns his entire interest to a third party and requests that the patent issue jointly to the other inventor and the assignee and the said attorney does not indicate that there was any objection on the part of the other inventor to so granting the patent, *Held* that there was no mistake on the part of the Office in granting the patent as requested.

2. OWNERSHIP OF PATENTS—BEST DETERMINED IN THE COURTS.

Where the records show that the proceedings in the Patent Office are regular and after the issue of the patent a question arises as to who is the true owner of the patent, the place to settle such controversy is in the courts.

3. RULE 26—PATENT MAY ISSUE TO INVENTOR AND ASSIGNEE OF AN UNDIVIDED INTEREST.

Where there has been an assignment of an undivided interest in an invention, accompanied by a request under Rule 26 that the patent issue jointly to the inventor and assignee, no legal objection seems to exist why the patent should not be so issued.

ON petition.

ELECTRIC STREET-RAILWAY SWEEPER.

Patent granted April 11, 1893, No. 495,821.

*Mr. H. H. Doubleday* for the petitioners.

*Mr. James L. Ewin* for the assignees.

FISHER, *Assistant Commissioner:*

This is a petition by Fowler and Hutton alleging that Patent No. 495,321 was illegally granted to John W. Fowler and John Hutton, said Hutton assignor to The Lewis & Fowler Manufacturing Company, and asking that joint Letters Patent be issued to them as joint inventors.

The records show that on May 6, 1892, John W. Fowler and John Hutton filed a joint application for patent and regularly appointed James L. Ewin their attorney to prosecute said application, to receive the patent, and to transact all business in the Patent Office connected therewith. Said application, after several rejections and amendments, was finally allowed March 14, 1893. The final fee was paid March 23, 1893, and at the same time a request was filed that the patent be issued to John W. Fowler and The Lewis & Fowler Manufacturing Company as the assignee of John Hutton. On March 24, 1893, there was recorded an assignment by Hutton of his entire interest in the said invention to the said The Lewis & Fowler Manufacturing Company, and the patent issued April 11, 1893, to John W. Fowler and John Hutton, said Hutton assignor to The Lewis & Fowler Manufacturing Company. Hutton now states that he signed said assignment in ignorance of the law, and joins with Fowler in requesting that another patent or a reissue be granted to them.

Various other allegations, affidavits, counter-affidavits, and exhibits were filed in the case after the patent had issued, alleging that Ewin, the regularly-appointed attorney in the case, had paid the fee, and, without consulting with Fowler as to the parties to whom the patent should issue, had requested that it issue as above stated, and also that Fowler and Hutton were formerly connected with The Lewis & Fowler Manufacturing Company, and that they used the tools and money of said company in experimenting on their invention, etc; but I do not see that these affidavits or exhibits have any bearing on this case in its present status. Ewin was the attorney of the inventors, and the Office, in accordance with Rule 7, transacted the business with him. It does not appear from what is shown by the record up to the time that the patent was delivered to him by the Office that he exceeded his authority or that the Office was in any way put upon its guard not to issue the patent to the present grantees, and since the Commissioner must be guided entirely by the record and has not the authority of a court to consider evidence outside the record as to outstanding equities (*ex parte Edison*, C. D., 1878, 42) it is not seen how this wrong, if it be a wrong, which the present petitioners allege they have suffered, can be properly considered and corrected in the Patent Office, the real question to be determined being one involving the validity of an assignment, and this question in turn involving the determination of questions of fact entirely outside of the jurisdiction of the Patent Office. Moreover, the proposition was established in *Gayler* v. *Wilder* (10 How., 477) that it was not necessary to the validity of a patent that it run in form to the owner of the invention, and it was held that the title to the invention was in the assignee, although the patent had issued to the inventor. It follows from this decision that the applicant would lose no rights by being relegated to the courts, and when the record shows, as it does in this case, that there has been no mistake on the part of the Office in issuing the patent, and after it has issued the question of ownership arises, it is clear that the proper place to settle such matters is in court.

It is true that counsel for the petitioners alleges that the Office has no authority to issue a patent jointly to

a patentee and assignee of a part interest, as provided for by Rule 26, and cites the opinion of two Attorneys-General to sustain his position, (Opinion Attorney-General, vol. 4, 399, and vol. 9, 403;) but it does not appear in either of the cases cited that the inventor had requested that the patent issue jointly to him and the assignee. In the absence of such a request, if a dispute arises between them as to whom the patent should issue, a case materially different from the one under consideration would be presented. Here Hutton, one of the joint inventors, assigned all his right to The Lewis & Fowler Manufacturing Company, which he undoubtedly had a right to do, (see *Dunham* v. *Indianapolis & St. Louis R. R. Co*, Myers Fed. Dec., 438, and *May* v. *Chaffee*, 2 Dill., 385,) and requested the patent to issue jointly to the inventors and the assignee. This assignment is in the form which has been sent out by the Office for years past in its "Rules of Practice." The practice has been, when it is so requested, to issue the patents jointly to the inventor and the assignee, and in the absence of any decision by a higher tribunal invalidating patents thus granted I think the Commissioner should follow the settled practice.

The petition is denied.

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### EX PARTE SCHLEGEL.

*Decided August* 16, 1893

1. PRINTS—WHAT CAN BE REGISTERED AS SUCH IN THE PATENT OFFICE.

The word "prints" as used in the statute authorizing the registration of prints in the Patent Office means a picture similar in kind to an engraving, cut, or photograph. *Held*, therefore, that a sheet of paper with several multicolored designs on both sides, with no attempt to produce such unitary effect as is produced by a single cut or engraving, was not such a print as could be registered.

2. SAME—SAME—MUST HAVE SOME VALUE AS A COMPOSITION.

To be registrable a print must have by itself some value as a composition, at least to the extent of serving some purpose other than as a mere advertisement.

APPEAL on motion.

REGISTRATION OF A LABEL.

Application filed June 10, 1893.

*Messrs. Keller & Starek* for the applicant.

FISHER, *Assistant Commissioner:*

This is an appeal taken from the action of the Examiner of Trade-Marks refusing to register as a print certain matter consisting of a sheet of paper one side of which contains a number of designs of different colors and numbered. The other side of the paper is also covered with a number of designs, all in blue tint. Such printed matter appears on each side. The Examiner refuses to register the alleged print on the ground that it is not a print in the sense of the copyright law.

The statute governing the registration of prints in the Patent Office is:

Sec. 3. That in the construction of this act the words "engraving, cut, and print" shall be applied only to pictorial illustrations or works connected with the fine arts, and no prints or labels designed to be used for any other articles of manufacture shall be entered under the copyright law, but may be registered in the Patent Office. And the Commissioner of Patents is hereby charged with the supervision and control of the entry or registry of such prints or labels, in conformity with the regulations provided by law as to copyright of prints, except that there shall be paid for recording the title of any print or label, not a trade-mark, six dollars, which shall cover the expense of furnishing a copy of the record, under the seal of the Commissioner of Patents, to the party entering the same.

The case hinges on what is meant by this word "print" used in the above statute. In *Rosenbach* v. *Dryfus* (2 Fed. Rep, 217) it was held that the word "print" means—

a picture, something complete in itself, similar in kind to an engraving, cut, or photograph.

Applicant's device is not of the nature of a single engraving, cut, or photograph. Each of his multicolored designs is complete in itself. There is no blending of colors or parts to produce a unitary effect as there is in an engraving, cut, or photograph, but each of the different-colored designs is entirely independent of all the rest. They are only placed on a single sheet of paper for convenience. Much less do the blue-tinted designs on the other side of the sheet tend to combine with the multicolored designs in producing any unitary effect similar to that produced by a single engraving, cut, or photograph. Each one of the numbered colored designs might be placed on separate pages of a book and each of the blue tinted designs on other pages, and they would subserve identically the same purpose as they do in their present form.

There is another reason why this alleged print should not be registered, since if registrable at all in the Patent Office it must be under the statute above quoted. In *Higgins et al.* v. *Keuffel et al.* (35 O. G., 1139) it was held that—

to be entitled to a copyright the article must have by itself some value as a composition, at least to the extent of serving some purpose other than as a mere advertisement or designation of the subject to which it is attached.

As a print is registrable under the same provisions as labels, it too must have some value as a composition, at least to the extent of serving some purpose other than as a mere advertisement.

In the present case applicant's multifarious designs have no use or object other than to assist persons in designating the particular kind of glass goods they wish to order. They do not possess any merit in themselves as works of art, and in accordance with the principle laid down in *Higgins* v. *Keuffel*, *supra*, it is not thought that they should be registered. (See, also, *ex parte Eldredge & Company*, 55 O. G., 1278.)

The decision of the Examiner is affirmed.

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## DECISIONS OF THE U. S. COURTS.

### U. S. Circuit Court—District of Maryland.

COLL *et al.* *v.* SENECA.

*Decided May* 6, 1893.

1. PATENTS FOR INVENTIONS—LIMITATION OF CLAIM—TIN CANS.

Letters Patent No. 207,058, issued August 13, 1878, to Miller & Coll, for an improvement in sheet-metal cans, is, by reason of the rejection and abandonment of a broader claim, strictly limited to the form therein described.

2. SAME—INFRINGEMENT.

The above patent is not infringed by the use of cans having the flange of the heads slightly flared, so as to form a V-shaped groove for the solder.

BILL by Bernard Coll and Philip C. Sanderson against Stephen J. Seneca for infringement of Letters Patent No. 207,058, granted August 13, 1878, to Miller & Coll, for an "improvement in sheet-metal cans." Bill dismissed.





*Messrs. J. W. & H. Bryant* for the complainants.

*Mr. William M. Marine* and *Mr. John T. Mason* for the defendant.

MORRIS, *J.:*

The subject-matter of this invention is the form of the flange of the heads and bottoms of the cylindrical-shaped tin cans used for packing oysters and vegetables. The claim of the patent is as follows:

As a new article of manufacture, a sheet-metal can constructed of a body portion straight from end to end, combined with heads, flanged as described—*d*, *e*, with the portion *a* of the flange of less diameter than the marginal portion, and binding closely against the straight side of the can, and the portion *a'* of greater diameter than *a*, and setting off from the body of the can in parallel position therewith, as shown and described.

It appears that ordinarily the heads and bottoms of such cans are made with the flanges fitting as closely as possible and parallel to the body of the can. From the application and from the file wrapper and contents it appears that the original claim was for—

a sheet-metal can having a head, B, flanged at *a a*, with the portion *a* binding closely against the body of can, and the portion *a* offsetting therefrom and filled with solder, substantially as described.

This claim was rejected by the Patent Examiner, who cited as anticipations several patents showing an offset in the flange and forming an annular V-shaped space or trough between the flange and the can, which could receive the solder. Acquiescing in this objection, the applicants, through their attorney, amended the specification and inserted the following, which now appears in the specification of the granted patent:

We are aware of the fact that cans have been heretofore constructed with joints having a degree of similarity to ours, reference being had, by way of example, to that shown in Patent No. 183,507, in which both the edge of the body portion and the heads are beaded, while the edge of the head is flared outwardly at an angle to form a V-groove for solder. We therefore limit our invention to the can constructed as shown and described, which is distinctive in the following features: The body portion is straight from end to end. The portion of the flange near the ends of the body portion is of less diameter than the edge or marginal portion, and binds tightly with the straight body portion, and the portion of the flange having the greatest diameter is arranged parallel with the side of the can in forming the trough to receive the solder.

This construction and arrangement of the parts of the can permit it to be easily and cheaply made, the heads being struck up in dies, and the peculiar form of flange securing, in connection with the solder, a strong joint and good finish.

The original claim was canceled and the claim of the granted patent hereinbefore quoted was substituted.

It thus clearly appears that the patentees disclaimed as old the form of flange which, by its offset from the can-body, formed a V-shaped trough to receive the solder and distinctly restricted their claim to the form which at the bottom fitted closely around and parallel to the can and then had an offset and then was formed parallel to the can, resulting in an annular U-shaped trough for the solder and not a V shape. The V-shaped groove was expressly disclaimed. The contention now made in behalf of the complainants that the real invention was an annular trough of any shape cannot be entertained. The patentee, not having appealed from the rejection of his original claim, is now irrevocably restricted to the limitations put upon his invention by the disclaimer in his amended specification and the withdrawal of his broad claim and his acceptance of the narrow claim as granted to him. (*Leggett* v. *Avery*, 17 O. G., 445: 101 U. S., 256; *Shepard* v. *Carrigan*, 34 O. G., 1157; 116 U. S., 593; 6 Sup. Ct. Rep., 498; *Roemer* v. *Peddie*, 49 O. G., 2151; 132 U. S., 313; 10 Sup. Ct. Rep., 98; *Caster Co.* v. *Spiegel*, 50 O. G., 1591; 133 U. S., 360; 10 Sup. Ct. Rep., 409; *Dobson* v. *Lees*, 53 O. G., 1740; 137 U. S., 258; 11 Sup. Ct. Rep., 71.)

The proof shows that the can manufactured by the defendant has no such annular U-shaped trough as is described in the patent. The flanges of the tops and bottoms of the defendant's cans are very nearly closely fitting and parallel without any offset at all, except that upon close examination in some there is found almost at the very edge of the flange a slight flare away from the can. This almost imperceptible flare, the witnesses for the defendant testify, is not intentional and is not desirable and arises solely from the fact that in stamping out the circular ends and turning up the flange by a drawing die there results, in consequence of the crimping of the metal, this slight flare. This, if it is anything worth considering, forms a V-shaped annular trough, such as was disclaimed by the patentees. I think it is quite clear that there is no infringement.

The bill must be dismissed.

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### U. S. Circuit Court—Southern District of Ohio, Western Division.

NEY MANUFACTURING COMPANY *v.* SUPERIOR DRILL COMPANY *et al.*

*Decided May* 27, 1893.

1. PATENTS FOR INVENTIONS — INFRINGEMENT — INJUNCTION — FORMER SUIT.

Although complainant's patent has been upheld in a suit against other parties in which defendants' patent was pleaded, a preliminary injunction against alleged infringement by manufacturing devices under the latter will not be granted when it appears that the former suit was so decided on the ground that there was an estoppel to question the novelty of complainant's patent, so that the validity of defendants' patent was not considered.

2. PRELIMINARY INJUNCTION—DELAY.

A preliminary injunction will not be granted in an infringement suit where complainant does not apply for it until two months after his bill was filed, during which time defendant has proceeded to fill up his stock of the alleged infringing articles for the coming season, which lasts but a short time.

ON motion for preliminary injunction in a suit by the Ney Manufacturing Company against the Superior Drill Company and others for the alleged infringement of complainant's patent. Motion denied.

*Messrs. Miller & Pomerene* and *Mr. M. D. Leggett* for the complainant.

*Mr. Paul A. Staley* for the defendants.

SAGE, *J.:*

The complainant filed its bill for infringement on the 27th of March, 1893. Respondents were served with process on the 12th of April, and on the 12th of May with notice that on the next day (Saturday, the 13th) an application for an injunction would be made, and that upon the hearing the complainant would file and use affidavits of seven persons named in the notice, copies of which affidavits were served with the notice. On the 13th the application was presented to the court. Counsel for respondents was present with such affidavits and exhibits as he could muster in the short time between the notice and the presentation of the application. Upon his request further time was given him for the preparation and filing of additional affidavits

the court overruling the objection by counsel for complainant that the delay would give respondents opportunity to dispose of their manufactured stock on hand for the spring and summer trade. The complainant's patent is for an improvement in hay-elevator tracks. It was granted on the 30th of October, 1883, to Jacob Ney, and by him on the same day assigned to the complainant. It was sustained by the Circuit Court for the Northern District of Ohio at the October term, 1887, in the case of the complainant against F. E. Meyer & Bro., and later in the case of the same complainant against Valentine L. Ney. The defendants manufacture a hay-elevator track under Letters Patent No. 465,287, issued to Jacob Ney December 15, 1891. It is said in the brief of counsel for the complainant that this patent was pleaded by Valentine L. Ney in the case decided against him. That is true; but it was not referred to in the opinion of the court, which, holding the complainant's patent valid, made out the case against the defendant upon an estoppel which, the court held, precluded him from denying the patentability of the complainant's invention. That estoppel has no application to the defendants in this case. The validity of the patent under which these defendants are manufacturing was not passed upon in that case. The motion for an injunction will be overruled upon two grounds:

1. Upon the authority of *Goodyear* v. *Dunbar*, (1 Fish. Pat. Cas., 474.) In that case the defendant claimed under a patent subsequent to the complainant's. Justice Grier, in passing upon a motion for a preliminary injunction, said that the defendant, in virtue of his patent, had a *prima facie* legal right to manufacture a compound by his process, and that whether that process was a mere colorable change from the older patent (which is precisely the claim made in this case) or was the same combination or compound as that described in the complainant's patent was the great question in dispute between the parties, and that so far as the judgment of the Patent Office affected the case it might be considered as having been decided in favor of the defendant. He declined to grant the motion, and declared that whenever a defendant presented a case showing a *bona fide* issue in fact or of law, or, as in that case, a *prima facie* right to continue his manufacture, founded on a decree of the Patent Office and a consequent public grant, he would not grant a preliminary injunction, and thus issue execution before judgment. He further said that he would not decide the merits of a *bona fide* issue in fact on *ex parte* affidavits, nor anticipate the final judgment of the court on the legal questions, as if they had been brought out on demurrer, or, it may be added, upon the hearing. There are presented to the court upon this application affidavits of experts and exhibits of Letters Patent, and the court is asked to consider these *ex parte* statements and upon them announce a conclusion at this stage of the case whether, on the one hand, the complainant's patent is valid and, on the other, the defendants' manufacture an infringement. That question will have to go over until the final hearing.

2. A second reason for overruling this motion is that the complainant waited nearly two months after filing its bill and until it must have known that the defendants would be stocked up with a full supply for the year's business, which is practically over at the close of the hay-making season, and then presented its motion for an injunction. The courts of the United States are vested with power to grant injunctions in patent causes according to the course and principles of equity. It is not according to equity for a complainant to delay the assertion of his right to an injunction until the time when it will most embarrass and injure the respondent. Such a proceeding savors of a disposition to use the right of a patentee to oppress an alleged infringer or to force him into a position where he may be compelled to incur heavy losses or to yield to hard demands. The granting or withholding of a preliminary injunction is within the proper discretion of the court. It will be withheld when apparently sought for the purpose of obtaining an undue advantage. It has been withheld when, in the opinion of the court, it would be used for the purpose of creating mischief, (*Neilson* v. *Thompson*, 1 Webst. Pat. Cas., 275,) or when it would give the complainant the means of coercing a compromise, (*Parker* v. *Sears*, 1 Fish. Pat. Cas., 93,) and so I think it should be here, where the result of granting it now would do more harm to the respondents than good to the complainant; whereas, if the application had been made promptly special harm to the respondents would have been avoided.

The costs of the motion will be taxed against the complainant.

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## U. S. Circuit Court—Western District of Pennsylvania.

AMERICAN BELL TELEPHONE COMPANY *et al.* v. MCKEESPORT TELEPHONE COMPANY *et al.*

*Decided June 3, 1893.*

PATENTS FOR INVENTIONS—PRELIMINARY INJUNCTION—EFFECT OF DECISION OF THE SUPREME COURT OF THE UNITED STATES.

A decision of the Supreme Court of the United States sustaining a patent must be regarded as conclusive upon a motion for preliminary injunction.

BILL for infringement of patent. On motion for preliminary injunction.

*Mr. J. J. Storrow* and *Mr. J. I. Kay* for the complainants.

*Mr. W. Bakewell* and *Mr. John McDonald* for the defendants.

ACHESON, *J.:*

Alexander Graham Bell's second patent, No. 186,787, dated January 30, 1877, here sued on, was sustained by the Supreme Court of the United States in the *Telephone Cases* (126 U. S.) as to the third, fifth, sixth, seventh, and eighth claims. Now, that decision must be regarded as conclusive upon the present motion for a preliminary injunction. (*American Middlings Purifier Company* v. *Christian*, 3 B. and A., 42, 51; *American Bell Telephone Company* v. *Southern Telephone Company*, 34 Fed. Rep., 795.)

Infringement by the defendants of said claims is, I think, clearly shown. Indeed, in the affidavits submitted on the part of the defendants it is not alleged that the telephones used by them differ materially, as respects the features here complained of, from the telephones which were adjudged by the Supreme Court to infringe the patent.

A preliminary injunction, therefore, must be granted against the McKeesport Telephone Company and the other defendants who are citizens of Pennsylvania.





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## U. S. Circuit Court—Western District of Pennsylvania.

STONEMETZ PRINTER'S MACHINERY COMPANY v. BROWN FOLDING MACHINE COMPANY.

*Decided July 18, 1893.*

1. LETTERS PATENT—INFRINGEMENT.

Letters Patent No. 343,677, dated June 15, 1886, to John A. Stonemetz, infringed by a device constructed in accordance with Patent No. 331,762, dated December 8, 1885, to R. T. Brown.

2. INTERFERENCE IN THE PATENT OFFICE—EFFECT OF JUDGMENT THEREIN UPON THE COURTS.

Where there had been an interference between the Stonemetz and Brown applications in the Patent Office the fact that priority of invention had been awarded to Stonemetz by the Examiner of Interferences, the Board of Examiners-in-Chief, and the Commissioner of Patents, while not conclusive, is not without weight, especially in view of a subsequent disclaimer by Brown of the invention of the matter covered by the issue in the interference.

3. SECTION 4918—WHEN PATENTS INTERFERE—DOMINANT AND SPECIFIC CLAIMS.

Patents interfere only when they claim the same invention in whole or in part, and in a proceeding under Section 4918 the court cannot go beyond the claims and consider generally the two patents as a whole. An interference does not exist within the meaning of the statute between a patent having a dominant broad claim and a junior patent having a subordinate specific claim.

*Mr. J. C. Sturgeon* for the complainant.

*Mr. John K. Hallock* and *Mr. J. D. Gallagher* for the defendants.

Before ACHESON and BUFFINGTON, Judges.

ACHESON, *J.:*

This suit is brought on Letters Patent No. 343,677, dated June 15, 1886, granted to John A. Stonemetz on an application filed March 14, 1883, for improvements in devices for connecting and operating together paper-folding machines and printing-presses. The bill charges the defendants with infringement and prays an injunction and an accounting, and also charges an interference between said patent and two Letters Patent granted to R. T. Brown and now owned by the defendants—namely, No. 331,762, dated December 8, 1885, issued on an application filed May 28, 1883, and No. 322,341, dated July 14, 1885, issued on an application filed August 4, 1884—and seeks relief under section 4918, Revised Statutes.

The invention in question relates to a sheet-conveying device connecting the paper-folder to the printing-press when the two machines are running together, but which, without disturbing the relative positions of the machines, may be removed out of the way when communication between them is not desired.

The nature of the invention is sufficiently indicated by the claims of the patent sued on, which we will now quote:

1. The combination, with a printing press and a folding-machine, of a frame or table bearing sheet-conveying devices spanning the space between said machines and adapted to be laid back upon the folding-machine, substantially as and for the purpose set forth.

2. The combination, with a printing-press and a paper-folding machine, which are arranged with relation to each other substantially as shown, of a table or frame, A, consisting of two sections, *a a'*, hinged together and bearing conveying-tapes and tape-actuating rollers, which are operatively connected with the folding-machine, which frame is adapted, as shown, to span the space between said machines, when desired, and convey the printed sheets to the folder from the press, and when communication between said machines is not desired can be folded back over the folder, as shown, and for the purposes mentioned.

3. The combination, with a printing-press and a paper-folding machine, which are arranged with relation to each other substantially as shown, of the frame or table A, composed of the jointed sections *a a'*, the rollers D and E at the upper end of said frame, the rollers D' and E' on the folder near the lower end of said frame, the pulleys H H' and belt *h*, and the tapes *c* and *d*, substantially as and for the purposes set forth.

4. The combination, with a folding machine, of a frame or table bearing sheet-conveying devices and operatively connected with said machine, and adapted to be placed between the folding-machine and a printing-press, and removed from the printing-press when not in use, substantially as and for the purpose set forth.

5. The combination, with a printing-press and a folding-machine, of a frame composed of jointed sections rollers on said frame and on the folding-machine supporting endless sheet-conveying tapes, and mechanism substantially as described, for driving said tapes, as and for the purpose set forth.

Pending the application of Stonemetz and Brown's application of May 28, 1883, the Patent Office declared an interference between them, the subject-matter thereof being thus defined:

First. The combination, with a folding-machine, of a sheet-carrier hinged to and adapted to be folded over upon said machine, substantially as described.

Second. The hinged carrier provided with the tape-carrying rollers and the tapes, in combination with a folding-machine having suitable rollers for the reception of said tapes, and means, substantially as described, for driving the latter.

Third. The combination, with a folding-machine, of the jointed and hinged carrier constructed and operating substantially as described and shown.

Upon the question of priority of invention the decision of the Examiner of Interferences was in favor of Stonemetz, and, upon appeal, that judgment was affirmed by the Board of Examiners, whose ruling, upon further appeal, was approved and affirmed by the Commissioner of Patents.

Brown then filed a disclaimer, which was incorporated into his specification forming part of Letters Patent No. 331,762, in the words following:

I do not claim, broadly, the combination, with a folding-machine, of a sheet-carrier hinged to and adapted to be folded over upon said machine; nor do I claim, broadly, the hinged carrier provided with the tape-carrying rollers and the tapes, in combination with a folding-machine having suitable rollers for the reception of said tapes and means for driving the latter; nor do I claim, broadly, the combination, with a folding-machine, of the jointed and hinged carrier.

This patent (No. 331,762) contains a single claim, as follows:

In a sheet-carrier attachment for folding-machines, the combination, in the frame of said carrier, of the parts B B and C, the hinges *b*, joining the parts B B together in a manner substantially as shown, whereby the two parts will fold with their under sides together, the hinges C' C' joining the lower part, B, to the part C, in a manner substantially as shown, whereby the parts B B will fold over onto the part C, substantially as set forth.

The parts B B are two sections of the carrier-frame which are united by the hinges *b* placed on the under side so that the frame will fold together with its upper side outermost. The part C is a piece securely fastened to the top of the folder at a proper inclination, and to it the carrier-frame is connected by the hinges C' C'. In this latter particular consists the distinguishing difference between this device and the device shown in the Stonemetz patent, which describes a connection between the carrier-table and the folding-machine by means of holes in the lower end of the table which engage with pins on a bracket on the side or front of the folder.

The defendant's alleged infringing device is constructed in accordance with the Patent No. 331,762.

The defense, which raises the principal question in the case, is thus stated in the defendant's printed brief:

First. That Brown invented the device shown in his patent, No. 331,762, which is the alleged infringing device, before Stonemetz invented the device shown in the Stonemetz patent in suit, and communicated said invention to Stonemetz.

But it appears by reliable and, indeed, uncontradicted testimony that as early as February, 1882, before Brown's alleged invention of the device shown in his patent, No. 331,762, Stonemetz had conceived and described to the witness, Walter G. Bennett, an attachment between a printing-press and a paper-folder, consisting of a table bearing sheet-conveying devices—namely, tape-carrying rollers and the tapes—spanning the space between the two machines, and adapted to be laid back upon the folding-machine when not in use; and such a device Stonemetz set up and put into operation at Somerville, Mass., in the month of June, 1882, at least four months before Brown's alleged conception of the invention. This Somerville attachment embodied the improvement here in question, except that the carrier-table was not hinged in the middle or to the folder.

As respects the latter features of the invention, the positive testimony upon the question of priority is conflicting, and is confined to Stonemetz on the one side and to Brown on the other, as the case is presented to us. The testimony of Edelen taken in the interference proceeding, and here offered by the plaintiff, clearly is inadmissible. (*Richardson* v. *Stewart*, 2 Ser. & R., 84; *Clow* v. *Baker*, 36 Fed. Rep., 692.) So also are Edelen's *ex parte* affidavit and letters offered by the defendants. Edelen's threatening letter of November 29, 1887, addressed to Stonemetz, and his subsequent conduct excused the plaintiff from putting him on the stand, and the defendants have not thought it proper to call him. There are, however, some circumstances tending to show the rightfulness of Stonemetz's claim to priority. The Somerville machine, which he undoubtedly devised, was the primary type of this invention. Then Brown was a workman in the employ of the Stonemetz Printer's Machinery Company acting under the general instructions of Stonemetz, who was an inventor in this line, and not until after Brown quit the service of that company did he set up claim to the invention; but, at any rate, here the burden of clear affirmative proof is upon the defendants. The Stonemetz patent itself affords a *prima facie* presumption that the patentee was the original and first inventor of the devices therein claimed, and to overthrow that presumption the evidence must be free from doubt. (Robinson on Patents, sec. 1023; *Patterson* v. *Duff*, 20 Fed. Rep., 641; *Duffy* v. *Reynolds*, 33 O. G., 621; 24 Fed. Rep., 855.) Again, the concurrent judgment of the Examiner of Interferences, the Board of Examiners, and the Commissioner of Patents, while by no means conclusive, is not without weight. (*Wire Book Sewing Machine Co.* v. *Steveson*, 11 Fed. Rep., 155; *Celluloid Mfg. Company* v. *Chrolithian Collar and Cuff Company*, 32 O. G., 393; 24 Fed. Rep., 275; *Kirk* v. *Dubois*, 42 O. G., 297; 33 Fed. Rep., 252, 254.) Furthermore, Brown's subsequent disclaimer, upon the strength of which he obtained the allowance of the restricted claim of his patent, No. 331,762, although not an estoppel, yet bears strongly against him in the present contest. It can then, we think, be affirmed confidently that this defense is not clearly established. And, upon the whole case, our conclusion upon the question of priority here raised is with the plaintiff.

We find nothing in the English patent to Davies anticipatory of this invention or suggestive of it. The defendants' own expert admits that the drawing of the English device is obscure. It certainly is so. Nor are we required by reason of anything disclosed by that patent or the American patents in evidence, or by the Milwaukee device, to read into the claims of the Stonemetz patent such precise limitations as would relieve the defendants from the charge of infringement. We think infringement is here shown of all the claims upon any fair construction of them; and we need scarcely add that even if Brown's patent, No. 331,762, shows a patentable improvement, yet it affords the defendants no justification for their use of the original invention. (*Blake* v. *Robertson*, 11 O. G., 877; 94 U. S., 728, 733.)

The plaintiff, therefore, is entitled to a decree for an injunction and an account.

But we think a case for relief under section 4918, Revised Statutes, has not been made out. In the statutory sense patents interfere only when they claim the same invention in whole or in part. (*Nathan Mfg. Co.* v. *Craig*, 57 O. G., 1887; 49 Fed. Rep., 370.) And in a proceeding under section 4918 the court cannot go beyond the claims and consider generally the two patents as a whole. (*Ibid.*) It has been held that an interference does not exist within the meaning of the statute between a patent having a dominant broad claim and a junior patent having a subordinate specific claim. (*Morris* v. *Kempshall Mfg. Co.*, 20 Fed Rep., 131; *Pentlarge* v. *New York Bung and Bushing Co.*, 28 O. G., 370; 20 Fed. Rep., 314.) Here the claim of Brown's patent, No. 331,762, is not coextensive with any of the claims of the Stonemetz patent; but it is a very specific subservient claim. Whether he shows patentable novelty to sustain his claim is a question not involved in this interference issue (Robinson on Patents, sec. 724) and upon which we are not now called on to express any opinion.

If there is no interference between the Stonemetz patent and No. 331,762, certainly none exists between it and No. 322,314; and, indeed, this particular part of the plaintiff's case has not been pressed.

A decree may be drawn in accordance with this opinion.

Buffington, J., concurs.



THE
# OFFICIAL GAZETTE
OF THE
# United States Patent Office.
[BY AUTHORITY OF CONGRESS.]

VOL. 64.—No. 9. TUESDAY, AUGUST 29, 1893. PRICE—$5 per year.

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## Notice.

The attention of attorneys and inventors filing applications for patents is called to the following paragraphs from Rule 51, (4,) Rules of Practice:

Drawings should be made with the fewest lines possible consistent with clearness. * * * Shading (except on sectional views) should be used *only* on concave and convex surfaces, where it should be used sparingly, and may even there be dispensed with if the drawing is otherwise well executed.

The prohibition is not absolute; but drawings will be rejected which, in the opinion of the Office, have such surface shading as makes them objectionable for reproduction in the GAZETTE by photolithography.

## Indexes to Patents on Electricity.

Indexes to patents relating to electricity, covering the period of time from July 1, 1882, to June 30, 1890, have been issued, and are for sale. These indexes, arranged alphabetically, numerically, and by classes, comprise the following volumes, the prices of which are given below:

Vol. 1. Index to patents relating to electricity granted by the United States prior to June 30, 1881, with an appendix, July 1, 1881, to June 30, 1882. One volume, 250 pages. In paper covers, $3; bound, $5.

Vol. 2. Appendix No. 2, July 1, 1882, to June 30, 1883. One volume, 50 pages. In paper covers, $1.50.

Vol. 3. Appendix No. 3, July 1, 1883, to June 30, 1884. One volume, 60 pages. In paper covers, $1.50.

Vol. 4. Appendix No. 4, July 1, 1884, to June 30, 1885. One volume, 60 pages. In paper covers, $1.50.

Vol. 5. Appendix No. 5, July 1, 1885, to June 30, 1886. One volume, 54 pages. In paper covers, $1.50.

Vol. 6. Appendix No. 6, July 1, 1886, to June 30, 1887. One volume, 52 pages. In paper covers, $1.50.

Vol. 7. Appendix No. 7, July 1, 1887, to June 30, 1888. One volume, 68 pages. In paper covers, $1.50.

Vol. 8. Appendix No. 8, July 1, 1888, to June 30, 1889. One volume, 72 pages. In paper covers, $1.50.

Vol. 9. Appendix No. 9, July 1, 1889, to June 30, 1890. One volume, 84 pages. In paper covers, $1.50.

Vol. 10. Appendix No. 10, July 1, 1890, to June 30, 1891. One volume, 98 pages. In paper covers, $1.50.

Vol. 11. Appendix No. 11, July 1, 1891, to June 30, 1892. One volume, 86 pages. In paper covers, $1.50.

## Oaths of Applicants in Foreign Countries.

(ORDER No. 822.)

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
*Washington, D. C., June 10, 1893.*

It is hereby directed that oaths accompanying applications for patents made within the following-named foreign countries must be taken before a minister, chargé d'affaires, consul, or commercial agent holding commission under the Government of the United States:

Austria-Hungary.
Argentine Republic.
Belgium.
Brazil.
Costa Rica.
Denmark.
Haiti.
Honduras.
Italy.
Mexico.
Netherlands.
Norway.
Peru.
Portugal.
Russia.
San Salvador.
Servia.
Sweden.
Switzerland.

Applications filed in this Office presenting oaths not executed in compliance with this order will be treated as incomplete.

JOHN S. SEYMOUR,
*Commissioner.*

## Construction of Statutes Relating to the Registration of "Prints" and "Labels."—Amended.

In the publication of this Office entitled "United States Statutes Concerning the Protection and Registration of Trade-Marks and Labels, with the Rules of the Patent Office Relating Thereto, Edition of January 4, 1892," the following matter on page 17 is hereby canceled:

The words "prints" and "labels," as used in this act, so far as it relates to registration in the Patent Office, are construed as synonymous, and are defined as any device, picture, word or words, figure, or figures (not a trade-mark) impressed or stamped directly upon the articles of manufacture, or upon a slip or piece of paper or other material to be attached in any manner to manufactured articles, or to bottles, boxes, and packages containing them, to indicate the contents of the package, the name of the manufacturer, or the place of manufacture, the quality of goods, directions for use, etc.

By the words "articles of manufacture" (to which such print or label is applicable by this act) is meant all vendible commodities produced by hand, machinery, or art.

But no such print or label can be registered unless it properly belongs to an article of commerce, and be as above defined; nor can the same be registered as such print or label when it amounts to a lawful trade-mark, or when its use in connection with the article to which it is applied is arbitrary or fanciful.

And the following is substituted therefor:

These sections of statute (referring to sections 3, 4, and 5 of the act of Congress relating to patents, trade-marks, and copyrights, approved June 18, 1874, 18 Statutes at Large, p. 78) are construed as authorizing the registry of "prints" and "labels." A label is a device or representation borne by an article of manufacture or vendible commodity. A print is a device or representation not borne by an article of manufacture or vendible commodity, but in some fashion pertaining thereto—such, for instance, as a pictorial advertisement thereof. A label cannot be registered if it bear a device capable of sequestration as a trade-mark until after such device is registered as a trade-mark. Both labels and prints, in order to be entitled to registry, must be intellectual productions in the degree required by the copyright law.

The note on page 19 is canceled.

## Women Inventors.

The Patent Office has published and has for sale a volume containing a list of women inventors to whom patents have been granted by the United States from 1790 to July 1, 1888. 44 pages. Paper covers, 50 cents.

An Appendix to the above, covering the period from July 1, 1888, to October 1, 1892, has been published, and is now for sale. 18 pages. Paper covers, 25 cents.

## PRINTS.

2.—Title "BOVRIL."—(For canned goods and cured meats.)—*Bovril*, Limited, London, England, and New York, N. Y. Application filed April 14, 1893.

## Issue of August 29, 1893.

| | |
|---|---|
| Patents | 378—No. 503,935 to No. 504,312, inclusive. |
| Designs | 22—No. 22,744 to No. 22,765, inclusive. |
| Trade-Marks | 23—No. 23,548 to No. 23,570, inclusive. |
| Labels | None. |
| Print | 1—No. 2. |
| Reissues | None. |
| Total issue | 434 |

TO CITIZENS OF THE UNITED STATES.

| States. | Patents and Designs. | Trade-Marks and Labels. | States. | Patents and Designs. | Trade-Marks and Labels. |
|---|---|---|---|---|---|
| Alabama | 2 | .... | Nevada | .... | .... |
| Arizona Territory | .... | .... | New Hampshire | .... | .... |
| Arkansas | 2 | .... | New Jersey | 18 | .... |
| California | 16 | .... | New York | 58 | 5 |
| Colorado | 2 | .... | North Carolina | .... | .... |
| Connecticut | 19 | 1 | North Dakota | 1 | 1 |
| Delaware | 1 | .... | Ohio | 24 | 2 |
| District of Columbia | 3 | 1 | Oklahoma Territory | 2 | .... |
| Florida | 1 | .... | Oregon | 1 | .... |
| Georgia | 2 | .... | Pennsylvania | 27 | 2 |
| Idaho | 1 | .... | Rhode Island | 5 | 1 |
| Illinois | 31 | 1 | South Carolina | 1 | .... |
| Indiana | 15 | .... | South Dakota | .... | .... |
| Indian Territory | 1 | .... | Tennessee | 2 | 1 |
| Iowa | 8 | 1 | Texas | 2 | .... |
| Kansas | 3 | .... | Utah Territory | 4 | .... |
| Kentucky | 2 | .... | Vermont | 3 | .... |
| Louisiana | 1 | .... | Virginia | 1 | .... |
| Maine | 5 | .... | Washington | .... | .... |
| Maryland | 3 | 1 | West Virginia | 1 | .... |
| Massachusetts | 33 | 2 | Wisconsin | 9 | 1 |
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| Mississippi | 1 | .... | U. S. Navy | .... | .... |
| Missouri | 13 | .... | | | |
| Montana | 2 | .... | Total to citizens of the United States | 348 | 20 |
| Nebraska | 1 | .... | | | |

TO CITIZENS OF FOREIGN COUNTRIES.

| Countries. | Patents and Designs. | Trade-Marks and Labels. | Countries. | Patents and Designs. | Trade-Marks and Labels. |
|---|---|---|---|---|---|
| Argentine Republic | .... | .... | Mexico | .... | .... |
| Austria-Hungary | 3 | .... | Netherlands | .... | .... |
| Belgium | .... | .... | Newfoundland | .... | .... |
| Bermuda | .... | .... | New South Wales | 1 | .... |
| Brazil | .... | .... | New Zealand | .... | .... |
| Canada | 7 | .... | Norway | .... | .... |
| Chile, Republic of | .... | .... | Peru | .... | .... |
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| Ecuador | 1 | .... | Sweden | .... | .... |
| England | 28 | 1 | Switzerland | 3 | .... |
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| Germany | 7 | 3 | Victoria | .... | .... |
| Hawaii | .... | .... | | | |
| Ireland | .... | .... | Total to citizens of foreign countries | 52 | 4 |
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## APPLICATIONS UNDER EXAMINATION.

*Condition at Close of Business August 22, 1893.*

| Division No. | Subjects of invention. | Oldest new application and oldest action by applicant awaiting office action. New. | Amended | No. of applications awaiting action. |
|---|---|---|---|---|
| | *In arrears.—Under one month.* | | | |
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| 6 | Chemistry, Medicines, Fertilizers, Preserving, Photography, Sugar and Salt, etc. | July 10 | Aug. 2 | 117 |
| 30 | Lamps, Gas-Fittings, Type-Writers, Matrix-Making Machines. | June 24 | July 29 | 190 |
| | *Between two and three months.* | | | |
| 3 | Metallurgy, Metal Founding, Coating, Annealing and Tempering, Electro-Chemistry, etc. | May 24 | Aug. 17 | 148 |
| 12 | Mechanical Engineering, Stores-Service, etc. | June 21 | Aug. 12 | 194 |
| 25 | Artesian and Oil Wells, Butchering, Mills and Thrashing, Stone-Working, etc. | June 3 | Aug. 12 | 206 |
| 8 | Furniture, Toilet, Umbrellas, and Canes, etc. | June 12 | Aug. 10 | 308 |
| 7 | Harvesters, Games and Toys | June 16 | Aug. 9 | 291 |
| 32 | Advertising, Baggage, Packing and Storing Vessels, etc. | June 19 | Aug. 7 | 194 |
| 13 | Metal-Working, Arms and Projectiles, etc. | May 24 | Aug. 2 | 102 |
| 9 | Hydraulics, Fire-Extinguishers, etc. | May 29 | July 22 | 335 |
| 4 | Civil Engineering, etc | June 15 | July 18 | 304 |
| 29 | Wood-Working Machines, Carpentry, Coopering and Roofing, etc. | May 25 | July 17 | 265 |
| | *Between three and four months.* | | | |
| 18 | Steam-Engineering, etc | May 30 | Aug. 11 | 250 |
| 22 | Fire-Arms, Navigation, Signals, etc. | Apr. 26 | Aug. 9 | 236 |
| 23 | Instruments of Precision, Acoustics, Optics, etc. | May 8 | Aug. 8 | 298 |
| 5 | Fine Arts, Stationery, Bookbinding, Music, etc. | May 1 | July 25 | 260 |
| 17 | Paper-Manufactures and Printing | May 15 | July 15 | 271 |
| | *Between four and five months.* | | | |
| 15 | Plastics, Paper-Making, Paving, Glass, Fuel, Bread-Making, etc. | Apr. 18 | Aug. 7 | 328 |
| 1 | Tillage and Fences | Apr. 19 | Aug. 3 | 219 |
| | *Between five and six months.* | | | |
| 28 | Pneumatics, Refrigeration, Air and Gas Engines, etc. | Mar. 1 | Aug. 4 | 384 |
| | *Between eight and nine months.* | | | |
| 26 | Electricity, Generation, Distribution, etc. | Dec. 17 | Aug. 12 | 327 |
| | Total number of applications awaiting action | | | 6,784 |
| | *Under one month in arrears.* | | | |
| | Designs | Aug. 19 | Aug. 19 | 3 |
| | Trade-Marks | Aug. 18 | Aug. 19 | 19 |

# PATENTS.

## GRANTED AUGUST 29, 1893.

**503,935.** HORSESHOE-REMOVING TOOL. PAUL AMELOTTE, Spencer, Mass. Filed June 7, 1893. Serial No. 476,864. (No model.)



*Claim.*—1. A tool for removing shoes from animals, consisting of a lever fulcrumed upon a bearing-piece, adapted to fit and engage the front of the hoof, and provided with a hook, whereby the shoe may be disengaged from the foot, substantially as shown and described.

2. A tool for removing shoes from animals, consisting of a lever, fulcrumed upon a bearing piece adapted to fit and engage the toe of the hoof, and provided with a hook, whereby the shoe may be disengaged from the foot, said lever being provided with means whereby the distance of the hook from the bearing piece may be varied, substantially as shown and described.

3. A tool for removing shoes from animals, consisting of a lever fulcrumed upon an adjustable bearing-piece adapted to fit the toe of the hoof, and provided with a hook, whereby the shoe may be disengaged from the foot, said lever being provided with recesses, whereby the distance of the hook from the bearing-piece may be varied, substantially as shown and described.

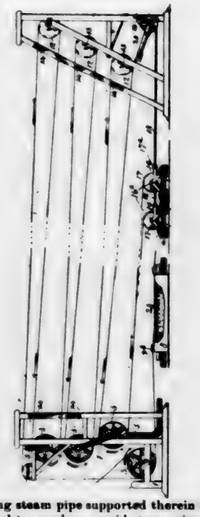
**503,936.** TWINE-FINISHING MACHINE. WALTER H. AVIS, Toronto, Canada. Filed Feb. 11, 1891. Serial No. 381,031. (No model.)

*Brief.*—The twine is run in the form of an endless belt alternately over steam-drums in the head-frame and trundle-rollers in the tail-frame. The slack is taken up by a carriage between the head and tail frames. While run through the machine the yarn is dry-carded, water-washed, buffed, sized, and greased. When finished, the endless belt of twine is cut, one end attached to the winding-on spools and the other end to the end of twine on the drawing-off spools. By putting in operation the machine the finished twine is spooled and a fresh supply drawn into the machine.

*Claim.*—1. In a twine finishing machine, the combination of the head frame, the circulating steam pipe supported therein as described, the steam drums adapted to revolve on said steam pipe as specified, the trundle rollers carried in the tail frame and corresponding to the steam drums in said head frame, and the spacing bars in front of said steam drums and trundle rollers, to direct the twine, substantially as shown and described.

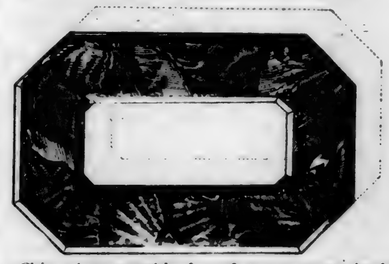
2. In a twine finishing machine, the combination of the head

**503,936.**



frame, the circulating steam pipe supported therein as described, the steam drums adapted to revolve on said steam pipe as specified, the trundle rollers carried in the tail frame and corresponding to the steam drums in said head frame, the spacing bars in front of said steam drums and trundle rollers, to direct the twine, and the take-up car having a trundle roller therein, said car adapted to operate along a track between said head and tail frames to take up the slack in the bands of twine over said steam drums and trundle rollers, substantially as shown and described.

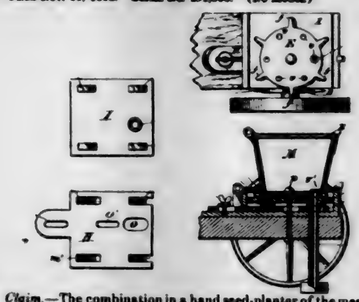
**503,937.** GLASS LETTER. JOHN BALLANCE, New York, N. Y., assignor to himself, Harry Haltermann, and Henry Haltermann, same place. Filed Jan. 3, 1893. Serial No. 456,978. (No model.)



*Claim.*—As a new article of manufacture, a separate glass letter or character having upon the back thereof thin leaves of pearl caused

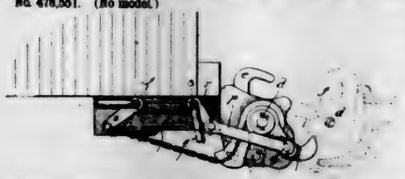
to adhere intimately to the glass by adhesive material, and coated with print or similar substance for the protection of the back of the letter, substantially as set forth.

## 503,938. SEED-PLANTER. FRANCIS W. BAHAN, East Knox, Me.
Filed Nov. 11, 1892. Serial No. 451,503. (No model.)



*Claim.*—The combination in a hand seed-planter of the measuring disk E with the plate I having on its under side the inclined planes *m m m m* which rest on the inclined planes *m' m' m' m'* in plate H substantially as shown.

## 503,939. CAR-COUPLING. RUSSELL S. BARBUR, Chicago, Ill., assignor to Alexander C. Martin, same place. Filed June 5, 1893. Serial No. 476,551. (No model.)



*Claim.*—1. The combination in a car coupler of an elbow shaped coupling device pivoted upon a horizontal axis, said coupling device being provided with a hook upon one end and a loop upon the other, a tripping arm loosely secured to said axis and arranged to swing forward in front of said draw head, said arm being provided with a shoulder or stud thereon, and a detent or stud eccentric to, and in operative connection with said axis and adapted to engage with the stud upon said tripping lever and hold the same in an oblique position when the latter is thrust forward, substantially as described.

2. The combination in a car coupler of the hook *e*, pivoted as described, stud *m* in operative connection with the pivotal shaft thereof, and the tripping arm *l* having a corresponding engaging stud or shoulder *n*, said tripping arm being loosely mounted upon said pivotal shaft, substantially as described.

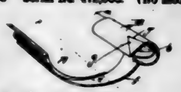
3. The combination with the opposite draw heads of a car coupler, of a coupling device, pivotally mounted upon a horizontal shaft in each of said draw heads, said coupling device consisting of two arms arranged obliquely to each other, one being provided with a hook and the other with a corresponding loop, a stud *m* in operative connection with each of said shafts and a tripping arm *l* loosely mounted upon each of said shafts and provided with a projection adapted to engage the stud *m* and hold said arm in an oblique forwardly projecting position, substantially as described.

4. The combination in a car coupler of the hook *e*, a tripping arm loosely mounted upon said pivotal shaft, studs, or shoulders *m*, *n* for enabling said tripping arm to be set in an operative position, a rock-shaft and means for operatively connecting the same with said tripping arm, substantially as described.

5. The combination of the hook *e* rigidly attached to the shaft *d* sheave *g* rigidly attached to said shaft and provided with the stud *n*, tripping arm *l* having the stud *m* and chain *h* in operative connection with a rock shaft secured to the body of the car, substantially as described.

6. The combination with the hook *e* rigidly attached to the shaft *d*, sheave *g* rigidly attached to said shaft and provided with a stud or projection *n*, a tripping arm *l* having a projection thereon adapted to engage the stud *n* means for operatively connecting said tripping arm with a crank attached to a rock shaft upon the body of the car and chain *h* in operative connection with a separate rock shaft upon said car, substantially as described.

## 503,940. EAVES-TROUGH. LEWIS S. BOMBAUR, Decatur, Ill.
Filed May 1, 1893. Serial No. 472,900. (No model.)



*Claim.*—1. The combination of the sheets or sections A, provided with the lip or extension *b*, and the extension B, the bead *a*, the groove *c*, the flange or guide *f*, and the lips *g* and *g'*, bent over the extension B, substantially as and for the purpose specified.

2. The combination of an eaves trough, provided upon one side thereof, with a bead or roll, the extension B, located upon the outer side and around the bead *a*, the lip or extension *b* the groove *c*, the guide or flange *f*, and the bent over portion *b'*, substantially as and for the purpose specified.

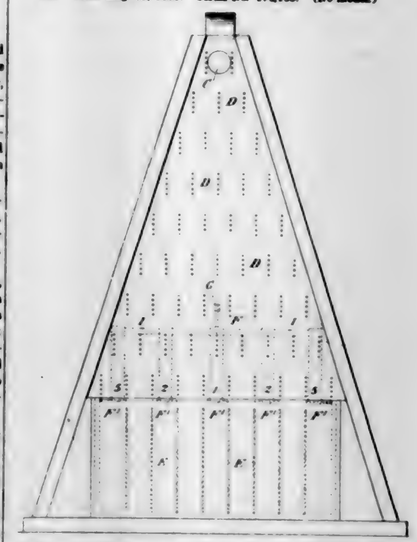
3. The combination of a section of eaves trough as A, provided upon one end thereof with a groove and guide, the extension B, located around the bead or roll, the extension *b*, and the lips *g* and *g'*, substantially as and for the purpose specified.

## 503,941. METALLIC ROOFING. JOHN S. BROOKS, Brooklyn, N. Y.
Filed Apr. 10, 1893. Serial No. 469,839. (No model.)



*Claim.*—A flat seam metal roof consisting of an upper surface of metal in which the seam is level on its upper side while the surplus metal of the seam is sunk into the roofing foundation in a manner that leaves no hollow space between the metal and the foundation and permits the solder to enter the seam in a downward course as shown and for the purposes specified.

## 503,942. GAME APPLIANCE. LUTHER H. BOSHARDS, Pasadena, Cal. Filed May 15, 1893. Serial No. 474,183. (No model.)



*Claim.*—1. A game appliance comprising a case provided with a coin slot and a passage-way leading downward from such slot; a series of chutes extending along such passage-way and arranged in rows extending across the passage-way with sufficient space between the walls of the chutes of each row and the walls of the chutes of the adjacent rows to permit the passage of a coin there-between, the tops of the walls of the chutes being respectively arranged in the center of the path of a coin dropped through and out of the chute immediately above such wall and also arranged in alignment respectively with the walls of the chutes of the alternate succeeding rows; and a movable stop provided with fingers arranged to close the bottoms of alternate chutes in the lower row of chutes, and suitable means for retracting the fingers from the bottoms of such chutes.

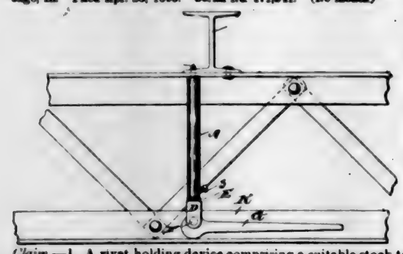
2. A game appliance comprising a case provided with a coin slot and a passage-way leading downward from such slot, a series of pins or tongues arranged to form partitions projecting into such passage-way and adapted to divide such passage-way into horizontal rows of short vertical coin chutes, the top one of said rows comprising two chutes and having its central partition arranged directly beneath the center of the coin slot, and the succeeding rows of chutes increasing in number by arithmetical progression with a ratio of one from the first row to the bottom of the passage-way: the walls of the chutes of each row being respectively arranged in alignment with the midlines of the chutes of adjacent rows and in alignment respectively with the corresponding walls of the chutes of the alternate succeeding rows.

3. A game appliance comprising a case provided with a coin slot and a chute which leads from such slot and has irregular side walls: a passage-way leading downward from such a slot: a series of pins or tongues arranged to form partitions projecting into such passage-way and adapted to divide such passage-way into horizontal rows of short coin chutes: the chutes of each row being arranged vertically out of line with the chutes of the adjacent row, and the rows increasing in number of chutes by arithmetical progression with a ratio of one from the coin slot downward.

4. A game appliance provided with a coin passage-way having a transparent face wall and divided at its bottom into a series of coin chutes and provided with a series of pins or tongues arranged above such bottom row of chutes to intercept the coin in its passage through the passage-way and to direct it into one or another of the chutes of the bottom row of chutes, a series of coin receptacles arranged one beneath each chute of the bottom row of chutes to receive the coin therefrom, and a series of retractible fingers arranged to project beneath alternate chutes, only, of such bottom row of chutes between such alternate chutes and the coin receptacles respectively beneath such alternate chutes to temporarily retain the coins in the alternate chutes.



## 503,943. RIVET-HOLDING DEVICE. GEORGE BURTCHER, Chicago, Ill. Filed Apr. 20, 1893. Serial No. 471,241. (No model.)



*Claim.*—1. A rivet holding device comprising a suitable stock to engage the rivet and a jaw piece, the stock and jaw piece being slidably connected whereby the tool may be varied as to length, means for securing the parts in their adjustable position, and a lever for forcing the stock into engagment with the rivet, substantially as described.

2. In a rivet holding device, the combination with a stock having a recessed head and a longitudinal bore in its end opposite the stock, a jaw piece provided with a shank or stud adapted to enter the bore of the stock, and a cam lever pivoted to the jaw piece, substantially as described.

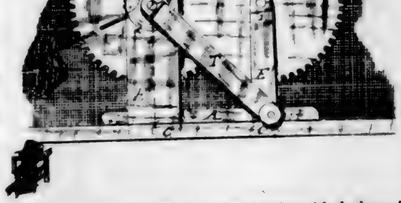
3. In a rivet holding device, the combination with a stock having a recessed head and a longitudinal bore in its end opposite the stock, a jaw piece provided with a shank or stud adapted to enter the bore of the stock, a set screw for holding the shank, and a cam lever pivoted to the jaw piece, substantially as described.

4. In a rivet holding device, the combination with a stock having a recessed head and a longitudinal bore in its end opposite the stock, a jaw piece provided with a shank or stud adapted to enter the bore of the stock, a set screw for holding the shank and removable washers adapted to be interposed between the end of the stock and the jaw piece whereby said stock may be adjusted as to length, and a cam lever pivoted to the jaw piece, substantially as described.

## 503,944. CORN-PLANTER. ERNST L. CARAWAY, Rector, Ark.
Filed Mar. 7, 1893. Serial No. 464,940. (No model.)

*Claim.*—1. In a corn-planter, the combination with a hopper provided with bearing openings in the opposite walls of the hopper, of a cylinder having seed-cups journaled in the openings, means for attaching the hopper to a plow standard, and ground-wheels secured rigidly to the ends of the cylinder beyond the walls of the hopper, substantially as specified.

2. In a corn-planter, the combination with a hopper adapted to be secured to a plow-standard, said hopper having its opposite walls provided with circular openings, of a cylinder journaled in the openings and extending slightly beyond the same and provided with radial seed-cups, plugs mounted in the openings and terminating at their inner ends in eyes projecting into the cylinder, slotted wheels secured to the opposite ends of the cylinder, and transverse bolts mounted in the slots of the wheels and in the eyes of the plugs and provided with nuts, substantially as specified.



3. In a corn-planter, the combination with a hopper having opposite circular openings, a hollow cylinder having radial cups formed therein, said cylinder extending slightly beyond the side walls of the hopper, and ground-wheels rigidly secured to the ends of the cylinder and provided with radial slots, metal plates secured to the outer faces of the wheels and provided with corresponding slots, plugs mounted adjustably in the cups and having their inner ends within the cylinder provided with eyes, and transverse bolts provided with nuts passing through the slots in the wheels and the eyes of the plugs, the heads and nuts of the bolts bearing on the plates, substantially as specified.

4. In a corn-planter, the combination with a hopper having opposite bearing-openings, a cylinder having cups formed therein and journaled in the openings and projecting slightly thereboyond, of ground-wheels rigidly secured to the ends of the cylinder, plugs mounted in the cups, and means for adjusting the plugs in said cups, substantially as specified.

5. The combination with the inclined plow-foot or standard, the hopper having front and rear inclined ends, the opposite circular openings, a clamping-device for securing the hopper to the standard, a seed-cylinder having cups journaled in the openings in the hopper, and ground-wheels secured to the ends of the cylinder, substantially as specified.

6. A hopper adapted to be secured to a plow-standard and consisting of the opposite side walls having annular openings and end posts, the intermediate filling-blocks having their lower halves inwardly projecting to form the bottom of the hopper, the sheet-metal sides secured to the posts, bolts passing through the sheet-metal sides and posts and filling blocks, the cylinder mounted in the openings, the wheels carried by the cylinder, the stud at the rear end of the hopper, the metal blank having a perforation to receive the stud and its terminals bent to form covering-blades, substantially as specified.

## 503,945. FLY-BRUSH. DANIEL W. COMARD, Waterloo, Iowa.
Filed Apr. 4, 1893. Serial No. 469,056. (No model.)



*Claim.*—1. In a fly brusher the combination with the base plate adapted to be secured to the frame of a screen door and provided with a pair of standards a toothed gear provided with a fixed pinion mounted in one pair of standards and a toothed gear provided with a central polygonal aperture and meshing with said pinion, a pinion provided with an enlarged polygonal opening meshing with the first named gear and a sleeve having a polygonal end to take into the

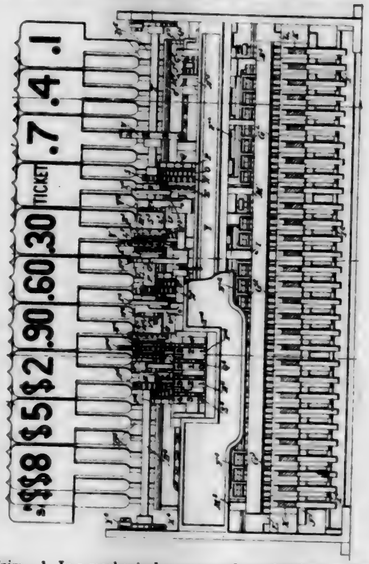
opening in the pinion, an axle inserted through said sleeve, standards, pinion, and toothed wheel and provided with a squared end to take into the opening in the toothed wheel, crank-levers secured to the ends of said axle and a brush secured to the said sleeve, substantially as set forth.

2. In a fly brusher the combination with a rotating sleeve provided with a recess, which has holes through its end walls of the brush holder, consisting of a piece of wire bent to fit into said recess and extending with its ends through the holes in the wall of the recess.

3. In a fly brush the combination with a base plate adapted to be secured to a screen door and provided with uprising ears, a toothed gear provided with a fixed pinion journaled in one pair of ears, and a toothed gear and a pinion journaled in the other pair of ears adapted to rotate in unison and meshing respectively with the first named pinion and gear, and carrying a fan adapted to be rotated by the latter gears, and means for rotating said gears, substantially as herein described.

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**503,946. CASH REGISTER AND INDICATOR.** Hugo Cook, Dayton, Ohio. Filed Nov. 19, 1892. Serial No. 452,569. (No model.)




*Claim.*—1. In a mechanical movement for registering machines, the combination of a driving member, a driven member, a revoluble member, a fourth member carried by the revoluble member in driving connection with the driving and driven members, and means co-operating with the revoluble and driven members to arrest one and release the other at different points in the movement of the driving member, for the purpose of imparting different portions of the movement of the latter to the revoluble member, substantially as described.

2. In a mechanical movement for registering machines, the combination of a driving member, a driven member, a revoluble member, a fourth member carried by the revoluble member and geared to the driving and driven members, and means co-operating with the revoluble and driven members to arrest one and release the other at different points in the movement of the driving member, for the purpose of imparting different portions of the movement of the latter to the revoluble member, substantially as described.

3. In a mechanical movement for registering machines, the combination of a driving wheel, a driven wheel, a revoluble wheel, a pinion carried by the revoluble wheel and geared to the driving and driven wheels, and means co-operating with the revoluble and driven wheels to arrest one and release the other at different points in the movement of the driving wheel, for the purpose of imparting different portions of the movement of the latter to the revoluble wheel, substantially as described.

4. In a mechanical movement for registering machines, the combination of a driving gear, a driven gear, a revoluble wheel, a pinion carried by said wheel and meshing with the two gears, a pair of detents co-operating with the driven gear and revoluble wheel, to alternately lock and release said gear and wheel, and means for shifting the detents at different points in the movement of the driving gear substantially as described.

5. In a mechanical movement for registering machines, the combination of a driving gear, a driven gear, an interposed revoluble wheel, a pinion mounted in said wheel and meshing with the two gears, and means for alternately locking and releasing the driven gear and revoluble wheel at different points in the movement of the driving gear, substantially as described.

6. In a mechanical movement for registering machines the combination of a driving gear, a driven gear, an interposed revoluble wheel, a pinion mounted in said wheel and meshing with the two gears, a pair of detents co-operating with the driven gear and revoluble wheel, to alternately lock one and release the other, and means for shifting the detents at different points in the movement of the driving gear, substantially as described.

7. In a registering machine, the combination of a series of operating keys representing different amounts, a driving member, a driven member, a revoluble member, a fourth member carried by said revoluble member in driving connection with the driving and driven members, and means actuated by the operating keys for locking and releasing the driven member and revoluble member at points in the movement of the driving member determined by the particular key operated, substantially as described.

8. In a registering machine, the combination of a series of operating keys representing different amounts, a driving member, a driven member, a revoluble member, a pinion carried by the revoluble member and geared to the driving and driven members, and means actuated by the operating keys for locking and releasing the driven member and revoluble member at points in the movement of the driving member determined by the particular key operated, substantially as described.

9. In a registering machine, the combination of a series of operating keys representing different amounts, a driving gear, a driven gear, an interposed revoluble wheel, a pinion mounted in said wheel and meshing with the two gears, and means actuated by the operating keys for locking and releasing the driven gear and revoluble wheel at points in the movement of the driving gear determined by the particular key operated, substantially as described.

10. In a registering machine, the combination of a series of operating keys representing different amounts, a driving gear given a definite movement by the operation of each key, a driven gear, an interposed revoluble wheel, a pinion mounted in said wheel and meshing with the two gears, and means actuated by the operating keys to lock and release the revoluble wheel and driven gear at points in the movement of the driving gear determined by the particular key operated, substantially as described.

11. In a registering machine, the combination of a series of keys representing different amounts, a driving gear given a definite movement by the operations of different keys, a driven gear, a revoluble wheel, a pinion carried by said wheel and meshing with the two gears, a pair of detents co-operating with the driven gear and revoluble wheel, to alternately lock and release said gear and wheel, and means intermediate said detents and the operating keys for shifting said detents at points in the movement of the driving gear determined by the particular key operated, substantially as described.

12. In a registering machine, the combination of a series of operating keys representing different amounts, a driving gear given a definite movement by the operations of different keys, a driven gear, an interposed revoluble wheel, a pinion mounted in said wheel and meshing with the two gears, a pair of detents co-operating with the driven gear and revoluble wheel, to alternately lock and release said gear and wheel, and means intermediate said detents and the operating keys for shifting said detents at points in the movement of the driving gear determined by the particular key operated, substantially as described.

13. In a registering machine, the combination of a series of operating keys representing different amounts, an oscillatory driving gear given a definite movement forward and backward by the operations of different keys, a driven gear, an interposed revoluble wheel, a pinion mounted in said wheel and meshing with the two gears, and means actuated by the operating keys to lock and release the driving gear and revoluble wheel at points in the movement of the driving gear determined by the particular key operated, substantially as described.

14. In a registering machine, the combination of a series of operating keys representing different amounts, a movable frame common to all of the keys and given a definite movement by the operations of different keys, an oscillatory driving gear, a rack and pinion connection between said gear and movable frame, for oscillating the gear forward and backward at the operation of each key, a driven gear, a revoluble wheel interposed between the driving and the driven gears, a pinion mounted in said wheel and meshing with the two gears, a pair of detents co-operating with the driven gear and revoluble wheel, for alternately locking and releasing said gear and wheel, and means intermediate said detents and the operating keys for shifting the detents at different points in the movements of the keys determined by the particular key operated, substantially as described.

15. In a registering machine, the combination of a series of operating keys representing different amounts, a driving gear having a definite movement at each operation of the machine, a driven gear, a revoluble wheel, a pinion carried by said wheel and meshing with the two gears, a pair of locking dogs or detents vibrating together upon opposite sides of the same axis and co-operating with the revoluble wheel and driven gear, to alternately lock one and release the other, and means intermediate said detents and the operating keys for vibrating the detents at different points in the movement of the driving gear, substantially as described.

16. In a registering machine, the combination of a series of operating keys representing different amounts, a driving gear having a definite movement at each operation of the machine, a driven gear, an interposed revoluble wheel, a pinion mounted in said wheel and meshing with the two gears, a pair of locking dogs or detents vibrating together upon opposite sides of the same axis and co-operating with the revoluble wheel and driven gear, to alternately lock one and release the other, and means intermediate said detents and the operating keys for vibrating the detents at different points in the movement of the driving gear, substantially as described.

17. In a registering machine, the combination of a series of operating keys representing different amounts, a driving gear having a definite movement at each operation of the machine, a driven gear, an interposed revoluble wheel, a pinion mounted in said wheel and meshing with the two gears, a pair of detents co-operating with said wheel and driven gear, to alternately lock one and release the other, and a movable frame for shifting the detents, co-operating with a series of graduated cams upon the operating keys to shift the detents at different points in the movement of the driving gear, substantially as described.

18. In a registering machine, the combination of two or more sets of operating keys, the keys of each set representing different amounts, a vibrating frame common to all of the keys and given a definite movement by the operation of each key, a shaft, and connections between said shaft and vibrating frame for giving the shaft a definite movement at the operation of each key, two or more driving gears fast upon said shaft, one for each set of operating keys, two or more driven gears loose upon said shaft, one adjacent each driving gear, two or more revoluble wheels, one adjacent each pair of driving and driven gears and carrying a pinion meshing with said gears, and means intermediate each set of operating keys and its co-operating gears and revoluble wheel for alternately locking and releasing the revoluble wheel and driven gear at different points in the movement of the driving gear determined by the particular key operated, substantially as described.

19. In a registering machine, the combination of two or more sets of operating keys, the keys of each set representing different amounts, a vibrating frame common to all of the keys and moved by the operation of each key, a rock-shaft, a pinion fast thereon, a rack actuated by the movements of the vibrating frame and meshing with said pinion, two or more driving gears fast upon the rock-shaft, one for each set of operating keys, two or more driven gears loose upon said shaft, one adjacent each driving gear, two or more revoluble wheels, one adjacent each pair of driving and driven gears and carrying a pinion meshing with said gears, and means intermediate each set of operating keys and its co-operating gears and revoluble wheel for alternately locking the revoluble wheel and driven gear at different points in the movement of the driving gear determined by the particular key operated, substantially as described.

20. In a registering machine, the combination of two or more sets of operating keys, the keys of each set representing different amounts, a vibrating frame common to all of the keys and moved by the operation of each key, a shaft, and connections between said shaft and vibrating frame for giving the shaft a definite movement at the operation of each key, two or more driving gears fast upon said shaft, one for each set of operating keys, two or more driven gears loose upon said shaft $m$, one adjacent each driving gear, two or more revoluble wheels, one adjacent each pair of driving and driven gears and carrying a pinion meshing with said gears, two or more pairs of detents, one pair for each driven gear and revoluble wheel and co-operating therewith to alternately lock one and release the other, and means intermediate each set of operating keys and the corresponding pair of detents, for shifting the latter at different points in the movement of the driving gear determined by the particular key operated, substantially as described.

21. In a registering machine, the combination of two or more sets of operating keys, the keys of each set representing different amounts, a vibrating frame common to all of the keys and moved by the operation of each key, a shaft, and connections between said shaft and vibrating frame for giving the shaft a definite movement at the operation of each key, two or more driving gears fast upon said shaft, one for each set of operating keys, two or more driven gears loose upon said shaft, one adjacent each driving gear, two or more revoluble wheels loose upon said shaft, one adjacent each pair of driving and driven gears and carrying a pinion meshing with said gears, two or more pairs of detents, one pair for each revoluble wheel and driven gear, the detents of each pair vibrating together upon opposite sides of the same axis and co-operating with the revoluble wheel and driven gear to alternately lock one and release the other, two or more movable frames for vibrating the respective pairs of detents, and a series of graduated cams upon the keys of each set, co-operating with said movable frames to shift the detents at different points in the movement of the driving gear determined by the particular key operated, substantially as described.

22. In a transfer mechanism for registering machines employing two sets of operating keys actuating respectively a primary and a secondary registering wheel in any suitable manner, the combination of a driving gear for the secondary wheel, a second gear normally disconnected from the primary wheel but intermittently actuated in any suitable manner at predetermined intervals in the revolutions of said wheel, the secondary registering wheel, and a pinion carried by said wheel in driving connection with the two gears, substantially as and for the purpose described.

23. In a transfer mechanism for registering machines the combination of the secondary registering wheel $V'$, the driving gear $K^2$ therefor actuated in any suitable manner by one set of keys, the gear $M^2$ located upon the opposite side of the wheel $V'$ and normally disconnected from the primary registering wheel, but intermittently actuated in any suitable way at predetermined intervals in the revolutions of said wheel, and the pinion $L^2$ mounted in the wheel $V'$ and meshing with the gears $K^2$ $M^2$, substantially as and for the purpose described.

24. In a transfer mechanism for registering machines, the combination of the secondary registering wheel $V'$, the driving gear $K^2$ therefor actuated by one set of keys, the gear $M^2$, the pinion $L^2$ carried by the wheel $V'$ and meshing with the gears $K^2$ $M^2$, the notched disk $R^2$ turning with the gear $M^2$, the housing $S^2$ turning with the primary registering wheel, the cam $V^2$, and the sliding pawl $T^2$ confined in the housing $S^2$ and co-operating with the cam $V^2$ and notched disk $R^2$, substantially as described.

25. In a transfer mechanism for registering machines, the combination of the secondary registering wheel $V'$, the driving gear $K^2$ therefor actuated by one set of keys, the gear $M^2$, the pinion $L^2$ carried by the wheel $V'$ and meshing with the gears $K^2$ $M^2$, the notched disk $R^2$ turning with the gear $M^2$, the housing $S^2$ turning with the primary registering wheel, the cam $V^2$, the sliding pawl $T^2$ confined in the housing $S^2$ and co-operating with the cam $V^2$ and notched disk $R^2$, the locking disk $Y^2$ turning with the primary registering wheel and housing $S^2$ and provided with the notch $Z^2$, and the locking rod $W^2$ co-operating with the disk $T^2$ and with the notches in the disk $R^2$, substantially as described.

26. In a transfer mechanism for registering machines, the combination of the revoluble notched disk $R^2$, the fixed cam $V^2$, a pawl-support or housing, as $S^2$, interposed between the cam $V^2$ and disk $R^2$, the sliding pawl $T^2$ carried in the housing $S^2$ and co-operating with the cam $V^2$ and disk $R^2$, the locking disk $Y^2$ turning with the housing $S^2$ and provided with the notch $Z^2$, and the locking rod $W^2$ co-operating with the disks $Y^2$ and $R^2$, substantially as described.

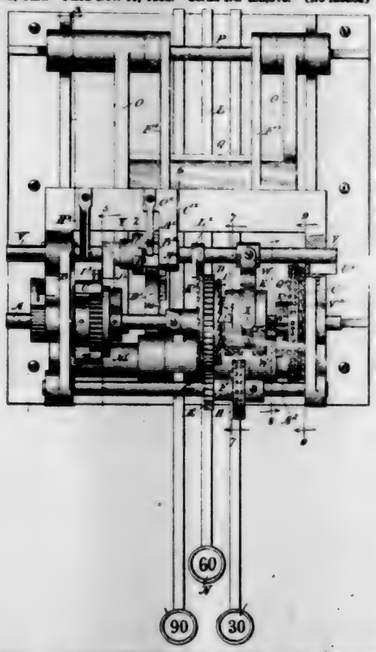
27. In a mechanical movement for registering machines and the like, the combination of a toothed segment fast upon a revoluble support, as a shaft or sleeve, two parallel racks reciprocating upon opposite sides of the segment and adapted to alternately engage it, a pinion loose upon the segment-support, two auxiliary racks co-operating with said pinion, and a connection between the pinion and the segment-support for moving the latter at the ends of the opposite strokes of the first mentioned racks, for the purpose of carrying the segment into engagement with one rack after it has been disengaged from the other, substantially as described.

28. The combination of the revoluble segment $G^2$ fast upon a suitable support, as the sleeve $F^2$, the pinion $J^2$ loose upon said support, the pawl $N^2$ carried by the pinion $J^2$ and co-operating with projections upon the segment-support, the reciprocating racks $H^2$ $I^2$ co-operating with the segment $G^2$, and the auxiliary racks $K^2$ $L^2$ co-operating with the pinion $J^2$, substantially as and for the purpose described.

29. In a registering machine, the combination of a series of operating keys, a movable bar or frame common to and moved by the keys and to which each key becomes attached when displaced from normal position, a toothed segment fast upon a revoluble support, as a shaft or sleeve, a ratchet also fast upon said support and a pawl co-operating with the ratchet to prevent reverse movement of the segment, two parallel racks carried by the movable bar or frame and reciprocating upon opposite sides of the segment and adapted to alternately engage it, a pinion loose upon the segment support, two auxiliary racks co-operating with said pinion, and a connection between the pinion and the segment-support for moving the latter at the ends of the opposite stroke of the first-mentioned racks, for the purpose of carrying the segment into engagement with one rack after it has been

disengaged from the other, substantially as and for the purpose described.

## 503,947. CASH REGISTER AND RECORDER. Hugo Cook, Dayton, Ohio. Filed Nov. 19, 1892. Serial No. 452,570. (No model.)




*Claim.*—1. The combination of a series of operating keys representing different amounts, a driving member actuated thereby, a driven member, and means for connecting the two members, controlled by the keys and operating to connect the driving member with or disconnect it from the driven member at different points in the movement of the driving member determined by the particular key operated, for the purpose of imparting to the driven member different portions of the movement of the driving member, substantially as described.

2. The combination of a series of operating keys representing different amounts, a driving member actuated thereby, a driven member, a clutch or connecting member for intermittently connecting the driving and driven members, and means controlled by the operating keys for shifting the clutch at different points in the movement of the driving member, for the purpose of imparting to the driven member different portions of the movement of the driving member, substantially as described.

3. The combination of a series of operating keys representing different amounts, a vibrating frame common to the keys and moved by the operation of any one of them, a driving member, a rack and pinion connection between said driving member and the vibrating frame, a driven member, a clutch or connecting member for intermittently connecting the driving and driven members, and means controlled by the operating keys for shifting the clutch at different points in the movement of the driving member, substantially as and for the purpose described.

4. The combination of a series of operating keys representing different values, a vibrating frame common to the keys and moved by the operation of any one of them, a driving member, a rack and pinion connection between said driving member and the vibrating frame, a driven member, a clutch or connecting member for intermittently connecting the driving and driven members, a shifter for the clutch, a second vibrating frame common to the series of keys and given different degrees of movement by the operations of different keys, and a connection between said frame and the shifter for actuating the latter to shift the clutch at different points in the stroke of the respective keys, substantially as and for the purpose described.

5. The combination of a series of operating keys representing different values, a driving shaft actuated by said keys, a wheel loose upon said shaft, a clutch or connecting member mounted to slide upon but turn with the shaft and co-operating with the wheel to intermittently connect it with the shaft, and means controlled by the operating keys to shift the clutch at different points in the movement of the driving shaft for the purpose of imparting different portions of its movement to the wheel, substantially as described.

6. The combination of a series of operating keys representing different amounts, a vibrating frame common to said keys and moved by the operation of any one of them, a driving shaft, a rack and pinion connection between said shaft and the vibrating frame, a wheel loose upon the shaft, a clutch or connecting member mounted to slide upon but turn with the shaft and co-operating with the wheel to intermittently connect it with the shaft, a shifter for the clutch, a second vibrating frame common to the series of keys and given different degrees of movement by the operations of different keys, and a connection between said frame and the shifter for actuating the latter to shift the clutch at different points in the strokes of the respective keys, substantially as and for the purpose described.

7. The combination of a series of operating keys representing different amounts, a driving member actuated thereby, a driven member, a clutch or connecting member for intermittently connecting the driving and driven members, means controlled by the operating keys for shifting the clutch at different points in the movement of the driving member, and a lock actuated by the keys to lock the driven member while it is disconnected from the driving member and to release it when connected with said member, substantially as described.

8. The combination of a series of operating keys representing different amounts, a driving member actuated thereby, a driven member, a clutch or connecting member for intermittently connecting the driving and driven members, a shifter for the clutch actuated by the operating keys to shift the clutch at different points in the movement of the driving member, and a lock for the driven member actuated by the shifter to lock said member when the clutch is shifted in one direction and to release it when it is shifted in the other direction, substantially as described.

9. The combination of a series of operating keys representing different amounts, a driving member actuated thereby and having a uniform movement at each operation, a driven member, and means controlled by the operating keys for connecting and disconnecting the two members, to cause the driven member to be turned at each operation from initial position to a point determined by the operated key during one-half of the movement of the driving member, and to be turned to initial position during the other half of the movement of the driving member.

10. The combination of a series of operating keys representing different amounts, a driving member actuated thereby and having a uniform movement at each operation, a driven member, and means controlled by the operating keys for connecting and disconnecting the two members, to cause the driven member to be turned at each operation from initial position to a point determined by the operated key during the first half of the movement of the driving member, and to be turned thence to initial position during the second half of the movement of the driving member.

11. The combination of a series of operating keys representing different amounts, a revoluble driving shaft actuated thereby and given a uniform movement by the operations of the different keys, a driven member loose upon the shaft, a connecting member mounted to slide upon the shaft and turn with it and provided with two driving projections co-operating alternately with a projection upon the driven member, and means controlled by the operating keys for shifting the connecting member toward and from the driven member at points in the movement of the driving shaft determined by the particular key operated, substantially as and for the purpose described.

12. The combination of a series of operating keys representing different amounts, a revoluble driving member actuated thereby and turning in one direction only, a driven member also revolving in one direction only, and means controlled by the operating keys for connecting and disconnecting the driving and driven members for the purpose of imparting to the latter different portions of the movement of the former, substantially as described.

13. The combination of a series of operating keys representing different amounts, a revoluble driving member actuated thereby and turning in one direction only, a driven member revolving on the same axis and in one direction only, and means controlled by the operating keys for connecting and disconnecting the driving and driven members, substantially as and for the purpose described.

14. The combination of a series of operating keys representing different amounts, a revoluble driving member actuated thereby and turning in one direction only, a driven member revolving on the same axis and in one direction only, a clutch for intermittently connecting the driving and driven members, and means controlled by the operating keys for shifting the clutch at different points in the movement of the driving member, substantially as and for the purpose described.

15. The combination of a series of operating keys representing different amounts, a revoluble driving member actuated thereby and turning in one direction only, a driven member revolving on the same axis and in one direction only, a clutch or connecting member interposed between the driving and driven members and revolving with the driving member, for intermittently connecting the two members, and means controlled by the operating keys for shifting the clutch at different points in the movement of the driving member, substantially as and for the purpose described.

16. The combination of a series of operating keys representing different amounts, a revoluble driving shaft actuated thereby and turning in one direction only, a driven member loose upon said shaft, a clutch or connecting member mounted to slide upon and turn with the shaft and adapted to be engaged with and disengaged from the driven member, and means controlled by the operating keys for shifting the clutch at different points in the movement of the driving shaft, substantially as and for the purpose described.

17. The combination of a series of operating keys representing different amounts, a revoluble driving member actuated thereby and turning in one direction only, a driven member also revolving in one direction only and moving at each operation first to a point determined by the operated key and thence to initial position, and means controlled by the operating keys for connecting and disconnecting the driving and driven members, substantially as and for the purpose described.

18. The combination of a series of operating keys representing different amounts, a revoluble driving member actuated thereby and turning in one direction only, a driven member also revolving in one direction only and moving at each operation first to a point determined by the operated key and thence to initial position, a clutch or connecting member interposed between the driving and driven members for intermittently connecting them, and means for shifting the clutch at different points in the movement of the driving member, substantially as and for the purpose described.

19. The combination of a series of operating keys representing different amounts, a driving member actuated thereby, a driven member, and means controlled by the operating keys for connecting the driving and driven members at different points in the movement of the driving member and disconnecting them at a fixed point at each operation, substantially as and for the purpose described.

20. The combination of a series of operating keys representing different amounts, a driving member actuated thereby, a driven member, an interposed clutch or connecting member for intermittently connecting the driving and driven members, and means controlled by the operating keys for shifting the clutch in one direction at different points, to connect the driving and driven members, and in the opposite direction at a fixed point to disconnect them, substantially as described.

21. The combination of a series of operating keys representing different amounts, a driving member actuated thereby, two independently movable driven members, and means controlled by the operating keys for alternately connecting said driven members with the driving member, whereby the movement of the driving member, or a definite part thereof, is divided between the two driven members in proportions determined by the particular key operated.

22. The combination of a series of operating keys representing different amounts, a driving member actuated thereby, two independently movable numbered wheels having their numbers arranged in reverse order relatively to the directions of movement of the respective wheels, and means controlled by the operating keys for alternately connecting the two wheels with the driving member, whereby the movement of the latter, or a definite part thereof, is divided between the two wheels in proportions determined by the particular key operated.

23. The combination of a series of operating keys representing different amounts, a driving member actuated thereby, a registering wheel and an independently-movable type-wheel, having their numbers arranged in reverse order relatively to the directions of movement of the two wheels, and means controlled by the operating keys for alternately connecting the two wheels with the driving member during the first half of the movement of the latter, substantially as described.

24. The combination of a series of operating keys representing different amounts, a driving shaft actuated thereby, two independently-movably wheels loose upon said shaft, a sliding clutch mounted upon and turning with the shaft between the two wheels, and means controlled by the operating keys for shifting the clutch at different points in the movement of the driving shaft, substantially as described.

25. The combination of a series of operating keys representing different amounts, the driving shaft A, mechanism intermediate said shaft and keys for turning the shaft, the wheel D loose upon the shaft and provided on one side with the clutch teeth I and on the opposite side with the locking ratchet K', the clutch member K mounted to slide upon and turn with the shaft and provided with one or more teeth J adapted to co-operate with the teeth I, an endwise movable shaft V connected with the clutch member K for shifting the latter, the locking arm L' fast, upon the shaft V and co-operating with the ratchet K' upon the wheel D, and means intermediate the operating keys and shaft V for moving the latter endwise at different points in the movement of the driving shaft A, substantially as described.

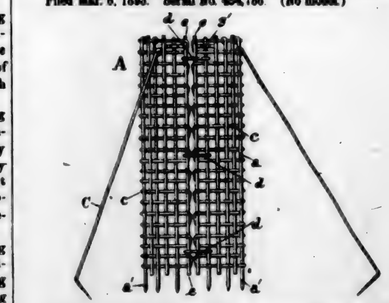
26. The combination of the operating keys L representing different amounts, the revoluble driving shaft A, means intermediate the keys and shaft for turning the latter, the wheel Q' loose upon the shaft and provided with a projection, as T', the sliding member K mounted to slide upon and turn with the shaft A and provided with the two projections R' S' adapted to co-operate with the projection T', and means controlled by the operating keys for shifting the member K toward and from the wheel Q', substantially as and for the purpose described.

27. The combination of the operating keys L representing different amounts, the revoluble driving shaft A, means intermediate the keys and shaft for turning the latter, the wheel Q' loose upon the shaft and provided with a projection, as T', and with the locking ratchet V', the sliding member K turning with the shaft and provided with two projections R' S' adapted to co-operate with the projection T', the endwise moving shaft V connected with the member K and provided with the locking plate U co-operating with the ratchet V' on the wheel Q', and means controlled by the operating keys for moving the shaft V endwise to carry the member K toward and from the wheel Q', substantially as and for the purpose described.

28. The combination of the wheel V', the independently-revoluble notched collar X', the fixed locking ring Y', and the arm W' carried by the wheel Q', and co-operating with the collar X' and provided with the locking tooth Z' co-operating with the ring Y', substantially as and for the purpose described.

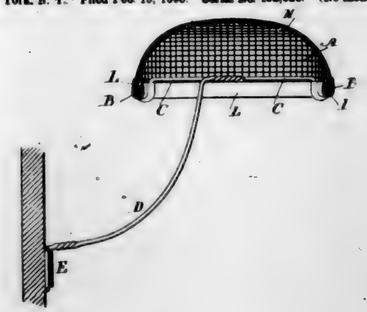


## 503,948. TREE-PROTECTOR. James M. Crews, Arlington, Tenn. Filed Mar. 6, 1893. Serial No. 464,786. (No model.)




*Claim.*—A tree-protector consisting of a flexible cylindrical guard of woven wire having vertical free-edges and means for securing the same together; and a yoke for embracing the trunk of the tree to keep it centered with respect to the guard, said yoke consisting of a wire doubled upon itself at the center to form two horizontal spring-arms united by the bend, *f*, the free ends of said arms being attached respectively to the free edges of the guard, and the bend, *f*, being connected to the said guard at a point diametrically opposite said vertical free edges, said spring-arms having oppositely disposed semi-circular bends, $g^4$, whereby when the guard is closed about a tree the said semi-circular bends will embrace the trunk of said tree, substantially as described.

## 503,949. HAT OR BONNET HOLDER. George Crouch, New York, N. Y. Filed Feb. 13, 1893. Serial No. 462,026. (No model.)

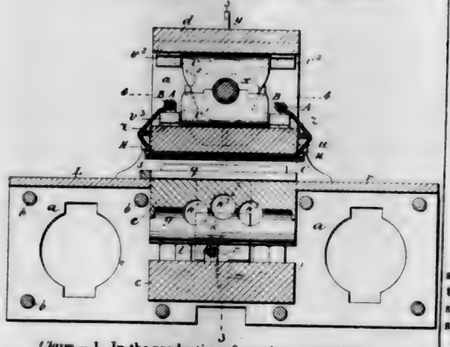


*Claim.*—1. A holder for a hat, bonnet or similar article, composed of an open-work form of woven wire, wire bars to support the form, and a bracket connected to the bars for supporting such open work form, substantially as set forth.

2. A holder for a hat, bonnet or similar article, composed of an openwork form of woven wire, wire bars supporting the form, and a bracket connected to the bars for supporting such open-work form, and a covering to the open-work wire of fibrous material secured at the edges, substantially as set forth.

3. The hat or bonnet holder consisting of an open work form of wire, cross wires at the base of the form and a bracket composed of two wires connected to the cross wires near their middle portions substantially as specified.

**503,950. STEREOTYPING.** GEORGE EASTWOOD, Norwich, England. Filed Mar. 1, 1893. Serial No. 464,190. (No model.)



*Claim.*—1. In the production of matrices or molds for stereotyping the process which consists in, first suspending a moist flong above the type form, then while so suspended partially drying the moist flong by means of heat until the superfluous moisture is driven out and the adhesive and other substances of which the flong is composed are consolidating, and then pressing the flong while hot and in the act of consolidating upon the form so as to take an impression of same, substantially as and for the purpose hereinbefore described.

2. The process of producing matrices or molds for stereotyping which consists first in partially drying the moist flong while it is suspended between a platen and the top of a heating chamber which also constitutes the type bed, secondly in taking the required impression upon the partially dried flong while hot between a form on said type bed and said platen, and thirdly in drying the resulting matrix or mold while it is suspended between said platen and the top of said heating chamber, substantially as and for the purpose set forth.

3. In apparatus for producing matrices or molds for stereotyping, a platen movable up and down and carrying a flong, in combination with a type bed below said platen and carrying a form of type opposite to the platen, and a heating chamber beneath said type bed, having outlet openings at top, and supplying an upward current of heated air to dry said flong, whereby when carried by said platen said flong is surrounded by a rising current of heated air throughout its manipulations, substantially as and for the purpose hereinbefore described.

4. In an apparatus for producing matrices or molds for stereotyping, a platen, in combination with a heating chamber opposite said platen, the top of which chamber constitutes the type bed, said chamber having transverse flues for the hot air, vertical side passages, and openings in top of said chamber, whereby the hot air escapes by said openings, substantially as and for the purpose hereinbefore described.

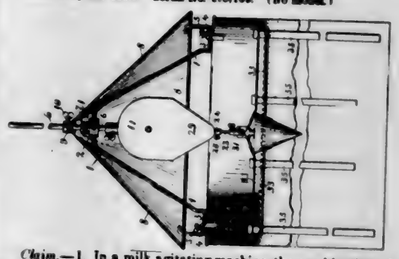
5. In an apparatus for producing matrices or molds for stereotyping a platen in combination with a heating chamber having transverse flues, vertical side passages and top openings for the passage of hot air as set forth, and shutters whereby the flow or passage of the hot air can be regulated, substantially as hereinbefore described.

6. In apparatus for producing matrices or molds for stereotyping, the combination with a platen adapted to be brought down toward the form of type, and a bed beneath said platen of guides on the under side of said platen adapted to receive a holder containing the flong to be impressed, substantially as and for the purpose hereinbefore described.

7. In apparatus for producing matrices or molds for stereotyping, the combination with a platen adapted to be brought down toward the form of type, and a bed beneath the platen of spring arms on the under side of said platen, and guides carried by said arms and adapted to receive a holder containing the flong to be impressed, whereby when the platen is brought down to produce the impression the guides somewhat yield, and when the platen is again lifted the guides together with the flong and its holder are moved out of contact with the blank and platen, substantially as and for the purpose hereinbefore described.

8. The combination of a heating chamber *e* the top of which constitutes a type bed, hot air outlets *j j* in top of said chamber, a frame D adapted to hold a flong, guides C C to receive the sides of said frame, a platen *u* carrying said guides, and means for lowering and raising said platen whereby a flong held in said frame when in said guides can be forced down upon a form placed on said type bed to take an impression of said form and be then raised clear of said form while still held in said frame in said guides.

**503,951. MILK-AGITATOR.** BENJAMIN SWING, Brighton, Canada. Filed May 22, 1893. Serial No. 475,169. (No model.)



*Claim.*—1. In a milk agitating machine, the combination of the supporting frame having means whereby it is secured on a milk can, the vertical rod carried by the central hub of said frame, and the shield as specified and secured adjustably on said vertical rod, substantially as shown and described.

2. In a milk agitating machine, the combination, of the supporting frame having means whereby it is secured on a milk can, the vertical rod adjustably secured in the hub of said frame, the clockwork motor secured on the lower end of said rod, and the float connected to the clockwork motor and having cross arms adapted to carry immersed strips, to agitate the milk, substantially as shown and described.

3. In a milk agitating machine, the combination of the supporting frame having means whereby it is secured on a milk can, the vertical rod adjustably secured in the hub of said frame, the shield adjustably secured on said rod above said frame, the clockwork motor secured to the lower end of said rod, and the float having radial arms carrying immersed strips, and means on said float whereby it is connected to said motor, substantially as shown and described.

**503,952. STUFFING-MACHINE.** JOHN FATKA, Racine, Wis. Filed Mar. 6, 1893. Serial No. 464,637. (No model.)

*Claim.*—1. In a stuffing machine, the combination, of a standard, a lever pivoted thereto, an arm depending from the end of the lever and provided upon its lower end with a stuffing head, and a second arm intermediate the first-named arm and the pivotal point of the lever, said arm depending from the lever to one side of the center thereof at a point nearest the pivot, substantially as set forth.

2. In a stuffing machine, the combination of a standard, a lever pivoted thereto, depending arms connected to said lever by links, one of said arms provided with a stuffing head and the other with a step or treadle, parallel guiding bars projecting from the standard, and through which the depending arms pass, and means for returning the lever to its normal position after depression, substantially as set forth.

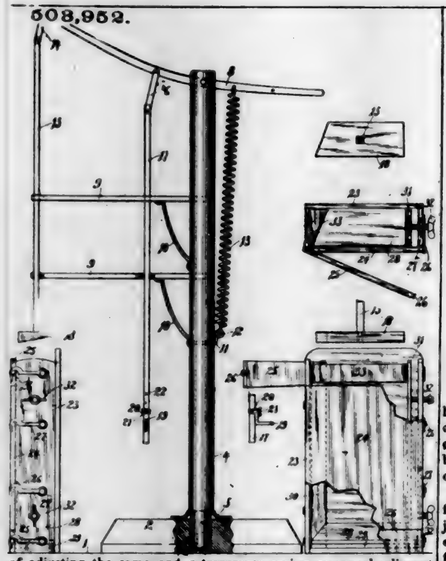
3. In a stuffing machine, the combination of a receptacle, having an open upper end, and one of its side edges inclined upon its inner side, a block arranged parallel to the opposite side edge of the casing, screws passing through said side edge and engaging the block, and operating mechanism carrying a stuffing head adapted to be passed into the receptacle, substantially as set forth.

4. In a stuffing machine, the combination of a receptacle, having an open upper end and a closed lower end, an inclined block against the inner side of said closed end, means for adjusting the position of said block to regulate the length of the receptacle, and operating mechanism carrying a stuffing head adapted to be passed into the receptacle, substantially as set forth.

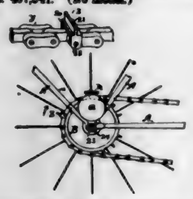
5. In a stuffing machine, the combination of a receptacle having an open upper end, a longitudinal block arranged within the interior of said receptacle and parallel with one of the side edges, screws passing through said side edges and engaging the block for the purpose of adjusting the same, and a transverse spring arranged adjacent to the open end of the receptacle, said spring having its ends bent at right angles, one of said ends bearing against the adjustable block, and the opposite end against the side edge of the receptacle, and operating mechanism carrying a stuffing head adapted to pass into the receptacle, substantially as set forth.



**503,952.**



**503,953. CYCLOMETER.** CHARLES F. FERNALD, Boston, Mass., assignor of one-half to Aloysius J. Ochs, same place. Filed Mar. 23, 1893. Serial No. 467,341. (No model.)



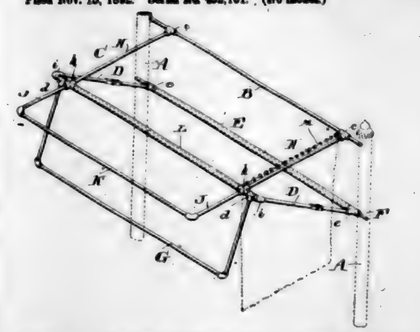
*Claim.*—1. The combination with a velocipede of a cyclometer provided with means of attachment thereto, and with means for actuating its registering mechanism as a lever or star wheel; of an intermittent striker located upon the chain which conveys motion from the treadles to the working wheel.

2. A cyclometer consisting of an inclosing case and registering mechanism hinged thereto, and a locking ring; the said inclosing case being provided with means of attachment to a velocipede, and supporting a shaft having upon its outer end outside of the said case a star wheel, and upon its inner end inside of the said case a pinion adapted to engage with the said registering mechanism when it is within the case and to be detached therefrom when it is opened outward.

3. The combination with a velocipede of a cyclometer provided with means of attachment thereto, and with means for actuating its registering mechanism as a lever or star wheel, the said mechanism being provided with means whereby one of its wheels may be removed from gear; of an intermittent striker which conveys motion from the driving chain to the said registering mechanism.

4. The combination with a velocipede of a cyclometer provided with means of attachment thereto, and with means for actuating the registering mechanism as a lever or star wheel upon the outside of the cyclometer case; and an intermittent striker located upon the chain which conveys motion from the treadles to the working wheel, the said chain being of greater length than the circumference of the driven sprocket wheel, as and for the purpose set forth.

**503,954. FOLDING CANOPY FOR BEDSTEADS.** ISIDOR I. GIBSON, Philadelphia, Pa., administrator of Theodore T. Woodruff, deceased. Filed Nov. 15, 1892. Serial No. 452,101. (No model.)



*Claim.*—1. A canopy for bedsteads &c., consisting of a frame hinged at its inner end to a stationary frame, jointed arms on each side of the frame connected therewith at one end and having their other ends pivotally supported by the stationary frame, and a connection between the jointed arms whereby they will bend together to raise or lower the hinged frame.

2. A canopy for bedsteads consisting of a stationary frame, a folding frame supported at its inner end by the stationary frame, jointed arms on each side connected with the folding frame at one end and at their other ends pivotally supported by the stationary frame, and a connection between the jointed side arms, whereby they will bend together to raise or lower the folding frame.

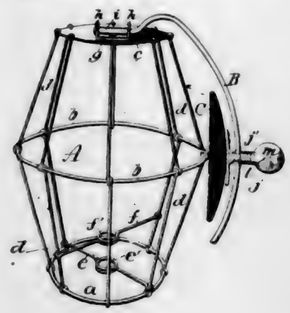
3. A canopy for bedsteads &c., consisting of a frame hinged at its inner end to a stationary frame, jointed arms on each side of the frame connected therewith at one end and having their other ends pivotally supported by the stationary frame, a connection between the jointed arms whereby they will bend together to raise or lower the hinged frame, and a folding frame carried by the hinged frame and free to swing over the outer end thereof.

4. A canopy for bedsteads &c., consisting of a stationary supporting frame, a folding frame hinged thereto at one end, and a second folding frame hinged to the first and free to be turned over the free end thereof.

5. A canopy for bedsteads &c., consisting of a stationary frame, a folding frame hinged thereto at one end, a second swinging folding frame carried by the first and free to be turned over the outer end thereof, jointed arms connected each at one end to one side of the first folding frame, and a rotary rod connecting the other ends of the jointed arms.

6. A canopy consisting of a swinging frame C composed of the side rods H, H and J, J and the end cross rod K the rods H and J on each side being united by the couplings *h*, *h*, the cross rod passing through the couplings *h*, *h*, the jointed arms D, D, connected with the ends of the rod I, and the swinging frame G connected with the rod I between the couplings *h*, *h* and the ends of the arms D, D, said frame G being free to swing over the end of frame C.

**503,955. GUARD AND REFLECTOR.** CARL J. GIDDINGS and GEORGE W. GIDDINGS, Rutland, Vt. Filed May 6, 1893. Serial No. 473,260. (No model.)



*Claim.*—1. As a new article of manufacture, a guard adapted to be placed on a gas burner, a bracket pivoted to said guard and a reflector carried by said bracket, substantially as set forth.

2. A guard for a gas burner, comprising a lower ring, a central ring, a top plate, wires connecting said rings and top plate, and devices for supporting said guard on a gas burner, substantially as set forth.

3. The combination with a guard or cage for a gas burner, of a cross bar having an eye at a point between its ends, and another cross bar having an eye located above the first mentioned cross bar, said eyes being adapted for the reception of a gas burner, substantially as set forth.

4. The combination with a guard or cage for a gas burner, of a plate pivoted thereto, a bracket connected with said plate and a reflector supported by said bracket, substantially as set forth.

5. The combination with a guard or cage, of a plate pivoted thereto and provided with perforated ears, a bracket passing through said perforated ears and a reflector supported by said bracket, substantially as set forth.

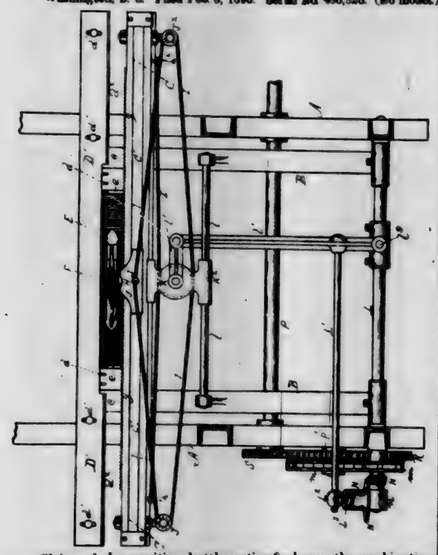
6. The combination with a bracket and a reflector, of an arm secured at one end to said reflector, a bar or short rod having an elongated slot to receive the arm on the reflector, and provided with a screwthreaded portion, said bracket being also adapted to pass through said elongated slot, and an internally screwthreaded thumb piece adapted to screw on said bar or short rod, whereby to clamp the reflector to its supporting bracket, substantially as set forth.

7. The combination with a guard or cage adapted to be fitted to and supported upon a burner, of a reflector, and an arm swiveled to the cage or guard and to which the reflector is connected, substantially as set forth.

8. The combination with a guard or cage adapted to be fitted to and supported upon a burner, of a reflector, and an arm swiveled to the cage or guard and to which the reflector is adjustably connected, substantially as set forth.

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**503,956.** POSITIVE SHUTTLE-MOTION FOR LOOMS. EDMUND H. GRAHAM, Biddeford, Me., assignor of one-half to Levi Woodbury, Washington, D. C. Filed Feb 3, 1893. Serial No. 460,823. (No model.)



*Claim.*—1. In a positive shuttle motion for looms, the combination of the shuttle supported and steadied at three points only, a pinion supporting it at one point said pinion being located at the center of the under side of said shuttle, the lower rail, a rack on the lower rail engaging said pinion, the upper rail, guides and guide-pins supporting and steadying the shuttle at two points on its upper side, said guides and pins being secured to the upper rail, and a traveler having a depression in which the said pinion rests whereby the shuttle is driven without the use of rolls, substantially as set forth.

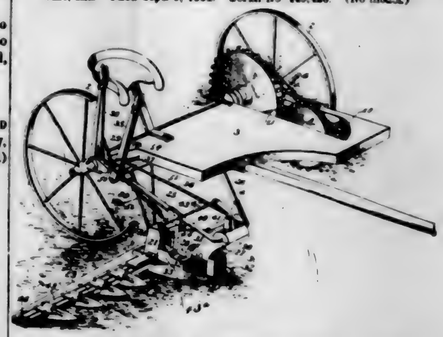
2. In a positive shuttle motion for looms, the combination of the shuttle provided with a longitudinal groove on its upper side, the pinion *f* having its bearings in said shuttle centrally near the under side, the lower rail, the rack *g* on the lower rail engaging said pinion, the traveler or carrier carrying the shuttle, the upper rail, the guide-bar *D'* secured to the upper rail, and guide-pins *g* extending downward from said guide-bar, substantially as described.

3. In a positive shuttle motion for looms, the combination of a pair of rails between which the warp extends a guide for the shuttle secured to the upper rail, a shuttle reciprocated between said rails, a pinion secured centrally to said shuttle a rack secured to the lower rail, and a traveler provided on its upper side with a recess or concavity fitting said pinion whereby horizontal motion is imparted thereto and thence to the shuttle, substantially as set forth.

4. The combination of the lay, the lower rail, the carrier or traveler H sliding in the lower rail, the sliding block K sliding in a groove in the lower rail and on a horizontal rod supported by the lay swords, pulleys J $J^1$ in said block, pulleys $J'$ $J^2$ supported by the lay at opposite ends thereof, a cord fastened to the traveler and passing around said pulleys and with its ends secured to the lower rail, link $I^2$ connecting the block and the lever $I$, lever $I$ pivotally secured to said link and the rocker shaft L, rocker shaft L, crank $L^2$, connecting rod L' having ball and socket connections with the lever $I$ and crank $L^2$, the bevel gear N integral with the crank and loose on the post *n*, bevel gear N' loose on the rocker shaft and engaging with the gear N, sprocket wheel $N^2$ integral with the gear N', stud P', and elliptical gear R' and eccentric gear S in engagement with the elliptical gear and fast on said stud P', substantially as described.

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**503,957.** MOWING-MACHINE. WILLIAM P. GRANNIS, Wolcottville, Ind. Filed Sept. 9, 1892. Serial No. 445,429. (No model.)



*Claim.*—1. In a mower, the combination of an axle, a main frame mounted thereon, a shaft journaled in suitable bearings at the rear end of the main frame, gearing connecting the shaft with the axle, a coupling frame having its rear end connected with the main frame, cutting mechanism arranged at the front end of the coupling frame, a disk carried by the shaft, and provided with an eccentrically arranged rectangular socket the sectional bearing block mounted in the socket of the disk and provided with a socket, and a bell-crank lever fulcrumed at its angle on the coupling frame, and having one arm provided with a ball and arranged in said socket and having its other arm extended forward to the cutting mechanism and connected with the sickle bar, substantially as described.

2. In a mower, the combination of an axle, a main frame mounted thereon, a shaft journaled at the rear end of the frame, gearing connecting the shaft to the axle, a coupling frame hinged at its rear end to the main frame, cutting mechanism hinged to the front of the coupling frame, a disk mounted on said shaft and provided with an eccentrically arranged socket, a housing secured to the sickle bar of the cutting mechanism and provided with a vertical opening, a sectional bearing block mounted in the opening and provided with a socket, and a bell-crank lever fulcrumed at its angle on the coupling frame and having the ends of its arms arranged in said sockets, substantially as described.

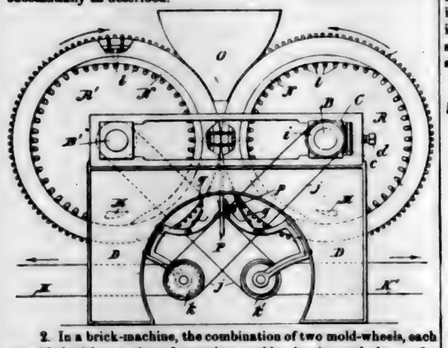
3. In a mower, the combination of an axle, a main frame mounted thereon, a coupling frame, cutting apparatus having a shoe, a coupling block connecting the shoe with the coupling frame, a catch pivotally mounted on the shoe and provided with a recess to engage the coupling frame, a lever, and connections between the upper end of the catch and the lever, said catch forming a part of the connection between the cutting apparatus and the lever, substantially as described.

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**503,958.** BRICK-MACHINE. SAMUEL E. HASKIN, Avoca, N. Y. Filed Apr. 13, 1892. Serial No. 429,025. (No model.)



*Claim.*—1. In a brick-machine the combination of two mold wheels, each provided with a series of complete molds the size and shape of the brick to be formed and having their peripheries in contact, means for rotating the wheels in opposite directions, whereby two bricks are simultaneously formed at the point of contact, and means for separating the two bricks, and delivering them separately, substantially as described.
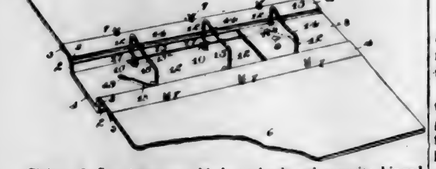


2. In a brick-machine, the combination of two mold-wheels, each provided with a series of complete molds, the size and shape of a brick, discharging devices for the several molds, means for rotating the wheels in opposite directions with their peripheries in contact, whereby two bricks are simultaneously formed at the point of contact, and means for separating the two bricks, substantially as described.

3. The combination, of two wheels rotating in opposite directions, with their rims in contact, and provided each with molds in such relation that the faces of the molds come together at the point of contact thereby forming two bricks simultaneously, and a separating knife or blade having its edge just beneath the line of contact, substantially as described.

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**503,959.** TEMPORARY BINDER. FRANK D. HASTINGS and OSCAR H. DURAND, Champion, Mich. Filed Mar. 27, 1893. Serial No. 467,892. (No model.)



*Claim.*—1. In a temporary-binder, a back and opposite hinged covers, in combination with pairs of opposite independent vertical swiveled wire-shafts having their upper ends inwardly and horizontally bent and beveled to form joints, and near their lower ends provided with horizontally disposed cranked portions or arms, connecting-rods loosely connecting the cranked portions of each series of shafts, and springs for normally closing the upper ends of the pairs of opposite shafts, substantially as specified.

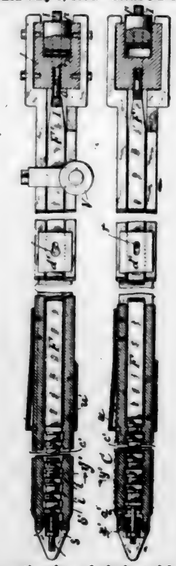
2. In a temporary-binder, the combination with the back, of the opposite series of wire-shafts journaled therein and having their upper ends inwardly-disposed and overlapped and near their lower ends provided with cranked portions, the springs bearing on the cranked portion of a shaft of each series, connecting-rods between the shafts of the series, hinged cover-sections at the sides of the back, clasps thereon, and main cover-sections hinged to said cover-sections beyond the clasp, substantially as specified.

3. In a temporary-binder, the combination with the oblong back having the surrounding wall or flange, the hinged covers at the sides of the flange, and the diaphragm or plate arranged over said side-walls or flanges and secured to the back, opposite bearings formed in the diaphragm or plate and bottom of the cover, wire-shafts journaled in the bearings and having their upper ends inwardly bent, beveled and meeting, and near their lower ends provided between the diaphragm and bottom of the back with cranked portions, connecting-rods between said cranked portions, and flat springs obliquely and oppositely disposed and secured to the bottom of the back and bearing against the cranked portion of a shaft of each series, substantially as specified.

4. The support or base, and the series of independent vertical wire shafts journaled therein at each side of the support or base and adapted to swing laterally, and having their upper ends inwardly and horizontally disposed and overlapping, and horizontal cranks formed near the lower ends of the shafts, in combination with the connecting rods arranged on each side and connecting each series of shafts independently, so that the series on one side work independently of the series on the other side, and yet each series will work in unison, substantially as specified.

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**503,960.** SECTIONAL MANDREL. CAMPBELL P. HIGGINS, New York, N. Y. Filed July 5, 1892. Serial No. 439,059. (No model.)



*Claim.*—1. A sectional mandrel adapted for the formation thereon of tubes of rectangular cross-sectional shape, consisting of longitudinal corner strips, and a core provided with means for moving outward the said corner strips of the mandrel.

2. A sectional mandrel adapted for the formation thereon of tubes of rectangular cross-sectional shape, the same consisting of longitudinal corner strips having a series of interior wedge-shaped and flat faced projections, and between the said longitudinal strips, a core having corresponding projections engaging therewith and means for moving said core longitudinally, substantially as described.

3. In combination with a sectional mandrel, a core provided with means for moving outward the sections of the mandrel, a cylinder attached to the mandrel, a plunger within the cylinder attached to the core of the mandrel, and means for operating the said plunger by fluid pressure.

4. The combination of a sectional mandrel, a core provided with means for moving outward the sections of the mandrel, two cylinders of different sizes attached to the mandrel and plungers therein of different size connected to the said core of the mandrel; the larger for expanding, the smaller for contracting the same by actuating said core in opposite directions, and means for operating the said plungers by fluid pressure.

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**503,961.** END-WELDING MACHINE FOR HEADERS OR OTHER TUBES. CAMPBELL P. HIGGINS, New York, N. Y. Filed July 5, 1892. Serial No. 439,060. (No model.)

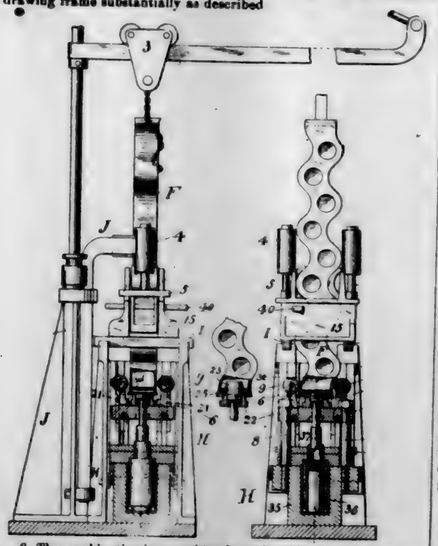
*Claim.*—1. In an end welding machine for headers or other tubes, a series of exterior welding rolls with means for moving them inward, a movable frame adapted for connection to the header for drawing it longitudinally between the said rolls, and means for supporting the end piece during its passage between the rolls as set forth.

2. In an end welding machine for headers or other tubes, a series of exterior welding rolls with means for moving them inward, a movable frame adapted to connect with and move the header longitudinally between the said rolls, and a follower for supporting the end piece during its passage between the rolls.

3. In an end welding machine for headers or other tubes, a series of welding rolls, a movable frame adapted to connect with and move the header longitudinally through the said rolls, a follower, and therein a shearing plate substantially as described, adapted to support the end piece and move with the header between the rolls and shear the surplus metal of the tube simultaneously with the welding.

4. In an end welding machine for headers or other tubes, a series of movably supported welding rolls, a movable frame adapted to connect with and move the header longitudinally through the rolls, and upon said frame, the cams or inclined surfaces such as described, adapted to move the welding rolls inward and subsequently retain them in their inward position during the upward motion of said frame.

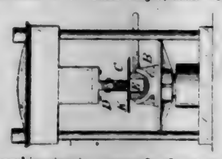
5. In an end welding machine for headers or other tubes, a series of movably supported welding rolls adapted to surround the end of the header, a drawing frame for moving the rolls inward and drawing the header longitudinally through the same, and a draw-box constructed to be attached to the header and to support it upon the said drawing frame substantially as described



6. The combination in a machine for end-welding headers or other tubes, of the movably supported welding rolls, the drawing frame having cams with inclined surfaces adapted to move the welding rolls inward, and means for moving the header longitudinally through the rolls, a hydraulic ram for operating the drawing frame, and a follower for advancing the end piece adapted for engagement with the said ram subsequent to the inward movement of the said rolls and simultaneously with the advancement of the header between the same, substantially as described.

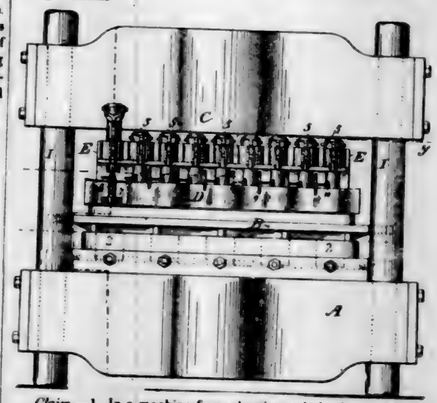
7 In a machine for end welding headers or other tubes, the combination of a series of exterior welding rolls, a drawing frame and means for moving the same to move the rolls inward, and to draw the header longitudinally between the rolls, a draw-box constructed to be attached to the header, a stationary support adapted to hold the draw-box in the path of movement of the drawing frame, fluid pressure cylinders and rams therein for holding the draw-box upon the stationary support, and adapted after the welding rolls have been moved inward, to yield to the motion of the drawing frame when the latter abuts on the draw-box, substantially as and for the purpose specified

## 503,962. DIE FOR FORMING POLYGONAL TUBES. CAMPBELL P HIGGINS, New York, N. Y. Filed July 5, 1892. Serial No. 439,061. (No model.)



*Claim.*—The combination in a press for forming rectangular or other polygonal tubes from a single plate, of a trough shape die corresponding to the exterior of the tube to be formed, having a convex surface fitting into a concave seat or support, a reciprocating compression die or plunger for forcing the plate within the forming die, a mandrel arranged within the trough shaped tube and die, and means for oscillating the forming die into different angular positions to the line of compression.

## 503,963. EMBOSSING AND PUNCHING MACHINE. CAMPBELL P. HIGGINS, New York, N. Y. Filed July 5, 1892. Serial No. 439,062. (No model.)



*Claim.*—1. In a machine for embossing tubular headers having a multiple die composed of a perforated plate arranged exterior to the header, a cooperating forming disk arranged within the header and independently acting retractible rams or crowns, with means for operating the same separately or together whereby one or a series of the same may be operated at will substantially as described.

2. In a machine for embossing tubular headers, a multiple die composed of a perforated plate arranged exterior to the header, a cooperating forming disk arranged within the header and a ram adapted for insertion through the tube holes of the header acting upon said disk, and means for centering said disk with the ram when the latter is advanced, substantially as described.

3. In a machine for embossing tubular headers, a perforated die exterior to the header, a disk interior thereto, a hollow ram aligned with the said perforated die, and provided with a pin to center the disk with the said perforated die and ram when the latter is advanced, substantially as described.

4. In a machine for embossing and punching tubular headers, a throughway die exterior to the header constructed with a marginal countersunk recess, a removable differential disk adapted for insertion within the headers corresponding to the recess and aperture of the exterior die, and a ram acting upon the interior disk, substantially as described

## 503,964. END-PLACING MACHINE FOR HEADERS OR OTHER TUBES. CAMPBELL P. HIGGINS, New York, N. Y. Filed July 5, 1892. Serial No. 439,063. (No model.)

*Claim.*—1. In an end placing machine for headers or other tubes, a vertically movable inserting block for supporting the end piece, means for forcing the header down over the inserting block, and lateral to the inserting block a series of movably supported rams provided with means for moving them radially inward adapted to advance upon the sides of the header after the end piece is inserted, and clinch the same substantially as described.

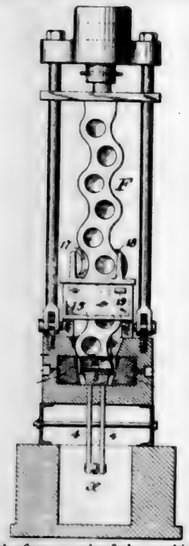
2. In an end placing machine for headers or other tubes, an inserting block, a limiting stop constructed to be attached to the header, an abutment for limiting the descent of the same, and a hydraulic ram for advancing the header against the said block.

3. In an end placing machine for headers or other tubes, an inserting block for the end piece, a stop forming a rest constructed to be attached to the header and support the same vertically upon the machine, and above the header a hydraulic cylinder for advancing the same and a suitable swiveling frame for throwing the cylinder into or out of alignment with the header when active or inactive respectively for the purpose described

4. In an end placing machine for headers or other tubes a series of movably supported rams provided with means for moving them radially inward and compressing the sides of the header, a vertically movable inserting block for the end piece, a rod extending through

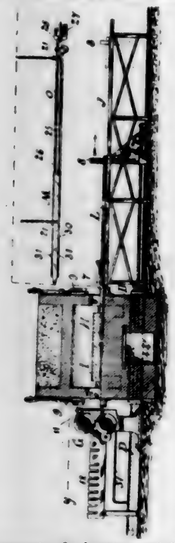


## 503,964.



and movable within the frame work of the machine for moving the said block and means for forcing the header over the block opposite the rams, substantially as and for the purpose described.

## 503,965. METAL-WORKING APPARATUS. CAMPBELL P. HIGGINS, New York, N. Y. Filed July 5, 1892. Serial No. 439,066. (No model.)



*Claim.*—1. In an apparatus for heating and forging metal, the combination of a suitable furnace having a throughway passage, forging rolls aligned with said passage upon one side of the furnace, an actuating plunger and cylinder provided with a fluid supply device and conveying mechanism for the work upon the other side of the furnace adapted to advance said work into and then through the furnace to the rolls; said mechanism consisting in a table, a truck connected to the said cylinder plunger, and interchangeable devices for supporting the work at the different stages of operation substantially as described.

2. In an apparatus for welding tubes, the welding rolls, a conveying mechanism for feeding the work to the rolls, a mandrel adapted to form a welding core for the tube, the same being provided with means for connecting it to the said conveying mechanism, and in the path of the conveying mechanism a suitable heating furnace substantially as described.

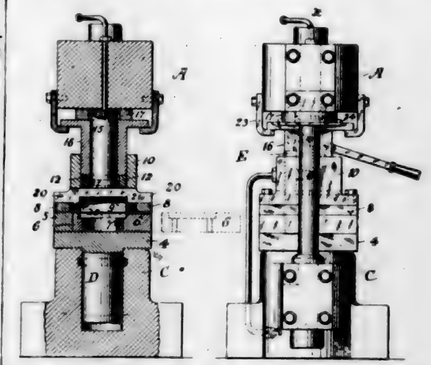
3. In an apparatus for heating and welding tubes, the welding rolls, a conveying mechanism, the through-way furnace interposed between the same and the rolls, a welding mandrel for the tube adapted for attachment to said conveying mechanism, and above the latter a suitable hoist and operating cylinder for placing and removing the mandrel thereon, substantially as described

4. In a tube welding machine, the combination of a suitable welding furnace, welding rolls upon one side thereof, a conveying mechanism upon the other side, a fluid pressure cylinder for operating the conveying mechanism, an expansive mandrel for the tube and operating cylinder for the mandrel adapted for attachment to the said mechanism, and means for supplying pressure to the mandrel cylinder at all positions in the travel of the same, and above the conveying mechanism a suitable hoist for the mandrel and fluid pressure operating cylinder for the hoist.

5. In a machine for welding tubes, the combination with the welding rolls adapted for the passage of the mandrel, and the receiving trough 12, of stripping pawls substantially as described upon the delivery side of the rolls within said trough for the purpose set forth

6. In an apparatus for heating and forging metal, a series of forging rolls, a plurality of furnaces or furnace sections provided with through-way passages aligned therewith, and conveying mechanism for the rolls provided to each said passage, and supporting devices for the work connected to an actuating plunger and cylinder provided with a fluid supply device whereby successive operations on different pieces of work are or may be simultaneously performed.

## 503,966. MACHINE FOR MAKING ENDS FOR HEADERS OR OTHER PURPOSES. CAMPBELL P. HIGGINS, New York, N. Y. Filed July 5, 1892. Serial No. 439,067. (No model.)



*Claim.*—1. In a press for shaping and perforating plates, the combination of two male dies, one for shaping the plate, the other for perforating it, and suitable female dies in alignment therewith, together with means for adjusting one of said male dies with reference to the other in different fixed positions; the one wherein the perforating die projects in advance of the shaping die; the other wherein the shaping die is brought flush or in advance of the said perforating die for the purposes set forth

2. A press fitted with compound dies substantially as described, in combination with telescoping cylinders attached to the respective heads of the press independent of the dies for holding and guiding said dies, substantially as described.

3. A press fitted with compound dies substantially as described, combined with telescoping cylinders attached to the respective heads of the press for holding and guiding the dies, and provided with a lateral channel therethrough extending between the dies for the reception of the plate, substantially as described.

## 503,967. DOLL. ANNIE J. HOLLAND, Boston, Mass. Filed Apr. 19, 1893. Serial No. 471,010. (No model.)

*Claim.*—1. In a doll's head, in combination, eyelids, H, set in eye-openings *a*, supports, E E', for said eyelids, extending therefrom into the head and with their outer ends resting in sockets or loops, D, on the inner side of and rigid with the head, and a weight secured to said eyelid supports, whereby as the eyelids move over the eyes, the

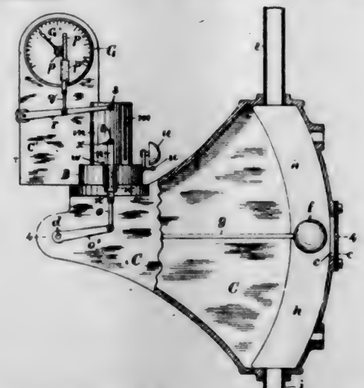
outer or bearing ends of the supports will play in the sockets or loops, substantially as described.



2. In a doll's head, in combination, eyes, B, and lower eyelids, C, rigidly secured in position by means of the supports *b*, and upper eyelids adapted to move by gravity over the eyes through suitable eye-openings as the position of the head is changed, substantially as set forth.

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**503,968. RECORDING STEAM AND WATER GAGE.** EMIL HOLTSAUS, Barren Island, N. Y. Filed Nov. 30, 1892. Serial No. 453,607. (No model.)

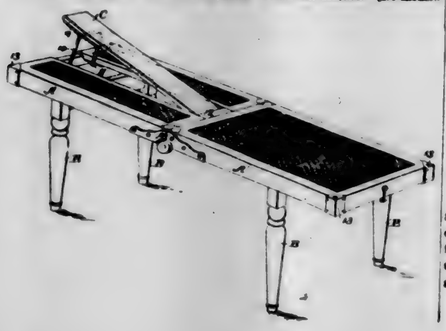


*Claim.*—1. The combination, with the casing C provided at one edge with the transverse spindle *d*, carrying the exterior arm *o'* and the interior float arm *g*, and having the concentric channel *k* at the opposite edge, of the float *f* fixed to the outer end of the arm *g* within the channel *k*, the slider *n* carrying the pencil *t* at one end and connected at the opposite end by means of the link *o* to the arm *o'*, and the cylinder *m* rotated as described, substantially as and for the purpose set forth.

2. A measuring and recording instrument for steam boilers comprising the casing C formed with the integral plate C', the cylinder *m* the clock-work for rotating said cylinder, the float *f* and pencil *t* with means as described for connecting the same, the steam gage G with pinion *p* fixed upon its spindle, the rack *p'* fitted to the guide *p*², the arm *r* pivoted to a fixed pin at one end and carrying at the other end the pencil *s* and connected intermediate to its ends to the rack *p'*, the whole arranged and operated as herein shown and described.

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**503,969. CORPSE-DRESSING TABLE.** LAURA B. HUDDLESTON, Winchester, Ind. Filed Feb. 15, 1893. Serial No. 462,529. (No model.)



*Claim.*—1. A corpse dressing table a table top having a removable section adjustable in its inclination by a support engaging a ratchet attached to the removable section, the inner end of the removable section having its bearing in the table frame, as and for the purpose set forth.

2. In a corpse dressing table a table top in two parts hinged together, having a removable section adjustable in its inclination by a support engaging a ratchet attached to the removable section, the inner end of the removable section having its bearing in the table frame as and for the purposes set forth.

3. In a corpse dressing table a table top in two parts hinged together having a removable section adjustable in its inclination by a support engaging a ratchet attached to the removable section, the inner end of the removable section having its bearing in the table frame in combination with supporting legs hinged in the frame of the top and held normally in position to support the top by spring braces attached to the frame at one end and engaging at the free end with a detent in the cross brace to which the legs are attached, as and for the purposes set forth.

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**503,970. OIL-BURNER.** CHARLES INGERSOLL, Indianapolis, Ind. Filed Apr. 4, 1892. Serial No. 427,684. (No model.)



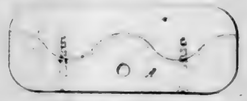
*Claim.*—1. A burner consisting of a hollow top constituting an oil and gas chamber, an oil ingress pipe entering the same at a lower level, hollow pipes or standards communicating therewith at a higher level and extending downwardly, and orifices at a lower level in said pipes or standards, the oil in the chamber being thus generated into gas by the action of the products of combustion of said gas itself, which impinges upon and heats said burner, said burner being mounted upon a plate or base which forms one side of an inclosure, and the openings into which inclosure are through said plate or base directly under said burner, substantially as set forth.

2. The combination, in a burner, of a hollow or chambered upper portion, hollow pipes or standards entering the same at a point intermediate the top and bottom of the chamber, an oil ingress pipe entering the same, centrally and from directly underneath, its upper end terminating at the lowest point of said chamber, and adapted to fill the lower portion of the chamber below the tops of said hollow standards or pipes with oil, said standards or pipes being provided with orifices through which said oil or the gas generated therefrom may emerge and be ignited, substantially as set forth.

3. The combination of a plate C having an annular groove or depression therein, hollow standards E the bottoms of which rest in said depression, which standards are provided with orifices *e*, a hollow top consisting of the parts D and D' said part D being cup-shaped in its center, and a fuel ingress pipe B communicating with said hollow top, said several parts being arranged and operating substantially as shown and described.

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**503,971. PORTABLE FIRE-ESCAPE.** JOHN JEWELL, Bristol, England, assignor of one-half to James Henry Howell, same place. Filed Mar. 16, 1893. Serial No. 466,372. (No model.) Patented in England Oct. 16, 1889, No. 16,270.

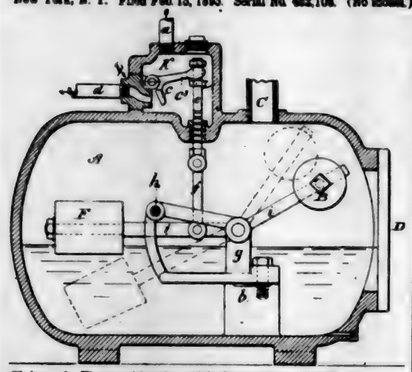


*Claim.*—A portable fire escape, comprising a flat band of flexible and non-combustible material, a sliding block formed in two parts A *a*, one of the said parts being provided with a waved groove B, the screws for securing the said parts together and causing the said band to be clamped with a certain prearranged pressure in the said groove, and a sling attached to the said block, substantially as set forth.

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**503,972. AUTOMATIC FEED APPARATUS.** GEORGE DE LAVAL, Warren, Mass., assignor to the Geo. F. Blake Manufacturing Company, New York, N. Y. Filed Feb. 13, 1893. Serial No. 462,108. (No model.)



*Claim.*—1. The combination with the receiver A having a removable head D by which access is had to its interior, and a steam chest K upon the receiver having inlet and outlet pipes and a valve; of a support within the receiver, a pedestal removably connected to said support, a rocking arm pivoted to said pedestal, an adjustable weight upon one end of said rocking arm, and a float upon the other end thereof and a connection from said rocking arm into the steam chest and to its valve, substantially as set forth.

2. The combination with the receiver A for water of condensation, the removable head D by which access is had to the interior of the receiver, a pump, and a steam chest upon and formed with said receiver and having a steam inlet pipe, a valve, and an outlet pipe leading to the pump; of a support *b* within the receiver, a pedestal *g* removably connected upon the support *b* and having a stopping arm *h*, an obtuse angled rocking arm *i* pivoted to said pedestal, an adjustable weight upon one end of said rocking arm, and a float upon the other end thereof, and a connection from said rocking arm into the steam chest and to its valve, substantially as set forth.

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**503,973. CATHETER-HOLDER.** WILLIAM W. LOVEJOY, Cochituate, Mass. Filed Oct. 4, 1892. Serial No. 447,795. (No model.)



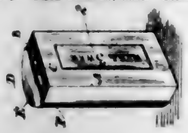
*Claim.*—1. A catheter holder comprising a collar and an arm projecting forwardly and inwardly from the catheter and having separable clamping jaws at its free end, substantially as set forth.

2. A catheter holder, consisting of a collar, a clamping arm movably connected with the collar, and a locking device adapted to hold the arm stationary upon the collar, substantially as shown and described.

3. A catheter holder, consisting of a collar, a clamping arm hinged upon the collar adapted to extend downward beyond one end of the collar, the lower end of the clamping arm being provided with jaws, and a locking device adapted to hold the arm stationary upon the collar, substantially as shown and described.

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**503,974. TICKET-SAFE AND MATCH-HOLDER.** THOMPSON MARTIN, New York, N. Y. Filed June 26, 1891. Serial No. 397,591. (No model.)

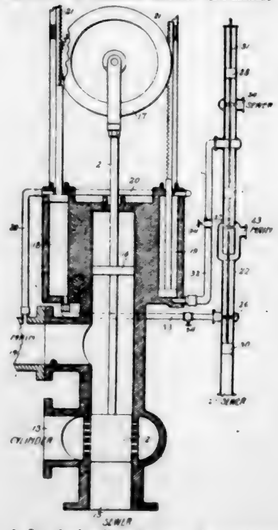


*Claim.*—1. The combined match and ticket safe having a case of one piece of sheet metal with an open end and an opening in one side, a partition to separate the match safe from the ticket holder, a follower and a spring to press the tickets toward the side of the case having the opening and a cover to the match holder, substantially as specified.

2. The combined match and ticket safe having a case with an open end and an opening in one side, a partition to separate the match safe from the ticket holder, a follower and a spring to press the tickets toward the side of the case having the opening and a cover to the match holder hinged to the central partition substantially as specified.

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**503,975. HYDRAULIC-VALVE GEAR.** EDWIN S. MATTHEWS, Cincinnati, Ohio, assignor of one-half to James L. Haven, same place. Filed July 18, 1892. Serial No. 440,315. (No model.)



*Claim.*—1. In a hydraulic valve gear, the combination, substantially as set forth, with a valve to have movement both ways from a neutral position, of a lever pivoted to the stem of such valve, a stop over one end of said lever, a stop under the other end of said lever, power agents holding the ends of the lever against said stops, a power agent for moving the lever from either stop while the other stop acts as a fulcrum, and a movable part, substantially as set forth, for controlling the motion of said last mentioned power agent.

2. The combination, substantially as set forth, of a main valve, a lever centrally pivoted to the stem thereof, a pair of cylinders arranged parallel with each other, a piston in one of said cylinders connected with one end of said lever, a piston in the other of said cylinders connected with the other end of said lever, and a valve to control the motions of said pistons, said pistons being so connected to said valve-stem that when said main-valve is in its neutral position one of said pistons is at one end of its cylinder and the other of said pistons is at the opposite end of its cylinder.

3. In a hydraulic valve gear, the combination, substantially as set forth, of two cylinders, a rack carried by the piston of each cylinder, a floating gear engaging said racks and connected with a main valve, and water-connections and a controlling valve for moving said pistons independently.

4. In a hydraulic valve gear, the combination, substantially as set forth, of two cylinders, a rack carried by the piston of each cylinder, a floating gear engaging said racks and connected with a main valve, a power agent constantly urging the pistons to an extremity of stroke, and water-connections and a controlling valve for moving said pistons independently away from such extremity of stroke.

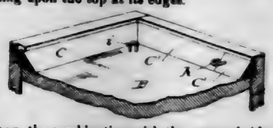
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**503,976. PACKING-BOX.** CLARENCE R. MENGEL, Louisville, Ky. Filed Dec. 6, 1892. Serial No. 454,264. (No model.) Patented in Canada Apr. 7, 1893, No. 42,492.

*Claim.*—1. In a box, the combination with the side A grooved on its inner face as at *a*, of the top fitting within the sides and of a size equal to the inside measurement of the main body of the box.

and the cleat or lining seated in the groove and bearing upon the top, said cleat being held in position by the expansive force of the contents of the box, all substantially as shown and described.

2. In a box, the combination with the side grooved on its inner face, of the top fitting within the sides and cut away along the edges as at *c* to form a shoulder *f*; and the cleats C seated in the grooved side and resting upon the top at its edges.



3. In a box, the combination with the grooved side, of the top, the cleat seated in the groove and bearing upon the top, and the hole or opening for the insertion of a cleat-removing tool.

4. In a packing box, the combination with the recessed sides, of a top or cover fitting within the box and of a size equal to the size of the body of the box; and a cleat-frame also fitting the sides and engaging the latter,—said cleat frame having outer dimensions exceeding those of the top.

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**503,977.** POLICEMAN'S CLUB. ABIEL W. NELSON, New London, Conn. Filed Jan. 19, 1893. Serial No. 458,907. (No model.)



*Claim.*—A policeman's club, composed of a central core piece, and an elastic envelope, constructed in an integral piece, and wholly inclosing said core, substantially as described.

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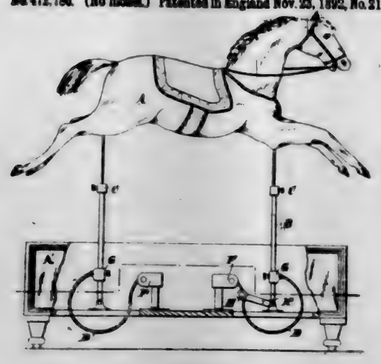
**503,978.** GAME-REGISTER. MICHAEL J. NEUHAUS, Jr., New York, N. Y. Filed Apr. 11, 1893. Serial No. 469,962. (No model.)



*Claim.*—The combination of case *a* with inclosed perforated plate *b*, pivots $b'$, $b^2$, passing through said plate, star wheels, *d*, $d'$, and dials *c*, $c'$, secured to the pivots at opposite sides of the plate, a collar $d^3$, between wheel $d'$ and plate *b*, a face plate *f*, pawl $e'$, and stem $a'$, the wheel *d* having a rearwardly projecting tooth $d^3$, to engage wheel $d'$, at each revolution, substantially as specified.

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**503,979.** ROCKING-HORSE, CRADLE, &c. YOUNG NORRINGTON and HENRY BLADES, Liverpool, England. Filed May 2, 1893. Serial No. 472,786. (No model.) Patented in England Nov. 23, 1892, No. 21,380.

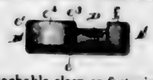


*Claim.*—1. In combination with the base, two columns pivoted thereto and carrying at their upper ends the horse, seat, or cradle,—each column being independently vertically adjustable; two abutments secured to the base; and vertically adjustable springs connecting the columns and the abutments.

2. In combination with the base, two columns pivoted thereto and carrying at their upper ends the horse, seat, or cradle,—each column being independently vertically adjustable; two abutments secured to the base; vertically adjustable springs connecting the columns and the abutments; and a lever connected to one of the columns and extending laterally therefrom; whereby the horse, seat, or cradle may be moved back and forth in a substantially horizontal plane.

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**503,980.** GARMENT-FASTENER. VIRGINIA H. OBERLY, Washington, D. C. Filed Oct. 13, 1892. Serial No. 448,745. (No model.)

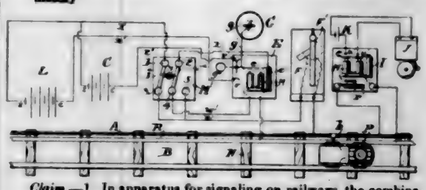


*Claim.*—1. A detachable clasp or fastening formed of one piece of metal comprising the body part D, hook *f*, at one end, and the enfolding part $e^3$, and catch *e*, at the other end, substantially as set forth.

2. A detachable clasp or fastening formed of one piece of metal comprising the body part D, hook *f*, at one end, and the enfolding part $e^3$ and catch *e*, at the other end, said catch being provided with a bevel *k*, substantially as set forth.

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**503,981.** SIGNALING APPARATUS FOR RAILWAYS. JOHN ORME, London, England. Filed Dec. 6, 1892. Serial No. 454,269. (No model.)



*Claim.*—1. In apparatus for signaling on railways, the combination of a commutator or pole changer "M" with the relays "R I" and semaphores "F" upon the train and on the cabin operated by batteries "L. C." which transmit through a conductor "A" a constant current of varying direction substantially as set forth.

2. In apparatus for signaling on railways the combination of the relay "I" having a variable resistance coil "r," with battery "C," bell "J" and relay "E," the whole being arranged so that the two latter can only be operated when the current actuating relay "I" is short circuited by the brush "*b*" and engine wheels "P" substantially as set forth.

3. In apparatus for transmitting signals between the moving train and signal cabin, the combination of the bell "J" upon the engine with relay E' operating said bell, the local battery "K'," in circuit with said bell, and springs "8 8'," closing said bell circuit and controlled by brush "*b*," whereby failure of the constant current is notified to the driver or guard substantially as set forth.

4. In apparatus for signaling between the signal cabin and the moving train the combination of the commutator "M'," the bars of which $1^a$ $2^a$ are coupled to the non-conducting strip Y with the rocking bars 8, the levers 9', connected thereto, and actuating the line semaphore signals, through the pins 7, the springs *m*, stops 9, and circuit connections to the batteries L C, for the purposes set forth.

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**503,982.** TRUCK. HARRY B. OWEN, Manchester, Va. Filed Feb. 25, 1893. Serial No. 463,720. (No model.)

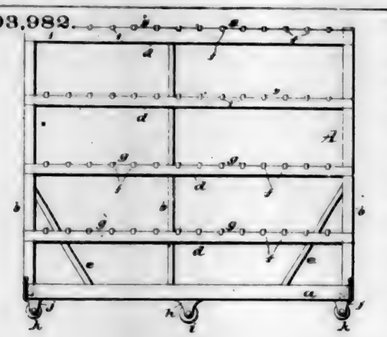
*Claim.*—1. A truck for carrying tobacco consisting of a superstructure comprising base, corner posts, side bars and end cross bars, said superstructure mounted on end and side wheels, the end wheels in a higher plane than the side wheels, substantially as set forth.

2. A truck for carrying tobacco consisting of a superstructure comprising base, corner posts, side bars and end cross bars, said superstructure mounted on end and side wheels, the end wheels pivotally connected with the superstructure and located in a higher plane than the side wheels, substantially as set forth.

3. A truck for carrying tobacco comprising a superstructure mounted on wheels, the superstructure comprising a base, corner posts side bars and end cross bars having notched upper edges and removable strips held in the notches, substantially as set forth.

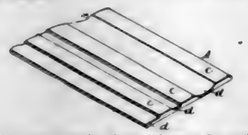


**503,982.**



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**503,983.** PLATED STOCK FOR MANUFACTURE OF JEWELRY. JOHN S. PALMER, Providence, R. I. Filed Dec. 28, 1888. Serial No. 294,630. (No model.)

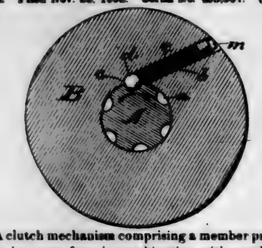


*Claim.*—1. As a new article of manufacture for making plated jewelry, an ingot of precious metal having a surface of pre-determined longitudinal ribs and depressions as set forth.

2. A compound ingot, composed of precious metal having on one of its faces longitudinal parallel ribs and depressions as set forth, and of an ingot or bar of baser metal united to its other face, all substantially as set forth.

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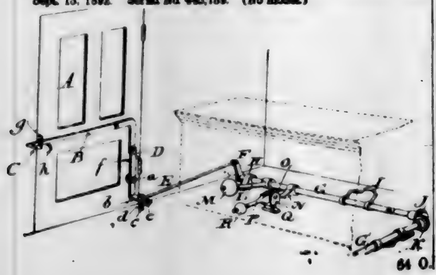
**503,984.** CLUTCH. ARTHUR P. PALMER and HOMER L. PHELPS, Athens, Pa. Filed Nov. 23, 1892. Serial No. 453,207. (No model.)



*Claim.*—A clutch mechanism comprising a member provided with countersinks in its outer face, in combination with another member having a tubular recess, the center line of which is tangential to the other member, a shoulder in said member at the inner end of said recess, a ball in said recess of equal radius to that of the countersinks, and with which said shoulder engages when the ball enters a countersink, a spring in said recess engaging with said ball, and means to adjust the tension of the bearing of said spring upon the ball.

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**503,985.** DOOR-OPERATING DEVICE. CHARLES L. RICE, Granite Falls, Minn., assignor of one-third to Ole H. Sortien, same place. Filed Sept. 13, 1892. Serial No. 445,739. (No model.)

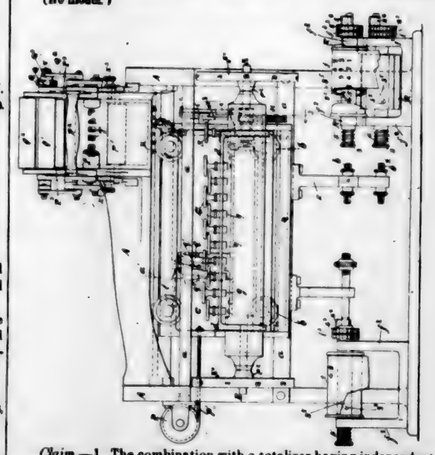


*Claim.*—1. In door-operating mechanism, the combination with the door, of a latch secured thereto, a lever D provided with an outwardly extending arm *b* and pivoted to the door, so as to actuate the latch, a rod E connected with the arm *b* so as to swing horizontally and to rise vertically, the stud or projection *e* secured to the outer end of the arm *b*, and means for reciprocating the rod E.

2. In door-operating mechanism the combination with the door, of a latch therefor, a shaft G and intermediate connections for actuating the latch, a weighted lever L secured to said shaft, a weighted lever P provided with a pivoted dog O and an arm N secured to the shaft and adapted to strike the dog during the closing of the door, all substantially as shown and described.

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**503,986.** CALCULATING AND RECORDING MACHINE. GEORGE RICHMOND, New York, N. Y. Filed May 17, 1890. Serial No. 352,236. (No model.)



*Claim.*—1. The combination with a totalizer having independent indicator wheels for units, tens, &c., of a communicator or thrust-piece movable toward the totalizer and adapted to advance either wheel thereof proportionally to the extent of its movement, a series of stop-keys for determining the extent of its movement, whereby when any key is depressed a totalizer wheel is advanced as many figures as correspond to the value of the depressed key, and a feed for transferring the action of the communicator from one totalizer wheel to the next after each movement, whereby the successive thrust-movements of the communicator are transmitted successively to the respective totalizer wheels.

2. The combination with a totalizer having independent indicator wheels for units, tens, &c., of a communicator or thrust-piece movable toward the totalizer and adapted to advance either wheel thereof proportionally to the extent of its movement, a series of stop-keys for determining the extent of its movement, whereby when any key is depressed a totalizer wheel is advanced as many figures as correspond to the value of the depressed key, said communicator being movable to bring it into operative connection with the several totalizer wheels successively, and a feeding mechanism actuated by the depression of the keys and connected to the communicator to move it each time from the position to operate one totalizer wheel to that for operating the next.

3. The combination with a totalizer having independent indicator wheels for units, tens, &c., of a communicator or thrust-piece movable toward the totalizer and adapted to advance either wheel thereof proportionally to the extent of its movement, a rotatable arbor connected to said communicator to impart motion thereto, a series of stop-keys adapted to arrest the arbor after it has executed angular movements corresponding to the values of the respective keys, and means for rotating the arbor upon the depression of any key, whereby the extent of movement of the arbor and communicator, and the consequent advance of the totalizer, are determined by the particular key depressed, and a feed for transferring the action of the communicator from one totalizer wheel to the next after each movement.

4. The combination with the totalizer, of a communicator or thrust-piece adapted to advance the totalizer proportionally to the extent of its movement, a series of stop-keys for determining the extent of its movement, a rotatable arbor carrying stop-teeth at different angular positions, adapted to be engaged by the respective keys when

depressed, means for rotating the arbor upon the depression of any key until stopped after it has executed the angular movement corresponding to the value of said key, and a mechanical connection between the arbor and communicator, whereby the extent of movement of the latter is determined by that of the former

5 The combination with a totalizer having independent indicator wheels for units, tens, &c., of a communicator or thrust-piece movable toward the totalizer to advance either wheel thereof proportionally to the extent of its movement, a carriage carrying said communicator and movable step by step to bring the communicator into operative connection with the several totalizer wheels successively, a series of stop-keys for determining the extent of the thrust movement of the communicator, and a feed for advancing the carriage actuated by the depression of the keys and adapted to move the carriage after the thrust movement of the communicator.

6 A totalizer consisting of indicating or printing wheels I, I, slides K K, one to each wheel, a mechanical connection between each slide and its wheel in the nature of a rack-and-pinion and ratchet-and-pawl devices, whereby the slide when displaced advances the wheel and when released is freely retracted, and a carrying-over device consisting of a cam-tooth $N$ carried by each wheel except the one of highest value, a lever $o$ arranged to be displaced by said cam-tooth while the wheel is passing from 9 to 0, and a shoulder $o^3$ on the slide of the wheel of next higher value arranged to be encountered by said lever on the displacement thereof, whereby the displacement of the lever moves the slide and advances the next wheel one unit.

7 The combination with a totalizer having independent indicator wheels for units, tens, &c., and slides connected to said wheels respectively for advancing them when the slides are displaced, of means for displacing the slides consisting of a communicator or thrust-piece movable toward and in line with the movement of the slides, a series of stop-keys for determining the extent of the movement of said communicator, whereby when any key is depressed its communicator is thrust against a totalizer slide for a distance corresponding to the value of the depressed key, and a feed for intermittently advancing the communicator relatively to the totalizer from a position in line with one slide to a position in line with the next after each thrust movement.

8. The combination with a totalizer, of a communicator for imparting advance movements thereto and means for determining the extent of the advance movements consisting of a rotatable arbor, a series of stop-projections thereon arranged in different angular positions, a series of keys marked with numbers or values, and having each a stop arranged when the key is depressed to enter the path of the corresponding stop-projection and arrest the arbor when it has executed an angular movement corresponding to the value represented by the key depressed, means for imparting a forward rotation to the arbor upon the depression of any key, and a mechanical connection between the arbor and communicator, whereby the extent of projection of the latter is determined by the extent of rotation of the former

9. The combination of a printing wheel, an arbor connected to said wheel to impart rotation thereto carrying a series of stop-teeth arranged in different angular positions corresponding to the successive values to be printed by the respective types of said wheel, a series of keys marked with numbers or values corresponding to those of said wheel, and having each a stop arranged when the key is depressed to enter the path of the corresponding stop-tooth on the arbor and arrest the latter when it has executed an angular movement corresponding to the value represented by the key depressed, whereby the corresponding character on the wheel is brought to the printing position, means for imparting a forward rotation to the arbor upon the depression of any key, an impression roller or surface carrying the material to be printed on, and a feeding mechanism actuated by the depression of the keys and adapted to move the printing wheel relatively to the printing surface after each impression, whereby the successive digits of a number may be printed from the same wheel by successive impressions.

10. The combination of an intermittingly movable carriage, an arbor carried thereby having angularly arranged stop-teeth connected thereto, a series of stop keys adapted when depressed to engage said teeth and arrest the arbor, a printing wheel connected to the arbor, and a feed mechanism for advancing the carriage after each impression in order to enable successive digits of the same number to be printed in proper positions by the same wheel

11 The combination of a printing wheel, an arbor connected to said wheel and adapted to impart motion thereto, a series of stop-teeth in connection with said arbor, arranged in different angular positions, a series of stop-keys adapted each when depressed to encounter one of said stop-teeth and arrest the arbor with the corresponding type on the printing wheel in position to be printed, a movable frame carrying said arbor by the depression of which the printing wheel may be moved against an impression surface, and means for rotating the arbor upon the depression of any key

12 The combination of a printing wheel, an arbor connected to said wheel and adapted to impart motion thereto, a series of stop teeth in connection with said arbor, arranged in different angular positions, a series of stop-keys adapted each when depressed to encounter one of said stop-teeth and arrest the arbor with the corresponding type on the printing wheel in position to be printed, a movable frame carrying said arbor by the depression of which the printing wheel may be moved against an impression surface, and means for rotating the arbor upon the depression of said frame consisting of a pinion on the arbor and a toothed rack or sector meshing therewith, and a spring or tension device acting on said rack to hold it stationary and thereby effect the rotation of the arbor until the arrest of the latter, whereby during the subsequent movement of the frame said rack is carried down bodily with it against the tension of said spring.

13. The combination with a traveling carriage, of a swinging frame carried thereby, a spring tending to elevate said frame, a sector-lever also carried by the carriage, a spring for drawing it up, a rotative arbor carried by said frame and having a pinion meshing with said sector, a series of angularly-arranged stop-teeth in connection with said arbor and a series of stop-keys each adapted when depressed to intercept one of said stop-projections and arrest the rotation of the arbor after it has executed an angular movement corresponding to the value of the depressed key

14. The combination of a movable frame, an arbor carried thereby, stop-keys for rotating it, a pinion on said arbor, a sector-lever meshing with said pinion, a spring for resisting the displacement of said sector-lever by the pinion, and a spring clasp constructed to frictionally engage the sector-lever when it is elevated and thereby to reinforce the tension of the spring in resisting its depression while overcoming the inertia of the arbor

15 The combination with a totalizer, of a communicator or thrust-piece consisting of a slide J, a rotatable arbor, stop-keys for arresting said arbor, a pinion on said arbor, a rack or sector meshing with said pinion and having a retractile device, and a connection between said rack or sector and said communicator adapted to project the latter proportionally to the displacement of the former, whereby the movement imparted to the communicator is the complement of the rotative movement of the arbor

16 The combination of a rotatable arbor having angularly-arranged stop-projections, printing wheels at the opposite ends of said arbor to be rotated thereby, stop-keys for determining the extent of rotation of the arbor, a movable frame in which the arbor is mounted and which when pressed down by the depression of any key moves down the printing wheels to print the impression, means for rotating the arbor upon the depression of the frame, impression rollers or surfaces for holding the material to be printed on, and a feed mechanism for displacing the printing wheels relatively to the impression surfaces after each impression to enable each wheel to print successively the digits of a number, whereby the wheels simultaneously print like or corresponding numbers on the two impression surfaces

17 The combination of a carriage, a rotatable arbor carried thereby having angularly-arranged stop-projections, stop-keys for determining the extent of rotation of said arbor, a printing wheel carried by said arbor, an impression roller for holding the material to be printed on, a feed mechanism for moving the carriage after each impression, and a paper-feed consisting of a push-piece carried by the carriage and a plunger arranged to be displaced thereby upon the movement of the carriage after printing a number, and ratchet mechanism intervening between said plunger and impression roller for advancing the impression roller upon each displacement of said plunger

18 The combination with an adding machine comprising co-acting stops and keys for determining the totalizing movements proportionally to the values to be added, of means for effecting subtraction consisting of a series of complemental stops, and a device for relatively displacing the stops and keys to bring the complemental stops into operative relation with the keys, whereby upon operating the keys to represent the number to be subtracted the machine is caused to add the arithmetical complement of such number

19 The combination with an adding machine comprising a totalizer, a communicator for actuating the totalizer proportionally to the extent of its movement, stop-keys, and a series of stops for determining the movement of the communicator proportionally to the values to be added, of means for effecting subtraction consisting of a series of complemental stops, and a device for relatively displacing the stops and keys to bring the complemental stops into operative relation with the keys, whereby upon operating the keys to represent the number to be subtracted the machine is caused to add the arithmetical complement of such number

20. The combination with an adding machine having a rotatable arbor with co-acting stops and keys for determining the extent of angular movement of said arbor, of means for effecting subtraction consisting of a series of complemental stops and a device for relatively displacing the stops and keys to bring the complemental stops into operative relation with the keys, whereby upon operating the keys



to represent the number to be subtracted the machine is caused to add the arithmetical complement of such number.

21. The combination with an adding machine having stop-keys, and direct and complemental stops to be alternatively engaged thereby, of a subtraction key to control the relative arrangement of the stops and keys, adapted when in one position to bring the direct stops into operative relation with the keys, and when in the other position to bring the complemental stops into relation therewith, whereby in the former position the machine performs addition and in the latter position it performs subtraction by adding the arithmetical complement.

22. An adding machine having stops and stop-keys, combined with a subtraction key, and complemental stops to be brought into operative relation with the stop-keys upon the displacement of the subtraction key, and with means connected to said subtraction key and adapted to act during its displacement for adding 1 to the units digit in order to correct the total during the operation of subtraction.

23. An adding machine comprising a totalizer, a communicator for actuating the totalizer proportionally to the extent of its movement, and co-acting stops and keys for determining the movement of the communicator proportionally to the values to be added, combined with means for effecting subtraction consisting of a series of complemental stops, a subtraction key for relatively displacing the stops to bring the complemental stops into operative relation with the keys, and an adding device connected to the subtraction key to be displaced thereby to act upon the totalizer and add 1 to the units digit thereof at each subtracting operation.

24. An adding machine comprising a totalizer, a communicator and co-acting stops and keys for determining the movements of the communicator, and a feeding mechanism for moving the communicator relatively to the totalizer from units to tens, hundreds, &c., after each adding operation, combined with means for effecting subtraction consisting of complemental stops, a subtraction key for relatively displacing the stops, and means for adding 1 to the totalizer consisting of an inclined tooth $t$ connected to and displaced by the subtraction key, and arranged relatively to the totalizer so that when displaced it shall enter the path of an operative part of the units system thereof, and upon the feeding movement from the units to the tens position it will displace such part and add 1 to the units digit.

25. The combination of a series of stop-keys, an arbor, two series of stops in connection with said arbor to be alternately engaged by said keys, two printing wheels connected to and deriving motion from said arbor for printing respectively characters corresponding to the respective series of stops, and a shifting device in connection with the stops and wheels, adapted when in one position to bring one series of stops into operative relation with the keys, and to cause one wheel to print, and when in the other position to bring the other series of stops into operative relation with the keys and cause the other wheel to print.

26. The combination of a series of stop-keys, an arbor having stops for determining its angular movement, two printing wheels connected to and deriving motion from said arbor, said wheels formed with equidistant types and intervening spaces, the impression rollers or surfaces against which said wheels print, the wheels being staggered relatively to said surfaces, so that when a type on either wheel is in position to print the other wheel will present a blank space to its impression surface, and a shifting device adapted when moved to displace said arbor and wheels an angular distance intermediate of that between the types, whereby its movement turns the inoperative wheel into position to print, and renders the other wheel inoperative.

27. The combination of a series of stop-keys, an arbor, two series of stops in connection with said arbor to be alternatively engaged by said keys, two printing wheels connected to and deriving motion from said arbor for printing respectively characters corresponding to the respective series of stops, said wheels formed with spaces between their printing types, the impression rollers or surfaces against which said wheels print, the wheels and surfaces being relatively arranged so that when a type on either wheel is in position to print the other wheel will present a blank space to its impression surface, whereby only one wheel can print at a time, and a shifting device in connection with the stops and wheels, adapted when moved from one position to another to bring the inoperative series of stops into relation with the keys, and to rotate the arbor and type-wheels sufficiently to move the inoperative wheel into position to print.

28. A combined adding or subtracting and printing machine consisting of a totalizer, two printing wheels adapted to print alternatively, one for added and the other for subtracted numbers, co-acting direct and complemental stops and keys for determining the angular movement of said wheels and the advancement of the totalizer, and a shifting device or subtraction key adapted when in one position to cause the numbers impressed on the keys to be added to the totalizer and printed by the addition wheel, and when in the other position to cause the numbers to be subtracted and printed by the subtraction wheel, whereby the machine is adapted for use in balancing accounts, and analogous operations.

29. The combination of an arbor, a stop-cylinder thereon, a series of stop-keys co-acting with the stops on said cylinder, a printing wheel or wheels connected to and deriving motion from said arbor, a shifting device for displacing said cylinder longitudinally relatively to said arbor, and a helical connection between the cylinder and arbor, whereby the lateral displacement of the cylinder communicates angular movement to the wheel or wheels, to bring a series of types thereon into or out of angular positions to be printed.

30. An adding machine comprising a totalizer, a series of keys for determining the numbers to be added thereon, a shifting device by the operation of which the numbers determined by the keys are subtracted therefrom, combined with a printing mechanism for taking impressions of the successive totals and differences on the totalizer, and a means for printing successively each subtracted number.

31. An adding machine comprising a totalizer, an addition printing wheel, a subtraction printing wheel, a series of keys for determining the number to be printed, and a shifting device or subtraction key for determining the addition or subtraction of the numbers, combined with a printing mechanism for taking the impressions of the successive numbers indicated by the totalizer, whereby by repeatedly adding successive series of totals according to the method of finite differences, and effacing them by subtraction, the subtraction wheel prints the resulting terms.

32. An adding machine comprising a totalizer, an addition printing wheel having intervening characters for printing subtracted numbers, a subtraction printing-wheel having intervening characters for printing added numbers, a series of keys for determining the numbers to be printed, and a shifting device or subtraction key for determining the addition or subtraction of the numbers, adapted to angularly displace the printing wheels in shifting from addition to subtraction, or vice versa, whereby during addition both wheels will print the number added (or its complement) and during subtraction both will print the subtracted number, combined with a printing mechanism for printing the successive totals indicated at the totalizer, whereby the machine may be used for computations by the method of finite differences involving either positive or negative values.

33. The combination with an adding machine comprising a totalizer, of printing mechanism for printing the successive totals, consisting of an impression roller P mounted adjacent to the totalizer type-wheels, links $P^4$ $P^2$ supporting said roller, an operating handle $P^3$ and toggle-links $P^4$ and $t^2$ adapted on the depression of said handle to press the impression roller against the type-wheels, and a feeding mechanism adapted to advance the strip of paper after each impression.

34. An adding machine comprising a totalizer, a printing wheel, a series of keys for determining the numbers to be printed, an impression roller for carrying the paper to be printed on, movable up and down, feeding mechanism for advancing the strip of paper after each impression, and mechanism for elevating or depressing the impression roller, adapted to hold it depressed beyond the reach of the printing wheel during a predetermined number of successive printing operations, and subsequently to lift it into position to receive an impression, whereby the printing of undesirable or intermediate numbers upon the paper may be avoided.

35 In an adding machine, a movable carriage, a printing wheel carried thereby and an impression roller for carrying the paper to be printed, combined with a feeding mechanism for advancing the paper after each impression consisting of a thrust-piece $b'$ carried by the carriage, a rod $e$ arranged to be displaced thereby, a sleeve $f'$ carrying the impression roller and connected to the rod through the medium of a spiral slot and pin connection, ratchet-wheels and pawls for preventing the backward rotation of the rod and sleeve respectively, and a retracting spring for restoring the rod after displacement.

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**503,987.** PROCESS OF TANNING. GUSTAV RUEBELIN, Milwaukee, Wis. Filed Oct. 6, 1892. Serial No. 448,044. (No specimens.)

*Claim.*—1. The process of tanning leather, which consists in coating a previously cleaned hide with Glauber's salt, and then treating the hide, after exposure, to a solution composed of aqua ammonia and grease or oil, substantially as set forth.

2. The process of tanning leather, which consists, first, in coating a previously cleaned hide with Glauber's salt, second, permitting the hide to stand for a certain time for the absorption of all moisture, third, applying a second coating of Glauber's salt, fourth, exposing the hide for a sufficient length of time, and fifth, treating the same to a solution composed of aqua ammonia and grease or oil, substantially as set forth.

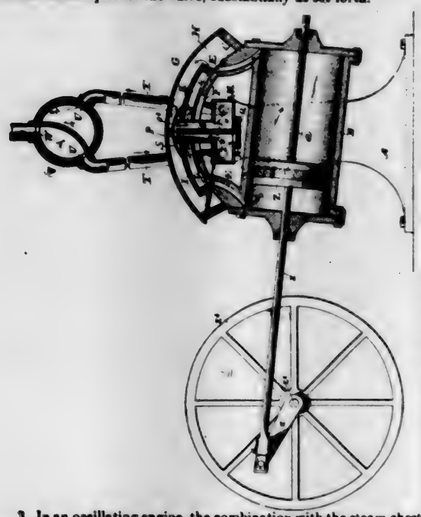
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**503,988.** STEAM-ENGINE. WILLIAM P. SOATES, Knoxville, assignor of one-half to James N. Freels, Scarborough, Tenn. Filed Mar. 24, 1893. Serial No. 467,488. (No model.)

*Claim.*—1. In an oscillating engine, the pivotally supported cylinder having a curved or segmental valve seat pierced by end steam

ports, a steam chest inclosing the valve seat and said ports, a stationary curved valve arranged within said steam chest and provided with a central and end ports means substantially as described for supporting or holding said valve stationary, substantially as set forth.

2. In an oscillating engine, a pivotally supported cylinder having a curved or segmental valve seat pierced by end steam ports and an intermediate slot, a valve or steam chest inclosing said valve seat and the ports therein, a stationary segmental valve arranged in said chest on the valve seat and provided with a central and end steam ports, and a stationary steam pipe projecting through the slot in the valve seat and into the central port of the valve, substantially as set forth.



3. In an oscillating engine, the combination with the steam chest carried by the oscillating cylinder; of a hollow stationary valve arranged within said chest and having end ports and central openings therethrough, and a combined steam and exhaust pipe projecting through the central openings of the valve and having separated passages communicating with the interior of the valve and the interior of the steam chest above the valve, respectively, substantially as set forth.

4. In an oscillating engine, an oscillating cylinder having an inclosed curved seat and opposite steam ports piercing said seat, and a hollow curved valve held stationary on the valve seat and provided with a central steam passage and end ports communicating with the interior thereof, substantially as set forth.

5. In an oscillating engine, an oscillating cylinder having a valve chest carried therewith, a stationary valve mounted within the chest and provided with suitably arranged ports mean substantially as described for supporting or holding said valve stationary, substantially as set forth.

6. In an oscillating engine, the combination of the segmental steam chest carried by an oscillating cylinder and having end steam ports and an intermediate slot, a curved or segmental stationary valve arranged within the steam chest and provided with central circular openings in the top and bottom thereof, an inclosed longitudinal passage extending from end to end thereof, and bottom ports near the opposite ends and opening into the longitudinal passage, and a combined steam and exhaust pipe projecting through the central openings of the valve and having separated passages communicating with the longitudinal passage of the valve and the interior of the steam chest respectively, substantially as set forth.

7. In an oscillating engine, the combination with the oscillating cylinder having a curved or segmental valve seat pierced by end steam ports and an intermediate slot; of a stationary segmental valve arranged upon the valve seat and having central circular steam openings, an inclosed longitudinal steam passage, and bottom ports near the opposite ends thereof and opening into said longitudinal passage, and a combined steam and exhaust pipe projecting through the central openings of the valve, substantially as set forth.

8. In an oscillating engine the combination with the stationary valve thereof, having a longitudinal steam passage and central openings; of a combined live steam and exhaust pipe having a partitioned neck projecting through the central openings of the valve, each passage of the neck having an opening communicating with the longitudinal passage of the valve and the interior of the steam chest respectively, substantially as set forth.

9. In an oscillating engine, the combination with the moving steam chest and a stationary hollow valve; of a combined live steam and exhaust pipe provided with an upwardly extending neck projecting through the center of the stationary valve, a partition separating the neck and the pipe into two passages one of which communicates with the interior of the hollow valve and the other of which opens into the steam chest, substantially as set forth.

10. The combination with a moving steam chest and a stationary hollow valve having end ports; of a combined live steam and exhaust pipe provided with an upwardly extending neck projecting through the center of the stationary valve, a partition separating the neck and the pipe into two passages communicating with the interior of the valve and the steam chest respectively, a steam cup extended below the pipe and communicating with the passage opening in the hollow valve, a plunger arranged in said cup, and a valve cap or bar arranged to bear on the top of the valve of the steam chest and connected with said plunger, substantially as set forth.

11. The combination with a moving steam chest and a stationary hollow valve having end ports; of a combined live steam and exhaust pipe provided with an upwardly extending neck projecting through the center of the stationary valve, a partition separating the neck and the pipe into two passages, one of the neck passages being closed at its upper end and opening at one side into the hollow valve, and the other neck passage opening at its upper end into the valve chest above the valve, a steam cup extended below the pipe and communicating with the neck passage opening into the hollow valve, a plunger arranged in said cup, a plunger stem or rod connected to the plunger and passing through the neck, a valve cap or bar secured to the upper end of said stem or rod and bearing on the top of the valve, separate pipes connected to opposite portions of the partitioned pipe, and a two-way throttle valve connected to said pipes, substantially as set forth.

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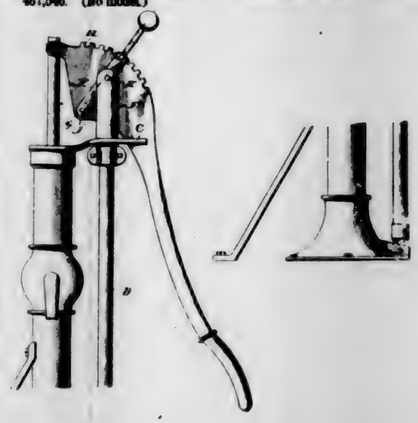
**503,989. FOLDING BED.** WALKER A. SCOTT, Evansville, Ind. Filed July 14, 1892. Serial No. 440,040. (No model.)



*Claim.*—In a folding-bed, the combination with a frame and a movable part, of a semi-circular flange bearing on the frame, a journal upon the movable part, a segmental gear upon the movable part, a longitudinally movable revoluble pinion carried in the frame adapted to mesh with the segmental gear, or to be separated therefrom, whereby the parts may be operated or separated, substantially as and for the purpose specified.

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**503,990. PUMP-HANDLE.** CHARLES A. SELLON, Fire, assignor to William J. Sellon, Dansville, N. Y. Filed Mar. 25, 1893. Serial No. 467,546. (No model.)



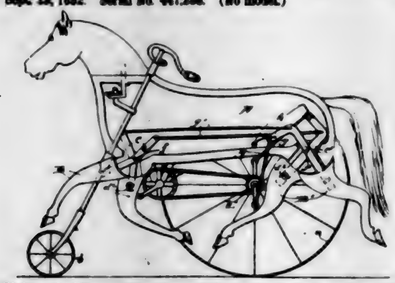


*Claim.*—1. In a pump handle, the combination of a swinging bearing standard having a bearing yoke at its upper end, an adjustable pump handle terminating at one end in a sector head adapted to move in said bearing yoke and provided with adjustment notches in its periphery, adjusting links pivoted at one end to the body of the sector head and provided with offstanding pivot pins engaging perforations in the extremities of said bearing yoke one of said links being further provided with a notch at its outer end, and a latch bar pivoted to the other of said links and adapted to engage the notches of said head and the link notch, substantially as set forth.

2. In a pump handle, the combination with the swinging bearing standard, and a slotted guide therefor, of an adjustable pump handle terminating at one end in a sector head provided with a series of notches in its arc, opposite circularly adjustable links pivoted to the center of the sector and to the upper extremities of the bearing standard, one of said adjusting links being provided at its outer end with a notch, and a weighted latch bar pivoted at one end to the other adjusting link and adapted to be dropped into engagement with the notches of the sector head and the link notch, substantially as set forth.

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**503,991. TRICYCLE.** WALDO V. SNYDER, Canton, Ohio. Filed Sept. 23, 1892. Serial No. 447,298. (No model.)



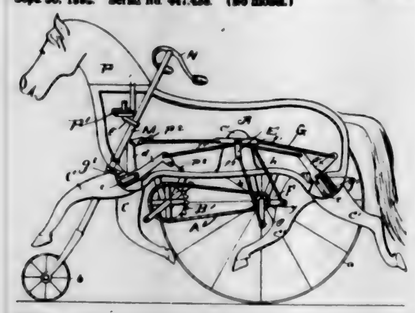
*Claim.*—1. The combination of the body A, the legs B and B', provided with the apertures C, the thimbles or sockets D, the oscillating or attaching arms *c* and *c'*, pivotally attached to the body A, and the screws $d^5$, or their equivalents, substantially as and for the purpose specified.

2. The combination of the body A, having pivoted thereto the arms *c*, and *c'*, the legs B and B', provided with the apertures C, and means for communicating motion to the legs B and B' substantially as and for the purpose specified.

3. The combination of the body A, the pivoted arms *c* and *c'*, having removably attached thereto the legs B and B', and the thimbles or sockets D, provided with the flanges or shoulders *d*, substantially as and for the purpose specified.

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**503,992. TRICYCLE.** WALDO V. SNYDER, Canton, Ohio. Filed Sept. 30, 1892. Serial No. 447,438. (No model.)

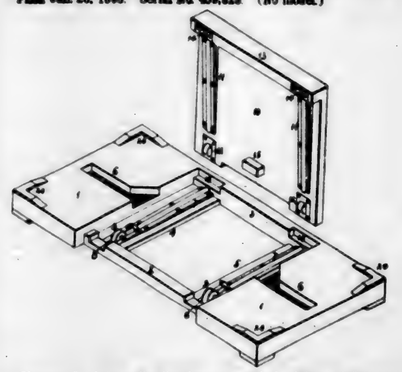


*Claim.*—1. The combination of the body A, the center-bar B, provided with the extension *c* and *c'*, the crank-shaft E, the pitmen A, the crank-shaft F, the connecting-rods G, and the rock-arms *d*, substantially as and for the purpose specified.

2. The combination of the body A, having removably attached thereto the legs C and C' by means of the pin H, provided with the helical-spring H', substantially as and for the purpose specified.

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**503,993. BASE FOR FURNITURE.** WILLIAM D. SNYDER, Chicago, assignor to the Forest City Furniture Company, Rockford, Ill. Filed Jan. 26, 1893. Serial No. 459,823. (No model.)



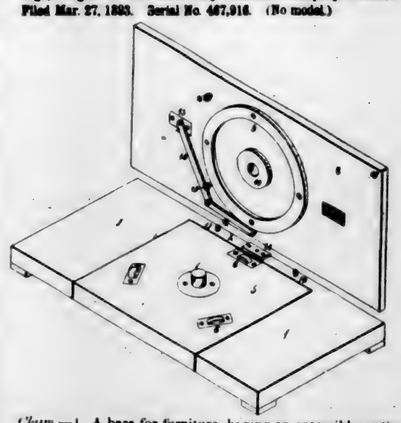
*Claim.*—1. A base for furniture provided with straight recesses extending only a portion of the length of the base, inclined tracks extending transversely of the base, an extensible section located upon the tracks, a platform having a pivotal connection with the section, and a roller engagement with the recesses of the base during the movement of the section.

2. A base for furniture provided with straight recesses extending only a portion of the length of the base, inclined tracks extending transversely of the base, an extensible section, inclined tracks secured to the under face of the extension, the extension having a roller engagement with the tracks, a platform having a pivotal connection with the section and a roller engagement with the recesses of the base during the movement of the section.

3. A base for furniture provided with straight recesses extending only a portion of the length of the base, inclined tracks extending transversely of the base, an extensible section located upon the tracks, a platform having a pivotal connection with the section through the medium of a series of rollers located in the upper face of the extension and an annular ring located upon the rollers and secured to the under face of the platform, said platform having a roller engagement with the recesses of the base during the movement of the section.

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**503,994. BASE FOR FURNITURE.** WILLIAM D. SNYDER, Chicago, assignor to the Forest City Furniture Company, Rockford, Ill. Filed Mar. 27, 1893. Serial No. 467,916. (No model.)

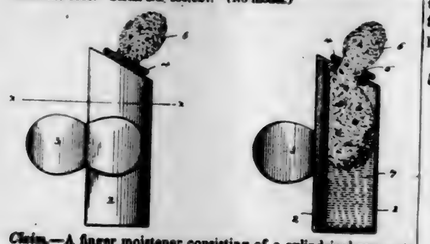


*Claim.*—1. A base for furniture, having an extensible section, a platform having a pivotal connection with the extension and a linked connection with the base.

2. A base for furniture, having an extensible section, a platform, having a pivotal connection with the extension and a linked connection with the base, and stops limiting the movement of the links.

3. A base for furniture, having an extensible section, a platform, having a pivotal connection with the extension, and a linked connection with the base, and pins or rollers for breaking the joint of the linked connection.

**503,995. FINGER-MOISTENER.** MILTON W. STEBBINS, Waterbury, Conn., assignor of one-half to Edward P. Lynch, same place. Filed Mar. 18, 1893. Serial No. 466,627. (No model.)



*Claim.*—A finger moistener consisting of a cylindrical reservoir having a curved depression in one side to partially receive the finger or thumb of the user, spring clamping arms to inclose the finger or thumb of the user, and an inclined cap having a central opening to receive a piece of absorbent material.

**503,996. TAR OR PETROLEUM STILL.** WILLIAM H. STELWAGON, Philadelphia, Pa. Filed June 29, 1892. Serial No. 438,365. (No model.)

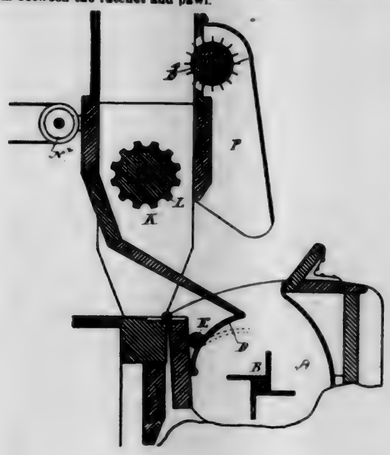


*Claim.*—1. A tar or petroleum still having a rotary agitator therein, the same being formed of rectangular and tapering vanes, whereby the material in the still may be raised and also directed laterally, and thereby caused to circulate, substantially as described.

2. A tank, a shaft journaled therein, collars secured on said shaft, arms adjustable on said collars, and vanes secured to said arms, said vanes being rectangular and tapering, said parts being combined substantially as described.

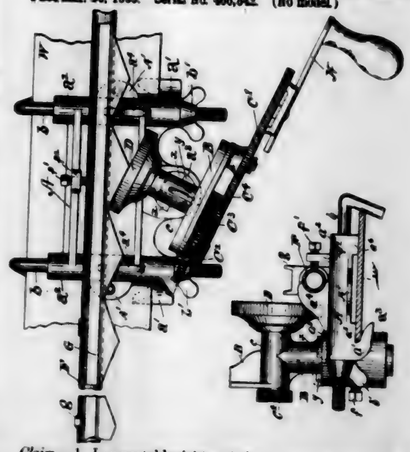
**503,997. AUXILIARY FEED MECHANISM FOR COTTON-SEED LINTERS.** FREDERICK S. STRONG and FREDERICK C. MANN, East Bridgewater, Mass. Filed Nov. 14, 1892. Serial No. 451,988. (No model.)

*Brief.*—An auxiliary feeding mechanism, comprising the wheel $D^a$ and chute P, is provided, whereby if the main feed-wheel L is prevented from feeding the stock in sufficient quantity the auxiliary wheel is put into operation. The feed-wheel $D^a$ is kept normally stationary by the intervention of the shield M' between the ratchet-wheel M and its actuating-pawl; but when the stock in the roll-box is reduced the float D, resting thereon, is depressed and removes the shield from between the ratchet and pawl.



*Claim.*—In a cotton seed linter, the combination of a hopper, a main feed mechanism, an auxiliary feed mechanism, a float adapted to rest upon the seed in the hopper, with means for connecting said float with said auxiliary feed wheel, substantially as and for the purpose set forth.

**503,998. SICKLE-GRINDER.** CHARLES E. STUART, Piqua, Ohio. Filed Mar. 20, 1893. Serial No. 466,842. (No model.)



*Claim.*—1. In a portable sickle-grinder, a supporting base for the grinding mechanism, consisting substantially of a plate adapted to extend over and rest upon the top of a wheel or similar supporting object, provided at one side with a vertical socket and hooked extensions at both sides of the same extending downward at and beyond one edge of the wheel-rim, and open ended sockets extending across the plate in line with such hooked extensions and adapted to receive a pair of adjustable hook-bolts through said sockets to engage the opposite edge of said wheel-rim, as set forth.

2. In a sickle-grinder, a metal base piece adapted to extend over and rest upon the top of a mower wheel and be clamped to opposite sides thereof, provided with a fixed vertical socket for the retention of the grinding mechanism, and an independent longitudinally adjustable resting support for the sickle bar, substantially as set forth.

3. In a sickle-grinder, the metal base-piece as constructed, having open cross-sockets for the reception of the hooked clamping bolts, abutments with recesses for the sickle-supporting bar, and an opposite lug with set-screw for retaining the supporting bar against the abutments, substantially as set forth.

4. The metal support for a sickle grinder formed as a single casting, consisting of a base piece having hooked extensions at one side, cross sockets for the clamping bolts; a vertical socket for the grinding mechanism; backing lugs for the retention of the sickle-supporting-bar; and an oppositely arranged lug for the set-screw holding the sickle bar; substantially as set forth.

5. In a sickle-grinder, a metal base-piece adapted to rest upon and be clamped to opposite edges of the wheel-rim of a mowing machine, and provided with a fixed vertical socket extending downward at one side, in combination with a radially and vertically adjustable standard, held in said socket and carrying the grinding wheel and its driving mechanism, and with a longitudinally adjustable sickle-supporting bar secured upon the base piece horizontally, in co-operative relations with the grinding wheel, substantially as set forth.

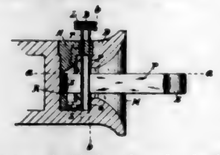
6. In a sickle grinder of the character described, in combination with a base support, grinding apparatus having a rotary and vertical adjustment thereon, and a sickle supporting bar horizontally supported and longitudinally adjustable and provided with guide blocks independently adjustable thereon holding the sickle bar, for manual adjustment substantially as set forth.

**503,999. CAR-COUPLING.** THOMAS SWEET, Florence, Canada, assignor of one-half to Joseph C. Ellison, same place. Filed July 9, 1892. Serial No. 439,552. (No model.)

*Claim.*—1. A tug pin, P, formed with the enlarged or knobbed ends, E, in combination with a draw head, D, formed with the flaring mouth, M, and shoulders, F, the gate holder, H, formed with the recess, R, the gates, G, G, formed with the trunnions, T, the levers, L, L, and the spring, S, substantially as shown and described, and for the purpose specified.



2. A tug pin, P, formed with the enlarged or knobbed ends, E, in combination with the draw head, D, formed with the flaring mouth, M, and shoulders, F, the gate holder, H, formed with the recess, R, and pin hole, I, the gates, G, G, formed with the trunnions, T, the levers, L, L, the locking bolt or pin, A, and springs, S, substantially as shown and described, and for the purpose specified.

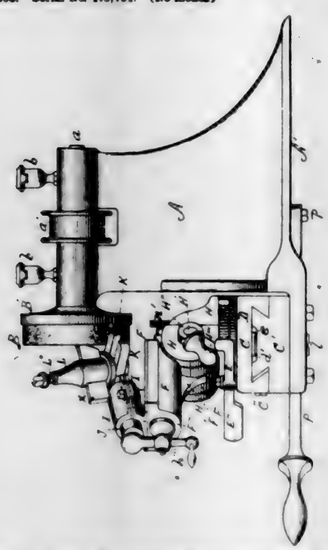


3. A tug pin, P, formed with the enlarged or knobbed ends, E, in combination with the draw head, D, formed with the flaring mouth, M, and shoulders, F, the gate holder, H, formed with the recess, R, the gates, G, G, formed with the trunnions, T, the levers, L, L, one formed with a tongue, B, and the other, with an elongated groove or recess, C, and the springs, S, substantially as shown and described, and for the purpose specified.

4. A tug pin, P, formed with the enlarged or knobbed ends, E, in combination with the draw head, D, formed with the flaring mouth, M, and shoulders, F, the gate holder, H, formed with the recess, R, and pin hole, I, the gates, G, G, formed with the trunnions, T, the levers, L, L, one formed with a tongue, B, and the other, with an elongated groove or recess, C, the locking bolt or pin, A, and the springs, S, substantially as shown and described, and for the purpose specified.

5. The rod, J, wheels, K, provided with the handles, O, and the chains, N, in combination with the arms or levers, L, gates, G, formed with the trunnions, T, the gate holder, H, and the draw head, D, substantially as shown and described, and for the purpose specified.

**504,000. MACHINE FOR GRINDING THREAD-CUTTING TOOLS.** CHARLES P. R. THIEL and MAX M. AUST, Lawrence, Mass. Filed May 27, 1893. Serial No. 475,761. (No model.)

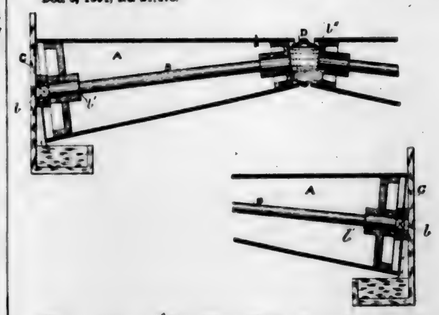


*Claim.*—1. In a thread tool grinding machine, the combination of the frame having the grinding wheel mounted thereon and set to grind with its face, the slide-bed C secured to the frame, the saddle-block O sliding on said bed on a line beneath and parallel with a horizontal line drawn across the face of the grinding wheel, the plate or block D swiveled on the saddle-block and adapted to make a partial rotation horizontally thereon and provided with peripheral openings *f* for engagement with a stop-finger secured to the slide C, the carriage or slide-bed F integral with the hub F' and moving in an arc in a vertical plane and supported by said hub which is adjustably held between the lips H extending from the plate D, said slide-bed being provided with the perforated outer end wall F'', the horizontal screw A provided with the annular shoulders A' A'', the plane portion of said screw lying in said end wall, the handle A''' for actuating said screw, the split bearing I provided with the integral nut or projection I' sliding on the slide-bed F, and the sliding feed J supporting the tool-post fork and tool-holder, substantially as set forth.

2. In a thread tool grinding machine, the combination of the frame having the grinding wheel mounted thereon and set to grind with its face, the vertical tubular post *d* having its lower end secured in the horizontal slot or groove *e* in the slide-bed C' and adapted to move in said slot or groove horizontally beneath and parallel with a line drawn horizontally across the face of the grinding wheel, said tube constituting a pivot for the block or plate D, the vertical spindle or center-indicator N fitting and sliding vertically in said groove and provided with the V shaped groove N', the collar *n* on said tube near its upper end and provided with screws *n'* and *n''*, the former securing the center-indicator in the desired position in the tube and the latter extending into the said V shaped groove, substantially as described.

3. In a thread tool grinding machine, the combination of the frame having the grinding wheel mounted thereon and set to grind with its face, the inclined sliding feed J, the substantially horizontally bifurcated tool-post fork K fitted to the sliding feed, the tool-post or tool-holder L set within the bifurcation in the fork and provided with the opening L' and set screw L'' for adjustably holding the tube, the slide-bed or carriage F having a swinging connection with the sliding feed J and sustained by the hub F' fitted between the lips H extending up from the swiveled plate D, said lips being provided with a graduated scale and said slide-bed being provided with an indicating finger, the block or plate D swiveled on the saddle-block C and the slide-bed C', substantially as set forth.

**504,001. MACHINE FOR STRETCHING OR REMOVING CREASES FROM WOVEN FABRICS.** GEORGE TILSTON, Church, England. Filed Apr. 12, 1892. Serial No. 428,881. (No model.) Patented in England Dec. 8, 1891, No. 21,470.



*Claim.*—1. In a machine for stretching or removing creases from woven fabrics the combination with the truncated cones A, of the fixed stationary shaft B composed of the end parts *b' b'* and the center piece *b''* fitted together upon which the cones rotate the two end parts being inclined one to the other and the side supporting frames C in which the ends are fixed substantially as described.

2. In a machine for stretching or removing creases from woven fabrics the combination with the stretching cones A rotating on the shaft B, of the fixed shaft B composed of the end parts *b' b'* at an inclination to each other and the enlarged central piece *b''*, the bush D between the ends of the cones to prevent the fabric catching therein and the supporting frames C provided with bearings in which the ends of the shaft B are fixed.

3. In a machine for stretching or removing creases from woven fabrics the combination with the stretching cones A, of the adjustable curved segmental rail E, the supporting bracket F upon which the rail slides, the screws G by which it is moved to and from the cones, the quadrant lever H by which it is moved about the center of the cones, and the tension roller I.

4. In a machine for stretching or removing creases from woven fabrics the combination with the stretching cones A, of the curved segmental rail E over which the cloth also passes, the supporting brackets F upon which the curved rail rests the tension roller I and a second curved segmental rail K to give an additional stretch to the fabric substantially as described.
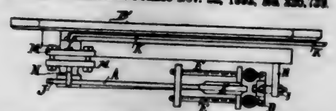
5. In a machine for stretching or removing creases from woven fabrics the combination with the truncated stretching cones A and

supporting frame C, of the longitudinal bar L upon which the framing carrying the cones is supported and slides and the screw M by which the position of the framing C and cones A upon the supporting bar L can be altered or moved.

6. In a machine for stretching or removing creases from woven fabrics the combination with the truncated stretching cones A the stretching rails E and K and the tension roller I, of the supporting framing C which carries the cones, the bracket F upon which the rail E slides, the quadrant H by which the rail E is raised and lowered, the slide bar L upon which the framing slides and screw M which moves the frame to and fro thereon substantially as and for the purposes described.

## 504,002. FIRE SIGNALING OR ALARM MECHANISM.

Louis J. Tirard, Caen, France. Filed June 24, 1893. Serial No. 478,764. (No model.) Patented in France Nov. 23, 1892, No. 226,739.



*Claim.*—1. In an alarm mechanism of the class described, the combination with a vessel adapted to receive a liquid, a tube communicating therewith and adapted to contain a liquid to be discharged into said vessel, a second tube communicating at one end with the first-mentioned tube and having its opposite end closed, of a pivoted arm or lever arranged in proximity to the closed end of the tube and adapted to be normally supported in an elevated position and to be automatically released from its support when the temperature exceeds a predetermined degree said arm or lever being adapted when so released to place the closed end of the described second tube in communication with the outer air, for the purpose specified.

2. In an alarm mechanism of the class described, the combination with a vessel adapted to receive a liquid, a tube communicating therewith and adapted to contain a liquid to be discharged into said vessel, a second tube communicating at one end with the first-mentioned tube and having its opposite end closed, of a pivoted arm or lever, a thermometer carried thereby, a support upon which one end of the thermometer rests whereby to support the arm normally in an elevated position, said thermometer being adapted to be broken when the temperature of the air exceeds a predetermined degree, and allow the arm to fall, and means for placing the closed end of the said second tube in communication with the outer air when the arm or lever falls, for the purpose specified.

3. In an alarm mechanism of the class described the combination with a vessel adapted to receive a liquid, a tube communicating therewith and adapted to contain a liquid to be discharged into said vessel, and a second tube communicating at one end with the first mentioned tube, and a frangible tube communicating with the opposite end of said second tube, of a pivoted arm or lever adapted to be normally supported in an elevated position and to be automatically released from its support when the temperature exceeds a predetermined degree, and a hook carried by the arm and adapted to strike against and break the said frangible tube when the arm or lever falls, for the purpose specified.

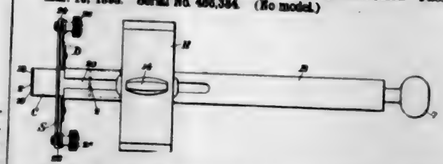
4. In an alarm mechanism of the class described, the combination with a vessel adapted to receive a liquid, a tube communicating therewith and adapted to contain a liquid to be discharged into said vessel, a second tube communicating at one end with the first-mentioned tube a frangible tube communicating with the opposite end of said second tube, of a pivoted arm or lever, a thermometer carried thereby, a support upon which one end of the thermometer rests whereby to support the arm normally in an elevated position, said thermometer being adapted to be broken when the temperature of the air exceeds a predetermined degree, and allow the arm to fall, and a hook carried by the arm and adapted to strike against and break the said frangible tube when the arm or lever falls, for the purpose specified.

5. In an alarm mechanism of the class described, the combination with a vessel adapted to receive a liquid, a tube communicating therewith and adapted to contain a liquid to be discharged into said vessel, a second tube communicating at one end with the first-mentioned tube and having its opposite end closed, of a pivoted arm or lever arranged in proximity to the closed end of the tube and adapted to be normally supported in an elevated position and to be automatically released from its support when the temperature exceeds a predetermined degree, said arm or lever being adapted when so released to place the closed end of the described second tube in communication with the outer air, and a compensator comprising superposed vessels communicating with each other, and a pipe communicating with the upper vessel at one end and with the said second tube at its opposite end, for the purpose specified.

6. In an alarm mechanism of the class described, the combination of a base adapted to be secured to a wall, an arm or lever pivoted at one end to said base, a thermometer carried by said lever at its opposite end, a support upon which one end of said thermometer rests, said end of the thermometer being more frangible than the remaining portion thereof, a frangible tube arranged adjacent to the arm or lever, a main air tube communicating with said frangible tube, a vessel adapted to receive a liquid, a tube adapted to contain a liquid to be discharged into said vessel, said main air tube communicating with the upper end of the tube containing the liquid, and a compensator comprising superposed vessels communicating with each other and adapted to contain a liquid, and a tube communicating with the upper vessel and with the main air tube, for the purpose specified.

## 504,008. MARKING-GAGE.

Justus A. Traut, New Britain, Conn., assignor to the Stanley Rule and Level Company, same place. Filed Mar. 16, 1893. Serial No. 466,384. (No model.)



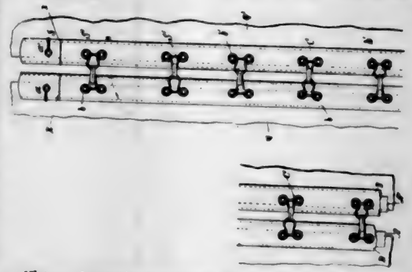
*Claim.*—1. As an attachment for a marking-gage of the class specified, the removable gage-head consisting of a plate notched on one edge thereof for receiving the cutter-carrier of the gage, and having at the ends thereof means for clamping and unclamping the head to and from the butt-gage head of the marking-gage, substantially as described.

2. The combination with a marking-gage having the butt-gage head D at one end of the gage-bar and on one side thereof, of the gage-head plate S adapted, as set forth, to be clamped upon the outer side of said head D in two positions, first, on the opposite side of the gage-bar, and second, on the same side of the gage-bar, of said head D whereby the marking-gage is adapted for setting-off lines at distances varying by the thickness of the head S.

3. In a marking-gage of the class specified, having at one end thereof the head D extending on one side of said bar, of the supplemental gage-head S consisting of a plate having projecting ears for carrying clamping-screws, and the clamp-screws carried by said ears and having collars located in position for clamping the ends of the head D, substantially as described.

## 504,004. COMBINED DRESS STAY AND FASTENER.

Maurice Trendorfer, New York, N. Y. Filed Aug. 31, 1892. Serial No. 444,701. (No model.)



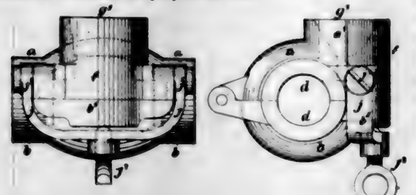
*Claim.*—A combined dress stay and fastener consisting of two resilient, elastic strips having a fabric casing, said casing having its open extremities lapped over and secured to the ends of the said strips by means of eyelets, each strip being provided with an alternating series of hooks and eyes attached thereto by means of eyelets, whereby ready means of attachment to the goods may be secured, each of the hooks having its toe depressed, as set forth

## 504,005. MOLD FOR MAKING PLUMBERS' JOINTS.

Frederick Tyers and Oswald Barnsdale, Nottingham, England. Filed Jan 18, 1892. Serial No. 418,352. (No model.)

*Claim.*—1. The herein described mold for making plumbers' joints, comprising the parts *a* and *b*, hinged together, corresponding semi-circular recesses *d*, formed in said parts, enlarged recesses *e*, also formed in said parts, a dovetailed recess formed in the part *a*, a part *f*, fitting detachably in said recess, the inner surface of said part *f*, corresponding to that of the part *a*, and runners communicating with the recesses *e*, as and for the purpose set forth.

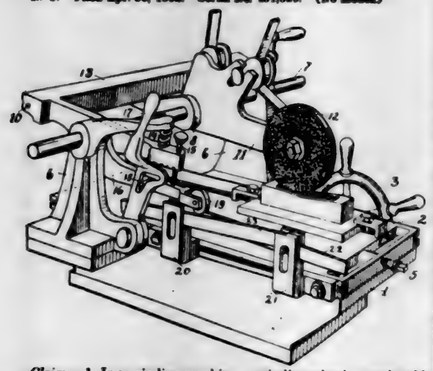




2. The herein described mold for making plumbers' joints, comprising the parts *a* and *b*, hinged together, corresponding semi-circular recesses *d*, formed in said parts, enlarged recesses *e*, also formed in said parts, a dovetailed recess formed in the part *a*, a part *f*, fitting detachably in said recess, the inner surface of said part *f*, corresponding to that of the part *a*, runners communicating with the recesses *e*, and an upward extension on each of the parts *a* and *f*, forming a cup *g'*, in communication with the runners, as and for the purpose specified.

## 504,006. GRINDING-MACHINE.

Ernest H. Vogel, New York, N. Y. Filed Apr. 30, 1892. Serial No. 431,329. (No model.)



*Claim.*—1. In a grinding machine, a grinding wheel, a work table constructed to reciprocate beneath the grinding wheel, in combination with a grinding wheel frame, a rod rigidly attached thereto, and supporting standards in which the rod can rock and slide laterally, substantially as described.

2. In a grinding machine, a grinding wheel, a work table constructed to reciprocate beneath the grinding wheel, in combination with a grinding wheel frame, a feed screw frame, a feed screw for feeding said grinding wheel frame, a rod rigidly attached to said grinding wheel frame and supporting said feed screw frame, and standards in which the rod can rock and slide laterally, substantially as described.

3. In a grinding machine a reciprocating work table, and a grinding wheel mounted above said table so that its distance therefrom may be varied, in combination with a frame supporting said grinding wheel, and a former supporting said frame for varying said distance, said former consisting of two rails adjustably inclined in opposite directions, substantially as described.

## 504,007. DEVICE FOR STORING AND DELIVERING FILTERED WATER.

Frank E. Way, Dayton, Ohio. Filed Jan. 28, 1893. Renewed July 19, 1893. Serial No. 480,954. (No model.)

*Claim.*—1. In a storing and delivering device for filtered water, the combination with a supply pipe and a transparent, asceptic storage vessel of globular form, of a chambered connection between said supply pipe and storage vessel, consisting of a supporting arm having passages therein, one connected with the storage vessel, and the other leading to the outlet, and an inlet opening to said chambers, for the supply pipe, a draw-off cock at the outlet end, and a float valve mounted between said inlet and storage vessel and adapted to be closed when the water reaches a predetermined height in said vessel to shut off the water from said supply pipe.

2. In a storing and delivering device for filtered water, the combination with a supply pipe and a storage vessel, of a chambered connection consisting of a supporting arm having parallel passages, a draw-off cock mounted at the end of one passage, the storage vessel being mounted at the end of the other passage, the said connection being provided with an inlet opening for the supply pipe and an extension from said passages corresponding to the predetermined height of water in the storage vessel, a float mounted in the said extension and a valve connected to said float and seated in said passage between the supply pipe and the storage vessel to shut off the admission of water thereto.



3. In a storing and delivering device for filtered water the combination with a storage vessel and a filtering apparatus located at distant points, of interconnecting pipes between said apparatus and said vessel, a cock-controlled chambered vessel mounted in the path of said pipes, and consisting of an inlet passage to the storage vessel an outlet passage to the discharge cock, and a valve seated between said inlet and outlet passages and adapted, by the influx of water, to close at a predetermined water level in said vessel, and to open to allow the afflux of water, when the pressure beneath the valve is relieved by opening said discharge cock.

4. In a storing and delivering device for filtered water, the combination with a supply pipe and a storage vessel, of a chambered connection having an inlet for said supply pipe, a regulated outlet opening, and a passage leading therefrom in one direction toward the supply pipe, and a similar passage in the other direction toward the storage vessel, a storage vessel communicating therewith and a valve seat between said passages, a valve therefor, one member being provided with a hard rubber surface, and the other with a matching, yielding, soft rubber surface, a float connected to said valve and mounted in the extension from said connection, whereby the water is maintained at a predetermined height in said vessel by said float valve and readily admits a supply thereto when a portion is drawn off.

5. The combination with a storage vessel, a filtering apparatus, and a conducting pipe to deliver the water to said storage vessel, a chambered cock-controlled connection mounted in the path of said pipe and provided with an extension corresponding to the water level desired in said storage vessel, a float mounted in said extension, a valve operated by said float and seated in said connection in the path of the water, between said storage vessel and the discharge cock of said connection, whereby the water will flow into said storage vessel till the predetermined water level is reached, when the valve will be closed and maintain such level until the discharge cock is opened to draw the water therefrom.

## 504,008. EXTENSION-LADDER.

Augustus D. Webster, Springfield, Ill., assignor of one-third to J. S. Condell, Jr., same place. Filed Apr. 24, 1893. Serial No. 471,627. (No model.)

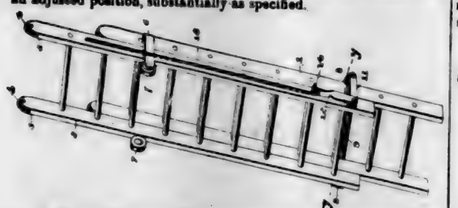
*Claim.*—1. The combination of ladder sections adjustably mounted in connection with each other, one of which is arranged to freely move over the other, an eccentrically mounted brake roller carried by one of said ladder sections and arranged to engage the other to lock it in adjusted position, said roller extending entirely across the said ladder section, and means to operate said roller substantially as described.

2. The combination of ladder sections adjustably mounted on each other, a pair of arms carried by one of said sections and supporting anti-frictional rollers, an eccentrically-mounted brake roller carried by the other section and arranged to be operated to clamp the one section against the other, and means to operate the said roller substantially as described.

3. The combination of ladder sections adjustably mounted upon each other, a pair of arms secured to one of said sections and forming bearings for an eccentrically mounted brake roller, a crank arm fixed

to said roller at one end, a catch and a cord having its one end secured to said catch, substantially as described.

4. The combination with slidably-connected ladder sections, of an eccentric brake roller mounted upon one of the sections to engage another section, a crank-arm fixed to said roller, an operating-cord connected to said crank-arm, and a catch to lock the crank-arm in an adjusted position, substantially as specified.



5. The combination of slidably-connected ladder-sections, of parallel arms carried by one section to engage the adjacent section, an eccentric-brake roller mounted in bearings in said arms to engage said adjacent section, a crank-arm connected to said roller, and an operating-cord connected to said crank-arm and fixed at the opposite end to the roller-carrying section, substantially as specified.

6. In an extension ladder, the combination of ladder sections movably mounted on each other and having tapered ends with slots therein, rollers mounted in said slots, a pair of arms secured to one of said ladder sections supporting anti-frictional rollers, a pair of arms carried by the opposite ladder section, an eccentric brake roller mounted in the arms, a crank arm attached to one end of said roller, a catch connected to said crank arm, a cord connected to said catch, and an adjacently situated pin or stud with which the said catch engages, substantially as described.

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**504,009. BRACKET FOR COFFINS.** ALBERT E. WHITNEY, Muncie, Ind. Filed Nov. 12, 1892. Serial No. 451,809. (No model.)

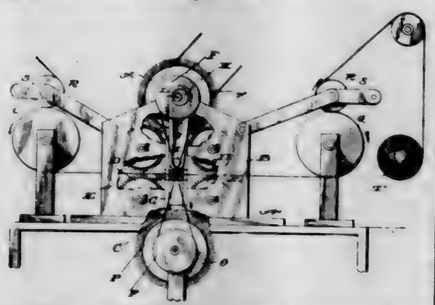


*Claim.*—A wreath rest for coffins or caskets consisting of a flat board or plate, hinged at one end within and to the frame of the coffin above the glass head plate, and resting when closed below the cap or cover, substantially as shown and described.

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**504,010. CLOTH-NAPPING MACHINE.** MILTON M. WILSON, Camden, N. J., assignor, by direct and mesne assignments, to Isaac N. Forrester and Spencer Fullerton, same place. Filed Aug. 19, 1892. Serial No. 443,502. (No model.)

*Brief.*—The machine includes two pairs of napping-rolls, the cloth being passed between the rolls of each pair and rotating said rolls by contact therewith, and a reciprocating guide and holder for the cloth placed between the two pairs of rolls.



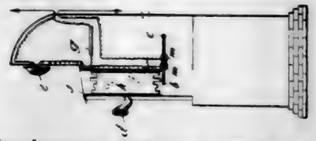
*Claim.*—1. In a cloth-napping machine, the combination of two pairs of napping rollers, the cloth being adapted to pass between the rollers of each pair and actuating the same and a reciprocating cloth holder and carrier arranged between the pairs of napping rollers and vibrating the cloth.

2. In a cloth-napping machine, the combination of two napping rollers, the cloth being adapted to pass over and actuating the same, and a reciprocating cloth holder and carrier arranged between the napping rollers and vibrating the cloth.

3. The combination with the napping rollers actuated by the cloth and the reciprocating cloth holder arranged between the same, of a driving shaft arranged above the holder and having a crank, a pitman connecting said crank with the cloth holder, and a brush roller secured on the driving shaft and engaging the napping rollers.

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**504,011. AUTOMATIC TELEPHONE.** JOSEF WRATTSCH and STEFAN GERSACSEVICS, Graz, Austria-Hungary. Filed Apr. 18, 1892. Serial No. 429,665. (No model.) Patented in Norway Sept. 19, 1891, No. 2,450; in Spain Sept. 19, 1891, No. 12,525; in Luxemburg Sept. 19, 1891, No. 1,503; in France Sept. 19, 1891, No. 216,225; in Belgium Sept. 19, 1891, No. 96,443; in Switzerland Sept. 19, 1891, No. 4,050; in England Sept. 22, 1891, No. 16,076; in Italy Sept. 30, 1891, No. 30,421/403; in Denmark June 7, 1892, and in Austria-Hungary Aug. 20, 1892, No. 11,680 and No. 38,430.



*Claim.*—In an automatic telephone, the combination of two contact springs *a a* adapted to be engaged by a metallic check, with a chute of non conducting-material, a spring-lever *b* secured to a support *c* and arranged under the said chute, and two electro magnets *m m* which trip the lever, said magnets and key *n* being contained in the central station circuit, whereby the officer in the central station may repress a key *n*, so that the token or metallic check can fall down and the electric connection is interrupted, substantially as described and for the purpose specified.

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**504,012. TAWING HIDES OR SKINS.** WILLIAM ZAHN, Newark, N. J. Filed Oct. 13, 1892. Serial No. 448,759. (No specimens.)

*Claim.*—1. In the art of tawing skins or hides, the herein described process, which consists in treating the same with a bath comprising therein a composition consisting of chromic oxide salts and a zinc salt, and adding a sulphide of an alkali, for the purposes set forth.

2. In the art of tawing skins or hides, the herein above mentioned composition consisting of chrome alum, zinc sulphate, chloride of sodium and sulphide of potassium, substantially as set forth.

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**504,013. PROCESS OF TANNING HIDES OR SKINS.** WILLIAM ZAHN, Newark, N. J. Filed Dec. 10, 1892. Serial No. 455,385. (No specimens.)

*Claim.*—1. The method herein described of tanning skins or hides, which consists, first, in subjecting the previously prepared skins or hides to a bath containing bichromate of potash, common salt and muriatic, or other like acid, and secondly, subjecting the skins or hides thus treated, to a bath containing saltpeter, an arsenite salt, such as arsenite of sodium or potassium, and muriatic or other like acid, substantially as set forth.

2. In the process herein described of tanning skins or hides, the reduction of chromic acid compounds by arsenite salts, substantially as set forth.

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**504,014. ART OF TAWING SKINS.** WILLIAM ZAHN, Newark, N. J. Filed Jan. 3, 1893. Serial No. 457,140. (No specimens.)

*Claim.*—1. In the art of tawing skins or hides, the herein described process, which consists in treating the same with a bath comprising therein a composition consisting of chromic oxide salts, zinc salts and manganese salts, and adding a sulphide of an alkali, for the purposes set forth.

2. In the art of tawing skins or hides, the herein above mentioned composition consisting of chrome alum, manganese sulphate, chloride of sodium and sulphide of potassium, substantially as set forth.

3. In the art of tawing skins or hides, the herein above mentioned composition consisting of chrome alum, zinc sulphate, manganese sulphate, sodium chloride, and sulphide of potassium, substantially as set forth.

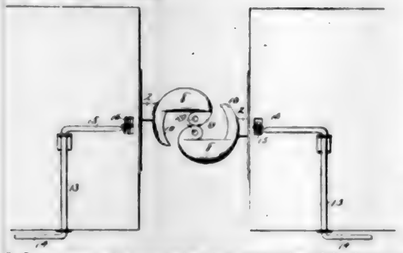
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**504,015. CAR-COUPLING.** JACOB ZILIUS, Huntingdon, Pa. Filed Jan. 3, 1893. Serial No. 457,045. (No model.)

*Claim.*—1. A car coupler comprising a draw-bar loosely secured at its inner end, capable of lateral movement at its outer end, and having a hooked draw-head, and a vertically movable actuating-plate formed with an inclined opening, $12^a$, substantially as set forth.



2. In an automatic car coupler, the combination of the draw-bar loosely secured at its inner end, supported near its outer end on a transverse bearing, and having the hooked draw-head at its outer end, and the vertically moving actuating-plate 12 formed with the inclined opening $12^a$ and engaging with the outer end of the draw-bar; substantially as set forth.



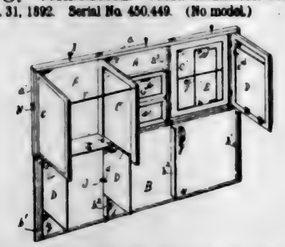
3. In an automatic car coupler, the combination of the draw-bar loosely secured at its inner end, capable of lateral movement at its outer end, and having the draw-head formed with the outwardly-extending curved lip 10 and the hook 9 having the integral hood-piece $9^a$ beyond which the point of the hook extends, and the vertically movable actuating-plate 12 having the inclined opening and engaging with the outer end of the draw-bar; substantially as set forth.

4. In an automatic car coupler, the combination, of a suitable bearing plate, as 4, the draw-bar having a headed rod extending from its rear end loosely through said plate and a bumper-spring encircling the rod between the plate and draw-bar, the draw-bar being formed at its outer end with the inclined sides 11 and shoulder $11^a$, and with the hooked draw-head, and the vertically moving actuating-plate 12 formed with the inclined opening $12^a$ and the stop-shoulder $12^b$, adapted to engage the shoulder $11^a$ of the draw-bar; substantially as set forth.

5. In an automatic car coupler, the combination of the draw-bar loosely secured at its inner end, capable of lateral movement at its outer end, and having the hooked draw-head, the bearing-frame 18 having the series of small rollers journaled transversely in it, and secured transversely beneath the laterally-movable outer end of the draw-bar, and the vertically movable actuating-plate having the inclined opening and engaging with the outer end of the draw-head; substantially as set forth.

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**504,016. VOTING-BOOTH.** PETER ZUCKERSOHL, Tell City, Ind. Filed Oct. 31, 1892. Serial No. 450,449. (No model.)



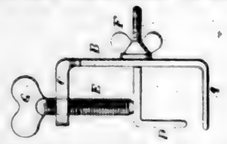
*Claim.*—1. The combination substantially hereinbefore set forth, of the tray, the paneled frames hinged thereto, and adapted to fold within it, the top hinged to one edge of the tray, adapted to close over the folded paneled frames, and the transverse ribs and shelves to hold the paneled side frames in the unfolded position.

2. The combination of the tray, A, $a$, $a'$, the transverse ribs, $a^2$, $a^3$, the paneled frames C, C', hinged respectively to the back A, and ribs, $a^3$, adapted to fold one upon the other within the tray, the leaves D hinged to the lower rail of the paneled frames, and adapted to fold in upon the panels, and unfold to form lower extensions of said paneled frames, the shelves E to brace and support the frames in the unfolded position and rest within the paneled frames for folding, the curtains and rods supporting them for closing the fronts of the booths, and the hinged top B, $b$, covering the tray when the parts are folded, substantially as and for the purpose set forth.

3. The combination of the tray, the paneled frames adapted to fold one upon the other within it, and leave a central space or storage cabinet, the hinged leaves D adapted to fold within the paneled frames, and unfold and form the lower extension of said frames, the hinged part B, $b$, having transverse ribs, $b'$, $b^2$, to support the unfolded leaves, and hinged to the lower rail of the tray to fold over it when the parts are closed, the outer face of the top being, when closed finished to serve as a black board, substantially as shown and described

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**504,017. TIRE-CLAMP.** JAMES W. ADGIER, Merchantville, N. J. Filed Aug. 23, 1892. Serial No. 443,927. (No model.)



*Claim.*—1. The clamp consisting of the main slotted piece having the projections A, C, and screw bolt G, and a movable gage provided with a winged nut F, substantially as described.

2. The herein described clamp consisting of a main part having a slot to receive an adjustable gage piece a projecting part A and a part C provided with a screw threaded opening to receive a screw bolt substantially as described.

3. The herein described clamp having the projection A, the gage to clamp the felly and the screw bolt G, for applying pressure to the tire all as set forth.

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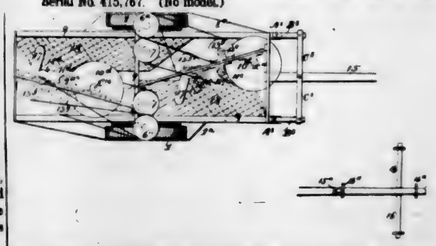
**504,018. POINT FOR AUGERS.** WILLIAM CALDWELL, Cootamon, New South Wales. Filed Jan. 31, 1893. Serial No. 460,187. (No model.) Patented in New South Wales Dec. 11, 1890, No. 2,671, and in England July 28, 1891, No. 12,810.



*Claim.*—An auger having a conical point and two wide or open pitch threads on the said conical point, the threads decreasing in size as they approach the apex of the point and extending beyond the apex of the point, whereby two radial cutting wings or points are formed, substantially as shown and described

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**504,019. COTTON-HARVESTER.** LOUIS COOPER, Boiling, Ala., assignor of one-half to James A. Reid, same place. Filed Dec. 21, 1891. Serial No. 415,767. (No model.)



*Claim.*—1. In a cotton harvester the combination of the frame, a pair of supporting wheels, and two caster-wheels pivoted at the front end, with two series of picker-cylinders located at diagonally opposite corners of the machine, one series being at the front end of the machine and the second series at the back end, said cylinders being nearly vertical but slightly inclined, substantially as described.

2. In combination with the picker-cylinders of a cotton harvester, the combined brush and fan alongside thereof, consisting of a central shaft, a series of collars having inclined wings thereon and brushes attached to said wings and a vertically slotted casing inclosing said brushes and wings, substantially as described.

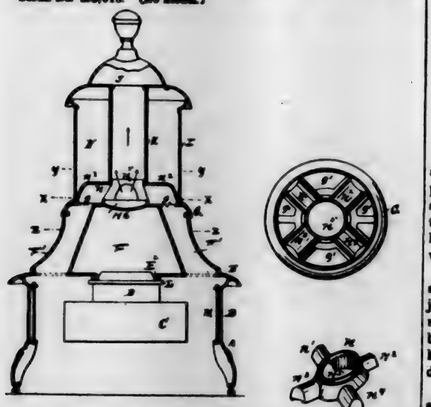
3. The combination of the tongue of a cotton harvester having its inner end pivoted thereto, the bars $C^9$, and levers $B^2$ connecting the tongue with the upright pivot bars of the caster wheels at one end, and at the opposite end the bent yoke 16 having its top bar connected to the tongue at two points by rings, substantially as described.

4. In a cotton harvester the combination of a pair of picker cylinders at one end of the machine with a similar pair at the opposite end, the cylinders of each pair being of different sizes and rotated at different speed and in opposite directions, substantially as described.

5. In a cotton harvester the combination of two pairs of picker-cylinders, one pair being on one side of the longitudinal axis of the machine and adjacent to the front thereof, and one pair being on the opposite side of said axis and adjacent to the rear thereof, with the plant-folders 10 in front of each pair, substantially as described.

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**504,020. OIL HEATING-STOVE.** GEORGE W. CORE, Detroit, Mich., assignor to the Art Stove Company, same place. Filed Dec. 19, 1892. Serial No. 455,618. (No model.)



*Claim.*—1. In an oil stove, the combination of a base, an oil burner, a combustion chamber, a plate G located above the combustion chamber, constructed with perforated arms G', and with perforations "*g*" between said arms, a plate H constructed with channeled arms open on the under side resting upon the arms G' of the plate G, and communicating therethrough, a drum I, an interior flue K located above the plate H and communicating therethrough, and flues F' communicating with said channeled arms, the chamber between said drum and flue K communicating through the perforations "*g*" with the combustion chamber, substantially as described.

2. In an oil stove the combination of the base, an oil burner, a combustion chamber, a perforated plate G above the combustion chamber, a plate H constructed with channeled arms open on the under side resting upon the plate G, a drum I, an interior flue K located above the plate H, and communicating therethrough, and flues F' communicating with said channeled arms, the chamber between the flue K and the drum communicating with the combustion chamber, substantially as described.

3. In an oil stove, having a combustion chamber and an air chamber N thereabove, a plate G constructed with a series of perforations "*g*" through which the air chamber communicates with the combustion chamber, and with a series of perforations "*g*" at the periphery thereof, a plate H constructed with a central opening and with channeled arms resting upon the plate G over the perforations "*g*," an interior flue K communicating with the central opening of the plate H, and vertically extended air flues located at the corners of the combustion chamber, communicating through the perforations "*g*" with the extremities of said channeled arms, substantially as described.

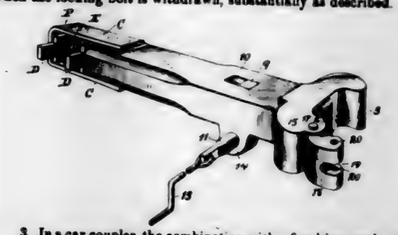
4. In an oil stove, the combination of a base, an oil burner formed with a collar L, a cover plate E constructed with a central opening, the periphery of which rests upon said collar, a combustion chamber, a perforated plate G, a plate H resting upon the plate G, constructed with a central opening and channeled arms, a drum I, an inner flue K located upon the central opening of the plate H, and flues F' communicating through the plates E and G with the channeled arms of the plate H, the chamber between the drum I and flue K communicating through the plate G with the combustion chamber, substantially as described.

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**504,021. CAR-COUPLING.** WILLIAM H. CRAMER, Saginaw, Mich., assignor of five-sixths to William G. Cowan, Thomas R. Cotter, Willis G. Van Auken, and Abram P. Bliss. Filed May 1, 1893. Serial No. 472,888. (No model.)

*Claim.*—1. In a car coupler, the combination with a fixed jaw and a movable jaw or knuckle, of a locking bolt arranged in the draw head, and a spring, secured within the locking bolt chamber, and bearing against the rear face of the knuckle, for throwing said knuckle open when the locking bolt is withdrawn, substantially as described.

2. In a car coupler, the combination with a fixed jaw and a movable jaw or knuckle, of a locking bolt arranged in the draw head, and a flat spring, secured within the locking bolt chamber, and bearing against the rear face of the knuckle, for throwing said knuckle open when the locking bolt is withdrawn, substantially as described.



3. In a car coupler, the combination with a fixed jaw, and a movable jaw or knuckle, of a locking bolt arranged in the draw head, a projecting latch secured in said locking bolt, means for reciprocating said latch and thereby the locking bolt, and a spring, secured within the locking bolt chamber, and bearing against the rear face of the knuckle, for throwing open said knuckle when the locking bolt is withdrawn, substantially as described.

4. In a car coupler, the combination with a fixed jaw and a movable jaw or knuckle, of a locking bolt having secured therein a projecting latch arranged in the draw head, a slotted, revoluble bar for reciprocating said latch and thereby the locking bolt, and a spring, bearing against the rear face of the knuckle, for throwing said knuckle open when the locking bolt is withdrawn, substantially as described.

5. In a car coupler, the combination with a fixed jaw and a movable jaw or knuckle, of the locking bolt 6, having secured within it the projecting latch 9, arranged within the draw head, the slotted bar 12 for reciprocating said latch and thereby the locking bolt, and the spring 21, bearing against the rear face of the knuckle, for throwing said knuckle open when the locking bolt is withdrawn, substantially as described.

6. The combination with a car coupler having a fixed jaw and a movable jaw or knuckle, a locking bolt having secured therein a projecting latch arranged within the draw head, means for reciprocating said latch and thereby normally operating the locking bolt and means for throwing said knuckle open when the locking bolt is withdrawn, of a strap, connected with the frame-work of the car, for engaging with said latch and withdrawing the locking bolt before the coupler can be torn from the car, substantially as described.

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**504,022. CULINARY VESSEL.** JAMES CUNNINGHAM, Dushore, Pa. Filed Sept. 2, 1892. Serial No. 444,850. (No model.)



*Claim.*—The culinary vessel comprising the inner vessel provided with an outside casing arranged to form a space entirely around the inner chamber and an exit aperture formed in the upper portion of the wall of the inside vessel to establish a communication between the interior of the inside vessel and the entire chamber surrounding said vessel and a lip extending outwardly and upwardly from below said exit aperture to form a shield, substantially as and for the purposes set forth.

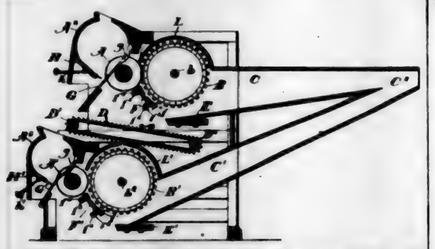
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**504,023. SAW COTTON-GIN.** HENRY J. DAVIS, JOHN ENDE, and JOHN C. MCDANIEL, Iron City, Ala. Filed Apr. 29, 1893. Serial No. 472,903. (No model.)

*Claim.*—1. A cotton-gin comprising a frame-work or casing having two or more compartments therein, each provided with a roll-box arranged so as to adapt one to deliver into the other, a flue for each roll-box, grates and saws of different sizes or grades for the respective boxes, a brush for each set of saws, a mote-carrier arranged below the upper brush and means for rotating said brushes and saws in opposite directions and simultaneously imparting motion to said mote-carrier, substantially as described.



2. In a cotton-gin, the combination with the frame-work or casing having the upper and lower compartments therein and provided with a flue for each compartment, of the upper and lower roll-boxes one of which is adapted to deliver into the other, a grate for each box, the revolving saws projecting through said grates, the oppositely revolving brushes, the whipper-boards arranged below said brushes, the mote-boards and means for directing the motes falling from the upper board into the lower roll box substantially as described.



3. In a double or triple cotton gin, the combination with the roll-boxes having the grates and regulating boards therein, the revolving saws, the oppositely revolving brushes, and the traveling mote-carrier interposed between the upper and lower brushes so as to deliver into the lower roll-box, and means for imparting motion to said saws, brushes and carrier, substantially as described.

4. In a cotton-gin, the combination with the upper and lower roll-boxes, of the revolving saws, the oppositely revolving brushes, the whipper-boards, the mote-boards, the mote-carrier below the upper brush, and mechanism for imparting motion to said saws, brushes and carrier, substantially as described.

5. In a double or triple cotton-gin, the combination with the frame-work or casing having the upper and lower compartments therein provided with a common flue, of a roll-box for each compartment, one adapted to deliver into the other, grates of different sizes for the respective roll-boxes, revolving saws of different sizes mounted in said compartments, revolving brushes mounted in rear of the saws, the adjustable whipper-boards arranged in close proximity to said brushes, the adjustable mote-boards arranged below the brushes and means for discharging the motes falling from the upper brush into the lower roll box, substantially as described.

6. In a double or triple saw-gin, the combination with the upper and lower revolving brushes and oppositely revolving saws, of the intermediate traveling belt or mote-carrier, the adjustable whipper-board, and the adjustable mote-board arranged and adapted to operate substantially as described.

7. In a double or triple cotton-gin, the combination with the frame-work or casing having two or more compartments therein, each provided with a flue, of a roll-box for each compartment, one adapted to deliver into the other, revolving saws and oppositely revolving brushes for each roll-box, and an intermediate mote-carrier adapted to deliver into the lower roll-box, substantially as described.

8. In a double or triple cotton-gin, the combination with the frame-work or casing having two or more compartments therein provided with a common flue, of a roll-box for each compartment one being adapted to deliver into the other, revolving saws and oppositely revolving brushes for each roll-box, a mote-carrier arranged between the upper and lower compartments, whipper-boards for the brushes, and adjustable mote-boards for regulating the discharge of motes &c., from said compartments, substantially as described.

9. In a cotton-gin, the combination with the revolving brush, of the lint and dust guard comprising the circular plate or disk revolving with the brush, and the stationary plate or ring encircling said disk and provided with a corresponding flat circular plate or ring overlapping the periphery of said disk so as to shield and protect the brush-shaft and bearings, substantially as described.

10. A cotton-gin comprising a frame-work or casing having two or more compartments therein one arranged above the other and provided with a common flue, a roll-box for each compartment one adapted to deliver into the other, and each provided with a grate, revolving saws of different sizes for the respective compartments projecting through said grate oppositely revolving brushes arranged in proximity to said saws, the adjustable whipper-boards having concave faces presented to the brushes, the mote-carrier adapted to deliver into a lower roll-box, the adjustable mote-boards, and means for imparting motion to said saws, brushes and carrier, substantially as described.

11. In a double or triple cotton-gin, the combination with the upper and lower roll-boxes, the revolving saws and their oppositely revolving brushes, and means for directing the motes falling from the upper brush into the lower roll box of a main driving-shaft having a band-wheel thereon, a counter-shaft carrying a similar band-wheel, a band-wheel on each saw-shaft, smaller band-wheels on the brush-shafts, and an endless belt or band passing from the band-wheel on said main shaft over the band-wheel on the counter and saw-shafts, and under the band-wheels of reduced size on the brush-shafts so as to lift and relieve the bearings of the latter shafts, substantially as described.

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**504,024. KEY FOR MUSICAL STRINGED INSTRUMENTS.** SYDENHAM B. DIETZ, Jr., Washington, D. C. Filed Apr. 21, 1892. Serial No. 471,335. (No model.)



*Claim.*—1. In a tuning peg, the combination of a threaded shank, a sleeve fixed to rotate with the shank and having a longitudinal movement thereon, and a nut engaging the threads of the shank and adapted to move the sleeve; the said shank and sleeve being provided with beveled surfaces to engage a bushing or bearing, substantially as and for the purpose set forth.

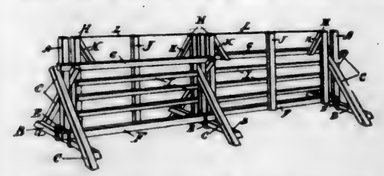
2. In a tuning peg, the combination with a bushing having its ends beveled; of a shank journaled in the bushing and having threads and also having a beveled surface to engage one end of the bushing, a sleeve fixed to rotate with the shank and having a longitudinal movement thereon and also having one of its ends beveled to engage the beveled end of the bushing, and a nut engaging the threads of the shank, and adapted to move the sleeve, substantially as and for the purpose set forth.

3. In a tuning peg, the combination with a bushing adapted to be fixed in the neck or head of a banjo and having its ends beveled; of a threaded shank journaled in the bushing and having the beveled shoulder *d*, and also having a spline groove *e*, a sleeve mounted on the shank and having its inner end beveled and also having a stud in engagement with the groove *e*, of the shank, and a nut mounted on the shank and adapted to adjust the sleeve F, substantially as and for the purpose set forth.

4. As an improved article of manufacture, a tuning peg or key, having a shoulder, a shank extending from the shoulder, and having a portion of its length threaded, and a slidable sleeve arranged on the shank and having its inner end beveled, and a nut for adjusting said sleeve on the shank, substantially as specified.

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**504,025. FARM-FENCE.** ROBERT B. DUNCAN and JAMES DUNCAN, Cormley, Canada. Filed Mar. 31, 1892. Serial No. 466,532. (No model.)



*Claim.*—A farm fence comprised of upright posts A, a sill B, on which the upright posts A, rest, side stakes C, secured to the sill B, the upper extremities of which cross each other on opposite sides of the upright posts A to form crotches D, a bracket E connected to the sill B and adapted to hold the end of the lower rail F, the rider G resting in the crotches D, the lower rail F resting on the sills B, the upright H secured to the rider and lower rail F, braces K, the upper ends of which are secured to the upper ends of the uprights H and the lower end of the said brace secured to the rider G, substantially as and for the purpose set forth.

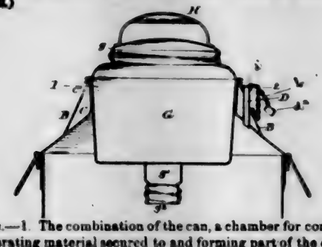
**504,026.** CAR-FARE HOLDER. GEORGE J. FIEDLER and ALBERT C. PROEL, Milwaukee, Wis. Filed May 8, 1893. Serial No. 473,456. (No model.)



*Claim.*—1. A holder for car-fare checks and analogous articles, comprising a casing consisting of a shell having two heads, one of said heads being detachable and one of the heads being slotted, said shell having a transverse slot adjacent to one of said heads and a longitudinal slot, a slide having a lip or projection on one end, and an operating shank passing through the slot in the head, and a spring within said casing having one end thereof fitting between the walls of the longitudinal slot in the shell, substantially as set forth.

2. A holder for car-fare checks and analogous articles, comprising a casing consisting of a shell having two heads, one of said heads being detachable and one of the heads being slotted, and grooved on its inner side, said shell having a transverse slot adjacent to one of said heads, and a longitudinal slot, and a graduated and numbered scale on its outer surface adjacent to said longitudinal slot, a slide fitting in the groove in the head and having a lip or projection on one end, and an operating shank passing through the slot in the head, and a spiral spring within said casing having one end thereof fitting between the walls of the longitudinal slot in the shell, substantially as set forth.

**504,027.** MILK-CAN. CHARLES FRIES and WILLIAM H. RICHARDSON, Philadelphia, Pa. Filed Nov 7, 1892. Serial No. 451,208. (No model.)



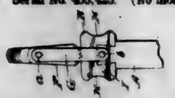
*Claim.*—1. The combination of the can, a chamber for containing the refrigerating material secured to and forming part of the cover of said can, a removable cap for said chamber, a drip chamber at the bottom of the refrigerating chamber, and a cap for said drip chamber, substantially as specified.

2. The combination of the can, the casing surrounding the upper portion of the same and forming a circulating-chamber, said casing being provided with inlet and outlet apertures for the circulation of air, substantially as specified.

3. The combination of the can, a refrigerating chamber at the upper portion thereof, a casing surrounding the upper portion of said can and forming a circulating chamber, said casing having lower inlet and upper outlet apertures arranged in different vertical planes so as to cause the air to travel part way around the circumference of the can, substantially as specified.

4. The combination of the can, with a vent tube extending through the can and having its opposite ends open respectively to the interior of the can and the outer air, with caps adapted to the upper end of said vent tube, substantially as specified.

**504,028.** WASHBOARD. HENRY J. GILBERT, Saginaw, Mich. Filed Dec. 17, 1892. Serial No. 455,425. (No model.)



*Claim.*—1. In a wash board, the combination of the top rail E, the plates G pivoted to the board, and the protector F pivoted at its ends to the plates G and co-operating with the rail E in the manner and for the purpose described.

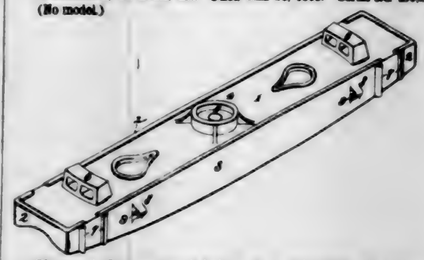
2. In a wash board, the combination of the top rail E having portions of its ends cut away to form the shoulders I, the plates G pivoted to the board and adapted to rest upon the shoulders I, and the protector F pivotally supported by the plates G and co-operating with the rail E, substantially as described.

3. In a wash board, the combination, with the top rail E having an edge provided with a groove H, of the plates G pivoted to the board, and the protector F pivoted at its ends to the plates G and having one of its edges adapted to co-operate with the groove H in the top rail E, in the manner described.

4. In a wash-board, the combination, with the top-rail E having an edge provided with a groove H, and also having the upper portions of its opposite ends cut away to form the supporting shoulders I, of the plates G pivoted to the ends of the rail E above the shoulders I and adapted to rest upon the latter when brought to horizontal position, and the protector F carried by the plates G and having one of its edges adapted to co-operate with the groove H in the top-rail E.

5. In a wash board, the combination, with the top rail E provided at its ends with stops or shoulders, as I, and having the concave grooves H in its opposite edges, of the plates G pivoted to the board and adapted to be swung to either side and rest upon the shoulders I, and the reversible protector F pivotally supported in the plates G and adapted to co-operate with the grooves H in the rail E in the manner and for the purpose set forth.

**504,029.** CAR-TRUCK BOLSTER. EDWARD F. GOLTRA and MORRIS S. SCHAFFER, St. Louis, Mo. Filed Jan. 21, 1893. Serial No. 459,219. (No model.)



*Claim.*—1. In a car truck bolster, the combination of a web and girders, said web and girders being cast in one piece, and said web being wholly or partly below the top of said girders.

2. In a car truck bolster, the combination of a web and sides, said web and sides being cast in one piece, and said bolster having integral side-bearings, and said sides being united beneath the tops of said side-bearings by means of said web.

3. In a car truck bolster, the combination of a web and girders, said web and girders, at a point or points between the ends of the bolster, having integral cross-ribs, substantially as described.

4. In a car truck bolster, the combination of a web and sides, said bolster having center and side-bearings, said sides, wholly or in part throughout their length extending above said web, said sides, at a point or points between the ends of the bolster, being connected by cross-ribs with said web, and said sides, web, bearings and ribs being an integral casting.

**504,030.** WHEEL-PRESS. HENRY D. GORDON, Altoona, Pa. Filed July 20, 1892. Serial No. 440,566. (No model.)

*Claim.*—1. In a wheel press the combination with a wheel supporting platform, of independent standards arranged at each side of said platform, press mechanism connected to and movable with said standards, and means for moving said standards vertically with respect to the platform, all substantially as and for the purpose specified.

2. The combination of stationary guides C C, supports F vertically adjustable in said guides, wheel-press mechanism secured to and moving with said supports, and mechanism for moving the supports and the press supported thereon substantially as specified.

3. The combination of stationary guides C C, supports F vertically adjustable in said guides, wheel-press mechanism secured to and moving with said supports, pulleys O O' O² secured to the guides, chains P P' attached to the supports and working over the pulleys as described so that both supports will move up or down simultaneously and mechanism for moving the supports and the press supported thereon substantially as specified.

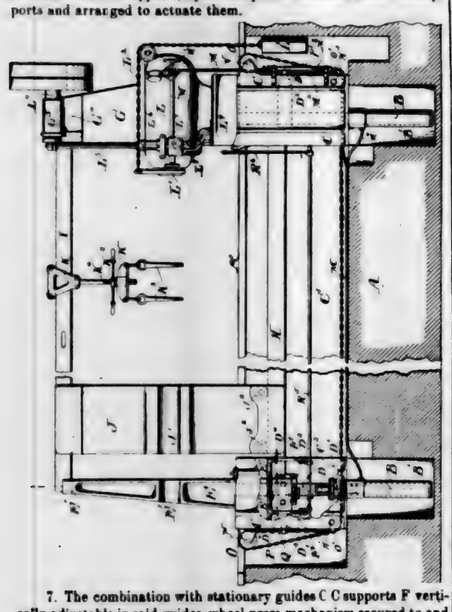
4. The combination of stationary guides C C, supports F vertically adjustable in said guides, lock mechanism for securing said supports at any desired points to the guides, wheel press mechanism secured to and moving with said supports, and mechanism for moving the supports and the press supported thereon substantially as specified.

5. The combination of stationary guides C, C, supports F vertically adjustable in said guides, lock mechanism for securing said supports



at any desired points to the guides, wheel press mechanism secured to and moving with said supports, pulleys O O' O² secured to the guides, chains P P' attached to the supports and working over the pulleys as described so that both supports will move up or down simultaneously, and mechanism for moving the supports and the press supported thereon substantially as specified.

6. The combination with stationary guides C C supports F vertically adjustable in said guides, wheel press mechanism secured to and moving with said supports, hydraulic presses situated below the supports and arranged to actuate them.



7. The combination with stationary guides C C supports F vertically adjustable in said guides, wheel press mechanism secured to and moving with said supports, a pump secured to and forming part of the press and connections from said pump to the hydraulic cylinders aforesaid.

8. In an adjustable wheel-press the combination of guides C having racks O³ connected therewith, supports F vertically movable in said guides, pawls R pivoted to support F and means for simultaneously engaging and disengaging said pawls with the racks substantially as specified.

**504,031.** WHEEL-PRESS. HENRY D. GORDON, Altoona, Pa. Filed Aug. 25, 1892. Serial No. 444,127. (No model.)

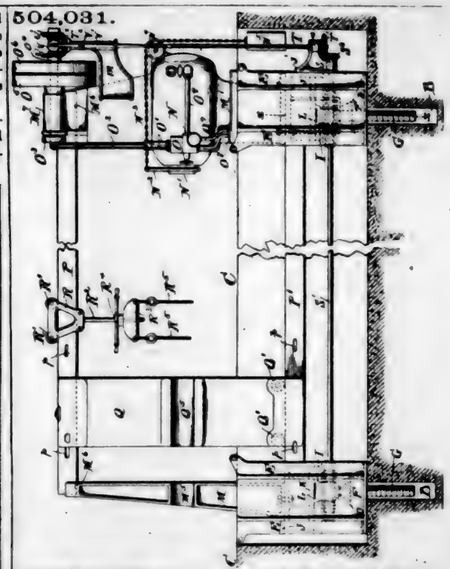
*Claim.*—1. The combination of standards M M' supporting the operative parts of a wheel press, guides arranged to hold said standards in alignment while permitting them to move vertically, threaded blocks secured beneath each standard, screws working in said blocks and arranged to support the standards, and screw actuating mechanism arranged to actuate the screws simultaneously and in the same direction so as to lower and raise the press.

2. The combination of standards M M' supporting the operative parts of a wheel press, guides arranged to hold said standards in alignment while permitting them to move vertically; threaded blocks secured beneath each standard, screws working in said blocks and arranged to support the standards, anti-friction balls placed between the standards and the rotating heads of the screws, and screw-actuating mechanism arranged to actuate the screws simultaneously and in the same direction so as to raise and lower the press.

3. The combination of standards M M' supporting the operative parts of a wheel press, guides arranged to hold said standards in alignment while permitting them to move vertically, threaded blocks secured beneath each standard, screws working in said blocks and arranged to support the standards, worm wheels secured to each screw, a shaft S' secured in bearings attached to each standard, worms secured to said shaft and in engagement with the worm wheels on the screws, and means for actuating said shaft to raise and lower the standards.

4. The combination of standards M M' supporting the operative parts of a wheel press, guides arranged to hold said standards in alignment while permitting them to move vertically, threaded blocks secured beneath each standard, screws working in said blocks and arranged to support the standards, worm wheels secured to each screw, a shaft S' secured in bearings attached to each standard, worms secured to said shaft and in engagement with the worm wheels on the screws, a shaft T journaled in supports upon the cam-carrying standard M', gearing connecting shafts S' and T, a driving shaft O⁴ on the standard M', a miter wheel T² secured to shaft T, miter-wheels U U' journaled on shaft O⁴ and in engagement with gear T² and a clutch V arranged to connect either of gears U or U' with shaft O⁴ substantially as and for the purpose specified.

**504,031.**



ment while permitting them to move vertically, threaded blocks secured beneath each standard, screws working in said blocks and arranged to support the standards, worm wheels secured to each screw, a shaft S' secured in bearings attached to each standard, worms secured to said shaft and in engagement with the worm wheels on the screws, a shaft T journaled in supports upon the cam-carrying standard M', gearing connecting shafts S' and T, a driving shaft O⁴ on the standard M', a miter wheel T² secured to shaft T, miter-wheels U U' journaled on shaft O⁴ and in engagement with gear T² and a clutch V arranged to connect either of gears U or U' with shaft O⁴ substantially as and for the purpose specified.

**504,032.** TIRE. SQUIRE GREES, Stretford, England. Filed May 29, 1893. Serial No. 475,909. (No model.)



*Claim.*—1. A steel tire for bicycles and other vehicles constructed of tubular or hollow form divided into a number of narrow transverse sections by a series of transverse slits or slots around the periphery substantially as described.

2. A tire for bicycles and other vehicles constructed of a hollow steel tube of oval or egg shape with a number of slits or slots cut transversely to give the desired amount of elasticity and resilience and a suitable covering of rubber, canvas or other material substantially as described and shown.

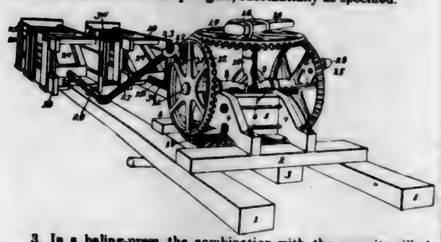
3. In a tire for bicycles and other vehicles the combination of a tubular tire divided into a number of sections by transverse slits or slots with an outer tread and covering of rubber an intermediate protecting covering of a hard flexible material and a strip of hard material wound round under the cover to produce projections thereon substantially as described.

**504,033.** BALING-PRESS. CHARLES HARRINGTON, Bartlett, Tex., assignor of one-half to Edward Rowntree, same place. Filed Feb. 14, 1893. Serial No. 462,286. (No model.)

*Claim.*—1. In a baling-press, the combination with a suitable base, a pair of baling-chambers arranged at one end thereof, and a framework at the opposite end of the base, of a pair of plungers mounted in the baling-chambers, opposite horizontal shafts located on the framework, beveled gears at the outer ends of said shafts, connecting-rods between the beveled gears and the ends of the plunger-

stems, and a superimposed beveled gear supported in the framework and meshing with the beveled gears, and a sweep-arm carried by said superimposed gear, substantially as specified.

2. In a baling-press, the combination with a pair of baling-chambers, their plungers and stems, of a framework located opposite the chambers, a "four-way" casting supported in the framework, pairs of horizontal and vertical shafts located in the branches of the casting, beveled gears located upon the outer ends of each of the shafts and engaging each other, a sweep-arm carried by the upper horizontal gear, and pitman-rods connected with the side-gears and loosely connected to the stems of the plungers, substantially as specified.

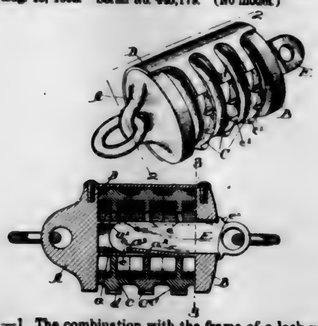


3. In a baling-press, the combination with the opposite sills 1, cross-sills 2, standards 4, end-pieces 5, and the tie-bolts 6, of the "four-way" casting 9, having the transverse branches 8 and vertically opposite branches 10, the shafts 11 located in the branches 8, the beveled gear-wheels 12 carried by said shafts, a shaft 13 located in the upper branch 10, the gear-wheel 14 carried by the shaft and provided with keepers 15, the sweep-arm 16 mounted therein, the lower shaft 17, the beveled gear 18, the ways 31 mounted on the side gears 12 and provided with perforations, and the wrist-pins 29 having plates 30 together with their locking-pins, the baling-chambers, the plungers mounted therein, the stems for the plungers, keepers for the stems mounted on the sills 1, and the connecting-rods 27 between the ends of the stems and wrist-pins, substantially as specified.

4. In a baling-press, the combination with the two baling-chambers comprising inner posts, the upper and lower pairs of tubular braces, and the tie-rods passing entirely through the chambers and through the braces, of the plungers mounted in the chambers, and means for operating said plungers, substantially as specified

## 504,084. PERMUTATION-PADLOCK. WALTER HAY, Chicago, Ill.

Filed Aug. 15, 1892. Serial No. 443,179. (No model.)



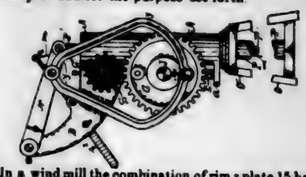
*Claim.*—1. The combination with the frame of a lock provided with a slotted post having a laterally yielding undercut catch at one side of a sliding bolt fitted to the post and having an under cut notch to engage with the catch, and a series of slotted tumblers journaled upon the post.

2. The combination with the frame of a lock, a series of slotted tumblers and a notched bolt, of a central post upon which the tumblers turn, said post being slotted upon one side and provided upon the other with a catch adapted to engage with the notch in the bolt; substantially as described.

3. The combination with the frame of a lock containing a tapering slot, of a notched bolt fitted to said slot, a series of notched tumblers and a central post upon which said tumblers turn bearing a slot upon one side and a catch upon the other adapted to engage with the notch in the bolt; substantially as described.

## 504,085. WINDMILL. GEORGE HERZOG, Joliet, Ill. Filed Feb. 15, 1893. Serial No. 462,690. (No model.)

*Claim.*—1. In a wind mill the wheel comprising the combination of the hub H having the annular flanges 1, 2, 3, and having its inner end cogged to form the pinion O', spokes *v* secured at their inner ends to flange 2, spokes *a* secured at their inner ends to flanges 1 and 3 respectively, braces *g* for connecting spokes *v* with each other, rims *z* and *x*, castings *e* and *i* for connecting said rims and spokes, and the sails 4 and the fastening plates for connecting the sails with said rims substantially as and for the purpose set forth.

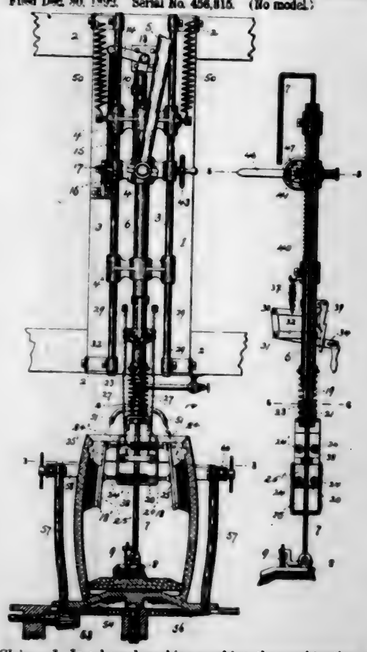


2. In a wind mill the combination of rim *z* plate 15 having the ear lugs 10, and adapted to stand on its edge against the side of a sail 4, sail 4 having apertures for receiving said ear lugs for securing said plate to the sail, plate 8 having the side flanges 12, 14, 20 and having stud 19, and adapted to be attached to plate 15 by bolt 9, bolt 9, and sail 4 having apertures for receiving ear lugs 10, and for receiving rim *z* all arranged to operate substantially as and for the purpose set forth.

3. In a wind mill the combination of rim *x* plate 6 having the hook or lip 7 for attaching said rim to said plate, and having the ear lugs 11, and the sail 4 having apertures for receiving said ear lugs for attaching said plate to said sail, all arranged to operate substantially as and for the purpose set forth.

## 504,086. BARREL-WASHER. ROBERT C. ISELER, Boston, Mass.

Filed Dec. 30, 1892. Serial No. 456,815. (No model.)



*Claim.*—1. In a barrel-washing machine, the combination with a plunger-shaft, and means for reciprocating the same, of a brush-carrier secured to the lower end of said shaft, and mechanism adapted to produce yielding movement of the brush-carrier longitudinally of said shaft, substantially as specified.

2. In combination with a reciprocating plunger shaft, and a removable extension sleeve at its lower end, a collar adapted to slide upon said sleeve, and a spring-actuated brush-carrier affixed to said collar, all operating substantially as explained.

3. In a barrel-washer, a reciprocating plunger-shaft, its cross-heads, and guides therefor, combined with a brush-carrier at its lower end, a series of movable rods transversely positioned in said carrier, and brushes affixed at the outer ends of said rods and adapted for universal movement, substantially as stated.

4. The combination with a reciprocating shaft, a brush-carrier, and brushes thereupon to operate on the staves of the barrel, of an oscillating brush adapted to operate on the barrel head, and connections between said oscillating brush and the reciprocating brushes, whereby all are caused to operate simultaneously, substantially as described.

5. In a barrel-washing machine, a hollow plunger-shaft, means for operating the same, a brush-carrier and brushes secured upon the lower end thereof, combined with an oscillating shaft interiorly of the plunger-shaft, and furnished with a brush at the lower end, and with mechanism at the upper end, whereby oscillations are produced by the movement of the plunger-shaft, substantially as set forth.

6. In combination with a plunger-shaft, a brush-carrier, and reciprocating side brushes, a central brush adapted to oscillate, when the side brushes reciprocate, together with means for withdrawing said brushes from and introducing them within the barrel, and connections between said side brushes and said center brushes, whereby all are caused to operate simultaneously, substantially as stated.

7. The reciprocating side brushes, the brush-carrier adapted to have endwise movement upon and secured to the plunger-shaft, combined with a hollow shaft, a brush-rod longitudinally therein, reciprocating cross-heads, means for operating the latter, as likewise means for oscillating the rod and composed of the forked lever, connecting-rod, and bell-crank levers, substantially as explained.

8. In barrel-washing machines, the combination with a connecting rod for positive uniform reciprocations, a plunger-shaft operated thereby, and a brush carried by said shaft, of mechanism adapted to effect a yielding endwise movement to the shaft, and produce variable reciprocations in the brush-carrier, substantially as set forth.

9. The combination with the fixed guides, a plunger-shaft, the interconnecting cross heads, and a brush-carrier adapted to reciprocate within a barrel, of a toothed rack secured to said shaft, a revoluble pinion mounted in one of the cross-heads, and means for locking said pinion to cause the plunger shaft to travel with said cross-head, substantially as described.

10. In combination with the fixed guides, the cross-heads movable thereupon, and a plunger-shaft for variable reciprocations, a brush carrier upon said shaft, means for connecting and disconnecting one of the cross-heads with the plunger-shaft, as likewise mechanism to lock and hold the cross-head fast to the guide-rods at certain times, substantially as stated.

11. In a washing machine, a brush-carrier adapted to reciprocate within a barrel, combined with brush holders, spring-impelled rods in said brush-carrier, and socket connections between said rods and the brush-holders, whereby the latter are allowed universal movement, substantially as specified.

12. In combination with the fixed guides, the cross-heads movable thereupon, and a plunger-shaft, a brush-carrier upon said shaft, means for disconnecting and connecting one of the cross-heads with the plunger shaft, as likewise means for raising said shaft and brush-carrier and withdrawing them from a barrel, substantially as herein stated.

13. In a barrel-washing machine, the combination with a plunger shaft, the brush carrier and spring-actuated brushes adapted for universal movement with respect to the carrier, of mechanism for causing the brushes to approach each other to allow their withdrawal from the barrel, substantially as herein specified.

14. The combination with a barrel washing mechanism comprising vertically reciprocating brushes for the sides of the barrels, and a brush for the bottoms of the barrels, of a table provided with a projecting upper surface frusto-conical in vertical cross section and adapted to center the barrels between the brush operating mechanism, and means for rotating said table, substantially as set forth.

15. In barrel washing apparatus, the combination with brush-cleaning devices, and means for operating the same, of a revoluble table upon which to place a barrel, and locking mechanism composed of holding irons to grasp the barrel, and a lever and operating rods for drawing the holding irons about the staves, substantially as described.

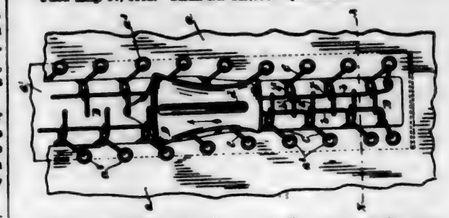
16. In barrel-washing apparatus, a revoluble table, the frusto-conical upper surface, and barrel-holding mechanism, composed of the pivotal rods 59, curved holding irons 59 the locking lever 60 and connecting rods 61 which unite the lever with the holding irons, substantially as set forth.

17. In a barrel-washing machine, the combination with a reciprocating plunger-shaft, a brush-carrier, and means for withdrawing said carrier from the barrel, of brushes affixed upon said brush-carrier, and means for moving said brushes toward each other, consisting of a slotted rod 35, a pivotal lever 32, an operating lever 34, and a flexible connection from said rod 35 to the brush-holders, all operating substantially as set forth.



## 504,087. SHOE-FASTENING. WESCOMB L. JUDSON, Chicago, Ill.

Filed Aug. 17, 1892. Serial No. 443,253. (No model.)



*Claim.*—1. A fastener for shoes, or similar uses, comprising two series of links or sections respectively securable to the flaps to be fastened, the links of each series being connected together and provided with hooks constructed to interlock with the links of the opposite series, substantially as described.

2. A fastener for shoes, or similar uses, comprising two series of links or sections respectively securable to the two shoe flaps or other parts to be fastened, the links of each series being pivoted together by swiveled joints and provided with hooks constructed to interlock with the links of the opposite series, substantially as described.

3. A fastener for shoes, or similar uses, comprising two series of connected links or sections respectively securable to the flaps or other parts to be fastened, the links of each series being provided with upwardly projecting hooks constructed to engage by an under-hooking action, whereby they may be retained in engagement by pressure from beneath, substantially as described.

4. A fastener for shoes, or similar uses, comprising two series of links or sections respectively securable to the flaps to be fastened, the links of each series being connected by swiveled joints and each constructed with a longitudinal rod portion and a transversely projecting hook adapted to engage with the rod portion of the corresponding link in the opposite series, substantially as described.

5. A fastener for shoes or similar use, comprising two series of links or sections, respectively, securable to the flaps, the corresponding sections of which are arranged to break joints with each other, each of the said sections being formed with the pivot rod *b*, having at one end the pivot-eye *b'*, and at the other the loop $b^3$ and the projecting interlocking hook $b^4$, connected and operating, substantially as described.

6. The combination with a series of clasps for fastening adjacent parts, such as shoe flaps, of a draw cord or cords, connecting one or both members of the clasps to the parts to be fastened, whereby the entire series of clasps may be adjusted at will, relatively to said parts substantially as and for the purpose set forth.

7. The combination with the shoe flaps *a'*, or other corresponding parts to be fastened, provided with the eyelets $a^3$, of the fastener consisting of two series of sections or links securable one to each of said flaps and composed each of the pivotally connected sections B, consisting of the pivot-rods *b* having the pivot-eyes *b'*, the cord loops $b^3$ and the hooks $b^4$, operating as described, and the draw-cords C passing through the loops $b^3$ and the flap eyelets $a^3$, substantially as and for the purpose set forth.

## 504,088. CLASP LOCKER OR UNLOCKER FOR SHOES. WESCOMB L. JUDSON, Chicago, Ill. Filed Nov. 7, 1891. Renewed Feb. 18, 1893. Serial No. 462,923. (No model.)



*Claim.*—1. A device for engaging and disengaging a series of two-part clasps upon a shoe or other article, consisting of a guide-block, having two guide-ways, which are separated at one end thereof, and converge into a single guide-way, at the other end thereof, said guide-ways being adapted to engage and carry the interlocking parts of the clasps into or out of engagement with each other, as the block is moved forward or backward over the same, substantially as described.

2. A device for engaging and disengaging a series of two-part clasps, upon a shoe or other article, the interlocking members of which are engageable or disengageable by an angular movement of the same, the said device consisting of a guide-block having a pair of cam-ways or guide-channels, in angular relation to each other at one end of the block, and converging and blending into a common cam-channel or guideway at the opposite end of the block, substantially as described.

3. A hand-device, for engaging or disengaging a series of two-

part clasps, upon a shoe or other article, by a single continuous movement, the said device consisting of a movable guide-block having a pair of diverging camways or guide-channels, at one end of the block, which converge and blend into a single camway or guide-channel at the other end of the block, over an angular surface, located at the junction of the said ways, and extended outward on an incline toward the end of the single camway, substantially as and for the purpose set forth.

4. A device for engaging and disengaging a series of clasps upon a shoe or other article, the interlocking parts of which engage or disengage by an angular movement of the same, the said device consisting of a guide-block, having two bell-mouthed guideways in angular relation to each other, on opposite sides of the block, at one end thereof, and converging and blending over an angular surface into a single bell-mouthed guideway at the other end of the block, substantially as described.

5. A hand device for locking or unlocking a series of two-part clasps or similar interlocking parts, which engage or disengage by an angular movement, the said device consisting of a movable guide-block provided with a pair of divergent camways or guide-channels, at one end of the block with bell mouths at an angle to each other in the vertical plane, the said channel converging over an angular surface at the junction of the ways into a single camway or guide channel at the other end of the block having a bell mouth in the horizontal plane, whereby, under a single continuous movement of the hand device, the clasps may be drawn together and engaged or be disengaged and separated at will.

6. A device for engaging and disengaging a series of two-part clasps upon a shoe or other article, the same consisting of a block having two guideways which are separated at one end thereof and converge into a single guideway at the other end and a shifting finger-pull connected with the block and arranged to slide to either end for applying power to pull the block in either direction, substantially as and for the purpose set forth.

7. A device for engaging and disengaging a series of two-part clasps upon a shoe or other article, the same consisting of a block having two guideways which are separated at one end thereof and converge into a single guideway at the other end, said block being provided with a staple extending from end to end thereof and a ring upon the staple constituting a shifting finger-pull to draw the block in either direction, substantially as described.

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**504,039. HOOK.** ELEAZER KEMPSHALL, Brooklyn, N. Y., assignor to Webster R. Walkley, same place. Filed Apr. 17, 1893. Serial No. 470,577. (No model.)



*Claim.*—1. A sheet metal hook having the end B turned back against the flat inner surface of the hook shank and provided with an intermediate raised bend C, forming the inward and outward inclines beneath the end D, the extreme end of the end B resting against the flat inner surface of the shank at a point adjacent to the bend forming the hook, substantially as and for the purpose specified.

2. A sheet metal hook in which the end B is turned back against the inner surface of the hook shank and provided with a raised bend C beneath the spring end D said spring end being provided with the corrugated strengthening rib F substantially as described.

3. A sheet metal hook in which the end B is turned back against the inner surface of the hook shank and provided with the raised bend C and a reinforcing hook bend E immediately adjacent to and bearing against the inner surface of the bend forming the hook proper, substantially as described.

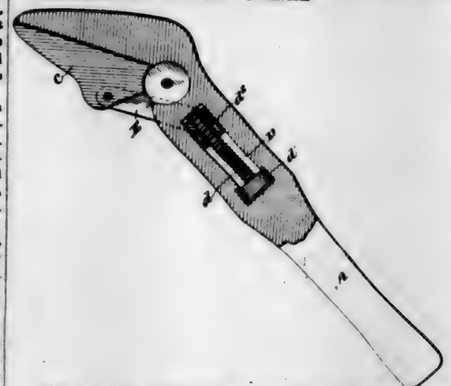
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**504,040. DEVICE FOR MAKING CIGARETTES.** HERBERT C. KERRAN, St. Catharines, assignor of one-third to William Shuttleworth Kerman, Toronto, Canada. Filed June 8, 1893. Serial No. 477,016. (No model.) Patented in Canada May 19, 1893, No. 42,966.



*Claim.*—A device for making cigarettes comprising a flat plate of sheet metal, having upturned ends, a stationary roller journaled at one side in said upturned ends, a movable roller journaled in horizontal slots in said ends, and an endless band loosely carried by said rollers, substantially as described.

**504,041. WRENCH.** SAMUEL B. KERR, Bellevue, Ohio. Filed June 2, 1893. Serial No. 476,402. (No model.)

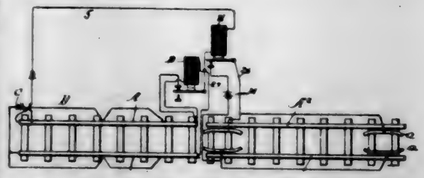


*Claim.*—1. In a wrench of the character described the combination of a handle a jaw set at an angle thereto and rigid therewith, a recess in said handle, screw in said recess, and a slide on said screw, with a jaw pivoted to said handle, and links or connections between said slide and said pivoted jaw, all constructed and arranged substantially in the manner and for the purpose set forth.

2. In a wrench of the character described the combination of a handle a jaw set at an angle thereto and rigid therewith, and provided with teeth or serrations on its engaging surface, a slotted recess in said handle, screw in said recess, and an interiorly screw threaded slide on said screw, with a jaw pivoted to said handle, and links or connections connecting said slide to said pivoted jaw, all constructed and arranged to operate substantially as and for the purpose set forth.

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**504,042. ELECTRIC CIRCUIT FOR CONTROLLING TRAINS.** FRANK R. KINNEAR, Plainfield, N. J. Filed Jan. 11, 1893. Serial No. 417,620. (No model.)



*Claim.*—1. In an apparatus for controlling the movement of railway vehicles, the combination with an electro-magnet connected to the opposite rails of a section of track, of a battery or other generator of electricity connected to the opposite rails of the said section, and an auxiliary independent conductor extending from said generator along said section and forming a circuit closed through wheels and axles of a vehicle on said section and independent to a greater or less extent of the rails for a greater or less portion of the section.

2. The combination of an apparatus for controlling the movement of railway trains or vehicles, of a magnet connected to the opposite rails of a section of track, a generator of electricity connected to the same section, and two supplementary auxiliary conductors leading from said generator and forming a path for the current flowing to the said magnet independent to a greater or less extent of the rails themselves over a greater or less portion of the section.

3. The combination substantially as described, in an apparatus for controlling the movement of railway trains or vehicles, of the electro-magnet connected to the opposite rails of a section of track, a battery or other generator of electricity connected to the said rails at another point, and a supplemental conductor or conductors leading from the battery or other generator along the section of track and connected to the track at one or more points.

4. The combination in an apparatus for controlling the movement of railway vehicles, a relay connected to a section of track, a battery or generator of electricity connected to the section, a detector circuit formed over the rails of the said section of track and normally kept closed by the action of said relay, a second electro-magnet in said relayed detector circuit, and a third circuit controlled by the latter relay, as and for the purpose described.

5. The combination, substantially as described, with the rails of a section of track, of an electro-magnet connected to one end thereof, a battery connected to the opposite end, a detector circuit formed over the rails and through the front contact of the armature for said magnet, an electro-magnet in said detector circuit, and a relayed circuit normally kept open by the latter magnet and connected to circuit closers on the road bed of another section of track.

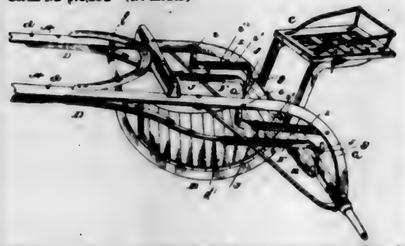
6. The combination in an apparatus for controlling the movement of railway vehicles, of a vehicle having a brake controlling device and a motive power controller, an electro-magnet or magnets for bringing the same into operation together, a circuit for said magnets on the vehicle, devices on the road bed of a section of track, an electro-magnet connected to or with the rails of another section of track, and relay devices governed by said magnet for controlling the connections to the devices on the road-bed of the first named section.

7. The combination substantially as described, with a section of railway track, of an electro-magnet whose opposite terminals are connected respectively to the opposite rails, a generator of electricity having its opposite poles connected to the opposite rails of said section at another point, a supplemental conductor extending from the said generator connected to the rails at one or more points, and a detector circuit formed through the rails and independent of the circuit formed by the said magnet, battery and supplemental conductor.



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**504,043. VEHICLE-SPRING.** JAMES A. LUKE, Petrolia, Canada, assignor to Benjamin S. Van Tuyl, same place. Filed May 6, 1893. Serial No. 473,284. (No model.)

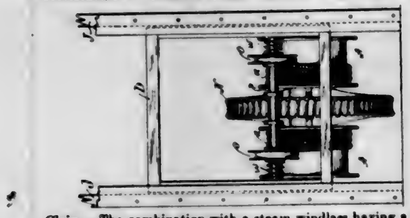


*Claim.*—1. The combination with the body and springs of a vehicle, of a lever having one end connected to said spring and its other end connected to said body, a notched bar connected to the vehicle and arranged above the lever, and a link connecting said lever with said bar and adapted to fit in any of the notches in the bar, substantially as described.

2. In a vehicle, a spring connected to the thills, a lever having one end connected to said spring and the other end connected to the body of the wagon, a notched bar arranged above the lever and connected to the under side of the thills, in combination with a link connecting said bar and lever and adapted to fit in any of the notches in the bar, substantially as described.

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**504,044. ENDLESS-CHAIN ELEVATOR.** JOSEPH P. MANTON, Providence, R. I. Filed Oct. 7, 1891. Serial No. 408,008. (No model.)

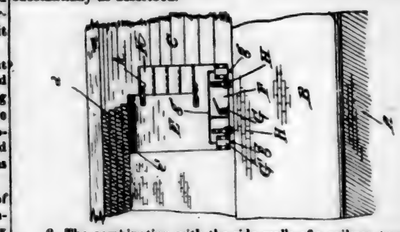


*Claim.*—The combination with a steam windlass having a drum to operate a wire rope or chain to raise the elevator, of a binder to take up the slack of said rope, said binder comprising a slidable frame and one or more grooved pulleys movable freely on a cross shaft, and a spring bearing against each pulley to guide the rope and make it follow properly in winding on the drum, substantially as herein set forth.

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**504,045. APPARATUS FOR RELINING TUNNELS.** SIMEON I. MORRIS, St. Paul, Minn., assignor of one-half to Jason W. Watt, same place. Filed Feb. 9, 1893. Serial No. 461,560. (No model.)

*Claim.*—1. The combination with the walls of a railway tunnel, of an apparatus for accomplishing the lining of the arched portion of the same consisting of an imperforate sheet metal center supported at each end from the side walls, and mechanism connected with said center for raising and lowering it toward and from the lined arch, substantially as described.



2. The combination with the side walls of a railway tunnel of a metallic center for building the arch lining consisting of a single strip of sheet metal extending from wall to wall and provided on each end with lifting apparatus to move it toward or from the arch lining, substantially as described.

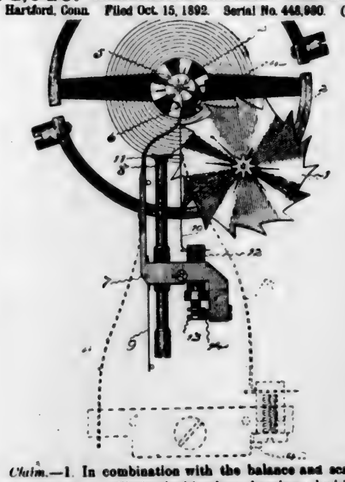
3. The combination with the walls of a railway tunnel of a metallic center for building the arch lining consisting of a substantially imperforate metal center extending from wall to wall provided on each end with wheels whereby the center may be moved easily longitudinally of the tunnel, and provided also on each end with lifting apparatus to raise the center toward or from the arch lining, substantially as described.

4. The combination with the imperforate sheet metal center of an auxiliary platform in the form of steps connected to said center and adapted to support the workmen, substantially as described.

5. The combination with the imperforate sheet metal center of a platform arranged in a form of steps, said platform attachable to and detachable from the main portion of the center, substantially as described.

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**504,046. CHRONOMETER-ESCAPEMENT.** JAMES G. MCALPINE, Hartford, Conn. Filed Oct. 15, 1892. Serial No. 448,980. (No model.)



*Claim.*—1. In combination with the balance and scape wheels of a time piece, an oscillating locking lever bearing a locking detent a discharge spring held by a longitudinally screw adjustable support and a locking spring, substantially as specified.

2. In combination with the balance and scape wheels of a time piece, an oscillating locking lever bearing a longitudinally screw adjustable locking detent, a discharge spring and a locking spring, substantially as specified.

3. In combination with the balance and scape wheels of a time piece, an oscillating locking lever bearing a longitudinally screw adjustable detent, a discharge spring and a locking spring held by a longitudinally screw adjustable support, substantially as specified.

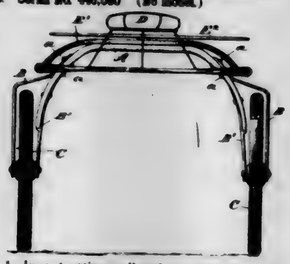
4. In combination with the balance and scape wheels of a time piece, an oscillating locking lever bearing a longitudinally screw adjustable locking detent having a circular head, a discharge spring held by a longitudinally screw adjustable support, and an adjustable locking spring, substantially as specified.

**504,047. CHUCK.** JAMES G. MCALPINE, Hartford, Conn. Filed Mar. 15, 1893. Serial No. 466,083. (No model.)



*Claim.*—In a chuck in combination, a flat base plate with a central opening, adapted to be secured to the spindle of the lathe, blocks with smooth openings through them near each end, stationarily held to the base plate with a space between them, a smooth spindle passing from one block to the other and secured from movement in the openings of the stationary blocks, a spindle with its middle portion threaded, passing from one block to the other and rotarily held in the smooth openings of the stationary blocks, and blocks movably supported by the spindles, with smooth openings through one end for the smooth spindle and threaded openings through the opposite end for the threaded spindle, said blocks bearing rotary disks with indentations in the peripheries of various size, substantially as specified.

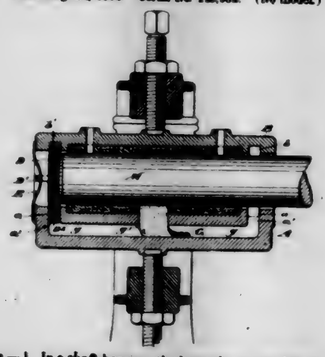
**504,048. SULKY.** MOSES MCCORMICK, Baltimore, Md. Filed Sept. 10, 1892. Serial No. 446,080. (No model.)



*Claim.*—1. In a trotting sulky the combination of the arched axle having downwardly bent ends, the two metal bars B B' bolted together at their upper ends upon opposite sides of the downwardly bent ends of the axles, and the wheels with cushioned tires having their individual axles connected to the lower ends of the said bars substantially as shown and described.

2. The arched axle A having its upward bend rising above the level of the shafts, in combination with the shafts, and the two metal bars B B' bolted to opposite sides of the downwardly bent ends of the axles, and the pneumatic-tired wheel arranged between the said bars substantially as shown and described.

**504,049. SHAFT-BEARING.** SIMEON G. PHILLIPS, Woodbridge, N. J. Filed Aug. 24, 1892. Serial No. 443,962. (No model.)



*Claim.*—1. In a shaft bearing, the lower box or pedestal A, having a groove *a* near its outer end, in combination with the upper box B, having a corresponding groove *b* near its outer end, and with the disk D engaged in both said grooves, all adapted to serve as herein specified.

2. The shaft bearing described, having the lower box A formed with a groove *a* near its outer end, the upper box formed with a groove near its outer end, a disk D engaged in said grooves and having a staple D', and a spring E inserted in said staple serving to hold said disk outward in said grooves, all combined and arranged to serve substantially as herein specified.

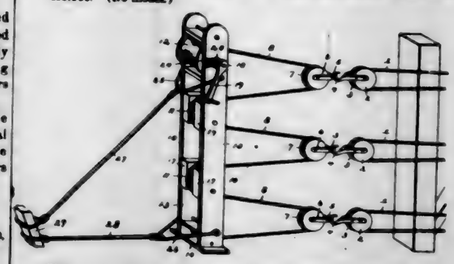
3. The shaft bearing described, having the lower box A formed with a groove *a* near its outer end and a recess *a'* in the bottom thereof, the upper box formed with a groove near its outer end, a disk D engaged in said grooves and having a staple D', and a spring E inserted in said staple serving to hold said disk outward in said grooves, and having also an arm $D^3$ serving to hold the disk against being revolved, all combined and arranged to serve substantially as herein specified.

**504,050. GATE-LATCH.** JAMES W. PHILLIPS, Pocatello, Idaho. Filed May 16, 1893. Serial No. 474,409. (No model.)



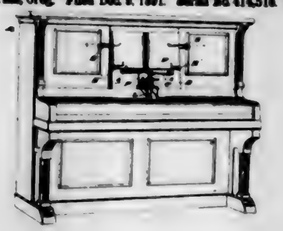
*Claim.*—A gate latch consisting of a plate having a cross-bar supported at a distance therefrom with a slot through the center thereof in a vertical direction, an operating lever pivotally connected to said plate and having its lower end moving in the said slot of the cross-bar, and an upper handle, said operating lever being oscillated in either direction in opening the gate, and a pair of quadrant shaped gravity catches disposed on the said cross-bar on opposite sides of the said operating lever, the outer ends of the said gravity catches being pivotally connected to said cross-bar and the inner ends thereof arranged vertical and adapted to be engaged by the lower end of the operating lever to raise either one of the same in order to open the gate in either direction, substantially as described.

**504,051. FENCE-WIRE TENSION DEVICE.** ORVILLE S. PIKE and GRANT S. PIKE, Greensburg, Pa. Filed Mar. 14, 1893. Serial No. 465,909. (No model.)



*Claim.*—A wire stretcher comprising a series of fence wire pulleys provided with hooks and adapted to receive a series of fence wires, a series of cable pulleys having eyes connected to said hooks, a frame, a series of frame pulleys journaled in the frame, a windlass mounted on the frame, and a cable having one end attached to the frame and being laced over the frame pulleys and cable pulleys and having its other end wound on said windlass, substantially as described.

**504,052. MUSIC-LEAF TURNER.** JOHN H. REDFIELD and SAMUEL H. REDFIELD, Medford, assignors of one-third to E. E. Redfield, Grant's Pass, Oreg. Filed Dec. 9, 1891. Serial No. 414,514. (No model.)





*Claim.*—1. The combination with the leaf turning mechanism of a music rack comprising a foot, and a back consisting of a stationary half, a movable half having screws projecting loosely through horizontal slots in the body of the back, the latter having a socket, and a spring located in said socket and having one end connected to the movable half, and music clamping devices mounted on the rack substantially as described.

2. In a leaf-turner, the combination with a pair of brackets connected by an upright rod, and a back and foot; of disks mounted on said rod, pawls connected with the disks, means for operating the latter, sleeves having heads engaged by said pawls, arms projecting from said sleeves, and shoes holding devices at the outer ends of said arms, as and for the purpose set forth.

3. In a leaf-turner, the combination with a vertical rod, nested sleeves thereon, a leaf-turning arm projecting from the upper end of each sleeve, and a head at the lower end of each sleeve having a double-faced tooth, of a disk journaled on said rod, a spring-actuated pawl on said disk having a stepped face adapted to engage the lowermost tooth first, a second disk journaled on said rod, a spring-actuated pawl on this disk having an oppositely stepped face adapted to engage the uppermost tooth first, and means for independently oscillating said disks, substantially as described.

4. In a leaf-turner, the combination with a vertical rod, nested sleeves thereon, a leaf-turning arm projecting from the upper end of each sleeve, a spring bearing the arm in one direction, and a head at the lower end of each sleeve, said head having a tooth, of a disk journaled on said rod, a spring-actuated pawl connected with said disk and having a stepped face adapted to engage the lowermost tooth first, and means for oscillating the disk, substantially as described.

5. In a leaf-turner, the combination with a vertical rod, nested sleeves thereon, a leaf-turning arm projecting from the upper end of each sleeve, a spring bearing the arm in one direction, and a head at the lower end of each sleeve, said head having a tooth; of a disk journaled on said rod, a spring-actuated pawl connected with said disk and having a stepped face adapted to engage said teeth successively, a gear on the hub of said disk, a toothed segment engaging said gear, a spring bearing said segment in one direction, and a lever for moving it in the opposite direction, substantially as described.

6. In a leaf-turner, the combination with an upright rod, a sleeve thereon, a leaf-turning arm carried by said sleeve, the latter having a head provided with a tooth, and a pawl adapted to engage said tooth, of a horizontal rod below the upright rod, a bell crank lever mounted at its angle on said horizontal rod, a rod having a knob at its lower end, its body moving through a suitable guide, and its upper end being connected with one arm of said lever, and connections substantially as described between the other arm of said lever and the pawl, as and for the purpose set forth.

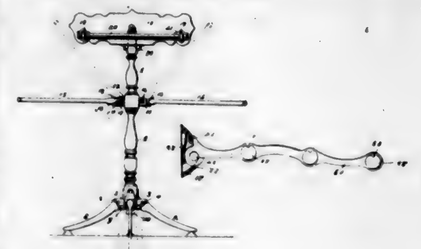
7. In a leaf-turner, the combination with a vertical rod, a sleeve thereon, a leaf-turning arm carried by said sleeve, a spring bearing the arm in one direction, and a head on said sleeve having a tooth, of a disk journaled on the rod, a spring-actuated pawl connected with the disk and adapted to engage said tooth, a gear on the hub of said disk, a pivoted segment having a toothed face engaging said gear, a horizontal rod below the segment, a bell-crank lever mounted at its angle on said rod, its upper end being loosely connected with the segment, a rod depending from its lower end, and a knob at the lower end of said pendent rod, as and for the purpose set forth.

8. In a leaf-turner, the combination with an upright rod, a sleeve thereon, an arm carried by said sleeve, an S-shaped spring holding said arm yieldingly in either of two positions, a leaf-turning arm projecting from said arm, and a head on said sleeve having a double-faced tooth, of two pivoted segments, one on each side of said rod, independent means for operating said segments, spring-actuated pawls adapted to engage the opposite faces of said tooth, and connections substantially as described between each pawl and one of the segments, as and for the purpose set forth.

9. In a leaf-turner, the combination with an upright rod, nested sleeves thereon, a leaf-turning arm projecting from the upper end of each sleeve, and a head at the lower end of each sleeve having a double-faced tooth, of three disks journaled on said rod, spring-actuated pawls connected with two of said disks and having oppositely stepped faces engaging the opposite faces of said teeth, an arm projecting from the third disk and having an upturned end adapted to engage all of said leaf-turning arms, and means for independently oscillating said disks, as and for the purpose set forth.

10. In a leaf-turner, the combination with an upright rod, sleeves journaled thereon, and leaf-turning arms carried by said sleeves, of a disk journaled on said rod and having a geared hub, an arm projecting from this disk and having an upturned end adapted to engage all of said leaf-turning arms, a second disk having a geared hub, connections between this disk and said sleeves, pivoted segments having toothed faces respectively engaging said hubs, and levers for oscillating said segments, one of the latter being slotted for the passage of the lever which operates the other segment, as and for the purpose set forth.

**504,053. TOWEL-RACK.** CHARLES SCHERERHORN, New York, N. Y., assignor of one-half to John W. Mitchell, same place. Filed Mar. 25, 1892. Serial No. 426,430. (No model.)

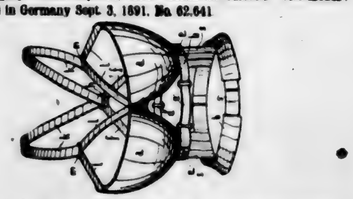


*Claim.*—1. In a device of the class described, the combination of a standard or upright, the flanged castings secured at the lower end of the latter and having shouldered ears, legs hinged thereon a centrally arranged cruciform turning brace adapted to bear against the said legs when extended, and the screw 10 arranged centrally below for holding the said cruciform brace in position, substantially as set forth.

2. In a device of the class described, the combination with the standard or upright of the head or cross-piece, the approximately semi-spherical castings 21, secured in pairs to opposite sides of the same, the arms 19 hinged in said castings, the springs 26 secured to the inner sides of the castings and bearing against the inner ends of the said arms, and the rungs connecting the latter, substantially as herein described.

3. The slotted approximately semi-spherical casting 21, having seats 23, in combination with the arm 19, having laterally extending trunnions 24, shoulder 25 and rounded inner end, and the spring 29 secured to the inner side of the casting 21 and bearing against the inner end of the arm 19 to retain the latter in position, substantially as set forth.

**504,054. BUST-SUPPORT.** HUGO SCHINDLER, Maria-Schein, Austria-Hungary. Filed Sept. 12, 1892. Serial No. 445,684. (No model.) Patented in Germany Sept. 3, 1891, No. 62,641.



*Claim.*—1. In a device of the character described, the combination with a support adapted to encompass and hold the breasts, and an adjustable belt secured to the lower portion of the support, of a hip-protecting device comprising the vertically-arranged bands *s*, secured at their upper edges to the said adjustable belt and a band *b'* secured to the lower edge of the band *s*, said bands *b'*, *s*, being adapted to encircle the body of the person about the hips and waist, for the purpose specified.

2. In a device of the character described, the combination with a support adapted to encompass and hold the breasts, and an adjustable belt secured to the lower portion of the support, of a hip-protecting device comprising the vertically-arranged bands *s*, secured at their upper edges to the said adjustable belt, and a band *b'* secured to the lower edges of the bands *s*, said bands *b'*, *s*, being adapted to encircle the body of the person about the hips and waist, and an elastic piece inserted in the band *b'*, for the purpose specified.

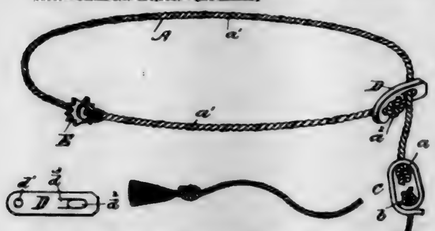
3. The combination with the supports *a*, *a*, adapted to support the breasts, of a belt *b*, secured to the lower portion of said supports, said belt being made in sections and adjustably connected together, straps *f*, secured at one end to the supports *a*, *a*, buckles *g*, interposed in said straps to render them adjustable, a shackle *h*, to which the other ends of the straps *f*, are secured, shoulder straps *k*, secured at one end to shackles *m*, and passing through the shackle *h*, straps L secured to the front of the supports and in the center thereof and to

the said supports at the sides of the latter, and being also connected with the shackles *m*, as and for the purpose specified.

4. The combination with the supports *a*, *a*, adapted to support the breasts, of a belt *b*, secured to the lower portion of said supports, said belt being made in sections and adjustably secured together, straps *f*, secured at one end to the supports *a*, *a*, buckles *g*, interposed in said straps to render them adjustable, a shackle *h* to which the other ends of the straps *f*, are secured, shoulder straps *k* secured at one end to the shackles *m*, and passing through the shackle *h*, straps I, secured to the front of the supports at the center thereof and to the said supports at the sides of the latter, and being also connected with the shackles *m*, and a hip-protecting device consisting of the bands *s*, secured at the upper edge to the belt *b*, and an adjustable band *b'* secured to the lower edges of the bands *s*, said band encircling the body of the wearer, and an elastic piece *t'* interposed in the band *b'*, for the purpose specified.

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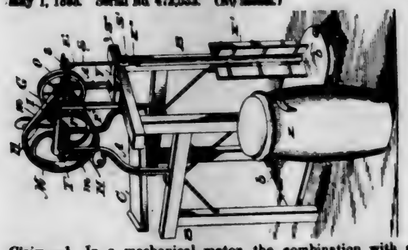
**504,055.** LASSO. EDGAR SHAW, Swampscott, Mass., assignor to the Lariat Manufacturing Company, Jersey City, N. J. Filed Feb. 1, 1893. Serial No. 460,565. (No model.)



*Claim.*—In a lasso, the combination with a loop-forming rope A of the noose forming swivel D, provided with the tongue $d^3$, all arranged for the purpose substantially as described.

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**504,056.** MOTOR. LOVELL H. SINCLAIR, Swits City, Ind. Filed May 1, 1893. Serial No. 472,532. (No model.)



*Claim.*—1. In a mechanical motor, the combination with a framework consisting of a base, four legs rising therefrom, the forward ones of a greater height than the rearward ones, side bars connecting the legs in pairs and leaving the framework open at its rear end, a seat pivoted to one side bar and adapted to swing over the other, and a cross-head connecting the upper ends of the front legs; of supports rising from said framework, an upright driving wheel journaled therein and having oppositely disposed cranks, and connections substantially as described between said wheel and the machinery to be driven, as and for the purpose set forth.
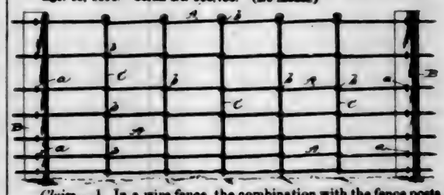
2. In a mechanical motor, the combination with a framework, a driving shaft journaled therein, a second shaft also journaled therein and driven from the first, a crank on the second shaft having in its body a number of holes at various distances from said second shaft, and a crank-pin removably seated in one of said holes and having a ball at its outer end; of an upright rock-shaft mounted in bearings supported by the framework, an agitator detachably connected with the lower end of this shaft, an arm secured to the shaft and having a yoke, a second yoke pivotally connected with the first by an upright pin, a pitman rod pivotally connected at one end to said second yoke and having a half-socket at its other end, a detachable piece having another half-socket adapted to complement the first and of a size to loosely embrace said ball, and a bolt detachably connecting said piece with the socketed end of the pitman rod, as and for the purpose set forth.

3. In a mechanical motor, the combination with an upright rock-shaft, an agitator detachably connected with its lower end, and a horizontal arm secured at one end to said shaft and having at its other end a rigid U-shaped yoke; of a second U-shaped yoke whose extremities pass between those of the first, a vertical pin engaging aligned eyes in said extremities, a horizontal crank-shaft, a pitman rod connected to the crank and pivoted on a horizontal pivot to said second yoke, and means for rotating the crank-shaft, as and for the purpose set forth.

4. In a churn motor, the combination with an upright rock-shaft journaled in suitable bearings and having a threaded upper extremity, a nut on said extremity above the uppermost bearing, a socket on the lower end of said shaft beneath the lowermost bearing, a set screw in the side of said socket, a churn body and an agitator whose upper extremity is reduced and adapted to enter this socket, the length of the agitator being such that at this time its lower end is above the bottom of the churn body; of a crank-shaft, means for revolving it, a pitman rod connected at one end with the crank, an arm having an eye at one end, a set screw in said eye whereby it is adjustably secured on said rock-shaft, and a joint substantially as described between the outer end of said arm and the other end of said pitman rod, as and for the purpose set forth.

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**504,057.** WIRE FENCE. WALLACE TIBBALS, Lytle, Ohio. Filed Apr. 13, 1891. Serial No. 388,735. (No model.)

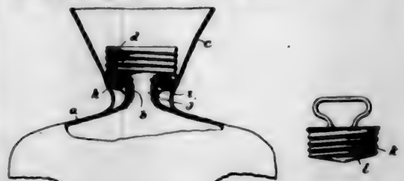


*Claim.*—1. In a wire fence, the combination with the fence posts, the longitudinal wires A, A passed through staples upon the posts and provided at intervals with loops as described; the vertical wires passed through said loops and held therein by the tension of the wires, and the supplemental wires D, secured at one end to the upper end of the vertical wire, passed successively around each of the several loops in the vertical series, and having its lower end secured to the lower end of the vertical wire, substantially as and for the purpose described.

2. The herein described improved method of constructing a fence, which consists in erecting suitable uprights, arranging longitudinal wires, forming loops therein, inserting vertical wires in said loops, and finally stretching the longitudinal wires and tightening the loop, around the vertical wires, and crimping the same, substantially as shown and described.

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**504,058.** FLEXIBLE WATER-BOTTLE. FRANCIS M. UNDERHILL, New York, N. Y., assignor to Whitall, Tatum & Co., same place. Filed Mar. 8, 1893. Serial No. 465,066. (No model.)



*Claim.*—1. The combination, in a water bottle, or similar article, of a body having a suitable neck, a sleeve into which the neck is inserted, and a stopper adapted to be inserted into the same, and to press the neck of the bottle against the sleeve, whereby the material of the neck is interposed between the sleeve and the stopper, and forms a packing, substantially as described.

2. The combination, in a water bottle or similar article, of a body, having a neck with an elastic packing ring, a sleeve into which the neck and its ring are inserted, and a stopper adapted to be inserted into the same sleeve, and to press the ring against the sleeve, thereby forming a packing, substantially as described.

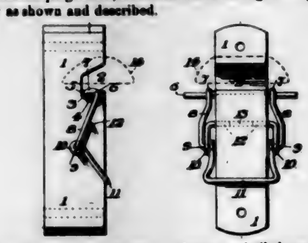
3. The combination, in a water bottle, of a rubber body, having a suitable neck, a sleeve *d* surrounding said neck, and entirely on the outside thereof, said sleeve being adapted to receive also a stopper substantially as described.

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**504,059.** INSULATOR. GEORGE W. BLACKMER, Palmyra, N. J. Filed Aug. 30, 1892. Serial No. 444,567. (No model.)



*Claim.*—1. In an insulator for electric conductors, a bail shaped clamping lever, a block of insulating material having a right lined groove therein adapted to receive a conducting line wire and aperture adapted to receive the pivotal ends of said bail shaped lever, in combination with a single clamp adapted to hook over the conductor on each side of the block and provided with pivotal ends engaged in eyes in said clamping levers, constructed and arranged to operate substantially as shown and described.



2. In an insulator for electric conductors, a bail shaped clamping lever, a block of insulating material having a right lined groove therein adapted to receive a line conductor, and a second groove parallel thereto adapted to receive a part of a clamping jaw, in combination with a clamping jaw extending across said block in said groove, hooked over the line conductor on each side of said block, and pivotally attached to eyes in said bail shaped lever as described and shown.

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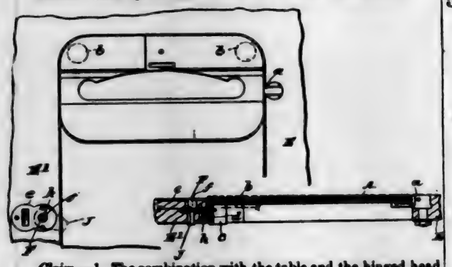
**504,060.** BUNG. ANDREW BRUBAKER, Ashland, Ohio. Filed May 17, 1893. Serial No. 474,598. (No model.)



*Claim.*—The combination of an exteriorly tapered and threaded bushing ring having in its inner sides opposite grooved ways and at its inner end diametrically opposite stop pins and adjacent curved guide lugs, said ring being adapted to have its outer end disposed below the outer edge of the bung hole in which it is fitted a flanged bung adapted to be detachably locking in position within said bushing ring and provided with an outer shouldered end adapted to work flat onto the outer end of said ring, and inside of the bung hole and a screw stem projected from its inner end, and provided at its extremity with a head O a locking bar having a central threaded opening receiving the screw stem of the bung and opposite rounded ends corresponding in curvature to the bushing ring guide lugs, and adapted to be passed through said opposite grooved ways and turned over the inner end of the bushing ring so as to engage inside of said curved guide lugs and at one side of said stop pins, substantially as set forth.

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**504,061.** SEWING-MACHINE. CHARLES W. DAVIS, Montreal, Canada. Filed Apr. 11, 1893. Serial No. 469,972. (No model.)



*Claim.*—1. The combination with the table and the hinged head of a sewing machine, of a horizontal movable locking finger located beneath the surface of said table and adapted to be engaged with said hinged head, with operating means directly connected with said finger and being flush with an exposed part of said table for the purpose set forth.

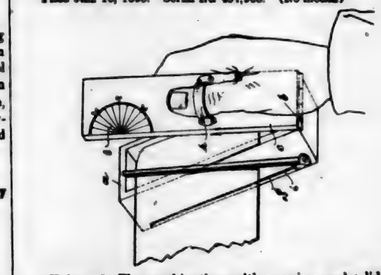
2. The combination with the table and the hinged head of a sewing machine, of a horizontally movable locking finger located beneath the surface of said table and adapted to be engaged with said hinged head, and an actuating body portion or bolt connected with said finger extending vertically through said table constructed to be readily engaged from above the table and being flush with the surface thereof for the purposes set forth.

3. The combination with the table and the bed plate of the hinged head of a sewing machine having an inclined slot in its face,—of a horizontally movable locking finger located beneath the surface of said table and adapted to be inserted within and to traverse such slot and means for operating such finger from above the table as and for the purposes set forth.

4. The combination with the table having vertical shouldered annular aperture and horizontal recess A and the hinged head of a sewing machine having an inclined slot in the bed plate thereof,—of a locking device consisting of a rotatable body portion located in said vertical shouldered annular aperture, a plate flush with the table surface for holding same in place and a horizontally movable locking finger connected with and operated by said body portion to engage said hinged head as set forth.

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**504,062.** CUTTER FOR FILMS. ALOIS DELUG, Munich, Germany. Filed Jan. 10, 1893. Serial No. 457,905. (No model.)



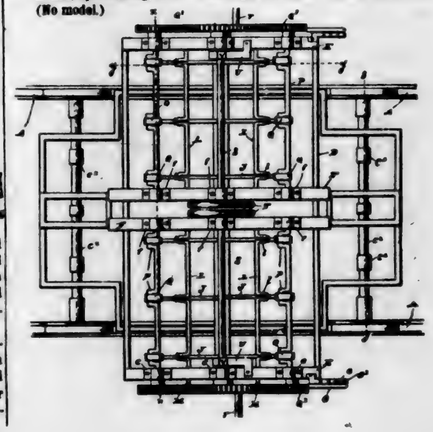
*Claim.*—1. The combination, with a casing, and a lid hinged to the casing, of a film-roll journaled in the casing, a knife pivoted to the side of the casing, and a knife-guard secured to the side of the casing below the knife, substantially as set forth.

2. The combination, with a casing, a pintle secured to the inner face of one side of the casing, a removable pin inserted through the side of the casing opposite said pintle, and a film-roll having axial sockets in which the pintle and the pin are inserted, of a lid hinged to the casing, a knife pivoted to one side of the casing and provided with a web at its upper edge, and a knife-guard secured to the casing below the knife, substantially as set forth.

3. The combination, with a casing, a pintle secured to the inner face of one side of the casing, a removable pin inserted through the side of the casing opposite said pintle, and a film-roll having axial sockets in which the pintle and the pin are inserted, of a lid hinged to the casing and having a protractor on its upper surface near one edge, a knife pivoted to one side of the casing and provided with a web at its upper edge, and a knife-guard secured to the casing below the knife, substantially as set forth.

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**504,063.** RAILWAY-TRACK TAMPING-MACHINE. NATHAN A. EVANS, Spartanburg, S. C. Filed Apr. 27, 1893. Serial No. 472,081. (No model.)



*Claim.*—1. In a machine of the class described, a truck frame, parallel multiple crank shafts journaled on top of the frame, gearing for said crank shafts, and separate sets of surfacing and tamping shovels guided to move at an angle within the frame and connected at their upper ends with said multiple crank shafts, substantially as set forth.

2. In a machine of the class described, a truck frame, opposite pairs of multiple crank shafts journaled on top of the frame, separate gearing for each pair of crank shafts, suitably arranged guides disposed within the frame under the crank shafts, and opposite independent sets of reciprocating and vibrating surfacing and tamping shovels mounted to move within said guides and connected with the cranks of said crank shafts, substantially as set forth.

3. In a machine of the class described, the wheel axles having reduced portions, a laterally adjustable truck frame supported on said axles and adapted to have a lateral play in said reduced portions, a supplemental transverse frame supported on the truck frame between the wheels, opposite sets of surfacing and tamping shovels, and separate operating devices arranged on the transverse frame and connected with the opposite sets of shovels to reciprocate the same, substantially as set forth.

4. In a machine of the class described, a truck frame, a supplemental transverse frame supported on and extended beyond the opposite sides of the truck frame, opposite vertical pairs of guides arranged at opposite sides of the center of the transverse frame, reciprocating lifting rods having their ends moving in said guides, shovels connected to the lifting rods, and means for reciprocating each opposite pair of lifting rods, substantially as set forth.

5. In a machine of theclass described, the laterally adjustable truck frame, a transverse frame secured on the truck frame between the wheels and extended beyond the sides thereof, vertical guides arranged on the transverse frame, vertically reciprocating lifting rods having headed ends moving in said guides, shovel stems attached to said rods and having surfacing and tamping shovels at one end, adjustable angularly set shovel guides arranged on the transverse frame and embracing said shovel stems, and means for reciprocating said rods, substantially as set forth.

6. In a machine of the class described, a movable frame, guides arranged on the frame, a vertically reciprocating lifting rod having its ends moving in said stationary guides, reciprocating and vibrating surfacing and tamping shovels having stems or handles loosely attached to the lifting rod, a multiple crank shaft suitably supported and driven, and links connecting the cranks of said shaft to the lifting rod, substantially as set forth.

7. In a machine of the class described, the truck frame, a transverse frame supported on the truck frame and having upright extension frames at its opposite extremities, intermediate adjacent bearing bars disposed between the upright extensions, opposite vertical pairs of stationary guides arranged on the upright extensions and said bearing bars, opposite pairs of vertically reciprocating lifting rods having their ends moving in said guides, sets of reciprocating and vibrating shovels attached to each lifting rod, adjustable shovel guides suitably arranged to dispose the shovels at an angle, opposite pairs of multiple crank shafts journaled on top of the upright extensions and the central bearing bars, links connecting the cranks of each crank shaft with the lifting rod directly thereunder, and gearing for each pair of crank shafts, substantially as set forth.

8. In a machine of the class described, the truck frame, vertically reciprocating lifting rods guided for movement on the frame, shovel stems having forked bearings at one end loosely embracing said lifting rods and carrying at their other ends detachable shovels or tampers, angularly set shovel guides loosely attached at their inner ends to the frames and terminating at their other ends in guide eyes embracing the shovel stems to dispose the same at an angle, means for adjusting the angle or pitch of said shovel guides, separate pairs of multiple crank shafts journaled on the frame, and links attached to the cranks of said crank shaft and to the lifting rods between the forked bearing of each shovel stem, substantially as set forth.

9. In a machine of the class described, the truck frame, the reciprocating-vibratory shovel carrying stems or handles, angularly set guide arms embracing said stem and loosely secured at one end to the frame, separate adjusting rock shafts journaled over the guide arms and having rock arms loosely connected to said guide arms and terminating at their outer extremities in cranks, adjustable levers arranged at opposite sides of the truck frame, and adjusting arms connected at one end to said levers and at their other ends to the cranks of said rock shafts, substantially as set forth.

10. In a machine of the class described, the truck frame, a supplemental transverse frame mounted on the truck frame between the wheels, vertically reciprocating lifting rods guided in the frame, angularly moving sets of surfacing and tamping shovels attached to the lifting rods, separate pairs of multiple crank shafts journaled on the transverse frame and connected to the lifting rods, said shafts carrying cog wheels at their outer ends, separate drive shafts intermediately mounted on the frame and carrying at one extremity drive spur wheels arranged between and meshing with each opposite pair of cog wheels, and at their other inner adjacent extremities balance wheels, substantially as set forth.

11. The combination with a drive shaft having a squared portion, and a lock bar pivoted at one end to a suitable point of attachment and having a squared loop adapted to engage the squared portion of the drive shaft, substantially as set forth.

## 504,064. MANUFACTURE OF VARNISH. WALTER D. FIELD, Wyoming, N. J. Filed Jan. 14, 1893. Serial No. 458,380. (No specimens.)

*Claim.*—1. The process of making a cleared shellac solution herein described, consisting in dissolving the shellac in an alcoholic solvent, adding a solvent of the soluble impurities immiscible with the alcoholic solvent, subjecting the compound to a temperature of not less than 30° centigrade and separating the alcoholic solution from the compound, as and for the purpose set forth.

2. The process of producing pure, clear and concentrated solutions of shellac consisting in dissolving the shellac in any alcoholic solvent thereof, then adding to the solution a solvent of the soluble impurities of the shellac immiscible with the alcoholic solvent, permitting the compound to stand at a temperature not lower than 30° centigrade until the liquids have separated, and then drawing off the alcoholic solution, substantially as described.

## 504,065. KEY-CUSHION FOR TYPE-WRITING MACHINES. ROBERT S. GRAHAM and WILLIAM B. SAVELL, San Francisco, Cal. Filed Feb. 2, 1893. Serial No. 460,768. (No model.)

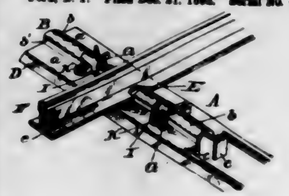


*Claim.*—1. A hollow cushioned cap for the keys of typewriting machines, having a letter or character upon its surface, said cap provided with means engaging the key for maintaining the cap elevated to form an air space or cushion between the inner top wall of the cap and top of the key.

2. A hollow cushion for the keys of typewriting machines, consisting of an elastic hollow cap, and a metallic rim over which the elastic cap is fitted; said rim adapted to be placed over the key, and said cap having a letter or character upon its surface.

3. A cushion key for typewriting machines, consisting of a hollow elastic cap having a letter or character formed upon its surface indicating the key to which it is applied, a metallic rim fitting said key, said rim having an upwardly projecting concave flange with a narrow neck between the two into which the corresponding flange of the rubber cap is drawn by its elasticity whereby the cap is retained in place and a hollow cushion is formed, substantially as herein described.

## 504,066. METALLIC RAILROAD-TIE. FRANK S. KETCHUM, New York, N. Y. Filed Dec. 21, 1892. Serial No. 455,880. (No model.)

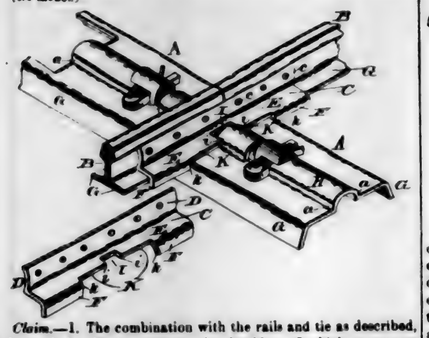






*Claim.*—The tie, A, having rib, B, provided with rail seat recesses, E and E', and recesses, I I, in combination with the rail, F, the lever, G, adapted to be inserted in the recess, I, and lock the rail to the tie, and the split key, K, which, when inserted in the space formed by the rabbet, A, in the lever, G, and the recess, I, will rigidly retain said lever in place, substantially as and for the purpose set forth.

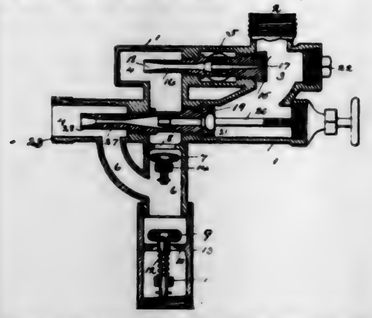
## 504,067. ANGLE-BAR FOR RAILROAD-RAIL JOINTS. FRANK S. KETCHUM, New York, N. Y. Filed Dec. 22, 1892. Serial No. 455,990. (No model.)



*Claim.*—1. The combination with the rails and tie as described, of the angle bar having a recess, the shoulders of which encompass the raised rib of the tie, and a secondary recess, the shoulders of which encompass the depending flanges of the tie proper, as and for the purpose set forth.

2. The combination with the rails, B, and tie, A, of the angle bar, C, secured to said rails and having the recess, I the shoulders, *i i*, of which extend on each side of the central rib of said tie, as and for the purpose set forth.

## 504,068. INJECTOR. GEORGE W. MASON, Sharon, Pa. Filed Aug. 30, 1892. Serial No. 444,541. (Model.)



*Claim.*—1. The herein described shell for injectors consisting of two barrels the one arranged above and parallel to the other, a steam passage connecting the one with the other, a water passage connecting the two barrels a steam inlet located at the top, and water inlet at the side, the overflow passages beneath the lowest barrel, and exit openings leading to the boiler, constructed and arranged, substantially as described.

2. In combination with an injector the lifting tubes constructed as described, one of which is provided with radial openings to admit water to the same, as described.

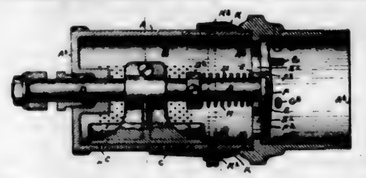
3. In combination with an injector the forcing tubes constructed as described, one of which is provided with radial openings for admitting water to the same as described.

4. The herein described double, or lifting and forcing injector, consisting of the shell 1, constructed and arranged as described, the lifting tubes provided with radial openings to admit water to the same, the forcing tubes also having radial openings 28, for the admission of water to the same, the overflow valve 7, and seat 8, adapted to close one of the passages 6, and the valve 13 automatically operated to close the two overflow passages, all arranged and combined for service substantially as and for the purpose described.

5. The herein described single or forcing injector, consisting of the shell having a steam and water inlet the tubes constructed as described, one of which is provided with openings 28 proportioned to the amount of water it is desired to admit to the said tubes, and the automatic valve 13, constructed as described, for regulating and controlling the overflow, substantially as set forth.

6. The herein described means for regulating and controlling the overflow passages, consisting of the shell 29, having a valve and seat, a partition separating the one overflow from the other, and a groove to collect any leakage, all arranged for service substantially as described.

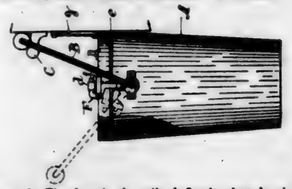
## 504,069. SPRINKLER. HENRY E. POTTER and JOHN L. POTTER, Somerville, Mass. Filed Dec. 22, 1891. Serial No. 415,937. (No model.)



*Claim.*—1. In a sprinkler, the combination with a nozzle that is chambered from end to end and at one end is closed and at the other end is adapted for communication with a water-supply and has water discharging openings or jet-holes along the length and for a portion of its outer circumference, of two valves F, J, one F of which is a disk that crosses said chamber of the nozzle and has ports $F^2$ and seats on a fixed plate E having ports $E^2$ and the other J of which is an arc-shaped plate fitting and seating and adapted to move around upon the inner circumference of the nozzle and of a shaft D axially arranged within and adapted to be rotated at the outer side of said chamber of the nozzle and having both of said valves held thereon, substantially as described, for the purposes specified.

2. In a chambered cylindrical nozzle for sprinkling purposes, water discharging jet-holes or openings located at the outer side and along the length and in the direction of the circumference of the nozzle and in a portion or portions, parallel, or substantially so, to radial lines from, and in another portion or portions parallel, or substantially so to radial lines from a longitudinal line of the nozzle parallel to the axis of the nozzle, substantially as described, for the purpose specified.

## 504,070. FIRE-BUCKET. GEORGE H. SHARDON, Portland, Me. Filed Jan. 11, 1893. Serial No. 456,080. (No model.)



*Claim.*—1. The herein described fire bucket having a cover, a hook for retaining said cover in place, said hook having a projecting portion against which the bail strikes to release the hook, substantially as described.

2. The herein described fire bucket having a cover, a spring secured to the top of said cover and having a projecting end, a hook pivoted to each side of the bucket and adapted to engage the projecting end of said spring, said hook being provided with a projecting portion against which the bail is adapted to strike as it swings in its bearings, to release said hook, substantially as described.

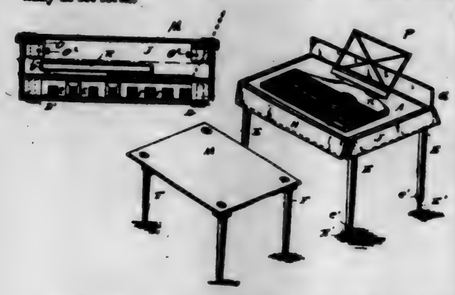
3. The herein described fire bucket having a cover a spring secured to the top of said cover and having projecting ends, hooks pivoted to the sides of said bucket and adapted to engage the projecting ends of said spring and adjustable bearings for the free ends of said spring to regulate its tension, substantially as described.

4. The herein described fire bucket having a cover, a hook for retaining said cover in place and a bail adapted to release said hook as it swings in its bearings, substantially as described.

## 504,071. STAND AND STOOL FOR ZITHERS. ALEXANDER VON WASCHINSKI, West Hoboken, N. J. Filed Apr. 20, 1893. Serial No. 471,187. (No model.)

*Claim.*—1. A combined zither-table, stool and sounding-box, composed of a box for receiving the detachable table legs, and detach-

able stool legs, walls projecting upward from the top of the said box, a seat fitting on said walls and forming a cover for the same, the top of the box, the said cover and the walls projecting upward from the top of the box together forming a compartment for a zither, substantially as set forth.



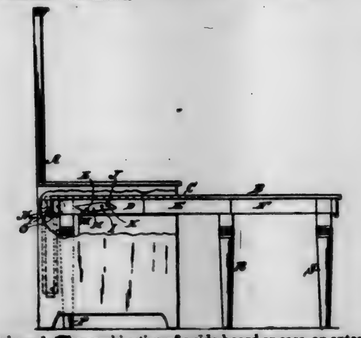
2. A combined zither-table, stool and sounding-box, composed of a box for receiving detachable table legs, and detachable stool legs, a fixed wall projecting upward from the top of the box at the rear, and hinged walls on the top of the box at the sides and front, and a seat fitting on said walls when the same are all raised, substantially as set forth.

3. A combined zither-table, stool and sounding-box, composed of a box for receiving the detachable table legs and detachable stool legs, a block in each corner of the box, which blocks have screw threaded apertures open at the bottom of the box, walls on the top of the box, a cover-plate fitting on said walls, and with the top of the box forming a compartment for receiving a zither, which cover-plate also serves as top-plate for a stool, apertured blocks on the under side of said cover-plate at the corners, which blocks have recesses or openings for receiving the upper ends of the stool legs, substantially as set forth.

4. A combined zither table, stool and sounding box, composed of a box for receiving the detachable table and stool legs, a fixed wall and three hinged walls projecting upward from the top of the box, catches for locking the hinged walls to each other and to the fixed wall, when in raised position, a cover plate on said hinged walls, which cover plate forms the seat of the stool and is provided at its under side with apertured blocks for receiving the upper ends of the stool legs, substantially as set forth.

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**504,072. COMBINED SIDEBOARD AND EXTENSION-TABLE.** CLARENCE F. WATERS, Grand Rapids, Mich. Filed Aug. 5, 1892. Serial No. 442,503. (No model.)



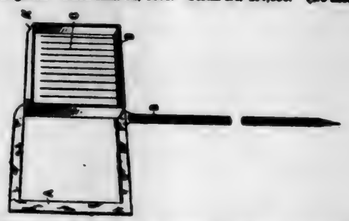
*Claim.*—1. The combination of a side board or case, an extension table provided with extension slides, a folding curtain top, provided with a stop or locking pin, rollers on which said curtain top folds, a stop or locking pin on a stationary part of the side-board, and a weighted locking lever on one of the table slides, said locking lever adapted to be automatically engaged with and disengaged from said stops or locking pins, substantially as described.

2. The combination of a sideboard or case, an extension table provided with extension slides adapted to slip by each other, a curtain top, a stop or lock upon the curtain top, a weighted lever pivoted on one of the sides and adapted to engage with said stop for locking the table in its extended position, and a lock or stop on the case for automatically operating said locking lever, substantially as described.

3. The combination with an extension table provided with extension slides and a curtain top, and a sideboard or case, of rollers over which said curtain top folds, a weighted automatically actuated locking lever pivoted to one of the table slides, a stop or locking pin on the sideboard or casing and a stop or locking pin on the curtain top, substantially as described.

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**504,073. GAME APPARATUS.** MARTIN H. WILSON, Llandudno, England. Filed Mar. 21, 1893. Serial No. 467,099. (No model.)



*Claim.*—1. In a game apparatus, a frame or hoop, and an annunciator to mark the passage of a ball through said hoop, this annunciator comprising a set of strips, C, having weighted bases to support them in an erect position in the path of a ball through the hoop, whereby one or more of the said strips will be disturbed and displaced by the impact of the ball, substantially as set forth.

2. A game apparatus comprising a ball, a hoop to pass the ball through, and an annunciator to mark the passage of the ball through the hoop, said annunciator comprising a set of flat, heavy bases, D, resting loosely on the lower bar of the hoop, and slender strips or wires, C, fixed in or to the bases D, and extending into the space within the frame through which the ball must pass, as set forth.

3. In a game apparatus, a double hoop A A', one of the frames of same being constructed with its broader face in the vertical plane so that it may be plainly seen, and the other with its broader face horizontal, so as to present a thin edge to the ball, as and for the purpose set forth.

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**504,074. PROCESS OF MAKING ALCOHOLIC DISTILLED LIQUOR.** EDSON BRADLEY and EDWARD H. DICKERSON, Jr., New York, N. Y. Filed May 10, 1893. Serial No. 473,494. (No specimens.)

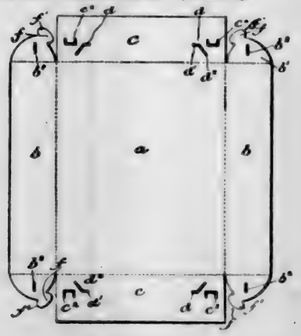
*Claim.*—1. The process herein described of increasing the yield of alcohol, which consists in screening the slop of coarse particles, of concentrating the fine particles of the slop in a less quantity of liquid by removing water therefrom, and of returning the said fine particles in their concentrated condition into subsequent processes, substantially as described.

2. The process herein described for increasing the yield of alcohol, which consists in screening the slop of coarse particles, concentrating the same by removing therefrom surplus water, rapidly cooling the slop and returning the same with the fine particles in suspension into subsequent processes, substantially as described.

3. The process herein described for increasing the yield of alcohol, which consists in screening the slop of coarse particles and concentrating the same by removing therefrom the surplus water, and then treating the concentrated slop with an addition of malt before its return to the fermenters, substantially as described.

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**504,075. PAPER BOX.** ROBERT P. BROWN, Philadelphia, Pa. Filed Apr. 29, 1893. Serial No. 472,291. (No model.)





*Claim.*—1. A paper box formed of a single piece of material and having flaps $b'$ extending from its sides, locks $f$ having a projecting ear $f'$ made with said flaps said box having a continuous cut $d$ formed in the ends of the box into which said lock is adapted to fit and so that the ear $f'$ of the lock $f$ will be caught and held behind the material of the box at one end of the cut $d$.

2. A paper box formed of a single piece of material and having flaps $b'$ extending from its sides, locks $f$ with projecting ears $f'$ formed with said flaps and a continuous cut $d$ formed of two parts $d'$ $d^2$ at an angle to each other into which the lock $f$ is adapted to fit, in such a manner that the ear $f'$ is caught behind and held by the material of the end of the box over the part $d'$ of the cut $d$.

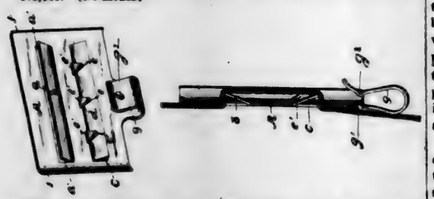
3. A box formed of a single piece of material and having flaps $b'$ with cuts as $b^2$ therein and locks $f$ with ears $f'$ thereon and ends $c$ with cuts $d$ formed of two parts $d'$ $d^2$ at an angle to each other as described and a tongue $c^2$ adapted to fit in the cuts $b^2$.

4. A paper box formed of a single piece of material and having its sides $b$ formed with flaps $b'$ having a lock $f$ with a projecting ear $f'$ thereon and a cut $b^2$ therein, and its ends formed with a tongue as $c^2$ and a cut $d$ formed of two parts $d'$ $d^2$ at an angle to each other whereby when the box is set up the ear $f'$ will engage with and be held by the material of the end of the box over the part $d'$ of the cut $d$ and the tongue $c^2$ will project through the cut $b^2$.

5. A paper box formed of a single piece of material, and having flaps $b'$ extending from its sides with locks $f$ having ears $f'$ formed with said flaps, cuts $d$ formed in the end of the box into which the locks $f$ are adapted to fit, said box having also a cut $b^2$ and tongue $c^2$ formed in the ends and sides respectively, whereby, when the box is set up the locks $f$ will engage with the cuts $d$ and the tongues $c^2$ will fit in the cuts $b^2$ substantially as specified.

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**504,076. BUCKLE.** JOHN A. BROWN, Tyler, Tex., assignor of one-fourth to Fred. L. Diley, same place. Filed May 6, 1893. Serial No. 473,185. (No model.)



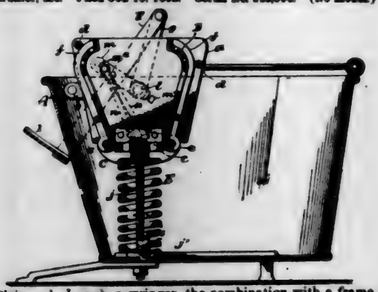
*Claim.*—1. A buckle consisting of the plate A, having the upper longitudinal slit $a$, upper vertical slits $a'$, and lower longitudinal and vertical slits $c$, cut to form tongues $b$, and $d$, slits $e$, teeth $c'$, and hook $g$, all integral, substantially as shown and described and for the purposes set forth.

2. A buckle consisting of the plate A, having its ends turned up, and having the slits $a$, $a'$, slits $c$, cut to form tongues $b$, and $d$, and teeth $c'$, substantially as shown and described and for the purposes set forth.

3. A buckle consisting of the plate A, having the upper longitudinal slit $a$, upper vertical slits $a'$, and lower longitudinal and vertical slits $c$, cut to form tongues $b$, and $d$, slits $e$, teeth $c'$, and hook $g$, having nibs $g'$, $g^2$, substantially as shown and described and for the purposes set forth.

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**504,077. MOP-WRINGER.** ARTHUR M. BURNHAM, Gardiner, Me., assignor to Leonard Moody, Brooklyn, N. Y., and Fred Hildreth, West Gardiner, Me. Filed Oct. 10, 1892. Serial No. 448,396. (No model.)



*Claim.*—1. In a mop wringer, the combination with a frame, of two jaws adapted to receive a mop between them, and means for operating said jaws to compress the mop between their free ends and the bottom of the frame, substantially as set forth.

2. In a mop wringer, the combination with a frame having a bottom provided with openings, of pivotally supported jaws having openings therein and adapted to receive a mop between them, of means for compressing a mop between said jaws and the bottom of the frame, substantially as set forth.

3. In a mop wringer, the combination with a frame, of a yoke arranged beneath the bottom of said frame, jaws pivotally connected to said yoke and adapted to receive and inclose a mop, and means for compressing the mop between said jaws and the bottom of the frame, substantially as set forth.

4. In a mop wringer, the combination with a frame, of a yoke arranged beneath the bottom thereof, jaws pivotally connected to said yoke, said jaws having curved upper ends, and means for forcing said yoke and jaws downwardly to compress the mop between their upper ends and the bottom of the frame, substantially as set forth.

5. In a mop wringer, the combination with a frame, of a yoke located beneath the bottom thereof, jaws pivotally connected to said yoke and adapted to receive a mop between them, means for forcing said yoke and jaws downwardly to compress the mop between them and the bottom of the frame, and a spring beneath said yoke for returning it and the jaws to their normal positions, substantially as set forth.

6. In a mop wringer, the combination with a frame, of two pivoted jaws having slots in their upper ends, and a mop holder having lugs or hooks adapted to enter said slots and retain the jaws closed with the mop between them, substantially as set forth.

7. In a mop wringer, the combination with a frame comprising two parallel plates and a bottom plate secured at its ends to the parallel plates, of a yoke located beneath the bottom plate, jaws pivotally connected to said yoke and adapted to receive a mop between them and means for operating said jaws to compress a mop between them and the bottom plate, substantially as set forth.

8. In a mop wringer, the combination with a frame comprising two side plates and a bottom plate secured at its ends to the side plates, brackets for securing the side plates to the bucket in which the device is located, and a post or standard extending from the bottom plate to the bottom of the bucket, of a yoke located beneath the bottom plate a spring for normally maintaining the yoke in its elevated position, jaws pivotally connected to the yoke and means for depressing the yoke whereby the mop will be compressed between the jaws and the bottom plate, substantially as set forth.

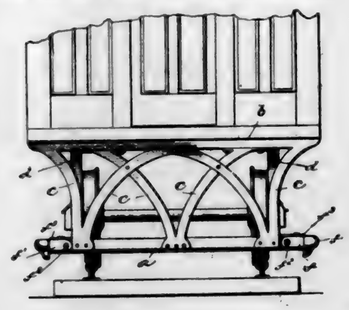
9. In a mop wringer, the combination with a frame, of a vertically movable yoke, jaws pivotally connected to said yoke and adapted to receive a mop between them, arms projecting from said jaws, a shaft at each side of said frame, bars attached to said shafts, links or rods connecting said bars with the arms of the jaws, arms projecting from the ends of said shafts, and a foot treadle attached to said arms, substantially as set forth.

10. In a mop wringer, the combination with a frame, of a vertically movable yoke, jaws pivotally connected to said yoke and adapted to receive a mop between them, arms projecting from said jaws, a shaft at each side of said frame, bars adjustably attached to said shafts, links or rods adjustably connected to said bars and pivotally connected to the arms of the jaws, arms projecting from the ends of the shafts, and a foot treadle attached to said arms, substantially as set forth.

11. In a mop wringer, the combination with a frame, of hinged jaws, means for closing said jaws, and means for operating said jaws to compress a mop between them and the bottom of the frame, substantially as set forth.

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**504,078. SAFETY DEVICE FOR CARS.** LEVI J. COOKE, Boston, Mass. Filed May 2, 1893. Serial No. 472,659. (No model.)

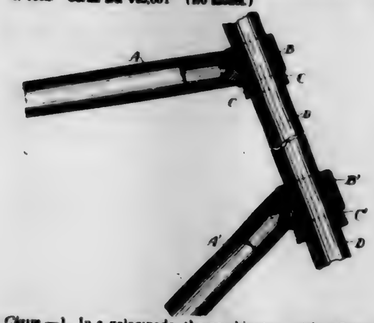


*Claim.*—1. The combination with a car supported on trucks of a rigid transverse bar extending under the body of the car and connected to the same by a series of rigid braces, the bar being supported a short distance above the rails and extending outwardly on each side of the same and provided with shoes, substantially as described.

2. The combination of a car and truck, a rigid transverse bar connected to the car and extending outwardly on each side of the rails, and an upwardly-yielding shoe on each end of the bar, substantially as described.

3. The combination of a car and a truck, a rigid frame depending from the car and carrying a rigid transverse bar at its lower end, a shoe pivoted on each end of the bar and depending below the lower edge of the bar, and springs normally holding said shoes, substantially as described.

## 504,079. VELOCIPEDE. Otto Cullmann, Chicago, Ill. Filed Oct. 6, 1892. Serial No. 448,031. (No model.)




*Claim.*—1. In a velocipede, the combination with a frame having a collar provided with an internal threaded tapering bore, of a steering rod having a correspondingly tapered portion provided with external threads, engaging the threads of the collar, substantially as set forth.

2. In a velocipede, the combination with the frame having the collars B and B' provided with tapering bores of different diameters, of the steering rod having the correspondingly tapered portions C and C', and means for holding the parts together, substantially as set forth.

3. In a velocipede, the combination with the frame having the collars B and B' provided with screw threaded tapering bores of different diameters, of the steering rod having corresponding screw threaded tapering portions C and C', screwed into the collars, substantially as set forth.

## 504,080. WHEEL. Otto Cullmann, Chicago, Ill. Filed May 1, 1893. Serial No. 472,626. (No model.)




*Claim.*—1. As a new article of manufacture, a spoke for wheels, consisting of a rod or wire having its inner end bent in two directions, forming a portion $g'$ that extends laterally with relation to the main portion of the spoke, and a portion $g^2$ that extends in the direction of the length of the main portion of the spoke and laterally with relation to the portion $g'$, the extremity of the spoke being without lateral enlargement, substantially as set forth.

2. In a wheel, the combination with a hub having a number of perforations, and a rim, of a number of spokes arranged tangentially with relation to the hub, the inner end of each of said spokes having a portion $g'$ which extends laterally with relation to the main portion of the spoke and occupies a perforation of the hub, and a portion $g^2$ which extends in the direction of the length of the main portion of the spoke and laterally with relation to the portion $g'$ and is adapted to have contact with the hub and prevent the portion $g^2$ from being withdrawn, the extremity of the spoke being without lateral enlargement, substantially as set forth.

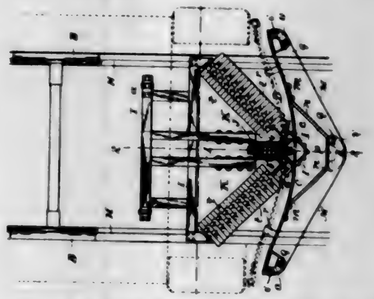
3. In a wheel the combination with a hollow hub, having a number of perforations, and a rim, of a number of spokes arranged tangentially with relation to the hub, the inner end of each of said spokes having a portion $g'$ which extends laterally with relation to the main portion of the spoke and occupies a perforation of the hub, and the portion $g^2$ which extends in the direction of the length of the main portion of the spoke and laterally with relation to the portion $g'$ and is adapted to have contact with the inner surface of the hub and prevent the portion $g'$ from being withdrawn, the extremity of the spoke being without lateral enlargement, substantially as set forth.

4. In a wheel the combination with a hub, consisting of a tube having in the tubular portion thereof and near its opposite ends a number of perforations arranged in series, a pair of journal bearings arranged outside of said series of perforations, a rim, and a number of tensile spokes having their inner ends inserted in said perforations, and their outer ends secured to the rim, substantially as set forth.

5. In a wheel the combination of a hub, consisting of a tube having in the tubular portion thereof and near its opposite ends two series of perforations, each series occupying an independent plane, a rim, and a number of tangential spokes having their outer ends secured to the rim, and having their inner ends inserted in said perforations, the several series of perforations being located at such distances apart that the spokes do not have contact with each other, substantially as set forth.

6. In a wheel the combination of the tube A, having a number of perforations F, rings B fitting in said tube near its outer ends and forming the inner parts of the journal bearings, the axle C extending through the tube, the nuts D carried by said axle and forming the outer parts of the journal bearings, the rim J, and a number of tangential spokes G, each of said spokes having its inner end bent to form the portion $g'$ extending laterally with relation to the main portion of the spoke and occupying one of said perforations, and a portion $g^2$ extending laterally with relation to the portion $g'$ and adapted to have contact with the inner surface of the tube, substantially as set forth.

## 504,081. FENDER AND LIFE-GUARD FOR STREET-CARS. Samuel Du Moulin, Boston, Mass. Filed Oct. 15, 1892. Serial No. 449,043. (No model.)



*Claim.*—1. The combination with a street car of an elastic fender placed in front of and covering the dasher, composed of the flexible band M drawn taut over or around a cluster or series of springs $o'$ at each end, and the cluster or series of springs $p'$ at its center, said springs $p'$ being located in advance of the springs $o'$ substantially as described.

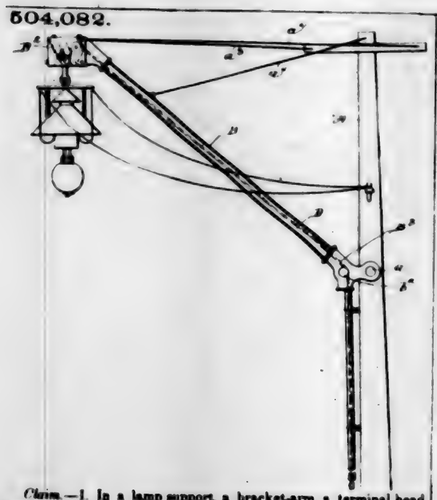
2. In combination with a street car, a yielding and elastic fender covering the front of the dasher; a pair of revoluble brushes arranged obliquely to the center line of the car beneath the car platform with their axes at right angles to each other or nearly so, and adapted to revolve with their peripheries in near proximity to the ground; and means having provision for revolving said brushes when the car is in motion.

3. The combination with a street car of the frame I I', the wheel J, the two revoluble brushes K K arranged with their axes at right angles to each other, the bevel gears $b$ and $c$, and means having provision for revolving said wheel and brushes when the car is in motion.

4. The combination with a street car of the frame I I', pivoted at its rear end to the car body, the wheel J and the brushes K K mounted in bearings in said frame, mechanism for raising the front end of said frame to remove the wheel J from contact with the ground, a locking bolt for supporting said parts in their raised positions, and a treadle mechanism for retracting said bolt to permit said wheel J to fall into contact with the ground.

## 504,082. HANGER FOR ELECTRIC LIGHTS. John P. Hendrie, Weatherby, Pa. Filed Nov. 5, 1892. Serial No. 451,088. (No model.)






*Claim.*—1. In a lamp support, a bracket-arm, a terminal head thereon, fixed and movable guides within the head at each side thereof, said movable guides being suitably notched to receive approximately V-shaped projections of the fixed guides, as specified.

2. In a device for suspending lamps, a head or casing suitably supported, fixed guides of an approximately inverted V-shape arranged within at each side of the casing, and the pivoted latches provided with recesses or notches to receive V-shaped projections of the fixed guides, as specified.

3. In a lamp support, a head or casing, suitable guides at the sides within the casing and the pivoted gravitating latches having their free ends forked, as specified.

4. In an automatic catch for the purpose set forth, comprising a suitable casing, the V-shaped guides arranged at each side thereof and provided with stops —$b^3$— the gravitating catches as described, and an operating cable having one end fixed and the opposite end passing over a pulley in said casing to form an engaging loop, said pulley being so arranged whereby the object suspended shall tend to swing toward the same, substantially as specified.

5. In an automatic catch for the purpose set forth, a casing, the V shaped guides formed at each side thereof and provided with stops —$b^3$—, the gravitating latches, the fixed and movable points of support for the operating cable, the engaging loop formed by the latter, the supporting link having engaging projections and the pulley of the said link being encircled by said loop, as specified.

6. In a support for lamps, a casing having V-shaped guides formed within at the sides thereof in combination with the gravitating latches pivotally secured at or near their lower ends and having their upper ends bifurcated to form engaging arms, substantially as specified.

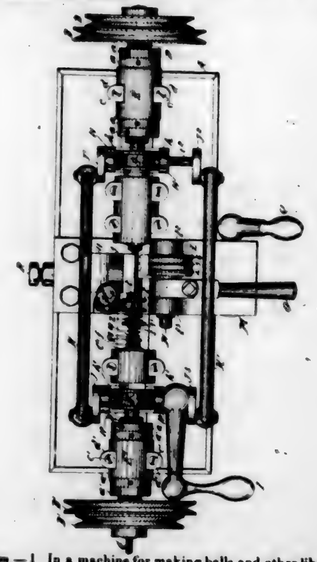
7. In a support for lamps, the combination with the support —A— of the tubular bracket arm —B—, the heads —$B^2$—$B^3$— the self acting catch located in the said head —$B^3$—, comprising the tracks —$b^4$— provided with projections —$b^5$—, the latches —$b$— pivotally secured therein and having arms —$b''$—$b'''$— and crotch —$b'$—, the lamp supporting link provided with lateral studs —$c$— adapted to engage the said arm —$b''$— to partially rotate the said latches as described, and the operating cable —D— having the fixed and movable supports —$b^6$—$b^6$— forming an engaging loop to encircle pulley —$c^{12}$— the opposite end of said cable being passed down through said bracket arm, and suitably secured, substantially as specified.

8. In an automatic catch for the purpose set forth, a casing, the guides formed at each side thereof, the gravitating latches, the fixed and movable points of support for the operating cable the engaging loop formed by the latter, the supporting link having engaging projections, and the pulley of the said link being encircled by said loop, substantially as specified.

9. In a support for lamps, the combination with a casing having suitable guides formed at the sides, of the gravitating latches pivotally secured at or near their lower ends and having their upper ends bifurcated to form engaging arms, substantially as specified.

10. In a support for lamps, the combination with the support A, of the tubular bracket arm B, the heads $B^2$, $B^3$, the self acting catch located in the said head $B^3$, comprising the tracks $b^4$, having the V-shaped projections $b^5$, the latches $b$, pivotally secured therein and having arms $b''$, $b'''$, and crotch $b'$, the lamp supporting link provided with lateral studs $c$, adapted to engage the said arm $b''$, to partially revolve the said latches as described, and the operating cable D, having the fixed and movable supports $b^6$, $b^6$ forming an engaging loop to encircle pulley $c^{12}$, the opposite end of said cable being passed down through said tubular bracket arm, and suitably secured, substantially as specified.

## 504,083. MACHINE FOR MANUFACTURING METAL BALLS, &c. Ernest G. Hoffmann, New York, N. Y. Filed Feb 13, 1893. Serial No. 462,199. (No model.)



*Claim.*—1. In a machine for making balls and other like articles from a metal rod which is adapted to rotate the combination of a cutting and forming device adapted to form or fashion two or more balls on said rod at the same time and to completely sever one of said balls so formed while the others are forming, and means for holding the said ball so severed in position in the same relation to the cutting device which it occupied before it was severed so that it may be further operated upon by said cutting device to remove any fins or projections that may be left thereon, and thereby finish said ball before it has been released or removed from the machine.

2. In a machine for making balls and other like articles from a metal rod which is adapted to rotate, the combination of a cutting and forming device adapted to form or fashion two or more balls on said rod at the same time and to completely sever one of said balls so formed while the others are forming, and means for holding the said ball so severed in position so that it may be further operated upon by said cutting device to remove any fins or projections that may be left thereon, said holding means being adapted to rotate so as to rotate the severed ball while the said cutting device is removing the fins or projections therefrom, and thereby finish said ball before it has been released or removed from the machine.

3. In a machine for making balls and other like articles from a metal rod which is adapted to rotate, the combination of a cutting and forming device adapted to form or fashion two or more balls on said rod at the same time and to completely sever one of said balls so formed while the others are forming, and means for holding the said ball so severed in position so that it may be further operated upon by said cutting device to remove any fins or projections that may be left thereon, and thereby finish said ball before it has been released or removed from the machine, and means for advancing the rod so that another ball may in like manner be severed therefrom and finished by the said cutting and forming device while still others are being formed on the rod.

4. A machine for making balls and other articles from a metal rod or bar which has in combination means adapted to rotate so as to rotate the rod or bar, means for forming thereon two or more balls at the same time, means for severing one of said balls while the others are being formed, means to hold the severed ball while any fins or projections which may remain thereon are being removed or cut therefrom, means adapted to rotate said holding means to rotate

the severed ball while said fins or projections are being removed and the ball completely finished by said forming and severing means before said ball has been released or removed from the machine and means for advancing the rod or bar so that other balls may be in like manner formed, severed and finished, all arranged so that they will operate substantially as and for the purposes herein set forth.

5. In a machine for making balls and other articles from a metal rod or bar which is adapted to rotate, the combination of a cutting and forming device adapted to be moved to and away from said rod, said cutting and forming device being also adapted to form two or more balls thereon at the same time and to completely sever one of said balls so formed while the others are forming and means forming part of said cutting and forming device for removing the fins on each side of the ball, and thereby finish said ball before it has been released or removed from the machine.

6. In a machine for making balls from a metal rod, the combination with means for holding or clutching the rod at two points, said means being adapted to rotate in order to rotate said rod, of a cutting and forming device adapted to form or fashion two or more balls on said rod at the same time and to completely sever one of said balls so formed while the others are forming, and means for holding the severed ball so that it may be operated upon to remove any fins or projections that may be left thereon.

7. In a machine for making balls and other articles from a metal rod or bar, the combination with means for rotating said rod, of a cutting and forming mechanism located a little below the center of said rod, said cutting and forming device being adapted to form two or more balls on said rod at the same time and to completely sever one of said balls so formed while the others are forming and a device for raising the cutting mechanism to remove any fins or projections that may be left on the severed ball.

8. In a machine for making balls and other articles from a metal rod the combination with two chucks or clutches adapted to rotate, said clutches being adapted to operate to clutch said rod which is passed therethrough in order to rotate said rod, of a cutting and forming device located between said clutches slightly below the center of said rod adapted to form two or more balls thereon at the same time, and to completely sever one of said balls so formed while the others are forming, one of said clutches being arranged to hold the severed ball and to rotate it so that it may be further operated upon by the cutting device in order to remove any fins or projections that may be left thereon.

9. In a machine for making balls and other articles from a metal rod which is adapted to rotate, the combination of a cutting and forming device adapted to form two or more balls thereon at the same time and to completely sever one of said balls while others are forming, consisting of a circular metal piece having grooves and edges on its periphery of varying depths and lengths, said cutting and forming device being adapted to be operated so as to remove any fins or projections that may be left on the severed ball and thereby finish said ball before it has been released or removed from the machine substantially as set forth.

10. In a machine for making balls and other articles from a metal rod which is adapted to rotate, the combination of a cutting and forming device adapted to form two or more balls thereon at the same time and to completely sever one of said balls while others are forming, consisting of a circular metal piece having grooves and edges on its periphery of varying depths and lengths, said circular piece having a portion of its periphery cut away, adapted to be raised so that one edge of the cut-away portion will operate to sever the fins on the balls as the device is raised, and thereby finish the severed balls before they have been released or removed from the machine, substantially as set forth.

11. In a machine for making balls and other articles from a metal rod which is adapted to rotate, the combination of a cutting and forming device adapted to form two or more balls thereon at the same time and to completely sever one of said balls while others are forming and thereby finish said severed ball before it has been released or removed from the machine, and means for advancing the rod a predetermined distance so that another ball may in like manner be severed therefrom by the cutting and forming device.

12. In a machine for making balls and other articles from a metal rod which is adapted to rotate, the combination with a cutting and forming device adapted to form or fashion two or more balls on said rod at the same time, and to completely sever one of said balls so formed while others are forming, and means for advancing the rod a predetermined distance so that another ball may in like manner be severed therefrom, while others are forming consisting of a chuck or clutching device adapted to operate by the movement of a lever in one direction to clutch the rod and by the movement of a lever in the opposite direction to advance the rod a predetermined distance before the clutch opens, substantially as set forth.

13. In a machine for making balls from a metal rod or bar, the combination with the chucks C and C' adapted to be operated to clutch the rod by the movement of the lever I in one direction, of the cutting and forming device L adapted to be moved backward and forward by the lever Q and raised by the lever O, the chucks C and C' being adapted to be simultaneously opened to release the rod by the movement of the lever I in the opposite direction, substantially as and for the purpose set forth.

14. In a machine for making balls from a metal rod or bar which is adapted to rotate, the combination with the chucks C and C' adapted to be operated to clutch the rod by the movement of the lever L in one direction and to be opened to release the rod by the movement of said lever in the opposite direction, the cutting and forming device L being adapted to be moved backward and forward by the lever Q and to be raised by the lever O, the clutch S adapted to be operated by the lever W to clutch the rod, the spring Z and spring 10, said spring 10 operating to move or advance the rod a predetermined distance when the lever I is moved to open the chucks C and C', substantially as set forth.

15. In a machine for making metal balls and other articles from a metal rod which is adapted to rotate, the combination with a cutting and forming device adapted to form or fashion two or more balls on the same rod at the same time and to completely sever one of said balls so formed while the others are forming and means for advancing the rod a predetermined distance so that other portions of the rod may be presented to the cutting and forming device for operation consisting of a chuck or clutching device adapted to clutch the rod and a spring to force or move said clutch and with it the rod a predetermined distance before said clutch is opened, substantially as set forth.

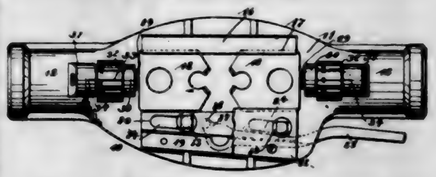
16. In a machine for making balls from a metal rod, the combination of a rotating clutch to grasp the rod at one point and a separate rotating clutch to receive and hold the ball after it has been fashioned from the rod and before it has been finally severed therefrom, said clutch being also adapted to hold the said ball after it has been severed in the same relation to the cutting device as it was before it was severed, said cutting device being adapted to remove the fin therefrom and thereby finish said severed ball before it has been released or removed from the machine, substantially as set forth.

17. In a machine for making balls and other articles from a metal rod which is adapted to rotate, the combination of a cutting and forming tool consisting of a circular metal piece having grooves and edges on its periphery of various depths and lengths, a portion of the periphery of said tool being cut away, said tool being adapted to form or fashion two or more balls on the rod and to completely sever one of said balls at the same time, said tool being also adapted to be operated to remove the fins from the severed ball, and thereby finish the severed ball before it has been released or removed from the machine, substantially as set forth.

18. In a machine for making balls and other articles from a metal rod the combination with two rotating spindles adapted to rotate at the same rate of speed by separate driving mechanisms, said spindles being adapted to clutch the rod at different points between which is located a cutting device or tool adapted to be moved to and away from the rod and to form or fashion several balls therefrom at the same time, a portion of the cutting device partially forming the ball from one part of the rod while another part of the said device completely severs a ball from an adjoining part of the rod, and which cutting and forming device is also adapted to be operated to remove the fins from the severed balls and thereby finish said severed balls before they are released or removed from the machine, substantially as set forth.

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**504,084. DIE-STOCK.** JOHN G. JACKSON, Minneapolis, Minn. Filed July 5, 1892. Serial No. 438,906. (No model.)



*Claim.*—1. A die stock provided with lugs or ribs, one of which is inclined, a longitudinally and laterally movable wedge having an inclined side engaging the inclined rib and a straight side parallel with the other rib and adapted to clamp both dies laterally thereagainst and adjusting screws for the ends of the dies, substantially as set forth.

2. A die stock provided with lugs or ribs, one of which is inclined, a slotted wedge having an inclined side engaging the inclined rib and a straight side parallel with the adjacent face of the other rib and adapted to clamp both dies laterally thereagainst, bolts extending through the wedge slots into the stock and adjusting screws for the ends of the dies, substantially as set forth.

3. A die stock having lugs or ribs upon its face, one of which is inclined in relation to the other, the ribs being adapted to hold dies between them, a longitudinally and laterally movable wedge held between the inclined lug and the dies, and a lever for adjusting the wedge, substantially as described.

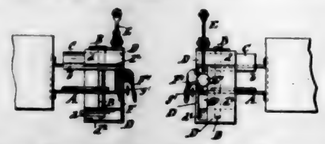
4. A die stock having lugs or ribs upon its face adapted to hold dies between them, one lug being straight and having an overhanging flange on its inner side to cover the dies and the other lug being inclined, and a longitudinally and laterally movable wedge held between the inclined lug and the dies, the wedge having an overhanging flange on its inner upper edge, substantially as described.

5. A die stock having lugs upon its upper face adapted to hold dies between them, one lug being straight and having an overhanging flange on its inner edge and the other being inclined, a wedge held to move longitudinally and laterally between the inclined lug and the dies carried by the stock, a face plate secured to the inclined lug and overlapping the wedge, limiting screws extending through the face plate and into the stock body, the screws extending through hollow slots in the wedge, and a lever for moving the wedge, substantially as described.



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**504,085. CAR-COUPLING.** FREDERICK JACOB, Newark, assignor of one-fourth to Henry Fattberg, Jersey City, N. J. Filed May 4, 1893. Serial No. 472,930. (No model.)



*Claim.*—1. The combination, with a draw bar having a rounded-off face-plate, of a saddle-piece on said draw-bar, a draw-head having a yoke-shaped top-part resting on said saddle-piece, and a swivel-pin for connecting the draw-head with the saddle-piece and draw-bar, substantially as set forth.

2. The combination, with a draw-bar being open at the sides and having a rounded-off face-plate, of a saddle-piece on the draw-bar, said saddle being provided with side-flanges for being retained on the top of the draw-bar, a draw-head resting on the saddle-piece and a swivel-pin connecting the draw-head, saddle-piece and draw-bar, substantially as set forth.

3. The combination, of a draw-bar having a rounded off face-plate, a saddle-piece resting on the top of the draw-bar, a draw-head having a yoke-shaped top-part resting on said saddle-piece, yoke-shaped top and bottom-parts, face-plates, and horizontal wings at both sides at the top and bottom-yokes, and a swivel-pin for connecting the yoke-shaped portions of the draw-head with the saddle-piece and draw-bar, substantially as set forth.

4. In a car-coupling, the combination, of a draw-head, a weighted push-piece pivoted to the rear-side of the draw-head and arranged at right angles thereto, its lower end passing through an opening in the face-plate of the draw head to the front of same, a latch pivoted to the rear-side of the draw-head and provided with a coupling-hook at its outer end, a weighted latch-lever pivoted to the latch, an uncoupling-lever fulcrumed to the top-part of the draw-head and connected by a link with the latch-lever, and means for retaining the latch and weighted latch-lever, so as to retain the parts in uncoupled or partly coupled position, substantially as set forth.

5. The combination, of a draw-head, a weighted push-piece pivoted to the rear-side of the draw-head at right angles thereto, the lower end of the push-piece extending through an opening in the draw-head to the front of same, said push-piece being provided with an upwardly-bent side-lug, a latch pivoted to the rear-side of the draw-head and provided with a stop-arm, a weighted latch-lever pivoted to the latch and an uncoupling-lever fulcrumed to the top part of the draw-head and connected by a link with the latch-lever, the stop arm on the inner end of the latch engaging the lug of the push-piece, when the parts are in partly uncoupled position, substantially as set forth.

6. The combination, of a draw-bar, a saddle-piece on the top of the draw-bar, a draw-head having a yoke-shaped top-part resting on the saddle-piece of the draw-bar and a swivel-pin connecting the top-part of the draw-head, saddle-piece and draw-bar, the front of the draw-bar being rounded off so as to permit the swinging of the draw-head on the coupling-pin, and the riding of the top-piece of the draw-head on the saddle of the draw-bar and the return of the same by gravity into normal position, substantially as set forth.

7. A draw-head, provided with a central opening, a face-plate at each side of the opening, a yoke-shaped top and bottom-part and horizontal wings at each side of the said top and bottom-parts for reinforcing the face-plates, substantially as set forth.

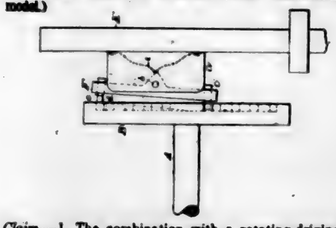
8. A draw-head, provided with a central opening, a face-plate at each side of said opening, a yoke-shaped top and bottom-part, horizontal wings at each side of the top and bottom-parts and a vertical connecting side-plate for the wings at one side of the draw-head, said side-plate having an elongated opening or slot, substantially as set forth.

9. The combination, of a draw-bar having a rounded-off face-plate and an opening in said face-plate for coupling with an ordinary link, with a draw-head swiveled to the draw-bar and provided with a central opening, substantially as set forth.

10. The combination, of a draw-bar, a saddle-piece on the top of said draw-bar, a draw-head resting on said saddle-piece, a swivel-pin for connecting the draw-head, saddle-piece and draw-bar, a weighted push-piece hinged to the rear-side of the face-plate of the draw-head and projecting beyond the same, a latch pivoted to the face-plate of the draw-head and provided with a coupling-hook at its outer end, a weighted latch lever pivoted to the latch, an uncoupling lever fulcrumed to the top part of the draw-head and a pivot-link connecting the latch-lever and uncoupling-lever, substantially as set forth.

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**504,086. DEVICE FOR CONVERTING MOTION.** EDWARD H. JOHNSON, New York, N. Y. Filed Dec. 1, 1892. Serial No. 453,720. (No model.)



*Claim.*—1. The combination with a rotating driving part provided with a spiral guide, of a reciprocating driven part having a projection which engages said spiral alternately at one side and the other of its center, substantially as set forth.

2. The combination with a shaft, of a disk on said shaft provided with a spiral groove in its face and a reciprocating driven part having a projection which engages said groove alternately at one side or the other of its center, substantially as set forth.

3. The combination with a rotating driving part provided with a spiral guide, of a reciprocating driven part, and a body pivoted on said driven part and provided with two studs one on each side of its pivot, said studs being in position to alternately engage the spiral guide, substantially as set forth.

4. The combination with the body pivoted upon the reciprocating part and carrying the alternately engaging studs, of the spiral guide on the rotating part, provided with a cam or inclined plane at its end, substantially as set forth.

5. The combination with the body pivoted upon the reciprocating part and carrying the alternately engaging studs, of the spiral guide on the rotating part, the same being an eccentric spiral except near its ends where its curves become concentric ones, substantially as set forth.

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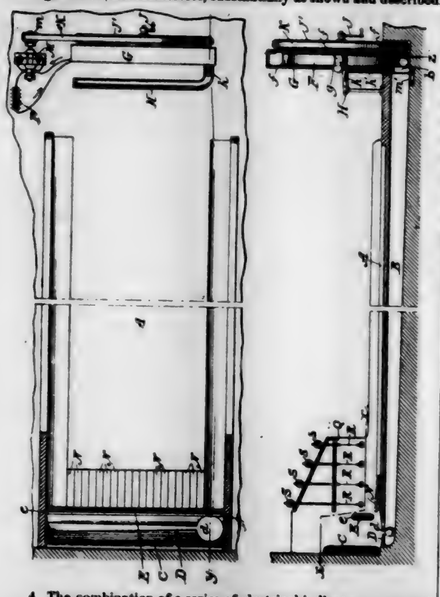
**504,087. ELECTRIC BOWLING-ALLEY.** PIER P. NELSON, New York, N. Y. Filed Sept. 21, 1892. Serial No. 446,381. (No model.)

*Claim.*—1. The combination of an elevator for balls, an electric motor for operating said elevator, a chute to deliver balls to the elevator, a receptacle to receive balls from the elevator, a circuit closer operated by a ball as it passes from the chute to the elevator and means to open said circuit closer operated by the ball as it passes from the elevator to the receptacle, substantially as shown and described.

2. The combination of a series of indicators, a series of electro-magnetic coils in independent branches, a series of plates movable by the passage of a ball one or more contacts for each of said plates whereby the movement of each plate closes one or a plurality of said branches, according to the position of the plate in the series, to cause the corresponding coils to move one or more of said indicators in one direction, a second series of electro-magnetic coils acting severally in opposition to said first named coils to move said indicators in the opposite direction, and an independent circuit closer to close the circuit of said second series of coils, substantially as shown and described.

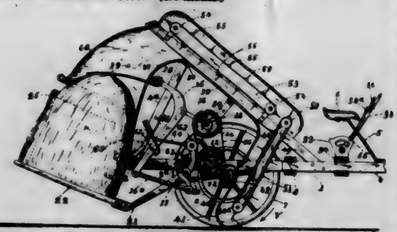
3. The combination of electric indicators, connected to one side of a battery, a series of conductors severally connected to said indicators, and a series of plates movable by a ball and each having, so-

cording to its relative position, one or more contacts connected to the other side of said battery and each adapted to complete the circuit through one of said conductors, substantially as shown and described.



4. The combination of a series of electrical indicators connected to one side of a battery, a series of conductors connected severally to said indicators, and a series of plates overlying said series of conductors and movable by a ball, one of said plates having a single contact connected to the other side of said battery and adapted to complete the circuit through one of said conductors, another of said plates having a series of contacts also connected to the battery and adapted to complete the circuit through all of said conductors and the intermediate plates of the series having each two or more contacts according to its position to complete the circuit through two or more of said conductors, substantially as shown and described.

**504,088.** MACHINE FOR RAKING AND COCKING HAY. ANDREW G. PARK and WILLIAM A. DEXTER, Wesley, N. Y. Filed Jan. 9, 1892. Serial No. 417,460. (No model.)



*Claim.*—1. In a hay cocking machine the combination, with an elevator of a receptacle pivotally secured to the rear of the machine, the bottom of which is slotted, and the sides are flexible and provided with upright bars, the front and rear of said receptacle being open, substantially as set forth.

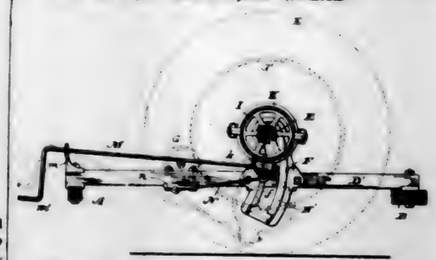
2. In a hay cocking machine, the combination with an elevator and a receptacle, of a spout projecting from the rear end of the elevator over the receptacle, a reciprocatory cross bar between the elevator and the receptacle, flexible tines secured thereto which are movable back and forth into and out of the spout, and means for stopping the tines within the spout and holding them there when the receptacle is being unloaded, substantially as set forth.

3. In a hay cocking machine, the combination with an elevator and a receptacle, of a rock shaft for raising and lowering the receptacle, a reciprocatory fork between the elevator and the receptacle, a rotary shaft adapted to be intermittingly operated by the operating mechanism of the machine an arm rigidly secured to the rock shaft for operating the receptacle, and means for connecting and disconnecting the rotary shaft with the operative mechanism simultaneously with the operation of the rock shaft, substantially as set forth.

4. In a hay cocking machine, the combination with a frame, of an elevator mounted thereon, and a receptacle pivotally secured to the rear portion of the frame, a reciprocatory fork between the elevator and the receptacle, two pulleys on the frame, one of which is connected with the operating portion of the machine and the other one is connected with the fork, a belt upon the pulleys, a shaft in the machine provided with an arm rigidly secured thereto, the free end of which arm is provided with a tightening pulley and with a connecting rod, for connecting with the belt and with the fork respectively, substantially as set forth.

5. In a hay cocking machine, the combination with the hay-cocking fork of a tripping mechanism for catching the hay cocking fork and holding it stationary while the hay receiving platform or fork is being lowered and the hay cock being discharged, for the purpose of preventing the continually falling hay from dropping on the completed retiring hay cock substantially as described.

**504,089.** HARVESTER. HENRY E. FRIDMORE, Chicago, Ill., assignor to the McCormick Harvesting Machine Company, same place. Filed Jan. 14, 1888. Serial No. 260,704. (No model.)



*Claim.*—1. The combination, substantially as hereinbefore set forth, of the master-wheel and its axle, the pinions, the segment rack-standards, the worm-wheel fixed to said axle, a worm meshing with said wheel and ultimately supported by the axle with freedom to oscillate thereabout, a stiff rod or shaft for turning said worm, a loose eye on the frame in which said rod has its bearing, and a draw connection between the worm-support and a pivotal point upon the frame, the parts being so arranged and proportioned that the worm is oscillated about the axle to preserve its alignment with the bearing of the shaft.

2. The combination, substantially as hereinbefore set forth, of the master-wheel and its axle, the pinions upon the end of said axle, the segment rack-standards with which said pinions engage, the worm-wheel fixed to said axle, a worm meshing with said wheel, a housing for said worm, a stiff rod or shaft pivoting in a guide-eye or bearing and attached to said worm, whereby it may be rotated, and a stiff connection with a pivotal point on the main-frame, conforming said housing to the inclination of the worm-shaft and holding it against orbital movement whenever the shaft is at rest and maintaining the alignment of the worm with the bearing of the shaft, all being located and proportioned essentially as described.

3. The combination, substantially as hereinbefore set forth, with the axle, of the worm-gear, the casing encircling the periphery of said gear, the worm carried in a housing from said casing and meshing with the teeth of the gear, the detachable shaft whereby the worm is turned, the loose bearing upon the frame in which such shaft may oscillate, and the link connecting the casing with a fixed point upon the frame, all being so arranged and proportioned that the housing and casing are caused to oscillate during the up and down adjustments to preserve the axis of the worm in line with the worm-shaft and its bearing.

4. The combination, substantially as hereinbefore set forth, of the main axle, the worm-gear mounted thereon, a worm suspended from said axle and meshing with the gear, arranged with its axis oblique to the plane of the gear, a stiff shaft for revolving said worm, a bearing on the frame in which said shaft may oscillate, and a link pivoted both to the worm-support and to the main-frame to retain the axis of the worm in line with said bearing, all being arranged and located essentially as described.

5. The combination, substantially as hereinbefore set forth, of the main axle, the worm-gear thereon, the casing encircling said gear and having an oblique housing, the worm mounted in said housing with its axis oblique to the plane of the gear, the worm shaft, the loose



bearing for the latter on the main-frame and the link connecting said casing with the main-frame, and operating to oscillate it around the axis of the worm-gear in the up-and-down adjustment, to preserve the axis of the worm in line with the worm-shaft and its bearing, the parts being arranged and proportioned practically as described.

6. The combination, substantially as hereinbefore set forth, of the main axle, the worm-gear thereon, the casing encircling said gear, its housing and the worm therein, the detachable crank-shaft, the loose bearing therefor on the main-frame, and the link connecting the casing with the main-frame, to oscillate said casing, the parts being arranged and proportioned essentially in the manner described.

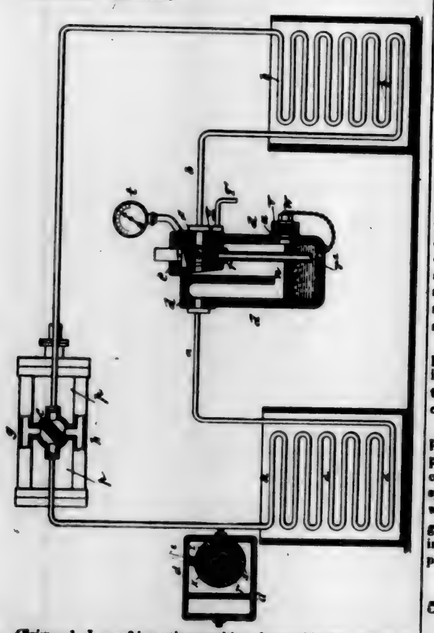
7. The combination, substantially as hereinbefore set forth, of the worm-gear, its annular seats, the casing with annular shoulders resting upon said seats, and the worm supported by said casing in mesh with the gear.

**504,090.** GARMENT-HOOK. NEWTON C. SAMPLE, Philadelphia, Pa. Filed May 15, 1893. Serial No. 474,241. (No model.)



*Claim.*—A garment hook, comprising a single piece of wire doubled to form a shank consisting of two members, each of which is provided with a thread eye and bent to form a bill with a flaring extremity and one part of the shank being straight and the other part being formed with an intermediate coil arranged diagonally with respect to the plane of said shank, substantially as and for the purposes described.

**504,091.** REFRIGERATING AND ICE-MAKING MACHINERY. PAUL I. SOMMALTE, Hamburg, Germany. Filed Nov. 14, 1891. Serial No. 411,863. (No model.)



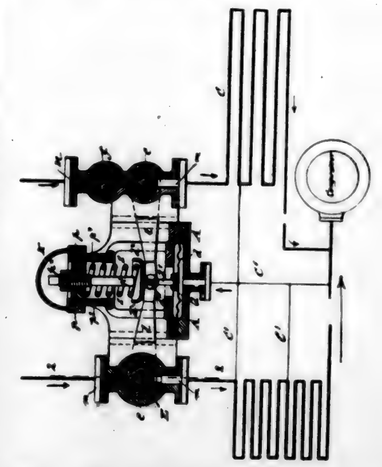
*Claim.*—1. In a refrigerating machine, the combination of a compressor, a condenser, an expander, means for reversing the course of the refrigerating medium whereby it is condensed in the expander, an oil-separating chamber connected with the condenser, and a valve connecting said oil-separating chamber with the expander whereby when said refrigerating medium is condensed in said expander and said valve is opened, a sudden expansion takes place from the expander to the oil-separating chamber, substantially as set forth.

2. An oil-separating chamber for refrigerating machines, having a downwardly-extending partition, and an expansion-valve or stop-cock at the upper part of the chamber at that side which is connected with the expander, substantially as set forth.

3. An oil-separating chamber for refrigerating machines, provided with a downwardly-extending partition, an expansion-valve or stop-cock at the upper part of the chamber, and a pressure-gage connected with the valve or stop-cock, the spigot of which is provided with a lateral bore or opening communicating with the pressure-gage, substantially as set forth.

4. An oil-separating chamber for refrigerating machines provided with a partition *n*, an expansion valve or stop cock, *e*, the spigot of which has a downwardly-extending tube *e'* and a lateral discharge-hole *g*, a discharge-pipe *g'*, and a glass-gage *u*, substantially as set forth.

**504,092.** AUTOMATIC PRESSURE-REGULATOR FOR REFRIGERATING-MACHINES. PAUL I. SOMMALTE, Hamburg, Germany. Filed Dec. 12, 1891. Serial No. 414,776. (No model.)



*Claim.*—1. The combination of a low pressure coil, a supply channel therefor, a regulating cock in said supply channel for regulating the flow of fluid thereto from the high pressure coil, a chamber a diaphragm in said chamber exposed on one side to the fluid pressure of said low pressure coil, a spindle connected with said diaphragm and provided with a cup, a screw-threaded sleeve disposed opposite said diaphragm, a screw-plug in said sleeve, a spring, an adjustable stop pin extending through said plug, and a lever connecting said spindle with said regulating cock.

2. The combination of a low pressure coil, a diaphragm chamber, pipes connecting said coil with said diaphragm chamber, a diaphragm in said chamber, a regulating plug arranged in the supply channel for the low pressure coil, and a stop cock surrounding said regulating cock in said supply channel.

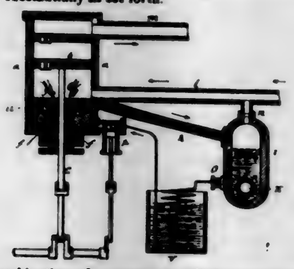
3. The combination of two low pressure coils or chambers, supply channels therefor, regulating cocks in said supply channels, a diaphragm chamber, a diaphragm in said chamber, pipes connecting said coils with said diaphragm chamber on one side of said diaphragm, a spindle attached to said diaphragm, levers connecting said diaphragm with said regulating cocks, a spring acting on said spindle, a threaded guide sleeve, a screw plug in said threaded guide sleeve for adjusting the tension of said spring, a stop device attached to said screw plug, and a protecting cap on said sleeve.

**504,093.** COMPRESSION AND VACUUM PUMP. PAUL I. SOMMALTE, Hamburg, Germany. Filed Dec. 12, 1891. Serial No. 414,777. (No model.)

*Claim.*—1. The combination of a compressor cylinder, an annular chamber at the head of said cylinder around the main piston-rod, ducts leading directly from said annular chamber into the cylinder, a pump for forcing the lubricating liquid into said annular chamber, and means for reciprocating the cylinder piston and the pump piston simultaneously in opposite directions, substantially as set forth.

2. The combination, of a compressor cylinder, a chamber disposed around the piston-rod, a cylindrical casing in said chamber, said casing being provided with supply-openings near its base and an opening or

openings into the pump cylinder, a collecting-tank for the lubricating liquid connected with the cylinder and with a gas-main, and means for forcing the lubricating liquid through the chamber and its casing into the cylinder, substantially as set forth.



3. The combination, of a compressor-cylinder, an inner chamber disposed around the piston-rod provided with openings leading into said cylinder, an outer chamber disposed around said inner chamber and provided with openings leading into said inner chamber, and means for pressing the lubricating liquid into said outer chamber for the purpose of lubricating the piston and lubricating and sealing the piston-rod, substantially as set forth.

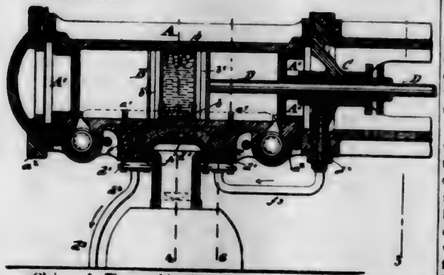
4. The combination, of a compressor-cylinder, an inner chamber disposed around the piston-rod provided with openings leading into said cylinder, an outer chamber disposed around said inner chamber and provided with openings leading into said inner chamber, a collecting tank for the lubricating liquid connected with the cylinder and with a gas-main, and means for forcing the liquid into the cylinder while the piston rod is moved in upward direction

5. The combination, of a compressor cylinder, a chamber disposed around the piston-rod, a collecting-tank for the lubricating liquid connected with the cylinder and with a gas-main, a heater in said tank for evaporating the vapors absorbed by the liquid, a cooler connected with the outlet opening of said tank, a strainer between said tank and cooler, and a circulating pump connected to the cooler and with the chamber around the piston-rod, substantially as set forth

6. The combination, of a compressor cylinder, a chamber disposed around the piston-rod, a cylindrical casing in said chamber, said casing being provided with supply openings near its base and an opening or openings into the pump-cylinder, a collecting tank for the lubricating liquid connected with the cylinder and with a gas-main, means for forcing the lubricating liquid through the chamber and into its casing into the cylinder, and a pipe for conducting the lubricating liquid from said cylinder back to the collecting tank

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**504,094. COMPRESSION AND VACUUM PUMP.** PAUL I SCHMALTZ, Hamburg, Germany. Filed Dec. 29, 1891. Serial No. 416,455. (No model.) Patented in Germany June 14, 1891, No. 61,104, and Feb. 6, 1892, No. 64,624.



*Claim.*—1. The combination, in a compression or vacuum-pump, of a pump cylinder having supply and discharge channels, inlet ports for the lubricating liquid on one side and outlet ports for the lubricating liquid on the reverse side thereof, a piston having a chamber which is open toward the walls of the pump, and a stuffing-box for the piston-rod having a chamber connected with the supply and discharge channels, whereby the lubricating liquid is supplied to the piston, pump and piston-rod, substantially as set forth.

2. The combination in a compression or vacuum-pump of a pump cylinder having inlet ports for the lubricating liquid on one side and outlet ports for the lubricating liquid on the reverse side thereof, a piston having a chamber open toward the walls of the cylinder, supply and discharge channels for the lubricating liquid arranged respectively on each side of the pump, longitudinal channels connecting the ports on one side with each other and with the channels on that side, and valves for opening and closing said ports intermittently, substantially as set forth.

3. The combination, in a compression or vacuum-pump, of a pump cylinder having inlet ports for the lubricating liquid on one side, outlet ports for the lubricating liquid on the reverse side thereof, a piston having one or more chambers open toward the walls of the cylinder, supply and discharge channels for the lubricating liquid arranged respectively on each side of the pump, longitudinal channels connecting the ports on one side with each other and with the channels on that side, valves for intermittently opening and closing the ports, and a valve gear for operating said valves, substantially as set forth.

4. The combination, in a compression or vacuum pump, of a pump cylinder having inlet ports for the lubricating liquid on one side, outlet ports for the lubricating liquid on the reverse side thereof, a piston having one or more chambers open toward the walls of said cylinder, supply and discharge channels for the lubricating liquid, a chamber in the stuffing-box of the piston-rod, channels for connecting said chamber with the supply and discharge channels of the liquid supplied to the piston, valves for said ports, a cooling tank for said liquid, and pipes for connecting the tank with the supply and discharge channels of the pump, substantially as set forth.

5. The combination, in a compression or vacuum-pump, of a pump cylinder, inlet ports for the lubricating liquid on one side, outlet ports for the lubricating liquid on the reverse side thereof, a piston having one or more chambers open toward the walls of said cylinder, supply and discharge channels for the lubricating liquid, hollow cushioned safety heads at the ends of said cylinder, and ducts, as $a^3$, leading from the pressure side of the compressor to the hollow safety heads.

6. In a compression or vacuum pump, the combination of a piston having closed ends and provided with a circumferential chamber, a receptacle for a lubricating medium provided with a cooling device for said lubricating medium, a channel or port in the compressor wall through which said lubricating medium is supplied to said circumferential chamber, and adjunctive connections whereby said lubricating medium is supplied to said circumferential chamber

7. In a compression or vacuum pump, the combination of a piston having closed ends and provided with a circumferential chamber, a receptacle for a lubricating medium, means for circulating said lubricating medium, a separator for separating said lubricating medium from the gas of the pump, channels or ports in the compressor walls through which said lubricating medium passes to and from said circumferential chamber, and adjunctive connections whereby said lubricating medium is supplied to and returned from said circumferential chamber

8. In a compression or vacuum pump, the combination of a piston having closed ends and provided with a circumferential chamber, a receptacle for a lubricating medium, a stuffing box for the rod of the piston provided with a chamber for the lubricating medium, a channel or port in the compressor wall through which said lubricating medium is supplied to said circumferential chamber, and adjunctive connections whereby said lubricating medium is supplied to the chamber of the stuffing box and to the circumferential chamber

9. In a compression or vacuum pump, the combination of a piston provided with a circumferential chamber, channels or ports in the compressor walls through which a lubricating medium is supplied and discharged to and from the chamber of said piston, and valves by which said channels or ports are intermittently opened and closed as said piston is moved

10. In a compression or vacuum pump, the combination of a piston with closed ends and provided with a chamber opening to the wall of the compressor, inlet and outlet ports in the compressor for a lubricating medium, supply and discharge channels for said lubricating medium, a stuffing box for the rod of the piston provided with a chamber, channels for connecting said chamber of the stuffing box with the channels of the lubricating medium supplied to the piston chamber valves for said inlet and outlet ports of the compressor, a cooling tank for said lubricating medium, and pipe connections between said cooling tank and the supply and discharge channels of the pump.

11. The combination, of a compression or vacuum pump, a piston having a chamber in the same, said chamber being open toward the walls of the cylinder, inlet ports for the lubricating liquid on one side of the cylinder, outlet ports for the lubricating liquid on the reverse side thereof, supply channels for conducting the liquid to the inlet ports, discharge channels for the outlet ports, longitudinal channels for connecting the ports and channels on one side, a stuffing-box around the piston-rod, a chamber therein, channels leading to said chamber, and connecting pipes connecting the channels leading to said chamber, with one of the supply and discharge channels, respectively, substantially as set forth

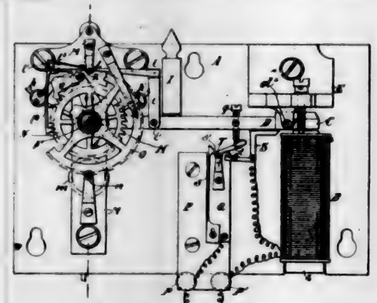
12. The combination, of a compression or vacuum-pump, a piston



having a chamber in the same, said chamber being open toward the walls of the cylinder, inlet ports for the lubricating liquid on one side of the cylinder, outlet ports for the lubricating liquid on the reverse side thereof, supply channels for conducting the liquid to the inlet ports, discharge channels for the outlet ports, longitudinal channels for connecting the ports and channels on one side, a stuffing-box around the piston rod, a chamber therein, channels leading to said chamber, connecting pipes connecting the channels leading to said chamber with one of the supply and discharge channels, respectively, and valves for opening and closing said ports intermittently, substantially as set forth.

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**504,095. ELECTRIC CLOCK.** EMIL SCHWEIZER, Sumiswald, Switzerland. Filed July 16, 1892. Serial No. 440,198. (No model.) Patented in Switzerland Apr. 21, 1890, No. 2,115; in England Apr. 28, 1890, No. 6,490; in Belgium Apr. 30, 1890, No. 90,374; in Austria-Hungary Sept. 18, 1890, No. 19,771 and No. 38,430, and in France May 5, 1891, No. 213,343



*Claim.*—1. In an electric clock, the combination with an electro-magnet, its armature mounted on the shorter arm of the armature lever, the said lever having its longer arm weighted, the wheels which operate the clock hands, mechanism intermediate the weighted arm of the armature lever and said clock wheels, whereby the descent of said lever rotates said wheels, and a circuit breaker and closer, of the escapement K, the verge wheel H, bearing a pawl *h*, the scroll disk G, loosely mounted concentric with the wheel H and engaged by the pawl *h*, the pinion *f*, connected to the disk G, and the rack *d* on the armature lever in gear with said pinion.

2. In an electric clock, the combination with an electro magnet, its armature mounted on the shorter arm of the armature lever, the said lever having its longer arm weighted, an escapement mechanism which retards the descent of the weighted armature lever, and a circuit breaker and closer, of the minute wheel N, the hook pawl P, engaging the teeth of said minute wheel and coupled to one arm of a rocking lever L, and a link *i*, which couples the other arm of said lever L to the weighted arm of the armature lever.

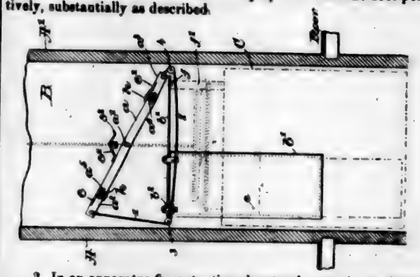
3. In an electric clock, the combination with an electro-magnet, a circuit of which the coils of said magnet form a part, the armature mounted on the shorter arm of the armature lever, and the said lever, of an automatic circuit breaker and closer comprising a contact lever, *t*, in the circuit and having an angular heel T, a spring *s*, having an angular head *s'*, bearing on the angular heel of the lever *t*, and operating as described, a contact bracket S, carried by the longer arm of the armature lever and adapted to take under the lever *t*, said bracket being in circuit, and a part *q*, carried by the armature lever and arranged over the lever *t*, substantially as set forth.

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**504,096. ACTUATING MECHANISM FOR ELEVATOR-DOORS.** EDMUND B. TAYLOR, Lowell, Mass. Filed Oct. 15, 1892. Serial No. 448,953. (No model.)

*Claim.*—1. An elevator well provided with an opening, a door therefor, and a traveling cage, combined with a lever pivoted to the interior of the well and in the path of movement of the cage, and connections between said door and lever, the cage engaging one or the other lever arm and positively moving the lever on its pivot in one or the other direction when the cage approaches or recedes from the opening, to thereby open and close the door positively, substantially as described.

2. An elevator well provided with an opening, a door therefor, and a traveling cage having upon its exterior two pins or projections at different heights, combined with a lever pivoted to the interior of the well, connections between it and the door, and lugs on the lever each in the path of movement of and to be engaged by one of said pins, whereby the lever is turned in one or the other direction by the movement of the cage to simultaneously open or close the door positively, substantially as described.



3. In an apparatus for actuating elevator doors, a lever pivoted to the inner wall of the well, a spring to act upon each side of the pivotal point of said lever to maintain it in normal position and a lug upon each of the lever ends, and a door connected to and moved by the lever, combined with a cage, pins thereon in different horizontal planes to engage said lugs singly and move the lever to open and shut the door, the connections permitting and the spring taking up lost motion of the lever, substantially as described.

4. An apparatus for actuating elevator doors, comprising a pivoted lever having separate hinged ends adapted to move in opposite directions, a lug on each end, and locking devices to normally maintain said ends rigid with the lever, combined with a cage provided with external pins or projections to engage said lugs and move the lever in one or the other direction and adapted, to turn the lever ends on their hinges without actuating the lever when the locking devices are disengaged, substantially as described.

5. An elevator well provided with a door opening, a sliding door therefor, and a traveling cage having an upper and lower pin upon its exterior, combined with a spring-pressed lever connected with the door, and a lug at each lever end in the path of movement of one of said pins, movement of the cage toward the door bringing one of said pins into engagement with its lug to turn the lever, the other pin engaging its lug thereafter and restoring the lever to its first position, the respective lugs being brought automatically into the paths of movement of the pins, substantially as described.

6. A pivoted lever having ends $a^3$, $a^3$ hinged thereto, and locking devices therefor, lugs *e*, *e'* on said ends, a sliding door, and flexible connections between the door and lever ends, combined with a cage, pins *e*, *f* to engage and move the lugs *e*, *e'* respectively, and a spring having arms *s'*, $s^2$ to act upon opposite sides of the pivotal point of said lever, to place the lugs in the paths of the pins, substantially as and for the purposes described.

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**504,097. HYDRAULIC AIR-PUMP.** EDWARD H. WEATHERHEAD, Cleveland, Ohio. Filed Oct. 22, 1890. Serial No. 368,938. (No model.)

*Claim.*—1. In a hydraulic air pump, the pump casing and the valve and piston to control the inlet and outlet of the motive fluid, in combination with two cylinders one within the other having each an open fluid connection with the pump casing, and connected pistons in said cylinders, substantially as described.

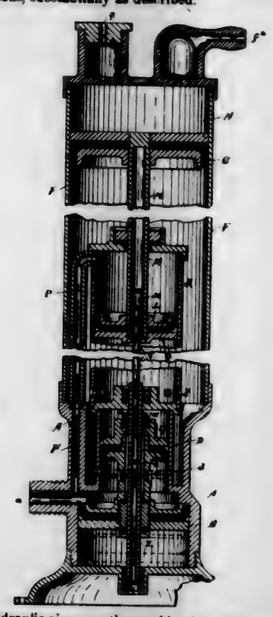
2. A main casing having fluid channels through the same and valve mechanism in the casing to control the inflow and the outflow of fluid, an outer cylinder open at its bottom into said casing and an inner cylinder open at its bottom into the water channel of said outer cylinder, and a pair of rigidly connected pistons working in said cylinders, one in each, substantially as described.

3. The main casing containing valve and piston chambers and inlet and outlet ports, an outer water and air cylinder open at its bottom for the passage of fluid from the main casing and an inner water cylinder over the valve chamber, in combination with a connected valve and piston in the main casing, and connected pistons in the outer and inner cylinders, and a valve tube, substantially as described.

4. The main casing and a cylinder fixed thereon and open at its bottom into the casing, an inner cylinder having a water space between it and the outer cylinder, and a water channel extending from the main inlet to the upper portion of the inner cylinders, in combination with a valve and piston in the main casing, connected pistons in the inner and outer cylinders, and an auxiliary valve actuated by said pistons, substantially as described.

5. The main casing provided with valve and piston chambers and fluid inlet and outlet ports and passages, and a valve and piston in said casing, in combination with an outer cylinder having air inlet and outlet passages at its top and opening at its bottom into the main casing, an inner fluid cylinder and fluid openings at its lower end and

a constant fluid pressure channel leading into its upper end, a pair of connected pistons in said cylinders and the valve stem connected with said pistons, substantially as described.

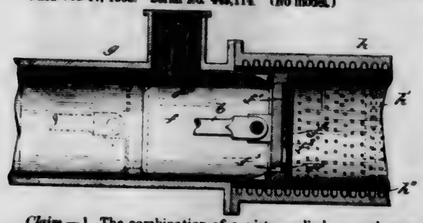


6. In a hydraulic air pump, the combination with a main cylinder provided with air and water inlets and outlets, and a piston reciprocating therein with air and water respectively on opposite sides thereof, of a hydraulic returning cylinder and piston within the main cylinder, the pistons being connected, all substantially as described.

7. In a hydraulic air pump, the combination of a main cylinder having air inlets and outlets in one end and water inlets and outlets in the other end, a main piston separating the air and water in said cylinder, a hydraulic returning cylinder within the main cylinder and having a piston connected to the main piston, and a valve mechanism controlling the inlet and outlet of water in the cylinder, substantially as described.

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**504,098. GRAIN-PRESS.** MAX T. F. WIESEBROCK, Chicago, Ill. Filed Oct. 17, 1892. Serial No. 449,114. (No model.)



*Claim.*—1. The combination of a piston-cylinder, an elongated piston working therethrough and means for operating this piston, an open ended press-cylinder secured to the end of the piston-cylinder and made larger in internal diameter than the piston, said press-cylinder being provided with numerous perforations, as and for the purpose described.

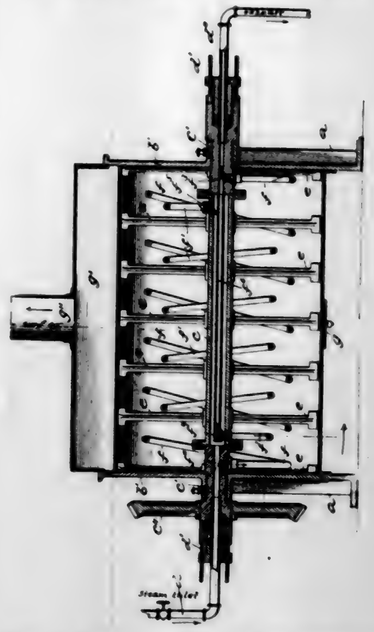
2. The combination of an open-ended press-cylinder provided with a series of internal annular grooves and ribs and an upper and lower internal longitudinal groove intersecting said annular grooves, openings in the upper and lower sides of the cylinder, communicating with said longitudinal grooves, a perforated cylinder fitted in the main cylinder and supported on the internal ribs, and a piston working in the perforated cylinder, substantially as and for the purpose described.

3. The combination of a cylinder, a piston working therein and provided in its face with a series of grooves and ribs and a main groove or channel (such as $f^a$) communicating with said grooves, an outlet opening $f^b$ communicating with the main-groove, and a perforated plate secured over the grooves and ribs and supported by the latter, substantially as described.

4. The combination in a press, of an open-ended cylinder $A$ having formed on its interior a series of integral ribs and intermediate channels, an interior metal cylinder $A'$ numerously perforated and fitted within the exterior cylinder, said interior cylinder resting on and being supported rigidly by said ribs, and a piston, substantially as described.

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**504,099. DRIER FOR BREWERS' GRAINS.** MAX T. F. WIESEBROCK, Chicago, Ill. Filed Oct. 17, 1892. Serial No. 449,115. (No model.)



*Claim.*—1. The combination of a shell, a hollow shaft extending therethrough and having its respective ends connected to live-and exhaust-steam pipes, said shaft having two separated steam compartments extending approximately the full length of the shell, one of these compartments being connected to the live-steam end of the shaft and the other to the exhaust-steam end, and two steam coils arranged spirally around the shaft and having their respective ends connected to the respective compartments of the shaft, substantially as described.

2. In a drier, the combination of a shell, a hollow shaft passing therethrough and having two separated steam compartments, one for exhaust steam and the other for live steam and two steam coils surrounding the shaft and having their inlet ends connected to opposite ends of the live steam compartment and their outlet ends connected to opposite ends of the exhaust steam compartment, substantially as described.

3. In a drier, the combination of a shell, a hollow shaft passing therethrough and constructed of two end-sections journaled in the heads of the shell and an intermediate section connecting the inner ends of the end sections, and provided with two steam compartments communicating with the respective end sections, stuffing boxes and steam pipes connected to the end-sections, and two steam coils having their inlet and outlet ends connected to the respective compartments, substantially as herein described.

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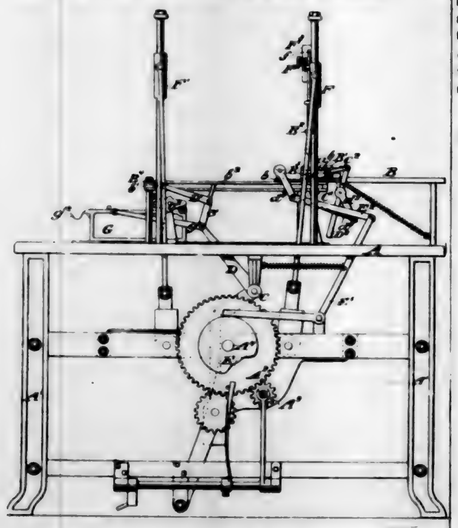
**504,100. MACHINE FOR FORMING FILLERS FOR CIGARS.** LOUIS F. WIETER, New York, N. Y., assignor, by direct and mesne assignments, to Leon A. Klein and Joseph Dein Mar, same place. Filed Nov. 30, 1892. Serial No. 453,671. (No model.)

*Claim.*—1. In a machine of the class described the combination with driving mechanism, of the stationary part having the throat-way, the mold, the holder, said mold and holder being respectively movable toward and from each other below and above the throat



and movable in line with the throat and mechanism for causing the movements, substantially as specified.

2. The combination with the mold, the holder and the stationary part having the throat-way of the shearing blades operating horizontally between the mold and throat way said mold and holder being movable toward and from each other and arranged respectively below and above the throat-way, substantially as specified



3. The combination with the mold, the stationary throat-way and holder movable above the throat-way and in line therewith, each substantially cigar-shaped in cross-section, of the cross-head, the plunger, having a yielding connection with the cross-head and means for moving the cross head vertically, substantially as specified.

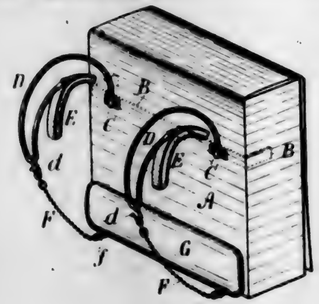
4. The combination with the stationary throat-way, the mold and the holder the said mold and holder being movable in line with the throat-way, of the cross-head, means for operating the same, a plunger carried by the cross-head and having a sliding connection therewith, the lever pivoted at one end to the cross head and having connection with the plunger, and a weight adjustable on the lever, substantially as specified.

5. The combination with the stationary throat-way, the mold and the holder the mold being below the throat-way and the holder being above the throat-way and each movable to register with the throat-way of the plunger and means for adjusting the pressure of the plunger, substantially as specified.

6. In a machine of the class described the combination with the fixed throat-way and the reciprocating mold below the throat-way, and the plunger movable through the mold, of the carrier above the throat-way and the holder removably attached to said carrier, substantially as specified.

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**504,101. KNAPSACK.** FRITZ ZBINDEN, Lausanne, Switzerland. Filed Dec. 16, 1892. Serial No. 455,363. (No model.) Patented in Switzerland May 30, 1892, No. 5,068.

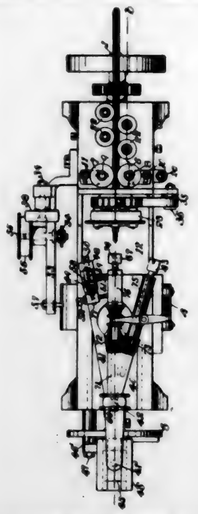


*Claim.*—1. A support for knapsacks and similar articles, consisting of two spring arms folded upon themselves and curved in form and connected at their rear ends to the knapsack or similar article, and having at their other ends the curved shoulder pieces for sustaining the weight of the knapsack upon the shoulders, substantially as set forth.

2. A support for knapsacks and similar artices, consisting of two spring arms folded upon themselves and curved in form and connected at their rear ends to the knapsack or similar article, and having at their other ends the curved shoulder pieces for sustaining the weight of the knapsack upon the shoulders, and chains or straps extending from the folds of the springs to the lower portion of the knapsack, substantially as set forth.

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**504,102. SCREW-MACHINE.** EDWARD R. CLAUSEN, Hartford, Conn., assignor of one-half to Emil F. Linke and George Mortson, same place. Filed May 19, 1892. Serial No. 433,524. (No model.)



*Claim.*—1. In combination with means for holding a wire rod from rotating, and which allow it to move only in the direction of its length, a series of revolving tool spindles and an intermittently oscillating bed on which those spindles are journaled, arranged and operating to present those tool spindles successively to that wire rod, all substantially as described.

2. In combination with means for holding a wire rod from rotating, and which allow it to move only in the direction of its length, a series of revolving tool spindles journaled on an intermittently oscillating bed, and a reciprocating slide on which that bed is mounted, arranged and operating to advance and retract those spindles toward and from the rod as they are presented to it, all substantially as described.

3. In combination with means for holding a wire rod from rotating, and which allow it to move only in the direction of its length, a series of revolving tool spindles journaled on an intermittently oscillating head, a slide on which that head is mounted, and a cam wheel, arranged and operating to reciprocate that slide to the extent and at the rate required by the respective spindles when in their operative position, all substantially as described.

4. In combination with means for holding a wire rod from rotating, and which allow it to move only in the direction of its length, a slide carrying a pivot located and reciprocating in the plane of the wire rod, a tool head adapted to oscillate upon that pivot, and a series of revolving tool spindles journaled upon that head with their axes radial to that pivot, whereby those axes may successively be brought into line with the center of the wire rod and reciprocated in the direction of that line, substantially as described.

5. The combination of a series of revolving spindles radially journaled on an intermittently oscillating head which is provided with radial slots corresponding in position with the respective spindles, a reciprocating slide on which that head is pivoted, and a guide piece 74 adapted to enter the slots corresponding to the respective spindles as they are brought into operative position and carried forward by the reciprocation of the slide, all substantially as described.

6. In a machine for making screws, the combination of means for holding a wire rod from rotating and for feeding it in the direction of its length, a revolving tool carrier, journaled concentrically with that wire rod, and provided with cutting tools, with means for feeding those tools to the wire rod, consisting of the cam plate 34, the sector 35 and the cam 3, all substantially as described.

7. The combination of a revolving carrier having oppositely disposed radially sliding tool blocks thereon, with a threaded cam plate adjacent to that carrier, and mechanism for rotating that cam plate upon its thread whereby it is advanced against the engaging ends of the tool blocks substantially as described.

8. In combination with means for holding a wire rod from rotating, a revolving carrier having oppositely disposed radially sliding tool blocks, and a threaded cam plate having an annular cam rib which is adapted to engage those blocks and carry them toward the center of revolution when that cam plate is rotated and advanced upon its thread, substantially as described.

9. A revolving carrier having oppositely disposed tool holders mounted thereon, provided with the beveled rollers 32, and a cam plate 34 having a beveled internal annular rib adapted to engage those rollers and carry them toward the center of revolution and to release them again substantially as described.

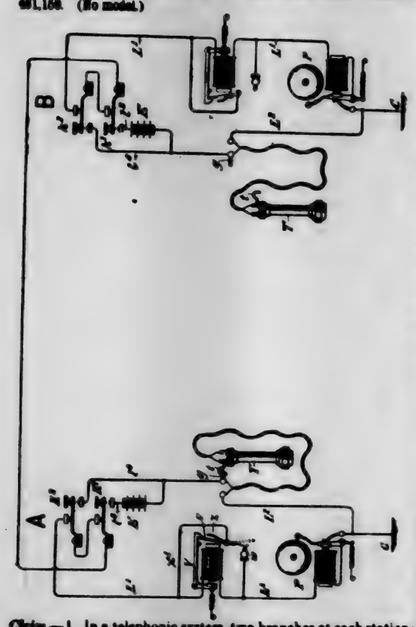
10. In combination with means for holding a wire rod from rotating and which allow it to move only in the direction of its length, a threading device mounted on a head which is adapted to carry it into operative relation to the rod, the said device consisting of the bevel gears 62 and 64 adapted to revolve in opposite directions, the die carrying spindle 44, and the clutches 65 and 68 arranged and operating to alternately engage with one and the other of those gears, substantially as described.

11. In combination with means for holding a wire rod from rotating, and with a revolving cutting off device, the carrier 48 mounted on an intermittently oscillating head, and adapted to pass upon and support the body of a screw while it is being severed from the rod, and also operating to carry it aside when severed, substantially as described.

12. In a machine for making screws, a transferring and holding device for slotting the same, consisting of the carrier 48 pivoted on an intermittently oscillating head, a spring 51 and the guide piece 53, the latter operating to turn the carrier and guide it in the plane of the slotting saw, all substantially as described.

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**504,108. SYSTEM OF TELEPHONIC INTERCOMMUNICATION.** FRANK B. COLVIN, New York, N. Y. Filed Feb. 6, 1893. Serial No. 461,159. (No model.)




*Claim.*—1. In a telephonic system, two branches at each station; signaling apparatus included in the first branch: two sub-branches constituting the terminals of the second branch, and a source of electricity included in one of said sub-branches; in combination with two three-point keys at each station, the first key having its lever connected to the line, its working contact to the sub-branch which includes the source of electricity, and its resting contact to the lever of the second key; the second key having its resting contact connected to the branch including the signaling apparatus, and its working contact to the remaining sub-branch, and a telephone included in the second branch at a point between the working contact of the second key and the ground or return circuit.

2. In a telephone system the combination of the main circuit and a portable telephone having one of its terminals provided with a metallic extension mounted on the instrument, and the other in electrical connection with a metallic support upon which the telephone may be hung, the two terminals leading to opposite sides of the circuit, whereby, when the telephone rests on the support it is short-circuited, but when removed therefrom the short-circuit is open.

3. In a telephone system, a branch permanently connected with the ground or return at each station and terminating in two normally open sub-branches; a telephone included in the undivided portion of said branch, a source of electricity included in one of said sub-branches, and two independent keys whereby either of said branches may be connected with the main line at will.

4. In a signaling system, the bars B B, in combination with two or more pairs of keys, the individual keys of each pair being normally in connection with each other, but making contact, when separately depressed, with the respective bars.

5. In a signaling system, the bars B B one connected through a battery and the other through a speaking instrument, with a common earth or return circuit, and two or more pairs of keys, the individual keys of each pair being normally in connection with each other, but making contact when separately depressed, with the respective bars.

6. In a signaling system, the bars B B, one connected through a battery and a speaking instrument, and the other through said speaking instrument alone with a common earth or return circuit, and two or more pairs of keys, the individual keys of each pair being normally in connection with each other, but making contact, when separately depressed, with the respective bars.

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**504,104. ELECTRIC CONDUIT FOR RAILWAYS.** JOSEPH I. COMELIN, Brooklyn, N. Y. Filed May 2, 1892. Serial No. 431,672. (No model.)



*Claim.*—1. In an electrical conduit the combination with the casing having a central longitudinal opening, of the insulating material, the main conductor embedded therein, with a head projecting up above the surface thereof, the elastic non-conducting strips at each side of said head resting on said insulating material, and the secondary conductors resting on said strips, substantially as described.

2. In an electrical conduit, the combination with the casing having rounded upper end and a central longitudinal opening with beveled sides or edges, of the insulating material located in said casing, the main conductor located therein having longitudinal flanges at its lower end and a head at its upper end projecting above the surface of the insulating material, the elastic non-conducting strips at each side of said head, resting on the insulating material and the secondary conductors having longitudinal beveled flanges resting on said strips substantially as and for the purpose described.

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**504,105. MANUFACTURE OF CARBON RODS FOR ELECTRIC-ARC LAMPS.** BERNHARD COELER and HERMANN REINICH, Essen, Germany, assignors to the firm of Fried. KRUPP, same place. Filed Apr. 28, 1893. Serial No. 471,963. (No specimens.)

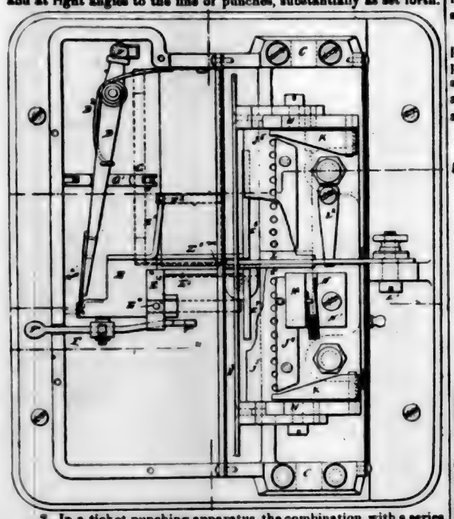
*Claim.*—An arc light carbon impregnated with tungstic acid, or a salt of this acid, substantially as described.

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**504,106. PERFORATING-STAMP.** CARL M. DANNER, Vienna, Austria-Hungary. Filed Mar. 19, 1888. Serial No. 267,612. (No model.) Patented in Austria-Hungary Oct. 16, 1887, No. 36,095 and No. 46,177; in Germany Feb. 4, 1888, No. 45,939; in Spain Feb. 10, 1888, No. 7,335; in England, Feb. 13, 1888, No. 2,174; in Belgium Feb. 15, 1888, No. 80,498; in Norway Mar. 26, 1888, No. 945; in Sweden Mar. 26, 1888, No. 1,632; in Italy Apr. 3, 1888, XXI, 23,082, and XLV, 380; in France Apr. 13, 1888, No. 188,618; in Denmark Aug. 3, 1888, No. 788, and in Switzerland Apr. 6, 1888, No. 1,682.



*Claim.*—1. In a ticket-punching apparatus, the combination, with a series of vertical punches arranged in two groups, there being a number of punches in each group, of a cutter between the two groups and at right angles to the line of punches, substantially as set forth.



2. In a ticket-punching apparatus, the combination, with a series of punches in line and arranged in two groups which are separated a short distance from each other, of a slide mounted above the punches and a lever for forcing down said slide and the punches below it, substantially as set forth.

3. In a ticket-punching apparatus, the combination, with a series of punches arranged in line and two groups which are separated a short distance from each other, of a ticket-adjusting slide mounted to slide in the front of said punches and parallel with the same, and provided with prongs against which the ends of the ticket to be punched can rest, and a slide above the punches, and a lever for forcing down said slide and the punches below it, substantially as set forth.

4. In a ticket-punching apparatus, the combination, with a series of punches arranged in line and in two groups which are separated a short distance from each other, of a toothed slide in front of the punches, having prongs for guiding the ticket, a spring-pawl engaging the teeth of the slide, a slide above the punches and a lever for forcing down said slide and the punches below it, substantially as set forth.

5. The combination, with a series of punches arranged in line and in two groups, which are separated a short distance from each other, of a punch-holder having a groove above the punches, a block or plate sliding in said groove, and with an adjacent slide in front of the punch-holder, said ticket-adjusting slide being connected with the sliding block in the groove of the punch-holder, and a lever for forcing down said sliding block and the punches below it, substantially as set forth.

6. In a ticket-punching apparatus, the combination with a vertically-movable punch-holder, of punches in the same, a pivoted cutting blade below the punch-holder, a fixed blade adjacent to the pivoted cutting blade, and a lever for forcing down the punch-holder and blade, substantially as set forth.

7. In a ticket-punching apparatus, the combination, with a punch-holder, of a row of punches in the same, a shaft provided with a plate above the punch holder, a handle on said shaft, a bar projecting downward from the handle, a pivoted lever connected with said bar, a ticket-shifting slide connected with said lever, a hinged section in front of the punch lever, means substantially as herein described for operating said hinged section, and a slide operated by the lever connected with the bar projecting downward from the handle, substantially as set forth.

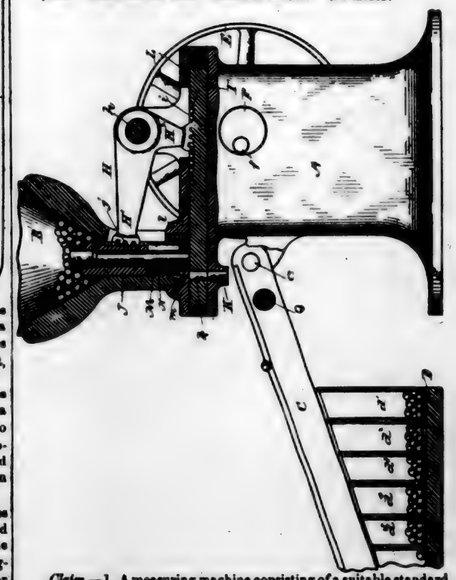
8. In a ticket-punching apparatus, the combination with a punch-holder, of a row of punches in the same, a shaft provided with a plate above the punch holder, a handle on said shaft, a bar projecting downward from the handle, a pivoted lever connected with said bar, a ticket-shifting slide connected with said lever, an additional slide-mechanism substantially as shown and described for operating said additional slide from said lever and a hinged cover section actuated by said additional slide, substantially as set forth.

9. In a ticket-punching apparatus, the combination as herein described, with a punch-holder, of a row of punches in the same, a rocking-shaft having a plate for forcing down the punch-holder, a handle on said shaft, a bar projecting downward from the handle and a swinging lever actuated by said bar, and a ticket-shifter connected with said lever, substantially as set forth.

10. In a ticket punching apparatus, the combination, with the punch-holder, a series of punches in the same, a shaft provided with a plate above the punches, a ticket-shifter, levers connecting the ticket-shifter with a handle lever of the bar above the punch holders, a separate ticket-lifting lever adjacent to the ticket-shifter, and a slide above the punches, substantially as herein shown and described.

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**504,107. MEASURING-MACHINE.** ROBERT H. GRANT, Fitchburg, Mass., assignor to the Grant Anti Friction Ball Company, same place. Filed Nov. 30, 1892. Serial No. 453,618. (No model.)



*Claim.*—1. A measuring machine consisting of a suitable standard and hopper having a neck provided with an inside stationary sleeve M, an outside vertically moving sleeve J, both mounted in the apex of the hopper, all arranged as and for the purpose substantially as described.

2. In a measuring machine, consisting of a suitable standard, a hopper B, a sleeve M, a sleeve J, a slide I, a lever H, and suitable driving mechanism whereby the balls are alternately discharged on to the inclined plane C, substantially as described.

3. A measuring machine, consisting of a suitable standard and hopper, provided with a vertically movable sleeve J, having its upper outside edge beveled, and connecting mechanism, as and for the purpose substantially as described.

4. A measuring machine consisting of a suitable standard and hopper provided with a fixed sleeve M, having its inside upper edge beveled, in combination with an outside sleeve J, having its outside upper edge beveled, and connecting mechanism, as and for the purpose substantially as described.

5. A measuring machine consisting of a suitable standard provided with a hopper, and suitable driving and discharging mechanism, in combination with the inclined plane C, provided with a longitudinal flaring slot O, substantially as described.

6. A measuring machine, consisting of a standard A, a hopper B, the sleeves M and J, the slide I, the bell crank lever H, the inclined plane C, and the bins $d'$, $d^3$ &c., and suitable driving mechanism, substantially as described.

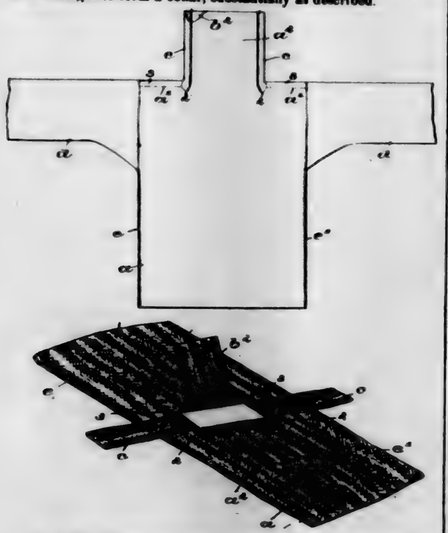
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**504,108. KNIT GARMENT AND METHOD OF MANUFACTURING SAME.** JOHN HOLMES, Boston, Mass. Filed Oct. 10, 1892. Serial No. 448,389. (No specimens.)

*Claim.*—1. A knitted garment having its front and back formed of a flat web connected by continuous lengthened knitted shoulder portions 4, 4, of the same width from front to back, located at the

sides of the neck opening, to form a fullness thereat, and a collar secured at its lower edge to the edges of the neck opening, variations in the length of said shoulder portions from front to back regulating the distance between the front and back edges of, and thereby the size of the neck opening, substantially as described.

2. A knitted garment having its front and back connected by lengthened knitted shoulder portions *a*, *a*, to form an enlarged neck opening, the front and back edges thereof being substantially in line with the ends of the shoulder portions, and a series of flat webs secured to the edges of the neck opening and united along their longitudinal edges to form a collar, substantially as described.



3. A knitted garment having its front and back formed of a flat web connected by continuous lengthened knitted shoulder portions *a a*, at the sides of the neck opening, and of the same width from front to back, to form a fullness thereat, and collar sections knitted upon the finished edges of the said neck opening to form a collar, substantially as described.

4. The herein described method of knitting garments, which consists in knitting a flat web to form one-half of the garment, and running off a portion thereof from the needles between the shoulder portions to form the front of the neck opening; continuing the knitting with all the previously thrown down needles at each side of the finished section to form shoulder portions of the desired length and of the same width from front to back and with finished edges, then throwing all the needles into action and completing the web to form the other half of the garment, and complete the neck opening attaching a collar to the finished edges of the neck opening so formed, and uniting the side edges of the half portions of the garment under the arm eyes, substantially as described.

5. A knitted garment having its front and back connected by substantially rectangular lengthened knitted shoulder portions *a*, *a*, of the same width from front to back, at the sides of the neck opening to form a fullness thereat, and enlarge the neck opening, substantially as described.

## 504,109. METHOD OF EXTRACTING SILVER FROM ORES.

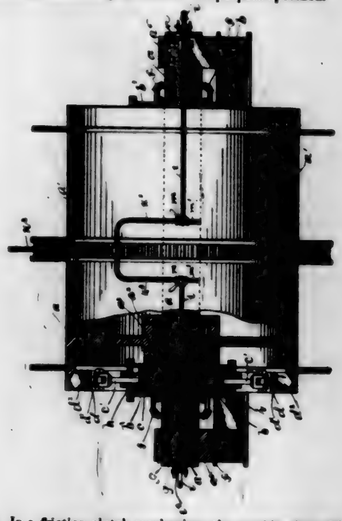
Juan F. N. Magat, Charapoto, Ecuador. Filed May 17, 1893. Serial No. 474,227. (No specimens.)

*Claim.*—The method of extracting silver from ores, which consists in subjecting the ore to a solution of cupric chloride with excess of chloride of sodium in substantially the proportion, by weight, of eighty six parts of cupric chloride, and four hundred and twenty-four parts of chloride of sodium to each one part of native silver, or silver in the state of sulphide of silver, for the purpose set forth.

## 504,110. FRICTION-CLUTCH.

William H. McConnell, Nelsonville, Ohio. Filed Jan. 5, 1893. Serial No. 457,204. (No model.)

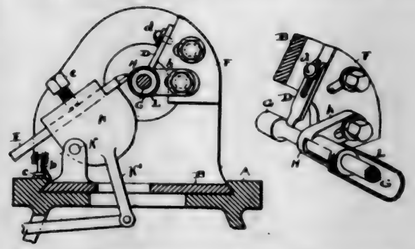
*Claim.*—1. In a friction clutch mechanism the combination with a journaled shaft *a*, a steam cylinder connected therewith and carried thereby, a piston head and piston rod working in said cylinder as described, of a clutch shoe jointedly connected with said piston rod, and a spring cushion between said cylinder head and piston head and means for introducing steam into said cylinder and exhausting it therefrom, substantially as and for the purpose specified.



2. In a friction clutch mechanism, the combination with a journaled shaft, steam cylinders *b b'* rigidly connected with said shaft, piston heads and rods working in said cylinders, inlet pipes *f* leading to said cylinders, a feed pipe *i* and a supply pipe connected therewith, a three-way valve at the junction of said feed and supply pipes, a rotary joint between said pipes *f* and *i*, a cross plate $a^3$ fixed on said shaft and clutch shoes jointedly connected with said piston rods and pivotally connected with said cross plates, substantially as and for the purpose specified.

## 504,111. ATTACHMENT FOR MOLDING OR TURNING MACHINES.

Grosbe A. Bethel, Bedford, Ohio. Filed Jan. 23, 1893. Serial No. 460,007. (No model.)



*Claim.*—1. The construction herein described comprising the sliding supporting frame B, the adjustable head F on said frame, and the adjustable material holder detachably secured to the head F, in combination with the pivotally supported bearing block K, and the finishing knife E adjustable in said block, substantially as set forth.

2. The attachment herein described having the adjustable head and the sizing knife D adjustable on the top inclined plane of the head F, in combination with the material holder adjustably secured to the side of the said head through the arm —A—, substantially as set forth.

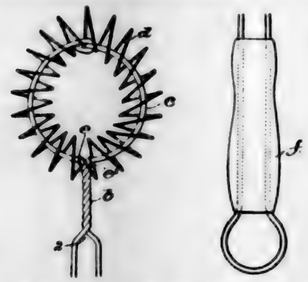
3. In the attachment described, the frame B, the head F thereon, and the material holder adjustable on said head and provided with a tubular extension through which the material passes, in combination with a receiving tube connected to said tubular extension to prevent the finished material from breaking, substantially as set forth.

4. In combination with the attachment described, the adjustable holder for the material having two or more parallel cylindrical channels of varying diameters, each channel open part way in front for the introduction of a cutting blade and one channel above the other, substantially as set forth.



## 504,112. EGG-BEATER.

Francis H. Faire, Boston, Mass. Filed Nov. 29, 1892. Serial No. 453,340. (No model.)



*Claim.*—1. In a culinary beater, a supporting loop, a sustaining handle, and a flexible wire beating surface surrounding the loop loosely, to operate, substantially as described.

2. A culinary beater having a rigid wire handle and supporting loop, and a flexible beating surface composed of a fine wire surrounding the supporting loop in a loose spiral, substantially as described.

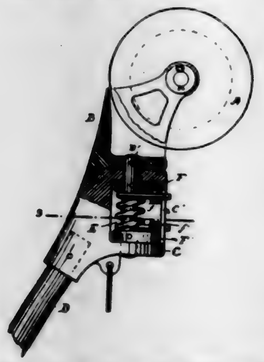
3. A culinary beater consisting of a stiff wire bent upon itself to form a flat loop-like handle and a supporting loop, the two parts of the wire being twisted and forming a rigid connection between said loop and handle, and a fine wire surrounding the supporting loop in a loose spiral to form a flexible beating surface, substantially as described.

4. In a culinary beater, a supporting loop, a sustaining handle provided with a rigid hand piece, and a flexible wire beating surface surrounding the loop loosely, to operate, substantially as described.

5. A culinary beater consisting of a stiff wire bent upon itself to form a flat loop and a supporting loop, a hand piece surrounding the flat loop, the two parts of the wire being twisted and forming a rigid connection between said loop and hand piece, and a fine wire surrounding the supporting loop in a loose spiral to form a flexible beating surface, substantially as described.

## 504,113. ELECTRIC-RAILWAY TROLLEY.

Alexander Falkenau, Lynn, Mass., assignor of one-half to Varna J. Peirce, Hudson, Me. Filed Sept. 1, 1892. Serial No. 444,797. (No model.)



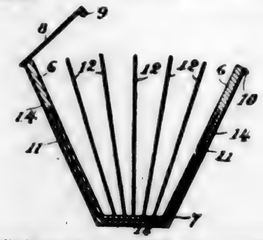
*Claim.*—1. The herein described trolley device consisting of a trolley wheel having its spindle loosely journaled in a bearing on the trolley pole, combined with a double acting single spring arranged on said spindle and having its ends pressing against the spindle bearing substantially as and for the purpose set forth.

2. The herein described trolley device consisting of a trolley wheel having its spindle loosely journaled in a bearing on the trolley pole combined with a coiled spring loosely arranged on said spindle, projections secured to the latter and a stop projection on the trolley pole socket substantially as and for the purpose set forth.

## 504,114. DISPLAY GLOVE-CASE.

Emanuel M. Rosenthal, Fort Wayne, Ind., assignor of one-half to Alexander Harpenthein, same place. Filed May 13, 1893. Serial No. 474,070. (No model.)

*Claim.*—1. In a display glove case consisting of an outer cover of stiff material in form of a book cover, and adapted to rest on its back, a covering attached to the sides and back, adapted to hold the sides inclining outward from each other by elastic force, a metallic spring for the back and sides, also adapted to hold the sides of the cover inclining outward from each other; a lid hinged to one of the sides and provided with a projection adapted to engage the other side, and a projection on the other side adapted to engage the projection on the lid.

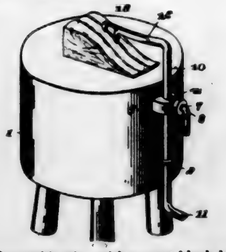


2. In a display glove case consisting of a cover of stiff material in form of a book cover and adapted to rest on its back, a covering attached to the sides and back of material adapted to hold the sides inclining outward from each other by elastic force; a lid hinged to one of the sides of the cover; and a projection on the free edge of the lid adapted to engage the other side of the cover when the lid is shut down.

3. In a display glove case consisting of a cover of stiff material in form of a book cover and adapted to rest on its back; two sides attached to a flat back; a spring adapted to hold the sides inclining outward from each other by elastic force; and a lid hinged to one of the sides provided with a projection on its free edge adapted to engage the other side when shut down.

## 504,115. MEAT-BLOCK ATTACHMENT.

Stephen P. Rees, Tyrone, Pa., assignor to William T. Henderson, same place. Filed May 8, 1893. Serial No. 473,448. (No model.)



*Claim.*—1. In combination with a meat block having guides on the side thereof, of a rod adjustably mounted in said guides and having a lower out turned end to be engaged by the foot of the operator, and an arm at the upper end thereof which projects over the top of the block and has a downwardly-extending inner spiked end, and means for clamping said rod in its adjusted position, substantially as described.

2. The combination with a meat block, of a staple or guide on one side adjacent to the lower part thereof, a plate attached to the upper part of the side of said block and carrying an ear with a vertical opening therein and a head with a screw-opening communicating with said vertical opening, a clamping-screw mounted in said screw-opening, and a rod located and vertically movable in the said ear and staple or guide having a lower out turned end and an upper inwardly-extending arm with a downwardly-projecting inner spiked end shaped as a fork, substantially as described.

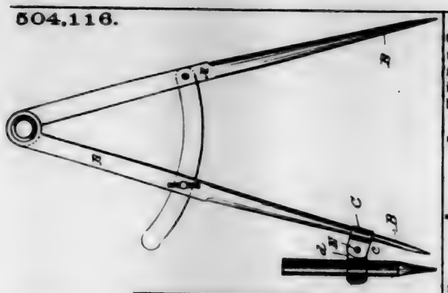
## 504,116. ATTACHMENT FOR DIVIDERS.

Warren S. Smith, St. Johnsbury, Vt. Filed Apr. 3, 1893. Serial No. 468,800. (No model.)

*Claim.*—1. In a divider attachment, a pair of sockets formed of sheet metal and pivotally connected one to the other, one socket adapted to be placed upon one leg of a pair of dividers and the other adapted to carry a lead pencil at any desired angle with said dividers.

2. In a pencil holding device, a pencil socket adjustably connected to a socket for attachment to a pair of dividers, both sockets being made of sheet metal and bent into the desired form substantially for the purpose set forth.

**504,116.**

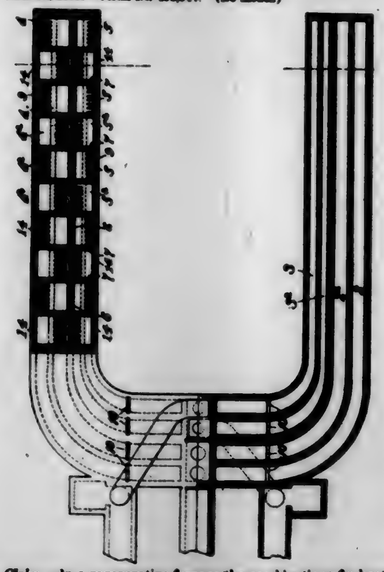


**504,117.** CLIP FOR HOLDING WHEEL-TIRES. HENRY H. STEVENS, Marengo, Ill. Filed Nov. 10, 1892. Serial No. 451,516. (No model.)



*Claim.*—A clip for holding the tires of vehicle wheels in position consisting of a plate interposed between the tire and felly, said plate provided with lips to engage the felly and a stud to engage the tire.

**504,118.** FURNACE. WILLIAM SWINDELL, Allegheny, Pa. Filed Mar. 31, 1893. Serial No. 468,517. (No model.)



*Claim.*—In a regenerative furnace the combination of a heating or melting chamber, a series of independent gas regenerating chambers on each side of the heating or melting chamber, a like series of independent air regenerating chambers on each side of the heating or melting chamber, the regenerating chambers having suitable flue connections with the melting chamber, a pair of gas flues and a pair of air flues on each side of the melting chamber, a portion of the gas regenerating chambers on each side of the melting chamber being connected with one of the gas flues and the remainder with the other gas flue, and the air regenerating chambers having a like alternating connection with the air flues, substantially as set forth.

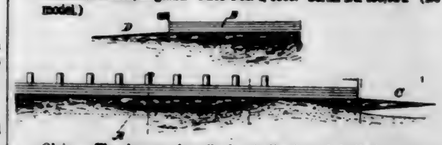
**504,119.** PAPER-FOLDING MACHINE. CHARLES D. VAN BUREN, Erie, Pa., assignor to the Brown Folding Machine Company, same place. Filed Oct. 3, 1892. Serial No. 447,772. (No model.)

*Claim.*—1. In a paper folding machine, the combination with the driving shaft, B, and gear, $B^2$, thereon, the first rolls, C C, first tapes, D, the movable stop, K, thereon; second rolls C' C', and second feed table, F, of a gearing between the shaft, B, and the rolls, C, that is adapted to drive the said rolls in either direction as the same may be adjusted.



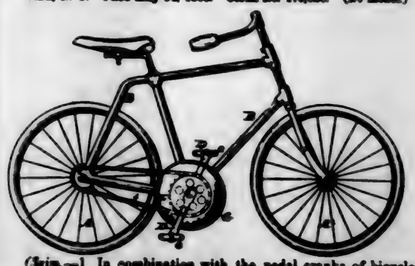
2. In a paper folding machine, the combination with the first folding rolls, C C, the carrying tapes driven by said rolls, movable stop on said tapes and second rolls C' C', of means for changing the direction of movement of said rolls and tapes without changing the direction of movement of the driving shaft, B, and a secondary feeding table in position to feed the sheets upon said tapes.

**504,120.** SPINDLE-SHAPED OCEAN-STEAMER. WILLIAM I. WIRAM, London, England. Filed Feb. 4, 1893. Serial No. 460,994. (No model.)



*Claim.*—The herein described spindle-shaped hull for ocean-going, self-propelled, surface-navigating vessels, having a length from extreme point to point of not less than six hundred feet, in conjunction with a beam or extreme diameter of not more than one-fifteenth of the length and not less than forty feet, substantially as specified.

**504,121.** BICYCLE-CRANK SHIELD. GEORGE R. CRESSMAN, Auburn, N. Y. Filed May 31, 1893. Serial No. 476,080. (No model.)



*Claim.*—1. In combination with the pedal cranks of bicycles, circular shields secured to said cranks substantially as described.

2. In combination with the pedal cranks of bicycles, concavo-convex shields secured to said cranks substantially as described.

3. In combination with the crank shaft and pedal cranks of bicycles, concavo-convex shields having lugs projecting from their inner side and an opening $G^2$ between said lugs and the rim of the shield, and a bolt passing through said lugs, cranks, and their shaft substantially as described.

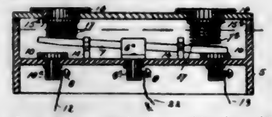
**504,122.** PUMP. LEVI G. CRESSINGER, Greensburg, Ind. Filed Apr. 26, 1893. Serial No. 471,893. (No model.)





*Claim.*—In a pump, the combination with the body and a nipple secured to and extending from the body; of the spout comprising the tubular section c, mounted and frictionally held on the nipple and having the peripheral rib e, adjacent to its outer end, the tubular section d, mounted on the outer end of the section c, and a filtering gauze or diaphragm bearing against the outer end of the section c, and having its edge interposed between said section c, and the section d, as and for the purpose set forth.

**504,123.** CIRCUIT-SWITCH. CHARLES E. DEY, Denver, Colo. Filed Dec. 13, 1892. Serial No. 455,087. (No model.)

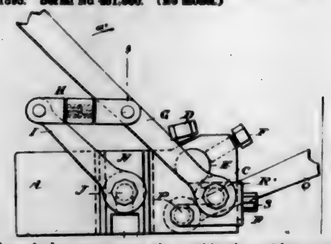


*Claim.*—1. In a circuit switch the combination with a suitable casing of three contacts secured to the bottom plate, to which contact the circuits wires respectively lead, a bar pivoted to one of these contacts and adapted to alternately engage the other contacts, shouldered push buttons having their inner reduced extremities surrounded by coil springs engaging the shoulders of the button at one extremity and the bar at the opposite extremity, said shoulders engaging the inner surface of the top plate of the casing, while the upper reduced extremities of the buttons project through apertures formed in said plate, the buttons affording means for shifting the pivoted bar from one contact to the other, substantially as described.

2. In a circuit switch the combination of a suitable casing, three contacts secured to the base thereof to which the circuit wires respectively lead, a bar pivoted to one of these contacts and adapted to alternately engage the other contacts, spring actuated push buttons for operating the bar and two pairs of springs carried by the base plate and insulated from the contacts, said pairs of springs being adapted to grasp the respective extremities of the bar as the latter are depressed and retain the same securely in engagement with their corresponding contacts, substantially as described.

3. In a circuit switch the combination of a suitable casing, a bar pivoted on a contact plate secured to the base of the casing to which contact one of the circuit wires leads, and a contact 10 to which the other wire leads and shouldered push buttons for operating the bar whereby it is made to alternately engage and disengage contact 10, the lower reduced extremities of said buttons being surrounded by coil springs which engage the shoulders of the buttons at one extremity and are connected with the bar at the opposite extremity, said shoulders engaging the inner surface of the top plate of the casing, the upper reduced extremities of the buttons projecting through apertures formed therein, substantially as described.

**504,124.** SAW-SWAGE. RICHARD E. DIMICK, Rhinelander, Wis., assignor of one-half to Webster Everett Brown, same place. Filed Feb. 11, 1893. Serial No. 461,860. (No model.)



*Claim.*—1. In a saw swage, the combination, with a swage block having a slot, of a swage die mounted to turn in the said block, a stationary anvil located in proximity of the swage die, and a shaft carrying the said anvil and capable of turning in the said block for effecting the angular adjustment of the anvil, the latter being also capable of being adjusted to protrude more or less from the said shaft, substantially as shown and described.

2. In a saw swage, the combination, with a swage block having a slot, of a swage die mounted to turn in the said block, a stationary anvil located in proximity of the swage die, a shaft carrying the said anvil and capable of turning in the said block for effecting the angular adjustment of the anvil, the latter being also capable of being adjusted to protrude more or less from the said shaft, and means for fastening the said shaft in position, substantially as shown and described.

3. In a saw swage, the combination, with a swage block having a slot, of a swage die mounted to turn in the said block and having a flattened portion within the said slot, a stationary anvil located in proximity to the swage die, and a shaft carrying the said anvil and capable of turning in the said block, for effecting the angular adjustment of the anvil, the latter being also capable of being adjusted to protrude more or less from the said shaft substantially as shown and described.

4. In a saw swage, the combination, with a swage block having a slot, of a swage die mounted to turn in the said block and having a flattened portion within the said slot, a stationary anvil located in proximity of the swage die, a shaft carrying the said anvil and capable of turning in the said block, for effecting the angular adjustment of the anvil, the latter being also capable of being adjusted to protrude more or less from the said shaft and a set screw for fastening the said shaft in place, substantially as shown and described.

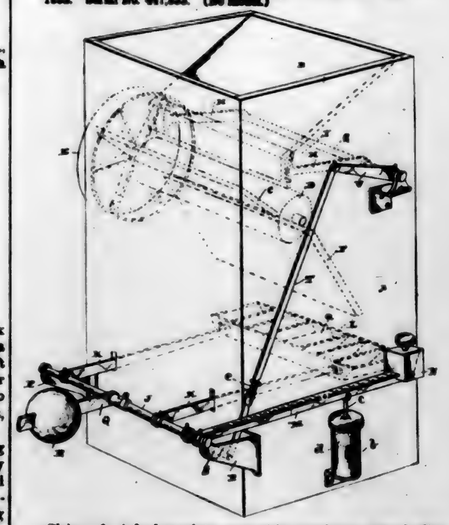
5. In a saw swage, the combination with a swage block, of a swage die mounted to turn in the said block, an anvil adjustably held in the said block, and oppositely arranged dressing dies actuated simultaneously with the said swage die, to dress one tooth while another tooth is swaged, substantially as shown and described.

6. In a saw swage, the combination with a swage block, of a swage die mounted to turn in the said block, an anvil adjustably held in the said block, oppositely arranged dressing dies actuated simultaneously with the said swage die, to dress one tooth while another tooth is swaged, and intermediate mechanism to connect the said swage die with the said dressing dies, substantially as shown and described.

7. In a saw swage, the combination, with a swage block, of a pair of slides fitted to slide vertically in the sides of the swage block, screw shafts mounted to turn in the said slides, a pair of dressing dies fitted to slide transversely in the swage block and each connected with the inner end of one of the screw shafts, means for turning one of the said screw shafts to move its dressing die toward or from the other dressing die, and means for locking the other screw shaft in place after it is adjusted, substantially as shown and described.

8. In a saw swage, the combination, with a swage block, of a pair of slides fitted to slide vertically in the sides of the swage block, screw shafts mounted to turn in the said slides, a pair of dressing dies fitted to slide transversely in the swage block and each provided with a threaded end to engage the thread at the inner end of one of the screw shafts, means for turning one of the said screw shafts to move its dressing die toward or from the other dressing die, and means for locking the other screw shaft in place after it is adjusted, substantially as shown and described.

**504,125.** AUTOMATIC FEED-REGULATOR. KENNEDY DOUGAN, Missoula, Mont., assignor to Thomas Dougan, Salem, Mo. Filed Oct. 4, 1892. Serial No. 447,833. (No model.)



*Claim.*—1. A feed regulator comprising a valve or gate, feeding a continuous stream of material, a movable receiver in uninterrupted communication with the flow from the valve and receiving and sta-

ated thereby, and an operating connection between the valve and the actuated receiver.

2. A feed regulator comprising a valve or gate, a receiver in uninterrupted communication with the flow from the valve or gate, a connection between the valve and receiver, and a diaphragm for preventing vibration of parts.

3. A feed regulator comprising a valve or gate feeding a continuous stream of material, a movable receiver in uninterrupted communication with the flow from the valve receiving and actuated thereby, an operating connection between the valve and receiver, and an adjustable balancing device for the receiver.

4. A feed regulator comprising an adjustable valve or gate feeding a continuous stream of material, a movable receiver in uninterrupted communication with the flow from the valve receiving and actuated thereby, and operating connections between the receiver and the valve.

5. A feed regulator comprising a valve or gate feeding a continuous stream of material, a receiver in uninterrupted communication with the flow from the valve receiving and actuated thereby, and a connection having one end connected directly with the receiver and its opposite end connected directly with the valve.

6. A feed regulator comprising a valve or gate feeding a continuous flow of material, a receiver in uninterrupted communication with the flow from the valve receiving and actuated thereby, a weight arm connected with a valve and carrying an adjustable weight, the parts arranged to be balanced at a prescribed point, and a diaphragm for preventing the arm from vibrating.

7. A feed regulator comprising a valve or gate feeding a continuous flow of material, a receiver in uninterrupted communication with the flow from the valve the same being constructed to continuously and substantially simultaneously receive and discharge the continuous flow of material from the valve, and an operating connection between the receiver and the valve, whereby the continuous flow of material controls the valve and thereby the amount of material fed within a given time.

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**504,126.** ARTIFICIAL TOOTH. CHARLES C. DURR, Plymouth, Ind. Filed Apr. 18, 1893. Serial No. 470,847. (No model.)

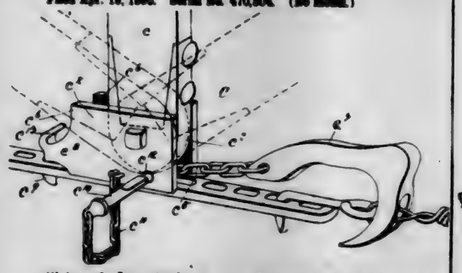


*Claim.*—1. The method substantially herein described of connecting artificial crowns to the roots of natural teeth, consisting in first forming a tube or bead to fit the root, placing the same over the root and taking an impression of the face thereof by placing in the tube or band a suitable impression material, removing the tube or band and taking a mold from the impression to serve as a guide, slitting and bending the tube or bead and forming the crown thereon, as set forth.

2. A tube or bead slitted as shown to form inwardly extending claws for connecting thereto an artificial crown, substantially as and for the purpose set forth.

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**504,127.** WIRE-STRETCHER. IRA P. EBERT, Oskaloosa, Iowa. Filed Apr. 18, 1893. Serial No. 470,804. (No model.)



*Claim.*—1. In a wire fence, a panel comprising the end posts, the double inclined braces and stays extending in opposite directions from the center of one post to the ground line of the opposite post, the apertured bars provided with integral engaging heads taking into and forming a rigid connection with one of said posts, and the fence wires having terminal hooks adjustable in the apertures of said bars, as specified.

2. In a wire-fence the combination with a tension post, of the apertured bars having integral projections engaging said post and forming a rigid connection therewith, and the fence-wires provided with terminal hooks adjustable in the apertures of said bars, as specified.

3. In a wire fence the combination with a fixed bar having a series of apertures formed therein and the fence wires provided with terminal hooks adjustable in said apertures, of a straining device removably mounted on the bar and comprising a foot-piece, a lever pivoted in the foot-piece, and a wire engaging device connected with the lever, as specified.

4. A tension bar, comprising a rectangular and apertured body portion, provided with an integral terminal head having engaging projections formed thereon, as specified.

5. A wire stretcher, comprising an operating lever pivotally secured in a foot-piece and provided adjacent the pivot point with one or more engaging projections, a wire engaging device, and a flexible connection between said device and the lever, said connection being provided with openings into which the engaging projections of said operating lever are adapted to take, as specified.

6. A wire stretcher, comprising an operating lever having the rounded end thereof eccentrically pivoted in a foot-piece and provided adjacent the pivotal point with one or more engaging projections, a wire engaging device, and a flexible connection between said device and the lever, said connection being provided with openings into which the engaging projections of said operating lever are adapted to take, as specified.

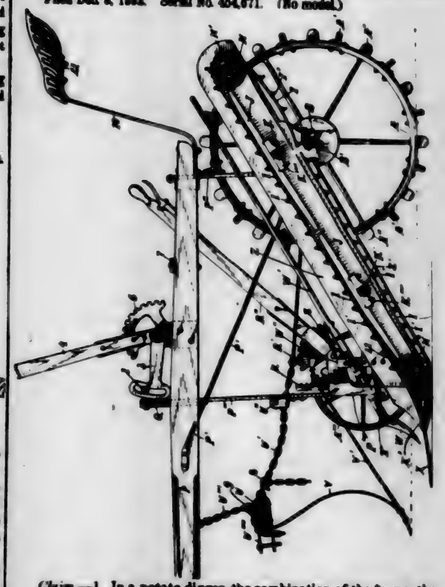
7. A wire stretcher, comprising an operating lever provided with a terminal metallic head having one or more engaging projections formed thereon, a foot-piece recessed for the reception of said head wherein the latter is pivoted, said foot-piece being provided with one or more hook-like projections, a wire engaging device, and a flexible connection between said device and the operating lever, said connection being provided with openings into which the engaging projections of said head are adapted to take, as specified.

8. In a wire stretcher, a foot-piece centrally recessed to form side walls and provided with a terminal hook having oppositely curved prongs, an operating lever pivoted between said side walls and provided with one or more engaging projections, a wire engaging device, and a chain connecting therewith and adapted to pass between the side walls of the foot-piece and into engagement with said projections, as specified.

9. A wire stretcher comprising a foot-piece provided with one or more engaging projections, an operating lever pivotally secured to the foot-piece, a wire-engaging device, a flexible connection between said device and lever, and means for engaging and locking said flexible connection independent of the lever, as specified.

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**504,128.** POTATO-DIGGER. ORRIN L. GOSS, Grand Rapids, Mich. Filed Dec. 9, 1892. Serial No. 454,671. (No model.)



*Claim.*—1. In a potato digger, the combination of the frame, the driving shaft at the rear end of the frame, said driving shaft carrying a roll and a cam wheel, a roll at the forward end of said frame, an endless carrier engaging said rolls, rock-shafts, grate bars rigidly secured at points intermediate of their lengths to said rock-shafts, a lever attached intermediate of its length to one of said rock-shafts and engaging at its rear end said cam wheel, and another lever connected at one of its ends to the other of said rock-shafts and having its other end pivoted to said first-mentioned lever, substantially as described.

2. In a potato digger, the combination with a blade for lifting the earth, the inclined side frames, the driving shaft at the rear end of the frame, said driving shaft carrying a roll and a cam wheel, the roll at the forward end of said frame, and the endless carrier engaging said rolls, of rock-shafts having lateral projections, grate-bars secured to said lateral projections, a lever attached intermediate of its ends to one of said rock-shafts and engaging said cam-wheel at its rear end, and another lever connected at one end to the other of said rock-shafts and having its rear end pivoted to said first mentioned lever, substantially as described.

3. In a potato digger, in combination a driving shaft, and driving wheels and a bed consisting of rock shafts, and parallel bars attached to the same and chains and drag bars traversing said bed, and a roll having a projecting shaft, and driving said chains and bars, a gear on the driving shaft a pinion movable on its shaft, a lever to move said pinion, sprocket wheels on said pinion shaft and said roll shaft, a chain connecting said sprocket wheels, a clutch connecting said pinion and one of said sprocket wheels, an adjustable roll engaging said chain, a cam wheel on said roll shaft, levers attached to the rock shafts, and connected by a pin and slot, one of said levers also having a roll engaging said cam wheel, substantially as described.

4. In a potato digger, the combination of the pole, the frame pivotally connected near its rear end with said pole, a bail pivoted near the front of the machine, said bail having vertical guides engaging the sides of the pole and also having a loop, and a bell-crank lever having in one arm a slotted opening engaging said loop, substantially as described and for the purposes specified.

5. In a potato digger, the digging and elevating mechanism thereof, and a pivoted frame inclosing the elevating mechanism and to which the digging mechanism is secured, in combination with the pole to which said frame is secured, a bail connected at one end with said frame, said bail having vertical guides engaging said pole, and a lifting lever connected with said bail, substantially as described.

6. In a potato digger, the combination of the pole, pivoted frame, a bail pivotally connected at its lower ends with said frame, a loop on said bail, and a bell-crank lifting lever pivoted to said pole and having in one of its arms a slotted opening engaging the loop on said bail, substantially as described.

7. In a potato digger, the combination with the pole and the pivoted frame, of braces, secured to said pole at their forward ends and pivoted at their rear ends, an arch, secured at its ends to said braces and at its center to said pole, and a lifting lever connected with said frame, substantially as described.

8. In a potato digger, the digging and elevating mechanism thereof, a pivoted frame inclosing the elevating mechanism and to which the digging mechanism is secured, in combination with the pole, braces secured to said pole at their forward ends and pivoted at their rear ends, an arch secured at its ends to said braces and at its center to said pole, a bail connected at its ends with the forward portion of the frame and engaging the sides of the pole, and a bell-crank lifting lever connected with said arch, substantially as described and for the purposes specified.

9. In a potato digging machine, having a pole pivoted to the same, a bail pivoted near the front of said machine, vertical guides on said bail engaging the sides of said pole, a loop on said bail, a bell crank lever pivoted to said pole, having a slotted opening in one arm engaging said loop, and a spring latch on the other arm engaging a notched sector, substantially as described.

10. In a potato digger, the digging and elevating mechanism thereof, and a pivoted frame inclosing the elevating mechanism and to which the digging mechanism is secured, in combination with the pole, curved arms secured to said frame, castings secured to said arms, a bail secured at its ends to said castings, said bail having vertical guides engaging the pole, and also having a loop, and a bell-crank lever having in one of its arms a slotted opening engaging said loop, substantially as described.

11. In a potato digger, the combination with a pole, of braces secured at their forward ends to said pole and pivoted at their rear ends, and an arch attached at its ends to said braces and at its middle to the rear end of said pole, substantially as described.

12. In combination with a potato digging machine, substantially as described, a pole attached to the same by braces attached to said pole at one end and to the driving shaft casing at the other end, and an arch connected at its ends to said braces, and connected near its middle to said pole, a bail pivoted near the front of the machine at its lower ends, guides on said bail engaging the sides of said pole, a loop on said bail, a bell crank lever pivoted on said pole, having a slotted arm engaging said loop, and an arm having a spring latch engaging a notched sector, substantially as described.

13. In combination with a potato digger, having a pole pivoted to swing in a vertical plane only, a transverse beam adjustably attached to said pole and also attached to said machine, a clevis on said beam to attach the team and rake teeth, attached to said beam at each side of the machine, and inclined fingers extending rearwardly from said teeth, substantially as described.

14. In a potato digger having a pole pivoted to swing in a vertical plane and a bail pivoted at its lower ends to the sides of the machine, and having guides engaging said pole, vertically movable racks on said bails, guide wheels journaled on said racks, levers pivoted on projecting arms on said bail segment pinions on said levers engaging said racks, notched sectors on said arms, and spring latches on said levers engaging said sectors, substantially as described.

15. In a potato digger, the drive wheels, concavo-convex blades attached to and projecting from the rims of said wheels, said blades having their surfaces in the plane of the axes of said wheels with their concave sides forward, and separate straight blades arranged between the respective pairs of said first-mentioned blades in a plane at right angles to the axes of the wheels, substantially as set forth.

16. In a potato digger, the driving shaft; driving wheels on said shaft; an endless carrier; the frame; and a driving roll at the upper end of said frame over which said carrier passes; in combination with a gear wheel on the driving shaft; a shaft, having a movable pinion, a clutch and a sprocket wheel mounted on it; a lever for moving said pinion into and out of engagement with said gear wheel; a sprocket wheel on the driving roll shaft; a chain connecting said sprocket wheels; and a pivoted lever engaging said chain at one end and adjustable to tighten the same, substantially as described.

17. In a potato digger, the driving shaft, driving wheels on said shaft, an endless carrier, and a driving roll at the rear end of the machine over which said carrier passes, in combination with a shaft, E", geared with the driving shaft, a sprocket wheel on said shaft, E", a sprocket wheel on the shaft of the driving roll, an endless chain connecting said sprocket wheels, an adjustable bent lever pivoted at one end and having at its other end a roller engaging said chain, said lever also having a slotted opening, and a bolt passing through said opening for holding the lever in any position within the limits of its adjustment, said lever thereby serving to tighten said chain, as specified.

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**504,129.** VAPOR-BURNER. JOHN A. LAMBERT and WILLIAM B. JEAVONS, Cleveland, Ohio. Filed Aug. 25, 1891. Serial No. 403,652. (No model.)



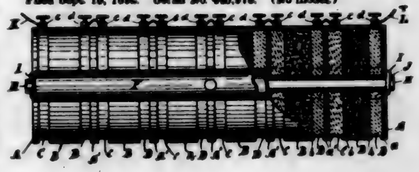
*Claim.*—1. A vapor generating burner having a chamber in which vapor and air may be mixed, a walled flame-way within the said chamber and a fuel supply pipe in position to be heated by the flame in said flame-way, substantially as described.

2. A vapor generating burner having a chamber in which vapor and air may be mixed, a walled flame-way within the said chamber and a fuel supply pipe in position to be heated by the flame in said flame-way and arranged to discharge oil or vapor into the said chamber, and the walls of the said chamber constructed to allow the fuel to gravitate to the said flame-way, substantially as described.

3. A vapor generating burner having a chamber in which air and vapor may be mixed, a walled flame-way within the said chamber, and a fuel holder about the lower portion of the said flame-way, in combination with a fuel supply pipe in position to be heated by the flame in said flame-way, substantially as described.

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**504,130.** ELECTRIC BATTERY. HOSEA W. LEDDEY, Boston, Mass. Filed Sept. 16, 1892. Serial No. 445,976. (No model.)



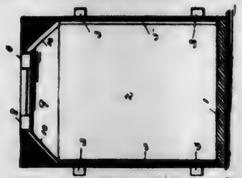
*Claim.*—1. In an electric battery a cell consisting of two outer disks or plates of insulating material a central ring of insulating material, two disks or plates forming the positive and negative elements, an absorbent material between said disks or plates, and means for supplying exciting fluid to said absorbent material as set forth.

2. In an electric battery a cell consisting of two outer disks or plates of insulating material, a central ring of insulating material, two disks or plates forming the positive and negative elements and held between said disks and ring, an absorbent material between said positive and negative elements, all the parts being mounted and held upon a tube and a tank arranged at the top and connected to the space containing the absorbent material for supplying the same with fluid as set forth.

3. In a battery the combination of positive and negative elements of disk form held between a central ring and disks of insulating material, an absorbent between said elements for holding the exciting fluid, all of which are mounted and held upon a central tube insulated therefrom, and means for supplying said absorbent material with fresh exciting fluid when required as set forth.

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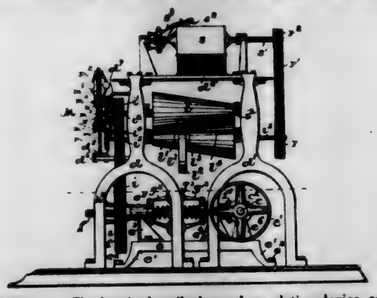
**504,131. APPARATUS FOR CASTING INGOTS.** LEWIS W. MALLASER, Pittsburg, Pa. Filed Mar. 21, 1892. Serial No. 425,812. (No model.)



*Claim.*—A mold for casting ingots, consisting of a base portion constructed of two sections, the meeting edges of which are provided the one with a groove and the other with a tongue for engaging the groove a sectional cap adapted to rest upon the base-portion, the meeting edges of which are provided the one with a tongue and the other with a groove, and having an interior conical-shaped cavity provided with openings, exterior lugs carried by the base-portion and the cap, and clamps for engaging the said lugs, substantially as described.

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**504,132. MEANS FOR TRANSMITTING POWER FROM CAR-AXLES TO DYNAMOS.** MORRIS MOSKOWITZ and SAMUEL YOUNG, Newark, N. J., assignors of one-half to Leon D. Adler and Joseph Loewenberg, same place. Filed Apr. 29, 1892. Serial No. 472,317. (No model.)



*Claim.*—1. The herein described speed regulating device, comprising therein, a main shaft, a cone-shaped pulley thereon, a driven shaft and a reversely arranged cone-pulley thereon, an endless band arranged between said pulleys, and operating by friction with said pulleys, means, whereby said band is caused to travel lengthwise of the pulleys, in either direction, a governor connected with said driven shaft, an automatically operated clutch connected with said governor and said means for causing the said band to travel lengthside of the cone-pulleys, substantially as and for the purposes set forth.

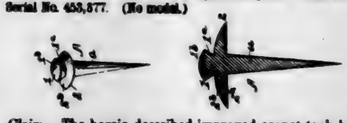
2. In the herein described means for transmitting power from a car-wheel axle to a dynamo within the car, a speed regulating device, consisting essentially of a main shaft, a cone-pulley thereon, a driven shaft, and a reversely arranged cone-pulley thereon, an endless band arranged between said pulleys, means, whereby said band is caused to travel lengthwise of the pulleys in either direction, a governor connected with said driven shaft, an automatically operated clutch connected with said governor, and a train of gearing connected with said governor and said means for causing the band to travel lengthwise of the cone-pulleys, and means connecting the other of said pulley shafts with the car-wheel axle, substantially as and for the purposes set forth.

3. In the herein described means for transmitting power from a car-wheel axle to a dynamo within the car, an automatic speed regulator, comprising therein, a suitable frame and base, two reversely arranged cone-pulleys adapted to rotate in bearings in said frame, a friction clutch geared with and operating one of said cone-pulleys, an endless band arranged between said pulleys, means, whereby said band is caused to travel lengthwise of the pulleys, and means connecting said friction clutch with the car-wheel axle, substantially as and for the purposes set forth.

4. In the herein described means for transmitting power from a car-wheel axle to a dynamo within the car, an automatic speed regulator, comprising therein, a suitable frame and a base, two reversely arranged cone-pulleys adapted to rotate in bearings in said frame, a friction clutch geared with and operating one of said cone-pulleys, a governor arranged on the same shaft with said friction clutch and regulating the action of the same, an endless band arranged between said cone-pulleys, means, whereby said band is caused to travel lengthwise of the pulleys, and means connecting said friction clutch and its governor with the car-wheel axle, substantially as and for the purposes set forth.

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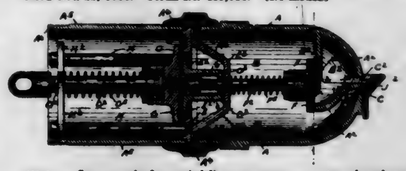
**504,133. CARPET-TACK.** WILLIAM J. PARKINSON, Buffalo, N. Y., assignor of one-half to D. Clark Ralph, same place. Filed Dec. 2, 1892. Serial No. 453,877. (No model.)



*Claim.*—The herein described improved carpet tack having the double head comprising the smaller head 1, and the larger under head 2 surrounding the shank and projecting circumferentially or annularly therefrom beyond the plane of the top head, the diameter of the under head being greater than that of the top head and the former being provided with the extended flat under surface circumferentially surrounding the shank; substantially as shown and described.

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**504,134. SPRINKLER.** HENRY K. POTTER, Somerville, Mass. Filed Dec. 22, 1891. Serial No. 415,929. (No model.)



*Claim.*—In a nozzle for sprinkling purposes, a water-chamber for communication with a water supply, a valve to open said chamber to and to shut it off from the water supply, and a discharge passage for said chamber, in combination with a supplemental chamber located in said water chamber, a valve to open and to close communication between said chambers, a discharge passage for said supplemental chamber, and operating devices common to both of said valves, adapted to close both, to partially open the valve of the main chamber while the valve of the supplemental chamber remains closed, or to fully open both, substantially as described, for the purposes specified.

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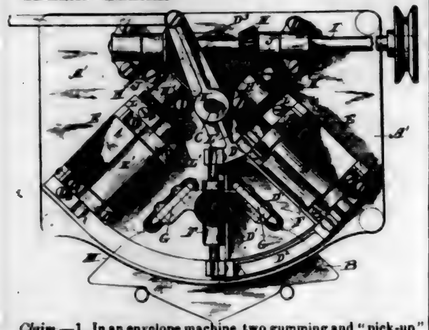
**504,135. PNEUMATIC TIRE FOR WHEELS.** JAMES B RATHBUN, New York, N. Y. Filed Apr. 4, 1893. Serial No. 469,021. (No model.)



*Claim.*—An inflatable tubular tire provided with a diaphragm to form two chambers, and a filling tube for one of the chambers extending through the other secured at one end to the diaphragm and movable with it, and at the other to the tire wall, said tube being otherwise disconnected from the walls of the tubular tire, whereby it is free to vibrate about its stationary end, the tube being disposed longitudinally of the tire in the chamber through which it passes, to permit of such vibration, substantially as described.



**504,136. GUMMING MECHANISM FOR ENVELOPE-MACHINES.** ABRAM A. REBOTIER, Worcester, Mass., assignor of one-half to the W. H. Hill Envelope Company, same place. Filed June 27, 1892. Serial No. 438,080. (No model.)



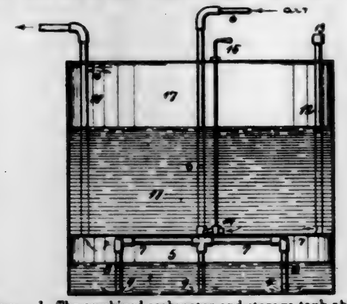
*Claim.*—1. In an envelope machine, two gumming and "pick-up" fingers arranged at an angle to each other, and two gum-boxes and their rolls at each side thereof, also arranged at an angle to each other and operated as described, in combination with a pivoted frame having lateral, circular, reciprocating movements between the gum-boxes and their rolls, and two gum-distributing rolls mounted thereon at an angle to each other corresponding substantially to the angle of the "pick-up" fingers and said gum-boxes and their rolls, each adapted to engage with one of the gum-box rolls and one of the fingers, to gum said fingers twice, after each application of fresh gum thereto from its respective gum-box roll, substantially as set forth.

2. In an envelope machine, two stationary gum-boxes and their rolls arranged at an angle to each other; a pivoted frame having lateral, circular, reciprocating movements between said gum-boxes and their rolls, two-gum-distributing rolls mounted on said frame, at an angle to each other corresponding substantially to the angle of the gum-box rolls, and two gumming and pick-up fingers adapted to engage with said gum-distributing rolls, when the latter are moved forward and back under the same; in combination with gears on the gum-box rolls, the main drive-shaft, and suitable gearing interposed between said drive-shaft and the gears on the gum-box rolls, substantially as and for the purpose set forth.

3. In an envelope machine, two gumming and "pick-up" fingers arranged at an angle to each other between a pair of gum-boxes and their rolls, in combination with two laterally reciprocating distributing rolls arranged at an angle to each other to bring them substantially parallel with said gumming and "pick-up" fingers when they pass under the same, and each traveling from its respective gum-box roll to a point between the fingers, or vice versa, at each reciprocating movement, substantially as and for the purpose set forth.

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**504,137. CARBURETOR.** EDWARD SAVILL, Lexington, Ky., assignor of two-thirds to John W Newman and James C. Olivet, same place. Filed Dec. 12, 1892. Serial No. 454,901. (No model.)

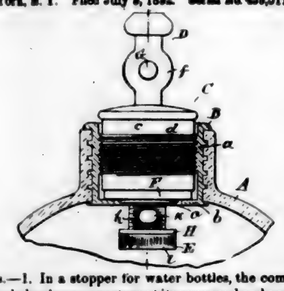


*Claim.*—1 The combined carburetor and storage tank above it, in combination with oil-supply pipes to the storage tank and carburetor, gas-outlet pipe from the latter and air-supply pipe to the same, said air-supply pipe having horizontal branches 7, and vertical branches 8, which reach from the under side of the bottom of the storage-tank to the bottom of the generator and serve as supports for the former and provided with air-outlets at their sides, all as substantially shown and described

2. The combined carburetor and storage tank above it provided with a fill-pipe reaching down to the bottom of the storage-tank, a gas outlet from the carburetor, an air-supply pipe passing through the storage-tank and into the carburetor, a short open pipe having a stop-cock and connected to the air-supply pipe near the bottom of the storage-tank, and an operating-rod reaching up and to the outside of the latter tank for the purpose of operating the stop-cock to supply the carburetor from the storage-tank through the air pipe, all as substantially shown and described.

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**504,138. WATER-BOTTLE STOPPER.** GEORGE H. F. SCHRADER, New York, N. Y. Filed July 9, 1892. Serial No. 439,511. (No model.)



*Claim.*—1. In a stopper for water bottles, the combination with a hollow body having an aperture at its upper end and a screwthreaded aperture at its lower end, of a nozzle carried by the upper end of said body and in communication through the upper aperture thereof with the interior of said body, and a valve, consisting of an externally screwthreaded tubular stem provided with a port in the body thereof and having a head on its lower end, whereby it is adapted to enter the lower screw-threaded aperture of the hollow body, be concealed therein, exteriorly close said aperture and thereby control communication through said body, substantially as set forth.

2. A screw stopper consisting of two parts, the one constituting the outer end of the stopper and having a nozzle, and the other united thereto, constituting the inner end of the body, and carrying a valve constructed when in one position to permit communication through the body to the nozzle, and when in the other position to close such communication.

3. In a screw stopper, a body having an internal conduit from its inner end to its outer end, and consisting of two parts united together, the one part forming the outer end of the body and the other part forming the inner end thereof, in combination with a tubular thimble as *o*, carried by the latter of said parts, and communicating with the conduit in said body, a packing washer as F carried by said thimble at the inner end of said body, and a valve as E, traversing said thimble, and adjustable therein for closing communication therethrough, substantially as and for the purpose set forth.

4. In a screw stopper a body consisting of the cup *c* constituting the outer part thereof, the disk D united to said cup to close its bottom and constituting the inner end of the body, a tubular thimble *o* riveted to said disk and communicating with the interior of the body, a washer F carried by said thimble at the inner end of the body, and a valve E having a stem A traversing said tubular thimble, and swaged outwardly within said cup, and having the head *l* at its outer end exteriorly of the inner end of said body, substantially as and for the purpose set forth.

5 In a screw stopper, the hollow cup *c*, in combination with the tubular nozzle D united thereto and having perforated enlargement *f*, and the handle G consisting of a bar traversing the enlargement of said nozzle and fixed in the perforations thereof.

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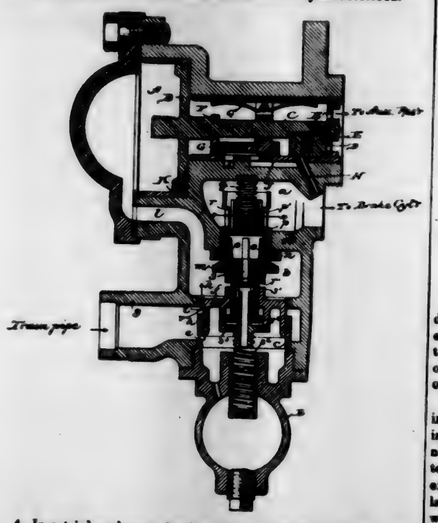
**504,139. TRIPLE-VALVE MECHANISM.** PAUL SYNNESTVEDT, Chicago, Ill., assignor to the Crane Company, same place. Filed Jan. 24, 1893. Serial No. 459,568. (No model.)

*Claim.*—1. In a triple-valve mechanism, the combination with an emergency-valve controlling the direct passage from the train-pipe to the brake-cylinder, of a piston loosely connected with and operating said valve and located in said passage connecting the train-pipe with the brake-cylinder, substantially as described.

2. In a triple-valve mechanism, the combination with an emergency-valve controlling the direct passage from the train-pipe to the brake-cylinder, of a piston loosely connected with and operating said valve and located in the passage connecting the train-pipe with the brake-cylinder at a point between the emergency-valve and the train-pipe connection, substantially as described.

3. In a triple-valve mechanism, the combination with an emer-

gency-valve controlling the direct passage from the train-pipe to the brake-cylinder, of a piston loosely connected with and operating said valve and located in the passage connecting the train-pipe with the brake-cylinder, and a chamber below said piston provided with a supply port said piston controlling both the passage in which it is located and the supply port to said chamber, substantially as described.




4. In a triple-valve mechanism, the combination with an emergency valve controlling the direct passage from the train-pipe to the brake-cylinder, of a piston loosely connected with and operating said valve and located in the passage connecting the train-pipe with the brake cylinder, a chamber below said piston provided with a supply and exhaust port said emergency-piston controlling the supply-port to its chamber, and a valve controlling the exhaust port of said chamber, substantially as described.

5. In a triple-valve mechanism, the combination with an emergency-valve controlling the direct passage from the train-pipe to the brake cylinder, of a piston loosely connected with and operating said valve and located in the passage connecting the train-pipe with the brake-cylinder, a chamber below said piston provided with a supply and exhaust port said emergency-piston controlling the supply-port to its chamber, and a valve operated by said piston and controlling the exhaust port of said chamber, substantially as described.

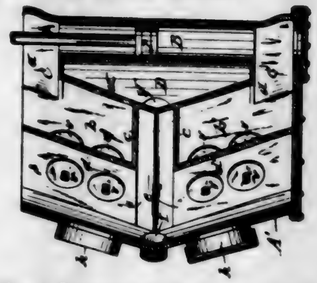
6. In a triple-valve mechanism, the combination with an emergency-valve controlling the direct passage from the train pipe to the brake-cylinder, of a piston loosely connected with and operating said valve and located in the passage connecting the train pipe with the brake-cylinder, a chamber below said piston provided with a supply and exhaust port said emergency-piston controlling the supply-port to the chamber, an exhaust port for said chamber extending through the piston and emergency-valve, and a valve for said port actuated by the piston, substantially as described.

7. In a triple-valve mechanism, the combination with the casing provided with the brake-cylinder chamber and an emergency-valve chamber separated by a diaphragm, and an emergency-valve located in the last mentioned chamber, of a cylindrical cage fitting a perforation in said diaphragm and affording a seat for said emergency-valve at one end and a spring-actuated check-valve working in the opposite end of said cage, substantially as described.

8. In a triple-valve mechanism the combination with a casing provided with the chambers *a*, *b* separated by the diaphragm *d*, and the emergency-valve *m* of the cage *n*, the check valve *p* having the cylindrical body *p'* and the wings *p''*, coiled spring *q* and the perforations *r* in said cage, substantially as described.

9. In a triple-valve mechanism, the combination with a casing provided with the upper brake-cylinder chamber, the middle emergency-valve chamber and the lower emergency-piston chamber, located respectively one above the other, the lower piston chamber being closed by a removable cap of greater diameter than said chamber, of the emergency-piston working in the lower chamber, the emergency-valve working in the middle chamber and of less diameter than the emergency-piston, and the cage affording a seat for the emergency-valve and carrying a check-valve working in the upper chamber, said cage being of less diameter than the emergency piston, whereby all of said mechanism may be removed from the casing through the opening closed by the cap thereof, substantially as described.

**504,140.** PUMP. HORACE S. THOMAS, Elmira, N. Y. Filed Jan. 31, 1893. Serial No. 460,488. (No model.)



*Claim.*—1. The combination, with the casing, of the pump-barrel disposed at one side of the interior of said casing, valve-chambers extending from the opposite side of the casing to the central portion thereof, and channels extending part way across the top and bottom of the casing and connecting the valve-chambers respectively with opposite ends of the pump-barrel as set forth and shown.

2. The combination, with the casing, of the pump-barrel located in the rear portion of the casing and united therewith and terminating remote from the top and bottom of the casing, horizontal channels extending from the top and bottom of the barrel toward the center of the casing, inlet-valve chambers separated from each other and extending respectively from the aforesaid upper and lower channels laterally and part way toward the center of the height of the casing, water inlets in the sides of the casing back of said valve-chambers, and an outlet valve chamber in front of the inlet valve-chambers and extending toward the center of the casing between the said inlet valve-chambers, as set forth.

3. The combination of the case —A— formed with the bulging front —A'—, the barrel —B— located in the rear portion of the casing, the channels —C—C— extending from opposite ends of said barrel toward the center of the casing, the partition —*e*— extending from top to bottom of the casing and joined to the walls of said channels and inclined forward from top to bottom, and forming the water-chamber —D— provided with inlets —*g*—*g*—, the front walls —*d*—*d*— having the bottom-plates —*c*—*c*— joined to the aforesaid partition and forming the outlet chamber —*c*— in front of the walls —*d*—*d*— and between the inlet-valve-chambers substantially as described and shown.

4. The combination, with the casing having the pump-barrel disposed at one side of the interior of said casing, valve-chambers extending from the opposite side of the casing to the central portion thereof, and channels extending part way across the top and bottom of the casing and connecting the valve-chambers respectively with opposite ends of the pump-barrel, of a separate hand-hole or port and closing-cap for each separate chamber and its particular set of valves, substantially as specified.

**504,141.** BRICK-MACHINE. ALBERT D. THOMAS, Keokuk, Iowa, assignor to E. G. Whitney, same place. Filed Mar. 15, 1893. Serial No. 466,115. (No model.)

*Claim.*—1. A brick machine having a drive wheel C, a lever F, having a pin running in a guide way in said wheel, and a pitman lever moved by a crank thereon, molds M, having two sets of plungers working therein connected together by link bars L. H', H, connected with said levers so as to be operated by them.

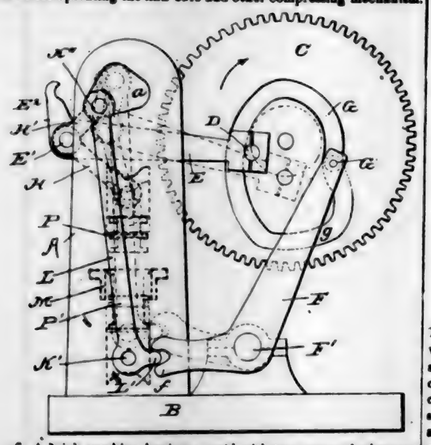
2. A brick machine having a mold and two plungers therein combined with mechanism for operating said plungers constructed and arranged to give the lower plunger an up and down and up motion while compressing the brick.

3. In a brick machine a knuckle joint of link bars H, H', and means for operating them in compressing the brick, and a guide way *a*, combined with a separate means for giving vertical motion thereto.

4. In a brick machine the combination of a wheel having a cam way, with a lever operated by said cam, a mold having two opposed plungers each connected with said lever by means adapted to give motion thereto, and a separate mechanism connected with one plunger and adapted to give motion to it additional to the motion given it by the lever and cam.

5. A brick machine having upper and lower plungers both movable in molds, and link bars, to operate the lower plungers, provided with spurs or means of engagement connecting a lever arranged to operate them to shove the brick out of the molds, and a lever bar or means for operating the link bars and other compressing mechanism.





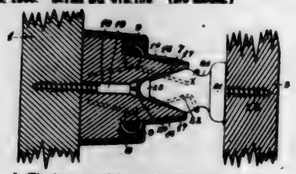

6. A brick machine having a mold with two opposed plungers movable therein, combined with a wheel having a lever with a cam way to operate it, and a pitman with a crank to operate it, each connected with both plungers and arranged to operate both of them.

7. In a brick machine a stationary mold and two opposed plungers operative therein, combined with a lever and a pitman, or means, connected to both plungers, and arranged to give to each plunger both a down and up motion in the mold while compressing a brick between them.

8. The mode of forming a brick which consists in filling a mold with pulverized clay and compressing it between upper and lower plungers therein, moving the lower plunger upward most rapidly, then moving both plungers downward, the upper, most rapidly, and then moving both upward, the lower, most rapidly, until the brick is compressed and polished.

9. The mode of compressing pulverized clay in a mold between plungers which consists in moving both plungers one way and then the other way in the mold while approaching each other.

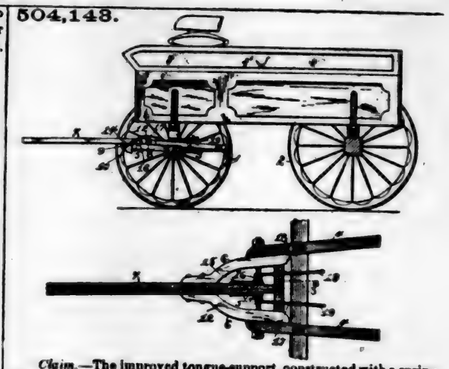
**504,142.** DOOR-CHECK. ROBERT L. WILBURN, Mexico, Mo. Filed Apr. 24, 1893. Serial No. 472,138. (No model.)



*Claim.*—1. The improved door-check, constructed with two members, one of said members having a circumferential-shoulder 8 and spring meeting-arms 12 which form an elliptical-opening for embracing the other member, coils 9 formed upon said arms and located in engagement with said circumferential-shoulder, and metallic casing 13 which engages said coils and secures them in position upon said shoulder, substantially as herein specified.

2. An improved door check having a wooden member a circumferential-shoulder 8 formed on said member incased by a metallic casing having a circumferential shoulder located a greater distance from the base of the member than the circumferential shoulder upon said member, spring arms terminating in meeting jaws forming an elliptical embracing opening, said arms provided with coils located between said casing-shoulder and the shoulder upon a member, and within said casing, arms projecting through the base of the opposite wooden member from said coils, and projecting springs 16 secured within the truncated portion of said casing and engaging in recesses in the truncated portion of the wooden member, substantially as set forth.

**504,148.** TONGUE-SUPPORT. ERWIN R. WILLIAMSON, Chain of Rocks, Mo. Filed Dec. 26, 1892. Serial No. 456,522. (No model.)



*Claim.*—The improved tongue-support, constructed with a spring 12 having spring-coils 16 which taper outwardly, arms 14 and 15 which merge into said coils, ends 17 and 18 for engaging the axle, said arms 14 and 15 being bent toward each other, and merging into said coils at the greatest diameter thereof, a bolt which engages these coils and secures the spring in position, a quadrant 9 provided with segmental transverse-slots 10 and a projecting perforated-lug 11 and arranged to be secured to the under side of the tongue, said quadrant curved corresponding to the radius of the outer end of the said spring, a horizontal-arm 13 detachably engaging said quadrant, and said arms 17 and 18 curved downward from said coils and terminating in ends which are in the same horizontal-plane as that in which said arm 13 is located, substantially as herein-specified.

**504,144.** PNEUMATIC TIRE. THOMAS J. WILLIAMS, London, England, assignor to Sydney Lee, same place. Filed Apr. 17, 1893. Serial No. 470,664. (No model.) Patented in England May 5, 1892. No. 8,594.




*Claim.*—1. As a new article of manufacture a puncture-proof pad or lining for pneumatic tires, composed of rosin or cognate substance in a finely powdered form, as set forth.

2. As a new article of manufacture, a puncture-proof pad for pneumatic tires composed of any suitable woolly or fibrous material impregnated with powdered rosin, as set forth.

3. A pneumatic tire, consisting of an outer cover C, an air tube B, and a puncture-proof pad A composed of any suitable woolly or fibrous material impregnated with powdered rosin, as set forth.

4. In a pneumatic tire, the combination with the outer cover, of a pad or lining composed of any suitable woolly or fibrous material impregnated with powdered rosin or cognate substance and inclosed in a cover of canvas or other textile material, as set forth.

5. A pneumatic tire, consisting of an outer cover C, an air tube B, a tubular canvas pocket D having flaps *d*, *d*, and of a puncture-proof pad A composed of any suitable woolly or fibrous material impregnated with powdered rosin, as set forth.

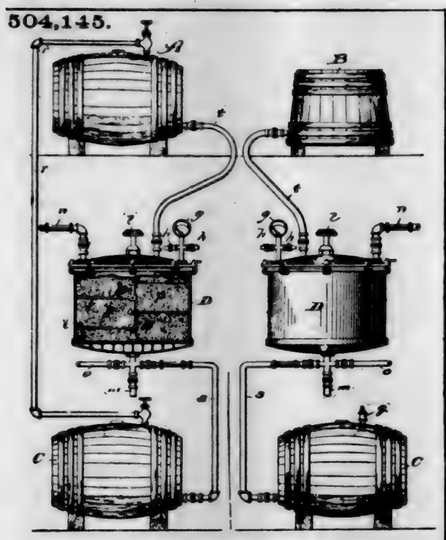
6. As a new article of manufacture a retaining tubular pocket for pneumatic or air inflated tires formed of canvas or other fabric, having a woolly or nappy exterior surface impregnated with powdered rosin or cognate substance, as and for the purpose set forth.

**504,145.** MANUFACTURE OF BEER. OTTO SWIETOCH, Milwaukee, Wis. Filed May 7, 1893. Serial No. 309,864. (No specimens.)

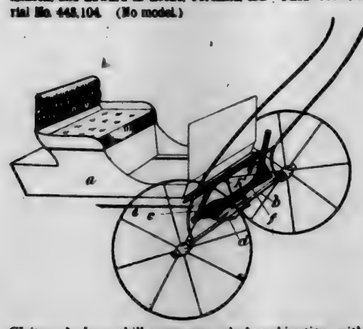
*Claim.*—1. The method of manufacturing beer, which consists in subjecting it to the main fermentation, then passing it through a filtering material, then carbonating or bunging it to give it the requisite life and effervescence, and finally clarifying it, substantially as described.

2. The method of manufacturing, clarifying and filling beer, which consists in subjecting it to the main fermentation, then passing it through a filtering material, then carbonating or bunging it to give the required life and effervescence, and finally passing it through a filtering apparatus while on its way to the ultimate receptacles, thereby imparting to it the requisite degree of brilliancy for the market, substantially as described.

**504,145.**



**504,146.** THILL-SUPPORT. JOHN H. ADAMS, Deering, assignor to himself and Edward H. Locke, Portland, Me. Filed Oct. 7, 1892. Serial No. 448,104. (No model.)



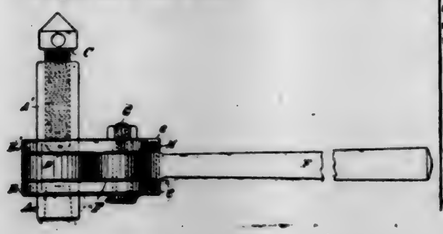
*Claim.*—1. In a thill supporter, the combination with a long tongue, of an inclined set-off extending from the top of said tongue, upward, substantially as and for the purposes set forth.

2. In a thill supporter, the combination with a long tongue of an inclined set-off adjustable longitudinally on said tongue, as and for the purposes set forth.

3. In a thill supporter the combination with a long tongue having one end curving slightly of an inclined set-off on the other end, as and for the purposes set forth.

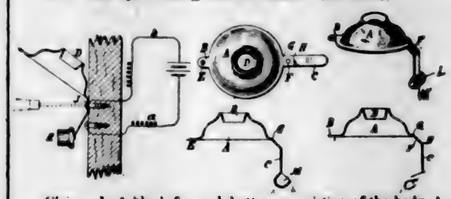
4. The combination with a thill supporter having a long tongue and a lateral set-off or lug on the end thereof, of a vertically inclined set-off at the other end, as and for the purposes set forth.

**504,147.** DRILL-BRACE. HERBERT A. L. BARRY, London, England. Filed Mar. 1, 1893. Serial No. 464,282. (No model.) Patented in England Mar. 21, 1892, No. 5,518.



*Claim.*—A drill-brace consisting of a holder A A' for the drill, a pivot-pin C screwing into the upper end of the holder, a collar D on the low part of the holder, a loose link E below the collar D, another loose link E' above that collar, a hand-lever F F' placed between the links E and E' and adapted to engage with the collar D, a bolt G serving to prevent the links E and E' slipping out of position, and a pin H driven through the lever F F' and engaging in one direction of rotation with ears e and e' on the links, as shown in the accompanying drawings.

**504,148.** PUSH-BUTTON. WILLIAM H. BERRIGAN, Jr., New York, N. Y. Filed Apr. 7, 1892. Serial No. 428,236. (No model.)



*Claim.*—1. A blank for push buttons, consisting of the body, A, lip, B, and tongue, C, substantially as shown and described.

2. A shell for push-buttons, consisting of the body, A, with openings, D, therein, the lip, B, with opening E, therein, and the tongue, C, with the opening, F, therein, and being bent at G, H, substantially as shown and described.

3. A shell for push-buttons, consisting of the body, A, with opening, D, therein, the lip, B, with opening, E, therein, and the tongue, C, with the opening, F, therein, and the tip C', and being bent at H, substantially as shown and described.

4. A blank for push-buttons, consisting of the body, A, lip, B, and the tongue, C, with broadened portion, L, substantially as described.

5. A shell for push-buttons, consisting of the body, A, with opening, D, therein, the lip, B, with opening, E, therein, the tongue C, with opening, F, therein, being bent at G and H, and having broadened portion, L, depressed into the knuckle, M, substantially as shown and described.

6. A shell for push-buttons, consisting of the body A, with opening, D, therein, the lip, B, with opening E, therein, the tongue, C, with opening, F, therein, and having broadened portion, L, depressed into the knuckle, M, substantially as shown and described.

7. A shell for push-buttons, consisting of body, A, with opening D therein, lip B, and tongue C, substantially as described.

8. A shell for push buttons, consisting of body, A, with opening D therein, and tongue C, the broadened tip of said tongue being depressed into the knuckle, M, substantially as described.

9. A push-button consisting of body, A, with opening, D, therein, lip B, with opening, E, therein, and tongue, C, with opening, F, therein, having the said tongue C bent under so that its tip will be below the opening, D, substantially as described.

10. A push-button consisting of body, A, with opening D therein, lip B, with opening, E, therein, and tongue C, with opening, F, therein, the said tongue C, depressed at M to form the knuckle, M, and bent under so as to be below the opening D, to cause the knuckle M to protrude through the opening, D, substantially as described.

11. A push-button consisting of body A, with opening D therein, lip, B, and tongue C, the said tongue bent under so that its tip will be below the opening, D, substantially as described.

12. A push-button consisting of body, A, with opening D therein, lip B, and tongue C, the tip of said tongue being depressed to form a knuckle, M, said tongue bent under so that the said knuckle will protrude through the opening, D, of the body A, substantially as described.

13. A push-button consisting of body A, with opening D therein and tongue C, the said tongue bent under so that its tip will be below the opening, D, substantially as described.

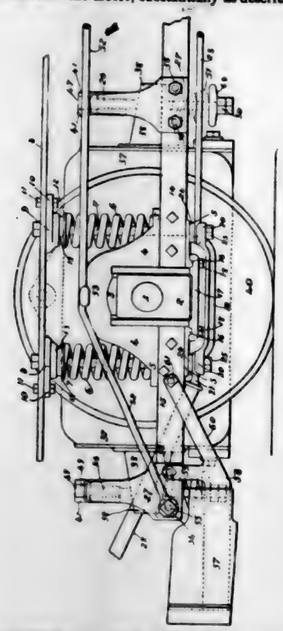
14. A push button consisting of body A, with opening, D, therein, and tongue C, the tip of said tongue being depressed to form a knuckle, said tongue being bent under so that the said knuckle will protrude through the opening, D, of the body, A, substantially as described.

**504,149.** MOTOR-TRUCK. JOHN A. BRILL and WALTER S. ADAMS, Philadelphia, Pa.; said Adams assignor to said Brill. Filed Nov. 12, 1891. Serial No. 411,752. (No model.)

*Claim.*—1. The combination with a truck axle, of the motor extending transversely thereof, and means for supporting the motor on or about the axle, comprising uprights secured to the side beams of the truck and extending upwardly therefrom, and cross bars uniting the uprights, the axle and motor being between the cross bars, and supports for the free end of the motor, depending from the cross bars which lie above said free ends, substantially as described.

2. The combination, in a truck, of a motor supported in part on a truck axle, a truck frame adapted to be lifted from the axle boxes, and a support for an end of the motor, extending across the end of the truck frame, the frame being otherwise unobstructed at that end, said support being of such a height relatively to the height of the motor that when the truck frame is raised to clear the axle boxes, the support will clear the motor, substantially as described.





3. The combination in a truck having side beams supported on the axle boxes thereof, upwardly disposed supports on the side beams at both sides of the axle boxes, a motor having free ends extending forwardly and rearwardly from the axle, a removable pendant hung from said supports which engage the free ends of said motor, said upwardly disposed supports being of such height as to permit the running of the motor under them when the side beams or appendages have been raised to clear the top of the axle boxes, substantially as described.

4. Side bars, upwardly extending supports thereon, said supports being recessed on both sides, and transverse bars secured on edge within said recesses, substantially as described.

5. The combination in a truck, of a motor in gear with the truck axle and extending away from the axle on both sides thereof, side uprights at front and rear of the axle and cross bars on the uprights, forming supports for the free ends of said motor, said supports carrying springs and being independent of the motor or its framing, substantially as described.

6. The combination in a truck, of a motor in gear with the truck axle, the free ends or nose pieces of which extend from the axle on both sides thereof, side uprights at front and rear of the axle and cross bars on the uprights, forming supports for the free ends located above the axle, said supports having springs and being independent of the motor or its framing, substantially as described.

7. The side bars 14, the upwardly extending supports 26 secured to the side bars, the transverse bars 33, 34 secured to the upwardly extending supports and set on edge, and a thimble and pendant secured to said bars, substantially as described.

8. The side bars 14 having the upwardly extending supports 26, transverse bars 33, 34 distanced apart and set on edge, their ends being secured to the said upwardly extending supports, a thimble 41 placed between said bars, a pendant 48 secured to said thimble, and a central aperture in said thimble adapted to permit said pendant to pass through said aperture, substantially as described.

9. The upwardly extending supports 26 having the legs 27 and upwardly extending arch 29, substantially as described.

10. The side bars 15, the upwardly extending supports 26 having the legs 27 recessed, as at 28 for the reception of said side bars, recesses in the upper portion of said supports, and transverse bars 33 secured on edge within said recesses, substantially as described.

11. The saddles 4 provided with an opening in the lower part thereof, lugs 16 on the lower part of the saddles, and a cross bar 17 recessed to receive the lugs secured to the saddles, substantially as described.

12. The upper chord 8, the spring caps 9 having lugs 10, bolt 11 passing through the lug and upper chord for securing the spring cap thereto, and a spring post 7 passing through the spring caps and upper chord, substantially as described.

13. The saddles 4 supported on the axle-boxes, the extended side beams 15, the brace 52 for supporting the extended ends of the side beams, secured thereto and supported on the saddles, and the feeder 57 supported on the side beams by the forked bar 58, the forks being secured each near an end of said extended beam, substantially as described.

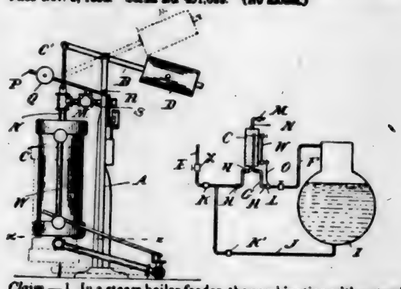
14. The independent spring caps 9 having a recess for the reception of the spring, and a lug 10 for securing the said spring cap to the upper chord or car sill of the truck, substantially as described.

**504,150.** FILLING-NIPPLE AND CAP. HENRY S. CHASE, Waterbury, Conn., assignor to the Waterbury Manufacturing Company, same place. Filed June 12, 1893. Serial No. 477,327. (No model.)



*Claim.*—The herein described filling-nipple and cap, the former having a threaded sleeve, a seat located at the upper end thereof, and a flange rising from the outer edge of the seat, and the latter having a threaded plug adapted to fit into the said sleeve, a shoulder adapted to take a bearing upon the said seat, and an overhanging top constructed to bear upon the said flange, substantially as set forth.

**504,151.** STEAM-BOILER FEEDER. JAMES DEAN, Detroit, Mich. Filed Nov. 5, 1892. Serial No. 451,089. (No model.)



*Claim.*—1. In a steam boiler feeder, the combination with a standard, of a lever fulcrumed to the top of the standard having an adjustable counter weight on one end, a water receptacle secured to the opposite end of the lever, means for alternately emptying and filling said receptacle controlled by the movement of said receptacle and a register secured to the standard adapted to be actuated by the movement of the water receptacle, substantially as described.

2. In a steam boiler feeder the combination with a water receptacle, means for alternately filling and emptying the receptacle, controlled by its upward and downward movement, a water gage for said receptacle, an adjustable counter weight, and the gravity latch adapted to delay said receptacle at the limits of its movement and having an adjustable weight secured thereon, substantially as described.

3. In a steam boiler feeder, the combination with a vertically reciprocating water receptacle, means for alternately filling and emptying said receptacle, an adjustable balance secured to said receptacle, a register and a lever for actuating the register adapted to be actuated by the movement of said water receptacle, substantially as described.

4. In a steam boiler feeder, the combination with a support, of a reciprocating water receptacle mounted thereon, an adjustable weight for the receptacle, means for alternately filling and emptying the receptacle controlled by the movement thereof, a register, a lever for

actuating the same and a projection on the receptacle for tripping the lever, substantially as described.

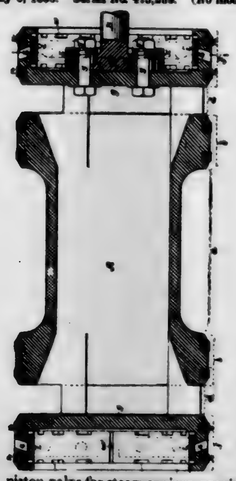
**504,152.** TOY. BAYARD DOMINICK, Jr., New York, N. Y. Filed Apr. 10, 1893. Serial No. 469,838. (No model.)



*Claim.*—1. A toy consisting of a casing closed on all its sides and having stationary partitions arranged at right angles to the sides, dividing the casing into compartments, said compartments communicating through a zigzag passage, and the loose particles adapted to be assembled in one compartment and subsequently distributed to the several compartments.

2. In a toy, a casing having a transparent side, stationary partitions dividing the casing into a series of compartments, the said partitions being arranged at substantially right angles to the length of the casing, and having openings or passages at alternate sides of the casing, and loose particles equal in number to the number of compartments adapted to be assembled in one compartment and subsequently distributed to the several compartments.

**504,153.** PISTON-VALVE. HENRY D. DUNBAR, North Hartland, Vt. Filed May 6, 1893. Serial No. 473,289. (No model.)



*Claim.*—1. A piston valve for steam engines, provided with a recessed and perforated ring for closing the steam port of the cylinder, and a split relief ring, applied to said recessed ring of the valve and serving to close the perforations of the same, substantially as specified.

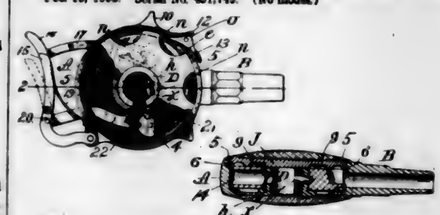
2. A piston valve for steam engines having a ring for closing the steam port of the cylinder, in combination with a notched relief ring adapted to a recessed portion of said valve ring and confined longitudinally between shoulders on the latter, the valve ring having openings through which pressure in the cylinder can act to compress the relief ring, substantially as specified.

3. A piston valve for steam engines having a recessed and perforated ring for closing the steam port of the cylinder, and a split relief ring applied to said recessed ring of the valve, and serving to close the perforations of the same, said relief ring having an external groove extending partway throughout the same, substantially as specified.

4. The combination of a piston valve, with a valve stem having an enlarged head, and a detachable cap secured to the valve and serving to confine the head of the valve stem lightly thereto, but permitting lateral play of the valve stem on the valve, substantially as specified.

5. The combination of a piston valve, with a valve rod having an enlarged head, and a cap seated upon a bearing on the valve and lightly confining the head of the valve rod, and securing bolts for said cap passing through elongated openings in the said head of the valve rod, substantially as specified.

**504,154.** REVOLVER. PETER H. FINNEGAN, Austin, Ill. Filed Feb. 10, 1893. Serial No. 461,749. (No model.)



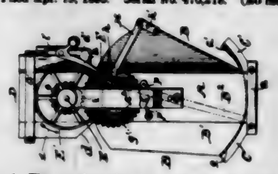
*Claim.*—1. In a revolving fire-arm of the class described, a cylindrical case, a cartridge-cylinder having an intermittent rotary movement in said case and having recesses in its periphery, combined with a safety-latch pivotally hung on the border of said case, one end of which passes through said border, a spring under one end of said latch operating to retain the opposite end thereof normally in engagement with any one of said recesses, substantially as set forth.

2. In a revolving fire arm of the class described, the cylinder-case having the integrally formed tubular breech-block centrally located therein, said block having a slot through its side extending from its extremity to its base whereby the nose of the hammer may be passed therethrough, substantially as set forth.

3. The case, A, having the finger-rests, 10, 12, on its border, one behind the other, combined with a safety-latch pivotally hung on the border of said case, and having one end opposite the forward side of said projection, 12, and its opposite end extending through said border in proximity to the periphery of the cylinder, A, said rear rest, 10, serving as an abutment for the finger for carrying the arm, thereby leaving the outer end of said latch free, combined and operating substantially as set forth.

4. In a revolving fire-arm, of the class described, means for locking and removing the cover of the cylinder-case, consisting of sections of inwardly extending flanges, 5, 5, on the borders of said case, at the end of one of which flanges is a stop to arrest the circular movement of the case-cover, combined with a cover having sections of flanges thereon to engage under those of said case, one of said cover-flanges having a cam, 7, at one end to engage with one end of one of said case-flanges, thereby causing the cover to be lifted from the case when turned in one direction, substantially as set forth.

**504,155.** AUTOMATIC GRAIN-MEASURER. ELI W. FLAGG, Battle Creek, Mich., assignor to the Nichols & Shepard Company, same place. Filed Apr. 13, 1892. Serial No. 470,218. (No model.)



*Claim.*—1. The combination in an automatic grain measurer of the twin buckets, the mutilated gear connected to said buckets for vibrating them, the shaft and pinion for actuating said gear, and the sleeve sliding on said shaft and connected to said mutilated gear for throwing the latter into mesh with the actuating pinion, substantially as described.

2. The combination with the tilting double bucket, of the mutilated gear connected to said bucket, the pinion fast on the driving shaft for actuating said gear, the driving wheel or band pulley loose on said shaft, said driving wheel and pinion having inclined-faced or ratchet teeth on their adjacent sides for engaging them, and the spring for holding them in engagement, substantially as described.

3. The mutilated gear and crank wheel for actuating the double bucket, the shaft E, with its pinion for actuating said gear wheel, and the sleeve provided with the wing or paddle and sliding on said shaft, in combination with the pawl engaging said gear and connected with and operated by said sleeve for throwing the gear into mesh with its actuating pinion, substantially as described.

4. The combination with the twin buckets and the mechanism for tilting the same to bring them alternately into position to receive the grain, of the sleeve on the actuating shaft provided with the paddle and sliding on said shaft, and the connection between said sleeve and the tilting mechanism for setting the latter in motion; substantially as described.

5. The combination with the bucket, of the mutilated gear and crank wheel for tilting said bucket, the pinion for actuating said gear, and the yielding support for the shaft of the mutilated gear, substantially as described.

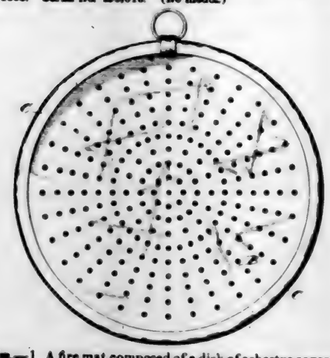
6. The combination with the mutilated gear for tilting the double bucket, of the pinion for actuating said gear and the yielding dog or pawl engaging said mutilated gear for stopping the rotation thereof, and causing the buckets to alternately fill and discharge substantially as described.

7. The combination in a grain measuring device, of the twin buckets, the mutilated gear connected to said buckets for operating them, the pinion on the driving shaft for actuating said gear, the pawl engaging said gear, and the sleeve and paddle sliding on said shaft and connected to said pawl for operating it to throw said gear into engagement with its actuating pinion, substantially as described.

8. In an automatic grain measurer, the shaft projected within the grain spout or hopper, in combination with the sleeve on said shaft carrying a wing or paddle, said shaft and sleeve being connected by a pin working in a spiral slot or groove, whereby an endwise movement is imparted to the sleeve when its rotary movement is retarded or stopped, substantially as described



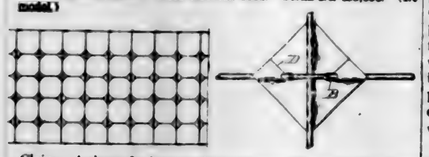
**504,156.** FIRE-MAT. BENJAMIN L. FLETCHER, Cincinnati, Ohio, assignor to the Fletcher Fire Mat Company, Newport, Ky. Filed Jan. 11, 1893. Serial No. 458,016. (No model.)



*Claim.*—1. A fire mat composed of a disk of asbestus covered with a perforated disk of heat conducting substance as set forth.

2. In a fire mat, the combination of asbestus A, sheet metal B, rim C, the metal disk B, being perforated as shown and described.

**504,157.** CLAMP FOR INTERLOCKING WIRES. LEBBEUS H. FOSTER, Adrian, Mich. Filed Nov. 25, 1892. Serial No. 453,088. (No model.)



*Claim.*—A clamp for intersecting wires consisting of a plate bent to form a central bearing, having apertures on opposite sides thereof, and having cuts extending from the apertures to the edge of the clamp forming leading in channels through which a wire is adapted to pass, substantially as described.

**504,158.** TRUSS. PERJONAH FREDIN, New Haven, Conn., assignor of one-half to Elisha Hewitt, same place. Filed Feb. 24, 1893. Serial No. 463,542. (No model.)



*Claim.*—1. A truss having a ball-pad furnished with an inflation tube, a cup-shaped frame adapted to receive the said pad, and constructed with an opening located at one side of its center to permit the tube to project through it for clearance and inflation, a frame-support attached to the center of the said cup-shaped frame, and a band or strap to which the said frame-support is attached, substantially as described.

2. A truss having a ball-pad furnished with an inflation tube, a cup-shaped frame adapted to receive the said pad and permit its tube to project through it at a point one side of its center, and constructed at its outer face with a recess to receive the end of the tube, and means for clamping the tube in the said recess, substantially as described.

3. A truss having a band or strap to pass around the body, a frame-support attached to the said band or strap, a ball-pad furnished with an inflation tube, and a cup-shaped frame adapted to be attached to the said support and to receive the said ball-pad, and permit the tube thereof to pass through it, and constructed with a recess to receive the end of the said tube, and located in position for the compression of the tube by the said support when the frame is attached thereto, substantially as described.

4. A truss having a ball-pad, a frame to receive the same, a band or strap to pass around the body, and a pad-support consisting of a long and a short member, both attached at their upper ends to the band, and the former having the frame attached to its lower end, and the upper end of the long member, and the lower end of the short member being longitudinally slotted, and the long member having a substantially transverse slot to receive a stud also passing through the slot in the lower end of the short member, substantially as described.

**504,159.** MEANS FOR TAKING READINGS OF METER-DIALS. ALBERT B. HERRICK, Schenectady, N. Y., assignor to the General Electric Company, Boston, Mass. Filed June 13, 1892. Serial No. 436,561. (No model.)



*Claim.*—1. The combination with a meter dial having pricking needles on its hands, and having an exposed or unobstructed face, of an impression-platen for taking readings from such meter dials, consisting of a block *e* distinct and separable from the meter, having a yielding pad on its face and means for attaching thereto a fac-simile sheet for receiving the impression, and reciprocally-engaging guiding devices on the meter and platen for guiding the platen into correct coincidence with the dial, and causing it to be pressed thereagainst in direction parallel with the needles.

2. The combination with a meter dial having pricking needles on its hands, and having an exposed or unobstructed face, of an impression-platen for taking readings from such meter dials, consisting of a block *e* distinct and separable from the meter, having a yielding pad on its face and means for attaching thereto a fac-simile sheet for receiving the impression, and reciprocally-engaging guiding devices on the meter and platen for guiding the platen into correct coincidence with the dial, consisting of guiding pins *c c* on the meter projecting parallel with the needles, and corresponding holes or sockets *l l* in the platen, whereby the platen is guided in its movement toward the dial in direction parallel to the needles.

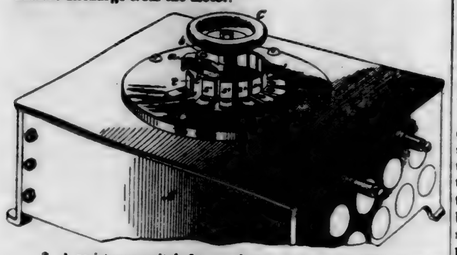
3. The combination with a recording meter dial having pricking needles on its hands, and having an exposed or unobstructed face, of an impression platen for carrying a record facsimile consisting of a block *e* separable from the meter having a yielding pad on its face and means for attaching the facsimile thereto, and a handle *f* projecting from the back thereof and adapted to enable the facsimile to be presented to the front of the dial and pressed thereagainst in direction parallel with the needles.

**504,160.** RHEOSTAT. ALBERT B. HERRICK, Schenectady, N. Y., assignor to the General Electric Company, Boston, Mass. Filed July 22, 1893. Serial No. 440,897. (No model.)

*Claim.*—1. A resistance switch for an electro motor comprising contact segments with interposed resistances, and a contact arm traversing said segments, relatively arranged and constructed to progressively decrease the resistance by a movement in one direction, and by a further movement in the same direction to first suddenly introduce a high resistance and afterward break the circuit.

2. A resistance-switch for cutting out an electro-motor, &c., consisting of a conducting segment and arm constituting circuit-breaking contacts, combined with a segment connected through a high resist-

ance, arranged to be touched momentarily by the arm in its circuit-breaking movement, whereby to momentarily cut down the current before finally breaking the circuit, and thereby to reduce the self-inductive discharge from the motor.



3. A resistance-switch for an electro-motor comprising contact segments with interposed resistances, connected to one circuit terminal and a contact arm connected to the opposite circuit terminal traversing said segments, relatively arranged and constructed to slide when moving from segments of relatively lower to those of higher potential, and to snap when moving from a segment of higher to one of relatively lower potential.

4. A resistance-switch comprising a series of contact-segments with interposed resistances, graduated from a maximum resistance at one terminal segment to a minimum resistance at the opposite terminal, a supplemental segment beyond the latter terminal, connected to interpose a high resistance, and an open-circuiting space beyond this supplemental segment, combined with a spring-pressed contact-arm constructed to sweep over the segments in direction from that of maximum resistance to that of minimum resistance, so that the interposed resistance is progressively diminished, to move past the latter to the supplemental segment, and to sweep beyond this segment by a snap action to avoid arcing in breaking the circuit.

5. A resistance-switch comprising a circularly-arranged series of contact segments with interposed resistances, graduated from a maximum resistance at the initial terminal of the series to a minimum resistance at the final terminal, a supplemental segment beyond the lateral terminal, connected to interpose a high resistance, and an open-circuiting space between said supplemental segment and the initial terminal, combined with a contact-arm movable over the series of segments in a rotative direction from the initial to the final terminal, from the latter to said supplemental segment, and from that across the open-circuiting space to the initial terminal again.

6. A resistance-switch comprising a circularly-arranged series of contact segments with interposed resistances, graduated from a maximum resistance at the initial terminal of the series to a minimum resistance at the final terminal, and an open-circuiting space between the terminals, combined with a contact-arm movable over the series of segments in a rotative direction from the initial to the final terminal, and from the latter across the open-circuiting space to the initial terminal again, and constructed to part contact with the final terminal segment by a snap action to avoid arcing, and a spring catch, constructed with engaging inclines adapted to hold the contact-arm in position when in contact with said final terminal, and yieldingly resist its further movement to break the circuit.

7. A resistance-switch comprising a circularly-arranged series of contact segments with interposed resistances, graduated from a maximum resistance at the initial terminal of the series to a minimum resistance at the final terminal, and an open-circuiting space between the terminals, combined with a contact-arm movable over the series of segments in a rotative direction from the initial to the final terminal, and from the latter across the open-circuiting space to the initial terminal again, and constructed to part contact with the final terminal segment by a snap action to avoid arcing, and a spring catch, constructed with engaging inclines adapted to hold the contact-arm in position when standing in said open-circuiting space, and yieldingly resist its further movement to said initial terminal to close the circuit.

8. A resistance-switch comprising a circularly-arranged series of contact segments with interposed resistances, graduated from a maximum resistance at the initial terminal of the series to a minimum resistance at the final terminal, a supplemental segment beyond the latter terminal, connected to interpose a high resistance, and an open-circuiting space between said supplemental segment and the initial terminal, combined with a contact-arm movable over the series of segments in a rotative direction from the initial to the final terminal, from the latter to said supplemental segment, and from thas across the open-circuiting space to the initial terminal again, and a spring catch-device adapted to hold the contact-arm when in contact with said final terminal, and again when it reaches said open-circuiting space, to resist its further movement.

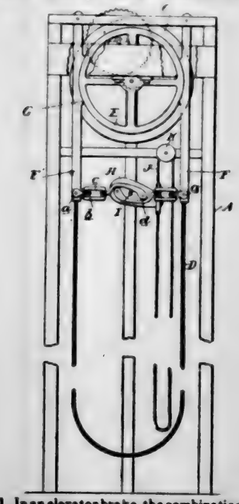
9. A resistance-switch comprising a series of contact-segments with interposed resistances, a supplemental segment of high resistance beyond the terminal segment of lowest resistance, and an open-circuiting space between said supplemental segment and the terminal segment of highest resistance, combined with a contact-arm adapted to move over the segments in one direction, a spindle carrying said arm, and a catch-device consisting of a spring bolt pressing toward said spindle, and notches in the spindle coinciding with said bolt when the arm is on the segment of lowest resistance and in the open-circuiting space.

10. A resistance-switch comprising a series of circularly-arranged contact-segments and an open-circuiting space, combined with a contact-device consisting of a rotative carrier and a contact-arm carried thereby and pressing against said segments, said arm formed to touch the segments in the rear of its connection with the carrier, so as to trail over the segments, and having an inclined advancing side, whereby when it flies out into said open-circuiting space, and is again moved against the series of segments the initial segment serves to press it back and bring it again into engagement with the contact faces of the segments.

11. A resistance switch comprising a series of contact segments with interposed resistances and an open-circuiting space, combined with a contact arm adapted to move over the segments rotatively in forward direction, a spindle carrying said arm, an operating handle fixed to said spindle and a ratchet catch device for preventing the backward rotation of the spindle consisting of a spring pawl engaging abrupt notches.

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**504,161. ELEVATOR-BRAKE.** ERNST C. HEYDENREICH, Mount Clemens, Mich. Filed Apr. 24, 1893. Serial No. 471,561. (No model.)

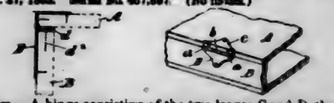


*Claim.*—1. In an elevator brake, the combination of the suspended brake levers carrying the shoes, a brake actuating lever pivoted between the brake levers, the adjustable connecting links and an operating cord connected directly to the actuating lever and adapted to draw said links past the pivotal point of the actuating lever to a stop, in applying the brake, substantially as described

2. In an elevator brake, the combination of the suspended brake levers carrying the shoes, a brake actuating lever pivoted between the brake levers, the connecting links each consisting of the head block *a*, the turnbuckle *c*, and the curved arm *d* extending beyond the pivotal point of the actuating lever, the parts arranged and adapted to operate substantially as and for the purpose described

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**504,162. HINGE.** CHARLES P. HOFFITT, Dayton, Ohio. Filed Mar. 27, 1893. Serial No. 467,697. (No model.)



*Claim.*—A hinge consisting of the two leaves C and D, the latter having an inturned angular portion, *d*, formed by bending the metal upon itself, substantially as set forth.



**504,163. CURTAIN-ROLLER FOR COACHES.** JOHN A. HOWELL, Newark, N. J., assignor to C. H. Lockwood & Co., same place. Filed Aug. 1, 1892. Serial No. 441,782. (No model.)



*Claim.*—1. The improved curtain roller for coaches in which is combined with a tubular sheet-metal roller open at opposite ends and a one piece metal rod, *d*, extending through said roller and projecting therefrom to engage brackets *a*, *a*, in which said rod is immovably fixed, said rod being reduced in diameter, as at *g*, to form, near one end, a shoulder *g'*, the reduced part being round in cross section and bored out at one side as at *h*, end pieces *i*, *i'*, centrally perforated to receive the reduced end of the rod, and soldered to the open ends of the roller, a pawl *j* pivotally riveted upon the outer face of one of said end pieces and adapted to enter the boring, *h*, to hold the roller stationary and said brackets *a*, *a*, holding said rod stationary and one of them being recessed and entirely covering the pawls on the face of the end piece, and a spring, all said parts being arranged and combined substantially as set forth.

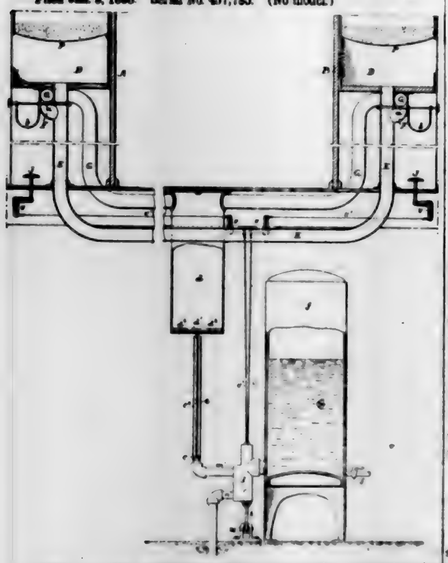
2. In combination with the tubular roller, rod *d*, brackets *a*, *a*, and spring, end pieces having pawls on the outer side and spring holding bearing arms *k*, *k*, on the inner side, substantially as set forth.

3. In combination, a roller *c* having end disks one of which is provided with flange, $i^3$, and non-sonorous bearing $i^4$, held by said flange, and the other at one side with a spring bearing, *k*, and at the opposite side with a pawl, *j*, a rod *d* having the angular extremity *f''* the round bearing *g*, with the hole or pawl recess *h*, therein and a shoulder *g'* and having a hole $f^3$ in its extremity, a spring *e*, and bracket bearings *b*, *b'*, one of which admits the removal of the rod therefrom and the other of which is swiveled and is provided with a screw *f'* substantially as set forth.

4. In combination with the tubular body, end pieces or disks adapted to be secured thereto after the insertion of the spring and rod into said body, and having a projecting arm, *k*, to receive the spring and adjait of the same being fastened thereon, a pawl on the outer side of said disk, to engage the rod and prevent the body from turning, said rod and spring the latter being secured upon said arm, substantially as set forth.

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**504,164. PNEUMATIC DISPATCH APPARATUS.** SMITH E. HUGHES, Philadelphia, Pa., assignor of one-half to Milo D. Baldy, same place. Filed Jan. 9, 1893. Serial No. 457,785. (No model.)



*Claim.*—1. The combination of the conveyer pipe connecting two stations, and normally open at each end, a short right angled branch pipe near each end of said conveyer pipe, a blast pipe communicating with each of said branches, slide valves located at the junction of the conveyer pipe and branch pipes, and movable so as to close one or other of the same, and springs whereby said valves are normally retained in position to close the branch pipes, substantially as specified.

2. The combination of the conveyer pipe connecting two stations and normally open at each end, a branch pipe near each end of said conveyer pipe, a blast pipe communicating with each of said branches, valves which normally tend to close the branches but which can be moved so as to temporarily close the conveyer pipe, and means for causing intermittent pulsations of air in the blast pipe, substantially as specified.

3. The combination of the conveyer pipe connecting two stations, blast apparatus communicating with said pipe near each end, valves adapted either to open the conveyer pipe and cut off the blast, or to close the conveyer pipe and open the blast, an air forcing device connected with the blast pipe, a valve controlling the operation of said air forcing device, and push plates located at each station and connected to said valve, substantially as specified.

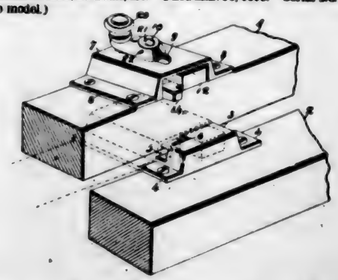
4. The combination of the conveyer pipe connecting two stations, air and water cylinders containing connected pistons, blast pipes leading from the air cylinder to each end of the conveyer pipe, valves adapted to close the conveyer pipe and open the blast pipe, or to close the blast pipe and open the conveyer pipe, a reservoir containing liquid under pressure, a valve controlling the flow of said liquid into the water cylinder, and push plates located at each station, and connected to said valve, substantially as specified.

5. The combination of the pressure reservoir, the water cylinder, the valve chest having inlet, service, discharge and drainage ports, and a valve having three pistons, and a drainage passage extending through it, substantially as specified.

6. The combination of the conveyer pipe, the blast pipe communicating with said conveyer pipe at each end, valves serving to open the conveyer pipe, and close the blast pipe, or vice versa, an air forcing device connected with the blast pipe, a valve controlling the operation of said air forcing device, a lever connected to said valve, push plates at each of the stations connected by the conveyer pipe, and devices for transmitting the movement of said push plates to the valve lever, such devices having a bearing only on one side of the lever so that either will operate the lever without affecting the other, substantially as specified.

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**504,165. FASTENER FOR THE MEETING-RAILS OF SASHES.** CHARLES KNAPP, St. Louis, Mo. Filed Mar. 30, 1893. Serial No. 468,362. (No model.)



*Claim.*—An automatic sash lock comprising a bolt, a plate forming a part of the same, a casing, a slot formed therein, a spring interposed between said bolt and the casing, a latch located to one side of the bolt and provided with a shoulder and adapted to receive the edge of the plate, depressions formed on either side of the said latch, an extension forming a part of the plate and adapted to be received by one of the depressions, a lug carried by the casing and received by the other depression of the latch, a post secured to the plate and passing through the slot of the casing, an operating knob secured to the upper end of the post, a catch plate provided with a lip against which one end of the latch is brought in contact, and a cut-away portion formed on the said catch plate immediately above the said lip for the passage of one end of the latch, substantially as set forth.

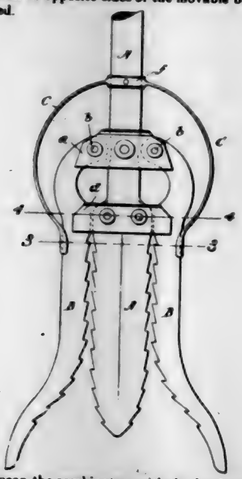
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**504,166. EEL-SPEAR.** NIKKEL C. KNOLL, Northampton, Mass. Filed Dec. 15, 1892. Serial No. 455,316. (No model.)

*Claim.*—1. In an eel-spear, the combination with an intermediate, serrated blade, and two serrated blades pivotally supported at each side thereof, and adapted to swing toward and from it, and springs for forcing the side blades toward the intermediate blade, substantially as described.

2. In an eel-spear, the combination with a fixed, serrated blade

and two side blades pivotally supported at each side thereof to swing toward and from it, springs for forcing the side blades toward the intermediate blade, and guide-members supported by the blade and extended therefrom at opposite sides of the movable blades, substantially as described.



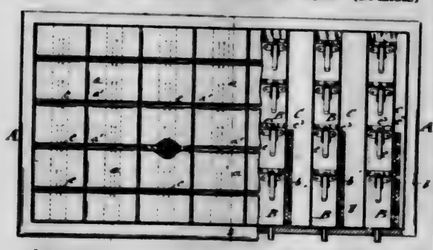
3. In an eel-spear, the combination with the fixed, serrated blade having a suitable shank or extension and having cross-bars placed on opposite sides of the shank and riveted thereto, and two serrated blades having their upper ends within the paired bar-extensions and pivotally connected, and springs applied to said pivoted blades to force them toward the fixed blade, substantially as described.

4. The combination with a fixed blade having two pairs of bars riveted to upper portions thereof, and all extended beyond the opposite edges thereof, of a pair of serrated blades having their upper ends between and pivoted to the paired extensions of the upper bars, and having intermediate portions thereof playing within the paired extensions of the lower bars to be guided by the latter, and the springs applied for inwardly forcing the side blades, substantially as described.

5. In an eel-spear, the combination with a fixed blade which, from its middle is beveled toward each edge and which is tapered toward its end and provided with serrations, and two blades which are beveled and serrated and which are pivotally supported at each side of the fixed blade to swing toward and from it, the lower extremities of which movable blades terminate below and in divergence relative to the lower end of the fixed blade and the springs for forcing the side-blades inwardly, substantially as described.

6. In an eel-spear, the combination with an intermediate blade and its shank or extension, and the pivotally supported blades, of a collar encircling and secured to the shank and having the oppositely extended curved spring-arms which inwardly force the pivoted blades, substantially as described.

## 504,167. JEWELER'S RING-TRAY. REINHOLD KRUMBEIN, New York, N. Y. Filed June 3, 1892. Serial No. 435,285. (No model.)



*Claim.*—1. A ring-tary for jewelers, the frame of which is provided with longitudinal strips and slots, and with transversely guided and spring-actuated slide-pieces below said strips, said slide-pieces being provided with fulcrumed and spring-actuated fingers transversely to the slots, so as to automatically lock the rings to the tray on inserting the same into the slots, substantially as set forth.

2. The combination, in a jeweler's ring-tray, of a supporting-frame having longitudinal strips and slots between said strips, transverse spring-actuated slide-pieces guided along the bottom of the frame, and fulcrumed and spring-actuated fingers supported on said slide-pieces and located transversely to the longitudinal slots, so as to lock the rings when inserted into the slots, substantially as set forth.

3. The combination, with the supporting-frame, of a jeweler's ring tray, of transverse spring-actuated slide pieces, fixed guide-strips for said slide-pieces, upright standards on said slide-pieces, fingers fulcrumed to the upper ends of said standards and helical springs connecting the rear-ends of the fingers with the slide-pieces, so that the front-end of the same is adapted to yield sufficiently, substantially as set forth.

## 504,168. ADJUSTABLE-SPEED BICYCLE. JOSEPH L. MORRIS, Lawrence, Kans. Filed Dec. 23, 1892. Serial No. 456,134. (No model.)



*Claim.*—1. A bicycle, comprising a frame mounted on wheels a stationary casing supported by said frame, and having vertical side plates or walls, pedal shaft journaled in said side plates or walls, and having stub-shafts projecting from said shaft, and a toothed hub upon said shaft, gear-pinions carried loosely upon the stub-shafts, a sprocket-wheel mounted loosely upon the pedal-shaft and operatively connected to the rear wheel and a gear-pinion carried by said sprocket wheel and meshing with the gear-pinions carried by the stub-shafts, and a disk also loosely mounted upon the pedal-shaft, and a gear-pinion carried rigidly by said disk and also meshing with the pinions of the stub-shafts, and a slidable locking-plate also carried by said disk, and means to actuate said locking plate to engage a toothed-hub of the shaft or to engage the stationary casing, substantially as set forth.

2. A bicycle, comprising a frame mounted upon wheels a casing, supported by said frame, and having vertical side plates or walls, a pedal-shaft journaled in said side plates or walls, and having stub-shafts projecting from opposite sides of said pedal-shaft, gear-pinions carried loosely upon the stub-shafts, a sprocket wheel mounted loosely upon the pedal-shaft, and operatively connected to the rear wheel a gear pinion carried by the sprocket wheel, and meshing with the gear pinions carried by the stub-shafts, and a disk, also loosely carried by the pedal-shaft, and a gear pinion carried rigidly by the said disk, a toothed hub carried by the shaft, and a locking plate also carried by said disk, in combination with a rod, and a rock-arm to actuate the said locking plate to engage the toothed hub of the shaft, or to engage the casing, substantially as set forth.

3. A bicycle, comprising a frame mounted upon wheels a casing, supported by said frame, and a circular flange projecting inwardly of one of the side walls or plates of said casing, having an opening or recess therein, adjustable slidable plates, located at the under side of said casing, and engaging the frame of the bicycle, a shaft journaled horizontally in the side walls or plates of said casing, stub-shafts projecting from opposite sides of the said shaft, and gear pinions loosely mounted upon said stub-shafts, a sprocket wheel loosely mounted upon said shaft and operatively connected to the rear wheel, and a gear pinion carried rigidly by said sprocket wheel a disk, also loosely carried by said shaft, and a gear pinion carried rigidly by said disk, and meshing with the gear pinions carried by the stub-shafts, a slidable locking plate carried by the said disk, and spring actuated dog or pawl engaging said locking plate, a toothed hub carried by the shaft, a rock arm at the inner side of the casing, and a rock arm at the outer side of the casing, and a rock-shaft or bolt connecting said rock-arm, and adapted to be operated to actuate the inner rock-arm to move the locking plate, substantially as described.

4. In a bicycle driving mechanism, the combination with a casing, a shaft journaled horizontally in said casing, stub-shafts projecting from opposite sides of said shaft, gear pinions carried loosely upon said stub-shafts, a sprocket wheel carried loosely upon said shaft and operatively connected to the rear wheel and a gear pinion carried rigidly by said sprocket wheel and meshing with the gear pinions carried by the stub-shafts, a disk also carried loosely by the said shaft, and a gear pinion carried rigidly by said disk and meshing with the gear pinions carried by the stub-shafts, and a locking plate carried by said disk, and a spring actuated dog or pawl also carried by said disk, and engaging the said locking plate, and a toothed hub carried by the shaft, of a rod, and a rock arm operatively connected to said rod to actuate said locking-plate, to engage with the shaft, and an expansion spring, surrounding said rod, and a collar loosely engaging said rod at each end of the expansion spring, and a casing inclosing said rod, expansion spring and collars, and having a closed bottom and top provided with openings for the rod, and through pins carried by said rod, and notches in the tops and bottoms of the cylindrical casings for the passage of said through pins, and a knob or handle at the upper end of the rod, all arranged substantially as set forth.

5. In a bicycle, the combination with a wheel having a hub-casing comprising hub disks 46 marginally connected together, a stationary plate at one side of the hub-casing and a stationary casing at the opposite side of the hub-casing, a shaft journaled loosely in the stationary plate and stationary casing and passing loosely and centrally through the hub-casing, stub-shafts carried by the said shaft, and gear-pinions carried loosely upon said stub-shafts, a sprocket-wheel carried rigidly by said shaft, and a pinion carried rigidly by the hub-casing and meshing with the pinions of the stub-shafts, a disk carried loosely by the shaft, a toothed-hub carried by the shaft adjacent to the disk, a gear-pinion carried by said disk and meshing with the pinions of the stub-shafts, a slidable locking plate carried by the said disk, and a spring-actuated dog also carried by said disk and engaging said locking-plate to hold it into engagement with the toothed-hub of the shaft or with the casing, of a rock-arm and a movable rod operatively connected to said rock-arm, and adapted to actuate the rock-arm to overcome the resistance of the spring-actuated dog, and move the locking-plate out of engagement with the toothed-hub of the shaft, or with the stationary casing, substantially as set forth.

6. In a bicycle, the combination with a wheel having a hub-casing, and a stationary casing located at one side of the hub-casing, and a stationary plate located at the other side of the hub-casing, a shaft extending loosely through the hub-casing and journaled near its opposite ends in the stationary plate and stationary casing, and having a toothed-hub and stub-shafts, and beveled gear-pinions mounted loosely upon the stub-shafts, and a beveled gear-pinion carried by the hub casing and meshing with the pinions of the stub-shafts, and a disk loosely mounted upon the shaft in the stationary casing and having a beveled gear-pinion meshing with the pinions of the stub-shafts, and a slidable locking plate, a rock-shaft journaled in the stationary casing, and a rock-arm carried at the outer side of the stationary casing upon the rock-shaft and an inner rock-arm carried by said rock-shaft, and adapted to actuate or move the locking-plate, a pivoted cylindrical casing, and a rod extending longitudinally through said casing, a spring surrounding said rod to return it to its normal position after being depressed or raised, a bearing, a rock-shaft 75 carried thereby and having a rock-arm pivotally connected to the rod passing through the cylindrical casing, a second rock-arm carried by the rock-shaft 75, and an obliquely arranged rod pivotally connecting the last mentioned rock-arm and the outer rock-arm of the stationary casing, substantially as set forth.

7. In a bicycle, the combination with a casing supported by the frame-work of the bicycle and having an opening therein, and a pedal shaft journaled in said casing, and having a toothed hub and stub-shafts, and pinions mounted loosely upon the stub-shafts and a sprocket-wheel mounted loosely upon the shaft, and a pinion carried rigidly by said sprocket-wheel, and meshing with the pinions upon the stub-shafts, of a disk mounted loosely upon the shaft, and guide-pins projecting from said disk, and a locking-plate carried by said disk and having a slot engaging the pins projecting from the disk, and also having inner and outer projections, and pins projecting from the locking-plate adjacent to said projections, and a rock-arm, and means to actuate said rock-arm to engage the pins adjacent to the projections so that the outer or inner projection will respectively engage the opening in the casing, or the toothed hub of the shaft, substantially as set forth.

8. In a bicycle, the combination with a casing supported upon the framework of the bicycle, a pedal shaft journaled therein, and having a toothed hub and stub-shafts, and pinions mounted loosely upon said stub-shafts, and a sprocket-wheel mounted loosely upon the shaft, and a pinion carried rigidly by said sprocket-wheel and meshing with the pinions of the stub-shafts, of a disk loosely mounted upon the shaft, and a slidable locking-plate carried by said disk having inner and outer projections and having one end formed with an inner and an outer bevel, and means to move the slidable locking-plate so that the outer projection will engage the opening of the casing or the inner projection will engage the toothed-hub of the disk, and a spring-actuated dog carried by the locking-plate and having an inner beveled end adapted to bear against the outer beveled end of the locking-plate to hold it into engagement with the casing, and also formed with an outer beveled end adapted to bear against the inner beveled end of the locking-plate to hold said locking plate into engagement with the toothed-hub of the shaft, substantially as set forth.

9. A bicycle, comprising a wheel having a hub-casing, a stationary plate located at one side of said hub-casing and secured to the framework of the bicycle, and a stationary casing located at the opposite side of the hub-casing and also secured to the framework of the bicycle, a tubular-shaft passing loosely through said hub-casing and journaled loosely in the stationary plate and the stationary casing, and having a toothed-hub and radial stub-shafts, and gear-pinions revolubly mounted upon said stub-shafts, and a gear-pinion carried by the hub-casing and meshing with the said pinions, and a sprocket-wheel rigidly mounted upon the shaft between the hub-casing and the stationary-plate, and a tie-rod passing through said tubular shaft, and clamping nuts engaging the opposite ends of said tie-rod, and bearing against the outer sides of the stationary plate and the stationary casing, substantially as set forth.

## 504,169. AUTOMATIC BRIDGE-GATE. ABRAHAM H. MYERS, Sterling, Ill. Filed Jan. 13, 1893. Serial No. 458,206. (No model.)



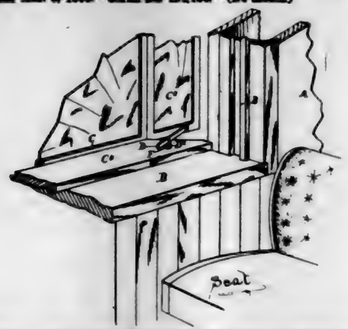
*Claim.*—1. In combination with the pivoted draw A, provided with a shoe 1 and wheel 3, the approach C, provided with a series of vertically reciprocating bars D arranged in separate ways along the inner face of said approach, the levers E provided with weights 9 and apices 5 slightly beyond their central pivot, and a pitman F connecting the unweighted end of levers E with the bars D, respectively; substantially as shown, and for the purpose described.

2. In combination with a suitable approach, a bridge draw, a series of vertical bars D independently seated, in suitable ways in the bridge face of said approach, and weighted levers E adapted to separately raise said bars, said draw A being provided with shoe 1, plank B, and wheel 3, adapted to separately depress said bars; substantially as shown, and for the purpose described.

3. In an automatic bridge guard, the combination of a series of vertical bars B, adapted to reciprocate vertically in the face of said approach, levers E suitably fulcrumed on the face of said approach, and pivotally connected at one end to the bar D, and provided at the opposite end with weights 9, and provided centrally, respectively, with apex 5 located slightly at the bar D side of the fulcrum 8 of said lever, and a draw A provided with means for forcing downward, and holding down said bars D, by pressure upon the apices 5; substantially as shown and for the purpose described.

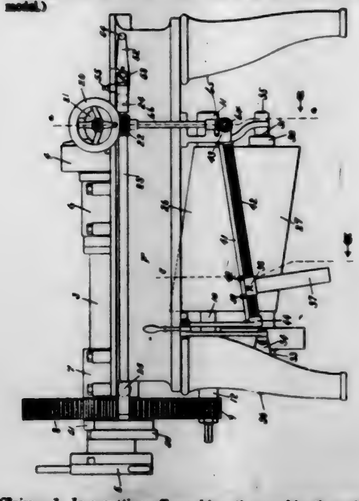
4. In an automatic bridge guard, the combination of a series of vertical bars D seated in vertical ways in the face of the approach, and levers E pivoted about centrally, and provided at one end with the weight 9, and pivotally connected at the other end to the bars D, whereby said weighted end forces the bar D upward when the draw is open; substantially as shown and for the purpose described.

**504,170. CAR-WINDOW.** EDWARD P. PHELPS, Scranton, Iowa. Filed Mar. 6, 1893. Serial No. 464,130. (No model.)



*Claim.*—An improved dust proof car window comprising a frame B having a sliding sash $B^2$, an auxiliary frame C having outwardly swinging hinged sashes or frames $C^2$, levers D pivoted to the lower ends of said frames $C^2$ to extend inward through loops $D^2$ projecting upward from a closed bottom $C^3$ fixed to the car and the frame C, and springs F connected with said loops, all arranged and combined to operate in the manner set forth for the purposes stated.

**504,171. MACHINE FOR CUTTING OFF BARS OF METAL.** FRANCIS A. PRATT, Hartford, Conn., assignor to the Pratt & Whitney Company, same place. Filed Jan. 23, 1893. Serial No. 459,417. (No model.)

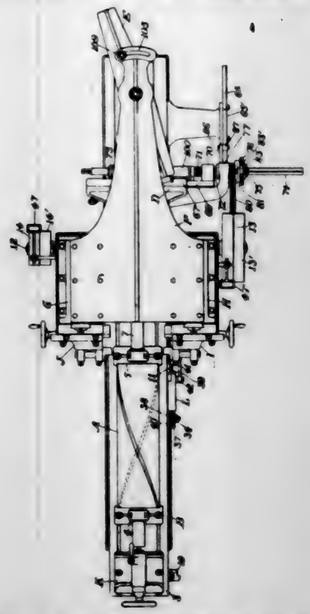


*Claim.*—1. In a cutting-off machine, the combination with the frame, the main spindle and tool-carriage, of a speed-changing driving-mechanism, comprising a conical-pulley supported in stationary bearings on the frame, and an oppositely-disposed conical-pulley supported in bearings upon an independent frame pivotally-supported by the frame of the machine, a driving-band, a band-shifter journaled at its ends in the frame and engaging the band for moving it longitudinally of the pulleys, and a speed-regulating-mechanism, comprising a feed-screw in engagement with the tool-carriage a bevel gear secured to said screw, a bevel gear secured to the band-shifting-screw, and interposed speed-regulating-gearing in direct connection with said bevel gears, substantially as and for the purpose described.

2. In a cutting-off machine, the combination with the frame, the main spindle and with a tool-carriage, of a speed-changing-driving-mechanism operatively connected for driving the spindle, and comprising two oppositely-disposed conical-pulleys, one of which is supported in stationary bearings in the frame, and the other of which is adjustably-supported with relation to said frame, a weighted independent frame having bearings which support the adjustable conical-pulley, and pivoted at one side of the pulley-bearings to the frame of the machine, and having means whereby the relative positions of the pulleys may be changed, a driving-band intermediate to said pulleys, a band-guide for shifting the band longitudinally upon the pulleys, a feed-mechanism for operating the tool-carriage, and actuating-mechanism operatively connecting the tool-carriage and band-guide whereby said carriage and guide have corresponding movements substantially as described.

3. In a cutting-off machine, the combination with the work-holding-spindle, of the tool-carriage and its cutting-off tool, the speed-changing-driving-mechanism operatively connected for driving the spindle and comprising speed-regulating elements substantially as described, the tool-setting and supporting-gage upon said carriage underneath the cutting-off tool to enable the tool to be set in proper relation to the coincident movements of the tool-carriage, and speed-changing-mechanism, and connecting mechanism intermediate to the tool-carriage and speed-regulating element, whereby the position of the tool on the carriage may be maintained in proper adjustment to, and coincide in its movements with, the carriage and feed-changing-mechanism, substantially as described.

**504,172. ROLL-GROOVING MACHINE.** FRANCIS A. PRATT and JOHN JOHNSTON, Hartford, Conn., assignors to the Pratt & Whitney Company, same place. Filed May 17, 1893. Serial No. 474,567. (No model.)



*Claim.*—1. In a roll grooving machine, the combination with the main framework and with the work-carrying table sliding thereon, of an overhanging-arm, a traversing-bar pivotally supported and adjustably-secured to and under said arm, the work-actuating shaft carried on the table, the worm-wheel on said shaft, the sliding worm engaging said worm-wheel, means for sliding the worm by engagement with the traversing bar, and means for intermittently revolving the worm, substantially as described.

2. In a roll grooving machine, the combination with the main-frame having the side pillars, and with the table sliding on said frame, of an overhanging arm secured to pillars and extending rearwardly therefrom, the traversing-bar pivoted to and under said arm, the work-actuating shaft and mechanism for rotating said shaft supported between the traversing-bar and table and in engagement with said bar and shaft, substantially as described.

3. In a roll grooving machine, the combination with the frame B, the sliding table 3 thereon and work-operating shaft 7, of an overhanging-arm secured to the frame having a bearing for pivotally supporting a traversing-bar and having the radially slotted bearing 106, the grooved traversing-bar E pivoted to said overhanging-arm and having adjustable connection with the bearing 106, and mechanism, substantially as described, interposed between the bar E and table 3, and having a sliding connection with the bar E and shaft 7, all constructed and arranged substantially as described to impart a rotary movement to said shaft, substantially as and for the purpose specified.

4. In a roll grooving machine, the combination with the frame B, sliding table 3 and over-reaching arm F supported upon pillars or uprights secured to the frame B, of the slotted traversing-bar E pivotally and adjustably secured to the under side of the arm F; the block D having the bearing 8 therein; the worm-wheel 57, the hub of which is supported in the bearing 8; the splined shaft 7 supported in said hub; the worm 71 supported in bearings upon the traverser or sliding block 69 supported in slides upon a block D; a stud or block 102 secured to the said traverser as shown and having a sliding bearing in the groove in the traversing-bar, arranged as described to impart a rotary motion to the shaft 7, and mechanism connected with the shaft 74 and table to impart an intermittent rotary movement to the shaft 7 and connected roll, all substantially as, and for the purpose described.

5. In a roll grooving machine, the combination with the frame B and sliding table thereon, of the overhanging arm F; the slotted traversing-bar pivotally and adjustably secured thereto; the block D secured to the bed, the splined shaft 7 having a worm-wheel thereon supported in a bearing in the block D; the worm 71 supported in bearings in the traverser 69 sliding in guides transversely secured to the block D; the sliding connection 102 between the traversing-bar and traverser, and a pawl and ratchet mechanism secured to the end of the worm-shaft 74, and the devices to impart an intermittent rotary motion to the ratchet and worm-shaft, substantially as, and for the purpose described.

6. In a roll grooving machine, the combination with the frame B, sliding table 3 and the transverse worm-shaft, arranged as described, of a mechanism to impart an intermittent rotary movement to said shaft, comprising a spring-actuated toothed sector pivotally-secured to a stud or shaft fixed to the table; a pinion loosely mounted upon a sleeve secured to the worm-shaft in mesh with said sector; a pawl supported upon an arm fixed to the said pinion; a ratchet-wheel fixed to the sleeve secured to the said worm shaft and engaged by said pawl; a lever secured to, or forming a part of, the sector, and a plate secured to the frame having an inclined face to lift the sector-lever and impart a rotary motion to the worm-shaft, substantially as described.

7. The combination with the pinion 81 and with a ratchet mechanism secured to the worm-shaft, of the toothed sector loosely mounted upon a shaft secured to the table and having a spiral-spring secured at one end to the sector and at its other end to the shaft 84, and adapted to impart a return movement to the sector after it has been turned to rotate the shaft 74, substantially as and for the purpose described.

8. In a roll-grooving machine, the combination with the main frame-work, and with the work-carrying table sliding thereon, of the overhanging arm, the traversing-bar supported under said overhanging arm and adjustable thereon, the work-actuating shaft carried on the table, the worm-wheel on said shaft, the sliding worm engaging said worm-wheel, means for sliding the worm by engagement with said traversing-bar, and means for intermittently revolving the worm, substantially as described.

9. In a roll grooving-machine, the combination with the main frame and the work-carrying-table sliding thereon, and with the work-actuating-shaft, of the overhanging-arm, the grooved traversing-bar pivotally and adjustably secured to said overhanging-arm, and mechanism intermediate to said traversing-bar and work-actuating-shaft, adapted for rotating said shaft at varying speeds, and mechanism for reciprocating the table, substantially as and for the purpose described.

10. In a roll-grooving-machine, the combination with the main framework and the work-carrying table sliding thereon, and with the work-actuating-shaft, of the overhanging arm, the traversing bar pivotally supported under said arm and adjustably secured thereto, intermediate mechanism movably connected with said traversing-bar and work-holding-shaft adapted for imparting a continuous rotary movement to said shaft during the longitudinal reciprocation of the table, for the purpose of forming grooves of uniform pitch in parallel lines, and independent operable mechanism in connection with the shaft-turning-mechanism aforesaid, and with the sliding table for intermittently rotating the work-holding-shaft for spacing the grooves formed in the work, substantially as described.

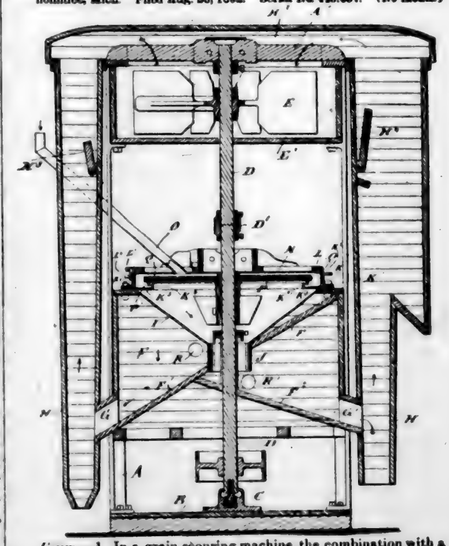
11. In a roll-grooving-machine, the combination with the main framework and the work-carrying table sliding thereon, of an actuating shaft journaled in suitable bearings and having a driving-wheel thereon, a traversing-bar pivotally and adjustably supported above said shaft, a rack intermediate to said traversing bar and driving-wheel, and in position for rotating said shaft during the reciprocations of the table, all substantially as and for the purpose described.

12. In a roll-grooving-machine, the combination with the table sliding upon the framework, and with the mechanism for imparting longitudinal movement to said table, of a longitudinally movable work-actuating shaft having a driving-wheel thereon and supported in suitable bearings; an adjustable traversing-bar pivoted above said shaft with its pivotal point in alignment therewith, a worm intermediate to and movably connected with said wheel and traversing bar, and supported in bearings so as to have longitudinal movement transverse to the axis of the shaft, substantially as and for the purpose described.

13. In a roll-grooving-machine, the combination with the main framework, and the table sliding thereon, of a work-actuating-shaft journaled in bearings so as to permit of longitudinal adjustment, and having a driving-wheel thereon, a traversing-bar adjustably carried by an overhanging arm above said shaft, a worm-rack intermediate to, and movably connected with, said driving-wheel and traversing-bar, and capable of movement transverse to the axis of said shaft and longitudinally of said traversing-bar, for continuously rotating said shaft, substantially as described, and mechanism connected with the shaft of said worm-rack, in position for engagement with the main frame of the machine for independently and intermittently rotating said worm-rack, substantially as and for the purpose described.



**504,173. GRAIN-SCOURING MACHINE.** PETER PROVOST, Menominee, Mich. Filed Aug. 20, 1892. Serial No. 443,637. (No model.)



*Claim.*—1. In a grain scouring machine, the combination with a casing, and a conical sieve carried thereby, of an annular groove or trough extending over the sieve, and having openings in its bottom, a revolving scouring disk projecting over and discharging into said groove or trough, and a stationary scouring disk above the revolving disk and through which the grain is discharged upon the revolving disk, substantially as described.

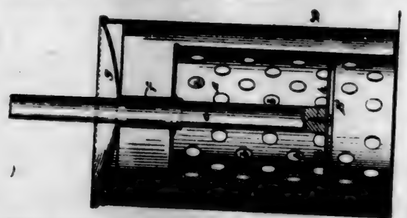
2. In a grain scouring machine, the combination with a revolving disk carrying a woven wire scouring disk, of a ring provided with annular interior flanges forming a groove into which discharges the said scouring disk, the flanges being formed with slots and openings for the passage of the grain, a fixed wire disk supported on the top of the said ring, and a second ring bolted to the first-named ring and carrying the said second wire disk, substantially as shown and described.

3. In a grain scouring machine, the combination with a revolving disk carrying a woven wire scouring disk, of a ring provided with annular interior flanges forming a groove into which discharges the said scouring disk, the flanges being formed with slots and openings for the passage of the grain, a fixed wire disk supported on the top of the said ring, a second ring bolted to the first-named ring and carrying the said second wire disk, and downwardly extending projections arranged on the said second ring to engage the first-named ring, substantially as shown and described.

4. In a grain scouring machine, the combination with the ring K provided with the annular interior flanges $K^3$ and $K^4$, of which the flange $K^3$ is provided with the slots $K^5$ and the opening $K^6$, of the ring L bolted to the ring K and provided with a spider $L^3$, lugs $L^4$ projecting from the said ring, and a scouring disk N made of woven wire and secured on the under side of the said ring, substantially as shown and described.

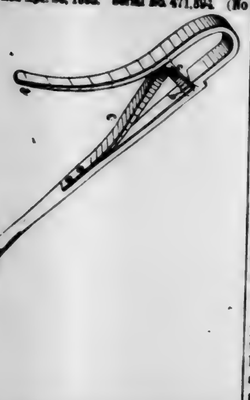
5. In a grain scouring machine, the combination with the ring K provided with the annular interior flanges $K^3$ and $K^4$, of which the flange $K^3$ is provided with the slots $K^5$ and the opening $K^6$, of the ring L bolted to the ring K and provided with a spider $L^2$, lugs $L^4$ projecting from the said ring, a scouring disk N made of woven wire and secured on the under side of the said ring, and a solid disk P carrying the woven wire disk Q located below the disk N and the annular flange P' projecting from the under side of the said disk P, substantially as shown and described.

**504,174. CHURN.** HIRAM F. QUIGLEY, Atoka, Ind. Ter. Filed Aug. 24, 1892. Serial No. 443,995. (No model.)



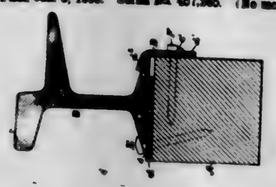
*Claim.*—A churn comprising the outer cylinder D, the inner foraminated cylinder having a central aperture in its upper end and a horizontal butter raising flange extending from the edge of its lower open end to the inner wall of the outer cylinder, the removable cover *g* having a central guide *f* registering at its lower end with the aperture in the upper end of the inner cylinder, and a dasher within the inner cylinder having a shaft extending up through the tube *f* and cover *g*, substantially as set forth.

**504,175. SHEPHERD'S CROOK.** ROBERT L. REDS and HENRY WEIDMAN, Poplar, Mont. Filed Apr. 26, 1893. Serial No. 471,894. (No model.)



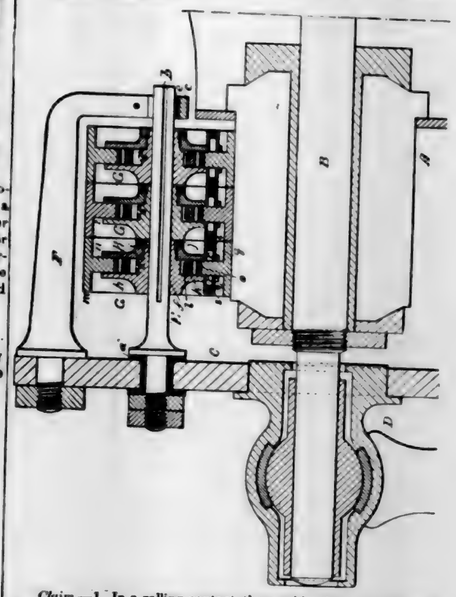
*Claim.*—As a new article of manufacture, a shepherd's crook having a smooth inner surface at its crook portion, and a curved spring secured at one end to the shank of the crook and extending forwardly and normally pressing against the smooth inner surface of the crook portion, the extreme free end of such spring being reduced and offset and extending within an orifice in the shank, substantially as described.

**504,176. STRINGER-PLATE.** EDWARD SAMUEL, Philadelphia, Pa., assignor to the William Wharton, Jr., & Company, Incorporated, same place. Filed Jan. 5, 1893. Serial No. 457,965. (No model.)



*Claim.*—The combination of the rail having a base flange, a stringer slightly wider than the base of the rail, a stringer plate mounted between the rail and the stringer and having a portion extending down on one side of the stringer, with lips at the junction of the vertical and horizontal portions of the plate, said lips extending over one edge of the base flange of the rail, one or more spike holes in the opposite end of the horizontal portion of the plate adapted to receive a spike which passes into the stringer and clamps the rail thereto, with one or more spike holes in the vertical or side portion adapted to receive a spike or spikes which enter the side of the stringer, substantially as described.

**504,177. BRUSH FOR DYNAMOS OR ELECTRIC MOTORS.** FREDERICK H. SANDBERG, St. Louis, Mo. Filed Jan. 7, 1893. Serial No. 457,594. (No model.)



*Claim.*—1. In a rolling contact, the combination of a stationary stud, a pair of collars attached to the stud, a spring-pressed ring surrounding the stud, a wheel rim provided with a web received between the collars, and a series of rollers inserted between the web and the ring, substantially as specified.

2. In a rolling contact, the combination of a stationary stud, a pair of collars attached to the stud, a spring-pressed ring surrounding the stud, a wheel rim provided with a web received between the collars, a series of rollers inserted between the web and the ring, and spring-pressed contact pieces carried by the collars, substantially as specified.

3. In a commutator brush, a contact wheel of conductive material provided with a hardened steel lining, bearing rollers rolling in contact with the lining, and a support for the wheel and rollers, substantially as specified.

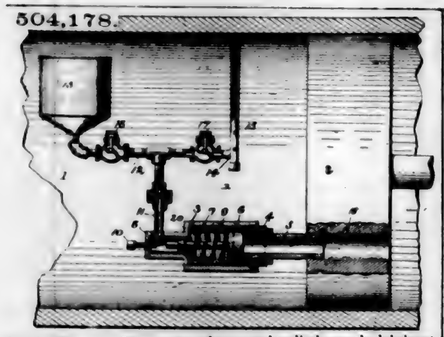
**504,178. LUBRICATOR.** OWEN T. SNYDER, Columbus, Ohio. Filed Feb. 23, 1893. Serial No. 463,474. (No model.)

*Claim.*—1. The combination of a cylinder, a fluid pressure piston having an opening or passage 18 communicating with the pressure side of the piston, a pump connected with said passage and moving with the piston constructed to be operated by compressed fluid passing through the said opening and having a discharge orifice or orifices arranged to feed the lubricant onto the interior side of the cylinder in advance of the piston and at or near the beginning of its outward stroke, substantially as described.

2. The combination of a cylinder, a fluid pressure piston having an opening or passage 18 communicating with the pressure side of the piston, a pump connected with said passage and moving with the piston constructed to be operated by compressed fluid passing through the said opening, a reservoir 13 for lubricant connected with the induction port of the pump, and a perforated spray pipe 15 connected with

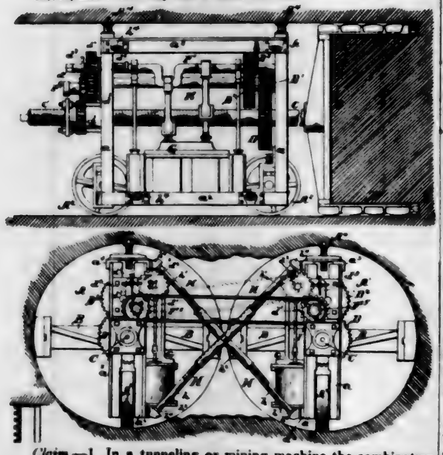


**504,178.**



the eduction port of the pump and arranged to discharge the lubricant onto the interior side of the cylinder in advance of the piston and at or near the beginning of its outward stroke, substantially as described.

**504,179. TUNNELING OR MINING MACHINE.** REGINALD STARLEY, Nuneaton, England. Filed Sept. 5, 1890. Serial No. 364,060. (No model.) Patented in England Feb 28, 1890, No. 3,595; in New South Wales June 27, 1891, No. 3,062; in Queensland June 29, 1891, No. 1,363; in New Zealand July 6, 1891, No. 5,078; in Canada Dec. 16, 1891, No. 37,971, and in Germany Feb. 5, 1892, No. 60,237.



*Claim.*—1. In a tunneling or mining machine the combination with a bed frame of two independent sets of cutters, an engine on said bed, and means for connecting the said cutters independently of each other with the said engine and disconnecting them therefrom, substantially as set forth.

2. In a tunneling or mining machine the combination of two independent sets of cutters, the bed or main frame, the two independent cutter carriers mounted upon said bed, the two independent trains of gearing for advancing the said cutter carriers and means substantially as set forth for rotating said cutters, substantially as described.

3. In a tunneling or mining machine the combination of the two independent sets of cutters, the bed or main frame, two independent cutter carriers mounted upon the said bed, two independent trains of gearing for rotating the said two cutter carriers, and means substantially as set forth for moving the cutter carriers relatively to the bed, as described.

4. In a tunneling or mining machine the combination of two independent sets of cutters, two advancing and receding carriers for said sets of cutters, respectively, a bed frame comprising two parts each of which supports one of the aforesaid carriers, a train of cutter actuating gear on each of said parts of the bed, a train of cutter advancing gear on each part of said bed, and an engine on each part of said bed adapted to be independent of that on the other part, substantially as set forth.

5. In a tunneling or mining machine the combination of the two independent sets of cutters, the two independent cutter carriers, the two independent sets of cutter-actuating gears, and the bed or main frame formed in two parts, each part having secured to it one of the said cutter carriers and trains of gearing, and adjustable connecting bars or braces for joining the two parts of the said bed or main frame, substantially as set forth.

6. In a tunneling machine, the combination of a main frame or bed, an engine or driving mechanism, cutter-rotating gearing, two sets of independently rotating tunnel-forming cutters, and cutter carriers which are adjustable laterally toward and from each other whereby the width of the cut can be modified, substantially as set forth.

7. In a tunneling or mining machine the combination of the two adjacent sets of independent cutters which form two horizontal cylindrical kerfs, the cutter carriers, and the main frame having the two parts or sections respectively supporting the said cutter carriers, said sections of the bed, and said cutter carriers being adapted to pass into the said kerfs, means substantially as described for connecting together the two parts of the bed or frame which support the cutter carriers, two independently acting cutter actuating mechanisms on said frame sections, respectively, and two independently acting cutter-advancing mechanisms on said frame-sections, respectively, substantially as set forth.

8. In a tunneling or mining machine, the combination of the two sets of cutters, the separate cutter carriers, and the bed frame which supports the said carriers and cutters formed of two parts adapted to be adjustably connected together, substantially as set forth, whereby one can be moved longitudinally forward or back, relatively to the other, as described.

9. In a tunneling or mining machine, the combination of the two sets of cutters, the separate cutter carriers, and the bed frame which supports both the said sets of cutters and said cutter carriers formed in two parts adapted to be adjustably connected together, at their upper parts as described.

10. In a tunneling or mining machine, the combination of the two sets of cutters, the separate cutter carriers, and the bed frame which supports the said cutters and cutter carriers, and formed in two parts adapted to be adjustably connected together at the bottom substantially as set forth, whereby the bottom parts thereof can be placed farther apart or closer together, as described.

11. In a tunneling or mining machine the combination with the two independent sets of cutters, the two carriers for said sets of cutters, the two sets of gearing for rotating said carriers, the two sets of gearing for advancing said carriers, the independent engines for driving the said sets of cutters, and the frame or bed connected to both the said cutter carriers and having two parts adjustable in relation to each other, substantially as set forth.

12. In a tunneling or mining machine, the combination with the bed or main frame, of two cutter carriers thereon adapted to advance and recede relatively to the bed and mounted in substantially the same horizontal plane, two sets of cutters supported by the said carriers and arranged to form two horizontal cylindrical kerfs adjacent to each other, of such dimensions as to adapt them to receive the entire machine, and two independently acting cutter-rotating mechanisms as described.

13. In a tunneling machine, the combination of two tunnel-forming cutters, two cutter-carriers, two sets of cutter-rotating devices, two engines or motors, a bed or frame which supports all of the aforesaid parts and is divisible centrally and longitudinally into two main parts, each part supporting a cutter, a cutter-rotating mechanism and an engine, and two sets of cutter-advancing devices, one on each of said parts of the main frame, whereby the cutters are moved forward, while the bed is stationary, substantially as set forth.

14. In a tunneling or mining machine, the combination of the bed or main frame two independent sets of cutters adapted to advance relatively to the main frame, the engine, and the two trains of gearing for rotating the two sets of cutters respectively, and two adjustable connecting mechanisms for throwing one or both of the said trains of cutter actuating gearing out of connection with the engine, substantially as set forth.

15. In a tunneling machine, the combination of two tunnel-forming cutters, two cutter-carriers, two sets of cutter-rotating devices, two engines or motors, a bed or frame which supports all of the aforesaid parts and is longitudinally separable from top to bottom in two parts, and detachable bracing or tie-rods adapted to be secured to the tops and the bottoms of the said separable parts of the frame, each of said parts carrying one of said cutters its rotating mechanism, and an engine or motor, substantially as set forth.

16. The combination of the cutter, the threaded feed shaft, the rotatable nut, the two gliding, intermeshing, continuously rotating, gear wheels connected to the power shaft for driving the nut, and means for sliding them together, into and out of the operative position substantially as set forth.

17. The combination of the cutter, the threaded feed shaft, the rotatable nut, the intermeshing wheels for rotating said nut, a plate

or securing said wheels in permanent relation to each other, and a threaded rod engaging with said plate for shifting said wheels, substantially as set forth.

18. The combination of the cutters, the threaded feed-shaft, the rotatable nut, the two sliding, intermeshing, continuously-rotating gear wheels for driving the nut, means for locking the nut against rotation, the threaded shaft for sliding the said wheels, and the sliding power-transmitting chain-wheel detachably connected to the said gear-wheels, substantially as set forth.

19. The combination of two independent cutters, two trains of cutter-driving gearing, two engines connected respectively to said trains of gearing, the chain for transmitting power from one train of gearing to the other, and means for disconnecting the chain from either or both of said trains of gearing, substantially as set forth.

20. The combination of the main frame or bed, the two cutting mechanisms respectively supported upon the side parts of the said frame or bed, the two independent sets of cutter-actuating devices respectively arranged at the sides of the bed, the transversely arranged power-shaft, and means for connecting either or both the sets of cutter actuating devices with the power shaft, substantially as set forth.

21. In a machine for forming two adjacent or intersecting tunnels of a height greater than that of the machine, the combination of a main frame extending from the center of one, to the center of the other of said tunnels, means for holding said frame stationary, two tunnel forming cutters in front of the main frame and rotating in planes transverse to the axes of the tunnels, and advancing when at work relatively to the frame, the engine on said frame, mechanism driven by the engine for advancing the cutters, and mechanism for rotating them, the said parts being arranged substantially as described, whereby the cutters while advancing from the frame are mutually relieved from reactionary and side thrust, as set forth.

22. In a machine for forming two adjacent or intersecting tunnels, the combination of the main frame, the clamping devices for securing the frame stationarily in place, the two sets of cutters, detachably connected to the engine the two cutter carriers advancing longitudinally relatively to the main frame, the gearing for rotating the said cutters, the gearing for advancing them, and the power shaft and the engine both secured to the main frame, and situated between the said cutter carriers, substantially as set forth.

23. In a tunneling or mining machine, the combination of the two independent cutters, the cutter carrying longitudinally advancing shafts permanently parallel to each other, the gear for rotating said shafts, the two independent trains of gear for advancing said shafts and a power-shaft intermittingly connected to either or both of said trains of gear, substantially as set forth.

24. In a tunneling or mining machine, the combination of two screw shafts, two sets of cutters carried thereby, independent bearings for said screw shafts, a main frame holding said bearings rigidly in relation to each other, and two independent sets of gearing supported on said frame for driving said cutters, substantially as set forth.

25. In a tunneling or mining machine, the combination of the two cutters, the frame behind the cutters, the two parallel cutter carriers on said frame, the engine, and the power-shaft situated between the cutter carriers and detachably connected to either or both the cutter carriers, substantially as set forth.

26. In a tunneling or mining machine, the combination of two independent sets of cutters, a bed frame supporting the said cutters permanently in the same relations to each other, an engine on said bed, two independent trains of gear for advancing the bed, and means substantially as set forth for connecting the engine therewith.

27. In a tunneling or mining machine, the combination of the two cutters, the main frame, the two cutter carriers, the two intermediate shafts respectively between said power shaft and the cutter carriers, and both driven by said power-shaft, and two clutches for disconnecting the cutter carriers from the power shaft independently, substantially as set forth.

28. The combination of two independent cutters, the two cutter carriers, the main frame, the transverse power-shaft and the longitudinal intermediate shafts both driven by the power shaft, substantially as set forth.

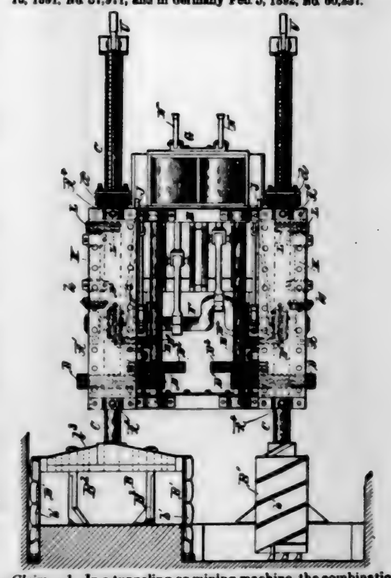
29. In a tunneling or mining machine, the combination of the bed or main frame, the engine mounted thereon, the two cutters or sets of cutters, and the two clutches, whereby the engine can be connected with both of the cutters or either one separately, substantially as set forth.

30. The combination with the two independent cutting mechanisms and the two independent trains of cutter actuating gearing, of the power shaft, the engine, and two clutches respectively interposed between the said power shaft and the trains of actuating gearing, substantially as set forth.

31. In a tunneling or mining machine, the combination of the two independent cutter mechanisms, the main frame or bed having the side parts respectively supporting the said cutting mechanisms and the connecting devices rigidly secured to the said side parts, the two trains of gearing for driving the said cutting mechanisms, respectively, and the power shaft intermittingly connected to either or both of the said trains of cutter actuating gearing, substantially as set forth.

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**504,180. TUNNELING OR MINING MACHINE.** REGINALD STANLEY, Nuneaton, England. Original application filed Sept. 5, 1890, Serial No. 364,060. Divided and this application filed July 7, 1891. Serial No. 398,690. (No model.) Patented in England Feb. 28, 1890, No. 3,595; in New South Wales June 27, 1891, No. 3,082; in Queensland June 29, 1891, No. 1 363; in New Zealand July 6, 1891, No. 5,078; in Canada Dec. 16, 1891, No. 37,971, and in Germany Feb. 5, 1892, No. 60,237.



*Claim.*—1. In a tunneling or mining machine, the combination of the cutter, the cutter rotating gearing, the shaft at one end of said frame for driving said gearing, the nut, the shaft at the other end of said frame for rotating said nut and a transverse shaft adapted to drive both of the aforesaid shafts, substantially as set forth.

2. In a tunneling or mining machine, the combination of a cutter, a cutter carrier, a main frame, a gearing at the front end of said main frame for rotating the cutter, a gearing at the rear end of said frame for advancing the cutter or the frame, and a power shaft for driving both gearings and arranged transversely of the frame and below the cutter carrier, substantially as set forth.

3. In a tunneling or mining machine, the combination of the cutter, a cutter carrier, a main frame, cutter rotating gearing, gearing for advancing the cutters or the frame, a shaft for driving the first aforesaid gearing, a shaft for driving the last aforesaid gearing, both of said shafts being below the cutter carrier, one on one side of the central vertical longitudinal plane of said carrier, and the other on the other side thereof, the power shaft, and the engine, substantially as set forth.

4. In a tunneling or mining machine, the combination of the cutter, the cutter carrier, the main frame extending above the cutter carrier, the clamping devices for securing the frame to the roof, the nut engaging with the cutter carrier, and the nut rotating shaft and gearing located below the cutter carrier, substantially as set forth.

5. In a tunneling or mining machine, the combination of a cutter, a cutter carrier, a main frame, cutter rotating gearing, gearing for advancing the cutter or the frame, a power shaft, and a sliding wheel adapted to engage with either of said gearings, substantially as set forth.

6. In a tunneling or mining machine, the combination of the cutter, the cutter carrier, the main frame, a shaft for transmitting rotary motion to the cutter, a shaft on a line other than that of last said shaft for imparting longitudinal motion to the cutter or main frame, and a sliding wheel for driving said shafts and mounted on lines between the aforesaid lines, substantially as set forth.

7. In a tunneling or mining machine, the combination of the two



cutting mechanisms, the two longitudinally advancing cutter carrying shafts, the stationary frame having two side parts, wherein are respectively mounted the said cutter carrying shafts, and an intermediate part bolted to the aforesaid parts, substantially as set forth.

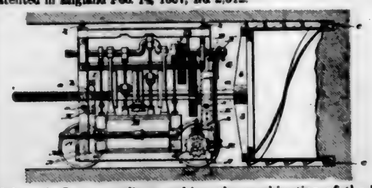
8. In a tunneling or mining machine, the combination of the two independent vertically revolving cutters, the bed, the engine on the bed, the independent trains of gear for rotating the cutter carriers, the independent trains of gear for advancing the cutter carriers, and the adjustable wheels driven by the engine and adapted to engage alternately with the said two trains of gear, substantially as set forth.

9. The combination of the cutters, the cutter carriers, the transverse power shaft, the intermediate shafts situated longitudinally of the machine and above the power shaft, whereby the power shaft can be placed relatively low, and the engine situated on the rear of the main frame in the horizontal plane of the power shaft, substantially as set forth.

10. In a tunneling or mining machine, the combination of the bed, the cutter, the cutter carrier, the engine on the bed, the train of gear for rotating the cutter-carrier, the train of gear for advancing the cutter-carrier, and the sliding or adjustable wheel driven by the engine and adapted to engage alternately with the said two trains of gear, substantially as set forth.

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**504,181. TUNNELING-MACHINE.** REGINALD STANLEY, Nuneaton, England. Filed Dec. 11, 1891. Serial No. 414,709. (No model.) Patented in England Feb. 14, 1887, No. 2,312.



*Claim.*—1. In a tunneling machine, the combination of the bed frame, means for fastening the bed stationary, the cutting apparatus, the cutter frame or support advancing relatively to the bed when the cutters are at work, the engine on the machine detachably connected to the cutters, the supporting wheels for the bed, and means connecting said engine to said wheels, substantially as set forth.

2. In a tunneling machine, the combination of the bed, the cutting apparatus, the engine detachably connected to the cutters, the supporting wheels, the screws carried by the bed and engaging with the tunnel wall, and means for detachably connecting the engine to the said supporting wheels substantially as set forth.

3. In a tunneling machine, the combination of the bed, the supporting and transporting wheels for the bed, the cutters the cutter frame or support, the abutment for the thrust of the cutters when at work, the cutter rotating engine on the machine detachably connected to the wheels and the feed mechanism adapted to alternately advance the cutters and the bed frame, substantially as set forth.

4. In a tunneling machine, the combination of the bed, the cutting apparatus, the cutter frame or support movable relatively to the bed when the cutters are at work, the supporting wheels, the engine on the machine, detachably connected to the cutters and detachably connected to the wheels, substantially as set forth.

5. In a tunneling machine, the combination of the bed, the cutting apparatus, the wheels, the engine on the machine means for detachably connecting the supporting wheels to the engine, the threaded shaft and nut for advancing the cutters and adapted to be thrown out of action in relation to the cutter substantially as set forth.

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**504,182. BOOKCASE.** JAMES STIMSON, Watsonville, Cal. Filed Oct. 27, 1892. Serial No. 450,099. (No model.)



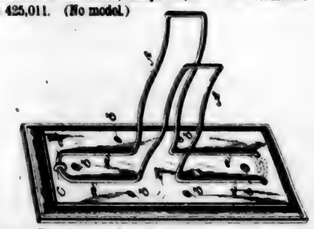
*Claim.*—1. A book case or stand, comprising a base having its top supported some distance above the object upon which the base rests and provided with a transverse slot at each end, and L shaped clamping arms having their lower members of equal width throughout and projecting through the slots of the base, the said lower members being provided with offsets or steps, substantially as described.

2. A book case, the same consisting of a base having slots near its ends and recesses adjacent to the slots, and angular arms pivotally located in their slots, the inner members of the arms being formed near their junction with the outer members with depressions adapted to enter the depressed surfaces in the base, as and for the purpose specified.

3. In a book case or stand, the combination, with a base provided with slots near its ends and recesses adjacent to the slots, of arms angular in cross section, one member being longer than the other, the shorter member of each arm being introduced into the slots in the base, the inner members of the said arms being also provided with a depression and a step near the depression, the depressed surface of the arms being adapted to engage with the depressed surfaces of the base, substantially as and for the purpose set forth.

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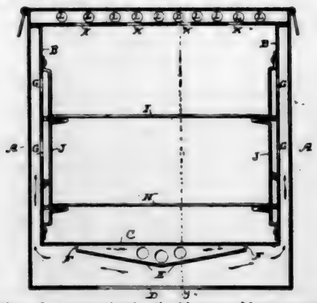
**504,183. BROOM-HOLDER.** THOMAS R. STONE, CLARENCE C. SMITH, and PRESCOTT A. SMITH, Camptown, Pa. Filed Mar. 15, 1892. Serial No. 425,011. (No model.)



*Claim.*—The herein described broom holder consisting of the support B and a single piece of wire having at its center a loop *a'* held to said support near one end thereof by a staple and the ends of the wire bent and extended in and held into said support, the said wire being formed intermediate of its two points of connection with the support with jaws A A arranged in planes parallel to each other with their outer ends turned outwardly and arms *a* extended at right angles to the said jaws in opposite directions, uncrossed and lying flat for their entire length against the outer face of said support whereby rigidity is secured and the desired torsional effect produced, substantially as herein shown and specified.

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**504,184. OVEN.** WILLIAM H. WIENTER, San Francisco, Cal. Filed May 5, 1893. Serial No. 473,140. (No model.)



*Claim.*—1. An oven having double top and bottom, and side walls with independent intervening chambers, an opening at the bottom through which heat is admitted into the bottom chamber, a diaphragm fixed in said chamber against which the heat impinges and by which it is directed into the side chambers, and the bottom of the oven protected from the direct action of the heat, openings through the inner walls of the side chambers whereby the heated air is admitted and distributed through the interior of the oven, and an independent top chamber with openings through the top of the oven, through which the heat escapes into the upper chamber, and openings in the rear of said chamber through which the heat escapes, substantially as herein described.

2. An oven having double walls forming side chambers, a double bottom through the outer portion of which heat is admitted, a diaphragm fixed in the bottom chamber and forming an independent chamber between itself and the bottom of the oven, openings leading from the external air into this independent chamber and other open-

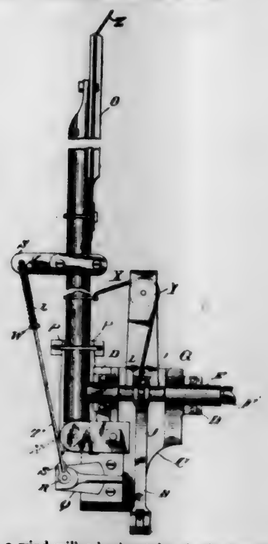
ings at the sides of said chamber through which the air escapes and enters the side chambers of the oven, and one or more series of openings from the side chambers into the oven, openings through the top of the oven into an independent top chamber, and openings at the rear of said chamber through which the heat escapes, substantially as herein described.

3. In an oven, connected side and bottom chambers and an independent top chamber, a double series of openings from the side chambers into the oven, and openings by which the heat escapes from the oven into the top chamber, horizontal removable racks, with supporting standards by which the lowermost rack is supported above the bottom of the oven, and the second one intermediate between the upper and lower series of side openings, a hole in the bottom of the bottom chamber through which heat is admitted, a diaphragm by which the heat is diverted into the side chambers of the oven, an independent chamber formed between said diaphragm and the bottom of the oven, holes opening from the exterior into said chamber for the admission of air, and openings upon each side through which the heated air escapes from said chamber into the side chambers of the oven, substantially as herein described.

4. In an oven, a chamber beneath the bottom into which the heat is introduced, and a supplemental chamber between the heat opening and the oven bottom, and openings from the exterior into the supplemental chamber for the admission and circulation of air within said chamber, substantially as herein described.

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**504,185. WINDMILL.** EDWARD WILLIAMS, Dubuque, Iowa. Filed Aug. 21, 1891. Serial No. 403,328. (No model.)



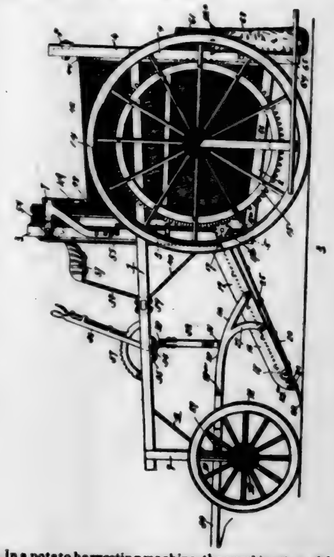
*Claim.*—In a wind mill, a horizontal main shaft carrying a wind wheel; a horizontally mounted vane, pivotally mounted on the same horizontal plane with, but to one side of said main shaft; a supporting rod, secured to said vane, and to a point above the pivot of the vane, but farther removed from the main shaft than the vane, substantially as described.

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**504,186. POTATO-HARVESTER.** HENRY C. WILSON, Edwardsville, Kans. Filed Sept. 23, 1892. Serial No. 446,705. (No model.)

*Claim.*—1. A potato harvesting machine, comprising a wheeled frame, an opening plow and elevator, a conical separating cylinder, and a frame composed of upper longitudinal bars extending and converging from the rear of the machine to the forward axle, lower bars correspondingly converging, extending below the cylinder, cross bars, and vertical end bars for connecting the longitudinal bars and for supporting the friction rollers and shafting, and a rear axle secured to the lower longitudinal bars midway of the length of the cylinder, substantially as described.

2. A potato harvester, comprising a wheeled frame, the conical horizontally revolving separating cylinder, an elevator driven and supported by a shaft at its upper end, geared to the wheel and carrying a sprocket wheel, a chain connecting said wheel with a sprocket wheel upon an upper parallel shaft, and geared to a sprocket wheel carrying a chain which encircles the separating cylinder and gears therewith, substantially as described.



3. In a potato harvesting machine, the combination with a wheeled frame having a rotatable separator, of an elevator-frame having its rear end adjacent to the front open end of the rotatable separator and pivoted to operate vertically, and an arm or lever pivotally connected to the front axle, and diverging link-bars secured to the elevator frame, and pivotally connected to the arm or lever, and means to lift the rear end of the arm or lever to raise the elevator-frame, substantially as set forth.

4. In a potato harvesting machine, the combination with a wheeled frame having a rotatable separator, of an elevator frame having its rear end adjacent to the front open end of the rotatable separator and pivoted to operate vertically, and an arm or lever pivotally connected to the front axle, and diverging and curved link-bars secured to the elevator-frame and pivoted at their front ends to and about midway of the arm or lever, and a cranked rock-shaft, and a vertical link pivotally connecting the rear end of the arm or lever and the crank of the rock-shaft, and means to operate and hold said rock-shaft at any point desired, substantially as set forth.

5. A potato harvester, comprising a rotary conical separating cylinder, supported with its axis horizontal and its expanding rear end inclined downwardly, and a series of blades secured within the cylinder expanding spirally to the rear of the cylinder and intermediate foraminous cylinder surface for giving continuous endwise movement to the tubers, and sifting the soil therefrom, substantially as described.

6. A potato harvester, comprising the separating cylinder having annular end, or rim, bands, longitudinal strips connecting said bands, spiral blades extending from the front to the rear of the interior of the cylinder, and spiral intermediate rods equidistant from each other and from the said blades, to form a riddle for sifting the soil from the potatoes as they are carried forward by the blades, substantially as described.

7. A potato harvester, comprising the separating cylinder, having an open work casing, spiral blades extending from the forward to the rear end of the cylinder, and correspondingly curved inwardly, inclined tines, or fingers, extending inside the circles of the blades to carry off the stems, stalks, and weeds from the potatoes, substantially as described.

8. A potato harvester, comprising a wheeled frame, a revolving separating cylinder, rake fingers secured to the rear rim, or periphery of said cylinder, to project rearwardly and outwardly therefrom, and a semicircular trough supported upon the frame in the path of the rake fingers, having a discharge spout upon one side of the machine, substantially as described.

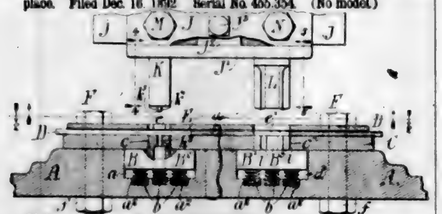
9. A potato harvester, comprising a wheeled frame, a rotatable separator mounted upon the frame, a discharge trough at the rear end of the separator, and a platform supported at the rear end of the separator, and outward of one of the drive-wheels and consisting of



a bracket 65, secured to the framework, and a bracket 66, secured to the end of the axle, and a board resting upon the horizontal arms of said brackets, substantially as set forth.

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**504,187. PUNCH FOR FORMING TONGUES IN BLANKS FOR KEY-OPENING CANS.** JOHN ZIMMERMAN and JOHN K. UNDERDOWN, Chicago, Ill., assignors to the National Key-Opening Can Company, same place. Filed Dec. 16, 1892. Serial No. 455,354. (No model.)



*Claim.*—1. A machine for forming key-opening-can blanks, comprising a pair of depressible dies formed respectively to accord with the shape of the tongue or lip of the body sheet, and also to the divergent clearing-cuts of said body sheet, and a pair of reciprocatory plungers conforming each in shape to the shape of one of the dies, substantially as set forth.

2. A machine for forming key-opening-can blanks, comprising a pair of dies one of which is formed to accord with the shape of the lip or tongue of the body sheet, and also recessed for the perforation of said lip or tongue, and the other of which is formed to accord with the divergent clearing cuts of the body sheet, and a pair of reciprocatory plungers one of which conforms in shape to the first named die and is provided with a projection to enter the recess of the die, and the other of which plungers is formed to accord with the shape of the second die, substantially as set forth.

3. A machine for forming key-opening-can blanks, comprising a pair of dies one of which is formed to accord with the shape of the lip or tongue of the body sheet, and the other of which is formed to accord with the divergent clearing-cuts of the body sheet, and a pair of reciprocatory plungers one of which conforms in shape to the shape of the first named die and has a beveled portion to raise the lip or tongue, and the other plunger of which is formed to accord with the shape of the second named die, substantially as set forth.

4. A machine for forming key-opening-can blanks, comprising a pair of depressible dies formed respectively to accord with the shape of the tongue or lip of the body sheet, and also to the divergent clearing-cuts of said body sheet, a suitably apertured and recessed framing for said dies, and a pair of reciprocatory plungers each according in shape to the shape of one of the dies, substantially as set forth.

5. A machine for forming key-opening-can blanks, comprising a pair of depressible dies formed respectively to accord with the shape of the lip or tongue of the blank, and with the clearing-cuts thereof, and a pair of reciprocatory and simultaneously movable plungers according each in shape to the shape of one of the dies, substantially as set forth.

6. A machine for forming key-opening-can blanks, comprising a bed-plate having a pair of recesses or cavities to receive the forming-dies, a top-plate overlying the bed-plate and apertured coincidently with said recesses or cavities, a face-plate overlying the top-plate and apertured coincidently with said top-plate, and a spacing-plate interposed between the top-plate and the face-plate, and spring-sustained die-carrying blocks placed within the cavities of the bed-plate, substantially as set forth.

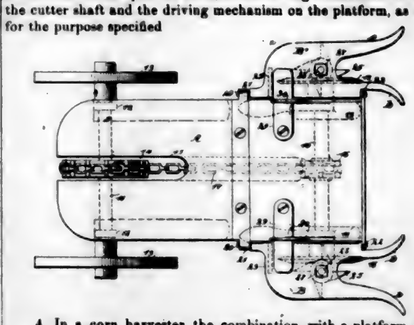
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**504,188. CORN-HARVESTER.** WARREN E. ABBOTT, East Monroe, Ohio. Filed Feb. 25, 1893. Serial No. 463,702. (No model.)

*Claim.*—1. In a corn harvester, the combination, with a table pivoted longitudinally to a side of the machine, of a rotatable cutter carried by the table and a driving gear carried by the machine and the cutter spindle, said driving gear being constructed to rotate the cutter when the table is in an essentially horizontal position, the cutter being adapted to be thrown out of gear by carrying upward the table, as and for the purpose set forth.

2. In a corn harvester, the combination, with a platform, and a table pivotally connected with a side of the platform, the table being provided with guide arms at one of its ends, of a cutter carried by the table and mounted to revolve across the space between the guide arms, a gear connected with the cutters, and a driving mechanism carried by the platform and adapted to connect with the said cutter gear, whereby the cutter may be silenced by carrying upward the table, as and for the purpose set forth.

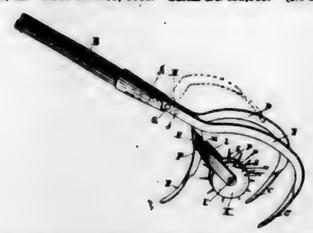
3. In a corn harvester, the combination, with a platform and a driving mechanism connected with the platform, of a pivoted table provided with guide arms between which the corn stalks are passed, a locking device carried by the platform and engaging with the table, a cutter mounted upon the table, and a driving connection between the cutter shaft and the driving mechanism on the platform, as and for the purpose specified



4. In a corn harvester, the combination, with a platform provided with front and rear axles, supporting wheels located upon the rear axle, a driving connection between the front and rear axles, driving gears mounted upon the front axle, feet projected downwardly and rearwardly from the platform near the front axle, of tables pivotally connected with the forward side portions of the platform, a locking device carried by the platform and adapted for engagement with the table, guide arms located at the forward ends of the tables, cutter shafts journaled in the tables, cutters mounted upon said shafts, and a gear connection between the cutter shafts and the driving gears of the forward axle, as and for the purpose set forth.

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**504,189. GARDEN-CULTIVATOR, &c.** GEORGE ADAIR, Rock Falls, Ill. Filed Nov. 19, 1892. Serial No. 452,595. (No model.)



*Claim.*—1. In a hand cultivator, the combination of the handle B, curved divergent shanks D provided, respectively, with cutting blades C—C, and suitably attached at their forward ends to said handle; and the intermediate blade E provided with shank F, pivotally seated at its upper end between the shanks D—D; in a vertical plane, and thereby adapted to be optionally turned up out of engagement with the earth, and means for locking said central blade down in working position, substantially as shown, and for the purpose described.

2. In a hand cultivator, a combination of two upwardly bowed and divergent shanks D—D, provided with shovels C—C formed integral therewith, and one of said shanks provided with the lateral recess J, and the intermediate blade E provided with a shank F, pivotally seated between the shanks D—D and provided with a boss H, adapted to optionally engage said recess J; substantially as shown, and for the purpose described.

3. In a hand cultivator, a combination of two upwardly bowed and divergent shanks D—D, provided respectively with cutting blades C—C integral therewith, and intermediate blade E provided with shank F pivotally seated between the shanks D—D, and circular seed cup K provided with radial earth engaging spokes S, and adjustable seed openings T, and the frame L removably connected at its front end to the shank F, and at its rear end to the axis of the seed cup K substantially as shown, and for the purpose described.

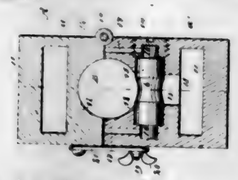
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**504,190. GUIDE-BLOCK FOR RUNNING WIRE.** ULYSSES H. ALEXANDER, Wilmington, Del. Filed June 5, 1893. Serial No. 476,639. (No model.)

*Claim.*—1. A guide device for wire and the like, comprising a sectional body, each section being provided with a recess to form an opening when the sections are closed, for the passage of the wire, and

with an opening in its outer end for the reception of a fastening strap or the like substantially as described.

2. A guide device for wire and the like comprising a sectional body, each section being provided with a semi-circular recess to form a circular opening for the passage of the wire, when the sections are closed, and with an opening in its outer end for the reception of a fastening strap or the like and a roller crossing the said opening, substantially as described.

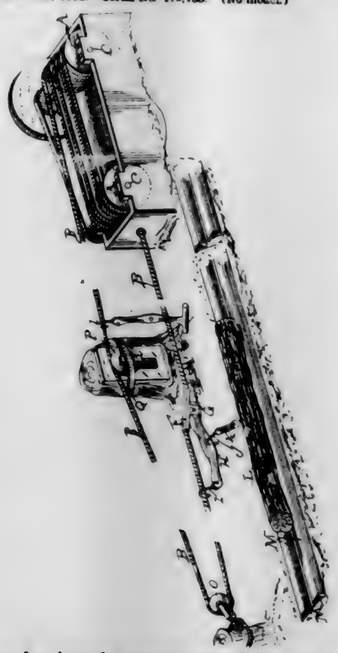


3. In a device for guiding wire and like material, the combination, with a body portion divided into hinged sections, and a locking device connecting the sections, the said body portion being provided with an opening through which the wire is to be passed, of a roller located in a section of the body and extending across the opening, as and for the purpose specified.

4. In a device for guiding wire and like material, a block constructed in sections, the sections being provided with an opening through which the wire is passed, a locking device uniting the sections, and a roller removably located in one of the sections and crossing the opening through which the wire passes, and means, substantially as shown and described, for suspending the device, or attaching it to a predetermined object, as and for the purpose specified.

5. In a device for guiding wire and like material, the combination, with a block constructed in hinged sections, the sections being provided with registering recesses forming an opening through which the wire is passed, and a locking device uniting the sections, of a removable roller journaled in one of the sections and crossing the wire-receiving opening, and means, substantially as described, for connecting the sections to a predetermined support, as set forth.

**504,191. TRANSPORTING LOGS.** WILLIAM V ALLEN, Chico, Cal. Filed Jan. 29, 1892. Serial No. 419,705. (No model.)



*Claim.*—In a device for transporting logs, skids or ways adapted to follow the contour of the surface to be passed over, an endless traveling rope, with guiding and supporting pulleys, and one part approximately parallel with the guiding ways, a rope gripping device having a clamping lever, a link having at one end an eye, engaging the free end of said lever, and a hook to engage the cable, a dog to be fixed in the log, and a flexible connecting link secured to the dog, and the intermediate portion of the lever, and guards Q surrounding the pulleys, whereby the clamps which are hooked upon the rope to be returned, are prevented from fouling the pulleys, as specified.

**504,192. PIANO-HAMMER.** JOHN ARMOR, New York, N. Y. Filed Apr. 14, 1893. Serial No. 470,277. (No model.)



*Claim.*—1. A piano hammer comprising a head formed with a fork, and a felt made of a V-shaped blank having its sides doubled up and the contacting surfaces fastened together, the said sides being inserted in the fork of the hammer head and fastened thereto, substantially as shown and described.

2. A piano hammer provided with a felt made of a single V-shaped blank, doubled up at its sides and having the contacting faces fastened together, substantially as shown and described.

3. A piano hammer provided with a head having a forked upper end, substantially as shown and described.

**504,193. SPIRAL CONVEYER.** ALFRED E. BAXTER and ALLAN O. MATHER, Milwaukee, Wis. Filed May 16, 1893. Serial No. 474,444. (No model.)



*Claim.*—1. The combination with a conveyer shaft, of a semi-elliptical flight provided with a central shaft-seating recess deeper than the diameter of the shaft, and fingers projecting into the recess at the rear of the shaft-seat, a gib having recesses arranged obliquely to its axis in its outer face adapted to be inserted between the rearwardly extending parts of the flight and interposed between the shaft and the fingers of the flight the fingers being adapted to enter the recesses at the rear of the shaft and thus to lock the flight to the shaft, substantially as described.

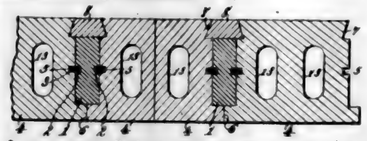
2. The combination with a conveyer shaft, of a semi-elliptical flight provided with a central shaft-seating recess deeper than the diameter of the shaft, fingers projecting into the recess at the rear of the shaft-seat and at the rear of the shaft, a gib having a plurality of recesses in its outer surface arranged in sets reversely oblique to its axis, inserted at the rear of the shaft between the shaft and the fingers of the flight in such manner that the fingers engage the gib at the rear of and within the planes extending rearwardly from the sides of the shaft, and means for forcing the gib into engagement with the fingers of the flight and locking it to the shaft, substantially as described.

3. The combination with a conveyer shaft, of a semi-elliptical flight provided with a central shaft seating recess deeper than the diameter of the shaft, fingers projecting into the recess at the rear of the shaft, a gib having recesses in its outer face arranged oblique to its axis inserted in the flight recess between the shaft and the fingers which enter the recesses and engage the gib at the rear of the shaft, and a set-screw turning through the gib near its end against the shaft and tilting the gib so that one end bears against the shaft while it is forced medially against the fingers of the flight, substantially as described.

**504,194. CONCRETE WALL.** JOHN W. BEAUMONT, St. Louis, Mo. Filed Feb. 6, 1892. Renewed July 11, 1893. Serial No. 480,175. (No model.)

*Claim.*—1. A wall composed of studding, concrete blocks embracing the studding and each provided with a dovetail recess 7 which lies opposite the studding to which the block is applied, and a key 8, engaging each dovetail recess and arranged flush with the surface of the block, substantially as described.

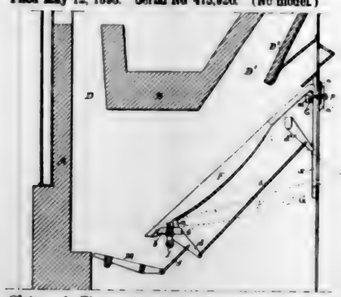




2. In a concrete wall, the combination of studs provided on opposite sides with longitudinal grooves, concrete blocks surrounding said studs and having recesses in their sides and in their adjacent ends, and keys inserted in said grooves and recesses, substantially as described.

3. In a concrete wall, the combination of the studs 1 having longitudinal grooves 2, the concrete blocks 4 provided with recesses 5 and 7 and arranged to surround the said studs, the keys 3 inserted in the grooves 2 and recesses 5, and the keys 8 inserted in the recesses 7, substantially as described.

**504,195. FURNACE-GRATE.** COLLINS P. BLISS, New York, N. Y. Filed May 12, 1893. Serial No. 473,920. (No model.)



*Claim.*—1. The combination of the fire box and feeder, with the inclined grate composed of a series of bars supported at their lower ends upon a swinging bar mounted upon a rock shaft below the same, and having alternating projecting lugs upon opposite sides, the faces of these lugs being eccentric in respect to the axis of the rock shaft, and those upon one side of the bar supporting every other bar of the grate, and those upon the opposite side supporting the alternate bars, substantially as specified.

2. The combination of the fire box and feeder, with the inclined grate composed of a series of bars, a pivoted fuel supporting grate at the base of said inclined grate, a rocking bar upon which the lower ends of the inclined grate bars are supported, and a connection between said rocking bar and the pivoted fuel supporting grate whereby the latter is caused to swing as the bars of the inclined grate are vibrated, substantially as specified.

3. The combination of the fire box and feeder, the inclined grate, a rocking support for the lower ends of the grate bars, a supporting bar for the upper end of the grate, side frames or walls having sockets for said supporting bar and grooves in which the ends of the bar are guided and in which they can be lowered on the removal of the bar from the sockets, and detachable retaining devices for confining the bar in the sockets, substantially as specified.

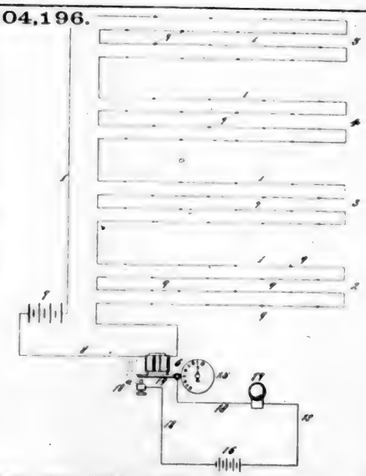
**504,196. ELECTRIC INDICATOR.** JAY L. BRADLEY, St. Louis, Mo. Filed Feb. 4, 1893. Serial No. 460,928. (No model.)

*Claim.*—1. In an electric indicator, the combination of a continuous wire passed back and forth through the different stories of a building, circuit breakers located in said wire, a bell in electric circuit at the place where the signal is to be given, a magnet in circuit with said continuous wire, and an armature having a pawl and ratchet connection with said indicator; substantially as and for the purpose set forth.

2. In an electric indicator, the combination of a continuous wire passed back and forth through the different stories of a building, circuit breakers located in said wire, a bell and indicator in electric circuit at the place where the signal is to be given, a magnet in circuit with said continuous wire, and an armature having a pawl and ratchet connection with said indicator; substantially as, and for the purpose set forth.

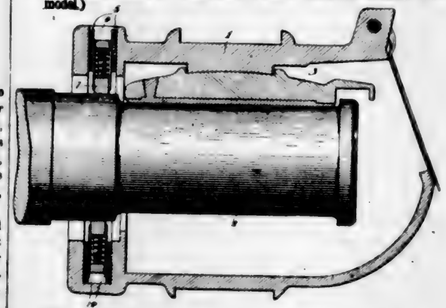
3. In an electric indicator, the combination of a continuous wire passed back and forth through the different stories of a building, circuit breakers located in said wire and having two or more prongs or

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contact points, a bell and indicator in electric circuit at the place where the signal is to be given, a magnet in circuit with said continuous wire, and an armature having a pawl and ratchet connection with said indicator, substantially as set forth.

**504,197. DUST-GUARD FOR JOURNAL-BOXES.** JACOB J. BUSENBENZ, Rock Island, Ill. Filed Dec. 8, 1892. Serial No. 454,528. (No model.)



*Claim.*—1. The combination with the journal box, having the dust guard cavity 4, of facings of felt or similar material 5, against each wall of the cavity, a box 14 introduced into said cavity between the facings, a packing comprising vertically and longitudinally separated sections having dovetailed joints one section with the other, each controlled by a spring and set within the box, all as set forth.

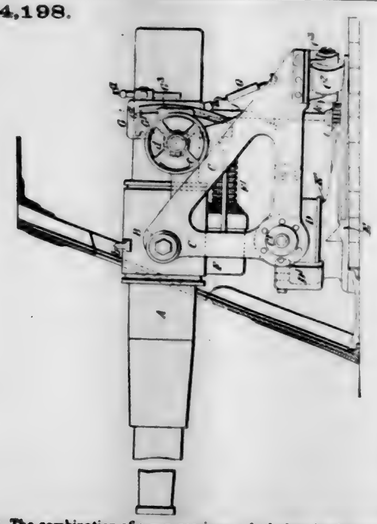
2. The method of introducing a dust guard into a journal box, which consists in first introducing facings of felt to lie against the walls of the cavity, thereupon introducing temporary plates, and thereupon introducing the packing carrying box between the said plates, and withdrawing the plates, all as set forth.

**504,198. GUN-MOUNTING.** JEAN B. G. A. CANET, Paris, France, assignor of one-half to the Sir Joseph Whitworth & Company, Limited, Openshaw, England. Filed Dec. 17, 1892. Serial No. 455,542. (No model.) Patented in France Feb. 26, 1890, No. 204,021, and in England Mar. 26, 1890, No. 4,747.

*Claim.*—1. The combination of a bed plate E having a vertical pivot, a pivot piece D turning on said pivot, a carriage C resting on the bed plate and secured to the piece D by a removable bolt C', and a gun and cradle mounted in said carriage, substantially as described, for the purpose specified.

2. In a gun mounting, the combination with the gun and its cradle, of a carriage C consisting of two cheeks, a pivot piece D secured to the carriage by a removable bolt C', and a vertical fixed pivot about which the piece D turns so situated that the gun and mounting are approximately balanced horizontally with respect thereto, substantially as described for the purpose specified.

**504,198.**



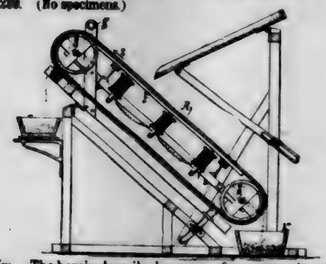
3. The combination of a gun carriage, a bed plate having a vertical pivot, a piece D rotating on said pivot, and a pin C' which connects the forward end of the carriage to said piece D, and which can be removed to allow of the unshipment of the gun and carriage, and then utilized to secure the carriage to the side of a vessel, or battery, casement or parapet, substantially as described.

**504,199. PROCESS OF TREATING FIBROUS MATERIALS FOR PRESERVING SAME.** JOHN D. CHEEVER, New York, N. Y., assignor to the New York Belting and Packing Company, Limited, of England. Filed Apr. 22, 1892. Serial No. 430,284. (No specimens.)

*Claim.*—1. The herein described process of treating fibrous material for the purposes specified consisting in successively subjecting it to the action of solutions of catechu and bichromate of potassium, substantially as described.

2. The herein described process of treating fibrous materials for the purposes specified consisting of successively subjecting it to the action of solutions of catechu, bichromate of potassium, and creosote, substantially as and for the purposes set forth.

**504,200. ART OF CONCENTRATING MAGNETIC IRON ORES.** GORDON COWLING, Glens Falls, N. Y. Filed Sept. 30, 1891. Serial No. 407,289. (No specimens.)

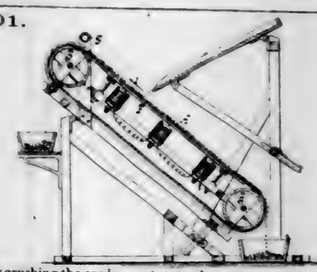


*Claim.*—The herein described process of concentrating magnetic iron ore which consists in first comminuting the ore in the presence of water, then exposing the comminuted ore while being carried in a stream of water to the action of magnets and continuously removing the magnetic particles which have been attracted by the magnets from the magnetic field while the non-magnetic particles are carried away by the water, then drying the magnetic particles and finally exposing the dried particles to the action of magnets.

**504,201. ART OF CONCENTRATING MAGNETIC IRON ORE.** GORDON COWLING, Glens Falls, N. Y. Filed Jan. 16, 1893. Serial No. 458,546. (No model.)

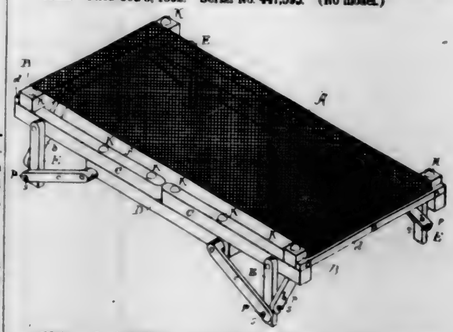
*Claim.*—The process of concentrating iron ore which consists in

**504,201.**



first coarsely crushing the ore in a wet state, then exposing the crushed mass while wet to the action of magnets, then recrushing the concentrate thus obtained while wet, then drying the recrushed mass and finally exposing the dry mass to the action of magnets, substantially as described.

**504,202. FOLDING BED OR COT.** CHARLES S. DAVIS, Wellfleet, Mass. Filed Oct. 3, 1892. Serial No. 447,595. (No model.)



*Claim.*—1. A folding cot or bed consisting of a wire mattress, adapted to be rolled or folded about the frame of said cot or bed, end rails, sectional side bars attachably pivoted to the same, detachable stretching link bars, pivoted to said sectional side bars, means such as bolts for retaining the stretching link bars and adjacent sections of the side bars in position and legs pivotally attached to said sectional side bars with braces and locking arms for the same, as and for the purposes set forth.

2. In a folding cot or bed, such as described viz:—one having its side bars in section pivotally attached to the adjacent end rails—a stretching link-bar pivoted to the adjacent sections of a side bar, for uniting and bringing into alignment said sections, by a lateral movement thereof as set forth, with bolts passing through the side bar sections and the link-bar to hold said sections and said link-bar in alignment, substantially as described.

3. As an article of manufacture a folding cot or bed containing the following detachable parts; head and foot rails with a mattress united thereto, side bars made in sections, detachably united to said head and foot rails, and stretching link-bars detachably united to said side-bar sections, said side and stretching link bars being adapted, when attached as shown, to move laterally in substantially parallel, horizontal planes, all as and for the purpose set forth.

4. In a bed frame having its side bars in sections, which are attached to the adjacent end rails, and move laterally about the same, a stretching link-bar, uniting said sections and moving in a plane substantially parallel thereto, whereby the said side bar sections are moved laterally into alignment and the end rails spread apart, substantially as described.

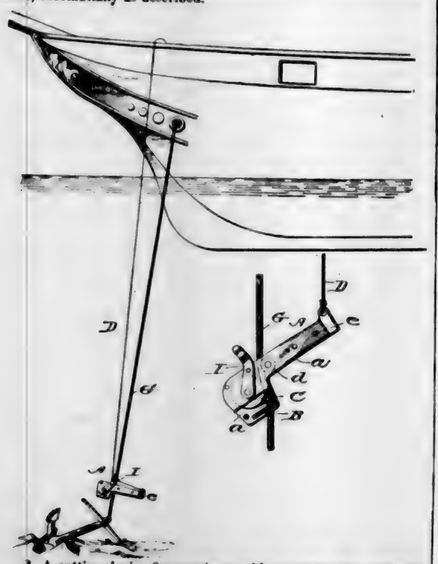
5. In a cot bed the combination, end rails, a mattress attached thereto, sectional side bars attached to said end rails and stretching link-bars attached to the adjacent side-bar section, all of said bars being constructed to move in substantially parallel horizontal planes, as and for the purposes set forth.

**504,203. DEVICE FOR CUTTING SHIPS' CABLES.** FRANCISCO V. DE BEN, Gloucester, Mass. Filed Oct. 13, 1892. Serial No. 448,766. (No model.)

*Claim.*—1. A cutting device for severing a cable or anchor line, consisting of a frame provided with a cutting appliance and weighted to normally hold the cutting appliance out of engagement with the



said cable or anchor line, and an operating line to control the movements of the device and bring into efficient service the cutting appliance, substantially as described.

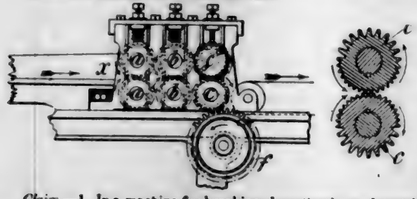


2. A cutting device for severing a cable or anchor line, consisting of a frame provided with a cutting appliance and weighted to normally hold the cutting appliance out of an operative position, a line for controlling the movements of the device, and a holder to retain the line in such relative position as to overcome the weighted end of the said frame under ordinary conditions, but which will release the said line when the latter is suddenly pulled upon, substantially as described for the purpose specified.

3. A cable cutting device, comprising a frame having a cutting appliance, and having a slot in one side to receive the cable, and a locking device to close the said slot and retain the cable in place in the said frame, substantially as set forth.

4. A cable cutting device consisting of, a frame having a slot in one side to receive the cable and provided with a cutting appliance and weighted to hold the cutting appliance out of operative position, a locking device to close the slot in the frame, guide pulleys on each side of the said slot, a temporary holder, and an operating line to control the movements of the device and held by said temporary holder to overcome the weighted end of the frame under normal conditions, substantially as specified, and adapted to bring the cutting appliance into active position when suddenly pulled upon to sever the cable, substantially in the manner herein set forth.

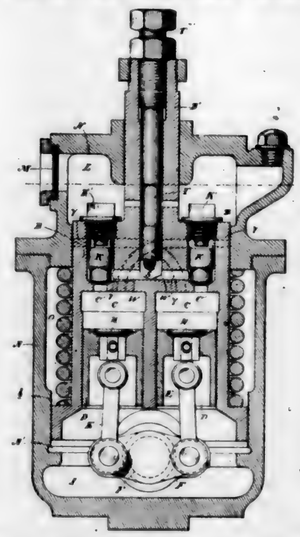
**504,204. MACHINE FOR BREAKING, SCUTCHING, AND DECORTICATING FLAX, &c.** GEORGE E. DOHERTHORPE and TAYLOR BURROWS, London, England. Filed Nov. 2, 1892. Serial No. 450,753. (No model.) Patented in England Feb. 4, 1892, No. 2,168.



*Claim.*—1. In a machine for breaking, decorticating and scutching or partially scutching flax, rhea and other fibrous plants, the combination with a feeding device, of a pair of fluted rollers, each of said rollers having blades or flutes of varying height similarly disposed to the blades or flutes on the other roller, and the said rollers being so placed that the blades of one project into the grooves between the blades of the other; and gearing between the two rollers whereby each is adapted to maintain the same speed relative to the other, so that the blades of the one may not come into contact with those of the other, substantially as described

2. In a machine for breaking, decorticating and scutching or partially scutching flax, rhea and other fibrous plants, the combination with a plurality of feeding and crushing rollers revolving at a comparatively slow speed, of a pair of rapidly revolving fluted rollers, each of said rollers having blades or flutes of varying height similarly disposed to the blades or flutes on the other roller, and the said rollers being so placed that the blades of one project into the grooves between the blades of the other; and gearing between the two rollers whereby each is adapted to maintain the same speed relative to the other, so that the blades of the one may not come into contact with those of the other, substantially as described.

**504,205. ENGINE-GOVERNOR.** GEORGE E. DOW, San Francisco, Cal. Filed Aug. 1, 1892. Serial No. 441,852. (No model.)



*Claim.*—1. A governor consisting of a cylinder containing liquid, a pump chamber movable therein and connected with the supply valve of the engine, alternately reciprocating plungers in the pump chamber, and deriving motion from a moving part of the engine to be governed, said plungers having upwardly opening valves in them, and upwardly opening outer valves from the plunger chambers through which the liquid is forced by the action of the plungers, in combination with passages leading from the outer valve chambers, and an adjustable or controllable transverse passage through which the liquid escapes into the chamber below the pump chamber, substantially as herein described.

2. An exterior liquid containing cylinder, a pump chamber movable therein and connected with the steam inlet valve of the engine, reciprocating plungers fitted in the pump chamber and deriving motion from a moving part of the engine, said plungers having valves for the admission of liquid from below, outlet valves in the upper part of the pump chamber through which said liquid is forced by the action of the plungers, and an adjustable or controllable discharge passage or passages through which said liquid is returned to a point below the pump chamber, in combination with passages leading from each of the plunger chambers to the outlet valve chamber of the opposite plunger whereby the outlet valve from the descending plunger chamber is closed by positive pressure supplied by the ascending plunger, substantially as herein described

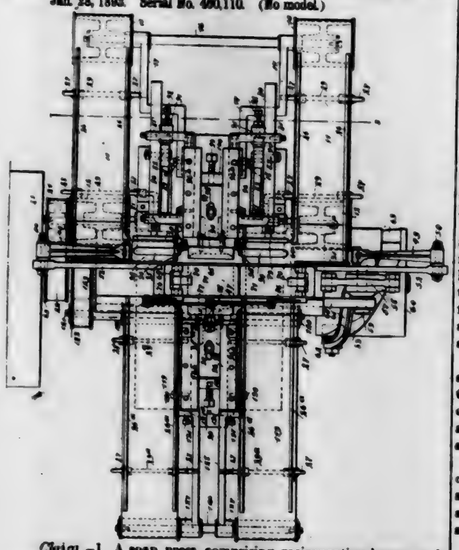
3. A governor consisting of the cylinder containing liquid, a pump chamber movable therein, and connected with the supply valve of the engine, alternately reciprocating plungers operating in corresponding and separate chambers in the pump chamber and deriving motion from a reciprocating part of the engine, inlet and outlet valves through which the liquid is pumped from below the pump chamber, passages by which the liquid is returned to the chamber below, a transverse V-shaped passage S through which the liquid passes, and the screw-stem by which the size of this passage is regulated, substantially as herein described.

4. A governor, consisting of a cylinder containing liquid, a pump chamber movable therein and connected with the supply valve of the engine, alternately reciprocating plungers operated by a moving part of the engine and having inlet and outlet valves, adjustable circulating passages, and the spring O acting upon the pump chamber to force it downwardly, substantially as herein described.

5. A governor consisting of a cylinder containing liquid, a pump chamber movable therein and connected with the engine valve to be governed, alternately reciprocating plungers operated by a moving part of the engine and moving in separate chambers in the pump chamber with inlet and outlet valves and circulating passages, and a transverse passage S with the stem T by which its size is regulated, in combination with a supplemental cylinder carried upon the upper end of the pump chamber, and having a passage by which liquid is admitted into said cylinder, a plunger moving therein and having the upper end of the adjusting stem T connected therewith, and the spring controlling said plunger, substantially as herein described.

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**504,206. SOAP-PRESS.** JACOB ECKMAN, Brooklyn, N. Y. Filed Jan. 23, 1893. Serial No. 460,110. (No model.)



*Claim.*—1. A soap press, comprising reciprocating boxes, each box having a movable side, feed mechanism for supplying soap cakes to the boxes, reciprocating dies arranged to meet in the boxes and press the soap therein, and a cam mechanism for locking the movable portion of each box at the time the impression of the dies is made, substantially as described

2. A soap press, comprising reciprocating boxes, feed belts arranged to deliver against abutments and at a point parallel with the plane of the boxes, reciprocating arms held to push the soap cakes inward to a point opposite the boxes, spring holders adapted to receive the soap cakes from the arms, reciprocating plungers arranged to push the soap cakes into the boxes, and reciprocating impression dies arranged to meet in the boxes and compress the soap therein, substantially as described.

3. A soap press, comprising reciprocating soap boxes, feed carrier belts arranged near opposite ends of the soap boxes and adapted to deliver soap cakes at a point near the boxes, reciprocating feed arms held to move parallel with the boxes and adapted to push the cakes opposite the boxes, reciprocating impression dies arranged to meet in the boxes and press the soap therein, reciprocating plungers held to push the soap cakes into the boxes and to push the pressed cakes out of the boxes, swinging spring-pressed dies arranged opposite the boxes and adapted to form resistance to the soap cakes, and discharging carrier belts arranged on the back sides of the boxes and opposite the dies, substantially as described.

4. A soap press, comprising reciprocating boxes, each box having a movable side feed mechanism arranged to deliver cakes into the boxes, oppositely arranged reciprocating dies adapted to meet alternately in the boxes and press the soap therein, cam rolls arranged opposite the movable sides of the boxes, cam plates secured to the said movable sides and extending opposite the cam rolls so as to inclose the cam rolls between themselves and the movable box sides, and mechanism for turning the rolls and locking the box sides at each impression of the dies, substantially as described.

5. In a soap press, the combination with the reciprocating boxes having movable tops, the mechanism for supplying soap cakes to the boxes, and reciprocating dies adapted to meet within the boxes, of curved cam plates secured near the free ends of the movable tops and arranged above said tops, oscillating cam rolls journaled in supports on the boxes and held to turn between the cam plates and the tops, cranks secured to said cam rolls, and connecting rods pivoted to the cranks and to a fixed support, thus enabling the reciprocation of the boxes to turn the cam rolls, substantially as described.

6. In a soap press, the combination with the reciprocating boxes and the dies adapted to meet in each box, of an abutment arranged at right angles to the boxes, a spring holder secured to said abutment and adapted to hold a soap cake in position against the abutment, a feed belt arranged to deliver soap cakes opposite the abutment, the reciprocating arm adapted to push the soap cakes into the holder, and the reciprocating plunger adapted to move beneath the holder and push a soap cake into one of the boxes, substantially as described.

7. In a soap press, the combination with the soap boxes and suitable feeding and pressing mechanism, of the abutment arranged opposite one of the boxes, a curved spring secured to the back of the abutment and extending over the top of the abutment and substantially parallel with the box, and the reciprocating plunger held to move beneath the spring and push a soap cake into the box, substantially as described.

8. In a soap press, the combination with the reciprocating slide, the soap boxes thereon, the feed carrier belt, and the plunger arranged to move parallel with the belt and push soap cakes into the boxes, of the arm carried by the box slide, and the swinging spring-sustained roller carried by the arm and adapted to engage the soap cakes and push them opposite the plunger, substantially as described.

9. In a soap press, the combination with the reciprocating boxes, and the reciprocating plunger held to move at right angles to the movement of the boxes and to push soap cakes into them, of the holder arranged adjacent to the plunger, the reciprocating arm held to move with the boxes, swinging spring-pressed plates carried at the free end of said arm, and the roller journaled in one of the plates and adapted to push the soap cakes into the holder, substantially as described.

10. In a soap press, the combination of the reciprocating boxes, and sliding plungers having outwardly extending shanks and adapted to push soap into the boxes, the oscillating spring-repressed levers operatively connected with the racks of the plungers to slide the same, and a crank mechanism for oscillating the levers, substantially as described.

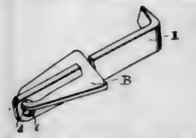
11. In a soap press, the combination of the soap boxes, the reciprocating dies held to meet in the boxes and having racks on their under sides, the oscillating weighted levers geared to the racks, and mechanism for moving the levers against the resistance of their weights, substantially as described.

12. In a soap press, the combination with the soap boxes, of the reciprocating dies arranged to meet in the boxes, the racks secured to the under sides of the dies, the swinging levers geared to the racks and provided with weights adapted to throw the dies together, the levers having curved or cam-shaped lower ends, and oppositely rotating gear wheels carrying rollers adapted to strike the cam ends of the levers and move the levers against the resistance of their weights, substantially as described.

13. The combination of the reciprocating dies, the swinging weighted levers geared to the dies, the cam mechanism for spreading the levers against the resistance of their weights, and a spring connection between the two levers, substantially as described.

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**504,207. DOOR-SECURER.** CHARLES M. FOWLER, Salem, Mass. Filed May 2, 1893. Serial No. 472,751. (No model.)




*Claim.*—A door securer comprising a jamb plate A, having an arcuate opening aperture in one end portion thereof, a lug or process projecting into said opening, a bent sharpened portion at the other end of said plate, and opposite notches or recesses in the edge portions of said plate intermediate of its ends, in combination with the bolt or lock plate B, consisting of a triangular-shaped plate, rounded at the apex, and having a straight base edge, a longitudinal slot in said plate B by means of which it is caused to loosely engage with the aperture or opening in the plate A, said plate B at one side of said slot being wider than at the other side, substantially as specified.



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**504,208. PULLEY.** WILLIAM R. FOX, Grand Rapids, Mich., assignor to the Fox Machine Company, same place. Filed Dec. 12, 1892. Serial No. 454,359. (No model.)

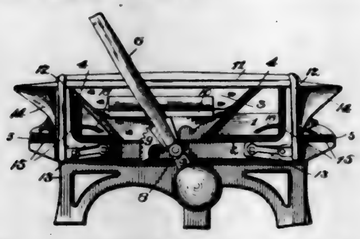


*Claim.*—1. A wheel or pulley composed of two disks of sheet metal having outwardly projecting portions around central holes, said disks being concaved about the holes, annular contacting portions near the periphery, and a central sleeve turned at its outer ends over the edges of the projecting portions, substantially as described.

2. A wheel or pulley composed of two disks of sheet metal having outwardly projecting portions around central holes, said disks being concaved about the holes, annular contacting portions near the periphery, and a split quill of sheet metal having its outer ends turned over the edge of the projecting portions of the disks, substantially as described.

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**504,209. WOOD-TRIMMER.** WILLIAM R. FOX, Grand Rapids, Mich., assignor to the Fox Machine Company, same place. Filed Dec. 21, 1892. Serial No. 455,896. (No model.)



*Claim.*—1. In combination, the bed or frame, the knife and carriage with operating means therefor, the swinging gage, having a shearing edge at the line of cut and the pivotal connection between the gage and the frame, the center of which is in the plane of the shearing edge and cutting line and below the same, said gage having its bearing face radiating from the center of the gage pivot, substantially as described.

2. In combination the bed or frame, the knife and carriage with operating means therefor, the swinging gage having a shearing edge at the line of cut and the pivoted connection between the gage and frame comprising the arm extending from the gage through a slot in the frame and pivoted at its end thereto, the center of the pivot being in the plane of the cutting line and below the same, said gage having a bearing face radiating from the pivot center, substantially as described.

3. In combination, the bed or frame, the knife and carriage with operating means therefor, the swinging gage having a shearing edge in the plane of the cutting line and the pivotal connection between the gage and the bed comprising the arm connected to the gage extending under the frame and having an upturned pivot at its end fitted to a socket in the plane of the cutting line and shearing edge of the gage, substantially as described.

4. In combination, the slotted frame, the knife carriage and knife, the gage, the pivotal connection extending therefrom through the slot to the under side of the frame and the clamp for the gage extending through the slot and bearing on the edges of the slotted frame independent of the pivoted connection, substantially as described.

5. In combination, the slotted frame, the knife, and knife carriage, the gage, the forked bracket extending from its under side through the slot to the lower side of the frame to which it is pivoted and the clamp for the gage extending between the forks of the bracket, substantially as described.

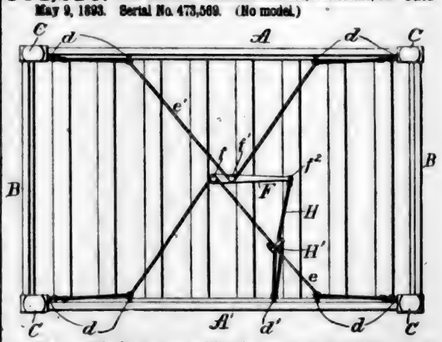
6. In combination the frame, the knife, the gage having a shearing edge at the line of cut and the setting stop for the gage consisting of the vertically movable pin on the gage adapted to enter holes in the bed, said stop being adjustable laterally of the gage and longitudinally thereof toward and from the shearing edge, substantially as described.

7. In combination, the gage having the opening, the boss of smaller diameter adapted to said opening and adapted to be moved laterally therein in any direction, and having a flange with openings, the screws passing through said openings and of smaller diameters than said openings, and the stop passing through the boss to engage the table or bed, substantially as described.

8. In combination, the frame having the bed, with the holes therein, the knife, the gage having a shearing edge at the line of cut and the setting stop arranged on the gage consisting of the conically pointed, vertically movable pin, said pin being adjustable laterally and longitudinally of the gage and operating to set the gage at the proper angle and also to set it in relation to the line of cut, substantially as described.

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**504,210. BED-BRACE.** JOHN A. FRETWELL, Gainesville, Ga. Filed May 9, 1893. Serial No. 473,569. (No model.)




*Claim.*—A bed brace comprising the two wires $e$ and $e'$ connected at each end to one of the posts of the bedstead, extending along the sides of the bed for a short distance, reeving through two eyes set on each of the side pieces of the bedstead, and each wire forming a loop between said eyes, the loops being adjacent and the one loop being nearer the head of the bed than the other; the lever F extending substantially lengthwise of the bed and provided near one end with studs, adapted to engage in said loops; and a cord H, secured to the opposite end of the said lever; adjusting block H'; and a hook $d'$ secured to one of the side pieces of the bed for holding the said lever at any desired position, substantially as and for the purposes described

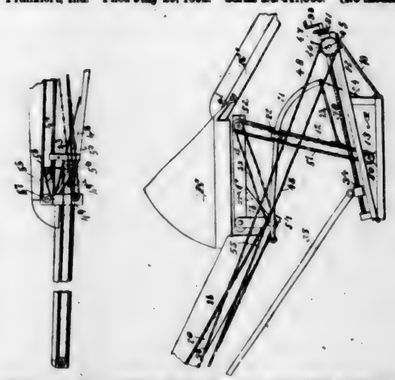
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**504,211. SHIP'S PAINT.** HUGO GALLINOWSKY, San Francisco, Cal., assignor of one-half to Charles M. Yates, same place. Filed Mar. 30, 1893. Serial No. 468,339. (No specimens.)

*Claim.*—A paint compound consisting of hydromagnesite, quicksilver chloride, and magnesium chloride and metallic oxide, substantially as herein described.

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**504,212. STRAW-CARRIER.** HOWARD GERRE and GEORGE GERRE, Frankfort, Ind. Filed July 29, 1892. Serial No. 441,580. (No model.)



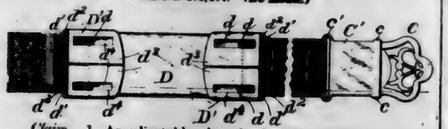
*Claim.*—1. In a machine of the character described, the combination, with a table and a support maintaining the table in a horizontal position, the table being provided with a revolving belt section, an elevator located beneath the table and pivoted thereto, and a second elevator having sliding movement beneath the upper one and capable of passing beneath it or of being extended beyond its upper end, of a base, adjusting screws journaled upon the base, a driving mechan-

ism connecting the screws, traveling blocks carried by the screws, and arms pivoted to the blocks and connected with the upper portion of the lower elevator, whereby both elevators may be raised or lowered, and a winding mechanism carried by the base and connected with the upper elevator, whereby said elevator may be extended beyond the lower one, as and for the purpose set forth.

2. In a machine of the character described, the combination, with a horizontal table provided with an endless belt section adapted to receive material from a thrasher, and a hood located above the table and removable therefrom, of two elevators, the lower one of which is pivoted beneath the table, the upper elevator having sliding connection with the lower one, and a winding mechanism connected with the upper elevator, whereby both elevators may be raised or lowered, and the upper elevator may be carried beneath the lower elevator, or may extend beyond its upper end, as and for the purpose specified.

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**504,213. CLASP FOR HOLDING ENVELOPES, PAPER, &c.** MARY E. GOODWIN and SAMUEL H. LEWIS, Jamaica Plain, Mass. Filed Apr. 15, 1893. Serial No. 470,477. (No model.)



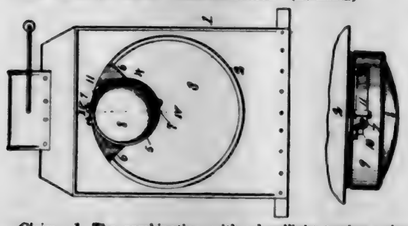
*Claim.*—1. An adjustable clasp for holding packages of envelopes, writing paper, and the like, which consists of a band, a buckle secured to one end of said band and adapted to engage the other end, a flattened tube having an aperture therethrough adapted to receive said band, and a sliding piece mounted over each end of said flattened tube for adjusting the clasp to suit the width of the package to be held, substantially as described.

2. An adjustable clasp for holding packages of envelopes, writing paper, and the like, which consists of a band, a buckle secured to one end of said band, and adapted to engage the other end, a flattened tube D, having an aperture therethrough adapted to receive said band, and lugs $d$ projecting from the ends thereof, and sliding pieces $D'$ bent over as at $d^3$ and provided with slots $d^5$ adapted to engage said lugs $d$, substantially as and for the purposes described.

3. An adjustable clasp for holding packages of envelopes, writing paper, and the like, which consists of a band, a buckle secured to one end of said band and adapted to engage the other end, a flattened tube D having an aperture therethrough adapted to receive said band, and lugs $d$ projecting from the ends of said tube, and sliding pieces $D'$ bent over as at $d^3$ and provided with slots $d^5$ adapted to engage said lugs $d$, and end faces $d^2$, and end pieces $d'$, substantially as and for the purposes described.

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**504,214. HEADLIGHT.** ALEXANDER H. HANDLAN, Jr., St. Louis, Mo. Filed Apr. 5, 1893. Serial No. 469,091. (No model.)



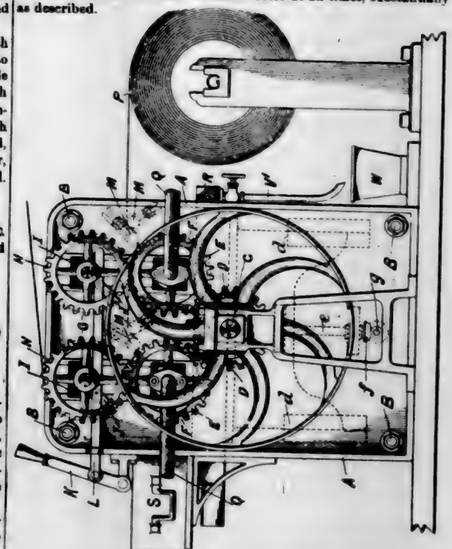
*Claim.*—1. The combination, with a headlight having a ring 2 and a glass 3; of a holder 4 consisting of a ring 5 having wings 6, and the collar 9 fitted on the ring of the holder, and a lens 8; substantially as described.

2. A headlight attachment consisting of the holder 4 having a ring 5 provided with wings 6 and the pins 7, and the collar 9 having bayonet-slots 10, the spring catch 11, and a lens 8, substantially as described.

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**504,215. APPARATUS FOR COATING PAPER, &c.** FRANK W. HAYWARD, ALFRED S. KIDD, and ALFRED W. LOVELAND, Norwich, England. Filed Apr. 27, 1893. Serial No. 472,125. (No model.) Patented in England Nov. 28, 1892, No. 21,714.

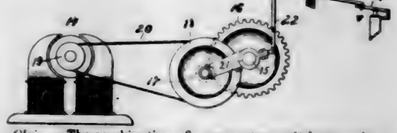
*Claim.*—1. In a machine for coating paper and similar material, the combination with the liquid conveying and applying rolls F, F, pressure rolls H, H, and tension guides M, of the adjustable liquid containing reservoir R, in which said conveying rolls work, a supply chamber S, for supplying liquid to the reservoir, a perforated screen X, placed in said reservoir and adapted to filter the material as it flows from chamber S to the reservoir, and means for agitating said material therein to insure a uniform color at all times, substantially as described.



2. In a machine for coating paper and similar material, the combination with the striated or channeled rolls F, F, adjustable pressure rolls H, H, and tension guides M, of the vertically adjustable liquid containing reservoir R, in which striated rolls F, F, work, a removable supply chamber S, and the gate or rib U, constructed in said reservoir and adapted to regulate the quantity of liquid contained therein, and the outlet pipe V, substantially as described.

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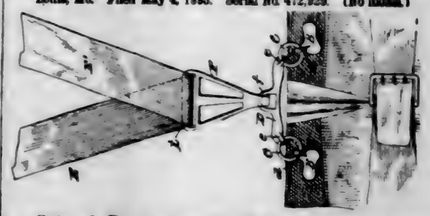
**504,216. REGULATOR FOR DYNAMO-ELECTRIC MACHINES.** JOHN C. HENRY, New York, N. Y. Filed Apr. 29, 1892. Serial No. 431,206. (No model.)



*Claim.*—The combination of a power transmitting gearing, consisting of a gear and pinion held to intermesh, but one free to rotate about the other, belt and pulley connected to and adapted to drive one of said members, and a regulating device connected to the free member of the gearing, and adapted to operate substantially as set forth.

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**504,217. SUSPENDER ATTACHMENT.** GEORGE L. HEULER, St. Louis, Mo. Filed May 4, 1893. Serial No. 472,929. (No model.)



*Claim.*—1. The rear suspender attachment for trousers consisting of the two clips B B with perforated lugs $d$, rings C C secured in the latter, and the middle bar D with central opening $f$ and eyes $e$ $e$ engaging the rings, substantially as and for the purpose described.

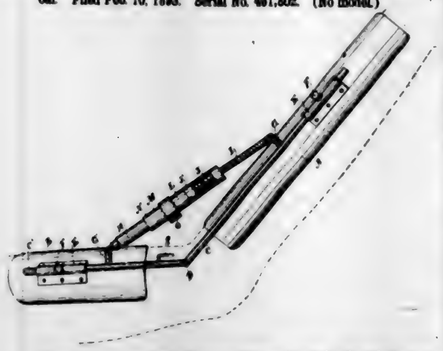
2. The combination of the two clips B B with perforated lugs $d$,



rings C C secured in the same, and the middle bar D with central opening $f$ and eyes $e$ $e$, engaging the rings, the front bar A with loops $b$ $b'$, means for attaching the fasteners to the trousers, and the suspenders made in one piece and having a rear hook plate F arranged in the middle and other similar hook plates F' F' in front, substantially as shown and described.

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**504,218. SURGICAL SPLINT.** REINHOLD HOPPE, San Francisco, Cal. Filed Feb. 10, 1893. Serial No. 461,802. (No model.)



*Claim.*—1. A surgical splint consisting of rods having their meeting ends hinged together, plates adapted to fit the part to be treated having sleeves fixed to their backs, and slidable and rotatable upon the rods, and set screws whereby the sleeves and plates are held in any desired position upon the rods, slotted standards projecting from the rods at points intermediate between the ends, a screw, the shank of which is hinged to one of said standards, and a tubular rod having one end hinged to the opposite standards, a nut turning within a casing, one end of which is hinged to the tubular rods, whereby the nut may be advanced along the screw to lengthen the connection between the standards, and thus bend the hinged rods and their attached plates to form an internal angle, substantially as herein described.

2. A surgical splint consisting of rods having their meeting ends hinged together, plates adapted to fit the part to be treated, having sleeves secured to their backs and slidable and rotatable upon the rods, set screws whereby the sleeves and plates are secured in any desired position, slotted standards projecting from the rods at points intermediate between their ends, a screw, the shank of which is hinged to one of said standards, a tubular rod H, the outer end of which is hinged to the other standard, a casing having one end hinged to the inner end of the tubular rod, a nut adapted to be turned within the casing, said nut being advanced in either direction along the screw by turning it, a sleeve slidable upon the tubular hinged rod and adapted to slip over the end of the casing containing the nut whereby the casing is retained in a straight line with the tubular rod, so that when the nut is advanced along the screw to shorten the distance between the standards, the screw will enter the tubular rod, and the hinged rods are turned about their joints so that the plates form an exterior angle with each other, substantially as herein described.

3. A surgical splint consisting of rods hinged together at their meeting ends, plates adapted to fit the part to be treated having sleeves secured upon their backs slidable and rotatable upon the outer ends of the rods, slotted standards projecting from the rods at points intermediate between their ends, a screw, the shank of which is hinged to one of the standards, a tubular sleeve, the outer end of which is hinged to the opposite standard, a case containing a nut rotatable therein so as to advance it along the screw in either direction, said case being hinged to the adjacent end of the tubular rod, a sleeve L slidable upon the tubular rod having an eye O formed upon it and a hook P fixed to one of the hinged rods over which this eye is adapted to slip and retain the tubular sleeve in position parallel with the rod to which it is connected while the plates are turned so as to form an interior angle between them, substantially as herein described.

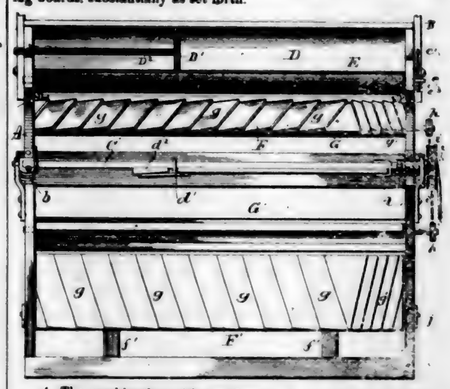
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**504,219. CLOTH-FINISHING MACHINE.** HANS G. JOHNSON, Waukon, Iowa. Filed May 4, 1892. Serial No. 431,760. (No model.)

*Claim.*—1. The combination with two frames, of a board carried by each frame, two series of inclined projections on each board, the teeth of one series wider than the teeth of the other, means for passing cloth or other material between said boards, a trough adapted to receive the bolt of cloth, and a slide in the trough forming a guide and abutment for one end of the bolt, substantially as set forth.

2. The combination with a pair of frames, of a board carried by each frame, one board rigid and the other yieldingly supported, said frames each having diagonal teeth, substantially as set forth.

3. The combination with two frames, of a stretching board in each frame, and means for yieldingly supporting one of said stretching boards, substantially as set forth.



4. The combination with two frames, of a stretching board secured in one of said frames, spring plates secured to the other frame and carrying a stretching board adapted to act in conjunction with the first mentioned stretching board, and means for regulating the tension of said springs substantially as set forth.

5. The combination with a pair of frames, of a board carried by each frame, one board rigid and the other yieldingly supported, each board having diagonal teeth, a portion of said teeth narrower than the remaining teeth, substantially as set forth.

6. In a cloth finishing machine, the combination with two frames hinged together and adapted to permit the passage of cloth &c. between them, of rotary beaters or cleaners mounted in said frames and adapted to remove lint, dust, &c. from the material passing between them, substantially as set forth.

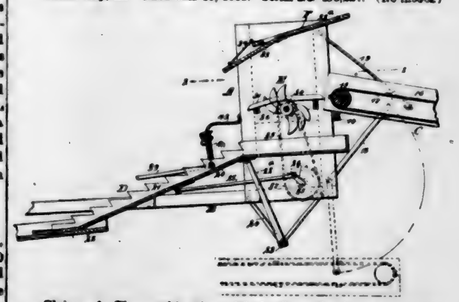
7. In a cloth finishing machine, the combination with two frames hinged together, of a rotary cleaner mounted in fixed bearings in one of said frames and a rotary cleaner mounted in yielding bearings in the other frame, and means for drawing material between said cleaners, substantially as set forth.

8. In a cloth finishing machine, the combination with two frames, of a rotary cleaner mounted in each frame, each of said cleaners being made angular in cross section, substantially as set forth.

9. In a cloth finishing machine, the combination with a frame, of a winding shaft, a clamp secured to one end thereof adapted to receive one end of the board on which the cloth is to be wound, a clamp movable on the shaft adapted to receive the other end of said board, a tongue projecting from the movable clamp and a wedge inserted between the said tongue and the shaft, substantially as set forth.

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**504,220. BAND-CUTTING AND FEEDING ATTACHMENT FOR THRASHING-MACHINES.** GEORGE N. KERN and JAMES W. FIELDER, Mason City, Ill. Filed Jan. 13, 1893. Serial No. 458,227. (No model.)



*Claim.*—1. The combination with the frame having a transverse end bar 14, the cutting table and cutters, of the bundle carrier resting at its inner end on said bar, the links 18 pivoted at their lower inner ends to the frame below bar 14 and at their upper outer ends

to the sides of the carrier to permit it to be swung downwardly under the frame, hooks 19 detachably connecting the sides of the carrier with the frame above the bar 14 and securing it against accidental displacement, substantially as set forth.

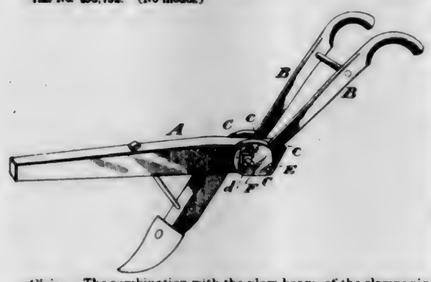
2. The combination with the slotted table 31 and the shaft thereunder provided with a series of blades extending up through the slots, of the carrier delivering upon the said table, the longitudinally reciprocating feed boards or pans D D' having upper horizontal portions extending beneath the said cutting mechanism, the hangers 24 below the pans, a transverse shaft mounted in the hangers, arms 22 pivoted at their upper ends to the pans and at their lower ends to the said shaft, the crank shaft 25 and the pitman 28 connecting said shaft with the under sides of the pan, substantially as set forth.

3. The combination with the frame, the slotted feed table and the series of rotary knives extending up through said slots, the inclined board F over the said table and having the adjustable hinged section 33, of the bundle carrier delivering to the table and the reciprocating feed boards or pans D D', having upper horizontal portions extending beneath said cutting mechanism, substantially as set forth.

4. The combination with the frame and the longitudinally reciprocating feed board or pan, of the rock shaft crossing the pan, provided within the pan with a finger and having on its outer end a clamping crank arm 42 and a flexible strap 43 secured at one end to the frame and at its other end clamped adjustably by said clamping arm to cause the shaft to rock and raise the finger in the forward throw of the feed board or pan, substantially as set forth.

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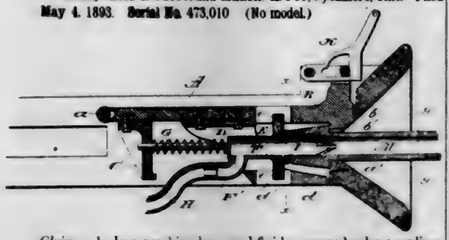
**504,221. HANDLE-CLAMP, &c.** LEWIS J. KING, Shoal Creek, Ga., assignor of one-half to T. R. KNOX, same place. Filed Dec. 1, 1892. Serial No. 453,732. (No model.)



*Claim.*—The combination with the plow beam, of the clamps pivoted thereon and having slots, and sockets extending in an inclined direction between the slots and bolt holes of the clamps and terminating at the upper rear corner of the clamp the handles having their ends held in said sockets, and the bolt and nut for simultaneously adjusting the clamps and handles, as set forth.

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**504,222. COMBINED CAR AND AIR-BRAKE COUPLING.** GEORGE A. KLARR, JACOB A. PETTY, and MARTIN H. FOX, Sycamore, Ohio. Filed May 4, 1893. Serial No. 473,010. (No model.)



*Claim.*—1. In a combined car and fluid pressure brake coupling, a hollow coupling-bar having shouldered ends, and end openings of increased diameter of a draw-head having means for engagement with the shouldered ends of the coupling-bar, and a movable pipe carried by the draw-head, one end of which is slitted and tapered so as to enter the coupling-bar, substantially as shown, and for the purpose set forth.

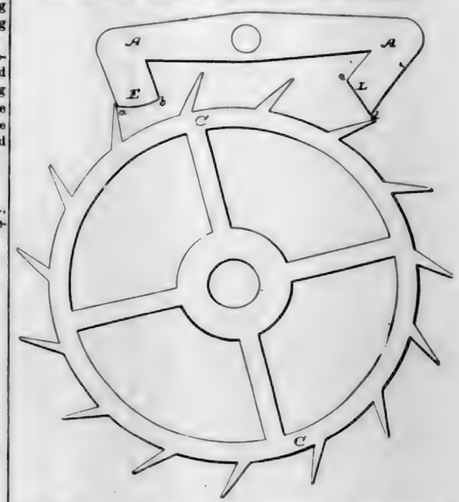
2. In a combined car and air-brake coupling, a draw-head carrying a pivoted latch to which is attached a movable pipe spring actuated in one direction, said pipe being in communication with the pipes of the air-brake mechanism, of a hollow coupling-bar constructed for engagement with the draw-head the pivoted latch and end of the pipe, substantially as shown.

3. In a combined car and air-brake coupling, a draw-head constructed substantially as shown, a latch constituting a part of the draw-head, said latch having a depending and forwardly extending support for a part of the air-brake mechanism, the forward end of the support lying in the path of the coupling-bar so that the coupling-bar will be detached from the draw-head when the latch is elevated.

4. In combination with a draw-head constructed substantially as shown and provided with a latch, means for supporting a pipe F carried by the latch, a plate carried by the pipe F, said plate having projections which enter apertures as shown, a washer located on the pipe against the plate, and a spring for holding the pipe F normally projected, for the purpose set forth.

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**504,223. TIMEPIECE-ESCAPEMENT.** JOHN H. LANGHORST, Jackson, Cal. Filed Apr. 4, 1893. Serial No. 469,017. (No model.)



*Claim.*—An anchor for a lever escapement for time pieces in which the acting line for impulse on the lifting face of the receiving or entering pallet is a convex curve, and the acting line for impulse on the leaving pallet is a straight line, whereby the lifting power transmitted by the escape wheel is approximately the same on the entering or receiving pallet and on the leaving pallet, substantially as herein described.

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**504,224. MACHINE FOR COLORING LEATHER.** CHARLES H. LAPPE and ALFRED A. LAPPE, Allegheny, Pa. Filed Feb. 23, 1893. Serial No. 463,308. (No model.)

*Claim.*—1. In a machine for coloring leather, the combination of a spreading or color roller adapted to apply a liquid preparation to one side of the leather, a platen or roller situate above the color roller, devices for feeding the leather between the color roller and the platen roller, means for feeding a liquid preparation to the color roller, and a wiping roller in contact with the platen roller and adapted to remove any coloring matter that may be accidentally applied to the platen-roller; substantially as described.

2. In a machine for coloring leather, the combination of a spreading or color roller, a platen roller, means for feeding a liquid preparation to the spreading roller, a wiping roller, and means for heating the same, substantially as described.

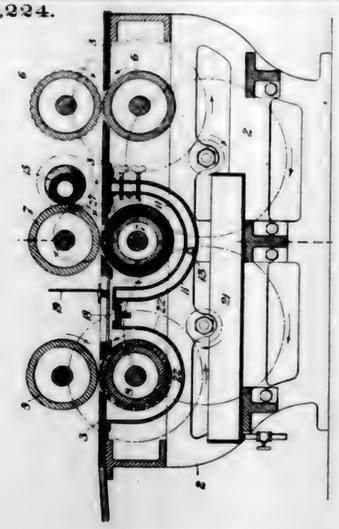
3. In a machine for coloring leather, the combination with the roller for applying a mordant, of a second pair of rollers, one of which is arranged to apply a coloring material to the leather, and a splash-board between the sets of rollers; substantially as described.

4. In a machine for coloring leather, the combination with the rollers for applying a mordant, of a second pair of rollers, one of which is arranged to apply a coloring material to the leather, and a perforated plate between the sets of rollers; substantially as described.

5. In a machine for coloring leather, the combination of feed rollers, rollers arranged to apply a mordant, rollers arranged to apply a coloring material to the same side of the leather, and a pivoted splash board between the mordant and coloring rollers; substantially as described.

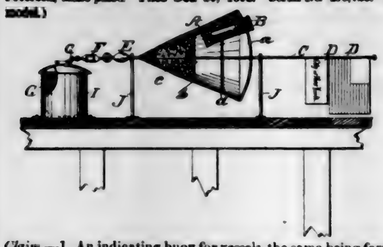


**504,224.**



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**504,225. FLOATING SIGNAL FOR LOCATING SUNKEN VESSELS.** JOHAN LARSSON, Ludington, Mich., assignor to himself and Frank Peterson, same place. Filed Dec. 29, 1892. Serial No. 456,723. (No model.)



*Claim.*—1. An indicating buoy for vessels, the same being formed with transverse partitions forming air tight chambers, a filling of cork in one of such chambers, a staff extending longitudinally through the buoy partitions and projecting beyond the top and bottom of the buoy, and a counterbalance weight on the lower projecting end of the staff, the upper end of the staff being adapted to receive a flag or the like, substantially as described.

2. In an indicating device for vessels, the combination with a conical air-tight hollow float or buoy shell, a flag-staff extending longitudinally and centrally through the shell, of a line box on the vessel's deck, a wrapped line therein having one end connected with the buoy at its lower end and oppositely attached to the box, and spaced standards on the vessel adapted to loosely sustain the buoy shell between them by engaging the flag-staff, substantially as described.

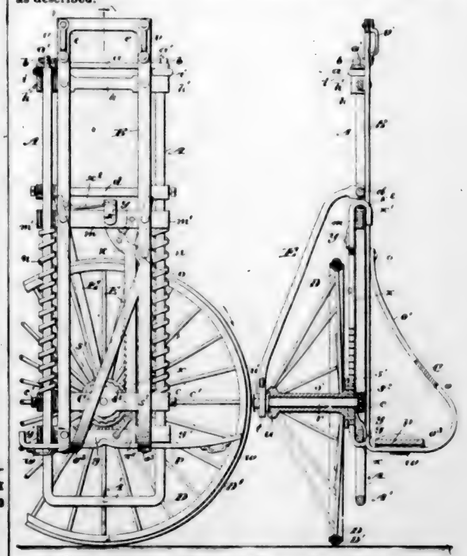
3. An indicating device for sunken vessels, comprising a conical buoy shell divided into a lower chamber and two upper chambers, cork-filling in the lower chamber, a flag-staff secured centrally and longitudinally in the buoy shell and projected through it air-tight, a sealed case in the buoy shell above a partition therein, standards on the deck of the vessel, which normally support the indicating device, and a line connected by one end to the float and the other to the vessel, substantially as described.

4. An indicating device for sunken vessels, comprising an air-tight conical buoy shell divided into three chambers, cork filling in the lower chamber, a flag-staff extending centrally and longitudinally through the buoy shell, a flag thereon above said shell, a depending ballast weight on the lower end of the flag-staff, a swivel piece on the weight, and a line in a box on the vessel's deck, and attached by one end in said box and at the other end to the swivel piece, substantially as described.

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**504,226. ROLLER-SKATE.** RUSSELL C. LEEDHAM, Salt Lake City, Utah. Filed June 7, 1892. Serial No. 435,796. (No model.)

*Claim.*—1. The combination with a sliding carrier frame, a foot rest thereon, guide rods spaced apart by transverse braces, and spiral springs on the guide rods between a brace thereon and a transverse slide bar on the frame, of a rotatable wheel, and a ratchet device therefor that permits its rotation in but one direction, substantially as described.



2. The combination with a carrier frame adapted for attachment on a wearer's lower limb, transverse slide bars thereon, two parallel guide rods, spacing bars therefor, and two spiral springs thereon between a spacing bar and a slide bar, of a dished rotatable wheel, a spindle therefor held at its ends on a spacing bar of the guide rods and a depending hanger frame, a hanger frame secured to a cross brace of the guide rods, a foot support, and a ratchet device which permits the wheel to rotate in one direction only, substantially as described.

3. The combination with a sliding carrier frame, two guide rods therefor, spacing braces for the guide rods, slide bars secured to the frame and loose on the guide rods, two spiral springs, two gum washers adapted to take up shock between the frame and guide rods, a loop frame on the carrier frame, a tread piece thereon provided with strap loops, and similar loops above on the carrier frame, of a dished wheel having a gum tire thereon, a fixed spindle on one of the guide rod braces and on a hanger frame depending from another guide rod brace, a ratchet disk on the wheel hub, a ratchet bar loosely connected to slide bars of the carrier frame, and a spring therefor, substantially as described.

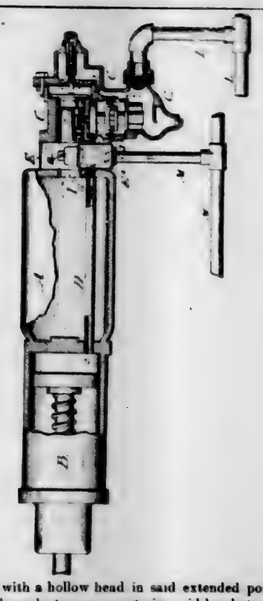
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**504,227. AIR-BRAKE.** WILLIAM H. MASTERMAN, Oakland, Cal., assignor of one-half to Frederick H. Myers, same place. Filed Jan. 11, 1892. Serial No. 417,699. (No model.)

*Claim.*—1. The combination with the brake cylinder, air reservoir, and triple valve of a brake mechanism, of a supplemental casing adapted to be interposed between the adjoining faces of the triple valve casing and the reservoir, and having an extended portion terminating in a hollow head, said supplemental casing having independent passages formed in it leading into said head at points near its upper and lower ends and having ports leading through its sides, one of said ports communicating with the triple valve casing and the other with a pipe leading to the brake cylinder, a valve stem guided in the extended head portion of the supplemental casing having valves of different areas adapted to close against the seats in said head portion, one of said valves closing upwardly and the other downwardly, and a straight air supplemental pipe entering the extended head portion of the supplemental casing below the lower valve, whereby the lower valve may be lifted from its seat to open communication with one of the passages in the supplemental casing, and with the pipe leading to the brake cylinder, substantially as herein described.

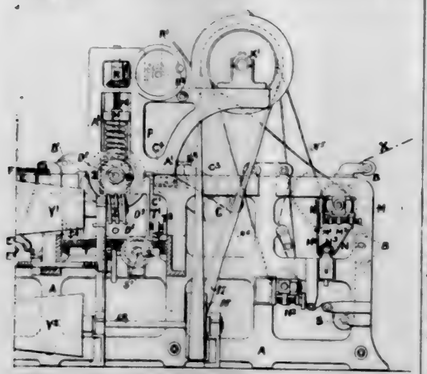
2. The combination with the brake cylinder, air reservoir, and triple valve of a brake mechanism, of a supplemental casing adapted to be interposed between the adjoining faces of the triple valve casing and the reservoir, said supplemental casing being extended at one

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side and formed with a hollow head in said extended portion, and provided with independent passages entering said head at points near its upper and lower end, with ports at the opposite ends of the passages, opening through opposite sides of the supplemental casing, communicating respectively with the triple valve casing, and with a pipe leading to the brake cylinder, upwardly and downwardly closing valves fixed to a single valve stem, and having different areas, a straight air supplemental pipe entering the head below the lower valve whereby the valves may be raised to close communication with the passage leading to the triple valve casing and to open communication between the straight air pipe and the passage leading to the brake cylinder, a channel in the upper part of the head in which the upper end of the valve stem is guided, an opening from the upper part of said channel to the open air, and a groove made upon the side of the valve stem connecting the upper part of the valve chamber with the opening, substantially as herein described.

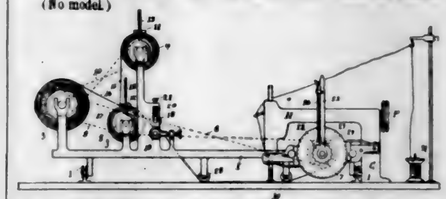
504,228. MACHINE FOR PRESSING AND FINISHING TEXTILE FABRICS. JOHN MILLER, Manningham, England. Filed Nov. 26, 1890. Serial No. 372,717. (No model.) Patented in England Nov. 23, 1889, No. 18,790.



*Claim.*—1. The combination of the reversible expander C', brushes M and N², corrugated breadthening rollers C, cylinder D, means for heating the same, concave D', means for adjusting the same with relation to the cylinder D, steamer E, second reversible expander C², second cylinder G, concave G', means for adjusting the same with relation to the cylinder G, refrigerator H, and drawing roller K, substantially as described.

2. The combination of the reversible expander C', brushes M and N², breadthening rollers C, heated cylinder D, concave D', means for adjusting the same with relation to the cylinder D, steamer E, second reversible expander C², a cooling device, substantially as described, and drawing roller K all arranged and operating in the manner set forth.

504,229. QUILTING-MACHINE. ANDREW J. MITCHELL, Washington Court-House, Ohio. Filed Mar. 11, 1893. Serial No. 465,601. (No model.)



*Claim.*—1. In a quilting machine, the combination with a sewing mechanism, of a movable quilting frame, having the lower fabric-carrying roll 3, the upper fabric-carrying roll 4, the wadding-carrying roll 5, the tension rollers 18 and 19 between the lower fabric carrying roll and the sewing mechanism, and the receiving roll 24 in rear of the needle of the sewing mechanism, means for intermittently rotating the receiving roll 24, and friction devices having frictional contact with a part of the receiving roll to hold the same against the strain of the taut goods, substantially as described.

2. In a quilting machine, the combination with a sewing mechanism, of a movable quilting frame, having the lower fabric-carrying roll 3, the upper fabric-carrying roll 4, the wadding-carrying roll 5, the tension rollers 18 and 19 between the lower fabric-carrying roll and the sewing mechanism, the receiving roll 24, having at one end a friction drum, friction devices having frictional contact with the periphery of the drum and adapted to move therewith when turned to tighten the goods, and means for intermittently rotating the receiving roll, substantially as described.

3. The combination with a sewing machine, of a quilting frame movable back and forth, and provided with fabric-carrying rolls and a roll 24, having a drum 33, frictional keys L, frictional rollers M against which the keys bear, and springs O acting on the frictional keys, substantially as described.

504,230. THILL-COUPLING. JOHN N. MOEHN, Milwaukee, Wis., assignor of one-half to Thomas Fidd, same place. Filed Apr. 3, 1893. Serial No. 468,817. (No model.)



*Claim.*—1. In a thill coupling, the combination of an axle clip provided with forwardly extending arms, said arms provided with apertures having openings radiating therefrom, one of said arms provided with a countersunk recess, the bottom of which is formed with an annular groove having pins projecting outwardly from the same at diametrically opposite points, a ring provided with a central aperture and with an opening radiating from the aperture, said ring provided upon its outer face with an annular groove and at diametrically opposite points in said groove with projecting pins, and upon its inner face with a pin extending into the groove of the bottom of the countersunk recess, in the lower half circle of said recess, a ring bearing against the first named ring, provided upon its inner face with a projecting pin entering the groove of the first ring, and upon its outer face with a series of outwardly extending pins, and a spring-actuated key provided upon its end with a lug said key and its lug adapted to be passed through the several openings and radial openings in the arms and rings, respectively, substantially as set forth.

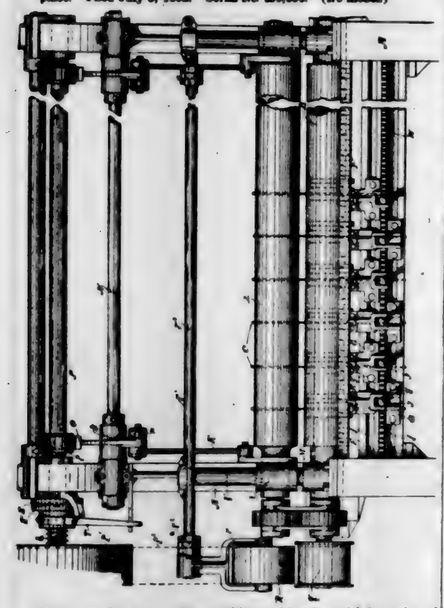
2. In a thill coupling, the combination of a clip provided with forwardly-extending apertured arms, a key passing through the arms, locking mechanism in one of the arms for engaging the end of the key, the latter also provided with an annular groove, a pin or bolt entering a recess in the other arm, said pin or bolt provided with a depression or recess, means for retaining the pin or bolt within the recess, and a spring for normally holding the depressed or recessed portion of the pin or bolt out of register with the annular groove of the key, substantially as set forth.

3. In a thill-coupling, the combination, of an axle clip, provided with forwardly-extending arms, said arms provided with apertures having openings radiating from the same, and one of the arms further provided with a countersunk recess, having pins projecting out from the bottom of the same at opposite points, a ring provided with a central aperture and with an opening radiating from said aperture, said ring provided upon its outer face with projecting pins and upon its inner face with a pin constructed to be brought into contact with the pins of the countersunk recess, and a spring-actuated key, provided upon its end with a lug, said key and its lug adapted to be passed through several openings and radial openings in the arms and rings, respectively, substantially as set forth.

4. In a thill coupling, the combination, of an axle-clip provided with forward-extending arms, said arms provided with apertures having openings radiating therefrom, and one of said arms provided with a counter-sunk recess having pins projecting from the bottom of the same at opposite points, a ring provided with a central aperture and with an opening radiating from the aperture, said ring having pins projecting from the outer face thereof at opposite points, and also provided upon its opposite face with a projecting pin, a ring bearing against the first named ring, provided upon its inner face with a projecting pin adapted to be brought into contact with the pins of said first named ring and upon its outer face with a series of outward-extending pins, and a spring-actuated key provided upon its end with a lug, said key and its lug adapted to be passed through the several openings and radial openings in the arms and rings respectively, substantially as set forth.



504,231. GANG-EDGER. BARTLETT McINTIRE and CHARLES J. KORFOD, San Francisco, Cal., assignors to the Vulcan Iron Works, same place. Filed July 5, 1892. Serial No. 439,033. (No model.)



*Claim.*—1. In a gang edger, and in combination with its series of movable saws and arms connected therewith, the sliding yokes connected with the outer ends of the arms and having on the inner surfaces of their outer ends the T-shaped slides, the fixed guide bar with a T-shaped groove, the said slide having its head portion bearing against the face of the bar, the neck portion passing into mouth of the groove bearing top and bottom thereon, and body portions fitting freely in the groove and bearing with their front surfaces against the front portion of said groove, substantially as herein described.

2. In a gang edger and in combination with its series of movable saws and arms connected therewith, the sliding yokes connected with the outer ends of the arms, the fixed guide bar with T-shaped grooves in its outer face, and the slides on the inner surface of the outer ends of the yokes having head portions bearing against the face of the bar, neck portions passing into the mouths of the grooves bearing top and bottom thereon, and body portions fitting freely in the grooves and bearing with their front surfaces against the front walls of said grooves, substantially as herein described.

3. In a gang edger, the vertically moving upper feed rolls, in combination with the lifting rods, having their lower ends pivoted to the roll shaft connections, the rock shafts N having crank arms or plates with which the upper ends of the lifting rods are connected, the rods or links *n* connecting the crank arms or plates at each end, the gears on one of the rock shafts, the shaft P above with pinions engaging the gears and means for turning shaft P, substantially as herein described.

4. In a gang edger, the vertically movable upper feed rolls, in combination with the lifting rods having their lower ends pivoted to the roll shaft connections, the rock shafts N having crank arms or plates, with which the upper ends of the lifting rods are connected, the rods or links *n* connecting the crank arms or plates at each end, the gears on one of the shafts, the shaft P above with pinions engaging the gears, the pulley on the end of the shaft P, the pulley on the shaft of the lower feed roll, the belt connecting the said pulleys and the swinging tightener pulley operating on the belt, substantially as herein described.

504,232. WRENCH. GEORGE McKERCHER, Jonesville, Mich. Filed Jan. 7, 1893. Serial No. 457,602. (No model.)



*Claim.*—1. A wrench consisting of a handle, a head attached to the handle and having its outer end inclined, a rocking bearing plate, D, pivoted to the head and contacting with the inclined end thereof, and a movable jaw pivoted to the head, substantially as described.

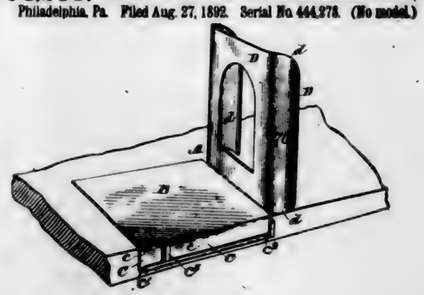
2. In a wrench, the combination with a head, forming the stationary jaw, and a handle attached to the head, of a movable jaw having one arm pivotally connected to the head and having a bearing plate, G, which is provided with a lug, *k*, adapted to contact with a lug, *i*, on the other arm of said jaw, and has its sides, G', extending on opposite sides of the arm that is pivoted to the head, substantially as described.

3. In a wrench, the combination with a bifurcated head and a handle attached to said head, of a serrated bearing plate secured within the bifurcation in the head and provided with a slot, *d*, and a movable jaw having one arm pivoted within the head between the handle and the serrated bearing plate and adapted to fit in the slot in said plate, substantially as described

4. A wrench consisting of a handle, a bifurcated head attached to the handle, a serrated bearing plate arranged at the free end of the head and provided with an arm which is pivoted within the bifurcation in the head, and a movable jaw pivoted within the head, substantially as described.

5. In a wrench, the combination of a bifurcated head having seats, C, formed therein, a bearing plate having an arm extending into the bifurcation in the head and pivotally connected to the walls thereof, the lower face of said plate being inclined at a different angle from the face of the adjacent seats, C, in the head, and a movable jaw having an arm pivoted within the head of the wrench and adapted to extend into the slot in the head and an aligned slot or recess formed in the bearing plate on the head, substantially as described.

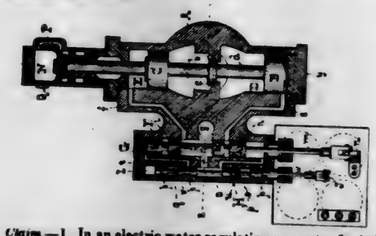
504,233. BOOK-SUPPORT. JOHN J. McVEY and ALFRED RIGLING, Philadelphia, Pa. Filed Aug. 27, 1892. Serial No. 444,278. (No model.)



*Claim.*—1. A book support having a horizontal broad base, and an upright end supporting portion comprising a staying extension edge bent and shaped to form a chamber which is open at top and bottom, said extension edges being constructed to bear horizontally upon a shelf beyond the flat upright portion of the support, substantially as described.

2. A book support having a horizontal broad base and an upright end portion, the base portion being terminated at its junction with said end portion, and the end portion formed with vertical extensions at its front and rear corner, which extensions are curved and shaped to form a chamber having an open bottom and to have at their lower edges a horizontal bearing contact upon a shelf transversely and longitudinally of said shelf, and a combined open ended index holder and limitation stop constructed by forming the front edge of the base portion with a downwardly extending flange *c* provided with a grooved lip *c'*, a stop $c^3$ and a loop $c^4$, substantially as and for the purpose described.

**504,234. WATER-REGULATOR FOR STEAM-BOILERS.** NATHAN E. HASH and GEORGE A. EDDY, Cleveland, Ohio, assignors to the National Electric Valve Company, same place. Filed Aug. 13, 1891. Serial No. 402,553. (No model.)



*Claim.*—1. In an electric water regulating apparatus for boilers, the steam controlling valve of the feed pump having a cylindrical chamber at each side of the said valve and in communication with the central chamber in which the said valve is situated, combined with a piston in each chamber, the said pistons being connected with the stem of the said valve, a valve to admit steam alternately to the outer faces of the two pistons, and magnets which are charged by the rise and fall of the water in the boiler through the medium of a suitable thermostat, arranged to actuate the said controlling valve, substantially as, and for the purpose specified.

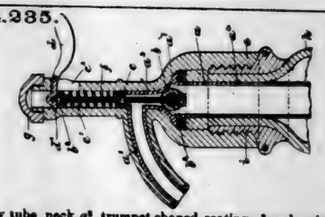
2. In an electric water regulating apparatus for steam boilers, the steam controlling valve of the feed pump having a cylindrical chamber at each side of the said valve and in communication with the central chamber in which the said valve is situated, combined with pistons on the stem of the said valve, one at each side thereof, a steam chest having a valve therein which controls the admission and escape of steam to and from the said pistons, and a second valve chest containing a valve to control the movement of steam to and from the first chest, and suitable magnets adapted to operate the last named valve as the change in water level in the boiler takes place, substantially as, and for the purpose specified.

3. In an electric water regulating apparatus, for steam boilers, the steam valve which regulates the admission of steam to the steam feed pump controlled by means of a primary and a secondary steam valve, the former in connection with actuating magnets and the latter adapted to operate a switch whereby the actuating magnets are cut out of the electric circuit, substantially as, and for the purpose specified.

4. In an electric water regulating apparatus for boilers, a valve to control the admission of steam to a steam feed pump, having on its stem two pistons of the same diameter, one at each side of the valve, the said pistons being in cylinders leading from the chamber in which the controlling valve is situated, a valve chest with ports in communication with the said cylinders having a balanced piston valve, a valve chest in communication with the first having a smaller balanced piston valve, magnets connected to the stem of the smaller piston valve, and a switch connected to the stem of the larger piston valve, whereby as the magnets are charged with electricity the two piston valves are moved and the steam valve opened or closed and the switch changed in position so as to cut out the said magnets, substantially as, and for the purpose specified.

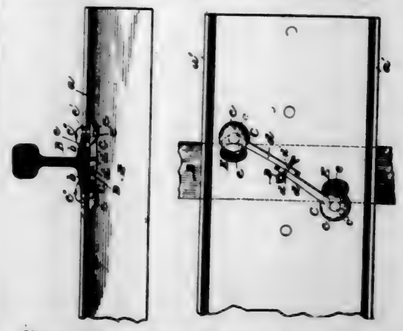
**504,235. SIPHON OR SELTOGENE FOR AERATED WATERS.** HENRY J. NICOLL, London, England. Filed Apr. 12, 1892. Serial No. 428,976. (No model.) Patented in England July 3, 1891, No. 11,330.

*Claim.*—A siphon-head having within it and in direct contact therewith a glass lining as shown and described having a spout or



delivery tube, neck $a^2$, trumpet-shaped seating $a^3$ and a siphon tube $a^4$ projecting beyond the trumpet mouth, such spout, neck, trumpet-shaped seating and siphon tube being all in one and the same piece.

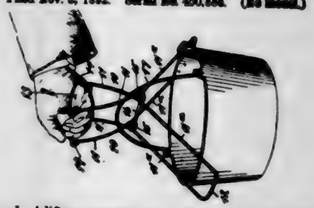
**504,236. TRACK-FASTENING.** GROVER R. NORTON, Salt Lake City, Utah. Filed Sept. 3, 1892. Serial No. 444,943. (No model.)



*Claim.*—1. In combination with a railway tie and the rail thereon, clamps or dogs passing through openings in the top of the tie, said clamps having their upper ends hooked to engage the flanges of the rail and having their lower ends passing beneath the top of the tie, said lower ends being provided with holes, and a locking member passing through said holes; substantially as described.

2. In combination with a railway tie and the rail thereon, clamps or dogs passing through openings in the top of the tie, said clamps having their upper ends hooked to engage the flanges of the rail and having their lower ends passing beneath the top of the tie, said lower ends being provided with holes, and a split key passing through said holes; substantially as described.

**504,237. LIFTER OR DRAINER.** WILLIAM W. OLCOTT, Fremont, Nebr. Filed Nov. 3, 1892. Serial No. 450,886. (No model.)



*Claim.*—1. A lifter, comprising oppositely arranged members pivoted together at about their centers forming upper and lower sections, the upper sections serving as handles and the lower sections as clamps, substantially as described.

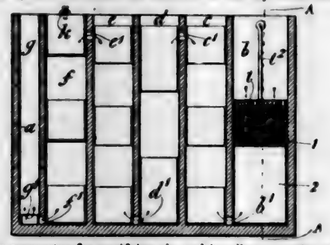
2. A lifter, consisting of the oppositely arranged members 10, each formed of an upper and lower section 11 $11^a$ and having an eye 15 at about the center, and a pin or shaft passing through the said eyes and pivoting the members together, substantially as herein shown and described.

**504,238. APPARATUS FOR THE PURIFICATION OF MOLTEN TIN OR ITS ALLOYS.** DAVID OWEN, Morriston, near Swansea, England. Filed Feb. 9, 1892. Serial No. 461,672. (No model.) Patented in England Mar. 23, 1889, No. 5,037.

*Claim.*—1. In apparatus for purifying tin and its alloys, a vessel having a series of filtering chambers separated by vertical partitions, and having communicating openings alternately at the bottom and



top of such partitions, each of such chambers being provided with a filtering mass composed of a series of filtering materials of different kinds superposed one above the other, substantially as set forth.

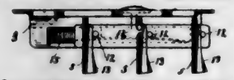


2. In apparatus for purifying tin and its alloys, a series of filtering chambers having each a passage communicating directly with the next chamber and each provided with a filtering mass composed of a series of filtering materials of different kinds located one above the other and disposed vertically, horizontally and transversely of each other substantially as set forth.

3. In combination with the series of communicating filtering chambers, each provided with a series of filtering materials placed one upon the other as described, a tinning pot in communication with the bottom of the last one of such chambers, all substantially as set forth.

4. A filter for molten tin and its alloys composed of metal rods placed vertically and horizontally, metal shot or balls, and reticulate work, disposed as set forth in a series of adjoining chambers communicating with each other, and through each and all of which the molten liquid is caused to pass.

**504,239. REGISTER.** WILLIAM E. PATCHIN, Rochester, N. Y. Filed Mar. 18, 1893. Serial No. 466,678. (No model.)



*Claim.*—1. In a register, the combination with the face plate and supports thereon, of the fans or blades pivoted at the sides of their ends upon said supports, the slide mounted in rigid guides on one of the supports movable crosswise of the blades and sliding connections between said slide and the blades between their pivots and the free edges for actuating them positively in both directions, substantially as described.

2. In a register, the combination with the face plate and supports thereon, of the fans or blades pivoted at the sides of their ends upon said supports and having the inclined ends, and the actuating slide, movable in rigid guides and loosely engaging said inclined ends for actuating and holding the blades on their pivots, substantially as described.

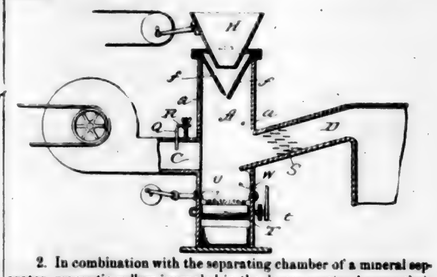
3. In a register, the combination with the face plate and supports thereon, of the fans or blades pivoted at the sides of their ends upon said supports and having the inclined ends and the actuating slide moving in rigid guides having the pins arranged on opposite sides of the inclined ends for actuating the blades and holding them, substantially as described.

4. In a register, the combination with the face plate, the fan supports thereon, one of them having the recess, and the sliding plate operating in the recess, of the fans or blades pivoted to said supports at the ends near their sides and the projections on the sliding plate cooperating with the blades for opening and closing them, substantially as described.

5. In a register, the combination with the face plate, the two flanged plates secured thereto having apertures for the journals of the fans, one of said plates having the recess in its face, the sliding plate operating therein, and the friction spring, of the fans or blades pivoted in the plates near their sides and arranged to overlap when moved in one direction, and connections between said blades and the sliding plate for causing their operation by the movement of the latter, substantially as described.

**504,240. DRY-MINERAL SEPARATOR.** GEORGE H. PATTERSON, Cañon City, Colo. Filed Mar. 9, 1893. Serial No. 465,293. (No model.)

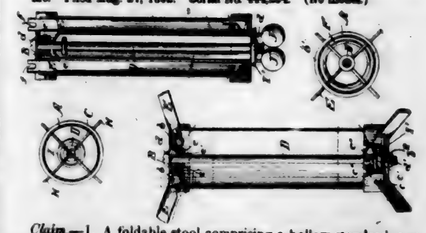
*Claim.*—1. In a dry mineral separator a central chamber having a feed hopper above the same, a passageway at one side admitting an air blast, an exit for said blast at the opposite side, openings in the walls of the chamber below the level of the air passages, magnetic rollers mounted within the chamber having portions of their peripheries extending through said openings and brushes located without the chamber bearing against said portion, substantially as described



2. In combination with the separating chamber of a mineral separator, magnetic rollers journaled in the lower portion having their peripheries projecting through openings in the walls of the chamber, a yoke having its arms supported in proximity to the walls and provided with brushes depending into contact with the rollers, and connections to the yoke for reciprocating the same, substantially as described.

3. In combination the central chamber, the feed hopper communicating therewith, a passageway for admitting an air blast upon one side of the chamber, an exit for said blast upon the other side, a projection from the wall of the chamber beneath the mouth of the exit, and an opening in the wall below said projection, substantially as described.

**504,241. FOLDABLE STOOL.** FRANK S. PATTON, Kansas City, Mo. Filed Aug. 27, 1892. Serial No. 444,254. (No model.)



*Claim.*—1. A foldable stool comprising a hollow standard, a radially-slotted cap or head fixed to said standard and provided with a depending boss having a series of sockets or seats, a series of arms adapted to be fitted in said seats or sockets of the boss, when projected, and to be disconnected from the same and thrust into the standard, the retainer fitted within the hollow standard and passing through the arms at one side of the inner ends thereof, a seat, and the legs, as and for the purpose described.

2. A foldable stool comprising a hollow standard, a slotted fixed cap having a series of seats, the arms fitted in said slotted cap, the segmental retainers on which said arms are loosely hung and which are fitted snugly within the standard to move freely in the same, a seat, and the legs, as and for the purpose described.

3. A foldable stool comprising the hollow standard or body, the heads fitted against the ends of the body and connected by a longitudinal through bolt, the pivoted arms fitted in the slots of the upper head and adapted to slide within the standard of the body, close to the same, a slidable ring fitted on the through bolt, and the legs pivoted to said ring and adapted to slide with the ring within the standard or body, said connected legs and ring lying close to the through bolt and within the positions occupied by the arms when said legs and arms are folded within the standard or body, substantially as and for the purpose described.

4. In a foldable stool, the combination with a hollow standard or body, and a bolt extending longitudinally through said standard or body, of a series of arms pivoted to a slidable retainer guided within the body or standard and adapted to slide therein with said arms when the latter are folded and thrust longitudinally into one end of the standard, and a series of legs connected by a common ring which is fitted loosely on the through bolt and slides with the legs when the latter are thrust into the opposite end of the standard, whereby the legs are adapted to fold into the standard within the positions occupied by the arms when folded therein, substantially as and for the purpose described.

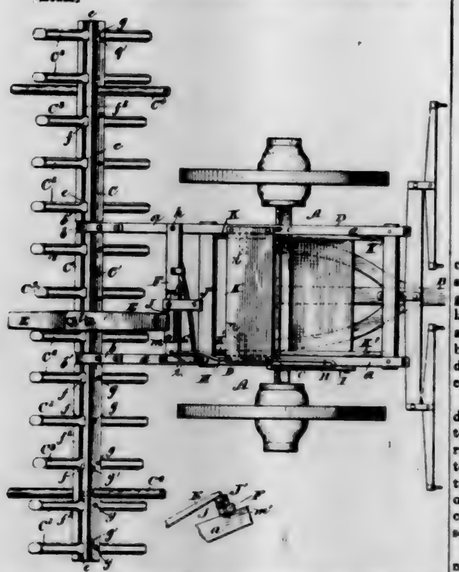
5. In a foldable stool, the combination with a hollow standard, and a central through bolt or rod, of a series of arms pivoted to a sliding retainer fitted to slide within the hollow standard, a series of

legs pivoted to a sliding ring loose on the central bolt or rod, the arrangement of the arms and legs and their sliding guides being such that the legs are adapted to lie within the arms when said arms and legs are folded within the standard, as and for the purpose described.

6. In a foldable stool, the combination with a hollow body or standard, of a series of arms adapted to be folded longitudinally within the standard, a series of legs arranged to fold in the standard within the positions occupied by the arms when folded therein, seats at opposite ends of the standard to receive the arms and legs, respectively, and hold the same in their projected positions, and a revoluble locking device at one end of the standard and arranged to confine the legs in their spread positions, substantially as and for the purpose described.

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**504,242. REVOLVING RAKE FOR CORNSTALKS.** JAMES A. PAYNE, Ellsworth, Ill. Filed Nov. 28, 1891. Serial No. 413,435. (No model.)

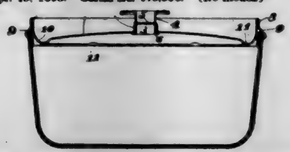


*Claim.*—1. The revolving rake head provided with locking arms, in combination with the pivoted spring locking bar, an auxiliary step locking block applied on the bar and adapted to be swung around on said bar out of, or into range of, the locking arms, for the purpose of changing the inclination of the teeth when locked, connecting rod and lever, substantially as described.

2. The revolving rake head provided with locking arms, in combination with the pivoted spring locking bar, a plurality of auxiliary step locking blocks applied on the locking bar, and adapted to be swung around on said bar out of, or into range of, the locking arms, for the purpose of changing the inclination of the teeth when locked, connecting rod and lever, substantially as described.

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**504,243. COOKING UTENSIL.** CHARLES PHILIPPOT, Newark, N. J. Filed Apr. 15, 1893. Serial No. 470,530. (No model.)

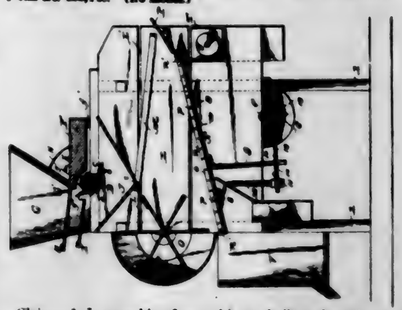


*Claim.*—1. A cover for cooking vessels having a raised rim arranged about its edges, the upper surface of said cover being convex at its center and provided with an annular depression or channel arranged between said central convex portion and the raised rim, said cover being also provided with a central perforation and with a series of perforations in the bottom of said annular channel or depression, substantially as set forth.

2. A cover for cooking vessels composed of a sheet of metal having a raised rim about its edges, said rim being formed of two thicknesses of metal, the upper surface of said cover being convex at its center and having an annular channel surrounding said convex portion, said cover having also a central perforation and a series of perforations in the bottom of said channel the outer thickness or ply of the raised rim extending below the base of said annular channel and having at its central part an outwardly projecting bead adapted to rest on the edges of the vessel, substantially as set forth.

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**504,244. MACHINE FOR CRACKING AND SEPARATING ALMOND-NUTS.** WALTER G. READ, Colusa, Cal. Filed Feb. 19, 1892. Serial No. 422,146. (No model.)



*Claim.*—1. In a machine for cracking or hulling almond nuts, the combination of a cylinder having a series of transverse teeth on its surface, each tooth provided with a straight surface between its tangential and radial sides, and a concave adjustably secured in fixed relation to the cylinder and having on its inner surface a series of teeth arranged in reverse order to the teeth of said cylinder, said cylinder being continously rotated in one direction to present the abrupt radial sides of its teeth to the corresponding sides of the teeth on the concave, for the purpose described, substantially as set forth.

2. In a machine for cracking or hulling almond nuts, the cylinder having its teeth arranged parallel across its surface and each tooth provided with the straight surface between its tangential and radial sides, combined with a concave having a greater number of teeth than the cylinder and with its teeth arranged in reverse position to the teeth of the cylinder, said cylinder being rotated continuously in one direction to present the radial sides of its teeth to the corresponding sides of the teeth on the concave, for the purpose described, substantially as set forth.

3. In a machine for cracking or hulling and separating almond nuts, the combination with a main frame, and a primary receiving hopper, of the fixed concave situated within the hopper at one side thereof and provided with the transverse teeth on its inner surface, the cylinder having its teeth arranged in reverse order to the teeth on the concave and rotated in a direction to present the abrupt sides of its teeth to the corresponding sides of the teeth on the concave, a shaking shoe below the cylinder and concave, the movable cut off H situated in the hopper above the cylinder and concave, and the regulating slide I guided in the hopper below the cut-off and arranged opposite to the cylinder, substantially as and for the purpose described.

4. In a machine for cracking and separating the hulls and shells of almond nuts, the combination with a main frame or casing and a hopper, of the adjustable supporting block secured to the casing outside of the hopper and having its inner end fitting in an opening in the side of said hopper, the toothed concave fixed to the inner end of said support, and the toothed cylinder provided at its ends with the circumferential flanges or heads which project beyond the cylinder and embrace the sides of the supporting block F and the ends of the concave, for the purpose described, substantially as set forth.

5. In a machine for cracking and separating the hulls and shells of almond nuts, the combination with a main frame and the primary hopper, of the support F situated outside of the hopper and provided, at its opposite ends, with the upper and lower arms, respectively, which project laterally from the support, the independent bolts for securing the support to the main frame to permit said support to be adjusted endwise and vertically, as set forth, the concave fixed to the inner end of the support, and the cylinder within the hopper, close to said concave, substantially as described.

6. In a machine of the character specified, the combination of the primary receiving hopper, the cylinder operating therein, the concave, the auxiliary hoppers on opposite sides of the primary hopper, the interior chute arranged within the casing of the machine framing and common to all of the hoppers to receive from the same, the cut-off operating in the primary hopper only, the inclined feed board in said primary hopper, and the shoe below the interior chute, substantially as and for the purpose described.

7. The combination with a vibrating shoe, of the sieve connected at one end to the shoe to partake of the vibrating motion thereof and resting at its other end on fixed supports independent of the shoe, the driving shaft, the striking mechanism having one part thereof pivotally connected to said sieve, and a cam on the driving shaft to operate the striking mechanism and impart vertical impulses to the sieve independently of its motion with said vibrating shoe, substantially as and for the purpose described.

8. The combination with a vibrating shoe, of the sieve connected to the shoe at one end and having its other end supported by means independent of the shoe, the driving shaft, the striking lever normally held by a spring in contact with a cam on the shaft, and the pendent bar loosely connected to the sieve and to the striking-lever, as and for the purpose described.

9. The combination with a vibrating shoe, of the sieve connected at one end to the shoe and having its other end supported by the ledges or shoulders, the shaft having a cam, the striker-lever arranged in the path of the cam, and having its free end connected by a spring to a part of the machine framing, and the pendent bar pivoted to the sieve-frame and having its other end loosely connected to the striker-lever, as and for the purpose described.

10. The combination, in a machine of the character specified, of the primary receiving hopper, the concave and cylinder, the vibrating shoe below the hopper and arranged to receive from the cylinder and concave, the single driving shaft having connections with the shoe to reciprocate the same, the receptacle below the tail of the shoe and having the conveyer therein, and gear connections between the driving shaft, the cylinder shaft, and the conveyer shaft to operate all the parts simultaneously, as and for the purpose set forth.

11. In a machine for cracking or hulling and separating almond nuts, the combination with a hopper, of a cylinder journaled in said hopper, a concave arranged close to the surface of said cylinder and adjustable toward or from the same, for the purpose described, and the shaking shoe L arranged immediately below said cylinder and concave to receive directly therefrom, said shoe carrying the inclined sieve M and the screen N which is inclined reversely to the sieve, substantially as and for the purpose described.

12. In a machine for cracking and hulling and separating almond nuts, the combination, with a hopper of a cylinder B journaled therein, a fixed concave arranged close to said cylinder and adjustable toward or from the same, for the purpose described, the shaking shoe arranged below said cylinder and concave and carrying the reversely-inclined sieve and screen, the tail-gate pivoted to the shoe between the contiguous ends of the sieve and screen, and the blast fan at the opposite end of the shoe from the tail gate, substantially as described.

13. In a machine for cracking and hulling and separating almond nuts, the combination, with a hopper, of the cylinder B journaled therein, a fixed concave arranged close to said cylinder and adjustable toward or from the same, for the purpose described, the shaking shoe L arranged immediately below the cylinder and concave and carrying the reversely inclined sieve and screen, the inclined tail gate P pivoted to the shoe between the contiguous ends of the sieve and screen, a blast fan, and the conveyer U operating in a receptacle below the pivoted tail gate and the upper end of the screen on the shoe, the whole combined and arranged for operation, substantially as described for the purpose set forth.

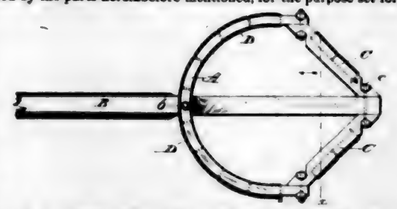
14. In a machine for cracking and hulling and separating almond nuts, the combination, of a hopper, the rotary cylinder, the concave adjustable toward or from the periphery of the cylinder, the vibrating shoe L arranged to receive from the cylinder and concave, the single driving shaft connected to said shoe to reciprocate the same, the conveyer arranged in a receptacle below the tail of the shoe, and belting between the driving shaft, the cylinder shaft, and the conveyer shaft, for the purpose described, substantially as set forth.

15. In a machine for cracking and hulling almond nuts, the cylinder having a series of ratchet teeth each provided with the inclined and radial sides connected by the tangenial surface, said cylinder being rotated continuously in one direction to present the radial sides of its teeth to the corresponding sides of the teeth on a concave, combined with a concave having teeth arranged in reverse order to the teeth on the cylinder, the concave being arranged opposite to the upper half of said cylinder and having its lower edge terminating at or near the horizontal axis of the cylinder, whereby the hulls or shells of the nuts will be crushed between the teeth of the cylinder and concave and the kernels will drop or fall upon the cylinder without liability of being injured by said concave, as and for the purpose described.

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**504,245. FRUIT-GATHERER.** THOMAS R. REAGAN, Mapleton, Kans. Filed Dec. 20, 1892. Serial No. 456,661. (No model.)

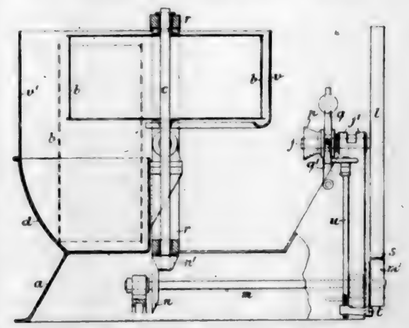
*Claim.*—1. In a fruit gatherer, the combination of the bow A attached to a handle, short pieces C C attached to the ends of the bow and to the end of the handle, the short pieces C and part of the handle opposite thereto being beveled as shown, and a net adapted to be carried by the parts hereinbefore mentioned, for the purpose set forth.



2. In a fruit gatherer, the combination of a handle, a bow attached thereto, short pieces C C attached to the ends of the bow and to the end of the handle, the inner sides of the pieces C C and the sides of the handle adjacent to said pieces being beveled to provide acute edges, and a net carried by the bow and pieces C C, substantially as shown, and for the purpose set forth.

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**504,246. WASHING-MACHINE.** ERNEST D. REEVE, London, England. Filed Dec. 29, 1890. Serial No. 376,187. (No model.)

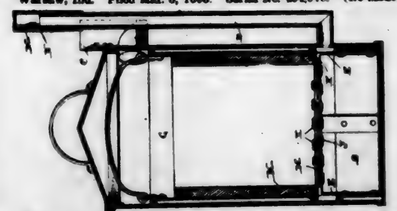


*Claim.*—1. The combined washing machine and hydro-extractor having a tank and cage relatively disposed substantially as described whereby the axis of revolution of the cage can be turned from a horizontal to a vertical position, in combination with mechanism for rotating the said cage at a higher speed when the axis is vertical, and at a lower speed for washing when the axis is horizontal and partially immersed in the water in the tank, substantially as described.

2. A combined washing machine and hydro-extractor having a cage adapted to rotate in a frame supported upon trunnions, and having such cage and a tank relatively disposed as set forth so that the axis of revolution of the cage can be turned from a horizontal to a vertical position, combined with means substantially as described serving to rotate the cage at a higher speed for hydro-extracting, and at a lower speed for washing when on its horizontal axis and partially immersed in the water in the tank

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**504,247. SUBMERGED WATER-HEATER.** RICHARD S. RUTTER, Warsaw, Ind. Filed Mar. 3, 1893. Serial No. 464,570. (No model.)



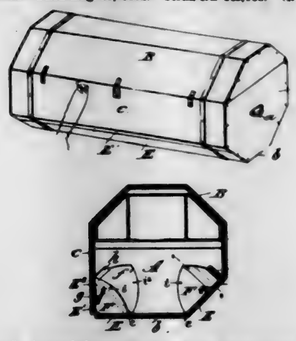
*Claim.*—1. A heater comprising a casing, a removable ash pan therein, supports projecting vertically therefrom, a removable fire pot adapted to rest thereon, a draft pipe entering the casing between the pan and pot, and an exit flue above the fire pot, substantially as shown and described.

2. A heater comprising a casing, a removable ash pan therein, supports projecting therefrom, inwardly extending arms at the upper ends of the supports a removable fire pot adapted to rest on the supports having a grated opening in its bottom, a draft inlet pipe leading to the casing between the ash pan and fire pot, and an exit flue above the fire pot, substantially as shown and described.

3. A heater comprising a casing, a removable ash pan therein, supports projecting vertically from the pan, chains connecting the same, a fire pot adapted to rest on the supports, a draft inlet pipe entering the casing between the pan and pot, and exit flue, substantially as shown and described.

4. A heater comprising a casing, an ash pan therein, supports projecting vertically therefrom, inturned arms at the inner ends of the supports, a fire pot, a recessed and grated bottom for the fire pot, the width of the bottom between its outer side and the recess being the same as the length of said arms at the upper ends of the supports, and draft inlet and exit pipes, substantially as shown and described.

**504,248.** AUTOMATIC FOLDING TRUNK. ALICE R. SCOTT, Hardesty, Okla. Filed Aug. 15, 1892. Serial No. 443,183. (No model.)



*Claim.*—1. A trunk having end and side pieces and a bottom board, the lower corners of the end pieces being cut away as shown, of intermediate strips hinged to the bottom board and to each other, one of the strips being in sliding engagement with the end pieces so that it can be folded against the cut away corners or extended on a line with the bottom board, and means for holding the strips, substantially as shown, and for the purpose set forth.

2. In a trunk having end pieces the lower corners of which are cut away as shown, a bottom board and side pieces attached to said end pieces, together with sections hinged to the bottom board and made up of a plurality of strips which are adapted to be arranged on a line with the cut away corners or extended to form continuations of the side pieces and bottom board, and means for holding the strips, substantially as shown.

3. A trunk having a body portion the lower corners of the end pieces of which are cut away as shown, strips E hinged to the bottom board and provided with end pieces F F which are rigidly attached thereto and slide upon the end pieces of the trunk, and strips E' and E² hinged to each other and to the strips E, substantially as shown, and for the purpose set forth.

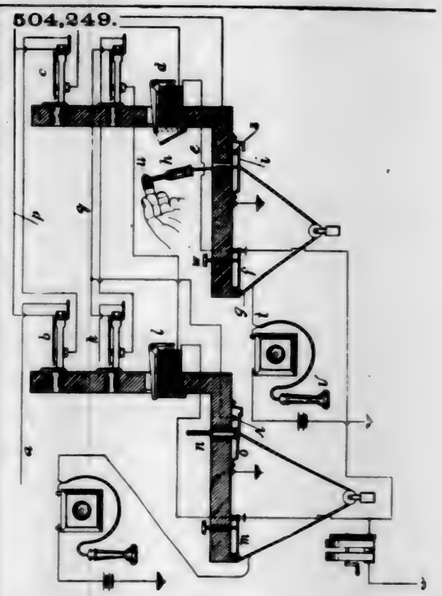
4. A trunk having end pieces the lower corners of which are cut away as shown, a bottom board *b* and side pieces *c c* secured to the end pieces, strips E hinged to the bottom board and having end pieces F F, strips E' and E² hinged to each other and to the strips E, the strips E' being connected to the end pieces of the trunk by springs, and pins which are inserted in perforations in the end pieces F F and end pieces of the trunk substantially as shown, and for the purpose set forth.

**504,249.** MULTIPLE SWITCHBOARD KEYBOARD APPARATUS. CHARLES R. SCRIBNER, Chicago, Ill., assignor to the Western Electric Company, same place. Filed Dec. 6, 1887. Renewed Dec. 13, 1892. Serial No. 455,011. (No model.)

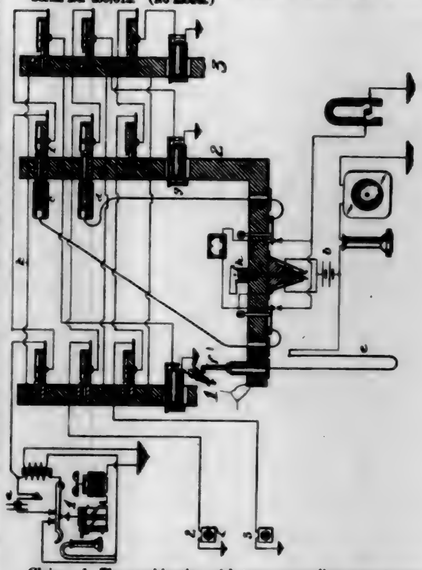
*Claim.*—1. A telephone line connected with one point of a terminal plug and a telephone connected with another point of the same plug, and a connecting device for closing the circuit between the two points of the plug to connect said line with the telephone, substantially as described.

2. A plug provided with an insulated shank and an insulated tip and a yielding metallic fabric adapted to be worn upon the finger so as to readily close the connection between the tip and the shank at the will of the operator, as described.

**504,249.**



**504,250.** TELEPHONE-EXCHANGE TESTING APPARATUS. CHARLES R. SCRIBNER, Chicago, Ill., assignor to the Western Electric Company, same place. Filed June 1, 1889. Renewed Dec. 13, 1892. Serial No. 455,012. (No model.)



*Claim.*—1. The combination with two or more lines upon two or more switch boards, each line being connected with a spring jack upon each board, of connecting plugs and cords connected with a listening key, the operator's telephone outfit, a testing battery connected intermediate of the listening key and the operator's telephone outfit, a test plug and cord connected with the operator's telephone outfit at a point between the test battery and telephone outfit, whereby a test may be made with the telephone outfit through the test battery or independent of it as may be desired.

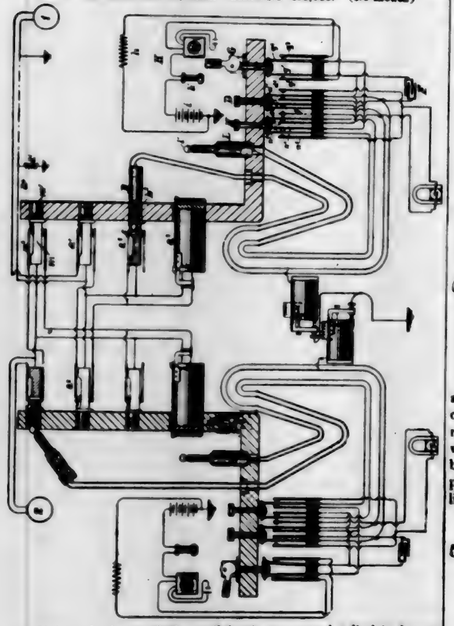
2. In a telephone exchange system the combination with the multiple switch board system, of the subscriber's transmitter battery connected with the transmitter and in derived circuit with the subscriber's line and the operator's test battery connected in a direction to operate in conjunction with the subscriber's transmitter battery whereby the operator may determine whether a line is connected and by the same test determine whether the subscriber's telephone is removed from the hook.

3. In a multiple switch board system the operator's telephone outfit, branches through a test battery to the listening keys and to a special testing plug, subscribers' telephone outfits having their batteries in derived circuit through a transmitter set and to their respective individual lines, whereby an operator may with the same telephone outfit test to determine whether a line is connected at another board and whether the subscribers of connected lines have hung their telephones upon the hook, substantially as described.

4. The combination with a telephone line provided with a local battery closed to line in derived circuit when the telephone is removed from its hook, of spring jack connections for said line one upon each of the switch boards, a test circuit for said line connecting together the insulated frames or test pieces of said spring jack switches and a ground circuit containing a battery and telephone at each of the switch boards, said ground circuits being provided each with a terminal plug adapted to be inserted in the spring jack switch of the line, the battery in said circuit at the central office, the local battery of the line and the batteries in the said circuits at the central office having their poles in the same direction when connected to line, substantially as and for the purpose specified.



**504,251.** VIBRATING CIRCUIT-BREAKER AND RETARDATION-COIL FOR TEST SYSTEMS. CHARLES R. SCRIBNER, Chicago, Ill., assignor to the Western Electric Company, same place. Filed Mar. 4, 1891. Renewed Dec. 13, 1892. Serial No. 455,013. (No model.)



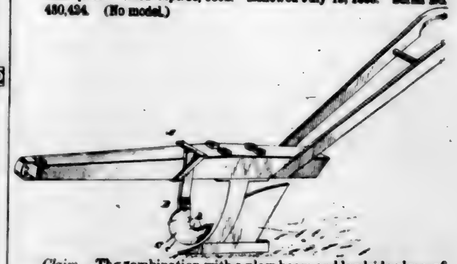
*Claim.*—1. A retardation coil having a central cylindrical core of iron, a coil of wire surrounding the central core, a tube of iron surrounding the coil, and of the same length as the central core, and a plate of iron uniting the central core and the external tube at one end, and an armature pivoted to swing in the direction of the axis of the coil and adapted to close against the presented ends of the core and tube, a spring to hold the armature normally away from the ends of the core and tube and against a fixed insulated stop, in the manner and for the purpose specified.

2. The combination of a retardation coil furnished with an armature and contacts adapted to be separated when the armature is attracted, and when separated to open the circuit of the coil, with a loop plug having a sleeve connected through the retardation coil to earth, and adapted to make contact with the test ring of a line jack into which it is thrust, whereby the test ring of the line jack is grounded through the retardation coil in the manner and for the purpose specified.

3. Two subscribers' lines each extending from a subscriber's station through the line springs and contacts of several spring jacks, each of which is provided with a test ring insulated from the line springs but electrically connected to the test rings of all the other spring jacks of that line, connected together for conversation by means of plugs, having each two points, one of which makes contact with a line spring and the other with a test ring of a subscriber's jack, and their corresponding contacts electrically connected, in combination with a retardation coil furnished with an armature and contacts adapted to be separated when the armature is attracted, and when separated to open the circuit through the coil, included in a connection from earth to that portion of the connecting plug which is in contact with the test rings of the two lines, and a telephone having its coil connected at one point to earth, and at another point to a test ring of a spring jack, for the purpose and in the manner described.

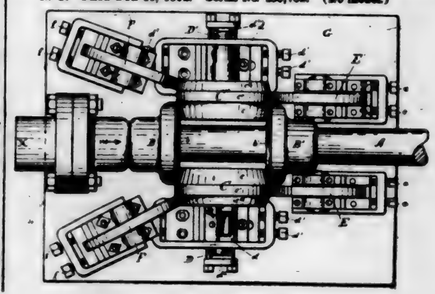
4. Two subscribers' lines each extending from a subscriber's station through the line springs and contacts of several spring jacks, each of which is provided with a test ring insulated from the line springs, but electrically connected to the test rings of all the other spring jacks of that line, connected together for conversation by means of plugs having each two points, one of which makes contact with a line spring and the other with a test ring of a subscriber's spring jack, and their corresponding contacts electrically connected, in combination with a retardation coil furnished with an armature and contacts adapted to be separated when the armature is attracted and when so separated to open the circuit through the coil, included in a connection extending from earth, through the test battery, through the retardation coil, to that portion of the connecting plug which makes contact with the test rings of the subscriber's jack, and a telephone one point of whose coils is grounded and another is connected to a test ring of a subscriber's spring jack, in the manner and for the purpose specified

**504,252.** COMBINED COLTER AND SCRAPER. FLETCHER SHERROD, Madison Station, Miss., assignor to himself and Henry B. Cage, same place. Filed Sept. 10, 1892. Renewed July 13, 1893. Serial No. 480,494. (No model.)



*Claim.*—The combination with a plow beam and landside plow, of a combined colter and scraper arranged in advance of the plow, and consisting of an upper securing shank terminating in a lower widened rearwardly curved cutting and scraping blade, said blade being provided with a continuous lower curved cutting edge and having a mold board twist corresponding to the curvature of the mold board of the plow and disposed in the same direction as said mold board and in line therewith, substantially as set forth.

**504,253.** THRUST-BEARING. EDWIN B. SUTTENFIELD, Rochester, N. Y. Filed Dec. 19, 1892. Serial No. 456,732. (No model.)

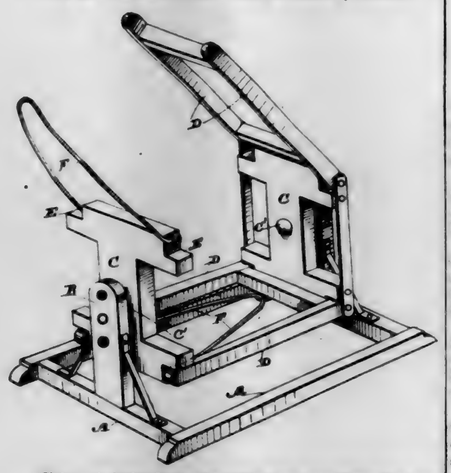


*Claim.*—1. In a thrust bearing the combination of a shaft, a collar fixed on said shaft and having an inclined face, rollers having each an axis at right angles to said shaft and a beveled face against which the collar bears, a flat face, and a second beveled face and rollers having flat faces and bearing respectively against said last mentioned beveled faces, substantially as and for the purposes described.

2. In a thrust bearing the combination of a shaft A, a collar B fixed on said shaft and having an inclined face $b$, rollers as C having each an axis at right angles to said shaft, and a beveled face $c$, against which the collar bears, a flat face $c'$ and a second beveled face $c^2$, a roller E bearing against said flat face $c'$ and having an axis at right angles to said shaft and a roller F bearing against said beveled face $c^2$ and having an axis parallel to said face, substantially as and for the purposes described.

3. In a thrust bearing, the combination of a shaft, having a slight longitudinal movement, collars oppositely fixed on said shaft, and having inclined faces respectively, rollers having axes at right angles to said shaft and each having a beveled face adapted to bear against the inclined faces of said collars and a flat face, said collars being so set on said shaft that when the shaft is moved in one direction, one of said collars bears against said rollers, and when the shaft is moved in the other direction, the other collar bears against said rollers, and rollers having axes at right angles to said shaft and bearing against said flat faces, substantially as described.

## 504,254. RAISIN-TRAY TURNER. MILTON R. SKAGGS, Brentwood, Cal. Filed Aug. 9, 1892. Serial No. 442,614. (No model.)




*Claim.*—A device for turning raisin trays, consisting of an open frame-work formed of transverse end frames having journal pins, supporting standards in which said journals rotate, opposing sides, one end of which is hinged to one of the transverse end frames, and shoulders upon the opposite frame upon which said sides are closed, independent locking clamps whereby either of the doors may be locked while the other is opened for the reception of trays, the closed side serving as a bottom upon which the trays are piled, and the opposite side, after being locked, serving as a bottom for the support of the trays in their reversed position, while the first side is opened to admit of their removal, substantially as herein described.

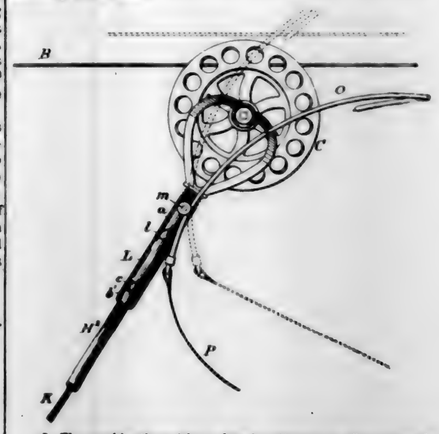
## 504,255. ELECTRIC-RAILWAY TROLLEY. FRANK J. SPRAGUE and PATRICK F. O'BRADDENHEIT, New York, N. Y., assignors to the Sprague Electric Railway and Motor Company, same place. Filed Jan. 15, 1893. Serial No. 458,573. (No model.)

*Claim.*—1. The combination with an electric railway car, of a contact device for making underneath contact with an overhead conductor and free to move both laterally and longitudinally of the car and a spring coiled around a vertical axis for supporting said contact device, substantially as set forth.

2. The combination with an electric railway car, of a contact device for making underneath contact with an overhead conductor, a pole carrying said contact device, and a universally flexible support for said pole, substantially as set forth.

3. The combination with an electric railway car, of a contact device for making an underneath contact with an overhead conductor, a pole carrying said contact device, and a universally flexible spring supporting said pole, substantially as set forth.

4. The combination with an electric railway car, of a contact device for making underneath contact with an overhead conductor, a pole carrying said contact device, and a spring support for said pole tending to resist any deflection thereof from a vertical position, substantially as set forth.




5. The combination with an electric railway car, of a contact device for making underneath contact with an overhead conductor, a pole carrying said contact device and a single spring connected with said pole and tending to resist any deflection thereof from a vertical position, substantially as set forth.

6. The combination with an electric railway car, of a pole, a contact device carried by said pole for making underneath contact with an overhead conductor, and a spring coiled on a vertical axis supporting said pole, substantially as set forth.

7. The combination with an electric railway car, of a pole carried thereby, a contact device carried by said pole for making underneath contact with an overhead conductor, and a spiral spring supporting said pole and rigidly attached to the car, substantially as set forth.

8. The combination with an electric railway car, of a socket on the roof of said car, a spiral spring rigidly secured in said socket, a pole carried by said spring and a contact device carried by said pole for making underneath contact with an overhead conductor, substantially as set forth.

9. The combination with an electric railway car, of a socket on the roof of the car, a spiral spring in said socket a vertical key and set screws for holding said spring in said socket, a pole carried by said spring and a contact device carried by said pole for making underneath contact with an overhead conductor, substantially as set forth.

10. The combination of a car, an overhead conductor, a pole, a contact device carried by the pole and making an underneath contact with said conductor, and a spring support connecting said pole with said car and tending to resist both lateral deflections and longitudinal deflections of said pole from a vertical position, said pole being of such length that when in contact with said overhead conductor, it assumes an inclined position, substantially as set forth.

11. The combination of a car, an overhead conductor, and a pole carrying a contact device for making an underneath contact with said conductor, said pole having normally a vertical position, and being so connected with the car at its lower extremity that it is adapted to rock either transversely or longitudinally of the car, and being of such length as to assume an inclined position when in contact with the overhead conductor, substantially as set forth.

12. The combination of a car, an overhead conductor, a pole carrying a contact device for making an underneath contact with said conductor, said pole having normally a vertical position, and a spring support connecting said pole with the car at its lower extremity, said pole being so connected with said spring support that it is adapted to rock either transversely or longitudinally of the car, and said spring support tending to resist such deflections, said pole being of such length as to assume an inclined position when in contact with the overhead conductor, substantially as set forth.

13. The combination with an electric railway car, of a pole carried by said car, and composed of sections of different diameters connected by insulating joints and a contact device carried by said pole for making underneath contact with an overhead conductor, substantially as set forth.



14. The combination with an electric railway car, of a spiral spring on said car, a metal pole carried by said spring, an insulating sleeve between said pole and said spring and a contact device carried by said pole for making underneath contact with an overhead conductor, substantially as set forth.

15. The combination with an electric railway car, of a support on the roof of the car, a contact device removably attached to said support and electrical contacts carried by the contact device and by said support and automatically joined by the mechanical connection of the contact device with the support whereby the circuit of said contact device is completed by the placing of the contact device on its support, substantially as set forth.

16. The combination with an electric railway car, of a pole carried by said car, a socket at the top of said pole, and a contact device adapted to run upon the under-side of the conductor and having a rigidly connected shank entering said socket, substantially as set forth.

17 The combination with an electric railway car, of a pole on said car, a socket at the top of said pole, a cross pin in said socket and a contact device having a split shank entering said socket, substantially as set forth.

18. The combination with an electric railway car, of a hollow pole on said car and an electrical conductor in said pole, a socket at the top of said pole, a terminal of said conductor in said socket, and a contact device having a shank entering said socket, substantially as set forth.

19. The combination with an electric railway car, of a hollow metal pole on said car, an insulated conductor in said pole, a metal socket carried by said pole and insulated therefrom, said wire being connected with said socket, and a contact device having a shank entering said socket, substantially as set forth.

20. The combination with an electric railway car, of a standard on the roof of the car, a pole carried by said standard and insulated therefrom, a contact device carried by said pole and insulated therefrom, and a conductor connected with said contact device and extending to the car, substantially as set forth.

21. The combination with an electric railway car, of a standard on the roof of said car, a pole carried by said standard and insulated therefrom, a contact device carried by said pole and insulated therefrom, a conductor in said pole, and electrical contacts whereby the circuit is closed to said conductor by the placing of the contact device on said pole, substantially as set forth

22. The combination with an electric railway car, of a pole on said car, a contact device carried by said pole, and a guide for said contact device adapted to swing around said pole, substantially as set forth.

23. The combination with an electric railway car, of a pole on said car, a contact device at the top of said pole for making underneath contact with an overhead conductor and a hauling line having a swiveling connection with the top of said pole, substantially as set forth.

24. The combination with an electric railway car, of a pole on said car, a contact device at the top of said pole, a guide for said contact device adapted to swing around said pole, and a hauling line attached to said guide, substantially as set forth.

25 The combination with an electric railway car, of a pole on said car adapted to rock on either side of a transverse axis, a contact device on said pole for making underneath contact with an overhead conductor, and a hauling line attached to said pole by a swiveling connection, substantially as set forth.

26. The combination with an electric railway car, of a spiral spring on said car, a pole carried by said spring, a contact device carried by said pole for making underneath contact with an overhead conductor and a hauling line attached to said pole by a swiveling connection, substantially as set forth.

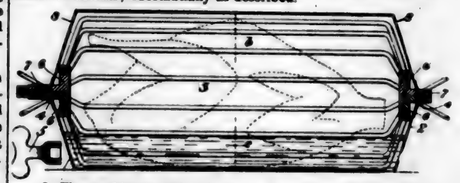
27. The combination with an electric railway car, of a pole on said car, a contact device carried by said pole, a guide for said trolley adapted to swing around said pole and means for retarding the movement of said guide, substantially as set forth.

28. The combination with an electric railway car, of a pole on said car, a contact device carried by said pole, a guide for said trolley adapted to swing around said pole, and the inclined stop and spring for retarding the movement of said guide, substantially as set forth.

## 504,256. COOKING APPARATUS. FREDERICK M. STRONG, Wheeling, W. Va. Filed Feb. 3, 1893. Serial No. 460,855. (No model.)

*Claim.*—1. In roasting apparatus, the combination with a pan, of a rotatory cage therein, said cage being arranged to hold the meat and bring it in contact with the juices at the bottom of the pan; substantially as described.

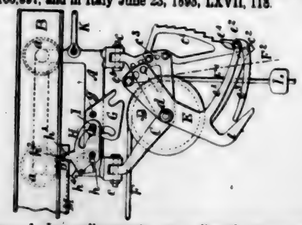
2. The combination of a closed pan, and a rotatory open-frame, or cage which holds the meat within the pan in contact with the juices at the bottom, and adapts it to be turned therein, said frame being made in sections; substantially as described.




3. The combination of a closed pan, and a rotatory open-frame or cage, which holds the meat within the pan in contact with the juices at the bottom, and adapts it to be turned therein, said frame having end trunnions enabling it to be turned axially; substantially as described.

4. The combination of a closed pan, and a rotatory open wire frame or cage, which holds the meat within the pan in contact with the juices at the bottom, and adapts it to be turned therein; substantially as described.

## 504,257. ELEVATED CARRIER. JOSEPH TEMPERLEY, Reigate, England. Filed Mar. 23, 1893. Serial No. 468,009. (No model.) Patented in France Mar. 17, 1893, No. 228,713; in Belgium Mar. 18, 1893, No. 103,897, and in Italy June 23, 1893, LXVII, 118.

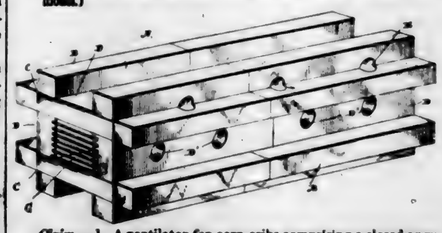


*Claim.*—1 In a pulley carriage traveling along an overhead track for the raising, lowering and traversing of roads, the combination of a block fixed on the hauling rope a double lever frame pivoted on the pulley axis and carrying a cross bolt, a cam having a gab to receive the said bolt and a curved slot, a second cam having also a curved slot, a bolt engaged in both curved slots and in horizontal slots of the carriage frame, a horn on the second cam and a pawl pivoted thereon and a stationary notched and shouldered piece presented to the horn and pawl, arranged and operating substantially as and for the purpose set forth.

2. In a traveling pulley carriage, in combination with a pair of cheeks between which the pulley is mounted, a toothed segment fixed to the said cheeks and terminating in a rest for a lever frame pivoted on the pulley axis, a double pawl lever pivoted on the said frame, and ends of the frame shaped as a fork engaging over them a block on the hauling rope, substantially as described.

3. In combination with a traveling pulley carriage, of pulley-carrying cheeks C, having a series of holes $c^2$, the segment $c'$ having an adjustable bolt connection with any one of the bolt holes in the cheeks, a cam G, a lever frame E having a series of bolt holes for the adjustment of a bolt which engages the cam, and a pawl lever pivoted to the lever frame for engaging the segment, substantially as described

## 504,258. DRYING ATTACHMENT FOR CORN-CRIBS. JOSEPH WELCH, Delphos, Ohio. Filed Sept. 8, 1892. Serial No. 445,578. (No model.)



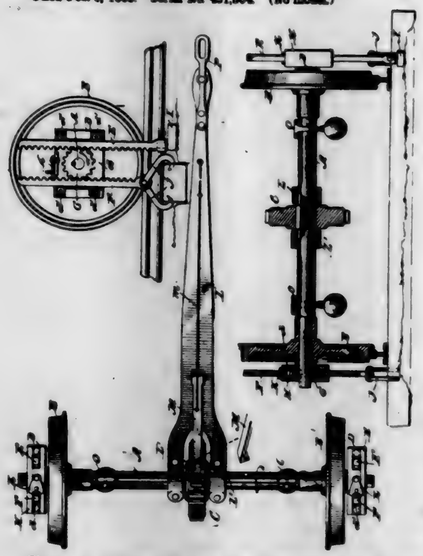
*Claim.*—1. A ventilator for corn cribs comprising a closed angular trough provided with longitudinal strips upon the outer sides of its walls to support the corn from contact therewith, the said walls

of the trough having transverse openings which have their opposite ends respectively communicating with the interior of the trough and with the spaces between the said longitudinal strips, substantially as shown and described.

2. A corn ventilator consisting of a closed rectangular trough provided with longitudinal strips on its outer sides opposite the edges of the walls of said trough, whereby the outer sides of said strips substantially intersect at their inner edges to support the corn from the sides of the wall, the walls of said trough having transverse openings communicating with the interior of the trough and with the space between the inner sides of said strips, and the corners of said walls and the meeting edges of said strips having diagonal perforations communicating with the interior of the trough and with the space between the outer sides of the said strips, substantially as shown and described.

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**504,259. TRACK-LIFTER.** WILLIAM L. WHITFIELD, Ocala, Fla. Filed Feb. 8, 1893. Serial No. 461,504. (No model.)



*Claim.*—1 An improved track lifter, comprising an axle, truck wheels loosely mounted thereon, a toothed wheel fixedly held on such axle, an operating lever loosely journaled on the axle and engaging the toothed wheel, rack bars arranged in pairs and connections between such bars and the axle substantially as shown whereby a reciprocating movement is imparted to such bars by the rotary movement of the axle, as and for the purpose described

2. The combination with the axle A, the truck wheels loosely journaled thereon, the toothed wheel C fixedly secured to such axle, and the lever and pawl for operating such wheel C, of a guide frame held on the axle, rack bars held therein, one to each side of the axle, one of such bars having a foot portion and the other a lifting arm, a cog wheel on the axle engaging such rack bars, all substantially as and for the purpose described.

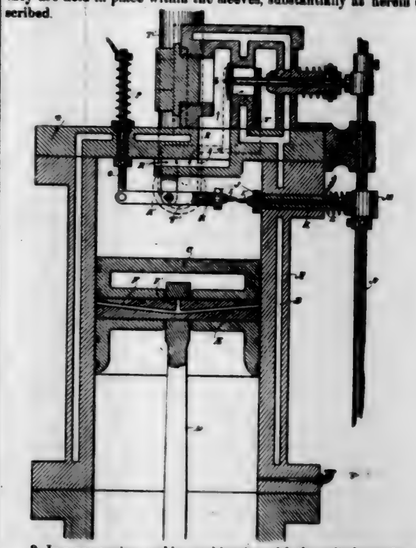
3. The combination with the truck wheels B, the axle A loosely journaled therein, its ends projecting beyond the same and having fixed cog wheels G and the toothed wheel C fixedly held thereon, of the frame D loosely held on the projecting portions of the axle, the rack bars E and F guided therein and engaging the cog wheels G, one of said bars having a foot portion and the other a lifting member, the lever M loosely hung on the axle and having a dog engaging the wheel C all substantially as and for the purpose described.

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**504,260. GAS-ENGINE.** WILLIAM H. WORTH, Petaluma, Cal. Filed June 30, 1892. Serial No. 437,886. (No model.)

*Claim.*—1. In a gas engine, electrodes arranged with their major axes on approximately the same line, means for moving one of said electrodes longitudinally inward, a spring for retracting it, means for allowing the other electrode to swing into an inclined plane, and a spring for retracting it.

2. In a gas engine and in combination with the cylinder, a reciprocating piston, spring actuated electrodes I and I', arranged on approximately the same plane and pointing toward each other whereby contact is made by the point of one electrode passing over the point of the other in a plane parallel with the length of both electrodes, carriers upon which they are mounted and by which they are moved into and out of contact with each other, sleeves within which the electrodes are adjustably fixed and clamping nuts or screws by which they are held in place within the sleeves, substantially as herein described.



3. In a gas engine, and in combination with the cylinder and a piston reciprocating therein, the electrode I' a sleeve projecting exterior of the cylinder and within which the electrode is mounted, means for adjusting the electrode within the sleeve and clamping it in place therein, a cam acting against the sleeve to move it forward, and a spring surrounding the sleeve exterior of the cylinder for returning the sleeve, substantially as herein described.

4. In a gas engine and in combination with the cylinder and a piston reciprocating therein, the tapering or pointed reciprocating electrode I', the correspondingly shaped electrode I mounted upon the oscillating arm K', the rod O connected with said arm extending through the head of the cylinder, and the yielding spring P whereby the carrier K' and electrode I are allowed to yield when contact is formed with the reciprocating electrode, and are returned to their position when the latter is withdrawn, substantially as herein described.

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**504,261. AUGER-BIT.** ABE L. ADAMS, Bridgeport, Conn. Filed May 1, 1893. Serial No. 472,593. (No model.)



*Claim.*—1. In an auger bit, the combination of the head having thereround a scoring ring provided with a cutting edge, and having a gate extending through such ring to a point about midway of such head, and a cutter detachably secured within such gate to said head and extending laterally outside said gate beyond the edge of said ring, substantially as set forth.

2. In a device of the character described, the combination of the bit head having a circumferentially disposed scoring ring and provided with a gate extending through such ring and head to a point about midway of the latter, and a cutter detachably secured to such head in a plane below the edge of said ring and extending on opposite sides of the latter, substantially as set forth.

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**504,262. BOLT.** AUSTIN ADAMS, New York, N. Y. Filed Feb. 2, 1893. Serial No. 460,700. (No model.)

*Claim.*—1. In a fastening device, the combination, with a bolt barrel provided with a projection in the side of said bolt chamber, of a spring reacted bolt bar provided with an operating knob or handle and also provided with a collar carrying a weight constructed and arranged to engage said projection and become retained thereby upon the said bolt bar being shot or pushed forward.

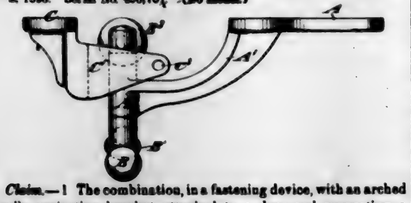




2. In a fastening device, the combination, with a bolt barrel provided with a projection in the side of said bolt chamber, of a spring reacted bolt bar provided with an operating knob or handle, and also provided with a collar carrying a weight constructed and arranged to engage said projection and become retained thereby upon the said bolt bar being shot or pushed forward, and of means to lock the collar to the bolt bar, whereby, upon manipulation, when said bolt bar is shot, it may be either retracted again by the spring without becoming retained by said projection, or may be retained and locked in its forward relation, the said bolt bar being prevented from being turned by reason of the operating knob secured to the same

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**504,268. LATCH.** AUSTIN ADAMS, New York, N. Y. Filed Feb. 2, 1893. Serial No. 460,701. (No model.)



*Claim.*—1 The combination, in a fastening device, with an arched laterally projecting bracket attached to a door and supporting a weight and handle, of a keeper secured to the jamb and provided with a jaw narrowed toward its extremity, whereby the fastening device may be released and the door opened with one hand

2 The combination, in a fastening device, with a bracket attached to a door and supporting a weight and handle, of a keeper secured to the jamb, the jaw of said keeper being provided with a double incline whereby the door may be opened and also closed and wedged tight with one hand

3. The combination in a fastening device, with a bracket attached to a door and supporting a weight and handle, of a keeper secured to the jamb, and of independent means within the closed chamber for releasing the weighted arm from the keeper

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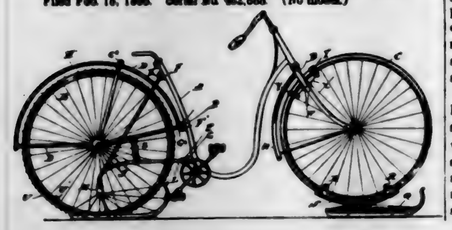
**504,264. METHOD OF DISTILLING WOOD-WASTE.** FRANZ J. SIEBERATH, Hohstm, Germany. Filed Dec. 22, 1892. Serial No. 456,070. (No specimens.) Patented in Germany Jan. 30, 1891, No. 65,447, and in France Feb. 12, 1892, No. 219,347

*Claim.*—1 The method herein described, of manufacturing wood vinegar, which consists in converting wood-waste, such as saw-dust or chips, into blocks under a pressure up to three hundred atmospheres and expressing water contained in the wood, and then carbonizing the pressed blocks in retorts, substantially as described.

2. The method herein described, of manufacturing wood-vinegar, which consists in converting wood waste, such as sawdust or chips, into blocks by comparatively high pressure up to about three hundred atmospheres, and expressing water contained in the wood, then carbonizing the pressed blocks in retorts, and precipitating the gases generated, substantially as described

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**504,265. ICE-VELOCIPEDE.** WILLIAM G. BOSSE, Lorain, Ohio. Filed Feb. 18, 1893. Serial No. 462,883. (No model.)



*Claim.*—1. In a bicycle a detachable hind wheel and supporting frame therefor in combination with a main frame provided with two points of attachment for the wheel supporting frame for general use and a third point of attachment between the other points for special use, as and for the purpose specified.

2. In a bicycle a detachable hind wheel provided with a supporting frame in combination with a main frame provided with a vertically arranged rear portion, and three points of attachment thereon for the hind wheel support, adapted for use as described, and substantially as set forth.

3. In a bicycle the combination of a main frame, a hind wheel provided with a supporting frame, a forked runner frame adapted to stride over the hind wheel and its supporting frame, and provided with forked bearings for said runners, with three points of attachment upon the main frame, for said wheel and runner supports, whereby the wheel support can be secured thereto singly or both parts aforesaid attached at once substantially as described.

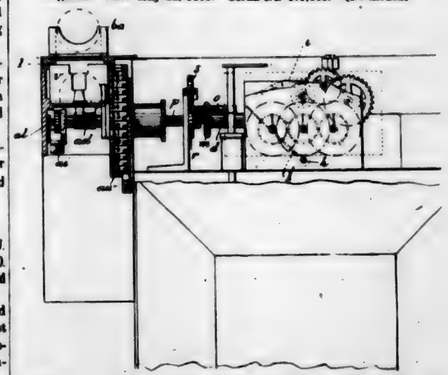
4. In a bicycle the combination of a main frame provided with three points of attachment on its rear extension, a hind wheel and support therefor provided with two points of attachment registering with two points of attachment on the frame, a connecting link between two points of attachment on the wheel support and frame, substantially as described.

5. In a bicycle the combination of a main frame, provided, with an upwardly extending rear extension, a hind wheel and support therefor pivotally secured to said rear extension, and a doubly forked runner frame secured to the main frame at points above and below the said pivotal point provided with forked bearings for pivoted runners, substantially as described.

6. In a bicycle the combination of a main frame provided with two points of connection with a forked runner frame, a hind wheel support pivotally secured to the main frame between said points of attachment, detachable spur tire upon the hind wheel, and pivoted runners upon the front wheel and rear runner fork, substantially as described

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**504,266. COIN-FREED GAS-METER.** GEORGE CARTER, London, England. Filed May 22, 1893. Serial No. 475,063. (No model.)



*Claim.*—1. The combination, with the index spindle of a gas meter having a worm secured on it, of a longitudinally-sliding screw rod *d*, the toothed wheel gearing into the said worm and engaging with the said screw rod, a toothed rack sliding with the said screw rod, a toothed quadrant gearing into the said rack, a stationary index dial, and a pointer operatively connected with the said quadrant, substantially as and for the purpose set forth

2. The combination, with the index spindle of a gas meter, the longitudinally-sliding screw rod *d* provided with a stop plate normally preventing its movement in one direction, and the worm *a* and toothed pinion *c* operatively connecting the said index spindle and screw rod; of means for revolving the screw rod whereby it and its stop are moved back longitudinally to permit the said index spindle to revolve and to return the said parts to their normal position, substantially as set forth.

3. The combination, with the index spindle of a gas meter, the longitudinally-sliding screw rod *d* provided with the flange *m* and a stop plate normally preventing its movement in one direction, and the worm *a* and toothed pinion *c* operatively connecting the said index spindle and screw rod; of the revoluble actuating rod *p* provided with a crank pin *o* engaging the flange *m*, and means for preventing the rod *p* from being revolved in more than one direction, substantially as and for the purpose set forth.

4. The combination, with the revoluble actuating rod *p* provided with the crank pin *o* and the ratchet wheels *r* and *ae*, of the pivoted pawl *o* engaging with the ratchet wheel *r*, the sleeve *q* journaled on the rod *p* and provided with the toothed pinion *ad*, the disk *ag* and the pawl *af* pivoted to the disk *ag* and engaging with the ratchet wheel *ae*; and the sliding base plate *w* provided with a toothed rack gearing into the pinion *ad*, substantially as and for the purpose set forth.

5. The combination, with the revoluble sleeve *q* provided with the toothed pinion *ad*, of the sliding base plate *w* provided with a toothed rack gearing into the pinion *ad*, and a coin slot *x*; and the operating carriage *v* provided with a coin slot *t* adapted to be placed over the slot *x* whereby the said carriage and plate are locked together by a coin inserted in the said slots, when coincident, substantially as and for the purpose set forth.

6. The combination, with the revoluble sleeve *q* provided with the toothed pinion *ad*, of the sliding plate *w* provided with a toothed rack gearing into the pinion *ad*, and a coin slot *x*; the operating carriage *v* provided with the coin slot *t*, the revoluble actuating rod *p* passing through the sleeve *q*; the ratchet wheel *ae*, the disk *ag*, and the pawl *af*, operatively connecting the sleeve *q* and rod *p*; the ratchet wheel *al* secured on the rod *p*, and the counterweighted pawl lever *ai* engaging the ratchet wheel *al* and adapted to be released from it by a coin inserted in the slots *t* and *x*, when coincident, substantially as and for the purpose set forth.

7. The combination, with the sliding base plate *w* provided with a toothed actuating rack for the purpose set forth, and a coin slot *x*; of the operating carriage *v* provided with a coin slot *t*; and the saw-toothed rack *y* arranged below the base plate and adapted to support a coin inserted in the said slots, when coincident, until the said parts have been moved forward sufficient to carry the coin beyond the front tooth of the said rack, substantially as set forth.

8. The combination, with the sliding base plate *w* provided with a toothed actuating rack for the purpose set forth, and a coin slot *x*; of the operating carriage *v* provided with the coin slot *t*, the rack *y* for supporting the coin when inserted in the slots *x* and *t*, and the pivoted rack lever *s* adapted to engage the upper edge of the coin and prevent the base plate from being moved backward until the coin is dropped, substantially as set forth.

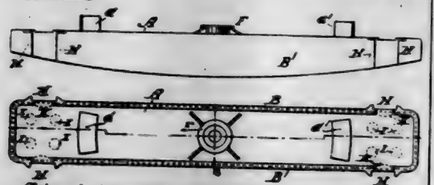
9. The combination, with the sliding base plate provided with the coin slot *x*, and the operating carriage *v* provided with the coin slot *t*; of the longitudinally-adjustable saw-toothed rack *y*, adapted to support a coin in the said slots, when coincident, and permitting the said coin to drop and unlock the said parts at any pre-arranged point in the forward movement of the base plate, substantially as set forth.

10. The combination, with the sliding base plate provided with the coin slot *x*, and the operating carriage *v* provided with the coin slot *t*; of the saw-toothed rack *y* adapted to support a coin in the said slots, when coincident; a revoluble disk *aq* provided with a curved slot, and a stud *at* projecting from the rack *y* and engaging the said curved slot, whereby the position of the said rack is adjusted longitudinally by turning the said disk, substantially as and for the purpose set forth.

11. The combination, with the index spindle of a gas meter, the longitudinally-sliding rod *d*, and intermediate driving mechanism operatively connecting the said parts; of the end stop plate *am* limiting the movement of the said rod *d* in one direction, and the pivoted cam lever *an* normally supported by the said stop plate and permitted to fall into the path of an arm on the spindle of the measuring device, to prevent its further rotation, when the movement of the rod *d* is arrested by the said stop plate, substantially as set forth.

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**504,267.** CAR-TRUCK BOLSTER. EDWARD F. GOLTRA and MORSE B. SCHAFFER, St. Louis, Mo. Filed June 23, 1893. Serial No. 479,045. (No model.)



*Claim.*—1. A cast steel car truck bolster in cross section of an inverted U-shape and having its sides thickened, substantially as described.

2. A cast steel car truck bolster in cross section of an inverted U-shape and having its sides thickened at the middle lower portion thereof, substantially as described.

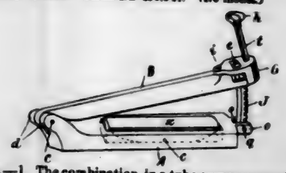
3. A cast steel car truck bolster in cross section of an inverted U-shape and having an excess of metal in its sides to cause the top of the bolster, in casting, to solidify sooner than the sides, and having its top and sides integral and connected by integral brackets, ribs, or corner-pieces, and its top provided with integral projections, substantially as described.

4. A cast steel car truck bolster in cross section of an inverted U-shape and having the end portions of its sides made thinner than the central portion thereof, but having integral projections containing sufficient metal to prevent said end portions from cooling too rapidly, substantially as described.

5. A cast steel car truck bolster in cross section of an inverted U-shape and having an excess of metal in its sides to cause the top of the bolster, in casting, to solidify sooner than the sides, and having its top and sides integral and connected by integral brackets, ribs, or corner-pieces, and its top provided with integral projections, and the end portions of its sides provided with integral projections, all cast in one piece, substantially as described.

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**504,268.** TUBE-COMPRESSOR. JAMES M. HARPER, Peoria, Ill. Filed July 9, 1892. Serial No. 439,541. (No model.)



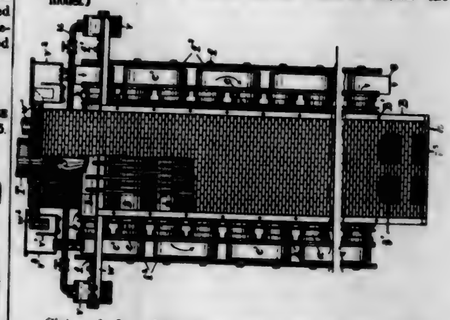
*Claim.*—1. The combination, in a tube compressor, of the sections A—B hinged as at *c d* and having pivoted at the forward extremity of section A or between extensions O—O therefrom, the tongue J, provided with suitable threads, the extension B, formed with a slot in its forward extension and provided with the cap G, secured as at (i) and provided with slot (*e*) within which in connection with the extension B', is held the worm screw (*f'*) journaled as shown and provided with shank (*f*) and suitable hand hold for operating said worm screw, all substantially as described and set forth.

2. In a tube compressor, the combination with the hinged sections A—B with the section A, the pivoted tongue J, formed as shown and provided with suitable threads with the section B, the worm screw (*f'*) held in position as shown to operate in connection with the threaded and pivoted tongue J for the purpose of drawing the said sections A—B together, all substantially as described and set forth.

3. In a tube compressor, the combination with the hinged sections A—B, with the section A pivoted to tongue J, formed as shown and provided with suitable threads and with the pivoted plate (*x*); with the section B, the worm screw *f'* held in position as shown to operate in connection with the threaded and pivoted tongue J for the purpose of drawing the said sections A—B together, all substantially as described and set forth.

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**504,269.** COMBINED DRIER AND BOILER. EMIL SOLTHAIR, Barren Island, N. Y. Filed Mar. 13, 1893. Serial No. 465,701. (No model.)



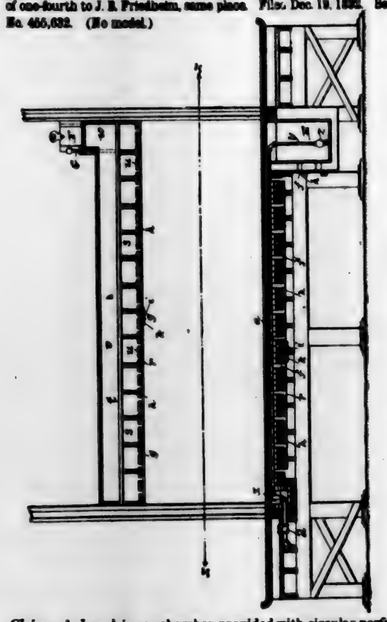
*Claim.*—1. In a drier, the combination, with a vertical casing, of a series of jackets sustained one above another with their ends projected beyond the casing, a series of drying cylinders fitted removably to the jackets with stuffing boxes at both ends of the jackets, removable hoods connected to the ends of the cylinders alternately, and shafts extended through the cylinders with conveyers to propel the material, as and for the purpose set forth.



2. A drier comprising the vertical series of straight drying cylinders and removable hoods connecting the ends of the cylinders alternately, tubular jackets provided with stuffing boxes at the ends fitted removably to the cylinders, bent pipes having their ends secured by expansion, respectively, within the adjacent jackets, the vertical bars B clamped upon the opposite sides of the jackets by means of the bolts E' intermediate to the jackets to support the jackets and cylinders, and shafts with conveyers for propelling the material through the cylinders, as and for the purpose set forth.

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**504,270.** DRIER. DANIEL L. HUMASON, Camden, Ark., assignor of one-fourth to J. B. Friedheim, same place. Filed Dec. 19, 1892. Serial No. 455,632. (No model.)



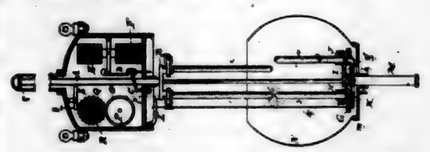
*Claim.*—1. In a drier or chamber provided with circular perforations in the ceiling and floor thereof, said perforations being arranged in rows transverse to the length of said chamber, two sets of slats also arranged transverse to the length of said chamber located beneath the floor, adapted to control the opening of the perforations in the floor and two sets located within the chamber and immediately beneath the ceiling adapted to control the opening of the perforations in the ceiling, each slat adapted to regulate the area of opening of a row of perforations, strips rigidly connecting the slats in each set at both ends thereof, sliding rods having their ends projecting through the walls of said chamber, each rod being arranged between sets of slats, links pivotally connected to said rod and the strips of each set of slats whereby a longitudinal movement of said rod will move said sets of slats and simultaneously regulate the opening of said perforations, substantially as described

2. In a drier, a drying chamber provided with rows of perforations in the floor and ceiling thereof, those in the floor communicating directly with the outer air and those in the ceiling communicating with flues; slats arranged in sets, the slats in each set rigidly fixed with respect to each other a distance apart corresponding to the distance between two contiguous rows of perforations, each slat adapted to cover a row of perforations; a longitudinally movable rod, links pivotally connecting the rod and the sets of slats, whereby, when the rod is moved longitudinally, the sets of slats are moved bodily to simultaneously regulate the area of opening of the perforations; in combination with heating pipes arranged within the chamber immediately above the floor thereof, flues in the ceiling of said chamber, and flue dampers, all arranged as and for the purpose set forth.

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**504,271.** ELECTRIC-ARC LAMP. RUDOLPH M. HUNTER, Philadelphia, Pa., assignor to the Thomson-Houston Electric Company, of Connecticut. Filed June 9, 1893. Serial No. 477,041. (No model.)

*Claim.*—1. In an arc lamp, the combination of a feeding rod carrying at the lower part two carbon holders, an electric regulator for feeding the said feeding rod, means for lifting the said feeding rod and its holders after the same have been once fully lowered, a carbon holder for each of the lower carbons, an automatic device for bringing the lower carbon holder of the second pair of carbons into alignment with its upper carbon holder after the feeding rod has been lifted upon the consumption of the first pair of carbons



2. In an arc lamp, the combination of a feeding rod carrying at the lower part two carbon holders, an electric regulator for feeding the said feeding rod, means for lifting the said feeding rod and its holders after the same has been once fully lowered, an automatic trip controlled by the feeding rod for liberating the lifting device when the feeding rod is fully lowered, a carbon holder for each of the lower carbons, an automatic device operated directly or indirectly by the movement of the said feeding rod for bringing the lower carbon holder of the second pair of carbons into alignment with its upper carbon holder after the feeding rod has been lifted upon the consumption of the first pair of carbons.

3. In an arc lamp, the combination of a feeding rod provided with two carbon holders, an electric regulator for feeding the feeding rod, lifting devices for lifting the feeding rod and its holders after the same has become fully lowered, a trip for controlling the lifting devices operated by the downward movement of the feeding rod, carbon holders for the lower carbons, means to move the lower carbon holder of the second pair of carbons into alignment with its corresponding upper carbon holder, and automatic trip devices for controlling the movement of the second carbon holder operated by the upward movement of the feeding rod.

4. In an arc lamp, the combination of a pair of vertically movable carbon holders, a single electric regulator to feed said carbon holders, a second pair of carbon holders adapted to operate in connection with the first mentioned pair of carbon holders, means controlled by the regulator for shifting the carbon holders of the two pairs relatively so as to bring the second pair of carbon holders into operative position after the function of the carbon holders of the first pair has been performed, whereby one pair of carbons is consumed and then a second pair of carbons is brought into position to maintain an arc.

5. In an arc lamp, the combination of two sets of carbon holders each set comprising one carbon holder of each of two pairs of carbon holders, a single electric regulator to move the two sets relatively toward each other, means controlled by the regulator for shifting one or more of the carbon holders of one set after the carbon holders of one pair of carbon holders have been brought into closest position, whereby the second pair of carbon holders of the two pairs of carbon holders may bring other carbons into operative position to maintain the arc after the first pair of carbons has been consumed.

6. In an arc lamp, the combination of two carbon holders to support one of each pair of carbons, a vertically movable feeding rod provided with two carbon holders arranged at different distances apart than the first mentioned carbon holders, electrically actuated feeding devices for feeding the feeding rod, power devices for raising the movable feeding rod and its holders after the same have been fully lowered, and means to change the position of one of the first mentioned carbon holders whereby a second pair of carbons shall be brought into line after the first pair of carbons has been consumed.

7. In an arc lamp, the combination of two carbon holders to support one of each pair of carbons, a vertically movable feeding rod provided with two carbon holders arranged at different distances apart than the first mentioned carbon holders, electrically actuated feeding devices for feeding the feeding rod, power devices for raising the movable feeding rod and its holders after the same have been fully lowered, mechanical devices for moving one of the first mentioned carbon holders laterally when the feeding rod is raised, an automatic device for throwing the power devices into action, and means to change the position of one of the first mentioned carbon holders, whereby a second pair of carbons shall be brought into operative position after the first pair of carbons has been consumed.

8. In an electric lamp, the combination of two vertically movable carbon holders, two stationary carbon holders adapted to be brought successively under the respective vertically movable carbon holders, electrically actuated feeding mechanism to feed the vertically movable carbon holders toward the stationary carbon holders, power devices for raising the vertically movable carbon holders after being fully lowered, mechanical devices for moving one of the stationary

carbon holders laterally, an automatic trip device for throwing the power devices into action after the vertically movable carbon holders have been fully lowered, and means for disengaging the power devices from the vertically movable carbon holders after they have been fully raised.

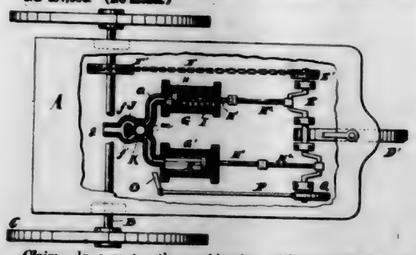
9. In an electric lamp, the combination of a vertically movable feeding rod and two holders carried thereby, two carbon holders independent of the rod and arranged at a distance apart different from that of the two vertically movable carbon holders, feeding devices for feeding the vertically movable feeding rod to compensate for the consumption of the carbons, power devices for raising the feeding rod, a locking device for holding the power devices out of action until the rod is fully lowered, a trip for releasing the rod from the power devices after being fully raised whereby it is free to be fed downward a second time by the regulator or feeding device, and automatic devices for shifting the independent carbon holders relatively to the vertically movable carbon holders whereby two sets of carbons carried by the holders are successively consumed under the action of a single regulator or feeding device.

10. In an electric lamp, the combination of the two independent carbon holder supports each of which is provided with two carbon holders but arranged at different distances apart, electrically controlled feeding devices for causing a relative movement between the carbon holder supports to maintain the arc during the consumption of the carbons, mechanical devices for automatically shifting the relative position of the carbon holders or their supports which are unaffected by the electrically controlled feeding devices, whereby after the consumption of one pair of carbons the lamp is reset and the consumption of the second pair of carbons takes place.

11. In an arc lamp, the combination of two movable carbon holders, two stationary carbon holders, a single electrically actuated regulator or feeding device to simultaneously feed the two movable carbon holders toward the stationary carbon holders, and mechanical means for moving one of the stationary carbon holders to throw its carbon into alignment with the corresponding carbon of the movable carbon holder whereby with a single feeding mechanism or regulator two successive pairs of carbons may be successively burned.

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**504,272. MOTOR.** GOTTLIEB KELLER, West Hoboken, N. J., assignor of two-fifths to Alphonse de Riesthal, Brooklyn, and Solomon Blor, New York, N. Y. Filed Feb. 12, 1892. Renewed Jan. 10, 1893. Serial No. 457,990. (No model.)



*Claim.*—In a motor, the combination, with two cylinders, of a valve-casing provided with a vertical bore for a valve and with two inlet-channels extending from said bore to the two cylinders, two outlet-channels extending from said cylinders to the bore for the valve, a vertically cylindrical rocking-valve in said bore, which valve is closed in its bottom and open at the top and is divided into two compartments by a horizontal transverse partition, the upper compartment having two apertures adapted to register with the inlet-channels of the cylinders, and the lower compartment having four apertures being adapted to register with the outlet-channels leading to the cylinders, and with channels leading to the outlet-port of the valve-casing, and an inlet-pipe for the operating medium connecting with the top of said rocking-valve, substantially as set forth.

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**504,273. PNEUMATIC VEHICLE-WHEEL.** JARVIS P. KELLY, Chicopee, assignor to the Warwick Cycle Manufacturing Company, Springfield, Mass. Filed June 12, 1893. Serial No. 477,336. (No model.)

*Claim.*—1. A rim for a pneumatic tired wheel consisting of a main annular section, A, having the intermediate tire supporting portion, *a*, and the inwardly turned lips or flanges, *b*, *b*, and the strips, B, B, comprising the portions, *d*, which lie against the said flanges, and the laterally and outwardly extended portion, *g*, and the screws, which pass through the said parts, *d*, and the flanges, *b*, substantially as described.

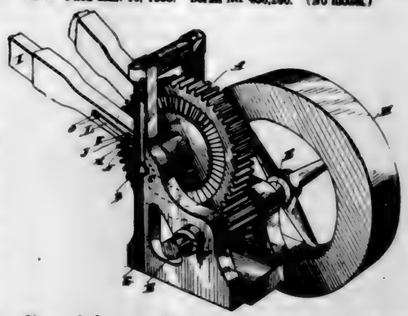
2. A rim for a pneumatic tired wheel consisting of a main annular section, A, having the intermediate tire supporting portion, *a*, with portions, *i*, within the edges outwardly turned and then returned inwardly in the flanges, *b*, *b*, and the strips, B, B, comprising the portions, *d*, which lie against the said flanges and the laterally and outwardly extended portions, *g*, and the screws, *f*, which unite the said parts, *d*, and the flanges, *b*, substantially as described.



3. In a wheel, the combination with the main annular section, A, having the intermediate tire supporting portion and the inwardly turned lips or flanges, *b*, and the strips, B, B, comprising the portions, *d*, which lie against said flanges, and the laterally and outwardly extended portions, *g*, and the screws which pass through and unite the said parts, *d*, *d*, and flanges, *b*, of the air-tube and the outer shoe or covering, C, having the beaded edges thereof confined in the grooves formed at the opposite outer edges of the rim, substantially as described.

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**504,274. PROPELLING MECHANISM.** ADAM LANG, Cleveland, Ohio. Filed Mar. 16, 1893. Serial No. 466,286. (No model.)



*Claim.*—1. In a propelling device the combination of the main spur-gear A provided with annularly arranged duplicate ratchet teeth on each face, and mounted upon the shaft B, the levers I pivoted upon said shaft, and pawls J J, passing through sockets in said levers, with operating springs L, secured thereto and to said levers, substantially as described.

2. In a propelling device, the combination of the main spur gear A, provided with duplicate annularly and radially arranged ratchet teeth *a a* on each face, a shaft B upon which said gear is mounted, operating levers I, and transverse pawls J supported in sockets K in the levers I springs L, secured to wrists M, and the levers I, with pinion D upon shaft E, and fly-wheel H substantially as described.

3. In a propelling device the combination of the main spur gear A provided with duplicate radial and annularly arranged ratchet teeth upon each face, and mounted upon the shaft B, levers I pivoted upon the shaft B, on each side of the gear A, and provided with sockets K, pawls J moving in said sockets, adapted to engage the said ratchet teeth, and provided with projecting wrists M, springs secured to the levers at one extremity and to the said wrists at the other, with the supporting frame G, for the shaft B substantially as described.

4. In a propelling device the combination of the main spur-gear A provided with an annularly arranged duplicate series of ratchet teeth on each face, and mounted upon the shaft B, the levers I pivoted upon said shaft, pawls J, J, passing through sockets K in said levers, operating springs secured thereto, and to said levers, with pinion D upon shaft E, fly wheel H and main supporting frame for said shafts G, substantially as set forth.

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**504,275. TOOL FOR SHAVING HATS.** WILLIAM H. MCMAHON, South Norwalk, Conn., assignor, by direct and mesne assignments, of one-half to Squire Denton Seymour, same place. Filed Mar. 23, 1893. Serial No. 467,232. (No model.)





*Claim.*—A hat shaving tool comprising the body having the central portion cut away, forming an opening 4, extending from top to bottom and leaving a connecting bar $2^a$ and end pieces $2^b$, projecting therefrom with the opening 3 below said connecting bar, the guard plate connected adjustably at its ends to the end pieces and extending under the cut away part 4, forming the bottom of the cavity and having a longitudinal opening the knife arranged in said opening and the shanks at the ends of the knife passing through the end pieces and adjustably held thereto, substantially as described.

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**504,276. CROSSING FOR ELECTRIC RAILWAYS.** JAY NELSON, St. Louis, Mo., assignor of one-half to Thomas G. White, same place. Filed May 18, 1893. Serial No. 474,711. (No model.)



*Claim.*—1. An insulating trolley crossing for intersecting electric wires constructed substantially as herein described with a seat for the lower wire, an insulating seat for the upper wire, slotted for the passage of the lower wire, and means for confining the upper wire in its seat.

2. The combination of the cruciform center piece 1, having arms 2 for seating and securing the lower wire, the transverse insulating arms $3^a$ for seating the upper wire, having a central slot or space between them, the key 11 for closing said slot and means for confining the upper wire in the seat thus provided, substantially as described.

3. The combination of the cruciform center plate, 1, 2, 3, and cars 4 engaging therewith at their inner ends and grooved for the reception of the wire W' as explained.

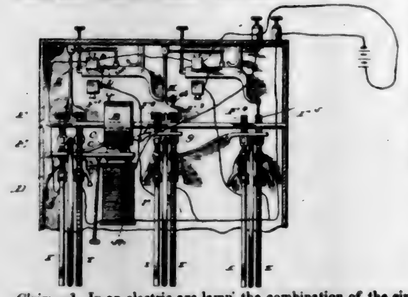
4. The combination of the cruciform center plate 1, 2, 3, grooved cars 4, transverse insulating arms $3^a$ and grooved transverse cars 12, substantially as and for the purpose set forth.

5. The combination of the cruciform center plate 1, 2, 3, grooved cars 4, transverse insulating arms $3^a$, a key 11, grooved lateral cars 12, and cap bar 16, substantially as and for the purposes set forth.

6. An insulating trolley crossing for intersecting electric wires, constructed substantially as herein described, with a seat for the lower wire, an insulating seat for the upper wire, slotted for the passage of the lower wire, means for confining the upper wire in its seat, and the lower wire W' and the upper wire $W^a$, that are thus seated; said wires being each integral in a continuous course; substantially as described.

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**504,277. ELECTRIC-ARC LAMP.** WILLIAM A. PHILLIPS, U. S. Army, assignor of one-half to Thomas J. Porter, Miles City, Mont. Filed June 3, 1893. Serial No. 476,443. (No model.)



*Claim.*—1. In an electric arc lamp, the combination of the circular carbon-holders and wheels intergeared therewith, an electromagnet, and an armature adapted to engage said wheels as a brake and released therefrom by the action of said electro-magnet, substantially as set forth.

2. In an electric arc lamp, the combination, with an electro-magnet and its armature, of circular cogged carbon holders and wheels geared therewith and acted upon by said armature, said circular carbon-holders having their carbon-carrying ends approaching each other laterally from below, substantially as set forth.

3. In an electric arc lamp, the combination of the cogged carbon-holders of circular form, the wheels whose axes or shafts are geared to said carbon-holders, and an electro-magnet with its armature having a wedge engaging said wheels, to cause the aforesaid wheels to move said rack and to separate said carbon-holders with their carbons or to cause them to approach, substantially as specified.

4. In an electric arc lamp, the combination of the circular racks carrying carbons, wheels whose shafts or axes are geared to said racks, an electro-magnet and a spring-pressed armature adapted to turn said wheels, under the action of its spring, and to be moved away from the same by the action of said electro-magnet, substantially as specified.

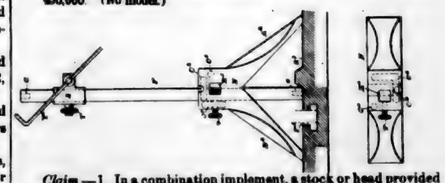
5. In an electric arc lamp, the combination of the circular rack carbon-holders, wheels whose shafts or axes are geared to said rack carbon-holders, the spring-pressed armature having a wedge engaging said wheels and an electro-magnet to retract said wedge from said wheels, to separate the carbons of said carbon-holders and to cause them to approach, respectively, substantially as set forth.

6. In an electric arc lamp, the combination of sets or series of carbon-holders, wheels whose shafts or axes are geared to said carbon-holders, an electro-magnet, with a wedge-shaped armature adapted to engage said wheels, and a switch adapted to cut out of the circuit the nearly used-up set of carbons and to bring into the circuit a fresh set of carbons, substantially as set forth.

7. In an electric arc lamp, the combination, with an electro-magnet and its armature of the circular rack bar carbon-holders, wheels whose shafts or axes are geared to said carbon-holders and which are engaged by said armature, circuit closing levers adapted to engage a projection on each of said carbon-holders, and a switch mechanism co-acting therewith, substantially as set forth.

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**504,278. COMBINATION-GAGE.** CHARLES W. PRESTON, San Francisco, Cal., assignor of one-half to William C. Ropey and Walter E Anderson, same place. Original application filed Apr. 7, 1892, Serial No. 428,243. Divided and this application filed Nov. 1, 1892. Serial No. 450,660. (No model.)



*Claim.*—1. In a combination implement, a stock or head provided with angular faces which may rest upon cylindrical forms and provided with mortises or seats for receiving a scale bar parallel to or transversely to the axis of any cylindrical form to which the stock or head may be applied and a clamping means for holding the bar in position and permitting its lineal adjustment, substantially in the manner and for the purposes as set forth.

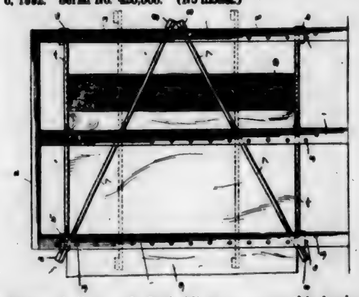
2. In a combination implement, the main stock provided with the angular projections having faces at right angles to each other and provided also with mortises or seats at right angles to each other, in combination with the scale bar adapted to be received into and held adjustably within said mortises, substantially in the manner and for the purposes indicated.

3. In a combination implement, the head N, having the angular faces $A^3$ $B^3$ and the mortises or seats $E^4$ and $E^5$, in combination with the scale bar F, substantially as described.

4. The main stock N, having the faces $A^3$ and $B^3$ at right angles to each other and having also the vertical mortise $E^4$, horizontal mortise $E^5$, clamping screw P and vertical and horizontal levels, all in combination with the scale bar, substantially as described.

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**504,279. LUMBER-DRYING RACK.** PERLEY B. RAYMOND, Indianapolis, Ind., assignor to Adams & Williamson, same place. Filed Feb. 6, 1892. Serial No. 420,503. (No model.)



*Claim.*—1. In a rack for holding veneers or thin lumber while being dried, a movable bracing frame composed of cross pieces and a series of connecting strips rigidly secured thereto sufficiently close together to support and brace the strips of lumber placed between them, substantially as shown and described.

2. A rack for holding veneers or thin lumber while being dried, consisting of a frame work, a movable bracing frame composed of cross pieces and a series of connecting strips rigidly secured thereto sufficiently close together to support and brace the strips of lumber placed between them, and means of supporting the bracing frame in the frame work, substantially as shown and described.

3. In a rack for holding veneers or thin lumber while being dried, a series of strips passing through such rack, whereby the sheets will be so held and supported laterally as to prevent warping or buckling during the process of drying, such strips having a central bearing, and their ends attached to cross-pieces, whereby such cross pieces and the strips may be thrown up or down out of the way during the insertion or removal of the material to be dried, substantially as shown and described.

4. A rack for holding veneers or thin lumber while being dried, comprising a framework, a pair of cross-bars provided with oppositely arranged grooves placed parallel to each other and adapted to receive between them the sheets of material, a series of bracing strips whose ends are suitably connected together, such strips having an adjustable central bearing and passing between the sheets of material to be dried and adapted to hold the same laterally in proper position for drying and to prevent any warping or breaking thereof, substantially as shown and described.

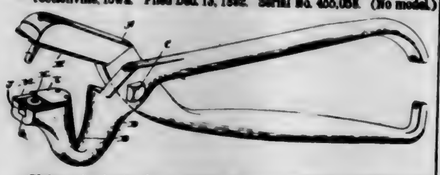
5. A rack for holding veneers or thin lumber while being dried, consisting of a framework, a rack supported therein provided with adjustable grooved slides at the top and bottom to receive the ends of the sheets of material, such grooved slides placed at suitable distances apart, allowing the free circulation of air about the stuff, in combination with one or more intermediate bracing rack frames formed of a series of strips whose ends are suitably connected together, such strips having an adjustable central bearing and passing between the sheets of material to be dried, and adapted to hold the same laterally in proper position for drying, and to prevent any warping or breaking thereof, substantially as shown and described.

6. A rack for holding veneers or other thin lumber while being dried, comprising a framework, racks supported therein, grooves formed at the upper and lower ends of such racks to receive the ends of the sheets of material to be dried, bracing strips for supporting the material laterally between the ends and having a central bearing for allowing the ends to be thrown up or down during the insertion or removal of the material from the rack grooves, substantially as shown and described.

7. A rack for holding veneers or other thin lumber while being dried, consisting of a framework, adjustable racks with grooved guides arranged in pairs parallel to each other in a horizontal position, and with the grooved faces toward each other, in combination with bracing strips having an adjustable central bearing and passing through the rack frame and between the sheets of material to be dried, the ends of such strips connected to and supported by cross pieces, such cross pieces adjustably supported from the framework, whereby the material to be dried will be prevented from warping, buckling, or breaking, substantially as shown and described.

8. A rack for holding veneers or other thin lumber in place while being dried, consisting of a framework, a series of grooved bars adjustable vertically and adapted to receive the ends of the sheets of material to be dried, in combination with a series of cross strips between such grooved bars having a central bearing and connected at the ends to cross pieces, such cross pieces adjustably supported upon the framework, whereby the sheets of material to be dried may be prevented from warping or buckling, substantially as shown and described.

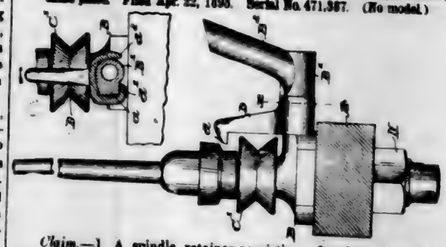
## 504,280. TAG-ATTACHING IMPLEMENT. James T. Reed, Correctionville, Iowa. Filed Dec. 13, 1892. Serial No. 455,058. (No model.)



*Claim.*—1. An implement of the class described comprising two pivotally connected jaws, the lower jaw being formed with a recess in its upper face, forked plate H secured to said face with its forks arranged adjacent said recess, the space between the forks being wider than the recess for the purpose stated, a means for holding a rivet cap located between said forks from vertical displacement, a rivet splitting mechanism carried by the lower jaw, and a rivet carrying mechanism on the upper jaw, substantially as shown and described.

2. A tag attaching implement comprising two jaws pivotally connected, one of which being adapted to carry a rivet, a forked plate secured to the other jaw for confining in place a rivet cap, cap holding spring I arranged over the forked plate, and a rivet splitting mechanism, substantially as shown and described.

## 504,281. SPINDLE-RETAINER FOR SLEEVE-WHEEL SPINDLES. Alonzo R. Rhoades, Hopedale, Mass., assignor to George Draper & Sons, same place. Filed Apr. 22, 1893. Serial No. 471,367. (No model.)

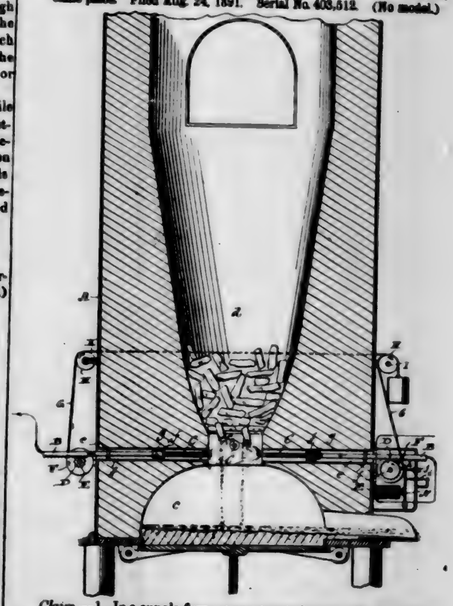


*Claim.*—1. A spindle retainer consisting of a hook having a crotched foot and a lip, substantially as described, to enable the said retainer to be readily slipped over and the said lip to pass beneath a portion of a horizontal extension from the spindle-bearing supporting-case and adapted to tip on or about said extension for a limited extent, substantially as described.

2. A spindle-bearing supporting-case having an oiling extension B' provided with a lug, combined with a spindle retainer having a hook adapted to engage a projecting portion of a spindle and at its lower end a crotched foot provided with a lip and a nose, the lip to engage the lug, and the nose to pass down over the opposite side of the said extension, the distance between the lip and nose being sufficient to enable the retainer to be readily applied to or taken from the said extension, to operate, substantially as described.

3. The combination with a spindle bearing supporting case having an oil extension, and a rail, of a spindle retainer applied to said extension and having a portion located between said extension and rail in manner substantially as described so that it can be removed only by loosening or releasing the spindle supporting case from the rail substantially as described.

## 504,282. APPARATUS FOR MELTING IRON. Solomon Shaw, Milwaukee, Wis., assignor of one-fourth to Edward P. Allis Company same place. Filed Aug. 24, 1891. Serial No. 403,512. (No model.)

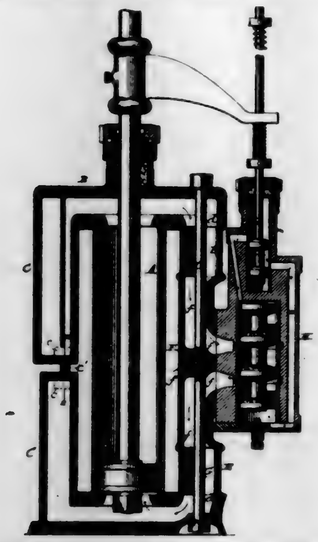


*Claim.*—1. In a cupola furnace constructed as described, and having a narrow passage open above and below, a lower receptacle for the melted material combined with rack bars having guide flanges arranged in openings in the furnace walls, and sockets to contain the electrodes, pinions mounted on shafts loosely arranged in suitable bearings, and meshing with said rack bars, straps passing over pulleys secured to the shell or outer surface of the furnace, and also over pulleys on the pinion shafts, and having attached counter-balances or weights, said shafts being provided with ratchet wheels; electro magnets provided with armatures having detents arranged to engage with the ratchet wheels on the shafts, and the electric connections of one of the electrodes adjusted to include in its circuit the electro magnet, all combined and arranged substantially as described.

2. A cupola furnace having flues leading from the lower portion thereof back into the ore chamber of the cupola, at a certain elevation, combined with electrodes arranged to automatically produce a voltaic arc within said furnace intermediate of the termini of said flues, substantially as set forth.



## 504,283. WATER-MOTOR. Sylvanus D. Sheppard, Newark, N. J., assignor to the Backus Water Motor Company, same place. Filed Feb. 7, 1893. Serial No. 461,352. (No model.)

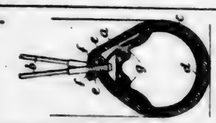


*Claim.*—1. The combination of the chambered heads, the cylinder formed of a single tubular section interposed between the heads and having ports opening into the chambers thereof, the detachable valve case seat arranged at one side of the cylinder and adjustable longitudinally relatively to the axis of the cylinder, a valve case secured to the valve case seat and having ports registering therewith, a tubular connection interposed between each head, and each end of the valve case seat and detachable therefrom, and means for clamping the chambered head, the interposed cylinder, the valve case seat and the tubular sections together, substantially as described.

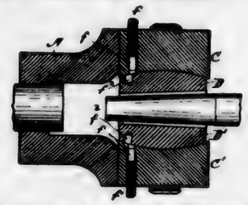
2. The combination of the cylinder formed of a single tubular section, the chambered heads, each having a flanged leg or extension and having ports opening into the cylinder, a clamping bolt passing through the flanges in the legs, the detachable valve case seat arranged at one side of the cylinder and adjustable longitudinally relatively to the axis of the cylinder, the valve case having ports registering with the ports in the valve case seat, a removable tubular connection between each chambered head and the opposite ends of the valve case seat, and a clamping bolt passing through the tubular connections and each head, and firmly clamping the tubular connections, the heads and the valve case seat together, substantially as described.

## 504,284. FASTENING DEVICE FOR PNEUMATIC TIRES. John Samuel Smith, Christopher John Tate, and George Edward Tate, London, England; said Christopher John Tate and George Edward Tate, assignors to said Smith. Filed Jan. 24, 1893. Serial No. 459,532. (No model.)

*Claim.*—The attachment of pneumatic tires to the rims of wheels by means of wires passed through pockets in the edges of the jacket or cover of the tire and engaging with the spokes of the wheel, substantially as described and illustrated.



## 504,285. CHUCK FOR LATHES. Robert L. Stanley, Somerville, assignor of one-half to Frank E. Whitney, Melrose, Mass. Filed May 20, 1893. Serial No. 474,967. (No model.)

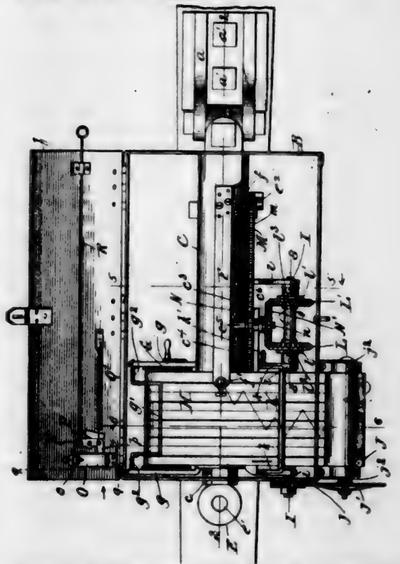


*Claim.*—1. In a chuck for lathes and other tools, the stock having a cross recess, the slides C C' movable in said recess toward and from each other, the movable jaws D D' connected together by means whereby the movement of one to an inclined position causes the other to be correspondingly inclined to the same angle, but in the opposite direction, as and for the purposes described

2. The combination of the stock A, the slides C C' the jaws D D' movable on said slides as specified and having recesses $c^4$ with the connecting slide plate E having the pins $e'$ to enter said recesses, as and for the purposes described.

3. The combination of the stock A, the slides C C', the jaws D D' automatically conformable to a tapering or inclined surface, and locks for rigidly securing the jaws to the sides with their faces parallel, substantially as and for the purposes described.

## 504,286. DYNAMOMETER. Henry C. Stone, Kansas City, Mo., assignor to Olive A. Stone, South Evanston, Ill. Filed Dec. 27, 1892. Serial No. 456,422. (No model.)



*Claim.*—1. In a dynamometer, a draft rod, in combination with a resistance spring, a record sheet, a recording marker connected to and moving with the draft rod, and mechanism actuated by the reciprocation of the draft rod to feed the record sheet always in one direction, substantially as described.

2. In a dynamometer, a spring resisted draft rod, in combination with a recording marker connected to and moving with the draft rod, a record sheet arranged to travel underneath said marker, mechanism for feeding the sheet in one direction actuated by the movement of the draft rod, a secondary marker suspended above the record sheet and normally out of connection therewith, and mechanism for depressing the secondary marker upon the record sheet at any fixed point in the operation of the machine, substantially as described.

3. In a dynamometer, the tube C provided with slot $c^3$, in combination with the draft rod E, resistance spring D, arm $c^4$ carried by said draft rod and projecting through said slot in the tube, index arm F connected to and carried by said arm $c^4$, and record sheet H, substantially as described.

4. In a dynamometer, a graduated record sheet H, in combination with drums, or rollers, G and J, driven shaft I geared to the drum J, mechanism for driving said shaft I by the movement of the draft rod, and a marker connected with the draft rod and arranged to travel transversely of the record sheet, substantially as described.

5. In a dynamometer, a record sheet H, in combination with drums G and J, the shaft I geared to the drum J, gear wheels L L' mounted loosely on said shaft and connected thereto by spring pawls, a gear wheel engaging with each of said gears, and mechanism for driving said gear wheel by the reciprocation of the draft rod, substantially as described.

6. In a dynamometer, the draft rod E, in combination with the resistance spring D, record sheet H mounted on suitable drums, shaft I whereby feed movement is given to said sheet, beveled gears L L' mounted loosely on said shaft and clutched thereto in one direction, the beveled gear N' engaging with both L L', pinion N mounted on the shaft of N', and rack bar M carried by the draft rod and engaging with said pinion N, substantially as described.

7 In a dynamometer, the tube C provided with slot $c^3$, in combination with the draft rod E provided with arm $c^4$ projecting through said slot, resistance spring D, ledge $c^1$ on one side of the tube, rack bar M connected to the arm $c^4$ and supported on said ledge, shaft a carrying gears N and N', feed shaft provided with gears L L' clutched to the feed shaft in one direction, record strip H, drums G and J on which the record sheet is mounted, gearing connecting drum J with the shaft I, and a recording marker $f^7$ connected and moving with the draft rod, substantially as described.

8. In a dynamometer, a record sheet H, in combination with drums G and J, gear wheel $j$ mounted loosely on the shaft of drum J, friction spring $j'$ fixed on the same shaft and arranged to bear upon the gear $j$, and mechanism whereby said feed shaft is driven by the movements of the draft rod, substantially as described.

9. In a dynamometer, a spring resisted draft rod, in combination with a record sheet H, mechanism whereby said sheet is continuously fed in one direction by the movements of the draft rod, a marker carried by the draft rod and in constant connection with the record sheet, the supplementary yielding marker O normally out of connection with the record sheet, lever P, spring Q, and actuating rod R, substantially as described

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**504,287. ROLLER-BEARING FOR SHEAVES.** WILLIAM H. THOMPSON, Morristown, N. J., assignor to John S. W. Thompson, same place. Filed May 28, 1892. Serial No. 475,908. (No model.)

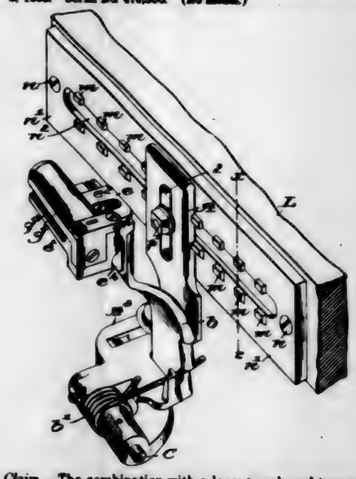


*Claim.*—1. The combination, with a sheave having a circular track $a$, concentric with its axis, the retaining rings C, embracing the sets of overlapping wheels $b$, and the said wheels, of the pintles $c$, on which the respective wheels rotate mounted at their respective ends in the said rings and distancing the latter, each of said pintles having a journal $c^2$, for the wheel and a distancing boss, $c^3$, of larger diameter than the journal and of a length somewhat in excess of the thickness of the wheels in the adjacent set, whereby the overlapping wheels of the sets are prevented from chafing and rubbing against each other, as set forth.

2. The combination with a sheave having a circular track $a$, concentric with its axis, the retaining rings C, two sets of chamfered wheels $b$, embraced between the rings C, the wheels of each set being of the same thickness and the wheels of one set overlapping those of the other set, as shown, and the pintles $c$ on which the respective wheels rotate, each of said pintles being fixed non-rotatively in the respective rings C at its ends, and having a journal $c^2$, on which the wheels turn and a distancing boss $c^3$, of larger diameter than said journal, said journal and boss occupying the entire space between the rings C, and the boss being longer than the journal, substantially as set forth.

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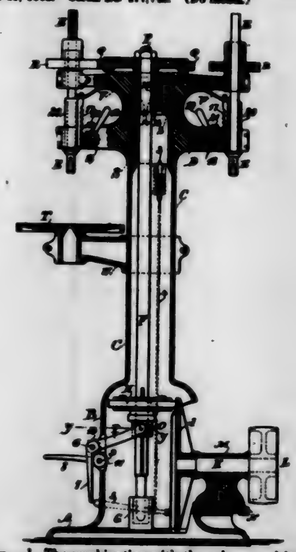
**504,288. LOOM-TEMPLE.** ARDEON TOELLNER, South Lawrence, assignor to the Dutcher Temple Company, Hopedale, Mass. Filed June 2, 1893. Serial No. 476,330. (No model.)



*Claim.*—The combination with a loom temple and its stand, of a slotted plate having a series of aligning stops, and a suitable bolt to confine the stand in adjusted position, substantially as described.

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**504,289. DRILLING-MACHINE.** ABRAHAM VANDERBEEK and LEWIS C. WORDEN, Hartford, Conn., assignors to said Vanderbeek. Filed June 15, 1893. Serial No. 477,748. (No model.)



*Claim.*—1. The combination with the column and its vertical eccentrically located shaft, of a countershaft and friction disk, a friction pinion upon the vertical shaft capable of being raised and lowered upon a feather or spline, a collar connected with the pinion, a lever and treadle for acting upon the collar to raise the pinion, and a second lever and intermediate gear segments for acting upon the lever and collar to draw down the pinion and lessen the speed, substantially as set forth.



2. The combination in a drilling machine, of a vertical column and a shaft within the same, a friction pinion movable up and down upon such shaft, a disk for rotating the pinion, a countershaft for such disk and a bearing carrying the countershaft and movable upon the base of the column, and a screw for applying the pressure and friction between the revolving disk and the pinion, substantially as set forth.

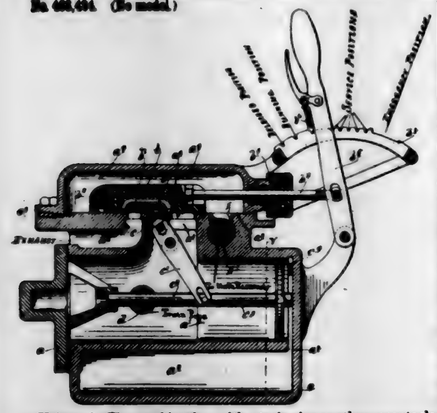
3. The combination in a drilling machine, of a column, an eccentrically located shaft within the column, means for driving the same, a drill head supported by the column and capable of being rotated, a circular range of vertical spindles carried by the drill head, friction wheels upon the respective spindles, and a friction wheel upon the eccentrically located vertical shaft coming into contact and driving the spindle which is in position for use, and a movable bearing for the upper end of the eccentric shaft for applying friction between the wheel upon the upper end of the vertical shaft and the wheel upon the spindle that is being rotated, substantially as set forth.

4. The combination with the circular range of vertical spindles, of a head carrying such spindles, a supporting column for such head, there being concave surfaces upon the exterior of the revolving head and springs within such concave surfaces, means for permanently attaching the springs at one end, and connections from the other ends of the sleeves to the spindles, substantially as specified, whereby the spring has a bearing against the concave surface of the head when the spindle is raised and the effective length of the spring is increased as the spindle is drawn down in consequence of the spring leaving the concave surface of the head, substantially as set forth.

5. The combination with the spindle E and the sleeve 20 surrounding the same, of a head for carrying the spindle having a concave surface, and a plate spring fastened at one end to the head and resting against the concave surface, the other end of the spring being connected with the sleeve, and means for raising and lowering the sleeve and the spindle, substantially as set forth.

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**504,290. ENGINEER'S BRAKE-VALVE.** HENRY H. VAUGHAN and MARTIN E. MCKEE, St. Paul, Minn. Filed Mar. 31, 1892. Serial No. 427,494. (No model.)



*Claim.*—1. The combination with a train pipe or other receptacle containing fluid under pressure, of valve mechanism, for opening and closing the exhaust from the same, adapted to be set for the desired reduction, and a controller, for effecting the closing movement of said valve mechanism, comprising a chamber charged with fluid under pressure and closed during exhaust from said train pipe or other receptacle and a movable body subject to train pipe pressure on one side and to opposing pressure from said closed chamber on the other, whereby, under the reducing pressure in the train pipe, the said body will move and cut off the exhaust, whenever the set reduction is reached, substantially as described.

2. The combination with a train pipe or other receptacle, of a discharge port for the same, and a graduating discharge valve mechanism controlling said port and consisting of a primary or exhaust opening valve adapted to be set for a desired reduction of train pipe pressure, and a follower or cut-off valve co-operating with said primary valve and controlled by pressure from said train pipe or receptacle to automatically stop the discharge when the set reduction is reached substantially as described.

3. The combination with a train pipe or other receptacle, of a graduating discharge valve mechanism, comprising a primary or exhaust opening valve adapted to be set for the desired reduction, a follower or cut off valve, a controller, for said cut off valve, consisting of a chamber, charged with fluid under pressure and closed during exhaust from train pipe, and a movable body subject to train pipe pressure on one side and to pressure from said closed chamber on the other, and provided with connections to said cut off valve, whereby said body and cut off valve will move under the reducing pressure, and cut off the exhaust when the set reduction is reached.

4. The combination with the train pipe, of the primary or exhaust opening valve adapted to be variably set in advance for any desired reduction, the follower or cut off valve, the equilibrium chamber charged with train pipe pressure and closed during exhaust from train pipe, and the movable body, with connections to said cut off valve, subject to train pipe pressure on one side and to pressure from said equilibrium chamber on the other, substantially as and for the purposes set forth.

5. The combination with the train pipe, of the primary or exhaust opening valve adapted to be set in advance, for any desired reduction, the follower valve, the equilibrium chamber charged with air under pressure, a valved passage between said chamber and the air supplying receptacle, controllable by the movement of said primary valve and constructed to be opened in the "running position" and to be closed in the "service positions" of said primary valve, and a movable body connected to said cut off valve, subject to train pipe pressure on one side and to pressure from the confined air in the equilibrium chamber on the other, substantially as and for the purpose set forth.

6. The combination with the train pipe, or other air supplying receptacle, of valve mechanism, comprising the primary or exhaust opening valve adapted to be set in advance for any desired reduction, the follower or cut off valve, the equilibrium chamber, a fluid passage from said equilibrium chamber to the seat of said primary valve, the construction of said primary valve being such that said passage to the equilibrium chamber will be open to the train pipe in the "running position," closed in all "service positions," and opened to exhaust in the "releasing position," and the movable piston connected to said cut off valve, subject to train pipe pressure on one side and to the pressure from the equilibrium chamber, on the other, substantially as and for the purpose set forth.

7. The combination with the train pipe or other receptacle of valve mechanism, comprising the primary or exhaust opening valve provided with the restricted exhaust port, the cut off valve cooperating with said exhaust port in gradual reductions, the equilibrium chamber charged with air under pressure, and a movable body connected to said cut off valve, subject to train pipe pressure on one side, and to the pressure of the confined air in said equalizing chamber, substantially as described

8. The combination with the train pipe of the valve mechanism, comprising the primary or exhaust opening valve provided with the restricted exhaust opening and the large emergency exhaust opening, the cut off valve cooperating with said restricted exhaust opening in the "service positions," and exhaust ports in the valve seat, cooperating with said emergency port in said primary valve, in the emergency application, the equilibrium chamber charged with air under pressure, and a movable piston connected to said cut off valve, subject to train pipe pressure on one side and to the pressure of the air confined in the equilibrium chamber on the other, substantially as and for the purpose set forth.

9. The combination with the primary or exhaust opening valve, adapted to be set in advance in different predetermined positions for corresponding reductions, of a graduated lock-plate marked to indicate the different positions of said exhaust valve, a manual valve setting device cooperating with said lock-plate, the cut-off valve, and the automatic controller for said cut off valve, substantially as and for the purpose set forth.

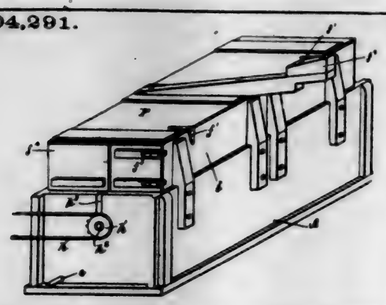
10. In a valve mechanism of the class described, the combination with the primary or exhaust opening valve $b$, having the restricted exhaust port $b'$, of the cut off valve $c$ working on the face of said valve $b$ and cooperating with the port $b'$, the casting $a$, comprising the cylinder $a'$ and the equilibrium chamber $a^3$, in communication with each other, and the piston $c^2$ working in said cylinder $a'$, subject to the train pipe pressure on one side and to the pressure of the air confined in the equilibrium chamber on the other, and having connections to said cut off valve $c$, substantially as and for the purpose set forth.

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**504,291. APPARATUS FOR DYEING.** SAMUEL C. AYERS, Clinton, Mass., assignor to the Bigelow Carpet Company, same place. Filed Feb. 15, 1892. Serial No. 421,553. (No model.)

*Claim.*—In a dyeing apparatus, a vat to contain the dye-liquor, a steam supply therefor, a removable reel to sustain the articles to be dyed, open bearings for said reel, and means for rotating the reel from the exterior of the vat, combined with a cover for the vat hinged thereto and adapted to be turned back on its hinges for the removal of the reel, and independent doors at and forming a part of the ends of said cover, said doors being adapted to be opened when the cover

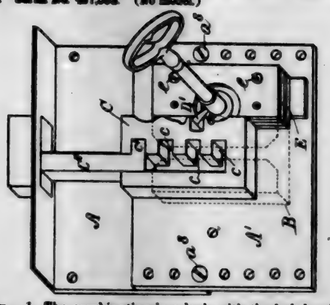
**504,291.**



is down whereby the contents may be inspected without raising the cover, substantially as described.

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**504,292.** LOCK. MASSIMILIANO BADONI, Geneva, Switzerland, assignor to the Aloys Revilliod de Murait, same place. Filed June 22, 1892. Serial No. 437,562. (No model.)



*Claim.*—1. The combination in a lock with the bolt head C; of the bolt C having notches $c^b$ $c^c$ and $c^d$ and with intermediate talons, the key D and the cylinder D entering said notches and engaging the talons, substantially as shown and described.

2. The combination in a lock, of the bolt head C having a projection $c'$, the bolt C having recesses $c$ adapted to receive the projections $c'$ for varying the position of the bolt head to the bolt, means for actuating the bolt in locking and unlocking, the plate A' and the box or guide connected together, and the plate A through which the bolt head passes, and screws for connecting the plates A and A', there being holes that allow the screws to be inserted after the plates have been placed in their proper relative positions, substantially as set forth.

3. The combination in a lock, of a bolt C slottted and having recesses, a bolt head C having a stem in the bolt slot and a projection $c'$ engaging either one of the recesses $c$, and means for projecting and retracting the bolt, substantially as and for the purposes set forth.

4. The combination in a lock, with the bolt and key; of the key cylinder D provided with a slot $d$ for the key, and the superposed plates connected together and notched to receive the cylinder and key, substantially as set forth.

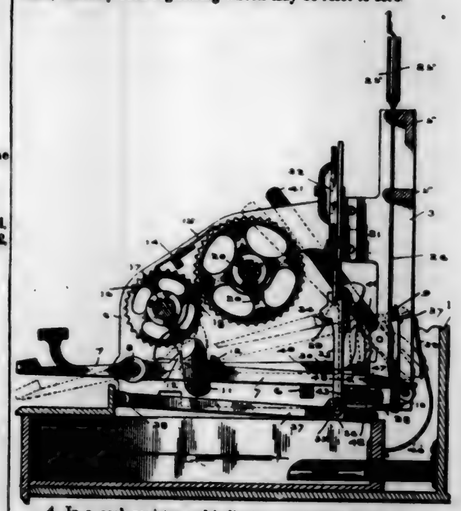
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**504,293.** CASH REGISTER AND INDICATOR. FORTUNE L. BAILEY, Freeport, Ind., assignor to the Boston Cash Register Company, Northampton, Mass. Filed June 10, 1892. Serial No. 436,185. (No model.)

*Claim.*—1. In a registering machine, an inflexible gravitating dog loosely mounted on an actuating lever, and a lug on such lever, such dog adapted to engage and move the wheel a certain distance and then stop the same by the body of such dog jamming between such wheel and lug.

2. In a registering machine, the combination of a shaft having bearings in the casing of the machine, suitable registering wheels mounted loosely on such shaft and having a notch on one side, cut spring washers keyed on such shaft between such wheels and the cut end thereof sprung to one side so as to engage with the notch in the registering wheel when turned backward, with a toothed wheel mounted rigidly on the end of such shaft, and a worm wheel mounted on the casing of such machine adapted to engage the teeth of such wheel and rotate the same, whereby such registering wheels may be reset to zero.

3. In a registering machine, the combination with a shaft having bearings in the casing of the machine, suitable registering wheels mounted loosely on such shaft and having a notch on one side, cut spring washers keyed on such shaft between such wheels and the cut end thereof sprung to one side so as to engage with a notch in the registering wheel when turned backward, of a toothed wheel fixed on the end of the registering wheel shaft, a bracket detachably secured to the frame-work of the machine, and a worm wheel having bearings therein adapted to engage such toothed wheel and turn the same, whereby such registering wheels may be reset to zero.



4. In a cash register and indicator, a gravitating finger having a notched extension on the side of the upper part of the same, the lower part of such extension having an inclined face, and an actuating lever having a pin extending from it, such pin adapted when such lever is operated to contact with such inclined face and tilt such finger forward and then engage such notches and prevent such lever from dropping until the same has been completely operated.

5. In a cash register and indicator, a series of gravitating fingers adapted to be tilted simultaneously, such fingers extending up between the actuating levers of the machine and provided with a series of notches and adapted to prevent any one of such levers from dropping until it has been completely operated, and a lug on the front side of such fingers adapted when such fingers are tilted forward to prevent any lever from being lifted from its normal position.

6. In a cash register and indicator, a gravitating locking bar provided with a series of fingers fixed thereto, such fingers having a series of notches thereon, a series of actuating levers operated between such fingers, and provided with a pin extending from each of such levers, such pin adapted, when the lever is operated, to engage such notches and tilt the fingers of such locking bar forward, a lug on the front of such fingers, and pins attached to such levers adapted to contact with such lug when such fingers are tilted forward, whereby no lever can be raised from its normal position until the lever being operated has been completely lifted and is dropped to its normal position.

7. In a cash register and indicator, a locking bar provided with a series of fingers, such fingers having a notched extension on the side of the upper part of the same, and the lower part of such extension having an inclined face, a lug on the front face of such fingers, in combination with a series of actuating levers, each lever having a pin on one side thereof adapted to contact with the inclined face of the extension on a finger and tip the fingers of the locking bar forward and engage the notches on such extension and prevent such lever from dropping until the same has been completely operated, and a pin on the other side of each of such levers adapted to contact with such lug when such fingers are tipped forward, whereby no other lever can be operated while any one of such levers is being operated.

8. In a registering and indicating machine, a gravitating rack-bar with vertically extending arms having notches in the upper end thereof adapted to hold the lower end of the indicating tablet shanks when the same are elevated, and an arm rigidly secured to the under side of such rack-bar and adapted to be moved by any of the actuating levers of such machine when operated and tip the arms of such rack-bar backward to release the indicating tablet shanks.

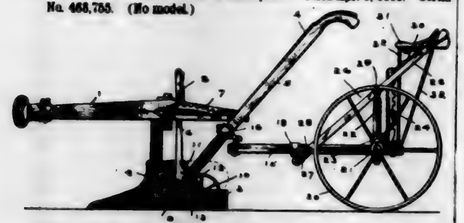
9. In a registering and indicating machine, a series of levers pivoted to a shaft, a cross bar resting on such levers, a gravitating rack bar with vertically extending arms having notches in the upper end thereof adapted to hold the lower end of the indicating tablet shanks when the same are raised by such levers, an arm rigidly secured to the under side of such rack-bar, the other end of such arm slotted, and a trip pivoted in such slot, such trip adopted to be operated by such cross bar when the same is raised, and thus tip the arms of such rack-bar backward and release the shanks of the indicating tablets.

10. In a registering and indicating machine, a series of key levers pivoted on a shaft and supporting tablet shanks on their inner ends, a cross bar resting on such levers, a trip adapted to be operated by such cross bar when raised, a rack-bar having vertical arms to catch and support such tablet shanks when raised, and an arm extending from such trip and attached to the lower part of such rack-bar, whereby when the lever is operated such trip will tilt such rackbar backward and release the tablet shanks previously raised.



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**504,294.** PLOW. GEORGE BALDWIN, Indianapolis, Ind., assignor of one-half to Patrick Donohue, same place. Filed Apr. 3, 1893. Serial No. 468,755. (No model.)



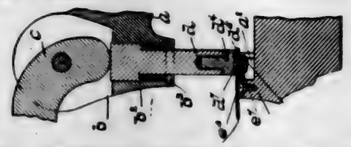
*Claim.*—1. In a plow, the combination of a bent lever pivoted at its bend to the plow immediately behind the mold board, a ground wheel mounted on one end of such lever, a handle at the other end of such lever, means for retaining such handle at any desired position, a curved slotted arm connecting the arms of such lever, and a headed bolt attached to the land side of the plow and operating in such slot, substantially as shown and described.

2. In a plow, the combination of a bent lever pivoted at its bend to the plow immediately behind the mold board, a ground wheel mounted on one end of such lever, a handle on the other end thereof, a notched guide secured to the plow beam through which such handle operates, and a spring bolt attached to such handle and adapted to lock such handle at any point of such notched guide, substantially as shown and described.

3. The combination with a plow of a carriage attached to the plow, and an adjustable draft reducing ground wheel mounted on the plow immediately behind the mold board, substantially as shown and described.

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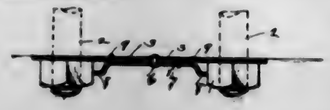
**504,295.** MACHINE FOR SETTING LACING STUDS OR HOOKS. RICHARD P. BARRY, Newton, Mass. Filed Mar. 30, 1893. Serial No. 468,330. (No model.)



*Claim.*—A stamping-press, comprising in its construction, a frame having a bed with a recess open at one side, interchangeable bed-plates for attachment on said bed, one of said plates having a block which fills the recess, and another adapted to project over the said recess when applied on the bed, and constituting a holder for a lacing stud or hook, a plunger, and interchangeable dies for attachment to said plunger, one of said dies constituting a punch to co-act with the block in cutting out holes to receive the lacing studs or hooks, and another constituting an upsetting die to act in the studs or hooks in conjunction with the holding-plate on the bed.

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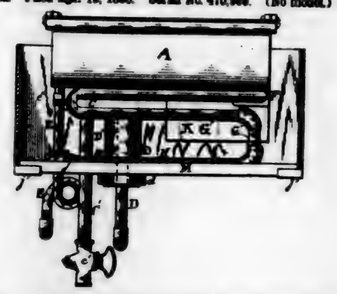
**504,296.** NUT-LOCK. OREN H. BEAN, Allegheny, Pa., assignor of one-half to Charles F. Knapp, same place. Filed Nov. 11, 1892. Serial No. 451,709. (No model.)



*Claim.*—In a nut-lock, the combination, with the bolts and their nuts,—of a fish-plate having suitable bolt-holes, and provided with a central aperture to receive a bolt or rivet, and with two clip-receiving openings, one on either side of the central aperture,—and a locking plate made in a single piece of spring-metal, secured centrally to the fish-plate by a headed bolt or rivet passing through coincident holes in the two plates, and provided at each end with an upturned nut-locking-flange, and with two clips struck up from the body of the plate and severally adapted to enter the clip-receiving holes in the fish-plate, there being one clip on either side of the securing bolt or rivet, substantially as specified.

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**504,297.** HYDROCARBON-BURNER. JOSEPH O. BRADLEY, Baltimore, Md., assignor to the Standard Heater Company, of West Virginia. Filed Apr. 18, 1893. Serial No. 470,969. (No model.)



*Claim.*—1. In a hydro carbon burner, wherein water is converted into steam to unite with the vapor of oil, a separate steam chest, located between the water supply pipe and the mixing chamber; said chest being provided with an outlet pipe and valve for discharging any sediment from the water.

2. The combination of the mixing chamber A, the abestus chamber B, the intermediate steam chest C, the oil pipe E the water supply pipe D the outlet pipe C' and gas pipes F, F', and H, H', having burners A, A', all substantially as and for the purpose described.

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**504,298.** THERMOMETER. HENRY CAMPBELL, Baltimore, Md., assignor of two-thirds to John Marr and James Bartley, same place. Filed Feb. 7, 1893. Serial No. 461,883. (No model.)

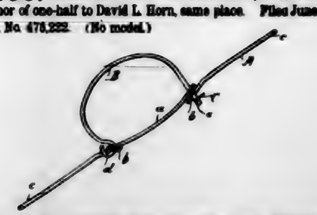


*Claim.*—1. In a hop tester the combination of the rod, pointed and provided with a groove as described and the thermometer situated in said groove and substantially flush with the surface thereof, as and for the purposes set forth.

2. In a hop tester the combination with the rod 1 provided with the groove 3 and recess 4, of the thermometer having its tube in said groove and a backwardly bent bulb fitting in said recess, substantially as shown and described and for the purposes set forth.

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**504,299.** COW-YOKE. WILLIAM S. CARSELL, Choctaw City, Okla., assignor of one-half to David L. Horn, same place. Filed June 20, 1893. Serial No. 478,222. (No model.)

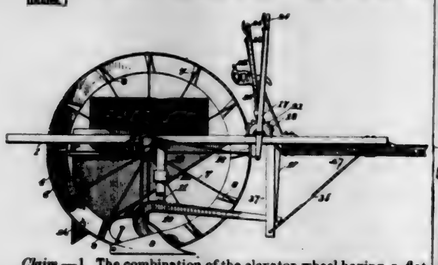


*Claim.*—1. In a cow yoke, the combination, with the bar provided with a hook at each end and an eye on each side of its central portion, of a substantially semi-circular neck-piece pivoted to one of the said eyes, passing through the other said eye and provided with means for securing it, substantially as set forth.

2. In a cow yoke, the combination, with the bar provided with a hook at each end and an eye consisting of a loop in the bar on each

side of its central portion, of the substantially semi-circular neck-piece provided with an eye at one end engaging with one of the aforesaid eyes and having its free end passed through the other eye, and a split ring passing through a hole in the free end of the said neck-piece, substantially as and for the purpose set forth.

**504,300. GRADING AND EXCAVATING MACHINE.** JOHN R. CORNWALL, Moline, Ill. Filed May 26, 1892. Serial No. 434,447. (No model.)

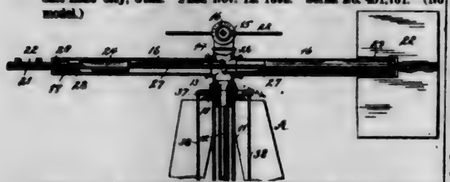


*Claim.*—1. The combination of the elevator wheel having a flat band or tire 6, a flange 4 at the inner side of the tire, and a series of equidistant plates 8, curved transversely and secured to the band and flange tangential to the axis of the wheel, the spokes secured to the outer band and to a hub, the main frame, a plow suspended from the frame at the side of the wheel opposite the flange, the sliding connection 11, 12, 13 between the rear part of plow beam and the frame, and the levers and connections thereof, with the front and rear ends of the beam whereby the plow may be adjusted, and the draft connections between the frame and plow beam, substantially as and for the purpose described.

2. The combination of the main frame, the axle, the wheel 5 on one end thereof, the elevator wheel near the other end thereof provided with a series of buckets, a dirt receptacle suspended between said wheels, and a chute for directing the discharge from the buckets into the receptacle; with a plow or scraper frame exterior to and beside the elevator wheel, the bars 11, and 13, and sleeve 12 adjustably connecting the rear end of the beam to the frame, the draft bar 37 depending beside the front end of beam, and the levers and connections for independently adjusting the front and rear ends of the plow beam, substantially as described.

3. The combination of the frame, the axle, the wheels thereon, one of said wheels having an angular rim and a series of curved plates or shelves 8 secured tangentially in the rim forming elevator buckets, a receptacle suspended from the frame, an axle between the wheels, a chute for directing material dropped from the buckets into the receptacle, a plow outside and beside the elevator wheel, the bars 11, and 13 and sleeve 12 adjustably connecting the rear end of the beam to the frame, the draft bar 37 and its brace rod 38, the chain and lever for adjusting the rear end of said plow beam, and the link, lever and rock shaft for adjusting the front end thereof, all constructed and adapted to operate substantially as and for the purpose described.

**504,301. WINDMILL.** EDWIN I. DAVIS and JOHN N. WHITE, Salt Lake City, Utah. Filed Nov. 12, 1892. Serial No. 451,761. (No model.)

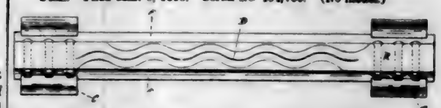


*Claim.*—1. In a wind mill, the combination, with the wind wheel shaft, of tubular arms located at angles to each other and connected with the shaft, and fixed sleeves located in the ends of the arms, the said sleeves having inner clutch surfaces, bearings held to turn in the sleeves, a shaft fixed to the bearings and extending from end to end of the arms, vanes secured to the ends of the shafts, reversely placed, and governor blocks held to slide upon the shafts, one opposite each sleeve, the ends of the blocks opposite the sleeves having clutch surfaces to engage with the like surfaces of the sleeves, substantially as and for the purpose specified.

2. In a wind mill, the combination, with the wind wheel shaft, of tubular arms located at angles to each other and connected with the shaft, and fixed sleeves located in the ends of the arms, said sleeves having inner clutch surfaces, bearings held to turn in the sleeves, a shaft fixed to the bearings and extending from end to end of the arms, vanes secured to the ends of the shafts, reversely placed, governor blocks held to slide upon shafts, one opposite each sleeve, the ends of the blocks opposite the sleeves having clutch surfaces to engage with the like surfaces of the sleeves, a lever and connecting rods uniting the governor blocks of an arm, shifting rods located upon the arms, levers carried by the arms and connected with the shifting rods, and means, substantially as shown and described, for operating the levers, as and for the purpose specified.

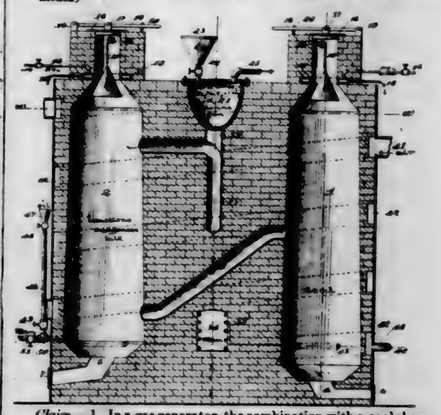
3. In a wind mill, the combination, with the wind wheel shaft, and tubular arms connected with the shaft, of vanes carried by the arms and reversely located, the vanes extending farther below than above the arms, a shaft connecting the vanes of an arm, a governor centrifugally operated, sliding upon the vane shafts, and a clutch mechanism contained in the arms and adapted for engagement with the governor, substantially as shown and described.

**504,302. RAILWAY-RAIL JOINT.** THOMAS J. GILMARTIN, Ogden, Utah. Filed Mar. 6, 1893. Serial No. 464,709. (No model.)



*Claim.*—The expansion railway rail joint, consisting of the corrugated plate or plates, D., welded to the rails, and the fish plates, F. F., connected to the rails by means of the bolts, R., or the clutch C., or both,—the whole adapted to absorb and nullify the longitudinal movement of the rail, due to expansion and contraction, or other natural causes.

**504,303. APPARATUS FOR THE GENERATION OF GAS.** MOTT P. GOFF, Mattituck, N. Y., assignor to the National Electric Gas Company, of Kentucky. Filed Dec. 2, 1892. Serial No. 453,882. (No model.)



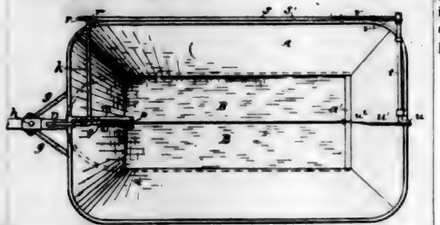
*Claim.*—1. In a gas generator, the combination with a coal chamber and a limestone chamber of a flue connecting the two chambers, a chlorine retort, and means for uniting the gases from the coal and limestone chambers with the chlorine gas from the chlorine retort, whereby the hydrogen is removed from said gases.

2. In a gas generating apparatus the combination with a coal chamber, a limestone chamber and a flue connecting both chambers, of a chlorine retort situated between the two chambers, a flue extending from near the top of the limestone chamber toward the bottom of the chlorine retort thence downward and outward, a pumice stone retort adapted to be heated by gas jets and connected to the downward extending flue and an oxygen separator connected to the pumice stone retort and to the chlorine retort, such as described.

3. In a gas generating apparatus, the combination, with a coal chamber, a limestone chamber, and a flue connecting both chambers, of a chlorine retort situated between the two chambers, a flue extending from near the top of the limestone chamber toward the bottom of the chlorine retort thence downward and outward, a pumice-stone retort adapted to be heated by gas-jets and connected to the downward-extending flue, an oxygen separator connected to the pumice-stone retort and to the chlorine retort, and an oil tube and steam-jet opening into the interior of the limestone chamber, substantially as described and for the purpose set forth.



**504,304. DUMPING-WAGON.** LEWIS C. HICKS, Onawa, Iowa, assignor of one-half to Mitchell Vincent, same place. Filed May 18, 1892. Serial No. 433,443. (No model.)

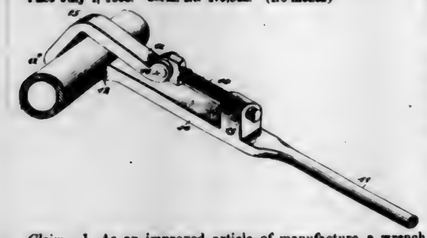


*Claim.*—1. The combination, with a wagon body, having a floor made in two parts and hinged to opposite parts of said body, of a shaft *k*, mounted on the front part of said body and provided with a hand-lever which is connected with both parts of said floor by chain passed over a pulley, two arms, *r*, *r'*, fastened to the outer end of shaft *k*, a shaft *l* mounted at the rear end of said body and provided with an arm *u*, chains or rods connecting arms, *r*, *r'*, with shaft *l*, so that when shaft *k* is turned in either direction, the shaft *l* is correspondingly turned, and devices connected with arm *u* of shaft *l* for securing said hinged floor in its closed position, substantially as and for the purposes described.

2. The combination, with the box of a wagon, having a floor formed of two hinged parts, of a shaft, mounted on the fore part of said box and having two arms on the outer end of said shaft; another shaft mounted on the rear part of said box, chains or rods, so connected with said rear shaft and with said arms of said forward shaft, that when the latter is turned in either direction, a corresponding movement is imparted to said rear shaft, substantially as set forth.

3. The combination with the body of a wagon having a floor, formed of two hinged parts, of a shaft, mounted in bearings carried by said body and provided with an arm *u*, mechanism for turning said shaft, an axle of said wagon and a bail constructed to be closed about said axle, being connected therewith and also with said arm *u*, substantially as set forth and described.

**504,305. WRENCH.** WILLIAM C. LAWRENCE, Casselton, N. D. Filed July 1, 1893. Serial No. 479,562. (No model.)



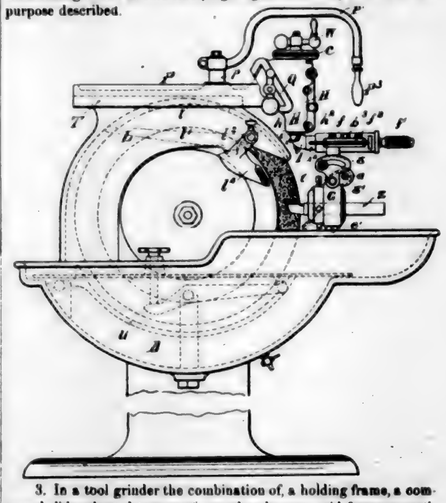
*Claim.*—1. As an improved article of manufacture, a wrench, the same consisting of a body bar having a jaw formed at one end and provided with a threaded guide forming a rigid portion thereof, an adjusting screw carried by the guide, and a hook jaw having pivotal connection with the adjusting screw, as and for the purpose set forth.

2. In a wrench, the combination, with a body bar having a jaw formed at one of its ends, and a nut firmly secured upon one surface of the body bar, of an adjusting screw extending through the nut, and a substantially hook shaped jaw adapted to extend over the jaw on the body, the shank of the hook shaped jaw being pivotally connected with the adjusting screw, whereby the hook-shaped jaw may be dropped to stand at substantially a right angle to the body bar when occasion may require, as and for the purpose specified.

**504,306. UNIVERSAL GRINDER.** CHARLES H. NORTON, Detroit, Mich., assignor to the Leland Faulconer & Norton Company, same place. Filed Feb 23, 1892. Serial No. 422,384. (No model.)

*Claim.*—1. In a tool grinder the combination of a supporting arm adjustable in a horizontal arc on a vertical axis, a tool holding clamp adjustable horizontally across the axis of said supporting arm and in a vertical arc on a horizontal axis, means for securing the clamp and arm in their adjusted position.

2. In a tool grinder, the combination of a holding frame a compound slide adapted to move forward and across said frame, a vertically movable arm supported by said slide, carrying a horizontal branch, a hanger depending from said horizontal branch, a holding ring hinged to said hanger a clamping ring concentric with said holding ring, and having an axial adjustment therein, means for securing and holding a tool in said clamping ring, substantially as and for the purpose described.



3. In a tool grinder the combination of, a holding frame, a compound slide adapted to move forward and across said frame, a vertically movable arm supported by said slide and provided with a horizontal branch, a sleeve adjustable along said horizontal branch, a hanger depending therefrom, a tool holding clamp supported by said hanger, means for adjusting the movable parts, substantially as and for the purpose described.

4. In a tool grinder, the combination of a holding frame a compound slide adapted to move forward and across said frame work an arm supported by said slide, adapted to have vertical movement and a tool holding clamp carried by said arm and provided with adjustments whereby said tool contained in said clamp may be rotated and moved angularly, substantially as and for the purpose specified.

5. In a tool holder, the combination of a sleeve supported on a sliding frame work, adapted to give to said sleeve, horizontal motion in either direction, an arm, journaled in said sleeve, and provided with a branch at right angles to the part forming said journal, a sleeve adapted to slide on said branch, and a tool holding clamp supported by said sleeve, substantially as and for the purpose specified.

6. In a tool grinder, the combination of a holding frame, a compound slide adapted to move forward and across said frame, a vertically adjustable rotatable arm supported by said slide, a tool holder supported by said arm, means for horizontal adjustment with respect to said rotatable arm, substantially as and for the purpose described.

7. In a tool grinder the combination of, a vertically adjustable hollow support rotatable on its vertical axis, an arm extending horizontally from said support, a tool holder mounted on and adjustable along said horizontal arm, a guide adapted to be held in said hollow support and to indicate its center of rotation, substantially as and for the purpose described.

8. In a grinding machine, the combination of a hanging tool holder, a supporting arm therefor, a sleeve adapted to slide on said arm, a feather secured to said arm and engaging a slot in said sleeve, means for adjusting said sleeve longitudinally along the arm, and means for clamping the sleeve to the arm, substantially as and for the purpose specified.

9. In a tool grinder, the combination of a primary support having a horizontal adjustment, a vertical sleeve supported on said primary support, a sleeve mounted and having vertical adjustment therein, an arm extending at right angles to said second mentioned sleeve, a tool holder mounted on said arm adapted to rotate with said arm about the vertical axis of said second sleeve, a guide adapted to be received in said sleeve, and to indicate below the same its vertical axis of rotation.

10. In a tool grinder the combination of, a main frame work a vertically hanging, vertically adjustable hollow support bent at right-

angles and having one vertical and one horizontal branch, a slotted sleeve mounted on and horizontally adjustable along said horizontal branch, a feather secured to said horizontal branch and extending through the slot in said sleeve, a tool holding clamp hanging from said sleeve, means for adjusting the sleeve along the branch, and means for clamping the sleeve to the feather, substantially as and for the purpose described.

11. In a grinder, a primary support having a horizontal adjustment, a vertical sleeve support on said primary support, and a sleeve mounted and having a vertical adjustment therein, a mandrel extending at right angles to said sleeve, a tool holder mounted on said mandrel and adapted to rotate with said mandrel about the center of rotation of said sleeve, and a guide mounted in said sleeve and adapted to indicate below the same its center of rotation, substantially as described.

12. In a tool grinder, the combination of a water trough, a stone partially immersed in water contained in said trough, a hood provided with side flaps and conduits adapted to catch the water lifted by said stone and direct it forward, substantially as and for the purpose described.

13. In a tool grinding machine, the combination of a water trough, a stone adapted to revolve partially immersed in water contained in said trough, a hood provided with side flaps and conduits, and with diaphragms across said hood above the stone, said diaphragms being adapted to stop the water raised by the grinding wheel and direct it into the conduits, substantially as and for the purpose specified.

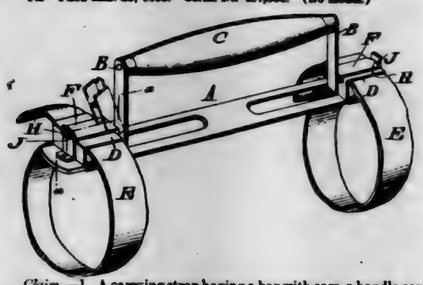
14. In a tool grinder, the combination of a water trough, a stone partially immersed in the water contained therein, a hood having side flaps and conduits pointed diaphragms across said hood above the stone having their apexes at the middle line of said stone, and their points directed toward the body of water raised by said stone, whereby the water is caught and directed to both the side conduits, substantially as and for the purpose described.

15. In a tool grinder, the combination of a water trough a stone adapted to rotate partly immersed in the water within said trough a curved hood, having its curvature eccentric to said stone provided with side flaps and conduits, leading from the rear to the front of said stone, diaphragms across the said hood, having a greater radial depth at the rear than at the front of said stone, substantially as and for the purpose specified.

16. In a grinding machine, the combination of a water trough, a grinding wheel, a hood having side flaps provided with conduits a movable nozzle, adapted to receive water from said conduits and direct it against the face of the grinding wheel, substantially as and for the purpose specified.

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**504,307. CARRYING-STRAP.** GEORGE W. ROBERTS, Philadelphia, Pa. Filed Mar. 25, 1893. Serial No. 467,558. (No model.)




*Claim.*—1. A carrying strap having a bar with ears, a handle connected with said ears, straps secured at one end to said bar, loops on said bar having pivoted latches with catches, and flanges on said bar co-operating with said latches, said parts being combined substantially as described.

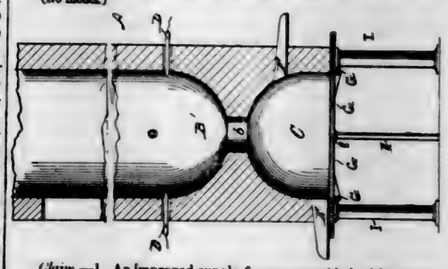
2. A carrying strap having a bar, straps secured to the outer ends of said bar, loops on said bar provided with pivoted latches having spring catches, and flanges secured to said bar within the loops, said parts being combined substantially as described.

3. In a carrying strap, a bar having a strap secured thereto, a loop on said bar, a latch with sides entering said loop, and a lip engaging a spring catch on said bar, and flanges rising from said bar and within said loop, said parts being combined substantially as described.

4. A carrying strap consisting of a bar with a handle, loops on said bar, latches having sides entering said bars, catches engaging said latches, flanges rising from within said loops, and springs on said latches normally raising the same, said parts being combined substantially as described.

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**504,308. APPARATUS FOR MELTING IRON OR IRON ORE.** SOLOMON SHAW, Milwaukee, Wis., assignor of one-fourth to the Edward P. Allis Company, same place. Filed Nov. 14, 1891. Serial No. 411,659. (No model.)



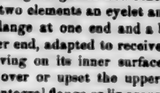

*Claim.*—1. An improved cupola furnace provided with a receptacle for metal or metallic ores in its upper portion, said receptacle having vertical walls and a rounded concave lower end, a chamber below said receptacle provided with discharge openings at different elevations, and a contracted passage leading from the said receptacle to the said chamber, and occupying the central vertical axial line of both of said parts, in combination with electrodes located in the lower part of said receptacle at the lower end of the vertical wall portion and above the rounded concave portion thereof, substantially as set forth.

2. An improved cupola furnace comprising vertical walls and a rounded concave base, and having electrodes introduced near its bottom, a narrowed passage connecting with a receiving chamber below, the said chamber provided with a slag opening and a tap-hole arranged at different elevations, and having hinged traps at the bottom, all arranged substantially as described.

3. A cupola furnace provided in its upper portion with a receptacle for metal or metallic ores having an inwardly contracted base and vertical sides, electrodes arranged within the lower portion of the said receptacle at the initial point of contraction, a narrowed passage connecting the receptacle with the receiving chamber, a receiving chamber, below said passage, provided with a slag opening and a tap-hole arranged at different elevations, and having its bottom formed of two fluid-tight hinged doors or traps, and a removable support for said traps, all combined, arranged and operated substantially as described.

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**504,309. GLOVE-FASTENING.** JOSEPH R. SMITH, Waterbury, Conn., assignor, by mesne assignments, to the Consolidated Fastener Company, Portland, Me. Filed Sept. 27, 1889. Serial No. 325,269. (No model.)



*Claim.*—In a fastening for gloves and other articles, the socket member consisting of two elements an eyelet and a cap; said eyelet having an outturned flange at one end and a body flared from the flange toward the other end, adapted to receive and retain a spring stud, and said cap having on its inner surface an inclined annular ridge adapted to turn over or upset the upper end or edge of the flaring eyelet, and an integral flange or lip around its margin, turned inward and upward in scroll form, resting upon the fabric and by its free inner edge engaging the upset extremity of the eyelet in close contact with the inclined annular ridge of the cap, as herein shown and described.

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**504,310. MECHANISM FOR BENDING PLATES.** FRANCIS H. STILLMAN and CARL WIEGEL, Brooklyn, N. Y. Filed Apr. 7, 1892. Serial No. 428,238. (No model.)

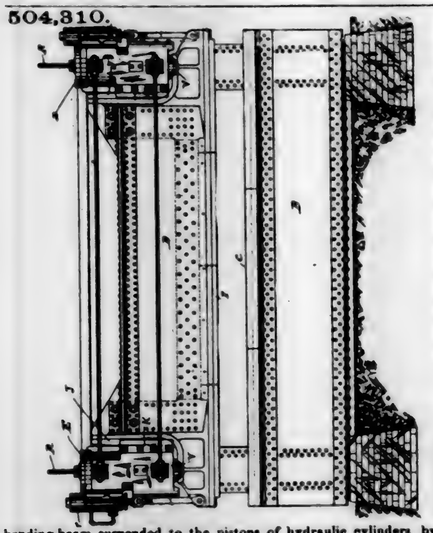
*Claim.*—1. In a machine adapted to bending or shaping metal plates in combination with a bending-beam therein capable of being adjusted so as to bend or shape plates at different angles or at the same angle throughout their entire length—the hydraulic cylinders to raise and maintain said bending-beam in position, and the hydraulic cylinders to force said bending-beam downward in bending or shaping plates, said cylinders being in pairs at either end of said bending-beam and connected so that the power-imparting liquid may flow alternately into and from said cylinders constructed, arranged and operating substantially as herein set forth and shown.

2. In a machine adapted to bending plates constructed and operating substantially as herein shown and described, the adjustable and removable guides secured respectively to the opposite ends of the bending-beam, said guides having convex surfaces as and for the purpose described.

3. In a machine adapted to bending metal plates consisting of a



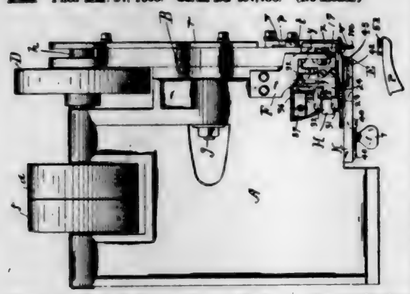
**504,310.**




bending-beam suspended to the pistons of hydraulic cylinders, by which cylinders said bending-beam is to be raised after a plate is bent or shaped—and hydraulic cylinders to force the bending-beam downward into a stationary bending-block to bend or shape metal plates—a series of recesses to receive therein the removable stops and by which stops the upward movement of the bending-beam is to be governed and limited substantially as herein shown and described.

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**504,311. PEGGING-MACHINE.** JOHN F. DAVEY, Marlborough, Mass. Filed Mar. 27, 1893. Serial No. 467,736. (No model.)




*Claim.*—1 The awl, hammer bar and their actuating-mechanism in combination with the presser-foot, E, having the hooked-head, 15, disposed adjacent the line of travel of said hammer and provided with the cutting-edge, 16, substantially as and for the purpose set forth.

2. The body in combination with the sliding-gage, K, the wheel, 43, fitted to rotate on said arm; a projection on said body and the cam-screw, L, in said arm working against said projection whereby the arm may be adjusted

3. In a pegging-machine a rocking-arm and an awl and hammer mechanism fitted to slide thereon in combination with a stationary knife on the machine-body; a peg-strip feed-mechanism carried by said arm and a cutter-head for forcing the strip against said knife.

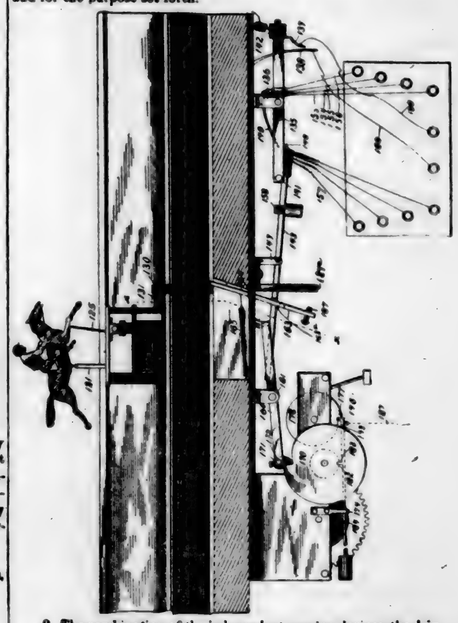
4. The combination with the pegging-machine provided with the gage, K, of the horn having the slotted rotating head, 52, and actuating mechanism for said head.

5. The combination of the body, drive-shaft and cams with the rocking-arm; the cam actuated block sliding thereon and carrying the awl and hammer; the grooved guide-plates for said hammer; the stationary knife on said body; the cutter-head on said arm and the peg-strip feed-mechanism carried by said arm all being arranged to operate substantially as described

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**504,312. COIN-CONTROLLED RACE-COURSE.** CHARLES CARROLL, New Orleans, La., assignor to the Automatic Machine Company, Limited, same place. Filed Aug. 29, 1891. Serial No. 404,113. (No model.)

*Claim.*—1. The combination of the independent running devices, the driving mechanism having independent working connections with the respective running devices and independent speed changing devices for the respective running devices, substantially in the manner and for the purpose set forth.



2. The combination of the independent running devices, the driving mechanism having independent working connections with the respective running devices, speed changing devices controlling the individual working connections and a chance mechanism for positively operating said speed changing devices, substantially as and for the purposes set forth.

3. The combination of the independent running devices, the individual endless belts engaging the respective running devices, the individual endless belt drivers, the independent connections for driving said endless belt drivers, the speed changing devices controlling said connections independently and the chance device for setting in operation said speed changing devices, substantially as and for the purpose set forth.

4. The combination with a race course having mounted thereon a number of running devices, independent endless belts driving said running devices and independent belt drivers for the respective belts; of the electro-magnetic clutches connected with the respective belt drivers, the independent driving connections for said clutches, the differential gear, in said driving connections, the belt-shifting device controlling said differential gear, the starting and setting device, and the compound switch all substantially as and for the purposes set forth.

5. The combination with a race course having mounted thereon a number of running devices independent endless belts driving said running devices and independent belt drivers for the respective belts; of the electro-magnetic clutches connected with the respective belt drivers, the independent driving connections for said clutches, the differential gear in said driving connections, the belt-shifting device controlling said differential gear, the chance mechanism controlling said belt-shifting devices, the starting and setting device, and the compound switch all substantially as and for the purposes herein set forth.

6. The combination with a race course having mounted thereon independent endless belts and independent belt drivers for the respective belts; of the electro-magnetic clutches connected with the respective belt drivers, the independent driving connections for said clutches, the differential gear in said driving connections, the belt-shifting device controlling said differential gear, the starting and setting device, and the compound switch all substantially as and for the purpose set forth.

7. The combination with the race-course, independent running devices, and the endless belts for moving said running devices; of the endless belt driver, a suitable source of power the electro-magnetic clutches adapted to connect the respective belt drivers with the source

of power, the compound switch for controlling the said clutches, and the starting and setting device for operating said switches, substantially as and for the purposes set forth.

8. A toy race-course provided with a number of endless conduits in the same horizontal plane and separated into upper and lower parts with slots for connection between them, the carriers and endless driving belts located in the respective parts of said conduits, and the independently movable belt-drivers having driving connection with the respective belts, all substantially as and for the purposes set forth.

9. In a toy race-course the combination of the course, having a conduit, the carrier running in the conduit, and having a running device and means for imparting galloping motion to the same and an endless belt having a transverse bar projecting up into the conduit and having separable connection with the running device, substantially as and for the purpose set forth.

10. In a toy-race course, the combination of the running devices, the driving mechanism, independently movable endless belts for driving the respective running devices, transverse bars projecting from the individual driving belts, and independent detents which control the movements of the respective belts and which project in the paths of the respective transverse bars, substantially as and for the purpose set forth.

11 The combination with a race-course having mounted thereon the independently movable running devices; of the independent driving connections for the running devices and the independent detents controlling said driving connections. substantially as and for the purpose set forth.

12. In a toy race-course, the combination of an endless belt having upper and lower transverse extensions, a carrier engaged by the upper extension and a detent engaged by the lower extension. as and for the purpose set forth

13. In a toy race-course the combination of the independently moving belt drivers, endless belts driven by the respective belt drivers, and the independently movable running devices, having connection with the respective belts and each provided with a pivoted image and working connection with the conduit for imparting an oscillatory movement to the image all substantially as herein set forth.

14. The combination with a race-course having mounted thereon the independently movable running devices; of the independent driving connections for the running devices and the electro-magnetic clutches controlling said driving connections substantially in the manner and for the purpose set forth.

15. The combination with a race-course provided with the running devices, the independently movable belts having connection with the running devices, independent driving connections for the belts and clutches controlling said driving connections, substantially as and for the purposes set forth.

16. The combination with a race-course having independent conduits all in the same plane and provided each with an independently movable endless belt below it: of independently moving belt drivers for the respective endless belts and the independent running devices having connection with said belts, all substantially as set forth

17. The combination with a race-course having independent conduits all in the same plane, and provided each with an endless belt below it; of the independent driving connections for the respective belts, and differential gear forming a part of said driving connections, substantially as and for the purposes set forth

18. The combination of a race-course, the independent driving connections, detents controlling the respective driving connections, and the starting and setting device for said driving connections and detents, substantially as herein set forth.

19. The combination in a race-course, of the driving mechanism, the belt-shifting device, and the chance mechanism controlling said belt-shifting device, substantially as and for the purposes set forth.

20. The combination of an endless belt having a transverse bar extending above and below the plane in which the belt runs, a carrier engaged by the upper extension, and a controlling detent engaged by the lower extremity.

21. The combination of the course, the series of conduits in the course, the running devices and endless belts running in the respective conduits, the endless belt drivers, a suitable source of power, independent connections between the source of power and the respective belt-drivers, and means for varying the said independent connections separately, substantially in the manner and for the purposes set forth.

22. The combination of the course, the series of independent conduits in a horizontal plane in which are located the running devices, series of guides around in the respective conduits which move the endless belts, the endless belt drivers, the source of power and suitable working connections between the source of power and the endless belt drivers, all substantially as and for the purposes set forth.

23. In a toy-race the combination of the running devices, the endless belts for moving said running devices, the endless belt drivers, the set of cones having working connections with said belt drivers, the set of corresponding cones in reverse position, suitable belts connecting corresponding cones of the respective sets and a chance mechanism independent of the cones for actuating said belts upon the cones, substantially in the manner and for the purpose set forth

24. In a toy-race course the combination of the set of driving cones adapted to receive motion from any suitable source, the set of follower cones in reverse position to the driving cones, belts connecting the corresponding cones, of the respective sets and independent means governed by a chance mechanism for shifting the respective belts substantially in the manner and for the purpose set forth

25. The combination of the running devices, the endless belts for moving said running devices, the endless belt drivers for moving said endless belts, the pulleys having working connections with the respective endless belt drivers, the driving mechanism adapted to receive power from any suitable source, the electro-magnetic clutches inserted between the driving mechanism and the respective pulleys which are connected to the endless belt drivers and suitable circuits and switches for the magnets of said clutches, substantially as and for the purpose set forth

26. The combination with the running devices, means for driving said running devices, the pulleys having working connections with said driving means and a suitable source of power; of the pivoted frames carrying gear wheels, each of which is connected with the source of power and adapted to engage one of the pulleys, electro-magnets for controlling said pivoted frames and circuits and switches for controlling said electro-magnets, substantially in the manner and for the purposes set forth.

27. The combination of the running devices, the endless belts connected with the respective running devices, the endless belt drivers, the pulleys connected with said endless belt drivers, the pinions carried by said pulleys, the driving pinions connected with a suitable source of power, the pivoted frames carrying idlers adapted to couple the respective driving pinions with the corresponding pinions on the pulleys, electro magnets controlling the respective pivoted frames and suitable circuits and switches for said electro-magnets, all substantially as set forth.

28. The combination of the course, the several running devices mounted on the course, the endless belts connected with the respective running devices, the series of driving pulleys located beneath the course, and the belts running from the respective driving pulleys to the corresponding endless belt drivers; said endless belt drivers being located at different points along the course whereby the belts radiate or spread and avoid interference, as shown

29. In a toy race course the combination of the running devices carrying images, means for moving the running devices independently, a suitable driving mechanism, independent sets of differential gearing between the driving mechanism and the respective devices, for moving said running devices, and means for varying the respective sets of differential gearing independently, substantially as and for the purposes set forth.

30. The combination with a race course having the driving mechanism, of the differential gear and means for shifting it, substantially as and for the purposes set forth.

31. The combination of a revoluble cylinder having formed on its surface pockets, shaped to receive balls or marbles, the adjacent parts in proximity to the cylinder to be engaged by the balls or marbles when taken up in said pockets and an apron for delivering the balls or marbles to one side of the cylinder, substantially as set forth.

32. A revoluble cylinder having formed on its surface pockets or depressions arranged in different vertical planes, an apron over which balls or marbles may roll to different points on one side of the cylinder and the series of adjacent mechanical parts to be operated by the protruding balls or marbles when picked up by the pockets in the cylinder, substantially in the manner and for the purpose set forth

33. The combination of a revoluble cylinder having formed in its surface a number of depressions or pockets in different vertical planes for receiving rolling objects, the adjacent series of parts to be engaged by the rolling objects when picked up by the pockets in the cylinder and the delivering device constructed to deliver by chance the rolling objects at different points along one side of the cylinder, substantially as and for the purpose set forth

34. The chance mechanism consisting of the levers adapted for connection with the individual parts to be controlled, the cylinder provided with pockets against which the levers rest, a guide way or apron adapted to deliver rolling objects to the cylinder, a distributing hopper for delivering the rolling devices onto the guide way or apron and means for returning the rolling devices from the cylinder to the hopper consisting of the elevator, and the channel communicating between the upper end of said elevator and the distributing hopper, substantially as set forth

35. The herein described means for controlling the movement of the running device by chance which consists of a lever adapted to be connected with the driving mechanism of said running device, a



revolving member having pockets against which the lever rests, a channel adapted to communicate with said pockets, and means for delivering marbles or other rolling devices into the channels, substantially as and for the purposes set forth.

36. The combination of the lever adapted to be connected to the object to be controlled and the means for moving said lever by chance consisting of the rotating cylinder having the pockets, a series of channels, one of which communicates with said pockets, and a hopper for delivering marbles to the several channels as and for the purposes set forth.

37. The herein-described chance mechanism consisting of combination of a series of levers, a revolving cylinder having series of pockets against which the levers rest, an apron having a number of channels terminating at the respective series of pockets, and a hopper adapted to deliver marbles into the channels, all substantially as set forth.

38. The combination of a series of levers, a revolving cylinder having a number of series of pockets against which said levers are adapted to rest, an apron having a number of channels corresponding in position to the respective series of pockets, a tray adapted to deliver balls or marbles into said channels and a revolving hopper adapted to deliver the marbles in constantly changing radial directions upon said tray, all substantially as and for the purposes set forth.

39. The chance mechanism consisting of a series of levers adapted to be connected with the mechanism to be controlled, the rotary cylinder having a number of series of pockets, an apron having a number of channels corresponding in position to the series of pockets, a collector located beneath the point of delivery of the cylinder, an elevator adapted to be supplied from said collector, and a chute or passage running from the delivery point of the elevator to the above mentioned apron, whereby marbles may be kept in continuous circulation through the channels of the apron and over the cylinder, all substantially as and for the purposes set forth.

40. In combination with the endless belt having the projecting bar and the herein described endless belt driver consisting of the stationary roll, the adjustable roll, and a pinion having working connection with the respective rolls, said rolls being mounted in independent separated frames, the movable roll frame being suitably pivoted and provided with means for regulating its position relatively to the stationary roll frame, whereby the projecting bar above the belt passes between the frames, substantially as and for the purpose set forth.

41. In combination with the running device, and endless belt for driving the same, the herein described endless belt driver consisting of the stationary roll, the adjustable roll and a pinion having working connection with the respective rolls, said adjustable roll being mounted in a frame suitably pivoted and provided with means for regulating its position relatively to the stationary roll. substantially as and for the purpose set forth.

42. The herein-described endless belt driver which consists of a pair of rolls having fixed bearings, a pair of adjustable co-operating rolls, a pair of pivoted frames in which said adjustable rolls are mounted, a shaft upon which said frames are pivoted, a pulley upon said shaft by which it is rotated, a pinion upon said shaft having working connection with all the rolls, a pair of adjusting levers suitably pivoted or fulcrumed, bearing at their ends upon the respective pivoted frames, and a pair of adjusting screws for adjusting the respective levers, all substantially as herein set forth.

43. The herein-described endless belt-driver consisting of a pair of fixed rolls geared together by a suitable pinion, a pair of adjustable rolls, a pinion connecting said adjustable rolls and intermeshing with the pinion first named, a pair of frames in which said adjustable rolls are mounted and which are pivoted upon the shaft upon which their connecting pinion is mounted, and a pair of adjusting levers suitably fulcrumed, each bearing upon one of the pivoted frames at one end and engaged by an adjusting screw at the other; one of said pinions being adapted to receive rotary movement, substantially in the manner and for the purposes set forth.

44. The endless belt driver comprising the fixed roller, the pivoted frame carrying a roller adapted to co-operate with the fixed roller, a plate upon which said fixed roller and frame are mounted, a lever fulcrumed in the plates and engaging the frame at one end, and a bracket extending on opposite sides of the plate from the frame and having a screw for engaging the other end of said lever, substantially as and for the purposes set forth.

45. The combination of the running devices, the endless belts connected with the respective running devices, the endless belt drivers, the motive power having independent working connections with the respective belt-drivers, the clutches controlling the respective independent working connections and detents controlling the clutches, and a projection on each endless belt engaging the corresponding detent when it arrives at the location of said detent, all substantially as and for the purposes set forth.

46. The combination of the running devices, the independent endless belts connected with the respective running devices, the endless belt drivers, the independent working connections for the respective belt-drivers, the electro magnetic clutches controlling the respective working connections, circuits and independent switches controlling said clutches, detents for holding said switches in a given position, and projections on the respective belts adapted to engage said detents, all substantially as and for the purposes set forth.

47. The combination of the course having suitable conduits and endless belts and running devices arranged in the said conduits and in engagement whereby the former move the latter; said running devices consisting of the carriers, having pivoted thereon the image or figure, the crank connected with the image for giving it a rocking galloping movement and having means in connection therewith for engagement with the conduit or surface past which the carrier moves for imparting movement to the crank, substantially in the manner and for the purpose set forth.

48. In a toy race course, the running device consisting of the oscillating image, and the friction roller having working connection with the image through multiplying gear in combination with a track over which the image moves and with which the friction roller engages, and a belt for drawing the image whereby the image is given simultaneously a galloping motion and a forward movement, as explained.

49. In a toy race-course, the running device consisting of the pivoted oscillating image, and a carrier upon which it is mounted having a friction roller and suitable driving gear, whereby the running device is given a galloping motion, in combination with a track or course over which the carriage runs, and with which the roller engages, and a driving belt having connections with the running device, substantially as set forth.

50. The combination of the carrier, the image mounted upon the carrier, the crank carried by the carrier and having connection with the image, a friction roller projecting from the carrier and adapted to engage the surface past which the carrier is moving, and suitable multiplying gear between the friction roller and crank, as and for the purposes set forth.

51. The carrier having the image, the crank for moving the image, the laterally projecting friction roller, having working connection with the crank, and a spring-pressed frame projecting outwardly from the side of the carrier opposite to the friction roller, substantially as and for the purposes set forth.

52. The combination of the frame, the image mounted upon the frame, the horizontal shaft and crank having connection with the image, a laterally projecting friction roller, a crown wheel on the shaft of said friction roller and a pinion on the crank shaft adapted to be engaged by the crown wheel, substantially as and for the purposes set forth.

53. A compound switch comprising a number of independently movable levers or switches for a set of individual mechanisms, and a motor switch lever, engaged and held in closed position by the closing of any one of the independent switches and released only after all individual switches have been opened, substantially as and for the purposes set forth.

54. The combination of the motor circuit, the individual circuits for starting the respective running devices, the switch frame for closing the motor circuit, the switch levers for closing the individual circuits each adapted to engage the switch frame and hold it in closed position, whereby the switch frame is released only after all the individual switches have been opened, means for raising said individual switches and suitable contacts and terminals in connection with the respective circuits and switches, substantially as and for the purposes set forth.

55. The combination of the motor switch, adapted to contact with a suitable terminal, individual switches for the respective running devices, all of which engage the motor switch, suitable terminals and detents for the individual switches, respectively, and a pivoted frame adapted to engage the ends of the individual switches opposite to those which engage the motor switch, substantially as and for the purposes set forth.

56. The combination of the individual switch levers having detents, the pivoted frame engaging said levers and adapted to force them into engagement with their detents, a cam for moving said frame, a motive power for said cam and a detent for said motive power, substantially as and for the purpose set forth.

57. The compound switch comprising a pivoted motor-switch lever a number of individual switch levers engaging at their forward ends beneath the motor switch lever, the setting lever engaging above the rear ends of the individual levers and suitable circuits and contacts in connection with the switch levers, substantially as explained.

58. The combination of the pivoted levers for closing the respective circuits, the pivoted setting frame engaging said levers, a cam for moving said frame to set the levers, a motive power for said cam, a detent for said motive power, and a pivoted coin lever connected with said detent, all substantially as set forth.

59. The combination of the switch levers, the pivoted setting frame, the cam for moving said frame, the motive power connected through a train of power reducing gear with the cam and through an additional train of gear with a detent wheel, a detent engaging said detent wheel and a wheel rotating synchronously with the cam and controlling said detent to prevent its engagement with the detent wheel until the cam has done its work, all substantially as and for the purposes set forth.

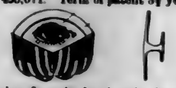
60. The combination of the setting device, consisting of a suitable power having working connection with the mechanism to be set; the stopping and releasing device consisting of the detent lever, the shouldered wheel, increasing leverage connection between the power and said wheel for the purpose of reducing friction between the detent lever and said wheel, the detent controlling wheel and connection of less leverage from the power to said detent controlling wheel whereby said detent controlling wheel rotates more slowly than the shouldered wheel, and the coin lever having connection with the detent lever, all substantially as and for the purpose set forth.

61. The herein described setting device consisting of the clockwork carrying the setting cam and the detent for the clockwork consisting of a shouldered wheel remote from but connected with power, and a lever adapted to engage said remote shouldered wheel and controlled in such engagement by the position of the setting cam, substantially as explained.

62. The herein described setting device consisting of the clockwork or equivalent power having suitable working connection with the mechanism to be set and the stopping and releasing device consisting of the detent lever, a shouldered wheel with which said detent lever engages connected through gear which increases the leverage from the motive power to said wheel whereby friction between the lever and notched wheel is reduced, and a wheel rotating more slowly also engaging said detent lever, and controlling its engagement with the shouldered wheel for the purpose of extending the time of operation of the setting device.

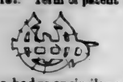
# DESIGNS.

**22,744.** BADGE. FRANCIS I. PALMER, Chicago, Ill. Filed May 31, 1892. Serial No. 435,071. Term of patent 3½ years.



*Claim.*—The design for a badge herein shown and described.

**22,745.** BADGE. WILLIAM SHAW, Ballard Vale, Mass. Filed Jan. 12, 1893. Serial No. 458,187. Term of patent 14 years.



*Claim.*—The design for a badge or similar article as herein shown and described.

**22,746.** HANDLE FOR SPOONS, &c. WILBUR H. GAINES, Waterbury, Conn., assignor to the Rogers & Hamilton Company, same place. Filed July 26, 1893. Serial No. 481,556. Term of patent 14 years.



*Claim.*—The design for handles for spoons, forks, &c., substantially as shown in the accompanying drawing.

**22,747.** HANDLE FOR SPOONS, &c. FREDERICK H. PRENAT, Waterbury, Conn., assignor to the Rogers & Hamilton Company, same place. Filed July 26, 1893. Serial No. 481,555. Term of patent 14 years.



*Claim.*—The design for handles of spoons, forks, &c., substantially as shown in the accompanying drawing.

**22,748.** HANDLE FOR SPOONS, &c. GEORGE WILKINSON, Providence, R. I. Filed July 5, 1893. Serial No. 479,658. Term of patent 7 years.



*Claim.*—The design for handles of spoons and similar articles as herein shown and described.

**22,749.** HANDLE FOR SPOONS, &c. GEORGE WILKINSON, Providence, R. I. Filed July 28, 1893. Serial No. 481,774. Term of patent 7 years.



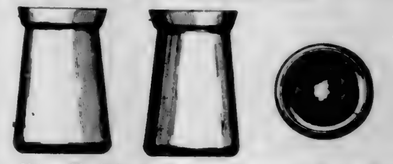
*Claim.*—The design for handles of spoons and similar articles as herein shown and described.

**22,750.** HANDLE FOR CANES, &c. ANDREW KROUSE, Bridgeport, Conn. Filed May 12, 1893. Serial No. 474,026. Term of patent 3½ years.



*Claim.*—The design for handles for canes, &c., substantially as shown in the accompanying drawings.

**22,751.** JAR. JAMES A. LANNING, Camden, N. J. Filed July 6, 1893. Serial No. 479,755. Term of patent 7 years.



*Claim.*—The design for a canning and preserving-jar, substantially as herein shown and described.

**22,752.** BOWL. CHARLES C. WIENTGE, Providence, R. I. Filed July 28, 1893. Serial No. 481,772. Term of patent 7 years.

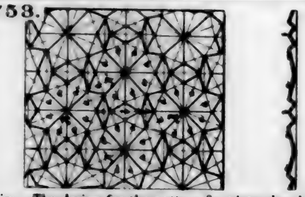


*Claim.*—The design for a bowl as herein shown and described.

**22,758.** PATTERN FOR PLATE-GLASS. WILLIAM L. PILKINGTON, St. Helen's, England, assignor to Pilkington Brothers, same place. Filed Nov. 11, 1892. Serial No. 451,689. Term of patent 14 years. Patented in England Apr. 21, 1892, No. 191,264.



**22,753.**



*Claim.*—The design for the pattern for plate-glass herein shown and described, the same comprising groups of similar pyramidically raised rhomboidal figures, which figures, in each group, are arranged radially from a common center with their similar sides, respectively, in juxtaposition, and which said groups are arranged in series with the groups of each series alternate to the groups of the adjoining series; together with other pyramidically raised rhomboidal figures arranged between, and with outlines corresponding to the outlines of the outer ends of those of the radially arranged rhomboidal figures where said ends approach each other in the respective series of groups thereof, as set forth.

**22,754.** ROSETTE. MARK C. REESE, Oxford, Pa. Filed Mar. 17, 1893. Serial No. 466,536. Term of patent 3½ years.



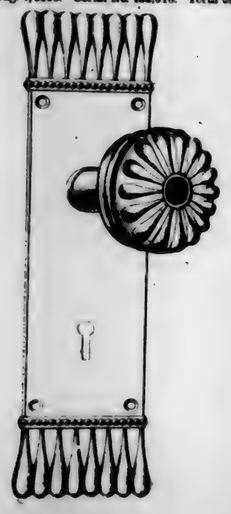
*Claim.*—The design for a rosette, substantially as herein shown and described.

**22,755.** DOOR-KNOB. HENRY R. RUSSELL, New Britain, Conn., assignor to the Russell & Erwin Manufacturing Company, same place. Filed Aug. 7, 1893. Serial No. 482,617. Term of patent 7 years.



*Claim.*—The design for a door knob substantially as herein shown and described.

**22,756.** ESCUTCHEON-PLATE. HENRY R. RUSSELL, New Britain, Conn., assignor to the Russell & Erwin Manufacturing Company, same place. Filed Aug. 7, 1893. Serial No. 482,618. Term of patent 7 years.



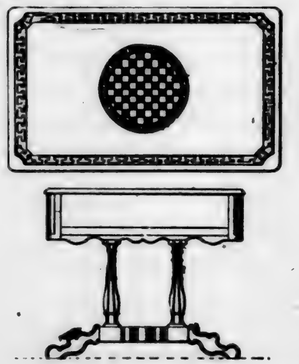
*Claim.*—The design for a knob and lock escutcheon plate substantially as herein shown and described.

**22,757.** NASAL TUBE. ALFRED G. ELY, New York, N. Y., assignor of two-thirds to Charles Christopher Ely and Frederick Ely, same place. Filed July 19, 1893. Serial No. 480,952. Term of patent 14 years.



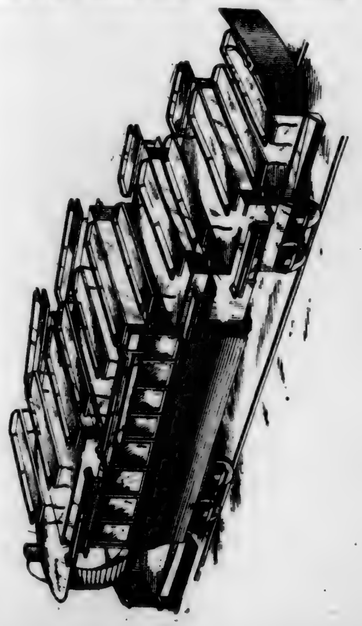
*Claim.*—The design for nasal tubes substantially as shown and described.

**22,758.** TABLE. VINCENZO CANIZZI, New York, N. Y. Filed June 23, 1893. Serial No. 478,085. Term of patent 3½ years.



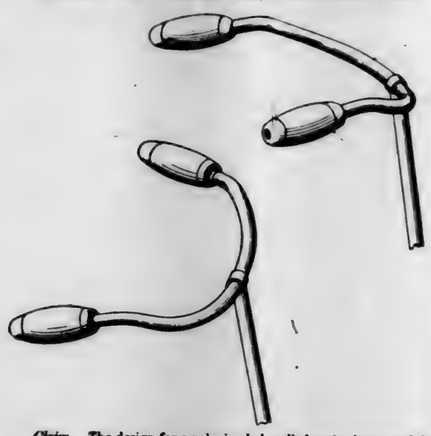
*Claim.*—The design for a table, substantially as shown and described.

**22,759.** CAR-BODY. JOHN DE WITT, Washington, D. C. Filed Dec. 15, 1892. Serial No. 455,312. Term of patent 14 years.



*Claim.*—The design for a car body, substantially shown and described.

**22,760.** VELOCIPEDE-HANDLE. THOMAS B. JEFFERY, Chicago, Ill. Filed Apr. 17, 1893. Serial No. 470,766. Term of patent 7 years.



*Claim.*—The design for a velocipede handle herein shown and described.

**22,761.** CASING FOR COIN-CONTROLLED APPARATUS. FREDERICK W. BISHOP, Los Angeles, Cal. Filed July 20, 1893. Serial No. 481,057. Term of patent 7 years.



*Claim.*—The design for the casing of a coin controlled apparatus as herein described and shown.

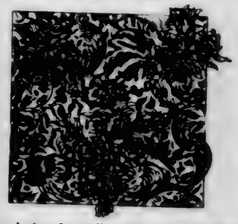
**22,762.** WALL-PAPER. FREDERIC AUBONIER, London, England. Filed Aug. 1, 1893. Serial No. 482,135. Term of patent 3½ years. Patented in England Mar. 3, 1893, No. 208,526.

**22,762.**



*Claim.*—The design for wall paper substantially as herein shown and described.

**22,763.** WALL-PAPER. FREDERIC AUBONIER, London, England. Filed Aug. 1, 1893. Serial No. 482,137. Term of patent 3½ years. Patented in England Mar. 3, 1893, No. 208,527.



*Claim.*—The design for wall paper substantially as herein shown and described.

**22,764.** WALL-PAPER. FREDERIC AUBONIER, London, England. Filed Aug. 1, 1893. Serial No. 482,134. Term of patent 3½ years. Patented in England Mar. 3, 1893. No. 208,529.



*Claim.*—The design for wall paper substantially as herein shown and described.

**22,765.** WALL-PAPER. FREDERIC AUBONIER, London, England. Filed Aug. 1, 1893. Serial No. 482,136. Term of patent 3½ years. Patented in England Mar. 3, 1893, No. 208,530.



*Claim.*—The design for wall paper substantially as herein shown and described.

# TRADE-MARKS

## REGISTERED AUGUST 29, 1893.

**23,548.** DOLLS. CRAMER & HERON, Sonneberg, Germany. Filed June 21, 1893.

**BABY RUTH.**

*Essential feature.*—The words "BABY RUTH." Used since May 20, 1893.

**23,549.** TRUNKS. BOSSHAR, DOOLID & Co., Toledo, Ohio. Filed May 22, 1893.

WALL TRUNK.

*Essential feature.*—The words "WALL TRUNK." Used since May 23, 1885.

**23,550.** BLANKETS. SHEPARD, NORWELL & Co., Boston, Mass. Filed July 22, 1893.

ROSEDALE

*Essential feature.*—The word "ROSEDALE." Used since 1889.

**23,551.** TROUSERS. JOHN FRANK HULL, Jr., Poughkeepsie, N. Y. Filed July 22, 1893.

FROM THE SHEEP TO THE MAN.

*Essential feature.*—The words "FROM THE SHEEP TO THE MAN." Used since May 1, 1893.

**23,552.** CERTAIN NAMED BAKERS' PRODUCTS AND CONFECTIONERY. AMERICAN BISCUIT AND MANUFACTURING COMPANY, Chicago, Ill. Filed July 24, 1893.

A.B.C.

*Essential feature.*—The letters "A. B. C." Used since January 1, 1890.

**23,553.** AMERICAN, BRICK, LIMBURGER, AND IMITATION SWISS CHEESE. N. SIMON & Co., Neenah, Wis. Filed June 24, 1893.



*Essential feature.*—The representation of a cheese trier, and the words "TRADE MARK TRY ME," within and encircled by the open handle thereof and the words, letters, and sign, "N. SIMON & Co.," inscribed on the figure of the blade thereof, and the words, "FANCY FULL CREAM CHEESE," inscribed along and near the upper and the words and letters, "NEENAH, WIS.," along and near the lower edge thereof in any size, style, or kind of type. Used since June 15, 1893.

**23,554.** ROLLED OATS AND OATMEAL. MUSCATINE OAT MEAL COMPANY, Muscatine, Iowa. Filed July 6, 1893.

Friends 

*Essential feature.*—The word "FRIENDS" and the representation of a girl wearing a Quaker bonnet. Used since September 15, 1891.

**23,555.** LAGER-BEER. THE WEBER-HOSELMANN-GOTTLIEB BREWING AND MALTING COMPANY OF BALTIMORE CITY, Baltimore, Md. Filed July 27, 1893.

GOLD BRAU

*Essential feature.*—The words "GOLD BRAU." Used since July 1, 1889.

**23,556.** WHISKY. NICKELS & TULLER, Philadelphia, Pa. Filed July 27, 1893.

BANTAM.

*Essential feature.*—The word "BANTAM." Used since June 1, 1893.

**23,557.** FLORIDA WATER. LOUIS R. HARRISON & Co., New York, N. Y. Filed July 8, 1893.

DE SOTO

*Essential feature.*—The words "DE SOTO." Used since February 1, 1893.

**23,558.** TOOTH-WASH. JAMES W. JOHNSON, New York, N. Y. Filed June 29, 1893.

LAVODENT

*Essential feature.*—The word "LAVODENT." Used since April 28, 1892.

**23,559.** WASHING-POWDER. WHITE ROSE MANUFACTURING CO., Pawtucket, R. I. Filed Mar. 6, 1893.

White Rose

*Essential feature.*—The words "White Rose." Used since March 22, 1891

28,560. Liquid shoe-dressing. C. L. Hathaway & Sons, Boston, Mass. Filed July 20, 1893.

PEERLESS GLOSS

*Essential feature.*—The words "Peerless Gloss." Used since January 1, 1870.

28,561. Certain named disinfecting and therapeutical preparations. Institut Chemischaft Cordes, Hermanni & Co., Hamburg, Germany. Filed Apr. 13, 1892.

THIOSAPOL

*Essential feature.*—The word "Thiosapol." Used since April 1, 1891

28,562. Liniment. Robert H. Wagner, Rye, N. Y. Filed June 14, 1893.

XTERNOLENE

*Essential feature.*—The word "Xternolene." Used since March 25, 1893?

28,563. Plasters, powders, ointments and sarsaparilla. Plantation Pharmacal Company, Memphis, Tenn. Filed July 20, 1893.

PLANTATION

*Essential feature.*—The word "Plantation." Used since June 1, 1885.

28,564. Ointments, salves, and similar preparations. Soules Medical Co., Lisbon, N. D. Filed July 20, 1893

Soules S

*Essential feature.*—The word "Soules" and a monogram formed of the letters "S S." Used since July 1, 1892.

28,565. Headache-powders. John U. O'Meara, Washington, D. C. Filed Feb. 16, 1893.

ROYAL

*Essential feature.*—The word "Royal." Used since July 18, 1892.

28,566. Headache and fever remedy. John B. Rasch, Reading, Pa. Filed July 22, 1893.

PHENATOL

*Essential feature.*—The word "Phenatol." Used since June, 1892.

28,567. Alloy of metal. The Smith & Egge Manufacturing Company, Bridgeport, Conn. Filed July 13, 1893.

GIANT

*Essential feature.*—The word "Giant." Used since January 1, 1879.

28,568. Tools, pruning implements, and cutlery. Jacob Albert Schmidt, Barmen, Germany, and New York, N. Y. Filed May 1, 1893.

GOLIATH

*Essential feature.*—The word "Goliath." Used since March 1, 1891.

28,569. Seeding implements, cider-mills, and hay-tools. The Superior Drill Company, Springfield, Ohio. Filed Aug. 17, 1893.

SUPERIOR

*Essential feature.*—The word "Superior." Used since June 1, 1868.

28,570. Machines for distributing grain, seeds, fertilizers, and the like. Empire Drill Company, Shortsville, N. Y., Jackson, Mich., Baltimore, Md., Allegheny, Pa., and Louisville, Ky. Filed July 25, 1893.



*Essential feature.*—The representation of a human hand holding aloft a scepter behind which appears the setting sun Used since October 13, 1892.

# DECISIONS

OF THE

# COMMISSIONER OF PATENTS

AND OF

# UNITED STATES COURTS IN PATENT CASES.

## DECISIONS OF THE U. S. COURTS.

### U. S. Circuit Court of Appeals—Third Circuit.

CELLULOID MANUFACTURING COMPANY *v.* ARLINGTON MANUFACTURING COMPANY *et al.*

*Decided November 22, 1892.*

1. PATENT—INFRINGEMENT—INTERPRETATION—CELLULOID.

Letters Patent No. 199,908, February 5, 1878, granted to the first-named company as assignee of John W. Hyatt, for an improvement in the manufacture of sheets of celluloid and other plastic compositions, *Held* to be limited by the apparatus and method shown and described to the discovery that a slab of material may be held upon a surface through the operation of the contractile energy it exerts in shrinking, acting upon elevations or depressions on or in the surface on which the slab is placed, and not infringed by the operation of Letters Patent No. 387,947, dated August 14, 1888, issued to Francis Curtis, assignor to The Arlington Manufacturing Company, one of the appellees, which provides an all-metal plate having a perfectly-smooth surface, to which the block of celluloid is held by atmospheric pressure and adhesion only.

2. SAME—SCOPE OF.

While meritorious inventions of primary character call for liberal interpretation, (*Tilghman* v. *Proctor*, 19 O. G., 859; 102 U. S., 707; *Morley Machine Co.* v. *Lancaster*, 47 O. G., 267; 129 U. S., 263; *Béné* v. *Jeantet*, 47 O. G., [illegible]; 129 U. S., 693,) the appellants' exclusive right may not be expanded by construction beyond the terms chosen to express the invention to include all means however differing in mode of action and principle from the process described in the patent. (*McClain* v. *Ortmayer*, 57 O. G., 1240; 141 U. S., 419.)

3. SAME—SAME.

The cancellation of the phrase "mechanical or cohesive action" from application by his own voluntary act indicated intention clearly inconsistent with defendant's present insistance.

4. SAME—CONSTRUCTION OF CLAIMS.

The true meaning of claims must be gathered by comparing them with the context of the specification.

APPEAL from the Circuit Court of the United States for the District of New Jersey.

Before ACHESON, DALLAS, and WALES, Judges.

*Mr. Frederic H. Betts* and *Mr. Roland Cox* for the complainant.

*Mr. John R. Bennett* for the defendants.

ACHESON, *J.*:

This is an appeal from the decree of the Circuit Court of the United States for the District of New Jersey in a suit in equity brought by The Celluloid Manufacturing Company, the appellant here, against The Arlington Manufacturing Company and others for the alleged infringement of Letters Patent No. 199,908, dated February 5, 1878, for an improvement in the manufacture of sheets of celluloid and other plastic compositions, granted to the first-named company as assignee of John W. Hyatt, the inventor.

The case as presented to us involves the single question of infringement, and the determination of that question depends upon the construction to be given to certain of the claims of the patent.

The invention, the specification of the patent declares—

relates to an improved apparatus and process for the manufacture of sheets of plastic composition, and, in the present instance, is applied to the article known as "celluloid."

At the opening of the specification the following explanatory statements occur:

Heretofore the great obstacle to successfully planing or reducing plastic or pliable material to sheets by securing it upon a surface and then feeding it to a fixed cutting-edge has been that the material was apt to rise from the surface supporting it and ride up the knife, thus cutting the material irregularly or arresting the operation. Hence to hold the slab of material firmly upon the surface sustaining it pending the operation of shaving or planing it into strips, has been esteemed a great desideratum, and is one of the objects effected by the mechanism and process hereinafter set forth.

The objects of the invention are accomplished by causing the union in a single slab of a number of sheets or pieces of celluloid, this being effected by means of pressure and heat, which contemporaneously amalgamate the sheets into a slab, and also force portions of the under side thereof into channels or inclined grooves in the surface upon which the slab rests, which grooves are so arranged that upon the hardening and shrinking of the material the portions thereof in the grooves operate as a series of hooks or clutches to retain the slab in place, after which the plate supporting the slab is placed upon a machine for planing, whereby the material is shaved or planed off in sheets or pieces of any desired thickness, according to the capacity of the machine, the sheets being subsequently dried in open frames, whereby they acquire and retain formation.

It is further stated that unseasoned celluloid when heated above 150° Fahrenheit becomes plastic and can be easily manipulated so long as it is warm; but, becoming cool, it hardens and while losing its caloric has a slight tendency to shrink.

The specification proceeds to set forth an apparatus whereby the objects of the invention are accomplished, and describes the base or bed-plate upon which the slab of celluloid is to be mounted as having in the central portion of its upper surface a slightly-raised boss, the entire upper surface of which is covered by grooves and intermediate ridges or elevations, these grooves, on either side of the vertical longitudinal center of the boss, inclining inward and downward toward the vertical central longitudinal plane of the plate. The purpose of this construction, it is stated, may be effected, though not so satisfactorily, by means of apertures of any desired form which have an inclination downward toward the said plane, the apertures, or some of them, on opposite sides of the said center of the plate having similar inclinations toward the said central plane.

The described operation of forming the slab and fixing it securely upon the plate is briefly this: A number

of rough sheets of crude celluloid are superposed one above the other upon the bed-plate in a chase or mold and by the application of hydraulic pressure and of heat the celluloid is softened and solidified, the lower part of the plastic mass being forced into and completely filling the grooves on the face of the boss. Then, after the application of water or other cooling agent, whereby the celluloid is chilled and hardened in place, the chases or sides of the press are removed—

and the material is found in a homogeneous slab secured upon the boss.

The specification here states:

Being exposed to the air, the celluloid shrinks somewhat, which causes the portion thereof which has been forced into the inclined grooves to operate as clutches or hooks, grasping the metal with immense power, and holding the slab firmly by a tension toward the center against any movement or force, either lateral or upward. Thus is the prime object of the invention accomplished.

We do not deem it necessary to set forth with particularity the other two steps of the Hyatt process—namely, the cutting and drying of the sheets—and hence we pass over so much of the specification as relates to the same and to the devices employed therein.

Near the close of the specification we find the following paragraphs relating to the first step of the process:

It is obvious that, after one of the slabs has been shaved off, leaving only a thin film of celluloid upon the plate, a second slab may be secured thereon by means of collodion, cement, or other suitable solvents, that will cause the slab to unite homogeneously with the film remaining upon the plate, when the slab thus attached may be manipulated the same as though secured upon the plate in the manner first above detailed.

The plate A may be grooved laterally or otherwise, and bars of wood secured in the grooves so as to be flush with, or slightly above, the surface of the plate, and the slab formed upon this formation.

Then follows this pregnant statement:

The purpose of retaining the slab in position may be effected also by vertical apertures in the plate, or, in fact, apertures or elevations of any order in or upon or about which the plastic composition can be forced, and there permitted to harden, the essence of this element of the invention being to affix a plate [slab] of plastic composition upon a plate immovably by combined heat and pressure and subsequent cooling.

The patent has thirty-one claims; but infringement by the defendants of the twenty-eighth, thirtieth, and thirty-first claims only is affirmed. Those claims are as follows:

28. The within-described process of making sheets of plastic composition, which consists, first, in forming and causing the adhesion of a slab of the composition to a plate; second, subjecting such slab to the operation of a plane to reduce it to sheets; and, third, drying the sheets thus produced in a frame, substantially as set forth.

30. A slab of plastic composition fixed upon a bed or plate by the means substantially as herein specified, for the purpose of enabling the division or planing of the slab, substantially as set forth.

31. A plate carrying a slab of plastic composition affixed thereon by means of heat and pressure, substantially as set forth, and for the purpose specified.

The court below was of the opinion that the Letters Patent in suit are limited to an apparatus and process whereby the slab of celluloid is affixed to a supporting surface during the operation of planing it into sheets by the employment of the contractile power of the material developed in the cooling of the heated mass, and therefore adjudged that the defendants did not infringe any of the claims of the patent by the use of an all-metal plate having a perfectly-smooth surface, to which the block of celluloid is held by atmospheric pressure and adhesion only, agreeably to the method described in and covered by Letters Patent No. 387,947, dated August 14, 1888, issued to Francis Curtis, assignor to The Arlington Manufacturing Company, one of the appellees.

The construction which the court below thus gave to the patent in suit is the same it received in the case of *The Celluloid Manufacturing Company* v. *The American Zylonite Company*, (42 O. G., 961; 31 Fed. Rep., 904,) a suit on this patent in the Circuit Court of the United States for the District of Massachusetts, Mr. Justice Gray there delivering the opinion of the court.

If the court below was right in its views as to the scope of the Hyatt patent, its conclusion upon the question of infringement was indisputably correct, for clearly in the practice of the defendant's method of securing the slab of celluloid to a smooth metal plate the contractile force of the material is not utilized. This the appellant's expert, Mr. Brevoort, concedes. He testifies that in the defendant's method—

there is no holding due to the shrinking of the material as it cools,

and he admits that if the claims are limited to a block fixed to the plate—

by the power it exerts in shrinking, then the defendants no not infringe.

We are therefore brought to the consideration of the controlling question. What is the true construction of the patent in suit with particular reference to the three claims alleged to be infringed by the defendants?

Now, we agree with the appellant that the patent describes and claims a process. But what is the nature of that process? The specification gives no uncertain answer. From first to last, as our above quotations demonstrate, it lays special stress upon the shrinking quality of the celluloid in cooling and its consequent exercise of a contractile agency in holding the slab to the plate in a fixed position while it is subjected to the strain of the plane. Thus at the outset it is stated that upon the hardening and shrinking of the material the portions thereof in the grooves operate as a series of hooks or clutches to retain the slab in place. Then, after describing the operation of forming the slab by heat and pressure, it is stated that upon exposure to the air the celluloid shrinks somewhat, which causes the portions which have been forced into the inclined grooves to act as clutches or hooks, grasping the metal with immense power and holding the slab firmly by a tension toward the center against any movement or force either lateral or upward. Then follows the significant declaration:

Thus is the prime object of the invention accomplished.

In the face of this announcement, how can it be said that the utilization of the contractile energy of the slab is not a necessary feature of the patented process? But this is not all. The specification proceeds to state that the purpose of retaining the slab in position may be effected by vertical apertures, or by apertures or elevations of any order, in or upon or about which the plastic composition can be forced and there permitted to harden, "the essence" of this step of the invention being to affix the slab upon a plate immovably—

by combined heat and pressure and subsequent cooling.

The subsequent cooling is thus declared to be of the substance of the invention.

It will be perceived that Hyatt's real discovery was not that celluloid in cooling would shrink, but that the contractile energy thereby developed could be





turned to the achievement of that which had been "esteemed a great desideratum"—namely, the affixing of a slab of the material upon the sustaining surface immovably—and the conception is well expressed in the first claim of the patent:

A slab of material secured upon a surface through the operation of the power it exerts in shrinking, acting upon two or more elevations or depressions on or in the surface on which the slab is placed.

The specification throughout contemplates the interlocking of the slab with the plate by its own action—its contractile power—under heat, pressure, and subsequent cooling. This is the underlying principle of the invention disclosed by the patent. No other agency for accomplishing the desired result is suggested, nor is any other fairly deducible from anything set forth in the specification. The method briefly referred to of uniting homogeneously a second block with the film of celluloid left on the plate obviously is a mere modification of the first-described operation and introduces no different principle. Nor does the suggested form of plate with bars of wood secured in the grooves so as to be flush with or slightly above the surface of the plate indicate any departure from the interlocking and clinching action. In his original deposition Mr. Brevoort upon this point testifies:

This method, like the first one, contemplates an interlocking of the slab with the plate, the wood presenting, by reason of its structure, spaces within which portions of the block could penetrate and harden.

This, we think, is the natural and correct view, and it is confirmed by the testimony of Mr. Hyatt, who states:

Before I made use of either of those particular forms of apertures I caused the block of celluloid to adhere to a piece of coarse grained wood by means of solvents of the celluloid, and also by heat and pressure, which caused the celluloid to enter the pores or interstices of the wood, and which held the blocks while being cut into sheets.

But, as we have seen, the defendants not only dispense with all grooves, apertures, and elevations and their equivalents—using a perfectly-smooth-surface all-metal plate—but they employ a force to retain the slab of celluloid in place entirely different from that of the Hyatt invention and operating in a different way. In a word, the two processes differ in principle.

Now, undoubtedly, where an invention is meritorious and of a primary character, as seems to be the case here, the patent should be liberally interpreted, so as to secure to the patentee his real invention as he has disclosed it to the public by his specification; and if it be for a process he should be protected from the unauthorized practice of it by others by whatsoever modes or forms of apparatus they may apply the process. (*Tilghman* v. *Proctor*, 19 O. G., 859; 102 U. S., 707; *Morley Machine Co.* v. *Lancaster*, 47 O. G., 267; 129 U. S., 263; *Béné* v. *Jeantet*, 47 O. G., 402; 129 U. S., 683.) The appellant's pretentions, however, far transcend the limits of these settled and just rules. Virtually the appellant claims all means, however differing in mode of action and principle from the process described in the patent, whereby a slab of celluloid is caused to adhere to a plate for the purpose of planing it into sheets; but a construction which would so expand the appellant's exclusive rights is altogether inadmissible under the terms here chosen to express the invention. (*McClain* v. *Ortmayer*, 57 O. G., 1229; 141 U. S., 419.)

As was said with reference to a patent for a process in *Tilghman* v. *Proctor*, *supra*, (pp. 729, 730,) so is it to be said here, that the true meaning of the claims is to be sought by comparing them with the context of the specification, the description therein contained giving to the claims the proper construction and qualification. Moreover, claim 28 is expressly for "the within-described process," and each of the three claims here in question has the clause "substantially as set forth," which connects the claim with the specification and thus limits it. (*The Cornplanter Patent*, 6 O. G., 392; 23 Wall., 218.)

In this connection we deem it worthy of notice that claim 30, as originally formulated, read:

A slab of plastic composition fixed upon a bed or plate by mechanical or adhesive action, &c.;

but pending the proceedings in the Patent Office the applicant, by his own voluntary act, it would seem, amended the claim by striking out the words "mechanical or adhesive action" and substituting the clause "by the means substantially as herein specified," a change which appears to us to indicate an intention on his part entirely inconsistent with the position upon which the appellant now insists.

Upon the most careful consideration of the whole case we cannot avoid the conclusion that the court below rightly construed the specification and claims of the patent, and accordingly the decree must be affirmed.

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## U. S. Circuit Court—Northern District of New York.

### BAUMER *v.* WILL *et al.*

*Decided December 23, 1892.*

1. PATENT—LIMITATION OF CLAIMS—CANDLE SHAPING AND FINISHING APPARATUS.
   Letters Patent No. 330,200, Anton F. Baumer, November 10, 1885, comprising a tubular holder for embracing the body of the candle, a die at one end of the holder, and a plunger at the other end, limited strictly to apparatus described by prior state of the art, which is full of machines for molding and pressing plastic material by means of a die and plunger, and by British patent, John Lyon Field, 1865, which was for same product and must have required mold shaped at one end exactly like patentee's die.
2. SAME—INFRINGEMENT.
   The patent named was not infringed by a construction which had a single die at one end for molding the cone-shaped foot after the wax has been softened to make it plastic and a cushion or bearing whose sole office was to hold the tip of the candle while the candle was molding at the other end and which did not embrace the body of the candle.
3. SAME—PATENTABLE NOVELTY QUESTIONED.
   "The thing produced being old, and dies for making articles in character being well known, the patent would seem to be dangerously near the doctrine of the bretzel case." (Citing *Butler* v. *Stickel*, 137 U. S., 21, 29; 53 O. G., 1009.)

*Mr. C. H. Duell* for the complainant.

*Messrs. Smith & Denison* for the defendants.

COXE, *J.*:

This is an equity action for the infringement of Letters Patent No. 330,200, granted to Anton F. Baumer November 10, 1885, for an improved apparatus for shaping and finishing candles.

The purpose of this invention is to apply the final shape and finish to the exterior, and more particularly to the ends, of candles molded or otherwise formed approximately to shape.

The invention consists—

In an apparatus comprising a tubular holder for embracing the

body of the candle, a die at one end of said holder, and a plunger at the opposite end of the same, whereby the candle is compressed endwise between said die and plunger, which impart the final shape and finish to the ends of the candle, and at the same time expand the candle circumferentially in the tubular holder, which straightens, smooths, and finishes the exterior of the body of the candle; and the invention also consists in certain auxiliary devices connected with the aforesaid apparatus.

The claims involved are as follows:

1. An apparatus for shaping candles, comprising a tubular holder for embracing the body of the candle, a die at one end of said holder, and a plunger in the opposite end of the same, substantially as set forth and shown.
2. The combination of the tubular candle-holder, dies at opposite ends of said holder, and a plunger carrying one of said dies, as and for the purpose specified.
4. The combination of the tubular candle-holder, a conical die at one end of said holder and corrugated longitudinally to taper and corrugate the foot of the candle, a concaved die in the opposite end of the holder to taper the top of the candle, and a plunger carrying one of said dies, substantially as set forth and shown.

The defenses are lack of novelty and invention and non-infringement.

In 1865 John Lyon Field, an Englishman, made and patented a candle with an enlarged corrugated foot made in the shape of an inverted frustum of a cone, so that it would fit the socket of any candlestick. The Field candle was made in a mold. The patentee makes a candle precisely similar in appearance, but by a different method. He takes an ordinary molded candle and in order to make the enlarged foot forces the lower end into a die shaped exactly like the lower end of the mold in which the Field candle must have been made. The product is the same in both instances.

The patentee's candle is no better than Field's candle. The method of making the former would seem to be more cumbersome and expensive. If there be any advantage in putting the candle through two manipulations where one would suffice, it is neither pointed out in the patent nor was it explained at the argument.

The thing produced being old, and dies for making articles similar in character being well known, the patent would seem to be dangerously near the doctrine of the bretzel case. Bretzels were old and dies for cutting dough were old. It was therefore held that it was not invention to make a die that would cut a bretzel. (*Butler* v. *Stickel*, 53 O. G., 1090; 137 U. S., 21, 29.)

But, in any view, the invention is a narrow one. The prior art was full of machines for molding and pressing plastic material by means of a die and plunger. Several of these machines appear in the record. It is entirely clear that the patent cannot have a broad construction, and that the doctrine of equivalents cannot be invoked to bring within the claims structures which do not contain the features expressly made a part of the claims. (*Derby* v. *Thompson*, 61 O. G., 1950; 146 U. S., 476.)

Confining the claims to the apparatus described, the defendants do not infringe. They do not use a holder which imparts a final finish to the candle, for the reason that it does not completely inclose the candle. They do not employ two dies at opposite ends of the holder. They have a single die at one end for molding the cone-shaped foot after the wax has been softened to make it plastic. While this operation is being carried on the tip of the candle is held firmly in a cushion or bearing to prevent the candle from slipping when subjected to the action of the plunger at the other end. This bearing or cushion does not impart any form or finish to the tip of the candle, as does the complainant's die. Its office is solely to hold the candle in place.

The first claim contains the following elements: first, a tubular holder for embracing the body of the candle; second, a die at one end of the holder, and, third, a plunger at the opposite end.

A machine which infringes this claim must be constructed with the die and the plunger at opposite ends of the holder. The cushioned support used by the defendants is not a die. Therefore, there is no die opposite the plunger end of their holder. Indeed, it is doubtful if they employ the first element of the claim. Their holder embraces a part of the candle only. It is not adapted to straighten, smooth, or finish the exterior of the candle or permit it to expand circumferentially. The upper part of the candle is not touched by the holder in any way.

Of course, if the first claim is not infringed neither of the others are, as both of them describe a holder with two dies, one at each end. The defendants, as has been seen, use an apparatus having but one die.

The bill is dismissed.

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## U. S. Circuit Court—District of New Jersey.

AERATED FUEL COMPANY *v.* WOODBURY GLASS COMPANY. SAME *v.* COX & SONS COMPANY *et al.* SAME *v.* COHANSEY GLASS MANUFACTURING COMPANY.

*Decided January 31, 1893.*

1. PATENT—PATENTABLE NOVELTY.

Letters Patent No. 397,336, James H. Bullard, February 5, 1889, comprising a burner arranged within a glass-furnace, two distinct pipes running to and connected with the burner—one an oil-supply, the other an air-supply from an air-compressor—and a regulator for automatically controlling the compressor and pressure of air fed to burner, not anticipated by Patent No. 365,789, granted to said Bullard on July 5, 1887, in which the air-pipe does not lead directly to the burner, but to an air-space in the upper part of the liquid-fuel tank, from which tank the oil is forced by air-pressure through an exterior tube, while at the same time air is forced from the air-space in the tank up through an annular air-passage between said inner and exterior tubes, meeting the oil at the outer end of the tube, where a screw-cap having a small central perforation is adapted to regulate the proportion of mixed air and oil ejected, though it was old to regulate the flow of liquids through pipes by cocks.

2. SAME—PATENTABLE NOVELTY EVIDENCED BY SUCCESS IN REPLACING CITATION.

The patent of 1887 did not independently regulate air and oil, and was therefore a failure, and was replaced by apparatus made under 1889 patent, which were entirely satisfactory, and this a reason for sustaining patent.

3. SAME—SCOPE OF.

Patentee is entitled to all the advantages incident to the patented apparatus, even though not described in the specification or originally perceived by the inventor. (*Roberts* v. *Ryer*, 10 O. G., 204.)

ACHESON, *J.*:

Each of these three suits is upon Letters Patent No. 397,336, to James H. Bullard, dated February 5, 1889.

The patented invention, the specification represents, relates to an "apparatus for securing the burning of hydrocarbon fuels and the regulating thereof." The apparatus illustrated and described comprises a burner which, as shown, is arranged within a glass-furnace, two distinct pipes running to and connected with the





burner—one an oil-supply pipe leading from a liquid-fuel receptacle, the other an air-supply pipe leading from an air-compressing machine—and a regulator for automatically controlling the compressor and maintaining the compressed air as fed to the burner at a uniform pressure. The specification states:

A cock is provided both in the air and oil supply pipes, as seen at *h* and *j*, respectively, whereby a normal or desirable proportional issue of air and oil to the burner is secured under their proper operations.

The patent has a single claim, which is as follows:

An apparatus for securing and regulating the combustion of liquid fuel in glass-melting and analogous furnaces, consisting of a burner, a liquid fuel tank, a pipe connecting said fuel-tank and burner, an air-compressor having a steam-pipe for conveying steam thereto for driving the same provided with a valve, a pipe connecting said air-compressor and said burner, a regulator connected to and actuated by the pressure in said air-pipe, and a connection between a movable part of said regulator and said steam-valve, whereby the feeding of steam to said air-compressor is regulated and a consequent regulation of the air-pressure to the burner is secured, substantially as and for the purpose described.

There is here no contest as to infringement. It is conceded by the defendants' counsel, and must be under the uncontradicted proofs, that if the patent is valid the defendants, respectively, infringe the claim.

As then, admittedly, the only question for the court is whether the plaintiff's patent is valid, we might perhaps avoid any reference to the construction to be given to the claim; but it may be well here to say that we do not accept the suggestion that the words—

whereby the feeding of steam to said air-compressor is regulated and a consequent regulation of the air-pressure to the burner is secured—

define the function of the entire combination. That reading would be too narrow. The quoted clause expresses the specific function of the particular constituent with which it stands immediately connected, while the opening words of the claim—

an apparatus for securing and regulating the combustion of liquid fuel in glass-melting and analogous furnaces—

indicate the purpose of the combination as a whole.

The validity of the plaintiff's patent is denied upon the grounds, first, that the entire combination claimed was anticipated by Letters Patent No. 365,789, granted to said Bullard on July 5, 1887, and, secondly, that in view of the previous state of the art, including what was shown in Bullard's earlier patent, no patentable invention is disclosed or claimed by the patent in suit.

Now, the earlier Bullard patent cited is, indeed, for improvements in furnaces for burning hydrocarbon fuels, and certainly it does exhibit many of the constituents of the combination here in question, including an air-compressor and an automatic regulator; but we cannot assent to the defendant's proposition that the two Bullard patents show, respectively, exactly the same combination of working parts. There are, we think, essential differences between the two devices in construction, operation, and results. In the 1887 apparatus the air-pipe from the air-compressor does not (as in the later construction) run to and connect with the burner, but leads to and communicates with an air-space in the upper part of the liquid-fuel tank, and by the air-pressure thus applied oil for the burner is forced into and through a tube which extends from near the bottom of the tank up to and through an exterior tube secured to the top of the tank, while at the same time air is forced from the air-space in the tank up through an annular air-passage between said inner and exterior tubes. The latter tube is provided at its outer end with a screw-cap having a small central perforation through which the mingled liquid fuel and air are ejected in proportions regulated by screwing the cap in or out. Thus it will be perceived that in the apparatus of 1887 the supply of oil to the burner depends altogether upon the pressure of the air, whereas under the patent in suit the oil-supply and the air-supply are entirely independent of each other. Then the apparatus of 1887 is so organized that with respect to the oil and air supplies it is not capable of independent regulation. Thus the flow of oil cannot be reduced without increasing the flow of air, and so vice versa. This proved to be a most serious defect, for, as a result, the power to vary the character of the flame to meet the necessities of the work in hand was very much limited; but the two supply-pipes in the apparatus of 1889, being entirely separate and drawing their contents from distinct sources, are capable of independent regulation, so that the quantities of oil and air can be controlled independently of each other and thereby such varying character of flame produced as is required.

Undoubtedly the regulation by means of cocks of the flow of fluids through pipes was old. Many of the prior patents in evidence show cocks employed to perform this function. Indeed, they are obvious and implied devices for the purpose. But here the point is this, that Bullard's 1887 apparatus did not admit of the independent control of the flow of oil and air by cocks or by any other means. Therein it was radically defective.

Again, Bullard's 1889 apparatus has another important capability not to be found in that of 1887. By the earlier apparatus it was impossible to supply more than one furnace from the same fuel-tank; but the 1889 construction permits of the supply of oil and air to a great number of furnaces from one fuel-tank and a single air-compressor governed by one regulator. Nor is this great advantage incident to Bullard's later patented apparatus to be left out of view, because it is not referred to in the specification or even may not originally have been perceived by the inventor. (*Roberts* v. *Ryer*, 10 O. G., 204; 91 U. S., 157.)

Once more, it appears that in actual practice the Bullard apparatus of 1887 was a failure, and this chiefly because its construction and mode of operation precluded the independent regulation of the oil and air. In fact, the use of the 1887 apparatus has been abandoned. Furthermore, the evidence shows that the machines which were constructed in accordance with the earlier patent have been replaced by others made under the 1889 patent, and that these latter machines have given entire satisfaction.

Upon the whole case, then, we feel quite justified in holding that the plaintiff's patent was not anticipated by Bullard's earlier apparatus. (*Consolidated Valve Co.* v. *Crosby Valve Co.*, 30 O. G., 991; 113 U. S., 157, 179; *The Barbed Wire Patent*, 58 O. G., 1555; 143 U. S., 275.)

We do not feel called upon to discuss at length the features of the numerous other patents of prior dates set up by the defendants. Avoiding particularity, we content ourselves with saying that while they show that the several elements here employed are in them-

selves old, yet none of them discloses the combination of the patent in suit.

Finally, not only does the presumption of patentability arising from the grant of the patent stand unshaken, but there is affirmative proof of the patentable novelty and utility of the combination.

A decree in favor of the plaintiff will be entered in each of the cases.

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## U. S. Circuit Court—Eastern District of Pennsylvania.

S. S. WHITE DENTAL MANUFACTURING COMPANY *v.* JOHNSON *et al.*

*Decided June 6, 1893.*

PATENTS—PRELIMINARY INJUNCTION.

Complainant in a suit for the infringement of a patent is entitled to a preliminary injunction where it appears that the Supreme Court of the District of Columbia has in a prior suit sustained the validity of his patent, and *Held* that it was infringed by a device which was substantially the same as that of the present defendants.

SUIT by the S. S. White Dental Manufacturing Company against Johnson and others for the infringement of complainants' patent. Complainants move for a preliminary injunction. Writ granted.

*Mr. Joseph C. Fraley* for the complainants.

*Mr. George Harding, Mr. George B. Selden,* and *Mr. Jerome Carty* for the defendants.

DALLAS, *J.*:

This is a motion for preliminary injunction. The circumstances which have been urged in argument as showing acquiescence by the plaintiffs in the conduct of the defendants and as estopping the plaintiffs from asserting that the "foot-rest" of the defendants is an infringement of the patent in suit have been fully examined and carefully considered; but nothing has been shown which, in my opinion, amounts to a waiver of the complainants' rights or which precludes them from maintaining them in a court of equity. Therefore it is necessary to dispose of this motion upon the other defenses which have been interposed, and these are (1) that the patent is invalid, and (2) that the defendants have not infringed. Upon both points this motion is supported by the decree of the Supreme Court of the District of Columbia in the case of *Morrison* v. *Dental Chair Co.*, (49 O. G., 735.) That case involved the same claim as is here in question—viz., the ninth claim of Letters Patent No. 369,295, dated August 30, 1887, granted to James B. Morrison for adjustable chairs, as follows:

In combination with a chair-body having a platform or step attached thereto, a supplemental foot-rest, and arms to sustain said rest pivoted to the platform to swing forward and backward to a limited extent and interlocking with said platform in an upright operative position when turned rearward as well as forward, whereby said arms are adapted to sustain the rest in either of two operative positions at different distances from the chair-seat.

This claim was distinctly sustained by the decree to which I have referred, and for the purpose of this application its validity is thereby conclusively established, (*Brush Electric Co.* v. *Accumulator Co.*, 50 Fed. Rep., 833; *Cary* v. *Spring-Bed Co.*, 27 Fed. Rep., 299; *Cary* v. *Manufacturing Co.*, 24 Fed. Rep., 141;) but if this were otherwise still the only new matter set up and insisted upon here is a patent issued to C. L. Bauder April 6, 1842, for a foot-rest so manifestly different from that of Morrison and so plainly incapable of accomplishing its object that it is obvious, upon inspection, that they do not conflict. The Supreme Court of the District of Columbia also adjudged that the defendant in the Morrison case had infringed this patent by the use of an appliance which was substantially the same as that of the defendants in the present case. The infringing device of the Chair Company was said by Judge Coxe to be identified with that of the patent—

by the fact that there are lugs placed upon the frame, which are exactly as in the other for the very purpose of preventing the rest from going down to a level with the platform, and for the purpose of keeping it in position where it can operate as a foot-rest.

So, also, in speaking of certain devices which had been introduced to show anticipation, the learned judge, in distinguishing them, said:

* * * The rest, when it is turned rearward, instead of being used as a rest for the foot, simply folds up flat with the body of the chair or platform, and therefore it does not serve the purpose of a rest at all.

And again:

The rest was folded into the body of platform or went down immediately upon it and was not sufficiently elevated from it to be used at all.

It is evident that it was not the mere presence of "lugs" which was considered important, but the fact that they were present—

for the purpose of keeping it [the rest] in position where it can operate as a foot-rest;

and, although lugs are absent from the contrivance of these defendants, yet their purpose is accomplished by simply increasing the diameter of the foot-rest. The end is the same, and the difference in means is not substantial, and therefore, if there was infringement in the case decided by Judge Coxe, there is also infringement in this one.

I should not be understood as intimating any independent opinion upon either of the two questions which were determined by the Supreme Court of the District of Columbia, but only as holding that, because they have been determined by that court, and upon substantially the same evidence as has been now adduced, they are not open for present consideration.

The motion for a preliminary injunction is granted, and the writ may issue accordingly.

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## U. S. Circuit Court—Eastern District of Pennsylvania.

WILLIAMS *et al. v.* MCNEELY *et al.*

*Decided June 6, 1893.*

PATENTS—PRELIMINARY INJUNCTION.

A preliminary injunction will not be granted in an infringement suit where the affidavits of experts disclose a conflict that cannot be decided in complainants' favor without danger of unjustly interfering with the business of defendants, who are merely users of the device in question, and whose financial responsibility is not questioned.

ON motion for preliminary injunction in a suit by Williams & Webster against McNeely & Co. for alleged infringement of a patent. Writ denied.

*Mr. Ernest Howard Hunter* for the complainants.

*Mr. S. S. Hollingsworth* for the defendants.

DALLAS, *J.*:

An application for a preliminary injunction is not, in patent causes any more than in others, an available short cut to an adjudication upon asserted, but disputed and doubtful, rights. Where upon such a motion the defendant avers that the subject-matter of the infringement alleged differs substantially from that of the patent, the question thus presented ought not in my judgment to be decided upon the *ex parte* affidavits, but should be left, unless the defendant's contention be plainly frivolous and unsupported, entirely open for decision upon the evidence as finally presented.

In this case it is not necessary that I should express any opinion upon the several points which have been discussed by counsel. It is sufficient to say that a conflict of expert opinion as to the fact of infringement has been disclosed, which possibly may be reconciled or be made easy of determination by cross-examination of the respective witnesses, but which cannot now be decided in favor of the complainants without danger of unjustly interfering with the business of the defendants, whose financial responsibility is not questioned, and who are but users, and not manufacturers or venders, of the mechanism in question.

The motion for preliminary injunction is denied.



THE

# OFFICIAL GAZETTE

OF THE

# United States Patent Office.

[BY AUTHORITY OF CONGRESS.]

VOL. 64.—No. 10. TUESDAY, SEPTEMBER 5, 1893. PRICE—$5 per year.

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## Withdrawal of Cases from Issue.

Hereafter all amendments proposed to allowed applications which involve a withdrawal from issue, and all petitions and requests relating thereto, shall be filed with the docket clerk, Mr. J. M. Emory, and transmitted by him to the Primary Examiner for report. If the Examiner shall report favorably to the admission of such amendment, the matter will be laid before the Commissioner for immediate determination. If the Examiner shall report unfavorably, the case will be docketed and will be heard and decided by the Commissioner in regular course, unless good reasons shall appear for immediate action.

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## Amended Rules of Practice.

Rule 25 and the first paragraph of Rule 122 of the Rules of Practice (edition of April 1, 1893) of the United States Patent Office are hereby amended to read as follows:

Rule 25. In case of the death of the inventor, the application will be made by and the patent will issue to his executor or administrator. In such case the oath required by Rule 46 will be made by the executor or administrator. In case of the death of the inventor during the time intervening between the filing of his application and the granting of a patent thereon, the Letters Patent will issue to *the executor or administrator upon proper intervention by him.*

Rule 122. Motions to dissolve an interference upon the ground that no interference in fact exists, or that there has been such irregularity in declaring the same as will preclude a proper determination of the question of priority, or which deny the patentability of an applicant's claim, or his right to make the claim, should, if possible, be made not later than the twentieth day after the statements of the parties have been received and approved. Such motions *should be noticed for hearing upon a day certain before the Examiner of Interferences upon the question of transmission to the Primary Examiner,* and when in proper form will be transmitted by the Examiner of Interferences, with the files and papers, to the proper Primary Examiner for his determination, *who will thereupon fix a day certain when the said motion will be heard before him upon the merits, and give notice thereof to all the parties. If a stay of proceedings is desired, a motion therefor should accompany the motion for transmission.*

## Names of Applicants.

When the full first name of the applicant does not appear either in his signature or in the preamble to the specification, the Examiner will, in his first official letter, require an amendment supplying the omission, and he will not pass the application to issue until the omission has been supplied, unless an affidavit shall have been filed setting forth that the full first name of the applicant is the one originally given by him.

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## Privileges of the Scientific Library.

Persons who are not employés of the Office may, under the supervision and direction of the Librarian, make extracts, in pencil, from descriptions and drawings contained in the Scientific Library, such extracts, when in the nature of copies, not to exceed one-third of the descriptions or drawings from which the copies are made. Violation of this order will subject all persons and parties concerned in the violation to exclusion from thereafter making any such extracts or copies whatever.

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## Construction of Statutes Relating to the Registration of "Prints" and "Labels."—Amended.

In the publication of this Office entitled "United States Statutes Concerning the Protection and Registration of Trade-Marks and Labels, with the Rules of the Patent Office Relating Thereto, Edition of January 4, 1892," the following matter on page 17 is hereby canceled:

The words "prints" and "labels," as used in this act, so far as it relates to registration in the Patent Office, are construed as synonymous, and are defined as any device, picture, word or words, figure, or figures (not a trade-mark) impressed or stamped directly upon the articles of manufacture, or upon a slip or piece of paper or other material to be attached in any manner to manufactured articles, or to bottles, boxes, and packages containing them, to indicate the contents of the package, the name of the manufacturer, or the place of manufacture, the quality of goods, directions for use, etc.

By the words "articles of manufacture" (to which such print or label is applicable by this act) is meant all vendible commodities produced by hand, machinery, or art.

But no such print or label can be registered unless it properly belongs to an article of commerce, and be as above defined; nor can the same be registered as such print or label when it amounts to a lawful trade-mark, or when its use in connection with the article to which it is applied is arbitrary or fanciful.

And the following is substituted therefor:

These sections of statute (referring to sections 3, 4, and 5 of the act of Congress relating to patents, trade-marks, and copyrights, approved June 18, 1874, 18 Statutes at Large, p. 78) are construed as authorizing the registry of "prints" and "labels." A label is a device or representation borne by an article of manufacture or vendible commodity. A print is a device or representation not borne by an article of manufacture or vendible commodity, but in some fashion pertaining thereto—such, for instance, as a pictorial advertisement thereof. A label cannot be registered if it bear a device capable of sequestration as a trade-mark until after such device is registered as a trade-mark. Both labels and prints, in order to be entitled to registry, must be intellectual productions in the degree required by the copyright law.

The note on page 19 is canceled.

## The Official Gazette.

THE OFFICIAL GAZETTE is published every Tuesday, simultaneously with the weekly issue of patents. From January 1, 1872, (the commencement of its publication,) to June 30, 1883, it was published and bound in semi-annual volumes; since July 1, 1883, in quarterly volumes. All subscriptions must commence with the beginning of a volume; none taken for less than three months. Terms: To all subscribers within the United States and Canada, $5 per annum; to foreign subscribers, $7; single copies, 10 cents; bound semi-annual volumes, (prior to June 30, 1883,) full sheep, $4 per volume; bound quarterly volumes, (subsequent to July 1, 1883,) full sheep, $3.75 per volume. No club rates. *Payment in advance.* All orders should be addressed to "The Commissioner of Patents, Washington, D. C."

## Issue of September 5, 1893.

| | | |
|---|---|---|
| Patents | 385 | No. 504,313 to No. 504,697, inclusive. |
| Designs | 6 | No. 22,766 to No. 22,771, inclusive. |
| Trade-Marks | 25 | No. 23,571 to No. 23,595, inclusive. |
| Labels | None. | |
| Prints | None. | |
| Reissues | 2 | No. 11,363 to No. 11,364, inclusive. |
| Total issue | 418 | |

### TO CITIZENS OF THE UNITED STATES.

| States. | Patents and Designs. | Trade-Marks. | States. | Patents and Designs. | Trade-Marks. |
|---|---|---|---|---|---|
| Alabama | 1 | ..... | Nevada | 1 | ..... |
| Arizona Territory | ..... | ..... | New Hampshire | 2 | ..... |
| Arkansas | 2 | ..... | New Jersey | 11 | 2 |
| California | 20 | 1 | New Mexico Territory | ..... | ..... |
| Colorado | 3 | ..... | New York | 48 | 5 |
| Connecticut | 15 | 2 | North Carolina | 1 | 1 |
| Delaware | ..... | ..... | North Dakota | 1 | ..... |
| District of Columbia | 3 | ..... | Ohio | 27 | 2 |
| Florida | ..... | ..... | Oregon | 4 | ..... |
| Georgia | 1 | ..... | Pennsylvania | 53 | ..... |
| Idaho | ..... | ..... | Rhode Island | 6 | ..... |
| Illinois | 39 | 5 | South Carolina | 1 | ..... |
| Indiana | 7 | 1 | South Dakota | 3 | ..... |
| Indian Territory | ..... | ..... | Tennessee | 3 | ..... |
| Iowa | 9 | ..... | Texas | 2 | ..... |
| Kansas | 2 | ..... | Utah Territory | ..... | ..... |
| Kentucky | 6 | ..... | Vermont | 1 | 2 |
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| Maine | ..... | ..... | Washington | ..... | ..... |
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| Minnesota | 8 | 1 | U. S. Army | ..... | ..... |
| Mississippi | ..... | ..... | U. S. Navy | 1 | ..... |
| Missouri | 11 | 1 | | | |
| Montana | ..... | ..... | Total to citizens of the United States | 358 | 24 |
| Nebraska | 5 | ..... | | | |

### TO CITIZENS OF FOREIGN COUNTRIES.

| Countries. | Patents and Designs. | Trade-Marks. | Countries. | Patents and Designs. | Trade-Marks. |
|---|---|---|---|---|---|
| Argentine Republic | ..... | ..... | Netherlands | 1 | ..... |
| Austria-Hungary | ..... | ..... | Newfoundland | ..... | ..... |
| Belgium | 1 | ..... | New South Wales | ..... | ..... |
| Bermuda | ..... | ..... | New Zealand | ..... | ..... |
| Brazil | ..... | ..... | Norway | ..... | ..... |
| Canada | 5 | ..... | Queensland | ..... | ..... |
| Chile, Republic of | ..... | ..... | Russia | ..... | ..... |
| Costa Rica | ..... | ..... | Scotland | 1 | ..... |
| Cuba | ..... | ..... | South Africa | ..... | ..... |
| Denmark | ..... | ..... | South Australia | ..... | ..... |
| Ecuador | ..... | ..... | Spain | ..... | ..... |
| England | 11 | ..... | Sweden | 1 | ..... |
| France | 3 | ..... | Switzerland | 2 | ..... |
| Germany | 6 | 1 | Venezuela | ..... | ..... |
| Guatemala | ..... | ..... | West Australia | ..... | ..... |
| Italy | 1 | ..... | | | |
| Japan | 1 | ..... | Total to citizens of foreign countries | 33 | 1 |
| Mexico | ..... | ..... | | | |

## APPLICATIONS UNDER EXAMINATION.

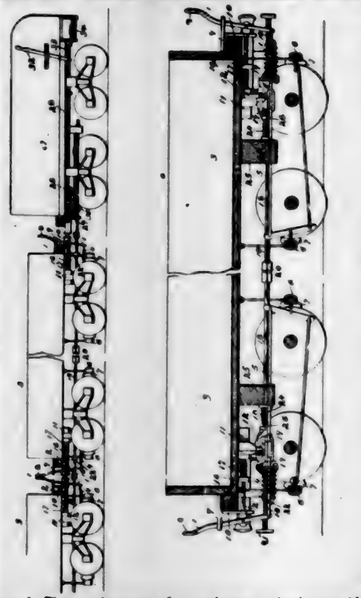
*Condition at Close of Business August 29, 1893.*

| Division No. | Subjects of invention. | Oldest new application and oldest action by applicant awaiting office action. New. | Amended | No. of applications awaiting action. |
|---|---|---|---|---|
| | *In arrears.—Under one month.* | | | |
| 31 | Gas, Painting, Hides, Skins, and Leather, Alcohol, Oils, Fats, and Glue, etc. | Aug. 17 | Aug. 28 | 15 |
| 13 | Metal-Working, Arms and Projectiles, Nails and Spikes, Needles and Pins, etc. | Aug. 1 | Aug. 10 | 84 |
| | *Between one and two months.* | | | |
| 2 | Farm Stock, Products, etc | July 27 | Aug. 26 | 61 |
| 14 | Metal-Bending, Wire-Working, Coin-Controlled Apparatus, Farriery, Nut and Bolt Locks, etc. | July 7 | Aug. 24 | 105 |
| 32 | Advertising, Aeration and Bottling, Baggage, Packing and Storing Vessels, etc. | July 5 | Aug. 24 | 127 |
| 10 | Carriages and Wagons and Railway-Cars. | July 3 | Aug. 24 | 263 |
| 21 | Textiles, etc | June 30 | Aug. 24 | 96 |
| 27 | Brushing and Scrubbing, Grinding and Polishing, Laundry, etc. | July 10 | Aug. 17 | 121 |
| 24 | Sewing-Machines, Crinoline and Corsets, and Apparel. | July 7 | Aug. 17 | 122 |
| 20 | Builders' Hardware, Cutlery, Safes, Dentistry, Surgery, Undertaking, Artificial Limbs, etc. | July 6 | Aug. 17 | 178 |
| 19 | Stoves and Furnaces | July 3 | Aug. 15 | 209 |
| 6 | Chemistry, Explosives, Medicines, Fertilizers, Preserving, Photography, Sugar and Salt, etc. | July 18 | Aug 14 | 105 |
| 16 | Telegraphy, Telephony, Electric Lighting and Signaling | July 27 | Aug. 10 | 84 |
| 12 | Mechanical Engineering, Stores-Service, etc. | July 1 | Aug. 5 | 222 |
| 30 | Lamps, Gas-Fittings, Linotyping, Matrix Making Machines, and Type-Writing Machines. | June 29 | July 29 | 187 |
| | *Between two and three months.* | | | |
| 3 | Metallurgy, Metal Founding, Coating, Annealing and Tempering, Electro-Chemistry, etc. | June 10 | Aug. 23 | 141 |
| 18 | Steam-Engineering, etc | June 1 | Aug. 22 | 249 |
| 25 | Artesian and Oil Wells, Butchering, Mills and Thrashing, Stone-Working, Vegetable Cutters and Crushers. | June 10 | Aug. 21 | 207 |
| 8 | Furniture, Toilet, Umbrellas and Canes, etc | June 21 | Aug. 15 | 286 |
| 11 | Boots and Shoes, Clasps, Buckles, and Buttons, Harness, Hose and Belting, and Leather-Working Machinery. | June 27 | Aug 14 | 225 |
| 7 | Harvesters, Games and Toys, and Velocipedes. | June 17 | Aug. 12 | 257 |
| 4 | Civil Engineering, Fire-Proof Buildings, Fire Escapes and Ladders, etc. | June 22 | July 31 | 291 |
| 9 | Hydraulics, Fire-Extinguishers, etc. | June 1 | July 25 | 347 |
| | *Between three and four months.* | | | |
| 22 | Fire-Arms, Fishing and Trapping, Navigation, Signals, etc. | May 20 | Aug. 18 | 211 |
| 23 | Instruments of Precision, Acoustics, Optics, etc. | May 16 | Aug. 16 | 325 |
| 5 | Fine Arts, Stationery, Book-Binding, Music, etc. | May 1 | Aug. 8 | 260 |
| 17 | Paper-Manufactures and Printing | May 15 | Aug. 5 | 255 |
| 1 | Tillage and Fences | May 15 | Aug. 3 | 179 |
| 29 | Wood-Working Machines, Carpentry, Coopering, and Roofing, etc. | May 25 | July 18 | 264 |
| | *Between four and five months.* | | | |
| 15 | Plastics, Paper-Making, Paving, Glass, Fuel, Bread-Making, etc. | Apr. 22 | Aug. 11 | 307 |
| | *Between five and six months.* | | | |
| 26 | Pneumatics, Refrigeration, Air and Gas Engines, etc. | Mar. 15 | Aug. 10 | 396 |
| | *Between seven and eight months.* | | | |
| 28 | Electricity, Generation, Distribution, Electric Railways, etc. | Jan. 11 | Aug. 22 | 288 |
| | Total number of applications awaiting action | | | 6,459 |
| | *Under one month in arrears.* | | | |
| Designs | | Aug. 25 | Aug. 28 | 8 |
| Trade-Marks | | Aug. 25 | Aug. 28 | 18 |

# PATENTS

## GRANTED SEPTEMBER 5, 1893.

**504,313. CAR-BRAKE** WILLIAM R. ANDERSON and GEORGE L. DAUGHERTY, Elizabethtown, Ky., assignors of one-third to R. P. Daugherty, same place. Filed Mar. 7, 1893. Serial No. 464,943. (No model.)



*Claim.*—1 The combination of a car having a brake provided with a brake rod, an operating lever mounted on the car and having one end connected with said brake-rod and extending upward and having its upper end arranged to engage a similar operating lever of another car, and means for shifting the fulcrum of the lever, whereby the brake will be released and the lever will be prevented from operating, substantially as described.

2 The combination of a car, a brake having a brake-rod, a fulcrum bar mounted on the car and having a longitudinal movement thereon, an operating lever fulcrumed on said bar and connected with the brake rod, a gravity latch lever arranged to engage the fulcrum bar to prevent the same moving inward, and means for disengaging the latch lever from the fulcrum bar, substantially as described

3 The combination of a car, a brake having a brake-rod, a longitudinally movable fulcrum bar mounted on the car, a latch lever arranged to engage the fulcrum bar to lock the same against longitudinal movement, an operating lever fulcrumed on said bar and connected with the brake-rod, and a push-rod having a beveled lug arranged to engage the latch lever to lift the same out of engagement with the fulcrum bar, substantially as described

4. The combination of a car, a brake having a brake-rod, a longitudinally movable fulcrum bar mounted on the car, a brake operating lever pivoted to the fulcrum bar and connected with the brake rod, a pivoted latch lever arranged to engage the fulcrum bar to lock the same against longitudinal movement, a push rod provided with oppositely disposed beveled lugs arranged at each side of the latch lever whereby when the push-rod is moved in either direction the latch-lever will be lifted out of engagement with the fulcrum bar, substantially as described

5 The combination of a car, a brake having a brake-rod, a longitudinally movable fulcrum bar mounted on the car, an operating lever pivoted to the fulcrum bar and connected with the brake-rod, a pivoted latch lever arranged to engage the fulcrum bar, a push-rod extending beneath the car and provided with a head to engage the head of a similar push-rod and provided with beveled lugs arranged at each side of the latch lever, substantially as described

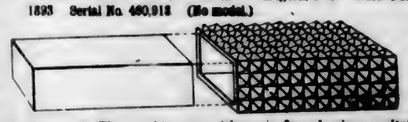
6. The combination of a car, a brake having a brake-rod, a movable fulcrum bar mounted on the car, an operating lever pivoted to the fulcrum bar and connected with the brake rod, a pivoted latch lever arranged to engage the fulcrum bar to hold the same against movement, and a push-rod extending beneath the car and provided at each end with a head to engage a similar head of another push-rod and provided with oppositely disposed beveled lugs arranged on each side of the latch lever, and a spiral spring disposed on the push-rod to return the same to its normal position, substantially as described.

7. The combination of a car, a brake having a brake-rod, a movable fulcrum bar mounted on the car, an operating lever pivoted to the fulcrum bar and connected with the brake-rod, a casing having a way and receiving the inner end of the fulcrum bar and provided with an opening communicating with said way, a pivoted latch lever having one end bent upward and arranged at said opening, and a push-rod for lifting the latch lever out of engagement with the fulcrum bar, substantially as described

8 The combination with a train of cars, brakes arranged on the cars and having brake-rods, fulcrum bars mounted for movement on the cars, operating levers pivoted to the fulcrum bars and connected with the brake rods and provided with engaging heads, latch levers for holding the fulcrum bars against movement, push-rods extending beneath the cars and provided at the ends of the same with engaging heads and having oppositely beveled lugs for engaging the latch levers, and means for actuating the push-rods, substantially as described.

9. The combination with a push-rod section 30 having a head, a main push-rod 28, a lever connecting the rear end of the main push-rod 28 with the push-rod section, and a cylinder having a piston connected with the main push-rod, of a brake having a brake-rod, a longitudinally movable fulcrum bar, an operating lever pivoted to the fulcrum bar and connected with the brake-rod, a pivoted latch lever arranged to engage the fulcrum bar, and a push-rod section adapted to disengage the latch lever and arranged to be engaged by the push-rod section 30, substantially as described.

**504,314. TILE FOR USE IN APPARATUS FOR THE MANUFACTURE OF GAS.** JOHN B. ARCHER, Washington, D. C. Filed Feb. 3, 1893. Serial No. 460,918. (No model.)

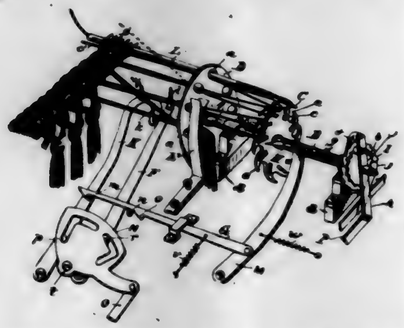


*Claim.*—1 The combination with a gas fixer having a suitable casing and gas inlets and outlets, of a filling of tiles, each of said tiles having a fire clay core and an iron shell exterior thereto, substantially as and for the purposes described.

2 The combination with a gas fixer having a suitable casing and gas inlets and outlets, of a filling of tiles, each of said tiles having a fire clay core and an iron shell exterior thereto and roughened on its outer surface, substantially as and for the purposes described

## 504,315. MACHINE FOR MAKING AND KNOTTING FRINGES.

BENJAMIN ARNOLD, East Greenwich, R. I., assignor to the Meriden Curtain Fixture Company, Meriden, Conn. Filed Dec 6, 1892. Serial No. 454,210. (No model.)



*Claim.*—1 In a machine for tying knots in fringes, a circular plate having a series of openings made in it to receive the threads to be tied, in combination with means for giving said plate a forward rotating motion for the space of two of said openings, and a backward rotary motion of the space of one of said openings alternately, a needle to carry the threads through the openings and means for holding the loops of the threads substantially as specified

2. In a machine for making knots in fringes, a circular plate having openings made in it to form a series of hooks around its periphery in combination with mechanism to rotate said plate forward the space of two hooks and backward the space of one hook alternately, with a needle having a reciprocating motion to deposit the thread to be tied on said hooks substantially as set forth

3. In a fringe knotting machine, a circular plate having a series of hooks on its periphery in combination with a double ratchet plate having the teeth of one part made facing in the opposite direction to the teeth in the other part, a lever carrying two pawls, one of said pawls engaging in one set of ratchet teeth and the other pawl engaging in the other set of ratchet teeth, and means to give a reciprocating motion to said lever substantially as described

4. In a mechanism for knotting fringes, a circular plate having a series of hooks on its periphery, to receive the threads to be tied, a series of radial slots, one in the body of each hook, in combination with a knife or cutter arranged to enter said slots, means for so moving said knife or cutter, and a needle to place the threads to be tied on the hooks, substantially as specified

5. In a fringe knotting machine, a circular plate having a series of openings made in it to receive the threads to be tied in combination with a clamp arranged to receive the threads by turning of said plate and means for turning the plate substantially as set forth

6. In a fringe knotting machine, a circular plate having a series of hooks on its periphery to hold the threads to be knotted, a needle to place said threads on the hooks, in combination with a clamp arranged to receive the threads by the motion of said plate and means for moving the plate substantially as set forth

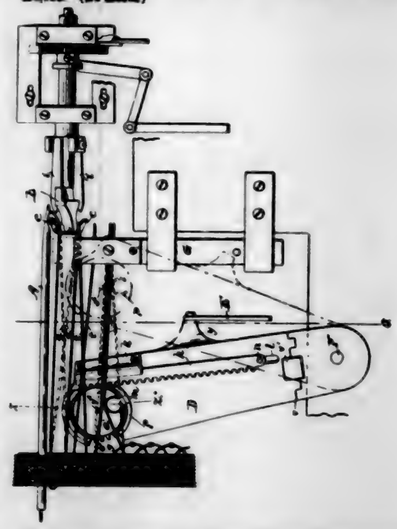
7 In a fringe knotting machine, the combination of a circular plate having hooks on its periphery to receive the threads to be tied, a needle to place the loops of said threads on the hooks, two levers each pivoted at one end and having in their free ends pins to receive the threads between them as the plate turns, and means to move said levers and fold the threads into an S or double looped form, and means to turn said plate substantially as described

8. The combination in a fringe knotting machine of a circular plate with hooks to receive the threads to be tied, a needle to deposit the loops of said threads on the hooks, levers with pins to receive the threads from the hooks and arrange them in an S or double looped form, a knotting hook to form an over hand knot of said threads, and means to give said knotting hook reciprocating motions, both vertically and horizontally, substantially as set forth

9. The combination in a fringe knotting machine of a circular plate with hooks to receive the threads to be tied, a needle to deposit the loops of said threads on the hooks, levers with pins to receive the threads from the hooks and arrange them in an S or double looped form, a knotting hook to form an over hand knot of said threads, and means to give said knotting hook reciprocating motions, both vertically and horizontally, and a clamp arranged to catch and detain one leg of the loop drawn down in finishing the knot substantially as specified

## 504,316. MACHINE FOR MAKING AND KNOTTING FRINGES.

BENJAMIN ARNOLD, East Greenwich, R. I., assignor to the Meriden Curtain Fixture Company, Meriden, Conn. Filed Dec 22, 1892. Serial No. 456,030. (No model.)



*Claim.*—1 In a machine for knotting fringes the combination of a tube and pin arranged to revolve, one around the other and wind the threads in a knot forming loop, with a depressor placed above the tube and having a shoulder to push the threads through the tube to form a knot and a pin at its end for the knot to draw up on, with means for revolving said tube and pin, substantially as specified

2 In a fringe knotting machine the combination with a thread assorting mechanism, of a plate pivoted to swing horizontally and provided with a hinge in it to allow of a vertical motion at its free end, a gear wheel held to turn on a pin fastened in the plate near its free end, and having a tube inserted in it near its periphery, with a toothed rack held on said plate and arranged to engage with the gear and turn it, with means for moving the plate horizontally and vertically, and means to move the rack, substantially as set forth

## 504,317. BINDER FOR LOOSE SHEETS OF PAPER, &c. OSWALD ARMBRUSTER, Tegelen, Netherlands. Filed Mar. 1, 1893. Serial No. 464,153. (No model.)



*Claim.*—1 In a binder, the combination with the hinged covers, of a pair of blocks hinged together and secured to the respective covers, each of said blocks being provided with two curved blades said blades being parallel with one another and concentric with the hinge pivot of the cover and a spring secured at one end to each block substantially as set forth

2 The combination with the covers, of the hinged blocks each secured to one of said covers, said blocks having a central opening extending through the hinge pivot, curved blades mounted on the respective blocks, and a spring arranged in the opening in and secured at each end to one of said plates, substantially as set forth

3 The combination with the covers, of the hinged blocks secured thereto, curved blades mounted on said blocks, and a brace, secured at one end to one of said blocks and at its other end to one of said covers, substantially as set forth

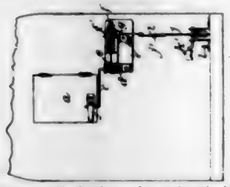
## 504,318. DOOR OR SHUTTER OPENER. JOHN BERRY, Groveland, Ill. Filed Mar. 21, 1893. Serial No. 467,026. (No model.)

*Claim.*—1. In a door operating device, the combination with a drum carrying a lever engaging the door, of a cord wound around said drum, and having one of its ends secured to a spring and its other end connected to lever mechanism adapted to be operated by the foot to unwind the cord from the drum, substantially as described.



2. The combination with the drum *d* carrying the lever *c* engaging the door, of the cord *e* wound around said drum and secured at one end to a spring *f* and at its other end connected with a bell crank lever $k^3$, a rod $k^2$ secured at one end to said bell crank lever and at its other end to a bell crank lever *k* provided with a pedal *k'* substantially as shown and described.

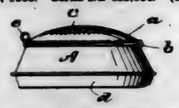
3. The combination with the drum *d* carrying the lever *c* engaging the door, of the cord *e* wound around said drum and secured at one end to a spring *f'* and at its other end connected to one end of a strap *i*, the rod *j* adjustably connected at one end to said strap and at its other end connected to one arm of a bell crank lever $k^3$, rod $k^2$ secured at one end to said bell crank lever and at its other end to a bell crank lever *k* provided with a pedal *k'*, substantially as shown and described.



4. The combination with the drum *d* carrying the lever *c* engaging the door, of the cord *e* wound around said drum and secured at one end to a spring *f* and knotted at its other end and secured in the forked end of a strap *i*, a series of perforations in said strap, a hooked rod *j* adapted to engage said perforations and secured to a bell crank lever $k^3$, and mechanism adapted to be operated by the foot to actuate said bell-crank lever, substantially as shown and described and for the purpose specified.

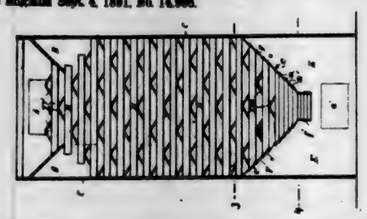
5. The combination with the drum *d* carrying the lever *c* engaging the door, of the cord *e* wound around said drum and secured at one end to a spring *f* and at its other end connected to a bell crank lever $k^3$, a rod $k^2$ secured at one end to said bell crank lever and at its other end to a bell crank lever *k* provided with a pedal *k'*, and a catch *l* adapted to engage the lever *k* and hold it in its depressed position, substantially as described and for the purpose specified.

## 504,319. STOVE-PROTECTOR. JOHN F. BLIVEN, East Greenwich, R. I. Filed Feb. 20, 1893. Serial No. 463,000. (No model.)




*Claim.*—As a new article of manufacture, a stove protector consisting of an inwardly tapering main body, having a rim or skirt on its lower edge extending downward and also made inwardly tapering, and a convex cover hinged to the upper edge and having the larger part of its surface perforated with sieve like holes to allow of the passage of the steam.

## 504,320. DRIER FOR CEREALS, &c. PAOLO BORGARELLI, Turin, Italy. Filed Oct. 31, 1892. Serial No. 450,417. (No model.) Patented in England Sept. 4, 1891, No. 14,986.



*Claim.*—In a drier, a drying chamber C through which the material to be dried passes from top to bottom, and a plurality of rows of diaphragms within said chamber, those of each row crossing those of the next, and those of each row resting with their lower edges on the upper edges of those of the row beneath, in combination with a discharge hopper F at the lower end of said chamber C, constructed internally with a plurality of rows of diaphragms, said diaphragms in said hopper constituting a continuation of the diaphragms in said chamber, said hopper constructed with louvre blades *a a* constituting its side walls, said blades being spaced apart for permitting the entrance of air between them, and having holes *c* coinciding with the ends of said diaphragms in said hopper, substantially as and for the purpose set forth.

## 504,321. CORN-PLANTER. DAVID J. BOWSER, Lucas, Mich. Filed Jan. 16, 1893. Serial No. 458,487. (No model.)



*Claim.*—1. In a planter, the combination with an arched axle, a frame supported thereby, rock-shafts mounted on the frame, and ground-wheels at the ends of the axle, of a lower movable frame, planting-mechanism carried thereby a lever fulcrumed on the upper frame, connections between the crank-arms on the frames and the lever, and connections between the rock-arms of said shafts and the lower planter-carrying frame, substantially as specified.

2. In a planter, the combination with an arched-axle, a superimposed frame, ground-wheels for the axle, a lower oblong frame embracing the ground-wheels, planters carried by said oblong frame, and means for raising and lowering said oblong frame and planters, substantially as specified.

3. In a planter, the combination with an arched-axle, ground-wheels, a frame supported by the axle, a hand-wheel supported above the frame, and means for locking said hand-wheel, of a movable frame embracing the ground-wheels, planters carried thereby, markers hinged at the sides of the movable frame, and ropes connected with the markers and made fast to the hand-wheel, substantially as specified.

4. In a planter, the combination with the arched-axle, the superimposed frame, the ground-wheels for the axle, and the lower planter-carrying oblong frame embracing the ground-wheels, of a draft-frame depending from the upper frame and having a central socket for the reception of the pole and loosely connected with said lower movable frame, and means for raising and lowering said movable frame, substantially as specified.

5. In a planter, the combination with the arched-axle, the ground-wheels and the rectangular frame supported by the axle, of the oblong frame embracing the ground-wheels, means for raising and lowering said oblong frame, and planter-carrying frames located under the arch and between the ground-wheels and outer ends of said movable frame and secured to said movable frame, and means for raising and lowering said movable frame, substantially as specified.

6. In a planter, the combination with the arched axle, the ground-wheels for the same, and the rectangular frame arranged upon the axle, of the oblong frame embracing and extending beyond the ground-wheels, means for raising and lowering said oblong frame, a series of planter-frames located between the front and rear bars of said oblong movable frame, a planter-mechanism carried thereby, and comprising a rotatable agitator, the shaft rotatably mounted in the oblong frame and extending through the planter-frames and means for rotating the shaft, pulleys carried by the shaft, and belts leading from the pulleys to the agitator, substantially as specified

7. In a planter, the combination with the frame thereof, of opposite hinged marker-carrying frames, an intermediate standard, a

hand-wheel having a handle mounted on the standards and provided upon its rear face with notches, a pawl pivoted on the standard below the wheel, a coiled spring interposed between the tail of the pawl and standard for normally engaging the upper end thereof and the notches, and a rope having its extremities connected to the marker-frames and its intermediate point connected to the wheel, substantially as specified.

8. In a planter, the combination with the opposite side-bars thereof, the furrow-opening shovels and seed-dropping-mechanism, of opposite standards hinged at their front ends to the side-bars of the frame in rear of the planting-mechanism and provided at their rear ends with slots, set-bolts passed through the slots and sides of the standards, and L-shaped arms hinged to the rear ends of the standards and provided at their free ends with slots and adapted to be swung inward against the side bars of the planters at an angle to the standards and receive said bolts, whereby said standards are supported outward or away from the sides of the planter, substantially as specified.

9. The combination with the side-bars of a planter, of a hinged frame, a roller journaled in the rear end of the frame, a bail loosely connected with an intermediate cross-bar of the roller-frame, a standard rising from one of the cross-bars of the planter-frame and provided with studs for engaging the bail, and a plate pivoted to the standard and adapted to swing over the studs and bail, substantially as specified.

10. In a planter, the combination with the hopper and frame thereof, of a seed-tube depending from the hopper and extending above the bottom thereof, said tube being provided with an opening, and a vertical sliding measure, having an inclined bottom mounted, adjacent to the tube and means for raising and lowering said measure, and limiting the upward movement thereof, substantially as specified.

11. In a planter, the combination with the hopper and framework thereof, of a seed-tube passing through the top and bottom of the hopper and provided at its rear side at its upper end with an opening, a U-shaped measure embracing the tube and mounted in ways at the sides thereof, means for raising and lowering the measure, and an inclined bottom located in said measure, substantially as specified.

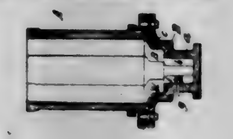
12. In a planter, the combination with the hopper thereof, and a seed-tube depending from the bottom of the hopper, extending through the same, and provided in its rear wall at its upper end with an opening, a sliding measure embracing the tube, means for operating the measure, a rotatable feed located in rear of the measure, and means for operating said feed, substantially as specified.

13. In a planter, the combination with a hopper thereof, a seed-tube extending through the bottom of the hopper and provided with an opening, a measure mounted for sliding adjacent to the tube, means for operating said measure, a transverse shaft journaled in the walls of the hopper in rear of the measure, a fluted agitator mounted on the shaft, a pulley on the outer end of the shaft, and means for driving the same, substantially as specified.

14. In a planter, the combination with the hopper, framework, and a seed tube passing through the bottom of the hopper and extending above the same and provided with an opening, of a sliding measure embracing the tube, a bracket rising from the measure and extending above the tube and having a lateral extension, a standard pivoted upon the bracket, a rear standard upon the framework, a lever pivoted in the rear standard and to the standard of the bracket and having its front end depending in front of the hopper, a ground-wheel having pins adapted to strike and operate the lever and thus raise and lower the measure, a bottom movably mounted in the measure, a threaded rod extending upwardly from the bottom through a perforation in the extension of the bracket, and set nuts threaded on the rod above and below the extension, substantially as specified.

15. The combination with a planter, having opposite side-bars and a hopper, of a U-shaped plate having its upturned ends slotted and provided with a central opening, bolts passed through the slots of the upturned ends and side-walls of the frame, a hollow drill standard depending from the opening in the plate and carrying the furrow-opening shovel, a seed-tube depending through the hollow drill standard and having an opening above the hopper, a sliding measure mounted on the seed-tube means for operating said measure, and means for feeding the corn to the measure, substantially as specified.

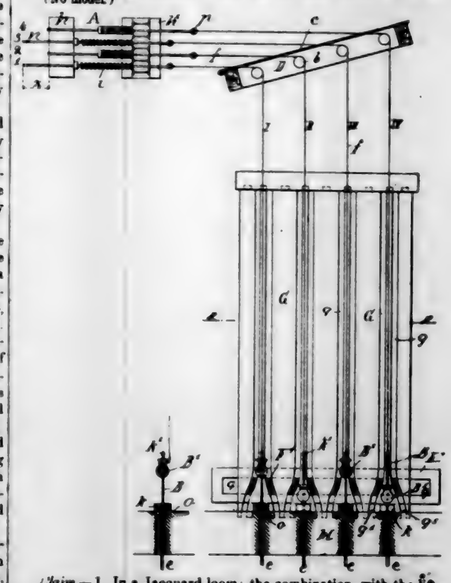
**504,322. CASTING INGOTS.** HENRI A. BRUSTLEIN, Unieux, France. Filed Dec. 7, 1892. Serial No. 454,404. (No model.)



*Claim.*—1. An iron or steel ingot having a tail or extension of less diameter than the body of the ingot, and provided with a key hole or recess in the side of said tail or extension, substantially as described.

2. An iron or steel ingot having at one end a shoulder of reduced diameter, and a tail or extension provided with a key hole or recess in the side thereof, substantially as described.

**504,323. JACQUARD MECHANISM FOR LOOMS.** GEORG SCHÜKLE, Blaubeuren, Germany. Filed May 31, 1892. Serial No. 434,983. (No model.)



*Claim.*—1. In a Jacquard loom: the combination, with the lifting frame E, lifting-wire B, having head *b'*, plate *b*, hook *o* and the cord *e* secured to the same, of the carrier-ball B' adapted to slide along the lifting-wire B and to collide with the head *b'*, needle *n* adapted to be operated by the perforated cards of the loom, and the thread *f* connecting the ball B' to the needle *n*, substantially as and for the purpose set forth.

2. In a Jacquard loom: the combination, with the lifting-blades F F and the lifting-frame E adapted to operate the same, of the side-boards G G provided with grooves *g g* for the guidance of the lifting-blades F F, the lower ends *g'* of these grooves being made divergent, substantially as and for the purpose set forth.

**504,324. PROCESS OF MAKING ALUMINUM COMPOUNDS.** WILLARD R. CASE, Auburn, N. Y. Filed Apr. 9, 1891. Renewed Feb. 6, 1893. Serial No. 459,496. (No specimens.)

*Claim.*—1. The process herein described of making an insoluble aluminum compound, which consists in combining aluminum sulphate and calcium fluoride to form an aluminum fluo-sulphate solution, and adding thereto an alkali carbonate.

2. The process herein described of removing the iron and making an insoluble aluminum compound, from an aluminum fluo-sulphate solution, which consists in first treating said solution with an alkali-carbonate to precipitate the iron, removing said iron and then treating said solution with a further quantity of said alkali-carbonate to cause precipitation of said aluminum compound.

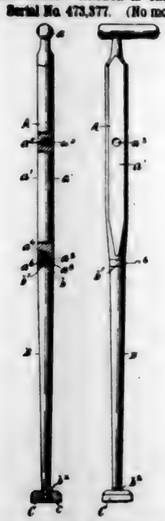
**504,325. PROCESS OF MAKING ALUMINUM FLUOSULPHATE.** WILLARD R. CASE, Auburn, N. Y. Filed Apr. 29, 1891. Renewed Feb. 6, 1893. Serial No. 459,497. (No specimens.)

*Claim.*—1. The process of producing aluminum alkali fluo-sulphate free, or substantially free, from iron, which consists in adding calcium fluoride to an aqueous solution of crude aluminum sulphate, then adding a solution of an alkali carbonate, to precipitate iron and then mechanically separating the liquid from the solid products of the reaction.



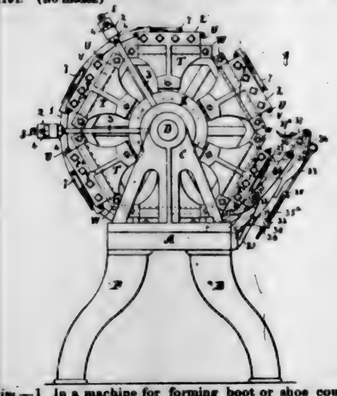
2. The process of producing aluminum sodium fluo-sulphate free, or substantially free, from iron, which consists in adding calcium fluoride to an aqueous solution of crude aluminum sulphate, then adding a solution of sodium carbonate, to precipitate iron and then separating the aluminum sodium fluo-sulphate solution from the solid products of the reaction by filtration.

**504,826. CANE-STOOL.** ARTHUR L. CHAPMAN, Theresa, N. Y. Filed May 8, 1893. Serial No. 473,377. (No model.)



*Claim.*—As an improved article of manufacture, the herein described convertible cane, the same comprising two approximately cylindrical sections, the uppermost of which has its opposite faces flattened and is provided with a threaded socket across the section at the center of one flat face and a second threaded socket in the lower end of said section, a handle at the upper end of this section consisting of a piece of approximately the same diameter as the sections and secured to said upper end parallel with the longest diameter of the upper section, a lower section having a reduced and threaded tenon at its upper end adapted to screw into either socket with the shoulder of the tenon abutting against the upper section around said socket, and when in the end socket to stand in alignment with the upper section, a ferrule fixed on the lower end of this section, and an enlarged base plate having a socket in its upper face into which said ferrule end fits removably, as and for the purpose set forth.

**504,827. HEEL-STIFFENER MACHINE.** MILTON CRASE and MATTHEW H. FOSTER, Haverhill, Mass. Filed June 10, 1892. Serial No. 436,191. (No model.)



*Claim.*—1. In a machine for forming boot or shoe counters, a wheel, a series of male dies secured thereto, each die being movable circumferentially of the wheel, a pair of female dies for each male die, said female dies engaging with the male die and moving it upon the wheel, and means for rotating the wheel and moving the female dies, substantially as set forth.

2. In a machine for forming boot or shoe counters, a wheel, a series of spring actuated male dies adjustably secured thereto, and movable circumferentially of the wheel, a pair of laterally movable female dies for each male die, said female dies engaging with the male die and moving it in one direction whereby the spring is compressed for moving the male die in the opposite direction, and means for rotating the wheel and moving the female dies, substantially as set forth.

3. In a machine for forming boot or shoe counters, a wheel, a series of male dies secured thereto, a pair of laterally moving female dies for each male die, and an adjustable presser for operating the female dies, substantially as set forth.

4. In a machine for forming boot or shoe counters, dies consisting of a central block, and two sliding jaws, one of which has an extension beyond the center line and rounded on its inner rear portion, the other one fitting into said round portion and having a knife edge as and for the purposes set forth.

5. In a machine for forming boot or shoe counters, a wheel, a series of spring actuated male dies secured thereto, and movable circumferentially of the wheel, one end of each of said dies being rounded and the opposite end provided with a wedge shaped projection, a pair of laterally movable female dies for each male die, one end of each of said female dies being concaved to correspond with the rounded end of the male die, and with a knife edge, and the opposite end of said female dies being adapted to engage with the wedge-shaped projection of the male die, and forcing its rounded end into the concave portion of the female dies, substantially as set forth.

6. In a machine for forming boot or shoe counters, a central block or die fulcrumed to a plate free to slide upon its bed, the front portion of said die having a lip or projection, and means for tilting said block substantially as set forth.

7. In a machine for forming boot or shoe counters, a central block or die the forward end of which is of a wedge shape two sliding dies secured to plates having wedge shaped portion to correspond with and fit against the front of the central die and a spring to draw the central block or die forward when the side dies are open said block being forced back by the wedge shaped portion when the dies close as set forth.

8. In a machine for forming boot or shoe counters, a wheel, a series of forming dies thereon, the male portion of which is pivotally secured thereto, a bracket adjacent to the periphery of the wheel, a latch lever, pivotally secured to the upper end of the bracket, and means for simultaneously moving the latch lever and the male die, whereby the counter is removed from the die, substantially as set forth.

9. In a machine for forming boot or shoe counters a wheel, having a series of forming dies, the male portion of which is provided with a projection and is pivotally secured to the wheel, a bracket adjacent to the periphery of the wheel, a latch lever and a catch latch pivotally secured to the bracket, and means for moving the catch latch into engagement with the male die and operating the latch lever, whereby the counter is removed from the die, substantially as set forth.

10. A machine for forming boot or shoe counters consisting of a wheel J, mounted upon a shaft D, to which a slow rotary motion is imparted, dies Q, R, R', secured on the periphery of said wheel, fixed cams K, cam levers T, and connecting rods U, for transmitting motion from the cam levers to the sliding jaws of the dies substantially as set forth.

11. In a machine for forming boot or shoe counters such as described, the central block or die Q, wedge shaped at its forward end and attached to a plate N, a spring P, for drawing said plate and block forward in combination with dies R, R', secured to and carried by sliding plates L, having wedge shaped portions corresponding to that on the block Q, whereby said block will be drawn forward when the dies are opened, and forced back when they are closed as set forth.

12. In a machine such as described the cam levers T, having a loose jaw *t*, and adapted to carry a bar *x*, and set screws Y, whereby the amount of travel imparted to the sliding jaws or dies R, R', can be adjusted as set forth.

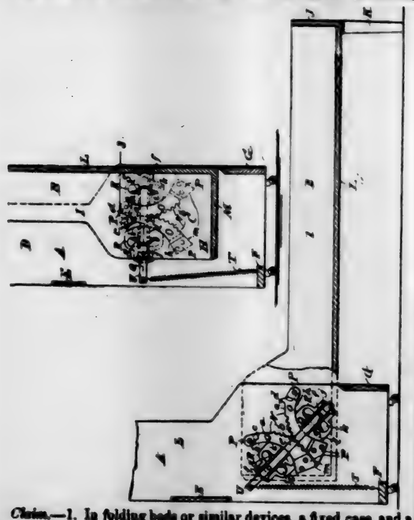
13. In a machine for forming boot or shoe counters a feed gage consisting of two parts each fulcrumed at 8, to the blocks 8, carrying the sliding dies and having their forward ends adjustably connected to the rear portion by set screws 13, the rear portion having a lip 9, in which is an adjusting screw 10, for regulating the distance it is thrown in by the spring 11, and a wheel or disk 15, for throwing the gage open when passing the plate 1, as set forth.

14. In combination with a machine of the character described for forming boot or shoe counters, the automatic device for removing the finished counters consisting of an arm 24 having a cam shaped hook 25 at its lower end and an arm 26, and latch 27, said arm being

mounted upon a shaft 23, carried by suitable brackets, brackets 21, arm 28, shaft 29, mounted therein, the arms 30, 31, secured to said shaft 29, eyes 32, 32ª, rod 33, bell crank 34, boss 35, spiral spring 35ª and nuts 36, the latch lever 37 having springs 37ª, rod 38, boss 39, spring 40, and nuts 41, in combination with a cam 42 and a catch 43, secured to the periphery of the wheel J, substantially as set forth.

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**504,328.** FOLDING BED. JACOB CHRIST, Brooklyn, assignor, by mesne assignments, of one-half to Christine Ohl and William D. Stewart, New York, N. Y. Filed July 14, 1892. Serial No. 439,903. (No model.)



*Claim.*—1. In folding beds or similar devices, a fixed case, and a folding section, in combination with a pivotal connection between said parts consisting of arc shaped reciprocal faces fixed the one to said case and the other to said section, that on said case having a substantially vertical upper forward portion and extending thence downwardly and rearwardly and terminating in a portion extending at an angle of substantially forty five degrees, and that on said section having a contour the reverse of that on said case and disposed to contact at its lower end with the lower end of that on said case when in the open position and at its upper end with the upper forward portion of that on said case when in the closed position, said faces constructed to abut at successive points during the folding of said section, and means for maintaining said faces in contact, whereby when in the folded position said section occupies a position relatively to said case in advance of that occupied when in the open position.

2. In a folding bed or similar device, a fixed case and a folding section, in combination with a pivotal connection between said parts consisting of reverse convex faces fixed the one to said case and the other to said section and constructed to contact at successive points during the folding operation, and a track carried by one of said parts and engaged by the other of said parts and constructed to preserve said faces in contact during the folding operation.

3. In a folding bed or similar device a fixed case and a folding section in combination with a pivotal connection between said parts consisting of reciprocal abutting faces constructed to abut at successive points during the folding operation, tracks carried by said parts, a link crossing said faces and shoes carried by said links and engaging said tracks for locking said parts together, and a spring or equivalent counterbalancing provision.

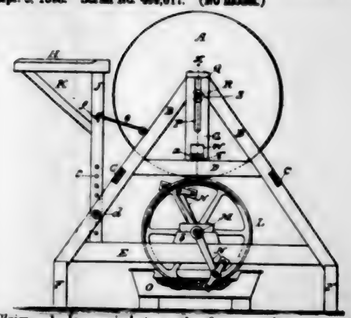
4. In a folding bed or similar device, the fixed case and folding section, in combination with the pivotal connection between said parts, consisting of reciprocal faces N N, tracks as A A, links as Q Q crossing said faces, shoes carried by said links and engaging said tracks, and a counterbalancing spring acting against said folding section, substantially as and for the purpose set forth.

5. A pivotal connection for folding beds or similar devices consisting of plates as O O having reciprocal faces as N N, tracks as A A and shoulders as *c d*, said plates adapted the one for connection to one part of the bed the other to the other part thereof, in combination with a link as Q embracing said plates, shoes as R engaged by said link and engaging said tracks, and a spring as S interposed between said link and one of said shoes.

6. In a folding bed or similar device, a fixed case and a folding section, in combination with a pivotal connection between said parts consisting of plates as O O fixed one to said case and the other to said section, having abutting faces as N N, and tracks as A back of said faces, a link traversing said faces, and shoes engaging respectively said tracks and constructed to preserve said faces in contact.

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**504,329.** GRINDSTONE. WILLIAM H. CLAFF, Auburn, N. Y. Filed Apr. 8, 1893. Serial No. 469,617. (No model.)



*Claim.*—1. In a grind-stone, the frame-work composed of the legs B, B, at either side thereof resting on the feet F, and converging at the top; the vertical pieces G, G, at either side thereof having slots P, P, and spaces W, W,; the upper cross-pieces D, D, and the lower cross-pieces E, E, at either side thereof, in combination with the adjustable seat H, held in place by the bolts *d*, and the hooks and staples *e*, and *f*, substantially constructed in the manner and for the purposes herein described and set forth.

2. In a grind-stone, the frame-work composed of the legs B, B, at either side thereof resting on the feet F, and converging at the top; the vertical pieces G, G, at either side thereof having slots P, P, in which is carried the shaft R, and the spaces W, W, in which are placed the adjustable friction roller stands T, T; the upper cross-pieces D, D, at either side thereof on which are fastened the said adjustable friction roller stands T, T; the lower cross pieces E, E, at either side thereof provided with the box-bearings *b*; in combination with the driving wheel shaft M, the treadles N, the driving wheel L, the grind-stone A, and the water-receptacle O, substantially as and for the purposes herein shown and described.

3. In a grind-stone, the combination therewith of the legs B, B, at either side thereof resting on the feet F, and converging at the top; the vertical pieces G, G, at either side thereof having slots P, P, in which is carried the shaft R, and spaces W, W, in which are placed the adjustable friction roller stands T, T; the upper cross-pieces D, D, at either side thereof on which are fastened the said adjustable friction roller stands T, T, by means of the thumb nuts *a*, *a*; the lower cross pieces E, E, at either side thereof provided with box bearings *b*, carrying the driving wheel shaft M; the driving wheel shaft M, provided at either end with the treadles N, N, and carrying the driving wheel L, on the upper face of which rests the lower face of the grind-stone A; the water receptacle O, placed underneath the driving wheel L; and the adjustable seat H, having the legs J, provided with a series of holes *c*, and the braces K, said seat being held in place by the bolts *d*, passing through the forward legs B, and the hooks and staples *e*, and *f*; the whole substantially constructed and combined for joint operation in the manner and for the purposes herein described and set forth.

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**504,330.** CLUTCH-OPERATING MECHANISM FOR LAWN-MOWERS. THOMAS COLDWELL, Newburg, N. Y. Filed Dec. 21, 1892. Serial No. 455,923. (No model.)

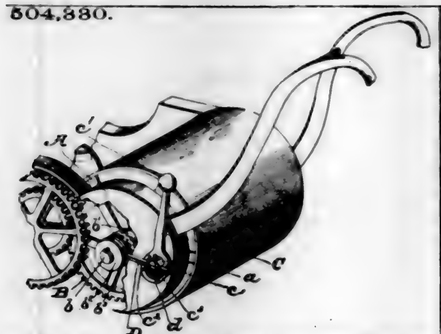
*Claim.*—1. In a clutch mechanism the combination with the movable clutch member, of an actuating lever therefor operatively connected therewith and a weighted lever having cams for engaging and moving the actuating lever at right angles to the plane of movement of the said weighted lever, whereby the actuating lever is locked by the weighted lever, substantially as described.

2. In a clutch operating mechanism the combination with the movable clutch member, of an operating lever pivoted intermediate its ends and operatively connected therewith, and a lever provided with cam grades for engaging portions of said operating lever on opposite sides of its point of pivoting and having a weight for holding one of said grades in engagement with the operating lever, substantially as described.

3. In a clutch operating mechanism the combination with the mov



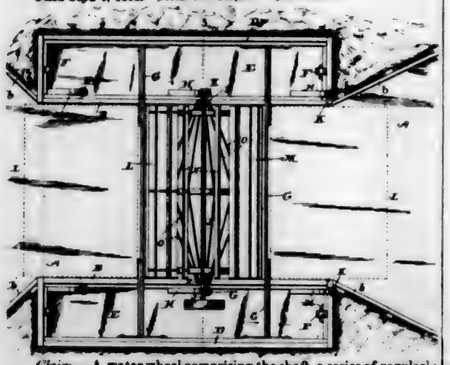
**504,330.**



able clutch member, of a weighted lever pivoted upon a stationary stud, and provided adjacent thereto with cam grades, an operating lever operatively connected with said movable clutch member and pivoted intermediate its ends to said stud and having portions at each side of its pivot adapted to be engaged by said cam grades, substantially as described.

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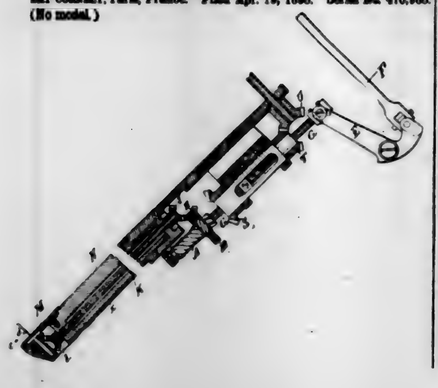
**504,331.** HYDRAULIC MOTOR. FRANCIS B. COLE, O'Neill, Nebr. Filed Sept. 6, 1892. Serial No. 445,163. (No model.)



*Claim.*—A water wheel comprising the shaft, a series of regularly spaced spoked wheels having the spokes thereof extending beyond their peripheries, horizontal concaved paddles or blades secured to the extended ends of the spokes, bracing collars secured to the shaft near its ends, and diagonal truss rods connected to the rim of the central spoked wheel and the end bracing collars, substantially as set forth.

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**504,332.** EMBROIDERING-MACHINE. EMILE CORNELY and ROBERT CORNELY, Paris, France. Filed Apr. 19, 1893. Serial No. 470,966. (No model.)



*Claim.*—In a machine for embroidering gloves, stockings and similar articles the combination with the crank-handle of the universal feed mechanism of a hollow arm constituting the bed plate for the work, a looper-pinion supported in a bearing at the inner end of said arm, a shaft extending through the latter and having a pinion engaging with the looper pinion, a screw-pinion geared to the outer end of said shaft, a reciprocating screw rod engaging said screw-pinion, said rod and pinion being both located outside of said arm, means for reciprocating said pinion and connections for rotating the looper, driving mechanism upon the movement of the crank-handle, substantially as described.

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**504,333.** INVALID-BED. WARREN D. DAWDY and ALBERT HERRES, Adair County, Mo. Filed May 3, 1893. Serial No. 472,888. (No model.)



*Claim.*—1. A bed bottom having an opening, combined with a supporting bed-frame, a curtain under the opening, guides at opposite ends of the frame, pairs of cords passing over the guides, and connected at their inner ends to the corners of the curtain weights attached to the ends of two of said cords, a lever pivoted at one end of the frame, connecting-devices between the lever and remaining cords, and means for locking the lever in any of its adjusted positions, substantially as specified.

2. A bed-bottom having an opening, a bed frame for the bottom, said frame consisting of two hinged-sections, and legs for the foot-section; combined with a sliding curtain below the opening, guides at opposite ends of the foot-section, ropes connected to the corners of the curtain and passing over the guides, weights at the ends of two of the ropes, an evener-bar at the ends of the remaining two, a lever pivoted to one of the legs, links connecting the lever and evener, and a rack-bar attached to the other leg and adapted to engage the free end of the lever, substantially as specified.

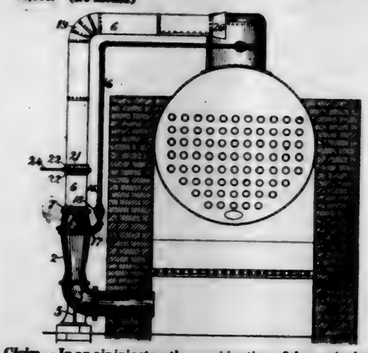
3. In a bed, the combination with a stationary foot-section having legs at its four corners, of a hinged or swinging head-section having an opening near its free end, a standard extending through said opening and carrying a pulley at its upper end, a winding shaft having opposite squared ends, a detachable handle therefor, a rope connected to the shaft, passed over the pulley and secured to the end of the head-section, a ratchet-wheel upon the shaft, and a pawl for engaging the same, substantially as specified.

4. In a bed, the combination with a stationary foot-section having pivoted legs at its four corners, and a hinged or swinging head-section, of a standard at the head-section, a pulley at the upper end thereof, a winding-shaft journaled in bearings in the standard, a crank-handle for operating the same, a rope connected to the shaft, passed over the pulley and secured to the free-end of the head-section, a pair of legs pivoted to the lower end of the standard, a cleat secured in rear of the legs, turn-buttons in front thereof, eyes extending from the legs, and stay-rods loosely connected to the legs of the foot-sec-

tion and removably connected to the eyes, substantially as specified.

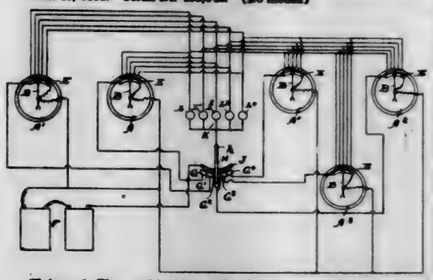
5. In a bed, the combination with a stationary foot-section having legs at its corners, and a hinged or swinging head-section, of a standard at the head-section, a pulley at the upper end thereof, a winding-shaft journaled in the standard, a crank-handle for operating the same, a rope connected to the shaft, passed over the pulley and secured to the free end of the head-section, eyes extending from the legs, and stay-rods loosely connected to the legs of the foot-section and removably connected to the eyes, substantially as specified.

## 504,384. COMBINED AIR INJECTOR AND EXHAUSTER. SALTER R. EARLE, Belleville, Canada. Filed Nov. 11, 1892. Serial No. 451,599. (No model.)



*Claim.*—In an air injector, the combination of the conical receiver having a diametrical steam pipe as an integral part therein, a conical nozzle secured to said receiver, an elbow attachable to either said receiver or said nozzle as specified, and an air pipe provided with a cut-off therein whereby to close the draft through said air pipe, substantially as shown and described.

## 504,385. TEMPERATURE-INDICATOR. CHARLES R. EGAN and FRED M. BAILEY, Chicago, Ill.; said Egan assignor to said Bailey. Filed Mar. 13, 1893. Serial No. 466,846. (No model.)



*Claim.*—1. The combination with a dial thermometer, of insulated contact pieces arranged along the scale of said thermometer, an electro-magnet placed beneath said scale, and the pointer constructed to swing clear of the scale of the contact pieces, and to act as the armature of said electro-magnet and also as means of electrical contact with said scale of contact pieces, substantially as specified.

2. The combination with a dial thermometer provided with a scale of insulated contact pieces, a pointer freely revolving over said scale and capable of acting as an armature and an electrical contact, an electro-magnet beneath the scale in combination with an electrical circuit, a switch or means for opening and closing said circuit, and an electrical means for indicating the particular one of the contact pieces of the scale which the pointer is in contact with, substantially as specified.

3. The combination of a series of dial thermometers located in different places, each provided with a scale of insulated contact pieces, a pointer capable of acting as an armature and also as an electrical contact, an electro-magnet placed to attract said pointer into contact with said scale, combined with an electrical current and circuits which includes a switch for making and breaking the circuit and changing it from one to the other of said thermometers, and means for indicating electrically which of the series of contact pieces of the scale or scales the pointer is in contact with, substantially as specified.

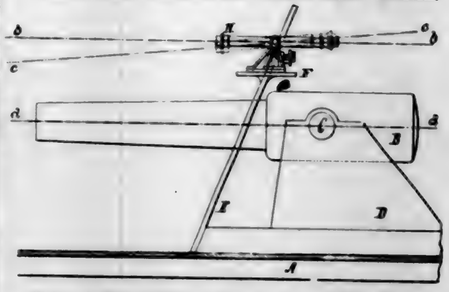
## 504,386. ELECTRIC BELT. WILLIAM C. EKHOLM, Joliet, Ill. Filed June 19, 1893. Serial No. 478,061. (No model.)



*Claim.*—1. An electric belt having a battery composed of a series of cells each of which consists of a plate of oxidizable metal such as zinc having each end folded back over the sides of the cell, a wrapping of cloth for covering said plate between its folded ends, a wrapping of asbestus cloth for covering said cloth covering and a wrapping of chamois skin for covering said asbestus cloth, a copper wire having its looped end passed around one cell out of contact with its zinc or oxidizable plate, and having its free ends passed through said looped end and connected with the folded edges of the plate of the adjacent cell, all combined and arranged substantially as and for the purpose set forth.

2. In an electric belt, a cell composed of an oxidizable plate such as zinc, having each end folded back over the sides of the cell, a cloth wrapping for covering said plate between its folded edges, a wrapping of asbestus cloth for covering said cloth covering, and a covering of chamois skin for covering said asbestus cloth, all combined and arranged substantially as and for the purpose set forth.

## 504,387. TELESCOPIC SIGHT FOR SHIPS' GUNS. BRADLEY A. FISKE, U. S. Navy. Filed Mar. 9, 1891. Serial No. 384,218. (No model.)



*Claim.*—1. The combination of a gun a support laterally movable with said gun, and a sight tube mounted on said support, the said tube and the said gun being independently movable on their transverse axes in parallel vertical planes.

2. The combination of a gun mounted on a vibrating platform, a supporting carriage therefor, a protecting shield for said gun and carriage and a sight tube supported on said shield; the said tube and the said gun being independently movable on their transverse axes in parallel vertical planes.

3. The combination of a gun mounted on a vibrating platform, a support laterally movable with said gun, a sight tube mounted on said support (the said tube and the said gun being independently movable on their transverse axes in parallel vertical planes) and means for adjusting said tube to desired angles of elevation or depression.

4. The combination of a gun mounted on a vibrating platform, a support laterally movable with said gun, a sight tube mounted on said support (the said tube and the said gun being movable on their transverse axes in parallel vertical planes) means for adjusting said tubes to desired angles of elevation or depression and an index showing the extent of said angular movent.

5. The combination of a gun mounted on a vibrating platform, a support laterally movable with said gun, a sight tube mounted on said support (the said tube and the said gun being movable on their transverse axes in parallel vertical planes), means for adjusting said tube to desired angles of elevation or depression, and an index showing the range of the said gun when laid at corresponding angles.

6. The combination of a gun mounted on a vibrating platform, a support laterally movable with said gun, a sight tube mounted on said support (the said tube and the said gun being movable on their transverse axes in parallel vertical planes), means for adjusting said tube to desired angles of elevation or depression, an index showing the extent of said angular movement, and an index showing the range of said gun when laid at corresponding angles.

7. The combination of a sight tube movable on a transverse axis, a screw operating to cause said motion, a graduated disk carried by said screw, and an index or scale plate in proximity to said screw index, the disk and the plate being graduated one in angles and the other in the ranges corresponding thereto.

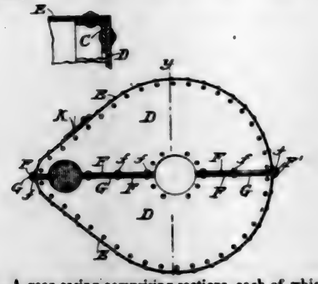


8. The combination of a sight tube movable on a transverse axis, a screw operating to cause said motion in one direction, and an opposing spring operating to cause said motion in the other direction, an index carried by said screw, an index or scale plate in proximity to said screw index, and showing the extent of rotation of said screw and hence of the angular movement of said sight tube.

9. The combination of the telescope H supported on its transverse axis and having the projection L, the adjusting screw M bearing upon said projection and operating to move said telescope on its axis in one direction, means, such as a retracting spring for moving said telescope in the opposite direction, a disk O on the screw shaft and provided with an index and a fixed scale R in proximity to said disk and showing the extent of rotation of said screw, and hence of the angular movement of said telescope.

10. The combination of the telescope H supported on its transverse axis and having the projection L, the adjusting screw M, bearing upon said projection and operating to move said telescope on its axis in one direction, means, such as a retracting spring for moving said telescope in the opposite direction, a disk O on said screw shaft provided with marks indicating the ranges of a given gun corresponding to angles of depression or elevation similar to that of said telescope, and a fixed scale or index R in proximity to said disk and showing the extent of rotation of said screw and hence the angular movement of said telescope.

## 504,388. GEAR-CASING. WILLIAM H. FORBES and GEORGE B. SHEPLEY, Brooklyn, N. Y. Filed Nov. 23, 1892. Serial No. 452,894. (No model.)



*Claim.*—A gear casing comprising sections, each of which consists of a skeleton frame, leatheroid plates fastened upon said frames, flanges upon the plates at their line of juncture whereby the parts may be secured together, and journal bearings fastened upon the inside of the casing; substantially as described.

## 504,389. CARRIAGE OR BUGGY TOP ENAMEL. ZACK T. FOWLER, Santa Rosa, Cal. Filed May 22, 1893. Serial No. 475,186. (No specimens.)

*Claim.*—The herein described composition of matter to be used to form an enamel, and renew, soften preserve and produce a luster and glossy surface to leather, and cloth tops of carriages, buggies, and leather known as patent-leather, and enameled cloth, also to produce a hard and glossy surface to wood, iron and other materials, consisting of asphaltum, coach japan, neat's-foot oil, oil of citronella, alcohol, oil of wintergreen, liquid-glue and boiled linseed-oil, in the proportions and manner herein specified.

## 504,340. VEHICLE-WHEEL. JOHN E. FRIST, Baltimore, Md. Filed Oct. 31, 1892. Serial No. 450,532. (No model.)



*Claim.*—1. A vehicle wheel consisting of a hub, a rim, and a series of spokes attached to the rim and bowed or curved outwardly beyond the ends of the hub as they approach the same, said spokes having their inner ends bent inwardly and extending parallel with the cylindrial surface of the hub to which they are rigidly fastened, substantially as described.

2. A vehicle wheel consisting of a hub provided at its ends with a series of sockets which extend longitudinally of the hub, a rim, and a series of spokes attached to the rim and bowed or curved outwardly beyond the ends of the hub as they approach the same, said spokes having their inner ends bent inwardly and fitted in the sockets in the hub to which they are rigidly attached, substantially as described.

3. In a vehicle wheel, the combination of a hub, a rim, a series of duplex spring spokes centrally attached to the rim and having their ends attached to the hub and elastic blocks or pads arranged between the members of said spokes, substantially as described.

## 504,341. COMBINED RULE, BEVEL, AND SQUARE. WILLIAM H. H. GARRETT, Des Moines, Iowa. Filed Dec. 13, 1892. Serial No. 455,014. (No model.)

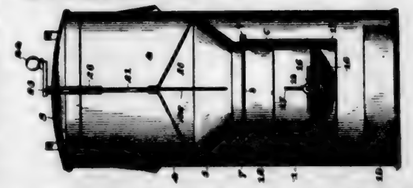


*Claim.*—1. In combination with a folding rule consisting of a plurality of sections the central ones of which are connected by means of a compass joint substantially as shown, a flat metal bevel or square adapted to lie flat upon one of the sections a bore in the end of said bevel or square, a screw-threaded bore extended through the solid portion of the compass joint, and a lever having the annular shoulder and screw threaded portion substantially as set forth extended through the bore in the bevel and square and screwed into the solid portion of the compass joint for the purposes stated.

2. A folding rule bevel and square combined comprising a rule having two or more sections a hinge for connecting the central sections thereof composed of a circular formation having integral journals on its side faces and adapted to be fixed to one rule section and two mating plates having openings to receive said journals fixed to opposite sides of the remaining rule section, a screw threaded bore extended through the solid hinge section a bevel or square having a bore at its one end as set forth and a bent lever having an annular shoulder and a screw threaded portion for the purposes stated.

3. A folding rule bevel and square combined comprising a rule composed of four sections the inner ones connected by means of the compass joint consisting of the part B having the integral journals $B^2$ a screw threaded bore extended through the said journals $B^2$ a bevel and square having a bore extended through one of its ends and adapted to lie parallel with the inner face of the rule section having the solid hinge section, and a bent lever having an annular shoulder formed thereon and screw threaded to enter the bore in the solid portion of the hinge section adapted to be placed in said screw-threaded bore and lie parallel with the ends of the rule sections substantially in the manner set forth.

## 504,342. FLOUR BIN AND SIFTER. ANDREW K. GIBSON, Coshocton, Ohio, assignor to Theodore Agnew, same place. Filed May 16, 1893. Serial No. 474,399. (No model.)



*Claim.*—1. The combination of a casing provided with a bin having a contracted lower end provided with opposite projections, a sifter fitting the lower end of the bin and provided with opposite bayonet slots to engage the said projections, and a curved spring secured to the sifter adjacent to one of the slots and having its free end terminating at the slot and provided with an opening to engage the adjacent projection and bent outward to form a thumb-piece, substantially as described.

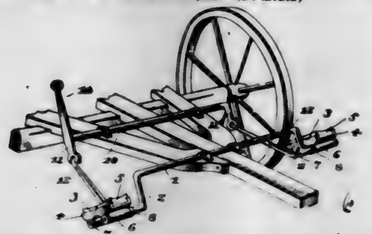
2. The combination of a casing provided at its top with a bin, a cover, and a vertically-disposed rotary agitator journaled on the cover and having depending arms conforming to the configuration of the bin, substantially as described.

3. The combination of a casing provided at its top with a bin having a tapering conical lower portion, a cover, and a vertically-disposed rotary agitator journaled on the cover and provided with radial arms having downwardly-inclined upper portions and inwardly-inclined lower portions, whereby the lower portion of the agitator conforms to the configuration of the bottom of the bin, substantially as described.

4. The combination of a casing provided at its upper portion with a bin having a tapering bottom, a cover provided with a socket,

an agitator comprising a vertical stem removably arranged in the socket and radial arms having downwardly-inclined upper portions and inwardly-inclined lower portions conforming to the configuration of the bottom of the bin, and a handle detachably secured to the upper end of the stem, whereby the cover may be removed without removing the agitator, substantially as and for the purpose described.

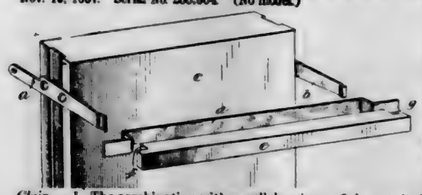
## 504,343. VEHICLE-BRAKE. CHARLES GOELZ, Mineral Point, Wis. Filed May 17, 1893. Serial No. 474,535. (No model.)



*Claim.*—1. The combination with a running gear, of a front rock-shaft journaled on the rear hounds and provided at its ends with crank-arms, brake-shoes mounted at their upper ends on the crank arms, a rear rock-shaft mounted on the running-gear and journaled in suitable bearings and provided with depending arms, and link connections between the depending arms and the lower ends of the brake-shoes, substantially as described.

2. The combination with a running gear, of brake shoes provided at their upper and lower ends with bearings, a front rock-shaft journaled on the running gear and provided at its ends with crank arms arranged in the upper bearings of the brake-shoes, a rear rock-shaft journaled on the running gear and provided with depending arms and having an upwardly extending arm, and link bars having their rear ends connected to the depending arms of the rear rock-shaft and provided at their front ends with journals arranged in the lower bearings of the brake-shoes, substantially as described.

## 504,344. THERMAL CUT-OUT. WILLIAM M. GOODRIDGE, Highland Park, assignor to the Western Electric Company, Chicago, Ill. Filed Nov. 19, 1887. Serial No. 255,804. (No model.)



*Claim.*—1. The combination with parallel springs, of the notched block and a strip of conducting material held against the block by the pressure of the springs, as described.

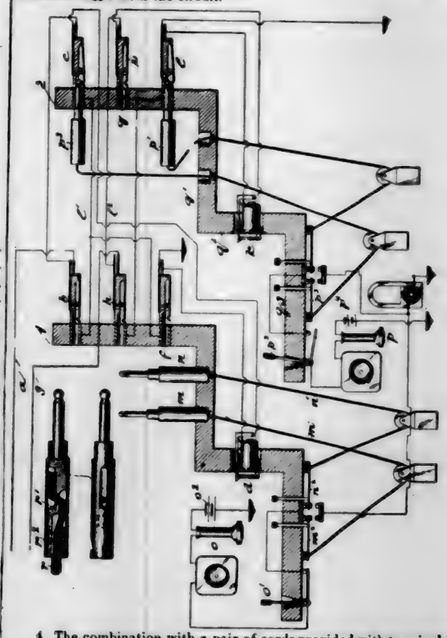
2. The combination with springs included in an electric circuit of a strip of conducting material in contact with said springs and held by the tension of said springs, against a block or support inserted between the springs, as described.

## 504,345. MULTIPLE-SWITCHBOARD APPARATUS. WILLIAM M. GOODRIDGE, Highland Park, assignor to the Western Electric Company, Chicago, Ill. Filed Jan. 12, 1889. Serial No. 296,192. (No model.)

*Claim.*—1. The combination with two telephone lines each connected with a separate spring jack switch on each of two or more switch boards, of an answering spring jack and an individual annunciator upon one of the boards in each of said lines, the individual annunciator being placed between the switch of its line on the last board and the answering spring jack switch thereof and upon the same board with the said answering spring jack switch and double cord switching apparatus, whereby said two lines may be connected together, the individual annunciator of the calling line being left in circuit as a clearing out signal device.

2. A telephone line in combination with spring jack switches, one in each of two or more switch boards, an annunciator included in the line at one of the switch boards and an answering spring jack switch upon the same board with the annunciator included in said line between said annunciator and the ground.

3. The combination with two telephone lines each connected with two or more switch boards and each including an answering spring jack switch in its circuit between the individual annunciator thereof and the ground, of a pair of cords with terminal plugs, one plug of the pair inserted in the answering spring jack of one of the lines and the other plug inserted in the switch of the other line upon the same switch board, whereby the individual annunciator of the line having the plug inserted in its answering spring jack is left in circuit as a clearing out device, while the individual annunciator of the other line is disconnected from the circuit.



4. The combination with a pair of cords provided with terminal plugs, of a ground branch including a telephone, a test battery and a single listening-in key, telephone lines each connected with two or more switch boards, and each provided with a test circuit, whereby while either of said plugs is inserted in the spring jack switch of one line the other plug of the pair may be used to test any other line at the same switch board; substantially as and for the purpose specified.

5. A plug with a flexible insulated cord inserted through an opening in the end of the plug handle and extended through another opening $r'$ at an angle to the first opening, the insulating covering being removed from the end of the cord passing through said opening $r'$, in combination with the rubber sleeve $r^3$ placed over the metallic portion of the handle of the plug, whereby the cord is held in place and provided with a perfect electrical connection with a metallic portion of the plug, substantially as and for the purpose specified.

## 504,346. FLOOD-FENCE. FRANCIS B. GREER, Barnhill, Ill. Filed May 23, 1893. Serial No. 475,343. (No model.)



*Claim.*—1. In a flood fence, the combination of a supporting frame, a vertically movable gate mounted thereon, a paddle-wheel horizontally journaled at the bottom of the gate and adapted to be rotated by water passing beneath the gate, spools connected with the journals of the wheel, and cords attached to the supporting frame and secured to the spools and adapted to be wound thereon by the rotation of the paddle-wheel, substantially as and for the purpose described.

2. In a flood fence, the combination of a supporting frame provided with vertical guide-rods, a gate having its top bar extended and provided with openings 9 and 10, the openings 9 receiving the guide-rods, eyes attached to the bottom of the gate and receiving the guide rods, a paddle-wheel horizontally journaled at the bottom of the gate, spools connected to the journals of the paddle wheel, cords attached to the top of the supporting frame and passing through the openings 10 and secured to the spools and adapted to be wound round them, a pulley mounted on the supporting frame, and a cord passing over the pulley and provided at one end with a weight and having its other end attached to the gate, substantially as described.

3. In a flood fence, the combination of a supporting frame, a vertically movable gate mounted thereon, a paddle-wheel horizontally journaled at the bottom of the gate and having flexibly mounted blades, spools connected with the journals of the paddle wheel, and cords attached to the supporting frame and to the spool and adapted to be wound around the latter, substantially as described.

4. In a flood fence, the combination of a supporting frame, a vertically movable gate mounted thereon, a paddle-wheel journaled horizontally on the gate at the bottom thereof and arranged below the same, and mechanism connecting the paddle-wheel with the supporting frame, whereby the rotation of the paddle-wheel will raise and lower the gate, substantially as described.



## 504,347. PUZZLE. WILLIAM P. GROVES, Philadelphia, Pa., assignor of one-half to William H. Galbraith, same place. Filed Apr. 1, 1893. Serial No. 468,883. (No model.)



*Claim.*—1. In a puzzle, the combination of a box or case, having its interior exposed to view, containing a number of movable spheres or balls, and having therein a shelf or ledge, and a tube extending outside the box or case and having an end adjacent to the shelf or ledge, substantially as specified.

2. In a puzzle, the combination of a box or case, having its interior exposed to view, containing a number of movable spheres or balls, and having therein a shelf or ledge, and a tube extending outside the box or case and having an end adjacent to the shelf or ledge and provided with an opening whose plane is at an angle with the axis of the tube and which faces toward one end of said shelf or ledge, substantially as specified.

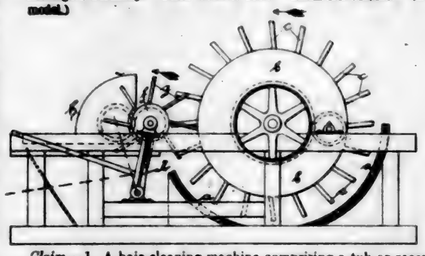
3. In a puzzle, the combination of a box or case, having its interior exposed to view, containing a number of movable spheres or balls, and having therein a shelf or ledge, and a tube extending outside the box or case and having an end adjacent to the shelf or ledge and provided with an opening whose plane is at an angle with the axis of the tube and which faces toward one end of said shelf or ledge, the lowermost portion of such end being a less distance from the shelf or ledge than is represented by the diameter of the spheres or balls, substantially as specified.

4. In a puzzle, the combination of a box or case, having its interior exposed to view, containing a number of movable spheres or balls, and having secured therein and to the ends thereof a pair of shelves or ledges located one above the other, and a tube extending from the outside of the box or case, through the upper and into close relation with the lower one of said shelves or ledges, substantially as specified.

5. In a puzzle, the combination of a box or case, having its interior exposed to view, containing a number of movable spheres or balls and having secured therein and to the ends thereof a pair of shelves or ledges located one above the other, and a tube extending from the outside of the box or case, through the upper and having an end adjacent to the lower one of said shelves or ledges, such end being provided with an opening whose plane is at an angle with the axis of the tube and which faces toward one end of the shelf or ledge last mentioned, substantially as specified.

6. In a puzzle, the combination of a box or case, having its interior exposed to view, containing a number of movable spheres or balls and having secured therein and to the ends thereof a pair of shelves or ledges located one above the other, and a tube extending from the outside of the box or case, through the upper and having an end adjacent to the lower one of said shelves or ledges, such end being provided with an opening whose plane is at an angle with the axis of the tube and which faces toward one end of the shelf or ledge last mentioned, the lowermost portion of such end being a less distance from such shelf or ledge than is represented by the diameter of the spheres or balls, substantially as specified

## 504,348. HAIR-CLEANING MACHINE. FRIEDOLIN HALL, Denkendorf, Germany. Filed Oct. 20, 1892. Serial No. 449,453. (No model.)

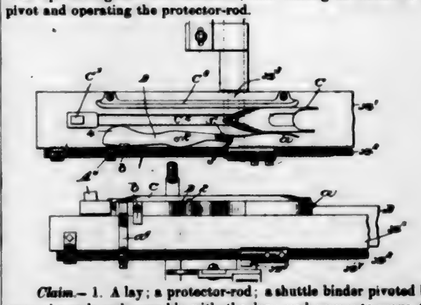


*Claim.*—1. A hair cleaning machine comprising a tub or receptacle, a drum provided with a series of arms rotating in said receptacle, a supplemental drum mounted upon pivoted supporting arms and provided with a series of pairs of arms for removing the hair from the main drum, and a receiving reservoir, substantially as described.

2. In combination with the tub or receptacle, the drum rotating therein provided with a series of rounds or arms, the supplemental drum carrying a series of pairs of arms semi-circular in cross section with their flat faces facing and adapted to pass in close proximity to the arms of the main drum, to remove the hair therefrom, and a compartment adapted to receive the hair from the supplemental drum, substantially as described.

## 504,349. SHUTTLE-BINDER FOR LOOMS. HERBERT R. HAMILTON, Salmon Falls, N. H. Filed Sept. 24, 1892. Serial No. 446,787. (No model.)

*Brief.*—The shuttle-binder is pivoted between its ends, and is provided at the inner end, or that nearest the lay, with a spring *a* and at the outer end with a limiting-stop *b*. The shuttle, entering the box, is first checked by the spring *a*, and when it fully enters the box it presses against the shoulder 4, thus turning the binder on its pivot and operating the protector-rod.



*Claim.*—1. A lay; a protector-rod; a shuttle binder pivoted between its ends and movable with the lay; and means to move the protector-rod, said means being located between the pivot of the binder and the end of the lay, substantially as described.

2. A lay; a protector rod; a shuttle binder pivoted between its ends and movable with the lay, and provided at its end nearest the reed with an elastic spring blade; and means to move the protector rod, said means being located between the pivot of the binder and the end of the lay, substantially as described.

3. A lay and a shuttle binder pivoted thereon between its ends whereby the shuttle on entering the box will tend to turn the binder about its pivot, in combination with a stop or catch applied to the outer end of the binder to limit its range of inward movement, substantially as described

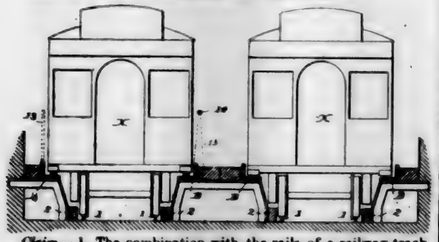
## 504,350. HAT. CHARLES HARKINS, Menlo Park, Cal. Filed Jan. 3, 1891. Serial No. 376,825. (No specimens.)

*Claim.*—As a new article of manufacture, a hat or cap having a flat disk like top projecting horizontally beyond the sides of said hat or cap at all points, said sides provided near the top thereof with a series of ventilating holes extending entirely around the same, and sheltered by the projecting flat top, substantially as and for the purpose set forth.

504,850.



504,851. RAILWAY. BENJAMIN S. HENNING, New York, N. Y. Filed Feb. 4, 1893. Serial No. 461,030. (No model.)



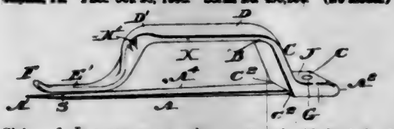
*Claim.*—1. The combination with the rails of a railway track, of fixed bearings extending the length of the track section where safety appliances are required, and arranged to occupy positions above the level of the car axles and below the bottom sides of the car bodies, substantially as and for the purpose set forth.

2. In a railway, elevated bearings arranged alongside the track rails to occupy positions below the bottoms of car bodies, and guards arranged to occupy positions above the bottoms and beyond the sides of the car bodies, substantially as described.

3. In a railway, elevated bearings arranged alongside the track rails to occupy positions below the bottoms of car bodies, said bearings being extended upward on their outer sides to constitute guards which occupy positions beyond the sides of the car bodies, substantially as described.

4. In a railway, elevated bearings arranged alongside the track rails at positions below the bottoms of car bodies, and guards extending upwardly to occupy positions at the sides of and beyond the car bodies, said bearings and guards being above the plane of the axles and constructed of angle-iron, and bolted or otherwise secured to a base, substantially as described.

504,852. ENVELOPE-OPENER. ISAAC W. HETHERER, Philadelphia, Pa. Filed Oct. 28, 1892. Serial No. 450,234. (No model.)

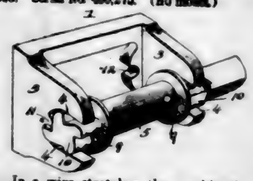


*Claim.*—1. In a paper or envelope cutter, the blade, A, having cutting edge, $A^1$, and point, A', the rear end of said blade secured to a handle for operating the same, said handle, B, extended forward along said blade, A, and having finger space, X, between said blade and said handle, and open paper space, S, between the free forward end of said handle and said blade, said space adapted to permit the uncut paper to pass along said blade beneath said handle, substantially as and for the purposes described.

2. In a paper or envelope cutter the elongated pointed rigid blade, A, and handle, B, secured to the rear end, $A^2$, of said blade, and extended forward along the same, having arch, C B D', with finger space, X, between said handle and said blade, and terminal finger, E, extended forward from said arch and along said blade, having space, S, between said finger, E, and said blade, A, said finger adapted to guard said blade at its free end from liability of inflicting injury, while admitting paper to be cut through said space, S, substantially as described.

3. As an article of manufacture, a paper or envelope cutter consisting of an elongated pointed blade, A, with rear supporting end, $A^2$, and reversed handle, B, having the rear end of said handle secured to the rear end of said blade, and forming a rear support, J, arched hand piece, B, extended forward along said blade, and substantially parallel thereto, said arch formed by any inclined or vertical raise, C, raised center, B, and forward descending piece H, said handle terminating in front in an elongated finger, E, carried along said blade, A, to near its point, A', having space, S, and adapted to guard the said blade and point, A A', substantially as described.

504,853. WIRE-STRETCHER. ALFRED IDE, Medina, N. Y. Filed July 12, 1893. Serial No. 480,275. (No model.)



*Claim.*—1. In a wire stretcher, the combination of a bracket having outwardly extending sides, provided with open bearings, and having arranged therein at the back thereof outwardly extending teeth, and a shaft arranged in the open bearings and provided at each end with a series of ratchet teeth to engage the tooth of the adjacent bearing, substantially as described.

2. In a wire stretcher, the combination of a bracket having outwardly extending sides, provided with open bearings, and having in each of the bearings at the back thereof an integral outwardly projecting tooth, and a shaft arranged in the bearings and provided with flanges at the inner faces of the sides of the bracket and having at the outer side of each flange a series of ratchet teeth arranged in the adjacent bearing and engaging the tooth thereof, substantially as described.

504,854. SELF-ACTING WATER-KEY FOR WIND-INSTRUMENTS. JOHN LINDSTROM, Henderson, Ky. Filed May 20, 1893. Serial No. 474,952. (No model.)



*Claim.*—1. The combination with a wind instrument, of a cap adapted to communicate therewith, and provided with a perforation, and absorbent material in said cap, substantially as set forth.

2. The combination with a wind instrument, of a cap adapted to communicate therewith and provided in its head with a small perforation and absorbent material in said cap in line with said perforation, substantially as set forth.

3. The combination with a wind instrument, of a cap adapted to communicate therewith and provided with a perforation in its head, absorbent material in said cap, and a spring between said cap and the instrument, substantially as set forth.

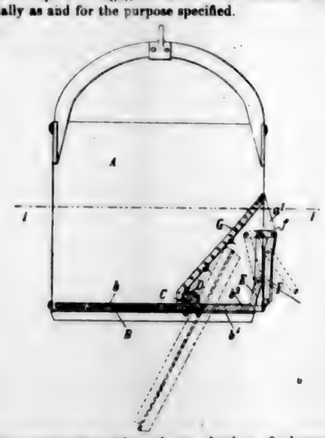
4. The combination with a wind instrument, of a perforated boss communicating therewith, a cap on said perforated boss and provided with a perforation in its head, and absorbent material in said cap behind said perforation, substantially as set forth.

504,855. ELEVATOR BUCKET. TIMOTHY LONG, Cleveland, Ohio, assignor of one-half to the Excelsior Iron Works Company, same place. Filed Dec. 6, 1892. Serial No. 454,215. (No model.)

*Claim.*—1. In combination with an elevator bucket, of a bottom hinged thereto, on an axis which divides the bottom into two parts the part of said bottom on one side of the hinge axis being the heavier, the part on the other side presenting the greater area for contact with the load, and a latch adapted to engage with the bottom and hold it closed, substantially as set forth.

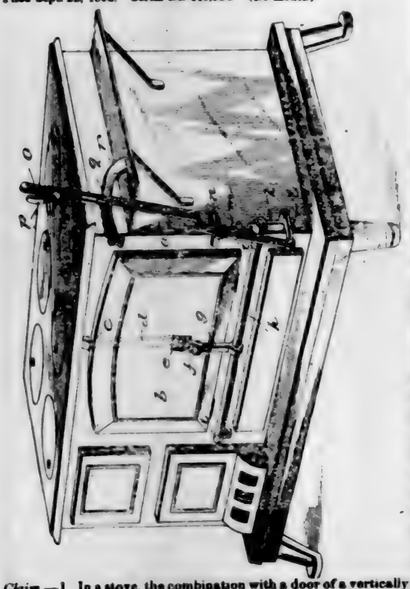
2. In combination with an elevator bucket, of a bottom hinged thereto on an axis which divides the bottom into two parts, the part of the bottom on one side of said hinge axis being heavier than the other, an inclined false bottom which lies over said heavier part and protects it from contact with the load, and a latch adapted to engage with said bottom, substantially as set forth.

3. The combination with an elevator bucket, of a cylindrical bar C, secured to the sides of the bucket, and a bottom, having a series of U-bolts, arranged in line at one side of the center of said bottom, which U-bolts loosely embrace said bar, the smaller division of said bottom being the heavier, with a latch mounted on the side of the bucket and adapted to engage with the bottom and hold it closed, substantially as and for the purpose specified.



4. The combination with an elevator bucket, of a bottom hinged thereto on an axis which divides the bottom into two unequal divisions, of which the smaller is counter-weighted to make it the heavier, a latch-lever pivoted to said bucket and adapted to engage at its lower end with the upper edge of the heavier side of the bottom, an operating lever also pivoted to the side of said bucket, and a link connecting the upper ends of said two levers, substantially as and for the purpose specified.

504,856. STOVE ATTACHMENT. LOUIS E. LOVE, Paducah, Ky. Filed Sept. 22, 1892. Serial No. 446,584. (No model.)

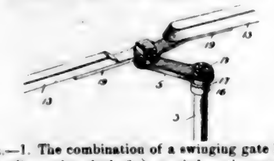


*Claim.*—1. In a stove, the combination with a door of a vertically movable catch, a horizontal rock-bar located at the bottom of the door and actuated by a lever, a vertical arm rising from said bar and a link connecting the lower end of the catch with the arm, whereby the door and catch may be moved, substantially as described.



2. The combination with a door, of a vertically movable catch, a hole in said door through which the catch extends, a horizontal rock-bar actuated by a lever, and a vertical arm rising from said bar, and connected to said catch whereby the catch is released when the horizontal bar is rotated, substantially as described

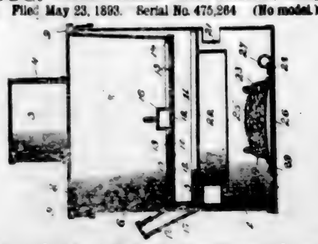
504,857. GATE. CECIL H. LUCAS, Offilvan, Ohio. Filed Feb. 14, 1893. Serial No. 462,296. (No model.)



*Claim.*—1. The combination of a swinging gate having a latch, a vertically disposed rock-shaft journaled on the gate and provided at its ends with arms, the lower one being connected with the latch, a keeper secured to the gate and limiting the movement of the lower arm of the rock-shaft, operating levers, the connecting bars provided with depending struts and having truss wires, and the plates secured to the inner ends of the connecting bars and pivoted to the upper arm of the rock-shaft and secured to the outer ends of the connecting bars and pivoted to the operating levers the latter plates being twisted, substantially as described.

2. The combination of a swinging gate having a latch, a rock-shaft journaled on the gate and arranged vertically and provided at its lower end with an arm connected to the latch, said rock-shaft having its upper end threaded and provided with a flange having teeth on its upper face, an arm provided on its inner end with teeth engaging those of the flange, a nut securing the arm to the upper end of the rock-shaft, and operating levers connected with the upper arm of the rock-shaft, substantially as described.

504,858. LUNCH-BUCKET. LOUIS MANOUILE, Cottage Grove, Oreg. Filed May 23, 1893. Serial No. 475,264. (No model.)



*Claim.*—1. In a lunch bucket, the combination of a containing pail provided in its sides adjacent to its bottom with vents, and having a removable lid or cover, a horizontally-disposed imperforate partition arranged in the pail to form a superjacent food compartment and a subjacent heating chamber, a removable tray fitting in the upper portion of said compartment with its bottom spaced from the said partition to form a liquid receptacle, said bottom being provided with perforations, means to close said perforations, an annular guard depending from the under surface of said partition adjacent to the vents in the sides of the pail and terminating at its lower edge below the lower sides of said vents, and a heating device fixed in the heating chamber beneath the center of the partition, substantially as specified.

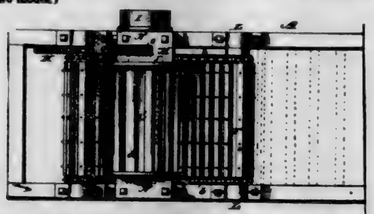
2. In a lunch bucket, the combination of a containing pail provided with a removable lid or cover, and an intermediate horizontally-disposed imperforate partition forming a superjacent food compartment and a subjacent heating chamber, said heating chamber being provided with suitable vents, a heating device arranged in said heating chamber, a removable tray fitted in the top of the food compartment and having a perforated bottom which is spaced from said imperforate partition to form a liquid receptacle, and a rotary slide or cut-off fitted in the tray, resting upon the bottom thereof and provided with perforations to agree with the perforations in the said bottom, and means whereby the slide or cut-off may be rotated, substantially as specified.

3. In a lunch bucket, the combination of a containing pail provided at its top with a removable lid or cover bearing an annular ring or fruit compartment and also provided near its bottom with a hinged door or closure and an adjacent annular series of vents, a horizontal imperforate partition arranged in the pail to divide the interior thereof to form a food compartment and a subjacent heating chamber, a guard flange depending from said partition, a tray fitted in the top

of the food compartment and forming a solid food receptacle and a liquid food receptacle, and a heating device provided with a diametrically-disposed strap to engage a keeper and a spring tongue fixed to the bottom of the pail, substantially as specified.

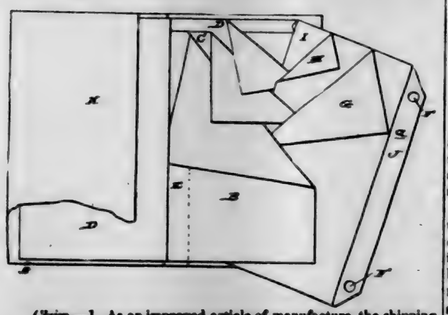
4. In a lunch bucket, the combination with a containing pail provided with a suitable lid or cover, and having an intermediate horizontal partition forming a superjacent food compartment and a subjacent heating chamber, the walls of the latter being provided with suitable vents, of a heating device having a filling of fibrous material and provided with a covering of wire gauze or reticulated fabric, a keeper and a spring tongue fixed to the bottom of the pail, and a strap secured diametrically to the under side of the heating device and having a free extremity to engage said keeper, and a turned up opposite extremity to engage said spring tongue and form a handle for the heating device, substantially as specified.

**504,859. BEAN OR GRAIN THRASHING MACHINE.** THOMAS A. MILLER, Stockton, Cal. Filed Apr. 10, 1893. Serial No. 469,738. (No model.)



*Claim.*—A bean or grain thrasher, consisting of a suitable frame, rollers and an endless slatted apron and means for adjusting it, a thrashing cylinder, adjustable disks located at the ends of the cylinder, and followers for holding the disks in their adjusted position, substantially as and for the purpose described.

**504,860. SHIPPING RECEIPT-BOOK.** JOHN D. D. MONTEMER, Stockton, Cal. Filed Jan. 26, 1893. Serial No. 459,863. (No model.)



*Claim.*—1. As an improved article of manufacture, the shipping receipt-book herein described, consisting, essentially, of the covers A, suitably connected together, the shipping order detachably connected to a stub, which in turn is permanently connected to the covers, the detachable shipping-receipt arranged after the shipping-order and next to the same, said shipping-receipt being detachably connected to a stub, which in turn is permanently connected to the covers, the permanent or stationary shipping-receipt arranged after the detachable shipping-receipt, and next to the same, the said permanent shipping-receipt, which is designed to remain in the book and form a permanent record, being permanently connected to the covers, the flap K, attached to the cover A, the waxed paper I, the pasteboard bar *a*, provided with the holes F, the carbon sheets H G, attached to the cloth J, and the cloth J, all substantially as shown and described.

2. A shipping receipt-book substantially as described, provided with an original and two duplicate sheets, in combination with the holding flap K, attached to the inside of one of the covers, and the carbon attachment consisting of the waxed paper I, the pasteboard bar *a*, provided with the holes F, and the carbon sheets H, G, attached to the cloth J, which is attached to the bar *a*, all substantially as shown and described.

3. As an improved article of manufacture, the shipping receipt-book herein described, consisting, essentially, of the covers A, suitably connected together, the shipping order B, detachably connected to a stub, which in turn is permanently connected to the covers, the detachable shipping-receipt C, arranged after the shipping-order and next to and narrower than the same, said shipping-receipt C, being detachably connected to a stub, which in turn is permanently connected to the covers, the permanent or stationary shipping-receipt D, of same width as and arranged after the detachable shipping-receipt C, and next to the same, the said permanent shipping receipt, which is designed to remain in the book and form a permanent record, being permanently connected to the covers, the flap K, attached to the cover A, the waxed paper I, the pasteboard bar *a*, provided with the holes F, the carbon sheets H G, attached to the cloth J, and the cloth J, all substantially as shown and described.

**504,861. STEEL-FOUNDING.** JAMES G. MCROBERTS, St. Louis, Mo. Filed July 5, 1893. Serial No. 479,928. (No model.)



*Claim.*—1. The herein described improvement in the art of steel founding the same consisting in introducing the steel through a dry sand gate and forming the casting in a wet sand mold, as set forth.

2. The herein described improvement in the art of founding steel the same consisting in introducing the steel through a dry sand gate into and through out a green sand mold, and so that the heat of the molten steel shall skin-dry the mold-walls in advance of the progress of the metal through the mold.

**504,862. SEEDING-MACHINE.** JAMES F. PARKS, Sandhill, Tenn. Filed Apr. 15, 1893. Serial No. 470,494. (No model.)

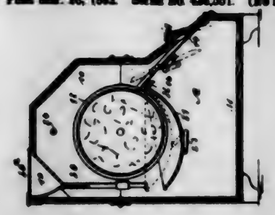


*Claim.*—1. The combination with a seeding machine of the character described, of the hopper having slotted ends, the adjustable inner hopper having slotted sides and ends, and the bolts engaging the slots in both of the said hoppers, substantially as and for the purpose set forth.

2. The body E, supported by a land roller and a furrow opener, the feeding plates located upon the body having seed-apertures, and operated by means of sprocket wheels and chain, the hopper K, having slotted ends, the springs for holding the hopper upon the said body, the inner hopper comprising the side and end pieces L and M, respectively each having a slot, and the bolts and nuts for adjustably securing the inner hopper in the said hopper K, the cross partition *n*, and the weighted ejector adapted to engage the said apertures in the said feed plates, substantially as and for the purpose set forth.

3. The combination with a seeding machine of the character described, the hopper K, the slotted pieces comprising the adjustable inner hopper, the cross partition with which the inner hopper is provided, the cut off Q, secured to the bottom of the said cross partition, and the weighted ejector, substantially as and for the purpose set forth.

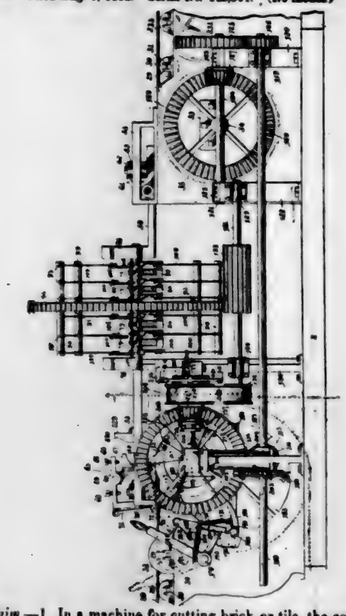
**504,863. ICE-CREAM FREEZER.** JAMES K. PATTERSON, Cross, Ind. Filed Mar. 25, 1892. Serial No. 426,551. (No model.)





*Claim.*—The combination with the freezing cylinder, of a pivoted scraper at one side of the cylinder, a cream pan below the cylinder, pivoted at one end adjacent to the cylinder, and arranged eccentrically with respect to the cylinder to project beyond the same at its free end, and a hopper having a vertical spout delivering to such projected end, the scraper being pivoted independent of the cream pan, and resting when in its normal position on the pivoted end of the pan, substantially as described.

**504,864. BRICK OR TILE CUTTER.** HORACE A. RICOE, Plymouth, Ohio. Filed Aug. 9, 1892. Serial No. 442,591. (No model.)



*Claim.*—1. In a machine for cutting brick or tile, the combination with the framework, of a rotatable cutting device, a support for the same, means for reciprocating said cutting device, a gear adapted to engage teeth upon the cutting device, at any point of reciprocatory travel thereof, and means for intermittingly rotating said gear, substantially as specified.

2. In a machine for cutting brick and tile, the combination with the framework, of a rotatable reciprocating cutting device, a reciprocating peripheral support for the same, cross-bars carried by the cutting device, cutters carried by the cross-bars gear adapted to rotate said device, and engaged therewith at any point of its reciprocatory travel, and means for intermittingly rotating said gear, substantially as specified.

3. In a machine for cutting brick and tile, the combination with the framework and table, of a rotatable cutting device mounted for longitudinal reciprocation, a peripheral support, radially-disposed cutters, a fixed gear adapted to rotate said cutting device, and means for intermittingly rotating said gear, substantially as specified.

4. In a machine for cutting off brick and tile, the combination with the table, of a rotatable reciprocatory cutting device having radially disposed cutters, and peripheral teeth, a gear for rotating said cutting device, at any point of its reciprocatory travel and means for intermittingly rotating said gear, substantially as specified.

5. In a machine for cutting off brick or tile, the combination with the table, of a rotatable cutting device mounted for longitudinal reciprocation, a peripheral support therefor, cross bars carried by said cutting device, cutting wires extending radially from the cross-bars, means for reciprocating said cutting device, a gear engaging and adapted to rotate said cutting device, and means for intermittingly rotating said gear substantially as specified.

6. In a machine for cutting off brick and tile, the combination with the table, of a rotatable toothed cutting device having radial cutters, a support for the device, gear adapted to engage said cutting device and rotate the same, and means for communicating intermitting motion to the gear, substantially as specified.

7. In a machine for cutting off brick or tile, the combination with the table, of a fixed longitudinally-disposed shaft mounted adjacent to the table, a rotatable cutting device mounted thereon and provided with radial cutters, and teeth, a gear adapted to engage and rotate said cutting device, and means for intermittingly rotating the gear substantially as specified.

8. In a machine for cutting off brick or tile, the combination with the table adapted for longitudinal reciprocation, of means for reciprocating the table, a non-rotatable shaft longitudinally disposed with relation to the table, clay-supporting devices supported by the shaft, a rotatable cutting device, a gear adapted to engage and rotate said cutting device, and means for intermittingly rotating the gear substantially as specified.

9. In a machine for cutting off brick and tile, the combination of the table, a rotatable cutting device, a peripheral support having longitudinal movement with the table, cross-bars carried by the rotatable cutter, a fixed shaft longitudinally-disposed with relation to the table, cutting wires between the shaft and the cross-bars of the rotatable cutter, supports for the clay sustained by the shaft, teeth upon the rotatable cutting device, automatic mechanism for engaging the teeth and intermittingly operating the cutter upon a bar of clay, whereby the same is cut into brick, substantially as specified.

10. In a machine for cutting off brick or tile, the combination with the table, and means for automatically reciprocating the same, of a rotatable cutting device having a longitudinal movement therewith, cross-arms carried by the rotatable cutter, a shaft longitudinally disposed with the table, cutting wires between the shaft and cross-arms, supports for the clay sustained by the shaft, and means for automatically rotating the cutter, substantially as specified.

11. In a machine for cutting off brick and tile, the combination with the table, of a pulley supported adjacent to the table, an intermediate shaft longitudinally disposed with relation to the table, and a rotatable cutting device having traveler-wheels journaled therein and riding on the pulley, substantially as specified.

12. In a machine for cutting off bricks and tile, the combination with the table mounted for longitudinal reciprocation, a peripheral support carried thereby, a fixed shaft, clay-supporting arms yieldingly supported by said shaft, a rotatable cutter mounted on traveler wheels for revolving on the peripheral support, substantially as specified.

13. In a machine for cutting off bricks and tile, the combination with the table mounted for longitudinal reciprocation, a peripheral support carried by the table, cutting device mounted for revolving on the peripheral support, means for operating said cutting device, and a clay-supporting arm pivotally mounted on the shaft, and means for adjusting and yieldingly supporting said arm, substantially as specified.

14. In a machine for cutting off bricks and tile, the combination with the table, of means for automatically reciprocating the same, a longitudinally-disposed shaft, a cutting device having a series of cutters carried by the table, and a series of clay-supporting arms yieldingly mounted upon the shaft and having intervening spaces registering with the cutting devices, substantially as specified.

15. In a machine for cutting off bricks and tile, the combination with a reciprocating carriage having an intermediate opening, and means for moving the carriage, of a shaft longitudinally disposed at one side of the opening, a series of rotatable cutters, and a series of yieldingly-supported arms extending from the shaft across the opening and having interrening spaces aligning with the cutting devices, substantially as specified.

16. In a machine for cutting off bricks or tile, the combination with the table, of a shaft located at one side thereof, a rotary cutter moving about the shaft, ears depending from the shaft, an arm extending tangentially outward from the shaft, an arm pivoted intermediate its ends between the ears, a spring interposed between the outer arm and the rear end of the pivoted arm, and a stop mounted on the ears and bearing on the pivoted arm in front of its pivot, substantially as specified.

17. In a machine for cutting off bricks or tile, the combination of a table, a shaft at one side of the same, a hub upon the shaft, an arm extending outward from the hub, ears depending from the hub, a clay-supporting arm pivoted in the ears intermediate its ends, a spring interposed between the arm and the hub and the rear end of the pivoted arm, and an adjustable stop located in front of the fulcrum of the pivoted arm and bearing on said arm, substantially as specified.

18. In a machine for cutting off brick and tile, the combination with a table, of a shaft at one side of the same, a hub upon the shaft, an arm extending outward from the hub, ears depending from the hub, a cross-bar connecting the ears, a bolt threaded therein, an arm fulcrumed intermediate its ends within the ears and borne upon by the bolt, an eye-bolt passed through the rear end of the arm and having its upper end terminating in an eye pivotally connected with the outwardly-disposed arm of the hub, an adjustable head threaded on the bolt, and a coiled spring encircling the bolt and interposed between the head and the pivoted arm, substantially as specified.

19. In a machine for cutting off brick or tile, the combination with

a suitable support, and a table, of a shaft located adjacent the table, a rim encircling the shaft, reversely-disposed yokes mounted on the shaft, and cutters connecting the yokes and rim, substantially as specified.

20. In a machine for cutting off brick and tile, the combination with a suitable support or table, of a shaft adjacent thereto, a rim having a series of transverse arms, reversely-disposed yokes mounted loosely on the shaft and arranged in series, and wires connected to the yokes and at intervals to the transverse arms, substantially as specified.

21. In a machine for cutting off brick or tile, the combination with the table, the shaft adjacent thereto, a rim, yokes loosely and reversely mounted on the shaft and removably interlocking at their centers with each other, and cutters leading from the yokes to the rim, substantially as specified.

22. In a machine for cutting off brick or tile, the combination with a table, of a shaft located adjacent thereto, a rim, yokes loosely mounted on the shaft and removably connected to each other, and cutting devices between the rim and yokes, substantially as specified.

23. In a machine for cutting off brick or tile, the combination with a table, of a shaft located adjacent thereto, a rim encircling the shaft, reversely-disposed yokes mounted loosely on the shaft, cutting devices between the rim and yoke, and means for adjusting the same, substantially as specified.

24. In a machine for cutting off brick or tile, the combination with the table, a shaft adjacent thereto, a rim encircling the shaft, of reversely-disposed yokes having intermediate arch portions embracing the shaft, and lugs engaging the arches of each other, and cutting devices between the extremities of the yokes and rim, substantially as specified.

25. In a machine for cutting off brick or tile, the combination with the table, the shaft, the rim encircling the shaft, of a pair of yokes having central arched portions and interlocking lugs embracing the shaft and removably engaging each other, said yokes terminating at their ends in angular portions having perforated lugs and provided with pins, threaded bolts mounted in the perforations, nuts for the bolts, wires connected to the rim, to the pins, and to the bolts, substantially as specified.

26. In a machine for cutting off brick or tile, the combination with a table, a shaft adjacent thereto, a pulley mounted on the shaft, a rim encircling the same, traveler-wheels between the rim and pulley, arms extending transversely through the rim, of a series of reversely-disposed yokes located at intervals on the shaft, and wire cutters extending from the arms to the ends of the yokes, substantially as specified

27. In a machine for cutting off brick or tile, the combination with a table having an opening, a shaft at one side thereof, and a pulley on the shaft, of a rim surrounding the pulley, a series of yokes, wire-cutters between the yokes and rim, transverse arms passing through the rim for connection with the outer ends of the cutters, a series of hubs located on the shaft between the series of yokes and at each side of the pulley, and clay-supporting arms pivotally connected with the hub and spaced apart to receive the wires, substantially as specified.

28. In a machine for cutting off brick or tile, the combination with a table having an opening, and a shaft located at one side of the opening, of a separable pulley mounted on the shaft, a rim encircling the pulley and having wheels riding thereon, transverse arms extending through the rim, a series of pairs of yokes reversely disposed and embracing the shaft, wire-cutters between the outer ends of the yokes and the arms, hubs cast upon the shaft between the yokes, and yieldingly supported arms pivoted on the hubs, extending into the opening of the table, and provided with spaces for the reception of the wire-cutters, substantially as specified.

29. In a machine for cutting off brick or tile, the combination with a sectional table, a belt mounted for movement thereover, of means for raising and lowering said sections independently, substantially as specified.

30. In a machine for cutting off brick or tile, the combination with a sectional table, a belt moving thereover, of means for raising and lowering said sections independently, and means for locking the same at any point of their adjustment, substantially as specified.

31. In a machine for cutting off brick or tile, the combination with a sectional table, a belt moving thereon, of means for raising and lowering the upper section thereof, and a hinge-connection between the meeting ends of the sections, substantially as specified.

32. In a machine for cutting off brick or tile, the combination with a table divided from a point in front of its end to its end in a horizontal manner forming upper and lower sections, of a belt moving over the table, a hinge-connection at the adjacent ends of the sections, a pair of slotted standards, bolts extending through the slots in the standards, and nuts mounted on the ends of the bolts, substantially as specified.

33. In a machine for cutting off brick or tile, the combination with the horizontally divided table forming upper and lower sections hinged at their inner ends, said upper section being provided with a horizontal slot at each side, a metal frame surrounding each slot and forming upper and lower horizontal guides, and a lower lug, of journal boxes mounted for sliding in the guides, set-screws passed through the ends of the frames bearing on the boxes, standards secured to the lower section and having brackets, bolts passed through the standards and bearing against the lugs, a drum mounted between the walls of the table, a shaft for the drum journaled in the boxes, and a bolt passing over the drum, substantially as specified

34. In a machine for cutting off brick or tile, the combination with the framework, a rotary cutter located adjacent thereto and provided with an uninterrupted series of teeth, a counter-shaft supported adjacent to the cutter, gear thereon engaging the teeth of the cutter, master-gear, and means for rotating the same and counter-shaft intermittingly, substantially as specified.

35. In a machine for cutting off brick or tile, the combination with the framework, the rotary cutter having an uninterrupted series of teeth, the counter-shaft, gear mounted thereon and engaging the teeth of the cutter, of means for intermittingly rotating the counter-shaft, substantially as specified

36. In a machine for cutting off brick or tile, the combination with the framework, and the rotary cutter, having an uninterrupted series of peripheral teeth, of an intermittingly operated train of gearing engaging therewith, substantially as specified.

37. In a machine for cutting off brick or tile, the combination with the framework, the rotary cutter, a longitudinal shaft at the side of the frame, a clutch thereon, a master-gear, a pinion mounted on the longitudinal shaft and engaging the master-gear, means for driving the master-gear, automatic means for disengaging and engaging the clutch with the pinion, and means for transmitting motion from the longitudinal shaft to the rotary cutter, substantially as specified.

38. In a machine for cutting off brick or tile, the combination with the framework, the master gear, and means for driving the latter, of a shaft located at one side of the master-gear, a gear mounted loosely on the shaft and engaging the master-gear, a clutch splined upon the shaft, means for communicating motion from the shaft to the cutters, and devices carried by the master gear for alternately throwing the shaft-gear into and out of operation with said clutch, substantially as specified.

39. In a machine for cutting off brick or tile, the combination with the framework, the cutter, the master-gear, and means for operating the same, of a longitudinal shaft, a gear mounted loosely on the shaft and having a hub a pawl pivoted on the hub, a spring for pressing the pawl inwardly, a disk fixed upon the shaft and having a shoulder, cam-lugs mounted on the master-gear and extending into the path of the tail of the pawl, and means for communicating motion from the shaft to the cutter, substantially as specified

40. In a machine for cutting off brick or tile, the combination with the framework, the rotary cutter, the longitudinal shaft 205, means for operating the same intermittingly and for communicating motion therefrom to the cutter, of a pulley mounted rigidly on the shaft, and a brake-lever yieldingly pressed into contact with the pulley, substantially as specified.

41. In a machine for cutting off brick or tile, the combination with the framework, the rotary cutter, the longitudinal shaft 205, means for intermittingly operating the same, of a pulley mounted to rotate with the shaft and having a recess in its periphery, and a brake-lever pivoted adjacent to the pulley and yieldingly supported in contact therewith and provided with a tooth for engaging with the recess, substantially as specified

42. In a machine for cutting off brick or tile, the combination with the framework, a rotary cutter, a drum mounted in the framework, of a friction gear mounted at the side of the drum and provided with counter-sunk portions, a small friction gear located adjacent to the large friction gear and contacting therewith, means for communicating intermitting motion from the large friction gear to the cutter, a pivoted pawl located at one side of the large friction gear and adapted to engage teeth on the gear, means for retracting the pawl, and pins carried by the drum for reciprocating the pawl, substantially as specified.

43. In a machine for cutting off brick or tile, the combination with the framework, the drum mounted therein, the rotary cutter, the friction pulley, the segmental teeth secured to the pulley, the shaft for the pulley, and the gear mounted on the shaft and moving with the pulley, of a train of gear engaging with the gear and with the cutter, an oscillating pawl pivoted to the framework, means for retracting the same, pins mounted on the drum for oscillating the pawl into engagement with the teeth of the pulley, a small friction-pulley for engaging with the large one, and means for driving the small pulley, substantially as specified.

44. In a machine for cutting off brick or tile, the combination with the framework, the cutter, the master-gear having teeth, and the drum having pins, of the lever pivoted to one side of the master-gear, a pawl pivoted to the lower end of the lever and adapted to engage the teeth, a spring connecting the pawl and lever, a stop on the lever for the pawl; an inclined lug on the rear side of the lever adapted to be struck by pins on the drum, a bell-cranked hand-lever having its lower branch contacting with the said lever and adapted to engage with the shoulder on the same, and a coiled spring connecting the lever and hand-lever, substantially as specified

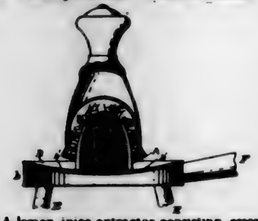
45. In a machine for cutting off brick or tile, the combination with the framework, the cutter, the rotary drum, the master-gear, means for operating the same, and for transmitting intermittent motion from thence to the cutter, of recesses formed in the inner side of the master-gear, spring-pressed detents or pawls for yieldingly engaging the same, and devices mounted on the drum for removing the pawls from such engagement, substantially as specified

46. In a machine for cutting off brick or tile, the combination with the framework, the cutter, the rotary drum, the master-gear, means for operating the same, and for transmitting intermittent motion from thence to the cutter, of a track located upon the inside of the gear and provided with recesses, a pawl pivoted and spring-pressed into engagement with the recesses, a lever fulcrumed at the inner side of the pawl and loosely connected therewith and extending into the path of pins projecting from the drum, and a spring for yieldingly pressing the lever upon the track, substantially as specified

47. In a machine for cutting off brick or tile, the combination of the front and rear feeding and delivery sections of the framework, and the drums and their belts located thereon, said drums being opposite each other at the inner ends of the sections, band wheels upon the shafts of the drums, a yieldingly supported tightener pulley bearing against the under side of the belt connecting the band-wheels, of tracks or guides mounted on the sections, a reciprocating carriage mounted on the tracks or guides, the rear bottom section of the carriage normally overhanging the front drum of the delivery section, means for reciprocating the carriage entirely over the drum of the delivery section, a cutter mounted on the carriage, means for operating the cutter and moving the belts, substantially as specified



## 504,365. LEMON-JUICE EXTRACTOR. JACOB ROBERTS, Poughkeepsie, N. Y. Filed Apr. 13, 1893. Serial No. 307,196. (No model.)



*Claim.*—1. A lemon juice extractor consisting, essentially, of a dome-shaped support having ribbed or roughened surfaces and rigidly mounted upon legs, and an independent elastic shell or hand piece having a smooth interior surface and diametrically opposite notches in its lower edge, said support and hand piece being adapted and arranged to operate substantially in the manner and for the purpose set forth

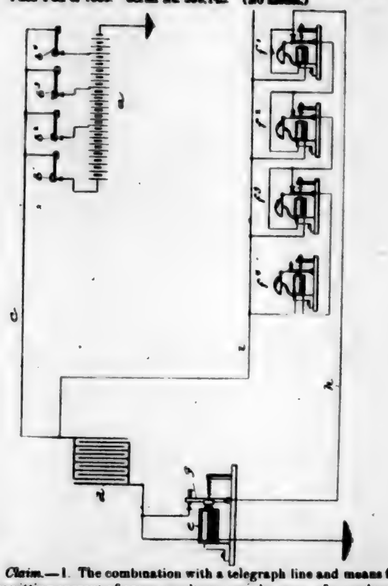
2. In a lemon juice extractor, the combination with the dome-shaped support having a ribbed or roughened surface, of a shell or hand piece consisting of two sections connected by a spring or clamp, and formed so as to be adapted to receive half a lemon and to be rotated with the same, on the dome-shaped support, substantially as specified

## 504,366. PUMP. FREELAND H. ROMANS, Bentonville, Ark. Filed Nov. 4, 1892. Serial No. 450,994. (No model.)



*Claim.*—In a pump, the combination with a cylinder, of a pipe entering the center of the end thereof, pins projecting inwardly from the said end of the said cylinder, a pivoted handle, a piston rod adjustably connected therewith and having a shouldered and threaded lower end contained in the said cylinder, a button mounted on the said rod and bearing on the shoulder thereon, a threaded button working on the threads on the said rod and having depressions thereon adapted to engage the said pins in the said cylinder upon the extension of the said rods and hemispherical washers mounted on the said rod and having their open ends closed by the said buttons and their rounded ends abutting, substantially as described

## 504,367. CONDENSER TELEGRAPH SYSTEM. CHARLES H. ROOT, Brantford, assignor to the Western Electric Company, Chicago, Ill. Filed Feb. 8, 1889. Serial No. 299,140. (No model.)



*Claim.*—1. The combination with a telegraph line and means for transmitting current of varying voltage over the same, of a condenser at a distant station included in said telegraph line, means adapted to discharge said condenser through a local circuit, and signaling devices in said local circuit, each adapted to respond to a different current strength, substantially as described.

2. The combination with a battery at the sending station, of a telegraph line connected with keys, each of which when depressed, acts to close a different portion of said battery to said line, said line extending to a distant station and there being connected to a condenser, a condenser discharger included in circuit with the condenser, and adapted to discharge the condenser through several electro magnetic signaling devices included in a local circuit and each adapted to respond to a different current strength, substantially as and for the purposes described

3. The combination with a battery at the sending station, of a telegraph line connected with keys adapted to close different portions of said battery to said line, said line extending to a distant station and there being connected with a condenser, a condenser discharger included in said circuit, electro magnetic devices included in the circuit which is closed by the condenser discharger, said electro magnetic devices being connected in a local circuit including a battery, said local circuit being branched through different translating devices, whereby on varying the voltage of the current sent to line from the transmitting station the different translating devices may be operated one at a time at the will of the operator at the sending station, substantially as and for the purpose specified

4. The combination, with a battery at the sending station, of a telegraph line connected with keys adapted to close different portions of said battery to said line, said line extending to a distant station and there being connected to a condenser, a condenser discharger included in said line and adapted to be actuated by the current flowing into said condenser, and when actuated, to discharge said condenser through a local circuit, and electro magnetic signaling devices adapted each to respond to a different current strength included in the circuit through which the condenser is discharged, as and for the purpose specified

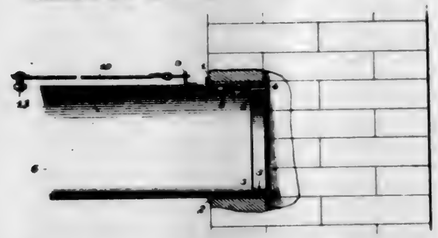
## 504,368. WIRE-STRETCHER. ANTHONY SCHALK and ARNOLD WEIHARDT, New Riegel, Ohio. Filed May 5, 1893. Serial No. 473,134. (No model.)



*Claim*.—1. A wire stretcher comprising a frame composed of parallel sides provided with bearing openings, and a back secured to the sides and projecting outward laterally and forming an exterior stop shoulder extending the entire length of the frame, pins arranged in the bearing openings, and keys passing through the pins and engaging the stop shoulder, substantially as described

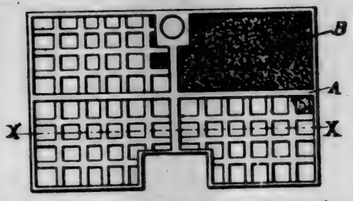
2. A wire stretcher comprising a frame composed of sides having bearing openings, and a back secured to the sides and projecting laterally from them and forming stop shoulders, pins arranged in the bearing openings and having squared ends and provided with shoulder enlargements at the inner ends of the squared portions, and keys passing through the pins and engaging the squared shoulders, substantially as described

**504,369.** STOVEPIPE AND THIMBLE FASTENER. WILLIAM H. SCOTT and GEORGE W. WISNER, Manhattan, Kans. Filed Apr. 17, 1893. Serial No. 470,718. (No model.)



*Claim*.—The combination of a stove pipe thimble provided at its outer end with an annular flange and having between its ends an inwardly extending bolt, the clips secured to the inner end of the thimble and having their outer ends bent outwardly at an angle and their other ends bent inwardly at an angle, a stove pipe provided with a perforated lug and having a bayonet slot to engage said bolt, and a stay wire secured to the perforated lug, substantially as described.

**504,370.** SECONDARY BATTERY. WILLIAM L. SILVEY, Lima, Ohio. Filed July 3, 1892. Serial No. 439,363. (No model.)




*Claim*.—1. The process of making secondary battery plates which consists in preparing plates with perforations or openings filling the openings and covering the sides of the plate with an oxide of lead in the form of a dry powder, then uniting them together by combining them with a solution containing sulphuric acid, and afterward forming them in another solution.

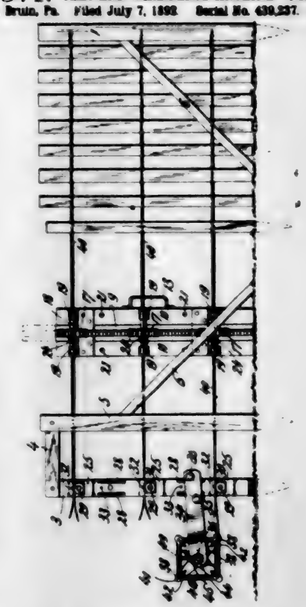
2. The process of making secondary battery plates which consists in preparing a plate with ribs and perforations, filling the perforations with powdered oxide of lead in a dry state, then pickling the whole in a bath of a solution containing sulphuric acid until the oxide has become hardened and afterward forming them by the passage of an electric current.

3. The process of making secondary battery plates which consists in making a support plate with perforations, filling the perforations with oxide of lead in a dry state then pickling the whole in an acid solution and afterward forming the plates ready for use

4. The process of making secondary battery plates which consists in preparing perforated plates of metal, placing the perforated plates on porous sheets of a nonconducting material, filling the perforations in the metal conducting plate with a dry powdered oxide of lead, then pickling the whole in a solution of sulphuric acid and afterward forming the plates ready for the

5. The process for making secondary battery plates which consists in laying suitable open frames or grids horizontally on porous plates, then filling the openings in the frames or plates with an oxide of lead in the form of a loose dry powder then immersing the whole in an acid solution and leaving it remain therein until the powder has become thoroughly hardened into an adherent mass in contact with the frame, then removing the plates thus hardened and afterward assembling them and forming them in the usual manner

**504,371.** SLAT-AND-WIRE-FENCE MACHINE. NELSON F. STANTON, Bruin, Pa. Filed July 7, 1892. Serial No. 439,237. (No model.)



*Claim*.—1 In a machine for wiring wood fences, the combination with one or more cog wheels for crossing the wire strands between the fence palings, of a rack-bar for actuating said wheels, a spring catch for holding the rack bar in its raised or lowered position against the tension of the wire strand, said catch comprising a loop having shoulders at different points in its length, and a pin or stud to engage with said shoulders to secure said rack bar in either of its two positions, substantially as and for the purposes described.

2. In a machine for wiring wood fences, the combination with mechanism for crossing the wire strands, of a clamping post for securing said strands while being crossed, said post having upon its opposite faces parallel ribs, clamping blocks having parallel ribs to bind the wire strands at different points and next to the parallel ribs on the post and provided with a pin to lie over the wire strands, and means for securing said blocks to the post, substantially as and for the purposes described

3 In a machine for wiring wood fences the combination with mechanism for crossing the wire strands, of a clamping post for securing said strands while being crossed, a bolt or rod passed transversely through said clamping post, a removable pin passed through the post and the cross rod or bolt therein for securing said rod or bolt against rotation and longitudinal movement, clamping blocks provided with ribs on their inside faces and supported on opposite sides of the clamping post by said transverse rod or bolt, and means for binding said blocks to said post, substantially as and for the purposes described

4 In a machine for wiring wood fences, the combination with mechanism for crossing the wire strands and a clamping post for securing said strands while being crossed, of a reel for feeding the wire to form the fence strand and for drawing taut said wire, said reel being supported from the clamping post by means of arms permitting the reel to be raised and lowered on said post, and bolts passed through said arms on opposite sides of the clamping post in different horizontal planes, substantially as and for the purposes described

5 In a machine for wiring wood fences, the combination with mechanism for crossing the wire strands and a clamping post for securing said strands while being crossed, of arms extending from said clamping post, a reel rotatably supported upon said arms, and means for compressing the ends of the arms at the point where the reel is journaled therein for binding said reel between its supporting arms to hold it against rotation while the tension is on the wire strand, substantially as and for the purposes described

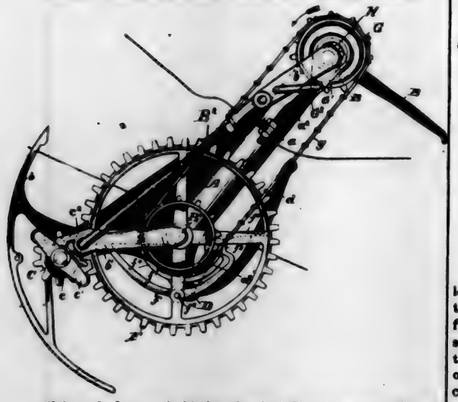
6 In a machine for wiring wood fences, the combination with mechanism for crossing wire strands and a clamping post for securing said strands while being crossed, of arms extending from said clamping post, a reel supported by said arms, said reel having elongated slots in its sides, rods or bolts extending from one side to the other of the reel and adjustable in said slots, and means for holding said rods or bolts to their adjustment, substantially as and for the purposes described.

7. In a machine for wiring wood fences, the combination with mechanism for crossing the wire strands and a clamping post for securing said strands while being crossed, of arms extending from the clamping post, a reel supported in said arms, the reel comprising a shaft, radial arms one set of which is removable, a washer for holding the removable arms in place, and a nut applied to the shaft of the reel and bearing against one of the side arms for clamping the reel against rotation, substantially as and for the purposes described.

8. In a machine for wiring wood fences, the combination with mechanism for crossing wire strands and a clamping post for securing said strands while being crossed, of arms extending from said clamping post, a reel supported by said arms, and a drum forming a part of said reel and serving for winding the wire of the fencing strand while the same is being drawn taut, substantially as and for the purposes described.



**504,372.** AUTOMATIC GRAIN-BINDER. JOHN F. STEWARD, Chicago, Ill. Filed Apr. 15, 1893. Serial No. 470,401. (No model.)



*Claim*.—1. In a grain binder, the shaft B which moves all parts directly concerned in the operation of binding, in combination with the eccentric H, the arm $b^3$, the arm G' and the link $G^3$, substantially as described.

2. Combined with the shaft B, the adjustable eccentric H loosely mounted thereon, the driving wheel G having the arm G', free to rotate upon the said eccentric, the arm $b^3$ and the link $G^3$, all combined substantially as described.

**504,373.** GRAIN-BINDER. JOHN F. STEWARD, Chicago, Ill. Filed Apr. 19, 1893. Serial No. 471,045. (No model.)

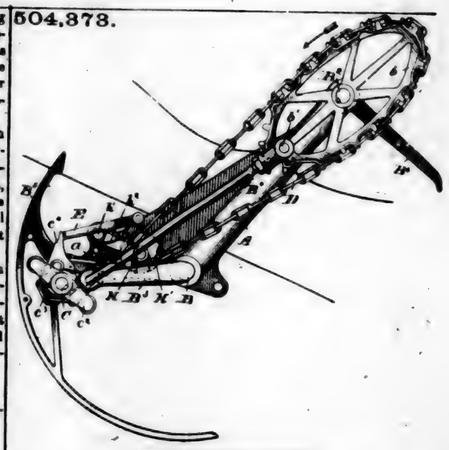
*Claim*.—1. In a grain binder, in combination with the parts directly concerned in the operation of binding, and with the continuously moving driving shaft C, the sprocket wheel $c^3$, the elliptic sprocket wheel $b$, and the chain connecting said sprocket wheels, substantially as described.

2. In combination with the continuously running shaft C, and the shaft $B^3$ from which all of the parts of the binder directly concerned in the operation of binding are moved, the sprocket wheel $c^3$, the elliptic sprocket wheel $b$, and the crossed chain D, all combined, substantially as described.

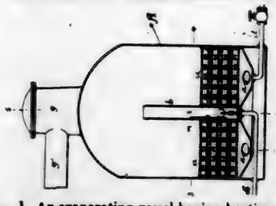
3. In combination with the packer shaft C and the shaft $B^3$ that gives motion to the parts directly concerned in the operation of binding, the sprocket wheel $c^3$ upon the former, and the sprocket wheel $b$ upon the latter, and having the crossed chain thrown therearound, and the centrally flanged anti-friction roller H, all combined substantially as described.

4. In combination with the packer shaft C and the shaft $B^3$ that gives motion to the parts directly concerned in the operation of binding, the sprocket wheel $c^3$ upon the former, and the sprocket wheel $b$ upon the latter, and having the crossed chain thrown therearound, and the elastically held centrally flanged anti-friction roller, all combined substantially as described.

**504,378.**



**504,374.** VACUUM APPARATUS. MAGNUS SWENSON, Fort Scott, Kans. Filed Dec. 3, 1891. Serial No. 413,869. (No model.)



*Claim*.—1. An evaporating vessel having heating devices in the lower portion, and inlet and discharge pipes so located that the liquid to be evaporated is caused to flow horizontally through the vessel from end to end, said vessel having at the discharge end a chamber separated from the evaporating chamber, but communicating laterally therewith through an opening in one of its walls, said opening being of larger area than the outlet pipe which communicates with said discharge chamber, substantially as specified.

2. An evaporating vessel having, in the lower portion, heating devices separated by a vertical partition extending part way throughout the length of the evaporating chamber, said partition inclosing a discharge chamber and having, in one of its walls, an opening through which the liquid can overflow from the evaporating chamber into the discharge chamber within the partition, substantially as specified.

3. An evaporating vessel having, in the lower portion, heating devices separated by a vertical partition extending part-way throughout the length of the evaporating chamber, said partition being hollow throughout its entire extent and having, in one of its walls at the discharge end of the evaporating chamber, an opening through which the liquid can pass from the evaporating chamber, substantially specified.

4. An evaporating vessel having heating devices in the lower portion, and having, at one end, a discharge chamber separated from the evaporating chamber, but having in one of its walls an opening or passage of larger area than the discharge pipe, in combination with a float valve contained in said discharge chamber, and governing the exit therefrom, substantially as specified.

5. An evaporating vessel having heating devices in the lower portion, and having, at one end, a discharge chamber separated from the evaporating chamber, but having in one of its walls an opening or passage of larger area than the discharge pipe, said wall also having an adjustable slide or gate whereby the level of overflow into the discharge chamber can be regulated, substantially as specified.

6. An evaporating vessel having, in the lower portion, heating devices on opposite sides of a hollow partition extending part way throughout the length of the evaporating chamber, one part of said hollow partition constituting a vapor flue, and the other part constituting a discharge chamber for the liquid, one of the walls of this latter portion of the hollow partition having an opening through which the liquid can pass from the evaporating chamber into the discharge chamber, substantially as specified.

**504,375. HEEL-SWEEP FOR PLOWS.** HENRY D. TERRELL, Covington, Ga. Filed Feb. 6, 1893. Serial No. 461,191. (No model.)



*Claim.*—The herein described heel-sweep attachment for plows, the same consisting of the steel strip bent to form the sweep, said sweep having its rear face beveled from a common or center line to its upper and lower edges, and its lower beveled edge provided with a heel-bolt opening, substantially as specified.

**504,376. KITCHEN UTENSIL.** JOSEPH M. TILMAN, Evansville, Ind., assignor of one-half to J. W. Compton, same place. Filed May 9, 1893. Serial No. 473,568. (No model.)



*Claim.*—1. The herein described scraper, the same being formed of sheet-metal and having a series of straight and curved edges, and provided with countersunk recesses punched from opposite sides thereof, forming convex portions 11 substantially as specified.

2. The herein described scraper, the same being formed of sheet-metal and consisting of two lower angles 1—2, the straight edges, 3—4, the curved edges 5, 9, 10, and 6 of varying proportions, and the recesses 7 and 8 occurring between the edges 9, 10 and 6, substantially as specified.

**504,377. CART FOR TRANSPORTING TELEGRAPH-POLES, &c.** JOHN TITUS, Oyster Bay, and WILLIAM TITUS, North Hempstead, N. Y. Filed June 24, 1891. Serial No. 397,356. (No model.)

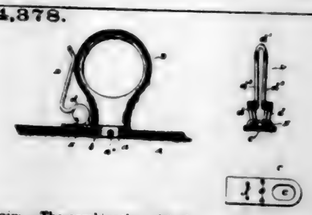


*Claim.*—1. A vehicle for transporting telegraph poles and other long timbers, consisting of a single wheeled axle having a draft pole, a roller supported above and substantially parallel with the axle, a ratchet secured to the middle of the roller, a chain secured by each end to the roller each side of the ratchet, an operating lever having a pawl engaging the ratchet, and a stop pawl for the ratchet, substantially as described.

2. The combination fastening device composed of the plate, *m*, chain, *n*, and the stud, *r*, with the tongue C, wheel axle A, windlass roller F, and loop chain G, all substantially as and for the purpose herein set forth.

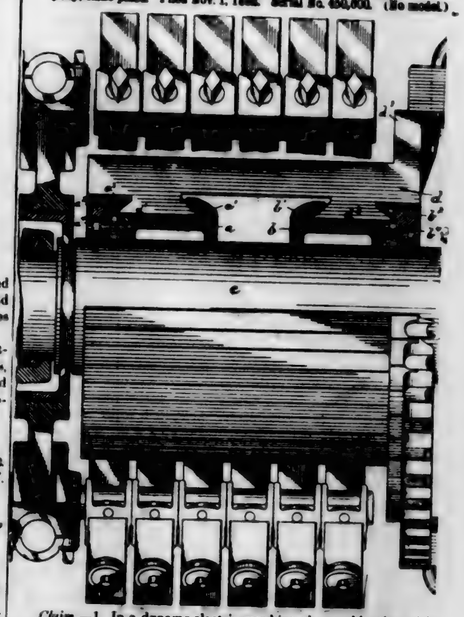
**504,378. TRACE OR REIN SUPPORTER.** JOHN J. A. VAN PATTEN, Schenectady, N. Y. Filed Apr. 22, 1893. Serial No. 471,316. (No model.)

**504,378.**



*Claim.*—The combination with the terret and strap, of the plate C, the spring fork or catch secured to said plate and comprising a spring wire or other spring metal which is bent upon itself at *d'*, providing the parallel sides $d^2$ $d^3$ which are bent so as to form a double-S, and formed at their extreme ends into the double coils *d d* whose ends pass through holes in the plate C and are secured beneath the same, together with the clip or loop E passing through said coils and adapted to hold the spring down firmly upon the plate, substantially as described.

**504,379. COMMUTATOR FOR DYNAMO-ELECTRIC MACHINES.** ELBERT P. WARNER, Chicago, Ill., assignor to the Western Electric Company, same place. Filed Nov. 1, 1892. Serial No. 450,600. (No model.)



*Claim.*—1. In a dynamo electric machine, the combination with a shaft, of sleeves thereon, one or more of which is free to move longitudinally, and commutator bars supported by said sleeves, substantially as described.

2. A commutator composed of bars mounted upon sleeves, one or more of which is free to move longitudinally along the axis of rotation, substantially as described.

3. The combination with a shaft, of sleeves thereon, one or more of which is free to move longitudinally, commutator bars each supported at or near its ends by said sleeves, and collecting brushes bearing upon said commutator bars, substantially as described.

4. The combination with a shaft, of sleeves thereon, one or more of which is free to move longitudinally, said sleeves being provided with annular grooves upon their peripheries, and commutator bars provided with feet adapted to be held in said grooves, substantially as described.

5. In a commutator of a dynamo electric machine, the combination with a shaft, of sleeves fitting loosely thereon, commutator bars attached by their ends to said sleeves, and a rigid connection between said commutator bars and the coils of the armature, substantially as described.

6. The combination with a shaft, of the sleeves thereon, one or more of which is free to move longitudinally, said sleeves being provided with annular grooves having oblique sides, commutator bars provided with upwardly tapering feet adapted to be held in said grooves, substantially as described.

7. The combination with a shaft, of sleeves thereon, one or more of which is free to move longitudinally, said sleeves being provided with annular grooves and composed of two parts, whereby feet provided upon the commutator bars and resting in said grooves may be clamped and held, and said commutator bars, substantially as described.

8. In a commutator of a dynamo electric machine, the combination with the shaft *c*, of the sleeves *a* and *b* provided with the tapering grooves *a'* and *b'* respectively, said sleeves being free to move longitudinally upon said shaft, commutator bar *d* provided with tapering feet $d^2$ and $d^3$ adapted to be clamped in said grooves, and the rigid connection between said commutator bars and the coils of the armature, substantially as described.

9. The combination with a shaft, of two or more independently movable supports for the bars of a commutator, and to which said bars are secured; whereby freedom of expansion and contraction for said bars is permitted, substantially as and for the purpose set forth.



**504,380. PHONOGRAPH.** JOHN H. WHITE, Washington, D. C. Filed Nov. 23, 1891. Serial No. 412,811. (No model.)



*Claim.*—1. In a phonograph, and in combination with a recording or reproducing style, a diaphragm composed of a plurality of sheets of substantially the same size laid one against the other.

2. A phonograph diaphragm composed of a sheet of metal and a sheet of glass in close contact with each other, and having their adjacent surfaces cemented together.

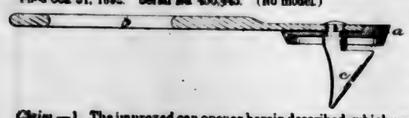
3. In a phonograph the combination with the style and cylinder of a diaphragm composed of sheets of metal and glass in close contact with each other, and a supporting frame for a diaphragm.

4. A phonograph diaphragm composed of alternate sheets of metal and glass in close contact with each other and secured together.

5. A phonograph diaphragm composed of a sheet of glass and a sheet of non-vitreous material in close contact with each other.

6. A phonograph diaphragm composed of a sheet of glass and a sheet of metal connected together.

**504,381. CAN-OPENER.** EDWARD B. WILLIAMS, Newark, N. J. Filed Oct. 31, 1892. Serial No. 450,645. (No model.)



*Claim.*—1. The improved can opener herein described, which consists of a chambered cap, a hook journaled therein, a handle, movably mounted upon said cap and rigidly secured to the shank of said hook; said parts being arranged in relation to one another and operating, as described and for the purpose set forth.

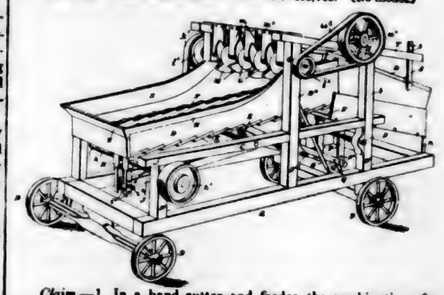
2. The herein described can-opener comprising a handle, one end of which is provided with a chambered cap, and a shouldered hook projecting below the cap, the shoulder of the hook being adjacent to the rim of the cap, substantially as set forth.

**504,382. GAS-HEATER.** FRANK P. ZIEGLER, Milwaukee, Wis. Filed Jan. 6, 1892. Serial No. 417,222. (No model.)



*Claim.*—In a gas heater the combination with a frame or body and a batting of asbestus secured to a vertical face thereof, of a divided burner pipe situated close to the lower portion of the batting, a main gas pipe secured to the body, and connections between each division of the burner pipe and the main gas pipe, substantially as described.

**504,383. BAND-CUTTER AND FEEDER.** CARL H. ZIEBEL, Spencer, Iowa. Filed Feb. 25, 1893. Serial No. 463,715. (No model.)



*Claim.*—1. In a band cutter and feeder, the combination of a longitudinally swinging bundle carrier pan having a notched bottom, a series of band cutting knives arranged to rotate over said pan near its inner end, and an inclined inclosed feed chute leading from the inner end of said pan and having a vibrating top and bottom, substantially as set forth.

2. In a band cutter and feeder, the combination with the oscillating notched bundle carrier pan and the cutters thereover; of a series of alternately vibrating notched feed plates provided at their adjacent edges with toothed flanges and adapted to work under the inner discharging end of said pan and in front of the cylinder of a thrasher, and a vibrating feed box arranged over the top of and inclosing the lower feed plates substantially as set forth.

3. In a band cutter and feeder, the combination with a portable truck frame; of an inclosed feeder pan arranged within said frame, swinging supports for the inner ends of said pan, swinging operating arms arranged on a support under the outer end of the pan and pivotally connected at their upper ends thereto, a multiple crank shaft mounted on said frame under the pan, a pitman connected to one of the cranks of said shaft and adjustably to said swinging operating arms, a series of alternately-vibrating notched feed plates provided with toothed flanges at their adjacent edges and adapted to work under the inner discharging ends of said pan and in front of the thrasher cylinder, vibrating rock arms pivotally mounted on a stationary support on the truck frame and pivotally connected at their upper ends to the upper inner ends of said vibrating feed plates, connecting bars adjustably connected at one end to the lower ends of said vibrating rock arms and at their other ends to said multiple crank shaft, and the band cutting knives, substantially as set forth.

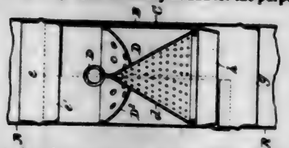
4. In a band cutter and feeder, the combination of a longitudinally swinging bundle carrier pan, the rotary cutters, a series of inclined alternately vibrating notched feed plates arranged to work under the inner discharging end of said pan and in front of the thrasher cylinder, the outer of said feed plates being provided with upwardly extending sides, and an upper vibrating feed box arranged to vibrate over said feed plates and provided with depending sides working therebetween to form therewith an inclosed vibrating feed chute, substantially as set forth.

5. In a band cutter and feeder, the combination with the bundle carrier pan and the cutters; of an inclined series of alternately vibrating feed plates receiving the grain from said pan and inclosed by oppositely upwardly extending sides attached to the outer of said feed plates, an upper vibrating feed box arranged over said feed plates and having depending sides working between the inclosing sides of said feed plates and the inner ends of the pan, and notched feed bars facing said feed plates, adjustable swinging supports pivotally attached to the lower end of said box and adjustably to a suitable point of support, and a rotating crank shaft loosely connected to the upper inner end of said feed box, substantially as set forth.

**504,384. STRAINER FOR RAIN-WATER PIPES.** CHARLES H. DODGE, Ripon, Wis. Filed June 11, 1892. Serial No. 436,269. (No model.)

*Claim.*—1. A pipe section for conductors having a door in its side, in combination with a strainer whose maximum cross-section fills the inside diameter of the pipe-section and which is carried on the door, substantially as set forth.

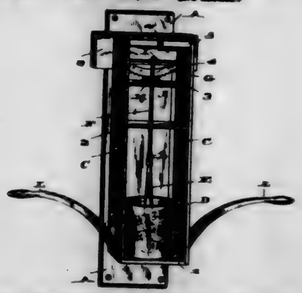
2. A strainer for a conductor, consisting of a cone shaped strainer having a handle at its apex, and a saucer shaped strainer of coarser mesh and of the same diameter as the base of the cone encircling the latter near the apex, substantially as and for the purpose set forth.



3. A strainer for a conductor, consisting of a pipe-section having a door in the side, a cone-shaped strainer carried on the inside of said door and a saucer-shaped coarser strainer superposed upon said cone-shaped strainer, all movable in, and out of, said pipe section with the opening and closing of said door, substantially as set forth.

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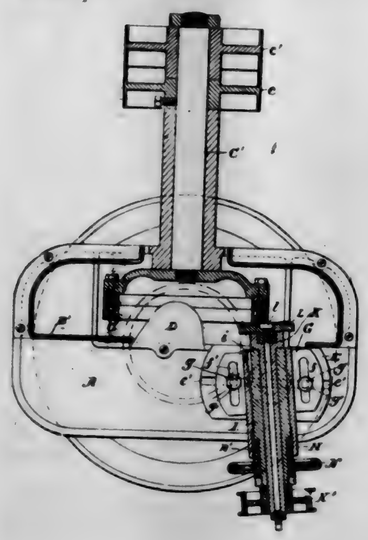
**504,385. CHURN.** WILLIAM W. HINMAN, Elkhart, Ill. Filed May 25, 1892. Serial No. 475,401. (No model.)



*Claim.*—A churn, comprising a back-board, a bracket secured thereto, a frame pivoted to the bracket and having its sides connected by a series of cross-bars, a segmental rack-bar arranged in the upper portion of the frame, a shaft carrying a pinion in mesh with the rack-bar, a pedal-bar connected with the shaft, and a bracket carrying a roller adapted to bear against the rack-bar to keep it in mesh with the pinion.

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**504,386. GRINDING DISK-CUTTER S AND APPARATUS THEREFOR.** ALLEN JOHNSTON, Ottumwa, Iowa. Filed June 15, 1892. Serial No. 436,854. (No model.)



*Claim.*—1. The described method of grinding the face of a disk or plate, by presenting it in contact with the circular face of a grinder with the wheel overlapping and embracing about half the work, the rest of the surface of the latter projecting beyond the outline of the wheel, and rotating the work in such manner that at each revolution every point of its surface passes across the grinding face of the wheel, the relative positions of the axes of the work and grinder being maintained throughout the operation, substantially as described.

2. The method of grinding the face of a disk to a curved surface, by presenting the disk to the face of a grinding wheel at an angle slightly oblique to said face, and rotating the disk against the grinding face, substantially as described.

3. The method of grinding the face of a metal disk to a curved surface, by presenting the disk to the face of a grinding wheel so that about half the surface of the disk overlaps the face of the wheel, said disk being inclined at a slight angle with said face, rotating the disk, and feeding it in the line of its axis of rotation as the grinding proceeds, substantially as described.

4. The method of grinding a disk—such as a slot cutting tool—to a curved surface, which method consists in presenting the face of the disk to the face of a grinding wheel at a slight angle with said wheel, grinding a portion of the face of the disk against the corner of the wheel, then reversing and partly grinding the other face, and so proceeding until the grinding is complete on both sides, substantially as described.

5. In a machine for grinding metal disks to a concave, straight, or convex surface, the combination with the grinding wheel of a work-holder adapted to hold the disk against the face of the grinding wheel and mounted on a support which is adjustable to present the face of the work holder at different angles or parallel to the face of said wheel, means for rotating said work-holder on its axis, and means for moving it in line of its axis while the grinding proceeds, substantially as described.

6. The combination with the grinding wheel, of a rotatable work-holder adapted to present the work against the face of the grinding wheel, and comprising a bearing plate and a circular projection adapted to engage the edge of the work, a support for said work-holder adjustable on an axis transverse to the axis of the grinder, means for rotating the work-holder, and means for moving it toward and from the face of the grinding wheel, substantially as described.

7. The combination with the grinding wheel, of a table for supporting the work-holding devices, a plate adjustable axially and also adjustable transversely with respect to the face of the grinding wheel, a rotatable bearing-plate adjustable in its support in the line of its axis, and a holding projection on the face of said plate, substantially as described.

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**504,387. APPARATUS FOR GRINDING CUTLERY.** ALLEN JOHNSTON, Ottumwa, Iowa. Filed Oct. 18, 1892. Serial No. 449,249. (No model.)



*Claim.*—1. In a machine for grinding articles having an irregular surface, the combination with a grinding wheel, of a work-holder capable of universal motion in one plane, and an irregular guide for controlling the movements of said work-holder, substantially as described.

2. In a machine for grinding articles having an irregular surface, the combination with a grinding wheel, of a work-holding slide supported so as to be capable of universal motion in one plane, means for reciprocating said slide in line with the grinding surface of said wheel, and a guide of irregular outline for deflecting said slide from the line of its reciprocating movement, substantially as described.

3. The combination with the grinding wheel, of a work-holder, a swiveled support therefor, means for reciprocating said slide on its support a guide for changing the positions of said support and slide while the latter is reciprocating on the former, a movable support or lever carrying said guide, and means for moving said support or lever toward and from the grinding surface of said wheel, substantially as described.

4. The combination with the grinding-wheel, of a work-holder, a swiveled support therefor, a pinion on a shaft concentric with the axis of said support and engaging a rack on said work-holder, means for oscillating said shaft, and a guide controlling the movements of said support on its axis, substantially as described.

5. In a grinding machine for grinding knife blades and other articles having a shoulder thereon, the combination with the grinding-wheel, of a work holder capable of moving transversely to the grinding surface and also parallel therewith, means for feeding said work-holder toward the grinding surface so as to present the article flatwise against the wheel and first grind the shoulder by the corner of the wheel, and means for subsequently traversing the work-holder with the article in contact with said wheel, across the grinding face



thereof and in the direction away from the said corner, substantially described.

6. In a grinding machine, the combination with the grinding wheel, of the automatic feed-mechanism for moving the work to, against, and away from the grinding wheel, a starting and stopping device such as a belt-shipper, a spring tending constantly to actuate said device in the direction to arrest the feed, a detent for holding said spring during the feed-movement, and means for automatically releasing said spring and putting the stopping device into operation at the completion of the feed movement when the work is away from the wheel, substantially as described.

7. In a grinding machine, the combination with the wheel, of the feed-slide, driving mechanism for moving said slide toward and from the wheel, a sprung-actuated rod for disconnecting the said driving mechanism and arresting the feed, a treadle or lever for withdrawing said rod against the pressure of said spring and thus starting the feed, a catch or detent engaging and holding said rod when retracted by said lever or treadle, and means for releasing said catch or detent at the end of the movement of the feed-slide, substantially as described.

8. The combination with the grinding wheel and automatic feed mechanism, of a starting and stopping device such as a belt-shipper, an actuating rod therefor, a treadle for shifting said rod in the direction to start the feed, a detent for holding the rod in this position, and means for releasing the detent automatically at a predetermined moment, substantially as described.

9. In a grinding machine, the combination with work-holding devices, of a rotary grinder, an adjusting wheel for moving the grinder in the direction of the work-holder, and means for intermittently actuating said wheel, substantially as described.

10. The combination with the work holding devices, of a rotary grinder, a wheel for adjusting said grinder with respect to said work-holding devices, and gearing connected with a moving part of the machine for actuating said adjusting wheel intermittently, substantially as described.

11. In a grinding machine, the combination with the work-holder and its actuating devices, of a rotary grinder, intermittently operating mechanism for moving said grinder toward said work-holder to compensate for wear, and means for regulating the amount of such motion at each adjustment, substantially as described.

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**504,388. CONSTRUCTION OF GRINDING EMERY-WHEELS.** ALLEN JOHNSTON, Ottumwa, Iowa. Filed Mar. 7, 1893. Serial No. 465,011. (No specimens.)

*Claim.*—1. A grinding surface or wheel composed of abrading material, a binder, and a substance readily absorbent of or soluble in water or other liquid, substantially as described.

2. A grinding-wheel composed of emery, a suitable binder, and a substance soluble in water or other liquid incorporated into the wheel in the form of fine particles of grains, substantially as described.

3. A grinding wheel composed of abrading material, a binding agent, and common salt, substantially as described.

4. A grinding wheel composed of emery, shellac, and common salt in approximately the proportions specified, substantially as described.

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**504,389. GRINDING-MACHINE.** ALLEN JOHNSTON, Ottumwa, Iowa. Filed May 13, 1893. Serial No. 473,991. (No model.)

*Claim.*—1. In a grinding machine the combination with a horizontal work-holding table, of a hollow reciprocating bed, a ring-grinder supported in an inverted position upon said bed and having its grinding face inclosed thereby, means for rotating said grinder and means for reciprocating said bed, substantially as described.

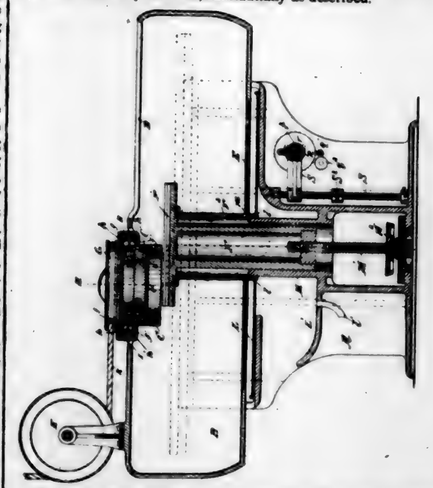
2. The combination with a horizontal work-holding table, of a hollow reciprocating bed and a rotating ring-grinder carried by said bed and having its grinding surface inclosed thereby, said grinder being provided with a water chamber and passages for supplying water to the inner edge of the grinding ring, substantially as described.

3. The combination of the upright column or support for the work-holder, of a hollow reciprocatory bed embracing the upper part of said column or support, and a grinder carried by said bed, substantially as described.

4. The combination of the trough-shaped main frame having horizontal edges constituting slide-ways, a hollow bed set in the main frame and adapted to slide on the edges thereof, an upright work-holder projecting through an opening in the under side of the bed, and a grinder carried by the bed above the work holder, substantially as described.

5. The combination of the trough-shaped frame, the work-holder carried thereby, the hollow bed provided with an opening through which the work-holder projects and an opening above for introduction of the work, a grinder carried by said bed, and means for reciprocating the bed upon the frame, substantially as described.

6. The combination of the main frame having an upright sleeve, the work holding column extending through said sleeve and having a cylinder outside of the latter, a hollow reciprocating bed supported upon the frame and embracing the upper part of said column, and a grinder carried by said bed, substantially as described.



7. The combination of the main-frame provided with a drip basin, and with an upright sleeve surrounded by said basin, a work-holding column extending through said sleeve and provided with a cylinder outside the latter, a hollow bed movable upon said frame and embracing the upper part of said column, and a grinder carried by said bed, substantially as described.

8. The combination with a ring-grinder having its grinding surface undermost, of a reciprocatory bed carrying said grinder and a vertically adjustable work-holder beneath the grinder, substantially as described.

9. The combination with the grinder, its supporting bed and means for reciprocating the bed, of a work-holder beneath the grinder, and means for intermittently feeding said work-holder toward the grinder, substantially as described.

10. The combination with the grinder, its supporting bed, and means for reciprocating the bed, of a work-holder beneath the grinder, intermittently acting feed-mechanism for raising the work-holder, and means for regulating the amount of feed at each motion, substantially as described.

11. The combination with the work-holder, of an adjusting screw therefor, gearing for turning said screw, a rod or pitman for actuating said gearing, a rotatable disk, and a crank pin to which the rod or pitman is attached, adjustably connected to said disk, substantially as described.

12. The combination with a ring grinder, of a bearing ring rigidly connected thereto, an annular chambered supporting ring around the bearing ring, and two sets of friction balls in said chambered supporting ring, between which the bearing ring engages, substantially as described.

13. The combination with a ring grinder, of a bearing ring rigidly connected thereto, an annular chambered supporting ring around the bearing ring, two sets of friction balls in said chambered supporting ring, and an adjustable clamping collar engaging against one set of balls, substantially as described.

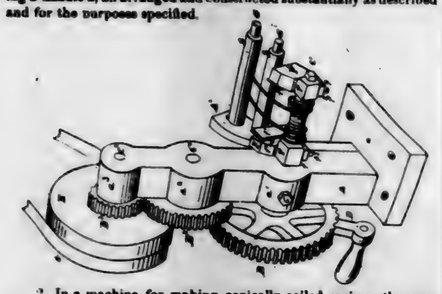
14. The combination of a vertical column for the work-holder a horizontally reciprocating bed, a grinder carried thereby, automatic feed-mechanism for reciprocating said bed, and means actuated from a shaft of said feed-mechanism for lifting said column, intermittently substantially as described.

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**504,390. MACHINE FOR MAKING WIRE SPRINGS.** SEBASTIAN KOSS, Louisville, Ky. Filed June 1, 1893. Serial No. 476,264. (No model.)

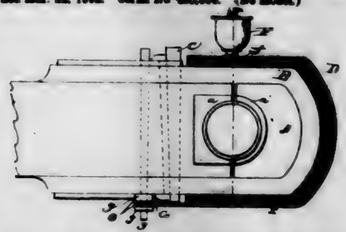
*Claim.*—1. A machine for making springs with a conical coil, having a frame consisting of a base $a$, and a standard A provided with journal boxes $a'$ $a^2$ and $a^3$ and a lateral arm A'; stud posts G and G', provided with roller sleeves, projecting from the outer surface of A' parallel with a shaft C journaled in the box $a'$ and projecting in front and rear of the standard A, carrying on its front projection a pair of

oppositely grooved conical chucks F having die blocks attached, and on its rear projection a spur wheel B, geared to engage a train of spur wheels B', B² and B³ keyed on stud shafts C' and C²; a pulley E keyed on the shaft C³ adapted to carry a belt *e*, and a crank D having a handle *d*, all arranged and constructed substantially as described and for the purposes specified.



2. In a machine for making conically coiled springs, the combination, with a standard having a lateral arm A' carrying stud posts G and G' provided with roller sleeves *g*, of a shaft C, having its bearings in the standard parallel with the stud posts carried on the lateral arm and projecting in rear and front of the standard, adapted to be revolved by power applied to the portion projecting rearwardly, and carrying on the portion projecting forward a pair of oppositely screw-grooved chucks F, in the shape of truncated cones with their larger bases outward, each provided with die blocks F', stud plates *f*, and guide pins *f*², constructed and arranged substantially as described and for the purposes specified.

**504,391. DEVICE FOR CATCHING OIL FROM CRANK-PIN JOURNALS OF CONNECTING-RODS.** RENÉ M. LA TOUCHE, Moscow, Pa. Filed Mar. 22, 1892. Serial No. 426,206. (No model.)



*Claim.*—1. The combination with the connecting rod having the crank bearing in its end, of the oil receptacle lying in proximity thereto around the top end and bottom and extending beyond the planes of its sides, and the absorbent material packed between the rod and receptacle; substantially as described.

2. The combination with the connecting rod having the crank bearing in its end, of the oil receptacle lying in proximity thereto around the top end and bottom and extending beyond the planes of its sides and the spring interposed between the top of the receptacle and rod; substantially as described.

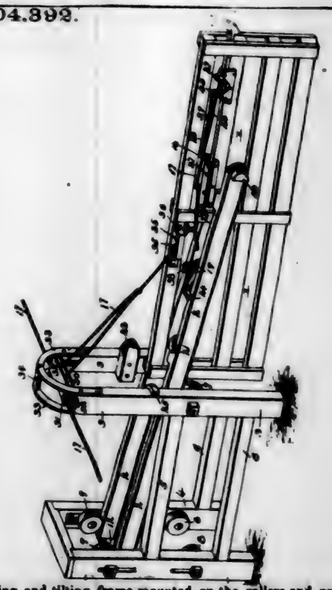
**504,392. GATE.** JAMES LOSEY, Freeport, Mich., assignor of two-thirds to Edwin W. Bellas and Oscar E. Jennings, same place. Filed Mar. 7, 1893. Serial No. 465,057. (No model.)

*Claim.*—1. The combination of a supporting frame provided with rollers, a sliding and tilting frame provided with lugs arranged at its front and at the center, a sliding gate mounted on the sliding and tilting frame, latches arranged on the gate and adapted to engage the lugs alternately and trips mounted on the supporting frame for releasing the latches from their engagement, substantially as and for the purpose described.

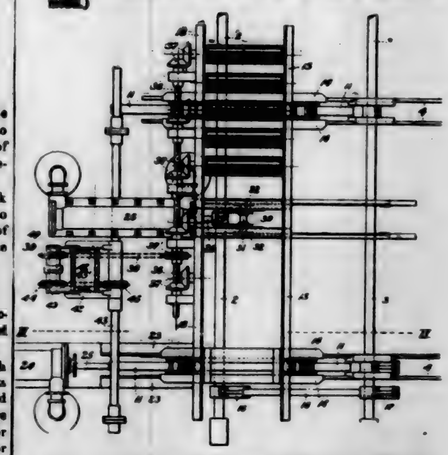
2. The combination of a supporting frame provided with rollers, a sliding and tilting frame having rollers and provided with lugs located at the front end of the frame and adjacent to the center, a sliding gate mounted on the sliding and tilting frame, the oppositely inclined latches pivotally mounted on the gate and arranged to engage said lugs and provided at their upper ends with projections, and the trips mounted on the supporting frame and having oppositely inclined faces arranged to engage the projections of said latches, substantially as described.

3. The combination of a supporting frame provided with rollers, a sliding and tilting frame mounted on the rollers and provided at the front and at an intermediate point with lugs and having rollers, oppositely disposed latches mounted on the gate and arranged to engage said lugs, trips mounted on the supporting frame for disengaging the latches, and a lever mounted on the front of the gate and connected with the latch which engages the front lug, substantially as described.

504,392.



**504,393. FEED-TABLE FOR ROLLING-MILLS.** WILLIAM H. MADDOCK, Pittsburg, Pa. Filed Aug. 3, 1892. Serial No. 442,015. (No model.)



*Claim.*—1. A feed-table for rolls comprising a carrier, driven feed-rolls thereon, a constant power connection for actuating the feed-rollers in all positions of the carrier, and means independent of the power connection for moving said carrier vertically and laterally; substantially as and for the purposes described.

2. A feed-table comprising a wheel truck, pivoted levers carrying rails upon which the truck travels, means for oscillating said levers, and means for preventing lateral movement of the truck as it rises and falls; substantially as and for the purposes described.

3. A feed-table comprising a wheeled truck carrying driven feed-rollers, pivoted levers carrying rails upon which the truck travels, and sprocket-chains arranged to drive the feed-rollers in any positions thereof, substantially as and for the purposes described.

4. A feed table comprising a wheeled truck carrying driven feed-rollers, pivoted levers carrying rails upon which the truck travels, means for holding said truck from lateral movement as the levers oscillate, and means for moving the same laterally upon the rails; substantially as and for the purposes described.

5. A feed-table comprising a wheeled truck carrying driven feed-rollers, pivoted levers carrying rails upon which the truck travels, a slotted plate secured to said truck, a shaft passing through said slot, and means for moving said shaft laterally, substantially as and for the purposes described.

6. A feed-table comprising a carrier, means for moving the same vertically and laterally, an actuating shaft supported upon the carrier, a flexible belt or chain connecting the same with a swinging shaft, and a second belt or chain connecting the swinging shaft with a power-actuated shaft, substantially as and for the purposes described.

7. A feed-table comprising a carrier, means for moving the same vertically and laterally, an actuating shaft supported upon the carrier, a flexible belt or chain connecting the same with a swinging shaft, a second belt or chain connecting the swinging shaft with a power-actuated shaft, and links between the three shafts, substantially as and for the purposes described.

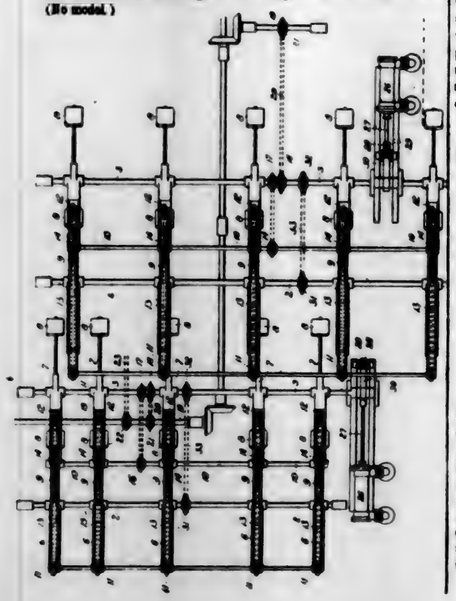
8. A feed-table comprising a wheeled truck, pivoted levers carrying rails upon which the truck travels, a motor arranged to oscillate said levers, a slotted plate projecting downwardly from the truck, a wheeled carriage having a shaft passing through said slot, and means for actuating said carriage, substantially as and for the purposes described.

9. A feed-table comprising a wheeled truck, pivoted levers carrying rails upon which the truck travels, a motor arranged to oscillate said levers, a slotted plate projecting downwardly from the truck, a wheeled carriage having a shaft passing through said slot, means for actuating said carriage, and a flexible connection arranged to rotate the feed-rollers in all positions of the truck, substantially as and for the purposes described.

10. A feed-table comprising a wheeled truck, pivoted levers carrying rails upon which the truck travels, a motor arranged to oscillate said levers, a slotted plate projecting downwardly from the truck, a wheeled carriage having a shaft passing through said slot, means for actuating said carriage, an actuating shaft supported upon the feed-roller truck, a flexible connection between the same and a swinging shaft, and a second flexible connection between the swinging shaft and a power driven shaft; substantially as and for the purpose described.



**504,394. TRANSFER MECHANISM FOR ROLLING-MILLS.** WILLIAM H. MADDOCK, Pittsburg, Pa. Filed Aug. 3, 1892. Serial No. 442,016. (No model.)



*Claim.*—1. A transfer device comprising pivoted levers arranged to swing upon transverse trunnions and carrying links at their upper ends, means for moving the metal along the links, and means for swinging the levers; substantially as and for the purposes described.

2. A transfer device comprising pivoted levers, a link pivoted to one lever and resting upon the other lever, a flexible belt or chain arranged to carry the metal along the link, and means for oscillating the levers; substantially as and for the purposes described.

3. A transfer device comprising pivoted levers, having their shafts rotatably connected, a link pivoted to one lever and resting upon a shaft in the other lever, a sprocket-chain passing over wheels in the link, means for imparting motion to the chain in all positions of the levers, and means for oscillating the levers; substantially as and for the purposes described.

4. A transfer device comprising pivoted levers, links carried thereon, means for moving the metal along the links, actuating connections between the lever-shafts, and a rack and pinion mechanism arranged to oscillate said shafts; substantially as and for the purposes described.

5. The combination with a set of feed-rollers, of pivoted levers carrying links arranged to pass between said rollers, and means for oscillating the levers; substantially as and for the purposes described.

6. The combination with two sets of feed-rollers, of pivoted levers between the same carrying links arranged to move between one set of rollers, flexible chains or belts arranged to carry the metal along the links, and means for oscillating the levers, substantially as and for the purposes described.

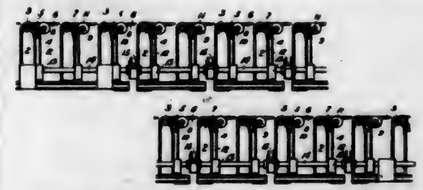
7. The combination with two sets of feed-rollers, of pivotal levers between the same, links pivoted to one set of levers and resting upon the other set, sprocket-chains passing over wheels in the links, wheels mounted upon one set of levers and arranged to drive the chains, and means for oscillating the levers; substantially as and for the purposes described.

8. The combination with two sets of feed-rollers, of pivotal levers between the same, links pivoted to one set of levers and resting upon the other set, sprocket chains 9 passing over wheels in the links, wheels mounted upon one set of levers and having sprocket-chains passing over wheels pivoted loosely upon the lever-shafts, and means for oscillating the levers, substantially as and for the purposes described.

9. The combination with two sets of feed-rollers, of pivotal levers between the same, links pivoted to one set of levers and resting upon the other set, sprocket-chains passing over wheels in the links, wheels mounted upon one set of levers and having sprocket-chains passing over wheels pivoted loosely upon the lever-shafts, flexible connections between the lever shafts, and a rack and pinion arranged to oscillate one shaft; substantially as and for the purposes described.

10. The combination with two sets of feed-rollers, of pivotal levers between the same, links pivoted to one set of levers and resting upon the other set, sprocket-chains passing over wheels in the links, wheels mounted upon one set of levers and having sprocket-chains passing over wheels pivoted loosely upon the lever-shafts, flexible connections between the lever-shafts, a segmental rack upon one lever-shaft, and a motive cylinder having a piston-rod provided with a rack engaging said pinion, substantially as and for the purposes described

**504,395. FEEDING MECHANISM FOR ROLLING-MILLS.** WILLIAM H. MADDOCK, Pittsburg, Pa. Filed Aug. 3, 1892. Serial No. 442,017. (No model.)



*Claim.*—1. A set of feed-rollers, having separately pivoted plates between each pair of rolls, and means for swinging said plates; substantially as and for the purposes described.

2. A set of feed-rollers, having pivoted plates therebetween, transfer mechanism arranged to move between the rollers, and means for oscillating the plates; substantially as and for the purposes described.

3. A set of feed-rollers, having pivoted plates therebetween, transfer mechanism arranged to move between the rollers, and actuating connections between the transfer mechanism and the plates arranged to swing the plates upon the movement of said mechanism, substantially as and for the purposes described

4. A set of feed-rollers, having pivoted plates therebetween, a

shaft below the rollers carrying transfer levers arranged to move between the rollers, and flexible connections between the shafts of the plates and levers; substantially as and for the purposes described.
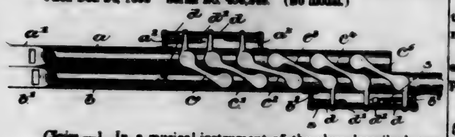
5. A set of feed-rollers having stationary tables, and pivoted tables therebetween, transfer mechanism located beneath the pivoted tables, and means for swinging said tables; substantially as and for the purposes described.

6. A set of feed-rollers having stationary tables and pivoted tables therebetween, a shaft beneath the rollers having transferring levers thereon, and flexible connections between the levers and the pivoted tables; substantially as and for the purposes described.

7. A set of feed rollers having stationary tables and pivoted tables therebetween, a shaft beneath the rollers having transfer levers located beneath the pivoted tables, and chains secured to sheaves upon the shafts of the pivoted tables and transfer levers; substantially as and for the purposes described.

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**504,396. WIND-INSTRUMENT.** JOHN L. HASER, Lynn, Mass. Filed Dec. 24, 1892. Serial No. 456,248. (No model.)



*Claim.*—1. In a musical instrument of the class described, two flutes secured together and each provided with the usual openings, combined with a series of key levers each adapted to simultaneously control an opening in both flutes, substantially as described.

2. In a wind instrument, two flutes secured together and provided with the usual openings, combined with a series of key levers supported by each flute, each lever having stops thereon adapted to control an opening in both flutes, substantially as described.

3. In a musical instrument of the class described, two flutes secured together and having their scales in different keys, combined with a series of key levers each adapted to control an opening in each flute, whereby two different tones are simultaneously produced, substantially as described.

4. In a musical instrument of the class described, two flutes secured together and having the usual openings therein, the scales of the flutes being in different keys and modulated to accord with each other, combined with a series of key levers each adapted to control an opening in both flutes, whereby two different tones are simultaneously produced, the interval between each two tones being the same, substantially as described.

5. In a wind instrument of the class described having the usual openings therein, a key lever adapted to simultaneously control a plurality of openings, and thereby produce different tones simultaneously, substantially as described.

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**504,397. ELECTRIC CONDUCTOR.** JOSEPH W. MARSH, Pittsburg, Pa. Filed Aug. 8, 1892. Serial No. 442,432. (No model.)



*Claim.*—1. An electric conductor having a covering of paper molded thereon with air spaces formed in said covering, substantially as described.

2. An electric conductor having a covering of paper molded thereon with air spaces formed in said covering and extending longitudinally of the conductor, substantially as described.

3. An electric conductor having a covering of paper molded thereon with air spaces within the covering and grooves forming air spaces in its outer surface, substantially as described.

4. An electric conductor having a covering of paper molded thereon with air spaces within the covering extending longitudinally of the conductor, and longitudinal grooves forming air spaces in the outer surface of the covering, substantially as described.

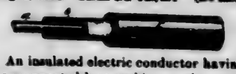
5. An electric conductor having a covering of paper molded thereon with grooves in its outer surface, substantially as described.

6. An electric conductor having a covering of paper molded thereon with air spaces between the covering and conductor, substantially as described.

7. An electric conductor having a covering of paper molded thereon with air spaces between the conductor and covering extending longitudinally of the conductor, substantially as described.

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**504,398. ELECTRIC CONDUCTOR.** JOSEPH W. MARSH, Pittsburg, Pa. Filed Aug. 8, 1892. Serial No. 442,431. (No model.)



*Claim.*—1. An insulated electric conductor having its insulating covering of paper supported by a cushion on the conductor, substantially as described.

2. An insulated electric conductor having its insulating covering of paper supported by a cushion of fibrous material on the conductor, substantially as described.

3. An insulated electric conductor having its insulating covering of paper supported by a fibrous cushion saturated with a semi-fluid material, substantially as described

4. An electric conductor having a cushion thereon and a covering of paper molded upon said cushion, substantially as described

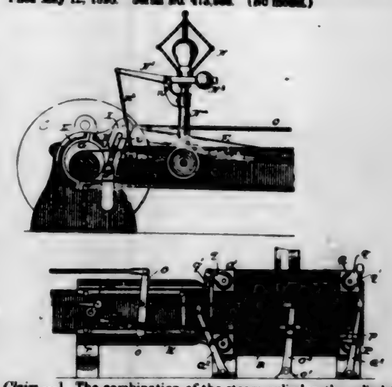
5. An electric conductor having a cushion of fibrous material thereon and a paper covering molded on said fibrous material, substantially as described.

6. An electric conductor having a cushion of fibrous material thereon saturated with a semi-fluid material, and a paper covering molded on said fibrous covering, substantially as described.

7. An electric conductor having a cushion thereon, a paper covering molded on said cushion, and a protective covering outside said paper covering, substantially as described

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**504,399. STEAM-ENGINE.** GEORGE MARSHALL, Fremont, Nebr. Filed May 12, 1893. Serial No. 473,998. (No model.)



*Claim.*—1. The combination of the steam cylinder, the cylindrical or rotary valves, controlling the supply of steam thereto, the crank shaft, the eccentric thereon, the slotted link connected with and operated by the eccentric, the rotary exhaust valves, the rock shaft, crank arms on the cylindrical admission valves and the cylindrical exhaust valves, a lever connected by links with the arms of the exhaust valves, rods connecting this lever with the link which is operated by the eccentric, a sliding block in the link, a rod connecting this block with the rock shaft, and connections between arms on the rock shaft and the crank arms on the admission valves

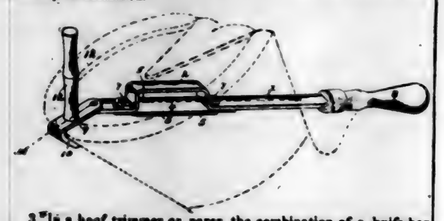
2. The combination of the crank shaft, the eccentric thereon, a slotted link, connected with and operated by the eccentric, the rotary exhaust valves, rods and levers connected with said valves and connected directly with the link, a block arranged in the slotted link, a rock shaft, a rod connecting the block with the rock shaft, arms on the rock shaft and projecting therefrom in different directions, the rotary admission valves having laterally projecting arms, levers pivoted to the frame of the engine and connected by links with the arms of the valves, and connections between the levers and the arms of the rock shaft.

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**504,400. HOOF TRIMMER OR PARER.** JOB MATTESON, South Hartford, assignor of one-half to Frank R. Boynton, Hebron, N. Y. Filed Apr. 13, 1893. Serial No. 470,188. (No model.)

*Claim.*—1. In a hoof trimmer or parer, the combination of a knife-bar having an offset loop or bend therein to form an opening, a knife secured to said knife-bar and spanning the said opening thereof, and having an open space at its inner face to prevent clogging and a grip-bar pivoted to the outer end of said knife-bar, substantially as described.

2. In a hoof trimmer or parer, the combination of a knife-bar having a handle connected thereto, a double-edged knife secured to the said knife-bar, a grip-bar pivotally connected to the outer end of said knife-bar and having an outer beat end with an inner corrugated or roughened surface, and a handle secured to the said grip-bar, substantially as described.

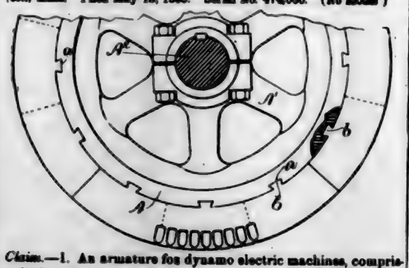


3. In a hoof trimmer or parer, the combination of a knife-bar having a handle connected thereto, a double-edged knife removably secured to the said knife-bar, and a grip-bar having an outer angularly-bent end with an inner corrugated or roughened surface and a handle, said grip-bar being also provided with a stop or projection to limit the movement of the knife-bar, substantially as described.

4. In a hoof trimmer or parer, the combination of a grip bar having an outer angularly bent end to engage a hoof and provided with a projection or stop, a knife bar pivotally attached to the grip bar and provided with a blade having cutting edges at opposite sides of the knife bar, the latter being arranged to engage the projection or stop to prevent the blade coming in contact with the grip bar, and a handle secured to the grip bar and arranged perpendicular to the knife bar, substantially as described.

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**504,401. ARMATURE FOR DYNAMO-ELECTRIC MACHINES.** JOHN T. MORROW, Lynn, assignor to the General Electric Company, Boston, Mass. Filed May 13, 1893. Serial No. 474,060. (No model.)



*Claim.*—1. An armature for dynamo electric machines, comprising a cylindrical supporting shell having longitudinal undercut grooves in its outer surface, and an angular core made up of segmental laminæ fitting thereon and provided with internal dovetail projections integral therewith and engaged by said undercut grooves, as described.

2. An armature core comprising layers of segmental laminæ dovetailed to an internal supporting shell, in which the segments in consecutive layers break joints, substantially as described.

3. An armature comprising an internal cylindrical support, undercut grooves on the surface thereof, and a core fitting and surrounding said support, and built up of laminæ punched with internal registering projections engaged and gripped by said grooves, but not fitted exactly thereto, as described.

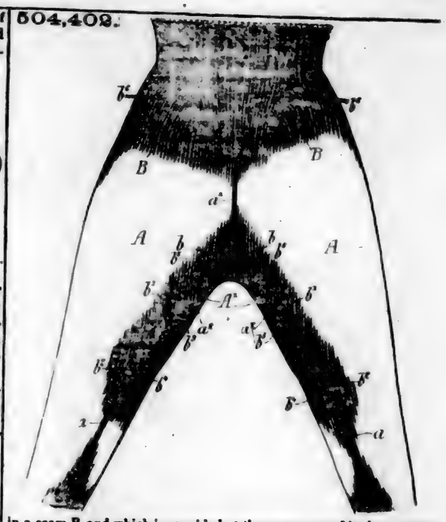
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**504,402. EQUESTRIENNE TIGHTS.** JOSEPH H. PIKE, Ypsilanti, Mich. Filed Mar. 14, 1893. Serial No. 465,884. (No specimens.)

*Claim.*—1. A garment of elastic or knit goods, which is enlarged at the seat of the garment by means of added ribs or rows of stitches at each side of the center line of the garment, said added ribs or rows of stitches terminating at their upper ends in a seam B, and the fabric being continuous above and below said seam, substantially as described.

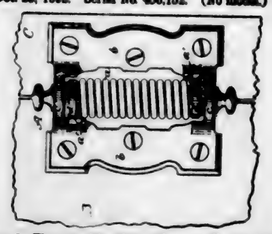
2. A garment of elastic or ribbed knit goods, which is enlarged at the seat by means of added ribs or rows of stitches at each side of the center line of the garment, said added ribs or rows of stitches terminating at their upper ends in a seam B, the enlarged or widened part of the fabric terminating at its lower end in a transverse edge or shoulder which is secured to the front margin of the side piece of the garment, substantially as described.

3. A garment of elastic or ribbed knit goods, consisting of two main side pieces or sections which are united along the middle line of the garment, and each of which is enlarged at the seat by means of added ribs or rows of stitches which terminate at their upper end in a seam B, and which is provided at the upper end of its leg portion with a transverse margin or shoulder which is secured to the opposite or front edge of said main part or section, substantially as described.



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**504,403. SPRING-HINGE.** LE ROY R. POMEROY, Cleveland, Ohio, assignor to the Van Wagoner & Williams Company, Jersey City, N. J. Filed Dec. 23, 1892. Serial No. 456,152. (No model.)



*Claim.*—1. The combination substantially as hereinbefore described, with a suitable spring, of hinge leaves having projecting ears, and a headed hinge pintle, affording a laterally projecting bearing surface, and also an open or slotted pintle eye, in rotative contact with the shank of said pintle between its head and the ear on which said pintle is carried, and also in rotative supporting contact with the lateral surface on the head of said pintle.

2. The combination substantially as hereinbefore described, with a suitable spring, of hinge leaves having projecting ears, and an inwardly projecting headed pintle, and also an open or slotted pintle eye ear having a spring centering stud projecting toward the head of the pintle and in rotative supporting contact with a laterally projecting bearing surface on said pintle head.

3. The combination substantially as herein before described, of a spiral spring, a pair of counterpart hinge leaves, each having an inwardly projecting headed pintle, and an open slotted pintle eye within an inwardly projecting spring centering stud, said eye and stud being not only in rotative contact with the shank of the pintle, but also in rotative supporting contact with a laterally projecting bearing surface on the head of the pintle, and with both centering studs, and the heads of both pintles located within the spring.

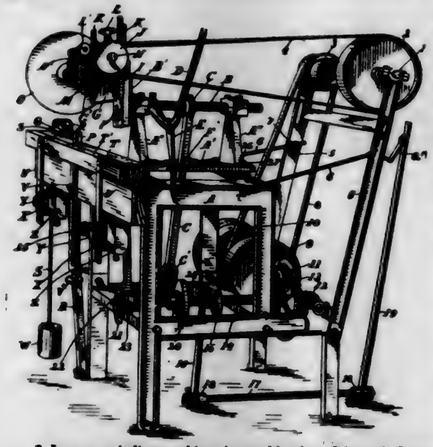
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**504,404. SAW-GRINDING MACHINE.** JAMES R. REDDEN, Grand Rapids, Mich. Filed May 16, 1892. Serial No. 433,312. (No model.)

*Claim.*—1. The combination of the grinding wheel, and its arbor, having bearings carried on the end of the rock shaft, with the frame, and rock shaft; the latter adjusted to communicate a reciprocating movement to said bearings, whereby said grinding wheel is reciprocated in the arc of a circle of which said rock shaft is the center substantially as set forth.

2. The combination of the grinding wheel and its arbor having

bearings arranged at right angles to and carried on the end of the rock shaft, and a means of longitudinal adjustment, with the frame and rock shaft; the latter adjusted to communicate a reciprocating movement to said bearings, substantially as and for the purposes set forth.



3. In a saw grinding machine, the combination of the main frame, a rock shaft journaled thereon and a grinding wheel and its arbor, the latter journaled in bearings carried on the rock shaft, and the lever D secured to the rock shaft and having the latch E, arranged substantially as described and for the purposes set forth.

4. In a saw grinding machine and in combination with a main frame, a rock shaft journaled thereon having a T head, an arbor having a grinding wheel journaled in adjustable bearings secured to said T head arranged at a distance above said rock shaft equal to about one half the diameter of the wheel substantially as and for the purposes herein set forth.

5. In a saw grinding machine and in combination with a main frame, a rock shaft journaled in adjustable bearings mounted thereon, having a T head, a bed plate adjustably secured to said head, a yoke movable in ways on said bed plate and an arbor having a wheel journaled in suitable bearings on said yoke arranged at a distance above said rock shaft equal to about one half the diameter of said wheel substantially as described and for the purposes set forth.

6. In a saw grinding machine, and in combination with a main frame A, having a table A', mounted thereon, provided with adjusting screws 27, and binding screws 26, and having upright hangers A'', mounted thereon, a rock shaft B, journaled on said hangers and having a T head B', and provided with an arm C, for oscillating the same, a bed plate G, adjustably secured to said T head, a yoke G', mounted on said bed plate, an arbor H, journaled on said yoke provided with an adjusting screw L', and carrying a grinding wheel O, arranged substantially as described and for the purposes set forth.

7. In a saw grinding machine, and in combination with a main frame A, having a cam shaft 14, journaled thereon carrying a cam 21, a pendent lever 22, pivoted to said frame and engaging said cam, a pivoted lever R, carrying a pawl Q, and provided with a retracting weight W, connected thereto by a cord S, and connected to said lever 22, by adjustable rod 25, all arranged as described, a rock shaft B, journaled on said frame, and having an arm C, engaging a cam 20, on said rock shaft and a T head B', and an arbor carrying a grinding wheel journaled in adjustable bearings adjustably secured to said T head, all arranged substantially as described and for the purposes set forth.

8. In a saw grinding machine, and in combination with a main frame A, having a cam shaft 14, journaled thereon carrying cams 15, and 21, pivoted levers 22, and 15, engaging said cams, pawls Q and Q', connected to levers 22, and 15, by lever R, and rod 22, and lever 19, and rock shaft 17, respectively clamp jaw T, secured to said main frame and jaw T', mounted on spring supports U, adjustable support V, arranged as described—the rock shaft B, journaled in said frame and having arm C, engaging cam 20, on said shaft and T head B', and the arbor H carrying wheel O, journaled in adjustable bearings secured to said T head, all arranged substantially as described and for the purpose set forth.

9. In a saw grinding machine the combination of the main frame with a rock shaft journaled thereon, having an arm for rocking the same, and a grinding wheel and its arbor; the latter journaled in bearings carried on the rock shaft and oscillated in the arc of a circle of which the rock shaft is the center, substantially as set forth.

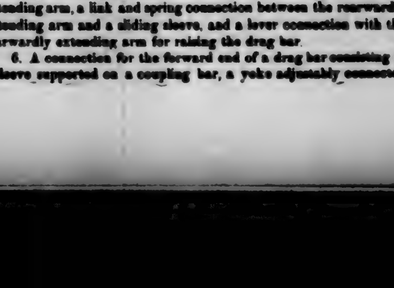
10. In a saw grinding machine, the combination of the main frame with a rock shaft journaled thereon, having an arm for rocking the same and a grinding wheel and its arbor in the latter, longitudinally adjustable and journaled in bearings carried on the rock shaft and rotating simultaneously therewith substantially as set forth.

11. In a saw grinding machine, the combination of the main frame, with a rock shaft journaled horizontally in bearings mounted thereon, and having an arm for rocking the same, and a grinding wheel and its arbor the latter longitudinally and vertically adjustable and mounted in bearings carried on and moving in unison with said rock shaft, substantially as set forth.

12. In a saw grinding machine, the combination of the main frame, with a rock shaft journaled horizontally, in vertically adjustable bearings mounted thereon, and having an arm for rocking the same and a lever for holding the same out of engagement with its cam, and a grinding wheel and its arbor, the latter longitudinally adjustable and journaled in vertically adjustable bearings carried on and moving in unison with said rock shaft substantially as set forth.

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**504,405. TROLLEY-WIRE CLEANER.** MARIAN SHARER, Reading, Pa., assignor of one-half to Jacob S. Arnold, same place. Filed June 19, 1893. Serial No. 478,162. (No model.)



*Claim.*—1. The combination with the trolley wheel of a trolley frame in which said wheel is mounted, said frame having ways $b^3$ in front and rear of the wheel, and scraper-plates C removably held in said ways by means of lugs $c$ on the plates and cross-pins engaging the same, said scraper plates having V-shaped upper ends arranged to ride upon the trolley wire and to bear upon the rim of the wheel, all substantially as set forth.

2. The combination with the trolley wheel and the frame in which said wheel is mounted, of the tangentially arranged scraper plates removably secured to said frame in front and rear of the trolley wheel and having their upper ends in sliding contact with the trolley wire and in fixed contact with the rim of the trolley wheel, substantially as set forth.

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**504,406. CULTIVATOR.** WILLIAM H. TRAPHAGEN, Rockford, Ill., assignor to Emerson, Talcott & Co., same place. Filed July 20, 1892. Serial No. 441,038. (No model.)

*Claim.*—1. A bracket secured to the tongue consisting of a base provided with uprising stops near its front end limiting the rearward movement of the evener, wings extending laterally and downward from the base to which the coupling arms are connected.

2. A bracket secured to the tongue consisting of a base provided with uprising stops near its front end limiting the rearward movement of the evener, wings extending laterally and downward from the base its ends made in socket form, a coupling bar having a notch or flattened surface near its upper end, a brace rod lying in contact with the flattened surface and bolts holding the parts together.

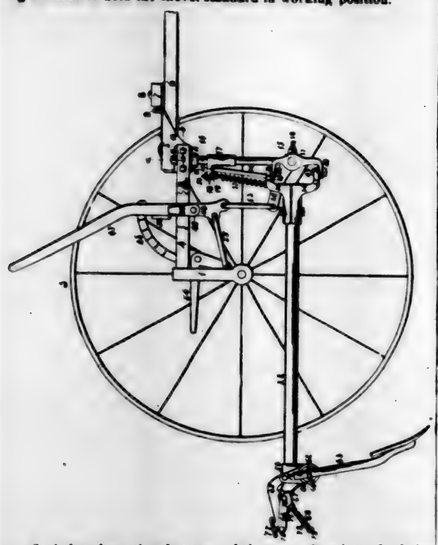
3. A sleeve for supporting the front end of a drag bar, consisting of a horizontal tubular shell located on the coupling arm and having a rearwardly extending arm provided with a series of holes and a lifting lever having a connection with the arm.

4. A spring supporting device for the drag bar of a cultivator consisting of a coupling arm, a sleeve on the arm having a rearwardly extending arm and a link and spring connection between the rearwardly extending arm and a sliding sleeve.

5. A spring supporting device for the drag bar of a cultivator consisting of a coupling arm, a sleeve on the arm having a rearwardly extending arm, a link and spring connection between the rearwardly extending arm and a sliding sleeve, and a lever connection with the rearwardly extending arm for raising the drag bar.

6. A connection for the forward end of a drag bar consisting of a sleeve supported on a coupling bar, a yoke adjustably connected with the sleeve and having cone shaped projections, the smaller portion of each being on a higher plane than the base portion, a yoke connected to the end of the drag bar provided with cone shaped recesses having their smaller ends on a higher plane than their larger ends and adapted to receive the cone shaped projections, and a bolt holding the parts together.

7. A drag bar, a bracket secured thereto, a shovel standard pivotally connected with the bracket, a cam shaped lever having a pivotal connection with the support of the standard, and a spring exerting its force to hold the shovel standard in working position.



8. A drag bar, a bracket secured thereto, a shovel standard pivotally connected with the bracket, a cam shaped lever having a pivotal connection with the support of the standard, and a spring exerting its force to hold the shovel standard in working position, and a foot piece secured to the link for returning the shovel to its working position.

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**504,407. GATE FOR ELEVATORS.** WILLIAM H. TRAPHAGEN, Rockford, Ill., assignor to Emerson, Talcott & Co., same place. Filed Nov. 21, 1892. Serial No. 452,630. (No model.)



*Claim.*—1. The combination of an elevator gate, two sliding heads having a flexible connection, one of the heads having a connection with the gate, non-pivoted double ended dogs, each loosely seated in one of the heads, a spring bearing centrally against each dog, holding the dog in its normal position and brackets secured to the car, each of the brackets adapted to engage one of the dogs thereby moving the sliding heads.

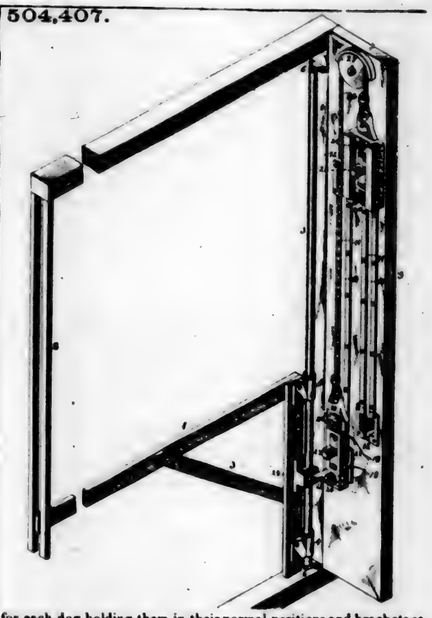
2. The combination of an elevator gate, two sliding heads having a flexible connection, one of the heads having a connection with the gate, each head composed of two sections bolted together, double ended dogs each having a connection with one of the sections of each head, a spring for each dog holding it in its normal position and brackets secured to the car engaging the dogs, thereby moving the sliding heads.

3. The combination of an elevator gate, having a vertical sliding movement, a base board provided with two vertical slots having enlarged ends, a sliding head for each of the slots, a double ended dog for each sliding head and having a projection extending therefrom, brackets secured to the car engaging the projections and moving the sliding heads in their engagement with the base board.

4. The combination of an elevator gate, two sliding heads having a flexible connection, one of the heads having a connection with the gate, double ended dogs having engagements with the heads, a spring for each dog holding them in their normal positions and brackets secured to the car engaging the dogs, thereby moving the sliding heads, and movable dogs supported by the brackets.

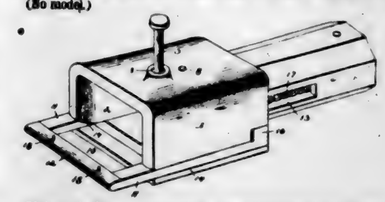


**504,407.**



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**504,408. CAR-COUPLING.** LEONIDAS TRIPLETT, Jr., and JOHN FRY, Mount Jackson, Va. Filed May 12, 1893. Serial No. 474,002. (No model.)



*Claim.*—1. In a car coupling, the combination of a draw-head having a link cavity and a coupling pin perforation, a pin supporting block arranged within the draw-head and having a limited movement, and a link supporting frame projecting beyond the draw-head and mounted thereon, and engaging the block and adapted to be moved rearward independent of the block, substantially as described.

2. In a car-coupling, the combination of a draw-head provided in its sides with horizontal grooves and having a horizontal slot, a pin supporting block arranged within the draw-head and having a limited movement, a rectangular link supporting frame having side-bars arranged within the grooves, a rear cross-bar working in the slot and a front cross-bar arranged in advance of the draw-head, and a spring for engaging the pin supporting frame, substantially as described.

3. The combination of a draw-head provided in its sides with horizontal grooves and having in rear thereof a horizontal slot, a pin supporting block arranged in the draw-head and having a limited movement, and a rectangular link supporting frame having side-bars arranged in the grooves, a rear cross-bar located in the slot and a front-cross-bar arranged in advance of the draw-head and provided with link engaging projections, substantially as described.

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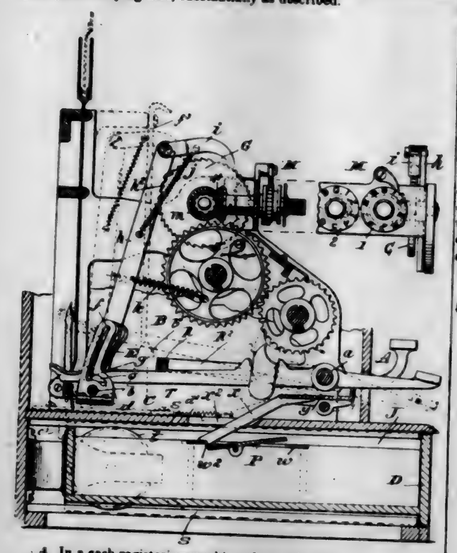
**504,409. CASH-REGISTERING MACHINE.** FORTUNE L. BAILEY, Northampton, Mass., assignor to the Boston Cash Register Company, same place. Filed Mar. 23, 1893. Serial No. 468,190. (No model.)

*Claim.*—1. In a cash registering machine, the combination with a ratchet-wheel forming part of a registering mechanism and a re-

ciprocatory pawl-carrier having a pawl to engage the ratchet-wheel, of a rocking bar having a series of projecting members provided with variously graded cam slots, which bar is connected with said pawl carrier, and a series of key-levers having projections respectively engaging the said slots whereby the operations of the various key-levers will insure varying extents of rocking movements of the said bar and correspondingly varying extents of movements of the pawl-carrier, substantially as described.

2. In a cash registering machine, the combination with the key-levers, each having a stud, as *g*, of a rocking-bar having a series of projecting members provided with variously graded cam-slots, *f*, within which said studs protrude, and the arc-slots *o*, concentric with the center of movement of said bar, a registering mechanism and operative mechanism therefor, which is controlled as to degree by the extent of rocking movement of said bar, substantially as described.

3. In a cash registering machine, the combination with the ratchet-wheel comprised in the registering mechanism, of a series of key-levers having the lateral projections, the rocking-bar having a series of projecting members provided with the variously graded cam-slots within which said projections of the key-levers protrude, and having the arm, *k*, with the pawl, *i*, and the driving-spring, *k*, applied to the said pawl-carrying arm, substantially as described.



4. In a cash registering machine, the combination with the series of key-levers having the lateral studs, *g*, of the horizontal bar or shaft, *b*, the bar *d*, mounted to rock on said shaft and having the arms E with the variously graded cam-slots, *f*, and the arc-slots, *b*, merging into said slots, *f*, the ratchet-wheel and the arm, *k*, fixed to said bar, *d*, and having the pawl, *i*, and the driving-spring, *k*, all arranged substantially as described.

5. In a cash registering machine, the combination with the series of key-levers with the lateral studs, of the bar or shaft, *b*, the bar *d* having the members, E, with the slots, *f*, *o*, and having the foot-lugs, $d^3$, said bar having the arm, *k*, with the pawl, *i*, the ratchet-wheel, G, and the driving-spring, *k*, all substantially as shown.

6. In a cash registering machine, the combination with one or more registering disks, as 1, 2, one thereof having a gear-wheel connected therewith, of the ratchet-wheel, G, with the gear-wheel, a series of key-levers having the projections, *g*, the rocking-bar having the series of members, E, with the variously graded cam slots, and having the pawl-carrying-arm, *k*, with the pawl, *i*, and all arranged substantially as and for the purposes described.

7. In a cash registering machine, the combination with the cash drawer and housing therefor having the upper and lower tracks or strips, *s*, *s*, of the drawer having the recess, *u*, in its rear wall, the journal support, *v*, for the roller consisting of the U-formed metallic part with the laterally turned lugs, $v^2$, $v^3$, and the roller journaled in said part and having flanges for engaging the said track-strips, substantially as shown.

8. In a cash registering machine, the combination with the drawer having a catch-abutment and a locking-arm to engage it which is operated by means of the key-levers and a shield or plate supported by the cash drawer and adapted to be impinged upon by the locking-arm as the latter assumes its locking position, and to be thereby swung into a guarding position relative to the said arm, substantially as described.

9. In a cash registering machine, the combination with the drawer having the plate, *w*, with the aperture therein and the plate, P, hung to have a swinging movement within said aperture, of the series of key-levers, the rocker-plate, *y*, and the locking-arm, *x*, arranged as shown.

10. In a cash registering machine, the combination with the series of key levers, and the common bar, R, arranged to have a swinging movement in unison with any of the key-levers, of the cash drawer movable under the key-levers, and the slide having a part to engage the said common bar and having a downwardly extended member which projects into the course of the drawer, substantially as and for the purpose set forth.

11. In a cash register, the combination with the series of key-levers, and the common bar, R, of the slide-plate, T, having the hooked upright, and the depending stud, $c^4$, the drawer and the spring, substantially as described.

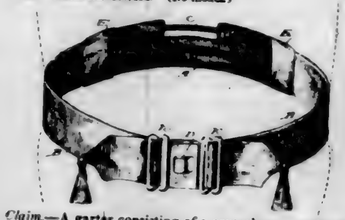
12. In a cash register, the combination with the series of key-levers and the common bar, R, of the slide-plate, T, having the hooked upright provided with the projection $b^4$, and the depending stud, $c^4$, the spring, $d^3$, the rod, $f^3$, with the cam incline, $f^4$, and the drawer, all substantially as and for the purposes set forth.

13. In a cash registering machine, the combination with a series of key-levers having the projections, *g*, and a fulcrum-rod, of a series of arms mounted on the fulcrum-rod, and having the depending portions provided with the cam-slots in which operate the projections, *g*, the bar, *d*, uniting all of the arms and the pawl-carrying-arm, *k*, substantially as described.

14. In a cash registering machine, the combination with a series of key-levers having projections, *g*, and the fulcrum-rod, *b*, of a series of arms intermediately mounted on the fulcrum-rod, and each having the depending portion formed with the cam-slot opening to the lower end and the portion, $o^3$, the bar, *d*, uniting the arms above their fulcrums, and having the pawl-carrying-arm, *k*, substantially as described.

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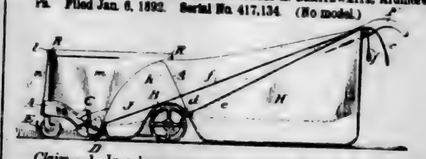
**504,410. GARTER.** GILBERT H. BLAKESLEY, Bristol, Conn., assignor to the Blakesley Novelty Company, same place. Filed Apr. 2, 1892. Serial No. 427,492. (No model.)



*Claim.*—A garter consisting of a central rear portion composed of two or more strands of soft elastic stock, and a front portion composed of two inelastic tapes suitably attached to the ends of said elastic rear portion, the free ends of the inelastic tapes being connected by a buckle to which they are adjustably attached, substantially as hereinbefore described and set forth.

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**504,411. LAWN-MOWER.** CHARLES H. BRAITHWAITE, Ardmore, Pa. Filed Jan. 6, 1892. Serial No. 417,134. (No model.)



*Claim.*—1. In a lawn mower the combination of the revolving cutting blades, C, the large grass receptacle H, and the small grass receptacle J, situated between the cutting blades and the large grass receptacle and swung so as to be capable of being overturned irrespective of the cutting blades and depositing its contents into the large receptacle, substantially as described.

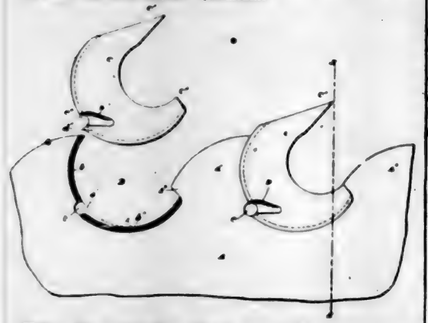
2. In a lawn mower the combination of the revolving cutting blades, C, the large grass receptacle H, the small grass receptacle J, situated between the cutting blades and the large grass receptacle and swung so as to be capable of being overturned irrespective of the cutting blades and depositing its contents into the large receptacle,



and the curtains *m*, *m*, *n*, surrounding the sides and front of the machine, substantially as described.

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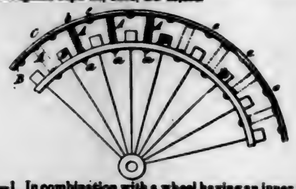
**504,412. SAW-TOOTH.** WILLIAM R. BROOKS, Trenton, assignor of one-fourth to Thomas H. Clark, Scudder's Falls, N. J. Filed Sept. 22, 1892. Serial No. 446,547. (No model.)



*Claim.*—The combination with the saw plate A, having a recess B, formed with the two edges *b* and *b'*, cut substantially on the curve of one circle, said recess having also the end shoulder $A^3$ and the semicircular notch *c*, the recess edge between the semicircular notch *c* and the edge *b'* being offset from the true semicircular line $b^3$ from the point *l* to the semicircular notch *c*, and the tooth C having point C' at one end and at the other end a flattened part $C^3$, which when the tooth is in position in the recess, comes in contact with the end shoulder $A^3$ at the end of the recess B, said tooth having its back or rear edge formed substantially on a semicircular line but with a part thereof offset from the true semicircular line to provide the shoulder *d'* at a point adjacent to the semicircular notch *c* and formed likewise with the semicircular notch *d'* which unites with the semicircular notch to form a rivet hole *e* as shown and said tooth further having the lateral depressions or recesses D D used for the purpose of inserting a tool for the easy dislodgment of the rivet, substantially as described.

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**504,418. WHEEL FOR CYCLES.** ALFRED C. BROWN, London, England. Filed Feb. 9, 1892. Serial No. 461,068. (No model.) Patented in England Sept. 20, 1892, No. 15,282.



*Claim.*—1. In combination with a wheel having an inner rigid rim, on which springs adapted to outwardly thrust an outer connecting flexible band are secured, blocks or buffers of rubber, cork or its equivalent, such as D, serving to absorb or lessen the final shock in case of abnormal compression of such springs, substantially as set forth.

2. A wheel comprising an inner rigid rim, an outer flexible rim, band or tread, a hub, and a series of metallic spokes, each secured to the hub, erteading through the inner rigid rim and secured to the outer rim, each of said spokes being formed with a spiral spring between the outer and the inner rim, substantially as described.

3. A wheel comprising an inner rigid rim, an outer flexible rim, band or tread, a series of bent, wide, flat springs interposed between the inner rim and the outer rim and secured thereto, and a series of coiled or spiral springs also interposed between the inner and the outer rim and secured thereto for the purpose specified.

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**504,414. COPY-HOLDER.** WARD O. CRANE, Syracuse, N. D. Filed Apr. 27, 1892. Serial No. 472,022. (No model.)

*Claim.*—1. In a copy-holder, the combination with the opposite standards mounted upon a base, a curved fixed guide located between the standards, of a pair of rolls arranged above the guide the lower roll being in juxtaposition therewith, a rock-shaft journaled in the front edges of the standards adjacent to the upper edge of the lower fixed guide, a curved swinging guide fixed upon the rock-shaft, cranks at the ends of the rock-shaft, and coiled springs connected to the holder transversely opposite the shaft and to the cranks, whereby the said springs serve to maintain the guide in an open or closed position substantially as specified.

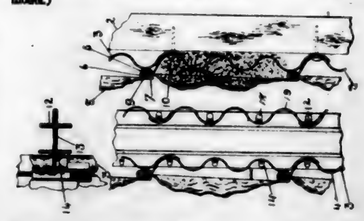
2. In a copy-holder, the combination with the opposite standards having transverse bearing-slots, and a suitable base, of a shaft located therein, a roll carried by the shaft, a shaft and roll arranged thereabove, and a lower curved guide embracing the lower roll, of a rock-shaft journaled in bearings in the front edges of the standards adjacent to the upper edge of the fixed guide, the ends of the rock-shaft being cranked, one of the same terminating in a handle and both having eyes, coiled springs between the eyes and the ends of the roll-carrying shaft, and a curved guide secured to the rock-shaft and terminating adjacent to the point of contact between the rolls, substantially as specified.



3. In a copy-holder, the combination with opposite standards and a pair of rolls arranged therein, of a guide located below the lower roll, and an upper swinging guide forming a continuation of the lower guide and terminating near the point of contact of the two rolls, and means for retaining in a raised or lowered position said upper guide, substantially as specified.

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**504,415. FIREPROOF BUILDING-WALL.** PHILIPPE A. DELLACHERIE, St. Paul, Minn. Filed July 9, 1892. Serial No. 439,474. (No model.)



*Claim.*—1. A building wall comprising in combination, the frame, the corrugated sheet metal sheathing, the sheet metal siding secured upon said sheathing, and a non-combustible filling between the same, substantially as described.

2. The combination of the frame, the corrugated sheet metal sheathing secured thereon, the projections upon said sheathing, and the siding plates secured to said projections, substantially as described.

3. The combination with the frame, of the perforate sections of corrugated sheet metal sheathing secured thereon, with their upper edges overlapping the sections above, and the sheet metal siding plates interlocked with said edges, substantially as described.

4. The combination with the studs, of the sections of perforate, corrugated sheet metal secured on the face thereof, with their upper edges overlapping the sections above, the interlocking siding plates engaging and supported by said edges, and the filling between said siding plates and sections of corrugated sheet metal, substantially as described.

5. The combination of the studs, the perforate corrugated metallic sheathing, the siding plates secured to said sheathing, the non-combustible filling between, and the corrugated sheet metal lathing on the inner faces of said studs, substantially as described.

6. The metallic stud having lateral ribs separated by a central rib, both the central and lateral ribs being formed of a double thickness of metal and from a single piece by the metal which is bent upon itself, substantially as described.

7. The metal stud having a central rib and lateral ribs formed of folds of the metal, some of the ribs having tongues projecting laterally therefrom, substantially as and for the purposes described.

8. The combination of the sheet metal studs, having ribs at right angles with each other, the corrugated sheet metal sheathing having grooves transverse of, and cutting the corrugations, adapted to fit over a rib on said stud, and means for securing the sheathing thereon, substantially as described.

9. The combination of the sheet metal stud having radiating ribs, formed by folding the metal upon itself, the corrugated metal sheath-

ing having its corrugations notched to fit upon one of said ribs, and lips outturned from said rib engaging and securing said sheathing, substantially as described.

10. The combination with the frame, of perforate metallic sheathing secured upon the same, siding plates secured outside thereof, and a non-combustible filling between the siding plate and perforate sheathing, substantially as and for the purposes described.

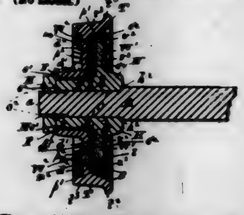
11. The combination with the metallic studs, of perforate metallic sheathing secured upon the outer face thereof, siding plates secured outside of said sheathing, and a non combustible filling between said sheathing and siding plates substantially as described.

12. The combination of a frame, a perforate sheathing secured thereto, projections extending from the sheathing, siding plates secured to said projections, and a non combustible filling between the siding plates and the perforate sheathing, substantially as described.

13. The combination of a frame, a perforate sheathing secured thereto, siding plates secured outside said sheathing, a non combustible filling between said plates and sheathing and extending through the perforate sheathing, and a plastic coating applied to the said perforate sheathing on the opposite face to said filling, substantially as described.

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**504,416. CAR-WHEEL.** GEORGE W. EDDY, Waterford, N. Y., assignor to Lyman K. Eddy, Boston, Mass. Filed July 31, 1892. Serial No. 440,753. (No model.)



*Claim.*—1. The combination with the hub-part H, made with the web W', having a reversing ogee form in diametrical section, and an axle-passage O, of the tread-part T, made with the tread-flange $f^3$, and tread-proper $f^4$, and the interiorly placed web $W^2$, having a reversing ogee form in diametrical section with a central hub-passage $O^2$; the packing plate P, having ring-form projections upon one of its sides and ring-form depressions upon its other side, and an axle passage $O^3$; and the bolts B, adapted to connect and secure said parts substantially in the manner as and for the purposes set forth.

2. The combination with the hub-part H, made with the web W', having a reversing ogee-form in diametrical section, the axle-passage O, and made with the encircling shoulder $h^2$ of the tread-part T, having the interiorly arranged web-part $W^2$, made with a reversing ogee-form in diametrical section and provided with the hub-passage $O^2$, and the encircling flange F; the axle A, made with the shoulder $h^3$, and threaded end $a$, provided with the nut N, said parts being constructed and arranged to connect substantially in the manner as and for the purposes set forth.

3. In a car wheel the combination with a hub-part having an encircling web that has a reversing ogee-form in diametrical section, an axle passage, and made with an encircling shoulder substantially as described; of a tread-part constructed with a tread-flange, and a tread-proper, said tread-part having an interiorly placed web that is of a reversing ogee-form in diametrical section, and is made with a centrally located hub-passage, and an outwardly projected and encircling flange; and the metallic packing plate P, arranged between said webs and bolts constructed to pass through said webs and packing plate to connect the same substantially in the manner as and for the purposes set forth.

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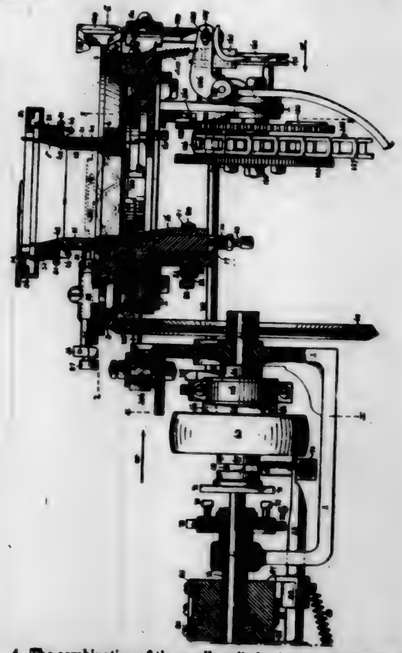
**504,417. CIRCULAR-KNITTING MACHINE.** EMIL FRANKE, Philadelphia, Pa., assignor, by mesne assignments, to the National Automatic Knitter Company, same place. Filed May 19, 1892. Serial No. 433,326. (No model.)

*Brief.*—At the end of circular work the pattern-chain sets in motion devices which raise one-half of the needles out of action, which change from circular to reciprocating work, and which put the fashioning-needles out of and into action to narrow and widen the web to form heel and toe pouches. After making the heel circular work is automatically resumed for the foot. The machine is automatically stopped to change needle-cylinders.

*Claim.*—1. The combination of the needle cylinder having a downwardly projecting finger, with the bed having a support for said finger and means for securing the finger to the bed, substantially as specified.

2. The combination of the needle cylinder having a downwardly projecting finger, the bed having a set screw serving as a support for said finger and means for securing the finger to the bed, substantially as specified.

3. The combination of the needle cylinder having a downwardly projecting finger with beveled face, the bed having a beveled recess in which said finger fits, a vertical support for the finger and means for securing said finger within the recess of the bed, substantially as specified.



4. The combination of the needle cylinder having a downwardly projecting finger, the bed having a support for said finger, and a clamping yoke and set screw whereby the finger is laterally confined to the bed, substantially as specified.

5. The combination of the needle cylinder having a downwardly projecting finger with beveled face, the bed having a beveled recess for the reception of said finger and a vertical support therefor, and a clamping yoke and set screw whereby the finger is secured within the recess, substantially as specified.

6. The combination of the needles, the needle cylinder having an annular groove therein, and a needle retaining ring adapted to said groove and composed of separable sections, and having, between the adjoining sections, a gap for the withdrawal of a needle, substantially as specified.

7. The combination of the needle carrier, the needles, some of which have longer bits than the others, a pivoted switch cam so mounted in respect to the needles that when in one position it will engage with the long bits and raise the needles, and when in the opposite position will engage with said long bits and depress the needles, a projection on said switch cam, a spring acting upon said projection and serving to hold the switch cam in its extreme positions, and means for shifting said switch cam from one position to the other, substantially as specified.

8. The combination of the needle cylinder and its needles, some of which have longer bits than others, a switch cam mounted in respect to the needles so as to raise the long bitted needles out of action when in one position and restore them when in the other position, a rock shaft carrying said switch cam, a pin or projection on said rock shaft, and a spring acting upon said pin or projection and serving to retain it in its extreme positions, substantially as specified.

9. The combination of the needle cylinder, the needle operating cams, needles, some of which are movable into and out of range with said cams, fashioning cams for acting on the lower portions of the needle shanks to so move them into and out of action, and a rest for the lower ends of the needles when they are out of action, substantially as specified.

10. The combination of the needle carrier, the knitting cams, the needles, some of which are movable into and out of range with said knitting cams, some of the fashioning needles having bent lower ends, and fashioning cams for acting on the lower portions of said fashioning needles to move them into and out of range of the knitting cams, substantially as specified.



11. The combination of the needle carrier, the knitting cams, the needles, some of which are movable into and out of range of said knitting cams, the fashioning cams acting upon the lower portions of the needles to move them into and out of range of said knitting cams, and cam carriers having beveled portions at the points where the movement of the needle is effected, substantially as specified.

12. The combination of the needle cylinder, the knitting cams, needles, some of which are movable into and out of range of said knitting cams, fashioning cams acting on the shanks of the needles to move them into and out of range of the knitting cams, slides carrying said fashioning cams, means for reciprocating said slides, and a friction ring acting as a brake upon the slides, substantially as specified.

13. The combination of the fashioning cams, and their slides, means for reciprocating the latter, a ring bearing upon the slides and having beveled portions and set screws acting upon said beveled portions of the retaining ring to press it down upon the slides substantially as specified.

14. The combination of the fashioning cams, slides carrying said cams, means for reciprocating said slides, rings, one attached to one slide and the other to the opposite slide, and an encircling ring bearing upon said cam slides and their rings, substantially as specified.

15. The combination of the fashioning cams, slides carrying said cams, means for reciprocating the slides, and adjustable stops for limiting the movement of the slides in either direction, substantially as specified.

16. The combination of the fashioning cams, slides carrying said cams, means for reciprocating said slides, and an eccentric stop for limiting the approach of the slides toward each other, substantially as specified.

17. The combination of the needle cylinder, the knitting cams, the needles, some of which are movable into and out of range of said cams, the fashioning cams for acting on the needles to move them into and out of action, toothed slides carrying said cams, reciprocated rack bars having fixed pawls in different planes for engaging with said toothed slides, and means for raising and lowering said reciprocated bars so as to throw one or other of the pawls of each bar into operation, substantially as specified.

18. The combination of the needle cylinder, the knitting cams, the needles, some of which are movable into and out of range of said knitting cams, some of the fashioning needles having bent lower ends, and fashioning cams for acting on the lower portions of said fashioning needles to move them into and out of range of the knitting cams, substantially as specified.

19. The combination of the toothed slides with the reciprocated rack bars having recesses or notches in opposite faces, and pawls consisting of blocks secured in said recesses and projecting therefrom so as to engage with the toothed slides, substantially as specified.

20. The combination of the cam box, the driving shaft, gearing connecting said shaft to the cam box, a clutch sleeve having a pulley for the driving belt, means for connecting said sleeve to the driving shaft, a sprocket wheel also adapted to engage with the clutch sleeve, a second sprocket wheel having a crank arm, a belt for connecting said sprocket wheels, a rod connected to the crank arm, a drum in connection with said rod, and a clutch for connecting said drum to the driving shaft, substantially as specified.

21. The combination of the driving shaft of the machine, the arm thereon, a vibrated drum, an opening in one of said parts, a pin or projection on the other part for engaging with said opening, a shifter rod having fingers embracing the drum, one of said fingers being free to move on the rod, and a spring connecting said finger to a projection on the rod, substantially as specified.

22. The combination of the driving shaft and its arm, having a projecting pin, the vibrated drum having an opening for the reception of said pin and a beveled block having an abrupt face in line of said opening, substantially as specified.

23. The combination of the needle cylinder, the knitting cams, the needles, some of which are movable into and out of range of said cams, fashioning cams acting on the needles to move them into and out of action, toothed slides carrying said fashioning cams, bars having pawls for engaging with said toothed slides, a lever carrying said bars, and a rotated drum having opposite tappets for acting on the said lever and moving the same first in one direction and then in the opposite direction, substantially as specified.

24. The combination of the pawl carrying bars, the lever for actuating the same, a rotating drum and a sleeve thereon carrying tappets for acting on said lever, said sleeve being made in sections adjustable laterally in respect to each other to vary the action of the tappets upon the lever, substantially as specified.

25. The combination of the driving shaft, a power-driven clutch-member adapted to engage directly with a clutching element on said shaft, other mechanism for imparting to and fro movement to the shaft, said mechanism having an element with which the power-driven clutch-member is also adapted to engage, a rock shaft having tappets thereon, means for vibrating said rock shaft, a bar having arms one of which is adapted to be acted on by one of said tappets and the other by the opposite tappet, means for connecting said bar to the clutch-member, and means for raising and lowering the bar so as to carry its arms respectively into and out of range of the tappets, substantially as specified.

26. The combination of the shifting clutch member, the vibrated shaft having tappets thereon, a bar connected to the shifting clutch-member and having a bifurcated end or arm movable into and out of range of the tappets, one of said arms having a notched end, a pattern chain, and means whereby said chain is caused to lift the bar for the action of the tappets so as to effect a partial movement of the shifting clutch-member to throw the machine out of gear, substantially as specified.

27. The combination of the needle cylinder, the knitting cams, the needles, some of which are movable into and out of range of said knitting cams, fashioning cams for acting on the needles to move them into and out of action, slides carrying said cams, means for reciprocating the slides, a clutch for changing the machine from to and fro to round and round knitting, a clutch operating rod, and a bar or finger carried by the said rod and acting on one of said cam slides so as to impart the final impulse thereto, substantially as specified.

28. The combination of the pattern chain, the sprocket wheel carrying the same, the ratchet wheel connected to said sprocket wheel, the toothed pattern wheel, pawls for acting on said toothed wheels, a shaft or stud carrying the wheels and permitting them to turn loosely thereon, and a washer interposed between the toothed pattern wheel and the sprocket wheel, said washer being keyed to the pivot shaft or stud, substantially as specified.

29. The combination of the cam slides, the reciprocated bars carrying pawls in different planes for operating said slides, shifting levers and slides for effecting the raising and lowering of said bars, and the pattern wheel having cams for operating said levers, substantially as specified.

30. The combination of the toothed cam slides, the reciprocated bars having pawls for engaging with said slides, levers and slides for vertically shifting the said bars, one of said levers overlapping the other, and a pattern wheel having cams for acting on said levers, whereby the movement of one lever is imparted to the other, when said lever moves in one direction, the levers moving independently of each other in the opposite direction, substantially as specified.

31. The combination of the toothed cam slides, reciprocated bars having pawls in different planes engaging with said teeth, slides guided on the frame of the machine and engaging with said bars, levers acting on said slides and a pattern wheel having cams for acting on said levers, substantially as specified.

32. The combination of the toothed cam slides, the reciprocating bars having pawls in different planes for acting on said slides, guided slide bars engaging with said pawl bars, levers acting on said slides, and a frictional retaining device or brake acting upon each slide, substantially as specified.

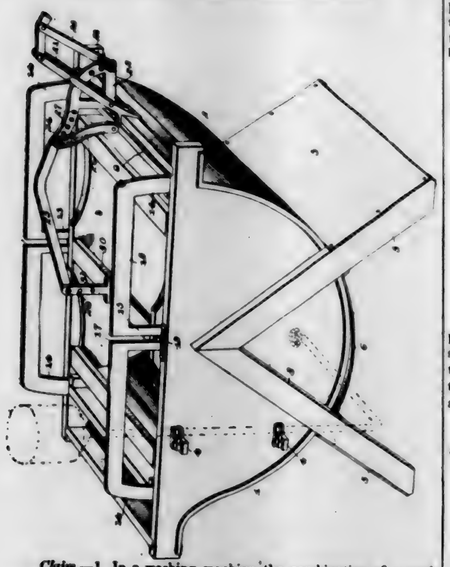
33. The combination of the needle cylinder and its needles, the cam box, a switch cam for acting on the bits of some of the needles, an arm on the shaft of said switch cam, a clutch forming part of the driving mechanism of the machine, mechanism for moving said clutch, a vibrated tappet acting on a bar forming part of said mechanism, and a slide rod carrying said bar and having cams for acting upon the arm of the switch cam, substantially as specified.

34. The combination of the needles, a cylinder having ribs extending to the top of the same so as to serve as sinkers for the stitches, the guided web holders working close to the top of the cylinder and each notched at its inner end so as to serve both as a web holder and as a means of "knocking over" the stitch, a grooved carrier for said web holders, a cam for acting upon the web holders to project and retract the same, and means for operating said cam, substantially as specified.

35. The combination of the needles, the knitting cams for actuating the same, cam slides having cams whereby said needles are caused to engage with or are released from the control of the knitting cams, a lever and devices carried thereby for operating said cam slides, means for vibrating said lever, and set screws and lugs whereby the movement of the lever in either direction is positively limited, one of said elements being carried by each arm of the lever, and the other by the fixed frame, substantially as specified.

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**504,418. WASHING-MACHINE.** JOHN A. GARRETT, Dalton City, Ill. Filed Apr. 22, 1893. Serial No. 471,514. (No model.)

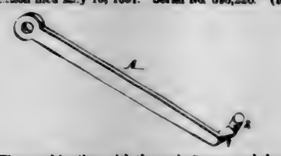


*Claim.*—1. In a washing machine, the combination of a semi-cylindrical body, an upper oscillating rubbing provided at its sides with journals and having a rubber surface on its lower face, a lower oscillating rubber having a rubbing surface on its upper face, and the opposite supporting frames, each composed of upper portions, depending ends secured to the lower rubber and a depending central arm provided at its lower end with a journal to fit in a bearing of the body and having a vertical slot receiving the adjacent journal of the upper rubber; substantially as described.

2. In a washing machine, the combination of a washing machine body, the upper and lower reversely oscillating rubbers, a standard extending upward from one end of the body, an operating lever fulcrumed at the top of the standard and extending outward therefrom, an arm extending upward from the upper rubber, a bell-crank lever fulcrumed at its angle at the bottom of the standard, a bar 23 connecting the outer end of the bell-crank lever with the operating lever, and the connecting rods extending from the inner end of the bell-crank lever to the adjacent end of the lower rubber and to the arm of the upper rubber, substantially as described.

3. In a washing machine, the combination of a washing machine body, the upper and lower oscillating rubbers, the standards extending upward and outward from one end of the body, an operating lever fulcrumed at the top of the standards, a bell-crank lever fulcrumed between the lower ends of the standards and provided at its outer end with adjusting perforations and having at its inner end an extension provided with adjusting perforations, a bar connecting the outer end of the bell-crank lever with the operating lever, an arm extending upward from the upper rubber and provided with adjusting perforations, and the connecting rods extending from the extension of the bell-crank lever to the arm of the upper rubber and to the adjacent end of the lower rubber, substantially as described.

**504,419. PUSH-BAR FOR MOWING-MACHINES.** JAMES H. JOHNS, Rockford, Ill., assignor to Emerson, Talcott & Co., same place. Original application filed Nov. 18, 1884, Serial No. 148,235. Divided and this application filed May 18, 1891. Serial No. 393,220. (No model.)



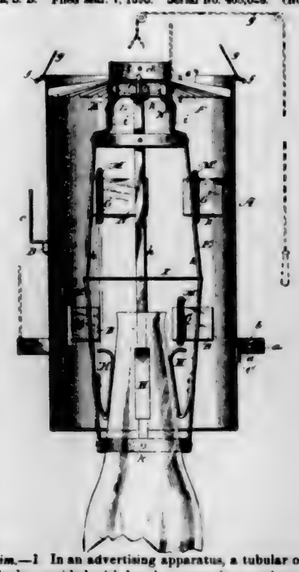
*Claim.*—The combination with the main frame, and the coupling-bar perforated as described, of a push-bar pivotally connected at its rear end with the main frame and provided at its forward end with a projection 1 substantially at right angles to the bar, and a further projection 2, substantially at right angles to the projection 1, whereby the said push-bar is made self-locking when the projections on its front end are inserted in the perforation on the coupling-bar and the bar swung into position for use.

**504,420. DRIP-TROUGH.** JOHN A. KNISLEY, Hitt, Mo. Filed Feb. 6, 1893. Serial No. 461,127. (No model.)



*Claim.*—The drip trough, made from a single piece of sheet metal provided with the lugs, the offset and the orifice; the said metallic sheet bent upward into a trough at the bottom, the lugs bent over the ends of the trough, and the offset bent upon the sheet and around the orifice, and the said lugs and offset being soldered rigidly in place; all substantially as herein and for the purpose described.

**504,421. ADVERTISING APPARATUS.** SOLOMON KUH, Sioux Falls, S. D. Filed Mar. 7, 1893. Serial No. 465,023. (No model.)



*Claim.*—1. In an advertising apparatus, a tubular or hollow rotatable body provided with brackets upon its exterior, suitable supports connected thereto to which the advertising cards or other devices are attached, said body having openings through its walls and semi-transparent shields, and means for holding the shields over the openings, consisting of pivoted spring clamps and pivoted latches, substantially as and for the purpose set forth.

2. In an advertising apparatus, a rotatable hollow or tubular body provided with suitable openings and semi-transparent coverings, means for connecting to the exterior of the body suitable advertising cards or devices, an upright skeleton supporting frame, and suitable spring clamps upon its lower end to hold the frame upon a lamp-chimney or other object to which it is connected, substantially as and for the purpose described.

3. In an advertising apparatus, a rotatable hollow or tubular body having openings covered by semi-transparent shields, means for connecting to the exterior of the body suitable advertising cards or devices, a fan upon the upper end of the body, and a skeleton frame for supporting said body, and friction rollers between the upper end of the frame and the fan, substantially as and for the purpose specified.

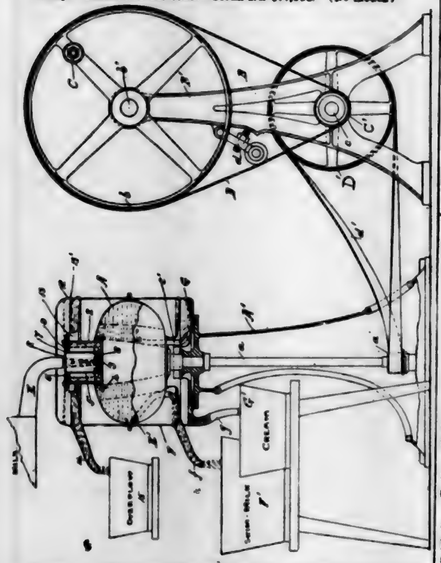


4. In an advertising apparatus, a rotatable hollow or tubular body having openings covered with semi-transpareat shields, and means for connecting advertising cards or devices upon the exterior of the body, an upright skeleton frame for supporting the body, a strengthening dome at the top of the frame, and a wire trestle for preventing the upright bars of the frame from twisting out of shape, substantially as and for the purpose set forth.

5. In an advertising apparatus, a rotatable hollow or tubular body having openings covered with semi-transparent shields, and means for connecting advertising cards or devices upon the exterior of the body, and an upright supporting frame provided upon its respective ends with spring clamps and anti-friction rollers, substantially as and for the purpose described.

6. In an advertising apparatus, a rotatable hollow or tubular body adapted to receive advertising cards or devices upon its exterior, and having openings covered with semi-transparent shields, an upright frame for supporting the body, provided with spring clamps and anti-friction rollers at its respective ends, a wire trestle connected to the frame, and means for elevating the body independent of the frame, substantially as and for the purpose specified.

**504,422. CENTRIFUGAL SEPARATOR AND METHOD OF REGULATING THE SUPPLY THERETO.** FRIEDRICH LUDLOFF, Berlin, Germany. Filed June 16, 1893. Serial No. 477,808. (No model.)




*Claim.*—1. The method of automatically regulating the supply of liquid to a centrifugal separator, which consists in subjecting the supply liquid to centrifugal force before it enters the separator and discharging into a separate vessel a portion of the supply liquid proportionate to any decrease in the normal speed of the separator, substantially as set forth.

2. The combination, with a centrifugal separator, of a centrifugal supply regulator consisting of a hollow vessel provided with two outlets arranged at different distances from its axis, and driving mechanism operating the separator and the regulator at the same proportionate speeds, whereby the supply of liquid is automatically rendered proportionate to the speed of the separator, substantially as set forth.

3. The combination, with a centrifugal separator, and driving mechanism for revolving it; of a centrifugal supply regulator consisting of a hollow vessel provided with two outlets arranged at different distances from its axis secured to the said separator and operating to automatically reduce the supply of liquid to the separator when the speed of the separator is diminished, substantially as set forth.

4. In an automatic supply regulator for a centrifugal separator, the combination, with a revoluble vessel provided with two outlets arranged at different distances from its axis, of a catch pan arranged around the outlet nearer the axis of the vessel and adapted to receive the surplus supply liquid when the speed of the said vessel is diminished, substantially as set forth.

5. In an automatic supply regulator for a centrifugal separator, the combination, with a revoluble vessel provided with an outlet at its lower part near its periphery for the passage of the liquid to the separator, and a second outlet at its upper part between the first said outlet and the axis of the vessel; of a catch pan arranged around the second said outlet and adapted to receive the surplus supply liquid when the speed of the said vessel is diminished, substantially as set forth.

6. In an automatic supply regulator for a centrifugal separator, the combination, with a revoluble vessel provided with an outlet at its lower part near its periphery, a second outlet at its upper part nearer the axis of the vessel than the first said outlet, and an internal vessel provided with openings at its lower part; of a catch pan for receiving the surplus liquid which passes through the second said outlet when the speed of the vessel is diminished, substantially as set forth.

7. In an automatic supply regulator for a centrifugal separator, the combination, with a revoluble vessel provided with an outlet at the lower part of its periphery, a cover plate provided with a central inlet hole for the liquid and outlets between the said central hole and its periphery, of a catch pan for receiving the surplus liquid when the speed of the vessel is diminished, substantially as set forth.

8. The combination, with the revoluble vessel 2 provided with an outlet 4 at its periphery, the internal cylinder provided with holes 6, the cover plate provided with a central hole 8 and outlets 9 between the hole 8 and its periphery, and the plate 10 secured in the vessel below the cover plate and provided with the outlet hole 11; of a catch pan encircling the said vessel and adapted to receive the surplus liquid driven through the outlets 11 and 9, substantially as and for the purpose set forth.

9. An automatic supply regulator for a centrifugal separator, comprising in its construction a revoluble vessel provided with a central opening for the entrance of the supply liquid and two separate outlets through which the said liquid is discharged by centrifugal force, one of the said outlets being arranged nearer the axis of the said vessel than the other said outlet, the outlet more remote from the axis operating to permit the passage of the liquid into the separator, and the outlet nearer the axis operating to permit the discharge of surplus liquid from the said vessel without entering the separator.

**504,423. BEET-HARVESTER.** HORACE B. MARTIN, Chino, Cal. Filed Aug. 29, 1892. Serial No. 444,494. (No model.)



*Claim.*—1. In a beet harvester, the combination with a supporting frame of a series of lifting fingers arranged in pairs and differentially graduated as to width, substantially as described.

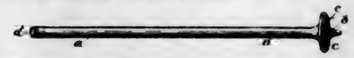
2. In a beet harvester, the combination with a suitable frame of a series of fingers arranged in pairs and inclined from front to rear, said pairs being of different width—substantially as described.

3. In a beet harvester, the combination with a suitable support of a series of lifting fingers arranged in pairs; the space between each pair being gradually lessened from front to rear of the machine—substantially as set forth.

4. In a beet harvester, the combination of a suitable support with a series of fingers arranged in pairs longitudinally of the machine, each pair of fingers being out of alignment with the other pairs, substantially as described.

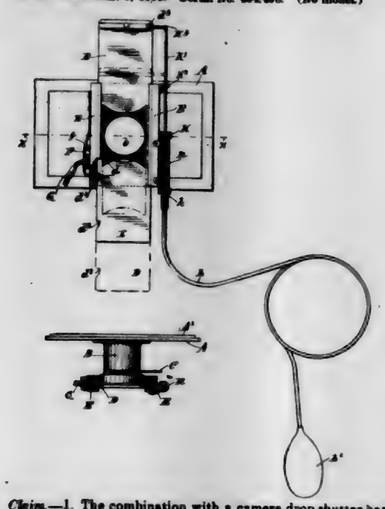
5. In a beet harvester the combination with a suitable draft frame provided with down hangers of two horizontally arranged runners or supports connected with said down hangers and provided with two sets of upwardly and rearwardly inclined lifting fingers arranged in pairs with graduated spaces between said pairs, substantially as described.

**504,424. SURGICAL CATHETER.** OSCAR DE PEZZER, Paris, France. Filed Dec. 5, 1891. Serial No. 414,389. (No model.) Patented in France Apr. 2, 1891, No. 212,535; in Belgium July 28, 1891, No. 95,805, and in England July 28, 1891, No. 12,833.



*Claim.*—As a new article of manufacture, an elastic flexible catheter, having a tubular stem provided at the end to be inserted into a cavity with a perforated disk shaped enlargement whose faces extend at substantially right angles to the stem substantially as described.

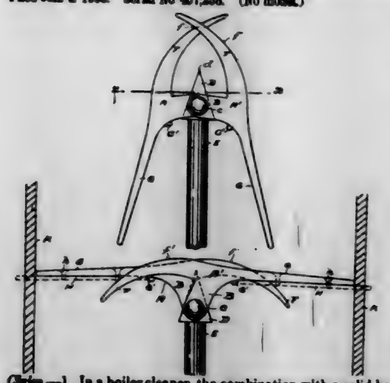
**504,425. CAMERA-SHUTTER.** OSCAR J. SCHRAMM, Minneapolis, Minn. Filed Mar. 3, 1893. Serial No. 464,498. (No model.)



*Claim.*—1. The combination with a camera drop shutter having a spring latch or detent and an air trip, for instantaneous work, of an air cylinder fixed to a stationary part, having a piston with extended stem detachably connectible with the shutter, for time work, and an air bulb with extended flexible tube interchangeably applicable either to the said cylinder or to the said air trip, substantially as and for the purposes set forth.

2. The combination with the drop shutter D having the recess or seat $d^3$ of the cylinder H having the nipple or tube A, the piston K having the extended stem K' with angular projection $K^2$ detachably engageable with the shutter seat $d^3$, and the air bulb L' and flexible tube L, substantially as and for the purposes set forth.

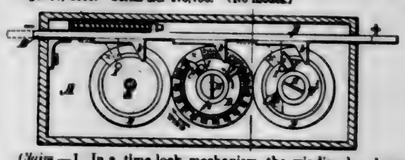
**504,426. BOILER-CLEANER.** GEORGE R. TRUAX, Denver, Colo. Filed Jan. 4, 1893. Serial No. 457,238. (No model.)



*Claim.*—1. In a boiler cleaner, the combination with a solid head mounted on a handle and having a chisel point; of two wings each comprising a blade at the rear end of the wing having its working edge struck on the arc of a circle, a pair of ears at about the center of the wing, and a lever at the front end of the wing standing in the plane of one of the ears, the levers crossing each other forward of said chisel point, and the four ears passing astride said head and breaking joint with each other and a single pivot bolt passing through said ears and head, as and for the purpose set forth.

2. In a boiler cleaner, the combination with a handle, and a solid head of rectangular cross section mounted thereon; of two wings each pivoted between its ends to said head and comprising at one extremity a lever with a curved front edge, the levers moving in different planes and crossing each other in rear of their front ends, and a blade at the rear extremity of the wing, the blade having one working edge *g* curved in a plane at right angles to that of the lever and its other edge *e* raised and continued into said lever, as and for the purpose set forth.

**504,427. TIME-LOCK.** IRA G. BLAKE, Worcester, Mass. Filed Apr. 17, 1893. Serial No. 470,758. (No model.)



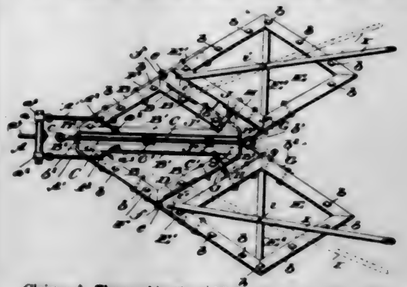
*Claim.*—1. In a time-lock mechanism, the winding-key having the throw-off detent thereon, the internal chamber and the clutch devices on its end, in combination with the chronometric arbor having a clutch-hub fixed thereon, said winding-key being permanently mounted on said arbor and engaging said clutch, an expandible coiled spring disposed within said chamber and retained by a nut at the end of said arbor, and the lock-controlling bar with which said throw-off detent makes contact, substantially as set forth.

2. In a time-lock mechanism, the combination, substantially as described, of the lock-controlling bar, the chronometrically operated arbor having the clutch hub carrying a projecting tooth rigidly fixed thereon, the stationary dial concentric therewith, the stop-pin fixed in the front plate, the winding-key mounted loose on said arbor and normally clutched with said hub, and carrying a projection or detent that engages and moves said lock-controlling bar, and a yielding connection that permits the unclutching and re-adjustment of said winding-key relatively to the arbor and dial, for the purposes set forth.

3. The reciprocating lock-controlling draw-bar having the upper and lower lugs or shoulders *b* and *b'*, in combination with the chronometric arbor, its motor spring, the clutch hub fixed on said arbor and carrying the tooth or projecting point in line with said shoulder *b'*, the winding-key mounted on said arbor normally in clutch with said fixed hub and carrying the throw-off detent in line with the shoulder *b*, and the stop-pin fixed in the front plate or dial at a position corresponding to the back limit of the unlocking movement, substantially as and for the purpose set forth.

4. The combination of the chronometrically actuated arbor *a*, the clutch hub fixed thereon and carrying the projecting tooth, the winding-key carrying the throw-off detent, the coil spring within the winding-key, the cap-nut threaded to the end of the arbor and retaining said spring, the fixed stop-pin and the draw-bar having two shoulders thereon, all substantially as and for the purposes set forth.

**504,428. FOLDING HARROW.** CHRISTENBERRY L. BURNETT, Spartanburg, S. C. Filed Nov. 23, 1892. Serial No. 452,932. (No model.)



*Claim.*—1. The combination with the two-part main section and the independent rear section having hinged connection therewith, and with the central connecting rod of the two-parts of the main section of means for moving the rear section on its hinge independent of the main section or locking it thereto to move simultaneously therewith, and means for holding the sections at a regulated distance apart substantially as specified.

2. The combination with the main section and the rear section hinged thereto, of a pivoted curved brace on the main section and a removable pin passed through the parallel portions of the brace and behind the bar to which it is pivoted, as and for the purpose specified.

3. The combination with the main section and the detachably hinged rear section, of the longitudinal rod forming a portion of the hinged connection, and having at its forward end an opening for the reception of a tooth and clips on said rod for the detachable connection of handles, substantially as and for the purpose specified.

4. The combination with the two portions of the main section, of the plates thereon with eyes, and the longitudinal rod supported in said eyes, and provided at its rear end with an eye and at its forward end with an opening for the reception of a tooth, as set forth.

5. The combination with the two portions of the main section, of the plates thereon with eyes, and the longitudinal rod supported in said eyes and provided with means for the detachable connection of handles, and for the reception of a tooth as set forth.

6. The combination with the two portions of the main section, of the plates thereon with eyes, extended laterally beyond their longitudinal bars and overlapped and the longitudinal rod supported in said eyes and provided with a hook or eye at its rear end and provided with means for the detachable connection of the handles, the pivoted curved brace and the removable pin as set forth.

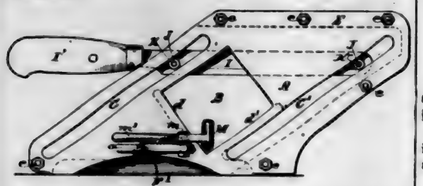
7. The combination with the front section formed of two like hinged parts, having plates with eyes overlapped for the reception of a hinge-rod of the draft appliance and a flexible connection between the same and the longitudinal bars of said part, the pivoted curved brace and the removable pin as set forth.

8. The combination with the main section and the rear hinged section, of the brace on the front bar of the rear section, and the curved brace on the rear bar of the front section with its curved portion engaging the first mentioned brace, substantially, as described.

9. The combination with the main section and the rear hinged section, of the brace on the front bar of the rear section, and the curved brace on the rear bar of the front section with its curved portion engaging the first mentioned brace, said curved brace being pivoted and provided with a removable pin, substantially as described.



**504,429. SLICING MECHANISM FOR BREAD, &c.** JOSEPH FALLOWS, 2d, Southbridge, Mass. Filed May 6, 1893. Serial No. 473,249. (No model.)



*Claim.*—1. In combination, substantially as described, the two upright guiding-plates A A' having similar downwardly and forwardly inclined guiding-slots C C' and the diagonally disposed central opening B therein; one of said plates provided with the foot $A^3$ and V shaped feed-trough D on its outer side; said plates connected together at their upper and rear edges by bolts *e* with the strip or flange E that sustain said plates with an intervening space, and the knife I movably confined within said intervening space, and provided at its opposite sides with guide-studs that work in said guiding slots, and a handle I' that projects at the front of the frame, as shown, for the purpose set forth.

2. In combination with the plates A A' and knife I supported and guided therein, as shown and described, the gage M consisting of a swinging handled lever pivoted upon a bracket *a* fixed to the plate A, and a notched or indented segment for retaining adjustment of said gage, substantially as set forth.

3. In a slicing mechanism of the character described, the plate A having at its lower edge the cut-away or recess at F', in combination with the plate A' attached thereto with the intervening space F, and the knife working and guided between said plates, said cut-away opening into said intervening space, substantially as and for the purpose set forth.

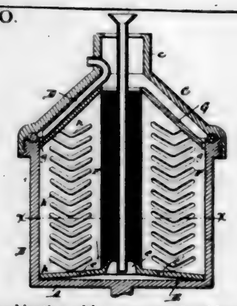
4. The combination with the hand-knife blade, of the removable stud having the shoulder, the rollers mounted on said stud at opposite sides of the blade, and the nut on the threaded end of said stud, substantially as and for the purpose set forth.

**504,430. CENTRIFUGAL CREAMER.** JESSE E. POLK, Brooklyn, N. Y., assignor to the Aktiebolaget Separator, Stockholm, Sweden. Filed Apr. 25, 1892. Serial No. 430,577. (No model.)

*Claim.*—1. The combination with a separator bowl, of corrugated division plates arranged vertically within the bowl, substantially as set forth.

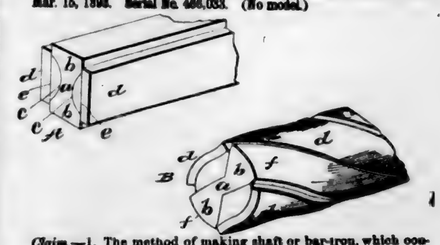
2. The combination with a separator bowl, of vertical division plates provided each with two rows of corrugations inclined in opposite directions, substantially as set forth.

**504,430.**



3. The combination with a separator bowl having a closed bottom and a contracted discharge neck at its top, of vertical division plates each provided with two rows of corrugations inclined toward the neck of the bowl, substantially as set forth.

**504,431. SHAFT OR BAR IRON.** JOHN GREER, Renovo, Pa. Filed Mar. 15, 1893. Serial No. 466,033. (No model.)



*Claim.*—1. The method of making shaft or bar-iron, which consists in forming a twisted core, enveloping said core in metal and welding the metal to the core.

2. The method of making shaft or bar-iron which consists in forming a pile, twisting the pile, surrounding the pile with pieces of metal and welding said pieces to the pile.

3. Shaft or bar-iron having a twisted core enveloped in metal.

4. Shaft or bar-iron having a composite body consisting of an inner twisted body or core and an outer body enveloping the core and welded thereto.

**504,432. CALENDAR-CLOCK.** HULDA GRÜNBERG, Biel, Switzerland. Filed Mar. 9, 1893. Serial No. 465,366. (No model.) Patented in Switzerland Sept. 5, 1892, No. 5,356.



*Claim.*—A regulator for calendar mechanisms of watches provided with an external operating arm, with a spring arm always tending to force it to its central or neutral position and with two pawl arms, one adapted when the operating arm is moved in one direction to rotate the number wheel and the other adapted when the operating arm is moved in the other direction to rotate the name wheel in each case the space of one tooth from the position previously occupied the whole substantially as described for the purpose specified.

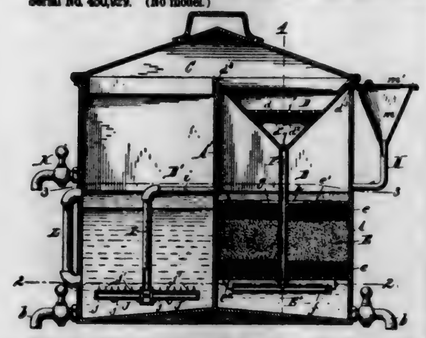
**504,433. TAP.** EDWARD HASLEHURST, Oldham, England. Filed Oct. 16, 1891. Serial No. 408,862. (No model.)



*Claim.*—1. In a tap the combination with the hollow tapered plug B and the hollow casing A into which the hollow plug fits provided with an inclined groove *a* at its outer edge in which a sealing disk is secured of a sealing disk G provided with flanged edges *g* to expand into the groove *a* to close the entrance to the tap and from which it cannot be removed without damaging the disk substantially as and for the purposes described.

2. In a tap for casks and other vessels the combination with the hollow casing A provided with lateral apertures through which the liquid flows and an inclined groove *a* at its edge, the hollow tapered plug which rotates therein, the hollow faucet C which forms a key for turning the plug B, the screwed spindle D of rectangular form which engages with internal screw threads in the hollow faucet C, the valve E which closes the inner end of the faucet C and the sealing disk G with flanged edges *g* which is secured in the inclined groove *a* substantially as and for the purposes described.

**504,434. FILTER.** EDWARD P. HUFF, Buffalo, N. Y., assignor to James H. Finley and James Murphy, same place. Filed Nov. 4, 1892. Serial No. 450,929. (No model.)



*Claim.*—1. The combination with the casing of the filter containing a filtering chamber, of a receptacle removably supported in the upper portion of said chamber, a depending oil tube secured at its upper end to the receptacle and provided with a flange or collar and above the latter with a transverse pin, and a filter bed arranged in said chamber below said receptacle and having a lower supporting plate provided with an opening for the passage of said oil tube and an upper plate resting on the flange of the tube and having an opening for the passage of the tube and a slot for receiving the pin of the same, substantially as set forth.

2. The combination with the casing of the filter having an upright partition dividing it into primary and secondary filtering chambers or compartments, of a filter bed arranged in the lower portion of said primary chamber and separated from the bottom of the chamber by a settling chamber, an oil tube or conduit extending from the upper portion of the primary chamber to the settling chamber, an auxiliary inlet arranged outside the filter case and communicating with the upper portion of the primary chamber, and a pipe submerged in the liquid of the secondary filtering chamber and communicating at its lower end with the latter and at its upper end with the upper portion of the primary chamber, substantially as set forth.

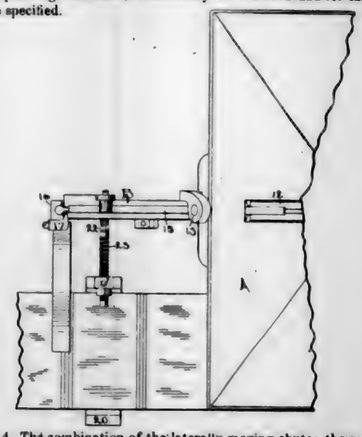
3. The combination with the casing of the filter having a filtering chamber adapted to contain a cleansing liquid, of an oil pipe submerged in said chamber and having at its lower portion one or more branches, each provided on its under side with exit openings for the oil and on its upper side, opposite said openings, with solid vertical pins tapering upward to a point, substantially as set forth.

**504,435. MECHANISM FOR FEEDING SCREW-BLANKS.** HORACE K. JONES, Hartford, assignor to the Russell & Erwin Manufacturing Company, New Britain, Conn. Filed Oct. 22, 1892. Serial No. 449,638. (No model.)

*Claim.*—1. The combination of a feeding tube for the endwise passage of blanks, said tube having a side slot for the admission of said blanks thereto, the laterally moving chute mounted with the opening at its discharge end arranged to face the slotted side of said tube and to be brought into and out of position for registering therewith and mechanism for operating said chute, substantially as described and for the purpose specified.

2. The combination of the laterally moving chute; a slotted feeding tube set relatively thereto for having its slot register with and form a continuation of said chute when it is in one position while said tube acts to obstruct the passage of blanks when its slot does not register with said chute; means for discharging the lowermost blank into said feeding tube, and operating mechanism, substantially as described and for the purpose specified.

3. The combination of a feeding tube for the endwise passage of blanks, said tube having a side slot for the admission of said blanks thereto, the laterally moving chute mounted with the opening at its discharge end arranged to face the slotted side of said tube and to be brought into and out of position for registering therewith, the stop finger 17 located in the path of the blanks in said chute when it is in position to register with the slot in said feeding tube and mechanism for operating said chute, substantially as described and for the purpose specified.



4. The combination of the laterally moving chute; the reciprocating rack having the cam recess 19; the slide 20 having an extension for engagement with said chute, and a pin 21 for engagement with said cam recess, and the spring 24 for moving said slide when released by said rack, substantially as described and for the purpose specified.

5. The combination of the laterally moving chute, a power device for moving said chute in one direction; a spring for moving said chute in the opposite direction and a yielding device between said power device and chute, whereby said chute may be ordinarily moved a given distance by power but may yield when meeting an obstruction, substantially as described.

6. The combination of the laterally moving chute; the slide 20 for acting against the same; the spring 24 for moving said slide in one direction; the spring 23 for holding said chute and slide together, and the reciprocating rack having the cam slot for holding and releasing said slide and moving it in the opposite direction, substantially as described and for the purpose specified.

7. The combination of mechanism for feeding headed blanks, a feeding tube for the endwise passage of the blanks received from said feeding mechanism, a pipe or pipe connection extending obliquely to the bore of said feeding tube with its effluent end pointed toward the discharge end of said tube for conducting a fluid jet in the same direction through said tube as the blanks move in passing therethrough, substantially as described and for the purpose specified.

**504,436. BALE-TIE.** WILLIAM A. KILNER, Newburg, N. Y. Filed Feb. 10, 1892. Serial No. 420,996. (No model.)

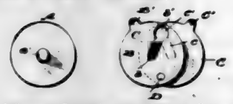


*Claim.*—1. A wire bale tie, having at one end a catch loop provided with a catch plate held in said loop, the ends only of the plate being clamped against the side wires of the loop, as set forth.

2. A wire bale tie, having at one end a catch loop provided with a catch plate, B, having the notches, $b^1$ $b^2$, into which the side wires of the loop fit, the ends, $b'$ $b'$, of the plate being clamped against said wires, as set forth.



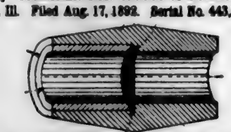
**504,437. BUTTON.** WILLIAM L. KING, Winston, N. C. Filed May 24, 1893. Serial No. 475,317. (No model.)



*Claim.*—1. A button-fastening consisting of two disks eccentrically pivoted together and each formed with a slot and with a nib, the nibs being bent toward each other as and for the purpose specified.

2. A button-fastening consisting of two disks eccentrically pivoted together and each formed with a straight radial slot extending from the center toward the periphery and terminating in an enlargement, and with a nib extending from the periphery, the said nibs being bent toward each other substantially as and for the purpose specified.

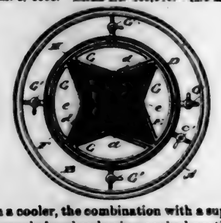
**504,438. STRAINER FOR SPOUTS OF PUMPS.** BASIL H. MESSLER, Canton, Ill. Filed Aug. 17, 1892. Serial No. 443,249. (No model.)



*Claim.*—1. In combination with a pump, a spout tapered from the center to each end, and having a bore which is increased in diameter on one side of the center of the spout, together with a strainer retained in place against the shoulder formed by the differential bore, substantially as shown, and for the purpose set forth.

2. In combination with a pump, a spout tapered from the center to each end, and having a differential bore, substantially as shown, together with a strainer the edge of which is bent at right angles to the body portion and is adapted to be upset when the strainer is driven against the shoulder, formed by the differential bore, by the tube D, for the purpose set forth.

**504,439. WATER-COOLER.** ALBERT W. MEYER, Terre Haute, Ind. Filed Mar. 8, 1893. Serial No. 465,073. (No model.)



*Claim.*—1. In a cooler, the combination with a support and a tray thereon, of a polygonal chamber having conical portion or air chamber, a casing surrounding said chamber and slotted from the top, a plurality of removable receptacles having fixed faucets extending through the slots of said casing and movable vertically therethrough and a removable jacket provided with a top, substantially as specified.

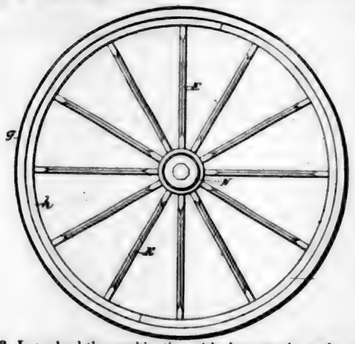
2. The combination with the base with its rollers and tray, of the polygonal jacket with its conical portion, water chamber and central ice receptacle, the surrounding casing slitted from the top, the liquid receptacles with fixed faucets extending through the slots of the casing and a jacket having a top with filling apertures, substantially as specified.

3. The combination with the support and the casing with slots and inclosed ice chamber, of the liquid receptacles with fixed faucets the water receptacle beneath the same and the outer removable jacket with slots, and filling apertures as and for the purpose specified.

4. The cooler described comprising the support with its rollers, the pivoted tray supported upon said rollers, the conical portion with its water receptacle and polygonal chamber and casing with slots, the independent vessels with fixed faucets, projecting through said slots and the outer removable jacket with slots and a cover, all substantially as specified.

**504,440. VEHICLE-WHEEL.** HARRY HOOKE, Wellingborough, England. Filed Mar. 15, 1892. Serial No. 424,807. (No model.) Patented in England Aug. 17, 1891, No. 13,834.

*Claim.*—1. In a wheel the combination with the nave the spokes passing through mortises in the nave and the axle box, of a plate secured to the axle box and having radial grooves, of a series of wedges whose ends are adapted to slide in the radial grooves of the plate and whose outer surfaces bear against the inner ends of the said spokes, and of a cone adapted to be moved along the axle box and act on the inner surfaces of the wedges to force them outward radially substantially as specified.



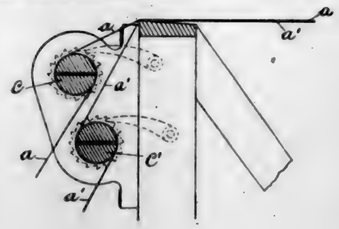
2. In a wheel the combination with the nave the spokes passing through mortises in the nave and a screw threaded axle box, of a plate secured to the axle box and provided with radial grooves, of a series of wedges whose ends are adapted to slide radially in the said radial grooves and whose outer surfaces form portions of a cylinder parallel to the axle and adapted to form bearing surfaces for the inner ends of the spokes and whose inner surfaces form portions of a cone coaxial with the axle box, and of a cone adapted to be screwed on the axle box and to force the wedges radially outward substantially as specified.

3. In a wheel the combination with the nave, the spokes passing through the mortises in the nave and the axle box, of a plate fitting loosely on the axle box but prevented from moving axially and provided with radial mortises, of a series of double wedges which are provided with projections filling in the radial mortises and whose outer surfaces bear against the inner ends of the said spokes, and of two cones adapted to be moved or drawn together along the axle box and act on the inner surfaces of the wedges from the two ends to force them radially outward substantially as specified.

4. In a wheel the combination with the nave the spokes passing through mortises in the nave and the right and left hand screw threaded axle box, of a plate fitting loosely on the axle box but prevented from moving axially and provided with radial mortises, of a series of double wedges which are provided with projections fitting in the radial mortises and whose outer surfaces form a portion of a cylinder parallel to the axis and adapted to form bearing surfaces for the inner ends of the spokes and whose inner surfaces form portions of two reverse cones coaxial with the axle box, and of two cones adapted to screw on the right and left hand screw threads of the axle box and to be drawn together by rotating the axle box to force the wedges radially outward substantially as specified.

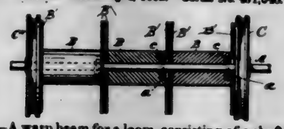
5. In a wheel the combination with spokes radially extensible from the hub to the felly, of wedge shaped fellies and of a double-flanged and wedge-shaped tire into which the fellies are expanded to obtain the required rigidity of the wheel substantially as specified.

**504,441. APPARATUS FOR CUTTING THE PILE OF WEFT-PILE FABRICS.** GEORGE ROGER, Warrington, England. Filed Nov. 22, 1892. Serial No. 452,789. (No model.) Patented in England Mar. 15, 1892, No. 5,065; in France Nov. 19, 1892, No. 225,780, and in Germany Nov. 22, 1892, No. 68,238.



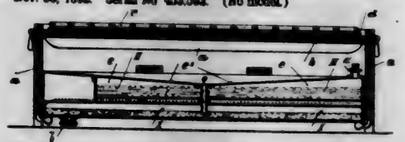
*Claim.*—In apparatus for cutting the pile of weft pile fabrics such as velvets and velveteens the combination of a frame, cloth straining beams or rollers *c*, *c'* mounted in one end thereof, the one below and slightly in advance of the other, and means for holding the rollers or beams in position when under tension, whereby two pieces of velvet or velveteen can be cut at one operation, substantially as described.

**504,442. WARP-BEAM FOR LOOMS.** ANDREW J. SEYBERT, Armstrong County, Pa. Filed May 4, 1892. Serial No. 431,840. (No model.)



*Claim.*—A warp beam for a loom, consisting of a shaft perforated at intervals, a pulley fast upon one end of the said shaft, spools on the shaft one of which is adjacent to the pulley and each having a diametrical recess in the head and end of the hub thereof, and pins passed removably through said perforations in the shaft and received in said recesses in each of the spools, and a removable pulley on the other end of said shaft, the recess and pin of each spool being covered by the adjacent head of the adjacent spool, substantially as described.

**504,443. MATTRESS.** WILLIAM STAAB, Munich, Germany. Filed Nov. 30, 1892. Serial No. 453,592. (No model.)



*Claim.*—1. In combination, with the frame *a*, a wire netting *b*, a reservoir beneath the same and a hot water compartment, substantially as described.

2. In combination with the frame *a*, a wire netting *b*, a drip pan beneath the netting, a compartment I in connection with the drip pan, and an intermediate hot water chamber *e*, substantially as described.

**504,444. HARROW-TOOTH.** LORENZO D. CORSER, Ebensburg, Pa., assignor of one-half to Valentine S. Barker, same place. Filed Aug. 29, 1892. Serial No. 444,403. (No model.)



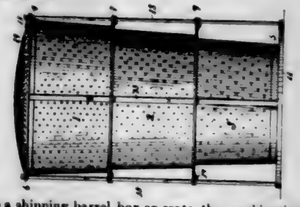
*Claim.*—1. The herein described harrow-tooth, the same formed of sheet-metal and substantially triangular in shape, the upper end of the tooth being laterally bent to form a securing-flange, and one edge of the blank laterally bent to form a stiffening-flange, whose upper end is secured to the adjacent end of the securing-flange, substantially as specified.

2. The herein described improved harrow-tooth, the same being triangular, and having its upper end bent to form a securing-flange, and one edge bent to form a stiffening-flange, the upper end of the latter flange being welded to the adjacent end of the former flange, said tooth having its lower portion laterally and rearwardly curved and rounded to form a rear concaved moldboard, the same having a central convexed nose, substantially as specified.

**504,445. BARREL OR CRATE.** CLIFTON R. DARE and JULIAN D. HALL, El Cajon, Cal. Filed Nov. 3, 1892. Serial No. 450,948. (No model.)

*Claim.*—1. A shipping barrel, box or crate, consisting of telescopic sections, stops arranged at the ends of the sections to prevent their total disengagement, rings encircling the sections, standards extending loosely through the rings and provided with joints, whereby they may be folded, substantially as specified.

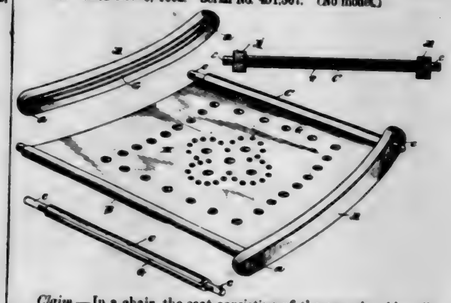
2. A shipping barrel, box or crate combined with a series of telescopic sections, of rings surrounding the same and provided with openings, standards extending from the bottom ring through the openings in the remaining rings, stops for preventing the separation of the sections, and locking devices between the rings and standards, substantially as specified.



3. In a shipping barrel, box or crate, the combination with a series of telescopic cylindrical sections, and stops for preventing the separation of the same, of a series of circular rings embracing the sections and of uniform diameter, the said rings with the exception of the bottom ring having openings, standards secured to the bottom and passing through the openings of the remaining rings and provided above each of said rings with folding joints, and locking devices between the rings and standards, substantially as specified.

4. In a shipping barrel, box or crate, the combination with a series of sections telescopically connected, a series of rings secured to the bottoms of the sections and extending beyond the outer and inner surfaces thereof, a series of rings secured to the upper edges of the intermediate sections and projecting internally, whereby they are adapted to abut against the bottom rings of the sections thereabove, an external ring at the upper edge of the upper section, a series of standards secured to the bottom ring and passing through perforations in the externally projecting rings, joints formed in the standards above said externally projecting rings, with the exception of the uppermost, perforations formed in the standards below the joints, and sliding keys secured to the rings and adapted to engage said perforations, substantially as specified.

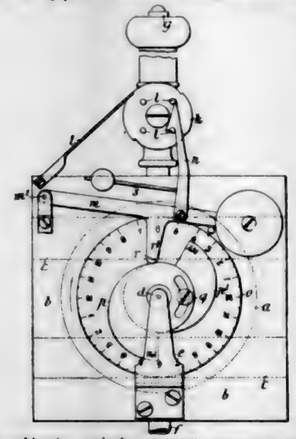
**504,446. CHAIR SEAT AND BACK.** BION H. DODD, Sheboygan, Wis. Filed Nov. 8, 1892. Serial No. 451,367. (No model.)



*Claim.*—In a chair, the seat consisting of the opposite side-rails A having their inner faces grooved longitudinally between their ends, and provided at the ends of their grooves with openings or holes extending transversely therethrough, the front and rear rungs B C likewise grooved between their ends and having their ends reduced and passed through and those of the rear rung extending beyond the openings or holes in the side-rails, combined with the foldable supporting frame having sockets for the reception of the ends of the rung, and the veneer seat having its edges seated in the grooves of the rails and rungs, substantially as specified.

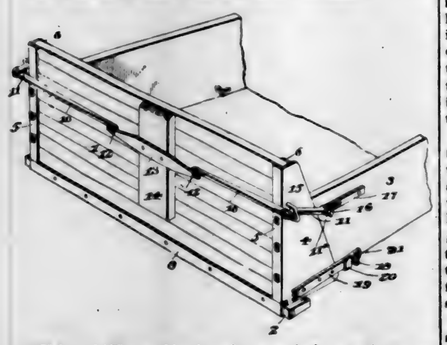
**504,447. AUTOMATIC GAS LIGHTING OR EXTINGUISHING APPARATUS.** PERCIVAL EVERITT, London, England. Filed Dec. 2, 1891. Serial No. 413,805. (No model.)

*Claim.*—1. Apparatus for automatically lighting and extinguishing gas, having in combination with a clock movement and with an illuminating burner and also with a pilot or lighting burner, two eccentric cams on a common arbor and at any desired angle relatively to each other, a re-acting or drop lever *m*, actuated by said cams, a pawl catch or hook actuated by said lever, a stop-cock actuated by said catch, and a by-pass *x*, around the cock, all substantially as set forth.



2. In combination, a clock movement, cams on a common arbor and at any desired angle relatively to each other, means substantially as described for letting on and cutting off the gas, a by-pass *x* around the cock through which the gas may if desired be allowed to pass direct to the burner, and a cock in such by-pass.

**504,448. WAGON END-GATE.** GEORGE C. FLAGG, Lewistown, Ill. Filed June 7, 1893. Serial No. 476,851. (No model.)



*Claim.*—1. The combination of a wagon body, an end gate provided on its outer face with a keeper having lugs at its ends, eyes arranged at the sides of the end gate, link-bars connected at their front ends with the body, and locking-levers arranged in the eyes and hinged to the rear ends of the link-bars and provided at their outer ends with hooks adapted to engage the keeper when the end gate is in a vertical position and to engage the eyes when the end gate is lowered, substantially as described.

2. The combination of a wagon body provided with headed lugs forming pivots, an end gate provided at its sides with eyes, a keeper secured to the outer face of the end gate and provided at its ends with lugs, link-bars pivoted at their front ends to the body by the lugs thereof and arranged in said eyes, and locking-levers hinged to the rear ends of the link-bars and provided at their other ends with hooks for engaging the keeper when the end gate is in a vertical position and for engaging the eyes when the end gate is lowered, substantially as described.

3. The combination of a wagon body, an end gate having eyes at its sides and provided on its rear face with a horizontal keeper having inwardly-extending lugs at the ends, link-bars having their front ends connected with the body and their rear ends arranged in said eyes, and tapering locking-levers hinged to the rear ends of the link-bars and provided with hooks and adapted to be fulcrumed on the outer face of the end gate when the latter is in a vertical position and to engage the keeper, and to engage the eyes of the end gate when the latter is in a lowered position, substantially as described.

4. The combination of a wagon body provided at its rear end with a rearwardly-projecting transverse cleat having a longitudinal recess, a metal strip secured to the outer edge of the cleat and forming a groove, an end gate having its lower edge rounded and arranged in the groove and adapted to be lowered to form a shoveling board, and means for locking the end gate when in a vertical position and for supporting the same when lowered, substantially as described.

5. The combination of a wagon body provided at its sides with hooks, a transverse cleat secured to the rear end of the body and projecting rearwardly therefrom and provided with a longitudinal recess, a metal strip secured to the cleat at the recessed portion thereof and forming a groove, wings having braces and provided with projecting hooks adapted to interlock with those of the body, an end gate having a rounded edge arranged in said groove and having the wings secured to it, and means for locking the end gate in a vertical position and for supporting it when lowered, substantially as described.

6. The combination of a wagon body provided at its sides with hooks and having headed lugs, a transverse cleat secured to the wagon body and projecting rearwardly therefrom and provided with a longitudinal groove, an end gate arranged in the groove and provided with side wings and having laterally-projecting eyes, braces secured to the wings and having hooks adapted to interlock with those of the body, link-bars having their front ends pivoted to the body by the lugs thereof and having their rear ends bent at an angle and arranged in said eyes and adapted to be supported by the hooks of the end gate when the latter is lowered, a double keeper secured to the outer face of the end gate, and levers hinged to the rear ends of the link-bars and provided with hooks for engaging the keeper and the eyes of the end gate, substantially as described.

7. The combination of an end gate constructed of boards arranged crosswise, wings arranged at the sides of the end gate and provided with inwardly extending flanges arranged on the rear face of the end gate, metal strips arranged on the front face of the end gate at points opposite said flanges, and bolts passing through the flanges the end gate and the metal strips and securing the parts together, substantially as described.

8. The combination of a wagon body, an end gate provided on its outer face with a keeper and having eyes arranged at its sides, link-bars connected at their front ends with the body and arranged in the eyes of the end gate, and the locking levers hinged to the rear ends of the link bars and extending horizontally on the rear face of the end gate when the latter is in a vertical position and engaging the keeper and forming a positive support for the end gate, said locking levers being adapted for engaging the eyes of the end gate when the latter is lowered, substantially as described.

9. The combination of a wagon body, an end gate, hooks arranged at the sides of the body at the bottom thereof, wings secured to the end gate and provided near their upper ends with eyes, a keeper arranged on the outer face of the end gate, link bars connected with the body, locking levers hingedly connected to the rear ends of the link bars and arranged in the eyes of the wings and adapted to engage the keeper, and braces secured to the wings at the bottoms thereof and projecting therefrom and provided with hooks to engage those of the body when the end gate is in a vertical position and to form a support for the link bars when the end gate is lowered, substantially as described

10. The combination of a body provided at the bottom of its sides with hooks, an end gate having wings provided with eyes, link bars connected to the body, locking levers hinged to the rear ends of the link bars and received by said eyes, a keeper arranged on the back or outer face of the end gate for engaging the locking levers, and braces secured to the wings at the bottoms thereof and projecting forward therefrom, and provided a short distance from their front ends with laterally extending flanges forming hooks for engaging those of the body when the end gate is in a vertical position, and for supporting the link bars when the end gate is lowered, substantially as described.

**504,449. MACHINE FOR MOLDING CONFECTIONS.** CHARLES H. GREENSTEIN, New York, N. Y. Filed Apr. 19, 1893. Serial No. 470,942. (No model.)

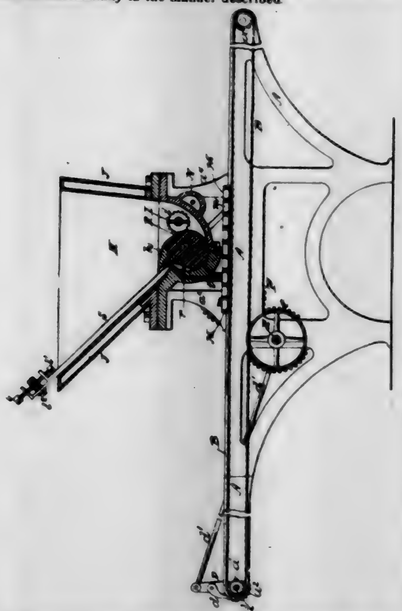
*Claim.*—1. In confection molding apparatus, the combination with the hopper and mold, of a rotating cylinder in the hopper formed with one or more valve chambers; one or more reciprocating scrapers acting in conjunction with said valve chamber or chambers, and one or more conduits arranged to receive the material removed from the said valve chamber or chambers by the scraper or scrapers and to drop the said material into the mold below substantially in the manner and for the purpose described.

2. In confection molding apparatus, the combination with the hopper and mold, of a rotating valve in the hopper, a reciprocating

scraper acting in conjunction therewith, a conduit for receiving the material removed from the rotating valve by the scraper and dropping it into the mold, and means for adjusting the thrust of the said reciprocating scraper with relation to the rotating valve substantially in the manner described.

3. In confection molding apparatus, the combination with the hopper and mold, of a rotating valve in the hopper, a reciprocating scraper acting in conjunction therewith, a conduit for receiving the material removed from the rotating valve by the scraper and dropping it into the mold, and a rotating agitator situated in the hopper adjoining the receiving side of the rotating valve for the purpose and substantially in the manner described.

4. In confection molding apparatus, the combination with the hopper and mold, of a rotating valve in the hopper, a reciprocating scraper acting in conjunction therewith, a conduit for receiving the material removed from the rotating valve by the scraper and dropping it into the mold, and an auxiliary steam or hot water jacket situated opposite the receiving side of the rotating valve for the purpose and substantially in the manner described.



5. In confection molding apparatus, the combination with the hopper and mold, of a rotating valve in the hopper, a reciprocating scraper acting in conjunction therewith, a conduit for receiving the material removed from the rotating valve by the scraper and dropping it into the mold, a rotary agitator, and an auxiliary steam or hot water jacket situated opposite the receiving side of the rotating valve for the purpose and substantially in the manner described.

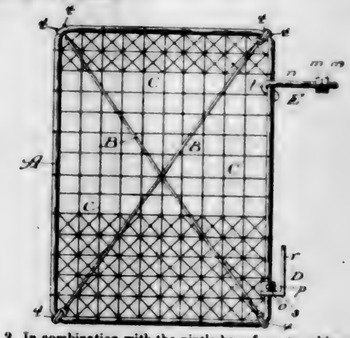
6. In confection molding apparatus, the combination with the hopper and mold, of a rotating valve in the hopper a reciprocating scraper acting in conjunction therewith, a conduit for receiving the material removed from the rotating valve by the scraper and dropping it into the mold, and a conduit for admitting material to the valve chamber beyond the scraper for the purpose and substantially in the manner described.

7 In confection molding apparatus, the combination with the hopper and mold, of a rotating cylinder in the hopper formed with a series of valve chambers or pockets, a series of reciprocating scrapers acting in conjunction with said valve chambers, a series of conduits arranged to receive the material removed from the valve chambers by the scrapers and drop the same into the mold below, and means for adjusting the thrust of the scrapers both individually and collectively with relation to the said valve chambers in the rotating cylinder substantially in the manner and for the purpose described.

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**504,450.** GATE-HINGE. CHARLES M. LAMB, Adrian, Mich. Filed Sept. 16, 1891. Serial No. 406,110. (No model.)

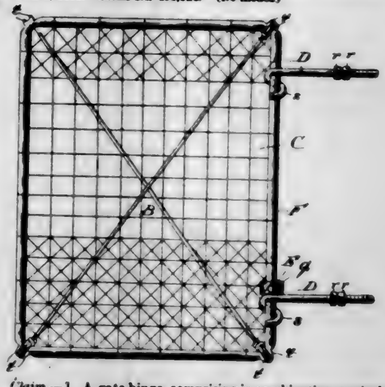
*Claim.*—1 In combination with the pintle-bar of a gate, a hinge secured to the gate-post and loosely encompassing the pintle-bar, and a vertically adjustable stop upon the pintle-bar above the hinge, substantially as described.



2. In combination with the pintle-bar of a gate, a hinge secured to the gate-post and loosely encompassing the pintle-bar, a collar *p* upon the pintle-bar above the hinge, and a set screw *o* passing through the collar for adjustably securing it to the pintle-bar, substantially as described.

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**504,451.** GATE-HINGE. CHARLES M. LAMB, Adrian, Mich. Filed Feb. 7, 1893. Serial No. 461,328. (No model.)

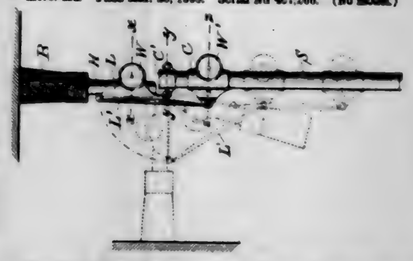


*Claim.*—1. A gate hinge, comprising in combination, a spiral collar *s* to receive the pintle-bar, and means for attaching the spiral collar to a gate-post, substantially as described.

2. The gate hinge D, consisting of a screw bolt, having the spiral collar *s* to receive the pintle-bar, and nuts *r* for securing it to a gate-post, substantially as described.

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**504,452.** BRUSH OR TOOL HOLDER. CHARLES H. LEWIS, Baltimore, Md. Filed Mar. 23, 1893. Serial No. 467,266. (No model.)



*Claim.*—1. In combination, a sliding-clamp, a link-clamp, a stationary collar, an intermediate link hinged to the sliding-clamp and to the link-clamp, and a staff, substantially as shown and described.

2. In combination, the sliding-sleeve-clamp C, the link-sleeve-clamp L, the stationary collar C', the link L', and the staff S, substantially as set forth.

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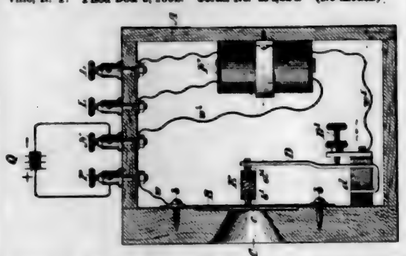


**504,453.** PROCESS OF MAKING ALKALINE PHOSPHATE. THEODOR MEYER, Amoneburg, assignor to H. & E. Albert, Biebrich-on-the-Rhine, Germany. Filed Mar. 9, 1892. Serial No. 424,334. (No specimens.)

*Claim.*—The process of obtaining phosphates of alkali which consists in treating a sulphate of alkali with phosphoric acid in the presence of carbonate of lime at a low temperature, thereby depositing the gypsum in a form in which the solution of phosphate may easily be filtered from it, substantially as described.

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**504,454.** TELEPHONE-TRANSMITTER. NATHANIEL PARKS, Deansville, N. Y. Filed Dec. 6, 1892. Serial No. 454,294. (No model.)



*Claim.*—1. In a telephonic transmitter, a block of carbon having recesses formed in its opposite sides, in combination with electrodes loosely entering each of said recesses and carrying said block.

2. In a telephonic transmitter, a block of carbon having cylindrical recesses formed in its opposite sides but in the same axial line, in combination with a movable and a fixed cylindrical electrode loosely entering said recesses and carrying said block.

3. In a telephonic transmitter, a block of carbon having cylindrical recesses with concave bottoms formed in its opposite sides, in combination with cylindrical electrodes with convex ends entering said recesses and supporting said block.

4. In a telephonic transmitter, a block of carbon having recesses formed in its opposite sides, in combination with electrodes loosely entering into opposite sides of, and carrying said block, and means for adjusting the normal distance between said electrodes.

5. In a telephonic transmitter, a block of carbon having recesses formed in its opposite sides, in combination with a fixed and a movable electrode loosely entering said recesses and carrying said block, a vibrating plate communicating motion to one of said electrodes, and a yielding support for the other electrode.

6. In a telephonic transmitter, a block of carbon having recesses formed in its opposite sides, in combination with a movable and a fixed electrode loosely entering said recesses and carrying said block, a vibrating plate communicating motion to one of said electrodes, and an adjustable yielding support for the other electrode.

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**504,455.** STORAGE-BATTERY. CHARLES J. REED, Orange, N. J. Filed Mar. 2, 1893. Serial No. 464,353. (No model.)

*Claim.*—1. The described method of preparing the material for an electrode for a secondary or storage battery consisting in forming an active coating on the opposite faces of a sheet of lead or equivalent conducting material and then cutting grooves in the coatings and afterward cutting it into strips of the desired width.

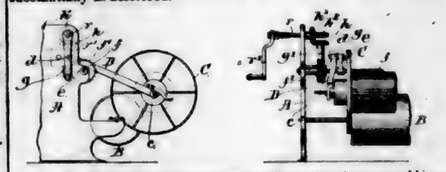
2. An electrode for a secondary or storage battery made up of a series of thin flat strips of lead or equivalent conducting material having an active coating on their opposite faces, the strips being provided with grooves in the active coatings for admitting the battery liquid, in combination with a binding medium for binding said strips together substantially as described.

3. An electrode for a secondary or storage battery consisting of a series of thin narrow strips of lead or equivalent conducting material having active coatings on their opposite faces, the opposite ends of the strips being bound together and the intermediate portions held together by a binding medium substantially as described.

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**504,456.** MECHANISM FOR HANDLING BEAMS. ALONZO E. RHOADES, Hopedale, Mass., assignor to the Hopedale Machine Company, same place. Filed Mar. 23, 1892. Serial No. 426,106. (No model.)

*Claim.*—1. A beam doffing mechanism for warping machines, comprising a driving drum to rotate the warp beam while resting thereon, said beam having journals, and supporting arms provided with bearings for the journals of the said beam, combined with an operating shaft, an actuator shaft to move the said arms longitudinally, and a worm shaft and worm connecting said operating and actuator shafts, substantially as described.



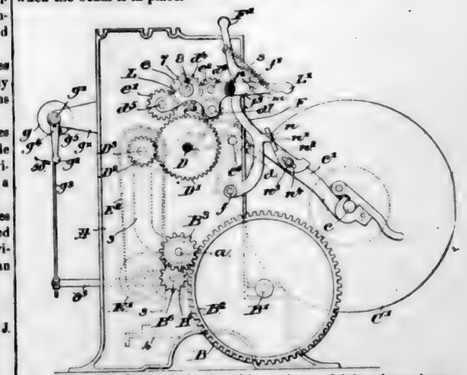
2. The driving drum B, a beam normally resting thereon and having journals, and connecting arms having bearings for said journals, combined with a crank shaft to which said arms are pivotally connected, and devices to rotate it, and thereby move the arms and beam and a locking device to restrain the shaft from rotation, substantially as described.

3. The driving drum B, a beam normally resting thereon and having journals, and pivoted arms having bearings at their free ends for said journals, combined with a crank shaft to which the other ends of said arms are pivotally connected, and having a worm gear, a worm shaft provided with a worm, and means to rotate the worm shaft, substantially as described.

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**504,457.** MECHANISM FOR HANDLING BEAMS OF WARPING-MACHINES. ALONZO E. RHOADES, Hopedale, Mass., assignor to the Hopedale Machine Company, same place. Filed Mar. 24, 1893. Serial No. 467,481. (No model.)

*Brief.*—The drum-supporting arms are fastened to cranks on a shaft adapted to be rotated in either direction. This shaft is set in motion by either of two gears fixed to a movable lever. This lever is held by a latch-lever, which latter is automatically knocked off when the beam is in place.



*Claim.*—1. In a warping machine, a beam driving drum, beam supporting arms having bearings for the journals of the beam which is to rest on and be rotated by said drum, and movable fulcra for said arms, combined with an independent operating shaft, connections between said shaft and said fulcra, and suitable means including normally disconnected actuating and reversing mechanism adapted to be brought into engagement with and to rotate said shaft at times in one or the other direction and thereby move the fulcra of and raise or lower said arms and warp-beam, substantially as described.

2. A beam driving drum, actuating mechanism therefor, and an operating shaft independent of said mechanism, combined with beam supporting arms having bearings for the journals of the beam to be rotated by said drum, movable fulcra for said arms, connections between said operating shaft and fulcra, and reversing mechanism intermediate the operating shaft and actuating mechanism, whereby said shaft may be rotated in one or the other direction to move the fulcra of and raise or lower said arms and warp-beam supported thereby, substantially as described.

3. In a warping machine, a beam driving drum, actuating mechanism therefor, a controlling device intermediate said drum and mechanism to disconnect them at times, and an independent operating shaft, combined with beam supporting arms having bearings for the

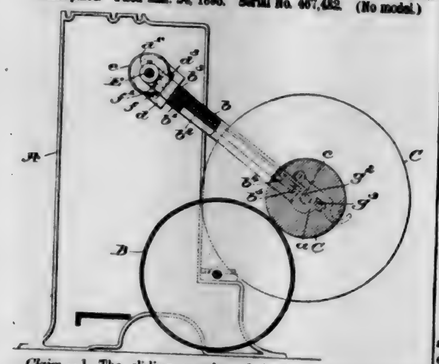
beam journals, movable fulcra for said arms, connections between said fulcra and said shaft, and gearing between said mechanism and shaft to rotate the latter in one or the other direction, to doff or replace the beam, substantially as described.

4. In a warping machine, supporting arms to support the warp-beam, movable fulcra for said arms, and an operating shaft connected with and to move said fulcra, combined with normally in-operative mechanism to rotate said shaft, a locking lever to maintain said mechanism in abnormal position to move the fulcra and place a beam in position to be wound, and an automatic releasing device to move said locking lever and stop the shaft actuating mechanism when the beam is in place, substantially as described.

5. In a warping machine, supporting arms to support the warp-beam, movable fulcra for said arms, and an operating shaft connected with and to move said fulcra, combined with mechanism to rotate said shaft and move the fulcra to place a beam in position to be wound, stops to limit the movement of said fulcra in one direction, and a releasing device to automatically disengage said shaft and its actuating mechanism when the beam is in place, substantially as described.

6. In a warping machine, warp beam supporting arms, movable fulcra therefor, an operating shaft for and connected with said fulcra, and mechanism for rotating said shaft, combined with reversing and locking levers for said mechanism, a projection on one lever and a series of recesses in the other lever, and a yielding connection between said levers to normally hold said projection in one of said recesses, to thereby maintain said mechanism in-operative or in position to rotate the shaft in one or the other direction, substantially as described.

## 504,458. MECHANISM FOR HANDLING BEAMS. ALONZO E. RHOADES, Hopedale, Mass., assignor to the Hopedale Machine Company, same place. Filed Mar. 24, 1893. Serial No. 467,482. (No model.)



*Claim.*—1. The sliding members *b* having journal bearings, threaded rods engaging threaded portions of said members, a shaft, and gearing between said shaft and threaded rods to rotate the latter and thereby move the sliding members longitudinally toward and from the gearing for actuating the threaded rods, substantially as described.

2. The driving drum, and a beam provided with journals and normally resting thereon, combined with longitudinally adjustable arms for the beam each comprising a rotatable member and a member longitudinally movable thereby and having bearings for the beam journals, pivotal supports for the rotating members, means to rotate them, and connections between the members of each arm to retain them in adjusted position, substantially as described.

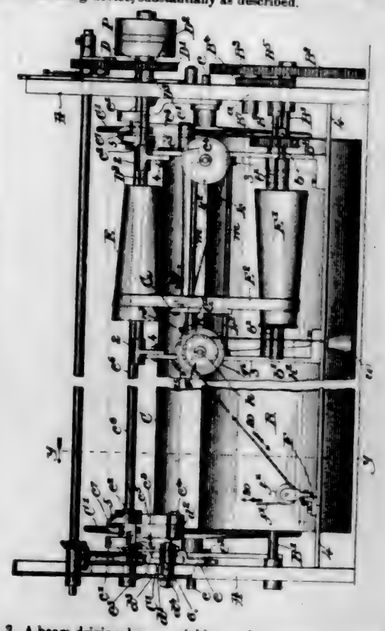
3. The driving drum, a beam normally resting thereon and provided with journals, and longitudinally adjustable supporting arms for the beam, each arm comprising a rotatable threaded rod, and a longitudinally movable member provided with a threaded opening, through which said rod is extended, and having journal bearings, a rotatable shaft upon which said rods are loosely mounted, and gearing between said shaft and rods to rotate the latter and adjust the length of the arms, substantially as described.

## 504,459. WARPING-MACHINE. ALONZO E. RHOADES, Hopedale, Mass., assignor to the Hopedale Machine Company, same place. Filed Mar. 24, 1893. Serial No. 467,483. (No model.)

*Brief.*—As the beam fills, it draws, by means of the link $d^6$, lever *d*, and cord *f'*, the belt along the conical pulleys to gradually reduce the speed of the winding-drum. When the beam is doffed, the cord *f'* is slackened, thus allowing the weight W to return the belt to its starting position on the conical pulleys.

*Claim.*—1. The combination, in a warping machine, of a driving drum, variable speed mechanism to rotate it, and a yarn beam to rest upon the drum, and with connections between said beam and said speed mechanism to control the latter and to automatically restore said speed mechanism to its starting position when the beam is being doffed, substantially as described.

2. The combination, in a warping machine, of a driving drum upon which the beam rests and by which it is rotated, variable speed mechanism to rotate the drum, and a controlling device therefor connected with and positively moved in one direction by the beam to gradually reduce the speed of the drum as the beam fills, with means controlled directly by the doffing of the beam to automatically retract the controlling device, substantially as described.



3. A beam driving drum, variable speed mechanism to rotate it, and supports for the beam which is to rest on and be rotated by the drum, combined with connections intermediate said speed mechanism and beam supports, to regulate the speed through the increased diameter of the beam said connections being controlled directly by the doffing of the beam to automatically place said mechanism in starting position, substantially as described

4. A beam driving drum, and variable speed mechanism comprising reverse cones and a connecting belt, to rotate the drum, combined with a beam to rest on and be rotated by the drum, connections between the beam and belt to positively shift the latter along the cones and gradually reduce the speed as the beam fills, and means controlled directly by the doffing of the beam to automatically replace said belt in starting position when the beam is doffed, substantially as described.

5. A beam driving drum, pivoted actuating arms to support the yarn beam, and variable speed mechanism to rotate the drum, comprising reverse cones and a connecting belt, combined with adjustable connections between the belt and actuating arms to shift the former and reduce the speed as the beam is filled, and devices controlled directly by the doffing of the beam to automatically retract the belt when the beam is doffed and a new one put in its place, to thereby start the winding at maximum speed, substantially as described.

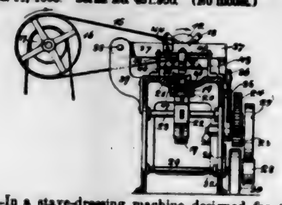
## 504,460. BUSHING. JAMES R. SNIDER, Chicago, Ill. Filed Dec. 22, 1892. Serial No. 456,045. (No model.)





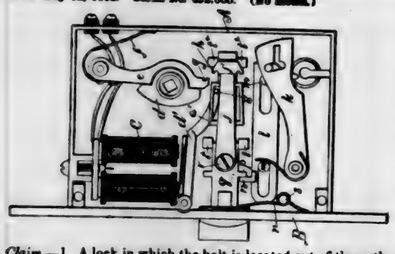
*Claim.*—In a bushing, gudgeon, or other shaft, adapted to be driven or otherwise forced into place, a wing formed thereon, said wing partially encircling the bushing, gudgeon, or shaft and being oppositely laid over at some point in its length, and in cross section to the axis of said bushing, gudgeon, or shaft.

## 504,461. MACHINE FOR DRESSING BUCKED STAVES. CHARLES SOMMER, Sloan's Valley, Ky., assignor to William Sommer, same place. Filed Feb. 11, 1893. Serial No. 461,900. (No model.)



*Claim.*—In a stave-dressing machine designed for the special work described, the combination of a feed-mechanism, a cutter-head means for reciprocating the cutter-head to and from the feed-mechanism which cuts in a line at right angles to the feed-line, a bed-plate provided with a shoulder 47, to hold the staves in the feed-line against the opposite tendency of the cutter-head, a platform 40, below the latter and projecting from the bed-plate and a presser-foot to hold the staves to the platform.

## 504,462. ELECTRIC LOCK. LEMUEL B. TURNHAM, Quincy, Mass. Filed May 12, 1892. Serial No. 432,805. (No model.)



*Claim.*—1. A lock in which the bolt is located out of the path of the tumbler lever, said bolt having connected thereto a movable latch, an electro magnet, and its armature, and suitable actuating mechanism intermediate said armature and said latch, whereby the latch is moved when the magnet is energized, for the purposes and substantially as set forth.

2. The combination in a lock in which the bolt is out of the path of the tumbler lever, with said bolt and tumbler lever, of a movable latch connected to said bolt, an electro magnet and a pivoted armature therefor, engaging said latch, for the purposes and substantially as shown and described.

3. The combination in a lock, with the tumbler and tumbler lever, said lever having a notch *g* at the end thereof, of the bolt *q*, the pivoted latch *j*, said latch being provided with a projection *h*, an electro-magnet, and an armature therefor engaging said latch for the purposes and substantially as set forth.

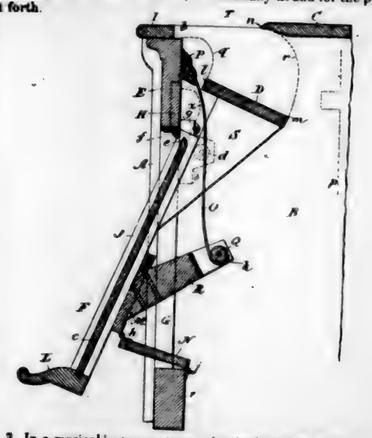
4. The combination in a lock, with the tumbler and tumbler lever, of the bolt *q*, pivoted latch *j* connected to said bolt, said latch being provided with a wing *a'*, the electro magnet and its armature, said armature being extended and provided with a pin *b'* which engages the wing *a'*, substantially as shown and described.

5. The combination in an electric lock with the tumbler lever *e*, of the bolt *q*, the pivoted latch *j*, having a head *j'* for engagement with said tumbler lever, said head *j'* being normally below and rearwardly of the engaging end of the tumbler lever, an electro magnet and a pivoted armature therefor, having a sliding engagement with said latch *j*, whereby when said latch is raised the tumbler lever will retract the bolt whether the bolt be fully projected from the lock case or not, substantially as described.

## 504,463. MUSICAL-INSTRUMENT CASE. JOHN A. WEBER, New York, N. Y. Filed Nov. 10, 1892. Serial No. 451,535. (No model.)

*Claim.*—1. In a musical instrument case, the fixed side walls, in combination with the movable music rack carried by the case, and a movable top cover for closing the top of the case, said cover disconnected from the case and rigidly connected to said rack, whereby said cover follows said rack when the latter is moved to the open or closed positions, and thereby opens or closes the top of the case, substantially as set forth.

2. In a musical instrument case, the case A, in combination with a movable music rack, as F, carried thereby, and a cover, as D, closing said case, and brackets, as S, fixed to said rack and cover and rigidly connecting them together, whereby said cover moves with said rack to open and close the case, substantially as and for the purpose set forth.



3. In a musical instrument case, the rigid side boards B, in combination with a fixed top board C, closing a portion of the top of the case, and having a reduced front edge *n*, a front board E, and movable top cover D for closing the top of the case between said top board and said front board, and fitting at its rear edge said reduced edge *n* of said top board when in the closed position, and entering within the interior of the case when in the open position, and a movable music rack carried by said front board and connected to said cover to move the latter to the open position as it is moved out, and to the closed position as it is moved in, whereby when in the closed position said cover is substantially flush with said top board, substantially as set forth.

4. In a musical instrument case, the case A, in combination with a movable rack F, and a board D rigidly connected thereto, movable therewith and constructed when said rack is in the open position to open the case and when said rack is in the closed position to close the case, and a spring as O constructed to exert a counterbalancing tension against said rack, whereby the weight of the latter and said board are sustained by said spring.

## 504,464. SWITCHBOARD FOR TELEPHONING PURPOSES. UPTON H. BAILEY, Philadelphia, Pa. Filed June 3, 1889. Serial No. 313,578. (No model.)



*Claim.*—1. In a telephonic switch board, the combination of two or more switches for each of different operators, with two or more connecting wires arranged between the terminals of said switches and connected between the switches to form a flat web or ribbon.

2. In a telephonic switch board, the combination of two or more series of switches for each of two or more operators, with connecting conductors between the corresponding terminals of corresponding series of switches of each operator and in which the conductors between two corresponding series of switches are arranged in substantially the same plane, and secured together so as to be movable as a unit and form a flat web.

3. In a telephonic switch board, the combination of two or more series of switches for each of two or more operators, with connecting conductors between the corresponding terminals of corresponding series of switches of each operator and in which the conductors between the corresponding series of switches are arranged in substantially the same plane and interwoven with a flexible weft thread

4. In a telephonic switch board, the combination of two or more series of switches for each of two or more operators, with connect-

ing conductors between the corresponding terminals and in which the conductors between two corresponding series of switches are arranged in substantially the same plane, and secured together so as to be movable as a unit forming a flat web and have their ends bent upward so as to support the horizontal portions of the conductors to the switches at a short distance below the terminals thereof.

5. In a telephonic switch board, the combination of two or more series of switches for each of two or more operators, with connecting conductors between the corresponding terminals of corresponding series of switches of each operator and in which the conductors between the corresponding series of switches are arranged in substantially the same plane, the said conductors being formed into a flat web or ribbon and supported at a distance below the switches to the terminals of which they are connected equal to at least the depth of the switches.

6. In a telephonic switch board, the combination of two or more series of switches for each of two or more operators, with connecting conductors between the corresponding terminals or corresponding series of switches of each operator and in which the conductors between the corresponding series of switches are arranged in substantially the same plane, and connected one to the other so as to form a compact web or ribbon of conductors with their ends bent over the body of the web or ribbon and extending toward the terminals of the switches.

7. In a telephonic switch board, a series of sections of board adapted for a series of operators, a corresponding series of removable switch sections for each section of board, a series of connecting conductors for connecting the corresponding switch sections of different sections of switch board and which conductors are arranged in the same or substantially the same plane, forming a flat web.

8. In a telephonic switch board, a series of sections of board adapted for a series of operators, a corresponding series of removable switch sections for each section of board, a series of connecting conductors for connecting the corresponding contacts of corresponding switch sections of different sections of switch boards, which conductors are arranged in the same or substantially the same plane and have their ends bent at substantially right angles and united to the switch terminals, and also having their parts between the bent portions united or tied together to form a flat web or ribbon.

9. In a switch board for telephonic purposes the combination of two or more switch sections having connecting conductors of insulated wires secured together into a flat web or ribbon.

10. In a switch board for telephonic purposes the combination of two or more removable switch sections having connecting conductors of insulated wires secured together into a flat web or ribbon equal in length to substantially the distance between the sections plus the length of a section, and movable in a plane of the switch sections.

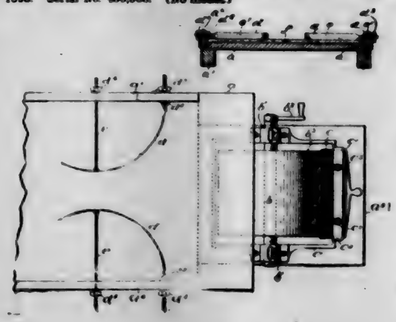
11. In a telephonic switch board, a series of distantly located and removable switch sections, and a frame work having a boxed compartment under the sections, in combination with a series of longitudinal parallel flat webs or ribbons composed of conductors uniting the corresponding distantly located switches and contained within the compartment to the rear of the switches.

12. The combination, with a multiple switch board, of the wires which connect a series of sockets in any given row of the switch board united into a web or band.

13. The combination, in a multiple switch board of a series of operators' sections each of which is formed of a plurality of rows of sockets or switches, with wires which connect the similar sockets or switches of the same row of the several sections united into a web or band.

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**504,465.** INKING AND CLEANING APPARATUS FOR DIE-STAMPING. ALFRED O. BEATER, Philadelphia, Pa. Filed Mar. 16, 1893. Serial No. 466,386. (No model.)



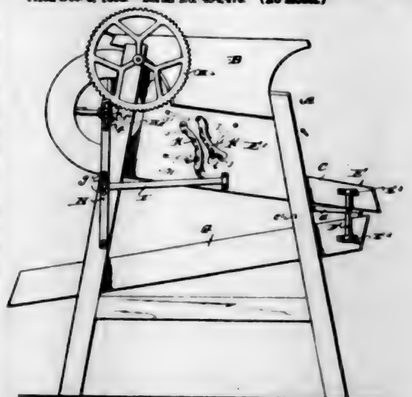
*Claim.*—1. An inking and cleaning appliance for die-stamping, comprising a bench or table provided with a die cleaning material, a rotatable inking-wheel in line with the surface of the bench or table and dipping into a vat or tank, a knife, brush or scraper for removing superfluous material from said wheel, and adjustable means applied to said table or bench and adapted to guide the die in its travel over the table or bench, substantially as and for the purposes set forth.

2. An inking and cleaning appliance for die-stamping provided with a table having an applied die cleaning material or surface, a rotatable inking wheel, and adjustable guides connected with said table, substantially as and for the purposes set forth.

3. In an inking and cleaning appliance for die-stamping, a table or bench provided with die cleaning material, guides detachably connected with said table, and means for adjusting said guides in connection with the table or bench, substantially as and for the purposes set forth.

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**504,466.** GRAIN-SEPARATOR. JAMES C. BENNER, Akeney, Ohio. Filed Dec. 8, 1892. Serial No. 454,479. (No model.)



*Claim.*—1. In a grain cleaner, the combination with the upper or chaffing shoe, the casing, and the drum, all in one frame and movable together, of the fan shaft, having the crank pins thereon, the bars or straps H, H, one on each side and secured to the legs or standards at their lower portions, their upper portions having each an elongated slot engaging said pins, the bars I, one on each side and adjustably connected at one end to said bars H, and at the other end affixed to the said casing, the lower shoe, and the pivoted links or bars connecting said lower shoe with the upper shoe, substantially as specified.

2. In a grain cleaner, the combination with the lower shoe, the hopper having the grain discharge, and the fan, of the transverse grain boards J and L, one situated on each side of the grain passage underneath the hopper, and inclined oppositely to each other, the wind board M operated in connection with said grain boards, and means for effecting and securing the independent adjustment of each of said boards, substantially as specified.

3. In a grain cleaner, the combination with the hopper and the grain passage therefrom, of the transverse pivoted boards J and L, situated one upon each side of said passage, underneath the hopper, means for effecting and securing the independent adjustment of each of said boards, and a chaff chute in front of and below the board L, said chaff discharging at one side, substantially as specified.

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**504,467.** AUTOGRAPHIC REGISTER. HUGO COOS, Dayton, Ohio. Filed July 6, 1892. Renewed Aug. 3, 1893. Serial No. 482,305. (No model.)

*Claim.*—1. In an autographic register, the combination of a pair of feed-rollers for advancing the record-strip, a storage-reel for winding up said strip, and an independent friction roller geared to one of the feed-rollers and bearing against the paper wound upon the storage-reel, for the purpose of turning the latter to wind up the record-strip, substantially as described.

2. In an autographic register, the combination of a pair of feed-rollers for advancing the record-strip, a storage-reel for winding up said strip, journaled in fixed bearings, and an independent friction-roller journaled in yielding bearings and driven by one of the feed-rollers and bearing against the record-strip wound upon the storage-reel, substantially as and for the purpose described.

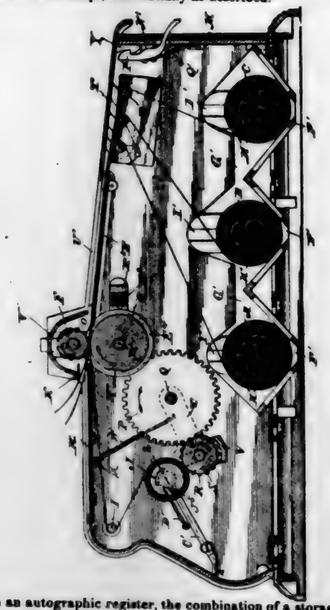
3. In an autographic register, the combination of a storage-reel for the record-strip, a friction roller journaled in a yielding frame and bearing against the paper wound upon said reel, for turning said reel, and means for driving the friction roller, substantially as described.

4. In an autographic register, the combination of the storage reel J for the record-strip, the friction roller S journaled in the swinging frame and bearing against the paper wound upon the reel J, the spring W connected to said frame, and means for driving the roller S, substantially as described.

5. In an autographic register, the combination of the storage reel J, the feed-rollers F G, the swinging frame T T V, the spring W applied thereto, the friction roller S journaled in said frame and bearing against the paper wound upon the roller J, and the gearing connecting said roller with the feed-roller G, substantially as described.

6. In an autographic register, the combination of a pair of feed-rollers for drawing the paper strips over the writing tablet, a storage reel for winding up the record-strip as it is advanced by the feed-rollers, dividing mechanism for the feed-rollers and storage reel, and means applied to the feed-rollers for automatically releasing the strips from the pressure of said rollers at a given point in their revolution, to permit adjustment of the strips, substantially as described.





7. In an autographic register, the combination of a storage reel for winding up the record-strip, a pair of feed-rollers for drawing the paper strips over the writing tablet and delivering the record strip to the storage reel, one of said feed-rollers being provided with a longitudinal cut away space for the purpose of automatically releasing the strips from the pressure of said rollers at a given point in their revolution, to permit adjustment of the strips, substantially as described.

8. In an autographic register, the combination of the supply reels for the paper strips, the writing tablet, and a pair of feed-rollers for drawing the paper strips from the supply reels over said tablet, one of said rollers being provided with a cut away or releasing space for the purpose of automatically releasing the paper strips from the pressure of said rollers at a given point in their revolution, to permit adjustment of the strips, substantially as described.

9. In an autographic register, the combination of the feed-rollers F G for advancing the record-strip, the roller G being provided with the cut away space E' for the purpose described, the storage reel J for winding up the record-strip, and the friction roller S bearing against the paper wound upon the storage reel and geared to the feed roller G, substantially as described.

10. In an autographic register, the combination of the reel J having the longitudinal groove $J^3$ and provided with the flange $J^3$ having an eye $J^4$, and the retaining wire $J^5$ fitting in the groove $J^3$ and co-operating at one end with the eye $J^4$ in the flange $J^3$ and reversely bent at its opposite end and confined in a hole in the end of the roller, substantially as described.

11. In an autographic register, the herein described means for supporting and applying tension to the paper strip supply roll, consisting of the trough F' and vertical guides I' at each end thereof, and the spindle H' passed through the roll of paper and fitting loosely in the guides I', whereby the roll is permitted to rest in the angle formed by the two inclined sides of the trough and its friction against them caused to produce the desired tension substantially as described.

12. In an autographic register, the herein described frame G' for supporting and carrying the paper strip supply rolls, said frame being provided with the troughs F' having the vertical guides at their ends, in combination with the spindles H' passed through the rolls of paper and fitting at their ends in the guides I', whereby the rolls of paper are permitted to rest in the angles formed by the oppositely inclined sides of the troughs and the friction of the rolls against the same caused to produce the desired tension, substantially as described.

13. In an autographic register, the combination of the casing provided with the supporting flanges K', the frame G' provided with the ribs J' resting upon the flanges K', and containing the troughs F' having the vertical guides I' at their ends, in combination with the spindles H' passed through the rolls of paper and fitting loosely in said guides, substantially as described.

14. In an autographic register, the combination of the casing provided with vertical guide-ways at its end, the sliding end gate M' fitting therein, the spring-pressed rock-shaft O' journaled in bearings on said end gate, and the locking plate R' carried by said rock-shaft and co-operating with the lug S' upon the side wall of the casing, substantially as described.

15. In an autographic register, the combination, with the casing of the removable lid T' provided at one end with the dowel pins W fitting in holes in the lugs X' and provided at its opposite end with the pendent hook Y', and the pivoted spring pressed latch P' co-operating with the hook Y' and projecting outside the casing, substantially as described.

16. In an autographic register, the combination of the casing provided with vertical guide-ways at one end, the sliding end gate M' fitting therein, the rock shaft O' journaled in bearings upon said end gate, the locking plate R' fast upon said shaft and co-operating with the lug S' upon the casing, the latch P' also fast upon said rock-shaft, the spring Q' applied to said latch and shaft, and the removable lid T' provided at one end with the dowel pins W' fitting in holes in the lugs X' on the casing and at its opposite end with the pendent hook Y' co-operating with the latch P', substantially as described.

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**504,468.** PNEUMATIC TIRE. DOUGLAS DOBBINS and RICHARD MCKENNEY, Franklin, Ind., assignors of two-thirds to John C. McNutt, Thomas J. Coyle, and William B. Jennings, same place, and Thomas Taggart, Indianapolis, Ind. Filed Dec. 31, 1892. Serial No. 456,949. (No model.)



*Claim.*—1. In a pneumatic tire, a protecting strip consisting of a number of narrow longitudinal strips of impenetrable material with their edges overlapping.

2. In a pneumatic tire, a protecting strip consisting of an elastic base and a number of narrow longitudinal strips of impenetrable material secured to such base with their edges overlapping.

3. In a pneumatic tire, a protecting strip consisting of an elastic base and a number of narrow longitudinal strips of impenetrable material, each secured to such base at one longitudinal line, and with their edges overlapping toward the center of such base.

4. In a pneumatic tire, a protecting strip consisting of an elastic base strip, and a number of narrow longitudinal strips of folds of finely woven silk, each sewed or otherwise fastened by one longitudinal seam to such base, and with their edges overlapping toward the center of such base.

5. In a pneumatic tire, a protecting strip consisting of an elastic base piece, and a number of narrow longitudinal strips of finely woven silk, one central strip centrally sewed or otherwise fastened to such base piece, and parallel strips on each side of such central strip each sewed or otherwise fastened near its outer edge to the base piece, and the inner edge overlapping the adjoining strip.

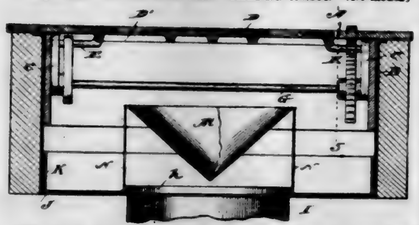
6. In a pneumatic tire, a protecting strip consisting of an elastic base piece, and a number of narrow longitudinal strips of flexible impenetrable material, one central strip wider than the other strips, and beneath it a narrow strip, both centrally attached to the base piece and parallel strip on each side of such central strip, each attached near its outer edge to the base piece and the inner edge overlapping the adjoining strip.

7. In a pneumatic tire, a protecting strip consisting of an elastic base piece with longitudinal strips of flexible impenetrable material attached to such base piece, in combination with a flexible outer tire covering, such base piece attached at its edges to such outer covering.

8. A pneumatic tire consisting of an outer flexible covering suitably attached to the wheel rim, an inner inflatable tube, and a longitudinal elastic protecting strip between such outer covering and inflatable tube, such strip attached at its edges to such outer covering.

9. A pneumatic tire consisting of an outer flexible covering suitably attached to the wheel rim, an inner inflatable tube, and an elastic protecting strip between such outer covering and inflatable tube, attached at its edges to such outer covering and having a series of narrow longitudinal strips of flexible impenetrable material attached to it and overlapping each other toward the center of the protecting strip, the overlapping edges of such narrow strips being free.

## 504,469. HOT-AIR REGISTER. WEBSTER M. DYAS, Arlington Heights, Ill. Filed Mar. 25, 1893. Serial No. 467,538. (No model.)



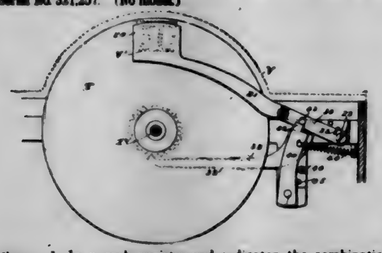
*Claim.*—1. In a register of the class described, the combination with two perforated plates one of which is movable into the plane of the other and the solid portions of one being adapted to register with and close the perforations of the other, and means for moving one of said plates, substantially as described.

2. In a register of the class described, the combination with two perforated plates, one of which is movable with reference to the other and the perforations and solid portions of the plates being so disposed that the solid portions of one may enter the perforations or apertures of the other and means for moving one of said plates, said means comprising pintles secured on the movable member, guides in which said pintles move, a rock shaft having an operating lever and segments secured on the rock shaft and having cam slots to receive the pintles, substantially as described.

3. In a register of the class described, the combination with two perforated plates one of which is secured with the register frame, and the other of which is movable in relation thereto, the movable member being provided with pintles, fixed guides for said pintles, a rock shaft secured in bearings in the lower ends of said guides, operating segments secured on the rock shaft, said segments having cam slots to receive the ends of the pintles and an operating lever secured to the rock shaft and working through a slot in the fixed plate, said operating lever being constructed to close said slot when the register is in a closed position, substantially as described.

4. The combination with a register box of a removable dust pan adapted to be placed within said box and having a central aperture surrounded by a flanged collar and adapted to be fitted over the end of the hot air delivery pipe, and a conical receiver having supporting legs and arranged within the dust pan over the aperture thereof, substantially as and for the purpose described.

## 504,470. BLIND FOR CASH REGISTERS AND INDICATORS. LEO EHRLICH, St. Louis, Mo., assignor, by mesne assignments, to the National Cash Register Company, Dayton, Ohio. Filed Aug. 19, 1889. Serial No. 321,257. (No model.)



*Claim.*—1. In a cash register and indicator, the combination, with an indicator and register having independent operating handles, of an automatic screen moving at the operation of the indicating handle into position to hide the indicator, and at the operation of the registering handle into position to expose it, substantially as described.

2. In a cash register and indicator, the combination, with an indicator and register having independent operating handles, of an automatic screen moving at the operation of the indicator handle into position to hide the indicator, a latch for holding it in such position, and a trip for the latch actuated by the registering handle to release the screen and permit it to move into position to expose the indicator, substantially as described.

3. In a cash register and indicator, the combination, with an indicator, a register, a handle for setting them and a second handle for actuating the register, of an automatic screen moving at the operation of the setting handle into position to hide the indicator, and at the operation of the register-actuating handle into position to expose the indicator, substantially as described.

4. In a cash register and indicator, the combination, with an indicator, a register, a handle for setting them and a second handle for actuating the register, of an automatic screen moving at the operation of the setting handle into position to hide the indicator, a latch for holding it in such position, and a trip for the latch actuated by the register-actuating handle to release the screen and to permit it to move into position to expose the indicator, substantially as described.

5. In an indicating machine, the combination, with an indicator movable to different positions to expose its numbers to view, of a screen movable into position to alternately hide and expose the indicator, and a connection between the screen and indicator for causing the indicator to move the screen into position to hide its numbers when the indicator is turned from its position of rest, substantially as described.

6. In an indicating machine, the combination, with an indicator movable to different positions to expose its numbers to view, of a screen movable into position to alternately hide and expose the indicator, a connection between the screen and indicator for causing the latter to move the screen into position to hide its numbers when turned from its position of rest, a latch for holding the screen in such position, and a trip for the latch, substantially as described.

7. In an indicating machine, the combination, with an indicator movable to different positions to expose its numbers to view and having a toothed wheel turning with it, a screen movable into position to alternately hide and expose the indicator, and a lever interposed between the toothed wheel and screen and co-operating therewith to move the screen into position to hide the indicator when the latter is turned from its position of rest, substantially as described.

8. In an indicating machine, the combination, with an indicator movable into different positions to expose its numbers to view and having a toothed wheel turning with it, a screen movable into position to alternately hide and expose the indicator, a lever interposed between the toothed wheel and screen and co-operating therewith to move the screen into position to hide the indicator when the latter is turned from its position of rest, a latch for holding the screen in such position, and a trip for the latch, substantially as described.

9. In a cash register and indicator, the combination, with an indicator movable into different positions to expose its numbers to view, and a register, of a screen movable to position to alternately hide and expose the indicator and tending to move automatically into one position, a latch for holding it in the other position, and a trip for the latch moved by the actuation of the register, to release the screen, substantially as described.

10. In a cash register and indicator, the combination, with an indicator movable into different positions to expose its numbers to view, and a register, of a screen movable to position to alternately hide and expose the indicator and tending to move automatically into position to expose the indicator, a latch for holding it in position to hide the indicator, and a trip for the latch actuated by the operation of the register, to release the screen and permit it to move into position to expose the indicator, substantially as described.

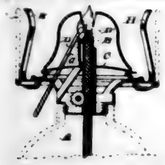
11. In a cash register and indicator, the combination, with an indicator movable to different positions to expose its numbers to view, and a register, of a screen movable into position to alternately hide and expose the indicator, a connection between the screen and indicator for causing the latter to move the screen into position to hide the indicator when the indicator is turned from its position of rest, and means for temporarily holding the screen in such position and releasing it at the operation of the register, to permit it to move to position to expose the indicator to view, substantially as described.

12. In a cash register and indicator, the combination, with an indicator movable to different positions to expose its numbers to view, and a register, of a screen movable into position to alternately hide and expose the indicator, a connection between the screen and indicator for causing the latter to move the screen into position to hide the indicator when the indicator is turned from its position of rest, a latch for holding the screen in such position, and a trip for the latch actuated by the operation of the register, to release the screen and permit it to move into position to expose the indicator, substantially as described.



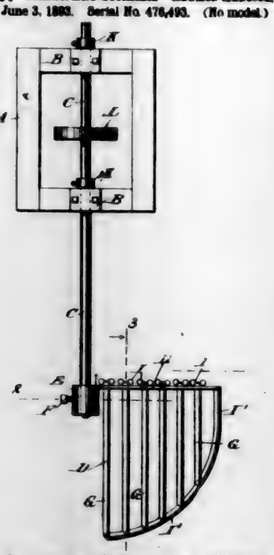
13. In a cash indicator, the combination, with an indicator movable to different positions to expose its numbers to view, of an automatic screen normally tending to move into position to expose the indicator, and means for moving it into position to hide the indicator as soon as the latter is turned from its position of rest, and releasing it after the indicator has been turned to the new indication, whereby the numbers upon the indicator are hidden from view as they successively pass the indicating point while the indicator is being turned from one position to another, substantially as described.

## 504,471. BURNER ATTACHMENT FOR LIGHTING LAMPS. JAMES H. FLOOD, Bridgeport, Pa. Filed Jan. 31, 1893. Serial No. 460,453. (No model.)



*Claim.*—The improved burner attachment for lighting lamps, comprising the wick-tube B, diaphragm C, trap D hinged adjacent to the wick-tube and of a width substantially equal to the height of the wick-tube above the hinge of the trap, the under side of the trap being roughened, and a stop to prevent raising the trap to a perpendicular position, whereby a match head may be caused to lift the trap, and be simultaneously ignited and guided to the wick, substantially as described.

## 504,472. MIXER AND STIRRER. ADDISON HANCOCK, Allegheny, Pa. Filed June 3, 1893. Serial No. 476,493. (No model.)



*Claim.*—1. In a mixer and stirrer, the combination with the stirrer shaft, of a dasher secured to the said shaft, a series of vertical slats inclined at an angle to the path of their rotation, pivoted in said dasher, and a segmental rim I secured to said slats, substantially as described.

2. In a mixer and stirrer, the combination with the stirrer shaft, of a dasher secured to said shaft, a series of adjustable vertical slats inclined at an angle to the path of their rotation pivoted in said dasher, and a segmental rim I secured to said slats, substantially as described.

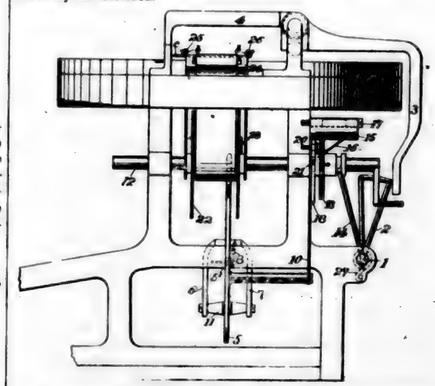
3. In a mixer and stirrer, the combination with the stirrer shaft, of a vertical adjustable dasher secured thereto, a series of vertical slats inclined at an angle to the path of their rotation, and a segmental rim I in which are secured the lower ends of said slats, substantially as described.

## 504,473. TYPE-WRITING MACHINE. LEWIS D. HITCHCOCK, Hartford, Conn. Filed Feb. 27, 1893. Serial No. 463,799. (No model.)

*Claim.*—1. A ribbon spool adapted to be moved endwise upon its bearings, a spring actuated rock shaft, having an arm engaging with the spool, and having a spiral wing adapted to engage with a moving carriage, arranged and operating to slide that ribbon spool endwise as the carriage is moved upon its ways, substantially as described.

2. A ratchet wheel, and a pawl adapted to be moved into and out of engagement with that ratchet, the engaging portion of the pawl consisting of a spiral fin, the axis of which is coincident with that of the wheel when the pawl is in its engaging position; substantially as described.

3. A ratchet wheel arranged to slide endwise on its bearings, a pawl, adapted to be moved into and out of engagement with the ratchet, and having a spiral fin arranged and operating to turn the ratchet wheel upon its bearings as it is moved endwise thereon; substantially as described.



4. A ratchet wheel arranged to slide endwise upon its bearings, a pawl located adjacent thereto, having a spiral working edge adapted to turn the ratchet wheel as it is moved endwise in one direction, and a detent adapted to engage the ratchet, and operating to keep it from turning back when moved endwise in the other direction, substantially as described.

5. A ratchet wheel, a spring actuated rock shaft adapted to engage the ratchet and to move it endwise upon its bearings, a pawl pivoted adjacent to the ratchet wheel and having a spiral working edge adapted to engage therewith, and a detent also adapted to engage with the ratchet wheel, all arranged and operating to revolve the ratchet wheel as it is moved back and forth by the rock shaft, substantially as described.

6. A ratchet wheel, with a pawl and detent adapted to engage therewith, and a cam journaled concentrically with the ratchet wheel and operating to carry that pawl and detent into or out of engagement with their ratchet wheel, substantially as described.

7. A pair of oppositely disposed ratchet wheels, each having a pawl, a detent, and a cam adjacent thereto, a pair of links and a tilting bar connecting those cams, and operating to lift the pawls and detent of one of those ratchets out of engagement, while allowing those of the other ratchet to engage therewith; substantially as described.

8. A ribbon spool, and a tripping pawl pivoted to the flanges of the spool, and having a portion lying within the plane of the ribbon, adapted to be wound in by the ribbon and to be released as the ribbon is unwound; substantially as described.

9. A ribbon spool, a tripping pawl pivoted to the flanges of that spool and lying partly within the plane of the ribbon, with a spring arm arranged and operating to carry that pawl outward when released by the ribbon; substantially as described.

10. A tilting bar adapted to oscillate upon a pivot, a spring arranged to press the bar either way from a dead center, and a pair of tripping pawls pivoted upon oppositely disposed ribbon spools, arranged and operating to oscillate the tilting bar past the dead point of its spring, alternately in opposite directions; substantially as described.

11. A ratchet wheel, having a pawl, a detent, and a cam adjacent thereto, a tilting bar and a link connected with that cam, and a tripping pawl, carried on a ribbon spool and adapted to engage with and operate that tilting bar; substantially as described.

12. A tilting bar, a spring adapted to press that bar in either direction from a dead center, a pair of links connecting the opposite ends of the bar with two oppositely disposed sets of mechanism, each set

consisting of a ratchet wheel, a spiral pawl, a detent, a cam, a ribbon spool, and a tripping pawl, the latter being pivoted on the spool and partly located within the plane of the ribbon and of the tilting bar, all arranged and operating to reverse the direction of the longitudinal movement of the ribbon when one of the tripping pawls is released by the unwinding of the ribbon and is carried against the tilting bar: all substantially as described.

13. A pair of oppositely disposed ribbon spools, adapted to be moved endwise upon their bearings, and a ribbon guide and tension ladder carried by those spools, arranged and operating to move laterally with the ribbon; substantially as described.

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**504,474. DUST-PAN.** ALVA L. HOLLANDER, Millis, Mass. Filed May 11, 1893. Serial No. 473,634. (No model.)



*Claim.*—1. A dust-pan, comprising in its construction the pan proper whose back portion is provided with a plurality of slots, and a tubular handle having tangs forming continuations of the tube and projecting from one end thereof, said tangs extending through the said slots and being bent in different directions over the inner side of the pan, so that they positively secure or lock the handle to the pan, the tangs being originally substantially parallel with each other, so that they may be inserted simultaneously in said slots by an endwise movement of the handle, as set forth.

2. A dust-pan, comprising in its construction the pan proper whose back portion is provided with a plurality of slots, and a tubular handle divided longitudinally along its lower side and provided with tangs engaging the said slots and bent over the inner side of the pan, two of said tangs being at opposite sides of the division in the handle and both engaging the same slot.

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**504,475. PENDENT INCANDESCENT ELECTRIC LIGHT.** WILLIAM A. JOHNSTON and JOHN C. DAVIDSON, Prince's Bay, N. Y., assignors to the S. S. White Dental Manufacturing Company, Philadelphia, Pa. Filed Apr. 28, 1893. Serial No. 472,217. (No model.)

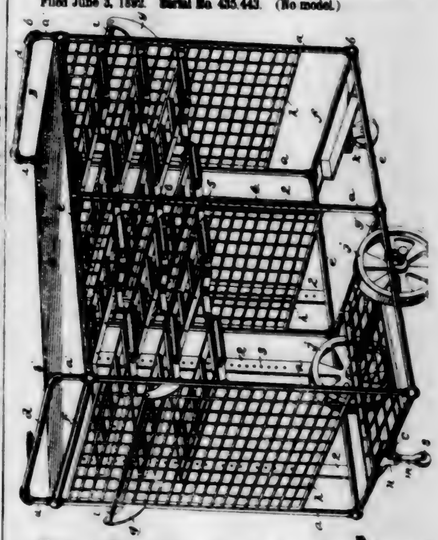


*Claim.*—1. The combination of the support adapted to be fixed position, the swinging suspending tube, the bearing piece within the support and connected with the suspending tube, the socket embracing the support, and carried by and adjustable on said tube, the adjusting sleeve on the suspending tube for yieldingly clamping the support between its socket and the bearing piece, the lamp carried by the suspending tube, and the conducting wires passing through the support and tube, substantially as and for the purpose set forth.

2. The combination of the support, the suspending tube connected therewith and having the longitudinally slotted section, and the section sliding therein, and provided with the guide projection working in the slot of the slotted section the lamp at the lower end of said sliding section, and the conducting wires passing through the support and tube sections and extending outside the tube by way of the slot in one of its sections, substantially as and for the purpose set forth.

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**504,476. TRUCK.** MARLY S. KELLEY, Providence, R. I., assignor to the Fenton Metallic Manufacturing Company, Jamestown, N. Y. Filed June 3, 1892. Serial No. 435,443. (No model.)



*Claim.*—1. The combination with the frame of the bus and its supporting wheels *j*, *j* and wheel *k*, of a support at the opposite end from the wheel *k* adapted to be displaced, substantially as set forth.

2. A truck for books and papers having its body constructed of vertical standards, a cap or cover, upper and lower horizontal side and cross pieces, and couplers uniting the ends of the side and cross pieces to each other and to the standards, substantially as described.

3. In a truck for books and papers, the body thereof constructed with the uprights having openings therein and the horizontal side and cross pieces, in combination with roller shelves having partitions adapted to receive bolts for adjustably securing the shelves in position upon said uprights, substantially as described.

4. The combination with the frame of the bus consisting of uprights and cross pieces, of roller shelves and means for adjusting and securing the shelves in different positions, substantially as set forth.

5. The combination with the frame of the bus of the roller shelves and vertical strips in rear of shelves, and means for securing said shelves in slightly inclined positions, substantially as described.

6. The combination of the frame of the bus and the handles *g*—*i*, arranged to be folded up against said frame, substantially as described.

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**504,477. CEMENT.** CHARLES F. LE FEVER, Hagerstown, Md. Filed Mar. 24, 1893. Serial No. 467,503. (No specimens.)

*Claim.*—1. The cement hereinbefore described consisting of borax twenty-five per cent., rosin twenty-five per cent., glue fifty per cent., comminuted or pulverized, dissolved in water and thickened, substantially as set forth.

2. The cement herein described, consisting of borax, rosin and glue in about the proportions and treated substantially as set forth.

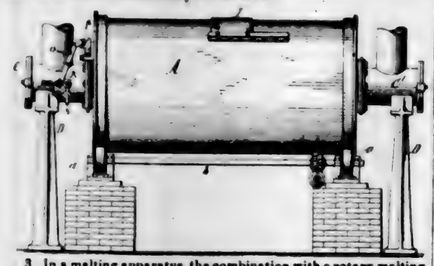
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**504,478. MALTING APPARATUS.** GEORGE J. MEYER, Buffalo, N. Y. Filed June 22, 1892. Serial No. 478,490. (No model.)



*Claim.*—1. In a malting apparatus, the combination with a rotary malting drum and a sprinkler pipe arranged therein, of a water supply pipe arranged outside of the drum and connected with said sprinkler pipe, a cut off valve arranged in said supply pipe, and a trip device, whereby said valve is automatically operated by the rotation of the malting drum, substantially as set forth.

2. In a malting apparatus, the combination with a rotary malting drum and one or more sprinkler pipes arranged therein, of a stationary supply pipe arranged outside of the drum, connected with said sprinkler pipes and provided with a cut off valve, a cam arranged on the rotary drum, and a trip lever for operating said valve, arranged in the path of said cam, whereby the lever is actuated by the rotation of the drum, substantially as set forth.



3. In a malting apparatus, the combination with a rotary malting drum and one or more sprinkler pipes arranged therein, of a stationary supply pipe arranged outside of the drum, connected with said sprinkler pipes and provided with a cut off valve, an extensible cam arranged on the drum and composed of a bracket, an incline arranged on said bracket, and a series of flat superposed plates arranged in said bracket and capable of being shifted laterally under said incline, and a trip device for operating said valve, arranged in the path of said cam, substantially as set forth.

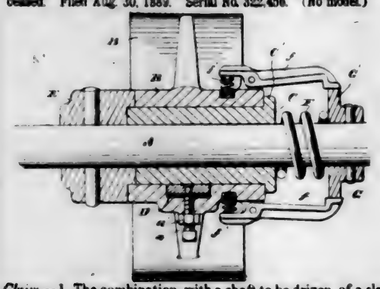
4. The combination with the rotary malting drum, and a sprinkler pipe arranged in the same, of a valve controlling the passage of the water through said pipe, a cam arranged on the drum for operating said valve, a bracket arranged adjacent to said cam, extension plates arranged in said bracket and adapted to be shifted in line with said cam for lengthening the same, and a clamping device for holding the extension plates in position, substantially as set forth.

5. The combination with the rotary malting drum and a sprinkler pipe arranged in the same, of a valve controlling the passage of the water through said pipe, a cam arranged on the drum for operating said valve, a recessed bracket arranged adjacent to said cam, slotted extension plates arranged in the recess of said bracket, a retaining rod passing through the slots of the extension plates, and a clamping bar for holding said plates in position, substantially as set forth.

6. The combination with the rotary malting drum and the sprinkler pipe arranged therein, of a supply pipe connected with the sprinkler pipe and having a valve, a drain pipe connected with said supply pipe and having a valve, an actuating lever, connected with both of said valves and arranged to open one of the same when the other is closed, a cam arranged on the rotary drum, and a trip lever connected with said actuating lever and operated by said cam, substantially as set forth.

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**504,479. SAFETY DRIVING MECHANISM.** ELMORE W. ROSS, Springfield, Ohio; Mary F. Ross executrix of said Elmore W. Ross, deceased. Filed Aug. 30, 1889. Serial No. 322,456. (No model.)



*Claim.*—1. The combination, with a shaft to be driven, of a sleeve thereon, and a wheel on said sleeve, said sleeve being detachably connected to said shaft, means whereby the connection between the sleeve and the shaft may be positively broken by a movement of said wheel on said sleeve, and means for yieldingly connecting said wheel and sleeve so as to permit such relative rotative movement of these parts, substantially as specified.

2. In a safety device for driving mechanism, a wheel mounted upon a sleeve, the hub of said wheel and said sleeve being each provided with inclined clutch-faces running in opposite directions, a clutch-collar having corresponding clutch-faces to engage with said wheel and sleeve, and means for yieldingly connecting said sleeve and wheel, substantially as specified.

3. The combination, with a shaft, and a clutch collar secured rigidly to said shaft, of a sleeve having inclined clutch-faces engaging with said clutch-collar, a wheel on said sleeve having clutch faces oppositely inclined from the clutch-faces on said sleeve, and also engaging with said clutch-collar, friction bearings between said wheel and sleeve, and means for holding said sleeve and wheel into engagement with said clutch-collar, substantially as specified.

4. The combination, with a shaft, and a clutch-collar secured rigidly to said shaft, said clutch-collar being provided with two series of clutch-faces inclined in opposite directions, of a sleeve on said shaft and a wheel on said sleeve, clutch-faces on the wheel and sleeve, respectively, adapted to engage with the respective clutches on the said clutch-collar, means for yieldingly connecting said sleeve and wheel, and means for holding said sleeve and wheel yieldingly in contact with said clutch collar, substantially as specified.

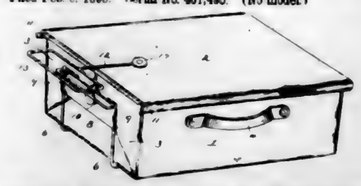
5. The combination, with a shaft and clutch collar thereon, said clutch-collar being provided with two series of clutch-faces inclined in opposite directions, of a sleeve on said shaft and a wheel on said sleeve, said sleeve and wheel being each provided with clutch-faces adapted to engage with the respective clutch-faces on said clutch-collar, friction-bearings between said sleeve and wheel, and means for holding said clutch-faces out of engagement when separated by the turning of said wheel upon said sleeve, substantially as specified.

6. The combination, with a shaft and clutch-collar thereon having two series of clutches with oppositely inclined faces, of a wheel and sleeve provided with clutch-faces adapted to engage with the respective series on said clutch-collar, means for yieldingly connecting said wheel to said sleeve, a spring for forcing said wheel and said sleeve into engagement with said clutches, and means for holding said clutches out of engagement when disconnected by a difference in the speed of said wheel and sleeve, substantially as specified.

7. The combination, with a shaft and a clutch-collars secured rigidly thereon having two series of oppositely inclined clutch-teeth or faces, of a sleeve and pulley each provided with clutch faces to engage with the respective clutches of said clutch-collar, friction bearings between said sleeve and pulley, a collar on said shaft, a spring between said sleeve and collar, and clutch-dogs on said pulley adapted to engage with said collar when said pulley is moved longitudinally on said shaft, substantially as specified.

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**504,480. BAKE-PAN.** CONRAD SCHIFFERLY, Port Wayne, Ind. Filed Feb 8, 1893. Serial No. 461,495. (No model.)



*Claim.*—1. A bake pan having a corrugated bottom and provided with longitudinal supporting wires, arranged on the lower face of the bottom, and extending upward at the ends of the pan and secured thereto, said wires being constructed of a single piece of wire and having an integral connecting portion 10 bent to form a handle and arranged on one end of the pan, substantially as described.

2. A bake pan having a corrugated bottom and provided with longitudinal supporting wires, arranged on the bottom and the ends of the pan and having an integral connecting portion, combined with strips securing the supporting wires to the pan, one of the strips being provided with eyes receiving the supporting wires adjacent to the integral connecting portion, substantially as described.

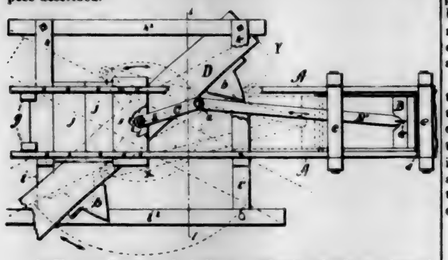
3. A bake pan having a sliding cover provided with a pivoted handle, constructed of a single piece of wire bent at its inner end to form an eye and at its outer end to form a loop, substantially as described.

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**504,481. BALING-PRESS.** GEORGE SCHUBERT, Walnut, Tex. Filed Oct. 17, 1892. Serial No. 449,139. (No model.)

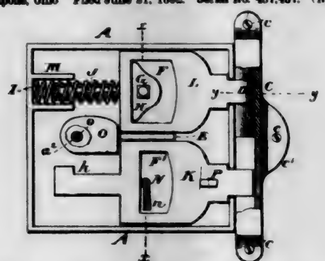
*Claim.*—1. In a baling press as described having the plates *f*, *f*, cross bars *h*, *h'*, and *i*, *i'*, guides $i^2$ and $h^2$ on said named cross bars, in

combination with a lever D plunger-bar and links as and for the purpose described.



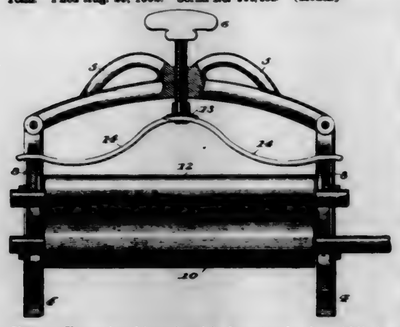
2. The combination of a baling press having the frame pieces A extended, the king-bolt plates secured thereto, the ends of the frame pieces A connected by the bars *g*, and cross bars *h* and *i*, and the space between the plates *f*, *f*, and the bars *i* and *h* filled in with suitable material as and for the purpose described.

**504,482.** LOCK AND LATCH COMBINED. FRANK F. SWANSON, Gallipolis, Ohio. Filed June 21, 1892. Serial No. 437,487. (No model.)



*Claim.*—In a lock, the keybolt K having the keyhole F and a rear arm with the shoulder *k*, the knoblatch L having the hole F for the knobspindle cam, and the cam O; all combined and arranged as shown; whereby the cam O may prevent both keybolt and knoblatch from being unlocked from the outside as set forth.

**504,483.** CLOTHES-WRINGER. WILLIAM THORSTON, Chattanooga, Tenn. Filed Aug. 29, 1892. Serial No. 444,482. (Model.)

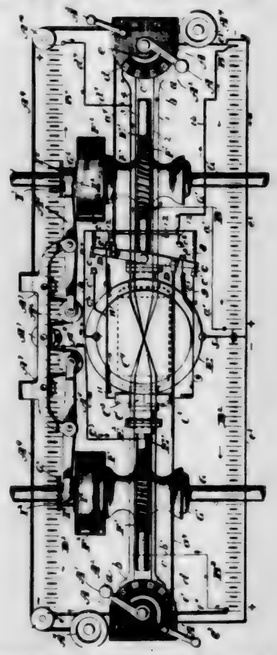


*Claim.*—The spring 14 made with three bends, the middle bend with the convex side up, and near the ends bent with the convex side down, so a line drawn through the center of the ends will show part of the spring above the line and part of the spring below the line, so the pressure on the spring will not cause the boxes to be deflected out or in,—substantially as set forth.

**504,484.** ELECTRIC LOCOMOTIVE. AUGUSTIN I. AMBLER, Washington, D. C., assignor to Roseline H. Ambler, same place. Filed Sept. 16, 1892. Serial No. 446,103. (No model.)

*Claim.*—1. In combination with the motor, and the two axles to be driven therefrom, the two friction clutches each interposed in the connections between one of the axles and the motor, the two levers for operating the respective clutches to bring their coacting frictional parts together, and means for actuating such levers connected with both of them so as to operate them both with the same power, to move the movable parts of the two clutches simultaneously, into and out of engagement with the corresponding fixed parts substantially as and for the purpose described.

2. In combination with the motor, and the two axles to be driven therefrom, the two friction clutches each interposed in the connections between one of the axles and the motor, the two levers for operating the respective clutches to bring their coacting frictional parts together, pulleys on the outer ends of the levers, a cord or rope passing around such pulleys and out over others beyond the lever ends, and means for pulling upon such cord or rope to shorten the beech therein between the outer pulleys and those on the respective lever ends, substantially as and for the purpose described.



3. In combination with the motor and the two axles to be driven therefrom, the two friction clutches each interposed in the connections between the motor and one of the axles, the two levers for operating the respective clutches so as to bring their coacting frictional parts together, pulleys on the outer arms of the levers, three pulleys journaled on a suitable support beyond the lever ends, a rope or cord passed over one of these pulleys inward to and around one of the lower pulleys, then outward around the middle one of the three pulleys, then inward around the other lever pulley, and outward around the remaining one of the outer pulleys, and means for applying power to draw upon the rope, so as to tend to straighten it out where it bends around the several pulleys, substantially as and for the purpose described.

4. In combination with the motor and the two axles to be driven therefrom, the two friction clutches, each interposed in the connections between the motor and one of the axles, the two levers for operating the respective clutches to bring their coacting frictional parts together, pulleys on the outer arms of the clutch levers, three pulleys journaled on a suitable support, a rope or cord having one end attached to any suitable support, and passing thence over the latter pulleys, and on each side of the middle of the three pulleys passing inward and around the pulley on one of the clutch levers, a reciprocating piece to which the other end of the cord or rope is attached, the screw having a head swiveled in such piece, and a hand wheel by which it can be turned, and a stationary nut or threaded block through which the screw is tapped, substantially as and for the purpose described.

5. In combination with the car frame and the motor for driving the car, the two supporting wheel axles to be driven from the motor, the two friction clutches each interposed in the connections between



the motor and one of the axles, the two levers for operating these clutches having pulleys on their outer arms, the three pulleys journaled on a stationary support, the cord or rope passing over each of the end pulleys of the three, inward around one of the lever pulleys, and then outward over the middle one of the three pulleys, and having its opposite ends attached to reciprocating pieces at or near opposite ends of the car, a screw for each one of such pieces, having a device whereby it can be turned, and a stationary threaded block or nut for each screw through which the latter is tapped, substantially as and for the purpose described.

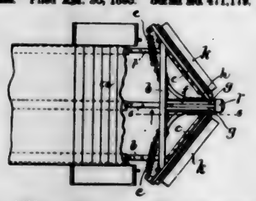
6. In combination with the two supporting wheel axles of a tram or street car, and the single motor, the two shafts coupled to opposite ends of the armature shaft, and each carrying a worm, a worm gear wheel for each axle kept in mesh with the worm on the respective worm shaft and means for connecting the two worm wheels simultaneously with the respective supporting wheel axles, and disconnecting them therefrom at will, substantially as and for the purpose described.

7. The combination with the motor and the two supporting wheel axles of a tram or street car, the two shafts coupled to the opposite ends of the single motor shaft, wheels adapted to be driven by the two coupled shafts connected therewith by gearing, a friction clutch for each wheel to connect the same with one of the supporting wheel axles, and means for operating the two clutches simultaneously to cause their co-acting parts to come together with any desired amount of frictional contact, substantially as and for the purpose described.

8. In combination with the single electro-motor and means for reversing the motion of the same at will, the two supporting wheel axles of a tram or street car, the two shafts coupled to the opposite ends of the motor shaft, the two wheels one being geared to and driven from each of such coupled shafts, friction clutch connection between each of such driven wheels and one of the supporting wheel axles, and means for simultaneously operating such clutch devices to cause each of the driven wheels to be connected with and drive its respective supporting wheel axle, substantially as and for the purpose described.

9. In combination with the reversible electromotor and the battery for driving the same divided up into divisions normally connected in series, by suitable conductors connecting the opposite poles of adjoining divisions a switch board having a contact strip, a series of contact pieces one for each battery division, and a movable arm having a contact piece adapted to connect the strip electrically with any one of the series of contact pieces, upon proper movement of the arm, the conductors for conducting the current to and from the motor, one connected with the contact strip, and the other, with one end of the series of battery divisions, conductors connecting each one of the series of contact pieces of the switch board with the pole of its respective battery division, opposite to that of the first division with which the motor is connected the current-reversing switch, and means to actuate the same mounted on the switch board and adapted to be operated by hand, at will, substantially as and for the purpose specified.

**504,485.** LIFE-GUARD FOR STREET-CARS. THOMAS BARNES, Lowell, Mass. Filed Apr. 20, 1893. Serial No. 471,179. (No model.)



*Claim.*—1. A life-guard for street-cars, comprising in its construction a hinged fender adapted to swing horizontally, and provided with a spring whereby it may be swung forward and laterally, a locking-device whereby said fender may be confined in its retracted position against the stress of its operating spring, and an exposed trigger carried by the fender and adapted to release said fender when struck by an object on the track, as set forth.

2. A life-guard for street-cars, comprising in its construction a hinged fender adapted to swing horizontally and spring-actuated forward and outward, a catch fastened to a stationary support, a latch on the fender and adapted to engage said catch, and an exposed trigger carried by the fender and adapted to trip the latch upon encountering an object on the track.

3. A life-guard for street-cars, comprising in its construction a hinged fender adapted to swing horizontally and provided with a spring whereby it may be swung forward and laterally, a locking-device whereby said fender may be confined in its retracted position against the stress of its operating spring, and a plate hinged to the fender and extending over its outer side and held yieldingly in an outward position, said plate having means whereby to release the fender upon encountering an object on the track.

4. A life-guard for street-cars, comprising in its construction two fenders hinged at their outer ends to a support on the car, each adapted to swing horizontally outward from the longitudinal center of the car platform, springs which normally exert an outward pressure on said fenders, locking-devices whereby the fenders may be confined in their retracted position against the stress of the springs, exposed triggers adapted to release said fenders, and a spring-supported buffer interposed between the inner ends of said fenders and movable longitudinally of the car, as set forth.

**504,486.** SPROCKET-WHEEL. VICTOR BÉLANGER, Boston, assignor of one-half to Josiah Quincy, Quincy, Mass. Filed Apr. 20, 1892. Serial No. 471,144. (Model.)

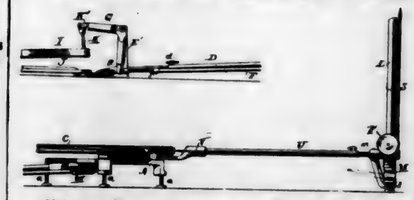


*Claim.*—1. A sprocket-wheel having pivoted teeth and constructed to permit limited play of said teeth, in combination with a chain bearing on the periphery of the wheel and having its points of bearing against the teeth a greater distance apart than the corresponding bearing-points of the teeth in their operative position at the limit of their pivotal movement in one direction.

2. A sprocket-wheel having pivoted teeth and rigid shoulders which limit the movement of said teeth, in combination with a chain whose points of bearing against the teeth are a greater distance apart than the corresponding points of the teeth in their operative position abutting the radial shoulders.

3. A sprocket wheel comprising in its construction a circular body portion or disk having a periphery adapted to support a chain, and angular teeth pivoted within the periphery of the disk and free to play in the chain while the latter bears on the periphery of the disk.

**504,487.** DENTAL ENGINE. BENONI S. BROWN, Hyde Park, Mass., assignor to the S. S. White Dental Manufacturing Company, Philadelphia, Pa. Filed Mar. 26, 1890. Serial No. 345,430. (No model.)



*Claim.*—1. The combination of the engine frame, the horizontally rotating driving wheel, the cranked driving shaft, the treadle frame, the bell crank lever pivoted to the treadle frame, the treadle for actuating the bell crank lever, the sectional rod adjustable in length and connecting the bell crank lever and the driving shaft, and the similarly adjustable rod connecting the treadle frame and engine frame, substantially as and for the purpose set forth.

2. The combination of the treadle frame, the bell crank lever pivoted thereto and provided with the swiveling end sections, the treadle for actuating the bell-crank lever, the connecting rod, and the horizontally rotating driving wheel actuated by connection therewith, substantially as and for the purpose set forth.

3. The combination of the engine frame, its detachable shouldered hub, the horizontally rotating driving wheel journaled by its shaft in said hub, the standard base, and the rod connecting the engine frame hub and standard base, substantially as and for the purpose set forth.

4. The combination of the engine frame its hub, the horizontally rotating driving wheel and its shaft having its bearing in said hub and provided with the angular oil duct, substantially as and for the purpose set forth.

5. The combination in a dental engine having a standard carried

independently of the engine frame, of the low carrier or standard base to which the standard is pivoted near its lower end close to the surface upon which said base rests and adapted to rock, and the spring operating with a tendency to maintain the standard in an upright position, substantially as and for the purpose set forth.

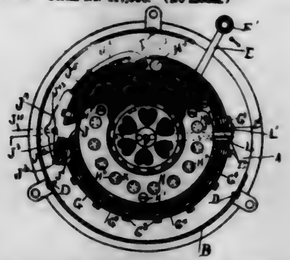
6. The combination of the engine frame, the standard base, the rod connecting the engine frame and standard base, and the rocking standard pivotally connected with its base by said rod, substantially as and for the purpose set forth.

7. The combination of the engine frame, the horizontally rotating driving wheel, the standard base, the standard pivoted to said base the driving cord and the guide pulleys partaking of the rocking movement of the standard and about which the driving cord passes on its way to and from the driving wheel, substantially as and for the purpose set forth.

8. The combination of the engine frame, the horizontally rotating driving wheel, the standard, the standard base, the sectional rod having connection with the engine frame and standard base and adjustable in length, the driving cord the guide pulleys adjacent to the lower end of the standard and to which the driving cord passes on its way to and from the driving wheel, and the horizontally turning supports for the guide pulleys, substantially as and for the purpose set forth.

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**504,488.** CALL-BOX. HENRY H. CUTLER, Waltham, Mass. Filed Jan. 13, 1892. Serial No. 417,990. (No model.)



*Claim.*—1. In a call box having a winding handle, or the like the combination of the main line with a divided circuit within the box, containing two branches, one having the signal wheel and the other a circuit breaker adapted to be automatically opened, to shunt the whole current through the signal wheel, by the motion of the winding handle.

2. In a call box having a winding handle, or the like the combination of the main line with a divided circuit within the box containing two branches, one of said branches having a signal wheel and a starting magnet therein, and the other a circuit breaker automatically opened by the motion of the winding handle.

3. In a call box the combination of the main line with a divided circuit within the box containing two branches, one of said branches having a signal wheel and a starting magnet therein, and the other a circuit breaker automatically opened by the motion of the winding handle, and a series of circuit breaking keys adapted each to be manually operated and thus to determine how long such branch of the circuit shall be broken.

4. In a call box having a winding handle, or the like in combination of the main circuit with two branches thereto within the box, one containing a starting magnet adapted also to give an alarm and embracing the signal wheel and finger, and the other containing a circuit breaker whereby the current will normally pass through the latter circuit but when it is broken will be shunted to the former and thus give an alarm to show whether or not the line is busy.

5. In a call box having a winding handle, or the like in combination of the main line with two branches in the box, one of said branches containing a signal wheel and finger and a magnet adapted to control the release for the driving mechanism, the other containing a circuit breaker adapted to be momentarily operated to break the circuit by the motion of the winding handle so as to cause the magnet in the other branch to give a signal that the box is ready for use.

6. In a call box the combination of the main line with two branches in the box, one of said branches containing a signal wheel and finger and a magnet adapted to control the release for the driving mechanism, the other containing a circuit breaker adapted to be momentarily operated to break the circuit by the motion of the winding handle so as to cause the magnet in the other branch to give a signal that the box is ready for use, and circuit breaking keys connected with the second branch whereby the same is broken manually and the mechanism thus freed by shunting the current to the other branch.

7. In a call box the combination of the following elements: a winding handle, a signaling wheel, a motor mechanism adapted to be wound up by the handle and when released to operate the signal wheel, and a series of starting keys which when depressed start the box or release its mechanism and at the same time determine what call will be given.

8. In a call box the combination of the following elements a winding handle to energize the driving motor and a series of circuit breaking and signaling keys and means whereby all of such keys are automatically re-set in normal position by the same motion of the handle which energizes the driving motor.

9. In a call box the combination of a driving motor, a signal wheel and finger and a handle to energize such motor with a series of starting and signaling keys adapted each when operated, after the mechanism has been set, to start the mechanism and determine the call.

10. In a call box the combination of a driving motor, a signal wheel and finger and a handle to energize such motor with a series of starting and signaling keys adapted each when operated, after the mechanism has been set, to start the mechanism and determine the call, and devices whereby all of such keys are normally re-set by the same action which energizes the motor.

11. In a call box the combination of the main line with two branches thereto in the box, one containing a signaling wheel and arm and a return call device, the other provided with the circuit breaker whereby the current may be shunted at will to the first mentioned branch so as to cause its mechanism to operate.

12. In a call box the combination of the main line with two branches thereto in the box, one containing a signaling wheel and arm and a return call device, the other provided with the circuit breaker whereby the current may be shunted at will to the first mentioned branch so as to cause its mechanism to operate, said circuit breaker adapted to be automatically operated by the operation of the box handle before it has reached the limit of its motion so that a return signal can be received without re-winding or re-setting the mechanism.

13. In a call box the combination of a motor mechanism, a handle for energizing the same, a return call device and means for energizing such device upon a slight motion of the handle and before the motor mechanism is energized, and manually operated release and signal keys adapted to set the box in operation after the handle has been moved to its extreme position.

14. In a call box the combination of the main line upon which a number of boxes are placed in series, with two branches in each box, one of said branches of normally low resistance and the other containing the signaling wheel and arm and a magnet with a return signal mechanism operated thereby.

15. In a call box the combination of the main line upon which a number of boxes are placed in series, with two branches in each box, one of said branches of normally low resistance and the other containing the signaling wheel and arm and a magnet with a return signal mechanism operated thereby, and a motor mechanism to drive the signal wheel.

16. In a call box the combination of the main line upon which a number of boxes are placed in series, with two branches in each box, one of said branches of normally low resistance and the other containing the signaling wheel and arm and a magnet with a return signal mechanism operated thereby and a motor mechanism to drive the signal wheel, and a handle to energize the motor mechanism.

17. In a call box the combination of the main line upon which a number of boxes are placed in series, with two branches in each box, one of said branches of normally low resistance and the other containing the signaling wheel and arm and a magnet with a return signal mechanism operated thereby and a motor mechanism to drive the signal wheel, and a handle to energize the motor mechanism, and said handle adapted when moved partially through its excursion to shunt the whole current through the box into the magnet and thus place the magnet and its return call in series with the whole line so as to receive any signal passing over the line.

18. In a call box the combination of the main line upon which a number of boxes are placed in series, with two branches in each box, one of said branches of normally low resistance and the other containing the signaling wheel and arm and a magnet with a return signal mechanism operated thereby and a motor mechanism to drive the signal wheel, and a handle to energize the motor mechanism, and said handle adapted when moved partially through its excursion to shunt the whole current through the box into the magnet and thus place the magnet and its return call in series with the whole line so as to receive any signal passing over the line and adapted further when moved on to release such shunting mechanism and energize the motor.

19. In a call box the combination of the main line upon which a number of boxes are placed in series, with two branches in each box, one of said branches of normally low resistance and the other containing the signaling wheel and arm and a magnet with a return signal mechanism operated thereby and a motor mechanism to drive the signal wheel, and a handle to energize the motor mechanism, and said handle adapted when moved partially through its excursion to shunt the whole current through the box into the magnet and thus place the magnet and its return call in series with the whole line so as to receive any signal passing over the line and adapted further when moved on to release such shunting mechanism and energize the motor will

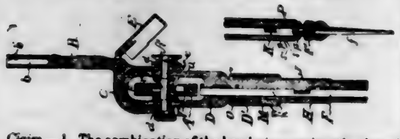
20. In a call box the combination of two circuits within the box, one containing a series of circuit breakers along its length, the other containing the signal wheel and finger and a motor mechanism for driving the signal wheel, and a circuit closing device traveling with the signal wheel and operating against such circuit breakers so as to restore the circuit broken by any one of them and thus divert the current from the signal wheel at a period determined by the position of such circuit breaker.

21. In a call box the combination of two circuits within the box, one containing a series of circuit breakers along its length, the other containing the signal wheel and finger and a motor mechanism for driving the signal wheel, and a circuit closing device traveling with the signal wheel and operating against such circuit breakers so as to restore the circuit broken by any one of them and thus divert the current from the signal wheel at a period determined by the position of such circuit breaker, and a manually operated circuit closer adapted to re-set all of such circuit breakers and restore the circuit by single action.

22. In a call box the combination of two circuits within the box, one containing a series of circuit breakers along its length, the other containing the signal wheel and finger and a motor mechanism for driving the signal wheel, and a circuit closing device traveling with the signal wheel and operating against such circuit breakers so as to restore the circuit broken by any one of them and thus divert the current from the signal wheel at a period determined by the position of such circuit breaker, and a manually operated circuit closer adapted to re-set all of such circuit breakers and restore the circuit by single action, said manually operated circuit closer being the same device which energizes the motor so that the main circuit is established whenever the driving mechanism is re-energized.

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**504,489.** DENTAL PLUGGER. CONSTANT DORIOT, Philadelphia, Pa., assignor to the S. S. White Dental Manufacturing Company, same place. Filed Mar. 9, 1893. Serial No. 465,283. (No model.)



*Claim.*—1. The combination of the hand-piece casing, the slotted plunger therein, the controlling arm provided with the lug or lugs for acting on the plunger, and the adjusting sleeve for imparting endwise movement to the controlling arm, substantially as set forth.

2. The combination of the hand-piece casing, the slotted plunger, its lugged controlling arm, the adjusting sleeve toothed or serrated at its end, and the spring pawl yieldingly locking the adjusting sleeve against movement, substantially as set forth.

3. The combination of the hand-piece casing, the slotted plunger, its lugged controlling arm, the adjustable collar turning about the nose end of the hand-piece casing for limiting movement of the controlling arm, and the spring locking catch for securing the adjustable collar in its adjusted position, substantially as and for the purpose set forth.

4. The combination, in a dental plugger, of the revolving hammer, the roller tappet thereof, and the spring acting upon the roller, substantially as set forth.

5. The combination of the plugger frame, the coupling frame, the pulley for actuating the revolving hammer mounted outside said frames, and the pulley inclosing shield hinged to the coupling frame, substantially as and for the purpose set forth.

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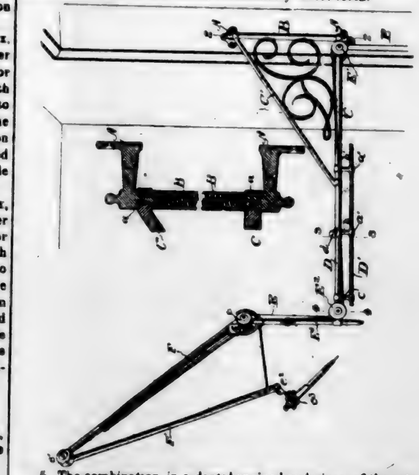
**504,490.** DENTAL ENGINE. CONSTANT DORIOT, Philadelphia, Pa., assignor to the S. S. White Dental Manufacturing Company, same place. Filed Mar. 11, 1893. Serial No. 465,600. (No model.)

*Claim.*—1. The combination of the main section of the bracket arm provided with the lateral arms having bearing sleeves, and the telescoping section composed of united parallel arms one of which slides in said sleeves, substantially as and for the purpose set forth.

2. The combination of the hand-piece frame having the front and rear arms and the sleeve, the hand-piece casing turning about said sleeve, the rotary spindle, and the adjusting sleeve adjustable in the rear arm of the hand-piece frame substantially as set forth.

3. The combination of the two-armed hand-piece frame, the pivoted hook connecting the arms, and the clamp acting on the hook, substantially as and for the purpose set forth.

4. The combination of the hand-piece casing, the tubular rotary spindle therein provided with a shoulder (*o*) near its front end, the split ended tool chuck extending entirely through the spindle and threaded at its rear end and having the two inclined shoulders, one at its front end and the other at a point in rear thereof upon its split portion, and the clamp nut upon the rear end of the chuck and seating against the spindle to force the inclined shoulders of the chuck the one into the end of the spindle and the other against the inclined shoulder near the end thereof, substantially as set forth.



5. The combination, in a dental engine hand-piece, of the rotary spindle provided with one section of a clutch, the sliding sleeve directly to which rotary motion is imparted, provided with the other section of the clutch, the hand-piece casing having an inner part and an outer or surrounding part, the clutch tripper pivoted to swing into and out of engagement with the sliding clutch section, means for actuating the clutch tripper to disengage the clutch sections, said means comprising the slide bar working inside the outer part of the hand piece casing, and the spring acting on the tripper to normally hold the clutch sections engaged and to re-engage them after having been disengaged, substantially as set forth.

6. The combination, in a dental engine hand-piece, of the casing having the cylindrical rear portion of larger internal diameter than the remainder of the casing, the rotary spindle provided with one section of a clutch within said internally enlarged cylindrical rear portion of the casing, the sliding sleeve directly to which rotary motion is imparted, provided with the other section of the clutch within said cylindrical rear portion of the casing, the clutch tripper by way of which the clutch-carrying sliding sleeve is actuated to disengage the clutch sections, the slide bar to the rear end of which the clutch tripper is pivotally connected, means for actuating the slide bar, and the spring acting on the tripper to normally hold the clutch sections engaged and to re-engage them after having been disengaged, substantially as set forth.

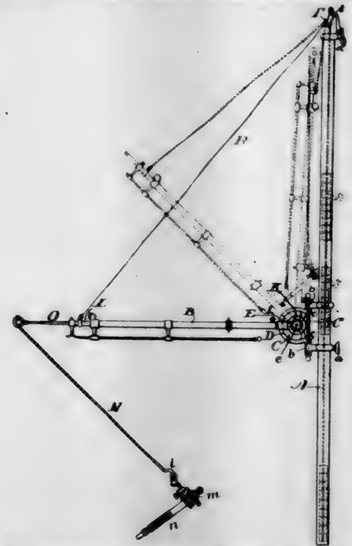
7. The combination, in a dental engine hand-piece, of the rotary spindle provided with one section of a clutch, the sliding sleeve to which rotary motion is imparted, provided with the other section of the clutch, the pivoted clutch tripper provided with the angular slot, the spring acting on the tripper, the housing for the spring consisting of the slotted tube and the sliding cover, and the cross pin secured to the housing and passing through the slot in the clutch tripper, substantially as and for the purpose set forth.

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**504,491.** DENTAL ENGINE. CONSTANT DORIOT, Philadelphia, Pa., assignor to the S. S. White Dental Manufacturing Company, same place. Filed Mar. 13, 1893. Serial No. 465,772. (No model.)

*Claim.*—1. The combination, in a dental engine, of the bracket

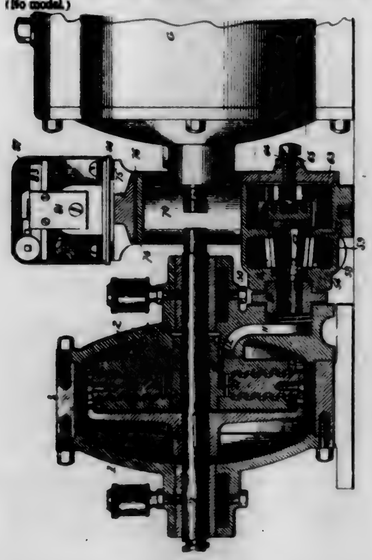
support, the horizontally swinging carrier having pivotal connection with the bracket support and provided with the sector, the vertically rocking bracket arm having pivotal connection with the carrier, and means for engaging the bracket arm and carrier sector to positively lock the bracket arm against vertical movement, substantially as set forth.



2. The combination, in a dental engine, of the bracket support, the horizontally swinging carrier sector pivoted to said support and having one or more peripheral holes or notches, the tubular bracket arm pivotally connected with the carrier sector and provided with the angular slot, the sliding pin in the bracket arm for engaging the carrier sector, the spring acting on said pin, and the button working in the slot of the bracket arm and serving to actuate the sliding pin and lock it in inoperative position, substantially as set forth.

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**504,492. ELECTRIC AUTOMATIC STEAM-GOVERNOR.** EDGAR A. EDWARDS, Cincinnati, Ohio. Filed Dec. 2, 1891. Serial No. 413,821. (No model.)



*Claim.*—1. The combination with a generator and motor therefor, of an electric automatic steam governor, the valve of which is normally completely opened, electrical devices connected with the generator for controlling the valve and means for instantly completely closing the valve when released by the electrical devices, substantially as described.

2. An electrical automatic steam governor provided with a valve, devices for holding the valve normally completely open and means for instantly completely closing the valve, substantially as described.

3. An electric automatic steam governor comprising a valve case, a balance rocking valve therein, mechanical means for rocking the valve in one direction, and electro-magnets, the poles of which project through the valve casing and are arranged to rock the valve in the other direction, substantially as described.

4. An electric automatic steam governor consisting of a case, a balance rocking valve within the case, an armature connected rigidly to the stem of the rocking valve, mechanical means for rocking the valve in one direction, and magnets, the poles of which project through the sides of the case for rocking the valve in the opposite direction, substantially as described.

5. An electric automatic steam governor comprising a valve case, a balance rocking valve within the case, an armature attached rigidly to the valve, springs for moving the armature in one direction, and magnets, the poles of which extend through the sides of the case for moving the armature in the other direction, substantially as described.

6. An electric automatic steam governor comprising a case and a valve therein, an armature controlling the valve, a magnet controlling the armature, the coils of the magnet being insulated calorically, substantially as described.

7. The combination with the valve casing and valve therein, an armature for operating the valve, magnets for operating the armature, the coils of the magnets being mounted upon the cores in the manner to provide an air space between the cores and coils, substantially as described.

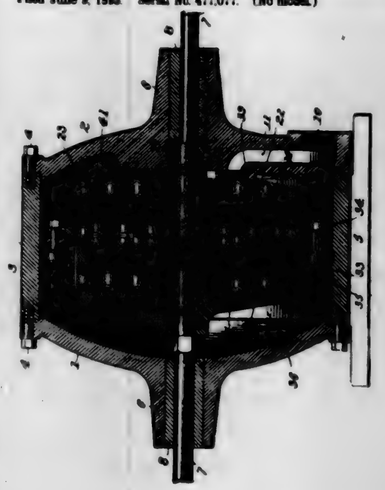
8. The combination with an electrically controlled valve, of a magnet for operating the valve, the coils of the magnet being mounted on a plate, and calorically insulated from the yoke and core, substantially as described.

9. The combination with a balance valve and magnet controlling the valve, the armature of the magnet being directly connected to the valve plug of a controller for the magnet comprising a magnetic switch arranged to open and close the circuit of the magnet to completely open or close the valve, substantially as described.

10. The combination with the electric automatic steam governor, having a valve adapted to be opened to its fullest extent or completely closed, and not occupy any intermediate position between the two extremes, of a controller therefor consisting of a magnet, an armature, a switch arm connected to the armature and controlling the circuit of the governor, and connections between the switch and armature for opening and closing the switch in accordance with variations in the circuit of the magnet, substantially as described.

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**504,493. STEAM-MOTOR.** EDGAR A. EDWARDS, Cincinnati, Ohio. Filed June 9, 1892. Serial No. 477,077. (No model.)





*Claim.*—1. A motor, comprising stationary and rotating members, the said members intermeshing and having a series of grooves and rings upon their inner and outer circumferential faces, substantially as described.

2. A motor, comprising stationary and rotating concentric members, the said members intermeshing and having a series of grooves and rings upon their inner and outer circumferential faces, substantially as described.

3. A motor, comprising a set of stationary members and a set of rotating concentric members, the said members intermeshing and having a series of grooves and rings upon their inner and outer circumferential faces, and a centrally located steam-chest, the arrangement being such that the steam passes from the chest successively through the grooves and rings on the adjacent circumferential faces of the separate members, substantially as described.

4. A motor, comprising a series of stationary members or rings, a series of rotating members or rings, the said members intermeshing, and each member having a series of alternate complete and segmental rings upon its inner and outer circumferential faces, the arrangement being such that the complete rings on one member are opposite the segmental rings on the other member, substantially as described.

5. A motor, comprising stationary plates provided with concentric rings or members, a rotating wheel also provided with concentric rings or members, the members on the wheel intermeshing with the members on the stationary plates, and each of the members being provided with a series of grooves and rings upon their inner and outer circumferential faces, substantially as described.

6. A motor, comprising stationary plates having a series of inwardly projecting concentric members or rings, a rotating wheel having outwardly extending concentric members or rings intermeshing with the members of the plates, each of the members provided with a series of grooves and rings upon their inner and outer circumferential faces, substantially as described.

7. A motor, comprising stationary plates having a series of concentric rings or members, a rotating wheel having a series of concentric rings or members intermeshing with the rings of the stationary plates, each member being provided with a series of grooves and rings upon its inner and outer circumferential faces, a centrally located steam-chest and a series of auxiliary steam-chests, said auxiliary steam-chests being located between the successive series of grooves and rings, substantially as described.

8. A motor, comprising stationary plates having a series of inwardly projecting concentric members, a rotating wheel having a series of outwardly projecting rotating members on each side intermeshing with the members of the stationary plates, each of the members being provided with a series of grooves and rings upon their inner and outer circumferential faces, a centrally located steam-chest, a series of auxiliary steam-chests arranged alternately adjacent to the stationary plates and rotating wheel, the arrangement being such that the steam passes from the central steam-chest substantially in a longitudinal direction outwardly to the first auxiliary steam-chest, then substantially in a longitudinal direction inwardly to the next auxiliary steam-chest, and acting by impact and reaction on the rings and grooves in the members between the respective chests, substantially as described.

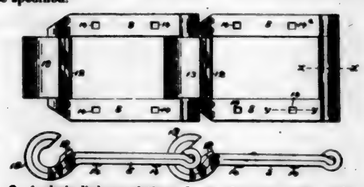
9. A motor, comprising stationary plates having connected to their inner faces a series of concentric members, a rotating wheel having connected to each side thereof a series of concentric members, each of the members being provided with a series of grooves and rings upon its inner and outer circumferential faces, a carrier supporting said wheel, a shaft supporting the carrier, a centrally located steam-chest, a hub having steam inlet passages therein, and a case inclosing the plates and wheel, supporting the shaft and provided with inlet and outlet steam passages, substantially as described.

10. A motor, comprising stationary plates having a series of concentric members, a hub supporting said plates, a wheel provided with a series of concentric members intermeshing with the members of the plates, the members and the hub being provided with a series of grooves and rings on their adjacent faces, a steam-chest centrally located in the hub, and steam passages through the hub leading to said steam-chest, substantially as described.

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**504,494. DRIVE-CHAIN.** WILLIAM H. HART, New Britain, Conn., assignor to the Stanley Works, same place. Filed May 2, 1892. Serial No. 431,863. (No model.)

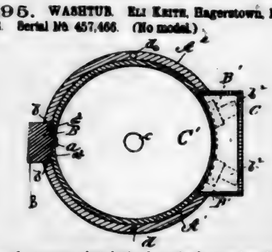
*Claim.*—1. The herein described chain link having the open knuckle portion, the side bars and pintle portion, the same consisting of one piece of sheet metal forming an inner thickness for the open knuckle portion and one thickness of the side bars and another piece forming the outer thickness of said opening knuckle portion, one thickness of said side bars and the general outer surface of the complete pintle portion, the two thicknesses of each of said side bars being secured against longitudinal movement one upon the other by means of opposing locking faces, substantially as described and for the purpose specified.



2. A chain link consisting of two pieces secured together, each of which has a knuckle portion, side bars and pintle portion one end of both pieces terminating in the double knuckle portion and the opposite end terminating in the double pintle portion with the wider and outer thickness coiled around the inner narrower thickness of said pintle portion substantially as described and for the purpose specified.

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**504,495. WASHTUB.** ELI KEITH, Hagerstown, Ind. Filed Jan. 6, 1893. Serial No. 457,466. (No model.)



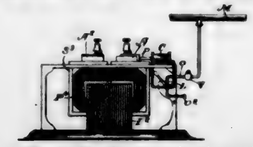
*Claim.*—1. In a wash tub the bent body portion A′, the piece $A^3$ fitting over said part A′, the part $A^3$ being secured to the sides of the post B and part A′ being secured to the tongue *a* of said post, substantially as set forth.

2. In a wash tub the combination of the bent part A′ having the tongues *b*, *b*, the standard B having the tongue *a* and grooves $a^2$ $a^2$, the posts B′ B′ carrying the brackets apron C resting on said brackets and the bent piece $A^3$ fitting around A′ as set forth.

3. In a tub the bent part A′ having the tongues *b*, *b*, part $A^3$ fitting around A′ and secured to standard B which has the tongue *a* and grooves $a^2$ $a^2$, the posts B′ B′ carrying the apron, the bottom C having hub *c* and the top D formed of two pieces substantially as set forth.

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**504,496. ELECTRIC WELDING APPARATUS.** HERMANN LEMP, Lynn, Mass., assignor to the Thomson Electric Welding Company, of Maine. Filed June 26, 1890. Serial No. 356,632. (No model.)



*Claim.*—1. The combination in an electric metal working apparatus, of a movable work holder, means for operating the same by pressure of air, gas, water or other fluid, and regulating or adjusting devices for determining the force or pressure applied to said work holder when the metal becomes softened by the electric current, as and for the purpose described.

2. In an electric metal working apparatus, the combination with a movable work holder, of means for operating the same by pressure of air, gas, water or other fluid, and regulating or adjusting devices for determining the pressure of fluid applied to the piston or other device which moves the work holder when the metal has been become softened by the electric current.

3. In an electric metal working apparatus, the combination with the movable work holder, of a piston arranged in line therewith and with the opposite holder, a source of air, gas, water or other fluid under pressure, and means for indicating or adjusting the pressure applied to the piston so as to determine the force to which the heated metal shall be subjected when it has become softened by the electric current.

4. In an electric metal working apparatus, the combination substantially as described, of a work holder, a piston and cylinder, a source of air or other gas under pressure, and means for regulating

or adjusting the pressure of such air or gas according to the nature of the work which is softened by the heating effect of the electric current.

5. The combination in an electric metal working apparatus, of movable work holders, means for moving the same under the pressure of air, gas or other fluid, a source of fluid under pressure, and an intermediate adjustable reducing valve.

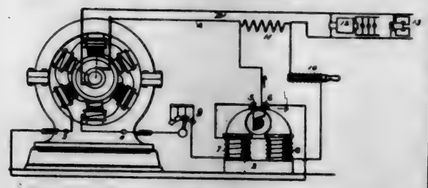
6. In an electric metal working apparatus, the combination with the longitudinally movable work holder, of a cylinder, a piston therefor arranged to work in line with the work holder, a source of fluid pressure, and a four way valve and connections, substantially as and for the purpose described.

7. The combination in an electric metal working apparatus, of a work holder longitudinally movable toward and away from the opposite holder, a cylinder, a piston therefor for producing movements of such work holder, a four way valve, pipes and connections as described, and an adjustable reducing valve in the connections leading from the source of pressure.

8. The combination in an electric metal working apparatus, of two work holding clamps, a clamp operating piston for each, and cylinders connected with a controlling cock or valve common to such cylinders whereby the pistons may be moved simultaneously, as and for the purpose described.

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**504,497. METHOD OF AND APPARATUS FOR REGULATING ALTERNATING-CURRENT DYNAMOS.** HERMANN LEMP, Lynn, Mass., assignor to the Thomson Electric Welding Company, of Maine. Filed Jan. 19, 1891. Serial No. 378,226. (No model.)



*Claim.*—1. The herein described method of regulating an alternating current dynamo, consisting in heating an electric conductor placed in an alternating current circuit directly or indirectly by current delivered from said dynamo, and varying the excitation of the dynamo through the changes of resistance of said conductor due to variations of the heating effect of said current.

2. The herein described method of regulating an alternating current dynamo, consisting in heating an electric conductor in an alternating current circuit directly or indirectly by the current of said dynamo, and varying the action of a separate exciter by the changes in resistance of said conductor due to variations of heating.

3. The herein described method of regulating an alternating current dynamo, consisting in heating an electric conductor placed in an alternating current circuit directly or indirectly by the current of said dynamo, and varying the field of a separate exciting dynamo by the changes of resistance of said conductor due to changes of heating.

4. The herein described method of regulating an alternating current dynamo, consisting in varying the excitation of the field through variations in the heating of a conductor primarily due to variations of alternating currents obtained directly or indirectly from the armature of said machine and varying as the current of such machine varies.

5. The combination with an alternating current dynamo, of a separate exciting source, and a regulating circuit of the latter containing a resistance heated directly or indirectly by the current of said dynamo, as and for the purpose described.

6. The combination with an alternating current dynamo, of a separate exciting dynamo, and a regulating circuit for the field of the latter containing a resistance heated directly or indirectly by alternating currents, as and for the purpose described.

7. The combination with a dynamo electric machine, of a separate exciting source, and a regulating or controlling resistance for the latter consisting of a conductor heated directly or indirectly by an electric energy varying with the condition of the circuit fed by said dynamo.

8. The combination with the controlling resistance variable by changes of temperature and heated by an alternating current flowing through it, of a continuous current circuit connected to said resistance, and a resistance in the latter circuit adapted to oppose low resistance to continuous currents and high resistance to alternating currents so as to prevent shunting of the alternating currents from said heated resistance.

9. The combination with an alternating current dynamo, of a separate exciter dynamo, and a resistance connected with the exciting circuits of the latter, and heated by the alternating current of the main dynamo, as and for the purpose described.

10. The combination with a regulating or controlling electric resistance variable with changes in its temperature, of a heating conductor in proximity thereto traversed by alternating currents, as and for the purpose described.

11. The combination with a variable resistance traversed by alternating currents, of a continuous current circuit connected to the same, and an inductive resistance in the continuous current connections to prevent shunting of the alternating currents.

12. The method of regulating or compounding an alternating current dynamo, consisting in exciting the same from a separate dynamo and determining the excitation of the latter by variations in the heating of a resistance primarily produced by and corresponding directly with the alternating currents of the first named or main dynamo.

13. The combination of the divided heated resistance, a continuous current circuit completed through the same in multiple, and a source of alternating heating currents in one or both of the branches in which the portions of heated resistance are respectively placed, as and for the purpose described.

14. The combination with a controlling or regulating resistance varying with changes of temperature, of two transformers having their secondaries connected to oppose one another in heating said resistance, and primaries for said transformers connected respectively into the main circuit with the work and in a shunt of high resistance to the work.

15. In a liquid resistance device, immersed electrodes forming terminals of the circuit and perforated to allow circulation of the liquid.

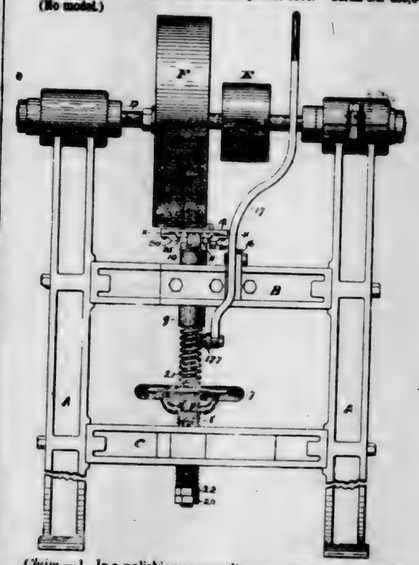
16. In a liquid resistance device, perforated or open work electrodes immersed in the liquid, in combination with a tank and circulating pipes or passages containing liquid kept at substantially constant temperature.

17. In a liquid resistance device, the combination with a tank, and pipes or passages for circulating the liquid heated by the current, of means for regulating the rapidity of the circulation.

18. A regulating electric resistance traversed by variable alternating currents to vary its heating and opposing thereby a variable resistance to a continuous current.

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**504,498. MACHINE FOR POLISHING HINGES.** EVERLEIGH A. MOORE, New Britain, Conn. Filed Apr. 10, 1893. Serial No. 469,640. (No model.)



*Claim.*—1. In a polishing or grinding machine, the combination of an abrading wheel, a rocking bed mounted upon said frame to rock laterally with reference to the traveling movement of the work by said wheel, and a moving work support mounted upon and guided along said rocking bed, substantially as described and for the purpose specified.

2. In a polishing machine the combination of a laterally rocking bed, a work support mounted to slide longitudinally thereon, and devices for moving said work support laterally as it passes along said rocking bed, substantially as described and for the purpose specified.

3. In a polishing machine the combination of a work support, the sliding shaft upon the end of which said work support is mounted, a spring for pressing said shaft and work support to their work and an adjustable stop mechanism for limiting the movement of said shaft under the influence of said spring, substantially as described and for the purpose specified.

4. In a polishing machine, the combination of the sliding shaft, a spring for pressing it to its work, a bracket 10 at the upper end of said sliding shaft and a work support pivoted upon said bracket, substantially as described and for the purpose specified.

5. The combination of the bed 11 having pins 25, the sliding table arranged to slide longitudinally thereon and provided with cams 24 for acting in connection with said pins for imparting lateral motion to the sliding table, substantially as described and for the purpose specified.



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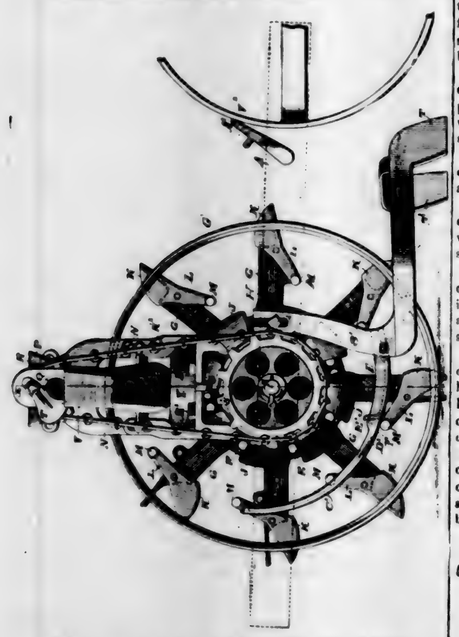
**504,499. VEHICLE-SPINDLE.** ROBERT M. MCBRIDE, Harrisburg, Pa. Filed Apr. 20, 1893. Serial No. 471,060. (No model.)



*Claim.*—A vehicle spindle formed with one or more annular grooves having under-cut edges 6 and provided with entrance openings 8, arranged at the top of the spindle in combination with antifriction balls 7, adapted to be inserted through said openings, substantially as described.

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**504,500. SEEDER.** FRANCIS S. MCWHORTER, Norfolk, Va. Filed Oct. 24, 1891. Serial No. 409,642. (No model.)



*Claim.*—1. A seeder, having a frame with side and cross-bars a hub mounted on an axle journaled in said frame, planting arms adjustably connected with said hub, and a divided carrying wheel mounted on said hub, and an adjustable sleeve on said axle, said parts being combined substantially as described.

2. A seeder, having a frame, an axle mounted in said frame, a hub with planting arms thereon, a sleeve adjustable on said axles, and a carrying wheel extending on opposite sides of said arms and having a hub mounted on said sleeve, said parts being combined substantially as described.

3. A seeder, having a frame, a planting wheel, and an adjustable divided carrying wheel on opposite sides of said planting wheel with lapping arms connecting the sections of its rim, said parts being combined substantially as described.

4. A seeder having a frame, an axle journaled thereon, a hub mounted on said axle, a ring secured to said hub, having a series of openings thereon, planting arms secured to said ring at said openings, and a feeding disk rotated by said arms, said parts being combined substantially as described.

5. A seeder having a frame, an axle journaled therein, a hub mounted on said axle, planting arms secured to said hub, and having pivoted lips with arms having the projections M thereon a depending guide-way secured to said frame having the flanges D' and E' on its upper and lower faces respectively with an opening between them, permitting the passage of the projection M, said parts being combined substantially as described.

6. A seeder having a frame, an axle journaled therein, a hub mounted on said axle, planting arms secured to said hub, each having a pivoted lip, means substantially as described for opening and closing said lip, a feeding disk rotated by said arms, a hopper with cylinder leading therefrom, and mechanism for rotating said cylinder connected with the axle of the hub carrying the arms, said parts being combined substantially as described.

7. A seeder having a frame, a hopper supported thereon, a frame secured to said hopper, a cylinder leading from said hopper and journaled in a wall of said hopper, and in said second frame, an axle journaled in said first frame, and mechanism substantially as described connected with said axle and said cylinder for rotating the latter, said parts being combined substantially as described.

8. A seeder having a frame, rotating planting arms and carrying wheel, a feeding disk, a coverer consisting of connected plates extending at an angle to each other, and a packing wheel in rear of the coverers, having a gravity scraper thereon, said parts being combined substantially as described.

9. A seeder having a frame with a seed feeding device mounted thereon, and a planting wheel journaled therein, an agitator in said feeding device, and mechanism connected with said agitator and the shaft of the planting wheel for operating the said agitator, said parts being combined substantially as described.

10. A frame, a rotatable planting wheel journaled therein, and consisting of arms having pivoted discharging lips, the latter being provided with arms with projections or pins thereon, and a guide-way with flanges having an intervening space, said parts being combined substantially as described.

11. A planting wheel consisting of a hub with a ring having openings therein, and arms adjustably connected with said rings and adapted to deposit the seed, substantially as described.

12. In a seeder, a horizontal feed cylinder with an agitator at one end and a regulating gate at the other, said cylinder being provided with mechanism connected therewith for rotating the same, substantially as described.

13. A seeder having a divided carrying wheel, planting arms secured to a hub and operating between the sections of the said carrying wheel, said carrying wheel being adjustable relative to said hub and planting arms, said parts being combined substantially as described.

14. A seeder having a rotatable shaft journaled in the side bars of the frame thereof, a hub secured on said shaft, a ring secured to the hub having planting arms thereon, the carrying wheel G' and the plate K' pivoted to the frame A and having the cylinder J', the hub of the carrying wheel being mounted on the said cylinder, said parts being combined substantially as described.

15. A seeder having carrying and planting wheels with a sliding connection consisting of an arm adapted at one end to be secured to one of said wheels, and provided at its other end with a slot in which a projection on a spoke of the other wheel is free to move, said parts being combined substantially as described.

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**504,501 LAMP-WICK.** HENRI PIEPER, Jr., Liege, Belgium. Filed Oct. 17, 1888. Serial No. 288,372. (No specimens.) Patented in Belgium Feb. 8, 1888, No. 80,553; in Germany Feb. 12, 1888, No. 44,124, and in France Mar. 17, 1888, No. 189,436.

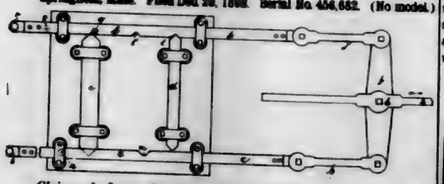


*Claim.*—1. A wick composed of continuous vegetable fiber completely carbonized and having capillary properties; substantially as described.

2. A wick composed of vegetable fabric completely carbonized and having capillary properties; substantially as described.

3. The method of making wicks which consists in subjecting vegetable fiber to the action of an acid, and subsequently carbonizing said fiber; substantially as described.

**504,502. LOCKING-SWITCH MOVEMENT.** JOHN T. POWERS, West Springfield, Mass. Filed Dec. 29, 1892. Serial No. 456,662. (No model.)



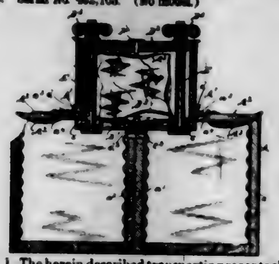
*Claim.*—1. In combination with a switch mechanism, the combination of a base, two sliding-bars arranged thereon, a locking-bar operating substantially at right angles therewith and engaging the sliding-bars alternately, and a starter arranged to start the sliding-bars alternately, each sliding-bar in turn operating through the starter to force the opposite one forward, substantially as shown.

2. In combination with a switch, a suitable base, two sliding-bars *b*, *c*, arranged thereon, the sliding-bar *b* having two locking recesses *l* and *l'* and the sliding-bar *c* having a locking-recess *m*, a locking-bar *d* arranged to enter said recesses alternately, and a starter *e* arranged to engage the sliding-bars and start the same alternately, substantially as shown.

3. The combination of a suitable base, sliding-bars *b*, *c*, mounted thereon, anti-friction rolls arranged to bear against the edges of said bars, a locking-bar *d* arranged to engage the sliding-bars alternately, and a starter *e* arranged to start said bars alternately, and anti-friction pulleys arranged at the edges of both the starter and lock, substantially as shown.

4. The combination of a suitable base, sliding-bars *b*, *c*, mounted thereon, a yoke *f* connected in its central portion with an operating rod *i*, links *j*, *k*, connecting the yoke and sliding-bars, a locking-bar *d* adapted to lock one bar as it releases the other, and a starter *e* arranged to start said bars alternately, substantially as shown.

**504,503. TRANSPORTING-RECEPTACLE.** LOUIS P. ROGERS and JOHN HOFMAN, Rochester, N. Y. Filed Mar. 28, 1891. Renewed Feb. 13, 1893. Serial No. 462,103. (No model.)



*Claim.*—1. The herein described transporting receptacle, the same comprising an outer shell composed of separable sections adapted to receive the article to be transported, and an ice chamber removably secured to said sections, substantially as and for the purpose set forth.

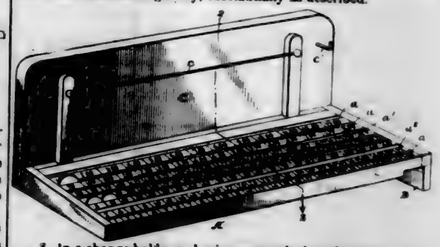
2. The herein described transporting receptacle, the same comprising an outer shell composed of separable sections adapted to receive the article to be transported, an ice chamber removably mounted in an opening in said shell, and entrance doors on either side of said ice chamber, substantially as and for the purpose specified.

3. The herein described transporting receptacle, the same comprising an outer shell composed of separable sections adapted to receive the article to be transported, an ice chamber removably secured in an opening in the top wall of said shell, an air inlet pipe —F—, a passage —c— in the wall of the ice chamber for producing a circulation through the ice chamber and outer shell, and an air outlet —E— for withdrawing the air from the outer shell, substantially as and for the purpose specified.

**504,504. COIN HOLDER AND COUNTER.** FRANK W. SMITH, Sunbury, Pa. Filed Jan. 6, 1893. Serial No. 457,508. (No model.)

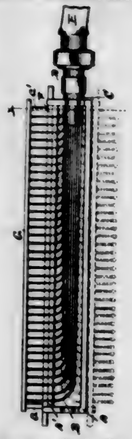
*Claim.*—1. In a change holder and coin counter the board or drawer having narrow grooves of different widths adapted to receive and hold on edge coins or tokens of various denominations, each of the grooves being slightly wider than the thickness of the coins for which it is adapted, whereby the coins are held edge to edge and may be rolled in the grooves substantially as described.

2. In a change holder and coin counter the board or drawer having narrow inclined grooves of different widths adapted to receive and hold on edge coins or tokens of various denominations and feed the same toward the lower ends of the grooves, said grooves being slightly wider than the thickness of the coins for which they are adapted whereby the coins are held edge to edge and are free to roll under the influence of gravity, substantially as described.



3. In a change holder and coin counter the board or drawer having narrow grooves of different widths adapted to receive and hold on edge coins or tokens of various denominations, each of the grooves being slightly wider than the thickness of the coins for which it is adapted, said grooves being separated by ribs having the sums of various numbers of coins marked thereon, substantially as described.

**504,505. APPARATUS FOR HOLDING AND DIPPING PILLS.** ALEXR D. STEARNS, Detroit, Mich., assignor to the Frederick Stearns & Company, same place. Filed Mar. 28, 1893. Serial No. 467,945. (No model.)



*Claim.*—1. In an apparatus for holding and dipping pills, the combination with a rack provided with a cross bar A', of a series of tubes engaged therewith at one of their extremities, and assembled at their opposite extremities, a perforated lifting bar located over said tubes upon said cross bar, and a perforated feeding bar supported at the upper ends of said tubes, substantially as described.

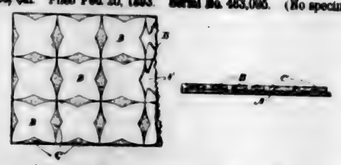
2. In an apparatus for holding and dipping pills, the combination of a rack provided with a cross bar, a series of tubes engaged with said cross bar, and a perforated lifting bar engaged over the extremities of the tubes upon said cross bar, said lifting bar constructed with different sized seats for the pills on opposite sides of said lifting bar, substantially as described.

3. In an apparatus for holding and dipping pills, the combination of a rack provided with a cross bar, of a series of tubes engaged with said cross bar, a perforated feeding bar located at the upper ends of said tubes, and posts "*a*," "*a'*" supporting said feeding bar, substantially as described.

4. In an apparatus for holding and dipping pills, the combination of a rack A, provided with a cross bar A', a series of independent tubes projecting upward from said cross bar at one of their extremities, their opposite extremities carried laterally and assembled together, and an exhaust pipe E, having a swiveled connection with the assembled ends of said tubes at one end of said rack, whereby the opposite ends of the tubes may be rotated vertically into opposite positions for dipping and removing the pills, and without disconnecting the rack from the exhaust pipe, substantially as described.

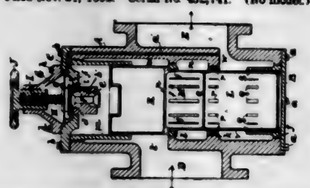


**504,506. MOSAIC ART-GLASS.** ADOLPH VERRAGEN, San Francisco, Cal. Filed Feb. 20, 1893. Serial No. 463,095. (No specimens.)



*Claim.*—A mosaic glass consisting of a bed glass, a number of pieces of glass of desired shape, color and arrangement to form the desired design, said pieces adhering to the surface of the bed glass, and a filling, in the interstices of said pieces, composed of a cohesive mass of powdered glass and glue, adhering to the bed glass, substantially as described.

**504,507. PRESSURE-REGULATOR.** EDWARD WEBB, Reading, Mass. Filed Nov. 21, 1892. Serial No. 452,741. (No model.)



*Claim.*—1. In a pressure-regulator the combination of a cylinder having an inlet and an outlet, passages leading from said inlet and outlet to each end of the cylinder, two chambers in the wall of the cylinder one opening into said inlet and the other into said outlet, an intermediate chamber in the wall of said cylinder, a piston-valve to move in said cylinder provided with two chambers, and openings in the wall of each of the piston-chambers, all of said openings and said chambers being so located with reference to each other that passages formed thereby, extending from said inlet and a chamber in the cylinder to a chamber in the piston and thence to said intermediate chamber and thence to the other chamber in the piston and thence to the chamber in the cylinder opening into the outlet, will be opened or closed simultaneously on movement of the piston, substantially as and for the purpose set forth.

2. In a pressure-regulator the combination of a main casing having an inlet and outlet, a casing located at one end of the main casing, forming therewith an auxiliary chamber, said main casing being constructed with passages in the wall thereof, one leading from the inlet passage to said auxiliary chamber and also to the opposite end of the casing, and the other leading from said auxiliary chamber to the outlet passage, a diaphragm in said auxiliary chamber, a valve controlled by a spring located in the end of the casing, controlling a passage between said auxiliary chamber and the interior of the pressure-regulator, a cylinder provided with an inlet and outlet and several chambers or annular spaces located centrally within the regulator, and the piston provided with chambers and having openings in the walls thereof, working in said cylinder, substantially as and for the purpose set forth.

**504,508. AMALGAMATING-MACHINE.** JACOB C. WISWELL, Medford, assignor to Charles P. Gorely, Boston, Mass. Filed Oct. 14, 1892. Serial No. 448,852. (No model.)

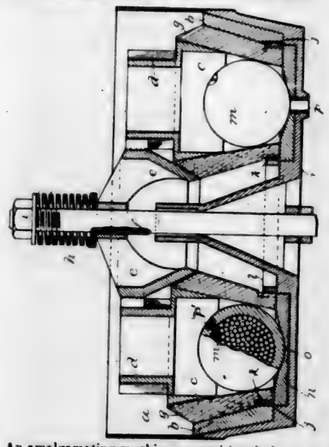
*Claim.*—1. An amalgamating machine comprising in its construction a circular bed, a plurality of cones arranged upon said bed, and having plain exterior surfaces to bear against the sides of the bed, and a rotary pinion adapted to engage said cones above the plain surfaces, as set forth.

2. An amalgamating machine comprising in its construction a circular bed provided at its sides with removable inclined plates having plain faces, a plurality of cones arranged upon said bed, and having plain exterior surfaces bearing against said inclined plates, and a rotary pinion engaging said cones, to rotate and revolve the same, as set forth.

3. An amalgamating machine, comprising in its construction a circular bed, provided at its sides with removably inclined plates, a plurality of cones arranged upon the said bed, and bearing against said inclined plates, balls arranged in said cones and resting upon the bottom of said bed, and a rotary pinion engaging the said cones to rotate and revolve the same, as set forth.

4. An amalgamating machine, comprising in its construction a circular bed, provided at its sides with removably inclined plates, a plurality of cones arranged upon the said bed, and bearing against said inclined plates, balls arranged in said cones and resting upon the bottom of said bed, the latter being provided with a round groove *o* at the point where the said balls rest thereon, and a rotary pinion engaging the said cones to rotate and revolve the same, as set forth.

5. An amalgamating machine, comprising in its construction a circular bed, provided with inclined side plates, the cones arranged to travel in said bed and against the said side plates, the said cones having their upper edges beveled, as described, the rotary vertical movable pinion adapted to engage the said cones to drive the same, the said pinion being provided with a beveled surface adapted to bear upon the beveled upper edges of the cones, as set forth.



6. An amalgamating machine, comprising in its construction a circular bed, provided with inclined side plates, the cones arranged to travel in said bed and against the said side plates, the said cones having their upper edges beveled, as described, the rotary vertical movable pinion adapted to engage the said cones to drive the same, the said pinion being provided with a beveled surface adapted to bear upon the beveled upper edges of the cones, and a spring arranged to exert a yielding pressure on said pinion, as set forth.

7. An amalgamating machine, comprising in its construction, a circular bed, a plurality of cones arranged to bear upon said bed, a rotary pinion adapted to engage said cones to rotate and revolve the same, balls arranged in said cones and a removable plate forming the bottom of the bed upon which the balls roll, as set forth.

8. An amalgamating machine, comprising in its construction, a circular bed, a plurality of cones arranged to bear upon said bed, a rotary pinion adapted to engage said cones to rotate and revolve the same, and balls arranged in said cones said balls being hollow and capable of being adjustably weighted or loaded, as set forth.

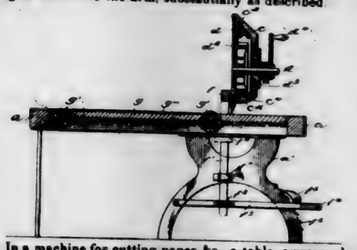
9. An amalgamating machine, comprising in its construction, a circular bed, a plurality of cones arranged to bear upon said bed, a rotary pinion adapted to engage said cones to rotate and revolve the same, said cones being notched or cogged at their lower ends, and a notched or cogged expansible ring arranged to engage the said notched or cogged ends of the cones, as set forth.

**504,509. MACHINE FOR CUTTING PAPER, CARD-BOARD, &c.** GEORGE W. ZEIGLER, Anderson, Ind. Filed Mar. 22, 1892. Serial No. 426,027. (No model.)

*Claim.*—1. In a paper-cutting machine, the combination of a table, a vertically-movable presser-bar extending across the same, an arm pivoted at one side of the table and adapted to swing down across the table parallel with the presser-bar, said arm being resiliently supported over the table and provided with a longitudinal slot and a rack-bar, a shaft extending through the slot and carrying a circular cutter working between the arm and presser-bar, a gear secured rigidly to the shaft and working in said rack-bar, a guide on the shaft working in the slot in the arm, and means for rotating the shaft, substantially as described and for the purpose specified.

2 In a machine for cutting paper, &c., a table frame, a vertically movable presser bar mounted over and extending across the same, a cutter-carrying arm extending across the table and carrying a rotary cutter, said arm being vertically yielding, substantially as described.

3 In a paper-cutting machine, a table, a presser-bar extending across the table, a vertically-movable arm extending across the table in front of the presser-bar and provided with a horizontal slot, means for guiding this arm at both its ends, a rack on the arm below the slot, a shaft extending through the slot in the arm and carrying rigidly a rotary cutter, said cutter rotating between the arm and the presser-bar, a gear rigidly carried by the shaft and made smaller in diameter than the cutter, a roller guide mounted on the shaft and working in the slot in the arm, substantially as described.



4. In a machine for cutting paper &c., a table, a presser bar, an arm extending across the table in the rear of the presser bar and close to it, a rotary traveling cutter carried by the arm and working between the same and the rear side of the presser bar, and working closely against the arm substantially as described

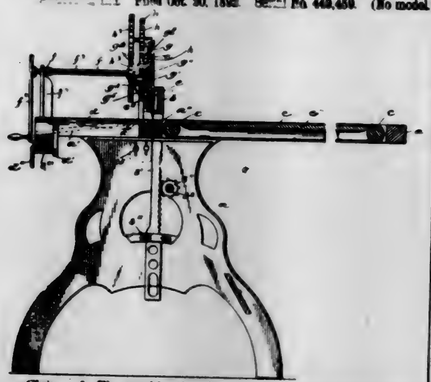
5. In a machine for cutting paper &c., the combination of a table and its supports, a cutter mounted above the table, a presser bar supported on two vertically movable uprights, levers connected to the lower ends of the uprights, a bar connecting these levers, and pawls carried by the levers and adapted to engage racks on the frame, substantially as described

6. The combination of a table, a bracket-arm thereon, a swinging arm pivoted on this bracket arm and carrying a traveling cutter, the adjacent faces of the two arms being provided with abutting circular flanges $b'$, substantially as described.

7 The combination of a table, a presser-bar a swinging arm parallel to the presser bar, and pivoted at one side of the same and carrying a traveling cutter, said arm being resiliently supported above the table and a vertical guiding-arm at the opposite side of the table, substantially as described

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**504,510. PAPER-CUTTING MACHINE.** GEORGE W. ZIEGLER, Anderson, Ind. Filed Oct. 20, 1892. Serial No. 449,459. (No model.)



*Claim.*—1. The combination, in a paper-cutting or analogous machine, of a table, a transverse presser-bar and means for operating it, a cutter operating near the presser-bar, a table section *d* hinged at its forward edge to the table-frame, directly in the rear of the path of the cutter, and extending approximately the full width of the table, means for supporting the section *d* flush with the table and for lowering its rear edge, and a support for the rear edge of section *d*, located a short distance below the upper surface of the table, so as to maintain said section in a rearwardly-inclined position when lowered, as and for the purpose described.

2. The combination of a table and a cutter and a presser bar, apron-rollers journaled in the table-frame an apron on the rollers, a toothed wheel on one of the rollers, a radially movable lever or crank on this roller and provided with a stationary lug engaging the toothed wheel, substantially as described.

3. The combination of a table, a swinging arm pivoted thereon and carrying a cutter, its pivotal bolt being extended rearwardly, a bracket $f^9$ on the table for supporting the rear end of said shaft, said bracket being provided with a short sleeve $f^{10}$, and a rigid brace-rod $f^{11}$ extending from the sleeve $f^{10}$ to the free end of the arm, substantially as described.

4 The combination of a table, a transverse arm, a shaft carrying a traveling cutter, said shaft also carrying a sprocket wheel, a chain carried by the arm and engaging said sprocket wheel, and means for operating the chain, substantially as described.

5. The combination of a table, a transverse arm pivoted at one side of the table, a traveling shaft $g'$ carried by the arm, a rotary cutter and a sprocket on this shaft, a sprocket-wheel $h'$ journaled at each end of the arm, an endless chain carried by the sprockets, a shaft $f'$ journaled concentrically with the pivotal point of the arm, and gears $A^3$ $A^3$ substantially as described.

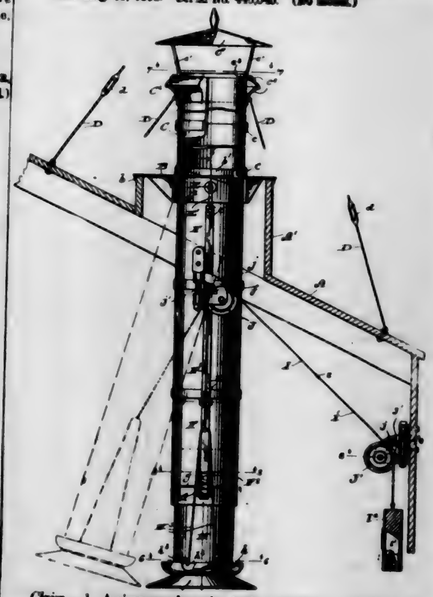
6. The combination of a table, a transverse presser bar, a transverse vertically-swinging slotted arm pivoted on a bracket at one side of the machine and provided with a rack $c^6$ a shaft $f'$, a shaft $g$ passing through the slot in the arm and rigidly carrying a rotary cutter working between the arm and the presser bar, a guide roller mounted on this shaft $g'$ and working in the slot in the arm, a sprocket-wheel on shaft $g'$ and working in rack $c^6$, an endless chain mounted on sprocket wheels on the arm and engaging the sprocket on shaft $g'$, and gears $A^3$ $A^3$ for operating the chain-carrying sprockets, substantially as described.

7 The combination of a table, an arm extending across the same a rotary traveling cutter carried by the arm means for rotating the cutter, and means for holding it yieldingly against the face of the arm, substantially as described.

8 The combination of a table, an arm extending across the same and provided with a rack a traveling shaft $g'$ carried by the arm, a cutter on the shaft and bearing against one face of the arm, a gear on the shaft and held in engagement with the rack, and a spring for yieldingly holding the cutter against the arm and the gear in engagement, substantially as described.

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**504,511. SMOKE-JACK.** ANDRO R. ANDERSON, Milwaukee, Wis. Filed Aug. 19, 1892. Serial No. 443,546. (No model.)



*Claim.*—1. An improved smoke jack comprising a suitable support plate provided upon its upper and lower sides with annular flanges, a stack engaged at its lower end with the upper one of said annular flanges, a pendulous pipe smaller in diameter than the lower one of said flanges and arranged with its upper end concentrically within said flange, a suspension rod passed transversely through said flange and pipe and suitable vertically disposed straps engaged with the sides of said pipe and with the ends of said suspension rod upon the outside of the flange, substantially as set forth.

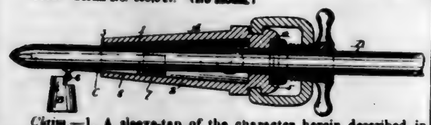
2. An improved smoke jack comprising a suitable supporting plate provided upon its upper and lower surfaces with annular flanges, a stack, fitted at its lower end to the upper one of said annular flanges, a pendulous pipe arranged with its upper end located centrally within the lower annular flange a transversely arranged suspension rod passed through apertures in said lower annular flange and the upper end of said pendulous pipe, vertically disposed straps engaged with opposite sides of said pendulous pipe, a section of pipe having telescopic engagement with the lower end of said pendulous pipe and carrying at its lower end a suitable hood, and means for raising and lowering said section of pipe, substantially as set forth.

3. In a smoke jack, the combination with a suitable supporting plate, provided upon its upper and lower sides with annular flanges and a stack extending upwardly therefrom, and engaged with the upper one of said annular flanges of a pendulous pipe comprising two or more sections of cast metal pipe jointed together at their ends, the upper end of the upper section being pivotally connected with said plate, and arranged concentrically within the lower one of said annular flanges, integral lugs arranged in pairs upon opposite sides of said pipe sections and provided with converging inner faces, vertical straps pivotally connected at their upper ends with said plate and arranged to extend downwardly between said lugs at opposite sides of said pipe, and suitable wedges for securing said straps in their engagement with said lugs, substantially as set forth.

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**504,512. APPARATUS FOR DRAWING LIQUIDS FROM BARRELS.** HENRY R. BAILEY, Albany, N. Y., assignor of two-thirds to Richard O. Bassett and Charles H. Bailey, same place. Filed Mar. 11, 1893. Serial No. 465,547. (No model.)

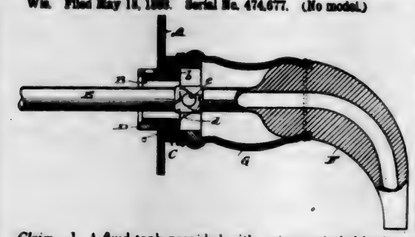


*Claim.*—1. A sleeve-tap of the character herein described, in combination with a stopper which forms a closure for the bore of the inner end of said sleeve-tap, and a stopper-holder having said stopper flexibly attached thereto and fitted to slide loosely in the bore of the sleeve-tap; said stopper-holder being provided with a tooth, 10, which will engage in the bore of the sleeve-tap; said stopper-holder being irremovable—by accident—from the bore of the sleeve-tap, as and for the purpose herein specified.

2. The combination of a sleeve-tap having a rib or stop in its bore, a stopper which forms a closure for the inner end of the bore of said sleeve-tap, and a stopper-holder fitted to slide loosely in the bore of said sleeve-tap and having said stopper flexibly attached thereto; said stopper-holder being arranged to take against said rib or stops, as and for the purpose herein specified.

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**504,513. BOTTLING-SIPHON.** FERDINAND BARTHOLD, Milwaukee, Wis. Filed May 18, 1893. Serial No. 474,677. (No model.)

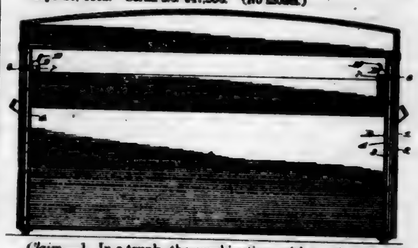


*Claim.*—1. A fluid tank provided with a ring encircled bushing, and a counter-weighted siphon tube trunnioned to the bushing; in combination with a flexible air-proof shield connecting the ring and counter-weight, substantially as set forth

2. A bottling siphon comprising an exteriorly screw-threaded sleeve that fits a corresponding aperture in a fluid tank and is provided at the rear with an outwardly extended flange, a ring encircling the sleeve and provided with a flange opposed to the one aforesaid, a clamp-nut run on said sleeve, and a counter-weighted siphon tube trunnioned to the aforesaid sleeve; in combination with a flexible air-proof shield connected to the ring and counter-weight, substantially as set forth

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**504,514. TRUNK.** JOSEPH J. BIBEL, Philadelphia, Pa., assignor of one-half to Ambrose R. Clemmer and Isaac S. Stover, same place. Filed Sept. 29, 1892. Serial No. 447,250. (No model.)

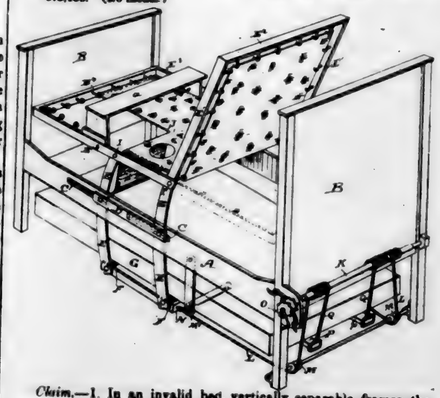


*Claim.*—1. In a trunk, the combination, with a series of vertical rails secured to the interior of the trunk and provided with heads, of a tray arranged between the rails, a series of bearings attached to the upper edge of the tray and having projecting fingers which engage the heads of the rails, and a series of cams journaled in the bearings and arranged to engage the rails, substantially as described and for the purpose set forth.

2. In a trunk, a series of vertical rails secured to the interior of the trunk, and provided with corrugated heads, in combination with a tray arranged between the rails, a series of bearings attached to the upper edge of the tray and having projecting fingers which engage the heads of the rails, and a series of cams journaled in the bearings, each cam provided with a thumb-piece and having a corrugated face arranged to engage with the corrugated face of its respective rail, substantially as described and for the purpose set forth.

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**504,515. INVALID-BED.** ADELE BODEN, JOSEPH PEERS, and SAMUEL SAXON, San Francisco, Cal. Filed May 22, 1893. Serial No. 475,123. (No model.)



*Claim.*—1. In an invalid bed, vertically separable frames, the lower one carrying the principal mattress, and the upper one a supplemental mattress or support, and mechanism connecting the frames whereby the lower one is depressed and the upper one raised simultaneously, substantially as herein described.

2. In an invalid bed, a main frame, a supplemental frame vertically movable within the main frame and adapted to support a mattress, lever arms fulcrumed above said frame, having the lower ends connected therewith, a second frame connected with said lever arms above their fulcrum points, a winding drum, straps adapted to coil thereon having their opposite ends connected with the lower ends of the levers and movable frame, whereby a movement of the levers about their fulcrum points acts to depress the lower mattress and raise the upper one, substantially as herein described.

3. In an invalid bed, a mattress supporting frame vertically movable within the main frame of the bed, levers fulcrumed above said frame having the lower ends connected therewith, a second frame connected with the levers above their fulcrum points and carrying a flexible mattress or support for an invalid, extensions of the pairs of levers nearest the head of the bed, to which extension the upper por-

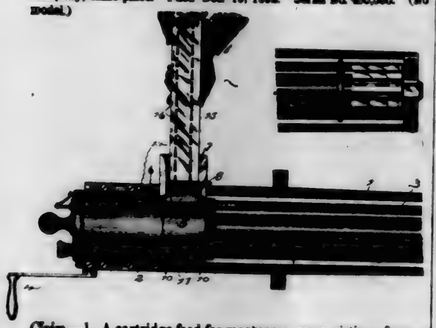
tion of said support is attached, a winding drum with straps adapted to coil thereon having their opposite ends connected with the lower ends of the lever connecting frames whereby the winding of the straps upon the drum moves the mattresses vertically in opposite directions simultaneously, and tilts the upper end of the upper matress to bring the invalid into a sitting posture, substantially as herein described.

4. In an invalid bed, the vertically separable mattresses, levers between which said mattresses are supported, winding mechanism and straps connected with the movable frames, whereby the lower mattress is depressed and the upper mattress is raised, and the invalid simultaneously raised into a sitting posture upon the upper mattress, attachments for the foot end of the upper mattress, longitudinally separable sections of said end of the mattress whereby either portion may be disengaged and dropped after the mattress has been raised so as to leave the invalid in a sitting posture upon the remaining portion of the mattress, substantially as herein described.

5. In an invalid bed, a supplemental mattress supporting frame, vertically movable within the main frame of the bed and having longitudinal slots made in its sides, slides adapted to travel longitudinally in said slots, horizontal movable slides adapted to travel upon the sides of the main frame above the movable frame, levers fulcrumed in pairs to said slides and having their lower ends connected with the slides of the mattress supporting frame, a second vertically movable frame attached to the upper ends of the levers above their fulcrum points, extensions of the head portion of the levers, a webbing or mattress attached to the supplemental frame and the lever extensions, a winding drum and straps coiled thereon and connected with the lower ends of the levers whereby said levers are turned upon their fulcrum points so as to depress the lower mattress and raise the upper one when the straps are coiled upon the drum and to raise the lower mattress and depress the upper one when the straps are uncoiled, substantially as herein described.

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**504,516. FEED FOR MACHINE-GUNS.** CLEMENT M. BRODERICK and JOHN VANKENNELEN, Hartford, Conn., assignors to the Gatling Gun Company, same place. Filed Dec. 19, 1892. Serial No. 455,565. (No model.)



*Claim.*—1. A cartridge feed for machine guns consisting of a metallic plate provided with rows of hook-shaped prongs for encircling the cartridges, each of which prongs is attached to the plate at one end only so as to grasp the cartridges from one side only, substantially as specified.

2. A cartridge feed for machine guns consisting of a metallic plate provided with rows of hook-shaped integral prongs for encircling the cartridges, each of which prongs is attached to the plate at one end only so as to grasp the cartridges from one side only, substantially as specified.

3. A cartridge feed for machine guns, consisting of a metallic plate provided with rows of prongs adapted to clasp the cartridges, and slots for receiving a portion of the rims of the cartridges opposite the prongs, substantially as specified

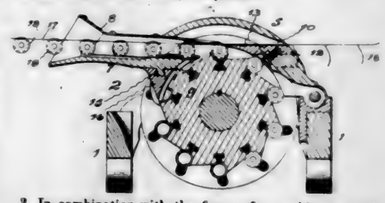
4. A cartridge feed for machine guns consisting of a plain metallic plate having an upturned front end and rows of hook-shaped prongs for encircling the cartridges, each of which prongs is attached to the plate at one end only, substantially as specified.

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**504,517. MACHINE-GUN.** CLEMENT M. BRODERICK and JOHN VANKENNELEN, Hartford, Conn., assignors to the Gatling Gun Company, same place. Filed Feb. 4, 1893. Serial No. 461,022. (No model.)

*Claim.*—1. In combination with the frame of a machine gun, a hopper hinged at one side to the frame and provided with a catch at the opposite side, said hopper having an opening through it for the passage of feed strips bearing cartridges, a yielding plate covering the top of the opening for a portion of the distance through the hopper, and a wedge for removing cartridges from the strips, substantially as specified.

2. In combination with the frame of a machine gun, a hopper hinged at one side to the frame and provided with a catch at the opposite side, said hopper having an opening through it for the passage of feed strips bearing cartridges, and a wedge adjustably secured to a portion of the hopper below the path of the strips but in the path of the cartridges, substantially as specified.

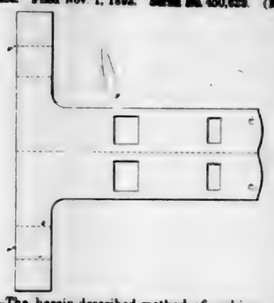


3. In combination with the frame of a machine gun, a hopper hinged at one side to the frame and provided with a catch at the opposite side, said hopper having an opening through it for the passage of feed strips bearing cartridges, a yielding plate covering the top of the opening for a portion of the distance through the hopper, and an adjustable wedge secured to a portion of the hopper below the path of the strips but in the path of the cartridges, substantially as specified.

4. In combination with the frame of a machine gun, a hopper hinged at one side to the frame and provided with a catch at the opposite side, said hopper having an opening through it for the passage of feed strips bearing cartridges, the front part of said opening being narrower than the diameter of the butts of the cartridges used, a plate covering the top of the opening for a portion of the distance through the hopper, and a wedge secured to a portion of the hopper below the path of the strips and in the path of the cartridges, substantially as specified.

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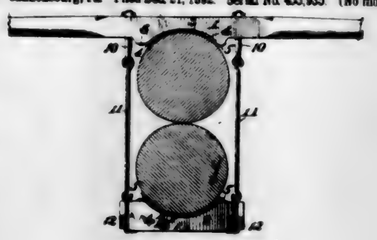
**504,518. METHOD OF MAKING WRENCH-HANDLES.** WILLIAM E. BROOKS, Trenton, N. J., assignor to the American Saw Company, same place. Filed Nov. 1, 1892. Serial No. 450,629. (No specimens.)



*Claim.*—The herein-described method of making a sheet metal casing for wrenches which consists in first shaping a suitable sheet metal blank having projections, folding these projections to present several thicknesses of metal and then folding the halves of the blank longitudinally together bringing the folded projections into contact with each other and welding them together to form a solid hard jaw, substantially as described.

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**504,519. GRINDING AND POLISHING TOOL.** JOHN F. BUDER, Canonsburg, Pa. Filed Dec. 21, 1892. Serial No. 455,935. (No model.)





*Claim.*—1. A tool for grinding or polishing, having in combination a supporting block, a plate provided with perforations for the reception of an abradant, and a compressible cushion interposed between the block and plate and adapted to force the abradant out of the perforations, substantially as set forth

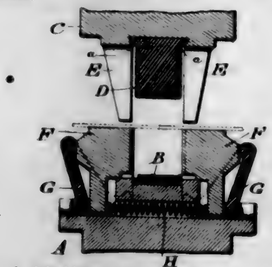
2. A tool for grinding or polishing having in combination a plate provided with perforations and a compressible cushion so arranged with reference to the perforated plate, that portions of the cushion will enter the perforations, when subjected to pressure, substantially as set forth

3. A tool for grinding or polishing, having in combination a metal plate provided with perforations and a compressible cushion formed of asbestus and so arranged with reference to the perforated plate that portions of the cushion will enter the perforations when subjected to pressure, substantially as set forth

4. A tool for grinding or polishing having in combination a supporting block, a plate provided with perforations, a compressible cushion interposed between the block and plate, and plugs of emery supported by the block and projecting through the cushion and openings in the plate, substantially as set forth.

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**504,520. DIE FOR MAKING CAR-STAKE POCKETS.** NATHAN H. DAVIS, Philadelphia, Pa. Filed Apr. 15, 1893. Serial No. 470,440. (No model.)



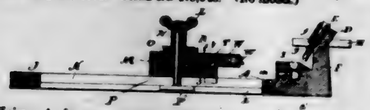
*Claim.*—1. A bed having a bottom die and movable side dies thereon, levers mounted on said bed, and a restoring spring bearing against said side dies, said levers being adapted to be engaged by projections on the head of the upper die, whereby said levers force in or close the side dies, substantially as described.

2. A head provided with an upper die, and depending legs, and a bed having lower and side dies and crank levers, said legs being adapted when the head is lowered to engage with said levers, whereby the latter force in or close the side dies, substantially as described.

3. A bed with a stationary bottom die, laterally-movable side dies, a head having a depending upper die, and legs aside of the same, elbow levers adapted to be operated by the downward movement of said head so as to move said side dies toward each other, and a spring for moving said side dies away from each other, said parts being combined substantially as described.

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**504,521. SAW-SET.** EDWARD W. DILLON, New Haven, Conn. Filed May 29, 1893. Serial No. 475,946. (No model.)



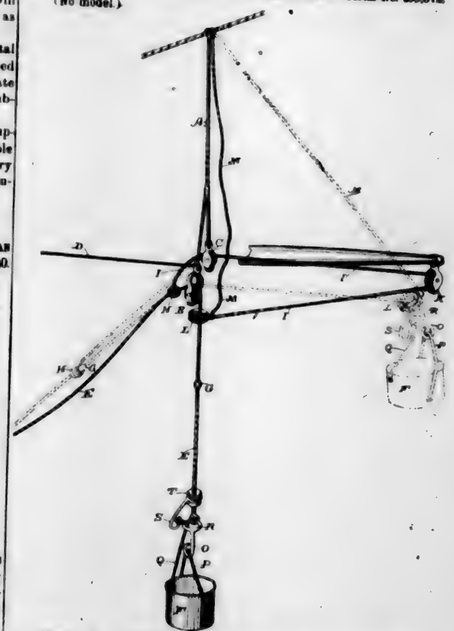
*Claim.*—1. In a saw-set, the combination with a base having an anvil and a long arm, of a plunger located above the said anvil, a slide mounted on the said arm, and constructed with a vertical sleeve, and with a tapering recess surrounding the same, a wedge adapted to be mounted on the sleeve, and to enter the said recess, and a bolt passing through the sleeve, whereby the slide is secured to the said arm, substantially as described.

2. In a saw-set, the combination with a base having an anvil and an arm, of a plunger located above the anvil, a slide mounted on the said arm and constructed with a sleeve and a tapering recess surrounding the sleeve, an adjustable wedge on the sleeve, adapted to enter the said recess and being provided with a set-screw for securing it thereto, a bolt passing through the sleeve and the said arm, and a nut for securing the bolt to the arm, substantially as set forth.

3. In a saw-set, the combination, with a base having an anvil and a long arm, of a plunger, located above the said anvil, a slide mounted on and adapted to rest upon the upper side of the said arm, and a vertically adjustable band-saw guide attached to the forward end of the said slide, and having tongue and groove connection therewith, substantially as described

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**504,522. HOISTING AND CONVEYING APPARATUS.** DANIEL DONAHUE, San Francisco, Cal. Filed Dec. 16, 1892. Serial No. 455,372. (No model.)



*Claim.*—1 A hoisting and transporting apparatus consisting of a suspending rope, pulleys B and C attached to the lower end of said rope and retained in position against the side pull, a hoisting rope passing through one of said pulleys from the source of power and down to the weight to be transferred, said rope having an enlargement attached to it, a second rope I passing through the second pulley having an eye through which the hoisting rope passes, a direction pulley K over which the rope I passes, and an eye or pulley L to which the opposite end of the rope is attached and through which that portion of the hoisting rope passes which lies between the pulley and the weight to be raised, substantially as herein described.

2 A hoisting and transporting apparatus consisting of a vertically acting hoisting rope and a laterally acting conveying rope, a fixed pulley through which the hoisting rope passes, a second fixed pulley through which the lateral rope passes, said lateral rope having eyes at the ends through which the hoisting rope passes and a direction pulley at the distant point over which it passes, a knot or enlargement in the hoisting rope which passes freely through the lowermost eye, but engages the upper one, whereby a continuous pull upon the hoisting rope will act upon the lateral rope and draw its lower end and that part of the hoisting rope which is engaged by it, to one side, substantially as herein described

3. In a hoisting apparatus, the automatically discharging device consisting of a bucket with a rope P by which one side of the bucket is permanently connected with the hoisting rope, a rope Q attached to the opposite side of the bucket, and passing up through a guide ring upon the lower end of the hoisting rope, a ring sliding upon the hoisting rope, and having a hook to which the upper end of the rope Q is attached, and from which it is automatically disengaged, substantially as herein described.

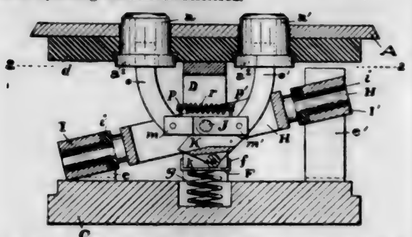
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**504,523. DOUBLE-POLE SWITCH.** CHARLES W GARTSIDE and ROBERT E WOOD, Baltimore, Md. Filed June 29, 1893. Serial No 479,182. (No model.)

*Claim.*—1. In a push-button switch, the combination of the poles; a rocking-lever pivoted between the poles and having contact-pieces in engagement therewith; a spring-pressed platform having position

under the contact-lever; a block interposed between the contact-lever and the spring-pressed platform and having a projection abutting against the latter; and means for operating the rocking contact lever as described.

2. In a push-button switch the combination of the poles; a rocking contact-lever pivoted between the poles and having contact-pieces for engagement therewith; a spring-pressed platform having position under the contact-lever; a block having a projection interposed below the contact-lever and the spring-pressed platform; and two pivoted push-bars on opposite sides of its pivot-point of the contact-lever for operating the same as described.



3. In a push-button switch, the combination of the poles; a rocking contact-lever pivoted between the poles, and having contact-pieces for engagement therewith; a spring-pressed platform; a pivoted tilting-block having a projection abutting against the spring-pressed platform; and two push-bars each pivoted at one end to the tilting block as described.

4. In a push-button switch, the combination of the poles; a rocking contact-lever pivoted between its ends and having a contact-piece at each end, both of said contact-pieces being adapted to be simultaneously thrown into or out of contact with the said poles, a spring-pressed platform having position under the pivot-point of the contact lever and having a projection abutting against the spring-pressed platform; stops on the tilting-block,—one on either side of the pivot-point and either of which is adapted to abut against the contact-lever on one side of the pivot-point, whereby a limited independent movement is permitted the tilting-block, but a further movement will cause one of the said stops to abut against the rocking contact-lever, and throw the same into or out of contact with the poles; and push-bars connecting with the tilting-block to operate the contact lever.

5. In a switch the combination of the poles; a rocking-contact-lever having a longitudinal slot forming side-arms, *A*, and pivoted between the poles; two contact pieces one on each end of the contact-lever, and adapted to simultaneously make or break contact with the poles; a spring-pressed platform located under the pivot-point of the contact-lever and having a sliding movement to and from the same; a tilting-block pivoted between the side-arms, *A*, and having a downward projection in spring-contact with the spring-pressed platform; stops on the tilting-block, one on either side of the pivot-point and either adapted to abut against the contact-lever to throw the same into or out of engagement with the poles of the switch; and push-bars connecting with the tilting-block to operate the same, substantially as described.

6. In a push-button switch, the combination of the poles, a standard between the poles and comprising side-posts, *d*; a rocking contact-lever pivoted between the side-posts, and having side-bars, *A*; contact-pieces one on each end of the contact-lever and adapted to make contact, each with one of the said poles; a spring-pressed platform sliding between the side-posts of the standard and below the pivot-point of the contact-lever; a tilting-block pivoted co-incidently with the lever and between its side-arms, *A*, and having a projection abutting against the spring-pressed platform—said tilting-block having upwardly-extending side-pieces, *f*; two links, each pivoted at one end co-incidently with the tilting-block and extending along the said slot in the tilting-block, in opposite directions from their common pivot-point; and two push-bars each jointed at one end to the free end of one of the links, for the purpose described.

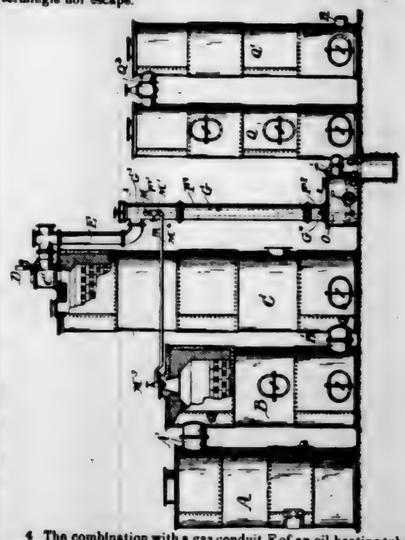
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**504,524.** OIL-HEATER. ARTHUR G. GLASGOW, Philadelphia, Pa. Filed Dec. 6, 1892. Serial No. 454,221. (No model.)

*Claim.*—1. The combination with a gas conduit F of an oil heating tube G situated in said conduit having an oil supply and outlet pipe and formed with its closed head $G^2$ integral with its sides and an internal centrally located rod H secured to head $G^2$ by a welded joint and extending close to its lower end, all substantially as described, so that the hot gas and oil vapor may not intermingle nor escape.

2. In combination with a gas conduit F of an oil heating tube G situated in said conduit having an oil supply and outlet pipe and formed with its closed head $G^2$ integral with its sides, and with a contracted opening in its lower end $G^4$ and an internal centrally located rod H secured to head $G^2$ by a welded joint and extending close to its lower end, all substantially as described, so that the hot gas and oil vapor may not intermingle nor escape.

3. In combination with a gas conduit F of an oil heating tube G situated in said conduit having an oil supply and outlet pipe and formed with its head $G^2$ integral with its sides, an internal centrally located rod H secured to head $G^2$ by a welded joint and extending close to its lower end and spacing lugs J secured to rod H, all substantially as described, so that the hot gas and oil vapor may not intermingle nor escape.



4 The combination with a gas conduit F of an oil heating tube G located in said conduit; an oil delivery pipe M, extending through the walls of conduit F and secured to tube G; an oil entrance pipe O, a springy transversely extending portion of which is secured to tube G; a steam inlet as S into the delivery pipe M, and a waste tap as W, leading from the oil entrance pipe O, all substantially as specified

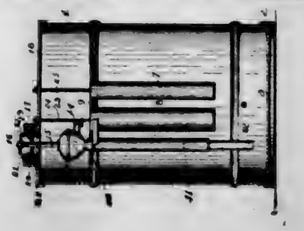
5. The combination with a gas conduit F of an oil heating tube supported at or near its upper end in said conduit, an oil delivery pipe M extending through the walls of conduit F and secured to the oil heating tube near its point of support in the conduit F and an oil entrance tube O entering the tube G from below the conduit F and having a transverse extension lying below said conduit to permit of springing

6. The combination with a gas conduit F having a spider L of an oil heating tube G located in said conduit and supported near its upper end on said spider, an oil delivery pipe M extending through the walls of conduit F, and secured to tube G near the spider and an oil entrance tube O entering tube G from below conduit F and having a transverse extension lying below said conduit to permit of springing

7 The combination with a gas conduit F and a wash box into which said conduit extends, of an oil heating tube G supported in said conduit, an oil delivery pipe M secured to the tube G near its upper end and an oil entrance pipe O opening into the lower part of the tube G and having a transverse extension in the wash box below conduit F in the wash box substantially as described.

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**504,525.** LIQUID-MEASURING CAN. LEWIS W. HEMP, St. Louis, Mo. Filed Dec. 28, 1892. Serial No. 456,519. (No model.)





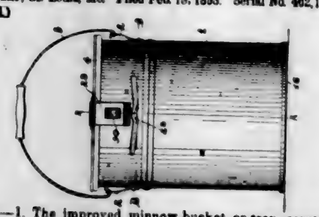
*Claim.*—1. The improved measuring-vessel, having a main-receptacle 1 provided with an annular base-rim 2 which elevates said main-receptacle above the supporting-surface on which it is supported, a bottom for said main receptacle, a sealed top for said receptacle, comprising the top 18 provided with an opening 17, a vertical-rim 19 surrounding said opening, and a cap 20 having a central circular depression 21 and its sides arranged to fit over said rim and make a tight-joint with a gasket 22, in combination with a device for indicating the height of liquid in said receptacle, liquid-measuring receptacles located upon the interior of said main-receptacle, troughs connecting said measuring-receptacles so that liquid may flow from one to another of same, a pump for filling the said measuring-receptacles, and floaters located in said receptacles last-named and serving as indicators by the flow of liquid therein or therefrom, substantially as herein specified.

2. The improved measuring-vessel, having a main receptacle 1, smaller receptacles 7 and 8 located within said main rpeceptacle, a trough 9 leading from the larger to the smaller receptacle within the main receptacle, a horizontal platform 10 secured to the side of the receptacle 8 and to the inner periphery of the main receptacle, a tubular guide or socket 11 depending from said platform, a pump-barrel 12 located in said guide and projecting below the lower end thereof, a spout 14 connecting said pump-barrels to said trough, a pump-rod located in said barrel and provided with a handle and projecting upward through an opening in the top of the main receptacle to permit manipulation from the exterior thereof, indicating floaters 23 located in said receptacles 7 and 8 to indicate the height of liquid therein, means for drawing liquid from said receptacles 7 and 8 separately and means for indicating the height of liquid in the main receptacle, substantially as herein specified.

3. An improved liquid measuring receptacle having interior liquid measuring receptacles, troughs connecting said receptacles, the liquid adapted to pass from the larger receptacle into the smaller one through said trough, when the larger is filled by pumping, floaters serving as indicators, said floaters vertically reciprocatory in said interior measuring receptacles by the flow of the liquid therein or therefrom, substantially as set forth.

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**504,526.** COMBINED MINNOW BUCKET AND TRAP. LEWIS W. HEMP, St. Louis, Mo. Filed Feb. 13, 1893. Serial No. 462,150. (No model.)



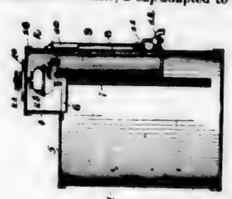
*Claim.*—1. The improved minnow bucket or trap, constructed with an outer bucket 1, a cylindrical trap-bucket 9 having reticulated sides, a conical top having reticulated sides which converge inwardly to form a flaring entrance to said trap bucket, said top having an apexial opening 20, a threaded nozzle 21 applied to said opening and detachable therefrom upon the interior of said trap-bucket, means for securing said cap to said top when said cap is removed from said nozzle, said top hinged to the upper end of said trap-bucket, and a pivoted-catch for securing said top, substantially as herein specified.

2. The improved minnow bucket or trap, constructed with an outer bucket 1 having indentations 26 upon its interior adjacent its upper end, an indentation 28 located opposite said indentations 26 the inner trap bucket having a conical top projecting within said trap-bucket and hinged thereto, said top having a capped apexial-opening and forming a flaring entrance to said trap-bucket, a rim 12 applied to the upper edge of said trap-bucket, two V-shaped ears 25 projecting in a common horizontal plane from said rim at one side of said trap-bucket and detachably engaging the indentations 26 of the outer bucket, a single larger ear 27 having a form similar to that of said ears 25 and detachably engaging the indentation 28 in the outer bucket, and a catch 24 pivotally secured at one end to said rim adjacent said larger ear 27 and constructed to engage over the edge of said top to hold the same in position when used as a trap, substantially as specified.

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**504,527.** SELF-MEASURING TANK. LEWIS W. HEMP, St. Louis, Mo. Filed Mar. 6, 1893. Serial No. 464,793. (No model.)

*Claim.*—1. An improved self-measuring liquid receptacle having an upwardly projecting-head, above a tank, said head provided with a hermetically sealed cover, an opening in said cover, downwardly and inwardly converging walls leading from said opening, an inwardly projecting annular flange around said walls, upwardly and inwardly converging walls from said flange, a cap having distended walls adapted to fit over said upwardly and inwardly converging walls, said cap provided with a central opening surrounded by an upwardly projecting screw-threaded nozzle, a cap adapted to fit over said nozzle, an opening in said cap through which the pump rod passes, and the space between the distended walls of said cap and the downwardly and inwardly converging walls adapted to be filled with water or other non-gaseous liquid to prevent the evaporation of liquids within said tank, substantially as set forth.



2. An improved self-measuring liquid receptacle comprising a cylindrical tank, a cylindrical measuring receptacle located therein and secured thereto, a pump-stock supported by a horizontal plate, the upper end of said pump stock provided with a spout leading into said receptacle, a sight-tube leading from said receptacle by means of a coupling through the wall of the tank, and provided with indicating marks adjacent its surface to indicate the amount of liquids therein, a pump rod in said pump-stock, the lower end of said rod provided with a valve comprising a circular ring of wire, secured by the cross-piece to the pump-rod, and a leather or rubber washer held above said ring, substantially as set forth.

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**504,528.** ELECTRIC SWITCH. ALBERT B. HERRICK, Schenectady, N. Y., assignor to the General Electric Company, Boston, Mass. Filed July 21, 1892. Serial No. 440,768. (No model.)



*Claim.*—1. A switch comprising an insulated base, a pair of terminal metal plates fastened thereto and formed with integral contact lugs projecting from them, the opposite sides of said lugs being finished in parallel planes in line with one another, a pair of flat elastic metal blades arranged to embrace the respective lugs between them flatwise to close the switch, and a block interposed between said blades, fastened to them, and by which they are moved.

2. A switch comprising an insulated base, a pair of terminal metal plates fastened thereto and formed with integral contact lugs projecting from them, the opposite sides of said lugs being finished in parallel planes in line with one another, a pair of flat elastic metal blades arranged to embrace the respective lugs between them flatwise to close the switch, said blades being pivoted to one lug and movable around it to bring their free ends into or out of contact with the opposite lug, a block interposed between said blades and fastened to them, and a handle projecting from said block by which to swing the blades

3. A switch comprising an insulating base, a pair of terminal plates fastened thereto and formed with respective contact lugs projecting from them, the opposite sides of said lugs being finished in parallel planes in line with one another, a pair of elastic blades adapted to embrace the respective lugs between them to close the switch, and a block interposed between said blades to which they are fastened and by which they are moved, the opposite faces of said block being finished in parallel planes coincident with those of the lugs.

4. A snap-switch comprising a movable member adapted to form a bridge between the stationary terminal plates, one of said plates having a projecting shoulder combined with a spring-pressed snap-tongue carried by said movable member, and adapted during the opening movement of the switch to engage and be restrained by said projecting shoulder until by the movement of said movable member it is drawn out of engagement with said shoulder, whereupon it over takes the movable member by a quick snap action adapted to break any arc that may form at the points of separation.

5. A snap-switch comprising two stationary terminals, one of said

terminals having a projecting shoulder, and a movable member adapted to constitute a conducting bridge between them, combined with a snap-tongue carried by said movable member drawn toward it by spring pressure, and arranged to engage said projecting shoulder and be restrained thereby during the opening movement of the switch until after said movable member has itself parted contact with said terminal, after which by the continued movement of said movable member said tongue is disengaged from said shoulder and springs toward the movable member, whereby the arc resulting from the breaking of the circuit is formed between said tongue and shoulder, and the normal contact surfaces between the terminal and movable members are preserved from oxidation

6. A snap-switch consisting of two stationary lugs constituting the respective terminals, a pair of elastic blades adapted to embrace the lugs between them and constituting the movable member, and a snap-tongue pivotally connected to said blades in conductive contact therewith, pressed toward them by spring pressure, and a projecting shoulder formed on one of the terminal lugs adapted to engage the free part of said tongue during the opening movement of the switch and restrain it until the blades have parted contact with said lug, after which by the continued movement of the blades the tongue disengages itself from said shoulder and flies toward the blades.

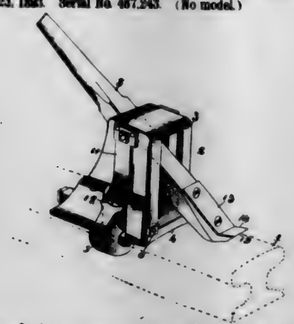
7. A snap-switch comprising a stationary lug constituting one terminal, a pair of elastic blades pivoted thereto, a stationary lug constituting the other terminal, and formed with a projecting shoulder, an operating lever or carrier connected to said blades by which they are moved to open or close the switch, and a spring-pressed tongue carried by said blades and having its free end arranged to be engaged by said shoulder and restrained thereby during part of the opening movement of the switch

8. The combination to form a snap-switch of terminals B B', one of them formed with projecting shoulder $b^{11}$, elastic blades D D, handle E, and spring-pressed snap-tongue G pivoted between said blades and having its free end arranged to engage said shoulder

9 The combination to form a snap-switch, of terminal plates B B', one of them formed with projecting shoulder $b^{11}$ and inclined face $b^{12}$, elastic blades D D pivoted to the opposite terminal, handle E, snap tongue G provided with slotted pivotal connection A i at one end by which it is joined to said blades, and spring s for drawing said tongue toward the blades

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**504,529. CAR-MOVER.** PETER H. JACOBUS, Millstadt, Ill. Filed Mar. 23, 1893. Serial No. 467,243. (No model.)



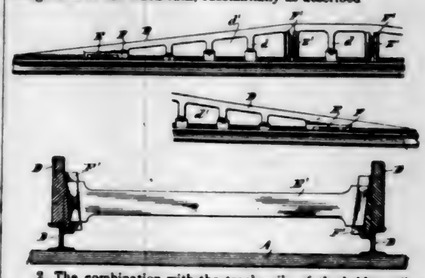
*Claim.*—1 A car mover consisting of a saddle, grappling hooks provided with cam surfaces and movably secured within the saddle, suitable guides formed in the opposite inner sides of the saddle, a movable bifurcated wedge-shaped block resting upon said cam surfaces, the sides of said block located in said guides, a lever movably secured between said bifurcations, and springs attached to the outside of said saddle the free ends of which bear against the curved outer surfaces of said hooks, substantially as set forth

2. A car mover consisting of a saddle, grappling hooks movably secured within the same, cam surfaces formed on said hooks, a bifurcated wedge-shaped block movable within the saddle and resting upon said cam surfaces, a lever movably secured between said bifurcations, and springs attached to the outside of said saddle, the free ends of which bear against the curved outer surfaces of said hooks, substantially as set forth

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**504,530. HOSE-BRIDGE.** FREDERICK KNICKERBOCKER, Minneapolis, Minn. Filed May 15, 1893. Serial No. 474,170. (No model.)

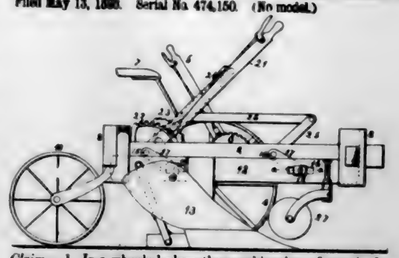
*Claim.*—1 The combination with the pair of hose bridge-rails, having their under surfaces formed to interlock with the track-rails, and provided with lateral wedge-blocks of the cross braces having wedge shaped ends co-operating with said wedge blocks, to lock the bridge-rails to the track-rails, substantially as described



2. The combination with the track-rails, of the bridge rails interlocking therewith, and having the horizontal wedge blocks F and the vertical wedge blocks F' with dove tailed grooves of the end cross braces E with wedge shaped ends working against the blocks F and the central braces E' with dove tailed and wedge shaped ends working in and against said grooved blocks F', substantially as and for the purpose set forth

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**504,531. WHEEL-PLOW.** HJALMAR LINDSTROM, Rockford, Ill. Filed May 13, 1893. Serial No. 474,150. (No model.)



*Claim.*—1 In a wheeled plow, the combination of a main frame and supporting wheels, vertical guideways, a plow beam held in position by the guide ways and provided with lengthwise slots, a main lever having a pivotal connection with the main frame, an adjusting lever having a pivotal connection with the main lever, both levers having a crank connection with the plow beam by guides located in the slots.

2 In a wheeled plow, the combination of a main frame and supporting wheels, vertical grooves formed in the main frame, a plow beam located in and guided by the grooves, a main lever having a pivotal connection with the main frame, a toothed segment for the main lever secured to the main frame, an adjusting lever having a pivotal connection with the main lever, a toothed segment for the adjusting lever secured to the main lever, a crank connection between the main lever and the plow beam and a crank and link connection between the adjusting lever and the plow beam.

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**504,532. COMBINED CURTAIN RING AND PIN.** JOHN LINES, Waterbury, Conn., assignor to the Scovill Manufacturing Company same place. Filed June 26, 1893. Serial No. 478,847. (No model.)



*Claim.*—A sheet-metal ring provided with transverse corrugations and a wire pin rigidly attached to the ring between the said corrugations which assist in holding it in place, the pin being thereto formed with an eye through which the ring passes, substantially as described
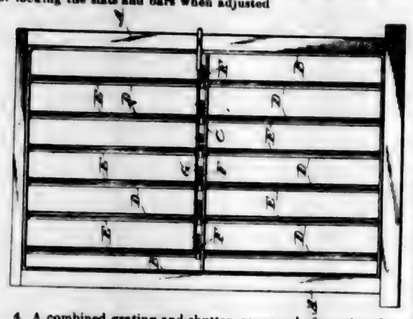
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**504,533. COMBINED BURGLAR AND FIRE PROOF SHUTTER.** EDMUND H. LOEKER, Cincinnati, Ohio. Filed Dec. 27, 1892. Serial No. 456,452. (No model.)

*Claim.*—1. A combined grating and shutter, composed of a series of parallel oscillating metal bars to form the grating, and a series of slats secured to said bars and actuated by the oscillation of the bars to be opened or closed

2 A combined grating and shutter, composed of a series of parallel oscillating bars to form a grating, means for oscillating them simultaneously and slats secured to said bars and actuated by the oscillation of the bars to be opened or closed

3 The combination with a wall opening, of a series of parallel oscillating metal bars, slats secured thereto, means for oscillating said bars and slats simultaneously to open or close the slats, and means for locking the slats and bars when adjusted



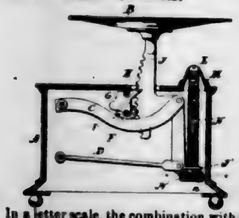
4. A combined grating and shutter, composed of a series of two part parallel oscillating metal bars to form the grating, and a series of slats secured to and between said bars and actuated by the oscillation of the bars to be opened or closed.

5. In a wall opening the combination of the parallel oscillating metal bars D the slats E secured thereto, the arms F secured to the bars D and pivoted to the cross bar G, the cross bar G, and means for locking the latter, substantially as described

6 In a wall opening, the combination of the parallel oscillating metal bars D, the slats E secured thereto, the arms F secured to the bars D and pivoted to the cross bar G, the cross bar G, the link e the pin f and crank handle c d, substantially as described

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**504,534. LETTER-SCALE.** CHARLES A. MILLER, Meriden, Conn., assignor to the Wilcox Silver Plate Company, same place. Filed Feb. 27, 1893. Serial No. 463,906. (No model.)



*Claim.*—1 In a letter scale, the combination with the case thereof, of a rack suspended therein and furnished at its upper end with a pan, a yoke suspended in the said case near the top thereof, and having its upper end adapted to take a bearing against the same, whereby its swinging movement toward the rack is limited, a shaft journaled in the said yoke, and a pinion and an indicator attached to the said shaft, the former taking into the said rack and the latter standing in front of a scale on the case, substantially as set forth.

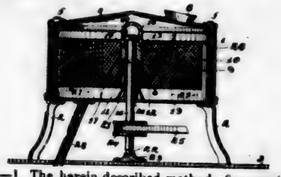
2. In a letter-scale, the combination with the case thereof, of a rack, and a spiral weighing spring suspended by its upper end in the case, and connected at its lower end with the rack, and furnished with an adjusting-nut, having a threaded central opening adapting it to fit over the spring and to engage with the outer sides of the coils thereof, the rack being supported upon the said nut, which is free to be moved up and down upon the spring, substantially as described

3 In a letter-scale, the combination with the case thereof, of a rack, a spiral weighing spring suspended at its upper end in the case, connected at its lower end with the rack, and furnished thereat with an adjusting nut, upon which the rack is supported and the threads whereof take into its coils and a set-screw mounted in the said nut to impinge against the coils of the spring, which are sprung or distorted to bind the nut thereon against rotation, substantially as described

4 In a letter-scale, the combination with the case thereof, of a rack suspended therein, a pan mounted upon the upper end of the rack, a spiral weighing spring having the said rack connected with its lower end, a stop in the top of the case, and consisting of an upwardly projecting collar, fixed to the case and having the said spring suspended, from its upper end substantially as described

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**504,535. METHOD OF PRESERVING EGGS.** CHARLES E. MCCLURE, St. Louis, Mo. Filed Nov 29, 1892. Serial No. 453,515. (No specimens.)



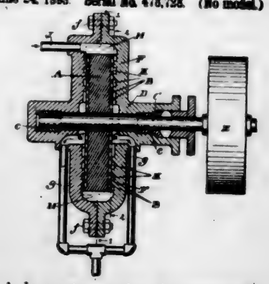
*Claim.*—1 The herein described method of preparing eggs for commercial use, consisting first in the simultaneous disintegration of the egg and the separating of the shells therefrom, secondly the collecting of the disintegrating material and the drying of same upon revolving driers heated to 160° Fahrenheit, and thirdly the disintegration or pulverizing of the dried material, substantially as set forth.

2 The herein described method of preparing eggs for commercial use, consisting first in the disintegration of the egg meat, the separation of shells therefrom and the thorough mixing of said disintegrated material with a preserving compound, second the collection of said disintegrated and mixed egg meat and preservative and the drying of same upon revolving driers and third the removal of the dried mixture and the disintegration of same ready for use, substantially as set forth.

3. The herein described method of preparing eggs for commercial use, by first disintegrating the egg meat, separating the shells therefrom, and the mixing of said disintegrated meat with a preservative, all of said steps consummated simultaneously by centrifugal force, substantially as set forth

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**504,536. ROTARY ENGINE.** JAMES F. MCELROY, Albany, N. Y., assignor to the Consolidated Car-Heating Company, Wheeling, W Va. Filed June 24, 1893. Serial No. 478,738. (No model.)



*Claim.*—1. In a rotary engine, the combination of a shaft, a movable disk keyed thereto, a series of pits or pockets in the lateral surface of said movable disk, a frame in which said shaft is mounted, stationary disks attached to or forming a part of said frame, a spiral groove in the surface of the stationary disks adjacent to the movable disks, with means for conveying steam to said movable disk, with means for exhausting the steam therefrom, substantially as described and for the purpose set forth.

2 A rotary engine consisting of a movable disk keyed to a shaft, a series of pits or pockets in the lateral surface of said disk, a frame within which said shaft is suitably mounted, stationary disks arranged in said frame in such a manner that their interior surfaces will coincide with the lateral surfaces of the movable disk, a space between the periphery of the movable disk and the interior adjacent surfaces of the stationary disks forming an annular steam chamber around the periphery of the movable disk, a spiral groove in the stationary disks extending from the periphery of the movable disk to near the center of the stationary disks, means for communicating steam to said steam chamber, and exhaust ports near the center of the stationary disks, substantially as described and for the purpose set forth.

3 In a rotary engine, a movable disk, a shaft mounted in a frame, said movable disk keyed to said shaft, a series of pits or pockets in the lateral surfaces of said movable disk, said frame provided with an inclosed chamber within which said movable disk may revolve, a means for conducting steam from near the periphery of said movable disk within said chamber in a continuous spiral path around

the said chamber coming in contact with the sides of the pits or pockets in the surfaces of the movable disk and exhausting at or near the center of the engine, substantially as described and for the purpose set forth.

4. In a rotary engine, the combination of a shaft, a movable disk secured thereto, a series of pits or pockets in the lateral surfaces of said disk, a frame in which said shaft is mounted, two stationary disks in said frame suitably fastened together, between which said movable disk is placed, said stationary disks provided with a means for conveying steam in a spiral path around the periphery of the movable disk to the center of the engine, a means for communicating steam to the space between the stationary disks, a means for exhausting the steam from near the center of the engine, substantially as described and for the purpose set forth.

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**504,537. FIREPROOF CONSTRUCTION.** WILLIAM ORR, Trenton, N. J. Filed May 13, 1893. Serial No. 474,063. (No model.)



*Claim.*—1. The combination with floor beams and joists supported by said beams and lying partly below the tops of the beams, of a series of joist supporting suspenders supported by the beams and extending from beam to beam, and a body of fire proof material between said joists, substantially as described.

2. The combination with floor beams and joists extending below the tops of the beams, of a series of joist supporting suspenders supported by the beams and extending from beam to beam, and a body of plastic material extending between the joists, substantially as described.

3. The combination with floor beams and joists extending below and above the tops of the beams, of a series of joists supporting suspenders supported by the beams and extending from beam to beam, and a body of plastic material extending over the tops of the beams and between the joists, substantially as described.

4. The combination with floor beams and joists extending below and above the tops of the beams, of a series of joist supporting suspenders supported by the beams and extending from beam to beam, and a body of cement or other plastic material extending over the tops of the beams and between the joists and having its upper surface below the tops of the joists, substantially as described.

5. The combination with floor beams and joists extending below and above the tops of the beams, of a series of joists supporting suspenders supported by the beams and extending from beam to beam, metallic lathing supported between the joists, and a body of plastic material supported by said lathing, substantially as described.

6. The combination with floor beams and joists extending below and above the tops of the beams, of a series of joist supporting suspenders supported by the beams and extending from beam to beam, metallic lathing supported between the joists, and a body of plastic material extending over the tops of the beams and between the joists and supported by said lathing, substantially as described.

7. The combination with floor beams and joists extending above and below the tops of the beams, of metallic lathing between and supported by said joists, and a body of plastic material extending over the tops of the beams and between the joists and supported by said lathing, substantially as described.

8. The combination with floor beams and joists extending below the tops of the beams, of joist supporting suspenders supported by the beams and extending from beam to beam, a body of plastic material extending between the joists, and a ceiling of fire proof material below the body of plastic material and separated therefrom by an air space, substantially as described.

9. The combination with floor beams and joists extending below and above the tops of the beams, of joist supporting suspenders supported by the beams and extending from beam to beam, a body of plastic material extending over the tops of the beams and between the joists, and a body of plastic material covering the webs of the beams and extending from beam to beam to form a fire proof ceiling with an air space between the two bodies of plastic material, substantially as described.

10. The combination with floor beams and joists extending below the tops of the beams, of joist supporting suspenders supported by the beams and extending from beam to beam, metallic lathing and plastic material between said joists, suspenders extending between the bottoms of the beams, and a ceiling of metallic lathing and plastic material supported by said suspenders with an air space between the two bodies of plastic material, substantially as described.

11. The combination with beams A and joists B, of joist supporting suspenders C supported by the tops of the beams and extending from beam to beam, metallic lathing *a* between the joists, and plastic material E supported by said metallic lathing, substantially as described.

12. The combination with beams A and joists B, extending above and below the tops of the beams, of joist supporting suspenders C supported by the tops of the beams and extending from beam to beam, metallic lathing *a* between the joists, and fire proof material E extending over the tops of the beams and supported by said metallic lathing, substantially as described.

13. The combination with beams A and joists B, of hangers 10 extending over the tops of the beams and provided with depending arms on opposite sides of the beams, joist supporting suspenders C supported in said hanger arms, metallic lathing *a* extending between and supported by the joists, and plastic material E supported by said lathing, substantially as described.

14. The combination with beams A and joists B, of joist supporting suspenders C supported by the tops of the beams and extending from beam to beam, metallic lathing *a* between the joists, plastic material E supported by said lathing, suspenders D supported at the bottom of the beams, and a ceiling of metallic lathing *c* and plastic material F supported by said suspenders D, substantially as described.

15. The combination with beams A and joists B, of joist supporting suspenders C supported by the tops of the beams and extending from beam to beam, metallic lathing *a* extending between the joists, suspenders D supported at their ends by the lower flanges of the beams, and suspender supporting rods 12 connected to the suspenders D between the beams and supported from the tops of the beams, substantially as described.

16. The combination with beams A and joists B, of joist supporting suspenders C supported by the tops of the beams and extending from beam to beam, metallic lathing *a* extending between the joists, suspenders D extending between the bottoms of the beams and supported from the lower flanges of the beams by clips *d*, and supporting rods 12 connected to the suspenders D between the beams and supported from the tops of the beams by clips hooked over the flanges of the beams, substantially as described.

17. The combination with beams A and suspenders D extending between the beams and supported at their ends by the lower flanges of the beams, of suspender supporting rods 12 connected to the suspenders between the beams and supported from the upper flanges of the beams G by clips *b* provided with arms 4, 5, respectively above and below the flanges, substantially as described.

18. The combination with beams A and suspenders D, of clips *d* engaging the lower flanges of the beams and supporting the suspenders at their ends, U shaped clips C embracing the suspenders D between the beams, suspender supporting rods 12 hooked to said clips, and clips *b* engaging the upper flanges of the beams and to which the suspender supporting rods are connected, substantially as described.

19. Clip *b* having the arms 4, 4, adapted to extend over the top of the beam flange, opening 3 between said arms, and arm 5 adapted to engage the under side of the flange, substantially as described.

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**504,538. SNAP-HOOK.** ALBERT A. PAGE, New Haven, Conn., assignor to the Sargent & Company, same place. Filed Dec. 5, 1892. Serial No. 454,030. (No model.)





*Claim.*—1. A snap-hook having its chambered-body, hook, and eye cast integral, its said body being longitudinally divided into two members connected by the eye, which is bent in bringing them into alignment, the hook forming a continuation of one of the said members, substantially as described.

2. A snap-hook having its chambered-body, hook, and eye cast integral, its said body being longitudinally divided in a plane parallel with the plane of the hook and at a right angle to the plane of the eye and at one side of its longitudinal center into two members connected by the eye, which is bent in bringing them into alignment, the hook forming a continuation of one of the said members, substantially as described.

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**504,539. SNAP-HOOK.** ALBERT A. PAGE, New Haven, Conn., assignor to the Sargent & Company, same place. Filed Dec. 5, 1892. Serial No. 454,031. (No model.)



*Claim.*—1. A snap-hook having a longitudinally divided, chambered body, composed of two members rigidly secured together, one of which is formed integrally with the eye of the article, and the other with the hook thereof, and one member extending to the base of the hook and the other to the base of the eye, and a bolt located in the said chambered body, substantially as described.

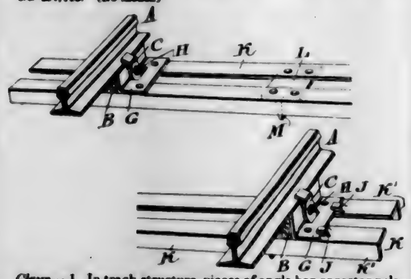
2. A snap-hook having a longitudinally divided, chambered body composed of two members, rigidly secured together, one of which is formed integrally with the eye and the other with the hook thereof, the said body being divided in the plane of the eye, and one member being substantially U-shaped in cross-section, and the other being shaped to fit over it to form a chamber, and a bolt located in the said chamber, substantially as described.

3. A snap-hook having a longitudinally divided, chambered body, composed of an upper and a lower member rigidly secured together and respectively formed integral with its eye and its hook, the said upper member being provided at its outer end with depending ears, and the lower member being constructed to fit within the upper member, and with curved shoulders conforming to the curvature of the lower edges of the upper member which rest upon them, substantially as described.

4. A snap-hook having a longitudinally divided chambered body, composed of an upper and a lower member rigidly secured together and respectively formed integral with its eye and hook, the said upper member being provided at its forward end with depending ears, and at its rear end with depending fingers, and the said lower member being constructed to fit within the upper member, having shoulders for the edges thereof to rest upon, and reduced at its inner end to be clasped by the fingers of the said upper member, substantially as described.

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**504,540. METALLIC CROSS-TIE AND RAILWAY CONSTRUCTION.** JAMES M. PRICE, Philadelphia, Pa., assignor to the Price Railway Appliance Company, of Pennsylvania. Filed June 16, 1892. Serial No. 437,115. (No model.)



*Claim.*—1. In track structure, pieces of angle bar or rectangular, metallic chairs, used in pairs, to inclose blocks of a less height, underlying and supporting railway rails in combination with a trough like metallic tie to which they are attached by bolts or rivets and stout clamps C, C, grasping both the flange of the rail and the base of the tie, substantially as described.

2. In a track structure, pieces of angle bar G, G, or metallic chairs, deeply notched in the middle of their upper edge to receive a clamp, with a long hole through their base through which the foot of the clamp reaches and clasps the under side of the metallic tie upon which the pieces are seated and pierced by round holes for rivets or bolts, substantially as described.

3. A metal tie of trough or channel section, supporting two pairs of metallic chairs consisting of two transverse pairs of pieces of angle bar which embrace the flanges of the rails and the supporting blocks on which they stand, in combination with rigid clamps C, C, whose upper ends clasp the flanges, while the lower ends grasp similarly the base of the tie, substantially as described.

4. A metallic channel tie, a pair of metallic chairs consisting of two angle bars, a wooden block on said tie between said bars, an underlying piece under said tie, clamps with limbs embracing said underlying piece and the flanges of a rail on said block, and a bolt connecting said clamps, said parts being combined substantially as described.

5. A channel shaped tie of metal in combination with pieces of angle bar on each side, seated transversely to the bed of the channel, as part of the fastenings for the rail and other pieces of angle bar as anchors for the tie in the ballast, and secured to the tie by bolts or rivets, or both, with clips or fins so cut from the tie as to grasp or confine the edge of the angle piece from movement, substantially as described.

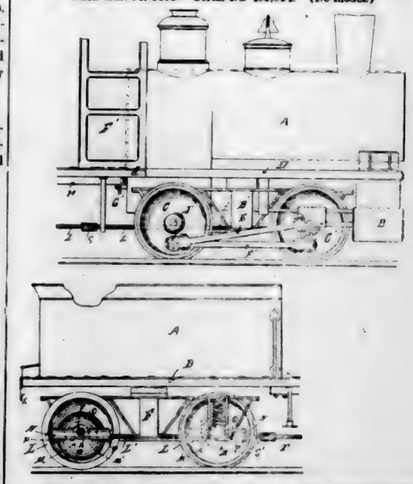
6. In a rail fastening, two rigid clamps, each with upper catch or jaw with inclined lower surface fitting upon the flange of the rail, and a lower catch or jaw grasping the under side of a metallic tie, and a securing bolt passing through said clamps the two clasping surfaces of the clamps so inclined as to apply a wedging force to both surfaces, admitting tightening up by the traversing bolt as the supporting block shall wear, substantially as described.

7. A built up tie consisting of two longitudinal angle bars with the hollow upward, parallel to each other, but apart or separated in the middle, in combination with two pairs of angle bar pieces, or two pairs of metallic chairs, set crosswise of them within the hollow of the channel formed by attaching the longitudinal bars to these pieces by rivets or bolts, with T pieces or pieces of angle bar crosswise of the tie and placed beneath the rail and its supporting block, and riveted or bolted to the tie, substantially as described.

8. In a railway structure, a sectional channel bar having transverse connecting underlying pieces with depending flanges, angle bars forming chairs, a supporting block, clamps passing through said tie and having limbs embracing said underlying pieces and the flanges of a rail on said block, and a securing bolt passing through said chairs, clamps and blocks, said parts being combined substantially as described.

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**504,541. TRAMWAY-LOCOMOTIVE.** CHARLES D. SCOTT, Corry, Pa. Filed Mar. 31, 1893. Serial No. 468,594. (No model.)



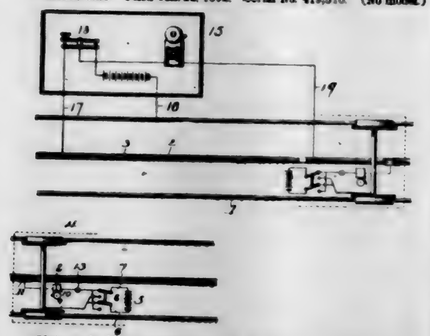
*Claim.*—1. The combination in a tramway locomotive, of wheels under the boiler driven by a crank and connecting rod mechanism, with a truck under the tender, a longitudinal driving shaft, crossboxes on the axles supporting said driving shaft, skew-gear wheels on one of the forward axles intermeshing with equal sized skew-gear wheels on said driving shaft, like skew-gear wheels on said driving shaft intermeshing with equal sized skew-gears on the axles of the

wheels under the tender, and universal joints in said shaft, substantially as described.

2. The combination in a skew-gear cross-box, of a central section having half axle bearings in one side thereof, and half shaft bearings in the opposite side thereof at right angles to said half axle bearings, with upper and lower sections having half axle and shaft bearings therein, substantially as set forth.

3. The combination in a skew-gear cross-box, of a central section having half axle-boxes in one side thereof, and half shaft-boxes in the opposite side thereof at right angles to the said half axle-boxes therein, with upper and lower sections having half axle and shaft boxes therein, and shells on said upper and lower sections inclosing the skew-gear wheels mounted on the axle and shaft operating in the boxes therein, substantially as and for the purpose set forth.

## 504,542. ELECTRIC RAILWAY-SIGNAL. FRANK E. SEAGRAVE, Toledo, Ohio. Filed Jan. 26, 1892. Serial No. 419,310. (No model.)



*Claim.*—1. In an electric railway signal, the combination with a track, of a conductor rail laid in sections, insulated from one another and extending the entire length of the track, two or more locomotives located upon the track and moving in the same or opposite directions forward or backward, a contact wheel attached to each locomotive, a manual pole changer located in each cab, and the wires connecting said changer and its adjacent battery, a wire leading from the pole changer to the contact wheel, a bell located on said wire, a push button, a switch and circuit connecting the button and switch by means of which the operator may manually change the polarity at any time and signal through a push button to an engine in front or behind him, and moving in the same or opposite directions.

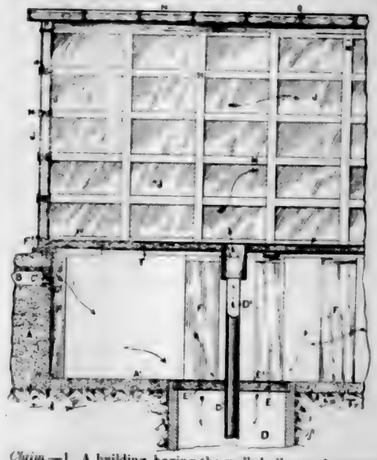
2. In an electric railway signal, the two rails, a central conductor extending by sections the entire length of the rails, an engine provided with a revoluble wheel in contact with the conductor, an alarm mechanism within the cab, electrical communication with the conductor, and either rail and the alarm mechanism in the engine adapted to be actuated when the circuit is closed by a like engine or circuit closer upon the conductor and either rail upon the tracks, a station, and connections with a key or circuit breaker in the station to establish communication with adjacent sections of the conductor and with the rail and the alarm mechanism.

3. In an electric railway signal the two rails, a central conductor, extending in sections the entire length of the rails, an engine provided with a contacting conducting wheel bearing upon the sectional conducter, electrical communications with the engine in combination with a movable section of the track, a lock for securing the same in alignment and mechanism actuated by the lock for completing the circuit with the engine, when the movable section of track is moved out of alignment with the stationary tracks.

## 504,543. PROCESS OF DECORATING GLASS BY SAND-BLAST. MAX SUSS, Chicago, Ill. Filed May 26, 1892. Serial No. 434,490. (No specimens.)

*Claim.*—The process of decorating glass, or like material, which consists in first coating the surface to be decorated with a coating of colored lacquer, or otherwise preparing as desired for a ground work, then placing upon said surface a stencil plate, then spreading upon the exposed parts through the stencil a coating of suitably prepared putty, then removing the stencil, then drying the putty, then exposing the surface thus prepared to the action of a sand blast, and then removing the putty, substantially as set forth.

## 504,544. SANITARY HOUSE. WILLIAM VAN DER HEYDEN, Yokohama, Japan. Filed Dec. 12, 1892. Serial No. 454,577. (No model.) Patented in England Sept. 10, 1891, No. 15,347.



*Claim.*—1. A building having the walls built up of water-tight boxes each filled with a solution of alumen, the exterior and interior vertical sides of the boxes being formed of glass, rendering the walls translucent, columns G by which the tiers of superposed boxes are supported, horizontal beams O carried on the said columns G for supporting the roof or ceiling, a translucent ceiling or roof composed of double glass panes N' N' containing alumen solution between the same, a double wood flooring T having an inter-space filled with sawdust or non heat conducting substance, and walls A and pillars F for supporting the structure, whereby a building is produced into which daylight penetrates to every part, while the walls, roof and flooring are practically impermeable to heat or cold, as set forth.

2. Boxes or cases for building translucent walls of dwellings, each composed of two metal frames H H', two plate glass panes J J fixed into the frames H H', a wood or other frame K provided on each edge with rubber packing L L for interposition between the metal frames H H', bolts $H^3$ passing through both frames H H' to hold the same together and cause the rubber packing L L to press onto the glass panes and preserve a water-tight joint, and apertures $H^3$ $H^4$ for filling the box with a solution of alumen, as set forth.

3. The combination in a building, of walls and roof built up of glass-sided boxes or cases filled with alumen in solution, the said walls and roof being translucent, a double floor T with inter-space therein filled with non heat conducting material, and an inclosed or underground basement beneath the floor T, apertures B in the basement walls with filtering medium C for admitting air to the basement, a well D in the floor of the basement, filtering cotton packed grating E' E' for filtering air admitted to the well from the basement, and a pipe D' from the well into the upper dwelling place to supply air of an equable temperature from the well to the dwelling place, as set forth.

4. The combination in a building having the walls and roof built up of glass-sided boxes or cases filled with alumen solution, the said walls and roof being translucent, of a double floor T the inter-space therein packed with non heat conducting material, and an inclosed or underground basement beneath the floor T, and basement walls with apertures B and filtering medium C for admitting air to the basement, a well D in the floor of the basement, filtering grating E E' for filtering air admitted to the well from the basement, a stove S in out building R, pipe S' to conduct used air from the dwelling place to supply combustion, and pipes D' $D^2$ to conduct air from the well, to be heated by passing around the stove, and passages P by which fresh air enters the said dwelling place, as set forth.

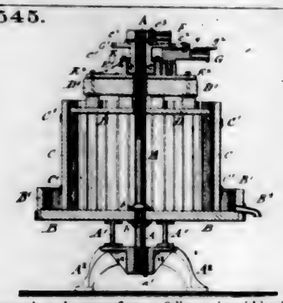
5. The combination in a building having walls and roof, of boxes introduced in the walls and having glass sides and containing a solution of alumen for admitting light and intercepting heat rays, substantially as specified.

## 504,545. FRUIT-PRESS. CONRAD WEGHARN, Brooklyn, N. Y. Filed Nov. 26, 1892. Serial No. 453,267. (No model.)

*Claim.*—The combination of a supporting standard having a fixed center socket, an upright spindle keyed to said socket, a press-floor attached to the supporting-frame and spindle, a press-cylinder or

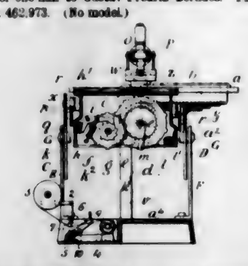


## 504,545.



basket supported on the press-floor, a follower in said basket, a screw-nut applied to the upper threaded end of the stationary spindle, a lever socket connected by a drop key with holes in the top-part of the screw-nut, a second lever socket pivoted to the top-plate of the follower, and a pawl and ratchet mechanism connecting the pivoted lever-socket with the screw-nut, thereby subjecting the fruit first to a preliminary pressing and then to a final pressing, substantially as described.

## 504,546. HAND-STAMP. KNUT E. WIBERG, Stockholm, Sweden, assignor of one-half to Gustav Fredrik Berndes. Filed Feb. 20, 1893. Serial No. 462,973. (No model.)



*Claim.*—1. The combination in a machine for stamping numbers, of the semi-circular guides *a*, the quarter circle number plates and the gears therewith connected, gear wheels and number wheels actuated by the number plates, and ratchet wheels for holding the number wheels in position, a box supporting the number wheels and plates, and inking mechanism and means for moving the box and number wheels vertically to print the numbers, substantially as set forth.

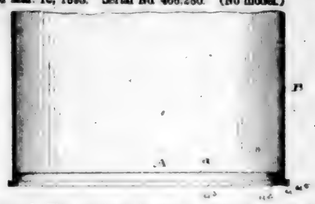
2. The combination in a machine for stamping numbers, of the semi-circular guides *a*, the quarter circle number plates and the gears therewith connected, gear wheels and number wheels actuated by the number plates, and ratchet wheels for holding the number wheels in position, a second set of number wheels and gearing for connecting the second set of number wheels, a box supporting the number wheels and plates, and inking mechanism and means for moving the box and number wheels vertically to print the numbers, substantially as set forth.

3. The combination in a machine for stamping numbers, of the semi-circular guides *a*, the quarter circle number plates and the gears therewith connected, gear wheels and number wheels actuated by the number plates, and ratchet wheels for holding the number wheels in position, a second set of number wheels and gearing for connecting the second set of number wheels, a box for supporting the number wheels and plates, and inking mechanism and means for moving the box and number wheels vertically to print the numbers, a paper roll, printing roll and winder and mechanism actuated by the movement of the box for feeding along a strip of paper for receiving impressions from the second set of number wheels, substantially as set forth.

4. The combination in a machine for stamping numbers, of the semi-circular guides *a*, the quarter circle number plates and the gears therewith connected, gear wheels and number wheels actuated by the number plates, ratchet wheels for holding the number wheels in position, a box supporting the number wheels and plates, inking mechanism and means for moving the box and number wheels vertically to print the numbers, the pin O and sliding and swiveling supports for the same for moving the number plates, substantially as set forth.

5. The combination in a machine for stamping numbers, of the semi-circular guides *a*, the quarter circle number plates and the gears therewith connected, gear wheels and number wheels actuated by the number plates, ratchet wheels for holding the number wheels in position, a box supporting the number wheels and plates, inking mechanism and means for moving the box and number wheels vertically to print the numbers, springs for returning the number wheels to their normal positions, and mechanism for disengaging the pawls from the ratchet wheels, substantially as set forth.

## 504,547. BOTTOM FOR CANS. WILLIAM C. WINFIELD, Warren, Ohio, assignor to the Winfield Manufacturing Company, same place. Filed Mar. 16, 1893. Serial No. 466,280. (No model.)



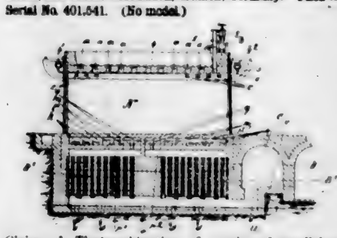
*Claim.*—1. The can body having straight sides and the bottom struck up to fit within the body and having a part of its edge inclined away from the body and a part below said inclined part bent downward parallel with and bearing against the inside of the body, substantially as set forth.

2. In cans, a body part, and a bottom having an outer flange overlapping the edge of the body on the outside of the can and a struck up interior having the lower portion of its edge bent vertically downward and bearing against the inside of said body and its upper portion inclining away from the body, substantially as set forth.

3. In cans, the body B, the struck up bottom —*a'*— having about its edge the inclined portion —$a^2$— and the downward vertical portion —$a^3$— below the incline —$a^2$—, and the edges of the body and the bottom interlocked on the outside of the can, substantially as set forth.

4. The can body B and the bottom A struck up with the surface —$a^2$— inclined away from the body, the downwardly extending rim portion —$a^3$— parallel with the side B of the body and lying flatly against the same, and the flange on the bottom outside of the rim —$a^4$— formed with two bends parallel with rim —$a^3$— and outside thereof and the lower edge of the body bent outwardly and upwardly into hook shape and engaging the inner of said bends, substantially as set forth.

## 504,548. COKE AND CARBONIZING OVEN. THEODOR BAUM, Berlin, and GEORG MENDHEIM, Munich, Germany. Filed Aug. 3, 1891. Serial No. 401,541. (No model.)



*Claim.*—1. The combination of a series of parallel carbonizing chambers, combustion chambers located near the tops of the carbonizing chambers and at the outer ends of the same, air heating apparatus, passages leading from the tops of the carbonizing chambers to the combustion chambers, passages leading downward from the combustion chambers near the outer ends of the carbonizing chambers, upward flues passing along the carbonizing chambers and flues placed in connection with said upward flues and conducting to the air heating apparatus; said air heating apparatus being provided with vertical downtakes for the waste gases connected at the bottom with the chimney, and also provided with air passages arranged to compel air and gas to travel in substantially opposite directions, inlets for atmospheric air connected to the bottoms of the air passages, and flues connecting the tops of the air passages with the combustion chambers, substantially as described.

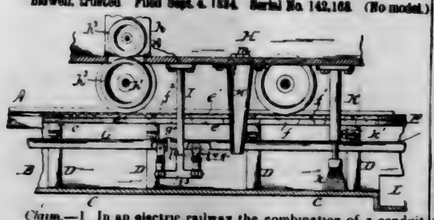
2. The combination of a series of parallel carbonizing chambers, combustion chambers located near the tops of the carbonizing chambers and at the outer ends of the same, air heating apparatus, passages leading from the tops of the carbonizing chambers to the combustion chambers, passages leading downward from the combustion chambers near the outer ends of the carbonizing chambers, upward flues passing along the carbonizing chambers and flues placed in con-

nection with said upward flues and conducting to the air heating apparatus, said air heating apparatus being provided with vertical downtakes for the waste gases connected at the bottom with the chimney, and also provided with air passages arranged to compel air and gas to travel in substantially opposite directions, inlets for atmospheric air connected to the bottoms of the air passages, flues connecting the tops of the air passages with the combustion chambers, and conduits as described for passing the gases from the carbonizing chambers to a condenser and for returning the same to the combustion chambers, substantially as described

3 The combination of a series of carbonizing chambers $A^6$, combustion chambers $f'$ located at both ends, on the sides, near the top of the carbonizing chambers, passages $e$ leading from top of chambers $A^6$ through channels $d'$ $d^5$ and apertures $c$ to combustion chambers $f'$ $f^5$, passages $i$ leading downward from the combustion chambers along the sides and near the ends of the carbonizing chambers, upward flues $n$, $n$ connected with the lower ends of said passages by apertures $k$ $k$ and channels $l'$ $l^5$, channels $o'$ $o^5$, flues $p$ and apertures $q^5$ $q^5$ leading to air heating chambers $r'$ $r^5$, the latter containing air heating apparatus B' $B^5$ consisting of a series of fireclay tiles with vertical downtakes $s$ for the flame and with horizontal flues $x$ arranged to form zig zag flues for the air to be heated, channels $t$ leading to the chimney and air inlets $w'$ $w^5$ leading to the lower ends of the zig zag flues and channel $z$ and tubes $y$ leading from upper ends of zig zag flues $x$ to combustion chambers $f'$ $f^5$, substantially as shown and described

4. The combination of a series of carbonizing chambers $A^6$, combustion chambers $f'$ $f^5$, passages $e$, channels $d'$ $d^5$ and apertures $c$, passages $i$, apertures $k$, channels $l'$ $l^5$ and upward flues $n$ $n$, channels $o'$ $o^5$, flues $p$ and apertures $q'$ $q^5$ leading to air heating chambers $r'$ $r^5$ containing air heating apparatus B' $B^5$ with vertical downtakes $s$ for the flame connected at the lower ends with the chimney, and zig zag flues $x$ for the incoming air, which when heated passes to the combustion chambers $f'$ $f^5$ through tubes $y$, collecting pipes 3 connected with the inside of the chambers $A^6$ to carry the gas to a condenser, and conduits 4', $4^5$ for returning the gas to the combustion chambers $f'$ $f^5$, substantially as shown and described

## 504,549. CONDUIT ELECTRIC RAILWAY. BENJAMIN BIDWELL, Philadelphia, Pa., assignor, by mesne assignments, of one-half to Benson Bidwell, trustee. Filed Sept. 4, 1894. Serial No. 142,168. (No model.)



*Claim.*—1. In an electric railway the combination of a conduit having an open top, internal brackets secured to opposing vertical sides of the conduit and having their upper ends flush with the top of the conduit, stationary conductor-sections secured to and supported by said brackets, and a slotted cover composed of two removable sections bolted to said conduit, substantially as set forth

2. In an electric railway the combination of a metallic conduit having an open top and closed sides and bottom, internal side brackets flush with the top of the conduit, conductors secured to and wholly supported by said brackets, and a slotted cover bolted to the brackets, substantially as shown and described.

3. The conduit B composed of sections and each section having closed bottom and sides and slotted removable top E composed of plates each made up of a strip of insulating material and a strip of metal bolted together and to the conduit sections, substantially as and for the purpose set forth

4. The metal conduit B having a slotted removable cover, composed of a top-plate made up of a strip of metal having its upper surface roughened or corrugated to form part of the street or road-surface, and of a lower strip of insulating material bolted together and to the conduit, substantially as set forth

5. In an electric railway the combination of conduit B having a slotted cover and internal brackets, conductors sections G secured to said brackets and having open bottom contact surfaces which do not extend over a half of a circle, an electrically propelled car and a current collector traveling with the car, extending into the conduit, and having contact pieces which have a yielding contact with the bottom of the conductors, substantially as set forth

6. The conduit B having open top $c$, brackets D, slotted removable cover E composed of separate plates each made up of strips $f$ $f'$ of different materials bolted together and to the brackets, substantially as shown and described.

7. In an electric railway a metallic line circuit composed of metal plates of segmental or dish shaped form in cross section which do not extend over half a circle and have internal contact surfaces, and are suitably supported with their open bottoms or internal contact-surfaces turned downward, substantially as set forth

8 In an electric railway the combination with a metallic line circuit composed of conductors of segmental or dish shaped form in cross-section which do not extend over half a circle and have internal contact surfaces, of an electrically propelled car having a current collector traveling therewith, and contact pieces on the collector for electrical contact with the bottom surfaces of the conductors and having vertically and laterally yielding motion, as and for the purpose set forth.

9. In an electric railway the combination of a conduit B having slot $c'$, conductors G having open bottoms, an electrically propelled car having a current collector extending into the conduit and provided with hinged arms projecting toward the conductors and supporting contacts $i^4$ which have a spring pressure toward the conductors, substantially as set forth

10 In an electric railway, the combination of a conduit having stationary conductors, an electrically propelled car having traveling connections l terminating in laterally projecting ends $i^3$ pivoted or hinged spring bearings on ends $i^3$ and contacts $i^4$ on said spring bearings substantially as set forth

11 In an electric railway the conduit B having slot $c'$ a lateral conduit L and a car having a funnel or pipe M for feeding salt or like material to said conduit, substantially as set forth

12 In an electric railway, a slotted conduit having branch conduits L in combination with an electrically propelled car having an adjustable brush $k$, substantially as and for the purpose set forth

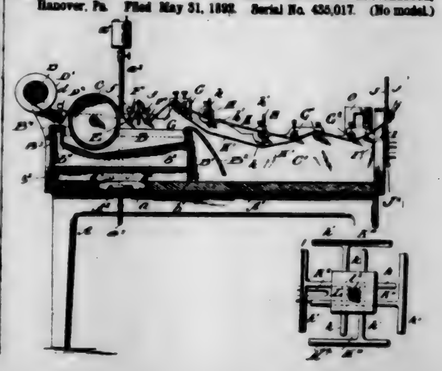
13 The combination of an electrically propelled vehicle, a slotted conduit having a fixed conductor, and a current collector traveling with the vehicle and having hinged or pivoted bars or plates, and upward spring pressure brushes on said plates for contact with said conductors, substantially as and for the purpose set forth.

## 504,550. CLOTH OR DRESS-GOODS SAMPLER. JOSEPH M. BOSTWICK, Janesville, Wis. Filed Nov. 30, 1892. Serial No. 453,602. (No model.)



*Claim.*—The combination with a roll of cloth or dress goods, of a sampling device consisting of a strip of card-board, or equivalent, having a slot at or near one end thereof, and a strip of cloth or dress goods folded upon said piece of card board and having one end projecting through the said slot and adapted to be pulled out for the purpose of cutting off samples, the said strip of card-board together with the folded strip of cloth or dress goods being laid upon the board or core and held in place by the roll of cloth or dress goods which is wound around and upon the board or core, substantially as and for the purposes set forth and illustrated.

## 504,551. BOX-COVERING MACHINE. WILLIAM BRANDTSAETTER, Hanover, Pa. Filed May 31, 1892. Serial No. 435,017. (No model.)

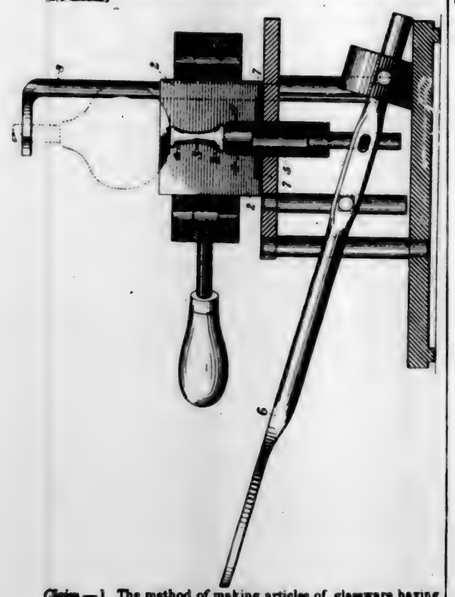




*Claim.*—1. In an organized machine for the purpose described, a paste supplying device, consisting of a tank having a flange upon its bottom and a damper, a paste receptacle removably supported within the tank and provided at its respective ends with a shield and a hinged flanged cap, suitable guide-rollers for the strips of paper, a severing mechanism therefor, and a box holding device, substantially as and for the purpose set forth

2. The combination with the tank having surrounding flange below its bottom, a hinged flanged cap and a damper, of a paste receptacle having side flanges and carrying a shield at one end, substantially as and for the purpose specified

## 504,552. MANUFACTURE OF GLASSWARE. JOHN J. BRAHAGAN, Martin's Ferry, Ohio. Filed Oct. 29, 1892. Serial No. 450,334. (No model.)



*Claim.*—1 The method of making articles of glassware having bowls, stems and feet, which consists in blowing the bowl in a paste mold, pressing a stem against the bowl, and then applying a foot to the end of the pressed stem, substantially as described

2 The method of making articles of glassware, having bowls, stems and feet, which consists in blowing the bowl, pressing a stem against the bowl, and then applying a foot to the end of the pressed stem, substantially as described

## 504,553. HORSESHOE-CALK SHARPENER. SIDNEY R. BROOKS, Allegany, assignor of one-third to Henry W. Huntton, Prewsburg, N. Y. Filed Feb. 4, 1893. Serial No. 460,854. (No model.)



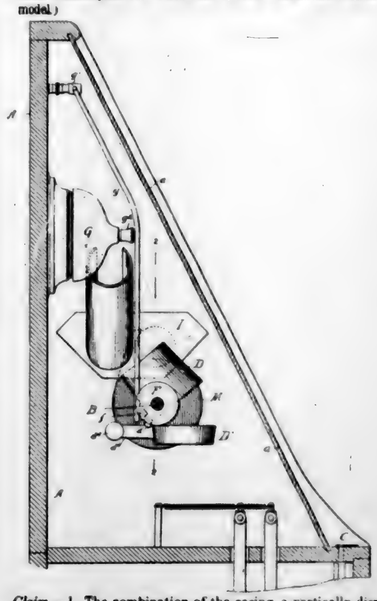
*Claim.*—A horse-shoe calk sharpener, consisting of a longitudinal brace rod, a clamp and a bracket independent of each other and adjustably and removably connected to the respective ends of the rod, files held by the clamp and bracket, and handles removably connected thereto, substantially as and for the purpose set forth

## 504,554. LAMP-BURNER. GEORGE A. BUETNER, Altoona, Pa. Filed May 6, 1893. Serial No. 473,253. (No model.)



*Claim.*—The combination with the upper part and the lower part, of the wire strip $b$ hinged at one end to the upper part, embracing the lower part and secured thereto and formed opposite its connection with the upper part with a looped opening catch, substantially as shown and described.

## 504,555. COIN-CONTROLLED APPARATUS. HERBERT H. BUXBAUM, Philadelphia, Pa. Filed June 8, 1893. Serial No. 476,905. (No model.)



*Claim.*—1. The combination of the casing, a vertically disposed recessed plate secured thereto and having a discharge opening, an inclined check reservoir, having its discharge end in line with the recessed plate, and in a different vertical plane from that in which the discharge opening is located, and a vertically disposed rotary disk having a projecting finger adapted to travel within the recessed plate and to move the check from a point opposite the mouth of the reservoir to a point opposite the discharge opening, substantially as specified.

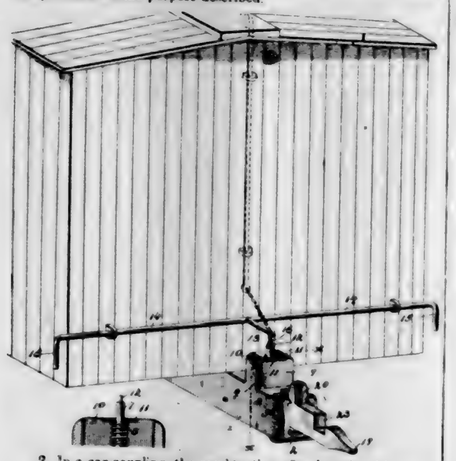
2. The combination of the reservoir, a plate having a recessed portion in line with the mouth of the reservoir and a discharge opening communicating with the recessed portion and located in a different vertical plane from that in which the mouth of the reservoir is located, a rotary disk adapted to the recessed portion of such plate and a radially projecting finger on said plate adapted to traverse the check from the mouth of the reservoir to a point opposite the discharge opening, the outer edge of such finger and the peripheral edge of the disk at its junction with such finger, being inclined to facilitate the discharge of the check, substantially as specified.

3. The combination of the inclined check reservoir, H, the plate I, to which said check reservoir is secured, the recessed plate, J, secured to said plate, I, and having a discharge opening $k$, a disk, M, adapted to travel partially within the recessed portion of such plate, a finger, M', projecting from said disk and a receiving table, K, in line with the discharge opening, substantially as specified.

## 504,556. CAR-COUPLING. BENJAMIN F. CADENHEAD, Union Grove, assignor of one-third to Emmett Gilbreath, Guntersville, Ala. Filed Apr. 28, 1893. Serial No. 472,219. (No model.)

*Claim.*—1. In a car coupling, the combination of a draw-head,

a vertically movable gate mounted therein, a coupling link or bar adapted to be engaged by said gate, and a rearwardly inclined guard located in the draw-head and arranged in rear of the gate, substantially as and for the purpose described.



2. In a car-coupling, the combination of a draw head having a rear inclined guard, and a slot extending through the top thereof whose opposite ends align with grooves in the opposite sides of the said draw-head, a spring-actuated gate mounted in said slots and grooves and movable vertically therethrough, and a coupling link or bar formed with heads at the opposite ends thereof having upper and lower reversely-inclined edges with slots or recesses in rear of said heads on the upper part of the body of said link or bar and also provided with a centrally-located vertically-disposed stop-arm, substantially as described.

3. In a car-coupling, the combination of a draw-head having a slot extending through the top thereof whose opposite ends align with interior grooves and covered by a housing, said draw-head being also provided with a rear guard and a recess in the front edge of the top of the same, a vertically-disposed gate movably mounted in said slot and grooves and provided with a vertically-disposed stem or post rising through the said housing and having a loop or eye on the upper projecting end thereof, a coiled spring surrounding said stem or post, a crank-shaft connected to said stem or post, and a link or bar having a flat body with a vertically-disposed stop arm at the center thereof, opposite heads with upper and lower reversely-arranged inclined edges, and slots in rear of the upper parts of the said heads, substantially as described.

**504,557. BEDSTEAD ATTACHMENT.** WILLIAM B CARTER, St. Maurice, La. Filed Mar. 3, 1893. Serial No. 464,599. (No model.)

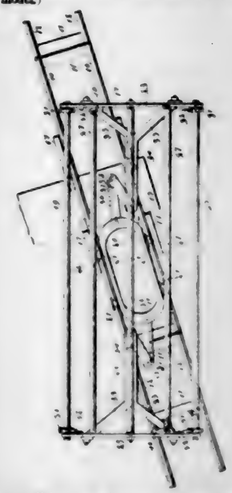


*Claim.*—1. The combination of a bed rail, the longitudinal and removable clamping strip hinged between its ends and formed with one or more recesses, spring clamps E adapted to clasp the said rails, and studs F on said clamps, which enter the recesses of the said removable rail, substantially as shown and described.

2. The combination of a bed rail, a clamping bar formed with recesses, clasps or clamps adapted to span the rail and bar, and projections F on said clasps which engage the recesses of said bar, substantially as shown and described.

3. The combination of a bed rail, a bar extending longitudinally therewith which is formed in two sections which are hinged at their adjacent ends, and clamps for holding the free ends of the bar to the said rail, substantially as shown and described.

**504,558. QUILTING ATTACHMENT FOR SEWING-MACHINES.** WILLIAM H. CHAPMAN, Bradford, Ark. Filed May 13, 1893. Serial No. 474,710. (No model.)



*Claim.*—1. In a quilting attachment, the combination with a track, and a carriage thereon, of a quilting frame, a link pivoted to the carriage, and a second link pivoted to the first named link and pivotally connected with the quilting frame, substantially as and for the purpose set forth.

2. In a quilting attachment, the combination with a track, and a carriage thereon, of a quilting frame, a horizontally arranged link connection between the carriage and frame for supporting the frame above the carriage and permitting the frame to turn freely, and springs for normally holding the frame in alignment with the carriage, substantially as described.

3. The combination, with the supporting track and the carriage thereon, of the quilting frame mounted above the carriage and provided with rollers to receive the quilt, and horizontal braces secured to the ends of the frame and connected by jointed links with the carriage, substantially as described.

4. In a quilting attachment the combination with a track, and a carriage thereon, of a quilting frame provided with horizontally extending braces, links pivoted together and to the braces and carriage, and springs secured to the carriage and to the outer end of the link which is pivoted to the carriage, substantially as described.

**504,559. CANTALEVER-BRIDGE.** THOMAS C. CLARKE, New York, N. Y. Filed Aug. 2, 1892. Serial No. 441,906. (No model.)

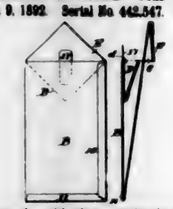


*Claim.*—1. A cantalever bridge in which the main land anchor stays pass over the towers and are thence divided into the intermediate stays on the water or central side, and in which the main stay on the central or water side, after passing over the tower is divided into the intermediate stays on the land side.

2. A cantalever bridge, provided with intermediate stays on the land side, said stays being anchored from below, substantially as specified.



**504,560. MAILING-ENVELOPE.** JOHN T. CLARK, New York, N. Y. Filed Aug. 9, 1892. Serial No. 442,547. (No specimens.)



*Claim.*—1. An envelope blank consisting in the rectangular sheet A having a vertical slit 12 in the middle of its upper edge in line with the fold and forming two extensions or flaps adapted to fold and form pockets, a flap extension 10 along one side edge of the sheet from a point about in line with the lower end of the slit and adapted to be folded to close the side of the bag opposite the side formed by folding the blank and a bottom-closing flap extension 11 along the lower edge of the sheet from a point about in line with slit 12 to the side edge of the sheet which has the extension 12, substantially as set forth.

2. An envelope formed at one edge of its mouth with an upwardly opening pocket and along the opposite edge of its mouth with a downwardly opening pocket to fold over the mouth of the envelope and into the said upwardly opening pocket, substantially as set forth.

3. An envelope formed at the edges of its mouth with flaps 13, 14 respectively, each flap being folded at the corners as shown at 15, 16, and 18, 19 respectively forming pockets D E, one of the said pockets being folded upon the body of the envelope with its mouth opening upwardly and the other having its mouth opening downwardly and adapted to fold within the other pocket, substantially as shown and described.

4. An envelope provided along one edge of its mouth with a stationary upwardly opening pocket provided with a fastening tongue projecting above the outer side of its mouth, and a downwardly opening pocket on the opposite edge of the envelope mouth to fold within the other pocket, whereupon the said tongue may be bent over the free edge of the folding pocket, substantially as set forth.

5. An envelope provided along the edges of its mouth with two permanently formed pockets, one pocket opening upwardly and the other downwardly the apex of the latter pocket being folded over and connected thereto and forming the stiffening section 20 to fold with said pocket into the upwardly opening pocket, substantially as set forth.

6. A mailing envelope, comprising a body portion provided with a pocket formed at one side of its mouth, the mouth of the pocket being at its upper edge, a pliable tab or tongue located at the mouth of the fixed pocket, the said body portion being provided at the opposite side of its mouth with a downwardly opening folding pocket to fold within the fixed pocket and the tab or tongue to hold the two pockets in interlocking engagement, closing the mouth of the envelope, as and for the purpose set forth.

7. In a mailing envelope, the combination, with the body portion thereof and a pocket formed at one side at the mouth, the mouth of the pocket facing outward or upward, and a pliable tab or tongue secured to the envelope adjacent to the mouth of the fixed pocket, of a folding pocket at the side of the body opposite that at which the fixed pocket is located, with its opening facing downward, the two pockets being of essentially the same shape, and the folding pocket being reinforced at what is normally its upper end, which end is adapted to enter the fixed pocket, whereby one pocket will be contained within the other and the tab may be carried over the edges of both pockets and into the inner pocket, as and for the purpose specified.

**504,561. NUT-LOCK.** HENRY COHEN and JOHN W. TEARP, Memphis, Tenn. Filed Mar. 11, 1893. Serial No. 466,523. (No model.)

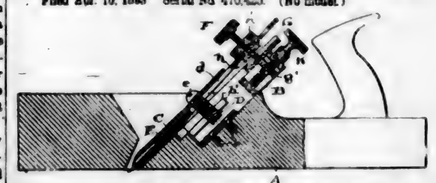


*Claim.*—1. In a nut lock, a locking plate radially grooved from a bolt-hole therein, and channeled oppositely from said groove, a pin adapted to interlock with a hole formed partly in the face of the nut and completed by the groove in the locking plate, and an integral bent wing plate that engages the channel in the locking plate when the pin is inserted, substantially as described.

2. In a nut lock, a locking device comprising a pin, and a bent wing plate furcated at its lower end and engaging the top of the pin, and adapted to fill a channel in a locking plate strung on the screw bolt having the nut thereon, when the pin is fully inserted in a hole formed jointly in the adjacent faces of the nut and locking plate, substantially as described.

3. In a nut lock, the combination with a screw bolt uniting two perforated fish plates, a locking plate on the projected end of the bolt, and a nut radially grooved in the face which bears on the locking plate, of a mating groove in said locking plate, a channel in the opposite face of said plate, a locking pin, and a wing plate connected to the upper end of the pin, bent laterally and downwardly therefrom and entering the channel when the pin is inserted in the hole produced by the junction of the groove in the locking plate and a radial groove in the face of the nut, substantially as shown and described.

**504,562. JOINER'S PLANE.** JOHN M. COLE, Cleveland, Ohio. Filed Apr. 15, 1893. Serial No. 470,425. (No model.)



*Claim.*—1. A plane provided with a suitable bed having ledges longitudinal on its inside, a separate holder for the bit engaging said ledges, adjusting mechanism at the upper end of the bit to fasten the bit, and an adjustable bracket or seat on which said mechanism is held, substantially as set forth.

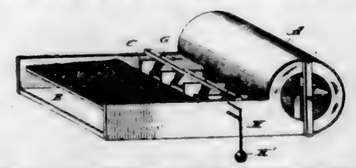
2. The construction herein described consisting of a separate bed fixed in the plane stock and having inside ledges, a separate holder for the plane iron or bit locking on said ledges, a longitudinally adjustable bracket at the top of said bed, and a fastening device for the plane iron or bit bearing upon said bracket, substantially as set forth.

3. The plane having a separate bed fixed centrally therein, said bed having longitudinal ribs or ledges upon its inside and a holder and screw to fasten the bit to said ledges, in combination with an adjustable bracket at the upper end of the bit provided with an adjusting screw and fastening and adjusting mechanism for the upper end of the bit resting upon the said bracket, substantially as set forth.

4. The plane stock having a metallic bed fixed therein and a bracket at its upper end adjustable in said bed, in combination with the bit, a substantially H shaped holder and a screw to secure said bit between its ends to the bed, and a screw in the upper end of the bit bearing upon said adjustable bracket, substantially as set forth.

5. The stock and the bed fastened in the stock and provided with ledges on its inside, a holder for the bit constructed to engage and slide on said ledges and to secure the bit, in combination with a bracket in the upper end of the bed, and a screw to adjust the bracket, a threaded bearing in the upper end of the bit and a thumb screw in said bearing engaging said bracket, substantially as set forth.

**504,563. AUTOMATIC WIND-DEFLECTOR.** BENTON V. CRUMRINE, Corning, Cal. Filed Oct. 12, 1892. Serial No. 448,714. (No model.)



*Claim.*—1. In combination with a grain separating machine comprising in part a fan and sieves, a deflector interposed between the fan and sieve, said deflector being adapted to be moved by gravity so as to direct the blast from the fan toward the lower portion of the sieves.

2. In combination with a grain separating machine comprising in part a fan the casing of which is provided with a mouth or outlet which leads to the sieves or separating mechanism, a plurality of deflectors pivoted in the space between the fan and sieves or separating mechanism and connected to each other so as to move in unison, said deflectors being shifted when the separating machine is inclined, for the purpose set forth.

3. In combination with a grain separating machine comprising

in part a fan or blast mechanism and separating mechanism, a series of deflectors pivoted between the separating mechanism and blast mechanism, said deflectors being connected to each other and with a bar having a weighted end, for the purpose set forth.

4. In a grain separating machine, a series of deflectors maintained in a vertical position adjacent to the sieves and in the path of the blast, said deflectors being connected to each other and to means for automatically swinging them upon their pivots when the grain separating mechanism or sieves are inclined, for the purpose set forth.

5. In a grain separating-machine, the combination, of a fan and fan casing, a throat or passageway leading therefrom to the part of the separator containing the sieves, of a series of deflectors pivoted in the blast passage and having portions which extend on each side of the pivots, a rod connected to said deflectors to one side of the pivots, said rod being connected to a swinging arm or lever carrying a weight, substantially as shown, whereby the deflectors will be automatically moved to direct the blast toward that part of the grain separating mechanism which may be the lowest and automatically return the deflectors to a position on a line with the direction of the blast when the separating mechanism assumes a horisontal position, substantially as specified.

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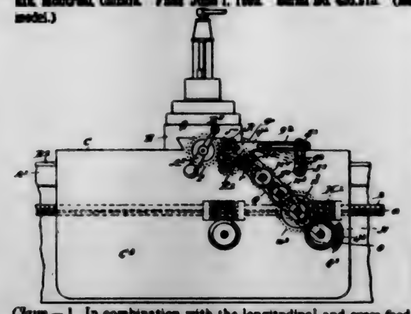
**504,564. NOZZLE FOR FIRE-EXTINGUISHERS.** DANIEL O'NEIL, Hamilton, Canada, assignor to George H. Downing, New York, N. Y. Filed Feb. 11, 1893. Serial No. 461,953. (No model.)



*Claim.*—A nozzle having in combination a tubular portion, a cap or cut-off having an air chamber, a yielding disk in said chamber, a yoke lever having its arms pivoted to the nozzle at the sides, arms extending rearward from the cap or cut-off and pivoted to the arms of the yoke lever, and a guide on the lower side of the nozzle and having an inclined front edge, substantially as specified.

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**504,565. TAPER ATTACHMENT FOR LATHES.** DANIEL CUSHEE, Montreal, Canada. Filed June 1, 1892. Serial No. 435,513. (No model.)



*Claim.*—1. In combination with the longitudinal and cross feed screws and apron of a lathe and a rotatory spindle and gear extension from said longitudinal feed screw at right angles thereto and passing through said apron,—of means for effecting a variable direct and rotatory connection between said cross feed screw and spindle and gear extension, consisting of interchangeable gear wheels variable both as to number and size, a carrier for said gear wheels in the form of a bar, one end of which is pivotally connected with said lathe apron about the axis of said spindle and gear extension, and the other end is free to be moved in an arc in the vicinity of said cross feed screw, and constructed to allow of such interchangeability and variation, and connections between said gear wheels and the aforesaid cross feed screw and spindle and gear extension.

2. In combination with the longitudinal and cross feed screws and apron of a lathe, a taper attachment consisting of a grooved carrier pivotally connected with the lathe apron at one end and its opposite end free to be moved in an arc in the vicinity of said cross feed screw and carrying a series of interchangeable gear wheels between its pivoting point and such opposite free end, the positions of the axis or axes of one, two, or more, of which gear wheels may be varied relatively to each other and to said carrier, and direct rotatory connections between said gear wheels and the longitudinal and cross feed screws of the lathe.

3. In combination with the longitudinal and cross feed screws of a lathe; an adjustable grooved carrier pivotally connected with the lathe apron at one end and its opposite end free to be moved in an arc in the vicinity of said cross feed screw, one, or more interchangeable gear wheels having stud shafts set in the groove of said carrier between its pivoting point and said cross feed screw, and rotatory connections between said gear wheels and the longitudinal and cross feed screws of the lathe.

4. In combination with the longitudinal and cross feed screws and apron of a lathe, an adjustable grooved carrier pivotally connected with the lathe apron at one end and its opposite end free to be moved in an arc in the vicinity of said cross feed screw, one, or more, interchangeable gear wheels having stud shafts set in the groove of said carrier, a gear on the end of said cross feed screw intermeshing with said series, a worm-sleeve encircling said longitudinal feed screw, moving with said apron and having sliding rotatory connection with said longitudinal feed screw, and gear and spindle connections between said worm-sleeve and said interchangeable gear wheels.

5. In combination with the longitudinal and cross feed screws and apron of a lathe, an adjustable carrier consisting of a pivoted bar grooved to receive the stud mountings of a series of interchangeable gear wheels and provided with slotted segmental end piece by means of which and a set screw it is fixed at the desired angle, a second carrier, having a pivotal connection with said bar, being adjustable by pivoted link and set screw connections, and adapted to carry reversing gear wheels.

6. In combination with the longitudinal and cross feed screws and apron of a lathe, an adjustable carrier on the face of said apron, and means for setting same at various angles, one or more interchangeable gear wheels carried by said carrier; a gear wheel mounted on said cross feed screw in line with said interchangeable gear wheels; an adjustable carrier and two reversing gear wheels carried by it and interposed between the said interchangeable gear wheels and the gear wheel on the cross feed screw, a worm moving with said apron, and having sliding and rotatory connection with said longitudinal feed screw, a sleeve and spindle passing through the apron, a worm gear wheel mounted loosely on said sleeve and meshing with said worm, a gear set on said sleeve and meshing with said interchangeable gear wheels, and a friction device actuated by said spindle for effecting a union between said worm gear wheel and sleeve, as set forth.

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**504,566. MACHINE FOR TRUING ROLLS.** DAVID J. DAVIDSON, Brockway, Mich., assignor of two-thirds to Amos A. Rasbolt, same place, and Abraham S. Martin, Port Huron, Mich. Filed Sept. 26, 1892. Serial No. 446,894. (No model.)



*Claim.*—1. In a machine for truing rolls, the combination of the frame, the head and tail block, the boxes at each end, having vertical and lateral adjustment, a drive pulley adapted to be secured to the shaft of the roll, a longitudinally movable driving wheel for engaging the roll, and means actuated by the pulley for moving the wheel substantially as described.

2. In a machine for truing rolls, the combination of the frame, the tail and head blocks, the cross-bar having the adjustable box thereon, the complementary adjustable box on the frame, the drive pulley adapted to be secured upon the shaft of the roll, and a longitudinal movable grinding wheel actuated by the roll actuating means substantially as described.

3. In a machine for truing rolls, the combination of the frame, the head and tail blocks, the cross bar extending across the frame, and adjustable thereon, the adjustable box thereon, the complementary adjustable box on the frame, the drive pulley adapted to be secured upon the shaft of the roll, the adjustable backing rolls H, and a longitudinal adjustable grinding wheel actuated by the roll actuating means substantially as described.

4. In a machine for truing rolls, the combination of the frame the roll shaft journaled in bearings therein, the drive pulley on said shaft, a grinding wheel, and a feed device for longitudinally adjusting said grinding wheel driven from the roll shaft, substantially as described.

5. In a machine for truing rolls, the combination of the frame, the roll shaft journaled in bearings therein, the grinding wheel, a driven shaft on which said wheel slidingly engages, a laterally adjustable frame in which said shaft is journaled, and a feed device for longitudinally adjusting the grinding wheel comprising a screw shaft journaled in the grinding wheel frame, and mechanism for driving said screw shaft from the roll shaft, substantially as described.

6. In a machine for truing rolls, the combination of the frame, the roll shaft journaled in bearings therein, means for actuating the shaft the grinding wheel, a driven shaft on which said wheel slidingly engages, a laterally adjustable frame in which said shaft is journaled, a feed device for the grinding wheel comprising a screw shaft journaled in the grinding wheel frame, means for actuating the screw shaft, actuated by the roller-shaft actuating means and automatically reversing feed mechanism for said screw shaft, substantially as described.

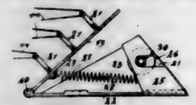
7. In a machine for truing rolls, the combination with the bearings in the frame, the roll shaft journaled therein, the means for driving said roll shaft, the driven grinding wheel, the feed mechanism for said grinding wheel driven from the roll shaft and comprising the shaft $W^3$ having bevel gear thereon, the shaft P, journaled in a pivoted bearing and having a bevel pinion meshing with the gear on the shaft $W^3$, the sleeve $R^2$ keyed on the shaft P, and sliding thereon, the yoke S' embracing the sleeve and forming the bearing for the upper end of the shaft P, the bevel gear wheels R R' on the sleeve, the bevel pinion Q, the screw shaft P on which said pinion is secured, the flanged bearing Q on the yoke, the eccentric T engaging therein, the weighted arm T' on said eccentric, the actuating lever U having head $U^2$ on opposite side of the arm T', the bell crank lever V, tripper rod V', tripper blocks $V^2$ and the block $P^2$ adapted to strike said blocks and engaging the grinding wheel, substantially as described.

8. In a machine for truing rolls, the combination of the frame, the bearing for the roll shaft, the grinding wheel journaled in an adjustable frame, the feed shaft for said grinding wheel also journaled in said frame and a driving mechanism for said driving shaft having means for automatically compensating for the adjustment of the shaft, substantially as described.

9. In a machine for truing rolls, the combination of the frame, the bearing for the roll shaft, the grinding wheel journaled in the adjustable frame, the feed shaft for said grinding wheel journaled in said frame, a gear wheel on the end of said feed shaft, a sliding sleeve carrying opposing gear wheels, either of which is adapted to be thrown into engagement with the gear wheel on the feed shaft and a pivoted driving shaft for said sleeve slidingly engaging with the drive shaft, substantially as described.

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**504,567. TENSION DEVICE FOR LOOM-SHUTTLES.** ETIENNE DOMENGE, Paterson, N. J. Filed Apr. 13, 1893. Serial No. 470,176. (No model.)



*Claim.*—1. The combination, with the shuttle body and the guard, of the swinging tension flies having the usual thread loops, the revoluble spring drums arranged behind the flies, and springs connecting the drums and flies and adapted to be wound upon the drums, substantially as described.

2. The combination, with the swinging flies having the usual thread loops, of the revoluble drums arranged behind the flies, a locking device to hold the drums from turning, and a flexible spiral spring connecting the flies and drums, substantially as described.

3. The combination, with the swinging flies having the usual thread loops, the revoluble spring drums, the springs connecting the drums and flies, spring-pressed studs serving as supports for the drums, adjacent supports for the studs, having squared holes as specified, and squared heads on the studs to enter the said holes, substantially as described.

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**504,568. SHOE-LACE FASTENER.** ALBERT R. DRAKE, Waltham, and FREDERICK A. HIGGINS, Winthrop, Mass.; said Higgins assignor to said Drake; said Drake assignor of one-half of whole right to Emma L. Higgins, Winthrop, Mass. Filed Nov. 30, 1891. Serial No. 413,490. (No model.)



*Claim.*—A lace or string holder, consisting of a blank having parallel side edges, the orifice D, the blister C, and the curved edge slits *b* to form the clinching points B, said blank being folded transversely upon itself to register the blister with the perforation, substantially as described.

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**504,569. BOILER-TUBE CLEANER.** JOHN M. DUNN, Toronto, Canada. Filed Feb. 4, 1893. Serial No. 461,025. (No model.) Patented in Canada Dec. 13, 1892, No. 41,425.



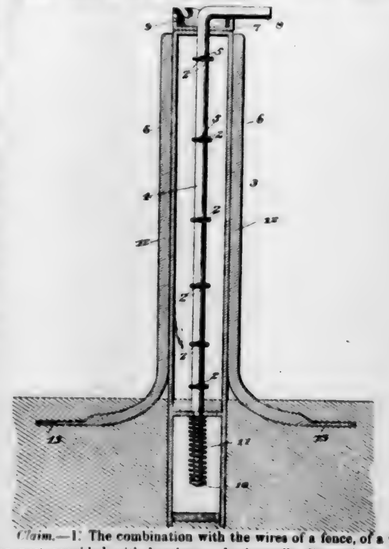
*Claim.*—1. The combination with the curved spring blades, A, attached to or forming part of the disk, B, and having the tapered split sleeve, F, formed within it, of the rod, C, having secured to its outer end the backing frame, D, which moves within the tapered split sleeve, F, and the following frame, G, secured in position on the rod, C, as and for the purpose specified.

2. The combination with the curved spring blades, A, attached to or forming part of the disk, B, and having the tapered split sleeve, F, provided with ribs, E, formed within it, of the rod, C, having secured to its outer end the backing frame, D, comprised of the forward disk, *d*, having notches, *e*, and rear disk, *d'*, joined together by the connecting rods, *d''*, which moves within the tapered split sleeve, F, and is held in position by the ribs, E, along which the notches, *e*, pass, and the following frame, G, screwed on to the threaded end of the rod, C, and the rod, H, as and for the purpose specified.

3. The combination with the curved spring blades, A, attached to or forming part of the disk, B, one blade having flaps, *a*, designed to fit and be adjustable within recesses, *a'*, of the opposite blade and both blades having a tapered split sleeve, F, of the rod C, having secured to its outer end the backing frame, D, which moves within the tapered split sleeve, F, and the following frame, G, secured in position on the rod, C, as and for the purpose specified.

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**504,570. FENCE.** JOHN E. DUSANG, Larue, Ohio. Filed Apr. 28, 1893. Serial No. 472,240. (No model.)



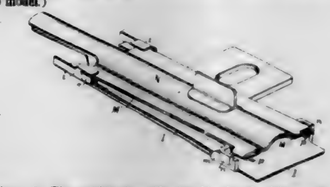
*Claim.*—1. The combination with the wires of a fence, of a tension post provided with bearings, a horizontally disposed circular ratchet mounted on top of the post, and a vertical shaft journaled in the bearings and receiving the fence wires and adapted to wind the

same around it and having its upper end bent horizontally and engaging the ratchet to provide a combined handle and pawl, substantially as described

2. The combination with the wires of a fence, of a tension post arranged at an intermediate point and consisting of a rectangular casing and provided with a horizontal cross-piece and having bearing openings, a circular ratchet secured to the top of the post, a vertical shaft journaled in the post and having its upper end bent at an angle for engaging the ratchet, a spiral spring disposed on the shaft for holding the upper bent end of the same in engagement with the ratchet, and the braces secured to the sides of the post and having curved feet provided with flattened outer extremities, substantially as described.

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**504,571. GUIDE FOR DOUBLE-NEEDLE SEWING-MACHINES.** LOUIS ESCHNER, Philadelphia, Pa. Filed May 25, 1893. Serial No. 475,441. (No model.)



*Claim.*—1. The within described guide for double needle sewing machines, said guide having a transverse partition whereby there are formed at each edge, two vertical portions one above the other, constituting bearings for the edges of two superposed strips, the guide for one of the strips being curved between the opposite edge bearings so as to accommodate fullness in said strip, substantially as specified.

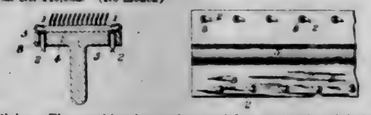
2. The within described guide for double needle sewing machines, said guide having two portions forming edge bearings for two strips, one above the other, and having a central portion curved or bowed to accommodate fullness of the strip or strips, said central portion projecting forward beyond the edge bearings of the guide, substantially as specified.

3. The within described guide for double needle sewing machines, said guide having portions forming edge bearings for the two strips, one above the other, the guide, for one of the strips being curved or bowed between the edge bearings to accommodate fullness in said strip, and the upper guide being composed of two plates of which the upper plate is detachable, substantially as specified.

4. The within described guide for double needle sewing machines, said guide consisting of a base plate, an intermediate plate, and a top plate detachable from each other, said plates forming edge bearings for two strips, one above the other, the guide for one of the strips being curved or bowed between the edge bearings so as to accommodate fullness in said strip, substantially as specified.

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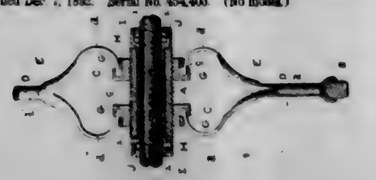
**504,572. CARD-FLAT-CLOTHING FASTENER.** JOHN W. FAWCETT, Rastrick, and ERNEST JONES, Whitcliffe, assignors to the Samuel Law & Sons, Limited, Cleckheaton, England. Filed Oct. 25, 1892. Serial No. 449,922. (No model.)



*Claim.*—The combination with a card flat provided with holes in its opposite edges, of card clothing and separate fasteners for each edge of said clothing, each of the said fasteners gripping the upper and under side of one edge of the clothing, and having prongs passing through the said holes in the flat, substantially as described.

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**504,573. VEHICLE-WHEEL.** JOHN E. FRIST, Baltimore, Md. Filed Dec. 7, 1892. Serial No. 454,403. (No model.)



*Claim.*—1. A vehicle wheel consisting of a hub, a rim and a series of flexible spokes having their outer ends attached to the rim and their inner ends bifurcated and curved or bowed outwardly and then inwardly to extend parallel to the hub to which they are attached, substantially as described.

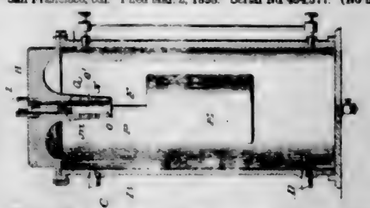
2. A vehicle wheel consisting of a hub having parallel disks, provided in their outer faces with annular grooves, secured thereon, a rim and a series of flexible spokes having their outer ends attached to the rim and their inner ends bifurcated and bowed or curved outwardly and then inwardly to extend parallel to the hub and fit in the annular grooves in the outer faces of the parallel disks thereon, substantially as described.

3. A vehicle wheel consisting of a hub, a rim, parallel disks secured on the hub and having annular grooves formed in their outer faces, and a series of spokes having their outer ends attached to the rim and their inner ends bifurcated and bowed outwardly and then inwardly to extend parallel to the hub, the inner ends of the spokes being enlarged and fitted in the grooves in the plates on the hub, substantially as described.

4. A vehicle wheel consisting of a hub, a rim, parallel plates secured on the hub and having annular grooves formed in their outer faces, a series of spokes having their outer ends attached to the rim and their inner ends bifurcated and bowed outwardly and inwardly to extend parallel to the hub, the inner ends of the spokes being enlarged and fitted in the grooves in the disks on the hub, and a locking collar fitted around the hub and bearing against the outer side of the enlarged inner ends of the spokes, substantially as described.

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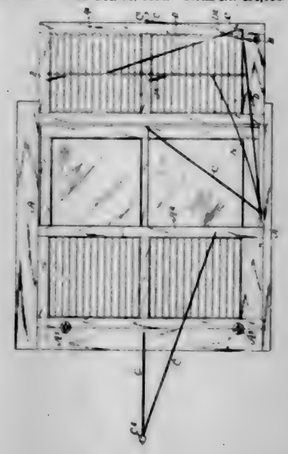
**504,574. FEED-WATER REGULATOR.** WILLIAM GLADSTONE, San Francisco, Cal. Filed Mar. 2, 1893. Serial No. 464,377. (No model.)



*Claim.*—The combination with the boiler A, of a feed regulator, consisting of a casing or cylinder B, located near the top of said boiler, a cap H, mounted on the top of said casing or cylinder B and having a central depending tubular projection N of conical form, which is provided with a series of openings O, O', a stem F having a float on the lower end thereof, and an upper enlarged cylindrical portion P with a lower flange which is adapted to move in the tubular projection N, to regulate the flow of the steam through the openings O, O', and an upper portion M connected to the upper end of the said cylindrical portion P of the said stem F, substantially as described.

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**504,575. SHUTTER AND SLAT OPERATOR.** DENNIS F. GOODALL, Toronto, Iowa. Filed Dec. 31, 1892. Serial No. 456,950. (No model.)





*Claim.*—1. In combination with a window frame the following elements, to wit: a shutter hinged to the window frame to swing outwardly, a gravity hook on the inner face of the shutter, a projection secured to the window frame and adapted to be engaged by said gravity hook as set forth, and a cord or its equivalent, fixed to the said gravity hook extended from thence outwardly through a bore in the shutter thence around a pulley or its equivalent located at the side of the shutter, and finally to a point inside of the window frame, for the purposes stated.

2. In combination with a window frame the following elements, to wit: a shutter hinged to the window frame to swing outwardly a gravity hook on the inner face of the shutter, a projection secured to the window frame and adapted to be engaged by said gravity hook as set forth, a cord fixed to said gravity hook extended from thence outwardly through a bore in the shutter, thence around a pulley or its equivalent located at the side of the shutter and finally to a point inside of the shutter extended through a metal loop secured to the shutter and thence to a point inside of the window frame for the purposes stated

3. A shutter having pivoted slats connected by means of a suitable connecting rod, a coil spring attached to said rod and to the shutter proper to normally retain the slats closed, a cord attached to said connecting rod and extended downwardly through a metal loop attached to the shutter and finally extended to a point inside of the window frame substantially as and for the purposes stated.

4. In combination with a window frame the following elements, to wit: a shutter hinged to a window frame to swing outwardly a gravity hook on the inner face of the shutter, a projection secured to the window frame and adapted to be engaged by said gravity hook as set forth, a cord fixed to said gravity hook, extended from thence outwardly through a bore in the shutter, thence around a pulley or its equivalent located at the side of the shutter and finally to a point inside of the window frame, an upper and lower set of slats in said shutter, rods connecting each set of slats, a link connecting the upper and lower rods as set forth a coil spring attached to the said upper rod and to the shutter proper for the purposes stated, a cord attached to one of said rods and to the aforesaid cord at a point inside of the shutter extended from thence through a metal loop secured to the shutter and finally extended through the base of the window frame and a box in said frame and adapted to contain the ends of said cords all arranged and combined substantially in the manner set forth for the purposes stated

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**504,576. FIRE-ESCAPE.** JAMES L. GREGORY, Washoe City, Nev. Filed Nov. 26, 1892. Serial No. 453,216. (No model.)



*Claim.*—1. A fire escape consisting of a cage, one or more cables secured to said cage and passing over suitable pulleys or rollers situated in a suitable support secured to a building at a point above the top window thereof, the other ends of said cables being wound about one or more drums secured to a sectional shaft having bearings in a frame work secured to said building near the base thereof, said shaft being encircled by one or more spiral springs substantially as and for the purpose set forth

2. A fire escape consisting of a cage, one or more cables secured to said cage and passing over pulleys or rollers situated in a suitable support secured to a building at a point near the top thereof, the other ends of said cables being wound about one or more drums secured to a sectional shaft having bearings in a frame work secured to said building near the base thereof, said shaft being connected to one or more spiral springs which encircle it, and means for regulating the speed of revolution of said shaft, said means consisting of one or more bands of metal passing partly around one or more drums secured to said shaft and means for regulating the amount of friction between said bands and said drums substantially as and for the purpose set forth.

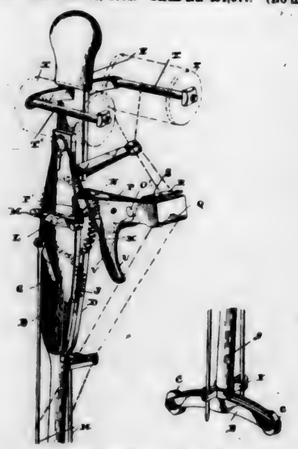
3. A fire escape consisting of a cage, one or more cables secured to said cage and passing over pulleys or rollers situated in a suitable support near the top of a building, the other ends of said cables being wound about one or more drums secured to a shaft having bearings in a frame work secured to said building near the base thereof and directly beneath the support for said pulleys, said shaft being formed in sections and having means for moving the end sections connected to one or more spiral springs which encircle it, parallel guides secured to said building and extending upward from said frame work to said support and projections on said cage adapted to slide in said guide substantially as and for the purpose set forth.

4. A fire escape consisting of a cage lined with a non-combustible material, one or more cables secured to said cage and passing over pulleys situated in a suitable support near the top of a building, the other ends of said cables being wound about one or more drums secured to a shaft having bearings in a frame work secured to said building near the base thereof, said shaft being connected to one or more spiral springs which encircle it, said shaft being formed in three sections, a serrated sleeve secured to each end of said sections and means for causing the end sections to move toward or from said central section substantially as and for the purpose set forth

5. A fire escape consisting of a fire proof cage, one or more cables secured to said cage and passing over pulleys having bearings in a suitable support near the top of a building, the other ends of said cables being wound about one or more drums secured to a shaft having bearings in a frame work secured to said building near the base thereof, said shaft being composed of three sections the central section bearing said drums and the end sections being secured to and encircled by one or more springs and means for connecting and disconnecting said end sections with and from said central section, a locking wheel secured to one end of one of said end sections and a lock adapted to engage with the teeth of said locking wheel, and a crank adapted to fit on a projecting end of one of said end sections substantially as and for the purpose set forth.

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**504,577. TURFING IMPLEMENT.** JOHN C. GREENFIELD, Forreston, Ill. Filed Nov. 11, 1892. Serial No. 451,677. (No model.)



*Claim.*—1. In a turfing implement, the combination of a frame, a needle, a shaft for actuating the same an operating shaft which imparts motion to the first named shaft, a wiper secured to the operating shaft, a spring retracted thread feeder pivoted between its ends

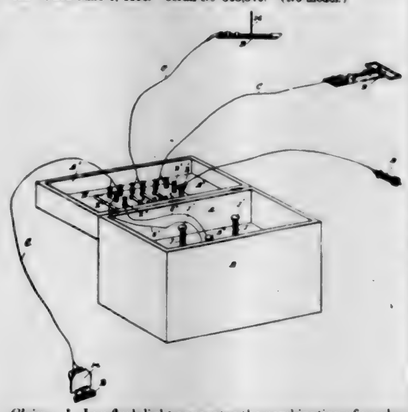
to the frame and intermittently engaged at its rear end by the wiper whereby the same is oscillated, substantially as shown and described.

2. In a turfing implement, the combination of a frame, a needle, a means for actuating the same, a spring retracted feeder pivotally secured to the frame consisting of two plates pivoted together, laterally extending arms on their ends, a spring for holding the said arms normally apart, and means closing the arms together and oscillating the feeder, substantially as shown and described.

3 In a turfing implement, the combination of a frame, a needle, a wiper and a means for actuating them, plate O pivoted to the frame, spring V engaging the same, plate P pivotally secured to plate O having depending end P', laterally extending arms Q, R, and a spring interposed between the same for holding them normally separated, the plate being oscillated and the arms closed together against said spring by the said wiper, substantially as shown and described.

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**504,578. FLASH-LIGHT APPARATUS FOR PHOTOGRAPHERS' USE.** JOSEPH N. HARRISON and HENRY J. HARRISON, San Francisco, Cal. Filed June 8, 1891. Serial No. 395,579. (No model.)



*Claim.*—1 In a flash light apparatus the combination of an electric battery, conductors, electrodes having enlarged heads or ends, sleeves upon said electrodes, and means for operating said sleeves, a fusing wire connecting the ends of the electrodes, a flash pan or receptacle, and a circuit closer arranged for operation, substantially as described.

2. A flash light apparatus consisting of a suitable battery, a number of flash pans or powder receptacles, electrodes having enlarged heads or ends, sliding sleeves upon said electrodes and means for operating said sleeves, a fusible wire connecting the electrodes in each flash pan, a switch board and suitable connections interposed in the conductors between the battery and the electrodes, to control each circuit independent of the others, and a circuit closer adapted to close one or all of the circuits for operation, as described.

3. A portable flash light apparatus consisting of a battery, flash pans, conductors, electrodes having enlarged heads or ends, a fusing wire connecting said electrodes, a movable reflector placed back of the flash pans, a switch board and suitable connections interposed in the conductors between the battery and the electrodes to control each circuit independent of the others, and a circuit closer adapted to close one or all of the circuits for operation, as and for the purpose set forth

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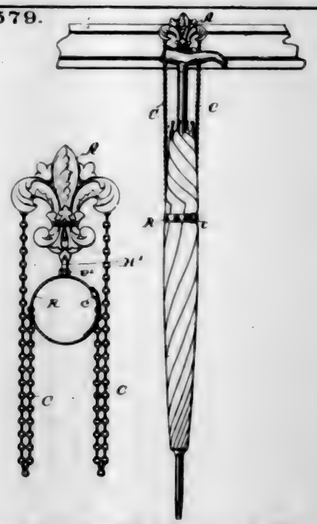
**504,579. UMBRELLA-CHATELAINE.** JENNIE C. HAYDEN, Chicago, Ill. Filed Mar. 2, 1893. Serial No. 464,330. (No model.)

*Claim.*—1. In a device of the class described, the combination with a plate provide with a hook adapted to engage the upper edge of a waistband or belt, of chains or cords attached to the plate and depending from it and a clasp fastened to said chains or cords and adapted to embrace and support an umbrella, substantially as shown and described.

2. In a device of the class described, the combination with a plate, of a clasp suspended from the plate and adapted to embrace and support an umbrella, the plate being provided with two hooks turned downward and upward respectively, one of said hooks being adapted to detachably engage a waistband or belt, and the other being adapted to form a support for the clasp and hold it above its normal working position

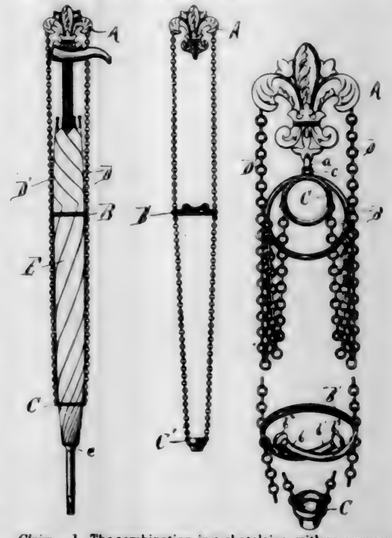
3 The combination with the plate, A, having the hooks, H, H', of the clasp formed substantially as shown and described, and suspended from the plate, the hook, H, being adapted to engage a waistband or belt, and the hook, H', being adapted to support the clasp when raised above its normal position, substantially as shown and described

**504,579.**



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**504,580. CHATELAINE.** JENNIE C. HAYDEN, Chicago, Ill. Filed Mar. 6, 1893. Serial No. 464,661. (No model.)



*Claim.*—1 The combination, in a chatelaine, with an ornamental head provided with means for attachment to the clothing, of a series of rings suspended therefrom, the lower of which is fitted to receive the small portion of an umbrella at the end opposite the handle, but is not large enough to allow the larger portion to pass through, and the upper of which is of sufficient size to receive the larger portion of the umbrella and at a sufficient distance from the lower to support the umbrella securely upon the latter; substantially as described.

2. The combination, in a chatelaine, with an ornamental head adapted for attachment to the clothing, of a series of rings suspended therefrom, the lower of which is fitted to the point of an umbrella and is too small to allow the larger portion thereof to pass through, and the upper of which is made yielding, so that it may receive the larger portion of the umbrella and accommodate itself thereto; substantially as described.

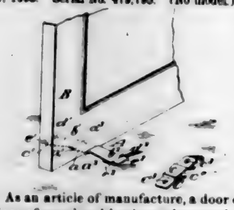
3. The combination, in a chatelaine, with an ornamental head, of a series of rings suspended therefrom, the lower of which is fitted to receive the projecting portion of an umbrella stick and conforms in general shape to the washer usually found thereon, and the upper of which is adapted to yield slightly to adjust itself to umbrellas of different sizes; substantially as described.

4. The combination, in a chatelaine, of an ornamental head and a series of rings supported therefrom, the lower of said rings being fitted to the end of an umbrella stick which projects from the covering and conforming in general shape to the washer which is used thereon and the upper of which is made in the form of a broken ring with overlapping ends whereby it may yield to receive umbrellas of different sizes and accommodate itself thereto; substantially as described.



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**504,581. DOOR-CHECK.** DANIEL H. HAYWOOD, New York, N. Y. Filed July 7, 1893. Serial No. 479,793. (No model.)

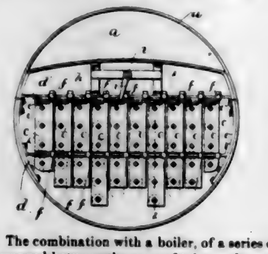


*Claim.*—1. As an article of manufacture, a door check struck up from a single piece of metal and having a depressed central portion, shoulders on either side thereof and end portions projecting downwardly therefrom adapted to bear upon and travel over the floor with a yielding pressure substantially as described

2. The combination of a door check, consisting of a single piece of metal having a depressed central portion embracing the lower edge of a door, and end portions bearing against the floor with a yielding pressure, the extremities thereof being turned upwardly, and a catch secured to the floor and adapted to receive and hold one end of the door check upon the same being brought into engagement therewith substantially as and for the purpose herein described.

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**504,582. TUBE-CLOSER FOR STEAM-BOILERS.** GEORGE C. HICKS, Boston, Mass. Filed Dec. 27, 1892. Serial No. 456,316. (No model.)



*Claim.*—1. The combination with a boiler, of a series of shutters having pivots arranged between the rows of tubes and provided with tube-plugs or valves formed to enter the ends of the tubes, said plugs varying in thickness, as described, so that the tubes are opened or uncovered successively by the opening movement of the shutters, the lower tubes being opened before the upper tubes, substantially as and for the purpose specified.

2. The combination with a boiler, of a series of vertically-arranged shutters connected with fixed supports by pivots arranged between the rows of tubes, each shutter having a vertical row or series of tube-plugs or valves formed to enter the ends of a row of tubes, said plugs being of successively-increasing thickness from the lower to the upper end of the series, whereby, when the shutter is moved from its closed position, the tubes will be opened successively from the bottom upwardly, as set forth.

3. The combination of a boiler, a series of vertically-arranged shutters connected with fixed supports on the boiler by pivots arranged between the rows of tubes, rows of tube-plugs or valves on said shutters, and means for adjusting said plugs on the shutters and positively securing them at any positions to which they may be adjusted, as set forth.

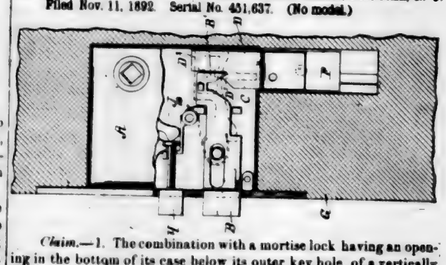
4. The combination of a boiler, fixed cross-bars extending horizontally across the boiler parallel with the tube-sheet and at the outer side thereof, arms or bearings adjustably secured to said cross-bars and projecting therefrom toward the tube sheet, and vertically-arranged shutters pivotally engaged with said arms and adapted to be seated on the exit ports of the boiler-tubes, as set forth

5. The combination with a boiler, of a series of graduated tube closers or valves independently mounted on substantially vertical axes and connected for simultaneous operation, each tube closer being formed to unequally close or contract the outlet ports of a vertical row of tubes, the contraction gradually decreasing from the highest tubes downward, as set forth.

6. The combination with a boiler, of a series of graduated tube closers or valves pivotally connected to fixed supports at points between the vertical rows of tubes, said tube closers being movable toward and from the outlet ports of the tubes and so arranged that when fully opened they do not obstruct the tubes, and connections between said tube closers whereby they may be moved in unison, the highest tube closers being formed to reduce the outlet capacity of the corresponding tubes to the minimum while the tube closers below are formed to successively increase the outlet capacity of the tubes from the top to the bottom of the series, as set forth.

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**504,583. KEYHOLE-GUARD.** GEORGE HIRSEN, Fort Plain, N. Y. Filed Nov. 11, 1892. Serial No. 451,637. (No model.)



*Claim.*—1. The combination with a mortise lock having an opening in the bottom of its case below its outer key hole, of a vertically slotted plate for the inner face of the door, an angular slide exterior to the lock case and having a knob secured to its lower inner portion with its shank extending through said slotted plate; the vertically extending member of the said slide projecting up through the opening in the bottom of the lock case to cross the outer key hole and engage the bolt to lock it against retraction, substantially as set forth.

2. A lock attachment, provided with a slide formed with a V-shaped offset and an arm, substantially as shown and described.

3. A lock attachment, provided with a slide having a V-shaped offset, an arm adapted to engage the lock casing to engage either the bolt and to pass over the key-hole or to engage the key, a guideway for the said slide, and a knob engaging the said slide to move the latter with its offset and arm into or out of the door lock casing, substantially as shown and described.

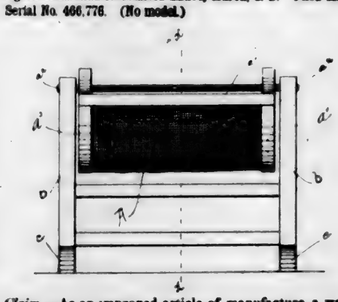
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**504,584. REFRACTORY BRICK.** ALFRED E. HUNT, Pittsburg, Pa. Filed May 15, 1893. Serial No. 474,332. (No specimens.)

*Claim.*—A refractory brick composed of bauxite bonded with a small proportion of lime, pressed and baked, substantially as described.

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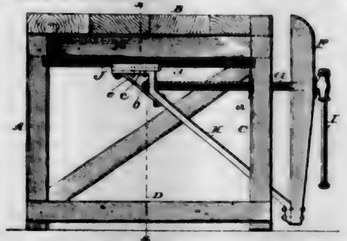
**504,585. WATER-COOLER.** JOSEPH HYMANS, Del Rio, Tex., assignor of one-half to Godfried Laube, Huron, S. D. Filed Mar. 20, 1893. Serial No. 466,776. (No model.)



*Claim.*—As an improved article of manufacture, a water cooler consisting of a U-shaped receptacle formed of canvas or other suit-

able porous material, having wooden ends, the cross pieces connecting said ends, and between which the canvas is secured, the straps holding the canvas to the ends, a rod passing through the ends and engaging the uprights of the frame, being swingingly mounted therein, the base portion and the braces, substantially as described.

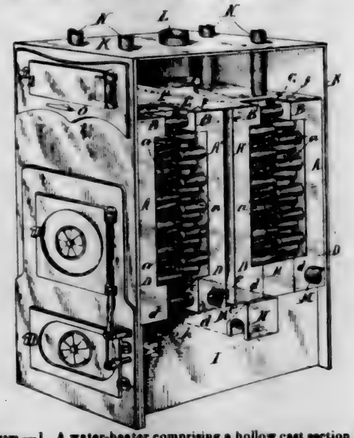
**504,586.** BENCH-VISE. THOMAS B. JACKSON, Salem, Oreg., assignor of one-half to Daniel T. Brown, same place. Filed May 4, 1893. Serial No. 472,932. (No model.)



*Claim.*—1. In a bench vise, the combination with its standard C having a screw plate *a* fixed therein; of a horizontal screw having a movable jaw swiveled upon its outer end, an inclined brace connected to the lower end of the movable jaw and extending upwardly and inwardly and carrying in a swiveling bearing the inner end of the screw, a slide fixed to this brace above the screw, and a transverse guide, arranged above and parallel to the screw to control the slide substantially as and for the purpose described.

2. In a bench vise, the combination with its standard C having a screw plate *a* fixed therein; of a horizontal screw having a movable jaw swiveled upon its outer end, an inclined brace connected to the lower end of the movable jaw and extending upwardly and inwardly and carrying in a swiveling bearing the inner end of the screw, a transverse guide fixed in the bench parallel with and above the screw, and a sliding shoe having an open groove on its upper side embracing the lower side of the guide only, and connected to and carried by the upper end of the inclined brace substantially as shown and described.

**504,587.** WATER-HEATER. FERDINAND JAKEL, Detroit, Mich. Filed June 24, 1892. Serial No. 437,834. (No model.)



*Claim.*—1. A water-heater comprising a hollow cast section having a water-space therein, and provided with conical, laterally extending tubes formed integral with said section that communicate with said water-space said section having also the arched base forming the fire-space therein.

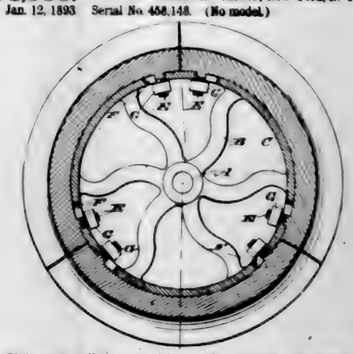
2. In a water heater, the opposed hollow sections, said sections having the right angle hollow cap portions, and the hollow lateral extensions at the base forming the sides of the fire-pot, the tubes coupling the adjacent cap portions, and the base extensions of the respective sections, substantially as specified.

3. A plurality of hollow rectangular sections in communication and arranged approximately parallel, said sections having arches in their base which form the fire-pot, the tubes projecting into the fire-space from the opposed faces of said sections and located around and above said arches.

4. A plurality of hollow sections having arches in the base thereof forming the fire-pot, and provided with the hollow extensions at the base that form the walls of said pot, the tubes extending from the opposed faces of said sections above the fire-pot, and the nipples coupling said sections.

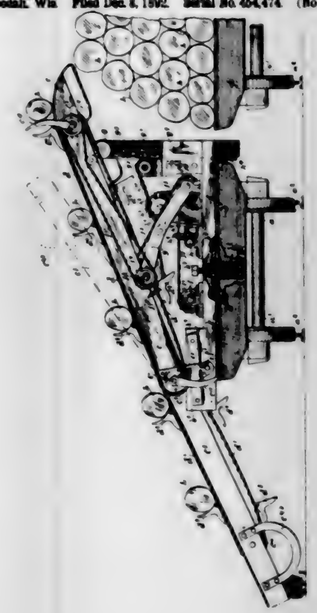
5. In a heater, a plurality of hollow sections all in communication, said sections having the arches at their base which form the fire-space, the horizontal tubes extending from the opposed faces of the sections above the fire-space, the hollow cap of said sections, said cap having the draft openings therein, and the horizontally movable damper adapted to control said openings.

**504,588.** PULLEY. CARLES A. JOHNSON, New York, N. Y. Filed Jan. 12, 1893. Serial No. 458,148. (No model.)



*Claim.*—A pulley, comprising spokes, a main rim having flanges and elongated slots, an auxiliary grooved rim made in sections held in the flanges of the main rim and formed with threaded projections integral with its body and adapted to pass through the said slots of the main rim, and nuts for fastening the sections of the auxiliary rim to the main rim, as set forth.

**504,589.** LOADING OR PILING MACHINE. GEORGE S. KAISER, Necedah, Wis. Filed Dec. 8, 1892. Serial No. 454,474. (No model.)





*Claim.*—1. In a machine of the class described, the combination with the supporting frame or platform and the turn-table thereon, of the carrying mechanism, the skids on said table, for supporting and guiding the carrying mechanism, said skids having their receiving ends secured to said table with freedom for a sliding movement thereon, and a hoisting device applied to the delivery ends of said skids, whereby under the adjustment effected by said hoisting device, the delivery end of the skids will rise, substantially in a straight line, thereby maintaining the delivery, in the same vertical plane, substantially as described.

2. The combination with a turn-table, of the adjustable skids, having their receiving ends connected to the turn-table, with freedom for a sliding motion, the hoisting device on the turn-table, applied to the delivery ends of the skids, and the pivoted arms, rising from the delivery end of the turn-table, and connected to the said skids, intermediate the extremities of the same, substantially as described.

3. The combination with the adjustable skids, with traveling chains, on the turn-table, of the hoisting device on the turn-table, applied to the delivery end of the said skids, and consisting of a windlass and a worm and worm-gear, for operating said windlass and holding the skids in whatever position the same may be set, substantially as described.

4. In a machine of the class described, the combination with the skids and traveling chains, of the revolving discharge arms at the ends of the skids, substantially as and for the purpose set forth.

5. In a machine of the class described, the combination with the adjustable skids and their traveling chains on the turn-table, of an extra pair of sprocket-wheels on the upper end member of the chain driving shafts, and skids detachably pivoted to said upper end shaft, and traveling chains, driven from said extra pair of sprocket wheels, said skids adapted to effect an extension at the delivery end of the turn-table skids, substantially as described.

6. The combination with the skids, of the traveling chains, and the sprockets for driving the same, the pivoted carrying fingers spaced apart from each other on the said chains, at distances equal to the circumferences of the said sprockets, and revolving arms on the said sprocket-shafts at the ends of the skids, for assisting in receiving and discharging the logs, substantially as described.

7. The combination with the pair of reversible driving shafts on the platform, running at equal speeds, spaced apart from each other, at equal distances on opposite sides of a common center, of a pair of shafts on the turn-table spaced apart at equal distances on opposite sides of a common center, drivable from either end, by the said reversible driving shafts on the platform, whereby the speeds of the turn-table shafts may remain the same, regardless of the particular member of the driving shafts, by which the same may be driven, substantially as described.

8. The combination with the pair of reversible shafts on the platform, running at equal speeds, of the pair of turn-table shafts, the members of both sets of said shafts being spaced apart equal distances on opposite sides of a common central line, and driving devices carried by the platform shafts and applicable to either end of said turn-table shafts, whereby the turn-table shafts are interchangeably connectible to either of said platform-shafts, substantially as described.

9. The combination with the reversible driving shafts on the platform, having gears adjacent to the turn-table offset or staggered in respect to each other, of the shafts on the turn-table having gears at both extremities offset or staggered with respect to each other, and interchangeably engagdable with the offset gears on said driving shafts, substantially as and for the purpose set forth.

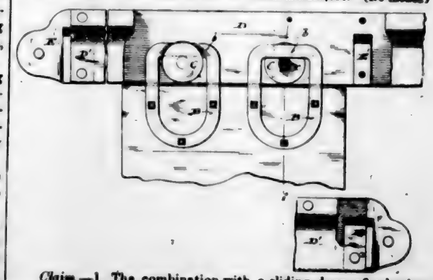
10. The machine for the purpose named, comprising a supporting car or other portable frame, the turn-table on the car, the adjustable skids, with pivoted extensions, on the turn-table, the traveling chains with carrying fingers, guided and supported by said skids, the hoisting device on the turn-table applied to the delivery ends of the skids, the pair of shafts on the turn-table, one having connections to said traveling chains, and the other, connections to said hoisting device, and the pair of reversible driving shafts on said car or portable frame, running at equal speeds, and applicable to said turn-table shafts at either end, substantially as and for the purpose set forth.

**504,590.** LIQUID-COOLER. WILLIAM P. KAUBER, Ferndale, Cal. Filed Nov. 19, 1892. Serial No. 452,563. (No model.)



*Claim.*—The liquid cooler described, consisting of the pan with perforated bottom, the double cylinder below said pan, ends connecting the inner and outer casings of said cylinder, a semi-circular pan having flanges on which the said cylinder rests, the arms on the ends of the pan fitting in recesses in the double cylinder, and the inclined pipe leading into the inner portion of the double cylinder, substantially as shown and described.

**504,591.** DOOR-HANGER. WILLIAM KEES, Northville, S. D., assignor of two-thirds to Anna Kees, same place, and Jacob Kees, Milwaukee, Wis. Files. Apr. 10, 1893. Serial No. 469,659. (No model.)



*Claim.*—1. The combination with a sliding door, of a horizontally disposed track comprising two strips of metal having horizontal flanges, one or more hangers secured to the door and arranged to extend upward between said flanges, and suitable two part rollers engaged with said flanges and each provided with a contracted central part engaging with the upper part of one of said hangers, and suitable blocks arranged between the ends of said strips which form the track and adapted to serve as stops to limit the movement of the hangers, substantially as set forth.

2. The combination with a sliding door, of a horizontally disposed track comprising two strips of metal having horizontal flanges, one of said strips arranged to rest against the outside of the wall of a building and the other strip being outwardly and downwardly curved so as to inclose the track formed by the two flanges, one or more hangers secured to the door and arranged to extend upward between said flanges, and suitable two part rollers engaged with said flanges and each provided with a contracted central part engaging with the upper part of one of said hangers, stop-blocks tightly closing each end of the track, and a central stop block and brace for strengthening the track and keeping the two strips of metal of which it is formed always the right distance apart, substantially as set forth.

**504,592.** DEVICE FOR USE IN BINDING GRAIN-SHOCKS. PETER KIEFER, Belle Fountain, Wis. Filed Apr. 1, 1893. Serial No. 468,731. (No model.)

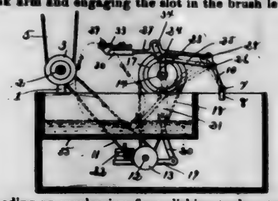


*Claim.*—The improved shock binder described, consisting of a bar having a wedge shaped end, and a longitudinal opening, a pulley journaled in said opening, a rope fixed at one end, with its other end passed over said pulley, and a spring plate pivoted at one end to said bar, arranged parallel therewith and covering the fixed end of the rope, and its other end extended partially over the opening in the bar to bear directly upon the rope, substantially as described.

**504,593.** FEEDING-UP MACHINE FOR POLISHING TOOLS. LORRE W. KIMBLE, Toledo, Ohio, assignor to the Libbey Glass Company, same place. Filed Apr. 10, 1893. Serial No. 469,664. (No model.)

*Claim.*—1. In a feeding up mechanism for polishing tools, a tool shaft and tool, a brush lever having a slot intermediate its ends, a revoluble shaft having a crank arm, and a pin secured upon said arm and engaging the slot in the brush lever, whereby the brush is given an elliptical motion.

2. In a feeding up mechanism, a tool shaft and tool, a revoluble shaft carrying a pulley and crank arm, a weighted arm carrying a shaft provided with pulleys at each end, belts connecting the tool shaft and crank shaft, a brush lever having a slot, and a pin mounted upon the crank arm and engaging the slot in the brush lever.



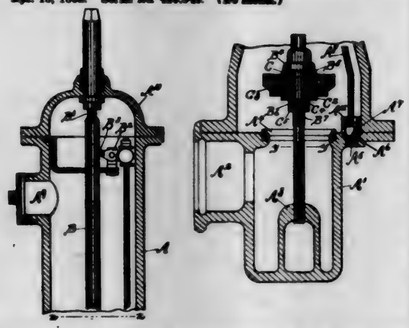
3. In a feeding up mechanism for polishing tools, a tool shaft, a shaft actuated thereby, a crank upon the last named shaft, a brush lever pivoted at one end to a pivoted arm and carrying a brush at the opposite end, a slot in the lever through which a pin of the crank passes, and a guide lever connecting the pin and pivoted arm.

4. In a feeding up mechanism, a tool shaft and tool, a revoluble shaft carrying a crank arm provided with a pin, a stationary shaft having an arm loosely mounted thereon, a brush lever pivoted to the end of said arm, and slotted intermediate its ends, and a guide lever connecting the crank and pivotal arms.

5. In a feeding up machine for polishing tools a tool shaft, a brush lever actuated thereby, said lever having a brush holder adjustably secured thereon, a pin in the brush holder, and a cam lever secured upon the pin for clamping the brush.

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**504,594.** HYDRANT. JOHN KNICKERBACKER, Troy, N. Y. Filed Apr. 18, 1892. Serial No. 429,549. (No model.)



*Claim.*—1. In a hydrant, the combination with the main valve stem; and a collar secured thereon; of a centrally apertured valve-disk; a flanged bushing-sleeve inclosing the stem and fixed in the disk-aperture on the side of the disk adjacent to the stem-collar; a bushing-sleeve inclosing the stem and loosely inserted in the disk aperture to project from the opposite side of the disk; packing in the disk-aperture between the inner ends of the sleeve; screw-threads on the stem adjacent to the lower bushing-sleeve; a nut on the stem to hold the parts in position, substantially as described.

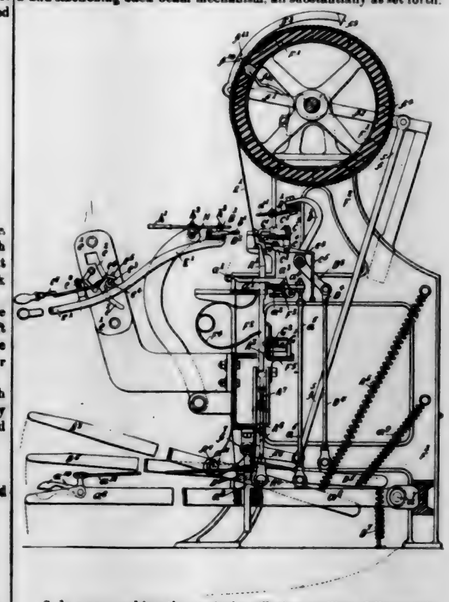
2. In a hydrant, the combination with the main valve stem; and a collar secured thereon; of a centrally apertured valve-disk; a flanged bushing-sleeve inclosing the stem and fixed in the disk-aperture on the side of the disk adjacent to the stem-collar; a bushing-sleeve inclosing the stem, and inserted in the disk aperture to project from the opposite side of the disk; packing in the disk-aperture between the inner ends of the sleeves; a shoulder-stop on the stem at the projecting end of the latter sleeve; screw-threads on the stem adjacent to the shoulder-stop; and a similarly threaded nut on the stem, for holding the parts together in position, substantially as described

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**504,595.** MACHINE FOR MAKING NETS. JAMES KNOX, Kilbride, Scotland. Filed July 8, 1891. Serial No. 398,823. (No model.) Patented in England July 5, 1890, No. 10,435.

*Claim.*—1. In machines for forming double knots on the meshes of net fabrics, the combination of the fallers and means for operating the same, the stationary needles, with front hooks, auxiliary faller needle hooks, and means for operating these hooks, substantially as set forth.

2. In a net machine, the fallers A′ and needles C, in combination with vertical oscillating faller needle hooks $a'$, front hooks B′ $b'$, plate $c'$ provided with a cam groove $c^3$ and shifting pin $c^4$, serrated plates $c^2$ $d'$ and slackening back beam mechanism, all substantially as set forth.



3. In a net machine, the vertical oscillating auxiliary faller needle hooks $a'$, treadle lever $a^4$ and connecting link fittings in combination with the front hooks B′ $b'$, hand lever E′, and pin and cam mechanism $c'$ to $c^3$ acting after the thread has been released from the ordinary fallers A′, to perform the functions of putting a double loop twist of the thread round the front hooks B′ $b'$ in forming the double knots on the net meshes, substantially as and in the manner herein set forth.

4. In a net machine for forming double knotted net fabrics, the combination comprising a grooved plate $c'$, $c^3$, shifting cam pin $c^4$, means for shifting the said pin, and front hooks B′ $b'$ mounted on a rocking frame, and a hand lever to operate the said rocking frame, all substantially as and for the purpose set forth.

5. In a net machine for forming double knotted net fabrics, the front hooks B′ provided with a grooved part $b'$, in combination with the stationary needles C′ provided with curved-in points $c'$, substantially as and for the purpose set forth.

6. In a net machine for forming double knotted net fabrics, the stationary needles C′ $c'$ in combination with a plate bar $c^3$ having serrated saw-like teeth, substantially as and for the purpose set forth.

7. In a net machine for forming double knotted net fabrics, the stationary needles C′ $c'$ in combination with a "chapping" bar D′ having serrated saw-like teeth $d'$, substantially as and for the purposes set forth.

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**504,596.** NUT-LOCK. DAVID A. LEONARD, Shannon, Ill. Filed June 15, 1893. Serial No. 477,629. (No model.)

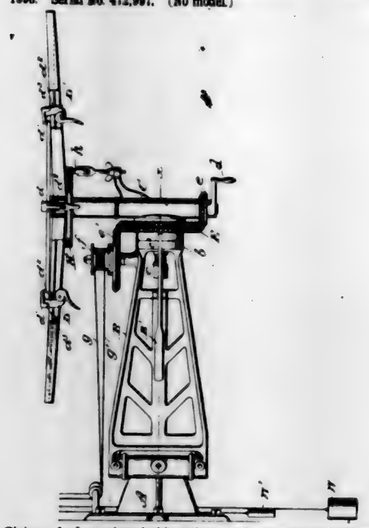


*Claim.*—In a nut-lock, the combination with a bolt, of a nut or burr having a slot in one side thereof, that is wider at one end than at the other, and provided with an outer over-projecting shoulder or flange having an under beveled side, and a wedge or key of the same form as the said slot, and having an outer beveled edge and an inner serrated edge, said wedge or key being inserted in the said slot and driven home, substantially as described.



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**504,597.** HOLDER FOR PLATES IN THE MANUFACTURE OF PHOTO-ENGRAVINGS. MAX LEVY, Philadelphia, Pa. Filed May 4, 1893. Serial No. 472,997. (No model.)



*Claim.*—1. In a plate holder, the combination, of a horizontally movable bracket arm, a reversible support carried thereby and a table mounted on the support said table having clamps for attaching a plate thereto, together with means for rotating the table, for the purpose set forth.

2. In a plate holder for the purpose set forth, the combination of a swinging arm suitably secured to a support, said arm carrying a rotatable table support, the table which is mounted thereon having slots, and clamps D′ carried by the table, substantially as shown, and for the purpose set forth.

3. In combination with a swinging bracket, of a rotatable table support having notches, or projections, opposite each other, of a catch carried by the bracket which is adapted to engage with said notches to hold the table in a horizontal position above or below the bracket, substantially as shown.

4. In combination with a bracket and table support having suitable gearing, of a drum containing a spring, a cord which is adapted to be wound upon the drum by the action of said spring, suitable clutch mechanism between the drum and gearing, and a weight attached to the cord, substantially as shown, and for the purpose set forth.

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**504,598.** OBSTETRICAL APPLIANCE. JAMES H. LEYDA and ISAAC N. LEYDA, Allegheny, Pa. Filed July 14, 1892. Serial No. 439,957. (No model.)



*Claim.*—1. An obstetrical appliance comprising an abdominal compressor band adapted to fit around the abdomen, having free ends adapted to cross at the back and adapted to extend from the middle of the back in opposite directions over the loins to the patient's hands or legs, and hand or feet holds applied to said ends; substantially as described.

2. An obstetrical appliance comprising an abdominal compressor band of elastic material and of form adapted to fit around the abdomen, and having free ends adapted to cross at the back and adapted to extend from the middle of the back in opposite directions over the loins to the patient's hands or legs, and hand or feet holds applied to said free ends; substantially as described.

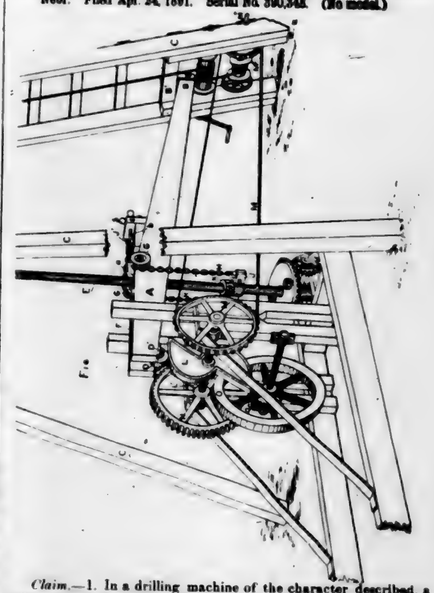
3. An obstetrical appliance comprising an abdominal band, having extensions leading therefrom, and adapted to extend from the patient's back crosswise over the loins, leg-extensor straps connected therewith by loop-connections, and hand-holds connected with said extensions and passing through said loop connections; substantially as described.

4. In an obstetrical appliance, the combination of leg-extensor straps and an abdominal compressor band, one portion of which passes through the other at the back, and has loin-straps connected with the abdominal compressor band and with the leg-extensor straps; substantially as described.

5. In an obstetrical appliance, the combination of leg-extensor straps provided with feet attachments or stirrups, and an abdominal compressor band, having crossing loin-straps connected therewith; substantially as and for the purposes described.

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**504,599.** DRILLING-MACHINE. ELIAS R. LOCKWOOD, Beatrice, Nebr. Filed Apr. 24, 1891. Serial No. 390,348. (No model.)



*Claim.*—1. In a drilling machine of the character described, a walking beam; in combination with a drill and provided with a double chain and sliding collar and a drill having a rigid stop secured thereto in the line of the path of the sliding collar, substantially as described and for the purpose specified.

2. In a drilling machine of the character described, the main walking beam having an opening through which extends the drill; in combination with a drill provided with a rigid stop secured thereto and in the line of the path of the sliding collar; in combination with a double ended sliding collar provided with a pair of cables secured to a link, in common, and provided with shives secured to the walking beam, and also provided with a feed screw, operating the link to which the chains are connected to adjust the same, substantially as described.

3. In a drilling machine of the character described, a hollow drill provided with a rigid stop secured thereto, said stop adapted to be adjusted and locked in any position desired; in combination with a tilting walking beam, having an opening through which the drill passes, and provided with a pair of shives and a pair of chains, supporting a sliding collar, which encircles the drill beneath the rigid stop, said chains adjustable, through the medium of the screw threaded bolt $b$, connected with a link J′, extending through a stop $s$, provided with a hand screw S, substantially as and for the purposes specified.

4. In a drilling machine of the character described, a shaft carrying a double eccentric cam and a sprocket wheel and a gear wheel, meshing with a pinion on a second shaft, provided with a fly wheel; in combination with a walking beam, provided with a slot F, at the open end of which is a friction wheel D, and through the inner portion of which extends the drill E, and the drill provided with a rigid stop and a sliding collar encircling the drill beneath the stop and adjustable cables for supporting the sliding collar and adjustably secured to the walking beam, and the means for operating the same, substantially as and for the purpose specified.

**504,600. GRAPPLE.** JOHN C. MANNING and ALBERT C. WILSON, Marshfield, Oreg. Filed June 1, 1893. Serial No. 476,294. (No model.)



*Claim.*—1. A grapple comprising a pair of tongs provided with upwardly and outwardly curved handles or arms and connected links, of which the outermost have a free sliding connection with the said handles or arms, and the middle one is attached to the hoisting rope, substantially as shown and described.

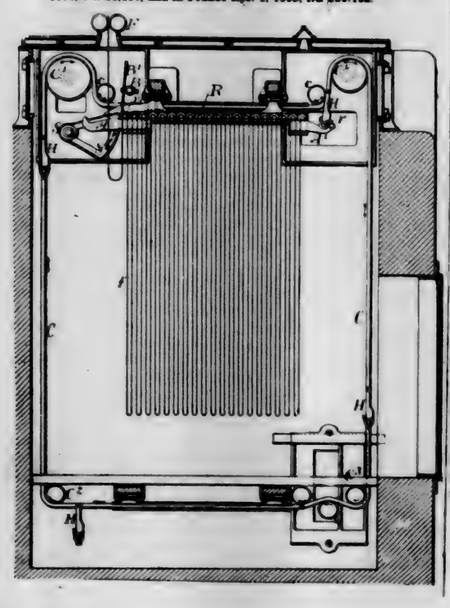
2. A grapple comprising a pair of tongs formed with the usual pivoted hooks having extension arms or handles extending upward and outward, the extreme outer ends of the said arms being bent downward to form stops, connected links having a free sliding connection with the said arms, and limited in their outward movement by the stops on the extreme ends of the arms and a hoisting rope carrying the said links, substantially as shown and described.

**504,601. FINGER OR TOE NAIL CUTTER.** EDMUND T. MABON, New York, N. Y. Filed Mar. 11, 1893. Serial No. 465,542. (No model.)



*Claim.*—A finger nail cutter consisting in the integral diverging members 10, 11 provided at their free ends with cutters and formed of a single piece slotted at its bend, the hook latch pivoted in the slot and provided at its heel with a shoulder 14, a spring 16 bearing on the said shoulder and throwing the latch outwardly and the operating cam lever for forcing the members together and adapted to be engaged by said latch, substantially as set forth.

**504,602. APPARATUS FOR STEAMING, AGING, AND DRYING FABRICS.** WILLIAM MATHER and DAVID P. SMITH, Manchester, England, assignors to Mather & Platt, Limited, same place. Filed Apr. 27, 1893. Serial No. 472,121. (No model.) Patented in England Nov. 8, 1892, No. 20,117, and in France Apr. 1, 1893, No. 229,102.



*Claim.*—1. In apparatus for steaming, aging, and drying fabrics, in combination with a chamber supplied with air, steam, or other suitable gas or vapor, a set of transverse rods extending across the chamber with collars traveling along tracks at the sides of the chamber, a pair of endless chains caused to travel over guide rollers and having hooks suspended from them to carry one of the transverse rods, inclined blades at the ends of the tracks to receive the successive rods and a pair of cams to push the rods forward, all operating in conjunction with means for continuously feeding and withdrawing fabric substantially as described.

2. In apparatus for steaming, aging and drying fabrics, the combination with a series of transverse rods and a support therefor, of an endless chain provided with devices for taking said rods successively from said support, and a pair of suitably speeded revolving cams intermittently advancing said rods upon the support, substantially as described.

**504,603. FUSE-LIGHTER.** WILLIAM C. MATTHEWS, Denver, Colo. Filed Dec. 19, 1892. Serial No. 455,660. (No model.)



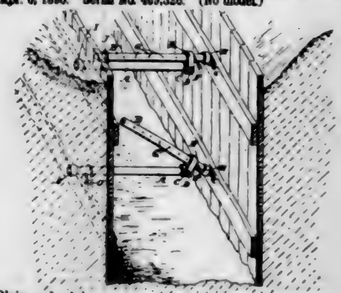
*Claim.*—1. A fuse lighter, comprising a combustible body having a pointed metallic end adapted to be inserted in a fuse, substantially as described.

2. A fuse lighter, comprising a metallic tack, a combustible body formed upon the tack and having the end next the point reduced, and a waterproof coating for the body, substantially as described.

3. A fuse lighter, comprising a metallic tack, a combustible body formed upon the tack and having a reduced end adjacent to the tack point, the body having also grains of powder on its larger end and having a waterproof coating, substantially as described.

4. A fuse lighter, comprising a tack, a body composed of powder and glue formed upon the tack and having a reduced end next the tack point, grained powder secured to the larger end of the body, and a waterproof covering for the body, substantially as described.

**504,604. BRACE.** GEORGE S. MILLER, Council Bluffs, Iowa. Filed Apr. 6, 1893. Serial No. 469,326. (No model.)



*Claim.*—1. A brace comprising two bars, a yoke carried on the head of one of the bars and through which passes the other bar, and a link for locking the two bars together, substantially as shown and described.

2. A brace comprising two bars, of which one is provided with a head and the other with a series of apertures, a yoke pivoted on the said head, and a stop pin passing through one of the said apertures in the said bar, substantially as shown and described.

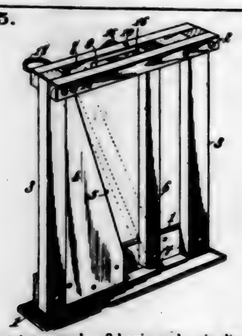
3. A brace comprising two bars, of which one is provided with a head and the other with a series of apertures, a yoke pivoted on the said head, a stop pin passing through one of the said apertures in the said bar, and a link for locking the two bars in position, as set forth.

4. A brace comprising a bar formed at one end with a foot and at the other end with a head having a rounded concaved outer surface, a yoke pivoted on the sides of the said head, a second bar passing loosely through the said yoke and guided in the said rounded head, the said second bar being provided with a foot and a series of apertures, a pin adapted to engage one of the said apertures to limit the movement of the yoke on the apertured bar, and a link for locking the two bars together, substantially as shown and described.

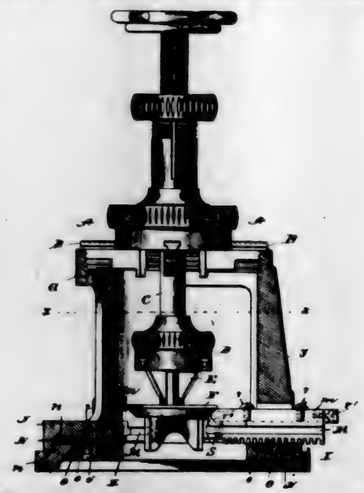
**504,605. CATTLE-STANCHION.** WARREN MORGAN, Houghton, N. Y. Filed June 26, 1893. Serial No. 478,041. (No model.)

*Claim.*—In a cattle stanchion, the combination with the pivoted stanchion bar 6, a top cross bar 2 having a longitudinal vertical slot 8, and a longitudinal horizontal slot 9 communicating therewith, of a spring-locking catch composed of a single strip of wire rod formed intermediate its ends with a coil 18, one end secured to the top cross bar, and the other end portion formed with an outwardly bent finger-piece 15, an inwardly bent horizontal catch arm 16, and an inclined member 17 against which the upper end of the stanchion bar operates to press the catch arm outward for the passage of the stanchion bar into locking engagement with said catch arm, substantially as described.





**504,606. VALVE-RESEATING MACHINE.** CHARLES L. MORSE, Athol, Mass. Filed Feb. 4, 1893. Serial No. 460,961. (No model.)



*Claim.*—1. In a cutter attachment for valve reseating machines the combination with the chuck devices; of an attachment casing adapted to be removably connected at one end to said chuck devices and carrying at its other end a stationary circular guide plate provided with a central opening, a radial series of guide slots or ways having rabbeted edges, and a circular bottom groove intersecting said slots or ways, said attachment casing being further provided with a series of slots or openings above its stationary guide plate, a series of sliding cutter jaws moving in said slots br ways and having side grooves engaging the rabbeted edges thereof, and bottom threads, said jaws also working through the slots in said casing, and a movable chuck ring clamped to the outside of said stationary guide plate and having a raised scroll or worm flange moving in the circular bottom groove of said guide plate and engaging the threads of said cutter jaws, substantially as set forth.

2. In a cutter attachment for valve reseating machines, the combination with the chuck devices carrying a work holder or auxiliary chuck; of a skeleton casing screw threaded at one end to removably receive said chuck devices and inclose the work holder or auxiliary chuck, said casing carrying at its other end a stationary circular guide plate, a series of sliding radially adjustable cutter jaws mounted in said guide plate, and an adjusting ring loosely clamped to said stationary guide plate and engaging said cutter jaws, substantially as set forth.

3. In a valve reseating machine, the combination of an attachment casing adapted to receive the turning-tool, and having a series of slots or openings, and an angularly disposed threaded opening leading into one of said slots, a cutter chuck provided with a central opening receiving the object being operated upon, and a series of sliding radially adjustable cutter jaws adapted to work through the slots in said casing, and a binder screw adapted to work in said threaded opening and onto one of said jaws, substantially as set forth.

4. The combination with a valve reseating machine, having a cutter chuck provided with sliding jaws, of a separate and independent cutting bit clamped for longitudinal adjustment to one or more of said jaws and provided with an inner cutting end conforming to the face of the object being dressed, substantially as set forth.

5. In a cutter attachment for valve reseating machines the cutter chuck having a series of radially adjustable sliding jaws having inner ends conforming to and touching the face of the object being dressed, one or more of said jaws being further provided at one end and top edge with chip grooves, and cutting or dressing bits adjustably clamped to said jaws next to said chip grooves on said jaws, substantially as set forth.

6. In a cutter attachment for valve reseating machines, the cutter chuck having a series of radially adjustable sliding jaws, said jaws being provided with inner beveled ends, one or more of said jaws being further provided with longitudinally disposed grooves in their upper faces and extending from end to end, and chip grooves at one end and top edge, elongated adjustable and reversible cutting or dressing bits seated in said top grooves, retaining screws threaded into the jaw or jaws carrying the cutters and having their heads working onto the bits, adjusting screws threaded into one end of the cutter jaw or jaws and engaging the cutting bits, and a bit setting screw working into the upper face grooves, substantially as set forth.

**504,607. SPITTOON-CARRIER.** GERARD B. HAGLE, Reversteke, Canada. Filed Jan. 10, 1893. Serial No. 457,986. (No model.)



*Claim.*—1. The combination with a handle of a pair of tongs pivoted between their ends to the handle the shank of the tongs in rear of their pivots being curved or inclined outwardly from each other and a slide movable along the tongs across the pivotal point thereof, whereby when the slide is in front of the pivot the tongs will be locked in their closed position and when in rear of the pivot on the rear extensions the tongs will be held open, substantially as set forth.

2. In a device of the class described, the combination with a handle, of a pair of tongs pivoted thereon and provided with rearwardly extending shanks, an apertured plate engaging the said shanks of the said tongs, rods connected with the said plate and mounted to slide in bearings on the said handle, and a sleeve fitted to slide on the said handle and connected with the said rods, substantially as shown and described.

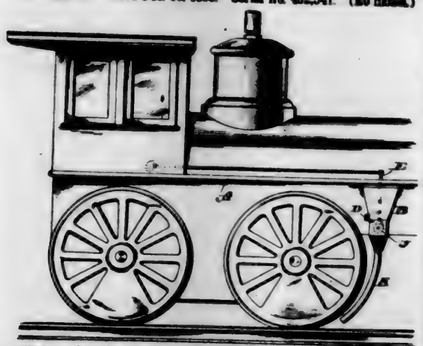
3. In a device of the class described, the combination with a handle provided at one end with a projecting rod, of a pair of tongs pivoted on the said projecting rod and adapted to engage the neck of the spittoon, the said pair of tongs being provided with rearwardly extending curved shanks, an apertured plate fitted to slide on the said projecting rod and engaging the shanks of the pair of tongs, rods rigidly connected with the said plate and fitted to slide in bearings on the said handle, and a sleeve fitted to slide on the handle and connected with the said rods, substantially as shown and described.

**504,608. NUT-LOCK.** IRA HASPIN, Farmington, Ill. Filed June 7, 1893. Serial No. 476,808. (No model.)



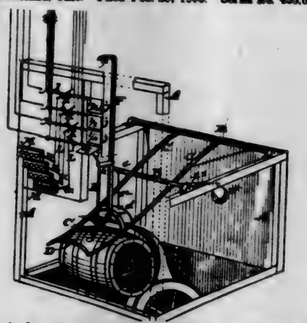
*Claim.*—The combination with the rails and the bolts, of the nuts with cut-away corners, and the pivoted locking plate having a cam portion and a projection, having a cam face substantially as and for the purpose specified.

**504,609. SAND-BOX FOR LOCOMOTIVES.** THOMAS F. O'FRIEL, Altoona, Pa. Filed Feb. 16, 1892. Serial No. 462,541. (No model.)



*Claim.*—The herein described device for supplying sand to railway rails, the same comprising in combination, the sand box, the inclined partition or chute therein, the slide-valve, lever mechanism adapted to move the said valve transversely across the sand outlet, the shaft H below the valve and having blades as described, the pinion upon the end of the shaft H, and the gravity pawl having one of its ends pivoted to the lower end of the valve operating lever and its free end adapted to engage the teeth of the pinion, substantially as shown and described.

**504,610. BARREL-REGISTERING MACHINE.** ANDREW W OPPMANN, Cleveland, Ohio. Filed Feb. 25, 1893. Serial No. 463,690. (No model.)



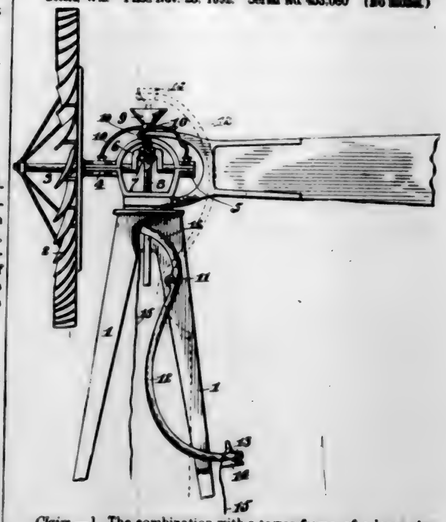
*Claim.*—1 In a barrel and keg registering machine, the combination of shaft B journaled in the frame A, levers C, C, attached to said shaft B, upright bar F attached to forward part of said levers C, C, and having a hook *f* at top end resting on top of frame A and supporting said levers in their normal position, rockshaft G journaled to said levers C C and provided with arm *g*, rod H pivotally attached to arm *g* and connected near its upper end by a link A, with the bar F, and adapted to push the doors *j*, said levers and bar F with the rock shaft G and rod H, adapted to be raised and operated by the passage of barrels or kegs beneath them, substantially in the manner and for the purpose set forth.

2. In a barrel and keg registering machine, the combination of a shaft B journaled in the frame A, levers C C attached to said shaft B, upright bar F attached to forward part of levers C, C, and having hook *f* at top end resting on top of frame A and supporting said levers in their normal position, rock shaft G journaled to said levers C, C, and provided with arm *g*, rod H pivotally attached to arm *g*, and connected near its upper end by a link A with the bar F, and adapted to push the doors *j* and a shaft E journaled in frame A over said levers C C and provided with arm *e* and rod $e^2$ hooked to cross bar *d* of said levers, and arm $e^1$, having a weight *w* adapted to counterbalance the weight of the levers C C, and their attachments substantially as and for the purpose set forth.

3. In a barrel and keg registering machine, the combination with the levers C C bar F rock shaft G, arm *g* and rod H, of the rock shafts I, I, journaled on frame A and provided with doors *j*, arms K and cords L connecting said arms K with the levers *m*, of the registering machine M, whereby the movements of said levers C C and rod H, are adapted for registering the barrels or kegs which pass under said levers C C as and for the purpose set forth.

4. In a barrel and keg registering machine, the combination with the levers C, C, bar F, rock-shaft G, arm *g*, and rod H, of the rock shafts I, I, journaled on frame A and provided with doors *j*, arms K and cords L connecting said arms K with levers *m*, of the registering machine M, and the electric bells having their wires connected with the said rock-shafts I and adapted to operate to announce the passage of barrels or kegs in conjunction with the registers substantially as and for the purpose set forth.

**504,611. LUBRICATOR FOR WINDMILLS.** OTHO H. ORTON, Beloit, Wis. Filed Nov. 25, 1892. Serial No. 453,080. (No model.)

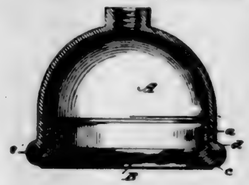


*Claim.*—1. The combination with a tower frame, of a lever pivoted thereto, a cord hanging from both ends of said lever and arranged to travel along said lever, and a carrier attached to said cord and thus adapted to be drawn to said lever, substantially as described.

2. The combination with a tower frame, of a hollow lever pivoted thereto, a cord passed therethrough, and a carrier attached to said cord, substantially as described.

3. The combination with a tower frame, of an oil cup secured thereon, a lever pivoted on the frame, a cord arranged to travel along said lever, and an oil vessel secured to said cord, the parts being so arranged that on turning the lever, one end thereof is brought directly over the oil-cup, substantially as described.

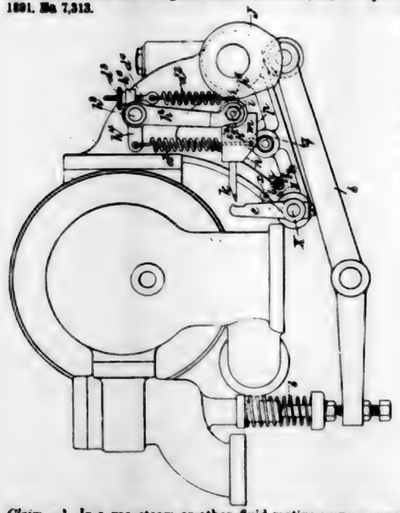
**504,612. HOLLOW RUBBER ARTICLE.** EDWARD L. PERRY, Paterson, N. J. Filed June 16, 1893. Serial No. 477,809. (No model.)



*Claim.*—An oil-can or other hollow rubber article having a body of hard rubber or vulcanite, and a detachable bottom of soft rubber having a flange or rim and a screw flange both of hard rubber or vulcanite, said screw flange engaging with screw threads upon the interior of the body, substantially as and for the purpose set forth.



**504,613. APPARATUS FOR GOVERNING GAS, STEAM, OR OTHER MOTIVE POWER ENGINES.** CHARLES W. PIGGOTT, Smethwick, assignor of two-thirds to George Tangye and George Handel Haswell, Birmingham, England. Filed Feb. 13, 1892. Serial No. 462,157. (No model.) Patented in England Jan. 28, 1885, No. 1,318, and Apr. 28, 1891, No. 7,313.



*Claim.*—1 In a gas, steam or other fluid motive power engine, the combination with a lever for operating the inlet valve, of a supporting arm pivoted at one end, an oscillatory lever fulcrumed in the opposite end of said arm, the forward end of which is adapted to be engaged at intervals with the valve operating lever, an incline on the oscillating lever engaging a rigid projection for moving said lever to the proper position for contact with the valve operating lever, a spring for limiting the lift of the oscillating lever by the incline, during the normal speed of the engine, but which allows it to escape the valve lever when said speed is increased, a spring for holding the oscillatory lever at the limit of its rearward movement, and means for imparting an oscillating movement to the latter, substantially as described.

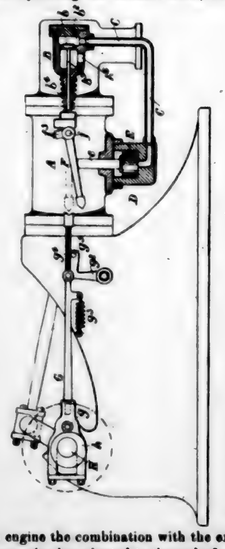
2. In a gas, steam or other fluid motive power engine, the combination with a lever for operating the inlet valve, of a supporting arm pivoted at one end, an oscillatory lever fulcrumed in the opposite end of said arm, the forward end of which is adapted to be engaged at intervals with the valve operating lever, an incline on the oscillating lever engaging a rigid projection for moving said lever to the proper position for contact with the valve operating lever, a spring for limiting the lift of the oscillating lever by the incline, during the normal speed of the engine, but which allows it to escape the valve lever when said speed is increased, means for adjusting the tension of said spring, a spring for holding the oscillatory lever at the limit of its rearward movement, and means for imparting an oscillating movement to the latter, substantially as described.

3. The combination with a lever for operating the inlet valve of a supporting arm pivoted at one end, oppositely extending projections or ears on the pivoted end of the arm, an oscillatory lever fulcrumed in the free end of said arm, the forward end of which is adapted to be engaged at intervals with the valve operating lever, an incline on the oscillatory lever engaging a rigid projection for moving the lever to the proper position for contact with the valve operating lever, a spring connecting one of the ears on the supporting arm with the oscillatory lever for limiting the lift of the latter by the incline during the normal speed of the engine, but which allows it to escape the valve lever when said speed is increased, a spring connected with the other ear of the supporting arm, for holding the oscillatory lever at the limit of its rearward movement, and means for imparting an oscillating movement to the latter, substantially as described.

**504,614. GAS-ENGINE.** CHARLES W. PIGGOTT, Smethwick, assignor of two-thirds to George Tangye and George Handel Haswell, Birmingham, England. Filed Feb. 13, 1893. Serial No. 462,159. (No model.)

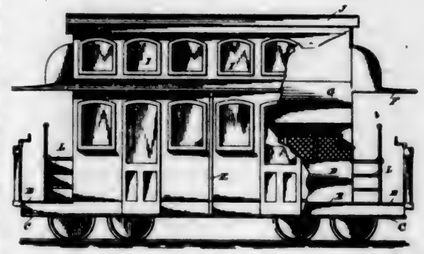
*Claim.*—1 In a gas engine the combination with the exhaust-valve and its stem, of a vertically movable connecting bar at the end of the valve-stem, a cylinder and piston or equivalent device in communication with the explosion chamber for raising the connecting bar as the pressure in said chamber is increased, an oscillating rod driven from the crank-shaft of the machine, and a vertically movable extension at the end of the oscillating rod adapted to be elevated by the connecting rod during the compression stroke and returned to its operative position by gravity, substantially as described.

2. In a gas engine the combination with the exhaust-valve and its stem, of a pivoted connecting bar at the end of said valve stem, a cylinder and piston or equivalent device in communication with the explosion chamber for moving said bar, an oscillating rod driven from the main crank shaft, and a pivoted extension at the end of said oscillating rod, adapted to be brought into operative contact with the connecting bar for operating the exhaust valve, substantially as described.



3. In a gas engine the combination with the exhaust valve and its stem, of a connecting bar pivoted to the end of said valve-stem, a cylinder and piston or equivalent device communicating with the explosion chamber for elevating the connecting bar to its operative position, an oscillating rod driven from the main shaft of the machine, a swinging support for the outer end of said rod and a pivoted extension at said outer end normally supported in alignment for engagement with the connecting bar when the latter is elevated to its operative position, substantially as described.

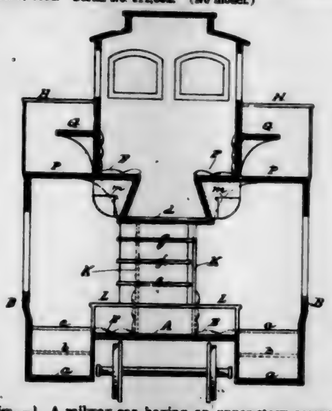
**504,615. RAILWAY-CAR.** THOMAS R. POPE, San Francisco, Cal. Filed Aug. 18, 1891. Serial No. 403,081. (No model.)



*Claim.*—A railway car or carriage consisting of a floor or bottom A having side or longitudinal, steps C below its general surface and opposed seats D at its center and above its general surface, extending longitudinally thereof, the roof F secured upon uprights or stanchions, at the sides of the car or carriage, themselves secured upon the steps C, upper compartment seats G extending from the roof F and below it, the foot or passage way H, arranged below said seats G and low down in the lower compartment, centrally of the seats D, the upper compartment J, and the end steps L leading from the floor A of the

lower compartment to the passage or foot way H, under cover, substantially as set forth.

**504,616. RAILWAY-CAR.** THOMAS E. POPE, Oakland, Cal. Filed Nov. 6, 1891. Serial No. 411,082. (No model.)



*Claim.*—1. A railway car having an upper story compartment provided with seats on each side, extending, each, throughout the length of said compartment, and a veranda on each side thereof also provided with seats on each side, substantially as described.

2. A railway car having in its floor depressed passage or foot ways forming seats at the sides thereof, said foot or passage ways having their outer sides formed by the sides or stanchions of the car, substantially as set forth.

3. A two story railway car having its lower main floor provided with depressed foot or passage ways, converting said floor into seats at its sides, said passage or foot ways being reached by steps, substantially as described.

4. In a railway car having an upper and lower compartment, the floor of the lower compartment formed with depressed foot or passage ways on each side whereby the floor is converted into seats for passengers, while the roof or upper floor is dropped down into the lower compartment whereby said roof or floor is converted into seats for passengers in the upper compartment, substantially as described.

5. In a two story railway car, a platform "L" arranged across the end of the car above the main floor "A" steps "*a b c*" leading up to said platform, a platform "*d*" on a level with the passage way of the upper compartment and steps "*e f g*" leading from the lower platform "L" up to said platform "*d*" and side steps "M" leading to the veranda, substantially as described.

**504,617. COMBINED LAND FURROWER AND MARKER.** JAMES RAMEY, Brooks, Ill. Filed May 29, 1893. Serial No. 475,830. (No model.)

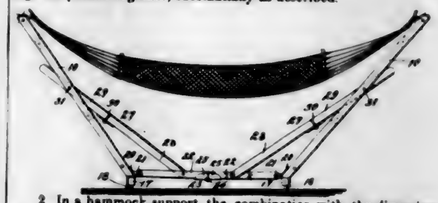


*Claim.*—1. In a land furrower and marker, the combination, with an axle, beam 4 loosely connected to said axle, shovel bars carrying shovels secured to said beam, and a marker loosely connected to one of said shovel bars; substantially as and for the purpose set forth.

2. In a land furrower, the combination with an axle, beam 4 loosely connected to said axle, hand lever and connections for turning said beam, shovel bars carrying shovels secured to said beam, an arm on one of said shovel bars, a marker loosely connected to said arm, and a rod connecting the marker to the axle; substantially as and for the purpose set forth.

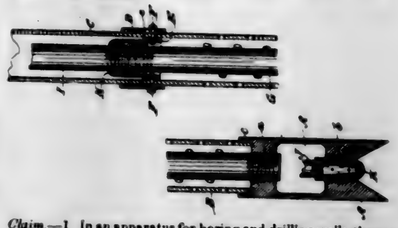
**504,618. HAMMOCK-SUPPORT.** NELSON G. REYNOLDS, Bangor, Mich. Filed Oct. 14, 1892. Serial No. 448,846. (No model.)

*Claim.*—1. A hammock support, comprising diverging legs having hooks at their upper ends, and transverse feet at their lower ends, the legs being made of parallel members united at the top, stretcher arms pivoted to the feet of the support and hinged together at their inner ends, and jointed braces pivoted to the stretcher arms and between the leg members so as to fold upward and inward when the legs are pushed together, substantially as described.



2. In a hammock support, the combination with the diverging legs, the transverse feet and the stretcher arms pivoted to the feet, of the double clip connecting the feet, legs and arms, each clip comprising an angle plate to fit the corners of a foot, upwardly extending parallel angle irons to fit the corners of the leg members, and projecting ears adapted to be pivoted to the stretcher arms, substantially as described.

**504,619. APPARATUS FOR BORING WELLS.** RUFUS S. RICKEY and ISAAC PEYTEL, New Orleans, La. Filed Apr. 6, 1893. Serial No. 469,277. (No model.)



*Claim.*—1. In an apparatus for boring and drilling wells, the combination with the drill-head A, of a strainer B, detachably connected to said drill head, a casing C located above the strainer and detachably connected therewith, by a sleeve D, a ring E, secured to the inner face of the strainer-threaded pipes G and I located within the strainer and casing, and serving to conduct water to the drill head, and a threaded collar H, connecting said pipes, and adapted to rest upon the ring E, and close the annular space between the pipes and strainer whereby water is prevented from rising up into the casing during the boring operation, substantially as described.

2. In an apparatus for boring and drilling wells the combination with the hollow drill-head A, of a strainer B attached to said drill-head, a casing C located above and detachably connected with the strainer by a sleeve D, a ring E having a beveled upper edge *e*, said ring being connected with the strainer and sleeve by bolts F, a pipe G, having a right and left hand screw-thread, the lower end of said pipe being connected with the drill-head, and the upper end of which is coupled with a pipe I by an internally threaded collar H, the lower edge of said collar being beveled to meet the beveled edge of ring E, and a plug K secured in the opening *b* of the drill-head, substantially as described.

**504,620. SASH-OPERATING MECHANISM.** PHILIP S. RIDDELL, Woodstock, Va. Filed Feb. 24, 1893. Serial No. 463,596. (No model.)

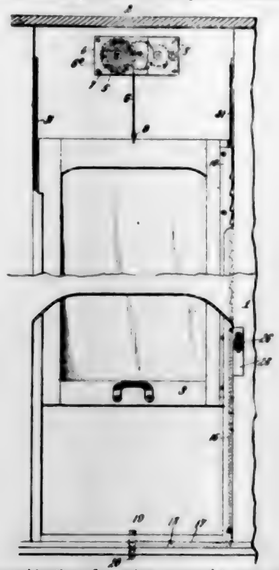
*Claim.*—1. The combination with a window frame, and a sash, of a spring-impelled hollow drum mounted on the top portion of the window frame and containing within it the impelling spring, a cable winding on the hollow drum and connected with the sash to automatically raise the latter whenever released, means for stopping the ascent of the sash at any desired point and holding it stationary against the power of the spring which acts on the drum, and a governor geared to the drum for preventing the sash rising with undue velocity, substantially as described.

2. The combination with a window frame, and a sash, of a spring-impelled hollow drum mounted on the top portion of the window frame and containing within it the impelling spring, a cable winding on the hollow drum and connected with the sash to automatically raise the latter whenever released, pawl and rack mechanism for stopping the ascent of the sash at any desired point and holding it stationary against the power of the spring which acts on the drum, and a finger piece for disengaging the pawl from the rack, and a governor arranged



in operative connection with the drum and serving to prevent the sash rising with undue velocity, substantially as described.

3. The combination of a spring connecting a sash with the top portion of a window frame and operating to raise the sash when released from restraint, with a rack and pawl directly engaging each other and one of which is carried by the window frame and the other by the sash, a finger-piece or push button for disengaging the pawl from the rack, connections between the pawl and the finger piece or push button, a movable bolt operating from the exterior of the window frame to hold the pawl in engagement with the rack and thereby retain the sash at any desired height, and a key-actuated locking device for locking the movable bolt in engagement with the pawl to prevent the sash being raised or lowered until the key-actuated locking device is operated by an authorized person, substantially as described.



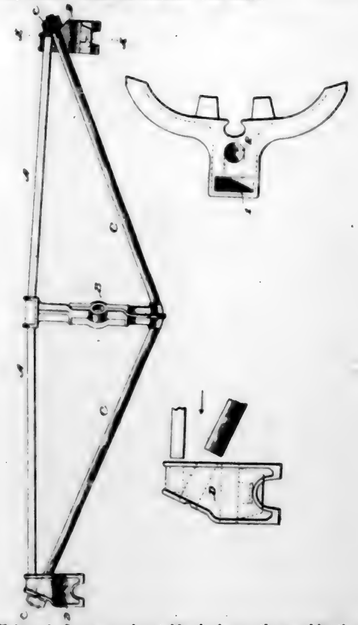
4. The combination of a spring arranged to rise a window sash when the latter is released from restraint, with a rack and pawl directly engaging each other and one of which is carried by the window frame and the other by the sash, a finger-piece or push button for disengaging the pawl from the rack to permit the spring to raise the sash, connections between the pawl and the finger piece or push button, a movable bolt operated from the exterior of the window frame to hold the pawl in engagement with the rack and thereby retain the sash at any desired height, and a rotary, key-actuated cam for locking the bolt in engagement with the pawl to prevent the sash being raised or lowered until said cam is operated by the proper key, substantially as described.

5. The combination with a window frame, and a sash, of a spring-impelled drum mounted on the top portion of the window frame, and provided with a cable winding thereupon, and connected with the sash to automatically raise the latter whenever released, rack and pawl mechanism for stopping the ascent of the sash at any desired point and holding it stationary against the power of the spring, a movable finger piece arranged on the window sill, and connections between the finger piece and the pawl for disengaging the latter from the rack, substantially as described.

6. The combination with a window frame, and a sash, of a spring mechanism mounted on the upper portion of the window frame and connected with the sash to automatically pull the latter upward whenever released, a rack on the sash, a sliding pawl on the window frame, a lever engaging and operating the pawl, a lever pivoted intermediate its extremities to the window sill, and having a rod connection with the pawl-operating lever, and a spring finger piece arranged in the window sill for vibrating the lever which is pivoted to the latter, substantially as described.

7. The combination, with a window sash having a rack, of a spring-impelled drum located on the window frame above the sash and having its spring connected with the latter for automatically raising the sash when released from restraint, a pawl casing arranged in the window frame, a pawl mounted in the pawl-casing and engaging the rack to hold the sash against the power of the spring, a spring which throws the pawl into engagement with the rack, a finger-piece or push button having lever and rod connections for operating the pawl and moving it out of engagement with the rack, and a movable bolt operated from the exterior of the window frame for locking the pawl in engagement with the rack to prevent the sash being raised or lowered until the bolt is disengaged from the pawl, substantially as described.

**504,621. BRAKE-BEAM.** HENRY B. ROBINSON, Kalamazoo, Mich., assignor to the Chicago Railway Equipment Company, Chicago, Ill. Filed May 1, 1893. Serial No. 472,552. (No model.)



*Claim.*—1. In a trussed metal brake beam, the combination with a compression member and a tension member, of a brake-head having a socket for the end of the compression member and a bore for the passage of the tension member, which bore and socket are in intersecting planes and substantially independent, whereby the torsion of the end of the compression member is restrained, substantially as and for the purposes specified.

2. In a trussed metal brake-beam, the combination with a compression member and a tension member, of a brake-head having a socket for the end of the compression member and a bore for the passage of the tension member, which bore and socket are in planes which intersect on substantially the median line of the brake-head; substantially as and for the purposes specified.

3. In a trussed metal brake-beam, the combination with a compression member and a tension member, of a brake-head having a socket for the end of the compression member and a bore for the passage of the tension member, which bore and socket are in planes which intersect on substantially the median line of the brake-head, the bottom of the compression member socket being at or near the point of intersection of the tension member bore with said socket; substantially as and for the purposes specified.

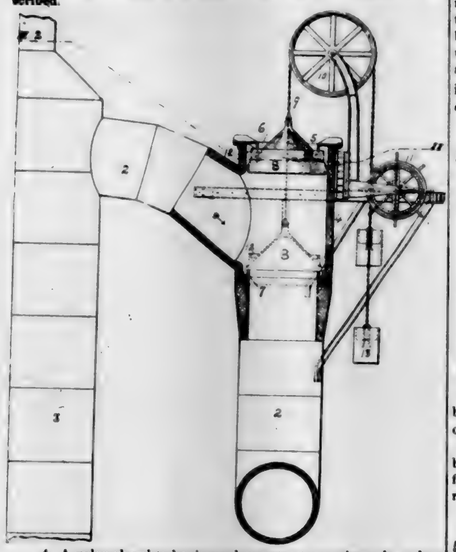
**504,622. GAS-VALVE FOR BLAST-FURNACES.** WILLIAM ROTTHOFF, Rankin Station, Pa. Filed Oct. 11, 1892. Serial No. 448,543. (No model.)

*Claim.*—1. A blast furnace having a conduit leading from the top for the exit of the furnace gases, and having a valve-controlled air-opening situate at a level below that of the top of the conduit at the point at which it leaves the furnace, said opening being adapted to admit air to establish a return cooling draft; substantially as described.

2. A blast furnace having a conduit leading from the top for the exit of the furnace gases, and having a valve-controlled air-opening situate at a level below that of the top of the conduit at the point at which it leaves the furnace, said opening being adapted to admit air

to establish a return cooling draft, and means for closing the conduit between the air-opening and the gas-main; substantially as described.

3. A blast-furnace having a conduit leading from the top for the exit of the furnace-gases, an upright valve-chamber in said conduit, said chamber provided at opposite ends with valve-seats, one of which surrounds an air-opening, and an intermediate valve contained in said chamber and movable to fit either of the seats; substantially as described.

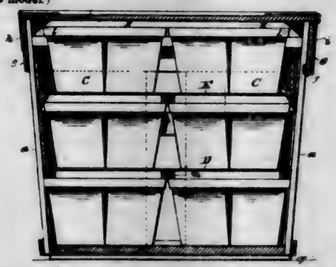


4. A valve-chamber having valve seats at opposite ends, and an intermediate mushroom valve having an annular gutter, one of said valve-seats having an annular projection adapted to fit within the gutter; substantially as described.

5. A valve-chamber having valve-seats at opposite ends, and an intermediate mushroom valve having an annular gutter, one of said valve-seats having an annular projection adapted to fit within the gutter, and the other valve-seat having an annular gutter into which fits an annular projection on the valve; substantially as described.

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**504,623.** FRUIT OR VEGETABLE CRATE OR CARRIER. JAMES R. ROUTH, Petersburg, Va. Filed Mar. 21, 1893. Serial No. 467,015. (No model.)



*Claim.*—1. In a crate or carrier, the combination, of a series of boxes or baskets arranged in tiers, and partitions for separating said tiers provided at each side with a triangular rail adapted to rest on the outer top edges of said boxes or baskets and to extend below said top edges and bear against the inner surface of the crate, substantially as shown and described.

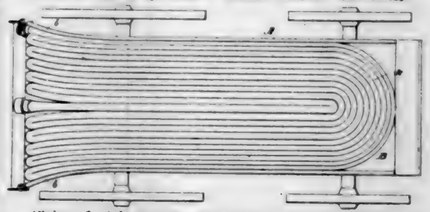
2. In a crate or carrier, the combination, of a series of boxes or baskets arranged in tiers, and partitions for separating said tiers provided at each side with a triangular rail adapted to rest on the boxes or baskets at their outer top edges and to extend below said top edges and bear against the interior surfaces of the crate and with a central rail adapted to rest on the meeting edges of the series of boxes or baskets of each tier, substantially as described.

3. The combination, with the crate or carrier having a cover provided with triangular end rails and intermediate square rails, of a series of boxes or baskets arranged in tiers in said crate or carrier, means for separating the tiers horizontally, and means for separating each of the boxes or baskets forming each tier from the other boxes or baskets of each tier, substantially as described.

4. The combination, with a crate or carrier having a cover provided with triangular end rails and square intermediate rails, of a series of boxes or baskets arranged in tiers in said crate or carrier, partitions for separating such tiers horizontally, racks for separating the boxes or baskets of each tier, and frames, each comprising inclined uprights and inclined slats connecting said uprights arranged to bear against the outer sides of the outer boxes of each tier and against the inner surfaces of the crate to prevent lateral movement of the boxes or baskets, substantially as described.

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**504,624.** HOSE-CARRIAGE. WILLIAM T. Y. SCHENCK, San Francisco, Cal. Filed May 24, 1893. Serial No. 475,366. (No model.)

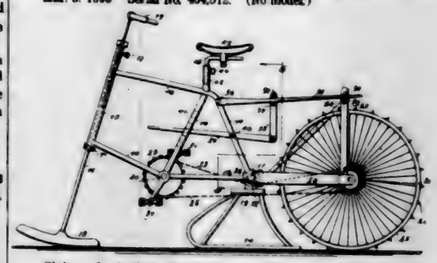


*Claim.*—1. A hose receptacle for fire apparatus, consisting of a bed or basket having its back end or rear portion outwardly inclined or flaring, substantially as herein described.

2. A hose receptacle for fire apparatus vehicles consisting of a bed or basket having its side edges straight and parallel from the front and at their rear portions outwardly inclined or flaring to the rear end, substantially as herein described.

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**504,625.** ICE-VELOCIPEDE. JONAS SCHMID, Mill Creek, Pa. Filed Mar. 3, 1893. Serial No. 464,512. (No model.)



*Claim.*—1. An ice velocipede, comprising a frame having a seat thereon, a steering rod journaled in the front portion of the frame and having a runner at its lower end, a runner hinged to the rear of the frame and adapted to follow the steering runner, a wheel frame hinged to the rear portion of the main frame and projecting rearwardly therefrom, a toothed driving wheel mounted in the said frame, a pedal operated mechanism for operating the wheel, and a lever mechanism for adjusting the driving wheel and holding it in yielding contact with the ice or snow, substantially as described.

2. An ice velocipede, comprising a main frame, a steering rod journaled in the main frame and having a curved runner at its lower end, a second runner hinged to the rear end of the frame and adapted to follow the steering runner, a vertically swinging frame hinged to the rear end of the main frame, a toothed driving wheel journaled in the swinging frame, pedal-operated mechanism for turning the driving wheel, a spring connecting the upper end of the swinging frame with the upper portion of the main frame, a lever fulcrumed on the main frame and pivotally connected with the central portion of the spring, and mechanism for fastening the lever in a fixed position, substantially as described.

3. In an ice velocipede, the combination with the main frame, of a wheel frame hinged to the main frame, and provided with upwardly extending posts at its rear end, a spring pivoted to the main frame and having a loose connection with the posts of the wheel frame, a pivoted lever, a link pivoted to the lever and loosely connected to the spring, and a wheel mounted in the said frame, substantially as described.



4. In an ice velocipede, the combination with the runners, of detachable skates, each provided with end lugs or flanges to embrace the runners, and screws passing through the lugs or flanges and engaging the runners, substantially as described.

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**504,626.** MEDICAL COMPOUND. JAKOB SCHMID, Basle, Switzerland, assignor to the Society of Chemical Industry in Basle, same place. Filed Mar. 16, 1893. Serial No. 466,364. (No specimens.)

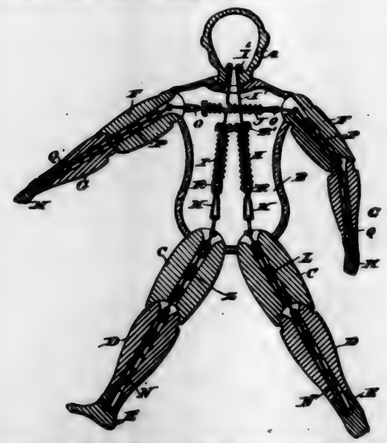
*Claim.*—The medical compound herein described of the formula:



which crystallises in yellowish colored flat needles melting at from 90° to 91° centigrade and is insoluble in water, difficultly soluble in dilute hot caustic-soda, but of easy solubility in ether, benzene and hot alcohol with a pale yellow coloration.

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**504,627.** DOLL. FREDERICK B. SCHULTE, New York, N. Y. Filed Sept. 23, 1892. Serial No. 446,666. (No model.)



*Claim.*—1. The combination with the hollow body having an articulated member, of a spring within the body and a swivel connected at one end to the spring and at its other end to the said member substantially as set forth.

2. The combination with the hollow body having two opposed articulated members, of a spring within the body and swivels connected with the ends of said springs and with said members, substantially as set forth.

3. A doll provided with springs, and a limiting device arranged on each spring and serving to limit the expansion of the spring, substantially as shown and described.

4. The combination with the hollow body and the head having an internal annular shoulder around its neck opening, of spring retracted hooks engaging said shoulder from within the hollow body, substantially as set forth.

5. In a doll, the combination with a spring held in the doll body, a swivel connected with one end of the said spring, a chain connected with the said swivel, a second swivel on the other end of the chain and connected with one of the movable parts of the doll, and a rod having hooks and held on the said spring to limit the opening of the same, substantially as shown and described.

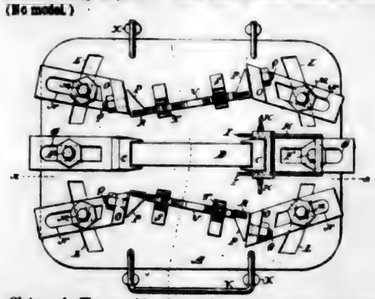
6. The combination with the hollow body and a member composed of articulated sections of a spring within the body a swivel secured to the outer section of said member, a second swivel secured to the spring and a flexible connection extending through the said member and connecting the two swivels, substantially as set forth.

7. The combination with the hollow body and the arms formed of articulated sections of a transverse spiral spring within the body and provided at its ends with swivels connected to the outer members of the arms, and flexible connections extending through said arms and connecting the said swivels, substantially as set forth.

8. The combination with the hollow body, the head having the internal annular flange around its neck opening and the legs formed of articulated sections, of the longitudinally extending springs within the body and provided at their upper ends with hooks engaging said flange and at their lower ends with swivels, swivels connected with the foot members and flexible connections extending through the legs and connecting said swivels, substantially as set forth.

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**504,628.** MACHINE FOR FORMING SHEET METAL. HERMAN BESSER, Jersey City, N. J. Filed June 1, 1893. Serial No. 476,205. (No model.)



*Claim.*—1. The combination with a bed or support A, and coacting dies D and E, of supports O arranged at one side of the dies, pivoted or swiveled shape-holders P mounted on said supports, and a shape R detachably mounted in the pivoted or swiveled holders, substantially as described.

2. The combination with a bed or support A and coacting dies D E of a shape arranged on one side of one of the dies, holders for maintaining the shape in upright position, and a block S adapted for insertion between the bed and the shape, said block having grooves or recesses for the insertion or engagement of the shape substantially as described.

3. The combination with a bed or support and coacting dies of a shape, swiveling holders at the sides of the shape and supports for the holders adjustably secured to the bed substantially as described.

4. The combination with a bed and coacting dies of a shape, swiveling holders for the shape, supports for the holders, and screws or fastenings for securing the supports to the bed, said supports and bed being suitably slotted for the passage of the screws to make the supports adjustable in various directions substantially as described.

5. The combination with coacting dies of one or more shapes arranged in proximity to the dies and a gage made to straddle one of the dies so as to be capable of being set within the edge of the die substantially as described.

6. The combination with a bed or support, and co-acting dies, of shapes arranged at opposite sides of the dies, the bifurcated rests V having legs which are vertically adjustable in openings in the bed or support for supporting the work in proximity to the shapes, and devices engaging the legs of the said rests for rigidly securing them in their adjusted position, substantially as described.

7. The combination with coacting dies and a bed or support for the dies of an actuating arm or attachment Y for one of the dies, said attachment being slotted or forked to allow bending or circling of the work substantially as described.

8. The combination with coacting dies and a bed or support therefor of an actuating arm or attachment Y for one of the dies, a holder for the arm or attachment, a screw for securing the holder to the die said screw being provided with a notched head, and a latch for engaging the notched screw head to hold the screw locked substantially as described.

9. The combination with coacting dies and a bed or support therefor of a forked actuating arm or attachment for one of the dies and a holder for connecting the arm to the die said holder being provided with sleeves or seats for the insertion of the forked arm substantially as described.

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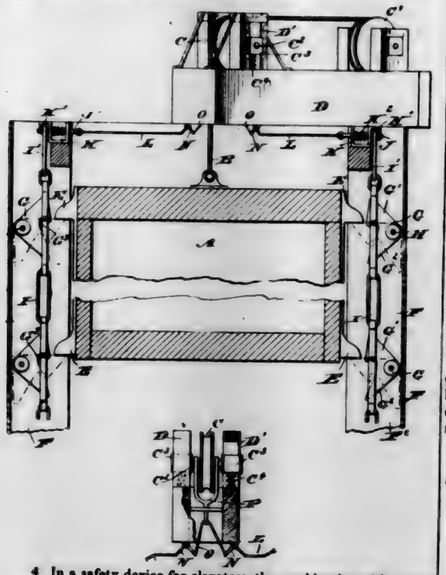
**504,629.** SAFETY DEVICE FOR ELEVATORS. FRANK H. SHORTS and HENRY O. SWAN, San Francisco, Cal. Filed Sept. 13, 1892. Serial No. 445,784. (No model.)

*Claim.*—1 A safety device for elevators, comprising a bolt adapted to be actuated from the cable pulley, a chain adapted to be supported on the said bolt, and a series of pivoted blocks connected with each other by the said chain, and adapted to swing into the path of the cage to stop the descent of the latter, substantially as shown and described.

2. A safety device for elevators, comprising a bolt adapted to be actuated from the cable pulley, a chain adapted to be supported on the said bolt, a series of pivoted blocks connected with each other by the said chain and adapted to swing into the path of the cage to stop the descent of the latter, and intermediate mechanism, substantially

as described, for connecting the said bolt with the cable pulley, as set forth.

3. A safety device for elevators, comprising an arm hung on the shaft of the cable pulley, a bolt mounted to slide, an intermediate mechanism for connecting the said bolt with the said arm, a chain supported on the said bolt, and a series of pivoted blocks adapted to be engaged by the said chain, the said blocks being adapted to swing into the path of the elevator cage, to stop the descent of the latter whenever the said bolt is withdrawn and the chain released, substantially as shown and described.



4. In a safety device for elevators, the combination with a cage provided with lugs, a cable for supporting the cage, and a cable pulley journaled in spring-pressed bearings, of a series of blocks mounted to swing and located one above the other, a chain for connecting the blocks with each other, a bolt for supporting the said chain, and an intermediate mechanism for connecting the said bolt with the said cable pulley, to withdraw the said bolt whenever the pulley slides inward, substantially as shown and described.

5. In a safety device for elevators, the combination with a cage provided with lugs, and a guide arranged in the elevator shaft and into which the lugs on the cage project, of angular blocks pivoted in the guide, a chain with which the blocks are connected a support for the chain, and means for releasing the said support from the chain to allow the blocks to drop into the path of the lugs on the cage, substantially as described.

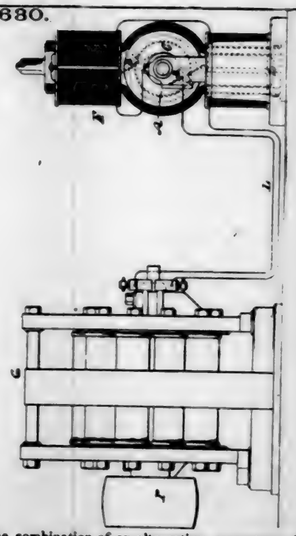
6. In a safety attachment for elevators the combination with a cage provided with lugs, and a guide arranged in the elevator shaft and into which the lugs on the case project, of angular blocks pivoted in the guide, a chain with which the blocks engage, a spring pressed bolt for supporting the chain, and means for releasing the bolt from the chain to allow the blocks to drop into the path of the lugs of the cage, substantially as herein shown and described.

**504,680. METHOD OF OPERATING ELECTRIC MOTORS BY ALTERNATING CURRENTS.** ALEXANDER SIEMENS, London, England, assignor to Siemens & Halske, Berlin, Germany. Filed Oct. 21, 1890. Serial No. 368,860. (No model.)

*Claim.*—1. The method of producing mechanical motion from electrical energy, which consists in generating an alternating current, transmitting it to a local point of consumption, and there producing in a motive device a succession of alternating polarities in the respective elements of the said device, so as to maintain their relation the same although their absolute polarities change.

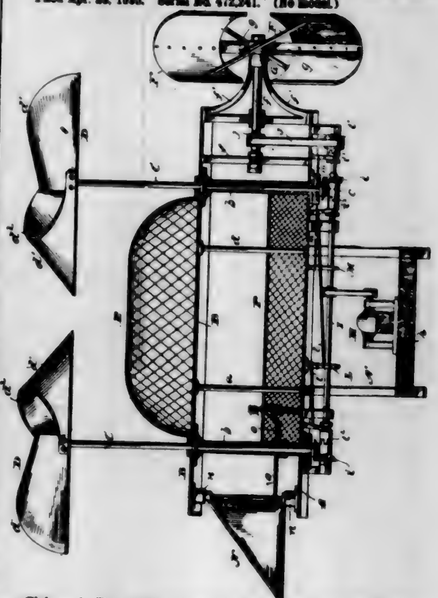
2. The method of producing mechanical motion from electrical energy, which consists in producing in one element of a motive device, a field of alternating polarity, and producing a successive advancing field of alternating polarity in the other element of the motive device; and causing the polarities to so succeed each other that their relative polarities remain unchanged.

**504,680.**



3. The combination of an alternating generator, a line circuit extending therefrom, a self-starting motive device connected to said line circuit, having one of its elements excited by an uncommutated current, and the other of its elements excited by a commutated current, substantially as described.

**504,681. FLYING-MACHINE.** EMORY B. SOWERS, Westville, Ohio. Filed Apr. 28, 1893. Serial No. 472,241. (No model.)



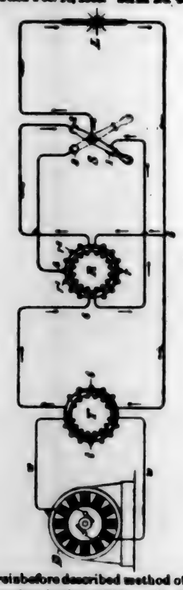
*Claim.*—1. The combination with the car and its balloon, of the lifting wheels arranged one near each end of the car and wholly above the balloon, substantially as specified.

2. The combination with the car and its balloon, of the lifting wheels arranged one at the front and the other at the rear in the line of the longitudinal center of the machine and wholly above the balloon on independent shafts mounted for rotation in opposite directions, substantially as specified.



3. The combination with the car having a compartment suspended from the floor thereof and having a false bottom, of a motor supported upon said false bottom, the balloon, the propelling wheel, the lifting wheels located wholly above the balloon, and connections from the motor to the shafts of said wheels whereby they may be operated together or separately, as set forth.

**504,682. ELECTRIC-ARC-LIGHTING SYSTEM.** THOMAS SPENCER, Philadelphia, Pa. Filed Feb. 16, 1893. Serial No. 462,826. (No model.)



*Claim.*—1. The hereinbefore described method of lighting an electric arc-lamp, which consists in the initial application thereto of a current having a potential in excess of the potential of the ordinary working current of the lamp.

2. The hereinbefore described method of lighting an electric arc-lamp, which consists in the initial application thereto of an alternating current having a potential in excess of the potential of the ordinary working current of the lamp.

3. The hereinbefore described method of lighting an electric arc-lamp, which consists in temporarily withdrawing from the lamp-circuit a portion of the resistance encountered by the current during the normal operation of the lamp, in order to increase the potential between the lamp terminals at the moment of lighting.

4. The hereinbefore described method of lighting an electric arc-lamp, which consists in temporarily diminishing the counter-electromotive force in the lamp circuit and thus creating an excess of potential between the lamp terminals at the moment of lighting.

5. The hereinbefore described method of lighting an electric arc-lamp, which consists in temporarily decreasing the length of that portion of the lamp circuit which is under the opposing inductive influence of the iron core of the transformer, whereby an excess of potential is created between the terminals of the lamp at the moment of lighting.

6. The combination with an electric arc-lamp, of a transformer having its secondary winding in two sections, and a switch whereby said lamp may be included in circuit either with one or with both of said sections, as and for the purpose set forth.

7. The combination with an electric arc-lamp, of a transformer having a primary winding and a secondary winding made in two sections, and a switch whereby said lamp may be included in circuit with the primary and with both sections of the secondary windings, or may be detached from said primary and one of said secondary windings, as and for the purpose set forth.

8. The combination with an electric arc-lamp of a transformer having a primary winding and a secondary winding made in two sections, and a three-point switch whereby said lamp be included in circuit with the primary and with both sections of the secondary windings, or detached from said primary and from one of said secondary windings, or detached from all of said windings, as and for the purpose set forth.

**504,683. BICYCLE.** OLAND W. SQUIRES, New York, N. Y. Filed Mar. 23, 1893. Serial No. 467,360. (No model.)



*Claim.*—1. The combination with the steering post of a bicycle, of a handle-bar pivoted at or near its center to the post by a pivot pin or bolt arranged horizontally in a plane at right angles to the longitudinal plane of the handle for swinging the latter in a vertical plane to one side of the steering post to enable the bicycle to pass through narrow passages, substantially as described.

2. In a bicycle, the combination with a steering post, of a handle-bar pivoted to the steering post to swing in a vertical plane to a position beside the steering post, and a brake lever fulcrumed on and swinging in a vertical plane with the handle bar, substantially as described.

3. In a bicycle the rigid steering handle or bar jointed at about its center to the steering post, a brake lever fulcrumed on said handle and a brake rod connected to the brake lever by a joint placed in alignment with the joint of the handle substantially as described.

**504,684. SAFETY-PIN.** CHARLES E. STEVENS, Hill City, S. D. Filed Dec. 24, 1892. Serial No. 456,276. (No model.)



*Claim.*—A safety pin, consisting of a pin having a loop B, at one end, and a point at the other end, an elastic band passed through said loop, and a shield, consisting of a thin plate of metal, the sides of one end of which are bent together to form a hollow cone E, into which the pointed end of the pin is adapted to pass while the sides of the other end of the said plate are bent backward on the opposite surface over which the cone E is situated to form a clamp in which the ends of the elastic band are secured, the said part of the shield in which the ends of the band are secured being below the level of the hollow cone, substantially as described.

**504,685. FIRE-GRATE.** ABRAHAM STROH, Freeland, Pa. Filed Mar. 23, 1893. Serial No. 467,290. (No model.)



*Claim.*—1. In a grate, the combination with the end supports, and the stationary skid bars having top portions formed with lateral members, of rider bars held between the skid bars having top portions formed with lateral members, overlapping the lateral members of the stationary or skid bars, said riders held for longitudinal movement between such skid bars and means for moving such rider bars longitudinally, whereby to increase or diminish the air spaces between the lateral members of such skid rider bars, substantially as and for the purpose set forth.

2. An improved grate, formed in sections, each section comprising a series of stationary bars, each formed with a central ridge or tongue on its upper face and lateral downwardly inclined fingers, a series of movable bars, arranged intermediate the stationary bars formed with lateral fingers having upwardly inclined lateral fingers held to overlap the stationary fingers, their ends being disposed adjacent the central ridge on the stationary bars and means for reciprocating the said movable bars longitudinally as and for the purpose described.

3. In a grate, the combination with the end supports C and D and the bars A held stationary on the said supports, of the rider bars B having their top portion held to overlap the stationary bars A, and held for longitudinal movement on the said supports, and means for reciprocating such rider bars as and for the purpose described.

4. In a stove grate, the combination with the end supports, and

the central support, of the skid bars formed of one or more sections, detachably held on such supports and from longitudinal and lateral movement, said skids having tops formed with lateral fingers having their upper face inclined downward and the intermediate or rider bars having their tops formed of lateral members inclined on their under face and held to overlap the members of the skid bars and means for reciprocating such rider bars, all arranged substantially as shown and described

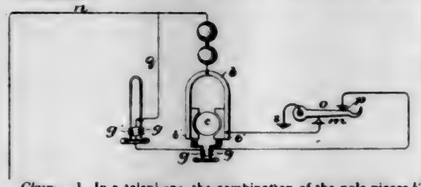
5 In a grate, the combination with the supports C D and E, and the skid bars A, arranged substantially as shown, of the rider bars B held intermediate the skid bars with their lateral fingers overlapping the top of the skid bars, said rider bars formed each of two members having seats or recesses in their under faces at their end, hook members fitting such recesses, held upon the supports C D and E and forming riding bearings for such rider bars, and means for reciprocating such rider bars as and for the purposes described

6 The combination with the supports C D, the skid bars A, formed each of a central longitudinal shank, lateral fingers $f^3$ at the top, and downwardly projecting guide flanges $a^3$ at their ends, of the rider bars B having detachable hook members at their ends, held on the supports C D to form rider bearings said hook members, held between the flanges $a^3$ of the bars A, and means for reciprocating the rider bars B all substantially as shown and described

7 The combination with the supports C D and the skid bars A, A arranged substantially as shown, of the rider bars F held between the bars A to be reciprocated and adjusted longitudinally, said bars F having lateral fingers $f^5$, and transverse notches between such fingers, on the top face and means for reciprocating such bars, all substantially as and for the purposes described

8 An improved grate, consisting of the stationary bars A, detachably held on their supports, said bars having lateral downwardly inclined fingers $a^5$, the rider bars F, formed in pairs, and arranged intermediate the bars A, their top portions formed of lateral fingers $f^5$ having upwardly inclined under faces held to overlap the fingers $a^3$, connecting hooks detachably joined at their inner ends to the rider bars, their outer ends projected beyond the grate supporting frame, a rocking lever connecting such free ends and means for rocking such lever, all arranged substantially as and for the purposes described

## 504,636. TELEPHONE APPARATUS. ALFRED STROMBERG and ANDREW CARLSON, Chicago, Ill. Filed Apr. 3, 1893. Serial No. 468,849. (No model.)



*Claim.*—1 In a telephone, the combination of the pole pieces *b' b'* with the extensions *f f*, the angular pieces of iron *f' f'* attached thereto, the helices *g g* surrounding the ends of said angular pieces, and the diaphragm A adapted to vibrate in proximity to said angular pieces of iron, substantially as described.

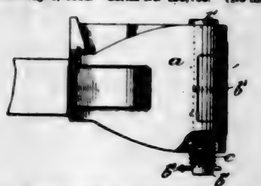
2 In a telephone, the combination with a magneto generator, of extensions from the poles thereof, the ends of said extensions being placed in proximity, a diaphragm opposite the ends of said extensions, and coils mounted upon said extensions, said coils being connected together in series, whereby the permanent mechanism of the magneto generator is utilized in producing voice currents and the voltage of said currents is the result of the added effect of the two coils, substantially as described.

3 In a telephone apparatus, the combination with a magneto generator, of soft iron extensions of the poles thereof, the ends of said extensions being brought into close proximity, a diaphragm opposite the ends of said extensions, and coils provided upon said extensions; whereby a completed magnetic field of minimum reluctance is provided for the telephone, the same being in shunt with the magnetic field of the generator, substantially as described.

4 In a telephone receiver, the combination with a diaphragm, of an electro-magnet having its ends brought into proximity to said diaphragm, a coil surrounding each of the limbs of said magnet, said coils being connected in circuit in parallel, whereby both coils exert their maximum influence upon the diaphragm at the same time, substantially as described

5 In a magneto telephone receiver, the combination with a plurality of magnetic cores having their ends placed in proximity and opposed to a common diaphragm, of coils surrounding said magnetic cores and connected in multiple in such a manner that no two of said coils may be included in series, substantially as described.

## 504,637. CAR COUPLING. CHARLES H. TAYLOR, South Orange, N. J. Filed July 2, 1892. Serial No. 438,795. (No model.)



*Claim.*—1 In a car-coupler, the combination with a draw-head, of a hook or knuckle hinged thereto provided with an arm projecting beyond the exterior of said draw-head, a plate or disk having an adjustable connection with said arm, and a spring having connection with said adjustable plate or disk to rotate the same and the connecting hook or knuckle, substantially as described and for the purpose set forth.

2 In a car-coupler, the combination with the draw-head, of a hook or knuckle hinged thereto provided with an arm or pivot-pin having a flange or disk thereon, and a spring having an adjustable connection at one end with said flange or disk, substantially as described and for the purpose set forth

3 In a car-coupler, the combination with the draw-head, of a hook or knuckle hinged thereto provided with an arm or pivot-pin having one end projecting beyond the exterior of the draw-head and provided with a flange or disk thereon having a series of openings therein, and a spring having adjustable connection with said flange or disk through the medium of the openings therein, substantially as described and for the purpose set forth

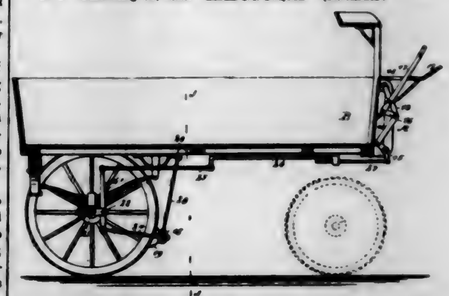
## 504,638. WIRE-SPLICER. JOHN D. THOMAS, Scranton, Pa. Filed Apr. 21, 1893. Serial No. 471,296. (No model.)



*Claim*—1 A wire splicer, formed of a tube furnished with apertures for receiving dogs, and a series of dogs consisting of serrated wedges, substantially as specified

2 A wire splicer, formed of a spindle-shaped tube furnished with apertures in the side thereof, and serrated wedges or dogs fitted to the apertures and adapted to engage the wire inserted in the spindle-shaped tube, substantially as specified

## 504,639. WAGON-BRAKE. JAMES VANDERVEER, Middle Village, N. Y. Filed May 17, 1893. Serial No. 474,552. (No model.)



*Claim.*—1. In a vehicle brake, the combination with a brake lever, of toggle levers, one of which is pivotally connected with the brake lever, a link pivoted to the toggle levers at their junction, and a pivoted hand or foot lever to which the link is pivoted, substantially as described

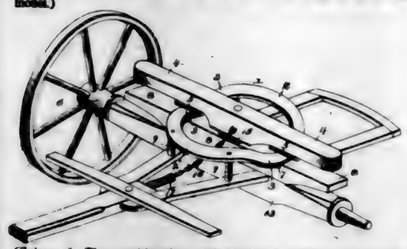
2. In a brake, the combination, with a casing, toggle levers located within the casing, one of the levers being pivotally connected therewith, and a brake lever pivotally connected with the other toggle, of a hand or foot lever fulcrumed within the casing, and a link connection between the said hand or foot lever and the pivotal connection of the toggle levers, as and for the purpose specified.



3. In a brake, the combination, with a brake bar, and a shifting lever fulcrumed upon the axle and connected with the brake bar, of a brake apparatus comprising a casing, a set of toggle levers, one of the levers being pivoted in the casing, a brake lever pivotally connected with the opposite toggle lever, a connection between the shifting lever and brake lever, a head or foot lever pivoted between its center and inner end within the casing, and a link connection between the inner or shorter end of the brake or hand lever and the toggle levers at their point of juncture, as and for the purpose specified.

4. In a vehicle brake, the combination with a shifting lever, a brake bar pivotally connected therewith, a brake lever, and a lever mechanism for operating the brake lever, of a connecting bar, a link pivoted to the shifting lever and to the connecting bar, and a rod pivotally connected with the brake lever and adjustably connected with the connecting rod, substantially as herein shown and described.

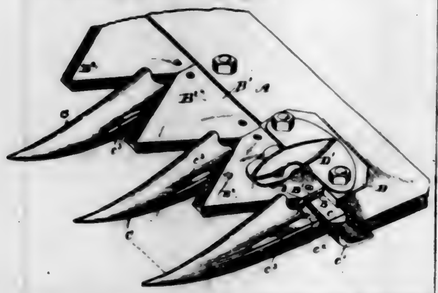
## 504,640. FIFTH-WHEEL. EDWARD V. WAGNER and SAMUEL H. PERQUITE, Urbana, Ohio. Filed Mar. 30, 1893. Serial No. 468,331. (No model.)



*Claim.*—1. The combination with the front portion of a running gear, of a circular fifth wheel having raised front and rear portions and oppositely inclined side portions and secured to the sand board and provided with depending flanges arranged on opposite sides of the sand board, the vertical supporting posts mounted on the front hounds and arranged beneath the front and rear portion of the fifth wheel, and a bolster pivotally mounted on the axle and provided with rollers arranged on its lower face and bearing on the fifth wheel, substantially as described.

2. The combination with the front portion of a vehicle, of the circular fifth wheel having raised front and rear portions and oppositely inclined side portions, a bolster having a king bolt loosely pivoted to the front axle and provided with rollers arranged on the fifth wheel, and a yielding stay chain provided with a spiral spring and connected with the bolster, substantially as described.

## 504,641. CUTTING APPARATUS FOR MOWING AND HARVESTING MACHINERY. PIERSON T. WALTON, Sutton, Nebr. Filed Mar. 25, 1893. Serial No. 467,591. (No model.)



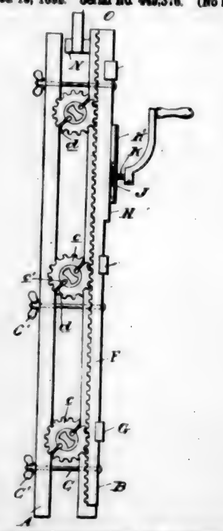
*Claim.*—1. A guard or series of guards having laterally extended wings that form the front and bottom of a cutter bar race and leave a rearward opening, between the said guards substantially as described.

2. The combination of the cutter bar with the finger bar and with guards having lateral extensions that form a race in which the said cutter bar may move, said space having openings between the said guards in a rearward direction, beneath the said finger bar, substantially as described.

3. The combination of a finger bar, guards, cutter bar and sections, the said sections and said guards tongued and grooved, substantially as described.

4. In a cutting apparatus a knife consisting of sections secured to a knife-back, the rear part of said sections made thinner than the front parts of said sections and thus when secured to said knife-back adapted to form a groove in combination with a guard having a tongue entering the same, substantially as described.

## 504,642. FENCE-MACHINE. ISAAC M. WARNER, Bronson, assignor of one-half to John D. Hagerman and Clyde Hagerman, Oxford, Mich. Filed Oct. 19, 1892. Serial No. 449,376. (No model.)

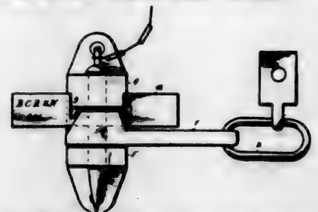


*Claim.*—1. In a picket fence machine, the combination of a frame comprising two like standards, complementary half boxes on each, twister wheels journaled in said boxes, forming the spacing blocks between the standards, with a take up between the boxes, and clamping bolts extending across the standards having nuts for clamping the boxes, substantially as described.

2. In a picket fence machine, the combination of a frame comprising two like standards, complementary half boxes on each standard, countersunk screws extending from centrally of the bearing in each box into the standard, twister wheels journaled in said boxes, forming the spacing blocks between the standards, with a take up between the boxes, and clamping bolts extending across the standards having winged nuts for clamping the boxes upon the wheels, substantially as described.

3. In a picket fence machine, the combination of a frame comprising two like standards, complementary half boxes on each standard twister wheels journaled in said boxes forming spacing blocks between the standards with a take up between the boxes and having drive gear wheels formed thereon, a rack bar engaging all the gear wheels, hook guide plates forming guides for the rack bar, an offset portion on the rack bar, a second rack bar at right angles to the first formed in said offset portion beside the standard, a drive pinion engaging said rack, and a crank for actuating said pinion, substantially as described.

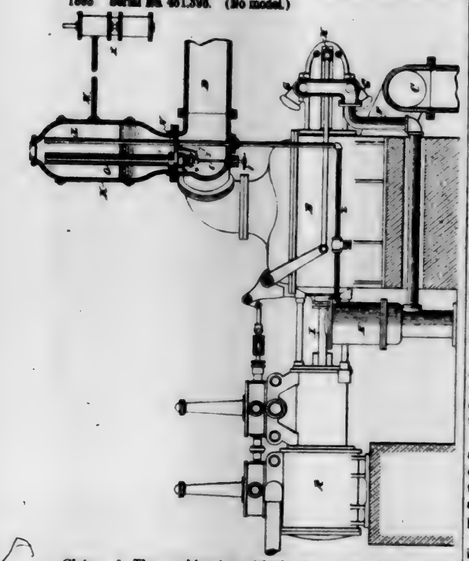
## 504,643. SEAL-LOCK. ORSON E. WHEATON, Grundy Centre, Iowa. Filed Mar. 21, 1893. Serial No. 467,083. (No model.)



*Claim.*—In a seal-lock, the combination with a hasp provided on its shank with a link extension and having on its swinging end an enlargement forming a shoulder and a sloped face as shown; of a lock-

plate having forwardly extending lugs with intermediate recesses and a projecting lip adapted to receive the corresponding shoulder and sleeved face of the hasp; a vertical opening extending through the lugs and hasp to receive a locking-pin provided with jaws to admit and retain the seal formed as shown, all constructed and arranged substantially as and for the purpose herein set forth.

## 504,644. DIRECT-ACTING PUMPING-ENGINE. CHARLES C. WORTHINGTON, Irvington, N. Y. Filed June 9, 1892. Renewed Feb. 7, 1893. Serial No. 461,396. (No model.)



*Claim.*—1. The combination with the force main of a pumping engine and a compensating cylinder or cylinders deriving pressure from the force main and having a constant connection with the force main to permit the gradual transfer of pressure between the force main and compensating cylinder or cylinders of a valve controlled by the pressure on opposite sides of said constant connection and normally closed when said pressures are the same, the pressure on the force main side tending to close the valve, said valve being constructed and arranged to relieve the pressure in the compensating cylinder or cylinders when opened, substantially as described.

2. The combination with the force main of a pumping engine and a compensating cylinder or cylinders deriving pressure from the force main, of an air chamber between the force main and compensating cylinders having a constant connection with the force to permit the gradual passage of water between the air chamber and force main, and a normally closed valve constructed and arranged to relieve the pressure in the air chamber when opened and controlled by the pressures in the force main and air chamber, the pressure in the force main tending to open the valve, substantially as described.

3. The combination with the force main of a pumping engine and a compensating cylinder or cylinders deriving pressure from the force main, of an air chamber between the force main and compensating cylinders having a constant connection with the force main to permit the gradual passage of water between the air chamber and force main, a valve permitting the escape of fluid from the air chamber when opened and controlled by the pressures in the force main and air chamber, the pressure in the force main tending to close the valve, and adjustable pressure devices tending to close the valve, substantially as described.

4. The combination with the force main of a pumping engine and a compensating cylinder or cylinders deriving pressure from the force main, of an air chamber between the force main and compensating cylinders having a constant connection with the force main to permit the gradual passage of water between the air chamber and force main, a check valve between the force main and air chamber opening toward the force main and normally closed when the pressures in the force main and air chamber are the same, substantially as described.

5. The combination with the force main of a pumping engine and a compensating cylinder or cylinders deriving pressure from the force main, of an air chamber between the force main and compensating cylinders having a constant connection with the force main to permit the gradual passage of water between the air chamber and force main, a check valve between the force main and air chamber opening toward the force main, and pressure devices tending to close the valve, substantially as described.

6. The combination with the force main of a pumping engine and a compensating cylinder or cylinders deriving pressure from the force main, of an air chamber between the force main and compensating cylinders having a constant connection with the force main to permit the gradual passage of water between the air chamber and force main, and a check valve between the force main and air chamber opening toward the force main, and adjustable pressure devices tending to close the valve, substantially as described.

7. The combination with the force main of a pumping engine and a compensating cylinder or cylinders deriving pressure from the force main, of an air chamber between the force main and compensating cylinders having a constant connection with the force main to permit the gradual passage of water between the air chamber and force main, a check valve between the force main and air chamber opening toward the force main, and adjustable pressure devices tending to close the valve, substantially as described.

8. The combination with the force main of a pumping engine and a compensating cylinder or cylinders deriving pressure from the force main, of an air chamber having a constant connection with said main to allow the gradual passage of water, and a check valve controlling a larger connection between the main and air chamber and opening toward the main, substantially as described.

9. The combination with the force main of a pumping engine, of an air chamber on said main having an escape for the air independent of the escape of all the water in the air chamber, and a valve controlling said escape and closed by the pressure in the force main against an opposing pressure, whereby the escape is opened upon a fall of pressure in the force main, substantially as described.

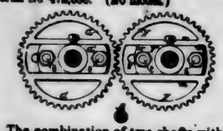
10. The combination with the force main of a pumping engine, of an air chamber on said main having an escape for the air independent of the escape of all the water in the air chamber, and a valve controlling said escape and closed by the pressure in the force main against an opposing pressure, whereby the escape is opened upon a fall of pressure in the force main, substantially as described.

11. The combination with force main D, of an air chamber having a constant connection with said main to allow the gradual passage of water, pipe O extending into the air chamber from the main, and normally closed check valve 3 closing said pipe and opening toward the main, substantially as described.

12. The combination with force main D, of an air chamber having a constant connection with said main to allow the gradual passage of water, pipe O extending into the air chamber from the force main and having openings 1 inside the air chamber, and normally closed check valve 3 closing said pipe and opening toward the main, substantially as described.

13. The combination with force main D, of an air chamber having a constant connection with said main to allow the gradual passage of water, pipe O extending into the air chamber from the force main and having openings 1 inside the air chamber, normally closed check valve 3 closing said pipe and opening toward the main, and means for adjusting the closing tension upon said valve, substantially as described.

## 504,645. GEARING. JOHN ZIMMERMAN, Philadelphia, Pa., assignor to William W. Altemus and Jacob K. Altemus, same place. Filed Apr. 27, 1893. Serial No. 472,056. (No model.)



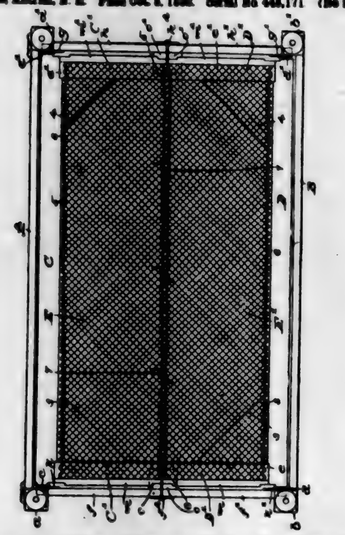
*Claim.*—1. The combination of two shafts with a pair of adjustable eccentric spur wheels each comprising a hub portion secured to the shaft, a toothed portion adjustable radially on said hub portion, and means for securing the toothed and hub portions of the wheel together after adjustment, substantially as specified.

2. The combination of a uniformly rotated driving shaft, a pair of countershafts, gearing whereby one of said countershafts is uniformly driven from said driving shaft, and a pair of eccentric spur gears, one mounted upon each of said countershafts, and each adjustable in respect to its shaft so as to vary the extent of its eccentricity, substantially as specified.

3. The combination of a uniformly rotated driving shaft, a shaft to be differentially rotated, a pair of countershafts, gearing whereby one of said countershafts is uniformly rotated from the driving shaft, a pair of eccentric spur gears connecting said countershafts, and each adjustable so as to vary its eccentricity, and gearing whereby the second countershaft is connected to the shaft which is to be differentially driven, substantially as specified.



## 504,646. FOLDING CRIB. JOHN G. ABBOTT and SAMUEL B. ROBINSON, Antrim, N. H. Filed Oct. 8, 1892. Serial No. 448,171. (No model.)



*Claim.*—1. A folding crib having rigid side rails, and hinged head and foot boards, and supports secured to said head and foot boards, combined with a two-part bottom composed of C-shaped frames, each frame being pivotally supported adjacent to one of the side rails, diagonal braces for the end arms of the frames, and an independent wire-fabric bottom-section suspended from the end arms of each frame, said arms resting on the supports when the crib is extended, substantially as described.

2. A folding crib having rigid side-rails, and hinged head and foot boards, and supports secured to said head and foot boards, combined with a two-part bottom composed of C-shaped frames, each frame being pivotally supported adjacent to one of the side rails, diagonal braces for the end arms of the frames, an independent wire-fabric bottom-section suspended from the end arms of each frame, said arms resting on the supports when the crib is extended, and detachable fasteners to connect the adjacent free longitudinal edges of said sections, substantially as described.

## 504,647. DISHCLOTH-HOLDER. CLARA ABELL, Baldwinsville, N. Y. Filed Mar. 13, 1893. Serial No. 465,767. (No model.)

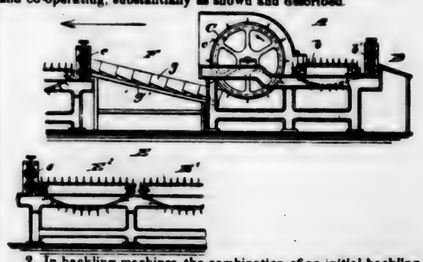


*Claim.*—The within described implement, constructed of an elongated wire frame *b*, a backing *d*, a spring coil or double loop *c* at one end of the frame, and hooks *g* at the opposite end, substantially as and for the purposes specified.

## 504,648. MACHINE FOR HACKLING AND PREPARING FIBERS. THEODORE B. ALLEN, Brooklyn, N. Y. Filed Sept. 19, 1892. Serial No. 446,285. (No model.)

*Brief.*—The fiber is fed through rolls *b'*, and is acted on successively by combing-belt *b*, combing-cylinder C, and chains E' and E². The cylinder C has greater surface speed than belt *b*, and the chain E² has greater speed than chain E'. Between cylinder C and chain E' is the pair of feed-rolls *e* and also the table F, whose sectional shape is indicated in Fig. 3.

*Claim.*—1. In hackling machines, the combination of an initial hackling mechanism comprising a combing cylinder and a combing belt or chain forming the feed for the cylinder, and a final hackling and combing mechanism beyond the cylinder, consisting of a drawing frame comprising differentially moving combing chains, that take up and finish the material thrown off from the cylinder, all combined and co-operating, substantially as shown and described.



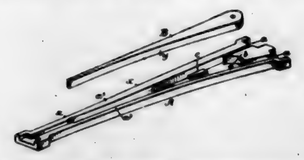
2. In hackling machines, the combination of an initial hackling mechanism, comprising a combing cylinder and a combing chain forming a feed for the cylinder and having its upper side or part moving toward the latter, and a final hackling and combing mechanism beyond the combing cylinder, consisting of a drawing frame comprising differentially moving combing chains or belts, all arranged, substantially as shown and described.

3. In hackling machines, the combination of an initial hackling mechanism, comprising a combing cylinder and a combing chain or belt forming a feed for the cylinder, a final hackling mechanism beyond the cylinder, consisting of a drawing frame comprising differentially moving combing chains or belts, and a receiving table interposed between the cylinder and drawing frame, for receiving the material thrown off from the cylinder, substantially as described.

4. In a machine for hackling and preparing fiber, a receiving chute leading to and in combination with drawing frames, the said chute being made up of overlapping sections, the overlapping ends being spaced vertically, substantially as described.

5. In a machine for hackling and preparing fibers, a receiving chute leading to and in combination with a drawing frame, the said chute being inclined and made up of overlapping sections, the overlapping ends being spaced vertically and forming openings, substantially as described.

## 504,649. RAILWAY-SWITCH. VICTOR ADDERER, Philadelphia, Pa., assignor to the William Wharton, Jr., & Company, Incorporated same place. Filed Jan. 5, 1893. Serial No. 457,202. (No model.)



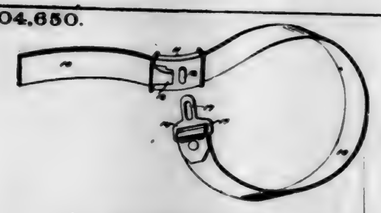
*Claim.*—1. The combination in a movable tongue switch, of the tongue pivoted in said switch and having a side support at the opposite end of said tongue, and a stop situated alongside of the tongue between the pivot point and said support adapted to resist the side thrust of the wheels and limit the bending of the tongue, substantially as described.

2. The combination, in a movable tongue switch, of the pivoted tongue, a bearing for the outer end of the tongue and a stop situated alongside of the tongue between the bearing point and the pivot, said stops forming part of the switch and adapted to resist the side thrust of the wheels, substantially as described.

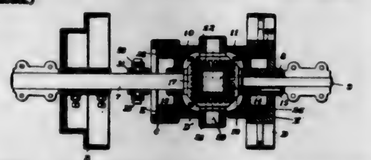
## 504,650. HALTER-HITCH. RICHARD H. BAKER, St. Louis, Mo. Filed Feb. 1, 1893. Serial No. 460,573. (No model.)

*Claim.*—As an improved article of manufacture a halter hitch, consisting of a strap, a link secured to the free end of the strap and provided with a projecting loop, and a sleeve fitting loosely on the strap and provided with a headed stud or button at or about its center and with an undercut projection or tongue at one end opposite the stud or button, as set forth.

504,650.



504,651. REVERSING DRIVING MECHANISM. HERBERT G. BAKER, Hartford, Conn. Filed Apr. 7, 1893. Serial No. 469,426. (No model.)



*Claim.*—1. In a mechanism of the class specified, the combination with the driving and driven-shaft and with the resistance-bearing, of the gear-frame intermediate to said bearing and driven-shaft, a gear secured to each of said shafts and one or more intermediate gears in mesh with the driving and driven-shaft gears carried by said gear-frame with the axes thereof transverse with the axes of the driving and driven-shaft gears, clutches adapted for locking and unlocking said gear-frame with and from the resistance-bearing and the driven-shaft, respectively, a clutch-actuating-bar carried in the gear-frame and connecting with a collar concentric with the axis of the shaft and means for actuating said clutch-bar by connection with said collar, substantially as described.

2. In a mechanism of the class specified, the combination of a driven-wheel revolubly supported substantially as described, a driving-shaft, a gear on the driving-shaft, a gear connected with the driven-wheel, a gear-carrier revolubly supported and carrying an intermediate gear connecting said driving and driven gears with its axis transversely disposed with relation to the axes of the driving and driven-gears, and two clutches constructed and arranged for alternate operation and adapted for locking and unlocking the revoluble gear-carrier with and from the driven-wheel and the fixed bearing successively, substantially as described.

3. In a reversing-driving-mechanism, the combination with the driving and driven-shaft, each having a gear thereon, of a gear-frame journaled on the said shaft and constructed in two parts, an intermediate-gear connecting said shaft gear and carried by said gear-frame with its axis transverse to the axes of said shaft gears, an intermediate-gear-carrying-stud journaled between the two parts of said gear-frame transverse to the axis of rotation thereof, and means for holding together the two parts of said frame, substantially as described.

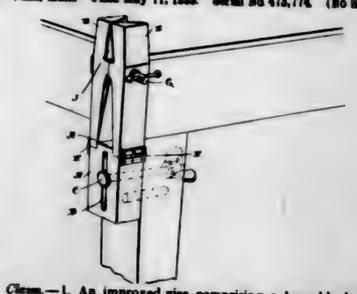
4. In a reversing gearing, the combination with the driving-shaft and its gear, and with the driven-shaft and its gear, of the gear-casing journaled on said shafts and constructed in two parts connected together substantially as described, the transverse intermediate gear stud journaled in bearings between said gear-casing parts and having a bearing on one of said shafts, and an intermediate gear carried on said transverse stud and connecting the gears of said shafts, substantially as described.

5. In a reversing gearing, the combination with the driving-shaft and the driven-shaft each having a gear thereon, of the revoluble frame carrying a gear connecting said shaft-gears and having in one side thereof a longitudinal way for a clutch-rod, a fixed resistance-bearing, a clutch intermediate to said gear-carrier and said bearing, and a clutch intermediate to the driven-shaft and said gear-carrier, said clutch-rod being adapted for operating said clutches, substantially as described.

6. The herein described reversing-driving-mechanism, consisting, essentially, of a frame-work having the journal-bearings 4, 5, and a cylindrical resistance-bearing 6, the driven and driving-shafts supported in the journals 4 and 5, respectively, the driving wheel carried by the driving-shaft and having the friction rim 28, a gear-casing revolubly supported at its ends upon said shafts within the rim of the driving-wheel and within the resistance-bearing 6, driving and driven gears located within said gear-casing and connected with the driving and driven shafts, substantially as described, expansible rings located at each end of the gear-casing and intermediate to said casing and the resistance-bearing, and the casing and friction-rim of the driving-wheel, a clutch-bar carried by and rotating with said gear-casing and having wedges located in position and adapted for expanding the clutch rings alternately by the longitudinal shifting movements of said clutch-rod, and means for shifting said clutch-rod, substantially as described.

7. In a reversing-driving-mechanism, a driven-shaft supported in journals at its either end, a driving-shaft revolubly supported upon said driven-shaft, a driving-wheel secured to the driving-shaft and having an annular friction flange, substantially as described, and a fixed cylindrical resistance-bearing, in combination with a gear-casing or drum revolubly mounted upon the driving and driven shafts and having an annular flange at each end extended within the rim of the driving-wheel and rim of the resistance-bearing; two oppositely and remotely disposed bevel-gears, one of which is secured to the driven-shaft within the gear-casing, one or more intermediate bevel-gears in mesh with the driving and driven gears and revolubly mounted upon studs secured to the gear-casing with the axis or axes thereof transverse to the axes of the driving and driven gears, and a friction-clutch-mechanism carried by the gear-casing intermediate to said gear-casing and driving wheels and resistance-bearing, and so constructed as to lock the gear-casing with relation either to the driving-wheel or fixed resistance-bearing, substantially in the manner and for the purpose described.

504,652. VISE AND BENCH-HOOK. ELON G. BAILEY, Redwood Falls, Minn. Filed May 11, 1893. Serial No. 473,774. (No model.)



*Claim.*—1. An improved vise comprising a base block having transverse gains on opposite sides of its upper end, upright jaws hinged at their lower ends in said gains, and a screw for connecting the upper end of the jaws, substantially as shown and described.

2. An improved vise comprising a longitudinally slotted base block, a clamping bolt projected therethrough, upright jaws hinged to opposite sides of the upper end of the block, and a clamping screw connecting the jaws, substantially as shown and described.

3. An improved vise comprising movable jaws, a screw for connecting them, the inner sides of the jaws being beveled outward in diverging lines to their front faces, and their rear inner sides also beveled downward in diverging lines, substantially as shown and described.

4. An improved vise comprising a base block, jaws hinged at their lower ends thereto, a screw connecting the upper portion of the jaws, and converging surfaces formed upon the inner sides of the jaws, for the purpose substantially as shown and described.

5. An improved vise comprising two jaws a screw for connecting them, the adjacent sides of the jaws being beveled outward, substantially as shown and described.

6. An improved vise comprising two jaws, a screw for connecting them, a recess formed between the clamping surfaces of the jaws, and beveled surfaces formed on the adjacent faces of the jaws, which surfaces extend outward to the edges of the jaws but in diverging lines, substantially as shown and described.

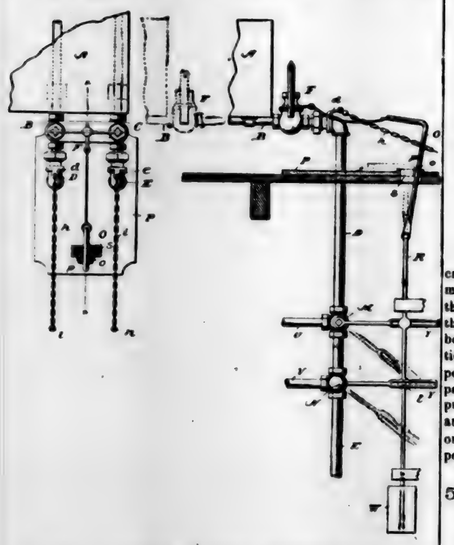
504,653. DOOR-SECURER. JOHN H. BRALL, Jacksonville, Ill., assignor of one-half to James W. Miller, same place. Filed Apr. 13, 1893. Serial No. 470,163. (No model.)



*Claim.*—A door fastener comprising a U-shaped bar, a catch hinged to the bar, and a hook, pivoted to the bar in front of the catch, formed with a point, adapted, when the hook is folded, to fit against the bar in rear of the catch, said hook being provided with an extension with which the catch is adapted to engage when in operative position; substantially as described.



504,654. CUT-OFF FOR STEAM FIRE-ENGINES. CHARLES E. BENNIS, New York, N. Y. Filed Apr. 27, 1892. Serial No. 430,854. (No model.)



*Claim.*—1. In a cut-off for steam fire engines, steam pipes attached to the engine, a spring valve controlling the said steam pipe and also attached to the engine, the controlling portion of the said spring valve being attached to a device in the engine-house, as and for the purpose set forth.

2. In a cut-off for steam fire engines, steam pipes attached to the engine, a spring valve controlling the said steam pipes and also attached to the engine, a retaining device controlling the operation of the said spring valve, the said retaining device being attached to a support remaining in the engine-house, as and for the purpose set forth.

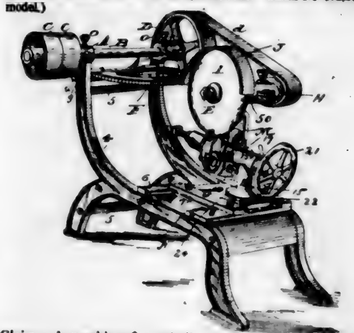
3. In a cut-off for steam fire engines, steam pipes attached to the engine, a spring valve controlling the said steam pipes and also attached to the engine, stationary pipes located permanently in the engine house and connected with the steam pipes on the engine, valves in the said stationary steam pipes, and a flexible connection between the said spring valves and the said valves in the stationary pipes, whereby on the moving of the engine, both sets of valves are operated, as and for the purpose set forth.

4. In a cut-off for steam fire engines, steam pipes attached to the engine, a spring valve controlling the said steam pipes and also attached to the engine, stationary pipes located permanently in the engine house and connected with the steam pipes on the engine, valves in the said stationary steam pipes, a pin controlling the action of the said spring valve and a link provided with a weight controlling the action of the said valves in the stationary pipes, the said pin and the said link being connected together, as and for the purpose set forth.

5. In a steam cut-off, a pair of steam pipes constituting the outgoing and return connections of a stationary boiler, and adapted to be connected with the movable pipes attached to and adapted to supply steam and water from the stationary boiler to the boiler of a fire engine, of a pair of valves in said stationary pipes and a weighted link connected to the operating arms thereof, the said link being detachably connected to the fire engine so that when the weighted link is tripped and dropped both of the valves will be positively and simultaneously operated by the weighted link, substantially as described.

6. In a steam cut-off, a pair of stationary pipes passing vertically through the floor of an engine house, a pair of valves in the said pipes, a weighted link controlling the said valves, the said link being provided with a pin above the floor, the said pin co-operating with a slot in a plate secured to the floor to permit the link either to be retained in an elevated position or to drop into a lower position for operating the valves, as and for the purpose set forth.

504,655. MACHINE FOR GRINDING ROTARY CUTTERS. DAVID E. RICE, La Crosse, Wis. Filed Apr. 29, 1893. Serial No. 472,287. (No model.)



*Claim.*—A machine for grinding rotary cutters comprising a carriage, a screw to move said carriage laterally, a second carriage mounted on the main carriage and adapted to move at right angles thereto, a stock placed on the second carriage and pivotally connected therewith, and having a circumferential slot in its base, a threaded bolt passing through this slot to secure the stock in the proper position, an indicating mechanism for locating the stock in the required position, a spindle journaled in the stock and having a detachable part to receive the cutter to be ground, a pointer on the stock to properly adjust the cutter, a pivoted arm carrying the grinding wheel, and means for positively adjusting the free end of said arm to raise or lower the grinding wheel, substantially as described, for the purposes set forth.

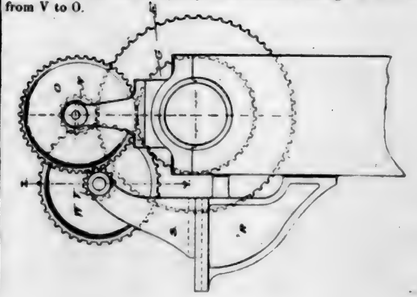
504,656. COMBINED SAW SET, GAGE, AND JOINTER. ELMER M. BICKERSTAFF, Milledgeville, Pa. Filed Mar. 11, 1893. Serial No. 465,563. (No model.)



*Claim.*—In a combination tool of the class described, a single metallic tool plate provided at one edge with an off-standing gage flange interrupted by a gage notch or recess, separated different sized setting and file slots formed in the other edge of the plate and disposed at opposite ends respectively, a side-file notch formed in one edge of the plate near one of said slots, rest lugs projecting from one edge of the plate, and differently beveled gage lugs projecting from one edge of the plate at both sides of one of said slots, substantially as set forth.

504,657. GEARING FOR LATHES. HENRY RIBBEL, Newark, N. J. Filed Oct. 19, 1892. Serial No. 449,323. (No model.)

*Brief.*—The gear-wheel O is slid to the left and the bracket S pushed up until the wheel W meshes with the gear-wheel G and the pinion V meshes with the wheel O. The motion derived through the wheel G, fast on the cone-pulley, is transmitted through W to V and from V to O.

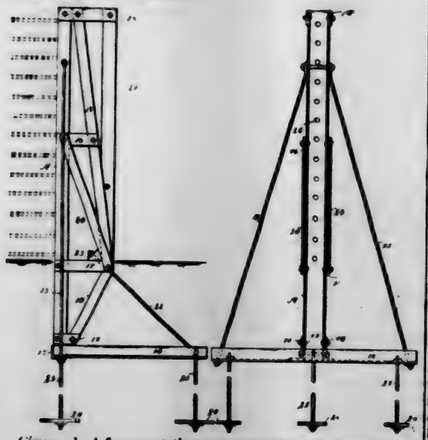


*Claim.*—1. In a train of driving gearing, in combination with a slidable gear on a back-gear shaft, a gear and pinion mounted on an adjustable countershaft, so that said slidable gear may be thrown in mesh with said pinion and the gear on the countershaft may mesh with a gear on the spindle of the machine, substantially as set forth.

2. In a train of driving gearing, the combination of a cone-pulley; a pinion or gear-wheel and a spindle-gear mounted on said pulley's spindle; back-gears; and a pair of gears mounted on a shaft carried by the arms of a removable bracket, said bracket being adjustably secured to the frame of the machine; whereby the speed of said pulley's spindle may be varied within large limits, substantially as and for the purposes set forth.

3. In a train of driving gearing, the combination of the following named elements: a spindle, as A; a spindle-gear, as E, secured to said spindle; a cone-pulley, as F, loosely mounted on said spindle; a gear-wheel as G, secured to said cone-pulley; back-gears, as N, O; a bracket, as S, adjustably secured to the frame of the machine; a shaft, as U, carried in arms of said bracket; and a pinion, as V, and gear-wheel, as W, secured to said shaft; substantially as and for the purposes set forth.

**504,658. FENCE-POST.** WILLIAM M. BLACK, Urbana, Ohio, assignor of one-half to J. M. Dovel, same place. Filed Feb 20, 1893. Serial No. 463,061. (No model.)



*Claim.*—1. A fence post, the same comprising a body post, a base to which the lower end of the body post is secured, anchor tie plates extending from the base plate at either side of the body post, trusses located at one side of the body post, and an adjusting device connecting the trusses with the anchor tie plates, as and for the purpose set forth.

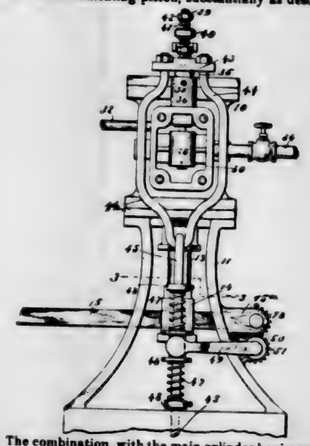
2. In a fence post, the combination, with a base, and anchor tie plates attached to the base forming essentially a T, and a post secured between the anchor tie plates at their junction with the base, of trusses located at one side of the body post, an adjusting block supported by the trusses, and an adjusting rod connecting the outer ends of the tie plates with the adjusting block in the trusses, as and for the purpose set forth.

3. In a fence post, the combination, with a base, of essentially T-shape, the shank portion of the T comprising two spaced members, and a body post secured to the base between the members of the shank section, of trusses located upon one side of the body post, adjusting devices connecting the outer extremities of the shank section of the base with the trusses near the ground line of the latter, and sub-anchor plates pendent from the base near the end portions thereof, as and for the purpose specified.

4. In a fence post, the combination, with a base of essentially T-shape, a body post secured to the base at the junction of its members, and a truss formed at one side of the body post, of a sub-post supported by the truss structure, essentially parallel with the body post, and an adjusting device connecting both the truss, the sub-post and the main body post with the base, as and for the purpose set forth.

**504,659. DAMPER-REGULATOR.** JOHN H. BLAKE, New York, N. Y. Filed June 27, 1891. Serial No. 397,697. (No model.)

*Claim.*—1. A damper regulator, comprising a main cylinder having suitable ports, a piston held to slide in the cylinder, a main lever pivoted on a support and connected with the piston rod, the lever being also operatively connected with the damper, a steam chest arranged on one side of the cylinder and in connection with its ports, a valve casing arranged within the steam chest and opposite the ports of the cylinder, a piston valve held to slide in the casing and over the cylinder ports, a second cylinder arranged at one end of the steam chest, an indicating piston held to move in the cylinder, said piston being coupled to the piston valve, and counterbalancing weights suspended from the indicating piston, substantially as described.



2. The combination, with the main cylinder having suitable ports and the piston held to move in the cylinder, and adapted to connect with a damper or other mechanism, of a steam chest arranged on one side of the cylinder, a valve casing arranged within the steam chest and over the cylinder ports, a piston valve held to slide in the valve casing and control the ports, a longitudinally adjustable indicating piston connected with the piston valve and held to slide above the steam chest and valve, a crosshead carried by the indicating piston, a yoke suspended from the crosshead, and a weight-carrying rod secured to the yoke, substantially as described.

3. A damper regulator, comprising a main cylinder having suitable ports, a piston held to slide in the cylinder and provided with the customary piston rod, a main lever pivoted adjacent to the piston rod and operatively connected therewith, a steam chest arranged on one side of the cylinder and in connection with its ports, a counterbalanced slide valve held to move over the cylinder ports, a second lever fulcrumed adjacent to the main lever and geared thereto so that the movement of the main lever will move the second lever in an opposite direction, and an operative connection between the second lever and the slide valve whereby the latter will be moved in a direction opposite to that of the main piston and lever, substantially as described.

4. In a damper regulator, the combination with the main cylinder, the piston arranged therein and provided with a suitable piston rod, and the weighted piston valve for controlling the ports of the main cylinder, of a main lever connected with the piston rod, a lever connected with the weight rod of the piston valve, and a gear connection between the two levers, whereby they will be simultaneously moved in opposite directions, substantially as described.

5. The combination with the main cylinder, the piston held to slide therein, and provided with a projecting piston rod, the piston valve for controlling the ports of the main cylinder, and the weighted rod connected with the piston valve, of a main lever connected with the piston, a spring pressed flanged sleeve mounted on the weight rod of the piston valve, a lever connected with the flanged sleeve, and a gear connection between the two levers, substantially as shown and described.

**504,660. SOLE.** ALFRED A. BLANDY, London, England. Filed June 6, 1893. Serial No. 476,709. (No model.) Patented in England June 10, 1890, No. 8,987.

*Claim.*—1. As an article of manufacture, a shoe provided with a sole having a metal sole plate to which the upper is secured, said plate having elongated openings pointing toward the middle of the sole; an outer metallic sole plate composed of a heel and waist plate to which the heel proper and the waist sole are secured, and a "fore part" plate to which the fore sole is secured; the said outer metallic sole plates being provided with raised tongues pointing toward the middle of the sole and arranged to engage the elongated openings in the inner metallic plate, the two outer sole plates being secured together by a hinge joint, which in combination with the tongues and slots will hold the outer sole firmly to the inner sole, substantially as described.





2. As an article of manufacture, a shoe provided with a sole having a metal sole plate to which the upper is secured, a waterproof material being placed between the uppers and the said plate, said plate having elongated openings pointing toward the middle of the sole; an outer metallic sole plate composed of a heel and waist plate to which the heel proper and the waist sole are secured, and a "fore part" plate to which the fore sole is secured; the said outer metallic sole plates being provided with raised tongues pointing toward the middle of the sole and arranged to engage the elongated openings in the inner metallic plate, the two outer sole plates being secured together by a hinge joint, which in combination with the tongues and slots will hold the outer sole firmly to the inner sole, substantially as described.

**504,661. SUSPENDER-END.** WILLIAM BLOOMBERG, New York, N. Y. Filed May 12, 1893. Serial No. 473,915. (No model.)



*Claim.*—1. A suspender end, comprising the usual end strap adapted to be looped in a buckle, and provided between its ends with a slot in its body, and a terminal drawers supporting tongue adapted to extend through the slot and hang below the strap, substantially as described.

2. The combination with the strap adapted to be doubled to form loops to engage the buckle of the suspenders and the button piece thereon, the said strap having a fastening device to hold it in buckled position and a slot in its body, of an elongated tongue formed integral with the strap and projecting through the slot, the tongue having a fastening device at its free end, substantially as described.

**504,662. HYDRANT.** WILLIAM H. BOOTHAM, Waterford, assignor to John Knickerbacker, Troy, N. Y. Filed Nov. 20, 1889. Serial No. 332,065. (No model.)



*Claim.*—1. In a hydrant, the combination with an elastic cushion having a central aperture, of a flanged metallic bushing secured within such aperture, a stem-collar seat surrounding the bushing-aperture on its flanged end, a valve-stem loosely fitting and rotary in the bushing, a collar fixed upon the stem and adapted to engage the collar-seat on the bushing, means for loosely securing the bushing longitudinally of the stem, and a valve-operating stem-nut, substantially as described.

2. In a hydrant, a valve plug C— having flange $C^4$— central aperture $C^5$— and threaded boss $C^6$—, a rubber ring C'—, a follower-ring $C^3$—, an upper bushing-flange D'—; in combination with a threaded valve-stem E—, a collar $E^2$ fixed on such stem, an enlarged portion B'— loosely fitting within the bushing and screw-threaded on its lower part, an adjustable nut $B^5$— fitting such threaded portion, and stem-nut $A^4$— fixed to the bottom of the hydrant, substantially as described.

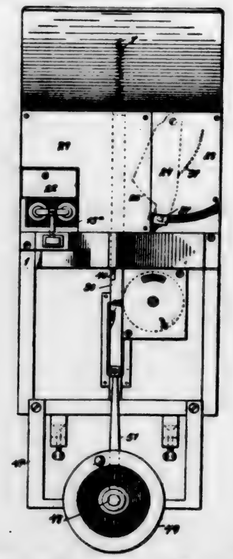
**504,663. METHOD OF SECURING TIPS TO BILLIARD-CUES.** NICOLAS BORRAMÉ, Chicago, Ill. Filed Jan. 23, 1893. Serial No. 459,468. (No model.)



*Claim.*—1. The combination with a cue having a bore in its smaller end, of an internally screw-threaded and externally grooved socket or tube to fit in said bore, a screw to engage the socket and having a perforated head, the covering *d*, for said head, a washer and tip secured to the lower and upper surfaces respectively of the screw-head by means of an adhesive substance, substantially as described.

2. The combination with a cue having a bore in its smaller end of a socket having internal screw-threads, the screw C, having the head *c*, the covering *d*, for said head having the frayed ends, the washer D, and tip E, secured to the lower and upper surfaces respectively of the screw-head by means of an adhesive substance, substantially as described.

**504,664. MAIL-MARKING MACHINE.** CHARLES R. BOWMAN and WILLIAM RICE, Tylersburg; said Rice assignor to Augustine S. Karns, Franklin, Pa. Filed May 20, 1891. Serial No. 393,491. (No model.)



*Claim.*—1. In a postmarking and canceling machine, the combination, with a hopper having a movable plate adapted to cover its discharge opening, of a reciprocating bar having a curved finger hinged thereto adapted to move said plate to uncover said opening, substantially as described.

2. In a postmarking and canceling machine, the combination, with a hopper having a movable plate adapted to cover its discharge opening, of a reciprocating bar provided with a hinged finger for moving said plate, stamp heads operated by said bar and an inking pad also operated by said bar, substantially as described.

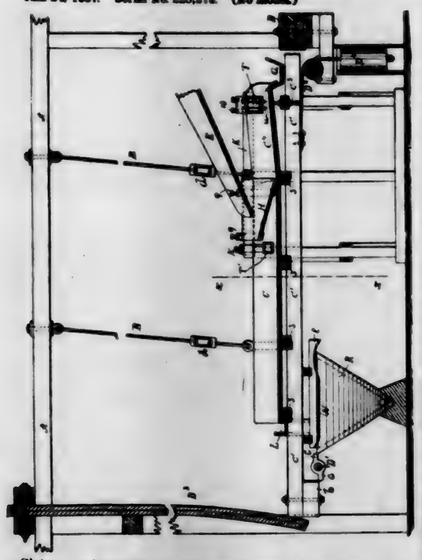
3. The combination in a postmarking and canceling machine, a hopper and a chute communicating with said hopper, of a plate for arresting the passage of letters through the chute, means for moving said letters into position to be postmarked and canceled, an inking pad, stamp-heads and a reciprocating bar for operating said plate, inking pad, and stamp heads, substantially as described.

4. The combination, in a postmarking and canceling machine, of a hopper provided with a movable plate adapted to cover the discharge opening of said hopper, a reciprocating bar for moving said

plate to uncover the discharge opening, and means for returning said plate to its normal position, substantially as described.

5. The combination, in a postmarking and canceling machine, of a hopper a movable plate for covering the discharge opening of said hopper, a chute communicating with said hopper, a plate adapted to intermittently close said chute, a pivoted plate provided with a pin extending into said chute, an inking pad adapted to be vertically reciprocated, stamp-heads, and a reciprocating bar provided with means for operating the above named parts, substantially as described.

**504,665. ORE-SEPARATING MACHINE.** HEZEKIAH BRADFORD, Philadelphia, Pa., assignor to Samuel E. Grissom, same place. Filed Jan. 24, 1887. Serial No. 225,273. (No model.)



*Claim.*—1. In combination with the central, longitudinal bumping beam, and bumper block directly in line with the front end of the beam, suspending devices and the bumping table having an upwardly inclined ore delivery at the upper end, over which the concentrated ore is automatically, continuously and uninterruptedly delivered, and a reciprocating device substantially as set forth.

2. The combination with the bumping table, whereon the ore is introduced with water, and the feed board, and a second water supply near the concentrated ore delivery to carry back from the ore any refuse material, of a third water supply for promoting the agitation and rapid delivery of such tailings, substantially as set forth.

3. The combination of the bumping beam extending the entire length of the table, and a table fastened to the bumping beam, and having an upward incline in the table toward the ore delivery end, a metallic lining to the table extending up the sides of such table, and an adjusting device for varying the inclination, substantially as specified.

4. The combination of the bumping table having an ore delivery at one end and a tailings delivery at the other end, of a screen connected to the bumping table and receiving the tailings, and a water vat in which such screen is reciprocated, substantially as set forth.

5. An ore separator, comprising the bumping table, having a tailings discharge at one end, and an ore discharge at the other, a block or bumper arranged at the ore delivery end of the frame, and a bumping beam connected to the under part of the table centrally thereof, and extending the whole length of the table, and in line with the block or bumper, in combination with a lateral chute for the tailings, a screen attached to the beam for receiving the discharge from the chute, and provided with an elevated delivery end and a water vat below the screen, substantially as described.

6. The combination with a bumping table ore concentrator to which the ore is delivered with water, of two water troughs substantially as herein shown and described, one of which is set transversely across the table above the inclined part thereof and is adapted to supply water to prevent the gangue passing over the upper end of the table, while the other is set transversely across the table between the feed supply and the ore delivery end and is adapted to the delivery of water as a fine rain, to assist in keeping the gangue loose enough to allow the mineral particles to quickly settle down through it, as set forth.

7. In an ore separator, the combination with a reciprocating bumping table, having an unobstructed working bottom (a section of which is adapted to be inclined from a nearly horizontal plane), closed at the sides and open at both ends for the free and continuous discharge of ore at one end, and of tailings at the other end, of a bumping beam secured to the table centrally thereto and extending the whole length thereof in the direction of the line of the operative movement of the table and travel of the ore, the tailings and water thereon; a fixed bumper block for the beam to strike against; a shaft carrying lugs adapted, in revolving, to jar the beam and table and move them from the bumper block, and springs or weights applied and arranged to force the beam against the bumper block, all substantially as set forth.

8. In combination with the suspending devices, a bumping table ore separator, open for free discharge of ore at one end and tailings at the other end, constructed substantially as herein shown and described, with cross pieces secured to the table bottom and a bumping beam secured to the cross pieces at right angles to them and in line with the travel of the table, the ore, tailings and water when in operation and reciprocating mechanism, as and for the purposes set forth.

9. In an ore separator a flat horizontally reciprocating table open at both ends, a solid abutment against which the table bumps at one end, and means for supplying crude ore and water to the table midway of its length means for suspending the table and giving end movement to the same; whereby a shallow slowly moving body of water may be maintained, and the light matters floated in one direction above the level of the ore moving in the opposite direction thereunder.

10. In an ore separator a flat reciprocating table open at both ends, having its body portion arranged in a horozontal position and its head inclined slightly upward, a solid abutment against which the table bumps endwise at the head, means for suspending the table and giving end movement to the same, and means for delivering the crude ore and water upon the level portion of the table.

11. In an ore separator and in combination with means for delivering the crude ore and water thereto, a table open at both ends, means for sustaining and reciprocating said table, and a solid abutment against which the table bumps, its body portion being arranged in a horizontal position but its head inclined slightly upward to retain the water and compel its flow in the opposite direction while permitting the purified ore to flow continuously upward to the point of discharge.

12. In an ore separator a reciprocating table having a smooth uninterrupted surface open at both ends, for the passage of ore over the head and the tailings over the tail, and sustaining devices for the table in combination with an abutment arranged in position to receive the impact of the head end of the table, as distinguished from an abutment beneath or at the tail end of the table, and means for supplying crude ore and water to the table.

13. In an ore separator the combination of a flat table open at both ends and having its head inclined upward in relation to the remaining portion, a bumping beam secured to said table lengthwise thereof, an abutment against which the end of the beam strikes at the head of the table, and means for supplying crude ore and water to the table, and means for sustaining the table.

**504,666. PROCESS OF SEPARATING OR CONCENTRATING ORES.** HEZEKIAH BRADFORD, Philadelphia, Pa., assignor to Samuel E. Grissom, same place. Filed June 20, 1888. Renewed Feb. 18, 1893. Serial No. 462,934. (No specimens.)

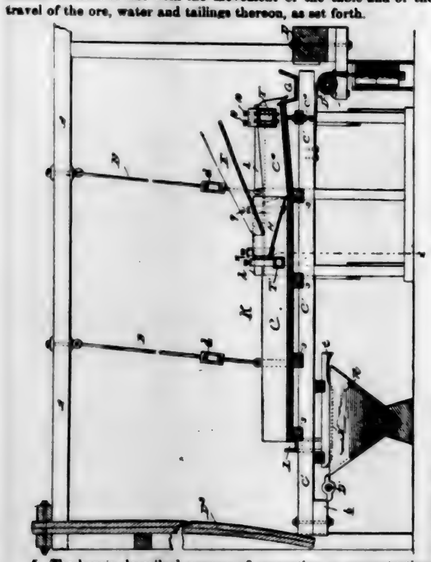
*Claim.*—1. The process of separating or concentrating ore, consisting in distributing the crude ore in a shallow horizontal flowing sheet of water, maintaining a depth sufficient to hold the lighter particles in free suspension, subjecting the water to rapidly succeeding lifting actions from beneath to produce a bubbling or effervescing motion, and carrying the precipitated purified ore in the opposite direction from the flow of the water and tailings by imparting thereto successive horizontal impulses.

2. The process of concentrating ore consisting in flowing the tailings and ore slowly in one direction over a substantially horizontal surface, maintaining a sufficient depth of water thereon to hold the lighter matters in suspension, imparting to the surface a constant tremor or vibration in a vertical direction, and also imparting to the surface rapid horizontal reciprocations with a sudden and violent stoppage of movement in the direction opposite to the flow of the water and tailings.

3. The process of concentrating the heavy particles in a bed of ore, which consists in causing a flow of water in one direction through the ore bed, maintaining a depth of water sufficient to hold the lighter particles in suspension, intermittingly jarring said bed in a direction opposite to the flow of the water and lighter particles, and causing a constant tremulous vertical motion in the particles forming the bed whereby the ore is maintained in a loose condition and a free movement of the heavy and light particles in reverse directions past each other permitted.

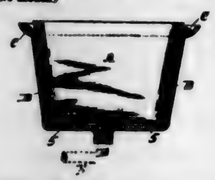
4. An improved process of separating or concentrating ores, consisting in continuously feeding upon a bumping table adapted and arranged to receive its operative shocks or blows endwise in a line with the movement of the table and with the level of the water, ore and tailings thereon, the crude pulverized ore mixed with water upon the middle or thereabout of the table; in furnishing upon the ore-delivery end of the table a second and constant supply of water just sufficient to wash back the particles of gangue that may be mixed with the ore when the latter arrives at the ore-delivery end of the table; in distributing a third and constant supply of water as a fine and gentle rain, across the whole width of the table at a proper point over the concentrated ore, in just sufficient quantity to maintain on the table such a depth of water that it may be kept in a constant state resembling effervescence or boiling by the ceaseless, jarring motion of the table, and in imparting to the table constant successive shocks or blows in line with the movement of the table and of the travel of the ore, water and tailings thereon, as set forth.





5. The herein described process of separating or concentrating ore, which consists in discharging said ore mixed with a proper quantity of water on a suitable table or receiver, and subjecting it to a continuous and equally distributed jarring or bumping which causes the water, ore and tailings to have a motion resembling effervescence or the gentle boiling of shallow water, and in applying to the ore and tailings on the table or received during the process of separating or concentrating two other independent supplies of water, substantially as described, whereby the tailings are prevented from packing and are effectually separated from the ore as set forth.

**504,667. HYDROCARBON-BURNER FOR STOVES, FURNACES, &c.** WILLIAM S. CHILTON, Dayton, Ohio. Filed May 15, 1893. Serial No. 474,276. (No model.)



*Claim.*—1. A hydrocarbon burner consisting essentially of two close fitting metallic shells with oil passages between, the passages being in the metal of one of the shells, and below the general level of the surface thereof and the other shell forming one closing wall of the grooves, all substantially as described.

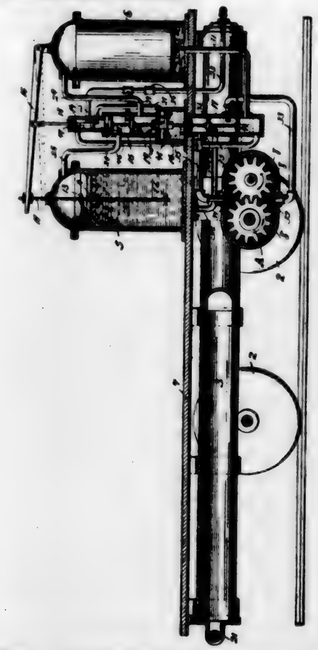
2. A hydrocarbon burner consisting essentially of two close fitting metallic shells, one of said shells being a tapered core inside of the tapered cavity of the other, and having grooves in the body of one shell closed on one side by the wall of the other shell, substantially as described.

3. A hydrocarbon burner consisting essentially of two metallic shells, the inner shell being a tapered frustum with grooves in its outer surface, the outer shell having a cavity which closely fits the outer surface of the inner shell excepting the grooves, and having a supply orifice, substantially as described.

4. The method of making a hydrocarbon burner which consists in casting a metallic shell in a mold and using it as a chill piece against which a second close fitting shell is cast, and finishing the burner by forming grooves in the unchilled shell, so that the grooves are between the shells and in the body of one of them, substantially as described.

5. The method of forming a hydrocarbon burner which consists in forming a tapered shell as a core piece, placing such piece in a mold and casting a second shell thereon, then removing the core piece, grooving the surface thereof, and reassembling the two, substantially as described.

**504,668. PNEUMATIC HYDRAULIC LOCOMOTIVE.** WILLIAM COOPER, Minneapolis, Minn. Filed Nov. 6, 1889. Renewed Feb. 9, 1893. Serial No. 461,667. (No model.)



*Claim.*—1. The combination in a locomotive provided with a suitable driving axle, of a hydraulic motor connected with said axle, a pneumatic reservoir carried by said locomotive, liquid reservoirs adapted to be alternately connected with said pneumatic reservoir, and valve controlled mechanism by means of which said liquid reservoirs are alternately connected with the inlet and outlet ports of said motor, and a column of liquid extending from one of said liquid reservoirs through said motor to the other liquid reservoir, whereby the air passing from the pneumatic reservoir to the liquid reservoirs forces the column of liquid to and fro from one reservoir to the other through said motor driving said motor continuously in the same direction in its passage.

2. The combination with a pneumatic reservoir, of liquid reservoirs adapted to be alternately connected with said pneumatic reservoir, a motor connected with said reservoirs with a liquid column or piston extending from one of said reservoirs to the other through said motor, and valve mechanism whereby said liquid reservoirs are alternately connected with the inlet and outlet ports of said motor.

3. The combination with a pneumatic reservoir, of liquid reservoirs adapted to be alternately connected with said pneumatic reservoir, a suitable motor and valve controlled mechanism by means of which said liquid reservoirs are alternately connected with the inlet and

outlet ports of said motor, with a column of liquid extending from one of said liquid reservoirs through said motor to the other liquid reservoir, whereby the air passing from the pneumatic reservoir to the liquid reservoirs forces the column of liquid to and fro from one reservoir to the other through said motor, driving said motor continuously in the same direction in its passage

4. The combination in a locomotive provided with a suitable driving axle, of a hydraulic motor connected with said axle, liquid holding reservoirs connected with said motor and carried by said locomotive, a pneumatic reservoir carried by said locomotive and connected with said liquid reservoirs and suitable valve connections whereby the air from the pneumatic reservoir is admitted first to one and then the other of said liquid reservoirs, and the liquid is thereby forced to and fro from one reservoir to the other passing in the same direction through said motor, for the purpose specified.

5 The combination in a locomotive provided with a suitable driving axle, of a hydraulic motor connected with said axle, liquid holding reservoirs connected with said motor and carried by said locomotive with a column of liquid extending from one of said liquid reservoirs to the other through said motor, and a pneumatic reservoir also carried by said locomotive and connected with said liquid reservoirs, for the purpose specified.

6. The combination with the positively acting hydraulic motor which has inlet and outlet ports, of a combined gas and liquid tank, connections extending from the lower portion of said tank, to both the inlet and outlet ports of said motor, the pneumatic reservoir, connections extending from said pneumatic reservoir to the upper portion of the combined gas and liquid tank, a piston fitting tightly in the tank, and valve mechanism operated thereby for controlling and shifting the above mentioned connections simultaneously so that when the lower portion of the tank is connected with the inlet port of the motor the upper portion of the tank is connected with the pneumatic reservoir, and when the lower portion of the tank is connected with the outlet port of the motor, the upper portion of said tank is connected with the exhaust, substantially as described.

7. The combination of the motor, the pneumatic reservoir, the liquid reservoirs adapted to alternately discharge the propelling liquid therefrom into said motor and to receive the said liquid as discharged from said motor, automatic reversing mechanism actuated by the rise and fall of the liquid in said reservoirs for shifting connection between said pneumatic reservoir and said liquid reservoir, and automatic reversing mechanism actuated by the pressure of the air from said pneumatic reservoirs for shifting the connections between said liquid reservoirs and said motor, substantially as described.

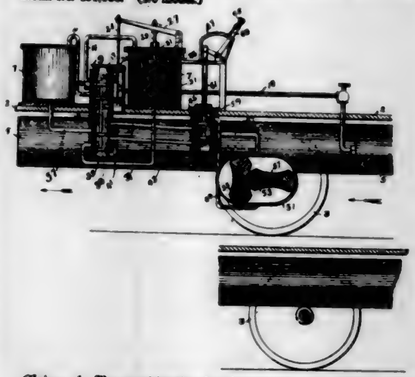
8. The combination of the pneumatic reservoir 3, the liquid reservoirs 5 and 6, the pipes connecting said pneumatic reservoir with said liquid reservoirs, a valve mechanism adapted to alternately open and close communication between said pneumatic reservoir and each of said, liquid reservoirs, the piston 9 carried by the liquid in one of said liquid reservoirs, adapted by means of suitable connecting mechanism to actuate said valve mechanism, the motor A, having the inlet port 32 and the outlet port 34 and the automatically reversible connections between said ports and said liquid reservoirs, substantially as and for the purpose set forth.

9. The combination of the pneumatic reservoir, the liquid reservoir, the motor having the rotary pistons 6, 8 the inlet port 32 and the outlet port 34, the pipe 23 connecting with the pneumatic reservoir, and having branches 24 and 25, the cylinder 14 fitted with the double piston valve 18 and connected at a point between said valves with the pipe 25, upper and lower outlet pipes 46 and 27, and suitable exhaust ports, the piston actuated lever 10 connected to the stem of said piston valve and adapted to actuate the same, the cylinders 15, 16 and 17 fitted with a common valve spindle 19, double piston valves secured to said piston and arranged in said cylinder 15, and said cylinder 17, and a single piston upon said spindle arranged in said cylinder 16, said pipes 46 and 27 entering said cylinder 16 respectively at the bottom and top of the same by means of which compressed air is conveyed into said cylinder to actuate said piston, and said other valves connected to said common stem, pipes 28 and 29 connecting said cylinder 15 with the liquid reservoir respectively above and below the connection between said cylinder and said branch pipe 24 whereby as said piston valves are operated said pipes 28 and 29 are alternately brought in communication with the pipe 24, pipes 33 and 35 respectively connecting ports 32 and 34 with the cylinder 17, and pipes 30 and 31 respectively connecting said cylinder with the liquid reservoir in such manner that said double piston valve in its operation alternately connects said pipes 33 and 35 to each of the pipes 30 and 31, substantially as and for the purpose set forth.

10. The combination of a positively acting hydraulic motor, two combined gas and liquid tanks, a pipe connecting the lower portion of one tank with one side of said motor, and the second pipe connecting the lower portion of the other tank with the other side of said motor, whereby the liquid contained in one tank may be driven through the motor into the other tank, in a continuous column, together with an inlet for compressed gas in said tanks, valves controlling the flow of gas in said inlets and the flow of liquid in said pipes, connecting apparatus whereby said valves are operated simultaneously, a tightly fitting piston in one of said tanks which is driven in one direction by the liquid acting upon one side thereof and in the other direction by the gas acting upon the other side thereof, and a suitable connecting mechanism extending from said piston to the valve operating apparatus, substantially as described.

11. The combination of a combined gas and liquid tank, a tightly fitting piston in said tank, which forms a movable partition between the gas and the liquid, inlet and outlet passage ways for gas at one end of the tank, inlet and outlet passage ways for the liquid at the other end of the tank, valves which control the flow of gas and liquid in said passage ways, apparatus which simultaneously operates said valves, and connections from the above mentioned piston to said valve actuating apparatus, substantially as described.

## 504,669. PNEUMATIC HYDRAULIC LOCOMOTIVE. William Cooper, Minneapolis, Minn. Filed Jan. 3, 1890. Renewed Feb. 9, 1893. Serial No. 461,682. (No model.)



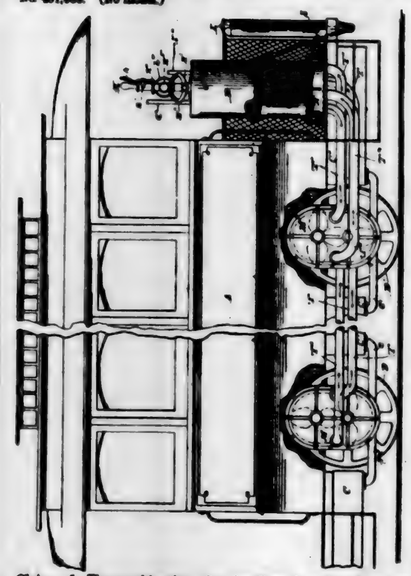
*Claim.*—1. The combination in a locomotive, of a driving axle, a rotary motor connected with said axle, a casing for said motor, two or more combined gas and liquid tanks, liquid passages connecting each tank with said casing at opposite sides of the motor, so as to admit the fluid at either side thereof and exhaust the same at the opposite side, for the purpose of propelling the motor in either forward or backward direction, liquid passages connecting said tanks with each other, means for forcing a liquid piston or column of water alternately from one tank into the other through said motor, so as to drive the same continuously in the same direction, an intermediate valve chamber, and a reversing and controlling valve located in said chamber through which said column of liquid is forced in its passage from tank to tank through said motor, and means for operating said valve, whereby the motor may be controlled, and the direction of flow of the liquid column through the motor casing reversed, so as to reverse the motor, without changing the application of the pneumatic pressure, or reversing the flow of the liquid column passing from tank to tank, substantially as described.

2. The combination of a positively acting hydraulic motor, two or more combined gas and liquid tanks, a pipe connecting the lower portion of one tank with one side of said motor, and a second pipe connecting the lower portion of another tank with the other side of said motor, whereby the liquid contained in one tank may be driven through the motor into the other tank in a continuous column, together with an inlet for compressed gas on the upper portion of each of said tanks, valves controlling the flow of gas in said inlets and the flow of liquid in said pipes, a piston and piston rod in one of said tanks and apparatus connected therewith by which said valves are operated by the rise and fall of liquid in said tanks, and a reversing valve through which the liquid conducting pipes above described pass, and by which the direction of flow of liquid from said pipes through said motor may be reversed and controlled, substantially as described.

3. The combination of a positively acting hydraulic motor, two or more combined gas and liquid tanks, a pipe connecting the lower portion of one tank with one side of said motor, and a second pipe connecting the lower portion of another tank with the other side of said motor, whereby the liquid contained in one tank may be driven through the motor into the other tank in a continuous column, together with an inlet for compressed gas in the upper portion of each of said tanks, valves controlling the flow of gas in said inlets and the flow of liquid in said pipes, connecting apparatus whereby said valves are operated simultaneously, a tightly fitting piston in one of said tanks which is driven in one direction by the liquid acting upon one side thereof and in the other direction by the gas acting upon the other side thereof, suitable connecting mechanism extending from said piston to the valve operating apparatus, and a reversing valve through which the liquid conducting pipes above described pass, and by which the direction of flow of liquid from said pipes through said motor may be reversed and controlled, substantially as described.



## 504,670. HYDROPNEUMATIC MOTOR. William Cooper, Minneapolis, Minn. Filed June 18, 1890. Renewed Feb. 9, 1893. Serial No. 461,689. (No model.)



*Claim.*—1. The combination of a plurality of combined gas and liquid cylinders, pistons which fit in said cylinders and form partitions between the gas at one end and the liquid at the other end of each cylinder, a valve chest to which compressed gas is supplied, connections from said valve chest to the gas end of each of the cylinders, valves controlling said connections, mechanism connecting said pistons one to another and to the aforesaid valves, whereby the said pistons are compelled to move consecutively and also to give motion to the valves, together with inlet and outlet connections for the liquid ends of the cylinders and check valves controlling the same, substantially as described.

2. The combination of a plurality of combined gas and liquid cylinders, pistons which fit in said cylinders and form partitions between the gas at one end and the liquid at the other end of each cylinder, a valve chest to which compressed gas is supplied, connections from said valve chest to the gas end of each of the cylinders, valves controlling said connections, mechanism connecting said pistons one to another and to the aforesaid valves, whereby the said pistons are compelled to move consecutively and also to give motion to the valves, together with inlet and outlet connections for the liquid ends of the cylinders, check valves which control the same, one or more hydraulic motors which have their inlet ports connected with the cylinder outlets, and their discharge ports connected with the cylinder inlets, substantially as described.

3. The combination of a plurality of combined gas and liquid cylinders, pistons which fit in said cylinders and form partitions between the gas at one end and the liquid at the other end of each cylinder, a valve chest to which compressed gas is supplied, connections from said valve chest to the gas end of each of the cylinders, valves controlling said connections, mechanism connecting said pistons one to another and to the aforesaid valves, whereby the said pistons are compelled to move consecutively and also to give motion to the valves, together with inlet and outlet connections for the liquid ends of the cylinders, check valves which control the same, one or more hydraulic motors which have their inlet ports connected with the cylinder outlets and their discharge ports connected with the cylinder inlets, and one or more reversing valves in the line of said connections, substantially as described.

4. The combination of two or more pairs of combined gas and liquid cylinders, pistons which fit in said cylinders and form partitions between the gas at one end and the liquid at the other end of each cylinder, proper inlet and outlet connections for the gas ends of said cylinders, a valve casing which is connected to the liquid ends of said cylinders, and which has as many chambers or sets of connected chambers as there are pairs of cylinders plus one, the outlet orifices of each pair of opposite cylinders being connected with a set of said chambers, and all of the inlet orifices of all of the cylinders being connected with the remaining chamber or set of chambers, together with proper check valves in said casing and one or more hydraulic motors which have their outlet ports connected with said last mentioned chamber or set of chambers, the inlet ports of each motor being connected with one of the first mentioned sets of chambers, substantially as described.

5 The combination of two or more pairs of combined gas and liquid cylinders, pistons which fit in said cylinders and form partitions between the gas at one end and the liquid at the other end of each cylinder, proper inlet and outlet connections for the gas ends of said cylinders, a valve casing which is connected to the liquid ends of said cylinders, and which has as many chambers or sets of chambers as there are pairs of cylinders plus one, the outlet orifices of each pair of opposite cylinders being connected with a set of said chambers, and all of the inlet orifices of all of the cylinders being connected with the remaining chamber or set of chambers, together with proper check valves in said casing and one or more hydraulic motors which have their discharge ports connected with said last mentioned chamber or set of chambers, the inlet ports of each motor being connected with one of the first mentioned sets of chambers, and a reversing valve or valves in the line of said motor connections, substantially as described.

6. The combination with two or more positively acting hydraulic motors, of a plurality of combined gas and liquid cylinders, pistons which, reciprocate therein and form partitions between the gas at one end and the liquid at the other end of each of said cylinders, the common return connection to the liquid end of all of said cylinders from the discharge connections of the motors, proper supply connections to the motors from the cylinders and check valves controlling said supply and return connections, substantially as described.

7. A fluid reversing apparatus which consists of a valve casing which has a number of ports no two of which are directly opposite one another, combined with a valve composed of two hollow, externally grooved portions rigidly connected together, and apparatus for reciprocating said valve the arrangement of ports being such that the port openings on one side of the casing will be traversed at each reciprocation while the port openings on the other side of the casing will be unaffected by such reciprocation, substantially as described.

8. The combination of one or more cylinders, pistons and piston rods reciprocating therein, a revolving cam cylinder, projections on said piston rods which mesh with the grooves in said cam cylinder, a valve chest to which a fluid under pressure is supplied and which is connected with the cylinders and with an exhaust pipe, a pair of simultaneously rotating valves in said chest, and connections from said valve to the above mentioned cam cylinder, and an adjustable non-rotating cut off valve, arranged between said rotating valves and means for adjusting same mounted on the rotating valve, substantially as described.

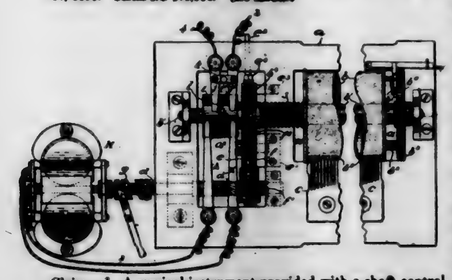
9. The combination of two pairs of cylinders, pistons and piston rods reciprocating therein, a valve chest to which a supply of compressed gas is furnished, a pair of simultaneously rotating valves which ride on the opposite internal faces of said valve chest, connections from one pair of the cylinders to the ports in the upper face in said valve chest, and from the other pair to the posts in the lower face, a spindle connected with said valves and by which they are rotated, a cam cylinder mounted on said spindle and projections on the above mentioned piston rods which mesh with the groove in said cam cylinder, whereby motion is transmitted to the valves from the pistons, substantially as described.

10. The combination of two pairs of cylinders, pistons and piston rods reciprocating therein, a valve chest to which a supply of compressed gas is furnished and which has proper exhaust connections, a pair of simultaneously rotating valves which ride on the opposite internal faces of said valve chest, connections from one pair of the cylinders to the ports in the upper face in said valve chest, and from the other pair to the ports in the lower face, a hollow spindle connected with said valves and by which they are rotated, a cam cylinder mounted on said spindle and projections on the above mentioned piston rods which mesh with the groove in said cam cylinder, whereby motion is transmitted to the valve from the pistons, together with a pair of non-rotating cut-off valves between said rotating valves, a spindle extending from the cut-off valves through the aforesaid hollow spindle, and adjusting apparatus connected therewith whereby the point of cut-off may be varied, substantially as described.

11. The combination of the valve chest which has ports in its upper and lower internal faces and exhaust openings at the centers of said faces, rotating valves which rest on said faces and have passage ways corresponding to said ports, and exhaust cavities which may connect the said ports with the exhaust openings, lugs on the backs of said valves which intermesh, adjustable cut-off valves which ride on the backs of the rotating valves and which also have lugs which intermesh, a hollow spindle extending from one of the rotating valves and a spindle which extends from one of said cut-off valves through the first mentioned hollow spindle, substantially as described.

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**504,671. MUSICAL INSTRUMENT.** COMPART DORIOT, Philadelphia, Pa., assignor of one-half to John B. Painter, same place. Filed Apr. 17, 1893. Serial No. 470,596. (No model.)



*Claim.*—1. A musical instrument provided with a shaft controlling the operative parts thereof, a differential gear and counter-gear mechanism, a motor and a speed controlling wheel, substantially as and for the purposes set forth

2. A musical-instrument provided with a pin-cylinder mounted on a shaft, a comb or combs for said pin-cylinder, a worm-gear actuating mechanism for controlling said shaft, a toothed speed controlling wheel mounted on said shaft and detachably engaging said worm-gear an electric motor included in circuit and adapted to be connected with said mechanism, and means for stopping and starting said shaft, substantially as and for the purposes set forth.

3. A musical-instrument provided with a pin-cylinder mounted on a shaft and its complemental comb or combs, a worm-gear and counter-worm gear mechanism controlled by a toothed speed controlling wheel mounted on said shaft and detachably engaging said worm-gear an electric motor suitably connected with said mechanism and a commutator mounted on the pin-cylinder shaft and provided with contact springs or brushes and a manual switch included in the motor circuit, substantially as and for the purposes set forth.

4. A musical-instrument provided with a comb or combs, a pin-cylinder mounted on a shaft driven by a toothed-speed controlling wheel meshing with a worm-and-counter-worm gear mechanism controlled by a motor, substantially as and for the purposes set forth.

5. A musical-instrument provided with a comb or combs, a pin-cylinder, a shaft controlling the same and having a speed controlling wheel meshing with counter-worm-and-gear-mechanism, means for throwing said mechanism into and out of engagement with said speed-controlling wheel, and a motor detachably connected with said mechanism, substantially as and for the purposes set forth.

6. A musical-instrument provided with a shaft controlling a spring-actuated pin-cylinder and tune-changing device, a speed controlling wheel mounted on said shaft, a differential actuating mechanism engaging therewith and a motor for controlling the same, substantially as and for the purposes set forth.

7. A musical-instrument provided with a comb or combs and a pin-cylinder and its shaft provided with a gear-wheel driven by a worm and counter-worm-gear-mechanism adapted to be connected with an electric-motor included in circuit by means mounted on the pin-cylinder shaft and provided with conducting and insulating surfaces and brushes or contact-strips and a manual-switch, substantially as and for the purposes set forth.

8. A musical instrument provided with a comb or combs and a pin-cylinder and its shaft and a gear-wheel driven by a differential worm-gear mechanism by a motor in a circuit having the commutator provided with insulating and conducting surfaces mounted on the pin-cylinder shaft and a manual switch and brushes interposed in circuit therewith, substantially as and for the purposes set forth.

9. A musical instrument provided with a spring controlled pin-cylinder mounted on a shaft having a gear-wheel meshing with a worm and counter-worm gear mechanism clutched to the shaft, a motor included in a circuit through a commutator provided with conducting and insulating discs and complemental brushes and a manual switch and a comb or combs adapted to contact with said pin-cylinder, substantially as and for the purposes set forth.

10. A musical instrument provided with a spring controlled pin-cylinder mounted on a shaft having a toothed governor wheel meshing with a differential actuating mechanism controlled by a motor, a comb or combs adapted to contact with said pin-cylinder and means for imparting motion to said motor, substantially as and for the purposes set forth.

11. A musical-instrument provided with a shaft controlling the operative parts thereof and having a speed controlling wheel mounted thereon and actuated by differential mechanism by means of a motor, substantially as and for the purposes set forth.

12. A musical-instrument provided with a spring controlled tune changing pin-cylinder mounted on a shaft provided with a toothed-wheel meshing with a worm and counter-gear-wheel clutched to the shaft of a motor in a circuit, and means for stopping and starting said motor, substantially as and for the purposes set forth.

13. A musical instrument provided with a spring controlled tune mechanism connected with a shaft having a toothed wheel meshing with a worm and gear and counter-worm adapted to be detachably connected with an electric motor in a circuit and said shaft carrying an insulated commutator provided with contact brushes and a manual switch or cut-out device included in said circuit, substantially as and for the purposes set forth.

14. A musical instrument provided with a spring controlled pin-cylinder loosely mounted on a shaft, a tune changing device, a complemental comb or combs for said cylinder, a gear-wheel mounted on said shaft driven by a worm and counter-gear mechanism by means of an electric motor detachably connected therewith and included in a circuit by means of a rotatable commutator having complemental contact strips or brushes and a cut-out switch, substantially as and for the purposes set forth.

15. A musical-instrument provided with a spring controlled pin-cylinder mounted on a shaft and having a tune-changing device and lever for controlling the same, a gear or toothed wheel mounted on said pin-cylinder shaft and meshing with an adjustable worm engaging a counter-gear and worm controlled as to speed by a motor and means for stopping the operative parts of the instrument at the completion of a tune, substantially as and for the purposes set forth.

16. A musical-instrument provided with a differential gear and worm actuating mechanism, a speed-controlling mechanism, a driving shaft controlling the tune producing devices, and a motor for actuating said mechanisms, substantially as and for the purposes set forth.

17. A musical-instrument provided with a differential worm-gear and counter-worm-gear speed controlling and governing mechanism actuated by an electric motor in a circuit having a commutator thereof connected with the shaft of the tune producing device and brushes and a switch included in said circuit, substantially as and for the purposes set forth.

18. A musical instrument provided with a main driving shaft for the tune producing appliances thereof and carrying a governor wheel meshing with a differential speed controlling mechanism clutched to a motor and means for engaging and disengaging the shaft of said motor, substantially as and for the purposes set forth.

19. A musical-instrument provided with a comb or combs supported by a bed-plate, a pin-cylinder loosely mounted on a shaft and controlled by a spring, a gear-wheel and an insulated commutator secured to said shaft, a differential worm-and-gear-mechanism provided with means of detachment, an electric motor adapted to detachably engage said mechanism, contact springs or brushes and a switch included in said circuit, substantially as and for the purposes set forth.

20. A musical-instrument provided with a comb or combs supported by a recessed plate, a shaft having a longitudinally movable pin-cylinder, a tune changing device controlled by a pivotal-lever, a toothed wheel and a commutator provided with insulated contacts mounted on said shaft, a worm and counter-gear mechanism adjustably connected with said toothed-wheel, an electric motor included in a circuit and contact springs or brushes and a switch, substantially as and for the purposes set forth.

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**504,672. MACHINE FOR PAINTING, VARNISHING, &c.** WILLIAM H. DOW and DAVID G. CRANE, Burlington, Vt. Filed Apr. 22, 1893. Serial No. 471,457. (No model.)

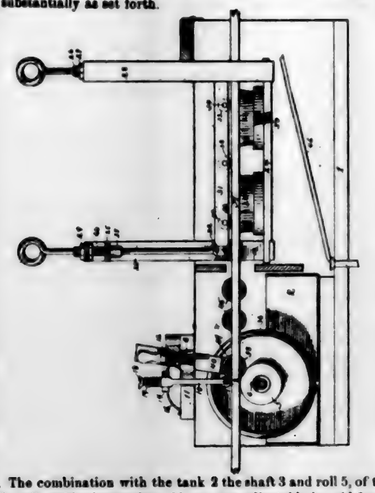
*Claim.*—1. In a painting or varnishing machine the combination of a transverse shaft having a roll, means cooperating with said roll to feed the material to be painted, a tank supplying liquid to the roll, the stationary and adjustable finishing brushes 23 for operating on the surface coated by the roll, the stationary edge painting or coating brush 37, edge finishing brushes 45, a scraper adapted to deliver material to said brush 37, and means operated by said shaft for supplying liquid to said scraper, substantially as set forth.

2. In a painting or varnishing machine, the combination with means for feeding the material, of a brush for operating upon the side or edge of the latter, a disk or wheel 36 mounted in proximity to said brush, means for supplying liquid to said disk or wheel, and a gage for removing the liquid from the wheel, said gage extending to or over the said brush, substantially as set forth.

3. The combination with means for feeding the material, of the side brush 37, the arm 40 supporting the same and adjustable in the frame of the machine, a tank 2, a wheel or disk in said tank, a gage for removing the liquid from said wheel and directing it to said brush, and a finishing brush 45 for operating upon the side or edge of the material subsequently to said brush 37, substantially as set forth.

4. In a painting or varnishing machine the combination of a tank or reservoir, a roller adapted to receive liquid from said reservoir and apply it to the material to be operated upon, a disk or wheel mounted upon the shaft of said roller and adapted to receive the liquid to be applied, a gage for removing said liquid from the disk or wheel, and a side or edge brush which receives the liquid so removed by the gage, substantially as set forth.





5. The combination with the tank 2 the shaft 3 and roll 5, of the laterally adjustable frame-piece 11, an arm adjustable in said frame piece and carrying an edge brush 37, and means for supplying liquid to said brush connected with and operated by said shaft, substantially as set forth.

6. The combination with the roll 5, the side brush, and means for supplying liquid thereto, of the guides 20, situated opposite to each other parallel links controlling said guides, and laterally adjustable screws 22 bearing against the rear of the guides for holding said guides in place against the strip to be operated upon, substantially as set forth.

7. The combination with the roll 5, and means for supplying liquid thereto, of the vertically movable frame 10, 10, 14, rollers 7 carried by said frame, the supporting frame piece 11, springs 16 for forcing said frame upward, the screw 18 and spring 19 for depressing the frame, and the finishing brushes 23, substantially as set forth.

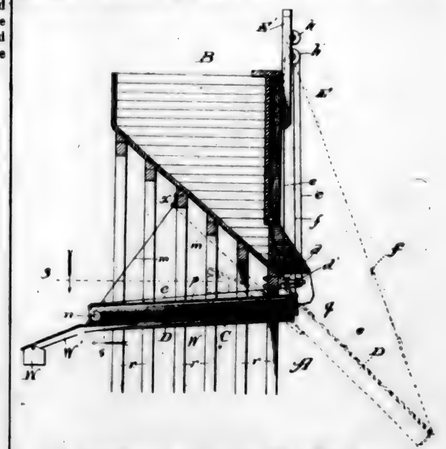
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**504,673. DISCHARGE APPARATUS FOR COAL OR ORE BINS.** RICHARD W. ERICSON, Aurora, Ill. Filed May 12, 1893. Serial No. 474,005. (No model.)

*Claim.*—1. In combination with a coal, ore, and the like, dock, a chute-track below the bin, extending from the forward portion of the dock backward, a chute supported normally on said track, and hoisting mechanism operative above the bin and having a flexible connection with the chute for moving it lengthwise on the track to extend it into operative position at the front of the dock and to hoist it and withdraw it therefrom under the bin, substantially as described.

2. In combination with a coal, ore, and the like, dock a chute-track below the bin, extending from the front of the dock backward, a chute carrying a balancing weight at its rear end and supported by anti-friction rollers normally on said track, and fastened at its rear end to the dock, and hoisting mechanism operative above the bin and having a flexible connection with the chute for moving it lengthwise on the track to extend it into operative position at the front of the dock and to hoist it and withdraw it therefrom under the bin, substantially as described.

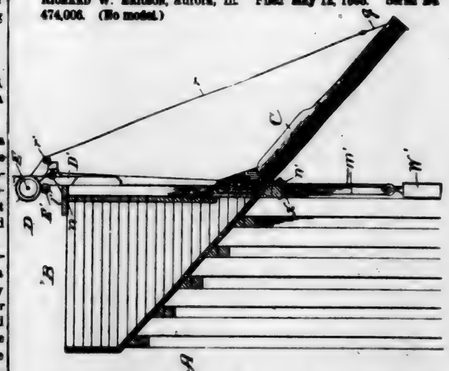
3. In combination with a coal, ore, and the like, dock, a chute-track C below the bin, extending from the front of the dock backward, a chute fastened at its inner end to the dock and weighted at its rear end and adapted to rise lengthwise on the track to be extended into operative position at the front of the dock and withdrawn therefrom on the track, and chute-operating hoisting mechanism E comprising a frame E' supporting a rotary shaft *l* carrying a drum *k* and a ratchet *l'*, a rotary longitudinally adjustable crank-shaft *g* carrying a pinion *g'*, and a rotary shaft *i* carrying drums *h* and *h'* and a ratchet *i'*, a flexible medium *f*, connecting the drum *k* with the chute near its outer end, and flexible connections *e*, fastened to the chute near its inner end, extending thence over guides *d'* about the drums *h*, *h'* and thence over guides *d* to, and fastened to, the chute toward its outer end, substantially as described.



4. In combination with a coal, ore, and the like, dock, a chute-track C below the bin, extending from the front of the dock backward, and provided near its forward end with anti-friction rollers *g*, a chute D adapted to ride lengthwise on the track and carrying, toward its rear end, anti-friction rollers *n* and an arm W' provided with a weight W, a flexible connection *m* between the inner end of the chute and the dock, and chute-operating hoisting mechanism E comprising a frame E' supporting a rotary shaft *l* carrying a drum *k* and a ratchet *l'*, a rotary longitudinally adjustable crank-shaft *g* carrying a pinion *g'*, and a rotary shaft *i* carrying drums *h* and *h'* and a ratchet *i'*, a flexible medium *f*, connecting the drum *k* with the chute near its outer end, and flexible connections *e*, fastened to the chute near its inner end, extending thence over guides *d'* about the drums *h*, *h'* and thence over guides *d* to, and fastened to, the chute toward its outer end, the whole being constructed and arranged to operate substantially as described.

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**504,674. DISCHARGE APPARATUS FOR COAL OR ORE DOCKS.** RICHARD W. ERICSON, Aurora, Ill. Filed May 12, 1893. Serial No. 474,006. (No model.)



*Claim.*—1. In a coal, ore, or the like, dock, the combination with a pivotal chute at a bin, of a hoist having a rotary shaft, a connection *r* between said shaft and the chute near its outer end, weights,

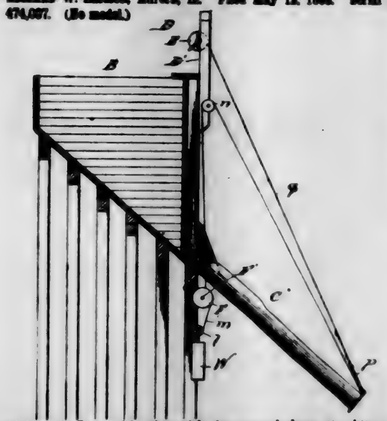
and flexible suspending mediums *m'*, *m'*, of differential lengths, suspending the weights from the shaft and relatively proportioned to equal, by the continuous rotation of the shaft in either direction, the one weight to rise or fall in opposition to and throughout the movement of the chute, and the other to move correspondingly with the chute throughout part of its movement, but in opposition thereto when near and passing its horizontal position, substantially as and for the purpose set forth.

2. In a coal, ore, or the like, dock, the combination with a pivotal chute, at a bin, of a hoist having a rotary shaft carrying drums F, G and G', a connection *r*, connecting the drum G with the chute near its outer end, and weights suspended from the drums G and G' by cables *p* and *o*, of differential lengths, substantially as and for the purpose set forth.

3. In a coal, ore, or the like, dock, the combination with a pivotal chute, at a bin, of a hoist D having a rotary shaft E carrying drums F, G and G', a connection *r*, connecting the drum G with the chute near its outer end, and differential weights W and W' suspended by cables *p* and *o*, of differential lengths, respectively from the drums G and G', substantially as and for the purpose set forth.

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**504,675. DISCHARGE APPARATUS FOR COAL OR ORE DOCKS.** RICHARD W. ERICSON, Aurora, Ill. Filed May 12, 1893. Serial No. 474,097. (No model.)



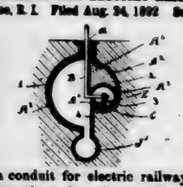
*Claim.*—1. In combination with the pivotal chute at a bin, of a coal, ore, or the like, dock, hoisting mechanism having a drum shaft connected by a flexible connecting medium, with the chute near its outer end, a rotary drum having a double-grooved periphery and supported on the dock, and a flexible weight-suspending medium, fastened to the chute toward its outer end, extending thence to the said drum into both grooves thereof to wind and unwind respectively in opposite directions therein, the width of each of the said grooves being such, with relation to that of the said weight-suspending medium, as to cause the latter to wind and unwind upon itself therein and a weight suspended on said medium below the drum, substantially as and for the purpose set forth.

2. In combination with a pivotal chute at a bin, of a coal, ore, or the like, dock, hoisting mechanism having a drum shaft connected by a flexible connecting medium, with the chute near its outer end, a rotary drum having a double-grooved periphery and supported on the dock, and a flexible weight-suspending medium, fastened to the chute toward its outer end, extending thence over a guide pulley to, and divided at, the said drum and fastened at its divided end to one of said grooves, the other section being fastened at one end to the adjacent groove and at its opposite end to the dock, and supporting between its ends a weight, the said sections winding in opposite directions in the said grooves, the width of each of said grooves being such, with relation to that of its said section, as to cause the latter to rapidly accumulate upon itself in the winding thereof in its groove substantially as and for the purpose set forth.

3. In combination with a pivotal chute at a bin, of a coal, ore, or the like, dock, hoisting mechanism comprising a frame D', supporting guide-pulley *n* and a rotary shaft E carrying a drum *r*, a connection *q* between the drum and the chute near its outer end, a shaft F' supported below the drum *r*, drums P on the shaft F', and each provided with grooves *l l'*, flexible weight-suspending mediums, fastened to the chute near its outer end and extending thence over the guide pulleys *n* to, and divided at, the drums F, with the end of one section of each fastened to a groove *l*, and with an end of the other section of each fastened to a groove *l'*, with its opposite ends fastened to the dock, to form the loops *m*, the width of each of said grooves being such, with relation to that of its said section, as to cause the latter to wind and unwind upon itself therein and weights W suspended in the loops, the whole being constructed and arranged to operate substantially as described.

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**504,676. CONDUIT FOR ELECTRIC RAILWAYS.** SAMUEL H. PLAGE, Providence, R. I. Filed Aug. 24, 1892. Serial No. 443,942. (No model.)



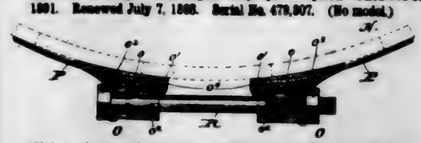
*Claim.*—1. In a conduit for electric railways having a slot for the contact bar to pass through, and a shoulder or shelf at one side a cast glass tube, having a longitudinal slot on its inner side, and arranged on one side of said contact bar slot, said cast glass tube being embedded in cement substantially as set forth.

2. In an electric railway, a conduit consisting of an outer metal tube or pipe having a shelf at one side, the bottom of which is rounding a glass tube or pipe arranged on said shelf said glass pipe being set in cement, an electric wire supported therein, in combination with a contact bar having a roller run upon said wire, and its upper end connected to the motor on the car substantially as shown and described.

3. A conduit for electric railways consisting of a metal casing having a lining of glass, and a drain at the bottom a small cast glass pipe arranged on one side thereof and having a longitudinal slot on its inner side, said cast glass pipe being embedded in cement substantially as set forth.

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**504,677. HOOP-COUPLING.** HENRY W. FORD, Beloit, Wis., assignor to the Eclipse Wind-Engine Company, same place. Filed Oct. 16, 1891. Renewed July 7, 1893. Serial No. 479,807. (No model.)



*Claim.*—1. As a fastening and tightening device for tank hoops, a coupling, consisting of two metallic blocks connected by a straining rod, one of said blocks being provided with an opening in line with and adapted to admit the hoop, a transverse projecting part immediately over the center of the opening for the hoop to receive the end of the straining rod; and a transverse part around which the hoop is bent and doubled back into the opening; substantially as set forth.

2. As a fastening and tightening device for tank hoops, a coupling member O., consisting of a metallic block, provided with the projecting part $o^3$, immediately over the center of the opening for the hoop for receiving the end of the straining-rod; the wedge-shaped opening *o*, to admit the end of the hoop; and the transverse part $o'$, arranged in the wider part of said opening around which the hoop is bent; substantially as set forth.

3. As a fastening and tightening device for tank hoops, the combination of the coupling member O., consisting of the metallic block, provided with the projecting part $o^3$, for receiving the end of the straining-rod, and the opening *o*, to admit the end of the hoop, in line with the body of said hoop with the separate bar $o'$; said bar being adapted to extend transversely across the block O., its ends resting against the shoulders $o^4$; and to have the hoop bent around it substantially as and for the purposes set forth.

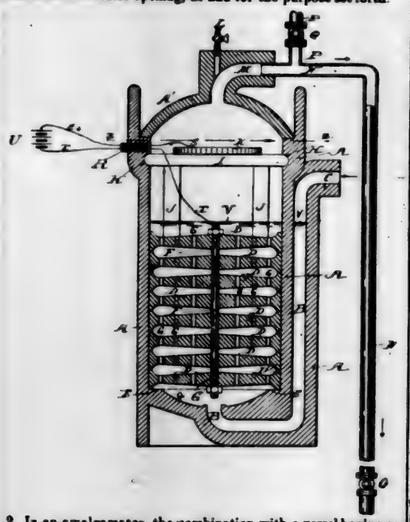
4. As a fastening and tightening device for tank hoops, the combination of a coupling member O., consisting of a metallic block, provided with the projecting part $o^3$, for receiving the end of the straining-rod, and the wedge-shaped opening *o*, to admit the hoop, with the separate bar $o'$, said bar being adapted to extend transversely across the block, its ends resting against the shoulders $o^4$; substantially as and for the purposes herein set forth.

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**504,678. AMALGAMATOR.** WILLARD M. FULLER, Denver, Colo. Filed Nov. 22, 1892. Serial No. 452,833. (No model.)

*Claim.*—1. In an amalgamator, the combination with a vessel having cored in its side an inlet pipe with an inlet opening near the top of the vessel, and an exit pipe leading from the top of the vessel to a point below the inlet opening; of a series of disks arranged in a pile within the vessel and provided with perforations for the flow of liquid therethrough, and quicksilver in the jar to a height above said pile but below said inlet opening, as and for the purpose set forth.





2. In an amalgamator, the combination with a vessel having an annular shoulder at its bottom inside, an inlet pipe communicating with said bottom, and an exit pipe leading from the top of the vessel; of a series of disks fitting closely but removably within the jar or vessel, each disk having on its upper and lower faces annular ribs whose combined thickness is greater than that of the body of the disk, and said body being provided with central bolt-holes and additional perforations, and a bolt passing through all said bolt-holes, as and for the purpose set forth.

3. In an amalgamator, the combination with a vessel having inlet and outlet openings and provided with an interior annular groove near its top, and a shoulder at the bottom of and within said vessel; of a series of disks having perforated bodies with annular ribs, the lowermost resting upon said shoulder and the others superimposed thereon, two strips removably placed across said vessel with their ends in said groove, a plate detachably mounted on said strips, and braces between said strips and the uppermost disk, as and for the purpose set forth.

4. In an amalgamator, the combination with a vessel having a concave interior bottom, an ore-inlet pipe cored in the side of said vessel and leading from said concave bottom to a point near the top of the vessel, and a series of perforated disks detachably fixed within said vessel; of a removable cover for the vessel, an air-cock therein, an exit-pipe leading from said cover to a point below the inlet opening of said ore-pipe, a cock in this pipe, a water-supply pipe communicating with said exit pipe, and a cock in the water-pipe, all as and for the purpose set forth.

5. In an amalgamator, the combination with an earthenware vessel, inlet and outlet pipes connected therewith, and a series of earthenware disks within said jar; of a bolt connecting said disks, quicksilver in the vessel to a height above the disks and bolt, a carbon plate supported in the vessel above the quicksilver, an insulator in the side of the vessel, and wires leading from a battery through said insulator respectively to said bolt and plate, as and for the purpose set forth.

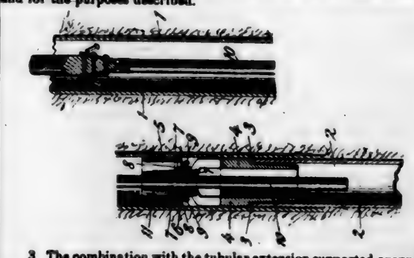
6. In an amalgamator, the combination with an earthenware vessel, inlet and outlet pipes connected therewith, a series of perforated earthenware disks piled within said vessel, a bolt passing through all said disks, and quicksilver in the vessel to a height above said disks and bolt; of strips removably secured in the vessel above the disks, a carbon plate removably secured thereon, braces between said strips and the uppermost disk, said strips and braces being non-conductors of electricity, and wires leading from a source of electric supply respectively to said plate and bolt, as and for the purpose set forth.

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**504,679. PUMP FOR OIL-WELLS.** JOHN H. GIBSON, Bruin, and THOMAS D. SUTTON, Connoquenessing, Pa. Filed Sept. 13, 1892. Serial No. 445,804. (No model.)

*Claim.*—1. The combination with the reciprocating piston or valve rod, of a tubular extension supported above the valve casing, and a cup formed with a perforated bottom and a central aperture to fit around said tubular extension and hold immovably around the piston rod adapted to reciprocate through the cup, substantially as and for the purposes described.

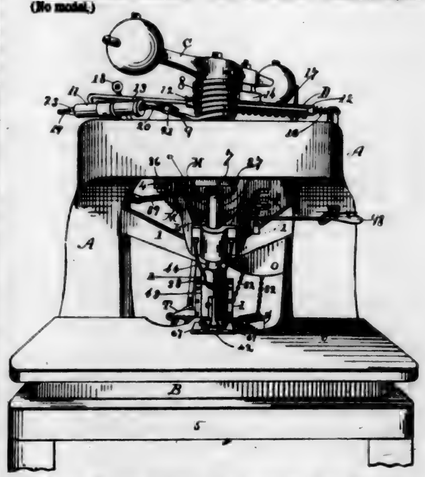
2. The combination with the reciprocating valve or piston rod, of a tubular extension supported around the piston rod, a cup separable from said extension and formed with a perforated bottom and a central aperture to fit around said tubular extension and provided with a depending collar or flange around said aperture, and securing means passed through said collar and bearing against said tubular extension to hold said cup immovably in place while permitting the piston rod to reciprocate through the same, said tubular extension extending through the cup to form a shield to prevent loose rivets in the cup from coming in contact with the reciprocating rod, substantially as and for the purposes described.



3. The combination with the tubular extension supported around the piston rod, and the reciprocating piston rod, of a cup having a perforated bottom and held immovably upon said extension, and a sleeve resting on said extension and made separate from and located inside the cup between it and the reciprocating piston rod to shield the rod in its reciprocation through the cup from loose rivets caught and retained by the cup, substantially as and for the purposes described.

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**504,680. EMBOSSING AND PRINTING PRESS.** JOSEPH Y. JOHNSTON, Montclair, N. J., assignor, by mesne assignments, to the Johnston Embossing Machine Company. Filed Sept. 10, 1892. Serial No. 445,594. (No model.)



*Claim.*—1. The combination of an operating lever 98, friction clutch 31, loose pulley O, pinion N on driving shaft F, gear wheel M, main shaft E, and mutilated bevel wheel K with bevel pinion L, shaft G, and die carrier I, substantially as and for the purposes described.

2. The combination of main shaft E and mutilated bevel wheel K with bevel pinion L, shaft G, and die carrier I, substantially as and for the purposes described.

3. The combination of main shaft E, mutilated bevel wheel H, pinion 25, rack bar D, connecting block 14, and lever C, with a spring-actuated screw plunger, substantially as and for the purposes described.

1. The combination of spring-actuated screw plunger 7, lever C, connecting block 14, rack bar D, spur pinion 25, mutilated spur wheel H, shaft E, mutilated bevel wheel K, bevel pinion L, shaft G, die car-

rier I, die plunger K, and die 42, with a die inking device, substantially as and for the purposes described.

5. The combination of the die of an embossing and printing press with die carrier I, shaft G, pinion L, mutilated gear K, shaft E, cam 27, locking pin 28, and check spring 44, substantially as and for the purposes described.

6. The combination of a revolving die carrier with a cam-actuated locking pin, substantially as and for the purposes described.

7. The combination of a revolving die carrier with a die plunger, a die, a die inking device, and a die wiping device, substantially as and for the purposes described.

8. The combination of a revolving die with an inking device, a wiping device, and a spring-actuated screw plunger, substantially as and for the purposes described.

9. A revolving die carrier, provided with a die plunger and a locking mechanism, in combination with a spring-actuated screw plunger, substantially as and for the purposes described.

10. The revolving die plunger R, carrier I, and adjustable cams 67, in combination with die 42, disks 95, and inking roller 48, supported on rocking arms 62, and held in position by springs 63, substantially as and for the purposes described.

11. The combination of a die plunger with a spring-actuated screw plunger, substantially as and for the purposes described.

12. In an embossing and printing press provided with a screw plunger, the combination of a ball lever C, connecting block 14, rack bar D, guide rod 13, and stop 15, with dog 29 and cam J, substantially as and for the purposes described.

13. The combination of a coil spring 8 actuating screw plunger 7 with a tension-adjusting auxiliary spring substantially as and for the purposes described.

14. The combination of die plunger R and spring-actuated screw plunger 7 with ball lever C and rebounding spring 17, substantially as and for the purposes described.

15 In an embossing and printing press, an inking device consisting of an ink reservoir, a collecting and an evening roller, an ink agitator, and a die inking roller mounted on a rocking frame and provided with adjusting springs, substantially as and for the purposes described.

16. In the inking device of an embossing and printing press, an ink agitator 57 in combination with connecting rod 58, crank 56, shaft 55, and gear wheels 54, 31, and 53, substantially as and for the purposes described.

17. The combination of a shaft F, pulley O, clutch and sprocket wheel P, chain 32, sprocket wheels 34 and 35 on shaft 33, chain 36, and sprocket wheel 37 on stud 100, with the fountain and the rollers of an inking device, substantially as and for the purposes described.

18. A die and a die inking device in combination with a cam and spring actuated die wiper, substantially as and for the purposes described.

19. The combination of a revolving die with an adjustable wiper T, provided with springs 68, base plate 69, arm 76, rock shaft 74, sliding bar 82, and adjustable cam 87, substantially as and for the purposes described.

20. The combination of a traveling die with a stationary die wiping device consisting of a wiper and mechanism adapted to move its wiping surface instantly against the entire lettered surface of the die and to hold the two together, substantially as and for the purposes described.

21. The combination of a die with a die wiping device consisting of a wiper and mechanism adapted to move its wiping surface instantly against the entire lettered surface of the die and to hold the two together while the one moves over the other, substantially as and for the purposes described.

22. A revolving die, a die inker, and a die wiper, in combination with a paper feeding device consisting of cam-actuated lever 89, connecting rod 92, pawl lever 93, ratchet *n*, feeding roller *m*, adjustable tension roller *p*, connecting rod 97 provided with slot *x*, weighted pawl lever 96, detent *z*, ratchet *y*, and waste paper roller *v*, substantially as and for the purposes described.

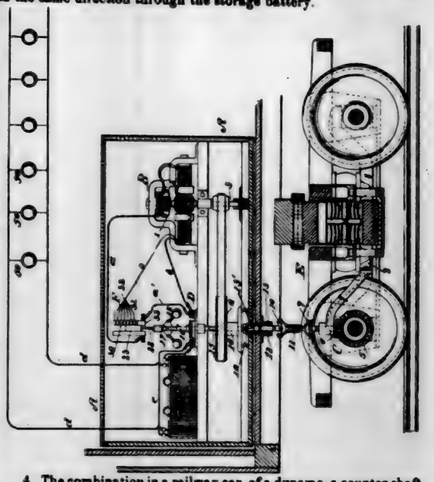
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**504,681.** ELECTRIC CAR-LIGHTING SYSTEM. ISAAC H. LEWIS, Fort Wadsworth, N. Y. Filed Sept. 17, 1892. Serial No. 445,894. (No model.)

*Claim.*—1. In a system for producing a continuous working current of electricity from an intermittent source of motion, the combination of a dynamo, having its field circuit connected in series with its armature circuit, a storage battery, a charging circuit, a discharging circuit, and a centrifugally controlled cut-out switch interposed in the charging circuit, connected with the variable speed source from which the dynamo is driven, substantially as described.

2. In an electric lighting system, the combination of a car or other vehicle, a dynamo B, having its field circuit in series with its armature circuit, flexible connections between the dynamo and car axle, a storage battery charged by said dynamo, an automatic cut-out switch, and the centrifugally controlled variable resistance device F, interposed in part of the field circuit of the dynamo, constructed and operating substantially as described.

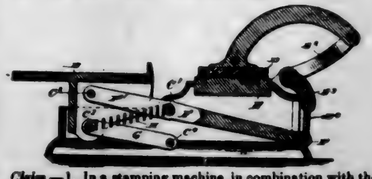
3. In a system designed to produce a continuous current of electricity from an intermittent and reversible source of motion, the combination of a dynamo having zero lead of the commutator brushes, a storage battery charged by said dynamo, and an automatic mechanically controlled reversing switch interposed between the dynamo and the battery, the position of which is changed with every change in direction of rotation of the dynamo armature shaft, and by means of which the electric current from the dynamo is made to pass always in the same direction through the storage battery.



4. The combination in a railway car, of a dynamo, a counter shaft mechanically connected with the axle of the car truck, means for imparting rotation from the counter shaft to the rotary part of the dynamo, a storage battery upon the car, a charging circuit, a discharging circuit, a centrifugal governor upon the said counter shaft having its revolution speed less than that of the dynamo, a cut-out switch interposed in the charging circuit operatively connected to said governor, a variable resistance device interposed in the main circuit of the dynamo or in a shunt circuit thereof, and also upon said counter shaft an automatic reversing switch interposed in said charging circuit operated by frictional connection with said counter shaft; all co-operating as herein described.

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**504,682.** STAMPING-MACHINE. DOCTOR F. OLIVER, Oakland, Cal. Filed Aug. 5, 1893. Serial No. 442,294. (No model.)



*Claim.*—1. In a stamping machine, in combination with the base A and stamp D horizontally carried by arms C, B' and $B^3$ the vertically movable platform pivotally supported by the parallel rocking-bars F and G, the link $B^4$ connecting bar F to lug $B^3$ for operating stamp, substantially as described.

2. In a stamping machine, in combination with the base A and stamp D horizontally carried by the arms C, B' and $B^3$, the vertically movable platform, pivotally supported by the parallel rocking-bars F and G, bar F being connected to lug $B^3$ by link $B^4$, the spring H attached to the pins C' and $C^3$, for the purpose set forth, substantially as described.

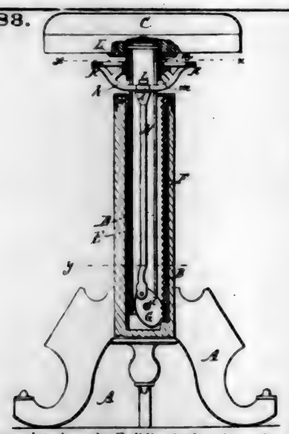
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**504,683.** FLANO-STOOL. JOSEPH R. PEARTREE, Rochester, N. Y., assignor of one-half to Peter Zink, same place. Filed May 4, 1893. Serial No. 473,031. (No model.)

*Claim.*—The combination, with the standard, of the exterior tube made in two sections D D' slotted and provided with a rack F offset



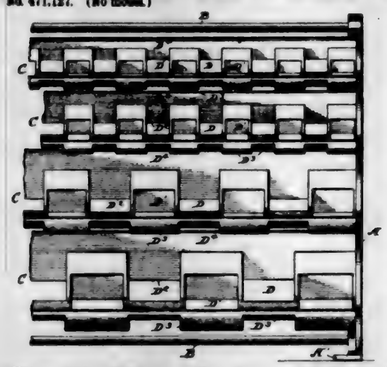
**504,683.**



from the tube, an interior tube E sliding in the other, a dog G pivoted to the interior tube and passing through its slot to engage with the rack, a rod H pivoted to the dog, a lifting ring K attached to the upper end of the rod, a bearing L attached to the seat and provided with a tubular shank *m*, a band *s* of the lifting ring sliding on said shank, a loose ring *p* on the tube E above the bearing, and a pin *r* connecting said loose ring with the tube, as and for the purpose specified.

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**504,684.** COIN-TRAY. WILLIAM H. STAATS, Chicago, Ill., assignor of one-half to James F. Griffin, same place. Filed Apr. 20, 1893. Serial No. 471,127. (No model.)



*Claim.*—1. A coin tray comprising a frame consisting of two side pieces having feet and scalloped front edges, the separable trays adapted to be supported in the side pieces and the rods connecting the side pieces, substantially as described.

2. A coin tray comprising a frame consisting of the two side pieces having feet and inclined slots, the separable trays having pockets for the coins and provided with projections fitting said slots and rods connecting the side pieces, substantially as described.

3. A coin tray comprising the sides secured together, and the separable trays having pockets for the coins and provided with means for securing them to the sides, the trays being provided with rear flanges arranged to extend under openings in the next tray, substantially as described

4. The combination with the sides and rods connecting them, the sides being provided with alternate recesses and projections, of the trays for holding the coins arranged at an inclination in the sides and having their front edges corresponding with the projections, exposing the coins in the recesses of the sides, substantially as described.

5. The combination with the inclined sides having feet and recessed front edges and provided with inclined slots, of the trays having recesses for the coins, and provided with projections at their ends fitting the slots, the trays being arranged at an inclination to the sides, so that their front edges will correspond with the projections of the sides, substantially as described

6. The combination with the sides and means for securing them together and the feet or extensions supporting the frame of the sides; of the detachable trays having pockets for holding the coin, the trays being connected to the sides at an angle so that they will support the coin whether the sides are in a substantially upright or horizontal position; substantially as described.

7. The combination with the sides and means for securing them together, the sides being provided with the rear extensions; of the coin trays secured to the sides, the arrangement being such that the coins are held in position when the tray is in a substantially vertical or horizontal position and the various coin trays may be nested for storage; substantially as described.

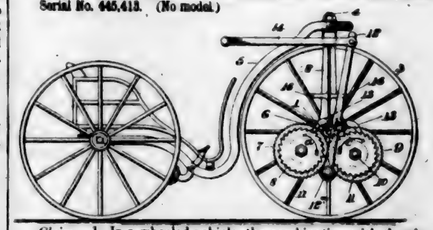
8. A coin tray comprising the sides, means for securing them together, trays supported by the sides and extensions for the sides, the said extensions being cut away to permit the trays being nested, substantially as described.

9. The combination with the sides properly connected together, and the trays supported between the sides, said sides being provided with feet having rear extensions set in from the outer surfaces of the sides, substantially as shown and for the purpose described.

10. The combination with the sides suitably connected together, and the trays supported between the sides, said sides being provided with feet having rear extensions set in from the outer surfaces of the sides, and the intersecting flange curved to form an offset, substantially as described.

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**504,685.** WHEELED VEHICLE. ROBERT STEEL, Philadelphia, Pa., assignor to William J. Moore, same place. Filed Sept. 8, 1892. Serial No. 445,413. (No model.)



*Claim.*—1. In a wheeled vehicle, the combination with the pivoted frame, of the pinion on the shaft or axle of the wheel in said frame, the ratchet wheels, and the spur wheels mounted on said frame, the vibrating arm, the pawls thereon engaging the teeth of the ratchet wheels respectively, and the handle bar or frame connected with said vibratory arm, and adapted to be used for operating and steering the vehicle substantially as described.

2. In a wheeled vehicle, the combination with the pivoted frame, of the pinions on the ends of the shaft or axle of the wheel in said frame, the ratchet wheels and the spur wheels mounted on the respective sides of said frame, the vibratory arms, the pivoted pawls thereon engaging the teeth of the ratchet wheels respectively, and the handle frame pivotally connected with said vibratory arms, and adapted to be used for operating and steering the vehicle substantially as described.

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**504,686.** WHIFFLETREE-HOOK. WILLIAM J. STOWE, Kansas City, assignor to the Hixdorff-Krein Manufacturing Company, St. Louis, Mo. Filed Feb. 20, 1893. Serial No. 463,033. (No model.)



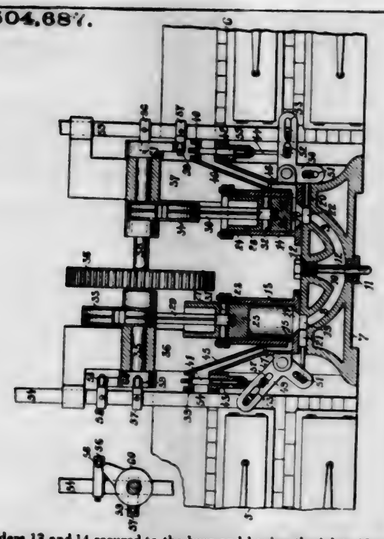
*Claim.*—A whiffletree-hook comprising a sleeve 3 of nearly equal size from its inner end to its outer end, having a flange 6 within it and formed with an open horizontal slot in its extremity and top and bottom recesses 7, a hook 4, and a pivot-pin 5 whereby the hook is pivoted eccentrically in the slot near the rear side of the sleeve, having heads $5^a$ occupying the recesses in the sleeve, substantially as described

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**504,687.** MACHINE FOR MAKING PIPES OR TUBES. GEORGE H. WILSON, Central Falls, assignor to himself, Henry Randall Wilcox, trustee, Cranston, and Stephen Cushing Harris, Providence, R. I. Filed Sept. 1, 1892. Serial No. 444,833. (No model.)

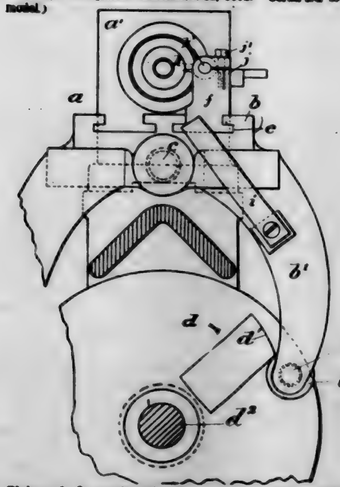
*Claim.*—The combination of the reservoirs 5 and 6, the base 7 located between the same, the chamber 10, formed in the lower central part of the base, the chambers 8 and 9 connecting this central chamber with the upper part of the base a removable die secured through the lower wall of the chamber 10 and a removable mandrel secured through the upper wall thereof, guides 19 and 20 formed in the upper part of the base 7, the gates 21 and 22 movable in said guides, the

504,687.



cylinders 13 and 14 secured to the base and having the inlets 15 and 16 and the outlets 17 and 18 connecting with the channels 8 and 9, the pistons 25 and 26 movable in said cylinders and connected by the rods 29 and 30 with the eccentrics 33 and 34 carried on the shafts, and means for rotating said shaft, of the supply-mains 39 and 40 connected with the inlets 15 and 16, the gates 41 and 42 for closing the mains, the bell-crank levers 49 and 50 having the slots 51—51 in which roller-bearings of the stems of the gates 21 and 22 engage, the slots 52—52 in which roller-bearings of the gates 41 and 42 engage, and the slots 53—53 in which roller-bearings on the rods 54 and 55 engage, the vertically-movable rods 54 and 55, the arms 56 and 57 secured to said rods and carrying roller-bearings, and the cams 60 and 61, carried by the shaft 35, adapted to alternately engage the roller-bearings on the arms 56 and 57 to lift or depress the rods 54 and 55, as and for the purpose described.

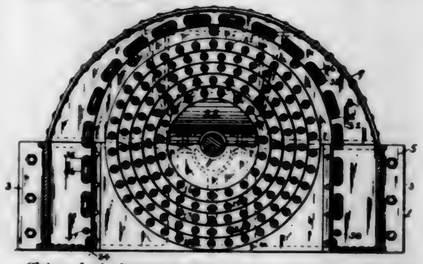
504,688. CUTTING-OFF AND FORMING TOOL. GEORGE E. WITHERELL, Hartford, Conn., assignor to the Hartford Machine Screw Company, same place. Filed Nov. 12, 1892. Serial No. 451,518. (No model.)



*Claim.*—1. In combination in a machine tool, a movable bed and means for moving it in a direction across the axis of the work holding arbor, the tool holding carriage arranged on said bed and adapted to move lengthwise thereon, an adjustable former borne on said carriage, a spring adapted to hold the carriage normally in engagement with the contact block, a contact block secured to a fixed part of the frame of the machine, and a tool holder borne on the carriage, all substantially as described.

2. In combination in a machine tool, a rocking bed piece *b* having a transverse carriage support *e*, a tool holding carriage *f* arranged on said bed and adapted to move lengthwise thereon, the adjustable former *g* arranged on the end of said carriage, the spring *i* adapted to thrust the carriage *f* with a yielding pressure toward the contact block A, the adjustable contact block A secured to the fixed part *a'* of the frame and a tool holder *j* and cam *j'* borne on the carriage, all substantially as described.

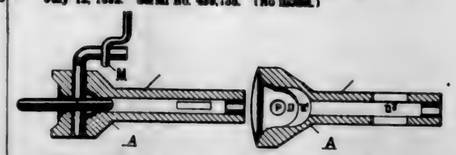
504,689. MACHINE FOR DISINTEGRATING CLAY, ORES, &c. HERMAN S. ALBRECHT, St. Louis, Mo. Filed Sept. 21, 1892. Serial No. 446,371. (No model.)



*Claim.*—1. An improved disintegrator having a supporting base consisting of end castings 2, side castings 3, said side and end castings bolted together, end frames 8 mounted thereon and secured thereto, a peripheral shell 32 mounted upon and secured to cross braces 33 the ends of which are secured to said side frames 8, an outer shell 9 riveted to the peripheral flanges 10 upon said side frames 8, and a series of horizontally arranged pipes 35 connected by couplings 36 between said shells 9 and 32, substantially as set forth.

2. An improved disintegrator having a heating chamber consisting of a series of horizontally arranged pipes 35 in parallel alignment with each other, said pipes located between an inner shell 32 and an outer shell 9, a shaft 11 mounted in suitable bearings, a revolving crushing cage keyed upon said shaft 11, a driving pulley 53 for operating said shaft 11, substantially as set forth.

504,690. CAR-COUPLING. JAMES R. AVERY, Louisville, Ky. Filed July 12, 1892. Serial No. 439,738. (No model.)



*Claim.*—1. In a car coupler, an angled coupling-pin, having uniform diameter and coupling link of like diameter, the inner ends of the link being semicircles conformed to the periphery of the pin and proportioned thereto as the pin-hole is to the pin, substantially as set forth.

2. A car-coupler having a vertically straight pin-hole of uniform diameter and a link-cavity having elliptical-concave, cylindrical-convex, and oblique converging walls, the configuration blending and assuring the proper reception guidance and union of the pin and link, substantially as set forth.

3. A car-coupler having its sub-cavity made to conform to the end of the coupling-link, proportionately as the pin-hole to the coupling-pin, substantially as and for the purposes specified.

4. In a car-coupling, a coupler having a cylindrical hole of uniform diameter, longitudinally through the center of its neck or stem bisecting the rear or back wall of the sub-cavity therein, a transverse slot through said neck or stem bisecting the walls of said hole of a length sufficient to allow a limited longitudinal movement of a bolt or bar engaged therein with a draw-bar, spring or bolt, substantially as and for the purposes set forth.

5. In a car coupling, the spring rod or bolt, of uniform diameter, having two transverse slots, one vertical to the other, the longer of the two slots having a bolt or bar for combination with the transverse slot



in the neck of the coupler impinged against its rear wall and a key for the other slot for combination, with follow plates having a spring interposed, or with a spring abutment having a spring interposed between it and the coupler and between said abutment and a washer or other abutment impinged against said key.

6. In a car coupling the bolt or bar engaged by the draw-bar, the spring rod or bolt, in the transverse slot through the neck of the coupler abd in the transverse slot in or through the draw timbers of the car, impinged against the rear wall of each slot, in combination to prevent the rearward movement of said draw bar, rod or bolt, permit the operation of the spring or springs to place the link, release the pin, cushion thrust, cause automatic coupling and receive the unspent force imparted by thrust, substantially as and for the purposes specified.

7. In the combination of a car coupling, the cross beam or spring abutment, having a hole through its center, to receive and engage the draw bar, rod or spring bolt, of a car coupler and transverse thereto, a hole above and below and parallel to each other, provided with bolts therein, to strengthen, connect and secure it to the draft timbers of the car substantially as and for the purposes set forth.

8. In a car coupling, the cross beam spring abutment made of any suitable material, metal, wood or composition having a hole or bearing through its center, engaging the draw bar, spring rod or bolt, a hole above and below transverse thereto having a rod or bolt each therein to strengthen the said abutment connect with and secure to the draw timbers having a bar on the outside of each, secured thereto by rods or bolts, provided with nuts to protect and prevent the draw timbers from spreading.

9. In combination with a car coupler, the draw timbers of a car, having a transverse slot provided therein or there through, opposite and parallel each to the other, to receive and engage the bolt or bar impinged against the rear wall of said slots the neck of the coupler having a transverse slot and the draw bar, spring rod or bolt having a slot near the latter slot to prevent the rearward movement of said draw-bar, rod or bolt, assure the operation of the spring or springs thereon, place the coupling link, release the pin, cushion thrust, cause automatic coupling and afford resistance to unspent force received from thrust substantially as described.

10. In a car-coupling—a coupler having a vertically straight coupling-pin-hole of uniform diameter a coupling-link cavity, having elliptical concave, cylindrical-convex, and oblique converging walls—the configuration blending and assuring the proper reception, guidance and union of the pin and link, a sub-cavity conforming to the end of the coupling link therein proportionately as the pin-hole to the coupling-pin, a cylindrical hole of uniform diameter longitudinally through the center of its neck or stem bisecting the rear wall of the sub-cavity, a transverse slot through said neck or stem bisecting the walls of said hole of a length sufficient to allow a limited longitudinal movement of a bolt or bar engaged therein with or by a draw-bar, spring-rod or bolt, substantially as and for the purposes set forth.

11. In combination with a car coupler and transom or body bolster of a car the draw rod or rods employed to resist draft and strengthen the coupling.

12. In a car coupling, the lateral rods, connecting the transom or body bolster of the car, with the transverse slot in the draw timbers or guards engaged therein, to receive draft subsequent to the operation of the spring or springs and provide increased strength to the coupling.

13. The guards F. in combination with the draft timbers of a car substantially as and for the purposes herein set forth.

14. In a car coupling the lateral rods connecting the transom or body bolster of a car with the guards in the transverse slot of the draw timbers or with the bolt or bar engaged in the transverse slot in the neck of the coupler and transverse slot in the draw bar spring rod or bolt, to provide increased strength to the coupling and protection to the spring or springs in combination.

15. In a car coupling the draft timbers of a car, having a transverse slot each opposite and parallel, provided with lateral draft rods engaged therein or thereby, to prevent the rearward movement of the draw-bar engaged in the neck of the coupler, permit and assure a limited movement of the coupler thereon rearward and a limited forward movement of both, also afford protection to the spring or springs, in response to thrust and draft respectively, the cross beam or spring abutment, having a hole through its center, to receive and engage the draw bar, rod or bolt of a car coupler and transverse to said hole, above and below holes parallel to each other, provided with a rod or bolt, each having a nut or nuts connecting it with and securing it to said draft timbers, affording an abutment for the springs engaged upon the draw-bar, spring rod or bolt, in combination substantially as and for the purposes herein set forth.

16. In a car-coupling the combination of a coupler provided with a transverse slot, and having in its neck a draw-bar, spring bolt or rod engaged therein with a sliding bolt or bar inserted in said slot, and draw-rods connected by slotted or looped ends therewith, whereby the pull first actuates the spring or springs of the spring bolt, rod or draw-bar, and subsequently acts upon the draft-rods, substantially as set forth.

17. In a car coupling, the coupler having a straight cylindrically round pin hole of uniform diameter, for the easy insertion and withdrawal of the coupling pin, a link cavity made to conform therewith, proportionately, by the blending of elliptical, concave, cylindrical convex and oblique converging walls, to receive, direct and hold the coupling link, in position normally for automatic coupling; a sub-cavity, to receive the inner end of the link for a greater elevation of its outer end and made to conform thereto proportionately as the pinhole to the pin, also for automatic coupling with links that are longer than the standard; a cylindrically round hole of uniform diameter extending therefrom longitudinally through the neck of the coupler, and a transverse slot therethrough, having a spring rod or bolt engaged in said longitudinal hole with the bar or bolt in said transverse slot, impinged against its rear wall and of a width less than the length of the slot and equal to the depth of the sub cavity to cushion thrust, place the link, release the pin, cause automatic coupling and provide greater strength to the coupling substantially as described.

18. The guards F. draft timbers V. cross beam E. and draft rods H. in combination substantially as and for the purposes herein set forth.

19. In combination the draft timbers V., cross beam E., angled carry iron I., draft rods H., coupler A., draw bar B., spring S., bolt C., guards F., spring S'., a washer and key D., substantially as and for the purposes herein set forth.

20. In combination with a car, the draft timbers V., provided with a spring abutment E., angled carry-iron I., guards F., draft rods H., with bar and nuts, coupler A., with pin P., draw bar B., with bolt C., spring S and S', washer and key D., uncoupling device, with vertical rod M., and gravity catch U., substantially as and for the purposes herein set forth.

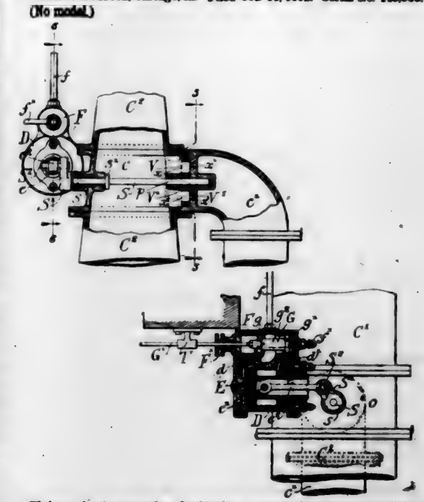
21. In a car coupling, the draft timbers V., spring abutment E., angled carry iron I. draft rods H., guards F., coupler A., draw bar B. bolt C., springs S and S'., washer, key D., link L., and pin P., rod M., bearing T., gravity catch U., and rod N. in combination substantially as and for the purposes herein set forth.

22. In combination with the transverse slot, in the draft timbers of a car, a right angled parallelogram, forming end walls thereto, and a bearing for a draft rod and a guard to a bolt engaged therein substantially as and for the purpose herein set forth.

23. In combination with the car and coupler, the coupling pin P., vertical rod M., lateral rod N., bearing T., and gravity catch U., substantially as and for the purposes herein described.

24. The bearing T, substantially as herein described,

504,691. GOVERNING DEVICE FOR COMPOUND ENGINES. MILAN C. BULLOCK, Chicago, Ill. Filed Oct. 11, 1892. Serial No. 448,533. (No model.)



*Claim.*—1. A governing device for compound engines comprising an exhaust steam outlet in the steam passage leading from the high to the low pressure cylinder, a valve maintaining said outlet normally

closed and a governor connected with said valve and acting to open the same whenever said governor passes a predetermined point in its movement, substantially as described.

2. A governing device for compound engines, comprising an exhaust steam outlet communicating with the exhaust passages of the high pressure cylinder, a valve maintaining said outlet normally closed, an auxiliary motor connected with the said valve, and connections between the motor and a governor for throwing the motor into action whenever the governor passes a predetermined point in its movement, substantially as described.

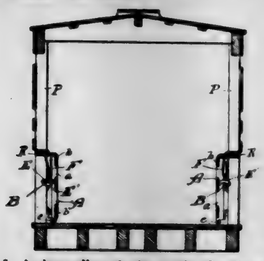
3. A governing device for compound engines, comprising an exhaust steam outlet, communicating with the exhaust passages of the high pressure cylinder, a valve maintaining said outlet normally closed, an auxiliary steam cylinder with its piston connected with the said valve, a valve controlling the admission of steam to the auxiliary cylinder, and connections between the latter valve and a governor for shifting the valve as the governor passes a predetermined point in its movement, substantially as described.

4. A governing device for compound engines comprising an exhaust steam outlet communicating with the exhaust passages of the high pressure cylinder, a fixed transverse seat in said outlet having radial openings therein, an oscillating disk in contact with said seat, provided with similar openings, an actuating shaft for said disk, provided with a crank-arm, and mechanism connected with a governor for oscillating the crank arm whenever the governor passes a predetermined point in its movement, substantially as described.

5. A governing device for compound engines comprising an exhaust steam outlet communicating with the exhaust passages of the high pressure cylinder, a fixed transverse seat in said outlet having radial openings therein, an oscillating disk in contact with said seat, provided with similar openings, an actuating shaft for said disk, provided with a crank-arm, an auxiliary motor connected with said crank arm and connections between the motor and a governor for throwing the motor into action whenever said governor passes a predetermined point in its movement, substantially as described.

6. A governing device for compound engines comprising an exhaust steam outlet communicating with the exhaust passages of the high pressure cylinder, a fixed transverse seat in said outlet having radial openings therein, an oscillating disk in contact with said seat, provided with similar openings, an actuating shaft for said disk, provided with a crank arm, an auxiliary steam cylinder with its piston connected with the crank arm, a valve controlling the admission of steam to said auxiliary cylinder, and connections between the latter valve and a governor for shifting the valve whenever the governor passes a predetermined point in its movement, substantially as described.

**504,692.** STOCK-CAR. BOBB C. HICKS, Chicago, Ill., assignor to the Hicks Stock Car Company, of West Virginia. Filed Feb. 10, 1891. Serial No. 380,908. (No model.)



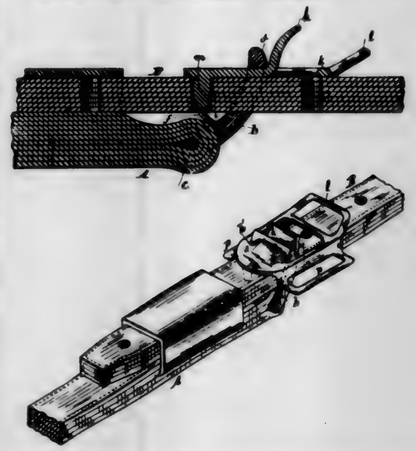
*Claim.*—1. An inwardly-swinging section forming the lower part of the side wall of a stock car and pivotally connected at its bottom at the floor thereof, said section being movable from a substantially vertical position at the side of the car inwardly to a position where a space is left between the upper edge of said section and the lower edge of the upper part of said side wall, said section having horizontal slats constituting its inner side, and also the side slats of the lower portion of the car one of said slats extending along the upper part of said section, in combination with a trough exterior at all times to said section and correspondingly movable, the open mouth of said trough being exposed and rendered accessible when said section occupies its inward position, and said trough being then located behind said upper slat whereby it is protected, substantially as set forth.

2. An inwardly-swinging slatted section forming the lower part of the side wall of a stock car and pivotally connected at its bottom at the floor and at the side of the car, said section being movable from a substantially vertical position at the side of the car inwardly to a position where a space is left between the upper edge of said section and the lower edge of the upper fixed part of the said side wall, in combination with a flexible collapsible trough secured along its inner edge to the upper outer edge of said swinging section and secured along its outer edge to the upper fixed part of the side wall of the car, substantially as set forth.

3. Inwardly-swinging sections pivotally connected at their bottoms at the floor and at both sides of a stock car, each of said sections having an outer and an inner position, in combination with rotary operating shafts at both sides of the car, said shafts being connected so as to be operated simultaneously and in the same direction, crank arms rigidly carried by each shaft, and arched links each pivotally connected at one end to one of said cranks and at the other end to one of said sections, the links at opposite sides of the car being oppositely arched so that the links on one side of the car pass over the shaft on that side while the links on the other side of the car pass under the shaft on that side, whereby said sections are locked in both positions, substantially as set forth.

4. An inwardly swinging section pivoted at its bottom at the floor and at the side of a stock car, said section having an outer and an inner position, in combination with an arched link pivoted to said section, a rotary shaft, the axis of said shaft and the pivotal point between said link and said section being both located approximately in an arc having as its center the axis on which said section swings, and a crank arm carried by said shaft and pivoted to said link, said crank arm being shorter than said link, whereby said section is locked in either of its two positions, substantially as set forth.

**504,693.** HARNESS-BUCKLE. JAMES G. HOYT, Haywards, Cal. Filed Apr. 3, 1893. Serial No. 466,899. (No model.)



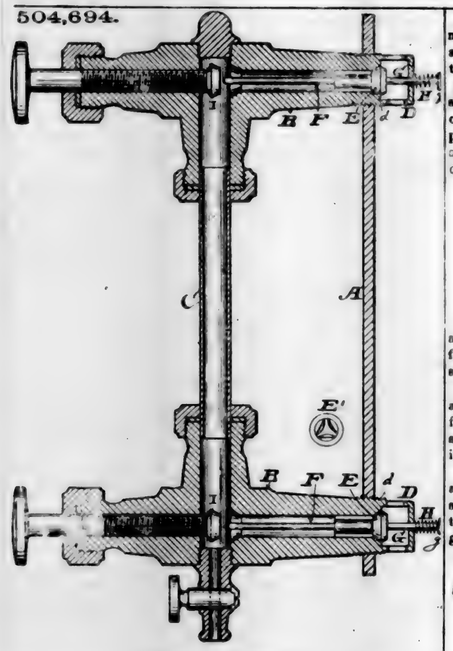
*Claim.*—A harness buckle, consisting of a lower frame or bail, having, near one end, an intermediate cross-bar, projecting beyond the plane of the frame or bail, to engage the strap passing through said frame or bail, and an upper frame carrying, near its outer or rear end, upon the under side, a pin or stud adapted to engage a hole in the strap opposite the aforesaid cross-bar, said upper frame also having an upturned loop at its forward end, and the upwardly turned angular projection formed from the plate-portion of said upper frame and having its free end standing about centrally of the opening of said upper frame, and having recesses extending parallel with the horizontal portion of said angular projection, for the reception of the side-bars of said bail when brought behind the vertical portion of said projection, substantially as set forth.

**504,694.** WATER-GAGE. THOMAS W. MILLER, Cleveland, Ohio. Filed Dec. 19, 1892. Serial No. 455,730. (No model.)

*Claim.*—The combination with the gage-cock, provided with an apertured thimble inclosing its inlet port and with a valve-seat within said thimble, of the valve E, inclosed in said thimble and adapted to fit said valve-seat, said valve having oppositely arranged stems, one of which is arranged in the path of the valve of the cock, the other of said stems projecting through said thimble and being provided with a head, and a spring, arranged between said head and the outer face of said thimble, substantially as set forth.



**504,694.**



**504,695.** METALLIC RAILWAY-TIE. EDWARD SIMMONS, Minneapolis, Minn. Filed Sept. 8, 1892. Serial No. 445,370. (No model.)



*Claim.*—1. A metallic cross tie for railways, consisting of a plate curved or bowed upward slightly transversely, and having raised supports for the rails at its ends, substantially as set forth.

2. The combination of a metallic cross tie for railways consisting of a plate curved or bowed upward slightly transversely, and provided along its edges with upturned flanges *a* and the raised support for the rails secured to such upturned flanges, substantially as set forth.

3. A metallic cross tie for railways consisting of a plate provided along its edges with upturned flanges *a* in combination with the box-like supports B for the rails having the flat top portions upon which the rails rest, and the sides, the lower portions of which lie parallel with and against the flanges *a* to which they are secured, substantially as set forth.

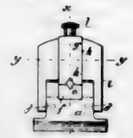
4. A metallic cross tie for railways, consisting of the plate A, and the box-like supports for the rails, B, having the flat tops, and the inward curved or bowed sides *b'* secured at their lower ends to the plate A, the ends of such box-like supports being open, substantially as set forth.

5. A metallic cross tie for railways, consisting of a plate, in combination with the open-ended box-like supports B for the rails secured to the plate near its ends, the top plate of the said box-like support being flat and being perforated adjacent to the line of the rail, the rails, the clamps D extending through the said perforation in the top plate of the rail support and the keys F which secure the clamps in place, substantially as set forth.

**504,696.** GUN-SIGHT. THOMAS E. ARMSTRONG, Marshfield, Wis. Filed June 25, 1890. Renewed Jan. 13, 1892. Serial No. 417,925. (No model.)

*Claim.*—1. The combined open and peep sight whereof the normal open sight forms a part, and the plate *g* pivotally adjustable into and out of position therewith forms the rest of the peep sight substantially as described.

2. The combined open and peep sight whereof the normal open sight forms a part, and the plate *g* pivotally adjustable into and out of position therewith forms the rest of the peep sight, one of said parts being adjustable to vary the size of the opening of the peep sight without changing its geometrical configuration substantially as described.

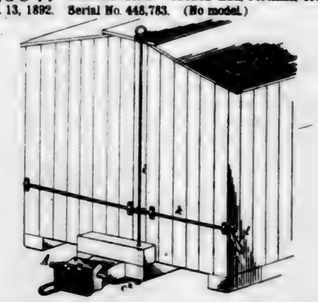


3. The combination in a gun sight of the permanent open sight, and the yoke having the companion part together with said open sight forming the peep sight and pivoted to the part having the open sight substantially as described.

4. The combination in a gun sight, of the permanent open sight, and the yoke having the companion part, together with said open sight forming the peep sight and pivoted to the part having the open sight, said companion part being adjustable in the yoke to vary the opening of the peep sight substantially as described.

5. The combination in a gun sight, of the permanent open sight, and the yoke having the adjustable companion part, together with said open sight forming the peep sight, and pivoted to and adapted to overlap the part having the open sight, and lock the two parts together for the peep sight substantially as described.

**504,697.** CAR-COUPLING. GEORGE KER, Portland, Oreg. Filed Oct. 13, 1892. Serial No. 448,783. (No model.)



*Claim.*—1. In a car coupler, the combination of a draw-head A, sockets *b* in the rear portion of the head extending downwardly from the upper surface thereof and adapted to receive arms *c c'* of a pawl *f*, a chamber below the sockets to receive the pawl, a lug *g* on the pawl to engage a coupling link, and rods *i* and *k* to operate the pawl, substantially as described and set forth.

2. The combination in a car coupler of a draw-head A with throat *d*, sockets *b* in the upper and rear portions of the draw-head to receive arms *c c'* of a pawl *f*, a chamber in the rear portion of the head to receive the pawl, a lug *g* on the pawl to engage a coupling link, rods *i* and *k*, mounted on the car and connected with arms *c c'* to operate the pawl, as and for the purpose set forth

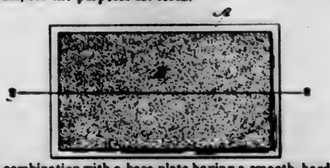
# REISSUES.

**11,868.** RELIEF-TYPE PRODUCTION. THE HOKE ENGRAVING PLATE COMPANY, St. Louis, Mo., assignee, by mesne assignments, from JOSEPH W. HOKE, deceased, late of same place. Filed Aug. 7, 1893. Serial No. 482,631. Original No. 388,261, dated Aug. 21, 1888.

*Claim.*—1. As a new article of manufacture, an engraving plate having a base-plate with a smooth hard upper surface and a soft friable coating of minute particles of earthy matter wholly or in part soap stone, tripoli, talc, quartz, chalk, barium, or kaolin and bonded loosely together solely, in substance, by means of a soluble bond added to said earthy particles, and having those particles of the coating next to the base plate more strongly bonded to it than the particles above them are bonded either to them or to each other.

2. As a new article of manufacture, an engraving plate having a base-plate with a smooth hard upper surface and a soft friable coating of minute particles of earthy matter wholly or in part soap stone, tripoli, talc, quartz, chalk, barium, or kaolin and bonded loosely together solely, in substance, by means of a soluble mineral bond added to said earthy particles, and having those particles of the coating next to the base-plate more strongly bonded to it than the particles above them are bonded either to them or to each other.

3. As a new article of manufacture, an engraving plate having a soft, friable coating composed of minute earthy particles bonded together and to a base plate having a smooth, hard upper surface by soluble glass, for the purposes set forth.



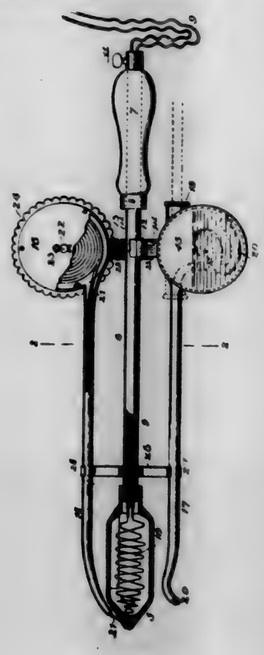

4. In combination with a base plate having a smooth, hard upper surface, a coating composed of soluble glass, silicate of magnesia, and sulphate of barium, in substantially the proportions herein recommended, as and for the purposes described.

5. In combination with a base plate having a smooth, hard, upper surface of soluble glass and a mixture of pulverized earths of different specific gravities, as and for the purposes described.

6. The hereindescribed process of making an engraving plate having a coating bonded by a soluble glass, consisting in introducing the bond in solution into contact with all the particles of the coating and then drying the coating by heat, substantially as directed.

7. The herein described process of making and finishing an engraving plate having its coating bonded by a soluble glass, consisting in reducing the earthy matter used to a fine powder, and subsequently introducing the bond in solution into contact with all the earthy particles of the coating, drying the coating on a base-plate by heat, and finally removing the crust, all substantially as herein directed.

**11,364. ELECTRICALLY-HEATED SOLDERING-IRON.** George B. Meteler, Cincinnati, Ohio, assignor of one-half to William H. Osborne, Prince's Bay, N. Y. Filed July 3, 1893. Serial No. 479,545. Original No. 490,256, dated Jan. 17, 1893.



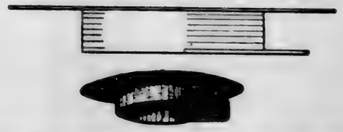
*Claim.*—1. In combination with an interiorly heated soldering tool, an attachment to carry soldering fluid, adjustably connected with the tool, a snout for carrying a wick, connected to this attachment and means to hold the attachment in its adjusted positions, all as substantially shown and described.

2. An interiorly heated soldering tool having attachments to carry soldering fluid and solder connected to it, each one of the attachments having a snout to convey their respective charges to the point where they are used and a brace connected to the soldering tool and provided with rests to support the snouts, all as substantially shown and described.

3. In combination with an interiorly heated soldering tool, an attachment to supply solder to the point, consisting of a case which receives the solder which is in the shape of a strip or wire, a pin 22, mounted within the case and upon which the solder strip is wound, a disk 24, connecting to this pin and serving as a means to feed the solder forward, a snout to carry it to the heated point and means to connect the attachment adjustably to the shank of the tool, all as substantially shown and described.

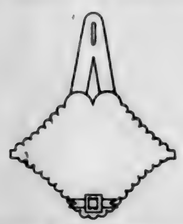
# DESIGNS.

**22,766. LADY'S HAT.** Josh D. Stapps, San Francisco, Cal. Filed Aug. 14, 1893. Serial No. 483,143. Term of patent 3½ years.



*Claim.*—The design for hats herein shown and described, the same comprising the cylindrical vertical body, the horizontal circular single disk crown projecting beyond the upper periphery of the body, and a horizontally projecting visor approximately parallel with the crown as set forth

**22,767. KNEE-PROTECTOR.** Annabell C. Bull, Peoria, Ill. Filed June 5, 1893. Serial No. 476,698. Term of patent 3½ years.



*Claim.*—The design for a knee protector as herein shown.

**22,768. JIGGER.** Cornelius P. Dugan, Chicago, Ill. Filed July 29, 1893. Serial No. 481,909. Term of patent 7 years.

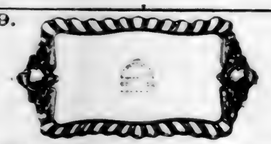


*Claim.*—The design for a jigger herein shown and described.

**22,769. COFFIN-PLATE.** George H. Ford, New Haven, Conn., assignor to the Gilley Company, same place. Filed Aug. 14, 1893. Serial No. 483,144. Term of patent 7 years.

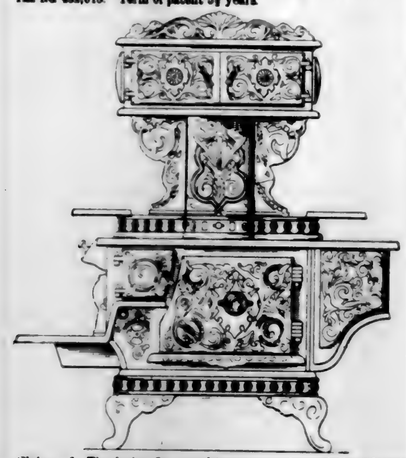


**22,769.**



*Claim.*—The design for a coffin or other plate, as herein shown and described.

**22,770. COOKING-STOVE.** Charles W. Wiffler, Detroit, Mich., assignor to the Joliet Stove Works, Joliet, Ill. Filed Aug. 7, 1893. Serial No. 482,615. Term of patent 3½ years.



*Claim.*—1. The design for a cooking stove, substantially as herein described and shown.

2. In a design for a cooking stove as herein shown and described, the oven door.

**22,771. TOE-RAIL FOR VEHICLES.** William A. Soelleicher, Cleveland, Ohio. Filed June 5, 1893. Serial No. 476,676. Term of patent 14 years.



*Claim.*—The design for a pattern for toe-rails substantially as herein described and shown.

# TRADE-MARKS

## REGISTERED SEPTEMBER 5, 1893.

**23,571.** WRITING-PAPER. Kastner & Williams Paper Co., Holyoke, Mass., and New York, N. Y. Filed Aug. 3, 1893.

OFFICIAL

*Essential feature.*—The word "Official." Used since January, 1891.

**23,572.** BRONZES AND SILVER AND PLATED WARE. Tiffany & Company, New York, N. Y. Filed July 29, 1893.

TIFFANY & CO.

*Essential feature.*—The word, character and abbreviation "Tiffany & Co." Used since 1868.

**23,573.** JEWELRY AND WATCHES. Tiffany & Company, New York, N. Y. Filed July 29, 1893.

TIFFANY & CO.

*Essential feature.*—The words "Tiffany & Co." Used since 1868

**23,574.** CHEWING GUM. Frederick W. Sultan and John A. Wellington, St. Louis, Mo. Filed Aug. 1, 1893.

"HEADACHE"

*Essential feature.*—The word "Headache." Used since June 1, 1893

**23,575.** FRUITS. W. H. Westervelt & Co., New York, N. Y. Filed Aug. 3, 1893.



*Essential feature.*—The words "The Fame" and the representation of a human figure reclining in a shell. Used since June 8, 1893.

**23,576.** RAISINS. William Forsyth, Fresno, Cal. Filed Aug. 1, 1893.

IMPERIALS

*Essential feature.*—The word "Imperials." Used since January 1, 1887

**23,577.** GREEN AND BLACK TEAS. Reid, Murdoch & Company, Chicago, Ill. Filed July 27, 1893.

LIGHT OF ASIA

*Essential feature.*—The words "Light of Asia." Used since May 1, 1893

**23,578.** GREEN AND BLACK TEAS. Reid, Murdoch & Company, Chicago, Ill. Filed July 27, 1893.

LALLA ROOKH

*Essential feature.*—The words "Lalla Rookh." Used since May 1, 1893.

**23,579.** GREEN AND BLACK TEAS. Reid, Murdoch & Company, Chicago, Ill. Filed July 27, 1893.

STAR OF INDIA

*Essential feature.*—The words "Star of India." Used since May 1, 1893.

**23,580.** CIGARETTES. The American Tobacco Company, Newark, N. J., and New York, N. Y. Filed Dec. 7, 1892.




*Essential feature.*—The representation of four panels fancifully decorated and lettered, one of said panels bearing the words "Duke's Best Cigarettes;" another the words "The Very 'Best' Workmanship;" another the words "The Very 'Best' Tobacco," and the fourth the words "Duke's Best Cigarettes" accompanied by a partially folded scarf with pinked edges and a spray of flowers. Used since 1888.

**23,581.** CIGARETTES. The American Tobacco Company, Newark, N. J., and New York, N. Y. Filed Dec. 7, 1892.






*Essential feature.*—The representation of four panels fancifully decorated and lettered, each of said panels being inclosed by a border made up mainly of straight lines and two of said panels bearing the words "Virginia Brights" and one of these two in addition the words "Crop of," &c., and the representation of the head and shoulders of a man wearing a hat with broad rolling brim and holding between his teeth a cigar, cheroot or cigarette. Used since 1885

**23,582.** CHEWING-TOBACCO. R. Eversmart & Co., Arnold, N. C. Filed June 12, 1893.

CUT SHORT

*Essential feature.*—The words "Cut-Short" Used since June, 1891

**23,583.** DRUGS. Luitpold Sollmann, Canton, Ohio. Filed Mar. 3, 1893.

3 T

TRIED, TRUE, TRUSTWORTHY.

*Essential feature.*—The figure "3," and the letter "T" to the right of the figure in connection with the words "Tried," "True," and "Trustworthy." Used since January, 1890.

**23,584.** HEALING-POWDERS. Ulrich W. Becker, Stapleton, N. Y. Filed Aug. 5, 1893.

"SICCUM"

*Essential feature.*—The word "Siccum." Used since 1882.

**23,585.** CERTAIN NAMED MEDICINES. Joseph Ray Watkins, Winona, Minn. Filed May 31, 1893.

DR. WARD'S

*Essential feature.*—The abbreviation and word "Dr. Ward's." Used since January 6, 1892.

**23,586.** REMEDY FOR CATARRH. S. C. Wells & Co., Le Roy, N. Y. Filed Aug. 2, 1893.




*Essential feature.*—The words "Shiloh's Catarrh Remedy" and the representation of an injector. Used since 1880.

**23,587.** HYDRAULIC CEMENT. Portland-Cement-Fabrik "Germania" H. Mahnke & Co., Lehrte, Germany. Filed May 29, 1893.

GERMANIA

*Essential feature.*—The word "Germania." Used since January, 1883.

**23,588.** LUBRICATING-OIL. Florence L. Smith, Cleveland, Ohio. Filed July 26, 1893.

STERLING WINTER CROWN

*Essential feature.*—The words "Sterling Winter Crown." Used since March 3, 1878

**23,589.** LOCKS AND KEYS. The Smith & Egge Manufacturing Company, Bridgeport, Conn. Filed July 18, 1893.

GIANT

*Essential feature.*—The word "Giant." Used since September 15, 1876

**23,590.** SASH-CHAINS. The Smith & Egge Manufacturing Company, Bridgeport, Conn. Filed July 18, 1893.

CIANT

*Essential feature.*—The word "Giant." Used since April 15, 1878.

**23,591.** CHAIN-PUMPS. Olmsted & Co., Chicago, Ill. Filed Apr. 3, 1893.



*Essential feature.*—The representation of a section of a chain and bucket used in chain pumps. Used since March 1, 1893.

**23,592.** WEIGHING-SCALES. E. & T. Fairbanks & Company, St. Johnsbury, Vt. Filed Aug. 9, 1893.

FAIRBANKS

*Essential feature.*—The word "Fairbanks." Used since 1838.

**23,593.** WEIGHING-SCALES. E. & T. Fairbanks & Company, St. Johnsbury, Vt. Filed Aug. 9, 1893.



*Essential feature.*—The representation of a globe with the words "FAIRBANKS STANDARD" displayed thereon. Used since 1878.

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**28,594.** BICYCLES, TRICYCLES, AND VELOCIPEDES. THE STOVER BICYCLE MANUFACTURING COMPANY, Freeport, Ill. Filed Aug. 7, 1893.




*Essential feature.*—The representation of a phenix and the word "PHOENIX." Used since December 1, 1892.

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**28,595.** CHILLED PLOWS. JAMES OLIVER, South Bend, Ind. Filed July 7, 1893.




*Essential feature.*—The word "CHILLED" and the representation of a plow inclosed in the initial letter of the word. Used since February, 1873.

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# DECISIONS

OF THE

# COMMISSIONER OF PATENTS

AND OF

# UNITED STATES COURTS IN PATENT CASES.

## COMMISSIONER'S DECISIONS.

### EX PARTE STATE OF SOUTH CAROLINA.

*Decided August 30, 1893.*

TRADE-MARK—APPLICATION BY A STATE—COMMERCE BY A STATE OUTSIDE ITS OWN LIMITS.

The State of South Carolina applies to register the Trade-Mark "Palmetto" in the Patent Office, to be applied by labels to bottles of intoxicating liquors to be regularly sold by the State outside its own limits in commerce with foreign nations or with Indian tribes.

1. It seems that a State may take upon itself the character of a trading corporation while retaining in other respects the essentials of a sovereign State.

2. While it is not necessary to decide how, if in any manner, a State may enter the domain of commerce, whether by an express authorizing provision in its constitution supplemented by appropriate legislation to carry it into effect, or otherwise, the executive officers of a State may not, in the absence of legislation, embark the State in such trade.

3. The act of the State of South Carolina, approved December 24, 1892, entitled "An act to prohibit the manufacture and sale of intoxicating liquors as a beverage within this State, except as herein provided," is a measure for the suppression of the liquor traffic within the State by private individuals and to substitute therefor its complete control by the State, and is not a law which authorizes a regular trade in liquors by way of sale to foreign purchasers.

4. The State of South Carolina, notwithstanding the acts of its Governor and State Board of Control, has no authorized trade in liquors outside its own limits. It is not the owner of any Trade-Mark, has not at this time the right to the use of the Trade-Mark sought to be registered, and therefore—

5. The application is denied.

APPEAL from Primary Examiner.

TRADE-MARK FOR LIQUORS, ETC.

Application filed July 15, 1893.

*Messrs. Johnson & Smith* for the applicant.

SEYMOUR, *Commissioner:*

Appeal is taken from the refusal of the Examiner to register a Trade-Mark applied for in the name of the State of South Carolina, consisting of the word "Palmetto," to be applied to bottles and other receptacles containing intoxicating liquors by means of suitable labels upon which the Trade-Mark is to be printed, together with the arms of the State, the name of the liquor, and the words "Warranted U. S. Standard Proof and Chemically Pure, South Carolina State Dispensary, Columbia, S. C.," it being understood that all these words except "Palmetto" may be omitted, and that the various accessories of ornamentation and arrangement may be varied at pleasure, or altogether omitted.

It is the intention of the State officers that the State shall enter markets outside the State and outside the Union as a vender of liquors for profit. As the present legislation of Congress on Trade-Marks is restricted to those used in commerce with foreign nations or with the Indian tribes, the authorities have sold a case of the State liquors, bearing this Trade-Mark, in Canada, and it is claimed that thus the Trade-Mark has been used by the State in commerce with foreign nations.

It also appears that the Trade-Mark was adopted on the 1st day of July, 1893, by the State Board of Control, created by the act approved December 24, 1892.

It was claimed in argument that the State in this regard possesses the full rights of a trading corporation, and that it followed from the nature of a State that it might undertake a business of this character to be conducted outside as well as within its own limits, and that, apart from its general powers, authority was found in the provisions of its recent liquor legislation to enable the State to do this.

The Examiner held otherwise, and therefore refused to register the Trade-Mark.

A State may become a partner in a commercial company, and when it does so—

it devests itself, so far as concerns the transactions of that company, of its sovereign character and takes that of a private citizen. Instead of communicating to the company its privileges and its prerogatives, it descends to a level with those with whom it associates itself, and takes the character which belongs to its associates and to the business which is to be transacted. (*U. S. Bank* v. *Planters' Bank*, 9 Wheaton, 904-907.)

If a State may be a member of a corporation, it was urged that it might resolve itself into a trading corporation, in the particular intent proposed, without associates, while in other respects it retained the characteristics or essentials of a sovereign State.

The Republic of France enjoys the monopoly of the trade in tobaccos and tobacco products. It owns manufactories of powder, of arms, of matches, of tapestry, and of porcelain, among them the celebrated manufactory of Sèvres. Belgium manufactures guns for its own use as well as for sale in the markets of the world. Nor are State Trade-Marks unknown in foreign jurisprudence. An instructive passage occurs in an authority on Trade-Marks, *Nouveau Traité des Marques de Fabrique et de Commerce*, par Alexandre Braun, 1880, page 249:

What of a State? The question whether a State is competent to claim its Trade-Mark as a producer or manufacturer has been presented repeatedly before our courts and tribunals and those of other countries. It has been decided in the affirmative. Why, indeed, if a State may engage in an industry, has it not, as every trader, in consideration of the performance of the usual formalities, the right to certify the origin of products coming from its manufactories? So the Court of Cassation has declared that the State of Belgium, inasmuch as it manufactures guns to arm the soldiery, ought to be considered as a regular manufacturer. (Cass. B., 5 mai. 1870, État belge c. Gerard, Ancion et Cie., P. B., 1870, I, 265.) What is to prevent, therefore, besides the official stamp, which attests that its arms have passed the board of approval, the impress of a Mark showing that they are of its own make? It has been decided:

1°. That the French administration is properly allowed in our (the Belgian) jurisdiction the character of a private manufac-

turer, whose Trade-Mark is susceptible of protection on condition that the outward sign of its product (cigarettes) has been regularly registered at the Registry of the Tribunal of Commerce in Brussels in the same way as all other foreign producers. (Cass. B., 26 dec., 1876; Proc. général, Spies et État français c. Kiss et consorts, P. B., 77, 1, 54.)

2°. That the usurpation or imitation of a Trade-Mark such as that the French State places upon the cigarettes made and sold by it falls within the application of the German law of November 30, 1874, especially when the registration of that Mark has been regularly made and published conformably to that law. (*Trib. de 1re instance de Dresde*, 3 mars, 1877, État français c. Taenbrich, Pataille, 77, 199.)

Quoting by translation from the "Dictionary of Industrial Property" (Trade-Marks) by Maillard de Marafy, vol 3, page 602:

The State, as well as private individuals, may have to appeal on its own account to the laws concerning Trade-Marks, trade and proprietary names. The State possesses, indeed, generally, manufactories, forests, mineral springs, industrial monopolies of every kind, tobacco, powder, matches, etc. In like manner it may have to affix its seal to authenticate brands, guarantee the validity of licenses of enterprises granted by itself—in a word, to make demands or suits upon usurpations or counterfeits.

It seems that a State of the American Union, having all the powers of an independent sovereign State except those surrendered to the Federal Government, has the inherent right as a State to engage in trade, domestic or foreign. Whether this may be done without limitation or whether it may be done where it is necessary to invoke the power to tax in order to provide the capital for embarking in trade I do not now consider. Nor is it necessary to discuss the implied limitations upon the executive, the legislative, and the judicial branches of the governments of the States laid down in a line of cases, of which the *Loan Association* v. *Topeka* (20 Wall., 655–663) is one. Nor is it necessary to point out how this might be done, if it may be done at all, or whether an express grant of power in the State constitution would be necessary or would be effectual to inaugurate such policy. It is certain that a lawful trade in liquors outside the State must be established in some effectual manner before the State can become the owner of a Trade-Mark which would be entitled to registration in its name in the Patent Office under the law of 1881.

The question now arises: Has the State of South Carolina taken upon itself the character of a trading corporation in intoxicating liquors outside its own limits or with foreign nations?

The application for this Trade-Mark is made by the Governor in the name of the State, and the State legislation under which this action is taken is before me. Its significant title is—

An act to prohibit the manufacture and sale of intoxicating liquors as a beverage *within this State*, except as herein provided.

A critical analysis of the act shows it to be a stringent measure of State regulation, within the State, of a traffic considered open to abuse in private hands. The comprehensive language of the first section definitively restricts the traffic within the limits laid down in the act. The State Commissioner purchases the liquors and furnishes them to the county dispensers to be sold as the act prescribes:

In all purchases or sales of intoxicating liquors made by said Commissioner, as contemplated in this act, the Commissioner shall cause a certificate to be attached to each and every package containing said liquors, when the same is shipped to him from the place of purchase or by him to the county dispensers, certified by his official signature and seal, which certificate shall state that the liquors contained in said package have been purchased by him *for sale within the State of South Carolina, or to be shipped out of the State, under the laws of said State.* (Part of section 2.)

The expression "to be shipped out of the State" evidently refers to the traffic elsewhere permitted in the act to manufacturers located within the State, who may sell outside the State, provided the certificate of the State Commissioner is obtained and affixed to every package.

Section 18 appropriates the sum of $50,000, if so much be necessary, for the purpose of purchasing and of supplying liquors to be distributed to county dispensers under the provisions of the act.

Every one of its minute provisions may be given its full and appropriate meaning by construing the whole act as a measure for the suppression of the liquor traffic in South Carolina by private individuals and to substitute therefor its complete control by the State through local public dispensers. It is only by strained constructions that any phrases in the act may be held to look to the establishment of an outside traffic of any kind, excepting in the purchase of the liquors to be dispensed. Nor is there anything in the general or special objects of the statute to show that the State intended to descend to the level of a trading corporation outside its own limits in and by the same public act whereby it prohibits both individuals and private corporations, and, by necessary construction, other States themselves, if they should attempt to act as private corporations in this particular, from entering, for the purpose of this traffic, the domain of South Carolina. If it should be held that the State could enter the field of commerce in traffic in intoxicating liquors outside its own limits, it must at the same time be held that the State has not done so in or by the legislation before me.

The State speaks by its constitution and public acts. Its "law-making power," including within that term the power by which constitutions are made as well as laws, is alone the repository of the sovereign and governmental powers of the State. That power is alone competent to initiate and define the policy of the State. Neither the Governor nor the State Board of Control provided for in this act can by any acts of theirs, even in the name of the State, take the State into trade.

The provisions of the Trade-Mark law of 1881 are that *owners* of Trade-Marks used in commerce with foreign nations or with Indian tribes may obtain registration; but the application must be accompanied by a declaration—

to the effect that such party has *at the time* a right to the use of the Trade-Mark sought to be registered.

It is considered that the State of South Carolina, notwithstanding the acts of its Governor and State Board of Control, has no authorized trade in liquors outside its own limits, is not the owner of any Trade-Mark, has not at this time the right to the use of the Trade-Mark sought to be registered, and therefore the application is denied.

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### EX PARTE LAZARUS, SCHWARZ, AND LIPPER.

*Decided August 22, 1893.*

TRADE-MARKS—ALTERNATIVES.

The word "Crescent" and the representation of a crescent-shaped figure refused registration on the ground that they are not true alternatives.

ON petition.

TRADE-MARK REGISTRATION.

Application filed May 29, 1893.

*Messrs. Howson & Howson* for the applicant.

FISHER, *Acting Commissioner:*

This is an appeal taken from the action of the Examiner of Trade-Marks refusing to register as a Trade-Mark the word "Crescent" and the representation of a crescent-shaped figure, on the ground that the two forms are not true alternatives.

In *ex parte Peper* (16 O. G., 678) Mr. Commissioner Paine said, in a case similar to the one under consideration:

I doubt whether the separate use of two such symbols as one Trade-Mark can be reconciled with the statute.

I am in thorough accord with the principle announced in this decision, and shall hold that in order to register alternative forms they must be *strict* alternatives.

In the case under consideration it would be just as accurate to register the word "Lune" as an alternative of applicant's figure. Now, if another applicant should apply for the registration of the word "Lune" as a Trade-Mark for braids he could not be rejected, even though the present Trade-Mark had been previously registered; but if he should apply for the registration of the word "Lune" and the representation of a lune he would be rejected if the present Trade-Mark had been previously registered. The only conclusion that can be reached from this state of facts would be that by the registration of the word "Crescent" *and* the representation of a crescent applicant secures a broader protection than he would by the registration of the word "Crescent" *or* the representation of a crescent. This is manifestly against the intent of the statute, which only contemplates the registration of a single Mark in a single application; and while it is probably true that the courts would hold a use of the word "Crescent" to be an infringement of the representation of a crescent it is held, in accordance with the principle announced in the decision above cited, that these two forms are not such alternatives as should be registered as one Trade-Mark.

The decision of the Examiner of Trade-Marks is affirmed.

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### EX PARTE KORFF.

*Decided August 2, 1893.*

1. DIVISION — MACHINES — ELEVATED RAILWAY AND A SPRING-TRUCK.

Where the respective structures have reached definite places in the arts and in the Office classification, they cannot be claimed in the same application.

2. SAME—ELEMENTS OF A COMBINATION CLAIM.

Where there are combination claims for the structures, one of the structures being specifically set out, such claims should be regarded as combinations of all of the enumerated elements, and not as claims for a part only of the elements contained in them.

3. SAME—CLAIMS FOR SPECIFIC STRUCTURES AND COMBINATIONS OF THE STRUCTURES.

Where there are claims for specific structures and combinations of the structures, and the structures have acquired distinct status in the arts, division should be required between the claims for one of the structures and combinations of the structures on the one hand and the claims for the other structure on the other hand.

ON petition.

ELEVATED RAILWAY.

Application filed March 3, 1893, No. 464,519.

*Messrs. C. A. Snow & Co.* for the applicant.

FISHER, *Assistant Commissioner:*

This is a petition taken from the action of the Primary Examiner requiring division between claims 1, 2, and 8, which, the Examiner holds, cover an elevated-railroad structure, and claims 3 to 7, inclusive, covering a spring-truck structure.

The Examiner in his statement says:

As regards claims 2 and 8, it should be *particularly noted that* they are to *specific* track structure and *specific* car structure, which "are dependent upon each other," (Rule 41,) and hence admissible in the same application.

But this is not the case as regards the subject-matter of claims 3 to 7, which are to *specific car structure*, applicable to general employment in connection with railway-tracks in *general*, and no more adapted to the *present track* structure than to any of hundreds now in existence.

There is no doubt but that "car-truck structures" and "railroad-track structures" have each reached that definite place in art and manufactures and in the Office classification that should, under the Commissioner's decision in *Ex parte Speckbauch* (54 O. G., 1265) and kindred decisions, necessitate claims covering those respective structures *per se* being claimed in separate applications.

Claim 1 of this application is for a specific railroad-track structure. Claims 6 and 7 are for specific truck structures. Claims 2 and 8 are each for combinations of specific truck structures and railroad-track structures, and the Examiner does not object to the applicant embodying those two claims (2 and 8) in the same application as claim 1 for the specific railroad-track structure.

Claims 3, 4, and 5 are not for the truck structure, as stated by the Examiner, but are for *combinations* of the railroad-track and the specific truck structure, and regarding these claims as combinations of all of their respective elements, and not as claims for a part only of the elements contained therein, they may be allowed in the same application with claims 1, 2, and 8. (*Ex parte Connelly*, 59 O. G., 787.)

Claims 6 and 7, being for the truck structure *per se*, should not be allowed in the same application with the other claims.

To the extent above indicated the petition is granted.

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## DECISIONS OF THE U. S. COURTS.

### U. S. Circuit Court—District of Montana.

PACIFIC CABLE RAILWAY COMPANY *v.* BUTTE CITY STREET-RAILWAY COMPANY.

*Decided April 10, 1893.*

1. PATENTS FOR INVENTIONS—INFRINGEMENT—CABLE CARS.

Letters Patent No. 184,663 were issued to Andrew S. Hallidie for an invention known as "improvements in railways." The claim was: "In combination with the cars of a street or other railway which are intended to be propelled by means of an endless cable moving in an underground slotted tunnel, the truck or dummy E, having the permanently-attached gripping device H." The specification described a dummy in which the grip was located under the forward axle—there being two—and which was not provided with seats for carrying passengers. *Held*, that this is infringed by a car used for the same purpose, and similarly constructed, save that the grip is located midway between the two axles and the car is arranged to carry passengers.

2. SAME.

The infringement is not avoided by so attaching the gripping device that it may be detached when required, for the terms "permanently attached" in the claim import, merely, that the gripping device is an essential part of the car, and not that it is incapable of removal.

3. SAME—ANTICIPATION.

This patent is not anticipated by the prior patents to G. T. Beauregard and to A. Ely Beach, or by the former patent for a similar device issued June 1, 1875, to Hallidie himself, as the evidence shows that the present device was perfected before such former patents were issued.

4. SAME—PRIOR USE.

Where the defense to an infringement suit is prior use, the burden is on defendant, and it is not sustained where the evidence shows that the alleged prior use was only for experimental purposes and had with a view to perfecting the device.

BILL by the Pacific Cable Railway Company against the Butte City Street-Railway Company for infringement of a patent. Decree for complainant.

*Mr. William F. Booth* and *Messrs. Dixon & Drennen* for the complainant.

*Mr. George H. Knight, Mr. F. T. McBride,* and *Mr. George Haldorn* for the defendant.

KNOWLES, *J.*:

The above-named complainant filed in this court its bill of complaint against the above-named defendant, and setting forth therein that defendant had infringed certain Letters Patent No. 182,663, and which granted certain rights to one Andrew S. Hallidie for an invention known as "improvements in railways." The said Hallidie, it appears from the bill, obtained the said patent for said invention and assigned the same to complainant. The claim of said Hallidie in his patent is thus described:

In combination with the cars of a street or other railway which are intended to be propelled by means of an endless cable moving in an underground slotted tunnel, the truck or dummy E, having the permanently-attached gripping device H, substantially as and for the purpose described.

Respondent in its answer to complainant's bill makes the following defenses: first, non-infringement; second, anticipation and non-patentability, and, third, two years' public use.

The first question presented, then, is: Does the respondent infringe upon complainant's patented device—that is, does it substantially use the dummy car specified in complainant's bill in combination with the cars of its street-railway? Respondent owns and is operat ng a street-railway at Butte City, Mont., upon which the cars thereon are propelled by means of an endless cable moving in an underground slotted tunnel. The evidence shows that defendant is using a car, which may be called a "dummy car," to which is attached a gripping device which seizes the said cable moving in an underground slotted tunnel, and to this is attached a passenger-car. The difference between the dummy car of complainant and that of respondent is thus described by Jesse M. Smith, a witness for respondent:

Comparing the car used by the defendant with the dummy of the patent, it appears that the dummy is a car having two axles and four wheels, and in this particular it is like the grip-car used by defendant. The grip of the car of the patent is located directly under one of the axles of the car, while in the car of the defendant the grip is located midway between the axles of the car, and therefore does not have the advantage claimed for the dummy car of the patent, with its grip located as specified. The dummy car of the patent is not provided with seats and is not designed to carry passengers. The grip-car of defendant is provided with seats and is designed to and does carry passengers, and is used with or without a trail-car connected to it. The gripping device of the patent is stated to be permanently attached to the dummy car, while the gripping device used by defendant is not permanently attached to the car, and is designed to be readily detached from the car, and is so detached as often as may be required.

Except, perhaps, as to the last specification of difference, this statement may be considered as stating correctly wherein the grip-car of complainant and that of respondent differ. The first difference consists in the moving of the gripping device back from the front axle of the car to a point about midway between the two axles of the same. Is this a substantial variation? It is apparent, then, that it operates the same as though it were placed under the first axle, unless it be upon very uneven ground. It can readily be seen that in passing over a very short and abrupt rise or hillock in the car-track the gripping-jaws attached to the grip arm or lever would always remain about the same distance from the bottom of the tube or tunnel through which the cable travels if the gripping device was placed under the front axle of the car. When such an abrupt rise does not occur in the car-track, the jaws of the gripping device of complainant and respondent would act in the same manner and maintain about the same position in respect to the bottom of said tunnel. I cannot see that there would be any perceptible difference between their action or position. Recurring to the claim in complainant's patent as to what constituted the invention of Hallidie, and we find that it is not limited to a gripping device attached to the gripping-car under the first axle. Hallidie was required by the statute, (see Revised Statutes United States, section 4888,) in his application for a patent, as his invention must be classed as a machine—

to explain the principle thereof and the best mode in which he had contemplated applying that principle, so as to distinguish it from other inventions.

It will be seen that he was not required to state every mode in which the principle of his machine might operate, but only the best mode he had contemplated applying it. This would imply that an applicant for a patent is not confined to this best mode of applying the principle of his machine, and that he can claim other modes of applying the same. The part of the patent in which the mode of apylying the gripping device under the first axle of the car appears is in the descriptive part thereof. As before stated, it is not in the claim. It is not evident that what is claimed as the invention of Hallidie is not alone the gripping device under the first axle, but the whole car, in combination with cable in an underground slotted tunnel, gripping device, and passenger-car. I find that in the case of *Tilghman* v. *Proctor* (102 U. S., 707) the Supreme Court said of a patent for a process:

There is, then, a description of the process, and of one practical mode in which it may be applied. Perhaps the process is susceptible of being applied in many modes, and by the use of many forms of apparatus. The inventor is not bound to describe them all in order to secure to himself the exclusive right to the process, if he is really its inventor or discoverer; but he must describe some particular mode, or some apparatus by which the process can be applied with at least some beneficial result, in order to show that it is capable of being exhibited and performed in actual experience.

Taking this as a guide, and we come to the conclusion that when a person entitled to a patent, in his application therefor, describes one mode—the best—in which the principle of his machine acts he should not be bound exclusively to that mode. If a variation from the best mode described in the application for a patent would prevent infringement, we are forced to the inquiry: How much of a variation would work this result? Take, for instance, the machine under consideration. Would the removal of the gripping device





one foot back from the front axle of the car work this result? If one foot would not, how many feet would? A change of form does not avoid an infringement of a patent unless the patentee specifies a particular form as a means by which the effect of the invention is produced. (Walker on Patents, sec., 363; *Morey* v. *Lockwood*, 8 Wall., 230; *American Diamond Rock-Boring Co.* v. *Sullivan Mach. Co.*, 14 Blatchf., 119; *Ives* v. *Hamilton*, 92 U. S., 431.) The change of the gripping device from the front axle to a place between the axles appears to me to be a change in form only from that indicated as the best form in which the car of complainant could be constructed. This change does not affect, materially, the principle embodied therein.

Respondent urges that there is also a material variation in the car described in complainant's patent and that of its car, in this: that its car is so constructed as to carry passengers, and that of complainant, as described in the patent, is not so constructed. The feature of respondent's car which furnishes seats for passengers is only an improvement at best on complainant's car. All the features of complainant's car are retained, and the passengers' seats are additional. When a machine embodies a patented device or combination with an addition thereto, it infringes the patented device. (*Carter* v. *Baker*, 1 Sawy., 512–526; *Pitts* v. *Wemple*, 1 Biss., 87.) It should be observed that the evidence in the case shows that, as finally perfected, complainant's car was so constructed as to have seats for carrying passengers; but the applicant, Hallidie, did not claim this as any feature of the car he patented. This contention of respondent cannot, upon the facts and the law applicable thereto, be maintained.

The next point presented for consideration by respondent is its contention that the description and claim in complainant's patent states that the gripping device was permanently attached to the dummy car, while that of its car is not so attached, and that, as a consequence, there is here a material variation between them. Considering the construction of complainant's car with the language used in the patent, and I think that all that was intended by the claim of the patent, that the gripping device was permanently attached to the car, was that it was a part of the car—one of its essential parts—and was not to be taken off to be used on any other car, such as the passenger-car. The idea sought to be expressed by the language was that it was not temporarily attached to the car, but constituted a permanent part thereof—one of its essential characteristics. If it was attached to the same by bolts and screws, it would be permanently attached to the car, but could be removed. This claim in the patent may be construed in the light of the fact as to the manner in which the inventor, Hallidie, did attach that gripping device to his car. The evidence shows that it was attached thereto in such a manner that it could be removed when necessary. The rule is that the language in a patent should be liberally construed, with the view of maintaining the validity of a patent. In the case of *Rubber Co.* v. *Goodyear* (9 Wall., 788) the Supreme Court said:

A patent should be construed in a liberal spirit, to sustain the just claims of the inventor. This principle is not to be carried so far as to exclude what is in it, or to interpolate anything which it does not contain. But liberality, rather than strictness, should prevail, where the fate of the patent is involved, and the question to be decided is whether the inventor shall hold or lose the fruits of his genius.

With this as a guide, I do not see how the contention of respondent can be maintained on this point. It would be a most narrow construction of the terms "permanently attached," as they appear in the claims of the patent, to say that they imported that the gripping device should be so attached to the car that it could not be removed when necessary. I therefore find that the dummy car of respondent is substantially the same as that of complainant, and does infringe upon the Letters Patent owned by complainant therefor.

I now come to the point that the car of complainant was anticipated by previous inventions, and hence not patentable. It is urged by respondent that a patent granted to G. T. Beauregard, of New Orleans, La., for improvement in machinery for propelling cars, and that granted to A. Ely Beach for improvement in street-railroads anticipated the invention owned by complainant. The Beauregard patent is used for propelling a car by means of a clamp or grip attached thereto on the side, or above the car, clutched to an endless rope or wire. This rope or wire is to be suspended from framing along the road. The clamp is to be connected by brackets upon the top of the car and to be worked by a screw which is moved by an operating pulley, over which a cord extends to the manager of the car. The Beach patent, I find, is somewhat difficult to describe without an extended reference to its parts. In it there is no such gripping device as is used in complainant's patent and no such cable combined therewith. In neither of these patents is there a dummy car. This is an important feature of complainant's pat nt. The patent of complainant is itself *prima facie* evidence of novelty and that the patentee thereof was the first inventor thereof. This can be overcome only by evidence which shows want of novelty and that Hallidie was not the first inventor of the car claimed in his patent beyond a reasonable doubt. The burden of establishing want of novelty and that Hallidie was not the first inventor of his car, as claimed, rests upon respondent. If, after weighing all of the evidence, the court has a reasonable doubt upon these points, he should find for claimant. (Walker on Patents, sec. 76, notes 2, 3; *Coffin* v. *Ogden*, 18 Wall., 120; *Cantrell* v. *Wallick*, 117 U. S., 696; 6 Sup. Ct. Rep., 970.) With this rule controlling me, I cannot find that the said inventions of Beauregard and Beach anticipated that of complainant.

As to the previous patent obtained by Hallidie, it appears on its face that it was an improvement upon the very street-railway described in the patent under consideration. It was obtained June 1, 1875; but before this Hallidie had invented the car alleged to be infringed in this case by that of respondent. The evidence shows that Hallidie had commenced his experimental use with this car as early as 1873 and was a year or a year and a half in perfecting the same. This would show that the car was perfected before the patent was issued—June 1, 1875—which respondent offers in evidence. Under such circumstances the patent of June 1, 1875, cannot be said to anticipate that of claim-

ant's, under consideration, if it did refer to the same. (*Plow Works* v. *Starling*, 140 U. S., 189; 11 Sup. Ct. Rep., 803.)

The last point for consideration is the defense that the invention of Hallidie presented in this case was in public use for two years before he made application to patent the same. This is a defense which respondent must make out by a preponderance of evidence. There is such a thing as experimental use of a machine which is not a public use. As an experiment a machine may be tried in public as well as in private.

So long as an inventor is actually engaged, in good faith, in testing the operation of a machine, to ascertain if it will accomplish the desired result, and show it to be a practicable invention, it is not a public use. (*Elizabeth* v. *Pavement Co.*, 97 U. S., 126.)

In regard to this invention it appears that there was a period in which the use may be termed "experimental." The car was first used about September 1, 1873. A. S. Hallidie, the inventor, in his evidence, said he thought it was a year or a year and a half after the first trial before the invention was considered perfected; that it was only after a considerable time and various changes that he succeeded in getting the dummy car to work; that during the time he was testing the car no other company than the one he was connected with used the same; nor did he sell it to any one, and that the cable road upon which he used it was the first one ever actually built and put into practical operation. The witness Britton testified that they, referring to the company with which Hallidie was connected, had great trouble with the grip-car at first; that after the first trials the whole affair was remodeled; that for a year and a half or two years after they first started the grip-car it was changed and altered and fixed over until—

we matured the thing in the shape in which it is used to-day.

Respondent relies upon the evidence of Peter H. Campbell, who says that when the Clay Street Hill road, in San Francisco, was started, in August, 1873, the first dummy car was a mere framework which carried the gripping apparatus; that the dummy at first would not run; that three or four months after starting the road the dummy car was fixed so it would carry passengers. He was not positive about this last statement, however. He finally said it might not have exceeded six months or a year; but nowhere in his evidence does this witness positively say that the dummy car was perfected within a year after starting up the Clay Street Hill road, in San Francisco. According to the evidence, the said Clay Street Hill road was started about the last of August or the 1st of September, 1873. Hallidie made his application for the patent in question March 24, 1876. It was, then, about two years and seven months after the starting of said road before said application was made. As it appears that when started the grip-car was not perfected, and that for some time its use was experimental, I cannot say that the grip-car was perfected and in public use for two years prior to said application. The burden of proof was upon respondent to show that the patented device was in public use for that time, and I think it has failed.

Some of the legal questions involved in this case, it would appear, must have been presented in a case tried by the circuit court of this circuit, sitting at San Francisco, entitled *Traction Railway Co.* v. *Sutter Street Railroad Co.* The judgment-roll in that case was introduced in evidence in this case. So far as the court can see that the points of law necessarily involved in that case are the same as those involved in this, it will and has been treated as persuasive authority.

It will be seen that I have found all the issues presented in this case in favor of complainant. It is therefore ordered that complainant have a decree as prayed for in its bill.

## U. S. Circuit Court of Appeals—Second Circuit.

ADEE v. J. L. MOTT IRON WORKS.

*Decided May 23, 1893.*

PATENTS FOR INVENTIONS — INFRINGEMENT — OVERFLOWS FOR BATHS.

Reissued Patent No. 6,739, granted November 16, 1875, upon Patent No. 153,250, dated July 21, 1874, to James Foley, for an improvement in wash-valves and overflows for basins and baths, which consists in bringing up the stand-pipe or outer pipe of the overflow through the casing or slab contiguous to the basin or bath-tub and securely attaching it to a removable cap resting upon the outside of the casing or slab, is not infringed by the device made under Letters Patent No. 170,709, dated December 7, 1875, to William S. Carr, in which the stand-pipe is secured by a screw-flange resting on the top of the slab, but has no cap covering its upper end, as has the prior patent. (46 Fed. Rep., 77, affirmed.)

APPEAL from the Circuit Court of the United States for the Southern District of New York.

Bill by Fred Adee against the J. L. Mott Iron Works for infringement of a patent. The bill was dismissed, (46 Fed. Rep., 77,) and complainant appeals.

*Mr. A. v. Briesen* for the appellant.
*Mr. Francis Forbes* for the appellee.

Before LACOMBE and WHEELER, Judges.

PER CURIAM:

This suit was brought in the Circuit Court of the Southern District of New York for infringement of reissued Patent No. 6,739, dated November 16, 1875, and granted to James Foley, upon surrender of original Patent No. 153,250, dated July 21, 1874, for an improvement in waste-valves and overflows. The alleged infringement consists in the making of the device patented to William S. Carr in Patent No. 170,709, dated December 7, 1875, for an improvement in waste-valves and overflows for baths and basins, and in which the device patented to Foley was required by the Patent Office to be, and was, disclaimed. The bill was dismissed for want of infringement. (46 Fed. Rep., 77.) This patent was before the Circuit Court of the District of Connecticut (Wallace, J.) in *Adee* v. *Peck*, (42 Fed. Rep., 497.)

The improvement of Foley, as stated by Judge Wallace, consisted in bringing the stand-pipe of the overflow up through the casing of the bowl or bath and securely attaching it by a removable cap to the upper side of the casing. The claim was for the stand-pipe passing through the casing and receiving at its upper end the removable cap, in combination with the overflow pipe and valve and means of suspending the overflow pipe and valve from the cap, substantially as set forth. The means of attaching the stand-pipe to the upper side of the slab described in the original patent was the flange of the removable cap extending outwardly around the stand-pipe upon the slab. In the reissue this function of the removable cap is omitted from the description and the removable cap is left to be a cover only of the stand-pipe. The drawings remain the same; but the retention there of the parts omitted from the description does not help the effect of the omission. (*James* v. *Campbell*, 21 O. G., 337; 104 U. S., 356.) The removable cap described in the reissue is not one securing the stand-pipe to the upper side of the slab. In Carr's device the stand-pipe is so brought up, but is secured by a flange. It is combined with an overflow pipe, valve, and means of suspending the overflow valve and pipe, but not from a cap. It has no cap as a cover of the stand-pipe. These means of suspension are bayonet-fastenings turning, when raised, between the overflow-pipe and the stand-pipe. This is not the combination of the reissued patent. Carr altered Foley's invention and improved upon it, but did not appropriate it as patented in the reissue.

Decree affirmed.



THE
# OFFICIAL GAZETTE
OF THE
# United States Patent Office.
[BY AUTHORITY OF CONGRESS.]

VOL. 64.—No. 11. TUESDAY, SEPTEMBER 12, 1893. PRICE—$5 per year.

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### The Official Gazette.

THE OFFICIAL GAZETTE is published every Tuesday, simultaneously with the weekly issue of patents. From January 1, 1872, (the commencement of its publication,) to June 30, 1883, it was published and bound in semi-annual volumes; since July 1, 1883, in quarterly volumes. All subscriptions must commence with the beginning of a volume; none taken for less than three months. Terms: To all subscribers within the United States and Canada, $5 per annum; to foreign subscribers, $7; single copies, 10 cents; bound semi-annual volumes, (prior to June 30, 1883,) full sheep, $4 per volume; bound quarterly volumes, (subsequent to July 1, 1883,) full sheep, $2.75 per volume. No club rates. *Payment in advance.* All orders should be addressed to "The Commissioner of Patents, Washington, D. C."

### Amended Rules of Practice.

The following rules of the Rules of Practice of the United States Patent Office (edition of April 1, 1892) are amended to read:

Rule 135. Upon the filing of the appeal the same shall be submitted to the Primary Examiner, who, if he find it to be regular in form, shall, *within fifteen days from the filing thereof*, furnish the Examiners-in-Chief with a written statement of the grounds of his decision on all the points involved in the appeal, with copies of the rejected claims and with the references applicable thereto. *The Examiner shall at the time of making such statement furnish a copy of the same to the appellant.* If the Primary Examiner shall decide that the appeal is not regular in form, a petition from such decision may be taken directly to the Commissioner, as provided in Rule 145.

Rule 145. Upon receiving a petition stating concisely and clearly any proper question which has been twice acted upon by the Examiner, and which does not involve the merits of the invention claimed, or the rejection of a claim, and also stating the facts involved and the point or points to be reviewed, an order will be made fixing a time for hearing such petition by the Commissioner, and directing the Examiner to furnish a written statement of the grounds of his decision upon the matters averred in such petition *within fifteen days* before the day of hearing. *The Examiner shall at the time of making of such statement furnish a copy thereof to the petitioner.* No fee is required for such a petition.

### Oaths of Applicants in Foreign Countries.

(ORDER No. 822.)

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
*Washington, D. C., June 10, 1893.*

It is hereby directed that oaths accompanying applications for patents made within the following-named foreign countries must be taken before a minister, chargé d'affaires, consul, or commercial agent holding commission under the Government of the United States:

| | |
|---|---|
| Austria-Hungary. | Netherlands. |
| Argentine Republic. | Norway. |
| Belgium. | Peru. |
| Brazil. | Portugal. |
| Costa Rica. | Russia. |
| Denmark. | San Salvador. |
| Haiti. | Servia. |
| Honduras. | Sweden. |
| Italy. | Switzerland. |
| Mexico. | |

Applications filed in this Office presenting oaths not executed in compliance with this order will be treated as incomplete.

JOHN S. SEYMOUR,
*Commissioner.*

### Construction of Statutes Relating to the Registration of "Prints" and "Labels."—Amended.

In the publication of this Office entitled "United States Statutes Concerning the Protection and Registration of Trade-Marks and Labels, with the Rules of the Patent Office Relating Thereto, Edition of January 4, 1892," the following matter on page 17 is hereby canceled:

The words "prints" and "labels," as used in this act, so far as it relates to registration in the Patent Office, are construed as synonymous, and are defined as any device, picture, word or words, figure, or figures (not a trade-mark) impressed or stamped directly upon the articles of manufacture, or upon a slip or piece of paper or other material to be attached in any manner to manufactured articles, or to bottles, boxes, and packages containing them, to indicate the contents of the package, the name of the manufacturer, or the place of manufacture, the quality of goods, directions for use, etc.

By the words "articles of manufacture" (to which such print or label is applicable by this act) is meant all vendible commodities produced by hand, machinery, or art.

But no such print or label can be registered unless it properly belongs to an article of commerce, and be as above defined; nor can the same be registered as such print or label when it amounts to a lawful trade-mark, or when its use in connection with the article to which it is applied is arbitrary or fanciful.

And the following is substituted therefor:

These sections of statute (referring to sections 3, 4, and 5 of the act of Congress relating to patents, trade-marks, and copyrights, approved June 18, 1874, 18 Statutes at Large, p. 78) are construed as authorizing the registry of "prints" and "labels." A label is a device or representation borne by an article of manufacture or vendible commodity. A print is a device or representation not borne by an article of manufacture or vendible commodity, but in some fashion pertaining thereto—such, for instance, as a pictorial advertisement thereof. A label cannot be registered if it bear a device capable of sequestration as a trade-mark until after such device is registered as a trade-mark. Both labels and prints, in order to be entitled to registry, must be intellectual productions in the degree required by the copyright law.

The note on page 19 is canceled.

## Notice.

It is hereby directed that in the printing of claims of applications for patents the punctuation of the claims as made by applicants be strictly followed, and that the punctuation of the specification made by applicants be not departed from except to cure a manifest absurdity.

## Names of Applicants.

When the full first name of the applicant does not appear either in his signature or in the preamble to the specification, the Examiner will, in his first official letter, require an amendment supplying the omission, and he will not pass the application to issue until the omission has been supplied, unless an affidavit shall have been filed setting forth that the full first name of the applicant is the one originally given by him.

## Issue of September 12, 1893.

| | | |
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| Patents | 384— | No. 504,008 to No. 505,081, inclusive. |
| Designs | 16— | No. 22,772 to No. 22,787, inclusive. |
| Trade-Marks | 17— | No. 23,596 to No. 23,612, inclusive. |
| Labels | None. | |
| Prints | None. | |
| Reissue | 1— | No. 11,365. |
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TO CITIZENS OF THE UNITED STATES.

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| Denmark | .... | .... | | | |
| Ecuador | .... | .... | | | |
| England | 12 | 1 | Total to citizens of foreign countries | 38 | 4 |
| France | 5 | 1 | | | |

## APPLICATIONS UNDER EXAMINATION.

*Condition at Close of Business September 5, 1893.*

| Division No. | Subjects of invention. | Oldest new application and oldest action by applicant awaiting office action. New. | Amended | No. of applications awaiting action. |
|---|---|---|---|---|
| | *In arrears.—Under one month.* | | | |
| 31 | Gas, Painting, Hides, Skins, and Leather, Alcohol, Oils, Fats, and Glue, etc. | Aug. 17 | Sept. 4 | 33 |
| 2 | Farm Stock, Products, etc | Aug. 17 | Aug. 31 | 58 |
| 13 | Metal-Working, Arms and Projectiles, Nails and Spikes, Needles and Pins, etc. | Aug. 7 | Aug. 16 | 73 |
| 16 | Telegraphy, Telephony, Electric Lighting and Signaling. | Aug. 5 | Aug. 10 | 65 |
| | *Between one and two months.* | | | |
| 21 | Textiles, etc | July 7 | Aug 30 | 115 |
| 10 | Carriages and Wagons and Railway-Cars. | July 7 | Aug. 29 | 240 |
| 8 | Furniture, Toilet, Umbrellas and Canes, etc. | July 6 | Aug. 29 | 209 |
| 27 | Brushing and Scrubbing, Grinding and Polishing, Laundry, etc. | July 21 | Aug. 28 | 126 |
| 32 | Advertising, Aeration and Bottling, Baggage, Packing and Storing Vessels, etc. | July 12 | Aug. 24 | 135 |
| 14 | Metal-Bending, Wire-Working, Coin-Controlled Apparatus, Farriery, Nut and Bolt Locks, etc. | July 7 | Aug. 24 | 112 |
| 19 | Stoves and Furnaces | July 10 | Aug. 22 | 228 |
| 20 | Builders' Hardware, Cutlery, Safes, Dentistry, Surgery, Undertaking, Artificial Limbs, etc. | July 19 | Aug. 21 | 181 |
| 6 | Chemistry, Explosives, Medicines, Fertilizers, Preserving, Photography, Sugar and Salt, etc. | Aug. 1 | Aug. 19 | 113 |
| 24 | Sewing-Machines, Crinoline and Corsets, and Apparel. | July 6 | Aug. 17 | 160 |
| 30 | Lamps, Gas-Fittings, Linotyping, Matrix-Making Machines, and Type-Writing Machines. | July 5 | July 29 | 179 |
| | *Between two and three months.* | | | |
| 3 | Metallurgy, Metal-Founding, Coating, Annealing and Tempering, Electro-Chemistry, etc. | June 21 | Aug. 29 | 137 |
| 15 | Plastics, Paper-Making, Paving, Glass, Fuel, Bread-Making, etc. | June 6 | Aug. 26 | 218 |
| 7 | Harvesters, Games and Toys, and Velocipedes. | June 29 | Aug. 24 | 286 |
| 25 | Artesian and Oil Wells, Butchering, Mills and Thrashing, Stone-Working, Vegetable Cutters and Crushers. | June 13 | Aug. 22 | 221 |
| 4 | Civil Engineering, Fire-Proof Buildings, Fire Escapes and Ladders, etc. | June 28 | Aug. 14 | 296 |
| 11 | Boots and Shoes, Clasps, Buckles, and Buttons, Harness, Hose and Belting, and Leather-Working Machinery. | June 27 | Aug. 14 | 204 |
| 12 | Mechanical Engineering, Stores-Service, etc. | July 1 | Aug. 10 | 225 |
| 17 | Paper-Manufactures and Printing | June 5 | Aug. 10 | 254 |
| 1 | Tillage and Fences | June 12 | Aug. 4 | 164 |
| 9 | Hydraulics, Fire-Extinguishers, etc. | June 15 | Aug. 2 | 379 |
| 18 | Steam-Engineering, etc | June 2 | Aug. 24 | 257 |
| | *Between three and four months.* | | | |
| 22 | Fire-Arms, Fishing and Trapping, Navigation, Signals, etc. | May 24 | Aug. 23 | 210 |
| 23 | Instruments of Precision, Acoustics, Optics, etc. | May 23 | Aug. 17 | 318 |
| 29 | Wood-Working Machines, Carpentry, Coopering, and Roofing, etc. | May 26 | Aug. 12 | 221 |
| | *Between four and five months.* | | | |
| 5 | Fine Arts, Stationery, Book-Binding, Music, etc. | May 8 | Aug. 18 | 215 |
| | *Between five and six months.* | | | |
| 28 | Pneumatics, Refrigeration, Air and Gas Engines, etc. | Mar. 17 | Aug. 12 | 368 |
| | *Between seven and eight months.* | | | |
| 26 | Electricity, Generation, Distribution, Electric Railways, etc. | Jan. 16 | Aug. 29 | 261 |
| | Total number of applications awaiting action | | | 6,971 |
| | *Under one month in arrears.* | | | |
| | Designs | Sept. 2 | Sept. 2 | 12 |
| | Trade-Marks | Sept. 2 | Sept. 1 | 11 |

# PATENTS

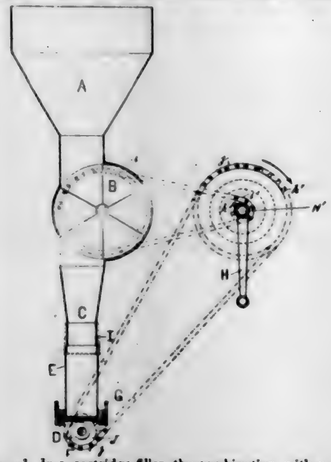
## GRANTED SEPTEMBER 12, 1893.

**504,698.** WRENCH. AXEL ANDERSEN, Attleborough, Mass. Filed July 15, 1893. Serial No. 480,794. (No model.)



*Claim.*—A wrench consisting of a round bar bent in the shape of a U and having an outer jaw riveted on its two ends, a loose jaw sliding on the side bars of the U, with a screw located between said bars, and having one end journaled in the outer jaw and the other end in the bend of the U and having a screw thread made thereon fitting into a screw thread in said loose jaw, the bent bar forming the handle of the wrench, substantially as described.

**504,699.** CARTRIDGE-LOADING MACHINE. MAX BIELEFELDT, Coswig, Germany. Filed May 1, 1893. Serial No. 472,584. (No model.)

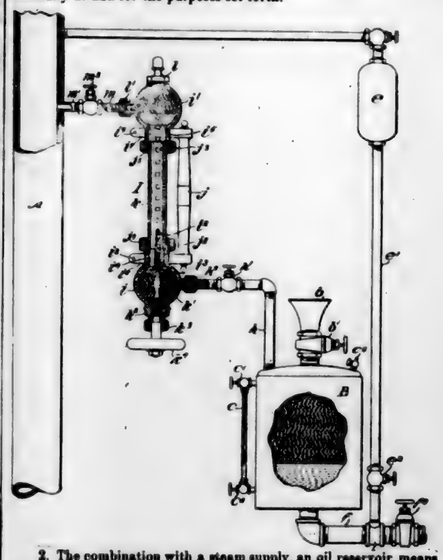



*Claim.*—1. In a cartridge filler, the combination, with a receptacle for the explosive, of a measuring device, a support for the cartridge, a jolting cam under the said support, and driving mechanism operating the said measuring device and the cam simultaneously, whereby the cartridges receive charges of equal quantity and density, substantially as set forth.

2. In a cartridge filler, the combination, with a receptacle for the explosive, of a measuring wheel, the support for the cartridge, the stationary guides, the jolting cam under the said support, a driving shaft provided with means for revolving it and the chain wheels A and A', the chain wheels *i* and J for driving the measuring wheel and the cam respectively, and the drive chains *i'* and *j*, substantially as and for the purpose set forth.

**504,700.** LUBRICATOR. GOTTLOB BAUER, Philadelphia, Pa. Filed June 27, 1893. Serial No. 478,888. (No model.)

*Claim.*—1. The combination with a steam supply, a reservoir or tank for containing a lubricant and means for controlling the supply of steam and discharge of the lubricant from the tank or reservoir, of a detachable lubricating device, comprising two globe valves or chambers with necks, a detachable fluid tube supported in said necks by means of gasketed nuts, a detachable split-ring supporting bracket connected with the necks of said globe-valves or chambers, a jet-tube formed integral with one of said globe-valves and provided with a valve for regulating the flow of lubricant through said jet-tube, substantially as and for the purposes set forth.




2. The combination with a steam supply, an oil reservoir, means for permitting of the admission and discharge of a lubricant therefrom, and a controlled gage and pet-cock connected therewith, of a lubricating device, comprising two globe-valves with necks, a jet-tube and hand controlled valve therefor, connected with one of said valves or chambers, a fluid-tube fitting the necks of said valves or chambers, a vertical post provided with two-part rings with tightening means embracing the necks of said valves or chambers, and means, substantially as described, for automatically controlling the flow of lubricant through said device, substantially as and for the purposes set forth.

3. The combination, in a lubricating device, of two globe-valves or chambers provided with threaded necks, having a glass tube or bulb fitted thereto and detachably connected therewith, a bracket provided with split rings with securing means detachably connected with the necks of said valves or chambers, a reducing jet-tube chamber extending into said bulb and integrally connected with one of said valves or chambers, and means, substantially as described, engaging with said jet-tube chamber for permitting of the regulation of the flow of the lubricant through said device, substantially as and for the purposes set forth.

4 The combination, in a sight feed lubricator, of a bracket or post provided with two-part detachable arms with tightening means, globular valves or chambers, nuts detachably secured to the walls of said chambers, and one of said chambers provided with a jet-tube having a tapering orifice and a plug valve with an operating device detachably connected with a screw-plug removably engaging the wall of one of said valves or chambers, substantially as and for the purposes set forth.

5. The combination, with a steam-supply, and a tank provided with means for admitting a lubricant thereto and permitting of the discharge of the same therefrom, of a condenser and suitable pipe connections interposed between said steam supply and tank and a detachable sight-feed lubricator interposed between said tank and steam supply and comprising two globe-valves with necks supporting a glass fluid-tube, nuts secured to the necks of said valves, a vertical post with two-part rings and securing means connected therewith, a regulating valve with a hand-wheel connected with a reducing jet tube formed integral with a casting in the bottom globe-valve and extending into said glass tube for regulating the flow under pressure of the lubricant therethrough, substantially as and for the purposes set forth.

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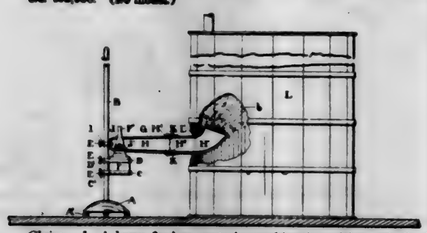
**504,701. BLANKET-RETAINING DEVICE.** NATHANIEL J. RUSSELL, Hartland, and ELIJAH J. RUSSELL, Milford, Mich. Filed Aug. 30, 1892. Serial No. 443,562. (No model.)



*Claim.*—A blanket retaining pin, formed of a single piece of spring wire, consisting of a central circular guard formed by spreading the strands of wire between two twisted points, said guard having depressions therein on opposite sides, the approximately parallel looped pins proceeding from said guard and returning thereto, their free ends engaging in the depressions therein, the spring hook extending from said guard in the opposite directions from said pin, substantially as set forth.

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**504,702. SAFETY-LAMP FOR BEER-VATS.** MICHAEL BORLINGHAUSEN and PETER BORLINGHAUSEN, Cleveland, Ohio, assignors of one-third to B. G. Borlinghausen, same place. Filed Feb. 20, 1893. Serial No. 462,990. (No model.)



*Claim.*—1. A lamp for beer vats, in combination with parabolical reflector consisting of two sections, the rear section having an external collar and an internal shoulder, with springs attached to said collar for securing the front section in position and allowing the same to be rotated, said front section having a flaring mouth, in the manner substantially as and for the purpose set forth.

2. In a safety lamp for beer vats, a rod fixed to a base, the brackets C and D adjustably attached to said rod by integral sleeves and set-screws, and a lamp, in combination with the parabolical reflector G secured to the sleeve I, said sleeve I being adjustably attached to said rod, above said bracket, by a set-screw, in the manner substantially as and for the purpose set forth.

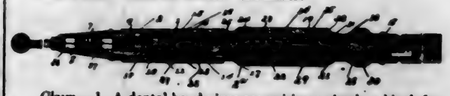
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**504,703. ELECTROLYTIC DIAPHRAGM.** AUGUST BEHREND, Iserlohn, Germany. Filed Jan. 4, 1892. Serial No. 417,339. (No specimens.)

*Claim.*—A diaphragm cup or cell for electrolytical apparatus composed of a cement that will set or harden at normal temperatures when combined with a suitable liquid in due proportions, and of a porous substance capable of resisting the action of an electrolyte, as comminuted pumice stone combined with and distributed throughout the body of cement.

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**504,704. DENTAL-ENGINE HAND-PIECE.** STEPHEN H. BROOKS, Brooklyn, N. Y., assignor to the Wilmington Dental Manufacturing Company, Wilmington, Del., New York, N. Y., and Philadelphia, Pa. Filed Feb. 5, 1892. Serial No. 420,462. (No model.)



*Claim.*—1. A dental hand piece comprising a chuck, a block for engaging the inner end thereof and a toggle lever for operating said block, substantially as and for the purpose specified.

2. A dental hand piece comprising a chuck, a block for engaging the inner end thereof, a bearing against said block, and an oscillating toggle lever substantially as and for the purpose specified.

3. A dental hand piece comprising a chuck, a block for engaging the inner end thereof, a movable bearing abutting against said block, an oscillating toggle lever and a lever for operating said toggle lever substantially as and for the purpose specified.

4. A dental hand piece comprising a chuck, a block for engaging the inner end thereof, a toggle lever engaging the block, and a lever for operating the toggle substantially as and for the purpose specified.

5. A dental hand piece comprising a chuck, a block for engaging the inner end thereof, a toggle lever, a lever for operating the latter, a driving shaft and a flexible connection between the lever and the driving shaft substantially as and for the purpose specified.

6. A dental engine hand piece, comprising a casing, a slotted tubular rotary shaft within the casing, a toggle having bearings in said shaft, and a lever guided by the slot in said shaft, and means for operating the lever substantially as and for the purpose specified.

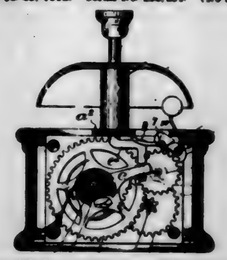
7. A dental engine hand piece comprising a casing, a slotted tubular shaft, a toggle lever provided with a heel piece having bearings in the slot in said shaft, a lever guided by said slot, and provided with a shoulder bearing upon the heel piece of the toggle lever substantially as and for the purpose specified.

8. A dental engine hand piece, provided with a casing, a slotted tubular rotary shaft, a chuck, a block adapted to engage the chuck, a toggle lever for operating the chuck, a lever in engagement with the latter, a driving shaft, a yielding connection between the two last mentioned elements, a grooved sleeve inclosing the driving shaft and lever, a splined sleeve fitting over the last mentioned sleeve, and a sleeve 34, extending forwardly from the spline sleeve, and means for the longitudinal adjustment of the same, substantially as specified

9 A chuck made of two duplicate pieces having their butt ends in contact substantially as and for the purpose specified

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**504,705. GONG OR CALL-BELL.** HARUN J. BUNDY, Maplewood, Mass. Filed Feb. 23, 1892. Serial No. 422,431. (No model.)



*Claim.*—1 A call-bell consisting essentially of a gong, a hammer, a motor, a combined actuating and releasing device to control the movement of the train, a supporting frame having a top plate and side pieces outwardly turned at their lower ends to form flanges, and a curb to increase the train and having internal shoulders upon which said top-plate and flanges bear, substantially as described.

2. In a call-bell, a gong; a hammer; an actuating train and its frame-work having outwardly turned flanges and a top plate, combined with a surrounding curb internally shouldered at top and bottom, said shoulders being engaged by and held between the top plate and flanges, and removable fastenings connecting said top plate and flanges, substantially as described.

3. The gong; its hammer; the actuating train, winding lever *e* therefor, and an actuating device to turn said lever and wind the train; combined with a hammer retracting device in the path of movement of and thrown into operative position by the lever actuating device in its retrograde movement to thereby lock the train and also positively retract the hammer from the gong simultaneously, substantially as described.

4. The gong; hammer, and its actuating train, and a supporting frame-work for said train; combined with an internally shouldered open-ended curb to surround and protect the said operating train, the shoulders projecting inward intermediate the top and bottom of and supporting said frame-work, and means to draw the said top and bottom toward each other, substantially as described.

5. The gong; its hammer; the actuating train, its winding lever *e*, and a longitudinally movable actuating device therefor; combined with a normally inoperative hammer retracting device in the path of movement of said actuating device and including a shoe adapted to be moved into operative engagement with the hammer by the return of the actuating device, to thereby retract and hold said hammer away from the gong, substantially as described.



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**504,706. METHOD OF EXTRACTING METALS FROM ORES.** HUGH CALHOUN, Hot Springs, and ARCH M. BEAN, Bear, assignors, by direct and mesne assignments, to the United States Desulphurizing, Dry-Chloridising, and Amalgamating Company, Hot Springs, Ark. Filed Apr. 1, 1891. Serial No. 387,275. (No specimens.)

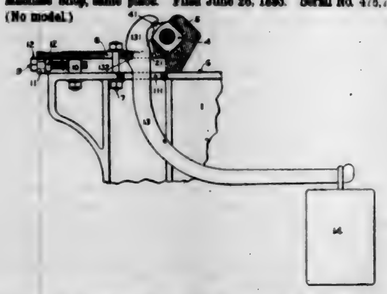
*Claim.*—1. The herein described method of chlorinating ores containing gold and silver, which consists in roasting the same in the presence of carbon and muriate of ammonia in substantially the proportions stated.

2. The herein described method of chlorinating and aggregating gold and silver from ores without a flux, which consists in subjecting the ores to heat in the presence of carbon and muriate of ammonia or its equivalent, and maintaining the temperature between a low red heat and the fusion point of the metal or metals to be extracted until the gold and silver become chlorinated.

3. The herein described mode of treating ores containing precious metal, which consists in reducing the ore to a granular or pulverulent condition,—mixing therewith muriate of ammonia and carbon in substantially the proportions stated, then roasting the mass, in presence of air increasing the heat as the roasting progresses, and thereby eliminating the carbon,—and finally amalgamating in the usual way.

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**504,707. FEED-ROLL-WEIGHTING DEVICE FOR CARDING-ENGINES.** WILLIAM P. CANNING, Lowell, Mass., assignor to the Lowell Machine Shop, same place. Filed June 26, 1893. Serial No. 478,790. (No model.)



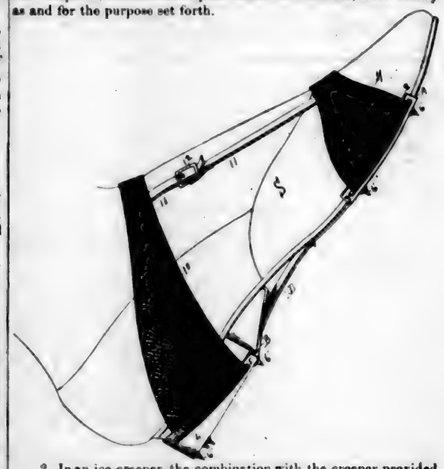
*Claim.*—1. The combination with the feed-roll, and the shell having the horizontal extension or plate formed with the opening therethrough, of the lever extending upward through said opening, applying pressure to the feed-roll by its upper end, formed with a notch to fit pivotally upon an edge of the said opening, and having its lower end extended horizontally, and a weight applied to the said lower end, substantially as described.

2. The combination with the machine-framing, the shell having the horizontal extension or plate formed with the opening therethrough, and means of adjusting the shell on the machine-framing, of the lever extending upward through said opening applying pressure to the feed-roll by its upper end, formed with a notch to fit pivotally upon an edge of the said opening, and having its lower end extending horizontally, and a weight applied to the said lower end, substantially as described.

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**504,708. ICE-CREEPER.** JOSEPH CARR, Saginaw, Mich. Filed June 16, 1893. Serial No. 477,731. (No model.)
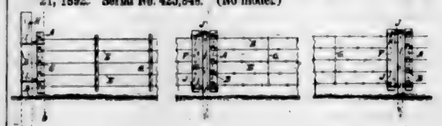
*Claim.*—1. In an ice creeper, the combination with the sole A, provided with upwardly extending rims 2, 2, containing slots 3, 3, and strap 9, of the heel B connected to and hinged to the sole A by the connecting piece D and hinge C, the heel B being provided with a rim 4 to fit around the heel of the shoe, and grooves 5, 5, and strap 10 secured through the grooves, and the calks 6, 6 consisting of a sharp pointed bolt having a square head 6 back of the shoulder of the point, the screw threaded end 8, nut 7 adapted to fit upon the screw threaded end 8, said nut being provided with a groove 7', and adapted to fit into a beveled socket B', the lower half of the socket B' being square and adapted to receive the square head 6 of the bolt, substantially as and for the purpose set forth.



2. In an ice creeper, the combination with the creeper provided with a beveled socket upon the upper side of the creeper for receiving a beveled nut, and a square socket underneath the beveled socket for receiving the square head of the calk, of a calk adapted to fit into the square socket with one end screw threaded, and passing up into the beveled socket, and a beveled nut adapted to be secured upon the upper end of the calk in the beveled socket holding the calk in position, substantially as and for the purpose set forth.

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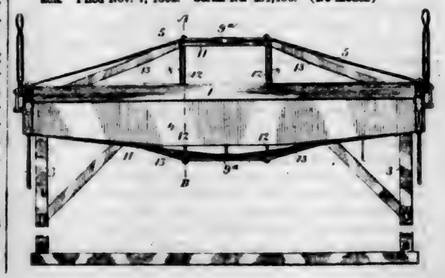
**504,709. WIRE FENCE.** ALFRED E. CODY, Sweaborg, assignor of one-half to Robert Cuddie, Woodstock, Ontario, Canada. Filed Mar. 21, 1892. Serial No. 425,848. (No model.)



*Claim.*—In a wire fence, the combination, with the wires E and head pieces F, of the upper and lower links J passing round said head pieces, and the independent stays K recessed at their upper ends to receive each a side of the upper link J, whereby the links and fence are removably suspended on the top of said stays, substantially as described.

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**504,710. CORNICE-BRAKE.** JOHN H. CROCKER, Shelburne, Canada. Filed Nov. 7, 1892. Serial No. 451,136. (No model.)



*Claim.*—In a cornice brake, the combination on the same side of the leaves, of the tension truss inclined as specified, and the king-post truss secured to stand vertically at the rear edge of said leaves, substantially as shown and set forth.

**504,711. RAIL-JOINT.** JOSEPH H. CROSBY, St. Albans, Vt. Filed May 1, 1893. Serial No. 472,502. (No model.)



*Claim.*—In a rail joint, the combination with the rails, of the fish plates provided at their centers with fulcrum blocks arranged between themselves and the rails, and bearing against the rails to hold the central portions of the fish plates away from the same, and the fastening bolts inserted through the rails and one fish plate and having their threaded ends engaging threaded openings in the other fish plate whereby the ends of the fish plates will act as spring levers to tighten the bolts.

**504,712. PROPELLING ATTACHMENT FOR GARDEN-PLOWS.** SOLOMON F. CRULL, Dublin, Ind. Filed May 19, 1890. Serial No. 474,806. (No model.)



*Claim.*—An attachment for garden plows, cultivators, lawn mowers, wheel barrows, and similar implements, as a propelling device, having a main bar or rod B, provided with hook or swivel end $a^3$, circular shaped piece *b*, provided with curved upright hip pieces $a^3$, flexible stomach piece A, secured to the tops of the hip pieces a strap *a'* for supporting the propeller, all in combination, substantially as and for the purpose set forth.

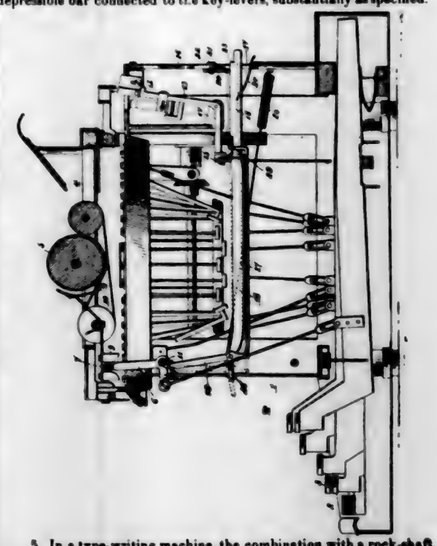
**504,713. TYPE-WRITING MACHINE.** THOMAS J. DOWNING, Lincoln, Ill. Filed Aug. 5, 1892. Serial No. 442,245. (No model.)

*Claim.*—1. In a type writing machine, having upper and lower case letters, the combination with shifting mechanism for controlling the same, of a slide-bar connected to, and operated by said shifting-mechanism and provided with an automatic stop to hold the parts in one position, and means for communicating motion from the printing mechanism to the slide-bar to release the stop, substantially as specified.

2. In a type-writing machine having upper and lower case letters, the combination with operating means for controlling said upper and lower case, of a spring-actuated slide-bar, provided with a spring-actuated stop to hold the parts in the upper-case position, and adapted to be engaged and released by a depressible bar connected with and operated by the key levers, substantially as specified.

3. In a type-writing machine, having upper and lower case letters, the combination with operating means for controlling said upper and lower case, said operating means having a rock-shaft which is connected to and operated by the case adjusting key, of a hanger carried by said rock-shaft, and connected to a retraction spring, and a slide-bar connected at one end to the hanger, fitted to slide at the other end in a guide and provided with a spring-stop, said slide-bar being in the path of and adapted to be released by a depressible bar connected to the key-levers, substantially as specified.

4. In a type-writing machine, having upper and lower case letters, the combination with operating means for controlling said upper and lower case and provided with a rock-shaft, of a swinging arm or hanger attached to said rock-shaft, a slide-bar pivotally connected to said swinging arm or hanger and provided with a shoulder, and a guide-bar provided with a slot to receive the free end of the slide-bar and a detent to engage the shoulder thereon, said slide-bar being provided with a spring to normally hold it in position to cause its shoulder to engage the detent, and being arranged in the path of a depressible bar connected to the key-levers, substantially as specified.



5. In a type-writing machine, the combination with a rock-shaft connected to the upper and lower case adjusting mechanism, of a hanger carried by the rock-shaft, a slide-bar connected at one end to said hanger and operating at the other end in a guide-slot, a spring-actuated stop carried by the slide-bar, a depressible bar connected to the key-levers and adapted at the depression of each key to engage and release the stop of the slide-bar, and a trip-slide, mounted upon the slide-bar and adapted to be arranged in the path of said depressible bar or removed therefrom, substantially as specified.

6. In a type-writing machine, the combination with a rock-shaft connected to the upper and lower case adjusting mechanism, of a hanger carried by the rock-shaft, a tension spring connected to the lower end of said hanger, a slide-bar pivotally connected at its front end to the lower end of said hanger and sliding at its rear end in a guide, adjacent to a detent, said slide-bar being provided with a shoulder and a spring to cause said shoulder to engage the detent and the trip-slide mounted to slide upon the slide-bar and connected by a connecting rod with a lever arranged at the front end of the slide-bar, said slide-bar being adapted to be engaged and released from its stop by the depression of a bar connected to the key-levers when said trip-slide is arranged in the path of said bar, substantially as specified.

7. The attachment for type-writing machines comprising a slide-bar, connected to the upper and lower case operating mechanism, and operating at its rear end in a guide provided with a detent to engage a shoulder on the slide-bar, the latter being provided with a spring to hold its shoulder in position, normally, to engage the detent, and the trip-slide mounted to slide upon the slide bar, all substantially as specified.

**504,714. PERIODICAL-HOLDER.** FRED C. DEETSADER, Ithaca, N. Y. Filed Apr. 15, 1893. Serial No. 470,544. (No model.)

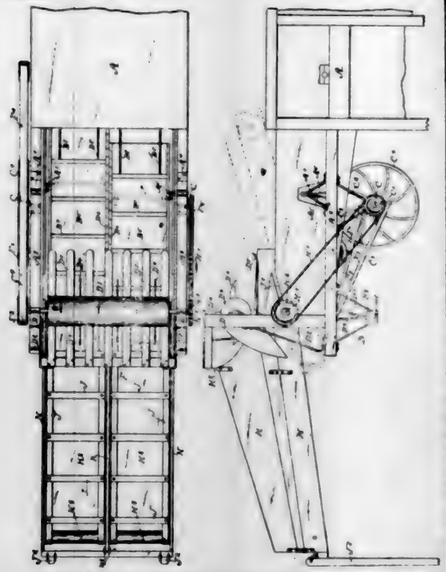


*Claim.*—In the described holder for periodicals and like articles, the slotted tube *a*, and a rod *c* the tube being constructed with an aperture *d* and the rod shaped to be a nearly closed ring, the inner end of the rod ring being fitted to enter the aperture *d*, whereby the rod and periodical are securely held in the tube as set forth.

**504,715. AUTOMATIC BAND-CUTTER AND FEEDER.** CHARLES H. EDWARDS, Alta, Iowa. Filed Dec. 13, 1892. Serial No. 455,019. (No model.)



*Claim.*—1. In a band cutter and feeder, the combination of the following elements to wit; a frame permanently attached to a thrashing machine, a rotatable cylinder, having knives, supported by said frame and adapted to sever the bands of sheaves of grain, means for advancing the grain from said cylinder toward the thrashing cylinder, and a conveyer for advancing bundles of grain to the said band-cutting cylinder, comprising suitable carrier mechanism in a frame adapted to pass between the said band cutting cylinder and the mechanism for advancing the grain to the thrashing cylinder, and, when not in use to be moved forward between the said cylinder and feeding mechanism and rest upon the top of the thrashing machine and the frame for supporting the band cutting cylinder, for the purposes stated.



2. In a band cutter and feeder the combination of the following elements, to wit; a frame $A^2$ permanently attached to a thrashing machine, uprights D at the outer end of said frame, a cylinder $D^3$, having knives $D^4$, supported by said uprights, an endless carrier frame composed of the parts H and $H^1$, a roller mounted in the outer end of the frame, a rotatable shaft $H^3$ extended transversely of the inner end of the carrier frame with its ends extended beyond the sides thereof, rollers $H^4$ secured to said shaft, endless carriers passed over the rollers $H^4$ and the roller at the outer end of the frame, a sprocket wheel $H^5$ secured to one end of the shaft $H^3$ to provide means whereby it may be rotated and the slots $J^2$ $J^3$ in the sides of the frame $A^2$ to admit the ends of the shaft $H^3$, all arranged and combined substantially as and for the purposes stated.

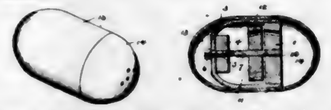
3. In a band cutter and feeder, the combination of a fixed frame having a rotating band cutter in its top portion, a carrier frame pivotally and detachably connected with the said fixed frame in a plane below the rotating band cutter in such a manner that it can be moved rearward under the band cutter, and a partition adapted to be detachably connected with the said fixed frame and also with the movable carrier frame for the purposes stated.

4. In a band cutter and feeder a frame having two endless carriers mounted thereon in parallel position, a frame having a rotating cutter mounted thereon to extend across said carrier in a plane above the carrier and rearwardly inclined open slots or bearings in its sides to admit the ends of a shaft or journals extending outward from the sides of the frame that supports the carriers as shown and described to pivotally connect the carrier frame with the fixed frame and also to allow longitudinal movement of the carrier frame, relative to the fixed frame and a partition adapted to be detachably fixed to the said frames to separate the two parallel carriers, arranged and combined to operate in the manner set forth for the purposes stated.

5. In a band cutter and feeder, a fixed frame adapted to support a rotating band cutter at its top portion and the sides of the frame provided with open slots $J^2$, and a carrier frame having journals $H^2$ extended outward and adapted to enter and traverse said slots, arranged and combined so that the carrier frame can be raised and lowered at its free front end and also moved longitudinally underneath the rotating band cutter in the manner set forth for the purposes stated.

6. An improved band cutter and feeder for thrashing machines, comprising a frame having rearwardly extended open slots or bearings in its sides adapted to support the ends of a rotating shaft, a rotating band cutter mounted across the top portion of said frame and vibratory pans in the lower portion thereof, a movable carrier frame having a rotating shaft at one end and the ends of the shaft extended to enter said bearings in the frame that supports the cutter, two rollers at the other end and endless carriers on the said shaft and two rollers, a detachable partition between the two carriers, an adjustable support at one end of the said movable carrier frame, and mechanism for operating the rotating band cutter, the vibrating pans, and the endless carriers, arranged and combined to operate in the manner set forth for the purposes stated.

**504,716. WHISTLE.** WILLIAM ELY, Providence, R. I., assignor, by direct and mesne assignments, of one-half to Walter S. Johnson and Henry Wolcott, same place. Filed Jan. 12, 1892. Serial No. 417,857. (No model.)



*Claim.*—1. In a whistle, the combination with a casing, consisting of a main body and a minutely perforated cover of a stationary disk below the cover and having an annular series of inclined perforations, bearings located at one side of the disk and a rotatable disk mounted in the bearings and having a series of annular perforations, inclined in opposition to those of the fixed disk, and formed upon a circle agreeing with those of the fixed disk, substantially as specified.

2. In a whistle, the combination with a casing, of a disk having an annular series of perforations, and a central bearing-stud, terminating at its lower end in a conical bearing-cavity, a U-shaped bridge secured to the opposite side of the stationary disk and provided at its center with a bearing-block having a vertical and transverse perforation, a bearing-pin or screw adjustably mounted in the vertical perforation, and provided at its upper end with a conical bearing-cavity, a binding-screw located in the transverse perforation and adapted to bear against the bearing-screw, a rotatable disk having an annular series of perforations adapted to register with those of the stationary disk, and a conical-ended stud located in the rotatable disk and bearing in the concavities, substantially as specified.

3. The combination with the elliptical casing, comprising the main and cover-sections, each perforated at its ends, of the disk 1 located in the upper end of the main section, the U shaped bridge, the inclined perforations in the disk, and the rotatable disk supported below the disk 1 and provided with perforations disposed at an angle to those of the disk 1, substantially as specified.

**504,717. UMBRELLA-SUPPORT.** WILLIAM FANCKBONER, Schoolcraft, Mich. Filed Feb. 20, 1893. Serial No. 463,035. (No model.)

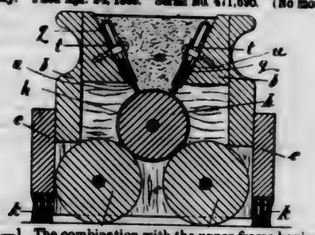


*Claim.*—1. The combination of a supporting-rod or bar, the two jaws hinged together at one end and adapted to clamp the umbrella handle at the other ends, one of said jaws being in an enlarged circular form, having the series of radial adjusting grooves in the outer face and provided with the lugs projecting at right angles to said face, at two opposite points at the periphery of the circular jaw a bolt having an eye at one end, through which the supporting-rod is loosely passed and from thence extending transversely through the jaws, and a binding-nut on the end thereof; substantially as set forth.

2. The combination of a supporting-rod or bar provided with the radial prongs or hooks, the jaws hinged together at one end and adapted to clamp the umbrella handle at the other end, one of said jaws having the radial ribs on its outer face, a bolt having an eye surrounding the supporting-rod at one end, from thence passed loosely through the jaws, a binding-nut on the other end of said bolt, said grooved jaw being provided with a flange adapted to be inserted be-

tween the supporting-rod and its prongs or hooks; substantially as set forth.

**504,718. BRONZING-MACHINE.** FRANZ R. A. FRAMER, Berlin, Germany. Filed Apr. 24, 1893. Serial No. 471,696. (No model.)



*Claim.*—1. The combination with the upper frame having a hopper and a grooved feed-roll to close the hopper-mouth, of a separable lower frame having a pair of smooth distributing rolls projecting beneath it and in contact above with said feed-roll, substantially as described.

2. The combination with the traveling box having a hopper above and a pair of distributing rolls projecting beneath said box, of the intermediate grooved feed-roll closing the hopper-mouth and in contact with said distributing rolls, substantially as described.

3. The combination with a traveling box having a hopper above and a pair of distributing rolls projecting beneath said box of the intermediate grooved feed-roll mounted below the hopper mouth and in contact with said distributing rolls and the flexible guards at the hopper sides impinging against said feed-roll, substantially as described.

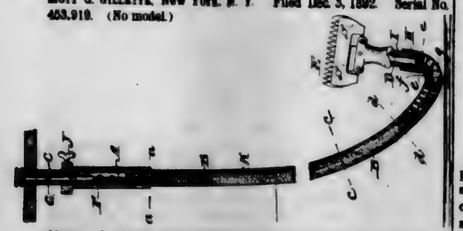
4. The combination with the traveling box comprising upper and lower separable frames the latter provided with fringe brushes at its sides of the pair of distributing rolls projecting elastically beneath said lower frame, the hopper carried by the upper frame, the intermediate grooved feed-roll mounted below the hopper mouth and in contact with said distributing rolls and the flexible guards at the hopper side impinging against said feed-roll, substantially as described.

**504,719. ALARM FOR RAILWAY-CROSSINGS.** CHARLES T. FRASHER, Mount Pleasant, Mich., assignor of one-half to George Reed, same place. Filed Sept. 8, 1892. Serial No. 445,319. (No model.)



*Claim.*—In a railway signal, the combination with a track, a signal, and an actuating wire, of a lever arranged beside the track in range of the flange of a wheel, and clamps consisting of heads *d*, jaws *c*, and extensions *b* arranged on opposite sides of the lever embracing the base of the rail and in which the lever is pivoted, substantially as described.

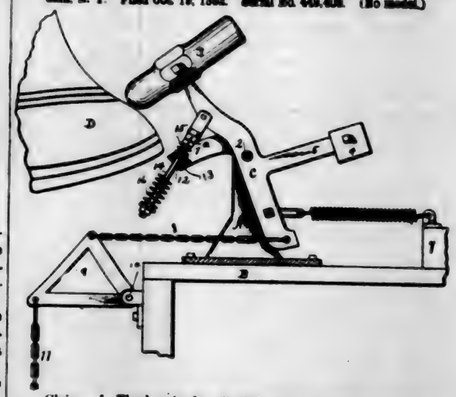
**504,720. FLEXIBLE SHAFTING.** GEORGE W. GILLETTE and MOTT G. GILLETTE, New York, N. Y. Filed Dec. 3, 1892. Serial No. 453,919. (No model.)



*Claim.*—1 A tube for flexible shafting composed of a coil of wire in a portion of the length whereof the convolutions abut, and in the remaining portion whereof the convolutions are wound with interspaces increasing from the intermediate portion toward the extremity, substantially as and for the purposes described.

2. In a power applying apparatus, the combination of a flexible shafting, a tube inclosing the same composed of a differentially wound coil of wire forming a longitudinally resilient spring, a shank I forming an abutment, for one end of the coil, and a sleeve F, and shank G, and means of adjusting the sleeve longitudinally at the other end of the coil, within which shanks the flexible shafting rotates in a longitudinally fixed position, all substantially as and for the purposes described.

**504,721. BELL-RINGING DEVICE.** WILLIAM J. GOUDS, Amsterdam, N. Y. Filed Oct. 19, 1892. Serial No. 449,408. (No model.)

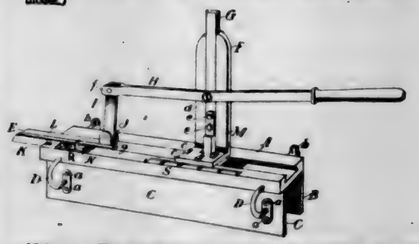


*Claim.*—1. The herein described device for striking bells, comprising a lever pivotally mounted and having a hammer at one end, and means for raising it, at its opposite end, a downwardly extending arm secured to the upper part of said lever, passing through an opening in the arm —1—, which arm is secured upon the lower end to the upper part of the lever, coiled springs surrounding either end of the arm —14— as set forth.

2. The herein described device for striking bells, comprising a lever pivotally mounted and having a hammer at one end, means for raising it, at its opposite end, a downwardly extending arm secured to the upper part and adapted to pass through an opening in the arm —1—, which arm is secured upon the lower end of the upper part of the lever, an adjustable nut —*a*— located near the inner end of the arm —14— and a coil spring surrounding said arm —14— interposed between said nut and the point where it passes through the arm —1—

3. The herein described device for striking a bell comprising a lever swingingly mounted, having a hammer at one end, means for raising it at its opposite end and an adjustable weight for balancing said hammer, as set forth.

**504,722. MORTISING-MACHINE.** LAWRENCE CRAFT and NATHAN C. HERTON, Chicago, Ill. Filed Mar. 2, 1892. Serial No. 423,546. (No model.)



*Claim.*—1. The combination in a mortising machine of a bed plate or base having an extension at right angles forming a fixed or stationary side, a movable side supported, guided and adjusted by clamp rods, a slide bearing the cutting mechanism and working in a groove in the bed plate or base, with a feeding attachment, a cutting point or chisel substantially as set forth and for the purpose specified.

2. The combination in a mortising machine of a bed plate or base having an opening forming a passage for a cutting point or chisel, also holes at either end for clamp rods to pass through and grooved its entire length to admit and retain in position a slide bearing the cutting mechanism, clamp rods passing through the bed plate or base, threaded for the reception of thumb nuts, bent and attached to the movable side of the machine, with a slide bearing the cutting mechanism, a feeding attachment, a cutting point or chisel, substantially as set forth.

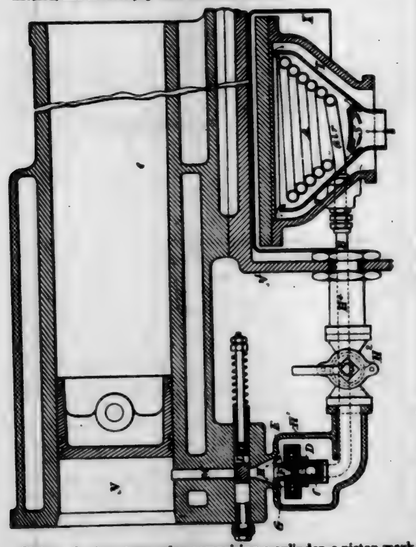


3 The combination in a mortising machine of a bed plate or base having a fixed side and a movable side with clamp rods connecting them, a slide conforming to and working in a groove in the bed plate or base and perforated for the passage of a cutting point or chisel, with an adjustable standard, a feeding attachment, a cutting point or chisel substantially as set forth.

4. The combination in a mortising machine of a bed plate or base having a fixed or stationary side and a movable side supported, guided and adjusted by clamp rods, a slide working in a groove in the bed plate, a standard grooved to admit and retain in position a guide for the cutting point or chisel, and having a base or foot piece at right angles which is perforated for a passage of the cutting point or chisel and slotted to form an adjustable attachment by means of set screws to the slide working in the bed plate or base, with a feeding attachment, a cutting point or chisel substantially as set forth and for the purpose specified.

5. The combination in a mortising machine of a bed plate or base having a fixed or stationary side and a movable side connected by means of clamp rods, a slide working in a groove in the bed plate, a standard with a base or foot piece at right angles, a feeding attachment K composed of the notched bar L, the feeding slide N formed with the thumb piece R and slotted ends, the spring pawls *m* and *n* and screws *i*—*i*, with a cutting point or chisel, substantially as set forth and for the purpose specified.

**504,723. HYDROCARBON-ENGINE.** ALEXANDER GRAY, London, England. Filed Nov. 24, 1891. Serial No. 412,926. (No model.) Patented in England Jan. 8, 1891, No. 191; in France Nov 9, 1891, No. 217,294, and in Germany Nov. 15, 1891, No. 64,230



*Claim.*—1. A motor engine comprising a cylinder, a piston working therein, an inlet valve for admitting an explosive mixture to the cylinder, an outlet valve for the escape of the exhaust gases, nozzles in close proximity to the inlet valve to which a liquid hydro-carbon is supplied, nozzles through which streams of highly heated air are projected across the first nozzles, and means for supplying a further quantity of cooler air to the heated mixture of air and vapor coming from the nozzles before it enters the cylinders, substantially as described.

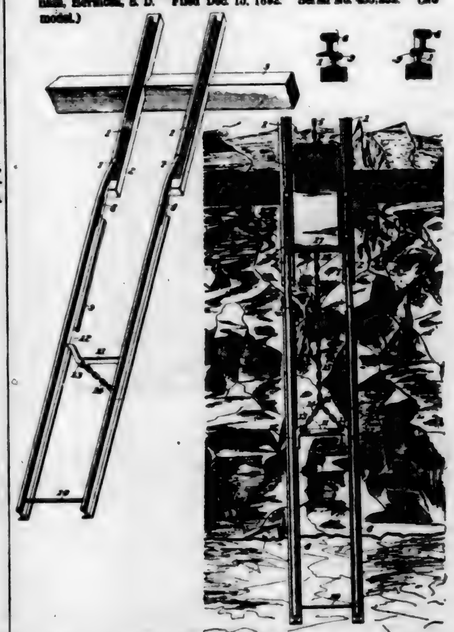
2. A motor engine comprising a cylinder, a piston working therein, an inlet valve for admitting an explosive mixture to the cylinder, an outlet valve for the escape of the exhaust gases, a nozzle or nozzles in close proximity to the inlet valve to which a liquid hydrocarbon is supplied, a nozzle or nozzles through which a stream or streams of highly heated air are projected past the first nozzles so as to produce spray and means for supplying a further quantity of cooler air to the heated mixture of air and vapor coming from the nozzles before it enters the cylinder, substantially as described.

3. A motor engine comprising a cylinder, a piston working therein, an inlet valve for admitting an explosive mixture to the cylinder, an outlet valve for the escape of the exhaust gases, mechanism for intermingling a stream or streams of highly heated air and a stream or streams of hydrocarbon oil in close proximity to the inlet valve and means for supplying a further quantity of cooler air to the heated mixture just as it enters the cylinder, substantially as described.

**504,724. COMPOUND FOR PRESERVING FOOD.** ABRAHAM J. GREENER, Chicago, Ill. Filed Feb. 11, 1893. Serial No. 461,912. (No specimens.)

*Claim.*—The herein described composition to be used for the preservation of food, consisting of charcoal, sulphur, sugar, corn starch, beeswax, saltpeter, cayenne pepper and ginger in the proportions as specified.

**504,725. GODEVIL.** HENRY HALL, Hill City, S. D., assignor of two-thirds to Henry Herbert Hall, same place, and John L. Buckingham, Hermosa, S. D. Filed Dec. 15, 1892. Serial No. 455,262. (No model.)



*Claim.*—1. The combination with a main track, of a godevil consisting of side pieces and noses thereon for guiding the same upon the main track, and means for raising and lowering the godevil, substantially as set forth.

2. In a godevil adapted to be raised and lowered upon a main track, the combination with side pieces having noses an end cross piece, and an oscillatory bail connecting the side pieces near their middle, substantially as and for the purpose specified.

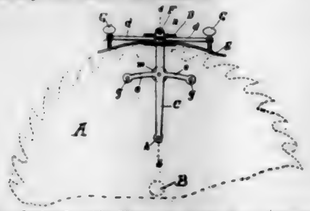
3. The combination with a main track, of a godevil having side pieces in vertical alignment therewith, guiding noses and ribs upon the side pieces and end cross-piece and oscillatory bail, substantially as and for the purpose specified.

4. The combination with a main track, a godevil adapted to carry a skip from the main track to the bottom of a shaft, a cross-piece upon the godevil, and a supporting piece adapted to be inserted underneath the same upon the main track, substantially, as and for the purpose specified.

**504,726. DEVICE FOR SIDE-DRESSING CIRCULAR SAWS.** WILLIAM HATFIELD, Fort Wayne, Ind. Filed May 1, 1893. Serial No. 472,647. (No model.)

*Claim.*—1. A device for filing saw teeth, comprising the standard C having an oblique slot *b* in the upper end thereof a gage screw in the other extremity, a thumb screw F adapted to secure the file D in said slot, and provided with a spring gage plate E removably secured in said standard, the lateral arms *d* having the gage or set screws G in the outer extremity thereof, for regulating the ends of the gage plate and the lateral arms *e* having the gage screws *g* for regulating the

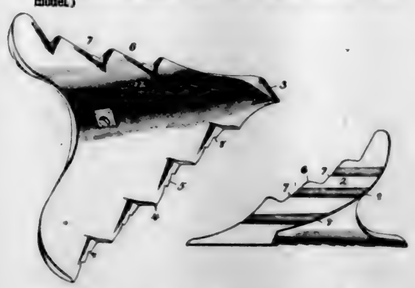
position of said file relatively to the swaged surface of the said tooth, all substantially as set forth and described.



2. In a device for side filing saw teeth, the combination of the standard C having a slot *b* in one end thereof and a gage screw *h* in the other extremity, and provided with the lateral arms *d* having set screws G in the extremities thereof and the lateral arms *e* having the gage screws *g* in the ends thereof, with the spring gage plate E removably mounted in said standard, the file D secured in said slot by the set screw F, and the operating handle *m*, all substantially as described.

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**504,727. PLOW-POINT.** CHARLES H. HEINLICH and FREDRICK G. HEINLICH, Venice, Ohio. Filed Feb. 15, 1893. Serial No. 462,472. (No model.)



*Claim.*—1. The herein described plow-point having one of its cutting edges provided with a series of chisel-pointed teeth disposed at an obtuse angle to the line of draft, and the chisel-point of each tooth having a series of serrations, substantially as specified.

2. The herein described plow having one of its cutting-edges provided with a series of teeth having chisel-points, and opposite the same having channels disposed in the line of draft the cutting-edges of said teeth being disposed at an obtuse angle to the line of draft of the plow, substantially as specified.

3. The herein described improved plow-point, the same having its landside provided with a series of grooves arranged parallel to each other and to that of the draft, substantially as specified.

4. The herein described plow having the under side of its point provided with a series of grooves arranged in line with the draft, substantially as specified.

5. The herein described plow having one of its surfaces provided with a series of grooves disposed parallel to each other and to the line of draft of the plow and having inclined bottoms, substantially as specified.

6. The herein described plow, the same having one of its edges provided with a series of chisel-pointed teeth whose cutting-edges are arranged at an oblique angle to the line of draft of the plow, the under side of said plow being provided with grooves having inclined bottoms arranged opposite the teeth, substantially as specified.

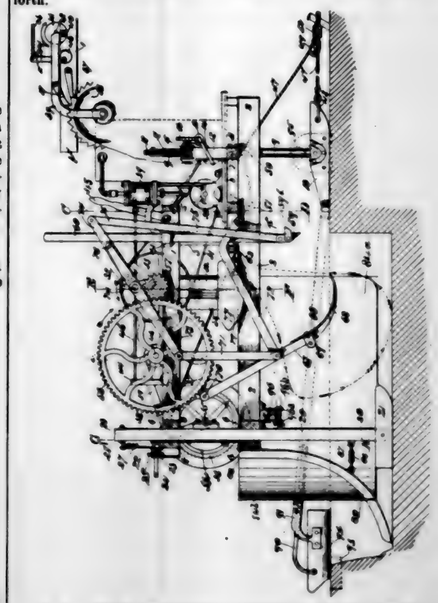
7. The herein described plow, the front cutting-edge and moldboard cutting-edge of which are provided with a series of chisel-pointed teeth having cutting-edges disposed at an obtuse angle to the line of draft, the moldboard and under side of the plow being provided with a series of grooves whose bottoms are inclined and which intersect the cutting-edges of the teeth, substantially as specified.

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**504,728. DITCHING-MACHINE.** OTTIS HOOSER, Vernon, and JEREMIAH S. HULL, Lock Spring, Ind. Filed June 6, 1892. Serial No. 435,990. (No model.)

*Claim.*—1. In a ditching machine, the combination with a vertically adjustable frame, a gear-wheel mounted in said frame and having a suitable crank formed thereon, of a shovel bar pivoted on said crank, a radius bar pivoted on said shovel beam intermediate between the ends thereof and to the main frame, a vertically moving digging bit, an oscillating lever connecting said shovel and digging bit and means for rotating said gear-wheel, substantially as set forth.

2. In a ditching machine, the combination with the shovel and the vertically moving digging bit thereof arranged and connected on a movable frame as described, of an oscillating beam having one of its ends bifurcated and a lever pivoted in said bifurcation, a set-pin of a baser material than that of the lever passing through said bifurcations of said oscillating lever and pivotal lever, substantially as set forth.



3. In a ditching machine, the combination with the vertically adjustable and portable frame thereof, of a gear-crank wheel mounted in said frame, a shovel-beam pivoted on the crank of said gear-wheel, a digging bit rigidly secured on vertically moving side rods, guide-ways wherein said rods move, an oscillating lever having a bifurcated arm, a lever pivoted in said bifurcated end of lever, and a set-pin of a baser material than the lever passing through said bifurcations of the oscillating lever and said pivotal lever intermediate between the ends thereof, suitable rods pivoted to said shovel digging bit, and oscillating lever and means for imparting motion thereto, substantially, as and for the purpose set forth.

4. In a digging machine, the combination with a vertically adjustable and portable frame, of a gear crank-wheel mounted on said frame, a shovel beam pivoted on said crank having a concave shovel mounted on its lower swinging end, a shovel cleaner adapted to move across the face of said shovel, a digging-bit secured on vertically moving side rods, upper rigid and lower horizontally yielding guide-ways wherein said guide rods slide vertically, an oscillating lever having a yielding arm, suitable rods connecting said oscillating lever, digging-bit and shovel, and means for operating the same, substantially as set forth.

5. In a ditching machine the combination with a vertically moving digging bit having parallel side sliding rods, to which said digging bit is loosely connected guides wherein said rods slide longitudinally, an oscillating lever and suitable means for connecting, and imparting motion to said oscillating lever and digging bit, substantially as set forth.

6. In a ditching machine the combination with a vertically moving digging bit having parallel vertically-sliding side rods secured thereto, guides wherein said rods slide longitudinally, an oscillating lever having a fixed and a bifurcated arm, a lever pivoted in said bifurcations, a set pin passing through said bifurcation and pivotal lever, and suitable means for driving and a frame for supporting the mechanism, substantially as set forth.

7. In a ditching machine, the combination with a vertically moving digging bit comprising a cross knife, cross cutter secured on and projecting in front of said knife, and parallel vertically sliding side rods to which said bit is secured with its face at an angle of advance, substantially as set forth.



8. In a ditching machine the combination with a vertically moving digging bit comprising a cross knife, side cutters projecting in front of the face of and secured on the sides of said cross knife, parallel side rods rigidly secured on said bit, upper rigid and lower yielding guide ways wherein said guide rods slide, substantially as and for the purpose set forth.

9. In a ditching machine the combination with a vertically moving digging bit, and its side rods of an upper fixed and a lower yielding guide way wherein said rods slide substantially as and for the purpose set forth.

10. In a digging machine the combination with a vertically moving digging knife, having vertically projecting side rods, yielding receding guide-ways wherein said rods slide longitudinally, substantially as set forth.

11. In a digging machine the combination with a vertically moving digging knife, having vertically projecting guide rods, horizontally yielding guide-ways secured on the frame of the machine, an oscillating lever having a bifurcated arm, a lever-arm pivoted in said bifurcations, a pin of a baser material passing through said bifurcations and pivotal lever, a rod pivoted to said pivotal lever and digging bit, and suitable means for operating said lever and digging bit, substantially as set forth.

12. In a ditching machine the combination with a portable frame and a winding drum mounted on said frame, a rocking pawl-lever and its operating crank disk, of a rocking lever throw-out cam pivoted on said frame and whereby the fall of the said rocking lever is adjusted, substantially as set forth.

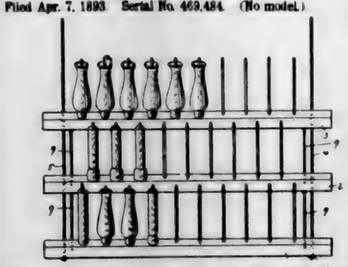
13. In a ditching machine the combination with a vertically adjustable frame mounted on runners, winding drums mounted on the sides of said frame, of an equalizing beam secured to the ground at a point in advance of the machine, return pulleys secured on the ends of said beam, and suitable cables extending from said winding drums round said return pulleys, and to said runners, substantially as set forth.

14. In a ditching machine the combination of a portable frame, the vertically moving shovel, the shields hinged on the frame on each side of the shovel, a rear shield secured on the end of the frame and to the rear of said shovel, and a tile conducting spout suspended to said rear shield, substantially as and for the purpose set forth.

15. In a ditching machine, the combination of a portable frame, a wheel mounted to revolve thereon, means for driving the wheel, a shovel bar pivoted on said wheel, and a radius rod pivotally connected to said bar and to the frame, a winding drum, and an operative connection between said winding drum and the shaft of said wheel, substantially as described.

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**504,729. CHIMNEY-RACK.** FRANK W KELLER, Utica, N. Y. Filed Apr. 7, 1893. Serial No. 469,484. (No model.)



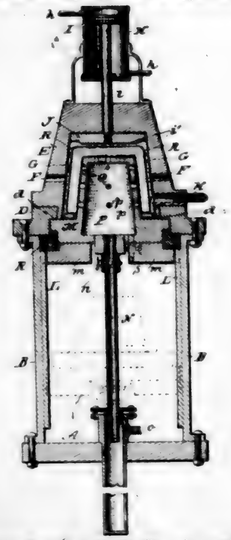
*Claim.*—1. In a chimney rack, the combination of hanger rods, several frame bars vertically movable along the hanger rods, removable extension posts interposed between the bars to hold them in extended position to form the rack, the several posts being secured in sockets in the upper face of the bars, substantially as set forth.

2. In a chimney rack, the combination of one or more hanger rods, two or more frame bars laterally movable on the hanger rods, pegs or pins secured in the several frame bars and extending upwardly and outwardly from the general plane of the rack, folding extension posts hinged to the lower frame bar and adapted to engage in sockets in the under side of the adjacent upper frame bar in holding the frame extended, substantially as set forth.

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**504,730. MACHINE FOR MAKING PAPER BUCKETS.** HENRY P LANE, Franklin, Ohio. Filed Aug. 9, 1892. Serial No. 442,604. (No model.)

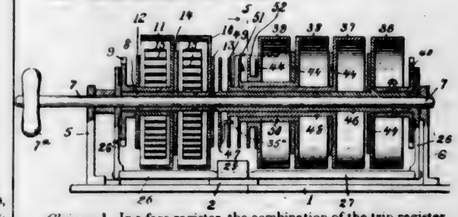
*Claim.*—1. In a press for hollow vessels, the combination with the frame, of an inverted stationary female die supported on the frame and having drain openings, the movable chine or bottom plate in the female die, a correspondingly shaped hollow male die adapted to move vertically within the frame and into the female die, said male die having combined filling and drainage openings in its top and sides, an imperforate inflatable bag sustained on the male die exteriorly and over its perforations, a valved water cylinder arranged below the male die, a hollow plunger moving in said cylinder and open at both ends, one end of said hollow plunger being fitted to the bottom of the male die and communicating with the interior thereof, and a valve arranged in the hollow plunger near its upper end, substantially as set forth.



2. The combination with a female die and a vertically movable hollow inflatable male die; of a valved water cylinder arranged below the latter die, a hollow plunger moving in the cylinder and open at both ends, one end of said hollow plunger being fitted to and communicating with the interior of said male die, and a valve arranged in the hollow plunger near its upper end, substantially as set forth.

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**504,731. FARE-REGISTER.** CHARLES S. LEWIS, Waterbury, Conn., assignor of one-half to William E. Fulton, same place. Filed Jan. 4, 1893. Serial No. 457,230. (No model.)



*Claim.*—1. In a fare register, the combination of the trip register wheels, the ratchet and toothed wheels secured thereto, the spring wire pawl on said toothed wheel designed to engage the adjacent ratchet wheel, the main shaft on which said register wheels are mounted, the yoke pivoted on said main shaft having the upper ends of its parallel arms cam-shaped, the actuating pawl secured on said yoke, the supplementary shaft arranged adjacent to the register wheels and carrying a lever which engages the cam on the yoke, the pawls secured on said shaft, and a sleeve supported loosely thereon provided with a slot, detent springs secured to the loose sleeve, a collar fixed rigidly to the supplementary shaft and carrying a pin which engages the slot in the said loose sleeve, and a slide or prime mover connected to the yoke for imparting an oscillatory movement thereto, substantially as described.

2. In a fare register, the combination of the trip register wheels, the ratchet and toothed wheels secured thereto, the spring wire pawl carried by said toothed wheel and designed to engage the adjacent ratchet wheel, the main shaft on which said register wheels are mounted, the yoke pivoted on said shaft and having the upper ends of its parallel arms cam-shaped, the actuating pawl secured on said yoke.

the supplementary shaft arranged adjacent to trip register wheels and carrying a lever which engages the cam of the yoke and pawls and detent springs which engage the ratchet and toothed wheels of the trip register, a slide or prime-mover connected to the yoke, through which an oscillatory movement is imparted thereto, and means whereby the pawls on the supplementary shaft may be thrown out of engagement with their respective wheels independent of the detent springs on said shaft, substantially as described

3 In a fare register, the combination of the trip register wheels and their shaft the toothed wheels secured one to each register wheel and arranged adjacent to each other, the spring wire pawl carried on the toothed wheel of the units register wheel and having its end bent to overhang the adjacent or tens toothed wheel, the detent springs engaging said toothed wheels and arranged in the path of movement of the spring wire pawl, and means for imparting a step by step rotary movement to the units toothed wheel, substantially as described

4 In a fare register, the combination of the trip and the totalizing register wheels, the ratchet wheels secured thereto, the main shaft on which said register wheels are mounted, the yoke having its parallel arms cam-shaped and journaled on the main shaft, pawls secured on the arms of said yoke and engaging the ratchet wheels of the units wheel of each register, the supplementary shafts journaled adjacent to said register wheels, levers and pawls secured on said shafts engaging the cams on the yoke, and the ratchet wheels on the register wheels respectively, and a slide connected to said yoke for imparting an oscillatory movement thereto, substantially as described.

5 In a fare register, the combination of the trip and totalizing register wheels, the ratchet and toothed wheels secured thereto, the main shaft on which said register wheels are journaled, the spring wire pawls secured on said toothed wheels and overhanging the adjacent wheels, the detent springs engaging said toothed wheels and arranged in the path of movement of the spring wire pawls, the yoke having its arms journaled on the main shaft, the pawls carried thereon, and engaging the toothed wheels of the units wheels of both registers, the detent pawls supported adjacent to the registering wheels and engaging the toothed wheels thereof, and the slide or prime mover connected to the yoke for imparting an oscillatory movement thereto, substantially as described

6 In a fare register, the combination of the trip register wheels, the ratchet and the toothed wheels secured thereto, the spring wire pawl carried on said toothed wheel and designed to engage the adjacent ratchet wheel, the main shaft on which said wheels are journaled, the yoke pivoted on said main shaft, and carrying the actuating pawl, the supplementary shaft arranged adjacent to the register wheels, the pawls and detent springs secured thereon and engaging the ratchet and toothed wheels of the register wheels respectively, and connections between said yoke and supplementary shaft, whereby when the former is rocked the pawls on the latter are thrown out of engagement with the respective ratchet wheels, the releasing slide, having lugs thereon engaging the pawl on the yoke and the detent springs on the supplementary shaft, the spring connected to said detent springs and to the base-plate, and the pivoted handle bar connected to said releasing slide, substantially as described

7 In a fare register, the combination of the trip register wheels, the ratchet and the toothed wheels secured thereto, the springs connected to each of the register wheels and to the frame of the machine, the main shaft on which the register wheels are journaled, the yoke pivoted on said main shaft and carrying the actuating pawl, the supplementary shaft arranged adjacent to the register wheels, the pawls and detent springs secured thereon and engaging the ratchet and the toothed wheels of the register wheels respectively, the releasing slide having lugs thereon engaging the pawl on the yoke and the detent springs on the supplementary shaft, the spring connected to said detent springs and to the base plate and the pivoted handle bar connected to said releasing slide, substantially as described

8. In a fare register, the combination of the trip and the totalizing register wheels, the toothed and ratchet wheels secured to said wheels, the main shaft on which the register wheels are journaled, the yoke having the upper ends of its parallel arms cam-shaped and journaled on the main shaft, the actuating pawls on said arms, the slide or prime-mover connected to the yoke, the supplementary shafts one for each register, journaled adjacent and parallel to the register wheels, the levers and pawls on each of said shafts engaging the cams on the arms of the yoke and the ratchet wheels on the register wheels respectively, the spring wire pawls on the toothed wheels and the detent springs in engagement with said wheels, substantially as described

9 In a fare register, the combination of the trip and the totalizing register wheels, said trip register wheels having springs secured thereto and connected in such manner as to store up force as the trip register wheels are revolved, and for returning them to their initial position when released, the toothed and ratchet wheel secured to said wheels, the main shaft on which the register wheels are journaled, the yoke having the upper end of its parallel arms cam-shaped, the actuating pawls on said arms, the slide or prime-mover connected to the yoke, the supplementary shafts, one for each register, journaled adjacent and parallel to the register wheels, the levers and pawls on each of said shafts engaging the cams on the arms of the yoke and the ratchet wheels on the register wheels respectively, the spring wire pawls on the toothed wheels of the register wheels, the detent springs in engagement with said wheels, the pivoted handle bar and the releasing slide having lugs thereon engaging the actuating pawls of the trip register and the detent springs thereof, substantially as described

10 In a fare register, the combination of the trip registering wheels 10 and 11, the totalizing register wheels 36, 37, 38, and 39 journaled upon the shaft 7, and upon their respective hubs, pawls engaging the ratchet wheels on said register wheels, toothed wheels mounted upon the projecting hubs of each of the register wheels, spring wire pawls on each of the register wheels, spring wire pawls on each of said wheels resting normally out of engagement therewith, detent springs engaging said toothed wheels and the spring wire pawls at proper intervals, the yoke 26 carrying the pawls to actuate the ratchet wheels 9 and 40 of the units wheel of the trip and the totalizing registers respectively, the slide 2 engaging the yoke 26, springs 15 arranged on each of the trip register wheels, the releasing slide 64 having lugs thereon engaging the actuating pawl of the units wheel of the trip register, and the detent springs 22 and 23 for throwing them out of engagement with said wheels, to permit the return of the trip registering wheels to their initial position, substantially as described

11 In a fare register, the combination of the trip and totalizing register wheels, the shaft on which said wheels are journaled, the yoke, the slide or prime-mover, and intermediate mechanism between the yoke and the said register wheels for imparting movement thereto, the pivoted lug on the slide or prime-mover, the spring connected to the base-plate, the bell and its hammer, the pivoted hammer-bar and its integral arms, one of which overlies the path of movement of the lug on the slide, and the spring attached to the base-plate and to the other arm for returning the hammer-bar to its normal position, substantially as described.

12 In a fare register, the combination of the trip registering wheels and their shaft, the ratchet and toothed wheels secured to said wheels, the spring wire pawl carried on the toothed wheel of the units registering wheel and adapted to engage the adjacent toothed wheel of the tens registering wheels, the pawls and detent springs engaging the ratchet wheels and the toothed wheels respectively, and means whereby a step by step rotary movement is imparted to the toothed wheel and the pawls disengaged from their ratchet wheels at each movement independent of the detent springs, substantially as described

13 In a fare register, the combination of the trip registering wheels and their shaft, the springs secured to said wheels and connected in such manner as to store up force as the register wheels are revolved, and for returning them to their initial position when released, the toothed and ratchet wheels secured to said trip registering wheels, the yoke journaled on the main shaft and carrying a pawl which engages one of the toothed wheels, the pawls and detent springs engaging the ratchet and toothed wheels respectively, and means whereby the pawls and detent springs engaging said wheels are disengaged therefrom simultaneously to release the springs of the trip registering wheels, substantially as described.

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**504,732. PRINTING-TELEGRAPH.** SAMUEL R. LEWILLE, Philadelphia, Pa., and LOUIS F. HETTRABPFENNER, Camden, N. J., assignors to the United States Printing Telegraph Company, Philadelphia, Pa. Filed Dec. 16, 1892. Serial No. 455,353. (No model.)

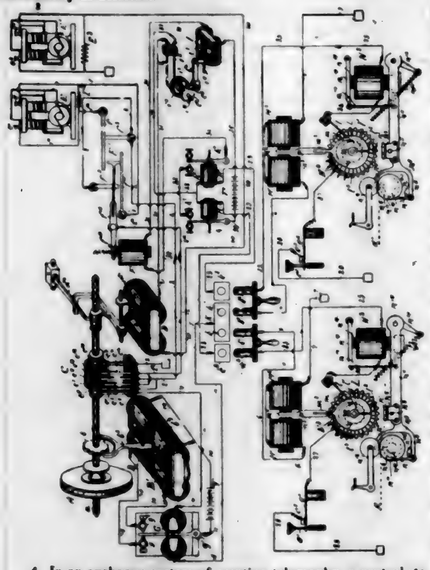
*Claim.*—1. An exchange system of printing telegraphy comprising subscribers' instruments, printing and type-wheel circuits in parallel to earth at the respective instruments and a central station having devices and their complemental circuits for controlling the pole-changer and alternator and for effecting impressions at the subscribers' instruments, substantially as and for the purposes set forth.

2. In an exchange system of printing telegraphy, normally closed parallel printing circuits, a relay, a transmitting instrument, a local circuit, a pole changer, an interrupting device, and said printing circuits adapted to operate said relay by the depression of a key of the transmitting instrument or instruments to break the local circuit through the pole changer device adapted to arrest the type-wheels of the instrument or instruments and through the interrupting device to break and again close the said printing circuit for effecting an impression from the arrested type-wheels, substantially as set forth.

3. In an exchange system of printing telegraphy, an electric generator, an alternator and its complemental pole-changer in a type wheel line circuit from the generator, an escapement, escapement-magnets located in a local circuit and controlling the rotation of the



alternator, a polarized-relay controlling the local circuit, a line from one terminal of said alternator to earth, a line from the other terminal of the alternator to a terminal block at an exchange or central station through said polarized relay, communicating subscribers instruments provided with type-wheels and their complemental polarized escapement armature and escapement magnets, sunflower indicators and keys and with printing magnets, type wheel circuits in parallel from said terminal block to earth through said escapement magnets, and printing circuits in parallel through the sunflower indicators, keys and printing magnets of the communicating instruments, substantially as described



4 In an exchange system of printing telegraphy, a central station provided with a generator and with mechanical and electrical devices and their accessories for alternating and reversing the current in a type-wheel line leading to terminals at said station, subscribers' instruments, type-wheel circuits in parallel from said terminal to earth through the escapement magnets of said communicating instruments and printing circuits in parallel through the indicators, keys and printing magnets of said communicating instruments, substantially as and for the purposes set forth.

5. In an exchange system of printing telegraphy, a central station provided with an electric generator and with mechanical and electrical devices including an alternator for alternating and a pole-changer for reversing the current in a type-wheel line connected with one terminal of the alternator and leading to a terminal block, a line from the other terminal of the alternator to earth, communicating subscribers' instruments provided with type-wheels and their complemental polarized escapement armatures and escapement magnets, sunflower indicators, keys and printing magnets, type wheel circuits in parallel from said terminal block to earth through said escapement magnets, and printing circuits in parallel through the indicators, keys and printing magnets of the communicating instruments, substantially as described.

6. In an exchange system of printing telegraphy, an electric generator, a pole-changer and its magnet, a circuit interrupter and its magnet adapted to momentarily break and close a printing circuit, an alternator and its unison magnet and controlling devices, a local battery circuit through said pole-changer magnet and interrupter magnet, two neutral relays adapted to close at their front contacts the circuit of said local battery and either relay adapted to break said local circuit, communicating instruments having sunflower indicators, escapements, type-wheel keys, and printing magnets and devices, type-wheel circuits in parallel, and a printing line circuit from one electrode of said generator through the contacts of said interrupter, thence in parallel through each of the magnets of said relays, sunflower indicators, printing magnets and keys of the communicating instruments to earth, the arrangement being such that a break in either branch of the parallel printing circuits at a depressed key breaks the local circuit and arrests the alternator and the type-wheels of the communicating instruments and momentarily breaks and again closes the printing line circuits, thereby effecting impressions from the type-wheels of communicating instruments

7 In an exchange system of printing telegraphy, an electric generator, a type-wheel line in parallel, mechanical and electrical devices controlled by a pole-changer adapted to arrest the type-wheels, a local battery circuit through the magnets of said pole-changer, two relays adapted to close at their front contacts the circuit of said local battery and either relay adapted to break said local circuit, an interrupter interposed in said local circuit and adapted to momentarily break and close a printing line circuit in parallel through the magnets of said relays and thence through the keys and magnets of communicating instruments to earth, the arrangement being such that a break in either branch of the parallel printing circuits at a depressed key arrests the type-wheels of communicating instruments and momentarily breaks and again closes the printing line circuit, thereby effecting impressions at the communicating instruments during a break of circuit

8 In an exchange system of printing telegraphy, a type-wheel line and its accessories in parallel, a printing line and its accessories in parallel, a local battery circuit and its accessories for causing the type wheel line to arrest the type-wheels, two relays adapted to close at their front contacts the circuit of said local battery and either relay adapted to break said local circuit and an interrupter interposed in the local circuit and adapted to momentarily break and close the printing circuit before it divides in parallel, the arrangement being such that a break in either branch of the parallel printing circuits arrests the type-wheels of communicating instruments and momentarily breaks and again closes the printing line circuits, thereby effecting impressions at the communicating instruments.

9 In an exchange system of printing telegraphy, a central or exchange station provided with an automatically controlled alternator, unison and pole-changing devices, an interrupter having its contacts in the undivided portion of the printing circuit from one electrode of a generator and with relays controlling the interrupter and located in the divided portion of the printing circuits, and communicating subscribers' instruments provided with indicators and keys interposed in said divided portion of the printing circuits and with connections for conveying said circuits to earth at said instruments, substantially as and for the purpose set forth

10. In an exchange system of printing telegraphy, a central station provided with an interrupter having its contacts in the undivided portion of the printing circuits and with relays controlling the interrupter and interposed in the divided portion of the printing circuits, and communicating instruments provided with indicators and keys and printing magnets interposed in said divided portion of the printing circuits, substantially as and for the purposes set forth

11 In an exchange system of printing telegraphy, an automatically controlled alternator, unison and pole-changing devices, the interrupter having its contacts in an undivided portion of the printing circuits from one electrode of a generator, and relays in the divided portion of the printing circuits from said electrode and communicating instruments provided with indicators and keys interposed in said divided portion of the printing circuits, substantially as and for the purposes set forth

12. In an exchange system of printing telegraphy, an automatically controlled alternator, unison, pole-changing and interrupting devices and their magnets and line contacts, a printing circuit from one electrode of an electric generator through the contacts of said interrupter, neutral relays in each of two sub-divisions of said printing circuit, a local battery circuit through the levers and stops of said relays and the magnets of said interrupter and pole-changer, and communicating instruments provided with indicators, keys and printing magnets and devices located in said divided circuit, the construction and arrangement being such that the depression of a key demagnetizes said pole-changer magnet and reverses said pole-changer, interrupts and closes said printing circuit, and effects impressions on two communicating instruments, substantially as and for the purposes set forth.

13. In an exchange system of printing telegraphy, an automatically controlled alternator and its accessories for reversing and alternating the current, a type-wheel line, an interrupter and its magnets, a single printing circuit through the contacts of said interrupter, neutral relays in each of two sub-divisions of said single printing circuit, a local battery circuit through the levers and stops of said relays and the magnets of said interrupter, and communicating instruments provided with indicators, keys and printing magnets and devices in said divided circuit, the construction and arrangement being such that the depression of a key reverses said pole-changer, interrupts and closes said single circuit and effects impressions on two communicating instruments during the interruption of said circuit, substantially as and for the purposes set forth.

14. In an exchange system of printing telegraphy, a pole changer and its accessories, an interrupter, a single circuit from one electrode

of an electrical generator through the contacts of said interrupter, neutral relays in each of two sub-divisions of said single circuit, a local battery circuit through the levers and stops of said relays and the magnets of said interrupter and pole-changer, and communicating instruments having their keys and printing magnets and devices in said divided circuit, the construction and arrangement being such that the depression of a key reverses said pole-changer, interrupts and closes said single circuit and effects impressions at two communicating instruments during the interruption of said circuit, substantially as and for the purposes set forth.

15. In a double line exchange system of printing telegraphy, electric generators, alternators and controlling devices at an exchange station, type-wheel lines in parallel from said alternator to communicating instruments, and printing lines in parallel from one electrode of an exchange generator to said instruments, substantially as and for the purposes set forth.

16. In a double line exchange system of printing telegraphy, electric generators, alternators and controlling devices at an exchange station, type-wheel circuits to said alternator and thence to ground and in parallel to communicating instruments, and printing lines in parallel from one electrode of an exchange generator to said instruments, substantially as and for the purposes set forth.

17. In a double line exchange system of printing telegraphy, electric generators, a pole-changer and controlling devices at an exchange station, type-wheel lines in parallel from said communicating instruments, and printing lines in parallel from one electrode of an exchange generator to said instruments, substantially as and for the purposes set forth.

18. In an exchange system of printing telegraphy, alternating devices, arresting devices and electric generators at an exchange or central station, communicating instruments provided respectively with type-wheel printing lines in parallel from said generators through said alternating and arresting devices, relays in the parallel printing circuits, and interrupting devices interposed in a local circuit controlled by said relays and the contacts of said interrupting devices included in the printing circuit and operating by the breaking of a branch printing circuit to momentarily break and close the parallel printing circuits of two communicating instruments, substantially as and for the purposes set forth.

19. In an exchange system of printing telegraphy, electric generators, alternators and arresting devices at an exchange or central station, interrupting devices, relays controlling said devices, communicating printing instruments having type-wheel escapement devices, printing devices, indicating devices and key-boards and type-wheel and printing circuits in parallel from said generators, substantially as and for the purposes set forth.

20. In an exchange system of printing telegraphy, an exchange or central station, printing instruments having type-wheels, escapement magnets and devices, printing magnets and devices, indicators and key-boards, type-wheel and printing circuits respectively in parallel and converging to terminals at said station, and electric generators, alternating, arresting and interrupting devices located at said station and included in the circuit of said generators and terminals and operating to control the parallel type-wheel and printing circuits through said instruments, substantially as and for the purposes set forth.

21. In an exchange system of printing telegraphy, electric generators, alternators, arresting and circuit interrupting devices at an exchange or central station and in multiple arc circuits from said generators, terminals for the printing and type-wheel circuits of the respective alternators and arresting devices and type-wheel and printing lines converging from the respective printing instruments to said exchange or central station, the resistances of said type wheel and printing lines being balanced to permit of their connection in multiple arc at will to the terminals of different alternators and arresting devices, whereby many communicating instruments may be operated in multiple arc from one or more generators, substantially as set forth.

22. The combination of the printing magnet $N^3$, armature $n^{13}$, armature lever $n^{19}$, link $n^{17}$, shaft $n^{14}$, lever $n^{20}$, curved arm $n^{26}$, T-lever $n^{22}$, shifting-bar $n^3$, pin $n^{25}$, pallet-levers $n^4$ and $n^5$, guide-box $n^3$, pallets-block N, printing pallet $n^{44}$, springs $n'$, and means for operating the T-lever, substantially as and for the purposes set forth.

23. The combination, in a printing telegraph, of two type-wheels, a printing pallet disposed between twin springs secured to a block and having portions bent outward around the edges of the paper or tape to allow clearance at each side to permit of the shifting of said block without moving the paper or tape and the said springs bent inward over and above said paper or tape to provide space between their adjacent ends to permit said pallet to pass between said springs while an impression is being effected, and means for actuating said pallet, substantially as set forth.

24. The combination, in a printing telegraph, of two type wheels, a printing pallet arranged between twin springs secured to a block so as to leave a clearance or space between adjacent ends thereof, and means, substantially as described, for shifting said pallet transversely of and into contact with said type-wheels so as to cause said springs moving with said pallet to cover the characters on one of the type-wheels and expose the characters on the other of said wheels, substantially as and for the purposes set forth.

25. The combination of the pallet levers $n^4$ and $n^5$, guide-box $n^3$ mounted thereon, pallet block N adapted to move freely in said guide-box, shifting bar $n^3$ secured in said pallet-block, springs $n'$ integral with said pallet block, springs $n^{42}$ secured to said guide-box and carrying pins $n^{30}$ and $n^{31}$ adapted to engage in indentations $n^{32}$ and $n^{34}$ in the pallet-block N, and means for operating the shifting-bar $n^3$ substantially as and for the purposes set forth.

26. In a printing telegraph, a printing-block working in a guide-box provided with spring controlled pins tending to engage said block and prevent accidental movement thereof, substantially as and for the purposes set forth.

27. In a printing telegraph, type-wheels, pallet levers provided with a guide-box, a printing-block movable in said guide-box, means for actuating said block, and spring controlled pins tending to engage recesses in said block to prevent accidental movement thereof, substantially as and for the purposes set forth.

28. In a printing telegraph, type-wheels, pallet-levers provided with a guide box, a printing block movable in said guide block, springs moving with said block and serving to cover one and expose the other of the type-wheels, and spring controlled pins tending to engage recesses in said block to prevent accidental movement thereof, substantially as and for the purposes set forth.

29. The combination of the pallet-lever $n^5$, pawl $n^7$, spring $n^{45}$, ratchet-wheel $n^8$, counter-pawl $n^9$, counter-ratchet-wheel $n^{10}$, feed-roller $n^{11}$ and pressure-roller $n^{12}$, all operating to feed the paper tape with a regular intermittent motion, whereby the letters and characters are evenly spaced, substantially as and for the purposes set forth.

30. The combination of the pallet lever $n^5$, pawl $n^7$, spring $n^{45}$, ratchet-wheel $n^8$, counter-pawl $n^9$, counter-ratchet-wheel $n^{10}$ and feed roller $n^{11}$, operating to feed the paper tape with a regular intermittent motion whereby the letters and characters are evenly spaced substantially as and for the purposes set forth.

31. The combination, in a printing telegraph, of a shaft provided with type-wheels and pins, a printing magnet for operating a shaft provided with an arm, a lever mounted on said arm and adapted to contact with said pins and shift a block provided with springs, a feed roll provided with ratchet-wheels, a printing pallet lever having a pawl and a counter pawl, the construction and arrangement being such as to respectively rotate and check said feed roll, and means, as described, for actuating the same, substantially as and for the purposes set forth.

32. In a printing telegraph, a type-wheel shaft provided with type-wheels and pins, a printing magnet for operating a shaft provided with a radial arm, a T-lever mounted on said arm and adapted to contact with said pins and shift a rectangular pallet-block provided with printing springs, a printing pallet-lever, a feed-roller provided with a ratchet and a counter ratchet-wheel, and a pawl and a counter-pawl carried by the printing pallet lever, the construction and arrangement being such that impressions are effected on a paper tape in either of two parallel lines and from either of the type-wheels, substantially as and for the purposes set forth.

33. In a printing telegraph, a type-wheel shaft $n^{40}$, type-wheels $N^3$ and $N^4$ and pins $n^{41}$ and $n^{43}$ mounted on said type-wheel shaft, in combination with a printing magnet $N^3$, its armature and lever, a spring controlled shaft $n^{14}$, a link $n^{17}$, a lever $n^{18}$, a lever $n^{20}$ mounted on a lever $n^{24}$, a pallet lever, a rectangular shifting pallet-block, a feed roller, a ratchet and a counter ratchet wheel, a pawl and a counter-pawl, the construction and arrangement being such that impressions on a paper tape are effected in a straight line from either of said type-wheels, substantially as and for the purposes set forth.

34. In a printing-telegraph, the pallet-lever $n^5$, pawl $n^7$, spring $n^{45}$ and counter-pawl $n^9$, in combination with a feed-roller $n^{11}$ provided with a ratchet-wheel $n^8$ and a counter ratchet-wheel $n^{10}$, a pressure roller $n^{12}$, guide-pins $n^{28}$ and $n^{27}$, and a slotted pin $n^{29}$, substantially as and for the purposes set forth.

35. The combination, in a printing telegraph, of a shaft provided with type-wheels and pins, a printing magnet for operating a shaft provided with an arm, a lever mounted on said arm and adapted to contact with said pins and shift a block provided with twin springs, a feed-roll provided with ratchet-wheels adapted to be actuated so as to rotate and check said feed-roll, and a slotted pin between said type-wheels and feed roll for guiding the paper thereto, substantially as and for the purposes set forth.

36. The combination, in a printing telegraph, of two type-wheels, a printing pallet disposed between twin springs secured to a block so as to leave a clearance between adjacent ends thereof, a feed roll provided with ratchet and counter-ratchet wheels, pins for presenting a paper tape to said printing pallet and a slotted pin for guiding said paper tape to the feed roll, substantially as shown and for the purposes set forth.

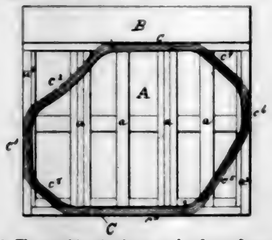
37. The combination, in a printing telegraph, of type-wheels, a printing pallet arranged beneath twin springs secured to a block connected with a shifting lever, means substantially as described, for actuating said lever and block, a feed roll provided with ratchet-wheels, pins for presenting a paper tape to the printing pallet, a slotted pin for guiding said paper tape to the feed roll and means, substantially as described, for actuating said feed roll, substantially as and for the purposes set forth.

38. In a printing telegraph, a guide-box $n^3$, mounted on pallet levers $n^4$ and $n^5$, in combination with the pallet block N, secured to the shifting-bar $n^3$, the printing pallet $n^{44}$ integral with said pallet block N, the retaining springs $n^{42}$ secured to the guide-box $n^3$, pins $n^{30}$ and $n^{31}$ attached to said springs and tending to engage the indentations $n^{32}$ and $n^{34}$ in the pallet-block N, and the curved-springs $n'$ secured to said pallet block and passing over the paper tape N', the extremities of the springs $n'$ being separated for a distance equal to or greater than the thickness of the face of the type-wheels $N^3$ and $N^4$ to permit of the taking of impressions from either type-wheel, substantially as and for the purposes set forth.

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**504,733.** PIANO. JOHN W. MACY, Cincinnati, Ohio. Filed Mar. 2, 1892. Serial No. 423,544. (No model.)




*Claim.*—1. The combination in a wooden frame for upright pianos, of the vertical braces $a$, wrest plank B, the blocking $b$, and the composite rim $a^3$, consisting of an outer piece of hard wood, and an inner piece of soft wood substantially as described.

2. The combination in a wooden frame of the vertical braces $a$, wrest plank B, blocking $b$, and composite rims $a^3$, having a portion of the rims $a^3$ and blocking cut away at $a^4$ to a level with the face of the vertical braces $a$ for the reception of the acoustic rim C, substantially as set forth.

3. A composite rim $a^3$ in a wooden frame for upright pianos formed of an inner piece of spruce and an outer piece of hard wood, the outer part supporting a portion of the sounding board and acoustic rim, substantially as set forth.

4. The combination in a wooden frame for upright pianos of the vertical braces $a$, wrest plank B, blocking $b$, composite rims $a^3$ and acoustic rim C, the whole forming a continuous support for the sounding board as herein described and set forth.

5. The combination in an upright piano of the sounding board E, with the acoustic rim C, and rims $a^3$, to portions of which the sounding board is continuously glued substantially as herein set forth.

6. A sounding board in an upright piano, glued at the top to a portion of the acoustic rim C, and supporting strip $c^4$, at the sides and bottom to the acoustic rim C and rims $a^3$ substantially as described.

7. A continuous acoustic rim C, built up of hard wood veneers bent in one piece, a polygonal figure having seven straight sides and one side $c^6$ curved toward the center of the sounding board, a rim consisting of two main portions $c$, $c^3$, $c^4$, and $c^4$, $c^5$, $c^6$ which support the sounding board, and two suspended portions $c^7$ and $c^8$, connecting the main portions of the rim, substantially as shown and described.

8. A continuous acoustic rim C, built up of hard wood veneers, having a straight side at $c^6$ opposed by a curved side $c$ $c^3$ in lines nearly parallel, with the bridge maintaining the crown of the sounding board substantially as described.

9. The combination of the sounding board in an upright piano, with the parallel sides $c^5$ and $c^5$ of the acoustic rim substantially as set forth.

10. A sounding board for upright pianos in combination with a continuous acoustic rim C, to which the board is glued at $c$, $c^3$, $c^4$, $c^4$, $c^5$, $c^6$, the suspended portions $c^7$ and $c^8$ being free from contact with the same substantially as set forth.

11. A sounding board E, having blocks of hard wood set into openings in the same at the intersection of the string bridges $e$ and $e^2$ and the ribs $d$, connecting the bridges directly with the ribs substantially as shown and described.

12. An acoustic disk $i$ consisting of a circular piece of hard wood set into openings in the sounding board the grain of which is placed transverse to that of the board substantially as described.

13. A sounding board E, having hard wood bindings set into grooves on the back of the same at $f$ and $f^2$ uniting the fibers of the board substantially as set forth.

14. The combination of the acoustic disk $i$, ribs $d$, and string bridges $e$ and $e^2$ conducting vibrations from the bridges to the ribs substantially as set forth.

15. The combination of the sounding board E, hard wood bindings $f$, and $f^2$, and the acoustic rim C, uniting the fibers of the sounding board and conducting more freely the vibrations from the board to the acoustic rim substantially as set forth.

16. A metal string frame F, for upright pianos having a series of lugs cast at the bottom of the same extending back and under the stiffening braces $a$, of the wooden frame A, substantially as set forth.

17. A metal string frame F for upright pianos having a rib $l$, placed diagonally across the lower right-hand corner on a line with and over the acoustic rim at $c^3$, substantially as described.

18. A metal string frame for upright pianos having a heavy flange $s$, projecting to the front along the treble side of the same substantially as described and set forth.

19. The combination of the rib $l$, of the metal frame F, with the binding $f^3$, and the acoustic rim at $c^3$, thereby maintaining the crown of the sounding board substantially as set forth.

20. The combination of the flange $s$, of the metal frame F, with the wooden frame A, suspending the metal frame from the wrest plank B to the acoustic rim at $c^3$, substantially as described.

21. The combination of the lugs $g$, of the metal frame F, with the stiffening braces $a$, through the medium of the bolts $g^4$ substantially as described and set forth.

22. An insulating strip of hard wood $h$, placed between the metal frame F and sounding board E substantially as herein described.

23. An insulating strip of hard wood $h$, recessed as described and having points of contact $h^2$ resting upon the sounding board E and supporting the metal frame F, substantially as set forth.

24. The combination of the insulating strip $h$, recessed and having points of contact $h^2$, the sounding board E acoustic disk $i$ at the edge of the board and at the termination of the ribs $d$, and the metal frame F, substantially as described.

25. A sounding board having blocks of hard wood set into suitable openings along the edge of the same, said blocks being placed at the termination of the ribs, with the grain transverse to that of the board each block supporting a point of contact $h^2$ substantially as set forth.

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**504,734.** TROLLEY-HEAD. JOSHUA P. MADDOX, Westbrook, Me. Filed Oct. 7, 1892. Serial No. 448,137. (No model.)



*Claim.*—1. The combination with a trolley pole of a trolley head pivotally attached thereto, the end of the trolley head overlapping the end of the pole and adapted to move laterally thereon, and springs constantly tending to keep said trolley head parallel with said pole, substantially as and for the purposes set forth.

2. The combination with a trolley pole, of a trolley head pivotally attached thereto, the end of the trolley head overlapping the end of the trolley pole and adapted to move laterally thereon, a slot in the end of the pole and a pivot bolt attached to the trolley head and adapted to project through said slot, and means for limiting the lateral motion of said trolley head relative to the pole, substantially as and for the purposes set forth.

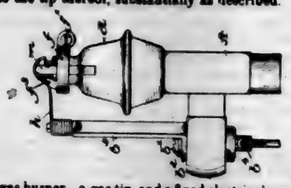
3. The combination with a trolley pole of a trolley head attached thereto, the end of the head overlapping the end of the pole and adapted to move laterally thereon, a slot in the end of the pole, a pivot bolt carried by the trolley head and adapted to project through said slot, means for limiting the lateral motion of said head relative to the pole and springs constantly tending to keep said head parallel with said pole, substantially as and for the purposes set forth.

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**504,735.** LIGHTING ATTACHMENT FOR GAS-BURNERS. HORACE MARSHALL, Boston, Mass. Filed Nov. 20, 1892. Serial No. 453,016. (No model.)

*Claim.*—1. The herein described improved gas burner, consisting of a solid body portion A having gas passages entering from opposite ends and terminating near the middle of the body in outwardly turned ends $c^3$, $c^3$, the laterally extended arm A driven into the body portion and provided with ports $c$, $c'$ to connect respectively with said outturned ends $c^3$, $c^3$, and the valve $b$ and means to actuate the same, combined with a movable contact arm fixedly attached to and movably

with the said valve and a co-operating fixed contact on the burner adjacent to the tip thereof, substantially as described.



2 A gas burner, a gas tip, and a fixed electrical contact adjacent thereto, combined with a co-operating movable contact, an actuator therefor, and a guard arranged in front of said fixed contact and to be engaged by the said movable contact in advance of the latter's engagement with the fixed contact and to hold said movable contact away from and out of engagement with the fixed contact, and to permit the said movable contact as it springs away from said guard to momentarily engage said fixed contact as it springs into its extreme position, whereby short-circuiting of the battery by partial movement of the movable contact is avoided, substantially as described.

3 A gas burner, a gas tip, and a fixed electrical contact arranged adjacent thereto, combined with the co-operating movable contact spring, an actuator therefor, and a fixed guard, as *m*, arranged in front of the fixed contact to engage with the spring contact in advance of the fixed contact, substantially as described.

4 A body, a gas tip provided with a groove, a gas passage leading thereto, a valve to control the same, a fixed contact arranged adjacent to the said gas tip and below the groove therein, combined with a co-operating movable contact adapted when moved in one direction to engage the fixed contact and when moved in the opposite direction to enter said groove and be thereby carried above and out of engagement with the said fixed contact, substantially as described.

**504,736. CARTRIDGE WITH AMORPHOUS EXPLOSIVE SHELL AND CHARGE.** HUDSON MAXIM, Pittsfield, Mass. Filed Aug. 31, 1889. Serial No. 322,553. (No model.)



*Claim.*—1 The herein described cartridge charge consisting of an exterior envelope or casing formed of an amorphous explosive compound, and an interior explosive, the explosive envelope forming an explosive addition to said interior explosive.

2 The herein described cartridge charge consisting of an exterior envelope or casing formed of an amorphous explosive compound, and an interior explosive of a different explosive quality from the envelope, the explosive envelope forming an explosive addition to said interior explosive whereby an accelerating explosive action is effected.

3 The herein described cartridge formed of an envelope or casing composed of an amorphous explosive compound, a contained propelling explosive charge and a projectile, the explosive envelope forming an explosive addition to the contained charge.

4 The herein described cartridge charge consisting of a capsule or casing formed of an amorphous explosive compound, a contained explosive charge, and also an igniting charge.

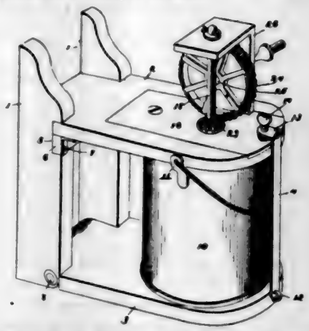
5 In a cartridge, the combination with the primer of an explosive capsule formed of an amorphous explosive compound arranged adjacent to the primer, and a contained igniting charge, substantially as described.

6 In a cartridge the combination of the exterior explosive envelope formed of an amorphous explosive compound, an interior explosive contained within the envelope, and a metallic shell or cup carrying the envelope, substantially as described.

**504,737. CHURN.** RICHARD D MOON, Ovilla, Tex., assignor of one-half to Robert J Cowan, same place. Filed May 29, 1893. Serial No. 475,823. (No model.)

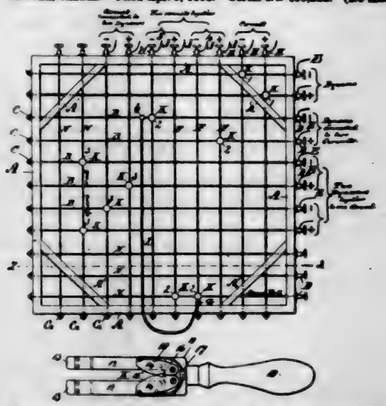
*Claim.*—1 In a churn, the combination with a support, of an upper rigid horizontal shelf, a lower downwardly swinging or opening shelf hinged to the support and arranged beneath the rigid shelf and detachably connected therewith, a churn body receptacle mounted on the hinged shelf and arranged beneath the rigid shelf, a dasher suspended from the rigid upper shelf and arranged within the churn body receptacle, and operating mechanism mounted on the upper shelf for actuating the churn dasher, substantially as described.

2 In a churn, the combination with a support, of a horizontal shelf rigidly attached thereto, a hinged shelf arranged beneath the rigid shelf, a locking bar hingedly connected at its lower end to the hinged shelf and provided at its upper end with a clamping screw for engaging the rigid shelf detachably, a churn body receptacle mounted on the hinged shelf, and a dasher and operating mechanism mounted on the rigid shelf, substantially as described.



3 In a churn, the combination of vertical bracket bars designed to be secured to a suitable support, an upper rigid shelf secured to the bracket bars, a lower shelf hingedly connected at its inner end to them, a churn body supported on the hinged shelf, a plate arranged on the upper shelf and provided with a depression, a locking bar hingedly connected with the lower shelf and having its upper end bent at an angle and provided with a threaded opening, a clamping screw arranged in the threaded opening for engaging the depression, and a dasher and operating mechanism mounted on the upper shelf, substantially as described.

**504,738. ELECTRIC SWITCHBOARD.** FREDERICK W. MOUNT, St. John, Canada. Filed Apr. 5, 1893. Serial No. 469,222. (No model.)



*Claim.*—1. A switch-board or switch frame, having rods F, connected at one end to the terminals of a metallic circuit or circuits, rods B, connected at one end to the terminals of a dynamo or dynamos, said rods crossing the rods F, at a distance therefrom, spare rods N, corresponding to the rods B, and F, connectors K, gripping said rods B, F, and N, to complete a circuit, and a circuit cut out L, consisting of a cable having clips at both ends to grip the rods B, F, while adjusting the connectors K, as set forth.

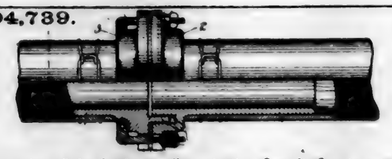
2 A connector K, comprising a bifurcated or U-shaped plate 11, having flat springs 12, provided with jaws 13, adapted to clip or grip a rod interveningly, and spring jaws 14, pivoted to said plate, and adapted to grip a rod offset from the rod gripped by said jaws 13, and provided with an insulated handle 10, substantially as set forth.

**504,739. PIPE JOINT AND COUPLER.** JAMES A. MURRAY, Minneapolis, Minn.; Kate F. Murray administratrix of said James A. Murray, deceased. Filed Feb. 23, 1892. Serial No. 422,356. (No model.)

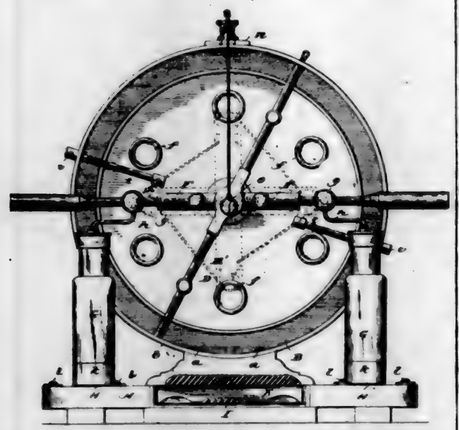
*Claim.*—In a pipe coupling, the combination of the section of pipe having at its end an annular groove formed in its face and a circumferential flange lying outside of said groove and in the same plane with the face end of the pipe and formed with open slots, the other section of pipe having a rib projecting from its face to enter the groove in the opposite section and formed with a circumferential flange lying outside of said rib and having open slots registering with the open slots in the flange of the other pipe section, the flange to one of the pipe-sections having a groove formed in its rear face, button-bolts hinged to one section back of its flange and lying in the slot of that flange and also in the slot of the opposite flange whereby the walls of the slots in both sections form a brace for said bolts and take the strain from their hinges, a washer applied to the ends of the bolts and lying in the groove of one flange, and nuts for clamping the parts together, substantially as and for the purposes described.



**504,739.**



**504,740. PORTABLE STATIC ELECTRIC MACHINE.** THEODORUS H. PATEK, Chicago, Ill. Filed Dec. 9, 1892. Serial No. 454,574. (No model.)



*Claim.*—1. In a static electrical machine, a stationary generating plate provided with a non-conducting strengthening flange or rim of the form described, substantially as and for the purpose set forth.

2. In a static electrical machine, a generating plate provided with a continuous non-conducting annular flange or rim, substantially as described.

3. In a static electrical machine, a stationary generating plate provided with a non-conducting annular flange or rim such as described, said plate having means for adjusting the same on its supports, substantially as hereinbefore set forth.

4. In a static electrical machine, a stationary generating plate provided with a non-conducting annular flange or rim such as described, in combination with a revolving plate inclosed or protected by said rim and supported and operated by a shaft free from contact with said stationary plate, substantially as described.

5. In a static electrical machine the combination of two generating disks one of which is adjustably supported whereby they may be moved toward or from each other, substantially as and for the purpose set forth.

6. In a static electrical machine, the stationary generating disk, the revolving disk, the operating shaft for the latter, a support for the shaft, and suitable means for enabling both the adjustment of the shaft and the movable disk upon the shaft, substantially as described.

7. In a static electrical machine, the combination with the generating disk, of a guard or shield arranged at the back of the same, substantially as described.

8. In a static electrical machine, the combination with the generating disk, having the projecting flange, of the guard or shield arranged at the back or rear of said disk and being secured in place by suitable means, substantially as described.

9. In a static electrical machine, the stationary generating plate provided with the annular rim in which slots are formed, the revolving plate, and brushes which are adjustably held or supported in said slots, substantially as described.

10. In a static electrical machine, the brush holder and brush composed of the rod supporting the wire, the ends of which are allowed to project outwardly, and the tube which surrounds said rod, the said tube being slotted so as to permit the passage of said projecting wires, substantially as described.

11. In a static electrical machine, the combination of the stationary generating plate and revolving plate, the metal strips embracing the edge of said stationary generating plate, the adjustable brushes, and a movable electric connection between said brushes and strips, whereby the said connection is maintained whenever the brushes are adjusted substantially as described.

12. In a static electrical machine, the combination with the stationary plate, of the embracing metallic strips formed with the projecting tubes, springs contained in said tubes, the brush holders and brushes, and the pins projecting from said holders and working in said tubes, substantially as described.

13. In a static electrical machine, the combination of the movable or sliding electrodes, their movable holding arms, the Leyden jars, the adjustable supports for said jars, and a movable and detachable connection for supporting said arms, substantially as described.

14. In a static electrical machine, the jar support provided with a swinging and adjustable slide, substantially as described.

15. In a static electrical machine, the combination with the Leyden jars and switches, of a display device, and suitable supports therefor constituting a portion of the machine substantially as described.

16. In a static electrical machine, the combination with the generating plate and the operating shaft, of a revolving display device connected by conductors, substantially as described.

17. In a static electrical machine, the combination with a revolving plate, the operating shaft, the combs and the conductors through which the electricity generated passes off, of a revolving display device adapted to be carried by the said shaft and having electric terminals which are caused to make a break contact with the said conductors as the device is revolved by the shaft, substantially as described.

18. In a static electrical machine, a plurality of generating plates, one or more of which plates is made of rigid non-conducting material and has adhesively applied to the surface thereof a soft or pliable non-conducting material, substantially as described.

19. The combination in a static electrical machine of a shield or guard having suitable conducting armatures, and a stationary generating plate also provided with conducting armatures, the latter being insulated from those of the shield or guard, but in such relation thereto as to act upon them by induction, substantially as described.

20. In a static electrical machine, a generating plate of hard rubber or other suitable material, the same being formed or provided with a rib or projection extending in any direction across the same, substantially as shown and for the purpose described.

21. In a static electrical machine, the revolving plate provided with rigid armatures or carriers which have projecting ribs or beads which are disposed substantially as described whereby two contacts are made with the brush as each carrier or armature passes the same, substantially as described.

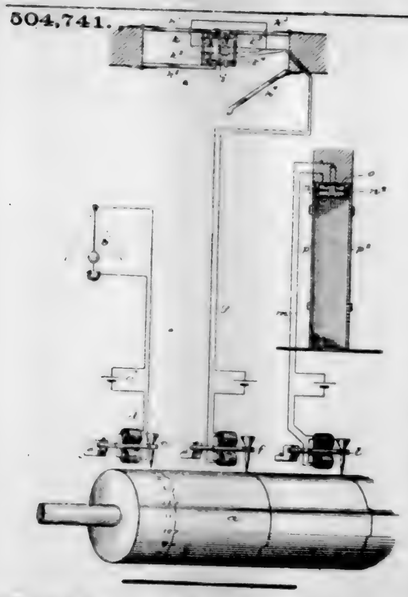
22. In a static electrical machine, the combination with the revolving plate, of the attached rigid metal armatures, having a depressed central portion and projecting surrounding rib or raised portion, substantially as and for the purposes described.

**504,741. ELECTRIC DOOR-REGISTER FOR WATCHMEN.** WILLIAM R. PATTERSON, Chicago, Ill., assignor to the Western Electric Company, same place. Filed Jan. 31, 1889. Serial No. 298,227. (No model.)

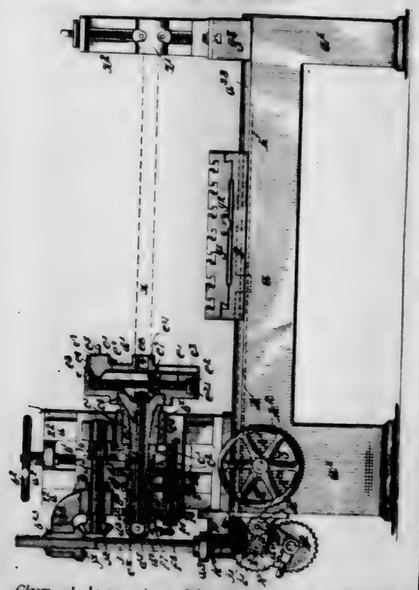
*Claim.*—1 The combination with a driven chronograph sheet, of a periodically actuated electro-magnetic pen resting thereon and adapted to make indications thereon, of a second electro-magnetic pen resting thereon, the coil thereof extending to contacts operated by a door on opening and closing the same, to hold the contact closed when the door is open and to hold the contact open when the door is closed continuously, whereby the circuit is closed to move the position of the pen to register the time during which the door is left open, substantially as and for the purpose specified.

2. The combination with a driven chronograph sheet, of a periodically actuated electro-magnetic pen resting thereon and adapted to make indications thereon, electro-magnetic pens resting thereon each of said latter pens being connected in a circuit extending to contact points of different doors, each door, when closed, holding its contact continuously open, whereby the position of said doors as open or shut and the time of change from one position to the other are registered, substantially as described.

504,741.



504,742. MACHINE FOR BORING CYLINDERS AND TURNING THE FLANGES THEREOF. WILLIAM A. PEARS and FRANK PEARS, Gorton, England. Filed Jan. 13, 1893. Serial No. 458,277. (No model.) Patented in England Nov. 25, 1891, No. 20,498.



*Claim.*—1. In a machine of the class described, the combination with the live spindle, a tool stock carrier revoluble with the spindle, and a tool stock having motion on the carrier in a plane perpendicular to the longitudinal axis of the spindle, of mechanism controlled by said live spindle adapted to impart a continuous rectilinear motion to the tool stock.

2. In a machine of the class described, the combination of a suitable bed, a driving shaft revoluble in bearings on the bed, a head stock adjustable vertically above the bed, a live spindle revoluble in bearings on the head stock, intermediate mechanism connecting the live spindle with the driving shaft, a tool carrier on said live spindle, a tool stock adapted to move on the tool carrier in a plane perpendicular to the longitudinal axis of the live spindle, and mechanism connecting the tool stock with the driving shaft through the medium of the live spindle.

3. In a machine of the class described, the combination with the bed and a driving shaft, of a head stock adjustable vertically on said bed, a live spindle revoluble in bearings on the head stock, a tool stock on said spindle, a tool carrier adapted to move in a plane perpendicular to the longitudinal axis of the spindle on the tool stock, driving mechanism connecting the live spindle with the driving shaft, and mechanism connecting the tool carrier with the live spindle, said mechanism adapted to convert the rotary motion of the spindle into rectilinear motion.

4. In a machine of the class described, the combination with the live spindle, means for revolving the same, and a tool stock connected with and having motion in a plane perpendicular to the longitudinal axis of said spindle; of mechanism for imparting motion to said tool stock, comprising a shaft revoluble within the spindle transmitting mechanism connecting said shaft with the tool stock, said transmitting mechanism constructed to convert the rotary motion of the shaft into rectilinear motion, and gearing connecting said shaft with the live spindle.

5. In a machine of the class described, the combination with the live spindle, means for revolving the same, and a tool stock connected with and having motion in a plane perpendicular to the longitudinal axis of said spindle; of mechanism for imparting motion to the tool stock and for varying the said motion relatively to the speed of the live spindle, comprising a shaft *d*, revoluble in said spindle, transmitting mechanism connecting shaft *g* with the tool stock, said transmitting mechanism constructed to convert the rotary motion of said shaft into rectilinear motion, a counter shaft geared to shaft *d*, variable speed gearing connecting the countershaft with the live spindle and mechanism for throwing the variable speed gearing into and out of operation.

6. In a machine of the class described, the combination with a driving shaft, a live spindle, mechanism connecting the spindle with said shaft, a tool carrier on said spindle and a tool stock adapted to move on the tool carrier in a plane perpendicular to the longitudinal axis of the live spindle; of mechanism connecting the tool stock with the live spindle, said mechanism adapted to impart a continuous rectilinear motion to the tool stock.

7. In a machine of the class described, the combination with a live spindle, a tool stock carrier, a tool stock movable across the face of its carrier, a shaft *d* within the live spindle and carrying bevel gear $d^6$ transmitting mechanism connecting said shaft with the tool stock, said mechanism constructed to convert the rotary motion of the shaft into rectilinear motion of the stock, a transmitting shaft geared to shaft *d*, gearing connecting the transmitting shaft with the live spindle, and mechanism for throwing said gearing into and out of operation, of the short shaft $d^5$ and its bevel wheel $d^4$, for the purposes set forth.

8. In a machine of the class described, the combination with the live spindle, and a shaft contained therein and carrying a bevel pinion at each end, of a tool support comprising a disk or face plate connected with the spindle, a tool holder movable across the face plate and provided with a screw threaded bearing, a screw spindle carried by the face plate and working in the threaded bearing of the tool support, said screw spindle provided with a bevel pinion in gear with that on one end of the shaft within the live spindle, and gearing connected with the bevel pinion on the opposite end of said shaft for revolving the same, for the purpose set forth.

9. In a machine of the class described, the combination with the live spindle, a shaft contained therein carrying a gear wheel at one end, the driving shaft and transmitting gearing connecting said driving shaft with the live spindle, of a tool support comprising a disk or face plate connected with the live spindle, a tool holder movable across the face plate and provided with a screw-threaded bearing, a screw spindle carried by the face plate and working in said screw threaded bearing, said screw spindle provided with a pinion in gear with that on the shaft in the live spindle, and variable gearing connecting the said spindle with its contained shaft for varying the speed of rotation of the last named shaft, for the purpose set forth.

10. In a machine of the class described, the combination with the live spindle *c*, the spur wheels $c^6$ and $d^7$ secured thereto, the face plate *e*, a tool holder movable across said face plate, the screw spindle *e'*, carried by the face plate and working in a threaded bearing of the holder, the pinion $e^2$ on said screw spindle, the shaft *d*, contained in the live spindle, the pinion $d^2$ on shaft *d* in gear with that on screw spindle, and the spur wheel $d^3$ on said shaft, of the counter shaft *f*, the spur wheel $f^3$ in gear with spur wheel $d^3$, the spur wheels $f'$, $f^4$, loose on said shaft *f*, and in gear with spur wheels $d^5$, $d^7$, respectively, and a clutch coupling for coupling either spur wheel $f'$, $f^4$, to shaft *f*, for the purpose set forth.



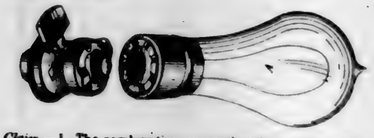
11. In a machine of the class described, the combination with the bed, the head stock, the carriage *g* movable toward and from said head stock, the carriage *g'*, movable across carriage *g*, the screw shaft $A_1$, the worm wheel $A^7$, loose on said screw shaft, and a clutch coupling for coupling the worm wheel to its shaft, of counter shaft $A^3$, a worm $A^4$, and a spur wheel $A^{24}$ thereon, said worm in gear with worm wheel on screw shaft, the main driving shaft, and a spur wheel thereon in gear with the spur wheel $A^{25}$ on the counter-shaft, for the purpose set forth.

12. In a machine of the class described, the combination with the bed, the head stock movable vertically above said bed, a live spindle supported by the head stock, a spur wheel on said spindle, a counter shaft $j^3$ also supported on the head stock, a spur and a bevel wheel on the counter shaft, said spur wheel in gear with the like wheel on the live spindle, the main driving shaft supported on the bed of the machine, and a bevel pinion on said main driving shaft, of transmitting gearing, comprising a vertical shaft supported at one end by the bed of the machine, a bevel wheel on said shaft in gear with that on the main driving shaft, and a second bevel wheel, $j^{18}$, revoluble with and having endwise motion on the vertical shaft, said bevel wheel $j^{18}$ supported from the head stock and in gear with the like wheel on the countershaft $j^3$, for the purpose set forth.

13. In a machine of the class described, the combination with the live spindle, of a tool support adjustable in a plane at right angles to the longitudinal axis of said spindle, said tool support provided with a bearing for a cutter or the like, and with a bearing for a boring tool, for the purpose set forth.

14. In a machine of the class described, the combination with the vertically adjustable head stock, the live spindle, and the counter shaft $j^3$ supported from said head stock, said counter shaft geared to the live spindle; of a driving shaft, a vertical transmitting shaft geared to said driving shaft, a pinion revoluble with and having endwise motion on said transmitting shaft, said pinion geared to said counter shaft and having its bearings on the head stock.

504,743. SOCKET FOR INCANDESCENT ELECTRIC LAMPS. CHARLES G. PERKINS, Hartford, Conn. Filed July 10, 1891. Serial No. 399,097. (No model.)



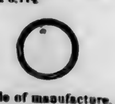
*Claim.*—1. The combination, in an electric coupling, of a coupling section having a projecting screw-threaded extension and a ribbed wing with a corresponding coupling section having an internally threaded socket, and a radially corrugated contact surface adapted to engage the rib to make close electrical contact therewith and lock the parts, substantially as described.

2. The combination, in an electric incandescent lamp, of a lamp section having an internally threaded socketed ring at its top, provided with radial corrugations and a coupling section having an externally screw-threaded section, and an elastic ribbed ring adapted to engage the radial corrugations, the socket and screw extension forming one terminal of the circuit through the lamp, and the ribbed and corrugated rings, the other terminal, substantially as described.

3. In an electric incandescent lamp having on its coupling end a radially corrugated contact surface, of a co-operative device provided with a rib adapted to engage the corrugated contact surface to make electrical connection therewith and lock the parts of the coupling, substantially as described.

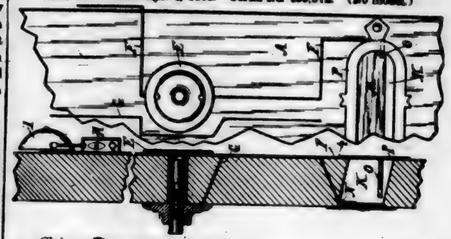
4. An incandescent electric lamp having a central terminal and an outer ring terminal on the end of its neck, the ring terminal being corrugated or roughened.

504,744. CATHETER. OSCAR DE PEZZER, Paris, France. Filed Apr. 6, 1893. Serial No. 469,127. (No model.) Patented in France Feb. 20, 1891, No. 211,570; in Belgium Mar. 3, 1891, No. 93,994, and in England Mar. 3, 1891, No. 3,774.



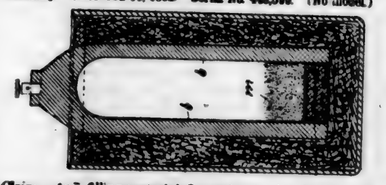
*Claim.*—As a new article of manufacture, a catheter made of a sheet of pure india-rubber, rolled into required shape, and having its edges thinned and cemented together, substantially as and for the purpose specified.

504,745. ELECTRIC SIGNAL DEVICE. CHARLES R. PROCTER, Racine, Wis. Filed Apr. 4, 1893. Serial No. 469,072. (No model.)



*Claim.*—The combination with an electric signal circuit, of a metal lid arranged automatically to close a letter chute, the lid being a part of the electric circuit which is open when the lid is closed, and a terminal of the electric circuit so arranged as to contact with the lid and close the circuit when the lid passes it in opening the chute, and to contact with the lid and close the circuit again when the lid passes it in closing the chute, substantially as described.

504,746. GALVANIC DRY BATTERY. JOHN VON DER POPPENBURG, Charlottenburg, assignor to Carl Christian Lesenberg, Rostock, Germany. Filed Oct. 11, 1892. Serial No. 448,599. (No model.)



*Claim.*—As a filling material for galvanic dry batteries finely chopped or ground vegetable substances, and especially chopped straw, mixed with hydrates of carbon, such as starch, glucose, dextrine, and the like, in combination with a solution of hydroxide of chrome, substantially as and for the purpose set forth.

504,747. DRYING-MACHINE. JOSIAH K. PROCTOR, Philadelphia, Pa., assignor to the Philadelphia Textile Machinery Company, same place. Filed Jan. 26, 1892. Serial No. 459,770. (No model.)

*Claim.*—1. In a drying machine having exterior walls or partitions forming a drying inclosure, the following combination and arrangement of parts,—a conveyer consisting of two endless chains and a series of rods or poles to hold the hanging material arranged so that the air currents may freely move down and up through the material, one or more sections of floor or horizontal partition located above the conveyer, fans located in said partition, heating coils situated below the material, the arrangement of these parts being such as to secure a continuous flow of air from the fans downward between the poles along the hanging material and through the heating coils and from thence upward through the material and between the poles to the fans, a fan arranged near the feed end of the inclosure to continuously remove a portion of the air from within the inclosure and an air inlet passage near the delivery end of the inclosure to admit a portion of the external air, all for the purpose of quickly and uniformly drying the material passing through the inclosure.

2. The combination in a drying machine arranged to carry materials or goods suspended from rods or poles continuously through a drying inclosure, of external walls or partitions forming a drying inclosure, the said walls or partitions extending downward so as to form a downward extension to the inclosure reaching downward below the floor on which the main body of the drier rests, with an air circulating fan located above the material so as to force the air continuously downward through the materials or goods and into the said downward extension in one part and continuously upward through the said downward extension and through the materials or goods in another part of the inclosure, and heating coils in said inclosure.

3. The combination in a drying machine arranged to carry materials or goods suspended from rods or poles continuously through a drying inclosure of external walls or partitions forming a drying inclosure, the said walls or partitions extending downward so as to form a downward extension to the inclosure reaching downward below the floor on which the main body of the drier rests with an air circulating fan located above the material so as to force the air continuously downward through the materials or goods and into the said down-

ward extension in one part and continuously upward through the said downward extension and through the material or goods in another part of the inclosure, and heating coils in said inclosure, and an exhaust fan arranged in the top of said inclosure to remove a portion of the air therefrom.



4. In a device for feeding poles to the conveying chains of a drying machine, the combination of the conveying chain G, the projecting brackets R and S to support the poles while being loaded with the material to be dried, the bracket R having a recess or notch r opposite the side of one of the chains for the purpose of guiding the pole into a socket of the chain, when the socket comes opposite the said recess or notch and the pole is thrust sidewise toward the chain, the lever T fulcrumed at t and retained in position by the spring s and adapted when drawn forward, to receive that end of the pole opposite to the end which rests on the bracket R and when drawn back by the spring to place the end of the pole automatically into a socket of the chain adjacent to the said lever, and the guideways l which keep the poles in position within the sockets of the chain after they leave the feeding device

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**504,748.** OIL-CAN. CHARLES W. PROCTOR, Lake Forest, Ill. Filed Feb. 14, 1893. Serial No. 462,231. (No model.)



*Claim.*—1. The combination with a can, and a basin in the upper portion thereof, of an internal delivery tube leading from the basin, a delivery pipe in communication with the delivery tube, and a valve arranged in the internal delivery tube leading from the basin and adapted to be operated from the exterior of the can to govern the flow of oil from said delivery tube into said delivery pipe, substantially as described

2. The combination with an oil can, and a basin in the upper portion thereof, of a delivery tube leading from the basin, a second tube having communication with the delivery tube, a valve arranged in the delivery tube leading from the basin to govern the flow of oil from said delivery tube into said second tube, and a removable delivery pipe in operative connection with said second tube, substantially as described

3. The combination with an oil can, and a basin in the upper portion thereof, of a delivery tube connected with said basin a removable delivery pipe having communication with the delivery tube, and a valve arranged in the delivery tube leading from the basin to govern the flow of oil from said delivery tube into said removable delivery pipe, substantially as described

4. The combination with a can, and a basin 2 therein, of a tube 3 opening into the lower portion of said basin, a tube 4 communicating with said tube 3, a delivery pipe fitted in said tube 4, and a valve, substantially as described

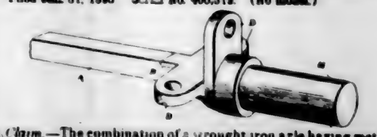
5. The combination with a can, and a basin 2 in the upper portion thereof, of a tube 3 communicating with said basin, a tube 4 extending to the exterior of said can, openings 11, 12 in said tubes 3 and 4, a valve 9 in said tube 3, and means for operating said valve from the exterior of the can, substantially as described

6. The combination with a can, and a basin 2 in the upper portion thereof, of a tube 4 having communication with said basin, and provided with an opening in its lower portion, and a delivery pipe slidable in said tube, substantially as described

7. The combination with an oil can 1, and a basin 2 in the upper portion thereof, of tubes 3 and 4 having openings 11 and 12 registering with each other, said tube 3 being in communication with the basin 2, said tube 4 extending to the exterior of the can and having an opening in its under surface to permit drippings to return to the main portion of the can, and a delivery pipe telescopically fitted in said tube 4, substantially as described

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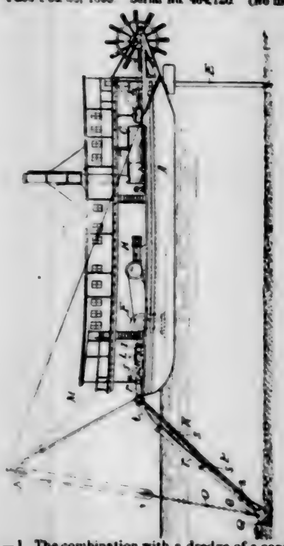
**504,749.** AXLE-JOURNAL. CHARLES W. REHIFF, Greensburg, Pa. Filed Jan. 31, 1893. Serial No. 460,312. (No model.)



*Claim.*—The combination of a wrought iron axle having metal receiving recesses cut in the top thereof near its ends, and separate hollow spindles or journals cast onto the ends of said axle and into the metal receiving recesses thereof, and provided at their inner ends with a set of perforated securing flanges comprising a single vertical flange, and oppositely projecting horizontal flanges disposed at right angles to the vertical flange and lined off flush with the top of the axle, said cast spindles or journals being projected beyond the extremities of the axle to leave hollow spaces therein, substantially as set forth

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**504,750.** HYDRAULIC DREDGE. ARTHUR W. ROBINSON, Bucyrus, Ohio. Filed Feb. 28, 1893. Serial No. 464,120. (No model.)



*Claim.*—1. The combination with a dredge of a conically shaped cutter head having detachable cutting blades, which are themselves conical longitudinally, also a back plate which closes the rear end of the cone, and a suction pipe, connecting through the back plate with the interior of the cutter head, substantially as set forth

2. The combination with a dredge of a conical cutter head, having detachable cutters or blades concave in transverse outline and conical in longitudinal outline, also having a back plate, which closes the rear end of the cone, and a suction pipe which connects through the back plate with the interior of the cutter head, substantially as set forth

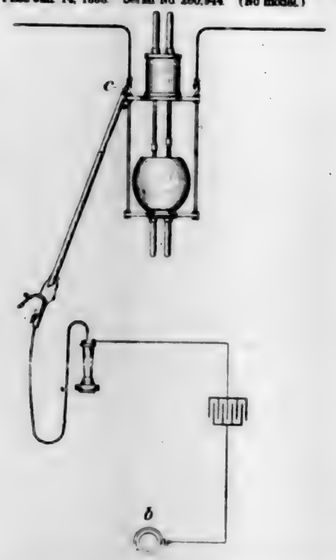
3. The combination with a dredge of a cutter head comprising a flat stationary back plate provided with flanges upon and to which the beams or trusses of the A frame may be bolted, and having a centrally located hub for the driving shaft, on which the cutter is mounted, and which braces the said flanges, and against which the beams or trusses are supported, and a conical rotary cutter head, the greatest diameter of which is adjacent to the said back plate, substantially as set forth

4. The combination with a dredge of a cutter head comprising a stationary back plate having a hub at or near its central part, which projects forwardly beyond the plane of the back plate, the sides of the hub on the exterior of the back plate, being squared, flanges or ledges on the back side of the back plate, adjacent to the squared sides of the hub, upon which the beams of the A frame may be bolted, being supported by the sides of the hub, and a rotary conical cutter, the shaft of which passes through said hub, said cutter having a single set of detachable cutting blades, substantially as set forth.

5. The combination in a dredge of an A frame hinged to the scow, a rotary cutter on the forward end of the A frame, having a conical frame and detachable conical blades bolted thereto, a cutter shaft supported on the A frame, the rear end of which is supported on a trunnion, the axis of which is on the same line as the axes of the hinges, which connect the A frame to the scow, and the front end of which is supported in a hub, on the back plate of the conical cutter head, and a suction pipe which opens into the cutter head through the said back plate, and at its inner side, substantially as set forth

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**504,751.** ELECTRICAL TESTING APPARATUS. CHARLES H. RUDD, Evanston, assignor to the Western Electric Company, Chicago, Ill. Filed Jan. 14, 1893. Serial No. 460,944. (No model.)



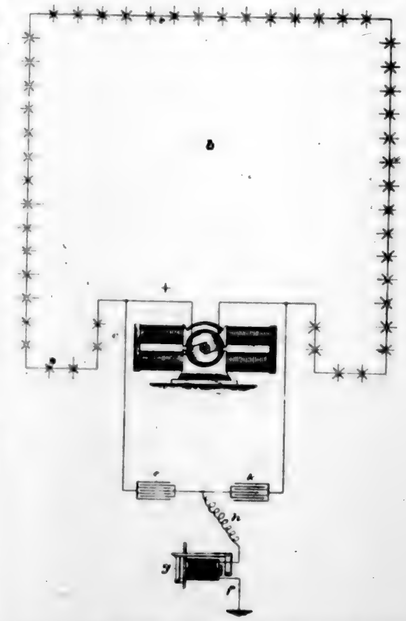
*Claim.*—1. The method of testing an electric lamp circuit, which consists in successively connecting or tapping a telephone with said circuit at different points while the lamps are burning, and listening at the telephone and comparing the sounds produced in the telephone at the different points with respect to loudness, substantially as described

2. The method of testing electric light circuits while the lamps are burning, which consists in successively closing different points of the circuit to ground through a telephone and condenser, and listening at the telephone as the connections are made and comparing the loudness of sounds in the telephone to determine the relative potentials of the current at the different points

3. The method of detecting grounds upon an electric circuit supplied with a non-uniform current, which consists in applying successively at various points along the line, an indicating device adapted to be actuated by a non-uniform current to give an indication, said indication adapted to vary as the strength of the current varies, and noting the character of the indication, substantially as described

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**504,752.** ELECTRIC SIGNAL DEVICE. CHARLES H. RUDD, Evanston, assignor to the Western Electric Company, Chicago, Ill. Filed Dec. 10, 1888. Serial No. 293,123. (No model.)



*Claim.*—1. The combination with a lamp circuit of the shunt circuit connected with different sides of the dynamo electric-machine, said shunt circuit including two condensers of equal capacity and a ground branch connected between the condensers with said shunt circuit and an electro magnetic signaling device included in said ground branch, whereby on closing the lamp circuit to ground at any point, the signaling device will be operated, substantially as and for the purpose specified

2. The combination with an electric arc circuit, of a branch circuit to ground from one side of the dynamo electric machine, a condenser included in said branch circuit and a signaling device included in the said branch containing the condenser

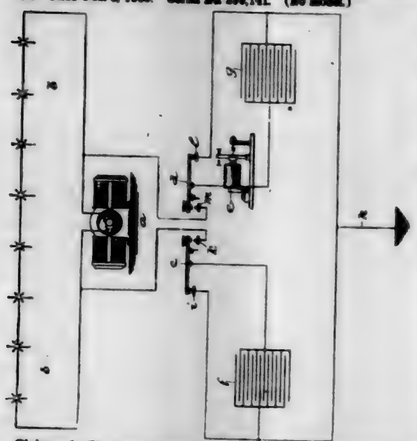
3. The combination with an electric arc circuit of a high resistance branch circuit to ground from one side of the dynamo electric machine, a condenser included in said branch circuit and a signaling device included in the said branch containing the condenser

4. The combination with the lamp circuit including the dynamo electric machine, of branch wires, one from each pole of the dynamo, each including a separate condenser, said branches being united in a ground branch and an annunciator included in said branch.

5. The combination with the lamp circuit including the dynamo electric machine, of branch wires, one from each pole of the dynamo, each including a separate condenser, said branches being united in a ground branch and an annunciator included in said branch with high resistance

6. The combination with a dynamo electric machine and a working circuit, of a connection to ground containing an indicating device and a device adapted to create a back electro-motive force equal to the electro-motive force of the machine upon the passage of a current whereby only a momentary current will flow to ground to actuate said indicating device, substantially as described

**504,753.** ELECTRICAL TESTING APPARATUS. CHARLES H. RUDD, Evanston, assignor to the Western Electric Company, Chicago, Ill. Filed Feb. 8, 1893. Serial No. 462,141. (No model.)

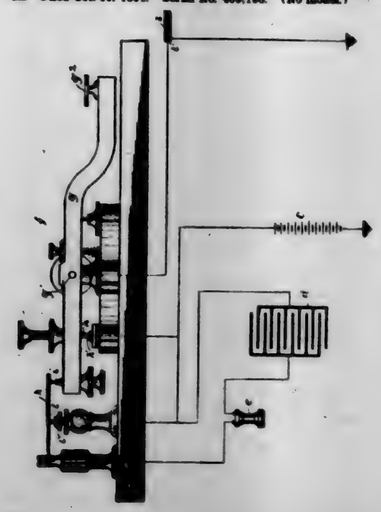


*Claim.*—1. The combination with a pair of keys connected together through condensers, of a ground connection between said condensers, a signal indicating device in circuit between one of said keys and its condenser connections from different sides of the generator in an electric circuit, one connection to a point near each of said keys and a short circuit around each of said condensers normally closed by the key thereof, whereby on depressing both of said keys to close connection with the different sides of the generator it may be determined whether a ground or leak exists upon the electric circuit in which said generator is included.

2. The combination with two keys each adapted to be closed to different sides of a dynamo included in an electric light circuit, of condensers connected in circuit between said keys, a ground branch between said condensers and a signal device between said ground connections and one of said keys, substantially as and for the purpose specified.

3. The combination with a source of electricity and a working circuit, of a connection to ground from one side of said source of electricity, containing a condenser, a current indicator, and a circuit closing key, substantially as described.

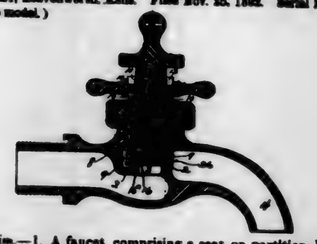
**504,754.** ELECTRIC MEASURING APPARATUS. CHARLES H. RUDD, Evanston, assignor to the Western Electric Company, Chicago, Ill. Filed Oct. 19, 1891. Serial No. 409,196. (No model.)



*Claim.*—1. The combination, with a resistance to be measured, a condenser, and a battery, of suitable means adapted alternately to connect the resistance, condenser, and battery in series, or to discharge the condenser through the telephone, substantially as and for the purpose described.

2. The herein described method of measuring resistances which consists in charging a condenser through the resistance by a battery, noting the time the condenser is charging, subsequently discharging the condenser through a telephone and noting the loudness of the click and comparing the time thus required to charge the condenser with the time required to charge the same condenser from an equivalent battery through a known resistance and in which the click caused by the discharge of the condenser was of the same degree of loudness, substantially as described.

**504,755.** FAUCET-VALVE. FREDERICK SOERENSEN and JAMES FOLEY, Leavenworth, Kans. Filed Nov. 25, 1892. Serial No. 453,148. (No model.)



*Claim.*—1. A faucet, comprising a seat or partition, having an opening therethrough, and a passage communicating with said opening, and a valve, comprising a cylinder longitudinally adjustable in said passage, a removable handle for said cylinder, and flexible packing disks carried by said cylinder and adapted to close or open the opening in the seat or partition as the cylinder is moved to or from the said opening, and a plug adjustable within said cylinder and adapted to bear firmly upon said disks, and to expel said disks at times, substantially as set forth.

2. A faucet valve, comprising a cylinder having its lower portion externally screw-threaded and its upper portion internally screw-threaded, and an inner marginal flange at its lower end; a removable handle engaging the upper end of the cylinder, and a series of flexible disks supported within said cylinder and bearing upon said flange, and a screw-threaded plug fitting within said cylinder, and bearing upon said disks, substantially as set forth.

3. The combination with a valve for faucets, comprising a cylinder, having an inner marginal flange at its lower end, a series of flexible disks within the cylinder and supported by the inner marginal flange, and notches or recesses in its upper end, and an adjustable plug bearing upon the disks within the cylinder, of a removable handle, comprising a yoke or ring inclosing the upper end of said cylinder, and provided with outwardly projecting handles, and lugs or pins projecting inwardly and engaging the notches or recesses in the upper end of the cylinder, substantially as set forth.

4. The combination with a valve, comprising a cylinder having a handle at its upper end, an inner marginal flange at its lower end, and its upper portion internally screw-threaded, and a series of flexible disks supported within said cylinder by the inner marginal flange at its lower end, of a plug having screw-threads engaging the internal screw-threads of the cylinder and bearing at its lower end upon the said disks, and a head provided with a groove and intersecting bores, and an angular portion or head, adapted to be engaged by a wrench, all arranged substantially as set forth.

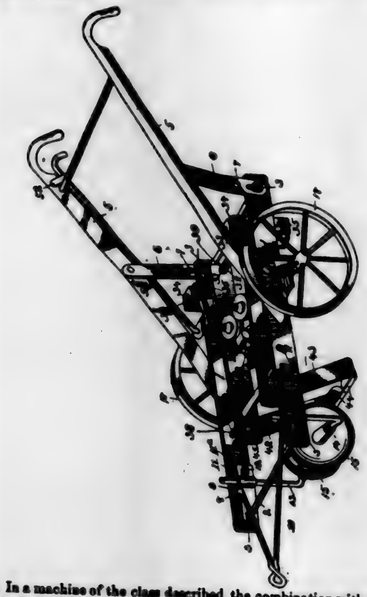
**504,756.** COTTON-CHOPPER. JAMES D. SCHOFIELD, Dallas, Tex., assignor of two-thirds to Charles W. Parker and Paul Furst, same place. Filed Mar. 30, 1893. Serial No. 468,284. (No model.)

*Claim.*—1. In a machine of the class described, the combination with a framework, an axle, and ground-wheels carried by the axle, of a pair of vibratory hoe-carrying horizontally disposed bars pivotally mounted in the frame, brackets carried by the bars, rollers on the brackets, and a tappet-carrying cylinder operated by the axle, substantially as specified.

2. In a machine of the class described, the combination with a frame, an axle, and ground-wheels, of a pair of vibratory bars pivotally mounted at the rear ends and extending over and in front of the axle, devices mounted on the axle for vibrating the bars, and L-shaped hoes depending from the front ends of the bars, substantially as specified.

3. In a machine of the class described, the combination with the frame, the axle, and the ground-wheels, of the vibratory bars fulcrumed between the ends in the frame, an expansion-spring between the rear ends of the bars, depending hoes carried by the bars, and devices mounted on the axle and operated thereby and adapted to spread and liberate said bars in advance of their fulcrum, substantially as specified.





4. In a machine of the class described, the combination with the framework, the axle, and the ground-wheels, of a pair of vibratory bars provided with hoes at their front ends and pivotally mounted between their ends in the framework, an expansion-spring between the rear ends of the bars, rollers mounted on brackets at the inner sides of the bars in advance of their points of fulcrum, a toothed cylinder mounted loosely on the axle and provided with tappets for taking between the rollers, a clutch-sleeve mounted on the axle and adapted to engage the teeth of the cylinder, a spring for normally throwing the clutch-sleeve into engagement with the teeth of the cylinder, and a lever engaging the clutch-sleeve and adapted to withdraw the same from engagement with the cylinder, substantially as specified.

5. In a machine of the class described, the combination with the frame, the rotatable axle, and the ground-wheels, of a flanged boss fast upon the axle and provided with a stud, the slotted clutch-sleeve engaging the stud and mounted on the boss, the spring interposed between the flange of the boss and the end of the clutch-sleeve, the cylinder provided with radial tappets mounted on the axle, toothed at its inner end to engage with the clutch-sleeve and recessed to receive the boss, the vibratory hoe-carrying bars pivotally mounted in the frame above and at opposite sides of the cylinder, the spring for normally expanding the rear ends of the bars and contracting the front ends, and loose rollers supported at the inner sides of the bars and meeting in the path of the tappets, substantially as specified.

6. In a machine of the class described, the combination with the frame, the axle, and the ground-wheels, of the opposite stationary brackets secured to the inner sides of the frame, the swiveled brackets received thereby, the vibratory bars rigidly secured to the swiveled brackets and provided at their rear ends with holes, a rod passing loosely through the holes, a coiled expansion spring mounted on the rod and interposed between the rear ends of the bars, a front guide-rod, elongated slots formed in the bars for the reception of the rod, hoes depending from the front ends of the bars, frictional rollers arranged between the bars, and a cylinder mounted upon and rotated with the axle and having tappets adapted to take and pass between the rollers of the bars, substantially as specified.

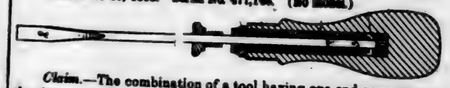
7. In a machine of the class described, the combination with the framework, the axle, the ground-wheels, the vibratory bars, hoes at the front ends thereof, and an expansion spring at the rear ends of the bars, of a cylinder mounted upon and rotated with the axle, holes formed in the cylinder, removable tappets threaded in the holes, and a pair of antifriction rollers arranged between the bars and meeting in the path of the tappets, substantially as specified.

8. In a machine of the class described, the combination with the framework, the axle, the ground-wheels, a tappet-carrying cylinder mounted on the axle and having teeth, a reciprocating clutch-sleeve arranged at the sides of the cylinder, a spring for normally throwing the clutch-sleeve into engagement with the cylinder, stationary brackets at the inner sides of the frame, companion brackets arranged therein, pintles for pivoting the companion brackets to the stationary brackets, a bell-crank lever mounted upon one of the pintles and having one branch engaging the clutch-sleeve, handles extending from the framework, a keeper located upon one of the same, a bell-crank operating rod arranged in the keeper, of vibratory hoe-carrying arms secured to the companion brackets, and an expansion-spring at the rear ends of the brackets, substantially as specified.

9. In a machine of the class described, the combination with the framework, the hoe-mechanism, and means for operating the same, of the tie-rod at the front end of the frame, the spring plates perforated to receive the tie-rod, said plates having half-bearings between their ends, and the inner plate of each pair inwardly bent to form a lip bearing at the side bar of the frame, binding-bolts passed through the side-bars and perforations in the plates in rear of the half-bearings, clamping nuts arranged on the tie-rod, L-shaped standards swiveled in the half-bearings, and disks carried by the standards, substantially as specified.

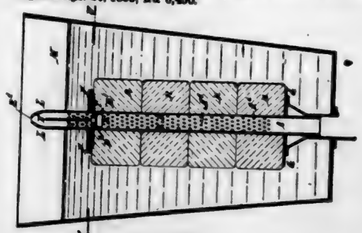
10. In a machine of the class described, the combination with the framework, the axle, and the ground-wheels, of the vibratory-bars fulcrumed in the framework, expansion springs for the rear ends of the bars, slots formed in the front ends of the bars, a guide-rod extending through the slots and the frame, a spacing-sleeve upon the rod between the bars, hoes carried by the bars, and devices mounted on the axle for intermittingly spreading the bars, substantially as specified.

**504,757.** SCREW-DRIVER. ANTON SCHUERMANN, Decatur, Ill. Filed June 10, 1893. Serial No. 477,168. (No model.)



*Claim.*—The combination of a tool having one end as narrow as the diameter of the shank, a chamber of greater diameter than the shank of the tool slotted across its inner end to receive an end of the tool, and a lock-cap fitting the shank of the tool and adapted to be detachably connected with the outer end of the chamber, substantially as set forth, and in connection with the handle encompassing the chamber.

**504,758.** APPARATUS FOR DYEING, &c. HERMANN SCHWARZ, Verviers, Belgium. Filed July 6, 1893. Serial No. 479,709. (No model.) Patented in Belgium Sept. 2, 1892, No. 101,216, Sept. 26, 1892, No. 101,513, Oct. 31, 1892, No. 101,951, and Dec. 10, 1892, No. 102,516; in Germany Nov. 17, 1892, No. 70,206; in France Mar. 4, 1893, No. 233,382, and in England Apr. 26, 1893, No. 8,450.

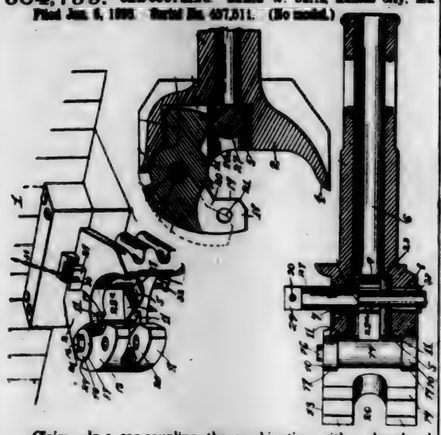


*Claim.*—1. A bobbin holder consisting of a perforated tube A having a flange G, two longitudinal slots B B, a stopper D adapted to slide in said tube and a cross pin C traversing the said slots B B and stopper D in combination substantially as set forth.

2. A bobbin holder consisting of a tube A with perforations A' and two longitudinal slots B B, a flange G, a stopper D adapted to slide in said tube A, a removable cross pin C traversing said slots B B and stopper D and means for engaging said stopper D temporarily in the end of the tube A, in combination substantially as set forth.

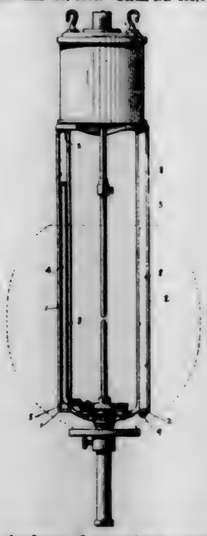
3. The combination of a vessel M, an open pipe mouth I in the base thereof, an open tube A adapted to be fitted in said pipe mouth, the said tube A being perforated at A' and having two longitudinal slots B B, a base flange G on said tube A, a stopper D adapted to slide in said tube A having tongues D' D' engaging in said slots B B and a removable cross pin C adapted to traverse the said slots B B and stopper D substantially as set forth and for the purpose described.

**504,759. CAR-COUPLING.** EARLE W. SEITZ, Kansas City, Mo. Filed Jan. 6, 1893. Serial No. 457,511. (No model.)



*Claim.*—In a car-coupling, the combination with a drawhead, having a longitudinally extending cylindrical recess 5, the recess 9 at one side of and communicating with the cylindrical recess 5, and forwardly projecting segmental shoulders 10, with a pivotal locking jaw having a cylindrical hub 14, pivoted to move laterally between the shoulders 10 of the draw-head and the forwardly and inwardly extending hooked end 18, and the rearwardly and horizontally extending supporting leg 22, adapted to engage the coupling pin and the recess 9 of the drawhead, substantially as set forth.

**504,760. ELECTRIC-ARC LAMP.** CHARLES T. SNEDEKOR, Worcester, Mass., assignor to the Washburn & Moen Manufacturing Company, same place. Filed Mar. 20, 1893. Serial No. 466,782. (No model.)

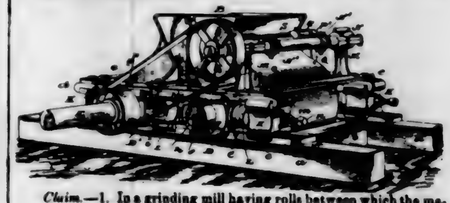


*Claim.*—1. In the frame of an arc lamp, an arm with a hollow space sufficiently large to contain an insulated wire, said space being filled with a packing of some refractory material, and covered by a strip of metal secured to the arm.

2. In the frame of an arc lamp, two arms falling within the globe of the lamp, one or both of the arms being hollow, and provided with lugs beneath which a covering strip is confined, whereby the insulated wire within the space is protected from the heat of the lamp.

3. In the frame of an arc lamp, an arm with a hollow space containing a naked wire packed in insulating material, said insulating material being held in place by a strip of metal secured to the arm.

**504,761. GRINDING-MILL.** JOHN THOMPSON, Bucyrus, Ohio, assignor to the Frey-Shockley Company, same place. Filed Apr. 5, 1893. Serial No. 469,139. (No model.)



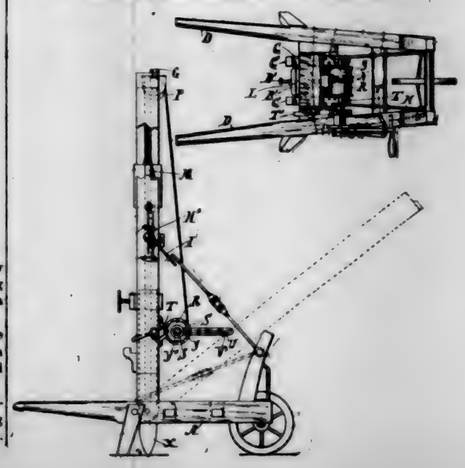
*Claim.*—1. In a grinding mill having rolls between which the material is fed, a mechanism for adjusting one of said rolls toward and from the opposing roll, comprising movable journal boxes for the shaft of one of the rolls, springs and adjusting screws for forcing the boxes inward whereby the movable roll is adjusted toward and from the companion roll, and stops consisting of castings placed within the sides of the frame between the journal boxes having extended ends for limiting the inward movement of the movable boxes to prevent the grinding surfaces of the rolls coming into direct contact.

2. In a grinding mill, the combination of a frame or casing, a grinding roll having its shaft mounted in stationary boxes therein, a second grinding roll opposing the first named roll, boxes slidably mounted in the frame and receiving the shaft of the second roll, springs bearing upon said slidable boxes and holding them and their roll under a yielding tension, screws bearing against and regulating the tension of the springs, and stops on the frame of the machine for limiting the inward movement of the boxes to prevent the faces of the opposing rolls coming into contact, said stops having extended ends adapted to be cut away to compensate for the wear of the opposing rolls.

3. The combination of the frame with its flanges or plates *c* and *d* separated from each other to form openings or guides along the sides of the machine, journal boxes fixed in said open sides and receiving the shaft of one of the grinding rolls, other journal boxes mounted to slide in said open sides and receiving the shaft of the opposing grinding roll, means for adjusting the slidable boxes toward the fixed ones, and castings fixed in said open sides having plates extending along the sides of the machine and forming stops for limiting the inward adjustment of the slidable boxes.

4. In a grinding mill, the frame, the grinding rolls, the standards arising from said frame, a transverse shaft mounted therein having eccentrics, the bars or rods extending from the eccentrics, the pivotally mounted clips P, the feed board having pintles at its upper end, and a shaft at its lower end extending through slots in the frame, clips T upon the extended ends of said shaft, and other clips P' pivotally mounted on said pintles, the spring plates connecting the clips P and P' and spring plates connecting the clips T, with a fixed support, and a gate adjustable toward and from the discharge end of the board, substantially as herein described.

**504,762. FENCE-POST DRIVER.** HERMAN VORACE, Pewaukee, Wis. Filed May 8, 1893. Serial No. 473,367. (No model.)



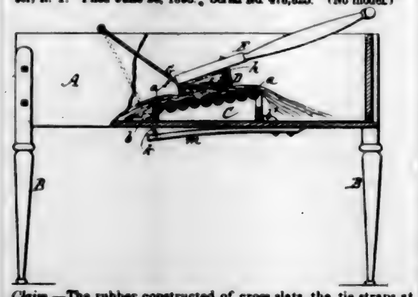


*Claim.*—1. The combination with a barrow, of upright posts pivoted to and supported on the barrow, on which posts a falling weight is mounted, stay-rods hinged to the barrow and having hooks on their free ends, and lugs fixed to the posts and provided with a plurality of apertures for taking the hooks of the stay-rods, substantially as described.

2. In a machine of the character described, the combination with upright posts, a vertically movable weight, a drum, and a cable attached to the weight running on a pulley and winding on the drum, of a crank-handle loose on the axle of the drum, a recessed wheel rigid on the axle of the drum, a spring-actuated bolt mounted and movable on the crank-handle adapted to lock the handle to the axle, releasably a brake disk on the drum axle, and a brake mounted on the crank handle movable toward and from the disk and means for forcing the brake against the disk, substantially as described.

3. In a machine of the character described, the combination with weight-carrying posts and a cable-winding drum mounted thereon, of a cog wheel and a brake disk fixed on the axle of the drum, a crank-handle loose on said axle, a latch adapted to engage said cog wheel releasably and a brake adapted to bear against said disk releasably, mounted on opposite sides of the crank-handle reciprocally thereof, and a lever-handle pivoted in and transversely of the crank-handle, to which lever-handle the latch and the brake respectively are connected, substantially as described

**504,768. WASHING-MACHINE.** EDWARD L. WALLACE, Rochester, N. Y. Filed June 26, 1893. Serial No. 478,625. (No model.)



*Claim.*—The rubber constructed of cross slats, the tie straps at its ends provided with upturned lugs, the handle hinged to the front edge of the rubber, the spring between the rubber and the handle, the bow attached to the handle and passing through the lugs of the tie straps, and suitable connections for holding and operating the rubber, as herein shown and described.

**504,764. SYRINGE.** WALTER F. WARE, Camden, N. J. Filed Dec. 19, 1892. Serial No. 456,575. (No model.)

*Brief.*—Conical sliding plug on barrel of syringe adjusts it to a bottle-mouth. The rubber cover of piston-head extends over edges and both sides of same.



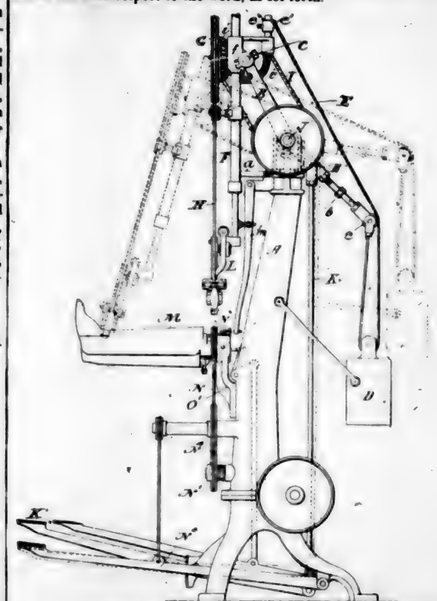
*Claim.*—1. In a syringe, the combination of the barrel, the piston provided with a disk at its lower end, a rubber cup incasing said disk and having an inwardly projecting flange engaging on the inner side of said disk around said piston rod, substantially as described.

2. The combination in a syringe, of a barrel, a cap, a nozzle, a piston rod, a disk on the lower end thereof, and a cuplike body of yielding material having a lower bottom portion extending entirely over the lower surface of the disk, the ring portion surrounding the piston, and the inwardly projecting annular flange portion extending partly over the upper surface of the disk, substantially as specified.

3. The combination of the barrel, a cap, a nozzle, a piston in the barrel, an inherently elastic conical stopper, D, surrounding the barrel and adjustable longitudinally thereon whereby the syringe may be adapted to bottles of different size, substantially as described.

**504,765. BOOT-TREEING MACHINE.** JOHN WARREN, Boston, Mass., assignor to the Globe Treeing Machine Company, same place, and Nashua, N. H. Filed July 3, 1893. Serial No. 479,404. (No model.)

*Claim.*—1. In a machine for treeing boots and shoes, the combination of a standard, a lever pivoted thereon, a treeing mechanism pivoted to said lever, and a counter-balance consisting of a weight supported by a flexible connection, the ends of which are attached respectively to an arm of the pivoted lever and to the pivoted treeing mechanism whereby a single counter-balance weight serves to counterbalance the treeing mechanism both in its motions up and down and in and out with respect to the work, as set forth.



2. In a machine for treeing boots and shoes, a treeing mechanism consisting of a telescoping frame F, *f*, having a removable weight *f'* whereby the amount of pressure of the belt upon the work may be regulated for the purpose set forth.

3. In a machine for treeing boots and shoes, a tree having a revoluble sheave M, a locking mechanism therefor, a movable arm carrying an element of the said locking mechanism, and a treeing mechanism, movable against the said arm, whereby the same may be moved to unlock the tree for the purpose set forth.

4. The tree rotating and stopping mechanism herein described consisting of the revoluble tree M, having sheave $N^3$ with notches $n'$ $n^2$, chain N with pawl link *n*, treadle $N^5$, and detent O, as set forth

5. In a machine for treeing boots and shoes, the combination with a pivoted lever carrying the treeing mechanism and a clutch mechanism connected with the main power shaft, of means substantially as described connected to the said lever, whereby the turning mechanism may be stopped and started by moving the lever substantially as set forth.

**504,766. AUTOMATIC REVERSING DEVICE FOR RAILROAD-TRAINS.** WILLIAM WEAVER, Westport, assignor of one-half to Edwin O. Keeler and Charles Lapham, Norwalk, Conn. Filed Oct. 15, 1891. Serial No. 408,766. (No model.)

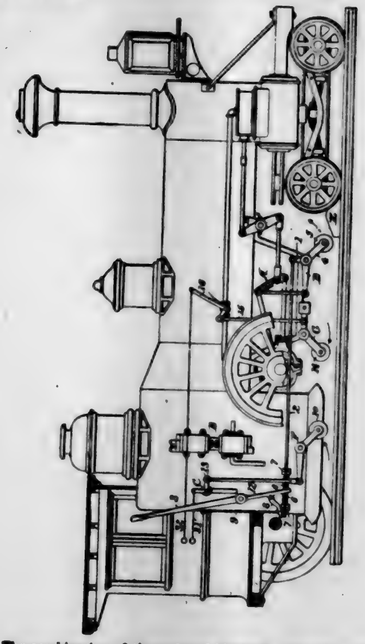
*Claim.*—1. The combination with a railroad bed provided with blocks of a locomotive provided with reversing mechanism, a contact piece connected with the reversing mechanism and arranged in position to make contact with and be shifted by said blocks, substantially as set forth.

2. The combination with the reversing devices of a locomotive, of a contact piece connected with said devices and arranged in position to make contact with blocks or projections upon the road bed, substantially as set forth.

3. The combination with a series of blocks dividing a road bed into sections, each block being connected with a lever, and connecting rods between adjacent levers, of a locomotive provided with reversing and stopping devices and with contact pieces connected with said devices and arranged in position to make contact with said blocks, whereby the locomotive may be prevented from passing into an occupied section, substantially as described.

4. The combination of the series of blocks, each connected with a lever and a connecting rod between each two levers connected to

permit a movement of one lever independently of the other, substantially as set forth.

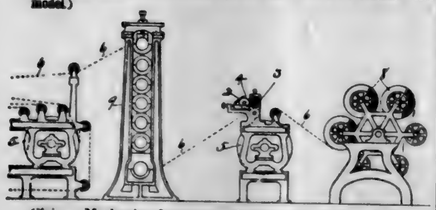


5. The combination of the series of blocks E, series of levers K, and levers L, each connected to one of the blocks and one of the levers K, and connecting rods 24 between the levers L, connected to permit one lever to move in one direction independently of the other, substantially as set forth.

6. The combination of the blocks E, and their operating levers K, and boxes 28, for the levers K, substantially as set forth.

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**504,767. MECHANISM FOR ORNAMENTING PAPER.** SETH WHEELER, Albany, N. Y. Filed Apr. 18, 1893. Serial No. 470,805. (No model.)



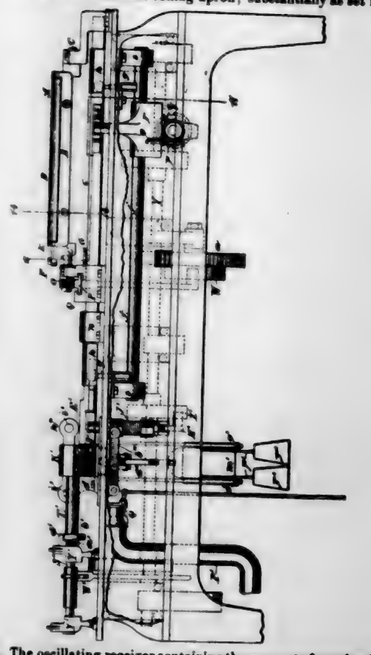
*Claim.*—Mechanism for ornamenting paper, consisting of a heated surface or surfaces and a dampening device arranged to dampen the entire paper uniformly, and having means for conveying said uniformly dampened paper over the heated surfaces until it is dry, and arranged to allow freedom to the drying paper to unevenly contact as the drying progresses, substantially as described.

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**504,768. CIGARETTE-MAKING MACHINE.** JOHN R. WILLIAMS, New York, N. Y. Filed Dec. 27, 1892. Serial No. 456,499. (No model.)

*Claim.*—1. The reciprocating feed jaws resting upon the table, forming between themselves a space for the reception of an elongated body of filler tobacco, combined with a rolling apron, means for severing the said body of tobacco into appropriate lengths, and mechanism for successively moving the said jaws across the rolling apron, opening them to deposit the severed charge and returning them, while open, to their former position to close against the said body of filler tobacco, preparatory to moving a definite portion of the same across the rolling apron on the successive travel of said jaws across the same; substantially as set forth.

2. The reciprocating feed jaws forming between themselves a space to receive the elongated body of filler tobacco, and having upon one end the head whose upper facing edges come into contact with each other, combined with the pivoted knives carried by said jaws and means for causing them to sever the appropriate lengths of said body of tobacco, and mechanism, substantially as described, for reciprocating said longitudinal jaws, opening the same to deposit the charge of tobacco and then returning and closing the same against the remaining portion of the filler tobacco, preparatory to drawing the same forward across the rolling apron; substantially as set forth.



3. The oscillating receiver containing the groove to form the elongated body of filler tobacco, and having separable sides, combined with means for separating said sides when the receiver is in its inverted position, the reciprocating feed jaws, beneath said receiver means for separating said jaws to receive the elongated body of tobacco from the receiver and closing said jaws against the same, and means for reciprocating said jaws to move the end of the body of tobacco across the rolling apron and return said jaws; substantially as set forth.

4. The flexible perforated rolling apron, and the perforated bed supporting said apron, combined with means connecting said bed with a suction blower and means for applying pressure to the tobacco while being rolled; substantially as set forth.

5. The flexible apron secured at one end to the bed and at the other end to a reciprocating roller, combined with means for reciprocating said roller for a portion of its line of travel without rotating it, and additional means for rotating said roller and winding said apron during the remaining portion of its line of travel; substantially as set forth.

6. The flexible rolling apron secured at one end to the rolling table and at the other end to a reciprocating roller, combined with means for reciprocating said roller to carry the apron, and means for winding said apron upon the roller during the latter portion of the forward movement of the latter, and unwinding the same during the first portion of the return movement of the said roller; substantially as set forth.

7. The flexible perforated rolling apron, and the perforated bed supporting said apron, combined with means connecting said bed with a suction blower, and means for rolling the filler tobacco in the loop of said apron, substantially as set forth.

8. The rolling apron, and the table supporting said apron and having at its front edge the pocket *f* to receive the rolled cigarette, combined with the open-frame-slide *b''* in line with said pocket and mounted on horizontal rods *a''*, the knives *g'* carried by said slide, the pivotally mounted spring clip *f''* whose contact surface is in advance



of said knives, and mechanism intermediate said slide and a driving shaft whereby during the rotation of said shaft the said slide is given a horizontal reciprocating movement on said rods; substantially as and for the purposes described.

9. In a cigarette machine a receiver having an elongated groove in which to measure the body of filler tobacco, and a pair of reciprocating feed jaws to receive between them said body of tobacco, combined with the rolling apron in the path of the end of said jaws, means for severing said body of tobacco into lengths, the compressor blade, and means for depressing the said blade into contact with the loop of the apron; substantially as set forth.

10. The pair of reciprocating feed jaws receiving between them the elongated body of filler tobacco, the rolling apron in the path of the end of said jaws, and means for reciprocating and opening and closing said jaws, combined with the compressor blade, and means for depressing said blade into contact with the loop in the said apron; substantially as set forth.

11. The flexible rolling apron forming the loop to receive the filler tobacco, combined with the pivoted compressor blade having a spring tension upward, the weight for depressing said blade into contact with the said loop inclosing the tobacco, and the pivoted dog for locking said blade in its depressed position; substantially as set forth.

12. The flexible rolling apron forming the loop to receive the filler tobacco, combined with the reciprocating frame in line with said apron, the pivoted compressor blade carried by said frame, the weight for moving said frame forward to follow the apron, and the weight connected with said blade to depress the same; substantially as set forth.

13. The rolling apron forming the loop to receive the charge of filler tobacco, combined with the reciprocating frame in line with said apron, the pivoted compressor blade carried by said frame and means adjusting the pressure of said blade against the filler tobacco; substantially as set forth.

14. The oscillating receiver having the elongated groove, the separable sides, the springs drawing said sides together, and the reciprocating cam slide to separate said sides, combined with the pair of separable reciprocating feed jaws to receive the filler tobacco from said receiver, the knives for severing the tobacco into lengths, and the rolling apron in the path of said jaws; substantially as set forth.

15. The pair of reciprocating feed jaws resting on the stationary bed and forming between them the space to receive the filler tobacco, combined with rolling mechanism in the path of said jaws, the arms for opening and closing said jaws and permitting them to move in one direction while open, the arms for reciprocating said jaws back and forth across the rolling apron, and the cutters for severing that portion of the filler tobacco carried across the apron by said jaws; substantially as set forth.

16. The pair of separable reciprocating feed jaws resting on the stationary bed and forming between them the space to receive the filler tobacco, combined with rolling mechanism in the path of said jaws, the knife bars pivoted to said jaws and having cam edges, and the rollers in the path of said cam edges; substantially as set forth.

17. The pair of separable reciprocating feed jaws resting on the stationary bed and forming between them the space to receive the filler tobacco, combined with rolling mechanism in the path of said jaws, the knife bars pivoted to said jaws and having cam edges, the rollers in the path of said cam edges, the springs drawing downward on said rollers, and the cam and arm for elevating said rollers; substantially as set forth.

18. The reciprocating roller, the rolling apron connected therewith and the sleeve within said roller and carrying the pinion and the roller having a flattened edge, combined with the reciprocating spindle or shaft entering said sleeve and carrying pinion wheels, and the guide racks both having teeth their entire length to engage the pinion wheels on the said spindle or shaft, while the inner rack has teeth at one end to engage the said pinion on said sleeve and a plain surface at the other end to engage the flattened edge of said roller on said sleeve; substantially as set forth.

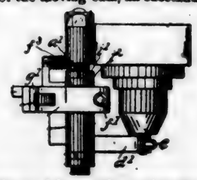
19. The rolling apron forming the loop to receive the charge of filler tobacco, combined with the reciprocating pivoted compressor blade, means for turning said blade downward to engage said loop, the inclined slot in said blade, the pivoted dog to lock said blade in its vertical position and the cam arm and post to turn said dog in line with said slot and free said blade; substantially as set forth.

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**504,769. KNURLING-FIXTURE.** GEORGE E. WITHERELL, Hartford, Conn., assignor to the Hartford Machine Screw Company, same place. Filed Nov. 12, 1892. Serial No. 451,820. (No model.)

*Claim.*—1. In a knurling tool fixture, the combination of a fixed threaded-stem, a knurling-tool holder loosely mounted on the stem, collars on the stem to adjust the holder laterally, a radially adjustable lever on the holder, a rocking-lever to intermittently engage the lever on the holder, and means to rock the rocking lever.

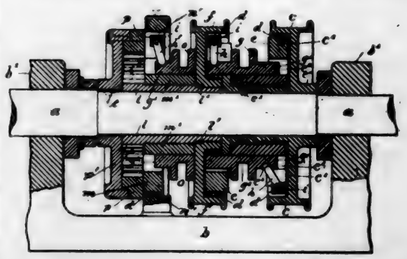
2. In a knurling tool fixture, in combination with a fixed stem, a knurling tool holder loosely supported on the stem, clamping nuts arranged on threaded portions of the stem and on opposite sides of the holder, the arm carrying the knurling tool, an adjustable lever clamped to the holder, the cam lever pivoted to the frame and bearing a cam in operative engagement with the outer end of the lever, the lever operating cams secured to the cam shaft, and a spring arranged to hold the outer end of the lever in operative engagement with the surface of the moving cam, all substantially as described.



3. In a knurling-tool fixture, the combination of a fixed support, a tool-holder on the support formed with an arm, a knurling tool journaled in the end of the arm, a radially adjustable lever on the tool holder, a roller journaled in the free end of the lever, a cam to engage the roller and rock the lever, and a spring to hold the lever and cam in contact.

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**504,770. CLUTCHING MECHANISM.** GEORGE E. WITHERELL, Hartford, Conn., assignor to the Hartford Machine Screw Company, same place. Filed Jan. 19, 1893. Serial No. 458,917. (No model.)



*Claim.*—1. In combination with a spindle and its bearings, mechanism for driving the spindle with a variable speed and comprising a loose pulley mounted on the shaft and driven in one direction, a second loose pulley mounted on the shaft and driven in a reverse direction, the clutch mechanisms as described appurtenant to the pulleys, a sleeve secured to one of the pulleys and turning with it and having on its outer end a pinion, an annular gear fixed on a disk secured to the spindle, a fixed ring appurtenant to the annular gear the disk of the clutch mechanism appurtenant to the fixed ring supporting an intermediate gear located between the annular gear and the pinion and the clutch mechanism appurtenant to the fixed ring, all substantially as described.

2. In combination with a spindle and its bearings two loose pulleys mounted on the shaft and driven normally in opposite directions, clutch mechanisms located between the adjacent faces of the pulleys and adapted to clamp either of them to the shaft a shifter ring that is arranged in operative connection with the clamping parts of the clutch device, a sleeve bearing a pinion secured to one of the pulleys and turning with it and the described mechanism including a fixed ring and clutch and the annular and intermediate gears whereby the rotary movement of the pulley bearing the sleeve and pinion is reduced in speed, all substantially as described.

3. In a clutch mechanism the combination of an expanding ring, a cam block pivoted to one end of the ring on one side of the opening and having on the outer end a cam face cooperating with a cam formed on the end of the ring on the opposite side of the opening, and an eccentric pivot hinging the cam block to the ring, all substantially as described.

4. In combination in a clutch mechanism, an expanding-ring, a pivot-pin bearing an eccentric arranged across a socket in one end of the ring and having one end tapered, and a nut screwed into the side wall of the socket and holding the pin in place and having a tapered perforation into which the tapered end of said pin fits, and a cam-block mounted on the pin and having a cam face cooperating with a cam surface on the opposite end of the ring, all substantially as described.

**504,771.** ROAD-CART. JOHN B. ARMSTRONG, Guelph, Canada; Robert Torrance administrator of said Armstrong, deceased. Filed May 26, 1892. Serial No. 434,426. (No model.)



*Claim.*—1. In a road cart the combination with the axle and shafts, of interposed cyma-reversa single plate draft springs rigidly connected with the axle and shafts, and a body, spring supported from the axle, substantially as and for the purposes specified.

2. In a road cart, the combination with the axle and shafts, of interposed cyma reversa single plate draft springs rigidly connected with the axle and shafts, a body, and single plate elliptic springs rigidly attached to the axle, and which support the body from the axle, substantially as and for the purposes specified.

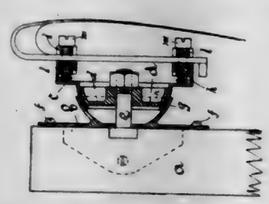
3. In a road cart, the combination with the axle and shafts, of interposed cyma reversa single plate draft springs rigidly connected to the axle and shafts, elliptical single plate springs rigidly attached to the axle, a body supported by the single plate elliptical springs, and strap and spring connections between the front of the body and the shafts, substantially as and for the purposes specified.

4. The combination with the body bar or rest, and the upper spring leaf, of the spring saddle having a recess for the body bar, and a yoke or clip which passes through the body bar and straddles the spring leaf, substantially as and for the purposes specified.

**504,772.** COMPOSITION FOR TREATING LITHOGRAPHIC STONES AND PLATES. EMIL ARNOLD and RICHARD ARNOLD, Leipsic-Plagwitz, Germany. Filed Nov. 10, 1892. Serial No. 451,506. (No specimens.)

*Claim.*—A composition of matter for preparing lithographic stones and plates, consisting of bioxalate of potash, pumice-stone, alum, chloride of magnesium, strong vinegar, sulphuric ether, and water, substantially as and for the purpose described, and in the proportions specified.

**504,773.** SCYTHE. JOHANN BADERTSCHER, Langnau, Switzerland. Filed Jan. 18, 1893. Serial No. 458,835. (No model.) Patented in Switzerland June 30, 1892, No. 5,259, and in France July 4, 1892, No. 222,796.

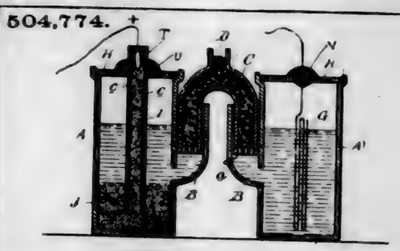


*Claim.*—The device for fixing a scythe blade to its stock consisting of the base *b* adapted to be fixed on the stock and formed with a socket *g*, of the clamp *h* adapted to hold the scythe blade and formed with its part hollow ball *c* fitting in the socket *g* of the washer *d* fitting in the hollow ball *c*, and of a nut *e* adapted to secure the whole together substantially as described.

**504,774.** ELECTROLYTIC CELL. THOMAS CRANEY, Bay City, Mich. Filed Feb. 13, 1893. Serial No. 462,113. (No model.)

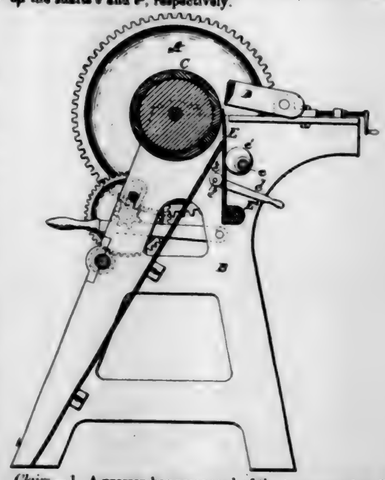
*Claim.*—The combination in an electrolytic cell having separate anode and cathode compartments united by an electrolytic diaphragm, of an anode composed of carbon compacted within a protective tube or casing extending through the liquid of the compartment, and carbon compacted into the bottom portion of the anode compartment itself and around the lower end of said tube or casing, and extending to the walls thereof, substantially as described.

**504,774.**



**504,775.** ROLLER COTTON-GIN. WYMAN DEARBORN, Boston, Mass. Filed Aug. 3, 1891. Serial No. 401,562. (No model.)

*Brief.*—The presser-bar E is adjusted and held secured in any desired position relative to the ginning-roller by the eccentrics $e'$ on the shafts $e$ and $e^2$, respectively.



*Claim.*—1. A presser bar composed of the transverse bar E' and the sheet of steel E fastened thereto, the same being furnished with, and pivoted to the frame of the machine by the pivots $E^3$ which engage with the transverse bar E', in combination with the roller and frame of a roller gin, and with the rod *e* and eccentrics $e'$, which bear upon said sheet of steel in front and about half way from the pivot $E^3$ to the upper edge of said sheet of steel, and with suitable sustaining devices on the back side of said sheet metal E and below said rod *e*, substantially as described.

2. A presser bar composed of the transverse bar E' and the sheet of steel E fastened thereto, the same being furnished with, and pivoted to the frame of the machine by the pivots $E^3$, which engage with the transverse bar E', in combination with the roller and frame of a roller gin, and with the rod $e^2$ and eccentrics $e^3$ thereon, situated below the middle of said sheet of steel, and with suitable sustaining devices on the front side of said sheet of steel and higher than said rod $e^2$ and eccentrics $e^3$, substantially as described.

3. A presser bar composed of the transverse bar E' and the sheet of steel E fastened thereto, the same being furnished with, and pivoted to the frame of the machine by the pivots $E^3$, which engage with the transverse bar E' in combination with the roller and frame of a roller gin and with the rod *e* and eccentrics $e'$ on the front side of said sheet of steel E at about the middle of its height, and with the rod $e^2$ and eccentrics $e^3$ on the back side and below the position of the rod *e* and eccentrics $e'$, substantially as described.

**504,776.** CALCULATING DEVICE. JAMES S. DURET, Noblesville, Ind. Filed Feb. 2, 1892. Serial No. 440,631. (No model.)



*Claim.*—1. The combination, in a calculator, of the base, several detachable strips thereon, spring clamps for holding said strips, a sliding frame mounted upon and adapted to slide over said base and strips and provided with perforations through which the figures on said strips may be seen, and a swinging frame hinged to said sliding frame, the whole being arranged and operating substantially as shown and described.

2. The combination, in a calculator, of the base A having loops *a*, the detachable strips inserted in said loops at one end and passing lengthwise over said base, and spring clamps A' at the other end whereby said strips are held at that point, substantially as shown and described.



**504,777.** SKEWER FOR CLOSING FOWLS. THERESE B. FISCHER, Baltimore, Md. Filed Apr. 1, 1893. Serial No. 468,627. (No model.)

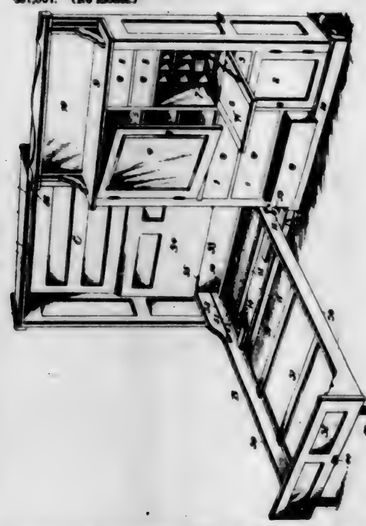


*Claim.*—1. A skewer, composed of a central stem provided with cross-pieces having prongs on their outer ends, substantially as described.

2. A skewer, the central stem formed of one piece of wire bent upon itself and twisted together and provided with cross pieces having prongs on their outer ends, substantially as described.

3. A skewer, the combination of the central stem, with the adjustable cross-pieces supported therein, substantially as described.

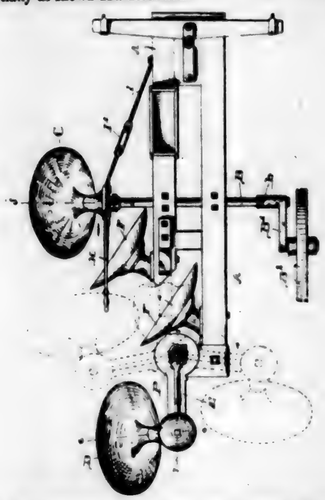
**504,778.** COMBINED FOLDING BED AND DRESSING-CASE. JOHN FLORY, Grand Rapids, Mich. Filed Mar. 23, 1893. Serial No. 467,367. (No model.)



*Claim.*—The combination with a folding-bed-casing having a groove along its top, and a trough projecting forward from the bottom of the casing, said trough being open at its right end and there having a notch in its bottom; of a dressing case or the like having a strip of L-shaped cross section whose depending lip travels normally in said groove, a depending molding at the front edge of said case standing just forward of the raised front of said trough, a depending guide-strip on said case standing just in rear of said raised front, and three rollers carried by the lower end of said case, the two smaller of which travel within the trough in rear of said guide-strip while the larger one travels on the floor and enters said notch when the parts are housed, as and for the purpose set forth.

**504,779.** ROTARY PLOW. MILTON T. HANCOCK, Shreveport, La. Filed Oct. 20, 1892. Serial No. 449,489. (No model.)

*Claim.*—1. The combination, with a rotary plow, of a guide-wheel mounted on an inclined shaft, secured to the rear end of the frame in position behind the plowing disk and running in the last furrow plowed, and arranged to resist the side strain of the plowing disks, substantially as shown and described.



2. The combination, with a rotary plow, of a guide-wheel mounted at the rear end, and mountings therefor secured to a pivot, whereby said guide-wheel is enabled to swivel, in turning, like a caster-wheel and provided with engaging devices whereby it is held in line in ordinary operation, substantially as set forth.

3. The combination, with a rotary plow, of a rear guide-wheel, a bearing on the framework having raised portions on its face, an arm carrying the guide-wheel and having raised portions on its face, said two faces being brought together when the parts are assembled, and whereby they are held to position in the usual operation of plowing, but are permitted to swivel on occasion, substantially as set forth.

4. The combination, with a rotary plow, of a rear guide-wheel, an arm on which it is mounted, and bearings on said arm and on said frame-work having corresponding raised portions or projections which fit between each other, a pivot-bolt securing the two together, and a spring surrounding said pivot-bolt whereby they are held in forcible but yielding contact, substantially as set forth.

5. The combination, with a rotary plow, of the rear guide-wheel, a swinging arm on which the same is mounted, means whereby said arm is connected to the frame-work, and a spring whereby said arm and the portion to which it is attached are held into forcible but yielding contact, substantially as set forth.

6. The combination, with a rotary plow, of a guide-wheel secured to the rear end of the frame in position behind the plowing disk, the spindle of said guide-wheel being inclined slightly to the rear, whereby said guide-wheel is given a "lead" opposite to the side pull of the plowing disk, substantially as shown and described.

7. The combination, in a rotary plow, of the frame A one beam whereof extends farther to the rear than the other, the axle B having the land-wheel $B^2$ upon one end and the adjustable staggered guide-wheel upon the other end, two or more plowing disks separately mounted upon the two beams of the frame-work, and a rear guide-wheel secured behind the whole, substantially as shown and described.

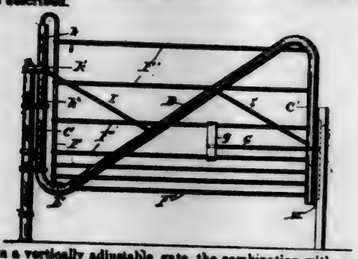
8. The combination, in a rotary plow, of an axle having a vertical bar H' upon one end carrying a guide-wheel or a bearing therefor, and a stay-rod I extending from said bar forward to the frame-work with a turn-buckle I' therein, whereby it may be adjusted, and the "lead" of the guide-wheel thus varied, substantially as set forth.

9. The combination, in a rotary plow, of a guide-wheel mounted at a point to one side of the axis on the axle, and an adjustable stay-rod connecting the bearing or support upon which it is mounted to the frame-work, whereby the "lead" may be varied as required, substantially as set forth.

**504,780.** GATE. HORATIO D. HERRINGTON, Leslie, Mich. Filed Apr. 11, 1893. Serial No. 469,898. (No model.)

*Claim.*—1. In a vertically adjustable gate, the combination with the gate, the vertical tubular end portions and a diagonal tubular brace formed integral therewith, the inner vertical end portion having apertures formed therein; of a hinge post; a casing on the post;

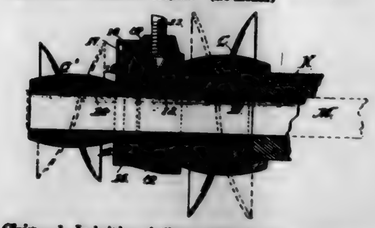
eye plates connecting the casing and gate; a connecting plate; a hook embracing the hinge post and resting on the connecting plate adapted to engage any of the apertures in the inner end portion of the gate, and means for securing the parts on the hinge post, substantially as described.



2. In a vertically adjustable gate, the combination with a gate having tubular vertical end portions connected by a tubular diagonal brace formed integral therewith, the inner end portion having apertures formed therein, of a hinge post, a casing on the hinge post, a connecting plate, a hook embracing the hinge post, and resting on the connecting plate eye plates rigidly connected to the end portion of the gate, connecting the gate and casing, collars on the casing on which rest the eye plates when the gate is in its lowermost position and means for securing the parts on the hinge post, substantially as described.

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**504,781. BRICK OR TILE MACHINE.** WILLIAM S. HIGBY, Royalton, Ohio, assignor to the Frey-Shenkir Company, same place. Filed Apr. 1, 1892. Serial No. 428,707. (No model.)



*Claim.*—1. In brick and tile machines having a chamber or cylinder in which the clay is mixed, a hollow shaft carrying a propeller, a shaft within the hollow shaft, and a vertically disposed flange carried by the inner shaft and adapted to rest against the end of the hollow shaft to prevent the admission of clay between the shafts.

2. In brick and tile machines having a chamber or cylinder, in which the clay is mixed, a hollow propeller shaft having an inner bore at its outer end, a shaft within the hollow shaft having a bushing provided with a vertical flange adapted to bear against the end of the hollow shaft and its bushing to close the joint and prevent the admission of clay between said shafts.

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**504,782. FILE.** JAMES W. HIRE, Jamestown, N. Y., assignor to the Fenton Metallic Manufacturing Company, same place. Filed Apr. 28, 1892. Serial No. 430,519. (No model.)

*Claim.*—1. The combination in a file case of files provided with inner ribs 2, upon their forward plates and cases provided with transverse sockets 3, adapted to receive said ribs, substantially as described.

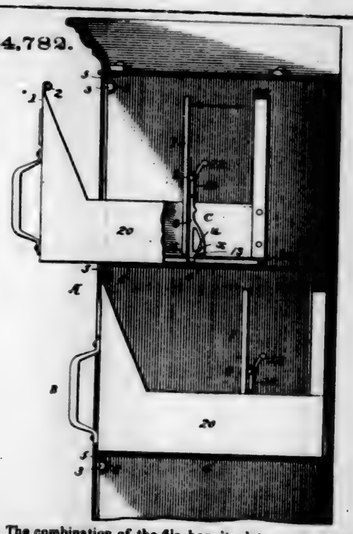
2. A file case provided with a metallic bar bent to form a forward rib 5, and curved flange 6, and socket 3, in combination with a file box having a front plate, 1, and transverse rib 2 substantially as set forth.

3. The combination in a file box having a bottom slot of a follower plate 7, a brace C, having a sliding connection with the follower plate, and having also a projection entering said slot, substantially as set forth.

4. The combination in a file box, of the follower plate and brace, jointed thereto and provided with an upwardly extending inclined finger 12, above the joint which connects the follower plate with the brace and against which the plate may rest when the plate is thrown back at an angle substantially as described.

5. The combination in a file box provided with a guide slot *y*, of a stop 14, at the end of said slot, a follower plate, and a clamping brace to which the follower plate is secured constructed to swing over and engage with the said stop, substantially as set forth.

**504,782.**



6. The combination of the file box, its slot *y*, stop 14, and the follower plate and brace provided with lugs 13 and 15, and with the recess *u*, substantially as set forth.

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**504,783. VEHICLE-SHAFT.** ISAAC HOGELAND, Chicago, Ill. Filed Apr. 21, 1892. Serial No. 430,153. (No model.)



*Claim.*—1. A metal shaft-coupling having a bore for the shaft, a bore for the cross-piece extending at a right angle to the shaft-bore, and a trace-hook chamber between the two said bores, substantially as described.

2. A metal shaft-coupling C comprising an L-shaped casting having a shaft-bore *q*, a cross-bar bore *p* and an intermediate trace-hook chamber, in combination with a trace-hook E, having a spring-controlled rod-portion P confined in said chamber, substantially as described.

3. A metal shaft-coupling C, comprising an L-shaped casting having a shaft-bore *q*, a cross-bar bore *p* and an intermediate trace hook chamber *i* forming internal shoulders *o* and *n*, in combination with a trace-hook E having the projecting hook-portion *e* on a rod *f* in the chamber and carrying stops *g* and A, and a spring *m* confined in the chamber, substantially as described.

4. In combination with the coupled shafts A, hold-backs D, each comprising a sleeve having a set-screw *d'* for fastening it to the shaft and normally extending at an angle outward therefrom, and a loop *d* extending backward from the rear end of the sleeve, substantially as and for the purpose set forth.

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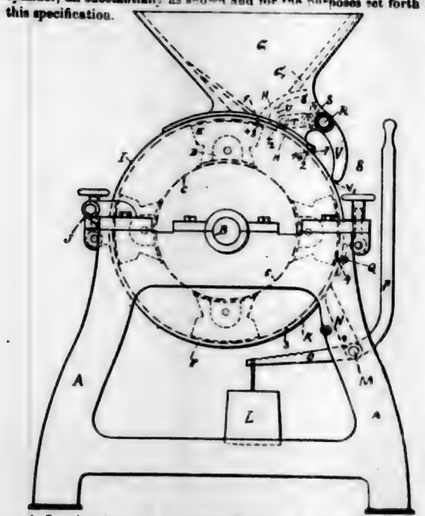
**504,784. HOMINY-MILL.** RAY S. JENKINS, Terre Haute, Ind. Filed Jan. 23, 1893. Serial No. 459,682. (No model.)

*Claim.*—1. In a hominy mill, the combination with the feed hopper and the cylindrical casing, of an inlet door formed of two curved wings, one wing fitted to close the longitudinal opening in the cylindrical casing, and swinging upon a rounded edge of this inlet opening, the second wing having a cylindrical surface abutting a side of the feed hopper, substantially as shown and for the purposes set forth in this specification.

2. In a hominy mill, the combination with the feed hopper and the cylindrical casing, of a two winged door, a lug fitted thereto, a rack shaft, a link, link pins, a crank and operating handle, arranged substantially as shown and for the purposes set forth in this specification.



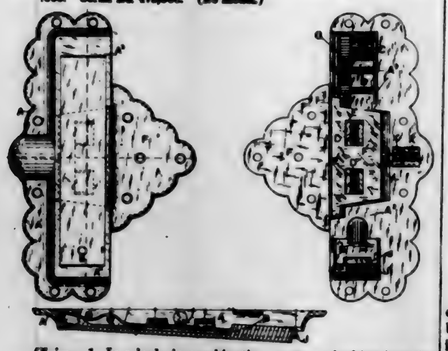
3. In a hominy mill, the combination with the knife cylinder of a two edged sheet metal knife, a pair of angular lug pieces, one leg of each of which lug pieces being curved to fit the surface of the knife cylinder and provided with holes or slots for bolting thereto, the second leg of each of said lug pieces being flat and provided with bolt holes, a clamp bolt binding the sheet metal knife between the pair of lug pieces, and clamp bolts binding the lug pieces to the knife cylinder, all substantially as shown and for the purposes set forth in this specification.



4. In a hominy mill, the combination with the knife cylinder, of a series of pairs of angular lug pieces bolted thereto, a sheet metal knife bound between each pair of lug pieces by means of a clamp bolt, substantially as shown.

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**504,785. LOCK.** JOSHUA L. JOHN, Chicago, Ill. Filed May 8, 1893. Serial No. 473,280. (No model.)



*Claim.*—1. In a lock, in combination, a case, a locking bar pivotally secured thereto at one end, a catch plate capable of engaging with the bar at substantially right angles to the plane of its vibration, a stop for automatically engaging with the bar and holding it in its unlocked position, and automatic means for moving the bar into its locked position when it is released from the stop, substantially as set forth.

2. In a lock, in combination, a case, a spring actuated vibratory locking bar pivotally secured thereto at one end, a catch plate and a spring actuated stop, each capable of engaging with the bar at substantially right angles to the plane of its vibration, and also capable of engaging with each other, and the bar being in engagement with the plate when locked and with the stop when unlocked, whereby, when the plate engages with the stop and forces it back, the bar automatically engages with the plate, and when the bar is disengaged from the plate, the stop automatically engages with the plate and forces it out of the case, substantially as set forth.

3. In a lock, in combination, a case, a vibratory locking bar therein, provided with lugs upon its under side, a spring actuated stop normally resting with one end under the bar, and a perforated catch plate capable of engaging with the bar at substantially right angles to the plane of its vibration, and having its nose adapted to engage with the stop and force it back from under the bar when the plate is in such a position that the lugs on the bar will enter the holes of the plate when the bar is released from the stop, substantially as set forth.

4. In a lock, in combination, a case having a base portion and an extension at each end, a locking bar having its central portion spanning the space between the extensions and with one end pivotally secured to one extension and having the other end adapted to be secured to the other extension, and a catch plate capable of engaging with the bar between the extensions, substantially as set forth.

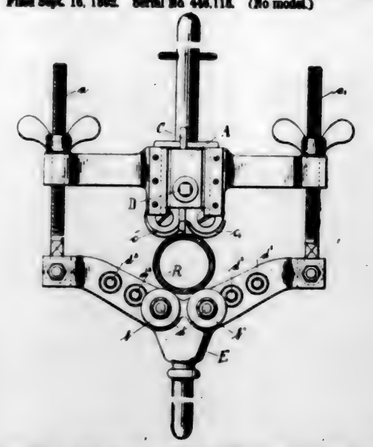
5. In a lock, in combination, a case having a base portion and an extension at each end and having a ledge between the extensions, a catch plate between the extensions, and a locking bar, the ends of which rest upon the bottoms of the extensions, and the central portion rests upon the ledge and the catch plate, substantially as set forth.

6. In a lock, in combination, a case, a locking bar pivotally secured thereto at one end, a spring secured to the central portion of the bar at one end and having its opposite end passed through the bottom of the extension at that end and adapted to bear against the end of the bar beyond its pivotal point, and a catch plate for engaging with the bar, substantially as set forth.

7. In a lock, in combination, a case having a base portion and an extension at each end thereof, a locking bar between the extensions, with each end in engagement with its respective extension, a longitudinally movable spring actuated stop mounted in the base of the case, one end of which, normally engages with the under side of the bar and holds it in an unlocked position, and a catch plate for engaging with the stop and moving it longitudinally from under the bar, substantially as set forth.

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**504,786. TUBE-CUTTER.** FELIX JUPPHANN, Berlin, Germany. Filed Sept. 16, 1892. Serial No. 446,118. (No model.)



*Claim.*—1. A tube cutter comprising the handle portion having diverging arms with bearing rollers carried thereby, a head portion or bar having its ends adjustably and detachably connected to the diverging arms and provided with bearing rollers and a suitable cutter carried by said head portion, substantially as described.

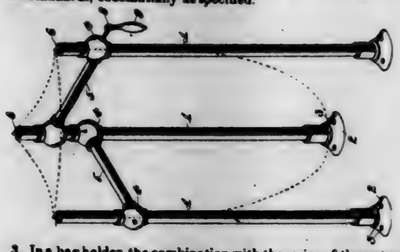
2. A tube cutter comprising the handle portion having diverging arms provided with a series of openings, a pair of rollers removably journaled in said openings, a head bar having its ends adjustably connected to the handle portion and provided with bearing rollers and a cutter carried by said head portion, substantially as described.

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**504,787. BAG-HOLDER.** JOHN S. KOUPS, Hatcher, Miss. Filed June 6, 1893. Serial No. 476,972. (No model.)

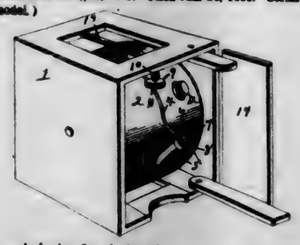
*Claim.*—1. In a bag-holder, the combination with the series of standards provided near their upper ends with hollow couplings, of transverse connecting pipes, pins located in the upper ends of the pipes and couplings, rock-shafts located in the pipes, cranked opposite the couplings and loosely connected with the pins, and means for rotating said shafts, substantially as specified.

2. The combination with the hollow standards, of the shafts journaled at their ends in said standards, and the reciprocating pins connected to the shafts and located in and projecting from the upper ends of the standards, substantially as specified.



3. In a bag holder, the combination with the series of three standards, the end standards being provided with single couplings, and the central standard with a pair of couplings, hollow pipes connecting the central couplings with those of the end standards, and pins mounted in each of the said couplings, of a pair of transverse or horizontal rock-shafts mounted in the transverse pipes, said rock-shafts having their inner ends journaled in the central couplings, their outer ends journaled in the end couplings, a turn buckle connection between the inner cranks, one of said shafts being extended beyond its outer bearing, a weighted handle thereon, said shafts being provided co-incident with the couplings with cranked portions disposed opposite to the weighted handle and loosely connected with the pins, substantially as specified.

**504,788.** OIL-CAN. DAVID A. LISK, Clifton Springs, and TRISTRAM D. BROWN, Canandaigua, N. Y. Filed Jan. 28, 1893. Serial No. 459,979. (No model.)



*Claim.*—A device for closing the spout of a pivoted can, consisting of a stopper located in the path of the spout of said pivoted can, a universal joint having one member thereof secured to a stationary support and its other member pendent and secured to and supporting said stopper, as set forth.

**504,789.** CARTRIDGE IMPLEMENT. THOMAS M. PIERCE, Concord, Mass. Filed Dec. 17, 1892. Serial No. 455,444. (No model.)



*Claim.*—A tool for crimping and closing the end of a paper tube consisting of a cylindrical body a working face at one end depressed centrally and radially from the circumference toward the center, and consisting of a series of steps or angular portions in circular lines one within the other.

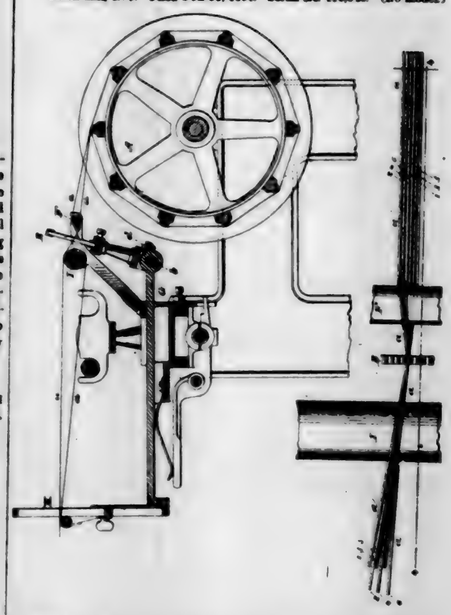
**504,790.** CAR-WHEEL. JOHN ROLLINS, Scranton, Pa. Filed May 20, 1893. Serial No. 474,956. (No model.)



*Claim.*—1. The combination of a railway car wheel provided with an annular peripheral rib, a tire composed of a series of sections provided on their inner ends with grooves adapted to receive the peripheral rib on the wheel, and means for rigidly connecting the sections of the tire together, substantially as described.

2. The combination of a railway car wheel provided with an annular peripheral rib, of a tire composed of a series of sections each of which is provided on its inner face with a groove adapted to receive the rib on the wheel, lugs attached to said sections and extending partially over the body of the wheel, and means for rigidly connecting the lugs on adjacent sections, substantially as and for the purpose described.

**504,791.** WARPING OR BEAMING MACHINE. ROBERT SIMON, Union Hill, N. J. Filed Dec. 30, 1891. Serial No. 416,543. (No model.)



*Claim.*—1. In a warping or beaming apparatus the combination of the spreading-reed B with the bar F placed in front thereof, means, substantially as described, for supplying thread to opposite sides of the bar F, and with the beam or drum A placed in front of said bar, all arranged to insure the crossing of the warp-threads as they issue from the spreading-reed, substantially as herein shown and described.

2. In a warping and beaming machine, the combination of the separator bars F and I over and under which the threads are adapted to pass and a reed B placed between said bars, substantially as and for the purposes described.

3. The combination of the spreading-reed B and the drum or beam A, with the bar F interposed between said spreading-reed and said drum, and with the bar I placed behind said spreading-reed, said bars I and F being so proportioned that the threads of the warp must be crossed before they reach the bar F, and after they pass the spreading reed, substantially as herein shown and described.

**504,792.** SEWING-MACHINE. EUGENE SMITH, Philadelphia, Pa. Filed Jan. 26, 1892. Serial No. 419,291. (No model.)

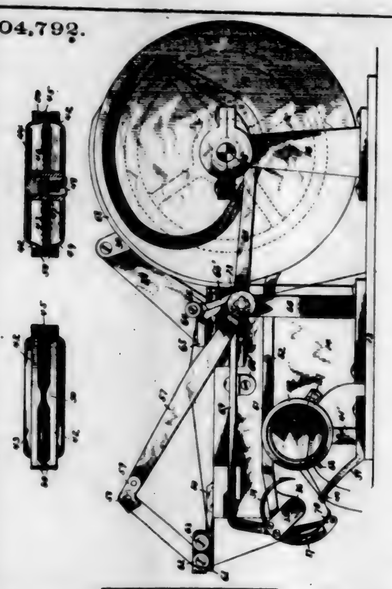
*Claim.*—1. The combination of a needle, a looper bar, the stationary concentric rings provided on their inner faces with a series of coincident projections, a bobbin case provided with an annular rib which fits between the projections on said rings, and a loop carrying hook adapted to be oscillated about the bobbin-case, substantially as described.

2. The bobbin case herein shown and described, consisting of a hollow case open at one side and provided with a hollow divided threaded spindle, a thread spool fitted on the hollow spindle, and a cone screw adapted to be screwed into the hollow spindle, substantially as described.

3. The combination of a needle, a looper bar, the stationary parallel rings, a bobbin case arranged between the rings and provided with a hollow divided spindle, a thread spool mounted on said spindle, a cone screw adapted to be screwed into the divided spindle and a loop carrying hook adapted to be oscillated about the bobbin case, substantially as described.



**504,792.**



**504,793.** PNEUMATIC TIRE. FREDERICK H. SPRANG, London, England. Filed May 16, 1893. Serial No. 474,453. (No model.)



*Claim.*—1. The treatment of rubber with oil after vulcanizing whereby the bulk or volume of that portion of the rubber which has absorbed the oil is increased.

2. A pneumatic tube or tire treated with oil after vulcanizing.

3. A pneumatic tube or tire in which a portion only of the thickness of the rubber has absorbed the oil.

4. A pneumatic tire consisting of an air tube which has absorbed oil after vulcanizing and a cover.

5. A pneumatic tire consisting of an air tube which has absorbed oil after vulcanizing a canvas pocket and an outer cover.

6. A pneumatic tire consisting of an air tube which has absorbed oil after vulcanizing.

**504,794.** LEGGIN. EDWIN B. STURGEON, Brooklyn, N. Y. Filed Nov. 25, 1891. Serial No. 413,065. (No model.)



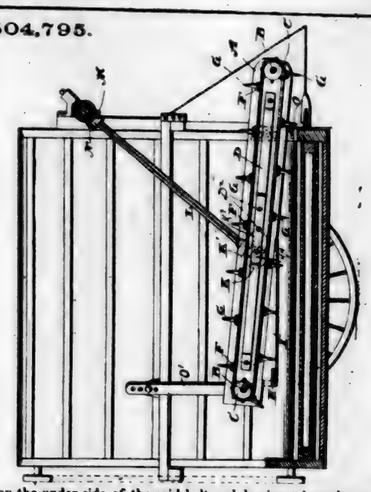
*Claim.*—1. A leggin of flexible material, open at the side, provided with normally expanding spring bands extending transversely around the leggin at different points in its length, and with means for holding the leggin closed and the said spring bands under tension, substantially as set forth.

2. A leggin of flexible material, open at the side and having annular spring-pockets extending transversely around it at different points, said leggin being provided with normally expanding spring bands which occupy said pockets, and with fastening devices at the ends of said springs to hold the edges of the leggin together and maintain a tension on the spring, substantially as set forth.

**504,795.** HARVESTER-REEL. CARL P. WALL, La Crosse, Wis. Filed Jan. 26, 1893. Serial No. 459,813. (No model.)

*Claim.*—In a harvester reel the combination with an endless belt provided with teeth, of a clearer located at the rear end of the reel upon the under side of the said belt and having triangular arms to intermesh with the teeth of the belt and just clear the same, the belt being inclined and the triangular arms of the reliever being arranged horizontally with their inclined faces uppermost.

**504,795.**



**504,796.** STOP MECHANISM FOR SPOOL-CARRIERS. ADOLPH BAYLER, New York, N. Y., assignor to Louis Raffloer, same place, and Charles H. Schott, Brooklyn, N. Y. Filed Apr. 1, 1893. Serial No. 468,629. (No model.)



*Claim.*—1. In a stop mechanism for spool-carriers, the combination of the drum B for applying tension to the thread, cam *f* operated by said drum, pin *g*, and means for connecting said cam and pin, substantially as and for the purposes specified.

2. The combination of the tension drum B, cam *f* carried by said drum, pin *g*, and lever C for operating said pin, all arranged so that when tension is relieved from the drumb B, the pin *g* will be released, substantially as described and for the purposes specified.

3. A vertically sliding pin, a tension slide *c* for the thread, a support for a spool, a tension drum connected with said tension slide, and mechanism connecting said drum with said pin, all combined and arranged to hold the pin raised whenever the drum is under tension, and to allow said pin to drop when the drum is not under tension, as specified.

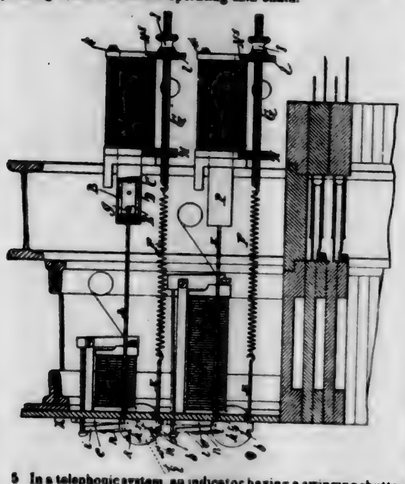
**504,797.** RESTORING SYSTEM FOR ANNUNCIATORS. LOUIS A. BERTRON, Paris, France, assignor to the Société Générale des Téléphones, (Ressaux Téléphoniques et Constructions Électriques.) Filed May 17, 1893. Serial No. 474,548. (No model.) Patented in France Jan. 31, 1893, No. 227,557.

*Claim.*—1. In a telephonic system, a movable indicator in combination with an electro-magnet for restoring said indicator when actuated, an electric circuit for supplying an electric current to said magnet, an electric switch in said circuit controlling communication therethrough, and a pulley operated by said magnet and engaging said indicator to move it to the restored position, whereby the operator can restore said indicator by operating said switch.

2. In a telephonic system, a movable indicator in combination with an electro-magnet for restoring said indicator when actuated, an electric circuit for supplying an electric current to said magnet, an electric switch controlling the current through said circuit, and a pulley operated by said magnet and having a stud engaging said indicator and restoring it when operated by said magnet.

3. In a telephonic system, an indicator having a swinging shutter, in combination with a rotative pulley adjacent thereto having two studs, one acting to stop its rotation and the other engaging the shutter elastically and moving it to the restored position.

4. In a telephonic system, an indicator having a swinging shutter, in combination with a rotative pulley engaging this shutter and moving it to the restored position, a chain passing over said pulley and operating it, and a solenoid operating said chain.

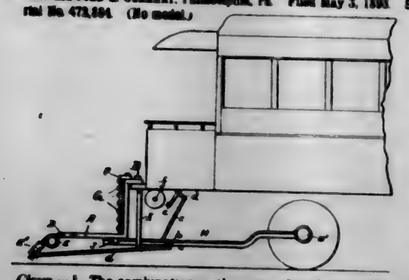


5 In a telephonic system, an indicator having a swinging shutter, in combination with a rotative pulley engaging this shutter and moving it to the restored position, a chain passing over said pulley and operating it, a solenoid operating said chain to move said pulley toward the restored position, and a spring operating said chain in the reverse direction.

6 In a telephonic system, an indicator having a swinging shutter, in combination with a solenoid for restoring said shutter having a central tube, a core having rollers moving in said tube, a chain actuated by said core, and a pulley engaging said shutter and moved by said chain to restore the latter

7 In a telephonic system, an indicator in combination with a solenoid for restoring the same, electric conductors for supplying a current to said solenoid, and a switch connected to said conductors and consisting of a sliding piece pressed out of contact by a spring and adapted to be pressed into contact to close said circuit by the operator's plug

## 504,798. SAFETY ATTACHMENT FOR CARS. ISORAM W SIPSME and JOHN E. GERHART, Philadelphia, Pa. Filed May 3, 1893. Serial No. 473,694. (No model.)



*Claim.*—1 The combination with a car, of an L shaped frame the upper end of which is pivotally attached to the forward end of the car, and the lower end of which projects forward forming a shelf, a spring guard secured to the forward ends of the sides of said L shaped frame and extending downward and forward, and from one side to the other of said frame, and the lower part of which is covered with rubber tubing or some other yielding material, and an upholstered screen secured to and extending across the front of the vertical part of said L shaped frame

2. The combination with a car of an L shaped frame the upper part of which is pivotally attached to the forward end of said car and the lower part of which projects forward, a spring guard as described, carried by the forward end of the lower part of said frame, a guide beam one end of which is carried by the forward axle of the car and which projects horizontally forward from this axle and the front end of which is secured to the L shaped frame, and a stirrup carried by the car and supporting the forward end of said guide beam.

3. The combination with a car of the L shaped frame, the spring guard attached to the forward end of said frame as described, a guiding beam for keeping said frame parallel to the front axle of the car, a rod connected at one end to said spring frame and at the other to a bell crank lever pivoted upon said guiding beam, said bell crank lever, a rod connecting said bell crank with a second bell crank lever, said second bell crank lever, and a bell operated by said second bell crank lever, all substantially as and for the purposes set forth

## 504,799. MACHINE FOR STRIPPING AND BOOKING LEAF-TOBACCO. CHARLES BOWMAN, Hanover, Pa. Filed June 19, 1893. Serial No. 478,079. (No model.)



*Claim.*—1 In a machine for stripping and booking leaf-tobacco, a grooved seat for the stem of the tobacco-leaf, and a guide roller and rollers having cutting disks located over it, substantially as and for the purpose set forth

2 In a machine for stripping and booking leaf-tobacco, a stem support having a tapering grooved seat, and a roller to guide the stem located over the seat and rollers having cutting disks also arranged over the grooved seat, substantially as and for the purpose described.

3 In a machine for stripping and booking leaf-tobacco, a stem support having a grooved seat, a guide-roller and rollers having cutting disks located above the grooved seat, and means for feeding the stem forward after being removed from the leaf, substantially as and for the purpose specified

4 In a machine for stripping and booking leaf-tobacco, a chute and a feeding device having radial feeding blades, substantially as and for the purpose set forth

5 In a machine for stripping and booking leaf-tobacco, a stem support having a grooved seat, an elastic guide-roller located over the seat, suitable cutting disks and an elastic roller located between the cutting disks, substantially as and for the purpose set forth.

6 In a machine for stripping and booking leaf-tobacco, a stem support having a grooved seat, an elastic guide-roller located above it, suitable cutting disks and leaf supporting means an elastic roller located between the cutting-disks, a chute having a short track on line with the grooved seat, and a feeder located over the chute, substantially as and for the purpose described

## 504,800. MOTOR-TRUCK. JOHN A. BRILL, Philadelphia, Pa. Filed Mar. 1, 1892. Serial No. 423,343. (No model.)

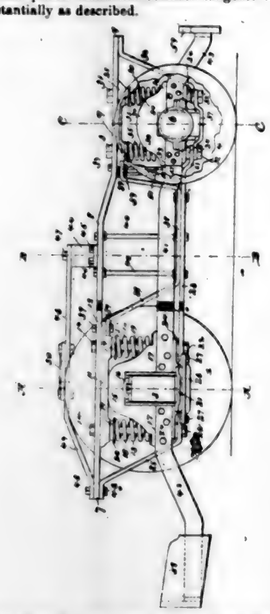
*Claim.*—1 In a motor truck, the combination of a truck frame, axles and wheels of different diameters, a frame supported on the running gear independently of the truck frame, the said frame being at one end of less diameter between their side members than the distance between the wheels, such reduced ends being supported on the running gear between the smaller wheels, both frames following substantially the same outline, and a support for a motor secured to the reduced end of the independent frame between the parallel vertical planes which are common tangents to the smaller wheels, substantially as described

2 In a motor truck, the combination, with the wheels, axles, axle-boxes, axle-box saddles and a truck frame, of a frame resiliently supported from the axle-boxes and forming an axle-box frame independent of the truck frame, a motor and a support for one end of the motor secured to the independent frame within the parallel vertical planes which are common tangents to one set of wheels, substantially as described

3 In a motor truck, the combination of a truck frame, axle boxes, and carrying wheels of different diameters, a frame supported on the axle boxes independently of the truck frame, the independent frame



being at one end of less diameter between its side members than the distance between the wheels, such reduced end being supported on axle boxes between the smaller wheels, and a support for the motor secured to the reduced end of the independent frame between the parallel vertical planes which are common tangents to the smaller wheels, substantially as described.



4. A truck having a frame proper, large and small wheels, axle boxes on the axles without the large and within the small wheels, and an additional frame supported independently of the truck frame, both frames being supported on the running gear without the large and within the small wheels, substantially as described.

5. In a motor truck, the combination with driving and trailing wheels, of two frames forming the truck body, having a resilient connection between them, whereby their vertical movements are independent of each other, each of said frames having supports on each axle fore and aft of that axle, one of said frames supporting the car body, and the other carrying a motor support, which lies between the parallel vertical planes which are common tangents to one set of the wheels, substantially as described.

6. In a motor truck, the combination, with driving and trailing wheels, of two frames forming the truck body, having a resilient connection between them, whereby their vertical movements are independent of each other, said frames following substantially the same outline, one of said frames supporting the car body, and the other carrying a motor support which lies between the parallel vertical planes which are common tangents to one set of the wheels, substantially as described.

7. A pivotal truck having wheels, a frame comprising an element for sustaining the pivotal devices, a supplemental element below the first-named between which two the car springs extend, the pivotal devices permitting the truck to have a greater arc of movement at one end than at the other, the frame being so conformed that a portion of the end of the same, including both elements, at which there is the larger arc of movement, will have a lateral vibration within two outer limits more restricted than have the wheels at that end, substantially as described.

8. A pivotal truck having a frame comprising a pivot-plate element and a supplemental element below the first-named, between which two the car springs extend, both elements being wider than the distance between the wheels at one portion and narrower than that distance at another portion, both frames extending between the forward and rear axles with the car springs about the axle boxes at both ends, the pivot plate being within the widest portion of the frame, substantially as described.

9. In a car truck, the combination of a continuous upper chord, having side members inclined inwardly from front to rear a lower chord, of similar construction an arched brace 38 depending from the upper chord, and uniting it with the lower chord, and posts 40 uniting the upper chord with the arched brace, substantially as described.

10. In a car truck, the combination of a continuous upper chord, having side members inclined inwardly from front to rear a lower chord, of similar construction terminal angle braces uniting the upper and lower chords, an intermediate arched brace unitjug the same, and vertical struts or posts uni.ng the same, within the arched brace, substantially as described.

11. A motor truck having axle boxes without the wheels at one end and within the wheels at the other, a continuous upper chord, axle box saddles, and lower braces for them, cars on the saddles and springs between the cars and upper chord, one end of the upper chord being narrower than the other, the narrow end, and its springs and bracing being supported on the inside axle box saddles entirely between the wheels, substantially as described.

12. A motor truck having wheels of different diameters, the larger wheels being at one end, and the smaller at the opposing end, axle boxes without the larger wheels, and within the smaller wheels, and a truck frame comprising a continuous upper chord and lower bracing therefor, axle box saddles, and springs between the axle box saddles and upper chord, one end of the upper chord being narrower than the other, the narrow end and its springs and bracing being supported on the inside axle box saddles entirely within the wheels, substantially as described,

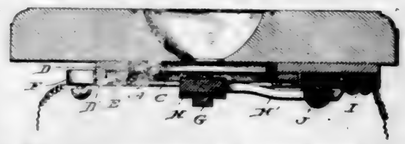
13. In a truck, the combination, with a frame comprising a continuous upper member or chord and bracing secured to and continuous with the sides of the upper chord and depending therefrom, the said bracing following the contour of the said upper chord, one end of said frame being reduced in width to clear the wheels, of running gear and springs between said upper chord and bracing, substantially as described.

14. In a car truck, the combination with the upper chord, of the arched and transverse bolster beam 44 resting upon the upper chord, and the semi-arched beams 46, 49 secured at one end to the beam 44 and to the said chord at the other, and the center bearing 50 on the beam 46, substantially as described.

15. In a motor truck, having driving and trailing wheels, the combination, with the running gear, of an axle box frame uniting the axle boxes and having a support for the motor, and an upper frame, having a motion independent of the motor supporting frame, and receiving the weight of the car body, and transmitting it directly to the driving wheels at points without those wheels, and to the trailing wheels at points within those wheels, substantially as described.

16. The combination, with a car, of a truck having large wheels at one end and smaller wheels at the other, the truck and car being pivotally united so as to secure a greater radial movement between the car and truck at one end than at the other, the sides of the car having secured thereto steps projecting outwardly at a height below the top of the larger wheels, and above the top of the smaller wheels, substantially as described.

## 504,801. TELEPHONE-TRANSMITTER. JAMES A. BROWN, Moline, Ill. Filed Apr. 26, 1893. Serial No. 471,800. (No model.)




*Claim.*—1. The combination with an electric circuit, of a diaphragm and electrodes with grained surfaces, one carried by the diaphragm and the other by a yielding support, the electrodes being arranged substantially at right angles to each other, as specified.

2. In a combination with the diaphragm of a telephone transmitter for transmitting articulate speech, an electrode having a grained surface and adapted to be actuated by the vibration of the diaphragm, to move in contact with a second electrode also having a grained surface, substantially as described.

3. In a telephone transmitter, in combination, the diaphragm, the electrodes having grained surfaces adapted to be moved in intermittent contact by the vibrations of the diaphragm and means substantially as described, for adjusting the electrodes relative to one another, substantially as described.

4. In a telephone transmitter, two grained surfaced electrodes at right angles to each other and normally in contact and adapted to be actuated by the vibration of the diaphragm, substantially as shown and described.

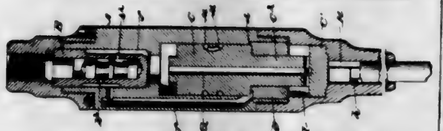
5. In a telephone transmitter, in combination with the diaphragm, of two electrodes at right angles to each other and having grained surfaces normally in contact and adapted to be actuated by the vibra-

tion of the diaphragm, substantially as shown and described and for the purpose specified.

6. A long distance electric telephone transmitter having two electrodes of any electric conductive material with grained surface in intermittent contact in which the motion of the diaphragm actuates an electric circuit, producing in such circuit a pulsatory current to correspond with the vibrations of the voice or any sound, substantially as set forth.

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**504,802. PNEUMATIC TOOL.** DANIEL DRAWBAUGH, Eberly's Mill, Pa., assignor to the Pneumatic and Electric Tool Company, New York, N. Y. Filed Dec. 5, 1892. Serial No. 454,096. (No model.)



*Claim.*—1. In a pneumatic tool, the combination with the casing having two cylinder chambers formed therein, the valve and air supply passages from the valve, communicating with the upper ends of both chambers, of the loose piston or hammer having separate piston heads working in said cylinder chambers whereby the superficial area of both heads is utilized in the forward stroke; substantially as described.

2. In a pneumatic tool, the combination with the shell or casing having the cylinder formed therein, and the collar formed separate from and inserted in said cylinder for dividing the same into separate cylinder chambers, of the loose hammer formed by the pistons working in said cylinders, and connected rigidly together by the reduced stem working through the collar; substantially as described.

3. In a pneumatic tool, the combination with the shell or casing having the cylinder formed therein and the removable collar dividing said cylinder into separate cylinder chambers, of the loose hammer formed by the piston working in said cylinders connected rigidly together by the reduced stem working through the removable collar; substantially as described.

4. In a pneumatic tool, the combination with the shell or casing having the cylinder opening formed therein, removable collar dividing said cylinder into separate cylinder chambers, and the removable nose section for holding said collar in place, of the piston working in said cylinder chambers and the reduced stem passing through the collar and uniting the piston to form a rigid hammer; substantially as described.

5. In a pneumatic tool, the combination with the casing having the cylinder formed therein, the forward or nose section having a cylinder formed therein and a collar separating said cylinders, of the loose hammer having piston sections working in said cylinders and air ports and passages leading to the respective cylinder chambers, substantially as described.

6. In a pneumatic tool, the combination with the casing having the separate cylinder chambers formed therein in alignment, of the hammer having piston sections working in said cylinders respectively, a valve and air passages for conveying pressure to the upper portions of both cylinder chambers and the lower portion of the upper chamber, substantially as described.

7. In a pneumatic tool, the combination with the casing having the piston chambers formed therein in alignment with each other, of the hammer having piston sections working in said chambers with a passage in said hammer leading to the lower chamber for supplying pressure thereto and a valve controlling the supply of air to said passage; substantially as described.

8. In a pneumatic tool, the combination with the casing having the cylinder chambers formed therein in alignment, the valve and air passages leading from the valve to opposite ends of the upper cylinder chamber, of the loose hammer having opposite sections working in said cylinder chambers and the center passage in said hammer leading from the valve to the lower chamber; substantially as described.

9. In a pneumatic tool, the combination with the casing having two piston chambers, a valve chamber formed in alignment therein with passages leading from the valve chamber to opposite ends of the upper cylinder chamber, of the valve and the hammer having pistons sections working in said cylinder chamber and a central passage for opening communication between the upper ends of the respective cylinder chambers; substantially as described.

10. In a pneumatic tool, the combination with the casing having the cylinder chamber formed therein, the collar seating in said chamber and the nose section screwing on the casing for holding said collar in place and having the cylinder chamber and tool opening formed therein, of the hammer having the piston sections working in the respective cylinder chambers, a valve and air passages leading from said valve to the upper ends of both cylinder chambers and the lower end of the upper cylinder chamber; substantially as described.

11. In a pneumatic tool, the combination with the casing and hammer, substantially as described, of the nose section having the tool opening therein, the pin or projection in said opening and the tool shank having the peripheral groove co-operating with said pin or projection; substantially as described.

12. In a pneumatic tool, the combination with the casing having the nose section with the tool opening formed therein and the pin or projection projecting into said opening, of the tool shank having the peripheral groove co-operating with said pin or projection, one side of the tool shank above said groove being cut away to permit the tool to enter past the projection; substantially as described.

13. In a pneumatic tool, the combination with the casing having the cylinder and pressure actuated valve, of the hammer having a circumferential chamber extending entirely around the same, passages leading from opposite ends of the valve to points at the upper and lower ends of the cylinder and terminating in points *l*, *l* and *l' l'*, and an exhaust opening for communicating with the central circumferential chamber of the hammer, said hammer and the ports leading to said passages being so proportioned and positioned with relation to each other that when the hammer is at the upper extreme of its movement, pressure will be admitted from the opposite end of the cylinder to one end of the valve and the opposite end of the valve will be open to exhaust through the circumferential chamber in the hammer and vice versa; substantially as described.

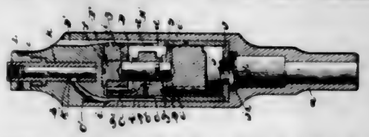
14. In a pneumatic tool, the combination with the casing having the cylinder therein and the pressure actuated valve, with passages leading from opposite ends of the valve to opposite ends of the cylinder respectively with ports *l l* and *l' l'* leading from said passages into the cylinder, of the hammer working in the cylinder and having the central circumferential chamber M extending entirely around the same and the exhaust passage N adapted to communicate with the said circumferential chamber; substantially as described.

15. In a pneumatic tool, the combination with the casing and hammer working therein and the point section having the central opening for the reception of a tool shank, of a loose button mounted in the upper end of said opening and adapted to be struck by the hammer and impart its movement to the tool shank; substantially as described.

16. In a pneumatic tool, the combination with the casing, hammer mounted therein and nose section having the central opening for the reception of a tool shank, the washer held by said nose section and the headed button loosely mounted in the washer in line with the tool opening and adapted to be struck by the hammer, substantially as described, whereby the impact of the hammer is imparted to the button and through it to the tool shank; substantially as described.

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**504,803. PNEUMATIC TOOL.** DANIEL DRAWBAUGH, Eberly's Mill, Pa., assignor to the Pneumatic and Electric Tool Company, New York, N. Y. Filed Jan. 11, 1893. Serial No. 458,033. (No model.)



*Claim.*—1. In a pneumatic tool adapted to be held in the operator's hand, the combination with the cylinder having pressure supply and exhaust passages and the loose beater reciprocating therein having pressure supply and exhaust passages registering with those in the cylinder, and independent secondary supply and exhaust passages leading to each of its ends, of a valve working in said beater and operating to connect the main and secondary supply passages and main and secondary exhaust passages, simultaneously, at opposite ends of the beater; substantially as described.

2. In a pneumatic tool adapted to be held in the operator's hand, the combination with the cylinder having pressure supply and exhaust passages, and the loose beater reciprocating therein having pressure supply and exhaust passages registering with those in the cylinder and independent secondary supply and exhaust passages leading to each of its ends, of a valve working in said beater having a single central annular chamber for connecting the main and secondary supply passages at each end alternately, and simultaneously putting the opposite main and secondary exhaust passages into communication across the end of the valve; substantially as described.

3. In a pneumatic tool adapted to be held in the operator's hand, the combination with the cylinder having pressure supply and exhaust passages and the loose beater reciprocating therein having pressure supply and exhaust passages registering with those in the cylinder, and independent secondary pressure supply and exhaust passages leading to each of its ends, a central valve chamber with which said passages communicate and small passages, for supplying pressure to each end of said valve chamber to move the valve, controlled by the longitudinal movement of the beater, of a valve working in said chamber for alternately opening communication between the main and secondary pressure supply passages and main and secondary exhaust passages at each end of the beater, substantially as described.



4. In a pneumatic tool, the combination with the cylinder having the end recessed to form a cushion chamber, of the beater bored longitudinally to form a valve chamber and a plug closing the end of said chamber having a projecting head adapted to enter the recess in the end of the cylinder substantially as described.

5. In a pneumatic tool, the combination with the cylinder having the end recessed to form a cushion chamber, the beater working therein and bored longitudinally to form a central valve chamber and with supply and exhaust passages in the wall around said chamber, of the valve working in the valve chamber and the screw plug fitting in the end of the chamber to close the same and having the projecting head for entering the recess in the end of the cylinder to form a cushion; substantially as described.

6. In a pneumatic tool, the combination with the cylinder having pressure supply and exhaust passages with ports for supplying pressure to and exhausting pressure from the ends of the valve, of the beater bored longitudinally to form a valve chamber and having lateral passages leading from each end of said chamber and registering at opposite extremes of the movement of the beater with the said valve supply and exhaust passages respectively, and a valve working in said chamber and controlling the supply and exhausting of pressure from opposite ends of the beater; substantially as described.

7. In a pneumatic tool, the combination with the cylinder having the nose section bored out to form a tool holder and a beater working in the cylinder, of the washer at the lower end of the cylinder and the button working through a bearing in said washer to form a closure for the end of the cylinder and adapted to receive the blows of the beater and transmit the same to the tool held loosely in the nose section; substantially as described.

8. In a pneumatic tool, the combination with the cylinder having the nose section bored out and forming a tool holder and the beater working in said cylinder, of the button constituting the closure for the lower end of the cylinder and upper end of the tool holder, and having a limited longitudinal movement whereby the blows of the beater delivered thereon are transmitted to the tool; substantially as described.

9. In a pneumatic tool, the combination with the cylinder having the beater working therein and the pressure supply and exhaust channels formed in its exterior, of the casing fitting over said cylinder to inclose the channels and form passages, and the nose section formed integral with said casing at the lower end, substantially as described.

10. In a pneumatic tool, the combination with the cylinder having the head section formed integral therewith the channels in the exterior of the cylinder and the beater working in said cylinder, of the casing inclosing the cylinder and united thereto by a screw thread at the base of the cylinder, and the point section formed integral with said casing and bored out to form a tool holder, substantially as described.

11. In a pneumatic tool, the combination with cylinder or casing having the pressure supply passage and the beater reciprocating within the cylinder, of the cut-off tube journaled to rotate in the rear end of the tool and having the aperture registering with the supply passage in the tool at one end, and with the opposite end formed for the attachment of the supply pipe, substantially as described.

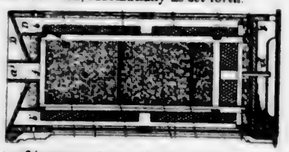
12. In a pneumatic tool, the combination with the cylinder or casing having the pressure supply passage, the cylindrical opening into which said passage opens and the beater, of the cut off tube journaled to rotate in said cylindrical opening and having an aperture adapted to register with the supply passage in the tool and the collar on the outer end of the tube for turning the same, substantially as described.

13. In a pneumatic tool, the combination with the cylinder or casing having the beater and supply passage terminating in a cylindrical opening at the rear end of the tool, of the cut-off tube journaled in said cylindrical opening and having the annular enlargement held within the tool and the collar secured on the outer end of the tube for turning the same, substantially as described.

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**504,804. REFRIGERATOR.** CHARLES H. FOX, Delano, assignor to James M. Gilstrop, Daunt, Cal. Filed June 21, 1892. Serial No. 437,537. (No model.)

*Claim.*—1. In a refrigerator, the combination with an open frame work having an opening through the top, and sides composed of absorbent material, of a water reservoir arranged at the top of the refrigerator, a top board with inclining bottom located over the reservoir, said top board having an opening therein, a flue extending through this opening and in open communication with the interior of the reservoir, and means for supplying the absorbent material with moisture from the tank, substantially as set forth.



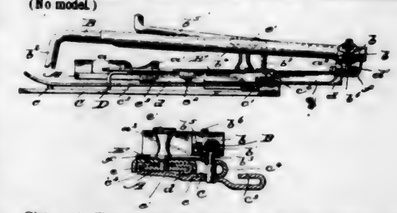
2. In a refrigerator, the combination with an outer frame, and an inner frame separated therefrom, of absorbent cloth covering the sides of said inner frame or casing, a reservoir arranged at the top of the refrigerator, a flue passing through said reservoir and communicating with the inner casing or frame, and means for conveying water from the reservoir to the absorbent cloth, substantially as set forth.

3. In a refrigerator, the combination with an outer frame or casing and an inner frame or casing separated therefrom, of absorbent material covering the inner frame or casing, a reservoir at the top of the refrigerator, means for conveying water from said reservoir to the absorbent covering of the inner casing, a pan at the bottom of the casing to receive water from the absorbent material, and an overflow in said pan constructed and arranged to maintain a constant supply of water in the pan, substantially as set forth.

4. In a refrigerator, the combination with an outer frame or casing, and an inner frame or casing separated therefrom, of air inlets at the bottom of the inner casing, air inlets in the outer casing, a flue communicating with the top of the inner casing, absorbent material covering the inner casing, and means for maintaining said absorbent material wet, substantially as set forth.

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**504,805. TUCK-MARKER FOR SEWING-MACHINES.** JOHN M. GRIST, New Haven, Conn. Filed Dec. 14, 1892. Serial No. 455,153. (No model.)



*Claim.*—1. The combination with the supporting plate A provided at its forward end with means of attachment to the presser foot of a sewing machine, and having at its rear end the upturned bracket or standard $a^3$, of the transverse shaft *b* journaled in said standard or bracket and provided with a rigidly attached tubular arm *b'* which vibrates therewith, the marking arm B fitting in the said tubular arm *b'* and adapted to be adjusted longitudinally therein, said shaft *b* having also the yielding transmitting arm $b^5$ by which said shaft is operated from the needle-bar of the machine, the plate C connected with the said marking arm to be simultaneously adjusted therewith, and provided at its forward end with a marking device to co-operate with the said marking arm, and a spring for lifting the said marking arm and the parts moving therewith.

2. The combination with the supporting plate A provided with the standard $a^3$, of the transverse shaft *b* provided with the pin $b^4$, the loop spring *f* embracing said bracket and pressing upon said pin, a tubular arm carried by said shaft, a marking arm adjustable in said tubular arm and a lower creasing device co-operating with said marking arm and connected to the latter so as to be adjusted toward and from the needle simultaneously therewith.

3. The combination with the supporting plate A provided with the standard $a^3$, of the shaft *b* journaled in said standard and provided with a tubular arm *b'*, the marking arm B carried by said tubular arm and provided with a pin or projection $b^3$, a spring for lifting said marking arm, the lower plate C provided with a creasing lip *c* and with the rear arm *c'* having a lip or projection $c^4$ through which the said pin $b^3$ passes, said pin having a head or projection to engage the under side of the said lip to limit the upward movement of the said marking arm under the stress of the said spring.

4. The combination with the supporting plate A and a vibrating marking arm suitably mounted thereon, of the lower plate C provided at one end with a creasing device co-operating with said marking arm, and at its other end with a transverse arm *c'* arranged beneath the said plate A and having an upturned lip $c^6$ embracing said plate A, the top

plate E bearing upon said lip $c^4$, and a set screw passing through said top plate E and tapped in the said plate A, said screw serving to clamp the plate E against the said lip and thus hold the said plate C in any desired position of adjustment.

5. The combination with the supporting plate A, and a vibrating marking arm suitably mounted thereon, of the lower plate C having a creasing lip or projection co-operating with said marking arm, and having also a transverse arm $c'$ provided with the lip $c^4$ embracing the said plate A, the gage D provided with the arm $d$ embracing the said plate A, the top plate E overlying the said arm $d$, and the said lip $c^4$, and a set screw for securing the said top plate to the said supporting plate.

6. The combination with the supporting plate A, and a vibrating marking arm suitably mounted thereon, of the lower plate C provided with a creasing lip or projection co-operating with said marking arm and having the transverse arm $c'$ provided with the lip $c^4$, the gage D provided with the arm $d$ embracing said plate A, the top plate E provided with the arm $e^3$ having a graduated scale for use in connection with said gage, the said top plate E having downturned flanges embracing the said arm $d$ and the said lip $c^4$, and the set screw $e'$ tapped in the said supporting plate A and serving to secure the said plate E and the parts clamped thereby in place.

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**504,806. WINDOW.** CHARLES HIBBERD, Melbourne, assignor to Thomas Wright Holland, Fitzroy, Victoria. Filed June 22, 1892. Serial No. 437,867. (No model.) Patented in Victoria Feb. 14, 1891, No. 8,507.



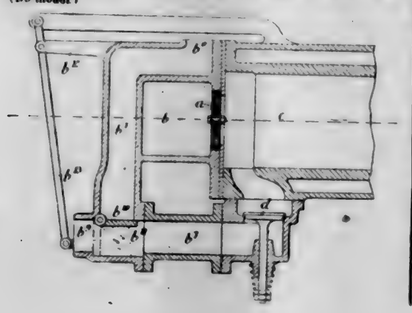
*Claim.*—1. In a window, the combination with the lower sash; of weights and cords therefor, said weights being heavier than the sash, of pull cords attached to the weights and passing over sheaves in the facing of the casement; and of means, such as holdfast pins, for fastening the cords.

2. In a window the combination with the sashes, of sash weights and cords therefor, the weights for the lower sash being heavier than the sash and those for the upper sash being about the same weight as the sash, of pull cords attached to the weights and passing over sheaves in the top facing of the casement; and of means, such as holdfast pins, for fastening the pull cords.

3. In a window, the combination with the sashes, of sash weights and cords therefor, the weights for the lower sash being heavier than the sash and those for the upper sash being about the same weight as the sash, and of means connected with the sash weights for lowering and raising them independently of the sash cords.

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**504,807. ENGINE OPERATED BY THE EXPLOSION OF COMBUSTIBLE MIXTURES.** WILLIAM HORNSBY, ROBERT EDWARDS, and WILLIAM E. GIBBS, Grantham, England, assignors to Richard Hornsby & Sons, Limited, same place. Filed Sept. 27, 1892. Serial No. 447,085. (No model.)



*Claim.*—1. In an explosion engine, the combination with the combustion chamber and the cylinder, of a partition of wire gauze or like material placed between such chamber and cylinder, a fuel inlet to the combustion chamber, and air inlet to the cylinder.

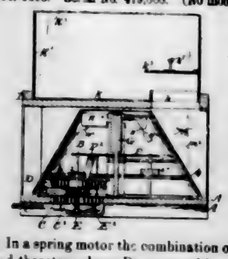
2. In an explosion engine, in combination with one and the same valve-box, two valves, one being held closed by a spring, and another adapted to be opened by a governor actuating it, so that the oil will pass the first named valve when the pump forces it past it, but that oil can pass the second valve only when the governor actuates and opens it, substantially as described.

3. In an explosion engine, the combination with the vaporizer or combustion chamber, of a jacket open to the atmosphere, a valve located in the jacket to allow more or less of the air that is required in the cylinder to be drawn through it, and a rod or column of mercury, whose expansion or contraction under variations of the temperature of the vaporizer or combustion chamber serves to open or close this valve to allow air to be drawn around the vaporizer or combustion chamber or to shut off the supply of air through the jacket substantially as described.

4. The combination of a cylinder and a combustion chamber, an air jacket surrounding the combustion chamber, open to the atmosphere and also to an air-inlet passage to the cylinder, a valve controlling the opening between the jacket and the air inlet passage, and a thermostatic device governing said valve.

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**504,808. SPRING-MOTOR.** WALTER HOWARD, Washington, D. C. Filed June 30, 1893. Serial No. 479,309. (No model.)



*Claim.*—1. In a spring motor the combination of a casing, a gear internally secured thereto, a drum D connected by gearing with said internal gear and carrying a spring-pawl a shaft passing through said drum, a power-spring within said drum and having one end secured to said shaft and the other to the drum, and a ratchet wheel secured to the shaft, with a spool and a pawl-carrying drum C upon the same shaft, a stationary sleeve inclosing the lower end of said shaft, a tape wound upon said spool and a spring within the drum C substantially as described.

2. In a spring motor the combination of a drum D carrying a pawl upon its flat face and a gear on its periphery, a shaft passing through said drum, a power spring within said drum, a ratchet wheel secured to said shaft, a spool and pawl-carrying drum C upon the same shaft, a stationary sleeve E inclosing a portion of said shaft, a tape wound upon said spool, and a light spring within the drum C substantially as described.

3. In a spring motor the combination of two drums loosely mounted upon a shaft and each carrying a spring pawl, springs wound in opposite directions within the drums, a ratchet wheel secured upon the shaft, a train of gears connected with one of the drums, a vertical shaft carrying one of the gears of the train and having a governor thereon consisting of radial blades H having one end pivoted to said shaft, each blade carrying a staple $A^2$ above its pivotal axis, a rod H' passing through said staple and having one end pivoted to the vertical shaft, and the other carrying a weight independent of the weights of the other radial blades substantially as described.

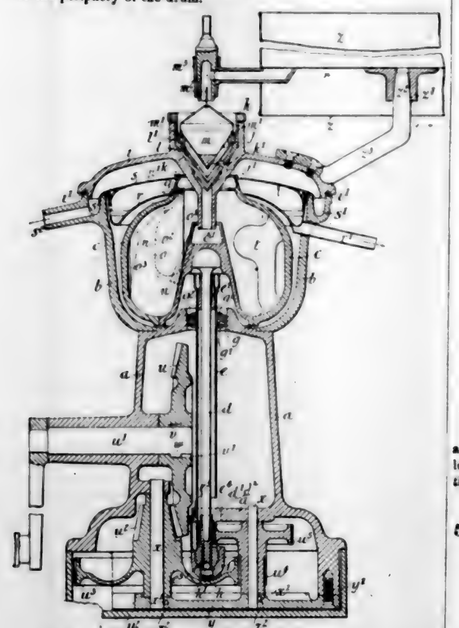
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**504,809. CENTRIFUGAL LIQUID-SEPARATOR.** ROBERT A. LISTER and MIKAEL PEDERSEN, Dursley, England. Filed Nov. 11, 1892. Serial No. 451,687. (No model.)

*Claim.*—1. In a centrifugal liquid separator, a top cover having a grooved inlet funnel within which is fitted a hollow regulator having a tapering opening therein, such regulator being adapted to be turned so as to place a wider or narrower part of its said opening opposite said groove or channel in the funnel, substantially as described.

2. In a centrifugal liquid separator, a hollow regulator, combined with the inlet funnel and float, the regulator fitting within the funnel and having a shoulder for supporting the strainer ring and the float placed within it, all substantially as set forth.

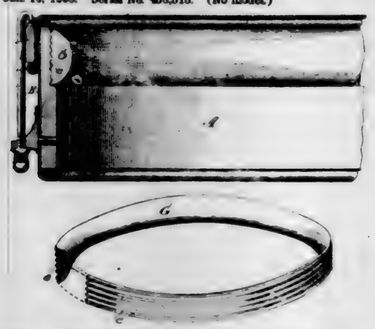
3. In a centrifugal liquid separator, the combination with the drum or bowl of the two imperforate vanes or plates $a$, $a'$ placed near together to form a narrow vertical passage through which the fluid to be separated enters the drum, one of said vanes at its outer end or edge extending beyond that of the other vane, but not quite to the periphery of the drum.



4. In a centrifugal liquid separator having two plates or vanes $a$, $a'$, placed parallel and near together to form a narrow passage through which the fluid to be separated enters the drum, a partition $p$, at right angles thereto, located between the vanes near the wall of the drum and serving to divide the space between the vanes into two parts for entry of the milk and exit of the skim milk, substantially as described.

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**504,810. BANJO.** JOHN F. LINCOLN, Marshfield, Mass. Filed Jan. 16, 1893. Serial No. 458,513. (No model.)



*Claim.*—The combination with the wooden hoop or rim of a banjo, of a metal ring having exterior screw threads for connecting it to the interior of the hoop or ring, substantially as and for the purpose specified.

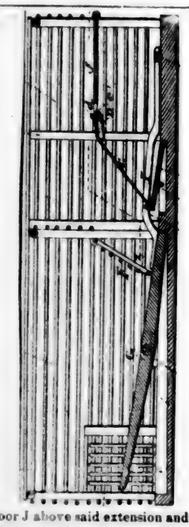
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**504,811. SELF-SETTING ANIMAL-TRAP.** CHARLES C. MARTIN, West Franklin, Ind., assignor of one-half to Albert J. Schlaffer, same place. Filed Mar. 17, 1893. Serial No. 466,475. (No model.)

*Claim.*—The combination with the case, of a tripping platform pivoted therein, a releasing lever pivoted on a higher plane and connected with said platform, the pivoted doors, the resetting pivoted platform, and an extension thereon passed over the tilting platform,



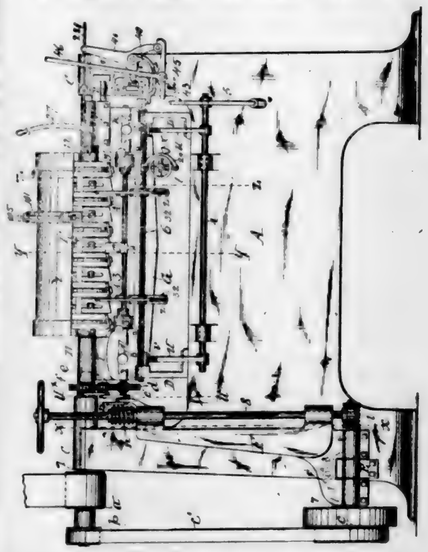
**504,811.**



and the pivoted door J above said extension and supported on the releasing lever, said extension being curved and cut away to allow the tilting platform to tilt, substantially as shown and described.

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**504,812. POLYGONAL LATHE.** LOUIS G. MERRITT, Lockport, N. Y. Filed Jan. 31, 1893. Serial No. 460,236. (No model.)



*Claim.*—1. In combination with the stationary frame and rotary cutter-arbor mounted on bearings fixed to said frame, stationary ways on the frame at right angles to the aforesaid arbor, a feed-table sliding on said ways, rotary work-holding centers mounted on said table, vibratory independently thereof, a revoluble shaft journaled in bearings on said table, and cams attached to said shaft and imparting vibratory motion to the aforesaid centers, as set forth.

2. In combination with the arbor carrying the cutter-heads and a feed-table movable toward and from the cutter-heads, rotary working-holding centers mounted on said table and vibratory independently thereof, a rotary shaft carried on the table, cams affixed to said shaft and imparting vibratory motion to the aforesaid centers, a vertical rotary shaft adapted to swing with its upper end toward and from the

aforesaid arbor, and gears transmitting motion from the vertical shaft to the aforesaid cam-shaft and head center as set forth.

3. In combination with the arbor and the work holding driving center, a horizontal counter-shaft receiving motion from the arbor, a worm attached to said counter-shaft, a vertical shaft, a worm wheel on the lower end of said shaft engaging the aforesaid worm, a worm on the upper end of the vertical shaft, and gears transmitting motion from the latter worm to the aforesaid driving center, as set forth.

4. In combination with the arbor carrying the cutter-heads, the feed-table movable toward and from said cutter-heads, work-holding centers mounted on said table and vibratory toward and from the cutter-heads independent of the table, a shaft mounted on said table parallel with the aforesaid arbor, cams affixed to said shaft and imparting vibratory motion to the work holding centers, a horizontal counter shaft receiving motion from the aforesaid arbor, a vertical shaft adapted to swing with its upper end toward and from the arbor, worm-gears transmitting motion from the counter shaft to the vertical shaft, a worm on the upper end of the vertical shaft, a worm-wheel on the aforesaid cam shaft meshing with the latter worm, and gears transmitting motion from said cam-shaft to the work-holding driving center as set forth.

5. In combination with the frame, the arbor carrying the cutter-heads, and the feed-table movable toward and from said cutter-heads, work-holding centers mounted on said table, a shaft mounted in bearings on the same table parallel with the aforesaid arbor, gears transmitting motion from said shaft to the head-center, a worm-wheel on said shaft, a vertical rotary shaft adapted to swing toward and from the aforesaid arbor, a worm on the vertical shaft adapted to engage and release the aforesaid worm-wheel, a bell-crank lever holding by one of its arms said worm normally engaged with the worm-wheel, and a rod connecting the other arm of said lever to the frame and causing said lever to throw the worm out of gear during the movement of the table from the cutter-heads as set forth.

6. In combination with the frame, the arbor carrying the cutter-heads, and the feed-table movable toward and from the cutter-heads, work-holding centers mounted on said table and vibratory independent thereof, a shaft mounted on the same table parallel with the arbor, cams on said shaft vibrating said centers, gears transmitting motion from said shaft to the head center, a worm-wheel on the cam-shaft, a vertical arm adapted to swing with its upper end toward and from the arbor, a vertical rotary shaft journaled on said arm, a worm on said shaft adapted to engage and release the aforesaid worm-wheel, a bell-crank lever mounted on the aforesaid cam-shaft, a link connecting one arm of said lever to the upper end of the aforesaid vertical rod, and a rod connecting the other arm of the bell-crank-lever to the frame as set forth.

7. In combination with the frame, arbor, feed-table and work-holding centers mounted on said table, the shaft, 3, gears transmitting motion from said shaft to the head-center, the cam —G'— and worm-wheel —*j*— fixed to the same shaft, the vertical arm —F— adapted to swing with its upper end toward and from the arbor, the rotary shaft, 8, journaled on said arm, the worm —*k*— on said shaft engaging the wheel —*j*—, the bell-crank lever —W—, the link, 28, connecting the horizontal arm of said lever to the arm —F—, the spring-restrained rod, 36, connecting the vertical arm of the lever to the frame, the arm —E'— pivoted to the feed-table and adapted to engage and release the vertical arm of the lever —W—, and the arm —F'— actuated by the cam —G'— and connected with the arm —E'— to throw the same out of engagement with the lever —W—, all combined to operate as set forth.

8. In combination with the frame and cutter arbor mounted thereon ways extending from the frame at right angles to said arbor, the feed-table mounted on said ways, a half-nut attached to said table, the screw-shaft, *g*, pivoted at one end to the frame, at right angles to the arbor and provided at the opposite end with the hand-wheel —*l*—, the two-armed lever —X'— mounted on said screw-shaft, and the link, 29, connected to the lever —X'— beneath the screw-shaft and to a support —6— on the frame above said shaft to maintain the nut in engagement as set forth and shown.

9. In combination with the frame —A— and arbor —1—, the ways —D—D— formed with rearward and upward extensions, the feed-table mounted on said ways, the shaft, 2, fastened to the extensions, the finger —D'— rigidly attached to said shaft, the rest —C'— mounted loosely on the shaft, and the spring, 34, and screw, 33, supporting said rest on the aforesaid finger, as set forth.

10. In combination with the frame —A—, cutter-arbor —1— and ways —D—D—, the table —G— provided with the guide —*m*— and the head-block and tail-block each composed of a base mounted on said guide and formed with the transverse tongue —*n*— on its top, a block grooved correspondingly in its under side and mounted on said base and provided with the work-holding center, a spring forcing said block toward the arbor, the rotary shaft, 3, mounted on the table, and cams on said shaft pushing the two center carrying blocks in opposition to the action of the springs as set forth.

11. In combination with the frame —A—, cutter-arbor —1— and ways —D—D—, the table —G— provided with the guide —*m*—, the base —J— mounted on said guide and formed with the dove-tail tongue —*n*— on its top, and with the groove —*n'*— and lug —*l*— in said tongue, the block —I— carrying the driving center, 11, and provided with a dovetail groove receiving through it the aforesaid tongue, the screw —*f*— passing freely through the outer end of the block —I— and through the lug —*l*—, and provided with a nut on its inner end, the spring —*s*— interposed between said nut and lug, the rotary shaft, 3, mounted on the table, and the cam —B'— attached to said shaft and vibrating the block —I— in opposition to the spring —*s*— as set forth.

12. In combination with the arbor —1—, the feed-table provided with the guide —*m*—, and the shaft 3, mounted on said table and provided with the cam —B'—, the base —J— mounted on the aforesaid guide, the block —I— mounted on said base movably toward and from the arbor, a spring forcing said block toward the arbor, and the shoe —H— attached to said block adjustaoly in relation to its distance from the cam —B'— as set forth.

13. In combination with the arbor —1—, the feed-table and the shaft, 3, mounted on said table, the block —I— mounted on said base, balls —*p*—*p*— interposed between said block and base, a spring forcing the block —I— toward the arbor, and the cam —B'— attached to shaft, 3, and vibrating the block —I— in opposition to the spring as set forth.

14. In combination with the arbor —1—, feed-table —G— and cam-shaft, 3, mounted on said table, the tail-block composed of the base —J— secured to said table, the vibrating block —K— mounted on said base, and the center-carrying block —L— mounted on the vibrating block movably toward and from the head-block as set forth.

15. In combination with the arbor —1—, feed-table —G— and cam-shaft, 3, mounted on said table, the base —J— secured to the table, the vibrating block —K— mounted on said base, the block —L— riding on the vibrating block in a line parallel with the axis of the lathe, a spring forcing the block —L— toward the head-block, and a lever pivoted to the vibrating block and engaging the block L to retract the same in opposition to its spring as set forth.

16. In combination with the frame —A— and arbor —1—, the ways D—D—, the table —G— mounted on said ways, the head-block and tail block mounted on the table, the shaft, 6, attached to the front ends of the ways, the arms *z*, *z*, fixed to said shaft, the levers —A'—A'— pivoted to the upper ends of said arms, tension-springs, 32, connecting the front ends of said levers to the feet of the arms, and shoulders —A"—A"— connected to the levers adjustably lengthwise thereof as set forth.

17. In combination with the frame, cutter arbor, and feed-table movable toward and from said arbor, the tail center movable parallel with the axes of the arbor, a spring forcing said tail center toward the head-center, the lever 27, adapted to retract the tail center, the cradle 40, attached to the feed-table, the three-armed lever, 41, pivoted to said cradle and having its upwardly extending arm connected with the lever, 27, the bridge, 42, pivoted track 43, traversed by the horizontal arm of the lever, 41, and the latch 45 adapted to engage and release the downwardly extending arm of the lever, 41, all combined to operate as set forth.

18. In combination with the cutter-arbor, the work carrying centers movable toward and from said arbor, the shaft, 2, shield —Y— under head rest —C'—, yoke 101, over head-rest, 102, and the set-screw 105, connected to said yoke and resting on the shield to sustain the free end of the yoke as set forth.

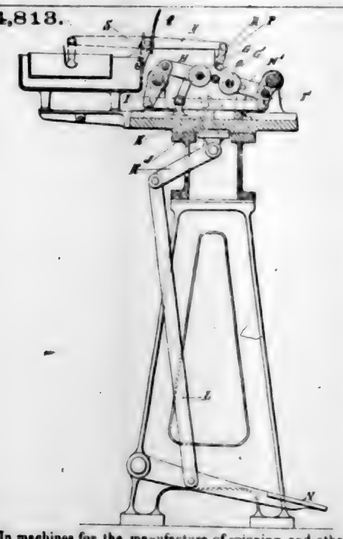
### 504,813. MACHINE FOR MAKING SPINNING OR OTHER ROLLERS. FRANÇOIS F. MOLIÉ, Paris, France. Filed Apr. 18, 1893. Serial No. 470,653. (No model.) Patented in France Aug. 21, 1891, No. 215,653; in Germany Jan. 27, 1892, No. 64,174, and in Austria-Hungary May 31, 1892, No. 5,973, and No. 19,322.

*Claim.*—1. In a machine for making rollers the combination of the heads A B adapted to support the roller, combined compressing and coating cylinders G G' placed opposite to each other and means for forcing the same in contact wth the roller by positive pressure substantially as and for the purposes specified.

2. In machines for the manufacture of spinning and other rollers, the combination of two heads A and B centering and adapted to hold between them the roller during the winding of the cotton or other fibrous material thereon, a pair of cylinders or rollers G G' for the purpose of compressing the cotton or other fibrous material wound upon the roller in course of manufacture and to distribute thereon a layer of cement, a pedal M, links L, lever K, rod J and links I I' and H H' for operating the cylinders or rollers G G' and a cement distributer formed of a reservoir O supported by two small links P hanging from two levers N, which allow this reservoir to be moved to take a supply of cement from a vessel and to convey it to the roller to be coated, the whole being formed, arranged and combined substantially as herein shown and described.



### 504,813.



3. In machines for the manufacture of spinning and other rollers, the combination of two heads A and B adapted to support and rotate the roller being manufactured, a pair of pressing and cement distributing cylinders or rollers G G', means for forcing such rollers toward each other, a cement distributing reservoir O, and means for carrying and moving such reservoir to above and away from the roller being manufactured and to and from the cement tank, all substantially as herein shown and described.

### 504,814. PORTABLE HAT-IRON. ALEXANDER S. MCDONALD, Brooklyn, assignor to Edwin S. Stimpson, New York, N. Y. Filed Sept. 17, 1892. Serial No. 446,149. (No model.)



*Claim.*—1. As an improved article of manufacture, a portable hat-iron for ironing the side of the body of a silk hat, comprising a metal head, of barrel-shape, circular in cross-section and convex longitudinally and a handle attached to one end of said head, the axis of the handle being aligned substantially with the axis of the head.

2. As an improved article of manufacture, a portable hat-iron for ironing the side of the body of a silk hat, comprising a hollow metal head, A, circular in cross-section and convex longitudinally, having apertures for the entry of air and escape of gases, and an aperture to admit a gas-jet for heating, and a handle B, said handle having its axis aligned substantially with the axis of the head.

3. As an improved article of manufacture, a portable hat-iron comprising a metal head which is circular in cross-section and convex longitudinally, and a handle, the head being secured at its end non-rotatively to the handle, whereby when the head is passed about the body of a silk hat its entire convex surface will be brought into rubbing contact with the surface of the hat.

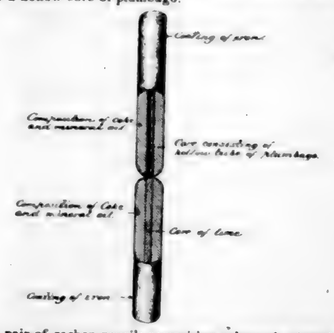
4. As an improved article of manufacture, a portable hat-iron comprising a hollow metal head of barrel-shape and a handle connected therewith by a universal coupling arranged in the interior of the head, substantially as set forth.

5. As an improved article of manufacture, a portable hat-iron having a hollow head furnished with two ironing faces *a* and *a''*, in different planes, and having outlets for the escape of gases arranged in a groove situated at the angle where the said ironing faces are joined, substantially as and for the purpose specified.

### 504,815. CARBON FOR ELECTRIC-ARC LAMPS. ROBERT MCMANUS, Brooklyn, N. Y. Filed Oct. 27, 1892. Serial No. 450,149. (No model.)

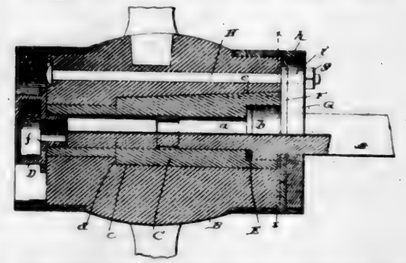
*Claim.*—1. A pair of carbon pencils, the one having a core of lime and the other a core of plumbago.

2. A pair of carbon pencils, the one having a core of lime and the other a hollow core of plumbago.




3. A pair of carbon pencils comprising coke and mineral oil in their composition, the one having a core of lime and the other a core of plumbago.

### 504,816. AXLE-LUBRICATOR FOR VEHICLE-HUBS. ROBERT PARKER, Pekay, Iowa. Filed Apr. 17, 1893. Serial No. 470,670. (No model.)



*Claim.*—In a wheel hub, the combination with the body, and an axle box arranged within the same and having interior threads at its outer end; of an oil reservoir D, having a tubular and exteriorly threaded extension adapted to enter the axle box and engage the threads thereof; the said tubular extension being adapted to feed oil to the axle box and being also adapted to engage the end of an axle spindle when the hub is placed thereon so as to prevent play of the hub, substantially as specified.

### 504,817. FOLDING BABY-CARRIAGE. FELIX F. PLOUF, Minneapolis, Minn. Filed Aug. 9, 1892. Serial No. 442,592. (No model.)



*Claim.*—1. The combination with the jointed axles and wheels of the telescoping bars and tubes connecting said axles, substantially as described.

2. The combination with the axles, of the tubes pivotally connected at or near their ends with each other, of the rods pivotally connected to the opposite axle and projecting into said tubes.

3. The combination with the axle, of the tubes pivoted to one of said axles, and rods pivoted to the opposite axle and projecting into said tubes, the ferrules 25 pivotally connecting said tubes to each other, and the spring dogs 27 adapted to project into openings in said tubes and engage ends of said rods, substantially as described

4. The combination with the axle provided with the pivoted extension at its opposite ends, spring bolts engaging said extension, the lugs 11 connected with said bolts, the rods 13 engaging said lugs and

supported upon said axle, and provided with the hooks 15 for the purpose specified.

5. The combination with the axles, provided with the pivoted extensions, the wheels arranged upon said extensions, and the telescoping connections between said axles, substantially as described.

6. The combination with the running gear, of the spring standards 35 secured upon the forward axle, the folding bars 39 supported upon said standards, and the basket supported upon said bars.

7. The combination with the forward axle, of the spring standards 35 secured thereon and provided with the clasps 37 at their upper ends, the bars 39 engaging said clasps, the cross bar 41, to which said bars 39 are pivotally connected, the groove 47 and the hinge 45, substantially as described.

8. The combination with the spring standards 35, provided with rectangular clasp 37, of the rectangular bar 39 arranged to fit in said clasp and provided with the groove 47, said bar being formed in two sections connected by hinge 45, for the purpose specified.

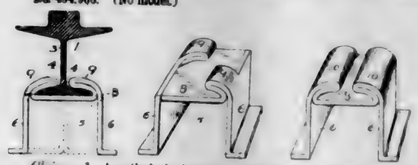
9. The combination with the axles, provided with the pivoted extensions, and the diagonal sliding connections between said axles, substantially as described.

10. The combination with the axles provided with the pivoted extensions, the wheels arranged thereon, the sliding connections between said axles, the folding basket secured upon one of said axles and the folding handle upon the other, substantially as described.

11. The combination with the cross pieces, of the tube pivoted to one of the same, the rods pivoted to the opposite cross piece and projecting into said tubes, the ferrules pivotally connecting said tubes to each other, and means for locking the rods in said tubes, substantially as described.

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**504,818. RAILROAD-RAIL CHAIR.** FRANCIS P. REILLY, New York, N. Y., assignor, by mesne assignments, to the Johnson Company, of Pennsylvania. Filed Oct. 1, 1891. Renewed Mar. 7, 1893. Serial No. 464,966. (No model.)



*Claim.*—1. A rail-chair having a rail-seat; supporting webs integral with and below said seat; and a retaining-lug on each side, directly engaging the rail and formed of two thicknesses of metal.

2. A rail-chair having a rail-seat; supporting webs integral with and below said seat, and diagonally-located retaining-lugs, directly engaging the rail and formed of two thicknesses of metal.

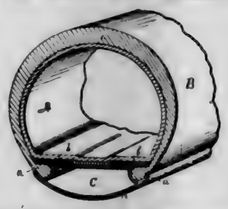
3. A rail-chair having a rail-seat formed of two thicknesses of metal and continuations of said seat forming girder-supports below the same.

4. A rail-chair having a rail-seat and rail-retaining-lugs, said seat and lugs being formed of two thicknesses of metal.

5. A rail-chair having a rail-seat and diagonally located rail-retaining-lugs, said seat and lugs being formed of two thicknesses of metal.

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**504,819. VEHICLE-TIRE.** ALBERT E. SPANGLER, Syracuse, N. Y. Filed May 15, 1893. Serial No. 474,365. (No model.)



*Claim.*—1. In a tire, continuous flat bands having a resilient connection between them and adapted to be contracted or expanded in the plane of their faces.

2. A pneumatic tire comprising a sack, a shoe having enlarged edges, a rim having pockets for receiving said edges, a web having continuous plates or bands secured within or to its lateral edges, as set forth.

3. A pneumatic tire comprising a shoe having thickened edges, a rim concaved to receive said edges and a lock comprising continuous flat bands and a flexible connection between them, in combination with a pneumatic sack within said shoe, adapted to engage with said connection and spread said bands apart in the plane of their faces.

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**504,820. AIR-GUN.** JOHN B. TRACHER and ERNEST C. FASOLDT, Albany, N. Y. Filed Mar. 23, 1893. Serial No. 467,292. (No model.)

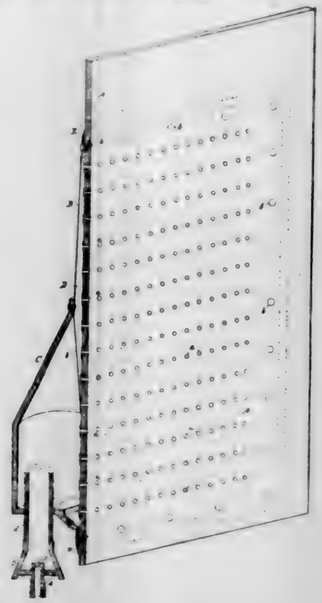


*Claim.*—1. In an air-gun, the combination of a gun-stock provided with a gun-barrel, an air-compressing pump contained in said stock, a crank-shaft for operating said pump and having one of its ends protruding from the side of said stock, an operating-crank fixed on the protruding end of said shaft and having a handle jointed thereto; said handle being arranged to fold against the face of said crank, a compressed-air receiver contained in the gun-stock, an air-chamber formed in the breech-piece and having its foremost end hermetically stoppered, a passage communicating between said air-chamber and the bore of a gun-barrel, an air-passage leading from the air-receiver to the air-chamber, and a piston fitted to reciprocate in said air-chamber and arranged to govern the flow of air from the air-chamber into the gun-barrel, as and for the purpose herein specified.

2. The combination of a gun-stock provided with a gun-barrel, an air-compressing pump contained in said gun-stock and arranged to deliver compressed-air into a receiver contained in said gun-stock, an air-chamber formed in the breech-piece for said gun-barrel, a stopper which forms a hermetical closure for the foremost end of said air-chamber, a passage communicating from said air-chamber with the bore of the gun-barrel, an air-pipe leading from said receiver into said air-chamber, a piston fitted to move in the bore of said air-chamber and to close the passage leading from said air-chamber into said gun-barrel, a toggle-joint having one end jointed to said piston and its opposite end jointed to a stationary point of the gun-stock, a spring arranged to extend said toggle-joint to the extreme length of the latter, and a trigger arranged to deflect said toggle-joint; whereby said piston can be moved to admit the compressed-air from said receiver into the bore of the gun-barrel, as and for the purpose herein specified.

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**504,821. FUEL-GAS BURNER.** JACOB B. WALLACE, Erie, Pa., assignor to the Metric Metal Company, same place. Filed Nov. 19, 1892. Serial No. 452,519. (No model.)



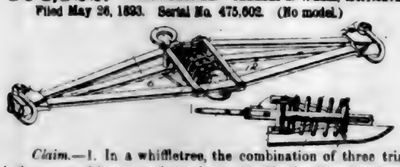


*Claim.*—1. In a fuel-gas burner, the combination of a fire board, A, formed of asbestus paper board, the metallic jet-tubes, *a*, through said board, the metallic back plate, B, attached to said board and forming the gas chamber, B', directly back of the jet openings, *a*, the fixture, C, over the opening, *b*, through the plate B, into the chamber, B', at its base, and the mixer, D, for connecting the fixture C, with the gas supply pipe.

2. In a fuel gas-burner, the combination of a dished metallic plate, B, a front plate or board, A, of asbestus paper, secured to the rim of said dished plate, so as to form a gas chamber, B', metallic jet tubes through the said asbestus board, a fixture, C, forming a supply entrance to said chamber at its base, and having a screw threaded opening, *c*, through its lower wall for connecting with a mixer, the mixer, D, having the screw thread, *d*, on its barrel for connecting with the screw thread, *c*, and the nipple, D', carried by said mixer, and having thereon a screw thread, *d'*, of the same lead as the screw thread, *d*.

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**504,822. WHIFFLETREE.** CHARLES S. WELLS, Herrickville, Pa. Filed May 26, 1893. Serial No. 475,602. (No model.)



*Claim.*—1. In a whiffletree, the combination of three triangularly-arranged bars, two being located at the back and one in front in the central plane of the said back bars, metallic sockets receiving and connecting the outer ends of said bars and provided with holes to adjustably receive a clevis or link, a bolt loosely mounted on the bars and extending rearwardly from them, a hook pivoted to the rear end of the bolt, and a cushioning spring interposed between the front end of the bolt and the back of the whiffletree, substantially as described.

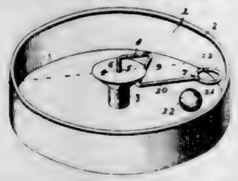
2. In a whiffletree, the combination of three triangularly arranged bars, two being located at the back and one in front in the central plane of the said back bars, outer end sockets connecting said bars having links or clevises attached thereto, a pair of V-shaped tie-braces passing over the front single bar and terminating at the rear back bars, said tie-braces being spaced apart from each other and a central attaching bolt, substantially as described.

3. In a whiffletree, the combination of triangularly-arranged bars, two being located at the back and one in front in the central plane of the said back bars, a pair of V-shaped tie-braces passing over the central portions of said bars, a spring-encircled bolt mounted between said bars and braces and having a rear projecting bifurcated end, a vertically-disposed stop-plate against which the rear part of said spring rests, said bolt having a front angular head bearing against a washer placed against the front of said spring, and a bolt removably mounted in said bifurcated end of the aforesaid bolt, substantially as described.

4. In a whiffletree, the combination of triangularly-arranged bars having a centrally-positioned bolt surrounded by a coiled spring, a pair of tie-braces connecting said bars at the center and spaced apart, and a wear-plate secured over the bottom of the said bars and attached to the said braces to shield the spring, substantially as described.

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**504,823. PUZZLE.** THEODORE H. APGAR, Bound Brook, N. J. Filed Mar. 9, 1893. Serial No. 465,315. (No model.)



*Claim.*—1. In a device of the class described, the combination of a box or container, a movable seat arranged within said box above the floor thereof, and a loose ball or member normally supported upon the floor of the box and adapted to be arranged in said seat, substantially as specified.

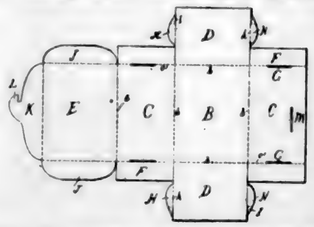
2. The combination of a box or container, a seat-carrying support arranged within the box and capable of free movement, the seat being elevated above the floor of the box and preserving a uniform distance therefrom, and a loose ball or member normally supported upon the floor of the box and adapted to be arranged in said seat.

3. The combination of a box or container provided with a central vertical post, a support pivotally mounted upon said post and carrying a seat which is arranged above the floor of the box, and a loose ball or member normally supported upon the floor of the box and adapted to be arranged upon said seat, substantially as specified.

4. In a device of the character set forth, the combination of a box having a post vertically rising from the center thereof, and provided with a socket in the upper end thereof, an inverted conical head, a support movably connected to said post and having a part thereof bent inwardly parallel with said inverted head to prevent disconnection thereof from the said post, said support being provided with a seat at its outer end, and a ball adapted to be thrown into said seat of the support, substantially as described.

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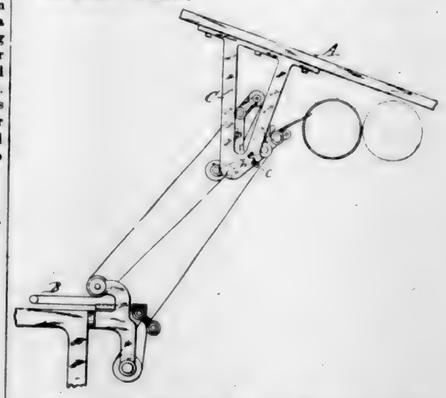
**504,824. FOLDING PAPER BOX.** WILLIAM H. COOK, Montclair, N. J. Filed Sept. 29, 1892. Serial No. 447,248. (No model.)



*Claim.*—In a folding paper box, the combination of the bottom, of the opposite side walls scored from the bottom and having side wall flaps, and straight corner slots or slits disposed at the juncture of said side wall flap with the side walls, and the opposite end walls provided with curved locking tongues H, scored from opposite edges of the same, and slit in from one end to form folding supplemental locking flaps adapted to be folded flat onto the body of the tongues H to allow for the insertion thereof into the straight corner slots or slits, and adapted to be straightened out inside of the side wall flaps after the insertion of said curved locking tongues into said slots or slits, substantially as set forth.

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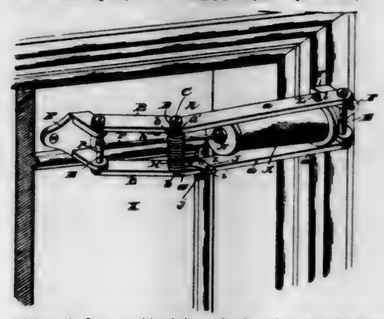
**504,825. PAPER-FOLDING-MACHINE ATTACHMENT FOR PRINTING-PRESSES.** TALBOTT C. DEXTER, Fulton, N. Y., assignor to the Dexter Folder Company, same place. Filed Dec. 19, 1892. Serial No. 455,553. (No model.)



*Claim.*—1. The combination, with a printing press and paper-folding machine, of brackets secured stationary to the delivery end of said press, supplemental brackets detachably connected directly to said stationary brackets, and paper transferring mechanism mounted on said supplemental brackets as set forth.

2. The combination, with a printing press and paper-folding machine, of the brackets —C— secured to the delivery end of the press and provided with the seat —*a*— and clamping bolt —*b*— the supplemental brackets —D— resting on said seat and provided with the slot —*c*— for the reception of said bolt, and paper-transferring mechanisms mounted on said supplemental brackets, as set forth.

**504,826. DOOR CHECK AND SPRING.** GEORGE E. DUDLEY, Provo, Utah. Filed Apr. 6, 1893. Serial No. 469,111. (No model.)



*Claim.*—1. In a combined door check and spring, the combination of a jointed lever frame comprising long and short lever arms connected together by a single pivot bolt, the outer extremity of the long lever arm being pivoted to a fixed point of attachment and the outer extremity of the short lever arm being pivoted to a movable point of attachment, a spring loosely coiled on the pivot bolt of the lever frame and having its extremities connected to the separate members of the frame respectively, and a cylinder and piston check device mounted within and carried by the lever frame, the cylinder being pivoted to the long lever arm and the rod of the piston being pivotally connected to the movable point of attachment, substantially as set forth.

2. In a device of the class described, a jointed lever frame comprising separate parallel long lever arms having inner rabbeted ends curved on an angle, and short lever arms having inner rabbeted ends curved on an angle and overlapping the corresponding ends of the long arms to form a "joint-stop" holding the frame normally bowed, a single joint or pivot bolt connecting the rabbeted ends of the lever arms, attachment plates pivotally connected to the outer ends of the lever arms and adapted to be fastened respectively to a door frame and door, and a spring coiled on the joint or pivot bolt and attached at its extremities to a long and a short lever arm of the lever frame, substantially as set forth.

3. In a device of the class described, a jointed lever frame having long and short lever members connected at their ends by end bolts, attachment plates pivotally connected to said end bolts, a joint or pivot bolt for the lever frame, an adjustable tension adjusting plate pivoted at one end on said joint or pivot bolt and having perforations in its other end, an adjusting screw arranged on the lever frame and adapted to engage any one of said perforations in said plate, and a door spring coiled on the said joint or pivot bolt and having its extremities connected to the short lever member and to said tension adjusting plate respectively, substantially as set forth.

4. In a device of the class described, a jointed lever frame having long and short lever members connected at their ends by end bolts, attachment plates pivotally connected to said end bolts, a closing spring arranged at the joint of the lever frame, an air cylinder pivoted at one extremity inside of the lever frame, a sliding hollow piston rod pivotally connected at one end to one of said end bolts and having at its other end a piston head sliding within the cylinder and escape and valve openings near the piston head, and a sliding valve plug adapted to work inside of the hollow piston rod and to cover and uncover said valve openings, substantially as set forth.

5. In a combined door check and spring, the combination of a spring jointed lever frame having a short swinging section or member carrying at its outer extremity an end bolt, of an air cylinder pivoted at one extremity to the frame and having a central exhaust opening and end exhausts in its pivoted end, a sliding hollow piston rod pivotally attached at its outer extremity to said end bolt of the short swinging section of the lever frame and carrying at its inner end a piston head moving within the cylinder, said piston rod being provided at a point near the piston head with a series of escape openings, and at a point beyond the escape openings with a series of valve openings, and a valve device adapted to cover and uncover said valve openings, substantially as set forth.

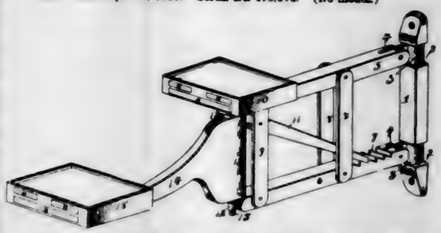
**504,827. ELECTRO-MECHANICAL GONG.** FRANKLIN M. DUNN, Baltimore, Md. Filed June 23, 1892. Renewed June 9, 1893. Serial No. 477,118. (No model.)

*Claim.*—1. The herein described device for mechanically operating electro-mechanical gongs, consisting of the spring-actuated trains of gearing B and E, the eccentric H and rod I connecting the same, the vertical sliding rod N, gravity rod M, cam R and catch pin L, and the armature F, and magnets G, all substantially as and for the purpose specified.



2. In a magneto-electrical gong, the spring-actuated gearing E, provided with the armature F, having hook-shaped projection F', magnets G, catch pin L, vertically sliding rod N, gravity rod M, and the shaft O, provided with the eccentric H and cam R, in combination with the vertical rod I and gong striking mechanism B, all substantially as and for the purpose specified.

**504,828. DENTAL BRACKET.** ALONZO B. ELMORE, Magnolia, Ark. Filed Apr. 17, 1893. Serial No. 470,673. (No model.)

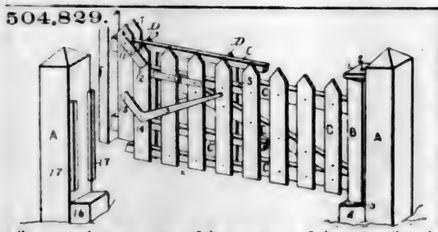


*Claim.*—The post or support 1, combined with the hinge-clips 3 loosely mounted thereon so as to swing horizontally, the parallel bars 5 and 6 pivotally attached to the hinge-clips 3, the lower bar 6 being provided on its upper face adjacent to its inner end with ratchet teeth 7, the parallel uprights 9 pivotally connected to said bars 5 and 6 adjacent to the outer ends thereof, a pawl 11 pivotally mounted between the uprights 9 and engaging the ratchet teeth 7, the parallel tie-bars 8 pivotally connected to the bars 5 and 6 and arranged adjacent to the ratchet teeth and located at opposite sides of the pawl to prevent the latter from being accidentally disengaged from the ratchet teeth by lateral movement, the hinge-clips 12 pivotally connected to the outer ends of the bars 5 and 6, and the arm 14 provided at its inner end with a vertically enlarged head hingedly connected to the clips 12 and arranged between and supporting the same and adapted to swing horizontally, substantially as described.

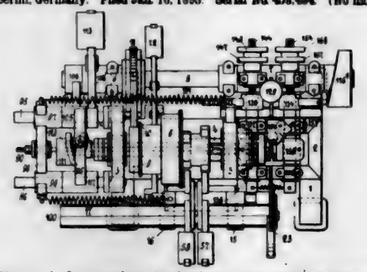
**504,829. GATE.** VINCENT PRIOUX, Perryville, Mo. Filed Apr. 20, 1893. Serial No. 471,161. (No model.)

*Claim.*—1. In a gate, the combination, with a pair of fence posts, of a pivot-post hinged to one of the fence posts, a pair of main rails attached to the pivot-post and cut away at their outer ends, a series of inside and outside pickets attached to the rails, a pair of auxiliary rails arranged to rest on top of the outer ends of the main rails and between the inside and outside pockets, a locking-post and a series of auxiliary pickets secured to the auxiliary rails, a pair of link-bars pivotally attached to the auxiliary pickets and to the main pickets, a bell-crank lever pivoted to the main pickets and to the auxiliary pickets, means for holding the bell-crank lever in its raised position, and a pair of stops secured to one of the fence-posts for engagement with the locking-post, substantially as described and for the purpose set forth.





**504,830. MACHINE FOR FINISHING WASHERS.** KARL FROCHT, Berlin, Germany. Filed Jan. 16, 1893. Serial No. 458,484. (No model.)



*Claim.*—1. In a machine for finishing washers the following mechanically operated instrumentalities in combination, to wit: a receiver for the blanks, a revoluble live spindle, an expansible chuck revoluble with and having endwise motion on said spindle, a step by step movable transfer mchanism adapted to transfer the blanks one after another from the receiver into the plane of endwise motion of the chuck and to receive and deliver the finished washers, and means for expanding the chuck after its passage into the axial opening of the blank, for the purpose set forth.

2. In a machine for finishing washers the following mechanically operated instrumentalities in combination, to wit: a live spindle, an expansible chuck revoluble with and having endwise motion on the spindle, a step by step revoluble holder adapted to receive and carry a blank into the plane of endwise motion of the chuck, a receiver for the blanks, a feeding device for feeding said blanks to the holder and means for expanding the chuck after passing into the central opening of the blank in the holder and for releasing said blank from the holder, for the purpose set forth.

3. In a machine for finishing washers the following mechanically operated instrumentalities in combination, to wit: a receiver for the blanks, a step by step revoluble holder therefor, a feeding device for feeding one blank after another to the holder, a live spindle, an expansible chuck revoluble with and having endwise motion on the live spindle, means for positioning the holder to present a blank to the chuck, for expanding the chuck after passing into the axial opening of the blank and for releasing the latter from the holder, and finishing tools adapted to operate on the blank, for the purpose set forth.

4. In a machine for finishing washers the following mechanically operated instrumentalities in combination, to wit: a live spindle, an expansible chuck revoluble with and having endwise motion on said spindle, a holder for the blanks having a step by step rotation in the plane of endwise motion of the chuck and adapted to present a blank thereto, feeding devices for feeding one blank after another to the holder, means for expanding the chuck after passing into the axial opening of the blank in the holder, finishing tools adapted to operate on the blank, and means for releasing the finished blank from the chuck and returning the same to the holder, for the purpose set forth.

5. In a machine for finishing washers the following mechanically operated instrumentalities in combination, to wit: a live spindle, an expansible chuck revoluble with and having endwise motion on said spindle, a holder provided with a pocket for the reception of a finished washer, retaining devices for securing a blank to the holder, said holder having a step by step rotation in the plane of endwise motion of the chuck timed to alternately present a blank to and receive a finished washer from said chuck, means for expanding the chuck after passing into the axial opening of a blank in the holder and releasing said blank therefrom, and means for withdrawing the chuck from the finished washer when the receiving pocket of the holder is in position to receive the same, substantially as and for the purpose set forth.

6. In a machine for finishing washers the following mechanically operated instrumentalities in combination, to wit: a live spindle, an expansible chuck revoluble with and having endwise motion on said spindle, a holder provided with two pockets, for a blank and a finished washer, respectively, said pocket for the blank having an opening in its side, a yielding gate closing the outlet of said pocket, a receiver for the blanks, feeding devices for feeding said blanks one after another to the open-sided pocket of the holder, means for imparting to said holder a step by step rotation timed to alternately present the open side of the pocket for the blanks and the pocket for the finished washer to the chuck, means for expanding the chuck after passing into the central opening of a blank, and means for withdrawing the chuck from the finished blank, for the purposes set forth.

7. In a machine for finishing washers, the following mechanically operated instrumentalities in combination, to wit: a live spindle, an expansible chuck revoluble with and having endwise motion on said spindle, a receiver for the blanks, a step by step movable transferring device adapted to transfer one blank after another from the receiver into the plane of endwise motion of the chuck, and to receive a finished washer from said chuck and deliver said washer, finishing tools having a fixed relation relatively to the live spindle and chuck and adapted to operate on the opposite faces and the periphery of a blank, and mechanism adapted to move said tools into and out of their relative operative positions, for the purposes set forth.

8. In a machine for finishing washers the following mechanically operated instrumentalities in combination, to wit: a live spindle, an expansible chuck revoluble with and having endwise motion on said spindle, a receiver for the blanks, a step by step movable transferring device adapted to transfer one blank after another from the receiver into the plane of endwise motion of the chuck, and to receive the finished washer from said chuck and deliver said washer, finishing tools having a fixed relation relatively to the live spindle and chuck and adapted to operate on the opposite faces and the periphery of a blank, and mechanism adapted to move said tools into and out of their relative operative positions, the operation of said mechanism being timed to the movements of the transferring device, for the purposes set forth.

9. In a machine for finishing washers the following mechanically operated instrumentalities in combination, to wit: a live spindle, an expansible chuck revoluble with and having endwise motion on the spindle, a discoidal holder provided with a radially arranged pocket for a blank, said pocket and its inlet adjustable relatively to the thickness of the blank, and spring actuated gates for closing the outlet thereof, a receiver for the blanks, a follower operating on said blanks to feed the same to the face of the discoidal holder, said holder also provided with a tangentially arranged pocket for the reception of a finished washer, finishing tools having a fixed relation to the live spindle and chuck and adapted to operate on the opposite faces and periphery of a blank, and mechanism constructed and adapted to impart a step by step rotation to the holder, a reciprocating and expanding and contracting movement to the chuck and a reciprocating motion to the tools in a plane perpendicular to the axis of the chuck said movements being timed to permit the holder to present the open side of its pocket to the chuck, move the same into the axial opening of the blank therein, expand the chuck, withdraw the blank from the pocket in the holder against the stress of the spring of its gates, move the finishing tools into operative position, move the same back into their normal position after the blank is finished, and collapse and withdraw the chuck from the finished washer, and simultaneously therewith move the discoidal holder to bring its pocket for the reception of said washer into position to receive the same, substantially as set forth.

10. In a machine for finishing washers the following mechanically operated instrumentalities in combination, to wit: a live spindle, an expansible chuck revoluble with and having endwise motion on the spindle, a discoidal holder provided with a radially arranged pocket for a blank, said pocket and its inlet adjustable relatively to the thickness of the blank, and spring actuated gates for closing the outlet thereof, a receiver for the blanks, a follower operating on said blanks to feed the same to the face of the discoidal holder, said holder also provided with a tangentially arranged pocket for the reception of a finished washer, finishing tools having a fixed relation to the live spindle and chuck and adapted to operate on the opposite faces and periphery of said blank, and mechanism operated from the live spindle and adapted to impart a step by step rotation to the holder, a reciprocating and expanding and contracting movement to the chuck, and a reciprocating motion to the tools in a plane perpendicular to

the axis of the chuck, said movements being timed to permit the holder to present the open side of its pocket to the chuck, move the same into the axial opening of the blank therein, expand the chuck, withdraw the blank from the pocket in the holder against the stress of the spring of its gates, move the finishing tools into operative position, move the same back into their normal position after blank is finished, and collapse and withdraw the chuck from the finished washer, and simultaneously therewith move the discoidal holder to bring its pocket for the reception of said washer into position to receive the same, substantially as set forth.

11. The combination with the live spindle, a chuck revoluble therewith, the shaft 24, and a ratchet and pawl mechanism controlled by said spindle and adapted to impart a step by step rotation to said shaft; of the disk 23 provided with a radial feed channel opening into a like pocket extending beyond the periphery of the disk, said pocket having a substantially wedge shaped lateral extension provided with a wedge-shaped opening in one of its sides and having motion in a plane intersecting the longitudinal axis of the live spindle in front of the chuck whereby a washer in said pocket may be positioned for chucking, and spring-actuated gates adapted to close the outlet of the pocket, substantially as and for the purpose set forth.

12. The combination with the live spindle, a chuck revoluble therewith, the shaft 24, and a ratchet and pawl mechanism controlled by said spindle and adapted to impart a step by step rotation to said shaft; of the disk 23 provided with a radial feed channel adjustable as to depth, said channel opening into a pocket extending beyond the periphery of the disk, said pocket having a substantially wedge-shaped lateral extension provided with a wedge-shaped opening in one of its sides and having motion in a plane intersecting the longitudinal axis of the live spindle in front of the chuck whereby a washer in said pocket may be positioned for chucking, and spring actuated gates adapted to close the outlet of the pocket, substantially as and for the purpose set forth.

13. The combination with the live spindle, a chuck revoluble therewith, the shaft 24, and a ratchet and pawl mechanism controlled by said spindle and adapted to impart a step by step rotation to said shaft; of the disk 23 provided with a radial feed channel adjustable as to depth, said channel opening into a pocket extending beyond the periphery of the disk, said pocket having a substantially wedge-shaped lateral extension, provided with hinged and spring connected end walls 41, 42, and a side wall composed of two wedge-shaped pieces 43, 44, connected with and adjustable laterally on said end walls, said pieces 43, 44, constructed to leave a wedge-shaped opening between them, said open-sided wedge-shaped pocket having motion in a plane intersecting the longitudinal axis of the live spindle in front of the chuck, whereby a blank therein may be positioned for chucking, substantially as and for the purpose set forth.

14. The combination with the live spindle, a chuck revoluble therewith, the shaft 24, and a ratchet and pawl mechanism controlled by said spindle and adapted to impart a step by step rotation to said shaft; of the disk 23, provided with a radial feed channel adjustable as to depth, said channel opening into a pocket extending beyond the periphery of the disk, said pocket having a substantially wedge-shaped lateral extension provided with an opening in one of its side walls of less diameter than that of the washer blank, one of its side walls adjustable inward and from the other, spring actuated gates adapted to close the wedge-shaped outlet of the pocket, a receiver V-shaped in cross-section for receiving the blanks on edge, and a follower adapted to press the foremost blank against the channeled face of the disk, substantially as and for the purpose set forth.

15. The combination with the live spindle, a chuck thereon, finishing tools adapted to operate on a washer blank when chucked, the shaft 24, its feed disk 23 adapted to feed a blank to the chuck, and a ratchet and pawl mechanism controlled from the live spindle and adapted to impart a continuous step by step rotation to shaft 24; of mechanism for intermittently locking the said ratchet and pawl mechanism out of operation, for the purpose set forth.

16. The combination with the live spindle, a chuck thereon, finishing tools adapted to operate on a washer blank when chucked, the shaft 24, its feed disk 23 adapted to feed a blank to the chuck, and a ratchet and pawl mechanism controlled from the live spindle and adapted to impart a continuous step by step rotation to shaft 24; of mechanism for intermittently locking the said ratchet and pawl mechanism out of operation, said mechanism also controlled from the live spindle, for the purpose set forth.

17. The combination with the live spindle, a chuck thereon, finishing tools adapted to operate on a washer blank when chucked, the shaft 24, its feed disk 23 adapted to feed a blank to the chuck, and a ratchet and a pawl mechanism controlled from the live spindle and adapted to impart a continuous step by step rotation to shaft 24; of mechanism for intermittently locking the said ratchet and pawl mechanism out of operation consisting of tappets on shaft 24, a weighted locking lever, as 69, and a revoluble shaft 8 provided with a radial tappet adapted to engage said lever and rock the same on its fulcrum, for the purpose set forth.

18. The combination with the live spindle, the shaft 24, tappets 65, 66, thereon, a ratchet and pawl mechanism controlled from the live spindle and adapted to impart a step by step rotation to said shaft, of mechanism for intermittently locking the said ratchet and pawl mechanism out of operation, consisting of a weighted locking lever adapted to engage one or the other tappet on shaft 24, and the shaft 8 provided with a radial lug or cam 74 adapted to rock the rocking lever, said shaft 8 deriving motion from said live spindle substantially as and for the purpose set forth.

19. The combination with the live spindle and the cam wheel 61* having four arms, said cam wheel fast on said spindle; of the shaft 24, the ratchet wheel 50 thereon, the weighted levers 59, 60, fulcrumed on shaft 24 and extending into the path of the arms of the cam wheel 61*, and the pawls 51 and 52 pivoted to said levers and adapted to engage the teeth of ratchet 50 on said shaft 24, substantially as and for the purpose set forth.

20. The combination with the, live spindle, the cam 9, and cam wheel 61* having four arms, said cam wheel fast on said live spindle, the shaft 24, the ratchet wheel 50, and tappets 65, 66, fast on said shaft, the weighted pawl levers 59, 60, fulcrumed thereon, and the pawls 51, 52, pivotally connected with said levers and adapted to engage the teeth of ratchet 50; of the shaft 8 provided with a cam or radial lug 74, a ratchet wheel 11 fast on said shaft, a pawl lever 10 loose thereon and extending into the path of the cam 9 on the live spindle, the pawl 13 pivotally connected with lever 10 and engaging the teeth of ratchet 11, and the locking lever 69 having a finger in the path of lug 74 on shaft 8 and extending into the path of tappets 65, 66, on shaft 24, substantially as and for the purpose set forth.

21. The combination with the disk 23 provided with a radial slot 27; of the face plate 28 covering one side of the slot and provided with a circular opening, the face plate 31 covering said circular opening, the disk 29 provided with an axial screw-threaded stem extending through face plate 31, and a nut or nuts on said stem whereby said disk may be projected more or less into the slot or withdrawn therefrom, for the purpose set forth.

22. The combination with the revoluble disk 23 provided with a radial channel leading to a pocket, said channel adjustable as to depth; of a feed trough V-shaped in cross section having its discharge end proximate to the channeled face of the disk, and a follower in and adapted to move toward said discharge end of the trough, for the purpose set forth.

23. The combination with the live spindle, a chuck thereon, the shaft 24, and mechanism for imparting a step by step rotation to said shaft; of the disk 23 provided with a radial feed channel, a pocket in communication therewith and extending beyond the periphery of the disk, said pocket substantially T-shaped at its outer end, a partition dividing the horizontal portion of the pocket into two compartments on a line with one edge of the radial channel in the disk, one of said compartments open at its outer end, the other having a wedge shaped outlet, and an opening in one of its side walls, and spring actuated gates for closing said outlet, said compartments revolving in a plane perpendicular to the longitudinal axis of the live spindle in front of and below the chuck respectively, substantially as and for the purpose set forth.

24. The combination with the hollow live spindle, an expansible chuck revoluble with the spindle, levers connected with and adapted to impart to the jaws of the chuck a rectilinear motion in one direction and expand said jaws, and springs acting on said levers to collapse the jaws and move the same in a reverse direction; of an actuating rod contained in the live spindle, actuating wedges rigidly connected with the rod and adapted to operate on the clutch jaw levers, and means for imparting motion in opposite directions to said rod, for the purpose set forth.

25. The combination with the hollow live spindle, an expansible chuck revoluble with the spindle, levers connected with and adapted to impart to the jaws of the chuck a rectilinear motion in one direction and expand said jaws, springs acting on said levers to collapse the jaws and move the same in a reverse direction; of an actuating rod contained in the live spindle, actuating wedges rigidly connected with said rod and adapted to act on the clutch jaw levers and rock the same in one direction, devices controlled from the live spindle adapted to impart motion to the rod in one direction, and a resilient power adapted to move said rod in an opposite direction, for the purpose set forth.

26. The combination with the hollow live spindle, the worm cam 120, the cam 121 at the rear end of said worm cam, both secured to the spindle and the fixed rods 95, 96; of the chuck actuating rod 90, the cross head 99 secured thereto, said cross head having sleeves 97, 98, for the rods 95, 96 respectively, a rock-lever provided with a stud adapted to engage with the worm cam on the live spindle and be disengaged therefrom by the cam 121, said lever operating on the cross-head 99 to move the same and the rod 90 in one direction, and means for moving said rod in a reverse direction, for the purpose set forth.

27. The combination with the hollow live spindle, the worm cam 120, the cam 121 at the rear end of said worm cam, both secured to the spindle, and the fixed rods 95, 96, of the chuck actuating rod 90, the cross head 99 having sleeves 97, 98, adapted to slide on said rods 95, 96, respectively, the lever 116 fulcrumed to and adapted to slide on rod 95 and to be guided by rod 96, the hub of said lever having bearing against sleeve 97 of the cross head, a roller 119 depending from said lever, said roller adapted to engage with the worm cam 120 and with the cam 121, substantially as and for the purpose set forth.

28. The combination with the hollow live spindle, the worm cam 120 and the cam 121 at the rear end of said worm cam, both cams fast on said spindle, the fixed rods 95, 96, the chuck actuating rod 90 and the cross head 99 having sleeves 97, 98 adapted to slide on rods 95, 96, respectively; of the lever 116 guided by rod 96, said lever provided with a sleeve 105 loose on rod 95 and having a radial pin 111 and a depending roller 119 adapted to engage worm cam 120 and to be engaged by cam 121, the weighted lever 112 loose on sleeve 105 and provided with a slot 110 in its nave for the radial pin 111, and the shaft 8 provided with cams 108 and 115 adapted to engage the arm 106 on sleeve 105 and arm 114 of weighted lever 112, substantially as and for the purpose set forth.

29. The combination with the hollow live spindle, the worm cam 120 and the cam 121 at the rear end of said worm cam fast on said spindle, the fixed rods 95, 96, the chuck actuating rod 90 and the cross head 99 having sleeves 97, 98 adapted to slide on rods 95, 96, respectively; of the weighted lever 112, the hub 109 thereof loosely mounted on nave 105 the lever 116 mounted on nave 105 of lever 106 and provided with a slot 110 for the reception of the pin 111, said lever 116 having in its outer downwardly bent free end a segmental slot for the passage of fixed rod 96, and provided centrally with a depending roller 119 adapted to engage with the worm cam 120 and the cam 121, the shaft 8 provided with cams 108 and 115 adapted to operate on lever 112 and its arm 106, and springs 100, 101, connected with the opposite ends of the cross head 99 and with fixed supports, substantially as and for the purpose set forth.

30. The combination with the hollow live spindle, the cam 9, the worm cam 120, cam 121, the rods 95, 96, and the chuck actuating rod 90 having sleeves 97, 98 adapted to slide on rods 95, 96, respectively; of the weighted lever 112, its radially slotted hub 109, the lever 116 provided with a radial arm 106, its nave 105 on which hub 109 is loosely mounted, said nave provided with a radial pin extending into the radial slot of said hub 109, said lever 116 having in its outer downwardly bent free end a segmental slot for the passage of fixed rod 96, and provided centrally with a depending roller 119 adapted to engage with the worm cam 120 and its cam 121, the shaft 8 provided with cams 108 and 115 adapted to operate on lever 112 and arm 106, a ratchet and pawl lever 11, 10, on said shaft, said lever in the path of cam 9 on live spindle, and the springs 100 and 101 connected with the opposite ends of the cross head and with fixed supports, substantially as and for the purpose set forth.

31. The combination with the live spindle and its chuck of a pair of tool holders carrying facing tools on one side of the chuck, said holders adapted to move toward and from the plane of rotation of said chuck and a tool holder on the opposite side of the chuck said holder carrying chamfering and edge tools and adapted to swing in a plane perpendicular to the axis of rotation of the chuck, and mechanism for moving said tools simultaneously into and out of operative position, for the purpose set forth.

32. The combination with the live spindle and its chuck; of a pair of tool holders carrying facing tools on one side of the chuck, said holders adapted to move toward and from the plane of rotation of said chuck, and a tool holder on the opposite side of the chuck, said holder carrying chamfering and edge tools and adapted to swing in a plane perpendicular to the axis of rotation of the chuck, and mechanism for moving said tools simultaneously into and out of operative position, said mechanism operated from the live spindle, for the purpose set forth.

33. The combination with the live spindle and its chuck; of a tool holder, a fixed pivot therefor, said tool holder carrying a chamfering and an edge cutter adapted to operate simultaneously on a blank, and an actuating device controlled by a revoluble element of the machine adapted to swing the holder toward the chuck into the plane of rotation of a washer thereon.

34. The combination with the live spindle and its chuck; of a tool holder, a fixed pivot therefor, a reciprocating bar provided with an inclined face adapted to operate on the holder and swing the same toward the chuck into the plane of rotation of a washer thereon, a revoluble cam acting on the bar to move the same in one direction and means for returning the tool holder and bar into their normal positions after having been moved out of it, substantially as and for the purpose set forth.



35. The combination with the live spindle, its chuck, a tool holder, a fixed pivot therefor, said holder provided near its upper end with a weighted arm 128, near its lower end with a rearwardly projecting arm, and a finger 122 pivoted below the last named arm, and a set screw working in said arm and having bearing on the pivoted finger, and an actuating bar provided with an inclined face 120' adapted to act upon the under side of the finger and tilt the holder against the stress of its weight toward the chuck; of a shaft deriving motion from the live spindle, a cam on said shaft acting on the bar to move it in one direction, and a spring adapted to move said bar in a reverse direction, substantially as and for the purpose set forth.

36. The combination with the live spindle and its chuck; of two pivoted tool holders provided with facing tools, said holders arranged on one side of the chuck and adapted to swing toward and from the plane of rotation of a washer on said chuck and toward and from each other, and an actuating device controlled by a revoluble element of the machine adapted to move said holders simultaneously toward each other whereby both faces of a washer are finished simultaneously, substantially as set forth.

37. The combination with the live spindle and its chuck; of two pivoted tool holders provided with facing tools, said holders arranged on one side of the chuck and adapted to swing toward and from the plane of rotation of a washer on the chuck and toward and from each other, an actuating device controlled from the live spindle and adapted to move the holders simultaneously toward each other, and a spring connected with the holder pivots to move said holders from each other, substantially as and for the purpose set forth.

38. The combination with the live spindle, its chuck, two tool holders provided each with a facing tool, said holders arranged on one side of the chuck, pivots for the holders in a plane perpendicular to the axis of the live spindle, and adjusting devices for adjusting the pivots in said plane; of an actuating device, as a bar, having inclined faces adapted to act upon the tool holders and move the same toward each other, and a spring connected with the holder pivots for moving said holders from each other, substantially as and for the purpose set forth.

39. The combination with the live spindle, its chuck, two tool holders provided each with a facing tool, said holders arranged on one side of the chuck, pivots on which the holders are adjustably secured, said pivots in a plane perpendicular to the axis of the live spindle, and adjusting devices for adjusting the pivots in said plane; of an actuating device, as a bar 118' provided with inclines 119', 121' adapted to act on radial arms secured to the holder pivots and move said holders toward each other, and a revoluble cam adapted to move the bar in one direction, and a spring adapted to move said bar in an opposite direction, substantially as and for the purpose set forth.

40. The combination with the live spindle, its chuck, the pivot shafts 136, 156, the tool holders 139, 159, provided with split bearings for said shafts, a radial arm projecting from said bearings, and a finger pivoted below the radial arm, said arms provided with an adjustable abutment screw for their respective fingers, and a spring 151 connected with the pivot shafts; of the bar 118' provided with the inclines 119' and 121' the shaft 8, the cam 116' thereon, and the spring 117', said cam and spring adapted to move the bar in opposite directions, substantially as and for the purpose set forth.

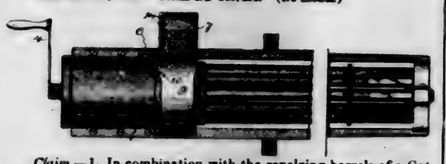
41. The combination with the hollow live spindle radially slotted at its outer end, and a chuck composed of jaws adapted to move toward and from each other, said jaws connected with actuating levers working in the radial slots of the spindle, and a chuck frame having a rectangular opening and pivot bearings for the jaw actuating levers; of the rod 90 contained and having endwise motion in the spindle, the wedges 88 and 89 at the outer end of said rod, said wedges adapted to move the jaw levers in one direction to spread the jaws of the chuck, and means for moving said levers in a reverse direction and collapse said jaws, for the purpose set forth.

42. The combination with the hollow live spindle radially slotted at its outer end, and a chuck composed of jaws adapted to move toward and from each other, said jaws connected with actuating levers working in the radial slots of the spindle, and a chuck frame having a rectangular opening, and pivot bearings for the jaw actuating levers, said bearings adjustable within said opening; of the rod 90 contained and having endwise motion in the spindle, the wedges 88 and 89 at the outer end of said rod, said wedges adapted to move the jaws in one direction to spread the jaws of the chuck, and means for moving said levers in a reverse direction and collapse said jaws, for the purpose set forth.

43. In a machine for finishing washers, a live spindle, an expansible chuck revoluble with and having endwise motion on said spindle, a receiver for the blanks, a transfer device for transferring the blanks one after another from the receiver into the plane of endwise motion of the chuck, an edge and chamfering tool for truing the periphery and chamfering the edge of a blank, and facing tools adapted to act simultaneously on both faces of such blank, and mechanism for im-

parting the necessary movements to said devices, said mechanisms deriving their motion from the live spindle, for the purpose set forth.

## 504,831. MACHINE-GUN. RICHARD J. GATLING, Hartford, Conn. Filed Oct. 20, 1892. Serial No. 449,423. (No model.)



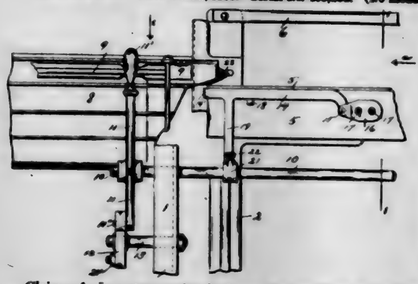
*Claim.*—1. In combination with the revolving barrels of a Gatling gun, a carrier cylinder having projecting arms revolving with the barrels, a hopper hinged to the frame of the gun with an opening for the passage of a belt through it above the carrier in the plane of the projecting arms, and a belt with spring fingers for grasping cartridges and with prongs between each set of fingers projecting into the path of and engaging with the arms on the carrier, adapted to pass through the hopper, substantially as specified.

2. In combination with the revolving barrels of a Gatling gun, a carrier cylinder having projecting arms revolving with the barrels, a hopper hinged to the frame of the gun with an opening for the passage of a belt through it above the carrier, a cover with its bottom face cut away to leave a space for the passage of the belt hinged to the hopper over the opening, a belt with spring fingers for grasping cartridges and with prongs between each set of fingers projecting into the path of and engaging with the arms on the carrier, adapted to pass through the hopper, substantially as specified.

3. In combination with the revolving barrels of a Gatling gun, a carrier cylinder having projecting arms revolving with the barrels, a hopper hinged to the frame of the gun with a wide opening on one side for the entrance of the cartridges and belt and a narrow opening on the opposite side for the passage of the belt only, above the carrier, with grooves through the hopper adjacent to the narrow opening for the passage of the spring fingers and prongs, and a belt with spring fingers for grasping cartridges and with prongs between each set of fingers projecting into the path of and engaging with the arms on the carrier, adapted to pass through the hopper, substantially as specified.

4. In combination with the revolving barrels of a Gatling gun, a carrier cylinder with projecting arms revolving with the barrels, a hopper hinged to the frame of the gun with a wide opening on one side for the entrance of the cartridges and belt and a narrow opening on the opposite side for the passage of the belt only, above the carrier, with grooves through the hopper adjacent to the narrow opening for the passage of the spring fingers and prongs, a cover hinged to the hopper over the opening, with its bottom face cut away to leave a space for the passage of the belt, and a belt with spring fingers for grasping cartridges and with prongs between each set of fingers projecting into the path of and engaging with the arms on the carrier, adapted to pass through the hopper, substantially as specified.

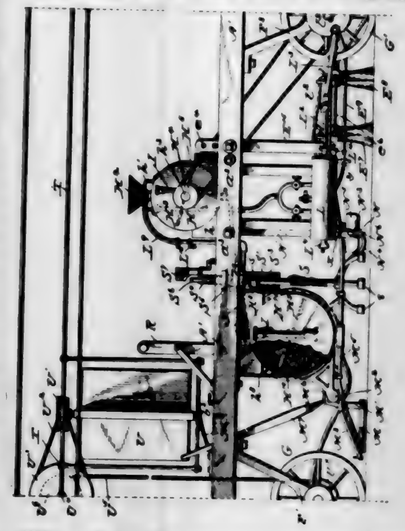
## 504,832. STOP-MOTION FOR LOOMS. HENRY GAUDT and SAMUEL E. WILD, Woonsocket, R. I., assignors to the Knowles Loom Works, Worcester, Mass. Filed Mar. 9, 1893. Serial No. 465,232. (No model.)



*Claim.*—1. In a stop motion for looms, the combination with the lay, of an arm pivoted at one end on the front thereof, with its free end bent around the end of the race plate, and adapted to be engaged by a shuttle projecting from its box, and said pivoted arm provided with an arm extending downwardly therefrom, at the front of the lay, with its lower end adapted to engage an arm fast on the shipper shaft, on the forward motion of the lay, for the purpose stated, and said arm and shipper shaft, substantially as shown and described.

2. In a stop motion for looms, the combination with the lay, of an arm located at the end of the lay, and pivoted at one end on the front side thereof, with its free end extending around the end of the race-plate, and adapted to be engaged by a shuttle projecting from its box, and said pivoted arm provided with an arm extending downwardly therefrom, on the front side of the lay, with its lower end adapted to engage an arm fast on the shipper shaft, for the purpose stated, and said arm and shipper shaft, and a knob or stud secured on the lay for supporting the free end of the pivoted arm, substantially as shown and described.

## 504,833. PAINTING-MACHINE. WILLIAM C. GEBHARDT, Lulling, Tex., assignor of two-thirds to Otis McGaffey, Jr., and Charles J. Butfield, same place. Filed May 10, 1893. Serial No. 473,645. (No model.)



*Claim.*—1. In a traveling automatic painting machine, the combination with the bearing wheels of the machine, of a reciprocating paint brush adapted to alternately sweep back and forth over the surface to be painted, and suitable connections between the brush and the said machine bearing wheels, for reciprocating the brush, substantially as described.

2. In a traveling automatic painting machine, the combination with the bearing wheels of the machine, of a reciprocating paint brush adapted to alternately sweep back and forth over the surface to be painted a device for vertically adjusting the brush, and suitable connections between the brush and the said machine bearing wheels for reciprocating the brush, substantially as described.

3. In a traveling automatic painting machine, the combination, with the bearing wheels of the machine, of a reciprocating brush adapted to alternately sweep back and forth over the surface to be painted, guides which direct the movement of the brush, and suitable connections between the brush and the said machine bearing wheels for reciprocating the brush, substantially as described.

4. In an automatic painting machine, the combination with a reciprocating paint brush, of adjustable guides which direct the movement of the brush, said guides having an upward curve at each extremity to raise and turn the brush and suitable connections between the brush and the machine wheels for reciprocating the brush, substantially as described.

5. In an automatic painting machine, the combination with a series of reciprocating paint brushes, having a spacing and connecting device between each brush and the next of the series of adjustable guides which direct the movement of each brush of the series, said guides having an upward curve at each extremity to raise and turn the brushes, and a suitable connection between the series of brushes and the machine wheels for reciprocating the brushes, substantially as described.

6. The combination with the frame A', of the crank shaft F, the wheels G keyed to the shaft, the connecting rods $E^5$ $E^6$, the brush E, the slotted guides $E^9$ engaging the ends $c^8$ $c^9$ of the brush back $E^3$, and the adjusting bars $E^4$ supporting the guides and adjustably attached to the frame A', substantially as described.



7. The combination with the frame A', of the crank shaft F, the wheels G keyed to the shaft, the connecting rods $E^5$ $E^6$, the brush E, the brush E, the gage rods $E^7$ connecting the brushes, the slotted guides $E^9$ engaging the ends $c^8$ $c^9$ of the brush backs $E^3$ of each brush, and the adjusting bars $E^4$ supporting the guides and adjustably attached to the frame as described

8. The combination with the frame A' of the crank shaft $F^3$, the wheels G' keyed to the shaft, the connecting rods $E^{10}$ $E^{11}$, their respective sets of brushes E $E^2$ and $E^{11}$ $E^{12}$, their respective gage rods $c^8$ $c^9$, their respective slotted guides $E^9$ $E^{13}$ formed in one piece, and the adjustable guide supports adjustably attached to the frame A', as described

9. The combination with the frame A having the crank shaft F, the wheels G keyed to the shaft, the connecting rods $E^5$ $E^6$, the brushes E E, the gage rods $E^7$ connecting the brushes, the slotted guides $E^9$ engaging the ends $c^8$ $c^9$ of the backs $E^3$ of each brush, and the adjusting bars $E^4$ supporting the guides and adjustably attached to the frame, of the crank shaft $F^3$, wheels G' keyed to the shaft, the connecting rods $E^{10}$ $E^{11}$, their respective sets of brushes $E^2$ $E^3$ and $E^{11}$ $E^{12}$, their respective gage rods $c^8$ $c^9$, their respective slotted guides $E^9$ $E^{13}$ formed in a single piece, and the adjustable guide supports $E^{14}$ adjustably attached to the frame, substantially as described

10. The combination with the frame A', of the cross piece $M^2$ journaled in the bearings $M^3$ secured to the frame A', brushes adjustable on the cross piece $M^2$, the lever $M^7$ for raising the brushes and the rack $M^8$ for locking the lever substantially as described

11. The combination with the frame A', of the cross piece $M^2$, and the brushes $M^9$ $M^{10}$ facing each other and adjustable along the cross piece $M^2$, substantially as described

12. In an automatic painting machine, the combination of a reciprocating paint brush, suitable connections between the brush and the machine wheels for reciprocating the brush, a receptacle for containing the paint, and suitable pipe connections between the brush and the paint receptacle for supplying paint to the brush, substantially as described

13. In a painting machine, having a paint brush adapted to be automatically operated by the machine, the combination of a sprinkler on the brush, a paint receptacle and suitable pipe connections between the receptacle and the sprinkler to supply paint to the brush, substantially as described

14. In a painting machine having a paint brush adapted to be automatically reciprocated by the machine, a paint receptacle, a paint distributer secured to and reciprocating with the brush, suitable flexible pipe connections between the receptacle for supplying paint to the distributer, an air pump actuated by the machine, and suitable pipe connections between the air pump and the paint receptacle, substantially as described

15. The combination with an automatic painting machine having the reciprocating brush E' and suitable connections with the wheel G for reciprocating the brush, of the sprinkler K' located between the brush bristles, the paint cylinder H', the flexible tube communication K between the sprinkler and the cylinder, a valve in said tube for closing the same, an air pump operated by the machine wheels, and pipe communication between the air pump and the cylinder, substantially as described

16. The combination with a painting machine having the forward and central reciprocating brushes E' E, and E' $E^3$, and suitable connections with the wheels G G' for reciprocating the brushes; of the sprinklers located in the brushes, the paint cylinder H', flexible tube communication between each brush and the paint cylinder, the valves therein, the mixer cylinder H, the paint supply pipe J connecting the cylinders, the air pump L, its piston rod connection with the wheels G', its air pressure tube $L^8$ communicating with the mixer cylinder H, the stirrers $H^3$ $H^3$ located in the cylinders, their belt and pulley connections actuated by the wheels G G', the gages I on the cylinders, and means on the mixer cylinder H for filling the same, substantially as described

17. The combination with a painting machine having brushes adapted to be automatically operated by the machine to paint a surface, of a set of laterally adjustable brushes located at an angle to the first brushes and adapted to paint each side of a projection or rib on said surface, and suitable connections between each set of brushes and the machine, whereby both sets of brushes are simultaneously driven to paint an irregular surface, as described

18. In a painting machine, the combination with the laterally adjustable paint brushes mounted on the cross piece $M^2$ as described, of the reciprocating paint brushes E' E, and E' $E^3$, their adjustable slotted guides, suitable connections between the brushes and the wheels G G' for reciprocating the same, the sprinklers on each brush, the paint cylinder H', its tube communication with the several sprinklers, the mixer cylinder H, its tubular connection with the cylinder H', the stirrers $H^3$ $H^3$, their belt and pulley communications with the wheels G G', the gages I on the cylinders, and means on the mixer cylinder H for filling the same, as described

19. In a traveling painting machine having supporting wheels, the combination with a paint receptacle mounted thereon, of the standards N' secured to the machine frame A', the sprinkler N journaled therein and having the drip rim $N^2$, its valve and valve handle $N^2$ $N^3$, the lever $N^5$ for rocking the sprinkler, its catch $N^7$ on the standard N', the pipe $N^4$ for supplying paint to the sprinkler connected to said receptacle, and an air pump actuated by the machine to force the paint to the sprinkler, substantially as described

20. In a painting machine having brushes adapted to be automatically operated by the machine, a paint receptacle, detachable tubular connections between the paint receptacle and the brushes, and an air pump connected with the paint receptacle to force the paint through the connections, the combination with the pump valves to cut off the communication of the pump with the paint receptacle and the air supply and a cock to connect the pump directly through the detachable tube connections to the brushes, substantially as described

21. The combination with the frame A', of the cross brace $a^4$, the piston S' secured to the same, the rod S provided with a suitable foot and having the piston head $s'$, the spring $S^3$ located in the piston between the piston head $s'$ and the bottom of the piston, the plunger $S^4$ located in the piston, the lever $S^6$ pivoted to the cross piece and having its head bearing against the plunger $S^4$, and the rack $S^7$, substantially as described

22. The combination with a traveling automatic painting machine having supporting wheels, of a detachable sweeper, driving gear for operating the sweeper and suitable connections between the supporting wheels of the painting machine, and the sweeper driving gear, substantially as described

23. The combination with a traveling automatic painting machine having supporting wheels, of a detachable sweeper consisting of a vertically swinging box pivoted to the sweeper frame, a rotating roller brush and suitable connections between the roller brush and the wheels of the painting machine to actuate the brush, as described

24. The combination with a traveling automatic painting machine having supporting wheels, of a detachable surfacing machine having driving gear and suitable connections between the supporting wheels of the painting machine and the driving gear of the surfacing machine, substantially as described

25. The combination with a traveling automatic painting machine of a detachable surfacing machine having supporting wheels consisting of a pair of drums turning in the machine frame, an endless belt passing over said drums and provided with suitable brushes, and suitable connections between one of the drums and the wheels of the painting machine to actuate the drum and move the endless belt, as described

26. The combination with a traveling automatic painting machine having supporting wheels, of a detachable sweeper having suitable driving gear, a detachable surfacer having suitable driving gear, and suitable connections between the supporting wheels of the painting machine and the respective driving gears of the sweeper and surfacing machines, substantially as described

27. The combination with a traveling automatic painting machine having supporting wheels, of a detachable sweeper having a rotating roller brush, a detachable surfacer consisting of rotating drums having an endless brush belt driven by said drums, and suitable connections between the roller brush, the drums and the wheels of the machine to actuate the sweeper and surfacer, as described.

28. The combination with a traveling automatic painting machine having supporting wheels and driving gear to actuate the machine, of a fixed rotating axle having one or more of the supporting wheels laterally adjustable thereon, and suitable connecting mechanism between said driving gear and axle, substantially as described

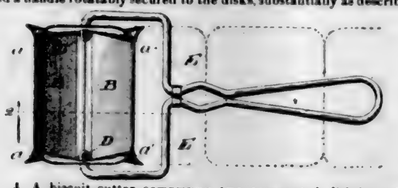
29. The combination with an automatic painting machine having moving parts, of laterally fixed rotating axles, suitable connecting mechanism between said axles and said moving parts and supporting wheels laterally adjustable upon said axles, substantially as described

## 504,834. BISCUIT-CUTTER. WILLIAM J. GROTENBUIS and HENRY T. SIDWAY, Chicago, Ill., assignors, by mesne assignments, to the Sidway Manufacturing Company, same place. Filed June 28, 1892. Serial No. 438,284. (No model.)

*Claim.*—1. A cutter comprising two disks, straight cutting blades secured to such disks and forming the sole means of connection between them, and a handle rotatably secured to the disks, substantially as described.

2. A cutter comprising two disks, straight cutting blades connecting such disks, an opening being left between the inner edges of such blades, and a handle rotatably secured to the disks, substantially as described.

3 A biscuit cutter comprising two corrugated disks, cutting blades connecting such disks with an opening at their inner edges, and a handle rotatably secured to the disks, substantially as described.



4 A biscuit cutter comprising two corrugated disks, cutting blades connecting the disks and secured to the corrugations, and a handle rotatably secured to the disks, whereby the cutter is revolved over the material to be cut, rectangular round cornered biscuit will be formed, substantially as described.

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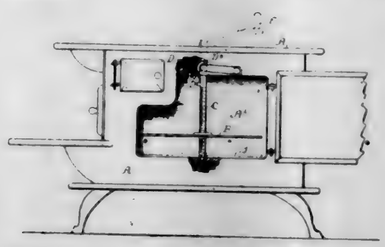
**504,835. PAPER FOR MAKING TRANSFER-PICTURES.** HECTOR DE GROUSILLIERS, Berlin, Germany. Filed Feb. 9, 1893. Serial No. 461,666. (No specimens.)

*Claim.*—1. An improved transfer paper, consisting of a base sheet, a coating thereon carrying the design and soluble in water, and a second coating covering the first composed of turpentine, drying oil and collodion, substantially as described.

2. The herein described method of making transfer paper consisting in applying a coating soluble in water to a base sheet, printing a design on said coating, drying the same and finally applying over the impression a coating of turpentine, drying oil and collodion, substantially as described.

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**504,836. ADJUSTABLE GRATE FOR STOVE-OVENS.** WILLIAM L. HIRDS, Des Moines, Iowa. Filed Apr. 3, 1893. Serial No. 468,815. (No model.)



*Claim.*—1. Improved means for vertically adjusting a grate in a stove oven, comprising the following elements in combination, to wit:—a screw threaded post having bearings in the top and bottom of the stove, a shelf or grate having a vertical screw threaded bore in one of its ends to receive said post, and mechanism at the top of the stove for rotating said post, for the purposes stated.

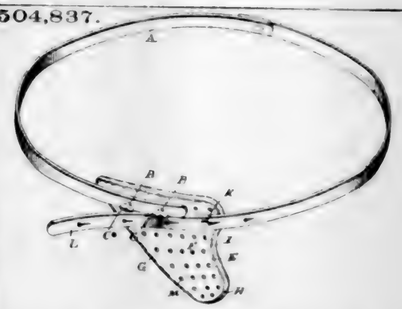
2. Improved mechanism for vertically adjusting a grate in a stove oven, comprising the following elements in combination, to wit:—a screw threaded post extended vertically through one end of the stove oven and having bearings both at its top and bottom for the purposes stated, a bevel gear wheel fixed to the top of said post, a shaft extended through the side of the stove at the top of the oven, and provided with a gear on its inner end to mesh with the aforesaid one, and a crank on its end, a rectangular shelf or grate within the oven and having the screw threaded bore near its end to admit the said post, all arranged and combined, substantially in the manner set forth for the purposes stated.

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**504,837. TRUSS.** JAMES A. HOPKINS, Milton, Del. Filed Feb. 18, 1893. Serial No. 462,873. (No model.)

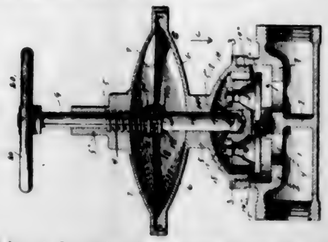
*Claim.*—In a truss, the combination with a reversible spring metal body band having threaded perforations at one end, a flat pad-faced triangular pad having threaded perforations near its upper edge, a sharply inclined side edge, a rounded lobe H, at one extremity, a curved outer edge I, above the rounded lobe, and ventilating openings or perforations arranged throughout every portion thereof, and set screws adapted to pass through the threaded perforations at one end of the body band and to engage the threaded perforations near the upper edge of the pad from either side thereof, to attach the body band to either face of the pad, substantially as set forth.

**504,837.**



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**504,838. VALVE.** JOSEPH JEANNOTTE, Worcester, Mass. Filed Oct. 12, 1892. Serial No. 448,700. (No model.)

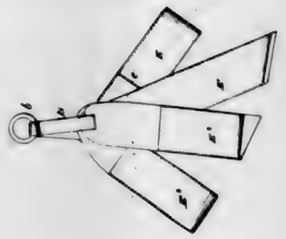


*Claim.*—1. In a valve, the combination with the body or shell, provided with a vertical division, and a horizontal division therein, and holes in the horizontal division forming the valve seats, and the neck of the valve, made in two parts, the lower end of the neck adapted to screw into the opening in the upper part of the body or shell, and the two parts of the neck provided with cup portions adjacent to each other, said cup portions secured together by a screw thread, and a movable diaphragm interposed between said cup portions, and secured at its outer edge to one of said cup portions, of the valve stem made in two parts, the upper part provided with a hand wheel at its upper end, and a screw thread at its lower end, with a flanged head thereon, attached to the upper side of the diaphragm, to have a free revolving motion thereon, and the lower portion of the stem provided with a flanged head at its upper end attached to the lower side of the movable diaphragm, and a block pivotally supported on the lower end thereof, and provided with conical shaped holes therein, in which are loosely supported the valves, and said valves, substantially as shown and described.

2. In a valve, the combination with the body or shell, provided with a valve seat with two openings therein, and the neck of the valve made in two parts, and provided with adjacent cup portions, and a movable diaphragm, made of one or more plates, interposed between said cup portions, of the valve stem made in two parts, the upper part of the stem provided with a hand wheel on its upper end, and a screw thread on its lower end, and attached to the upper side of the movable diaphragm, and the lower part of the stem attached to the lower side of the movable diaphragm, and a block supporting the valves, pivotally connected with the lower end of the stem of the valve, substantially as shown and described.

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**504,839. CHATELAINE.** AUGUSTA B. KNIGHT, Boston, Mass. Filed Feb. 1, 1893. Serial No. 460,544. (No model.)



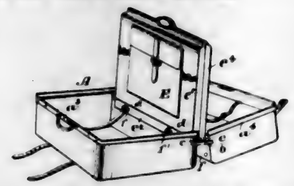


*Claim.*—1. A chatelaine bow comprising a plurality of branches provided on their inner sides with pockets, and means for suspending the bow from the person of the wearer substantially as set forth.

2. A chatelaine bow comprising a plurality of branches emanating from a knot or head and provided on their inner sides with pockets and means for suspending the bow from the person of the wearer, substantially as set forth.

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**504,840. TRAVELING-BAG.** ADAM C. KRICK, Newark, N. J. Filed Mar. 28, 1893. Serial No. 467,929. (No model.)



*Claim.*—1. A bag frame, comprising therein, the end pieces *a* and *a'*, frame-sections hinged or jointed thereto, rods or bars $a^4$ and $a^5$ connecting said hinged or jointed parts of the frame, and plates *b* secured to said end pieces *a* and *a'*, substantially as and for the purposes set forth.

2. In a bag or the like, the combination, with the frame thereof, of a sample or toilet case, comprising therein two pocket-shaped partitions pivotally connected at their bottoms, to form an additional bag, having flaps at their sides, and means for detachably securing said toilet case to said frame, substantially as and for the purposes set forth.

3. In a bag or the like, the combination, with the frame thereof, of a sample or toilet case, comprising therein two pocket-shaped partitions pivotally connected at their bottoms, to form an additional bag, having flaps at their sides, slotted plates on said flaps, and swivel posts or keys on said frame, adapted to be engaged and locked with said slotted plates, substantially as and for the purposes set forth.

4. In a bag or the like, the combination, with the frame thereof, comprising therein, the end pieces *a* and *a'* and the frame-sections hinged thereto, of a toilet case or sample case, comprising therein two pocket-shaped partitions pivotally connected at their bottoms, forming an additional bag, provided with flaps forming hinge-pieces, and means for detachably securing said parts to said frame, substantially as and for the purposes set forth.

5. In a bag or the like, the combination, with the frame thereof, comprising therein, the end pieces *a* and *a'*, frame-sections hinged or jointed thereto, and plates *b* secured to said end pieces *a* and *a'*, of a sample or toilet case, comprising therein two pocket-shaped partitions pivotally connected at their bottoms, to form an additional bag, provided with flaps forming hinge-pieces, and means for detachably securing said parts to said frame, substantially as and for the purposes set forth.

6. In a bag or the like the combination, with the frame thereof, comprising therein, the end pieces *a* and *a'*, frame sections hinged or jointed thereto, rods or bars $a^4$ and $a^5$ connecting said hinged or jointed parts of the frame, and plates *b* secured to said end pieces *a* and *a'*, of a sample or toilet case, comprising therein two pocket-shaped partitions pivotally connected at their bottoms, to form an additional bag, provided with flaps forming hinge-pieces, and means for detachably securing said parts to said frame, substantially as and for the purposes set forth.

7. In a bag or the like the combination, with the frame thereof, comprising therein the end pieces *a* and *a'*, frame sections hinged or jointed thereto, rods or bars $a^4$ and $a^5$ connecting said hinged or jointed portions of the frame, and swivel posts or keys *d* and *d'*, of a sample or toilet case, comprising therein two pocket-shaped partitions pivotally connected at their bottoms, to form an additional bag, provided with flaps $c^3$ and $c^4$ forming hinge-pieces, and slotted plates *f'* on said flaps, with which said swivel posts or keys *d* and *d'* are adapted to engage and lock, substantially as and for the purposes set forth.

8. In a bag or the like, the combination, with the frame thereof, comprising therein the end pieces *a* and *a'*, frame-sections, hinged or jointed thereto, rods or bars $a^4$ and $a^5$ connecting said hinged or jointed portions of the frame, and swivel posts or keys *d* and *d'*, and *c* and *c'*, of a toilet case or partition provided with flaps $c^3$ and $c^4$ forming hinge-pieces, and slotted plates *f* on said flaps, with which said swivel posts or keys *d* and *d'* are adapted to engage and lock, flaps *e* on the ends of said toilet case or partition, and slotted plates *f'* in said flaps *e*, with which said swivel posts or keys *c* and *c'* are adapted to engage and lock, substantially as and for the purposes set forth.

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**504,841. PROCESS OF TREATING MALLEABLE IRON.** JOHN H. LADD, London, England. Filed Sept. 30, 1891. Serial No. 407,336. (No specimens.)

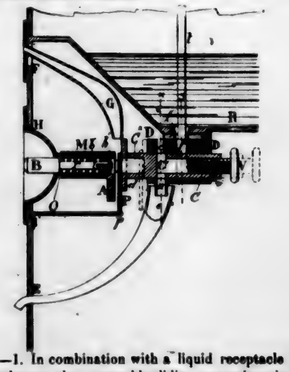
*Claim.*—1. The process of treating crystallized wrought iron substantially free from carbon to change the same to a fibrous condition, which consists in subjecting the iron to the action of a gaseous composition consisting of air, hydrocarbon vapor and vapor of water, substantially of the nature described, in a state of combustion, whereby the molecules assume throughout a fibrous structure, and the product is otherwise improved, as set forth.

2. The process of treating malleable iron for the purpose described, which consists in subjecting it to the action of a gaseous composition of air, hydrocarbon vapor and vapor of water in combustion, to heat the iron to a welding point without melting its mass, and before removing the iron from the heat increasing the proportion of carbon contained in the gaseous composition acting upon the iron, substantially as described.

3. The process of treating iron which consists in piling the crystallized metal and subjecting the same to the action of a gaseous composition in a state of combustion, composed of air, hydrocarbon (benzine) vapor and vapor of water in about the proportions named and free from sulphur, maintaining the iron at the welding heat obtained from said gaseous composition, and before removing the iron therefrom increasing the carbon constituent of said gaseous composition, without introducing sulphur, substantially in the manner and for the purpose described.

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**504,842. AUTOMATIC PERFUME-DELIVERY APPARATUS.** PHILIPPE LEONI, Paris, France. Filed May 31, 1893. Serial No. 476,177. (No model.) Patented in France Feb. 8, 1893, No. 227,742, and in Belgium Feb. 15, 1893, No. 103,476.



*Claim.*—1. In combination with a liquid receptacle having an outlet, a discharge tube, a movable sliding measuring piece having a cavity which is alternately in communication with the said outlet or the said discharge tube according to its position, a push-button arranged to force backward the said measuring device when a coil is interposed between them, a spring which replaces the said push-button, and devices arranged to be actuated by the said button after a slight interval and engaging the said measuring piece to draw it into the position for discharge substantially as set forth.

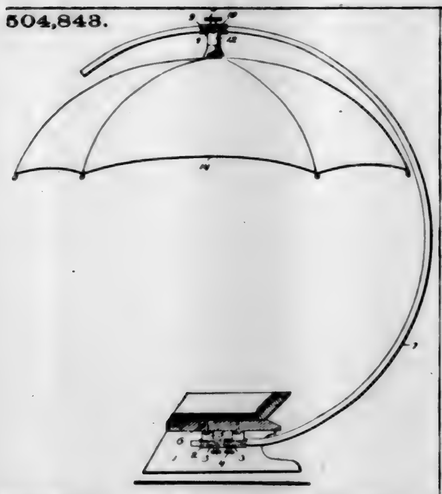
2. The push button B having a stem *b*, a terminal piece *b'*, and a replacing spring *r*, in combination with the movable socket M having a hole which permits the inward and outward play of the said stem but not of the said screw head, this socket being also provided with lugs *a a'* and studs *o o'*, a sliding measuring piece C provided with a front plate *d* which is engaged by the said studs, and a liquid supply-tank and outlet arranged to be respectively in contact with the said sliding measuring piece in the one and the other of its two positions substantially as set forth.

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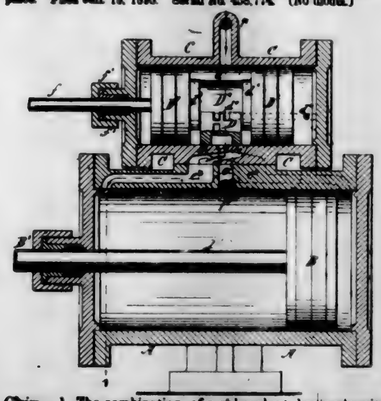
**504,843. UMBRELLA-SUPPORT.** MELVEN LOOFT, Sheldon, Ill. Filed Feb. 15, 1893. Serial No. 462,477. (No model.)

*Claim.*—The combination with the seat, the bowed securing plates located under and secured to the seat, the split clamp 2 connecting the same and provided at its meeting edges with pairs of perforated lugs, and clamping-screws passed through and connecting the lugs, of the continuously curved standard secured within the clamp, the split clamp 9 mounted upon the curved standard and provided with a pair of perforated lugs having a clamping screw and upon its under side with a depending socket, and an umbrella having its upper end or tip secured in said socket, substantially as specified.

504,848.



504,844. VALVE FOR DIRECT-ACTING STEAM-PUMPS. MICHAEL MUSIC, Brooklyn, N. Y., assignor to the Foster Pump Works, same place. Filed Jan. 18, 1893. Serial No. 458,774. (No model.)



*Claim.*—1. The combination, of a valve-chest, having longitudinal channels at opposite sides and ends of the chest, a valve-piston having a contracted middle-portion and shoulders at the ends of the middle-portion, and a slide-valve, the shank of which is guided in a diametrical recess of the contracted portion, the slide-valve being provided with a single cavity, notches in its ends and recesses at the under side for the supply and exhaust of the steam to and from the ends of the steam-chest, said recesses being in line with one set of notches, substantially as set forth.

2. The combination, of a steam-chest, having longitudinal channels extending from the center to opposite ends of the chest, a valve-piston in the steam-chest, said valve-piston having a contracted middle-portion and shoulders at the ends of the contracted portion, a slide-valve having a shank guided in a diametrical recess of said contracted portion, said slide-valve being provided with two notches in its ends, a single cavity, two recesses at the under side and two channels having enlarged outer ends, substantially as set forth.

3. The combination, with a steam cylinder, having inlet and exhaust-ports, the inlet-ports being arranged at right angles to and at diagonally opposite sides of the exhaust-port, of a steam-chest having ports communicating with the ports of the steam-cylinder, a valve-piston in said steam-chest, provided with a middle contracted portion and a slide-valve, the shank of which is inserted in a diametrical recess in the contracted portion of the valve-piston, said slide-valve being provided with notches at its ends, a single cavity and recesses at its under side, substantially as set forth.

4. The combination, of a steam-cylinder, having inlet and outlet-ports, the inlet-ports being arranged at right-angles to and at diagonally opposite sides of the exhaust-port, of a steam-chest having ports communicating with the ports of the steam-cylinder, and longitudinal channels at opposite sides and ends, a valve-piston in said steam-chest having a middle contracted portion, a diametrical recess in said contracted portion and shoulders at each end of the same, and a slide-valve, the shank of which is inserted in the recess of the contracted portion, said slide-valve being provided with two notches in its ends a single cavity and two recesses at the under side, and two channels having enlarged outer ends, also located at the under side of the slide-valve, substantially as and for the purpose set forth.

504,845. CARBON FOR ELECTRIC-ARC LAMPS. ROBERT MCMANUS, New York, assignor to William A. Powell, Brooklyn, N. Y. Filed July 8, 1892. Serial No. 439,436. (No model.)

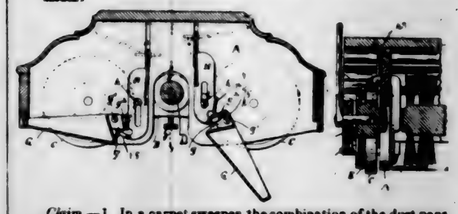


*Claim.*—1. The combination of coke, mineral oil and iron to form pencils or electrodes.

2. A carbon pencil or electrode consisting of a composition of coke and mineral oil coated with iron.

3. A carbon pencil or electrode consisting of a composition of coke, mineral oil and iron coated with iron.

504,846. CARPET-SWEEPER. WILLIAM NEWHOUSE and GUSTAV A. WORZ, Milford, Ohio; said Worz assignor to the Milford Manufacturing Company, same place. Filed Apr. 17, 1893. Serial No. 470,892. (No model.)



*Claim.*—1. In a carpet-sweeper, the combination of the dust pans pivoted in the end walls of the case and having a projecting lug $g^3$, the sliding bars H fitted to slide on the inside of said end partition and having arms projecting through slots in said partition and thumb pieces outside to operate said bars, hook ends on said bar to engage the lugs on the pivoted pans, to turn them on their pivots and open the pans when the bars are elevated, and the lugs $A^5$ to close the pans when the bars are returned to their lower positions, substantially as shown and described.

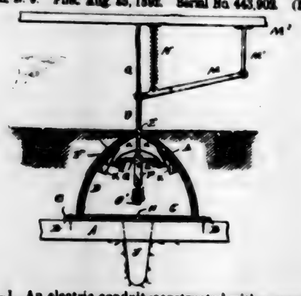
2. The combination of the sweeper case, the dust pans pivoted at their inner ends to the inner end walls of said case and having inwardly projecting lugs $g^3$, the bars H fitted to slide upon the case end A', having hooked ends $A^5$ and lugs $A^6$ to engage the lugs $g^3$ upon the dust pans, and their upper ends bent outwardly to traverse slots in the case end, and the spring $A^3$ to normally force said bars to the lower positions and lock the dust pans in the closed positions, substantially as shown and described.

3. The combination of the case, the dust pans pivoted therein and having inward projections as $g^3$ the bars H, pivoted to slide vertically upon the inner end wall of the case and having their lower ends shaped to engage the lugs upon the dust pans and open and close them, and their upper ends formed in thumb pieces to project to the outside of the walls, and the spring $A^3$ to normally force said bars to their lower positions to close and lock the dust pans, substantially as shown and described.

4. The combination of the case, having ends A' vertically slotted to pass the brush shaft, and vertically slotted bridge trees to pass the journal pins of said brush shaft, the brush shaft having grooved pulleys upon its ends outside of the case ends, the grooved drive wheels C journaled between the bridge trees and case ends, the elastic belt E passing around the drive wheels and over the brush pulley, the bail F having inwardly projecting journal pins $f$, passing through the slots in the bridge trees and furnishing bearings for the brush shaft, and the set screws $f''$ in the lower edges of the bridge trees for the purpose of adjusting the position of the brush shaft, substantially as shown and described.



504,847. CONDUIT ELECTRIC RAILWAY. HENRY D. OLER, Paterson, N. J. Filed Aug. 23, 1892. Serial No. 443,902. (No model.)

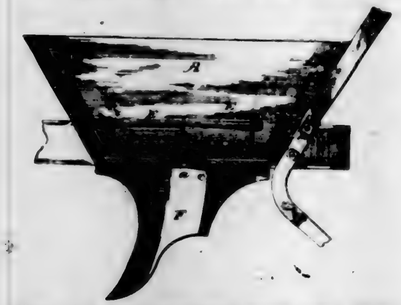


*Claim.*—1. An electric conduit, constructed with a wooden bottom and wooden sides, between the upper edges of which a slot is formed, a metal covering for each side of the conduit, which metal covering is provided at the lower end with a flange, and metal strips fastened to the sleepers at right-angles to the same, upon which metal strips the flanges of the metal side coverings of the conduit rest, substantially as set forth.

2. The combination, with a conduit, of wedge shaped conductors secured to the sides of the same, a rod passing through the slot of the conduit, telescoping arms projecting from said rod, spring for pressing the outer parts of said telescoping rods outward, disks mounted on the ends of said telescoping arms and conductors extending from said disks to the car, substantially as set forth.

3. The combination, with a conduit, of electric conductors secured to the sides of the same, a rod passing through the slot of the conduit, arms on said rod, disks on the ends of said arms, a lever pivoted to the car bottom and to said rod and a spring for drawing said lever and the rod upward, substantially as set forth.

504,848. SEED-PLANTER. ISRAEL Y. PALMER, Columbia, Ala., assignor of two-thirds to George L. Campbell and Barton Hooten, same place. Filed Nov. 28, 1892. Serial No. 453,439. (No model.)



*Claim.*—1. A planter, comprising a hopper having a discharge-opening, a reciprocating slide having receptacles therein, and provided with abutments thereon, a plunger arranged above the discharge-opening, and pivoted levers bearing on the plunger and arranged in the path of movement of the abutments, substantially as described.

2. A planter comprising a hopper having a discharge opening, a slide having abutments thereon and receptacles therein, and capable of reciprocating to bring the receptacles to register with the discharge-opening in the hopper, a bar or plate overlapping the slide whereby the same is retained in position, and the quantity of seed carried by the receptacle is regulated, a plunger arranged above the discharge opening, and pivoted levers bearing on the plungers and arranged in the path of movement of the abutments on the slide, substantially as described.

3. A planter comprising a hopper, having a discharge-opening, a slide having abutments thereon and receptacles therein, and capable of reciprocating to bring the receptacles to register with the discharge-opening in the hopper, a bar or plate overlapping the slide whereby the same is retained in position, and the quantity of seed carried by the receptacle is regulated, and a plunger arranged above the discharge-opening, pivoted levers for depressing the plunger, arranged in the path of movement of the abutments on the slide and a spring whereby the plunger is retained in a normal raised position, substantially as described.

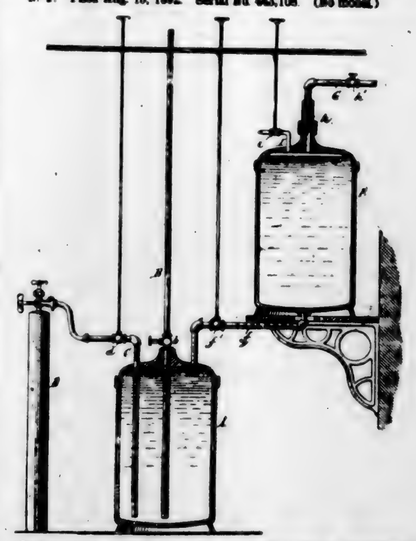
4. A planter comprising a hopper having a discharge opening, a slide having receptacles and capable of reciprocating to bring the receptacle in line with the discharge opening, a bar overlapping the slide, whereby the same is retained in position and the quantity of seed carried by the receptacle regulated, a reciprocating plunger arranged above the discharge opening, pivoted levers arranged adjacent to the plunger, projections on the slide engaging the levers, a crank on the supporting wheel-shaft, and a pitman connecting the crank to the slide, substantially as described.

5. A planter comprising a hopper having a discharge opening, a slide having receptacles and capable of reciprocating to bring the receptacles in line with the discharge opening, a reciprocating plunger arranged above the discharge opening, pivoted levers arranged adjacent to the plunger, projections on the slide engaging the levers, a crank on the supporting wheel-shaft, and a pitman connecting the shaft to the slide, substantially as described.

6. A planter comprising a hopper having a discharge opening, a slide having receptacles and capable of reciprocating, a plunger arranged above the discharge opening, levers for depressing the plunger, and a spring, whereby the plunger is retained in a normal and raised position, a crank on the supporting wheel-shaft, and a pitman connecting the crank to the slide, substantially as described.

7. A planter comprising a hopper having a discharge opening, a slide having receptacles and capable of reciprocating to bring the receptacles in line with the discharge opening, a bar or plate overlapping the slide whereby the same is retained in position, and the quantity of seed carried by the receptacles regulated, a plunger arranged above the discharge opening, levers for depressing the plunger, and a spring, whereby the plunger is retained in a normal and raised position, a crank on the supporting wheel-shaft, and a pitman connecting the crank to the slide, substantially as described.

504,849. SODA-WATER APPARATUS. FRED C. PECK, Buffalo, N. Y. Filed Aug. 15, 1892. Serial No. 443,108. (No model.)

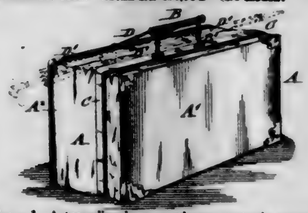


*Claim.*—1. A continuous soda water apparatus, comprising a fountain, a permanent branch pipe connecting the water main with the upper part of the fountain, the liquid reservoir permanently interposed in said branch connection leading to the main, and above the top of the fountain whereby the intermediate part of the branch pipe will serve both as the liquid supply to the fountain and as the gas equalizing pipe between the fountain and liquid reservoir, and the gas supply vessel connected to the fountain, substantially as described.

2. A continuous soda water apparatus comprising a fountain a permanent branch pipe from the water main connecting with the top of the fountain, the water reservoir fixed permanently in said connection to the main, and above the top of the fountain so that the intermediate part of the branch pipe will serve as the liquid supply

to the fountain and as the gas equalizing pipe between the reservoir and fountain the gas vessel connected to the fountain, the valves between the fountain and the gas and water vessels respectively, the relief valve for the water reservoir and the stem extending from each of said valves above the floor, substantially as described.

**504,850. TRAVELING-BAG.** ROBERT POSICKAU, Jersey City, N. J. Filed Dec. 23, 1892. Serial No. 456,864. (No model.)



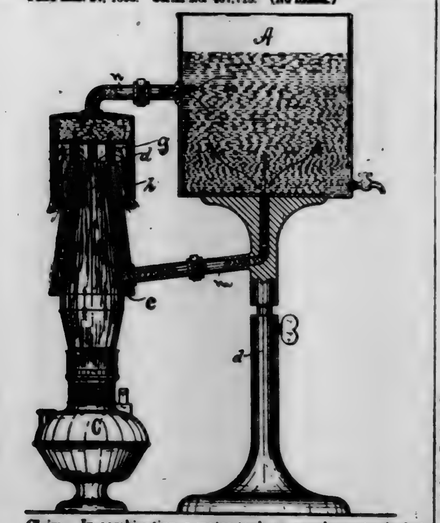
*Claim.*—1. A traveling bag or other receptacle, provided with a handle attached to standards of said bag or receptacle at a point located on that side of the center-line of the bag next to the person carrying the same, said handle being connected by links or stays with points located at the opposite side of the center-line of the bag or receptacle, substantially as set forth.

2. A traveling bag, provided with a frame located at one side of the center-line of the bag, a handle attached by rigid standards to said frame and links or stays connecting the handle with a re-inforcing strip or wire at the outer edge of the larger bag-section, substantially as set forth.

3. A traveling bag, composed of a larger and a smaller section, a frame located at one side of the center-line of said bag, a rigid handle attached to the jaw of the larger bag-section, a re-inforcing wire or strip attached to the outer edge of the larger bag-section, links or stays connecting the ends of the rigid handle with the re-inforcing wire of the larger bag-section and a re-inforcing layer for the side-wall of the smaller bag-section, substantially as set forth.

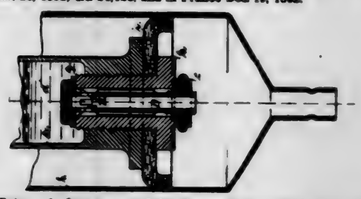
**504,851. WITHDRAWN.**

**504,852. HOT-WATER HEATER.** JOB THORP, Westerly, R. I. Filed Mar. 27, 1893. Serial No. 467,713. (No model.)



*Claim.*—In combination, a water tank, an annular water jacket, the inner wall of which is extended below the bottom of the jacket and forms a support and a chimney, a vessel above, and of a larger diameter than the jacket, the bottom of which vessel is provided with a depending cylindrical shell which is of the same diameter throughout its length as the vessel, and extends below the top of the jacket, a series of water legs connecting the top of the jacket with the bottom of the vessel, and two pipes for connecting the vessel and the jacket with the top and bottom respectively, of the tank, substantially as set forth.

**504,853. PUMP FOR PNEUMATIC TIRES.** FRIEDRICH VEITH, Gelnhausen, Germany. Filed Apr. 3, 1893. Serial No. 468,846. (No model.) Patented in Germany Sept. 24, 1892, No. 9,856; in England Nov. 21, 1892, No. 21,120, and in France Dec. 19, 1892.



*Claim.*—1 In a pump of the character described, the combination with an outer cylinder of a piston operating in said cylinder, the rod of said piston having a liquid containing chamber therein, and means, substantially as described for forcing the liquid therefrom substantially as and for the purposes herein set forth

2. In a pump of the character described, the combination with an outer chamber of a piston operating therein, the rod of said piston having a liquid containing chamber in open communication with the exterior of the pump, means for closing said communication, and means substantially as described, for forcing the liquid from its containing chamber

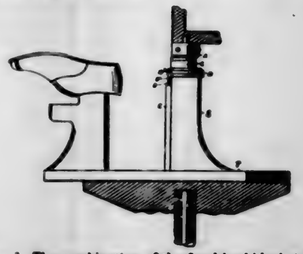
3 In a pump of the character described, the combination with an outer chamber of a piston operating therein, the rod of said piston having a liquid containing-chamber in communication with the exterior of the pump, and an adjustable hollow perforated bolt in said piston, as and for the purposes specified

4 The combination of the hollow screw *k*, hollow perforated bolt *d* within the screw *k*, and nut *c*, all arranged substantially as and for the purposes specified

5. In a pump of the character described, the employment of a hollow piston-rod which is adapted to form a reservoir for a liquid, and which has a valve at its piston end, which valve when used as an air pump is closed, and when used as a liquid ejector is opened, said piston rod having at its outer end a nozzle opening, which is adapted to be closed, and having also a handle

6. An air pump having air ejecting aperture at one end, and a hollow piston rod having an opening at the other end, to be used when the other is closed, substantially as and for the purposes specified

**504,854. MACHINE FOR BREASTING HEELS OF BOOTS OR SHOES.** HAROLD A. WEBSTER, Haverhill, Mass. Filed Jan. 30, 1893. Serial No. 298,098. (No model.)



*Claim.*—1. The combination of the fixed heel-block A, the movable heel-block B, the post S supporting the block B and movable therewith, guides E E on said post, a cutter-bar D fitted to slide between said guides and having a cutting edge $D^2$, and mechanism consisting of a toothed rack bar F on the cutter-bar, and a pinion G meshing with said rack-bar, journaled in bearings which are movable with said post S and block B, said pinion being adapted by its rotation to give the cutter-bar a movement additional to that of the block B, and thereby breast the heel which is compressed between said blocks, the plane of movement of the said cutting edge being one side of the face or breast of the fixed block substantially as described.

2. The combination of heel-blocks A, B adapted to receive and secure a heel between them, of a cutter-bar D having a cutting edge $D^2$ and upwardly extending prongs $D^3$ at opposite ends of said edge and mechanism to move it, and thus by the cutting edge of said bar to cut or trim the breast or front face of a heel confined between said blocks, substantially as described



**504,855. FOLDING CHAIR.** WILLIAM A. WRIGHT, Centreton, N. J., assignor of one-half to Brown & Gilman, Philadelphia, Pa. Filed June 9, 1892. Serial No. 434,956. (No model.)



*Claim.*—1 A standard having a sliding head mounted thereon, a back secured to said head, a folding seat mounted on said head, and a seat-supporting ledge secured to the frame of the chair in front of the standard, a space being left between said ledge and standard to receive the back and seat in folded positions, substantially as described

2 A standard, a sliding head thereon, a back secured to said head, a folding seat mounted on said head, a support on the frame for the seat, and a guide and bracing piece connected at opposite ends with the back, and passing freely through an eye in the top of the standard, substantially as described

3 A folding chair consisting of a standard, a vertically sliding head mounted thereon, a back secured to said head, a folding seat mounted on said head, and a ledge connected with the frame and extending horizontally and transversely in front of said standard, leaving a space between the ledge and standard into which the back and seat are adapted to be folded, substantially as described

4 A folding chair consisting of a base, a standard pivoted to a socket rotatable on said base, a sliding head on said standard, a folding seat on said head, a ledge supporting the seat, and guides and braces for the back, said parts being combined substantially as described

**504,856. CARPENTER'S VISE.** JOHANN ASCHNER, Brooklyn, N. Y. Filed May 2, 1893. Serial No. 473,807. (No model.)



*Claim.*—1. In a carpenter's vise, the combination with a fixed jaw, of guide-bars secured to the same, a movable jaw mounted to slide on said guide-tracks, and means for moving said movable jaw, one surface of said jaws being at right-angles to the fronts of the jaws and the other face at an angle of twenty-two and one-twentieth degrees, and a beveled movable piece mounted on the guide-bars, substantially as set forth.

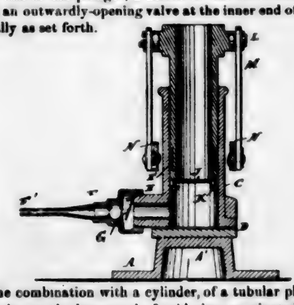
2. In a carpenter's vise, the combination with a fixed jaw having a recess in its inner face, of guide-bars attached to said fixed jaw, a sliding jaw mounted on the guide-bars, means for moving said sliding jaw, a beveled piece mounted to slide on said guide-bars and to pass into the recess in the fixed jaw, substantially as set forth

3. In a carpenter's vise, the combination with a fixed jaw provided in its inner face with a recess, of guide-bars secured to said fixed jaw, a movable jaw on said guide-bars, means for moving said jaw, a beveled piece mounted to travel on said guide-bars and to pass into the recess in the fixed jaw and means for coupling said beveled piece to the movable jaw, substantially as set forth

**504,857. MACHINE FOR FILLING CREAM-PUFFS.** LOUIS J. ADLER, New York, N. Y. Filed Dec. 27, 1892. Serial No. 456,395. (No model.)

*Claim.*—1 The combination with a cylinder, of a tubular plunger in the same, a valve on the lower end of the plunger, a neck projecting from the bottom of the cylinder, a valve on the outer end of said neck and a nozzle on said neck, substantially as set forth

2 The combination with a cylinder, of a tubular plunger in the same, a valve on the lower end of the plunger, a funnel mounted on the upper end of the plunger, a nozzle on the lower end of said cylinder and an outwardly-opening valve at the inner end of said nozzle, substantially as set forth.



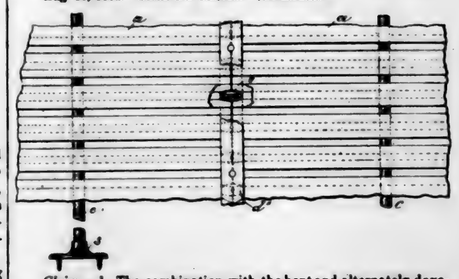
3. The combination with a cylinder, of a tubular plunger in the same, a valve on the lower end of said plunger, pivoted levers, rods connecting the plunger with said levers, an upwardly-projecting check-rod, a thumb-nut on said check-rod, a nozzle projecting from the lower end of the cylinder and an outwardly-opening valve at the inner end of said nozzle, substantially as set forth.

4. The combination with a cylinder, of a neck at the lower end of the same, an outwardly-opening valve pivoted on the end of said neck, a nozzle screwed on said neck, a tubular plunger in said cylinder, pivoted levers, rods connecting the plunger with the pivoted levers, a cross-piece connecting the levers and having a notch, a pivoted screw-rod projecting upward between the levers, a spring acting on the lower end of the same and pressing it into the notch of the cross-piece, a thumb-nut on said rod and a valve on the lower end of the plunger, substantially as set forth.

5. The combination with a base, of pivoted screws, a cylinder having slotted wings into which said pivoted screws can pass, thumb-nuts on said screws, a tubular plunger in the cylinder, a valve on the bottom of said plunger, a nozzle on the lower end of the cylinder, an outwardly-opening valve at the inner end of said nozzle and means for operating the plunger, substantially as set forth.

6. In a machine for filling cream-puffs, the combination with a cylinder and plunger, of a flattened nozzle having its free end beveled at both sides to form inclined side-openings at the end of the said nozzle, substantially as set forth.

**504,858. PARTITION.** THOMAS BAILEY, New York, N. Y. Filed Aug. 10, 1892. Serial No. 442,735. (No model.)



*Claim.*—1. The combination with the bent and alternately dovetail ribbed and grooved sheet metal partitions or ceiling plates, of a bar extending lengthwise along and attached to the surface of the plate substantially as described.

2. The combination with the reversely bent and alternately dovetail ribbed and grooved sheet metal partition or ceiling plate, of a bar extending lengthwise along each side and attached to said plate substantially as described.

3. The combination with the reversely bent and alternately dovetail ribbed and grooved sheet metal partition or ceiling plate, of a bar extending lengthwise along said plate and attached thereto by the transversely flaring cleats confined in the undercut grooves substantially as described.

4. The combination with the reversely bent and alternately dovetail ribbed and grooved sheet metal partition or ceiling plate, of a bar extending lengthwise along said plate and attached by the expansible cleats confined in the undercut grooves substantially as described.

5. The combination with the reversely bent and alternately dovetail ribbed and grooved sheet metal partition plate, of a bar extend-

ing lengthwise along each side of said plate and bolted or riveted together through the plate substantially as described.

6. The combination with the reversely bent and alternately dovetail ribbed and grooved plate, of a bar extending lengthwise along and attached to one side of said plate, and eye bolts projecting laterally from said plate substantially as described.

7. The combination with the reversely bent and alternately dovetail ribbed and grooved plate, of a bar extending lengthwise along and attached to said plate, and a flange along one edge of the bar substantially as described.

8. The combination with the reversely bent and alternately dovetail ribbed and grooved plate, of a bar extending lengthwise along and attached to said plate, and a flange at one or both ends of said bar substantially as described.

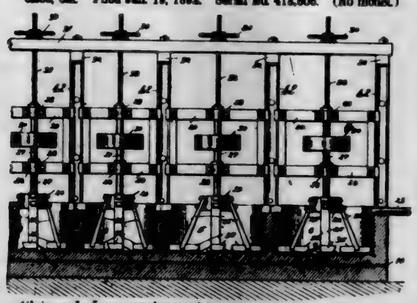
9. The combination with the reversely bent and alternately dovetail and ribbed and grooved plate, of a bar extending lengthwise along and attached to one side of said plate by the transversely flaring and lengthwise tapered yoke cleats substantially as described.

10. The combination with the reversely bent and alternately dovetail and ribbed and grooved plate, of a bar extending lengthwise along and attached to one side of said plate, and one or more rods extending lengthwise through the cross webs of the plate substantially as described.

11. The combination with the reversely bent and alternately dovetail and ribbed and grooved plates joined edge to edge, of a coupling bar extended lengthwise along the plates at the joints and connected to said plates by yoke cleats attached to it and engaging the undercut grooves of each plate substantially as described.

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**504,859. AMALGAMATING-PAN.** MARTIN F. BOSS, San Francisco, Cal. Filed Jan. 19, 1892. Serial No. 418,606. (No model.)



*Claim.*—1. In an amalgamating apparatus, the combination with a series of pans, of a series of vertically movable frames above said pans, shafts journaled in said frames, stirrers carried by said shafts and located in said pans, and devices connected with said movable frames for adjusting said frames, shafts and stirrers vertically, substantially as described.

2. The combination with two or more pans arranged adjacent to each other, of one or more partitions separating each pan from the others, upper and lower means of communication between the successive pans, and means for agitating the contents of the pans, substantially as described.

3. The combination with a series of pans, and a settler, of partitions separating each pan from the others and from the settler, means of communication above and below each partition between successive pans and the settler, and means for agitating the contents of the pans and the settler, substantially as described.

4. The combination with a series of pans, and a settler, of partitions separating the pans from each other and from the settler, said partitions terminating a short distance below the upper edges of the pans and settler, a passage at the lower portion of the pans to afford communication between adjoining pans and to the settler, and means for agitating the contents of the pans and settler, substantially as described.

5. The combination with a plurality of pans, of partitions separating said pans, passages affording communication between said pans, and devices for heating said partitions, substantially as described.

6. The combination with a series of pans, and a settler, in communication successively with each other, of partitions separating the pans from each other and from the settler, means for heating said partitions, and devices for agitating the contents of the pans and the settler, substantially as described.

7. The combination with a series of pans, and a settler, partitions separating each of said pans and the settler, said partitions terminating a short distance below the upper edges of the pans and settler, and passages at the lower portions of said partitions, of a chamber in each of said partitions, and means for passing a current of steam through each of said chambers, substantially as described.

8. The combination with a series of receptacles, as 1, 2, 3, 4, of partitions 9 separating said receptacles, said partitions terminating a short distance below the upper edges of the receptacles 1, 2, 3, 4, an opening under each of said partitions to afford communication between successive receptacles near the bottom, and means for agitating the contents of said receptacles, substantially as described.

9. The combination with a series of receptacles, as 1, 2, 3, 4, of partitions 9 separating said receptacles, said partitions terminating a short distance below the upper edges of the receptacles 1, 2, 3, 4, an opening under each of said partitions to afford communication between successive receptacles near the bottom, means for agitating the contents of said receptacles, a chamber 10 in each of said partitions, and means for passing a current of steam through each of said chambers, substantially as described.

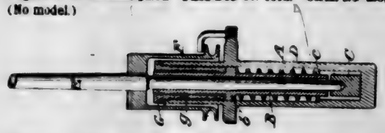
10. The combination with a series of receptacles, as 1, 2, 3, 4, of partitions 9 separating said receptacles, said partitions terminating a short distance below the upper edges of the receptacles 1, 2, 3, 4, an opening under each of said partitions to afford communication between successive receptacles near the bottom, means for agitating the contents of said receptacles, a chamber 10 in each of said partitions, steam pipes 36 extending into each of said chambers, means for supplying steam to said pipes, and pipes 38 inclosing said pipes 36 and opening into said chambers, substantially as described.

11. The combination with an amalgamating pan, of a plate 14 under said pan, adapted to intercept any mercury which may filter through the bottom of said pan, substantially as described.

12. The combination with a series of pans in communication successively with each other, and a settler communicating with said pans, each of said pans and settlers being cylindrical in shape, of partitions 9 separating said pans and the settler, said partitions being somewhat lower than the edges of the pans and settler, passages under said partitions, stirrers in said pans and settler adapted to agitate their contents, means for rotating said stirrers, a pipe 15 leading from said settler, a strainer 16, and means for conducting mercury from said strainer back to said pans, substantially as described.

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**504,860. SELF-BALANCING SPINDLE FOR SPINNING.** EDWARD E. BRADLEY, Stonington, Conn., assignor to John E. Atwood and Eugene Atwood, same place. Filed Dec. 17, 1892. Serial No. 455,495. (No model.)



*Claim.*—1. The combination with a spindle and a flanged bolster and a step therefor, of a supporting case which constitutes an oil reservoir and in which said bolster and step are separately contained and which extends upward above the flange of and nearly to the top of the bolster, a nut which is screwed to the upper end of the so extended portion of the bolster and which is provided with a downwardly projecting sleeve serving as a bearing for the upper surface of the bolster flange, and a spring within the said case for supporting the bolster against the bottom of said sleeve, substantially as herein set forth.

2. The combination with a spindle having a sleeve whirl, of a flanged bolster and a separate step for said spindle, a bolster supporting case the upper part of which is within the sleeve of the whirl, a nut screwed to the upper end of said case, and having a sleeve projecting downward thereinto, and a spring within the bolster case for holding up the bolster with its flange against said sleeve, substantially as herein set forth.

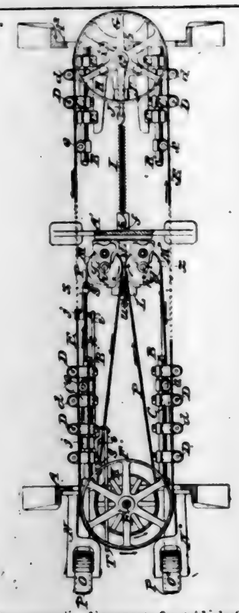
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**504,861. SPINNING AND TWISTING MACHINE.** EDWARD E. BRADLEY, Stonington, Conn., assignor to John E. Atwood and Eugene Atwood, same place. Filed Feb. 1, 1893. Serial No. 460,550. (No model.)

*Claim.*—The combination with a series of spindles, an upright shaft having a pulley thereon, and a belt on said pulley for driving the said spindles, of a horizontal main driving shaft, a driving pulley Q thereon, a second pulley K fast on said upright shaft, a loose pulley K′ on said upright shaft, two guide pulleys O O* having horizontal axes and arranged at opposite sides of said upright shaft, two guide pulleys M M* having vertical axes, and a belt running on said pulleys Q, O, O*, M, M*, and K or K′ and forming three loops around said pulleys M M* and K or K′ for driving said upright shaft from said horizontal shaft, a shipper for shifting the belt from pulley K to



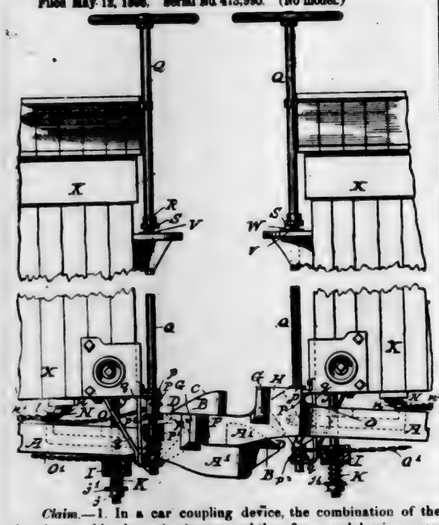
**504,861.**



pulley K′ and the reverse, and supports for said shafts and pulleys, substantially as herein set forth.

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**504,862. CAR-COUPLING.** ARTHUR L. BROWN, Lyndonville, Vt. Filed May 12, 1893. Serial No. 473,995. (No model.)



*Claim.*—1. In a car coupling device, the combination of the drawbars and hooks projecting upward therefrom, each having a vertical opening back of and adjacent to the hook, and adapted for connection either above the other, and an uncoupling block and its operating mechanism whereby the hooks are disengaged.

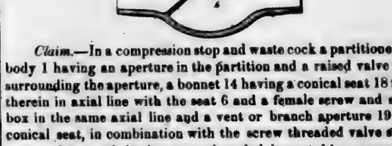
2. In a car coupling device a pair of duplicate drawbars provided at their outer ends with upward projecting hooks attachable one above the other, and separating mechanism consisting of a horizontally movable bar and uncoupling block pivoted thereto arranged within either draw bar, and an operating lever extending to one side of a car.

3. In a car coupling device a pair of duplicate drawbars having at their outer ends upward projecting hooks attachable one above the other, and separating mechanism consisting of a horizontal movable bar and uncoupling block pivoted thereto arranged within each draw bar, and means substantially as described for operating said uncoupling mechanism either at the side or upon the roof of a car.

4. The combination with automatic couplings and their separating mechanism, of actuating mechanism consisting of a chain, and winding drum having ratchet teeth or serrations upon its lower face, said drum being mounted loosely upon the brake rod of a car, and a collar secured to said brake rod having serrations for engaging with said drum.

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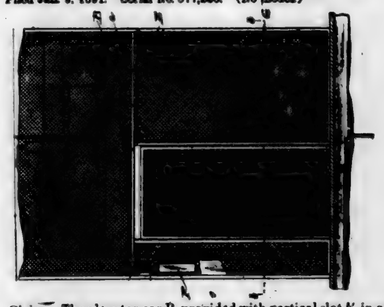
**504,863. GATE-FASTENER.** THOMAS A. CARRAHER, Howman Grove, Nebr. Filed Dec. 21, 1892. Serial No. 455,913. (No model.)



*Claim.*—The improved gate fastening herein described consisting of the bar D having the lever E pivotally secured to one end and a hook F, to the other, in combination with the link G secured to said lever and adapted to engage a suitable fastening on the gate, substantially as described.

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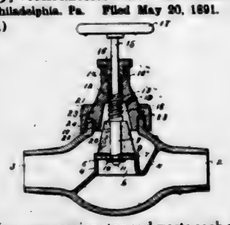
**504,864. ELEVATOR-DOOR.** RICHARD T. CRANE, Chicago, Ill. Filed Jan. 9, 1891. Serial No. 377,223. (No model.)



*Claim.*—The elevator car B, provided with vertical slot B′, in combination with the spring lever H, cleat I, arranged on the free end of said lever and to project through the slot in the car, the sliding guard-door C, the spring catch G arranged on the inside of said door and the actuating weight F, substantially as and for the purposes specified.

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**504,865. COMPRESSION STOP AND WASTE COCK.** THOMAS C. DALTON, Philadelphia, Pa. Filed May 20, 1891. Serial No. 393,493. (No model.)

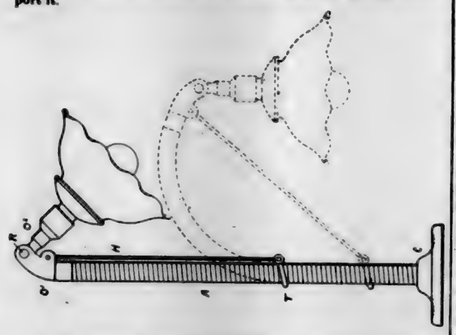


*Claim.*—In a compression stop and waste cock a partitioned cock body 1 having an aperture in the partition and a raised valve seat 6, surrounding the aperture, a bonnet 14 having a conical seat 18 formed therein in axial line with the seat 6 and a female screw and stuffing box in the same axial line and a vent or branch aperture 19 in the conical seat, in combination with the screw threaded valve stem 15 arranged to work in the screw threaded bonnet 14, a compressible plug 20 fitting in the seat 18 a washer supporting said plug 20 and a compressible packing 7, adapted to cover and close the aperture in the seat 6 and the washer 10 and the screw 11 arranged to hold the packing 7 against the shoulder 9 as shown and described.

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**504,866. ELECTRIC-LIGHT FIXTURE.** FRANK W. DAVENPORT, Providence, R. I. Filed July 25, 1893. Serial No. 481,208. (No model.)

*Claim.*—1. In electric light fixtures, a resilient spiral coil capable of automatically returning to its normal form when forcibly bent therefrom and then released, said coil provided near one end with means for holding an electric lamp, a rod jointed by one of its ends near one end of the coil, and provided at its other end with a ring adapted to travel on other parts of the coil, in combination with a support having a tube extension adapted to receive a portion of the coil and support it.



2. In electric light fixtures, an arm provided near one end with an electric lamp, said arm being resilient, and capable of automatically returning to its normal form when forcibly bent therefrom and then released, in combination with means for adjusting and forcibly holding the arm in other than its normal form and against the action of its resiliency.

3. In electric light fixtures, an arm provided near one end with an electric lamp, and near the other end with a support upon which it may be revolved, said arm being resilient and capable of automatically returning to its normal form when forcibly bent therefrom and then released, in combination with means for adjusting and forcibly holding the arm in other than its normal form and against the action of its resiliency.

4. In electric light fixtures, an arm capable of assuming either a straight or curved form, and provided near one end with means for holding an electric lamp, said arm being resilient and capable of automatically returning to its normal form when forcibly bent therefrom and then released, in combination with means for adjusting and forcibly holding the arm in other than its normal form and against the action of its resiliency.

5. In electric light fixtures, an arm provided near one end with means for holding an electric lamp, a considerable portion of the length of the arm nearest the base being practically unyielding as compared with other parts of the arm which are made yielding and resilient, and capable of automatically returning the arm to its normal form when forcibly bent therefrom and then released, in combination with means for adjusting and forcibly holding the arm in other than its normal form and against the action of its resiliency.

6. In electric light fixtures, a resilient arm capable of automatically returning to its normal form when forcibly bent therefrom and then released, means for adjusting and forcibly holding the arm in other than its normal form and against the action of its resiliency, said arm provided near one end with means for holding an electric lamp, in combination with a support having a tube or rod extension which is adapted to receive a portion of said arm and support the same.

7. In electric light fixtures, an arm provided near one end with means for holding an electric lamp, and near the other end with a support upon which it may be revolved, a considerable portion of the length of the arm nearest the base, or support, being practically unyielding as compared with other portions of the arm which are made yielding and resilient and capable of automatically returning the arm to its normal form when forcibly bent therefrom and then released, in combination with means for adjusting and forcibly holding the arm in other than its normal form and against the action of its resiliency.

8. In electric light fixtures, an arm provided near one end with an electric lamp, said arm being resilient and capable of automatically returning to its normal form when forcibly bent therefrom and then released, in combination with a retaining member adapted to engage parts adjacent to both ends of the arm.

9. In electric light fixtures, an arm capable of assuming either a straight or curved form, and provided near one end with an electric lamp, a considerable portion of the length of the arm nearest the base being practically unyielding as compared with other parts of the arm which are made yielding and resilient and capable of automatically returning the arm to its normal form when forcibly bent therefrom and then released, in combination with a retaining member adapted to engage parts adjacent to both ends of the arm.

10. In electric light fixtures, an arm capable of assuming either a straight or curved form, and provided near one end with means for holding an electric lamp, said arm being resilient and capable of automatically returning to its normal form when forcibly bent therefrom and then released, in combination with a retaining member adapted to engage parts adjacent to both ends of the arm.

11. In electric light fixtures, an arm provided near one end with means for holding an electric lamp, a considerable portion of the length of the arm nearest the base being practically unyielding as compared with other parts of the arm which are made yielding and resilient and capable of automatically returning the arm to its normal form when forcibly bent therefrom and then released, in combination with a retaining member adapted to engage parts adjacent to both ends of the arm.

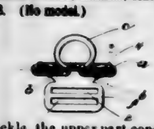
12. In electric light fixtures, a resilient spiral coil capable of automatically returning to its normal form when forcibly bent therefrom and then released, said coil provided near one end with means for holding an electric lamp, in combination with means for adjusting and forcibly holding the coil in other than its normal form and against the action of its resiliency.

13. In electric light fixtures, a resilient spiral coil capable of automatically returning to its normal form when forcibly bent therefrom and then released, said coil provided near one end with means for holding an electric lamp, and near the other end with a support upon which it may be revolved, in combination with means for adjusting and forcibly holding the coil in other than its normal form.

14. In electric light fixtures, a resilient spiral coil capable of automatically returning to its normal form when forcibly bent therefrom and then released, said coil provided near one end with means for holding an electric lamp, in combination with a retaining member attached by one of its ends to the coil or to parts integral therewith, and provided at its other end with a ring or slide adapted to travel on other parts of the coil.

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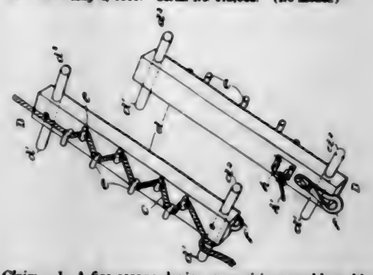
**504,867.** BUCKLE. WILLIAM B. DRAPER, Cambridge, assignor of one-half to William H. Todd, Melrose, Mass. Filed Mar. 18, 1893. Serial No. 466,648. (No model.)



*Claim.*—A buckle, the upper part consisting of the parallel cross bars *a*, *b*, with a narrow space between them adapted to receive the web and a finger piece *c*, rigidly attached to said upper part arranged in a plane of substantially forty five degrees, with relation to the said bars, and the lower part consisting of the plate *f*, the upper end of which loosely embraces the cross bar *a*, and has rearwardly projecting teeth 4, which co-operate with the cross bar *b*, to hold the material, substantially as described.

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**504,868.** FIRE-ESCAPE. LEOPOLD A. H. ENGELER, Philadelphia, Pa. Filed May 4, 1893. Serial No. 472,968. (No model.)



*Claim.*—1. A fire escape device, comprising an oblong block or bar provided with top and bottom transverse gripping handles, angular hooks or prongs secured into said block or bar and disposed in staggered position and a supported rope detachably engaging with said hooks or prongs, substantially as and for the purposes described.

2. A fire escape device, comprising a rectangular block or bar provided with top and bottom gripping handles, a series of angular hooks or prongs secured into said block or bar and disposed in staggered position with respect to each other, a rope detachably engaging therewith, a spring controlled hook secured to one surface of said block or bar and detachably engaging a body belt or sling provided with a ring, and a loop secured to said block or bar for detachably engaging a danger line therewith, substantially as and for the purposes described.



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**504,869.** INSTRUMENT FOR MEASURING DISTANCES AND SOLVING TRIGONOMETRICAL PROBLEMS. EDOARDO FALLETTI, Rome, Italy. Filed May 12, 1893. Serial No. 473,993. (No model.) Patented in Italy Dec. 23, 1892, No. 33,112.



*Claim.*—1. In an instrument for measuring distances, the combination of an inclined mirror Y, a second mirror X, facing the same under an angle, a telescope or diaphragm whose optical axis passes through the summit of the mirror Y, a casing containing said appliances, a rotatable cover for such casing, and means for converting the revolving motion of the cover into swinging motion of mirror X, whereby the doubly reflected image of one signal can be brought to coincide with the image of the other signal observed directly through the telescope or diaphragm, substantially as set forth.

2. In an instrument for measuring distances, the combination of inclined mirror Y, a second mirror X, telescope or diaphragm K, the surrounding cylindrical casing its rotatable cover B, worm H, pinion I, axis G, sector W gearing with the worm, toothed indicator wheel N receiving motion from wheel L and provided with pointer *j*, substantially as set forth.

3. In an instrument for measuring distances, the combination of the inclined mirror Y, a second mirror X, telescope or diaphragm K the surrounding cylindrical casing its rotatable cover B, means for converting rotating motion of such cover into swinging motion of mirror X, wheel N in gear with a wheel on the axis G of the rotatable cover, the registering disk Q on the axis of wheel N, index stud *q* and pointer *j*, substantially as set forth.

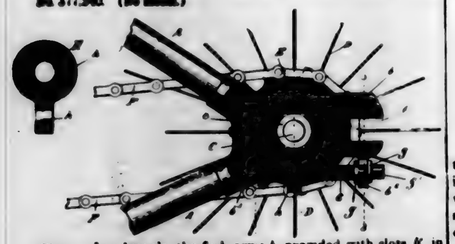
4. In an instrument for measuring distances, the combination of inclined mirror Y, mirror X, telescope or diaphragm K, the surrounding casing, its rotatable cover B, means for converting rotating motion of such cover into swinging motion of mirror X, stop wheel L' journaled in the casing and angle tooth pinion M' on axis G of cover B, substantially as set forth.

5. In an instrument for measuring distances, the combination of an inclined mirror Y, a second mirror X, telescope or diaphragm K, the surrounding cylindrical casing, its rotatable cover B carrying a pointer and scale, means for converting revolving motion of the cover into swinging motion of mirror X, ring J surrounding the movable cover and carrying one or more reference points *a*, substantially as set forth.

6. In an instrument for measuring distances, the combination of inclined mirror Y, second mirror X, telescope or diaphragm K, the surrounding cylindrical casing its rotatable cover B carrying on its periphery a scale corresponding to its first revolution and upon a spiral line a scale corresponding to its further revolutions, means for converting revolving motion of the cover into swinging motion of mirror X, and ring J surrounding the movable cover and carrying one or more reference points *a*, substantially as set forth.

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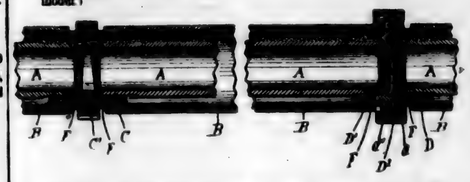
**504,870.** ADJUSTING DEVICE FOR CHAIN-WHEELS OF BICYCLES. ALFRED PEATHERSTONE, Chicago, Ill. Filed Jan. 9, 1891. Serial No. 377,240. (No model.)



*Claim.*—In a bicycle, the fork arms *b*, provided with slots *b'* in combination with the chain drive wheel axle C mounted in said slotted arms, the washers H on the respective nuts of the axle and provided with threaded lugs A, and inside face lugs *h'*, and adjusting screws Q running in the threaded lugs of the washers and thereby causing the latter to travel, substantially as and for the purposes specified.

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**504,871.** DEVICE FOR PROTECTING STEAM-PIPES. ROBERT C. FORSYTH, Chicago, Ill. Filed Feb. 9, 1893. Serial No. 461,584. (No model.)



*Claim.*—1. In combination with the inner pipe sections, a right-and-left coupling adapted to unite them having intermediate its ends the encircling boss C, the protecting pipes, whose inner diameter adapts them to receive the ends of the coupling and cylindrical packing rings interposed on said ends between the same and the protecting pipe to form slip joints, substantially as set forth.

2. In combination, substantially as set forth, the inner pipe sections A A, the union for connecting them, comprising the members D D' and the nut $D^2$, the outer protecting pipe and the packing rings on the hubs of the union and within the ends of the protecting pipe, the nut being adapted to slip over the end of the protecting pipe.

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**504,872.** VAULT OR FLOOR LIGHT. JAMES C. FRENCH, New York, N. Y. Filed Aug. 24, 1892. Serial No. 443,907. (No model.)



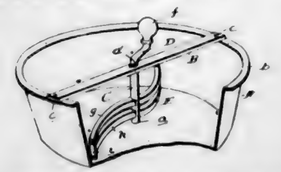
*Claim.*—1. The vault or floor light, comprising a group of eyes or windows having their opposite ends of greater diameter than the stem portions connecting the ends, a supporting frame consisting of rigid bars connected with one another and engaging the eyes or windows upon opposite sides of their reduced stem portions and cement filling interposed between the eyes or windows of the light and concealing the said eye holding bars, substantially as set forth.

2. The vault or floor light, comprising series of eyes or windows having their central portions of reduced diameter, bars engaging the reduced portions of the eyes or windows, marginal frame pieces extending in opposite directions from the plane of the eye holding bars and the cement filling interposed between the eyes and the marginal frame pieces, concealing the eye holding bars and forming faces substantially similar upon opposite sides of the light, substantially as set forth.

3. The vault or floor light, comprising a supporting frame consisting of a border flanged upon its opposite sides and a series of parallel bars connecting two opposite sides of the border and spaced apart, a series of translucent eyes having reduced stems and held between the parallel bars, and a cement filling upon opposite sides of the parallel bars between the eyes, and concealing the structure with the exception of the eyes and the edges of the flanged border, substantially as set forth.

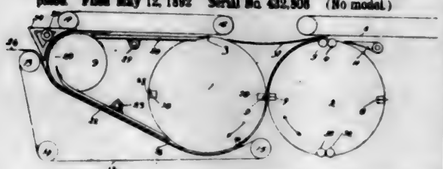
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**504,873.** DOUGH-MIXER. THOMAS GASKINS, Arcadia, Fla. Filed June 29, 1893. Serial No. 479,179. (No model.)



*Claim.*—The improved dough mixer described, consisting essentially of the vessel A, having the hole or aperture in the center of its bottom, the bar B, secured diametrically across the mouth of the vessel and having a hole coinciding with the hole in the bottom, the shaft passing through the respective holes, and having a cap or cover on its lower end beneath the vessel bottom, and having its opposite end terminating in a crank handle, and the beaters or blades formed from two parallel, compound curved strips secured midway of their length to the operating shaft, and secured together at their outer ends, the whole adapted to operate, substantially as specified.

**504,874. APPARATUS FOR DELIVERING SHEETS.** SAMUEL G. GOSS, Chicago, Ill., assignor to the Goss Printing Press Company, same place. Filed May 12, 1892. Serial No. 432,906. (No model.)



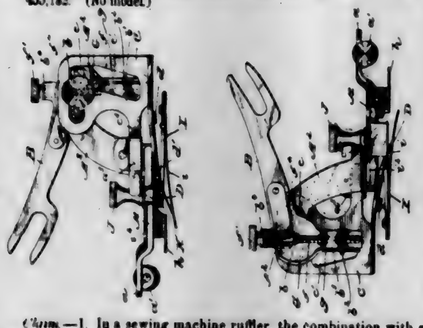
*Claim.*—1. The combination of a pair of cylinders having means for severing one or more sheets from a continuous web, mechanism for transferring the severed sheet or sheets back to and superposing the same upon said web, and folding devices for folding the web and the sheet or sheets superposed thereupon, substantially as described.

2. The combination with a pair of cylinders having web severing and folding devices, of guide rollers, suitable upper guides located between the upper portions of the guide rollers and the adjacent cylinder, suitable lower guides located between the lower portions of the guide rollers and the said adjacent cylinder, tapes for carrying a web along the said lower guides to the folding cylinders, means for carrying a severed sheet from the cylinders along the upper guides to the guide rollers, and devices for transferring the severed sheet or sheets to and upon the web as it moves toward the cylinders, substantially as described.

3. The combination with a pair of cylinders having web severing and folding devices, of guide rollers 19, suitable guides located between the guide rollers and the adjacent cylinder, tapes for carrying a web to the lower portion of said adjacent cylinder, means for carrying a severed sheet from the cylinders to the guide rollers, and devices for transferring the severed sheet or sheets around the guide rollers to and upon the web as it moves toward the cylinders, substantially as described.

4. The combination of a cylinder 1 having a folding blade 3, a cylinder 2 having folding rollers 4 and 5 and cutting blades 7 and 8, carrying tapes 12 for carrying the web to the cylinders, guide rollers 19 co operating with said tapes, suitable guides 20 and 22 located between the guide rollers and the adjacent cylinder, tapes 16 for carrying a sheet or sheets from the cylinders to the guide rollers, and devices for directing the severed sheet or sheets under the guide rollers to and upon the web as it moves toward the cylinders, substantially as described.

**504,875. RUFFLING ATTACHMENT FOR SEWING-MACHINES.** JOHN M. GREIST, New Haven, Conn. Filed Dec. 14, 1892. Serial No. 455,182. (No model.)



*Claim.*—1. In a sewing machine ruffler, the combination with a frame or supporting plate provided with means for attachment to a sewing machine and with a standard, of a bell crank lever pivoted to the upper part of the said standard and carrying on its lower arm a vertically adjustable lug or projection, a sliding ruffling blade slide or carrier provided with an inclined slot in which said lug or projection works, and with a horizontal slot embracing the pivot pin of the said bell-crank lever, said carrier having also a guiding arm fitting in a suitable guide-way formed for the same on the said standard.

2. In a sewing machine ruffler, the combination with the frame or plate A provided at one end with a bifurcated bracket *a*, and at its other end with a standard $A^2$, of a bell-crank lever B pivoted by a pin *b* to the upper portion of said standard, and carrying on its lower arm a vertically adjustable plate or projection, the sliding ruffling blade carrier C formed with vertical and horizontal portions, the vertical portion thereof having the slots *c* and *c'* and the guiding arm $c^2$, the last named fitting in a guide-way formed on the said standard, and the horizontal portion of the said sliding carrier having attached thereto the ruffling blade D.

3. In a sewing machine ruffler, the combination with a suitable frame or support, and an operating lever pivoted thereto, of a ruffling blade and its carrier, an adjustable lug or projection carried by said operating lever and engaging said carrier, a screw for adjusting said lug or projection, said screw being provided with a polygonal portion and a head by which it may be turned, and a light spring bearing against the said polygonal portion of said screw for retaining the same in the different positions to which it may be adjusted, while permitting the said screw to be easily turned when desired.

4. In a sewing machine ruffler, the combination with the supporting plate and its standard, of a bell-crank-lever pivoted to said supporting plate, a ruffling blade and its carrier, an adjustable connection between said ruffling blade carrier and the said operating lever, said connection consisting of the plate $b^3$ provided with a lug or projection working loosely in a slot in said carrier, the screw F supported on the said operating lever and having a threaded portion engaging a part of the said plate $b^3$, said screw having a head $f''$ and a polygonal part $f^3$, and the light plate spring $f^4$ carried by said bell-crank-lever and pressing against the said polygonal part of the said screw.

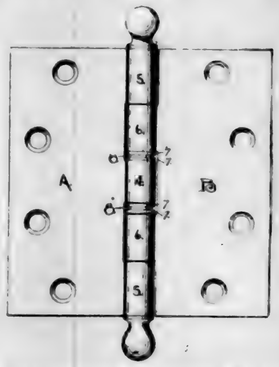
**504,876. ATTACHMENT-HOLDER FOR SEWING-MACHINES.** JOHN M. GREIST, New Haven, Conn. Filed Dec. 14, 1892. Serial No. 455,184. (No model.)



*Claim.*—1. The combination with a presser foot provided with oppositely placed grooves between which is a neck of metal, of an attachment having a holding shank provided with a bifurcated portion formed of sheet metal of a lesser thickness than the depth of said grooves, said bifurcated portions being provided with lugs to compensate for the difference between the thickness thereof and the depth of said groove.

2. The combination with the presser foot provided with oppositely placed grooves between which is a neck of metal, of an attachment having a holding shank provided with a bifurcated portion formed of sheet metal of a lesser thickness than the depth of said grooves, said bifurcated portion being provided with struck-up lugs having rounded upper surfaces, said lugs serving to compensate for the difference between the thickness of the metal of the bifurcated holding portion thereof and the depth of said groove.

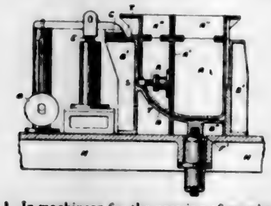
**504,877. HINGE.** WILLIAM H. HART, New Britain, Conn., assignor to the Stanley Works, same place. Filed Oct. 24, 1892. Serial No. 449,739. (No model.)



*Claim.*—The herein described anti-friction hinge, having a set of three hard washers loosely held between the ends of the knuckles, the middle washer being of a less diameter than the other washers while the diameter of bearing surface between the washers themselves is less than that between the washers and knuckles substantially as described and for the purpose specified.



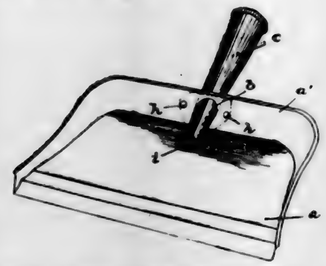
**504,878. MACHINERY FOR PRESSING OR STAMPING BOATS FROM SHEET METAL.** WILLIAM HESLOP, Wakefield, England. Filed May 10, 1893. Serial No. 473,606. (No model.) Patented in England Mar. 18, 1892, No. 5,391; in France Apr. 4, 1892, No. 198,821; in Germany Apr. 7, 1892, No. 65,392; in Belgium Apr. 12, 1892, No. 99,200; in Italy May 12, 1892, No. 31,562, and in Canada July 27, 1892, No. 39,498.



*Claim.*—1. In machinery for the pressing of metal plates for the manufacture of boats therefrom the combination with an upper sectional male die, of a lower sectional female die, a movable section $B^6$ located on and forming part of the base of the female die, ram $F^6$ for actuating the movable section $B^6$ for supporting the plate, a longitudinal rod S carried by the upper die and rams R for actuating same, a groove in the female die for receiving the rod S for forming grooves in the pressed plate, a rim C acting on the upper edge of the plate being pressed for holding same in position; arms for carrying the rim or holding down plate C; weights D and connecting rods for retaining the ends of the rim arms, and rams E for raising and lowering the rim C, together with distance pieces G on the upper die and corresponding recesses on the lower die for maintaining the die in proper relative positions as set forth.

2. The combination in machinery for pressing sheet metal boats with the upper die, of a lower die having a movable section, means for raising and lowering such section for sustaining the sheet when placed in position and for lifting out the pressed boat section, a holding down plate for the edge of the boat sheet while being pressed and means for actuating the dies and the holding down plate, auxiliary rams and a bar for producing a longitudinal rib in the boat section substantially as specified.

**504,879. DUST-PAN.** ALVA L. HOLLANDER, Millis, assignor to the Steel Edge Stamping and Retinning Company, Boston, Mass. Filed Jan. 26, 1893. Serial No. 459,816. (No model.)



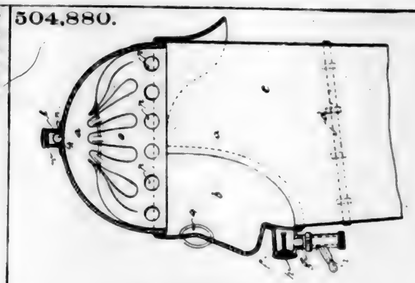
*Claim.*—1. The combination of a dust-pan, having a back flange with an opening through it, a handle extending through said opening and fitting against the bottom of the pan; a brace piece engaging the under side of the pan-bottom, and extending behind the back-flange of the pan and having an opening through which the handle extends; and a fastening, passing through the handle, the pan bottom and the brace-piece.

2. The combination of a dust-pan, having a back-flange with an opening through it; a handle, extending through said opening and secured to the bottom of the pan; and a brace-piece, secured to the outer side of the back-flange of the pan, and having an opening through which the handle passes, and extending under and secured to the bottom of the pan.

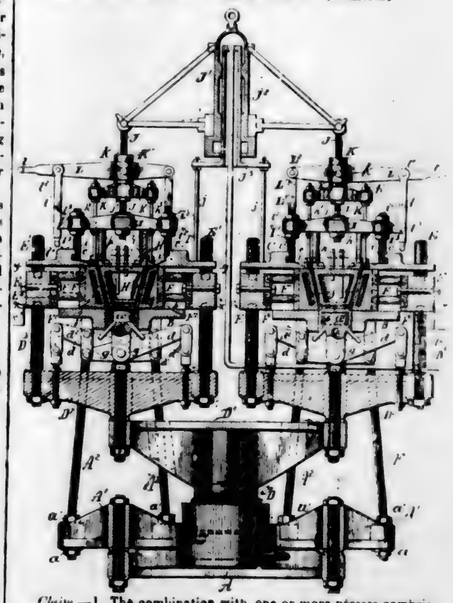
**504,880. MASK-RESPIRATOR.** CARL B. KÖSIG, Altona, Germany. Filed Aug. 27, 1891. Serial No. 403,920. (No model.) Patented in Belgium Mar. 17, 1891, No. 94,168.

*Claim.*—The combination of a helmet with tube *f*, having screw valve *h*, a branch *g*, for coupling with the fresh air hose, and a branch *i*, for coupling with the lamp hose, substantially as specified.

**504,880.**



**504,881. MACHINE FOR MAKING PAILS.** GEORGE W. LAKAWAY, Hartford, Conn., assignor of one-half to Josiah E. West, St. Cloud, Minn. Filed Sept. 3, 1890. Serial No. 363,799. (No model.)



*Claim.*—1. The combination with one or more presses comprising each, mold sections, plunger and former, of a reciprocating ring connected with the side and plunger sections of the molds, whereby the ring and sections move simultaneously, the connecting mechanism between the plungers and rings comprising spiders and levers, the latter of such length and connection that the speeds of the ring and plunger are unequal, substantially as set forth.

2. The combination with a table, top plate and spacing blocks located between the table and top plate, the adjacent faces of these blocks parallel with each other and constituting guides, of reciprocating mold sections located between these guide faces the top plate and table, a reciprocating ring connected with these mold sections and reciprocating at right angles thereto, a reciprocating plunger, spiders and levers connecting the plunger with the spider whereby the two are reciprocated simultaneously, substantially as set forth.

3. The combination with a table having an opening formed therein, a top plate, said parts properly spaced apart, and means for securing them together, of side mold sections located between the table and top plate, a plunger operating in the opening in the table, a reciprocating ring to which the side mold sections are connected, a spider, and lever connected with the table, the plunger and the spider, substantially as set forth.

4. The combination with a spider having several arms, spiders $A'$ connected with each of said arms, tables, and rods extending from the ends of spiders $A'$ to the tables and secured to the latter, of a plunger having arms, spiders $D^3$ connected with these arms, rings connected to said spiders $D^3$, side mold-sections located on the tables and con-

nected with the rings, bottom mold sections operating in holes in the tables, and levers pivotally connected with the tables the bottom mold-sections and the spiders $D^3$, substantially as set forth.

5. The combination with a table, top plate, means for holding them apart, and mold sections adapted to reciprocate between the table and top plate, of a rotary reciprocating spider, a core, a cylinder connecting the core to the spider, a ring mounted on the cylinder, and adapted to reciprocate thereon, the lower face of this ring adapted to give the finish to the upper edge of the pail or article being formed, substantially as set forth.

6. The combination with top plate having overhanging lugs, of rotary reciprocating spider carrying depending rods, having notches therein adapted to be engaged by the lugs, a mold core or former connected with the spider, and mold sections co-operating with said core, substantially as set forth.

7. The combination with a top-plate having overhanging lugs, of reciprocating rotary spider having notched depending rods adapted to be locked to the top plate when rotated, a cylinder secured to the spider, a former secured to the cylinder, a ring mounted on the cylinder, and means for locking the ring in position relative to the former and cylinder, substantially as set forth.

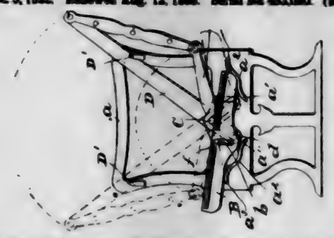
8. The combination with mold sections, of an inside former, a spider connected therewith, a cylinder to which the former is secured, a former ring mounted on the cylinder, means for locking the former in place, a spider connected with the former ring, a lever for operating the latter spider, and means for locking this lever to the former, substantially as set forth.

9. The combination, with a series of presses of the variety indicated arranged in circular order, each press having a former constituting the inner wall of the mold, of a hydraulic crane centrally located and having arms operatively connected with the different formers, whereby the latter may be simultaneously raised or lowered, substantially as set forth.

10. In combination, a series of presses of the variety indicated, each press having a former constituting the inner wall of its mold, each former being operatively connected with the spider, the different spiders being, respectively, journaled on rods depending from the arms of the hydraulic crane, each spider having depending locking-bars adapted also to serve as stops in lowering the former into the mold, substantially as set forth.

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**504,882. CAR-SEAT.** JOHN LEHMAN, Wakefield, Mass. Filed Oct. 5, 1892. Renewed Aug. 12, 1893. Serial No. 483,080. (No model.)



*Claim.*—1. In a reversible car seat the combination with the main frame, the movable seat and the back, of a link at each end of the car seat pivoted to the upper part of the back forming the striker arms, a seat operating arm or link at each end of the car seat pivoted to the lower part of the back, the striker arm and seat operating arm at each end of the car seat being pivoted to the main frame by a common pivot located near the level of the seat, the connection of each striker arm with the back and frame permitting the back to move from and toward the frame in a direction longitudinally of the striker arm and each seat operating arm having a slotted connection with the seat, substantially as described.

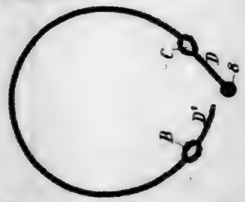
2. In a reversible car seat the combination with the main frame, the seat and the back, of links pivoted to the upper part of the back and to the main frame near the level of the seat frame forming the striker arms, seat operating arms pivoted to the lower part of the back and to the main frame, the back and the seat and operating arms when in a position of rest forming a triangle with the striker arms and the connections of the striker arm with the back and frame permitting the back to move longitudinally of the striker arm, the seat operating arms being connected to the seat by a compensating connection said point of connection being in nearly the same horizontal plane as the pivot point of the seat operating arm, substantially as described.

3. In a reversible car seat the combination with the main frame the movable seat and the back, of links one at each end of the seat forming the striker arms and pivoted to the upper part of the back, seat operating links pivoted to the lower part of the back, the said striker arm and the seat operating links at each end of the seat engaging and operating on the same pivot, the said striker arms being slotted to engage its pivot and the seat operating link being connected with the seat by a compensating connection the said point of connection when the back and seat are in their positions of rest, being in line with the pivot points of the seat operating arm, substantially as described.

4. In a reversible car seat the combination with the main frame, the seat and the back, of a link at each end of the car seat pivoted to the upper part of the back, forming the striker arms, a seat operating link or arm at each end of the car seat, pivoted to the lower part of the back, both the striker arm and seat operating arm at each end of the car seat operating upon a common pivot each of the striker arms having a slot engaging its pivot and the seat operating links being each provided with a pin engaging a slot in the seat construction, substantially as described.

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**504,883. WOVEN FABRIC FOR WHEEL-TIRES.** JAMES LYALL, New York, N. Y. Original application filed Dec. 27, 1892, Serial No. 456,327. Divided and this application filed July 11, 1893. Serial No. 480,138. (No model.)



*Claim.*—1. As a new article of manufacture, a woven fabric in the form of a strip for wheel tires, the same having longitudinal warp threads to pass around the wheel, weft threads passing transversely of the woven strip, and pockets at or near the edges for the reception of wires, strips or similar devices employed in connecting the elastic tire to the wheel fully, the warps in the middle of the strip being longer than those near the edges, substantially as set forth.

2. As a new article of manufacture, a woven fabric in the form of a strip for wheel tires, the same having longitudinal warp threads to pass around the wheel, weft threads passing transversely of the woven strip, pockets at or near the edges for the reception of wires, strips or similar devices employed in connecting the elastic tire to the wheel fully, and flaps at one or both edges of the strip and adjacent to the pockets, substantially as set forth.

3. As a new article of manufacture, a fabric for elastic wheel tires woven in the form of a strip with longitudinal warp threads and transverse weft threads, some of which transverse weft threads cross only a part of the entire fabric and are doubled upon themselves in the middle portions of such fabric to increase the length of the center of the fabric, so that such fabric is adapted to surrounding the tubular or elastic tire and to the circular form required in passing around the wheel, substantially as set forth.

4. As a new article of manufacture, a woven fabric for elastic wheel tires in the form of a strip, with longitudinal warp threads and transverse weft threads, some of which transverse weft threads cross only a part of the entire fabric and are doubled upon themselves in the middle portions of such fabric to increase the length of the center of the fabric, so that such fabric is adapted to surrounding the tubular or elastic tire and to the circular form required in passing around the wheel, and longitudinal pockets woven in such fabric near the edges of the same, substantially as set forth.

5. As a new article of manufacture, a strip of canvas or duck for elastic wheel tires, woven with longitudinal warp threads that are longer near the middle of the strip than those near the edges, and weft threads, so that the fabric is adapted to pass around a wheel and to surround the tubular or other tire, and heavier warps at or near the edge or edges of the strip held in place by the weft threads, substantially as set forth.

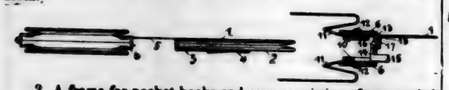
6. As a new article of manufacture, a strip of canvas or duck for elastic wheel tires, woven with weft threads and longitudinal warp threads that are longest in the middle portion of the strip and proportionately shorter toward and at the edges, and means for securing such strip to the elastic or other wheel tire when drawn around the same, substantially as set forth.

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**504,884. POCKET BOOK OR CASE.** HENRY MAYER, Philadelphia, Pa. Filed Mar. 8, 1893. Serial No. 465,197. (No model.)

*Claim.*—1. In a pocket book or case the combination of a flexible back, with a frame having a slit therein for the insertion of said flexible back, straight edges united by a clasp opposed to the flexible fold of the back, and opposite curved edges united by hinges and covered upon the flat side by said flexible cover substantially as set forth.

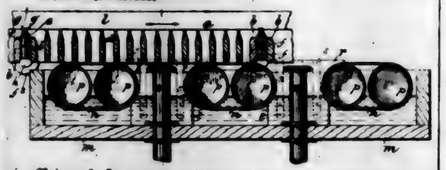




2. A frame for pocket books and cases consisting of two angled frames united by a hinge upon the curved sides and having right lined edges united by a spring clasp, and provided with a slot in said straight side to receive the leather forming the back of the pocket book as described and shown adapted to support a flexible fold of a pocket book substantially as set forth.

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**504,885. SUCTION-BOX FOR PAPER-MACHINES.** ROBERT W. MOSCRIEFF, Manchester, England. Filed Nov. 21, 1892. Serial No. 452,739. (No model.)



*Claim.*—1. In a paper making machine, the combination with a traveling interstitial paper former, of a suction water box below the line of travel of said paper former, a suction pipe in said box, and a bed in said box consisting of a thin flexible sheet of air tight material contacting at one of its sides with the under side of said paper former across substantially the entire width of the under face thereof and exposed to the air at its other side, said sheet, when a suction is created in said box, pressing under the pressure of the outer air tightly against the under side of said paper former where it contacts therewith, and thereby preventing leakage into the suction box, substantially as and for the purpose set forth.

2. In a paper making machine, the combination with a traveling interstitial paper former, of a suction box below the line of travel of said paper former, a suction pipe in said box, and plates contacting with the side edges of said paper former to prevent leakage at said edges into said box, substantially as and for the purpose set forth.

3. In a paper making machine, the combination with a traveling interstitial paper former, of a suction box below the line of travel of said paper former, a suction pipe in said box, beds in front of and behind said pipe each contacting with the under side of said paper former across substantially the entire width of its under face, each contacting with its said face at a plurality of points, whereby each covers a plurality of interstices of said paper former and prevents leakage between the latter and the beds into said box, and plates contacting with the side edges of said paper former and preventing leakage at said edges into said box, substantially as and for the purpose set forth.

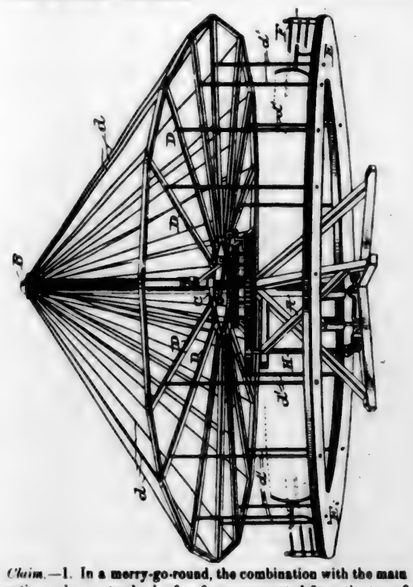
4. In a paper making machine, the combination with a traveling interstitial paper former, of a suction box below the line of travel thereof, a suction pipe in said box, and beds in front of and behind said suction pipe contacting with the under face of said paper former to prevent leakage under the latter, and consisting of endless belts *n* contacting with said paper former across substantially its entire under face, and rollers *p* carrying said belts, substantially as and for the purpose set forth.

5. In a paper making machine, the combination with an endless traveling interstitial paper former consisting of a plurality of molds hinged together and having surface *a* of woven wire carrying a wet web of paper, frames *b*, edge frames *c*, and cross-bars *d* supporting said surface *a*, of track $f^9$ carrying said former horizontally throughout a portion of its travel, suction box *m* beneath said former at the point of its horizontal travel, a suction pipe *v* within said box, flexible beds at each side of said suction pipe contacting with the under faces of a plurality of said cross bars *d*, and extending across substantially the entire width of the paper former to prevent leakage between the latter and said beds into said box, boards *t* beneath said edge frames *c* of the paper former between said beds, and plates *r* contacting with the outer sides of said boards and the outer edge frames *e* of the paper former, and closing the joint there between to prevent leakage into said box at the edges of said paper former, all combined and arranged substantially as and for the purpose set forth.

6. In a paper making machine, the combination with a traveling paper former of the suction box *m*, suction pipes *v*, rollers *p p*, endless traveling belts *n n* adapted to form close contact with the under side of said paper former, boards *t t* and plates *r r* kept in contact with the sides of said paper former substantially as set forth.

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**504,886. MERRY-GO-ROUND.** HARRY S. MOORE, Bridgeton, N. J., assignor of one-half to Stanton B. Cole, same place. Filed June 22, 1892. Serial No. 437,612. (No model.)



*Claim.*—1. In a merry-go-round, the combination with the main supporting pole or standard, of a frame supported from the top of the same, mechanism for imparting a rotary motion to said frame and a separate mechanism having rigid connection with said frame for imparting a lateral movement to the same, substantially as described.

2. In a merry-go-round, the combination with the supporting pole or standard, of a frame surrounding said pole or standard and supported from the top of the same, mechanism for imparting a rotary motion to said frame, and a separate mechanism including a crank-pin and a rigid connection between the said crank-pin and said frame for imparting a lateral movement to the frame, substantially as described.

3. In a merry-go-round the combination with a main supporting pole or standard, of a frame revolubly supported at or near the top of said standard, means for rotating said frame, crank pins, links connecting said crank pins with said frame, said links having universal connections with said pins and frame, and means for moving said crank pins whereby a reciprocating movement is given to said frame, which is greatest during the middle portion of said movement and decreases toward the extremes thereof, substantially as described.

4. In a merry-go-round the combination with the main supporting pole or standard, a frame surrounding the same and supported from the top thereof, a driving wheel having rigid link connections with said frame for imparting rotary motion thereto, cranks having rigid link connections with said frame for imparting lateral motion thereto and means for operating said cranks and gear wheels, substantially as described.

5. In a merry-go-round the combination with a main supporting pole or standard, of a frame supported from the top thereof, a driving wheel mounted on said standard having rigid link connections with said frame for imparting rotary motion thereto, cranks having rigid link connections with said frame for imparting lateral movement to the same, a gear wheel mounted on said standard for imparting motion to said cranks and means for connecting to and disconnecting from said pole, the crank operating wheel, substantially as described.

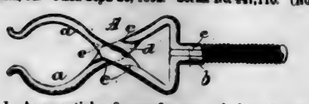
6. In a merry-go-round the combination with a supporting standard, of a frame revolubly supported at or near the top of said standard, said frame surrounding the standard below the point of suspension, a driving wheel having rigid link connections with said frame for imparting rotary motion thereto, said links having universal connections with the wheel and said frame permitting a lateral movement to be imparted to the frame, substantially as described.

7. In a merry-go-round the combination with a main supporting

pole or standard, a main frame surrounding said supporting pole, a main gear wheel mounted upon said supporting pole, gearing for imparting rotary motion to said frame, gearing mounted upon said main gear wheel, a crank arm movably connected by an intervening part with the main frame, a second gear wheel mounted upon the pole and meshing with the gearing mounted on said main gear wheel and means for rigidly attaching said second gear wheel to and detaching it from the supporting pole, substantially as described.

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**504,887. BROOM OR BRUSH HOLDER.** WILLIAM W. MOORE, Philadelphia, Pa. Filed Sept. 26, 1892. Serial No. 447,110. (No model.)



*Claim.*—1. As an article of manufacture, a holder for brooms or similar articles consisting of spring jaws made of a single piece of material, said jaws crossing each other at a point approximately midway between their ends, and a screw threaded shank, substantially as set forth.

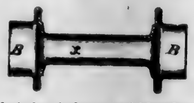
2. As an article of manufacture a holder for brooms and like articles consisting of a pair of spring jaws crossing each other diagonally at a point between their ends, shoulders formed on the jaws to limit their vibrations and a screwthreaded shank, substantially as set forth.

3. As an article of manufacture, a holder for brooms and like articles consisting of a pair of spring jaws crossing each other, and a screw threaded shank integral with the jaws, substantially as set forth.

4. A holder for brooms, brushes and similar articles composed of spring jaws and a screwthreaded shank made of a single piece of metal, and a plate or strip inserted between the parts of the shank, substantially as set forth.

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**504,888. HUB FOR BICYCLE-WHEELS.** FRED NEBEL and FRANK MCLISS, Chicago, Ill. Filed Dec. 19, 1892. Serial No. 455,734. (No model.)



*Claim.*—1. A hub for skeleton and bicycle wheels, consisting of a suitable length of tubing, originally of the same diameter its entire length, which has its central portion reduced in diameter, its bell-shaped ends the same diameter as originally, and circumferential flanges on said ends made by expanding radially outward a section of said ends and then collapsing the same so that said flanges consist of two thicknesses of said tube.

2. A hub for a skeleton or bicycle wheel made of one integral piece of tubing, having a central portion reduced in diameter, bell-shaped ends of greater diameter, and circumferential flanges thereon consisting of two thicknesses of the walls of said ends, as set forth.

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**504,889. KNIFE.** JACOB OEFINGER, Meriden, Conn. Filed Mar. 7, 1893. Serial No. 465,006. (No model.)
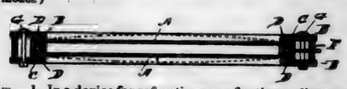


*Claim.*—1. A handle for knives, forks and kindred articles, consisting of a tube, a solid plug located in one end thereof, adapted in its exterior conformation to form the outer end of the handle, and constructed with a shoulder against which the tube abuts; and an imperforate plug located in the opposite end of the tube, adapted in its exterior conformation to form the bolster of the handle, having a shoulder against which the tube abuts, and constructed to have an independently formed knife-blade or other part fastened to its outer end, substantially as described.

2. A handle for knives, forks and kindred articles, consisting of a tube, a solid plug located in one end thereof, adapted in its exterior conformation to form the end of the handle, having a shoulder against which the tube abuts, and constructed with a threaded socket; a solid plug located in the opposite end of the tube, adapted in its exterior conformation to form the bolster of the handle, having a shoulder against which the tube abuts, and constructed with a screw-threaded bore to receive an independently formed knife-blade or other part, and a coupling-rod permanently attached to the plug last mentioned, and having its opposite end threaded to enter the threaded socket in the plug, forming the end of the handle, substantially as described.

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**504,890. DEVICE FOR REFLECTING AND REFRACTING RADIANT ENERGY.** ELI C. OBMART, Detroit, Mich., assignor, by mesne assignments, to Francis Doane, Charles F. Crowell, and Melvin L. Severy, trustees, Boston, Mass. Filed Feb. 24, 1890. Serial No. 341,436. (No model.)



*Claim.*—1. In a device for refracting or reflecting radiant energy, a chamber inclosing a fluid and having a curved surface or surfaces, the convexity or concavity of the surface or surfaces being maintained by a difference of pressure between the inclosed and the external media, substantially as shown and described.

2. The combination, substantially as and for the purpose set forth, of two opposed flexible or elastic plates separated from one another, a suitable wall or ring embracing the edges of said plates, and means for establishing a difference of pressure between the medium inclosed by these plates and the medium in juxtaposition to their outer surfaces.

3. The combination, substantially as and for the purpose set forth, of the opposed flexible or elastic plates A, A, having surfaces parallel to one another, the rings B B, the ring C, and the packing rings D D, the tube E, the ring F, and the screws G.

4. The combination, substantially as and for the purpose set forth, of the parallel flexible or elastic plates A, A, having surfaces parallel to one another, the rings B B convex on their inner sides, the ring C convex on its sides, and the packing rings D, D, convex on their faces.

5. The combination, substantially as, and for the purpose set forth, of a chamber having a curved surface or surfaces, a secondary chamber connected with the first-mentioned chamber, a movable wall to the secondary chamber, and a device for moving said wall.

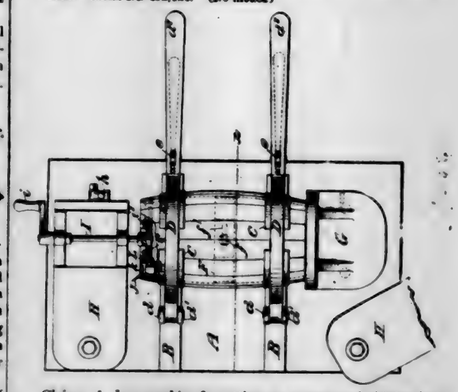
6. The combination, substantially as, and for the purpose set forth, with the chamber formed by opposed flexible or elastic plates having their edges clamped by a suitable wall or ring, of the secondary chamber communicating with the first mentioned chamber, the movable diaphragm I forming one of the walls of the secondary chamber, and a screw, for moving the diaphragm.

7. A mirror consisting of an air tight box closed by a flexible reflecting diaphragm.

8. A mirror consisting of an air tight box closed by a flexible reflecting diaphragm, and means for introducing a fluid into the box.

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**504,891. MACHINE FOR SETTING UP, CROZING, AND CHINING BARRELS.** FRANK S PALMATIER, Leeds, N. Y. Filed Nov. 16, 1892. Serial No. 452,120. (No model.)



*Claim.*—1. In a machine for setting-up, crozing and chining barrels, a bed plate, a block thereon having a semi-cylindrical recess therein, a band—the ends of which are normally some distance apart—secured within the recess and a lever pivoted to the block, the said lever having a semi-cylindrical recess engaging the ends of the band and drawing them together as the lever is depressed for the purpose of gathering the staves of a barrel together, substantially as set forth.

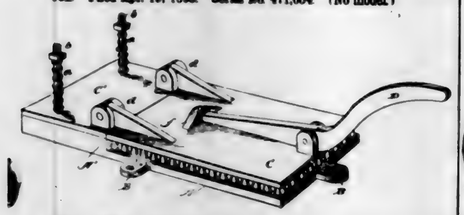
2. In a machine for setting up, crozing and chining barrels, a bed plate, a block thereon having a semi-cylindrical recess therein, a band—the ends of which are normally some distance apart—secured within the recess, a lever pivoted to the block said lever having a semi-cylindrical recess engaging the ends of the band for drawing them together and thereby gathering the staves together as the lever is depressed, and an adjustable hoop within the barrel for holding the staves loosely assembled before the lever is depressed, substantially as set forth.

3. In a machine for setting up, crozing and chining barrels, a bed plate, blocks thereon having semi-cylindrical recesses therein, bands secured within the recesses in the blocks and having their ends normally some distance apart, levers pivoted to the blocks said levers having semi-cylindrical recesses engaging the ends of the bands for drawing them together as the levers are depressed, a block pivoted to the bed plate in position to swing the croze and chine cutting mechanism into engagement with the end of the barrel after the levers have been depressed and the staves assembled, a shaft mounted to rotate in said block, a socket piece adjustable longitudinally upon the shaft, croze and chine cutters having a limited sliding movement in the socket piece toward and away from the interior of the barrel, a spring tending to hold the croze and chine cutters at the limit of their outward movement, and means for operating the croze and chine cutters, substantially as set forth.



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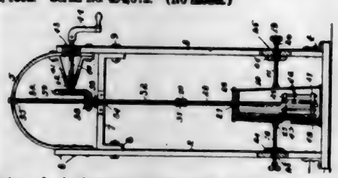
**504,892. MEAT-TENDERER.** BENJAMIN H. PASSMORE, Belmont, Tex. Filed Apr. 19, 1893. Serial No. 471,034. (No model.)



*Claim.*—The combination of a meat-tenderer, of a base plate A, having a raised portion A', with the plates C C, articulated at *d d* and connected by rods *b b*, to the base, said rods provided with springs *a a*, substantially as and for the purpose specified.

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**504,893. CHURN.** ERNESTUS W. SETTLE, Slater, Mo. Filed Dec. 12, 1892. Serial No. 454,572. (No model.)



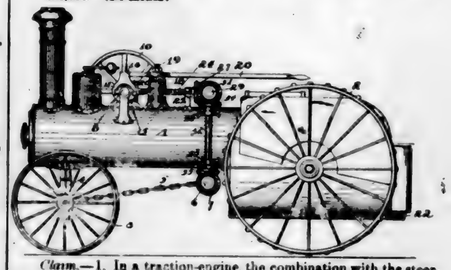
*Claim.*—1. An improved churn adapted to be mounted upon a base having two upwardly projecting uprights, metallic interiorly screw threaded bushings located in alignment in said uprights screw threaded rods adjustable in said bushings, a V-shaped clamp located upon the inner end of each of said adjusting rods, said rods adjustable independent of any movement of the clamping jaw, and said arms comprising said jaw provided upon their inner sides with projecting teeth made of flexible material substantially as set forth.

2. An improved churn adapted to be held upon a base having two uprights standards connected by a curvilinear strip at the upper end, and intermediately by a horizontal cross piece, said strip and cross piece providing bearings for a vertically mounted shaft, means for revolving said shaft, the lower end of said shaft squared and provided upon two sides with corrugations, plates having inner corrugated sides secured to the lower end of said shaft, a churn dasher secured to a vertical dasher-rod the upper end of said rod squared and corrugated and adapted to be held between the corrugated plates secured to the lower end of the driving shaft and held therein by removable thumb screws, substantially as set forth.

3. An improved churn adapted to be held upon and removable from a base construction, two upright rectangular standards secured at the ends of said base intermediate of its width, the upper end of said standards connected by a curvilinear strip secured upon the inner sides of said standards, a cross-piece secured to the inner sides of said standards below the curvilinear strip by its downwardly projecting lugs bolted to said standards, bearings provided in said curvilinear strip and cross-piece for a vertical-shaft carrying a horizontal pinion, a collar secured upon said shaft adjustable to prevent any downward movement of the shaft and to compensate for its wear and the wear upon the pinion, a vertical horizontally mounted driving-gear adapted to engage said pinion, said gear mounted upon a horizontal shaft secured in bearings provided by a V-shaped bracket secured to the curvilinear strip, and by a metallic bushing projecting through said strip and one of the upright standards, a crank secured upon the projecting end of said shaft, the said upright standards having interiorly screw threaded metallic bushings located in alignment within same, screw threaded adjusting rods having mounted on their inner ends V-shaped arms, provided upon their inner sides with projecting teeth made of yielding material, said adjusting-rod adjustable in said metallic bushings and the adjustment of same adapted to hold the churn upon said base, a churn-dasher located in said churn, an upwardly projecting dasher-rod, said dasher-rod removably secured to the lower end of the vertical driving-shaft, and the revolving of the crank adapted to revolve the churn-dasher, substantially as set forth.

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**504,894. STEERING MECHANISM FOR TRACTION-ENGINES.** JAMES H. STEVENSON, Alliance, Mo. Filed Apr. 24, 1893. Serial No. 471,618. (No model.)

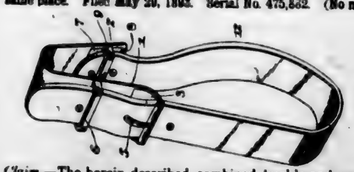


*Claim.*—1. In a traction-engine, the combination with the steering-wheel or wheels, of the main shaft of the engine, a sleeve axially revoluble and longitudinally reciprocative upon said shaft, friction-wheels 14 and 15 secured upon said sleeve a distance apart so as to leave a space between them, an additional friction-wheel mounted in the space between said wheels which are carried by said sleeve, a manually-controlled device for sliding said sleeve and the friction-wheel which it carries upon said shaft to engage said additional friction-wheel alternately at diametrically opposite points, and gearing which connects said additional friction-wheel to the steering-wheel or wheels of the machine, whereby when said additional wheel is revolved in one direction the machine will be steered in a given direction, and when said friction gear-wheel is revolved in an opposite direction the machine will be steered in a corresponding direction, substantially as herein specified.

2. In a traction-engine, the combination of a steering-axle 4, steering chains 5 connected at one end of said axle, one at each side of its pivotal point, a winding shaft 6 to which the opposite ends of each of said chains is connected and arranged to be reversely wound thereon and unwound therefrom, the main shaft 8, a shipping sleeve 11 axially revolved with and longitudinally reciprocative upon said main shaft, friction wheels 14 and 15 rigidly secured to said sleeve a distance apart, a clutch yoke provided with a clutch arm which loosely engages said sleeve, a stand or support fixed at a point adjacent said sleeve, a hand lever fulcrumed upon said support with one end extending rearward within reach of the operator, and its opposite end pivotally secured to said clutch yoke, and operative connections between said sleeve and said steering shaft, substantially as herein specified.

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**504,895. PROTECTIVE BUCKLE.** FRANK W. SWIGART, Arroyo Grande, Cal., assignor of two-thirds to T. A. Dranga and A. Brieger, same place. Filed May 29, 1893. Serial No. 475,852. (No model.)

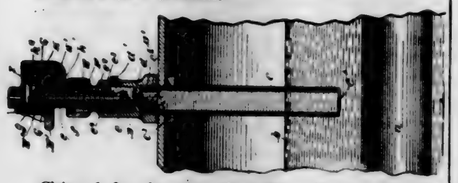


*Claim.*—The herein described combined buckle and guard, the same consisting of the V-shaped body portion or plate forming the terminals 1 and 2, the former having an opening 3 adjacent to its end

and in rear of the same a perforation, a tongue loosely hung in the perforation, and a keeper 6 arranged upon the outer side of the body-portion in rear of the tongue and at one side of the angle of the plate, the remaining terminal having an opening 7 adjacent to its end forming an end bar 11, the same being provided with curved pointed teeth extending inward beyond the plane of the buckle, said opening being further provided with a central transverse bar 9 slightly beyond the plane of the buckle, and provided with a central curved stud, said bar 9 being above the opening 3 and at the opposite side of the angle at which the keeper 6 is located, substantially as specified.

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**504,896. SAFETY-PLUG FOR BOILERS.** CLARENCE E. VAN AUKEN, Chicago, Ill., assignor to Charles P. Monash. Filed Feb. 20, 1892. Serial No. 423,312. (No model.)



*Claim.*—1. In a low water alarm the combination of a casing adapted to be secured to the shell of a steam boiler with a fusible plug, a valve in the casing between the fusible plug and the boiler, and a keyless lock automatically engaging with the fusible plug and preventing its removal from the casing except by fusing; substantially as described.

2. In a low water alarm the combination of a casing adapted to be secured to the shell of a steam boiler with a fusible plug, a valve in the casing between the fusible plug and the boiler, a keyless lock automatically engaging with the fusible plug and preventing its removal from the casing except by fusing, and a stop preventing the closing of the valve when the fusible plug is locked in position in the casing; substantially as described.

3. In a safety plug, the combination of a casing adapted to be secured to the shell of a steam boiler with a fusible plug, a passage-way extending through such casing closed by the fusible plug, a valve in the casing between the fusible plug and the boiler adapted to close such passage-way, a keyless lock automatically engaging with the fusible plug and preventing its removal from the casing except by fusing and a stop engaging with and preventing the closing of the valve when the fusible plug is in position in the casing; whereby when the passage-way is closed by the fusible plug, such passage-way cannot be closed by the valve, and when such passage-way is not closed by the fusible plug, it can be closed by the valve; substantially as described.

4. In a safety plug the combination of a two part casing, one part thereof adapted to be secured to the shell of a steam boiler, a passage-way through such part of the casing, a hollow plug fitting into such passage-way and adapted to form a valve closing the same, and a fusible plug fitting into and adapted to close the opening through the hollow plug, and the other part of such casing adapted to be placed over the hollow plug and when placed thereon to form a cover for such fusible plug and also to form a stop preventing the closing of the valve formed by the hollow plug; substantially as described.

5. In a safety plug the combination of a two part casing, one part thereof adapted to be secured to the shell of a steam boiler, a passage-way through such part of the casing, a hollow plug fitting into such passage-way and adapted to form a valve closing the same, and a fusible plug fitting into and adapted to close the opening through the hollow plug, and the other part of such casing adapted to be placed over the hollow plug, and when so placed thereon to form a cover for the fusible plug and a stop preventing the closing of the valve formed by the hollow plug, and a spring in such part of the casing adapted to engage with the fusible plug and thereby lock it in position as such cover and stop; substantially as described.

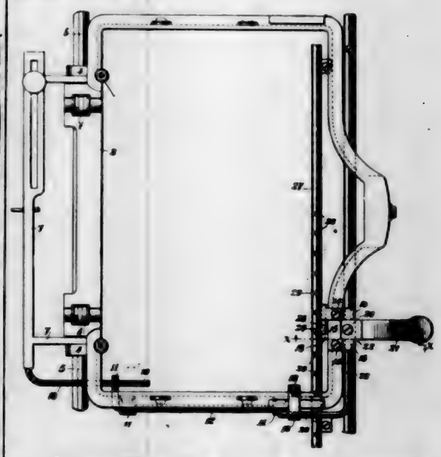
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**504,897. TYPE-WRITING MACHINE.** GEORGE B. WEBB, New York, N. Y., assignor to the Wyckoff, Seamans & Benedict, same place. Filed Dec. 3, 1892. Serial No. 453,957. (No model.)

*Claim.*—1. In a type writing machine, the combination with a paper-carriage and its feeding mechanism, of a releasing mechanism, independent of the line spacing mechanism and a carriage-lifter operatively-connected to said releasing mechanism, whereby the carriage may be either released or elevated at pleasure by the application of the hand to said lifter alone and without moving the paper in line space direction.

2. In a type writing machine, the combination with a paper-carriage and its feeding mechanism, of a releasing mechanism, a carriage-lifter operatively-connected to said releasing mechanism and provided with a dog, and one or more column stops.

3. In a type writing machine, the combination with a paper-carriage and its feeding mechanism, of a releasing mechanism, a lifter pivotally mounted on the carriage and provided with a dog and operatively-connected to the releasing mechanism, and one or more column stops fixed relatively to the carriage; the lifter being connected to the releasing mechanism in a manner such that the latter may be operated either independently of the lifter or through the lifter while at the same time the lifter may be actuated independently of the releasing mechanism to effect the raising of the carriage without simultaneously releasing the same.



4. In a type writing machine, the combination of a paper-carriage, one or more column stops, and a horizontally pivoted lever provided on one side of its pivot with a dog, arranged to travel normally out of the plane of the stop or stops and on the opposite side with a handle or finger-piece which when actuated operates to move the dog into the plane of the stop or stops.

5. In a type writing machine, the combination of a lifting paper-carriage, one or more column stops, and a spring actuated horizontally pivoted lever, one arm of which is provided with a depending dog, and the other arm of which is provided with a handle or finger-piece which when moved in one direction is adapted to serve as a carriage lifter and when moved in the opposite direction is adapted to move said depending dog into the plane of the column stop or stops.

6. In a type writing machine, the combination of a paper carriage, a rod or support having one or more column stops, and a spring-actuated lever pivoted in a plane parallel with said rod or support and provided on one side of its pivot with a dog, and on the other side with a handle or finger-piece.

7. In a type writing machine, the combination with a paper-carriage, of a bracket secured thereto and provided with forwardly-extending eyes or bearings, a lever pivoted to said bracket as shown and described, and provided at one end with a dog, and at the other end with a handle, and one or more column stops fixed relatively to the carriage.

8. In a type writing machine, the combination with a paper-carriage and its feeding and releasing mechanisms, of one or more column stops, and a lever connected to said releasing mechanism, and provided on one side of its pivot with a dog, and on the other side with a handle or finger-piece.

9. In a type writing machine, the combination with a paper-carriage and its feeding and releasing mechanisms, of one or more column stops, a bent rod pivoted at one end and adapted at its other end to operate upon said releasing mechanism, and a lever secured to said rod and provided on one side of the pivot with a depending dog, and on the opposite side with a forwardly-extending handle or finger-piece.

10. In a type writing machine, the combination with a paper carriage and its feeding and releasing mechanisms, of one or more column stops, a bracket secured to said carriage and provided with eyes or bearings, a bent rod mounted at one end in said eyes or bearings and extended at its opposite end contiguous to the releasing mechanism, and a spring-actuated lever secured to said rod and provided on one side with a depending dog, and on the opposite side with a forwardly-projecting handle, or finger-piece.



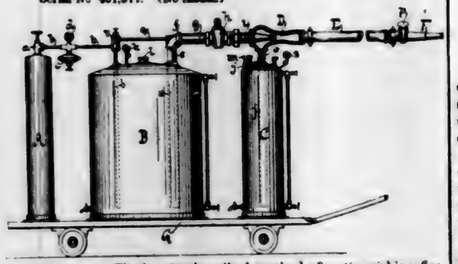
11. In a type writing machine, the combination with a paper-carriage, of one or more column-stops, and a column stop key lever provided with a pivoted dog.

12. In a type writing machine, the combination with a paper-carriage, its feeding mechanism, and its releasing mechanism, of a lever, and connecting devices between said lever and the release key of said releasing mechanism, said lever being adapted to release the carriage upon a downward movement of its handle portion, and to serve as a carriage-lifter upon an upward movement of its handle portion.

13. In a type writing machine, the combination with a paper-carriage, its feeding mechanism, and its releasing mechanism, of one or more column stops, and a combined column stop key and carriage lifter, the whole being so arranged as that the release key may be operated independently of the combined column stop key and carriage lifter when the column stop or stops may be in place, so that the carriage may be released and moved toward the left to the desired point without interruption by the column stop or stops.

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**504,898. METHOD OF AND APPARATUS FOR EXTINGUISHING FIRES.** HENRY P. WEIDIG, Newark, N. J. Filed Feb. 7, 1893. Serial No. 461,377. (No model.)



*Claim.*—1. The herein described method of extinguishing fire, which consists in supplying a stream of carbonated water under pressure, conducting ammonia into this stream, thus forming a stream of a solution of ammonia carbonate under pressure, and discharging this solution into the fire by such pressure.

2. The herein described method of extinguishing fires, which consists in supplying a stream of carbonated water by the pressure of carbonic acid gas, conducting ammonia into this stream, thus forming a stream of a solution of ammonia carbonate under pressure, and discharging this solution into the fire by such pressure.

3. In apparatus for extinguishing fire, the combination of one or more vessels adapted to contain liquid carbonic acid, a closed water tank, a closed ammonia tank, an ejector, a hose and nozzle connected to the ejector, and connections substantially as described, for admitting carbonic acid at or near the bottom of the closed water tank, for taking the water from the bottom of the water tank to the ejector and for taking ammonia from the bottom of the ammonia tank to the ejector, substantially as and for the purpose specified.

4. In an apparatus for extinguishing fire, the combination of one or more carbonic acid cylinders A, water tank B, ammonia tank C, ejector D, hose E, nozzle F, pipe *b* leading from cylinder A to bottom of tank B, pipe *e* leading from bottom of tank B to cock A connected with ejector D, and pipe *j* leading from bottom of tank C to ejector D, substantially as and for the purpose specified.

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**504,899. HARMONICA.** MAX AHN, New York, N. Y. Filed June 12, 1893. Serial No. 477,268. (No model.)

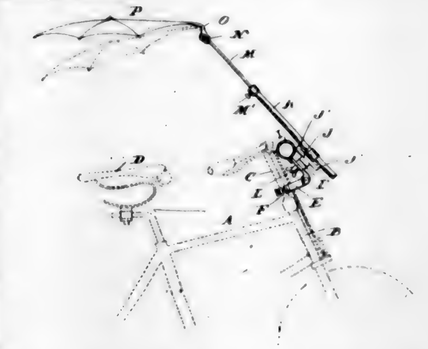


*Claim.*—The combination of a harmonica with a revoluble lid, adapted to be projected over its mouth piece and back and with springs that secure the lid to the ends of the harmonica, substantially as specified.

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**504,900. CANOPY FOR BICYCLES.** JOHN S. BARNES, Detroit, Mich., assignor of one-half to John S. Ellis, same place. Filed Aug. 23, 1892. Serial No. 443,836. (No model.)

*Claim.*—1. In a bicycle canopy, the combination with an adjustable bracket of a casing arranged thereon, a jointed adjustable support on the bracket, a collapsible canopy, and a supporting rib, for the canopy having an angular extension pivoted to the support, substantially as described



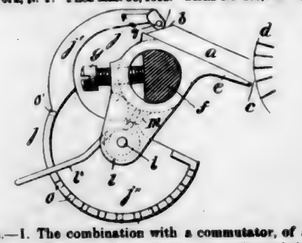
2. In a bicycle canopy, the combination with a support having an extensible section of a collapsible canopy having a supporting extension formed with an angular connecting section pivotally secured to the support, and an inclosing casing for the canopy adjacent to and connected with the support, substantially as described.

3. In a bicycle canopy, the combination with a tubular stowage casing, for a canopy of an adjustable support arranged at the side thereof, means for permitting the movement of the support to a position parallel with the casing and a collapsible canopy pivotally secured to the support, substantially as described.

4. The combination with the standard, of a bracket thereon, an arm pivotally secured in said bracket, a canopy support pivotally secured to the arm, a canopy casing supported on the arm, and a collapsible canopy pivotally supported on the support, substantially as described.

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**504,901. COMMUTATOR-BRUSH HOLDER.** ROBERT N. BAYLIS, New York, N. Y. Filed Mar. 30, 1893. Serial No. 468,273. (No model.)



*Claim.*—1. The combination with a commutator, of a block of carbon or other electric conductor having opposite ends beveled toward each other, and one of the beveled ends lying against said commutator, a flat and adjustable conducting plate upon which the block rests and upon which it is movable, a helical spring bearing against the remaining beveled end, and movable toward the commutator, and means for varying the pressure of said helical spring upon said block.

2. The combination with a commutator, of a block of carbon or other electric conductor having opposite ends beveled toward each other, and one of the beveled ends lying against said commutator, a flat and adjustable conducting plate upon which the block rests and upon which it is movable, a helical spring bearing against the remaining beveled end, and movable toward the commutator, and means for varying the pressure of said helical spring upon said block, said means consisting of a second spring one end of which is fixed, and the other end of which is adjustable to predetermined fixed positions upon the holder of said helical spring.

3. The combination with a commutator, of an electric conducting block pressing thereon, a holder therefor, circularly adjustable around a given arbor, the block being movable in the holder, an arm provided with notches bearing against the block toward the commutator, and circularly adjustable around a second arbor, means for maintaining the holder fixed, and a spring having one end held fixed, and the other adjustable for insertion into any of said notches.

4. The combination with a commutator, and adjustable spring of an electrical conducting block in contact therewith and movable on

and in contact with a flat conducting plate, one end of the block being in contact with the commutator at or below a plane including the axis of the commutator, and the other end being above said plane and beveled toward the commutator, and a pivoted arm whose one end presses the block toward the commutator and whose other end is connected to said adjustable spring.

5. The combination with a commutator, and adjustable spring of an electrical conducting block in contact therewith and movable on and in contact with a flat conducting plate, one end of the block being in contact with the commutator at or below a plane including the axis of the commutator, and the other end being above said plane and beveled toward the commutator, and a pivoted arm whose one end presses the block toward the commutator and whose other end is connected to said adjustable spring, and a helical conductor connected to said conducting block.

6. The combination with a commutator, of an electrical conducting block in contact therewith and movable on and in contact with a flat conducting plate, one end of the block being in contact with the commutator at or below a plane including the axis of the commutator, and the other end being above said plane and beveled toward the commutator, and a pivoted arm carrying a helical spring whose convolutions press upon said block toward the commutator.

7. A commutator brush consisting of an electric conducting block, whose opposite ends are beveled toward each other.

8. The combination with a commutator of a conducting block in contact therewith, an adjustable flat plate upon which the block rests, and means for pressing the block against the commutator, said means consisting of a movable helical spring whose convolutions bear upon the end of said block.

9. The combination of a commutator, an electric conducting block in contact therewith, a plate supporting said block, and a follower pressing the said block toward said commutator and against said plate.

10. The combination of a commutator, an electric conducting block in contact therewith, a plate supporting said block, and a follower pressing the said block toward said commutator and against said plate, one end of the block being at or below the plane including the commutator's axis and the other end being above said plane.

11. The combination with a commutator and a conducting block bearing thereon of a follower for the block carrying a helical spring whose convolutions bear upon said block

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**504,902. BICYCLE-BELL.** OLIVER B. BEACH, Stony Creek, Conn. Filed Jan. 9, 1893. Serial No. 457,737. (No model.)



*Claim.*—1. In a bicycle-bell, the combination with the bell proper, of a segmental rack, a verge, two spring arms extending inward from the said verge, and a rigid segmental hammer carried by the inner ends of the said arms, and adapted in length to have its respective ends stand adjacent to different points in the inner surface of the bell, substantially as described.

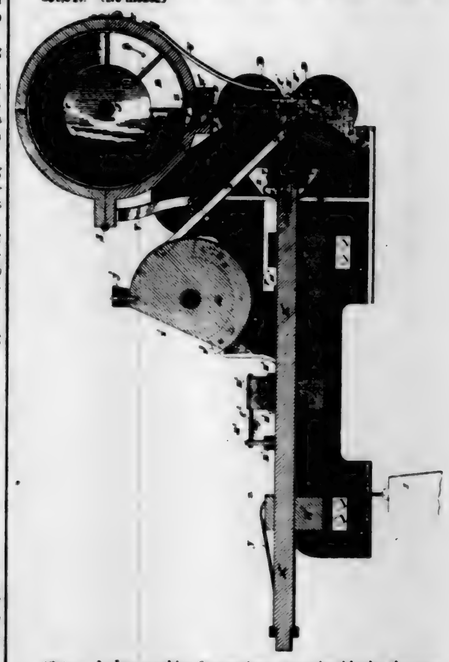
2. In a bicycle-bell, the combination with the bell proper, of a central post for supporting the same, a spring-actuated operating-lever constructed at its inner end with a segmental rack, a verge having pins with which the said rack engages, and having its body constructed of a piece of sheet-metal, the ends of which are bent at a right angle to it, and extended inward, and a segmental hammer connected with the inner ends of the said spring-arms, substantially as described.

3. In a double bicycle-bell, the combination with a central post, of two bells secured thereto, with their open edges near together, a frame-work connected with the said post independent of the said bells, a spring-actuated operating-lever pivotally connected with the said frame-work, and constructed at its inner end with a segmental rack, and at its outer end with a finger-piece which projects between and beyond the bells, a verge also carried by the said frame-work, having verge-pins engaged with the said rack, and two plates or members located on opposite sides of the said rack, and carrying the said pins; spring-arms extending inward from the said plates on opposite sides of the said lever and post, and segmental hammers also located on opposite sides of the said lever for engagement with the respective bells, and connected with the said arms of the verge-plates or members, substantially as described.

4. In a double bicycle-bell, the combination with a central post, of two bells secured thereto with their edges adjacent to each other, a frame-work connected with the post independent of the bells, and located within the same, a ring mounted upon the post about midway the length of the same, located in a plane at a right angle to the axis thereof and extending between the edges of the bells, a spring-actuated operating-lever hung on the said frame-work and constructed with a segmental rack, and with a finger-piece which extends outward through the said ring, a verge mounted in the said frame-work on the opposite side thereof from the suspension point of the lever, two pairs of spring arms extending inward from the said verge, on opposite sides of the said ring respectively, and two rigid segmental hammers respectively attached to the inner ends of the arms of the said pairs of arms, and adapted in length to have their respective ends stand adjacent to different points in the inner surface of the respective bells, substantially as described.

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**504,903. MACHINE FOR TAPPING OR REAMING BLANKS.** EDWIN N. BESCHER, Marion, assignor, by direct and mesne assignments, to Henry H. Clark, Charles H. Clark, Robert W. Bemis, and William H. Cummings, Southington, Conn. Filed Dec. 13, 1886. Serial No. 221,347. (No model.)



*Claim.*—1. In a machine for tapping or reaming blanks, the combination with a rotary, reciprocatory tool-driving shaft, provided with a flange or collar; of a rotary cam normally uncoupled from its shaft and engaging when coupled therewith and actuated, with the said flange or collar and sliding the tool-driving shaft in one direction; means for sliding such shaft in the opposite direction, a tool, and a blank-holder for holding the blank while it is being tapped or reamed, substantially as set forth.

2. In a machine for tapping or reaming blanks, the combination with a rotary, reciprocatory tool driving shaft provided with a flange or collar; of a rotary cam engaging with the said flange or collar to slide the said shaft in one direction, means for sliding the shaft in the opposite direction, and a driving-pulley loosely mounted on the tool-driving-shaft and coupled with and uncoupled from the same, substantially as set forth.

3. In a machine for tapping or reaming blanks, the combination with a rotary, reciprocatory tool-driving shaft, provided with a flange or collar; of a tool-holder carried by the said shaft and normally holding the tool, jaws for holding the tool by its shank while the blank is being removed from it, a cam to engage with the said flange or collar to retract the shaft after it has done its work, and also adapted to operate the said jaws in gripping the tool, and means for sliding the shaft in the opposite direction and for intermittently rotating it, substantially as described.

4. In a machine for tapping or reaming blanks, the combination



with a rotary, reciprocatory tool-driving shaft, of a tool-holder carried at the forward end of the same and normally holding the tool, a secondary tool-holder for temporarily holding the tool when the blank is being removed from the same, a normally idle cam for operating the said secondary tool-holder, and mechanism connecting the said shaft and cam, whereby the longitudinal movement of the former is made to control the operation of the latter, substantially as described.

5. In a machine for tapping or reaming blanks, the combination with a rotary, reciprocatory tool-driving shaft; of a rotary cam normally uncoupled from its shaft and operating when coupled therewith to slide the tool-shaft in one direction, means for sliding the tool-shaft in the opposite direction, a detachable tool, a secondary tool-holder for holding the tool while the blank is being removed from the same, and a blank-holder, substantially as set forth.

6. In a machine for tapping or reaming blanks, the combination with a rotary, reciprocatory tool-driving shaft, of a tool-holder carried thereby, a detachable tool, a secondary tool-holder for holding the tool while the blank is being removed from it, a cam normally uncoupled from its shaft and operating, when coupled therewith, the said secondary tool holder; and a blank-remover, substantially as set forth.

7. In a machine for tapping or reaming blanks, the combination with a tool-shaft, means for rotating and reciprocating the same, and a tool-holder comprising a head so articulated to one end of the shaft as to permit independent longitudinal movement between them, tap-holding jaws pivoted to such head, and means interposed between the jaws and shaft for operating the jaws when the head and shaft are relatively moved longitudinally, substantially as described.

8. In a machine for tapping or reaming blanks, the combination with a tool-driving shaft, means for rotating and reciprocating the same, and a tool-holder comprising a head, tap-holding jaws pivoted thereto, shoes between the tails of the said jaws and the end of the shaft, and a spring to open the jaws, the said head being so articulated to one end of the shaft as to permit independent longitudinal movement between them and one or more of the said parts being constructed with bevels or inclines so that when such movement takes place, the jaws will be operated, substantially as described.

9. In a machine for tapping or reaming blanks, the combination with a tool-driving shaft having a longitudinal chamber entering it from its forward end, means for rotating and reciprocating the said shaft, and a tool-holder comprising a head having a spindle which enters the chamber in the shaft so as to have longitudinal movement therein, tool-holding jaws pivoted to the said head, cam-shoes interposed between the tails of the jaws and the shaft, and a spring arranged to open the said jaws, substantially as described, and whereby the said tool-holder and shaft are articulated for independent longitudinal movement which is utilized in operating the said jaws.

10. In a machine for tapping or reaming blanks, the combination with a tool-driving shaft having a longitudinal chamber entering it from its forward end, and slots formed in its exterior surface, and extending parallel with the said chamber, a head having a spindle which enters the said chamber and is movable therein, tool-holding jaws pivoted to the said head, and constructed with tails which enter the slots in the shaft, means located in the slots for operating the jaws in one direction, and a spring to impart opposite movement to the jaws, substantially as described, the said head, jaws, shoes, means and spring forming a tool-holder which is so articulated to the shaft that the said holder and shaft may have independent longitudinal movement.

11. In a machine for tapping or reaming blanks, the combination with a rotary, reciprocatory tool-driving shaft having slots and a chamber in its outer end; of a head having a slotted spindle entering such chamber in the shaft, tool-holding jaws pivoted to such head and entering such slots, shoes for closing the said jaws, a spring for opening the jaws, a tool, and a blank-holder, substantially as set forth.

12. In a machine for tapping or reaming blanks, the combination with a rotary, reciprocatory tool-driving shaft, a tool-holder carried by the said shaft at the forward end thereof and normally holding the tool, a secondary tool-holder to hold the tool when the same is disconnected from the other tool-holder, a blank-holder, a blank-remover, and connection between the said shaft and blank-remover including a collar mounted on the shaft, and a spring-actuated rod connected with the blank-remover and moved in one direction by the said shaft by means of the said collar and in the opposite direction by its said spring, substantially as described.

13. In a machine for tapping or reaming blanks, the combination with a rotary, reciprocatory tool-driving shaft; of a tool-holder carried thereby, a detachable tool, a secondary tool-holder, and a blank-remover having a hinged finger arranged to yield to pass from one face of the blank to the other and recover for removing it from the tool, substantially as set forth.

14. In a machine for tapping or reaming blanks, the combination with a rotary reciprocatory shaft, of a tool-holder carried thereby, a tool, a blank remover, a collar upon the shaft, and a rod engaged by such collar and connected with the blank-remover, substantially as set forth.

15. In a machine for tapping or reaming blanks, the combination with a rotary, reciprocatory tool-driving shaft; of a primary and a secondary tool-holder, and a blank-remover consisting of a pivoted block, a stock adjustably mounted therein, a finger hinged to the stock, and a spring for holding such finger normally extended, substantially as set forth.

16. In a machine for tapping or reaming blanks, the combination with a tool-driving-shaft, of a tool-holder carried thereby and normally holding the tool, means for rotating the shaft, a cam for sliding the shaft in one direction, means for sliding the shaft in the opposite direction, means substantially as described for controlling the action of the said cam, a secondary tool-holder, a blank holder and a blank-remover, substantially as described, and whereby the cam which slides the shaft in one direction is put into and out of operation by the sliding movement of the shaft independent of the number of revolutions thereof.

17. In a machine for tapping or reaming blanks, the combination with a rotary, reciprocatory tool-driving shaft; of a tool-holder carried thereby, a tool, a lever operated by a cam on the said tool-driving shaft, and a driving-shaft provided with a movable sleeve and a loosely mounted cam, the said lever being controlled by the tool-driving shaft in moving the sleeve to couple the loose cam with the driving-shaft, substantially as set forth.

18. In a machine for tapping or reaming blanks, the combination with a rotary, reciprocatory tool-driving shaft; of a driving-shaft normally rotating independent of the tool-driving shaft, and normally uncoupled cam and lever mechanism controlled by the sliding tool-driving shaft in coupling the same with the driving-shaft, substantially as set forth.

19. In a machine for tapping or reaming blanks, the combination with a tool-driving shaft, a tool-holder carried thereby for normally holding the tool, means for rotating the said shaft and for sliding it in one direction, a driving shaft, a cam-disk loosely mounted thereupon, and constructed and arranged to move the tool-driving shaft in the opposite direction when it is coupled with the said driving shaft and rotated thereby, coupling mechanism for coupling the said disk and driving shaft, and connection between the said mechanism and tool driving-shaft, brought into play by the forward movement of the latter, substantially as described, and whereby the tool driving-shaft in its sliding movement controls the actuation of the said disk by effecting the coupling of the same with the driving shaft on which the same is mounted.

20. In a mechanism for tapping or reaming blanks, the combination with a tool-driving shaft, a tool-holder carried thereby for normally holding the tool, a secondary tool-holder, means for intermittently rotating the said tool driving shaft, and for sliding it in one direction, a driving-shaft, a cam-disk loosely mounted thereupon and having its opposite faces provided with cams to operate the said secondary tool-holder, and having its edge adapted to move the said tool driving shaft in the opposite direction, coupling mechanism for coupling the said disk with the driving shaft, and connection between the said mechanism and the tool driving-shaft, brought into play by the forward movement of the latter, substantially as described.

21. In a machine for tapping or reaming blanks, the combination with a tool-driving shaft, a tool-holder carried thereby, a tool, a driving-shaft, a cam loosely mounted thereon and coupled intermittently therewith for operating the tool-driving shaft, coupling mechanism controlled by the tool-driving shaft for coupling the cam with the driving-shaft, a secondary tool-holder for holding the tool when detached from the tool-driving shaft, and a blank holder, substantially as set forth

22. In a machine for tapping or reaming blanks, the combination with two blank-receiving pans set with a sufficient space between their edges for the edgewise passage of the blanks, means for rotating the said pans together, a fixed guard encircling their edges to close the said space, and having in its lower edge a passage for the escape of the blanks, and provided with a beveled shoulder extending upward between the said pans into the space inclosed by them, and with an inclined table located on the opposite side of the said passage from the said shoulder and below the level of the same, and a chute leading from the said passage, substantially as described.

23. In a machine for tapping or reaming blanks, the combination with two blank-receiving pans set with a sufficient space between their edges for the edgewise passage of the blanks between them, means for rotating the said pans together, a fixed guard encircling their edges and composed of two sections hinged together, the lower section having an opening in it, a chute-block located in the said opening, and constructed at its upper edge to form a beveled shoulder, which extends upward between the said pans, with a beveled table located below such shoulder, and with a passage located between such shoul-

der and table; and a chute leading from the said passage through which the blanks issue into the chute, substantially as described.

24. In a machine for tapping or reaming blanks, the combination with a tool-driving shaft, a tool-holder carried thereby for normally holding the tool, a secondary tool-holder for holding the tool when detached from the said tool-driving shaft, means for sliding the said shaft forward; means for intermittently rotating the shaft, put into action by its forward movement, and out of action by its retraction; mechanism for sliding the shaft back or retracting it, including a driving shaft and a cam loosely mounted thereon, and clutch-mechanism between the said driving shaft and the said cam, and connection between the said mechanism and the tool driving shaft, operated by the latter, and including a shipping lever, substantially as described, and whereby the said cam is coupled with the driving shaft for retracting the tool-driving shaft by the forward longitudinal movement thereof independent of the number of its rotations.

25. In a machine for tapping or reaming blanks, the combination with a rotary, reciprocatory tool-driving shaft, a tool holder carried thereby for normally holding the tool, a secondary tool-holder for holding the tool while it is disconnected from the other tool-holder, a blank-remover for removing the blanks over the butt-end of the tool, and means controlled by the said shaft independent of the number of its revolutions, for retracting it, and including a driving shaft, a cam loosely mounted thereupon, a collar mounted on the tool-driving shaft, a clutch for coupling the said cam to the driving-shaft, and a shipping-lever attached by the said collar for operating the said clutch, substantially as described.

26. In a machine for tapping or reaming blanks, the combination with a rotary, reciprocatory tool-driving shaft, of a tool-holder carried thereby for normally holding the tool, a secondary tool-holder, mechanism for sliding the shaft forward, means for intermittently rotating the shaft, put into and out of action respectively by its forward and rearward movement, a driving shaft, a cam loosely mounted thereupon, and constructed and adapted to operate the secondary tool-holder and to move the tool driving-shaft rearward, coupling-mechanism for coupling the said cam to the said driving shaft, and operating connections between the tool driving-shaft and said mechanism, substantially as described, and whereby the retraction of the tool driving shaft is made to depend upon the extent of its forward movement and not upon the number of its revolutions.

27. In a machine for tapping or reaming blanks, the combination with a rotary and reciprocatory tool driving shaft, of a tool-holder carried thereby, a cam normally uncoupled from its shaft and operating when coupled therewith to retract the tool-driving shaft, means for advancing the tool-driving shaft, and mechanism operated by the said tool-driving shaft in its forward movement and independent of the number of its rotations for controlling the actuations of such cam, substantially as described.

28. In a machine for tapping or reaming blanks, the combination with a rotary and reciprocatory tool driving shaft, of a tool-holder carried thereby, a tool, a secondary tool-holder for holding the tool when detached from the said shaft, a normally idle cam actuating the said secondary tool-holder, and a clutch operated by the tool-driving shaft in its forward movements, and independent of the number of its rotations for controlling the actuation of such cam, substantially as set forth.

29. In a machine for tapping or reaming blanks, the combination with a rotary, reciprocatory tool-driving shaft, of a cam normally uncoupled from its shaft for sliding the tool-driving shaft in one direction, means for sliding such shaft in the opposite direction, a detachable tool-holder carried by such shaft, and a secondary tool-holder operated by such cam to hold the tool while the blank is being removed from the same, and mechanism controlled by the said tool-driving shaft for causing the actuation of the said cam, substantially as set forth.

30. In a machine for tapping or reaming blanks, the combination with a rotary reciprocatory tool-driving shaft; of a cam normally uncoupled from its shaft and operating when coupled therewith to slide the tool-driving shaft, means for sliding the said tool-driving shaft in the opposite direction, and mechanism controlled by the tool-driving shaft for causing the actuation of the cam, substantially as set forth.

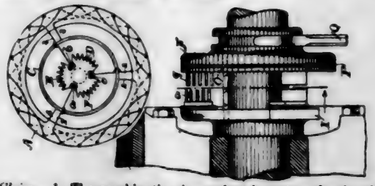
31. In a machine for tapping or reaming blanks, the combination with a rotary reciprocatory tool-driving shaft, of a tool-holder carried thereby for normally holding the tool, a secondary tool-holder, mechanism for sliding the said shaft forward, means for rotating the shaft brought into and put out of operation by its sliding movement, and means for retracting the shaft, and constructed to operate independent of the number of its revolutions when the same has reached the limit of its forward movement, and including a driving shaft, a cam loosely mounted thereupon, a clutch for coupling the said driving shaft and cam together, a lever for operating the said clutch and a collar mounted on the tool-driving shaft for actuating the said lever, substantially as described

32. In a machine for tapping or reaming blanks, the combination with a rotary, reciprocatory tool-driving shaft; of a tool-holder carried thereby, a cutting-tool, a secondary tool-holder for holding the tool while the same is detached from the shaft for the removal of the blank from it, a driving-shaft, a normally idle cam loosely mounted thereupon and arranged and adapted to operate the said tool-holder and mechanism substantially as described, controlled by the shaft independently of the number of its rotations for coupling the said cam with the said driving-shaft for operating such secondary tool-holder, substantially as set forth.

33. In a machine for tapping or reaming blanks, the combination with a rotary, reciprocatory tool-driving shaft, a tool-holder carried thereby, a secondary tool-holder, means for sliding the shaft forward, means for rotating the shaft put into action by the forward movement of the shaft, and out of action by its rearward movement, a collar mounted on the shaft and rotated therewith, mechanism for moving the shaft rearward, and devices connecting said mechanism and collar, whereby the same causes the said mechanism to operate in retracting the shaft, substantially as described.

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**504,904.** MULTIPHASE MOTOR. LOUIS BELL, Boston, Mass., assignor to the General Electric Company, of New York. Filed Nov. 4, 1892. Serial No. 450,955. (No model.)



*Claim.*—1. The combination in an electric motor of a closed circuited secondary member forming the revolving part of the motor, with current impeding means carried by, or fixed relatively to, said revolving member for reducing the primary current flowing in said secondary incident to starting the motor, and means for removing said impeding means from circuit when the proper speed has been attained, as set forth.

2. The combination in an electric motor of a closed circuited secondary member forming the revolving part of the motor, with a non-inductive resistance or resistances carried by, or fixed relatively to, said revolving member, and means for removing said resistance from circuit when proper speed has been attained, as described.

3. The combination in an electric motor of the inductive type, of a revolving secondary member having a closed circuited winding thereon, a resistance in said winding and moving therewith, and a switch for removing said resistance from circuit at will while the machine is running, as set forth.

4. The combination in an electric motor of a closed circuited revolving secondary member having a winding comprising two or more coils, as for example an ordinary three-phase winding, with a resistance or resistances moving therewith, and through which the circuit of the respective coils is or may be completed, and a switch for removing said resistance or resistances from circuit at will, as described.

5. The combination in an electric motor of a closed circuited revolving secondary member having a plurality of coils thereon, each of which is connected to the others through a resistance moving therewith, and a switch adapted to remove all said resistances from circuit simultaneously while the machine is running, as described.

6. The combination in an electric motor of a revolving secondary member having a winding comprising a plurality of coils, and resistances moving therewith connecting one end of each coil to the proper end of its neighboring coil, short circuiting connections around such resistance respectively, and a switch for removing said resistance from circuit while the machine is running, as set forth.

7. The combination in an electric motor of a closed circuited secondary member forming the revolving part of the motor, a resistance moving with such member and impeding the primary flow of current therethrough incident to starting the motor, a switch, and a speed responsive device automatically throwing said switch so as to remove the resistance from circuit when the proper speed has been attained, as set forth.

8. The combination in an electric motor of a closed circuited secondary member forming the revolving part of the motor, a resistance moving with such member and impeding the primary flow of current therethrough incident to starting the motor, a switch and a centrifugal speed responsive device automatically throwing said switch so as to remove the resistance from circuit when the proper speed has been attained, as set forth.

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**504,905.** PYROXYLINE SOLVENT AND ITS COMPOUND. CHARLES L. BORGHOFF, Rahway, N. J. Filed May 29, 1893. Serial No. 475,951. (No specimens.)

*Claim.*—1. The active solvent of pyroxyline which consists of artificial oil of peppermint, in solution in amyl alcohol.

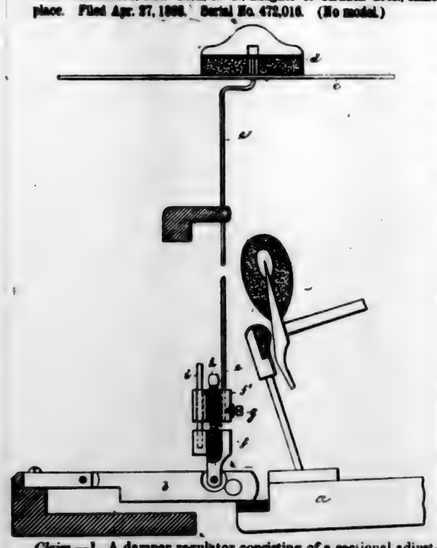
2. The compound of pyroxyline which consists of pyroxyline dissolved in artificial oil of peppermint.

3. The compound of pyroxyline which consists of pyroxyline dissolved in an amyl-alcoholic solution of artificial oil of peppermint.

4. The compound of pyroxyline which consists of pyroxyline dissolved in a conjoint combination of the artificial oils of tansy, peppermint, red thyme and sassafras.

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**504,906.** DAMPER-REGULATOR FOR PIANO-ACTIONS. EDWARD BORGHOFF, New York, N. Y., assignor to Strauch Bros., same place. Filed Apr. 27, 1893. Serial No. 472,016. (No model.)



*Claim.*—1. A damper regulator consisting of a sectional adjustable block of which one section is pivoted to the damper lever and the other section is connected to the damper wire, substantially as specified.

2. A damper regulator consisting of a sectional adjustable block and of a right and left screw engaging the two sections of the block, substantially as specified.

3. A damper regulator consisting of a sectional adjustable block, a right and left screw, a guide rod engaging the two sections of the block and a clamp screw for securing the damper wire to the upper section, substantially as specified.

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**504,907.** SPRING-MOTOR. FRANK REISER, Philadelphia, Pa. Filed Feb. 13, 1893. Serial No. 462,016. (No model.)

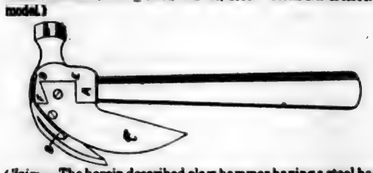


*Claim.*—1. The combination in a spring motor, of a drum, a coiled spring secured at its inner end to the axis of the drum, and at its outer end to a transverse bolt or bar, the walls of said drum having guiding slots or grooves to which the bolt or bar is adapted, said slots or grooves being curved on a line opposite, or nearly so, to the line in which the end of the spring normally tends to travel from the center to the circumference of the drum, substantially as specified.

2. The combination in a spring motor, of a drum, a coiled spring secured at its inner end near the axis of the drum, a bow shaped slot provided in each of the side walls of the drum between the axis and periphery thereof, that end of each slot nearest the periphery extending rearwardly and away from the line in which the end of the spring normally tends to travel from the center to the periphery of the drum, and a transverse bolt or bar provided in said slots and carrying the outer end of said spring, substantially as specified.

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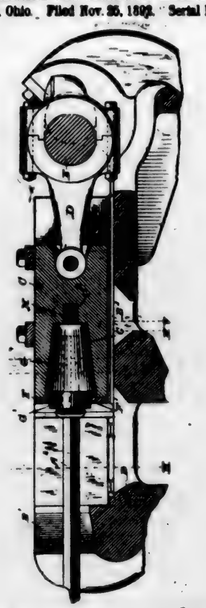
**504,908.** COMBINATION HAMMER AND HATCHET. CASPER BROCK, Hillsdale, N. J. Filed Jan. 21, 1893. Serial No. 459,300. (No model.)



*Claim.*—The herein described claw hammer having a steel hatchet blade inserted into a recess extending from about the middle of the side of the hammer head, along the side to the point of the shortened claw, the blade being securely fastened by a dovetailed shoulder, and also by two countersunk screws, substantially as described.

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**504,909.** MACHINE FOR UPSETTING METAL. FREDERICK W. BRUCH, Cleveland, Ohio. Filed Nov. 25, 1892. Serial No. 453,018. (No model.)



*Claim.*—1. In an upsetting machine, the combination of an upsetting plunger formed with an inwardly tapering recess, of die sections movable within said recess and shaped to form an expansible and contractible die, substantially as set forth.

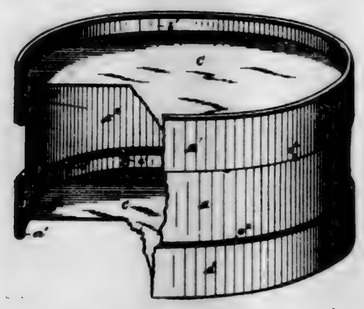
2. In an upsetting machine, the combination of an upsetting plunger formed with an inwardly tapering recess, die-sections shaped to jointly fit in the inner portion of said recess and formed with cut out portions which form an axial, expansible and contractible socket, and a spring, bearing against the inner end of the die formed by said die sections, substantially as set forth.

3. In an upsetting machine, the combination of an upsetting plunger formed with an inwardly tapering recess, die sections shaped to jointly form an inwardly tapering die, having an axial, expansible and contractible socket and a reduced neck at its outer end, a face plate secured to the end of the plunger and having an opening through which said neck projects, and a spring, bearing against the inner end of said die, substantially as set forth.

4. In an upsetting machine, the combination of a holding die, an upsetting plunger having means for reciprocating it in a line axial to said holding die and formed with an inwardly tapering recess in the end facing said die, die-sections shaped to form an inwardly tapering die, fitting within said recess, having springs forcing them apart, and

formed with grooves at the axial line of the die to jointly form a socket and with a reduced neck at the outer end of the die, a face plate secured to the end of the plunger and formed with an opening through which said neck projects, and a spring, bearing against the inner end of the die, formed by said die-sections, substantially as set forth.

**504,910. DRUM.** SAMUEL R. COX, Cleveland, Ohio. Filed Sept. 17, 1892. Serial No. 446,134. (No model.)



*Claim.*—1. In a drum or similar instrument, the combination of a flesh hoop, a head secured to said flesh hoop, a shell formed with an annular recess within which the flesh hoop may fit and have axial play, and a movable adjusting rim bearing against the head and having means for adjusting it arranged within the annular recess in the shell, substantially as set forth.

2. In a drum or similar instrument, the combination of a shell formed with an annular recess, a head having its flesh hoop secured substantially immovable in said recess, a movable adjusting rim bearing against the head and having brackets projecting into the annular recess, and screws journaled to revolve in the bottom of said annular recess and having threaded ends fitting into corresponding holes in the brackets of the adjusting rim, substantially as set forth.

3. In a drum or similar instrument, the combination of a shell formed with an annular enlargement having a bead at its outer edge, an abutting rim in said enlargement, a head having its flesh hoop bearing against the inner edge of said abutting rim, an adjusting rim bearing against the head within the inner periphery of the flesh hoop, and screws inserted through, and journaled in the inner edge of the enlargement, and connected to move said adjusting rim, substantially as set forth.

4. In a drum or similar instrument, the combination of a shell formed with an annular recess, a rim having beveled ends and fitted in said recess, a wedge fitted between said beveled ends, and a screw fitted to revolve in the shell and fitted into a threaded hole in the end of the wedge, substantially as set forth.

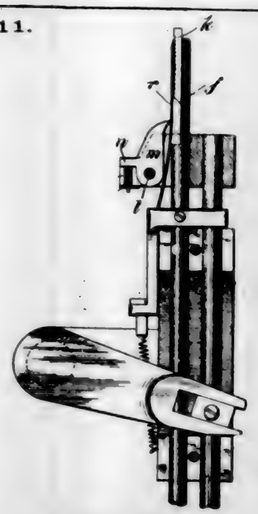
5. In a drum or similar instrument, the combination of a shell formed with an annular enlargement having a bead at its outer edge and a groove at its inner end, an abutting rim in said enlargement and bearing against the bead of the same, a filling in the groove of the enlargement, a head having its flesh hoop bearing against the inner edge of the abutting rim, an adjusting rim bearing against the head within the inner periphery of the flesh hoop, and screws inserted through and journaled in the groove and filling of the enlargement and connected to move said adjusting rim, substantially as set forth.

6. In a drum or similar instrument, the combination of a shell formed with an annular recess, a head having its flesh hoop secured substantially immovable in said recess, a movable adjusting rim bearing against the head, and adjusting means within the recess constructed to axially move the adjusting rim, substantially as set forth.

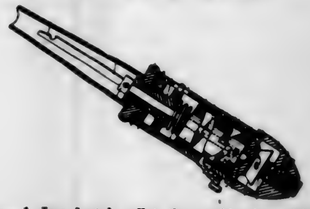
**504,911. SEWING-MACHINE.** PETER L. COX, Boston, Mass. Filed Dec. 3, 1892. Serial No. 453,990. (No model.)

*Claim.*—In a sewing machine, the combination with a presser foot and its bar, the latter of which is provided with a rack *h*, of a spring-actuated pawl *m*, a vertically reciprocating part of the machine by which the said pawl is carried adjacent to said rack, and the metallic plate or strip *r* interposed between the point of said pawl and the said rack, the said plate or strip being secured to a stationary part of the machine and having its upper end thinned down to an edge, so that the pawl will not snap into engagement with the rack but will come smoothly into contact therewith, substantially as set forth.

**504,911.**



**504,912. DENTAL MALLET.** JOHN H. DEMONET, Brooklyn, N. Y. Filed Dec. 6, 1892. Serial No. 454,214. (No model.)



*Claim.*—1. In a dental mallet, the combination, with a shell, a longitudinal rotatably supported shaft therein, an interior case, opposite longitudinal slots in the shell and case, and a spring pressed dog adapted to engage said slots and lock the shell and case together, of three laterally locking cam blocks in the case engaging the shaft and case all located on the shaft, and a spring pressed anvil block adapted to slide in a head piece of the shell, normally resting near the hammer block, and struck thereby when said block is reciprocated by the rotatable shaft and cams thereon, substantially as described.

2. In a dental mallet, the combination, with a cylindrical shell, a head-block on one end of the shell, apertured axially, and a swivel nut on the other end of the shell, of a case within the shell, a hammer head thereon, an anvil supported to slide in the shell head piece near the hammer, a coiled spring for the anvil, an adjustable extension block on the swivel nut in the shell, a longitudinal, rotatable drive shaft in the case, a spiral cam faced block in the case secured to the shaft, a lifting cam block secured in the case and loose on the shaft, a double faced spiral cam between the other cams and loose on the shaft, a spiral spring between a cam block and the extension block, a tubular sheath having a head wall perforated to support the shaft, a collar on said shaft, and a latching dog on the shell adapted to vibrate and lock the case and shell together or release the case, substantially as described.

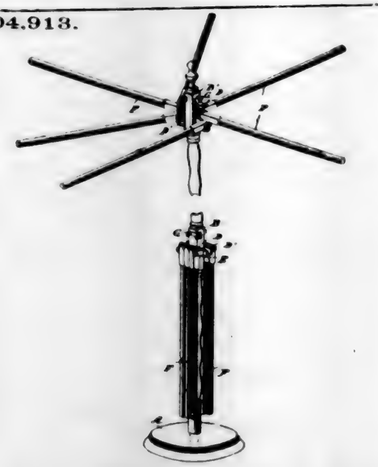
**504,918. DISPLAY-RACK.** MATTHEW R. DICKSON, New York, N. Y. Filed May 10, 1893. Serial No. 473,689. (No model.)

*Claim.*—1. The combination with the pivoted bracket and the supporting arms pivoted therein of a transverse plate having a spring catch at one end and a projection at its opposite end to stop the bracket after it passes the catch, and retain it in a vertical position, substantially as set forth.

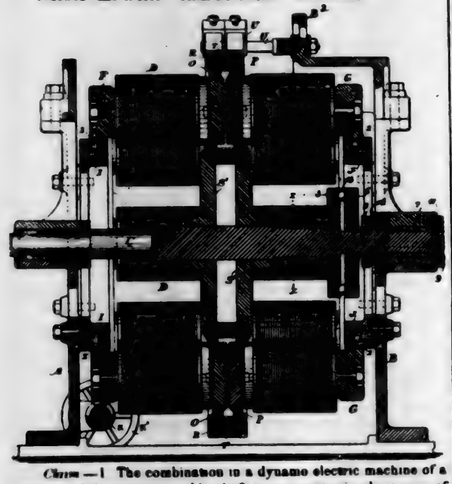
2. The combination with a post provided with a transverse pivot and a spring catch on its face at right angles to the pivot of a bracket, pivoted centrally on said pivot and carrying the supporting arms; the spring catch being in the path of one end of the bracket to lock it in its vertical position, substantially as set forth.



**504,913.**



**504,914. DYNAMO-ELECTRIC MACHINE.** ROLPH ELDREDGE, New York, N. Y. Filed May 13, 1891. Renewed June 3, 1892. Again renewed June 1, 1893. Serial No. 476,290. (No model.)



*Claim.*—1. The combination in a dynamo electric machine of a revolving disk armature and its shaft, two opposite circular ranges of field magnets, frames and movable rings for supporting such ranges of field magnets, and adjusting devices for changing the relative position of one range of field magnets to the opposite range of field magnets for varying the intensity of the interpolar field, substantially as set forth.

2. The combination with a revolving disk armature and its shaft, of the frame for supporting such shaft and the field magnets, two opposite circular ranges of field magnets rings for connecting such ranges of field magnets, circular bearings upon the frames for receiving such rings and means for varying the position of one range of field magnets in relation to the other range of field magnets, substantially as set forth.

3. The combination in a dynamo electric machine, of a disk armature and its shaft and the frames of the machine, two circular ranges of field magnets of alternate polarity in each range and opposite polarity in the magnets that face each other, rings for supporting the respective ranges of field magnets and an adjusting mechanism for varying the position of such circular ranges in relation to each other or to the commutator brushes, substantially as set forth.

4. The combination in a dynamo electric machine of a revolving armature, its shaft, the frames of the machine, a circular range of field magnets connected to the frame, a second circular range of field magnets, a movable ring for supporting the same and a spring for holding the movable range of field magnets and allowing such range of field magnets to partially revolve under the action of the magnetism, substantially as set forth.

5. The combination with a revolving armature, its shaft and the machine frames, of two circular ranges of field magnets, circular supports for the respective ranges of magnets and an electro magnet for controlling the position of one range of field magnets in its relation to the other range of field magnets, substantially as set forth.

6. The combination with the revolving armature, its shaft and the frames, of two circular ranges of field magnets circular supports for such field magnets upon which one range of field magnets can be partially revolved, a spring or equivalent for acting upon such circular range of field magnets in one direction and an electro-magnet for varying the power exerted in partially rotating such range of field magnets, substantially as set forth.

7. In a dynamo electric machine, two circular ranges of field magnets facing each other, in combination with a revolving armature composed of two ranges of bars of magnetic material, segmental connections at the outer and inner ranges of such armature bars, and bars of copper or similar metal of superior conductivity uniting the inner ends of the armature bars with the inner segments, substantially as set forth.

8. The combination in a revolving armature, of clamping disks upon the shaft, inner segments with inclined ends received and held by such clamping disks, there being insulating material between the parts, two ranges of armature bars and connections at their inner ends to the inner insulated segments, outer insulated segments connecting the outer ends of the armature bars and forming the commutator plates and an insulated tire connecting the outer segments together, substantially as set forth.

9. The combination in an armature, of armature bars of magnetic material, outer segments to which the ends of the armature bars are connected and an insulated tire between the parts of the outer insulated segments and to which such segments are clamped, inner connections between the armature bars, and an armature shaft and disks for supporting the armature bars, substantially as set forth.

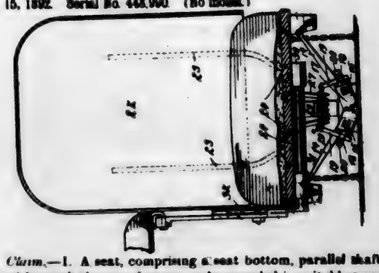
10. The combination in a revolving armature, of a range of armature bars of soft iron or other magnetic material, each tapering inwardly, and connecting plates of copper or similar metal of superior conductivity fastened to the inner parts of such iron armature bars, substantially as set forth.

11. The combination with two circular ranges of field magnets, of an armature disk composed of bars of magnetic material in two ranges and connected up to form a closed circuit, substantially as specified, with two routes through the armature for the passage of the current to the respective commutator brushes, substantially as set forth.

12. The combination in a dynamo electric machine of radial bars O P outer insulated segments R connecting such radial bars O P an insulated tire within such range of outer insulated segments, the inner insulated segments Q and the insulated arc bars Q' passing diagonally from one range of radial armature bars to the other, substantially as set forth.

13. The combination with stationary field magnets in two circular ranges, of an armature between the ranges of field magnets said armature being composed of radial bars connected in pairs at their outer ends and diagonal connections at their inner ends, the number of pairs of armature bars not being a multiple of the field magnets and being connected to form two metallic circuits through the armature bars from the negative to the positive brushes, substantially as set forth.

**504,915. SEAT.** GEORGE A. KEMP, Livingston, Mont. Filed Oct. 15, 1892. Serial No. 448,990. (No model.)



*Claim.*—1. A seat, comprising a seat bottom, parallel shafts arranged beneath the seat bottom and journaled in suitable supports, diverging oppositely arranged levers secured to the shafts and arranged to support the seat bottom, upwardly extending arms carried

by the shafts, a spring connecting the arms, and a gear connection between the two shafts, substantially as described

2 A seat, comprising a seat bottom, parallel shafts arranged beneath the seat bottom and journaled in suitable supports, diverging levers carried by the shafts and arranged to support the seat, vertically adjustable arms arranged opposite one another and secured to the shafts, a spring connection between the two arms, and a gear connection between the shafts, substantially as described

3 A seat, comprising a seat bottom having oppositely arranged depending brackets secured thereto, parallel shafts arranged beneath the seat bottom and journaled in suitable supports, diverging levers carried by the shafts and having their outer ends connected with the seat brackets, a gear connection between the two shafts, vertically adjustable arms carried by the shafts, and a spring connecting the arms, substantially as described

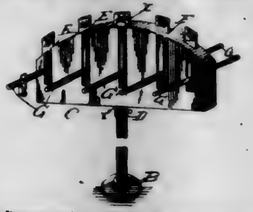
4 A seat, comprising a suitable seat bottom, parallel shafts journaled beneath the seat bottom diverging levers carried by the shafts and having a flexible connection with the seat bottom, segmental meshing gears carried by the shafts and having oppositely extending shanks, vertically adjustable arms secured in the gear shanks, and a spring connecting the arms, substantially as described

5 A seat, comprising a suitable bottom, parallel shafts arranged beneath the seat bottom and journaled in supports, diverging oppositely arranged levers secured to the shafts and arranged to support the seat bottom, springs to hold the levers in a raised position, and a gear connection between the two shafts, substantially as described.

6 The combination with the seat bottom and the tilting seat back, of a rod secured to the seat back, a block adjustable vertically on the rod, a swinging and vertically adjustable support carried by the seat bottom, and a main arm secured to the vertically adjustable support and having a latch connection with the slide block on the seat back, substantially as described

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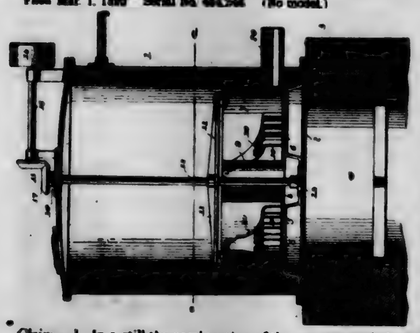
**504,916.** DISPLAY RACK. CHARLES FRANKEL, Baltimore, Md. Filed June 3, 1893. Serial No. 476,488. (No model.)



*Claim.*—A display rack consisting of a standard, a rack body supported by said standard and provided with vertical dovetail grooves and arms having dovetail ends to take into said grooves, substantially as herein described

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**504,917.** RETORT FOR STILLS. JOHN PEREL, Whiting, Ind. Filed Mar. 1, 1893. Serial No. 464,946. (No model.)



*Claim.*—1 In a still the combination of the retort provided with a main bottom, a false bottom adapted to receive and retain the solid matters, said false bottom being sustained a slight distance above the main bottom, and constructed to admit of a circulation of the oil below the same

2 In a still the combination with a retort provided with a main bottom of a false bottom being sustained a slight distance above the same and provided with a vertical annular surrounding flange extending a slight distance from the inner surface of the retort

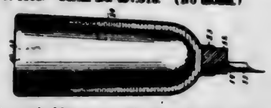
3 In a still the combination with a retort provided with a main bottom, of a false bottom sustained a slight distance above the same and provided with a vertical annular surrounding flange extending a slight distance from the inner surface of the retort, and the pipe extending through the annular space between the flange and retort

4 In a still the combination with the false bottom provided with the central opening and the surrounding annular flange, of the rotary shaft extending within said flange and the agitator drags carried by said shaft, and adapted to travel upon the false bottom

5 In a still the combination with the retort, of the false bottom provided with the central opening, the vertical flange surrounding the same, the vertical annular flange extending from the outer edge of the false bottom and arranged a slight distance from the inner surface of the retort, the vertical rotary shaft extending within the opening in the false bottom, the radial arms carried by said shaft, and the drags carried by said arms and adapted to travel upon the false bottom

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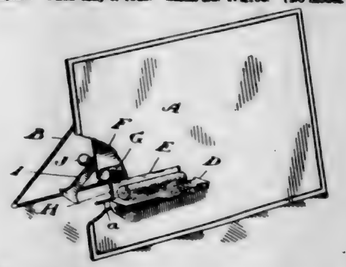
**504,918.** PENHOLDER. JAMES B. GUNNISON, New York, N. Y. Filed Jan. 5, 1893. Serial No. 457,316. (No model.)



*Claim.*—A pen holder comprising the thimble 10 adapted to receive the finger and having hollow walls forming an annular ink reservoir, a threaded tubular extension 11 on the closed end of the outer wall of the thimble, and a plug 12 screwed into said extension and provided with a slot to receive a pen and a conducting tube 14 to supply the pen from the said annular reservoir, substantially as set forth.

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**504,919.** ADVERTISING DEVICE. JOHN A. GIBSON, Toronto, Canada. Filed May 6, 1893. Serial No. 474,163. (No model.)



*Claim.*—1 A plate A, suitably supported on one edge and having an opening E, through it at the bottom of the magazine F, in combination with a dummy D, pivoted in front of the opening E, and provided with an extension H, forming a bottom for the magazine F and mechanism for holding the dummy closed, substantially as and for the purpose specified

2 A plate A, suitably supported on one edge and having an opening E, through it at the bottom of the magazine F, a dummy D, pivoted in front of the opening E, and provided with an extension H, forming a bottom for the magazine F, in combination with the hasp K on said extension H, a pivoted latch I, acting on said hasp K, and cord M, forming a connection between said latch I and extension H substantially as and for the purpose specified

3 A plate A, suitably supported on one edge and having an opening E, through it at the bottom of the magazine F, a dummy D, pivoted in front of the opening E, and provided with an extension H forming a bottom for the magazine F, in combination with the hasp K on said extension H, a pivoted latch I, acting on said hasp K, cord M, forming connection between said latch I and extension H bell N, and spring J, substantially as and for the purpose specified

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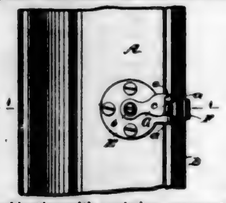
**504,920.** WINDOW-BEAD FASTENER. HENRY A. GREER, Montrose, Colo. Filed May 27, 1893. Serial No. 475,777. (No model.)

*Claim.*—1 A locking device for window strips, comprising a bracket plate having ears thereon, a clamping limb pivoted at one end between the ears, and a pivoted locking dog adapted to press on the pivoted end of the clamping limb, substantially as described

2 A locking device for window strips, comprising a bracket plate having two spaced ears projected therefrom, a clamping limb pivoted at one end between the ears, and a pivoted locking dog having a cam



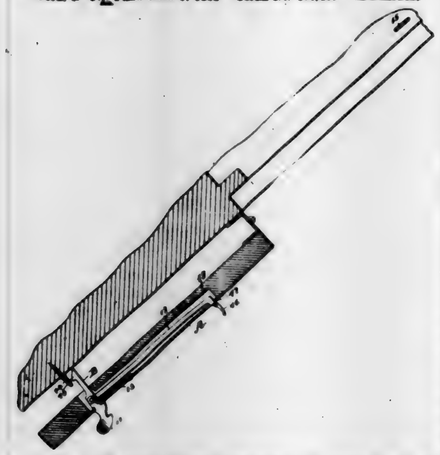
sloped front edge adapted to press on the side edge of the pivoted end of the clamping limb when folded thereon, substantially as described.



3 The combination with a window casement, its parting strips, and bead strips, and a sash held to slide between said strips, of a bead strip locking device, comprising a circular, flat bracket plate perforated to receive screws, two spaced ears projected from said bracket plate at one edge, a clamping limb conformed to the shape of the surface of the bead strip and pivoted at one end between the ears, and a locking dog one end of which is pivoted at the center of the bracket plate, and its other end formed with a cam slope adapted to press upon the side edge of the pivoted end of the clamping limb, when folded thereon, substantially as described

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**504,921.** SHUTTER-FASTENER. AUGUST F. GUSTAFSON, New York, N. Y. Filed June 8, 1893. Serial No. 476,483. (No model.)



*Claim.*—The improvement hereinbefore set forth, to wit, the spring-actuated latch, pivoted in a plate attached to the inner side of the blind, and having a terminal catch or shoulder projecting outward from the blind hinge, the draw-bar, having a rigid laterally-projecting handle and arranged in a recess in the blind, and also pivoted to the latch at a point between its pivotal point and catch, all combined as shown and described

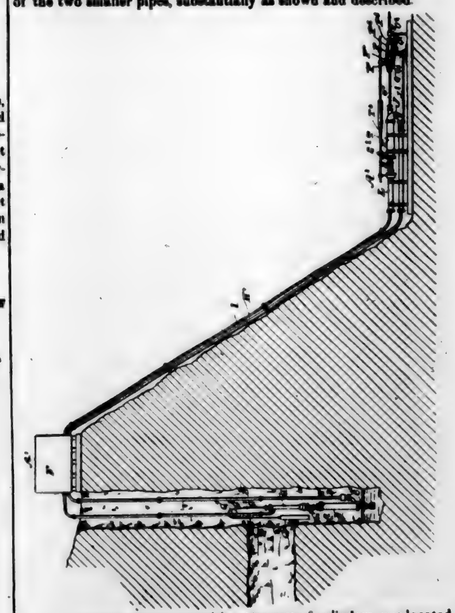
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**504,922.** GRAVITY-PUMP. WILLIAM A. HARTT, Tucson, Ariz. Filed Feb. 16, 1893. Serial No. 462,510. (No model.)

*Claim.*—1 A gravity pump comprising two sets of cylinders each set containing two cylinders of different diameters and one set being located below the other, connected pistons of different diameters traveling in each set of cylinders, pipes of varying diameters and length connecting the said two sets of cylinders with each other and a valve automatically controlling the inlet to and outlet from the largest lowermost cylinder from the lower end of the largest outermost pipe, substantially as shown and described

2. A gravity pump comprising two sets of cylinders, one located below the other and each set containing two cylinders of different diameters, connected pistons of different diameters traveling in each set of cylinders, pipes of varying diameters and length connecting said two sets of cylinders with each other a valve automatically controlling the inlet to and outlet from the largest lowermost cylinder from the lower end of the largest outermost pipe, and a tank located above the said sets of cylinders, and connected with the said sets of pipes, substantially as shown and described

3. A gravity pump comprising two sets of cylinders located one below the other and each set containing two cylinders of different diameters, connected pistons of different diameter traveling in each set of cylinders, pipes of varying diameter and length connecting said two sets of cylinders with each other a valve automatically controlling the inlet to and outlet from the largest lowermost cylinder from the lower end of the largest outermost pipe, a tank located above the said sets of cylinders, and connected with the two larger pipes, and an inlet valve arranged in the said tank at the junction of the two smaller pipes, substantially as shown and described.



4 A gravity pump comprising two sets of cylinders, one located below the other and each set containing two cylinders of different diameter, connected pistons of different diameter traveling in each set of cylinders, pipes of varying diameter and length connecting said two sets of cylinders with each other a valve automatically controlling the inlet to and outlet from the largest lowermost cylinder from the lower end of the largest outermost pipe, a tank located above the said sets of cylinders and connected with the said sets of pipes, and a suction pipe connected with the largest cylinders of the uppermost set of cylinders, substantially as shown and described

5 A gravity pump comprising two sets of cylinders, each set containing two cylinders of different diameter and one set being located below the other, connected pistons of different diameter traveling in each set of cylinders, pipes of varying diameter and length connecting the said two sets of cylinders with each other, and an outlet valve operated automatically and located between one of the cylinders of the lowermost set of cylinders and the lowermost end of the largest pipe, substantially as shown and described

6. A gravity pump comprising two sets of cylinders, one located below the other and each set containing two cylinders of different diameter, connected pistons of different diameter traveling in each set of cylinders, pipes of varying diameter and length connecting said two sets of cylinders with each other, a tank located above the said sets of cylinders and connected with the said sets of pipes, a suction pipe connected with the largest of the cylinders of the uppermost set of cylinders, and a check valve arranged in the lower end of the said suction pipe, substantially as shown and described

7 A gravity pump comprising two sets of cylinders, one located below the other and each set containing two cylinders of different diameter, connected pistons of different diameter traveling in each set of cylinders, pipes of varying diameter and length connecting said two sets of cylinders with each other, a tank located above the said sets of cylinders and connected with the said sets of pipes, and a valve automatically controlling the inlet to and outlet from the largest lowermost cylinder from the lower end of the largest outermost pipe, substantially as shown and described.

8 A gravity pump comprising two sets of cylinders, one located below the other and each set containing two cylinders of different diameter, connected pistons of different diameter traveling in each set

of cylinders, pipes of varying diameter and length connecting said two sets of cylinders with each other, a tank located above the said sets of cylinders and connected with the said sets of pipes, a valve automatically controlling the inlet to and outlet from the largest lowermost cylinder from the lower end of the largest outermost pipe, and an automatic device controlled from the piston in the largest outermost cylinder and adapted to actuate the said valve, substantially as shown and described.

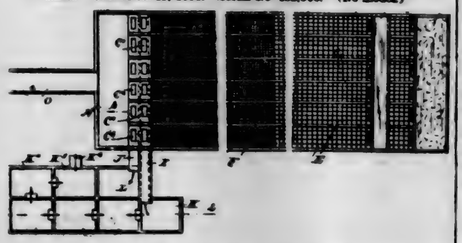
9. A gravity pump comprising two sets of cylinders, one located below the other and each set containing two cylinders of different diameter, connected pistons of different diameter traveling in each set of cylinders, pipes of varying diameter and length connecting said two sets of cylinders with each other, a tank located above the said sets of cylinders and connected with the said sets of pipes, a valve automatically controlling the inlet to and outlet from the largest lowermost cylinder from the lower end of the largest outermost pipe, and an air valve arranged in the largest outermost cylinder and adapted to be actuated from the piston therein, substantially as shown and described.

10. A gravity pump comprising two sets of cylinders, one located below the other and each set containing two cylinders of different diameter, connected pistons of different diameter traveling in each set of cylinders, pipes of varying diameter and length connecting said two sets of cylinders with each other, a tank located above the said sets of cylinders and connected with the said sets of pipes, a valve automatically controlling the inlet to and outlet from the largest lowermost cylinder from the lower end of the largest outermost pipe, an air valve arranged in the largest outermost cylinder and adapted to be actuated from the piston therein, and means, substantially as described, for actuating the said valve from the piston of the said largest outermost cylinder, substantially as shown and described.

11. A gravity pump comprising two sets of cylinders, each set containing two cylinders of different diameter and one set being located below the other, connected pistons of different diameter traveling in each set of cylinders, pipes of varying diameter and length connecting the said two sets of cylinders with each other, an outlet valve operated automatically and located between one of the cylinders of the lowermost set of cylinders and the lowermost end of the largest pipe, and a dead weight connected with the pistons of the innermost set of cylinders, substantially as shown and described.

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**504,928. CONCENTRATOR.** DAVID W. HUMPHERIES, De Lamar, Idaho. Filed Feb. 15, 1893. Serial No. 462,360. (No model.)



*Claim.*—1. A concentrator provided with an inclined table formed with a series of parallel and longitudinally-extending channels, each covered in the upper part of its bottom with a coarse mesh fabric and in the lower part of its bottom with a finer mesh fabric, substantially as shown and described.

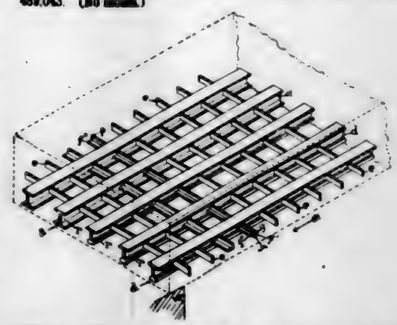
2. A concentrator comprising an inclined table having a series of longitudinally-extending channels, each provided in the upper part of its bottom with a coarse mesh fabric and in the lower part of its bottom with a fine mesh fabric, a tailings receiving receptacle having gates discharging into the said channels at the upper end of the table, and a tailings box into which the said channels discharge at the lower end of the table, substantially as shown and described.

3. The concentrator comprising an inclined table formed with longitudinal channels each having a bottom covered in the upper part with a coarse mesh fabric and in the lower part with a fine mesh fabric, the water distributing box set on the upper end of the said table and having gates discharging into the said channels, and transversely-extending chutes arranged under the lower end of the table and adapted to be connected with the said channels by gates, substantially as shown and described.

4. The concentrator comprising an inclined table formed with longitudinal channels each having a bottom covered in the upper part with a coarse mesh fabric and in the lower part with a fine mesh fabric, the water distributing box set on the upper end of the said table and having gates discharging into the said channels, transversely-extending chutes arranged under the lower end of the table and adapted to be connected with the said channels by gates, and settling tanks connected with the said chutes, substantially as shown and described.

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**504,924. METALLIC TIE TO RESIST PROGRESSIVE STRAINS.** PETER H. JACKSON, San Francisco, Cal. Filed Apr. 4, 1893. Serial No. 469,043. (No model.)



*Claim.*—1. The means for strengthening structures of artificial stone, concrete, brick and mortar, stone or similar materials, comprising a peculiarly formed metallic tie or ties embedded near either surface so as resist compressive force or tensile strain, performing the functions similar to either the top or bottom flanges of an iron or steel supporting beam; said ties consisting of flat, T, angle, or other shaped bars of iron or steel, with cross bars extending through them presenting flat resisting surfaces to the abutting material in which they are inclosed, substantially as herein described.

2. The means for strengthening structures of artificial stone, concrete, brick and mortar, stone or similar materials comprising metallic ties embedded near either surface so as to resist compressive force or tensile strain, performing the functions similar to either top or bottom flanges of iron or steel supporting beams, said ties consisting of a web and top and bottom flanges of iron or steel, with cross bars extending through the web between the flanges, and presenting flat resisting surfaces to the abutting material in which they are inclosed, substantially as herein described.

3. The means for strengthening structures of artificial stone, concrete, brick and mortar, stone or similar materials comprising metallic ties embedded near either surface so as to resist compressive force or tensile strain, performing the functions similar to the top and bottom flanges of iron or steel supporting beams, said ties consisting of flat, T, angle, or other shaped bars of iron or steel, or small I beams,—or railroad T rails, with cross bars extending through them, and plates resting against the cross bars presenting extended flat surfaces to the abutting material in which they are inclosed, substantially as herein described.

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**504,925. WHIFFLETREE-HOOK.** OWEN C. JOYCE, Mill, Ark., assignor of one-half to Alonzo W. Nobles, same place. Filed Mar. 14, 1893. Serial No. 465,893. (No model.)



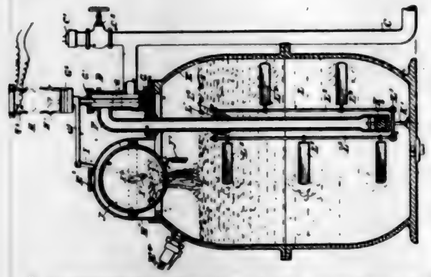
*Claim.*—In a whiffletree hook the combination with the block formed with a socket, an extension having a cylindrical bore, an opening to receive the end of a shackle and a side opening provided with a central lug, of a shackle pivoted to said extension having an eye at its free end, and a spring-actuated slidable and rotatable bolt provided with a projecting pin, and a housing surrounding the side opening in the extension, substantially as described.

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**504,926. AUTOMATIC FIRE EXTINGUISHER AND ALARM.** EDWARD LIVINGSTON, New Orleans, La., assignor of one-half to Harry M. Isaackson, same place. Filed Jan. 31, 1893. Serial No. 460,389. (No model.)



*Claim.*—1. The combination in an automatic fire extinguishing apparatus, of pipes adapted to be filled with an extinguishing liquid, a supply tank having its outlet connected with said pipes a device for delivering thereto a gas generating substance, and a cut off between the tank outlet and the distributing pipes, the said cut off having connection with the device for supplying the gas-generating substance, and serving to operate the same and connect the supply tank and pipes, upon reduction of pressure in the pipes, substantially as described.



2. An automatic fire extinguisher and alarm, comprising a series of pipes filled with a fluid under pressure, and provided with fusion valves, a cylinder connected with the said pipes and containing a piston held in an uppermost position by the fluid in the pipes, and a tank containing a fluid and provided with an outlet pipe opening into the said cylinder above the piston, substantially as shown and described.

3. An automatic fire extinguisher and alarm, comprising a series of pipes filled with a fluid under pressure, and provided with fusion valves, a cylinder connected with the said pipes and containing a piston held in an uppermost position by the fluid in the pipes, a tank containing a fluid and provided with an outlet pipe opening into the said cylinder above the piston, and a vessel containing a gas generating fluid and adapted to be discharged into the said tank on the downward movement of the said piston, which takes place when the fluid in the said pipes is discharged, substantially as shown and described.

4. An automatic fire extinguisher and alarm, comprising a series of pipes filled with a fluid under pressure, and provided with fusion valves, a cylinder connected with the said pipes and containing a piston held in an uppermost position by the fluid in the pipes, a tank containing a fluid and provided with an outlet pipe opening into the said cylinder above the piston, a vessel containing a gas generating fluid and adapted to be discharged into the said tank on the downward movement of the said piston, which takes place when the fluid in the said pipes is discharged, and an agitator arranged in the said tank and adapted to actuate the liquid therein as soon as the latter flows through the outlet pipe, substantially as shown and described.

5. An automatic fire-extinguisher and alarm, comprising a series of pipes filled with a fluid under pressure, and provided with fusion valves, a cylinder connected with the said pipes and containing a piston held in an uppermost position by the fluid in the pipes, a tank containing a fluid and provided with an outlet pipe opening into the said cylinder above the piston, a water wheel arranged in the lower end of the said tank outlet pipe and adapted to be actuated by the outflowing liquid, and an agitator held on the shaft of the said water wheel and serving to agitate the liquid in the tank substantially as shown and described.

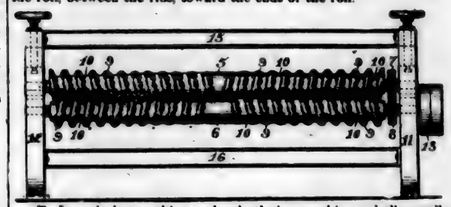
6. An automatic fire extinguisher and alarm, provided with a series of pipes filled with a fluid and provided with fusion valves, adapted to open to form an outlet for the fluid as soon as the fusion connection for the valve is melted, and a supply connected with the said pipes and adapted to be actuated by the fluid contained in the pipes to generate carbonic acid gas and to force the additional fluid supply into the pipes, and an alarm adapted to be actuated on the outflow of the liquid from the said pipes through one of the open fusion valves, substantially as shown and described.

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**504,927. CLOTH STRETCHING AND CALENDERING MACHINE.** WILLIAM F. HATHER, Providence, R. I. Filed Mar. 20, 1893. Serial No. 466,854. (No model.)

*Claim.*—1. In a cloth stretching or calendering machine, rolls furnished with spiral ribs extending in opposite directions from the center of the rolls and increasing the diameter of the rolls toward the ends of the same.

2. In a cloth stretching or calendering machine, rolls having spiral convex ribs extending from the center in opposite directions becoming more prominent toward the ends, and spiral grooves between the convolutions of the ribs which gradually reduce the diameter of the roll, between the ribs, toward the ends of the roll.



3. In a cloth stretching and calendering machine, a hollow roll 5 having hollow shafts and provided on its surfaces with ribs 9 and grooves 10 extending in opposite directions from the center, the ribs becoming more prominent toward the ends of the rolls, the grooves gradually extending farther into the surface of the rolls to reduce the diameter of the same, as described.

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**504,928. SELF-TRIPPING PULLEY-BLOCK.** COLIN MATHESON, Eureka, Cal. Filed June 8, 1893. Serial No. 476,926. (No model.)



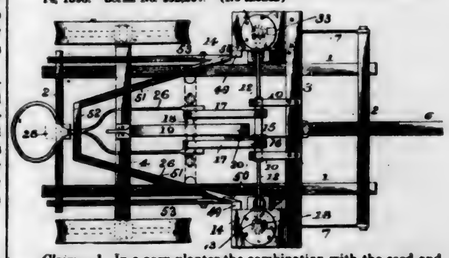
*Claim.*—1. As an improved article of manufacture, a pulley block having an open side, a pulley journaled in the upper portion of the block, and a second pulley journaled in the lower portion and provided near one edge with projecting cogs, substantially as specified.

2. The combination, with the main cable and the branch cable thereon, of the pulley block having an open side, a pulley journaled in the upper portion of the block, above the said opening, and a second pulley journaled in the lower portion of the block and provided at its outer edge with projecting cogs, substantially as specified.

3. As an improved article of manufacture, a pulley block having a side opening, a pulley journaled in the block above the opening, and a second pulley journaled in the block below the opening, the second pulley having a grooved face to receive the cable and projecting cogs at its outer edge, substantially as specified.

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**504,929. CORN-PLANTER.** WILLIAM R. MATTHEW, Bucyrus, Ohio, assignor of one-third to Charles H. Noblet, same place. Filed Feb. 14, 1893. Serial No. 462,297. (No model.)

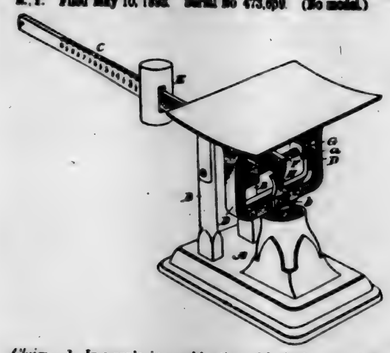


*Claim.*—1. In a corn-planter the combination with the seed and lime boxes, the disks therein, and the transverse shaft and vertical shafts provided with bevel pinions, of the hub provided with radial arms mounted on said transverse shaft, the rotating wheel having rollers in one face, adapted to engage with said shaft, and the swinging bearings in which said wheel is journaled, substantially as described.

2. In a corn planter the combination with the seed and lime boxes, the disks therein and the transverse shaft and vertical shafts provided with intermeshing bevel pinions, of the hub provided with

radial arms mounted on said transverse shaft the wheel having rollers adapted to strike said radial arms, the shaft on which said wheel is mounted journaled in swinging bearings, the slotted tubes containing coiled springs, the transverse bar to which said tubes are secured, and uprights for supporting said bar, substantially as described.

**504,930.** WEIGHING-SCALE. CHARLES C. MILLER, New York, N. Y. Filed May 10, 1893. Serial No. 473,659. (No model.)

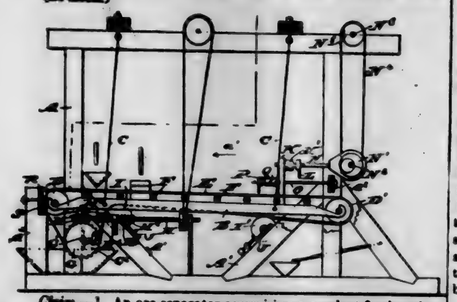


*Claim.*—1. In a scale, in combination with the beam and the support for the pan, the detachable stop as H attached to the pan support; substantially as described.

2. In a scale, in combination with the beam, the yoke supporting the pan, the knife edge rod secured to the end of the short arm of the beam, and the stop H detachably secured to the yoke and arranged just below the said short arm of the beam; substantially as described.

3. In a scale, in combination with the beam, the yoke supporting the pan, and a vertical stop attached to said yoke moving with the same and exteeding upward to a point just below the beam; substantially as described.

**504,931.** ORE SEPARATOR AND CONCENTRATOR. IRA P. MORRILL, Sugar Loaf, Colo. Filed Aug. 28, 1892. Serial No. 444,235. (No model.)



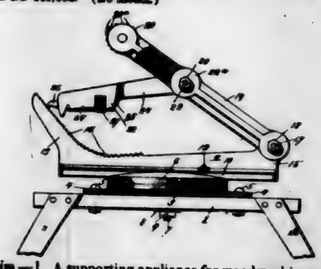
*Claim.*—1. An ore separator comprising a pendent freely swinging table, having a pushing block provided with an aperture, a cushion secured on the front face of the said block and provided with an aperture registering with the aperture in the block, and a threaded eccentric-rod or pitman extending freely through the apertured cushion and block and provided with a nut to strike the cushion in the forward throw of the rod and swing the table, then recede from the cushion when the rod is retracted to again strike the cushion on the return of the table and jar the latter and again throw it, substantially as set forth.

2. An ore separator and concentrator provided with a pendent swinging table having a pushing block, an eccentric rod passing loosely through the said pushing block, a nut held adjustably on the said eccentric rod and adapted to press a rubber cushion on the said block, and a stationary screw rod passing loosely through the said pushing block and provided at its outer end with a nut adapted to engage a cushion on the opposite side of the said pushing block, substantially as shown and described.

3. In an ore separator and concentrator, the combination with a pendent swinging table and means for imparting a forward motion to the said table, of a fixed screw rod passing through a pushing block attached to the said table, a nut held adjustably on the said fixed screw rod, and a pushing block secured on the said table and provided with a rubber cushion adapted to be engaged by the said nut on the return movement of the said table, substantially as shown and described.

4. An ore separator and concentrator provided with a driving shaft for the endless traveling belt, collars secured on the said shaft, and springs abutting against the said collars and on a fixed bracket forming a bearing for the said shaft, substantially as shown and described.

**504,932.** ADJUSTABLE ROLLER FOR WOODWORKING-MACHINES. CHARLES O. MOOR, Kansas City, Mo. Filed Aug. 1, 1892. Serial No. 441,892. (No model.)



*Claim.*—1. A supporting appliance for woodworking machinery, comprising a suitable supporting framework, a pair of carrying-arms mounted pivotally upon said supporting framework, a supporting roller mounted between said arms, a series of ratchet-teeth carried by the upper portion of the supporting framework and a pivotal adjusting arm carried between the said carrying arms and engaging with said ratchet-teeth, substantially as set forth.

2. A supporting appliance for woodworking machinery, comprising a suitable framework, a pair of carrying-arms mounted pivotally upon said supporting framework, a supporting roller carried between said arms, an adjustable supporting-arm secured pivotally to said carrying-arms and having an adjustable head, an adjusting-nut for said head and a series of ratchet-teeth engaged by the adjustable head and carried by the upper part of the supporting framework, substantially as set forth.

3. A supporting appliance for woodworking machinery comprising a suitable supporting framework, a pair of roller-carrying-arms pivotally mounted upon said framework, a pivotal adjusting arm carried by the said carrying-arms and having an adjustable head, and an adjusting-nut carried by the stem or rod of the adjustable head, substantially as set forth.

4. A supporting appliance for wood-working machinery, comprising a suitable supporting frame-work, a longitudinally extending base-plate secured upon said frame-work, a longitudinally extending bar formed upon said base-plate or secured thereon, and having an extension at each end, a series of teeth formed in the upper side of one of said extensions and upon the upper side of the longitudinally extending bar, a pair of parallel arms 19 pivoted on opposite sides of the extension at the other end of the said bar, and carrying an externally serrated roller in their outer ends, a bolt connecting said parallel arms, and an arm pivoted on said bolt, and having a toothed head adapted to engage the teeth on the upper sides of the longitudinally extending bar and the extension therefrom, substantially as set forth.

5. A supporting appliance for wood-working machinery, comprising a suitable frame-work, a stationary base-plate mounted upon said frame-work, and having a circular body-portion, a revoluble top-plate mounted upon said base-plate having a centrally depending pivot passing through a central opening in the stationary base-plate and the frame-work, and a retaining nut engaging the lower end of said pivot and bearing against the under side of the frame-work, and a frame located upon the revoluble top-plate, and supporting arms pivoted thereto, and a roller journaled in the outer ends of said supporting arms, substantially as set forth.

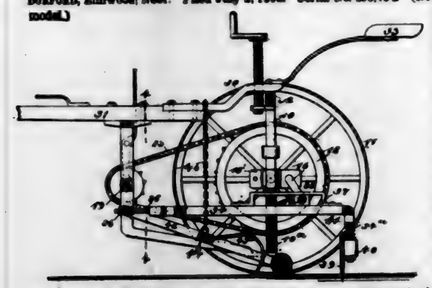
6. A supporting appliance for wood-working machinery, comprising a suitable frame-work, a base plate located upon said frame-work having a circular body-portion projecting upwardly therefrom, and having a circular groove therein, a top-plate having a circular groove in its under side adapted to register with the groove in the upper side of the circular body-portion, a number of balls located in said grooves, a pivot pendent from the under side of the top-plate and passing through a central opening in the circular base plate and through the frame-work, and having its lower end reduced and screw-threaded, a flanged cap engaging the lower end of the said pivot, and a nut engaging the projecting end of the said pivot, and bearing against the under side of the flanged cap, and a supporting frame mounted upon the top plate, a pair of pivotal arms carried upon said frame, and a roller journaled between said arms, substantially as described.



**504,933.** COMPOSITION FOR ARCHITECTURAL PURPOSES. EDGAR A. MOORE, Manlius, N. Y. Filed Jan. 6, 1893. Serial No. 457,470. (No specimens.)

*Claim.*—The composition of matter consisting of sand, raw gypsum, calcined gypsum, quick lime, glue, sulphuric acid and kerosene oil in about the proportions specified.

**504,934.** STALK-CUTTER. WILLIAM M. MUELLER and OSKAR F. BURFORD, Elmwood, Nebr. Filed July 2, 1892. Serial No. 438,734. (No model.)



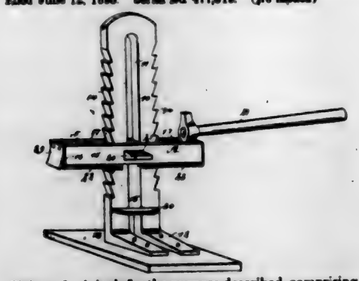
*Claim.*—1. The combination with the frame having an arched axle 10, of the vertically adjustable connected boxes on the vertical arms of the axle, means for raising and lowering the boxes, a crank shaft journaled in said boxes, vertically vibrating bars pivotally connected at their forward ends with the frame and having guide ways, blocks on the cranks and sliding in said guides, and the chopping knife carried by the rear ends of the said bars, substantially as set forth.

2. The combination with the frame having the arched axle 10, 10ª, of the boxes 15 sliding on the vertical members of the axle, the yoke carrying said boxes at its lower ends, the vertical screw mounted in the frame and swiveled at its lower end to the said yoke, and the vertically vibrating chopping bars pivotally connected at their forward ends with the frame and having guide ways between their ends for the cranks of said crank shaft, substantially as set forth.

3. The combination with the wheeled frame, of the longitudinally extending bars 34 pivoted at their forward ends to swing vertically and provided at their rear ends with depending posts 34ª, of the transverse knife set vertically edgewise and having eyes 40 sliding on said posts, springs on the posts above said eyes, and mechanism for operating the bars 34, substantially as set forth.

4. A stalk chopper, comprising the arched axle 10, 10ª, the arch frame 13, having extension arms 14 secured at their rear ends to the lower ends of the arched axle, the tongue 31 secured to top of frame 13 and also connected with top of the axle by a rearward extension 30, spindle 36 journaled at its ends in frame 13, the roller frame secured to said spindle, teeth mounted on the roller frame in front of the roller, and the vibrating frame 34 secured to the spindle 36 and provided at its rear end with a chopping knife, and means for raising and lowering the frame 34, substantially as set forth.

**504,935.** TRACK-JACK. JOSEPH MCMURRIN, Shoshone, Idaho. Filed June 12, 1893. Serial No. 477,312. (No model.)

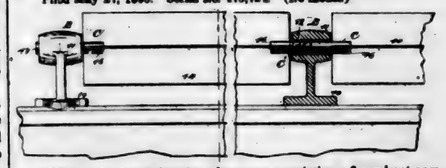


*Claim.*—1. A jack for the purpose described, comprising a standard toothed on opposite sides, the teeth being pitched in one direction and alternately located, a ratchet slide having movement upon the standard, and spring-controlled dogs carried by the ratchet slide and engaging with the teeth of the standard, said ratchet slide and the dogs being provided with registering openings for the reception of a railroad pick or like tool, as and for the purpose specified.

2. A jack for the purpose described, the same consisting of a standard having alternately arranged teeth at opposite sides, all the teeth having the same pitch, a lifting arm or ratchet slide capable of rocking movement upon the standard, spring controlled dogs carried by the lifting arm or ratchet slide, said dogs being normally in engagement with the teeth of the standard, the dogs being further provided with openings registering with the openings of the lifting arm or slide and adapted to receive a lever, and a platform connected with the lifting arm or ratchet slide and adapted to be raised or lowered by the rocking movement of the slide, substantially as shown and described.

3. In a jack for the purpose described, the combination, with a standard having a slideway produced therein, and teeth formed alternately upon opposite edges, the teeth having the same shape, of a lifting arm or ratchet slide capable of rocking movement upon the standard, a guide bar provided with a platform, having movement in the slide way of the standard and pivotally connected with the lifting arm or ratchet slide, dogs having sliding movement upon the bottom of the lifting arm or ratchet slide, spring-pressed at their outer ends and bearing at their inner ends against the teeth of the standard, said dogs at their inner ends extending beyond the front and rear faces of the slide, both the slide and the dogs being provided with registering openings for the reception of a lever, and slotted projections located upon the sides of the slide, between the inner ends of the dogs, the slots being likewise adapted for the reception of a lever, as and for the purpose set forth.

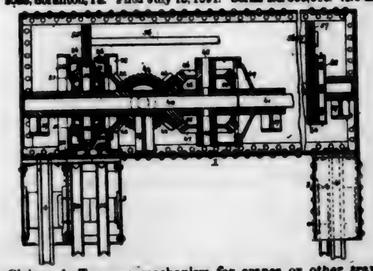
**504,936.** CAT-BARRIER. GEORGE S. HILES, Brooklyn, N. Y. Filed May 27, 1893. Serial No. 475,724. (No model.)



*Claim.*—1. A cat barrier, the same consisting of a wheel comprising blade sections angular in cross section and of a predetermined length, the sections being placed with their angular surfaces back to back, and trunnions slotted to receive the angular blade sections, whereby the sections are bound together, and any one section may be removed and replaced, as and for the purpose set forth.

2. A cat barrier, the same consisting of bearings adapted to be secured upon a fence, wall or like partition, a bladed wheel located between the bearings, said wheel comprising blade sections angular in cross section and of predetermined length, said sections having their angular surfaces placed face to face, and trunnions mounted in the bearings, which trunnions are provided with openings into which the extremities of the blade sections are introduced, as and for the purpose specified.

**504,937.** CRANE-OPERATING MECHANISM. CALVIN W. PARSONS, Scranton, Pa. Filed July 15, 1891. Serial No. 399,616. (No model.)



*Claim.*—1. Traverse mechanism for cranes or other traveling structures, comprising a driving belt, a pair of wheels located upon the traveling structure and rotated by engagement with the going and returning parts of said driving belt, means for retarding or differentiating the speed of said wheels, a squaring shaft, traverse mechanism operated thereby, and gearing whereby difference in the speed of said wheels is caused to effect rotation of said squaring shaft in proportion to such difference in speed, substantially as specified.

2. The within described means for effecting the uniform rotation of a shaft upon a traveling structure, said means comprising a continuously running driving belt, a pair of wheels, one engaging one run of said belt, and the other engaging the other run of the same, and equalizing gearing through the medium of which each of said wheels is connected to the shaft to be driven, substantially as specified.

3. The within described means for imparting movement to a traveling structure and for uniformly rotating a shaft thereon, said means comprising a continuously running driving belt, a pair of wheels, one engaging one run of said belt, and the other engaging the other run of the same, friction brakes for regulating the speed of rotation of said wheels, and equalizing gearing through the medium of which each of the wheels is connected to the shaft to be driven, substantially as specified.

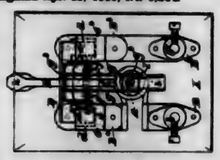
4. The combination of the traveling structure carrying a shaft, as 40, to be driven, a continuously running driving belt, a pair of wheels carried by the traveling structure and engaging respectively with the forward and backward runs of said belt, bevel wheels connected respectively to said belt wheels, and a frame, as 49, mounted upon and free to rotate with the shaft to be driven, said frame carrying one or more bevel wheels meshing with those of the belt wheels, substantially as specified.

5. Traversing mechanism comprising a continuously running driving belt, a pair of wheels carried by the structure to be traversed, and engaging respectively with the forward and backward runs of said driving belt, means for regulating the speed of rotation of each of said wheels, a squaring shaft, and means for operating the latter, comprising bevel wheels connected to the belt wheels, and a spider which carries one or more pinions engaging with said bevel wheels, substantially as specified.

6. Traversing mechanism comprising a continuously running driving belt, a pair of wheels carried by the structure to be traversed and engaging respectively with the forward and backward runs of said driving belt, means for regulating the rotation of said wheels, a squaring shaft, gearing whereby difference in the speed of rotation of the belt wheels is caused to effect a corresponding rotation of the squaring shaft, a squaring chain, and a wheel engaging therewith, said wheel being driven from the squaring shaft, substantially as specified.

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**504,938. ELECTRIC CUT-OUT.** HERBERT E. PRESTON, Stowmarket, England. Filed May 31, 1893. Serial No. 476,092. (No model.) Patented in England Apr. 12, 1890, No. 6,284.



*Claim.*—1. In a magnetic cut-out, the combination with the magnet the armature and the contact pieces, of a pivoted arm having a weight on one end normally opposing the action of the magnet and initially moved by the armature when the current becomes abnormal, and having the other end arranged to kick the contact pieces as the weight falls, whereby the contact is broken, substantially as described.

2. In a magnetic cut-out, the combination with the magnet, the armature and the contact pieces, of a pivoted arm having a weight on one end normally opposing the action of the magnet and initially moved by the armature when the current becomes abnormal, and having the other end arranged to kick the contact pieces as the weight falls, with an adjusting screw adapted to regulate the distance between the armature and the magnet, substantially as described.

3. In a magnetic cut-out, the combination with the magnet and contacts, of a slotted armature, a weighted arm having a tail piece for removing the contact piece, the said weighted arm journaled on the same axis with the armature, and within the slot thereof, substantially as described.

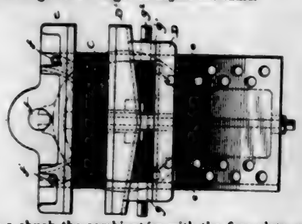
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**504,939. CHUCK.** PETER W. REAM, Davenport, Iowa. Filed Sept. 16, 1892. Serial No. 446,041. (No model.)

*Claim.*—1. In a chuck the combination with the face plate, of a fixed or stationary jaw thereon, a movable jaw made in two sections one of which is sustained on the face plate, wedges between said sections to force the same apart, and a screw for adjusting said wedges.

2. In a chuck the combination with the face plate, of a jaw pivoted thereon and adapted to be set in different angular positions, a movable jaw made in two sections one of which is sustained on the face plate, wedges between said sections to force the same apart, and a screw for adjusting said wedges.

3. In a chuck the combination with the face plate, of a jaw supported thereon immovably, a movable jaw made in two sections one of which is sustained on the face plate, movable wedges between said sections to force the same apart, and a right and left hand screw threaded through said wedges to adjust the same.



4. In a chuck the combination with the face plate, of a jaw immovably supported thereon, a movable jaw made in two sections, one of which is sustained on the face plate, the other section tapering on the rear side from the longitudinal center toward both ends, wedges between the ends of said sections to force the same apart, and a right and left hand screw threaded through said wedges to adjust the same.

5. In a chuck the combination of the face plate, the jaw *c* sustained thereon, the movable jaw made in two sections D, D', the movable brackets *e e* for sustaining the movable jaw, the wedges between the two sections of the movable jaw, and the screw $g^3$ threaded through said wedges.

6. In combination with the base plate, the face plate provided with clamping jaws, the intermediate ring adapted to be secured to the machine, the triangular links pivoted between their ends to the face plate and having one of their ends pivoted to the base plate, the nut pivoted between the other ends of the links and the threaded rods sustained by the face plate and adapted to enter the nut.

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**504,940. COMBINED PENCIL-SHARPENER AND PAPER-WEIGHT.** LEIGH M. REED, Cleveland, Ohio. Filed Jan. 3, 1893. Serial No. 457,180. (No model.)

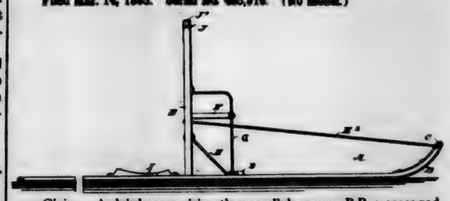


*Claim.*—1. A combined pencil sharpener and paper weight, constructed of glass and comprising a block having a sloping top surface, and a base having the top surface thereof recessed, the block having a conical bore cutting the top surface of the block so as to cause a slot broader at the top and tapering from thence to zero at the zero point of the conical bore, substantially as and for the purpose set forth.

2. A combined pencil sharpener and paper-weight comprising a block, and a base having a depression at the top, the block having a conical bore and a cylindrical bore arranged side by side, and each bore cutting the top surface of the block substantially as and for the purpose set forth.

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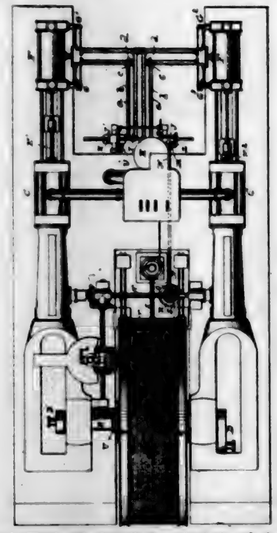
**504,941. SLEIGH.** CHARLES O. REDSTROM, Lakeoming, Minn. Filed Mar. 14, 1893. Serial No. 465,916. (No model.)



*Claim.*—A sleigh comprising the parallel runners B B, a cross rod C connecting the forward ends of the runners, a cross piece D also connecting the runners between their ends the standards E extending up from the middle of the runners and connected at their upper ends by cross bar J having handles J' at its ends, a seat F secured to the standards a back rest F', front legs G extending up from the runners, secured to the sides of the seat and bent back at their upper ends and secured to the standards to form arms for the seats, braces H side braces $E^2$ longitudinal braces $E^3$ extending forwardly from a cross bar E' to the rod C and the foot rests I, substantially as set forth.



**504,942. METHOD OF AND MACHINERY FOR HOISTING.** EDWIN REYNOLDS, Milwaukee, Wis. Filed Apr. 4, 1893. Serial No. 468,987. (No model.)



*Claim.*—1. The herein described method of rendering steady and uniform the action of hoisting machinery, which consists in diverting from the hoisting drum to other recipient during the hoisting operations a portion of the effective force of the engine substantially proportionate to the decrease of load to be lifted, due to the decrease in length of suspended cable, as the load ascends.

2. In combination with a hoisting drum and cable; an engine for actuating the drum; a secondary mechanism requiring power for its actuation; and connecting mechanism between the engine and said secondary mechanism, whereby power developed by the engine and not required to actuate the hoisting drum is diverted to and caused to actuate said secondary mechanism, thereby maintaining uniformity of action in the drum and engine and utilizing the full power of the latter.

3. In combination with a hoisting drum and an engine therefor; a mechanical motor adapted to be operatively connected with the engine and to be actuated by the surplus energy of the latter during the hoisting operation.

4. In combination with a hoisting drum and an engine therefor; a mechanical motor adapted to be operatively connected with the engine; and intermediate connections for automatically diverting a portion of the effective force of the engine from the drum to the motor.

5. In combination with a hoisting drum and an engine therefor; a mechanical motor adapted to be operatively connected with the engine; and means for varying the energy or effective force of the engine that is diverted from the drum to the motor

6. In combination with a hoisting drum and an engine therefor; a mechanical motor adapted to be operatively connected with the engine during the hoisting; a brake mechanism for the drum; and means whereby the motor shall be disconnected and the brake applied.

7. In combination with a hoisting drum and an engine therefor; an air-compressor adapted to be actuated by the engine; and means for throwing the compressor into action during the hoisting and out of action when the hoisting is completed.

8. In combinstion with a hoisting drum and an engine therefor; an air-compressor adapted to be actuated by the engine during the hoisting; and means whereby the effective work of the compressor is increased as the hoisting load decreases.

9. In combination with a hoisting drum and an engine therefor; an air-compressor adapted to be actuated by the engine during the hoisting; a series of valves for the compressor; and means for setting said valves successively.

10. In combination with a hoisting drum and an engine therefor; an air-compressor adapted to be actuated by the engine during the hoisting; a series of valves for the compressor; and a shaft H geared to rotate with the drum and provided with a cam I for setting the valves.

11. In combination with a hoisting drum and an engine therefor; an air compressor adapted to be actuated by the engine during the hoisting and provided with valves; a brake mechanism for the drum; and a screw shaft having a cam to set the valves of the compressor and the brake-mechanism.

12. In combination with a hoisting drum and an engine therefor; an air-compressor, provided with a valve and its gear; a rotatable screw shaft H provided with a slot and a cam and engaging a fixed nut; a shaft V; lever W mounted thereon to be struck by the cam; arm Y also mounted upon the shaft, and adapted to be moved by the lever; and connections between said arm and the valve gear.

13. In combination with a hoisting drum and an engine therefor; an air-compressor provided with a valve and its gear; a screw shaft H adapted to turn in both directions and provided with a cam I; a second shaft V; lever W mounted thereon; oppositely-extending arms Y and Z also mounted upon shaft V and adapted to be actuated by the lever W; and connections between the arms and the valve gear.

14. In combination with the screw shaft having a cam I; the shaft V having the loose lever W; the arm Y having its hub slotted to receive a key on shaft V, and adapted to be actuated by the lever W; and a lever X connected with shaft V and arranged in the path of the cam.

15. In combination with a hoisting drum and an engine therefor; an air compressor having its cylinders arranged in line with the engine cylinders, the piston rods being extended through the rear ends of the engine cylinders and operating the air-compressor pistons.

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**504,943. HORSESHOE-CALK.** SAMUEL ROBINSON, Monmouth, Ill. Filed Dec. 22, 1892. Serial No. 456,000. (No model.)



*Claim.*—1. A horse-shoe calk comprising an iron body having rectangular top and sides and triangular ends, a steel coating on one side and both ends, a shank rising from said body, and means for connecting the shank detachably with the shoe, substantially as described.

2. The combination with a horse-shoe having a calk-opening and a smooth pin-opening extending obliquely upward through and terminating near the outer edge of the shoe; of a calk having a threaded shank fitting said calk-opening, and a pin opening adapted to be brought in register with that in the shoe, and a fastening key passing through said registering smooth openings, and clinched at its upper end, substantially as described.

3. The combination with a horse-shoe having a calk-opening, a threaded pin-opening, and a smooth pin-opening extending obliquely upward through and terminating near the outer edge of the shoe; of a calk having a threaded shank fitting said calk-opening, and pin openings adapted to be brought in register with those in the shoe, a fastening screw removably seated in the registering threaded pin-openings, and a fastening key passing through said registering smooth openings, through and out of the hoof, and clinched on the latter, substantially as described.

4. The combination with a horse-shoe, having a recess in its lower face, a threaded calk-opening in the shoe at the center of the recess, the ends of the latter being curved concentric to said opening, and a pin-opening passing through the shoe and forming a groove in one of said curved ends; of a calk, its body shaped to fit said opening and having a sharpened lower edge extending below the plane of the shoe, and a threaded tank taking into said shank-opening, the end of said body having a groove adapted to register with that in the recess, and a fastening pin passing through said registering grooves into the pin-opening, as and for the purpose set forth.

5. The combination with a horse-shoe having a notch in its upper face and a recess in its lower face, a threaded calk-opening in the shoe within the recess, one end of the latter being curved concentric to said opening, and a pin-opening passing through the shoe to said notch and forming a groove in said curved end: of a calk, its body shaped to fit said opening, a threaded shank taking into said shank-opening, the end of said body having a groove adapted to register with that in the recess, and a fastening pin passing through said registering grooves into the pin-opening and clinched within said notch, as and for the purpose set forth.

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**504,944. TUBULAR-UMBRELLA-STICK.** JOHN ROSE, Philadelphia, Pa. Filed Jan. 23, 1893. Serial No. 459,229. (No model.)

*Claim.*—1. A tubular metal stick for umbrellas or parasols, said stick being drawn down near one end so that the tubular end portion

of the stick is reduced in diameter and increased in thickness as compared with the body of the stick, substantially as specified.



2. The combination of the tubular metal stick drawn down near one end so that the tubular end portion of the stick is of less diameter than the body, with the notch applied to said reduced tubular portion of the stick, and the ribs hung to the notch and fitted snugly against the enlarged body of the stick, substantially as specified.

3. A tubular metal stick for umbrellas or parasols, said stick having a body of polygonal cross section, but being drawn down near one end so that the tubular end portion of the stick is reduced in size and increased in thickness as compared with the body of the stick, substantially as specified.

4. A tubular metal stick for umbrellas or parasols, said stick having a body of polygonal cross section, but being drawn down near one end so that the tubular end portion of the stick is of circular cross section and of less diameter but of greater thickness than the body of the stick, substantially as specified.

**504,945.** UMBRELLA CASE. JOHN ROSE, Philadelphia, Pa. Filed Mar. 25, 1893. Serial No. 467,599. (No model.)

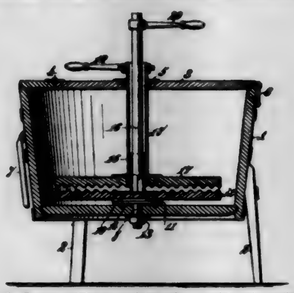


*Claim.*—1. The within described umbrella case, the same consisting of a tube of leather slitted and provided with fastening devices at the upper end and having at the lower end an internal socket extending throughout the length of the projecting end of the umbrella stick, and fitting snugly thereto, and a ferrule applied to the lower end of said stick, substantially as described.

2. The combination of the tubular case, the internal socket extending throughout the length of the projecting end of the umbrella stick and fitting snugly thereto, and a ferrule applied to the lower end of said socket, and having a tubular portion between which and the socket the lower end of the case is confined, substantially as specified.

3. The combination of the tubular case, the internal socket extending throughout the length of the projecting end of the umbrella stick and fitting closely thereto, and a ferrule applied to the lower end of said socket and consisting of an end plug of metal and a sheet metal tube fitted to said plug, that portion of the tube which projects above the plug serving to confine the lower end of the case to the socket, substantially as specified.

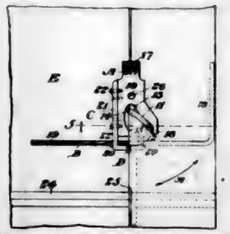
**504,946.** WASHING-MACHINE. JOHN SHAFFER, Singer's Glen, Va. Filed May 27, 1893. Serial No. 475,635. (No model.)



*Claim.*—1. In a washing machine, the combination with the tub, and the rubbers independently rotatable with respect to each other and to the tub, of a hollow rotating shaft attached to the upper rubber, a hollow sleeve attached to the lower rubber and adapted to project into the hollow shaft, and a removable shaft adapted to be inserted into the hollow sleeve to rotate the latter and its rubber, substantially as described.

2. In a washing machine, the combination with the tub and the independently rotatable rubbers, of a hollow shaft attached to the upper rubber, passing loosely through the lid of the tub, and vertically movable together with its attached rubber, a hollow sleeve attached to the lower rubber and adapted to project into the hollow shaft, and a removable shaft adapted to be inserted into the hollow sleeve to rotate the latter and its rubber, substantially as described.

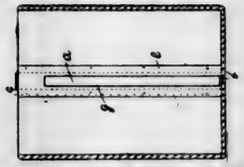
**504,947.** WIDE HEMMER FOR SEWING-MACHINES. ALFRED S. SIMONS, Port Chester, N. Y. Filed May 18, 1893. Serial No. 474,664. (No model.)



*Claim.*—1. The combination of a hemming presser-foot having the customary needle-hole curling finger and curling recess, together with an indented entrance, an oblique passageway extending inward from said entrance, and a solid separator the left-hand edge of which is a straight edge in line with said needle-hole, and a laterally adjustable fold-gage supported by the toe of said foot and having an effective portion which extends rearwardly beyond the needle-hole in a line parallel to said straight edge and to the line of feed, substantially as hereinbefore specified.

2. The improved wide hemmer composed of a hemming presser-foot, an L-shaped fold-gage of wire or the like having a rearwardly projecting shorter portion parallel to the line of feed and a relatively long stem, a support attached to said foot and having a pair of guides for said stem, and a horizontal screw coacting with said stem between said guides to fasten said fold-gage, substantially as hereinbefore specified.

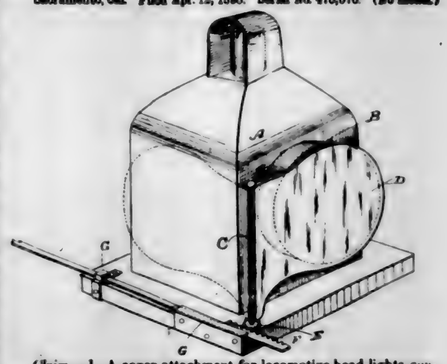
**504,948.** CARD-CASE. JOSEPH F. SMITH, New Bedford, Mass. Apr. 19, 1893. Serial No. 470,966. (No model.)



*Claim.*—1. A card case of the character described, having one of its sides provided with a flat bar *a*, having thumb catch *c*, and arm *b*, and adapted to slide in a groove in the side of the case, and held therein by the plate *e*, secured to the inside of the case and having slot *g*, through which the arm *b*, projects; said bar *a*, having a series of numbers on its outer face, all as shown, and for the purpose described.

2. A card case of the character described, comprising two open ended boxes, one adapted to be contained within the other; each having one of its sides provided with a bar, sliding in guides and bearing a series of numbers, whereby is kept the score of the game played with the cards, all as shown and described.

**504,949.** LOCOMOTIVE-HEADLIGHT COVER. REED A. STEVENS, Sacramento, Cal. Filed Apr. 12, 1893. Serial No. 470,070. (No model.)



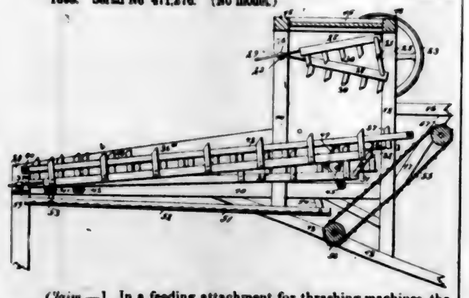
*Claim.*—1. A cover attachment for locomotive head-lights, consisting of a hinged swinging cover plate and a mechanism comprising



a pinion on the axis of the cover plate and a rack connected therewith and with the cab, whereby said cover plate may be turned about its hinge to cover or uncover the light opening, substantially as herein described.

2. A cover attachment for locomotive head-lights, consisting of the cover plate, a vertical shaft journaled at one side in the plane of the lantern front, to which shaft the cover is fixed, a pinion fixed to the shaft, a reciprocating rack, the teeth of which engage the teeth of the pinion, and a rod extending from the rack bar rearwardly to the engine cab whereby the cover plate is actuated, substantially as herein described.

**504,950.** FEEDING ATTACHMENT FOR THRASHING-MACHINES. HERMANN A. STOLTENBERG, Hollyrood, Kans. Filed Apr. 21, 1893. Serial No. 471,276. (No model.)



*Claim.*—1. In a feeding attachment for thrashing machines, the combination, with a series of reciprocating feed arms and knives secured thereto, of a feed device consisting of a grating pivoted at one end and located over the arms, a rock shaft located below the opposite end of the grating, pivotally connected links connecting the shaft with the grating, and a pawl and ratchet mechanism connected with the shaft, substantially as shown and described.

2. In a feeding attachment for thrashing machines, the combination with a series of reciprocating feed arms, of a grating pivoted at one end above the feed bars, and means connected with the free end of the grating for raising and lowering the same, substantially as described.

3. In a feeding attachment for thrashing machines, the combination of a series of reciprocating feed bars, a pivoted grating above the feed bars, means for raising and lowering the grating, and a series of reciprocating separator bars above the grating, substantially as described.

4. In a feed attachment for thrashing machines, the combination of a crank shaft, a series of feed arms pivotally connected with the crank arms of the crank shaft, knives attached to the arms and extending at an angle therefrom, guide devices located at the opposite ends of the feed arms and connected therewith, a feed regulating device located above the feed arms, comprising a grating capable of being raised and lowered and lifting devices connected with the grating, a grain pan suspended below the feed arms, and an elevator adapted to receive material from the feed arms and the grain pan, as and for the purpose set forth.

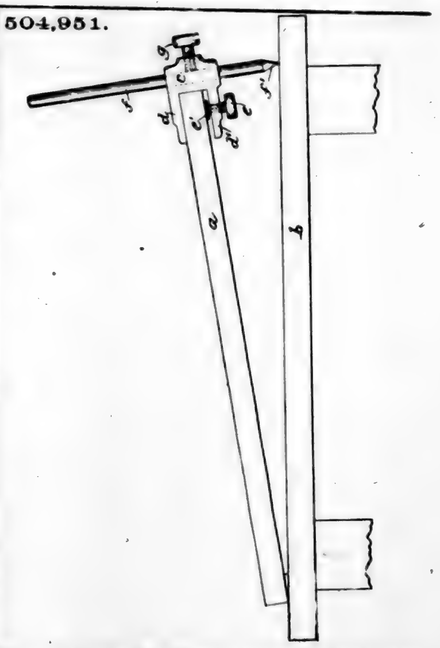
5. In a feed attachment for thrashing machines, the combination, with an upper and a lower crank shaft, a fixed shaft opposite the upper crank shaft, blocks loosely mounted upon the said fixed shaft, separator arms pivotally connected at one of their ends with the crank arms of the upper crank shaft and having sliding movement at their opposite ends in the said blocks, and knives projected downward from the said separator arms, of a series of feed arms carrying upwardly-extending knives and pivotally connected at one of their ends with the crank arms of the lower crank shaft and having guided movement at their opposite ends, a feed regulating device located above the feed arms, a grain pan suspended below the feed arms, and an elevator which is adapted to receive material from both the grain pan and the separator and feed arms, as and for the purpose specified.

**504,951.** TILTING DEVICE FOR DRAWING-BOARDS. LAFAYETTE P. STRETTER, Asbury Park, N. J. Filed Apr. 25, 1893. Serial No. 471,806. (No model.)

*Claim.*—1. The combination with a drawing board, of a head *c* adapted to be clamped to the edge of the board and perforated in a line at a right angle with the plane of the board, a rod passed through said perforation and means to fix said rod in adjusted position in said head, substantially as shown and described.

2. The combination of a head *c* having jaws *d*, *d'*, to receive the edge of a drawing-board, a clamping-screw *e* threaded in one of said jaws, a rod *f* passing freely through a perforation in said head and having a pointed end to engage a table top, and a set-screw *g* to fix said rod in adjusted position, substantially as shown and described.

**504,951.**



**504,952.** WINDOW-SHADE SUPPORTER. STEPHEN T. STOVER, Puyallup, Wash. Filed Apr. 11, 1893. Serial No. 469,908. (No model.)



*Claim.*—1. A window shade and curtain supporter comprising a truss frame formed of wire and having depending transversely extending end sections terminating at their inner extremities in bearing feet, formed between their ends with openings having shade roller bearing plates clipped therein and the outer ends of the said end sections terminating in curtain pole rings, substantially as set forth.

2. In an adjustable window-shade supporter composed of a truss frame constructed in sections and made up of an upper and lower series of wires fitted to slide one upon or along the other, locking devices for holding the sections at their adjustment, and one or more suspension eyes adapted to insure the straight hang of the window shade, the upper and lower series of wires being twisted together at opposite ends of the truss frame and bent to form angular openings at said ends, in combination with plates closing said openings, adapted to carry the shade roller and secured by integral clips to the wires, essentially as described.

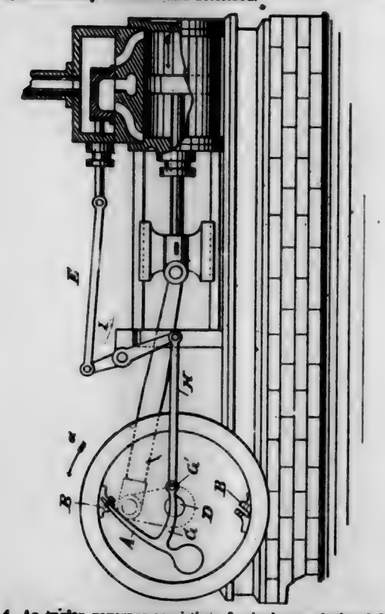
**504,953.** ENGINE-GOVERNOR. ROBERT H. THOMPSON, Rhinebeck, N. Y. Filed Sept. 28, 1892. Serial No. 447,149. (No model.)

*Claim.*—1. An engine governor consisting of a flexible arm adapted to be rigidly secured at one end to a revoluble wheel, arm or other device, the said flexible arm being directly connected with the valve gear of the engine, substantially as shown and described.

2. An engine governor consisting of a single unarticulated arm rigidly secured at one end to revoluble wheel or equivalent, the free end of the arm being weighted and directly connected with the valve gear of the engine, substantially as shown and described.

3. A governor for prime motors, consisting of a single piece, so

far as its essential elements are concerned, uniting balls, arms, springs, and eccentrics with their connections in one single unarticulated piece, in the sense that this piece has no joints, as pins, knife-edges, or hinged parts, substantially as shown and described.

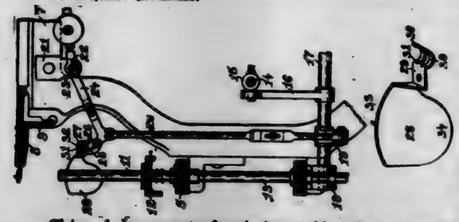


4. An engine governor consisting of a single unarticulated flexible arm rigidly secured at one end to a revoluble wheel or equivalent and carrying at its free end a weight, the said arm being directly connected with the valve gear of the engine at a point in a circle passing through the center of the wheel, the center of the circle being the fastening point of the arm on the wheel, substantially as shown and described.

5. In a device of the class described, the combination with the valve gear of a revoluble wheel or equivalent, and a single unarticulated, flexible arm, rigidly fastened at one end to the said wheel or its equivalent and directly connected with the said valve gear, substantially as shown and described.

## 504,954. SEPARATOR MECHANISM FOR SPINNING-MACHINES.

EDWARD M. WESTON, Fall River, Mass. Filed Mar. 20, 1893. Serial No. 466,822. (No model.)



*Claim.*—1. In a separator for spinning-machines, the combination with an actuating mechanism, of an adjustable counterweighted lever pivoted intermediate the beam and the center of the machine, a separator-shaft pivotally supported on the forward portion of the lever, and separators mounted on said shaft, as described.

2. In a separator for spinning-machines, the combination with an actuating-mechanism and a lever actuated thereby, of an arm pivoted to the forward portion of the lever, a stop for limiting the movement of the arm, a separator-shaft mounted in the upper end of said arm, and blades carried by the shaft.

3. In a separator for spinning-machines, a separator-blade having the shank 29 furnished with the bent-arms 30—30 and the key 31, and a clamp for securing the same to a shaft, as described.

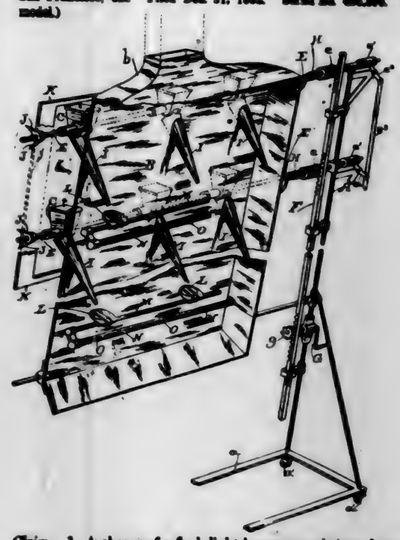
4. In a separator for spinning-machines, the separator-blade 29 having the upper curved-edge 32, the depending-guard 34, and a shank 29 furnished with the bent-arms 30—30 and the key 31, as described.

5. The combination with the reciprocating-shaft 14, the sleeve 15 clamped thereto, the lever 16 pivoted to the sleeve, the rotatable-shaft 17 to which the lower end of the lever is rigidly secured, the arm 19 mounted on said shaft, and the actuating-rod 20 pivoted to the end of the arm, of the bracket 21 located within the frame of the machine and having the rocker-bearing 22, the rocker-shaft 23 supported therein, the counter-weighted lever 24 mounted on said shaft and pivoted to the upper end of the actuating-rod, a separator-shaft carried by said lever, and separators mounted on the shaft, as described.

6. The combination, in a separator for spinning-machines, with an actuating rod having a yoke at the upper end, of a separator lever having a transverse pin adapted to engage in said yoke, a separator-shaft supported by the lever, and blades carried by the separator-shaft.

## 504,955. COMBINED CHARGER, REFLECTOR, AND SMOKE-ARRESTER FOR FLASH-LIGHT BURNERS.

SYLVESTER M. WILLIAMS, San Francisco, Cal. Filed Dec. 31, 1892. Serial No. 456,806. (No model.)



*Claim.*—1. A charger for flash light burners consisting of a supply hopper and a longitudinally movable oscillatory valve mounted in the throat of the hopper and having a series of charge sockets of varying sizes adapted to be moved into and out of the hopper, substantially as herein described.

2. A charger for flash light burners consisting of a supply hopper and a longitudinally movable oscillatory valve mounted in the throat of the hopper and having a series of charge sockets of varying sizes adapted to be moved into and out of the hopper, and a directing chute in communication with said valve, and into which it delivers the charge of powder, substantially as herein described.

3. A charger and reflector for flash light burners consisting of a reflecting plate, a supply hopper secured to the back of said plate, an oscillatory charge valve operating in the throat of the hopper and a directing chute in communication with said valve and passing through the reflecting plate, substantially as herein described.

4. A reflector and charger for flash light burners consisting of a frame, a reflector carried thereby, a directing chute passing through the reflector from behind, and means for supplying a charge of powder to said chute, substantially as herein described.

5. A reflector and charger for flash light burners, consisting of a reflecting plate, a supply hopper on its back, means for controlling the discharge from the hopper, and means for delivering the charge to the burner, substantially as herein described.

6. A reflector and charger for flash light burners consisting of a movable frame, a reflector carried thereby, directing chutes passing through the reflector from behind, and means for supplying a charge of powder to said chutes, consisting of hoppers on the back of the reflector, and oscillatory valves with charge sockets operating in the throats of the hoppers, substantially as herein described.

7. A reflector and charger for flash light burners consisting of a frame, a reflecting plate carried thereby; a series of supply hoppers secured to the back of the plate, oscillatory valves with charge sockets operating in the throats of the hoppers, directing chutes in communication with said valves, and passing through the reflecting plate and rocking shafts upon which said valves are mounted whereby they are operated simultaneously, substantially as herein described.

8. A reflector and charger for flash light burners consisting of a frame, a reflecting plate carried thereby, a series of supply hoppers secured to the back of the plate, oscillatory longitudinally movable sleeves forming valves operating in the throats of the hoppers, said valves having a series of charge sockets of different sizes, directing chutes in communication with said valves, and passing through the reflecting plate and rocking shafts upon which said valves are mounted whereby they are operated simultaneously, substantially as herein described.

9. A reflector and charger for flash light burners consisting of a frame, a reflecting plate carried thereby, a series of supply hoppers secured to the back of the plate, oscillatory valves with charge sockets operating in the throats of the hoppers, directing chutes in communication with said valves and passing through the reflecting plate, rocking shafts upon which said valves are mounted whereby they are operated simultaneously, and stops for limiting the movement of said valves, substantially as herein described.

10. A reflector and charger for flash light burners consisting of a frame, a reflecting plate carried thereby, a series of supply hoppers secured to the back of the plate, oscillatory valves with charge sockets operating in the throats of the hoppers, directing chutes in communication with said valves and passing through the reflecting plate, rocking shafts upon which said valves are mounted whereby they are operated simultaneously, and the means for operating said shafts, consisting of a rock bar, pinions on the shafts and springs for returning them, substantially as herein described.

11. A combined charger, reflector and smoke arrester for flash light burners, consisting of a portable frame, a reflecting plate carried thereby, provided with an apertured top hood, supply hoppers secured to the back of the reflecting plate, oscillatory valves with charge sockets operating in the throats of the hoppers, rock-shafts upon which said valves are mounted, and directing chutes in communication with the valves and passing through the reflecting plate, substantially as herein described.

12. A reflector and charger for flash light burners consisting of a reflecting plate, supply hoppers on its back, oscillatory valves, each having a series of charge sockets of different sizes, said valves operating in the throats of the hoppers, longitudinally movable rock shafts carrying said valves whereby they may be moved simultaneously to present different sockets in the hoppers, and directing chutes for receiving the charges from said sockets, substantially as herein described.

## 504,956. FLASH-LIGHT BURNER.

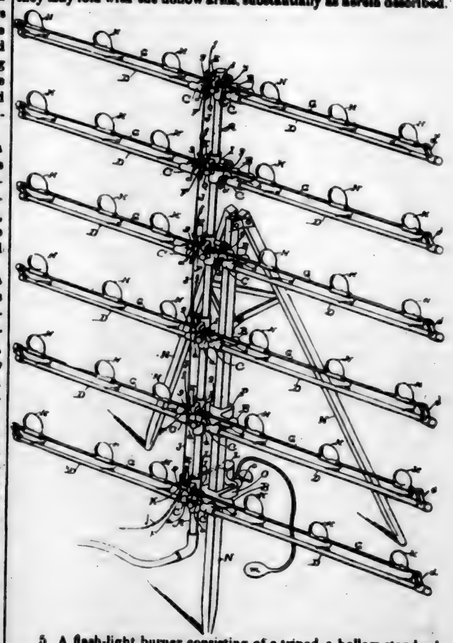
SYLVESTER M. WILLIAMS, San Francisco, Cal., assignor of one-half to J. A. Shepard, same place. Filed May 10, 1893. Serial No. 473,693. (No model.)

*Claim.*—1. A flash-light burner, consisting of a central hollow standard, hollow arms communicating therewith and connected to said standard by joints, enabling them to be extended at right angles to the standard and to be folded beside it, said arms having flame burners or jets, rock-shafts hinged at their inner ends and extending out parallel with the arms and adapted to be folded therewith, and charge cups carried by said rock-shafts adapted to throw the powder into the flame jets, substantially as herein described.

2. A flash-light burner, consisting of a central hollow standard, hollow arms communicating therewith and connected to said standard by joints, enabling them to be extended at right angles to the standard and to be folded beside it, said arms having flame burners or jets, rock-shafts hinged at their inner ends and extending out parallel with the arms and adapted to be folded therewith, charge cups carried by said rock-shafts adapted to throw the powder into the flame jets, and the means for rocking said shafts consisting of the oscillating short shafts to which the rock-shafts are hinged, said short shafts having cranks and controlling springs, the rod connecting said cranks, the ratchet on the lowermost short shaft, the pawl engaging the ratchet and means for disengaging the pawl, substantially as herein described.

3. In a flash-light burner, the combination of the central hollow standard, the hollow burner arms communicating therewith and having a hinge connection with the standard, whereby they may be turned to a position at right angles with the standard and be folded beside it, the stops for the lower set of arms adapting them to fold upwardly beside the standard and to be limited in a horizontal position, and the pivoted catches for the upper set of arms adapting them to fold downwardly beside the standard and to be limited in a horizontal position, substantially as herein described.

4. A flash-light burner consisting of a hollow standard, apertured brackets secured thereto at an inclination, and hollow arms communicating with and journaled in said brackets whereby they may turn to a position at right angles to the standard, and to be folded beside it without interference with each other, said arms having burners or flame jets, and the rock shafts with their charge cups, said shafts having a hinge connection at their inner ends with the standard whereby they may fold with the hollow arms, substantially as herein described.

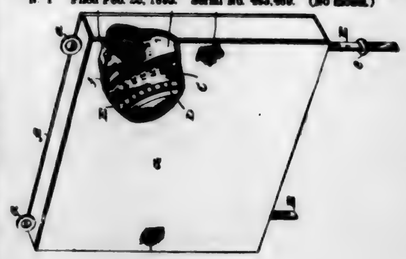


5. A flash-light burner consisting of a tripod, a hollow standard having a clamp with set screw by which it is fitted to and is adjustable vertically upon one of the legs of the tripod, a series of hollow arms communicating with the standard and connected therewith by hinge joints enabling them to turn to a position at right angles to the standard and to be folded beside it, rock-shafts extending out parallel with the arms and having a hinge connection with the standard at their inner ends whereby they are adapted to fold with said arms, means for setting, tripping, and rocking said shafts, and charge cups carried by said shafts adapted to throw the powder into the flame jets, substantially as herein described.

6. A flash light burner consisting of a central hollow standard, hollow arms communicating therewith and connected to said standard by joints, enabling them to be extended at right angles to the standard and to be folded beside it, said arms having flame burners or jets, suitable regulating valves controlling the gas passages whereby the jets can be made to burn equally with different gases, rock shafts hinged at their inner ends and extending out parallel with the arms and adapted to be folded therewith, and charge cups carried by said rock shafts adapted to throw the powder into the flame jets, substantially as herein described.

## 504,957. BILLIARD-REGISTER.

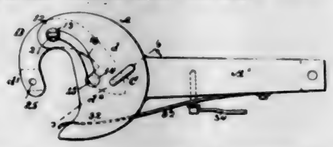
WILLIAM H. WOODRUFF, Auburn, N. Y. Filed Feb. 23, 1893. Serial No. 463,469. (No model.)



*Claim.*—1 In a counter or register, in combination with a casing having two sets of display openings, two eccentrically located, overlapping registering wheels, having numerals on both of their faces, and each wheel having the line of its axis passing within the circumference of the other wheel, and means for actuating each wheel, substantially as and for the purpose specified.

2 In a counter or register, in combination with a casing, having two sets of display openings on diametrically opposite sides, two overlapping registering wheels having numerals on both of their faces and being independent of each other in their movements, and the bar, in the casing, between, and having pintles on its opposite sides journaling said wheels, substantially as and for the purpose specified.

## 504,958. CAR-COUPLING. SAMUEL A. YEAGER and WILSON L. LUCKENBACH, Bethlehem, and ALFRED P. BALLIET, Coplay, Pa. Filed Aug. 12, 1892. Serial No. 442,672. (No model.)



*Claim.*—1 As an improved article of manufacture a coupling knuckle D curved or elbow shaped provided with a hook $d^3$ at one end, a pivot aperture 26 at or near its middle and end apertures 24, 25, substantially as set forth.

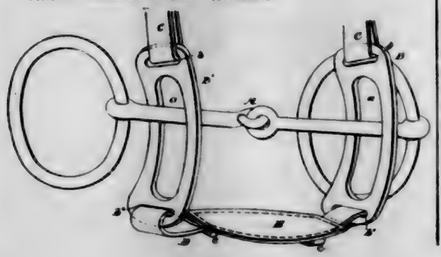
2 The combination with a draw head having a middle and an end aperture, of a curved or elbow like knuckle provided with a hook at one end, and an aperture in its bend, and a pivot pin adapted to pass through either one of the draw head apertures and said aperture in the bend of the knuckle and means for locking the hooked end of the knuckle when said knuckle is pivoted in the end draw head aperture, substantially as set forth.

3 In a car coupler of the type described, the combination, with a drawhead, a spring extending within the same, and an adjusting mechanism for the spring, of a knuckle having a shifting fulcrum, whereby either end of the knuckle may be made the outer or coupling end, as and for the purpose specified.

4. In a car coupler of the type described, the combination, with a drawhead and a knuckle pivoted therein, the knuckle being provided with a pin opening in its inner end, of a locking pin comprising an essentially straight body section and an angular head, the body section and head having free vertical movement in the drawhead, and the head section being adapted to enter the pin opening in the knuckle, substantially as shown and described, whereby an automatic coupling may be effected and an uncoupling be produced by the elevation of the pin.

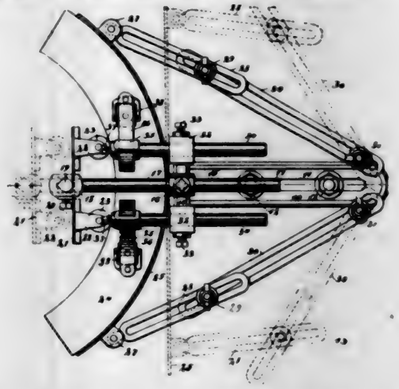
5 In a car coupler of the type described, the combination, with the drawhead and its shank, the drawhead being provided in one side horn with upper and lower registering openings, and upper and lower central registering openings, the upper openings being connected by a curved passage-way, of a knuckle having one end formed as a latch head, the said knuckle being provided at each extremity with a pin opening and an opening near its center, a pivot pin passed through the central opening of the knuckle and through one of the aligning sets of openings in the drawhead, a locking pin adapted for engagement with the knuckle, having free vertical movement in the drawhead and having an essentially inverted U-shaped formation at its upper end, a spring attached to the shank and extending within the drawhead, and an adjusting mechanism connected with the spring, as and for the purposes specified.

## 504,959. BRIDLE-BIT. HERMAN ZAHL, Momence, Ill. Filed Apr. 26, 1893. Serial No. 472,442. (No model.)



*Claim.*—A bridle bit comprising two separate and independent longitudinally slotted side links provided with transverse slots at their upper and lower ends, the upper slots being for the cheek straps a chin strap secured in the lower slots and a bit proper extending through the longitudinal slots and provided with rings at its ends, substantially as set forth.

## 504,960. WORK-HOLDING CLAMP. WILLIAM J. AUEY, Cincinnati, Ohio. Filed May 6, 1893. Serial No. 473,245. (No model.)



*Claim.*—1. A work holding clamp, comprising a spring plate supported edgewise, means for flexing the plate, clamping rollers arranged opposite the spring plate and adjustable to and from the same, and a second set of adjustable rollers adapted to bear upon the top of the work, substantially as described.

2 A work holding clamp, comprising a spring plate held edgewise, means for flexing the said plate, clamping rollers arranged opposite the spring plate and adjustable to and from the same, yieldingly supported rollers for engaging the top of the work, and means for adjusting both of said rollers horizontally and vertically, substantially as described.

3 A work holding clamp, comprising a table, a base plate secured thereon and having an upwardly extending post, a spring plate secured to the front end of the base plate at the foot of the post, fastening links secured to the back of the spring plate and also to the base plate, a longitudinal adjustable shaft carried by the top of the post and extending parallel with the table top, a cross bar suspended rigidly from the shaft and carrying rollers which turn in vertical axes and opposite the spring plate, a second set of shafts arranged parallel with the first shaft and mounted adjustably in the post, spring arms carried by the second set of shafts, and casters secured to the arms and adapted to press upon the work, substantially as described.

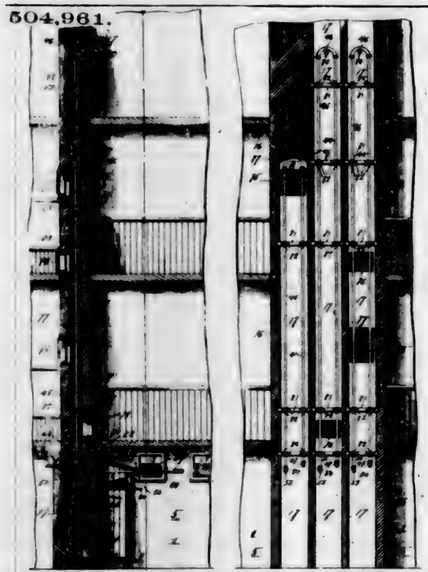
4 A work holding clamp, comprising a base plate having a post in one end, a central shaft mounted in the post and extending parallel with the base plate, means for adjusting the shaft longitudinally, a vertical shaft adjustable in the outer end of the central shaft, a cross bar carried at the lower end of the vertical shaft and provided with clamping rollers, a spring plate secured to the base plate and extending opposite the clamping rollers, a fastening device for fixing the position of the spring plate, and vertically adjustable casters arranged in front of the spring plate and adapted to ride on the work held against the plate, substantially as described.

## 504,961. HEATING, COOLING, AND VENTILATING SYSTEM. JOSEPH H. BRADY, Kansas City, Mo. Filed May 9, 1892. Serial No. 432,230. (No model.)

*Claim.*—The improved warming and ventilating apparatus, constructed with a furnace to circulate a heating-liquid, an air-mixing chamber 14 connected with the atmosphere exterior of the building, radiating-tubes 23 located to heat the air in this mixing-chamber and connected by piping to receive heating-liquid from the boiler of said furnace, a single large flue or chimney 16 containing a series of parallel vertical straight passages 17 which extend from said mixing-chamber vertically and project through the roof of the building, the lower end of each passage communicating with the said mixing-chamber, horizontal partitions 77 which divide each of these passages into separate aligned upper and lower chambers, each of said upper chambers being connected with the lower portion of separate rooms, so as to form a separate outlet for air discharged into a given room by a different

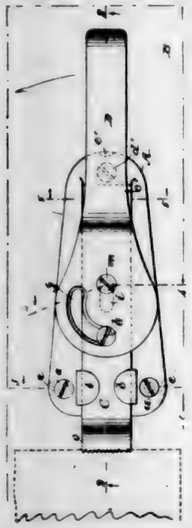


504,961.



chamber or passage, the lower chambers of said passages being connected by an opening with the upper part of separate rooms in the stories below the rooms to which said upper chambers are connected and forming supply-passages for said rooms in the stories below entirely separated from the discharge-passages of the same rooms, whereby the air of all rooms is supplied by the lower chambers of said passages 17 but is discharged from said rooms by way of upper chambers thereof which are out of alignment with said lower chambers through which the same air was delivered to the rooms, said upper and lower chambers having like cross-sectional area to provide both a free supply and discharge of air for each room, and liquid-circulating heat-radiating pipes located a pair in each passage of said flue, and extending from end to end thereof through said partitions and connected at their lower ends with said boiler of said furnace, substantially as and for the purpose specified.

## 504,962. BENCH-DOG. CHARLES L. BRONK, New York, N. Y. Filed May 2, 1893. Serial No. 472,742. (No model.)



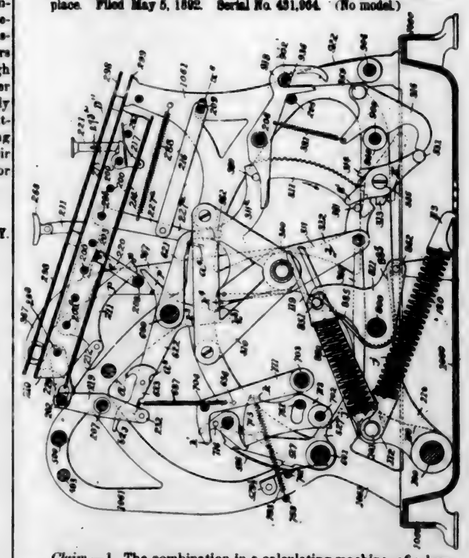
*Claim.*—1. A bench dog, comprising a bottom plate, a longitudinally slidable locking dog thereon, a vibratile cam curved slotted lever, a bolt loosely engaging this slot and secured to the dog, and a stud loosely engaging the perforation of the lever passing through a longitudinal slot in the dog, and fast in the bottom plate, substantially as described.

2. A bench dog, comprising an elongated bottom plate perforated to receive screws, and having depending toes at the edges, two spaced and raised ears near the front on the bottom plate, a longitudinally slidable locking dog loosely engaging the ears and passing below a raised flange at the rear of the bottom plate, a lever having a curved cam slot and loosely secured above the locking dog, a pivotal connection between the dog and cam lever, and a fulcrum bolt fast in the bottom plate and loose in the dog and lever, substantially as described.

3. The combination, with a bottom plate adapted for attachment by screws upon a bench top, two spaced overhanging and opposite ears on the bottom plate near one end, and a raised flange near the opposite end of said plate above an aperture therein, of a locking dog serrated at one end, slidable between the ears and passing down through the aperture below the flange, and a cam lever curve slotted near one end, pivoted through said slot to the locking dog, and pivoted eccentrically to the curved slot by a headed screw bolt that passes loosely through the cam lever and through a longitudinal slot in the dog into a threaded hole in the bottom plate, substantially as described.

4. The combination, with a bottom plate securable to a bench top, and a raised flange near one end of said plate over an aperture therein, of a slidable locking dog bent at one end to pass down through the aperture and loosely engage with the flange, and a curve slotted cam lever pivoted on the bottom plate through a slot in the dog and loosely secured to the dog by a stud that engages the cam curved slot of the lever, substantially as described.

## 504,963. CALCULATING-MACHINE. WILLIAM S. BURROUGHS, St. Louis, Mo., assignor to the American Arithmometer Company, same place. Filed May 5, 1892. Serial No. 431,964. (No model.)



*Claim.*—1. The combination in a calculating machine, of a key-plate, a number of series of vertically movable keys extending through said plate and arranged side by side, each key having a slot, and cross-rods extending beneath the plate and passing through the slots of the keys which lie in the same transverse line, substantially as described.

2. The combination of the operating keys, the stops operated thereby, the crank-levers 217, upon which the keys rest, and which are connected with the stops, side bearings for said levers, and springs bearing against the levers and pressing them frictionally against the said bearings, substantially as described.

3. The combination of the series of levers B, and a rack connected to each lever to move longitudinally independent of said lever to a limited extent, and connecting springs to lift the racks with re-

spect to said levers when the latter have been brought to the limit of their upward movement, substantially as described.

4. The combination of the levers B, racks movably connected therewith, to slide independently thereof to a slight extent a series of pinions 916, a cam carried by each pinion, a detent as 412 arranged to make contact with a stop as 631 upon each rack, and intermediate devices between the cams and the detents for moving each detent as the pinion gearing with the adjacent rack completes a revolution, substantially as set forth.

5. The combination with the levers B, a rack movably connected with each lever and provided with a stop, a detent bearing against said stop, a striker arranged to operate said detent, and pinions, each provided with a cam and a movable lever 413 having a bearing for the striker and another for the cam, substantially as set forth.

6. The combination of the series of strikers, a series of levers arranged to make contact with bearings upon the strikers, means for shifting the levers to release the strikers and a cross-bar 902, and independent means carrying said cross-bar for swinging the latter to carry back all of the strikers, substantially as set forth.

7. The combination with the series of keys, and with the series of bars 214 operated thereby, of a movable locking bar 203 and contact pieces upon the bars 214, substantially as set forth.

8. The combination in a calculating machine, of the keys and stops connected to be set thereby an operating handle and devices connected therewith for operating the different parts of the machine, a locking bar for locking the keys in their different positions, and connections between the locking bar and the operating handle for shifting the bar to lock the keys as the handle begins its movement, substantially as set forth.

9. The combination with the series of keys, the series of levers 217 and slide bars 214, and the bearings for said levers, of a cross-bar 203, and means for automatically swinging said cross-bar to bring the same against said slide bars, substantially as set forth.

10. The combination with the keys, registering mechanism, intervening connections, and an operating handle, of a main shaft carrying the main actuating devices of the machine and a handle rock-shaft connected with the main shaft and intervening connections between the main shaft and handle rock-shaft, substantially as set forth.

11. The combination of the handle rock shaft 300 connected with the operating handle, and parallel main shaft 800, of an arm connected with a handle shaft and a yielding connection between the arm and the main shaft, substantially as described.

12. The combination of the parallel shafts 300 and 800 provided with arms and with a shaft 100 provided with arms, of reciprocating connections between the arms of the shafts 300 and 100 and a spring 880 connecting the arms of the shafts 100 and 800, substantially as set forth.

13. The combination of the shafts 100 and 800, of a lever 811 having a stud, a forked rod embracing said stud and an arm upon the shaft 100 connected with said rod, substantially as set forth.

14. The combination with the shaft 800 and lever 811 of a stud connected movably with said lever, a spring buffer bearing upon the stud and a forked rod 119 receiving said stud, substantially as set forth.

15. The combination of the shafts 300 and 100, the main shaft 800, and intermediate yielding reciprocating connections, and a dash-pot and an arm connected with said shaft 800, and with the dash-pot, substantially as described.

16. The combination of the shafts 300 and 100, the main shaft 800, and intermediate yielding connections between said shafts, and a dash pot an arm connected with said shaft 800 and with the dash-pot, the said dash-pot being constructed of the main cylinder having a side chamber, and provided with a diaphragm having a valve, and upper and lower openings leading from the main cylinder into the side chamber, substantially as described.

17. The combination with the operating shaft connected with the handle the parts moved thereby and springs 180 for effecting the return movement of said parts, of a catch lever 527 and an arm connected with said springs arranged to engage with said catch lever and connections between the said catch lever and an operating part of the machine for releasing said catch lever as said part reaches the limit of its movement, substantially as set forth.

18. The combination with the arm 116, catch lever 527, and shaft 800, of a catch 714, striker plate 713, and connections between the catch 714 and the shaft 800 arranged to swing the said catch as the shaft terminates its movement, substantially as set forth.

19. The combination with the arm 116, connected with the springs for imparting the return movements of the parts of a calculating machine, of a catch lever 527 and a striker plate, as 713 for operating said catch and means for releasing the said striker plate, substantially as described.

20. The combination with the lifter frame I, of the series of rack levers B, and operating handle connected with the shaft 300, a main shaft 800, and yielding connections between the shafts 300 and 800 and connections between the shaft 800 and the lifter frame, substantially as set forth.

21. The combination of the lifter frame I, the shaft 800, the toggle-levers 816, 817, the lever 815 carrying the pin 839, and the slotted connecting rod 824, the slot of which receives a pin on lever 816, and the spring 884, substantially as set forth.

22. The combination with the strikers 411, the means by which the same are actuated, and the vibrating curved rack 311, of the cross-bar 902, supported intermediate of said strikers, and actuating devices, cam-lever 918, for moving said cross-bar, a spring for moving the cam-lever in one direction and a stud upon the rack to make contact with said lever to move it in the opposite direction, substantially as described.

23. The combination with the frame carrying the pinions 916, of a vibrating lever, a connecting rod and means for shifting the connecting rod to bearings upon opposite sides of the pivot of said frame, substantially as set forth.

24. The combination with the frame C and pinions 916 carried thereby, a connecting rod and means for shifting the same, to bearings on opposite sides of the pivot of the frame lever 913 to which the connecting rod is pivoted, and a shaft carrying an arm provided with a reversible pawl arranged to engage bearings upon the lever 913, substantially as set forth.

25. The combination with the lever 913, frame C, forked connecting rod having notches for engaging studs upon opposite sides of the pivot of said frame and pendent link 911, connected movably to the connecting rod and means for setting the link in position substantially as set forth.

26. The combination of the frame C, and the pinions carried thereby, the forked connecting rod, key 265, lever 227, and means connecting said lever and forked connecting rod, substantially as described.

27. The combination with the frame C, key 265 and intermediate connections, the racks and retainers 415 for the racks, and cross bar 209 contacting with the retainers and connected to be operated by said key, substantially as set forth.

28. The combination of the lever 227 and lever 227', the locking arm 621, therefor and the rack frame 311 carrying a stud for making contact with said arm, to lift the same substantially as and for the purpose set forth.

29. The combination with the series of pinions 916, of retainers for holding the same while out of gear, and means for swinging the retainers to engage the pinions as the latter are swung in either direction, substantially as set forth.

30. The combination with the series of pinions 916, carried by a frame, a series of teeth carried by arms or levers pivoted to the shaft of said frame, a lever 917, for operating the frame, and having a beveled end engaging a beveled edge upon said frame, substantially as set forth.

31. The combination with the frame C, and its operating devices, a spring-controlled lever 917 engaging the frame when at the limit of its movement in either direction, and an automatic locking device for holding said lever after the frame reaches either position, substantially as set forth.

32. The combination with the keys, the cross-bar 202, and connections for restoring the position of the keys, the key 265, and connections between said key and the cross-bar, substantially as set forth.

33. The combination with the bar 202, vibrating arms 219, supporting the same and one provided with a stud, the rock-shaft 600 supporting an arm and a spring pawl upon said arm arranged to engage said stud, substantially as set forth.

34. The combination with the main operating keys, the cross-bars 202, and connections for restoring the positions of the keys, of the key 265, the frame C, and its locking devices, and connections between such devices and said key 265, substantially as described.

35. The combination of the handle-lever formed or provided on its hub with teeth $r$, beveled on one side and provided with an abrupt shoulder on the other, said lever being provided with a slotted conical pintle, the shaft 300, having reverse teeth $r'$, and the spring actuated stud provided with a lip for entering the notch of the pintle, substantially as shown and for the purpose described.

36. The combination with a series of keys and parts shifted thereby, and lugs arranged upon said parts, of a movable locking bar 203 arranged to occupy a position on either side of said lugs when at the limit of their different positions, substantially as set forth.

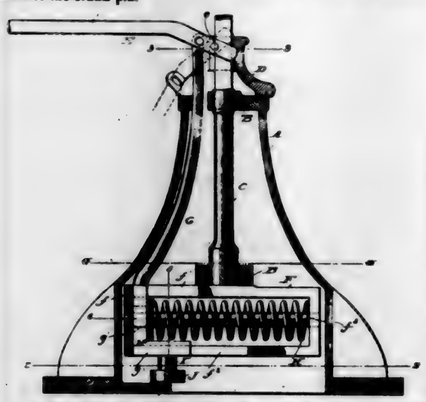
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**504,964. SWITCH-STAND.** ROBERT H. CANFIELD, Corning, N. Y. Filed Sept. 8, 1892. Serial No. 445,292. (No model.)

*Claim.*—1. In combination with a switch, an operating crank provided with a radially movable spring-supported crank-pin, whereby the switch is permitted to move while the crank is at rest.



2. In combination with a switch, a switch rod, an operating crank provided with a crank-pin movable toward and from the center and a spring rotating with the crank and tending to prevent said movement of the crank pin.



3. In combination with switch rails, a switch rod, an operating shaft having a radially movable crank pin, a spring carried by the shaft and tending to hold the crank pin outward, and means for turning and locking the shaft.

4. A switch operating crank having a radially movable crank-pin, a cam surface co-operating therewith to resist the rotation of the crank, and a spring acting to hold the crank-pin outward substantially as described; whereby the spring is caused to serve the double purpose of locking the crank and switch in different positions and of permitting the switch to move without rotation of the crank.

5. In a switch-stand, the combination of the upright lever constructed to be connected to the switch rails, the spring-carrying frame mounted to turn on a vertical axis, the horizontal spring sustained by said frame and acting on the upright lever, and the cam arranged to be engaged by said lever.

6. In a switch-stand, the combination of the upright vertically moving lever, the horizontal spring-carrying frame within which said lever moves, the vertical shaft sustaining said frame and movable around a longitudinal central axis, the horizontal spring sustained by the frame and acting on the lever, the cam adapted to be engaged by the lever and the switch-operating lever connected to the upper end of the same.

7. In a switch stand, the combination of the vertical lever, the horizontal revoluble spring-carrying frame within which the lever is adapted to move vertically and horizontally, the horizontal spring carried by the frame and acting on the lever, the recessed cam, the roller on the lever adapted to engage the cam and enter the recess, and the switch-operating lever connected to the upright lever.

8. In a switch stand, the combination of the upright vertically moving lever, the horizontal spring-carrying frame through which the lever extends and revoluble on a vertical axis, the horizontal rod mounted in said frame and extending through the lever, the spiral spring encircling said rod and acting on the lever, the roller on the lower end of the lever, the cam adapted to be engaged by the roller and the switch-operating lever pivoted to the upper end of the upright lever.

9. In a switch-stand, the combination with the vertically-moving lever and the frame within which the lever moves, of the spring carried by the frame and the washer interposed between the end of the spring and the lever and bearing on the frame; whereby the lever is relieved of the direct pressure of the spring.

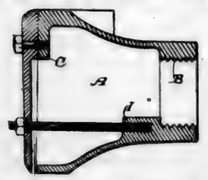
10. In a switch-stand, the combination of the spring-carrying frame, the vertical shaft sustaining the same and having a flattened portion, the pivoted operating lever having its end forked to receive the end of the shaft, the vertically-moving lever connected to the switch-operating lever, and the spring sustained by the frame.

11. In a switch-stand, of the type herein described, the combination of the spring carrying frame provided with the transverse and longitudinal slots, of the vertically movable lever having its lower end formed to fit within the transverse slot and the portion of the lever above the same formed to enter the longitudinal slot, and the spring sustained by the frame and acting on the lever; whereby the lateral motion of the lever with relation to the frame is permitted only when the lever is lowered.

12. In combination with the switch operating shaft, its yielding crank pin, and the spring, the shaft operating lever E, and the stand or frame with means for locking the lever thereto only in position to hold the switch for the main line.

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**504,965. SPRINKLER.** FRED E. CATON and FRANKLIN B. WARRING, San José, Cal. Filed June 1, 1893. Serial No. 476,269. (No model.)



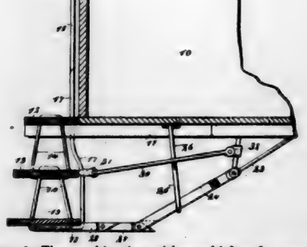
*Claim.*—1. A sprinkling nozzle consisting of a head having an inwardly turned flange, a flat removable disk, said disk having a thickened section for a portion of the circumference bolts inserted through said thickened portion and the inwardly turned flange to secure the disk to the nozzle whereby an open slot is left around the remainder of the circumference between the disk and the end of the nozzle, substantially as herein described.

2. A sprinkler consisting of a nozzle having one end adapted to be secured to a supply pipe, a yielding elastic disk fitting over the end of the nozzle and bolted through the thickened portion at one side, so that an open channel is formed between the disk and the end of the nozzle around the remaining portion of the circumference, a bolt passing through the unsupported edge of the disk having its inner end screw-threaded and fitting corresponding threads in the nozzle whereby the unsupported edge of the disk may be adjusted with relation to the end of the nozzle, substantially as herein described.

3. A sprinkler consisting of a nozzle having one end adapted to be secured to a supply pipe, a disk removably secured at one side and extending across the end of the nozzle at right angles with its longitudinal axis so as to form a segmental open slot around a portion of its periphery, and an insertible segment fitting a portion of the circumference of the slot, and forming a guide to divert the discharge stream, substantially as herein described.

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**504,966. FOLDING STEP.** HENRY J. CLINER, Anna, Ill. Filed Apr. 29, 1893. Serial No. 472,370. (No model.)



*Claim.*—1. The combination with a vehicle, of steps suspended by pliant hangers, and means for holding the steps projected and prevent them from swinging, substantially as described.

2. The combination, with a vehicle, of a flight of steps suspended from the vehicle, the steps being connected by flexible hangers, and a lever mechanism for raising the steps and folding them together, substantially as described.

3. The combination, with a vehicle, of a fixed step secured thereto, vertically movable steps suspended one beneath the other from the fixed step, flexible hangers connecting the several steps, and a lever fulcrumed on the vehicle and having one end extending beneath the lower step and adapted to swing upward, substantially as described.

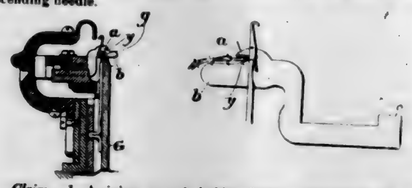
4. The combination, with the vehicle, of a flight of steps suspended therefrom and connected together by flexible hangers, a lever for lifting the steps one against the other, and swinging guide arms pivoted beneath the vehicle and pivotally connected with the movable steps, substantially as described.

5. The combination, with the vertically movable steps connected together by flexible hangers, of the movable guide arms pivoted adjacent to the steps and pivotally connected with the steps, and a support and guide for the arms, substantially as described.

6. The combination, with the vehicle body, of the steps suspended by flexible hangers therefrom and arranged one above the other, a lever for lifting the steps, a bracket secured to the under side of the vehicle, a swinging guide arm pivoted to the bracket and pivotally connected to the lower step, a second guide arm pivoted to the bracket and to the next step above, and a depending support secured to the vehicle and having a link to receive the lower guide arm, substantially as described.

**504,967. SINKER OR WEB-HOLDER FOR KNITTING-MACHINES.** STEPHEN S. COOK, Philadelphia, Pa., assignor to the Branson Machine Company, same place. Filed Apr. 27, 1893. Serial No. 472,008. (No model.)

*Brief.*—The inclined portion is intended to secure the disposition rearward of the needle of the stitches as they are produced, obviating the liability of the stitches being re-engaged by the hook of the ascending needle.

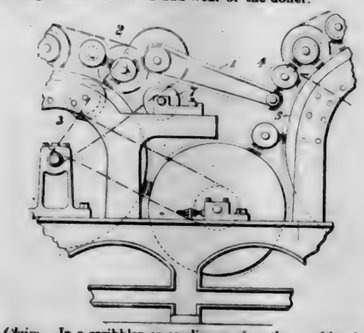


*Claim.*—1. A sinker or web holder device constructed with a cam-engaging portion, an overhanging hook or web engaging portion, a tail or web-supporting portion, and an incline or stitch-raising portion, rising rearward of the point upon which the wale is supported during the formation of a stitch, substantially as described.

2. The combination with a needle cylinder and needle, of a sinker or web holder provided with a tail or finger having a wale supporting portion and an inclined or raising portion, the supporting portion being in line with the top of the cylinder and the raising portion being extended above the same, substantially as described.

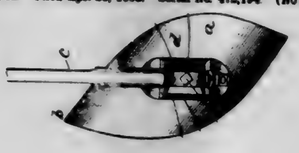
**504,968. CARDING-ENGINE.** ERNEST CROWTHER and WILLIAM H. CROWTHER, Pudsey, England. Filed Mar. 13, 1893. Serial No. 465,743. (No model.)

*Brief.*—A traveling belt 1 is employed, which removes the greater part of the fiber from the last worker of one of the carding-engines and transfers it to the first worker of the following engine, thus saving a large amount of work and wear of the doffer.



*Claim.*—In a scribbler or carding engine, the combination with a plurality of swifts or cylinders, of workers and fancy rollers adjacent to each swift or cylinder, a stripping roller adjacent to the last worker of each swift, and an endless belt removing the fiber from each stripping roller and delivering it over the fancy rollers to the first worker of the succeeding cylinder, substantially as described.

**504,969. CULTIVATOR-BLADE.** BENJAMIN F. DARBY, Clay's Prairie, Ill. Filed Apr. 28, 1893. Serial No. 472,194. (No model.)



*Claim.*—1. The herein described reversible concavo-convex cultivator shovel formed of an elliptical plate twisted so that its similar opposite points are curved to project in opposite directions as shown and described, and fastening means located on the outer side of the shovel, as set forth.

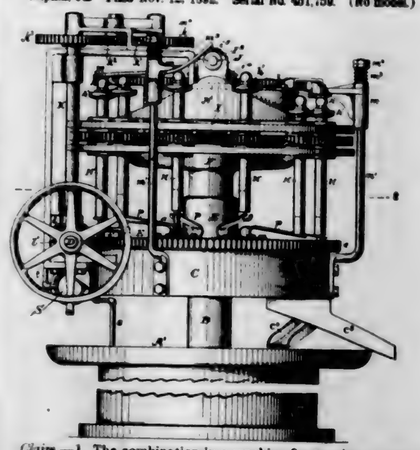
2. The reversible cultivator shovel having the opposite points and the fastening plate centrally located on its rear side having a longitudinal socket extending through the plate, clamping means for securing the shank in said socket, said plate also having the rounded sides on opposite sides of said socket provided with openings to receive T shaped clamping bolts as and for the purposes set forth.

**504,970. SPRING SHADE-ROLLER.** ALEXANDER E. DENNIS, Newark, N. J., assignor, by mesne assignments, to the Meriden Curtain Fixture Company, of Connecticut. Filed Aug. 25, 1892. Serial No. 444,099. (No model.)



*Claim.*—In combination with the usual roller; the actuating spring; and the step, an automatically acting device for effecting an engagement between the step and the roller, composed of a toothed, or ratchet-like, device, permanently secured in the bottom of the bore of the roller, and a toothed device fastened to the adjacent end of the step; the whole constructed, arranged, and operating together, in substantially the manner and for the purpose hereinbefore described.

**504,971. NUT-TAPPING MACHINE.** THOMAS S. DENTON, Philadelphia, Pa. Filed Nov. 12, 1892. Serial No. 451,759. (No model.)



*Claim.*—1. The combination in a machine for tapping or reaming nuts, of the central standard upon which the mechanism is carried, the table fixedly mounted on said standard, the tap carrying frame sleeved upon said standard, the nut carrier sleeved upon and secured to said tap carrying frame, with mechanism for revolving the frame and carrier around the standard, and mechanism for revolving each spindle around its own axis, and with mechanism for feeding the taps into the blanks as they are traversed, substantially as described.

2. The combination of the central standard, the table fixed on said standard, a feed shaft mounted on said table, a worm on said feed shaft, a nut carrier, adapted to revolve around the standard, teeth on said carrier with which the worm engages, the carrier having sockets adapted to receive the nut blanks, the spindle supporting frame sleeved on the standard, and adapted to travel around said standard, said carrier being sleeved upon and secured to the said frame so as to travel therewith, wheels G, mounted on said frame, spindles mounted in said wheels and carrying taps, a driving shaft and intervening gearing between the shaft and the wheels G by which the several spindles are turned as they are traversed around the standard, substantially as described.

3. The combination in a machine for tapping or reaming nuts, of a central standard upon which the mechanism is carried, the table fixedly mounted on said standard the carrier for the nuts, a tap-carrying frame, and spindles carried by said frame and adapted to receive taps, with the mechanism for revolving the frame and carrier around the standard, the mechanism for revolving the spindles, and the platform having a slot enlarged at one end, through which the nuts and taps are discharged, substantially as described.

4. The combination of the standard B, the table C, the slotted platform $C^3$, the nut carrier E, sockets therein for receiving the nut blanks to be tapped, spindle carrying frame mounted on the standard and secured to the nut carrier, mechanism for revolving the nut-carrier and spindle carrying frame, the tap spindles, wheels in which the spindles are so mounted as to turn with the wheels and slide therein, and a gear wheel having external teeth engaging with the several spindle wheels, and internal teeth engaging with the driving gear, substantially as described.

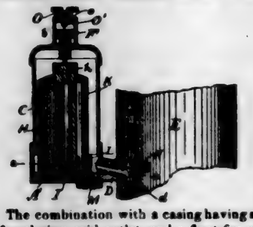
5. The combination in a nut tapping machine, of the nut carrier, the platform thereunder for supporting the nuts, the tap carrying spindles, a carrier therefor traveling with the nut carrier, the mechanism for revolving the nut and tap carriers around a common axis, and the mechanism for revolving the spindles around their own axes, with an inclined plane or cam for depressing the spindles, and cushions above said cam, substantially as described.

6. The combination of the table, the platform slotted to receive the taps, and adapted to support the nuts, the tap carrying frame and the nut carrier secured thereto and mounted upon the central standard, the mechanism for revolving the tap and nut carriers around the standard, the mechanism for revolving the spindles, and the devices for feeding the taps into the nuts independent of the nuts themselves, with the cam for raising the tap carriers, substantially as described.

7. The combination of the nut carrier and tap carrier, moving in unison, with a yielding guide *p* mounted under the tap carrier to steady the taps so that the carrier can pass over and engage with the taps, substantially as described.

8. The combination in a nut tapping machine, of the taps and carrier therefor and nut carrier, with an oil discharge pipe situated so as to oil the taps, a feed pump attached to the side of said machine, a reservoir in the base of the machine and a float carried by the suction pipe and operating a valve to control the flow of oil to the pump, substantially as described.

**504,972. AIR-VALVE FOR RADIATORS.** GEORGE E. DIXON, Chicago, Ill. Filed Mar. 1, 1892. Serial No. 423,395. (No model.)



*Claim.*—1. The combination with a casing having an inlet and an outlet, a valve for closing said outlet, and a float for operating said valve, of a baffle-plate situated directly opposite the inlet and extending downward below it so as to intercept all of the air and steam entering through said inlet and prevent any of it from striking directly against the bottom of the float, substantially as set forth.

2. The combination with a casing having an inlet and an outlet, of a valve for closing said outlet, a float for operating said valve and a baffle plate interposed between the inlet and float and having its lower edge sealed, substantially as set forth.

3. The combination with a casing having an inlet and an outlet, of a valve for closing said outlet, mechanism for operating said valve, and a baffle plate interposed between said mechanism and the inlet, said casing having a well into which the lower edge of the baffle plate projects, substantially as set forth.

4. The combination with a casing having an inlet and an outlet, of a valve for closing said outlet, a post of solid expansive material, suitably connected with said valve, said post being free to move up and down within the casing, and a float surrounding said post and adapted to lift said valve when floated, said float having a chamber surrounding the post, and the post and float being so related that as the float is lifted by water rising up in the casing it lifts the post and when the water escapes the weight of the post assists in depressing the float and valve, substantially as set forth.

5. The combination with a casing having an inlet and an outlet, of a valve for closing said outlet, a solid expansive member suitably connected with said valve, a float connected with said expansive member so as to lift it when floated, and a support independent of the float upon which the expansive member rests, whereby the float is relieved of the pressure resulting from the expansion of said member, substantially as set forth.



6. The combination with a casing having an inlet and an outlet, of a valve for closing said outlet, a post of solid expansive material suitably connected with said valve, said post being free to move up and down within the casing, a float surrounding and connected to said post, so as to lift it when floated, said float having a chamber which surrounds the post, substantially as set forth.

7. The combination with a casing having an inlet and an outlet, and a valve for closing said outlet, of a post of solid expansive material suitably connected with said valve, said post being free to move up and down within the casing, and a float consisting of an inverted cup surrounding the post, so as to leave a chamber between the post and the outer side of the float, said post and float being so related that as the float is lifted by water rising up in the casing it lifts the post, and when the water escapes the weight of the post assists in depressing the valve and float, substantially as set forth.

8. The combination with a casing having an inlet and an outlet, and a valve for closing said outlet, of a post of expansive material suitably connected with said valve, said post being free to move up and down within the casing, a float connected to said post so as to lift it when water enters the casing, and a socket in which the lower end of said post fits loosely whereby it is guided in its movement and held against lateral displacement, substantially as set forth.

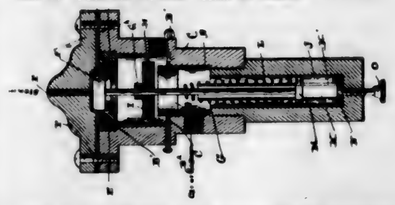
9. The combination with a casing having an inlet and an outlet, of a valve for closing said outlet, a post of expansive material suitably connected with said valve, said post being hollow and open at top and bottom, and means substantially as described for closing the lower end of the post against the admission of air or steam while permitting the escape of water, substantially as set forth.

10. The combination with a casing having an inlet and an outlet, and a valve for closing said outlet, of a post of expansive material suitably connected with said valve, said post being hollow and open at both top and bottom, and a water seal covering the entrance to the lower end of said post, substantially as set forth.

11. The combination with a casing having an inlet and an outlet, and a valve for closing said outlet, of a post of expansive material suitably connected with said valve, said post being open at top and bottom, and an annular flange extending upward from the bottom of the casing and embracing the lower end of said post, said flange having side openings for the escape of water, and a water seal closing said openings, substantially as set forth.

12. The combination with a radiator, of a vent valve therefor, having a hollow stem D screwed into the radiator, and a flange projecting from the end of said stem into the radiator, said flange being located over the duct substantially as set forth.

**504,973. FLUID-PRESSURE REGULATOR.** EVAN EVANS, Chicora, Pa. Filed Dec. 21, 1892. Serial No. 455,900. (No model.)



*Claim.*—1. An improved fluid pressure regulator comprising an inlet and an outlet chamber, a rod movable vertically therein, a valve on the rod between the chambers, a tube through which the lower end of the rod extends, a spring coiled about the tube to which it is secured, a connection between the lower ends of the rod and spring whereby the former is held normally in an elevated position, and a means for applying steam pressure to the upper end of the rod, substantially as shown and described.

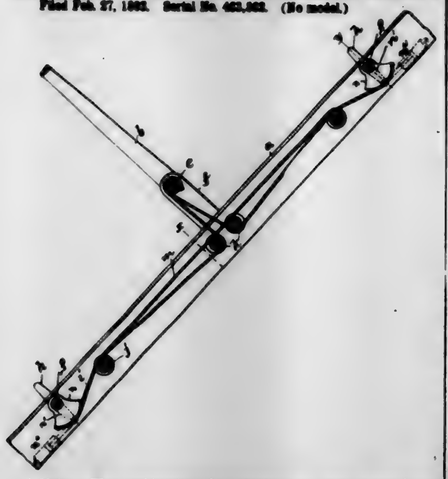
2. A fluid pressure regulator comprising an inlet and an outlet chamber, a rod extending therethrough, a valve on said rod arranged between the chambers, a tube slotted transversely at its lower end and through which tube the said rod extends, a spiral spring surrounding the said tube to which it is secured at its upper end, a transverse bar extending through the slots of the tube and to which the lower end of the spring is secured, and a means for applying steam pressure to the upper end of the rod, substantially as shown and described.

3. A fluid pressure regulator comprising an inlet and an outlet chamber, a vertically movable spring actuated rod extending therethrough, a valve on said rod arranged between the chambers, a removable countersunk gasket at the upper end of the outlet chamber, a pressure plate on the upper end of the rod for which the said gasket forms a seat, a removable cap for the regulator having a steam connection, and a flexible diaphragm between the cap and said pressure plate, substantially as shown and described.

4. A fluid pressure regulator having an inlet and a discharge chamber, a vertically movable rod, a valve between its ends for closing the passage between the chambers, a means for applying steam pressure to the upper end of the rod, a slotted tube through which the rod extends, a spring coiled about the tube and made spiral at its upper end above the tube, and a bar extending transversely through the slotted tube to which the spring is secured and upon which the rod bears, substantially as shown and described.

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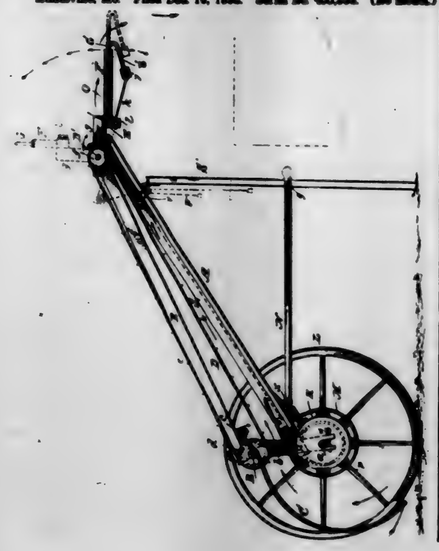
**504,974. RAILROAD-GATE.** JAMES H. FITZGERALD, Winston, N. C. Filed Feb. 27, 1893. Serial No. 463,962. (No model.)



*Claim.*—The combination of a swinging mast gate mounted on a shaft having a drum, a support therefor, transverse rock shafts beneath the track on opposite sides of said gate having upwardly projecting arms beside the rails and rigid depending segments, the flexible connections secured on said segments and extending along the track to said drum, as set forth, the pulleys for said connections, the downwardly extending arms from said rock shaft, and dash pots connected therewith to operate as set forth.

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**504,975. HAY RAKE AND LOADER.** CLIFFORD A. FLEMING, Huntsville, Mo. Filed Dec. 16, 1892. Serial No. 455,338. (No model.)

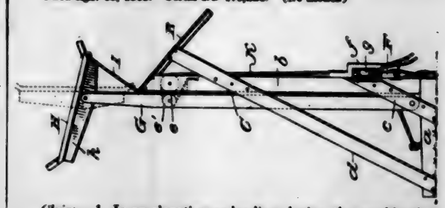


*Claim.*—1. In a combined hay-rake and loader, the combination with a suitable frame and rake-teeth, of a supplemental frame pivoted to the front end of the main frame and consisting of tubular guides and extensible rods, and means for operating them substantially as and for the purpose specified.

2. In a hay-rake and loader, the combination with a suitable frame and rake-teeth, of a supplemental frame consisting of tubular guides and extensible rods extending into the guides and having their front ends hooked, and a cord connected thereto and an adjustable stop on the cord, substantially as and for the purpose set forth.

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**504,976. LOADING DEVICE.** CHARLES M. FURGASON, Otto, Iowa. Filed Apr. 13, 1893. Serial No. 470,220. (No model.)

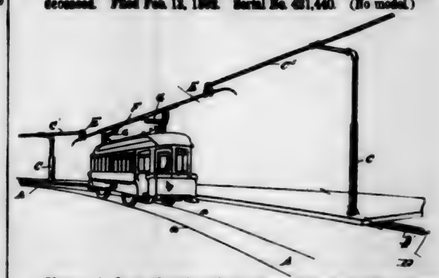


*Claim.*—1. In an elevating or loading device, the combination, of a frame constructed substantially as shown, arms pivoted to said frame and carrying at their free ends a pivoted platform, hoisting and lowering ropes attached to the frame and extending therefrom to and around pulleys journaled in the outer ends of the pivoted arms and from there around pulleys supported by the uprights of the main frame to a suitable draft attachment, together with ropes or flexible connections attached at one end to the pivoted platform and at the other to the main frame and adapted to be moved against the main frame to tilt the pivoted platform, for the purpose set forth.

2. In an elevating or loading device, the combination, of a frame constructed substantially as shown, arms pivoted to said frame and carrying at their outer ends a pivoted platform, hoisting and lowering ropes attached to the pivoted arms and extending to suitable draft mechanism, ropes or flexible connections attached at one end to the pivoted platform and at the other to a stationary part of the main frame and adapted to strike against a part of the main frame to tilt the pivoted platform, and a spring or springs secured to the main frame and adapted to operate against the pivoted bars, substantially as shown, and for the purpose set forth.

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**504,977. SUPPLY SYSTEM FOR ELECTRIC RAILWAYS.** GEORGE F. GREEN, Kalamazoo, Mich., assignor of one-half to Oliver S. Kelly, Springfield, Ohio; Martha L. Green executrix of said George F. Green, deceased. Filed Feb. 13, 1892. Serial No. 421,440. (No model.)



*Claim.*—1. In an electric railway, the combination with a source of supply and with a moving car, of stationary contact devices located at intervals along the line of railway and constantly in electrical connection with the source of supply, a contacting conductor on the car adapted to successively contact with said stationary devices, electromagnets for magnetizing said conductor, and a switch for cutting said magnets out of circuit, substantially as described.

2. In an electric railway the combination with a source of supply and a moving car, of stationary contact devices connected electrically with the source of supply, and located at intervals along the line of railway, and a contacting conductor on the car, provided with adjustable arms, and means for extending and contracting the length of said conductor, substantially as described.

3. The combination with a source of supply, a moving car, and stationary contact points located at intervals along the line of the railway, of a contacting conductor carried by the car, means for magnetizing said conductor, and means for varying the length thereof, substantially as described.

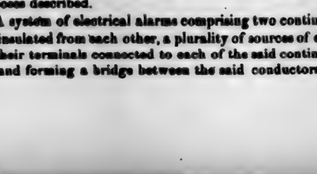
4. The combination with the source of supply, of a moving car, stationary contacts located at intervals along the railway, a contacting conductor carried by the car and consisting of sections pivotally secured together at their adjacent ends and sliding in pivoted bearings at their opposite ends, and means under control of the operator for adjusting said sections laterally, substantially as described.

5. The combination with the source of supply, of a moving car; stationary contacts located at intervals along the line of the railway; a contacting conductor on the car; means for adjusting said conductor longitudinally and means for effecting lateral movements thereof, substantially as described.

6. The combination with the source of supply, the moving car and the stationary contact points, of a conductor carried by the car and provided with telescoping arms; and cords and pulleys for adjusting said arms, substantially as described.

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**504,978. SASH-HOLDER.** JOHN H. GRINWOLD, Oakland, Cal. Filed Apr. 26, 1893. Serial No. 471,996. (No model.)



*Claim.*—In combination with the lower and upper window sashes, the plate A secured to the top of the lower sash and having the angled arm forming a bearing-piece opposite to and separated from the stile of the upper sash by a space increasing in width upwardly, the roller fitted in said space and having a diameter greater than the width of the lower portion of the space and less than its upper portion, and a swinging lever plate engaging the roller and adapted to lift it to and support it in the wider portion of said space, said lever plate being fulcrumed on plate A, with a finger-piece on one end, and a forked opposite end embracing the angled arm of plate A and formed with curved extremities to receive and journal the ends of the roller, substantially as herein described.

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**504,979. COMB.** HENRY G. GUILD, New York, N. Y. Filed Feb. 3, 1893. Serial No. 460,894. (No model.)



*Claim.*—An all-metal comb, constructed of a thin sheet metal channel-piece, a strengthening piece inclosed within said channel-piece, teeth arranged between the lips or edges of said channel-piece, and a binding metal run in around said teeth and strengthening piece, whereby a lighter channel-piece and less binding metal may be used for making a cheap, light and strong all-metal comb, substantially as described.

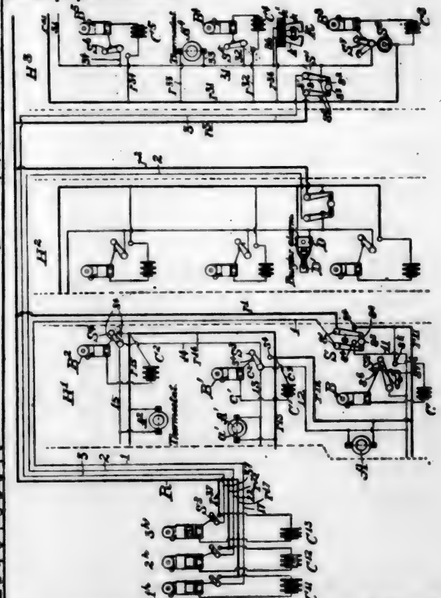
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**504,980. ELECTRICAL ALARM SYSTEM.** CHARLES K. HALL and WILLIAM B. LELLARD, New Orleans, La. Filed Nov. 2, 1892. Serial No. 450,776. (No model.)

*Claim.*—1. A system of electrical fire alarms comprising two continuous conductors insulated from each other, a plurality of sources of electricity having their terminals connected to each of the said continuous conductors, and forming a bridge between the said conductors, an electrically operated signaling device placed in each of the said bridges, and a thermostat for electrically connecting said conductors, and so operating all of said signaling devices, substantially as and for the purposes described.

2. A system of electrical burglar alarms comprising two continuous conductors insulated from each other, a plurality of sources of electricity having their terminals connected to each of the said continuous conductors, and forming a bridge between the said conductors, an electrically operated signaling device placed in each of the said bridges, a contact making device attached near and operated by an opening door or window for electrically connecting said conductors, and so operating all of said signaling devices, substantially as and for the purposes described.

3. A system of electrical alarms comprising two continuous conductors insulated from each other, a plurality of sources of electricity having their terminals connected to each of the said continuous conductors and forming a bridge between the said conductors, an electrically operated signaling device placed in each of the said bridges, and thermostats and contact making devices for sounding burglar alarms placed between the said conductors and adapted to make electrical connection between the said conductors, substantially as and for the purposes described.

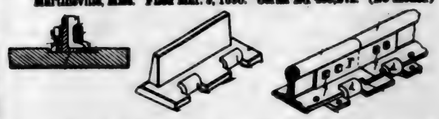


4. A system of electrical alarms comprising two continuous conductors insulated from each other, a plurality of sources of electricity having their terminals connected to each of the said continuous conductors, and forming a bridge between the said conductors, an electrically operated signaling device placed in each of the said bridges, a switch adapted to cut out one of said signaling devices and at the same time to electrically connect said continuous conductors, and an adjustable contact piece adapted to engage said switch and so put back into electrical connection said signaling device so cut out, if desired, substantially as and for the purposes described.

5. In an apparatus of the character described, the combination with two continuous conductors insulated from each other and bridged by wires leading from the terminals of a source of electricity, with electrically operated signals contained in the said bridges, of the switch $S^3$ forming part of one of said bridges and connected to one of said continuous conductors, the contact piece $c^4$ with which said switch is in contact when said bridge is closed, the contact piece $c^5$ electrically connected to the other of said continuous conductors and adapted to be in contact with said switch when said bridge is open, and the adjustable contact piece $c^6$ electrically connected to said contact piece $c^4$, and adapted to be thrown into or out of connection with said switch when it is in contact with the contact piece $c^5$, substantially as and for the purposes described.

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**504,981. JOINT FOR RAILWAY-RAILS.** FREDERICK HERMAN, Martinsville, Miss. Filed Mar. 9, 1893. Serial No. 465,272. (No model.)



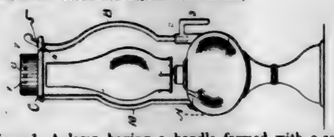
*Claim.*—1. In a railway rail joint, the combination with the rail sections cut away at the outer side at the base and tread, of the joint plate underlying the joint and seated in said cut away portions of the rail sections, and having its upper edge flush with the surface of the tread of said sections, the bottom plate integral with said joint plate and forming a seat for the joint portions of said rail sections, projections on the under surface of the said bottom plate adapted to engage the ties in addition to the usual spikes or bolts, tongues on the inner portion of said bottom plate bent into engagement with cut away

portions in the base of the rail sections, the inner fish plate bolted to the rail sections and to the joint plate, and means for locking the nuts of said bolts, substantially as specified.

2. In a railway rail joint, the combination with the rail sections cut-away at the outer side at the base and tread, to receive the joint plate, of the joint plate seated in said cut-away portions and having its upper edge flush with the surface of the tread, the bottom plate integral therewith, the notches or cut-away portions in the base of said sections at their inner sides, and the tongues on said bottom plate bent into engagement with said notches, and of a less width than the length of said notches, substantially as specified.

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**504,982. HEATING-LAMP.** JOHN HOUSE, Crinfield, Md. Filed Aug. 6, 1893. Serial No. 482,345. (No model.)



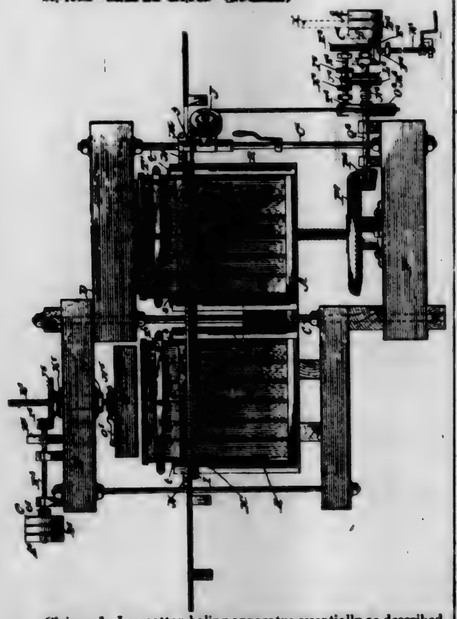
*Claim.*—1. A lamp having a handle formed with a socket, a standard detachably fitted in the socket of the handle, and a plate secured to the top of the standard to set horizontally over and above the chimney of the lamp.

2. A lamp having a handle formed with a socket and a depending pin on the handle to engage a socket in a support, a standard detachably fitted in the socket of the handle, and a plate having a central opening and arranged to lie horizontally over and above the top of the chimney, substantially as described.

3. A lamp having a handle formed with a socket, a standard detachably fitted in the socket, a plate secured to the top of the standard to rest horizontally over and above the chimney of the lamp, and a standard 10, opposite to the socketed standard having one end lodged on the lamp and the other under the plate, as specified.

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**504,983. COTTON-BALING APPARATUS.** EDMUND M. IVENS, New Orleans, La., assignor to Emily L. Ivens, same place. Filed June 28, 1892. Serial No. 438,340. (No model.)



*Claim.*—1. In a cotton baling apparatus essentially as described, in combination, a rotatable press box having dual compartments, a cross head under one of such compartments, a cross head over the other compartment, a presser mechanism, including a follower, adapted to drop by gravity at the first portion of its movement, and screw operated to finish its thrust, a second presser mechanism, including an accumulative presser platen adapted to engage the partially compressed cotton from below, after the press box has been turned, substantially as and for the purposes described.

2. In a cotton baling apparatus, in combination with the press box, a presser mechanism, including a gravity and screw operated follower, and shifting gear devices adapted to be set to engage the screw follower and move it to a final thrust by screw pressure, substantially as and for the purposes described.

3. In a cotton baling apparatus, in combination with the press box, a presser mechanism, including a screw operated follower, adapted to drop by gravity against the cotton, a locking device on such follower adapted when set to hold the follower from such gravity movement after it enters the press box substantially as and for the purposes described.

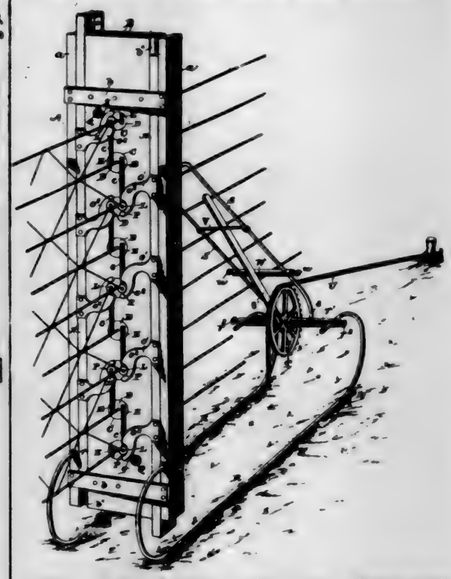
4. In a cotton baling apparatus, the combination with a cross head and a press box, of a screw operated follower, movable in such box against the cross head and constructed to fall by gravity when not locked to the feed screw, a locking device for locking it to such screw, and shifting gear mechanism meshing with the feed screw adapted to operate such screw shaft substantially as and for the purposes described.

5. In a cotton baling apparatus, the combination with the press box, the oppositely swinging doors and link fastenings secured at the edges of one door, of the pivoted sectors having lock lugs, secured to the other door, and means for operating such sectors in unison, substantially as and for the purpose described.

6. In a cotton baling apparatus, the combination with the press box doors and the link couplings secured to one of such doors, of the slotted sectors having rack faces and a transverse shaft journaled to the opposite door, such shaft projected through the slotted sectors and having squared ends, said sectors having lock lugs adapted to engage the link couplings and levers adapted to fit the ends of the shaft and having a pinion arranged to engage the rack face of the sectors, all substantially as and for the purposes described.

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**504,984. WIRE-FABRIC MACHINE.** ALVA L. KITSELMAN, Ridgeville, Ind. Filed Jan. 19, 1893. Serial No. 458,897. (No model.)



*Claim.*—1. In a wire fabric machine, a series of inter-geared twisters mounted for fixed rotation and having central perforations adapted to receive the warp wires and also parallel notches at each side of the central perforations adapted to be aligned with each other, and weft wire carriers mounted in the notches of said twisters and adapted to be shifted from one to the other when said notches are aligned, substantially as set forth.

2. In a wire fabric machine, a series of inter-geared twisters having separate parallel notches or slots adapted to align respectively with the corresponding notch or slot of the twister directly above and below, weft wire carriers registering in said notches of the twisters, and adapted to move in separate vertical planes and means for shifting said carriers, substantially as set forth.

3. In a wire fabric machine, the combination of a series of directly intercommunicating slotted twister wheels mounted for a fixed rotation and provided with cog flanges formed integrally on the periphery thereof, said cog flanges meshing with the flanges of the adjacent wheels and being interrupted at the slots, and shiftable single-arm weft wire carriers adapted to be carried in the slots of said twister wheels, and provided with weft wire guides, substantially as set forth.

4. In a wire fabric machine, the combination with a frame or casing having a series of bearing openings and a vertical series of slots connecting the same, and out of alignment with each other a series of twister wheels mounted in said bearings of the frame or casing and having separate parallel notches or vertical series of disconnected slots adapted to align with the slots connecting the bearings, weft wire carriers registering with the notches in the twisters, and shifting devices for said carriers, substantially as set forth.

5. In a wire fabric machine, the opposite adjacent frame boards or plates having an aligned series of circular bearing openings, and slots connecting such bearing openings, a series of shaftless twister wheels mounted for a fixed rotation between the frame boards or plates and provided with integral peripheral cog flanges meshing directly with the flanges of the adjacent wheels, the hub portions at both sides of said cog flanges being journaled in said circular bearing openings of the frame boards or plates, and weft wire carriers mounted in said twister wheels and adapted to be shifted from one to the other, substantially as set forth.

6. In a wire fabric machine, a series of sectional twisters comprising separate superposed halves having oppositely arranged notches or slots, and meeting cog flanges interrupted at said notches or slots, and weft wire carriers arranged to be carried in the notches or slots of the twisters and adapted to be shifted from one twister to another, substantially as set forth.

7. In a wire fabric machine, the sectional twisters comprising separate superposed halves having notches or slots and meeting cog flanges, the teeth of one flange being out of line with those of the other flange, the weft wire carriers adapted to be carried in the notches or slots of said twisters, and means for shifting the carriers, substantially as set forth.

8. In a wire fabric machine, a series of sectional twisters comprising separate superposed hollow sections provided with aligned oppositely disposed notches or slots, meeting cog flanges registering with the corresponding flanges of the adjacent twisters, said superposed sections also having at their meeting edges inter-locking notches and lugs, the shiftable weft wire carriers arranged in the notches of the twisters, and means for shifting the said carriers, substantially as set forth.

9. In a wire fabric machine, the frame having a series of connected bearing openings, a series of sectional twisters mounted in said bearing openings and having separate oppositely disposed and parallel notches or slots, meeting cog flanges interrupted at said notches or slots, and locking devices for holding the two sections together, shiftable weft wire carriers and guides registering with the notches or slots in said twisters, and means for shifting the carriers from twister to twister, said twisters being inter geared, substantially as set forth.

10. In a wire fabric machine, the combination of the opposite frame bearing boards provided with a series of circular bearing openings, intermediate slots connecting said openings with each other, and upper and lower filling slots, a series of inter-geared twisters, mounted for fixed rotation in said circular bearing openings and provided with central perforations to receive the warp wires, and separate oppositely disposed and parallel notches or slots adapted to align at the same time with the two slots leading from the bearing openings, combined weft wire carriers and guides mounted for rotation with the twister wheels, and means for shifting the carriers and guides above and below its twister at the same time, substantially as set forth.

11. In a wire fabric machine, opposite frame boards or plates having bearings and slots connecting the bearings, a series of twister wheels mounted for fixed rotation in said bearings and provided with oppositely disposed notches or slots adapted to align with those of the frame boards or plates, warp wire perforations, and inter-meshing peripheral cog flanges, one of said twister wheels being further provided with a supplemental bevel cog ring inside of the adjacent frame board or plate, a suitably arranged operating crank shaft, a pinion on said shaft projecting through a slot in one of the frame boards or plates and meshing with said bevel cog ring, and the shiftable weft wire carriers, substantially as set forth.

12. In a wire fabric machine, a series of inter-geared twisters mounted for fixed rotation and each having separate oppositely disposed and parallel notches or slots adapted to align with the corresponding notches or slots of the twisters above and below it, weft wire carrier arms provided with flattened wire guide ends registering with the notches or slots in said twister wheels, so as to be carried therewith, weft wire spools or bobbins mounted for rotation on one end of said arms, and means for shifting the arms through the aligned slots, substantially as set forth.

13. In a wire fabric machine, the combination with the inter-geared and inter-communicating notched or slotted twisters, of the shiftable combined weft wire carriers and guides, comprising a single arm having flattened shouldered ends adapted to fit in the notches of the twisters, the shoulders being disposed at both sides of the twisters perforated guide lugs at such shouldered ends to receive and guide the weft wire and a right-angularly disposed journal or spindle at the opposite end adapted to receive the spool or bobbin of weft wire, substantially as set forth.

14. In a wire-fabric machine, the combination with the frame, a series of inter-meshing and inter-communicating twisters mounted for fixed rotation in the frame, and weft wire carriers adapted to be arranged for movement with the twisters, of oppositely moving slides, and shifting plates attached to both sides of said slide on both sides of the frame and embracing the projecting ends of said weft wire carriers, substantially as set forth.

15. In a wire-fabric machine, the combination with the inter communicating twister wheels and the shiftable weft wire carriers, of the oppositely moving shifting slides carrying notched shifting plates embracing the projecting ends of the carriers and adapted to move the same from twister to twister, substantially as set forth.

16. In a wire fabric machine, the combination with the frame having opposite vertical guides or ways, a series of notched intermeshing and inter-communicating twisters mounted in the frame, weft wire carriers registering with the notches in the twisters and projecting beyond opposite sides of the same, oppositely moving slides arranged to work in said vertical guides or ways and having at their upper inner end rack bars meshing with opposite sides of a spur wheel at the upper end of the frame, one of said slides being provided with a second rack bar, a suitably arranged shifting lever carrying a toothed segment meshing with said second rack bar to operate the slides, and shifting plates secured to both sides of said slides and embracing the projecting ends of said weft wire carriers, substantially as set forth.

17. In a wire fabric machine, a series of notched inter-meshing and inter-communicating twister wheels, combined weft wire carrier and guides mounted in said wheels and adapted to be shifted from one to the other, oppositely moving shifting slides, and shifting plates attached to both sides of said slides and extended arms provided with notches adapted to embrace the projecting portions of the carriers, substantially as set forth.

18. In a wire fabric machine, the combination of the opposite frame boards or plates having bearing openings and connecting slots, and concentric grooves upon their inner faces around certain of said bearing openings, and the twisting wheels mounted in said bearing openings for a fixed rotation, some of said twisting wheels being provided with circular retaining or strengthening ribs moving in said grooves, substantially as set forth.

19. In a machine of the class described, the combination with the machine frame, of a stationary rod or shaft braced from one side of the machine frame and having perforated ends, laterally swinging slide runners having curved ends, one of which ends is threaded and passes through the machine frame, while the other unthreaded end of each runner passes through a perforated end of said stationary rod or shaft, binding nuts engaging the threaded ends of said runners and working against the machine frame, and set screws adapted to work in the extremities of said rod or shaft and onto the runner ends therein, substantially as set forth.

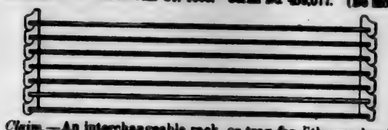
20. The combination with a weaving machine of the class described, of the brace rods connected to and extending out from the front of said machine, a stationary rod or shaft secured to the lower outer ends of said brace rods and having perforated ends, laterally swinging slide runners adjustably connected at one end to the machine body and at their other ends in the perforated ends of said rod or shaft, and combined propelling and mesh regulating devices arranged on said rod or shaft, substantially as set forth.

21. In a machine of the class described, the combination with the runner supported machine, of a stationary shaft at the front ends of said runners, a chain wheel loosely mounted on said shaft provided with a ratchet face on one side, a spring pressed pawl lever loosely mounted on said shaft alongside of the wheel and normally held in engagement with the ratchet teeth thereof, a chain engaging the upper portion of said chain wheel and anchored stationary a distance in front of the same, and a check pawl for said chain wheel, substantially as set forth.

22. In a machine of the class described, the combination with the runner supported machine, of parallel rods extended from said machine and having lower curved ends, a stationary shaft connected to the lower ends of said rods, a combined drag and mesh regulating device on said shaft, and having a pawl lever moving between said rods, a fixed stop connecting said brace rods to limit the movement

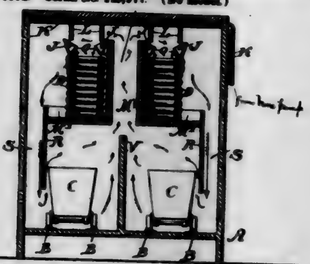
of the pawl lever in one direction, and an adjustable regulating stop bar arranged to work over the curved ends of said rods to regulate the movement of the pawl lever in the other direction, substantially as set forth.

## 504,985. PRINTER'S DRYING-RACK. HERMAN T. KOEHLER, Buffalo, N. Y. Filed Jan. 21, 1893. Serial No. 459,077. (No model.)



*Claim.*—An interchangeable rack or tray for lithographers' or printers' use, consisting essentially of a floor piece or pieces, having secured thereto on each side a rail, each rail having an inner wall, a shelf or rest above the inner wall, an outside groove adjacent to the shelf and opposite to the inner wall, a depending guard underneath the outside groove and projecting below the floor piece adapted for sliding register with the outside groove of the rack placed beneath, and a recess above the depending guard forming a shelf for the reception of the end of the floor piece, all arranged in a series as shown to form a drying stack for printed sheets, substantially as described.

## 504,986. ICE-MACHINE. JOHN KURTZ, Philadelphia, Pa. Filed Sept. 15, 1892. Serial No. 445,977. (No model.)

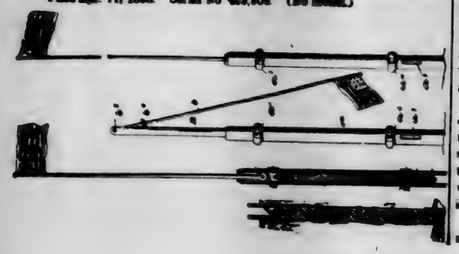


*Claim.*—1. In an ice manufacturing machine, a casing, a partition rising from the floor of said casing, drip troughs supported in said casing, and ammonia coils supported in said casing, said drip troughs having depending partitions forming with the sides of the casing air passages, and also having between them a flue leading from the spaces on the sides of the floor partition, said parts being combined substantially as described.

2. In an ice manufacturing machine, a casing with a floor having tracks thereon, tanks movable on said tracks a partition between said tanks, ammonia coils above said tanks, brine drip troughs above and below said coils communicating with a brine tank, and partitions depending from said lower brine troughs forming with the sides of the casing cold air flues, said parts being combined substantially as described.

3. In an ice manufacturing machine, a casing, tanks movable on tracks on the floor of said casing, a partition rising from the floor between said tanks, ammonia coil pipes communicating with an ammonia supply tank, brine troughs supported above said coils, other brine troughs below said coils forming a vapor flue between the same, and having depending partitions forming with the sides of the casing cold air flues, and pipes communicating with said brine troughs and a brine supply tank, said parts being combined substantially as described.

## 504,987. LANDMARK. DAVID P. MARUM, Fort Supply, Ind. Ter. Filed Apr. 11, 1893. Serial No. 469,908. (No model.)



*Claim.*—1. A land-mark comprising a flag-pole formed in two sections pivoted together, and an inclosing casing therefor, which will hold said flag-pole extended when lowered therein, the pivot-point being beneath the upper end of said casing, substantially as set forth.

2. A land mark comprising a flag pole formed in two sections pivotally connected together, a support for said members, and locks for locking one of said members in said support, substantially as set forth.

3. The combination with the stationary hollow post or casing having upper and lower locks, of the flag-pole composed of inner and outer sections pivoted together, said inner section being designed to be engaged by said locks and said outer section being held perpendicular when the pivot point is beneath the upper end of said post, substantially as set forth.

4. The herein-described improved land mark, comprising the hollow post or casing, having a slot therein for the insertion of a check or its equivalent of the character specified, the flag pole located in said post or casing, and the upper and lower locks for securing said flag pole in said post or casing, substantially as set forth.

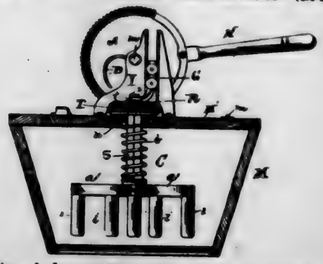
5. The herein-described improved land mark, comprising the hollow post or casing having a slot therein, the base-plate made integral therewith, the jointed flag pole having upper and lower members, said lower member being provided with a groove or recess, and the upper and lower locks secured to said post or casing designed to engage said groove or recess and lock the flag pole in said post or casing, substantially as set forth

## 504,988. METHOD OF MANUFACTURING ARTIFICIAL WOOD. JACOB MELLINGER, Baltimore, Md. Filed May 31, 1893. Serial No. 476,145. (No specimens.)

*Claim.*—1. The process of making artificial wood which consists in mixing lime with a fibrous material; producing a solution containing borax, alum, carbonate of potassium, sulphate zinc, sodium chloride, bicarbonate sodium, silicate of sodium, and lye; producing a pulp by mixing said solution with the lime and fibrous material, and finally molding the pulp and subjecting it to pressure, substantially as and for the purposes described.

2. A composition of matter for making artificial wood, consisting of a suitable fibrous material, borax, alum, carbonate of potassium, sulphate of zinc, sodium chloride, bicarbonate of sodium, silicate of sodium, lye, lime and water, substantially as and in the proportions specified

## 504,989. WASHING-MACHINE. EDWARD G. MINNEMEYER, Chicago, Ill. Filed June 22, 1891. Serial No. 397,031. (No model.)



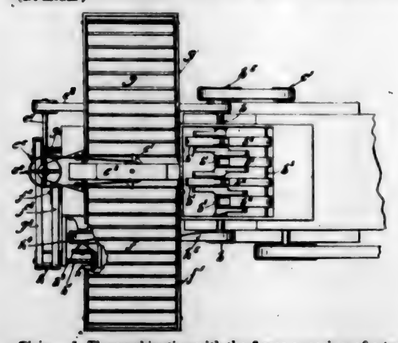
*Claim.*—1 In a washing machine of the class described, the combination of a vertically placed segmental gear having fixed thereto an arc-shaped cam extending from its outer edge to or near its hub with a vertically adjustable stirrer or rubber-block with a collar provided with an angular central opening, an angular bar passing through the collar and carrying a pinion wheel and connecting with a projection from a rack carried in a vertical slot in a frame-work, the pinion wheel meshing with the segmental gear, and the cam on the cog wheel contacting with a roller carried on the rack without the frame, a suitable spiral spring carried around the square bar and bearing upon a shoulder on the collar of the rubber-block, all substantially as described

2 In a washing machine of the class described, the combination of the cam B fixed upon the cog wheel A and contacting with the roller *e* in the rack G, the rack G provided with anti-friction rollers *a a* within the frame work, and the roller *e* without the frame work, the rack working in a slot in the standard frame Y and connecting with the stirrer by means of the square bar S, all substantially as described

3 In a washing machine of the character described, the combination of a rubber which intermittingly rises and falls and intermittingly reciprocates in horizontal planes, a carrier imparting rotary reciprocating horizontal movements to the rubber and rising and falling relatively to the contents of the tub, the vertically stationary gear wheel and intermittingly acting devices for positively lifting said carrier away from the contents of said tub, said intermittingly acting devices comprising a vertical gear wheel with a cam and a horizontally arranged projection extending laterally from the rubber-carrier into the path of the said cam on the wheel, substantially as set forth.



## 504,990. BAND-CUTTER AND FEEDER. MARTIN T. MISOGUE, Springfield, Ohio, assignor of two-thirds to Thomas Reynolds and Patrick Shoocolin, same place. Filed June 10, 1893. Serial No. 477,135 (No model.)



*Claim.*—1. The combination with the frame or casing, of a transverse crank shaft having vibrating levers thereon, a longitudinal endless carrier in the rear of said crank shaft, transverse carriers arranged above and adapted to discharge on said longitudinal carrier, and a moving knife arranged centrally between and above said transverse carrier, and means, substantially as described, for driving the respective parts to produce a joint operation thereof, substantially as specified.

2. The combination with the frame or casing having a transverse crank shaft with vibrating levers thereon, a longitudinal carrier arranged in the bottom of said casing, hinged transverse carriers extending laterally in opposite directions from the center of said casing, a moving knife arranged centrally between and above said transverse carriers, supporting shafts for supporting and driving said transverse carriers, and trunnions around said shafts on which said carriers are pivoted, substantially as specified.

3. The combination, in a band cutting and feeding device, of the longitudinal carrier arranged in the casing, and the transverse carriers arranged above said longitudinal carrier and adapted to discharge thereon, a revolving knife arranged slightly above and centrally between said transverse carriers, and means, substantially as described, for operating the parts simultaneously, substantially as specified.

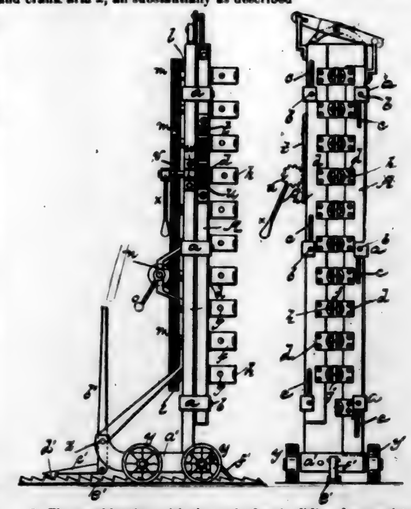
4. The combination with the outer casing having the sides and bottom, as described, the transverse shaft having a series of cranks with vibrating levers thereon, a longitudinal carrier in the rear of said vibrating levers, transverse carriers arranged above said longitudinal carrier and adapted to extend beyond the sides of said casing, said transverse carriers being pivotally supported on the shaft which imparts movement thereto, a revolving knife arranged above and centrally between said carriers, and means, substantially as described, for driving the respective parts simultaneously, substantially as specified.

5. The combination with the longitudinal and transverse carriers, as described, a revolving knife supported in a suitable frame above and between said transverse carriers, a vertical shaft for driving said knife, a transverse shaft having a series of cranks thereon, and vibrating levers on said cranks arranged in front of said longitudinal carrier, a horizontal shaft for driving said transverse carriers, and connections from opposite ends of said crank shaft to the respective shafts which drive said cutter and transverse carriers, substantially as specified.

## 504,991. WIRE-FENCE MACHINE. JAMES A. MITCHELL, Martinsburg, W. Va. Filed May 2, 1893. Serial No. 472,828. (No model.)

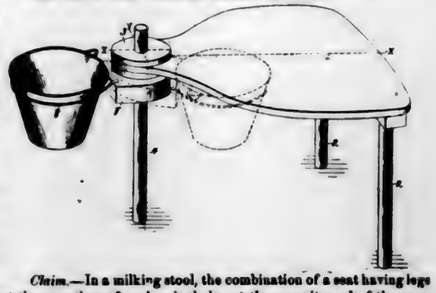
*Claim.*—1. The combination with the main frame, the vertically sliding bars, slotted and having the plates on their face, of the twister composed of two sections having the flange *e*, a cutaway portion, spool holder or stud, and flange having the perforation *i*, all substantially as described.

2. The combination with the main frame, sliding bars, and twisters, and plates for holding said twisters in position of the pivoted rock bar attached to the top of the frame, and pivoted at its ends to the top of each sliding bar, and the rack secured to the side of the sliding bar A, the pinion therefor, journaled on the edge of the main frame and crank arm *x*, all substantially as described



3. The combination with the main frame, sliding bars, twisters, rock bar, pivoted on the top of the main frame, rack *l* secured to the edge of the bar A pinion and crank arm *x* for operating the same, and the toothed bar *e'*, of the lever *b'*, pivoted to the frame, the toothed bar *e'*, pivoted to this lever and adapted to engage the bar *e'* having the teeth, and the pawl pivoted to the rear of the frame and engaging said teeth, all substantially as described.

## 504,992. MILKING-STOOL. OAKMAN A. MOODY, Canaan, Me. Filed Jan. 31, 1893. Serial No. 460,316. (No model.)

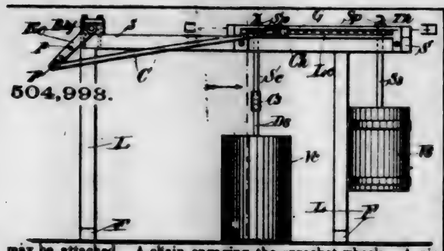


*Claim.*—In a milking stool, the combination of a seat having legs at the rear thereof, and a single leg at the opposite end of the same supplied with a series of openings and a removable pin, and a head loosely and adjustably mounted on the said single leg and supporting a wire ring or band in which the pail is placed, said wire ring or band and the head supporting the same being adapted to be turned on the single leg and swung under the seat, and the said head supporting wire ring or band being held apart from the under side of the seat by an interposed lower stationary head, substantially as described.

## 504,993. MOTOR. DAVID R. MYERS, Indianapolis, Ind. Filed Apr. 24, 1893. Serial No. 471,710. (No model.)

*Claim.*—In a churn motor in connection with a suitable frame mounted upon uprights. The combination of a crank shaft mounted in one end of said frame. An adjustable crank arm attached thereto, a lever pivoted at one end to said crank arm and adapted to be adjustably secured thereto, a sliding block secured to the other end of said lever. Horizontal guide ways arranged on said frame in which the sliding block moves, sprocket wheels mounted horizontally in the frame. Rods depending therefrom to which a dasher or other shaft

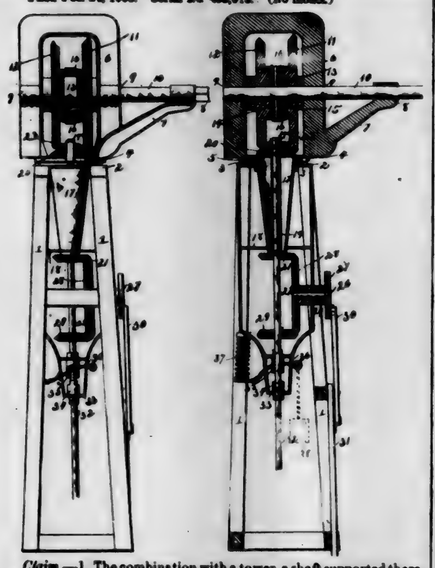
504,993.



may be attached. A chain engaging the sprocket wheels. A pin through the sliding block engaging said chain whereby motion is imparted to the dasher shaft through the crank arm, lever and sliding block, substantially as described.

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504,994. WINDMILL. ALBERT H. KELLER, Mapleton, Minn. Filed Feb. 24, 1893. Serial No. 463,813. (No model.)



*Claim.*—1. The combination with a tower, a shaft supported thereon, a pair of main gears of different sizes having peripheral and facial teeth mounted loosely on the shaft, a bearing carried by the shaft between the gears, and a short shaft mounted in the bearing, small gears mounted on the short shaft and engaging the facial-teeth of the main gears, of vertically-opposite bearings arranged below the short shaft, a hollow shaft arranged therein, upper and lower gears on said shaft, the upper gear being engaged by the teeth of the smaller of the main gears, a solid shaft located in the hollow shaft and extending above and below the same, upper and lower gears thereon, the upper gear engaging the teeth of the remaining or larger main gear, a crank-shaft located between the lower gears of the hollow and solid shafts, a pump-rod connected therewith, and a gear-wheel arranged on the crank-shaft and meshing with the teeth of said lower gears of the two shafts, substantially as specified.

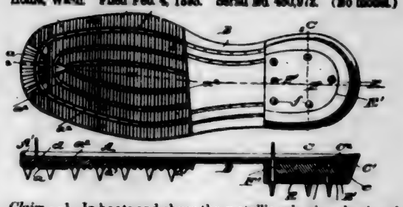
2. In a windmill, the combination with the tower, the revoluble turn-table, the inverted U-shaped yoke surmounting the same and provided with a hollow arm, the bearings 8 and 9 formed in the arm, the wheel-carrying shaft 10 journaled in the bearings, the large and small gears 11 and 12 mounted loosely on the shaft 10 and provided with peripheral and facial teeth, the disk 13 mounted on the shaft 10 between the gears, the short shaft 15 journaled in the disk, the small gears 16 journaled on the ends of the short shaft and engaging the facial teeth of the gears 11 and 12, of the depending leg 17 secured to the table and having upper and lower bearings, the tubular shaft 19 arranged in the bearings, the gear 20 at the upper end and the gear 21 at the lower end thereof beyond the leg, said upper gear 20 engaging the peripheral teeth of the large gear 11, the solid shaft 22 located in and extending beyond the hollow shaft 19, the gear 23 at the upper end thereof the teeth of which engage with those of the gear 12, the gear 29 at the lower portion of the solid shaft 22, the intermediate horizontal shaft 26, the gear 28 at the inner end thereof engaging the teeth of the gears 21 and 29, the disk 27 at the outer end of the shaft 26, and the pump-rod connected with the disk, substantially as specified.

3. In a windmill, the combination with the tower, the revoluble turn-table, the inverted U-shaped yoke surmounting the same and provided with a hollow arm, the bearings 8 and 9 formed in the arm, the wheel-carrying shaft 10 journaled in the bearings, the large and small gears 11 and 12 mounted loosely on the shaft 10 and provided with peripheral and facial teeth, the disk 13 mounted on the shaft 10 between the gears, a short shaft journaled in the disk, the small gears 15 journaled on the ends of the short shaft and engaging the facial teeth of the gears 11 and 12, of the depending leg 17 secured to the table and having upper and lower bearings, the tubular shaft 19 arranged in the bearings, the gear 20 at the upper end and the gear 21 at the lower end thereof beyond the leg, said upper gear 20 engaging the peripheral teeth of the large gear 11, the solid shaft 22 located in and extending beyond the hollow shaft 19, the gear 23 at the upper end thereof the teeth of which engage with those of the gear 12, substantially as specified.

4. In a windmill, the combination with the hollow shaft having a gear 21 at its lower end, and the solid shaft 22 having a gear 29, the intermediate shaft 26, the gear 28 at the inner end thereof engaging the teeth of the gears 21 and 29, the disk 27 at the outer end of the shaft 26, and the pump-rod connected with the disk, of the shaft 32 arranged below the solid shaft 22, the clutch-member 34 carried at the upper end of the shaft 32 and loosely receiving the lower end of the solid shaft, the upper sliding clutch-member 35 carried by the lower end of the said solid shaft, the lever 36 loosely connected with the member 35, the spring for normally elevating the same and separating the clutches, the weight for depressing said lever, and means for rotating the hollow and solid shafts, substantially as specified.

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504,995. SOLE AND HEEL PLATE. JOHN I. R. NELSON, Cedar Home, Wash. Filed Feb. 4, 1893. Serial No. 460,972. (No model.)



*Claim.*—1. In boots and shoes the metallic sole piece having the integral tread shank and heel seat having the tread provided with openings for the spike shanks and the heel seat provided with the undercut mortise the heel piece having on one side a tenon to fit said mortise and provided in its outer side with an undercut mortise and the spike plate fitted in said mortise, substantially as set forth.

2. A metallic sole piece having the integral tread shank and heel seat and provided in the tread with openings for the spikes and the detachable heel piece fitted to the heel seat all substantially as set forth.

3. In boots and shoes the improved sole piece herein described made of metal having the integral tread shank and heel seat, the tread being provided with ribs and openings for the spike shanks, the heel seat being provided with an undercut mortise, the heel piece having a tenon fitted to said mortise and also provided with an undercut mortise and the spike plate fitted to the undercut mortise of the heel piece all substantially as and for the purposes set forth.

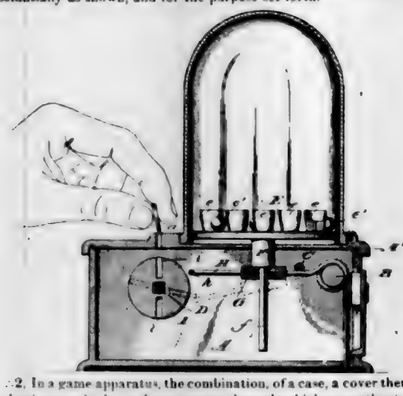
4. In boots and shoes, a metallic sole piece having openings for the spike shanks, a heel seat having an undercut mortise the heel piece fitted to said mortise and an intermediate shank portion arranged between the heel seat and sole piece all substantially as and for the purposes set forth.

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504,996. COIN-CONTROLLED GAME APPARATUS. DAVID T. NUTTLE, Chester, Pa. Filed June 23, 1893. Serial No. 478,462. (No model.)

*Claim.*—1. In a game apparatus, the combination, of a case supporting a dome within which is a platform upon which rest movable objects, said platform having a depending stem or rod, a spring-actuated bar carrying a cross-bar with a slot through which the stem of the platform passes, a coin slot in the case, a coin carrier or cylinder mounted on a shaft and having a recess or recesses within which a coin is adapted to partly lie, the connecting portion *A* of the spring actuated bar lying normally adjacent to the coin carrier or cylinder and in the path of the projecting part of the coin carried thereby, substantially as shown, and for the purpose set forth.



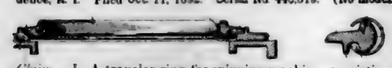


2. In a game apparatus, the combination, of a case, a cover therefor having a coin-slot and an aperture through which passes the stem of a movable platform, rigid cross-bars B and C located to one side of the aperture through which the stem of the platform passes, a spring bar coiled upon the cross-bar C to present a loop *A* and projecting ends which are attached to the case, the side members of the loop of the spring bar carrying a cross-bar having a slot through which the reduced portion of the stem of the platform passes, together with a coin carrier or cylinder I mounted on a shaft and adapted to be turned in but one direction by the knob, said coin carrier operating the spring bar which actuates the platform by means of a coin placed therein, substantially as shown, and for the purpose set forth.

3. In a coin controlled game apparatus, the combination, of a case supporting a movable platform, the case having a slot *a*, a shaft D mounted in the case and having a knob D′ at one end, a ratchet wheel on the shaft with which a spring-actuated pawl engages, said shaft also carrying a cylinder I having a recess or recesses *i* of slightly greater diameter than the coin receiving slot *a*, together with a spring bar coiled upon a cross-bar to present a loop upon which is mounted a cross-bar G having a slot through which a stem or rod depending from the platform passes, said stem being enlarged adjacent to the platform for engagement with said cross-bar, the connecting portion *A* of the loop of the spring bar lying adjacent to the cylinder I so as to be operated upon by the coin adapted to be carried by said cylinder, and a stop for limiting the movement of the spring bar, substantially as shown.

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504,997. TRAVELER-RING FOR SPINNING-MACHINES. HORATIO L. PEIRCE, Olneyville, assignor to Albert Curtis Tingley, Providence, R. I. Filed Oct. 11, 1892. Serial No. 448,519. (No model.)



*Claim.*—1. A traveler ring for spinning machines consisting of a horizontal plate with a vertical flange on its inner edge extending above and below the horizontal plate, said plate having a flange or ridge on its under side midway between its outer edge and the vertical flange on its inner edge, so as to form a groove or recess between the ridge and vertical flange, substantially as set forth.

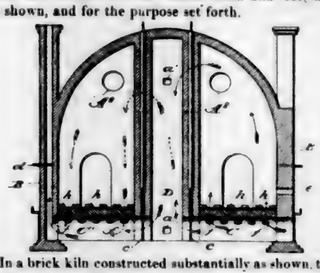
2. A traveler ring for spinning machines consisting of a horizontal plate having a vertical flange on its inner edge made with a convex face projecting at its middle toward the center of the ring, said horizontal plate having a flange or ridge on its under side midway between its outer edge and the vertical flange on its inner edge, substantially as specified.

3. A traveler for ring spinning machines shaped in the form of a true circle with an opening or gap in its side, in combination with a ring consisting of a horizontal plate having a vertical flange on its inner edge made with a convex face projecting at its middle toward the center of the ring, and a flange or ridge on its underside midway between its outer edge and the vertical flange on its inner edge substantially as described.

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504,998. REVERSIBLE-DRAFT BRICK-KILN. ALPHEUS L. PLASTERS, WILLIAM F. RANKIN, and JAMES M. WOLFE, Tarkio, Mo.; said Rankin and Wolfe assignors to said Plasters. Filed Apr. 13, 1893. Serial No. 470,346. (No model.)

*Claim.*—1. A kiln comprising side and end walls constructed substantially as shown and central walls forming a chamber on each side of which are located the kiln sections, together with alternating horizontal flues and furnaces located beneath each kiln section, substantially as shown, and for the purpose set forth.



2. In a brick kiln constructed substantially as shown, the combination, of the side walls having vertical flues which communicate with horizontal flues having inner end openings with dampers, furnaces constructed similar to the horizontal flues and alternating therewith, and central walls forming a combustion chamber, said walls being apertured for the reception of rods carrying dampers which are adapted to cut the furnaces and longitudinal flues from the combustion chamber, substantially as shown, and for the purpose set forth.

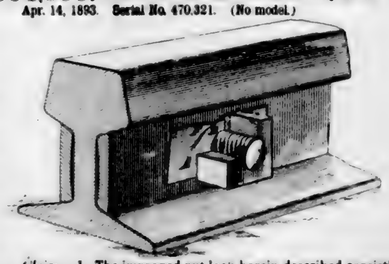
3. In a kiln constructed substantially as shown and having central longitudinal walls, of horizontal flues and furnaces alternating with each other and located between the side and central walls, said horizontal flues and furnaces having apertures *f f* with cut-offs *g* and dampers which are adapted to cut off communication with the combustion chamber D, together with chimneys which lead from the horizontal flues, substantially as shown, and for the purpose set forth.

4. In a kiln constructed substantially as shown, the combination, of an outer structure comprising side and end walls and a crown, the end walls having openings and doors to provide access to the kiln sections and a central door communicating with the combustion chamber formed by inner walls, together with horizontal flues and furnaces alternating with each other and communicating with the combustion chamber, and dampers or cut-offs, substantially as shown, whereby either an up or a down draft may be provided in the kiln section for the purpose set forth.

5. In a kiln constructed substantially as shown and provided with side walls, having vertical flues, and end walls with doorways, interior walls with piers extending to the crown of the kiln, damper rods passing up through the interior walls and piers so as to be operated from the crown of the kiln, a series of horizontal flues and furnaces alternating with each other and provided with openings having cut-offs, as shown, said furnaces and horizontal flues communicating with a chamber or space between the interior walls, chimneys built in the side walls and leading from the horizontal flues, the furnaces and horizontal flues being located beneath the floor of the kiln and each furnace having an opening which extends through the side walls, the parts being organized substantially as shown, and for the purpose set forth.

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504,999. NUT-LOCK. EDWARD E. POOLE, Fordyce, Ark. Filed Apr. 14, 1893. Serial No. 470,321. (No model.)



*Claim.*—1. The improved nut lock herein described consisting of the plate A having the bolt hole B and provided with the slits C and E, forming tongue D and pawl F, the slit C extending from the edge to the bolt hole and the slit E being formed diagonally to the edge of plate A whereby to produce a point at the end of the pawl F, and both the pawl and the tongue being bent forward at their free ends or points substantially as set forth

2. The improved nut locking plate herein described having a bolt opening, a slit C leading from said opening to the edge of the plate and forming a tongue D and provided adjacent to said tongue with another slit forming a spring pawl F the said pawl and tongue

being both deflected to the same side of the plane of the plate and being arranged to both point and face in the same direction with respect to the revolution of the nut all substantially as set forth.

## 505,000. EYE-TESTING DEVICE. BENJAMIN I. PRICE, Denver, Colo. Filed Dec. 15, 1892. Serial No. 455,268. (No model.)

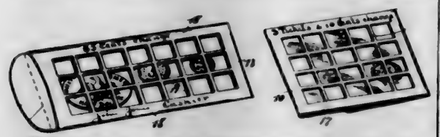


*Claim.*—1. The combination with a frame having goggle shaped eye pieces, and having grooved seats at the lower side of the opening in said eye pieces, of a disk pivoted to the nose piece or bridge of said frame and adapted to be turned to rest in and be held in place by the grooved seat in either of the eye pieces, substantially as set forth.

2. The combination with the frame having goggle shaped eye pieces provided with grooved seats at the lower side of the eye piece opening, and having the front side of the bridge or nose piece in the same plane as the front side of the eye pieces, of a disk having a shank pivoted to the front side of said bridge and adapted to be turned to come in front of either eye piece and be supported and held in place by the groove seat on said eye piece, substantially as set forth.

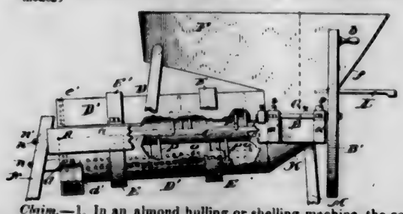
3. The herein specified eye testing appliance composed of goggle shaped eye pieces having grooved seats B at the lower side of the openings, a bridge connecting said eye pieces, a blank disk pivoted to said bridge and adapted to be turned to close the opening in either eye piece, and test disks having thumb pieces and provided with suitably shaped apertures, substantially as set forth.

## 505,001. TICKET AND CHANGE POCKET. MARTIN RALPH, New York, N. Y. Filed Dec. 1, 1892. Serial No. 453,773. (No specimens.)



*Claim.*—As an improved article of manufacture, a pocket of the character described, having in one side perforations large enough to permit the inspection of a coin through them, and having its back side formed of overlapping flaps adapted to carry tickets between them, substantially as described.

## 505,002. ALMOND HULLING AND SHELLING MACHINE. WALTER G. READ, Colusa, Cal. Filed Aug. 30, 1892. Serial No. 444,570. (No model.)



*Claim.*—1. In an almond hulling or shelling machine, the combination with a suitable frame, and a hopper mounted thereon, of the horizontally-inclined cylindrical drum having a continuous single chamber extending from end to end thereof and communicating at its upper end with said hopper, the longitudinal shaft arranged concentrically within the drum and carrying the radial spikes or teeth which terminate near the inner surface of the drum and operate to forcibly strike the nuts therein, and mechanism for rotating the shaft at a high rate of speed to cause the teeth thereon to remove the hulls or shells by the impact of said teeth on the nuts, substantially as and for the purpose described.

2. In an almond hulling or shelling machine, the combination with a frame having a suitable support at one end, and a hopper mounted thereon, of the horizontally-inclined cylindrical drum having a single continuous chamber extending from end to end thereof and arranged to receive the nuts at its upper end from said hopper, a longitudinal shaft arranged concentrically within the drum and carrying the spirally arranged crushing spikes or teeth which terminate near the periphery of the drum, mechanism for rotating said shaft at a high rate of speed and cause the spikes to have sufficient impact against the nuts to remove or crush the hulls or shells of the nuts, and a vertically adjustable supporting leg connected to the frame at the lower end of the drum, whereby the inclination of said drum can be varied to regulate the passing of the nuts through the drum and cause the nuts to be subjected to the action of the spikes for a longer or shorter time, as set forth.

3. In a machine for hulling or shelling almond nuts, the combination with the frame having the fixed legs at one end, and a hopper mounted on the frame, of the horizontally inclined cylindrical drum having a single continuous chamber extending from end to end thereof and provided with the discharge opening at its lower end, the longitudinal shaft journaled in said frame to extend through the drum, concentric therewith, and provided with the spirally arranged crushing spikes or teeth, mechanism for rotating the shaft at a high rate of speed to cause the spikes to have sufficient impact against the nuts to remove or crush the hulls or shells, the supporting leg N arranged at the end of the frame contiguous to the lower end of said drum and provided with the longitudinal slot in its upper end, and the bolt which fastens the leg to the frame, for the purpose described, substantially as set forth.

4. In a machine for hulling and shelling almond nuts, the combination with a frame, and a hopper supported directly thereby and provided with a contracted depending feed throat, of a cylindrical drum D comprising the upper and lower semi-cylindrical sections independently secured to the frame at one side of the hopper, the upper section having both of its ends closed and the lower section being closed at its rear end and provided at its open front end with the inclined feed chute K that lies below the feed throat of said hopper, and a longitudinal spiked shaft C extending centrally through said cylindrical drum and the feed throat, substantially as and for the purpose described.

5. In a machine for hulling and shelling almond nuts, the combination with a frame, of the hopper F supported near one end of the frame and provided with the depending feed throat G and the inclined chute K, of the horizontally-inclined cylindrical drum D having its sections independently secured to the frame and arranged with its upper open end contiguous to the feed throat and chute to receive directly therefrom, the longitudinal shaft extending concentrically through said cylindrical drum and provided with the crushing spikes within the drum and with the agitator finger within the feed throat, and mechanism for rotating the shaft at a high rate of speed to cause its spikes to have sufficient impact against the nuts to crush the hulls or shells of the nuts in the drum, substantially as described.

6. A machine for hulling or shelling almond nuts, comprising a frame, the hopper supported thereon at one end and provided with the depending-feed throat and the chute K, the sectional cylindrical drum having its sections independently secured to the frame at one side of the hopper and each section of the drum provided with the circumferential stiff bands, the lower half of said drum being perforated and provided with the discharge spout and the upper open end of the drum communicating with the feed throat and chute of the hopper, and the longitudinal spiked shaft extending through the drum and the feed throat, substantially as and for the purpose described.

7. In a machine for hulling or shelling almond nuts, the combination with a frame, and a drum supported thereby, of the hopper having one of its side walls extended downward at *f* into the feed throat, the inclined boards *g*, *g*, fixed in the feed throat on opposite sides thereof and each having one edge abutting against the wall *f* and with its other edge beveled at *g'*, the gate valve H pivoted in the feed throat at one side of the walls *g*, *g*, and adapted to be moved toward or from the beveled edges *g'* thereof, and a spiked shaft extending through the feed throat and the drum, substantially as and for the purpose described.

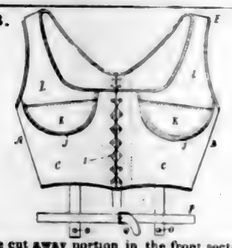
8. In a machine for hulling or shelling almonds, the combination of a main frame having the longitudinal slots in its side bars, the drum, a hopper, the feed throat formed in the lower part of the hopper by the inclined walls having the beveled edges, the gate-valve hung in the hopper to swing toward or from the beveled edges of the throat-walls, a securing bolt carried by the lower part of the gate-valve and having its ends fitted in the slots of the frame and the clamping-nuts, and a spiked shaft in the drum, substantially as described.

## 505,003. BUST-SUPPORTER. IDA M. REW, New York, N. Y. Filed Jan. 19, 1893. Serial No. 459,034. (No model.)

*Claim.*—A bust supporter consisting of two sections composed of a front part rear part and shoulder part, and having the front part provided with a bust receptacle formed of the elliptically-shaped strip

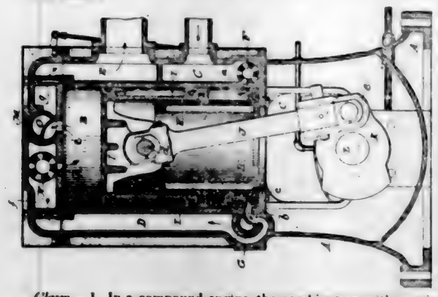


## 505,003.



K inserted in the cut away portion in the front section of the supporter, which strip has the curved stiffener secured thereto at its point of union with the curved edge of the front section where cut away, substantially as shown and described.

## 505,004. COMPOUND ENGINE. EDWIN REYNOLDS and EDWARD CHEMIRE, Milwaukee, Wis. Filed Mar. 6, 1893. Serial No. 464,733. (No model.)



*Claim.*—1. In a compound engine, the combination with a main cylinder B, of a short internal cylinder H set away from the inner face of the main cylinder, a piston having its upper end fitting within the upper end of the main cylinder and its opposite end fitting the annular space between the two cylinders, an induction and an eduction valve at the lower end of the main cylinder, an induction and an eduction valve at the upper end of the cylinder, and a port or passage D for conveying the steam from the eduction valve at the lower end of the cylinder to the induction valve at the upper end, all substantially as shown and described.

2. In a compound engine, the combination with the concentric cylinders B and H, arranged one within the other of the piston I working within the high and low pressure chambers thus formed, a crank shaft, a rod J connecting the piston and shaft, and working through the inner cylinder H, and suitable induction and eduction valves.

3. In a compound engine, the combination with the main cylinder B having the internal ledge *e*; the ring or cylinder H resting upon said ledge, and extending upwardly therefrom a piston fitting the cylinders B and H; a removable cylinder head, and suitable induction and eduction valves.

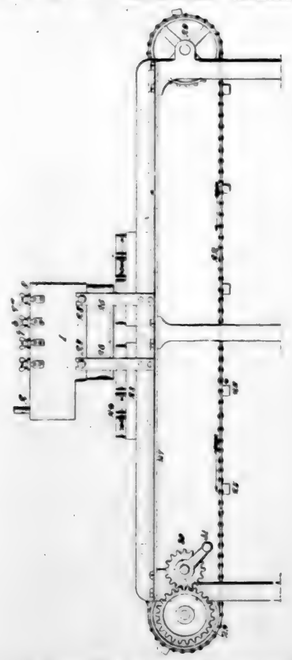
4. In a compound engine, the combination with the upright concentric cylinders B and H, of the receiver D, and the interposed oscillating eduction valve G having a downward discharge whereby the valve is adapted to lie upon its seat by gravity, substantially as and for the purpose described.

5. In combination with the main cylinder B, and the internal cylinder H; the steam chest C and exhaust chamber E, the receiver D, the induction valve F at the base of the steam chest, an eduction valve at the base of the receiver; a cylinder head cored out to form passages *f g*, and ports *h i*; the induction and eduction valves N O mounted in the head, and a piston I mounted within the cylinder B.

6. In a compound engine, a main cylinder B, in combination with an internal cylinder H extending throughout a portion of the length of the main cylinder and set away from the inner face thereof, a piston I having the area of one end equal to the area of the bore of the main cylinder, while the other end has an area equal to the space between the two cylinders and forms an annular head which moves within such space, an induction valve F and an eduction valve G controlling the passage of steam to and from the annular space between the two cylinders, an induction valve N and an eduction valve O controlling the passage of steam to and from the main cylinder, and a passage D for conveying steam from the eduction valve G to the induction valve N, all substantially as shown and described.

7. In a compound engine, the combination with the main cylinder B; of a short internal cylinder H set away from the inner face of the main cylinder and open at both ends as shown; a piston I working within the high and low pressure chambers thus formed, and suitable induction and eduction valves.

## 505,005. CAN-FILLING MACHINE. GEORGE ROTH, Richland, Ill. Filed May 25, 1893. Serial No. 475,412. (No model.)



*Claim.*—1. In a can filling machine, the combination of a tank, valves located at the bottom of the tank, and provided with stems by which they may be turned, cylinders located beneath the tank, stationary disks on top of the cylinders beneath said valves, and which have ports adapted to register with ports in the valves, disks located at the bottoms of the cylinders, and connected to said valves, and which have ports adapted to register with ports in the bottoms of the cylinders, means for moving the cans beneath said cylinders, substantially as and for the purpose set forth.

2. In a can filling machine, the combination of a tank, valves located at the bottom of the tank and provided with stems by which they may be turned, cylinders located beneath the tank, stationary disks on top of the cylinders beneath said valves, and which have ports adapted to register with ports in the valves, disks located at the bottoms of the cylinders, and connected to said valves and which have ports adapted to register with ports in the bottoms of the cylinders, means for moving the cans beneath said cylinders, and a crank on the stem of one of the valves, said valves being geared together, substantially as and for the purpose set forth.

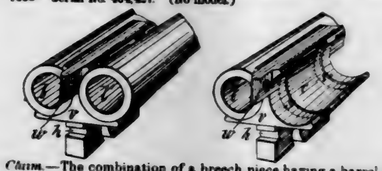
3. In a can filling machine, the combination of a tank, valves located in the bottom of the tank and provided with stems by which they may be turned, and having teeth on their peripheries meshing into each other, cylinders located beneath the tank, stationary disks on top of the cylinders beneath said valves, and which have ports adapted to register with ports in the valves, disks located at the bottoms of the cylinders and connected to said valves, and which have ports adapted to register with ports in the bottoms of the cylinders, and means for moving the cans beneath said cylinders, substantially as and for the purpose set forth.

4. In a can filling machine, the combination of a tank, valves located at the bottom of the tank, and provided with stems by which they may be turned, and having teeth meshing into each other, a hinged crank on one of said valve stems, stop pins 7ª adapted to be engaged by said crank, cylinders located beneath the tank, stationary disks on top of the cylinders beneath said valves, and which have ports adapted to register with ports in the valves, disks located at the bottoms of the cylinders, and connected with said valves, and which have ports adapted to register with ports in the bottoms of

the cylinders, and means for moving the cans beneath said cylinders; substantially as and for the purpose set forth.

5. In a can filling machine, the combination of a tank, valves located at the bottom of the tank and provided with hollow stems by which they may be turned, cylinders located beneath the tank, and communicating with said hollow stems through ports 16, stationary disks on top of the cylinders beneath said valves, and which have ports adapted to register with ports in the valves, disks located in the bottoms of the cylinders and connected to said valves by bars 17, and which have ports adapted to register with ports in the bottoms of the cylinders, and means for moving the cans beneath said cylinders, substantially as and for the purpose set forth.

505,006. GUN. RUDOLF SAUER, Suhl, Germany. Filed Mar. 2, 1893. Serial No. 464,427. (No model.)



*Claim.*—The combination of a breech piece having a barrel seat provided with a dove tail groove formed in the arc of a circle and extending transversely to the longitudinal axis of the breech piece, with a barrel having a dove-tail ring segments formed in the arc of a circle transverse to the length of the barrel and adapted to be engaged with the groove by axially rotating the barrel, substantially as described.

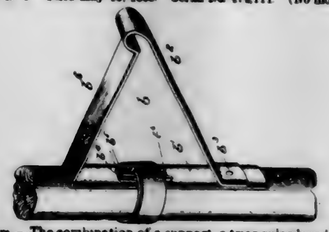
505,007. BILLIARD-CUSHION. CHARLES SCHULENBURG, Detroit, Mich. Filed Dec. 29, 1892. Serial No. 456,676. (No model.)



*Claim.*—1. In a billiard cushion, constructed substantially as shown, the parts thereof being formed integral with each other, of a flat metal strip embedded in the cushion at or near its center and on a horizontal line with the edge of the cushion against which the ball strikes, said strip being inclined so that the greatest width of the strip will be at an inclination with the front edge of the cushion, and parallel with the rear face of the cushion substantially as shown.

2. In combination with a billiard cushion, the parts comprising the same being molded together and including a flat metal strip embedded in the rubber so that the greatest width of the metal strip will be parallel with the rear face of the cushion, substantially as shown, and for the purpose set forth.

505,008. SUPPORTING-BRACKET. SAMUEL R. SCOTTRON, Brooklyn, N. Y. Filed May 13, 1893. Serial No. 474,111. (No model.)



*Claim.*—The combination of a support, a triangular bracket having its vertical bar adapted to closely fit against the support, said vertical bar being provided with a wedge-shaped opening tapering upwardly, the side edges of this opening being bent outwardly to form flanges, and a band embracing the support and partially embracing the vertical bar of the bracket, the ends of the band being bent down over the converging flanges and terminating short of the adjacent face of the support, substantially as described.

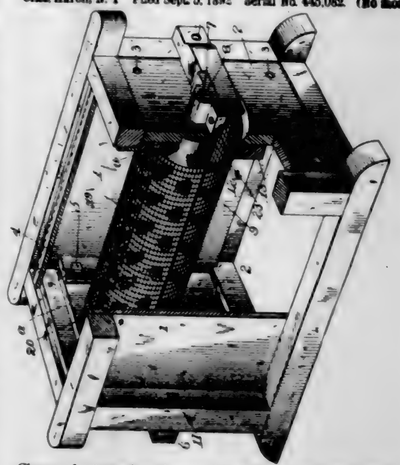
505,009. GATE. JOHN W. TAYLOR and GEORGE W. WALTERS, Cape Girardeau, Mo. Filed July 5, 1893. Serial No. 479,647. (No model.)

*Claim.*—1. The combination with a swinging gate, of a longitudinally movable latch bar carried by the gate and provided with a laterally projecting stud, a lever fulcrumed at one side of and connected with the gate, and an arm attached to the lever and adapted, when the gate is closed, to bear against the stud on the latch bar, and operating cables connected to the lever, substantially as described.



2. The combination with a swinging gate provided with a longitudinally movable latch bar, a lever fulcrumed at one side of and connected with the gate, an angular arm attached to the lever and extending above the body thereof and adapted, when the gate is closed, to bear against a laterally projecting stud on the latch bar, and operating cables connected to the lever, substantially as and for the purpose described.

505,010. MACHINE FOR SCOURING AND CLEANING GRAIN, NUTS, OR SIMILAR ARTICLES. CORTLAND O. TINKHAM and ORIN B. SIBLEY, Akron, N. Y. Filed Sept. 5, 1892. Serial No. 445,082. (No model.)



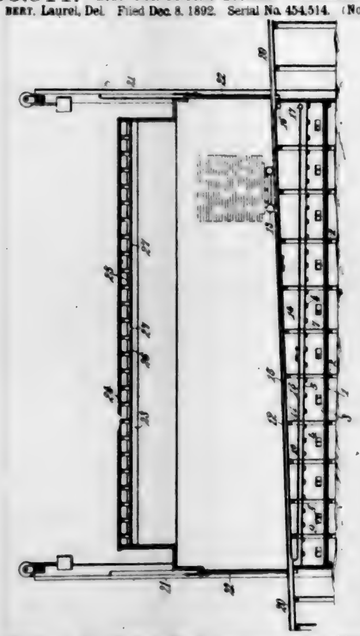
*Claim.*—1. A machine for cleaning and scouring grain, nuts and similar articles, consisting of a shell or casing having removable end plates, a hopper and a suitable discharge, a reticulated cylinder the ends of which project outward and are clamped between said removable end plates and the adjacent end walls of the casing, said cylinder having a receiving opening at one side of its periphery registering with the hopper discharge, cylinder braces and supports removably secured to said shell and having concaved inner edges to receive and seat said cylinder, and a brush having spirally arranged bristles around its periphery of less height at the receiving than at the delivery end, and known devices for actuating said brush, substantially as and for the purpose set forth.

2. A machine for cleaning and scouring grain, nuts and similar articles, consisting of a shell or casing having removable end plates, a hopper and a suitable discharge, a reticulated cylinder seated at its respective ends within openings in end plates of the casing and having projecting ends which are clamped down upon the casing and between said end plates, said cylinder having a grain-receiving opening at one side of its periphery, cylinder braces and supports removably attached to said shell and having concaved inner edges adapted to receive, seat and brace the sides of said cylinder, and a brush having spirally arranged bristles around its periphery of less height at the receiving than at the delivery end and a curved metallic feed strip projecting upwardly from the brush shaft at the receiving end of the machine, and known means for actuating said brush, substantially as and for the purpose set forth.

3. A machine for cleaning and scouring grain, nuts and similar articles, consisting of a shell or casing having removable inner and outer end plates, said inner plates each having a central circumferential bore or opening to receive and support the respective ends of a reticulated cylinder, the outer plates each having in its inner face a circumferential recess to receive and afford bearing for the respective ends of a brush shaft, one of said outer ends having a transverse delivery-slot for the cleaned grain, in combination with a hopper and feed slide and conveyer spout, a reticulated cylinder having a receiving opening at one side of its periphery, its respective ends projecting outwardly through said inner plates and being clamped between said outer and inner end plates, strips having concaved inner edges adapted to receive, brace and support the side walls of said reticulated cylinder, bolts and nuts removably connecting said end plates and cylinder-supporting strips, and a revolving brush located within said cylinder and having a spirally-arranged series of bristles extending nearly to the ends of the brush shaft, and a metallic feed-strip carried by said brush shaft, all substantially as and for the purpose set forth.



505,011. KILN FOR DRYING LUMBER. NATHANIEL T. TORBERT, Laurel, Del. Filed Dec. 8, 1892. Serial No. 454,514. (No model.)

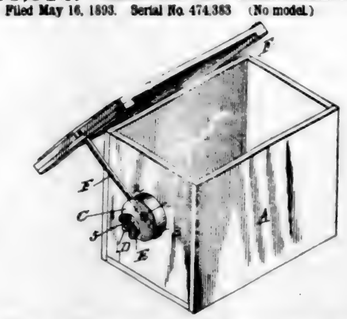


*Claim.*—1. In a drying kiln, the combination of a cold air chamber occupying the entire lower portion of the kiln and having air inlets on opposite sides, an air heating chamber extended the entire length and breadth of the kiln and having the whole of its top open to the body of the kiln, an air distributing floor intermediate the cold air chamber and air heating chamber, and provided throughout with equi-distant spaces or openings for the direct upward passage of air currents from the cold air chamber into the air heating chamber, steam pipes located in the air heating chamber above the perforated air distributing floor, and a longitudinally arranged ventilator located in the roof of the kiln and extended its entire length for direct exit of moist air from all parts of the kiln, substantially as described.

2. In a drying kiln, the combination of a cold air chamber located in the lower part of the kiln and provided with lateral air inlets, an air distributing floor supported above said cold air chamber and composed of metal plates spaced apart to afford openings for direct upward passage of air currents from the cold air chamber, an air heating chamber located immediately above the said air distributing floor and having the whole of its top open to the body of the kiln, car tracks supported at the top of the air heating chamber, steam pipes arranged in said air heating chamber, and a ventilator located longitudinally in the roof of the kiln and extended its entire length for direct exit of moist air from all parts of the kiln, substantially as described.

3. In a drying kiln, the combination of a cold air chamber occupying the entire lower portion of the kiln and having lateral air inlets, an air heating chamber open at the top and having an air distributing floor provided throughout with spaces or openings for the direct upward passage of air currents into the air heating chamber from all parts of the cold air chamber, steam pipes located within the air heating chamber to heat the air admitted through the perforated air distributing floor, tracks supported at the top of the air heating chamber, a longitudinally arranged ventilator extended the entire length of the roof and provided with lateral openings for exit of moist air and a perforated horizontally arranged plate located in said ventilator below its latter air exits, substantially as described.

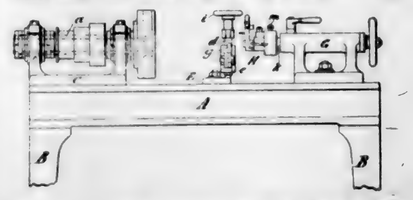
505,012. PACKING-BOX LID. THOMAS TUCKER, Sereno, Mo. Filed May 16, 1893. Serial No. 474,383. (No model.)



*Claim.*—1. The combination, with a box, of a disk secured to each end of the box, each disk provided with a central bolt-hole and a series of quadrantal recesses a bolt inserted in each bolt-hole and provided with a transverse opening, a box lid, a rod secured to each end of the box lid and inserted through the quadrantal recesses and through the opening in the bolt and a nut threaded onto each bolt, substantially as described.

2. The combination, with a box, and a box-lid, of a locking device for each end of the box, each locking device comprising a recessed disk having a central bolt hole and secured to the end of the box, a slotted bolt in the bolt-hole, a rod attached to the end of the box-lid and inserted through the recess in the disk and through the slot in the bolt, a nut on the bolt, a hasp hinged to the nut, and a staple in the box over which the hasp fits, substantially as described.

505,013. MACHINE FOR CENTERING, PREPARING, AND COUNTERSINKING BARS, STUDS, &c. WILLIAM WEBSTER, Leeds, England. Filed June 14, 1892. Serial No. 436,660. (No model.)



*Claim.*—1. A centering machine comprising a rotating hollow spindle carrying jaws, a drill support movable toward the said spindle carrying a drill, and a swinging arm carried by said drill support carrying a counter-sinking tool, substantially as specified.

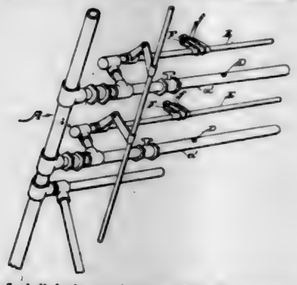
2. A centering machine comprising a rotating hollow spindle carrying jaws, a drill support carrying a drill, and an arm pivoted to said support at one side of the drill and swinging transverse thereof, the said pivoted arm carrying a counter sinking tool, substantially as set forth.

505,014. FLASH-LIGHT BURNER. SYLVESTER M. WILLIAMS, San Francisco, Cal. Filed Dec. 24, 1892. Serial No. 456,251. (No model.)

*Claim.*—1. In a flash light burner, the combination of a flame burner, a swinging cup adapted to receive and to throw a charge of powder into the flame, and an obstructing piece interposed between the cup and flame burner in the path of flight of the powder whereby the powder is broken up or divided before reaching the flame, substantially as herein described.

2. In a flash light burner having a flame burner, a swinging cup adapted to receive and to throw a charge of powder into the flame, said cup having an obstructing piece in its front whereby the powder

upon leaving the cup is broken up or divided, substantially as herein described.



3. In a flash light burner having a flame burner, a swinging cup adapted to receive and to throw a charge of powder into the flame, said cup having the obstructing wire traversing its front whereby the powder upon leaving the cup is broken up or divided, substantially as herein described.

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**505,015. CARRIAGE.** FREDERICK W. ZIMMER, Rochester, N. Y. Filed Jan. 17, 1893. Serial No. 458,673. (No model.)



*Claim.*—1. In a carriage of the class described, the combination with the door having the groove in the lower end and the rubber strip at the side near the top, of the body having the upper side rail and the laterally projecting strip extending beneath the strip on the side of the door, and the rubber bottom rail entering the groove in the door, substantially as described.

2. In a carriage of the class described, the combination with the door having the groove in its lower end and the strip or ledge on the side near the top, of the body, the laterally projecting strip secured thereto, said strip projecting beneath the strip on the side of the door, and the rubber bottom rail entering the groove in the door, substantially as described.

3. The combination with the carriage body having the upper side rail provided with the longitudinal groove and the laterally projecting door supporting strip, and the rubber bottom rail, of the door having the groove in the bottom, the strip or ledge on the side near the top and the rubber strip secured to the top of the door, substantially as described.

4. In a carriage of the class described, the combination with the body having the dash, the upper side rail and the laterally projecting strip on the body, and the short bottom rail of rubber having the central stiffening piece, of the door having the recess in the lower end, and the ledge or strip on the side near the top, substantially as described.

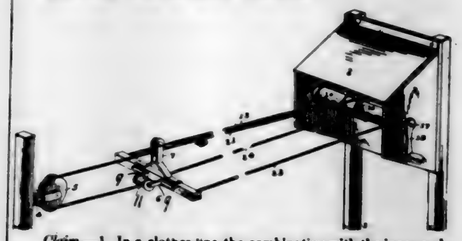
5. The combination with the carriage body and bottom, and the top rail, of the dash, the vertical brace secured to the body bottom extending up inside the dash, thence through the latter and upward and connected to the carriage top, and the sashes sliding between the dash and top and supported by them, substantially as described.

6. In a carriage such as described, the combination with the front top rail having the two rubber strips secured thereto and the dash having corresponding rubber strips, of the two sliding sashes supported between the strips on the top rail and dash and having grooves for the accommodation of the strips, substantially as described.

7. In a vehicle, the combination with the sliding door, of the cord connected to the door, guiding pulleys therefor, and a weight for taking up the slack in said cord, not heavy enough to operate the door substantially as described.

8. In a vehicle, the combination with the seat and the sliding door, of the cord connected to said door, and extending in proximity to the seat, the weight connected to the cord and the guide rod on which the weight slides, substantially as described.

**505,016. CLOTHESLINE.** CLAY B. ALBERT, Carrollton, Mo. Filed June 5, 1893. Serial No. 476,661. (No model.)

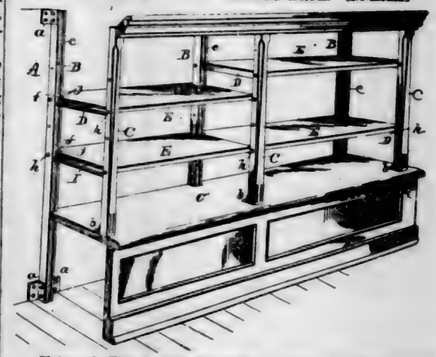


*Claim.*—1. In a clothes-line, the combination with the inner and outer supports, and the pulley at the outer support, of the roll at the inner support having a crank for operating the same and provided with a series of eyes, a cross head, a grooved pulley arranged thereon, a winding shaft at the front side of the cross-head, squared at one end to receive a crank, a drum on the winding shaft, a ratchet wheel on said shaft, a pawl for locking the ratchet wheel, a supporting wire secured to the drum, passed around the pulley of the outer support, under the pulley of the cross-head and over and secured to an eye of the drum, and a series of wires leading from the cross-head to the drum and secured to the eyes thereof and reversely wound thereupon with relation to the first mentioned wire, substantially as specified.

2. In a clothes-line, the combination with the inner and outer supports, and the grooved pulley secured to the outer support, of the transverse shaft journaled at the inner support carrying a roll provided with a series of eyes, the cross-head provided at its inner side with a series of eyes, a central wire connected to one of the eyes and passed under and around the roll and secured to one of its eyes, the clothes supporting wire passed loosely through the series of eyes of the cross-head and following the direction of the first mentioned wire also secured to the roll, the standards arranged upon the upper side of the cross head, the grooved wheel journaled in the standards, the brackets at the opposite sides of the cross-head, the winding shaft arranged therein and squared at one end to receive a crank, the drum and ratchet wheel upon the winding shaft, a pawl for engaging the ratchet wheel, and a supporting wire secured to the drum, passed under the grooved pulley of the outer support and rearward under the pulley or wheel of the cross-head and secured to the roll upon which it is reversely wound with relation to the remaining wires, substantially as specified.

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**505,017. STORE-SHELVING.** FREDERICK A. ANTHONY, Livermore, Cal. Filed Dec. 3, 1892. Serial No. 453,942. (No model.)



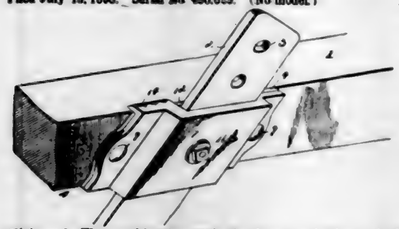
*Claim.*—1. The combination with a series of uprights having grooves therein, of bars adapted at their ends to enter said grooves, pins adapted to adjustably secure said bars to the uprights, ornamental heads fixed to one end of said pins and ornamental heads or knobs removably secured to their other ends, substantially as set forth.

2. The combination with several pairs of uprights having vertical grooves, of bars adapted at their ends to enter the grooves in the uprights of the two end pairs, pins for adjustably securing said bars to said uprights, and two sets of bars adapted at their ends to enter the grooves in the central pair of uprights and pins for securing both sets of bars to the central uprights, substantially as set forth.

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**505,018. COLTER.** LEONARD S. BAILEY, West Potsdam, N. Y. Filed July 15, 1893. Serial No. 480,629. (No model.)

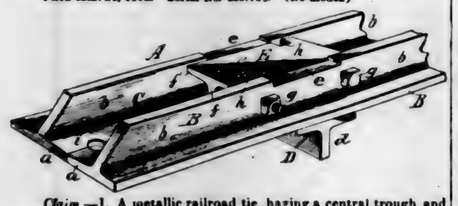


*Claim.*—1. The combination with the beam and colter, of a U-shaped clip for receiving the colter and applied to the face of the beam, bolts passing through perforations in the clip at opposite sides of the colter, and a central pivot-bolt passed through the clip, colter and beam, the shank of the colter being of less width than the recess in the clip, substantially as specified.

2. The combination with the beam, the colter and the wear-plate applied to the face of the beam and having central and end-openings, a U-shaped clip applied to the wear-plate and having central and end openings, the opposite walls of the clip being flared at opposite sides of their centers, and the colter having its shank fitting between the walls at their narrowest points and mounted pivotally on the central bolt, substantially as specified.

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**505,019. RAILROAD-TIE.** NEWTON BENJAMIN, Elmira, N. Y. Filed Mar. 21, 1892. Serial No. 425,761. (No model.)



*Claim.*—1. A metallic railroad tie, having a central trough, and having a T-shaped bearing located in the trough and engaging the sides and bottom of the trough, substantially as set forth.

2. A metal tie comprising three rails the treads of which are removed, the middle rail inverted and the three secured together, substantially as set forth.

3. The combination with a railroad tie made in the form of a trough and having recesses for the reception of a railroad rail, of an inverted T-shaped bearing for the rail, located within said trough, said T shaped rail having a bearing centrally on the bottom of the trough, substantially as set forth

4. In a railroad tie, the combination with two flanged sections united to form a trough shaped tie, of an inverted T-shaped rail located between said flanges, substantially as set forth.

5. A railroad tie consisting of a trough shaped body portion, and an inverted rail the tread of which is removed, secured in the trough, the base of said inverted rail having holes therein and bolts or similar devices passing through said holes for securing rails to the tie, substantially as set forth.

6. The combination with a trough shaped tie composed of vertical flanges, of a T-shaped web between said flanges resting on the bottom of the trough and bearing upon the inner walls of the trough, and a T-shaped rail secured transversely beneath the T-shaped web, substantially as set forth.

7. The combination with a railroad tie made of flanged sections so as to form a trough, of an inverted T-shaped supporting rail located within said trough and a T-shaped rail secured across the bottom of said tie, beneath the rail located in the trough substantially as set forth.

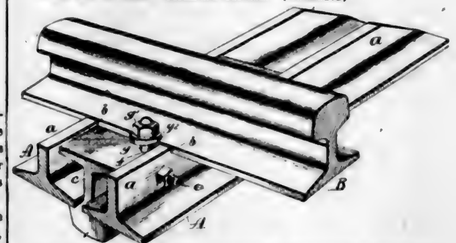
8. In a railroad tie, the combination with two T-rails, of an inverted T-shaped rail inserted between said firstmentioned T-rails, its edges bearing against the sides of the two main rails and bolts passing through all of said T-shaped rails, substantially as set forth.

9. In a railroad tie, the combination with two rail sections placed side by side so that their inner flanges abut and thus form a trough, of an inverted T-shaped rail placed in said trough, and provided with openings, bolts passing through the webs of all of said rails, and eye bolts passing through the openings in the inverted T shaped rail and connected with said bolts, substantially as set forth.

10. The combination with a pair of rail sections placed together with their inner base flanges together at the bottom, of an inverted rail section placed between the two rail sections with its flanges bearing against the webs of the two main rails and its web resting on the inner flanges of the two main rails, and bolts passed through holes formed in the several webs, between the flanges to secure the rail sections together, substantially as set forth.

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**505,020. RAILWAY-TIE.** NEWTON BENJAMIN, Elmira, N. Y. Filed Oct. 10, 1892. Serial No. 448,402. (No model.)



*Claim.*—1. A railway tie composed of three rails or sections of rails rigidly secured together side by side, the central or intermediate rail engaging the outer rails at two points in different horizontal planes, substantially as set forth.

2. A railroad tie composed of three rails or rail sections secured together, the web of the central rail interposed between and bearing against the adjacent edges of flanges of the two outside rails and the outer edges of the flanges of the central rail engaging the webs of the two outside rails, substantially as set forth.

3. A railway tie composed of three rails or sections of rails the central rail extending in the opposite direction from the outer rails, the web of the central rail between the flanges of the outside rails and the flanges of the central rail bearing against the web of the outside rails and bolts passed through the three webs for securing the parts rigidly together, substantially as set forth.

4. A railway tie composed of a pair of outer rails or sections of rails having their treads removed and an inverted rail or rail section interposed between the outer rails or rail sections and secured to said rails or rail sections the tread of the central rail or rail section extending below and forming shoulders for the inside base flanges of the outer rails, substantially as set forth.

5. In a railroad tie, the combination with two rail sections arranged in proximity to each other, of an intermediate rail section having its web extending between the flanges of the first-mentioned rail sections, bolts passing through the webs of said rail sections, and tie bolts adapted to receive said bolts, said tie bolts passing through the flanges of the intermediate rail section and adapted to serve to secure the railroad rails to the tie, substantially as set forth.

6. In a railroad tie, the combination with two rail sections arranged in proximity to each other, of an intermediate rail section having its web projecting between the flanges of the firstmentioned rail sections and having its tread beneath the same and adapted to constitute an anchor for the tie and a support for the firstmentioned rail sections, the upper edges of the several sections in approximately the same horizontal plane, to form a seat for the support of a rail, substantially as set forth.

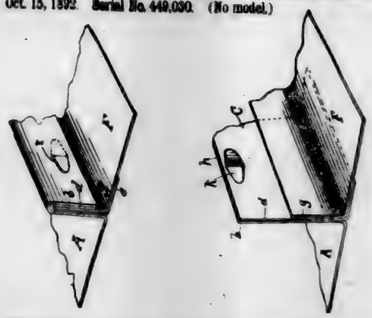
7. In a railroad tie, the combination with two rail sections arranged side by side in proximity to each other, of an intermediate rail section having its web projecting between the first-mentioned rail sections, bolts connecting said rail sections together, a block passing through the web of the intermediate rail section and adapted to bear on the flanges of the first-mentioned rail sections, substantially as set forth.

8. In a railroad tie, the combination with two sections, each composed of two parallel rail sections, of an intermediate rail section having its web projecting between the first-mentioned rail sections and having its tread beneath the same, said intermediate rail section extending from the outside bearing of one track rail to the other, the ends only of the central portion of the intermediate rail section being provided with a tread portion, substantially as set forth.

9. A railroad tie composed of three rails or rail sections secured together, the central rail or rail section extending in an opposite direction from the outer rails and blocks inserted in the spaces between webs of the rails, said blocks reaching the entire distance from one web to the next adjacent web whereby the tie is strengthened at this point, substantially as set forth.

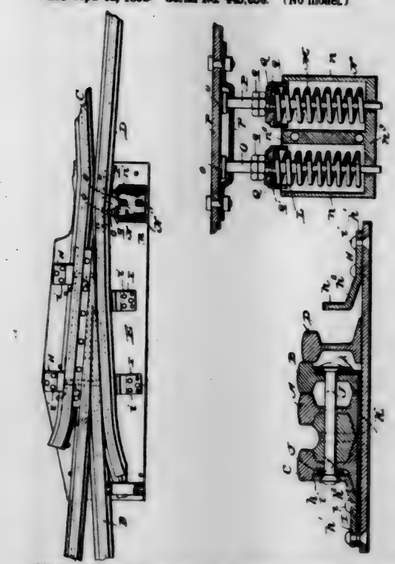
10. A railroad tie composed of three rails or rail sections the outer ones having their treads removed and the central one inverted with its tread located below the base flanges of the outer rails or rail sections, and blocks interposed in the spaces formed between the webs of the rails, substantially as set forth.

**505,021. SHEET-METAL ROOFING.** WILSON C. BERGER, Canton, Ohio, assignor to the Berger Manufacturing Company, same place. Filed Oct. 15, 1892. Serial No. 449,030. (No model.)



*Claim.*—The combination with the sheets A and F having turned up flanges *b* and *g*, of the anchor C and triangular tongues *h* and *k'* cut from the flange *b* of sheet A and the vertical portion *d* of the anchor C, the free ends of which are folded back on the anchor on a line perpendicular to the roof, substantially as described.

**505,022. RAILWAY-FROG.** NATHANIEL W. BOYD, Carlisle, Pa. Filed Sept. 12, 1892. Serial No. 445,658. (No model.)



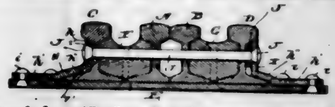
*Claim.*—1. In a railway frog, the combination with a movable wing rail, of the stiff frog-body comprising the main line rail, the frog-rails and the distance blocks, said frog-body being raised above the level of the top of the wing-rail by a horizontal spacing plate fitted beneath the frog body and having its inner end provided with a vertical flange that bears against the inner frog-rail, and the parts of the frog-body and the vertical flange of the spacing plate being united rigidly together by a through bolt, substantially as and for the purpose described.

2. In a railway frog, the combination with the fixed point rails and the main line rail, a bearing plate, and the distance blocks, of a movable wing rail, the horizontal spacing plate fitted below the fixed body of the frog and having its inner end bent upward to bear against the inner frog rail, the fixed brace bearing against the outer main line rail, and the through bolt passing through the frog and main line rails, the distance blocks and the two braces, substantially as described.

3. In a railway frog, the combination with the fixed frog rails and main line rail, of a movable wing rail, a fixed housing, a spring therein, a coupling rod connected directly to said wing rail and guided in the fixed housing, a cup-shaped follower fitted on said rod and in the open end of the housing, and receiving the outer end of the spring, and an adjustable nut carried by the coupling rod and bearing against the follower, substantially as and for the purpose described.

4. In a railway frog, the combination with the fixed frog and main line rails, of the movable wing rail, a fixed spring housing open at its front end, the coupling rods playing freely in the housing and having the direct loose connection at their front ends with the wing rail, the spring fitted on said rods within the housing, the cup-shaped followers carried by said rods to play freely in the open end of the housing, and receiving within themselves the outer ends of the springs, and the adjustable nuts on said rods and bearing against the followers, substantially as described.

**505,023. RAILWAY-FROG.** NATHANIEL W. BOYD, Carlisle, Pa. Original application filed Sept. 12, 1892, Serial No. 445,658. Divided and this application filed Feb. 15, 1893. Serial No. 462,425. (No model.)

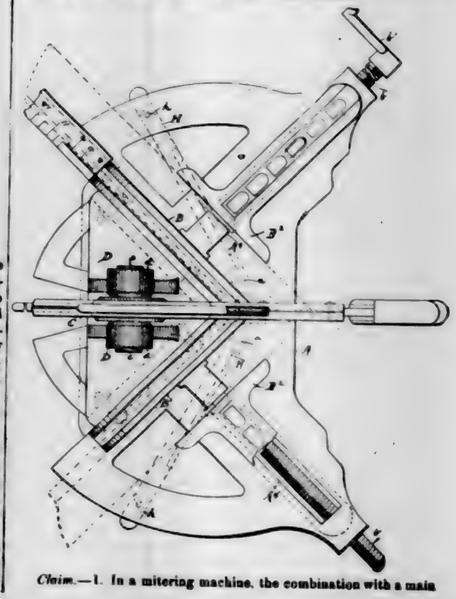


*Claim.*—1. In a stiff railway frog, the combination with the rail, the distance blocks, and a bearing plate, of the outside braces H, I, fixed to the bearing plate and fitted against the feet and webs of the outside rails of the frog, the through bolt passing through said braces, rails and distance blocks, and the slotted key J forced between one of the rails and the adjacent brace, substantially as and for the purpose described.

2. In a stiff railway frog, the combination with the rails, the distance blocks, and the bearing plate, of the fixed braces H, I, fitted against the outside rails and each provided with a countersunk opening, and the through-bolt having one head thereof seated in the countersunk opening of one brace and its other end upset or swaged to form a head which is seated or fitted in the countersunk opening of the other brace, substantially as and for the purpose described.

3. In a stiff railway frog, the combination with the rails, a bearing plate, and the distance blocks, of the braces H, I, each fastened to the bearing plate and bent to fit close against the foot and web of one outside rail, the double-headed through bolt passing through said braces, rails and distance blocks, and seated against the braces, and the slotted key, substantially as and for the purpose described.

**505,024. MITERING-MACHINE.** JAMES A. BEATTIE, Akron, Ohio. Filed Dec. 11, 1890. Serial No. 374,276. (No model.)



*Claim.*—1. In a mitering machine, the combination with a main frame, of a saw guide having horizontal bearings in the main frame at right angles to the saw guide whereby it may be swung in a vertical plane into various positions, said saw frame constructed to receive a saw and permit it to reciprocate therein, substantially as set forth.

2. A mitering machine consisting of a guiding device adapted to embrace, support and guide a saw, such guiding device mounted on trunnions approximately perpendicular to the plane of the guiding device, said guiding device capable of swinging to various inclinations between a horizontal and vertical position, and a reciprocating saw fitted to the guiding device and adapted to reciprocate therein, substantially as set forth.

3. A mitering machine comprising a turn table pivoted to a suitable support, clamping device constructed or adjusted so that the lines thereof form a predetermined angle to each other, suitable saw guide having horizontal bearings at right angles thereto mounted to turn in the turn table whereby the saw guide may be moved to different inclinations on the turn table and constructed to receive and embrace a saw, and a reciprocating saw fitted to the guide and adapted to reciprocate therein, substantially as set forth.

4. In a mitering machine, the combination, with a saw adapted to reciprocate in suitable guides, such guides being mounted on trunnions substantially as indicated, of one or more springs engaging the back of the saw for yieldingly holding the saw to its engagement to the work, substantially as set forth.

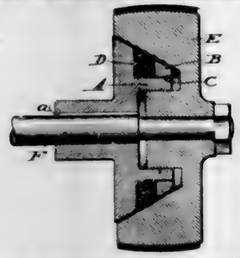
5. In a mitering machine, the combination, with a turn-table bearing stationary ledges or jaws, a pivotally mounted saw guide and a reciprocating saw fitted and adapted to reciprocate therein of opposing movable jaws and screws for operating the latter, each movable jaw having a series of mortises and the nuts of the actuating screw having lugs or projecting members adapted to engage these mortises, substantially as set forth.

6. In a mitering machine, the combination, with a turn table bearing stationary jaws, of movable jaws having catches pivoted thereto for holding the jaws upon the table, a spring adapted to engage the clamping end of the movable jaw or an attachment of the latter, such spring acting upward on the jaws for taking out the lost motion of the jaw from below, substantially as set forth.

7. In a mitering machine, the combination, with saw saw guide frame, turn table and clamping device, comprising a sliding jaw, and a screw adjustably connected with the jaw for moving the latter, of detachable angle-bars adapted to be adjusted at various angles and adapted when adjusted to serve as the stationary jaws for the clamping devices, substantially as set forth.



**505,025. MAGNETIC CLUTCH OR COUPLING.** GEORGE A. BROWN, Muskegon, Mich. Filed Feb. 11, 1893. Serial No. 461,869. (No model.)

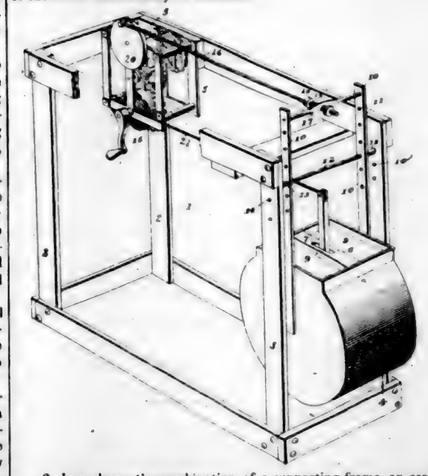


*Claim.*—1. An electro-magnetic clutch, comprising an electro-magnet, the magnetic circuit of which is interrupted by non-magnetic material; and an armature, adapted and arranged to make direct contact with said electro-magnet, substantially as set forth.

2. In an electro-magnetic clutch or coupling, the combination with an armature E, of an electro-magnet comprising a body A, pole piece B, non-magnetic layer C between the body and the pole-piece, and winding D; the magnet and the armature being of conical form and adapted and arranged to come into direct contact and adhere one to the other, substantially as and for the purpose set forth.

**505,026. CHURN.** JOHN C. BUDD, Defiance, Ohio. Filed Feb 2, 1893. Serial No. 460,727. (No model.)

*Claim.*—1. In a churn, the combination of a supporting frame, an oscillating churn body provided with upward-extending suspension bars pivotally connected to the frame and extending above the pivotal point, a dasher arranged within the churn body and having a stem pivoted to the top thereof and projecting above the same, a motor having a pitman connected with the suspension bars above their pivotal point and adapted to oscillate the churn body, and a stationary rod connected with the stem of the dasher above the pivotal point of the same substantially as described.



2. In a churn, the combination of a supporting frame, an oscillating churn body provided with upward extending suspension bars, a cross-rod journaled in their upper ends and having an opening, a motor having a pitman arranged in the opening of the cross-rod and threaded thereat, nuts arranged on opposite sides of the cross-rod and screwed on the threaded portion of the pitman, and spiral springs disposed on the pitman and arranged between the nuts and the cross-rod, substantially as described.

3. In a churn, the combination of a supporting frame, an oscillating churn body, the suspension bars extending upward from opposite sides of the churn body and each provided with a series of perforations, a pivot rod arranged in perforations of the suspension bars, a cross-rod journaled in the upper ends of the suspension bars, a motor having a pitman connected with the cross-rod, an oscillating dasher mounted in the churn body and having a stem extending above the body, and a stationary rod connected with the stem of the dasher, substantially as described.

**505,027. GAME APPARATUS.** FRANK H. CARPENTER, Buffalo, N. Y. Filed Oct. 10, 1890. Serial No. 367,882. (No model.)



*Claim.*—A game consisting of a shallow box having a flat bottom, a pin or peg protruding above the upper surface of the bottom, and a ball arranged in the box and provided with a socket adapted to fit over the pin or peg, the latter forming an obstruction to the movements of the ball upon the bottom, and also serving to hold the ball when the socket of the latter is engaged with the pin or peg, substantially as set forth.

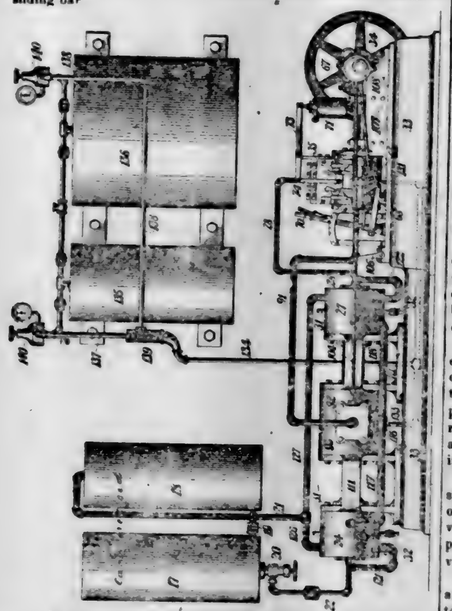
**505,028. APPARATUS FOR USING GASES UNDER HIGH PRESSURE FOR POWER.** GEORGE H. CHAPPELL, New York, N. Y., assignor to the New Power Company, same place. Filed Sept. 28, 1892. Serial No. 446,906. (No model.)

*Claim.*—1. In a closed circuit gas engine, in combination a compressed gas holder or reservoir, a compressing pump, a heat absorbing fluid chamber surrounding the pump, a coil of pipe from the gas reservoir located in this chamber, a motor engine connected to this coil, another power cylinder connected to the exhaust of the motor engine and arranged to operate the compressing pump, a heating apparatus for imparting heat to the cylinders of the motor engine, and the power cylinder, a coil of pipe located in the heat absorbing fluid chamber and connected to the exhaust of the pump cylinder, and a compressed gas holder or reservoir connected to this coil of pipe and also connected to the other gas reservoir by a stop valve connection.

2. In a closed circuit gas engine, in combination a compressed gas reservoir, a chamber holding a heat absorbing medium, two passages therein having heat radiating surfaces, a motor engine connected to the gas reservoir by one of the passages a source of heat supply, and a gas compressing pump connected at its inlet to the exhaust of

the motor engine, and at its outlet to the gas reservoir by the other passage.

3. In a gas engine, in combination, the cylinder, the valve chest, puppet valves communicating with the ends of the cylinder, arms or tappets on the puppet valves actuating rods, levers pivoted to a frame on the side of the cylinder with their upper ends in juxtaposition to the arms or tappets, a horizontally sliding bar attached to and controlling the lower ends of the levers, and means for reciprocating said sliding bar



4. In a gas engine, in combination, arms on rock shafts for actuating the valves, a vertically sliding frame, levers pivoted to the vertically sliding frame arranged with their upper ends in juxtaposition to the arms, a fluid governor driven from the main shaft and having a vertically moving spindle, a lever connecting said spindle of the governor to the vertically sliding frame, and a bar and means for reciprocating it horizontally, said bar being attached to and controlling the lower ends of the levers, which are pivoted to the vertically sliding frame, substantially as and for the purpose set forth.

5. In a gas engine valve gear, in combination a bar fitted in slides to move horizontally, a starting and reversing device comprising a link connected to the bar and operated by two eccentrics on the main shaft and a hand lever connected to the link, two levers pivoted to a frame on the side of the cylinder having their lower ends controlled by the horizontally moving bar, arms or tappets on rocking rods arranged to be acted upon by the upper ends of the levers, and puppet valves operated by the rocking rods to which the arms are attached, substantially as and for the purpose set forth.

6. In a gas engine valve gear, in combination, a bar fitted to slide horizontally, a reversing gear operated from the main shaft, the link of which is connected to and actuates the bar, two levers pivoted on a frame fitted to slide vertically, arms on the valve actuating shafts arranged to be acted upon by the upper ends of the levers, and a governing device operated from the main shaft and connected to the vertically sliding frame, substantially as and for the purpose set forth.

7. In a gas engine, in combination, a reversing valve controlling gear, a fluid governor having a rotating propeller, a gear wheel driven from the main shaft, reversing gear wheels fitted to rotate the propeller shaft, and means connected to the reversing gear for setting said reversing gear wheels so that the governor propeller is caused to rotate always in the same direction.

8. In a gas engine, in combination, the cylinder valves and means for operating the same from the main shaft a hand lever for reversing the direction of rotation of the main shaft, a fluid governor having a rotating propeller, a bevel wheel in a vertical plane on a shaft driven by connecting gear wheels from the main shaft, two connected bevel wheels on the governor propeller shaft adapted to be alternately moved into gear with the vertical bevel wheel, a bell crank lever arranged to control the two connected bevel wheels, and a rod connecting the bell crank lever to the shaft of the hand lever of the reversing gear, substantially as and for the purpose set forth.

9. In a gas engine in combination, the cylinder, induction valves, a bar fitted to slide horizontally in guides on the side of the cylinder and reciprocated by suitable means from the main shaft, levers and tappets for imparting motion from this bar to the induction valves, eduction valves and a horizontally sliding bar for actuating them on the other side of the cylinder, a rock shaft fitted in bearings transversely to the cylinder, and levers or arms fastened to the ends of the rock shaft and connected to the two horizontally sliding bars, substantially as and for the purpose set forth.

10. In a gas engine, in combination, a valve consisting of a nipple having exterior vertical ribs extending into the valve chest and constituting a continuation of a cylinder induction passage, a cylindrical screen fitting on the ribs of the nipple, a rod or bar having a cylindrical recess at its lower end so as to embrace the cylindrical screen but be free to slide vertically thereon, and means for raising the rod or bar, substantially as and for the purpose set forth.

11. In a gas engine, in combination a nipple valve, a rod or bar recessed at one end to cover the nipple and having a valve seat formed in the recess, and a screen interposed between the valve face of the nipple and the opening of the recess of the rod.

12. In a gas engine, in combination, a valve chest, a nipple valve extending therein, a rod or bar recessed at one end to cover the nipple valve, a guide or bearing formed in the wall of the valve chest opposite the nipple valve and in which the other end of the rod or bar is fitted to slide, and a screen interposed between the valve face of the nipple and the opening of the recess of the rod.

13. In a gas engine, in combination, a valve chest, a nipple valve extending therein, a screen surrounding the nipple, a rod recessed at one end to fit over and slide on the screen and having a valve seat at the bottom of the recess, a bearing in or on the wall of the chest opposite the nipple valve and forming a guide for the other end of the rod, a tappet rod extending through a side wall of the chest, arranged at right angles to and acting on the recessed rod, and means for rocking the tappet rod.

14. In a gas engine, in combination, a cylinder, a valve chest, studs secured in the side of the cylinder and passing through the walls of the valve chest, cap nuts on the outer ends of the studs, nipple valves in the valve chest, ports in the interior of the cylinder, and passages extending from the nipple valves laterally into the studs and vertically through the ends of the studs to the cylinder ports.

15. In a gas engine, in combination, a gas compressing cylinder and its plunger, a jacketed space surrounding the cylinder adapted to hold a heat absorbing fluid, a coil of pipe located in the heat absorbing fluid, a connecting pipe joining one end of said coil to the inlet valve of the cylinder, and a gas reservoir connected to the other end of the coil substantially as and for the purpose set forth.

16. In a gas engine, in combination, a compressed gas reservoir, a power cylinder and its piston, gas compressing plungers and their cylinders, said plungers being operated directly by the power piston, jacketed space surrounding the compressing cylinders and adapted to hold heat absorbing fluid, two coils of pipes around the cylinders within the jacketed space, and connecting pipes between the gas reservoir, the power and compressing cylinders and the coils of pipes, substantially as and for the purpose set forth

17. The slide valve of a gas engine, consisting of the following elements in combination, two blocks having central vertical holes, the upper face of one and the under face of the other constituting the working of the valve, the central parts being fitted together to permit of vertical play only between them, an elastic washer located between adjacent shoulders of the blocks, and a yoke surrounding the blocks and provided with a rod by means of which the valve is connected to the actuating mechanism.

18. In a gas engine, in combination, a cylinder, a valve chest having two induction ports formed in each of its side walls opposite to one another, each opposing pair of ports being connected by passages to the openings in the ends of the cylinder, and an eduction in each of its side walls located between the induction ports and connected by passages to the exhaust passage of the cylinder, and a slide valve having a central passage through it and fitted to bear against the two side walls of the chest, substantially as and for the purpose set forth.

19. In combination a valve chest, a two part slide valve located therein with space on four sides, the inlet pipe being in one of the walls of the chest thus allowing the working gas to act by its pressure on four sides of the valve, the two other sides of the valve being held against two opposing side walls constituting the valve seats of the chest, two pair of connected ports in said walls connected respectively to the end ports of the cylinder and so arranged as to be alternately covered by the valve, and means for reciprocating the valve.

20. In a gas engine, in combination, a cylinder, a valve chest having two induction ports formed in each of its side walls opposite to one another, each opposing pair of ports being connected by passages to the openings in the ends of the cylinder, and an eduction in each of its side walls located between the induction ports and connected by passages to the exhaust passage of the cylinder, and a slide valve consisting of two blocks having central vertical holes, the upper face of one and the under face of the other constituting the working faces of the valve, the central parts being fitted together to permit of vertical play only between them, an elastic washer located between adjacent shoulders of the blocks, and a yoke surrounding the blocks and provided with a rod by means of which the valve is connected to the actuating mechanism.



## 505,029. WIRE-TIGHTENER. George J. Cline, Goshen, Ind.

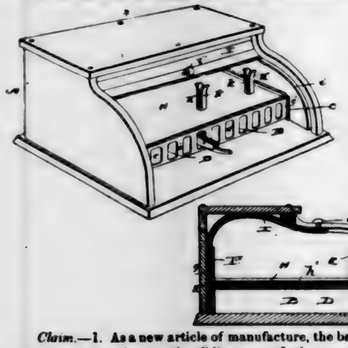
Filed June 7, 1893. Serial No. 476,847. (No model.)



*Claim.*—The improved spool for wire tightening devices consisting essentially of the round body having the integral annular flanges *f*, near one end, the ratchet also formed integral with the body and comprising the four teeth which taper on their longitudinal sides from the heels to the points and are rounded transversely throughout their length on their surface so as to avoid the formation of angles and produce a tooth broadest at its base, said teeth having their heels meeting the toes of the contiguous teeth in an abrupt or relatively right-angle, the body also having the journal portion *k*, at one end, the angular key seat *m*, at the opposite end, and the hole through the body between the flange and ratchet, in combination with the box or bearing having the beveled, angular lug in its base, the whole adapted to operate, substantially as specified.

## 505,030. BARBER'S CABINET. John B. Cox, Fayetteville, Ark.

Filed May 29, 1893. Serial No. 475,863. (No model.)

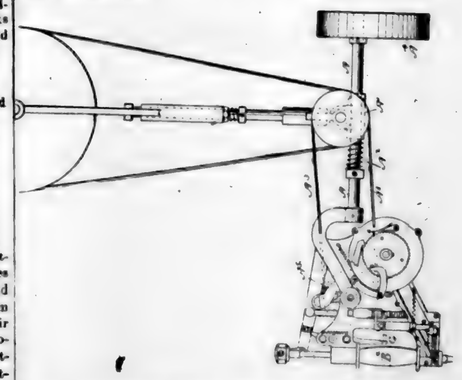


*Claim.*—1. As a new article of manufacture, the barber's cabinet comprising a case having the sliding cover I, the transverse vertical front C having the slots or openings *e*, the false back F fixed within the case and forming with the rear wall thereof a space *g* for the reception of the sliding cover when moved backward to open the cabinet, and the longitudinal parallel partitions D fixed to the false back and to the front C on lines between the slots *e* therein and forming a series of longitudinal horizontal compartments B within the cabinet, substantially as described, for the purposes set forth.

2. As a new article of manufacture, the barber's cabinet herein described comprising the inclosing case provided with the false back F forming the space *g* and with the sliding cover I guided in ways to enter said space *g*, the fixed front strip C having the series of slots *e*, the longitudinal partitions D fixed to the false back and to the front C on lines between the slots *e* therein and forming the series of longitudinal horizontal compartments B which are closed at the rear by the back F and open at the front through the slots *e* in the strips C, and the removable shelf H supported by ways above said compartments B to close the upper sides thereof, and provided with one or more clamps *k*, substantially as and for the purposes described.

## 505,031. TACK-DRIVING MACHINE. Joseph E. Crimp, Somerville, George W. Copeland, Malden, and Thomas Barrett, Boston, Mass., assignors, by mesne assignments, to the Boston Lasting Machine Company, Portland Me. Filed July 31, 1891. Serial No. 401,286. (No model.)

*Claim.*—1. In a machine for driving tacks, a constantly revolving lifter, a driving spring, a driver disconnected from its raising mechanism, in combination with a swinging spring operated dog for locking said driver against the tension of the driving spring, substantially as shown and described.



2. In a machine for driving tacks, a constantly revolving lifter, in combination with a driver and endwise reciprocating roll for raising said driver, and mechanism substantially as described, to reciprocate said roll at the termination of the movements of said driver, all constructed and operating substantially in the manner shown and described and for the purposes set forth.

3. In a machine for driving tacks, a feeding finger and mechanism substantially as described for carrying it, mounted on the frame of the machine, intermediate mechanism connected to the driver elevating arm, operating a reciprocating cam, which actuates said feed finger carrying mechanism in unison with the driver and holds the feed finger at its extreme forward position, when said driver is locked up, in combination with an interposed spring operated dog for holding the driver up, and an independent trigger and gear for releasing the driver and driving the nail or tack held by the feeding finger, all operating substantially as shown and described.

4. In a machine for driving tacks, the combination of the elevator wheel D' mounted upon an axis at right angles to the direction of the chute or roadway $B^4$, with the ratchet wheel $D^2$, hooked pawl $C^2$ and the eccentric C', substantially as shown and described.

5. In a machine for driving tacks, the combination of the chute or roadway $B^4$, the picker $E^2$, mounted upon the swinging arm E, and operated by the pins $D^3$, of the ratchet wheel $D^2$ acting upon the curved arm $E^4$ arranged and operating substantially as shown and described.

6. In a machine for driving tacks, the combination of the feeding finger M' mounted upon the bell crank lever M, provided with a slot $M^3$, with the rocker arm $L^3$, and the spring $M^4$ substantially as described, whereby the feeding finger is caused to move back until it loosens the tacks in the lower end of the roadway and then passes around behind the first one of them and pushes it into the throat of the driveway, and there holds it, until the driver is released.

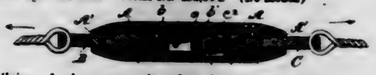
7. In a machine for driving tacks, the combination of the feeding finger M', means substantially as described for actuating said finger, two independent gates K, which close the end of the chute or roadway $B^4$, substantially as shown and described.

8. In a suspended oscillating tack-driving machine, the combination of the counter balanced arm A, sliding and revolving in the sleeve A', of the suspended mechanism, and the bearing A, upon one end of said arm A, and the eccentric counter balance A, on the other end, substantially as and for the purposes shown and described.

9. In a machine for driving tacks, a constantly revolving main shaft with a cam or lifter for automatically raising the driver attached thereto, an interposed swinging spring-operated dog for holding said driver up, in combination with the trigger $G^3$ whereby the operator can at will set in operation the tack driving and feeding mechanism substantially as shown and described.

10. In a machine for driving tacks suitable tack driving and feeding mechanism a constantly revolving main shaft operating an elevator wheel, in combination with cam or lifter for the driver a dog for holding the driver locked up against the tension of the driving spring and a trigger and sear for releasing said driver whereby the operator can at will set in motion the driving and feeding mechanism, substantially as shown and described.

**505,082. AUTOMATIC SAFETY-JOINT FOR ELECTRIC CONDUCTORS.** JAMES R. CURRY, Wilkinsburg, Pa., assignor of eighty-three one-hundred-and-twenty-eighths to Frank B. Tomb, same place, and Samuel J. Graham, A. H. Childs, and Robert A. Gillespie, Pittsburg, Pa. Filed Nov. 18, 1892. Serial No. 452,394. (No model.)

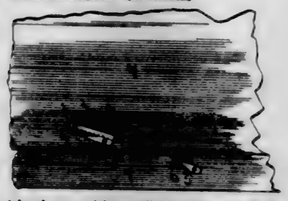


*Claim.*—1. An automatic safety joint for electric conductors consisting of an insulated containing case, conducting stems passing through the ends of the same, springs for forcing these stems inwardly, and two sliding electrical contact surfaces arranged upon the inner ends of these stems and adapted to break circuit by being moved inwardly past each other, and insulation disposed between the conducting stems and contacts on the one hand, and the containing case on the other, to maintain a permanent insulation for the containing case in all positions of the parts, substantially as described, and shown.

2. An automatic safety joint for electric conductors, consisting of an insulated containing case, conducting stems passing through the ends of the same, springs for forcing these stems inwardly, two sliding electrical contact surfaces arranged upon the inner ends of these stems, and a non-conducting locking seat of insulating material arranged upon one of the stems behind its contact surface, for the other contact surface to drop into, substantially as shown and described.

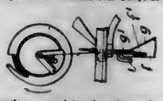
3. The conducting stem B, with slotted metal shell having an inturned flange at the end and insulation within; in combination with the conducting stem C having a metal hub with a non-conducting grooved collar behind it, springs for forcing the stems inwardly, and an outer insulated containing case, substantially as shown and described.

**505,083. LATCH.** JOHN L. DALE, Whaleyville, Md. Filed Apr. 5, 1893. Serial No. 469,170. (No model.)



*Claim.*—A latch comprising a clip having an arched portion provided with an opening or seat, and the rod fitted at one end to said arched portion and having a lateral portion or stud to enter said opening or seat substantially as and for the purposes set forth.

**505,084. SEWING-MACHINE.** MARX T. DEBUS, Eastbourne, England. Filed Sept. 27, 1892. Serial No. 447,045. (No model.)



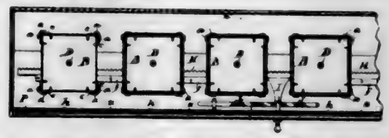
*Claim.*—1. In a sewing-machine having a barbed needle, the combination with the needle of a thread guide having an edge inclined to the line or plane of reciprocation of the needle thereby forming with the needle when the latter is in its lowest position, a V-shaped notch, and a thread puller, means for giving said thread puller movement in a downward and outward direction, thereby operating to draw the thread into such notch so that it will lie against the needle and so that in the upward movement of the needle its barb will take the thread, all substantially as described.

2. In combination the barbed needle, the fixed thread guide *f*, consisting of a plate having the inclined edge *g*, and slot *f*, the thread puller *i*, having a hooked end *j*, and secured to a slide bar *k*, arm *m*, on said bar, and a grooved cam *p*, serving to give the forward and backward and also a lateral movement to the hook, all substantially as set forth.

**505,085. DISPLAY-CABINET.** MILLARD F. DYER, Detroit, Mich., assignor to the Automatic Register Company, same place. Filed Nov. 30, 1891. Serial No. 413,468. (No model.)

*Claim.*—1. The combination of the outer case, the revoluble column located in said case, said column having a way in each of its faces, the pinion mounted on said column, the rack engaging said pinion, the movable handle attached to said rack, the pointer on said handle, and the scale with which said pointer registers.

2. The combination of the case, the fixed port therein, the revoluble column, said column being located in said case in line with said port, the display matter on the several faces of said column, the graduated plate on said case, said plate having characters indicative of the display matter on the several faces of said column, the pinion on said column, the removable rack engaging with said pinion, the movable handle attached to said rack, and the movable pointer that registers with said scale-plate.



3. The combination of the case, having the fixed port therein, the vertical rod in said case, the conical collar on said rod, the revoluble display frame, said frame loosely mounted on said rod adjacent to said port and supported by said collar, the pinion mounted on said frame, the sliding rack engaging with said pinion, the movable handle attached to said rack, the scale-plate, and the movable pointer adapted to register with said plate.

4. In a device for the purpose set forth, the combination of the case, the revoluble frame located therein, the pinion on said frame, the sliding rack engaging with said pinion, the handle attached to said rack and extending through the case, the undulating spring over which the stem of said handle travels, as specified.

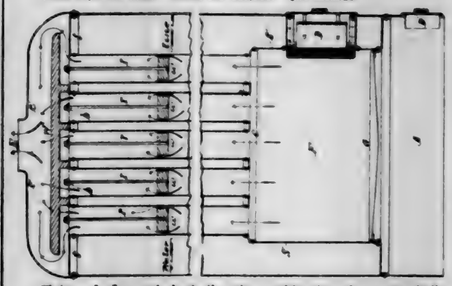
5. The combination of the case, having the fixed ports, the series of revoluble columns, said columns being located in said frame in horizontal alignment adjacent to said ports, the pinions attached to said columns, the horizontally movable rack common to all of said pinions and engaging therewith, the movable handle attached to said rack, the scale-plate, and the movable pointer.

6. The combination of the case, the revoluble prismatic-frames therein, said frames having a pinion at their lower ends, the sliding rack common to and engaging with the pinions of all of said frames, the graduated plate on said case, the handle attached to said rack and extending through said case, said handle having a pointer that registers with the graduations on said plate, as set forth.

7. The combination of the case having a transparent face, the revoluble prismatic frames therein, said frames carrying a pinion on their lower ends, the rack common to and engaging the pinions of all of said frames, the slotted graduated plate on the front of said case, the handle attached to said rack and extending through the slot in said plate, and having a pointer that registers with the graduations thereon, as set forth.

8. The combination of the case, the revoluble prismatic-frame therein, said frame having a series of clock-dials on its several faces, and carrying a pinion at its lower end, a sliding rack engaging said pinion, a plate attached to said case having a graduation thereon corresponding to each face of said prismatic-frame, a movable handle attached to said rack and having a pointer that registers with the graduations on said plate, substantially as specified.

**505,086. TUBULAR BOILER.** ELLIS F. EDGAR, Woodbridge, N. J. Filed Sept. 21, 1892. Serial No. 446,399. (No model.)

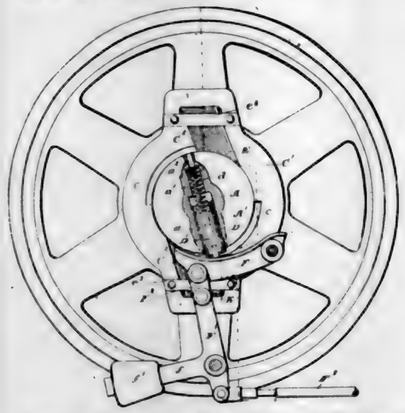


*Claim.*—1. In a tubular boiler, the combination of an outer shell, an inner shell, a firebox, a tube sheet at the fire box, a tube sheet at the smoke box, a series of fire tubes extending from one to the other of said tube sheets and a series of incombustible walls located within and partially closing said tubes at or about the water line of the boiler, but leaving draft spaces substantially at the side edges of said wall, substantially as and for the purpose set forth.

2. A tubular boiler provided with an incombustible wall located in the smoke box and extending over the ends of the tubes at a distance therefrom, in combination with other incombustible walls located within the tubes at or about the water line and partially closing the same and draft spaces substantially at the side edges of said walls, all substantially as set forth.



**505,087. CUSHIONED CLUTCH.** HIO P. EILERS, Cleveland, Ohio. Filed Apr. 15, 1893. Serial No. 470,459. (No model.)



*Claim.*—1. The combination of a shaft, a loose pulley upon said shaft, a stop movable to project from the surface of said shaft and to be withdrawn into the same, a cushion in the hub of said pulley to be engaged by said stop, and means for projecting and withdrawing the stop, substantially as set forth.

2. The combination of a shaft, a loose pulley upon said shaft, a stop in said shaft having means for projecting it from the surface of the same and withdrawing it into the same, and a cushion in the hub of the pulley to be engaged by said stop, and composed of plates of spring metal, substantially as set forth.

3. In a clutch device of the described form, a cushion composed of plates of spring metal having interposed, corrugated plates of spring metal, substantially as set forth.

4. In a clutch device of the described form, a cushion composed of alternating flat and corrugated spring metal plates, substantially as set forth.

5. The combination of a shaft, a loose pulley upon said shaft, a stop in said shaft having means for projecting it from the surface of the same and withdrawing it into the same, and a cushion in the hub of the pulley to be engaged by the stop,—said cushion composed of spring metal plates having corrugated spring metal plates interposed between them, substantially as set forth.

6. The combination of a shaft, a stop constructed to project from the periphery of said shaft, a loose pulley upon the shaft, and a cushion in the hub of said pulley to be engaged by said stop, substantially as set forth.

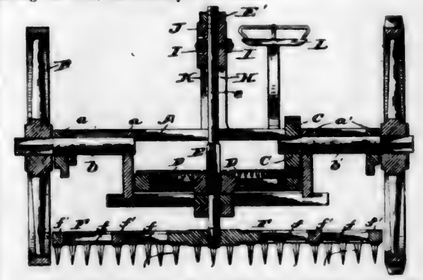
7. The combination of a shaft, a stop constructed to project from the periphery of said shaft, a loose pulley upon the shaft and having a shoulder in its hub engaged by said stop, and a shoe provided with means for forcing it toward and from the shaft and arranged in the path of a portion of said stop,—said shoe thus serving to force back or release the stop, substantially as set forth.

8. The combination of a shaft, a stop constructed to project from the periphery of said shaft and having a key upon its side, a loose pulley upon the shaft and having a shoulder in its hub to be engaged by the stop, and a shoe provided with means for forcing it toward and from the shaft and arranged in the path of the key upon the top substantially as set forth.

9. The combination of a shaft formed with a collar having a diametrical bore, a spring-pressed bolt in said bore provided with a key upon its side, a loose pulley upon the shaft having a hub portion embracing the collar and formed with segmental recesses around said collar and with deeper recesses at the ends of the segmental recesses, laminated spring cushions in said deeper recesses, and a shoe having means for forcing it toward and from the shaft and arranged in the path of the key upon the bolt, substantially as set forth.

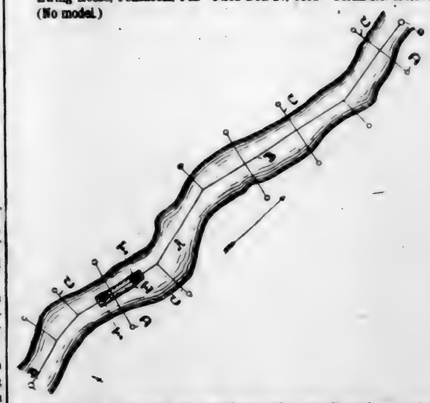
**505,088. ROTARY HARROW.** EDWARD ERICSON, Ouray, Colo., assignor of one-half to George C. Pierce and John P. Olson, same place. Filed Nov. 2, 1892. Serial No. 450,723. (No model.)

*Claim.*—1. In a rotary harrow, the combination, with a webbed disk composed of concentric rings supported by radial spokes, of a series of harrow teeth carried by said disk, each tooth consisting of a spear point, a shank, two annular collars or washers at the extremities of the shank, and a binding nut and means for rotating and adjusting said disk, substantially as set forth.



2. In a rotary harrow, the combination, with the two drive-wheels, a stud-shaft for each drive-wheel journaled in a swinging frame, and a swinging frame mounted on and supported by said stud-shafts, of a pinion keyed to the inner end of one stud-shaft, a horizontal crown gear intermeshing with said pinion and mounted upon a vertically-movable shaft, a vertically-slidable upright shaft loosely rotatably connected to said crown-gear, means for moving and controlling said shaft, and a webbed disk composed of concentric rings and provided with teeth mounted on the lower end of the upright shaft, each tooth comprising a spear-point, a shank, annular collars at the end of the shank, and a binding nut substantially as set forth.

**505,089. MEANS FOR GUIDING FLOATING LOGS, &c.** JASPER FINNEY and GEORGE DAVIDSON, Goulding, assignors of one-third to E. Ewing Reese, Pensacola, Fla. Filed Dec. 27, 1892. Serial No. 456,321. (No model.)

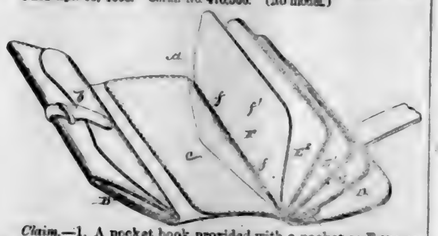


*Claim.*—1. In combination with a cable extending along a river and secured between the banks thereof, a trolley connected to the cable and adapted to move longitudinally thereof, and suitable mechanism to attach the said trolley to a log, whereby the said log may be guided while floating down stream, substantially as specified.

2. In combination with a dog adapted for attachment to a log, a trolley pivoted thereto, the same consisting of a disk in separated sections connected by means of a trough, and a guard plate having arms which cross the slot or opening between the two sections of the disk, substantially as specified.

3. As means for guiding logs as the same are floated down a stream or river, a stream cable secured in the said river from between posts or anchors situated at the shipping point and the place of destination, guy wires attached to the said stream cable and connected to poles on the river banks whereby the cable may be made to conform to the general direction of the river or stream and be also deflected for the purpose of avoiding obstructions, combined with a trolley adapted for attachment to a log, said trolley having a guiding trough and a revoluble guard which prevents the lifting of the said cable from the trough and at the same time allows the guy wires to pass the trolley, substantially as specified.

**505,040. POCKET-BOOK.** JOSEPH FRONTEIAX, Duluth, Minn. Filed Apr. 15, 1893. Serial No. 470,566. (No model.)



*Claim.*—1. A pocket book provided with a pocket as E the entrance to which is concealed, a closed, spaced compartment *b* and a slitted, sliding cover F which extends into and is secured at its lower end in said spaced closed compartment, and also extended over the mouth of said pocket and provided at its outer end with a hand hold *f'* for drawing said slitted cover outward, the construction and arrangement being such that when the pocket book is in its normal closed condition, the slits in the cover over the mouth of the pocket will be concealed but by drawing the cover outward will expose said slits and afford a means of access to the pocket for inserting or removing a coin, substantially as described.

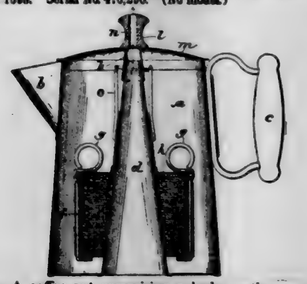
2. A folding pocket book provided with ordinary accessible pockets and coin pockets as E, the entrance to which latter is concealed, a spaced, closed compartment *b*, a slitted, sliding cover F which extends into and is secured at its lower end in the spaced compartment and also extended over the mouth of said coin pockets and provided at its outer end with a hand hold for drawing the cover outward and exposing to view the slits in the same, stitches passed through the inner or upper end of the spaced compartment, said stitches also passing through the slits in the extensible cover, which permit the cover to be drawn outward but prevent the insertion of the fingers into the spaced compartment, substantially as described.

**505,041. WATER-TIGHT LINING.** DALLAS FURGESON, Topeka, Kans. Filed Sept. 26, 1891. Serial No. 406,932. (No model.)



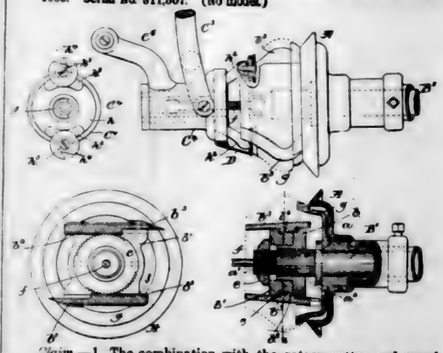
*Claim.*—A glass lining for hollow articles, comprising a number of glass plates embedded in a backing of cement, the meeting edges of the adjacent plates being beveled to form tight joints which are also backed up by suitable packing or backing of water-proof material, substantially as set forth.

**505,042. COFFEE-POT.** SVAN GELDERART, Galesburg, Ill. Filed June 1, 1893. Serial No. 476,290. (No model.)



*Claim.*—A coffee pot comprising a body portion, a centrally located conical flue extending vertically therein its entire length, a perforated grounds receptacle provided with a tapering passage extending through it, and adapted for the reception of the flue whereby the grounds receptacle is supported in position, a removable lid fitting over the receptacle, a swinging fastening device having a vertical axis and capable of being swung in and out of engagement with the lid, and a projection secured to the receptacle and extending vertically therefrom, whereby the receptacle may be lifted from its seat, substantially as described.

**505,043. HEEL-TRIMMING MACHINE.** CHARLES W. GLIDDEN, Lynn, and HENRY W. WINTER, Boston, assignors to James W. Brooks, trustee, Petersham, Mass. Filed Aug. 25, 1892. Renewed May 18, 1893. Serial No. 311,307. (No model.)



*Claim.*—1. The combination with the rotary cutter and tread guard, of an independent throat plate as *g*, to operate substantially as described.

2. A rotary cutter composed of a blade provided on its inner surface between its side edges with a longitudinally arranged strengthening and clamping rib standing out from the body of the blade, said rib being of irregular cross section, and a two-part cutter head constructed substantially as described and adapted to engage said rib and clamp and hold the cutter blade in working position, said cutter being adapted to be adjusted longitudinally between the said heads to provide for alterations in position of the blade after grinding, substantially as described.

3. The shaft B' having oppositely inclined screw threads, the two part cutter head *b b'*, the part *b'* being movable on the hub of the part *b*, combined with the nut *e*, and with the cutter blades, to operate substantially as described.

4. The cutter blades having the toothed projections at their backs, and the two part cutter head *b b'* shaped to grasp and hold the said projections, combined with the toothed plate by which to simultaneously adjust the said blades, substantially as described.

5. The shaft B' having the right and left hand threads, and the cutter head and cutting blades, and a nut as *e*, combined with the disk shaped tread guard, the said head carrying the said blades being adjustable longitudinally on the said shaft toward and from the said tread guard, substantially as described.

6. The combination with a rotary cutter and a rand guard, and a support for the said rand guard independent of the said rotary cutter and its shaft, of an independent hub separated by the rand guard and having a plate and a plurality of disk like cutters carried by the said plate, substantially as described.

7. The cutter shaft having a threaded portion $a^4$, and the two-part cutter head composed of plates *b*, *b'*, one of the said plates being threaded to fit the threads of the said shaft, combined with the blades having the projecting ribs $b^3$, and a nut to act upon one of the said plates to effect the clamping of the projections of the blades, the rotation of the plates upon the threaded cutter shaft and the adjustment of the nut permitting the longitudinal adjustment of the cutter head and its attached blades upon the said shaft, to operate, substantially as described.

**505,044. ILLUMINATING-TILE CONSTRUCTION.** HENRY HAMTEIN, San Francisco, Cal. Filed Mar. 23, 1893. Serial No. 467,363. (No model.)



*Claim.*—1. A tile-plate having light-openings surrounded by an upwardly-projecting flange upon the upper inner edge of which lenses of various shapes may be squarely seated, the upper outer edge of the flange forming a raised border or annular shoulder inclosing the lenses, substantially as set forth.

2. An illuminating-tile comprising light-openings, inwardly-rabbeted flanges around said openings, lugs upwardly-projecting from the inner upper edges of said rabbeted flanges, and lenses having recesses corresponding to said lugs, substantially as set forth.

3. The combination, in an illuminating-tile, of a perforated plate, screws cast therein or otherwise secured thereto, and concrete or cement filling, substantially as set forth.

4. The combination, in an illuminating-tile, of a plate having light-openings, upwardly-projecting flanges surrounding each of these openings, and ligaments connecting and projecting above said flanges, substantially as set forth.

5. The combination, in an illuminating-tile, of a perforated plate, screws projecting therefrom, flanges around the openings in said plate, ligaments projecting above said flanges, and filling, substantially as set forth.

6. The herein-described illuminating-tile construction comprising plates having light-openings, lenses in said openings, a bearer having parallel flanges between which the sides of said plates may be inserted and top and bottom ribs at right angles thereto, the said top rib lying below the top surface of said lenses, and cement or concrete filling wholly covering the upper side of said bearer and plates between and around the lenses whereby an even walking surface is produced, substantially as set forth.

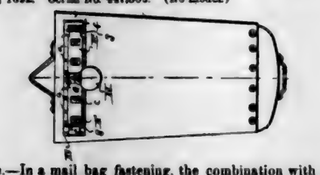
7. The herein-described illuminating-tile construction comprising a bearer having parallel flanges and plates provided with downwardly-exteoding offsets at each end whereby the sides of said plates are raised so that they may be inserted between said flanges and the ends thereof be in line with the supporting parts of said bearer on the under side, substantially as set forth.

8. The herein-described illuminating-tile construction comprising a tile-plate having whole light-openings projecting outwardly and entirely overlapping similar openings in an adjoining tile-plate, substantially as set forth.

9. The combination of a tile-plate having outwardly-projecting rings or light-openings, a corresponding plate having similar reinforced openings entirely lapped over by said rings, and strengthening ribs between said reinforced openings, substantially as set forth.



**505,045. MAIL-BAG FASTENING.** ZADOK R HENDRIX, Anderson, Ind., assignor of one-half to Willard P. Brickley, same place. Filed Oct. 1, 1892. Serial No. 447,506. (No model.)



*Claim.*—In a mail bag fastening, the combination with an oblong metallic plate B secured to the upper front portion of the bag, and having therein a series of vertical slots *b*, located over corresponding slots in the thicknesses of the bag, of the series of narrow vertical plates C riveted to the inner face of the closing flap of the bag, the staples carried by said plates C and adapted to engage the slots in the said front flap and plate B, a locking plate E arranged to slide upon the outer face of the plate B and having cut-away portions *c*, *c*, in each of which is a tongue F, the notches *g*, *g*, at the end portions of said locking-plate, and the holding wires *f*, *f*, substantially as specified.

**505,046. CRIMPER FOR CARTRIDGE-SHELLS.** GEORGE D HUNTER, Auburn Park, Ill., assignor to the Standard Cartridge Company, of New Jersey. Filed May 9, 1893. Serial No. 473,529. (No model.)



*Claim.*—1. In a crimper for cartridge shells, the combination with a glass crimping disk, of a holder for the same, and means separate from said holder holding said disk in position in said holder, substantially as described.

2. In a crimper for cartridge shells, the combination with a glass crimping disk, of a holder for the same having its interior of a shape corresponding to that of the crimping disk, and means separate from said holder holding the disk in position in said holder, substantially as described.

3. In a crimper for cartridge shells, the combination with a glass crimping disk, of a holder for the same, a seating of asbestus or other suitable material between said holder and the top of the crimping disk, and means separate from said holder holding said disk in position in said holder, substantially as described.

4. In a crimper for cartridge shells, the combination with a glass crimping disk, of an exteriorly screw-threaded holder for the same, and an interiorly screw-threaded auxiliary holder or cap, formed with an interior rim, holding said disk in position in said holder, substantially as described.

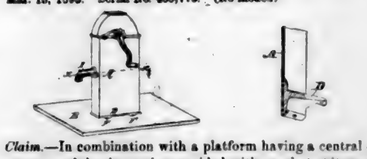
5. In a crimper for cartridge shells, the combination with a glass crimping disk, of an exteriorly screw-threaded holder for the same, and an interiorly screw-threaded auxiliary holder or cap, formed with an interior rim having a seating of asbestus or other suitable material on its upper surface, holding said disk in position in said holder, substantially as described.

6. In a crimper for cartridge shells, the combination with a glass crimping disk, of an exteriorly screw-threaded holder for the same, a seating of asbestus or other suitable material between said holder and the top of the crimping disk, and an interiorly screw-threaded auxiliary holder or cap, formed with an interior rim having a suitable seating on its upper surface, holding said disk in position in said holder, substantially as described.

7. In a crimper for cartridge shells, the combination with a glass crimping disk, of a holder for the same, a central screw threaded opening extending through the top of said holder, and means separate from the holder holding said disk in position in the same, substantially as described.

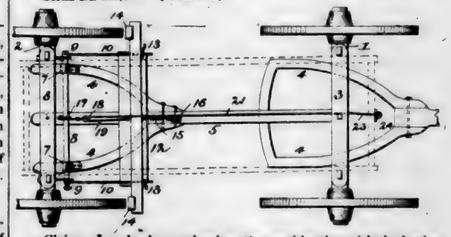
8. In a crimper for cartridge shells, the combination with a glass crimping disk, of a holder for the same provided on its top with a central projection, a central screw-threaded opening through said top, and means separate from the holder holding the crimping disk in position in said holder, substantially as described.

**505,047. PUMP-CURB.** WILLIAM KEGLER, Bellevue, Iowa. Filed Mar. 13, 1893. Serial No. 465,776. (No model.)



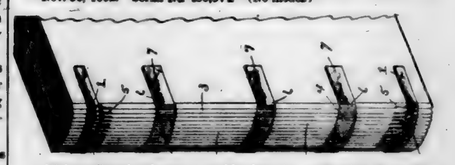
*Claim.*—In combination with a platform having a central opening, a pump curb having a rim provided with a socket at its end, a T shaped attaching rim having one arm adapted to rest in the socket rim and means for fastening the respective arms to the outer face of the curb and the surrounding edge of said platform, substantially as described.

**505,048. WAGON-BRAKE.** JOSEPH KRIEG, St. Mary's, Pa., assignor of one-half to John L. Kaul, Hollins, Ala. Filed Mar. 8, 1893. Serial No. 465,127. (No model.)



*Claim.*—In a brake mechanism, the combination with the brake beam, the transverse rotatable shaft, the chain and rods adjustably connected therewith and the arm secured to said shaft provided with a sheave, of the chain passing around said shaft and connected with the brake beam, the rod connected with the other end of said chain and leading to the front of the vehicle, the chain connected therewith and the rotatable shaft to which said chain is secured; substantially as described.

**505,049. BOOKBINDING.** JOHN KROOKR, Toledo, Ohio. Filed Nov. 30, 1892. Serial No. 453,574. (No model.)

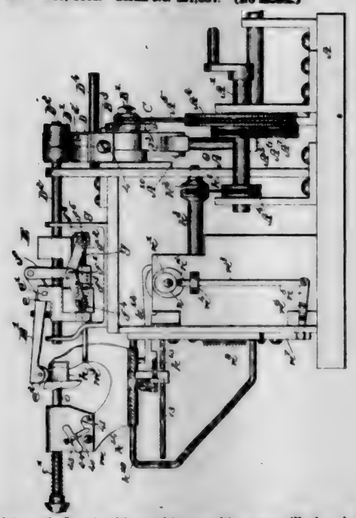


*Claim.*—In a book, a series of leaf sections, a single independent binding thread for each section, the kettle strips secured to the back of the sections at the top and bottom, and the bands secured to the sections intermediate the kettle strips, the binding threads being

passed through the sections, around each band, and secured at their ends to the kettle strips.

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**505,050. HEEL-BURNISHING MACHINE.** HENRY M. LOOKER, Boston, Mass., assignor to the Tapley Machine Company, Portland, Me. Filed Feb. 10, 1892. Serial No. 421,087. (No model.)



*Claim.*—1. In a heel-burnishing machine, an oscillating shaft, and an arm operatively connected therewith, and provided with a heel-burnishing tool; combined with a link pivoted thereto, a lever to which said link is also pivoted and a spring acting upon and to normally cause the lever acting through the link to keep the tool in contact with the heel with a yielding pressure, substantially as described.

2. In a heel-burnishing machine, the oscillating shaft, the block attached thereto, provided with a slide rod, a spring surrounding said slide rod, and a pivoted tool-carrying arm, combined with jointed connections between said rod and arm, substantially as described.

3. In a heel-burnishing machine, the oscillating shaft, the block attached thereto, provided with a slide rod, a spring surrounding said slide rod, and a pivoted tool-carrying arm, combined with jointed connections between said rod and arm; and with means to adjust the force of the spring, substantially as described.

4. In a heel-burnishing machine, an oscillating shaft, a block, and a tool-carrying arm mounted thereon, provided with a heel-burnishing tool, combined with a sector, connections between said sector and shaft; a crank to effect the movement of the said sector to carry the tool from breast to breast of the heel, and an eccentric, and intermediate lever connected by a universal joint to and co-operating with the said sector to reciprocate the same during each complete stroke effected by the crank referred to, to operate substantially as described.

5. In a heel-burnishing machine, an oscillating tool-carrying arm, a slide having a track, and a cam, and intermediate devices to raise the said slide, combined with a shoe-holding jack mounted upon a track extended from the said slide, and with a cam and intermediate connections between it and the said jack to move the same longitudinally upon the said track to enable the heel to be burnished from one to its other end during the vibrations of the tool about the heel from breast to breast, substantially as described.

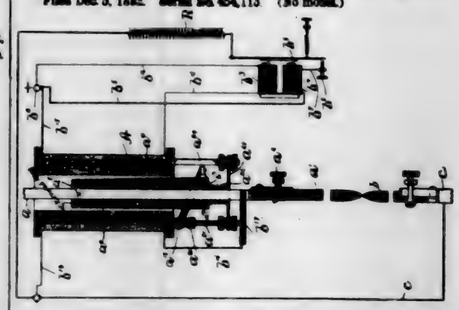
6. In a heel-burnishing machine, a vertically-movable slide provided with a track, actuating devices for said slide, combined with a double or twin jack, and suitable latches to retain the jack in either of its two positions, to operate, substantially as described.

7. In a heel-burnishing machine, the combination with a heel-burnishing tool, and a jack, and a vertically movable slide on which said jack is mounted, of a lever, a link, and a cam to move the slide and jack vertically, and a cam to move the jack horizontally on said slide bar, substantially as described.

8. In combination with heel burnishing mechanism, a yoke-like jack to hold the shoe, a toothed jack rod, a toothed locking dog and an eccentric upon which said dog is mounted to actuate the said dog and increase the holding force of the jack rod, a shaft upon which the eccentric is fast, and means to turn the shaft, substantially as described.

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**505,051. ELECTRIC-ARC LAMP.** WILLIAM B. LOCK, Brooklyn, Mass., assignor of one-third to Edward S. Ritchie & Sons, same place. Filed Dec. 5, 1892. Serial No. 454,113. (No model.)



*Claim.*—1. In an electric arc lamp, the combination of the following instrumentalities, viz: a solenoid, a carbon holder extended therethrough, and a magnetic core consisting of two parts or members, one part or member being movable longitudinally within the solenoid and the other member being movable longitudinally and laterally, and a clutch ring pivoted to the first member and operated by the lateral movement of the second member to grasp the carbon holder, substantially as described.

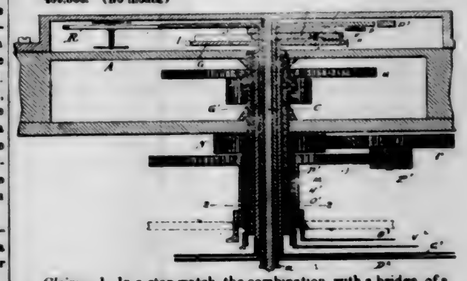
2. In an electric arc lamp, the combination of the following instrumentalities, viz. a solenoid, a carbon holder extended therethrough, and a magnetic core consisting of two parts or members, one part or member being movable longitudinally within the solenoid, and the other member being movable longitudinally and laterally, a clutch ring pivoted to the first member and operated by the lateral movement of the second member to grasp the carbon holder, and means to act on the laterally moving member to turn the clutch ring to release the carbon holder, substantially as described.

3. In an electric arc lamp, the combination of the following instrumentalities, viz. a solenoid, a carbon holder extended therethrough, and a clutch mechanism to operate on the carbon holder consisting of a tube or shell $a^4$, a clutch ring pivoted thereto, and a magnetic bar or piece $a^{13}$, secured to the said ring and adapted to tilt the ring on its pivot to clutch the carbon holder, substantially as described.

4. In an electric arc lamp, the combination of a carbon holder for the lower carbon $b$, a supporting bar $c^6$ for the said carbon holder, tubes $c^1$ $c^2$ secured to the said support, guide rods $c^4$ $c^5$ movable in the said tubes, a cross bar connecting said guide rods and a globe holding base pivotally secured to the said cross bar, and means to lock the said base to the support for the lower carbons, substantially as described

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**505,052. STOP-WATCH.** HENRY A. LUGRIN, Brooklyn, assignor to Albert Wittnauer, New York, N. Y. Filed Apr. 11, 1893. Serial No. 469,866. (No model.)



*Claim.*—1. In a stop watch, the combination, with a bridge, of a stem or post projecting from the same through the center wheel of the watch, a hollow arbor surrounding said post loosely, a timing wheel on one end, and a hand on the other end of said arbor, substantially as set forth.

2. In a stop watch, the combination, with a bridge and a post projecting from the same, of a hollow arbor surrounding said post, a timing wheel on one end of said arbor, a hand on the other end of said arbor, a second hollow arbor surrounding the first hollow arbor, a split seconds hand wheel on one end of said second arbor and a split seconds hand on the other end of said second hollow arbor, substantially as set forth.



3. In a stop watch, the combination, with a bridge, of a post projecting from the same, two concentric tubular arbors for the timing and split seconds hands and for the timing and split seconds wheels, which arbors pass through a tubular arbor of the center wheel of the watch, and tubular arbors for the hour and minute hands surrounding the tubular arbor of the center wheel of the watch, substantially as set forth.

4. In a stop watch, the combination, with a top bridge or plate, of an additional bridge on the same, a post projecting from said additional bridge, two concentric tubular arbors on said post, a timing and split seconds wheels, and timing and split seconds hands on said arbors, the timing wheel and split seconds wheel being arranged between the top bridge or plate and the said additional bridge of the movement, substantially as set forth.

5. In a stop watch, the combination, with the split seconds wheel, of a heart cam and a spring arm on the split seconds wheel, and an arm provided with a spring extension resting against the rim of the split seconds wheel, substantially as set forth.

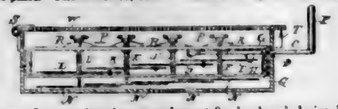
6. In a stop watch, the combination, with a timing wheel, and a split seconds wheel, of a heart cam on the arbor of the timing wheel, a spring lever on the split seconds wheel, the end of which rests on the rim of the heart cam, a brake-arm for the split seconds wheel, a cam wheel acting on the brake-arm, an additional arm also acted upon by the cam wheel, and a spring-extension on said additional arm, which spring-extension bears on the rim of the split seconds wheel, substantially as set forth.

7. A split seconds watch having a special lever for turning the split seconds wheel when released, substantially as set forth.

8. A split seconds watch having a special lever in contact with the rim of the split seconds wheel for the purpose of turning said wheel when released, substantially as set forth.

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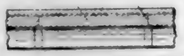
**505,053. AUTOMATIC REGISTER FOR BARBERS' CHAIRS.** JOHN E. MANNEN, Sterling, Ill., assignor of one-half to Henry G. Gerdes, same place. Filed Mar. 20, 1893. Serial No. 466,760. (No model.)



*Claim.*—In a registering attachment for barbers' chairs, in combination, a box, the front face of which is provided with visual openings and one end is slotted and the lid is hinged and adapted to be secured to the chair, two plates within the box having a suitable interval between them, shafts journaled in the plates, a registering disk upon the end of each of the shafts adjacent to the visual openings, and a head upon the other end, a circular spring washer between each head and the adjacent plate, a spur wheel upon each shaft between the plates, a pin upon each wheel except the last one, a lever pivotally secured to one of the plates at one end and having its other end projecting through the slot in the box and provided with a pin for engaging with the chair, and a lock for securing the lid of the box, substantially as set forth.

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**505,054. VAULT FOR CEILINGS, BRIDGES, &c.** JOSEPH MELAN, Brunn, Austria-Hungary. Filed May 17, 1893. Serial No. 474,598. (No model.) Patented in Austria-Hungary Oct. 23, 1892, No. 60,937 and No. 44,505.



*Claim.*—1. A vault or arch consisting of abutments, beams or girders, arched ribs rigidly connected with said abutments, beams or girders, and a filling of concrete or the like between said ribs, substantially as described.

2. A vault or arch consisting of abutments, beams or girders, arched ribs having beveled ends located between and resting at their ends upon said abutments, beams or girders, and a filling of concrete or the like between the said ribs, substantially as described.

3. A vault or arch consisting of abutments, beams or girders, arched ribs having beveled ends located between and resting at their ends upon said abutments, beams or girders, wedge plates between the ends of said ribs and said beams or girders, and a filling of concrete or the like between said ribs, substantially as described.

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**505,055. CISTERN-COVER.** CHARLES M. MCNEVE and GEORGE ESTEL, Fort Wayne, Ind. Filed Feb. 27, 1893. Serial No. 463,709. (No model.)

*Claim.*—1. A cistern cover consisting of an annular metallic rim recessed or beveled on its inner edge and adapted to be secured to the neck of a cistern or other opening in combination with: a removable cap for said rim provided with a lug or lugs on its under surface adapted to engage the recessed or beveled edge of the rim and an orifice for a locking device: and a locking device consisting of the bolt 14, projection 20, the washer 15, the bolt head 17 and the stud 18 substantially as described.



2. In a cistern cover, an annular metallic rim adapted to be secured to the neck of a cistern or other circular opening: in combination with a removable metallic cap or cover for said rim constructed in two half parts and provided with the opening 21 for a square pump stock: a lug or lugs on the under surface of one of the half parts of said caps adapted to engage the inner edge of the rim and hold the cap in place: an orifice on the other half of said rim for a locking device: a locking device operating through and in said orifice adapted to force the said lug or lugs into engagement with the rim and to clamp the part of the cap to which it is attached to the outer rim.

3. In a cistern cover, an annular metallic rim adapted to be secured to the neck of a cistern or other opening: in combination with a removable cap or cover for the rim, constructed in two half parts and provided with an opening for a pump stock: a lug or lugs on one of the half parts of said cap adapted to engage the inner edge of the rim and hold the part firmly to it: an orifice in the other half of said rim for the locking device: a locking device adapted to force the said lug or lugs into engagement with the rim, and to clamp the part to which it is attached to the rim; and the projecting flange 22.

4. In a cistern cover, an annular metallic rim adapted to be secured to the neck of a cistern or other opening: in combination with a removable cap or cover for the rim constructed in two half parts and provided with an opening for a pump stock: a lug or lugs on one of the half parts of said cap adapted to engage the inner edge of the rim and hold the part firmly to it: an orifice in the other half of said rim for the locking device: a locking device adapted to force the said lug or lugs into engagement with the rim, and to clamp the part to which it is attached to the rim: the projecting flange 22: a ventilating shaft provided with means to exclude bugs and vermin and admit air in small currents: and a cover to said ventilating shaft provided with a recessed opening for the rod of a discharge valve, and means to secure it in place adjustably to the rod.

5. A cover for the neck of a cistern or similar openings, consisting of an annular metallic rim provided with inwardly chamfered edges on its inner periphery; a removable cap for the opening of said rim, provided with an orifice for a bolt; a bolt provided with a flange or shoulder and a head for turning; a stud attached to the lower end of the bolt, having an outer surface forming a circular rim eccentric to the circle of the bolt, which is chamfered inwardly so as to coincide with the chamfered edge of said rim; and lugs on the cap on the opposite side from the bolt, adapted to engage said chamfered edge of said rim and hold the cap down upon it, when forced into close engagement.

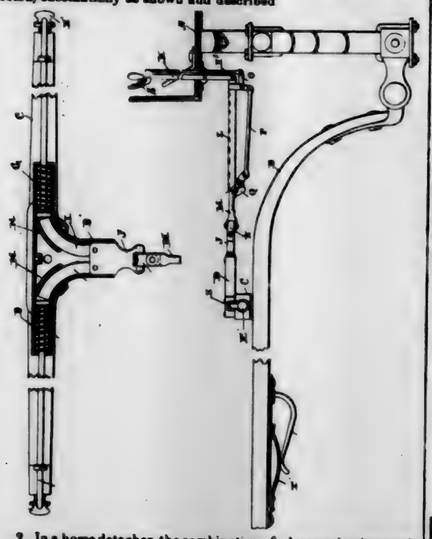
6. As an article of manufacture, a cover for the neck of a cistern or other similar opening, consisting of an annular metallic rim, provided with inwardly chamfered edges on its inner periphery; a removable cover therefor, provided with an orifice for a bolt, and with lugs on the opposite side, chamfered to correspond with and engage the inner edge of said rim; and a locking device consisting of a bolt for said orifice, provided with a flange and head, and also with a stud adapted to force said lugs into engagement with said rim, and also to engage and hold down said cover upon the rim by turning the bolt.

7. As an article of manufacture, a cover for the neck of a cistern or other similar opening consisting of an annular iron rim, and a removable iron cover therefor constructed in two half parts and provided with a centrally placed opening for a pump stock: a flange projection on one of the half parts adapted to extend over the other so as to cover and protect the place of joining from the entrance of water and vermin and aid in holding the other part in place: a lug or lugs attached to one of the half parts and adapted to engage the rim and hold the part against it: and a locking device for the other half part adapted to force the lugs into engagement with the rim and to clamp the part to which it is attached firmly against the rim

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**505,056. HORSE-DETACHER.** ALONZO M. MESTHER, Andrews, Ind., assignor of one-half to John B. Haller, same place. Filed May 24, 1893. Serial No. 475,322. (No model.)

*Claim.*—1. An improved horse detacher comprising a casing, curved and converging guide-ways formed therein, longitudinally movable trace releasing rods, curved bars movable in said guideways for operating the rods, and a movable head to which said bars are connected, substantially as shown and described

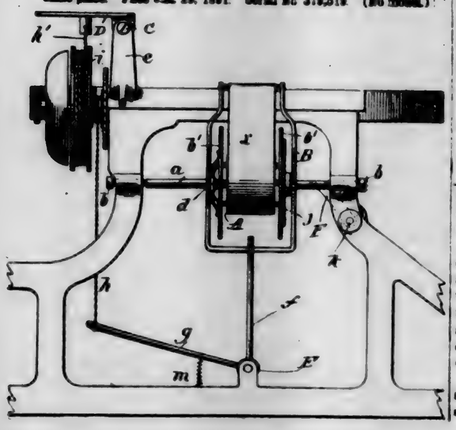


2. In a horse detacher, the combination of a horse releasing mechanism, a longitudinally movable head for operating the same, a rearwardly extending rod, a hollow arm in which the said rod moves, a means for adjusting the arm, and a means for locking the said arm and rod together, substantially as shown and described.

3. In a horse detacher, the combination of a trace releasing mechanism, a head for operating said mechanism, a rod leading rearward from the head, a hollow arm in which the said rod moves, a means for locking the said arm and rod together, and an operating lever to which the inner end of the said arm is connected, substantially as shown and described

4. In a horse detacher, the combination of a trace releasing mechanism, a rod for operating the said mechanism, a hollow arm in which the said rod moves, a dog pivoted to the arm for engaging the rod and holding it rigid therewith, a lever connected to the arm for moving it longitudinally, a spring actuated latch adjacent the upper end of the lever, and a rod and lever connection between the said latch and dog for operating the latter, substantially as shown and described.

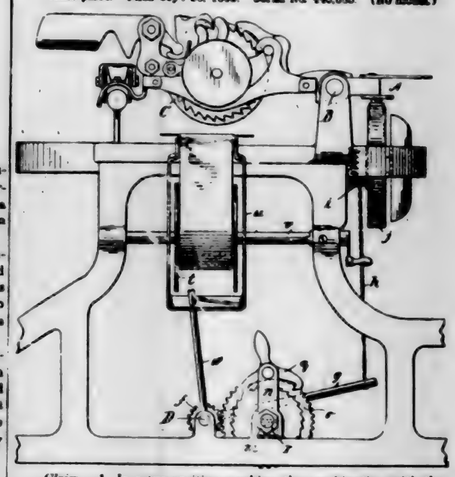
505,057. TYPE-WRITING MACHINE. HENRY W. MERRITT, Springfield, Mass., assignor to the Merritt Manufacturing Company, same place. Filed Jan. 29, 1891. Serial No. 379,519. (No model.)



*Claim.*—1. In a typewriting machine, the combination with the movable carriage, a ribbon-roll and a shaft on which said roll may rotate and also move axially, of a rock-shaft provided with an arm *f*, engaging said roll, an arm *g*, the drum having the portions of larger and smaller diameter, the flexible connection secured to the carriage and engaging with said drum to be wound on and unwound from the larger portion as the carriage travels, and the flexible connection connected with said arm and engaged with said drum to be wound on and unwound from the reduced drum portion as the drum is turned, substantially as and for the purposes set forth.

2. In a typewriting machine, the combination with a carriage and a pair of ribbon-rolls each having on its one end or head a ratchet, shafts *a*, *a*, on which said rolls may rotate and also move axially, a pair of pawls respectively located to engage said ratcheted ribbon-rolls as the same reach their limit of axial movement, each of said pawls being mounted so as to be thrown out of its ratchet-engaging position and said pawls being located relative to said ribbon-roll ratchets to rotate said rolls the one in a direction the reverse of the other, the rock-shaft E, arms *f*, *f*, arm *g*, drum having portions of two diameters, and the flexible connections A, A', and all arranged for securing on the travel of the carriage a simultaneous endwise movement of said ribbon-rolls, for the purpose set forth.

505,058. TYPE WRITING MACHINE. HENRY W. MERRITT, Springfield, Mass., assignor to the Merritt Manufacturing Company, same place. Filed Sept. 26, 1892. Serial No. 446,885. (No model.)



*Claim.*—1. In a typewriting machine, the combination with the carriage and a ribbon-roll and a yoke or carrier therefor, both of which are supported for fore-and-aft bodily movements which are at right angles to the travel of the carriage, of a shaft, D, which runs crosswise of the machine, that is, parallel with the travel of the carriage, and which has an arm to swing in a fore-and-aft plane corresponding to the bodily movement of the yoke-and-roll, and which arm is directly engaged with the yoke, and a spring coiled about said shaft for imparting the rotational movement thereto, substantially as described

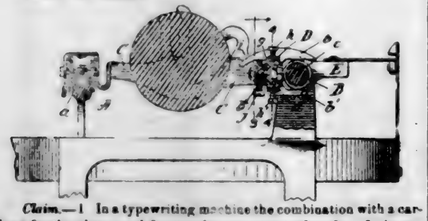
2. In a typewriting machine, the combination with a shaft mounted for a rotational movement and having an arm extended radially therefrom, and a spiral spring applied to said shaft for exerting a torsional reaction thereon, of the carriage the drum, *i*, and disk, *j*, the strap, *k*, connected to said carriage and having a winding engagement with the disk, and the flexible connection secured to said arm and having a winding engagement with said barrel, substantially as and for the purpose set forth

3. In a typewriting machine the combination with the shaft, D, of the sleeve, *d*, loosely mounted thereon, the spiral spring coiled around said shaft and having one end in engagement therewith and the other in engagement with said sleeve, a gear wheel having a connection with said sleeve, a ratchet-wheel movable as one therewith, an escapement for the ratchet-wheel, the platen carriage and a medium of connection between said shaft and carriage, substantially as described

4. In a typewriting machine in combination, the shaft, D, the sleeve, *d*, loosely mounted thereon, the spiral spring coiled around said shaft one end being in engagement therewith and the other in engagement with the sleeve, the stud mounted for rotation, and having fixed thereon a gear-wheel which has a gear engagement with said sleeve, and a ratchet-wheel, said stud being formed with a polygonal part, as *r*, the escapement, *q*, the platen carriage and means of connection between it and said shaft, substantially as and for the purposes set forth.

5 In a type-writing machine, the combination with a shaft mounted crosswise of the machine for a rotational movement, and a spring applied to said shaft for imparting a rotational movement thereto, of the platen carriage, and the ribbon-roll-carrier movable transversely of the run of the ribbon, that is, at right angles to the length of the shaft, and a medium of connection between the said shaft and the carriage whereby the movement imparted to the shaft by the spring will insure the endwise movement of the carriage, and an arm on said shaft, which directly engages the ribbon-roll-carrier whereby the reaction of the same spring will also insure the crosswise movement of the carrier, substantially as described

505,059. TYPE-WRITING MACHINE. MORTIMER G. MERRITT and WILLIAM E. PURNETT, Springfield, Mass., assignors to the Merritt Manufacturing Company, same place. Filed Oct. 17, 1892. Serial No. 449,111. (No model.)



*Claim.*—1 In a typewriting machine the combination with a carriage for the platen, and front and rear supports therefor, of a bar or part having between its ends a pivotal engagement with one side portion of the carriage intermediate between the ends of the latter whereby said bar or part may have swinging movements vertically relative to the carriage and said swinging part having portions which are located in opposite directions from said point of pivotal engagement that are sustained from the adjacent carriage support, all whereby said portions are rendered automatically adjustable in a vertical plane parallel to the front of the machine, for the purpose set forth.

2. In a typewriting machine, the combination with a carriage for the platen, and front and rear supports therefor, of a bar or part having between its ends a pivotal engagement with one side portion of the carriage intermediate between the ends of the latter whereby said bar or part may have swinging movement vertically relative to the carriage and said swinging part having portions which are located in opposite directions from said point of pivotal engagement that are sustained from the adjacent carriage support, all whereby said portions are rendered automatically adjustable in a vertical plane parallel to the front of the machine and a stop device for limiting the degree of swinging movement of said bar relative to the carriage, for the purpose set forth.

3. The combination, in a typewriting machine, with a front support, rear support-rail, and carriage, of the bar or part intermediately pivoted on a middle rear part of the carriage and having the rear or support lugs, *b*, *b'*, and the lugs, *i*, and the stop devices, arranged for conjoint action, substantially as described.

4. In a typewriting machine the combination with the carriage and front and rear longitudinally extended supports therefor, of a bar or part having slide bearings on one of said supports and means between it and the carriage for constituting a vertically adjustable pivotal connection, for the purpose set forth.

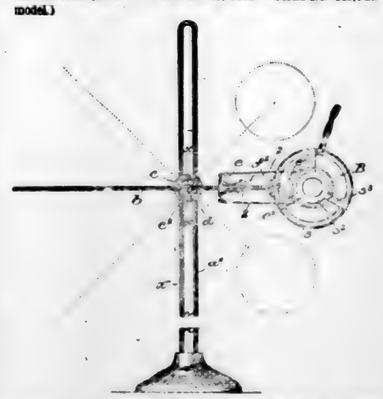
5. In a typewriting machine the combination with a front support and a rear rail, of the carriage having the bar intermediately of its length pivotally connected to the middle rear part of the frame and having near each of its ends the upper and lower lugs, *b*, *b'*, rearwardly extended to embrace said rear support-rail, substantially as described

6. In a typewriting machine the combination with a front support and a rear rail, of the carriage having the bar intermediately of its length pivotally connected on the middle rear part of the frame and having near each of its ends the upper and lower lugs rearwardly extended to embrace the rear support-rail and having the forwardly extended lugs to overlie the rear parts of the carriage, and the stop-screws, *j*, *j*, substantially as described.

7 In a typewriting machine the combination with a front support and rear-rail, of the carriage and the bar intermediately of its length provided with a vertical slot and having portions to bear on the rear rail, a stud passed through the slot and having an engagement with the carriage and the adjusting screws passed through the portions of the bar which constitute the upper and lower boundaries of the slot for a bearing on the stud, substantially as described.

8. In a typewriting machine the combination with a front support and a rear-rail, of the carriage and the bar intermediately of its length provided with a vertical slot, and having portions for bearing on the rear-rail, a screw passed through the slot and carriage and having the sleeve, flanged at its outer end, surrounding the screw and the adjusting screws, *h*, *h'*, passed through the portions of the bar which constitute the upper and lower boundaries of the slot, substantially as and for the purpose set forth

505,060. PORTABLE ELECTRIC-LAMP SUPPORT. NORMAN T. MILLS, Boston, Mass. Filed Oct. 15, 1892. Serial No. 448,942. (No model.)



*Claim.*—1. A portable incandescent lamp stand comprising a standard, a lamp supporting rod pivotally mounted and vertically movable thereon, and adjustable radially and concentrically about its pivotal point, and a single clamp to confine said rod in adjustable position and also to secure it to the standard, combined with a lamp, and connections between said lamp and the supporting rod, substantially as described

2. A portable incandescent lamp stand comprising a standard, and a lamp supporting rod mounted thereon, combined with a lamp, a flexible connection between it and said supporting rod, and independent separable bearings for said connection rotatable upon the rod, substantially as described.

3. A portable incandescent lamp stand comprising a standard, an adjustable longitudinally movable lamp supporting rod mounted thereon, and a single clamp to confine said rod in adjusted position longitudinally or in a vertical plane, combined with a lamp, and adjustable connections therefor mounted axially upon said rod, the lamp being frictionally held by and rotatable in said connections, substantially as described

4. An incandescent lamp stand comprising a standard, a lamp, a substantially cylindrical inclosing shade therefor provided with an opening in the side, and a support for the lamp, combined with adjustable connections between said lamp and standard including a single clamp and rotatable bearing blocks whereby the opening in the shade may be turned in any direction, substantially as described.

5. An electric lamp stand comprising a standard, an adjustable longitudinally movable lamp supporting rod thereon, and a clamp through which said rod is extended to confine said rod in any adjusted position, combined with a lamp, adjustable connections between the lamp and its supporting rod, and bearings for said connections rotatable on said rod, whereby the lamp may be rotated about the supporting rod at an axis, substantially as described.

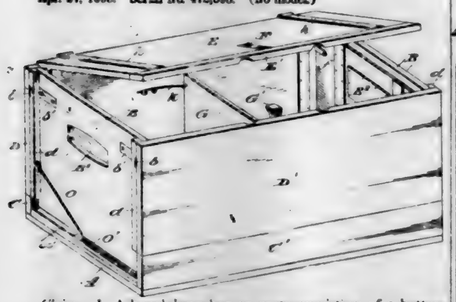
6. A standard, a lamp-supporting rod, and a clamping device connecting said standard and rod, comprising clamping plates to embrace the standard, a stud therethrough carrying the supporting rod, and a grooved washer between said rod and one of the clamping plates, combined with an adjusting nut upon the stud, rotation of the nut clamping or releasing all the parts, substantially as described.

7 A standard, and a lamp supporting rod thereon, combined with bearing blocks adjustable upon said rod, guides upon one of said blocks, and a flexible lamp receiving loop-like bands extended through the guides and secured to the other block, substantially as described.

8. A standard, and a lamp supporting rod thereon, combined with bearing blocks rotatable upon said rod, and a loop-like connection supported by said blocks between said rod and the lamp to

embrace a portion of the lamp frictionally and permit rotation thereof upon its own axis, substantially as described.

## 505,031. KNOCKDOWN CRATE. JOHN MYERS, Mechanicsburg, assignor to Maggie Dock and Samuel C Myers, Mifflintown, Pa. Filed Apr. 27, 1893. Serial No. 472,095. (No model.)



*Claim.*—1. A knockdown box or crate consisting of a bottom board having transverse strips to which the end pieces of the crate are hinged and longitudinal strips of different heights to which the side pieces of the crate are hinged, a top hinged to one of the side pieces, said top having a spring catch and a strip hinged thereto beyond the catch, said strip being adapted to be turned to lie over the catch when the crate is folded, substantially as shown, and for the purpose set forth.

2. In a knockdown box or crate constructed substantially as shown, a partition hinged to the bottom board of the crate, one of the side pieces of the crate having a spring catch and the other a recess, so that when elevated the partition will be moved to one side to engage with the recess so as to maintain the same in a vertical position, substantially as shown.

3. In a knockdown crate a swinging catch K attached to one edge of the bottom board of the crate upon a spring-actuated pivot-pin, the free end of the catch being bent at right angles with the body portion, a recess in the edge of the bottom board within which the end of the catch lies when not in use, and a board or part of the crate with which said catch is adapted to engage, for the purpose set forth.

4. In a knockdown box or crate constructed substantially as shown, a side piece D having hinged thereto a top or cover, a stay-brace O connected to the side piece of the crate and engaging with a slotted plate O' attached to the bottom board substantially as shown.

5. In a knockdown box or crate constructed substantially as shown and consisting of a bottom board having end strips of equal height and side strips C and C' of different heights, side pieces D and D' having strips *d d* with recesses *b*, end pieces B and B' carrying angle plates *b'* which are adapted to engage with the recesses *b*, turn-button *f* pivoted to the side pieces, a cover E hinged to the upper end of one of the side pieces, said cover carrying a strip E' and a spring catch, and a partition G hinged to the bottom board and provided with an upwardly projecting loop or bail with which the spring catch engages, said partition being adapted to be maintained in a vertical position, substantially as shown, and for the purpose set forth.

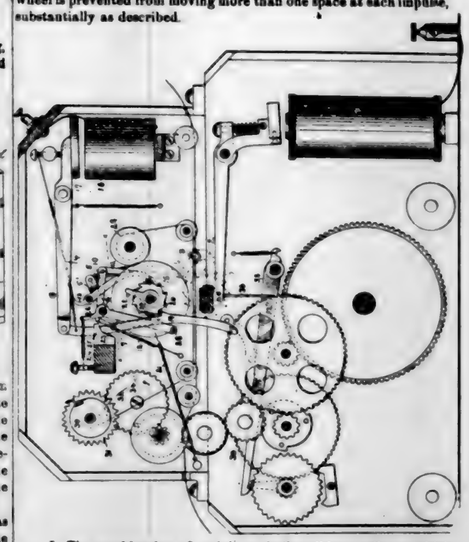
## 505,062. ELECTRIC TIME-RECORDER. CHARLES E. ONGLEY, New York, N. Y., assignor, by direct and mesne assignments, to the Ongley Electric Company, same place. Filed Jan. 24, 1891. Renewed Nov. 16, 1892. Serial No. 452,143. (No model.)

*Claim.*—1. The combination of time printing type wheels having ratchet wheels connected thereto, a wheel propelled by time mechanism, a shaft turned by said wheel through a series of levers, a propelling pawl for the type wheels connected to the same shaft, whereby it is moved in accordance with the time mechanism, substantially as described.

2. The combination of time printing type wheels having ratchet and detent wheels connected thereto, a wheel propelled by time mechanism, a shaft turned by said wheel, a propelling pawl for the time type wheels connected to the same shaft whereby it is moved in accordance with the time mechanism, and detent levers resting against each detent wheel, substantially as described.

3. The combination of a wheel, a magnet, an armature and a pawl for advancing said wheel step by step, and a cam adjacent to said pawl and pressing it toward the wheel when it has moved the wheel one space, substantially as described.

4. The combination of a wheel, a magnet, an armature and a pawl, a block having an inclined or cam face in the line of movement of the pawl, a projection on said pawl adapted to strike the inclined face, whereby the pawl is moved toward the wheel and the wheel is prevented from moving more than one space at each impulse, substantially as described.



5. The combination of an ink or similar ribbon, rolls on which said ribbon is supported, a wheel connected to one roll, a wheel moved by a suitable motor, a pin on said wheel in position to move the roll once for each revolution of the wheel, substantially as described.
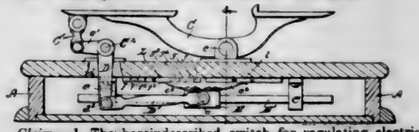
6. The combination of an ink or similar ribbon, rolls on which said ribbon is supported, a wheel connected to one roll, paper feeding mechanism, a wheel moved by said paper feeding mechanism, and a pin on said wheel in position to move the roll once for each revolution of the wheel, substantially as described.

7. The combination of an ink or similar ribbon, rolls on which said ribbon is supported, a wheel connected to one roll, a wheel moved by a suitable motor, and pins on said wheel normally out of engagement with the roll but in position to move said roll as the wheel carrying the pins revolve, substantially as described.

8. The combination of a roll on which an ink or similar ribbon is wound, a second roll to which one end of the ribbon is connected, means for turning the second roll, said means being out of engagement during a part of each revolution, and means for turning the first roll to rewind the ribbon, substantially as described.

9. The combination, in a recorder, of paper feeding mechanism, a detent lever therefor, a printing platen and a hook or link between said detent lever and platen, substantially as described.

## 505,063. SWITCH FOR GOVERNING ELECTRIC MOTORS. EDGAR F. RAMIEN, Milwaukee, Wis., assignor, by direct and mesne assignments, to Horace Hobbs, Augustus W. Friese, and Henry W. Ramien, same place. Filed Apr. 3, 1893. Serial No. 469,543. (No model.)



*Claim.*—1. The hereindescribed switch for regulating electric motors, comprising a suitable casing, a series of resistance coils within said casing, a series of contact pieces respectively in electrical connection with said resistance coils, other contact pieces electrically connected with opposite poles of the armature, a foot treadle and a connected traversing block carrying suitable contact devices and arranged to engage with said contact pieces to successively bring said resistance coils into or out of the circuit with the armature, substantially as described.

2. A switch for regulating electric motors, comprising a suitable casing, a series of resistance coils located within said casing, a series of contact pieces respectively in electrical connection with the said resistance coils, other contact pieces electrically connected with opposite poles of the armature, a treadle pivoted upon the casing, suitable hangers within the casing a longitudinal rod engaged with said hangers, a traversing block mounted upon said rod and operatively connected with said treadle, and suitable contact devices carried by said block and adapted to engage with said contact pieces to successively cut said resistance coils into or out of circuit, substantially as described.

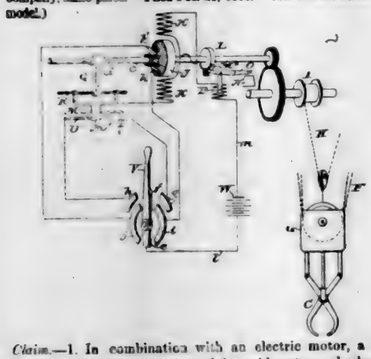


3. The combination with a suitable casing and a series of resistance coils therein, of a series of contact pieces double the number of the resistance coils and inversely connected in pairs with said coils, other contact pieces connected with armature of a motor, a traversing contact device adapted to successively engage with the contact pieces of said series and simultaneously with a pair of the last mentioned contact pieces, said latter contact pieces being so positioned within the casing as to cause the current to traverse the armature of the motor in one direction when the contact pieces of one end of the series are in circuit and in an opposite direction when the contact pieces at the opposite end of said series are in circuit, and a foot treadle movably supported upon the casing and operatively engaged with said traversing contact, substantially as described.

4. The combination with a suitable casing and a series of resistance coils therein, said coils being of a thin flat form and arranged one upon another and connected together in series, a series of contact pieces double the number of the resistance coils and inversely connected in pairs with the respective coils, those connected with the first coil of the series being located farthest apart, and those connected with the last coil of the series nearest together, a contact piece located between said latter pair of contacts and free from connection with any of said coils, other contact pieces arranged parallel with said first mentioned series of contact pieces and adapted for electrical connection with opposite poles of the armature of a motor, an intermediate contact arranged opposite to the first mentioned central contact and also free from connection with any of the coils of the resistance, electrical connections between these two intermediate contacts and opposite poles of the armature, and a traversing contact device within the casing, arranged to bring any desired one of the contact pieces of said series into electrical connection with the opposite one of the other contact pieces, substantially as described.

5. The combination with a suitable casing, of switch mechanism located within said casing, suitable means upon the outside of the casing for actuating said switch mechanism, and a plurality of resistance coils having electrical connections with the contact sections of said switch mechanism, and each of said coils being formed from wire wound upon a thin, flat body of insulating material, said coils being arranged one upon another within the casing, and insulated from each other, and connected in series with each other, substantially as described.

## 505,064. SWITCH FOR CONTROLLING ELECTRIC MOTORS. HARRY SAWYER, Muskegon, Mich., assignor to the Shaw Electric Crane Company, same place. Filed Feb. 20, 1893. Serial No. 463,108. (No model.)



*Claim.*—1. In combination with an electric motor, a double switch and circuit breaker actuated by said motor and adapted to close one circuit through the switch before opening another; a second double switch adapted to be operated by hand, and double circuit connections between the two switches, substantially as shown and described; whereby the motor-controlled switch is caused to interrupt the operative circuit connection when the motor has operated sufficiently in one direction, and the manually-controlled switch is caused to close the second circuit connection simultaneously with reversal of the motor current.

2. In combination with an electric motor, an automatic brake therefor, an electro-magnet in circuit with the motor and adapted to withdraw the brake, and a circuit breaker connected with and directly actuated by the motor and serving to interrupt the current supplying the motor and the brake magnet, and thereby to permit the application of the brake whenever the motor has operated to a predetermined extent in either direction.

3. In combination with an electric motor, a reversing switch, a circuit breaker actuated by the motor, and two independent conductors connecting the reversing switch and the circuit breaker, substantially as shown; whereby, in the event of the operative circuit being broken by the circuit breaker, a second circuit may be completed in the reverse direction by actuating the reversing switch and reversing the motor.

4. In combination with a reversible electric motor and its supply conductors, an electrically controlled brake included in the motor circuit, a circuit breaker directly applied to and actuated by the motor and serving to interrupt the circuit of the motor and break whenever the motor has operated to a predetermined extent in either direction; and a reversing switch adapted to reverse the direction of the current through the armature of the motor without reversing that of the fields or of the brake.

5. In combination with motor B, contact breaker M M' actuated thereby, and contact bars T, U,—reversing switch V, comprising contacts *e*, *f*, *g*, *h*, *i* and *j*, and a divided or double circuit connection between the switch and the circuit breaker, substantially as described and shown.

6. In combination with motor B, and with a source of electric energy, a circuit breaker actuated by said motor and comprising a movable member M M' and bars T and U; a reversing switch comprising movable contacts *e*, *f*, and fixed contacts *g*, *h*, *i* and *j*; a conductor connecting the block *e* with one pole of the supply, conductors connecting the contacts *i*, *j* with the brushes *k'* and *k* of the motor, conductors connecting the contacts *g* and *h* with the bars T and U and a conductor connecting the movable member M M' with the negative pole of the supply.

7. In combination with motor B, and with a source of electric energy, a circuit breaker actuated by said motor and comprising a movable member M M' and bars T and U; a reversing switch comprising movable contacts *e*, *f*, and fixed contacts *g*, *h*, *i* and *j*; a conductor connecting the block *e* with one pole of the supply; conductors connecting the contacts *i*, *j* with the brushes *k'* and *k* of the motor; conductors connecting the contacts *g* and *h* with the bars T and U; and a conductor connecting the movable member M M' with the negative pole of the supply, and including the field of the motor.

8. In combination with motor B, and with a source of electric energy, an electrically controlled automatic brake; a circuit breaker actuated by said motor and comprising a movable member M M' and bars T and U; a reversing switch comprising movable contacts *e*, *f*, and fixed contacts *g*, *h*, *i* and *j*; a conductor connecting the block *e* with one pole of the supply; conductors connecting the contacts *i*, *j*, with the brushes *k'* and *k* of the motor; conductors connecting the contacts *g* and *h* with the bars T and U; and a conductor connecting the movable member M M' with the negative pole of the supply, and including the fields of the motor and the break magnet helix.

9. In combination with motor B, and with a source of electric energy, an electrically controlled automatic brake; a circuit breaker actuated by said motor and comprising a movable member M M' and bars T and U; a reversing switch comprising movable contacts *e*, *f*, and fixed contacts *g*, *h*, *i* and *j*; a conductor connecting the block *e* with one pole of the supply; conductors connecting the contacts *i*, *j*, with the brushes *k'* and *k* of the motor; conductors connecting the contacts *g* and *h* with the bars T and U; and a conductor connecting the movable member M M' with the negative pole of the supply, and including the brake magnet helix.

## 505,065. HOISTING MACHINERY. ALTON J. SHAW, Muskegon, Mich., assignor to the Shaw Electric Crane Company, same place. Filed Nov. 15, 1892. Serial No. 452,047. (No model.)

*Claim.*—1. In combination with the hoisting drum, cable, running block, and tripping device of a hoisting apparatus, an auxiliary block connected with said tripping device, an auxiliary drum, a cable passing through the auxiliary block and having its ends arranged to wind upon the hoisting and auxiliary drums respectively, and means for rotating the auxiliary drum when required; whereby the blocks are caused to rise and fall together normally, but the auxiliary block may be raised independently to actuate the tripping device.

2. The combination substantially as set forth of hoisting drum B; cable E having one end fixed and the other wound upon said drum; running block D carried by said cable; carrier F carried by said block; auxiliary block H connected with and serving to actuate the trip of said carrier; auxiliary drum J; cable I passing through the block H and having its ends wound upon drum B and drum J respectively; and a motor connected with and serving to turn drum J.

3. In combination with the hoisting drum, cable, running block and carrier of a hoisting apparatus; an auxiliary block connected with the trip of said carrier and serving to actuate the same; an auxiliary drum; a cable passing through the auxiliary block and having

its ends wound upon the respective drums; an electric motor connected with and serving to turn the auxiliary drum; and a switch controlling said motor; whereby it may be started, stopped, and reversed at will.




4. In combination with the hoisting drum, cable, running block and carrier of a hoisting apparatus; an auxiliary block connected with and serving to actuate the trip of said carrier; an auxiliary drum; a cable passing through the auxiliary block and having its ends wound upon the respective drums; a motor connected with and serving to turn the auxiliary drum; a brake serving to bring the auxiliary drum to rest promptly upon stopping the motor.

5. In combination with the hoisting drum, cable, running block and carrier of a hoisting apparatus; an auxiliary block connected with and serving to actuate the trip of said carrier; an auxiliary drum; a cable passing through the auxiliary block and having its ends wound upon the respective drums; an electric motor connected with and serving to turn the auxiliary drum; a brake normally acting to hold the motor and drum at rest; and an electro-magnet included in the circuit which supplies the motor and serving to withdraw the brake during the operation of the motor.

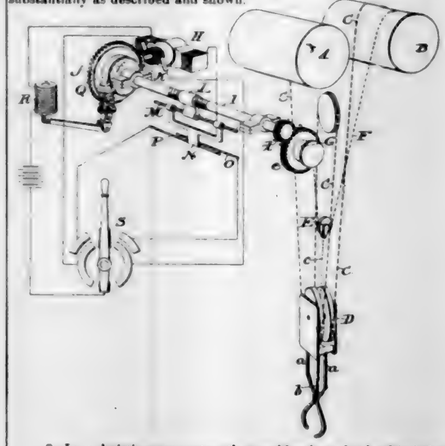
6. In combination with the hoisting drum, cable, running block and carrier of a hoisting apparatus; an auxiliary block connected with and serving to actuate the trip of said carrier; an auxiliary drum; a cable passing through the auxiliary block and having its ends wound upon the respective drums; an electric motor connected with and serving to turn the auxiliary drum; a brake normally acting to hold the motor and auxiliary drum at rest; an electro-magnet serving to withdraw the brake during the operation of the motor; and a switch serving to simultaneously throw the motor and brake magnet into or out of action.

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**505,066. HOISTING MACHINERY.** ALTON J. SHAW, Muskegon, Mich., assignor to the Shaw Electric Crane Company, same place. Filed Feb. 11, 1893. Serial No. 461,865. (No model.)

*Claim.*—1. In a hoisting apparatus, the combination of a load-hoisting drum, a carrier provided with a trip device, a hoisting chain and a trip chain arranged to wind simultaneously on or off the hoisting drum, a take-up connected with the trip chain and serving to actuate the trip device, an electric motor wholly independent of the hoisting motor and drum and serving to actuate the take-up, gearing connecting the take-up motor and the take-up, and a friction coupling introduced into the gear train at a suitable point, substantially as and for the purpose set forth.

2. In a hoisting apparatus, the combination of a load-hoisting drum, a carrier provided with a trip device, a hoisting chain and a trip chain arranged to wind simultaneously on or off the hoisting drum, a take-up G connected with the trip chain, electric motor H provided with pinion K and wholly independent of the hoisting motor and drum, shaft I provided with pinion *d* to actuate the take-up and with gear wheel J, the latter meshing with the take-up motor pinion, and friction coupling *h*, *i*, *j*, *l*, serving to connect gear wheel J with shaft I, substantially as described and shown.

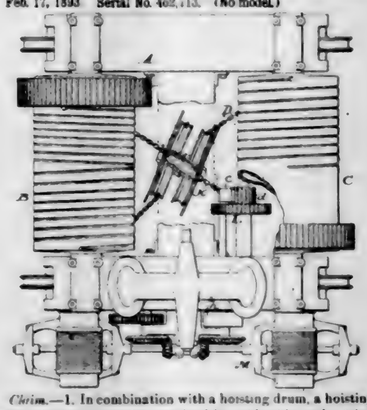



3. In a hoisting apparatus, the combination of a load-hoisting drum, a carrier provided with a trip device, a load-hoisting chain and a trip chain arranged to wind simultaneously on or off the hoisting drum, a take-up connected with the trip-chain, an electric motor for actuating said take-up, a gear train connecting the motor and the take-up, an automatic electric brake, and a friction coupling or slip device included in the motor train and serving to prevent injury to the gearing by the sudden application of the brake.

4. In a hoisting apparatus, the combination of a load-hoisting drum, a carrier provided with a trip device, a load-hoisting chain and a trip chain arranged to wind simultaneously on or off the hoisting drum, a take-up connected with the trip chain, an electric motor for actuating said take-up, a gear train connecting the motor and the take-up, an automatic circuit breaker actuated by the take-up motor, an automatic brake, a manual switch for starting stopping, and reversing the take-up motor, and a slip gear or friction-coupling included in the motor train and serving to prevent excessive strain upon the gearing or the take-up.

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**505,067. HOISTING MACHINERY.** ALTON J. SHAW, Muskegon, Mich., assignor to the Shaw Electric Crane Company, same place. Filed Feb. 17, 1893. Serial No. 462,713. (No model.)




*Claim.*—1. In combination with a hoisting drum, a hoisting cable winding thereon, a carrier sustained by said cable, and a trip device for said carrier; a second cable connected with the trip device and having one end arranged to wind on and off the hoisting drum simultaneously with the hoisting cable; and a take-up connected with the second or trip cable, and adapted to take in or pay out the same independently of the rotation of the hoisting drum.

2. In combination with the hoisting drum, cable, running block and trip of a hoisting apparatus, a secondary cable having one end arranged to wind on and off the hoisting drum simultaneously with the hoisting cable; a take-up device connected with the opposite end of said secondary cable, and a secondary running block hung in a loop of the secondary cable and connected with the trip, substantially as set forth.

3. In combination with a hoisting drum, a hoisting cable winding thereon, a carrier sustained by said cable, and a trip device for said carrier; a second cable connected with the trip device and having one end arranged to wind on and off the hoisting drum simultaneously with the hoisting cable; a take-up connected with the second or trip cable; and a motor for actuating said take-up, the motor and take-up being independent of the hoisting drum, so that the movements of the trip relatively to the carrier are independent of the position of the latter.

4. In combination with the hoisting drum, cable, running block and trip of a hoisting apparatus; a secondary cable having one end arranged to wind on and off the hoisting drum simultaneously with the hoisting cable; a take-up device connected with the opposite end of said secondary cable; a secondary running block hung in a loop of the secondary cable and connected with the trip; and a motor for actuating said take-up; the motor and the take-up being adapted to actuate the trip independently of the hoisting drum.

5. In combination with a hoisting drum, a hoisting cable winding thereon, a carrier sustained by said cable, and a trip device for said carrier; a second cable connected with the trip device and having one end arranged to wind on and off the hoisting drum simultaneously with the hoisting cable; a rack-bar connected with the opposite end of said secondary cable; and a pinion meshing with said rack-bar and serving to move the same and thereby to take up the secondary cable and actuate the trip.

6. In combination with the hoisting drum, a hoisting cable winding thereon, a carrier sustained by said cable, and a trip device for said carrier; a second cable connected with the trip device and having one end arranged to wind on and off the hoisting drum simultaneously with the hoisting cable; a take-up connected with the second or trip cable; a motor for actuating said take-up, and an automatic brake serving to bring the motor promptly to rest when the latter is thrown out of operation.

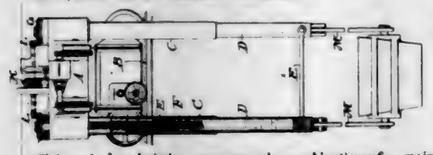
7. In combination with a hoisting drum, a hoisting cable winding thereon, a carrier sustained by said cable, and a trip device for said carrier; a second cable connected with the trip device and having one end arranged to wind on and off the hoisting drum simultaneously with the hoisting cable; a rack-bar connected with said secondary cable, an electric motor gearing with and serving to move said rack-bar; and a circuit breaker carried by the rack-bar and included in the circuit of said motor, all substantially as set forth.

8. In combination with a hoisting drum, a hoisting cable winding thereon, a carrier sustained by said cable, and a trip device for said carrier; a second cable connected with the trip device and having one end arranged to wind on and off the hoisting drum simultaneously with the hoisting cable; a take-up connected with the secondary cable and serving to actuate the trip device; an electric motor gearing with and serving to move the take up, an automatic brake applied to a shaft of the motor train; an electro-magnet included in the motor circuit and serving normally to hold the brake off; and a circuit breaker carried by the take-up and serving to break the circuit in case of undue movement of the take-up.

9. In combination with a hoisting drum, a hoisting cable winding thereon, a carrier sustained by said cable, and a trip device for said carrier; a second cable connected with the trip device and having one end arranged to wind on and off the hoisting drum simultaneously with the hoisting-cable; a rack-bar connected with the secondary cable and serving to actuate the trip; and a dash-pot serving to retard the movement of the rack-bar.

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**505,068. HOISTING MACHINERY.** ALTON J. SHAW, Muskegon, Mich., assignor to the Shaw Electric Crane Company, same place. Filed Mar. 6, 1893. Serial No. 464,722. (No model.)




*Claim.*—1. In a hoisting apparatus, the combination of a main frame or support, a screw suspended therefrom, a tube closed at its lower end and provided with an internal nut to receive and fit the screw, means for rotating the screw, and a load-carrying device suspended from the tube.



2. In a hoisting apparatus, the combination of a main frame or support, a screw carried thereby and provided at its upper end with a wheel, a motor connected with and serving to rotate the wheel, a tube closed at its lower end to contain oil and provided at a point below its upper end with an internal nut to receive the screw, and a load carrying device carried by the tube; whereby the oil is caused to pass from below the nut into the space above the same as the tube rises.

3. In a hoisting apparatus, the combination of a main frame or support, a rotatable screw carried thereby and provided at its upper end with means for rotating same, a tube closed at its lower end to contain oil and provided at a point below its upper end with an internal nut to receive the screw, and a load carrying device connected with the tube; whereby the oil, being displaced by the screw as the tube rises, is caused to pass from below the nut into the space above same.

4. In a hoisting device, the combination of a main frame or support, a lifting-screw, and a step for supporting and turning the screw, the step and screw being connected by a universal joint substantially as described and shown, whereby the screw may operate at an angle with the axis of the step without being thereby subjected to a bending strain other than that caused by the friction of the joint.

5. In a hoisting apparatus, the combination of a hoisting screw, a wheel for supporting and rotating said screw, a friction disk forming a bearing for said wheel; a dog or pawl adapted to hold the disk against backward rotation though permitting forward rotation thereof; and antifriction rollers placed between the friction disk and the frame or support of the hoisting apparatus; whereby a rolling friction is obtained when the screw is elevating a load, and a sliding or rubbing friction is produced when lowering the same.

6. The herein described hoisting apparatus, comprising a frame or support A; tubes D provided with nuts E; screws F provided with wheels G; friction disks H beneath said wheels; locking dogs *a* for holding the friction disks against backward rotation; and antifriction rollers I placed between the friction disks and the main frame or support, said parts being combined and arranged to operate substantially as set forth.

7. In a hoisting apparatus, the combination of a main frame or support; tubes D, provided with nuts E; screws F provided with gear wheels G; friction disks H beneath said wheels; locking dogs *a* for holding said disks against backward rotation; antifriction rollers I between the friction disks and the main frame or support; an electric motor K for rotating the screws; and pinions L for transmitting motion from the motor to the gear wheels G.

8. In a hoisting apparatus, the combination of a main frame or support, a gear wheel sustained thereby and provided with a spherical seat, and a lifting screw having a spherical head resting in said seat and interlocking with the gear wheel.

9. In a hoisting apparatus, the combination of a main frame or support A; a wheel G sustained thereby and provided with a spherical seat and with lugs *g*; and a lifting screw F having a spherical head *d* seated in said wheel, and a radial arm *f* engaging with the lugs *g*.

10. In combination with a support having annular collar *i*, gear wheel G encircling said collar and provided with a spherical seat, and lifting screw F, having spherical head *d* seated in the wheel G and interlocking therewith, all substantially as described and shown.

11. In combination with a main support and with a lifting screw carried thereby, a tube provided with an internal nut to receive the screw, and a second tube encircling the first and serving to protect the exposed portion of the screw.

12. In a hoisting apparatus, the combination of a main frame or support, a screw carried thereby, and a tube encircling the screw and provided with an internal nut, the tube being closed at its lower end to form an oil chamber,—and the nut being provided with a vertical passage for the free escape of surplus oil from one to the other side of the nut.

13. In a hoisting apparatus, the combination of a main frame, a screw carried thereby, a tube closed at its lower end to form an oil chamber, a nut within and secured to the tube and tapped to receive the screw, an oil passage through the nut, and an upwardly-opening valve applied to said opening.

14. In a hoisting apparatus, the combination of a main frame or support, a step sustained thereby, a hoisting screw connected by a universal joint with said step, a nut fitting said screw and serving to carry the load, and a guard tube placed outside the nut, and suspended from the main frame or support substantially as shown, whereby it is adapted to move laterally with the screw and nut.

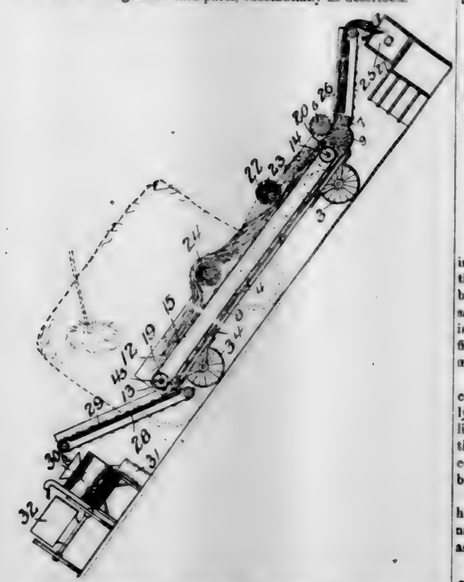
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**505,069. CLEANER AND REDUCER FOR CRUDE FLAX-STRAW.** JOHN T. SMITH, Heron Lake, Minn. File Dec. 2, 1892. Serial No. 453,861. (No model.)

*Claim.*—1. The combination with the long conveyer, of a trough wherein the same is contained, over the floor of which the lower side of said conveyer is adapted to operate, break rolls arranged to re-

ceive the stock from said long conveyer, and a conveyer to receive the reduced stock from said break rolls, substantially as described.

2. The combination with the long conveyer composed of endless chains and cross slats, the floor arranged beneath the lower side of said conveyer, break rolls to receive the stock from said conveyer, said floor extending beneath said break rolls, separate conveyers for carrying away the reduced stock and the shives respectively, and means for driving all of said parts, substantially as described.



3. The combination with the sills, of the long conveyer mounted thereon, the floor 8 arranged beneath said conveyer, means for supporting the slats on the upper side of the conveyer, sideboards for said conveyer, the break rolls, and the duffer arranged above said conveyer and arranged to throw the stock toward the rolls, substantially as described.

4. The combination with the sills, of the floor 8, the conveyer arranged to operate above said floor, the top of said conveyer being open, sideboards for the conveyer, the break rolls, said floor extending beneath said break rolls, and the duffers 22 and 24 arranged to operate above said conveyer and a considerable distance from one another and from the break rolls, substantially as described and for the purpose specified.

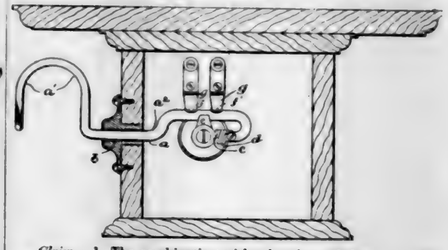
5. The combination with the trough, having the floor 8, of a conveyer arranged to operate over said floor and having an open top, the break rolls, said floor extending beneath said break rolls, sideboards arranged above said conveyer, and duffers or beaters 22 and 24 operating in opposite directions, said duffers being adapted to raise the stock from said conveyer whereby upon its again falling upon the conveyer, the waste portions are taken out through said conveyer and upon said floor to be carried back by the lower side of the conveyer, substantially as described.

6. The combination with the long conveyer, of break rolls, the floor 8 over which said conveyer is adapted to operate, the hinged extension of said floor, said extension being curved upward beneath the forward side of the lower roll, and a spring for normally supporting said extension, substantially as described.

7. The combination with the frame, of the wheels 3 wherein the same is mounted, the floor 8, with a long conveyer arranged to operate above said floor and the endless chains and cross slats, means for supporting the upper side of the conveyer, the break rolls, a duffer or duffers arranged to operate above said conveyer at a considerable distance from said break rolls, a conveyer 25 to receive the stock from said rolls, and a waste conveyer 28 to receive the waste from the rear end of said floor 8, substantially as described.

8. In a field machine for treating crude flax straw the combination of a wheeled frame provided with the floor 8, of the long conveyer 12 composed of chains and cross slats, ribs whereon the outer edges of said slats are supported, side-boards for the conveyer, break rolls to receive the stock therefrom, a hinged extension 9 of said floor, the oppositely rotating duffers 22 and 24 operated by considerable distance from one another and from said rolls, a fiber conveyer 25, and a waste conveyer 28, substantially as described.

## 505,070. TELEPHONE-SWITCH. JOSEF STEINER, Brooklyn, N. Y., assignor to the Western Electric Company, Chicago, Ill. Filed Oct. 18, 1891. Serial No. 409,199. (No model.)

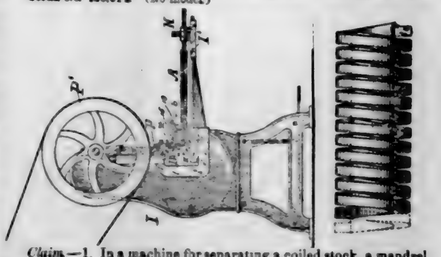


*Claim.*—1. The combination with a bar journaled at one point in the side of the call box, so as to be capable of limited rotary motion, of a radially extending hook formed at one extremity of said bar, and adapted to receive the telephone, a spring acting to rotate said bar to maintain said hook in a horizontal position, said bar being bent to form a radial extension provided with contact points, and fixed contact points with which said contact points are adapted to make contact in one position of the bar, substantially as described.

2. The combination with the bar $a$ journaled in the side of the call box, of the hook $a'$ upon the exterior end of said bar, said hook lying upon one side of said bar with its mouth in the same straight line with the journaled portion of said bar, a radial extension upon the interior end of said bar provided with contact points, and fixed contact points adapted to be engaged thereby, in one position of said bar, substantially as described.

3. The combination with fixed contact points, of a telephone hook formed from a single bent bar and comprising the hook $a'$, journal $b$, radial extension $a^3$ and end journal, and spring $d$, substantially as described.

## 505,071. MACHINE FOR SEPARATING COILED BARS OR RODS. CHARLES A. STERLING, East Orange, N. J., and JAMES E. WILSON, New York, N. Y.; said Wilson assignor to said Sterling. Filed Mar. 22, 1892. Serial No. 426,014. (No model.)



*Claim.*—1. In a machine for separating a coiled stock, a mandrel for supporting the coil provided with a shearing edge at its extremity, a separating tool moving substantially at right angles thereto, and means for slightly rotating the coil upon its axis at each interval of separation.

2. In a machine for separating a coiled stock, a stationary mandrel provided with a shearing edge or abutment adapted to support the stock, a movable shearing tool, and means for moving it substantially at right angles to the axis of the mandrel and toward the said shearing edge thereof, and a holder for the mandrel provided with means for universally adjusting the same.

3. In a machine for separating a coiled stock, a shearing tool, a mandrel for the coil comprising a stationary shear, a longitudinally adjustable holder for the mandrel, and a rotatively adjustable clamp or guide within the holder adapted to engage in fixed relation to the mandrel for the purpose described.

4. In a machine for separating a coiled stock, a mandrel for supporting the coil, a separating tool moving substantially at right angles to the axis of the mandrel, a feed mechanism for intermittently advancing the coil in the direction of its axis between the intervals of separating, and means for rotating the coil upon its axis at each interval of separation.

5. In a machine for separating a coiled stock, a separating tool



provided with a projection beyond the separating part of said tool and having a lateral cam surface which engages with the coil to partially rotate the coil during the advance of said tool and previous to its separating action, whereby a space is provided at the point of separation of the coil without waste of material or change of its internal diameter.

6. In a machine for separating a coiled stock, a shearing tool, a cylindrical mandrel for the coil provided with a longitudinal shearing edge and a transverse holding notch, and a holder for the mandrel provided with a circumferentially adjustable V-shaped clamp presenting a transverse edge fitting the said notch, adapted to gage the longitudinal position and to determine the rotative adjustment of the said mandrel, substantially as described.

7. A machine for separating a coiled stock, comprising the following elements, a mandrel or arbor passing into the coil rigidly supported at one end and provided at its opposite end with a cutting edge; an anvil or pillow block for supporting the coil adjacent to the part operated upon; an exterior separating tool antagonizing the cutting edge of said mandrel and means for feeding and rotating the coil previous to the action of the separating tool.

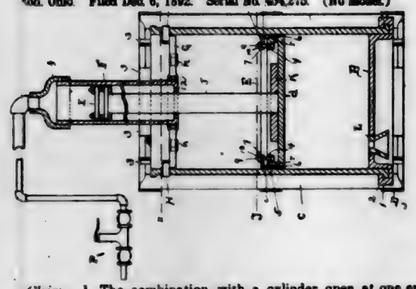
## 505,072. EXTENSION-LADDER. LEONARD C. TIEFEL, Rochester, N. Y., assignor of one half to Herbert R. Lewis, same place. Filed May 15, 1893. Serial No. 474,340. (No model.)



*Claim.*—1. An extension ladder having a lower section provided with rungs in its sides substantially midway between the edges, cross bars upon its rear edges, a pulley at its upper end, and an upper sliding section held between said rungs and cross bars, in combination with a catch for said upper section, held by the lower section, having a main part adapted to extend across the plane of the upper section, and a loop at right-angles with said main part, and a cord upon the pulley secured to the upper section and passing through said loop, substantially as shown and described.

2. An extension ladder having a lower main part provided with rungs and rear cross bars, and an upper sliding part held by said main part, in combination with a catch for said sliding part having bearings in said main part at the upper side of one of said rungs, said catch being adapted to fall or tip forward or backward from the action of gravity, and stops to control the action of said catch, substantially as shown and described.

## 505,073. VESSEL FOR BEVERAGES. JOHN M. VAN FLEET, Keokuk, Ohio. Filed Dec. 6, 1892. Serial No. 454,275. (No model.)



*Claim.*—1. The combination, with a cylinder open at one end and closed and provided with a tap-spout at the other end, of a follower fitted air-tight in the cylinder, unattached means for moving the follower forward, and removable stops for limiting the backward movement of the follower.

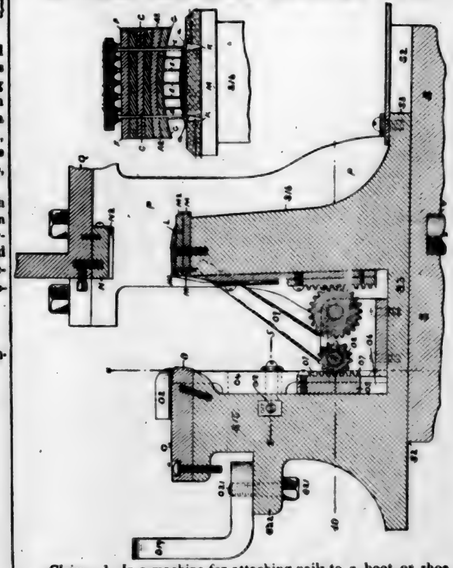
2. The combination, with a cylinder open at one end and closed and provided with a tap-spout at the other end, of a follower fitted air-tight in the cylinder and comprising a disk having a rim near its edge and inward-projecting lugs on the rim, an elastic packing on the outer side of the rim, a compressing-ring bearing on the packing and having inward-projecting lugs, bolts passed through the lugs on the rim and ring, and nuts on the bolts, unattached means for moving the follower forward, and removable stops for limiting the backward movement of the follower.

3. The combination, with a cylinder open at one end and closed and provided with a tap-spout at the other end, said cylinder having two series of slots near its open end, of a follower fitted air-tight in the cylinder, a spider movable in the cylinder, a rod supported by the spider and adapted to move the follower forward, means for operating the rod, and two series of spring-keys removably fitted in the slots in the cylinder, one series serving as a bearing for the spider and the other series serving to limit the rearward movement of the follower.

4. A receptacle for gaseous beverages, comprising a metal cylinder surrounded by wooden staves placed so as to leave open spaces between them, said cylinder being open at one end and closed and provided with a tap-spout at the other end, in combination with a follower fitted air-tight in the cylinder, unattached means for moving the follower forward, and removable keys passed through slots in the cylinder, near its outer end, for limiting the backward movement of the follower, said slots being located between the staves.

5. The combination, with a cylinder open at one end and closed and provided with a tap-spout at the other end, said cylinder having two series of slots near its open end, of a follower fitted air-tight in the cylinder, a spider movable in the cylinder, a pipe secured at one end in the spider and having an inward-projecting flange, a piston in the pipe, a rod secured to the piston and carrying a plate adapted to bear against the follower, a pump connected to the pipe above the piston, and two series of spring-keys located removably in the slots in the cylinder, one series of said keys serving as a bearing for the spider and the other series serving to limit the backward movement of the follower.

## 505,074. HEEL-ATTACHING MACHINE. HAROLD A. WEBSTER, Haverhill, Mass. Filed Feb. 18, 1888. Serial No. 264,538. (No model.)



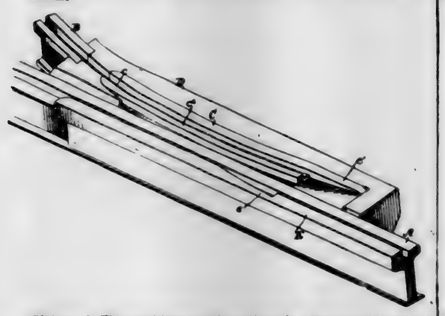
*Claim.*—1. In a machine for attaching nails to a boot or shoe heel, preparatory to attaching the heel by its said attached nails to a boot or shoe sole, the combination of two anvil-blocks M, N, having opposed faces adapted to support the opposite faces of a heel, one of said blocks having holes L which are open at the heel face of said block, rigid or closed at their bottoms or ends within the block, and provided with inclined surfaces formed to give an outward or radial inclination to the points of the nails, one of said blocks being movable toward and from the other, and means for applying power to said movable block to produce pressure on a heel placed between the blocks and on opposite ends of the nails in and projected from the heel, whereby the heads of the nails are embedded in a top lift interposed between the heel and the block M, and the points of the nails are first bent or inclined outwardly by the inclined surfaces of the holes L, and then supported by the bottoms of the said holes against the pressure of the top lift against the heads, as set forth.

2. In a machine for attaching heels to boots and shoes with nails or such like fastenings, in combination, an anvil or block M, having a face for the rest of a heel, and holes L open at said face and rigid or closed at their bottoms or ends within the block, to receive and make a rest for the ends of fastenings within and projected from a heel, an anvil or block N having a face for the rest of a heel and opposed to the face of the block M, a last or jack O to receive and sup-

port a boot or shoe, a slide-carriage $8^3$ carrying, at its opposite end-portions, the block M and the jack O, a support and guide-way on which to reciprocate said carriage $8^3$ to place either said block or the jack into and out of position for pressure to be produced upon the heel between the opposed faces of the blocks M, N, or between that of the block N and the jack, means for placing said opposed faces nearer to or farther from each other and thereby to secure and to release said pressure, abutments $8^8$, $8^9$ at opposite end-portions of said guide way and an abutment $8^{10}$ on carriage to engage and be released from abutments $8^8$, $8^9$, substantially as described, for the purposes specified.

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**505,075. RAILWAY-SWITCH.** WILLIAM WHARTON, Jr., Philadelphia, Pa., assignor to the William Wharton, Jr., & Company, Incorporated, same place. Filed Nov. 19, 1892. Serial No. 452,545. (No model.)



*Claim.*—1. The combination of a main rail, with a movable switch rail having an inclined end forming a continuation of the tread surface of said switch rail, and adapted to pass over and lie upon the main rail, said switch rail having a guard, substantially as described.

2. The combination of an unbroken main rail, a movable grooved switch rail having an inclined end, and adapted to pass over and lie upon the main rail, and a guard rail having a recess to receive a portion of the said grooved switch rail, substantially as described.

3. The combination of an unbroken main rail, with a pivoted switch rail having an inclined end forming a continuation of the tread surface of said switch rail and adapted to pass over and lie upon the main rail, said switch rail having a guard, substantially as described.

4. A movable switch rail having an inclined end and a guard, said inclined end forming a continuation of the tread surface of the switch rail and projecting beyond the guard, substantially as described.

5. The combination of a continuous main rail and siding rail, with a pivoted switch rail having an inclined end and having a guard, said switch rail being pivoted at the outside of the main rail and adapted to be shifted onto the main rail so that the guard will then direct the wheels of a car from the main track onto the siding, substantially as specified.

6. The combination of a continuous main rail and recessed guard rail, with a movable switch rail having an inclined end and having a guard part on its inner side, the outer end of said guard part resting within and supported by the recessed guard rail when the switch rail is moved over the main rail, substantially as specified.

7. The combination of an unbroken main rail and siding rail, with a movable grooved switch rail, said rail having an inclined end extending beyond the grooved portion, the incline being of such a height as to raise the flanges of the car wheels clear of the bottom of the groove of the switch rail when being transferred from the main track to the siding, substantially as specified.

8. The combination of an unbroken main rail, a grooved switch rail having an inclined end, and a recessed support for the said switch rail to slide upon, the bottom of said recess being level with the top of the main rail, substantially as described.

9. The combination of the unbroken rails of a main track, a movable switch rail having an inclined end and having a guard stopping short of said end, with a switch mate, substantially as described.

10. The combination of the unbroken rails of a main track, the rails of a siding, a switch rail having a guard and pivoted at the outside of one of the main rails and adapted to move over upon said main rail, and a switch mate at the inside of the opposite main rail, substantially as described.

11. The combination of the unbroken rails of a main track, a movable switch rail having a guard and having an inclined end, and a switch mate having a vertical incline in its flange bearing portion, substantially as described.

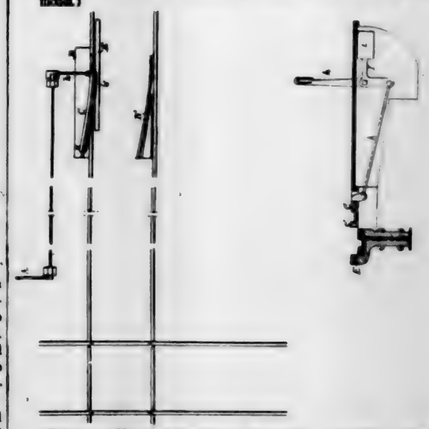
12. The combination of the unbroken rails of a main track, a movable switch rail having a guard and having an inclined end, and a switch mate having a vertical incline in its flange bearing portion and having a guard, substantially as described.

13. The combination of an unbroken rail of a main track, with a switch structure at the outside of and a guard rail on the inside of the main rail secured thereto, and supported thereby, substantially as described.

14. A continuous main rail, and a movable grooved switch rail, adapted to pass over and lie upon the main rail, in combination with a guard rail against which the grooved switch rail bears, said guard rail acting also as a stop to resist the lateral thrust of the car wheels against the guard portion of the grooved switch rail, substantially as described.

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**505,076. DERAILING-SWITCH.** WILLIAM WHARTON, Jr., Philadelphia, Pa., assignor to the William Wharton, Jr., & Company, Incorporated, same place. Filed Dec. 15, 1892. Serial No. 455,236. (No model.)



*Claim.*—1. The combination of the track, a derailing switch, mechanism located in advance of the switch thereby requiring the operator to precede the car whereby said switch may be set by hand so as to permit a car to traverse the track, an automatic mechanism whereby the switch is restored to its normal derailing position, as soon as the hand-setting mechanism is released, substantially as described.

2. The combination in a derailing switch, of the track, the derailing switch normally set to derail cars running on the track, and an operating device for said switch adapted to set the switch for derailment when released, said operating device being situated at some distance in advance of the switch, to which place the conductor or other operator must precede the car before it passes the derailing switch, and at which place only the derailing switch can be shifted to clear the track, substantially as described.

3. The combination in a derailing switch, of the unbroken track, the derailing switch, and the weight or spring so connected to the derailing switch as to automatically move it in the path of cars traversing the main track, substantially as described.

4. The combination in a derailing switch, of the track, the derailing switch, a weight or spring tending to move the derailing switch automatically in the path of cars traversing the track, an operating shaft, and an arm for moving said switch at the far end of said shaft, and in advance of the switch, substantially as described.

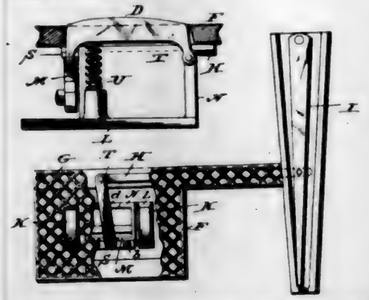
5. The combination of the two continuous rails of a main track, a movable switch rail with a vertically inclined end for lifting a car wheel above and free from the control of the main rail on that side of the track, and a weight or spring so connected to the movable switch rail as to automatically move it in the path of cars traversing the main track, substantially as described.

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**505,077. STREET-RAILWAY SWITCH.** PIERRE J. BOBIS, Boston, Mass. Filed Sept. 1, 1892. Serial No. 444,827. (No model.)

*Claim.*—1. In a railway switch, the combination of a key or pedal adapted to be operated by a part on the car, a switch tongue moved by the action of the pedal, the pedal being detachably connected with the tongue, and means for automatically returning the pedal to the position in which it is engaged by the car without moving the tongue, as set forth.





2. In a railway switch, the combination of a key or pedal adapted to be operated by a part on the car, a chamber having a slot to receive the pedal and in which the latter is movable, a switch tongue moved by the action of the pedal, the pedal being detachably connected with the tongue, and means for automatically returning the pedal to the position in which it is engaged by the car without moving the tongue, as set forth.

3. In a railway switch, the combination of the keys or pedals D D adapted to be operated by a part on the car, the bell-crank levers R R detachably engaged by the pedals, transverse bar S, lever T, rod H, the switch tongue, and means constructed automatically to return the pedals to the position in which they are engaged by the car whereby the pedals will assume said position without moving the tongue, substantially as shown and described.

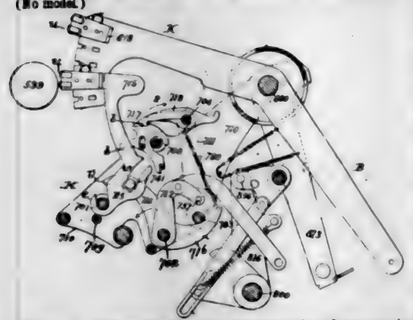
4. The combination, substantially as and for the purpose set forth, of the two elongated pedals arranged parallel to one another and parallel with and between the rails of a railway, the vertical bell crank levers independent of the pedals, each having one arm extending under a pedal respectively, and the other arm engaging a movable bar S transverse to the rails, the said bar, the rod H transversely to the switch tongue and a pivoted bar connecting said transverse bars.

5. The combination, substantially as and for the purpose set forth, of the box-like casting L, consisting of a base plate and walls M, N, elongated pedals hinged to the wall N, the bell-crank levers R, pivoted to the wall M, the slotted bar S, the lever T pivoted to the bar S, the bar H, connecting the switch tongue and the lever T, and the switch tongue I.

6. The combination of a casing G placed between the tracks of a railway and below the level of the road-bed, the plate F supported on the casing having slots K with walls inclining outward, the casting L, pedals D D hinged to the casting and moving in the slots, means for restoring said pedals to their normal position when pressure upon them has ceased, the projection P with curved faces on said pedals, the vertical bell-crank levers R pivoted to the casting, the slide bar S, the lever T pivoted to the casting, the bar H, and the switch tongue I, all constructed, arranged and operating as described.

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**505,078. RECORDING DEVICE FOR CALCULATORS, &c.** WILLIAM S. BURROUGHS, St. Louis, Mo., assignor to the American Arithmometer Company, same place. Filed May 14, 1892. Serial No. 432,971. (No model.)



*Claim.*—1. The combination of a platen a series of type carriers movable opposite said platen and a series of separate drivers each arranged to operate upon the type between it and the platen to bring the two together, substantially as set forth.

2. The combination with the series of type carriers, of a platen opposite said carriers and a series of separate drivers arranged to move the type toward the platen, substantially as set forth.

3. The combination of a platen, series of movable type carriers and series of drivers, springs for moving the same toward the type, and detents for holding the drivers in a retracted position, substantially as described.

4. The combination with the series of type carriers and series of drivers and springs for moving the drivers percussively against the type, of detents for holding the drivers retracted, and means for successively releasing the detents, substantially as set forth.

5. The combination of the platen a series of carriers, arranged side by side and a series of type each movably supported upon a carrier, and separate drivers for acting upon the movable type, substantially as set forth.

6. The combination of the platen, carriers, type, and drivers, and levers provided with projections for making contact with bearings on the drivers and arranged to hold the latter in the forward position to which they are thrown, and springs for actuating the levers, substantially as set forth.

7. The combination with the drivers having inclined bearings to, and levers having studs or projections 741, and springs for actuating the levers, substantially as set forth.

8. The combination with the drivers and their actuating devices of detents for holding the drivers out of action a swinging rod carrying pawls for actuating the detents, and carriers, having shoulders arranged to control the action of the pawls, substantially as set forth.

9. The combination with the type drivers, of actuating and controlling devices therefor, and carriers having shoulders arranged to be struck by said controlling devices to throw the same out of operative position, substantially as set forth.

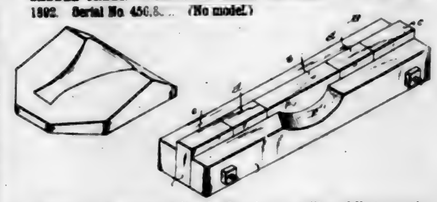
10. The combination with the type drivers, of a series of detents or triggers arranged to hold the drivers in a retracted position, a series of controlling pawls and shoulders upon the triggers and pawls arranged each in advance of the next shoulder to secure the release of the triggers in succession, substantially as set forth.

11. The combination with the series of drivers, of means for actuating the drivers, a series of triggers controlling the actuating means, a series of pawls controlling the triggers and springs connecting the triggers and operating devices for the drivers, substantially as described.

12. The combination with the series of drivers, of a series of triggers or detents and connections between the drivers and triggers each trigger having an arm extended to make contact with and operate the succeeding trigger after a limited movement of the actuating trigger, substantially as set forth.

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**505,079. DIE FOR MANUFACTURING METALLIC HARNESS-SADDLE TREES.** WILLIAM H. BURTIS, Boston, Mass. Filed Dec. 31, 1892. Serial No. 456,8... (No model.)



*Claim.*—1. In a pair of dies for forming metallic saddle trees, the combination with a male die having an angular raised central portion *b*, and the raised end portions *c*, *c*, of the female die having the depressed central portion, and the blanks *d*, *d*, one at each side of said depressed central portion, the upper faces of said blanks seating flush with the upper face of the side portions of said male die, and means whereby said blanks may be removed from one die and applied to the other, substantially as specified.

2. The dies for forming metallic saddle trees, said dies having the interchangeable center pieces, said center pieces having seats to receive removable die blocks, in combination with said blocks, substantially as specified.

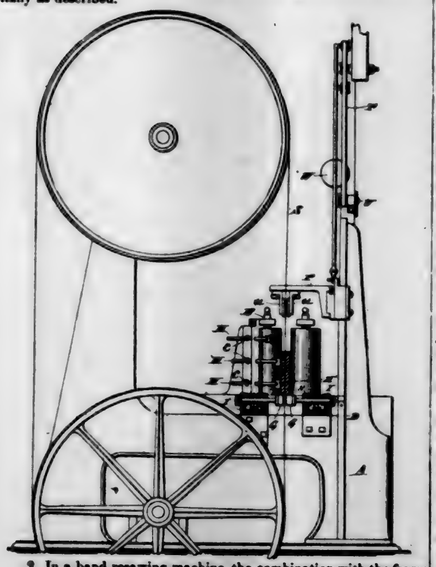
3. A pair of dies for forming metallic saddle trees, consisting each of three pieces, clamped or bolted together, and separable, the side pieces of said dies being adapted to form the raised front of the tree, and the interchangeable center pieces the central portion of the tree, substantially as specified.

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**505,080. BAND SAWING-MACHINE.** EDWARD C. MERRIAM, Saginaw, Mich. Filed Dec. 12, 1892. Serial No. 454,958. (No model.)

*Claim.*—1. In a band resawing machine, the combination with the

frame of the feed rolls, of a vertical frame in the rear of the feed rolls, and integral with the frame of the feed rolls, and adapted to receive laterally extending adjustable pressure bars and one or more laterally extending adjustable pressure bars adapted to press against the material being sawed at a point opposite the base of the saw teeth, substantially as described.

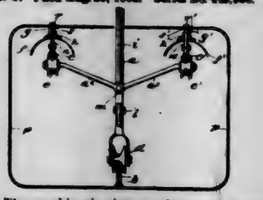


2. In a band resawing machine, the combination with the frame supporting the saw wheels, and carrying an endless band saw, the band saw, the feed rolls, pressure bars adjustably secured to a frame integral with the feed roll frame and adapted to press against the material being sawed at a point opposite the base of the saw teeth, of horizontal bars G having a broad end adapted to press against the saw blade, springs I actuating the bars G, the whole secured in grooves in frames D secured in the main frame, substantially as specified.

3. In automatically adjusting guides for a band saw, the combination with independent horizontal bars on each side of the saw and below the material being sawed, having a broad face next the saw, of independent springs or weights connected to each bar, adapted to resist the lateral movement of the bars when the saw is strained, and to restore the bars to their position, substantially as and for the purpose set forth.

4. In a band resawing machine, laterally adjustable pressure bars consisting of two or more independent bars having a broad face, held in a vertical frame, one above the other, so as to support the material being sawed at a point opposite the base of the saw teeth, and adjustable to and from the material independently, substantially as specified.

**505,081.** CONDUIT ELECTRIC RAILWAY. CHARLES O. SELBY, New York, N. Y. Filed Aug. 23, 1892. Serial No. 443,936. (No model.)



*Claim.*—1. The combination in an underground conduit for electric railways, of the main trolley arm *a* mounted on a grooved iron trolley wheel *d*, of an iron trolley guide or center rail secured within and extending longitudinally through the said conduit to guide the trolley arm *a*, of the short arm *a'* loosely mounted or secured to the main trolley arm *a*, of the flat steel spring *k* adapted to press the short arm *a'* upward and of the diverging fork or branch arms $a^2$ and $a^3$ secured to the upper end of short arm *a'* and bent upward, having grooved contact trolley wheels *c* and *c'* mounted and insulated on their upper ends to engage contact with the under side of suitable electric conductors secured within said conduit, as shown and described.

2. The combination in an underground conduit for electric railways, of the main trolley arm *a* mounted on a grooved iron trolley wheel *d*, of the short arm *a'* loosely mounted or secured to the main trolley arm *a* and pressed upward by the spring *k*, of the diverging fork or branch arms $a^2$ and $a^3$ secured to the upper end of short arm *a'* and bent upward, having the grooved contact trolley wheels *c* and *c'* mounted and insulated on their upper ends to engage contact with the under side of electric conductors *c* and *c'* secured to the standards *g* and *g'* by the straps *n* and *n'* and of an iron trolley guide or center rail *b*, secured within and extending longitudinally through the said conduit to guide the main trolley *a* and keep it in alignment with the longitudinal slot of said conduit and to permit the diverging fork or branch arms $a^2$ and $a^3$ of main trolley arm *a* to give even an equal contact on the under side of conductors *c* and *c'* substantially as shown and described.

3. In an underground conduit for electric railways, the combination of the trolley guide *b*, of a main trolley arm *a*, of short arm *a'*, of branch or fork arms $a^2$ and $a^3$ engaging contact with the electric conductors, and the drip shields *f* and *f'* having a concave or plane surface, secured above the electric conductors, as shown and described.

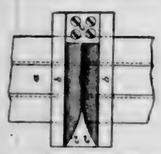
4. An underground conduit for electric railways, provided with suitable electric conductors, having the protecting hoods or shields *f* and *f'* secured above them, an iron trolley guide or center rail *b*, secured within and extending longitudinally through the said conduit, of a main trolley arm *a* mounted on a grooved iron trolley wheel *d* to travel over the said trolley guide or center rail *b*, and having the short arm *a'* loosely mounted or secured to the main trolley arm *a* and pressed upward by spring *k*, the lever *i* to control the short arm *a'*, the diverging fork or branch arms $a^2$ and $a^3$ secured to the upper end of said short arm *a'* and bent upward, having the grooved contact trolley wheels *c* and *c'* mounted and insulated on their upper ends to engage contact with the under side of said electric conductors secured within the said conduit substantially as shown and described.

5. In an underground conduit for electric railways, the combination of a trolley guide, of a main trolley arm mounted on a grooved trolley wheel, of branch or contact arms secured thereto and pressed or actuated by springs to engage contact with the electric conductors, and the protecting hoods or drip shields *f* and *f'*, substantially as shown and described.

6. In an underground conduit for electric railways, the combination of protecting hoods or drip shields secured above the electric conductors, of a main or supporting trolley arm, of short arm *a'* secured thereto and pressed or actuated by springs, and of branch or fork contact arms $a^2$ and $a^3$ secured to short arm *a'* to engage contact with the conductors, substantially as set forth.

# REISSUES.

**11,865.** KNIFE FOR CUTTING OR SCORING PASTEBOARD. EMIL SALTZKORN and LUDWIG NICOLAI, Dresden, Germany. Filed June 3, 1893. Serial No. 476,532. Original No. 442,738, dated Dec. 16, 1890. Patented in Germany Apr. 21, 1889, No. 50,358; in England Apr. 23, 1889, No. 6,797; in France Apr. 29, 1889, No. 197,841; in Belgium May 15, 1889, No. 86,006, and in Austria-Hungary Mar. 15, 1890, No. 40 and No. 719.



*Claim.*—1. In a pasteboard scoring machine, a table, a scoring knife provided above the same, having the straight blade, *c'*, bifurcated at the front end and formed into two forwardly and upwardly curved blades, $c^2$, said knife carried upon the frame of the machine above the level of the table, and actuating mechanism substantially as described.

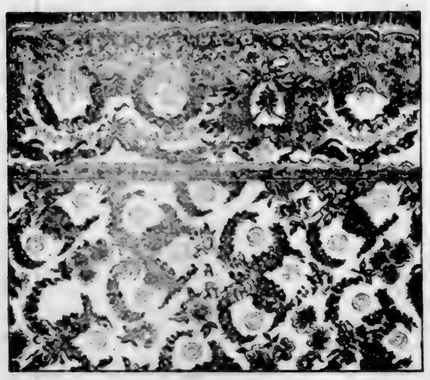
2. In a pasteboard scoring machine, a scoring knife having the straight blades, *c'*, bifurcated at the front end and formed into two forwardly and upwardly curved blades, $c^2$, stock, *a*, securing the knife to the frame of the machine, movable table, *t*, provided below the knife and means for carrying the same to and fro, substantially as described.

3. In a pasteboard scoring machine an adjustably disposed scoring knife having the straight blade, *c'*, bifurcated at the front end into two forwardly and upwardly curved blades, $c^2$, stock, *a*, knife carrier, *b*, movable table, *t*, and roller, *w*, for actuating the same, substantially as described.



# DESIGNS.

**22,772.** CARPET. WILLIAM F. BROWN, Newark, N. J., assignor to the Bigelow Carpet Company, New York, N. Y. Filed Aug. 1, 1893. Serial No. 482,120. Term of patent 3½ years.

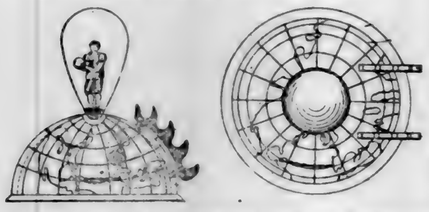


*Claim.*—1. In a design for a carpet the body A, substantially as shown.

2. In a design for a carpet the border B, substantially as shown.

3. The design for carpets, consisting of the body A and the border B, substantially as shown.

**22,773.** INKSTAND. ALEXANDER W. MCNEIL, Chicago, Ill. Filed Mar. 6, 1893. Serial No. 464,906. Term of patent 3½ years.



*Claim.*—The design for an ink-stand substantially as shown and described.

**22,774.** PAPER-WEIGHT. ADDISON T. SMITH, Washington, D. C. Filed July 15, 1893. Serial No. 480,660. Term of patent 3½ years.



*Claim.*—The herein described design for paper-weights, substantially as shown.

**22,775.** BOOK-MARK. JOHN BENT, Paterson, N. J. Filed May 13, 1893. Serial No. 474,143. Term of patent 3½ years.

*Claim.*—The design for book-mark substantially as herein shown and described.

**22,775.**



**22,776.** PINCUSHION. FREDERICK RATCLIFF, New Bedford, Mass., assignor to the Fairpoint Manufacturing Company, same place. Filed June 21, 1893. Serial No. 478,416. Term of patent 7 years.



*Claim.*—The herein described design for a pin cushion, substantially as set forth.

**22,777.** BADGE. GUSTAVUS A. SCHLEICHER, Reading, Pa. Filed May 24, 1893. Serial No. 475,578. Term of patent 7 years.



*Claim.*—1. The design for a badge substantially as shown and described.

2. In a design for a badge as herein shown, the obverse as set forth.

3. In a design for a badge as herein shown, the reverse as set forth.

**22,778.** SPOON, &c. FRANK A. DOWLING, Cleveland, Ohio. Filed June 28, 1893. Serial No. 479,101. Term of patent 3½ years.



*Claim.*—The design for handles of spoons or forks substantially as shown and described.

**22,779.** HANDLE FOR SPOONS, &c. ROWLAND RHODES, New York, N. Y., assignor to William H. Durgin, Concord, N. H. Filed July 8, 1893. Serial No. 479,957. Term of patent 7 years.

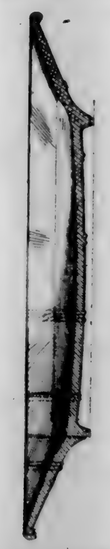


*Claim.*—1. The design for a handle for spoons or similar articles substantially as herein shown and described.

2. In a design for a handle, for spoons or similar articles the obverse, substantially as shown and described.

3. In a design for a handle for spoons or similar articles the reverse, substantially as shown and described.

**22,780.** PLATE. ALFRED HACHE, Vierzon, France. Filed Aug. 21, 1893. Serial No. 483,683. Term of patent 7 years.



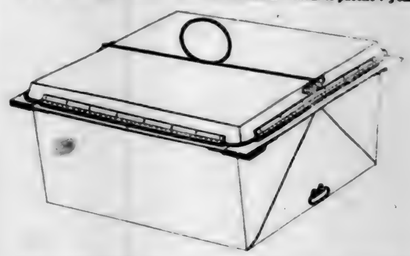
*Claim.*—A design for plates substantially as above shown and described.

**22,781.** CONDIMENT-HOLDER. ALBERT STEVENS, New Bedford, Mass., assignor to the Mount Washington Glass Company, same place. Filed Mar. 31, 1891. Serial No. 468,617. Term of patent 7 years.



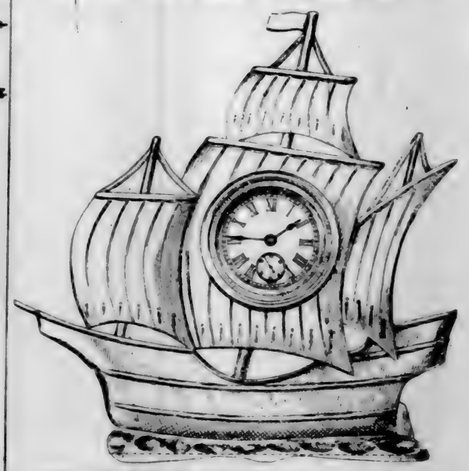
*Claim.*—The design for a condiment or other holder herein shown and described.

**22,782.** COVERED COOKING-PAN. ALONZO B. CONDE, Albany, N. Y. Filed Aug. 1, 1893. Serial No. 482,121. Term of patent 7 years.



*Claim.*—The design for a covered cooking-pan substantially as herein shown and described.

**22,783.** CLOCK-CASE. JOHN H. ZEILIN, Philadelphia, Pa. Filed Apr. 14, 1893. Serial No. 470,383. Term of patent 3½ years.



*Claim.*—The design for clock cases herein shown and described, the same comprising the outline of a Columbus caravel ship with three masts, with sails set on each mast, and in the center of the main-course sail the dial of a clock.

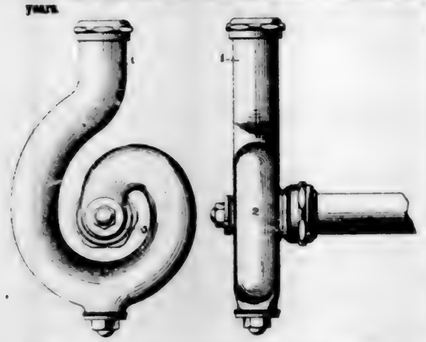
**22,784.** GAS-BURNER FRAME. LOUISA CASSNER, Wayne, Pa. Filed Aug. 21, 1893. Serial No. 483,684. Term of patent 14 years.



*Claim.*—The design for a gas burner frame, substantially as shown and described.



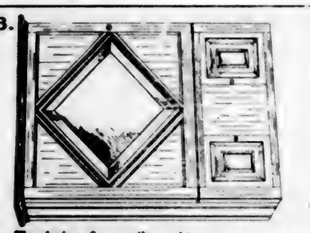
**22,785.** LAVATORY OR SINK TRAP. WILLIAM BUNTING, JR., Flushing, assignor to The Meyer-Sniffen Company, Limited, New York, N. Y. Filed Feb. 23, 1893. Serial No. 464,134. Term of patent 14 years.



*Claim.*—The design for a lavatory or sink trap consisting of the straight vertical portion 1, and the curved or bent portion 2 commencing at the lower portion of the straight vertical part 1 and extending first downwardly and outwardly, then downwardly and inwardly, then upwardly and outwardly, then upwardly and inwardly and terminating in a downward direction at 3 about centrally between the downwardly curved portion on one side and the upwardly curved portion on the other side and about axially in line with the downwardly extending straight portion 1, as shown and described.

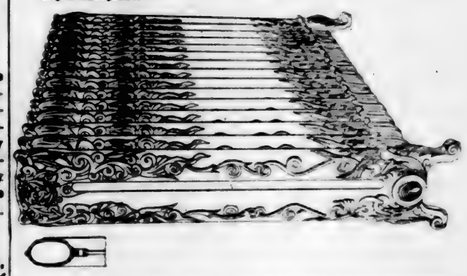
**22,786.** TOILET CABINET-CASE. JAMES O. SWEAR, Baltimore, Md., assignor to the Dressing Cabinet Supply Company of Baltimore City, of Maryland. Filed Aug. 11, 1893. Serial No. 482,944. Term of patent 3½ years.

**22,786.**



*Claim.*—The design for a toilet cabinet case herein shown and described.

**22,787.** RADIATOR. THOMAS H. WILLIAMS, Jersey City, N. J., and EDWARD ARMBRUST, Troy, N. Y., assignors of the A. A. Griffing Iron Company, Jersey City, N. J. Filed Aug. 7, 1893. Serial No. 482,014. Term of patent 7 years.



*Claim.*—The herein described design for a radiator, as illustrated in the accompanying drawings.

# TRADE-MARKS

## REGISTERED SEPTEMBER 12, 1893.

28,596. TOYS. ROBERT REACH, Philadelphia, Pa. Filed Aug. 11, 1893.



*Essential feature.*—The representation of a clock dial with the hands indicating six o'clock. Used since July 1, 1893.

28,597. KNITTED SHAWLS. SCHLOTTMANN & Co., Berlin, Germany. Filed June 2, 1893.



*Essential feature.*—The representation of a flying eagle holding in its talons a branch of a tree. Used since February 4, 1892.

28,598. RUBBER AND TEXTILE HOSE AND BELTING. BOSTON WOVEN HOSE AND RUBBER COMPANY, Boston, Mass. Filed Apr. 20, 1893.



*Essential feature.*—The representation of a tiger's head. Used since April 1, 1889.

28,599. PERFUMED TOILET ARTICLES AND PREPARATIONS, INCLUDING SOAP. VICTOR KLOTZ, Paris, France, and New York, N. Y. Filed May 19, 1893.

LILAS DE FRANCE

*Essential feature.*—The words "LILAS DE FRANCE." Used since March 1, 1890.

28,600. SOAP FOR FAMILY, LAUNDRY, AND MILL USE. JAMES B. NOBLE, Albany, N. Y. Filed June 24, 1893.



*Essential feature.*—The representation of the cactus plant, as a species of melo-cactus having buds and a blossom. Used since May 1, 1893.

28,601. ORANGES AND LEMONS. LOUIS CONTESCIN & SON, New York, N. Y. Filed Aug. 2, 1893.






*Essential feature.*—The representation of a barefooted boy wearing knee breeches, holding in his left arm a bundle of newspapers and in his left hand several branches containing three oranges and one lemon and having his right arm raised in such a manner that his open right hand touches his face, the thumb resting against his chin and the forefinger against his right cheek. Used since July 14, 1893.

28,602. CIGARETTES. THE AMERICAN TOBACCO COMPANY, Newark, N. J., and New York, N. Y. Filed Apr. 25, 1893.




*Essential feature.*—The representation of four panels, one bearing a blank sheet punctured by pins the heads and points whereof are exposed upon the face of the sheet, and the words "ORIGINAL" "PIN HEAD" "CIGARETTES" "MILD AND MELLOW" "OLD NORTH CAROLINA LEAF"; the body portions of the other panels consisting of a fancy ground bearing branches, leaves and flowers and inclosed at top and bottom by fancy borders made up of curved and straight lines and cones. Used since 1883.

28,603. TONIC OF MALT AND HOPS. HOSPITAL TONIC CO., Milwaukee, Wis. Filed June 19, 1893.




*Essential feature.*—The words "HOSPITAL TONIC," in connection with the representation of a stalk of barley with a hop vine entwining the same. Used since December 20, 1891.

28,604. FLUID OR DAIRY MILK. NEW YORK CONDENSED MILK COMPANY, Jersey City, N. J., and New York, N. Y. Filed July 14, 1893.

EAGLE

*Essential feature.*—The word "EAGLE." Used since May 1, 1887.

28,605. BELT-GREASE. GEORGE W. SOUTHWICK, Stamford, Conn. Filed May 6, 1893.



*Essential feature.*—The representation of a Maltese cross having laterally extended arms about three times the length of the vertical arms, and the picture of a bear in the center. Used since February, 1890.

28,606. ANTISEPTIC FOR DESTROYING INSECTS, FUNGI, AND THE LIKE. FARBENFABRIKEN, VORMALS FR. BAYER & Co., Elberfeld, Germany, and New York, N. Y. Filed May 22, 1893.

ANTINONNIN

*Essential feature.*—The word "ANTINONNIN." Used since February 5, 1892.

28,607. SALVES AND OINTMENTS. WILLIAM H. LOCKWOOD, St. Paul, Minn. Filed Dec. 9, 1892.

GOOD LUCK



*Essential feature.*—The words: "GOOD LUCK" and the representation of a horse shoe and a spray of clover leaves. Used since July, 1886.

28,608. PILLS. JOLLY & SONS, LIMITED, London, England. Filed May 29, 1893.



*Essential feature.*—A representation of the smiling face of a girl with hair parted in the middle, surrounded by a wreath of various kinds of fruits attached to their stalks and vines. Used since December 10, 1892.

28,609. PREPARATION FOR THE PAINLESS EXTRACTION OF TEETH. GARRETT LAYTON GRIER, Dover, Del. Filed July 3, 1893.

ALGIAFUGE

*Essential feature.*—The word "ALGIAFUGE." Used since April 1, 1893.

28,610. MEDICINE FOR EXPELLING TAPE-WORMS. RICHARD PHILLIPS, Baird, Tex. Filed Aug. 1, 1893.



*Essential feature.*—The representations of a man's head and an awl. Used since June 1, 1893.

28,611. REMEDY FOR DISEASES OF THE KIDNEYS AND LIVER. FREDERICK PENN, Rutland, Vt. Filed Aug. 9, 1893.

STORY'S

*Essential feature.*—The word "STORY'S." Used since April 20, 1893.

28,612. SEWING-MACHINE AND HAND SEWING NEEDLES. NATIONAL NEEDLE COMPANY, Springfield, Mass. Filed Aug. 7, 1893.

"STANDARD"

*Essential feature.*—The word "STANDARD." Used since 1871.

# DECISIONS

OF THE

# COMMISSIONER OF PATENTS

AND OF

# UNITED STATES COURTS IN PATENT CASES.

## COMMISSIONER'S DECISIONS.

### STEWART v. EINSTEIN v. SAWHILL.

*Decided September 9, 1893.*

1. TRADE-MARK—NAME AND SIGNATURE OF A DECEASED PHYSICIAN.

A druggist whose only relation with a physician was that he filled the latter's prescriptions occasionally cannot, upon the death of the physician, adopt the *fac-simile* of his signature and picture, or either of them, as a Trade-Mark without showing to the Office in some manner the consent of the physician that this should be done, or acquiring the right to do so from the personal representative of the decedent.

2. SAME—OWNER OF—INTERFERENCE—PRIORITY—PRACTICE.

The person attempting to do this is not the owner of the Trade-Mark; his use of it in commerce with foreign nations or otherwise is unlawful, and in interference proceedings judgment of priority cannot be rendered in his favor.

3. SAME—PARTNERSHIP IN TRADE—PHYSICIAN AND PHARMACIST—RIGHT OF SURVIVING PARTNER TO INCHOATE TRADE-MARK.

Another druggist who had a commercial partnership with the physician up to the time of his death, in the business of dispensing the remedies used by the physician, the two having an extensive trade in them, domestic and foreign, has a right as surviving partner to the trade which had become established, to the good-will connected with it, and to the inchoate Trade-Mark right which was incident to it, at least to the extent of treating them as assets of the partnership for the purpose of closing out the partnership business.

4. SAME—APPLICATION FOR A TRADE-MARK BY A SURVIVING PARTNER—NON-USE OF THE TRADE-MARK IN FOREIGN COMMERCE UNTIL AFTER THE FILING OF THE APPLICATION—PRACTICE.

Upon an application by the latter druggist showing the adoption of the Trade-Mark in this trade after the death of the physician, and its use in foreign commerce after the filing of the application, but not before, the case is remanded to the Examiner of Trade-Marks, with instructions to register the same under a supplemental application, should one be filed, upon a showing that commerce with foreign nations in these remedies, with the label suitably applied, has been carried on prior to the filing of such supplemental application.

APPEAL from Examiner of Interferences.

TRADE-MARK FOR MEDICAL COMPOUNDS.

Application of Samuel Stewart filed July 22, 1892.
Applications of Morris Einstein filed June 30, 1892.
Application of Alexander F. Sawhill filed June 18, 1892

*Mr. O. D. Levis* and *Mr. W. E. Aughinbaugh* for Stewart.

*Messrs. Kay, Totten & Cooke* and *Messrs. Pennie & Goldsborough* for Einstein.

*Messrs. L. Bagger & Co.* and *Mr. J. M. Shields* for Sawhill.

SEYMOUR, *Commissioner:*

Suibertas Gottfried Mollinger, of the city of Allegheny, in the State of Pennsylvania, was a priest and a regularly-licensed physician. For many years he was in charge of the Church of the Most Holy Name, of that city; but his chief work came to be to treat and prescribe for the sick. During the last seven years of his life many thousands visited "Father Mollinger," as he was called, in his double capacity, and his fame extended beyond the limits of his own State and even to foreign countries. Some of the remedies prescribed were compounds which he had discovered or become possessed of and which were known only to himself and the pharmacists who compounded them. Others were adopted by him, and some were discovered or compounded by the pharmacist Sawhill or those in his employ. In the last year of his life a book was prepared by two of Sawhill's assistants, one of whom was regularly in attendance upon Father Mollinger for the last two years of his life during the hours while he was prescribing, obtained and delivered the medicines which were prescribed, and also attended to some extent to the correspondence of Father Mollinger. The book was kept in Father Mollinger's study, and a duplicate was at Sawhill's store and contained the formulas and prescriptions, with the name of the disease for which each was ordinarily prescribed.

Alexander F. Sawhill, one of the parties in this interference, filled upward of eighty thousand of these prescriptions; but occasionally one was taken to another druggist. A few were taken to Morris Einstein, the only other party in the interference, Stewart having abandoned the case.

On the 23d of May, 1892, the arrangement between Father Mollinger and Sawhill passed into a formal agreement, by which the gross profits of the business of dispensing Father Mollinger's remedies to the public were to be equally divided between them, each to pay certain stipulated salaries and expenses; but this division of profits was not to extend beyond the time that Father Mollinger should continue to prescribe and to send his prescriptions to Sawhill's store. This agreement subsisted and was carried out by both parties from the time it was made until the death of Father Mollinger, which occurred on the 15th of June, 1892. The agreement constituted a commercial partnership between Father Mollinger and Mr. Sawhill in that part of Sawhill's business which pertained to the Father Mollinger remedies. The scope of this partnership is to be marked off, on the one hand, from Father Mollinger's professional treatment of the sick, which was personal to him, and, on the other, from Sawhill's other pharmaceutical trade. This partnership trade extended over a wide area and to foreign countries and was considerable in volume, and the bottles containing the remedies bore the name of Mol-

linger as the prescribing physician and of Sawhill, the druggist, upon each label. The character of this trade was not affected by the agreement of May 23, 1892; but under it it was continued as it had been for several years before, and thus there came to be connected with it a good-will, which at the time of Father Mollinger's death was valuable, as was also the trade itself.

Immediately after Father Mollinger's death Sawhill made application for the registration of the Trade-Mark in question, and afterward and as early as July 25, 1892, he prepared and printed the labels containing the Trade-Mark and applied them to a carefully-selected series of the remedies which Father Mollinger had prescribed, designating on the labels the diseases for which Father Mollinger used them. These remedies, with these labels, were thereupon put upon the market, and from that time on the Trade-Mark was used by Sawhill in commerce with foreign nations.

Two days after the death of Father Mollinger, Adolph Hepp, who for five years had lived at his house and had attended the Father in his treatment of the sick, but without taking other part than to write out under dictation some of the prescriptions and take them to Sawhill's store and bring back the medicines, took the book containing these prescriptions, heretofore alluded to, from Mollinger's private bookcase and carried it to Morris Einstein, who thereupon began the preparation of medicines which were immediately put upon the market as "the Father Mollinger Remedies."

Einstein adopted the Trade-Mark later than Sawhill, but was the first to actually use it in trade. Besides the Trade-Mark, the label also contained the statement:

> The above is the true prescription. Signed: Adolph Hepp, secretary of the late Father Mollinger.

Some of the remedies were not those used by Father Mollinger; others were not used for the purpose for which Father Mollinger used them; many others are not shown in the record to be either the same or different, for Einstein refused to disclose their formulas, although interrogated upon that point. Adolph Hepp was not the private secretary of Father Mollinger.

It was attempted to show that a few weeks before his death Father Mollinger had promised to transfer to Hepp his interest in the business of dispensing his remedies, and one witness testified that Father Mollinger said he had done so; but nothing effectual for this purpose was done, nor did Hepp actually manage the business in any manner whatever or have any part of the profits. The administrator of Father Mollinger is not a party on this record and is not shown to have interfered with the interests of the decedent in this business or to have attempted to realize upon them or to dispose of them.

It is considered that Einstein was not the owner of this Trade-Mark, and his use of it in commerce with foreign nations or otherwise was and is unlawful. Notwithstanding, therefore, his first application of the Trade-Mark to the bottles and packages containing medicines in commerce, judgment of priority cannot be rendered in his favor.

Sawhill, as the surviving partner of Mollinger in the particular matter of dispensing these remedies, which may be called the commercial side of the healing art as practiced by Mollinger, has the right to the trade which had become established, to the good-will connected with it, and to the inchoate Trade-Mark right which was incident to it, at least for the purpose of closing out the partnership business; but he did not use the Trade-Mark in commerce with foreign nations prior to the filing of his application in this Office. It was afterward so used by him, as soon as it was possible to select and prepare the medicines.

For want of this foreign trade at the time of filing his application, registration must be denied Sawhill under this application; but the case is remanded to the Examiner of Trade-Marks, with instructions to register the Trade-Mark to Sawhill under a supplemental application, should one be filed, and upon a showing that commerce with foreign nations in these remedies, with the Label suitably applied, has been carried on prior to the filing of such supplemental application.

## DECISIONS OF THE U. S. COURTS.

### U. S. Circuit Court—Southern District of New York.

NEW YORK BELTING AND PACKING COMPANY *v.* GUTTA PERCHA AND RUBBER MANUFACTURING COMPANY.

*Decided February 24, 1892.*

1. PATENTS—PRELIMINARY INJUNCTION.
   When it appears that defendants have kept and offered for sale an infringing article, it is not unfair to issue a preliminary injunction, though they profess to have no present intention of continuing such sales.
2. SAME—SAME.
   Such injunction will not be refused on a suggestion that an improper use may be made thereof by advertising to embarrass defendants in the sale of non-infringing articles, since it must be presumed that the injunction was sought in good faith, and should the contrary appear the court could reconsider its action.

SUIT by the New York Belting and Packing Company against the Gutta Percha and Rubber Manufacturing Company for infringement of Design Patent No. 11,208, issued May 27, 1879, to George Woffenden. The patent was sustained by Judge Coxe in *New York Belting and Packing Co.* v. *New Jersey Car Spring and Rubber Co.*, (48 Fed. Rep., 556.) Preliminary injunction granted.

*Mr. B. F. Lee* and *Mr. William H. L. Lee* for the complainant.

*Mr. Livingston Gifford* for the defendant.

LACOMBE, *J.*:

While I do not think the complainant has shown the manufacture by the defendants of infringing mats of the kind described in the decision of Judge Coxe, it is impossible not to escape the conviction that they have kept such mats in stock and offered them for sale. The catalogue which they circulated down to some time subsequent to June 1, 1891, offering mats of sizes not made by the complainant, seems conclusive on this point. It may be that the defendant has no present intention of continuing such sales; but in view of the fact that there is a final decision sustaining the patent it does not seem an unfair exercise of





the court's discretion to secure the continuance of that intention by the granting of a preliminary injunction, at least until further order. The defendant cannot complain, in view of the fact that it has infringed or threatened infringement, although when it did so it expected that complainant's patent would turn out to be void. If defendant does not intend to sell such infringing mats, its business is in no way interfered with by an order prohibiting it from doing so. Nor does the suggestion that some improper use may be made of the order by advertising it so as to interfere with or embarrass the defendant in the sale of other mats—not now before the court—warrant a refusal of the relief asked for. It is to be assumed that complainant has applied in good faith and intends to avail of the preliminary injunction only to accomplish the purpose for which it is granted—viz., the securing of the rights it has shown on this motion. Should the contrary appear hereafter, it will work such a change in the equities between the parties that the court will experience no difficulty in reconsidering this decision.

### U. S. Circuit Court—District of New Jersey.

ROEMER *v.* JENKINSON *et al.*

*Decided March 28, 1893.*

ROEMER—SATCHEL-FRAMES—VOID CLAIMS.

Claims 6 and 7 of Letters Patent No. 378,263, issued February 21, 1888, to William Roemer, for an improvement in bag or satchel frames, are void, as covering the results of mere mechanical skill.

SUIT by William Roemer against George S. Jenkinson and John D. Peddie for infringement of certain patents. Bill dismissed.

*Mr. George J. Harding* and *Mr. George Harding* for the complainant.

*Mr. Louis C. Raegener* for the defendants.

GREEN, *J.*:

The bill of complaint in this cause was filed to restrain an alleged infringement by the defendants of Letters Patent No. 378,263, granted to the complainant, on February 21, 1888, for a new and useful improvement in bag or satchel frames, and also an alleged infringement by the same defendants of Letters Patent No. 378,620, granted to the complainant, on February 28, 1888, for certain new and useful improvements in frames for traveling-bags. So far as the latter patent is concerned, it may be dismissed from further consideration. It contained six claims, set forth specifically. Of those, the fifth only was supposed to be trespassed upon by the defendants, and upon the argument this contention was formally abandoned. These Letters Patent, therefore, are out of the present case. The invention covered by the other Letters Patent, No. 378,263, is said to relate to that class of bag frames in which the—

> jaws of the bag are pivoted upon the opposite ends of certain bars or rods disposed at the ends of the bags, at the top thereof, so that there is formed, when the jaws are open, a very wide passage to the pocket or chamber in the bag equal to or approximating in length and breadth the length and breadth of the bag-body.

The object of the invention was declared to be—

> to reduce the cost of manufacture, to facilitate the construction, and to secure certain effects of finish not common to other bags now on the market.

There are seven claims in the Letters Patent. Of these, originally, the complainant insisted that three were involved in this suit—the second, sixth, and seventh; but at the argument he abandoned the second, resting his contention upon the sixth and seventh. These claims are as follows:

> 6. In a bag-frame substantially as described, end sections *b b*, jaws *c c'*, with end sections *f f*, rigidly secured to and connected by longitudinal parts or sections *d*, and pivotally secured upon the extremities of the said sections *b b*, and adapted to lie, when in their closed positions, parallel with said end sections *b b*, the said longitudinal section *d* having a seat, *d'*, raised above the said sections *f f* when in said closed positions, substantially as and for the purposes set forth.
>
> 7. In a bag-frame, the combination of end bars or sections *b b*, longitudinal sections *d d*, and end sections *f f*, connecting said longitudinal sections with said end sections *b b*, being pivotally secured upon said end sections *b b*, as at *i*, and the longitudinal sections being raised above the sections *f f* to form a raised seat at the center of the closed bag, substantially as set forth.

The defendants by their answer deny infringement, and insist that the alleged combination of the invention discloses no patentable novelty.

These claims, 6 and 7, which are relied upon by the complainant, and which are quoted at length above, are substantially for the same combination, the only difference being that claim 7 requires the longitudinal sections *d d* to be raised above the end sections *f f*, so as to form "a raised seat at the center of the closed bag." Stating the claims in other words, they cover, first, two end bars or sections called "distending-bars;" secondly, two pivoted jaws, consisting each of two end sections, pivotally secured to the ends of the distending-bars and adapted to lie when the jaws are in their closed position parallel with the distending-bars; third, a longitudinal bar or section rigidly secured to and connecting said end sections and having a raised seat above them. Add to these the additional condition stated in the seventh claim—that the "raised seat" must be at the center of the closed bag - and the catalogue of elements embraced by these claims is complete. Now, the evidence in the cause as presented on the part of the defendants clearly shows, I think, that every one of these elements is old, and the combination of them has resulted in no new means. The defendants upon this point of lack of patentability rely upon various foreign Letters Patent and upon various bags and satchels made or in use in this or other countries, all of which antedate the alleged invention by years. I do not think it necessary to encumber this opinion with a long or searching analysis of the patents referred to by the defendants, nor of the testimony of the witnesses, expert and non-expert, who have been examined on either side of this controversy. It is sufficient to say that in my judgment the German Laueza bag, the French Keller bag, and the English Victoria bag, with its variations, as shown in the King and Allen bags, are clear anticipations of all that the complainant contends is covered by the claims now in issue. There may be found, by an examination approaching the microscopic, that the complainant has made some alterations or modifications. It would be almost unprecedented if he had not. But the changes made plainly involve the exercise of ordinary mechanical skill only, and hence cannot lift the action of the complainant to the dignity of invention. A very careful consideration of the evidence given by the single witness produced by the complainant to support his contention has failed to shake or weaken this conclusion; and upon this ground, then—the lack

of patentable novelty—I must hold that complainant's Letters Patent, so far, at least, as these claims are concerned, are void, and that his bill of complaint must be dismissed.

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## U. S. Circuit Court—Northern District of New York.

LOEWER AND SCHELTER *v.* C. P. FORD & CO.

*Decided April* 3, 1893.

1. LETTERS PATENT—INFRINGEMENT.
Letters Patent to H. Loewer and B. L. Blair, No. 407,735, granted July 23, 1889, for an improved sole-cutting machine, sustained and infringed by a device constructed in accordance with Patent No. 472,399, granted to S. Ross, Jr., April 5, 1892.
2. INVENTION.
Loewer and Blair's machine does the work better and faster than the best of the prior machines. It is stated that the daily capacity of the Hartford machine is from 600 to 800 pairs of outsoles per day, while that of Loewer and Blair's machine is from 4,000 to 6,000 per day. To construct such a machine required invention. The arrangement of its complicated and ingenious mechanism is not the work of mechanical skill alone.
3. INVENTORS—PIONEER.
Although the complainants have not made a pioneer invention in the broad sense of the term, they are entitled to a construction liberal enough to cover a machine which in the same art performs the same work in manner almost identical.

FINAL hearing in equity.

*Mr. George B. Selden* for the complainants.
*Mr. E. E. Wood* for the defendants.

COXE, *J.*:

This is an infringement suit founded upon Letters Patent No. 407,735, granted July 23, 1889, to Henry Loewer and Barton L. Blair, for an improved sole-cutting machine. The patent is now owned by the complainants. The object of the inventors was to construct a machine which should cut from leather blanks one sole or several soles to the exact size and shape desired. This is accomplished by means of a stationary frame provided with a rapidly-revolving shaft which carries a cutter and a guide-wheel. A second swinging frame, which moves to and from the stationary frame, is provided with clamps opposite the cutter for holding the leather blanks and other clamps opposite the guide wheel for holding the pattern. These clamps are mounted on a shaft. When the blanks and pattern are clamped in position, the second frame is moved forward, and as its shaft is slowly revolved the edges of the blanks come in contact with the cutter and are pared down to the precise size and shape of the pattern, the edge of which strikes against the guide-wheel, thus limiting the depth of the cut.

The claims involved are as follows:

1. In a sole-cutting machine, the combination, with the revolving cutter C and its shaft, of the revolving sole-clamps E E', their supporting-shafts, the movable carriage, and a revolving form operating to vary the relative positions of the cutter and the sole-clamps, substantially as described.
4. In a sole-cutting machine, the combination, with the revolving cutter C and its shaft, and guide s, of the revolving sole clamps E E', clamp-plates s s', removable form F, and suitable supporting-shafts, substantially as described.
5. In a sole-cutting machine, the combination, with the revolving cutter C and its shaft, and guide s, of the revolving and traveling sole-clamps E E', form F, suitable supporting-shafts, and movable blank-guide T, substantially as described.
6. In a sole-cutting machine, the combination, with the revolving cutter C and its shaft, and guide s, of the revolving and traveling sole-clamps E E', suitable supporting-shafts, and movable blank-guide T, provided with adjustable plate p', substantially as described.
9. In a sole-cutting machine, the combination, with the main frame A A', supporting the revolving cutter C and its shaft, and the guide s, of the movable frame D, carrying the revolving sole-clamps E E' and form F, and mechanism adapted to secure the simultaneous revolution of the sole-clamps and the form, substantially as described.
14. In a sole-cutting machine, the combination, with the revolving cutter C and its shaft, provided with the spring-guard S, of the guide s, and the revolving sole-clamps E E', form F, and suitable supporting-shafts, substantially as described.

The defendant, a corporation engaged in manufacturing shoes at Rochester, N. Y., uses a machine covered by Letters Patent No. 472,399, granted to Simon Ross, Jr., April 5, 1892. It is alleged that this machine infringes the above-named claims of the complainants' patent.

The defenses are lack of novelty and invention and non-infringement.

The patent was granted without reference. The principle underlying the invention is unquestionably old. Over seventy years ago Thomas Blanchard invented an automatic lathe by which irregular forms were turned by means of a revolving cutter and guide-wheel mounted on a stationary frame, the stock and pattern opposite the cutter and guide-wheel being mounted on a swinging frame. In 1884 David F. Hartford patented (No. 309,850) an ingenious machine in which the leather blank was clamped to the pattern and cut to the desired shape by a knife which traveled around the pattern. Besides these the record shows many machines for cutting and trimming the heels and channeling and grooving the soles of boots and shoes and many improvements in lathes for turning lasts and other irregular forms.

It is unnecessary to discuss the various exhibits in detail, for neither alone nor aggregated do they show the combinations of the claims.

An army of ingenious mechanics and inventors had the Blanchard lathe before them for over half a century, yet the idea of utilizing it in the sole-rounding industry never seems to have occurred to one of them. It did not occur to men of undoubted ingenuity, like Stevens, Hartford, Helms, King, and Joyce, to round the soles of shoes to the desired shape by a rotary cutter and guide-wheel on a stationary frame, and revolving clamps for holding the pattern and blanks on a movable coacting frame.

That the patented machine is a valuable contribution to the art cannot be doubted. It does the work better and faster than the best of the prior machines. It is stated in the record that the daily capacity of the Hartford machine is from 600 to 800 pairs of outsoles per day, while that of the patented machine is from 4,000 to 6,000 per day. To construct such a machine required invention. The arrangement of its complicated and ingenious mechanism is not the work of mechanical skill alone. The fact that during the many years of fierce competition in this art the idea never occurred to any of the men of genius who were striving to improve all kinds of labor-saving devices in the shoe industry creates a strong presumption that it was not the kind of contribution to be expected from one who is a mechanic and nothing more. Although the complainants have not made a pioneer invention, in the broad sense of that term, they are entitled to a construction liberal enough to cover a machine which in the same art performs the same work in manner almost identical. There are differences between the com-





plainants' and the defendant's machines; but they are of form and relate only to minor details. The defendant's machine may be in some particulars an improvement; but that it has adopted all the essential features of the patented machine there can be no doubt.

The complainants are entitled to the usual decree.

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## U. S. Circuit Court—District of New Jersey.

NARAMORE *v.* CAHOONE BARNET MANUFACTURING COMPANY *et al.* (Two cases.)

*Decided April* 21, 1893.

INFRINGEMENT—HARNESS-PADS.
Claim 1 of Letters Patent No. 302,548, issued July 29, 1884, to Dorr and Tamplin, is for a harness-pad in which the wool of the sheep or other animal is incorporated with a fabric backing in place of the skin. Claim 2 of Letters Patent No 423,797, issued March 19, 1890, to Henry L. Naramore, is for practically the same thing, except that the claim is limited to a backing having secured thereto "tufts of unspun wool or hair * * * in the form of doubled uncut loops." *Held* that, in view of the prior state of the art, these claims, must be strictly construed, and are not infringed by a pad made under the Cahoone Patent No. 402,719 and consisting of a broad skein or web of material made flat and joined to a woven fabric or backing by rows of stitching, the material used being "spun" wool.

SUIT by Henry L. Naramore against the Cahoone Barnet Manufacturing Company and others for infringement of a patent.

*Messrs. Church & Church* for the complainant.
*Mr. E. H. Brown* for the defendants.

GREEN, *J.*:

These two suits in equity were brought against the defendants, the one to restrain them from infringing Letters Patent No. 302,548, granted July 29, 1884, to Oscar L. Dorr and Thomas J. Tamplin, for certain new and useful improvements in harness-pads, and the other to restrain the same defendants from infringing Letters Patent No. 423,797, dated March 19, 1890, granted to Henry L. Naramore, also for an improvement in harness-pads. The Dorr and Tamplin patent was duly assigned to the complainant, Naramore, on or about June 7, 1886. The invention claimed to have been made jointly by them is said to—

consist in an imitation sheepskin pad in which the wool of the sheep, or it might be other animal, is incorporated with a fabric backing or holder in place of the skin.

The object of Mr. Naramore's invention is said to be—

to provide an improvement in the harness-pad shown and described in United States Letters Patent No. 302,548, granted to Dorr and Tamplin July 29, 1884;

and in reference to the invention itself the patentee says:

By my improvement objections met with in the use of the aforesaid harness-pad are overcome, said improvement consisting of a pad comprising a backing or ground fabric, preferably of coarsely-woven cloth, having tufts of unspun wool or hair secured to it in the form of doubled uncut loops.

The claims infringed are said to be the first of the Dorr and Tamplin patent and the second of the Naramore patent. They are as follows:

1. (Dorr and Tamplin patent.) In a harness-pad, the combination, with a piece of knitted or woven fabric, A, forming a backing or holder, of the doubled tufts B, incorporated, as shown, with said holder, and essentially as described.
2. (Naramore patent.) The leathern or other harness support, in combination with a harness-pad consisting of the backing or ground fabric secured to said support, the ground fabric having tufts of unspun wool or hair secured thereto in the form of doubled uncut loops, as set forth.

Upon comparison of these claims it appears that they are practically identical, except that in the Naramore patent the claim is limited to a specific form of "tufts," which must be of "doubled uncut loops," and to a special character of material to be used—to wit, "unspun wool or hair." Upon the argument it was forcibly contended that both of these patents were invalid because they disclosed neither invention nor patentable novelty. Without expressing any opinion as to this defense, it is sufficient to say that in view of the state of the art, either admitted or clearly and satisfactorily proved, the claims of the Letters Patent in controversy must be strictly construed, and when so construed the "harness-pad" manufactured by the defendants under the Cahoone Patent No. 402,719 cannot be held to be an infringement. Clearly it exhibits nothing which can properly be described as "tufts," but rather, in its completed form, presents a surface composed of a broad skein or web of material made flat and joined to a woven fabric as a backing by rows of stitching, while the material itself used is "spun" wool, a very different article from the "unspun wool or hair" of the complainant's pads. These differences are essential in character and carry the pad of the defendant beyond the region covered and appropriated by the Letters Patent in controversy.

The bill of complaint in each case must be dismissed.

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## U. S. Circuit Court—District of Connecticut.

BRAGG MANUFACTURING COMPANY *v.* CITY OF HARTFORD.

*Decided May* 24, 1893.

1. INJUNCTION—DEMURRER—EXPIRATION OF TERM OF PATENT.
A bill for an injunction to restrain the infringement of a patent filed only four days before the term of the patent expires is demurrable where no preliminary injunction is asked, since it would be impossible to obtain a final decree before expiration of the patent. (*American Cable Ry. Co.* v. *Chicago City Ry. Co.*, 41 Fed. Rep., 522, followed.)
2. SAME—DEMURRER—PUBLIC POLICY.
The objection that public policy forbids the issuance of an injunction cannot be raised by demurrer to the bill, since that is a question addressed to the discretion of the court, especially where the bill alleges that complainant has reason to fear that defendant will continue his infringements.
3. SAME—DEMURRER—LACHES.
The mere fact that eight years elapse between the rendition of a judgment declaring a patent valid and the filing of a bill to restrain its infringement does not render the bill demurrable on the ground of laches.

SUIT by the Bragg Manufacturing Company against the City of Hartford for infringement of certain patents. On demurrer to the bill. Sustained in part and overruled in part.

*Messrs. Eaton, Lewis & Burdett* for the complainant.
*Mr. J. E. Steele* and *Mr. A. W. Walker* for the defendant.

TOWNSEND, *J.*:

This is a bill in equity, filed July 9, 1892, for an injunction and accounting by reason of the alleged infringement of reissued Letters Patent No. 6,831 and of Letters Patent No. 173,261, both patents being is-

sued to Robert Bragg, for improvements in fire-alarm-gong apparatus. The defendant demurs to the whole bill on the following grounds, namely:

First. That the said bill does not contain any matter of equity whereon this court can ground any decree or give to the complainant any relief against this defendant. Second. That the complainant is not entitled upon said bill to the relief prayed for, because it has a plain, adequate, and complete remedy at law. Third. That no injunction could ever have been or can now be lawfully granted in pursuance of said bill, because public policy forbids any discontinuance of the said defendant's use of any apparatus which may infringe either of the Letters Patent upon which said bill is based. Fifth. That the said bill shows that the complainant, and also the assignors from which the complainant derived title to the Letters Patent upon which the bill is based, are chargeable with laches in not sooner prosecuting whatever right of action in equity it or its assignors may have had against the said defendant on account of said Letters Patent or either of them.

Defendant further demurs to the bill, so far as it is based upon reissued Letters Patent No. 6,831, on the following additional ground, namely:

Fourth. That, so far as said bill is based upon reissued Letters Patent of the United States No. 6,831, said bill was filed so shortly before the expiration of that patent that no motion for an injunction could have been regularly notified to the defendant and heard by the court until after that expiration.

This fourth ground of demurrer will be first considered. The bill was filed four days before the date of the expiration of this patent. The rule is established in *Root* v. *Railway Co.* (21 O. G., 1112; 105 U. S., 189;) that equity only takes jurisdiction of suits for infringement where it appears from the bill that complainant is entitled to an injunction or other equitable relief. The test of jurisdiction applied in the later cases is whether the bill is filed in season to enable complainant, under the practice and rules of court, to move for and obtain an injunction before the expiration of the patent. It does not appear that in any of the cases cited by complainant the bill was filed so short a time before the expiration of the patent as in this case. In *The Singer Manufg. Co.* v. *Wilson Sewing Mach. Co.*, (38 Fed. Rep., 586,) cited by complainant, Judge Blodgett sustained the jurisdiction because the four and one-half months between the commencement of the suit and the expiration of the patent would have allowed time for answer, proofs, and final hearing during the life of the patent. But in *American Cable Ry. Co.* v. *Chicago City Ry. Co.*, (41 Fed. Rep., 522,) Judge Blodgett, interpreting the rule in the light of the intimations in *Clark* v. *Wooster*, (87 O. G., 1477; 119 U. S., 322; 7 Sup. Ct. Rep., 217,) dismissed the bill on demurrer where the patent had fourteen days of life when the bill was filed, and where no application had been made for a preliminary injunction. This view was approved in *American Cable Ry. Co.* v. *Citizens' Ry. Co.*, (44 Fed. Rep., 484.) (See, also, *Washburn Manufg. Co.* v. *Freeman Wire Co.*, 41 Fed. Rep., 410.) Inasmuch as in this case no application was made for a preliminary injunction, and none could, "by the course of the court," have been obtained until after the expiration of the patent, and as the defendant's appearance was not due until eighteen days thereafter, I think that equity has no jurisdiction of the claims under reissued Patent No. 6,831. The fourth ground of demurrer is sustained.

The third ground of demurrer is that public policy and complainant's interests would be infringed by the issuance of the injunction. But these claims, if true, are addressed, not to the jurisdiction of the court, but to its discretion. And the question as to the exercise of such discretion cannot be determined upon the complaint alone. It does not necessarily appear therefrom, nor from any judicial notice which the court is authorized to take, that an injunction against the infringement of Patent No. 173,261 would cause any public injury or inconvenience, such as caused the court to deny the injunction in *Southwestern Brush Electric Light and Power Co.* v. *Louisiana Electric Light Co.*, (45 Fed. Rep., 893.) Furthermore, the demurrer admits not merely the use of the patented inventions by defendant for its engine-houses, but also that defendant has made a large number of said inventions, and that complainant has reason to fear that, unless defendant is enjoined, it will continue to make the same. Upon these facts the court has the power to grant an injunction. It cannot be assumed, without further evidence, that such power will not be exercised upon a proper case being made out. The third ground of demurrer is overruled.

The fifth ground of demurrer alleged is laches. It appears that both the patents in suit were adjudged valid in test cases some eight years ago. It is unnecessary to consider on this demurrer what would have been the effect of such delay, in view of other litigation, upon the right to a preliminary injunction or an account of past profits. The court may still entertain jurisdiction of the cause where any equitable relief is sought, provided the plaintiff has not been guilty of laches. (*Root* v. *Railway Co.*, 21 O. G., 1112; 105 U. S., 189; *Burdell* v. *Comstock*, 15 Fed. Rep., 395; *Dick* v. *Struthers*, 34 O. G., 131; 25 Fed. Rep., 103; 3 Rob. Pat., 1093, 1094.) It does not necessarily appear on the face of the bill that the complainant's delay was such as to constitute laches. The disposition of this question may be properly deferred for a consideration of all the facts upon final hearing. The fifth ground of demurrer is overruled.

The first and second grounds of demurrer, alleging want of equity in the bill and that complainant has an adequate remedy at law, are also overruled.



THE
# OFFICIAL GAZETTE
OF THE
# United States Patent Office.
[BY AUTHORITY OF CONGRESS.]

VOL. 64.—No. 12. TUESDAY, SEPTEMBER 19, 1893. PRICE—$5 per year.

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## Notice.

All solicitors, agents, or attorneys who, in circulars or advertisements or otherwise, refer to the Commissioner of Patents, or to any other official of the Patent Office, for evidence of their professional standing, do so without authority.

## File-Wrappers—Entries On.

It is directed that entries shall not be made on the back of a file-wrapper, containing the application-papers for a patent, of papers or actions which do not become a permanent part of the contents of the file.

A card (Form 2-384 Office Series of blanks, sample hereto attached) will be placed in the file showing all appellate actions.

## Amended Rules of Practice.

Rule 25 and the first paragraph of Rule 122 of the Rules of Practice (edition of April 1, 1892) of the United States Patent Office are hereby amended to read as follows:

Rule 25. In case of the death of the inventor, the application will be made by and the patent will issue to his executor or administrator. In such case the oath required by Rule 46 will be made by the executor or administrator. In case of the death of the inventor during the time intervening between the filing of his application and the granting of a patent thereon, the Letters Patent will issue to *the executor or administrator upon proper intervention by him.*

Rule 122. Motions to dissolve an interference upon the ground that no interference in fact exists, or that there has been such irregularity in declaring the same as will preclude a proper determination of the question of priority, or which deny the patentability of an applicant's claim, or his right to make the claim, should, if possible, be made not later than the twentieth day after the statements of the parties have been received and approved. Such motions *should be noticed for hearing upon a day certain before the Examiner of Interferences upon the question of transmission to the Primary Examiner*, and when in proper form will be transmitted by the Examiner of Interferences, with the files and papers, to the proper Primary Examiner for his determination, *who will thereupon fix a day certain when the said motion will be heard before him upon the merits, and give notice thereof to all the parties. If a stay of proceedings is desired, a motion therefor should accompany the motion for transmission.*

## Names of Applicants.

When the full first name of the applicant does not appear either in his signature or in the preamble to the specification, the Examiner will, in his first official letter, require an amendment supplying the omission, and he will not pass the application to issue until the omission has been supplied, unless an affidavit shall have been filed setting forth that the full first name of the applicant is the one originally given by him.

## Publishers' Catalogues.

This Office would be pleased to receive from manufacturers and publishers such catalogues, circulars, price-lists, or other advertisements relating to the sciences and mechanical arts as are published by them for gratuitous distribution; but notice is hereby given such manufacturers or dealers who feel disposed to send their publications that not less than three copies should be forwarded in order that the subjects may be properly indexed, classified, and subclassified in the Scientific Library for convenient and ready reference.

## Construction of Statutes Relating to the Registration of "Prints" and "Labels."—Amended.

In the publication of this Office entitled "United States Statutes Concerning the Protection and Registration of Trade-Marks and Labels, with the Rules of the Patent Office Relating Thereto, Edition of January 4, 1892," the following matter on page 17 is hereby canceled:

The words "prints" and "labels," as used in this act, so far as it relates to registration in the Patent Office, are construed as synonymous, and are defined as any device, picture, word or words, figure, or figures (not a trade-mark) impressed or stamped directly upon the articles of manufacture, or upon a slip or piece of paper or other material to be attached in any manner to manufactured articles, or to bottles, boxes, and packages containing them, to indicate the contents of the package, the name of the manufacturer, or the place of manufacture, the quality of goods, directions for use, etc.

By the words "articles of manufacture" (to which such print or label is applicable by this act) is meant all vendible commodities produced by hand, machinery, or art.

But no such print or label can be registered unless it properly belongs to an article of commerce, and be as above defined; nor can the same be registered as such print or label when it amounts to a lawful trade-mark, or when its use in connection with the article to which it is applied is arbitrary or fanciful.

And the following is substituted therefor:

These sections of statute (referring to sections 3, 4, and 5 of the act of Congress relating to patents, trade-marks, and copyrights, approved June 18, 1874, 18 Statutes at Large, p. 78) are construed as authorizing the registry of "prints" and "labels." A label is a device or representation borne by an article of manufacture or vendible commodity. A print is a device or representation not borne by an article of manufacture or vendible commodity, but in some fashion pertaining thereto—such, for instance, as a pictorial advertisement thereof. A label cannot be registered if it bear a device capable of sequestration as a trade-mark until after such device is registered as a trade-mark. Both labels and prints, in order to be entitled to registry, must be intellectual productions in the degree required by the copyright law.

The note on page 19 is canceled.

## The Official Gazette.

THE OFFICIAL GAZETTE is published every Tuesday, simultaneously with the weekly issue of patents. From January 1, 1872, (the commencement of its publication,) to June 30, 1883, it was published and bound in semi-annual volumes; since July 1, 1883, in quarterly volumes. All subscriptions must commence with the beginning of a volume; none taken for less than three months. Terms: To all subscribers within the United States and Canada, $5 per annum; to foreign subscribers, $7; single copies, 10 cents; bound semi-annual volumes, (prior to June 30, 1883,) full sheep, $4 per volume; bound quarterly volumes, (subsequent to July 1, 1883,) full sheep, $2.75 per volume. No club rates. *Payment in advance.* All orders should be addressed to "The Commissioner of Patents, Washington, D. C."

## Issue of September 19, 1893.

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|---|---|
| Patents | 347—No. 505,082 to No. 505,428, inclusive |
| Designs | 18—No. 22,788 to No. 22,795, inclusive. |
| Trade-Marks | 29—No. 23,613 to No. 23,641, inclusive. |
| Labels | None. |
| Print | None. |
| Reissue | 1—No. 11,366. |
| Total issue | 385 |

### TO CITIZENS OF THE UNITED STATES.

| States. | Patents and Designs. | Trade-Marks and Labels. | States | Patents and Designs. | Trade-Marks and Labels. |
|---|---|---|---|---|---|
| Alabama | 2 | .... | Nevada | .... | .... |
| Arizona Territory | .... | .... | New Hampshire | 1 | .... |
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| Missouri | 13 | .... | | | |
| Montana | 2 | .... | Total to citizens of the United States | 317 | 21 |
| Nebraska | 1 | .... | | | |

### TO CITIZENS OF FOREIGN COUNTRIES.

| Countries. | Patents and Designs. | Trade-Marks and Labels. | Countries. | Patents and Designs. | Trade-Marks and Labels. |
|---|---|---|---|---|---|
| Argentine Republic | 1 | .... | Mexico | .... | .... |
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| Ireland | 1 | .... | Total to citizens of foreign countries | 38 | 8 |
| Italy | .... | .... | | | |

## APPLICATIONS UNDER EXAMINATION.

*Condition at Close of Business September 12, 1893.*

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|---|---|---|---|---|
| | *In arrears.—Under one month.* | | | |
| 2 | Farm Stock, Products, etc | Aug. 23 | Sept. 11 | 40 |
| 31 | Gas, Painting, Hides, Skins, and Leather, Alcohol, Oils, Fats, and Glue, etc. | Sept. 2 | Sept. 9 | 15 |
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| | Trade-Marks | Sept. 9 | Sept. 11 | 19 |

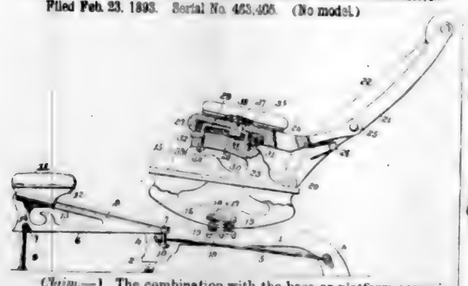
# PATENTS

## GRANTED SEPTEMBER 19, 1893.

**505,082.** MANUFACTURE OF ARTIFICIAL STONE. FRANZ F. VON AUBACH, Knittelfeld, Austria-Hungary. Filed Aug. 26, 1892. Serial No. 444,204. (No specimens.) Patented in Austria-Hungary Jan. 30, 1891, No. 38,431 and No. 75,131.

*Claim.*—A composition consisting of powdered and burnt magnesite and an aqueous solution of tungstate of soda substantially as set forth.

**505,083.** ROCKING-CHAIR. JASPER M. AUSMAN, Herkimer, N. Y. Filed Feb. 23, 1893. Serial No. 463,405. (No model.)



*Claim.*—1. The combination with the base or platform comprising a central longitudinally-disposed slot or way, of a foot-rest frame provided at its outer end with supporting legs, a foot-rest carried by the frame, and a headed pin depending from the inner end of the foot-rest frame and taking through and engaging the sides of the slot or way, substantially as specified.

2. The combination with a platform or base comprising a pair of centrally-located longitudinally-disposed rungs combined to form an intermediate slot, of a foot-rest frame, supports for the outer ends of the frame, a rest arranged on the frame, and a headed pin depending from the inner end of the rest, taking through the slots, and engaging the rungs substantially as specified.

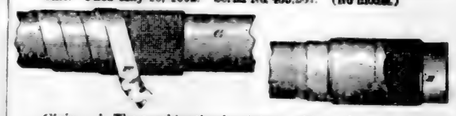
3. In a chair of the class described, the combination with the platform, of a movable foot-rest frame connected therewith, said frame being provided with opposite parallel sides declining from front to rear and forming ways, and provided in their bottoms with recesses and a foot-rest mounted for movement upon the ways, and provided with lugs for engaging the recesses, substantially as specified.

4. In a chair of the class described, the combination with the platform or base comprising a pair of parallel longitudinal rungs centrally arranged therein, of a foot-rest frame comprising opposite declining sides whose inner faces are provided with declining grooves, legs for the outer ends of the frame, rungs connecting the sides, a headed pin depending from the rear rung through the slot formed by the parallel rungs of the base, and a foot-rest having cleats upon its under side inclined to correspond with the sides of the foot-rest frame, and a cross-piece secured to the cleats and having its ends engaging and adapted to move within the grooves of the sides of the foot-rest frame, substantially as specified.

5. In a chair of the class described, the combination with a base, a seat-frame, rockers secured to the seat-frame and resting on the base, and stationary arms secured to and rising from the seat-frame, of a back-section pivoted to the seat-frame, a spring for normally throwing the back section forward, movable arms pivoted to the sides of the back-section and adapted to slide upon the stationary arms, and grooves formed in the under sides of the movable arms, rods rising from the stationary arms and taking into the grooves, and binding-screws passing through the movable arms and impinging upon the rods, substantially as specified.

6. In a chair of the class described, the combination with a base, a seat, rockers secured to the seat and mounted upon the base, stationary arms rising from the seat, and a back pivoted to the seat, of movable arms pivoted to the back and provided with grooves upon their under sides in which are located recesses, perforated metal blocks located in the recesses, rods located in the blocks and having their terminals downwardly bent, the rear terminals being secured to the upper sides of the stationary arms, and the front terminals depending through openings formed in the stationary arms and provided with nuts, perforations formed in the outer sides of the blocks, and binding-screws passed through the perforations in the movable arms and threaded in the perforations of said blocks, substantially as specified.

**505,084.** PACKING FOR JOINTS. JOHN A. BARBER, Cleveland, Ohio. Filed May 16, 1892. Serial No. 433,207. (No model.)

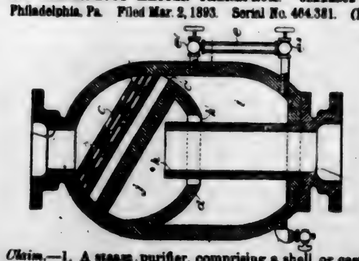


*Claim.*—1. The combination in a joint packing, of a core of elastic material, with or without cotton duck or other insertion, and a coupling perforated or roughened on its inside, and covered on its outside with a suitable material, whereby the elasticity of either the core or the coupling or both will cause each to adhere tightly to the other, and whereby on pressing the coupling and core, one will become partially or wholly embedded in the other, substantially as described.

2. The combination of a core of elastic material and a coupling covered on its outside with a suitable material, said covering extending over the ends of the coupling onto the core, and by its contraction, holding the ends of the packing within the coupling, substantially as described.

3. A steam joint-packing, consisting of a core of elastic material and a coupling covered on the outside with a suitable material, said coupling having its ends protected or packed by the extension of the covering, substantially as and for the purpose described.

**505,085.** APPARATUS FOR PURIFYING STEAM AND REMOVING EXTRANEOUS MATTER THEREFROM. CLARENCE M. BAUM, Philadelphia, Pa. Filed Mar. 2, 1893. Serial No. 464,381. (No model.)



*Claim.*—1. A steam purifier, comprising a shell or casting provided with an internal inlet conduit, a diagonally disposed V-shaped

partially fluted, ribbed or corrugated baffle-plate, a chamber for receiving the purified steam separated from the well for water and extraneous matter by a curved perforated partition and a base or standard provided with a steam outlet pipe or conduit and extending through the well into said chamber, substantially as and for the purposes set forth.

2. A steam purifier provided with a diagonally disposed channeled and partially fluted, ribbed or corrugated baffle-plate with an interposed partition or wall separating the steam purifying chamber from the well for the reception of water and extraneous matter and a steam outlet pipe or conduit extending through the well into said chamber, substantially as and for the purposes set forth.

3. A steam purifying apparatus, comprising a standard with an integral steam outlet conduit, a shell or casting mounted on said standard and provided with an integral steam inlet conduit, a baffle-plate and partition separating the steam purifying chamber from the well for the reception of water and extraneous matter, and said steam outlet conduit extending into said chamber, substantially as and for the purposes set forth.

4. A steam purifier, comprising a shell provided with a steam inlet conduit, a diagonally disposed fluted, corrugated or ribbed baffle-plate having a partition in rear thereof and a standard provided with a steam outlet conduit extending through said partition, substantially as and for the purposes set forth.

5. A steam purifier, comprising a shell having an integral steam inlet conduit, a diagonally disposed V-shaped baffle-plate and an integrally formed curved partition or wall beneath, dividing the interior of the shell into upper and lower chambers, a pipe or conduit extending into the upper chamber and a regulated gage and waste or drip-cock connected with the lower chamber, substantially as and for the purposes set forth.

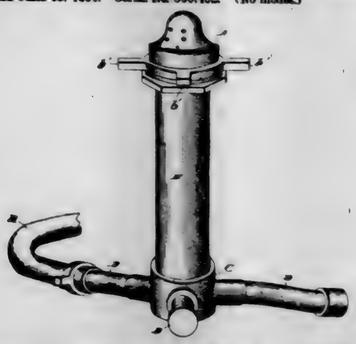
6. A steam purifier, comprising a shell having a steam inlet conduit, a diagonally arranged V-shaped fluted, ribbed or corrugated baffle-plate provided with a circumferential outlet, an integral partition adjacent to said plate and dividing the shell into two chambers and a detachable base or standard provided with a steam outlet conduit extending through the lower into the upper chamber, substantially as and for the purposes set forth.

7. A steam purifier, comprising a shell having a steam inlet conduit, a diagonally disposed V-shaped baffle-plate, a partition with a central opening therein, a pipe extending through the same, a drip controlled pipe and a gage connected with said shell or casting, substantially as and for the purposes set forth.

8. A steam purifier, comprising a shell provided with an integral inlet conduit, an internal diagonally disposed V-shaped partially corrugated or ribbed baffle plate with outlets and a partition having an opening therein, a detachable standard for supporting said shell and provided with an outlet pipe or conduit extending into the interior of said shell through the opening in said partition, substantially as and for the purposes set forth.

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**505,086. LAWN-SPRINKLER.** STEPHEN S. BLACK, Pasadena, Cal. Filed June 15, 1891. Serial No. 396,402. (No model.)



*Claim.*—1. A spray apparatus in which the exit or delivery holes are constructed and arranged radially in two series of alternating vertical pairs as set forth, in one series of which the axes converge at an acute angle, in the other or alternating series the axes converge at a less acute angle, the axes of each pair focusing separately in the same horizontal plane, the foci being equidistant from the vertical center line of apparatus, substantially as and for the purpose specified.

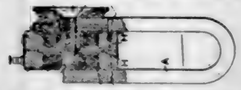
2. A lawn spray apparatus having a motionless but removable head with exit or delivery holes constructed and arranged in radiating vertical pairs as set forth, and provided with four horizontally projecting horns arranged vertically below four corresponding pairs of holes substantially as and for the purpose described.

3. A lawn spray apparatus consisting of a spraying device mounted upon a tubular water conducting standard provided with a plurality of feet, each of such feet being bent or constructed to form a comparatively smooth bearing surface and one of them serving as a conductor pipe from hose to standard, whereby the apparatus may be moved from place to place by drawing upon the hose.

4. A lawn spray apparatus resting upon a tripod one foot of which is used as a conductor pipe from hose to standard, this foot being furnished at its outer extremity where it rests upon the ground with means for attaching a hose, the inner extremity being slightly elevated and secured into a hollow base communicating with the tubular standard, the two remaining legs being secured into the opposite side of base and radiating outward and slightly downward, substantially as and for the purpose specified.

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**505,087. TELEPHONE.** JOSEPH B. S. BOOTH and ERNEST J. PALOSER, Manchester, England. Filed Jan. 31, 1893. Serial No. 460,242. (No model.) Patented in England Mar. 2, 1892, No. 4,068.



*Claim.*—1. In an electric telephone, a single diaphragm arranged perpendicular to and between two co-axial pole pieces of a permanent or electro-magnet, the pole pieces having thereon coils included in the line circuit and wound or joined in such a manner that the line current tends to produce similar polarity in the ends of the pole pieces next to the diaphragm, substantially as set forth.

2. In a telephonic apparatus, a diaphragm having an air chamber on each side, a receiving and a transmitting aperture entering said chambers respectively at their edges, and a sound conveying trumpet, quadrant shaped, connected to one of said apertures and opening at its outer end toward the other aperture, for the purpose set forth.

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**505,088. PROCESS OF FIXING COLORS UPON COTTONS, &c.** JOHN BRACKWELL, North Adams, Mass. Filed Apr. 14, 1893. Serial No. 470,304. (No specimens.)

*Claim.*—1. The process of producing and fixing on cotton fabrics or fibers colored patterns with alizarine color grounds, which consists in first padding or dyeing the fabric or fibers with an alizarine color mixture composed of an alizarine color and a metallic mordant, and then printing with a color mixture consisting of an aniline color, a vegetable mordant therefor, and a discharge for the alizarine ground color, and then steaming or aging at such degree as that the alizarine ground color and the color pattern are both simultaneously developed and fixed substantially as described.

2. The process of producing and fixing on cotton fabrics or fibers colored patterns with alizarine color grounds, which consists in first padding or dyeing the fabric or fibers with an alizarine color mixture composed of an alizarine color and a metallic mordant therefor, and then printing with a color mixture consisting of an aniline color, a vegetable mordant therefor, and a discharge for the alizarine ground color, and then steaming or aging at such degree as that the alizarine ground color and the color pattern are both simultaneously developed and fixed, and finally passing the fabric through a solution of antimony to further fix the vegetable mordant of the pattern color, substantially as described.

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**505,089. CARTRIDGE.** WILLIAM C. BUSH, Wilmington, Del. Filed Mar. 11, 1893. Serial No. 465,562. (No model.)



*Claim.*—1. A cartridge having a shell consisting of a breech section having a hollow annular flange or rim, a cylindrical or main section having oblong recesses in its rear end, a breech block having a conical powder chamber located in the rear end of said cylinder or main section, and compressed to force the portion of the same through the oblong recesses into the hollow annular rim of the breech section, substantially as shown and described.

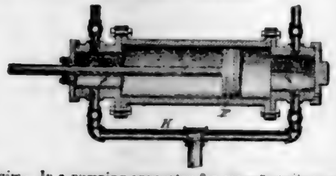
2. A cartridge having a shell consisting of a breech section having a hollow annular flange or rim, a cylindrical or main section having oblong recesses and oblong projections at its rear end, a breech block having a conical powder chamber, located in the rear end of the cylinder section and compressed to force the oblong projections of the cylinder into the hollow flange or rim and portions of the breech block through the oblong openings into said flange or rim, substantially as shown and described.

3. A cartridge having a shell consisting of a breech section having a hollow annular flange or rim, a cylindrical or main section having oblong recesses in its rear end, a breech block having a conical rifled powder chamber located in the rear end of the main or cylinder section, and compressed to force a portion of the same through the oblong recesses into the hollow flange or rim of the main section, substantially as shown and described.

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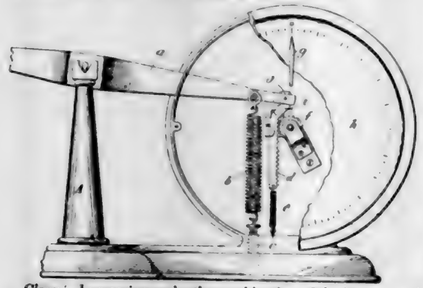
**505,090. PUMPING APPARATUS FOR THE MANUFACTURE OF CARBONIZED WATERS.** HENRY CARSE, Rock Island, Ill. Filed May 23, 1893. Serial No. 475,396. (No model.)



*Claim.*—In a pumping apparatus for manufacturing carbonized water, a central pump cylinder in combination with an extension hollow head detachably secured to each end thereof and of less bore than the cylinder, and forming altogether a single compartment divided by a piston, the rod of which operates through one hollow head which is distant from the piston stroke, a gas supply pipe and exit pipe secured to and communicating with one hollow head, and a water supply pipe and water exit pipe attached to and communicating with the other head, in combination with an exterior exit pipe communicating with two exit pipes and having communicating therewith a single discharge pipe for conducting the carbonized water, and suitable supply cocks and check valves; as and for the purpose specified.

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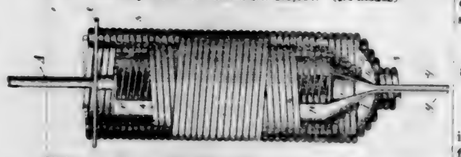
**505,091. SPRING-SCALE.** GEORGE H. CHATILLON, New York, N. Y. Filed May 11, 1893. Serial No. 473,836. (No model.)



*Claim.*—In a spring scale, the combination of the beam *a*, rack-bar *d*, one end of which is pivoted to said beam, pinion *f* meshing therewith, and coiled spring *e* connected to the free end of said rack bar and to a stationary part of the scale, whereby said spring *e* exerts a resistance against the scale beam *a* and holds the rack bar in engagement with the pinion, substantially as described.

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**505,092. COMPOUND SPRING.** GEORGE H. CHATILLON, New York, N. Y. Filed May 11, 1893. Serial No. 473,837. (No model.)



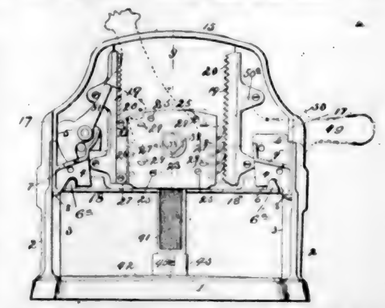
*Claim.*—1. The combination of a central rod or stem with one or more open coiled springs 1, 2, 3, cushioning contractively, and with one or more closely coiled springs, cushioning expansively, and with means substantially as described for supporting both sets of springs on said rod, all as specified.

2. The combination of the rod A having head or enlargement *a* and shoulder *b*, with the sleeve B carried by said rod and adapted to be opened and shut, with one or more open coiled spiral springs 1, 2, 3 supported on the head *a*, and with one or more closed coiled springs 4, 5 bearing against the sleeve B, and with a holder *i* resting on the shoulder *b* and connecting with the outer spring or springs, all as and for the purpose specified.

3. The combination of the central rod A having head *a* and shoulder *b* with the open coiled spring or springs 1, 2, 3, sleeve B forming stems *g g*, disk *h*, closed coiled spring or springs 4, 5, and rod *i* resting on shoulder *b*, all arranged as and for the purpose specified.

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**505,093. LETTER-PRESS.** GREVILLE E. CLARKE, Racine, Wis. Filed Aug. 11, 1892. Serial No. 442,830. (No model.)



*Claim.*—1. In a copying press the combination with the bed, the uprights, the housing and the platen, of the vertically movable head having a series of pivoted dogs, the rack bars having rack teeth, the operating lever and cam, and means for throwing said dogs into and out of engagement with the rack teeth, substantially as described.

2. In a copying press the combination with the bed, the uprights, the housing, the platen and its rod or bar, of the rack bars provided with rack teeth, the vertically movable head provided with pivoted dogs, the cam shaft having a cam and formed with angular ends and an intermediate cylindrical portion, the operating lever, the horizontally movable plate provided with a vertical flange and a stud or pin, and the disk mounted on the cam shaft and provided with the cam flange having a passageway, substantially as described.

3. In a copying press the combination with the bed, the uprights, the housing, the platen and its rod or bar, of the rack bars provided with rack teeth, and vertical grooves, the vertically movable head having vertical flanges and anti-friction rollers, and provided with pivoted dogs, the cam shaft having a cam and provided with angular ends and an intermediate cylindrical portion, the operating lever, the horizontally movable plates provided with vertical flanges and studs or pins, and the disks mounted upon the cam shaft provided with the cam flanges having passageways, substantially as described.

4. In a copying press the combination with the bed, the uprights, the housing, the platen and its rod or bar, the rack bars having rack teeth, the vertically movable head having a series of pivoted dogs, the cam shaft, the cam and the operating lever, of the horizontally movable plates having vertical flanges and studs or pins, the cam disks having cam flanges and passageways, and the inward and outward extensions of said flanges, substantially as and for the purpose specified.

5. In a copying press the combination with the bed, the uprights, the housing, the platen and its rod or bar, the rack bars having rack teeth, the vertically movable head provided with pivoted dogs, the cam, the cam shaft and the operating lever provided with a projection at one side, of the horizontally movable plates having vertical flanges, and studs or pins, the disks having cam flanges, and the pivoted weighted arm adapted to engage with and form a fulcrum for said operating lever, substantially as and for the purpose specified.

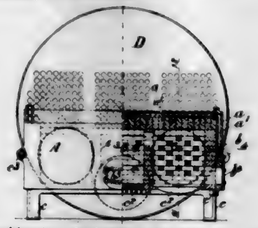
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**505,094. STEAM-BOILER FURNACE.** JAMES CLEGHORN, Port Chalmers, New Zealand. Filed Apr. 20, 1892. Serial No. 429,977. (No model.)

*Claim.*—1. In combination with the boiler, the furnace comprising the end chambers A, C, and the intermediate chamber B, divided from said end chambers by perforated walls, said end chambers having openings leading to the boiler, substantially as described.

2. In combination with the boiler, the furnace comprising the end chambers A, C, and the intermediate chamber B, divided from said end chambers by a perforated wall and having an imperforate wall between it and the boiler, the said end chambers communicating with the boiler through openings and the passage or space extending between the perforated walls of the end chambers and the boiler and from one end chamber to the other across the imperforate wall of the

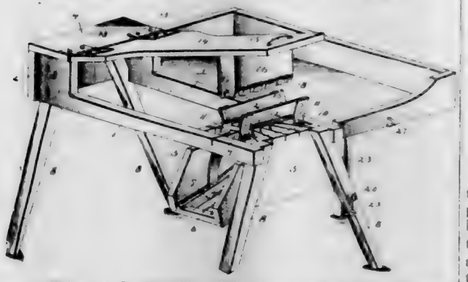
intermediate chamber and between said imperforate wall and the boiler, substantially as described.



3. In combination, the boiler and the furnace and having a perforated wall extending adjacent to the boiler, said wall being formed of the bricks having bearing points $d^2$ and intermediate cut away edges $d'$, the spaces $d^1$ between the said bricks, the bricks $d^3$ arranged in alternate layers with the bricks $d$ and adapted to form with said bricks $d$, the vertical passages $d^5$, and $d^6$ and the horizontal passages $d^6$, substantially as described.

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**505,095. SEED-POTATO CUTTER.** JAMES COLGROVE, Clear Water, Minn. Filed May 8, 1893. Serial No. 473,465. (No model.)



*Claim.*—1. In a machine of the class described, the combination with a rectangular frame having a raised portion at its rear end, a lever hinged to the raised portion and extending forwardly over the frame, a spring for elevating the lever, and a plunger arranged upon the under side of the lever and provided with intersecting grooves, of a knife-frame having intersecting knives arranged in the path of the plunger, and a pair of converging yieldingly supported potato-clamping plates arranged over the knife-frame, substantially as specified.

2. In a machine of the class described, the combination with a rectangular frame having a raised portion at its rear end, a lever hinged to the raised portion and extending forwardly over the frame, a spring for elevating the lever, and a plunger arranged upon the under side of the lever and provided with intersecting grooves, of a knife-frame having intersecting knives arranged in the path of the plunger, a pair of yieldingly supported converging potato-clamping plates arranged and horizontally supported over the knife-frame, said plunger having its opposite edges beveled to spread the plates, substantially as specified.

3. In a machine of the class described, the combination with the opposite side bars, a superimposed plunger, and supporting legs for the bars, of the sides 5 of the box cut away at their ends and located between the side bars with which they combine to form a knife-frame, inclined rods forming a chute arranged in the side-bars a longitudinal knife let into the side-bars and subdividing the frame, and a series of transverse knives let into the longitudinal knife and having their ends let into slots in the sides 5 and at increasing distances apart, substantially as specified.

4. In a machine of the class described, the combination with the open frame, the knife-carrying frame arranged therein, and a superimposed plunger, of the hinged drop-leaf secured to one of the side-bars of the frame, and the hinged leg secured to the under side of the drop-leaf and adapted at its free end when the drop-leaf is closed to take between the side-bars of the frame, substantially as specified.

5. In a machine of the class described, the combination with the main frame, the knife-carrying frame, the sides 5 extending below the same and forming a box, the rods arranged in the box and forming an inclined way, of the superimposed plunger, opposite pairs of bent spring-arms extending through the knife-frame and secured to the sides 5, and converging plates secured to the spring-arms, substantially as specified.

6. In combination with the box provided with the knife frame having the longitudinal and transverse series of knives, the spring arms 11 secured to the box and extending up above the knife frame, the plates 12 secured to the arms, the said arms and plates constituting a holder for the potatoes, and the plunger, substantially as specified.

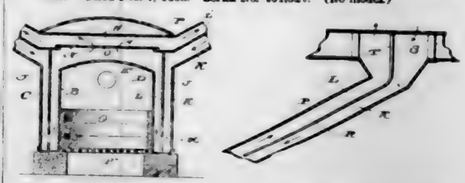
7. In combination with the box, the knife frame at the top thereof having the series of knives, the spring holder for the potatoes to support the latter directly over the knife frame, and the spring supported plunger adapted to work down between the sides of the spring holders, for the purpose set forth.

8. The framework having the box 5, at one end provided with an open bottom, and the inclined rods 7 crossing the bottom of the box and forming an inclined perforated way, the knife frame at the top of the box, and the plunger, substantially as described.

9. The box 5, provided with a longitudinal knife blade 9, having at intervals upon its under side a series of vertical slots, the sides of the box being also provided with a series of slots, which are wider apart than the slots of the knife, and a series of transverse blades 10 inserted at their ends in the slots of the box and also engaging with the slots of the blade 9, whereby the blades 10 are arranged farther apart at their outer ends than at their centers, substantially as described.

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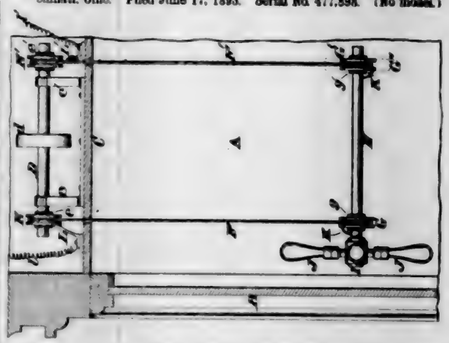
**505,096. HOT-AIR FURNACE.** ALEXANDER J. ERWIN, Mansfield, Ohio. Filed Feb. 7, 1893. Serial No. 461,327. (No model.)



*Claim.*—The furnace herein shown and described, consisting of the base, the fire pot thereon, the closed casing surrounding the fire pot, the casing inclosing said closed casing having openings at the lower portion and upper portion, the heat conducting chamber above the latter casing, a heating pipe leading from the said chamber a cold air supply pipe leading to the casing having the openings, and registers communicating with the heating and supply pipes.

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**505,097. ELECTRIC-LIGHT FIXTURE.** BENJAMIN F. FLEET, Cincinnati, Ohio. Filed June 17, 1893. Serial No. 477,898. (No model.)



*Claim.*—1. A revolving shaft, provided with a number of electric lights and freely suspended by bands that conduct the current to said lights, substantially as described.

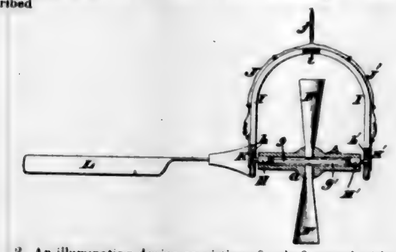
2. A revolving shaft H, provided with a number of electric lights, as J, and and having wires K, K', and insulated pulleys G, G', which pulleys are driven by bands F, F', that conduct the current to said wires, for the purpose described.

3. The combination, in an electric light fixture, of driving shaft D, provided with insulated pulleys E, E', and the shaft H, provided with a number of lights, as J, and carrying insulated pulleys G, G', and the bands F F', that pass around the pulleys E, G, E', G', and conduct the current from wires $l$, $l'$, to said lamps, in the manner described.

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**505,098. REVOLVING ELECTRIC LIGHT.** BENJAMIN F. FLEET, Cincinnati, Ohio. Filed July 5, 1893. Serial No. 479,608. (No model.)

*Claim.*—1. The combination, in an illuminating-device, of a revolving-shaft carrying electric-lights, wires that conduct the currents to said lights, and obliquely-arranged blades, which latter turn said shaft, when struck by a current of air, substantially as herein described.



2. An illuminating device consisting of a shaft armed with a series of globes, and wires that conduct electric currents into the latter, said globes being of such a shape and so arranged as to be struck by the wind and thereby revolve said shaft, substantially as herein described.

3. The combination, in a revolving electric light, of shaft A, provided with sails F, obliquely disposed globes G, and wires $g$, $g'$, journals H, H' inserted in the ends of said shaft and communicating with said wires $g$, $g'$, a yoke I, suspended from wires J, J', united together at $j$, bushings $k$, $k'$, secured in said yoke and serving as bearings for said journals H, H', and means for causing the electric currents to pass from the suspension wires, J, J', into said bushings $k$, $k'$, all as herein described.

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**505,099. BRUSH-BURNER.** HENRY S. GAYLORD, Arimon, Cal. Filed Oct. 14, 1892. Serial No. 448,880. (No model.)



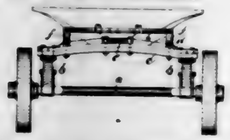
*Claim.*—1. A brush burner composed of pipes connected together and having a top rail-rod, and two curtains having curved ends and hooks designed to engage said rail-rod and inclose the sides of the burner, substantially as set forth.

2. A brush burner having its frame composed of intersecting pipes and having a top rail rod, the carrying wheels for said frame, and the lower removable curtains engaging said rail rod and designed to extend beneath said frame and inclose the sides thereof, substantially as set forth.

3. The herein-described improved brush burner consisting of the frame or body, the rear carrying wheels, the front swivel wheel, the upper frame having supporting arms detachably connected to said frame or body and the curtains removably secured to said frame, substantially as set forth.

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**505,100. WAGON.** THEODOR GEISEL, Springfield, Mass. Filed June 2, 1893. Serial No. 476,345. (No model.)



*Claim.*—1. The combination with a wagon of a truck having cross pieces whose lower parts are rigid metal U shaped in cross sections, and having the upper portion of wood, fitting in the recess in the metal and projecting above the sides thereof substantially as shown.

2. The combination in a wagon of cross pieces formed of the metal part $e$, of rectangular shape in cross section except for a longitudinal recess curved in cross section and the wood part $d$ shaped to fit the recess in the metal substantially as shown.

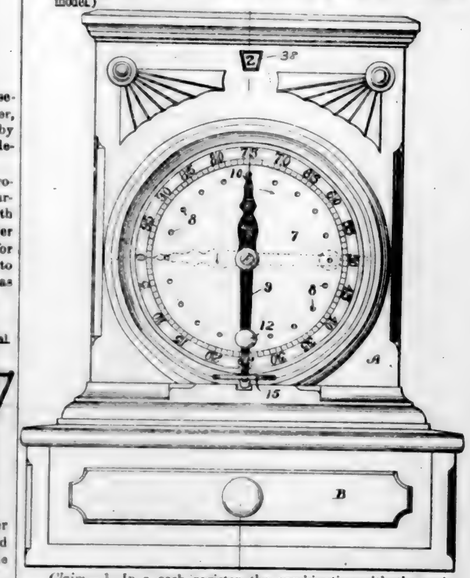
3. The combination in a wagon of wheels, suitable axles, springs mounted on the latter, cross pieces connecting the ends of adjacent springs, said cross pieces comprising metal parts $e$ recessed longitudinally, wood parts $d$ fitting the recess in the metal and projecting above the same, supports $f$ resting upon said cross pieces, and braces $g$ extending from the supports $f$ to the wooden portion of the cross pieces and secured thereto substantially as shown.



4. The combination in a wagon or truck of suitable wheels, suitable axles, suitable supports for the frame work,—cross pieces comprising a metal strip rectangular in cross section except for a longitudinal groove extending the whole length thereof and circular in cross section, and a wooded strip $d$ fitting the groove in the metal and projecting above the same, said cross pieces being formed to curve upwardly as shown in the central portion, and means to secure the tongue to the top portion of the front cross piece substantially as shown.

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**505,101. CASH REGISTER AND INDICATOR.** JOSEPH H. GREENLEAF, New Haven, Conn. Filed Dec. 14, 1891. Serial No. 414,914. (No model.)



*Claim.*—1. In a cash register, the combination with the main shaft, of a dial rigidly fastened thereon, a pointer loosely pivoted upon said shaft provided with a crank or handle and having means for operative connection with the dial for turning the latter in either direction, and a registering train actuated by the main shaft, substantially as described.

2. In a cash register, the combination with the main shaft having a ratchet wheel of one hundred teeth loosely mounted thereon, of a dial plate rigidly fastened on said shaft and having a pawl adapted to engage the ratchet wheel to carry the latter in one direction, the pointer pivoted on the main shaft and adapted to move over the face of the dial, means as described for coupling the dial and pointer together, and a spring-actuated locking pawl adapted to engage and to hold said pointer, substantially as set forth.

3. In a cash register, the combination with the main shaft having loosely mounted thereon the one hundred toothed ratchet wheel, of the dial rigidly fastened on said main shaft and having a pawl adapted for engagement with the ratchet wheel to carry the latter in one direction, the centrally pivoted pointer co operating with the dial to form the primary indicating device, a secondary indicating device as described, actuated from the main shaft, worm gear borne upon said main shaft, and a totalizing registering train engaged and operated by said worm gear, substantially as shown and for the purpose described.

4. In a cash register, the combination with the main shaft and the one hundred toothed ratchet wheel loosely mounted thereon, of the dial rigidly mounted on said shaft and bearing a pawl adapted to make connection with the ratchet wheel to move the same in one direction, the pointer and means for connecting it with the dial so as to operate the latter in both directions, the totalizing mechanism substantially as described and which is actuated from the main shaft, the supplemental shaft and its indicating disk, and connections substantially as set forth for the operation of the supplemental shaft one step at each complete turn of the main shaft, all arranged and adapted to operate as described.

5. In a cash register, the combination with the main shaft, its dial, and means for operating it, of the supplemental shaft having an indicating disk, a ratchet wheel upon said shaft, an arm provided

with an actuating pawl carried by the main shaft and adapted to actuate the ratchet wheel one step at each complete revolution of the main shaft, suitable retaining pawl co-operating with the ratchet wheel, and a spring connected to and adapted to return said supplemental shaft, substantially as described

6. In a machine of the character described, the combination with the main shaft, of the dial and pointer adapted to actuate said shaft, the supplemental shaft and its dial, a pair of arms mounted upon said main shaft and adapted, the one to operate the supplemental shaft, and the other to disengage the drawer-latch, the spring engaging and adapted to return the supplemental shaft, and a trip mounted upon the arm 42 and adapted to release said shaft, substantially as described.

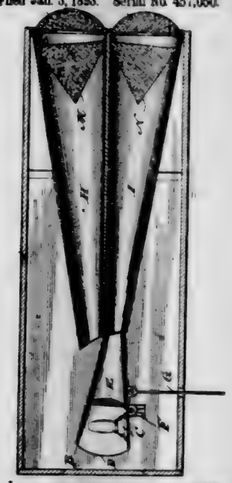
7 In a machine of the character described, the main shaft and worm gear, in combination with the gears 20 and 21, the dials 25 and 34, the pointer-carrying ring 31, and the intermediate gears arranged and operating as described whereby the appropriate movement is imparted to the several dials, substantially as and for the purpose specified

8. In a machine of the character described, the main shaft and the worm gear carried thereby, in combination with the transverse shaft 22, the gear 21 secured upon said shaft, the gear 20 and its dial loosely mounted upon said shaft, the ring dial 31 and an operative connection between said dial and a pinion borne on the gear 20, the dial 34, pinion 32 borne by the ring dial 31, and a driving connection between said pinion and the dial 34, the whole arranged and adapted to operate as and for the purposes hereinbefore set forth

9 As a totalizing device for machines of the character described, the gears 20 and 21 and means as a worm gear for actuating them, in combination with dials 25 and 34, the pointer carrying ring 31, and the intermittent gears combined and arranged and operating as described whereby the appropriate movement is imparted to the several dials, substantially as and for the purpose specified.

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**505,102. SIGNALING APPARATUS.** WILLIAM H. HALL, Chicago, Ill. Filed Jan. 3, 1893. Serial No. 457,050. (No model.)



*Claim.*—1. In an apparatus for casting different colored lights, the combination with a pivoted case, a lamp or other suitable illuminating agent mounted within the case, a lens arranged within the lamp case in front of the lamp and a plurality of stationary cases having their open ends within the range of movement of the lamp case, colored disks mounted in said cases and prisms also arranged in said cases for straightening the rays of light, substantially as described.

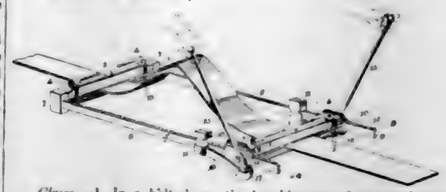
2. In a signal apparatus, the combination with a lamp case having its pivot arranged below the lamp, a reflector arranged behind the lamp, a lens arranged within the lamp case in front of the lamp, a plurality of stationary cases each containing at its front end a disk, the respective disks being of different colors, and the rear ends of said disk cases being within the range of movement of the lamp case, and prisms arranged within the disk cases for straightening the rays of light, substantially as described.

3. In a signal apparatus the combination with a lamp case having converging walls, a reflector, a lamp and a lens mounted within said case and the latter being so pivoted as to balance upon its pivot, and a plurality of stationary cases having converging walls and each containing a disk and a prism, the small end of the lamp case being adapted when the latter is moved on its pivot to be brought to register with the small end of either of the stationary cases, substantially as described.

4 In a signaling apparatus the combination with a lamp case having a lamp, a reflector and a lens mounted therein, said case being pivoted and an operating rod pivotally connected to the lamp case whereby the case, lamp, reflector and lens may be moved in unison, and a plurality of stationary cases each containing a disk and a prism and having open ends within the range of the movement of the lamp case whereby the rays of light may be directed through either of said stationary cases at will, substantially as described

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**505,103. BELT-CLAMP.** EDWARD B. HAWKES, Orange, assignor to E. W. Davis, Greenfield, Mass. Filed Mar. 10, 1893. Serial No. 465,400. (No model.)



*Claim.*—1. In a belt-clamp, the combination of oppositely-disposed end-clamps, a pair of rack-bars having heads with hooks thereon engaging opposite sides of one of said clamps, a pair of catch-dogs on each rack-bar connected to each other, and one of each pair of which is supplied with hooks removably engaging the oppositely-situated end-clamps, and a lever connected to one of each of said pairs of catch-dogs for operating the same to draw the end-clamps toward each other, substantially as described

2. In a belt-clamp, the combination of a pair of end-clamps, each composed of two separable sections having operating cams in connection therewith for the purpose of closing the same against the belt, a pair of rack-bars having heads at one end of each, supplied with hooks arranged to engage the end-clamp at one end, a pair of catch-dogs on each rack-bar having spring-actuated detents or vertically-disposed pawls therein, a lever connecting each pair of catch-dogs, and an operating handle or lever for said catch-dogs, one of each pair of said catch-dogs having hooks at the inner side thereof to engage the end-clamp opposite to that engaged by the heads on the ends of the rack-bars, substantially as described

3. In a belt-clamp, the combination of oppositely situated belt engaging clamps, opposite catch-dogs at the end of one of said clamps, and pairs of rack-bars passing loosely through the catch-dogs, and means for feeding the catch-dogs along said rack-bars, substantially as specified

4. In a belt-clamp, the end-clamps 1, carrying sockets, the rack-bars 8, the catch-dogs 10 and 11, and the lever connections attached to the catch-dog 11 and pivoted on the catch-dog 10, substantially as described.

5. The end-clamps 1 each carrying sockets at both ends, the head 7 fitted to the socket of the rear clamp, the catch-dogs fitted to the sockets of the front clamp, the rack-bars 8 passing through the head 7 and catch-dogs 10, the catch-dogs 11 loosely fitted on the rack-bars, and the levers 15 pivoted to the catch-dogs 10 and having a link connection with the catch-dog 11, substantially as described

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**505,104. MACHINE FOR REMOVING THE WATER-HAIRS FROM PELTS.** ANTON HEDBAVNY and ANDREW H. FIALA, New York, N. Y. Filed Oct. 10, 1891. Renewed Feb. 15, 1893. Serial No. 462,502. (No model.)

*Brief.*—The water-hairs are removed by a surface, such as a wire, that is alternately moved into a flame, thus heating it, and against the hairs, thus burning them off

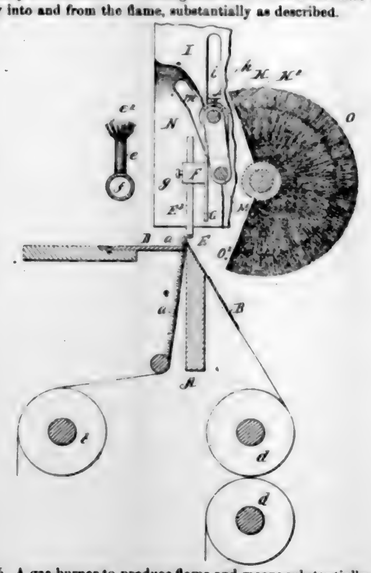
*Claim.*—1 The combination with a gas burner to produce flame and means substantially as described to guide pelts, of a hair burning wire, and means substantially as described for moving said wire into the flame rising from said burner, and for applying the wire to the hairs to be burned, substantially as described.

2. A hair burning wire, a gas burner for heating it by the flame rising from the burner, and means substantially as described to guide pelts, combined with an intermittent rotary brush having an opening or cavity on one side, substantially as described

3. A gas burner for producing a flame and means substantially as described to guide pelts, combined with a hair burning wire, means substantially as described to move the latter vertically into and from the hairs and means to move the wire laterally into and from the flame substantially as described



4. A gas burner to produce flame and means substantially as described to guide pelts combined with a hair burning wire E its support G, laterally movable bar H carrying the same and means substantially as described for turning said bar to move the wire E laterally into and from the flame, substantially as described.

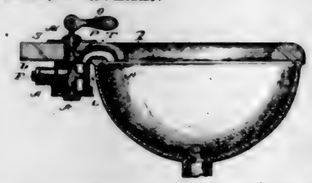


5. A gas burner to produce flame and means substantially as described to guide pelts combined with a hair burning wire, its support G, laterally movable bar H carrying it, arm L on said bar, projections M and plate or bar N having slot *m* to guide the projection M, to move the wire E laterally, substantially as described.

6. The combination of a gas burner to produce flame and means substantially as described to guide pelts, hair burning wire E, its support G, hangers $H^2$, laterally movable bar H carrying them, set screws A, slotted guide I, arm L, projection M and slotted guide N receiving the latter substantially as described.

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**505,105. FAUCET.** CHARLES A. HITCHCOCK, Chicago, Ill., assignor to the Adams & Westlake Company, of Illinois. Filed June 6, 1890. Serial No. 354,485. (No model.)



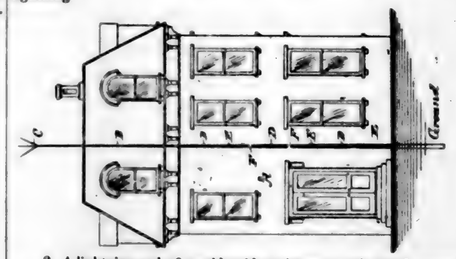
*Claim.*—1. A self-closing duplex faucet, comprising a main-casing having two oppositely disposed self-closing inlet-valves located side by side at one side of the casing, and an oscillatory valve operating stem located within the main casing adjacent to the inner ends of said valves and provided with a wing having oppositely disposed margins radiating from the stem and extending trasversely to the axes of the valves adjacent to the inner ends thereof substantially as set forth.

2. A self closing duplex faucet, comprising a main casing having two parallel valve-casings located side by side at one side of the main casing, a pair of self-closing spring pressed inlet valves each located in one of said valve-casings, an outlet-passage, leading from the main casing, and an oscillatory valve-operating stem mounted in the main-casing and provided with a horizontal wing having oppositely disposed margins radiating from the stem and extending transversely to the axes of the valves adjacent to the inner ends thereof, substantially as set forth.

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**505,106. LIGHTNING-ROD.** NATHANIEL D. C. HODGES, Plainfield, N. J., assignor to the American Lightning Protection Company, Sioux City, Iowa. Filed Dec. 17, 1890. Serial No. 374,987. (No model.)

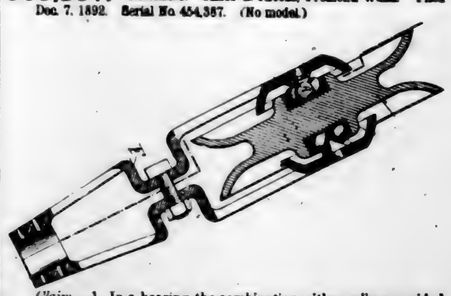
*Claim.*—1. A lightning rod provided with one or more deflagrating sections adapted to be destroyed by the passage of a discharge of lightning.



2. A lightning rod of considerable resistance, made up of two or more lengths which do not quite touch each other at their ends, substantially as shown and described.

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**505,107. BEARING.** OLAUS B. JACOBS, Fremont, Wash. Filed Dec. 7, 1892. Serial No. 454,387. (No model.)



*Claim.*—1. In a bearing, the combination with a pulley provided with cups in its hub, and balls in said cups, of a hanger having cup-shaped sides into which the hub of the pulley projects, and cones projecting from the inside of the hanger and engaging the balls; substantially as described.

2. In a bearing, the combination with a pulley provided with cups in its hub, and balls in the said cups, of a hanger having cup shaped sides into which the hub projects, and cones detachably secured to the inner surface of the cup shaped sides of the hanger and engaging the balls, substantially as herein shown and described.

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**505,108. CLOTHES-DRIER.** JOHN G. KURTZ, Washington, D. C. Filed Dec. 14, 1892. Serial No. 455,154. (No model.)

*Claim.*—1. A clothes-drier comprising an upper support, pulleys in the support, a covering over the pulleys, an extensible clothes drier composed of an upper frame, a covering over the frame, a bottom piece, chains connecting the base and the upper frame, said frame and base being mounted to turn; clothes-bars on the corner-chains, a sheave at the base, a cord on the pulleys and sheave, and means to stop the bottom sheave against turning, substantially as and for the purpose specified.

2. The extensible frame for a clothes-drier composed of an upper frame, a lower base-piece, chains connecting the said frame and base piece, clothes-bars arranged on the chains, diagonally arranged bars having their ends secured to the chains, and a covering on the upper frame, as specified.

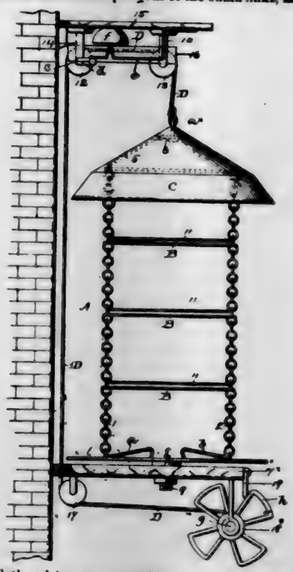
3. In a clothes-drier, the combination with suitable supports and means for hoisting the drier, of a revoluble and extensible clothes-frame composed of an upper frame, corner-chains suspended therefrom, clothes-bars consisting of a single wire extending around and between the corner-chains, and diagonally disposed clothes-bars, as specified.

4. The combination with the corner-chains, and the upper and lower supports therefor, of the clothes-bars consisting of a single wire formed into angular shaped frames and having eyes at the corners thereof to grasp and retain the suspension-chains, as specified.

5. The clothes-drier comprising the supporting table at the base, the revoluble base-piece secured on the table, a revoluble upper frame, chains connecting the upper frame and the base-piece, clothes-bars secured to and between the chains and means for hoisting and lowering the frame, as set forth.

6. In a clothes-drier, the frame A, composed of corner-chains con-

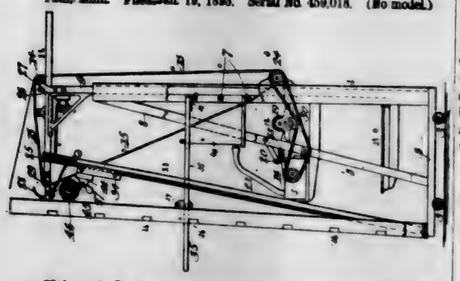
sisting of links having narrower central portions than ends and the clothes-bars consisting of a single wire frame with eyes at the corners to take and retain the central portions of the chain links, as specified.



7. In a clothes drier, an extensible frame, a bottom piece, and bails on the bottom piece to lock onto the extensible frame whereby it may be held taut at different heights of extension.

8. In a clothes drier an extensible frame, a cover over the frame and attached thereto, a bottom piece having the lower end of the frame connected thereto, and bails on the bottom piece arranged to lock over the rim of the cover of the frame when it is lowered and keep the cover in position at the bottom.

## 505,109. PAPER-HANGING MACHINE. ADAM H. LOBLEIN, St. Paul, Minn. Filed Jan. 19, 1893. Serial No. 459,018. (No model.)



*Claim.*—1. In a paper hanging machine, a base frame supporting standards 1 and with a vertically adjustable framework supported thereby, standards 23 connected removably to said base frame and having a vertically adjustable portion, a substantially horizontal frame 22 supported in the upper end of said adjustable portion, cut-off mechanism carried by the horizontal frame, the latter supported adjustably upon the upper end of the adjustable portion of the standards 1, as and for the purpose set forth.

2. In a machine for hanging paper, the roll holder, pasting and trimming device, substantially as described, an endless carrier belt for receiving the paper after having passed said trimming and pasting devices, means for operating said devices and said carrier, in combination with bar 41 pivoted centrally to said belt carrying framework and adapted to be adjusted to control the position of the margins of the paper, substantially as and for the purpose set forth.

3. In a paper hanging machine the paper roll holder, the paste box having a revolving brush therein in position to bear against the back of the paper, the rollers provided with circular shear cutters at each end, between which the paper is adapted to pass, means for operating simultaneously said rollers and paste brush, a wiper strip 18 between said revolving brush and trimming rollers and over which the pasted side of the paper runs, and a tension roll 20 bearing upon the paper above said wiper strip, substantially as and for the purpose set forth.

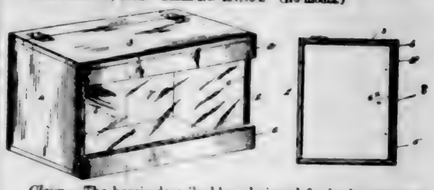
4. In a paper hanging machine, the supporting framework the roll holder, pasting and trimming devices, substantially as described, an endless belt for receiving the paper after passing said devices, means for operating said devices and carrier belt, a vertical support upon the outer end of which said carrier is borne, in combination with a ladder 36 adapted to be supported by said framework, and a step 35, and means for connecting and supporting said step, substantially as and for the purpose set forth.

5. In a machine for hanging paper, the roll holder, pasting and trimming devices, substantially as described, an endless carrier belt for receiving the paper after passing said devices, means for operating said devices and carrier, a vertical support upon which the outer end of said carrier belt is mounted, a carriage adapted to slide upon said support, a horizontal brush mounted upon said carriage by a loop frame 45 and brackets 44 whereby the brush is made laterally adjustable, substantially as and for the purpose set forth.

6. In a paper hanging machine, the paper roll holder, the paste box having a revolving brush therein in position to bear against the back of the paper, the rollers provided with circular shear cutters at each end, between which the paper is adapted to pass, means for operating simultaneously said rollers and paste brush, said paper roll holder having a spring 46, as and for the purpose set forth.

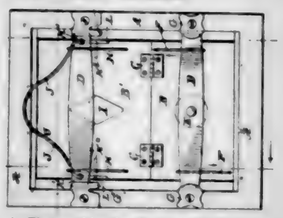
7. In a machine for hanging paper, the roll holder, pasting and trimming devices, substantially as described, an endless carrier belt for receiving the paper after passing said device means for operating said devices and carrier, a vertical support upon which the outer end of said carrier belt is mounted, a carriage adapted to slide upon said support, and a horizontal brush mounted upon said carriage, in combination with frame 42 adjustably connected to said supporting framework and provided with rollers 33, substantially as and for the purpose set forth.

## 505,110. CRACKER-BOX. JAMES C. LOUGHRY, Greensburg, Pa. Filed June 23, 1892. Serial No. 437,704. (No model.)



*Claim.*—The herein described box designed for both transportation and display purposes, having all of its walls closed and provided with a hinged top, and having its exterior front wall composed of two stationary longitudinally-disposed strips 4 and 5, and a removable board 8 fitting in and closing the space between the said stationary strips, the ends of the box in rear of the strips 4 and 5 being provided with grooves for the purpose, substantially as described.

## 505,111. PHOTOGRAPHIC-PRINTING FRAME. GARRETT W. LOW and WILLIAM SHAKESPEARE, Jr., Kalamazoo, Mich. Filed Apr. 8, 1893. Serial No. 469,102. (No model.)

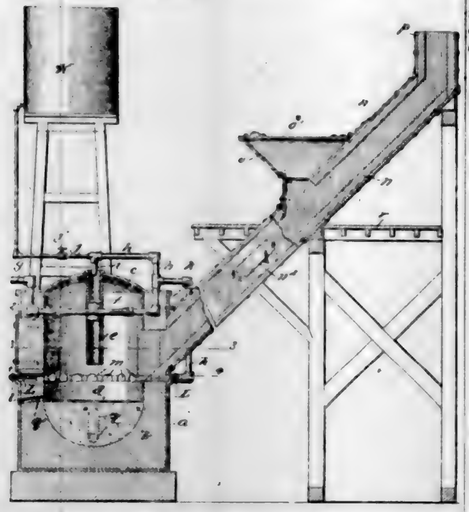


*Claim.*—1. The combination in a printing frame of a spring and confining devices for the spring attached to the back plate at or near the ends of the spring, which hold it under tension when removed from the clips, substantially as set forth.

2. The combination in a printing frame of a spring, a lever pivoted to the back plate and which engages with the spring, confining devices for the ends of the spring and clips on the frame, substantially as set forth.



## 505,112. SMELTING-FURNACE. OSCAR LUDWIG, Chicago, Ill., assignor of three-fourths to James L. Board, Robert D. Wardwell, and Ellsworth M. Board, trustees, same place. Filed Aug. 4, 1892. Serial No. 442,100. (No model.)



*Claim.*—1. A furnace consisting of a converter having a heating chamber, an oil admission pipe leading into the heating chamber and adapted to discharge a flame downward and a supply chute leading into said chamber below the flame port, substantially as described.

2. A smelting furnace consisting of a converter having a well *d*, a heating chamber above the well, steam and oil pipes leading into the heating chamber and adapted to discharge a flame downward and a chute leading into said chamber below the flame port and above the well substantially as described.

3. A smelting furnace consisting of a converter having a well and a heating chamber above the well, a steam pipe leading into said chamber and having its discharge adjacent to the top thereof, an oil supply joining the steam supply before the discharge, a depending pipe extending from the oil and steam discharge into the heating chamber, and an ore supply chute joining the heating chamber between the end of the depending pipe and the well substantially as described.

4. A smelting furnace consisting of a converter having a well and a heating chamber above the well, steam and oil pipes leading into the heating chamber and adapted to discharge a flame downward, means for introducing air at the side of the furnace and above the well and a chute leading into said chamber below the flame port and above the well substantially as described.

5. A smelting furnace consisting of a converter having a well and a heating chamber above the well, a steam pipe arranged to pass through the chamber, a discharge jet communicating with said steam pipe, a source of oil supply operatively connected with said discharge jet, an enlarged depending pipe leading into said furnace and in operative proximity to said discharge jet and a chute leading into said converter, said chute having a chimney opening at the top, substantially as described.

6. A smelting furnace consisting of a hollow chambered receptacle lined with refractory material, an inclined chute communicating with the side thereof, a depending pipe open at both ends, leading into said chamber from the top and means for introducing a jet of oil and superheated steam into said pipe whereby the flame may be directed upon the top of the material to be burned substantially as described.

7. In a smelting furnace the combination of an oil burner arranged immediately above the well of the furnace, means for commingling superheated steam and air with the oil at the point of combustion, and a combined feeding chute and chimney leading directly to the well substantially as described.

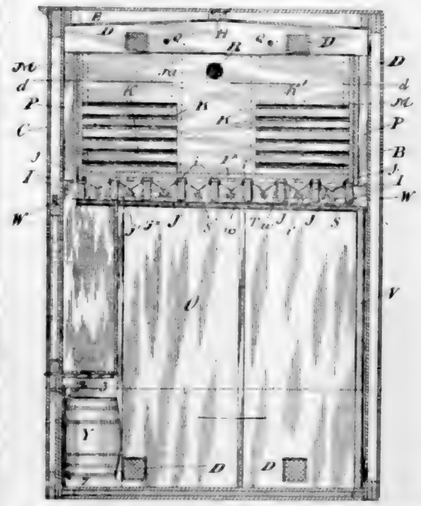
## 505,113. PIPERAZIN HYDRATE. WILHELM MAJERT, Gruenau, and ALBRECHT SCHMIDT, Berlin, assignors to the Chemische Fabrik auf Actien, vormals E. Schering, Berlin, Germany. Filed Aug. 15, 1893. Serial No. 483,175. (No specimens.)

*Claim.*—The herein described new product, piperazin hydrate, having the formula

$$C_4H_{10}N_2+(1+6)H_2O,$$

being an odorless and colorless, stable, crystalline substance, having its melting point between 39° centigrade and 75° centigrade, being easily soluble in water, having no caustic properties and being a strong solvent of uric acid, substantially as set forth.

## 505,114. REFRIGERATOR. JAMES G. MALCOLM, Toronto, Canada. Filed Nov. 18, 1892. Serial No. 452,461. (No model.)



*Claim.*—1. In a refrigerator, the combination with the body having a cooling chamber and an ice chamber and having a series of flues communicating between said ice chamber and cooling chamber, said body being also provided with an air space included between the inner and outer sheathings of its walls, said air space being closed to both said ice chamber and cooling chamber, of a series of flues D, arranged in said air space, said flues having their lower ends opening into the lower portion of the cooling chamber and their upper ends opening into the upper portion of said ice chamber, substantially as set forth.

2. In a refrigerator, the combination with a body having an ice chamber and a cooling chamber, of a perforated lining arranged in said ice-chamber and forming the walls thereof, vertical studs arranged between the walls of the refrigerator and of the ice chamber on opposite sides of the perforation in the walls of the ice chamber whereby a vertical cold air flue is formed communicating between said ice chamber and the cooling chamber, a partition arranged across said flue above the perforation in the wall of the ice chamber, and a series of vertical flues D, extending from the upper portion of the ice chamber to the lower portion of the cooling chamber, substantially as set forth.

3. In a refrigerator, the combination with the body, of the joists dividing said body into a cooling chamber and an ice chamber, warm and cold air flues communicating between said ice chamber and cooling chamber, an ice pan mounted on said joists and having channels arranged between the same, a series of strips secured to said joists over said ice pan, said strips having a width greater than the thickness of the joists and means for carrying the water away from said channels, substantially as set forth.

4. In a refrigerator, the combination with the body, of the beams arranged across the same, the joists resting at their ends on said beams, whereby the interior of the body is divided into an ice chamber and a cooling chamber, warm and cold air flues communicating between said ice chamber and cooling chamber, an ice pan mounted on said joists and adapted to receive and discharge the water from the ice in the ice chamber, and a series of vents formed through the upper portions of said beams adjacent to the under-side of the ice pan, substantially as set forth.

5. A refrigerator having a roof composed of inner and outer sheathings separated by an air space said sheathings being provided with coinciding apertures extending transversely of the refrigerator, in combination with two strips arranged in the air space between the

sheathings on opposite sides of said coinciding transverse apertures, substantially as set forth

6. In a refrigerator the combination with the body having an ice chamber and a cooling chamber, of a perforated lining arranged in said ice chamber and forming the walls thereof, vertical studs arranged between the walls of the refrigerator and of the ice chamber on opposite sides of the perforation in the walls of the ice chamber whereby a vertical cold air flue is formed communicating between said ice chamber and the cooling chamber, and a partition arranged across said flue above the perforation in the wall of the ice chamber, substantially as set forth

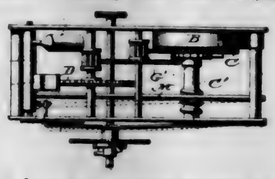
7. In a refrigerator, the combination with the body having an ice chamber and a cooling chamber, of a perforated lining arranged in said ice chamber and forming the walls thereof, a series of vertical studs arranged between the walls of said refrigerator and of said ice chamber, whereby vertical flues are formed which communicate between the upper portions of the ice chamber and of the cooling chamber, the perforations in the walls of the ice chamber being arranged to open into alternate flues of said series whereby cold air flues are formed, and partitions arranged across said cold air flues above the perforation in the walls of the ice chamber, substantially as set forth

8. In a refrigerator, the combination with the body, of the joists dividing said body into a cooling chamber and an ice chamber, warm and cold air flues communicating between said chambers, an ice pan mounted on said joists and having channels arranged between the same, a series of strips secured to said joists over said ice pan, a perforated floor arranged in said ice chamber and resting on said strips, and means for carrying away the water from said channels, substantially as set forth

9. In a refrigerator, the combination with the body having an ice chamber and a cooling chamber, an ice pan arranged in the ice chamber and adapted to discharge its water outside the refrigerator, a perforated lining arranged in said ice chamber and forming the walls thereof, vertical studs arranged between the walls of the refrigerator and of the ice chamber on opposite sides of the perforation in the wall of the ice chamber whereby a vertical cold air flue is formed communicating between said ice chamber and cooling chamber, a partition arranged across said flue above the perforation in the wall of the ice chamber, a series of inwardly inclined slats arranged across the perforation in the wall of the ice chamber, and an upturned rim or flange formed about the edges of the ice pan outside said walls of the ice chamber, substantially as set forth

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**505,115. ALARM-CLOCK.** EDWARD R. MASON and ALT O. SHOW, Binghamton, N. Y. Filed May 1, 1893. Serial No. 472,604. (No model.)



*Claim.*—1. In an alarm mechanism for clocks, the combination with the main-spring shaft, of a worm, a verge-shaft having endwise movement and connected to be actuated back and forth by the said worm, an automatic trip arranged to engage connections on said verge-shaft and means, substantially as described, for intermittingly disengaging the trip from said connections whereby two separate alarms are sounded, as set forth and described.

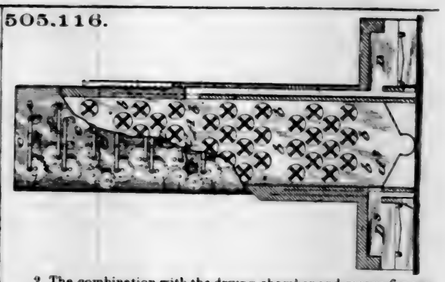
2. In an alarm mechanism for clocks, the combination with the main-spring shaft, of a worm thereon, a shifting rod actuated by the worm, a verge shaft having endwise movement and provided with an arm engaged by the rod, a strip adapted to engage said arm, and a driven cam acting in conjunction with the trip to intermittingly move it away from the arm, substantially as described.

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**505,116. DRYING APPARATUS.** ERASTUS F. MEAD, New York, N. Y. Filed Feb. 29, 1892. Serial No. 423,176. (No model.)

*Claim.*—1. The combination with a drying chamber open throughout its length for the continuous passage of the material to be dried under the influence of gravity, of a plurality of independent furnaces the flues of which communicate with the interior of the drying chamber at different points throughout its height and means for distributing the material during its travel through the drying chamber, the interior of the drying chamber forming a common flue for the ascent of the heated products of combustion whereby the heated products of combustion may be delivered directly from the furnace into engagement with the material to be dried and under varying temperatures, substantially as set forth.

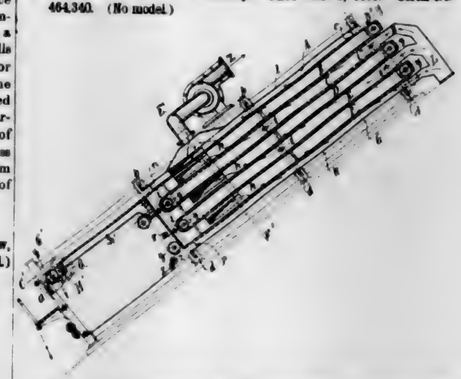
**505,116.**



2. The combination with the drying chamber and means for supplying heat thereto, of rotary trays arranged in series within the drying chamber to distribute the material to be dried therein, the trays consisting of perforated wings radiating from a common axis, the outer edges of the wings being provided with lips extending laterally away from their exterior faces to retain the load thereon during a portion of their revolution and the trays of a succeeding series being arranged alternately with respect to the trays of a preceding series to dump the material from one tray to another in its downward course, substantially as set forth.

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**505,117. CLOTH STRETCHING AND DRYING MACHINE.** MORITZ P. MESSNER, Chemnitz, Germany. Filed Mar. 2, 1893. Serial No. 464,340. (No model.)



*Claim.*—1. In a stretching and drying machine, a closed casing, the interior of which is closed from the outer air, and tracks traversing said casing for carrying the fabric to be dried, whereby the casing is divided by the lengths of the fabric into several chambers, in combination with an air admission pipe for supplying treated air to said casing opening into the interior of said casing at one side of said tracks, and thereby communicating with one of said chambers, and a discharge pipe opening into the interior of said casing at the other side of said tracks and thereby communicating with the other of said chambers, whereby a length of fabric traversing said casing on said tracks will intervene between said admission and discharge pipes, and air entering said casing through said admission pipe will be drawn through the fabric and discharged through said discharge pipe, and the fabric while drying will be isolated from the outer air and air differing from ordinary atmospheric air may be fed to the apparatus

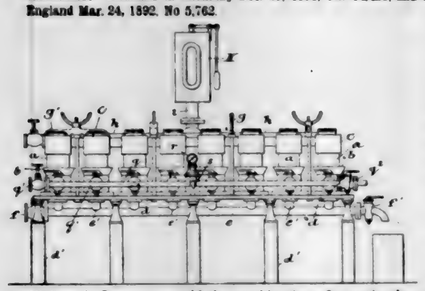
2. In a stretching and drying machine, a closed casing, the interior of which is closed from the outer air, and tracks traversing said casing for carrying the fabric to be dried, whereby the casing is divided by the lengths of the fabric into several chambers, in combination with an air admission pipe for supplying treated air to said casing opening into the interior of said casing at one side of said tracks, and thereby communicating with one of said chambers, and a discharge pipe opening into the interior of said casing at the other side of said tracks and thereby communicating with the other of said chambers, whereby a length of fabric traversing said casing on said tracks will intervene between said admission and discharge pipes, and treated air entering said casing through said admission pipe will be drawn through the fabric and discharged through said discharge pipe and in its passage to, through and from the apparatus will be isolated from the outer air, and a fan communicating with said admission pipe for forcing air therein, and an exhauster communicating with said discharge pipe for exhausting air therefrom, whereby the fabric can be treated independently of the outer air and with air differing in its condition from the latter, substantially as and for the purpose set forth.

3. In a stretching and drying machine the combination with a closed casing constructed with inlets and outlets for the fabric to be dried, of a chain *x* for carrying the fabric to be dried through said casing, traversing the latter and dividing said casing into chambers, whereby when the fabric is carried within said casing by said chain, said casing is subdivided into chambers at opposite sides of such fabric, an air inlet pipe for delivering heated air to said casing at one side of said chain, an air heater in connection with said inlet pipe and delivering heated air thereto, an air exhaust pipe for withdrawing air therefrom at the other side of said chain, and an exhauster connected to said air exhaust pipe, whereby the outer air is excluded and the air used is heated before reaching the casing, and in the circulation of air through said casing from said inlet to said exhaust it is caused to pass through the fabric carried by said chain, and thereby the drying of such fabric is expedited.

4. In a stretching and drying machine, a closed casing comprising the side walls *h*, intermediate strip *i*, bottom *k*, cover *l* and front wall *m*, in combination with chains *x* for carrying the fabric, rollers *y* over which said chains travel, air inlet pipe L delivering heated air between said chains, and an air exhaust pipe in said cover and at the side of said chains opposite to said inlet pipe, whereby when lengths of fabric are carried on said chains heated air from said inlet will be introduced at one side of such fabric and upon passing through the latter will be withdrawn through said exhaust, and the outer air will be excluded, substantially as and for the purpose set forth.

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**505,118. APPARATUS FOR REFINING SUGAR IN MOLDS.** OSCAR MESSELBIER, Penco, Chile. Filed Oct. 14, 1892. Serial No. 448,906. (No model.) Patented in Germany Dec. 23, 1891, No. 64,429, and in England Mar. 24, 1892, No. 5,762.



*Claim.*—1. In a sugar mold the combination of a suction box, a mold, and a hood pivoted to swing upwardly, substantially as described.

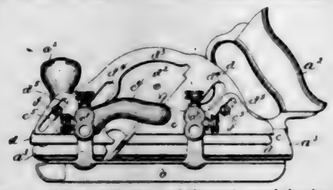
2. In a sugar mold the combination with the mold *a*, the suction box *b*, adapted to receive the mold, a supply pipe and a hood adapted to fit over the mold forming the connection between said pipe and mold, substantially as described.

3. In a sugar mold, the combination of the suction box *b*, having a flaring mouth, the mold fitting within the same and a pivoted hood fitting over the top of the mold, substantially as described.

4. In a sugar mold, the combination, with the mold, of a suction box having a flaring rim, a pivoted hood and a drip plate *u*, substantially as described.

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**505,119. BENCH-PLANE.** EPPIE J. MCCULLOCH, Manchester, N. H. Filed Mar. 15, 1893. Serial No. 466,010. (No model.)



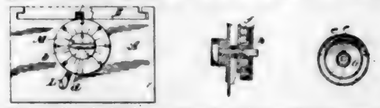
*Claim.*—1. The combination of the main stock having a blade fixed thereon with an auxiliary stock laterally adjustable with relation to said main stock, and a blade supported on said auxiliary stock and vertically adjustable thereon, substantially as and for the purpose described.

2. The combination of the main stock having a blade fixed thereon and lateral rods or pins, with an auxiliary stock adjustably supported on said rods, a blade connected with the said auxiliary stock having slots parallel with the iron or cutter of the plane embracing the rods, and means for fastening the said blade at different heights on said auxiliary stock, substantially as described.

3. The combination of the main stock, its blade, and rods projecting laterally from said stock; with the auxiliary stock adjustably supported on said rods and provided with slots $c^3$ parallel with the iron or cutter of the plane, the blade *d* provided with a recess for the cutter, and having slots $d^4$ parallel with the cutter embracing the rods of the main stock, and clamping screws *f* extending through the slots of the auxiliary stock, substantially as and for the purpose described.

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**505,120. COMBINATION-LOCK.** TIMOTHY W. MCGRATH, Brooklyn, N. Y. Filed May 6, 1892. Serial No. 432,088. (No model.)



*Claim.*—In a lock, the combination of a spindle, a flange or ring carried thereby and having a notch *e*, a sleeve on the spindle carrying a flange or ring having a notch *e*, a bolt having lips *f*, *h*, and a lever or handle to operate said bolt when the notches *e*, *e*, are aligned, substantially as described.

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**505,121. DENTAL DISK-HOLDER.** EDWARD NELSON, Frederick, Md. Filed Jan. 11, 1893. Serial No. 458,067. (No model.)

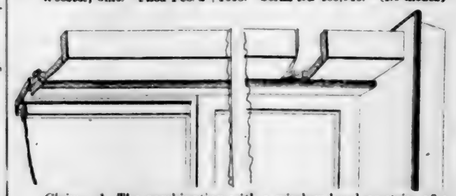


*Claim.*—1. In a dental disk carrier, the combination with an externally threaded and intermediately slotted tube flared at its upper end to form a head, and a rod passing throughout the tube and mounted for reciprocation therein and terminating at its outer end at opposite sides with shoulders, of a spear-shaped head slotted and pivoted to the outer end of the rod and adapted to be swung into substantial alignment therewith and against the shoulders, a sleeve interiorly threaded and mounted upon the tube, and pins passing through the rod and slots and loosely engaging the sleeve, substantially as specified.

2. In a dental disk carrier, the combination with a tube having intermediate slots and flared at its outer end to form a head, of a rod extending throughout the tube and beyond the same and having its opposite sides in rear of its outer end provided with inclined shoulders, a spear-shaped head slotted and pivoted on the outer end of the rod and adapted to be swung against the shoulders and substantially in alignment with said rod, pins projecting from the rod through the slots in the tube, and a sleeve mounted for adjustment on the tube and engaged by the pins, substantially as specified.

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**505,122. WINDOW-BEAD FASTENER.** EUGENE W. NEWKIRK, Wooster, Ohio. Filed Feb. 27, 1893. Serial No. 463,915. (No model.)



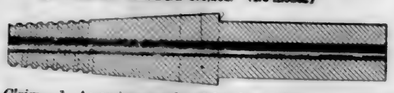
*Claim.*—1. The combination with a window bead or strip, of a fastening device comprising a pair of independent reversed or oppositely-positioned spring engaging arms arranged respectively near the terminals of the bead or strip and adapted to enter independent spaced openings in the window casing, the upper wall of one opening and the lower wall of the other opening being V-shaped to engage concave surfaces of the spring-arms, whereby a single pair of spring-arms may be employed for each bead or strip, substantially as specified.

2. The combination with a window casing provided with openings having V-shaped walls, of a bead, and fastening devices comprising independent spring engaging arms, attached to the outer surface

of the head to enter the said openings in the casing, such arms being similarly constructed and reversed in position and having, each, a compound curved portion to engage the apex of one of the walls of the opening, and a flared terminal to facilitate engagement therewith, substantially as specified.

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**505,123. INSULATOR-PIN.** JAMES J. O'NEILL, Boston, Mass. Filed Apr. 14, 1893. Serial No. 470,292. (No model.)



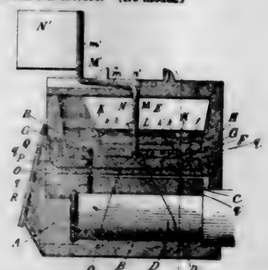
*Claim.*—1. As an improved article of manufacture, a composite supporting pin for electric conductors or wires, consisting of a non-metallic portion and a reinforcing metal portion, substantially as described.

2. As an improved article of manufacture, a composite supporting pin for electric conductors or wires, consisting of a wooden pin and a reinforcing metal center, substantially as described.

3. As an improved article of manufacture, a composite supporting pin for electric conductors or wires, consisting of a wooden portion $a^2$, and a reinforcing metal rod or bar inserted into the said wooden portion $a^2$, substantially as described.

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**505,124. AXLE-LUBRICATOR.** FRANK PETTEPHER, Marshfield, assignor of one-fourth to George Straight, Eau Claire, Wis. Filed Jan. 16, 1893. Serial No. 458,465. (No model.)



*Claim.*—1. In a journal box for vehicles, an oil chamber provided with a feed opening, a rotatable stem provided with an exterior arm carrying a lateral wing and having a lateral arm within the oil chamber, a valve revolubly mounted upon said arm to close the feed opening, and means to return the valve to its closed position after deflection by the wing, substantially as specified.

2. In a journal box for vehicles, an oil chamber having a feed opening in its floor, a gravitating valve arranged to close said feed opening, and a rotatable stem having an arm connected to said valve and provided with an exterior arm bearing a lateral wing, substantially as specified.

3. In a journal box for vehicles, an oil chamber having feed-openings in its floor, a revoluble cranked stem having the cranked portion M', a wing secured to the vertical portion of the crank in the plane thereof, lateral arms fixed to the portion of the stem within the oil chamber in the plane of said crank-arm and wing, and gravitating valves revolubly mounted upon said arms, substantially as specified.

4. The combination with a journal-box provided with an oil-chamber having a beveled floor provided at its lowest point with feed-openings communicating with the bearing, of valves resting upon the floor of the oil-chamber and adapted to normally close said feed-openings, and a governor rotatably mounted in suitable bearings in the oil-chamber, connected to said valves and provided with a wing to receive atmospheric pressure, substantially as specified.

5. The combination with a journal box, and a superjacent oil chamber connected to the interior of said box by communicating feed-openings, of a gage rotatably fitted in a cylindrical casing between said journal box and oil chamber, intersecting the said feed-openings and provided with passages adapted to register with such feed-openings, whereby the flow of oil from the oil chamber to the interior of the box may be positively cut off, substantially as specified.

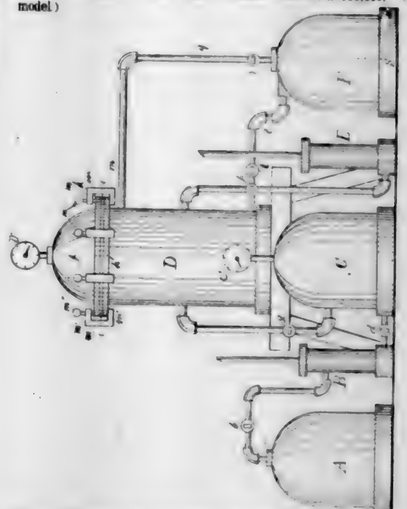
6. The combination with a journal-box and an oil-chamber communicating therewith through feed-openings and having an oppositely beveled floor, of revoluble valves or balls adapted to fit in valve seats at the upper ends of said feed-openings, a rod or cross-head carrying said valves or balls, and a governor connected to the rod or cross-head and provided with means to turn the latter when the axle is in motion, substantially as specified.

**505,125. PROCESS OF MANUFACTURING ELECTRODES.** CARL POLLAK, Frankfort-on-the-Main, Germany. Filed Apr. 19, 1893. Serial No. 470,993. (No specimens.)

*Claim.*—The process of producing electrodes for electrical accumulators which consists in mixing pulverized carbonate of lead with caustic soda or caustic potash so as to form a paste, then forming the same into suitable shape or form, then drying the same, then placing the same in an alkaline bath and applying an electric current to reduce the carbonate of lead to metallic lead, and then compressing the same while still in a wet state, substantially as described.

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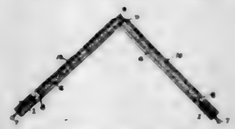
**505,126. MEAT-PRESERVING DEVICE.** JAY W. POWERS, Chicago, Ill., assignor, by direct and mesne assignments, to Charles Owen Brown, same place. Filed July 17, 1890. Serial No. 359,093. (No model.)



*Claim.*—The herein described apparatus for curing meat, consisting of a smoke generator or vapor retort; A, a reservoir C, a pump B, having communication on one side with said generator or retort and on its opposite side with said reservoir, said pump serving to compress the smoke or vapor into said reservoir, an air tight meat receiver, communicating with said vapor or smoke reservoir C, a vacuum pump E communicating with said meat receiver and serving solely to produce a vacuum therein, a saline solution reservoir, means connecting the same with said meat receiver for the discharge of the saline solution into the meat receiver and for draining the same back to the reservoir, gages on said meat receiver and reservoir C, for indicating the degree of vacuum in the former and of compression in the latter, and valves or stop-cocks for regulating communication of the generator or retort with the force pump, of the force pump with reservoir C, of said reservoir with the meat receiver, of the vacuum pump with said meat receiver, and of the solution reservoir with said meat receiver, all substantially as shown and described.

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**505,127. MIRROR FOR USE IN PHOTOGRAPHY.** HENRY P. RANGER, Rochester, N. Y. Filed May 18, 1893. Serial No. 474,701. (No model.)



*Claim.*—1. The combination with the mirror frame having the ways arranged at an angle, of the mirrors independently and longitudinally movable in said ways, substantially as and for the purpose set forth.

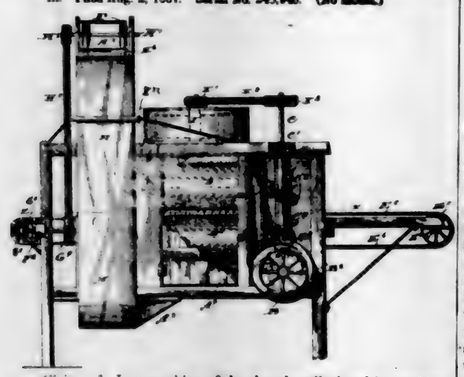
2. The combination with the frame composed of two parts hinged together and open at their proximate sides, of the mirrors independently movable in said frames, substantially as described.

3. The combination with the frame composed of two parts hinged together and having the grooves or ways therein open at their proximate sides, of the mirrors independently movable in the grooves in the frames and having the handles for moving them, substantially as described.



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**505,128. BROOM-CORN CLEANER.** FREDERICK W. REBER, Paris, Ill. Filed Aug. 2, 1887. Serial No. 245,943. (No model.)

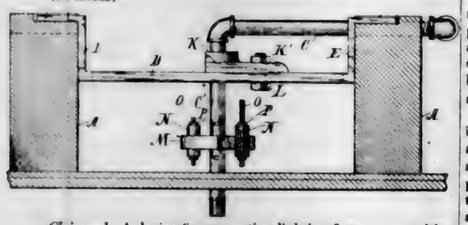


*Claim.*—1. In a machine of the class described and in combination with the cylinders and feed mechanism thereof, a casing provided with front and rear openings and arranged to encompass the cylinders and to permit of the introduction and egress of the material to be operated upon, an exhaust apparatus for withdrawing the dust and similar refuse collecting within the cleaning compartment of the machine, and an elevating mechanism, all substantially as and for the purpose described.

2. The combination with a pair of diagonally-arranged cylinders and the feed mechanism, of a casing provided with front and rear openings, an elevator and an exhaust mechanism and up-take located above the meeting line of the cylinders and over the refuse collecting bin, substantially as and for the purpose specified.

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**505,129. DEVICE FOR SUPPORTING LIGHTING-FIXTURES.** HERMAN ROTH, Milwaukee, Wis. Filed Dec. 27, 1892. Serial No. 456,323. (No model.)



*Claim.*—1. A device for supporting lighting fixtures comprising a bracket adapted to rest on adjoining joists, and a block secured to a section of pipe which block is adjustable on the bracket horizontally, substantially as described.

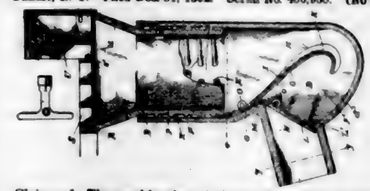
2. In a device for supporting lighting fixtures, a bracket consisting of a horizontally disposed member having an elongated slot, suspending arms and horizontally projecting flanges, combined with a block adjustable on the bracket horizontally and secured rigidly to a section of pipe, said pipe passing movably through the bracket in the slot therefor, substantially as described.

3. In a device for supporting lighting fixtures, a bracket adapted to be supported on adjoining joists, said bracket having a horizontally disposed member provided with an elongated slot, in combination with a block terminating abruptly at one end, a section of gas pipe fixed in the block near its abrupt extremity and passing movably through the slot in the bracket, and means for securing the block adjustably to the bracket, substantially as described.

4. In a device for supporting lighting fixtures, a bracket adapted to be supported on adjoining joists, said bracket having a horizontally disposed member provided with an elongated slot, a block adjustable on the bracket, a pipe fixed in the block and adjustable therewith, and a collar secured to and supported on the pipe which collar is adapted to receive and support wires therein for electric lighting, substantially as described.

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**505,130. RECEIVER AND STENCH-TRAP.** THOMAS J. RYAN, Buffalo, N. Y. Filed Dec. 31, 1892. Serial No. 456,935. (No model.)



*Claim.*—1. The combination of a lower pipe receiver section having an interior double set of parallel threads in the upper open end thereof and interrupted at regular intervals by cleaning grooves, said threads of each set terminating at each cleaning groove in abrupt ends, an upper pipe section arranged for adjustment in the lower receiver section and having double exterior threads corresponding to the interior threads of the lower receiver section, and set a suitable distance apart from each other to leave a loose thread-connection between the two sections, said exterior threads on the pipe section also being interrupted at regular intervals by cleaning grooves, and a locking set screw engaging an opening in the upper pipe section between two of the threads thereof, and adapted to be projected beyond said upper pipe section into one of the cleaning grooves of the lower pipe section so as to be disposed between the abrupt ends of the interior threads of the pipe receiver at such cleaning groove, substantially as set forth.

2. A pipe receiver having a contracted trap at its lower closed end, and a sewer or drain pipe projecting therefrom at an angle above the plane of the bottom of the trap, an outwardly opening check valve arranged within said drain pipe, a combined valve cover and pressure gate removably seated in the receiver at an angle and extending to a point in close proximity to the bottom of the trap, and a catch basin arranged at the upper end of the receiver, substantially as set forth.

3. In a receiver and stench trap, the pipe receiver contracted at its lower end into a stench trap having a sharply curved base or bottom an inclined drain pipe above the plane of said bottom, and an inclined seat or shoulder over the inner end of the drain pipe and an S shaped pressure gate arranged at an angle and removably on said inclined seat or shoulder within the receiver and having a lower curved tongue disposed in close proximity to one side and the bottom of the receiver and following the curvature of said bottom to form a contracted passage, substantially as set forth.

4. In a receiver and stench trap, the combination of the pipe receiver having a contracted bowl at the bottom thereof and a drain pipe arranged at an angle at one side, and a removable pressure gate arranged at an angle within the receiver and having a curved concave tongue curving in close proximity to one side and the curved bottom of the bowl to form a contracted-water passage, substantially as set forth.

5. In a receiver and stench trap, the pipe receiver contracted at its lower end into a bowl and having an inclined drain pipe arranged at one side above the bottom of the bowl, and an inclined seat or shoulder arranged within the pipe over the inner end of the drain pipe and extending to a point near the bottom of the bowl opposite the drain pipe, a removable approximately S-shaped pressure gate arranged on said seat and having its curved tongue arranged in close proximity to one side and the bottom of the trap, said gate being concaved and deeply so in its tongue, and an outwardly swinging check valve arranged in said drain pipe, substantially as set forth.

6. The combination of a pipe receiver having a contracted trap at its lower end, a drain pipe extending therefrom at an angle above the plane of the bottom of the trap, a sharply inclined seat or shoulder arranged over the inner end of the drain pipe within the receiver and having near its lower ends opposite notches, and an elongated valve seat arranged within the drain pipe at an opposite angle to the inner receiver shoulder and terminating at its upper ends in bearing notches, a removable approximately S-shaped concaved pressure gate arranged on the inclined seat or shoulder in the receiver and having opposite supporting shoulders engaging the notches thereof and from which point the tongue of the gate follows the bottom of the trap in close proximity thereto, an outwardly swinging check valve arranged to work over the inclined valve seat and having opposite pivot lugs loosely engaging said bearing notches, eyes on the gate and valve, and a hooked cleaning rod, substantially as set forth.

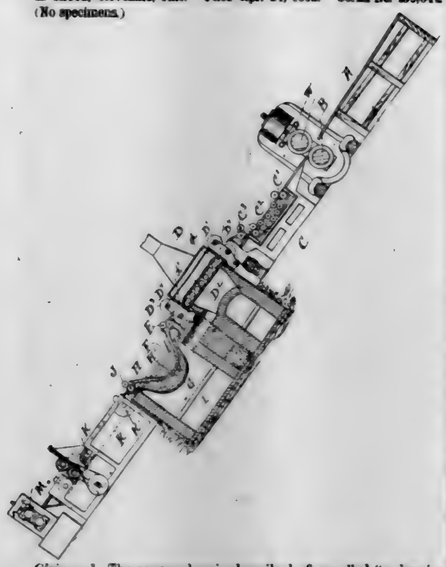
7. The combination with a stench trap receiver; of a squared catch basin having a neck adjustably mounted within the receiver, an interior shoulder and a threaded lug, a horizontal grate section resting on said shoulder, a curb box removably resting on said shoulder, a locking grate section arranged to be fitted within the open front of said curb box against the inner edge of the horizontal grate section, and having a perforation, and a locking screw adapted to pass through

said perforation and engage the threaded lug of the curb box, substantially as set forth.

8. The combination with a stench trap receiver; of a squared catch basin removably mounted within said receiver and having an inner shoulder, and inwardly extending flanges above the corners of said shoulders, a horizontal grate section having outer notched corners adapted to engage beneath two of said flanges, and an inner shouldered edge a removable curb box resting on the basin and having notched locking tongues engaging the other locking flanges and an inwardly depending threaded lug, a removable locking grate section having lower shouldered ends adapted to engage the shouldered edge of the horizontal grate section, and a perforation or opening, and a locking screw adapted to pass through said perforation and engage the threaded lug of the curb box to lock the several parts together on the basin, substantially as set forth.

9. The combination of a pipe receiver having a contracted trap at its lower end, a drain pipe extending therefrom at an angle above the plane of its bottom, and an elongated valve seat arranged within the drain pipe and terminating at its upper ends in bearing notches, and an outwardly swinging check valve adapted to work over the inclined valve seat and having opposite pivot lugs loosely and removably engaging said bearing notches, substantially as set forth.

**505,131. PROCESS OF GALVANIZING SHEET-METAL.** SAMUEL A. SAGUE, Cleveland, Ohio. Filed Apr. 21, 1892. Serial No. 430,044. (No specimens.)



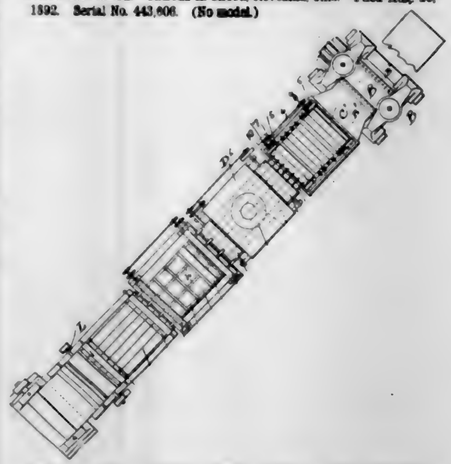
*Claim.*—1. The process herein described of so-called "galvanizing" sheet iron and steel, and consisting, first, in pickling the sheet or plate; secondly, cold-rolling the sheet or plate; thirdly, bathing the sheet or plate in or passing it through muriatic acid; fourthly, drying the sheet or plate; fifthly, passing the sheet or plate endwise through a zinc or spelter bath; sixthly, brushing the sheet or plate, and seventhly, calendering or smoothing the sheet or plate, substantially as set forth.

2. The process herein described of so-called "galvanizing" sheet iron and steel, and consisting, first, in pickling, the sheet or plate; secondly, cold-rolling the sheet or plate; thirdly, passing the sheet or plate endwise and between rolls through a muriatic acid bath; fourthly, drying the sheet or plate; fifthly, passing the sheet or plate endwise through a zinc or spelter bath; sixthly, brushing the sheet or plate, and seventhly, calendering or smoothing the sheet or plate, substantially as and for the purpose set forth.

3. A continuous process of so-called galvanizing sheet iron and steel and consisting after pickling the original smooth surface of the sheet or plate, first, in passing the sheet or plate between cold rolls, thence passing the sheet or plate between rolls through a muriatic acid bath; thence passing the sheet into and through a drying-chamber; thence passing the sheet or plate through a suitable flux into a zinc or spelter bath; thence conveying a sheet or plate through a brushing-machine to and between calendering and smoothing rolls, substantially as set forth.

4. A continuous process of so-called "galvanizing" sheet iron or steel and consisting after pickling the original smooth surface of the sheet or plate, first, in passing the sheet or plate between cold rolls thence, passing the sheet or plate, between rolls through a muriatic acid bath; thence passing the sheet between wiper or wringer-rolls into and through a drying-chamber; thence passing the sheet or plate through a suitable flux into and through a zinc or spelter-bath; thence conveying the sheet or plate through a brushing machine and to and between calendering or smoothing-rolls, substantially as set forth.

**505,132. APPARATUS FOR THE MANUFACTURE OF SHEET IRON OR STEEL.** SAMUEL A. SAGUE, Cleveland, Ohio. Filed Aug. 20, 1892. Serial No. 443,606. (No model.)

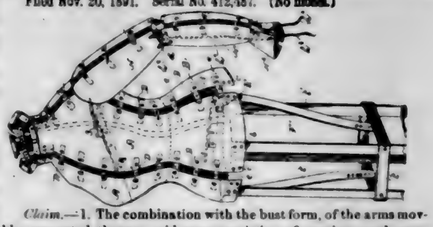


*Claim.*—1. The combination with an acid vat, and a spelter tank, of a drying chamber located between the vat and tank, and a furnace connected to both the drying chamber and the tank, substantially as set forth.

2. The combination with an acid vat, spelter tank, and drying chamber, of a furnace connected to both the spelter tank and drying chamber for supplying heat to the tank and chamber, means for conducting the plates to be treated through the chamber and tank, and a flux box located in the tank through which the plates are passed, substantially as set forth.

3. The combination with an acid vat, spelter tank, and drying chamber, of a furnace connected to both the spelter tank and drying chamber for supplying heat to the tank and chamber, a brushing machine at the rear or delivery end of the spelter tank, and means for conducting the plates to be treated through the chamber and tank, substantially as set forth.

**505,133. BUST-FORM.** NATALIE SCHELL, San Francisco, Cal. Filed Nov. 20, 1891. Serial No. 412,187. (No model.)



*Claim.*—1. The combination with the bust form, of the arms movably connected thereto, said arms consisting of members each composed of sections adjustably secured together and having the upper and lower members of the arms proper movably fastened so as to allow the natural bend of the arm to be imparted, as and for the purpose set forth.

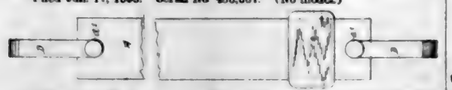
2. The combination with a bust form, substantially as set forth, of the arms movably connected thereto, said arms consisting of members each composed of sections adjustably secured together, the upper and lower part of the arm and wrist being secured by a spring connection, and a cord passing through the upper and lower members of the arm and down to the wrist as and for the purpose set forth.



3. A bust form composed of a series of independent sections, each section comprising two plies of material, the inner ply being of greater rigidity than the outer, said plies being separably attached to reinforcing ribs, and means for adjustably connecting together the edges of the sections.

4. A bust form composed of a series of independent sections, each section comprising two plies of material, the inner ply being of greater rigidity than the outer, said plies being attached to reinforcing ribs, and of means for adjustably connecting the edges of the sections.

**505,134. RAZOR-STROP.** LUCIUS T. SHEFFIELD, New York, N. Y. Filed Jan. 17, 1893. Serial No. 458,667. (No model.)

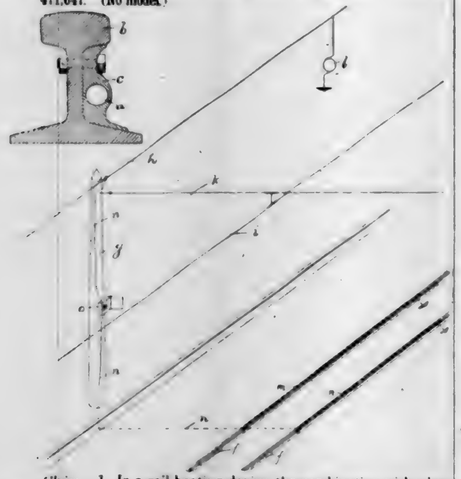


*Claim.*—1. The combination with a razor strop of a receptacle movably attached to said strop for applying a gritty substance thereto, substantially as specified.

2. The combination of a razor strop of a receptacle for applying a gritty substance to the strop, the said receptacle being provided with a slot through which the strop may slide, substantially as specified.

3. The combination with a razor strop of a sliding receptacle for applying a gritty substance thereto, and stoppers attached to a strop at both ends preventing the removal of the sliding receptacle, substantially as specified.

**505,135. RAIL-HEATING DEVICE.** CHARLES S. SMITH and ELMER E. KNOWLES, Spokane, Wash. Filed Apr. 24, 1893. Serial No. 471,647. (No model.)



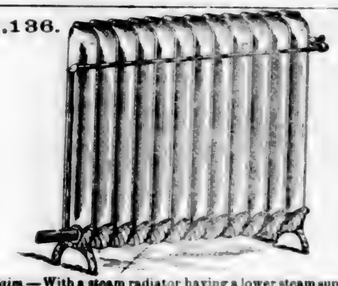
*Claim.*—1. In a rail heating device, the combination with a longitudinal opening or passage, the walls of which are in heat conductive relation with the tread of the rail, of an electric conductor within said passage adapted to carry a heat producing current, whereby the tread of the rail is heated, substantially as described.

2. The combination with a rail, of a heat conducting plate secured thereto, said plate being provided with a longitudinal opening or passage, and an electrical conductor within said passage adapted to carry a heat producing current, whereby the tread of the rail is heated, substantially as described.

3. The combination with a supply conductor of an electric railway system, of an electric rail heating device, and means for connecting the electrical conductor of said rail heating device with said supply conductor, substantially as described.

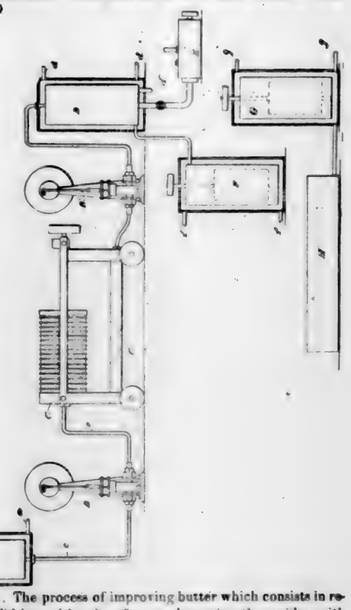
4. The combination with the supply conductor of an electric railway system, of an electric heating device arranged in sections, and means for connecting the electrical conductor of one or more of said sections with said supply conductor; whereby the rails along one or more sections of the track may be heated, substantially as described.

**505,136. AUXILIARY STEAM-PIPE FOR RADIATORS.** JOHN B. SMITH, Chicago, Ill. Filed June 6, 1893. Serial No. 476,750. (No model.)



*Claim.*—With a steam radiator having a lower steam supply pipe, the combination of a small exterior steam pipe at its lower end attached to and communicating with the exterior portion of said supply pipe, and its upper end attached to and communicating with the upper portion of the opposite loop from where the said supply enters; substantially as and for the purpose specified.

**505,137. PROCESS OF TREATING BUTTER.** JAMES H. STEBBINS, Jr., New York, N. Y., assignor to Joseph H. Campbell and Charles H. Campbell, same place. Filed Sept. 27, 1892. Serial No. 447,022. (No specimens.)



*Claim.*—1. The process of improving butter which consists in removing the solid impurities therefrom and treating the residue with an air blast in an alkaline solution, substantially as set forth.

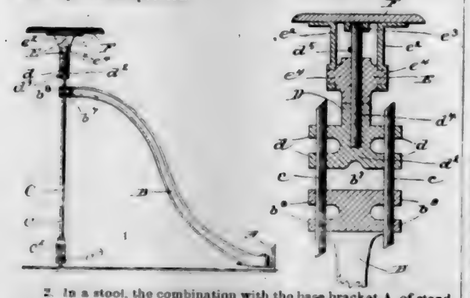
2. The process of improving butter which consists in removing the solid impurities therefrom and treating the residue with an air blast, an alkaline solution, and then washing in pure water aided by an air blast, substantially as set forth.

3. The process of improving butter which consists in removing the solid impurities therefrom and treating the residue with an air blast, an alkaline solution, and then washing in pure water aided by an air blast, maintaining the mixture in a liquid state by heat during the operation, substantially as set forth.

4. The process of improving butter which consists in removing the solid impurities therefrom by filtering, removing the soluble impurities therefrom by oxygenating and neutralizing the same, then treating the residue with sour milk or cream at a temperature to yield a plastic mass, then melting the mass and cooling it by an ice cold bath, substantially as set forth.

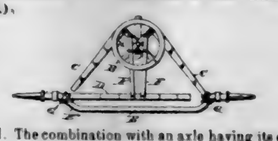
**505,138. STORE-STOOL.** GEORGE F. STEERE, Cleveland, Ohio, assignor to William H. Newton, same place. Filed Oct. 13, 1892. Serial No. 448,986. (No model.)

*Claim.*—1. In a store stool, the combination with a standard supported by a pivoted arm so as to swing horizontally, of an adjustably mounted head on the standard provided with an upwardly projecting spindle, a collar slidingly and revolubly mounted on the spindle and means for limiting the upward movement of the collar, and a seat trunnioned on the collar and recessed to receive the upper end of the spindle, as specified.



2. In a stool, the combination with the base bracket A, of standard supporting arm B, pivotally secured thereon and retained in position by a spring catch $b'$, the standard comprising the rods $c$, $c$, connected at their lower ends by a suitable casting $c^3$, mounted on rollers $c^4$, $c^4$, the head piece $b^7$, of said arm being apertured for the spindle casting D, having apertured heads formed thereon and mounted on the rods $c$, $c$, the thumb-screws for the adjustment of the head on the rods, the collar E, slidingly and rotatably mounted on the spindle casting and provided with lateral studs $e^4$, of the seat portion having the angular brackets $e^5$, pivotally secured on said studs, and the socket casting $e^3$, on the seat portion adapted to be engaged by the projecting end $d^6$, of the spindle casting E, as specified.

## 505,139. RUNNING-GEAR. JAMES F. STEVENS and WILLIAM V. BREESE, Port Chester, N. Y. Filed June 15, 1892. Serial No. 436,813. (No model.)



*Claim.*—1. The combination with an axle having its central portion out of the line of the end portion and integrally connected therewith by an oblique segment at each end, of clips secured to said segments, and springs secured to said clips and extending from the axle in planes approximately perpendicular, respectively, to said segments.

2. The combination with an axle having its middle portion bent out of the vertical plane of the end portions, of a transverse spring, in said plane, secured at its extremities to said axle, a fifth wheel device at some distance in the rear of said spring, and a bar connecting the crown of said spring to said fifth wheel device and rigidly secured to both.

3. The combination with the horizontally offset axle, the transverse spring secured thereto, the fifth wheel device in the rear of the axle, the side springs diverging from said device and secured to the axle in approximately the central line of the axle, and the bars connecting and rigidly secured to said fifth wheel device and the middle of said transverse spring.

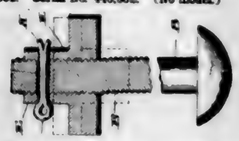
4. The combination with an axle, a transverse spring mounted upon the axle and rising above it in its plane, rearwardly converging side springs secured to said axle and connected at their rear ends by a bar, a brace connecting said bar and transverse spring, a lower fifth-wheel-plate resting upon both said brace and bar, and a king bolt for connecting the whole to parts resting upon said fifth-wheel-plate.

5. The combination with the body and a fifth wheel secured beneath the same, of a bar fixed to the body in the rear of the fifth wheel, extending beneath the fifth wheel to support its rear side and engage the king-bolt, a spring mounted upon the front axle, and a brace extending rearward from said spring and supporting the front side of the fifth wheel.

6. The combination of a rear axle having its middle portion laterally offset, of a transverse spring secured to said axle and rising above it in the vertical plane of its central line, forwardly converging side springs secured to said axle approximately in said line, and a transverse bar connecting the forward ends of said side springs, substantially as set forth.

7. The combination with an axle and rearwardly converging side springs attached thereto, of a transverse spring forming an arch above the axle, and a bar connecting the top of said arch to the rear ends of said side springs or rigid attachments thereof.

## 505,140. NUT-LOCK. WILLIAM M. STEWART, Scurry, Tex. Filed July 21, 1892. Serial No. 440,852. (No model.)

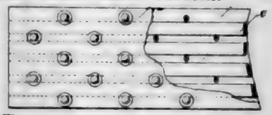


*Claim.*—The combination with a bolt having through its threads a slot closed at both ends; of a nut having at one side a reduced tubular axial extension whose entire length is exteriorly cylindrical and interiorly threaded, the end of the extension opposite said nut being flat and its body provided with diametric perforations some distance from the nut, and a key of greater length than the diameter of the extension but of less length than any diameter of the nut, said key removably engaging said slot in the bolt at either end of the nut or removably engaging both the slot and one perforation, all and for the purpose set forth.

## 505,141. PROCESS OF TREATING FEATHER FUR. BERTHOLD TAUSK, Berlin, Germany. Filed Aug. 10, 1892. Serial No. 442,734. (No specimens.)

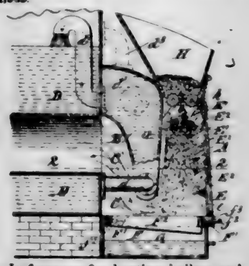
*Claim.*—The process of treating feather fur which consists in the following steps: first moistening it with a dilute solution of acid, then applying to it a mixture composed of soap, or an equivalent alkaline solution, and oily or fatty substances; then in drying, brushing, and steaming it, and finally in hardening it by the application of a solution of alum, substantially as set forth.

## 505,142. BELTING. RICHARD TEMMEL, Berlin, Germany. Filed Dec. 17, 1892. Serial No. 455,479. (No model.)



*Claim.*—The improved belt comprising the upper and lower sections with a series of parallel strips of cane between, and rivets uniting said upper and lower sections and passing through the spaces between the strips, substantially as described.

## 505,143. FURNACE. JAMES K. THOMPSON, Leeds, England, assignor of two-thirds to Charles F. Jahn, Pittsburg, Pa. Filed May 2, 1893. Serial No. 472,654. (No model.) Patented in England Jan. 28, 1891, No. 1,565.



*Claim.*—1. In furnaces for heating boilers and for other purposes, a fire-box downwardly flaring on two opposite sides and formed by an inclined water-back on one side and a front wall on the opposite side, provided with a series of air-openings extending over its entire surface to admit air to the fire-box, substantially as set forth.

2. In furnaces for heating boilers and for other purposes, a fire-box comprising a bottom grate and a continuous unbroken bridge extending down to near the bottom grate, so as to retain all the fuel in the fire-box and prevent its passage beyond the bridge, and a front wall having openings along its entire extent, the fire-box being closed at its top, substantially as set forth.

3. In furnaces for heating boilers and for other purposes, a fire-box having lateral air-openings, in combination with a pilot-plate arranged within the fire-box, near one of the sides of the same, the top of the pilot-plate being substantially flush with the uppermost air-opening, substantially as set forth.

4. In furnaces for heating boilers and for other purposes, a fire-box having lateral air-openings, in combination with a pilot-plate arranged within the fire-box, near one of its sides, and beginning at a point below the top of the fire-box and extending downward a part of the depth of the fire-box, substantially as set forth.

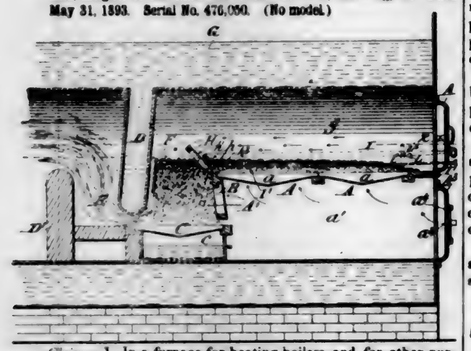
5. The combination, with a steam-boiler, of a water-back, a water pipe or pipes connecting the lower part of the water-back with the boiler, and a water pipe or pipes connecting the upper part of the water-back with the boiler and having a return-bend above the water level, substantially as set forth.

6. The combination, of a steam boiler, with a furnace, and a water-back extending down to form one side of the furnace, a pipe or pipes connecting the lower part of the water-back with the boiler, and a pipe or pipes connecting the upper part of the water-back with the boiler, and provided with a return-bend extending above the water level of the boiler, substantially as set forth.

7. The combination, with a steam-boiler, of a furnace, a water-back extending downwardly to form one side of the fire box of the furnace, a water pipe or pipes connecting the lower portion of the water-back with the boiler, and a pipe or pipes connecting the upper part of the water-back with the boiler, and extending into the interior of the boiler above the water-level, substantially as set forth.



## 505,144. BOILER-FURNACE. JAMES K. THOMPSON, Leeds, England, assignor of two-thirds to Charles F. Jahn, Pittsburg, Pa. Filed May 31, 1893. Serial No. 476,050. (No model.)



*Claim.*—1. In a furnace for heating boilers and for other purposes, a front fire-bed, and a rear fire-box extending below the level of the fire-bed, in combination with a guard-plate arranged between the fire-bed and the fire-box, substantially as set forth.

2. In a furnace for heating boilers and for other purposes, a front fire-bed, and a rear fire-box extending below the level of the fire-bed, in combination with a pivoted guard-bed arranged between the fire-bed and the fire-box, and means for adjusting the angle of the guard-plate, substantially as set forth.

3. In a furnace for heating boilers and for other purposes, a front fire-bed, and a rear fire-box extending below the level of the fire-bed, in combination with a perforated guard-plate arranged between the fire-bed and the fire box, substantially as set forth.

4. In a furnace for heating boilers and for other purposes, a horizontal, front fire-bed, in combination with a fire-box arranged below the level of the fire-bed and comprising a perforated front wall, a bottom-grate, an air-tight chamber below the grate and a rear, unbroken fire-bridge extending downwardly from the top of the furnace-chamber to near the bottom-grate, substantially as set forth.

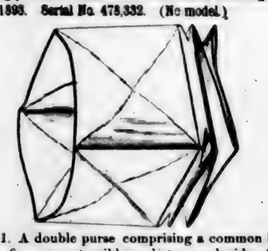
5. In a furnace for heating boilers and for other purposes, a horizontal, front fire-bed, in combination with a downwardly-flaring fire-box arranged below the level of the fire-bed and comprising a perforated front wall, a bottom grate, an air-tight chamber below the grate and a rear, unbroken fire-bridge extending downwardly from the top of the furnace-chamber to near the bottom grate, substantially as set forth.

6. In a furnace for heating boilers and for other purposes, a horizontal, front fire-bed, in combination with a fire box arranged below the level of the fire-bed and comprising a perforated front wall, a bottom-grate, a rear, unbroken fire-bridge extending downwardly from the top of the furnace-chamber to near the bottom grate, and a pilot-plate arranged within the fire-box, substantially as set forth.

7. A steam boiler, in combination with a furnace arranged within the flue of the boiler and comprising the following parts: a horizontal front fire-bed and a rear downwardly-extending fire-box consisting of an open front wall, a bottom grate, an air-tight chamber below the grate and a fire-bridge extending from the top of the furnace-chamber to near the bottom-grate, substantially as set forth.

8. A steam boiler, in combination with a furnace arranged within the flue of the same and comprising the following parts: a horizontal, front fire-bed and a rear downwardly-extending fire-box consisting of an open, front wall, a bottom-grate an air-tight chamber below the grate and a downwardly-extending water-back communicating with the boiler and reaching to near the bottom-grate, and an upwardly-extending fire-back arranged behind the fire-box, substantially as set forth.

## 505,145. COIN-PURSE. GEORGE TOPHAM, Washington, D. C. Filed June 24, 1893. Serial No. 478,332. (No model.)



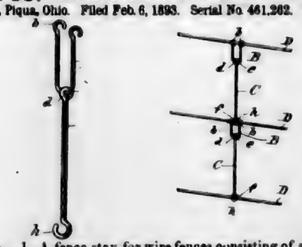
*Claim.*—1. A double purse comprising a common bottom piece of rectangular form, an extensible pocket on each side of the bottom, rectangular in cross section and having creased sides whereby each pocket may be extended or folded down against the bottom, the two pockets operating along the same axial line and having their mouths directed in opposite directions.

2. A double purse having common bottom and folded sides combined with connecting pieces having oppositely turned flaps overlapping the linings and a single covering piece extending over the linings of both pockets, substantially as described.

3. A double purse consisting of the two pockets of the same cross section placed back to back and having creased sides whereby the pockets may be folded or extended along the same axial line, the sides of the two pockets forming continuations of each other and the single covering piece extending over the joint between the two pockets and over the sides substantially as described.

4. A double purse consisting of two pockets placed back to back and the connecting piece having oppositely turned flaps secured to the sides of the pockets, substantially as described.

## 505,146. FENCE-STAY FOR WIRE FENCES. WILLIAM VAN HORN, Piqua, Ohio. Filed Feb. 6, 1893. Serial No. 461,262. (No model.)



*Claim.*—1. A fence stay for wire fences consisting of a relatively short yoke terminating in two upper hooks, and a relatively long straight link permanently looped to form a hinge-joint around the bight of the yoke and terminating in a single lower hook, as and for the purpose set forth.

2. In combination with the horizontal strands of a wire fence, a vertical fence stay in independent sections, each section consisting of a yoke and a straight arm permanently hinged together—the yoke arms being attached to an upper fence strand at opposite sides of the straight arm of the next upper stay section except at the ultimate upper strand to prevent lateral displacement, and the lower end of each straight arm looped to the strand next below, between the yoke arms of the next lower stay except at the ultimate lower strand, substantially as set forth

## 505,147. CHECK-HOOK. GEORGE H. VAN WAGNER, Wappingers Falls, N. Y. Filed Mar. 10, 1893. Serial No. 465,554. (No model.)

*Claim.*—1. In combination with a check hook, a horizontally-disposed plate attached to the fastening bolt of said check-hook and having an eye or loop at the front end thereof, with arms projecting transversely from opposite sides of the same, and a ring movably mounted in said eye or loop and arranged to bear upon said arm

whereby said ring may be supported above a horizontal plane for ready engagement, substantially as described.

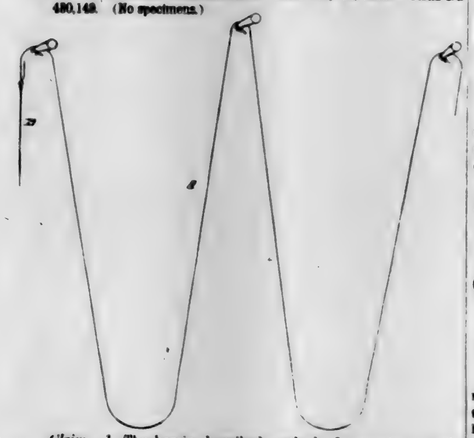


2. The combination with a check hook, of a horizontally disposed plate attached to the fastening bolt of said check hook, and provided at its front end with an eye and having thereat laterally projecting supporting arms, and provided in rear thereof with upwardly extending securing arms arranged on opposite sides of the check hook, and a ring movably mounted in said eye, substantially as and for the purpose described.

3. In combination with a check hook, the horizontally disposed plate 3 arranged beneath the base of the hook and attached to the fastening bolt thereof, and having an eye or loop at the front end, and a ring movably mounted in said eye or loop, substantially as described.

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**505,148. PROCESS OF PREPARING SURGICAL SUTURES.** LELAND S. WEAVER, Fremont, Mich. Filed July 11, 1893. Serial No. 480,149. (No specimens.)



*Claim.*—1. The herein described method of preparing aseptic shredded animal tendon for sutures and ligatures in surgery, consisting in taking tendons from healthy beeves or other animals and placing in a solution of chloride of sodium, then taking them from this solution and cutting sheaths and flesh away, partially drying said tendons and splitting them at right angles through their centers, and dividing the strands thus formed until reduced to the size desired, and hammering and twisting the same until the shreds are loosened, as set forth.

2. The herein described method of preparing aseptic shredded animal tendon for sutures and ligatures in surgery, consisting in taking tendons from beeves or other animals and placing in a solution of chloride of sodium then taking them from this solution and cutting sheaths and flesh away, then dipping them in a weak solution of chloride of iron, then drying and rehammering the tendons, then carding and spinning into threads for surgical and other purposes, as set forth.

3. A surgical ligature of spun or twisted strands of animal tendons, previously treated with chloride of iron and hammered, as and for the purpose herein set forth.

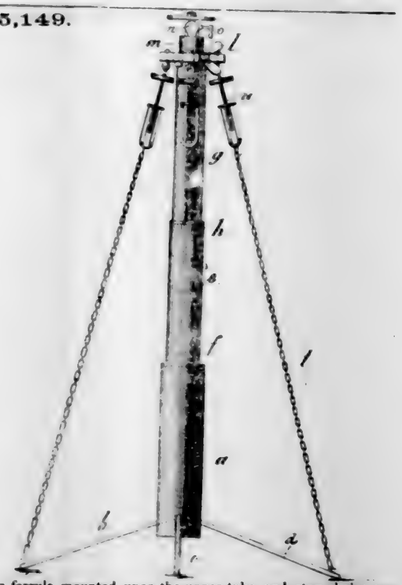
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**505,149. TELESCOPIC STAND FOR MATHEMATICAL AND OPTICAL INSTRUMENTS, &c.** MAXIMILIAN WEYL, Berlin, Germany. Filed Nov. 28, 1892. Serial No. 453,444. (No model.)

*Claim.*—1. In combination with the series of tubes fitting one within the other and provided with shoulders, a ferrule secured to the upper tube an adjustables tube *m* clamped by the ferrule, an adjustable support carried by said tube *m* and stay chains, substantially as described.

2. In combination with the series of tubes fitting one within the other and provided with shoulders, diverging feet supporting the lower

**505,149.**



tube, a ferrule mounted upon the upper tube, and stay chains connecting said ferrule with the extremities of the feet, substantially as described.

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**505,150. CORSET-STEEL.** EXILDA WILSON, Detroit, Mich. Filed May 2, 1893. Serial No. 472,683. (No model.)



*Claim.*—In a corset, the combination with the opposite perforated steels, of the broad reinforcing strip arranged in rear of one of the steels, extending beyond the inner edge thereof, and having headed studs passing loosely through the perforations of said steel, the opposite reinforcing strip corresponding in width to that steel to which it is applied and having headed studs loosely engaging the perforations of its steel and adapted to overlap the exposed surface of the reinforcing strip before mentioned, and eyes projecting from the inner edge thereof and adapted to engage removably with said headed studs of the broad reinforcing strip, substantially as specified.

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**505,151. TRACTION-ENGINE.** ALBERT C. ARES, Chicago, Ill. Filed June 27, 1890. Serial No. 356,993. (No model.)

*Claim.*—1. In a traction engine, the combination with a frame B and independent wheels A, A', on which the frame is supported, of two independent engines E, E', driving mechanisms between the engines E, E' and the wheels A, A', respectively, a reach M, whereby the traction engine is guided by the independent engines, substantially as specified.

2. The combination with a frame B and independent wheels A, A', of two independent engines E, E', driving mechanisms between the engines E, E', and a coupling device L for coupling together the engines whereby the wheels A, A', can be driven in unison, substantially as specified.

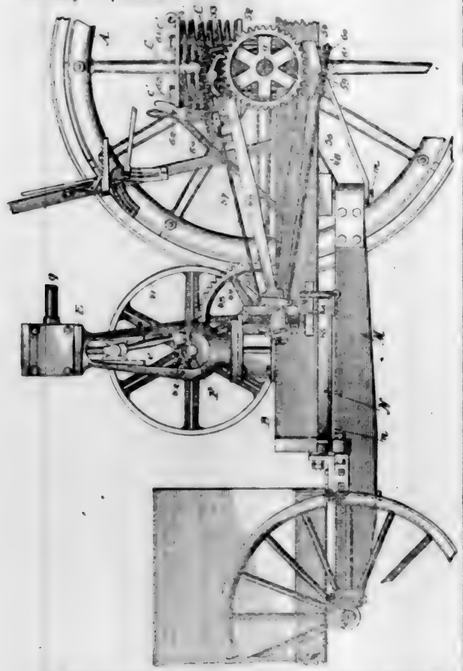
3. The combination with a frame B and two independent wheels A, A', of two independent engines E, E', mechanisms for driving the wheels A, A', from the engines E, E', respectively, a coupling device for coupling the two engines and a device for throwing one driving mechanism out of operation, whereby both engines may be caused to drive a single wheel, substantially as specified.

4. The combination with a frame B and two independent wheels A, A', of two independent engines E, E' for driving the wheels A, A', respectively, mechanisms for driving the wheels A, A' from the engines E, E', devices for throwing the driving mechanisms out of operation, and a device L for coupling the two independent engines,



whereby the engines E, E' may be used for supplying power, substantially as specified.

5. The combination with two independent wheels A, A', and two independent brake cylinders J', J, and brake mechanisms between the cylinders J', J, and the wheels A, A', respectively, of a steam chest G provided with chambers H, H' connected with the brake cylinders J, J', respectively, a sliding and rotatable valve 7, and ports 8 and 9, substantially as specified.



6 The combination with a steam chest G provided with chambers H, H' of a sliding and rotatable valve 7, ports 8 and 9, levers 12 provided with a pawl 14, and a rotatable segment 15, substantially as and for the purpose specified

7. The combination with independent brake cylinders, J', J, and independent steam engines E, E', of a valve chest G provided with chambers H, H', rocking disk 17 provided with openings 20, 21, connections between the chest G and steam engines, and brake cylinders, and mechanism for rocking the disk 17, substantially as and for the purpose specified

8. The combination with two independent wheels A, A', and two brake cylinders J', J, of exhaust ports *j*, *j'*, valves *k*, *k'*, a lever 12, connections between the valves *k*, *k'*, and the lever 12, and a steam chest G, substantially as specified

9. The combination of two exhaust ports *j*, *j'*, and valves *k*, *k'*, of a swinging lever 32, links 33, and 35, and arms 34 and 36, substantially as specified

10. The combination with two exhaust pipes *j*, *j'*, valves *k*, *k'*, of a swinging lever 30, links 33 and 35, arms 34 and 36, a rod 37 to which the lever 30 is pivotally connected, a spring 38, cable 39, and pedal 40, substantially as specified

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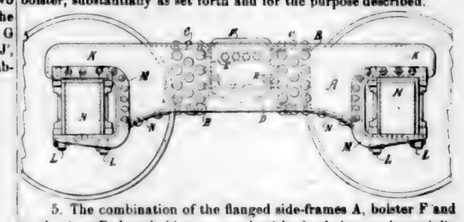
**505,152. TRUCK-FRAME.** DAVID L. BARNES, Chicago, assignor to the Fox Solid Pressed Steel Company, Joliet, Ill. Filed May 18, 1891. Serial No. 393,239. (No model.)

*Claim.*—1. A pressed steel side-frame for trucks having an upper flange cut away at the center for the reception of a bolster, while affording the strengthening projections of said flange on both sides of the bolster, substantially as described.

2. The pressed steel side-frame A, in combination with horizontally placed pedestals attached thereto, substantially as described

3. The combination of the side-frame A having a projecting portion K, and the pedestals M horizontally arranged thereunder, substantially as described

4. The combination of the side frames A, having their flanges recessed or cut away to receive a bolster, and extended on both sides of said recesses, the transoms secured to said extensions, and the spring plate D attached to the transoms and passing beneath the bolster, substantially as set forth and for the purpose described.

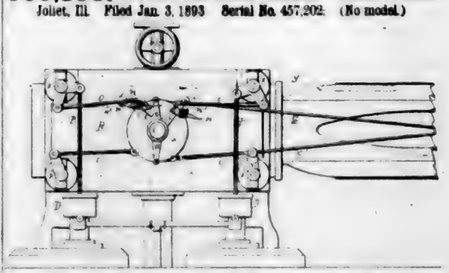


5. The combination of the flanged side-frames A, bolster F and angle piece E detachably connected with the bolster, substantially as described.

6. The side-frame A, horizontally arranged pedestal M and strengthening strap N attached to the pedestal and side-frame, substantially as described.

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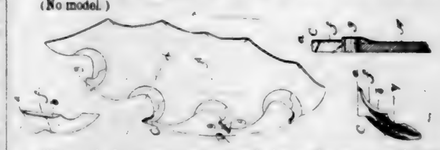
**505,153. CUT-OFF FOR STEAM-ENGINES.** ALBERT J. BATES, Joliet, Ill. Filed Jan. 3, 1893. Serial No. 457,202. (No model.)



*Claim.*—In an automatic cut off for steam engines, the combination of a wrist plate carrying a pair of oscillating trips pivotally connected to its side, reach rods for connecting the inner ends of said trips with one end of a bell crank secured on the inlet valve shafts, said reach rods having their ends connected with said trips curved downward to bring their point of pivot with said trips below a line drawn through the point of pivot of said trips with said wrist plate, and the center of said valve shafts, bell crank arms journaled on the wrist plate hub, and having one arm connected through the medium of a rod with the governor, and their free arms provided with friction rollers adapted to be alternately engaged by the free ends of said trips, and a dash pot mechanism connected with the other arm of said valve shaft bell cranks, all arranged to operate substantially as and for the purpose set forth

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**505,154. COMBINED SAW AND PLANER.** JOHN BOWLES, Washington, D. C. Original application filed Apr. 12, 1892. Serial No. 428,879. Divided and this application filed Nov. 19, 1892. Serial No. 452,578. (No model.)



*Claim.*—1 In a combined saw and planer, the cutter tooth provided at its outer extremity with the incision edge *a* lying substantially at right angles to the faces of the tooth and having the lateral shaving or paring edge *f* within the square incision edge *a*, the side faces of the tooth converging from the front working face thereof toward the rear neutral face, substantially as and for the purpose described

2. In a combined saw and planer, the cutter tooth having its front working face beveled from one side toward the other, forming the advanced planer edge *f* on one side of said tooth, and the square incision edge *a* at the outer extremity or apex of the tooth, beyond the beveled front face and paring edge *f* of said tooth, substantially as and for the purpose described

3. In a combined saw and planer, the cutter tooth provided with the square incision edge *a* at the outer extremity and at right angles to the longitudinal axis of said tooth, the shaving edge *f* on one side of the tooth and within its incision edge, *a*, and the longitudinal ridge

on one or both sides of the tooth within the incision and paring edges thereof, combined with the alternate planer teeth whose outer extremities lie within the path described by the incision edge of the cutter tooth, as and for the purpose described.

4. In a combined saw and planer, the series of cutter teeth each having the incision edge at its apex and the shaving or paring edge projecting laterally beyond the face of the saw, combined with the planer teeth arranged alternately with relation to the cutter teeth, and each planer tooth having its extremity within the path described by the incision edge of the cutter teeth, and with its lateral planing edge extending farther beyond the face of the saw than the paring edge of the adjacent cutter teeth, substantially as and for the purpose described.

5. In a combined saw and planer, the series of cutter teeth each having its working face beveled transversely from one side to the other and forming a lateral shaving or paring edge within the incision edge, combined with a series of alternate planer teeth each having its lateral planing edge extending farther beyond the faces of the saw than the paring or shaving edges of the adjacent cutter teeth, substantially as and for the purpose described.

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**505,155. RETAINING-BAR FOR MOLDING-FLASKS.** THOMAS J. BRADBERRY, Sharpsburg, Pa. Filed June 5, 1893. Serial No. 476,564. (No model.)



*Claim.*—1. A retaining bar for a molding flask consisting of a metal plate provided with one or more downwardly projecting arms, narrow at their middle portions and wider at their terminations, for the purposes described.

2. A retaining bar for a molding flask consisting of a metal plate provided with one or more downwardly projecting arms, narrow at their middle portions and wider at their terminations, and having in the body of the bar openings and recesses for the purposes described.

3. A retaining bar for a molding flask consisting of a metal plate provided with one or more downwardly projecting arms narrow at their middle portions and wider at their terminations, and having in the body of the bar openings and recesses, the edges of all such arms, openings and recesses being V shaped in cross section, and grooves preferably curved formed in the face of the arms, substantially as shown.

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**505,156. FENCE-POST.** HORACE B. CARP, Cuyahoga Falls, Ohio. Filed Oct. 22, 1892. Serial No. 449,575. (No model.)



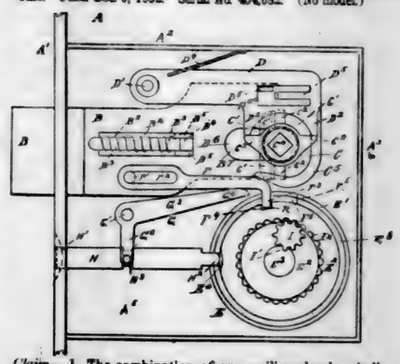
*Claim.*—1. In a fence post of the class designated, the combination with a hollow earthen-ware base, open on one side, and having projections on its two inner opposite faces, of a wood post adapted to fit the interior of said base and be retained by said projections, substantially as shown and described.

2. An improved fence post consisting essentially of a hollow earthen-ware base, open on one side, having projections on two inner opposite faces; and a wood post adapted to enter and fit said base, and be retained laterally by said projections, and having stops to limit its descent into the base, substantially as shown and described.

3. As an improved article of manufacture, a fence post base consisting of a section of earthenware pipe, open on one side, and having on two inner opposite faces, projections to retain an inserted wood post, substantially as shown and described.

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**505,157. COMBINATION-LOCK.** HENRY H. DANIELS, Cincinnati, Ohio. Filed Dec. 9, 1892. Serial No. 454,652. (No model.)



*Claim.*—1. The combination of an auxiliary knob spindle, and another knob and tumblers in connection with the latter, and the sliding latch B having stop-lug $D^4$, and the locking piece D having tongue $D^5$, and capable of being raised above and below the said lug, as well as opposite thereto, and also tailpiece $C^3$, tooth $F^3$, lever F, the latter for lifting the tooth $F^2$ out of the notches of the tumblers, and elevating the locking piece D, the auxiliary knob-spindle carrying one or more arms for actuating the sliding latch, substantially as and for the purposes specified.

2. The combination of the sliding latch B, having stop lug $D^4$, and the locking piece D having tongue $D^5$, and capable of being raised above and below the said tongue as well as opposite thereto, and the arms $D^6$ on said piece D and arms $C^4$, $C^5$, of the knob cylinder C, supporting said arms $D^6$, and the lugs $C^6$, $C^6$, on said cylinder, and lugs C', C', on the latch bar B for engagement therewith, substantially as and for the purposes specified.

3. The combination of the latch bar B, and spring for advancing it, and the usual knob cylinder E and means for enabling it to move the latch, and bar F having slot $F^1$, and pin F' therein and secured to said bar and tooth $F^2$ on said bar F and tumblers having notches R for receiving said tooth, for enabling the tumblers to move the latch independently of the cylinder C, substantially as and for the purposes specified.

4. The combination of the sliding latch bar B, having stop lug $D^4$, and the locking piece D having tongue $D^5$, and arms $D^3$ and lugs C', and cylinder C having arms $C^3$, and lugs $C^2$ respectively engaging said arms $D^3$ and lugs C', and locking bar F, having slot $F^1$ and tooth $F^2$, and tumblers $E^3$ having notches R for engagement with said tooth and the pin F' on the latch bar located in slot $F^1$, extension $C^3$ of the locking piece resting on bar F, and pivoted angular lever G, one limb $G^2$ against bar F, and bar H reciprocally sliding engaging the limb $G^2$ of the lever G, and a front stop for the bar F, substantially as and for the purposes specified.

5. The combination of the latch bar B and the locking piece D, and cylinder E cut away and forming stops $F^4$ and $F^5$, and the bar F for retracting the latch and lifting the locking piece D, whose tooth $F^6$ engages said stops, substantially as and for the purposes specified.

6. The combination of the sliding latch bar B, having stop lug $D^4$, and the locking piece D having tongue $D^5$, and arms $D^3$, and lugs C', and cylinder C having arms $C^3$, and lugs $C^2$ respectively engaging said arms $D^3$ and lugs C', and locking bar F, having slot $F^1$ and tooth $F^2$, and tumblers $E^3$ having notches R for engagement with said tooth and the pin F' on the latch bar located in slot $F^1$, extension $C^3$ of the locking piece resting on bar F, and pivoted angular lever G, one limb $G^2$ against bar F, and bar H reciprocally sliding, engaging the limb $G^2$ of the lever G, and a front stop for the bar F, the bar H having end $H^2$, and the tumblers having depressions $E^4$, for receiving said end, substantially as and for the purposes specified.

7. The reciprocating bar H, and the frame A', and combination lock casing E', and tumbler cylinder $E^2$, bearings for the said rod H being formed therein, tumblers having depressions $E^4$, and the lever G, bar F, latch bar, knob cylinder C and locking piece, substantially as and for the purposes specified.

8. The combination of the sliding latch bar B, having stop lug $D^4$, and the locking piece D having tongue $D^5$, and arms $D^3$ and lugs C', and cylinder C having arms $C^3$, and lugs $C^2$ respectively engaging said arms $D^3$ and lugs C', and locking bar F, having slot $F^1$ and tooth $F^2$, and tumblers $E^3$ having notches R for engagement with said tooth and the pin F' on the latch bar located in slot $F^1$, extension $C^3$ of the locking piece resting on bar F, and pivoted angular lever G, one limb $G^2$ against bar F, and bar H reciprocally sliding, engaging the limb $G^2$ of the lever G, and a front stop for the bar F, spring $D^4$, located in the bar D and pressing against the frame A, substantially as and for the purposes specified.

9. The sliding latch bar B, having the rear ends and the cylinder C having the groove $C^4$, receiving said rear ends of the bar B, and forming a guide therefor, and spring for advancing the latch bar, substantially as and for the purposes specified.

10. The sliding latch bar B, having the rear ends and the cylinder C having the groove $C^4$, receiving said rear ends of the bar B, and forming a guide therefor, and spring for advancing the latch bar, and the rod $B^2$ fixed to the latch bar and located in slot $B^3$ of the latch bar and having the lugs $B^5$, $B^5$, in said slot and fastened to the frame, and the rod $B^2$, sliding between same, substantially as and for the purposes specified.

11. In a combination lock, the devices substantially as described for operating the tumblers, and the reciprocating cap $J^3$ having flange embracing piece J', and pin $J^9$, moving in recess $J^{10}$ of part J', substantially as and for the purposes specified.

12. In a combination lock, the devices substantially as described for operating the tumblers, and the reciprocating cap $J^3$ having flange embracing piece J', and pin $J^9$, moving in recess $J^{10}$ of part J', and rubber stop $J^{14}$, substantially as and for the purposes specified.

13. In a combination lock, the devices substantially as described for operating the tumblers, and the reciprocating cap $J^3$ having flange embracing piece J', and pin $J^9$, moving in recess $J^{10}$ of part J', and catch $J^{17}$, extending through the piece J', and held back by spring $J^{19}$, the piece J' having recesses $J^{20}$ into which said catch can be pushed, substantially as and for the purposes specified.

14. In a combination lock, the devices substantially as described for operating the tumblers, and the reciprocating cap $J^3$ having flange embracing piece J', and pin $J^9$, moving in recess $J^{10}$ of part J', and catch $J^{17}$, extending through the piece J', and held back by spring $J^{19}$, the piece J' having recesses $J^{20}$ into which said catch can be pushed, and indicator piece $J^{22}$, located on the cap $J^3$, substantially as and for the purposes specified.

15. In a combination lock, the combination of the sliding latch bar B, having stop lug $D^4$, and locking piece D having tongue $D^5$, and the bar F, tumblers $E^3$ having notch R, and means for lifting bar F, and the knob spindle with means substantially as specified for retracting the sliding latch bar, substantially as and for the purposes specified.

16. In a combination lock, the reciprocating knob or cap $J^3$, and a pin $J^9$ for compelling the rotation of the shank $J^3$, substantially as and for the purposes specified.

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**505,158. SNAP.** HENRY B. DAY, Elgin, Ill. Filed Apr. 15, 1893. Serial No. 470,430. (No model.)



*Claim.*—As an article of manufacture, a snap constructed of a single piece of resilient wire, turned and bent into a hook B; the two prongs A and A' extending laterally in opposite directions; one extended and bent at a right-angle and formed with the catch D, and the other extended in a reverse direction and sharpened to constitute the pin E, capable of engaging with said catch; and provided with a spring F firmly attached to said prongs, and capable of engaging with said hook B; all substantially as shown.

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**505,159. BOGIE-TRUCK FOR RAILWAY-CARRIAGES.** SAMSON FOX, Harrogate, England. Filed Sept. 21, 1892. Serial No. 446,439. (No model.) Patented in England Feb. 26, 1892, No. 3,799.

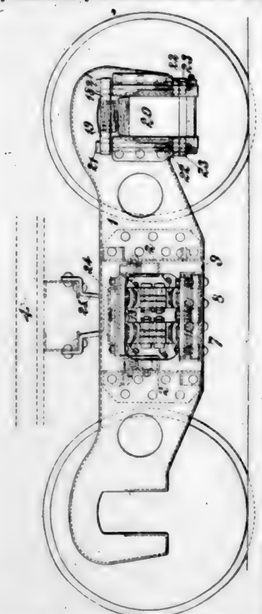
*Claim.*—1. A bogie truck having side-frames and fixed supports therein for the bolster supporting springs, a bolster free to move longitudinally independently of the side-frames, springs connecting said bolster and side-frames whereby longitudinal motion of the bolster is obtained, and the swinging bolster is dispensed with, substantially as described.

2. A bogie truck having side-frames, spring supports secured thereto, an upper bolster, bolster-bearing springs connecting the bolster and the side-frames, and mechanism for allowing the motion of said springs when the bolster moves over them longitudinally, substantially as described.

3. A bogie truck having side-frames, sole bars secured to the inner side of the side-frames, an upper bolster, bolster-bearings, springs connecting the bolster and the side-frames, and mechanism for allowing the motion of said springs when the bolster moves over them longitudinally, substantially as described.



4. A bogie truck comprising a bogie frame, a bolster, and laminated metal bearing springs carried by said bogie frame and supporting said bolster, said springs being arranged in pairs and having their adjacent ends jointed together thereby allowing motion transverse of the car only substantially as herein described for the purpose specified.



5. A bogie truck comprising a bogie frame, laminated metal bearing springs carried by said frame and connected together in pairs by links jointed to the ends of the springs, and a bolster carried by said springs and fixed to the upper spring of each pair substantially as herein described for the purpose specified.

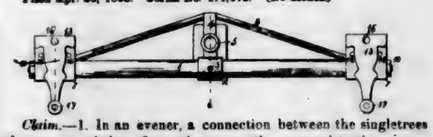
6. A bogie truck comprising a bogie frame, sole bars secured to the inner side thereof, a bolster, and laminated metal bearing springs supported by said sole bars, said springs being jointed together in pairs, fixed to said bolster and mounted to move laterally in relation to said sole bars substantially as herein described.

7. The combination with a truck frame and bearing springs therefor, of cross heads arranged each to bear on the top of one of said springs and adjusting mechanism arranged between each of said cross heads and said frame and supporting the latter and axle boxes bearing against said springs and sliding vertically only in the pedestal substantially as herein described for the purpose specified.

8. The combination with a bogie frame and bearing springs therefor, of cross heads arranged to bear on said springs, and bolts suspended from said cross heads and provided with adjusting nuts upon which said frame rests, and axle boxes bearing against said springs and sliding vertically only in the pedestal substantially as herein described for the purpose specified.

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**505,160. DRAFT-EVENER.** HENRY H. HARNDEN, Rockford, Ill. Filed Apr. 26, 1893. Serial No. 471,876. (No model.)

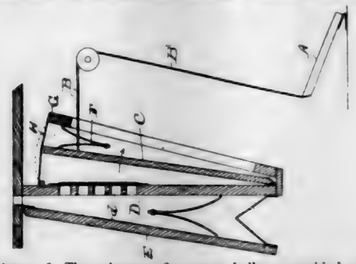


*Claim.*—1. In an evener, a connection between the singletrees and evener consisting of a stationary portion secured to the evener, having its rear face provided with teeth, a clevis consisting of a top and bottom plate, the rear ends connected by a toothed segment, which meshes with the teeth of the stationary portion, and pins extending from the stationary portion located on either edge of the top and bottom plates holding them in proper position.

2. In an evener, consisting of a tubular support having a brace rod connected with its ends and with a central support and a connection between the singletrees and evener consisting of a stationary

portion secured to the evener, having its rear face provided with teeth, a clevis consisting of a top and bottom plate, the rear ends connected by a toothed segment, which meshes with the teeth of the stationary portion, and pins extending from the stationary portion located on either edge of the top and bottom plates holding them in proper position.

**505,161. EXHAUST FOR REED-ORGAN BELLOWS.** FREDERICK W. HEDGELAND, Chicago, Ill., assignor to the W. W. Kimball Company, same place. Filed Apr. 5, 1893. Serial No. 469,232. (No model.)

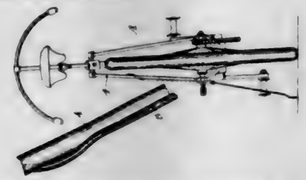


*Claim.*—1. The exhauster for organ bellows provided with the impervious cloth sides stretched over the edge of the movable front board, substantially as specified.

2. The combination in an exhauster with the movable board C thereof, of the impervious cloth H covering the sides of the exhauster, and supports for such cloth, substantially as specified.

3. The combination with an organ bellows of an exhauster consisting of the valveless board C and the impervious cloth H secured to the front of the bellows and to a stationary support located in front of the board C, substantially as specified.

**505,162. BICYCLE-SUPPORT.** MAX E. HERTEL and AUGUST BECK, Chicago, Ill.; said Hertel assignor to said Beck. Filed Apr. 8, 1893. Serial No. 469,628. (No model.)



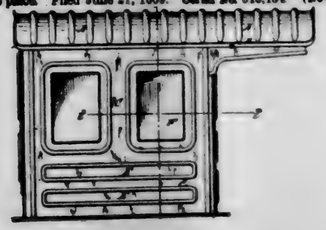
*Claim.*—1. The combination with a velocipede, of a supporting bar pivoted thereto, and provided with a bent or deflected end for engaging the frame of the velocipede, substantially as described.

2. The combination with a velocipede, of a braced supporting bar pivoted thereto and provided with a spirally bent or deflected end to engage the frame of the velocipede, substantially as described.

3. The combination with a plate 2 rigidly secured to the axle of a velocipede, of a supporting bar B pivoted to said plate 2 and having a bent or deflected end to engage the frame of the velocipede, substantially as described.

4. The combination with a velocipede having a brace bar 4, of a supporting bar pivoted to said velocipede and having a bent or deflected end located to engage said brace bar, said bent or deflected end of the supporting bar being so arranged that when it is swung toward said brace bar it will engage the outer face of the same, substantially as described.

**505,163. CAB FOR LOCOMOTIVES.** EDWARD W. MACKENZIE-HUGHES, Chicago, Ill., assignor to the Fox Solid Pressed Steel Company, same place. Filed June 21, 1889. Serial No. 315,134. (No model.)



*Claim.*—1. The combination with the side walls of an engine cab of the herein described continuous piece of metal constituting the roof of the cab and formed with the transverse corrugations, and with its edges flanged to form a water gutter, substantially as described.

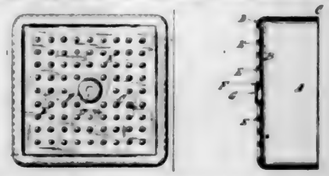
2. An engine cab composed of the roof formed of a single piece of corrugated pressed steel, the sides each formed of a single piece of corrugated pressed steel flanged at its edges and the front formed of a single piece of corrugated pressed steel flanged at its edges, these parts being united together by their flanged edges to form a pressed steel cab, substantially as and for the purpose set forth.

3. The front plate for engine cabs consisting of a plate of pressed steel having openings therein for windows and doors, the opening of the running board door being flanged and the running board door fitting around said flange, substantially as described.

4. The combination with the flanged side of an engine cab of a corrugation presenting an inwardly projecting edge around the window frame, an internal plate or clip for holding the glass in position, and a bolt passing through the corrugation for drawing the clip against the glass, substantially as described.

5. In an engine cab the combination of a pressed steel side formed with a flanged edge and a pressed steel front also formed with a flanged edge, the said flanged edges being united together to form a corner of the cab without carrying a corner post, substantially as described.

**505,164. STEAM-CHEST-COVER CASING.** EDWARD W. MACKENZIE-HUGHES, Chicago, Ill., assignor to the Fox Solid Pressed Steel Company, same place. Filed June 21, 1889. Serial No. 315,135. (No model.)



*Claim.*—The pressed steel steam chest casing, having the top B, and side C with surrounding corrugation between the top and side, the projection F surrounding an opening in the top, and isolated projections E, substantially as described.

**505,165. COMBINATION SCREW-DRIVER AND TOOL-HANDLE.** JOHN B. HUGHES, Denver, Colo. Filed Aug. 22, 1891. Serial No. 403,490. (No model.)



*Claim.*—1. The combination of the hollow handle, the spiral stem adapted to rotate within the handle which is fashioned to impart motion thereto as the handle is reciprocated thereon, one extremity of the spiral stem carrying a clutch member, the bit chuck having the counter-part clutch member, and the outer shell rotatably connected with the chuck and adapted to protect the hand of the user as the handle is thrust forward on the stem, substantially as described.

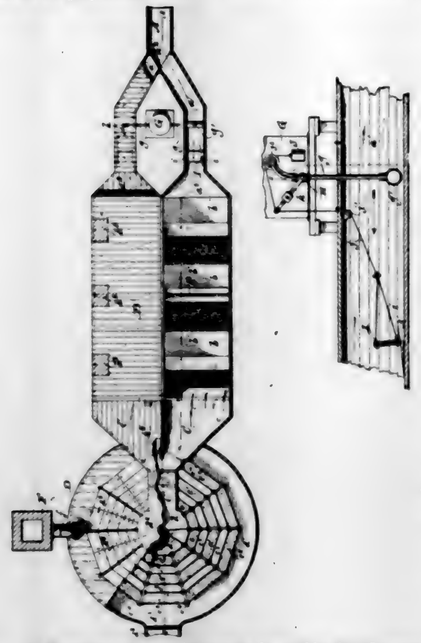
2. The combination of the hollow handle, the spiral stem, the inner tube rotatably connected with the handle and fashioned to rotate the stem when moved axially thereon, said tube being provided with a ratchet pinion, a pin supported within the hollow handle and carrying a coil spring, two pawls pivoted on this pin and attached to opposite extremities of the spring whereby the free extremities of the pawls are normally held in engagement with the pinion, and a lever fulcrumed on the handle and extending lengthwise of the tool, one extremity thereof occupying a position between the pawls whereby the movement of the opposite extremity in either direction disengages one of the pawls from the pinion, substantially as described.

3. The combination of the hollow handle, the divided inner tube, the spiral stem carrying the plunger at one extremity, the chuck having one section of the inner tube located thereon and the outer shell rotatably connected with the chuck and tube section and adapted to protect the hand as the tube sections engage during use, substantially as described.

**505,166. APPARATUS FOR TREATING SEWAGE.** OLOF B. MEYER, Milwaukee, Wis. Filed Jan. 14, 1893. Serial No. 458,316. (No model.)



*Claim.*—1. The combination in apparatus for the treatment of sewage, of a conduit through which the sewage flows, a tank or receptacle for holding chemicals to be introduced into the sewage, a connection with said tank or receptacle opening into said conduit and provided with a valve, and a plate exposed to the force of the current in said conduit and connected with said valve, substantially as and for the purposes set forth.



2. In apparatus for treating sewage the combination of a sewage conduit, a tank or receptacle for holding chemicals in a liquid state, a perforated chamber placed in said conduit and connected with said tank or receptacle, a valve placed in the connection between said tank and chamber, and a current-actuated device exposed to the sewage in said conduit and connected with said valve, substantially as and for the purposes set forth.

3. In apparatus for treating sewage, the combination of a sewage conduit, a tank for holding chemicals in a liquid condition, a distributer placed in said conduit and connected with said tank, a valve placed in the connection between said tank and distributer, and a plate exposed to the current in said conduit and connected with said valve, substantially as and for the purposes set forth.

4. In apparatus for treating sewage, the combination of a sewage conduit, a tank or receptacle for holding chemicals, a connection leading from said tank into said conduit and provided with a valve having an adjustably weighted arm, and a plate exposed to the current in said conduit and connected with said arm, substantially as and for the purposes set forth.

5. In apparatus for treating sewage, the combination of a sewage conduit, a tank for holding chemicals, a connection between said tank and conduit provided with a valve, a plate exposed to the current in said conduit and connected with said valve, and a counter weight acting in opposition to said plate on said valve, substantially as and for the purposes set forth.

6. In apparatus for treating sewage, the combination of a sewage conduit, a tank for holding chemicals, a connection between said tank and conduit provided with a valve which has an arm attached to its stem, a plate exposed to the current in said conduit and having a flexible connection with said arm, a counter weight also connected with said arm and acting thereon in opposition to said plate, and inclines upon which said plate rests, substantially as and for the purposes set forth.

7. An apparatus for treating sewage, a filter comprising a central chamber, a number of imperforate vertical partitions radiating therefrom and forming radiating conduits, screens arranged between and transversely to said partitions and forming therewith receptacles or cages for filtering material, an inlet connection with said central chamber and an outlet connection with the outer ends of said conduits, whereby the sewage is caused to flow in a radial direction from the center outward through said conduits, substantially as and for the purposes set forth.

8. In apparatus for treating sewage, a filter comprising a circular or polygonal box or inclosure provided with a central chamber, a number of partitions radiating therefrom, screens arranged transversely to and between said partitions and forming therewith receptacles for filtering material, a clear space or passage outside of said receptacles, and inlet and outlet connections with said central chamber and said outside space or passage, whereby the sewage is caused to flow in a radial direction outwardly through said receptacles, substantially as and for the purposes set forth

9. In apparatus for treating sewage, the combination of a closed filter box or inclosure, having a central chamber provided with an air intake opening or connection, a number of partitions radiating therefrom, screens arranged between and transversely to said partitions and forming therewith receptacles for filtering material, and a clear space or passage outside of said receptacles and a chimney connected with said space or passage, substantially as and for the purposes set forth.

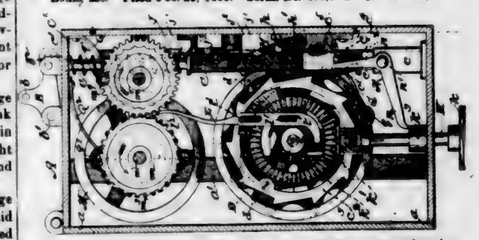
10. In apparatus for treating sewage, the combination of a box or inclosure containing cages or receptacles for filtering material, arranged radially around a central chamber into which the sewage is introduced, said chamber having an air inlet opening, a passage outside of said cages leading into an outlet conduit, a gate loosely suspended at its upper edge in said conduit, and a chimney connected with said passage, substantially as and for the purposes set forth.

11. In apparatus for treating sewage, a filter comprising a circular or polygonal box or inclosure having a central chamber with an inlet connection and radiating partitions forming a number of outwardly diverging radiating conduits, upright screens placed transversely between said partitions and forming in each conduit two or more receptacles for filtering material, with clear spaces between said receptacles, the outer receptacles in the several conduits being provided with the finer grades of filtering material, and an outlet passage with which the outer ends of said conduits communicate so as to cause the sewage to flow outwardly from the center in a radial direction through said conduits, substantially as and for the purposes set forth.

12. In apparatus for treating sewage, a filter comprising a circular or polygonal box or inclosure, a central chamber with an inlet connection and imperforate radiating partitions forming a number of radiating conduits, transverse screens interposed between said partitions and forming therewith receptacles for filtering material, an outlet passage communicating with the outer ends of said conduits so as to produce an outward flow of the sewage from the center through said conduits, and means of cutting off either conduit from the central chamber without obstructing the other conduits, substantially as and for the purposes set forth.

13. In apparatus for treating sewage, the combination of a filter box, filter cages arranged in series around an intermediate chamber into which the sewage is introduced, radiating partitions separating the filter cages from each other, and two gates hinged together at their inner ends to a central shaft in said chamber and capable of being turned at their outer ends into line with either of said partitions, substantially as and for the purposes set forth.

**505,167. STREET-CAR REGISTER.** ONESIME E. MICHAUD, St. Louis, Mo. Filed Feb. 23, 1893. Serial No. 463,374. (No model.)



*Claim.*—1. A street car register combining in its construction the spring-actuated thrust-rod, C provided with the projection $c^4$, the pawl $c^3$, the ratchet $c^2$, the units-wheel D, the tens-wheel D' having ratchet $d^3$, the spring actuated pin F, the cam $f$, and the tens-wheel ratchet, and the rock shaft H, actuated by the projection $c^4$, on the rod C, and the hook $h^2$, transmitting the motion to the ratchet $g$, of the wheel G, and said wheel G, and its ratchet $g$, substantially as described.

2. The combination of rod C, having projection $c^4$, the rock shaft H, actuated thereby the hook $h^2$, communicating motion to the wheel G the wheel G, the wheel G', the gear wheels $g^2$, $i$, the projection $i^3$,

the toothed wheel $g^7$, and the shafts E, I, substantially as described.

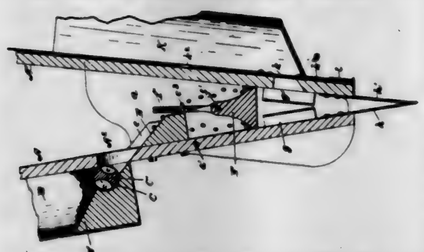
3. The combination of the rod K, provided with the bevel gear, the units wheel provided with a ratchet and bevel gear, the bell crank lever, and the pawl $c^4$, and the rock shaft H, and the rod C, having projection $c^6$, adapted to actuate the rock shaft, the hook $h^3$, and the fire wheel G substantially as described.

4. The combination of the shouldered rod K provided with a bevel gear, the units wheel D provided with its bevel gear, the bell crank, the pawl $c^4$, attached to the shaft having the arm $c^5$, the thrust-rod movable on pins $l'$, $l'$, which pass through its slots $l$. $l$, and the ratchet $m$, of the wheel M, and the spring actuated thrust-rod C, substantially as described.

5. The combination of the rod K provided with the bevel gear, the units wheel provided with the bevel gear, and stop $p^4$, the tens wheel provided with the ratchet, and the spring, and the pivoted dog P provided with the tooth and the extension, and the stop $d^{10}$, and the spring actuated rod C, adapted as described, to move the actuating parts substantially as described.

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**505,168. CORN-PLANTER.** CHRISTOPHER J MILLER, Marion, Ohio. Filed Jan. 21, 1893. Serial No. 459,128. (No model.)



*Claim.*—1. In a hand corn-planter the combination with the seed hopper, of the seed cylinder composed of the core having pockets of different capacities in combination with and adjustable in the perforated inclosing casing for said core, substantially as described.

2. The seed discharging cylinder composed of the core having a series of pockets of varying capacities and the inclosing, perforated casing therefor, substantially as described.

3. In a corn-planter the combination with the seed hopper of the pocketed cylinder for taking the seed from said hopper, the divided chute receiving the seed from said cylinder, and a lower cut-off intermediate said chute and the lower end of the planter, substantially as described.

4. In a corn-planter the dividing chute-board and means for discharging the seed from the hopper thereon, in combination with the pivoted planter blades, and, two compartments for the seed and a cut-off located below the chute-board, substantially as described.

5. The combination in a corn-planter, of the pivoted blades or handles carrying the hopper and means for discharging the seed therefrom, the dividing chute-board, the wedge operating in connection with the blades to form a lower cut-off and a spring operating to close said cut-off, substantially as described.

6. The combination in a corn-planter, of the hopper B, a corn dropping device connected therewith, a lower cut-off for catching the seed discharged from said hopper, a second hopper for other seed, and means controlled by the operator, independent of said corn-discharging device for discharging such other seed, substantially as described.

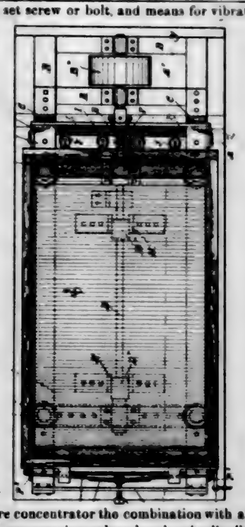
7. The combination in a corn-planter, of the pivotally connected blades, the hoppers B and K, for corn and other seed, connected therewith, the seed discharging attachment to said hoppers, the dividing chute F, the cut-off intermediate the said chute and the ends of the blades and the spring or springs for automatically closing said cut-off, substantially as described.

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**505,169. ORE-CONCENTRATOR.** THOMAS MCGLEW, San Francisco, Cal., assignor to the McGlew Ore Concentrator Company, of California. Filed Apr. 21, 1892. Serial No. 430,019. (No model.)

*Claim.*—1. The combination in an ore concentrator of a driving pulley, a supporting frame, a vibrating table pivoted thereto, longitudinal cam-shaft having a universal joint connecting with the driving pulley shaft, and a cam-plate fixed to the under side of the table engaging a grooved pulley or wheel on the longitudinal shaft, arranged and operating in the manner, substantially as set forth and specified.

2. A vibrating ore concentrator having friction rollers or wheels at the upper end of the table and a bumper fixed to the frame in line with the friction wheels and engaging the bumper, a resilient spring regulated by a set screw or bolt, and means for vibrating said table as described.

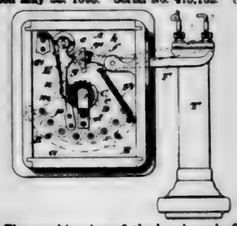


3. In an ore concentrator the combination with a vibrating table having a transverse reciprocal and a longitudinally reciprocating movement of the friction rollers engaging a bumper fixed to the frame and in line with the rollers, of a resilient spring and a set screw, as and for the purpose set forth.

4. The combination in an ore concentrator of a driving pulley, a supporting frame, a vibrating table pivoted thereto, a longitudinal cam shaft having a universal joint connecting with the driving pulley shaft, cams on said shaft working in guides secured to the under side of said table, and a cam plate fixed to the under side of the said table engaging a grooved pulley or wheel on the longitudinal shaft, arranged and operated as and for the purpose set forth.

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**505,170. TELEPHONE-SWITCH.** THOMAS W. NESS, Montreal, Canada. Filed May 22, 1893. Serial No. 475,182. (No model.)



*Claim.*—1. The combination of the key board of a warehouse or local telephone system, an independent switch key therefor, and the telephone hook mechanism, with means whereby said independent switch key is, after being moved to the several points of such key board by hand, automatically returned to its normal position.

2. In combination with the key board of a warehouse or local telephone system, having an independent switch key adapted to be moved to the several points of such key board by hand, a detent, a releasing device and automatic return for such switch key.

3. In combination with the key-board of a ware-house or local telephone system, the independent switch key thereof and the telephone hook mechanism, an automatic return for such key or switch under the control of said telephone hook mechanism, as set forth.

4. In combination with the key-board of a ware-house or local telephone system, the independent switch key thereof and the telephone hook mechanism, a controllable yielding resisting device acting to return said key or switch to its normal position after effecting a line connection, as set forth.

5. In combination with the key-board of a ware-house or local telephone system, the independent switch key thereof and the telephone hook mechanism, a yielding resistance device tending to return said key to its normal position after effecting a line connection, and detent mechanism acting to control such yielding resistance device, as set forth.

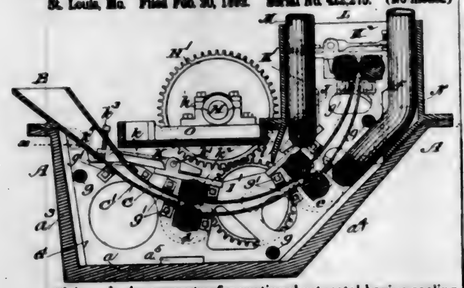
6. In combination with the key-board, of a ware-house or local telephone system, the switch key B; the rotatable axis or spindle c thereof and suitable bearings for same; the telephone hook mechanism; the spring C; the ratchet wheel D; a yielding pressure pawl lever engaging said ratchet wheel, and a yielding pressure contact dog $g$ on the inner end of said telephone hook, all substantially as and for the purposes set forth.

7. In combination with the key-board of a ware-house or local telephone system, the switch key B; the rotatable axis or spindle c thereof and suitable bearings for same; the telephone hook mechanism; the spring C; ratchet wheel D; a yielding pressure pawl lever engaging said ratchet wheel, and a yielding pressure contact dog $g$ on the inner end of said telephone hook, detent $m$ and means on said ratchet wheel for operating same, all substantially as and for the purposes set forth.



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**505,171. APPARATUS FOR THE MANUFACTURE OF TIN-PLATE AND COATING SHEET METAL.** WILLIAM F. NIEDRINGHAUS, St. Louis, Mo. Filed Feb. 20, 1892. Serial No. 422,273. (No model.)

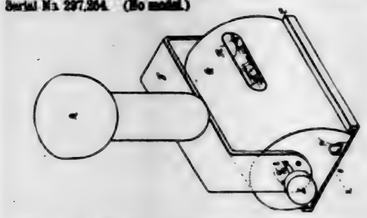


*Claim.*—1. An apparatus for coating sheet metal having cooling flues extending upward and downward in the grease pot at opposite sides respectively of the guides through which the plates to be coated are worked, substantially as described.

2. The combination of the pot A, the vertically extended grease pot, the guides through which the plates to be coated are worked, and the cooling flue extending upward and downward within said grease pot and at its lower end arranged in the vicinity of the guides.

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**505,172. HAND-STAMP.** HENRY H. NORRINGTON, West Bay City, Mich., assignor to Robert Woodman, Boston, Mass. Filed Jan. 23, 1889. Serial No. 297,264. (No model.)



*Claim.*—1. A hand stamp consisting of a frame or yoke provided with a handle, and having one end provided with retaining holes, a polygonal faced cylinder journaled in the yoke, a wheel upon one end of the journal of the cylinder provided with a pin for engaging with the retaining hole in the yoke, and a spring for moving the cylinder longitudinally within the yoke, substantially as set forth.

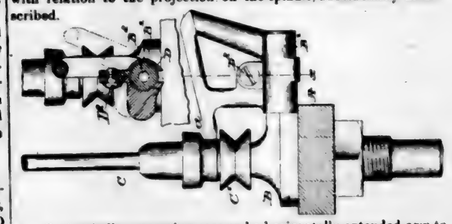
2. In a hand stamp the combination of the case G and base plate O having therein the slot Q, the yoke F having therein the holes S, the shaft I journaled in said yoke and carrying thereon the cylinder H, the spring J, and the stop-pin M, substantially as shown and described.

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**505,173. SPINDLE-RETAINING DEVICE.** JAMES H. NORTHROP, Hopedale, Mass., assignor to George Draper & Sons, same place. Filed Apr. 22, 1893. Serial No. 471,395. (No model.)

*Claim.*—1. A spindle supporting-case and a horizontally extended arm to constitute part of an oil reservoir, combined with a rocker having its center of motion substantially parallel to or coincident with the said arm, the said rocker having a finger to co-operate with a projection of a spindle to prevent the lifting of the spindle during the operation of doffing, substantially as described.

2. A spindle supporting-case and a horizontally extended arm to constitute part of an oil reservoir, combined with a rocker having its center of motion substantially parallel to or coincident with the said arm, the said rocker having a finger to co-operate with a projection of a spindle to prevent the lifting of the spindle during the operation of doffing, and also having a portion to cover the oil hole leading into the oil reservoir when the finger referred to is in operative position with relation to the projection on the spindle, substantially as described.

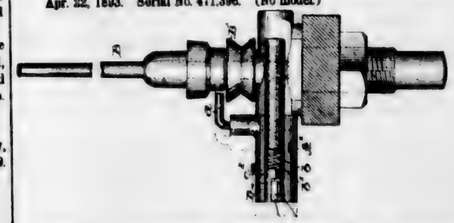


3. A spindle supporting-case and a horizontally extended arm to constitute part of an oil reservoir, combined with a rocker having its center of motion substantially parallel to or coincident with the said arm, the said rocker having a finger to co-operate with a projection of a spindle to prevent the lifting of the spindle during the operation of doffing, said rocker also having a counter-balance to normally keep the finger in operative position, and a stop to limit the movement of the rocker, substantially as described.

4. A spindle supporting-case and a horizontally extended arm to constitute part of an oil reservoir, combined with a rocker having its center of motion substantially parallel to or coincident with the said arm, the said rocker having a portion to cover the oil hole leading into the oil reservoir when the finger referred to is in operative position with relation to the projection on the spindle, substantially as described.

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**505,174. SPINDLE-RETAINING DEVICE.** JAMES H. NORTHROP, Hopedale, Mass., assignor to George Draper & Sons, same place. Filed Apr. 22, 1893. Serial No. 471,396. (No model.)



*Claim.*—1. A spindle-bearing supporting-case, it having a substantially horizontal or lateral extension, combined with a carriage mounted upon said extension and adapted to be slid longitudinally thereon, said carriage being provided with a suitable stop to overlap a projecting portion of a spindle and prevent the lifting of the spindle during the operation of doffing, substantially as described.

2. A spindle-bearing supporting-case, it having a substantially horizontal or lateral hollow extension to constitute an oil reservoir, combined with a carriage mounted upon said extension and adapted to be slid longitudinally thereon, said carriage being provided with a suitable stop to overlap a projecting portion of a spindle and prevent the lifting of the spindle during the operation of doffing, and with a spring to normally move the said carriage in the direction to put the said projection in operative position, substantially as described.

3. A spindle-bearing supporting-case, it having a laterally extended arm to constitute an oil reservoir, the said oil reservoir having an open mouth, combined with a carriage mounted on said extension and adapted to slide longitudinally thereon, and provided with an oil hole, the oil hole in the carriage in the outermost position of said carriage coinciding with the oil hole in the said arm, but in other positions of the said carriage closing the oil hole in the arm or reservoir, substantially as described.

4. A spindle-bearing supporting-case having a laterally extended hollow arm provided with an open mouth, and a carriage mounted on said arm and provided with a stop and an oil hole; and a guide to control the path of movement of said carriage in one direction, substantially as described.

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**505,175. BAKING-OVEN.** PAUL PFLEIDERER, London, England, and HERMANN WERNER, Cannstadt, Germany. Filed Sept. 29, 1891. Serial No. 407,193. (No model.)

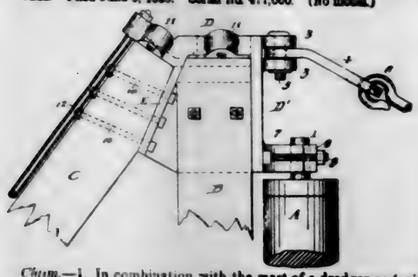
*Claim.*—In a baker's oven the combination of rails suitably secured in the oven, a truck or carriage having wheels traveling on said

**505,175.**



rails, drums mounted in said carriage, and a flexible endless baking plate or surface mounted upon said rollers or drums, substantially as described.

**505,176. MAST FOR DREDGERS.** WILLIAM B. PIERS, Stockton, Cal., assignor to the Piers Dredging and Reclamation Company, of Nevada. Filed June 9, 1893. Serial No. 477,060. (No model.)

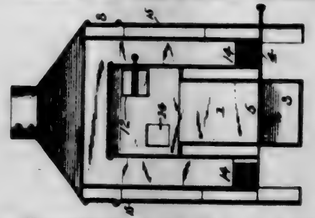


*Claim.*—1. In combination with the mast of a dredger and with the A-frame composed of side and rear converging timbers, a casting fitted and bolted to all the timbers of the frame and having a bearing in which the upper end of the mast is swiveled, substantially as set forth.

2. In combination with the A-frame composed of side and rear converging timbers, a casting fitted and bolted to said timbers, lugs on said casting at or near its top for connecting it to the hull of the dredger and to a swinging boom, and a bearing near the lower end of said casting for the top of the dredger mast, all constructed and arranged so that the strain transmitted from the boom is distributed through said casting and tension rods, on a line above the top of the mast, substantially as set forth.

3. A casting adapted to fit and be secured to the A-frame of a dredger and having a lug adapted to form a half bearing for the top of the mast, and a plate bolted to said lug and forming the other half bearing, substantially as set forth.

**505,177. HOT-AIR FURNACE.** JOSEPH H. PUTNAM, Bridgeton, N. J. Filed July 2, 1892. Serial No. 438,805. (No model.)



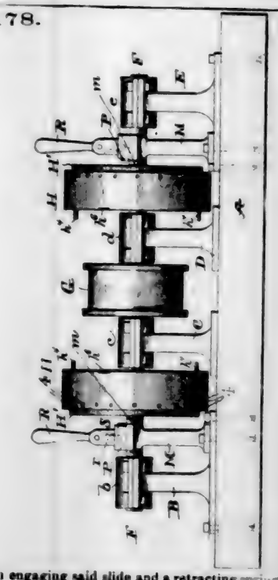
*Claim.*—The combination, in a hot-air furnace, of the outer casing 8 having doors 15 hinged at their upper ends and adapted to swing outward with their free lower ends, fire-pot 1, ash-pit 3, smoke-flue 10 having damper 12 and hinged check-valve 13 respectively arranged as described, and radiating-flue 14, when said several co-operating parts are constructed, arranged and combined as shown and specified.

**505,178. GRINDING-MACHINE.** THOMAS SHAW, Newark, N. J. Filed July 22, 1891. Serial No. 400,361. (No model.)

*Claim.*—1. In a grinding machine the combination with the grinding device, of a grinding rest provided with friction rolls for engaging and supporting the article to be ground, and the slide for moving the article to be ground upon said rolls longitudinally of their axes, substantially as described.

2. In a grinding machine the combination with the grinding device, of a grinding rest provided with supporting rolls for supporting the article to be ground, the slide, the pivoted lever having an operative portion engaging said slide and a retracting spring for said lever and slide, the main body of said slide being above the plane of the upper surfaces of said supporting rolls, substantially as described.

**505,178.**



**505,179. AUTOMATIC STEAM-REGULATOR.** JOHN SOLTER, Baltimore, Md. Filed May 3, 1893. Serial No. 472,902. (No model.)

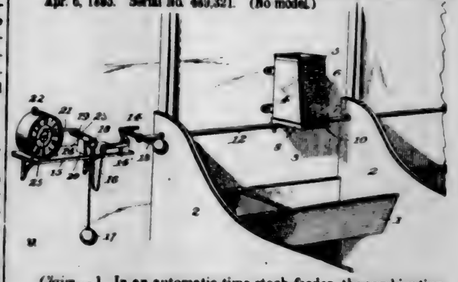


*Claim.*—1. In combination with the casing A, the cap G having a valve seat, a valve, a valve stem within the casing and adjustably connected at its outer end said valve stem being composed of a perforated expansible tube adapted to spring laterally, substantially as described.

2. In combination, the casing A, the casting B, having an inlet and threaded boss, the cap G, having a valve seat and outlet, the valve the tubular stem having holes and adapted to spring laterally and means for adjusting said spindle, substantially as described.

3. In combination with the case having a valve seat and tubular outlet an expansible stem within the less expansible case carrying a valve fitting said seat and having wings extending within said tubular outlet and bearing against the wall thereof and a wheel and jam nut for setting said valve, substantially as described.

**505,180. TIME STOCK-FEEDER.** JOHN H. WELLER, Louisville, Ky., assignor to the Time Stock Feeder Company, same place. Filed Apr. 6, 1893. Serial No. 469,321. (No model.)



*Claim.*—1. In an automatic time stock-feeder, the combination, with a series of feed-boxes and a rock shaft carrying bottoms for closing the said boxes, of a lever carried by the free end of the shaft and having a weight at one end, a trigger having one end in engagement with the unweighted end of the lever and its other end bearing a weighted chain, and a trip-lever having one end in engagement with the alarm-mechanism of a clock and the other end in engagement with the said chain.

2. In an automatic time stock-feeder, the combination with a series of feed-boxes and a rock-shaft carrying bottoms for closing the said boxes, of a lever carried by the free end of the shaft and having a weight at one end, a trigger pivoted at right angles to the unweighted end of the lever and having one end in engagement with the lever and its other end bearing a weighted chain, and a trip-lever pivoted at right angles to the trigger and having one end in engagement with the alarm-mechanism of a clock and the other end in engagement with the said chain.

3. In an automatic time stock-feeder, the combination with a clock having an alarm-releasing lever projecting therefrom, of a pivoted trip-lever designed to be moved in a horizontal plane to and from the releasing lever, a series of feed boxes, a rock-shaft journaled beneath the boxes and carrying the bottoms thereof, a weighted lever carried by the shaft, a trigger in engagement with the latter lever, and a weighted chain carried by the trigger and adapted to be hooked into engagement with the trip lever.

4. In an automatic time stock-feeder, the combination with a suitable time releasing mechanism, of a feed-box having its front side inclined outward from the top to a point near the bottom and then inclined inward, and a pivoted bottom having outward flaring side and end flanges designed to fit around the lower portion of the said box.



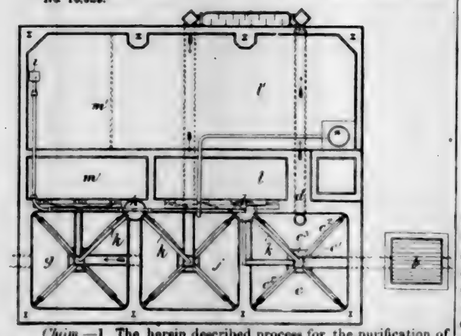
**505,181. RAIL-JOINT.** OSCAR O. WINTER, Minneapolis, Minn. Filed May 5, 1893. Serial No. 473,096. (No model.)



*Claim.*—1. The combination with a pair of rail ends, having their outer ball portions cut away to form the bridge-plate seat, of the joint iron consisting of the rail-chair, angle-bar and bridge-plate, formed integral with each other, said chair portion extending inward beyond the inner foot flange of the rail, and provided with spike holes, in line with the inner edge of said rail-foot, whereby the inner spikes may be made to lock said parts together, substantially as described.

2. The combination with a pair of rail ends, having their outer ball portions cut away to form the bridge-plate seat, of the joint iron consisting of the rail-chair, angle-bar and bridge-plate, formed integral with each other, said chair portion extending inward beyond the inner foot flange of the rail and provided with spike holes in line with the inner edge of said rail-foot, and the fish-plate on the inner side of the rail, said parts being clamped together by means of bolts, and secured to the tie by means of spikes, substantially as described.

**505,182. PROCESS OF PURIFYING SEWAGE.** WALTER R. ADDNEY, Mookstown, and WILLIAM K. PARRY, Dublin, Ireland. Filed Oct. 23, 1892. Serial No. 450,272. (No specimens.) Patented in England Mar. 1, 1890, No. 3,312, Nov. 22, 1890, No. 18,983, and June 26, 1891, No. 10,929.



*Claim.*—1. The herein described process for the purification of liquid sewage, which consists in separating the solid matter, suitably regulating the temperature of the sewage and adding manganate of soda and subsequently adding another inorganic oxidizing agent, such as nitrate of soda.

2. The herein described process, which consists in separating solid matter from sewage, suitably regulating the temperature of the sewage while under treatment, adding manganate of soda, and then recovering manganese added as manganate of soda, in the form of the insoluble hydrated peroxide of manganese, and then re-converting the same into manganate of soda for reuse for sewage purification.

**505,183. ELECTRIC-ARC LAMP.** ARTHUR S. ATWATER, Cleveland, Ohio, assignor to the Atwater General Electric Company, same place. Filed Jan. 16, 1893. Serial No. 458,590. (No model.)



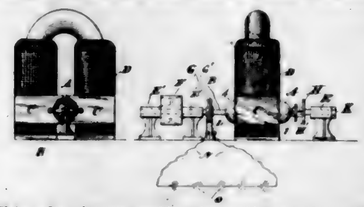
*Claim.*—1. In an arc lamp the combination of flat carbon candle plates having linear edges presented to one another for the formation of the arc, a stationary holder for the lower carbon and an oscillating upper holder whose fulcrum point is located upon the lower holder at a point below the horizontal center line between said holders, substantially as described.

2. In an arc lamp, the combination of flat carbon candles having linear edges presented to one another for the formation of the arc between them, a rigid lower carbon holder, an oscillating upper carbon holder and means for adjusting the relative positions of the upper and lower carbon plates, consisting in the electro-magnet D, upon the lower holder, and armature or armatures upon the upper holder, substantially as described.

3. In an arc lamp, provided with flat carbon plate candles, the combination of a lower fixed carbon holder, an upper oscillating holder, and means for regulating the length of the arc between the plates, consisting in the magnet D on the lamp circuit, located upon one of the holders, and armatures upon the other holder, with a modifying shunt coil upon the magnet reversely wound to the main circuit, substantially as described.

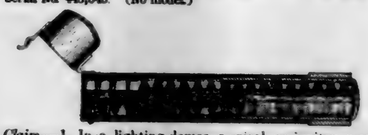
4. In an arc lamp provided with plate carbon candles having linear edges presented to one another for the formation of an arc, the combination of a fixed lower holder, and oscillating upper holder, with means for controlling the movement of the upper holder and length of the arc consisting in the electro-magnet D upon the lamp circuit placed on the lower holder, one or more armatures upon the upper holder, and a dashpot between said holders whereby an easy movement is given the oscillating arm in bringing the carbons together, but a difficult movement in separating them.

**505,184. DYNAMO-ELECTRIC MACHINE.** ARTHUR S. ATWATER, Cleveland, Ohio, assignor to the Atwater General Electric Company, same place. Filed Jan. 16, 1893. Serial No. 458,591. (No model.)



*Claim.*—In a dynamo machine, the combination of a ventilated armature, a single coarse wire coil about the armature having its terminals in collecting rings upon the main shaft, a shunt field exciting coil connecting the terminals of the coarse wire coil and the sections of a duplex commutator, a field circuit having its terminals in radial brushes engaging the said sections and a rheostat in said field circuit provided with an automatic cutout whereby the rheostat is cut out of the circuit until a normal current has been generated, substantially as described.

**505,185. LIGHTING DEVICE.** JOHN E. BARLOW, Philadelphia, Pa., assignor of one-half to Charles R. Paul, same place. Filed Sept. 5, 1892. Serial No. 445,045. (No model.)

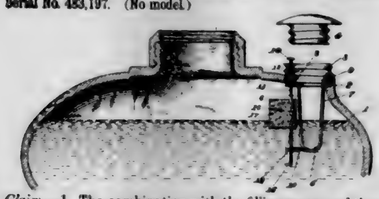


*Claim.*—1. In a lighting device, a spiral, an ignitor, a serrated consuming tape, strip or ribbon tipped with ignitible material, a revoluble shank provided with a slot for the reception of the tape, strip or ribbon and having the upper portion cut away to permit the segrations of the tape, strip or ribbon to mesh with the spiral and to be brought into contact with the ignitor to permit of the ignition of the serrated portions of the tape, strip or ribbon in regular sequence to cause a flame to be produced and the exposed portion of the tape, strip or ribbon to be consumed, substantially as and for the purposes set forth.

2. A lighting device comprising a housing provided with a spiral having a coiled wire applied thereto and the free extremity forming an ignitor or scratcher, a serrated ignitible light producing and consuming tape, strip or ribbon, and a revoluble carrier adapted to present the serrated portion of the tape, strip or ribbon to the spiral and the ignitor, substantially as and for the purposes set forth.

3. A lighting device comprising a housing provided with a hinged-cover, a revoluble cap mounted on said housing and provided with a recessed carrier arranged concentrically with respect to a spiral having a coiled wire applied thereto and the free extremity of the wire forming an ignitor or scratcher and a serrated ignitible light producing and consuming strip, tape or ribbon, the construction being such that the rotation of the carrier causes the serrated tape, strip or ribbon to be fed to the ignitor for producing a flame and consuming the exposed portion of the tape, strip or ribbon, substantially as and for the purposes set forth.

**505,186. FILLING-INDICATOR FOR LAMPS.** THOMAS W. BARTHOLOMEW, Danville, Pa. Filed Oct. 29, 1892. Renewed Aug. 15, 1893. Serial No. 483,197. (No model.)



*Claim.*—1. The combination with the filling-screw and the yoke depending therefrom, and provided with laterally projecting ears having vertically opposite perforations, of a stem loosely mounted for reciprocation in said perforations, and a float carried by the stem, substantially as specified.

2. The combination with a filler-screw, of a U-shaped spring guide yoke removably engaging therewith and depending therefrom, and a float-carrying stem mounted in the yoke, substantially as specified.

3. The combination with a filler-screw, of a U-shaped spring guide-yoke having guide-eyes, the terminals of the yoke being adapted to be sprung into the threads of the screw, and a float-carrying stem mounted in the guide-eyes, substantially as specified.

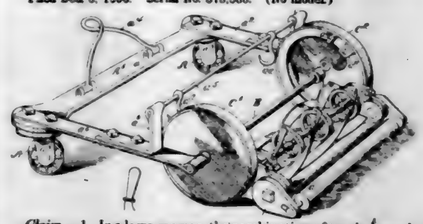
4. The combination with a filler-screw, of a U-shaped guide-yoke having one of its terminals wider than the other terminal thereby forming a shield and both terminals having outwardly bent ends for engaging with the threads of the screw, perforated bearing-ears extending from the wider terminal, a stem mounted for reciprocation in said perforations, and a float carried by the stem, substantially as specified.

5. The combination with a filler-screw, of a U-shaped spring-metal yoke, having its terminals outwardly bent and adapted to be sprung into the threads of the screw one of its terminals having an ear punched from its lower end, perforations formed in said ear, and in the end of the terminal above the same, a stem mounted for reciprocation in the terminals, and a float carried by the stem, substantially as specified.

6. The combination with a filler-screw, of a U-shaped yoke depending therefrom and having one of its terminals provided with vertically opposite guide-openings, a stem mounted in the yoke and terminating above and below the openings and provided with stops, and a float through which the stem passes, substantially as specified.

7. The combination with a filler-screw, of a perforated yoke depending therefrom, a stem mounted for reciprocation in the guide-yoke and provided between its ends with a roughened-portion, and a cork float through which the stem passes located on the same at said roughened portion, substantially as specified.

**505,187. LAWN-MOWER.** GEORGE W. CARR, Brooklyn, N. Y. Filed Dec. 8, 1890. Serial No. 373,886. (No model.)



*Claim.*—1. In a lawn mower, the combination of two independent frames arranged one rearward of the other the rear frame carrying cutter mechanism, a support common to the adjacent ends of both frames and rolling supports for the distant ends of said frames, substantially as specified.

2. In a lawn mower, the combination of a frame having wheels supporting its forward end, driving wheels rotating around an axle whereby the rear end of said frame is supported, a second frame carrying cutting mechanism and having its forward end connected to said axle and a rolling support for the rear end of said second frame, substantially as specified.

3. In a lawn mower, the combination of a frame having swiveling wheels supporting its forward end, driving wheels secured to an axle whereby the rear end of said frame is supported, a second frame carrying the cutter mechanism and having its forward end connected to said axle and a rolling support for the rear end of said second frame, substantially as specified.

4. In a lawn mower, the combination of two independent frames arranged one rearward of the other, driving wheels connected with an axle to which said frames also are connected and a rod and hook on the forward frame serving as a support for the rear frame when it is swung forward, substantially as specified.

5. In a lawn mower, the combination of two independent frames arranged one rearward of the other, driving wheels connected with an axle to which said frames also are connected, hand rods connected with the rear frame and a rod on the forward frame with which said hand rods may co-act to sustain the rear frame in an inoperative position, substantially as specified.

**505,188. MULTIPLE-SWITCHBOARD APPARATUS.** JOHN J. CARTY, New York, N. Y., assignor to the Western Electric Company, of Chicago, Ill. Filed Feb. 2, 1889. Renewed Oct. 16, 1891. Serial No. 408,877. (No model.)

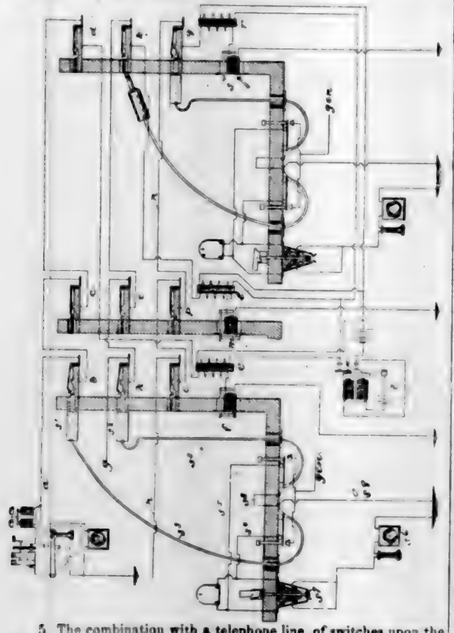
*Claim.*—1. The combination with telephone lines, each line connected through a different spring jack switch on each of two or more switch boards, and each line being connected through a current inducing device to ground, of pairs of loop plugs and cords at the different boards, the strand of each pair connecting the sleeves of the plugs being provided with a ground connection, whereby on connecting any two lines together at one board the portion cut off from each line will be closed directly to ground, substantially as and for the purpose specified.

2. Two telephone lines connected together at the central office through one strand of a pair of cords in combination with the cut off portions of said lines connected together through another strand of the cords, said strand being connected to ground, whereby the cut off portions of the lines are grounded and the talking circuits cut off from the source of the test current.

3. Two telephone lines connected together at one of the multiple switch boards of said lines, the cut off portions of said lines which include each a vibratory current inducing device being closed through a ground branch when the lines are thus connected and a branch circuit to ground through a telephone at another switch board adapted to be closed to the switch of either of said lines upon said switch board, whereby it may be determined whether either of said lines is thus connected or in use.

4. The combination with two telephone lines each extending from ground at the subscriber's station thereon to the central office and thence normally each through a different switch on each of two or more switch boards and through an annunciator to ground, of a pair of looping devices having two of their terminals connected together while the other corresponding terminals of the said plugs are connected to ground, said plugs being adapted to be inserted in switches of said telephone lines, whereby the lines may be looped together for conversation while the portions of said lines cut off at the switches by the insertion of the plugs are connected to ground, substantially as and for the purpose specified.





5. The combination with a telephone line, of switches upon the different boards at the central office, a source of electricity and an annunciator between the last switch and ground, switching apparatus at the different switch boards, for establishing connection between different lines, and means controlled by said switching apparatus adapted to cut off a portion of the line and close the same directly to ground, substantially as described.

6. The combination with a telephone line, of switches upon the different boards at the central office, a source of electricity and an annunciator between the last switch and ground, switching apparatus at the different switch boards for establishing connection between different lines, means controlled by said switching apparatus adapted to cut off a portion of the line and close the same directly to ground, and operators' testing sets at the different boards provided with connecting apparatus adapted to close the circuit of the telephone at any one of the boards with the test piece of any switch; whereby on making said test at either of said boards the sound will be heard in the telephone, if the line tested is free, while no sound will be produced in the telephone if the line tested is busy, though the test should be made at the switch included in the cut off portion of the line, substantially as described.

7. The combination with a telephone line, of switches upon the different boards at the central office, a source of electricity and an annunciator between the last switch and ground, switching apparatus at the different switch boards for establishing connection between different lines, and means controlled by said switching apparatus adapted to cut off a portion of the line and close the same to ground, and telephonic testing apparatus at each board; whereby any line may be tested to determine whether it is in use, substantially as described.

**505,189. FLEXIBLE BLADE.** FRANK O CLIMER, Anderson, Ind., assignor of one-half to Moses S. Tousey, same place. Filed Jan. 9, 1893. Serial No. 457,721. (No model.)

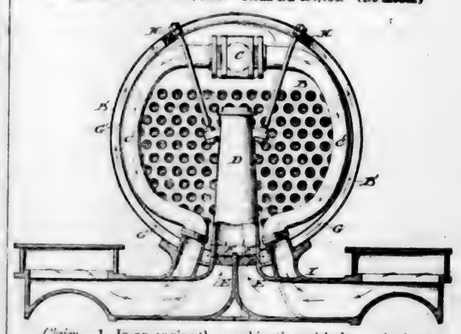


*Claim.*—1. A blade in the form of a strip crimped at the back edge, such crimps diminishing toward the operating edge, as and for the purpose set forth.

2. A blade crimped at the back to give it convex curvature at the operating edge, and adapted to be flattened or further crimped to vary that curvature: substantially as set forth.

3. In combination with a revoluble cylinder, a blade crimped at the back to conform to the cylindrical surface, and means for securing it upon such surface with its operating edge outward; such blade being adapted to be flattened and further crimped in varying degree at different parts of its extent, to cause it to conform to the cylindrical surface in varying directions: substantially as set forth.

**505,190. EXHAUST FOR STEAM-ENGINES.** JOHN W. CLOUD, Chicago, Ill. Filed Jan. 9, 1893. Serial No. 457,738. (No model.)

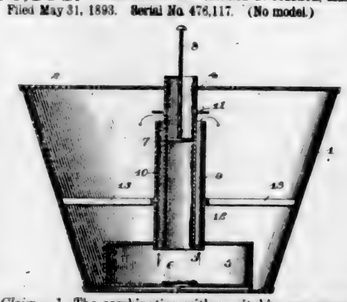


*Claim.*—1. In an engine the combination with the smoke box of an exhaust nozzle opening therein, and an exhaust steam accumulator chamber connected with the nozzle below its delivery end and extending upward therefrom along the sides of the smoke box, substantially as described and so as to be out of line with the boiler tubes and of the line of draft therefrom.

2. In an engine the combination with the smoke box of an exhaust nozzle opening therein, and exhaust steam accumulator chambers connected with the nozzle below its delivery end and extending upward therefrom in both directions along both sides of the smoke box substantially as described and so as to be out of line with the boiler tubes and with the line of draft therefrom.

3. In an engine the combination of the smoke box, an exhaust nozzle opening therein and an exhaust steam accumulator chamber formed between the sides of the smoke box and curved plates secured inside thereof and connected with the exhaust below the delivery end of the nozzle.

**505,191. DISH-CLEANER.** MONROE D. COLBATH, Mars Hill, Me. Filed May 31, 1893. Serial No. 476,117. (No model.)

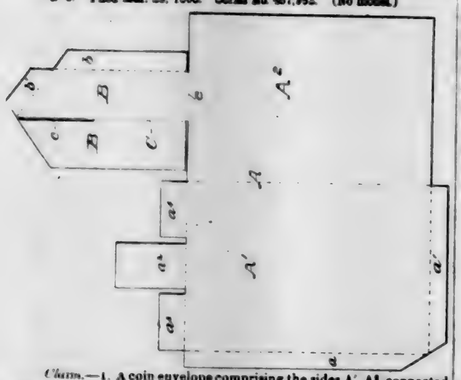


*Claim.*—1. The combination with a suitable pan or container, of concentric outer and inner cylinders arranged axially in the pan or container and having open upper and lower ends, a valved receiver communicating with the lower ends of said cylinders, a plunger operatively mounted in the inner cylinder, and a deflecting shield carried by the inner cylinder and projecting laterally over the upper end of the outer cylinder, substantially as specified.

2. The combination with a pan or container, of concentric inner and outer cylinders arranged axially in the pan or container, a valved receiver communicating with the lower ends of the cylinders, a plunger operatively fitted in the inner cylinder, a deflecting shield carried by the inner cylinder and projecting laterally over the upper end of the outer cylinder, and a dish-rack fixed exteriorly to the outer cylinder and having its periphery arranged contiguous and conforming to the walls of the pan or container, substantially as specified.

3. The combination with a pan or container provided with a cover having a central opening, of concentric outer and inner cylinders arranged axially in the pan or container, the inner cylinder projecting above the upper end of the outer cylinder and extending through the central opening in the pan cover, the upper ends of both cylinders being open, a valved receiver communicating with the lower ends of the cylinders and resting upon the bottom of the pan or container, a plunger operatively fitted in the inner cylinder, a deflecting shield fixed exteriorly to the inner cylinder and projecting laterally over the upper end of the outer cylinder, and a dish rack carried by the outer cylinder with its periphery contiguous to the walls of the pan or container, substantially as specified

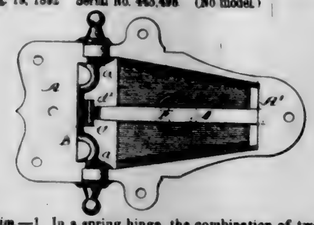
## 505,192. COIN PURSE OR CASE. Lewis T. Condon, Stanwick, N. J. Filed Mar. 28, 1893. Serial No. 467,992. (No model.)



*Claim.*—1. A coin envelope comprising the sides A', $A^3$, connected together as described, the side B', integral with side $A^3$, formed with flaps *b*, *b'*, and side B, formed with slit *c*, said flaps *b*, *b'*, and side B being bent over inwardly and gummed and the side B', bent inwardly, forming a chute located in the interior of the envelope, substantially as specified.

2. A coin envelope comprising the side A', provided with flaps *a*, $a'$, $a^3$, $a^4$, and $a^5$, the side $A^3$, having formed integral therewith the side B', provided with side B, having beveled upper end and formed with a slit *c*, the flap *b* and beveled flap *b'*, said sides A' and $A^3$ being connected together by flaps *a*, $a'$, $a^3$, $a^4$, $a^5$, and side B and flaps *b*, *b'*, bent inwardly and gummed forming a chute bent over on the line *c*, and projected into the envelope, substantially as described.

## 505,193. SPRING-HINGE. James W. Coultas, Havana, Ill. Filed Aug. 13, 1892. Serial No. 443,498. (No model.)



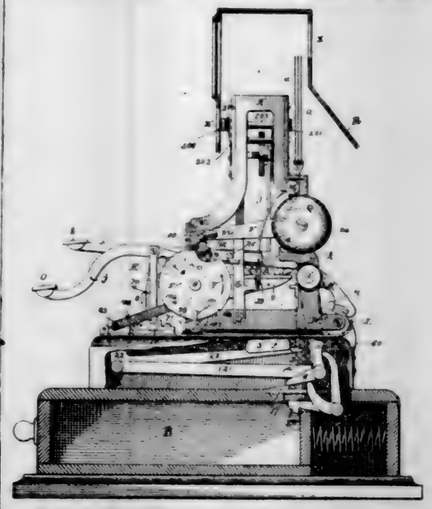
*Claim.*—1. In a spring hinge, the combination of two leaves of suitable form connected by knuckles forming a hinge-joint, one of said leaves being provided with a rod eccentric to the axis of the hinge, and the other being formed with a chamber, or case, a hook engaging said rod and formed with a stirrup, a lever lying in said chamber and supported by a fulcrum therein and having one of its ends in engagement with said stirrup, and a spring interposed between the wall of said chamber, and a suitable point upon said lever, and exerting its force through said lever upon the rod formed upon the other leaf, substantially as shown and described.

2. In a spring hinge, the combination of two leaves of suitable form connected by knuckles forming a hinge-joint one of said leaves being provided with a rod eccentric to the axis of the hinge, and the other being formed with a chamber or case, a hook engaging said rod and formed with a stirrup, a lever lying in said chamber, and supported by a fulcrum therein and having one of its ends in engagement with said stirrup, and a coiled spring interposed between the wall of said chamber, and a suitable point upon said lever, and adapted to be compressed by the swinging of the leaves of the hinge from their completely closed position, substantially as shown and described.

3. In a spring hinge, the combination of two leaves of suitable form connected by knuckles forming a hinge joint, one of said leaves being provided with a rod eccentric to the axis of the hinge, and the other being formed with a chamber, a hook engaging said rod and formed with a stirrup, a lever lying in said chamber and supported by a fulcrum therein, and having one of its ends in engagement with said stirrup, and a coiled spring interposed between the wall of said chamber and a suitable point upon said lever and adapted to be compressed as the hinge is opened, the successive coils of said spring being of increasing diameter from one end of the spring toward the other whereby as the spring is compressed, each coil may lie within the one next succeeding it; substantially as shown and described.

4. The combination of the leaves A, A', formed and connected substantially as described, the stirrup C, C', engaging the rod B, upon the leaf A, the lever D, lying within the chamber in the leaf A', and having its inner end in engagement with said stirrup and its outer end provided with a bend engaging the wall of the chamber, and a spring F, interposed between the lever and the wall of the chamber and operating substantially as described.

## 505,194. CASH-REGISTER. James T. Cowley, Lowell, Mass., assignor, by mesne assignments, to the National Cash Register Company, Dayton, Ohio. Filed Sept. 4, 1889. Serial No. 322,916. (No model.)



*Claim.*—1. The combination of the tablets and staves *f*, keys *b*, levers 1 having pendent arms $1^a$, movable bearings 24 below the staves and intermediate connections between the latter and the arms $1^a$, substantially as set forth.

2. The combination of the targets and staves *f*, having lugs *g*, wing Q, keys *b*, lever F, recessed disk 7, and connections between the latter and the keys whereby said disk is moved by the movement of any key, substantially as set forth.

3. The combination with the key levers 1, of locking dogs E hung to the levers, cross plate 8, and movable bar 4, bearing on the dogs, substantially as set forth.

4. The combination of the horizontal key levers, arms 70 hanging loosely therefrom and series of sliding blocks below the end of the arms 70, substantially as set forth.

5. The combination with the key levers of arms 70 hung loosely thereto and blocks 72, and locking devices for retaining the other levers in their normal positions after any lever is depressed, substantially as set forth.

6. The combination of the receptacle, catch for holding the same in its closed position, and key O independent of the registering machine for operating said catch, and targets and operating keys *b*, locking devices for said keys, and connections between said locking devices and the key O whereby all the keys *b* are locked when the key O is depressed and the drawer open, substantially as set forth.

7. The combination with the key levers, of an independent lever *j*, drawer or receptacle and catch therefor connected to be actuated by said lever *j*, and key lever locking devices operated by the lever *j*, substantially as set forth.



8. The combination of the key levers, lever *j*, drawer, drawer-catch connected to be operated by the lever *j*, and series of locking devices for the key levers also connected to be operated by the lever *j*, to retain the key levers after the drawer is released and until the lever *j* is in its usual raised position, substantially as set forth.

9. The combination of the tablets, keys *b*, separate therefrom, intermediate connections whereby a tablet is raised upon depressing any one of the keys, and an independent key O and locking devices for the keys *b* and connections between said locking devices and the key O, whereby the keys *b*, are locked except when the key O is in its normal position, substantially as set forth.

10. The combination of the tablets, tablet operating keys *b* drawer, drawer-catch, lever *j* and connections between the latter and the catch whereby the catch is released on depressing the lever *j* and connections between the lever *j* and the keys *b* whereby the latter are locked until the lever *j* recovers its normal position, substantially as set forth.

11. The combination of the drawer, lever *j*, and pawl 16 for holding the lever depressed arranged in position to be released by the drawer as the latter is closed, substantially as set forth.

12. The combination of the lever *j*, pawl 16, bearing 17, the drawer and catch 20 and the arm 21 arranged to make contact with the drawer and with the pawl, substantially as set forth.

13. The combination of the lever *j*, having a pendent arm 15 and pawl 16, the shaft 19 carrying a catch 20, arm 18 and loose arm 21, the bearing 17 and the drawer, substantially as set forth.

14. The combination of the key levers, bar extending beneath all of the levers, disk 7 connected with said bar and having two reversed series of ratchet teeth, double acting pawl 103 and contacts 101, 102, substantially as set forth.

15. The combination with the staves, retaining wing Q and key levers of the bar 4 recessed disk 7 and arm F connected with said wing, retainer for said arm F, lever *j* and connections for releasing said retainer by the action of said lever, substantially as set forth.

16. The combination of the two or more banks of keys, target staves, a wing for each bank for engaging a lug on the elevation of a staff on depressing a key, and connections between all the wings and each key whereby said wings as any key is depressed is first positively retracted to release all the staves before elevated, and then restored to position for such wing to engage the staff being raised by the said key, substantially as set forth.

17. The combination of the lever *j*, wing Q, target staves lever F connected therewith, arm G having a bearing for the lever F, and connections between the lever *j* and arm G whereby the latter is swung by the upward movement of the lever *j*, to retain the lever F substantially as set forth.

18. The combination of the levers 1, *j*, plate 8, dogs E pivoted to the levers 1, swinging bar 4, notched disk 7, lever F and detent therefor and connections for operating the detent from the lever *j*, and a series of targets and target detent or wing Q connected with the lever F, substantially as set forth.

19. The combination with the series of movable targets, detent therefor and lever F of a notched disk 7 connected to be moved by the key levers, a detent for the lever F and a lever *j* and connections for operating the latter detent, substantially as set forth.

20. The combination with the series of tablets of a series of staves having lugs *g*, the lug $g^4$ of the $10 tablet being larger than the others, and a movable wing Q, substantially as and for the purpose set forth.

21. The combination of a series of key levers, arranged in banks or sections, a totalizing counter in sections having wheels with numbers 0 to 9 with transfer devices between the sections, each section of the counter connected to be operated by one of the banks, substantially as set forth.

22. The combination with the series of banks of keys, a counter in sections, transfer devices between the sections, and two or more movable plates one connected to operate each section of the counter, and each extending beneath one of the banks of key levers, with bearings for the latter at different distances from the fulcrum of the levers, substantially as set forth.

23. The combination with the banks of keys and counter in sections, and transfer devices, of connections for operating each section of the counter from one of the banks of keys, a locking device for each section of the counter, and connections between each locking device and the preceding bank of keys whereby the operation of any key of such bank will unlock the next higher section of the counter, substantially as and for the purpose set forth.

24. The combination with different banks of keys and with the counter sections, of a reciprocating pawl 12, for operating each section, a locking bar 52 above each pawl, a second reciprocating pawl 76 and transfer connections for operating it from the preceding counter section, and connections between each pawl 12 and one of the banks of keys, substantially as set forth.

25. The combination of two or more banks of keys and a counter section and pawl for operating each section from one of the banks of keys, of a locking bar for each pawl, transfer devices between the counter sections, and connections between each pawl and the keys of the preceding bank of keys for unlocking said pawl when any one of said keys is depressed, substantially as set forth.

26. The combination of the banks of keys, plate 9, counter in sections each section connected to be operated by one of the plates, transfer devices, and a lever K bearing on each plate and connections between the lever and the keys of the preceding bank for vibrating said lever on the movement of any one of said keys, substantially as set forth.

27. The combination with the plates 9, counter in sections transfer devices, actuating pawls 12 and locking bars 52, end levers K and wings H', H", substantially as and for the purpose set forth.

28. The combination with the different banks of keys counter and transfer and locking devices of wings H', H" arranged to be moved by the different banks of keys and each connected to operate the locking devices of the succeeding section of keys, substantially as set forth.

29. The combination with the banks of keys, plates 9, and counter sections, of levers K, wings H', H", having bearing for said levers, and bearings for one wing upon the preceding wing, substantially as and for the purpose set forth.

30. The combination of the wings and shouldered levers K, of the notched disks L, springs 60, and bearings for the wings, on the disks, substantially as and for the purpose set forth.

31. The combination of the key levers, swinging cross bar 4, and dash pot N, substantially as and for the purpose set forth.

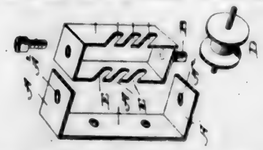
32. In a registering mechanism, the combination of the adjustable shafts, the intermediate fixed shafts, dials on all the shafts, gearing connecting the latter, and a movable frame for throwing the shafts into and out of engagement, substantially as described.

33. In a registering mechanism, the combination of the adjustable shafts, the intermediate fixed shafts, dials and gear wheels on the shaft, a movable frame contacting with the opposite ends of the adjustable shafts, and a spring for holding the gear wheels normally in engagement, substantially as described.

34. The combination with the key levers of locking devices composed of the dogs E, rod 4 and plate 8 for locking the remaining levers in elevated positions as the one is depressed and a stop device consisting of the arms 70 and 72 for preventing more than one lever being depressed at one time, substantially as set forth.

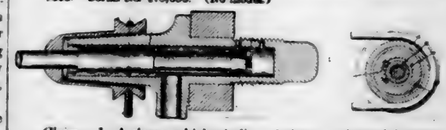
35. The combination with the key levers, of locking device composed of the dogs E, rod 4 and plate 8 for locking the remaining levers in their elevated positions as the one is depressed, and a stop device for preventing more than one lever being depressed at one time substantially as set forth.

## 505,195. GATE-HANGER. Frank A. Cullen, Jackson, Mich. Filed Feb. 7, 1893. Serial No. 461,373. (No model.)



*Claim.*—A gate hanger consisting of the base plate made of a single piece of flat metal having the extensions provided with openings or bearings, the rectangular open roller frame having a series of inclined open bearings a stud bearing in one of the bearings, the removable stud in the other bearing, the block receiving said stud, and the roller mounted in the open frame in one set of the open bearings.

## 505,196. SPINDLE-BEARING. William F. Draper, Hopedale, Mass., assignor to George Draper & Sons, same place. Filed May 29, 1893. Serial No. 475,868. (No model.)



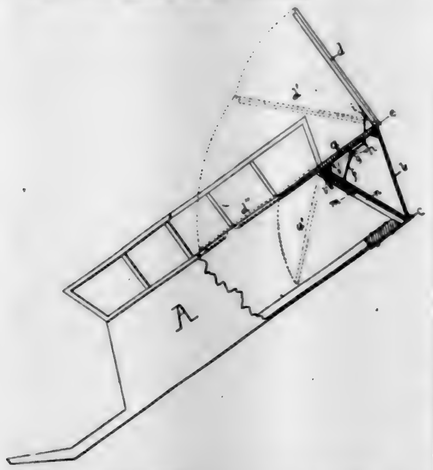
*Claim.*—1. A sleeve-whirl spindle, a bolster or lateral bearing, and its surrounding supporting-case, combined with a segmental cushion interposed between the supporting-case and that side of the bolster or lateral bearing which is drawn toward the said case by the pull of the band, leaving other parts of the space between the said

bearing and case free and unobstructed for oil and to let the bearing move if desired away from said cushion under the elasticity of the band, substantially as described.

2. The combination with a sleeve whirl spindle and a supporting-case, of a lateral bearing for said spindle, said bearing being mounted loosely in the supporting-case, and a cushion interposed between the said bearing and the said supporting-case at but one section of the circumference of the said bearing, substantially as described.

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**505,197. CARRIAGE.** WILLIAM H. ENOND, Boston, Mass. Filed Nov. 17, 1892. Serial No. 452,300. (No model.)



*Claim.*—1. The combination, in a two seated carriage, of a rear seat-frame, movable hinged seat-bracket, catch lever, and a seat-back, constructed to serve also as a box cover; said seat-back to be hinged to the seat-frame in manner to be closed down as a box cover by the closing in of the seat-frame and to be raised into position as a seat-back, substantially as shown and described.

2. The combination, in a two seated carriage, of a tilting seat-frame, *a*, a movable seat-back pivoted thereto, a seat-bracket, *b*, having a rest and stop, *b''*, pivoted to the body at *c*, a catch lever, *f*, pivoted to the seat-frame at *g*, and secured to the seat-back at *i*, and a support bar, *m*, all for the purposes and in the manner set forth.

3. The combination, in a two seated carriage, of a movable seat-bracket, *b*, pivoted to the body at *c*, a seat-frame, *a*, secured thereto, a back, *d*, pivoted to the seat-frame at *e*, an automatic catch lever, *f*, and support bar, *m*, substantially as specified.

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**505,198. SKIVING-MACHINE.** CHARLES S. FIFIELD, Revere, Mass. Filed June 13, 1891. Serial No. 396,210. (No model.)

*Claim.*—1. In a skiving machine, the combination of the presser bar; the knife carriage; movable ways on which the knife carriage is supported and reciprocates; connection between the movable ways and the presser-bar; mechanism substantially such as is described by which the presser-bar and the movable ways for the knife carriage are elevated and depressed simultaneously and mechanism substantially such as is described by which the knife carriage is moved on its ways toward and from the presser bar, all as and for the purposes set forth.

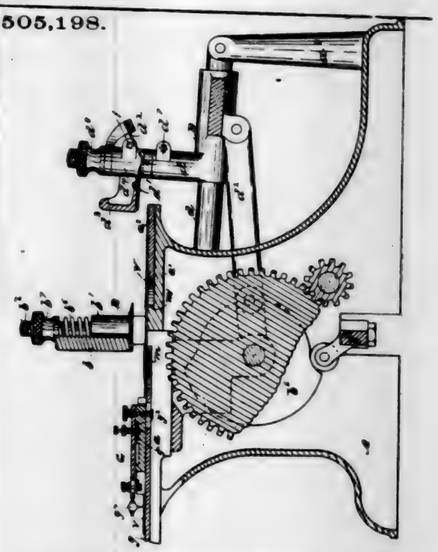
2. In a skiving machine the combination of a knife carriage, a knife holder, and a cross-bar, provided with spring fingers to press upon the stock near the knife edge, the fingers slanting upward and away from the knife, and their ends arranged to move past, but so that they cannot strike the knife edge, all substantially as described.

3. In a skiving machine the combination with bed $a^2$ sloping upward from the marker; of marker *m'* and presser-bar B as and for the purposes set forth.

4. In a skiving machine a gage, consisting of two adjustable curved arms for the throat of the vamp, and an adjustable cross-piece curved in plan and in elevation for the ends of the vamp, and a support for the arms and cross piece substantially as described.

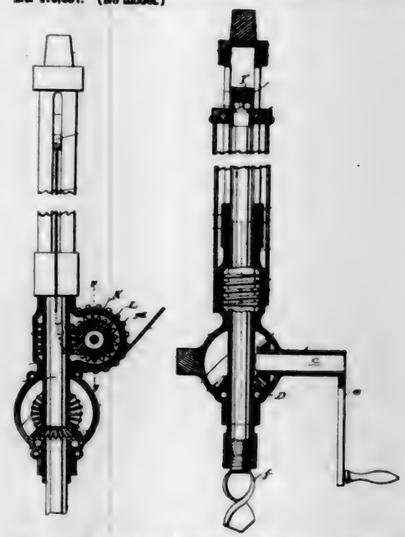
5. In a skiving machine, a gage consisting of two adjustable curved arms for the throat of the vamp; a support for the arms; a gage bar on which the support is adjustable; a pointer adjustable on the support and a scale on the gage bar, all substantially as described.

**505,198.**



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**505,199. DRILL.** CHARLES GROTE, Ottumwa, Iowa, assignor of one-half to George W. Thayer, same place. Filed Apr. 17, 1893. Serial No. 470,657. (No model.)



*Claim.*—1. In a coal drill, the combination with a rotatable and endwise-movable drill rod or shaft, and a rotatable sleeve surrounding and engaging said rod or shaft and having a worm screw; of a slide bearing for the drill rod or shaft, a shaft N, having a gear wheel meshing with the worm screw of the rotatable sleeve, and gearing intermediate of said shaft N, and the slide bearing, substantially as specified.

2. In a coal drill, the combination with a rotable drill shaft; of a shell or casing, a gear wheel journaled in the casing and adapted to receive a rotary motion; said gear having a double conical bore, or flaring from its center to opposite ends, sprocket wheels having conical hubs and bearing in the flaring bore of said gear, a slide bearing for one end of the drill shaft, and flexible connections for the sprocket wheels and bearing, substantially as specified.

3. In a coal drill, the combination with a drill rod or shaft adapted to be rotated within a tube or casing; of a sleeve or tube rotatable



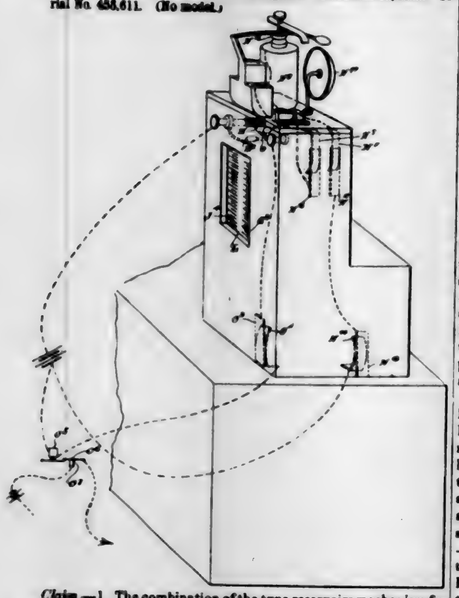
with the shaft and having an external worm gear, a gear in engagement with the worm gear, sprocket wheels adapted to receive rotation from said geering, a bearing for one end of the drill shaft, slidable in the tube or casing, and sprocket chains connecting the bearing with the sprocket wheels, whereby the drill shaft will be given a simultaneous rotary and reciprocating movement, substantially as specified.

4. The shell or casing, having one end threaded as described, in combination with the sleeve arranged therein, and having an angular bore, and also having the bevel gear and the worm gear, respectively, the crank shaft, also having a bevel gear or pinion, the slotted tube or sleeve, the coupling for the shell and sleeve, the bearing for the drill rod or shaft, the sprocket chains secured to said bearing, the gear meshing with the worm gear, and having the double conical or flaring bore, the sprocket wheels having the conical hubs, the rod or bolt passing through said hubs, and the hand wheel on one end of said bolt, and the drill rod of an angular form in cross section, all adapted to operate, substantially as specified.

5. In a drill, substantially as described, the combination with the shell or casing; of the drill rod, the slide bearing for one end thereof, the anti-friction balls carried by said bearing and receiving the inner end of the rod, the gear fixed to the sleeve, and the ball bearings interposed between the gear and casing, substantially as specified.

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**505,200. INDICATOR MECHANISM FOR TYPE-SETTING MACHINERY.** JOHN HOOKER, Beccles, England. Filed Jan. 16, 1893. Serial No. 458,611. (No model.)



*Claim.*—1. The combination of the type reservoirs mechanism for ejecting type one by one from such reservoirs and for setting them up in line—a series of movable plates ranged side by side—mechanism for moving one or other of these plates a definite distance each time that a type is ejected from one or other of the reservoirs—an incline or cam surface upon each plate—a rod held toward all the inclines by the action of a spring or gravity—a rack of ratchet teeth pawls carried by the rod engaging with this toothed rack retaining mechanism to restrain the rack from backward movement and an indicator hand carried or moved by the rack substantially as described.

2. The combination of the type reservoirs, mechanism for ejecting type one by one from such reservoirs and for setting them up in line—a series of electro magnets (one for each thickness of type used) through the coil of one or other of which an electric circuit is completed whenever a type is ejected from any reservoir.—the magnet armatures, light wires coupling these armatures to a series of plates—springs to move the plates in the opposite direction to that in which they are drawn when the armature is attracted by its magnet—stops to limit the movement of the plates—an incline or cam surface on each plate—a rod held toward all the inclines by the action of a spring or gravity—a rack of ratchet teeth pawls carried by the rod engaging with this toothed rack retaining mechanism to restrain the rack from backward movement and an indicator hand carried or moved by the rack substantially as described.

3. The combination of type reservoirs, mechanism for ejecting type one by one from such reservoirs and for setting them up in line—an electro magnet through the coil of which an electric circuit is completed whenever a type is ejected from any of the reservoirs, the magnet armature, a plate coupled by a light wire with the armature—a spring to draw the plate in the opposite direction to that in which it is drawn when the armature is attracted by the magnet, stops to limit the movement of the plate and armature—an incline or cam surface on the plate—a rod held toward the incline by the action of a spring or gravity—a rack of ratchet teeth, pawls carried by the rod engaging with this toothed rack, restraining mechanism to restrain the rack from backward movement and an indicator hand moved by the ratchet rack.

4. The combination of electro magnets E, armatures E' on axes $E^2$, arms $E^3$ on these axes, wires $E^4$ connecting these arms to plates $E^5$ having inclines upon them, springs $E^6$ drawing the plates in a direction to hold the armatures away from the magnet poles—stops to limit the movement of the plates—vertical slide F drawn downward to rest on the inclines of the plates, pawls $F^3$ carried by the slide F, slide G with racks G' of ratchet teeth upon it, soft roller H pressed against the racks and indicator hand $G^3$ moving with the slide G substantially as described.

5. The combination of electro magnets E, armatures E' on axes $E^2$, arms $E^3$ on these axes, wires $E^4$ connecting these arms to plates $E^5$ having inclines upon them, springs $E^6$ drawing the plates in a direction to hold the armatures away from the magnet poles—stops to limit the movement of the plates—vertical slide F drawn downward to rest on the inclines of the plates, pawls $F^3$ carried by the slide F, slide G with racks G' of ratchet teeth upon it, soft roller H pressed against the racks and indicator hand $G^3$ moving with the slide G—magnet P its armature on axis P', spring P'' for holding the armature away from the magnet poles, arm $P^2$ extending from axis P' with projections upon it which when the armature is attracted press back the roller H and pawls $F^3$ and allow the slide G to drop to its lowest position.

6. The combination of electro magnets E, armatures E' on axes $E^2$, arms $E^3$ on these axes, wires $E^4$ connecting these arms to plates $E^5$ having inclines upon them, springs $E^6$ drawing the plates in a direction to hold the armatures away from the magnet poles—stops to limit the movement of the plates—vertical slide F drawn downward to rest on the inclines of the plates, pawls $F^3$ carried by the slide F, slide G with racks G' of ratchet teeth upon it, soft roller H pressed against the racks and indicator hand $G^3$ moving with the slide G—slide $E^{15}$ having an incline upon it and coupled to one of the plates $E^5$ vertical slide J held down toward this incline, pawls $J^3$ carried by the slide, slide K with rack K' of ratchet teeth upon it—retaining pawls $K^3$ and indicator hand $J^4$ moving with the slide K substantially as described.

7. The combination of electro magnets E, armatures E' on axes $E^2$, arms $E^3$ on these axes, wires $E^4$ connecting these arms to plates $E^5$ having inclines upon them springs $E^6$ drawing the plates in a direction to hold the armatures away from the magnet poles—stops to limit the movement of the plates—vertical slide F drawn downward to rest on the inclines of the plates, pawls $F^3$ carried by the slide F, slide G with racks G' of ratchet teeth upon it, soft roller H pressed against the racks and indicator hand $G^3$ moving with the slide G—slide $E^{15}$ having an incline upon it and coupled to one of the plates $E^5$—vertical slide J held down toward this incline—pawls $J^3$ carried by the slide, slide K with rack K' of ratchet teeth upon it—retaining pawls $K^3$ and indicator hand $J^4$ moving with the slide K—magnet P, its armature on axis P', spring P'' for holding the armature away from the magnet poles—arm $P^2$ extending from axis P' with projections upon it which when the armature is attracted press back the roller H, the pawls $F^3$ $J^3$ and $K^3$ and allow the slides G and K to drop to their lowest positions substantially as described.

8. The combination of electro magnets E, armatures E' on axes $E^2$, arms $E^3$ on these axes, wires $E^4$ connecting these arms to plates $E^5$ having inclines upon them, springs $E^6$ drawing the plates in a direction to hold the armatures away from the magnet poles—stops to limit the movement of the plates—vertical slide F drawn downward to rest on the inclines of the plates—pawls $F^3$ carried by the slide F, slide G with racks G' of ratchet teeth upon it, soft roller H pressed against the racks and indicator hand $G^3$ moving with the slide G—contact spring M struck by the slide G when it approaches its highest position—weighted arm N against which spring M is then brought and an electric circuit thereby completed through the coil of an electric bell substantially as described.

9. The combination of electro magnets E, armatures E' on axes $E^2$, arms $E^3$ on these axes, wires $E^4$ connecting these arms to plates $E^5$ having inclines upon them springs $E^6$ drawing the plates in a direction to hold the armatures away from the magnet poles—stops to limit the movement of the plates—vertical slide F drawn downward

to rest on the inclines of the plates, pawls $F^3$ carried by the slide F, slide G with racks G′ of ratchet teeth upon it, soft roller H pressed against the racks and indicator hand $G^2$ moving with the slide G—contact arm $M^2$ raised by the slide G when it has been raised too high, contact arm O against which the arm $M^2$ is thereby brought, electro magnet $O^3$ through the coil of which a circuit is thereby completed—the magnet armature, contact arm $O^4$ and fixed contact $O^7$ substantially as described.

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**505,201. SUPPORT FOR TABLE-SCREENS.** CANDACE A. HOPKINS, Sarcoxie, Mo. Filed June 16, 1893. Serial No. 477,817. (No model.)



*Claim.*—1. A screen holder or support comprising a base, a standard rising therefrom, and horizontally disposed bars arranged in series and extending from opposite sides of the standard, to form when spread out a horizontal frame adjustable in size said bars being pivoted together and the inner ones being pivotally connected to the top of the standard, substantially as described.

2. A support or holder comprising a base, a standard rising therefrom, horizontal bars arranged in series and pivotally connected together and extending from opposite sides of the standard, the inner bars being pivotally connected to the standard, and depending supporting bars hinged to the outer end of the outer pivoted bars, substantially as and for the purpose described.

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**505,202. TOBACCO-PIPE.** JOSEPH JAQUE, St. Louis, Mo. Filed Feb. 23, 1893. Serial No. 463,579. (No model.)



*Claim.*—In combination with a pipe bowl open at the lower end, of a ferrule secured to the lower end of the bowl and having slots in opposite sides thereof with entrance arches, a plug having diametrically-situated pins projecting therefrom that are arranged to engage the said slots to lock the plug in removable connection with the bowl and close the lower end of said bowl, and a stem rising from the center of the plug and having a perforate plate at its upper end that extends upwardly into the bowl, said stem and plate being removable simultaneously with the plug, substantially as described.

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**505,208. LOOM-SHUTTLE.** JOHN W. EXELEY, Hopedale, Mass., assignor to George Draper & Sons, same place. Filed Sept. 17, 1892. Serial No. 446,173. (Model.)

*Brief.*—The shuttle contains a self-threading device consisting of a cage having a substantially cylindrical shank provided at its outer end with flanges and having a finger provided with an inclined beak, and a co-operating socketed finger to receive said beak, the shank being provided next the end of the bobbin with an inclined threading-slot.



*Claim.*—1. The described self-threading cage consisting of a slotted shank having a socketed finger, and a finger located near it and provided with a beak to enter the socket in the socketed finger, the two fingers presenting between them a slot obstructed by the said beak, the said beak being inclined downwardly to permit the descent of the weft between the fingers and past the beak, the latter also preventing the upward movement of the weft from between the fingers, substantially as described.

2. The self-threading cage containing a shank slotted diagonally upwardly and outwardly as at 7 away from the longitudinal center line of the shuttle, and having the two fingers, one having a socket and the other a beak to enter the socket, substantially as described.

3. The self threading cage having a shank provided at one side with a slot 10, and its other side with a slot 7 and a shoulder 12 at the end of said slot, said shoulder acting to arrest the weft and direct it into the said slot 7, substantially as described.

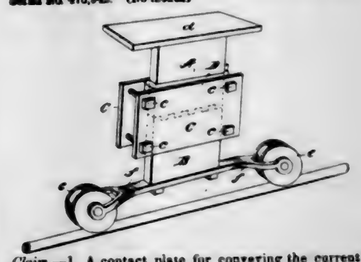
4. The metallic self-threading cage having a slotted shank, wings and fingers, one finger provided with a beak and the other with an opening for the entrance of and to partially cover said beak, combined with the shuttle body cut away substantially as described, and having a slot leading to its delivery opening as set forth.

5. In a self-threading shuttle, a shuttle body provided with an eye $a^7$ a cage having a shank, two fingers as $b^3$ and $b^5$, the under side of the finger $b^3$ being beveled downwardly and backwardly toward the shank to thus depress the thread into the eye of the shuttle body, substantially as described.

6. In a self-threading shuttle, a shuttle body provided with an eye $a^7$, a cage having a shank, two fingers as $b^3$ and $b^5$, the under side of the finger $b^3$ being beveled downwardly and backwardly toward the shank, and having its end 14 shaped to form a bearing for the thread at one side of the eye in the shuttle-body, substantially as described.

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**505,204. CURRENT-CONVEYER FOR ELECTRIC RAILWAYS.** WILLIAM LAWRENCE, New York, N. Y., assignor to the Lawrence Electric Company, same place. Original application filed Aug. 17, 1892, Serial No. 443,323. Divided and this application filed June 27, 1893. Serial No. 478,942. (No model.)



*Claim.*—1. A contact plate for conveying the current of electricity from an electric wire, said plate consisting of two separate parts tongued and grooved together, and incased within suitable insulating material, an outer casing for holding the latter, a bow shaped spring secured to the lower edge of said plate, and grooved contact wheels at its outer ends, substantially as shown and for the purposes described.

2. A contact plate formed in parts, fitted one against the other, insulating material around said parts, a casing binding said parts together, and contacts connected with one of said parts, substantially as set forth.

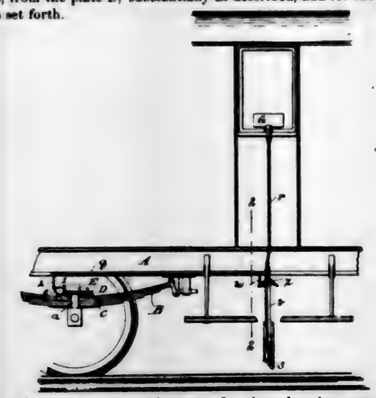
3. A contact plate formed in parts fitted together, a casing holding said parts together, insulating material between said plate and said casing, wire engaging contacts and movable connections carrying said contacts and connected with said contact plate, substantially as set forth.

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**505,205. RAILWAY-RAIL-SPLASHING APPARATUS.** GUSTAV MACK, Nuremberg, Germany. Filed July 22, 1892. Serial No. 440,804. (No model.) Patented in Germany July 9, 1891, No. 62,091.



*Claim.*—1. In a device of the character indicated, the combination with a car, of a vibratile plate D, supported at one end thereof by a spring F, valve *l*, and means for communicating motion to said valve, from the plate D, substantially as described, and for the purposes set forth.

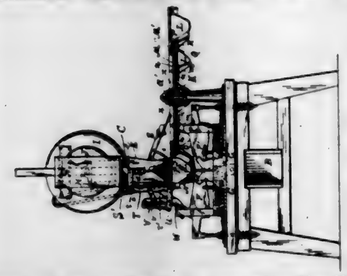


2. The combination, with a car, of a pivoted spring supported plate D, adjustable screw *n*, carried by said plate D, lever 1, reservoir G, valve *l* for controlling the discharge from said reservoir, and means for operating said lever and valve, all arranged substantially as described.

3. In a device of the character indicated the combination of a pivoted plate D, block E carried thereon, spring F contained within said block and adapted to support one end of the plate, valve *l* controlling the discharge of the coloring matter, lever 1 and means for connecting said valve and lever, all arranged so that the rebound of the plate D will cause it to operate the lever 1, substantially as and for the purposes specified.

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**505,206. FRUIT-STONING MACHINE.** PAUL MAISONNEUVE, Fruitvale, Cal. Filed Dec. 22, 1892. Serial No. 456,080. (No model.)



*Claim.*—1. The combination with the rotatable table, of bails pivoted therein and having crank arms at their ends, fruit holding half-cups secured on said bails, and spring stops secured to the table and bearing on said crank arms.

2. The combination with the rotatable table, of bails pivoted therein and having crank arms at their ends, fruit holding half cups secured on said bails, spring stops secured on the table and bearing against the under sides of the crank arms, and a rail or flange on the table extending over the crank arms.

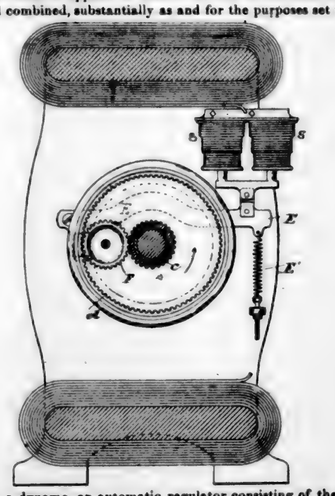
3. The combination of the table, the push rod, the standard W, the links pivoted thereto, the stop carried by said links, the knife E having an offset adapted to engage the stop, and operating mechanism all arranged and operating substantially as described.

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**505,207. AUTOMATIC REGULATOR FOR DYNAMO-ELECTRIC MACHINES.** ORVIS P. PHILBRICK, Somerville, Mass. Filed Apr. 2, 1892. Serial No. 427,456. (No model.)

*Claim.*—1. In a dynamo, the brake E adapted to be operated by the solenoids S, S, and spring E′, in combination with the wheels C and D arranged and adapted to change the position of the commutator relatively to the armature, by means of a train of gears, connecting said wheels C and D with said commutator, substantially as and for the purposes set forth.

2. In a dynamo, an automatic regulator, adapted to be operated by the action of the main current of the machine through suitable means, and consisting of a brake, arranged to contact with either one of two loose wheels, said wheels being connected with the commutator of the dynamo, by a train of gears, and adapted to change the position of the commutator relatively to the armature, according as the said brake is applied to retard the one or the other of said wheels, all combined, substantially as and for the purposes set forth.



3. In a dynamo, an automatic regulator consisting of the combination of the brake E, adapted to be operated by suitable means by the action of the main current, the loose wheels, C and D, the train of gears, c, F. G. H. I. J. L. M. and the commutator A, all arranged as described and substantially as set forth.

4. In a dynamo, the brake E, arranged to be moved by the current in the main circuit by suitable means, the commutator the wheels C and D, a train of gears connecting said wheels with the commutator in combination with the telescopic connecting rods *k k′*, and insulator N, all combined and adapted to operate substantially as and for the purposes set forth.

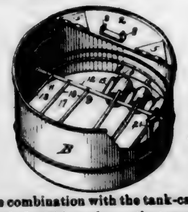
5. In a dynamo, the rod *k k′* having a telescopic connection and pivotally secured to the commutator or the commutator plate and the armature or its connections substantially as and for the purposes set forth.

6. In a regulator for dynamo electric machines, having a variable field, the combination of a commutator capable of rotating on its shaft relatively to the armature, a train of gears connecting therewith, loose wheels upon main shaft in said train, a brake for retarding the movement of either of said wheels and a magnetic device for controlling the brake, substantially as described.

7. In combination with a dynamo, the connecting rod *k, k′*, pivotally connected at each end, the insulating material N, the hub *p* and the clasp *n*, the said parts suitably arranged to form a movable connection between the commutator and the armature, substantially as and for the purposes set forth.

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**505,208. TANK-CAN FOR VARNISH, &c.** CHARLES L. WAGANDT, Baltimore, Md., assignor to Keen & Hagerty, same place. Filed Apr. 11, 1893. Serial No. 469,953. (No model.)



*Claim.*—1. The combination with the tank-can, of the removable support and drip rack 9 within and near the top of the tank, adapted to support the vessel to be filled and having the bar or rod 13 to hold the dipping measures in an inclined position, substantially as shown and described.

2. The combination with the tank-can formed in two separable sections, of the support within the upper section, adapted to support

the vessel to be filled and the drip rack 13 to hold the dipping measures in an inclined position substantially as shown and described.

3. In a tank for the purpose described, the removable shelf 9 adapted to be supported in, and near the top of the tank having the rack 13 at the side of said shelf and the support 17, substantially as shown and described.

4. In a tank-can for the purposes described, the combination with the can, of the removable shelf 9 adapted to be supported in and near the top of the tank having the grated or open support 17, the drip rack 13 and the vertical bearing 20 for the measuring bar, substantially as set forth.

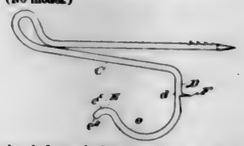
5. The combination with the tank-can having the inwardly extending flange or rib 10 and the lugs 11, 11, situated by said rib at opposite sides of the tank of the removable shelf 9 having the support and drip rack, and adapted to be retained in place by said rib and lugs substantially as shown and described.

6. The combination with the tank-can having the cover 3, and the hinge rod 4, of the support 6 having a sleeve inclosing said rod and adapted to sustain the cover, substantially as shown and described.

7. The combination with the tank-can having the cover 3 and the hinge rod 4, of the support 6 having a sleeve inclosing said rod and adapted to sustain the cover, and the lugs 8, 8 confining the base of said support, substantially as shown and described.

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**505,209. COAT AND HAT HOOK.** ALBERT WHITE, Lowell, Mass., assignor to Frederick Taylor, same place. Filed Oct. 13, 1891. Serial No. 408,430. (No model.)

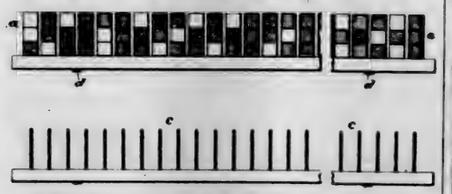


*Claim.*—1. A hook formed of wire and having a supporting-point which extends rearwardly from the back thereof, between the ends of the wire and is raised from the body of said wire, as and for the purpose specified.

2. A coat and hat hook formed of wire and having an attaching-point, an upper hook, an inclined brace under said upper hook and a lower hook, below said brace, and having a supporting-point which extends rearwardly from the back of said lower hook between the ends of said wire and is raised from the body of said wire, as and for the purpose specified.

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**505,210. PUZZLE.** NORTH S. WORLEY, Evansville, Ind. Filed May 19, 1893. Serial No. 474,795. (No model.)



*Claim.*—1. A puzzle, comprising three distinct sets of blocks, beads or cylinders, of equal number, and a frame provided with wires or pins for holding the blocks, beads or cylinders, substantially as and for the purpose set forth.

2. A puzzle comprising three distinct sets of blocks, beads or cylinders, each set containing twenty-seven parts, and a frame provided with twenty-seven wires or pins each, for holding three blocks, beads or cylinders, said blocks, beads or cylinders being adapted to be arranged on said wires or pins in such manner as that no two wires or pins will appear alike, when filled, substantially as and for the purpose set forth.

3. A puzzle, comprising a base or strip provided with wires or pins, pivoted supports for the base or strip, and blocks, beads or cylinders adapted to be arranged on said wires or pins, substantially as, and for the purpose set forth.

4. A puzzle, comprising a base or strip provided with pivoted buttons, and wires or pins for supporting blocks, beads or cylinders, substantially as and for the purpose set forth.

5. A puzzle, comprising a series of spaced wires or pins, and several distinct sets of removable objects of equal number, adapted to be received by said wires or pins, substantially as set forth.

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**505,211. GLASS-TUBE CUTTER.** AUSTIN ADAMS, Jr., Orange, N. J. Filed June 6, 1891. Serial No. 395,334. (No model.)



*Claim.*—1. A hand glass cutter consisting of two jaws flexibly connected at one end, and constructed and arranged to move with an articulating movement, and carrying at the other ends respectively a glass cutter and a suitable bearing opposite the cutter, the cutter carrying bar being provided with a gage block and handle integral therewith adjustable along the jaw.

2. A hand glass cutter consisting of two jaws flexibly connected by a spring consisting of a double coil and carrying at the other ends respectively a glass cutter and a suitable bearing opposite the cutter, the cutter carrying bar being provided with a gage block and handle integral therewith adjustable along the jaw.

3. A hand glass cutter consisting of two jaws flexibly connected at one end, and constructed and arranged to move with an articulating movement, and carrying at the other ends respectively a glass cutter and a suitable bearing opposite the cutter, the tool being also provided with an integral handle and guide movably mounted upon one jaw of the same and located forward of the said flexible connection.

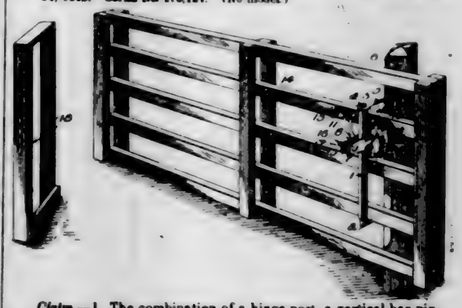
4. A hand glass cutter consisting of two jaws flexibly connected by a spring consisting of a double coil and carrying at the other ends respectively a glass cutter and a suitable bearing opposite the cutter, the tool being also provided with an integral handle and guide movably mounted upon one jaw of the same and located forward of the said connection.

5. The combination of two jaws flexibly connected at one end and carrying at the other ends respectively a glass cutter and a suitable bearing opposite the cutter, the cutter carrying jaw being provided with a gage block adjustable along the jaw and provided with two projecting bars for guiding the opposite jaw, and with a projecting integral handle whereby pressure applied upon the outside of said handle will lock said guide block upon the bar.

6. The combination of two jaws flexibly connected at one end by a spring consisting of a double coil and carrying at the other ends respectively, a glass cutter and a suitable bearing opposite the cutter, the cutter carrying jaw being provided with a gage block adjustable along the jaw and provided with two projecting bars for guiding the opposite jaw, and with a projecting integral handle whereby pressure applied upon the outside of said handle will lock said guide block upon the bar.

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**505,212. GATE.** THOMAS J. ANDRE, Wauseon, Ohio. Filed May 31, 1893. Serial No. 476,127. (No model.)



*Claim.*—1. The combination of a hinge-post, a vertical bar pivotally connected therewith, and a vertically-adjustable hanger having a horizontal roller and provided with a clamp securing it to the vertical bar, substantially as described.

2. The combination of a hinge-post, a vertical bar pivotally connected therewith, a vertically-adjustable hanger having a horizontal spindle and provided with a clamp arranged on and engaging the vertical bar, a vertical roller arranged on the spindle, and a gate supported on the roller, substantially as described.

3. The combination of a hinge-post, a vertical bar pivotally connected therewith, a vertically-adjustable hanger having a horizontal spindle and provided with horizontal arms terminating in vertical spindles, means for securing the hanger to the bar, rollers arranged on the spindles, and a gate arranged on and supported by the rollers, substantially as described.

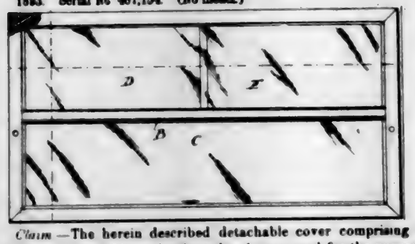


4. The combination of a hinge-post, a vertical bar pivotally connected therewith, a vertically-adjustable hanger provided with a clamp to secure it to the bar and having a horizontal spindle and provided with oppositely-disposed horizontal arms having vertical spindles, rollers arranged on the spindles, and a sliding and swinging gate mounted on and supported by the rollers, substantially as described.

5. The combination of a hinge-post provided with an upper horizontal eye and having a lower vertical pintle, a vertical rod provided at its ends with sockets and mounted on the pintle, a bolt or pin arranged in the eye and the upper end of the bar, a hanger comprising a clamp receiving and engaging the vertical bar, a horizontal spindle and oppositely-disposed arms terminating in vertical spindles, a vertical roller arranged on the horizontal spindle, a gate supported by the vertical roller, and horizontal rollers arranged on the vertical spindles and forming a frictionless bearing for the gate, substantially as described.

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**505,213. COVER FOR BOXES.** JAMES R. BARRY, Syracuse, assignor of one-half to John A. Anger, New York, N. Y. Filed Mar. 22, 1893. Serial No. 467,154. (No model.)



*Claim.*—The herein described detachable cover comprising a frame having one of its ends adapted to be removed for the purpose of inserting new panes within the cover, a longitudinal central division piece provided with a groove to receive the stationary pane of glass, the upper parts of said cover and division piece being provided with a groove adapted to receive the pane of glass, and one end of said groove being provided with a recess for the purpose of holding one pane stationary and allowing the other pane to travel in the main groove over it.

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**505,214. LOCK.** JOHN T. BEATTY, Philadelphia, Pa. Filed Jan. 19, 1893. Serial No. 459,026. (No model.)



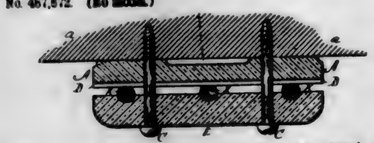
*Claim.*—1. The combination with a lock and its bolt, of a flexible key, and a case adapted to hold the shank of the key when folded, substantially as set forth.

2. The combination with a lock and its bolt, of a flexible key, case, and a cover for the case, substantially as and for the purpose specified.

3. The combination with an escutcheon and key bed therein, of a cover movably secured to the same, substantially as and for the purpose specified.

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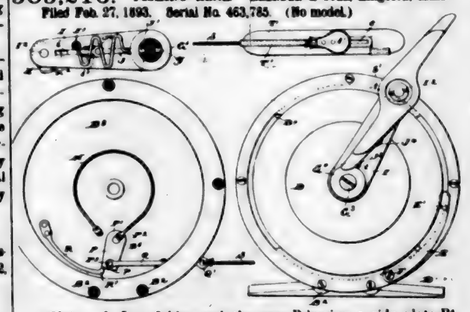
**505,215. CLEAT FOR HOLDING A PLURALITY OF INSULATED ELECTRIC WIRES.** ELISHA W. BUFFINTON, Fall River, Mass., assignor of one-half to Albert F. Dow, same place. Filed Mar. 27, 1893. Serial No. 467,872. (No model.)



*Claim.*—In a cleat for holding a plurality of insulated electric wires, the combination with the cap or cleat proper E provided with grooves H for receiving the wires, of the base A having its under surface formed into longitudinal continuous grooves D, said cap and base being provided with coincident openings for the reception of screws for clamping the wires between them, substantially as described.

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**505,216. FISHING-REEL.** LEANDER S. COLE, Kingston, Mass. Filed Feb. 27, 1893. Serial No. 463,785. (No model.)



*Claim.*—1. In a fishing-reel, the case B having a side plate $B^4$ with a large aperture adapted to allow the spool to be introduced and removed therethrough, and with a removable head D and the partial screw-threads $D^3$ for securing and releasing the latter at will, as herein specified.

2. In a fishing reel, the case B having a side-plate $B^4$ with a large aperture adapted to allow the spool to be introduced and removed therethrough, and with a removable head D and provisions for securing and releasing the latter at will by means of partial screw-threads $D^3$ and with a dog E adapted to be engaged in nicks *b*, *d*, and easily inserted and removed, all substantially as herein specified.

3. In a fishing-reel, the combination with a removable head D, having internal gear D', of a spool C having a hollow center and a pinion $C^3$, a central shaft G carrying a cross-bar G' and studs $G^3$ and gears H, arranged for joint operation all substantially as herein specified.

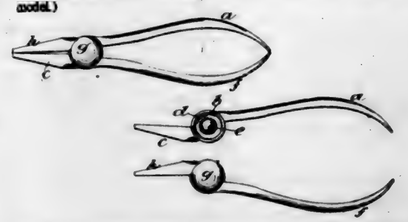
4. In a fishing-reel, having a shaft G and suitable gearing connecting therefrom to a spool C, a loosely connected crank I and a dog J', spring $J^3$ and the stud $J^4$ for engaging and releasing such crank, in combination with each other and with the segment $K^3$ carried on the sleeve K adapted to be turned relatively to the crank in the act of operating the crank, all arranged for joint operation substantially as herein specified.

5. In a fishing-reel, having a spool carrying a drum C, a brake-band M adapted to act on such drum, a thumb-piece U mounted on a separate plate T fixed to the rod at another point and the cord S and link Q from such thumb-piece to the brake lever P for allowing the brake to be applied and released, by the hand grasping the pole beyond the reel, as herein specified.

6. In a fishing-reel, a brake-band M and operating device comprising the brake-lever P, disk $P'$ and pin $P^3$ connecting the brake-band with said lever, adapted to serve at will, in combination with the spring-dog R R', and roughened surface *p* on the lever P, engaging together when required, for holding such device automatically to serve as a drag, all substantially as herein specified.

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**505,217. PLIERS, NIPPERS, OR SIMILAR TOOL.** CHARLES EISELE, Newark, N. J. Filed Oct. 1, 1892. Serial No. 447,536. (No model.)



*Claim.*—1. A two-part tool having a hinge comprising a flattened circular internal portion cast with symmetrical projections and depressions, and an exterior portion cast surrounding the core formed by said flattened circular portion, substantially as described.

2. A two-part tool comprising an inner and outer member the latter cast surrounding the former at the joint or hinge, and the parts being cast with co-acting faces at such point, substantially as described.

3. A tool comprising handles, jaws and a hinge or joint, the lat-

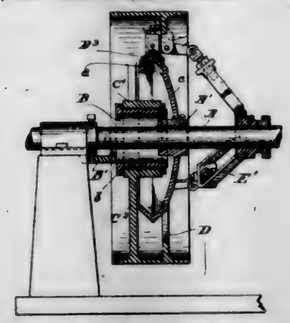
ter formed by casting one member around the other, substantially as described.

**505,218. CLUSTER-SETTING FOR GEMS.** RUDOLPH FUCHS, New York, N. Y. Filed Apr. 11, 1893. Serial No. 469,886. (Model.)



*Claim.*—The cluster setting for gems, comprising a ring portion, a plurality of projections extending outwardly from the ring portion and disconnected with one another save at the ring portion from which they emanate, said projections having branches at their outer ends, which together with the projections serve to form the outer and side walls of the gem opening, substantially as set forth.

**505,219. CLUTCH.** JAMES C. GIBSON, San Francisco, Cal. Filed Apr. 26, 1892. Serial No. 430,806. (No model.)



*Claim.*—1. In a friction clutch pulley, the combination with the operating shaft, a driving disk secured to and rotating therewith, a stationary sleeve through which the shaft extends, a pulley wheel having its hub, fitting over said spindle, a flange inwardly projecting from the rim of the wheel, levers fulcrumed to said flange, the friction shoes attached to the inner end of the levers, said shoes designed to engage with rim of the driving disk, of the sleeve loosely mounted upon the operating shaft, and of suitable mechanism forming connection between the fulcrumed levers and movable sleeve.

2. In a friction clutch pulley, the combination, with the operating shaft, a driving disk secured to and carried by the shaft, the pulley wheel supported when idle independent of the shaft, the friction shoes for engaging rim of driving disk, the levers for radially moving the shoes, and the sleeve loosely mounted upon the operating shaft, of suitable device forming connection between sleeve and gripping lever for operating the friction shoes, in order to throw the shoes in or out of contact with the driving disk.

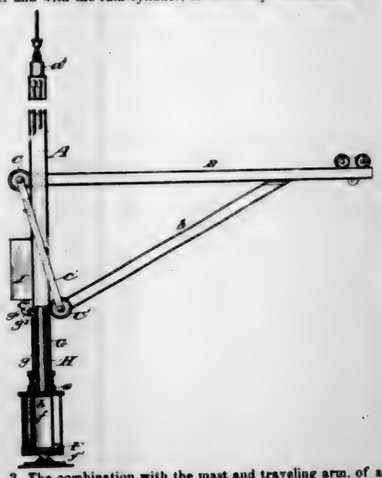
3. In a friction clutch pulley, the combination with the operating shaft carrying a driving disk, the pulley wheel, the supporting sleeve for holding the wheel independent of the shaft when same is idle, shoes for engaging with the driving disk, of mechanism for throwing the shoes in or out of engagement, and of the sleeve loosely working on the operating shaft, said shoes, operating mechanism and sleeve forming connection with the rim of the pulley wheel, so that when the wheel is idle, the shoes and operating mechanism and sleeve will likewise remain idle.

4. In a friction clutch pulley, the combination, with the operating shaft, a driving disk secured to and carried by the shaft, the pulley wheel, when idle, supported independent of the operating shaft, gripping mechanism secured to and carried by said pulley wheel, said mechanism being adapted to frictionally engage with the driving disk, the sleeve loosely mounted upon the operating shaft, of suitable devices forming connection between the sleeve and gripping mechanism of the wheel, said devices and gripping mechanism remaining idle with the wheel.

**505,220. STEAM HYDRAULIC CRANE.** WILLIAM S. HALSEY, Allentown, Pa. Filed Jan. 9, 1893. Serial No. 457,744. (No model.)

*Claim.*—1. The combination with the mast mounted to turn, and the traveling arm thereon, of a hydraulic cylinder with its plunger for operating the traveling arm, and a pump cylinder and piston for forcing the liquid to the hydraulic cylinder, the said hydraulic and pump cylinders being mounted to turn with the mast, substantially as set forth.

2. In combination, the mast, the traveling arm, the steam cylinder at the base of the mast, the ram cylinder extending upwardly from the steam cylinder along the mast, the ram seated within the ram cylinder and engaged with the traveling arm, the piston adapted to reciprocate within the steam cylinder, means for admitting steam to the cylinder upon one side of the piston, an inclosed volume of liquid between the piston and the ram cylinder, a liquid supply tank located above the steam cylinder and liquid conduits with their valves connecting the supply tank and inclosed volume of liquid with each other and with the ram cylinder, substantially as set forth.



3. The combination with the mast and traveling arm, of a ram cylinder, a ram seated within the cylinder and engaged with the arm, a steam cylinder at the side of the ram cylinder, a steam piston having a hollow stem adapted to fit and slide over the end of a plunger, a liquid supply tank, a conduit leading from within the hollow piston stem to the ram cylinder, a check valve in the conduit, a conduit leading from the supply tank to the hollow piston stem, a check valve in the conduit, a conduit leading from the ram cylinder to the supply tank, a valve in said conduit under the control of the operator, and means for admitting steam to the steam cylinder, substantially as set forth.

**505,221. MACHINE FOR BUFFING METAL TUBES.** THOMAS HARPER, Brooklyn, N. Y., assignor to William S. Hurley and David Alexander, same place, and Asa P. Meylert, New York, N. Y. Filed July 5, 1892. Serial No. 439,009. (No model.)

*Claim.*—1. The combination of a rotary buffing wheel, two sets of axially rotating feed-wheels, each set being composed of three wheels the spindles of which are supported at opposite inclinations to the rod or tube to be buffed, chucks for supporting the spindles of said feed-wheels, means for adjusting said chucks to the rod or tube to be buffed, a table on which the chucks are supported, and means by which the table is adjusted so as to bring the rod or tube to be buffed in proper relative position toward the buffing wheel, substantially as set forth.

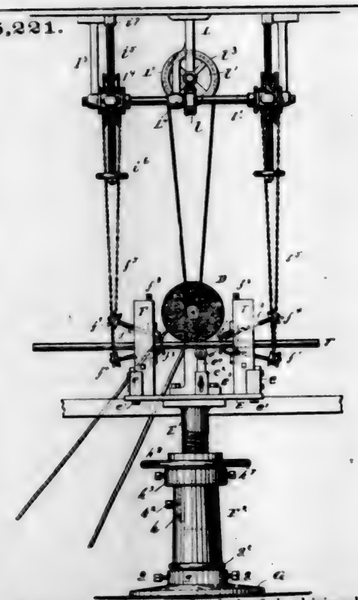
2. The combination with a rotary buffing-wheel, of two sets of rotary feed-wheels arranged adjacent to the buffing-wheel, chucks for supporting the inclined shafts of said feed-wheels, a table for supporting said chucks, a threaded standard attached to said table, an interiorly-threaded nut engaging the threaded standard and a tubular standard attached on the base-plate, said tubular standard supporting the adjusting-nut of the threaded standard, substantially as set forth.

3. The combination with a rotary buffing-wheel, of two sets of rotary feed wheels, inclined spindles for said feed-wheels, chucks provided with bearings for supporting said inclined spindles, a vertically-adjustable table to which said chucks are attached, a threaded standard attached to the under side of the table, a tubular standard into which the threaded standard telescopes, means for adjusting the threaded standard into the tubular standard and a base-plate having a socket provided with set-screws for receiving the tubular standard and for adjusting the same on its axis, substantially as set forth.

4. The combination with a rotary buffing wheel, of two sets of inclined feed-wheels, inclined spindles to which two feed-wheels are attached, grooved wheels at the upper ends of said spindle, driving-chains passing over said grooved wheels, a pivoted arm provided with idlers for said driving-wheels, means for adjusting said pivoted arm

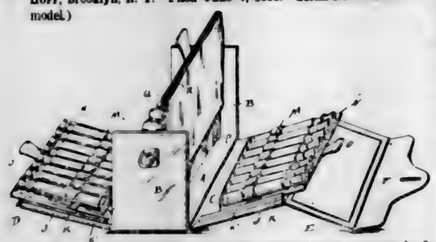


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higher or lower so as to take up the slack of the driving-chain, a shaft having driving pulleys for the driving-chain, a worm gear wheel on the shaft of the driving-chain and a transmitting shaft to which rotary motion is imparted by suitable belt transmission provided with a worm for meshing with said worm-gear, substantially as set forth.

**505,222. PHYSICIAN'S VIAL-CASE.** AUGUSTUS HOFF and HENRY HOFF, Brooklyn, N. Y. Filed June 7, 1893. Serial No. 476,811. (No model.)



*Claim.*—1. The combination, with a body frame composed of a base and fixed ends, of hinged sides, metal clips embracing the end edges of said sides and provided on the inner surface with L-shaped flanges, and removable plates provided with vial holding loops, which removable plates are passed under the flanges of the clip and thus held on the inner surface of the sides of the case, substantially as set forth.

2. In a physician's vial case, the combination, with a frame constructed with a bottom plate and fixed ends, of vial receptacles between said ends, vertical U-shaped clips fastened to the inner surfaces of the ends, and a removable plate having its edges slipped into said U-shaped clips, substantially as set forth.

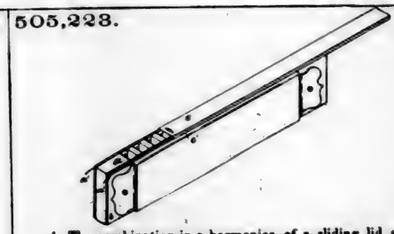
**505,223. HARMONICA.** GUSTAVE HYMAN, New York, N. Y., assignor to Strauss, Sachs & Co., same place. Filed May 11, 1893. Serial No. 473,833. (No model.)

*Claim.*—1. A harmonica provided with a removable lid adapted to be projected over the perforated mouth piece, substantially as specified.

2. The combination of a harmonica having grooves at the sides of the mouth piece, with a flanged sliding lid engaging such grooves, substantially as specified.

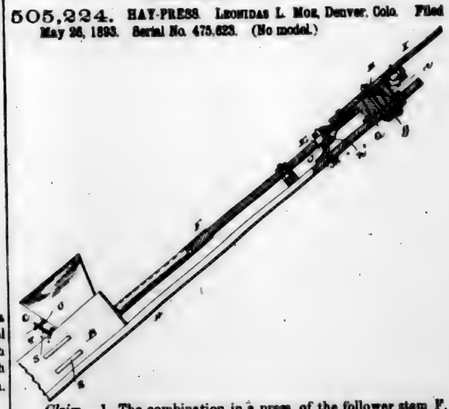
3. The combination in a harmonica of a sliding lid over the mouth piece with sliding covering plates over the reed plates that engage the sliding lid, substantially as specified.

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4. The combination in a harmonica of a sliding lid and back with sliding covering plates engaging the lid and back, substantially as specified.

**505,224. HAY-PRESS.** LEONIDAS L. MOE, Denver, Colo. Filed May 26, 1893. Serial No. 475,623. (No model.)

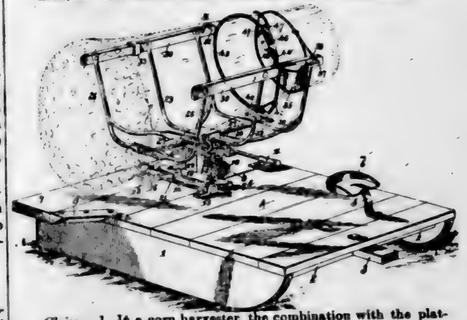


*Claim.*—1. The combination in a press, of the follower stem F, the head E projecting from one side thereof, the roller carrier H and the lever M pivoted to the base and in operative connection with the head E, substantially as described.

2. The combination in a press, of the head E, the roller carrier H operating on the head, the lever M pivoted to the base, and the link N connecting the head and lever, substantially as described.

3. The combination in a press, of the head E, spider H, having forked arms cut away on one side, and the rollers set into said arms, and acting on the head E, substantially as described.

**505,225. CORNSTALK-SHOCKER.** OSCAR D. MOWRER, Claremont, Ill. Filed Dec. 24, 1892. Serial No. 456,254. (No model.)



*Claim.*—1. In a corn harvester, the combination with the platform thereof, of a post swiveled therein, U-shaped standards 26 located at opposite sides thereof, and curved standards 29 located therebetween and bolted to the post, opposite side-bars 30 connecting the upper ends of said standards 26 and 29, oppositely disposed U-shaped and substantially horizontal braces 27 bolted to the opposite sides of the post and connecting the terminals of the outer U-shaped standards 26, and a rod passed through the post and through and connecting the U-shaped standards 26 and the braces 27, the whole combining to form a cradle, substantially as specified.

2. In a corn-harvester, the combination with the platform thereof.

of a post rising therefrom, a U-shaped cradle mounted on the post and provided with opposite side-bars, one of said side bars being provided near one end with a notch and below the same with a pin, and the other of said side-bars provided with a cord-carrying basket, and with a perforation for said cord, and adapted to removably receive a peg mounted in the perforation, substantially as specified.

3. In a corn-harvester, the combination with a U-shaped frame, having a curved wire guide secured to one end thereof, and terminating in eyes, a binding-rope passed through the wire-guide, a pulley secured to one end of the rope and provided with a spring cleat at its opposite end for engaging the free end of the rope, substantially as specified.

4. The combination in a corn-harvester, of a U-shaped frame, a rod passing through the frame and extending beyond the same and provided with a cross-pin, a clip having an eye engaging the pin, a curved rod having eyes and engaging the clip, and a rope passed through the eyes of the rod a pulley on one end of the rope, and spring-clips on the end of the pulley.

5. In a corn-harvester, the combination with the platform thereof having an opening, and a plate hinged therein, of a cradle carried by the platform, and means for elevating said plate, substantially as specified.

6. In a corn-harvester, the combination with the platform thereof having an opening, a plate hinged at its outer edge to the opening, a rock-shaft mounted in bearings in front of the free end of the platform, a bail mounted rigidly on the rock-shaft terminating at its outer end in a treadle and having its inner ends bent downwardly to form levers for engaging the free edge of the plate, of a cradle swiveled in the trap-door, substantially as specified.

7. In a corn-harvester, the combination with the platform thereof having an opening, a plate hinged at its outer edge to the opening and provided at its free edge with a cross-cleat for engaging the platform, bearings located on the platform, a rock-shaft mounted in the bearings, a U-shaped bail secured to the rock-shaft and having its terminals disposed at an angle thereto, and engaging the front edge of the plate, a spring-catch pivoted to the edge of the opening, connecting-devices between the catch and the pin on the rock-shaft, of a post swiveled in the plate, and a cradle carried by the post, substantially as specified

8. In a corn-harvester, the combination with the platform thereof having an opening, the plate hinged therein, a lever fulcrumed near the front edge of the plate upon the platform and having its inner end engaging the free edge of the plate, of a cradle swiveled on the door, substantially as specified

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**505,226. CATERPILLAR-TRAP.** THOMAS D HOOBE, Camden, N. J. Filed June 1, 1893. Serial No. 476,203. (No model.)



*Claim.*—1. A caterpillar-trap composed of a divided double-cylinder having a central-opening for embracing a tree-trunk, and a bottom between the cylinders forming an annular space capable of holding a sticky-liquid, in combination with bolting-flanges which are higher at the ends than at the middle, for the purpose shown and described.

2. A caterpillar-trap composed of a divided double-cylinder having a central opening for embracing a tree-trunk, and a bottom between the cylinders forming an annular space capable of holding a sticky-liquid, bolting-flanges which are higher at the ends than at the middle, and a rain-shedder embracing the same tree trunk at a suitable distance above the trap, for the purpose shown and described.

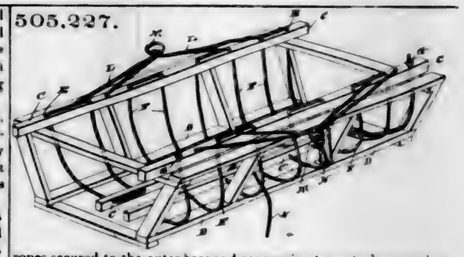
3. A caterpillar trap having its members provided on their inner sides with the bolting-flanges C which are united laterally together and constructed to form the collar *c* which is adapted to embrace the trunk of a tree, each section having its bolting flange extending radially from the trunk-collar to the vertical segmental shell and forming with the flat bottom of the member a semi-circular receptacle, substantially as and for the purposes described

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**505,227. HAY-SLING.** BERNARD G. OLSON, Chinook, Mont. Filed Dec. 17, 1892. Serial No. 455,430. (No model.)

*Claim.*—The combination in a hay net of the separate duplicate sections comprising flexibly and adjustably connected net bars the outer bars of each section being longer than the other inner bars and adapted to have their projecting ends rest on the top ends of a hay rack to support the net open within said rack, equalizing connecting

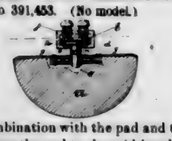
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ropes secured to the outer bars and converging to central connecting loops or eyes, one of which is smaller than the other and is adapted to be passed therethrough, a tapered trip pin adapted to be inserted in the smaller loop at one side of the larger loop to connect the same, a trip rope connected to said pin, equalizing attaching ropes secured to the outer bars and having central loops, and a strap rope secured at one end to one of said loops and adapted to be looped across a bundle and through the opposite loop, substantially as set forth

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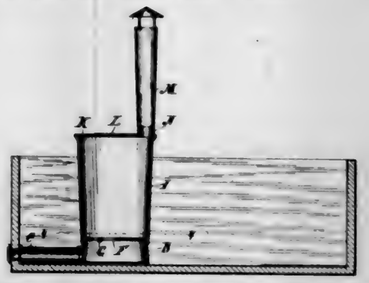
**505,228. TRUSS.** DANIEL POMEROY, Brooklyn, N. Y. Filed May 4, 1891. Serial No. 391,453. (No model.)



*Claim.*—The combination with the pad and the truss-band, of the standard for connecting the pad to the said band, said standard being pivoted upon a bar arranged in a recess in the said pad transversely thereof, and secured to the inside of the pad-plate, and said plate having a hole to receive the standard and allow lengthwise oscillation of the pad, substantially as described

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**505,229. STOCK-TANK HEATER.** CARL P. RAVN, Delavan, Wis. Filed Jan. 23, 1893. Serial No. 459,411. (No model.)



*Claim.*—1 A stock-tank heater comprising a hollow base or pan forming an ash receptacle, the outer surface of which base tapers inwardly upwardly, a draft flue leading into the hollow base, a removable grate supported on the base near its top, and a combustion chamber casing made to fit water tight on the tapering surface of the base and to be removable therefrom, substantially as described.

2 A stock-tank heater consisting of a hollow base or pan forming an ash receptacle the outer surface of which base tapers inwardly upwardly, a draft flue leading into the hollow base, a removable grate supported on the base near its top, a combustion chamber casing made to fit water tight on the tapering surface of the base and to be removable therefrom and a removable cover on the case of the combustion chamber provided with a kettle hole and lid and a smoke pipe leading from the combustion chamber, substantially as described.

3. A stock-tank heater comprising a hollow base or pan forming an ash receptacle, the outer surface of which base tapers inwardly upwardly, a draft flue leading into the hollow base, a removable grate supported on the base near its top and a combustion chamber casing tapering inwardly downwardly made to fit water tight on the tapering surface of the base and removable therefrom, substantially as described.

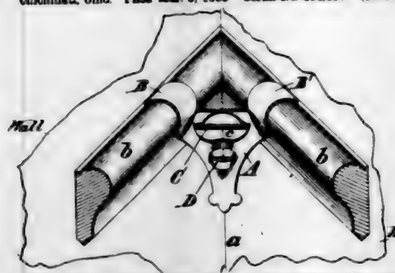
4. The combination with a stock-tank of a heater, comprising a hollow base having a surface tapering inwardly upwardly, lugs for securing the base to the bottom of the tank, a pipe forming a part of a draft flue exteading from the base to and through the side of the tank, a grate supported on the base at the top thereof, a case for the



combustion chamber tapering inwardly downwardly and fitted water tight but removable on the base, a removable cover on the case and a smoke flue leading from the combustion chamber, substantially as described.

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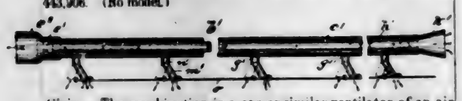
**505,230. CORNER PICTURE-HANGER.** JOSEPHINE M. ROBINSON, Cincinnati, Ohio. Filed Mar. 6, 1893. Serial No. 464,857. (No model.)



*Claim.*—In a corner hanging-fixture for pictures, the combination of a flat triangular plate A with its apex inverted, lateral, angled or flaring suspension-hooks B, B', constructed one at either upper corner of said plate, suspension-hook C and eye or loop D, said hook C and loop being turned or struck up centrally in the same vertical plane in said plate, substantially as herein shown and described.

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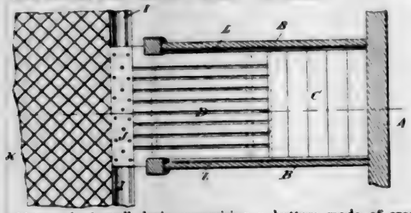
**505,231. INDUCTION APPARATUS FOR VENTILATING.** MARTIN R. RUBLE, Newark, N. J., assignor to the Ruble American Blower and Injector Company, same place. Filed Aug. 23, 1892. Serial No. 443,906. (No model.)



*Claim.*—The combination in a car or similar ventilator of an air tube *c'* provided with a series of movable tubes *m' n'* communicating with the interior of the car and having at one end a discharge *c' c''* leading to the exterior of the car, with the tube *K'* incased by said tube *c'* and having at one end a receiving funnel *K'* in communication with the external air and having its other end open and situated near the discharge end *c' c''* of the incasing tube *c'*, substantially as described.

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**505,232. STALL-DRAIN.** HENRY SCHIFFER, New York, N. Y. Filed Mar. 20, 1893. Serial No. 466,598. (No model.)



*Claim.*—1. A stall drain comprising a bottom made of cross boards and longitudinal slats connected at their upper ends with the lowermost of the said cross boards and forming top channels between adjacent slats, battens connecting the said slats with each other at the under side and angle irons adapted to be fastened to the sides of the stall and adapted to engage with their horizontal flanges the top surface of the said bottom at the sides thereof to securely hold the said bottom to the floor substantially as shown and described.

2. A stall drain provided with a bottom comprising a series of cross boards and a drain composed of a series of longitudinal slats in alignment with the said cross boards, each slat being formed on top and on one edge thereof with a rabbet exteuding throughout the length of the slat, and partly overlapped by an undercut on the next adjacent slat so as to form a longitudinal channel between each two adjacent slats and on the top thereof substantially as shown and described.

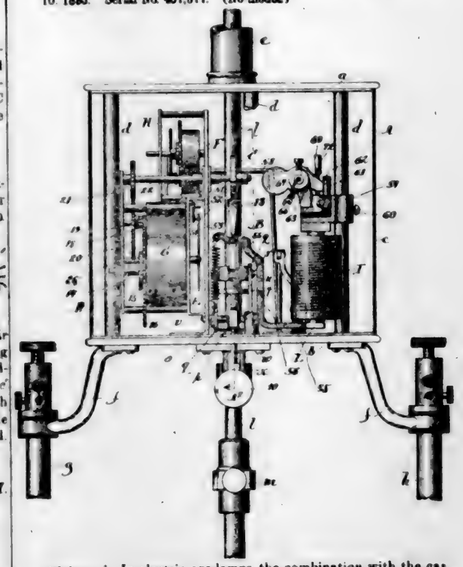
3. A stall drain comprising a bottom made of cross boards and longitudinal slats forming channels between adjacent slats, the upper ends of the slats being connected by tongue and groove with the end cross board, battens connecting the slats with each other at the under side, and angle irons adapted to be secured to the sides of the stall and resting with their horizontal flanges on the end slats and the sides of cross boards substantially as shown and described

4. A stall drain comprising a cement floor formed with a transverse gutter, a cover for the said gutter and a bottom extending from the gutter to the head of the stall, the said bottom being inclined and made of cross boards and longitudinal slats each formed on one side with a rabbet overlapped by an undercut on the next adjacent slat for forming longitudinal channels in the top of the slats and between each two adjacent slats and battens secured to the under side of the slats substantially as shown and described.

5. A stall drain provided with a drain made of slats placed firmly alongside one of the other, each slat being formed on top and on one edge thereof with a rabbet extending throughout the length of the slat and partly overlapped by an undercut on the next adjacent slat so as to form a longitudinal channel between each two adjacent slats and on the top thereof substantially as shown and described.

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**505,233. ELECTRIC-ARC LAMP.** CHARLES SCHMID, Chicago, Ill., assignor of one-half to Pancratius Friedrich, Jeanette, Pa. Filed Jan. 10, 1893. Serial No. 457,877. (No model.)



*Claim.*—1 In electric arc-lamps the combination with the carbon and its mechanically suspended retaining-clamp, of the mechanical trip-feed device, and the separate mechanical time-control device co-acting at pre-determined intervals to release the trip-feed device, substantially as described.

2. The combination with the carbon and its retaining clamps of the mechanical suspender therefor, the intermittent mechanical trip-feed device and the separate mechanical time-control device co-acting at pre-determined intervals to release the trip-feed, substantially as described.

3. In electric arc-lamps the combination with the carbon and its retaining clamps, of the mechanical suspender therefor having a projecting detent, and the intermittent mechanical trip-feed device provided with a ratchet engaging said detent, substantially as described.

4. In electric arc-lamps the combination with the carbon and its jaw-clamp, of the connecting link secured at the jaw-hinge, the suspending lever to carry said link and provided with a detent and the intermittent mechanical trip-feed device having a ratchet to engage said detent, substantially as described.

5. In electric arc-lamps the combination with the jaw-clamp for the carbon, and with its connecting link, of the regulating springs carried by said link and bearing against the free ends of the clamp-jaws, substantially as described

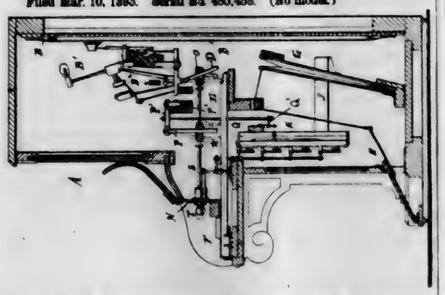
6. In electric-arc lamps the combination with the carbon and with its mechanically suspended retaining clamps, of the mechanical trip-feed device to actuate said clamp, the separate mechanical time-control device to regulate the trip-feed, an electro-magnet energized from the lamp-current, an armature therefor and extension-arms operated by said armature to control the suspension clamp and the time mechanism respectively, substantially as described.

**505,234. CARRIAGE.** ALBERT SCHRÖDER, Hamburg, Germany. Filed Aug. 5, 1893. Serial No. 482,460. (No model.) Patented in Germany Apr. 26, 1892, No. 65,318.



*Claim.*—The construction herein described for the conversion of a carriage with rear length or side seats into one with rear cross seats, said construction being characterized by an intermediate piece C displaceable in its position of height and connecting the fore carriage A with the rear carriage B, this intermediate piece for length or side seats being in its highest position and for cross seats in its lowest position substantially as herein set forth.

**505,235. COMBINED PIANO AND ORGAN.** GEORGE SCHUELKE, New York, N. Y., assignor of one-half to Theodore Lederle, same place. Filed Mar. 10, 1893. Serial No. 465,458. (No model.)



*Claim.*—1. The combination, with a piano casing, of a piano action and an organ action in the same, a set of key levers, a row of stickers for the piano action, an independent row of stickers connected with the organ action, a slotted bar for each set of stickers, through which slotted bars the stickers pass, and an actuating rod or stop for said bars substantially as set forth.

2. The combination, with a piano casing, of key levers in the same, a piano action, and an organ action in the casing, a row of stickers for the piano action, an independent row of stickers connected with the organ action, a slotted bar for each set of stickers, through which slotted bars the stickers pass, an actuating rod or stop for said bars, and stops for the organ valves, substantially as set forth.

**505,236. DUMPING-WAGON.** MARTIN L. SENDERLING, Jersey City, N. J. Filed Dec. 29, 1892. Serial No. 456,634. (No model.)



*Claim.*—1. In combination, a wagon body, a supporting axle, a supporting frame, springs engaged at their rear ends with the axle and at their forward ends with the frame, and means for supporting the body in tilting adjustment on the springs intermediate of their ends, substantially as set forth.

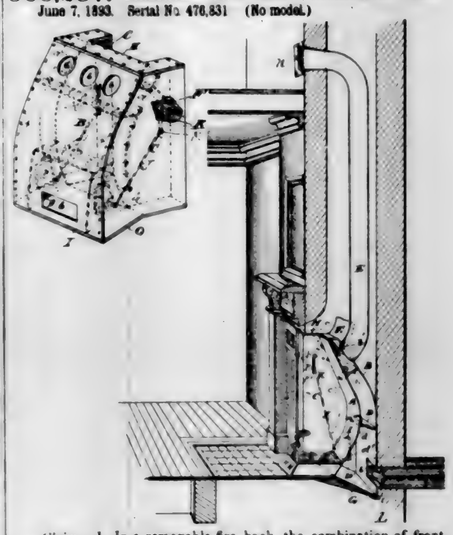
2. In combination, a wagon body, a supporting axle, a supporting frame including side rails as a part thereof, springs engaged at their rear ends with the axle and at their forward ends with the supporting frame and a cross bar fixed to the springs intermediate of their ends, the cross bar serving to transmit the weight of the wagon body and its load to the springs, substantially as set forth.

3. In combination, a wagon body, a supporting axle, a supporting frame, springs engaged at their rear ends with the axle and having a loose engagement at their forward ends with the supporting frame, and means for supporting the wagon body and its load upon the springs intermediate of their ends, substantially as set forth.

4. In combination, the wagon body, the supporting frame, the axle, springs engaged at one end with the axle and at the opposite end with the supporting frame, means for supporting the body and its load upon the springs intermediate of their ends and links fixed at one end relatively to the springs and at their opposite ends fixed relatively to the axle, substantially as set forth.

5. In combination, the tilting body, the axle, side rails extending from the axle forwardly to a head frame, springs loosely engaged at their rear ends with the axle and at their forward ends with the head frame, links connecting the springs with the side rails, and a cross bar fixed to the springs and forming a support for the tilting body, substantially as set forth.

**505,237. FIREBACK.** JOHN G. SHELDON, Cleveland, Ohio. Filed June 7, 1893. Serial No. 476,831. (No model.)



*Claim.*—1. In a removable fire back, the combination of front and rear plates, A, and B, end chambers formed of single plates C, C, bent to form front and sides of the chambers, the third side being closed by the over-lapping front and rear plates A, and B; a top plate covering the chambers and a foundation plate, on which they rest, substantially as described.

2. In a removable back, the combination of front and back plates A, and B, partitions D, D′, and M, perforated at *d*, *d*′, and *m* and side chambers C, separated from the rear chamber by the front plate, perforated at *a a*′, as and for the purpose set forth.

3. In a removable fire back, the combination of a rear chamber formed between front and back plates; side chambers closed in the rear by the said front plate; a cover plate over the chambers, and foot plate underneath them, the front and back plates being provided with openings for air circulation, with partitions D, D′, and M, provided with openings for air circulation, substantially as described.

4. In a removable fire back, the combination of a rear heating chamber formed of front and back plates A, and B, side chambers inclosed by plates C, on three sides, the fourth side being covered by the front plate to the rear chamber, inlet and outlet flues for air, and means for retarding the passage of the air through the chambers, consisting in the partitions M, D, and D′, provided with openings for the passage of air, and openings between the chambers, substantially as described.

5. In a removable fire back, the combination of front plate A, provided with openings on its edges *a*, *a*′, rear plate B, provided with air inlet and outlet openings, and having its lower part extended to form an air box, partitions D, D′, and M, between said plates, perforated for air passage, and side plates C, inclosing side chambers on three sides, and abutting on the fourth side against the plates A, and B, with dampers I, over the openings in the partitions D′, substantially as described.

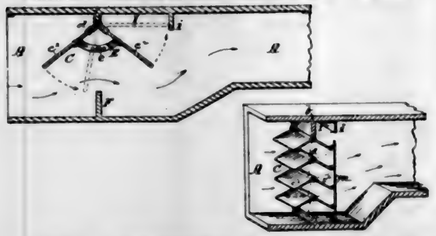
6. In a removable fire back, the combination of front and back plates, A, and B, provided with air openings for circulation, the said plates being separated by perforated partitions, with side plates bent to inclose side chambers on three sides, one of the side walls formed by said plates in either side, extending to the rear plate B, the other wall being shorter and extending to the plate A, substantially as described.

7. In a removable fire back, the combination of a rear chamber formed by front and back plates, a side chamber formed of plates bent to inclose said chamber on three sides, the side plates abutting against the said front and back plates, as and for the purpose set forth.

8. In a removable fire back, the combination of front and back plates A and B inclosing a heating chamber, partitions D and D′ separating said plates, and forming an air box, side chambers composed of plates C bent to inclose said chambers on the front and sides, the front plate A closing the side chambers on the fourth side, and provided with openings *a*, *a*′, deflector plates in the side chambers over the openings *a*′, and flues E and L entering the back plate B, all arranged substantially as and for the purpose set forth.



**505,238. AIR-CURRENT GOVERNOR.** SOLOMON P. SMITH, Waterford, N. Y. Filed Dec. 24, 1892. Serial No. 456,226. (No model.)



*Claim.*—1. The valve composed of two oppositely inclined leaves meeting at an angle at their upper edges, and supported in fixed relation to each other, said valve suspended at its apex by a hinging connection transversely within the air-passage to have free back and forth swinging action, in combination with the air-conduit, and an upright guard or fender disposed transversely across the passage centrally beneath said dual-leaved valve, the top of said guard terminating adjacent to the line of motion or arc on which the lower edge of the valve leaf swings, substantially as and for the purpose set forth.

2. The combination, of the conduit or air-inlet having the fender or guard disposed across the bottom of the passage, the pendulous double-leaved valve having its respective leaves disposed in separate intersecting planes hinged to each other and pivotally suspended at their adjacent edges to swing freely within the air conduit, and an adjustable brace connecting the two leaves of the valve to each other and adapted for adjusting the degree of angularity between the planes of said valve-leaves, substantially as set forth.

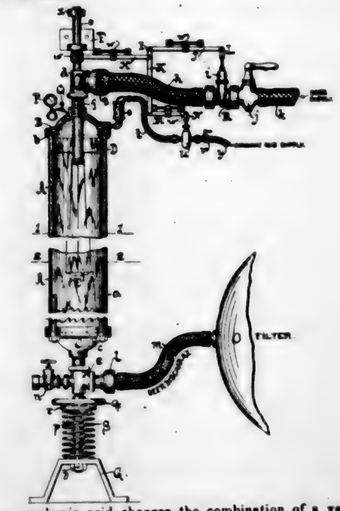
3. The combination, with the air-conduit, the pendulous dual-leaved valve, and the upright fender beneath said valve; of an inclosure in rear of said valve adapted to afford an air cushion on the rear leaf to arrest the motion of said valve before the front leaf strikes said upright fender, as the valve is forced backward, substantially as set forth.

4. In combination, with the air-inlet passages or register, a plurality of transversely disposed dual-leaved angular valves respectively suspended by hinging attachment at their apex, one above another, to swing freely when acted upon by the air currents, and disposed in such relation as to respectively close one against another, the fender or guard beneath the lower valve, and a link connecting the several valves for united action, substantially as set forth.

**505,239. APPARATUS FOR CHARGING LIQUIDS WITH CARBONIC-ACID GAS.** JACOB F. THEURER, Milwaukee, Wis., assignor to the Universal Carbonating Company, Newark, N. J. Filed Jan. 24, 1893. Serial No. 459,596. (No model.)

*Claim.*—1. In a carbonic acid charger, the combination of a vertical charging vessel, a liquid supply pipe entering said vessel at the top and projecting down into the same a suitable distance, a supply pipe for carbonic acid gas entering the vessel at or near the top and above the lower end of the supply pipe, regulating valves in the supply pipe for liquid and for gas, means substantially as described for automatically operating said valves by the variations of the level of liquid in the charging vessel, and an outlet for the liquid at or near the bottom of the charging vessel, substantially as and for the purpose set forth.

2. In a carbonic acid charger, the combination of a vertical charging vessel, a liquid supply pipe entering said vessel at the top and projecting down into the same a suitable distance, a foraminous plate surrounding the pipe, a dash plate within the charging vessel arranged in line with the pipe, a supply pipe for carbonic acid gas entering the vessel at or near the top, regulating valves in the supply pipes for gas and liquid, means substantially as described for automatically operating said valves by the variations of the level of liquid in the charging vessel, and a discharge pipe for the liquid connected at or near the bottom of the vessel, substantially as and for the purpose set forth.




3. In a carbonic acid charger, the combination of a vertical charging vessel, a liquid supply pipe entering said vessel at the top and projecting down into the same a suitable distance, a supply pipe for carbonic acid gas entering the vessel at or near the top and above the lower end of the liquid supply pipe, regulating valves in the supply pipes for liquid and for gas, means substantially as described for automatically operating said valves by the variations in the level of the liquid in the charging vessel, a discharge pipe for the liquid at or near the bottom of the charging vessel, a stop cock for admitting water into the charging vessel at and drawing it off from the bottom, and air valves at the top of the vessel and at or near the regulating valve in the liquid supply pipe, substantially as and for the purpose set forth.

4. In a carbonic acid charger, the combination of a charging vessel composed of a glass cylinder A and heads B C, an elastic cushion supporting said vessel, a liquid supply pipe flexibly connected to the vessel and entering the same at the top and projecting down into the vessel, a foraminous disk surrounding the portion of the pipe within the vessel, a gas supply pipe flexibly connected to and entering the vessel at or near the top and provided with a regulating valve, means substantially as described for operating the valve by the rise and fall of the charging vessel, a discharge pipe flexibly connected to the vessel at the bottom, a cock *n* for admitting water into the vessel at, and drawing it off from the bottom, and air cocks, substantially as and for the purpose specified.

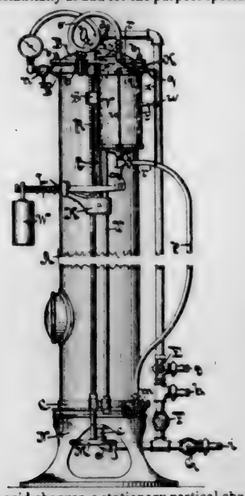
5. In a carbonic acid charger the combination of a charging vessel, an elastic cushion supporting said vessel, a liquid supply pipe connected to said vessel entering the same at the top and projecting down into the vessel, a liquid discharge pipe connected to said vessel at the bottom, regulating valves in the supply pipes for liquid and gas, and means substantially as described for automatically regulating the gas supply by the variations of the level of liquid in the charging vessel, substantially as and for the purpose specified.

6. In an apparatus of the character specified, a charging vessel, a spring cushion supporting the same; liquid and gas supply pipes, regulating valves therein connected with the vessel and operated by the rise and fall of the same, and means for adjusting the range of the valves, substantially as described.

**505,240. APPARATUS FOR CHARGING LIQUIDS WITH CARBONIC-ACID GAS.** JACOB F. THEURER, Milwaukee, Wis., assignor to the Universal Carbonating Company, Newark, N. J. Filed June 30, 1893. Serial No. 479,237. (No model.)

*Claim.*—1. In a carbonic acid charger the combination of a stationary vertical charging vessel, a liquid supply pipe connected to said vessel at the top and projecting downward into the vessel, a car-

bonic acid supply pipe entering the vessel above the discharge orifice of the liquid supply pipe, a regulating valve for the gas, a regulating vessel vertically adjustable between the top and bottom of the charging vessel and supported upon a scale beam, flexible connections between the top of the charger and the regulating vessel and between the bottom of the charger and the bottom of the regulating vessel, and connections, substantially as shown and described, for operating the gas regulating valve through the rise and fall of the liquid in the regulating vessel, substantially as and for the purpose specified.



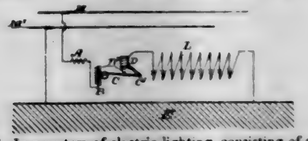
2. In a carbonic acid charger, a stationary vertical charging vessel A with heads B and C, a liquid supply pipe *f* entering said vessel at the top and projecting downward into the charger, connections between the top of said liquid supply pipe *f* and the bottom of the charger A, couplings *g*, *h* and *i* for the liquid to be impregnated and discharged and for water respectively, a regulating vessel V connected with the charger A by flexible hose *o* and *p*, a scale beam L supporting the regulating vessel, a block K vertically adjustable on a screw rod R and supporting the scale beam; a block S through which the screw rod R passes rigidly connected to the block K by a rod *t*, a guide rod T for the blocks K and S, an arm *s* connected to the upper end of the rod *t* and forming a guide for the upper end of the vessel V, a flexible carbonic acid supply pipe *o*, a gas regulating valve *v* operated by an arm *y* projecting from the regulating vessel, and a connection between the outlet of the valve *v* and the top of the charger, substantially as and for the purpose specified.

3. In combination with a stationary charging vessel and a fluid supply valve, of an external movable regulating vessel in communication with the top and bottom of the charging vessel for receiving fluid, and operated by variations in the liquid level, and an operative connection between said regulating vessel and the fluid supply valve substantially as described.

4. In combination with a stationary charging vessel, of a liquid supply pipe, a gas supply pipe, an external regulating vessel in communication with the top and bottom of the charging vessel, and operated by variations in the liquid level, means for adjusting said regulating vessel, and an operative connection between the latter and the gas supply valve, substantially as described.

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**505,241. ELECTRIC-LIGHTING SYSTEM.** ADDISON G. WATERHOUSE, Hartford, Conn. Filed Nov. 28, 1892. Serial No. 453,313. (No model.)

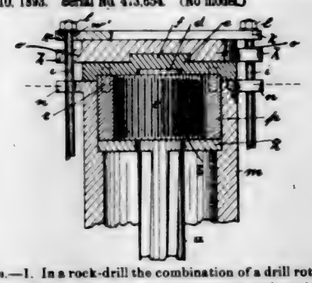


*Claim.*—1. In a system of electric lighting, consisting of a path crossing from one main line to the other, representing the positive and negative sources of power, the combination with one or more electric lights, or translating devices, of an automatic rheostat actuated by both the magnetic forces of the current which passes through the lamps, and the current of a derived circuit which spans the whole or part of the path upon which the lamp or lamps are placed, substantially as and for the purposes set forth.

2. An automatic rheostat consisting of the working magnets H, and a swinging contact lever C, having a parallel motion of the contacting end: substantially as and for the purposes set forth.

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**505,242. ROCK-DRILL-ROTATING DEVICE.** WARREN WOOD, Paterson, N. J., assignor to Samuel G. McKiernan, same place. Filed May 10, 1893. Serial No. 473,654. (No model.)

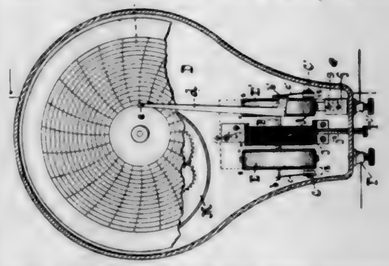


*Claim.*—1. In a rock-drill the combination of a drill rotating bar, the cylinder and the cylinder head, with a releasing plate clamped between the ends of the cylinder and the cylinder head and having a bearing in said cylinder head, said releasing plate forming a bearing for the head of the drill rotating bar, and with means substantially as described for locking said releasing plate to the head of said drill bar to prevent the drill bar from rotating in one direction, all arranged so that said drill bar and releasing plate when locked, will under abnormal strain rotate upon the cylinder head as a bearing, substantially as described.

2. In a rock-drill the combination of the cylinder and the cylinder head, and the drill rotating bar having an enlarged notched head, with a collar surrounding said notched head and provided with a series of pawls adapted to engage the notched head of the drill rotating bar to prevent the same from turning in one direction, and with the releasing plate united to said collar and furnishing a bearing for the head of the drill rotating bar, said releasing plate being clamped between the end of the cylinder and the cylinder head and unable to move therein except under abnormal torsion of the drill bar head and its collar, substantially as described.

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**505,243. RECORDING-VOLTMETER.** WILLIAM H. BRISTOL, Hoboken, N. J. Filed Apr. 17, 1893. Serial No. 470,640. (No model.)



*Claim.*—1. In an electrical measuring instrument, the combination of a stationary solenoid, a movable solenoid provided with metallic portions on its opposite sides insulated from each other and forming the electrical terminals of the same, and flexible metallic supports in electrical connection with the metallic portions of the movable solenoid, substantially as described.

2. In an electrical measuring instrument, the combination of a stationary solenoid, a movable solenoid mounted on a horizontal shaft having metallic ends insulated from each other and connected respectively with the terminals of the movable solenoid, and vertical flexible conducting supports provided with recesses in which the metallic ends of the shaft rest to form electrical connection between said supports and the movable solenoid, substantially as described.

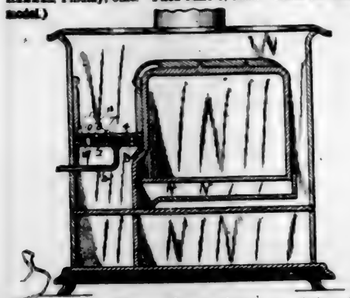
3. The combination with the stationary solenoid, of a movable solenoid adapted to the same, a support for the movable solenoid provided with metallic ends insulated from each other and forming the terminals of the movable solenoid, and conducting supports in which said metallic ends rest, substantially as described.

4. In an electrical measuring instrument, the combination of a stationary solenoid, a movable solenoid adapted to the same, swinging conducting supports for the movable solenoid, and an indicating or recording arm attached directly to one of said supports and participating in the angular movements of the same, substantially as described.



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**505,244. OIL-STOVE.** JAMES D. FOSTER, Ironton, and CHARLES A. HAMMEL, Findlay, Ohio. Filed June 5, 1893. Serial No. 476,596. (No model.)



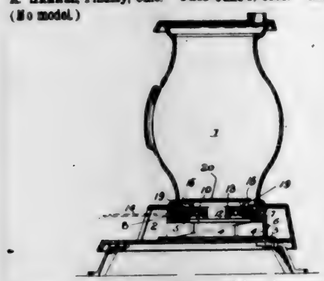
*Claim.*—1. An oil burner for a cook stove consisting of the plate, recessed on its upper side forming an oil receptacle, and having holes at its rear and front portions, the cover and strip with an intervening space, and the feed or supply pipe, substantially as described.

2. In a cook stove, the combination with the fire-box and ash pit, of the rectangular, plate recessed on its upper side, forming an oil receptacle, and having holes and channels at its rear edge, and holes at its front edge, the cover, the movable strip having beveled recesses on its under side, and the supply pipe, substantially as described.

3. In a cook stove, the combination with the fire box and ash pit, of the rectangular plate recessed on its upper surface to form an oil receptacle, and having holes and channels at its rear edge and holes at its front edge, the lugs on said plate, the movable strip having beveled recesses on its under side, the cover having slots at its sides, and the supply pipe, substantially as described.

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**505,245. OIL-STOVE.** JAMES D. FOSTER, Ironton, and CHARLES A. HAMMEL, Findlay, Ohio. Filed June 5, 1893. Serial No. 476,597. (No model.)



*Claim.*—1. An oil burner for an oil burning stove, consisting of an oil receptacle having a central opening, and a boss, a series of air openings outside of said boss, a disk located above said oil receptacle having a central opening with which said boss engages, and a deflecting plate, substantially as described.

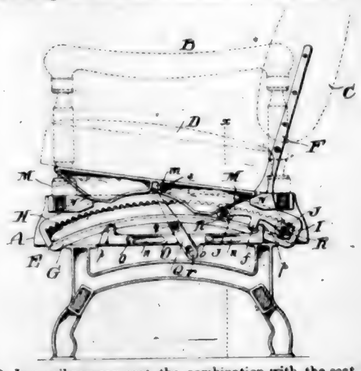
2. In an oil burning stove, the combination with the fire pot, of the flanged oil receptacle having a central opening and a boss, a series of openings outside of said boss, a disk located above said oil receptacle having a central opening with which said boss engages, a deflecting plate, and means for elevating and lowering said oil receptacle, substantially as described.

3. In an oil burning stove, the combination with the fire pot and ash pit, of the plate located in the ash-pit, provided with a series of beveled segments, the rotatable annulus having similar segments engaging therewith, and formed with a peripheral flange, the oil receptacle having air openings and a central opening and boss and the disk and deflecting plate, substantially as described.

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**505,246. RAILWAY-CAR SEAT.** HENRY S. HALE, Philadelphia, Pa. Filed Jan. 26, 1893. Serial No. 459,772. (No model.)

*Claim.*—1. In a railway car seat, the combination with the seat frame and seat cushion, of guideways located in the sides of the seat frame below the seat cushion, movable side arms having their lower ends below the seat cushion guided in the guideways of the side frames and movable bodily therein from one end to the other, a connection between the lower ends of said movable side arms below the seat cushion whereby said side arms are moved together, the connection shifting with them, and a seat back carried by said side arms.



2. In a railway car seat, the combination with the seat frame and seat cushion carried thereby, of guideways located in the sides of the seat frame below the cushion, a shifting U shaped frame guided in said side guideways and movable bodily from one end thereof to the other, consisting of side arms and a transverse connection between their lower portions below the seat cushion, and a seat back carried by the side arms.

3. The combination of a seat frame having guideways upon its sides, a seat back, side arms connected with the seat back, toothed racks carried by the sides of the seat frame, cogs carried by the side arms and engaging the racks, and idlers carried by the lower ends of the side arms and guided in the guideways, whereby the side arms may be moved bodily from one end to the other in the guideways for the purpose of shifting the seat back.

4. The combination of a seat frame having guideways upon its sides, a seat back, side arms connected with the seat back, toothed racks carried by the sides of the seat frame, cogs carried by the side arms and engaging the racks, idlers carried by the lower ends of the side arms and guided in the guideways, whereby the side arms may be moved bodily from one end to the other in the guideways for the purpose of shifting the seat back, and a common shaft connecting the cogs.

5. The combination with the seat frame, of stationary toothed racks carried by the sides of the seat frame, a seat back, rotatable cogs carried by the seat back and traveling in the toothed racks, and a connection between the cogs whereby they rotate together.

6. The combination with the seat frame of stationary curved toothed racks carried by the side of the seat frame, a seat back, side arms carrying the seat back and rotatable cogs carried by the side arms and traveling in the toothed racks, and a common shaft connecting the cogs.

7. The combination of the seat frame having curved guideways on its sides, a seat back, shifting side arms carrying the seat back and guided in the curved guideways of the seat frame, curved toothed racks carried by the side frame, a shaft journaled in the lower ends of the side arms, and cogs carried by the shaft and traveling in the racks.

8. The combination of the seat frame, the curved slotted guide plates G having the toothed racks H, the seat back, the side arms F carrying the seat back, the shafts R journaled in the lower ends of the side arms, the idlers I carried by the shafts and guided in the guide plates G and the cogs J carried by the shafts and traveling in the racks H.

9. The combination with the seat frame provided with guides on its sides, a shifting seat back, arms carried by the shifting seat back and guided in said guides, a rotatable shaft carried by said side arms, a toothed cog carried by one end of the shaft, a stationary rack carried by the seat frame with which the cog engages so as to be rotated by it and thereby rotate its shaft, and a rotatable guide piece carried by the other end of the shaft and rotated by it.

10. In a railway car seat, the combination with the seat frame and tilting seat cushion, of guideways located in the sides of the seat frame below the seat cushion, shifting side arms having their lower ends below the seat cushion guided in the guideways of the side frame and movable bodily from one end of said guideway to the other, a

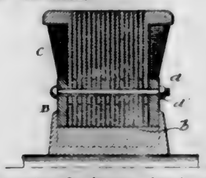
seat back carried by the shifting side arms, and operative connections between the shifting side arms and tilting seat cushion.

11. In a railway car seat, the combination with the seat frame and tilting seat cushion, of guideways located in the sides of the seat frame below the seat cushion, shifting side arms having their lower ends below the seat cushion guided in the guideways of the side frame and movable bodily from one end of said guideway to the other, a connection between said side arms extending transversely below the seat cushion and shifting bodily with the side arms, a seat back carried by the shifting side arms, and operative connections between the shifting side arms and tilting seat cushion.

12. The combination of a seat frame having guideways on its sides, shifting side arms guided in the guideways on the sides of the seat frame and movable bodily from one end to the other thereof, a seat back carried by the side arms, a tilting seat cushion, slide bars carried by the seat frame, and operated by the shifting side arms, and connections between the slide bars and tilting seat to tilt the seat when the side arms are shifted.

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**505,247. ARMATURE FOR DYNAMO-ELECTRIC MACHINES OR MOTORS.** WALTER T. KOSINSKI, New York, N. Y. Filed May 5, 1893. Serial No. 473,104. (No model.)

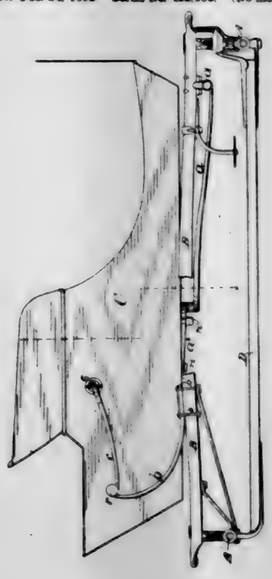


*Claim.*—1. An armature for dynamo electric machines and motors, consisting of a laminated ring or cylinder having annular grooves in its periphery, in combination with a series of removable radial cores each carrying a coil, said cores being built up of plates which alternately project into the grooves of the cylinder, substantially as described.

2. An armature for dynamo electric machines and motors, consisting of a laminated ring or cylinder having annular grooves in its periphery, in combination with a series of removable radial cores each carrying a coil, said cores being built up of plates which alternately project into the grooves of the cylinder, and bolts passing through the edge of the cylinder and the ends of the core plates, in the manner and for the purpose described.

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**505,248. VEHICLE-SPRING.** EVERETT F. MORSE, Trumansburg, N. Y. Filed Feb. 24, 1892. Serial No. 422,686. (No model.)



*Claim.*—1. In a vehicle, the combination with the body, of a spring consisting of a torsion rod extending through the sides of the body, crosswise within the same and securely attached to the framework thereof,—and an arm rigidly attached to said torsion bar, arranged outside of the body, alongside thereof, and supported at its free end by the gear, substantially as described.

2. In a vehicle, the combination with the body, of springs consisting of arms arranged outside of and along either side of the body, torsion bars extending crosswise of the body within the same, said torsion bars being arranged one above the other, clamped together at their middle and having their ends projecting into sockets of hangers firmly bolted to the body frame, substantially as described.

3. The combination with the body and side-bars of a vehicle, of the C-springs *b*, the torsion springs *c*—*c*$^2$, having the arms *c*, arranged without, and the torsion branches *c*$^1$ *c*$^3$, within the body, substantially as described.

4. In a vehicle, the combination with the body of two springs arranged, one above, or in a higher position than the other, the one attached to the bottom of the body, arranged lengthwise of the same and supported by the gear, the other attached to the side of the body extending alongside of the same and supported by the gear, substantially as described.

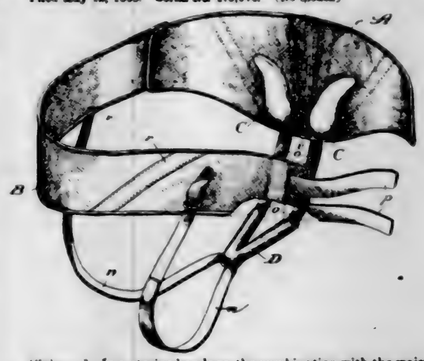
5. The combination with a torsion spring of a hanger having an outwardly curved bearing surface, a substantially rectangular torsion bar arranged against said surface and adapted to rock about the same, arms projecting from the hanger on either side of said torsion bar, substantially as and for the purpose described.

6. The combination with a torsion spring of hangers having an outwardly curved bearing surface, a substantially rectangular torsion bar arranged against said surface and adapted to rock about the same, arms projecting from the hangers on either side of said torsion bar, leathers attached to the inner side of these arms, substantially as described.

7. The combination with two torsion springs each provided with supporting arms and torsion rods, said rods being arranged one above the other and clamped together, of two hangers, each of which is provided with an outwardly curved bearing surface for one spring to turn against and a socket to receive the end of the other spring, the sockets in the different hangers being arranged one above and the other below said bearing surface, substantially as described.

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**505,249. UTERINE BANDAGE.** CLAUS F. OHLRICH, Chicago, Ill. Filed May 12, 1893. Serial No. 473,976. (No model.)



*Claim.*—1. In a uterine bandage, the combination with the waist-band having a padded abdominal section, of a band to pass between the legs and fasten at opposite ends to the waist-encircling portion, and a V-shaped pad D fastened to the said band to bear upward, substantially as and for the purpose set forth.

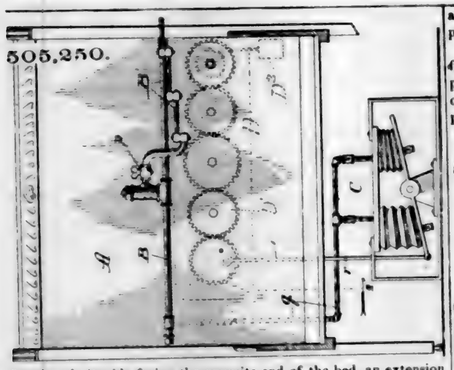
2. A uterine bandage comprising, in combination, the waist-band B containing the abdominal section A provided on its inner side with the pads C, formed and converging substantially as described, and the V-shaped pad D strapped at its diverging ends to the abdominal section near its lower tapering edge and at its converging end to the rear portion of the waist-band, the whole being constructed and arranged to operate substantially as and for the purposes set forth.

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**505,250. VENTILATED BED.** SANTINO P. FALETTA, Chicago, Ill. Filed Apr. 3, 1893. Serial No. 468,886. (No model.)

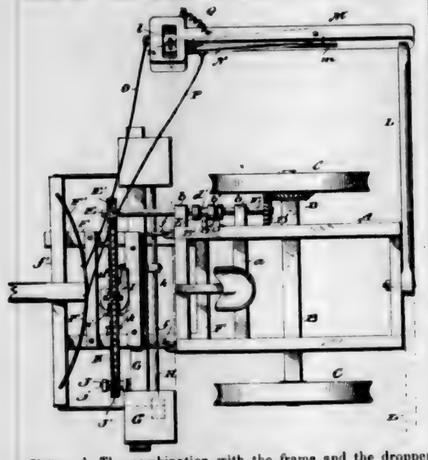
*Claim.*—In combination with a bed, a ventilating apparatus comprising a pipe B extending transversely across the bed at one end thereof near the plane to which the pillows reach and having perforations in its side facing the opposite end of the bed, an extension B' of the pipe B pivotally connected therewith near its center and formed in jointed sections having perforations in their under sides, whereby they may be extended to any desired length longitudinally of the bed and direct the air-currents down upon the occupant, and means for supplying air-pressure to the said pipes, comprising an air-compressor communicating with the pipe B and a motor to work the compressor, substantially as described.





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**505,251. CHECK-ROW CORN-PLANTER.** FRANCIS C. PECK, Shannondale, Ind. Filed May 16, 1893. Serial No. 474,432. (No model.)



*Claim.*—1. The combination with the frame and the dropper mechanism, of the marker reversibly mounted on the frame and having a spring-actuated portion, and a cord connected therewith and extended toward the driver's seat as set forth.

2. The combination with the main frame and the supplemental frame, of the dropper mechanism, the means for actuating the same, and the reversible marker, having a pivoted spring-actuated portion and a cord for operating the same substantially as specified.

3. The combination with the main frame, of the arm pivoted thereon and carrying an arm with a slot, and the spring-actuated marker-arm pivoted in said slot, the arched rod, and the cord connecting the same with the marker arm substantially as and for the purpose specified.

4. The combination with the main frame, of the arm pivoted thereto the arm connected therewith and extending at right angles thereto and having a slot and a lateral extension, and the spring-actuated arm pivoted in said slot and carrying a vertical pin and provided with a cord or chain, substantially as specified.

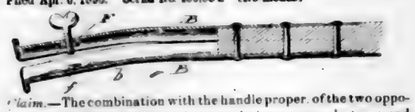
5. The combination with the main frame and the supplemental frame having arched rod, of a reversible marker its spring-actuated pivoted arm and a cord attached thereto and with the arched rod, as set forth.

6. The combination with the main frame and the supplemental frame, of the reversible marker on the main frame and having a spring-actuated pivoted marker arm and the dropper mechanism on the supplemental frame, as set forth.

7. The combination with the main frame and the supplemental frame, of the reversible marker on the main frame, the spring-actuated pivoted marker arm, its cord the arched rod the dropper mechanism on the supplemental frame, and the mechanism for actuating the dropper mechanism from the main wheel, as set forth.

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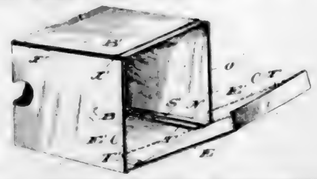
**505,252. HOE-HANDLE.** JACOB P. PHILLIPS, Yantley Creek, Ala. Filed Apr. 6, 1893. Serial No. 469,334. (No model.)



*Claim.*—The combination with the handle proper, of the two oppositely arranged semi-circular spring metal pieces secured at one end to said handle with their lower ends extended beyond the same and inclined, to receive a hoe-tang, the set screw passed through one of said pieces and a nut within the space inclosed by said pieces and engaging said screw, all substantially as shown and described.

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**505,253. BOX.** FRANK F. SANBORN, Saxonville, Mass. Filed Nov 10, 1892. Serial No. 451,542. (No model.)



*Claim.*—1. The herein described box, the same consisting of two members, each having tongues at its opposite ends and slits along its opposite sides adapted to receive said tongues on the other member, as and for the purpose set forth.

2. The herein described box, the same consisting of two members, each having tongues at its opposite ends, and along its sides slits of the length of the tongues on the other member and distant from the side edges less than the width of said tongues, as and for the purpose set forth.

3. The herein described box, the same consisting of two members, each comprising a rectangular body, two ends connected by fold-lines with the opposite edges of said body, and two tongues connected by fold-lines with the edges of the ends opposite the first mentioned fold-lines, the body being provided with slits at right angles to said fold-lines and nearer the side edges of the body than the width of said tongues, and all said fold-lines being in one face of the member, as and for the purpose set forth.

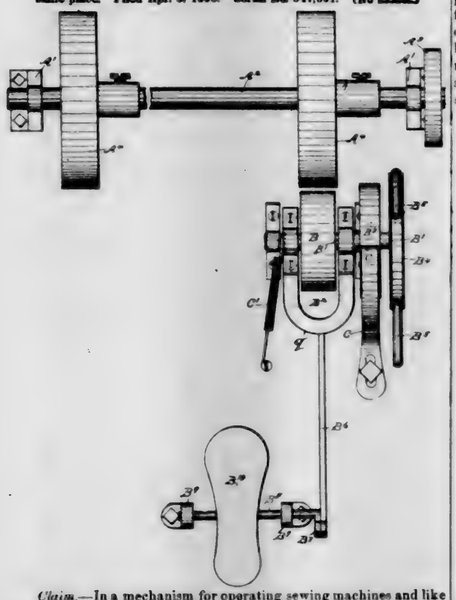
4. The herein described box, the same consisting of two members of paper or equivalent material having transverse fold-lines to produce a body, ends, and tongues, the body of each member being provided with cuts parallel with its side edges to receive the tongues on the other member, and said cuts at their extremities being extended inward for a short distance, as and for the purpose set forth.

5. The herein described box, the same consisting of two members adapted to be bent so as to complement each other, each member having tongues at its opposite ends and slits along the side edges of its center to receive the tongues of the other member, and one member having flaps at its opposite sides adapted to engage the other member between the slits and end tongues on the latter, to close the corners of the box, as set forth.

6. The herein described box, the same consisting of two members adapted to be bent so as to complement each other, each member consisting of a body, two ends, and tongues along the outer edges of said ends, each body portion having slits along its side edges for the reception of the tongues of the other member, one member also having slits along the side edges of its end portions, and the other member having corner-closing flaps along the side edges of its end portions adapted to enter the last-mentioned slits, as and for the purpose set forth.

7. In a knockdown box, the combination with one member having two fold lines to form a body between, the body being slitted parallel with its edges from one fold-line to the other and the slits being extended at their extremities inward in cuts along the fold-lines, of a second member having a portion of the same width as the length of the slits, and tongues on said portion of a length to enter said slits when said portion stands against the edge of said body, as and for the purpose set forth.

**505,254.** MECHANISM FOR OPERATING MACHINES. THOMAS S. SMITH, Waterford, N. Y., assignor of one-half to William W. Breslin, same place. Filed Apr. 8, 1890. Serial No. 347,091. (No model.)



*Claim.*—In a mechanism for operating sewing machines and like machines, the combination of a friction-wheel mounted on a power-shaft, rocking standards having bearings in their upper ends and connected by a bail at their top, a friction wheel journaled in the bearings of the rocking standards, a brake-wheel on the shaft in the rocking bearings, a band-pulley on said shaft, a spring to hold the rocking-standards outward, an adjustable standard carrying a brake-block to engage the brake-wheel, and a treadle-lever connected to the bail of the rocking standards to push them inward and carry the friction wheels into engagement, substantially as and for the purpose specified.

**505,255.** PNEUMATIC TIRE. JOHN S. SMITH, London, England. Filed Jan. 24, 1893. Serial No. 459,527. (No model.)



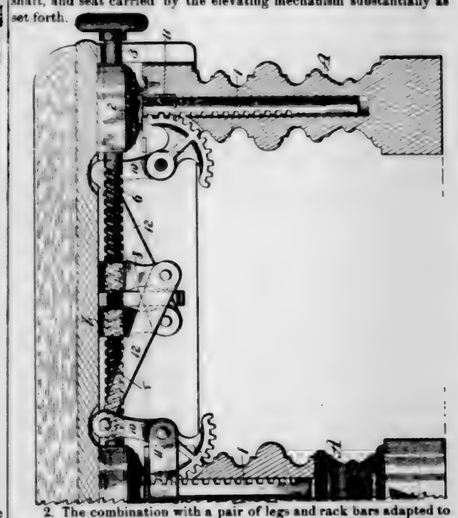
*Claim.*—1. In a pneumatic tire the combination with the rim, and the air chamber, of the tire jacket having flaps for engaging the exterior of the rim, and bracing flaps for engaging the interior of the rim, an elastic cord engaging one of said bracing flaps for securing it in position in respect to the rim, and means for holding the other bracing flap in engagement with the rim, substantially as described.

2. In a pneumatic tire the combination with the concave rim and air chamber, of the tire jacket having flaps for engaging the exterior of the rim, and laterally extending bracing flaps for engaging the concave interior of the rim and lying between the rim and air chamber, and an elastic cord secured to the edge of each bracing flap for drawing the same into the concave rim and holding it substantially as described.

3. In a pneumatic tire the combination with the concave rim and air chamber, of the tire jacket, provided with flaps for engaging the exterior of the rim and bracing flaps for engaging the concave interior of the rim between the rim and the air chamber said bracing flaps having their edges provided with cords, for holding said edges in said concave rim, whereby the inflation of the air chamber causes it to engage said bracing flaps and press said corded edges into close engagement with the rim, substantially as described.

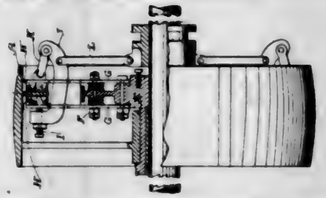
**505,256.** PIANO-STOOL. WILLIAM T. SMITH, Baltimore, Md., assignor to the Wm. Knabe & Co. Manufacturing Company, same place. Filed Mar. 25, 1893. Serial No. 467,592. (No model.)

*Claim.*—1. In a stool, the combination with a pair of legs, rack bars having sliding connection with the legs, and heads on the upper ends of the rack-bars, of a shaft having right and left threads formed thereon, blocks having threaded bores, with which the threads of the shaft engage toothed levers pivotally connected with the legs links connecting said levers with the blocks whereby the levers are rocked and the racks are raised or lowered with the turning of the shaft, and seat carried by the elevating mechanism substantially as set forth.



2. The combination with a pair of legs and rack bars adapted to slide therein, said rack bars having heads on their upper ends, of a shaft passing through and adapted to turn in these heads, said shaft having right and left screw threads formed thereon and provided with wheels or knobs on one or both ends, blocks having threaded bores mounted on the shaft, rock levers pivoted to the legs and provided with rounded segments having teeth adapted to engage the teeth of the racks links connecting said levers to the blocks, and seat carried by the elevating mechanism substantially as set forth.

**505,257.** CLUTCH MECHANISM. ISAAC F. THOMPSON, San Francisco, Cal., assignor of one-half to Wales L. Palmer, same place. Filed Dec. 20 1892. Serial No. 455,802. (No model.)

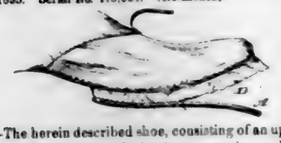


*Claim.*—1. A frictional clutch consisting of a hub secured to the drive shaft, the pulley or rim having the inwardly projecting annular flange, clamping shoes supported upon independent arms, which extend radially outward from said hub to which they are secured and have the outer ends movable to and from each other, yokes passing through slots in the arm so that the inner ends of the yokes press against the center of the inner clamping shoes, links to which the outer ends of the yokes are pivoted, each of said links having one end adapted to press against the center of one of the outer clamping shoes, a collar sliding upon the shaft of the pulley, and means whereby the clamping shoes are actuated by the shifting of the collar, substantially as herein described.

2. A frictional clutch consisting of a pulley having an inwardly projecting annular flange, clamping shoes adapted to press upon opposite sides of said flange, radial arms, upon the outer ends of which said shoes are supported, and means by which they are thrown out of contact with the flange when released from pressure, yokes extending through and loosely supported in slots in the arms which carry the shoes, having the inner ends adapted to force the inner clamping shoes against the flange, links to which the outer ends of the yokes are pivoted, adjusting devices passing through the arms of the yokes, and acting against the clamping shoes, a collar sliding upon the shaft, links connecting the collar with the yokes, whereby the movement of the collar in one direction causes the clamping shoes to grip the flange between them, and a movement in the opposite direction withdraws the shoes and releases the flange, substantially as herein described.



**505,258.** SHOE. GEORGE W. WHILBY, Rochester, N. Y. Filed May 12, 1893. Serial No. 473,987. (No model.)



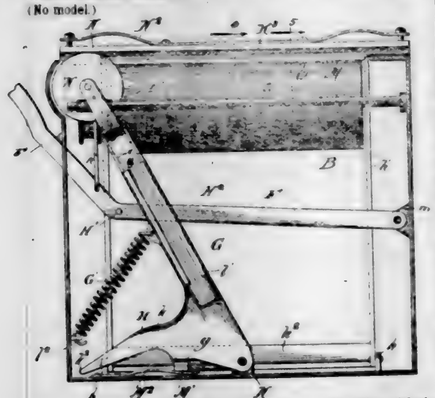
*Claim.*—The herein described shoe, consisting of an upper having untrimmed surplus, an inner sole having a covering and binding of water-proof material from the toe to the shank and stitched to and protected by the surplus of the upper, and an outer sole secured to the upper and inner sole, all substantially as herein shown and described.

**505,259.** PROCESS OF ORNAMENTING PAPER. SETH WHEELER, Albany, N. Y. Filed Apr. 18, 1893. Serial No. 470,806. (Specimens.)



*Claim.*—The process of ornamenting paper, consisting of first drying the pulp until it forms a sheet of wet paper, by pressing and holding it snugly against drying devices and second, removing such pressure that the paper may have freedom to contract, and passing the sheet over drying devices until it is dried substantially as described.

**505,260.** AUTOGRAPHIC REGISTER. CHARLES F. BASSETT and ISAAC S. DEMENT, Chicago, Ill. Filed Jan. 3, 1893. Serial No. 457,012. (No model.)



*Claim.*—1. In an autographic register, the combination with the feed-roll, the cutter and the cutter-carrying mechanism, of a lever, and a connection between the lever and feed-roll, whereby the lever when moved in one direction operates to give a corresponding rotation to the roll, an adjustable stop engaged by the lever in its return movement, whereby the extent of movement of the lever is limited with corresponding limitation upon the amount of movement of the feed-roll, and a connection between the lever and the cutter-carrying mechanism when the lever is on its return stroke, substantially as described.

2. In an autographic register, the combination with the feed roller, the transversely movable cutter arranged to cut the strip after being fed forward, and the oscillating arm carrying said cutter, a lever connected with the feed roller and operating to rotate the same, and a connection between said lever and said cutter carrying arm when the lever has reached its advanced position, whereby the lever in its forward motion shall rotate the feed roller, and in its return motion shall operate the cutter, substantially as described.

3. In combination with the feed roller of an autographic register, and means for preventing the backward rotation of said roller, a lever operating said feed roller in advancing, a cutter moving transversely across the strips, an oscillating arm carrying said cutter, and a connection between said oscillating arm and said lever when the latter has reached the limit of its advanced motion, whereby on the return motion of the lever the cutter is operated and the feed is held at rest, substantially as set forth.

4. In an autographic register, the combination with the feed roller and transversely moving cutter and with the case having an opening to permit one slip to enter the casing, of a guide plate M, operating to cover said opening thereby to prevent the introduction of the check strips, and acting as a guide to direct the record slip through the opening, and means, substantially as described, for moving said plate away from said opening, as set forth.

5. In an autographic register, in combination with the casing, a knife moving transversely across the casing, an arm carrying said knife, having its pivot in the base of the casing, and a lever engaging and operating said arm, substantially as described.

6. In an autographic register, in combination with the casing, a knife movable transversely across the casing, an arm carrying said knife, having its pivot in the base of the case, a lift arm connected therewith, and a lever pivoted in the casing and accessible to the hand outside of the casing, having a pin adapted to engage the lift arm to lift the same and to pass the lift arm in the downward motion, whereby the movement of the lever operates the knife, substantially as described.

7. In an autographic register, in combination with the knife movable transversely across the casing, a movable plate M, movable in and out of the path of the knife and serving to cover the cutting opening, substantially as described.

8. In an autographic register, in combination with the feed rollers, the separating rod and the movable separating plate, substantially as and for the purpose set forth.

9. In an autographic register, in combination with the casing, the plate M for the purpose described, the pivoted arms $K'$ carrying said plate and connected at their bases, the arm $M'$ and spring, $M^3$, as and for the purpose described.

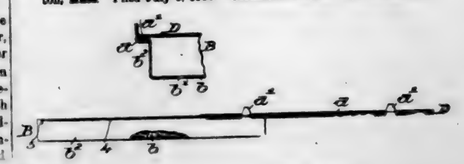
10. In an autographic register, in combination with the casing, the rod L, the knife carrying lever, the sleeve secured to said lever and engaging and traveling on said rod, a spring operating to retract said lever, and a lever operating to advance it, substantially as described.

11. In an autographic register, in combination with the knife-carrying pivoted lever, and a plate normally covering the cutting opening in the casing, the arm $M'$, spring $M^3$ and projection $g$, arranged to operate substantially as described, whereby in its retracted position the knife carrying lever holds the plate over the opening, to be automatically withdrawn therefrom when the knife carrying lever is advanced.

12. In an autographic register, the combination with the feeding roll and the casing having a transverse cutting opening, the cutting knife comprising a cutting disk movable transversely across the casing in said opening, mechanism operating the feeding rolls, and the cutting knife, mechanism restraining the motion of the feeding rolls during the movement of the cutting knife, a movable plate adapted to close said cutting opening when the knife is advanced, and a block $K^3$ having a beveled cutting edge to cooperate with the cutting knife and supported above the cutting opening, substantially as described.

13. In an autographic register, the casing having the cutting opening, the downwardly inclined plate O, the upwardly inclined plate O' and the movable plate M, all arranged to operate substantially as and for the purpose described.

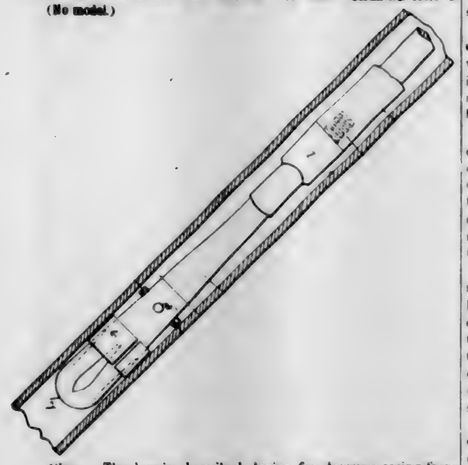
**505,261.** CIGAR-BOX MOISTENER. CHARLES H BAYLEY, Boston, Mass. Filed July 6, 1893. Serial No. 479,904. (No model.)



*Claim.*—The within described moistening device comprising the base plate D having the guides *d* and attaching prongs *d'*, and the box B having lips 4 to engage the guides of the base plate and provided with a perforated bottom and a moistening pad, substantially as set forth

## 505,262. DEVICE FOR DRAWING CASINGS FROM DEEP WELLS.

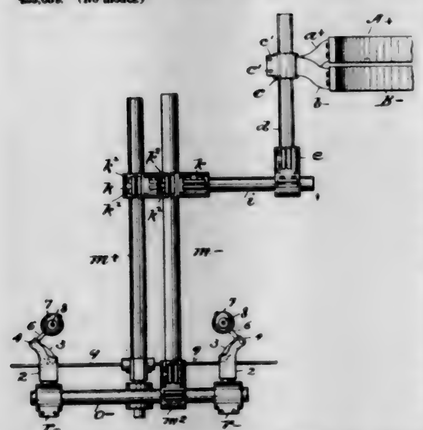
DAVID BOWEN, Butler, Pa. Filed Feb. 13, 1893. Serial No. 462,174. (No model.)



*Claim.*—The herein described device for drawing casing from deep wells, consisting of the tapering bar or mandrel, a means substantially as shown for attaching the same to the drilling tools, the tapering split ring operating along the length of the said mandrel, and the radially arranged pins projecting from the sides of the said mandrel, occupying a position above the said split ring, whereby a frictional hold may be taken at any point of the casing by an upward movement of the apparatus, and released by lowering the same below the casing to remove the tapering ring therefrom, substantially as described

## 505,263. ELECTRICAL METAL-WORKING.

GEORGE D. BURTON, Boston, and EDWIN E. ARGELL, Somerville, Mass., assignors to the Electrical Forging Company, of Maine. Filed Feb. 27, 1892. Serial No. 423,039. (No model.)



*Claim.*—1. In an electric metal-heating apparatus, the combination of the pivoted sleeves *k*, *k*, respectively connected to opposite terminals of the converter, the rods *m*+, *m*−, respectively connected thereto, the bar, *o*+, connected to one of said rods and carrying an electrode of one polarity arranged to receive the bar to be heated, and a vertically pivoted block, *r*−, connected to the other of said rods and carrying an electrode of the opposite polarity, arranged to make contact with another part of the metal bar to be heated, all arranged substantially as described, whereby said electrodes may be swung into different positions and brought into proper alignment with each other, substantially as described

2. In an electric metal-heating apparatus, the combination of two electrodes respectively connected to opposite terminals of the converter by metal bars arranged to slide vertically in holding sleeves, and to adjust said electrodes at different heights to receive the metal bar to be heated, and accommodate the workman using the same, substantially as described.

3. In an electric metal-heating apparatus, the combination of two electrodes respectively connected to opposite terminals of the converter, by metal bars arranged to slide vertically and pivot in holding sleeves and to adjust said electrodes in alignment with each other at different heights and positions, to receive the metal bar to be heated and accommodate the workman substantially as described

4. In an electric metal-heating apparatus, the combination of an electrode arranged to receive the end of the bar and connected to one terminal of the converter, the electrode, 2, connected to the other terminal and arranged to allow the metal bar to be thrust through it to be placed in the electrodes, and the weighted lever, 3, connected to the latter one and arranged to automatically lift as the metal bar is thrust under it, and to take a bearing thereon during the heating process, substantially as described

5. In an electric metal-heating apparatus, the combination of a series of electrodes, arranged to receive the ends of the bar to be heated and connected to one terminal of the converter, and a series of electrodes connected to the other terminal and arranged to allow the metal bars to be thrust through them to be placed in the electrodes, and a series of weighted levers, 3, connected to the latter series of electrodes and respectively arranged to lift as the metal bar is thrust under them, and to take a bearing thereon during the heating process, substantially as described

6. In an electric metal-heating apparatus, the combination of one electrode connected with one terminal of the source of electric energy and arranged to bear upon one part of the metal to be heated, formed of a metal of one degree of conductivity, with another electrode connected with the opposite terminal of the source of electric energy, and arranged to bear upon another part of the metal to be heated, and formed of a different metal of a substantially greater or less degree of conductivity than the metal of the first electrode, substantially as described

7. In an electric metal heating apparatus, the combination of one electrode, 2, connected to one terminal of the converter, the other electrode, 1, connected to the opposite terminal, and the weighted lever, 15, pivoted to the latter electrode carrying the pivoted presser foot, 17, arranged to bear upon the metal bar to be heated, substantially as described.

8. In an electric metal-heating apparatus, the combination of one electrode, 2, connected to one terminal of the converter the other electrode, 1, connected to the opposite terminal, and the lever, 15, pivoted to the latter electrode, provided with opposite balancing arms and weights, 19 and 20, and with the presser foot, 17, attached thereto and arranged to bear upon the metal bar to be heated, substantially as described

9. The combination of two outer bars, each carrying a series of electrodes, all connected with one electric pole; and an intermediate bar connected with the opposite pole of the same circuit and provided on its opposite side with two series of adjustable electrodes disposed respectively opposite the electrodes of the outer bars, whereby two workmen can work on opposite sides of the same forge utilizing the same current, substantially as set forth

10. The method of heating a bar of metal of different sizes in cross-section, which consists in adjusting the bar on electrodes so as to secure a large area of contact until the larger portion is sufficiently heated, and then gradually reducing the contact of the smaller portion, substantially as set forth

11. The method of heating a bar of metal of different sizes in cross-section, which consists in placing said bar in contact with electrodes of opposite polarity and holding a smaller cross-section largely in contact with one of said electrodes until the larger cross-section is sufficiently heated, and then reducing the electric contact of the smaller cross-section, substantially as set forth.

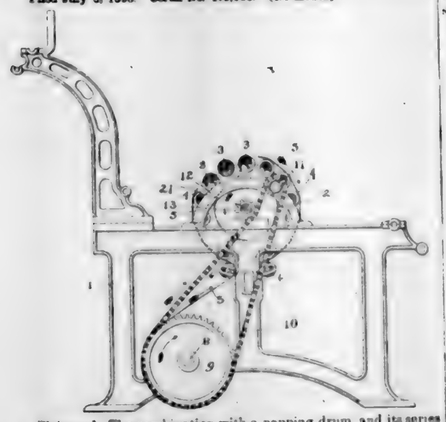
12. The method of heating a bar having a tapered end, which consists in placing it between electrodes of opposite polarity, and holding its tapered end largely in contact with one of said electrodes until the larger portion of the bar is raised to the desired temperature, and then gradually reducing the area of contact of the tapered end with its electrode, substantially as set forth

13. The method of heating a metal bar of different areas in cross-section at different parts to a substantially even working heat, which consists in subjecting the bar to the action of an electric heating current and graduating the area of contact surface between the bar and the electrodes during the heating operation



## 505,264. CLOTH-NAPPING MACHINE.

JOSIAH D. CLOUDMAN, Lowell, Mass., assignor of one-half to Edward W. Thomas, same place. Filed July 8, 1893. Serial No. 479,908. (No model.)



*Claim.*—1. The combination with a napping drum, and its series of napping or teaseling rollers, of a driving wheel on the shaft of the said drum, a driven wheel, a carrier wheel beyond the said driving wheel, a band passing around the driven wheel and the carrier wheel and having one side thereof in driving engagement with the driving wheel, and means for transmitting movement from the driven wheel to the napping or teaseling rollers, substantially as described

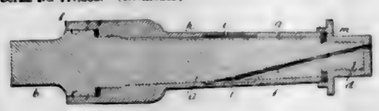
2. The combination with a napping drum, and its series of napping or teaseling rollers, of a driving sprocket wheel on the shaft of the said drum, a driven sprocket wheel, a carrier wheel beyond the said driving wheel, a sprocket chain passing around the driven wheel and the carrier wheel and having one side thereof in driving engagement with the driving wheel, and means for transmitting movement from the driven wheel to the napping or teaseling rollers, substantially as described

3. The combination with a napping drum, its series of napping or teaseling rollers, a driving band for said rollers, and a driving band pulley around which said band passes, of driving connections comprising a driving wheel on the shaft of the drum, a driven wheel in operative connection with the said driving band pulley, a guide or carrier wheel beyond the said driving wheel, and a band passing around the driven wheel and carrier wheel and having one side thereof in driving engagement with the driving wheel, substantially as described.

4. The combination with a napping drum, its series of napping or teaseling rollers, a driving band for said rollers, and a driving band pulley around which said band passes, of driving connections comprising a driving sprocket wheel on the shaft of the drum, a driven sprocket wheel in operative connection with the said driving band pulley, a guide or carrier wheel beyond the said driving wheel and a sprocket chain passing around the driven wheel and guide wheel and having one side thereof in driving engagement with the driving wheel, substantially as described.

## 505,265. AXLE-LUBRICATOR.

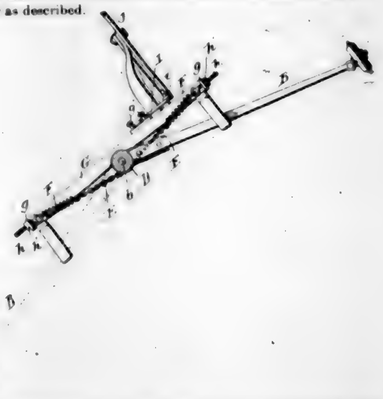
JOHN G. COBURN, Carthage, assignor of one-half to Albion P. Marsh, Dixfield, Me. Filed Sept. 29, 1892. Serial No. 447,252. (No model.)



*Claim.*—An axle and lubricator therefor comprising an axle having a passage extending from a point above the center of its outer end, and inclining downward to a point in the periphery midway of its length, said passage being uninterrupted for the purpose described, a nut for the axle having an aperture normally registering with the passage, and adapted to be moved out of register, a box surrounding the axle, and having an inner annular oil chamber at the inner end of the passage, all as set forth.

## 505,266. MARKER FOR CORN-PLANTERS.

CLIFFORD COUNCIL, Sherman, Ill. Filed June 7, 1893. Serial No. 476,846. (No model.)



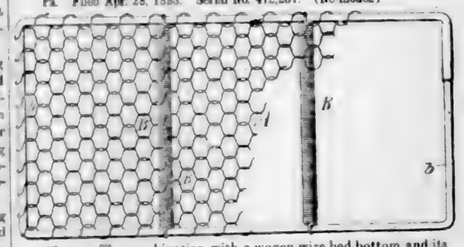
*Claim.*—1. In combination, a swinging marker carrying arm, the opposing springs attached thereto and means to relax one spring and means to draw on or increase the tension of the other spring, substantially as described.

2. In combination, a pivoted marker-arm, the opposing springs attached thereto, the sliding bar connected to said springs, and means to move said bar to vary the stress of the springs, substantially as described and for the purpose specified

3. In combination, a pivoted marker, its hub or drum, the two opposing springs connected to said drum, the sliding bar having adjustable connections with said springs, the bell-crank-lever to move said bar, and the hand lever connected to the bell-crank-lever, substantially as and for the purpose described

## 505,267. WIRE BED-BOTTOM.

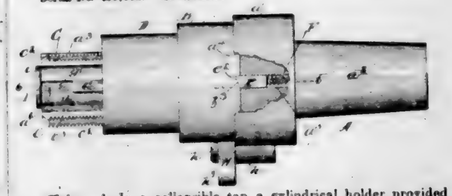
MILTON L. CROSS, Philadelphia, Pa. Filed Apr. 28, 1893. Serial No. 472,237. (No model.)



*Claim.*—The combination with a woven wire bed bottom and its side bars, of a closed coil spring extending from one side bar to the other and bearing at its ends against said side bars, substantially as set forth

## 505,268. COLLAPSIBLE TAP.

WILLIAM W. DOOLITTLE, Chicago, Ill., assignor to the Crane Company, same place. Filed Dec. 19, 1892. Serial No. 455,652. (No model.)



*Claim.*—1. In a collapsible tap, a cylindrical holder provided with longitudinal grooves, in combination with cylindrical cutters mounted in said grooves, and automatic mechanism whereby said cutters may be turned in their seats to position of collapse automatically and without stopping the normal rotation of the tap, substantially as described

2. In a collapsible tap, the cutter-holder *a* with enlargement, or head, *a'* and longitudinal grooves $a^2$, in combination with cylindrical cutters C seated in said grooves, a loose band B mounted on the cutter-holder around the cutters and connected to the latter, a stop device to limit the oscillation of the band on the holder, and a connect-

ing device whereby the loose ring may be connected and disconnected with the head of the holder, substantially as described.

3. In a collapsible tap, a cylindrical cutter-holder provided with longitudinal grooves $a^3$, in combination with cylindrical cutters C seated in said grooves, a loose band B mounted on the cutter-holder around the cutters and connected to the latter, a stop device to limit the oscillation of the band on the holder, a device for connecting and disconnecting said band on the holder, and mechanism whereby said connecting device is operated automatically, without stopping the tap, substantially as described.

4. In a collapsible tap, the cutter-holder $a$ provided with head $a'$ and grooves $a^3$, in combination with cylindrical cutters C having grooves $c'$, band B mounted loosely on the holder and provided with ribs $q'$ adapted to engage with the cutters, and spring latch E acting normally to connect said band with the head $a'$ substantially as described.

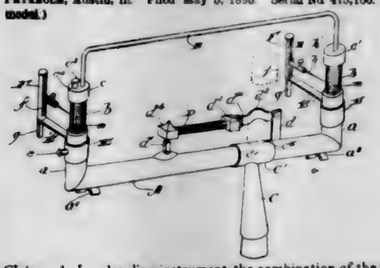
5. In a collapsible tap, a cylindrical cutter-holder $a$ and head $a'$ provided with grooves $a^3$, in combination with cylindrical cutters C, loose band B connected to said cutters and having a limited oscillation around their holder, the spring latch E, and actuating slide G adapted to be operated while the tap is in motion, substantially as described.

6. In a collapsible tap, the main head A provided with longitudinal grooves $a^3$, in combination with the cylindrical cutters C provided with toothed section $c^4$ and grooves $c'$, $c^3$, a loose band B provided with ribs $b'$, adapted to engage with the cutter grooves $c'$, and with a groove $b^3$, the spring latch E, seated in the head, adapted to engage with the loose band and having a shank $e'$ passing underneath the band B in the groove $b^3$ therein, a collar D fixed on the cutter-holder and provided with groove $d^3$, and the slide G seated underneath the fixed band D and arranged to slide back and forth in said groove therein, substantially as described.

7. In a collapsible tap, a cylindrical holder provided with longitudinal grooves $a^3$, in combination with cylindrical cutters C seated therein, a loose band B surrounding said cutters and connected thereto, a stop adapted to limit the oscillation of said band, an automatic mechanism for disconnecting the band and holder, and a device for returning the band to working position, substantially as described.

8. In a collapsible tap, the cutter-holder $a$ and end head $a'$, in combination with cylindrical cutters C mounted in grooves in said holder, the loose band B surrounding and connected to the cutters, the spring latch E arranged to connect the said band with the head $a'$, and the lever H pivoted to the head and engaging with the loose band, substantially as described.

## 505,269. HYDROSTATIC LEVELING-INSTRUMENT. OLOF V. PETERSON, Austin, Ill. Filed May 5, 1893. Serial No. 473,100. (No model.)



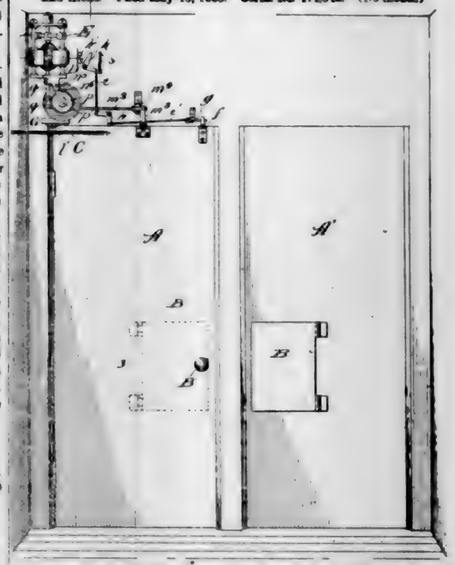
*Claim.*—1. In a leveling instrument, the combination of the tube A, having the upturned portions $a$, at its ends, with the transparent tubes $b$, secured thereto, and having the caps $c$, and $c'$, the cap $c$, having the opening $c^3$, provided with a stopper $c^3$, for the admission of the liquid or spirits, the tube B, connecting the tubes $b$, the floats I, composed of the pieces $i$, and quills $m$, and located within the upturned portions $a$, and adapted to rise in the tubes $b$, the movable socket-piece C, secured to the tube A, all constructed, arranged and operating, substantially as and for the purpose set forth.

2. In a leveling instrument, the combination of the tube A, having the elbows $a$, and the perforated disks $n$, with the transparent tubes $b$, secured in said elbows, and having the caps $c$, and $c'$, the cap $c$, having the opening $c^3$, provided with the stopper $c^3$, for the admission of the liquid or spirits, the tube B, connecting the tubes $b$, the floats I, composed of the pieces $i$, and quills $m$, and located within the elbows $a$, and adapted to rise in the tubes $b$, the movable socket-piece C, having the collar C', provided with the slot $c$, to fit around the tube A, and the tube D, secured to the tube A, all constructed, arranged and operating substantially as and for the purpose set forth.

3. In a leveling instrument, the combination of the tube A, having the elbows $a$, and perforated disks $n$, with the transparent tubes $b$, secured to said elbows, and having the caps $c$, and $c'$, the cap $c$ having the opening $c^3$, provided with a stopper $c^3$, for the admission of the liquid or spirits, the tube B, connecting the tubes $b$, the floats I, located within the elbows $a$, and adapted to rise in the tubes $b$, the movable socket-piece C, having the collar C', to fit around the tube A, and provided with a slot $c^4$, to engage a projection $c^5$, to hold the socket-piece rigidly, and the adjustable needle-sights secured at each end of the level, all constructed, arranged, and operating substantially as and for the purpose set forth.

4. In a leveling instrument, the combination of the tube A, with the transparent tubes $b$, secured thereto, an indicating substance within said tubes, the adjustable needle-sights secured to each end of the level and the adjustable specular glasses movably secured to the tube A, substantially as described.

## 505,270. ELECTRIC DOOR-OPERATING APPARATUS. OLIVER H. HICKS and ROBERTUS F. TROY, Chicago, Ill.; said Troy assignor to said Hicks. Filed May 15, 1893. Serial No. 474,342. (No model.)



*Claim.*—1. In combination with a door, motor-mechanism, and a contact-plate on the door having an electrical connection with the motor mechanism and operating, by pressure against the plate, to set in motion the motor-mechanism to operate the door, substantially as described.

2. In combination with a door, a contact-plate thereon controlling a normally open electric circuit closed by pressure against the plate, and motor-mechanism connected with the door for operating it and actuated to operate the door by closing the circuit by the contact-plate, substantially as described.

3. In combination with a door, a contact-plate thereon controlling a normally open electric circuit closed by pressure against the plate, motor-mechanism having an electric clutch connected with the door to tend normally to close it and contained in a normally closed electric circuit opened to release the door from the clutch by said pressure against the plate, and a spring set by the closing of the door to open it when released from the clutch, substantially as described.

4. In combination with a door and electric mechanism connected therewith for operating it, an electric door-check operating automatically to control the said mechanism to check the motion of the door in its operation, substantially as described.

5. In combination with a door and electric mechanism connected therewith for operating it, an electric door-check operating automatically to control the said mechanism to check the motion of the door in its operation, and adjustable with relation to said door to produce its checking effect at a desired predetermined point in the operation of the door, substantially as described.

6. In combination with a door, a normally open primary circuit-closer in position to be closed by a person approaching the door, motor mechanism provided with an electric clutch connected with the door, and set to effect closure thereof by the motor in the open condition of the primary circuit closer, a spring set by the closing of the door to open it when released, and a normally open circuit-closer in the clutch-circuit and closed by the opening of the door to a predetermined point to actuate the clutch to check its further opening, substantially as described.

7. In combination with a door, a contact-plate thereon controlling a normally open electric circuit closed by pressure against the plate, an electro-magnet D in said circuit, a motor E in an electric circuit normally held open by the door when closed and geared to an electric clutch F in a normally closed electric circuit opened by closure of the contact-plate circuit, the clutch being connected with the door to close it by operation of the motor, a contact-finger $D^2$ normally connecting the motor and clutch circuits and controlled to open the same by the armature of the magnet D, and a spring C for opening the door, the whole being constructed and arranged to operate substantially as described.

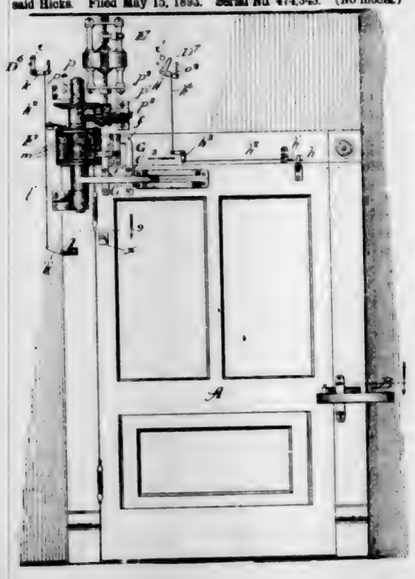
8. In combination with a door, a contact-plate thereon controlling a normally open electric circuit closed by pressure against the plate, an electro magnet D in said circuit, a motor E in an electric circuit containing a circuit-closer $D^3$ having a contact-finger $k$ controlled by a spring $s'$ and connected with a lever $g$ above the door, a projection $f$ on the door bearing against the lever $g$ and maintaining open the motor-circuit when the door is closed, an electric clutch F geared to the motor and in a normally closed electric circuit, a flexible connection $m^3$ between the clutch and door, a contact-finger $D^2$ normally connecting the motor and clutch circuits, and a spring C for opening the door, the whole being constructed and arranged to operate substantially as described.

9. In combination with the door having electric motor-mechanism connected with it for operating the door, an electric clutch in said motor-mechanism for connecting and disconnecting the door therewith, said clutch having the engaging surfaces of its co-operating members frictional in their operation and adapted to slip one upon the other to tend to produce yielding engagement of the door with its operating mechanism, substantially as described.

10. In combination with a door having electric motor-mechanism connected with it for operating the door, an electric clutch in said motor-mechanism, for connecting and disconnecting the door therewith, one of the co-operating members of said clutch forming a rotary armature and being provided with a tapering-pulley extension connected with the door by a flexible connecting medium, substantially as described.

11. An electric clutch comprising, in combination with a rotary shaft, a series of electro-magnets having at one end a non-magnetic head through which the cores of the magnets extend, and an armature loosely supported on the shaft and carrying a pulley provided with a spiral groove about its perimeter, substantially as and for the purpose set forth.

## 505,271. ELECTRIC DOOR-OPERATING APPARATUS. OLIVER H. HICKS and ROBERTUS F. TROY, Chicago, Ill., said Troy assignor to said Hicks. Filed May 15, 1893. Serial No. 474,343. (No model.)





*Claim.*—1. In combination with a door motor mechanism and a projection extending, in a plane above the threshold, into the path of the approach to the door, and having an electrical-contact connection with the motor-mechanism actuated by pressure against the projection to set in motion the motor-mechanism to operate the door, substantially as described.

2. In combination with a door, a projection extending, in a plane above the threshold, into the path of the approach to the door and controlling an electric circuit closed by pressure against the said projection, and motor-mechanism connected with the door for operating it and actuated to operate the door by closing the circuit by the said projection, substantially as described.

3. In combination with a door, a projection extending, in a plane above the threshold, into the path of the approach to the door and controlling an electric circuit closed by pressure against the said projection, a swinging arm connected with the door, and motor-mechanism connected with the swinging arm and in a normally open electric circuit closed, upon closing the circuit controlled by the said projection, to actuate the motor-mechanism to swing the said arm to operate the door, substantially as described.

4. In combination with a door, a projection extending, in a plane above the threshold, into the path of the approach to the door and controlling an electric circuit closed by pressure against the said projection, a swinging arm connected at one end with the door, and motor-mechanism with which the swinging arm is connected at its opposite end, said motor-mechanism being in two normally open electric circuits, the one being closed, upon closing the circuit controlled by the said projection, to actuate the motor-mechanism to swing the said arm to operate the door in one direction and the other being closed by such operation of the door to actuate the motor-mechanism to swing the said arm to operate the door in the opposite direction, substantially as described.

5. In combination with a door, a projection extending, in a plane above the threshold, into the path of the approach to the door and controlling an electric circuit closed by pressure against the said projection, and motor-mechanism having a clutch connected with the door for operating it and set, by closing the circuit by the said projection, to operate the door, substantially as described.

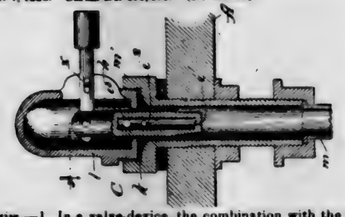
6. In combination with a door, a projection extending, in a plane above the threshold, into the path of the approach to the door and controlling an electric circuit closed by pressure against the said projection, an electric-motor in two normally open electric circuits and having an electric clutch in a normally closed electric circuit momentarily opened by the closure of the circuit controlled by said projection and provided with and operating a swinging arm connected with the door, and a starting-spring, set by the door when closed and released on momentarily opening the said clutch-circuit to start the door to open, one of said motor-circuits being closed by closure of the circuit controlled by said projection to actuate the motor to turn the clutch and swinging arm to open the door and the other of said motor-circuits being closed by the opening of the door to actuate the motor to turn the clutch and swinging arm to close the door, and a circuit-closer actuated by the door, when opened to a desired extent, to open the first of said motor-circuits, substantially as described.

7. In combination with a door, a projection extending, in a plane above the threshold, into the path of the approach to the door and controlling an electric circuit closed by pressure against the said projection, an electric motor in two normally open electric circuits, a swinging arm on a rotary shaft geared to the motor, said arm being connected at its free end with the door to open and close it by swinging in opposite directions, a circuit-closer G comprising a stationary track $e$ electrically connected with one branch of the circuit controlled by the said projection and a pivotal brush $g$ having an insulated section $d$ and connected with the other branch of said circuit and supported to engage the track and close said circuit in the opening of the door and to open it in the closing of the door, one of said motor-circuits being closed by closure of the circuit controlled by said projection to actuate the motor to turn the swinging arm to open the door and the other of said motor-circuits being closed by the opening of the door to actuate the motor to turn the swinging arm to close the door, and a circuit-closer actuated by the door when opened to a desired extent to open the first of said motor-circuits, substantially as described.

8. In combination with a door A, projections B and B' at opposite sides of the door, each extending, in a plane above the threshold, into the path of an approach to the door, and controlling an electric circuit closed by pressure against either projection, said circuit containing an electro-magnet D having its pivotal armature D' connected with a spring-controlled reversible switch and with a circuit-closer $D^3$, an electric motor E in two normally open electric circuits controlled by said reversible switch and containing, respectively, the circuit-closers $D^4$ and $D^7$, means for opening the circuit-closer $D^4$ by the door in opening, means for holding the circuit closer $D^7$ open when the door is closed, a starting-spring $c$ set by the door when closed, a rotary

electric clutch F geared to the motor and in circuit with the circuit-closer $D^2$, a swinging arm C secured at one end to the clutch-armature and connected at its opposite end with the door, a circuit-closer G' in a circuit containing the clutch, and a circuit-closer G for the circuit containing the magnet D, the whole being constructed and arranged to operate substantially as described.

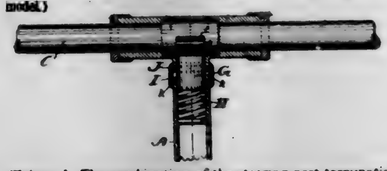
**505,272. VALVE DEVICE.** JOHN KELLY, Chicago, Ill. Filed Apr. 7, 1893. Serial No. 469,470. (No model.)



*Claim.*—1 In a valve-device, the combination with the supply-pipe to a flushing tank A containing a siphoning device B, of a hood *l*, a diaphragm *k* covering the lower end of the hood, a tube *i* supported to extend through the diaphragm with one end in the hood and the other end presented to the supply-pipe, the hood and tube being adapted to be reciprocated one with relation to the other, an opening in the tube between its ends, and an opening *i'* in the end of the tube presented to the supply-pipe, substantially as and for the purpose set forth

2. A valve-device comprising, in combination with the supply-pipe to a flushing-tank A containing a siphoning device B, a diaphragm *k* on a seat *m'* in said supply-pipe, a hood *l* confining the diaphragm on its seat and provided with a lateral discharge-opening A, a reciprocating tube *i* supported to extend through the diaphragm with one end in the hood and the other end in the supply-pipe, an opening *i'* in the lower end of the tube and an opening in the tube between its ends, and a float D on a rod fulcrumed in the opening *h* and fastened at its inner end to the tube, substantially as and for the purpose set forth

**505,273. ADJUSTABLE HANDLE FOR BICYCLES.** WALTER LAMB, Memphis, Tenn. Filed May 27, 1893. Serial No. 475,770. (No model.)



*Claim.*—1. The combination of the steering post terminating at top in the bearing rigid therewith, the handle bar rocking in said bearing and prevented from endwise movement therein, and the detent devices within the bearing and steering post for locking the handle bar in its adjusted position in the bearing, substantially as set forth

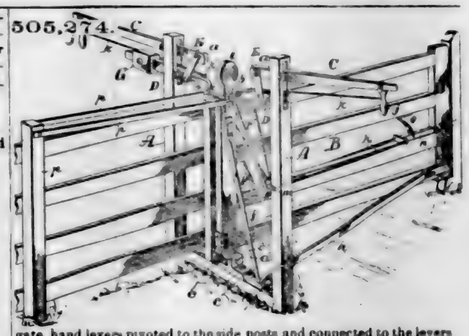
2. The combination of the steering post terminating at top in the bearing rigid therewith, the handle bar rocking in said bearing and prevented from endwise movement therein, the detent sleeve secured to the handle bar in the bearing, the detent bolt in the steering post, the spring acting on said bolt, and the slide for actuating the bolt, substantially as set forth

3. The combination of the steering post terminating at top in the bearing rigid therewith, the handle bar rocking in said bearing, the detent devices for locking the handle bar in its adjusted position in the bearing, and the flanged sleeves or collars of the handle bar embracing the bearing, substantially as set forth

4. The combination of the steering post terminating at top in the bearing rigid therewith, and provided with the opening having a detachable cover, the handle bar rocking in said bearing, and the detent devices within the bearing and steering post for locking the handle bar in its adjusted position in the bearing, substantially as set forth

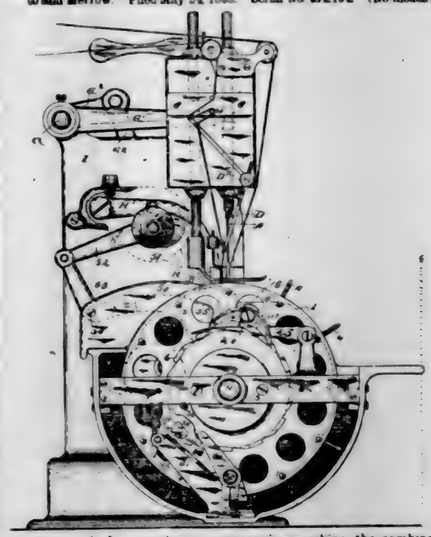
**505,274. GATE AND MECHANISM THEREFOR.** THOMAS H. LINDLEY, Savannah, Iowa. Filed Dec. 3, 1892. Serial No. 453,962. (No model.)

*Claim.*— In a tilting gate, the combination with a gate proper, and post at the free end and the sides of the gate, of levers pivoted to the side posts, rods connecting the free ends of these levers to the



gate, hand levers pivoted to the side posts and connected to the levers operating the gate, rods extending from a post in the rear of the gate to the free ends of the levers, handles pivoted at the end of the hand levers, a latch and flexible devices extending from the latch to the main levers and thence to the handles whereby the latch may be operated by the handles, substantially as set forth

**505,275. CROCHETING-MACHINE.** JOSEPH M. MERROW, Merrow, and WILLIAM H. STEDMAN, Norwich, Conn., said Stedman assignor to said Merrow. Filed May 24, 1892. Serial No. 434,194. (No model.)



*Claim.*—1. In a crochet or overseaming machine, the combination, with the stitch forming devices and a finger around which the stitches are formed, a feed wheel provided with a serrated or roughened holding and feeding surface and a series of pins or points for impaling the fabric, substantially as described

2. In combination with the stitch forming mechanism of an overseaming or crochet machine, a fabric feeding mechanism provided with a feed-wheel having impaling points or pins, a fabric guard projecting on one side of the impaling pins, and a fabric cast off reciprocating on the opposite side of said pins, substantially as described

3. In combination with the feed wheel and its ratchet wheel, a timing ratchet wheel, a pawl-carrier provided with reversed pawls one for the feed and the other for the timing ratchet wheel, a pawl-guard for the feed pawl, and a cam actuating said pawl guard and deriving motion from the timing ratchet, substantially as described.

4. In combination with the feed ratchet wheel, timing ratchet wheel and the actuating pawls therefor driven in unison, the pawl guard, the cam actuating the pawl-guard and driven from the timing ratchet, the locking pawl and the disengaging pin also driven by the timing ratchet and operating to unlock the feed ratchet wheel; substantially as described

5. In combination with the feed ratchet wheel; timing ratchet wheel, reversed actuating pawls mounted upon a common pawl carrier; pawl guard, cam driven by timing ratchet and actuating pawl-guard; locking pawl; tripping pin on timing ratchet for disengaging locking pawl; and trigger engaging locking pawl, substantially as described.

6. In combination with feed ratchet wheel; timing ratchet wheel; actuating pawls for said ratchet wheel; locking pawl, tripping pin on timing ratchet wheel for releasing locking pawl, trigger engaging locking pawl, and tripping pins for disengaging said trigger; substantially as described

7. In combination with feed wheel provided with impaling pins; feed ratchet wheel; timing ratchet wheel, actuating pawls for said ratchet wheels, locking pawl for feed wheel; trigger engaging locking pawl when elevated; and a series of pins, equal in number to the impaling points on feed wheel, arranged to engage and trip trigger to release locking dog before termination of feed movement, substantially as described.

9. In combination with feed wheel provided with trigger operating pins and ratchet wheel, timing ratchet wheel provided with cam and actuating pin for locking pawl, a pawl for each of said ratchet wheels; a pawl guard for feed operating pawl; a locking pawl for feed ratchet wheel, and a trigger engaging locking pawl, substantially as described

9. In combination with the feeding devices the feed ratchet wheel and its pawl and the timing ratchet and its pawl; the pawl guard and friction brake applied to the timing ratchet wheel; substantially as described

10. In combination with the feed wheel provided with a ratchet, the rock shaft, and the pawl carrier secured to said shaft by a frictional clamp; substantially as described

11. In combination with the feed wheel and its ratchet wheel mounted upon a bushing; a feed actuating shaft journaled in said bushing and provided with a pawl carrier; a pawl mounted upon said carrier and engaging the feed ratchet wheel; on the forward stroke of the carrier, a timing ratchet; a second pawl mounted upon the carrier and engaging said timing ratchet on the back or return stroke of the carrier, a locking pawl for engaging the feed ratchet wheels mounted upon a rock shaft having an arm projecting in the path of a pin on the timing ratchet; a trigger engaging said locking pawl when elevated by the timing ratchet wheel; and a pin on the feed wheel arranged to engage and pass the trigger; and operating to release the locking pawl during the advance motion of the feed wheel; substantially as described.

12. In combination with the stitch forming mechanism, comprising a reciprocating needle, a reciprocating and oscillating hook and a finger to form and support the stitches beyond the edge of the fabric; a feed wheel provided with impaling points; a fabric guard; a fabric cast off; and actuating mechanism controlling the advance movements of the feed wheel with relation to the number of stitch forming operations, said mechanism comprising a rock shaft driven in unison with the needle and carrying the impelling devices for the feed wheel, a timing ratchet wheel with devices controlling the application of said impelling devices, and a locking device for arresting the movement of the feed wheel, said locking devices being released by the action of the timing ratchet and engaged by the feed motion of the feed wheel; substantially as described.

13. The combination, in a machine, such as described, with the stitch forming mechanism, of a feeding mechanism comprising a rotating member, such as a wheel; actuating devices for advancing said wheel intermittingly, a lock actuated to interrupt and hold said rotating member, to prevent overthrowing or displacement, and unlocking mechanism operating through the lock to release the rotating member or feed wheel preparatory to the next feed motion, substantially as described.

14. In a crocheting machine, the combination of a feed-wheel and its support, a ratchet wheel secured to the feed wheel, a continuously reciprocating feeding pawl, a pawl guard, a lock arresting the throw of the feed wheel and retaining the latter in position, a cam governing the position of the pawl guard; and a lock retracting pin, substantially as described

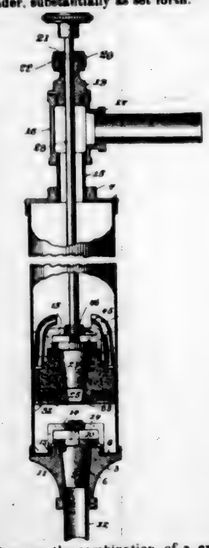
15. The combination with a feed-wheel, and actuating mechanism for effecting intermittent movements of said wheel, of a locking pawl actuated to arrest the feed wheel at the end of each feed-movement and to positively retain said wheel against further movement either forward or backward in the intervals between successive feed-motions, substantially as described

**505,276. LIFT-PUMP.** JOHN N. MOHN, Druecker, assignor of two-thirds to Ernst A. Weidner and Jacob Morgenthaler, Milwaukee, Wis. Filed Apr. 1, 1893. Serial No. 468,638. (No model.)

*Claim.*—1. In a lift pump, the combination, of a cylinder, a piston and piston stem, the former provided with an exterior apertured annular groove, and with a bottom chamber to receive packing, the

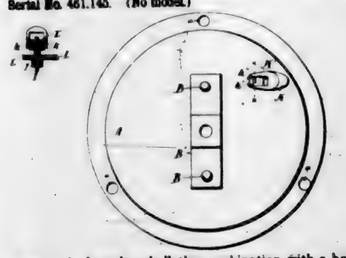


aperture communicating with said chamber, and inlet and outlet openings for the cylinder, substantially as set forth.



2. In a lift pump, the combination, of a cylinder, a piston and piston-stem, the former provided with inclined grooves, said grooves communicating with openings or recesses at their initial or starting points, pipes extending upwardly from the piston and having their lower ends communicating with the openings or recesses leading to the grooves, and inlet and outlet pipes for the cylinder, substantially as set forth

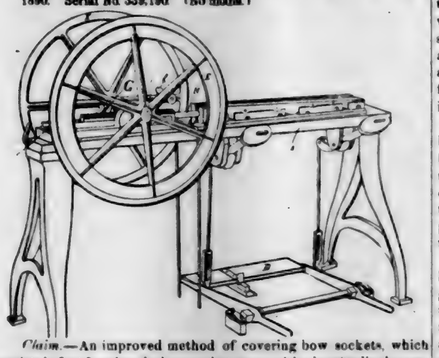
**505,277. DOOR-BELL.** ALBERT A. PAGE, New Haven, Conn., assignor to the Sargent & Company, same place. Filed Feb. 6, 1893. Serial No. 461,145. (No model.)



*Claim.*—1. In a door-bell, the combination with a hollow metal base, comprising a flat face and a flange offsetting from the edge thereof, of a bell-support projecting from the face of the said base, a bell attached to the said support, a single movement-plate located within the said base in a plane parallel with the face thereof, means for attaching the said single movement-plate directly to the said inner face of the base, a train located between the inner face of the base and the said plate, and including a wheel having a hub fitted into an opening formed in the center of the face of the base, and adapted to receive a key, and an arbor projecting through the face of the base near the edge thereof, and a bell-hammer secured to the projecting end of the arbor, and striking the bell when rotated, substantially as described, and whereby the train is entirely inclosed by the base of the device, and but a single movement-plate employed.

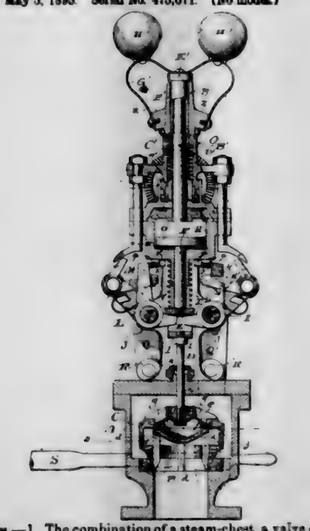
2. In a door-bell, the combination with a bell, a support therefor, and a train, of a bell-hammer connected with the said train for rotation thereby, and composed of a hammer-block having its opposite edges longitudinally grooved, and a knocker having a longitudinal opening longer than the said block, and constructed with corresponding parallel ribs extending inward from the walls of the said opening and taking into the grooves of the hammer-block, and extended at their inner ends to form retaining fingers for coupling the block and knocker together, substantially as described

**505,278.** METHOD OF COVERING BOW-SOCKETS. RUDOLF H. PFAFF and FREDERICK K. LEWIS, Ashtabula, Ohio. Filed Feb. 4, 1890. Serial No. 339,190. (No model.)



*Claim.*—An improved method of covering bow sockets, which consists in first forming the bow socket cover with a longitudinal seam; then closely inclosing the cover and clamping its seam so as to hold the cover and seam extended and supported throughout the entire length of the same, and finally forcing the two parts together, one in relation to the other, so as to cause the cover to snugly fit upon the bow socket, substantially as set forth

**505,279.** GOVERNOR. JOHN D. SILBERZAHN, West Bend, Wis. Filed May 5, 1893. Serial No. 473,071. (No model.)



*Claim.*—1. The combination of a steam-chest, a valve controlling the outlet of the chest, an automatic lift-and-trip mechanism governing the movement of the valve, a dash-pot having a lateral opening therein adjacent to its bottom, and a piston in the dash-pot, this piston being operated in unison with the valve and having such thickness as to cut-off the lateral opening in said dash-pot when moving in the direction necessary to a seating of said valve, substantially as set forth

2. The combination of a steam-chest, a valve controlling the outlet of the chest, a spring-resisted shackle connected to the valve, a dash-pot supported on standards rising from said chest, a piston in the dash-pot having a rod connection with the shackle, a pair of linked together rocking shafts having bearings on the standards and provided with lever-arms, bell-cranks loose on the shafts and engaging said shackle, spring-controlled hooks that are pivoted to the lever-arms and exert power on the bell-cranks, fingers extended from the hooks, and automatically adjustable trips in the paths of the fingers, substantially as set forth.

3. The combination of a steam-chest, a valve controlling the outlet of the chest, a spring-resisted shackle connected to the valve, a dash-pot supported on standards rising from said chest, a piston in the dash-pot having a rod connection with the shackle, a pair of linked together rocking shafts having bearings on the standards and provided with lever-arms, bell-cranks loose on the shafts and engaging said shackle, buffer springs interposed between arms of the bell-cranks and lugs depending from the dash-pot, spring-controlled hooks that are pivoted to the lever-arms and exert power on the bell cranks, fingers extended from the hooks, and automatically adjustable trips in the path of the fingers, substantially as set forth.

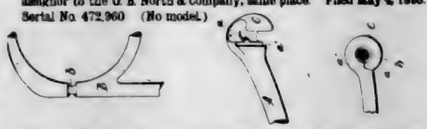
4. The combination of a steam-chest, a valve controlling its outlet, a lift and-trip mechanism for the valve, rotative speed-governing balls, a reciprocative sleeve actuated by movement of the balls due to centrifugal force, a movable spring-controlled device in the path of the former sleeve, and feet carried by the spring-controlled sleeve to come in the paths of fingers extended from hooks that constitute parts of the aforesaid lift-and-trip mechanism, substantially as set forth

5. The combination of a steam-chest, a valve controlling its outlet, a lift-and-trip mechanism for the valve, a rotative shaft, speed-governing balls connected to the shaft, a cylindrical guide maintained on the shaft, a sleeve loose on the guide and controlled as to movement by said balls, a stationary hollow stem engaging said shaft and provided with an exterior annular shoulder, a spiral spring supported on the shoulder, another sleeve that engages the stem against the resistance of the spring and abuts against the ball controlled sleeve, and feet carried by the spring-controlled sleeve to come in the paths of fingers extended from hooks that constitute parts of the aforesaid lift-and-trip mechanism, substantially as set forth.

6. The combination of a steam-chest, a valve controlling its outlet, a lift-and-trip mechanism for the valve, a stationary base having a socket and an exteriorly shouldered hollow stem rising therefrom, a shaft rotative in the stem, speed-governing balls connected to the shaft, a cylindrical guide maintained on the shaft, a sleeve loose on the guide and controlled as to movement by said balls, a spiral-spring supported on the stem-shoulder, another sleeve that engages said stem against the resistance of the spring, enters the socket on said base and abuts against the ball-controlled sleeve; suitable channels and ports for conveying lubricant from said socket to the aforesaid stem and rotative shaft, and feet carried by the spring-controlled sleeve to come in the paths of fingers extended from hooks that constitute parts of the aforesaid lift-and-trip mechanism, substantially as set forth.

7. The combination of a steam-chest, a valve controlling its outlet, a spring-resisted shackle connected to the valve, a flanged dash-pot supported on standards rising from the chest, a piston in the dash-pot having a rod-connection with the shackle, a pair of linked together rocking shafts having bearings on the standards and provided with lever arms, bell-cranks loose on the shafts and engaging said shackle, spring-controlled hooks that are pivoted to the lever-arms and exert power on the bell-cranks, fingers extended from the hooks, a plate supported on the dash-pot flange, an exteriorly shouldered hollow-stem rising from the plate, a shaft rotative in the stem, speed governing balls connected to the shaft, a cylindrical guide maintained on the shaft, a sleeve loose on the guide and controlled as to movement by said balls, a spiral spring supported on the stem-shoulder, another sleeve that engages said stem against the resistance of the spring and abuts against the ball-controlled sleeve, rods secured to the spring-controlled sleeve and engaging registering slots in the dash-pot flange and plate supported thereon and feet on these rods that come in the paths of the fingers belonging to the aforesaid hooks, substantially as set forth.

**505,280.** BRIDLE-BIT. CHARLES H. SMITH, New Haven, Conn., assignor to the O. B. North & Company, same place. Filed May 4, 1893. Serial No. 472,960. (No model.)



*Claim.*—The herein described bridle-bit, consisting of a mouth-bar A, provided at each of its ends with an initially open ear C, having a transverse recess $a'$ at its base and a tongue $a$, extending inward from the said recess about halfway around the inner face of the ear, and gradually tapering in depth from its outer to its inner end, and two cheek-pieces B, B, adapted to be inserted within the ears of the mouth-bar, which are then closed around them, and each constructed with a groove $b$ to receive the tongues $a$ of the ears, substantially as described, and whereby the tongues and grooves prevent the cheek-pieces from lateral play in the said ears, which the form and location of the tongues permit to be readily closed upon the cheek-pieces.



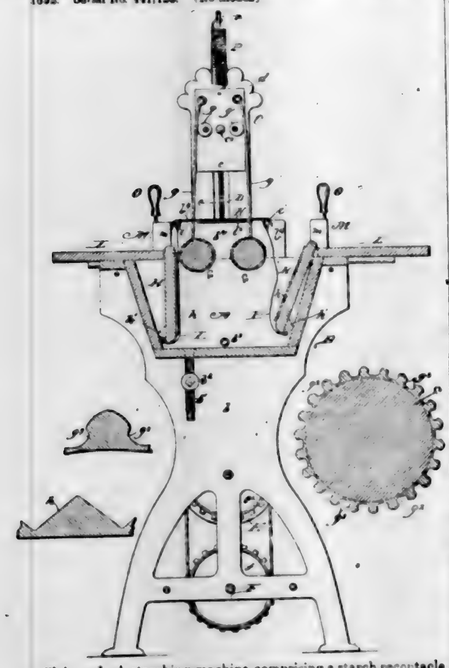
**505,281.** SNAP-HOOK. CHARLES H. SMITH, New Haven, Conn., assignor to the O. B. North & Company, same place. Filed May 22, 1893. Serial No. 475,082. (No model.)



*Claim.*—1. A double snap-hook having its two hooks located at the opposite ends of its body-portion and opening in opposite directions, and provided with two independent bolts, co-operating respectively with the hooks, the independency of the bolts enabling one to be actuated irrespective of the other, substantially as described.

2. A double snap-hook having its body-portion laterally recessed and its two hooks located at its opposite ends and opening in opposite directions, a cap adapted to fit into the recess of the said body-portion, and two spring-actuated bolts arranged between the cap and body-portion independently of each other, and held in place by the cap, substantially as described.

**505,282.** STARCHING-MACHINE. THOR A. THORSEN, Chicago, Ill., assignor to the S. H. Stipolair Company, same place. Filed July 25, 1892. Serial No. 441,123. (No model.)



*Claim.*—1. A starching machine comprising a starch receptacle, a bed or support which holds the article that is to be starched removed from the supply of starch within the starch receptacle and a reciprocating starching roll operating to take up a supply of starch from the receptacle, and to apply the same to the article upon the bed or support, in alternation, substantially as described.

2. A starching machine comprising a starch receptacle, a bed or support which holds the article that is to be starched removed from the supply of starch within the starch-receptacle a flexible foraminous or open work sheet arranged to cover said article, and a reciprocating starching roll operating to take a supply of starch from the receptacle and to traverse the said flexible foraminous or open work sheet in alternation so as to first take a suitable quantity of starch from the main source of supply and then apply the same to the article by distributing it over and forcing it through the said sheet substantially as described.

3. A starching machine comprising a starch receptacle, a bed or support arranged to rise within the starch receptacle to an extent to support the article that is to be starched removed from a supply of starch occupying the bottom portion of the receptacle, and a reciprocating starching roll having an up and down movement and operating to dip within the starch and to traverse an article upon the bed or support, in alternation so as to first take up a suitable quantity of starch from the main supply and then distribute the same over the article, substantially as described.

4. The combination in a starching machine of a reciprocating starching roll operating to take a supply of starch from a main source of supply and to distribute the same upon the article requiring starching, in alternation, and a bed H for said article arranged for adjustment in and out of co-operative relationship with the starching roll, substantially as described.

5. In a starching machine provided with a reciprocating starching roll and stationary starching trough, a bed H adjustable into and out of co-operative relationship with the starching roll, and a movable table L adjustable with reference to the adjustment of the bed, substantially as set forth.

6. In a starching machine a bed whereon the article to be starched is placed, a reciprocating carrier, and a starching roll suspended therefrom and maintained in co-operative relationship with the bed by spring action, substantially as set forth.

7. In a starching machine, the combination of a bed H, a suspended foraminous or open work sheet I attached to the lower portion of the bed, and a reciprocating starching roll arranged to distribute starch upon and force it through said sheet upon an article placed between the sheet and bed substantially as set forth.

8. The combination in a starching machine of a bed whereon the article to be starched is placed, a reciprocating carrier, and a starching roll attached to the reciprocating carrier by spring arms, substantially as set forth.

9. The combination in a starching machine of a starching roll, spring arms supporting the starching roll and cams or eccentrics $g'$ for adjusting the spring arms, substantially as set forth.

10. In a starching machine, the starching receptacle, a couple of starching rolls suspended from a reciprocating carrier and arranged to dip into the starch receptacle, and beds for the purpose set forth arranged within and at opposite sides of the starching receptacle, substantially as described.

11. In a starching machine, a reciprocating starching roll, a bed, a foraminous or perforated sheet I attached at one end to an end of the bed, and a rod $i'$ to which the opposite end of said sheet is attached, substantially as set forth.

12. In a starching machine, a sliding table L, and a bed H hinged to the sliding table and arranged to hang therefrom within the starch receptacle in co-operative relationship with the reciprocating starching roll, substantially as set forth.

13. A starching machine comprising the starch receptacle, reciprocating starching rolls G suspended from a reciprocating carrier, beds H arranged to rise within the starch receptacle, and slides connected with the beds for the purpose of raising and lowering the same, substantially as set forth.

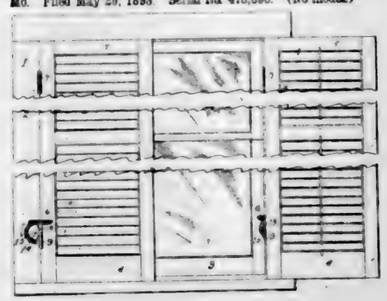
14. The combination in a starching machine of the reciprocating carrier C, provided with one or more starching rolls, balance springs P suspending the carrier, and a driving mechanism by which the carrier is reciprocated, substantially as set forth.

15. In a starching machine, a bed whereon the article to be starched is placed, a starch receptacle, a reciprocating starching roll arranged to dip into the starch receptacle, and a perforated steam pipe arranged within the starch receptacle whereby the starch can be kept in proper condition, substantially as described.

16. In a starching machine, the starch receptacle A, end guards $b^4$ and sliding tables provided with guards M, substantially as described.

17. In a starching machine, the starching roll having a corrugated face with concaved sides for the channels, so as to form starch-holding pockets, substantially as described.

**505,283.** SHUTTER-WORKER. CHARLES F. ZIEGLER, St. Louis, Mo. Filed May 29, 1893. Serial No. 475,898. (No model.)



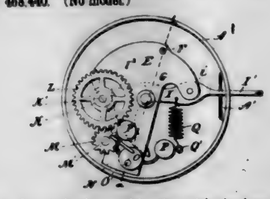
*Claim.*—1. The improved shutter fastener and operator for hinged shutters and blinds, constructed with a gear-wheel mounted upon one of the hinge-leaves of the blind or shutter, a horizontal shaft, a gear 15 mounted upon the outer end of said shaft to engage said gear-wheel carried by the hinge-leaf, an arm 18 having its inner end fixed upon said shaft and provided with a longitudinal slot 26, a slotted face-plate 17 having a longitudinal slot 27 and an enlargement 32 of said slot adjacent the upper end thereof, and an enlargement 33 of said slot located below the plane of said shaft, an operating knob or handle 21 provided with a shank 22 having a fork 23, a pin 25 sliding loosely in the slot 26 of the arm 18 and connecting said arm to said shank, said shank and arm being constructed to be pulled out of and pushed in the slot 27 in the face plate and swung around to rock said shaft, means which lock said shaft against rotation in one direction when the shutter is in a closed position, and means which lock said shaft against rotation in the opposite direction when the shutter is in an open position, substantially as herein specified.

2. In an improved shutter fastener and operator for hinged shutters and blinds, a horizontal shaft 14 provided with a series of apertures 20 located adjacent its inner end, means fixed upon the outer end of this shaft to assist in opening and closing the shutter, an arm 18 arranged to be fixed upon said shaft nearer to or farther from its ends, a pin 19 which engages an aperture in said arm and any one of the series of apertures in said shaft, and an operating handle or knob connected to said arm to rock said shaft, substantially as herein specified.

3. In an improved shutter fastener and operator for hinged shutters and blinds, the face plate 17 having a slot 27 provided with two lateral enlargements 32 and 33 located a distance apart, ears 16 having inclined upper edges 29 and projecting upon one side of said face-plate, one of said ears upon either side of said slot, ears 30 having inclines 31 and located one upon either side of said slot and beneath said ears 16, in combination with means which engage the inclined edges of the ears 16 to lock a shutter or blind in a closed position, and which engage the inclines 31 of the ears 30 to lock a shutter or blind in an open position, substantially as herein specified.

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**505,284.** BELL. IRVIN H. ABELL, East Hampton, Conn., assignor to the East Hampton Bell Company, same place. Filed Mar. 31, 1893. Serial No. 468,440. (No model.)



*Claim.*—1. In a bell, the combination with the base and the bell thereof, of a train, means for actuating the same, a pivotal bell-striker located near one side of the bell in the chamber formed between the base and the bell and a pitman or link connected eccentrically with the said striker and with a revolving member of the said train, substantially as described, and whereby the striker is oscillated when the train is actuated in either direction.

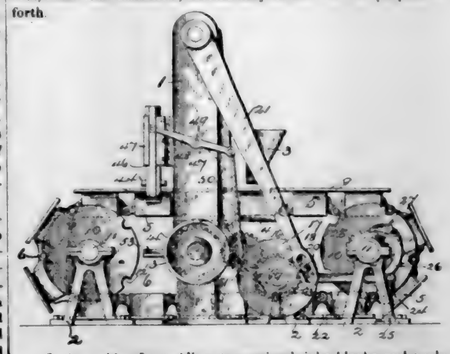
2. In a bell, the combination with the base and the bell thereof, and a movement plate, of a train, means for actuating the same, a pivotal bell-striker adapted to oscillate upon the face of the movement plate within the chamber formed by the base and bell and comprising two hammers extending inward, away from one side of the bell and a pitman attached to the striker inside of its pivot, and also connected with a rotary member of the said train, substantially as described.

3. In a bell, the combination with a circular cup-shaped base, a movement-plate located therein, a threaded post secured to the said plate, a bell applied to the said post, a lever located between the said plate and the bottom of the base, and having its inner end furnished with a segmental rack and its outer end with a finger-piece, a spring attached to the said lever for actuating it in one direction, a train mounted in the said base and plate, a striker pivoted to the plate, and oscillating on the face thereof and a pitman having eccentric connection with the striker and directly with a pinion of the train, substantially as described, and whereby by the operation of the lever the train is caused to oscillate the striker, all of said parts being contained within the base and bell.

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**505,285.** BRICK-MACHINE. WILLIAM ACTON, Chicago, Ill., assignor to Thomas T. Wood, St. Joseph, Mich. Filed Oct. 31, 1892. Serial No. 450,542. (No model.)

*Claim.*—1. A machine for molding or pressing bricks, blocks, and analogous articles, consisting of a suitable framing, hopper, and mold-supporting table, an operative shaft, an endless series of linked molds having meeting flanges at their upper portions, rotary disks or drums adapted to engage with and rotate said molds, a series of brick-pressing plungers, a rocking shaft and a toggle adapted to operate upon the cross-head carrying said plungers, levers connected with said rocking shaft, eccentrics connected with said levers and adapted to oscillate the same, ejectors, eccentrics, levers connected therewith and with the ejector-carrying frame and adapted to reciprocate the same, followers attached to the ejector-carrying frame and adapted to force down the brick-receiving and transporting board, and mechanism, substantially as described, connecting and operating said levers, disks and eccentrics, substantially as and for the purpose set forth.



2. A machine for molding or pressing bricks, blocks, and analogous articles consisting of a suitable framing, hopper, and mold-supporting table, a series of linked molds having meeting flanges at their tops, rotary disks or drums having notched peripheries to engage with and rotate said molds, a series of vertically-reciprocating pressing plungers, toggle mechanism for actuating the plunger head or frame, a series of ejecting plungers, an independent brick receiving and transporting board and a plurality of followers connected and reciprocating with the ejector mechanism and adapted to impinge upon and press down said brick-receiving board, substantially as and for the purpose set forth.

3. In a machine for molding or pressing bricks, blocks and analogous articles, the combination of a series of connected molds, pressing plungers and mechanism for vertically reciprocating the same, an independent brick-receiving and transporting board, vertically-reciprocating ejectors and followers connected with the ejector frame and adapted to impinge upon and press downward said brick-receiving board, substantially as and for the purpose set forth.

4. In a machine for pressing or molding bricks, blocks, and analogous articles, the combination with the molds and pressing mechanism of a brick-receiving board positioned beneath said molds, brick-ejector mechanism, and followers connected with said ejector mechanism and adapted to impinge upon said brick-receiving board in advance of the impingement upon the bricks of the ejectors and force down said board correspondingly with the downward movement of the ejectors, substantially as and for the purpose set forth.

5. A machine for pressing bricks, blocks, and analogous articles consisting of a series of flexibly-connected and multiple-chambered molds having open, unimpeded, tops and bottoms, notched disks or drums engaging with and rotating said series of molds, downwardly-acting pressing plungers located in a guide frame above the mold-chain, ejecting plungers located in a framing and operating in a plane and direction parallel with that of the pressing plungers, a loose brick-receiving and conveying board adapted to be held against the bottom of said molds while in their upper position, followers connected with said ejectors and adapted to press down said conveyer board in advance of the ejection of the bricks, and mechanism, substantially as described, for actuating said disks, plungers, and ejectors, substantially as and for the purpose set forth.

6. The combination with a series of flexibly-connected molds, notched disks engaging therewith and brick-pressing plungers and ejectors and the main driving shaft, of supplemental shafts 16 and 19, toothed gearing connecting said shafts, eccentric disks 17 carried by said shaft 19 and having eccentric pins 20, plunger-operating levers 21 having slotted lower ends engaging with said eccentric pins 20, arms 22 having strap connection with said eccentrics, pivoted levers 24 connected with said arms 22, curved lever arms 26 having pawl and ratchet connection with said notched disks, a cross-head 30, rocking shaft 41 connected with the plunger-operating levers 21 and a toggle connecting the cross-head and the rocking shaft, substantially as and for the purpose set forth.

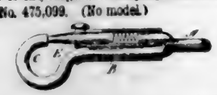


7. In a machine for pressing bricks, blocks and analogous articles, a plunger-carrying cross-head having at its upper portion bevel edges and a central curved recess, a roller seated within said recess, a toggle having a beveled bottom edge and a beveled and grooved top, a roller seated within the grooved upper portion of said toggle, a rock-shaft having a bevel-edged depending offset keyed to the roller seated in the upper portion of the toggle, plunger-operating levers connected at one end with said rock-shaft, eccentrics connected with the other ends of said plunger-operating levers, and gearing actuating said eccentrics, substantially as and for the purpose set forth.

8. In a machine for molding or pressing bricks, blocks, and analogous articles, the combination with the pressing mechanism of vertically-reciprocating ejectors and followers connected therewith and adapted to impinge upon and force downwardly the brick-receiving and transporting board, substantially as and for the purpose set forth.

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**505,286.** SNAP-HOOK. FREDERICK W. CARNELL, New Haven, Conn., assignor to the Sargent & Company, same place. Filed May 22, 1893. Serial No. 475,099. (No model.)



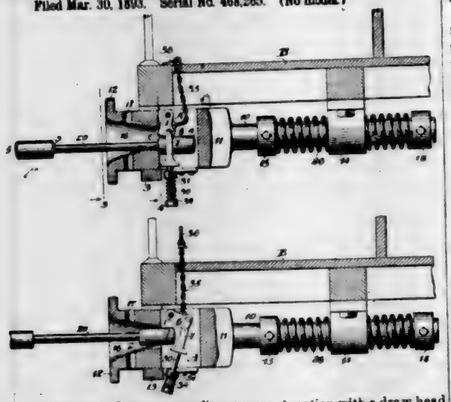
*Claim.*—1. A snap-hook having an eye, body-portion, hook-proper, and an extension from the base of the eye, all formed from a single piece of wire, a case applied to the said body-portion and extension, and a bolt located in the case, the said extension constituting a lock or key to prevent the case from turning on the body-portion of the hook, substantially as described.

2. A snap-hook having an eye, body-portion, hook-proper, and an extension from the base of the eye, all formed from a single piece of wire, a sheet-metal case applied to the said body-portion and extension, a bolt located in the case, and a spring interposed between the extension and the bolt, the said extension constituting a lock or key to prevent the case from turning on the body-portion of the hook, and also constituting an abutment for the spring, substantially as described.

3. A snap-hook having its eye, body-portion and hook proper formed from a single piece of wire, a sheet-metal case applied to the said body-portion in the form of a letter S and adapted to embrace the said body-portion, and an extension from the base of the eye, and a bolt located in the said case, substantially as described.

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**505,287.** CAR-COUPLING. JOHN J. CROWLEY, New York, N. Y. Filed Mar. 30, 1893. Serial No. 468,265. (No model.)



*Claim.*—1. In a car coupling, the combination with a draw head having an opening communicating at its rear with a vertical recess, of a coupling bar consisting of a shank and an enlarged end whereby the said bar may gravitate in the recess to engage the draw head, and a spring controlled swinging saddle pivoted in said recess, and operating to hold the coupling bar from moving upwardly, substantially as described.

2. In a car coupling, the combination with a draw head having an opening communicating at its rear with a vertical recess, of a coupling bar consisting of a shank and an enlarged end whereby the said bar may gravitate in the recess to engage the draw head, a spring controlled swinging saddle pivoted in said recess, operating to hold the coupling bar from moving upwardly, and a chain or rod for lifting said saddle, substantially as described.

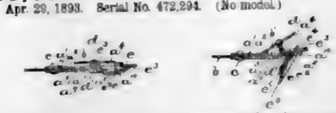
3. In a car coupling, the combination with a draw head having an opening communicating at its rear with a vertical recess, of a coupling bar consisting of a shank and an enlarged end whereby the said bar may gravitate in the recess to engage the draw head, a swinging saddle pivoted in said recess, and a stirrup pivoted thereto with means for raising the same whereby the said coupling bar may be raised and released, substantially as described.

4. In a car coupling, the combination with a draw head having an opening communicating at its rear with a vertical recess, of a coupling bar consisting of a shank and an enlarged end whereby the said bar may gravitate in the recess to engage the draw head, a spring seated swinging saddle pivoted in said recess, a pivoted stirrup, and means for raising the same whereby the said coupling bar may be raised and released, substantially as described.

5. In a car coupling, the combination with a draw head having an opening communicating at its rear with a vertical recess, of a coupling bar consisting of a shank and an enlarged end whereby the said bar may gravitate in the recess to engage the draw head, a spring seated swinging saddle pivoted in said recess, a pivoted stirrup, and means for raising the same whereby the said coupling bar may be raised and released, and a lifting device whereby the coupling bar may be raised and released, substantially as described.

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**505,288.** CORSET-CLASP. DAVID EISEX, New York, N. Y. Filed Apr. 29, 1893. Serial No. 472,294. (No model.)



*Claim.*—1. A corset clasp comprising therein, an eye-plate, and a pivoted plate hinged to said eye-plate, in combination with a stud or post, a lip on said hinged plate adapted to normally project beneath the head of said stud or post, whereby said hinged plate is in holding engagement with said stud or post when in its normal position, but when raised, causing the disengagement of said post from the eye-plate, substantially as and for the purposes set forth.

2. A corset clasp comprising therein an eye-plate, a pivoted plate hinged to said eye-plate and a spring plate connected with said eye-plate, in combination with a stud or post, a lip on said hinged plate adapted to normally project beneath the head of said stud or post, whereby said hinged plate is in holding engagement with said stud or post when in its normal position, but when raised, causing the disengagement of said post from said eye-plate, substantially as and for the purposes set forth.

3. A corset clasp comprising therein an eye-plate having communicating eyes $a^2$ and $a^4$, arms $a^5$ and $a^7$ and a pivot plate hinged to said arms, in combination with a stud or post, a lip on said hinged plate adapted to normally project beneath the head of said stud or post, whereby said hinged plate is in holding engagement with said stud or post when in its normal position, but when raised, causing the disengagement of said stud or post from said eye-plate, substantially as and for the purposes set forth.

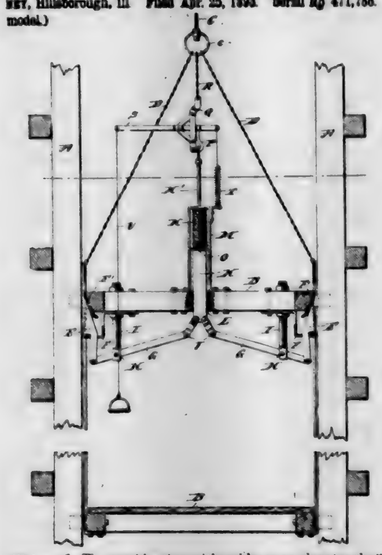
4. A corset clasp, comprising therein, an eye-plate having communicating eyes $a^2$ and $a^4$, a spring-plate $a^9$, arms $a^5$ and $a^7$ and a pivot plate hinged to said arms, in combination with a stud or post, said hinged plate being in holding engagement with said stud or post when in its normal position, but when raised, causing the disengagement of said stud or post from said eye-plate, substantially as and for the purposes set forth.

5. A corset clasp comprising therein an eye-plate, having a stop or post $a^{10}$ thereon, and a pivot-plate $c$ hinged thereto, said plate having a raised portion $c'$, an inclined surface $c^4$ and a projection or lip $c^3$, in combination with a stud or post $d$, substantially as and for the purposes set forth.

6. A corset clasp comprising therein a lower plate $a'$, having communicating eyes $a^2$ and $a^4$, and a post or stop $a^{10}$, an upper plate $a^3$ having arms $a^5$ and $a^7$, and a pivot plate $c$ hinged to said arms, said plate having a raised portion $c'$, an inclined surface $c^4$, and a projection or lip $c^3$, in combination with a stud or post $d$, substantially as and for the purposes set forth.

7. A corset clasp comprising therein a lower plate $a'$ having communicating eyes $a^2$ and $a^4$, and a post or stop $a^{10}$, an upper plate $a^3$ having arms $a^5$ and $a^7$, and a spring-plate $a^9$, a pivot plate $c$ hinged to said arms $a^5$ and $a^7$, said plate having a raised portion $c'$, an inclined surface $c^4$ and a projection or lip $c^3$, in combination with a stud or post $d$, substantially as and for the purposes set forth.

**505,289. SAFETY-CATCH FOR ELEVATORS.** WALTER H. FISHER, Hillsborough, Ill. Filed Apr. 25, 1893. Serial No. 471,786. (No model.)



*Claim.*—1. The combination with guides in an elevator shaft, and a cage slidingly mounted between the same, of wedge-shaped catches provided with sharp downwardly acting teeth on their outer faces opposite said guides, levers each of which is engaged at one end with one of the catches, a spring-actuated plunger adapted to act on the other ends of said levers, a spring for said plunger to effect such action, and means to maintain such spring normally compressed and the catches out of action, substantially as and for the purpose described.

2. The combination with the guides in an elevator shaft and a cage mounted between the same, of catches carried by said cage opposite the guides respectively, and adapted to slide upward and outward to wedge between said guides and cage, levers fulcrumed on the cage each of which is connected at one end to one of said catches, a plunger engaging the other ends of the levers, a trip mechanism to maintain the plunger in its upper position and the catches inoperative, and a spring normally compressed, and acting to throw the plunger downward and the catches into action, when the trip mechanism is actuated, substantially as described.

3. The combination with guides, an elevator cage and a safety catch therefor, of a trip mechanism consisting of a link maintained normally in a suspended position, a pivot hook at one end of the link adapted to engage with the safety catch device, and a trip arm to secure the other end of the hook till the arm is operated to allow the catch to act.

4. The combination with an elevator shaft, a cage therein, and a safety catch therefor, of a trip mechanism to support said safety catch normally inactive, and consisting of an L-shaped hook normally engaging the said safety device, a link to which said hook is pivoted by one end, a trip arm carried by the link and provided with a slot or recess to engage the other end of the hook, a spring to prevent the premature disengagement of the arm and hook, and means to effect said disengagement, substantially as and for the purpose described.

5. In a safety catch, a sliding wedge provided with ratchet teeth on one face, and a shank polygonal in cross section, a slotted guide for said shank, a friction plate for the back of said wedge, and means to operate said wedge along said plate.

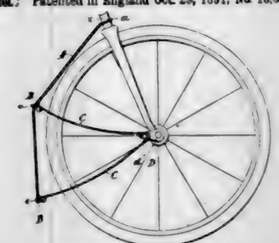
6. In a safety catch for elevators, the combination with the cage and guides, of a pair of sliding wedge-shaped catches provided with teeth on their outer faces, friction plates for their rear faces, levers fulcrumed in the cage, and connected at their outer ends with said catches, a plunger having a flattened lower end engaged with the inner ends of the levers, and a reduced upper stem portion, a saddle or chair secured to the cage and forming a guide for the plunger, a coil spring mounted on the plunger-stem within the chair and acting downward, and trip means to maintain the plunger elevated and the spring compressed until said trip is actuated.

7. In a safety catch, the herein described trip mechanism, consisting of a suspended link or piece, adapted to be supported at the upper end, a pivot hook at the other end, a trip arm pivoted to a side extension from said link and having a slot or recess to engage with said hook, and a spring tending to maintain such engagement, and adjunctive devices inoperatively supported on said pivot hook when engaged with said trip arm, but free when said arm is disengaged from the hook.

8. In a safety catch for elevators, the combination with elevator shaft guides and the cage mounted therein, of a catch guide carried by the cage and provided with a polygonal slot; a wedge catch having a shank polygonal in cross-section slidingly mounted in said slot, a friction plate at the back of said wedge catch, and means to slide said catch, substantially as shown and described.

9. The combination with guides and an elevator cage having a plurality of spreading chains and a supporting cable, of a trip mechanism also supported from said cable, a spring actuated safety catch for said cage connected to said trip mechanism, and maintained inactive while the spreading chains and trip mechanism are maintained in a taut condition, but adapted to be thrown into action when the trip mechanism is slacked by the slacking of the spreading chains.

**505,290. MUD-GUARD FOR CYCLES.** JOHN GARDNER and DALE MARSHALL, Cheltenham, England, assignors to the Overman Wheel Company, Chicopee Falls, Mass. Filed Feb. 20, 1893. Serial No. 463,010. (No model.) Patented in England Oct. 29, 1891, No. 18,651.



*Claim.*—1. The combination in a mud-guard for cycle wheels, of a strip of flexible waterproof fabric adapted to be fixed to the frame of the cycle at one end, with spring stays detachably fixed to the fork or frame carrying the wheel and adapted to stretch and support the strip of flexible waterproof fabric over the wheel, as set forth.

2. The combination in a mud-guard for cycle wheels, of the strip of flexible waterproof fabric A having one or more metallic strips B, B, fixed to it; of the spring stays C, C, detachably connected to plates D fixed to the fork or frame of the machine and having their free ends *c*, *c*, adapted to engage with holes *b*, *b*, in the strips B, B; the plates D D being constructed and adapted to have the stays C C applied to and removed from them at pleasure all substantially as set forth.

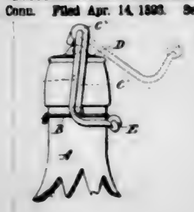
3. The spring stays C, C, each pair being formed out of one length of spring wire, in combination with a strip of flexible waterproof fabric forming a mud-guard substantially as shown and for the purpose specified.

4. A suspension mud-guard for cycles, consisting of an unrolled strip of flexible material, and attaching devices applied to its respective ends, and adapted to be applied to and removed from the vehicle at pleasure, substantially as described.

5. A suspension mud-guard for cycles, consisting of an unrolled strip of flexible material, and attaching devices applied to its respective ends, and one of them being yielding to place the said strip under tension, and both of them being adapted for application to or removal from the vehicle at pleasure, substantially as described.

6. A suspension mud-guard for cycles, consisting of an unrolled strip of flexible material, and attaching devices applied to its respective ends, and one of them being made of spring wire and constructed to embrace a wheel of the vehicle, and to place the strip under tension, and both of them being adapted for application to and removal from the vehicle at pleasure, substantially as described.

**505,291. BOTTLE-STOPPER FASTENER.** BENJ. GUNNISON, West Haven, Conn. Filed Apr. 14, 1893. Serial No. 470,330. (No model.)

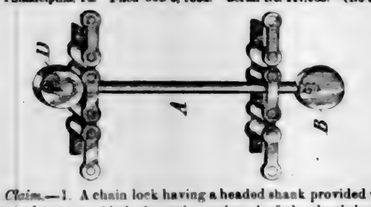




*Claim.*—1. A bottle-stopper fastener comprising a bail having two arms adapted at their lower ends to be pivotally connected with the neck of a bottle, and having their upper ends united and provided with bearings, a lever journaled in the said bearings whereby it is pivotally connected with the bail, and comprising a short crank-arm located between the said bearings, and a long crank-arm having two members which extend beyond the bearings of the bail and are thus located outside of the bail-arms, and adapted to be sprung laterally apart so as to pass over the bail-arms to lock the device in its closed position, and a bottle-stopper connected with the short crank-arm of the lever, substantially as described.

2. A bottle-stopper fastener comprising a bail having two arms adapted at their lower ends to be pivotally connected with the neck of a bottle, and having their upper ends united and provided with bearings, a lever journaled in the said bearings whereby it is pivotally connected with the bail, and comprising a short crank-arm located between the said bearings, and a long crank-arm having two members which extend beyond the bearings of the bail and are thus located outside of the bail-arms, and adapted to be sprung laterally apart so as to pass over the bail-arms to lock the device in its closed position, and having their lower ends connected together to prevent their undue separation, and a bottle-stopper connected with the short crank-arm of the lever, substantially as described.

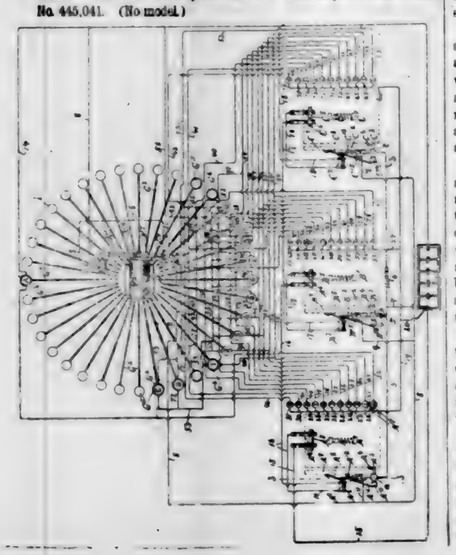
**505,292. LOCK FOR BICYCLE-CHAINS.** WILLIAM H. HART, Jr., Philadelphia, Pa. Filed Oct. 6, 1892. Serial No. 447,985. (No model.)



*Claim.*—1. A chain lock having a headed shank provided with a neck, and a removable lock on the neck end of the shank having a bolt adapted to engage in the walls of said neck, said parts being combined substantially as described.

2. A chain lock consisting of a shank adapted to be passed through the opposite links of a chain, a head on one end of said shank wider than the openings in the link, a neck in the other end of the shank, and a lock proper wider than the openings in the link and having a bolt adapted to engage in said neck, said lock being rotatable on said shank, said parts being combined substantially as described.

**505,293. PRINTING-TELEGRAPH FOR CASH-RECORDING SYSTEMS.** HENRY K. HESS, Syracuse, N. Y. Filed Sept. 5, 1892. Serial No. 445,041. (No model.)



*Claim.*—1. The combination of a record ribbon, mechanism for feeding the ribbon, a series of independently movable drawers or operating pieces, and connections between the ribbon feeding mechanism and said operating pieces, whereby one of said drawers and the feeding mechanism move simultaneously, substantially as and for the purpose set forth.

2. The combination of a record ribbon, mechanism for feeding the ribbon, a series of independently movable drawers or operating pieces, connections between the ribbon feeding mechanism and the operating pieces for bringing said mechanism into action, locks for preventing the movement of the operating pieces and movable engaging pieces for moving said lock from operative position and bringing said connections into action, substantially as and for the purpose specified.

3. The combination of a record ribbon, mechanism for feeding the ribbon, a magnet for actuating said feeding mechanism, a drawer or operating piece, and an electric circuit substantially as described connected, substantially as described, to said magnet and operating piece, whereby the magnet brings said mechanism into action as the operating piece is moved, substantially as and for the purpose set forth.

4. The combination of a record ribbon, mechanism for feeding the ribbon, a magnet for actuating said feeding mechanism, a drawer or operating piece, an electric circuit connected, substantially as described, to said magnet and operating piece, whereby the magnet brings said mechanism into action as the operating piece is moved, a lock substantially as described for preventing the movement of the operating piece, and a movable engaging piece for forcing said lock out of operative position, substantially as and for the purpose set forth.

5. The combination of a record ribbon, mechanism for feeding the ribbon, a magnet for actuating said feeding mechanism, a drawer or operating piece, an electric circuit connected, substantially as described, to the magnet and operating piece, and an engaging piece movable conjointly with the operating piece and connected to said circuit, substantially as described, whereby the magnet brings the feeding mechanism into action with the movement of the engaging piece, substantially as and for the purpose set forth.

6. The combination of a record ribbon, mechanism for feeding the ribbon, a magnet for actuating said feeding mechanism, a drawer or operating piece, an electric circuit connected, substantially as described, to the magnet and operating piece, a lock substantially as described for preventing the movement of the operating piece, and an actuating piece movable conjointly with the operating piece and connected, substantially as described, to said circuit and to the lock, whereby the lock is forced out of operative position and the magnet brings the feeding mechanism into action with the movement of the engaging piece, substantially as and for the purpose specified.

7. The combination of a record ribbon, mechanism for feeding the said ribbon lengthwise, mechanism for feeding the ribbon laterally, a drawer or operating piece, and connections, substantially as described, between said mechanisms and operating piece, whereby said mechanisms and the operating piece move simultaneously, substantially as and for the purpose set forth.

8. The combination of a record ribbon, mechanism for feeding said ribbon lengthwise, mechanism for feeding said ribbon laterally, a magnet connected to the former mechanism and movable conjointly with the ribbon, a second magnet connected to the latter mechanism, a drawer or operating piece, and an electric circuit between said magnets and operating piece, whereby the magnets bring said mechanisms into action as the operating piece is moved, substantially as and for the purpose specified.

9. The combination of a frame, a carriage movable on the frame, a record ribbon mounted on the carriage, mechanism for feeding the ribbon lengthwise, mounted on the carriage, mechanism for feeding the ribbon laterally, mounted on the frame, a magnet mounted on the carriage for actuating the mechanism for feeding the ribbon lengthwise, a second magnet for actuating the mechanism for feeding the ribbon laterally, a drawer or operating piece, and an electric circuit between said magnets and operating piece, whereby the magnets bring said mechanisms into action as the operating piece is moved, substantially as and for the purpose set forth.

10. The combination of a record ribbon, mechanism for feeding the ribbon, a magnet for actuating said feeding mechanism, a drawer or operating piece, an open electric circuit connected to said magnet, and connections between said operating piece and circuit for releasing the operating piece and closing the circuit, substantially as and for the purpose specified.

11. The combination of a record ribbon, mechanism for feeding the ribbon, a series of independently movable drawers or operating pieces, an electric generator, and electric conductors between the feeding mechanism and the generator, connected to said operating pieces, whereby the feeding mechanism is brought into action as one of the operating pieces moves outward, substantially as and for the purpose set forth.

12. The combination of a record ribbon, mechanism for feeding the ribbon, a series of independently movable drawers or operating pieces, locks for preventing said operating pieces from movement, an electric generator, electric conductors between the feeding mechanism and the generator, and movable engaging pieces connected to said locks and to the electric conductors for bringing said feeding mechanism into action and releasing said operating pieces, substantially as and for the purpose specified.

13. The combination of a record ribbon, mechanism for feeding said ribbon lengthwise, mechanism for feeding the ribbon laterally, a series of drawers or operating pieces, an electric generator, and electric conductors between the feeding mechanism and the generator, connected to said operating pieces, whereby the feeding mechanisms are brought into action as one of said operating pieces moves outward, substantially as and for the purpose set forth.

14. The combination of a record ribbon, mechanism for feeding the ribbon, a series of independently movable drawers or operating pieces, and connections between the ribbon feeding mechanism and said operating pieces, whereby the feeding mechanism and one of said operating pieces move simultaneously, and alarms connected to said operating pieces, whereby the movement of one of the operating pieces actuates the alarms of the other, substantially as and for the purpose set forth.

15. The combination of a record ribbon, mechanism for feeding the ribbon, a magnet for actuating said feeding mechanism, a drawer or operating piece, an electric circuit connected, substantially as described, to said magnet and operating piece, whereby said mechanism is brought into action as the operating piece is moved, and an alarm connected to said circuit and adapted to be brought into action upon the movement of the operating piece, substantially as and for the purpose specified.

16. The combination of a record ribbon, mechanism for feeding the ribbon, a magnet for actuating said feeding mechanism, a drawer or operating piece, an electric circuit connected, substantially as described, to said magnet and operating piece, whereby said mechanism is brought into action by the magnet as the operating piece is moved, a lock for preventing the movement of the operating piece, a movable engaging piece for forcing said lock out of operative position, and an alarm connected to said circuit and adapted to be brought into action by the movement of the engaging piece, substantially as and for the purpose set forth.

17. The combination of a record ribbon, mechanism for feeding the ribbon, a magnet for actuating said feeding mechanism, a drawer or operating piece an open electric circuit connected to said magnet, a normally inactive alarm connected to said open circuit and adapted to be brought into action by the closing of the circuit, and connections between said operating piece and circuit for releasing the drawer and closing the circuit, substantially as and for the purpose set forth.

18. The combination of a record ribbon, mechanism for feeding the ribbon, a drawer or operating piece, connections between the operating piece and the ribbon feeding mechanism for bringing said mechanism into action, a lock for preventing the movement of the operating piece, a movable engaging piece for bringing said connections into action and moving said lock from operative position, and a stop for preventing movement of the engaging piece, substantially as and for the purpose specified.

19. The combination of a record ribbon, mechanism for feeding the ribbon, a magnet for actuating said feeding mechanism, a drawer or operating piece, an electric circuit connected, substantially as described, to said magnet and operating piece, whereby the magnet brings said mechanism into action as the operating piece is moved, a lock for preventing the movement of the operating piece, a movable engaging piece for forcing said lock out of operative position, and a stop for preventing movement of the engaging piece, substantially as and for the purpose set forth.

20. The combination of a record ribbon, mechanism for feeding the ribbon, a magnet for actuating said feeding mechanism, a drawer or operating piece, an open electric circuit connected to said magnet, connections between said operating piece and circuit for releasing the operating piece and momentarily closing the circuit, and a stop for preventing closing of said circuit after the drawer or operating piece is moved from its normal position, substantially as and for the purpose set forth.

21. The combination of a record ribbon, mechanism for feeding the ribbon, a series of independently movable drawers or operating pieces, an electric generator, electric conductors between the feeding mechanism and the generator connected to said operating pieces, whereby the feeding mechanism is brought into action as one of the operating pieces moves outward, and a series of stops connected to said conductors for preventing the passage of the current therethrough when one of the operating pieces is moved from its normal position, substantially as and for the purpose set forth.

22. The combination with a drawer or operating piece of an engaging piece a record ribbon, mechanism for feeding the record ribbon electrically connected to said operating piece and to said engaging piece, and an insulating stop for preventing movement of said engaging piece, substantially as and for the purpose specified.

23. The combination of a series of independent movable operating pieces, locks for preventing the movement of the drawers or operating pieces, engaging pieces for withdrawing said locks from operative position, electric connections between said engaging pieces, and insulating stops connected to said connections for preventing the movement from normal position of more than one operating piece at a time, substantially as and for the purpose set forth.

24. The combination of a series of drawers or operating pieces, a series of locks for preventing movement of the operating pieces, a series of engaging pieces connected to the locks for forcing the same from operative position, electric conductors between said locks of unequal resistance or conductivity, whereby but one lock is moved when two engaging pieces are simultaneously operated, substantially as and for the purpose specified.

25. The combination of a series of drawers or operating pieces provided with electric conductors, an electric circuit having a series of terminals adapted to engage said conductors when the operating pieces are in their normal position, and a series of alarms connected to said circuit and adapted to be operated when the circuit is broken by the movement from normal position of one of the operating pieces, substantially as and for the purpose set forth.

26. The combination of a series of drawers or operating pieces provided with electric conductors, an electric circuit having a series of terminals adapted to engage said conductors when the operating pieces are in their normal position, a series of alarms connected to said circuit and adapted to be operated when the circuit is broken by the movement from normal position of one of the operating pieces, engaging pieces for releasing said drawers, and stops connected to said electric circuit for preventing the operation of said engaging pieces, substantially as and for the purpose specified.

27. The combination with a main station, printing mechanism at the main station, a branch station, printing mechanism at the branch station, and connections between said printing mechanisms, whereby the printing mechanism at the main station is brought into action by the operation of the printing mechanism at the branch station, a record ribbon at the main station for receiving the impression of the printing mechanism at said station, and a movable drawer or operating piece at the branch station connected, substantially as described, to feed said record ribbon substantially as and for the purpose set forth.

28. The combination of a main station, printing mechanism at the main station, a series of branch stations, printing mechanisms at the branch stations, connections between said printing mechanisms whereby the operation of the printing mechanism at the main station is brought into action by the operation of the printing mechanism at one of the branch stations, means, substantially as described, for preventing the simultaneous operation of the printing mechanisms at two of the branch stations, a record ribbon at the main station for receiving the impression of the printing mechanism at said station, and a movable drawer or operating piece at the branch station connected, substantially as described, to feed said record ribbon substantially as and for the purpose specified.

29. The combination of a main station, a record ribbon at the main station, mechanism at the main station for feeding the ribbon, and mechanism at said station for printing upon the ribbon, a branch station, printing mechanism at the branch station, electric connections between the feeding and printing mechanisms at the main station and the printing mechanism at the branch station, whereby the feeding and printing mechanisms at the main station are brought into action by the operation of the printing mechanism at the branch station, and a movable drawer or operating piece at the branch station connected, substantially as described, to said mechanism at the main station for feeding the record ribbon substantially as and for the purpose set forth.

30. The combination of a main station, a record ribbon at the main station, mechanism at the main station for feeding the ribbon laterally, mechanism at said station for printing on the ribbon, branch stations, printing mechanisms at the branch stations, electric connections between the feeding and printing mechanisms at the main station, and printing mechanisms at the branch stations, whereby the feeding and printing mechanisms at the main station are brought into action by the operation of the printing mechanisms at the branch station, and a movable drawer or operating piece at the branch station connected, substantially as described; to said mechanism at the main station for feeding the record ribbon substantially as and for the purpose specified.

31. The combination of a main station, a record ribbon at the main station, mechanism at the main station for feeding the ribbon laterally, mechanism at said station for printing on the ribbon, a branch station, printing mechanism at the branch station, electric connections between the feeding and printing mechanisms at the main station and the printing mechanism at the branch station, whereby the feeding and printing mechanisms at the main station are brought into action by the operation of the printing mechanism at the branch station, a push button for bringing the electric connections into action, and a movable drawer or operating piece at the branch station connected, substantially as described, to said mechanism at the main station for feeding the record ribbon substantially as and for the purpose set forth.

32. The combination of a main station, a record ribbon at the main station, mechanism at the main station for feeding the ribbon lengthwise, mechanism at said station for printing on the ribbon, a branch station, printing mechanism at the branch station, electric connections between the feeding and printing mechanisms at the main station and the printing mechanism at the branch station, whereby the operation of the feeding and printing mechanisms at the main station are brought into action by the operation of the printing mechanism at the branch station, a push button at the branch station for bringing the electric connections into action, and a movable drawer or operating piece at the branch station connected, substantially as described, to said mechanism at the main station for feeding the record ribbon substantially as and for the purpose specified.

33. The combination of a main station, printing mechanism at the main station, a series of branch stations, station indicating push buttons at each branch station, electric connections between the printing mechanism at the main station and said buttons, whereby each station is indicated at the central station, a record ribbon at the main station for receiving the impression of the printing mechanism at said station, and a movable drawer or operating piece at the branch station connected, substantially as described, to feed said record ribbon substantially as and for the purpose set forth.

34. The combination of a main station, printing mechanism at the main station, a series of branch stations, station indicating push buttons at each branch station, electric connections between the printing mechanism at the main station and said buttons, whereby each station is indicated at the central station, printing mechanisms at the branch stations connections between the printing mechanism at the main station and the printing mechanisms at the branch stations, a record ribbon at the main station for receiving the impression of the printing mechanism at said station, and a movable drawer or operating piece at the branch station connected, substantially as described, to feed said record ribbon substantially as and for the purpose specified.

35. The combination of a main station, printing mechanism at the main station, a branch station provided with a series of terminals, electric connections between the printing mechanism and the terminals, push rods, each of which is movable toward two of said terminals for connecting the same, printing characters carried upon the push rods, a record ribbon at the main station for receiving the impression of the printing mechanism at said station, and a movable drawer or operating piece at the branch station connected, substantially as described, to feed said record ribbon substantially as and for the purpose set forth.

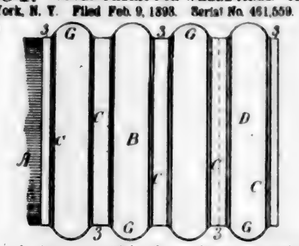
36. The combination of a main station, printing mechanism at the main station, a series of branch stations, a series of terminals at the branch stations, electric connections between the printing mechanism at the main station and the terminals, push rods at the branch stations movable toward said terminals for connecting the same, printing characters carried by said push rods, a record ribbon at the main station for receiving the impression of the printing mechanism at said station, and a movable drawer or operating piece at the branch station connected, substantially as described, to feed said record ribbon substantially as and for the purpose specified.

37. The combination of a main station, printing mechanism at the main station, a branch station provided with a series of terminals, electric connections between the printing mechanism and the terminals, push rods, each of which is movable toward two of said terminals for connecting the same, printing characters carried upon the push rods, a support beneath said printing characters, an inking ribbon above said support, a record ribbon at the main station for receiving the impression of the printing mechanism at said station, and a movable drawer or operating piece at the branch station connected, substantially as described, to feed said record ribbon substantially as and for the purpose set forth.

38. The combination of a main station, printing mechanism at the main station, a branch station provided with a series of terminals, electric connections between the printing mechanism and the terminals, push rods, each of which is movable toward two of said terminals for connecting the same, printing characters carried upon the push rods, a support beneath said printing characters, an inking ribbon above said support, mechanism for feeding said ribbon, a record ribbon at the main station for receiving the impression of the printing mechanism at said station, and a movable drawer or operating piece at the branch station connected, substantially as described, to feed said record ribbon substantially as and for the purpose set forth.



505,294. WOVEN FABRIC FOR WHEEL-TIRES. JAMES LYALL, New York, N. Y. Filed Feb. 9, 1893. Serial No. 461,559. (No specimens.)




*Claim.*—1. As a new article of manufacture, a section of heavy cylindrical canvas fabric having the weft threads running around such cylindrical section and with the warp threads extending across from edge to edge thereof, and means woven with such section for securing its edges in place, whereby such tubular section is adapted to form the canvas or woven fabric in the elastic tire or wheel, substantially as set forth.

2. As a new article of manufacture, a section of heavy cylindrical canvas fabric having the weft threads running around such cylindrical section and with the warp threads extending across from edge to edge thereof, the weft threads in the central portion of such woven tubular canvas section being elastic, such tubular section being adapted to form the canvas or woven fabric in the elastic tire of a wheel, substantially as set forth.

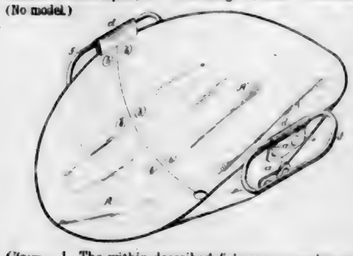
3. As a new article of manufacture, a cylindrical fabric section woven and having the weft threads running around such cylindrical section and with the warp threads extending across from edge to edge thereof and pockets woven around such tubular section and near the edges thereof, such tubular section being adapted to form the canvas or woven fabric in the elastic tire of a wheel, substantially as set forth.

4. As a new article of manufacture, a cylindrical fabric section woven and having the weft threads running around such cylindrical section and with the warp threads extending across from edge to edge thereof, such tubular section being adapted to form the canvas or woven fabric in the elastic tire of a wheel, and eyelets introduced into such fabric and near the edge thereof, substantially as set forth.

5. As a new article of manufacture, a cylindrical fabric section woven and having the weft threads running around such cylindrical section and with the warp threads extending across from edge to edge thereof and pockets woven around such tubular section and near the edges thereof, such tubular section being adapted to form the canvas or woven fabric in the elastic tire of a wheel, and eyelets introduced into such fabric and near the edges thereof, substantially as set forth.

6. As a new article of manufacture, a ring-shaped fabric section woven and having the weft threads running around such cylindrical section and with the warp threads extending across from edge to edge thereof, the weft threads near the edges of the section being shorter than the weft threads near the middle portions of the section, so that the ring-shaped fabric section is contracted to a less diameter near the edges than in the middle portions and adapted to form the canvas fabric for the elastic tire of a wheel, substantially as set forth.

505,295. FISH-SCOOP. WILLIAM H. PENNY and WILLIAM A. BIGGERSTAFF, Philadelphia, Pa. Filed Aug. 13, 1892. Serial No. 442,987. (No model.)

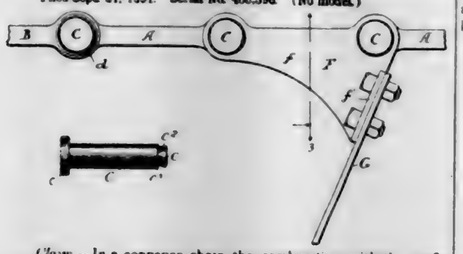


*Claim.*—1. The within described fish scoop consisting of opposite halves formed of sheet steel and straps bridging the joint between the halves of the scoop and secured by rivets to each of said halves, the uppermost strap at each side of the scoop being bent into loop form and receiving a handle, substantially as specified.

2. The within described fish scoop consisting of opposite halves formed of sheet steel, and straps bridging the joint between the two halves of the scoop, and secured by rivets to each of said halves, the

upper strap at each side of the scoop forming a handle receiving loop, and overlapping the upper edge of the scoop on the inner side, substantially as specified

**505,296. CONVEYER CHAIN.** JAMES POLLOCK Wilkes-Barré, Pa. Filed Sept. 21, 1891. Serial No. 406,396. (No model.)



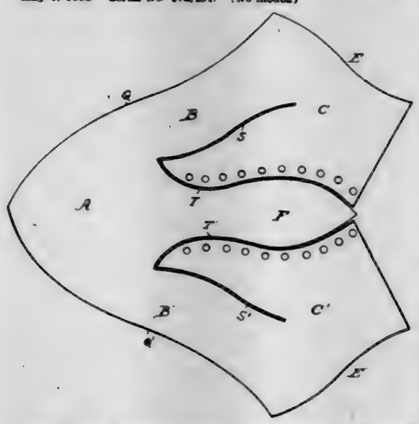
*Claim.*—In a conveyer chain the combination with the perforated links A B, the connecting pins C, and malleable metal washers D, of brackets arranged upon the pins C parallel with the links and each provided with an outwardly bent wing portion perforated for attachment to a flight or bucket, substantially as described.

**505,297. CARTRIDGE.** WOLDEMAR H. SAENGER, Augustusbad, Germany. Filed May 4, 1893. Serial No. 472,991. (No model.)



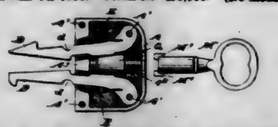
*Claim.*—A shot cartridge having a holder for the shot of felt or other suitable material, divided longitudinally and having a conical shot receiving cavity on the inside and cylindrical on the outside, substantially as set forth

**505,298. SHOE.** BENJAMINO SCARINCI, Philadelphia, Pa. Filed May 1, 1893. Serial No. 472,451. (No model.)



*Claim.*—As an improved article of manufacture, a shoe formed from an integral blank, consisting of the vamp A, integral tongue F, flaps or sides C C', separated from the tongue by the curved slits T T', and from the counters by the curved slits S S', the said flaps being adapted to overlap the counters and secured thereto, substantially as shown and described

**505,299. KEYHOLE-GUARD.** LOUIS SCHNEIDER, Williamsport, Pa. Filed Jan. 14, 1893. Serial No. 458,353. (No model.)



*Claim.*—1. In a key-hole guard, the casing A and levers D D, adapted to be opened and closed within the lock and key M controlling such levers, all arranged for joint operation substantially as herein specified

2. In a key-hole guard the casing A, having a key-hole *a*, internal fixed screw $A^1$, and nut G fitting thereon, and the levers D D and springs E E on opposite sides of the nut, in combination with each other and with the key M and provisions as the wings M' on the key and score *g* on the nut for engaging these parts to open and close the levers, all arranged for joint operation substantially as herein specified

**505,300. STOPPERING BOTTLES.** CONRAD SCHROEDER, Milwaukee, Wis., assignor of two-thirds, by direct and mesne assignments, to Anton Stollenwerk and Ferdinand Achtenhagen, same place. Filed Apr. 18, 1892. Serial No. 429,535. (No model.)



*Claim.*—1. In a bottle-stoppering device, a bottle-head having a rounded top and an annular exterior shoulder, a cork, a stiff metallic cap having a central depressed portion above said cork, and provided with a small central perforation, a rounded top closely hugging the rounded top of said bottle head a side-wall and an inward flange at the base of its side-wall, substantially as set forth

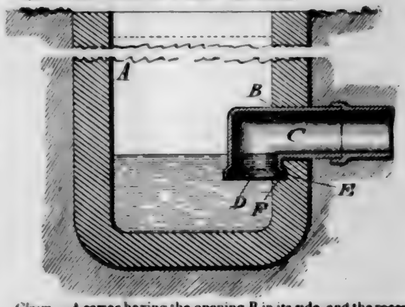
2. In a bottle-stoppering device a cork, a stiff metallic cap, provided with a rounded top, and a side-wall, having a hole in the center thereof, and a coating of readily fusible material on its under surface, between said cork and said cap and an inward flange at the base of its side-wall, and a bottle-head having a rounded top and an annular exterior shoulder, substantially as set forth

**505,301. STOPPERING BOTTLES.** CONRAD SCHROEDER, Milwaukee, Wis., assignor of two-thirds, by direct and mesne assignments, to Anton Stollenwerk and Ferdinand Achtenhagen, same place. Filed Apr. 18, 1892. Serial No. 429,536. (No model.)



*Claim.*—In a bottle-stoppering device, the combination with a bottle-head provided with an interior circumferential groove, and with the bore enlarged or flared above and below said groove, forming straight tapered side walls, and constricted above the upper flared portion, and a continuous annular shoulder formed in the said constricted top, extending directly from said tapered sid walls, of a short stopper of cork inserted in said bore below the shoulder and above the choke of the bottle, and a perforated metallic disk having a coating of readily fusible material on its under side, pressed to place beneath said shoulder and above said cork thereby increasing its diameter, substantially as set forth

**505,302. SEWER-TRAP.** PETER STANDER, Belleville, Ill. Filed Apr. 26, 1893. Serial No. 471,883. (No model.)



*Claim.*—A sewer having the opening B in its side, and the recess E in its inner face below and communicating with said opening, in combination with the pipe C fitting in said opening, and having on its end within the said sewer, the inverted bell D, the latter having a portion thereof in said recess and supported on the lower wall thereof, substantially as described

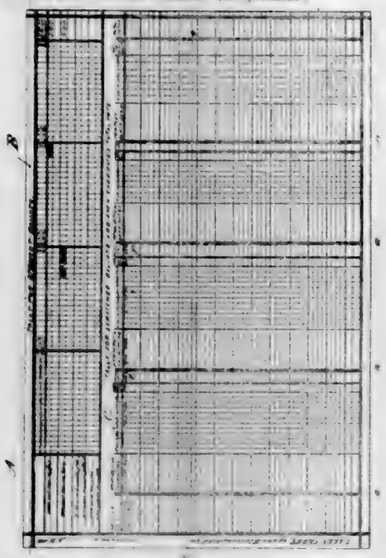


**505,303. MARBLEIZING METAL, CHINA, &c.** SAMUEL WITHERS, Philadelphia, Pa. Filed Apr. 18, 1892. Serial No. 429,659. (Specimens.)

*Claim.*—1. An improvement in marbleizing and granitizing metal, tile, delf, &c., consisting in applying to the surface of an enamel or glazed material or article, a color, formed of a pigment that has been ground in water or fermented liquor, sweet or sour, next sprinkling on the coating a solution of alkali, drying the article and firing the same until the color is fused with the enamel or glaze, and if required applying a coat of enamel or glaze as a finish, substantially as described.

2. An improvement in marbleizing and granitizing metal, tile, delf, &c., consisting in glazing the article to be marbleized, firing the same, coating it with a color formed of a pigment which has been ground in water or fermented liquor, sweet or sour, then applying an alkali thereon, and drying and firing the same, substantially as described.

**505,304. TALLY-SHEET.** FREDERICK W. BARRETT, Springfield, Ohio, assignor to the Barrett Publishing Company, same place. Filed Oct. 20, 1892. Serial No. 449,424. (No specimens.)



*Claim.*—1. A tally sheet, having a portion or division B of the sheet devoted to straight ballots, consisting of tally spaces, a total column and a column for the names of the parties; a portion C devoted to scratched ballots, consisting of spacements or divisions in succession across the sheet each spacement or division devoted to a single party, and consisting of a candidate column, tallying spaces, a total column for said spaces and a column for the sum of the straight and scratched ballots for each candidate, and a common column devoted to the offices on the tickets of the respective parties.

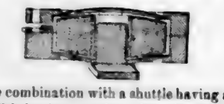
2. A tallying sheet, having a division or portion for tallying the straight ballots of the respective parties arranged across the head of the sheet; a series of spacements having candidate columns, tally spaces and total columns for the respective parties, and a common column for designating offices for all of said parties, arranged below said head portion, and devoted to scratched ballots, whereby the straight ballots are tallied in the first division or portion, B and the scratched ballots in the second portion C of the tally sheet opposite their respective party candidates, and the total for each candidate's name, is also shown opposite thereto

3. A tally sheet, having a portion B of the sheet devoted to straight ballots of the respective parties, and consisting of tallying spaces, a total column, and a party column, and a space C devoted to scratched ballots, and consisting of a set of candidate columns, tallying spaces, total columns for said spaces, and total columns for the sum of the straight and scratched ballots counted for each designated candidate, all substantially as shown and described

4. A tally sheet having a division B for tallying straight ballots of the regular parties, and a division or portion C for tallying the scratch ballots of the said parties' candidates separately; a portion or division D on the reverse side of the sheet devoted to scattering candidates consisting of a column for the candidates' names, tally spaces therefor, total columns, and a common column for the offices voted for; and a portion F devoted to the certificate of said sheet, all substantially as shown and described.

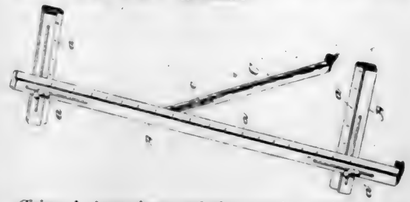
5. In a tally sheet, the combination with a main sheet having a portion B devoted to tallying straight ballots arranged across the head of the sheet, and a portion C for tallying scratched ballots consisting of spacements ruled for tallying, and of columns for the candidates and a column devoted to the names of the offices to be filled, of an auxiliary sheet A' ruled to form tallying and candidate columns, and constituting the remainder of the portion or division of the tally sheet devoted to scratched ballots, and secured to the main sheet opposite the common office column, substantially as shown and described.

**505,305. BOBBIN-HOLDER FOR SEWING-MACHINE SHUTTLES.** HENRY A. BATES, Yonkers, N. Y. Filed Nov. 2, 1892. Serial No. 450,768. (No model.)



*Claim.*—The combination with a shuttle having a circular cavity, of a removable disk having a spring edge adapted to be held within the cavity of the shuttle by the friction of its edge, and a cylindrical center pin upon such disk adapted to receive and form the support for the paper tube of the thread bobbin, substantially as set forth.

**505,306. EASEL ATTACHMENT FOR LACE-CURTAIN STRETCHER-FRAMES.** ALFRED P. BOHLINGER, St. Louis, Mo. Filed May 12, 1893. Serial No. 473,961. (No model.)



*Claim.*—1. An easel support for lace curtain stretcher frames and the like, consisting in the combination with the frame, of an easel leg and a hinge device adapted to be rigidly secured to the frame and pivotally connected to the leg, substantially as and for the purposes specified

2. An easel support for curtain stretcher frames and the like, consisting in the combination with the frame, of an easel leg, and a hinge device, adapted to be screwed to the frame, formed with a flat plate portion, and means for pivotally securing the leg to the plate, substantially as and for the purposes specified.

3. An easel support for curtain stretcher frames and the like, consisting in the combination with the frame, of an easel leg a hinge plate adapted to be screwed to the frame, and formed with a flange portion adapted to bear against the frame, and a pivot bolt to pivotally secure the leg and plate together, the leg being slotted for the reception of the plate, and the leg and plate being perforated for the accommodation of the pivot bolt, substantially as and for the purposes specified

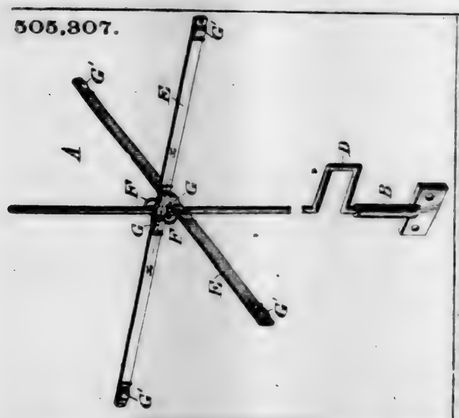
4. The combination with a frame for stretching lace curtains, and the like, and an easel leg with a beveled end for supporting the frame in an inclined position, of the herein-described means for pivotally and removably securing the leg to the frame, consisting in a hinge plate having a wood screw cast therein, for securing the plate to the frame, and being formed with a laterally extending flange, circumferentially disposed notches in the flange, a perforation in the plate, a slot in the leg, and a split cotter pin, all combined and coacting substantially in the manner and for the purposes specified.

**505,307. MUSIC-SHEET TURNER.** JOHN N. CARPENTER, Philadelphia, Pa. Filed Mar. 25, 1893. Serial No. 467,537. (No model.)

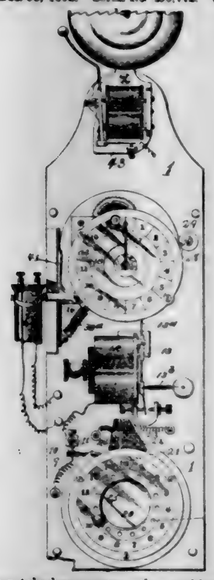
*Claim.*—1. A music sheet turner consisting of a rotatable standard having a bend therein forming a finger piece, a vertically adjustable arm secured on said standard and extending on opposite sides thereof and clamps on said arm, said parts being combined substantially as described

2. A music sheet turner consisting of a standard provided with a finger piece, a vertically-adjustable arm on said standard, means for retaining said arm in adjusted position, clamps for holding the sheets on the said arm, and a step or socket in which the standard is mounted, substantially as described

**505,307.**



**505,308.** TELEPHONE SYSTEM. WILLIAM W. DAVIS, California, Mo., assignor to himself, Walter Lander, and Frank S. Lander, same place. Filed Dec. 30, 1892. Serial No. 456,772. (No model.)



*Claim.*—1. In a telephone system, the combination with a main line, and a battery therefor, of a series of magnets permanently connected in said line, an armature for each of said magnets, a circuit breaker in the main line for each of said main line magnets, power driven mechanism for actuating said circuit breaker, a step-by-step escapement mechanism which is operated by the armature of the main line magnet, and means, actuated by the escapement mechanism, for controlling a local circuit in which is inserted a magnet, the armature of which is adapted to control the said power driven mechanism and its operated circuit breaker, substantially as and for the purposes specified.

2. In a telephone system, the combination with a main-line and its battery, of a series of magnets inserted therein, a step-by-step mechanism, whose escapement is controlled by the armature of said magnets, power driven mechanism for breaking the main line circuit, and a local circuit comprising two parallel branches one of which branches being controlled by the movement of the escapement mechanism and the other by the movement of the said power driven mechanism, substantially as and for the purposes specified.

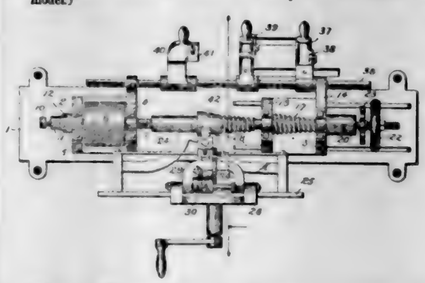
3. In a telephone system, the combination with a main line, a magnet, battery, and circuit breaker inserted therein, of a step-by-step mechanism operated by the armature of said main line magnet, a local-circuit controlling device operated by the escapement mechanism when the same is at its normal position, said local circuit being effective, through the medium of a magnet and battery inserted therein, to control the operation of said main-line circuit breaker, and a second local signaling circuit controlling device, operated by the said escapement mechanism, when the same is at a position other than its normal, substantially as and for the purposes specified.

4. In a telephone system, the combination with a main line, a magnet, a battery, and a circuit breaker inserted in the same, of the herein described means for operating the circuit-breaker, consisting in a revoluble disk provided with projecting pins adapted to engage with and operate the circuit breaker, a removable stop for retaining the revoluble disk at its normal position, an adjustable stop for stopping the disk at any position other than its normal, substantially as and for the purposes specified.

5. In a telephone system, the combination with a main line, a series of magnets, a battery, and a series of circuit breakers inserted in the main line, of means for operating the circuit breakers, consisting in a revoluble disk provided with projecting pins adapted to engage with and operate the circuit breakers, a removable stop for retaining the revoluble disk at its normal position, an adjustable stop for stopping the disk at any position other than its normal, and means for locking all other revoluble disks against rotation when any one disk has been started, substantially as and for the purposes specified.

6. In a telephone system, the combination with a main line, a magnet, a battery, and a circuit breaker inserted in the main line, of means for operating the circuit breaker, consisting in a revoluble disk provided with projecting pins adapted to engage with and operate the circuit breaker, a radially projecting arm secured to the supporting shaft of the said disk, a stationary disk provided with a series of holes corresponding in number to the pins on the revoluble disk, and a pin, or pins, adapted to be inserted in the holes and engage with the said radial arm, substantially as and for the purposes specified.

**505,309.** INSULATOR PIN AND BRACKET MACHINE. CHARLES A. EISENHART, York, Pa. Filed Oct. 4, 1892. Serial No. 447,800. (No model.)



*Claim.*—1. The combination, in an insulator pin machine, with the bed plate and the head and tail stocks, of the spindle, arranged to turn, and movable lengthwise, in the tail stock, the screw guide splined upon the spindle, means for preventing said guide from moving lengthwise, and mechanism controlled by the screw guide for cutting the thread upon the pin substantially as described.

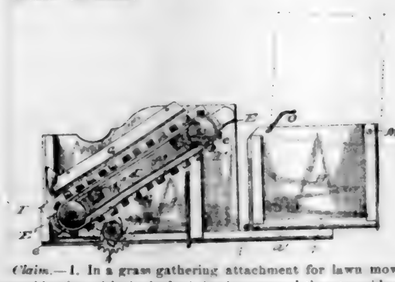
2. The combination in an insulator pin machine, with the bed plate and the head and tail stocks, each having spindles and spur centers, of bearings in which the tail stock spindle revolves, a guide screw splined upon said spindle and arranged between said bearings, an adjusting screw connected to the end of the spindle by a swivel joint a hand wheel for the adjusting screw, and mechanism controlled by the screw guide for cutting the thread upon the pin substantially as described.

3. The combination in an insulator pin machine, with the bed plate and the head and tail stocks, of spindles having spur centers mounted in said stocks, a driving pulley upon the spindle of the head stock, a guide screw splined upon the spindle of the tail stock, means for adjusting said latter spindle longitudinally, mechanism controlled by the screw guide for cutting the thread upon the pin a tool support having a rack and templet and a tool carriage movable lengthwise upon said support by means of a pinion and crank, substantially as described.

4. The combination in an insulator pin machine, with the head and tail stocks provided with spindles having spur centers, of a guide screw 17 mounted on the spindle of the tail stock, a rod 36 in the rear of the machine and a frame 37 hinged upon the rod and provided with a guide piece 38 adapted to run in the groove of the screw guide and a thread cutting tool 39, substantially as described.



**505,310.** GRASS-GATHERING ATTACHMENT FOR LAWN-MOWERS. MICHAEL FRY, Bloomington, Ill. Filed Mar. 21, 1893. Serial No. 467,038. (No model.)



*Claim.*—1. In a grass gathering attachment for lawn mowers, the combination with the body A, having secured thereto guideways C, and provided with a grass receptacle, of the carrier frame D removably supported in said guideways and carrying an endless carrier, and means for driving said carrier, substantially as described.

2. In a grass gathering attachment for lawn mowers, the combination with the body A, having secured thereto guideways C and provided with a grass receptacle, of the carrier frame D removably supported in said guideways and carrying pulleys $c\,c'\,c^2$, endless belts $f\,f'\,f^2$, mounted on said pulleys and carrying transverse slats G, and the drive shaft K having mounted thereon a gear wheel $k$ successively engaging said slats, substantially as described.

3. In a grass gathering attachment for lawn mowers, the combination with the body A having secured thereto guideways C and provided with a grass receptacle, of the carrier frame D removably supported in said guideways and consisting of the longitudinal bars $d\,d$, and cross-bars $d'\,d^2$, the ends of the latter projecting beyond the sides of the bars $d\,d$, and resting in the said guideways, pulleys $c\,c'\,c^2$, carried by said frame, the carrier F mounted on said pulleys, the apron H secured to the carrier frame, and means for driving said carrier, substantially as described.

4. In a grass gathering attachment for lawn mowers, the combination with the body A provided with a grass receptacle, of the carrier frame D carrying pulleys, $c\,c'$, $c^2$, the carrier F consisting of belts $f\,f'$, $f^2$, mounted on said pulleys and having secured thereto transverse slats G, and wear plates $g$, secured to said slats, and the shaft K carrying the gear wheel $k$, engaging said slats, substantially as described, and for the purpose specified.

5. In a grass gathering attachment for lawn mowers the combination with the body A provided with a grass receptacle, of the carrier frame D carrying an endless carrier, mechanism for driving said carrier frame, and the guard plates L secured to the sides of the body A and inclined inwardly over the edges of the carrier and carrier frame, substantially as described, and for the purpose specified.

6. In a grass gathering attachment for lawn mowers, the combination with the body A having pivotally secured thereto adjustable guideways C, and provided with a grass receptacle, of the carrier frame D removably supported in said guideways and carrying an endless carrier, and means for driving said carrier, substantially as described.

**505,311.** COMPOSITION FOR KINDLING FIRES. PERRY S. GRISDLE, Brooklyn, Ala. Filed Oct. 26, 1892. Serial No. 450,060. (No specimens.)

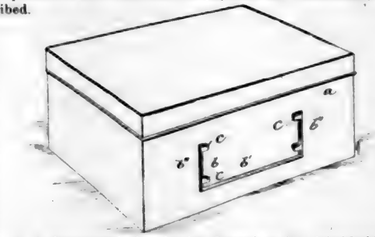
*Claim.*—A fire kindling composition consisting in three parts of sawdust mixed with one part of rosin, and one-fiftieth of one part of a combustible cement formed of two and one-half parts coal tar one and one-half parts asphaltum one-half of one part glue and one part of starch, substantially as set forth.

**505,312.** LABEL-HOLDER FOR SHEET-METAL VESSELS. CHAS. H. HASKER, Richmond, Va., assignor to the Hasker & Marcuse Manufacturing Company, same place. Filed July 15, 1893. Serial No. 480,636. (No model.)

*Claim.*—1. A sheet-metal vessel having formed on it a label holder, said holder consisting of a receptacle formed by pressing a narrow portion of the sheet-metal body outwardly a short distance to form a rib and one or more securing ears, substantially as described.

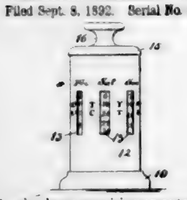
2. A sheet-metal vessel provided with a label-holder, said label-holder consisting of a rib formed by pressing a portion of the metal bodily outwardly, said rib having a lower part $b'$ and two end parts $b^2$, the end parts being provided with ears, substantially as described.

3. A sheet-metal plate having formed on it a label-holder, said label-holder consisting of a rib having a lower horizontal portion and two upright portions at the ends of the same, suitable parts of the rib being provided with ears, said rib being formed by pressing a narrow portion of the sheet-metal bodily outward substantially as described.



4. A sheet-metal plate having formed on it a label-holder consisting of a narrow rib having a lower part and upright end parts, said rib being formed by pressing a narrow part of the sheet-metal outwardly, the metal inclosed by the rib being unimpaired so as to form a back for the label, and malleable ears formed on the upright parts of the ribs and adapted to be bent against the label, substantially as described and for the purpose specified.

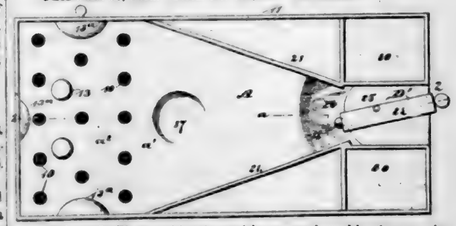
**505,313.** PERPETUAL CALENDAR. DANIEL A. HOLTZMAN, Myerstown, Pa. Filed Sept. 8, 1892. Serial No. 445,308. (Model.)



*Claim.*—1. A calendar, comprising an outer shell or cylinder having slots therein lettered to represent the days of the week and provided with arbitrary signs adjacent to the slots, and a revoluble drum held to turn in the cylinder, the drum having groups of dates thereon representing the years of a century, vertical rows of numbers representing the days of the month and adapted to register with the slots in the shell, and the names of the several months arranged opposite the rows of numbers, substantially as described.

2. A calendar comprising a shell having several vertical slots therein produced at equidistant points around the shell, the slots being lettered to represent the days of the week, arbitrary signs produced adjacent to the slots, a revoluble drum to turn within the shell, the drum having groups of figures thereon arranged to represent the years of the centuries, and the vertical columns of each group representing numerical series having the common difference of twenty-eight, signs produced in each column of figures, the said signs corresponding with those on the outer shell, and rows of numbers produced on the strip and representing the days of the months, the rows being arranged to register with the slots in the outer shell and the names of the months arranged adjacent to the rows of numbers, all substantially as shown and described.

**505,314.** GAME-BOARD. WHITFIELD G. HOWELL, Highland, N. Y. Filed June 26, 1893. Serial No. 437,945. (No model.)



*Claim.*—1. The combination, with a game board having a series of apertures near one end, of a propelling mechanism pivotally located near the opposite end, and a recess adapted to hold the article to be propelled in engagement with a propelling mechanism, one wall of which recess is shaped to correspond practically to the radius upon which the propelling mechanism moves, as and for the purpose set forth.

2. The combination, with a game board inclined upward from a

point near its center in direction of one end and provided with a series of openings in front of the lower portion of the incline, a depression or pocket in rear of the openings, and guide partitions located upon the board and leading from the end opposite to that containing the apertures to the sides of the apertured portion, the partitions diverging at their front and converging at their rear ends, of a propelling mechanism located between the guide partitions and at a distance from said partitions, whereby the articles to be shot into the openings may be collectively placed in the depression in rear of the openings and acted upon by the single articles shot from the propelling mechanism, or whereby each article may be propelled directly from the propelling mechanism individually, substantially as described.

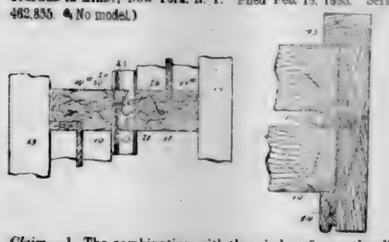
3. The combination, with a game board provided with apertures near one end, and baffle blocks or projections arranged adjacent to the apertures upon the board, of a propelling mechanism pivotally located in front of the apertured portion of the board, the propelling mechanism having produced in front of it in the board a recess deepest near the wall adjacent to the propelling mechanism, said wall conforming to the path in which the propelling end of the propelling mechanism is adapted to travel, as and for the purpose specified.

4. The combination, with a game board provided with a series of apertures near one end and pockets removably placed beneath the apertures, the board being also provided with a depression in its upper surface in front of its apertured portion, of a propelling mechanism pivotally located in front of the depression and the apertured portion of the board, and a recess produced in front of the inner end of the propelling mechanism, the bottom wall of the recess being inclined outwardly and downwardly, and the outer or end wall of the recess being curved, as and for the purpose set forth.

5. A game board provided with a curved or segmental recess, the bottom of which is inclined upwardly to the surface of the board, and a horizontal swinging casing pivoted on the board and registering at its discharge end with the deepest portion of the slot to permit the ball or projectile entering the mouth of the casing to be moved thereby along the recess when the casing is swung and a spring projected piston mounted in the casing, substantially as set forth.

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**505,315.** WINDOW PACKING AND ANTI-RATTLING DEVICE. STEPHEN R. KIRBY, New York, N. Y. Filed Feb. 13, 1893. Serial No. 462,855. (No model.)

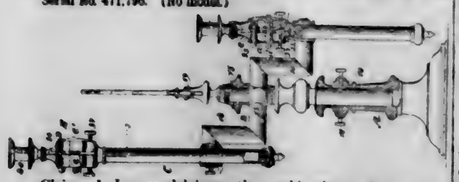


*Claim.*—1. The combination with the window frame, the sliding sashes therein, and a parting strip, of a metallic packing, U-shaped in cross section, the same receiving the parting strip, the U-bend thereof being at the back of the strip and its arms extending beyond the strip at each side, the extreme free ends of the arms inclining toward each other, substantially as described.

2. The combination, of the sliding sashes having opposite meeting rails with longitudinal and opposite recesses therein, a packing gasket secured to the upper wall of the recess in one rail, and a flexible metallic packing strip of U-shaped cross section secured at one edge in the recess of the opposite rail and having its free edge adapted to engage the gasket, the said free edge of the U-shaped packing strip projecting outwardly at a point above the bottom wall of the recess in which it is secured substantially as described.

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**505,316.** CANDELABRUM. CHARLES S. KOEHLER, Brooklyn, assignor to Benziger Brothers, New York, N. Y. Filed Apr. 23, 1893. Serial No. 471,796. (No model.)



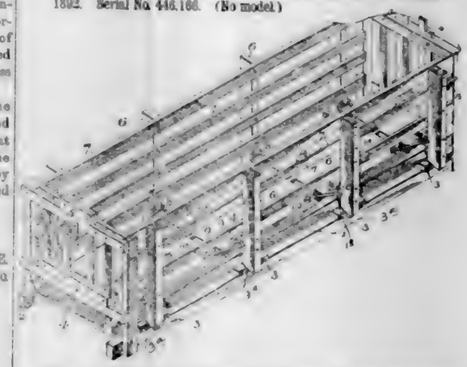
*Claim.*—1. In a candelabrum, the combination, with a base and a body adjustable therein, of standards supported by the said adjustable body and vertically adjustable in relation thereto, arms pivotally connected with the said standards, and candle sticks carried by the arms, substantially as and for the purpose set forth.

2. A candelabrum, consisting of a base, a vertically adjustable body adapted to slide therein, arms secured to the body and extending upwardly and downwardly on opposite sides thereof, said arms being provided with vertical sockets at their upper and lower ends respectively, standards adapted to slide in the said sockets, means for locking the standards in relation to the sockets, arms pivotally connected with the upper ends of the said standards, and candle sticks carried by the said arms, substantially as and for the purpose set forth.

3. A candelabrum, comprising a base, a tubular body carried thereby, arms secured to the body on opposite sides thereof and provided with vertical sockets at their ends, standards adapted to slide in the said sockets, arms pivotally connected with the upper ends of the standards, candle sticks carried by the said arms, and a hollow stud projected upwardly from the central portion of the tubular body and adapted to receive another set of candle carrying arms, substantially as and for the purpose set forth.

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**505,317.** HAY-RACK. WILLIAM H. LAIRD, Mendon, Mich., assignor of one-half to William H. Reinhart, same place. Filed Sept. 17, 1892. Serial No. 446,166. (No model.)



*Claim.*—A hay rack consisting of the bottom rails, the ends, and the bottom having transverse slots with beveled inner walls, the sides consisting of the horizontal rails and the bars having beveled inner ends, and the bails pivotally connected to said bars by half-round boxes, and having their ends bent outwardly and pivotally connected with eye-bolts secured to said bottom, substantially as described.

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**505,318.** BOTTOM FOR METAL PAILS. DAVID A. LEE, Clifton Springs, N. Y., assignor of one-half to Truman V. Fox, same place. Filed July 17, 1893. Serial No. 480,708. (No model.)



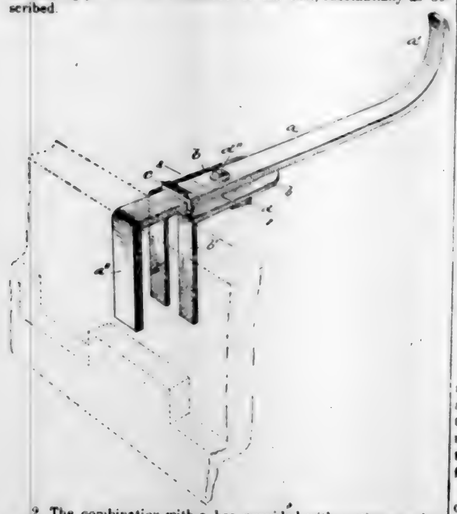
*Claim.*—A bottom for pails and other vessels consisting of two concave plates of different metals, the upper plate being nested in and having greater natural expansive properties than the lower plate, the two plates being united at their edges only, substantially as and for the purpose described.

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**505,319.** OBSTETRICAL AND EXAMINATION STIRRUP. JOSEPH M. MAURER, Washington, Pa. Filed May 31, 1893. Serial No. 476,019. (No model.)

*Claim.*—1. The combination of a bar provided with a stirrup at its forward end and a depending arm at its rear end, a slotted plate *b* secured to the bar near its rear end and provided with a depending clamping-arm, a loop connecting the forward end of the plate to the bar, a bolt passed down through the bar and the slot in plate *b*, and a clamping plate on the lower end of the bolt, substantially as described.



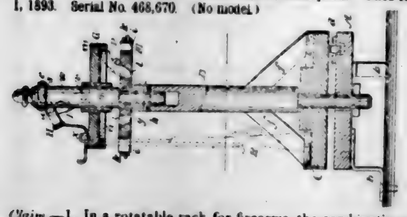


2. The combination with a bar provided with a stirrup and a depending arm, a plate *b* provided with a slot, open at its rear end, said plate being provided with a depending clamping-arm, a bolt passing down through the bar and the slot in plate *b*, and a transverse clamping plate carried on the lower end of the bolt, substantially as described.

3. The combination of a bar provided with a stirrup at one end and a clamping-arm at its other end, a slotted plate clamped to the under side of said bar and provided with a depending clamping arm, said plate tapering toward one end, a clamping bolt passed down through said bar and plate, and a transverse clamping plate on the lower end of said bolt, said plate tapering in the opposite direction from said slotted plate, substantially as described.

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**505,320.** RACK FOR FIREARMS. JESSE A. MEADOWS, Sackett's Harbor, N. Y., assignor to William H. Ayres, same place. Filed Apr. 1, 1893. Serial No. 468,670. (No model.)



*Claim.*—1. In a rotatable rack for firearms, the combination of a central post, a lower platform around said post adapted to hold the butts of guns or rifles, an upper platform recessed to receive within it the muzzle ends of the guns, and provided with locking catches to separately hold them therein, and a rising and falling cap adapted to collectively secure the muzzle ends of the guns within the upper platform, substantially as described.

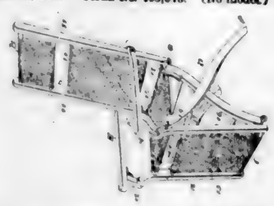
2. In a rotatable rack for firearms, the combination of a base provided with projecting rollers on its upper surface for support and travel of the rack, a lower platform around said post and resting on the rollers, adapted to hold the butts of guns or rifles, an upper platform recessed to receive within it the muzzle ends of the guns and provided with locking catches to independently hold them therein, a rising and falling cap adapted to collectively secure the muzzle ends of the guns within the upper platform, and a locking lever device, substantially as described, adapted to raise and lower said cap and to hold it in position during the rotation of the rack, substantially as set forth.

3. In a rotatable rack for firearms of the character described, the rising and falling cap which collectively secures the muzzle ends of the guns or rifles in place, provided on its under surface with a soft and flexible cushion adapted to bear down upon and protect the muzzles of the guns, substantially as described.

4. A combined rotatable rack for firearms, consisting of a center post, a lower platform around said post adapted to hold the butts of guns or rifles, an upper platform recessed to receive within it the muzzle ends of said guns or rifles, and perforated to receive down within or through it the barrels of a series of pistols, and a rising and falling cap adapted to collectively secure said guns or rifles and pistols within the upper platform, essentially as specified.

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**505,321.** FOLDING CHAIR. WILLIS J. MORELAND, Mottville, N. Y. Filed Mar. 10, 1893. Serial No. 465,375. (No model.)



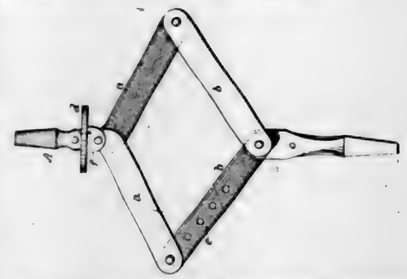
*Claim.*—1. As an improved article of manufacture, a folding and reclining chair, comprising a supporting frame, a back, a seat pivotally connected with the back, a foot rest pivotally connected with the seat, arms having a pivotal connection with the back, and connecting bars hinged to the said arms and pivotally connected with the foot rest, whereby the back can be moved independently of the foot rest, as and for the purpose specified.

2. As an improved article of manufacture a folding and reclining chair, comprising a supporting frame a back, a seat pivotally connected with the back, a foot rest pivotally connected with the seat, having its upper or inner end at the sides curved outwardly from the pivot, arms pivotally connected with the back and connecting bars pivotally connected with the curved extremities of the foot rest, and hinged to the said arms whereby the pivotal connection between the connecting bars and the foot rest is in advance of the pivotal connection between the foot rest and the seat, as and for the purpose specified.

3. In a folding and reclining chair, the combination, with the seat, a back pivotally connected with the rear of the seat, and a foot rest pivotally connected with the forward portion of the seat, the upper or inner end of the foot rest at its sides being outwardly curved from its pivotal connection with the seat, of legs of the cross pattern pivotally connected with each other and pivotally connected with the rear of the seat, the said legs having removable yet locking engagement with the foot rest, arms pivoted to the back, and connecting bars hinged to the arms and pivotally connected with the curved extremities of the foot rest, substantially as shown and described, whereby the chair may be balanced in whatever position it may be placed, and compactly folded, as and for the purpose specified.

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**505,322.** REAMING-BIT. MARVIN R. MOSS, Huntsburg, Ohio. Filed Oct. 24, 1892. Serial No. 449,821. (No model.)

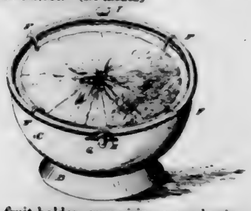


*Claim.*—1. A reaming bit having oppositely faced cutting blades pivoted together and pivotally connected at their rear ends to connecting bars pivoted to a common stem adapted to rotate the bars and blades, substantially as described.

2. The combination of the pivoted cutting blades having their oppositely bent shanks pivotally connected by connecting bars to a common stem adapted to rotate the apparatus, and a bearing collar pivotally attached to one of the blade bars, substantially as described.

3. A reaming bit consisting of two cutting blades pivoted together and having rearward extending tangs independently connected pivotally to a common stem adapted to rotate the blades, substantially as described.

**505,323. FRUIT-HOLDER.** WILLIAM NICHOLSON, Brooklyn, N. Y., assignor of one-half to Adelbert A. Webster, same place. Filed Apr. 12, 1893. Serial No. 470,016. (No model.)



*Claim.*—1. A fruit holder, comprising a cup having a base, and a ring hinged on the said cup and provided with inwardly and downwardly projecting prongs adapted to engage the fruit to hold the same in place in the cup, substantially as shown and described.

2. A fruit holder, comprising a cup having a base, a ring hinged on the said cup and provided with inwardly and downwardly projecting prongs adapted to engage the fruit to hold the same in place in the cup, and a locking device for locking the said ring to the said cup, substantially as shown and described.

3. A fruit holder, comprising a cup having a base, a ring hinged on the said cup and provided with inwardly and downwardly projecting prongs adapted to engage the fruit to hold the same in place in the cup, and a finger piece on the pivot end of the said ring to assist in opening the latter, substantially as shown and described.

**505,324. RAILWAY-COACH VESTIBULE.** ROWLEY K. ORTT and MARLON A. SHEARER, Norristown, Pa. Filed Mar. 28, 1893. Serial No. 467,382. (No model.)

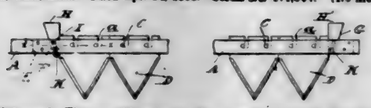


*Claim.*—1. A vestibule for cars constructed of a series of supports separated by flat springs, substantially as described.

2. A vestibule for cars constructed of a series of supports, adapted to support the covering and provided with flat, bow-shaped, springs between the pairs of the supports, whereby elasticity sufficient to provide for the motion of a train is produced, substantially as described.

3. The combination of two or more supports for a vestibule for cars, of a flat spring separating the supports at the top and a pair of flat springs separating them at the sides, substantially as described.

**505,325. CUTTER-BAR FOR HARVESTERS.** WILLIAM H. PALMER, Yale, Mich. Filed Apr. 24, 1893. Serial No. 471,597. (No model.)



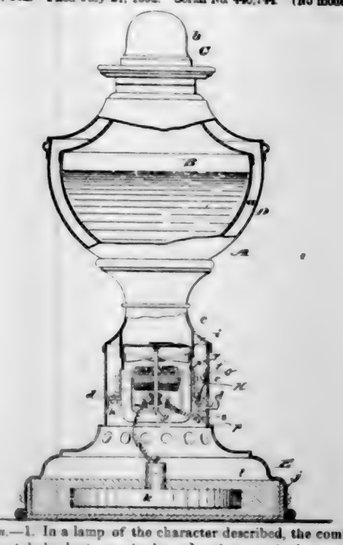
*Claim.*—1. The combination with a cutter bar of the knives adapted to be detachably locked thereto, by means of a lateral movement, and means at each end of the bar for shifting said blade in opposite directions, substantially as described.

2. In a cutter-bar, the combination of the bar, the rivets arranged in pairs thereon, the knives each provided with a pair of L-shaped slots opening at the edge of the knife and adapted to engage with said rivets and means, such as the wedges H H' at opposite ends of the cutter bar for shifting the knives laterally into the locking slots *b*, substantially as described.

3. In a cutter bar, the combination of the upper and lower members A B, of the rivets C extending between said members, the knives D having L-shaped slots open at their rear edges, the spreader blocks E at each end, having inclined bearing faces F, of the wedges H H' having inclined slots the rivets I engaging said slots and the locking pin or screw K, the parts arranged and operating, substantially as and for the purpose described.

4. In a cutter bar for harvesters, the combination with the bar, of knives detachably locked thereto by means of a lateral movement, means for retaining the knives in their locked positions and means on the bar for moving the knives in an opposite direction for unlocking the same, substantially as described.

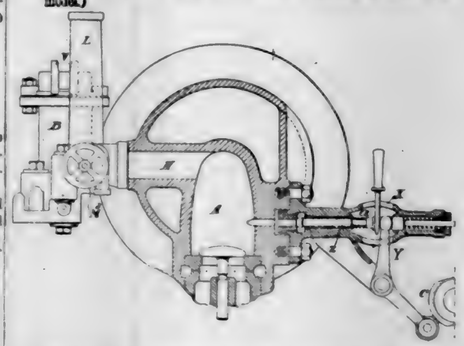
**505,326. LAMP.** DELMAR D. PINKHAM and FRANK E. LEWIS, Longview, Tex. Filed July 21, 1892. Serial No. 440,744. (No model.)



*Claim.*—1. In a lamp of the character described, the combination with a tubular lamp standard, an electric motor in the standard, and a fan on the armature shaft of the said motor, of a contact on the inside of the tubular standard, and a spring secured to the inside of the standard and provided at its lower end with a contact point and with a notched arm projecting through an opening in the said standard, substantially as herein shown and described.

2. In a lamp of the character described, the combination with a tubular standard, of an electric motor in the standard, a fan on the armature shaft, a battery holding tray detachably held in the base of the standard, contacts on the inside of the said standard, and a spring secured to the inside of the standard and provided with a contact point and with a notched arm projecting through an opening in the standard, substantially as described

**505,327. GAS-ENGINE.** CHARLES W. PINKNEY, Smethwick, assignor of two-thirds to George Tangye and George Handel Haswell, Birmingham, England. Filed Feb. 13, 1893. Serial No. 462,183. (No model.)



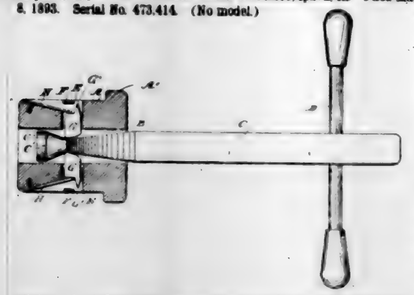
*Claim.*—1. In a gas engine the combination with a passage communicating with the combustion chamber, of a pump or similar device, an inlet valve between the pump and communicating passage for admitting a mixture of air and gas, and a relief valve connected with the pump, operated by excessive pressure therein when the pressure of the mixture in the combustion chamber reaches a certain predetermined limit, substantially as described.



2. The combination with a gas engine of a pump or forcing device for the purpose described, and a relief valve, and a projection on the piston of the forcing device for opening the said valve and means for keeping the said valve open when the engine is to be started or is at work and for preventing the said projection opening the said valve when the pump is forcing in the starting charge substantially as hereinbefore described.

3. In a gas engine the combination with means for forcing a starting charge into the combustion chamber, of the crank arm, and means for holding the latter in the proper position for starting consisting of a rod carrying a spring actuated catch engaging a projection on the crank arm whereby the latter is released upon the explosion of the starting charge, substantially as described

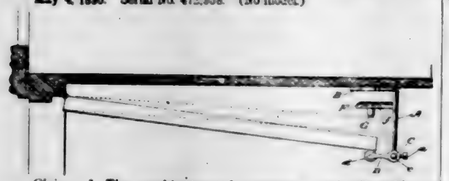
**505,328. FLUE-CUTTER.** EBER W. PRATT, Ipava, Ill. Filed May 8, 1893. Serial No. 473,414. (No model.)



*Claim.*—1. A flue cutter, comprising a body provided with a longitudinal central aperture and transverse radial apertures, cutters fitted to slide in the said radial apertures, stops for limiting the outward movement of the cutters, springs secured to the body and adapted to bear on the outer ends of the cutters, and a mandrel adapted to be moved longitudinally in the central aperture of the body, the said mandrel being provided with a beveled portion to engage the inner ends of the cutters and move the latter outwardly in the radial apertures of the body, substantially as described.

2. A flue cutter, comprising a body provided with a longitudinal central aperture and transverse radial apertures, cutters fitted to slide in the said radial apertures, and a mandrel fitted to be moved longitudinally in the central aperture of the body, the said mandrel having a reduced beveled portion adapted to move the cutters outwardly, and an enlarged head at the end of the said reduced portion the said head being adapted to collide with the inner ends of the cutters to prevent the withdrawal of the mandrel from the body, substantially as described.

**505,329. DOOR-CHECK.** KARL REICHERT, Muscatine, Iowa. Filed May 4, 1893. Serial No. 472,958. (No model.)



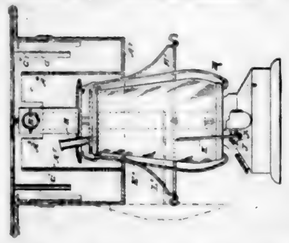
*Claim.*—1. The combination of a support, a rod adjustably attached thereto, a keeper hinged on said rod, and a spring on said rod for holding the keeper in normal position, substantially as described.

2. The combination with a supporting arm, of a swinging keeper connected thereto, and springs for holding said keeper normally at right angles to the arm but permitting it to be forcibly turned in either direction as the door swings therepast, and a stop projecting from the arm adjoining the keeper, substantially as described.

3. The combination of the arm, the rod adjustably secured thereto, the keeper hinged on said rod, and the springs on said rod adjustable therewith connected to the keeper for holding it in normal position and a stop in rear of the keeper, substantially as and for the purpose specified.

**505,330. DEVICE FOR HEATING AND LIGHTING VEHICLES.** NAPOLEON B. ROSS, Gilboa, Ohio. Filed Feb. 23, 1893. Serial No. 463,378. (No model.)

*Claim.*—1. A device for heating and lighting vehicles, comprising a casing adapted to be passed through an opening in the bottom of the vehicle, a flange formed on the upper end of the said casing and adapted to be seated on the bottom of the vehicle to support the casing in place in the vehicle, a lamp supported in the said casing and projecting a suitable distance below the same, so that the light of the lamp is shed exteriorly of the vehicle, while the heat of the lamp passes through the said casing to the interior of the vehicle, an apertured cover hinged to the said flange to close the upper end of the casing within the vehicle, and a solid cover attached to the bottom of the vehicle for excluding the heat therefrom and for covering up the aperture, substantially as shown and described.

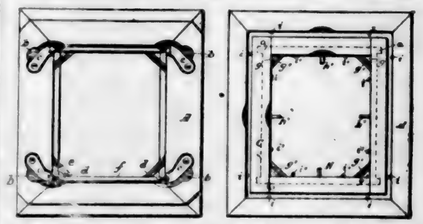


2. A device for heating and lighting vehicles, comprising a casing adapted to be fitted into an aperture in the bottom of the vehicle, a flange arranged on the upper end of the said casing and adapted to be seated on the bottom of the vehicle, a lamp supported in the said casing and projecting with its lower part a suitable distance below the bottom of the said casing, and slides arranged in the upper portion of the wall of the said casing above the top of the lamp's chimney to open and close openings therein, substantially as shown and described.

3. A device for heating and lighting vehicles, comprising a casing made in sections and adapted to be fitted into an opening in the bottom of the vehicle, a flange secured on the upper end of the said casing and adapted to be seated on the upper surface of the bottom of the vehicle, a spring rod having hook ends and secured to one section of the said casing, to engage lugs on the other section of the said casing to lock the two sections in place, and a lamp secured with its upper end in the said casing, substantially as shown and described.

4. A device for heating and lighting vehicles, comprising a casing made in sections and adapted to be fitted into an opening in the bottom of the vehicle, a flange secured on the upper end of the said casing and adapted to be seated on the upper surface of the bottom of the vehicle, a spring rod having hook ends and secured to one section of said casing to engage lugs on the other section of the said casing to lock the two sections in place, and a cylindrical projection secured to the ring-shaped bottom of the said casing to form a support for the upper end of the lamp, substantially as shown and described.

**505,331. NEGATIVE AND SCREEN HOLDER.** JAMES SCOGLER, San Francisco, Cal. Filed Feb. 1, 1893. Serial No. 460,579. (No model.)

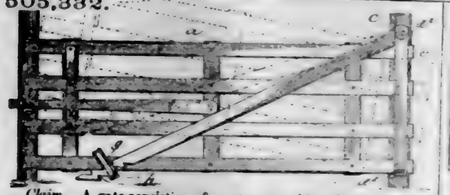


*Claim.*—1. The combination with a frame rabbeted on one side and provided with supports for supporting a sensitive plate in the rabbeted side of the frame, of spring buttons pivoted on the opposite side of the frame for holding a screen in this side of the frame, substantially as described.

2. The combination with a frame A, having one side rabbeted and provided with the recesses *b c*, and with supports for a sensitive plate, of the spring buttons *e* pivoted in the recesses *b* and adapted to hold a screen in the frame and the cross bars *f* having their ends fitting in the recesses *c* and serving to space the sensitive plate from the screen, substantially as described

**505,332. FARM-GATE.** SAMUEL S. SHERMAN, West McHenry, Ill. Filed July 5, 1893. Serial No. 479,606. (No model.)

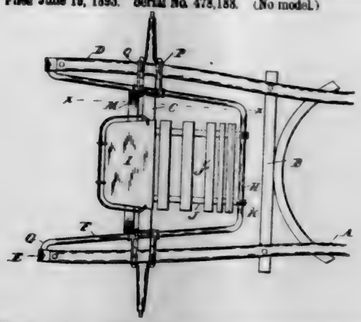
## 505,332.



*Claim.*—A gate consisting of a gate proper hinged to swing horizontally and pivoted to swing vertically on one of its hinges, said gate being adapted to be pivoted on either the upper or the lower hinge as described, an inclined brace pivoted on the hinge opposite the hinge on which the gate is pivoted and extending across the gate and having notches in both its edges at its forward end, and a loop adjustably and removably secured to the gate and adapted to be engaged by the notches of the brace, substantially as described.

## 505,333. ROAD-CART. JACOB S. SHOEMAKER, New Lothrop, Mich.

Filed June 19, 1893. Serial No. 478,188. (No model.)



*Claim.*—1. In a road cart, the combination of the axle, the frame extending rearwardly of the axle, a seat supporting frame pivoted at the rear end of said extension and springs on the frame of the vehicle supporting the free end of said supporting frame.

2. In a road cart, the combination of the frame extending rearwardly of the axle, a seat supporting frame pivoted in such rearward extension, springs on the vehicle frame supporting the free end of such seat supporting frame, a seat and a seat spring suspended from the seat supporting frame, substantially as described.

3. In a road cart, the combination of the axle, the frame extending rearwardly thereof, a seat supporting frame pivoted in said rearward extension, the seat a basket or crate, a connection between the forward ends of the basket and the forward end of the supporting frame, a semi-elliptical spring suspended centrally of the seat supporting frame and a spring support on the vehicle frame for the seat supporting frame.

4. In a road cart, the combination of the axle, the shafts extending rearwardly thereof having boxes at their rear ends, the frame F pivoted in said boxes and extending forwardly above the axle, the seat and crate bars J extending downwardly and forwardly from the seat, supported at the forward end of the frame F, the semi-elliptical seat spring suspended from the frame F in rear of the axle, the coiled springs P on the shafts, and links R from which the seat supporting frame is suspended upon the springs P, substantially as described.

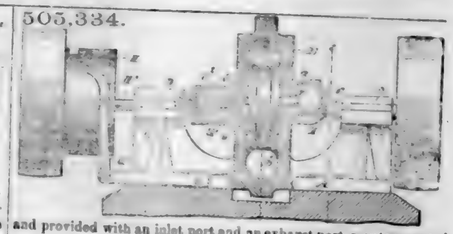
5. In a road cart, the combination of the axle, the shafts extending rearwardly thereof, the forwardly extending frame pivoted at the rear ends of the shafts, the seat supported thereon, of the springs on the vehicle frame, a bail on the hinged frame beneath the spring and a link longitudinally adjustable connecting the bail and spring, substantially as described.

## 505,334. ROTARY ENGINE. CHARLES H. STONE and ALONZO STONE, Ringgold, Tex., assignors to themselves and James W. Long, same place. Filed June 12, 1893. Serial No. 477,362. (No model.)

*Claim.*—1. In a rotary engine, the combination, with a central driving shaft, the cylinder having an annular bore, or passage, whose inner side is slotted, and the piston fitting in said bore and attached to an arm of said driving shaft, of the divided packing-ring, fitting into the aforesaid slot and having its ends provided with slots to receive the piston arm, as and for the purpose specified.

2. A rotary engine, comprising a cylinder having an annular bore

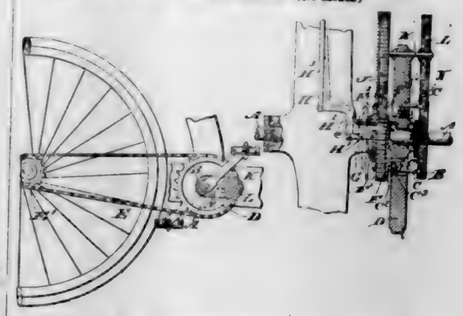
## 505,334.



and provided with an inlet port and an exhaust port, a gate mounted to slide in the said bore between the said ports, a piston mounted to travel in the said bore and provided with an arm secured on the main driving shaft, a cam mechanism, substantially as described, for actuating the said gate, a steam chest containing a piston valve for controlling the said inlet port, the said piston valve being actuated in one direction by the live motive agent to uncover the said inlet port, and an eccentric cam held on the main driving shaft and adapted to move the said piston valve in an opposite direction to close the said inlet port, substantially as shown and described.

## 505,335. BICYCLE-GEAR. ERIK J. SWEDLUND, Atwater, Minn.

Filed Aug. 30, 1892. Serial No. 444,542. (No model.)



*Claim.*—1. In a bicycle gear, the combination with a driven or transmitting wheel, a drive wheel concentric therewith and rotated from the treadles, a locking or clutch mechanism carried by the said driven or transmitting wheel and normally connecting it with the said drive wheel and a short shaft carried by the said driven or transmitting wheel, geared at one end to said drive wheel and provided with a spur wheel at its opposite end, of a laterally sliding gear wheel mounted on the frame work at the side of the driven or transmitting wheel opposite to the drive wheel, normally out of mesh with said spur wheel and adapted to retract or release the said locking or clutch mechanism from the drive wheel when moved into mesh with the spur wheel, substantially as set forth.

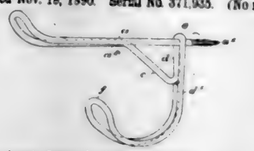
2. In a bicycle gear the combination with a driven or transmitting wheel, a drive wheel concentric therewith and rotated from the treadles, a locking or clutch mechanism carried by the said driven or transmitting wheel and normally connecting it with said drive wheel, and a short shaft carried by the said driven or transmitting wheel, geared at one end to said drive wheel and provided at its opposite end with a spur wheel, of a laterally sliding ratchet wheel mounted on the frame work concentric with the driven or transmitting wheel and at the opposite side thereof from the drive wheel, a gear wheel mounted on the ratchet wheel to be moved into and out of mesh with the said spur wheel thereby, and also adapted to release or retract the said locking or clutch mechanism when thrown into mesh with said spur wheel, and pawls mounted on said sliding gear wheel and engaging the teeth of the ratchet, substantially as set forth.

3. The combination with the frame and the treadle shaft A, of the loose driven or transmitting sprocket wheel D, on the shaft, and provided near its periphery with a transverse shaft K having a sprocket wheel L and a spur wheel J, the sprocket wheel B fast on shaft A and provided on its inner face with recesses, locking devices carried by the wheel D and normally locking it to wheel B, a sliding ratchet wheel F' on a part G of the frame at the inner side of wheel D, a gear wheel F mounted on said ratchet moved thereby into and out of mesh with wheel J and retracting said locking devices when moved into mesh with said wheel J, pawls mounted on wheel F and engaging the teeth of ratchet F' and means for sliding the ratchet F', extending within reach of the rider, substantially as set forth.



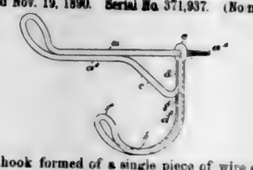
4. The combination with the bicycle frame and its treadle shaft A having a loose drive or transmitting sprocket wheel D geared to the rear bicycle wheel and provided with transverse spring projected pins C extending beyond one side and retracting pins $C^3$ therefor projecting from its opposite sides, the sprocket wheel B fast on shaft A and having recesses into which pins C normally project, a shaft K carried by wheel D and having a sprocket L geared to wheel B and a gear wheel J at its opposite end, the sliding ratchet wheel F' on the part G of the frame, a gear wheel F mounted on the ratchet wheel F' and having pawls $F^2$ engaging the ratchet teeth, and the lever mechanism H actuated from the brake lever to throw the wheel F against pins $C^3$ and into mesh with a wheel J substantially as set forth.

## 505,336. COAT AND HAT HOOK. FREDERICK TAYLOR, Lowell, Mass. Filed Nov. 19, 1890. Serial No. 371,935. (No model.)



*Claim.*—A hook formed of a single piece of wire comprising a horizontal portion formed by doubling the wire laterally upon itself, the two members lying side by side and at substantially the same height throughout a portion of their lengths and one of them being extended to form an attaching point, a rearwardly and downwardly extending diagonal brace springing from the other member of said horizontal portion, a vertical back-portion doubled over the shank of the attaching point and one of its members springing from the brace, and a lower hook formed by doubling the wire laterally upon itself, one member of said hook being a continuation of one member of the vertical back-portion, and the end of the other member of the hook terminating under the bend at the base of the brace.

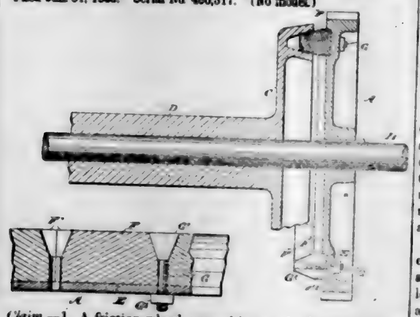
## 505,337. COAT AND HAT HOOK. FREDERICK TAYLOR, Lowell, Mass. Filed Nov. 19, 1890. Serial No. 371,937. (No model.)



*Claim.*—A hook formed of a single piece of wire comprising a horizontal portion formed by doubling the wire upon itself in a vertical plane, the upper member being extended to form an attaching point, a rearwardly and downwardly extending diagonal brace springing from the under member of said horizontal portion and extending at an angle to the vertical plane of said horizontal portion, a vertical back-portion doubled over the shank of the attaching point, one member springing from the brace, and a lower hook formed by doubling the wire laterally upon itself, one member being a continuation of one member of the back-portion, and the end of the other member terminating below the bend at the base of the brace.

## 505,338. FRICTION-CLUTCH. ERIK G. P. WERN, Brooklyn, N. Y.

Filed Jan. 31, 1893. Serial No. 460,317. (No model.)



*Claim.*—1. A friction wheel, comprising a wheel formed in one face with an annular groove, friction blocks set in the said groove to form a continuous rim, and bolts for fastening the said blocks in place on the wheel, each bolt being provided with a wedge-shaped head fitting into corresponding recesses at the joint of adjacent blocks, substantially as shown and described.

2. A friction wheel, comprising a wheel formed in one face with an annular groove, friction blocks made of wood and set with their square bases into the said annular groove, the beveled sides of the said blocks forming a continuous rim for engagement with the friction clutch, and bolts for fastening the said blocks in place on the wheel, each bolt having a wedge shaped head fitting into corresponding recesses at the joint of adjacent blocks, substantially as shown and described.

## 505,339. MECHANICAL MOTOR. JOHN E. WEST, Centralia, Wash., assignor to himself and Maggie J. Horr, same place. Filed Feb. 18, 1893. Serial No. 462,861. (No model.)



*Claim.*—1. The combination with an upright frame, a winch drum rotatable thereon near its base, a loose pulley at the head of the frame, a rope passing from the drum over the pulley, a pendent weight on the rope, a counter-shaft, a pinion thereon engaged by a spur wheel on the drum shaft, and an escapement wheel on the counter-shaft, of a rotatable rock shaft at a right angle to the counter-shaft, a dual rock arm on one end of the rock shaft near the face of the escapement wheel and adapted to be alternately engaged near its ends by teeth on said escapement wheel, and a crank arm on the other end of the rock shaft, substantially as described.

2. The combination with an upright frame, a rotatable transverse shaft thereon near its base, a winch drum on said shaft, a rope extended upwardly from the drum and engaging a loose pulley on the head of the frame and pendent therefrom, a weight thereon, and means to rotate the drum and elevate said weight, of a spur wheel on the drum shaft, a counter-shaft, a pinion thereon, an escapement wheel having staggered teeth in two series, a rock shaft rotatable on the frame at right angles to the counter-shaft, a dual rock arm near the face of the escapement wheel, pallet toes on the ends of the rock arm adapted to be alternately impinged by the teeth of the escapement wheel, and a crank arm on the other end of the rock shaft, substantially as described.

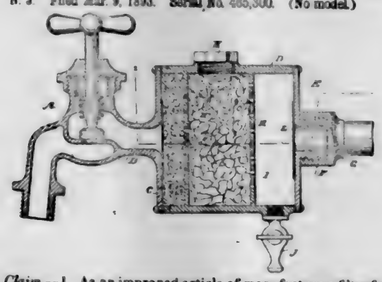
3. In a mechanism supported on an upright frame, and having a rotatable transverse shaft thereon near its base, a winch drum of two diameters, on said shaft, a rope extended upwardly from the smaller drum, and engaging a loose pulley on the head of the frame and pendent therefrom, a weight thereon, a second rope engaging the larger winch drum and a windlass shaft below the drum, and a match block between the drum and windlass, the following co-acting parts, viz: a spur wheel on the drum shaft, a counter-shaft, a pinion thereon, an escapement wheel having two series of staggered cam teeth, a rock shaft rotatable on the frame at right angles to the counter shaft, a dual rock arm thereon near the face of the escapement wheel, pallet toes on the ends of the rock arm, adapted for an alternate engagement with the cam teeth, and a crank arm on the other end of the rock shaft, in the same plane with the dual rock arm, substantially as described.

4. A mechanical movement, comprising a supported rotatable escapement wheel, two series of spaced cam teeth thereon, one series alternating with the other series and each tooth incurved on the lower side at its inner end, a rock shaft rotatable in a plane below and at right angles to the axis of the escapement wheel, a transverse dual rock arm centrally on the rock shaft end near the cam teeth, pallet toes thereon near its ends, each having a rotatable thimble,

thereon and adapted to be alternately engaged by the duplicate series of cam teeth, a crank arm on the other end of the rock shaft, in the same plane with the dual rock arm, and mechanism adapted to transmit the motion of a descending weight to the escapement wheel, substantially as described.

5. In a mechanism supported on a derrick frame, and having a rotatable transverse shaft thereon near its base, a winch drum of two diameters, on said shaft, a rope extending upwardly from the smaller drum and engaging a loose pulley on the top of the frame and pendent therefrom, a weight thereon, a second rope engaging the larger drum and a windlass shaft below the drum, and a snatch block between the drum and windlass, the following co-acting parts, viz: a spur wheel on the drum shaft, a counter-shaft, a pinion thereon, an escapement wheel having two series of staggered cam teeth incurved on their lower sides at their inner ends a rock shaft rotatable on the frame at right angles to the axis of the counter-shaft and below said shaft, a balance wheel thereon, a plate spring engaging the balance wheel, a dual rock arm on the end of the rock shaft near the cam teeth, two thimble-covered pallet toes on the ends of the rock arm, adapted to alternately engage the cam teeth, a crank arm on the other end of the rock shaft, and an upright pump connected by its rod with said arm, substantially as described.

505,340. FILTER-FAUCET. EDWARD O. WILSON, Jersey City, N. J. Filed Mar. 9, 1893. Serial No. 465,300. (No model.)



*Claim.*—1. As an improved article of manufacture a filter faucet, comprising a casing provided with transverse perforated partitions forming filtering compartments, a faucet connected with one end of the said casing, a water supply nipple connected with the opposite end of the casing, and screens secured to the end walls of the casing to cover the apertures leading to said faucet and said nipple the compartments of the casing being filled with a suitable filtering material, with the exception of the compartment adjacent to the water inlet, the said compartment being provided with a drain cock in its bottom, substantially as shown and described.

2. As an improved article of manufacture a filter faucet, comprising a casing open at both ends formed integral with transverse perforated partitions forming filtering compartments, a faucet formed integral with a cover plate adapted to close the said casing at one end, a water supply nipple carried by another cover plate adapted to close the casing at the opposite end the said cover plates being provided with screens covering the apertures leading to the faucet and to the water supply respectively, and a suitable filtering material located in the compartments of the casing with the exception of the compartment adjacent to the water inlet, the said compartment being provided with a drain cock in its bottom, substantially as shown and described.

505,341. SASH-FASTENER. ELIJE AMENT, Rogers Park, assignor of one-half to Charles W. Ross, Aurora, Ill. Filed Apr. 15, 1893. Serial No. 470,412. (No model.)

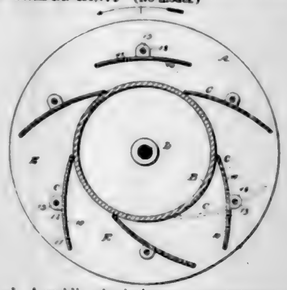


*Claim.*—1. The combination with a guide with a slot open at one end and having notched flanges, of a base with a sliding bolt with a head, and a screw mounted for rotation and held against longitudinal movement and engaging said bolt to actuate the same and having a head whereby it may be turned, as set forth.

2. The combination with a base with securing flanges and a longitudinal bore, of a bolt arranged to slide in said bore and provided with a head and a neck, and at the other end a screw threaded socket, and a screw engaging the threads of said socket and having a portion extended outside the bore for its manipulation and means for preventing longitudinal movement of the screw, substantially as specified.

3. The combination with a guide with a slot open at one end and flanges notched upon their inner faces, of a base with a longitudinal bore and securing flanges, a bolt sliding within said bore and having a neck and a head toothed upon its opposite edges a pin in said bolt working through a slot on the base, and a screw engaging one end of said bolt to actuate the same and means permitting rotation but preventing longitudinal movements of said screw, substantially as shown and described.

505,342. WATER-WHEEL. EDWARD N. ANDREWS, New Britain, assignor to himself and George A. Coles, Middletown, Conn. Filed Apr. 1, 1893. Serial No. 468,714. (No model.)



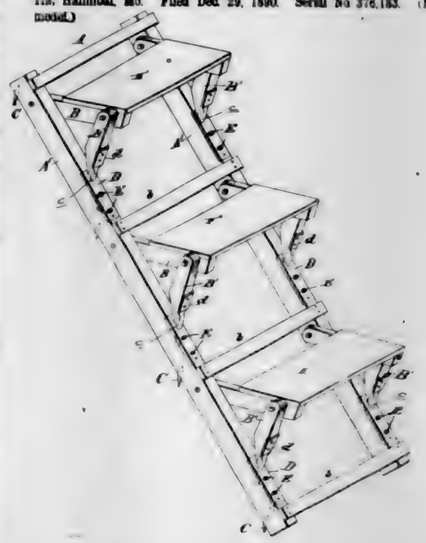
*Claim.*—1. A paddle wheel, the same consisting of a circumferential partition, solid sides projected beyond the outer face of the partition, and paddles pivoted between the sides around the partition, as and for the purpose specified.

2. A paddle wheel, the same consisting of solid sides and a circumferential partition connected with the sides, and self-reversing balanced paddles pivoted between the sides and around the partition, as and for the purpose specified.

3. In a paddle wheel, the combination, with a body comprising solid sides and a circumferential partition connecting the sides, of paddles having one face concaved and the other convexed, said paddles being balanced and pivoted between the sides around the partition, the inner ends of the paddles being capable of contact with the partition, as and for the purpose set forth.

4. In a paddle wheel, the combination, with a body comprising solid sides and a circumferential partition connecting the sides, the sides extending beyond the circumferential partition, of a series of balanced paddles pivoted between the sides around the partition, the paddles being concentrically located, one independent of the other, and the position of the paddles being such that their inner ends may be engaged with the outer face of the partition, as and for the purpose specified.

505,343. ADJUSTABLE PITCH-ROOF LADDER. EDGAR A. AUSTIN, Hannibal, Mo. Filed Dec. 29, 1890. Serial No. 376,183. (No model.)





*Claim.*—In a ladder for the purpose described, the combination with a frame comprising the side bars provided with the apertures E, and the reinforcing plates D; of the arms B, pivotally connected to the side bars, the steps or platforms mounted on the arms B, the pivoted supporting legs, and the points connected to the legs and adapted to engage the apertures E, substantially as and for the purpose set forth.

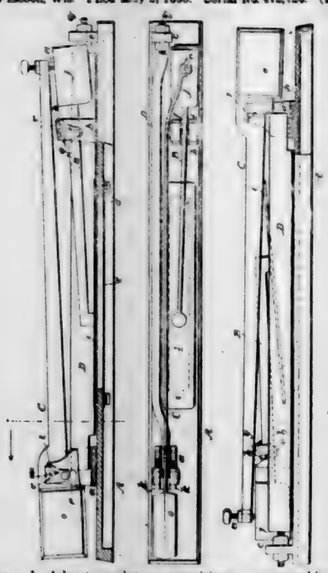
505,344. TOY SOLDIER. CHARLES M. BEAUMONT, Hull, England. Filed May 11, 1893. Serial No. 473,803. (No model.)



*Claim.*—1. A toy soldier, consisting in the combination, with figure of a soldier in a shooting or charging attitude, of a tube corresponding in position to the barrel of the soldier's gun, said tube being open at both ends and not in alignment with the head or any other part of the figure, substantially as and for the purpose specified.

2. The combination with a toy soldier consisting of a figure holding in firing position a tube representing a gun barrel, open at both ends and not in alignment with any part of the figure, of a projectile in the form of a long slender rod adapted to slide through the tube, and to be propelled therefrom by a fillip of the finger applied to the end of the rod projecting from the breech end of the tube as described.

505,345. HEAT-REGULATOR FOR OVENS. ANTON BEDNARZ, New Lisbon, Wis. Filed May 2, 1893. Serial No. 472,726. (No model.)

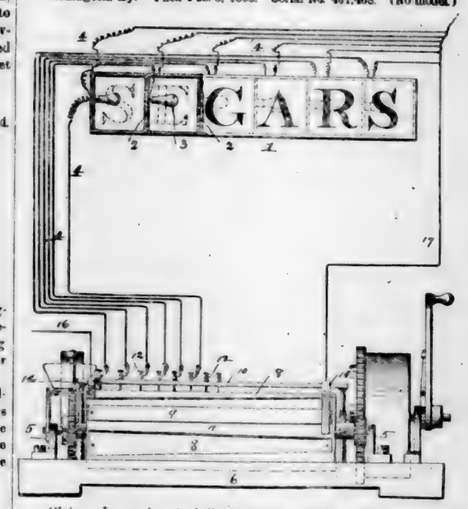


*Claim.*—1. A heat regulator, comprising an apertured base plate, a cover for the opening of the base plate, oppositely pivoted levers, one of which carries the said cover and is engaged at its opposite end by the free end of the other lever, and an expansion bar for operating the said levers, substantially as described.

2. A heat regulator, comprising an apertured base plate, a lever pivoted at one side of the opening of the base plate, a cover for the said opening carried by said lever, a second lever pivoted at the opposite side of the said opening and having its longer arm engaging the shorter arm of the first named lever, and an expansion bar engaging the short arm of the second lever, substantially as described.

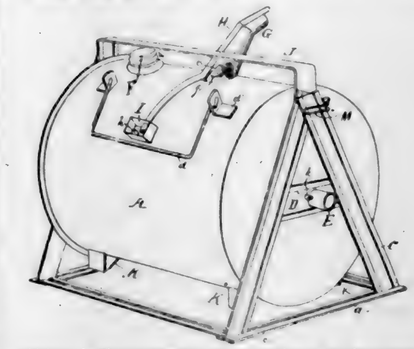
3. The combination of the base plate A provided with the aperture *d*, the wire cloth *e*, the counter-balanced lever H, the cover *i* carried by the lever B, the counter-balanced lever C provided with the adjusting screw *n*, and the adjustable expansion bar D, substantially as specified.

505,346. ELECTRIC ILLUMINATED SIGN. HENRY A. BIGELEY, Lexington, Ky. Filed Feb. 8, 1893. Serial No. 461,468. (No model.)




*Claim.*—In an electrical illuminating sign, the combination with the casing having a series of compartments, with an incandescent lamp in each compartment, and a transparent front having letters or other characters thereon, of the continuously rotating cylinder of non-conducting material, the rectangular conducting strip and the strip having the front edge beveled and secured to said cylinders and extending from end to end thereof, the non-conducting bar having a series of contact fingers adapted to contact with said strips with which fingers the positive conductors of the lamps are respectively connected, the curved conducting arms secured to each end of the finger bar, contacting with said strips and connected respectively with the positive and negative conductors of a source of electric energy, and the conductors connecting said negative conductor with the negative conductors of the lamps, substantially as described.

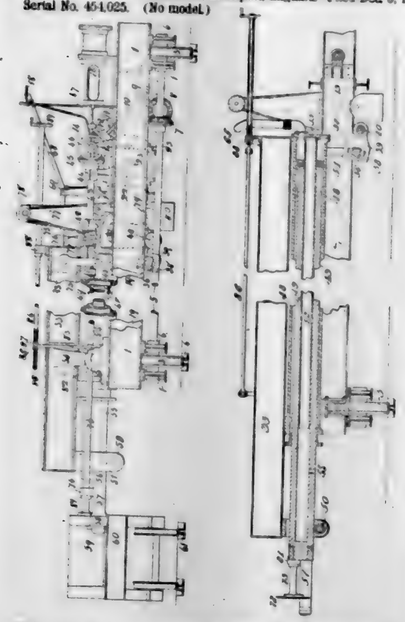
505,347. OIL-CAN. LEWIS S. BONEBRAKE, Decatur, Ill. Filed Feb. 7, 1893. Serial No. 461,335. (No model.)



*Claim.*—1. The combination of a rotatable can, the frame carrying said can, a delivery spout fixed to the periphery of the can, a ball and stop located within said delivery spout, an air-tube leading from the can, and extended past and beyond the delivery or filling spout, and the feet K fixed to the periphery of the can, substantially as and for the purpose specified.

2. The combination of a frame having removably attached thereto a rotatable can, and provided with a bail, the filling spout G, having a ball valve and valve stop located within said spout, an air chamber provided with a ball valve located within said chamber, the stop bar J, a catch for holding the can in a fixed position, and the feet or counter-balance, K substantially as and for the purpose specified.

**505,348. APPARATUS FOR CHARGING FURNACES WITH METAL.** JAMES BUCHANAN, Jr., Liverpool, England. Filed Dec. 5, 1892. Serial No. 454,025. (No model.)



*Claim.*—1. In furnace-charging apparatus, the combination of a traversing carriage, a motor carried thereby and comprising a longitudinally movable plunger and a cylinder mounted on a horizontally rotatory frame, and means adapted to fix said plunger to the metal burden to be carried; substantially as described.

2. In furnace-charging apparatus, the combination of a traversing carriage, a horizontally rotatory frame, a motor cylinder carried thereby and pivotally supported so as to be movable vertically, and a second motor adapted to turn the frame horizontally and to move the motor cylinder vertically; substantially as described.

3. In furnace-charging apparatus, the combination of a traversing carriage, a horizontally rotatory frame, a motor cylinder carried thereby and pivotally supported so as to be movable vertically, and a second motor adapted to turn the frame horizontally, to move the motor cylinder vertically and to move the carriage; substantially as described.

4. In furnace-charging apparatus, the combination of a carriage, a motor-cylinder provided with metal-carrying devices and adapted to project them longitudinally, a frame or girder pivoted horizontally on the carriage and supporting the motor-cylinder, means for moving the frame or girder pivotally, and a roller carried by said frame or girder and supporting the ram of the motor-cylinder; substantially as described.

5. In furnace-charging apparatus, the combination of a traversing carriage, a horizontally rotatory frame, a motor-cylinder carried thereby and pivotally supported so as to be movable vertically, and a second motor having a shaft provided with clutch-gearing; and mechanism connecting it operatively with the frame, substantially as described.

6. In furnace-charging apparatus, the combination of a carriage, a motor cylinder provided with metal-carrying devices, a frame or girder pivoted horizontally on the carriage and supporting the motor-cylinder, a rocking crank-shaft connected with said frame or girder and adapted to rock the same, and a motor for driving said shaft; substantially as described.

7. In furnace-charging apparatus, the combination with a tray for holding the materials to be charged, of a longitudinally-movable carrier or head for introducing and retracting the tray into and from the furnace, means for projecting the carrier or head, and a pusher adapted to discharge the materials from the tray; substantially as described.

8. In furnace-charging apparatus, the combination with a tray for holding the materials to be charged, of a longitudinally-movable carrier or head for introducing and retracting the tray into and from the furnace, a pusher adapted to hold the materials during the retraction of the tray and to cause their discharge therefrom, means for retracting the tray, and means for holding the pusher stationary during the retraction of the tray; substantially as described.

9. In furnace-charging apparatus, the combination with a tray for holding the materials to be charged, of a longitudinally-movable carrier or head for introducing and retracting the tray into and from the furnace, a pusher adapted to hold the materials during the retraction of the tray and to cause their discharge therefrom, said pusher being carried with the head during its advancement, a locking device for holding the pusher stationary during the retraction of the head, and means for retracting the pusher when unlocked; substantially as described.

10. In furnace-charging apparatus, the combination with a tray for holding the materials to be charged, of a longitudinally movable carrier or head for introducing and retracting the tray into and from the furnace, a pusher adapted to hold the materials during the retraction of the tray and to cause their discharge therefrom, said pusher being carried with the head during its advancement, a locking device for holding the pusher stationary during retraction of the head, means for engaging and disengaging said locking device, and means for retracting the pusher when unlocked; substantially as described.

11. In furnace-charging apparatus, the combination of a horizontally rotatory frame having a rack, a driven shaft having a pinion in gear with the rack, and adapted to rotate the frame, a girder carrying a motor-cylinder set on horizontal pivots on the frame, a rock-shaft connected with the girder and adapted to rock the same, and a common driving motor operating these parts; substantially as described.

**505,349. HORSE-HOE.** CAMPBELL COTTLE, Epping, England. Filed June 17, 1893. Serial No. 477,973. (No model.)




*Claim.*—1. In an expanding horse hoe or similar implement of the kind specified, the combination, with the expanding side bars or wings pivoted on a common center on the main beam, of curved and slotted rack bars fixed thereto and lying in different planes the one above and the other below the main central beam, and of a pinion passing through the main beam and through the slots of both rack bars and gearing with both so as to move them simultaneously and equally in opposite directions, as specified.

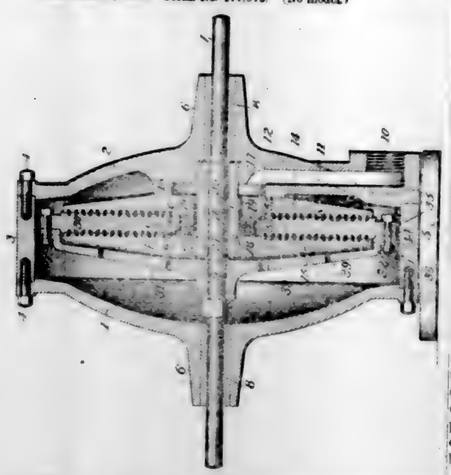
2. In an expanding horse hoe or similar implement as specified, the combination, with the expanding wings or side bars, of brackets fixed thereto, and of bridle pieces adapted to embrace the brackets and having eyes to receive the stalks and set-screws for binding the stalks against the brackets, with facility for circular adjustment, as specified.

3. In a horse hoe or similar implement, a hoe stalk or tine curved at the middle and straight at the ends so as to be reversible end for end, in combination with a bridle piece adapted to embrace it and a bracket to which the bridle piece is secured by a set-screw, as and for the purpose specified.

4. In a horse-hoe or similar implement, the means of securing the shoe point or share to the stalk of V-form in section, which consists in the acute end of the stalk fitting as a wedge-shape dovetail into a corresponding socket in the share, in combination with a screw-bolt detachably connected, by a hook, to the share and a nut bearing against an abutment in the hollow of the stalk, substantially as specified.



**505,350. STEAM-MOTOR.** EDGAR A. EDWARDS, Cincinnati, Ohio. Filed June 9, 1893. Serial No. 477,076. (No model.)



*Claim.*—1. A motor, comprising stationary plates and a rotating wheel between the plates, the wheel and plates having grooves in their adjacent faces, a steam chest supplying steam to said grooves, and a valve on the wheel arranged to change its position in the steam chest to automatically vary the relative dimensions of the ports, in accordance with the relations of the stationary plates and rotating wheel, substantially as described.

2. A motor, comprising stationary plates, and a rotating wheel between the plates, the wheel and plates having grooves in their adjacent faces, the wheel having transversely crossing steam passages, a steam chest supplying steam to said grooves, and a valve on the wheel arranged to change its position to automatically vary the relative dimensions of the ports, in accordance with the relations of the stationary plates and rotating wheel, substantially as described.

3. A motor, comprising stationary plates and a rotating wheel between the plates, the wheel and plates having grooves in their adjacent faces, and the wheel having transverse steam passages arranged to conduct the steam across the wheel to the grooves, substantially as described.

4. A motor, comprising stationary plates and a rotating wheel between the plates, the wheel and plates having grooves in their adjacent faces and arranged to have a clearance between the wheel and plates, a steam chest supplying steam to said grooves, transversely crossing steam passages, and a valve in the steam chest, the arrangement being such that a portion of the steam passes directly to the clearance space from the ports, while the bulk of the steam passes through the transversely crossing steam passages to the opposite side of the wheel, substantially as described.

5. A motor, comprising stationary plates and a rotating wheel between the plates, the wheel and plates having grooves in their adjacent faces, and a ring connected to the wheel having transversely crossing steam passages, substantially as described.

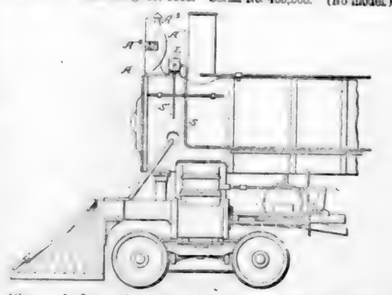
6. A motor, comprising stationary plates and a rotating wheel between the plates, the wheel and plates having grooves in their adjacent faces, transversely crossing steam passages, and a valve adjustably connected to the wheel, arranged to change its position in the steam chest, to automatically vary the dimensions of the ports in accordance with the relations of the stationary plates and rotating wheel, substantially as described.

7. A motor, comprising stationary plates and a rotating wheel between the plates, the wheel and plates having grooves in their adjacent faces, a ring provided with transversely-crossing steam passages connected to the wheel, and a valve ring connected to said steam passage ring, substantially as described.

8. A motor, comprising stationary plates and a rotating wheel between the plates, the wheel and plates having grooves in their adjacent faces, a carrier having a projecting flange provided with lugs to which the wheel is connected, and having cut-away portions between the lugs for the passage of the exhaust steam, substantially as described.

9. A motor, comprising stationary plates and a rotating wheel between the plates, the wheel and plates having grooves in their adjacent faces, a carrier having projecting lugs, (the said wheel having a radial extension,) and means for connecting the lugs of the carrier and the radial extension of the wheel, substantially as described.

**505,351. ELECTRIC HEADLIGHT.** EDGAR A. EDWARDS, Cincinnati, Ohio. Filed Aug. 15, 1893. Serial No. 483,205. (No model.)



*Claim.*—1. In an electric head light, the combination with the reflector, and supporting case therefor, the case conforming substantially to the contour of the reflector and the edge of which practically co-incides with a plane passing through the focus of the reflector, of an electric lamp arranged in the focus thereof, the said lamp comprising a case having carbons parallel to each other and to the axis of the reflector, an incandescent material arranged between the carbons, substantially as described

2. In an electric head light, the combination with a reflector of a lamp arranged in the focus thereof, the said lamp comprising a case having carbons arranged parallel to each other and to the axis of the reflector and an incandescent material between the carbons and arranged to throw the light rays all substantially in one direction, substantially as described.

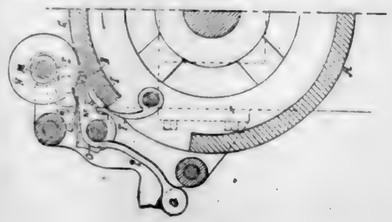
3. In an electric lamp, the combination with a case, of the parallel carbons, the incandescent material between the carbons, a re-lighter for the carbons, and a differential solenoid connected to the lighter for automatically establishing the arc, substantially as described.

4. In an electric head-light, the combination with a reflector, of an electric lamp mounted in the focus thereof, the said lamp being supported on a standard and being provided with parallel carbons and having a block of incandescent material between the carbons, a re-lighter for the carbons and a differential solenoid, the core of which is connected to the lighter, substantially as described.

5. In an electric head-light, the combination with a base, of a casing formed integral therewith and conforming substantially in contour to the reflector carried thereby, the base having an extension, and a generator and motor mounted on said extension, substantially as described.

6. The combination with a locomotive, of motor having a wheel adapted to be driven by steam impact, steam connections between the motor and the locomotive, a generator connected to the motor, and electric lighting devices connected to the generator, substantially as described.

**505,352. SHEET-SPLITTING ATTACHMENT FOR PRINTING-PRESSES.** GEORGE P. PERRER, New London, Conn. Filed Apr. 27, 1893. Serial No. 472,101. (No model.)



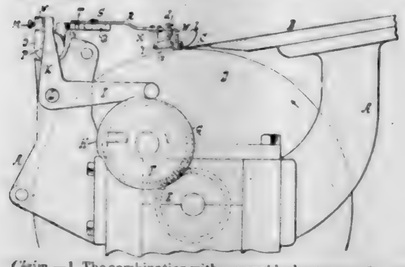
*Claim.*—1. The combination with an impression cylinder of a counter disk H actuated by said cylinder and an overbalanced splitting disk or cuttor made to run in frictional contact with the counter disk substantially as described.

2. The combination with an impression cylinder of a counter disk H actuated by said cylinder and an overbalanced splitting disk or cutter provided with a rim made to run in frictional contact with the counter disk and having a cutting edge made to project inside the periphery of the counter disk substantially as described.

3. The combination with an impression cylinder of a counter disk H located at the upper side of the sheet coming from the cylinder and an overbalanced splitting disk or cutter located at the under side of said sheet and made to act against the counter disk substantially as described.

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505,353. SHEET-GUIDE FOR PRINTING-MACHINES. GEORGE P. PENNER, New London, Conn. Filed Apr. 27, 1893. Serial No. 472,102. (No model.)



*Claim.*—1. The combination with a movable sheet-stop, of a gravitating link pivotally connected with the sheet-stop, and a rocking pressure finger pivoted to the gravitating link, substantially as described.

2. The combination with a movable sheet-stop, of a gravitating link pivotally connected at one end with the sheet stop, a rocking pressure finger pivoted intermediate its extremities to the opposite end of the link and having a tail piece, and an adjustable stud carried by the movable sheet-stop and bearing against the tail-piece of the pressure finger, substantially as described.

3. The combination with a feed board having a paper supporting step projecting from the edge thereof, of a movable sheet-stop provided with a pendent arm or hanger, a gravitating link pivoted at one end to the arm or hanger, an overbalanced pressure finger pivoted to the opposite end of the link, and an adjustable device mounted on the sheet-stop and engaging the pressure finger to swing the latter on its pivotal attachment to the link, substantially as described.

4. The combination with a vertically movable sheet-stop, of a gravitating link pivotally connected at one end with the sheet-stop, a pressure finger pivotally attached intermediate its extremities to the opposite end of the gravitating link and having a tail-piece, and an adjustable screw carried by the sheet-stop and bearing against the tail-piece of the pressure finger, substantially as described.

5. The combination with a vertically movable sheet-stop, of a gravitating link pivotally connected at one end with the sheet-stop, and provided with a lateral stud arranged in the path of a part of the sheet-stop, a pressure finger pivoted intermediate its extremities to the gravitating link and having a tail-piece, and a device mounted on the sheet-stop and bearing against the tail-piece of the pressure finger, substantially as described.

6. The combination with a vertically movable sheet-stop having a horn *i*, of a gravitating link pivotally connected at one end with the sheet-stop and having a lateral stud *k* arranged in the path of the horn, a pressure finger pivoted to the opposite end of the gravitating link, and a device mounted on the sheet-stop and engaging the pressure finger to swing the latter on its pivotal attachment to the link, substantially as described.

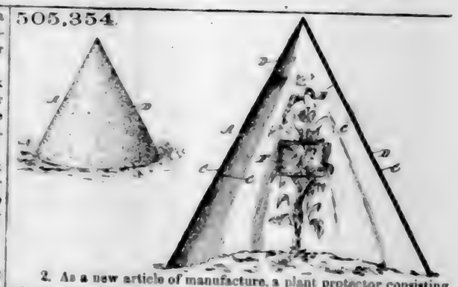
7. The combination with a movable sheet stop of a link jointed to the sheet stop and a finger jointed to the link, said link having a stud or support *k* adapted to be engaged by the sheet stop substantially as described.

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505,354. PLANT-PROTECTOR. JOSEPH GARBESI, Moundsville, W. Va. Filed Apr. 4, 1893. Serial No. 468,979. (No model.)

*Claim.*—1. As a new article of manufacture, a plant protector, comprising a body formed of paper, said body having a coal tar or analogous coating on its inner and outer faces and an additional coating of sand laid on the tar coating on the outer face all substantially as shown and for the purpose described.

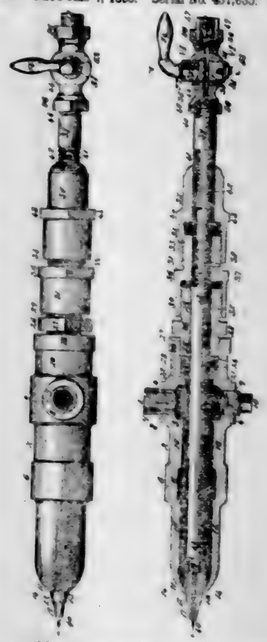
505,354.



2. As a new article of manufacture, a plant protector consisting of a paper body formed of a sheet folded upon itself, to a conical shape, the ends of its outer fold terminating at a point over the end of its inner fold, a water proof cement interposed between the contact faces of such folds, said body having a coal tar coating on its inner and outer face and an additional sand coating on its outer face all substantially as and for the purpose set forth.

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505,355. OIL-BURNER FOR FURNACES. WILLIS N GRAVES, St. Louis, Mo. Filed Jan. 7, 1893. Serial No. 457,635. (No model.)



*Claim.*—1. An oil-burner comprising a nozzle 2, a screw threaded follower 26, located at the rear end of the nozzle, a nut section 31, located at the rear end of the follower, a nut cylinder 35, located at the rear end of the nut section, a tube 13 extending through the nozzle and through the follower, having screw thread connection with the latter, and an oil pipe 19 extending through the tube, having screw thread connection with the nut-cylinder; substantially as described.

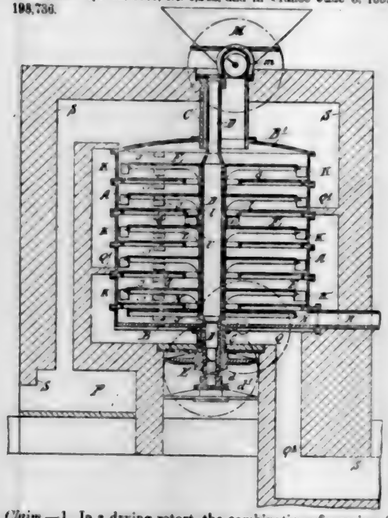
2. In an oil burner, the combination of a steam and air supply pipe 1, a nozzle cylinder 2, said nozzle provided with the steam and air chambers 3, 5, 15 and 16, the spiral grooves 17 within the nozzle; the rear end of said nozzle cylinder inclosing the stuffing box 20, a perforate flange stopper 21 at the forward end of said stuffing box, elastic packing rings 23 and metal rings 24, a tube gland or follower 26, a tube nut-section 31, provided with the internal bed screw 38, that is screw seated on said gland, a nut cylinder 35, screw seated on said section, and provided with an internal bed screw 42, a tube 13, a left hand drive screw 37, integral with said tube, an oil pipe 19, a tube stem 39 integral with said oil pipe, a peripheral left hand drive screw 41, and a right hand screw 46 on said stem, the said screw 41, working in said bed-screw 42; substantially as described.



3. In an oil burner, the combination of a steam and air supply pipe 1, a nozzle cylinder 2, the steam and air chambers 3, 5, 15 and 16, the latter chamber provided with the spiral grooves 17, the rear end of said cylinder inclosing the stuffing-box, a perforate flange stopper 21 at the forward end of said stuffing-box, elastic packing-rings 23 and metal rings 24, a tube gland or follower 26, a tube nut-section 31, provided with the internal bed screw 38, that is screw-seated on said gland, a nut cylinder 35, screw seated on said section, and provided, with an internal bed screw 42, a tube 13, a left-hand drive-screw 37 integral with said tube, an oil-pipe 19, a tube-stem 39 integral with said oil-pipe, and a peripheral left-hand drive screw 41, and a right-hand screw 46 on said stem, the said screw 41, working in said bed screw 42 of said nut cylinder 35, substantially as described.

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505,356. MECHANICAL RETORT. ROBERT HAIG, Paisley, Scotland. Filed Oct. 20, 1891. Serial No. 409,336. (No model.) Patented in England Apr. 12, 1889, No. 6,242, and in France June 5, 1889, No. 198,736.



*Claim.*—1. In a drying retort, the combination of a series of revolving plates, a series of stationary plates having central openings, and scrapers the upper ends of which are adapted to extend up into the central openings of the stationary plates, and their lower edges P bearing upon the revolving plates at about their center, substantially as and for the purposes herein before set forth.

2. In a drying apparatus, the combination with a retort, of a series of revolving plates F, a series of stationary plates G, scrapers arranged above the said plates to stir up the material upon them, and blades K arranged around the edges of the revolving plates, substantially as described.

3. In a drying apparatus, the combination with a retort, a series of revolving plates F a series of stationary plates G having central openings, the scrapers arranged above the said plates to stir up the material thereon, the stationary scrapers L arranged to bear upon the revolving plates below the openings in the stationary plates, and the blades K arranged at the edge of the revolving plates substantially as described.

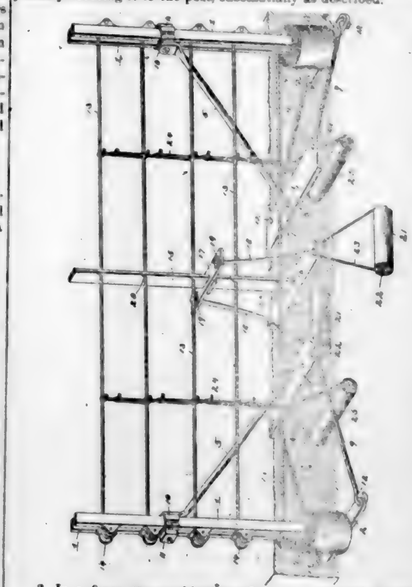
4. In a drying apparatus, the combination of a vertically arranged closed retort, means for feeding material slowly through the same, and an escape passage for the volatile vapors from the retort leading from the lower part thereof, and a heating flue for the retort outside thereof leading first to the top thereof then around the same and then out near the bottom thereof, substantially as described.

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505,357. FENCE. HARVEY HANSBARGER, Pittsburg, Ohio. Filed May 22, 1893. Serial No. 475,052. (No model.)

*Claim.*—1. In a fence, the combination of a post provided at its lower end with a transverse plate, a horizontal plate arranged a short distance from the post, stays connecting the horizontal plate with the transverse plate of the post, and an inclined brace detachably engaging the horizontal plate and having its upper end adjustably secured to the post, substantially as described.

2. In a fence, the combination of a fence post provided at its lower end with a transverse plate, a horizontal plate provided with a projection, parallel stay rods secured to the transverse and horizontal plates, and an inclined brace provided at its lower end with a notch to engage the projection and having at its upper end a clamp adjustably securing it to the post, substantially as described.



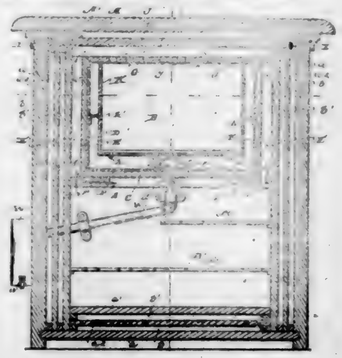
3. In a fence, the combination of a post composed of parallel bars, a plate secured to the lower ends of the bars, a cylinder receiving the bars, a horizontal plate provided with a projection on its upper face, parallel stay rods secured to the horizontal and transverse plates, an inclined brace having its lower end engaging said projection, and its upper end arranged adjacent to the post, and a clamp for adjustably securing the brace to the post and composed of similar clamping plates and a bolt passing through the plates and the upper end of the brace and provided with a nut, substantially as described.

4. In a fence, the combination with fence wires, of an intermediate post comprising a vertical bar having kerfs receiving the fence wires, upper and lower horizontal plates, the braces connecting the plates, and the anchors arranged beneath and connected to the ends of the lower plate and each consisting of a pipe having a filling, and means for securing it to the plate, substantially as described.

5. In a fence, the combination with fence wires, of an intermediate post comprising a vertical bar and upper and lower plates having their ends connected by braces, tubular anchors disposed longitudinally of the fence and located below the lower plate, and means for connecting the anchors to the ends of the same, substantially as described.

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505,358. REFRIGERATOR. JULIUS A. HENKEL, Greenville, Mich. Filed Apr. 27, 1893. Serial No. 472,070. (No model.)



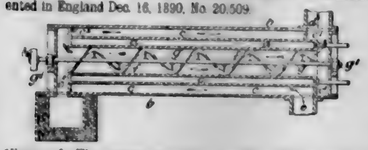
*Claim.*—1 In a refrigerator, the box A divided into two chambers B, B' by a horizontal partition C, having an opening *d* between it and each inner end wall of the box, and a central opening *d'*, an ice chest D in the upper chamber, said chest fitting snugly against the front and back inner walls of the box, but held away from the end walls thereof to form flues E situated over the openings *d*, a perforated cover G for said chest, an air chamber above said cover, and a guarded opening *f* in the bottom of said chest and registering with the opening *d'* in the partition, substantially as specified

2 In a refrigerator, the combination with the chamber B in the upper portion of the box, and separated from the lower chamber thereof by a partition C having end openings *d* and a central opening *d'*, of an ice-chest D in said chamber B, said chest fitting snugly against the front and back inner walls of said chamber but held away from the end walls thereof, a flue E at each end of said chest and communicating with the openings *d*, an opening *f* in the bottom of the chest registering with the opening *d*, an arched guard for said opening *f*, the perforated cover G for said chest, the chamber H above said cover and communicating with the flues E, E', and the ice box K supported in said chest and open at the top, and having a grating at the bottom of said box, substantially as specified

3 In a refrigerator, the chambers B, B', one above the other, the partition C separating said chambers, the end openings *d* through said partition, the central opening *d'*, the horizontally sliding dampers P P arranged to close the openings *d*, *d*, and working in guides on the under side of said partition, the levers R, R pivoted to the under side of said partition with their forward arms projecting to a point just inside the front wall of the box, a link S connecting the rear arm *p* of each of said levers with one of the dampers P, P, a spring interposed between said levers to the rear of their points and acting to spread their rear arms, and a door closing the chamber B' and having a lug thereon arranged to enter between the forward arms of said levers and force them apart, substantially as specified

4 A refrigerator comprising a box having double chambered walls, the transverse horizontal partition C, forming the upper ice chamber B and the lower provision chamber B', an opening *d* through said partition at each end thereof, a central opening *d'* therethrough, an ice-chest D in said chamber B, a flue E at each end of said chest and communicating with the openings *d*, *d*, an opening *f* in the bottom of the chest communicating with the central opening in the partition, the ice box K in said chest, the air-chamber H above said chest and communicating therewith and with the flue E, the valves for closing the openings *d*, the doors, and mechanism operated by the lower door to open said valves, substantially as specified

## 505,359. REFRIGERATING APPARATUS. FREDERICK B HILL, London, England, assignor to the Hills Cold Storage Company, Limited, same place. Filed June 9, 1892. Serial No. 436,165. (No model.) Patented in England Dec. 16, 1890, No. 20,509.



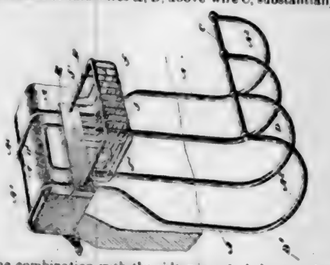
*Claim.*—1. The combination of an annular refrigerating chamber, a casing surrounding the same and provided with inlet and outlet apertures, a rotary helical blade or conveyer which works in contact with the cylindrical wall of the said refrigerating chamber, and means for circulating air through the said casing in contact with the inner and outer walls of the said refrigerating chamber, substantially as and for the purposes above specified

2. The combination with an annular refrigerating chamber, of a rotary helical blade or conveyer extending through the same in contact with the inner cylindrical wall thereof, another rotary helical blade or conveyer which works in contact with the outer cylindrical wall of the said refrigerating chamber, and a chamber or casing surrounding the said refrigerating chamber and through which a cold carrier is circulated, substantially as and for the purposes specified.

## 505,360. SPONGE AND SOAP HOLDER. THOMAS M. HILLIARD, New York, N. Y. Filed Apr. 10, 1893. Serial No. 469,867. (No model.)

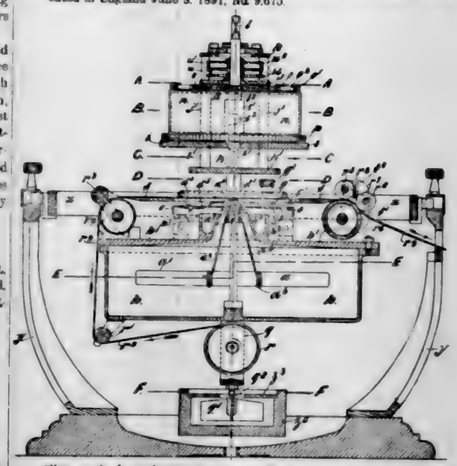
*Claim.*—1 A rack composed of the side wires bent into U-shape at one end and connected thereat by a cross wire, and then bent divergingly, and then into parallel hooks, and connected by a second cross wire, intermediate wire hooks parallel with but intermediate the other hooks connected to the lower cross wire, and the cross piece connecting the upper portions of the hooks to the side wires substantially as and for the purpose described

2 The combination with the side wires A, A, bent as described, and the wires B, C, rigidly connecting the ends thereof, the intermediate wire D bent upon itself and its members also bent to conform to the lower portions of wires A, of the cross piece E connecting the vertical portions of said wires A, D, above wire C, substantially as described



3. The combination with the side wires A, A, bent as described, and the wires B, C, rigidly connecting the ends thereof, the intermediate wire D bent upon itself and its members also bent to conform to the lower portions of wires A, of the cross piece E connecting the vertical portions of said wires A, D, above wire C, and the U-shaped wire F connected to said piece, and the wires *f*, *f'* all constructed substantially as and for the purpose set forth.

## 505,361. SHIP'S RECORDING-COMPASS. JOHN HOPE, Liverpool, England. Filed Dec. 2, 1892. Serial No. 453,841. (No model.) Patented in England June 8, 1891, No. 9,675.



*Claim.*—1 In a ship's course recording apparatus, the combination of a diagram sheet or chart, magnets adapted to retain a north and south position and inclosed in a pontoon or chamber, a vessel containing liquid, in which said pontoons work; and a marking device connected to said magnets, and by which said diagram or chart is marked

2 In a ship's course recording apparatus, the combination of a diagram sheet or chart, a bowl or vessel for containing liquid, a marking device adapted to mark said chart or sheet, and magnets connected with said marking device, and controlling the position thereof, and contained in a ponton or pontons, immersed in said liquid at a constant depth the buoyancy of which is sufficient to carry the weight of the magnets, whereby the pressure on the supporting point of the marker is rendered small, substantially as herein described

3 In a ship's course recording apparatus, the combination of a bowl *b* adapted to contain a liquid, magnets *a* disposed within the said liquid in pontons *a'*, immersed at a constant depth in said liquid and connected with a marker supported upon a central support $a^2$; a cover *b'* over the bowl *b*, and a motor mechanism supported upon said bowl, and adapted to operate a diagram chart or sheet, and the marker, substantially as described.

4. In a ship's course recording apparatus, the combination of a bowl adapted to hold liquid; a pivot on which the magnets are mounted and supported; pontons containing said magnets and disposed in the said liquid; a marking device separate from the magnets connected by suspension bars to the pontons containing said magnets, said pontons being below the point of support of said marking device; substantially as and for the purposes set forth

5. In a ship's course recording apparatus, the combination of a diagram sheet or chart, magnets adapted to retain a north and south position, and a marking device disposed in a plane above that of the magnets, but connected thereto and mounted upon a central pivot, and having two pricking or puncturing points by which two lines of punctures are marked and recorded on the diagram sheet, substantially as and for the purposes set forth

6 In a ship's course recording apparatus, the combination of a diagram sheet or chart; magnets adapted to retain a north and south position; a marking device connected with the magnets, consisting of two arms with puncturing points, a pivot on which said marking device is supported, weights on said marking device opposite to and on the opposite side of said pivot whereby said arms are both counterbalanced, and a loose joint connection between said arms and the magnets

7 In a ship's course recording apparatus, the combination of a diagram sheet or chart, a table over which said diagram passes, a marking device mounted upon a pivot below said diagram, and retained in a north and south position by magnets, and a ring mounted above said diagram sheet or chart, and serving as a protractor and as a means of keeping the said diagram on the table; substantially as set forth

8 In a ship's course recording apparatus, a marker pivotally mounted upon a fixed or immovable pivot, and whose position is retained by magnets, in connection with a circular bar engaging with the end of said marker and adapted to be raised and depressed by suitable operating or motor mechanism on the apparatus, to actuate said marker, throughout the whole circle, substantially as and for the purposes set forth

9 In a ship's course recording apparatus, the table *f* over which a recording chart moves, a marker pivoted centrally below said table, the complete ring *e* for actuating said marker at its end, the side rods *w* disposed diametrically opposite each other and connected to said ring at each side thereof, the cross head *v* mounted centrally above said ring and connected to said rods *w*, the wheels $a'$, $a^3$, and suitable motor mechanism disposed above said ring and adapted to operate one of said wheels and to raise and let fall the cross-head *v*, the upper of said wheels being fixed to said cross head, and meshing with and operated by said motor actuated wheel, substantially as and for the purposes set forth

10 A ship's course recording apparatus, a table over which the recording chart or paper is moved, a marker controlled by magnets disposed and operating below said table; a motor spring or springs disposed above said table and supported thereon, a going train or time keeping mechanism directly under said spring or springs but disposed above said table and said going train, whereby access to the table below the motor can be had, and a mechanism disposed directly above said motor spring or springs and connected with the marker actuating device, and adapted to actuate and control said marker; substantially as set forth

11 In a ship's course recording apparatus, a spring or springs disposed centrally above the marking device, an actuating device engaging with the end of said marker adapted to operate same, and a pair of wheels $a'$, $a^3$, having inclined teeth or planes meshing with each other, one of which is adapted to be rotated by said spring, and the other is fixed and connected with said marker actuating ring, whereby, when the operative toothed wheel is rotated said corresponding wheel and the said marker actuating device is first raised and then lowered, a cross-bar *v* mounted centrally across the wheel $a^3$, and side rods *w* connecting the cross bar *v* with the marker actuating device substantially as set forth

12. In a ship's course recording apparatus, the combination of the wheels $a'$ and $a^3$, by which the marker actuating device is operated, a spring connected to and adapted to operate one of said wheels, $a'$; projections or teeth *u* on $a'$, comprising two annular rows of detents, and the crown wheel *t* operated also through said spring or other spring, and adapted to stop and release said wheel $a^3$ and act as an escapement, whereby the marker actuating mechanism is controlled and intermittently operated, substantially as set forth

13 In a ship's course recording apparatus, two motor springs arranged centrally with the pivot of the magnet, and adapted to uncoil on opposite sides of the center of the motor mechanism, said springs being connected through suitable mechanism with the marker of the apparatus and the recording chart or diagram feeding device, whereby the center of gravity of the apparatus remains undisturbed when the springs uncoil and the action of said springs upon the magnets is neutralized, substantially as set forth

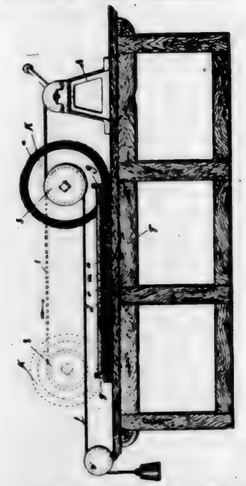
14 In a ship's course recording apparatus, the combination of two springs disposed within a case and centrally over the pivot of the magnets thereof, the outer ends of which springs are connected to the inside of the case, and their inner ends to the arbor of the motor mechanism; two driving toothed wheels, one fixed or formed on the outside lower part of said case, and the other fixed to the arbor and disposed at the top of said case; the said two wheels being moved in opposite directions one being adapted to drive the going train or time mechanism, the paper feeding roller, and the mechanism which controls the marker actuating mechanism, and the other being adapted to drive said marker actuating mechanism; substantially as described

15. In a ship's course recording apparatus, a marker with magnets connected therewith by which a north and south position thereof is retained, a pivot supporting said marker and magnets, and mounted in a gimbaled or swinging frame, a chart or paper storing roller mounted directly beneath said magnets, marker, and pivot, and guiding and feeding rollers over which the said chart paper is fed in a horizontal direction past said marker, and suitable motor mechanism adapted to drive or actuate said feeding roller, whereby the center of gravity of the apparatus is maintained when the paper is moved off said roller, and the magnets and marker retain their horizontal position, and the apparatus does not become tilted in its gimbaled or swinging frame, suostantially as described

16 A ship's course recording apparatus, having the recording mechanisms comprising a motor mechanism, a marker and magnets, mounted as a whole at each side upon a gimbal ring or equivalent support upon which said apparatus is free to oscillate in one plane, and a pendulum in combination therewith having different rate of vibration, whereby the variations or oscillations of the apparatus are diminished or neutralized, substantially as described

17 A ship's course recording apparatus having the recording mechanism comprising a motor mechanism, a marker and magnets mounted as a whole in a suitable gimbal ring on pivots, and which when oscillated acts as a pendulum, a mass or weight suspended by a free joint connection from said apparatus and acting as a secondary pendulum, and having a vessel filled with suitable liquid, and a vane or vanes on the apparatus and disposed within the liquid in the said vessel, substantially as and for the purposes described

## 505,362. APPARATUS FOR MAKING HOLLOW ARTICLES FROM PLASTIC MATERIAL. ROBERT KIESSELING, Hamburg, Germany. Filed Oct. 22, 1891. Serial No. 409,516. (No model.)



*Claim.*—1 An apparatus for manufacturing hollow articles of plastic material, consisting of a core, a shaft in the core, a table, a slatted plate secured to the core and adapted to rest on the table, a sheet of foraminous material extending over the slatted plate and on which the plastic substance is placed, and mechanism connected with the shaft of the core for winding the slatted plate, the foraminous material, and the plastic substance upon the core, substantially as described

2 An apparatus for the manufacture of articles of plastic material, consisting of a core, a slatted plate secured thereto, a sheet of foraminous material extending over the slatted plate and on which the plastic substance is placed, and means for winding the slatted plate, the foraminous material, and the plastic substance upon the core, substantially as described

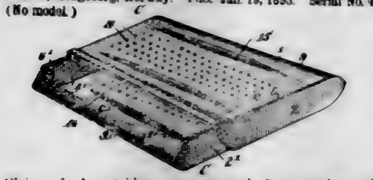
3. In an apparatus for the manufacture of hollow articles of plastic material the combination of a yielding table-top, a core, a slatted

plate secured thereto, and means for winding said plate upon said core.

4. In an apparatus for the manufacture of hollow articles of plastic material, the combination with a yielding table-top, a core, the core-heads secured thereto, a slatted plate secured to said core, and means for winding said plate upon said core, substantially as described

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**505,368. CARTRIDGE-HOLDER.** OLE H. J. KRAG and ERIK JÖRGENSEN, Kongsberg, Norway. Filed Jan. 19, 1893. Serial No. 459,024. (No model.)



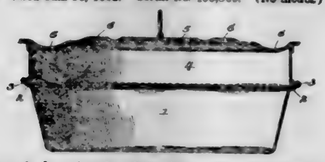
*Claim.*—1. A cartridge case composed of two sections adapted to slide into or onto each other, the lateral edge of one of the sections curving toward the corresponding straight edge of the other section, said curved edge performing the function of side wall to the case and of guide to the cartridges in emptying said case.

2. A cartridge case composed of two sections adapted to slide into or onto each other, each section having a re-curved and a straight lateral edge, said re-curved edge of the two sections constituting the side walls of the case and acting as a guide to the cartridges when removed from one or the other side of said case.

3. A cartridge case composed of two sections, *c*, *c'*, adapted to slide one into or onto the other, said sections made of sheet metal having a portion of their outer faces roughened and provided with finger abutments on opposite sides of said roughened portion, for the purposes set forth

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**505,364. DOUGH-RAISER.** ELIZABETH H. MACINTOSH, Little Rock, Ark. Filed Jan. 31, 1893. Serial No. 460,309. (No model.)



*Claim.*—1. In a dough raiser, the combination with a pan provided at its upper edge with a groove or seat, of a reversible extension band or ring of oven diameter throughout and having beaded edges to fit in said groove or seat, and a perforated lid or cover adapted to fit the pan or the upper edge of the band or ring, substantially as specified.

2. The combination, in a dough raiser, of a pan provided at its upper edge with a groove or seat formed by offsetting said upper edge outwardly, an extension band or ring having a beaded edge to fit in said groove or seat whereby the inner surface of the band or ring is flush with the inner surface of the pan, and a perforated lid or cover, substantially as specified.

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**505,365. NUT-LOCK.** THEODORE MARTIN, Wallaceburg, Canada. Filed Sept. 23, 1892. Serial No. 447,154. (No model.) Patented in Canada Aug. 11, 1892, No. 39,784.

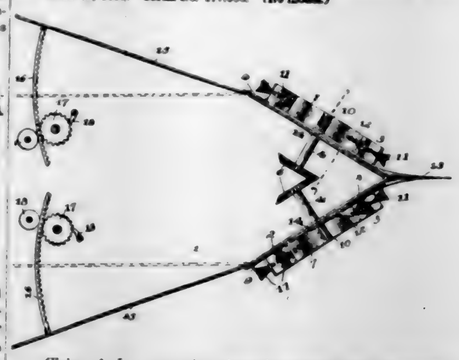


*Claim.*—1. In a nut lock the combination with the nut and bolt, of a washer, having a series of vertically projecting lugs upon its edge, and a key having arms at each end and an inclined portion between the arms upon which the lug is bent down substantially as shown and described.

2. In a nut lock the combination with the bolt and nut of a washer having a series of lugs and bosses arranged in pairs and a key having arms, an inclined portion and an angular seat to receive the boss substantially as shown and described.

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**505,366. SNOW-PLOW.** THOMAS C. MCADAM, Ferndale, Pa. Filed June 16, 1893. Serial No. 477,839. (No model.)



*Claim.*—1. In a snow plow, the wedge-shaped head, in combination with wheels arranged parallel with the sides of said head and provided with curved brush-carrying blades, substantially as specified.

2. The combination with a snow plow having a wedge shaped head, of rotary wheels arranged parallel with the sides of said head and provided with peripheral flanges, and a prow or nose fixed to the apex of said head and provided with rearwardly-divergent guard or shield plates having concaved rear edges to overlap the peripheral flanges of the wheels, substantially as specified.

3. The combination with a snow plow having a wedge shaped head, of brush-carrying wheels arranged parallel with the sides of said head and comprising circular plates and curved or dished blades fixed to said plates and terminating short of their peripheries to form flanges, and brushes secured respectively to the outer ends of the blades upon their rear sides, substantially as specified.

4. In a snow plow, the combination with a wedge-shaped head, and brush-carrying wheels mounted upon opposite sides of the head, of swinging wings arranged in rear of the head, and means for adjusting and locking such wings at any desired deflection, substantially as specified.

5. In a snow plow, the combination with a wedge-shaped head, and brush-carrying wheels arranged parallel with opposite sides thereof, of wings hinged at their front ends adjacent to the rear edges of the sides of the head, and means for adjusting and locking said wings consisting of rack-bars, pinions engaging said rack-bars and pawls to hold the pinions in their adjusted positions, substantially as specified.

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**505,367. FENCE-POST.** JOSEPH D. PALDI, Brockway, Mich. Filed Apr. 5, 1893. Serial No. 469,169. (No model.)



*Claim.*—1. A fence post formed of a burnt clay body, outer metallic clamp members, bolts extending transversely through the body portion, to secure such clamp members and the wire rods incased in said body, and extended longitudinally thereof at each side of the transverse bolts all substantially as shown and for the purposes described.

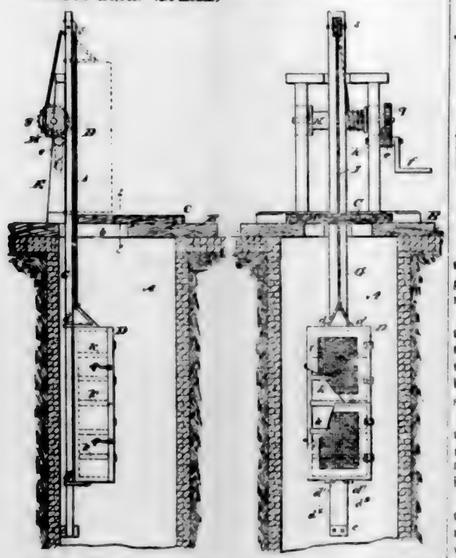
2. A fence post comprising the clay body A, the metal clamp members B, one of said members having outwardly projecting longitudinal flanges *b*, the wire loops D secured to such flanges, and the fastening bolts C, all arranged substantially as shown and for the purposes described

3. The herein described fence post, consisting of the clay body A, having the binding wires for rods *a* incased therein, the clamping plates B, one of which is provided with a longitudinal flange *b* apertured to receive the loops D, and the bolts C passed through the clamping plates and body between the binding wires *a*, as specified.

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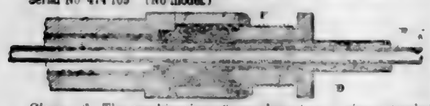
**505,368. REFRIGERATOR.** HARRISON L. PITTMAN, Industry, Ill., assignor to himself and James E. Vail, same place. Filed May 4, 1892. Serial No. 431,845. (No model.)



*Claim.*—The combination with a well and a single track upright arranged vertically within the well at one side thereof; of the vertically movable refrigerator box mounted to slide at one side of the track upright, guide plates or clasps secured to the top and bottom of said refrigerator box and provided at the extremity of the side portions thereof with inturned guide tongues $d^2$, adapted to embrace the rear edges of said track upright, the upper one of said plates or clasps being further provided with a central upwardly disposed angular portion, and the elevating rope connected to the angular portion of the upper plate or clasp, substantially as set forth.

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**505,369. STUFFING-BOX.** EDWARD RHODES, Philadelphia, Pa., assignor of one-half to John Mayers, same place. Filed May 13, 1893. Serial No. 474,169. (No model.)



*Claim.*—1. The combination of a packing box, a pipe extended thereinto, a collar arranged between the pipe and the box, a follower movable longitudinally on the said pipe and into the boxing, and a packing ring carried by the inner end of said follower, substantially as shown and described.

2. The combination of an interiorly screw threaded packing box, a pipe extended into the box, a collar arranged between the pipe and the box, a screw threaded follower movable longitudinally on the pipe and within the box and which is reduced at its inner end to form an annular shoulder, and a packing ring fitting on said shoulder, substantially as shown and described.

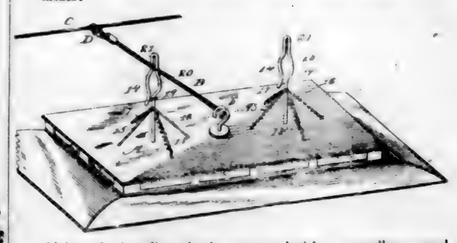
3. The combination of a packing box, an interiorly screw threaded ring secured to its outer end the opening of which is of less diameter than the box, a pipe extended into the box, a collar arranged between the pipe and the box, and a screw threaded follower movable longitudinally on the pipe and through the said ring, substantially as shown and described.

4. The combination of a packing box having an annular flange upon its inner side, a pipe extended into said box and interiorly screw threaded ring secured to the outer end of the box which is of less diameter than the said box, and a screw threaded follower movable longitudinally upon the said pipe and through the said ring toward the said flange, substantially as shown and described.

5. The combination of a packing box, an annular flange formed therein, an interiorly screw threaded ring secured to the outer end of the box, a longitudinally movable screw threaded follower adjustable through said ring, and a pipe extending through the follower and into the boxing, substantially as shown and described.

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**505,370. ELECTRIC-RAILWAY TROLLEY.** ELBERT R. ROBINSON, Nashville, Tenn. Filed Mar. 7, 1893. Serial No. 464,967. (No model.)



*Claim.*—1. A trolley wheel constructed with a centrally grooved tread and broad supplementary flanged treads at the sides of the grooved tread for receiving the wire when the wheel's axis is not at right angles thereto as explained.

2. In a trolley for electric railways, the combination of the frame, the axle mounted in said frame, grooves formed on said axle, and the three independent pulleys mounted on said axle and consisting of the centrally grooved pulley and the outer pulleys provided with the broad inwardly inclined treads, substantially as and for the purpose set forth.

3. In a trolley for electric railways, the combination of the frame, the axle mounted in said frame, and the three independent pulleys mounted on said axle, and consisting of a middle pulley formed with a groove and two outer pulleys formed with out turned flanges and inwardly inclined treads, substantially as set forth.

4. In a trolley for electric railways, the combination of the frame, the axle mounted in said frame, and the three independent pulleys mounted on said axle, consisting of the dished outer pulleys formed with the inclined treads and the hollow grooved middle pulley, substantially as set forth.

5. In a trolley for electric railways, the combination of the frame, the grooved axle mounted in said frame, and the three independent pulleys mounted on said axle, consisting of the hollow grooved middle pulley having perforated trunnions and the outer dished pulleys provided with hubs bearing on the perforated trunnions of the hollow grooved middle pulley, substantially as set forth.

6. In a trolley for electric railways, the combination of the trolley wheel, the arm, the spring for holding the wheel against the electric conductor, and the independent guides placed at each end of the car consisting of a bar of metal formed into an open loop, substantially as set forth.

7. In a trolley for electric railways, the combination of a trolley wheel held against the electric conductor by means of a spring and independent guide consisting of a bar of metal formed into a loop with an opening near its lower end and an enlargement and contracted portion above the loop, substantially as set forth

8. In an electric railway, the combination of the trolley centrally pivoted on the car, an elevating spring between the trolley and its pivot, a pair of laterally yielding guides on the car, and springs for holding the guides normally yielding, substantially as set forth.

9. In an electric railway, the combination of the centrally pivoted trolley having the central grooved pulley and the lateral guide pulleys, and the guides on the car into which the trolley may enter, and provided with the upper restricted loop for holding the trolley in the vertical plane of the conductor, and the intermediate bulge for permitting lateral play in rounding curves, all substantially as explained.

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**505,371. DRAWING-FRAME.** CHARLES S. ROBINSON, Lonsdale, R. I. Filed June 20, 1893. Serial No. 478,263. (No model.)



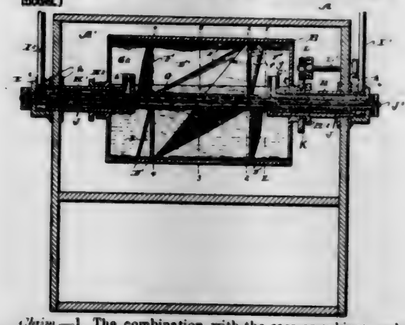
*Claim.*—1. The combination with the calender rolls and trumpet plate of clearers placed in front and rear respectively of the trumpet plate and detachably connected to their supporting frame or bearings, so as to be removable and replaceable, substantially as and for the purpose hereinbefore set forth.

2. In combination with the calender rolls and trumpet plate, the

clearers fitting against the front and rear edges of said plate and overhanging the exposed portions of said rolls, and supported in bearings inclined in a direction to cause them to tend by their weight to hug or press toward their respective rolls, substantially as and for the purposes hereinbefore set forth.

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**505,372. GAS-REGULATING AND ADVERTISING CABINET.** JOHN RUTHVEN, Topeka, Kans. Filed Jan. 14, 1893. Serial No. 458,348. (No model.)



*Claim.*—1. The combination with the case or cabinet, and the chamber therein, of the suction cylinder and regulator within said chamber, the L-pipes one at each end forming respectively the vapor inlet and outlet, and having their vertical arms within said cylinder, said pipes forming bearings for said cylinder, and the perforated central tube or pipe forming a center bearing for said cylinder, substantially as specified.

2. The combination with the case or cabinet, having the interior chamber, of the suction cylinder and regulator within said chamber, the L-shaped pipes projecting one through each end wall of the cabinet, and forming the gas-inlet and outlet, their vertical arms extending into the opposite end portions of said cylinder, the central perforated tube having bearings at its ends, the central rod or shaft and the caps to which the inlet and outlet pipes are respectively connected, substantially as specified.

3. The combination of the L-pipes, their bearing pipes or tubes, the cylinder into the end portions of which the vertical arms of said L-pipes project, the bearing sleeves or bushings in said cylinder, the stuffing boxes, the central perforated pipe or tube engaging said bearing pipes at its ends, the caps on the outer projecting ends of said L-pipes, the inlet and outlet pipes connected to said caps, the central rod or shaft and the driving gear, substantially as specified.

4. The herein described suction-cylinder and vapor regulator, comprising a rotary cylinder designed to be partially filled with a liquid, the spirally arranged passages or chambers therein, the closed end chambers, an inlet pipe communicating with one of said end chambers, and an outlet pipe communicating with the other of said chambers, and a central perforated pipe, substantially as specified.

5. The herein described suction cylinder and vapor regulator, comprising a rotary cylinder designed to be partially filled with a liquid, its bearings and driving gear, the central portion of said cylinder being divided into a series of spiral chambers or passages, the end chambers into which said chambers or passages open, a vapor inlet communicating with one of said end chambers, and a vapor outlet communicating with the other of said chambers, and a central perforated tube or pipe, substantially as specified.

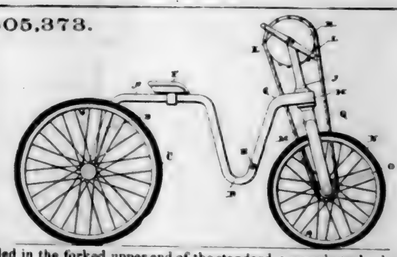
6. The combination with the suction cylinder having the closed end chambers, and the series of spiral chambers or passages connecting said end chambers and communicating therewith by oppositely directed openings, of the L-pipes forming bearings for said cylinder, and having their vertical arms projecting into the upper portions of said end chambers said pipes forming respectively the vapor inlet and outlet, and the central perforated pipe or tube, substantially as specified.

7. A suction cylinder and vapor regulator, comprising a closed rotary cylinder provided with a vapor inlet and outlet, and designed to be partially filled with a liquid, a series of compartments or passages therein, and a central perforated tube or pipe through which the liquid seeks its level as the cylinder rotates, substantially as specified.

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**505,373. VELOCIPEDE.** ALBERT SANFORD, Galena, Mo. Filed Feb. 17, 1893. Serial No. 462,750. (No model.)

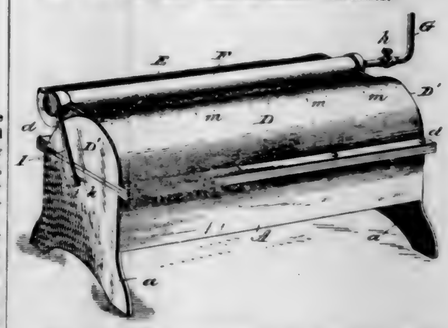
*Claim.*—In a velocipede the combination of a frame, a revoluble standard at the forward end thereof, a wheel journaled to the lower end of the standard, a sprocket carried thereby, a crank shaft jour-



naled in the forked upper end of the standard, a sprocket wheel upon the shaft and between the forks and which is in line with the first named sprocket, and an endless drive chain, substantially as shown and described.

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**505,374. HYDROCARBON-BURNER.** ADAM SCHAFER, Weston, Ohio. Filed June 8, 1893. Serial No. 476,937. (No model.)



*Claim.*—1. In a hydrocarbon burner, the combination, of a base having an open end, a section B having a depending portion of less length than the section A and an upper wall or plate *b* with an aperture *b'*, a section D having a series of perforations and an outwardly projecting trough the end walls of which are recessed to receive and support the vaporizer F, said vaporizer discharging into the section B, substantially as shown, and for the purpose set forth.

2. In a hydrocarbon burner, the combination, of the sections A, B and D constructed and connected to each other substantially as shown so as to provide a serpentine air passage which commences at one end of the section A, the discharge from the vaporizer being on a line with the intermediate portion of said serpentine passageway, substantially as shown, whereby the air is drawn into the casing and mixed with the gaseous vapor from the vaporizer on its way to the outlet openings of the burner.

3. In a hydrocarbon-burner, the combination, with a base A provided with supports and an open end, the side walls having outwardly-projecting flanges, of a section B comprising a horizontal plate having near one end an opening *b'* and a semi circular plate extending from the opening *b'* to near the end wall of the section A, a section D made up of a perforated curved plate and end walls, said section D supporting a trough E, the end walls of the trough having recesses, and a vaporizer made up of a section of pipe with a cap at each end to which the inlet pipe and discharge pipe are connected, the discharge pipe passing through the end wall of the section A of the burner, substantially as shown, and for the purpose set forth.

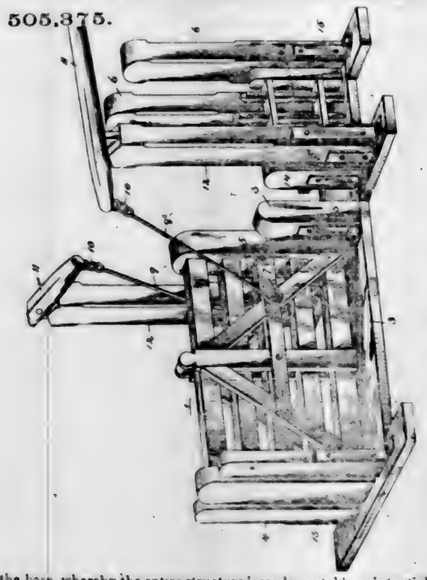
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**505,375. PORTABLE TILTING GATE.** ANDREW SNYDER, Canton, Minn. Filed June 27, 1893. Serial No. 478,972. (No model.)

*Claim.*—The combination of a portable base, a tilting gate mounted thereon, a hinge arranged at the lower inner corner of the gate and connecting the same with the base, uprights arranged at opposite sides of the gate and mounted on the base, levers fulcrumed on the uprights and extending from opposite sides of the gate and having their inner ends connected therewith, latch posts arranged at the outer ends of the tilting gate, intermediate posts 5 arranged at the hinged end of the gate and located at opposite sides thereof, elongated supporting posts 6 arranged in rear of the gate and adapted to sustain the latter when open against lateral movement, a supplemental swinging gate hinged to one of the supporting posts 6 and arranged in rear of the tilting gate, a supplemental latch post, and knees constructed of metal and securing the uprights and posts upon



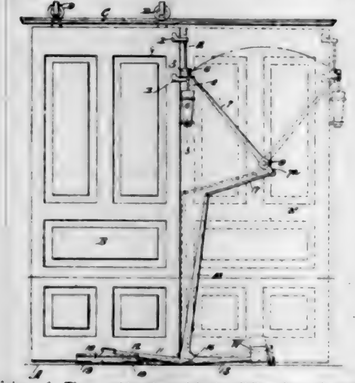
**505,375.**



the base, whereby the entire structure is made portable, substantially as described.

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**505,376. DEVICE FOR OPENING OR CLOSING DOORS.** JOHN H. WHITAKER, Davenport, Iowa. Filed May 14, 1892. Serial No. 433,068. (No model.)



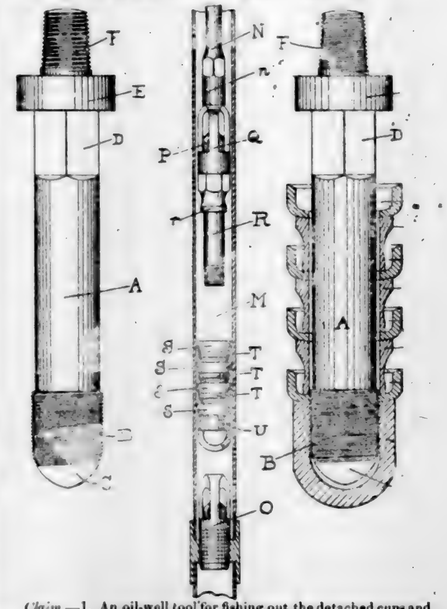
*Claim.*—1. The combination with the sliding door, the pull rod 2 on its rear edge, the cushion chamber 6, held on such edge and the collar 3 held to slide on the rod 2 and formed at its lower end with a follower 5, operating in the chamber 6, of the lever 7, pivoted near its lower end to the wall, its upper end having a pivotal connection with the sliding collar 3, and means for operating the lever substantially as described.

2. In a door operating device, the combination with the sliding door, having a rod bearing 2 at its upper rear edge, the lever 7 pivoted near its lower end to the wall, its upper end pivotally connected to a collar 3, held to slide on the rod 2, the lever 10 pivoted at its lower end to the wall, its upper end having a pivotal arm connection with the lower end of the lever 7, said lever 10 having a forwardly forked extension adapted to embrace the lower end of the door and a counter weight connected therewith to normally hold the levers and door to a closed position and the front forked end up from the floor substantially as and for the purpose described.

3. The combination with the framing, the door held to slide thereon, and provided with a pull rod 2 on its upper rear edge, a cushion chamber 6 secured to such edge under the rod 2, the collar 3 held to slide on the rod 2, and formed with a depending portion having a follower 5 operating in the chamber 6 and the lever 7 pivoted at 9 to the wall, its upper end having a pivotal connection with the collar 3, of the lever 10 pivoted at its lower end to the wall and formed with forked extensions 12, 12ª and a rearwardly extending beam 13 carrying a weight W and the hinged tread members 18 engaging the members 12 and 12ª of the lever 10, all arranged substantially in the manner and for the purpose described.

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**505,377. TOOL FOR OIL-WELLS.** GEORGE WOODARD, Bradford, Pa. Filed June 8, 1893. Serial No. 476,914. (No model.)

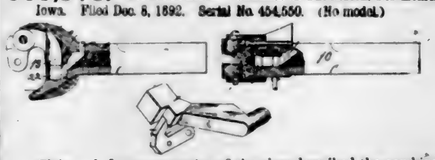


*Claim.*—1. An oil-well tool for fishing out the detached cups and rings of the working-valve, said tool being adapted at one end to be secured to the sucker-rods and at the other end to engage with the detached parts, and said tool having a beveled point C, a shank A of such diameter and length that it will pass through all of the detached cups and rings, and a guiding collar E above said shank A, substantially as set forth.

2. The described fishing out tool for oil-wells adapted to be secured to the sucker-rods and having guiding collar E, squared portion D, shank A, threaded portion B, and beveled point C, substantially as set forth.

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**505,378. CAR-COUPLING.** CHARLES A. BALLREICH, Des Moines, Iowa. Filed Dec. 8, 1892. Serial No. 454,550. (No model.)



*Claim.*—1. In a car coupler of the class described the combination of the drawbar and the knuckle mounted thereon having a rearwardly extending arm extended within a cavity in the drawbar, a locking block pivoted at its rear end within the rear end of said cavity, the pivoted end of said locking block being in a horizontal plane above the plane of the other end thereof, and means manually operated, whereby said locking block is elevated.

2. In a car coupler of the class described the combination with the drawbar having a cavity therein, the knuckle mounted upon said drawbar, an impact arm formed on said knuckle and extended within said cavity, a locking block pivoted at its rear end within the rear portion of the cavity in said drawbar, a trigger pivoted in the lower portion of said drawbar and transversely of said drawbar, and means whereby said trigger is manually operated to elevate said looking block.

3. In a car coupler of the class described, the combination with the drawbar, the locking block mounted within said drawbar, a trig-

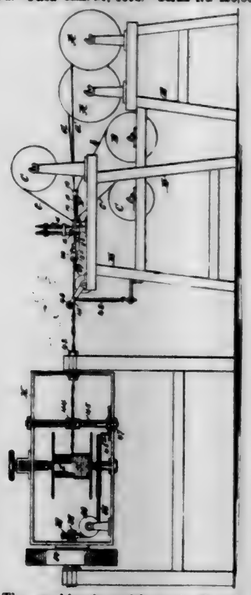
ger mounted within said drawbar and acting upon said locking block, a chain, forming a connection between said trigger and the car, and a hook mounted upon said drawbar and adapted to receive and hold said chain when desired.

4. In a car coupling of the class described the combination of the drawbar and the longitudinally extending locking block therein, of a trigger pivoted upon the lower portion of said drawbar and acting upon said locking block, a notch in the extreme upper portion of said trigger in which said locking block, abnormally rests, and a chain, whereby said trigger is operated by manual force.

5. In a car coupler of the class described the combination of a drawbar, a knuckle mounted thereon, an impact arm formed on said knuckle, a rearwardly extending chamfer on said impact arm, a forwardly extending chamfer on the extreme outer end of said impact arm, a ridge formed by the jointure of said chamfer, a locking block pivoted at its rear end within said drawbar, a trigger beneath said locking block and adapted to act upon the same a notch in the extreme upper end of said trigger in which said locking block abnormally rests, and a chain by means of which said trigger is manually operated.

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**505,379. MACHINE FOR COVERING WIRES.** JOHN A. BARRETT, Brooklyn, N. Y., assignor to the Standard Underground Cable Company, Pittsburg, Pa. Filed Mar. 29, 1892. Serial No. 426,869. (No model.)



*Claim.*—1. The combination with mechanism for advancing a plurality of wires and covering therefor and holding the wires at a fixed distance apart, of a folder for folding a wrapper strip about the wires, and means for securing the layers of said wrapper together between the wires, substantially as described.

2. The combination with mechanism for advancing a plurality of wires and covering therefor and holding the wires at a fixed distance apart, of a folder for folding a wrapper strip about the wires, means for securing the layers of said wrapper together between the wires to hold them in place, and a spiraling and reeling mechanism, substantially as described.

3. The combination with mechanism for advancing a plurality of wires and covering therefor and holding the wires at a fixed distance apart, of a folder for folding a wrapper strip about the wires, guides by which one or more binding strips are applied between the wires, and means for securing the wrapper and binding strip or strips together between the wires, substantially as described.

4. The combination with mechanism for advancing a plurality of wires and covering therefor and holding the wires at a fixed distance apart, of a folder for folding a wrapper strip about the wires, and a sewing mechanism arranged to sew the layers of wrapper together between said wires, substantially as described.

5. The combination with feeding mechanism for advancing a plurality of wires and covering therefor, of a folder for folding a wrapper strip about the wires, guides by which one or more binding strips are applied between the wires, and a sewing mechanism for sewing the layers of wrapper and binding strips together between said wires, substantially as described.

6. The combination with mechanism for advancing a plurality of wires and covering therefor and holding the wires at a fixed distance apart, of a folder for folding a wrapper strip about the wires, a sewing mechanism for sewing the layers of said wrapper together between said wires, and a spiraling and reeling mechanism, substantially as described.

7. The combination with feeding mechanism for advancing a plurality of wires and covering therefor, of guides for holding the wires at a fixed distance apart, a folder for folding a wrapper strip about the wires, and means for securing the layers of wrapper together between the wires, substantially as described.

8. The combination with feeding mechanism for advancing a plurality of wires and covering therefor, of a tongue forming a guide holding the wires at a fixed distance apart, a folder for folding a wrapper strip about the wires and tongue, and means for securing the layers of wrapper together between the wires, substantially as described.

9. The combination with feeding mechanism for advancing a plurality of wires and covering therefor, of a tapering tongue forming a guide holding the wires at a fixed distance apart, a folder for folding a wrapper strip about the wires and tongue, and means for securing together the layers of wrapper between the wires, substantially as described.

10. The combination with feeding mechanism for advancing a plurality of wires and covering therefor, of a tapering tongue forming a guide holding the wires at a fixed distance apart, a folder for folding a wrapper strip about the wires and a tongue, a presser foot holding the parts in position after they have passed the tongue, and sewing mechanism arranged to sew the layers of wrapper together between the wires, substantially as described.

11. The combination with feeding mechanism for advancing a plurality of wires, a wrapper strip and one or more binding strips applied between the wires at a point in the feeding movement of said wires and strip, of a tapering tongue between the wires extending to the point where the binding strip or strips are applied, a folder constructed to fold the wrapper strip about the wires and tongue, and means for securing the wrapper and binding strip or strips together between the wires, substantially as described.

12. The combination with feeding mechanism for advancing a plurality of wires and covering therefor, of a tapering tongue between the wires, guides for applying one or more binding strips between the wires at the end of the tongue, a folder constructed to fold a wrapper strip about the wires and tongue, and means for securing the wrapper and binding strips together between the wires, substantially as described.

13. The combination with tube forming folder 14, of tongue 11 inclosed by said folder and tapering in the direction of movement of the strip to be folded, substantially as described.

14. The combination with tube forming folder 14, of pivotally mounted tongue 11 inclosed by said folder, substantially as described.

15. The combination with tube forming folder 14, of tongue 11 inclosed by said folder and having grooves 1 on opposite sides extending longitudinally of the folder.

16. The combination with tube forming folder 14, of tongue 11 inclosed by said folder and tapering in the line of direction of movement of the strip to be folded and having grooves 1 on opposite sides extending longitudinally of the folder, substantially as described.

17. The combination with tube forming folder 14, of tongue 11 inclosed by said folder and tapering in the direction of movement of the strip to be folded, and presser foot 16, substantially as described.

18. The combination with tube forming folder 14, of tongue 11 inclosed by said folder and tapering in the direction of movement of the strip to be folded, presser foot 16 and table F, recessed to form guides for one or more strips, substantially as described.

19. The combination with two plates forming a grip and provided with notches having inclined surfaces at their forward sides, of reciprocating studs entering said notches, substantially as described.

20. The combination with two plates forming a grip and provided with notches having inclined surfaces at their forward sides, of reciprocating studs entering said notches and adjustable to vary the distance between them, substantially as described.

21. The combination with plates 25, 26 having ribs 27 provided with notches 28 with inclined surfaces at the forward side and shoulders at the rear side, of reciprocating studs 24 entering said notches, substantially as described.

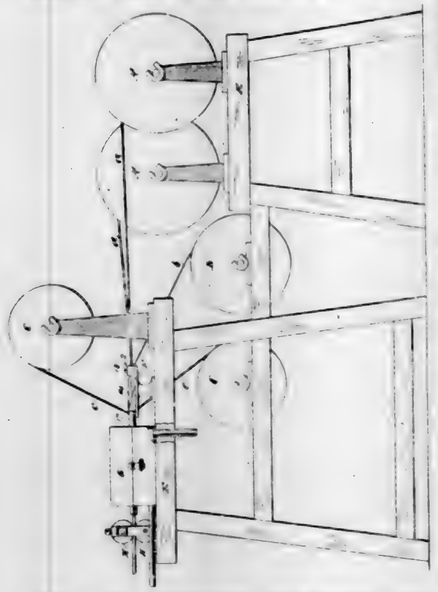
22. The combination with plates 25, 26, having ribs 27 provided with notches 28 with inclined surfaces at the forward side and shoulders at the rear side, of reciprocating hinged arm 23 carrying studs 24 entering said notches, substantially as described.

23. The combination with plates 25, 26, having ribs 27 provided with notches 28 and held to move longitudinally while free to be separated transversely, of hooked spring 30 engaging the rib 27 on plate 26 to hold it in place, and reciprocating studs 24 entering said notches, substantially as described



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**505,380. MACHINE FOR COVERING WIRE.** JOHN A. BARRETT, Brooklyn, N. Y., assignor to the Standard Underground Cable Company, Pittsburg, Pa. Filed Oct. 27, 1892. Serial No. 450,108. (No model.)



*Claim.*—1. The combination with a folder for folding a wrapper strip about a plurality of wires, of means for rendering the wrapper adhesive, and means for advancing said wires and wrapper with the wires held at a fixed distance apart and pressing the layers of wrapper together, substantially as described

2. The combination with a folder for folding a wrapper strip about a plurality of wires, of guides by which one or more binding strips are applied between the wires, means for rendering the wrapper or binding strips adhesive, and means for advancing said wires and covering and pressing the adhesive wrapper and binding strip or strips together, substantially as described.

3. The combination with a folder for folding a previously gummed wrapper strip about a plurality of wires, of moistening devices for rendering the wrapper strip adhesive, and means for advancing said wires and wrapper with the wires held at a fixed distance apart and pressing the layers of wrapper together, substantially as described.

4. The combination with a folder for folding a previously gummed wrapper strip about a plurality of wires, of a steam chest through which the wires and wrapper are led, and means for advancing said wires and wrapper with the wires held at a fixed distance apart and pressing the layers of wrapper together, substantially as described.

5. The combination with a folder for folding a previously gummed wrapper strip about a plurality of wires, of a steam chest, a perforated guide in said steam chest through which the wires and wrapper are led, and means for advancing said wires and wrapper and pressing the layers of wrapper together, substantially as described.

6. The combination with a folder for folding a wrapper strip about a plurality of wires, of guides by which one or more binding strips are applied between the conductors, the wrapper or binding strips, or both, being previously gummed, a steam chest, a perforated guide in said steam chest through which the wires, wrapper and binding strips are led, and means for advancing the wires and covering and pressing the wrapper and binding strips together, substantially as described.

7. The combination with guides for holding wires at a fixed distance apart, of a folder for folding a wrapper strip about the wires, means for rendering the wrapper adhesive, and means for advancing the wires and wrapper and pressing the layers of wrapper together between the wires, substantially as described.

8. The combination with a tapering tongue forming a guide holding wires at a fixed distance apart, of a folder for folding a wrapper strip about the wires and tongue, a guide holding the parts in position after they have passed the tongue, means for rendering the wrapper adhesive, and means for advancing the wires and wrapper and pressing the layers of wrapper together between the wires, substantially as described.

9. The combination with a tapering tongue forming a guide holding wires at a fixed distance apart and extending to a point where one or more binding strips are applied between the wires, of a folder for folding a wrapper strip about the wires and tongue, a guide holding the parts in position after they have passed the tongue, means for rendering the wrapper or binding strip or strips adhesive, and means for advancing the wires and covering and pressing the layers of wrapper and binding strip or strips together between the wires, substantially as described.

10. The combination with a tapering tongue forming a guide holding wires at a fixed distance apart and extending to a point where one or more binding strips are applied between the wires, of a folder for folding a wrapper strip about the wires and tongue, the wrapper or binding strips, or both, being previously gummed, a steam chest, a perforated guide in said steam chest through which the wires, wrapper, and strips are led, and means for advancing the wires and covering and pressing together the wrapper and binding strips between the wires, substantially as described.

11. The combination with feeding devices for advancing a plurality of wires and a previously gummed wrapper strip inclosing said wires, of steam chest G, and perforated guide 18 in said chest, substantially as described.

12. The combination with feeding and pressing rolls H, of steam chest G, and perforated guide 18 in said chest, substantially as described.

13. The combination with feeding and pressing rolls H, of steam chest G, perforated guide 18 in said chest, tapering tongue 11, and folder 14 inclosing said tongue, substantially as described.

14. The combination with feeding and pressing rolls H, of steam chest G, perforated guide 18 in said chest, guide 17 constructed to form guides for one or more binding strips, tapering tongue 11, and folder 14 inclosing said tongue, substantially as described.

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**505,381. CAR-BRAKE.** HORACE P. BASSETT, Warren, Ohio. Filed Apr. 15, 1892. Renewed Feb 21, 1893. Serial No. 463,282. (No model.)



*Claim.*—1. In a car-brake, the combination of a lever connected at one end with operating mechanism, a pair of supplemental levers, an equalizer connected to the supplemental levers and the first-named lever, plungers connected to the outer ends of said supplemental levers, shoes attached to said plungers, and a beam or bolster having grooves in the opposite ends thereof with plungers therein to which said shoes are attached substantially as described.

2. In a car-brake, the combination of an operating lever connected at one end with the operating mechanism, a pair of supplemental levers having plungers pivotally connected to the outer ends thereof, links connected to said supplemental levers and to other plungers, and shoes carried by said plungers, substantially as described.

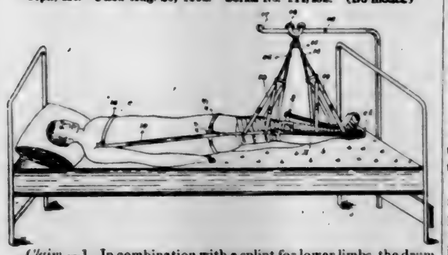
3. In a car-brake, the combination of a beam or bolster having

grooves in the opposite ends thereof, plungers mounted in said grooves and carrying brake-shoes, and operating levers connected to said plungers, substantially as described.

4. In a car-brake, the combination of a beam or bolster having grooves in the ends thereof, plungers movably mounted in said grooves and carrying shoes at their outer ends, supplemental levers connected to the inner ends of said shoes, and an operating lever connected to the inner opposing ends of said supplemental levers, substantially as described.

5. In a car-brake, the combination of a beam or bolster having grooves therein with inwardly-projecting flanges, grooved plungers mounted in said grooves of the beam or bolster and having shoes at their outer ends, and levers for operating the same, substantially as described.

## 505,382. FRACTURE APPARATUS. JOHN T. BERGHOFF, St. Joseph, Mo. Filed Aug. 29, 1892. Serial No. 444,432. (No model.)



*Claim.*—1. In combination with a splint for lower limbs, the drum conically grooved at its ends to receive and wind both ends of a cord, a frame supporting such drum and adapted to be adjustably applied to the inner and outer legs of the splint, and to be reversed thereon as and for the purposes set forth.

2. In combination with the double-cone drum its interior spring, its winding shaft, its ratchet and pawl as set forth; a cord 17, foot-piece 16, and its guide pulleys $c^6$, movable foot piece 15, and its hook 18, all substantially as and for the purposes set forth.

3. In combination with the drum, its frame and cord, and with the foot pieces 15, 16, the sliding splints 10, applied to be moved lengthwise between the fixed parts 7 and 8.

4. In combination with the splint A, having the adjusting joint $a^5$, $a^4$, the opposite splint B having a simple pivot joint $b'$, and made solid at its upper end, all as set forth.

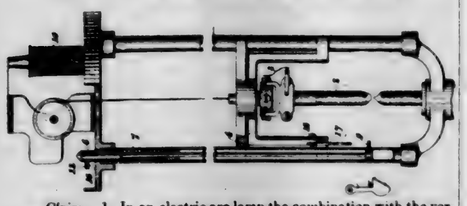
5. In combination with the side splints, the double-cone and its frame cord, the extension bridge 29, and means substantially as described for attaching bands to the limbs of the patient, all as set forth.

6. In combination with the side splints A, B, the movable and removable friction adhering cap-pieces $15^9$ severally provided with hooks, adapted for holding a canvas sling or hammock to, support the leg as set forth.

7. In combination with the side splints, and their foot-pieces as described, the system of straps 59, connected thereto, the trolley 49, with its lower portion adapted to turn on a shaft, and having a pulley 52, and cord 53, which connects these parts to the straps as shown and described, and the trolley adapted to be supported on a bar 46, attached to a bed frame.

8. In combination with the inner and outer splints, the steel plates $a^{13}$, having the curved slotted tongues $a^{14}$, and the slotted extensible thigh piece 11, adapted for adjustable connection to such tongues as set forth.

## 505,383. ELECTRIC-ARC LAMP. SIGMUND BERGMANN, New York, N. Y. Filed July 19, 1893. Serial No. 480,894. (No model.)



*Claim.*—1. In an electric arc lamp the combination with the vertically movable frame and the switch rod arranged to be operated thereby in its movement of the vertically and laterally movable switch lever provided with insulation and included in the shunt circuit of the feeding magnets.

2. In an electric arc lamp the combination with the vertically movable frame and the conically pointed switch rod arranged to be operated thereby in its movement of the vertically and laterally movable switch lever provided with insulation at its free end, and included in the shunt circuit of the feeding magnets, substantially as described.

3. In an electric lamp a hollow vertical side rod, a switch rod vertically movable in the same and pressed upward by spring pressure, and a vertically movable guide, which in its descent strikes a projection of the switch rod and gradually draws down the latter, in combination with a switch lever and feed electro-magnets, substantially as described.

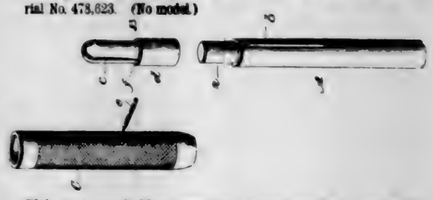
4. In an electric arc lamp the combination with a vertically movable frame and the conically pointed switch rod provided with a lateral projection, of the vertically and laterally movable switch lever provided with insulation on its under side, and provided with a spring for moving it laterally and a stop arranged to limit the vertical and lateral movements of said lever substantially as described.

5. In an electric arc lamp the combination of the guide frame provided with a weighted catch and a switch rod provided with a projection with which said catch co-operates to lift the switch rod, substantially as described.

6. In an electric arc lamp the combination of the guide frame provided with a weighted catch having a cam surface and a lifting cam or tooth, with a switch rod having a projection co-operating with the lifting cam or tooth of said catch to lift the switch rod, substantially as described.

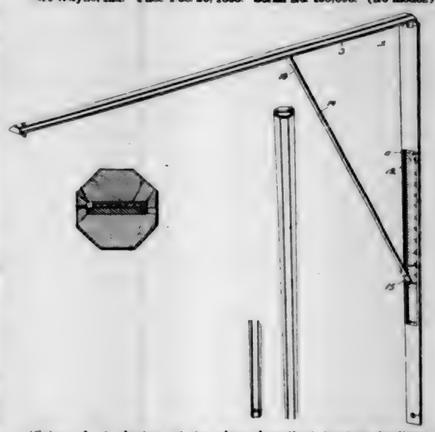
7. In an electric arc lamp the combination with the vertically movable frame provided with a weighted catch of the switch rod provided with a projection in the path of the movable frame and weighted catch whereby the switch rod is depressed or elevated as it descends or rises, substantially as described.

## 505,384. PENHOLDER. CLARE W. BOMAN, Brooklyn, assignor to the Eagle Pencil Company, New York, N. Y. Filed June 23, 1893. Serial No. 478,623. (No model.)



*Claim.*—A pen-holder, consisting of the handle A, having the slit $b$ and the solid tenon $a$, the tubular sheet metal tip B, with its split portion $c$, socket portion $d$, and intermediate shoulder $f$, and the sleeve C with its pin $c'$—these parts being constructed and fitted together, as hereinbefore shown and described.

## 505,385. COMBINED GAGE AND CANE. GEORGE W. BOWER, Fort Wayne, Ind. Filed Feb. 20, 1893. Serial No. 463,090. (No model.)



*Claim.*—1. A device of the class described having duplicate members pivotally connected at or near one end, a scale carried by one of the members, and an arm pivotally connected to the other member and adapted to travel at its free end over said scale, substantially as specified.

2. A device of the class described having duplicate members of a definite length pivotally connected at or near one end, a scale carried by one of the members, and an arm pivotally connected to the other member to engage said scale, substantially as specified.

3. A combined measuring instrument and cane having a body-portion comprising duplicate members provided respectively with a scale, and a swinging arm to engage said scale, substantially as specified.

4. In a device of the class described, the combination of duplicate members, a scale and adjacent rack attached to one of the members, and an arm pivotally connected to the other member to engage said rack, substantially as specified.



## 505,386. LATCH. JOHN E. BOZELL, Elwood, Ind. Filed Mar. 2, 1893. Serial No. 464,363. (No model.)




*Claim.*—1. A door fastener or latch for cupboards and like articles of furniture, consisting of a spindle having formed integral therewith a catch portion and an extension which is adapted to hold the catch portion in an operative position, a knob attached to the spindle for turning the latch, and a spring bar carried by the cross-bar or shelf with which the catch portion of the latch is adapted to engage, substantially as shown, and for the purpose set forth.

2. In combination with a latch a fixture $b$ containing a spring having side members and a connecting bar, of a latch consisting of a catch portion or hook having a recess $d$, said catch portion or hook being extended to form a gravity tail C', and a spindle C which passes through the door A and is provided with a knob, for the purpose set forth.

## 505,387. CARRIAGE-AXLE. CHARLES W. BROOKS, Stevens Point, Wis. Filed Oct. 24, 1892. Serial No. 449,686. (No model.)



*Claim.*—1. The combination of sleeve G with the axle A, and Babbitt, or other alloy bearing, uniting G and A.

2. In combination with a tubular axle and sleeve which are adapted to be connected, the axle and sleeve having bearings $a$ and $a'$, of a spindle B having tapered portions $b'$ and $b^3$ for engagement with the bearings, a hub rigidly attached to the outer end of the spindle, and means for connecting the hub and spindle together, substantially as shown.

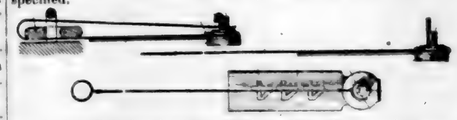
3. In combination with a tubular axle having a bearing $a'$ and threaded end, a sleeve carrying a bearing which is adapted to enter the end of the axle, said sleeve having a threaded end and an outwardly extending circumferential flange, a spindle having conical bearing portions, said spindle being rigidly attached to the hub, the hub having a cup the projecting end of which is threaded, together with a nut which engages with the sleeve and cup so as to connect the parts to each other, substantially as shown, and for the purpose set forth.

4. A tubular axle having a threaded end and a sleeve G which is adapted to be secured thereto, said sleeve having an external flange and an internal conical bearing $a'$, in combination with a hub C and spindle B which are constructed substantially as shown and are rigidly attached to each other the hub carrying a cup having a threaded projecting portion, and a nut F which encircles the sleeve G and engages with the threaded end of the cup, for the purpose set forth.

5. The combination of nut F and projecting threaded end of cup D, the nut F screwing onto the cup D which is threaded to receive it as before described.

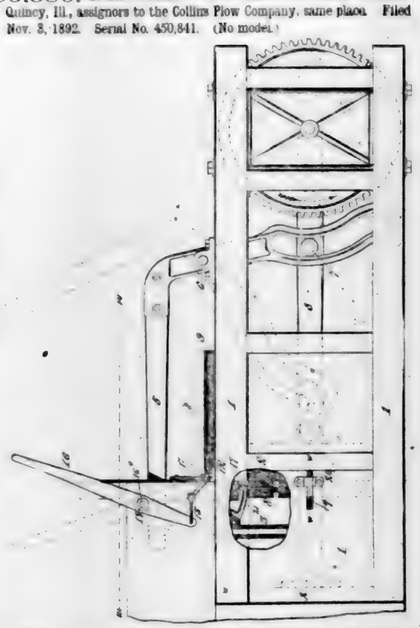
## 505,388. SEAL AND SEAL-TAG. EDWARD J. BROOKS, East Orange, N. J., assignor to the E. J. Brooks & Company, New York, N. Y. Filed July 1, 1893. Serial No. 479,353. (No model.)

*Claim.*—1. A combined seal and seal-tag composed of a flexible shackle of wire having a loop at each end, a tag having a pair of loops between which one of said loops is inclosed, and a sealing rivet having a portion thereof surrounding its stud upset upon said tag loops to preliminarily unite the parts, substantially as hereinbefore specified.



2. A sealing rivet having a pliable retaining finger on the outer end of its stud, in combination with a flexible shackle preliminarily united with said rivet at one end, and having a loop at its other end which embraces said stud and with which said finger coacts preparatory to the pressing operation, substantially as hereinbefore specified.

## 505,389. BALING-PRESS. JOHN W. BROWN and ALBERT A. GEHRT, Quincy, Ill., assignors to the Collins Plow Company, same place. Filed Nov. 8, 1892. Serial No. 450,841. (No model.)



*Claim.*—1. In a baling press, the guides 17 for directing the division boards into the press, in combination with a support pivoted adjacent to said guides for lifting said boards into a vertical position; substantially as set forth

2. In a baling press, the combination of a support for the division boards, a crank shaft to which the support is secured, and a lever connected to the crank shaft for moving the support and division board to a vertical position, to permit the division board to drop by gravity into the press chamber; substantially as set forth.

3. In a baling press, the combination of a support for the division boards, means for moving the support into a vertical position, and spring-actuated dogs 19 for holding the division boards in an upright position in the baling chamber; substantially as set forth.

4. The combination, in a baling press, of the baling box having an opening for the admission of division boards, with the retaining dogs 19 having beveled portions $19^a$ and supported in the walls of the baling box and adapted to hold the division boards in upright position while they are being inserted, substantially as and for the purpose set forth.

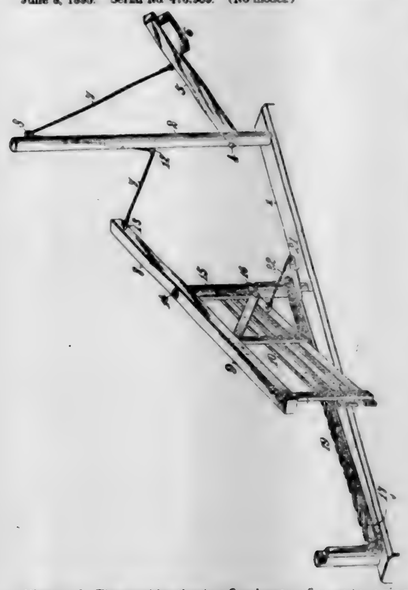
5. In a baling press, the combination of a support for the division boards, means for moving the support into a vertical position, guides 17 for directing the division board into the baling chamber, and spring-actuated dogs 19 for holding the division board in an upright position in the baling chamber; substantially as set forth.

6. In a baling press, the combination of the baling box, the vertical guides 17 which hold the division boards upright against horizontal or lateral movement when pressed by the feeder, and the feeder.

having a bracket or projection 21 for engaging the division boards, substantially as and for the purpose set forth.

7. In a baling press, the combination of a support for the division boards, means for moving the support into a vertical position, guides 17 for insuring the vertical descent of the division boards, and a feeder having a projection or bracket 21; substantially as and for the purpose set forth.

505,390. FLOOD-GATE. JOHN H. CARAWAY, Chrisman, Ill. Filed June 8, 1893. Serial No. 476,959. (No model.)



*Claim.*—1. The combination in a flood-gate, of an upper swinging gate section, a lower rocking gate section, a flexible connection between the upper and lower gate sections, and a weight acting on the upper gate section to close the same, said flexible connection serving to close the lower gate section but permitting the upper section to open while the lower section remains closed, substantially as described.

2. The combination of an upper gate section pivoted to swing in a horizontal plane, a lower gate section pivoted to rock in a vertical plane, a flexible connection between the upper and lower gate sections, and a weight acting on the upper section to close the same, said flexible connection serving to close the lower gate section but permitting the upper section to open while the lower section remains closed, substantially as described.

3. The combination of an upright or gate-post, a stanchion having cable guides, a pivoted weight carrying arm, an upper gate section journaled on the post, a cable connecting the weight-carrying arm with the upper gate section, a pivoted lower gate section, and a flexible connection between the upper and lower sections which serves to close the lower gate section when the upper gate section is closed, and permits the latter to open if the lower gate section is held closed, substantially as described.

4. The combination of an upright or gate-post, a horizontally-swinging gate mounted on the upright or gate post, a lower gate section having a rock-shaft supported in suitable bearings, a flexible connection between the upper gate section and the rock-shaft, and a weight acting on the upper gate section to close the same, substantially as described.

505,391. SLED-BRAKE. PETER CHELIUS, Trout Creek, N. Y. Filed June 12, 1893. Serial No. 477,304. (No model.)

*Claim.*—1. The combination with the sled and the pivoted brakes, of the pivoted tongue, the sleeve thereon, the sliding plate on the tongue, the adjustable stop for said plate and the pivotal connections between said plate and the brakes and sleeve, substantially as specified.

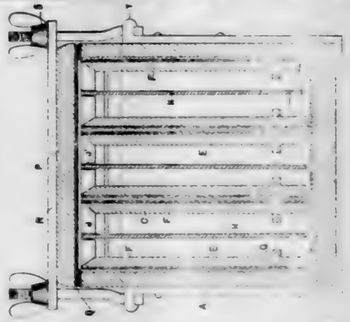
2. The combination with the sled and the pivoted brakes, of the pivoted tongue, the sleeve thereon, the fixed plate on the tongue with slot, and the sliding plate with a pin working in said slot and connected with the brakes and sleeve, substantially as specified.

505,391.



3. The combination with the sled and the pivoted brakes, of the pivoted tongue, the sleeve thereon, the plate on the tongue and having slot and guides, the adjustable toothed stop plate, the slide with pin working in said slot and with guide flanges, ... connections between the sliding plate and the ... and ... stantially as specified.

505,392. ELECTRIC PRIMARY BATTERY. THEOPHILUS CLAD, London, England. Filed Nov. 10, 1892. Serial No. 451,525. (No model.)



*Claim.*—A primary battery consisting of suitable cells, carbons secured in each cell electrically connected, the zinc formed with shoulder or projections for it to be hung by in cell, a recess to secure the zinc between the carbons and a contact point arranged at bottom of recess electrically connected to the carbons, of the next cell for one of the projections of the zinc to rest upon, substantially as described and set forth.

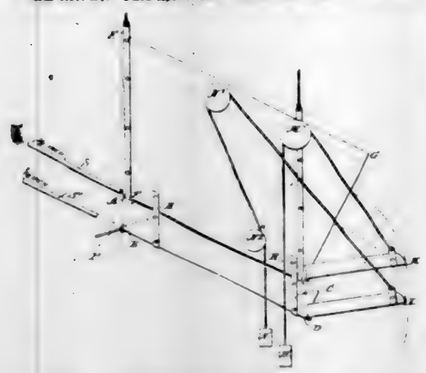
505,393. ELECTRO-MEDICAL AIR-INJECTOR. JAMES ... and FRANK M. CATTERN, Denver, Colo. Filed Aug. 7, 1893. Serial No. 482,606. (No model.)



*Claim.*—An electrical apparatus consisting of a tube having a nozzle at each extremity, and a voltaic battery attached to the tube and conductors passing therefrom through the tube and exposed at the opening in one of the nozzles, whereby the circuit is normally open but closed by contact with the parts to which the instrument is applied, substantially as described.



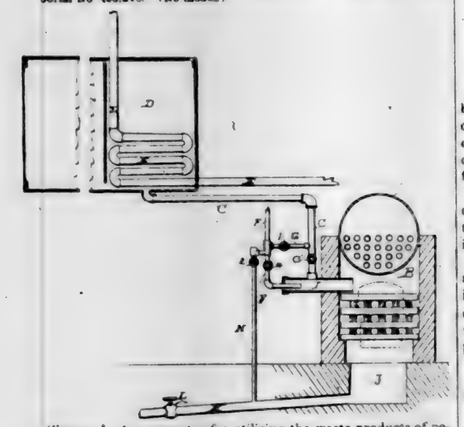
505,394. COAL-WEIGHING BASKET. THOMAS C. DU PONT, Central City, Ky. Filed Apr. 3, 1893. Serial No. 468,885. (No model.)



*Claim.*—1. The combination with the inclined screen S, and coal weighing basket E F G H having a hinged section H K at its lower end, of a subjacent transfer chute attached to the bottom of the coal weighing basket, the screen S arranged on a line with the transfer chute, and a hinged section for holding or discharging the contents of the transfer chute, substantially as shown and described.

2. The combination with the inclined screen S, and coal weighing basket E F G H having a hinged section H K at its lower end, of a subjacent transfer chute attached to the bottom of the coal weighing basket, the screen S arranged on a line with the transfer chute, a hinged section for holding or discharging the contents of the transfer chute, and a valve P arranged at the upper end of the latter, adapted to connect the screen S with the transfer chute, or cut off the latter, substantially as shown and described.

505,395. MEANS FOR UTILIZING WASTE PRODUCTS OF PETROLEUM. JACOB P. ENGLE, San Francisco, Cal. Filed Mar. 9, 1893. Serial No. 465,278. (No model.)



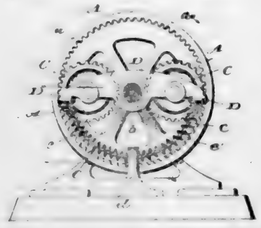
*Claim.*—1. An apparatus for utilizing the waste products of petroleum, consisting of the furnace having bars of iron laid parallel and transversely in series one above the other, a combustion chamber located beneath said bars, a pipe by means of which the material is delivered into the furnace above the bars, the steam jet pipe opening into said delivery pipe, a tank situated above the level of the furnace, a pipe through which the material is led from said tank to the furnace inlet pipe, a controlling cock by which the flow is regulated, and means for heating the material within the tank, substantially as herein described.

2. An apparatus for utilizing the waste products of petroleum, consisting of a furnace having iron bars laid in masses or tiers within the furnace, a tank situated above the level of the furnace, into which the material is first received means for heating the material within the tank, a pipe leading from the tank to the furnace supply pipe, a steam jet pipe opening into the furnace supply pipe whereby steam is injected with the material into the furnace above the iron bars which are laid therein, a combustion chamber situated below the furnace adapted to receive the waste material which passes down through the bars, and a discharge pipe through which said waste material is drawn off, substantially as herein described.

3. An apparatus for utilizing the waste products of petroleum, consisting of a boiler furnace having iron bars laid in masses, one above the other, a tank situated above the level of the furnace, a pipe leading from the tank and connected with a supply pipe which opens into the furnace above the bars therein, means for heating the material within the tank, a jet tube opening into the supply pipe and delivering steam with the material into the furnace, a combustion chamber situated below the furnace adapted to receive the unconsumed material which passes down through the bars of the furnace, a discharge pipe communicating with said chamber and through which the waste material is drawn off, steam pipes connecting with the boiler and provided with cocks, said pipes opening into the main supply pipe and into the discharge pipe of waste material whereby said pipes are cleansed and heated to insure a free flow of the material therein, substantially as herein described.

4. In an apparatus for utilizing the waste products of petroleum, a tank, a supply pipe leading therefrom to deliver material to a boiler furnace by gravitation, a filling of masses of iron within the furnace over which the material is sprayed and upon and below which it is burned, a combustion chamber below the ash pit for the surplus material, a discharge pipe leading from the chamber with a stop cock therein, a steam jet pipe opening into the discharge pipe between the cock and receiver whereby the steam is directed into the receiver when the cock is closed or discharged outwardly when it is opened, substantially as herein described.

505,396. ELECTRIC MOTOR. ERNEST R. ENNOND, New York, N. Y. Filed Aug. 15, 1893. Serial No. 483,177. (No model.)



*Claim.*—1. An electric motor comprising a field and armature, both of them rotatable, in combination with intermediate gearing connecting the two, and a carrier for said gearing hung upon an axis on which it can vibrate to permit swinging movement of the gearing carried by it, substantially as and for the purposes hereinbefore set forth.

2. The intermediate and its pendulous spring or weight controlled carrier, in combination with the rotatable field and rotatable armature of an electric motor, substantially as and for the purposes hereinbefore set forth.

3. The combination, in an electric motor having a rotatable field and rotatable armature, with the internal spur wheel *a* and the pinion *b* of an intermediate C meshing with said wheel and pinion, and a carrier for said intermediate pivoted to move upon an axis coincident with that of the wheel and pinion between which the intermediate is placed, as set forth.

505,397. WIRE-ROPE TRAMWAY. CHRISTOPHER T. FINLAYSON, Denver, Colo. Filed Mar. 20, 1893. Serial No. 466,910. (No model.)

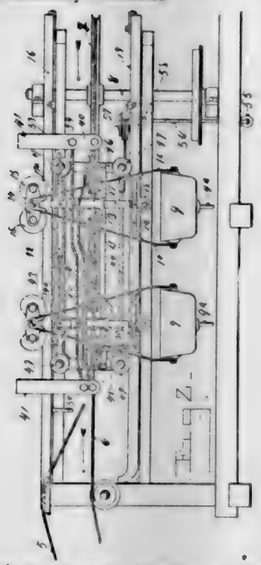
*Claim.*—1. The combination with the bucket pendant or frame, of the vertically movable slide supported thereon, and the dogs pivoted thereto, and having pins projecting into slots formed in the slide, the shape of the slots being such that the action of the dogs is controlled by the movement of the slide, substantially as described.

2. The combination of the bucket pendant or frame provided with stationary upper and lower jaws, the pivoted dogs and the vertically movable slide controlling the action of the dogs, substantially as described.

3. The combination of the bucket pendant or frame having the stationary jaws suitably separated, the movable dogs controlling the passage way between the jaws, and the vertically movable slide provided with slots or openings to receive pins or projections carried by the dogs, substantially as described.

4. In a wire rope tramway, the combination with the bucket pendant or frame, of the movable dogs supported thereon, the verti-

cally movable slide engaging the dogs, and suitable means attached to stations on the line and lying in the path of a projection on the slide, whereby the latter is actuated for the purpose of controlling the action of the dogs, substantially as described



5. In a wire rope tramway, the combination with the traction ope carrying a clip, of the bucket pendant provided with the stationary jaws, and means for locking the clip between these jaws, consisting of two dogs located respectively at the entrance and exit of the passage, substantially as described.

6. In a wire rope tramway, the combination with the traction rope carrying the clip, of the bucket pendant provided with the gripping mechanism, consisting of the stationary jaws, the movable dogs and the slide controlling the dogs, substantially as described.

7. In a wire rope tramway, the combination with the traction rope and clip, of the bucket pendant having the gripping mechanism composed of the stationary jaws, the pivoted dogs, and the vertically movable slide carrying slots adapted to receive pins carried by the dogs and projecting into the slots, substantially as described.

8. In a wire rope tramway, the combination of the traction rope and clip, of the bucket pendant carrying the gripping mechanism consisting of the stationary jaws, the pivoted dogs, and the vertically movable slide, and means located at the stations for engaging the slide and actuating the same as the bucket passes, substantially as described

9. In a wire rope tramway, the clip composed of the clasp, the shouldered projection, the enlarged head and the neck connecting the head with the shouldered part, substantially as described.

10. In a wire rope tramway, the combination with the traction rope, of the clip consisting of the clasp, the shouldered projection, the reduced neck and the circular head, substantially as described.

11. In a wire rope tramway, the combination with the stationary frame, the traction rope and the clip, of the pendant frame having the trolley at its upper extremity, the bucket at its lower extremity, and the intermediate gripping mechanism consisting of the stationary jaws, the pivoted dogs and the vertically movable slide controlling the dogs, substantially as described.

12. In a wire rope tramway, the combination with the bucket pendant, the traction rope and clip, of the terminal frame provided with two track plates, one above the other, the carriage mounted on pulleys grooved to engage the track plates, means for attaching the bucket pendant to the carriage, and the curved oscillating arm pivoted on the stationary frame at one extremity, while the other extremity projects into the path of the clip, said arm normally engaging the carriage near its pivoted extremity, whereby as the clip engages the opposite extremity, the carriage is actuated by a gradually accelerated movement, substantially as described.

13. In a wire rope tramway, the combination with the bucket pendant, the traction rope and clip, of the stationary frame provided with the track plates, the carriage mounted between the track plates, means for attaching the bucket pendant to the carriage, a curved oscillating arm pivoted on the stationary frame and engaging the carriage near its pivoted point, its free extremity projecting into the path of the clip, whereby the clip starts the bucket by a gradually accelerated movement, and means for automatically releasing the bucket from the carriage, substantially as described.

14. In a wire rope tramway, the combination with the stationary frame, the traction rope, the clip and the bucket pendant, of the carriage mounted on the stationary frame and provided with longitudinal guide plates forming a way for the traction rope and clip, means for attaching the bucket pendant to the carriage, a curved or crescent-shaped arm pivoted on the stationary frame, its free extremity projecting into the guide way for the traction rope while it engages the carriage near its pivoted point, whereby as the clip of the moving rope engages the upper extremity, a gradually accelerated movement is imparted to the carriage and bucket, and means for automatically releasing the bucket from the carriage, substantially as described.

15. In a wire rope tramway, the combination with the stationary frame, the traction rope and the clip, of the carriage mounted on the stationary frame and provided with the guide way for the traction rope and clip, means for attaching the bucket to the carriage, a curved or crescent shaped oscillating arm attached to the stationary frame, and having its free extremity projecting into the path of the clip carried by the traction rope, said arm normally engaging the carriage near the pivoted point of the arm, whereby as the clip of the moving rope engages the arm, a gradually accelerated movement is imparted to the carriage and attached bucket, until the bucket has attained approximately, the speed of the traction rope when the clip leaves the oscillating arm and engages the bucket pendant, means for releasing the bucket from the carriage and means for returning the carriage to its normal position, substantially as described.

16. In a wire rope tramway, the combination with the stationary frame, the traction rope and the clip, of the carriage mounted on the frame and provided with means for engaging the bucket pendants, one in front and the other in the rear, the oscillating arm attached to the stationary frame and projecting into the path of the clip on the moving traction rope, the arm engaging the carriage near its point of attachment to the frame, whereby as the clip engages the free extremity of the arm, the carriage is started by a movement gradually accelerated until the speed of the traction rope is attained, when the clip leaves the oscillating arm and engages the bucket, means for releasing the bucket from the carriage and means for returning the carriage to its normal position, and whereby the rear bucket is left in the position originally occupied by the forward bucket, substantially as described.

17. In a wire rope tramway, the combination with the stationary frame, the carriage, the traction rope and clip, of means for gradually starting the carriage, consisting of an oscillating arm attached to the stationary frame and projecting into the path of the clip, substantially as described.

18. In a wire rope tramway, the combination with the stationary frame, the traction rope and clip, of the carriage mounted thereon, and provided with a guide-way for the traction rope and clip, means for starting the carriage by a gradually accelerated movement, said means consisting of an oscillating arm attached to the stationary frame and projecting into the path of the clip, substantially as described.

19. In a wire rope tramway, the combination with the stationary frame, the traction rope, the clip and the carriage mounted in the frame, of starting mechanism for imparting to the carriage a movement gradually accelerated from a position of rest until the speed of the traction is attained, and means for automatically returning the carriage to its position of rest after each forward movement, substantially as described.

20. In a wire rope tramway, the combination with the stationary frame, the carriage mounted thereon, the traction rope and the clip, of the bucket pendant attached to the carriage and provided with the gripping mechanism, and a vertically movable slide for controlling the same, means actuated by the clip for starting the carriage, and means attached to the stationary frame for actuating the slide controlling the gripping mechanism, substantially as described.

21. In a wire rope tramway, the combination with the stationary frame, the traction rope and the clip, of the bucket pendant provided with the gripping mechanism, and a vertically movable plate for controlling said mechanism, and a differential guideway supported upon the stationary frame and actuating the grip-controlling slide which it engages, substantially as described.

22. In a wire rope tramway, the combination with the traction rope and clip of the terminal frame having two curved tracks one above the other, and a wheel for supporting the traction rope, of the bucket pendant provided with a trolley engaging one edge of one track, a guide sheave engaging the opposite edge of the other track, and intermediate mechanism for gripping the traction rope, the terminal frame being further provided with suitable mechanism for dumping the bucket, said mechanism being actuated by the clip of the traction rope, substantially as described.



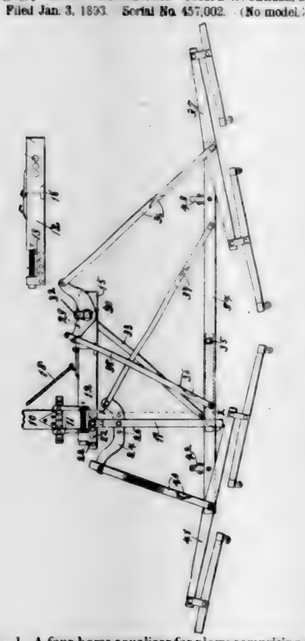
23. In a wire rope tramway system, the combination of the terminal frames, the stationary rope having its extremities anchored at said frames, tracks attached to said frames and forming with the stationary rope, an endless way, the moving traction rope carrying suitable clips, said rope engaging wheels mounted on the terminal frames, the buckets and the pendent frames therefor, said frames being provided with a trolley engaging the stationary rope, and gripping mechanism for engaging the traction rope, a vertically movable slide for controlling the gripping mechanism, and differential ways attached to the stationary frames for actuating said slide, substantially as described.

24. In a wire rope tramway, the combination with the traction rope of the terminal frames each having two tracks one above the other and provided with wheels for supporting the traction rope, the bucket pendant provided with a trolley at its upper extremity engaging one track, and a guide sheave attached to its lower portion engaging the other track, whereby the trolley is locked on the track in making the turn, and intermediate mechanism for gripping the traction rope, substantially as described

25. In a wire rope tramway, the combination with the traction rope, the terminal frames having two tracks one above the other, and wheels for supporting the traction rope, of the bucket pendant having a trolley engaging the upper edge of one track, and a guide sheave engaging the lower edge of the other track, and intermediate mechanism for gripping the traction rope, substantially as described

26. In a wire rope tramway, the combination with the traction rope and clip, the terminal frames having curved tracks one above the other and wheels for supporting the traction rope, of the bucket pendant provided with a trolley engaging one edge of one track, a guide sheave engaging the opposite edge of the other track, and intermediate mechanism for gripping the clip of the traction rope, substantially as described.

## 505,398. DRAFT-EQUALIZER. JOSEPH W. GAMBLE, Des Moines, Iowa. Filed Jan. 3, 1893. Serial No. 457,002. (No model.)



*Claim.*—1. A four-horse equalizer for plows comprising a bracket clevis connected to and extending transversely of a plow beam, an evener pivotally mounted on said bracket clevis, a tongue clevis connected to said bracket clevis, an evener pivotally mounted on said tongue clevis, a plurality of whiffletrees, and draw-rods forming connections between said eveners and whiffletrees.

2. In a four-horse equalizer for plows the combination of a bracket clevis arranged transversely of the line of draft, a tongue clevis connected to said bracket clevis, a brace connecting the outer ends of said clevises with each other, a brace-bar parallel with said bracket clevis, flexible connections between the tongue clevis and brace-bar, and connections between the brace bar and bracket clevis.

3. In a four horse equalizer for plows the combination of a bracket clevis arranged transversely of the line of draft, a tongue-clevis connected to said bracket clevis, a brace connecting the outer ends of said clevises with each other, a brace bar parallel with said bracket clevis, flexible connections between the tongue clevis and brace bar, and eveners independently mounted on said clevises, draw-rods connecting said eveners and brace-bar, and whiffletrees connected with said brace bars.

4. In a four horse equalizer for plows the combination of a bracket clevis arranged transversely of the line of draft, a tongue clevis connected to said bracket clevis, a brace connecting the outer ends of said clevises with each other, a brace bar parallel with said bracket clevis, a hinge plate connecting said tongue clevis and brace bar and forming a flexible connection, eveners mounted on said clevises, and draw-rods connecting said eveners and brace-bar.

5. In a four-horse equalizer for plows, the combination of a hinged bracket clevis adapted for attachment to plow beams, an evener mounted on the outer end of said clevis, a tongue clevis adjustably connected to the inner end of the bracket clevis and extended approximately in alignment with the plow beam, an evener mounted on the rear portion of the tongue clevis, a brace connecting the outer ends of said clevises, a hinge plate connected at one end to the outer end of the tongue clevis, a brace bar connected approximately at its center to the remaining end of the hinge plate, whiffletrees mounted on said brace bar, draw rods extended and forming a connection between the extreme outer end of the brace bar and the extreme opposite ends of the eveners, draw-rods connected with the brace-bar intermediate of the aforesaid draw-rods and crossing each other connected to the adjacent ends of the eveners, and a brace connecting the hinged bracket clevis with the plow-beam.

6. In a four horse equalizer for plows the combination of the hinged bracket clevis adapted for attachment to the plow-beam, the tongue clevis attached to the bracket clevis, the eveners mounted on said clevises, the draw-rods connected at one end to said eveners, a brace-bar connected to the remaining ends of said draw rods, the hinge plate connecting the tongue clevis and brace bar, and a brace connecting the outer ends of said clevises, the forward end of which brace is provided with a slot forming a sliding connection with the adjacent end of the tongue clevis.

7. In a four-horse equalizer for plows the combination with the eveners and a brace-bar, of four connecting rods, two of said rods connecting the extreme outer ends of the brace-bar with the extreme outer ends of the eveners and converging toward said eveners, the two intermediate rods crossing each other and connecting the intermediate portion of the brace-bar with the adjacent ends of the evener, which connecting rods form draw-rods, whereby the draft of the brace-bar is applied to the evener.

8. A four-horse equalizer for plows comprising a bracket clevis arranged transversely of the line of draft and adapted for attachment to the plow-beam, a tongue clevis attached to and extending forward from the bracket clevis, a brace connecting the outer ends of said clevis, a brace-bar mounted on caster wheels, a hinge-bar connecting said brace bar with the forward end of the tongue clevis, sheaves mounted respectively on the tongue clevis and bracket clevis, and cables connected at each end to the brace bar, the bight of which cables is rove through said sheaves, and the inner end portions of which cables cross each other.

## 505,399. MACHINE FOR MAKING PYROXYLINE COLLARS. GUSTAVUS A. GOLDSMITH, New York, and ALFRED K. MERRILL, Brooklyn, N. Y.; said Merrill assignor to said Goldsmith. Filed May 11, 1893. Serial No. 473,773. (No model.)

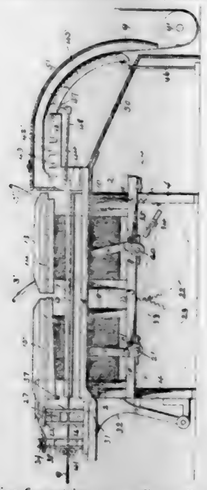
*Claim.*—1. In a machine for cutting pyroxyline collars from a web upon the interlocking principle, the combination of suitably shaped cutters and web feeding devices, with a heated table supporting the web under tension in its travel to the cutters, and thereby heating and straightening the web, substantially as described.

2. In a machine for cutting pyroxyline collars from a web upon the interlocking principle, the combination of suitably shaped cutters with heated surfaces in the line of travel of the web to the cutters, and feeding devices for dragging the web over said surfaces and thereby heating and straightening the same, substantially as described.

3. In a machine for making pyroxyline collars, the combination of a heating table and feeding devices for moving a web of pyroxyline in contact with the table so as to heat and straighten the web; with suitably shaped cutters for splitting the web on the lines of two interlocking collars, and a chilled die or dies located in advance of the cutters for embossing and chilling the web before it is cut, substantially as described.

4. In a machine for cutting pyroxyline collars from a web upon the interlocking principle, the combination with suitably shaped cutters and web feeding devices, of a convexly curved heated table supporting the web under tension in its travel to the cutters and thereby heating and straightening the web, substantially as described.

5. In a machine for cutting pyroxyline collars from a web upon the interlocking principle, the combination with suitably shaped cutters and web feeding devices, of a heated table and a tension device comprising an adjustable roller and a fixed heated cylinder in the path of the web in its travel to the cutters, substantially as described.

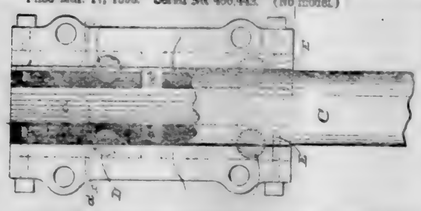


6. In a machine for cutting pyroxyline collars from a web upon the interlocking principle, the combination with suitably shaped cutters and web feeding devices, of means located in advance of the cutters for removing warps, buckles, and wrinkles from the web which means comprise a curved heated table over which the web is drawn, a fixed heated cylinder in the path of the web, and a roller between the table and cylinder and adjustable relative thereto to regulate the tension of the web, substantially as described.

7. In a machine for cutting pyroxyline collars from a web, upon the interlocking principle, the combination with suitably shaped cutters, a chilled embossing die, and web feeding devices, of means located in advance of the collar shaping devices, for removing kinks and wrinkles from the web, which means comprise a curved, heated table and fixed heated cylinder in the path of the web, and a roller between the table and cylinder, adjustable relative thereto to regulate the tension of the web, substantially as described.

## 505,400. STAMP-STEM GUIDE. HUGH P. GRUGIN, Helena, Mont.

Filed Mar. 17, 1893. Serial No. 466,442. (No model.)



*Claim.*—The stamp stem guide herein described, consisting of the socketed stock through which the stem passes, said stock having the open ended longitudinally disposed channels therein, opening into its socket, the balls seated and freely movable in the channels and bearing on the stem, and the removable stops at the open ends of the channels, substantially as herein described.

## 505,401. CIGAR ATTACHMENT. THOMAS GUILFOYLE, Collingwood, Canada. Filed Dec. 17, 1892. Serial No. 455,508. (No model.)

*Claim.*—1. A smoke deflector for cigars comprising a body portion apertured at its lower end to slip onto the cigar, and its upper end extended upwardly and forwardly to form a hood portion, substantially as and for the purpose described.

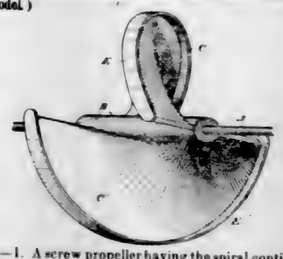
2. A smoke and heat deflector for cigars, comprising a body having a pocket D tapered from the rear to the front, said pocket adapted to receive the cigar therethrough and a hood portion projected upward and forward as and for the purpose described.

3. A heat and smoke deflector for cigars, comprising a body portion formed with a pocket to receive the cigar through it, a finger piece and a forwardly and upwardly extending hood portion as and for the purpose described.



4. A new article of manufacture for the purpose described, comprising a body portion having pocket D to receive the cigar, said pocket having clamping portions at its rear end, and a forwardly and upwardly extending hood portion, all substantially as set forth.

## 505,402. SCREW-PROPELLER. ALEXANDER D. HALL and GEORGE B. SLOAN, San Francisco, Cal. Filed Apr. 4, 1893. Serial No. 469,037 (No model.)



*Claim.*—1. A screw propeller having the spiral continuous blades of equal diameter from end to end projecting from opposite sides of the same hub, making each a full half revolution around the propeller shaft, the rear edge of each blade and the front edge of the opposite blade terminating in a radial plane taken through the axis of the shaft and upon opposite sides thereof, substantially as herein described.

2. A screw propeller having spiral continuous blades of equal diameter from end to end projecting from opposite sides of the same hub and interlocking with each other to form continuous channels upon opposite sides of the hub, said blades making a half revolution around the propeller shaft and having flanges fixed upon the outer edges of the blade projecting in each direction in a plane parallel with the axis of the propeller, substantially as herein described.

3. A screw propeller having spiral continuous blades of equal diameter from end to end projecting from opposite sides of the same hub, each forming a half turn about the propeller shaft with the front edges of the blades commencing upon opposite sides of the shaft and the rear edges lying in radial planes taken through the axis, and intersecting the front edges of the opposing blades, and flanges fixed to the peripheries of the blades, projecting upon each side thereof parallel with the axis of the propeller, substantially as herein described.

## 505,403. LATCH AND LOCK COMBINED. WILLIAM A. JUSTICE, New Athens, assignor of one-third to Elmore R. Justice, Bridgeport, Ohio. Filed Apr. 24, 1893. Serial No. 471,589. (No model.)



*Claim.*—1. In a latch, the combination with a knob-spindle and a double arm thereon; of a bell crank lever pivoted at its angle to the latch-casing above the knob-spindle with one arm passing down in rear of said double arm, a latch loosely connected with the lower extremity of this arm, the other arm of said lever extending to the rear, a weight pivoted at its upper rear corner to the rear end of the latter arm, and a guide within the latch-casing against which the rear edge of said weight slides, substantially as described.



2. The combination with a latch, a weight, a lever pivotally connecting them so as to normally shoot the latch, a knob-spindle, and a double arm thereon engaging said lever for retracting the latch; of a bolt, a tumbler therefor, and an extension on the tumbler engaging a cavity in and normally depressed by said weight, as and for the purpose set forth.

3. In a combined latch and lock, a knob-spindle having a double arm, a Y-shaped lever pivoted at its angle above said spindle with one arm standing in rear of said double arm, a latch pivoted to the extremity of this arm, the other arm of the lever extending about horizontally to the rear, and a weight pivotally connected therewith and having a cavity in its front edge; combined with a bolt, a tumbler therefor pivoted at its front end to the lock-casing, and an extension at the rear end of the tumbler entering said cavity and normally depressed by the weight, as and for the purpose set forth.

4. In a combined lock and latch, a knob-spindle having an arm, a Y-shaped lever pivoted at its angle above said spindle with one arm extending to the rear and the other arm having a vertical notch and engaged by said arm on the knob-spindle, a latch pivotally connected with the last-mentioned arm of the lever, a weight pivoted at its upper rear corner to the first-mentioned arm of the lever and having a cavity in its front edge, and a guide in the lock-casing against which the rear edge of the weight slides; combined with a bolt, a tumbler therefor pivoted at its front end to the lock-casing, and a rigid extension at the rear end of the tumbler passing over the knob-spindle, through said notch, and into said cavity in the weight, as and for the purpose hereinbefore set forth.

## 505,404. MACHINE FOR PERFORATING CHARACTERS. PHILIP L. KOSCIALOWSKI, San Francisco, Cal. Filed Apr. 4, 1893. Serial No. 469,014 (No model.)

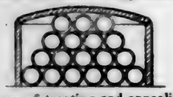


*Claim.*—1. An implement for cutting and perforating characters &c., comprising the two connected, rotatable disks or plates, one bearing the lower dies, and the other having coincident openings therein and the series of keys provided with dies standing opposite the aforesaid dies and openings, a receiving space being provided between the two disks or plates, and means for holding the article to be perforated stationary while the characters are being cut or perforated independently and intermediately of said disks or plates, whereby the perforating or cutting operation will be performed in the arc of a circle, producing a like arrangement of the perforations or characters in the article, substantially as set forth.

2. An implement for cutting or perforating characters, having connected rotatable die-carrying disks or plates, a pivoted spring-plate having at one end upwardly projecting pins or holders for the article to be acted on, passing through the false bottom and transversely through the receiving-space for the article to be acted on, and a spindle or plunger resting upon said spring-plate, and a cap or thumb-piece superposed upon said spindle or plunger, substantially as set forth.

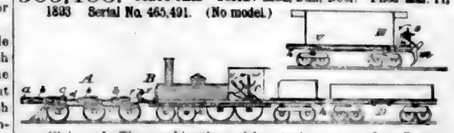
3. An implement for cutting or perforating characters &c., comprising a casing having a viewing opening and a false-bottom therein, the two connected, rotatable plates or disks, one bearing dies and the other having coincident openings therein, and the series of keys provided with dies standing opposite the afor- id dies and openings, a receiving space being left between said plates or disks, the spring-plates hung upon the under side of said false-bottom and having retaining pins projecting through said false-bottom and transversely through said receiving space, a spindle or plunger resting upon said spring-plate, and a cap or thumb piece having a tubular pendent portion fitted upon said spindle and into a corresponding opening or barrel in said casing, substantially as set forth.

## 505,405. METHOD OF TREATING CAR-AXLES. JOHN N. LAUTH, St. Louis, Mo., assignor of one-half to James Green, same place. Filed Jan. 12, 1892. Serial No. 417,839. (No specimens.)



*Claim.*—The process of treating and annealing car axles herein described, which consists in first heating them, next shaping them by swaging or hammering in customary manner and then bunching them together in close contact whereby the heat contained in the inner axles is slowly radiated through the surrounding axles with which they are in contact and the whole are cooled gradually and annealed and the hammer chill of the surfaces is eliminated, all as herein explained.

## 505,406. PILOT-CAR. GUSTAV LINK, Duff, Nebr. Filed Mar. 11, 1893. Serial No. 465,491. (No model.)



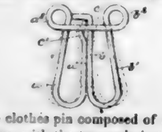
*Claim.*—1. The combination with a train or car, of a pilot car consisting of spring-connected trucks and movable connecting rods and the sliding spring-connected plates and movable rods, substantially as specified.

2. The combination with the pilot car and its spring-connected trucks and plates and movable rods, of the movable rods extending to the rear of the train and connected to the throttle valve rod of the locomotive and the air brakes of the train, substantially as and for the purposes, as specified.

3. The combination with the rear car and the movable spring-controlled rods, of the pivoted anchors and windlass and its details, the connecting chains and trip lever, the whole arranged to operate to lock the train to the road bed, substantially as specified.

4. The combination with the pilot car, having spring-connected trucks and sliding plates, with movable connecting rods, of a pilot or cow catcher located on the front truck whereby obstructions will be swept or thrown from the track substantially as specified.

## 505,407. CLOTHES PIN. HATTIE MERRILL, Westphalia, Kans. Filed Oct. 27, 1892. Serial No. 450,172. (No model.)



*Claim.*—1. The clothes pin composed of a single piece of wire bent into the W shape with the two ends in the middle to form the loops $a'$ $b'$ and with the outer and upper portions of said loops bent outwardly to form spring coils $a^2$ $b^2$, and then extended continuously across the ends at right angles to prevent the rising of the clothes line between the same over said ends substantially as shown and described.

2. The clothes pin composed of a single piece of wire bent into W shape, with its two ends $a$ $b$ in the middle and one of them bent to form seat $c'$, and having the outer member of its two loops $a'$ $b'$ bent outwardly at the top to form spring coils $a^2$ $b^2$, and then extended across the ends $a$ $b$ in the form of cross bar $c$ substantially as shown and described.

## 505,408. PROCESS OF TREATING ORES OF ZINC, MANGANESE, OR IRON. GIDEON E. MOORE, New York, N. Y. Filed Mar. 6, 1893. Serial No. 464,882. (No specimens.)

*Claim.*—1. The herein described process of treating ores of zinc, manganese and iron containing willemite and franklinite and contained in a limestone gangue which consists in calcining the ore and the gangue in a practically non-reducing atmosphere, causing the calcined gangue to slake or disintegrate by hydration, separating the willemite and franklinite from the disintegrated gangue and subjecting them to furnace treatment for the recovery of the metals they contain substantially as described.

2. The herein described process of treating ores of zinc, manganese and iron containing willemite and franklinite and contained in a limestone gangue which consists in calcining them in a practically non-reducing atmosphere to render the lime more or less caustic, causing the calcined gangue to slake or disintegrate by hydration, removing the disintegrated gangue, separating the minerals consisting chiefly of compounds of zinc from those consisting chiefly of compounds of manganese and iron and subjecting the several products to separate metallurgical treatment for the recovery of the metals they contain substantially as described.

3. The herein described process of treating ores of zinc, manganese and iron containing willemite and franklinite and contained in a limestone gangue, which consists in calcining them in a practically non-reducing atmosphere to render the gangue more or less caustic, causing the gangue to slake or disintegrate by hydration and separating the magnetic and non-magnetic ores from each other and from the disintegrated gangue substantially as described.

4. The herein described process of treating ores of zinc, manganese and iron containing willemite and franklinite and contained in a

limestone gangue, which consists in calcining them in a practically non-reducing atmosphere, causing the calcined gangue to slake or disintegrate by hydration, separating the magnetic and non-magnetic ores from each other and from the disintegrated gangue, and subjecting the magnetic and non magnetic ores to separate metallurgical treatment for the recovery of the metals they contain substantially as described.

5. The herein described process of treating ores of zinc, manganese and iron containing willemite and franklinite and contained in a limestone gangue which consists in calcining them in a practically non-reducing atmosphere to render the gangue more or less caustic, causing the calcined gangue to slake or disintegrate by hydration, removing the disintegrated gangue, separating the magnetic from the non-magnetic ores by the use of a magnetic separator and subjecting the magnetic and non-magnetic ores to separate metallurgical treatment for the recovery of the metals they contain substantially as described.

6. The herein described process of treating ores of zinc, manganese and iron containing willemite and franklinite and contained in a limestone gangue which consists in calcining them in a practically non-reducing atmosphere, causing the calcined gangue to slake or disintegrate by hydration, separating the ore consisting chiefly of compounds of zinc and the ore consisting chiefly of compounds of manganese and iron from each other and from the disintegrated gangue, smelting the ore consisting chiefly of compounds of manganese and iron in the blast furnace for spiegeleisen and subjecting the ore consisting chiefly of compounds of zinc to metallurgical treatment for the extraction of the zinc substantially as described.

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**505,409. PORTABLE FOLDING COT.** BENJAMIN D. MORRELL, Pittsburg, Pa. Filed July 19, 1892. Serial No. 440,455. (No model.)



*Claim.*—1. In a folding cot, the combination with the side rails —*a*—, of the inclined rails —$a^3$—, the connection between the rails —*a*—$a^3$— comprising the socket-piece —*a*—, adapted for the reception of the beveled extremities of said rails —*a*— and having a series of apertures —$a^4$—, the hinge piece —$a^5$— engaging the apertures, and the collars —$a^{10}$— on which said hinge piece is adjustably secured, as specified.

2. The combination with the side rails —*a*—, of the inclined rails —$a^3$— and the hinge connection between the same as described, the collars —$a^{11}$— loosely mounted on the reduced portions of said rails —*a*— and the extensions —C— having sockets —*c*— engaging the extremities of said reduced portions to retain said collars in position, as specified.

3. In a folding cot, the combination with the side rails —*a*— of the inclined rails —$a^3$— the hinge connection between the same as described, the collars —$a^{10}$—$a^{11}$— loosely mounted on said rails —*a*— and provided with slotted lugs —$a^2$—, the collapsible supporting legs —B—B— pivotally secured to said lugs and suitably braced, and the removably secured cover —D—, as specified.

4. In a folding cot, the combination with the side rails *a*, of the inclined rails $a^3$, and the X-shaped legs B, supporting the first named by a pivotal connection comprising the collars $a^{10}$, $a^{11}$, having the lateral slotted projections $a^3$, adapted to be held in a recess formed in the upper end of the leg B, by the pivotal pin $a^{13}$, substantially as described.

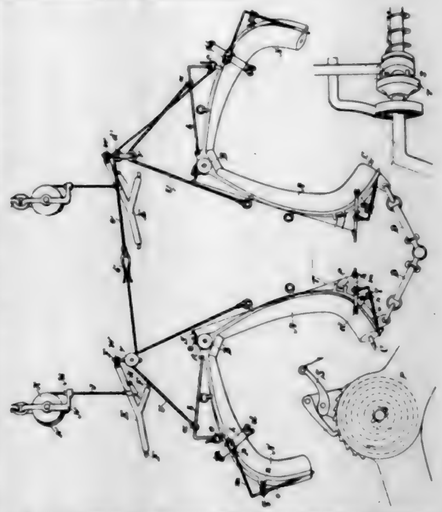
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**505,410. FIRE-ENGINE HARNESS.** THOMAS MURPHY, San Francisco, Cal. Filed May 13, 1893. Serial No. 474,103. (No model.)

*Claim.*—1. In a harness, the two-part collars hinged together at the top and adapted to close and lock at the bottom, a pawl and ratchet mechanism for holding the parts of the collars normally open, and a spring at the hinge joint for automatically closing the parts of the collars when the said retaining mechanism is disengaged.

2. In a harness, collars hinged together at the top adapted to close and lock at the bottom, a spring contained in the hinge box by which the collars are automatically closed, a pawl and ratchet mechanism by which when they are opened they are retained in the open position, and a mechanism whereby the pawl and ratchet are disengaged whereby the spring is allowed to act to close the collars together, substantially as herein described.

3. In a harness, the hinge automatically closing collars, the two-part collars hinged together at the top adapted to close and lock at the bottom, a suspending chain, a pulley supported from a point above the collar over which the chain passes, a permanent attachment for the chain upon one side of the collar, and a bar connected with the other side of the collar upon which the outer end of the chain is slidable, substantially as herein described.



4. In a harness, the two-part collars hinged together at the top adapted to close and lock at the bottom, the suspending chains connected with the collars, pulleys around which the chains pass, a frame situated above the harness having retractile bars projecting from its front and rear ends, rings connected with the suspending pulleys adapted to hang upon side bars, and a mechanism whereby said bars are retracted within the frame and the harness disengaged therefrom, substantially as herein described.

5. In a double harness, the two collars hinged at the top, adapted to close and lock at the bottom, suspending chains and sprocket pulleys and frames suspended above each harness from which they are suspended above the backs of the horses, springs connected with the hinge joints of the collars whereby the collars are automatically closed when released, a pawl and ratchet mechanism connected with one section or part of each of the collars, whereby it is retained in an open position against the tension of the spring, means for disengaging the pawls and ratchets and allowing the collars to close, a cord or strap connecting the movable side of one of said collars with the sprocket wheel around which the suspension chain of the opposite collar passes, whereby the wheel is rotated and the outer portion of the second collar is allowed to close simultaneously with the closing of the first named collar, substantially as herein described.

6. In a harness, the collars hinged at the top adapted to close and lock at the bottom, bent arms *m* connected with and turning upon the lower part of the collar, spring clasps at the ends of the bent arms, in which the snap hooks of the reins are held, spiral springs surrounding the arms and retaining them normally with the inner ends projecting through the meeting ends of the collar when the latter is open, said ends being forced backward against the tension of the spring when the collar is closed, springs connected with said arms whereby the outer bent portions thereof are thrown up against a collar when released by the closing of the collar and the removal of the snap hooks, substantially as herein described.

7. In a harness having collars with hinged separable sections, and means for opening and closing the same, the snap hooks of the reins consisting of the heart-shaped sections hinged together at the point and adapted to open and close at the outer ends to receive the two ring extensions of the two parts of the snap hook slidable within an exterior case, and having lugs projecting through slots in the side of the case, a spring by which the inner ends of the arms are separated and the snap hook closed, substantially as herein described.

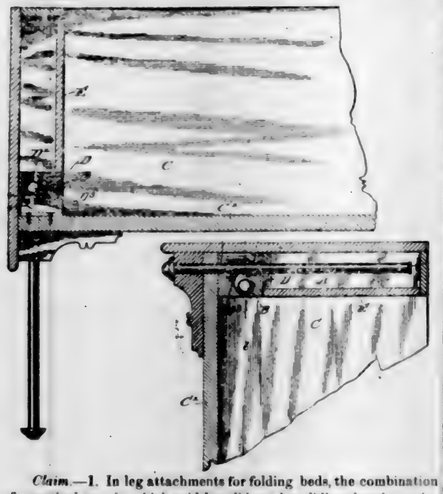
8. In a harness having collars with hinged separable sections, and means for opening and closing the same, the heart-shaped snap hooks hinged together at the apex and adapted to open and close at the opposite side for the reception of the bit ring, extensions rearwardly from the hinge joint slidable within an inclosing case having a spring by which they are normally separated and the snap hook closed, and



lugs projecting through slots in the side of the case by the compression of which the snap hook is opened, a pin passing through the case behind the hinge of the snap hook, over which pin the extensions of the snap hook are slidable, whereby the snap hook may be opened when it is in its rearmost position, and is locked to prevent opening when it is drawn forward, substantially as herein described.

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**505,411. LEG FOR WARDROBE-BEDS.** WILLARD A. MORRISON and CHARLES L. AMES, of Chicago, Ill., assignors to the Ames & Frost Company, of Illinois. Filed July 3, 1890. Serial No. 357,634. (No model.)

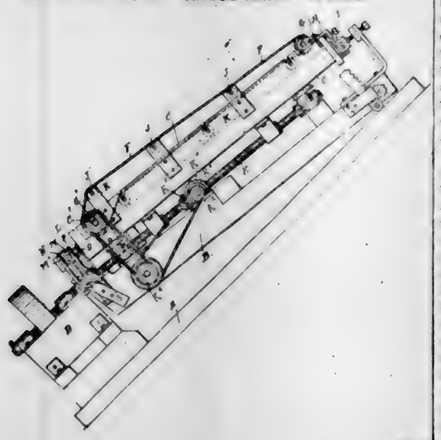


*Claim.*—1. In leg attachments for folding beds, the combination of a vertical way in which said leg slides a leg sliding therein, an inclined way extending into the path of said leg, with a free gravity key playing in said inclined way, said key being of such a size that it will extend into the path of said leg, a portion of said key being engaged by the walls of said vertical way to prevent the leg from entering, substantially as described.

2. In leg attachments for folding beds, the combination of a casing secured at the foot of the bed, said casing having a slot for the insertion of the leg and a slot of larger area in cross section extending from the slot carrying the leg at an angle, said slot having a ball therein which falls by gravity into the lower end of the larger slot out of the path of travel of the leg when the bed is folded, and over the end of the leg when the bed is unfolded, substantially as described.

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**505,412. ORE-CONCENTRATOR.** THOMAS MCGLEW, San Francisco, Cal. Filed Feb. 20, 1893. Serial No. 463,104. (No model.)



*Claim.*—1. In an ore concentrator of the character described, the combination of a longitudinally and transversely reciprocating frame or table, cylinders mounted at each end thereof, an endless belt on said cylinders, intermediate supporting rollers for said belt, and mechanism, substantially as described for operating the said belt and frame from the shaft E, with the buffer plate M having suitable buffers thereon, and support for said buffer plate, as and for the purpose set forth.

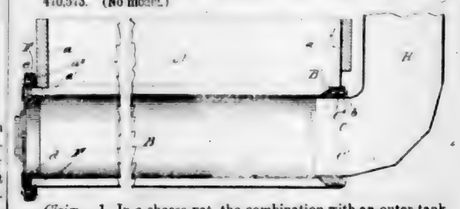
2. In an ore concentrator of the character described the combination of a longitudinally and transversely reciprocating frame or table, a cylinder mounted on one end of said frame, a cylinder mounted in an adjustable bearing at the other end thereof, an adjustable bearing for said cylinder, an endless belt on said cylinders, intermediate supporting rollers for said belt, and pulleys and belts, substantially as described, operated from the longitudinal shaft E; with the buffer plate M having suitable buffers thereon, support for said buffer plate, and hooks or guides for attaching said buffer plate to said support, the said buffer plate being adapted to reciprocate transversely of the machine, as set forth.

3. The combination with the shaking-bed or frame, of an ore concentrator, of the transverse-plate M carrying elastic buffers O, O, and bent arms or hook-plates N N moving on a fixed plate or runway M°, as specified.

4. The combination with the shaking bed or frame of an ore concentrator, of the buffer-plate M having suitable buffers thereon, support for said buffer plate, and hooks or guides for attaching said buffer-plate to said support, the said buffer-plate being adapted to reciprocate transversely of the machine, as set forth.

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**505,413. CHEESE-VAT HEATER.** ROBERT OLP, Manitowoc, assignor to Gottlieb H. Simon, Kiel, Wis. Filed Apr. 17, 1893. Serial No. 470,573. (No model.)

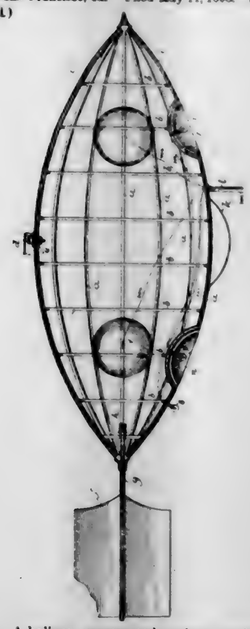


*Claim.*—1. In a cheese vat, the combination with an outer tank or vat provided with a metallic lining having a longitudinal trough in its bottom, said lining being provided with apertures of different diameters at opposite ends of said trough and the lining flanged outwardly at the front aperture, of a removable heater tube having annular flanges or rings upon its opposite ends of correspondingly different diameters, the smaller one of said flanges or rings being of such size as to pass freely through the larger aperture, the rear flange or ring of the heater being made thick and drilled or tapped for the reception of fastening screws, a packing ring interposed between this rear flange and the adjacent end wall of the lining, another ring on the outside of said rear wall, screws passing through said rings and rear end wall into the thick rear flange of the heater, a facing ring having a horizontal annular flange within the front end of the heater tube and a vertical annular flange fitted against the front flanged end of said heater tube, a packing ring between the flanged ends of the heater and lining and an exterior ring against this lining flange there being an annular space between the heater tube, and the lining and packing-ring, at this point, and exterior fastening bolts uniting these parts, whereby the packings and joints are always cooled by contact with the water in the vat, while the fastening screws and bolts are never exposed to contact with the water, substantially as set forth.

2. In a cheese vat, the combination with an outer tank or vat provided with a metallic lining having a longitudinal trough in its bottom, said lining being provided with apertures of different diameters at opposite ends of said trough and the lining flanged outwardly at the front aperture, of a removable heater tube having annular flanges or rings upon its opposite ends of correspondingly different diameters, the smaller one of said flanges or rings being of such size as to pass freely through the larger aperture, the rear flange or ring of the heater being made thick and drilled or tapped for the reception of fastening screws, a packing ring interposed between this rear flange and the adjacent end wall of the lining, another ring on the outside of said rear wall, screws passing through said rings and rear end wall into the thick rear flange of the heater, a facing ring fitted to the front flanged end of the heater and having a horizontal annular flange within the latter, an exterior ring fitted against one surface of the outwardly flanged portion of the lining adjacent to the front aperture, and having a horizontal flange inclosing and flush with the outer

surface of the facing ring, a packing ring interposed between the front flanged end of the heater tube and the adjacent outwardly flanged portion of the lining, there being an annular space between the heater tube, and the lining and packing-ring, at this point, and fastening bolts passed through and uniting the facing ring, heater flange, packing ring, lining flange and exterior ring, all substantially as and for the purpose set forth.

## 505,414. BALLOON FOR OBSERVING DISTANT OBJECTS. CHAS. A. SMITH, San Francisco, Cal. Filed May 11, 1893. Serial No. 473,877. (No model.)



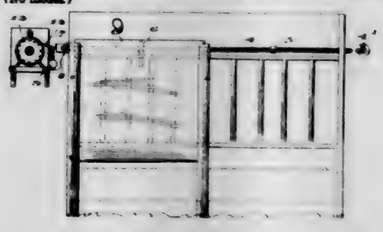
*Claim.*—1. A balloon constructed as shown and described with concavities or recesses in its surface, concave reflectors set in said concavities, and electric lamps mounted in front of said reflectors, the arrangement being such that the light of the lamps will be reflected downward.

2. The combination with the hollow balloon provided with lamps and reflectors as shown and described, of the tubular rudder stem and the rudder, the said stem being provided within the balloon with a valve opening inward, as and for the purpose described.

3. The combination with a body or balloon buoyant in air, of electric lamps, reflectors arranged with relation to said lamps to throw the light thereof to the ground or upon distant objects or places, and a convex reflector arranged at the bottom of the balloon with the convex surface downward.

4. The combination with a body or balloon buoyant in air, of a convex reflector below the same with the convex surface downward, electric lamps mounted on said body or balloon, and concave reflectors arranged with relation to said lamps to throw the light thereof within the radius or field of reflection of the convex reflector.

## 505,415. TIME RELEASING DEVICE FOR GRAVITY-DOORS. WILLIAM L. WELLER, Jr., Louisville, Ky., assignor to the Time Stock Feeder Company, same place. Filed Feb. 13, 1893. Serial No. 462,212. (No model.)

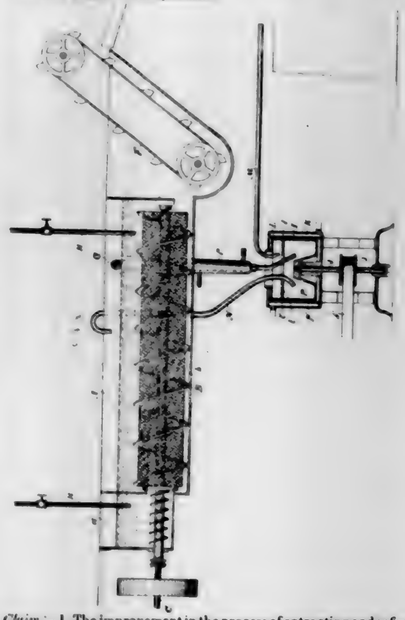


*Claim.*—1. In an apparatus of the described class, a gravity door, a spring catch on said door, a balanced rocker-bar sustained in an elevated position in proximity to said door, a lug on said rocker-bar to engage said spring-catch, and a cranked extension of said rocker-bar normally sustained by a balance weight at the opposite end of said rocker bar, all combined substantially as specified.

2. In an apparatus of the described class, a gravity door, a spring-catch on the inner face of the said door, a balanced rocker-bar suspended in proximity to said door at its top edge, adjustable lugs projecting laterally from said bar in proximity to said spring-catches, an angular extension of said rocking bar, a balance weight on said rocking bar, a second angular extension on the opposite end of said bar, a cord extending thence to a weight, as —9—, a pivoted lever carrying said weight at its shorter end, a clock lever, as —12—, projecting laterally from a clock an alarm clock, an alarm disk in said clock, and a slot in said alarm disk adapted to come into coincidence with an angular portion of said lever —12 at certain predetermined times, all combined substantially as specified.

3. In an apparatus of the described class, a balanced rocking-bar, a cranked extension of the same at one end, a weight on said cranked extension, a lug projecting laterally from said rocking bar, a gravity spring, a door-catch on said door engaging said lug, a second cranked extension at the opposite end of said bar, an alarm clock, a clock-lever, as —12—, a balanced lever normally held in position by said clock-lever, a weight sustained by said balanced lever, and a cord connecting said weight and the cranked extension of said rocking-bar, all combined substantially as specified.

## 505,416. PROCESS OF EXTRACTING AND REFINING ASPHALTUM, &c. ARTHUR F. L. BELL, San Francisco, Cal., assignor to the California Petroleum and Asphalt Company, same place. Filed Feb. 2, 1893. Serial No. 460,773. (No specimens.)



*Claim.*—1. The improvement in the process of extracting and refining asphaltum, mineral pitch, bitumen, Trinidad lake pitch, petroleum, petroleum oils, paraffine, paraffine oils, and kindred substances, which consists first, in heating in water and keeping in motion the material with its carrying sand, or vehicle, whereby the former separates from the sand, or vehicle, and rises and floats on the surface of the water, and then in discharging the carrying sand, or vehicle, and subjecting the material to be refined, to centrifugal force, whereby it is separated from the water with which it became impregnated in the process of separation from the sand, or vehicle substantially as described.

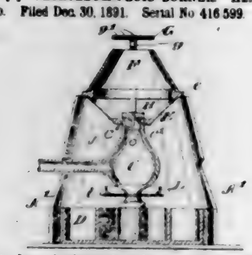
2. The improvement in the process of extracting and refining asphaltum, mineral pitch, bitumen, Trinidad lake pitch, petroleum, petroleum oils, paraffine, paraffine oils, and kindred substances, which consist first in heating in water the material with its carrying sand, or vehicle, whereby the material to be refined separates from the sand, or vehicle, and rises to and floats on the surface of the water, then in subjecting the material to be refined to centrifugal force whereby it is separated from the water with which it became impregnated in the process of separation from the sand, or vehicle, and, finally, returning the water so separated to the bath in which the separation from the sand, or vehicle, is effected, substantially as described.

3. The improvement in the process of extracting and refining asphaltum, mineral pitch, bitumen, Trinidad lake pitch petroleum and petroleum oils, paraffine, paraffine oils, and kindred substances, which consists first, in heating in water and maintaining a continuous flow of the material with its carrying sand, or vehicle, whereby the material separates from the sand, or vehicle, and rises to and floats on the surface of the water, and then in subjecting the material to be refined to centrifugal force, whereby it is separated from the water with which it became impregnated in the process of separation from the sand, or vehicle, the separation of the material from the sand or vehicle, and the transfer of the water impregnated material to and its separation from said water by centrifugal force, being a continuous operation, whereby the process may be carried on continuously with a constant supply and discharge, substantially as described above.

4. The improvement in the process of extracting and refining asphaltum, mineral pitch, bitumen, Trinidad lake pitch, petroleum, petroleum oils, paraffine, paraffine oils, and kindred substances, which consists, first, in heating in water the material with its carrying sand, or vehicle, whereby the material separates from the sand or vehicle and rises and floats on the surface of the water, and then in subjecting the material to be refined, to centrifugal force, whereby it is separated from the water with which it became impregnated in the process of separation from the sand, or vehicle, and of constantly keeping the material at a temperature to produce a substantial difference between the specific gravities of the material itself and of the water contained in it, so as to make possible a separation of the two by centrifugal action, substantially as above described and for the uses and purposes set forth.



## 505,417. PETROLEUM-FLUID BURNER. HENRY BRAGG, Cleveland, Ohio. Filed Dec. 30, 1891. Serial No. 416,599. (No model.)



*Claim.*—1. In a hydrocarbon burner, the combination with a frame, of a vaporizer mounted thereon, and a shell inclosing said vaporizer, said shell being in two sections, each of which is hinged to the frame, substantially as set forth.

2. In a hydrocarbon burner, the combination with a frame, of a vaporizer mounted thereon and provided with a supply pipe, and a shell inclosing said vaporizer, said shell being provided with oppositely arranged openings through one of which said supply pipe protrudes, and being in two sections, each of said sections being hinged to said frame, substantially as set forth.

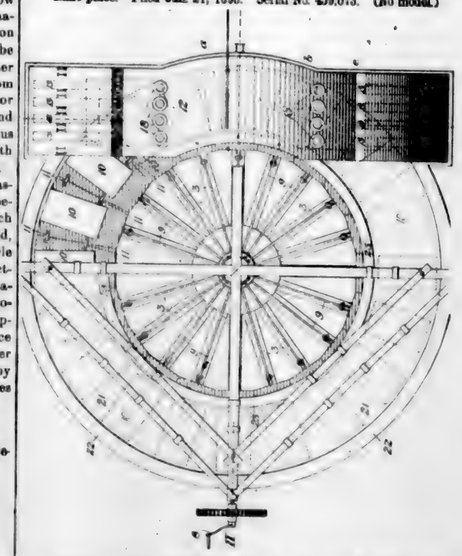
3. In a hydrocarbon burner, the combination with a vaporizer having a supply pipe and a vapor outlet, of a slitted plug arranged in said vapor outlet with its slits communicating between the interior and exterior of said vaporizer, said plug being also provided with a central bore and a valve seat, and a valve adapted to fit said valve seat, substantially as set forth.

4. In a hydrocarbon burner, the combination with a frame, of the pan D, mounted thereon and provided with a central interiorly screw threaded boss, the vaporizer having a supply pipe and an outlet and being provided with a screw threaded lower portion engaging said boss of the pan, substantially as set forth.

5. The combination in a hydrocarbon burner, of a vaporizer having a supply pipe and a reduced and screw threaded upper end forming a vapor outlet, of the frame E having a screw threaded collar engaging said screw threads on the vaporizer, said frame being provided with a ring $e'$ at its upper end, and a cone F mounted on said ring, substantially as set forth.

6. The combination in a hydrocarbon burner, of a vaporizer provided with a supply pipe and having an interiorly and exteriorly screw threaded upper end forming a vapor outlet, the diametrically slitted plug H arranged in said upper end of the vaporizer with its slits communicating between the interior and exterior thereof, said plug being further provided with a central bore and a valve seat, the valve fitting said seat and having a stem arranged in said central bore of the plug, the frame E having an interiorly screw threaded collar at its base, said collar engaging the exterior screw threads of the vaporizer, and the cone F mounted on said frame, substantially as set forth.

## 505,418. COMBINED FLATTENING AND ANNEALING OVEN. JAMES CLARDY, Jeannette, Pa., assignor of one-half to Frederick Miller, same place. Filed Jan. 21, 1893. Serial No. 459,073. (No model.)



*Claim.*—1. The method of flattening and annealing glass, consisting in flattening the cylinders upon suitable supports, moving said supports through an annealing oven and allowing the sheets to become entirely annealed and cooled before removal from the supports; substantially as described.

2. The method of flattening and annealing glass, consisting in flattening the cylinders upon suitable stones, moving said stones through an annealing oven, allowing the sheets thereon to become entirely annealed and cooled, removing the sheets, and reheating the stones preparatory to flattening other cylinders thereon; substantially as described.

3. The combination with an annular annealing oven and carrier passing therethrough, of a double arched flattening oven built over a portion of the path of said carrier, substantially as described.

4. An endless carrier, having a double arched flattening oven built over a portion of its length, substantially as described.

5. A flattening oven, having a hollow roof, flues leading from an exterior source of heat into the space therein, openings leading from said space into the flattening-chamber, and means for closing said openings, substantially as described.

6. A flattening oven, having a hollow roof, flues leading thereinto, openings leading therefrom to the oven, and a shield extending over part of the flattening stones, substantially as described.

7. A flattening-oven, having an adjustable shield between the adjacent supports for the glass, upon the wheel substantially as described.

8. A spindle carrying flattening stones, and means for vertically adjusting said spindle, substantially as described.

## 505,419. BLOCK-SIGNAL APPARATUS. JOHANN H. FRISCHEN, Berlin, Germany, assignor to Siemens & Halske, same place. Filed Apr. 13, 1893. Serial No. 470,171. (No model.) Patented in Germany Jan. 22, 1892, No. 65,695.

*Claim.*—1. A block signal apparatus, comprising a stop rod, formed of three independently movable aligned parts placed end to end, and mechanically and electrically operative latch devices, substantially as described, whereby the lower part of the stop rod may be mechanically locked to prevent operation of dependent signal adjusting mechanism while the other parts of the rod operatively con-

trol and are controlled by the electrical latch devices, as herein set forth.

2. A block signal apparatus, comprising a stop rod formed of three independently movable aligned parts placed end to end, and mechanically and electrically operative latch devices and electrical signaling devices, substantially as described, whereby the lower part of the stop rod may be mechanically locked to prevent operation of dependent signal adjusting mechanism, while the two upper parts of the rod control and are controlled by the electrical latch and signaling devices, as herein set forth.



3. A block signal apparatus, comprising a three-part stop rod each part having a collar, a two part spring actuated pawl having one fulcrum and a stop pin and adapted to the stop rod, a stop lever adapted to detain parts of the stop rod, a pivoted signal frame adapted to detain the stop lever, and electro magnetic devices operating or permitting operation of said signal frame, substantially as described.

4. A block signal apparatus, comprising a three-part stop rod each part having a collar, a two-part spring actuated pawl adapted to the stop rod, a stop lever adapted to detain parts of the stop rod, a pivoted signal frame adapted to detain the stop lever, electro magnetic devices operating or permitting operation of said signal frame, and a line wire contact lever operative from the stop rod, substantially as described.

5. A block signal apparatus, comprising a stop rod, formed of three independently movable aligned parts placed end to end, a signal operating lever adapted to be locked by or through agency of the stop rod, and mechanically and electrically operative latch devices to which the stop rod sections are adapted, substantially as described.

6. A block signal apparatus, comprising a three-part stop rod, each part having a collar, a two-part spring actuated pawl adapted to upper and lower parts of the stop rod, a stop lever adapted to detain parts of the stop rod, a signal operating lever adapted to be locked by or through agency of the stop rod, a pivoted signal frame adapted to detain the stop lever, and electro magnetic devices operating or permitting operation of said signal frame, substantially as described.

7. A block signal apparatus, comprising a three-part stop rod, each part having a collar, a two-part spring actuated pawl adapted to upper and lower parts of the stop rod, a stop lever adapted to detain parts of the stop rod, a signal operating lever adapted to be locked by or through agency of the stop rod, a pivoted signal frame adapted to detain the stop lever, electro magnetic devices operating or permitting operation of said signal frame, and a line wire contact lever operative from the stop rod, substantially as described

8. In block signal apparatus, the combination with the three-part stop rod 1, 2, 3, having collars 5, 6, 7, and springs 8, 9, 10, of a pawl 12, 13, fulcrumed at 11, and having springs 15, 16, said part 12, having faces or shoulders 19, 20, 21, and the part 13, having a stop pin 14, and tappet 22; said stop rod portion 3, adapted to lock dependent operating devices, substantially as described.

9. In block signal apparatus, the combination with the three-part stop rod 1, 2, 3, having collars 5, 6, 7, and springs 8, 9, 10, of a pawl 12, 13, fulcrumed at 11, and having springs 15, 16, said part 12, having faces or shoulders 19, 20, 21, and the part 13, having a stop pin 14, and tappet 22; a spring pressed stop lever 32, having a shoulder 34, a signal frame 28, on a shouldered fulcrum 31, adapted to detain the lever 32, and mechanical and electrical devices actuatin: the signal frame, substantially as described.

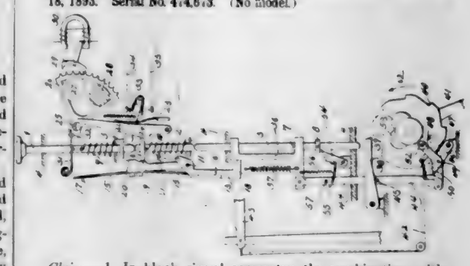
10. In block signal apparatus, the combination with the three-part stop rod 1, 2, 3, having collars 5, 6, 7, and springs 8, 9, 10, of a pawl 12, 13, fulcrumed at 11, and having springs 15, 16, said part 12, having faces or shoulders 19, 20, 21, and the part 13, having a stop pin 14 and tappet 22; a spring pressed stop lever 32, having a shoulder 34, a signal frame 28, on a shouldered fulcrum 31, adapted to detain the lever 32, a spring 36, normally lifting the signal frame, and an electro magnet 42, having an escapement armature 41, engaging the signal frame, substantially as described.

11. In block signal apparatus, the combination with the three-part stop rod 1, 2, 3, having collars 5, 6, 7, and springs 8, 9, 10, of a pawl 12, 13, fulcrumed at 11, and having springs 15, 16, said part 12, having faces or shoulders 19, 20, 21, and the part 13, having a stop pin 14, and tappet 22; a spring pressed stop lever 32, having a shoulder 34, a signal frame 28, on a shouldered fulcrum 31, adapted to detain the lever 32, mechanical and electrical devices actuating the signal frame, and a line wire contact lever operative from the stop rod, substantially as described.

12. In block signal apparatus, the combination with the three-part stop rod 1, 2, 3, having collars 5, 6, 7, and springs 8, 9, 10, of a pawl 12, 13, fulcrumed at 11, and having springs 15, 16, said part 12, having faces or shoulders 19, 20, 21, and the part 13, having a stop pin 14, and tappet 22; a spring pressed stop lever 32, having a shoulder 34, a signal frame 28, on a shouldered fulcrum 31, adapted to detain the lever 32, a spring 36, normally lifting the signal frame, an electro magnet 42, having an escapement armature 41, engaging the signal frame, and a line wire contact lever 23, operative from the stop rod, substantially as described.

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**505,420. BLOCK-SIGNAL APPARATUS.** JOHANN H. FRISCHEN, Berlin, Germany, assignor to Siemens & Halske, same place. Filed May 18, 1893. Serial No. 474,673. (No model.)



*Claim.*—1. In block signal apparatus, the combination, with a signal lever, a pawl adapted to lock the lever and a stop rod locking the pawl, of a stirrup movable on the stop rod, a draft rod coupled to the stirrup and adapted to disengage the pawl from the signal lever, and a device connected to the draft rod and operative by the signal lever for depressing the draft rod and stirrup, substantially as described.

2. In block signal apparatus, the combination, with a signal lever, a pawl adapted to lock the lever and a stop rod locking the pawl, of a stirrup movable on the stop rod, a draft rod coupled to the stirrup and adapted to disengage the pawl from the signal lever, a device connected to the draft rod and operative by the signal lever for depressing the draft rod and stirrup, and a spring actuated two-part pawl adapted to mechanically lock the stirrup and signal lever, substantially as described.

3. In block signal apparatus, the combination, with a signal lever, a pawl adapted to lock the lever and a stop rod locking the pawl, of a stirrup movable on the stop rod, a draft rod coupled to the stirrup and adapted to disengage the pawl from the signal lever, a device connected to the draft rod and operative by a signal lever for depressing the draft rod and stirrup, and a detent for the stop rod removable therefrom by the draft rod, substantially as described.

4. In block signal apparatus, the combination, with a signal lever, a pawl adapted to lock the lever and a stop rod locking the pawl, of a stirrup movable on the stop rod, a draft rod coupled to the stirrup and adapted to disengage the pawl from the signal lever, and a two-part lever device coupled to the draft rod and operative to depress said rod on movement of the signal lever in one direction, substantially as described.

5. In block signal apparatus, the combination, with a signal lever, a pawl adapted to lock the lever, and a stop rod locking the pawl, of a stirrup movable on the stop rod, a draft rod coupled to the stirrup and adapted to disengage the pawl from the signal lever, a detent for the stop rod removable therefrom by the draft rod, and a two-part lever device coupled to the draft rod and operative to depress said rod on movement of the signal lever in one direction, substantially as described.

6. In block signal apparatus, the combination, with a signal lever having one deep and other shallower notches, a pawl adapted to lock into said notches and a stop rod locking the pawl, of a stirrup movable on the stop rod, a draft rod coupled to the stirrup and adapted to disengage the pawl from the signal lever and a device connected to the draft rod and operative by the signal lever for depressing the draft rod and stirrup, substantially as described.

7. In block signal apparatus, the combination, with a signal lever having one deep and other shallower notches, a pawl adapted to lock into said notches and a stop rod locking the pawl, of a stirrup movable on the stop rod, a draft rod coupled to the stirrup and adapted to disengage the pawl from the signal lever, a device connected to the draft rod and operative by the signal lever for depressing the draft rod and stirrup, and a spring actuated two-part pawl adapted to mechanically lock the stirrup and signal lever, substantially as described.

8. In block signal apparatus, the combination, with a signal lever having one deep and other shallower notches, a pawl adapted to lock into said notches and a stop rod locking the pawl, of a stirrup movable on the stop rod, a draft rod coupled to the stirrup and adapted to disengage the pawl from the signal lever, a device connected to the draft rod and operative by the signal lever for depressing the draft rod and stirrup, and a detent for the stop rod removable therefrom by the draft rod, substantially as described.

9. In block signal apparatus, the combination, with a signal lever having one deep and other shallower notches, a pawl adapted to lock into said notches and a stop rod locking the pawl, of a stirrup movable on the stop rod, a draft rod coupled to the stirrup and adapted to disengage the pawl from the signal lever and a two part lever device coupled to the draft rod and operative to depress said rod on movement of the signal lever in one direction, substantially as described.

10. In block signal apparatus, the combination, with a signal lever having one deep and other shallower notches, a pawl adapted to lock into said notches and a stop rod locking the pawl, of a stirrup movable on the stop rod, a draft rod coupled to the stirrup and adapted to disengage the pawl from the signal lever, a detent for the stop rod removable therefrom by the draft rod, and a two part lever device coupled to the draft rod and operative to depress said rod on movement of the signal lever in one direction, substantially as described.

11. In block signal apparatus, the combination with a signal lever, a pawl adapted to lock the lever, a sectional stop rod locking the pawl, a stirrup movable on the stop rod, a draft rod coupled to the stirrup and adapted to disengage the pawl from the signal lever, a device connected to the draft rod and operative by the signal lever for depressing the draft rod and stirrup, a two part pawl adapted to lock and release the stirrup, a trip lever adapted to lock and release parts of the stop rod, and a rocking electrically operative signal frame adapted to detain the trip lever and exchange the mechanical locking of the stop rod and signal lever by the two part pawl for the electrical locking of said stop rod by the trip lever and the signal frame, substantially as described.

12. In block signal apparatus, the combination, with a signal lever, a pawl adapted to lock the lever, a sectional stop rod locking the pawl, a stirrup movable on the stop rod, a draft rod coupled to the stirrup and adapted to disengage the pawl from the signal lever, a device connected to the draft rod and operative by the signal lever for depressing the draft rod and stirrup, a detent for the stop rod removable therefrom by the draft rod, a two part pawl adapted to lock and release the stirrup, a trip lever adapted to lock and release parts of the stop rod and a rocking electrically operative signal frame adapted to detain the trip lever and exchange the mechanical locking of the stop rod and signal lever for the electrical locking thereof, substantially as described.

13. In block signal apparatus, the combination, with a signal lever, a pawl adapted to lock the lever, a sectional stop rod locking the pawl, a stirrup movable on the stop rod, a draft rod coupled to the stirrup and adapted to disengage the pawl from the signal lever, a two part lever device coupled to the draft rod and operative to depress said draft rod on movement of the signal lever in one direction, a detent for the stop rod removable therefrom by the draft rod, a two part pawl adapted to lock and release the stirrup, a trip lever adapted to lock and release parts of the stop rod and a rocking electrically operative signal frame adapted to detain the trip lever and exchange the mechanical locking of the stop rod and signal lever for the electrical locking thereof, substantially as described.

14. In block signal apparatus, the combination, with a signal lever having one deep and other shallower notches, a pawl adapted to lock into said notches, a sectional stop rod locking the pawl, a stirrup movable on the stop rod, a draft rod coupled to the stirrup and adapted to disengage the pawl from the signal lever, a two part lever device coupled to the draft rod and operative to depress said draft rod on movement of the signal lever in one direction, a detent for the stop rod removable therefrom by the draft rod, a two part pawl adapted to lock and release the stirrup, a trip lever adapted to lock and release parts of the stop rod, and a rocking electrically operative signal frame adapted to detain the trip lever and exchange the mechanical locking of the stop rod and signal lever for the electrical locking thereof, substantially as described.

15. In block signal apparatus, the combination, with a signal lever, a pawl adapted to lock the lever, a sectional stop rod locking the pawl, a stirrup movable on the stop rod, a draft rod coupled to the stirrup and adapted to disengage the pawl from the signal lever, a device connected to the draft rod and operative by the signal lever for depressing the draft rod and stirrup, a two part pawl adapted to lock and release parts of the stop rod, a line wire contact lever operative by the stop rod, and a rocking electrically operative signal frame adapted to detain the trip lever and exchange the mechanical lever of the stop rod and signal lever for the electrical locking thereof, substantially as described.

16. The combination, with the signal lever 41 having notch 39 and one or more projections 53, a pawl 38, adapted to said notch, a stop rod section 3, having pin 7, a stirrup 36, loose on rod 3, a spring 37, lifting the stirrup, a draft rod 44, coupled to the stirrup and having a pin 45, and a duplex lever device 46, 50, 48, 51, coupled to the draft rod and operative by the signal lever, substantially as described.

17. The combination, with a signal lever 41, having notches 39, 40, and one or more projections 53, a pawl 38, a stop rod section 3, having pin 7, a stirrup 36, a spring 37 therefor, a rod 44, having a pin 45, and a duplex lever device 46, 50, 48, 51, substantially as described.

18. The combination, with the signal lever 41, having notch 39 and one or more projections 53, a pawl 38, a stop rod section 3, having pin 7 and shoulder 8, a stirrup 36, a spring 37 therefor, a rod 44 having pins 45, 57, a duplex lever 46, 50, 48, 51, and a stop rod detent 54, 55, 56, substantially as described.

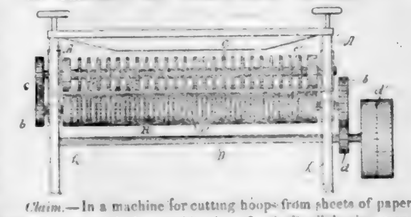
19. The combination, with the signal lever 41, having notches 39, 40, and one or more projections 53, a pawl 38, a stop rod section 3, having pin 7 and shoulder 8, a stirrup 36, a spring 37 therefor, a rod 44, having pins 45, 57, a duplex lever device 46, 50, 48, 51, and a detent 54, 55, 56, adapted to the stop rod shoulder 8 and draft rod pin 57, substantially as described.

20. The combination, with the signal lever 41, having notch 39, and one or more projections 53, a pawl 38, adapted to said notch, a stop rod comprising sections, 1, 2, 3, having projections 5, 6, 7, 8, springs 9, 10, lifting rod sections 1, 2, a two part pawl 12, 13, 14, 15, 16, a trip lever 22, a rocking electrically operative signal frame 26, 27, 28, adapted to retain lever 22, a stirrup 36, on the rod 3, a spring 37, lifting the stirrup, a lever device 46, 50, 48, 51, next the lever 41, a draft rod connecting the parts 36, 46, and provided with pins 45, 57, and a detent 54, 55, 56, for the stop rod, substantially as described.

21. The combination, with the signal lever 41, having notch 39, and one or more projections 53, a pawl 38, adapted to said notch, a stop rod comprising sections 1, 2, 3, having projections 5, 6, 7, 8, springs 9, 10, lifting rod sections 1, 2, a two part pawl 12, 13, 14, 15, 16, a trip lever 22, a rocking electrically operative signal frame 26, 27, 28, adapted to retain lever 22, a stirrup 36, on the rod 3, a spring 37, lifting the stirrup, a lever device 46, 50, 48, 51, next the lever 41, a draft rod connecting the parts 36, 46, and provided with pins 45, 57, a detent 54, 55, 56, for the stop rod, and a line wire contact lever 33, substantially as described

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**505,421. MACHINE FOR MAKING PAPER HOOPS.** WALTER E. FROST, Lewiston, assignor of three fourths to Louis J. Coté, Waterville, Me. Filed Jan. 11, 1893. Serial No. 458,042. (No model.)



*Claim.*—In a machine for cutting hoops from sheets of paper or other like material, the combination of a bed roll having annular grooves therein, knives having, when in position an inverted V shaped cross section and end cutting edges, the lower edges of said knives resting at their forward ends in said grooves and feed rolls between said knives, substantially as described.

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**505,422. ELECTRIC-LAMP SOCKET.** JOHN M. GARDNER, Jr., Pittsburg, Pa., assignor of one-half to Peter Weber, same place. Filed July 1, 1893. Serial No. 479,385. (No model.)



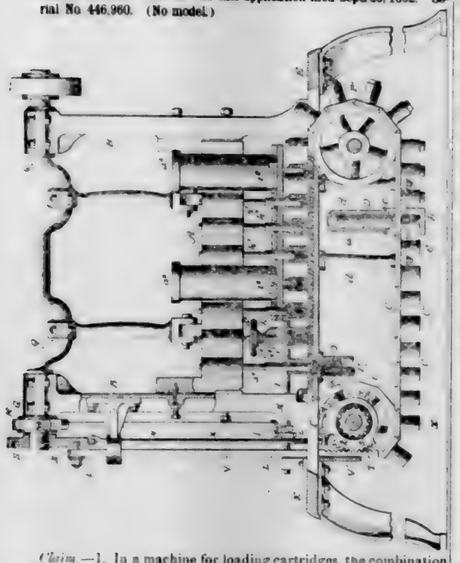
*Claim.*—1. A socket for electric lamps, having an ejector arranged to force the lamp from the socket; substantially as described.

2. An electric lamp socket having a transverse shaft provided

with a cam portion arranged to eject the lamp; substantially as described.

3. An electric lamp socket, having spring fingers to retain the lamp, and a transverse cam shaft having a protruding handle; substantially as described.

## 505,423. CARTRIDGE-LOADING MACHINE. CHARLES S. HISEY, Aurora, Ind., assignor, by mesne assignments, to the Standard Cartridge Company, of New Jersey. Original application filed June 24, 1889, Serial No. 315,308. Divided and this application filed Sept. 26, 1892. Serial No. 446,960. (No model.)



*Claim.*—1. In a machine for loading cartridges, the combination with a wad feeder, of a wad cutter, and a wad inserter, all arranged in a right line, the said wad cutter and the inserter located and operating at different points along the line of feed, substantially as described.

2. In a machine for loading cartridges, the combination with a shell carrier, of a wad feeder having its line of feed at an angle to the path of the carrier, a wad cutter and a wad inserter, said devices being arranged in a right line, and the said cutter and inserter located and operating at different points along the line of feed, substantially as described.

3. In a machine for loading cartridges, the combination with a wad feeder, of a wad cutter, a wad stamp, and a wad inserter, said devices being arranged in a right line, and said cutter stamp and inserter located and operating at different points along the line of feed, substantially as described.

4. The combination in a machine for loading cartridges of a wad feeding device, a device for cutting out the wads, a device for inserting the wads into the shells, located at different points along the line of feed, and a stamp for impressing or printing the number of the charge on the wad situated between the cutter and inserter, whereby the wad is first cut out of the strip, then impressed with the number of the charge, and then inserted in the shell, substantially as described.

5. The combination in a machine for loading cartridges with powder and shot, of a shell carrier, powder and shot supply, and wad feeders consisting of the shaft I, the rollers M and M', and the guide rollers N, in connection with the operating mechanism, substantially as described.

6. In a cartridge loading machine, the combination with a shell carrier having a right line movement, of wad feeding devices including feeding rolls in line with the path of the shell carrier, and a common operating shaft, substantially as described.

7. In a cartridge loading machine, the combination with a shell carrier consisting of an endless belt provided with shell holders, of a series of wad feeders including feed rollers located parallel with said belt and having a feed movement at right angles to the belt and a common operating shaft, substantially as described.

8. In a machine for loading cartridges with powder and shot, a wad supply, cutter and inserter, consisting of the shafts I and N' provided with rollers M and M', and the roller N mounted on a shaft N', the tool carrier A with the punch $a^3$ attached thereto, the mandrel $b^3$ with a head $c^3$, said mandrel and head being held up by the spring $d^3$ and the piston $A^3$ attached to the tool carrier A, whereby the wad is inserted into the cartridge, substantially as described.

9. In a machine for loading cartridges, the combination with a shell carrier and powder and shot supply, of means for feeding wad strips consisting of the eccentric G geared to the driving shaft, the rod H connected with said eccentric, the shaft I provided with the rollers M M', and the rollers N, the shaft I and the rod H being connected, substantially as described.

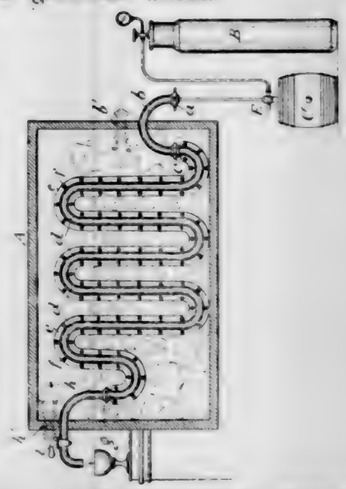
10. The combination, with the shell carrier provided with shell holders, of means for feeding the shells into the holders, consisting of the supports $d'$ of the plates $c'$ attached thereto, the bands or strips $b'$ and $c'$, and the tube $a'$, substantially as described.

11. In a machine for loading cartridges, a wad cutter consisting of the guide $c^3$ and the headed bolt $b^3$ provided with the spring $d^3$, supported by the frames E and $e^3$ and the hollow mandrel provided with a spring $g^3$ and head $f^3$, constructed and combined substantially as described.

12. In a machine for loading cartridges, a wad cutter, and means for forcing the same into the cartridge consisting of the casting $e^3$, containing the headed bolt $b^3$, provided with the spring $d^3$, said parts being supported by the band $e^3$ and a hollow mandrel provided with a spring $g^3$ and movable head $f^3$, and the piston or mandrel $A^3$ attached to the tool carrier A, substantially as described.

13. In a cartridge loading machine, a wad punching device consisting of a punch, a movable sleeve surrounding said punch, a support for the wad strip or material provided with a yielding part beneath the punch, of the same size as the punch, substantially as described.

## 505,424. BEER-TEMPERING DEVICE. GUSTAV KRUSE, Hamburg, Germany, assignor to George T. Mamerow, Chicago, Ill. Filed Apr 1, 1893. Serial No. 468,688. (No model.)



*Claim.*—1. In a beer tempering device, the combination with a tempering chamber provided with fixed inlet and outlet pipes, of a longitudinally separable pipe removably connected to the inner ends of said fixed pipes, substantially as specified.

2. In a beer tempering device, the combination with a tempering chamber provided with fixed inlet and outlet pipes, of a longitudinally separable pipe removably connected to the inner ends of said fixed pipes, a pipe coupling at one end and a cock at the other of the outer ends of said fixed pipes, substantially as specified.

## 505,425. PLOW OR CULTIVATOR TOOTH. WILLIAM B. LEE, Ozark, Mo., assignor of one-half to David Wolff and Zachariah A. Johnson, same place. Filed June 29, 1893. Serial No. 479,152. (No model.)



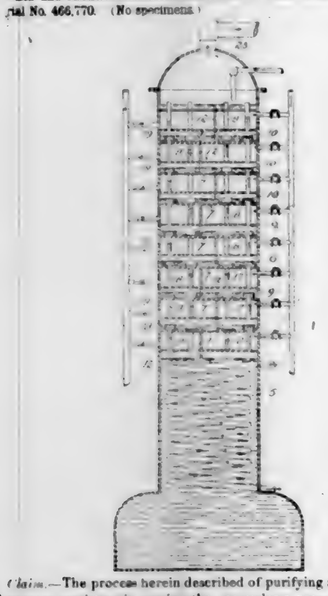


*Claim.*—The shovel or point, having the ribs or flanges on the rear face made thick at the top of the tooth and tapering in curved form toward the point, and converging in gradual lines into and forming a continuation of the rear face of the point, with a dovetail socket or groove between the ribs, in combination with the toe or standard point made in triangular form to fit the socket or groove, and forming with the flanges of the tooth a strengthening rib, substantially as set forth.

## 505,426. NON-CONDUCTING COMPOSITION OF MATTER FOR COVERING STEAM PIPES, BOILERS, OR OTHER SURFACES. SIDNEY W. STEINER, Norristown, Pa. Filed Apr. 5, 1893. Serial No. 469,201. (No specimens.)

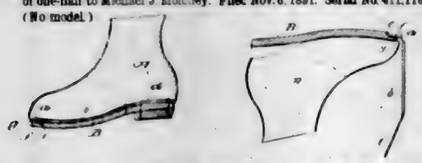
*Claim.*—A non-conducting composition for coverings for steam boilers, tubes, &c., consisting of vegetable animal or mineral fiber and the hydrate of lime of about the consistency of cream, as described, incorporated together, as set forth.

## 505,427. PROCESS OF PURIFYING AMMONIA-GAS. GEORGE L. VAIL and THOMAS CHARLTON, Denver, Colo. Filed Mar. 20, 1893. Serial No. 466,770. (No specimens.)



*Claim.*—The process herein described of purifying ammonia gas, said process consisting in passing the gas under a pressure of nine to twelve atmospheres approximately, from the generating tank through a quantity of aqua ammonia at a temperature sufficiently low to remove by condensation the moisture and other impurities with which the gas is laden, the aqua ammonia containing such a per cent. of ammonia gas, say from twenty-nine per cent. to thirty-two per cent. by weight, that it has practically or approximately reached the limit of gas absorption, substantially as described.

## 505,428. SHOE. EDWARD KINSELLA, Rochester, N. Y., assignor of one-half to Michael J. Moloney. Filed Nov. 6, 1891. Serial No. 411,116. (No model.)



*Claim.*—1. As an article of manufacture, an insole for turned shoes, the same having a flexible tab projecting from its toe end, whereby said insole is adapted for attachment at that point to the shoe before turning, said insole being also provided at its heel end with a projecting tab, whereby it may be attached to the shoe at that point after turning; substantially as described.

2. As an article of manufacture, an insole for turned shoes, the same composed of a body part and a flexible covering, the latter having tabs projecting from its toe and heel ends, whereby said insole is adapted for attachment to the outer sole; substantially as described.

3. As an article of manufacture, an insole for turned shoes, the same having a flexible tab projecting from its toe end, whereby said insole is adapted for attachment at that point to the outer sole before the shoe is turned, said insole being also provided at its heel end with means for attachment to the outer sole after the shoe is turned; substantially as described.

4. A turned shoe composed of an upper, a sole and an insole, the insole being fastened to the toe seam by a flexible hinge and to the sole by a rear connection; substantially as described.

5. A turned shoe composed of an upper, a sole and an insole of cork or other suitable material provided with a flexible covering having a projecting tab attached to the shoe at the toe seam by the same stitches as the upper is sewed to the sole and adapted to be drawn into the shoe when the latter is turned without bending the insole and fastened closely upon the sole after the shoe is turned; substantially as described.

6. A turned shoe composed of an upper, a sole and an insole provided with a flexible projecting tab attached to the shoe at the toe seam by the same stitches as the upper is sewed to the sole and adapted to be drawn into the shoe when the latter is turned without bending the insole, and a flexible tab projecting rearwardly from said insole whereby the same is fastened upon the sole; substantially as described.

7. The method of manufacturing turned shoes, the same consisting in sewing an upper inside out to the outer sole, fastening an insole to the upper and outer sole at the toe while in this position by a flexible projection from the insole, turning the shoe right side out, whereby the insole is drawn unbent into the shoe, fastening the rear end of the insole to the shoe after turning and finishing the shoe as usual; substantially as described.

8. The method of manufacturing turned shoes, the same consisting in sewing an upper inside out to the outer sole, fastening an insole at the toe end only to said upper and outer sole before turning, turning the shoe right side out, thus drawing the insole endwise into the shoe, securing the rear end of the insole to the shoe after turning and finishing the shoe as usual, substantially as described.

9. The method of manufacturing turned shoes which consists in sewing an upper inside out to the sole, fastening an insole having a rearwardly projecting tab to the seam at the toe by a flexible connection, then turning the shoe whereby the insole is drawn unbent into the shoe, fastening said rear tab under the shank piece or heel seat of the shoe and finishing the shoe as usual; substantially as described.

# REISSUES.

## 11,366. KNITTING-MACHINE STOP MECHANISM. EDWARD M. SMITH, Cohoes, N. Y., surviving inventor, and JOHN SCOTT and JOHN SULLIVAN, assignees; said Scott assignee of one-third, and said Sullivan assignee of James W. Cassidy, deceased. Filed Nov. 17, 1892. Serial No. 452,181. Original No. 430,512, dated June 17, 1890.



*Claim.*—1. In a knitting machine, the combination with the needles and thread carrying bar, of a reciprocating bar connected with the thread carrying bar to move therewith, fingers carried adjacent to the thread guides by said reciprocating bar and having their ends in such proximity to the needles as to be deranged by a knot or abnormal thickness, as a "bunch," in the thread fed from the thread guides, and means set in motion by derangement of said fingers and actuating the belt shipper to throw off the belt and stop the machine, substantially as and for the purposes set forth.

2. In a knitting machine, the combination with the needles and thread carrying bar, of a reciprocating bar connected with the thread carrying bar to move therewith, uprights or supports carried by said reciprocating bar, a detent or locking pin carried by each support, a finger supported from each support adjacent to the thread guide and having a connection with said detent or locking pin to act thereon,

with a part of the finger in such proximity to the needles as to be deranged by a knot or abnormal thickness, as a "bunch," in the thread fed from the thread guides to release said detent or locking pin, a shifting bar normally at rest and connected to the reciprocating bar to move therewith by said locking pin when the same is released by derangement of said finger, and a belt-shipper actuated from said shifting bar to stop the machine when said finger is deranged as specified, substantially as and for the purposes set forth.

3. In a knitting machine, the combination with the needles and thread carrying bar, of a reciprocating bar connected with the thread carrying bar to move therewith, uprights or supports carried by said reciprocating bar and each having thereon a bridge or rest, detents or locking pins carried by said supports, fingers adjacent to the thread guides and connected with said detents and resting on said bridges and having a portion thereof in such proximity to the needles as to be deranged by a knot or abnormal thickness, as a "bunch," in the thread to release the detents or locking pins, a shifting bar having projections thereon and standing at rest, except when locked to the reciprocating bar by said detent or locking pin, and a lever acted on by said shifting bar to actuate a belt shipper to stop the machine when said finger is deranged as specified, substantially as and for the purposes set forth.

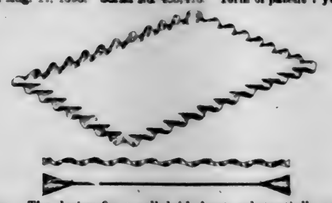
4. In a knitting machine the combination with the needles and thread carrying bar, of a finger adjacent to the thread guide and standing in such proximity to the needles as to be deranged by a knot or abnormal thickness, as a "bunch," in the thread, a reciprocating bar below the needles and carrying said finger, and means intermediate of said finger and the belt shipper and actuated by the derangement of said finger to transmit motion to the belt shipper to stop the machine when said finger is deranged as specified, substantially as and for the purposes set forth.

5. In a knitting machine, the combination with the needles and thread carrying bar, of a belt shipper, a finger reciprocating in front of the needles and adapted to be deranged by a "bunch" in the thread to set the belt shipper in operation to stop the machine, means intermediate of the finger and shipper to cause the shipper to act on the derangement of the finger, and a support for said finger sustained independently of said thread carrying bar, substantially as and for the purposes set forth.

6. In a knitting machine, the combination with the needles and thread carrying bar, of a belt shipper, a finger reciprocating in front of the needles and adapted to be deranged by a "bunch" in the thread to set the belt shipper in operation to stop the machine, means intermediate of the finger and shipper to cause the shipper to act on the derangement of the finger, a support for the finger, and a stationary guide adapted to steady the finger and hold it against lateral vibration to and from the needles, substantially as and for the purposes set forth.

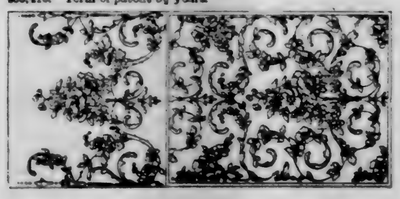
# DESIGNS.

**22,788.** CELLULOID SHEET. CHARLES H. FERNALD, Ayer, Mass. Filed Aug. 17, 1893. Serial No. 483,415. Term of patent 7 years.



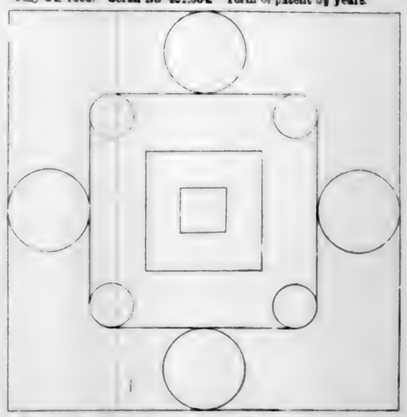
*Claim.*—The design for a celluloid sheet, substantially as herein shown and described.

**22,789.** WALL-PAPER. CHARLES BOOSE, Buffalo, N. Y., assignor to M. H. Birge & Sons, same place. Filed Aug. 16, 1893. Serial No. 483,416. Term of patent 3½ years.



*Claim.*—The design for wall paper herein shown and described.

**22,790.** GAME-BOARD. GEORGE W. GARDNER, Dawkins, Colo. Filed July 24, 1893. Serial No. 481,354. Term of patent 3½ years.



*Claim.*—The design for a game board herein shown and described the same comprising a board having an outer marginal square, an inner series of squares arranged one within another, a series of outer circles arranged at the centers of the sides of the outer marginal square, and a series of inner circles arranged at the corners of the square adjacent to the outer marginal one, as set forth.

**22,791.** COMBINED SPOOL-STAND AND PINCUSHION. ROBERT WALSH, Philadelphia, Pa. Filed Aug. 24, 1893. Serial No. 483,935. Term of patent 7 years.



*Claim.*—The design for a combined spool stand and pin cushion, substantially as described and as shown in the accompanying drawing.

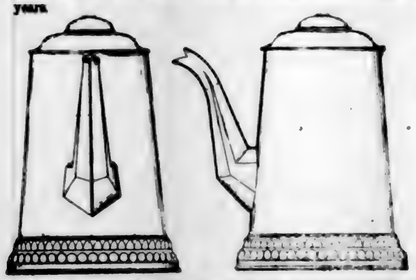
**22,792.** ADVERTISING-STATUE. GUSTAV FUCHS, Chicago, Ill. Filed May 11, 1893. Serial No. 473,851. Term of patent 14 years.





*Claim.*—The design for a statue consisting of the representation of a St. Bernard dog with a collar, a small keg or barrel fastened to the collar, a blanket strapped upon the back of the dog, and a plain base or pedestal upon which the dog is represented as standing, substantially as shown and described.

**22,793.** COFFEE OR TEA POT. ALBERT R. PRITCHARD, Rochester, N. Y. Filed June 7, 1893. Serial No. 476,856. Term of patent 14 years.

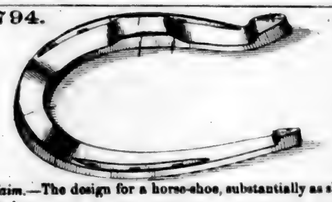


*Claim.*—1. The design for a coffee or tea pot substantially as shown and described.

2. In the design for a coffee or tea pot, the design for a spout, substantially as shown and described.

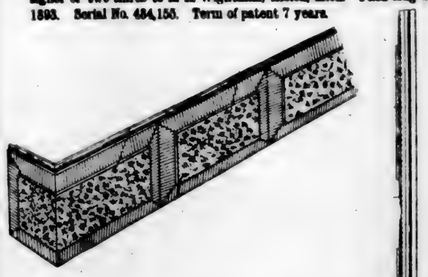
3. In the design for a coffee or tea pot, the design for the cover, substantially as shown and described.

**22,794.** HORSESHOE. PATRICK J. SULLIVAN, New York, N. Y. Filed Aug. 24, 1893. Serial No. 483,867. Term of patent 7 years.



*Claim.*—The design for a horse-shoe, substantially as shown and described.

**22,795.** WEATHERBOARD. SAMUEL MILLER, Mohawk, N. Y., assignor of two-thirds to R. R. Wightman, Albion, Mich. Filed Aug. 26, 1893. Serial No. 484,155. Term of patent 7 years.



*Claim.*—The design for a weatherboard herein shown and described.

# TRADE-MARKS

## REGISTERED SEPTEMBER 19, 1893.

23,613. CERTAIN NAMED DECORATIVE WORK. HALL & GARRISON, Philadelphia, Pa., and New York, N. Y. Filed Aug. 16, 1893.

DEC-CO-RE-O

*Essential feature.*—The hyphenated word "DEC-CO-RE-O." Used since June 12, 1893.

23,614. HARMONICAS, ACCORDIONS, AND SIMILAR MUSICAL INSTRUMENTS. CARL ESEBACH, Brunndöbra, Germany, and New York, N. Y. Filed May 22, 1893.



*Essential feature.*—The representation of a draped female figure, holding a torch in the right hand, high above her head, and supporting a tablet against her body with the left hand, the figure standing upon a pedestal, the base of which at some distance therefrom is surrounded with a serrated wall. Used since January, 1886.

23,615. CLOTHING MADE FROM A KNIT FABRIC HAVING A SMOOTH FACE AND A PLUSH BACK. ISIDORE JAROS, New York, N. Y. Filed May 17, 1893.

HYGIENIC

UNDERWEAR

*Essential feature.*—The word "HYGIENIC" placed on the upper part of an imaginary circle, when used in combination with the word "UNDERWEAR" or word of similar import, placed in the lower curve of the imaginary circle. Used since 1884.

23,616. HYDRAULIC AND FIRE HOSE. EUREKA FIRE HOSE COMPANY, New York, N. Y. Filed Aug. 2, 1893.

EUREKA

*Essential feature.*—The word "EUREKA." Used since May 29, 1875.

23,617. HYDRAULIC AND FIRE HOSE. EUREKA FIRE HOSE COMPANY, New York, N. Y. Filed Aug. 2, 1893.

PARAGON

*Essential feature.*—The word "PARAGON." Used since May 29 1875.

23,618. HYDRAULIC AND FIRE HOSE. EUREKA FIRE HOSE COMPANY, New York, N. Y. Filed Aug. 2, 1893.



*Essential feature.*—The representation of a Greek cross. Used since May 29, 1875.

23,619. CANDLES. THE PHŒNIX CANDLE COMPANY, Syracuse and New York, N. Y. Filed May 9, 1893.

PHŒNIX.



*Essential feature.*—The word "PHŒNIX" and the pictorial illustration of a phœnix. Used since March 1, 1893.

23,620. ROLLED OR CRUSHED WHEAT. CHARLES S. LAUHEIMER, San Francisco, Cal. Filed June 1, 1893.

BREAKFAST GEM

*Essential feature.*—The words "BREAKFAST GEM." Used since November 21, 1884.

23,621. CANNED VEGETABLES. ILLINOIS CANNING CO., Hoopeston, Ill. Filed Apr. 10, 1893.



23,621.

FRENCH·RED KIDNEY·BEANS

*Essential feature.*—The words "FRENCH RED" having letters decreasing in height from left to right, and the words KIDNEY-BEANS having letters increasing in height from left to right. Used since 1891.

23,622. PEAS, SARDINES, MUSHROOMS, TRUFFLES, MACARONI, CAPERS, OLIVE-OIL, OLIVES, AND PRUNES. S. J. VALK & BRO., New York, N. Y. Filed Aug. 15, 1893.

TISSERAND & FILS

FALCON BRAND

*Essential feature.*—The words "TISSERAND & FILS," and "FALCON BRAND." Used since July, 1890.

23,623. CHICORY AND OTHER COFFEE SUBSTITUTES. HEINRICH FRANCK SÖHNE, Ludwigsburg, Germany. Filed Mar. 30, 1893.



*Essential feature.*—The representation of a coffee-mill, a lion having on its back a coffee cup and standing with its four feet on four hills or cones, and a coffee mill. Used since November, 1876.

23,624. CHICORY AND OTHER COFFEE SUBSTITUTES. HEINRICH FRANCK SÖHNE, Ludwigsburg, Germany. Filed June 3, 1893.



Heinrich Franck Söhne

*Essential feature.*—The representation of a coffee mill, and the firm name "HEINRICH FRANCK SÖHNE" in script and having a paraph extending its whole length. Used since November, 1876.

23,625. UNFERMENTED MALT-AND-HOPS BEVERAGES CLASSED AS SOFT DRINKS. THE NON-ALCOHOLIC BEER BREWING COMPANY, Chicago, Ill. Filed Aug. 10, 1893.



*Essential feature.*—A monogram consisting of the letters, "N, A. B. B." Used since March 30, 1893.

23,626. CHAMPAGNE. KUNKELMANN & Co., Rheims, France. Filed Aug. 4, 1893.



*Essential feature.*—The words "PIPER-HEIDSIECK, REIMS" and "BRUT EXTRA," and the representation of a knight's helmet. Used since August 31, 1892.

23,627. CchampagnE. KUNKELMANN & Co., Rheims, France. Filed Aug. 4, 1893.




*Essential feature.*—The words, "PIPER-HEIDSIECK, REIMS, SEC" and the figure of a five pointed star, with displayed rays, issuing therefrom downward, and between the two lower points of such star. Used since August 31, 1892.

23,628. CHAMPAGNE. KUNKELMANN & Co., Rheims, France. Filed Aug. 4, 1893.




*Essential feature.*—The words "PIPER-HEIDSIECK, SEC," printed in white color on a dark green background, and arranged in a horizontal line. Used since January 16, 1885.

23,629. GERMICIDES, DISINFECTANTS, AND OTHER DEODORIZING PREPARATIONS. CHEMISCHE FABRIK AUF ACTIEN, VORMALS E. SCHERING, Berlin, Germany. Filed July 6, 1893.

FORMALIN

*Essential feature.*—The word "FORMALIN." Used since March 2, 1893.

23,630. EUCALYPTUS-OIL FOR MEDICINAL AND OTHER USES. THOMAS INGHAM, Rockhampton, Inghamstown, and Wallaroo, Queensland. Filed Aug. 8, 1893.



*Essential feature.*—The word "WART," and the pictorial representation of an eucalyptus wart. Used since November 5, 1891.

23,631. COUGH ELIXIR. MARION A. LEHR, Weehawken, N. J. Filed Aug. 16, 1893.

M.A.L.

*Essential feature.*—The letters "M. A. L." Used since January 1, 1893.

23,632. TOILET SOAP. COLGATE & Co., New York, N. Y. Filed Aug. 23, 1893.

BEE

*Essential feature.*—The word "BEE." Used since August 19, 1893.

**23,633.** FERTILIZERS. THE CLEVELAND LINSEED OIL COMPANY, Cleveland, Ohio. Filed June 1, 1893.



*Essential feature.*—The representation of a tobacco-leaf in association with a figure representing one or more bags. Used since February 1, 1893

**23,634.** LYE AND WASHING-POWDERS. EDWARD A. DONALDSON, Galesburg, Ill. Filed Aug. 14, 1893.




*Essential feature.*—The word "MOTHERS." Used since January 1, 1893

**23,635.** CLOTHES-WRINGERS. THE AMERICAN WRINGER COMPANY, Providence, R. I. Filed Aug. 18, 1893.

EMPIRE

*Essential feature.*—The word "EMPIRE" Used since March, 1873

**23,636.** CLOTHES WRINGERS AND DRIERS. THE AMERICAN WRINGER COMPANY, Providence, R. I. Filed Aug. 18, 1893.



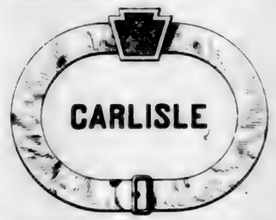
*Essential feature.*—The representation of a horseshoe. Used since November 10, 1888.

**23,637.** RADIATORS. A. A. GRIFFING IRON COMPANY, Jersey City, N. J., and Chicago, Ill. Filed July 28, 1893.




*Essential feature.*—A quarter-moon shaped figure, in which the word "PERFECT" appears. Used since December, 1888.

**23,638.** WATER-CLOSETS AND URINALS. ROBERT CARLISLE, Cincinnati, Ohio. Filed Aug. 23, 1893.




*Essential feature.*—The word "CARLISLE," and the representation of a buckled belt or girdle. Used since February, 1886.

**23,639.** CUTLERY, INCLUDING KNIVES, RAZORS, SHEARS, FILES, &c. THE ESTATE OF FREDERICK WIEBUSCH, New York, N. Y. Filed Aug. 7, 1893.

CHALLENGE

*Essential feature.*—The word "CHALLENGE" Used since 1867

**23,640.** PROPORTIONAL DIVIDERS. KEUFFEL & ESSER COMPANY, Hoboken, N. J., and New York, N. Y. Filed Aug. 16, 1893.

UNIVERSAL

*Essential feature.*—The word "UNIVERSAL" Used since September 1, 1892.

**23,641.** PLOWS AND CULTIVATORS. MOLINE PLOW COMPANY, Moline, Ill. Filed Aug. 24, 1893.



*Essential feature.*—A monogram composed of the letters "M P Co." Used since July, 1870.

# DECISIONS

OF THE

# COMMISSIONER OF PATENTS

AND OF

# UNITED STATES COURTS IN PATENT CASES.

## COMMISSIONER'S DECISIONS.

### EX PARTE DEMENY.

*Decided September 13, 1893.*

1. DIVISION—PROCESS AND PRODUCT.

Where it appears that the process can produce no other product and the product can be produced by no other process, the process and product are parts of one invention, and division should not be required.

2. SAME—PATENT FOR PROCESS AND PRODUCT.

Where, if the application were a patent containing claims for a process and product, it would not be invalid because of independent inventions, division ordinarily ought not to be required, and not unless some exceptional burden would be placed upon the Office in conducting the examination.

3. SAME—INVENTIONS CLASSIFIED IN DIFFERENT DIVISIONS.

Where the inventions are classified in different divisions, such mere difference of the location of the inventions in the Office classification is not the sole test in determining the question of division.

4. SAME—CONFUSION AND LITIGATION OF TWO PATENTS IN A CASE LIKE THIS TO BE CONSIDERED.

The confusion and litigation likely to follow the grant of two patents in a case like this, which might come into the hands of separate owners, neither having the full enjoyment of the right to work his own, if both be valid, and the doubt cast upon the validity of both, are more important considerations than the suggestion that the inventions are classified in different divisions.

5. SAME—A GENERAL RULE—DISCRETION OF THE OFFICE IN THE REQUIREMENT OF DIVISION.

Within the limits of validity of the grant claims for distinct but dependent inventions may be joined in the same application or be made in separate applications, at the option of the applicant. This general rule leaves to the discretion of the Office the requirement of division in those exceptional cases in which the inconvenience resulting from a single application amounts to the necessity to divide, and leaves room, also, for the exercise of that inherent discretion necessarily left on this subject to the Office. (*Bennet* v. *Fowler*, 8 Wall., 445.)

ON petition.

POSITIVE PHOTOGRAPH IMAGE AND MODE OF PREPARATION.

Application of Georges Demeny filed July 18, 1893, No. 480,870.

*Messrs. Pollok & Mauro* for the applicant.

SEYMOUR, *Commissioner:*

The petition shows that the application contains two claims—one for the method of producing positive photoscopic exhibition-plates, the other for the positive photoscopic plate itself—and that the Examiner required the division of the application between the process claim and that for the product.

It appears that the product may be made by the process, and it does not appear that it may be made by any other process. It appears, also, that the process does not result in any other product, and it does not appear that it can result in any other product. On this record the two are parts of one invention. It is difficult to see how the petitioner could draw an application covering the process without describing the article as produced by the process, and it is equally difficult to see how he could draw an application covering the article without describing the process by which the article was produced. The suggestion of the Court in *Mosler Safe Co.* v. *Mosler* (127 U. S., 354, 361-362) is that the inventor in such a case could not take a patent for the article and afterward, on an independent application, secure a patent for the method. The three patents involved in that case—two for an article and one for the process of making it—were treated for the purposes of that suit as one patent containing all the claims involved, although the claims were for separate and distinct, though not independent, inventions; and the Court observes that they might have been all included in one application had the patentee chosen so to present them. (Page 359.)

Should both claims in this application finally be found to be allowable—a question which is not before me—a patent containing both would not be invalid, and where this is so the applicant ordinarily ought to be allowed to put claims of both classes in the same application, if he so elect, unless some exceptional burden would thus be placed upon the Office in conducting the search. It is said by the Examiner that the invention pertains to two separate divisions in the Office; but this might be so, and often is so, in the case of an application with but a single claim. The mere convenience of the Office is not the test in determining the question of division.

The confusion and litigation likely to follow the grant of two patents in a case like this, which might come into the hands of separate owners, neither having the full enjoyment of the right to work his own, if both be valid, and the doubt cast upon the validity of both, are more important considerations. In *ex parte Richardson*, (41 MS. Dec., 421,) Mr. Commissioner Mitchell, in a similar case, held the following language:

> In my opinion the so-called process claims of the application now under consideration are patentable, if at all, only in connection with and in the same patent containing the claims for the article.

Within the limits of validity in the grant inventors may, as a general rule, put claims for distinct but dependent inventions in the same application or in separate ones at their option, and division should not ordinarily be required by the Office except where it is

considered that a patent including all the claims would be invalid, or would be held to be valid only on the ground that an instrument should be upheld rather than that it should wholly fail of its purpose. This rule leaves to the discretion of the Office the requirement of division in those exceptional cases in which the inconvenience resulting from a single application amounts to the necessity to divide, and leaves room, also, for the exercise of that discretion which the case of *Bennet* v. *Fowler* (8 Wall., 445, 448) holds must necessarily be left on this subject to the head of the Patent Office under any general rule which may be laid down upon this nice and perplexing question.

The order to divide is set aside.

## DECISIONS OF THE U. S. COURTS.

### U. S. Circuit Court of Appeals—Sixth Circuit.

CHRISTIE *v.* SEYBOLD.

*Decided March* 22, 1893.

1. INTERFERENCE—BILL IN EQUITY TO SECURE LETTERS PATENT—ESTOPPEL.

The failure of a party in an interference proceeding in the Patent Office to raise the question whether his opponent's invention includes the issue declared in the interference does not estop such party to raise that question in an equity suit, under Revised Statutes, section 4915, to determine his right to a patent.

2. SAME—BOOKBINDER'S PRESS.

Letters Patent No. 450,832 were issued April 21, 1891, to W. H. Christie, for a bookbinder's press in which the platen could be quickly run up by hand without moving the power-driving mechanism. The patent was granted after a decision in Christie's favor upon an interference with an application by Charles Seybold. In the Seybold invention the pressure was obtained by a vertical screw, and transmitted to the platen by means of removable pipes of different lengths to suit the size of the bundle. In the Christie invention the power was obtained by a lever and pawl operating in connection with a ratchet-wheel, pinion, and rack-bar. In both inventions the platen was balanced by weights. The interference was declared on a claim for a "platen detachably connected with the power-driving mechanism and provided with a counterbalancing-weight," which language was taken from the Christie claim. In the Christie invention, however, the point of disconnection was between the ratchet-wheel and the lever-pawl. *Held* that this construction was fairly within the language of the claim and interference, notwithstanding that the point of disconnection was not immediately at the platen proper; and that there was an interference between the two inventions.

3. SAME—PRIORITY OF INVENTION—REDUCING TO PRACTICE.

The man who first reduces an invention to practice is *prima facie* the first inventor under act July 4, 1836, (5 St., p. 117;) but the man who first conceives the invention may date it back to such conception if he uses due diligence in reducing it to practice, and he must use such diligence before, as well as after, the second conception of the invention. (*Reed* v. *Cutter*, 1 Story, 590, followed.)

4. SAME—DUE DILIGENCE—WHAT CONSTITUTES.

The person who first conceived a comparatively-simple improvement in power-presses for bookbinding made a rough sketch of it within a few months. Three years after his first conception he had working drawings made, and six months thereafter a machine was manufactured. He excused the delay by asserting that he could neither afford to buy the necessary tools sooner nor use them in his small shop. His reason for not having the machine made at another shop was that he would have made no profit on machines made by others according to his invention. *Held* that he did not use due diligence so as to entitle him to a patent as against one who conceived the invention later, but reduced it to practice sooner, than himself.

5. SAME—SKETCH OF MACHINE.

A rough sketch of an invention is not such a reduction to practice as to make its author the original inventor within the meaning of the patent laws.

6. SAME—CLAIM THAT THIRD PARTY WAS INVENTOR.

Under Revised Statutes, section 4915, the only question the court can consider is whether the complainant is the first inventor of a patentable device. Whether respondent or a third party was the inventor of the device for which respondent has received a patent should not be inquired into either by the court or by the Commissioner in interference proceedings between the same parties.

APPEAL from the Circuit Court of the United States for the District of Kentucky.

Bill by Charles Seybold against William H. Christie to obtain the issue to complainant of Letters Patent which had been refused after a decision against him on an interference. A decree was entered for complainant.

STATEMENT OF THE CASE BY JUDGE TAFT.

This was an appeal from a decree of the Circuit Court of the United States for the District of Kentucky, directing the Commissioner of Patents to issue a patent to Charles Seybold, the appellee and complainant below, for a device in a power-press used in bookbinding, whereby the platen is "detachably connected with power-driving mechanism and provided with a balancing-weight." The bill was filed below under section 4915 of the Revised Statutes, which provides as follows:

Whenever a patent, on application, is refused, either by the Commissioner of Patents, or by the Supreme Court of the District of Columbia upon appeal from the Commissioner, the applicant may have remedy by bill in equity, and the court having cognizance thereof, on notice to adverse parties and other due proceedings had, may adjudge that such applicant is entitled, according to law, to receive a patent for his invention, as specified in his claim, or for any part thereof, as the facts in the case may appear; and such adjudication, if it be in favor of the right of applicant, shall authorize the Commissioner to issue such patent, on the applicant filing in the Patent Office a copy of the adjudication and otherwise complying with the requirements of law. In all cases where there is no opposing party a copy of the bill shall be served on the Commissioner, and all the expenses of the proceedings shall be paid by the applicant, whether the decision is in his favor or not.

The appellant, Christie, who was respondent below, secured a patent, one claim of which covered the device which Seybold averred that he first invented. Seybold filed his application June 6, 1889, and Christie his June 7, 1889. An interference was declared between them in the Patent Office, on the following claim:

In a power-press, a platen detachably connected with the power-driving mechanism and provided with a counterbalancing-weight.

The Commissioner decided the interference proceeding in favor of Christie, and issued a patent to him, rejecting Seybold's application. Christie lives in Kentucky, and Seybold therefore began proceedings against him in that district.

The invention in controversy was an improvement in presses used by bookbinders for compressing the signature-bundle into a solid form, about which is applied the cover to make the complete book. The platen is the upper plate of the press. As the signature-bundles vary much in size, it is of advantage to move the platen up and down in the press quickly in order to give space for the insertion of the bundle under it. The mechanism used for producing a strong pressure, whether it be a screw or other means, has a slow movement. If the platen is rigidly connected with this power-pressure mechanism, it cannot be moved upward or downward to release the bundle or readjust the space for a different bundle with much greater rapidity than when pressure is being applied. The improvement was in so detaching the platen from the power-pressure mechanism as to allow it to move up and down independent of that mechanism, and, by means of counterbalancing-weights, to render its movement very easy.





Seybold's device consisted of a top cast portion A and a base of bottom B, which are connected by suitable stay-rods C, three on each side, which form a frame-rack for the support of the top plate and screw-rod. The top plate was provided with the central screw-thread hole, through which the screw D operated. The platen H was suspended between the stay-rods C by means of suitable chains passing over suitable pulleys secured in brackets attached to the top plate and attached at the other end to the balancing-weights, which were adapted to slide up and down on the outside of the stay-rods. The platen was guided by the stay-rods in its movement up and down. Screw D was moved by a hand-wheel and a lever, and the end of the screw D was connected with the platen by the connecting-pipe I, which served to communicate the pressure from the screw to the platen and was merely an extension of the screw. A number of such connecting-pipes, of different lengths, were provided to suit the size of the bundle. The pipe I was easily removable. By taking it out the platen H might be moved up or down freely and easily by reason of the counterbalancing-weights and its height adjusted to leave the proper space between the platen and the base.

Christie's patent consisted of a press-frame with a platen moving up and down between the sides of the frame as guides and having rigidly attached to its upper side a rack-bar, which, extending up through the top of the press-frame, engaged above with a pinion or small cog-wheel mounted upon a shaft journaled in two upright brackets fixed to the top of the press-frame. To the same shaft were keyed ratchet-wheels which, by means of pawls and a lever, were rotated, driving the pinion, forcing downward the rack-bar, and bringing the required pressure on the platen. On top of the rack-bar was a cross-bar, to the ends of which were attached cords passing up over pulleys journaled in upright posts supported on the top of the press-frame and carrying counterbalancing-weights equal to the weight of the platen. The pawls which were engaged with a ratchet-wheel to produce a rotary motion, forcing down the platen, might be thrown out of engagement with the ratchet-wheel, and then the platen might be moved up or down easily by the aid of the counterbalancing-weight. In doing so of course the pinion and ratchet-wheels turned with the movement of the rack-bar, but offered no obstruction to the upward or downward movement of the platen. The facts with reference to the invention by the two parties were as follows:

Seybold conceived of his invention in October, 1885, and made a rough sketch of it, which he showed to several persons in January, 1886. He was a machinist and inventor, and engaged in manufacturing numbering-machines, perforators, cutting-machines, index-cutters, pasting-machines, gluing-machines, wood-staining machines, graining-machines, polishing-machines, sandpaper-machines, and general repair work. At the time of his conception he says that he did not have the proper tools in his shop to make the machine. It would have required a planer, a long lathe, and a boring-mill. He did not have the requisite tools until he moved into his new shop, on Webster street, in the month of March, 1889. From October, 1885, until October, 1888, he did nothing toward reducing his machine to practice. At the latter date he had full-sized drawings made, and his first machine was made in April, 1889. He applied for a patent June 6, 1889. The only reason which Seybold gave in the interference proceedings in the Patent Office for the delay in reducing his machine to practice was that he did not have the necessary tools or room in his shop. On the hearing below, another deposition was taken, in which he gave an additional reason. His evidence was as follows:

Question. Please state why you did not have the proper tools, or why you did not secure them in the early part of 1886.
Answer. Because my financial condition was such that I could not possibly buy those tools.
Q. 4. Is there any other reason you can give?
A. Yes, sir.
Q. 5. Please give it.
A. It would have been possible for me to order the press built by some other party; but as it has been my object to construct this press to be put on the market, and knowing the prices of presses built by my competitors, I found it impossible to build the press at the competition figure if ordered to be built in outside shops.
Q. 6. The reason, then, that you did not have a press built shortly after you had invented the same was because there would have been no profit in it for you? Is this correct or not?
A. Yes, sir.

Christie claimed to have conceived of his invention in the summer of 1886. He had working drawings made nd patterns ordered for the production of his press in the spring and early summer of 1888, and his press was completed about July 12 of that year. The machine was set up and put in operation in the Methodist Book Concern, of Cincinnati, about that date, and continued in operation until the bill herein was filed. A second machine was built in October, and put in operation in that building. He filed an application for a patent June 7, 1889.

The court below held that Seybold was the first and true inventor of the machine, and entered a decree directing the Commissioner of Patents to issue a patent to him. The decree was based on the finding that while Seybold's device disclosed, "in a power-press, a platen detachably connected with the power-driving mechanism," Christie's device did not.

*Messrs. Wood & Boyd* for the appellant.
*Mr. O. M. Hill* for the appellee.

Before JACKSON, TAFT, and HAMMOND, Judges.

TAFT, *J.*, (after stating the facts:)

The questions arising in this case, covered by the assignments in error, are two: First, does Christie's invention or device show, "in a power-press, a platen detachably connected with the power-driving mechanism and provided with a counterbalancing-weight?" and, second, if it does, which one of the two, Seybold or Christie, was the first or true inventor, within the meaning of the patent laws?

It is contended by appellant that it was too late for the complainant to raise the question, in the court below, whether Christie's device includes "a platen detachably connected with the power-driving mechanism," because it was not raised in the interference proceeding in the Patent Office. It is said he is thereby estopped to make it. We do not concur in this view. The interference issue is drawn up by the Patent Office Examiners, and the interference is declared, before either party has access to the specifications of the other, and the claims made with respect to the issue are submitted before the specifications are disclosed. Subsequently, perhaps, the question might be raised; but we do not think that a failure to raise it in the Patent Office prevents its being brought to the attention of the court in a proceeding like this by independent bill.

The fact, if it be a fact, that the invention of one of the parties does not include the issue declared in the interference is apparent on the record. In one of the two cases considered by the Supreme Court under this section it was held that the court of its own motion must declare that the issuable device in the interference proceeding was not patentable for want of invention, and could therefore dismiss the bill, although the question had not been raised either in the Patent Office or by the parties in the court below or in the Supreme Court. (*Hill* v. *Wooster*,

132 U. S., 693, 10 Sup. Ct. Rep. 228.) We do not see why the court has not the same power with reference to the present question. The fact, if it be a fact, that Seybold did not raise it in the Patent Office, may, of course, affect the weight of his present objection; but it has no force as an estoppel.

Coming now to the question whether the Christie device embodies that which is described by the issue framed in the interference proceedings, we find that the issue was adopted by the Patent Office from the language of the first claim of Christie's patent, and the question presented is really whether Christie's specifications entitle him to his first claim. In his specifications Christie says:

My invention refers to an improvement in a press especially adapted for book-binders. It relates more especially to a press-platen which is made detachable from the power-driving mechanism and suspended by the counterpoise-weight.

The object of my invention is to provide ready means for raising and lowering a press-platen by hand without having to manipulate the power-driving mechanism, the various features of which will be fully set forth in the description of the accompanying drawings. * * *

I preferably employ a rack-bar and pinion driven by a ratchet-lever to obtain power for compressing the platen, as it is rapidly and easily manipulated.

The power is conveyed as follows: 13 represents the teeth of the rack bar, which engage with pinion 14, mounted upon shaft 15, which is journaled in ears of brackets 16. * * *

On the opposite side of the ratchet-wheels I provide a duplex holding-pawl 31, which engages with the respective ratchet-wheels. This pawl is normally held in engagement with the ratchet-teeth by means of the spring 28, which presses them up, and they are held out of engagement by the wedge 29, which is operated by the lever 30. When lever 30 is depressed, the wedge 29 is raised up and the spring 28 presses the pawl 31 into engagement with the teeth of the ratchet-wheel. When said lever is raised up, it pulls the wedge 29 down in between the holding pawl 31 and the rear edge of the rack-bar 6, which prevents the engagement of the holding-pawl 31 with the teeth of the ratchet-wheels. When lever 18 stands in its normal position, (shown in Figs. 2 and 4,) the pawls are also in disengagement with the ratchet-driving wheels. The press-platen 5 is therefore free to move up and down by extraneous means, so as to be adjusted to any desired height. * * *

The above driving mechanism, with the shipping and unshipping connections, is the preferred form of construction; but I do not limit myself to said means, except where they are made special features of claims herein; but the importance of sustaining the platen by counterbalance-weight and having it readily detachable from the driving mechanism, so as to be raised independent thereof, is the special feature of invention. * * *

The principal object to be accomplished by the above-described invention is the ready arrangement of the press-platen by hand without manipulating the same by the power-lifting and depressing mechanism, as, for instance, in a book-binding or other similar use the rapid operation of the press is a very important feature, and is accomplished by means to disengage the press-platen from the power-driving mechanism and suspending it by a counterpoise-weight, allowing it to be readily raised or lowered, as the case may be, and the within-described mechanism I believe to be the best, and is claimed herein as of my invention.

Then follow the claims, the first of which is:

In a power press, the platen, 5, detachably connected with the power-driving mechanism and counterbalanced by the weight to hold the same in any adjusted position, substantially as specified.

The court below held that the power-driving mechanism consisted of the lever, the pawls, the ratchet-wheels, the pinion, and the rack-bar, and that as the ratchet-wheel and pinion were fixed in their relation to the rack-bar, and the rack-bar was fixed to the platen, the power-driving mechanism was not detachably connected with the platen.

We think this construction too narrow. The expert for the complainant below testified that he had never heard the expression "detachably connected with," but that in this view it must mean that all the mechanism used to transmit the pressure to the platen should be capable of being detached from the platen. The Patent Office took the expression from the specifications and claim of Christie, and it is only fair, therefore, in construing the meaning of the term, if ambiguous, to look into Christie's specifications to see what, in fact, is meant by the term "detachably connected with the power-driving mechanism." Of course Christie's specifications cannot be used for this purpose, if by so doing we are taken out of the Seybold invention; but if the issue framed by the Patent Office, by a fair construction, will include a feature present in both inventions, then it is the duty of the court to lean to that construction rather than to give it a strict and narrow one, which will describe something present only in one. We are very clear that the two inventions have a common feature—viz., the easy elevation and lowering of the platen, secured by a counterbalancing-weight and a device for the disengagement of the platen from the power-pressure mechanism and consequent independence thereof.

The amount of power required to compress the bundle makes necessary a somewhat cumbersome and slow action in the power-pressure mechanism. The object of both inventions is to temporarily free the platen from connection with the slowly-acting mechanism while the bundle is being put in the press. A device which unships the machinery conveying the great pressure power to the platen, so as to permit a free movement of the platen unrestrained by its connection with that machinery, makes the connection between the platen and the power-driving mechanism "detachable" within the meaning of Christie's specifications and the issue framed in this case by the Patent Office. It may be true that in a certain sense the pinion and the ratchet-wheels and the rack-bar are part of the power-driving mechanism when in action, though our impression is that, as the power is applied first on the lever, the machinery conveying the power to the platen beyond the lever is power-transmitting mechanism, and that the lever and pawl only may be properly called the "power-driving mechanism." But, whichever is the correct view, it is certain that as soon as the pawls and lever which communicate the power to the ratchet-wheels are unshipped the ratchet wheels and the pinion are free to move without opposing any obstruction whatever to the easy up-and-down movement of the platen. When thus detached, they are certainly no part of the power-driving mechanism. The result is exactly the same as if they were removed from their connection with the rack-bar, because they make no resistance to the movement of the rack-bar and platen. The specifications do not limit Christie to this one mode of applying the power; but the lever, pawl, and ratchet are described by him as the preferable mode. There are many well-known equivalents, and were at the time of this invention, of this power-driving mechanism, notably the screw described in Seybold's invention. For these reasons we are unable to agree with the learned judge below in respect to the ground upon which he placed his decision. We are therefore brought to consider the question which, in the view he took of the case, he did not find it necessary to pass upon—that is, who was the first and true inventor of that feature which we have found to be common to the two devices and which is here the subject of controversy?

The patent statutes have always required such particularity of description in the applications for a patent as to leave no doubt that in the eye of the law he





is the first and true inventor who first reduces the conception of a new invention or discovery to practical and operative form. In *Bedford* v. *Hunt* (1 Mason, 302–304) Mr. Justice Story said:

The first inventor who has put the invention into practice, and he only, is entitled to a patent.

And, again, on page 305, he says:

The intent of the statute was to guard against defeating patents by the setting up of a prior invention which had never been reduced to practice. If it were the mere speculation of a philosopher or a mechanician, which had never been tried by the test of experience and never put into actual operation by him, the law would not deprive a subsequent inventor, who had employed his labors and his talents in putting it into practice, of the reward due to his ingenuity and enterprise.

So in *Agawam Co.* v. *Jordan* (7 Wall., 588) Mr. Justice Clifford states the rule as follows:

The settled rule of law is that whoever first perfects a machine is entitled to a patent, and is the real inventor, although others may have previously had the idea and made some experiments toward putting it in practice. He is the inventor, and is entitled to the patent, who first brought the machine to perfection and made it capable of useful operation.

So in *Whitely* v. *Swayne* (7 Wall., 685, 687) Mr. Justice Nelson said:

He is the first inventor and entitled to the patent who, being an original discoverer, has first perfected and adapted the invention to actual use.

This is the general rule, and had no exception under the statutes in force down to the act of July 4, 1836, (5 St., p. 117.) The fifteenth section of that act, in specifying the defenses which a defendant might set up in an action for infringement, permitted him to plead that the patentee—

had surreptitiously and unjustly obtained the patent for that which was in fact invented or discovered by another who was using reasonable diligence in adapting and perfecting the same.

The effect of the change made by the act of 1836 was considered by Mr. Justice Story in the case of *Reed* v. *Cutter*, (1 Story, 590,) where, referring to the words "was using reasonable diligence in adapting and perfecting his invention," he said:

These latter words were copied from the fifteenth section of the act of 1836, chapter 357, and constitute a qualification of the preceding language of that section; so that an inventor who has first actually perfected his invention will not be deemed to have surreptitiously or unjustly obtained a patent for that which was in fact first invented by another, unless the latter was at that time using reasonable diligence in adapting and perfecting the same. And this I take to be clearly the law; for he is the first inventor in the sense of the act, and entitled to a patent for his invention, who has first adapted and perfected the same to use; and until the invention is so perfected and adapted for use it is not patentable. An imperfect and incomplete invention, existing in mere theory or in intellectual notion, or in uncertain experiments, and not actually reduced to practice, and embodied in some distinct machinery, apparatus, manufacture, or composition of matter, is not, and indeed cannot be, patentable under our patent acts, since it is utterly impossible, under such circumstances, to comply with the fundamental requisites of those acts. In a race of diligence between two independent inventors, he who first reduces his invention to a fixed, positive, and practical form would seem to be entitled to a priority of right to a patent therefor. (*Woodcock* v. *Parker*, 1 Gall., 438.) The clause now under consideration seems to qualify that right by providing that in such case he who invents first shall have the prior right, if he is using reasonable diligence in adapting and perfecting the same, although the second inventor has, in fact, first perfected the same, and reduced the same to practice in a positive form. It thus gives full effect to the well-known maxim that he has the better right who is prior in point of time, namely, in making the discovery or invention.

*Reed* v. *Cutter* is a leading case, and has been followed by Mr. Justice Clifford in *White* v. *Allen* (2 Cliff., 224; 2 Fish. Pat. Cas., 440) and in later cases.

It is obvious from the foregoing that the man who first reduces an invention to practice is *prima facie* the first and true inventor, but that the man who first conceives and, in a mental sense, first invents a machine, art, or composition of matter may date his patentable invention back to the time of its conception, if he connects the conception with its reduction to practice by reasonable diligence on his part, so that they are substantially one continuous act. The burden is on the second reducer to practice to show the prior conception, and to establish the connection between that conception and his reduction to practice by proof of due diligence.

It has sometimes been held in the decisions in the Patent Office that the necessity for diligence on the part of the first conceiver does not arise until the date of the second conception; but this, we think, cannot be supported on principle. The diligence of the first reducer to practice is necessarily immaterial. It is not a race of diligence between the two inventors in the sense that the right to the patent is to be determined by comparing the diligence of the two, because the first reducer to practice, no matter what his diligence or want of it, is prior in right unless the first conceiver was using reasonable diligence at the time of the second conception and the first reduction to practice. The language of the statute, (section 4920,) in the use of the imperfect tense, "was using reasonable diligence," shows the legislative intent to confer a prior right on a first conceiver in a case where, after his mental act of invention, and pending his diligent reduction to practice, another inventor enters the field and perfects the invention before his rival. The reasonable diligence of the first conceiver must be pending at the time of the second conception, and must therefore be prior to it. Reasonable diligence by the first conceiver beginning when his rival enters the field could only carry his invention back to the date of the second conception, and in the race from that time the second conceiver must win because of his first reduction to practice. (See Roberts on Patents, sections 384–386; *Millward* v. *Barnes*, 11 O. G., 1060.) The elaborate opinion of the Commissioner of Patents, Mr. Mitchell, in the interference proceeding between Christie and Seybold, reported in 54 O. G., 957, cites all the authorities, and is quite convincing on this point. We fully concur therein. As Christie reduced the invention to practice nearly a year before Seybold's press was made, the burden is on Seybold to show that from the time of his original conception, which antedated that of Christie, he was using reasonable diligence in adapting and perfecting his idea to practical use. Has he sustained that burden? It is quite clear to us that he has not. The question of reasonable diligence in any case depends, of course, upon all the circumstances. A complicated invention, requiring many experiments and much study to give it practical form, would reasonably delay a reduction to practice after the first conception for a greater length of time than where the idea and the machine embodying it were of a simple character. (*Bradford* v. *Corbin*, 6 O. G., 223.) Then, too, the sickness of the inventor, his poverty, and his engagement in other inventions of a similar kind are all circumstances which may affect the question of reasonable diligence. (See *Webster* v. *Carpet Co.*, 5 O. G., 522; *Cox* v. *Griggs*, 1 Biss., 362, 2 Fish. Pat. Cas., 174; *Munger* v. *Connell*, 1 O. G., 491; *Proctor* v. *Ackroyd*, 6 O. G., 603; *Cushman* v. *Parham*, 9 O. G., 1108.)

In this case, Seybold's first conception was in October, 1885, and he did not reduce his machine to practical form until April, 1889, three years and a half

later. He made a rough sketch in January, 1886, which he subsequently lost. In October, 1888, three years after his first conception, he had working drawings made, and six months later a press was manufactured. His excuse for his delay is that until the spring of 1889 he could not afford to buy the necessary tools for the manufacture of the press, and, if he had been able to do so, his shop was not large enough to permit the use of them. He does not say, however, that he had not the means to have the press made at some other shop, where the proper tools were to be had, but, on the contrary, intimates that he might have done so, but for the fact that there would have been no profit for him to sell machines made by others according to his invention. Now, we do not think this a good excuse for failing to make at least one machine, in accordance with his conception. It is as much as to say that in his view his new conception, when reduced to practice, would not have sufficient value and utility to bring him any return commensurate with the outlay required to reduce it to practice, and in consequence he indefinitely postponed putting it into practical form until circumstances should change. This is a temporary abandonment of the idea, (*White* v. *Allen*, 2 Cliff., 224), and is not the due diligence which entitles him to the favor of the public, for whose benefit, primarily, the patent laws were enacted, (*Wright* v. *Postel*, 53 O. G., 603; 44 Fed. Rep., 352.)

It can hardly be claimed that the rough sketch made by Seybold of his proposed press in January, 1886, was a reduction to practice. It has been held in many cases that drawings, much more complete than the one here testified to, are not reductions to practice, as against a subsequent conceiver who first made an actual operative machine. (*Reeves* v. *Bridge Co.*, 1 O. G., 466; 5 Fish. Pat. Cas., 456; *Lubricator Manufg. Co.* v. *Renchard*, 9 Fed. Rep., 393, opinion by Mr. Justice Matthews; *Drill Co.* v. *Simpson*, 29 Fed. Rep., 288; *Ellithorp* v. *Robertson*, 4 Blatchf., 307; *Draper* v. *Mills Corp.*, 18 O. G., 276; *Odell* v. *Stout*, 23 O. G., 862; 22 Fed. Rep., 159.)

Further objection to reversing the decree is made on behalf of appellee on the ground that Christie was not the true inventor of the machine for which he obtained the patent. It is said that Christian Keck, who was in his employ, was the real inventor. We do not see how this is a subject which can be here investigated. The question here (section 4915, Revised Statutes) is only whether Seybold was the first and true inventor. It is certain that some one reduced the invention to practice before Seybold did, and, if that is so, Seybold is not the first and true inventor, unless he was using reasonable diligence to adapt and perfect his conception; and we have found that he was not doing this. If Christie's patent is void because he was not the first and true inventor, and Keck was, that would not entitle Seybold to a patent. The Commissioner of Patents did not consider the question, and we think he acted rightly in this respect.

On the whole case we find, therefore, that Seybold is not the true and first inventor.

The decree of the court below is reversed, with instructions to dismiss the bill at the costs of the complainant.

[Vol. 64. No. 12.]

## U. S. Circuit Court—District of New Jersey.

STOKES BROTHERS MANUFACTURING COMPANY *v.* HELLER *et al.*

*Decided May* 16, 1893.

PATENTS FOR INVENTIONS—INFRINGEMENT—INSPECTION OF WORKS.

In a suit to restrain alleged infringement of patents for rasps and files and the process and machinery for making the same plaintiffs failed for more than six months after the answer was filed to take any evidence, and then applied for an order that they be allowed to inspect fully defendants' factory. Defendants denied infringement, and alleged that for years before the patents were granted they made files under a secret process, not patented, which they still use. They also produced files made by such process before the date of the patent, which were apparently the same as plaintiffs' files. *Held* that the order for the examination would not be granted.

SUIT by the Stokes Brothers Manufacturing Company against Heller Brothers and others for the alleged infringement of the following patents: No. 376,400, granted to James and George Stokes, January 10, 1888, for a rasp-cutting machine; No. 383,999, granted to Philip S. Stokes, June 5, 1888, for rasps; No. 397,254, granted to Philip S. Stokes, February 5, 1889, for a rasp-cutting machine; No. 408,936, granted to Philip S. Stokes, August 13, 1889, for a method of forming teeth of rasps. Heard on complainant's motion for an order that defendants permit an inspection of their factory.

*Mr. W. H. Doolittle* for the complainant.
*Mr. John Dane, Jr.*, for the defendants.

GREEN, *J.*:

This bill is filed to restrain the defendants from infringing certain Letters Patent granted on various dates to the complainants for rasps or files. The patents cover as well the process of manufacture, the machines used, and the manufactured article. The bill contained numerous interrogatories to be answered by the defendants, and also called for an answer from each of the defendants under oath. Such answers have been duly made, and were filed September 16, 1892. Since that time the complainants have taken no step forward in the litigation. Not a particle of evidence to sustain the issues on their part has been taken. They now move the court to order that the defendants do permit a full and thorough inspection of their manufactory, situate in Newark, N. J., and of all their machinery, and of all their processes for the manufacture of the rasps or files made by them, and which files and rasps and processes and machines, the complainants allege, infringe their Letters Patent. The defendants, in their answer, deny infringement, and, furthermore, assert under oath that rasps have been manufactured by them by a peculiar process, not patented, but kept as a secret in their business, since 1836; and they produce files and rasps before the court which, as shown by affidavits uncontradicted, were made many years before the Letters Patents in question were issued, and which to the eye at least seem to be entirely similar to those now made by the complainants. Under these circumstances to compel the defendants to open their manufactory to hostile inspection of rivals in business and to disclose the character of the machines and the process by which for so many years they have made a sucessful article of merchandise would be unjust and inequitable. The motion is too obviously the excuse for a "fishing excursion," and does not, under the circumstances of this case, commend itself to the court.

It is therefore denied.

THE
# OFFICIAL GAZETTE
OF THE
# United States Patent Office.
[BY AUTHORITY OF CONGRESS.]

VOL. 64.—No. 13. TUESDAY, SEPTEMBER 26, 1893. PRICE—$5 per year.

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| PRINTS | None. |
| LABELS | None. |
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## Changes in Classification.

(ORDER No. 893.)

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
*Washington, D. C., September* 22, 1893.

The following changes in classification are directed:

In Division X, Class 105, Railway-Cars, Couplings, sub-classes "41. Continuous draw-bars," and "48. Link-setters," are abolished, and sub-class "60. Twin jaws" is established.

In Division XIII, Class 306, Metal-Working, a sub-class is established to be entitled "8. Metal-working, electric."

In Division XXI, Class 19, Carding, a sub class is established to be entitled "4. Stopping"

S. T. FISHER.
*Acting Commissioner.*

## Amended Rules of Practice.

Rule 25 and the first paragraph of Rule 122 of the Rules of Practice (edition of April 1, 1893) of the United States Patent Office are hereby amended to read as follows:

Rule 25. In case of the death of the inventor, the application will be made by and the patent will issue to his executor or administrator. In such case the oath required by Rule 46 will be made by the executor or administrator. In case of the death of the inventor during the time intervening between the filing of his application and the granting of a patent thereon, the Letters Patent will issue to *the executor or administrator upon proper intervention by him.*

Rule 122. Motions to dissolve an interference upon the ground that no interference in fact exists, or that there has been such irregularity in declaring the same as will preclude a proper determination of the question of priority, or which deny the patentability of an applicant's claim, or his right to make the claim, should, if possible, be made not later than the twentieth day after the statements of the parties have been received and approved. Such motions *should be noticed for hearing upon a day certain before the Examiner of Interferences upon the question of transmission to the Primary Examiner*, and when in proper form will be transmitted by the Examiner of Interferences, with the files and papers, to the proper Primary Examiner for his determination, who *will thereupon fix a day certain when the said motion will be heard before him upon the merits, and give notice thereof to all the parties. If a stay of proceedings is desired, a motion therefor should accompany the motion for transmission.*

## Attorneys.

DEPARTMENT OF THE INTERIOR,
OFFICE OF THE SECRETARY,
*Washington, D. C., September* 21, 1893.

SIR: The Secretary of the Interior has ordered that A. W. Ballew, of Rome, Ga., be not recognized after this date as agent or attorney in the prosecution of any claim or other matter before this Department or any Bureau thereof.

Very respectfully,

WM. H. DELACY,
*Acting Chief Clerk.*

The Commissioner of Patents.

DEPARTMENT OF THE INTERIOR,
OFFICE OF THE SECRETARY,
*Washington, D. C., September* 21, 1893.

SIR: The Secretary of the Interior has ordered that W. H. Hoxie, of Corning, Iowa, be not recognized after this date as agent or attorney in the prosecution of any claim or other matter before this Department or any Bureau thereof.

Very respectfully,

WM. H. DELACY,
*Acting Chief Clerk.*

The Commissioner of Patents.

DEPARTMENT OF THE INTERIOR,
OFFICE OF THE SECRETARY,
*Washington, D. C., September* 21, 1893.

SIR: The Secretary of the Interior has ordered that Mathias S. Moore, of Washington, N. C., be not recognized after this date as agent or attorney in the prosecution of any claim or other matter before this Department or any Bureau thereof.

Very respectfully,

WM. H. DELACY,
*Acting Chief Clerk.*

The Commissioner of Patents.

## The Official Gazette.

THE OFFICIAL GAZETTE is published every Tuesday, simultaneously with the weekly issue of patents. From January 1, 1872, (the commencement of its publication,) to June 30, 1883, it was published and bound in semi-annual volumes; since July 1, 1883, in quarterly volumes. All subscriptions must commence with the beginning of a volume; none taken for less than three months. Terms: To all subscribers within the United States and Canada, $5 per annum; to foreign subscribers, $7; single copies, 10 cents; bound semi-annual volumes, (prior to June 30, 1883,) full sheep, $4 per volume; bound quarterly volumes, (subsequent to July 1, 1883,) full sheep, $2.75 per volume. No club rates. *Payment in advance.* All orders should be addressed to "The Commissioner of Patents, Washington, D. C."

## Notice.

It is hereby directed that in the printing of claims of applications for patents the punctuation of the claims as made by applicants be strictly followed, and that the punctuation of the specification made by applicants be not departed from except to cure a manifest absurdity.

## Names of Applicants.

When the full first name of the applicant does not appear either in his signature or in the preamble to the specification, the Examiner will, in his first official letter, require an amendment supplying the omission, and he will not pass the application to issue until the omission has been supplied, unless an affidavit shall have been filed setting forth that the full first name of the applicant is the one originally given by him.

## Issue of September 26, 1893.

| | |
|---|---|
| Patents | 376—No. 505,429 to No. 505,804, inclusive. |
| Designs | 20—No. 22,796 to No. 22,815, inclusive. |
| Trade-Marks | 24—No. 28,642 to No. 28,665, inclusive. |
| Labels | None. |
| Prints | None. |
| Reissues | 2—No. 11,367 to No. 11,368, inclusive. |
| Total issue | 422 |

TO CITIZENS OF THE UNITED STATES.

| States. | Patents and Designs. | Trade-Marks. | States. | Patents and Designs. | Trade-Marks. |
|---|---|---|---|---|---|
| Alabama | | | Nevada | | |
| Arizona Territory | | | New Hampshire | 1 | |
| Arkansas | 1 | | New Jersey | 9 | |
| California | 3 | | New Mexico Territ'y | | |
| Colorado | 9 | | New York | 78 | 3 |
| Connecticut | 19 | 2 | North Carolina | 2 | |
| Delaware | | | North Dakota | | |
| District of Columbia | 3 | | Ohio | 37 | 1 |
| Florida | 1 | | Oregon | 1 | |
| Georgia | 1 | | Pennsylvania | 38 | 1 |
| Idaho | | | Rhode Island | 7 | |
| Illinois | 30 | 3 | South Carolina | 1 | |
| Indiana | 13 | 1 | South Dakota | 1 | |
| Indian Territory | | | Tennessee | 5 | |
| Iowa | 1 | | Texas | 5 | |
| Kansas | 4 | | Utah Territory | | |
| Kentucky | 2 | | Vermont | 1 | |
| Louisiana | | | Virginia | | |
| Maine | 2 | | Washington | 4 | |
| Maryland | 5 | 1 | West Virginia | 1 | |
| Massachusetts | 38 | 2 | Wisconsin | 10 | |
| Michigan | 9 | | Wyoming | | |
| Minnesota | 10 | 1 | U. S. Army | | |
| Mississippi | | | U. S. Navy | | |
| Missouri | 15 | | | | |
| Montana | | | Total to citizens of the United States | 359 | 15 |
| Nebraska | 2 | | | | |

TO CITIZENS OF FOREIGN COUNTRIES.

| Countries. | Patents and Designs. | Trade-Marks. | Countries. | Patents and Designs. | Trade-Marks. |
|---|---|---|---|---|---|
| Argentine Republic | | | Netherlands | | |
| Austria-Hungary | | 1 | Newfoundland | | |
| Belgium | | | New South Wales | | |
| Bermuda | | | New Zealand | | |
| Brazil | | | Norway | 1 | |
| Canada | 3 | 2 | Queensland | | |
| Chile, Republic of | | | Russia | | |
| Cuba | | | Scotland | | |
| Denmark | | | South Africa | | |
| Ecuador | | | South Australia | | |
| England | 11 | 3 | Spain | | |
| France | 1 | 2 | Sweden | 1 | |
| Germany | 5 | 1 | Switzerland | 1 | |
| India | 1 | | Victoria | 1 | |
| Ireland | 1 | | West Australia | | |
| Italy | 1 | | | | |
| Japan | | | Total to citizens of foreign countries | 27 | 9 |
| Mexico | | | | | |

## APPLICATIONS UNDER EXAMINATION.

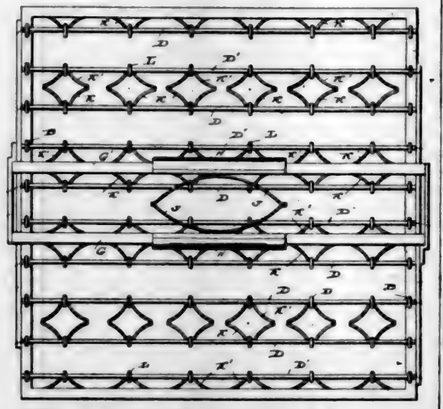
*Condition at Close of Business September 18, 1893.*

| Division No. | Subjects of invention. | Oldest new application and oldest action by applicant awaiting office action. New. | Amended | No. of applications awaiting action. |
|---|---|---|---|---|
| | *In arrears.—Under one month.* | | | |
| 31 | Gas, Painting, Hides, Skins, and Leather, Alcohol, Oils, Fats, and Glue, etc. | Sept. 4 | Sept. 19 | 21 |
| 2 | Farm Stock, Products, etc | Aug. 31 | Sept. 14 | 45 |
| 13 | Metal-Working, Arms and Projectiles, Nails and Spikes, Needles and Pins, etc. | Aug. 31 | Sept. 7 | 46 |
| | *Between one and two months.* | | | |
| 11 | Boots and Shoes, Clasps, Buckles, and Buttons, Harness, Hose and Belting, and Leather-Working Machinery. | July 26 | Sept. 14 | 147 |
| 21 | Textiles, etc. | July 21 | Sept. 14 | 104 |
| 14 | Metal-Bending, Wire-Working, Coin-Controlled Apparatus, Farriery, Nut and Bolt Locks, etc. | July 21 | Sept. 13 | 89 |
| 27 | Brushing and Scrubbing, Grinding and Polishing, Laundry, etc. | Aug. 14 | Sept. 11 | 86 |
| 23 | Advertising, Aeration and Bottling, Baggage, Packing and Storing Vessels, etc. | July 21 | Sept. 11 | 172 |
| 5 | Fine Arts, Stationery, Book-Binding, Music, etc. | Aug. 7 | Sept. 9 | 119 |
| 15 | Plastics, Paper-Making, Paving, Glass, Fuel, Bread-Making, etc. | July 25 | Sept. 9 | 159 |
| 3 | Metallurgy, Metal Founding, Coating, Annealing and Tempering, Electro-Chemistry, etc. | July 24 | Sept. 9 | 115 |
| 10 | Carriages and Wagons and Railway-Cars. | Aug. 9 | Sept. 7 | 183 |
| 8 | Furniture, Toilet, Umbrellas and Canes, etc | July 19 | Sept. 7 | 235 |
| 5 | Chemistry, Explosives, Medicines, Fertilizers, Preserving, Photography, Sugar and Salt, etc. | Aug. 5 | Sept. 2 | 120 |
| 20 | Builders' Hardware, Cutlery, Safes, Dentistry, Surgery, Undertaking, Artificial Limbs, etc | July 24 | Aug. 31 | 148 |
| 12 | Mechanical Engineering, Stores-Service, etc. | July 20 | Aug. 31 | 220 |
| 19 | Stoves and Furnaces | July 21 | Aug. 23 | 221 |
| 16 | Telegraphy, Telephony, Electric Lighting and Signaling. | Aug. 12 | Aug. 21 | 68 |
| 24 | Sewing-Machines, Crinoline and Corsets, and Apparel. | July 28 | Aug. 21 | 171 |
| 30 | Lamps, Gas-Fittings, Linotyping, Matrix Making Machines, and Type-Writing Machines. | July 19 | July 29 | 228 |
| | *Between two and three months.* | | | |
| 25 | Artesian and Oil Wells, Butchering, Mills and Thrashing, Stone-Working, Vegetable Cutters and Crushers. | June 23 | Sept. 11 | 208 |
| 7 | Harvesters, Games and Toys, and Velocipedes. | July 8 | Aug. 31 | 306 |
| 1 | Tillage and Fences | July 11 | Aug. 26 | 170 |
| 17 | Paper-Manufactures and Printing. | June 19 | Aug. 24 | 240 |
| 4 | Civil Engineering, Fire-Proof Buildings, Fire Escapes and Ladders, etc. | July 15 | Aug. 9 | 240 |
| | *Between three and four months.* | | | |
| 33 | Instruments of Precision, Acoustics, Optics, etc. | May 31 | Sept. 7 | 307 |
| 18 | Steam-Engineering, etc | June 15 | Sept. 6 | 241 |
| 29 | Wood-Working Machines, Carpentry, Coopering, and Roofing, etc. | June 9 | Sept. 4 | 241 |
| 26 | Fire-Arms, Fishing and Trapping, Navigation, Signals, etc. | May 31 | Aug. 30 | 229 |
| 9 | Hydraulics, Fire-Extinguishers, etc. | June 15 | Aug. 17 | 320 |
| | *Between five and six months.* | | | |
| 28 | Electricity, Generation, Distribution, Electric Railways, etc. | Mar. 27 | Sept. 15 | 245 |
| 22 | Pneumatics, Refrigeration, Air and Gas Engines, etc. | Mar. 27 | Aug. 19 | 277 |
| | Total number of applications awaiting action | | | 5,894 |
| | *Under one month in arrears.* | | | |
| | Designs | Sept. 13 | Sept. 12 | 25 |
| | Trade-Marks | Sept. 13 | Sept. 15 | 19 |

# PATENTS

## GRANTED SEPTEMBER 26, 1893.

**505,429.** DEVICE FOR TESTING AND HANDLING EGGS. WILLIAM H. B. ALDERSON, Eureka Springs, Ark., assignor of one-half to Edwin R. Ray, same place. Filed Apr. 3, 1893. Serial No. 468,564. (No model.)



*Claim.*—1. A device of the character described, consisting of a frame, grippers depending from and pivotally connected to the frame, and means for operating the grippers to cause them to engage and release the eggs, for the purpose described.

2. A device of the character described, consisting of a frame, a series of rods or shafts mounted in the frame, grippers arranged in pairs and connected to the rods, and means for moving the rods to operate the grippers, for the purpose described.

3. A device of the character described, consisting of a frame, rods or shafts mounted in the frame and having a crank at one end, grippers carried by the rods, and handles connected to the cranks on the rods for operating the grippers for the purpose described.

4. A device of the character described, consisting of a frame, rods mounted therein and having a crank at one end, grippers connected to the rods and consisting each of two gripping arms bent to conform to the shape of an egg, and means for moving the rods to operate the grippers, for the purpose described.

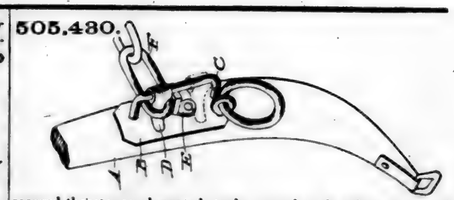
5. A device of the character described, consisting of a frame, rods mounted in the frame, grippers carried by the rods, rods connected to the gripper rods, and pivoted handles connected to said rods and having springs for returning them to normal position, as described.

**505,430.** HAME. LEE ANDERSON, Paris, Tex., assignor of three-fourths to Thomas Broad, John Martin, and R. W. Rush, same place. Filed Feb. 6, 1893. Serial No. 461,472. (No model.)

*Claim.*—1. In a trace or tug fastener, the combination with the hame, of a staple secured thereto, a pivoted tongue mounted on the staple, and a button to limit the movement of the tongue.

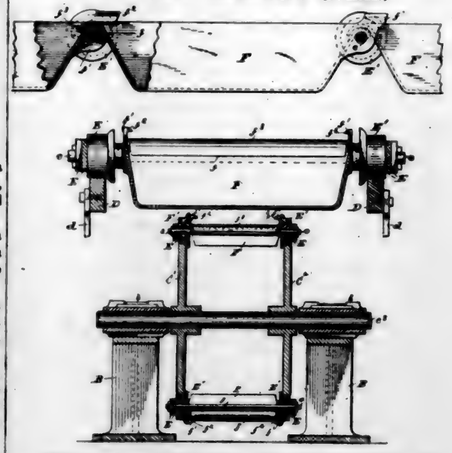
2. In a trace or tug fastener, the combination with the hame, of a staple secured thereto, a pivoted tongue mounted on the staple, a button pivoted to the hame, and a stop to limit the movement of the button.

3. In a trace or tug fastening, the combination of a hame, a plate



secured thereto, an elongated staple secured to the plate, a pivoted tongue mounted on the staple and adapted to bear at its free end upon the plate, a button pivoted to the plate and adapted to limit the movement of the tongue on the staple, and a stop to limit the movement of the button.

**505,431.** CHAIN CONVEYER. CHARLES O. BARTLETT, Cleveland, Ohio. Filed Feb. 6, 1891. Serial No. 380,446. (No model.)



*Claim.*—1. In a chain conveyer, the combination with a chain composed of links connected by cross bars, of buckets, each bucket having at one end a curved end flange resting upon a cross bar of the chain and also having lugs pivoted upon said cross bars, having at the other end a curved end flange resting and turning upon the end flange of the adjoining bucket, and having lips upon one end adapted to engage and loosely confine the end of the adjoining bucket, substantially as set forth.

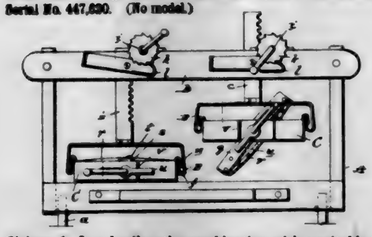
2. In a chain-conveyer, the combination with a chain, of buckets, each bucket having a curved, rear end-flange resting upon a cross-bar of a chain-link, and having at the same end upwardly-projecting lugs pivoted upon said cross-bar and forming inwardly-projecting lips, and each of said buckets formed with a curved, forward end-flange, resting and turning upon the rear end-flange of the adjoining bucket and retained and loosely confined upon the same by means of said lips, substantially as set forth.

**505,432.** COVER-FASTENING FOR POTS. CARL J. P. BIENGRAESS, Hamburg, Germany. Filed Apr. 5, 1893. Serial No. 469,105. (No model.)



*Claim.*—The combination of a pot having a shoulder $a^1$, which is exposed at its rear half, with an eccentric flange which extends over the front of the shoulder and with a cover adapted to fit upon the shoulder, substantially as specified.

**505,433.** BROILER. JOSEPH O. BOOM, Fayetteville, Pa., assignor of one-half to George W. Bothwell, Jersey City, N. J. Filed Oct. 3, 1892. Serial No. 447,830. (No model.)



*Claim.*—1. In a broiler, the combination with a suitable frame; of a meat holder, and an adjustable connection between the meat holder and the frame, whereby said holder may be moved vertically so as to carry it toward or from the fire, substantially as and for the purpose set forth.

2. In a device for broiling meats and the like, the combination with the main frame; of a holder, a frame supporting the holder, rack bars connected to the frame and taking through guides in the main frame, a shaft journaled in the main frame and having a crank at one end, pinions mounted on the shaft and engaging the rack bars, and a suitable means for locking the shaft against casual rotation, substantially as and for the purpose set forth.

3. In a broiling device, the combination with a frame and a suitable means for supporting said frame; of a rotary shaft journaled in the frame and having a longitudinal adjustment with respect to said frame, a holder mounted on the rotary shaft and adapted to turn therewith, and a suitable means for locking the shaft and securing the holder in its adjusted position, substantially as specified.

4. In a broiling device, substantially as described, the combination with a holder frame having the notched lug *v*, at one end, and a suitable means for supporting said frame; of a shaft journaled in the holder frame and having a longitudinal adjustment, a holder mounted on the shaft, and lateral branches extending from the shaft and adapted to engage the lug *v*, of the frame, substantially as described.

5. In a broiling device, substantially as described, the combination with a supporting frame having one of its end bars raised; of a slidable frame having flanges adapted to engage the side bars of the supporting frame and a meat holder mounted in said slidable frame substantially as and for the purpose set forth.

6. In a broiling device, the combination with a supporting frame; of the slidable holder frame having flanges adapted to engage the side bars of the supporting frame, a shaft journaled in the holder frame and having a longitudinal adjustment, the meat holder mounted on said shaft, and a suitable means for locking the shaft against casual rotation, substantially as specified.

7. In a broiling device, substantially as described, the combination with a frame having the raised end bar *g*, provided with the notch *h*, of the holder frame having the vertical lug *v*, and the flanges adapted to engage the side bars of the frame, the longitudinally-adjustable shaft journaled in the holder frame, and having the lateral branches *u*, and the holder mounted on said shaft, substantially as described.

8. In a broiling device, substantially as described, the combination with a supporting frame, having the raised end bar *g*, provided with the notch *h*, of the holder frame having the flanges adapted to engage the side bars of the frame, the longitudinally-adjustable shaft journaled in the holder and having the lateral branches *u*, and the holder mounted on the said shaft, substantially as described.

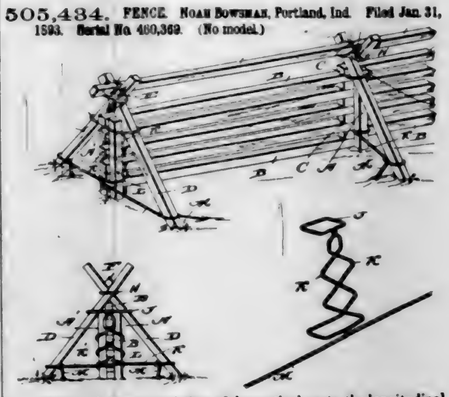
9. In a broiling device, substantially as described, the combination with a frame, having the raised end bar provided with a notch at an intermediate point in its length, and a suitable means for supporting said frame; of a holder frame mounted upon the frame, the shaft journaled in the holder frame and having a longitudinal or endwise adjustment, a lateral branch extending from the shaft and adapted to engage the notch of the frame and a holder mounted on the said shaft, substantially as specified.

10. In a broiling device, substantially as described, the combination with a holder frame; of a shaft journaled therein, and the holder comprising the fixed section mounted on the shaft and the section flexibly connected to the fixed section, substantially as specified.

11. In a broiling device, substantially as described, the combination with a main frame, of a vertically adjustable frame, a suitable means for holding the frame at various elevations, a slidable frame mounted on the vertically-adjustable frame and a meat holder mounted in the slidable frame, substantially as specified.

12. In a broiling device, substantially as described, a main frame, a vertically adjustable frame, a suitable means for holding the frame at various elevations, a slidable frame mounted on the vertically-adjustable frame, a meat holder mounted and adapted to turn in the slidable frame, and a suitable means for holding the meat holder against casual rotation, substantially as specified.

**505,434.** FENCE. NOAH BOWSMAN, Portland, Ind. Filed Jan. 31, 1893. Serial No. 460,362. (No model.)



*Claim.*—A fence consisting of the vertical posts, the longitudinal rails supported therein, the inclined posts having their upper ends crossing to form seats, the rider rails resting and supported therein, the binding loop passing around the ends of the rider rails and the upper ends of the inclined posts, the loop passing around the inclined posts, vertical posts and the rails, the branches leading from the loop and twined around the vertical posts and rails, the lower loop passing around the vertical posts and rails, and the branches leading from the loop into the ground, all as shown.

**505,435.** BRAKE FOR RAILWAY-CARS. GEORGE F. BRANDAU, Cohoes, N. Y., assignor of one-fourth to James Wallace, same place. Filed June 7, 1893. Serial No. 476,857. (No model.)

*Claim.*—1. A brake shoe having two oppositely curved faces and a straight connecting face with an elastic block held in a recess therein and having a roughened acting face substantially as shown and described.

2. The combination with a brake shoe, and a shaft to which it is secured, of a pulley on said shaft, a windlass carrying frame and cable, and a plurality of lugs; and means for operating the same, substantially as shown and described.

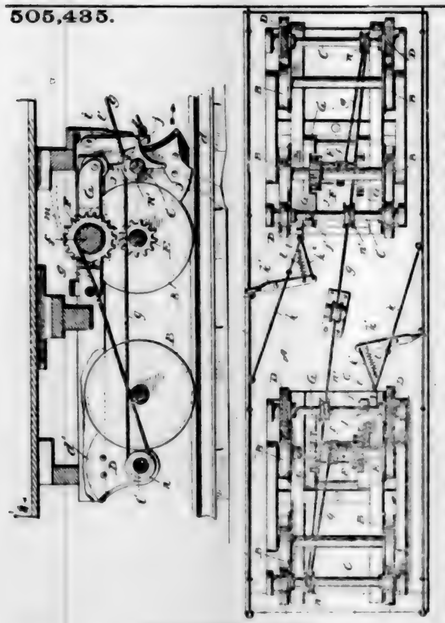
3. The combination with a brake shoe, and a shaft to which it is secured, of a pulley on said shaft, a windlass carrying frame and cable, and a plurality of lugs, and means for operating the same, and a spring actuated pawl, substantially as shown and described.

4. The combination with a brake shoe, and a shaft to which it is secured, of a pulley on the shaft, a windlass carrying frame and cable, and a plurality of lugs; and means for operating the same, and a spring actuated pawl, a pivoted lever and a sliding rod J actuated thereby.

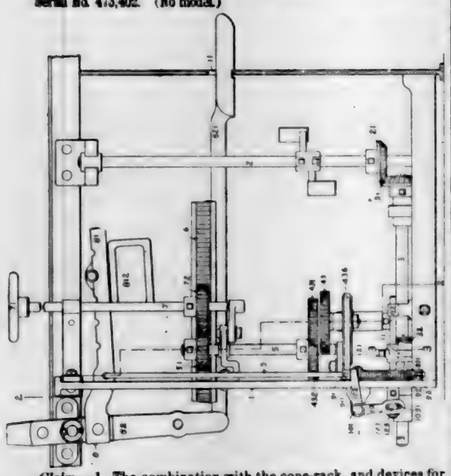
5. In combination with the brake actuating mechanism, comprising in part a windlass carrying frame, the locking pawl and the longitudinally movable rod, connected to and adapted to move said pawl when moved in either direction, substantially as described.



**505,435.**



**505,436.** FLY-FRAME. WILLIAM P. CANNING, Lowell, Mass., assignor to the Lowell Machine Shop, same place. Filed May 8, 1893. Serial No. 473,402. (No model.)



*Claim.*—1. The combination with the cone-rack, and devices for moving the same endwise as required for shifting the cone-belt, the said devices embracing a pair of intermeshing bevel-wheels and a shaft on which one of said wheels is splined, of a movable member of the stop-motion devices, and connections intermediate the said splined wheel and the said movable member whereby the splined wheel is slid lengthwise of its shaft when the said member of the stop-motion devices is moved, and thereby is disengaged from the other bevel-wheel, substantially as described.

2. The combination with the cone-rack, and devices for moving the same endwise as required for shifting the cone-belt, the said devices embracing a pair of intermeshing bevel-wheels and a shaft on which one of the said wheels is splined, of a movable member of the stop-motion devices, a rocker having connected therewith a fork in engagement with the splined wheel and whereby the latter may be slid lengthwise of its shaft, and connections between the said rocker and the said movable member of the stop-motion devices whereby the rocker may be moved from the said member, substantially as described.

3. The combination with the cone-rack, and devices for moving the same endwise as required for shifting the cone-belt, the said devices embracing a pair of intermeshing bevel-wheels and a shaft on which one of the said wheels is splined, of a movable member of the stop-motion devices, a fork mounted to move in the direction of the length of the said shaft and in engagement with the splined wheel, and a rocker having an arm which is operatively connected with the said fork, and also having a second arm which is operatively connected with the said movable member of the stop-motion devices, substantially as described.

4. The combination with the cone-rack, and devices for automatically moving the same endwise as required for shifting the cone-belt, the said devices embracing a pair of intermeshing bevel-wheels and a shaft on which one of the said wheels is splined, of a shaft having a pinion in engagement with the cone-rack and a hand wheel for effecting adjustment by hand, a movable member of the stop-motion devices, and connections intermediate the said splined wheel and the said movable member of the stop-motion devices whereby the splined wheel is slid lengthwise of its shaft when the said member of the stop-motion devices is caused to act, and thereby is disengaged from the other bevel-wheel, substantially as described.

5. The combination with the cone-rack, and devices for automatically moving the same endwise as required for shifting the cone-belt, the said devices embracing a pair of intermeshing bevel-wheels and a shaft on which one of the said wheels is splined, of a shaft having a pinion in engagement with the cone-rack and a hand-wheel for effecting adjustment by hand, a movable member of the stop-motion devices, a rocker having connected therewith a fork in engagement with the splined wheel and whereby the latter may be slid lengthwise of its shaft, and connections between the said rocker and the said movable member of the stop-motion devices whereby the rocker may be moved from the said member, substantially as described.

6. The combination with the cone-rack, and devices for automatically moving the same endwise as required for shifting the cone-belt, the said devices embracing a pair of intermeshing bevel-wheels and a shaft on which one of the said wheels is splined, of a shaft having a pinion in engagement with the cone-rack and a hand-wheel for effecting adjustment by hand, a movable member of the stop-motion devices, a fork mounted to move in the direction of the length of the said shaft and in engagement with the splined wheel, and a rocker having an arm which is operatively connected with the said fork, and also having a second arm which is operatively connected with the said movable member of the stop-motion devices, substantially as described.

7. The combination with the cone-rack, and devices for moving the same endwise as required for shifting the cone-belt, the said devices embracing a pair of intermeshing bevel-wheels and a shaft on which one of the said wheels is splined, of a movable member of the stop-motion devices, a rocker having connected therewith a fork in engagement with the splined wheel and whereby the latter may be slid lengthwise of its shaft, and yielding connections between the said rocker and the said movable member of the stop-motion devices whereby the rocker may be moved from the said member, substantially as described.

8.—The combination with the cone-rack, and devices for moving the same endwise as required for shifting the cone-belt, the said devices embracing a pair of intermeshing bevel-wheels and a shaft on which one of the said wheels is splined, of a movable member of the stop-motion devices, a fork mounted to move in the direction of the length of the said shaft and in engagement with the splined wheel, and a rocker having an arm which is operatively connected with the said fork, and also having a second arm and yielding connections intermediate the said second arm and the said movable member of the stop-motion devices, substantially as described.

9. The combination with the cone-rack, and devices for moving the same endwise as required for shifting the cone-belt, the said devices embracing a pair of intermeshing bevel-wheels and a shaft on which one of the said wheels is splined, of a movable member of the stop-motion devices, a rocker having connected therewith a fork in engagement with the splined wheel and whereby the latter may be slid lengthwise of its shaft, and yielding connections comprising a rod and spring between the said rocker and the said movable member of the stop-motion devices whereby the rocker may be moved from the said member, substantially as described.

10. The combination with the cone-rack, and devices for moving the same endwise as required for shifting the cone-belt, the said devices embracing a pair of intermeshing bevel wheels and a shaft on which one of the said wheels is splined, of a movable member of the stop-motion devices, a fork mounted to move in the direction of the length of the said shaft and in engagement with the splined wheel, and a rocker having an arm which is operatively connected with the

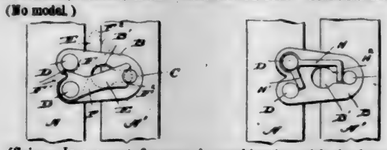
said fork, and also having a second arm and yielding connections comprising a rod and spring intermediate the said second arm and the said movable member of the stop-motion devices, substantially as described.

11. The combination with the cone-rack, and devices for moving the same endwise as required for shifting the cone-belt, the said devices embracing a pair of intermeshing bevel wheels and a shaft on which one of said wheels is splined, of means for moving the splined wheel lengthwise of its shaft, substantially as described.

12. The combination with the cone-rack, and devices for moving the same endwise as required for shifting the cone-belt, the said devices embracing a pair of intermeshing bevel-wheels and a shaft on which one of said wheels is splined, of a rocker having connected therewith a fork in engagement with the splined wheel and whereby the latter may be slid lengthwise of its shaft, and means for moving the rocker, substantially as described.

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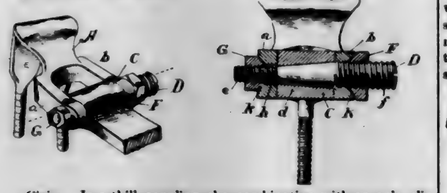
**505,437. CORSET-FASTENING.** HORATIO R. CARTER and WARD H. SNYDER, Jackson, Mich. Filed Dec. 14, 1892. Serial No. 455,145. (No model.)



*Claim.*—In a corset fastener, in combination with the key hole slotted plate and stud member, the plate secured to the steel by two rivets substantially as described, of a plane surfaced latch plate having angularly disposed arms forming a latch and stop substantially as described and pivoted to the slotted plate by one of the securing rivets and to swing in the same plane as the plate, as set forth.

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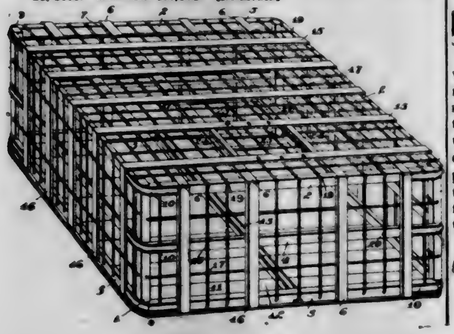
**505,438. THILL-COUPLING.** SHEPARD W. CATELY, Cortland, N. Y., assignor to Alice M. Etting, same place. Filed May 15, 1893. Serial No. 474,284. (No model.)



*Claim.*—In a thill coupling, the combination with an axle clip having two ears, one provided with a threaded hole and the other with a smaller unthreaded hole, both of said holes being countersunk on their outer sides, of an eye fitting between said ears and provided with a conical opening, a bolt having a plain conical central portion fitting in the conical opening in the eye, a threaded end fitting the threaded hole in the ear, and a smaller threaded end passing through the unthreaded hole in the other ear, and conical nuts for centering the bolt fitting on the threaded ends of said bolt resting in the countersinks in the ears, as set forth.

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**505,439. COOP.** SAMUEL P. CLOYD, Trezevant, Tenn. Filed Jan. 28, 1893. Serial No. 460,124. (No model.)



*Claim.*—1. A coop comprising corner posts, top and bottom horizontal frame bars having their ends recessed at their inner faces and receiving the corner posts therein and forming partial sockets for the same, said top and bottom bars having their ends rounded at the outer faces, the angle strips secured to the outer faces of the top and bottom frame bars and conforming to the same, a bottom, and strips and wires for completing the coop, substantially as described.

2. A coop comprising corner posts, top and bottom horizontal frame bars having their inner faces recessed at the ends to receive and form partial sockets for the corner posts and having their ends rounded at their outer faces, the intermediate horizontal frame bars having their ends rounded and secured to the corner posts, the angle strips secured to the ends of the horizontal frame bars, the intermediate top frame bars, the strips arranged on the top and sides of the coop, and the wires located between the strips, substantially as described.

3. A coop comprising corner posts, top and bottom horizontal frame bars secured to the corner posts, the top bars being provided at their upper outer edges with notches and the bottom bars having perforations, and wires extending over the top of the coop and arranged in the notches of the top bars and having their ends passed through the perforations of the bottom bars and turned against the same, substantially as described.

4. A coop having an opening at its top and provided with a series of bars and strips arranged at right angles and framing the opening, the cross-pieces 24 secured to the bars adjacent the opening, the cleats secured to the lower faces of the bars adjacent to the opening and projecting therefrom and forming ways, stop bars arranged at the ends of the ways and closing the same, and a sliding door mounted in the ways, substantially as described.

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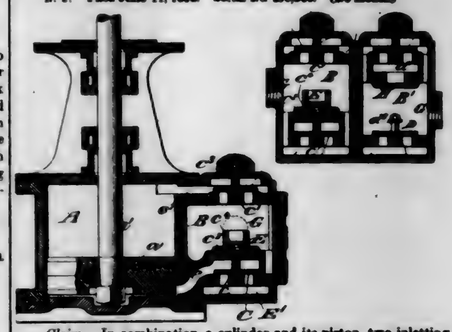
**505,440. MANUFACTURE OF KEY-BLANKS.** GEORGE B. COWLES, New Britain, Conn. Filed Feb. 27, 1893. Serial No. 463,836. (No model.)



*Claim.*—That improvement in the manufacture of key blanks which consists in cutting the blanks into an approximate form from sheet metal, rounding up the stem and forming the shoulder enlargement therein by means of lateral and endwise pressure, then striking the same in dies and removing the surplus metal, substantially as described and for the purpose specified.

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**505,441. DOUBLE-ACTING PUMP.** WILLIAM CRAIG, Brooklyn, N. Y. Filed June 11, 1892. Serial No. 436,289. (No model.)



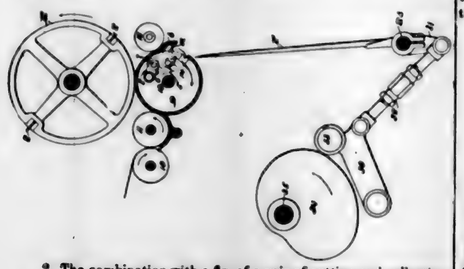
*Claim.*—In combination, a cylinder and its piston, two inletting valves in alignment and separated by a removable partition in alignment with the valves, two outletting valves in alignment and separated by a removable partition in alignment with the valves, an inletting chamber in open communication with the two inletting valves upon opposite sides of the partition, an inletting chamber in open communication with the outletting valves upon opposite sides of their partition, inletting conduits leading from above the inletting valve to the opposite ends of the cylinder and outletting conduits leading from the opposite ends of the cylinder to the under sides of the outletting valves, substantially as set forth.

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**505,442. SHEET COLLECTING AND DELIVERY MECHANISM.** LUTHER G. CRESWELL, Brooklyn, assignor, by direct and mesne assignments, to Robert Hoe, Theodore B. Mead, and Charles W. Carpenter, New York, N. Y. Filed Mar. 3, 1892. Serial No. 423,561. (No model.)



*Claim.*—1. The combination with a fly, of a sheet collecting cylinder, and devices co-acting therewith to sever sheets from the web and deliver them directly from the cylinder to the fly, substantially as described.



2. The combination with a fly, of a pair of cutting and collecting cylinders, the collecting cylinder having sheet holding pins, and means for delivering the sheets from the pins directly to the fly, substantially as described.

3. The combination with a fly, of a pair of cutting and collecting cylinders, the collecting cylinder having sheet holding pins and strippers operating to deliver the sheets from the pins directly to the fly, and a feeding roll mounted behind the throw off point of said collecting cylinder, and co-acting therewith to advance the sheets when released from the pins, substantially as described.

4. The combination with a fly, of a pair of cutting and collecting cylinders, the collecting cylinder having sheet holding pins and strippers operating to deliver the sheets from the pins directly to the fly, and a spring pressed feeding roll mounted behind the throw off point of said collecting cylinder, and co-acting therewith to advance the sheets when released from the pins, substantially as described.

5. The combination with a fly, of a pair of cutting and collecting cylinders, the collecting cylinder having sheet holding pins and strippers operating to deliver the sheets from the pins directly to the fly, and a spring pressed feeding roll consisting of a series of disks adjustable longitudinally of the cylinder mounted behind the throw off point of said collecting cylinder, and coacting therewith to advance the sheets when released from the pins, substantially as described.

6. The combination with a pair of cutting and collecting cylinders, the collecting cylinder having sheet holding pins and strippers operating to deliver the sheets from the pins, of a feeding roll mounted behind the throw off point of said collecting cylinder and co-acting therewith to advance the sheets when released from the pins, substantially as described.

7. The combination with a pair of cutting and collecting cylinders, the collecting cylinder having sheet holding pins and strippers operating to deliver the sheets from the pins, of a spring pressed feeding roll mounted behind the throw off point of said collecting cylinder and co-acting therewith to advance the sheets when released from the pins, substantially as described.

8. The combination with a pair of cutting and collecting cylinders, of a feeding roll co-acting with the collecting cylinder to advance the sheets when released by the cylinder, substantially as described.

9. The combination with a pair of cutting and collecting cylinders, of a spring pressed feeding roll co-acting with the collecting cylinder to advance the sheets when released by the cylinder, substantially as described.

10. The combination with a sheet collecting cylinder and its sheet holding pins *a* and strippers *b*, of means independent of the engagement of the pins by the strippers for simultaneously actuating the strippers to throw the sheets off the pins and moving the pins with the strippers to permit the sheets to be thrown off, substantially as described.

11. The combination with a sheet collecting cylinder and its sheet holding pins *a* and strippers *b* and shafts on which the pins and strippers are carried, of connections between said shafts, and means for rocking one of said shafts, whereby the strippers are actuated to throw the sheets off the pins and the pins are simultaneously rocked to permit the sheets to be thrown off, substantially as described.

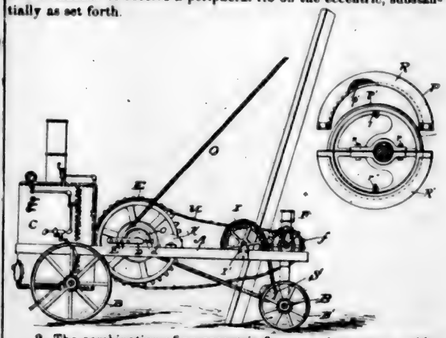
12. A sheet collecting cylinder having sheet holding pins and strippers mounted on separate shafts connected to move in unison, by means independent of the strippers and pins substantially as described.

13. The combination with cylinder D having pins *a* and strippers *b* mounted on shafts 3, 7, therein, of cranks 4, 6 and link 5 connecting said shafts, and a crank and bowl on one of said shafts, substantially as described.

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**505,443. WELL-DRILLING MACHINERY.** ALBERT C. DARRAGH, Allegheny, Pa. Filed June 18, 1891. Serial No. 396,784. (No model.)

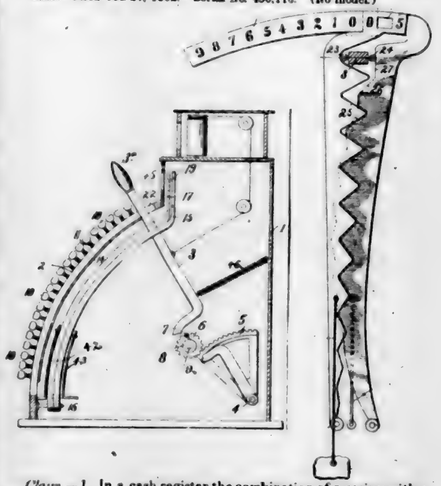
*Claim.*—1. The combination of an eccentric for operating a rope, cable, &c., a loose annular sheave encircling said eccentric, said sheave having a groove for the power transmitter and provided with an internal channel to receive a peripheral rib on the eccentric, substantially as set forth.



2. The combination of an eccentric for operating a rope, cable, &c., a loose annular sheave encircling said eccentric and provided with a groove for the power transmitter, and means for preventing the lateral displacement of said sheave, substantially as set forth.

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**505,444. CASH REGISTER AND INDICATOR.** WILLIAM F. Z. DEBANT, New York, N. Y., assignor to the Debant Electric Company, of Ohio. Filed Oct. 27, 1892. Serial No. 450,116. (No model.)



*Claim.*—1. In a cash register the combination of a casing with a window therein, a radius rod with a cam face formed on one side, and an arc shaped piece upon its outer end, which arc shaped piece has figures stamped thereon which appear at the window as the radius rod moves back and forth, a second radius rod with a cam face formed upon its opposite side, a shorter arc shaped piece upon its outer end, which arc shaped piece has figures stamped thereon and an opening cut therethrough, and which moves back and forth before the first mentioned arc shaped piece, together with an operating lever which projects through the casing and is moved up and down between the two cam faces of the radius rods, substantially as described.

2. In a cash register the combination of a casing with a window therein, a radius rod with a cam face formed on one side, and an arc shaped piece upon its outer end, which arc shaped piece has figures stamped thereon which appear at the window as the radius rod moves back and forth; a second radius rod with a cam face formed upon its opposite side, a shorter arc shaped piece upon its outer end, which arc shaped piece has figures stamped thereon and an opening cut therethrough, and which moves back and forth before the window in the casing and before the first mentioned arc shaped piece; together with an operating lever which projects through the casing and is moved up and down between the two cam faces of the radius rods,

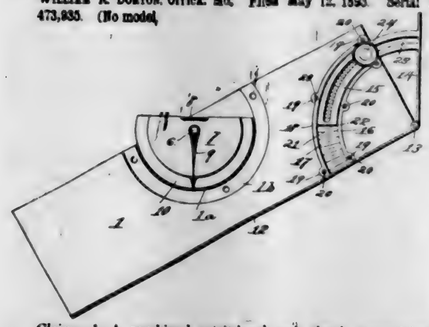
and a series of stops for said operating lever, substantially as described.

3. In a cash register, the combination of a casing with a window therein, a radius rod with a cam face formed on one side, and an arc shaped piece upon its outer end which arc shaped piece has figures stamped thereon which appear at the window as the radius rod moves back and forth; a second radius rod with a cam face formed upon its opposite side, a shorter arc shaped piece upon its outer end, which arc shaped piece has figures stamped thereon and an opening cut therethrough, and which moves back and forth before the first mentioned arc shaped piece; together with an operating lever which projects through the casing and is moved up and down between two cam faces of the radius rods, a shaft, ratchet gearing by which motion is communicated to the shaft from the operating lever and adding and registering mechanism actuated by said shaft, substantially as described.

4. In a cash register the combination of the registering mechanism, the lever which operates the same, one or more oscillating radius rods which have cam faces bearing on said lever and which are vibrated to and fro as the lever moves up and down, and the indicating mechanism operated by said oscillating radius rod or rods, substantially as described.

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**505,445. ADJUSTABLE SPIRIT-LEVEL AND PLUMB DEVICE.** WILLIAM R. DORTON, Orrick, Mo. Filed May 12, 1893. Serial No. 473,935. (No model.)



*Claim.*—1. A combined spirit-level and plumb, comprising a stock having a marginal recess, plates 2 and 3 secured at opposite sides of said recess, plate 3 being recessed and provided with an inscribed scale, a pivot revolubly journaled in said plates and having an indicator-finger 9, a semi-circular block or pendulum rigidly mounted upon the pivot and located in the recess of the stock, and having a marginal flange 10, and a set-screw passing through one of the plates and engaging said flange, and a spirit-vial 8 carried upon the upper side of the block or pendulum, substantially as set forth.

2. In a combined spirit level and plumb, the combination with a stock, a plate carried by said stock having a scale inscribed thereon, and a block, carrying a spirit-level and an indicator-finger, of a plate pivoted to said stock and having a segmental arm, and a segmental plate secured to said stock and arranged concentric to the pivotal point of the plate having the segmental arm, and having a scale inscribed thereon and adapted to be registered by the radial end of the segmental arm, substantially as set forth

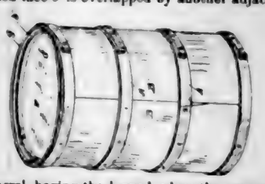
3. In a combined spirit-level and plumb, the combination with a stock, of a plate secured thereto, and a plate hinged to one end of said plate and having a segmental arm, and a segmental plate secured to the stock having a recess in the face thereof and arranged concentric to the pivotal or hinged point of the plate, and engaged by the segmental arm of the hinged plate, and having a scale inscribed thereon radial to the pivotal point of the hinged plate, and a set screw adapted to clamp the segmental arm at any desired point, substantially as set forth.

4. In a combined spirit-level and plumb, the combination with a stock, of a plate secured thereto and a plate hinged to one end of the first-mentioned plate, and having a slotted segmental arm, and a segmental plate secured to the stock and arranged concentric to the pivotal point of the plate carrying the slotted segmental arm, and having a grooved face engaged by said slotted segmental arm, and a set-screw passing through said slot and into the grooved plate, so that the hinged plate may be held at any angle desired, substantially as set forth.

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**505,446. BARREL AND METHOD OF MAKING SAME.** JAMES C. DEDER, Louisville, Ky. Filed Dec. 1, 1892. Serial No. 453,795. (No model.)

*Claim.*—1. The barrel herein shown and described, having the series of staves B each provided on its outer face only with the oppositely extending bevels $b, b'$, arranged longitudinally along its respective side edges, said staves being forced or held together by external hoops or bands and each stave having one of its bevels $b$ overlapped by the inner face of the adjacent stave, whereby each stave has the side $b'$ thereof fitted on the beveled face $b$ of the adjacent stave while its other beveled face $b'$ is overlapped by another adjacent stave, as set forth.



2. In a barrel, having the lapped edges the expansible, pliable, corrugated lining H fitted snugly within the barrel and adapted to be uniformly expanded or pressed outward against said staves of the barrel by the pressure of the contents packed within said barrel, substantially as described.

3. The method of making a barrel, which consists in arranging the hoop-strips in parallel positions, forming each stave with the longitudinal bevels $b, b'$, on its outer face and at the side edges thereof, laying the staves on their flat faces upon the hoop-strips and spacing said staves apart to leave the openings or spaces $c$ between the contiguous beveled edges thereof; fastening the staves and hoop strips together; bending the connected hoops and staves around a cylindrical former and subjecting them to pressure to contract the body and thereby cause the beveled edges of the staves to overlap one another and close the spaces $c$; and then fastening the hoops in place, substantially as herein set forth.

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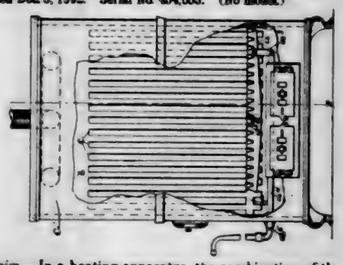
**505,447. PIANO.** PETER DUFFY, New York, N. Y. Filed Apr. 11, 1893. Serial No. 469,931. (No model.)



*Claim.*—In a piano, the combination with the frame, plate, strings, and tuning pins, of a sounding board, a bridge secured thereto, an elevated bearing upon one side of the bridge higher than the other side thereof, and a press bar adjustably secured vertically above the bridge, to one side of the bearing, the strings being thus secured over the bridge between an upper bearing edge on the bridge and a lower bearing edge upon the press bar, and the strain of the strings upon the bar being in vertical line, substantially as and for the purpose specified.

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**505,448. STOVE OR FURNACE.** EDWARD FALES, Boston, Mass. Filed Dec. 5, 1892. Serial No. 454,033. (No model.)



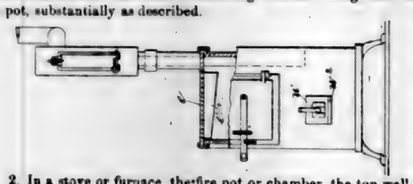
*Claim.*—In a heating apparatus, the combination of the fire pot or chamber, the rear wall of which has a series of vertical ribs $c$, to present guide passages or flues for the flame and products of combustion, interposed partitions or equivalents $c^3$, at or near their lower ends, a smoke consuming chamber rising from said fire pot above said guide passages or flues, and having a series of small passages communicating with and forming continuations of said guide passages or flues, substantially as described.

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**505,449. STOVE OR FURNACE.** EDWARD FALES, Boston, Mass. Filed Jan. 24, 1893. Serial No. 459,589. (No model.)



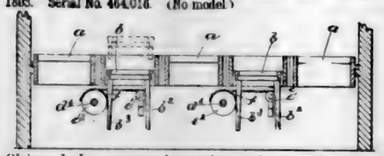
*Claim.*—1. In a stove or furnace, the fire pot or chamber, the top wall $e$ of which has a series of parallel arranged ribs $e'$, upon its under side, and the thin smoke consuming chamber rising from the fire pot, substantially as described.



2. In a stove or furnace, the fire pot or chamber, the top wall $e$ of which has a series of parallel arranged ribs $e'$, upon its under side, declining toward the rear end, and the thin smoke consuming chamber rising from the fire pot at said rear end, substantially as described.

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**505,450. GRATE.** EDWARD FALES, Boston, Mass. Filed Feb. 23, 1893. Serial No. 464,016. (No model.)



*Claim.*—1. In a grate, the stationary boxes $a$, having grated tops, and the alternately arranged boxes having movable grated bottoms $b$, a rod or shaft supported beside each grated bottom $b$, means for rotating each rod or shaft, and intermediate connections between said rods or shafts and said grated bottoms whereby said grated bottoms may be moved up and down bodily, substantially as described.

2. The grate $b$ having downwardly extended legs, the shaft $d^6$, beside it, and chains connecting the lower ends of said legs with said shaft, and an operating device for said shaft, substantially as described.

3. The grate $b$ having at one end a single downwardly extended leg, and at the other end two downwardly extended legs, the shaft $d^6$ beside said grate, and pulleys thereon, and chains connecting the lower ends of said legs with said pulleys, and an operating device for said shaft, substantially as described.

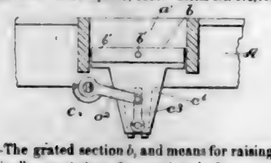
4. The grate $b$ having downwardly extended legs with lugs $b^4$, thereon having holes through them, the shaft $d^6$, and pulleys thereon, and chains connected to said pulleys at one end, and to screw eyes at the other end, which pass through the holes in said lugs, substantially as described.

5. The grate $b$, shaft $d^6$ beside it, and chains connecting said grate with said shaft, a short arm $g$ on said shaft having a projection $g'$, and a detachable operating device $h$ fitting loosely upon said shaft and adapted to engage said short arm $g$, to turn the shaft and thereby bodily raise the grate, and to be disengaged from said short arm to thereby permit said grate to fall by gravity in advance of the coal resting upon it, substantially as described.

6. In a grate, the combination of the box like frame A and bodily movable grate $b$ therein, the rod or shaft located beside it, and intermediate connections between said grate and said rod or shaft, a fixed part $g$—$g'$ on said shaft, the manual operating device $h$ adapted to engage and rock on said shaft, engaging the fixed part $g$—$g'$ to turn the shaft in one direction and releasing said fixed part, by rocking on the shaft, to permit said shaft to be turned in the opposite direction by the weight of the grate, and the stationary box $a$ having grated tops flush with the top of said box like frame A, substantially as described.

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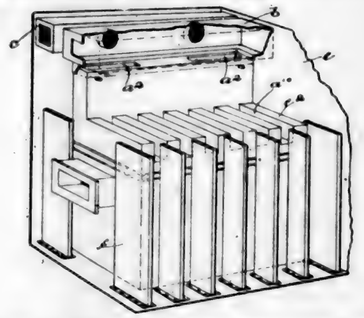
**505,451. SHAKING MECHANISM FOR GRATES.** EDWARD FALES, Winthrop, Mass. Filed Apr. 25, 1893. Serial No. 471,705. (No model.)



*Claim.*—The grated section $b$, and means for raising and lowering it bodily vertically, consisting of a rotating shaft $c$, arms $c^2$, projecting therefrom, links $c^3$, pins $c^4$, connected with said arms $c^2$ by said links $c^3$, and arms $c^5$, depending from said section $b$, from which said pins $c^4$, project, and guideways for said pins, substantially as described.

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**505,452. FURNACE.** EDWARD FALES, Winthrop, Mass. Filed May 6, 1893. Serial No. 473,237. (No model.)



*Claim.*—1. In a heating apparatus, the combination of the combustion chamber $a$, having its top wall provided with interior elongated recesses $a'$, closed at one end, and open at the opposite end, and also provided with exterior elongated recesses $a^{10}$, arranged alternately with relation to the interior recesses, substantially as described.

2. In a heating apparatus the combination of the combustible chamber $a$, the interior of the top wall of which is provided with several parallel guide passages, vertical passages $a^9$, $a^{10}$, in open communication with said recesses, separated by a short division wall, and conducting the smoke to the smoke pipe, substantially as described.

3. In a heating apparatus, the combination of the combustion chamber, $a$, the interior of the top wall of which is provided with several parallel guide passages, vertical passages in open communication with said guide passages, and one or more drums in open communication with said vertical passages, and having entrances for the removal of soot, the jacket inclosing the combustion chamber and drums, and the smoke pipe, substantially as described.

4. In a heating apparatus, the combination of the main combustion chamber $a$, and secondary combustion chamber $a^3$, consisting of a narrow chamber extending substantially from end to end of the main combustion chamber, and rising vertically therefrom, and in direct open communication therewith at its lower end, substantially as described.

5. In a heating apparatus, the combination of the main combustion chamber $a$, and secondary combustion chamber $a^3$ consisting of a narrow chamber extending substantially from end to end of the main combustion chamber, and rising vertically therefrom, and in direct open communication therewith at its lower end, and guide passage formed on the interior of the top wall of said main combustion chamber directing the flame to said secondary combustion chamber, substantially as described.

6. In a heating apparatus, the combination of the main combustion chamber $a$, and secondary combustion chamber $a^3$ consisting of a narrow chamber extending substantially from end to end of the main combustion chamber and rising vertically therefrom, and in direct open communication therewith at its lower end, and guide passages formed on the interior of the top wall of said main combustion chamber directing the flame to said secondary combustion chamber, and guide passages formed upon the exterior of the top wall of said main combustion chamber arranged alternately with relation to the interior guide passages, directing the air against the exterior of said secondary combustion chamber, substantially as described.

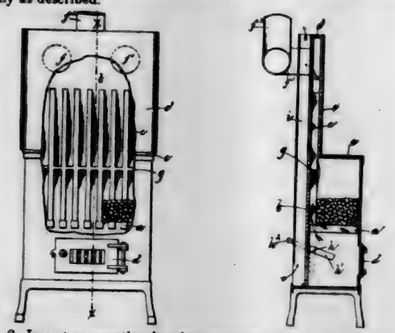
7. In a heating apparatus, the combination of the main combustion chamber $a$, and secondary combustion chamber $a^3$ consisting of a narrow chamber extending substantially from end to end of the main combustion chamber, and rising vertically therefrom, and in direct open communication therewith at its lower end, and guide passages formed on the interior of the top wall of said main combustion chamber, directing the flame to said secondary combustion chamber, and guide passages formed upon the exterior of the top wall of said main combustion chamber, alternately with relation to the interior guide passages, directing the air against the exterior of said secondary combustion chamber, a jacket and several air inlets made as narrow flattened pipes $f$, which admit the air in thin streams, substantially as described.

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**505,453. STOVE OR FURNACE.** EDWARD FALES, Winthrop, Mass. Filed June 25, 1892. Renewed Aug. 17, 1893. Serial No. 483,413. (No model.)

*Claim.*—1. In a stove or other heating apparatus, a fire pot or chamber comprising a vertical front wall, side walls, and a rear wall,

the latter having upon its inside a series of parallel vertical ribs *c*, combined with the thin smoke consuming chamber rising from said fire pot, having a series of small flues or passages communicating with and forming continuations of the spaces between the ribs *c*, substantially as described.



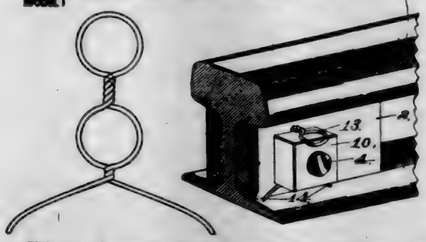
2. In a stove or other heating apparatus, a fire pot or chamber, the rear wall of which has a series of vertical ribs *c*, to present guide passages or flues for the flame and products of combustion, combined with a thin smoke consuming chamber rising from said fire pot directly above the guide passages or flues formed in its rear side wall, and having a series of small passages communicating with and forming continuations of said guide passages or flues, substantially as described.

3. In a stove or other heating apparatus, a fire pot or chamber, the rear wall of which has a series of vertical ribs *c*, to present guide passages or flues for the flame and products of combustion, combined with the thin smoke consuming chamber or flue comprising the ribbed rear wall, which is a continuation of the ribbed rear wall of the fire pot, and the vertical plate upon the ribs of said rear wall to thereby present passages communicating with and forming continuations of the guide passages in the fire pot, substantially as described.

4. In a stove or other heating apparatus, a fire pot or chamber, the rear wall of which has a series of vertical ribs *c*, to present guide passages or flues for the flame and products of combustion, combined with the thin smoke consuming chamber rising from said fire pot directly above the guide passages or flues formed in the rear side wall, and having a series of small passages communicating with and forming a continuation of said guide passages or flues, and horizontal partitions located in said guide passages below the entrances to the flues of the smoke consuming chamber, thereby breaking up their continuity, substantially as described.

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**505,454. COMBINED WASHER AND NUT-LOCK.** CHARLES H. FOOTE, Kansas City, Kans. Filed May 12, 1893. Serial No. 473,949. (No model.)



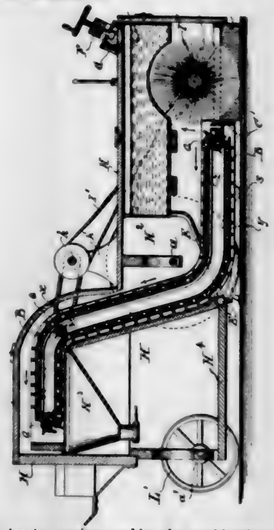

*Claim.*—1. In a nut-lock, a locking plate formed of wire, and having a central opening and depending legs, and an upper extension adapted to be bent upon the edge of the nut, substantially as set forth.

2. The combination with the rail, the fish-plate, the bolt and the nut, of a locking washer looped around the bolt, having a loop to be bent against the edge of the nut, and having its free ends bent to form divergent legs adapted to bear upon the foot-portion of the rail, substantially as described.

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**505,455. STREET-SWEEPER.** JAMES R. GALLAGHER, Buena Vista, N. J. Filed May 10, 1893. Serial No. 473,643. (No model.)

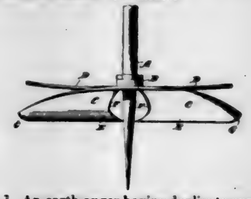
*Claim.*—1. In a street sweeping machine, the combination of an adjustable revolving brush, driven from an axle carrying the main weight of the machine, with stationary brushes, inclosing the space in which the revolving brush is operating on three sides, while the front side is closed by an end-transverse-brace of the conveyer frame, and with the conveyer, mounted in an S-shaped oscillating frame, one end of which is pivotally connected with the body of the machine, while the other end is supported by rollers, as and for the purposes herein shown and described.



2. In a street sweeping machine the combination of the brushes mounted at the tail end of the machine upon an oscillating casing with a water tank whose contents regulate the pressure upon the brushes, an oscillating conveyer and a hopper as and for the purposes herein shown and set forth.

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**505,456. EARTH-AUGER.** WILLIAM H. GIBBS, Mendon, Ill., assignor of one-half to James P. Graham, same place. Filed Aug. 10, 1892. Serial No. 442,674. (No model.)



*Claim.*—1. An earth-auger having duplicate oppositely-disposed blades, each comprising a horizontal portion and a downwardly-inclined lip which are separated by an intermediate radially disposed recess to clear the inner marginal edge of said lip, substantially as specified.

2. An earth-auger having duplicate, oppositely-disposed blades, each comprising a horizontal portion and a downwardly-inclined cutting lip separated at its inner marginal edge from the horizontal portion, the inner and outer marginal edges of the lip being forwardly divergent whereby the cutting edge of such lip terminates at its inner end close to the spindle and at its outer end beyond the marginal contour of the preceding horizontal portion, a recess being formed in rear of the inner terminal to clear the cutting edge.

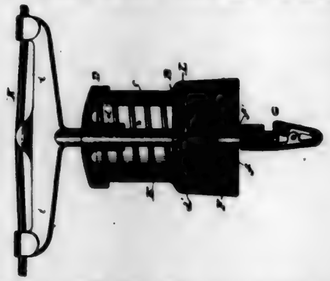
3. In an auger, the downwardly-inclined lips having their inner marginal edges recessed and arranged radially, substantially as specified.

4. An earth auger blade having a cutting edge which terminates at its inner end close to the point of the spindle, and provided in rear of such inner end with a recess, whereby an excess of cut soil and pressure thereof about the spindle will be relieved through said recess, substantially as specified.

5. An earth auger having a lip whose cutting edge terminates at its inner end adjacent to the spindle and whose inner lateral edge is concaved to form an opening or recess to relieve the pressure about the spindle, substantially as specified



**505,457. TROLLEY-WIRE SUPPORT.** LOCUM T. GIBBS, Milwaukee, Wis. Filed Oct. 15, 1892. Serial No. 448,997. (No model.)

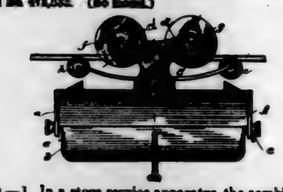


*Claim.*—1. In a trolley wire hanger, the combination of a fixed support adapted to be connected to a post or equivalent supporting medium, a depending extension carried by said fixed support, and provided with a head, a vertically moving cylinder surrounding said extension and head and adapted to sustain the wire, and a spring located within the cylinder and bearing at its ends respectively against the head and the cylinder; whereby the cylinder is yieldingly sustained by the spring and serves to protect the moving parts inclosed thereby, substantially as described.

2. In a trolley wire hanger, the combination of the bolt adapted at its upper end to be connected to a post or equivalent sustaining medium, and provided at its lower end with a disk, of a cylinder surrounding said disk and movable relatively thereto, a cap applied to the top of the cylinder and provided with an opening to receive the bolt, a spiral spring located within the cylinder encircling the bolt and bearing at its ends respectively on the cap and disk and an insulated wire clamp applied to the cylinder.

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**505,458. STORE-SERVICE APPARATUS.** JOHN H. GOODFELLOW, Troy, N. Y., assignor to the Lamson Consolidated Store Service Company, Boston, Mass. Filed Aug. 10, 1885. Renewed June 22, 1893. Serial No. 478,532. (No model.)

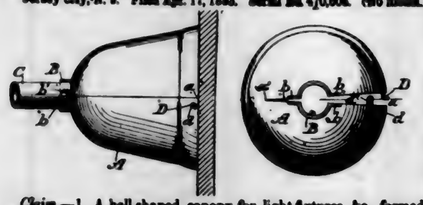


*Claim.*—1. In a store service apparatus, the combination with a track or way, of a wheeled carrier adapted to travel thereon, having a spring as C, supporting at its free ends rollers adapted to run in contact with and bear against the under side of the track, substantially as described.

2. In a store service apparatus the combination with a track or way, of a wheeled carrier adapted to travel thereon, having a spring attached at its middle point to the carrier, said spring provided at its free end with wheels adapted to run in contact with and bear against the under side of the track.

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**505,459. CANOPY FOR LIGHT-FIXTURES.** ERNST GUTBERG, Jersey City, N. J. Filed Apr. 17, 1893. Serial No. 470,608. (No model.)

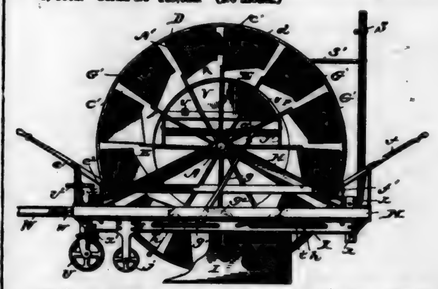


*Claim.*—1. A bell-shaped canopy for light fixtures, &c., formed into shape from one piece of sheet metal and cut from one edge through the central aperture and somewhat beyond the shoulder of the bell, leaving a substantially straight portion uncut, said canopy also having a fastening device for the edges of the cut near the rim, and having a ring about the central aperture to fasten the canopy upon a tube or rod, substantially as shown and described.

2. A bell-shaped canopy for light fixtures, &c., in one piece and cut from one edge through the central aperture and somewhat beyond the shoulder of the bell, having a hook on one side of the cut near the rim to spring into a corresponding hole on the other side of the cut, and having a split ring fixed about the central aperture with means to fasten the parts of the ring together, substantially as shown and described.

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**505,460. EXCAVATING-MACHINE.** WILLIAM M. GROSS, Spokane, Wash., assignor of one-half to George L. Walker, same place. Filed Sept. 3, 1892. Serial No. 445,052. (No model.)



*Claim.*—1. In an excavating machine, the combination with the supporting frame, of a bucket wheel having a construction adapted to receive elevate and discharge the material therein, an unyielding excavator support in the frame, an excavator held rigidly therein, and means actuated by a single lever for adjusting the excavator horizontally in a straight line, substantially as described.

2. In an excavating machine, the combination with the supporting frame, of a bucket wheel having a construction adapted to receive, elevate and discharge the material deposited therein, an unyielding adjustable excavator support in the frame, an excavator held rigidly therein, means for adjusting the excavator support vertically in respect to the rotating device and frame, and means actuated by a single lever for adjusting the excavator horizontally in a straight line, substantially as described.

3. In an excavating machine, the combination with the supporting frame, of a rotating device having a construction adapted to receive, elevate and discharge the material deposited therein, a plow beam supported in said frame and having a vertical longitudinal slot and lateral longitudinal slots, a plow having a rack frame moving horizontally in said vertical slot, studs on the rack frame sliding in said lateral slots, a lever pivoted to said plow beam and having a stirrup engaging with said plow rack frame, and a gage wheel on said plow beam, substantially as described.

4. In an excavating machine, the combination with the supporting frame, of a rotating device having a construction adapted to receive, elevate and discharge the material deposited therein, a plow beam supported in said frame and having the vertical and lateral longitudinal slots, as described, vertical guides secured to the supporting frame at each extremity of and retaining the plow beam, means for fastening the plow beam to the guides, a plow having a rack frame moving horizontally in said vertical slot, studs on the rack frame sliding in said vertical slots, a lever pivoted to said plow beam and having a stirrup engaging with said rack frame, levers pivoted to standards secured to the supporting frame and connected to said plow beam ends as described, and a gage wheel on said plow beam, substantially as described.

5. In an excavating machine, the combination with the supporting frame, of a bucket wheel adapted to receive, elevate and discharge the material deposited therein, an unyielding adjustable excavator support in the frame, an excavator held rigidly therein, means for adjusting the excavator support vertically in respect to the rotating device and frame, means actuated by a single lever for adjusting the excavator horizontally in a straight line, and a supporting wheel vertically adjustable in respect to the supporting frame, substantially as described.

6. In an excavating machine, the combination with the supporting frame, of a rotating device adapted to receive elevate and discharge the material deposited therein, a plow beam supported in said frame and vertically adjustable therein, a plow supported in said plow beam and horizontally adjustable therein, a gage wheel on said plow beam, a vertical sliding frame secured to said supporting frame, a wheel having its axle sliding in said frame, a lever pivoted to the supporting frame and suitably connected to said wheel axle for raising and lowering the same, and a locking device on said supporting frame for locking the lever in position as described.

7. In an excavating machine, the combination with the supporting frame, of a rotating device having a construction adapted to receive, elevate and discharge the material deposited therein, and a plow supported by the frame and having a hinged mold board and yielding spring connection between the mold board and the plow frame, as described.

8. In an excavating machine, the combination with the supporting frame H, of the bucket wheel A' having a construction adapted to receive, elevate and discharge the material deposited therein, the plow beam X supported in said frame and sliding vertically in the guides $x$ secured to the supporting frame at each extremity of the plow beam, the standards secured to the supporting frame H, the levers $f$ $e$ pivoted to said standards and the links $f'$ $e^3$ connected to said plow beam and levers whereby the plow beam can be elevated and lowered the locking device consisting of apertures $x$ $x'$ in said plow beam and guides and a pin to secure them together, the plow I and the gage wheel $j$ both secured to said plow beam, substantially as described.

9. In an excavating machine, the combination with the supporting frame, of an excavator supported therein, and a bucket wheel having a broad rim or tread D secured near the receiving edge to the spokes of the wheel and forming the bottom of the buckets, the outwardly dished ring F on its delivery side forming the back of the buckets, the interior diagonal partitions G connecting the ring F with the spokes having the cutting and retaining flanges as described and forming the sides of the buckets, and the inwardly dished scalloped ring E on the receiving side forming the mouth of the buckets, substantially as described.

10. In an excavating machine, the combination with the supporting frame, of an excavator, a bucket wheel having the rim D, the outwardly dished ring F, the interior diagonal partitions G and the inwardly dished scalloped ring E, and a carrier supported by the frame and extending within the bucket wheel and adapted to receive and discharge the material delivered from the buckets, substantially as described.

11. In an excavating machine, the combination with the supporting frame, of an excavator, a bucket wheel having the rim D, the outwardly dished ring F, the interior diagonal partitions G and the inwardly dished scalloped ring E, a carrier supported by the frame, extending within the bucket wheel and adapted to receive and discharge the material delivered from the buckets, and the shield V secured to the carrier frame and adapted to form with the ring E of the bucket wheel a delivery chute onto the carrier, as described.

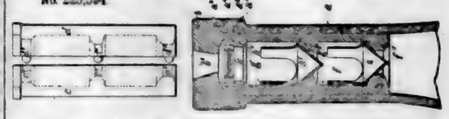
12. In an excavating machine, the combination with the supporting frame, of an excavator, a bucket wheel having the rim D, the outwardly dished ring F, the interior diagonal partitions G and the inwardly dished scalloped ring E, a carrier frame extending within the circumference of the bucket wheel and having an endless carrier running upon rollers mounted in the frame a gear wheel on the bucket wheel axle, and suitable gear connection between it and the carrier rollers, substantially as described.

13. In an excavating machine, the combination with the supporting frame, of an excavator, a bucket wheel having the rim D, the outwardly dished ring F, the interior diagonal partitions G and the inwardly dished scalloped ring E, a carrier frame having a fixed receiving end extending within the circumference of the bucket wheel and a hinged outer delivery end, an endless carrier mounted upon rollers in said carrier frame, suitable gearing between the bucket wheel axle and the carrier rollers, and suitable means for raising and lowering the delivery end of the carrier, as described.

14. In an excavating machine, the combination with the supporting frame, of an excavator, a bucket wheel having the axle A and the buckets formed by the rim D, the outwardly dished ring F, the interior diagonal partitions G and the inwardly dished scalloped ring E, the carrier J having the fixed frame extending within the circumference of the bucket wheel, and the hinged delivery frame, the endless carrier traveling over the rollers in said fixed and hinged frames, the sprocket wheel Q on the hinged frame roller, the shaft O mounted in the outer extremity of said fixed frame, the sprocket wheel P on said shaft, the chain connection between the sprocket wheels on the shaft and rollers, the bevel gear L on said bucket wheel axle, its pinion shaft and sprocket wheel N and the chain connection with the carrier shaft O, the lever S pivoted to the fixed carrier frame and suitably connected to its hinged delivery end, and the shield V secured to the carrier frame, as described.

15. In an excavating machine, the combination with the supporting frame, of the vertically adjustable supporting wheel, the swivel wheel secured to the forward end of said frame, the plow having the hinged mold board and spring as described, and adjustable vertically and horizontally in said frame, the bucket wheel mounted in said frame and having the rim, partitions and rings as described, the endless carrier having the fixed and hinged portions extending within the circumference of said bucket wheel as described, the gear for operating the carrier directly from the axle, the lever connection for operating the hinged end of the carrier, and the carrier shield, all constructed and operating, substantially as described.

## 505,461. APPARATUS FOR PREVENTING THE REFILLING OF BOTTLES. ERNEST GUERBOIS, Plaisance, France. Filed Apr. 19, 1893. Serial No. 470,973. (No model.) Patented in France Nov. 11, 1892, No. 225,594.



*Claim.*—1. In a device for preventing a bottle from being wholly or partly re-filled, the combination of two valves $e$ $e'$ a valve chest constructed in two sections, as $c$ $d$, united by a vertical joint, each of such sections being provided with projections extending inwardly and forming seats and stops for such valves, substantially as set forth.

2. In a device for preventing a bottle from being wholly or partly re-filled, the combination of two valves $e$, $e'$, a valve chest constructed in two sections as $c$ $d$, united by a vertical joint each of such sections being provided with projections extending inwardly and forming seats and stops for such valves, and a grating, as K, secured above the valves for preventing access to the same, substantially as set forth

3. In a device for preventing a bottle from being wholly or partly refilled, the combination of two valves $e$ $e'$, a valve chest constructed in two sections, as $c$, $d$, united by a vertical joint, each of such sections being provided with projections extending inwardly and forming seats and stops for such valves, and a perforated cap $b$ placed above such valve chest near the mouth of the bottle, substantially as set forth.

4. In a device for preventing a bottle from being wholly or partly re-filled, the combination of two valves $e$ $e'$, a valve chest constructed in two sections as $c$, $d$ united by a vertical joint, and three partitions $f'$, $g$ and $k'$ extending inwardly from such sections, partitions $f'$ and $g$ forming seats for aforesaid valves and $g$ and $k'$ forming stops for the same, substantially as set forth.

## 505,462. MANUFACTURE OF CELLULOID BOXES. ALFRED G HAZELT, New York, and JESS REDLEFSEN, Brooklyn, N. Y. Filed Nov. 26, 1892. Serial No. 453,276. (No specimens.)



*Claim.*—1. A box cover, box, or like article, consisting of sides, each faced with celluloid veneer upon its exposed face and one edge, and a top, bottom, or other conjoined part, glued or cemented to the bare edges of the said sides and faced with celluloid veneer extending to and meeting the veneer upon the sides of the said box, but leaving the bare surface of such part in contact with the bare surface of the said side, substantially as, and for the purposes, set forth.

2. A slide for a box or similar article, consisting of a backing B faced with celluloid upon one side and each edge $c$ thereof, and divided to form bare edges $b$ for securing adjacent parts, and to permit the faced edges $c$ to be brought together to form the opposing and meeting edges of the side, substantially as, and for the purposes, set forth.

3. The method of manufacturing sides for celluloid boxes and similar articles, which consists in securing a celluloid facing to the face and edges of the backing by heat and pressure, turning down the projecting edges of the celluloid upon the rear face of the said backing, and then subjecting the whole to heat and pressure in a suitable press, substantially as, and for the purposes, set forth.

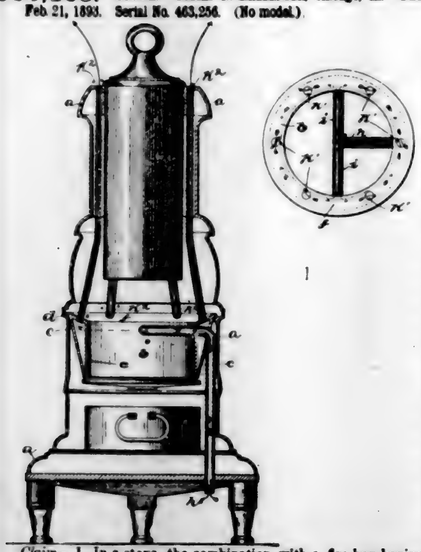
4. The method of manufacturing celluloid covered articles which consists in cementing a celluloid facing, conforming and securing it to the backing by heat and pressure, turning down the edges upon the rear face of the backing, and then applying heat and pressure, substantially as and for the purposes set forth.

5. The method of manufacturing sides for celluloid boxes and similar articles, which consists in securing and embossing a celluloid facing upon the face and edges of the backing by suitable cement and by heat and pressure, turning down the projecting edges of the celluloid upon the rear face of the said backing and forcing them firmly into contact with the backing by suitable pressure, substantially as, and for the purposes, set forth.

6. The method of constructing the sides of boxes or similar articles of celluloid, which consists in covering the face and edges of a strip or molding with suitable celluloid veneer, cutting and joining the said molding into a frame corresponding in shape to the form of the finished sides of the said article, and then severing the said frame as described, whereby the celluloid-covered edges may be brought together to form the opposing and meeting edges of the said article, substantially as, and for the purposes, set forth.



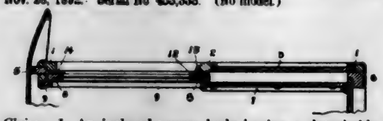
## 505,463. STOVE. TOBIAS N. HALLANGER, Chicago, Ill. Filed Feb. 21, 1893. Serial No. 463,256. (No model.)



*Claim.*—1. In a stove, the combination with a fire box having double walls, of a cold air supply pipe leading from the base of the stove, a pipe connecting therewith extending across the fire box and opening into the space between the double walls thereof, and an outlet at the top of the stove communicating with the space between the double walls of the fire box, substantially as described.

2. In a stove, the combination of a stove body $a$ with a fire box $b$ supported therein, said fire box consisting of two walls $c$ and $c$ and a rim $f$, which inclose an air space, a tube $h$ opening beneath the stove and leading through the fire box and provided with branches $i$ $i$ which communicate with the said air space, distributing tubes $k$ $k$ $k$ communicating with the exterior atmosphere and the said air space, substantially as and for the purpose specified.

## 505,464. WAGON-BODY. JAMES HEMONG, Chillicothe, Ohio. Filed Nov. 28, 1892. Serial No. 453,333. (No model.)



*Claim.*—1. An inclosed wagon body having a detachable end consisting of the frame and panel and the movable sash having its lower outer edge rabbeted and a flexible flap secured in said edge and adapted to overhang the cross bar substantially as set forth.

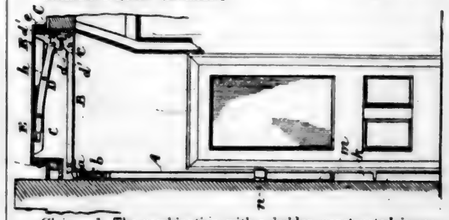
2. The detachable wagon body end consisting of the paneled frame, the inner panel and the sash, said frame and panel being provided on the inner sides with screw holes situated to receive the fastening screws extending through the usual holes in the frame and panel, when the latter are detached from the body and the parts are suitably assembled for package or transportation, substantially as set forth.

3. In a knock down wagon body the posts 4 rabbeted to receive a sash, said sash, the detachable paneled frame secured by screws to the posts, the detachable inner panel secured in like manner to said posts on their inside and the detachable strips secured to the posts above the inner panel to complete the ways of the sash, substantially as set forth.

4. An inclosed wagon body having a detachable top, floor, sides and ends, the front end consisting of the frame 1 and panel 3 said end having the separate detachable panel 7 forming a pocket with the panel first named, and the movable sash, substantially as set forth.

5. An inclosed wagon body having its top, floor, sides and ends detachably secured together by screws or bolts and the detachable posts 4 rabbeted to receive the sides and ends all substantially as set forth.

## 505,465. COMBINED VENTILATOR AND STEP-LADDER FIRE-ESCAPE. RICHARD HUGHES, Philadelphia, Pa. Filed Apr. 20, 1893. Serial No. 471,225. (No model.)

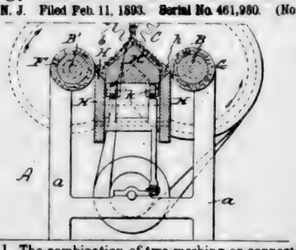


*Claim.*—1. The combination with a ladder, constructed in sections which are hinged together, of two fixed, bearing pieces with which the uppermost section of said ladder is pivotally connected, two arms, pivotally connected with said bearing pieces, segmental gears fastened to said arms and similar gears fastened to the uppermost section of the ladder, in position to engage with the gears of said arms, and a movable cover, loosely connected with the extremities of said arms, substantially as set forth and described.

2. The combination with a lower section of a ladder, of an upper section hinged thereto, fixed bearing pieces with which said upper section is pivotally connected, two arms, pivotally connected with and extending from said bearing pieces, segmental gears $d$, secured to said upper section of the ladder, and similar gears $d'$, secured to said arms, in position to engage with gears $d$, substantially as set forth and described.

3. The combination with the hinged sections A and B of a ladder, of two fixed bearing pieces $c$, with which section B is pivotally connected, arms D, connected with bearing pieces $c$, gearing $d$ and $d'$, fastened to section B and arms D respectively, a cover E, movably connected with arms D, fixed vertical pieces and a cross piece $m$, adjustable thereon, in position to support said ladder, substantially as set forth.

## 505,466. MACHINE FOR MAKING CORES. WILLIAM IRETON, Camden, N. J. Filed Feb. 11, 1893. Serial No. 461,980. (No model.)



*Claim.*—1. The combination of two meshing or connected spindles or core body shafts, and intervening strikes for each core body shaft, substantially as set forth.

2. In a core forming machine, the combination of two rotating core holding and forming shafts, an intervening supply support or table, and vertically arranged strikes between the shafts and table, substantially as set forth.

3. In a core forming machine, the combination of a number of parallel rotating core holding and forming shafts, strikes intermediate of said shafts and a supply table or support between the strikes substantially as set forth.

4. The mode of coating core barrels or spindles, or making cores herein described which consists in dividing the supply of coating or core material into two streams and directing each stream of material to a separate core barrel or spindle, substantially as described.

5. The combination of two meshing or connected cores or core

body shafts, strikes located between said shafts, and a feeding device interposed between said strikes, substantially as set forth.

6. The combination of two oppositely rotating core-body shafts, strikes for said body-shafts located between the latter, and a feed device interposed between the strikes substantially as set forth.

7. In a core making machine, the combination of revolubly supported parallel core-barrels, strikers between said core-barrels, a feed device interposed between said strikes and actuating mechanism for lowering and raising said feed device substantially as set forth.

8. In a machine for making cores, the combination of the parallel core-barrels F G, the feeding device K intermediate of the core-barrels and adapted to be lowered and raised, and the vertically located strikes H H one at each side of the feeding device K between it and the adjacent core-barrel, substantially as set forth.

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**505,467.** SECONDARY BATTERY. ISIDOR KITSEE, Philadelphia, Pa. Filed May 23, 1892. Serial No. 434,063. (No model.)



*Claim.*—1. An electrode composed of non-conducting material supporting a plurality of conductors, said conductors extending through the support and having no metallic connection with each other outside the non-conducting material.

2. In a multiple cell, an electrode or electrodes, composed of non-conducting material supporting two or more conductors, said conductors having no metallic connection with each other, whereby in use they are electrically connected through the electrolyte only.

3. In a multiple cell, an impervious electrode or electrodes, composed of non-conducting material supporting two or more conductors, said conductors having no metallic connection with each other, whereby in use they are electrically connected through the electrolyte only.

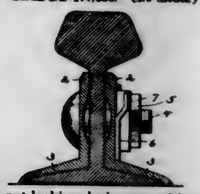
4. A multiple cell consisting of a non-conducting containing vessel and impervious partitions dividing said vessel into two or more compartments, said partitions being composed of non-conducting material having transverse apertures and conductive material hermetically sealing said apertures, said cell being also provided with means for conducting the current to and from it.

5. An electrode consisting of a plate of impervious non-conducting material provided with a plurality of transverse apertures and conducting material arranged within and hermetically sealing said apertures, the portions of said conducting material which lie within the several apertures having no electrical connection with each other outside said plate.

6. An electrode consisting of a plate of non-conducting material provided with a plurality of transverse apertures and bodies of conducting material within and sealing hermetically said apertures, said bodies having the form of double-headed rivets and having no electrical connection with each other.

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**505,468.** NUT-LOCK. EVAN L. KRAUSER, Norristown, Pa. Filed June 16, 1893. Serial No. 477,820. (No model.)

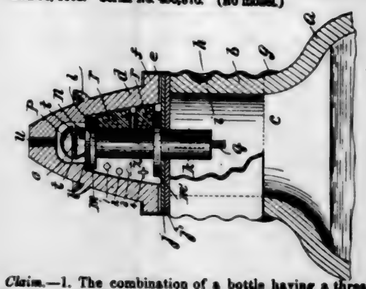


*Claim.*—1. A nut locking device comprising a washer provided with a lateral wing having a terminal upstanding lip which is offset from the plane of the washer, and a tongue to engage said lip provided with an integral angular eye to engage a nut, said tongue being offset at its rear side from the plane of the eye to bear upon the surface of the fish-plate and being of a thickness which is equal to the interval between the rear surface of the lip and the contiguous surface of the fish-plate to fit snugly in said interval, substantially as specified.

2. The combination with an angular fish-plate, a bolt, and a nut threaded upon said bolt, of a washer provided with an opening to receive the bolt and having a lateral wing with a straight base edge to engage the base-flange of the fish-plate, an upstanding lip integral with the wing of the washer and offset from the plane thereof to form an interval between its rear side and the contiguous surface of the fish-plate, the nut being adapted to bear upon said washer to hold the latter in contact with the fish-plate, a tongue to engage said lip, and an angular eye integral with the tongue and fitting upon the nut to hold the tongue in contact with the surface of the fish-plate, substantially as specified.

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**505,469.** BOTTLE. HARVEY I. LEITH, Providence, R. I. Filed Dec. 31, 1892. Serial No. 456,870. (No model.)



*Claim.*—1. The combination of a bottle having a threaded lip or neck, a perforated cap located over the mouth of the bottle and having radial grooves in the lower part thereof and between itself and the bottle, a metallic or similar hard washer and a yielding washer located between the cap and the bottle, a flange upon the end of the cap opposite the end containing the perforation, a threaded collar screwed upon the said lip and bent over the said flange, a seal connecting the collar to the bottle, the collar being partly compressed into an indentation in the said lip, the cap being divided into upper and lower compartments, a tube connecting the interior of the bottle with the upper compartment, from which it is separated by a valve, a tube passing partially through the first named tube from the interior of the bottle to the lower compartment, and blocks expansible by liquids fitting in the lower compartment and pressing upon opposite sides of the last named tube.

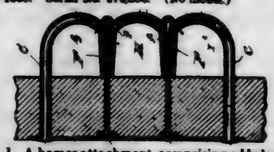
2. The combination with the neck of a bottle of a yielding washer, placed over the mouth thereof, a perforated cap upon the washer, a tube passing through the washer and connecting the interior of the bottle with the interior of the cap, a valve between the cap and bottle and a seal connecting the cap to the bottle.

3. The combination with a bottle, of a cap covering the mouth thereof, and divided into two compartments, a tube containing a valve and connecting the upper compartment with the neck of the interior of the bottle, an air conduit connecting the interior of the bottle with the lower compartment which is open to the atmosphere, and chemically prepared substances, changeable in appearance under the influence of liquids or heat, located in the lower compartment the upper compartment being open to the atmosphere.

4. The combination with the neck of a bottle of a perforated cap over the mouth thereof, and provided with a flange, a collar turned over the flange, a seal connecting the collar to the bottle, an air conduit, or passage leading from the outside atmosphere to the interior of the bottle, chemically prepared substances changeable under the influence of liquid or heat, located in the air conduit and a valve between the cap and the interior of the bottle.

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**505,470.** HAME-STAPLE. JOHN A. O. LIVOST, Marion, Kans. Filed May 15, 1893. Serial No. 474,256. (No model.)



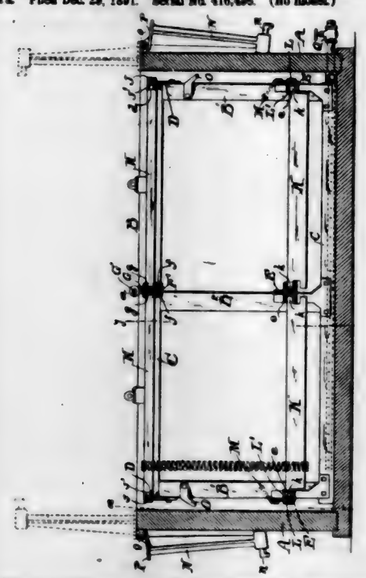
*Claim.*—1. A hames attachment, comprising a U-shaped rod having the stems thereof secured to the hame section, and provided with a series of dividing tubes, and screw bolts adapted to pass through said attachment, the dividing tubes and the hame section, to form a series of openings for the reception of the clip of the trace, substantially as set forth.

2. The combination with a hame having holes therethrough, of a retaining plate secured to the inner sides of said hames, and having screw threaded holes in alignment with the holes of the hames, and a U-shaped attachment having stems extending through said hames, and engaging openings in the retaining-plate and dividing tubes, and screw bolts adapted to pass through said attachment, through said dividing tubes and the hames and engage the screw thread openings in the retaining plate, substantially as set forth.



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**505,471.** DYEING-MACHINE. JOSEPH H. LORIMER, Philadelphia, Pa. Filed Dec. 29, 1891. Serial No. 416,496. (No model.)



*Claim.*—1. In an apparatus for dyeing yarn, &c. the combination of a vat, a frame for supporting yarn therein, a pipe entering said vat and adjacent to its bottom, branch pipes leading therefrom within the vat and adjacent to the bottom thereof having perforations or openings, an overflow pipe near the top of the vat, a circulating pump, and pipes connecting said pump respectively with the pipe entering the vat near the bottom and the overflow pipe near the top.

2. In an apparatus for dyeing yarn, &c. the combination of a vat, arms hinged thereto and provided with supports, a frame to support the yarn provided with hooks or projections adapted to be received in the supports of the arms when the frame is raised from the vat.

3. In an apparatus for dyeing yarns, &c. the combination of a vat arms hinged thereto adjacent to the edge and provided with flat bases P adapted to rest upon the edge of the vat when the arms are raised, and with supports at the upper or free ends, a frame to support the yarn provided with hooks or projections adapted to be received in the supports of the arms when the frame is raised from the vat.

4. A yarn supporting frame for a dyeing machine having upper and lower supporting sticks, a support for said sticks, and a sliding locking bar having a series of projections adapted to be moved over the ends of said sticks while resting on the support, to lock the sticks therein.

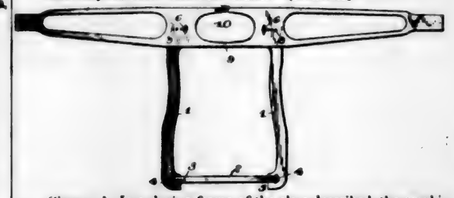
5. In a yarn supporting frame for a dyeing machine the combination with the upper and lower sets of sticks of the support frame D for the upper sticks having a series of supports *d*, and the sliding bar J having a series of projections J′ adapted to be moved over the ends of the sticks resting in the supports.

6. In a yarn supporting frame for a dyeing machine the combination of a longitudinal frame with upper and lower support frames for the yarn sticks at its ends, a transverse frame located at the middle of the yarn supporting frame provided with a series of worm wheels, a shaft carried by the frame adjacent to the worm wheels, worms carried by the shaft and meshing with the worms, and two sets of upper and lower yarn sticks, both sets of upper sticks being supported at the outer ends in the end supports of the frame and having their inner ends connected with the worm wheels at the middle thereof, whereby both sets of sticks may be turned together

7. In a yarn supporting frame for a dyeing machine, the combination of end supporting pieces for the outer ends of the yarn sticks an intermediate supporting frame, located between the end frames, for supporting the inner ends of the sticks, rotary supports carried by said intermediate frame and connected with the inner ends of each set of sticks, and means to rotate the rotary supports carried by the intermediate frame in unison, whereby both sets of sticks may be turned or rotated together

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**505,472.** SHIRT-STRETCHER. ORLO J. MARSH, Titusville, Pa. Filed May 20, 1893. Serial No. 474,943. (No model.)



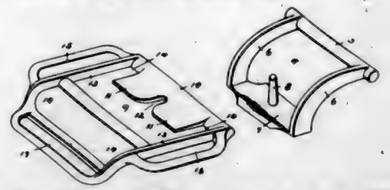
*Claim.*—1. In a drying frame of the class described, the combination with the opposite side bars, the lower transverse connecting bar pivoted to the lower ends thereof, of the opposite arms abutting at their inner ends and hinged at their upper corners and pivotally connected at each side of said hinge with the side bars, substantially as specified.

2. In a drier frame, of the class described, the combination with the curved side bars and the lower transverse connecting bar, of devices for adjustably connecting the same at its opposite ends to the side bars, the upper hinged arms adjustably connected to the side bars and abutting between the same, and a hinge connection between the upper corners thereof, substantially as specified.

3. In a drier of the class described, the combination with the opposite curved side bars, the lower transverse bar having perforations, and the thumb-nuts and bolts passed therethrough and through openings in the side bars, of the opposite arms having a series of perforations, thumb-nuts and bolts for adjustably connecting the same with the upper ends of the side bars, said arms having their abutting edges recessed to form lower abutting portions 9, the opposite metal plates 10 secured to the opposite sides of the arms at their upper corners and provided at their inner ends with disks, a pivot for the disks, and openings formed in the plates adapted to align when the arms are in a horizontal position, substantially as specified.

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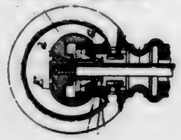
**505,473.** TRACE-BUCKLE. THEODORE H. MERRINS, Yankton, S. D. Filed Jan. 21, 1893. Serial No. 459,120. (No model.)



*Claim.*—In a buckle of the character set forth, the combination of a tug-section having outwardly-curved side-bars extending from an inner straight cross-bar, and an outer end-plate having an inwardly-projecting pin or lug, and a locking-section having a front cross-bar flush with side-bars extending rearwardly therefrom and terminating in loops, a pair of flat lugs being extended rearward from the said cross-bar and flush with the upper surface of the latter, and having a recess between the same at the center, and recesses 14 between the outer terminations thereof whose front walls terminate in rounded exposed portions of the front cross-bar of the locking-section, the curved side-bars of the tug-section being flattened and engaging the said rounded exposed portions of the front cross-bar of the locking-section, substantially as described.

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**505,474** WATCHCASE-PENDANT. FRITZ MINK, Philadelphia, Pa., assignor to the Keystone Watch Case Company, same place. Filed Jan. 18, 1893. Serial No. 458,788. (No model.)



*Claim.*—1. The combination with the pendant of a watch case, of a stem movable longitudinally therein, a spring projection carried by the stem, a projection carried by the pendant upon its interior and located in the path of the spring when it is moved with the stem, and a stop independent of the spring projection carried with the stem so as to move with it and limit the upward longitudinal movement of the stem

2. The combination with the pendant of a watch case, of a stem movable longitudinally therein, a spring projection carried by the stem, a projection carried by the pendant upon its interior and located in the path of the spring projection when it is moved with the stem, and a stop carried by the stem and located below the projection carried by the pendant so as to strike said projection when the spring projection has passed the pendant projection and thus limit the outward movement of the stem, substantially as shown and described

3. The combination with the pendant of a watch case, of a stem movable longitudinally therein, a spring carried by the stem and provided with a small snap projection and a larger stop projection, and a projection carried by the pendant on the interior and located in the path of the projections of the spring, whereby the small snap projection may pass said projection of the pendant and the larger stop projection will strike it and arrest the further outward movement of the stem, substantially as shown and described.

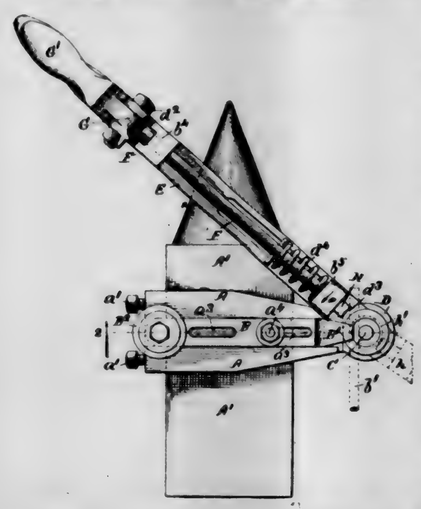
4. The combination with the pendant of a watch case, of a stem movable longitudinally therein, a tubular spring carried by said stem provided with a small snap projection, and a larger stop projection located below the small snap projection, and a nut carried by the pendant upon the interior and located in the path of the projections on the spring, substantially as shown and described.

5. The stem controlling spring for a pendant setting watch case consisting of a split tube having two projections upon its outer surface located one above the other, one projection being larger than the other to act as a detent, substantially as shown and described.

6. The combination with the pendant of a watch case, of a stem movable longitudinally therein, a spring carried by the stem and provided with a small snap projection, a projection carried by the pendant and located in the path of the snap projection of the spring, and a stop independent of the snap projection carried by the stem so as to move with it and limit the longitudinal movement of the stem

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**505,475.** BENDING-MACHINE. MERRITT MCMASTER, Batavia, Ill. Filed Apr. 12, 1893. Serial No. 470,017. (No model.)



*Claim.*—1. In a bending-machine, the combination with a supporting-bed of a reversible and longitudinally adjustable die-plate, having a flat die on one end and a cylindrical die on the other, substantially as set forth

2. In a bending-machine the combination with a bending-lever, a die-post, projecting up through one end thereof, a bracket-bar, adjustably seated on said lever and provided with upturned lugs in the respective ends thereof, a rod, inserted and having an endwise movement in said lugs, said rod being provided on the end adjacent to the die-post with a clamping-head, and a handle, having a pivotal movement and provided on one end with a cam-plate adapted to bear against one end of said rod, whereby a downward pressure on said handle will clamp an object between the clamping-head and die post, substantially as set forth

3. In a bending-machine, the combination of a bending-lever, a bracket-bar, having upturned lugs, a clamping-rod, having an endwise movement in said lugs, a handle, provided with a cam-plate and bearing against one end of said rod, and a spring coiled on said rod, whereby the rod is thrown into a clamping position when the handle is pressed down and returned to its normal position when the pressure is relaxed, substantially as set forth.

4. In a bending-machine, the combination of a supporting-bed, a reversible die-plate, adjustably seated thereon, a bending-lever, a die-post, projecting up through the joining-ends of said bed and lever, a bracket-bar, provided with upturned lugs and adjustably seated on said lever, a clamping-rod, having an endwise movement in said lugs, and a handle, provided with a cam-plate, and pivoted in one of said lugs, substantially as set forth

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**505,476.** UMBRELLA-COVER. ANTHONY NICHOLAS and LUDWIG TACHAU, Newark, N. J. Filed Aug. 26, 1892. Serial No. 444,188. (No model.)



*Claim.*—1. In an umbrella or parasol, the combination, with the stick and the ribs of the umbrella frame, the stick being provided at its outer end with an annular groove formed above the ring in which the ribs are pivoted, of a cover having an aperture to receive the collared end of the stick, fastening devices carried by the cover and adapted for removable engagement with the ribs, and a locking sleeve carrying spring-controlled pins, the locking sleeve being adapted to fit over the collar of the stick and the pins to enter its groove or channel, substantially as specified.

2. In an umbrella or parasol, the combination with a stick provided with a collar having an annular groove or channel, of a locking sleeve fitting upon the stick, and spring pressed cup-shaped projections carried by the sleeve and entering the groove or channel of the collar, substantially as described.

3. In an umbrella or parasol, the combination with a stick provided with a collar having an annular groove, of a locking sleeve fitting upon the stick, loose cup-shaped projections carried by the sleeve, and springs secured to the sleeve and provided with pins projecting into the cup-shaped projections, substantially as described.

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**505,477.** FOLDING BED. NIELS ODEGAARD and GOTFRED KUEHLE, Chicago, Ill. Filed Sept. 15, 1892. Serial No. 445,937. (No model.)

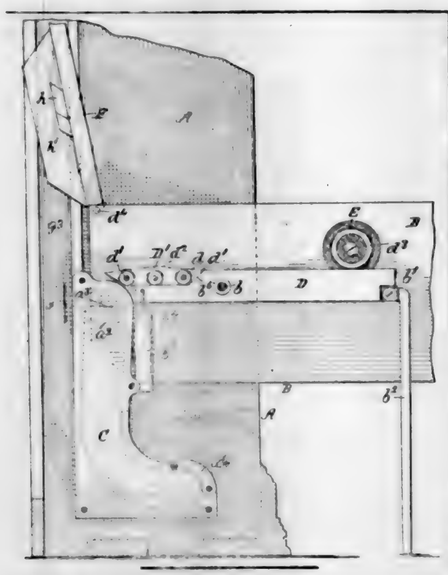
*Claim.*—1. In a folding-bed, the combination with the inclosing case, of the companion track-bars pivoted thereto and adapted to assume a vertical or a horizontal position, the track-bars or sections rigidly secured to the case in line with the pivoted bars, the legs pivoted to the front ends of the pivoted bars, and the weights suspended from the rear ends of the latter bars, substantially as set forth.

2. In a folding-bed, the combination with the inclosing case, of the companion track-bars, pivoted thereto and adapted to assume a vertical or horizontal position, the legs, pivoted to the front ends of said bars, and the weights, suspended from the rear ends thereof, substantially as set forth.

3. In a folding-bed, the combination with the case, of the track-bars pivoted to the respective inner sides thereof, the legs pivoted to the front ends of said bars, the track-bars or sections rigidly secured to the case in line with and forming a continuation of the pivoted bars, the side-rails and the rollers pivoted thereto and tracking on said bars, substantially as set forth.

4. In a folding-bed, the combination with the case, of the cam-plates having a curved pathway therein, the side-rails, the movement-rollers moving in the curved pathway of the cam-plates, the track-bars pivoted to the case, the legs pivoted to the front ends of said bars, the track-bars or sections rigidly secured to the case, and the rollers attached to the side-rails and tracking on said bars, substantially as set forth.





**505,478.** RAILWAY. ESPRIT PERRODY, Geneva, Switzerland. Filed Sept. 21, 1892. Serial No. 446,474. (No model.) Patented in France Dec. 1, 1887, No. 187,563, and in Belgium Feb. 19, 1891, No. 93,823.



*Claim.*—1. A metallic sleeper comprising two iron boxes for supporting the rails, said boxes filled within with concrete, a gage bar extending into said boxes and anchored within the bodies of concrete therein, substantially as set forth.

2. A metallic sleeper comprising two iron boxes for supporting the rails said boxes filled within with concrete, a gage bar extending into said boxes, and transverse bolts attached to said bar and embedded in the concrete, substantially as set forth.

3. A metallic sleeper for a double gage railroad consisting of three iron boxes for supporting the rails, said boxes filled within with concrete, a gage bar extending into the outer boxes and through the intermediate box and anchored within the bodies of concrete in said three boxes, substantially as set forth.

4. In a metallic substructure for railroad tracks, the combination of hollow iron supports for the rails filled with concrete, proper cross connections between said supports, bolts with nuts for fastening the rails to such supports, such nuts being embedded in the concrete, substantially as set forth.

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**505,479.** BUTTON. JOSEPH F. PLATT, Waterbury, Conn. Filed Feb. 25, 1893. Serial No. 463,752. (No model.)

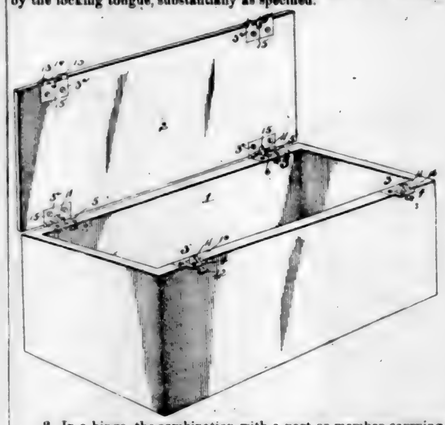


*Claim.*—A button consisting of the face or cap plate, the back or socket plate secured to and depending therefrom and having the tongues at the lower edge thereof and carrying the points which enter the material, the shell within the socket plate having the kerf or slot extending from the lower edge to or nearly to the upper edge thereof and the shank having the head or heads adapted to engage the shell, in the manner described.

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**505,480.** HINGE. LEVI L. PLETCHER, McConnellsville, Ohio. Filed May 13, 1893. Serial No. 474,136. (No model.)

*Claim.*—1. In a hinge, the combination of detachable parts or members, one of which is provided with a hook or seat and a co-acting spring-actuated locking tongue, and the other of which is provided with a pivot-pin to lie in said hook or seat and to be engaged by the locking tongue, substantially as specified.



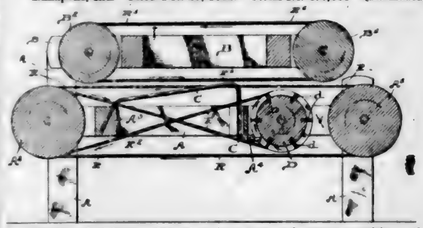
2. In a hinge, the combination with a part or member carrying a pivot-pin, of a separable part or member provided at one edge with a hook or seat to receive said pivot-pin, and a slidable spring-actuated locking tongue to engage the pivot-pin while in the hook or seat and having a beveled face to permit of automatic engagement of the parts, substantially as specified.

3. In a hinge, the combination with a part or member bearing a pivot-pin, of a part or member, provided with a hook or seat, a spring-actuated slide or plunger mounted in a suitable guide, and a locking tongue carried by said slide or plunger and adapted to engage the pivot pin when mounted in the hook or seat, substantially as specified.

4. In a hinge, the combination with a part or member bearing a pivot-pin, of a part or member bearing a hook or seat and a sheath or guide, a slide or plunger mounted in said sheath or guide and provided with an actuating spring, a locking tongue fixed to said slide or plunger and arranged in operative relation to the hook or seat, and an operating arm or extension fixed to the slide, substantially as specified.

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**505,481.** CARPET BEATING AND CLEANING MACHINE. CHAS. W. RAYMOND, Evansville, assignor of one-half to John H. Harford, Indianapolis, Ind. Filed Dec. 23, 1892. Serial No. 456,111. (No model.)



*Claim.*—1. The combination, in a carpet beating machine, of a series of rollers, one set being above, and the other below, the carpet in operation, belts or ropes connecting said rollers and adapted to carry a carpet through the machine when operated, spring fingers arranged in the path of the carpet, and means of actuating said fingers, substantially as set forth.

2. The combination, in a carpet beating machine, of two sets of rollers having grooves in their faces, rope belts laid in said grooves and connecting said rollers, said sets of rollers being arranged to permit the passage of a carpet between them, and beating mechanism arranged to operate in the path of the carpet.

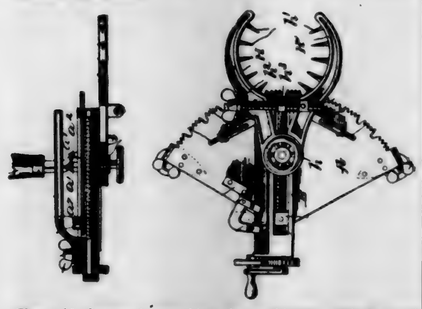
3. The combination, in a carpet beating machine, of a main frame-work, a set of rollers connected by belts or ropes and mounted in said frame-work, a second frame secured to the first and also carrying a set of rollers connected by ropes or belts, spring fingers mounted in said main frame, and an escapement wheel also mounted in said main frame and adapted to operate said fingers, substantially as set forth.

4. The combination, in a carpet beating machine, of a frame A carrying grooved rollers A' and A² with ropes or belts R laid in said

grooves and connecting said rollers, a grooved escapement wheel D mounted in said frame-work and driven from the roller $A^2$ by means of ropes $R^2$, spring fingers C mounted in a cross-bar $A^1$ in the frame-work and adapted to be operated by said escapement wheel, a frame-work B pivoted to the frame A and carrying grooved rollers $B^1$ and $B^2$, and ropes or belts R laid in said grooves and connecting said rollers, substantially as shown and described.

## 505,482. MACHINE FOR SAWING LOGS, TREES, OR SPILES.

ADELBERT W. RICH, Jersey City, N. J. Filed Dec. 12, 1891. Serial No. 414,897. (No model.)



*Claim.*—1. In a sawing machine, the combination with the pawl and ratchet (and the saw, screw shaft and connecting mechanism driven by the ratchet) of the pawl actuating lever, and the actuating arms, having one end secured directly to the saw, and the other end engaged by the said lever so as to feed the saw in the same plane with said lever.

2. In a sawing machine, the frame a screw shaft, journaled through and provided on one end with a ratchet wheel, a traveling nut working on said shaft, to which is secured a saw, actuating arms, secured directly to said saw, and an actuating lever pivoted to said frame and provided with a pawl, adapted to engage said ratchet wheel, said actuating arms adapted to engage the actuating lever.

3. In a sawing machine the combination with the frame, saw, and operating mechanism, of the clamping jaws pivoted to said frame, the clamping bolt for the jaws and anti-friction wheels secured in brackets integral with the clamping jaws substantially as described.

4. In a sawing machine mechanism, for feeding the saw to the work consisting of a screw shaft and a traveling nut, a ratchet wheel, secured to said shaft, a lever pivoted to said machine, and a pawl pivoted to the rear end of said lever and adapted to engage said ratchet wheel; and actuating arms secured directly to the saw and adapted, when the saw is operated to operate the pawl actuating lever.

5. In a sawing machine, the combination with the frame of the screw shaft journaled therein, a traveling nut working on said shaft, and a saw secured to said nut; actuating arms secured to the saw and extending at an angle from the same, and a ratchet wheel secured to one end of said shaft; of a lever pivoted to said frame and provided at one end with a pawl adapted to engage said ratchet wheel, a spring E secured to the frame and adapted to normally hold the pawl actuating lever in its lowest position substantially as set forth.

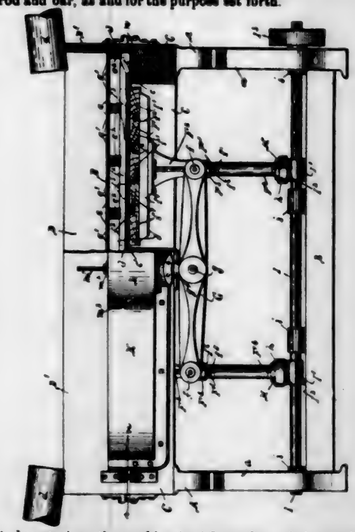
## 505,483. PULP-STRAINER.

D WELLINGTON ROUNDS, Dexter, N. Y. Filed Oct. 6, 1891. Serial No. 407,912. (No model.)

*Claim.*—1. In a strainer, the combination of a perforated plate, a plunger movable toward and away from said plate, and a corrugated flexible plate between the plunger and the perforated plate, substantially as and for the purpose described.

2. In a strainer, the combination with a frame containing a chamber provided with a perforated plate above its bed, two plungers within said bed below the plate, and flexible plates connecting the bed with the edges of the plungers; of brackets depending from said plungers, a lever mounted on a central support and pivoted to said brackets, rods depending from the brackets, arms pivoted to the main framework and connected with the lower ends of said rods, a rotating shaft below said arms and rods, and cams on said shaft for lifting the arms alternately, as and for the purpose set forth.

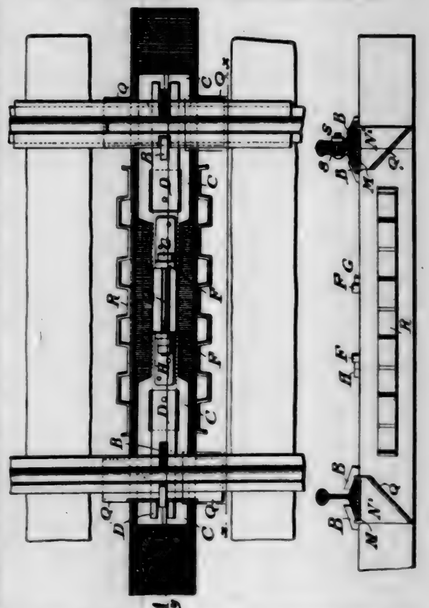
3. In a strainer, the combination with a chamber containing a horizontal perforated plate above its bed, vertically movable plungers beneath said plate, and flexible plates connecting the bed with the edges of the plungers, said bed having outlet passages around the plungers leading to a common delivery; of a main outlet communicating with said delivery and having a vertical pipe at its lower end, a ring movable vertically within the upper end of said pipe, a rod across said ring, a bar across said main outlet, and an adjusting bolt connecting said rod and bar, as and for the purpose set forth.



4. In a strainer, the combination of a perforated plate and a plunger movable toward and away from said plate; of a flexible upper plate arranged between the perforated plate and the plunger and formed with its central portion cut away, and with lengthwise corrugations in its sides, substantially as and for the purpose specified.

## 505,484. RAILWAY-TIE AND FASTENING.

HORACE B. ROWLAND, Philadelphia, Pa., assignor of one-third to Jacob L. Bothwell, same place. Filed June 23, 1892. Serial No. 437,700. (No model.)



*Claim.*—1. A hollow tie, movable and stationary plates, the stationary plate having its outer ends above the outer ends of the movable plates, said parts being combined substantially as described.



2. Movable plates, a stationary plate, and slides secured to said movable plates, said parts being combined substantially as described.

3. A stationary plate and a movable plate guided thereon, and means for operating the movable plate in combination with cheek pieces for clamping the rail, one of said cheek pieces being engaged by the movable plate and fulcrumed on the other cheek piece, whereby both cheek pieces may be moved upon the rail, substantially as described.

4. Stationary and movable plates, and a slide connected with the movable plate and freely engaging the stationary plate, in combination with cheek pieces which are supported on the stationary plate and provided with depending portions which fulcrum on each other, one of the cheek pieces being engaged by the movable plate, said parts being combined substantially as described.

5. A railway tie having a plate for supporting the cheek pieces of the rail provided with an additional plate, and a post forming a truss for the first named plate, substantially as described.

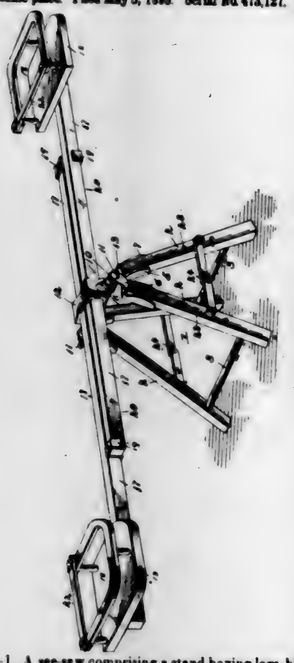
6. A railway tie formed with an open top, a bed on the top of the tie having depending sides secured to the sides of the said tie, said depending sides having obliquely extending wings, said parts being combined substantially as described.

7. A railway tie having on the sides thereof projecting obliquely arranged wings Q, substantially as described.

8. A railway tie having a bed for the rail supported on the tie, depending side pieces connected with the sides of the tie, and wings projecting outwardly from said side pieces, substantially as described.

## 505,485. FOLDING SEESAW.

EDWARD M. SCEARCE, Paris, Mo., assignor of two-thirds to Granville P. Grimes, J. H. Rodes, and T. T. Rodes, same place. Filed May 5, 1893. Serial No. 473,127. (No model.)



*Claim.*—1. A see-saw comprising a stand having legs, hinge castings secured to the tops of the legs and provided with half-sockets to receive the legs and having inclined offset eyes, a rectangular loop provided with depending eyes, a pivot bolt passing through said eyes and hinging the castings together and fulcruming the loop on the stand, the longitudinally adjustable beam sections slidingly arranged in the loop, and seats secured to the outer ends of the beam sections, substantially as described.

2. A see-saw comprising a stand having legs, hinge castings having inclined offset eyes and provided with half-sockets receiving the upper ends of the legs and consisting of plates and side and top flanges, a rectangular loop provided with depending eyes, a pivot bolt passing through said eyes, beam sections arranged in the loop, and seats mounted on the beam sections, substantially as described.

3. In a see-saw, the combination of a stand, a rectangular loop fulcrumed on the stand, beam sections slidingly mounted in the loop and arranged side by side and capable of longitudinal adjustment, and the double rectangular hooks arranged at the inner ends of the beam sections and each extending over the top of the beam section to which it is secured and under the bottom of the adjacent beam-section, substantially as described.

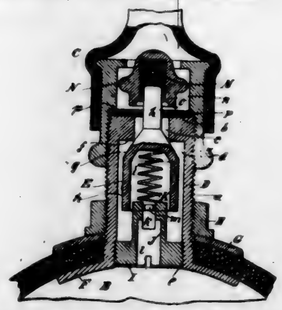
4. In a see-saw, the combination of a stand, a rectangular loop fulcrumed on the stand, beam sections slidingly mounted in the loop and arranged side by side, seats mounted on the beam section, double rectangular hooks arranged at the inner ends of the beam sections and each extending over the top of the beam section to which it is secured and under the adjacent one, and studs projecting from the lower faces of the beam sections and arranged near the inner ends of the same, substantially as described.

5. In a see-saw, the combination of a stand, a loop fulcrumed on the stand, beam sections slidingly mounted in the loop and arranged side by side, and double hooks arranged at the inner ends of the beam sections and each extending over the top of the beam section to which it is secured and under the bottom of the adjacent one, substantially as described.

6. In a see-saw, the combination of a frame having legs arranged in pairs and provided with adjusting perforations, hinged link bars arranged at the sides of the frame and connecting the legs and provided with fastening devices adapted to enter any of the perforations, hinge castings secured to the upper ends of the legs and provided with eyes, a loop provided with depending eyes, a pivot bolt passing through said eyes, beam-sections arranged in the loop and capable of longitudinal adjustment, and seats mounted on the beam-sections, substantially as described.

## 505,486. VALVE.

GEORGE H. F. SCHRADER, New York, N. Y. Filed Feb. 9, 1893. Serial No. 461,251. (No model.)



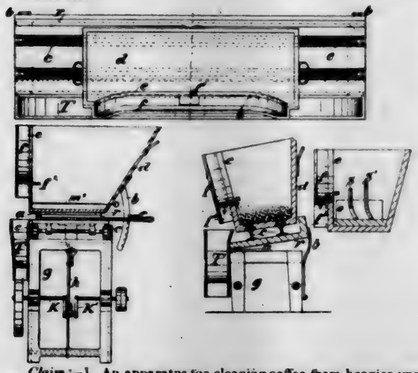
*Claim.*—1. In a bicycle tire valve, the casing D, having an internal seating face, and an outlet aperture *c*, in combination with a plunger E therein having a seating face within said casing engaging the internal seating face thereof, a contracted stem above its seating face, projecting outside of said casing, and having a screwthreaded outer end, and a nut exteriorly of said casing engaging and irremovably fastened to said screwthreaded end of said stem for operating the plunger, whereby the separation of the stem and nut is prevented.

2. In an air valve, the casing D, having hollow interior *d*, aperture *c*, and internal seating face *f*, in combination with the plunger E within said casing, having a seating face *g* within said casing engaging said seating face *f*, said plunger having a reduced stem extending outside of the casing and an enlarged screwthreaded outer end *m* exteriorly of said casing, and a nut having an internal screwthread engaging that of said stem for operating it, and having an inward projection *n* opposite said reduced stem and projection in the path of the screwthread *m* thereof, whereby separation of the nut and stem is prevented.

3. In a bicycle valve, the casing D, having hollow interior *d* and screwthread *e* at the lower end thereof, in combination with a slotted plug I entering the end of said casing and engaging the screwthread *e* thereof, and a plunger E movably mounted within said casing, and having a lug *m* engaging the slot of said plug and preventing rotation of said plunger, substantially as and for the purpose set forth.

4. In a valve the casing D in combination with the plug I fitting the hollow interior thereof and having guiding projection J, the plunger E within said casing having enlarged end *h* and hollow portion *i* fitting over said projection J and guided thereby, and a spring K for said plunger within the hollow portion thereof and acting against said projection J

**505,487. MACHINE FOR ELIMINATING STONES, &c., FROM COPPER.** WILLY SCHWAB, Cologne, Germany. Filed Feb. 11, 1893. Serial No. 461,851. (No model.) Patented in Germany Aug. 15, 1891, No. 62,764; in France Sept. 7, 1891, No. 215,958; in Belgium Feb. 6, 1892, No. 98,249, and in Austria-Hungary Apr. 26, 1892, No. 2,313 and No. 14,496.



*Claim.*—1. An apparatus for cleaning coffee from heavier impurities consisting of a reciprocating carriage, a discharge opening in the front thereof and means for tilting said carriage toward the front, substantially as described.

2. In combination, a reciprocating carriage having a discharge opening, means for tilting the same and toothed slides located in said carriage, substantially as described.

3. In combination, a reciprocating carriage having a discharge opening, means for tilting the same in the direction of the opening and a raised bottom for said carriage, substantially as described.

4. In combination, a reciprocating carriage having a discharge opening in the front and a hinged connection between said carriage and the frame along the edge in which the opening is located, substantially as described.

5. In combination, a reciprocating carriage, means for tilting the same and a channel *f* in its front face terminating in a discharge opening, substantially as described.

6. In combination, a reciprocating and tilting carriage having a discharge opening and a horizontal plate $f^3$ extending inwardly from said opening, substantially as described

**505,488. FIRE-BRIDGE FOR RAILWAY-CROSSINGS.** JAMES H. SCOTT, Bath, Me. Filed Feb 24, 1893. Serial No. 463,620. (No model.)



*Claim.*—The combination of the transverse bars and the longitudinal bars mounted thereon, the hinged bar-sections, the latches for securing the hinged sections, the rails mounted on the transverse bars, the rail sections having the rigid lips at one end for engaging the web of the abutting rail and the slotted movable catches at the other end of the rail sections for engaging the web of the other abutting rail to fasten the rail sections, as described.

**505,489. REGULATING PLUG-COCK.** HORACE SEE, New York, N. Y. Filed Sept. 15, 1892. Serial No. 445,955. (No model.)



*Claim.*—1. A plug-cock consisting of a shell provided with a circumferentially-grooved plug and with one side entrance-nozzle, two or more discharge-nozzles and one side exhaust-nozzle, whereby said discharge-nozzles are each respectively fed by said entrance-nozzle, and exhausted by said exhaust-nozzle, around the exterior of the plug, substantially as and for the purposes set forth.

2. A plug-cock consisting of a shell, provided with a plug of the form described and having one entrance-nozzle, three discharge-nozzles and one exhaust-nozzle, said exhaust-nozzle and two discharge-nozzles being in the same plane and said entrance-nozzle and one discharge-nozzle being located in planes on either side of said other nozzles, and all of said nozzles radiating from the same shell, substantially as and for the purposes set forth.

3. A plug-cock consisting of the following named parts: a plug provided with an annular feed-groove, as *d*, a longitudinal conduit-groove, as *a*, and a circumferential exhaust-groove, as *c*; and a shell provided with an entrance-nozzle, as A, three discharge-nozzles, as B, C, D, and an exhaust-nozzle, as E; the nozzles B, C, and E being in the same plane and the nozzles A and D being located in planes on either side of said other nozzles; substantially as and for the purposes set forth.

**505,490. DENTAL-DISK HOLDER.** RUFUS G. STANBROUGH, New York, N. Y. Filed Apr. 4, 1892. Serial No. 427,720. (No model.)

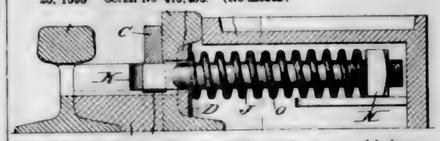


*Claim.*—1. A metal binder for dental disks having shoulders *c*, *c*, on one face, and lugs *d*, *d* depending from the other face, substantially as described for the purposes set forth.

2. The combination with a metal binder having a substantially elongated opening, shoulders projecting from the upper face and lugs depending from the under face, of said metal binder, of a dental disk having an opening corresponding to the opening in the binder, and at each end of said opening a slit at right angles thereto, substantially as described for the purposes set forth.

3. The combination with a dental disk provided with a metal binder having an elongated opening, shoulders on the upper face, and lugs projecting from the lower face, of a disk carrier comprising a shank having a reduced stem, terminating in a T-head, adapted to enter the openings and engage opposite sides of the upper shoulders and a spring acting pressure plate having projecting fingers adapted to engage opposite sides of the depending lugs, substantially as and for the purpose described.

**505,491. SPRING-BOLT AND BOX.** GLEASON F. STARKWEATHER, Chicago, Ill., assignor to the Paige Iron Works, same place. Filed May 25, 1893. Serial No. 475,458. (No model.)



*Claim.*—1. The combination with a spring actuated bolt, means for preventing the rotation thereof, and a spring adjusting nut thereon of a removable box inclosing said bolt and nut and engaging the nut so as to prevent rotation of the same, substantially as and for the purpose described.

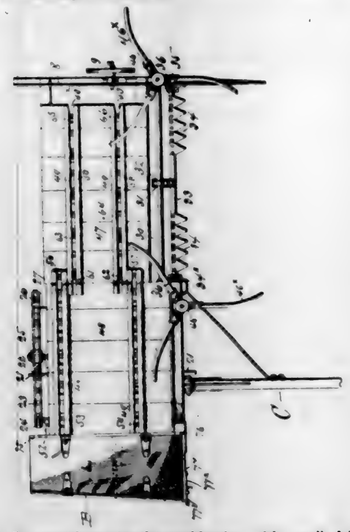
2. The combination with the switch tongue, the spring actuated bolt provided with a head engaging said tongue, and means for preventing the rotation of the bolt, of a nut working on said bolt for adjusting the spring actuating the same, and a removable box inclosing said bolt and nut provided with projections engaging said nut so as to prevent rotation thereof, substantially as and for the purpose described.

3. The combination with a stationary rail, a movable switch tongue, a bolt working through the stationary rail and provided with a head engaging the switch tongue and means for preventing the rotation of said bolt of a nut on the opposite end of said bolt, a coil spring sleeved upon the bolt and confined between said nut and the stationary rail and a box inclosing said spring and nut having interior dimensions and configuration complementary to said nut whereby the nut is free to move longitudinally in said box, but is prevented from rotation on the bolt substantially as and for the purpose described

**505,492. CORN-HARVESTER.** WILLIAM R. STEINER, Frederick, Md. Filed Sept. 13, 1901. Serial No. 408,138. (No model.)



*Claim.*—1. In a corn-harvester the combination, with the receiving-floor of the machine, of a revolving shaft mounted parallel with said floor and provided with a tappet, a cutter-bar mounted parallel to the said revolving shaft and journaled to rock in its bearings, cutters projecting horizontally from and rigidly secured to the rocking cutter-bar, a torsional spring on the cutter-bar to return it to normal position and restrain it from rotation, an arm on the cutter bar arranged to be engaged by the tappet, and means to rotate the tappet shaft, substantially as described.



2. In a corn-harvester the combination, with a stalk delivering mechanism, of a shock-box B composed of a bottom-piece and two side-pieces hinged together, and a support projected from the machine through bearings on the bottom of the box and arranged to swing in a horizontal plane, whereby the box may be turned on its bearings into an upright position and swing on the support and lie open, substantially as specified.

3. In a corn-harvester the combination, with the frame of the machine, of the end-door hinged to the frame, the shock-box B, composed of the bottom-piece and side-pieces hinged together and the supporting-bar 71 held in keepers 72 on the bottom of the box and to turn in bearings 73 on the frame, all substantially as and for the purpose specified.

4. In a corn-harvester the combination, with the frame of the machine, of the shock-box B composed of a bottom-piece and two side-pieces hinged thereto, and the supporting bar 71 held in keepers 72 on the bottom of the box and to turn in bearings 73 on the frame, as set forth.

**505,493. HARMONICA.** CARL STRAUSS, New York, N. Y. Filed June 26, 1893. Serial No. 478,824. (No model.)

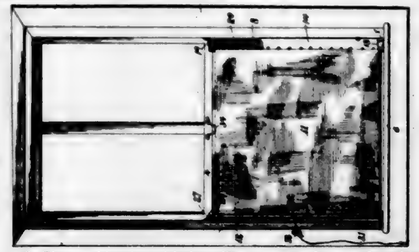


*Claim.*—1. The combination of a harmonica with rails secured to the reed plates and sliding covers received by the rails, substantially as specified.

2. The combination of a cell block *b*, with reed plates *a*, secured to the sides thereof, bent rails *c*, secured to the ends of the reed plates and sliding covers *d*, received by the outwardly bent ends of the rails, substantially as specified.

**505,494. INSECT-SCREEN OR DUST-ARRESTER.** LOUIS F. STUTZ and JOSEPH A. DURBRAUGH, Washington, D. C. Filed July 30, 1892. Serial No. 441,704. (No model.)

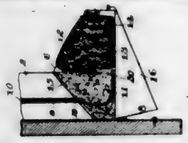
*Claim.*—1. In a screen for the purposes described, the combination of a spring roller at one side of the window, a screen secured thereto and having at its free edge a stick, means for drawing the screen across the window opening, an outwardly inclined guide roller 10, and means for holding the said stick in an outwardly inclined position at the other side of said window, the direction of said inclination being such that the base of the screen is farther inward than the top substantially as set forth.



2. The combination with the rolling screen and means for taking up the same at the side of a window, of a stick secured to the free edge of the screen, and a rotary polygonal shaft 26 mounted at the other side of the window and adapted to confine said stick against the window frame, substantially as set forth.

3. The combination with the screen, and an outwardly inclined spring roller secured thereto, of a stick attached to the free end of the screen, means for drawing said stick and screen across the window opening, and an outwardly inclined rotary polygonal shaft 26 adapted to confine said stick against the window frame, the direction of inclination of said roller and shaft being such that the base or lower edge of the screen is farther inward than the top, substantially as set forth.

**505,495. POSTAGE-STAMP OR ENVELOPE MOISTENER.** JOHN B. WALSH, Wapakoneta, Ohio. Filed May 8, 1893. Serial No. 473,437. (No model.)



*Claim.*—1. In a stamp and envelope moistener, the combination of a tank or reservoir having a tube therein, a compartment below said tank or reservoir, a wick mounted in said tube and smaller than the same, a quantity of absorbent cotton in the rear part of the compartment with which the lower end of the wick engages, and a delivery pad located in and exposed in the front part of said compartment and supplied with a felt covering that contacts with the said cotton, substantially as described.

2. In a stamp and envelope moistener, the combination of a frame comprising a vertically-disposed box with an upper hinged lid or cover and a lower inclined bottom to form a reservoir, a tube rising vertically through the said reservoir, a compartment below the said reservoir having an upper inclined side with an opening therein, and a partition extending into the same, a wick mounted in said tube and of less dimension than the latter, a quantity of absorbent cotton in the rear part of said compartment and engaged by the said wick, and a delivery pad in the front part of said compartment consisting of an outer felt covering with a filling therein that is exposed through the opening of the said compartment, the bottom of said frame being supplied with a drip attachment, substantially as described.

3. In a stamp and envelope moistener, the combination of a tank or reservoir having a tube therein, a compartment below said tank or reservoir, a wick mounted in said tube and smaller than the same, a quantity of absorbent cotton in the rear part of the compartment with which the lower end of the wick engages, said compartment having a partition extending thereinto, and a delivery moistening pad exposed in the front part of said compartment and having front and back hooks that respectively engage the front portion of said compartment and the said partition, substantially as described.

4. In a stamp and envelope moistener, the combination of a tank or reservoir having an outward extension provided with an open top, and a removable delivery pad arranged within the extension and conforming to the configuration thereof and filling the same and provided with hooks for detachably securing it in place, substantially as described.

5. In a stamp and envelope moistener, the combination of a tank provided with an outward extension having an open top, and provided at the back with a depending partition and having at its front a depending flange, and a removable delivery pad arranged within the extension of the tank or reservoir and provided at its front and

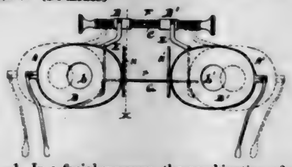
back with hooks detachably engaging the partition and the flange, substantially as described.

6. In a stamp and envelope moistener, the combination of a tank or reservoir having an extension provided with an open top, a delivery pad arranged in the extension, and a removable drip-pan secured to the bottom of the tank or reservoir and conforming to the configuration thereof and extending beyond the front of the same and arranged to receive the overflow, substantially as described.

7. In a stamp and envelope moistener, the combination of a tank or reservoir provided on its bottom with ways and having a forward or outward extension with an open top, a delivery pad arranged within the extension, and a drip-pan provided with flanges arranged in the ways, said drip-pan projecting beyond the tank or reservoir to receive the overflow, substantially as described.

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**505,496. FACIAL MEASURE.** ALBERT M. WARD, Detroit, Mich., assignor to George Johnston, same place. Filed Apr. 24, 1893. Serial No. 471,536. (No model.)



*Claim.*—1. In a facial measure, the combination of eye frames, and perforated plates in connection therewith, located adjacent to the inner portions of the eye frame, substantially as described.

2. In a facial measure, the combination of eye frames, perforated measuring plates at the adjacent portions of the eye frames, and a rod to engage said plates, substantially as described.

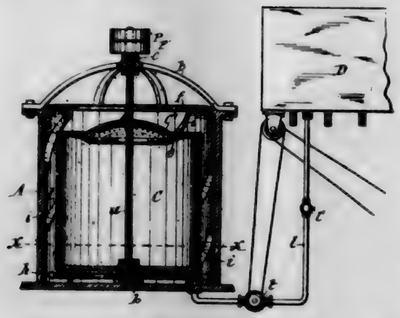
3. In a facial measure, the combination of eye frames, measuring plates located at the adjacent portions of the eye frames, and means for laterally adjusting the measuring plates substantially as described.

4. In a facial measure, eye frames having perforated plates in connection therewith at their adjacent portions, and a screw to adjust the frames laterally, substantially as described.

5. In a facial measure, eye frames having perforated plates in connection therewith at their adjacent portions and extending substantially at right angles thereto, a screw to adjust said frames laterally, and a scale bar to indicate the lateral adjustment, substantially as described.

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**505,497. CENTRIFUGAL DYEING-MACHINE.** LEONARD WELDON, Amsterdam, N. Y., assignor to the Klauder-Weldon Dyeing Machine Company, same place. Filed Feb. 10, 1893. Serial No. 461,739. (No model.)

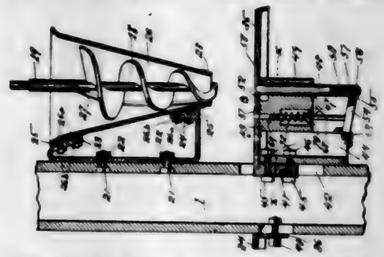


*Claim.*—1. The combination in a dyeing machine, of an upright cylindrical vat, a revoluble perforated cage arranged concentrically in said vat, spirally arranged ribs located on the inner side of the vat and extending from the top to the bottom thereof, and an annular deflector extending from the vat over the cage, substantially as specified.

2. The combination of an upright cylindrical dye-liquor vat, a revoluble perforated cylindrical cage arranged concentric in the vat, ribs on the inner side of the vat extending from the bottom to the top thereof, an annular deflector extending from the vat over the cage, and an annular shed on the top of the cage and inclined toward the center thereof as set forth and shown.

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**505,498. BEEF-STUFFING MACHINE.** ALFRED WESTOS, Kansas City, Kans. Filed May 12, 1893. Serial No. 473,962. (No model.)



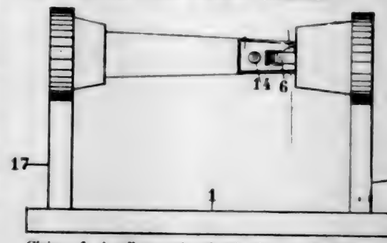
*Claim.*—1. A beef stuffing machine, comprising a hopper, having spirally arranged guide strips extending from the lower end toward the upper end, and a spiral conveyer adapted to revolve within said hopper and feed the meat therethrough, substantially as set forth.

2. A beef stuffing machine, comprising a cylindrical and tapering hopper, and spirally arranged guide strips secured to the inner side of said hopper and extending from its lower toward its upper end, and a spiral conveyer of diameter gradually decreasing to correspond with the interior tapering forming the hopper, substantially as set forth.

3. A beef stuffing machine, comprising a conical shaped hopper open at each end, and having spirally arranged guide-strips at its inner side, and a nozzle adapted to fit upon and continue the tapering formation of the hopper and having guide strips adapted to align with and continue the spiral curvature of the guide-strips of the hopper, and a spiral conveyer of gradually decreasing diameter adapted to operate in the hopper and nozzle, substantially as set forth.

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**505,499. ROLL-PAPER BRACKET.** SETH WHEELER, Albany, N. Y. Filed Mar. 1, 1893. Serial No. 464,222. (No model.)



*Claim.*—1. A roll paper bracket having two head pieces, one at least of which is movable, and having a longitudinally protruding arm extending across the bracket and ending in proximity to one of the head pieces, and having a latch engaging with the arm, said latch being attached to a push button and having a spring between the button and the free end of the latch arranged to press the latch rearward, substantially as described.

2. A roll paper bracket consisting of a movable head piece and a rigid head piece and a spring actuated latch and having an arm extending across the bracket with which the latch engages, the latch protruding through one of the head pieces and having a stop on said latch arranged to prevent the nose of the latch from being drawn rearward into the head piece, substantially as described.

3. A roll paper bracket having a movable headpiece and having a resilient device, a movable latch and an actuating device attached thereto, the latch having a longitudinal movement, said bracket also having a stationary headpiece, a portion of which terminates in proximity to the movable headpiece, and having a catch with which the latch engages locking the headpieces together, substantially as described.

4. A roll paper bracket having a movable headpiece with a resilient device, a movable latch and an actuating device for the latch, the latch having a longitudinal and a vertical motion, said bracket also having a stationary headpiece a portion of which terminates in proximity to the movable headpiece and having a catch with which the latch engages, the latch being immovable vertically when the paper roll is in place on the bracket and the bracket placed ready for use substantially as described.

5. A roll paper bracket having a movable headpiece and an immovable one, a portion of the latter extending across the bracket in proximity to the accompanying headpiece and having a guard or



piece extending beyond the extremity of one of the headpieces, and having a cavity in the other in which the end of the guard or piece may enter, allowing the two headpieces to approach each other, said guard or piece being movable and arranged to rest out of said cavity when desired thus separating the headpieces farther from each other substantially as described.

6. A roll paper bracket having two headpieces, one at least of which is movable, and a swinging separating device arranged to separate the headpieces when desired and be moved and allow them to approach each other when desired substantially as described.

7. A roll paper bracket having two headpieces between which a roll of paper may be held, one at least of said headpieces being movable, that the roll of paper may be put in position on the bracket, one of said headpieces having an arm extending across the bracket and locked to the other, and having a guard arranged to keep the headpieces at a predetermined distance apart substantially as described.

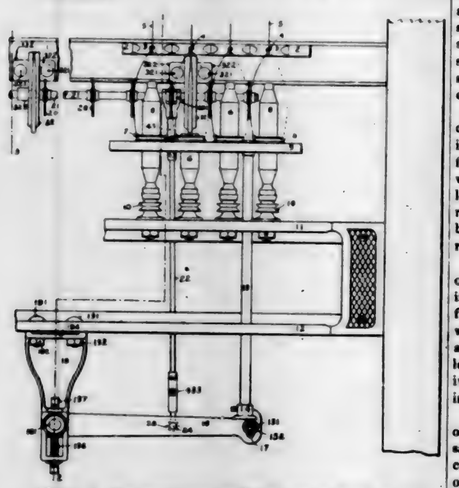
8. A roll paper bracket having two headpieces between which a roll of paper may be held, one of which at least being movable that the roll of paper may be put in place, one of said headpieces being chambered and having a locking device arranged in said chamber, the other headpiece having an arm in proximity to the chambered headpiece and arranged to engage with the locking device when in such proximity and lock the roll of paper on the bracket substantially as described.

9. A roll paper bracket having a movable head piece and a rigid head piece provided with a longitudinally protruding arm extending across the bracket and ending in proximity to the other head piece, and having a resilient locking device arranged to yieldingly lock the head pieces together, substantially as described.

10. A roll paper bracket consisting of a movable head piece and a rigid head piece and having a resilient locking device arranged to yieldingly lock the head pieces together, substantially as described.

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**505,500. SEPARATOR MECHANISM FOR RING-SPINNING FRAMES.** CHANDLER WHITAKER, Tyngsborough, assignor to the Lowell Machine Shop, Lowell, Mass. Filed Apr. 24, 1893. Serial No. 471,697. (No model.)



*Claim.*—1. The combination with the ring-rails and the separator-rails on the opposite sides of a ring-frame, and the separators carried by the separator-rails, of a frame sustaining the said separator-rails, and means for separately moving the ring-rails and the said frame vertically, substantially as described.

2. The combination with the ring-rails and the separator-rails on the opposite sides of a ring-frame, the separators carried by the separator-rails, and the corresponding cross-shaft arms upon the opposite sides of the ring-frame whereby the ring-rails are actuated, of a frame sustaining the said separator-rails, and separately actuated by the said cross-shaft arms, substantially as described.

3. The combination with the separator-rails on the opposite sides of a ring-frame, the separators carried thereby, and the corresponding cross-shaft arms upon the opposite sides of the ring-frame, of a frame sustaining the said separator-rails composed of side-rods provided with supports for the separator-rails and acted upon at their lower ends by the cross-shaft arms, and upper and lower cross-bars, rods, or wires connecting the said side-rods, substantially as described.

4. The combination with the separator-rails on the opposite sides of a ring-frame, the separators carried thereby, and the corresponding cross-shaft arms upon the opposite sides of the ring-frame, of the frame sustaining the said separator-rails composed of side-rods provided with supports for the separator-rails and connected pivotally at the lower ends thereof with the cross-shafts arms, and upper and lower cross-bars, rods, or wires connecting the said side-rods, substantially as described.

5. The combination with the separator-rails on the opposite sides of a ring-frame, the separators carried thereby, and the corresponding cross-shaft arms upon the opposite sides of the ring-frame, of the frame sustaining the said separator-rails composed of side-rods provided with supports for the separator-rails and acted upon at their lower ends by the cross-shaft arms, upper and lower cross-bars, rods, or wires connecting the said side-rods, and means for connecting the cross-bars, rods, or wires to the side-rods and adjusting the direction of the said cross-bars, rods, or wires with respect to that of the said side-rods, substantially as described.

6. The combination with the separator-rails on the opposite sides of a ring-frame, the separators carried thereby, and the corresponding cross-shaft arms upon the opposite sides of the ring-frame, of the frame sustaining the said separator-rails composed of side-rods provided with supports for the separator-rails and connected pivotally at their lower ends with the cross-shaft arms, upper and lower cross-bars, rods, or wires connecting the said side-rods, and means for connecting the cross-bars, rods, or wires to the side-rods and adjusting the direction of the said cross-bars, rods, or wires with respect to that of the said side-rods, substantially as described.

7. The combination with the ring-rails and separator-rails on the opposite sides of a ring-frame, and the separators carried by the separator-rails, of the frame sustaining the said separator-rails, means for separately actuating the ring-rails and the said frame, and directive means whereby to maintain the separators as they rise and fall in proper positions relative to the spindles, substantially as described.

8. The combination with the ring-rails and separator-rails on the opposite sides of a ring-frame, the separators carried by the separator-rails, and the corresponding cross-shaft arms upon the opposite sides of the ring-frame whereby the ring-rails are actuated, of a frame sustaining the said separator-rails, and separately actuated by the said cross-shaft arms, and directive means whereby to maintain the separators as they rise and fall in proper position relative to the spindles, substantially as described.

9. The combination with the separator-rails on the opposite sides of a ring-frame, the separators carried thereby, and the corresponding cross-shaft arms upon the opposite sides of the ring-frame, of a frame sustaining the said separator-rails composed of side-rods provided with supports for the separator-rails and acted upon at their lower ends by the cross-shaft arms, and upper and lower cross-bars, rods, or wires connecting the said side-rods, and directive means whereby to maintain the separators as they rise and fall in proper positions relative to the spindles, substantially as described.

10. The combination with the separator-rails on the opposite sides of a ring-frame, the separators carried thereby, and the corresponding cross-shaft arms upon the opposite sides of the ring-frame, of the frame sustaining the said separator-rails composed of side-rods provided with supports for the separator-rails and connected pivotally at the lower ends thereof with the cross-shaft arms, and upper and lower cross-bars, rods, or wires connecting said side-rods, and directive means whereby to maintain the separators as they rise and fall in proper positions relative to the spindles, substantially as described.

11. The combination with the separator-rails on the opposite sides of a ring-frame, the separators carried thereby, rods sustaining the said separator-rails, and means for reciprocating the said rods vertically, of a cross-bar, rod, or wire uniting the corresponding rods on opposite sides of the ring-frame, and means for adjusting the direction of the said cross-bar, rod, or wire with respect to that of one of the said rods, substantially as described.

12. The combination with the separator-rails on the opposite sides of a ring-frame, the separators carried thereby, rods sustaining the said separator-rails, and means for reciprocating the said rods vertically, of a cross-bar, rod, or wire uniting the corresponding rods on opposite sides of the ring-frame, and means for adjusting the distance apart of the said rods, and the direction of the said cross-bar, rod, or wire with respect to that of one of the said rods, substantially as described.

13. The combination with the separator-rails on the opposite sides of the ring-frame, and the separators carried thereby, of side-rods sustaining the said separator-rails, means for reciprocating the said side-rods vertically, a cross-bar, rod, or wire uniting the corresponding side-rods on opposite sides of the ring-frame, and a socket, 43, connected with one end of the cross-bar, rod, or wire, and having an

opening therethrough for the reception of one of the side-rods, and also having the oppositely located screws, 433, 433, 433, substantially as described.

14. The combination with the separator-rail, the separators carried thereby, the vibratile supporting and connecting-rods, and the cross-shaft arms whereby the said rods are moved to actuate the separator-rail, of the guides for the separator-rail provided with vertical surfaces between which the separator-rail moves and whereby the said separator-rail is prevented from moving transversely of the ring-frame, substantially as described.

15. The combination with the separator-rails on opposite sides of a ring frame, the separators carried thereby, the swinging frame whereby the said rails are supported, and the corresponding cross-shaft arms on opposite sides of the ring-frame by which the said swinging-frame is actuated, of guides provided with vertical surfaces whereby the said separator-rails are prevented from moving transversely of the ring-frame, substantially as described.

16. The combination with the separator-rail, the separators carried thereby, the vibratile supporting and connecting-rods, and the cross-shaft arms whereby the said rods are moved to actuate the separator-rail, of a slotted bracket in which the separator-rail is fitted and by which it is guided, substantially as described.

17. The combination with the separator-rail, the separators carried thereby, the vibratile supporting and connecting rods, and the cross-shaft arms whereby the said rods are moved to actuate the separator-rail, of a slotted bracket in which the separator-rail is fitted and by which it is guided, and collars on the separator-rail on opposite sides of said bracket, substantially as described.

18. The combination with the separator-rail, the separators carried thereby, the cross-shaft, the cross-shaft arm, and means for operating the separator-rail from the cross-shaft arm, of the guide-rail, and a vertically adjustable bearing for the cross-shaft supported on the said guide-rail, substantially as described.

19. The combination with the separator-rail, the separators carried thereby, the cross-shaft, the cross-shaft arm, and means for operating the separator-rail from the cross-shaft arm, of the guide-rail, a vertically-slotted hanger or bracket carried by the guide-rail, a bearing for the cross-shaft in the slot of said hanger or bracket, and a set-screw beneath the said bearing for fixing the position thereof, substantially as described.

20. The combination with the separator-rail, the separators carried thereby, the cross-shaft, the cross-shaft arm, and means for operating the separator-rail from the cross-shaft arm, of the guide-rail, a vertically-slotted hanger or bracket carried by the guide-rail, a bearing for the cross-shaft in the slot of said hanger or bracket, a set-screw beneath and a clamp-screw above the said bearing for fixing the position thereof, substantially as described.

21. The combination with the separator-rail, the separators carried thereby, the cross-shaft, the cross-shaft arm, and means for operating the separator-rail from the cross-shaft arm, of the guide-rail, a vertically-slotted hanger or bracket carried by the guide-rail, a bearing for the cross-shaft in the slot of said hanger or bracket having a flange at one end fitting against one side of the hanger or bracket and having the other end threaded, a clamping-nut on said threaded end, and a set-screw beneath said bearing for fixing the position thereof, substantially as described.

22. The combination with the separators, and the separator-rail provided with oppositely projecting stops, of a support having bearings at the opposite sides thereof, and having rests with which the said stops may engage, substantially as described.

23. The combination with the separators, the separator-rail, and a hub or collar mounted on the separator-rail provided with oppositely projecting stops, of a support having bearings at the opposite sides thereof, between which bearings the said hub or collar may enter, and also having rests with which the said stops may engage, substantially as described.

24. The combination with the separators, the separator-rail, and a hub or collar mounted on the separator-rail provided with oppositely projecting stops located at the rear of the separator-rail, of a support having bearings at the opposite sides thereof, between which bearings the said hub or collar may enter, and also having rests at the rear sides of such bearings with which the said stops may engage, substantially as described.

25. The combination with the separators, the separator-rail, and a hub or collar mounted on the separator-rail provided with oppositely projecting stops, of a support constructed to permit the separator-rail to be unobstructedly removed therefrom before the separators have been turned out of their operative position, it having open bearings at the opposite sides thereof, between which bearings the said hub or collar may enter, and also having rests without obstruction to interfere with the stops while the rail is being removed and with which rests the said stops may engage, substantially as described.

26. The combination with the separators, the separator-rail, and a hub or collar mounted on the separator-rail provided with oppositely projecting stops located at the rear of the separator-rail, of a support constructed to permit the separator-rail to be unobstructedly removed therefrom before the separators have been turned out of their operative position, it having open bearings at the opposite sides thereof, between which bearings the said hub or collar may enter, and also having at the rear sides of such bearings the rests without obstructions thereabove to interfere with the stops while the rail is being removed, substantially as described.

27. The combination with the separator-rail, a separator, and the separator-collar mounted on the separator-rail and provided with oppositely projecting stops, of a support constructed to permit the separator-rail to be unobstructedly removed therefrom before the separators have been turned out of their operative position, it having open bearings at the opposite sides thereof, between which bearings the said collar may enter, and also having rests without obstruction to interfere with the stops while the rail is being removed and with which rests the said stops may engage, substantially as described.

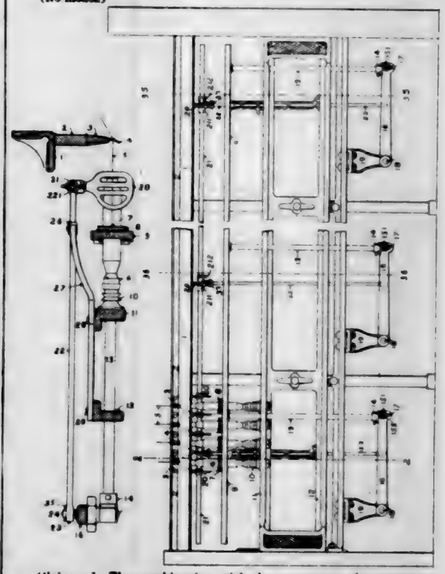
28. The combination with the separator-rail, a separator, and the separator-collar mounted on the separator-rail and provided with oppositely projecting stops located at the rear of the separator-rail, of a support constructed to permit the separator-rail to be unobstructedly removed therefrom before the separators have been turned out of their operative position, it having open bearings at the opposite sides thereof, between which bearings the said collar may enter, and also having at the rear sides of such bearings the rests without obstruction thereabove to interfere with the stops while the rail is being removed, substantially as described.

29. The combination with the separator-rails on opposite sides of a ring-frame, the separators carried thereby, and the movable frame supporting the separator-rails, of the cross-shaft having arms provided with studs or pins in engagement with the said movable frame, one of the said arms being removable from the cross-shaft and having means for securing it in place on the latter, substantially as described.

30. The combination with the separator-rails on opposite sides of a ring-frame, the separators carried thereby, and the movable frame supporting the separator-rails, of the cross-shaft having arms provided with studs or pins in engagement with the said movable frame, one of the said arms being removable from the cross-shaft, and a screw for securing said movable arm in place on the latter, substantially as described.

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**550,501. SEPARATOR MECHANISM FOR RING-SPINNING FRAMES.** CRAWFORD WHITAKER, Tyngsborough, assignor to the Lowell Machine Shop, Lowell, Mass. Filed Apr. 24, 1893. Serial No. 471,696. (No model.)



*Claim.*—1. The combination with the separators, the separator-rail, and the cross-shaft arm, of the vibratile connecting-rod carrying the separator-rail and swinging freely laterally in unison with the cross-shaft arm as it is raised and lowered by the latter, and directive means whereby to maintain the separators in proper position relative to the spindles, substantially as described.

2. The combination with the ring-rail, the lifting-rod, the separators, the separator-rail, and the cross-shaft arm acting to move the lifting-rod and thereby effect the traversing of the ring-rail and rings, of the vibratile connecting-rod carrying the separator-rail and swinging freely laterally in unison with the cross-shaft arm as it is raised and lowered by the latter, and directive means whereby to maintain the separators in proper position relative to the spindles, substantially as described.

3. The combination with the separators, the separator-rail, and the cross-shaft arm, of the vibratile connecting-rod carrying the separator-rail and swinging freely laterally in unison with the cross-shaft arm as it is raised and lowered by the latter, and directive means applied to the upper end of the connecting-rod whereby to maintain the separators in proper position relative to the spindles, substantially as described.

4. The combination with the ring-rail, the lifting-rod, the separators, the separator-rail, and the cross-shaft arm acting to move the lifting-rod and thereby effect the traversing of the ring-rail and rings, of the vibratile connecting-rod carrying the separator-rail and swinging freely laterally in unison with the cross-shaft arm as it is raised and lowered by the latter, and directive means applied to the upper end of the connecting-rod whereby to maintain the separators in proper position relative to the spindles, substantially as described.

5. The combination with the separators, the separator-rail, and the cross-shaft arm, of the vibratile connecting-rod carrying the separator-rail and swinging freely laterally in unison with the cross-shaft arm as it is raised and lowered by the latter, and an encircling guide applied to the upper end of the connecting-rod near to the separator-rail, substantially as described.

6. The combination with the separators, the separator-rail, and the cross shaft arm, of the vibratile connecting-rod carrying the separator-rail and swinging freely laterally in unison with the cross-shaft arm as it is raised and lowered by the latter, and an encircling guide applied to the upper end of the connecting-rod near to the separator-rail and having a tapering hole therethrough, substantially as described.

7. The combination with the separators, the separator-rail, and the cross-shaft arm, of the vibratile connecting-rod carrying the separator-rail and swinging freely laterally in unison with the cross-shaft arm as it is raised and lowered by the latter, an encircling guide applied to the upper end of the connecting-rod near to the separator-rail, and a stand on which said guide is mounted, having means for securing the said guide in the desired position of vertical adjustment, substantially as described.

8. The combination with the separators, the separator-rail, and the cross-shaft arm, of the vibratile connecting-rod carrying the separator-rail and swinging freely laterally in unison with the cross-shaft arm as it is raised and lowered by the latter, an encircling guide applied to the upper end of the connecting-rod near to the separator-rail, and means for supporting the said guide and securing it in the desired position of horizontal adjustment, substantially as described.

9. The combination with the separators, the separator-rail, and the cross-shaft arm, of the vibratile connecting-rod carrying the separator-rail and swinging freely laterally in unison with the cross-shaft arm as it is raised and lowered by the latter, an encircling guide applied to the upper end of the connecting-rod near to the separator-rail, a stand having means for securing the said guide in the desired position of vertical adjustment, and means for securing the said guide to the stand with capacity for horizontal adjustment, substantially as described.

10. The combination with the ring-rails on the opposite sides of a ring-frame, and means for operating the same, of the separator-rails on the said opposite sides, the separators carried thereby, independent actuating connections whereby the separator-rails are operated, and a cross-bar or wire spacing apart the said separator-rails at a fixed distance, substantially as described.

11. The combination with the separator-rails on the opposite sides of a ring frame, the separators carried thereby, and rods sustaining the said separator-rails, of a cross-bar or wire uniting the devices on opposite sides of the ring-frame, and means for reciprocating said rods vertically, substantially as described.

12. The combination with the separator-rails on the opposite sides of a ring-frame, the separators carried thereby, rods sustaining the said separator-rails, and means for reciprocating the said rods vertically, of a cross-bar or wire uniting the corresponding rods on opposite sides of the ring-frame, substantially as described.

13. The combination with the separator-rails on the opposite sides of a ring-frame, the separators carried thereby, rods sustaining the said separator-rails, and means for reciprocating the said rods vertically, of a cross-bar or wire uniting the corresponding rods on opposite sides of the ring-frame, and means for adjusting the distance apart of the said rods, substantially as described.



14. The combination with the separator-rails on the opposite sides of a ring-frame, the separators carried thereby, rods sustaining the said separator-rails, and means for reciprocating the said rods vertically, of a cross-bar or wire, and clamps connecting the opposite ends of said cross-bar or wire with the corresponding rods on opposite sides of the ring-frame, substantially as described.

15. The combination with the separator-rails on the opposite sides of a ring-frame, the separators carried thereby, rods sustaining the said separator-rails, and means for reciprocating the said rods vertically, of a cross-bar or wire having loops or eyes at the ends thereof, and clamps connecting the opposite ends of said cross-bar or wire with the rods, each clamp formed in two slotted halves or sections fitting the corresponding sustaining rod and one end of the cross-bar or wire, and being provided with a securing bolt which passes through the slots and the eye or loop at the corresponding end of the cross-bar or wire, and also with a nut fitted to the threaded end of the bolt, substantially as described.

16. The combination with a rod, and a wire or bar having an eye or loop at the end thereof, of a clamp uniting the same, consisting of the two halves or sections 3711, 3711, slotted at 3715, 3715, and formed with the concave portions 3712, 3712, fitting the rod and the notches 3714, 3714, fitting the wire or bar, a bolt passed through the slots and the eye or loop, and a nut on the threaded end of the bolt, substantially as described.

17. The combination with the separator-rails on the opposite sides of a ring-frame, the separators carried thereby, rods sustaining the said separator-rails, means for reciprocating the said rods vertically, and a cross-bar or wire uniting the corresponding rods on opposite sides of the ring-frame, of directive means whereby to maintain the separators in proper position relative to the spindles, substantially as described.

18. The combination with the separator-rails on the opposite sides of a ring-frame, the separators carried thereby, rods sustaining the said separator-rails, means for reciprocating the said rods vertically, and a cross-bar or wire uniting the corresponding rods on opposite sides of the ring-frame, of directive means for preventing movement of the separator-rails transversely of the ring-frame, substantially as described.

19. The combination with the separator-rails on the opposite sides of a ring-frame, the separators carried thereby, rods sustaining the said separator-rails, means for reciprocating the said rods vertically, and a cross-bar or wire uniting the corresponding rods on opposite sides of the ring-frame, of directive means for preventing movement of the separator-rails longitudinally of the ring-frame, substantially as described.

20. The combination with the separator rails on the opposite sides of a ring-frame, the separators carried thereby, the cross-shafts, the cross-shaft arms, and vibratile connecting rods sustaining the said separator-rails and actuated by the said cross-shaft arms, of a cross-bar or wire uniting the corresponding rods on opposite sides of the ring-frame, and directive means whereby the separator-rails are restrained from improperly moving in the ring-frame, substantially as described.

21. The combination with the separator-rails on the opposite sides of a ring-frame, the separators carried thereby, the cross-shafts, the cross-shaft arms, and vibratile connecting-rods sustaining the said separator-rails and actuated by the said cross-shaft arms, of a cross-bar or wire uniting the corresponding rods on opposite sides of the ring-frame, and directive means applied to one of such rods for preventing movement of the separator-rails transversely of the ring-frame, substantially as described.

22. The combination with the separator-rails on the opposite sides of a ring-frame, the separators carried thereby, the cross-shafts, the cross-shaft arms, and vibratile connecting-rods sustaining the said separator-rails and actuated by the said cross-shaft arms, of a cross-rod or wire uniting the corresponding rods on opposite sides of the ring-frame, and a guide encircling one of such connecting-rods for determining the path of motion of the separator-rails, substantially as described.

23. The combination with the machine-framing, the spindle and guide-rails, the spindles, the ring-rail and the separator-rail both actuated from the cross-shaft arm, and the cross-shaft arm, of means for supporting the cross-shaft which permit changes of height of the spindle-rail without changes of height of the cross-shaft, substantially as described.

24. The combination with the machine-framing, the spindle and guide-rails, the spindles, the ring-rail, the separator-rail, the lifting-rod, a rod for operating the separator-rail, and the cross-shaft arm acting through the said rods to communicate traversing movements to the ring-rail and the separator-rail, of the supplemental rail carrying the bearings for the cross-shaft and having separate attachment to the machine-framing, substantially as described.

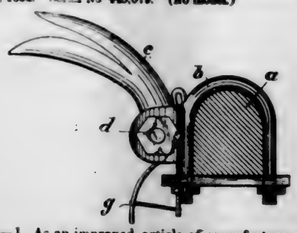
25. The combination with the separators, the separator-rail having a stop which is carried thereby and moves therewith, a vertically-

movable supporting-rod, and means for actuating said supporting-rod, of a support having an open bearing for the journal or pivot of the separator-rail and also having at the front thereof a rest with which the said stop engages at a point to the front of the separator-rail and in advance of the center of gravity of the combined separators and separator-rail, substantially as described.

26. The combination with the separators, the separator-rail having a stop which is carried thereby and moves therewith, a vertically-movable supporting-rod, and means for actuating said supporting-rod, of a support carried by said supporting-rod and having an open bearing for the journal or pivot of the separator-rail and also having at the front thereof a rest with which the said stop engages at a point to the front of the separator-rail and in advance of the center of gravity of the combined separators and separator-rail, the said bearing and rest being without obstruction thereabove to interfere with the removal of the separator-rail from the support at any time before the separators have been turned out of their operative positions, substantially as described.

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**505,502. THILL-COUPLING.** ELBERT WILCOX, Jr., New Haven, assignor of one-half to William R. Hartigan, Burlington, Conn. Filed Sept. 5, 1892. Serial No. 445,079. (No model.)



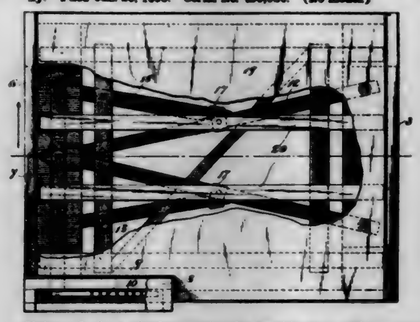

*Claim.*—1. As an improved article of manufacture an anti-rattler spring formed of a single piece of spring metal folded upon itself having arms located opposite to each other and provided with a series of openings in the opposite parts and the adjustable strut removably secured between the arms of the spring, and with the ends of the strut adapted to engage said openings all substantially as described.

2. In combination with the T-shaped spring formed of a single piece of spring metal folded upon itself with curved arms extending from the folded edge and having a series of sockets adapted to hold a strut, a strut adapted to be removably secured in said sockets all substantially as described.

3. In combination with a T-shaped spring formed of a single piece of spring metal folded upon itself with outwardly curved arms extending from the folded edge and provided with a series of sockets adapted to hold a strut, a strut of a length longer than the width of the space to be occupied by the spring and adapted to be removably secured between said arms with its ends engaging said sockets, all substantially as described.

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**505,503. PLATFORM-SCALE.** GEORGE W. WILLIAMS, Eddyville, Ky. Filed Jan. 28, 1893. Serial No. 459,926. (No model.)

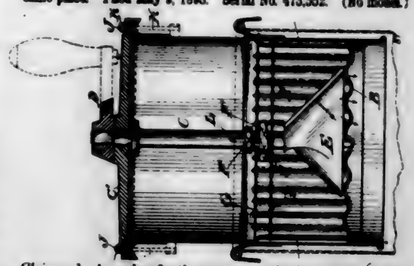


*Claim.*—1. In a platform-scale, the combination with a rectangular frame, a scale-beam support, a scale beam arranged therein, and a platform for the frame, of main levers converging to a point under one of the cross-bars of the frame and diverging toward a point under the remaining cross-bar and loosely suspended from the latter, supplemental levers secured to the sides of the levers and diverged therefrom to a point under that cross bar where the meeting ends of the main levers occur and suspended loosely from said cross-bar, a lever fulcrumed upon the last mentioned cross-bar, connecting devices between the ends of the same and the scale-beam, and connecting devices between the meeting ends of the main levers and the said lever that is arranged upon the end bar, substantially as specified.

2. In a platform scale, the combination with four supporting posts, the rectangular frame arranged thereon, and the rest bars at the ends of the frame surmounting the posts, a scale beam and a cover for the same, and a rod depending from said beam, of a pair of main levers converged to a point under one of the rest bars, eyes in the terminals of said levers, suspension eyes depending from the rest-bar thereabove and loosely connecting with said eyes, supplemental levers arranged at the outer sides of the main levers, loose clips connecting the same therewith, eyes arranged in the outer ends of said supplemental levers, eyes depending from the adjacent rest bar and engaging the same, a knife-edge bearing arranged upon the last mentioned rest bar, a lever having one end resting upon said bearing and its outer end connected to the rod that leads to the scale-beam, an eye at the meeting ends of the main levers, and a rod between the eye and the superimposed lever, substantially as specified.

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**505,504. MASHER FOR VEGETABLES, FRUITS, &c.** GEORGE H. ZAHN, Philadelphia, Pa., assignor of one-half to James B. Gallagher, same place. Filed May 9, 1893. Serial No. 473,552. (No model.)

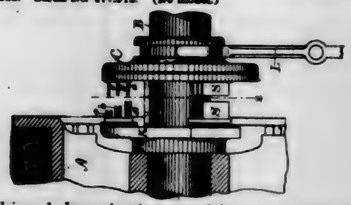


*Claim.*—1. A masher for the purpose set forth consisting of a vessel having corrugated sides and a perforated corrugated bottom, a detachable cross bar secured to the top of said vessel, a rotatable shaft journaled in said bottom and cross bar, a spiral head secured to the lower end of said shaft, beaters secured to the sides of and within said vessel, and beaters on the shaft passing between said beaters on the side, said parts being combined substantially as described.

2. A masher having a vessel, a shaft carrying a mashing head, a cross bar supporting said shaft, and ears and spring catches on said vessel, the ends of said bar being between said ears, and the latter being engaged by said catches, said catches being pivoted to said vessel below said ears substantially as described.

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**505,505. MULTIPHASE MOTOR.** LOUIS BELL, Boston, Mass., assignor to the General Electric Company, same place. Filed June 14, 1893. Serial No. 477,512. (No model.)



*Claim.*—1. In an electric motor of the inductive type, the combination with a revolving secondary member normally closed-circuited through a resistance moving therewith, of means for varying said resistance, as described.

2. In an electric motor of the inductive type, the combination with a revolving secondary member having a closed-circuited winding, of a resistance in said winding revolving therewith, and means for gradually lowering said resistance by successively short-circuiting portions thereof, as set forth.

3. In an electric motor of the inductive type, the combination with a revolving secondary member having a winding normally closed-circuited through a resistance revolving therewith, of circuit-closing devices such as switch-contacts mounted on said secondary member and revoluble therewith, and means for operating said circuit-closing devices to short-circuit successive portions of said resistance, as set forth.



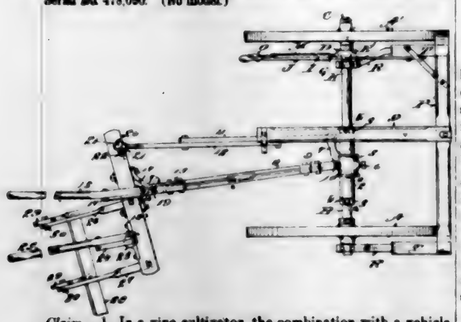
4. In an electric motor having a closed circuited armature, the combination of resistances carried upon the armature between the coils and divided into sections with a switching mechanism carried upon the armature shaft and adapted to short-circuit the sections of the resistances successively.

5. In an electric motor, the combination with a revolving secondary member closed-circuited through a resistance movable therewith, of a speed responsive device adapted to gradually remove said resistance from circuit as the speed increases, substantially as set forth.

6. In an electric motor having a closed circuited armature-winding the combination with resistances in circuit with said winding and carried therewith upon the armature shaft, said resistances being divided into sections, of automatic switching mechanism also mounted on said armature shaft and responsive to the speed thereof, whereby successive sections of the resistance are short-circuited as the speed increases, as set forth.

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**505,506. CULTIVATOR.** LEROY S. BUTT, North East, Pa., assignor to the P. P. Mast & Company, Springfield, Ohio. Filed June 19, 1893. Serial No. 478,090. (No model.)



*Claim.*—1. In a vine cultivator, the combination with a vehicle of a draft beam attached thereto near its middle, a shovel beam carried by said draft beam and extending laterally beyond it, a shovel carried by such extended end and means to hold the shovel beam against strains arising from the shovel, the said lateral extension of the shovel beam permitting the point of attachment of the draft beam to be near the middle of the vehicle.

2. In a vine cultivator, the combination with a vehicle, of a draft beam attached thereto near its middle, the means of attachment being adjustable up and down to tilt the shovel, a shovel beam attached to said draft beam and extending laterally therefrom, a shovel carried by such lateral extension, and means to hold the shovel beam against the strains arising from the shovel.

3. In a vine cultivator, the combination with a vehicle, its axle adjustable up and down at one end, of a draft beam attached to the axle near its middle, a shovel beam attached to said draft beam and extending laterally beyond it, a shovel carried by such lateral extension, and a brace to hold the shovel beam against the strains arising from the shovel.

4. In a vine cultivator, the combination with a vehicle, its axle adjustable up and down at one end a draft beam and brace rod attached to said axle near its middle, a shovel beam pivoted to the draft beam and extending laterally beyond it at both sides, a shovel carried by one of said lateral extensions and a connection between the other extension and the said brace-rod.

5. In a vine cultivator, the combination with the frame, two wheels, an axle carried by one of them, a slide carried by the axle, a spindle and standard carried by the other wheel, a slide fitting said standard, and a lever and locking device to operate the slide and unlock it, of a cultivating gang attached to the axle and adapted to have one end of the shovel raised above the other end by adjusting the said slide upward.

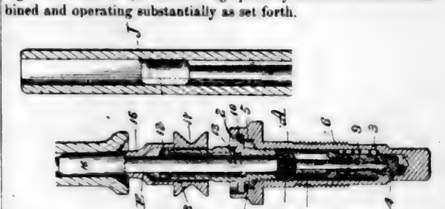
6. In a vine cultivator, the combination with a wheeled vehicle, an axle carried by one wheel and adjustable up and down at the other end with respect to the other wheel, a draft beam and a brace rod attached to the axle and adapted to be tipped by the adjustment of the axle up or down, a shovel beam pivoted to the said draft beam and extending laterally beyond it at both sides, a shovel attached to the outer lateral extension of the shovel beam, and a connection between its inner extension and said rod, and suitable handles to manipulate the beam laterally and up and down.

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**505,507. SPINNING-MACHINE SPINDLE.** CHARLES G. BUTTRICK, Holyoke, Mass. Filed Sept. 15, 1892. Serial No. 445,954. (No model.)

*Claim.*—1. The step case having a cup at its upper end and an annular shoulder on its inner wall above the base of said cup, combined with the bolster engaging said case by a screw thread below the base of said cup, and having a flange engaging the said shoulder in the casing, together with the spindle and operative connections, all combined substantially as described.

2. The spindle, the step, the whirl-hub fixed to the spindle and having a chamber therein, the step casing having the cup at its upper end on whose wall is a shoulder, 5, located above the base of said cup, the bolster screwing into said case and having a flange, 10, bearing on said shoulder, and extending upwardly into said chamber combined and operating substantially as set forth.



3. The spindle, the step, the whirl-hub fixed to the spindle and having a chamber therein, the step case having the cup at its upper end on whose inner wall is a shoulder, 5, located above the base of said cup, the bolster extending upwardly into said chamber and screwing into said case and having a flange, 10, bearing on said shoulder, and having a pin, 13, through its side, and the removable bolster-bushing, 12, having an annular collar thereon at its upper end engaging with the upper extremity of the bolster, and one or more longitudinal slots in its lower end and having a slot engaging with said pin, combined and operating substantially as set forth.

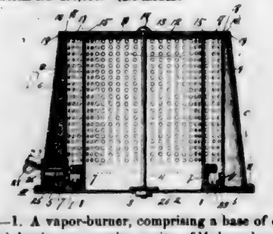
4. The step case and the bolster having screw threaded engagement therewith, the spindle having a removable collar thereon below the bolster, and the spring supported step in the step case bearing the spindle toward the bolster, all combined substantially as described.

5. The step casing, the steps therein of tubular form to receive the spindle and having a passage, 8, through its wall, the spring supporting the step and the projection from the casing to prevent the rotation thereof, the spindle having a collar within the step and the bolster with which said collar engages, all combined substantially as described.

6. The step case with the bolster having screw-threaded engagement therewith the spindle having a removable collar below said bolster, and the tubular step in said step case inclosing said spindle and collar, said step having a lubricating passage, and a spring surrounding said step above the lubricating passage and bearing upward on the step, all substantially as described.

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**505,508. VAPOR-BURNER.** JOHN A. CHANDLER, Kansas City, Mo., assignor of one-half to Nellie D. Waters, same place. Filed Apr. 26, 1892. Serial No. 430,659. (No model.)



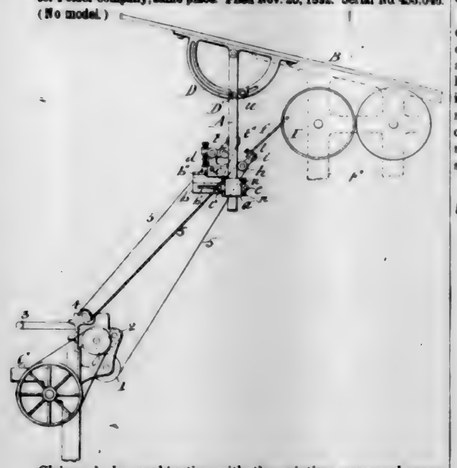
*Claim.*—1. A vapor-burner, comprising a base of open continuous form and having an annular cavity of V-shaped cross-section, a number of outwardly extending radial projections integral therewith, and also a cross-bar, two concentric foraminous walls rising from the base, a cap-piece resting upon said walls, an outer non-foraminous casing surrounding said walls, a ring carried by the cap-piece and closing the upper part of the space between the casing and the outer foraminous wall, and a coupling-bolt extending through the center of the cap-plate and also similarly through the cross-bar, substantially as set forth.

2. A vapor-burner, comprising a number of concentric foraminous walls, a non-foraminous inclosing casing, registering-lighting openings formed in the lower parts of said casing and the outer wall, and a lighting-plug composed of a number of connected foraminous disks and a carrying-stem, substantially as set forth.

3. A vapor burner, comprising two concentric foraminous walls, a non-foraminous inclosing casing, registering lighting openings formed in the lower parts of said casing and the outer wall, a lighting tube secured to said casings and connecting said openings, and a lighting plug, composed of two connected disks, and a carrying stem, substantially as described.

4. A vapor burner, comprising a continuous base with a number of radial lugs extending therefrom, two concentric foraminous walls resting over the walls of a U-shaped cavity formed within the base; a feed pipe passing through the outer or non-foraminous casing and one of the foraminous walls, the extreme inner end of which is closed, said pipe within the walls being formed into a continuous horizontal coil, the under portion thereof perforated and resting over the U-shaped cavity formed within the base, as fully set forth and described.

## 505,509. PAPER-FOLDING-MACHINE ATTACHMENT FOR PRINTING-PRESSES. TALBOTT C. DEXTER, Fulton, N. Y., assignor to the Dexter Folder Company, same place. Filed Nov. 25, 1892. Serial No. 453,046. (No model.)



*Claim.*—1. In combination with the printing press and paper folding machine, tape-carriers mounted on the frame of said folding machine, arms supported on the press independent of the folding machine, brackets detachably secured to said arms, and tape-carrying mechanism supported on said brackets, as set forth.

2. In combination with a printing press and paper-folding machine, arms supported on the press independent of the folding machine and adjustable in their position in relation to the paper-delivery of the press, and tape-carrying mechanism supported on said arms, as set forth.

3. In combination with a printing press and paper-folding machine, arms suspended from the feed-board of the press and sustained adjustably in their angle of inclination to said board, and tape-carrying mechanism supported on said arms and conveying the paper to the folding machine as set forth.

4. In combination with a printing press and paper folding machine, arms pivoted to and hanging from the feed-board of the press, segmental brackets secured to said board concentric to the pivots of the arms, screws clamping the arms on the segments, and tape-carrying mechanisms supported on said arms and conveying the paper to the folding machine, as set forth.

5. In combination with a printing press and paper-folding machine, pendent arms secured to the feed-board of the press, and tape-carrying brackets connected to said arms adjustable lengthwise thereof, and tapes conveying the paper from the press to the folding machine as set forth.

6. In combination with a printing press and paper-folding machine, arms suspended from the feed-board and sustained adjustably in their angle of inclination to said board, and tape-carrying mechanism connected to said arms adjustable lengthwise thereof and conveying the paper from the press to the folding-machine, as set forth.

7. In combination with a printing press and paper-folding machine, arms sustained in pendent position on the feed-board of the press, and tape-carrying mechanisms connected to said arms adjustable laterally thereon as set forth.

8. In combination with the printing press and paper-folding machine, arms suspended from the feed-board of the press and sustained adjustably in their angle of inclination to the said feed-board, and tape-carrying mechanism connected laterally adjustable to said arms as set forth.

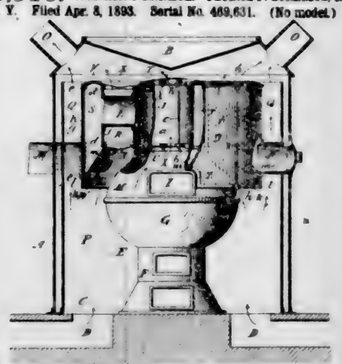
9. In combination with a printing press and paper folding machine, arms suspended from the feed-board of the press and sustained adjustably in their angle of inclination to said board, and tape-carrying mechanism connected to said arms adjustable lengthwise and laterally thereon as set forth.

10. In combination with a printing press and paper folding machine, arms secured in pendent positions to the feed-board of the press, two brackets, each composed of a base connected to one of said arms, a rider mounted on said base adjustable laterally in relation to the arm, and paper conveying devices connected to said rider as set forth.

11. In combination with a printing-press and paper folding machine, arms secured in pendent positions to the feed-board of the press, two brackets, each composed of a base connected to one of said arms adjustably in its elevation thereon, a rider mounted on said base adjustable laterally in relation to the arm, and paper conveying devices connected to said rider as set forth.

12. In combination with a printing press and paper-folding machine, the arm —A— secured in a pendent position to the feed-board of the press, the sleeve —a— loosely embracing the arm and clamped adjustably thereon, the base —b— connected to said sleeve adjustable laterally in relation to the arm, and provided with a series of sockets in its top at different points in the length thereof, the rider —c— mounted movable longitudinally on said base, the spring-bolt —d— connected to said rider and engaging the sockets of the base, shafts mounted on the rider, and paper conveying devices connected to the shafts as set forth.

## 505,510. HOT-AIR FURNACE. PATRICK F. DICKINSON, New York, N. Y. Filed Apr. 8, 1893. Serial No. 469,631. (No model.)



*Claim.*—1. In a hot air furnace, a fire-pot H, dome J, radiator S, neck L between said dome and radiator, and smoke-pipe M leading from the latter, in combination with an annular tapering ring W having the form of a truncated cone, constituting the bottom of said radiator, said ring having a sharp lower edge surrounding said body H, and an inwardly inclined wall *j* rising around the latter, and said radiator having a narrow inner vertical wall meeting and rising from the upper extremity of said wall *j*, and a wide outer vertical wall meeting and rising from the lower extremity of said wall *j*, whereby the current of air to be heated is divided by the lower edge of said ring, and part thereof rises exteriorly of said radiator, and the remainder thereof is gradually deflected toward said body and between said radiator and drum, and the flow of the current is not impeded, substantially as and for the purpose set forth.

2. In a hot air furnace, the cylindrical casing A, the body H, having a feed-hole I, the dome J on said body, and the neck L leading from said dome, in combination with the radiator S surrounding said dome communicating with said neck and with a smoke-pipe, and depending below said drum surrounding said body and depending below the upper portion of said feed-hole, said radiator having a narrow cylindrical vertical inner wall *f* opposite said dome, an outwardly flaring wall *j* extending downwardly from said wall *f* and surrounding said body, and a wide cylindrical vertical outer wall *g* extending upwardly from said wall *j*, and parallel with but at a distance from said casing, substantially as and for the purpose set forth.

3. In a hot air furnace, the body H, dome J, and neck L leading from the upper part of said dome, in combination with the radiator S communicating at its upper part with said neck, having the offset Z at its lower edge beyond its point of communication with said neck, and the smoke-pipe M communicating with said radiator beyond said offset, substantially as and for the purpose set forth.

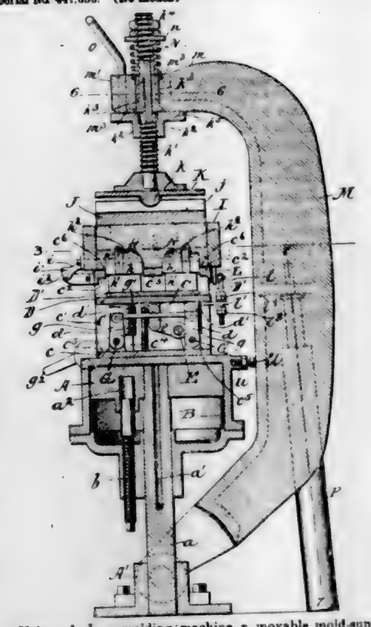


4. In a hot air furnace, the cap T for the dome of the furnace, radial arms X leading therefrom, annular cap V for the radiator of the furnace, and lugs *b* and *h*, said lugs and arms having beveled under faces, and said parts constructed all in one integral piece or casting.

5. In a hot air furnace, the body ring U for the dome of the furnace, the arms X radially of said ring, and the annular tapering ring W surrounding said ring U, said parts all constructed as one integral casting, substantially as and for the purpose set forth.

6. In a hot air furnace, a radiator consisting of an annular cap V having flanges *d* and *e*, an annular ring W having flange *d* at top, tapering internal wall *j*, lower edge *k*, front face *l*, flange *e* and outer face *m*, in combination with narrow sheet metal wall *f* between said cap and rings and engaging said flanges *d* thereof, and long sheet metal wall *g* between said rings, and engaging said flanges *e* thereof, substantially as and for the purpose set forth.

## 505,511. MOLDING-MACHINE. WILLIAM W. DOOLITTLE, Chicago, Ill., assignor to the Crane Company, same place. Filed Oct. 3, 1892. Serial No. 447,656. (No model.)



*Claim.*—1. In a molding machine, a movable mold-support, in combination with a stationary platen, a pattern table having a movement in line with that of the mold-support but independent thereof, a stripping plate, mechanism adapted to force the mold-support toward the platen, and mechanism adapted to hold the pattern table up in working position with a yielding force, substantially as described.

2. In a molding machine, a stationary piston, in combination with a movable cylinder, a mold-support mounted thereon, a pattern table having a vertical movement independent of the mold-support, a stripping plate mechanism adapted to hold the pattern table up in working position with a yielding force, a stationary platen substantially as described.

3. In a molding machine, a stationary piston, in combination with a movable cylinder, a mold-support C mounted thereon and provided with a stripping plate top, a pattern table D mounted within the mold-support and having an independent vertical movement therein, patterns H fastened to said pattern table and adapted to move up and down in the stripping plate, and a device adapted to hold the pattern table upward with a yielding pressure, substantially as described.

4. In a molding machine, the mold-support C, surmounted by the stripping plate $c^3$, $c^3$, in combination with the pattern table D, arranged below the stripping plate rock shaft E provided with crank arms *e*, links *e'*, pivoted on the table and lever F provided with counterbalance *f*, and secured on said rock shaft substantially as described.

5. In a molding machine, a mold-support and stripping plate, in combination with a pattern table movable independently of said support, and a yielding pressure mechanism adapted to hold the pattern table and patterns toward the mold to project the patterns at first through the stripping plate beyond their normal position required in finishing the mold, substantially as described.

6. In a molding machine, a vertically movable mold support, in combination with a pattern table movable independently of the said support, mechanism for holding the pattern table toward the mold with yielding pressure, a stripping plate and removable stops adapted to arrest the movement of said table away from the mold, substantially as described.

7. In a molding machine, the mold-support C, in combination with the pattern table D having a vertical movement independent of said table, a stripping plate a yielding pressure device for holding the said table up to the mold, the stop arms *g* mounted on rock shafts, and a device adapted to hold said stop arms in a vertical position beneath the pattern table, substantially as described.

8. In a molding machine, the mold-support C, in combination with the independently moving pattern table D, a stripping plate the rock shaft E provided with crank arms *e*, links *e'*, counterbalance lever F, rock shafts G and G', stop arms *g* mounted thereon, the link *g'* and counterbalance lever $g^2$, substantially as described.

9. In a molding machine, a stationary piston A provided with recess $a^3$, in combination with a movable cylinder B, adjustable plug *b*, secured in the bottom thereof mold support C, carried by said cylinder, stripping plate $c^3$, $c^3$, independently movable pattern table D, arranged below said stripping plate and a stationary platen K, substantially as described.

10. In a molding machine, a movable mold support provided with stripping plate, in combination with a separate pattern table movably supported independent of the mold-support, mechanism to hold the pattern table up to the mold with yielding pressure, movable stop arms adapted to resist the retreating movement of the pattern table under pressure at the point required for finishing the mold, means for reciprocating the mold support and mechanism for moving said stops out of working position to permit the pattern table to drop still lower, whereby the patterns may be withdrawn through the stripping plate, substantially as described.

11. In a molding machine, a reciprocating mold-support C surmounted by a stripping plate, in combination with an independent moving pattern table D, a flask I connected to the mold-support at one side by pivotal bearings, mechanism mounted on the mold support and connected to mechanism connecting said pattern table and adapted to tilt the flask by depressing the said table after finishing the mold, substantially as described.

12. In a molding machine, a movable mold-support C, in combination with a pattern table D movable independently of the mold-support, a stripping plate a flask I hinged at one side to the mold support, means for reciprocating said support the cam levers L under one edge of the flask, and the link rods *l* connected to said levers and the pattern table, substantially as described.

13. In a molding machine, a movable mold-support C, provided with means for reciprocating it in combination with an independently movable pattern table D, a stripping plate the rods S connected to said table, keepers T through which said rods pass, and springs *s* on the lower ends of said rods, substantially as described.

14. In a molding machine, a movable mold-support, provided with means for reciprocating it in combination with a pivoted bail M a platen K mounted thereon, the tubular case P, rod *p*, tube Q sleeved on said rod, and spring R, substantially as described.

15. In a molding machine, the bail M provided at its outer end with a central round aperture $m^3$, and having side grooves $m^3$, in combination with a platen K provided with threaded stem *k'*, adapted to slide freely in said aperture and having side grooves $k^2$, the key plates $k^3$, the adjusting nut $k^4$, spring N, and stop *n* on said stem substantially as described.

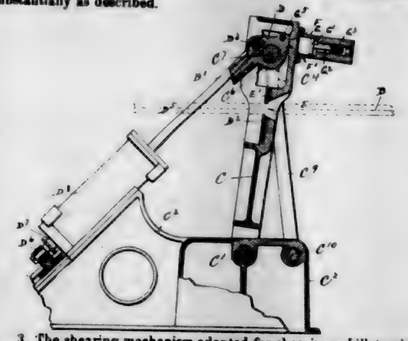
16. In a molding machine, the bail M, in combination with a platen K having a threaded stem *k'* freely reciprocating in an aperture in the outer end of the bail, the flanged nut $k^4$, the retracting spring N, spring stop *n* on said stem the cam plates O, and the handle *o'*, attached thereto, substantially as described.

## 505,512. SHEARS FOR CUTTING RODS WHILE IN MOTION. VICTOR E. EDWARDS, Worcester, Mass., assignor to the Morgan Construction Company, same place. Filed Feb. 21, 1893. Serial No. 463,270. (No model.)

*Claim.*—1. The combination with a pair of rolls, adapted to roll a billet and deliver the same to a shearing mechanism, of a shearing mechanism comprising a carrying frame capable of being moved away from said rolls and substantially in the plane of the billet delivered thereto, operative mechanism by which said carrying frame is moved with a speed equal to the speed of the billet, as it is delivered by said rolls, and a pair of cutting blades carried by said frame and adapted to sever the billet and operating mechanism by which said blades are

operated to sever the billet synchronously with the forward movement of said carrying frame, substantially as described.

2. The combination with a pair of rolls, by which a billet is projected forward, of a carrying frame arranged in the path of the billet, as it is delivered from said rolls, mechanism by which said frame is moved forward with a speed equal to the speed of the billet, a fixed cutting blade carried by said frame, a movable blade carried by said frame and adapted to act conjointly with said fixed blade in severing the billet, and mechanism by which said movable blade is moved synchronously with the forward movement of said carrying frame, substantially as described.



3. The shearing mechanism adapted for shearing a billet, while the billet is in motion, and consisting of a frame arranged to move in the direction of the moving billet, mechanism by which said frame is moved with the speed of the moving billet a determined distance, a shearing device carried by said frame and actuating mechanism by which said shearing device is operated to sever the billet synchronously with the forward motion of said carrying frame, substantially as described.

4. The combination with a frame placed in the path of a moving billet, mechanism by which said frame is moved with the billet and at equal speed, a fixed cutting blade carried by said frame, a movable blade carried by said frame, mechanism by which said movable blade is moved to act conjointly with said fixed blade in shearing the billet, said movable blade being pivoted so the momentum, as the frame is stopped, will cause the movable blade to rock and clear the billet, substantially as described.

5. The combination with a supporting frame-work arranged in the path of a moving billet, of a fixed cutting blade supported by said frame-work, a crosshead capable of sliding in ways on said frame-work, a reciprocating cutting blade carried by said crosshead and arranged to act conjointly with said fixed cutting blade in severing a billet, said reciprocating blade having a pivotal connection with said crosshead, by which it is capable of an angular movement, in order to clear the passage for the moving billet, substantially as described.

6. The combination in a shearing mechanism adapted to sever a billet while the billet is in motion, of a carrying frame arranged in the path of the billet, cutting blades carried by said frame and arranged to act conjointly in severing a billet interposed between them, one of said cutting blades being capable of an angular motion, whereby the billet is released, and actuating mechanism, by which said frame and said cutting blades are operated, substantially as described.

7. The combination of mechanism for moving a billet longitudinally and delivering the same between the blades of a shearing mechanism, a carrying frame arranged in the path of the billet and capable of moving with said billet, a shearing mechanism carried by said frame, arranged to close in order to sever the billet and to open in order to release the same, mechanism by which said carrying frame is moved forward in the direction of a moving billet, a limited distance, and then reversed in order to provide for the succeeding operation of the shearing mechanism, and mechanism by which said shearing mechanism is closed to sever the billet synchronously with the forward motion of the carrying frame and held open during the reverse motion of said carrying frame, substantially as described.

8. The combination of a frame pivoted upon a fixed bed, and capable of a limited angular motion, actuating mechanism by which said frame is moved, a fixed blade held by said frame, a blade capable of a reciprocating motion in said frame, so as to act conjointly with said fixed blade, actuating mechanism by which said blade is moved to sever the billet during the motion of said frame in one direction, substantially as described.

9. The combination of a pivoted carrying frame, capable of an angular motion, a shearing mechanism carried by said frame and comprising a pair of blades arranged to open, to receive a moving billet and to close and sever the billet during the motion of said frame in one direction, mechanism by which said frame is moved along with the moving billet, and mechanism by which said blades are closed synchronously with the forward motion of said frame, substantially as described.

10. The combination of a pivoted frame, mechanism by which said frame is moved in a limited arc of a circle, a fixed blade held in said frame, a movable blade acting conjointly with said fixed blade and a link by which said movable blade is connected with the fixed frame-work, whereby motion will be imparted to said movable blade during the angular motion of said frame, substantially as described.

11. The combination of a pivoted frame, provided with ways, a crosshead arranged to slide in said ways, links connecting said crosshead with the fixed frame-work, a fixed cutting blade held by said pivoted frame, a movable cutting blade carried by said crosshead and mechanism by which said pivoted frame is moved through a limited arc, substantially as described.

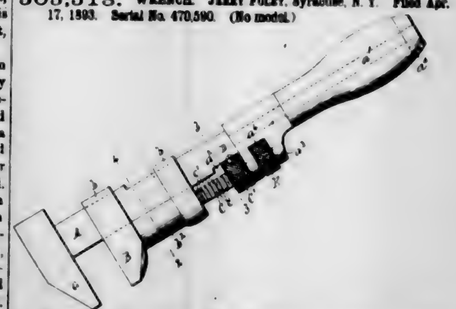
12. The combination of a pivoted frame, provided with ways, a crosshead arranged to slide in said ways, links by which said crosshead is connected with the fixed frame-work, a fixed cutting blade held by said pivoted frame, a shear block pivoted on said crosshead, a cutting blade carried by said shear block and actuating mechanism pivoted to said shear block, by which said shear block is rocked and said pivoted frame is moved through an arc of a circle, substantially as described.

13. The combination of a pivoted frame, fixed blade carried by said frame, a crosshead carried by said frame and capable of a sliding motion, a shear block pivoted on said crosshead, a cutting blade carried by said shear block, links by which said crosshead is connected with the fixed frame-work, actuating mechanism for imparting an angular motion to said pivoted frame, said actuating mechanism being pivoted to said shear block, so as to rock said shear block and fixed stops carried by said pivoted frame, by which the rocking motion of said shear block is limited, substantially as described.

14. The combination, with a frame C, having an angular movement and a shear block carried by said frame and capable of a rocking movement, stops by which the rocking motion of said shear block is limited and an air cylinder provided with ports of limited area and a piston sliding in said cylinder and operatively connected with said rocking shear block, whereby the contact of said shear block with said fixed stops is cushioned, substantially as described.

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**505,513. WRENCH.** JERRY FOLEY, Syracuse, N. Y. Filed Apr. 17, 1893. Serial No. 470,590. (No model.)



*Claim.*—1. In a wrench, the combination of a shank A provided at one end with a fixed jaw $a$ and having a projecting arm $a^3$ and a cut out $a^4$ interposed between the jaw $a$ and the arm $a^3$ in proximity to said arm $a^3$, a jaw B supported upon and movable lengthwise of the shank A between the jaw $a$ and the arm $a^3$ and provided with a socket $b^3$ closed at one end and extending inwardly from the opposite face of the jaw B and having a series of engaging shoulders $b^4$ and a groove $b^5$, a spindle C having one end journaled in the arm $a^3$ and the other end arranged within the socket $b^3$ and provided with a series of shoulders $c$ for engaging the shoulders $b^4$ and registering with the groove $b^5$, a shoulder C′ of greater diameter than the spindle C fixed thereto and projecting within the cut out $a^4$, and oppositely arranged stop shoulders —D—D— for engaging the opposite faces of the shank A consisting of the projecting ends of a pin passed through the shoulder C′, substantially as and for the purpose described.

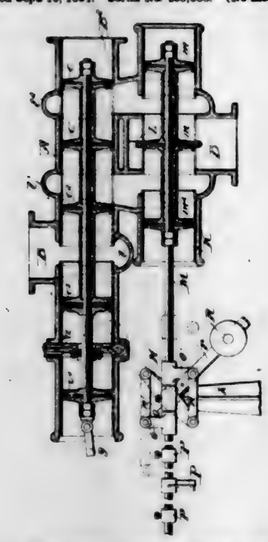
2. In a wrench, the combination of a shank A provided at one end with a fixed jaw $a$ and having a projecting arm $a^3$ and a cut out $a^4$ interposed between the jaw $a$ and the arm $a^3$ in proximity to said arm $a^3$, a jaw B supported upon and movable lengthwise of the shank A between the jaw $a$ and the arm $a^3$ and provided with a socket $b^3$ closed at one end and extending inwardly from the opposite face of the jaw B and having a series of engaging shoulders $b^4$ and a groove $b^5$, a spindle C having one end journaled in the arm $a^3$ and the other end arranged within the socket $b^3$ and provided with a series of shoulders $c$ for engaging the shoulders $b^4$ and registering with the groove $b^5$, said shoulders $c$ having at corresponding ends pointed engaging extremities —$c'$—, a shoulder C′ of greater diameter than the spindle C fixed thereto and projecting within the cut out $a^4$, and oppositely arranged stop shoulders —D—D— for engaging the opposite faces of the shank A, substantially as and for the purpose specified.

3. In a wrench, the combination of a shank A provided at one end with a fixed jaw $a$ and having a projecting arm $a^3$ provided with a cut out $a^4$ extending inwardly from its outer face, and a cut out $a^5$ interposed between the jaw $a$ and the arm $a^3$ in proximity to said arm $a^3$, a jaw B supported upon and movable lengthwise of the shank A between the jaw $a$ and the arm $a^3$ and provided with a socket $b^3$ closed at one end and extending inwardly from the opposite face of the jaw B and having a series of engaging shoulders $b^4$ and a groove $b^5$, a spindle C having one end journaled in the arm $a^3$ and formed of less diameter than the spindle C and provided with screw-threads $c^6$, and the other end arranged within the socket $b^3$ and provided with a series of shoulders $c$ for engaging the shoulders $b^4$ and registering with the groove $b^5$, said shoulders $c$ having at corresponding ends pointed engaging extremities $c'$, a shoulder C′ of greater diameter than the spindle C fixed thereto and projecting within the cut out $a^4$ and formed of less width than the width of said cut out, and oppositely arranged stop shoulders —D—D— for engaging the opposite faces of the shank A, and an adjusting nut E mounted upon the screw-threaded extremity of said spindle —C— and arranged within the cut out $a^4$ whereby said spindle C and jaw B may be lengthwise adjusted, substantially as and for the purpose described.



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**505,514. AUTOMATIC STOP-VALVE.** HUGO W. FORSLUND, Chicago, Ill., assignor, by direct and mesne assignments, to the Standard Elevator Company and William H. Wells, Jr., same place. Original application filed Aug. 18, 1890, Serial No. 362,364. Divided and this application filed Sept. 16, 1891. Serial No. 405,833. (No model.)

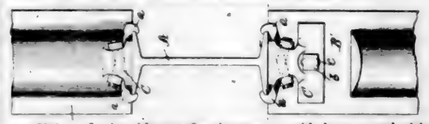


*Claim.*—1. The combination with a hydraulic motor and its controlling valve a cut-off valve automatically actuated by the motor at each of its limits of movement, and a device for returning said cut-off valve to its center comprising a weighted T-crank pivoted upon a fixed standard, a collar fixed upon the valve stem, a sliding sleeve carried by the valve-stem upon each side of said collar and adapted to abut against it and links uniting each of said sleeves respectively to opposite ends of the cross-arm of the T-crank, substantially as described and for the purpose set forth.

2. As a new article of manufacture a hydraulic motor valve comprising in combination a cylinder having an induction and an eduction port, and two passageways to the motor, a piston valve reciprocating in said cylinder, and having a disk located between the passages to the motor, and disks adapted respectively to close and open communication between the induction and eduction ports, and the adjacent passage to the motor; of an additional cylinder and an automatic cut off valve interposed between the main valve and the motor and communicating with the two passageways from the main valve cylinder and with the passage to the motor, and a piston valve constituting a cut off and having two outer balancing pistons with a stem projecting from such cut off valve; two collars fixed upon said stem and adapted to be engaged by a lateral arm projecting from the piston rod of the motor and sliding between such collars; a weighted T-crank and links connecting the same to sliding sleeves carried upon the stem of the cut off valve and another collar fixed upon such valve stem and co-operating with the sleeves; all substantially as and for the purpose set forth.

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**505,515. GUIDE-POST CLAMP.** GEORGE T. FRANCIS, Chicago, Ill., assignor of one-half to the Standard Elevator Company, same place. Filed Mar. 27, 1893. Serial No. 467,891. (No model.)



*Claim.*—1. A guide post for elevators provided at one end with a clamping device permanently secured thereto, and at the other end with a clamping device removably secured thereto, whereby the guide post may be readily clamped to an eye-beam and adjusted as to length; substantially as and for the purpose set forth.

2. A guide post for elevators having at one end a permanent lug having adjustable bolts secured thereto, and at its other end a removable lug having similar bolts; substantially as and for the purpose set forth.

3. In a guide post for elevators the combination of the main body of the post, having the side faces of one end flat, such faces extending some little distance back of the end of such post, with lugs containing clamping hooks or bolts and mechanism for securing the same to such main body; substantially as and for the purpose set forth.

4. In a guide post for elevators the combination of the main body of the post having the sides of one end faced so as to afford a flat surface which extends some little distance back of the end thereof, with lugs containing clamping bolts or hooks and a bolt for securing them to the main body of the guide post; substantially as and for the purpose set forth.

5. In a guide post for elevators the combination of the main body of the post with lugs containing clamping hooks or bolts secured to such main body, and adjustable thereon in the direction of the length of such body of the post; substantially as and for the purpose set forth.

6. In a guide post for elevators the combination of the main body of the post, having its sides near one end faced flat, with lugs containing clamping hooks or bolts and provided with elongated holes or apertures and a securing bolt passing through the lugs and the main body of the post whereby such lugs may be adjustably secured to such main body of the post in reference to the length thereof; substantially as and for the purpose set forth.

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**505,516. METAL-DRILLING MACHINE.** GEORGE M. FRENCH, Jr., Chicago, Ill. Filed Oct. 22, 1892. Serial No. 449,887. (No model.)

*Claim.*—1. In a drill the combination of a drill rod with a driving plate, a shaft parallel with such plate and having a friction wheel at one end and a shaft driving pulley or the like at the other end, and means for adjusting such shaft along its length, said means consisting of a sleeve in which such shaft is journaled, and a rack and pinion associated with such sleeve, and a spring clutch piece associated with such pinion so that the pinion may be driven or locked into position thereby.

2. In a drill the combination of a friction driving device with a drill rod, a handle, a suitable connecting device whereby the drill and the friction devices are operatively moved simultaneously by the action of the handle.

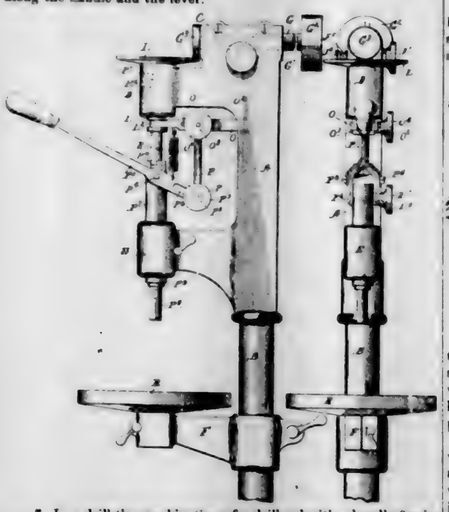
3. The combination of a drill rod with a handle to depress the same, friction devices to drive the rod, connecting parts from such handle to such friction devices whereby the latter are put into operation by the motion of the former.

4. In a drill the combination of a drill rod with a handle for depressing the same against the work, friction devices for driving the drill rod, a lever connected with such friction devices at one end and fixedly connected at the other, and a link from the handle to the lever whereby the motion of the handle operatively applies the friction devices.

5. In a drill the combination of a drill rod with a handle for depressing the same against the work, friction devices for driving the drill rod, a lever connected with such friction devices at one end and fixedly connected at the other, and a link from the handle to the lever whereby the motion of the handle operatively applies the friction de-

vices and a spring connecting the handle and the lever so as to automatically restore the parts to their position of disengagement when the handle is free.

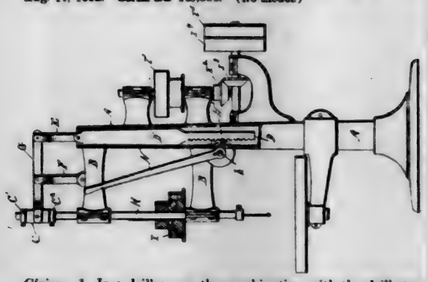
6. In a drill the combination of a drill rod with a handle for depressing the same against the work, friction devices for driving the drill rod, a lever connected with such friction devices at one end and fixedly connected at the other, and a link from the handle to the lever whereby the motion of the handle operatively applies the friction devices, said link longitudinally adjustable at each end respectively along the handle and the lever.



7. In a drill the combination of a drill rod with a handle for depressing the same against the work, friction devices for driving the drill rod, a lever connected with such friction devices at one end and fixedly connected at the other, and a link from the handle to the lever whereby the motion of the handle operatively applies the friction devices, said link longitudinally adjustable at each end respectively along the handle and the lever, and a spring connecting the handle and the lever.

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**505,517.** DRILL-PRESS. HIRAM H. FULLER, Meadville, Pa. Filed Aug. 17, 1892. Serial No. 443,336. (No model.)

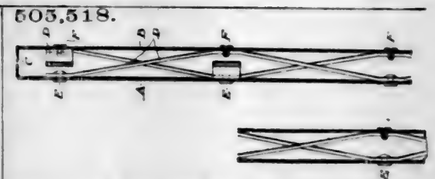


*Claim.*—1. In a drill press, the combination with the drill stem of a lever for moving said stem vertically, a pivoted fulcrum therefor, a vertically moving rack-bar connected to said lever, attached to the frame of the machine, a pinion for moving said rack-bar and means for moving said pinion.

2. In a drill press, the combination with the drill-stem of a lever for moving said stem vertically that is fulcrumed between the said stem and the column, a rack-bar within the column that is connected with the said stem moving lever, a pinion for moving said rack-bar and a hand lever for moving said pinion.

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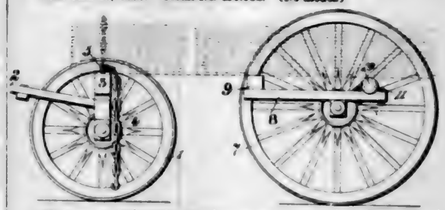
**505,518.** FIREPROOF DOOR OR SHUTTER. JOSEPH GASCOIGNE, Worcester, Mass. Filed June 29, 1892. Serial No. 438,480. (No model.)



*Claim.*—A fire proof door or shutter comprising two sheets of iron forming the two sides, their edges being turned inward and a short space being left between said turned-in edges, and connections between the two sides, consisting entirely of diagonally arranged straps secured alternately to the two sides of the door or shutter, substantially as described.

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**505,519.** LUMBER-WAGON. PETER GIRNAU, Eau Claire, Wis. Filed Jan. 28, 1893. Serial No. 459,932. (No model.)



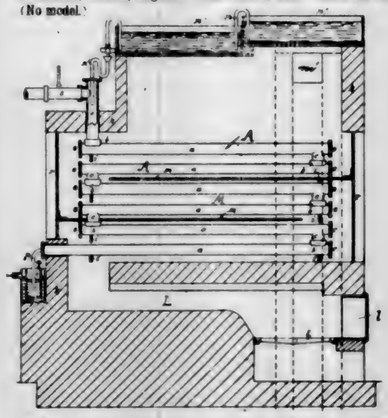
*Claim.*—1. A dumping lumber wagon comprising disconnected two-wheeled fore and hind trucks, said fore truck provided with a suitable bolster for the fore end of the load and said hind truck provided with a supporting frame for the rear end of the load, said frame having a rolling bearing for the load at its rear end in rear of but proximate to the wheel axle, for the purpose set forth.

2. A dumping lumber wagon comprising disconnected two wheeled fore and hind trucks, said fore truck provided with a suitable bolster for the fore end of the load, and said hind truck provided with a supporting frame secured to its wheel axle and projecting forwardly and rearwardly thereof, the portion in front of the axle tree being shorter than the wheel radius, and a rolling bearing for the load at the rear end of said frame, for the purpose set forth.

3. A dumping lumber wagon comprising disconnected fore and hind trucks, said fore truck provided with a bolster for the fore end of the load and with means for securing said load thereto, said hind truck provided with a supporting frame secured to and projecting forwardly and rearwardly of its wheel axle, the portion of said frame in front of the axle tree being shorter than the wheel radius, and a rolling bearing at the rear end of the frame in close proximity to the axle tree, for the purpose set forth.

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**505,520.** APPARATUS FOR CONCENTRATING LIQUIDS. OSCAR GUTTMANN, London, England. Filed June 5, 1893. Serial No. 476,604. (No model.)

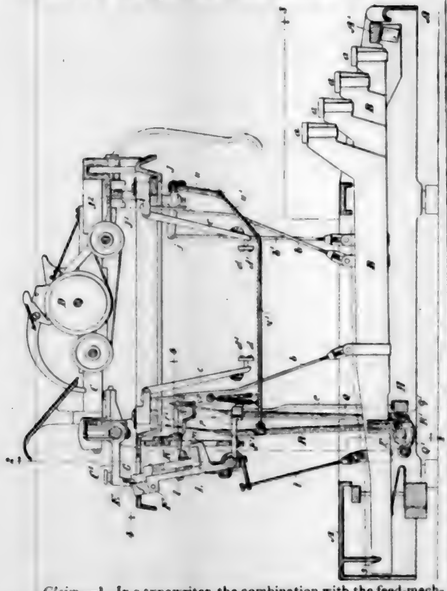


*Claim.*—An apparatus for concentrating liquids, comprising a furnace, a zig-zag shaped flue above said furnace, a serpentine pipe within said flue, supply tanks for the liquid to be concentrated on top of the said flue and connected with one another, a siphon connecting one of the supply tanks with the upper end of the serpentine pipe, an outlet pipe connected to the lower end of the serpentine pipe and extending into a collecting vessel, and means for causing a draft in the serpentine pipe, opposite to the direction of the flow of the liquid, substantially as and the purposes set forth.



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**505,521.** TYPE-WRITING MACHINE. JOHN A. HAMILTON, New York, N. Y. Filed Apr. 1, 1893. Serial No. 468,641. (No model.)



*Claim.*—1. In a typewriter, the combination with the feed-mechanism comprising a relatively-movable feed-rack and dog, and a spacer, said rack having teeth of a fineness equal to a fraction of the feed for types of average width, of a variable stop for determining the movement of the spacer, mounted to reciprocate with the feed mechanism and means for operating said stop consisting of a movable abutment standing normally in the path of said stop, to intercept it in position to give a normal feed, and a connection between said abutment and the requisite keys for throwing said abutment out of the path of the stop to vary the movement of the spacer and give a feed of different length when any of the keys so connected is depressed.

2. In a typewriter, the combination with the feed-mechanism comprising a relatively movable feed-rack and dog, and a spacer, said rack having teeth of a fineness equal to half the feed for types of average width, of a variable stop for determining the movement of the spacer, mounted to reciprocate with the feed mechanism and means for operating said stop consisting of a movable abutment standing normally in the path of said stop, to intercept it in position to give a two-space feed, and a connection between said abutment and the keys for one-space types for throwing said abutment out of the path of the stop to permit the latter to move farther and thereby limit the movement of the spacer to give a one-space feed.

3. In a typewriter, the combination with the feed-mechanism comprising a relatively-movable feed-rack and dog, and a spacer, said rack having teeth of a fineness equal to half the feed for types of average width, of a variable stop for determining the movement of the spacer, mounted to reciprocate with the feed mechanism and means for operating said stop consisting of a movable abutment standing normally in the path of said stop, to intercept it in position to give a two-space feed, and a connection between said abutment and the keys for types requiring a different feed, consisting of a treadle, projections on such keys arranged to encounter and displace the treadle, and means for communicating motion from the treadle to said abutment to throw the latter out of the path of the stop on the depression of the treadle.

4. In a typewriter, the combination with feed-rack E, dog F, and spacer G, of variable stop L, movable abutment K, treadle Q' arranged to be depressed by certain keys, and rod Q connecting it to said abutment, to the effect set forth.

5. In a type-writer wherein the same type-keys print two different types under the control of a "shifting mechanism" the combination therewith of a variable letter-feed, comprising a feed-rack, dog and spacer, a variable stop for determining the movement of the spacer over one or more teeth of the rack, a stop actuating mechanism connected to the keys for printing each two types which require different feeds, so that the depression of any of said keys operates said stop-actuating mechanism, said mechanism normally connected to the stop to actuate the latter to give a narrow feed, and a connection between said stop-actuating mechanism and the "shifting-mechanism" for disconnecting the former from the stop upon the operation of the shifting mechanism, so that the depression of any of said keys fails to act upon the stop, and the latter gives the wider feed, whereby the same key will cause a wide or narrow feed according to the type it is printing as determined by the shifting mechanism.

6. In a typewriter wherein the same type-keys print two different types under the control of a "shifting mechanism," the combination therewith of a variable letter-feed, comprising a feed-rack, dog and spacer, a variable stop for determining the movement of the spacer over one or more teeth of the rack, a movable abutment normally in the path of said stop and acting to hold it to the position for giving a two-space feed, a stop controlling mechanism for displacing said abutment to enable the stop to give a one-space feed, connected to and normally operated by the keys for printing each two types which require different feeds, so that normally the depression of any of said keys displaces said abutment and gives a one-space feed, and a connection between said stop-controlling mechanism and the shifting mechanism for throwing the former out of action upon the operation of the latter, so that while the shifting mechanism is in use the depression of any of said keys fails to displace said abutment and gives a two-space feed.

7. In a typewriter wherein the same type-keys print two different types under the control of a "shifting mechanism," the combination therewith of a variable letter-feed, comprising a feed-rack, dog and spacer, a variable stop for determining the movement of the spacer over one or more teeth of the rack, and mechanism for controlling the stop consisting of a movable abutment K, having an arm with active portion $r'$, a treadle R' arranged to be depressed by the keys for printing each two types which require different feeds, a rod R connecting the treadle to said arm, normally engaging the portion $r'$ thereof, so that the depression of the treadle displaces the abutment, and a rod $u$ for connecting said rod R with the shifting mechanism so that when the latter is operated said rod R is moved out of engagement with the active part of said arm, and the depression of said keys, treadle and rod fails to displace the abutment.

8. In a typewriter, the combination with feed-rack E, dog F, and spacer G, of variable stop L, movable abutment K having arm $p$, treadle R' arranged to be depressed by certain keys, rod R, connecting it to said arm, arm $u$ attached to the shifting mechanism of the typewriter, and rod $u'$ connecting said arm $u$ to said rod R for throwing the latter out of action.

9. In a typewriter, the combination with feed-rack E, dog F, and spacer G, of variable stop L, movable abutment K, treadle Q' arranged to be depressed by certain keys, treadle R' arranged to be depressed by certain other keys, rods Q and R for connecting the respective treadles to the abutment, and rod $u'$ connecting said rod R to the shifting mechanism for throwing it out of action.

10. In a typewriter, the combination with feed-rack E, dog F, and spacer G, of variable stop L, movable abutment K, having arms $q$ and $p$, treadles Q' and R' arranged to be depressed by certain different keys, rods Q and R connecting the respective treadles to said arms $q$ and $p$, both of said rods having free or slotted engagement with said arms to enable either arm to move down independently of its rod under the pull of the other rod, and rod $u'$ connecting rod R with the shifting mechanism for throwing it out of action.

11. In a typewriter, the combination with feed-rack E, dog F and spacer G, of variable stop L, movable abutment K constructed as a pivoted arm pressed normally to place by a spring $s'$, and mechanism in connection with certain keys for displacing said abutment when said keys are depressed.

12. In a typewriter, the combination with feed-rack E, dog F and spacer G, of variable stop L, movable abutment K having an arm $q$, a treadle Q' arranged to be depressed by certain keys, a rod Q connecting it with said arm, and spring $s'$ for upholding the said treadle and rod.

13. In a typewriter, the combination with feed-rack E, dog F and spacer G, of variable stop L, movable abutment K having an arm $p$, a treadle R' arranged to be depressed by certain keys, a rod R connecting it with said arm, a rod $u'$ connecting said rod R with the shifting mechanism, and a spring $s^3$ for upholding said treadle and rods.

14. In a typewriter, the combination with feed-rack E, having teeth of a fineness equal to a fraction of the feed for types of average width, dog F and spacer G, of a variable stop L mounted to move with the dog, and movable relatively to the dog in the direction of the dog's movement, having a shoulder abutting against the dog and

a spring *s* for tending to keep it in place with said shoulder pressed against the dog, whereby the stop normally moves with the dog to cause a feed of a certain width, and connections between said stop and the requisite type-keys for displacing the stop relatively to the dog, and against the tension of said spring, for causing a feed of a different width.

15. In a typewriter, the combination of feed-rack E, pivoted dog F and spacer G, with a variable stop L pivoted on the same axis as the dog, and spring *s* acting against it and reacting on the dog.

16. In a typewriter, the combination of feed-rack E, pivoted dog F and spacer G, with a variable stop L mounted to move relatively to the dog in the direction of the movement of the dog, having shoulder *l* abutting against the dog for limiting its movement relatively thereto, and spring *s* tending to press it forward to bring said shoulder against the dog whereby the stop is normally carried with the dog.

17. In a typewriter, the combination of feed-rack E, pivoted dog F and spacer G, with a variable stop L mounted to move with the dog, and movable independently in the direction of the dog's movement, and an adjusting device for determining its position longitudinally of the rack to adjust it to stop the spacer in positions coinciding with the spaces between the rack teeth.

18. In a typewriter, the combination of feed-rack E, pivoted dog F and spacer G, with a variable stop L mounted to move with the dog, and an adjusting device for determining its position relatively to the spacer consisting of a screw collar *k* engaging the stop to move it toward or from the spacer.

19. In a typewriter, the combination of feed-rack E, pivoted dog F formed with an axial shaft *i*, and spacer G, with a variable stop L pivoted on said shaft, and a collar *k* adjustable thereon and engaging the stop.

20. In a typewriter, the combination to form a variable letter feed, of a feed-rack, a dog and spacer working therein, a variable stop for determining the movement of the spacer over a greater or less number of teeth, mounted to move with the dog, and movable relatively to the dog in the direction of the dog's movement, a spring pressing against said stop and tending to cause it to move normally with the dog, and a connection between the keys for types of extra width, and said variable stop adapted upon the depression of either of said keys to draw back the stop during the forward movement of the dog to a position where it permits an increased movement to the spacer, thereby causing a wider feed.

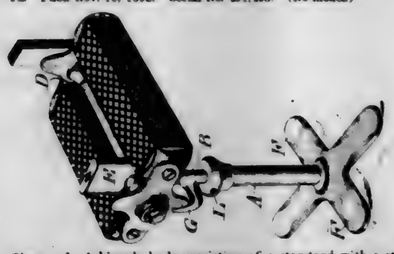
21. In a typewriter, the combination to form a variable letter feed, of a feed-rack, a dog and spacer working therein, a variable stop L mounted to move with the dog, having a spring *s* acting against it and reacting on the dog, and a shoulder abutting against the dog for limiting its movement relatively thereto, whereby normally the stop moves with the dog, and having a rearwardly projecting arm, and a connection between said arm and a key lever for impressing a type of extra width, adapted on the depression of such key-lever to draw back the variable stop against the tension of its spring during the forward movement of the dog.

22. In a typewriter, the combination of feed-rack E, dog F, spacer G, variable stop L mounted to move with the dog, having a spring tending to press it forward with the dog, and formed with a rearward arm $L^3$, and a rod *t* connecting this arm with the key-lever of a type of extra width, whereby on the depression of said lever it draws back the stop.

23. In a typewriter, the combination of feed-rack E, dog F, spacer G, variable stop L mounted to move with the dog, having a spring tending to press it forward with the dog, and formed with a rearward arm $L^3$, having a cross-bar $L^4$, and two rods *t t* connecting the opposite ends of this cross-bar with two key-levers for types of extra width, whereby on the depression of either of said levers the stop is drawn back.

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**505,522.** BICYCLE-LOCK. WILLIAM H. HART, Jr., Philadelphia, Pa. Filed Nov. 10, 1892. Serial No. 451,495. (No model.)



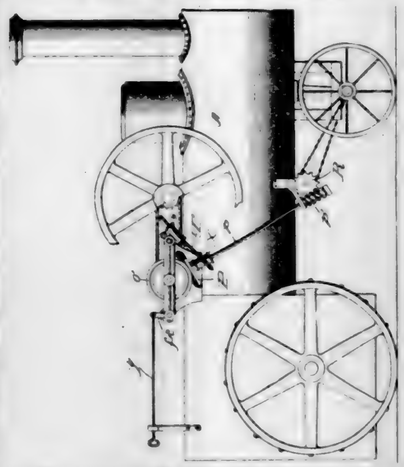
*Claim.*—1. A bicycle lock consisting of a standard with a stem having a bifurcated end adapted to embrace the axle of the bicycle treadle, and forming a bow for a lock, and a horn in contact with the end of said treadle, said parts being combined substantially as described.

2. A carrier for a bicycle lock consisting of hangers with loops to receive the base of said lock, and a grooved block to be embraced by the shackle of said lock, substantially as described.

3. A bicycle lock consisting of a standard with a base, an adjustable stem having a bifurcated notched upper end and a lock for which said bifurcated end forms the bow or staple, said parts being combined substantially as described.

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**505,523.** STEERING-GEAR FOR TRACTION-ENGINES. STACY B. HART, Peoria, Ill., assignor to the Hart Weigher Company, same place. Filed May 19, 1893. Serial No. 474,785. (No model.)



*Claim.*—1. In a steering device for traction engines, the combination of substantially the following elements: a frame supported on the engine; a shaft journaled on said frame and driven by the power of the engine; two hollow drums loosely mounted on the shaft and having formed on their peripheries oppositely disposed bevel-gears; an intermediate gear meshing with both said gears and adapted to be driven by either one; means for transmitting the motion of the intermediate gear to the take-up drum controlling the front axle of the engine; a part K longitudinally traversed by the shaft and adapted to move transversely thereon; two friction-wheels or rolls loosely mounted on the ends of the part K within, but normally not in contact with, the drums, and having their peripheries in different planes; means for causing the friction-wheels to revolve with the shaft; and means for moving the part K to bring one or the other of the friction-wheels into engagement with its contiguous drum, whereby the intermediate gear is operated and the take-up drum revolved either forward or backward.

2. In a device of the kind described, the combination of substantially the following elements:—a frame supported upon the engine, the shaft G journaled on said frame and driven by the power of the engine; two hollow drums loosely mounted on the shaft and having formed upon their peripheries oppositely disposed bevel-gears; an intermediate gear meshing with both the other gears, and adapted to be driven by either one; a shaft rotated by the intermediate gear and transmitting motion to the take-up drum; the part K longitudinally traversed by the shaft G, and adapted to move transversely thereon; two friction-wheels or rolls loosely mounted on the ends of the part K, within, but normally not in contact with, the drums and having their peripheries in different planes; a dog or latch secured to and revolving with the shaft G, and adapted to engage with the friction-wheels to cause them to revolve with the shaft; and means for moving the part K to bring one or the other of the friction-wheels into engagement with its contiguous drum, and operate the parts.

3. In a device of the kind described, the frame supported by the engine; the shaft G journaled thereon; the part K, carrying the friction-wheels M, M, which are adapted to revolve with the shaft; the drums O, O, having oppositely disposed bevel-gears O′, O′, upon their peripheries; the intermediate gear P; and means for transmitting the motion of the gear P to the take-up drum; in combination with the sleeve F, having formed thereon one or more eccentrics or cams, a part or parts upon the part K adapted to engage with the cams, whereby the part K will be operated, and means for revolving the sleeve F; substantially as described.

4. In a device of the kind described, a frame supported by the engine; the shaft G journaled thereon; the part K; the friction-wheels M, M, mounted thereon and adapted to revolve with the shaft; the drums O, O, and gears O′, O′; in combination with the intermediate gear P; means for transmitting the rotary motion of the gear P to the take-up drum; and means for adjusting the intermediate gear with relation to the gears O′, O′; substantially as described.

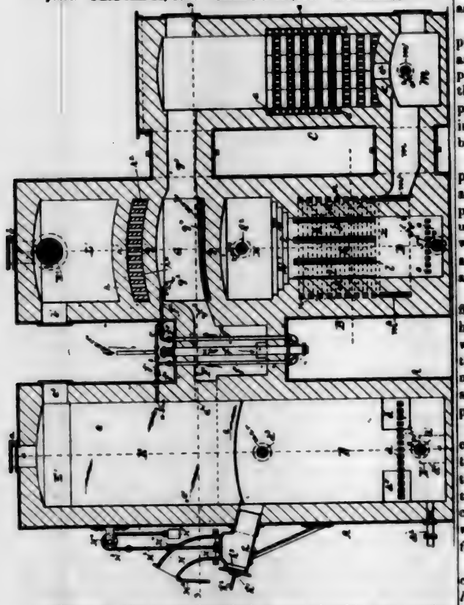
5. In a device of the kind described, a frame supported by the engine; a shaft journaled thereon; the part K adapted to move transversely with the shaft; the friction-wheels M, M, mounted thereon, and adapted to revolve with the shaft; the drums O, O, the gears O′, O′, the intermediate gear P, a shaft *p* actuated by said gear; and means for transmitting the rotary motion of the shaft *p* to the take-up drum; in combination with the adjusting sleeve S, adapted to adjustably receive the arm T; the yoke *t* on said arm; and the sleeve or collar X pivoted to said yoke, adapted to sustain the gear P; whereby said gear may be adjusted with relation to the gears O′, O′, so as to change the inclination of the shaft *p*; substantially as described.

6. In a device of the kind described, a frame carrying the steering device; in combination with a bracket adapted to be secured to the engine, and provided with two or more extending arms adapted to adjustably support the steering device; substantially as described.



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**505,524.** MANUFACTURE OF GAS. JAMES L. HASTINGS, Philadelphia, Pa., assignor to the National Heat and Power Company, same place. Filed Jan. 11, 1892. Serial No. 417,668. (No model.)



*Claim.*—1. The herein described process of making gas, consisting in burning suitable gas and passing the heated products of complete combustion thereof through a body of carbon and thereby heating the same to (but not beyond) redness, and subsequently passing gas containing hydrocarbons through said red-hot carbon, substantially as and for the purposes set forth.

2. The herein described process of making gas, consisting in passing air through a body of carbon and the resultant gas through a chamber around pipes containing liquid hydrocarbon, thence through a chamber above a bed of sand, and thence through a steam superheated containing open refractory material, then burning the resultant gas and passing the products thereof around and through a body of carbon to heat the same to redness, and finally burning any resultant gases within a mixing chamber and around such chamber containing the bed of sand; and then passing steam through the first body of carbon, introducing heated hydrocarbon and superheated steam into the resultant gases above the heated bed of sand, and then passing the gases and vapors through such body of heated open refractory material and through such body of red-hot carbon, and finally intermingling the resultant gases under pressure in the heated mixing chamber before passing them to the wash box, substantially as and for the purposes set forth.

3. In apparatus for the manufacture of gas, a heating furnace having at the base thereof a cupola generator and having above the same a central vertical channel extending in one direction for the full width of the furnace, and having formed on the sides thereof chambers communicating with said channel at the top thereof, substantially as set forth.

4. In apparatus for making gas, a heating furnace having a cupola generator at the base thereof, and having above the same a central vertical channel extending in one direction for the full width of the furnace, and having chambers on each side thereof, said channel communicating at the base with the generator and at the top with said chambers, and said chambers having ports leading from the base thereof, substantially as set forth.

5. An apparatus for making gas having two vertical casings containing gas generating and fixing chambers, and a horizontal casing connecting and forming the passage way between the two casings, said passage forming an oil heating chamber and vertical oil heating pipes extending through the chamber and communicating with one of the casings, substantially as and for the purposes set forth.

6. An apparatus for making gas having two vertical casings containing gas generating and fixing chambers, and a horizontal casing connecting and forming the passage way between the two casings, the passage way between the casings being of greater area in vertical section than the inlet and outlet ports thereto, and so forming an oil heating chamber, and vertical oil heating pipes extending through the chamber and communicating with one of the casings, substantially as and for the purposes set forth.

7. An apparatus for making gas having an oil heating chamber provided with vertical oil heating pipes extending through the same, and having inlet and outlet ports through which the gas enters and passes from such chamber, the oil supply pipe communicating with the upper end of the pipe *f* and said pipe communicating with the pipe *f*″ below and outside of said chamber, and said pipe *f*″ then passing through said chamber and above the same opening into the chamber into which the oil is to be introduced, substantially as set forth.

8. An apparatus for making gas having an oil heating chamber provided with vertical oil heating pipes extending through the same, and having inlet and outlet ports through which the gas enters and passes from such chamber, the oil supply pipe *f* being closed at its upper and lower ends with plugs and the pipe *f*″ communicating therewith below the casing, and thence extending through the chamber to a point at which the oil is introduced into the apparatus, substantially as and for the purposes set forth.

9. An apparatus for making gas having the heating furnace B, a fixing chamber K at the base thereof, a muffle chamber G extending horizontally across the same and having no communication therewith within the furnace, a passage way outside of the furnace leading from the muffle chamber to the fixing chamber, an air entrance below said muffle chamber, and a mixing chamber above the fixing chamber and around and above the muffle chamber, substantially as and for the purposes set forth.

10. An apparatus for the manufacture of gas, having the fixing chamber K provided with a solid annular wall $m^3$ at the base thereof, the pillars *k* rising therefrom and having the spaces *l* between them, the annular spaces $m^3$ surrounding the base of the fixing chamber, the annular spaces *n* surrounding the upper part thereof, said spaces communicating with each other through the ports or openings *n*′ and with the fixing chamber through the passages *l*, substantially as and for the purposes set forth.

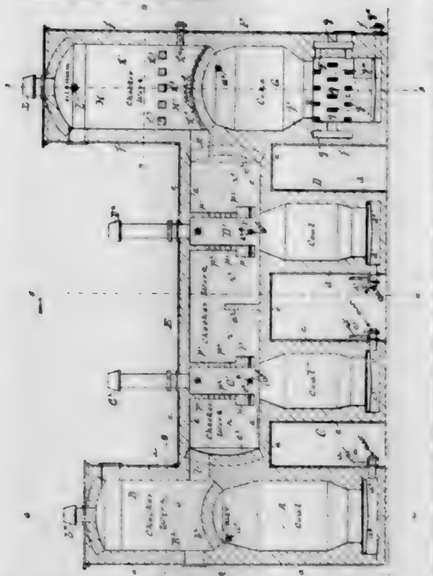
11. An apparatus for the manufacture of gas, having the fixing chamber K provided with a series of pillars *k* and having the spaces *l* between them, an annular space or spaces surrounding the said pillars, said space communicating with the fixing chamber through the passages *l* and said vertical pillars terminating in an annular flaring wall *k*′ opening out to the full width of said fixing chamber, substantially as and for the purposes set forth.

12. In an apparatus for the manufacture of gas, the combination of a cupola generator, a heating furnace provided with a muffle chamber extending transversely through the same, and having a fixing chamber below the muffle chamber, said cupola generator and muffle chamber being connected by a passage, and a steam superheater having a coil of superheating pipes, the exit end of said muffle chamber communicating with the upper end of the superheater, and the lower end of the superheater communicating with the fixing chamber in said heating furnace, substantially as and for the purposes set forth.

13. An apparatus for making gas having the heating furnace B provided with the fixing chamber K at the base thereof, and having the muffle chamber extending through but not communicating therewith, said heating furnace having arches extending over above the muffle chamber and having a central passage between them above

the muffle chamber, and a chamber L above said arches, substantially as and for the purposes set forth.

**505,525. PROCESS OF AND APPARATUS FOR THE MANUFACTURE OF GAS.** JAMES L. HASTINGS, Philadelphia, Pa., assignor to the National Heat and Power Company, same place. Filed Nov. 7, 1892. Serial No. 451,106. (No model.)



*Claim.*—1. The herein-described process of making gas, consisting in generating water gas, and without superheating the gas introducing oil or like hydrocarbons into the water gas generated in the first part of the run and carrying the combined gas and vapors through a body of fixing materials, and generating water gas in the later part of the run superheating the same and introducing the oil into the resultant superheated water gas, and carrying such combined gas and vapor through a body of fixing materials, substantially as and for the purposes set forth.

2. The herein-described process of making gas, consisting in generating water gas, and without superheating the gas introducing oil or like hydrocarbons into the water gas generated, and carrying the combined gas and vapors through a body of heated refractory fixing material and then through a body of heated coke, and, in the later part of the run, generating water gas and superheating the same, introducing oil into the resultant superheated water gas and carrying such combined gas and vapor first through a body of heated refractory material and then through a body of heated carbon, substantially as and for the purposes set forth.

3. The herein-described process of making gas, consisting in generating gas from a mass of carbon, superheating the gas so generated, introducing hydrocarbons into the superheated gas, and carrying the combined superheated gas and vapor, and any fixed gases formed thereby, through a body of heated carbon, substantially as and for the purposes set forth.

4. The herein-described process of making gas, consisting in blowing up two or more generators, burning the gases formed to heat bodies of refractory material, and then carrying the heated products of combustion through a mass of carbon and thereby heating the same, and subsequently introducing steam into one of said generators, introducing hydrocarbons into the water gas formed, and carrying the same through the body of heated carbon, and, at a later part of the run, introducing steam into the other generator, carrying the water gas formed through a body of heated checker work to superheat the same, introducing hydrocarbons into such superheated water gas, and carrying the same through the body of heated carbon, substantially as and for the purposes set forth.

5. The herein-described process of making gas, consisting in blowing up two or more cupola generators, burning the gas formed to heat bodies of checker work, or like loose material, and carrying the heated products through a fixing chamber containing refractory material, and then downwardly through a mass of carbon to heat the same, then admitting steam to one of the cupola generators, carrying the products through the fixing chamber containing refractory material, and during their passage introducing hydrocarbons into the same and carrying the combined gas and vapor through the body of heated carbon, and at the later part of the run introducing steam into the other cupola generator, carrying the water gas formed through the heated bodies of checker work and the superheated water gas through the fixing chamber containing refractory material, and during their passage introducing hydrocarbons into the same, and the resultant superheated water gas and vapor through the heated carbon, substantially as and for the purposes set forth.

6. In apparatus for making gas, the combination of two vertical furnaces, a horizonal body portion connecting the same at a point about midway of the height of the furnaces and having depending vertical portions extending below the body portion and forming cupola generators, the same being inclosed within suitable casings, and the two vertical furnaces and cupola generators communicating with the horizontal body portion, substantially as and for the purposes set forth.

7. In apparatus for making gas, the combination of two vertical furnaces, a horizontal body portion connecting the same, the whole being inclosed within suitable casings, and the end walls of the horizontal portion being formed arch-shaped so as to support the lining of the vertical furnaces where they communicate with the body portion, and having ports formed through such arches between the body portion and the vertical furnaces, substantially as and for the purposes set forth.

8. In gas making apparatus, a vertical furnace having a solid central arch extending longitudinally across a portion thereof with spaces on each side of said arch and vertical walls supported on and extending upwardly from said arch toward but not quite to the top of the furnace and supported at the sides by the walls of the furnace, so forming a central chamber, said chamber having a port at the base thereof and communicating with the ports of the furnace on each side of said walls over the upper ends of the walls, substantially as and for the purposes set forth.

9. In a gas making apparatus, a vertical furnace having a central arch extending longitudinally across a portion thereof with spaces on each side of said arch and vertical walls supported on and extending upwardly from said arch toward the top of the furnace, and supported at the sides by the walls of the furnace, and a port opening above said arch at the base of the vertical chamber formed by said vertical walls, substantially as and for the purposes set forth.

10. In gas making apparatus, the combination of a vertical furnace having a coal chamber in the base thereof, a central arch extending across said chamber and having spaces on the sides thereof, vertical walls supported on and extending upwardly from said arch toward the top of the furnace chamber, a port opening above said arch tiles extending across the chambers on each side of the vertical chambers so formed between the arch and the side walls of the furnace, and checker work supported on such tiles, substantially as and for the purposes set forth.

11. In gas making apparatus, the combination of a vertical furnace having a coal chamber in the base thereof, a central arch extending across said chamber and having spaces on the sides thereof, vertical walls supported on and extending upwardly from said arch toward the top of the furnace chamber, a port opening above said arch tiles extending across the chambers on each side of the vertical chambers so formed between the arch and the side walls of the furnace, and a relief valve in the top wall of the furnace, substantially as and for the purposes set forth.

12. A gas making apparatus having a horizontal body portion, a vertical depending portion forming a cupola generator below the body portion, arches extending across above such generator, and cross walls extending from said arches to the top of the body portion, said cross walls having ports therein, communicating with the spaces on each side of the walls, substantially as and for the purposes set forth.

13. A gas making apparatus having at one end a vertical furnace containing a cupola generator in the lower part, and a gas superheater in the upper part, a horizontal body portion with which such gas superheater communicates, a vertical furnace with which the other end of the horizontal body portion communicates, said second vertical furnace having a fixing chamber containing refractory material in the upper part, and a coke chamber in the lower part provided with an outlet, substantially as and for the purposes set forth.

14. A gas making apparatus having at one end a vertical furnace containing a cupola generator in the lower part, and a gas superheater in the upper part, a horizontal body portion with which such gas superheater communicates, a vertical furnace with which the other end of the horizontal body portion communicates, said second vertical furnace having a fixing chamber containing refractory material in the upper part, and a coke chamber in the lower part provided with an outlet, and one or more depending portions extending below the horizontal body portion and forming cupola generators, substantially as and for the purposes set forth.

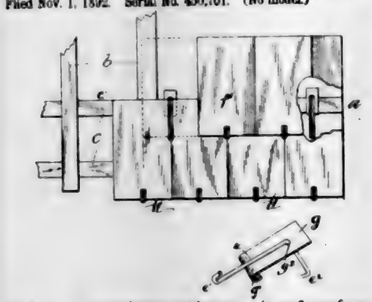
15. A gas making apparatus having a vertical furnace containing a fixing chamber or chambers, an outlet passage leading from the lower end thereof, a vertical steam superheater with which such passage communicates at the base, said superheater containing a coil of steam pipes, and a mass of checker work, and an outlet passage leading from the upper end of such steam superheater, substantially as and for the purposes set forth.

16. A gas making apparatus having a vertical furnace provided with a fixing chamber having a bed of sand at the base thereof, and having an oil entrance above said bed of sand, substantially as and for the purposes set forth.

17. A gas making apparatus having a vertical steam superheater, an inlet passage at the base leading from the gas generating and fixing apparatus, an outlet passage at the top, a vertical washer, and a pipe leading from the top of the gas superheater down through the washer and into a water-seal at the base thereof, substantially as and for the purposes set forth.



**505,526. ROOFING.** SAMUEL R. HAWTHORNE, Hartford, Conn. Filed Nov. 1, 1892. Serial No. 450,701. (No model.)

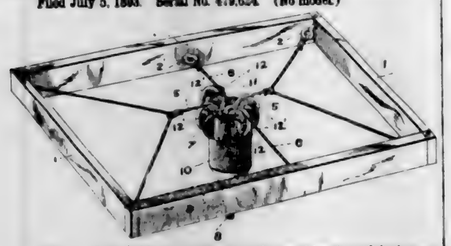


*Claim.*—1. In combination with a cross-piece of a roof an angular slate holder made of metal bent about midway of its length provided at one end with a clamping hook adapted to engage the cross-piece of the roof and at the other end with a slate holding hook, and an anchor secured to the cross-piece and having an opening through which one arm of the slate holder is passed, all substantially as described.

2. In combination with the frame work of a roof a slate holder composed of an angular piece of metal provided at one end with a slate holding hook adapted to engage the lower edge of the slate and with the other end adjustably secured to a clamping hook attached to the cross-piece of the roof, all substantially as described.

3. In combination with the frame work of a roof, a slate holder composed of an angular piece of metal provided at one end with a slate holding hook and at the other end with a screw thread, a clamping hook adapted to engage the cross piece of the roof and provided with a screw threaded opening adapted to engage the screw threaded end of the holder, all substantially as described.

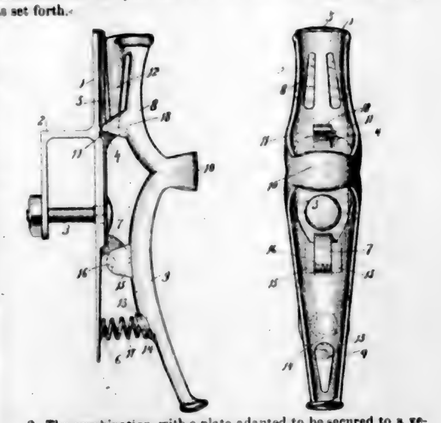
**505,527. BED-BRACE.** CHARLES A. HUNT, Jr., Lexington, N. C. Filed July 5, 1893. Serial No. 479,624. (No model.)



*Claim.*—In a bed brace or fastener, the combination of the braces, the bolt having one end connected thereto, the thimble for guiding said bolt, the rollers carried by the thimble and receiving the braces, and the adjusting nut engaging the bolt.

**505,528. REIN-HOLDER.** JESS JESSEN, Janesville, Wis. Filed May 27, 1893. Serial No. 475,769. (No model.)

*Claim.*—1. The combination, with a plate adapted to be secured to a vehicle, said plate provided near one end with a laterally-extending lug, and near the opposite end with a hook, of a spring-pressed arm having a transverse pin engaged by the hook, and also provided with a groove to receive the lug of the plate, the reins adapted to be passed between the plate and the arm, above the lug, substantially as set forth.

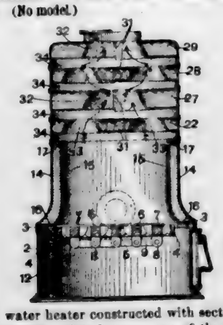


2. The combination, with a plate adapted to be secured to a vehicle, said plate provided near one end with a laterally-extending lug, and near the opposite end with a hook, of a spring-pressed arm having a transverse pin engaged by the hook, and also provided with a groove to receive the lug, and with lugs on each side of the groove, said latter lugs straddling the lug of the plate, to prevent sidewise movement of the pivoted spring-pressed arm, substantially as set forth.

3. The combination, with a plate adapted to be secured to a vehicle, of a spring-pressed cup-shaped arm pivoted to the plate, and adapted to confine the reins between its inner face and the opposing face of the plate, said arm provided with a medial bulge, the sides formed by the cup-shaped contour of the arm having their edges, at the bulged portion, united by a curved band or strap, and the lower portion of the arm curved outward, so as to bring its lower end in an approximate line with the loop, whereby, when a whip is inserted through the loop, its butt will be supported by the curved end of the arm, substantially as set forth.

4. The combination, of a plate adapted to be secured to a vehicle, said plate provided with a lug and a hook, an arm adapted to confine the reins between its inner edge and the opposing face of the plate, said arm provided with a groove adapted to receive the lug of the plate and with side lugs bearing against opposite sides of said lug of the plate, the arm also provided with inward-extending ears united by a transverse pin adapted to fit under the hook of the plate, and a coiled spring fitting between the plate and arm and received in a socket provided in said arm, substantially as set forth.

**505,529. WATER-HEATER.** ALBERT LONG, Chicago, Ill., and CHARLES MCCUMBER, Fond du Lac, Wis. Filed Dec. 12, 1892. Serial No. 454,928. (No model.)



*Claim.*—A water heater constructed with sections having vertical flues and a partition plate between one of the flues and the side and bottom and top of said sections, as described, the bottom of each of said sections lower at one side of said partition than at the other side thereof, and orifices for the admission and exit of water into and

out of said sections, said orifices disposed relative to said bottom and said partition in each of said sections substantially as shown and described.

**505,530. TIRE FOR BICYCLES.** CHARLES E. LUBURG, Philadelphia, Pa., assignor to the Luburg Manufacturing Company, of Pennsylvania. Filed Oct. 10, 1892. Serial No. 448,297. (No model.)




*Claim.*—1. A tubular pneumatic tire having a metallic rim on its inner periphery, and a sound-deadening facing partially surrounding it, with an intervening rigid shoe, and a guard within the rim having its ends connected with the ends of the facing and shoe, said parts being combined substantially as described.

2. A tubular pneumatic tire having a casing consisting of a sound-deadening substance with a rigid shoe, and a dust guard having in its ends pieces of metal, the ends of said dust guard and said casing being lapped together, said parts being combined substantially as described.

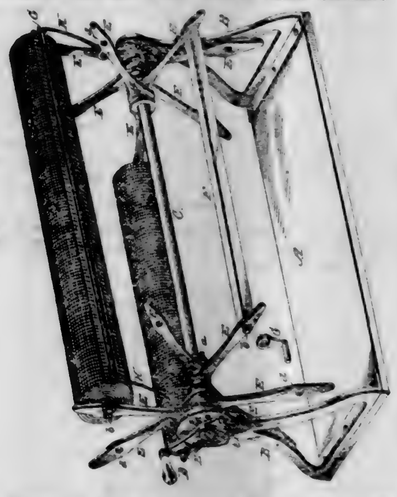
**505,531. COMPOSITION FOR ROOFING.** EDWARD M. MCCOOK, Riverside, Conn., and WILLIAM P. SEAL, Chicago, Ill. Filed Feb. 16, 1893. Serial No. 462,630. (No specimens.)

*Claim.*—1. A composition of matter for use in roofing, paving &c., consisting of coal-tar pitch, anthracine oil, and geyserite, in proportions substantially as specified.

2. A composition of matter consisting of coal-tar pitch, anthracine oil, geyserite, and argillaceous rock, substantially in the proportions and for the purposes specified.

3. A composition of matter consisting of coal-tar pitch, anthracine oil, geyserite, and sand or gravel, substantially in the proportions and for the purposes set forth.

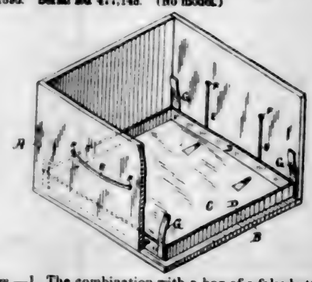
**505,532. WIRE-CLOTH HOLDER.** JAMES MCMANIS, Blandinsville, Ill. Filed June 18, 1893. Serial No. 478,066. (No model.)



*Claim.*—1. A device for holding rolls of wire cloth, consisting of a suitable frame, a rotatable shaft supported therein, radial arms adjustably connected to the shaft, and bars for supporting the rolls of wire cloth, said bars detachably connected to the radial arms, substantially as and for the purpose described.

2. A device for holding rolls of wire cloth, consisting of a suitable frame, a central rotatable shaft supported therein, radial arms at right angles thereto and adjustably connected to the shaft, bars having sockets at their ends and springs and movable journals located therein as a means for detachably connecting the bars to the arms, and a spring actuated clamp for retaining the free end of the cloth against the body of the roll, substantially as and for the purpose set forth.

**505,533. BOX.** JOHN H. O'NEIL, Philadelphia, Pa. Filed June 10, 1893. Serial No. 477,148. (No model.)

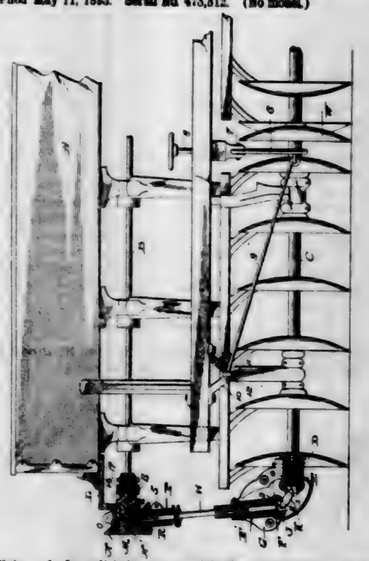



*Claim.*—1. The combination with a box of a false bottom, cords secured to said false bottom and passing upward and then through the sides of said box and by means of which said bottom may be raised and springs for supporting said false bottom when raised.

2. The combination with a box of a false bottom, cords passing through holes in opposite sides of said box and the ends of which are secured to the sides of said bottom and the bights of which are outside said box, and springs for supporting said bottom when raised.

3. The combination with a box of a false bottom formed of card board, raised edges on said bottom, cords secured to said bottom and passing upward inside of said box and out through holes in the sides of said box, and springs for holding said bottom when raised.

**505,534. DISK HARROW-SEEDER.** GEORGE W. PACKER, Rock Falls, assignor to the Keystone Manufacturing Company, Sterling, Ill. Filed May 11, 1893. Serial No. 473,812. (No model.)



*Claim.*—1. In a disk harrow seeder, the combination of grip D, suitably attached to one of the axles of the disk gang, knuckle block E pivotally seated in grip D, box G suitably supported from the gang axle, grip F pivotally seated in knuckle block J and provided with shaft F' loosely seated in box G, knuckle K, provided with engaging jaws 3 and 4 adapted, respectively, to engage grips D and F, a shaft H supported loosely within the shaft F', seed shaft B, and means, substantially as shown, for communicating the rotation of shaft H to shaft B, for the purpose described.

2. The combination of the seed shaft B, pinion N provided with sleeve N' loosely seated on said shaft, and further provided with clutch end 14, clutch 8, provided with annular recess 17, and seated on shaft B in condition to be rotated therewith, a vertical shaft 15 provided with eccentric point 16, adapted to rest in said recess, lever T seated on shaft 15 adapted to optionally throw the clutch 8 into and out of engagement with sleeve N', vertical shaft H, pinion R seated on shaft H adapted to engage and actuate pinion N', and means substantially as shown for rotating shaft H, for the purpose specified.

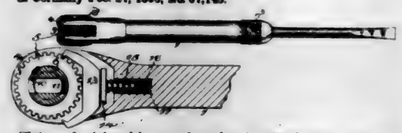
3. The combination of the seed shaft B, gang axle C, grip D, knuckle blocks E and J, knuckle K, suitably supported grip F provided with hollow shank F', shaft H supported loosely within said shank, and provided at its upper extremity with pinion R, pinion N loosely seated on shaft B in position to be engaged by pinion R, and means substantially as shown for locking said pinion N on the shaft B, for the purpose described.

4. In a disk harrow, the combination of lever 6 suitably fulcrumed longitudinally to the frame of the machine, and projected from said fulcrumed point forward and back, disk W seated on the rear end of said lever, means for laterally bracing said disk against the pressure of the earth an operating arm 8, projected from the front end of said lever, substantially as shown, and for the purpose described.

5. The combination of the lever 6, centrally fulcrumed to the frame of the machine, the disk W seated on the rear end of said lever, rod 9 connected at one end to the box of said disk, and extended transversely of the machine, and adjustably attached at its opposite end to the frame of the machine; substantially as shown, and for the purpose described.



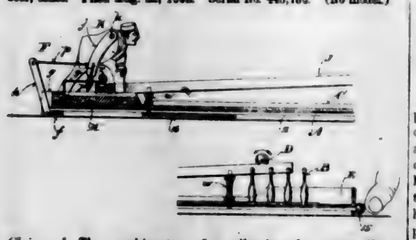
**505,535. RATCHET-TOOL.** URBANUS FORSTENDORFER, Hartford, Conn. Filed Nov. 2, 1892. Serial No. 450,729. (No model.) Patented in Germany Feb. 27, 1893, No. 67,145.



*Claim.*—1. A hand lever, whose head is divided by a slot, and a ratchet wheel, rotatable in said slot, in combination with a spring-seated plate, and a loose two-pointed pawl, having a flat back, whereby said pawl may slide on the surface of said spring-seated plate, substantially as and for the purpose specified.

2. A lever, whose head is separated by a slot into two cheeks, and a ratchet wheel, whose shaft is journaled in said cheeks, in combination with the spring-seated plate 14, and the loose double pawl 13, having a flat back, whereby said pawl may slide on the surface of said plate, substantially as and for the purpose specified.

**505,536. TOY BOWLING-ALLEY.** WILLIAM S. REED, Leominster, Mass. Filed Aug. 22, 1892. Serial No. 443,736. (No model.)



*Claim.*—1. The combination of an alley-board, a vertically inclined trough running longitudinally thereof; a spring-pushed plunger-arm fitted to swing transversely of the mouth of said trough longitudinally of the alley; a latch for locking said arm against the force of its spring, said latch having a projection disposed adjacent the mouth of said trough in position to be engaged by a ball therefrom, substantially as and for the purpose set forth.

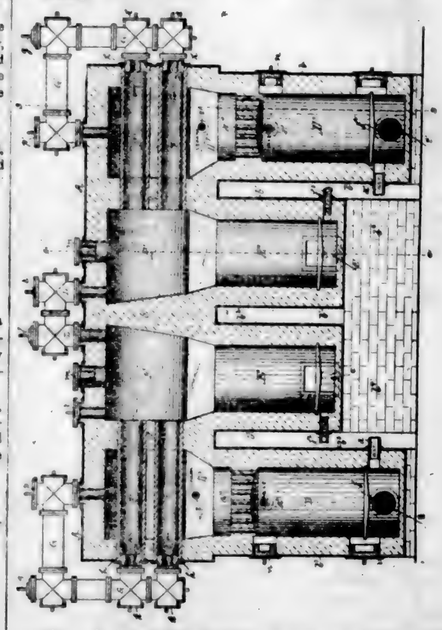
2. The combination of an alley-board, an image disposed at one end thereof and having a spring-pushed member; a ball-trough opening into the path of said member; a latch for said member adapted to be released by contact with the ball, and a pusher-bar running longitudinally of the alley for setting said member, substantially as described.

3. The combination with an alley-board of an image disposed at one end thereof; a spring-pushed member on said image fitted to move longitudinally of the alley; a latch for locking said member; a series of levers for moving said member against its spring from the opposite end of the alley; an inclined trough running longitudinally of the alley and adapted to deliver a ball in the path of said member and release said latch, substantially as described.

4. The combination of the alley-board, an inclined trough with the image, K, detachably mounted on said board and provided with the spring-pushed member, *j*; the spring-latch, *q*, for locking said member having its free end registering with the mouth of said trough and the levers, *k*, *p*, for returning said member to receive the latch, substantially as described.

5. The combination with the alley-board and pins of the image, K, having the spring-pushed member, *j*, the spring latch, *q*, for locking said member; the inclined trough, J, opening at the free end of said latch; the levers, *k*, *p*, connecting said member and board and the spring-returned push-bar, *s*, for actuating said levers all being arranged to operate substantially as described.

**505,537. APPARATUS FOR THE MANUFACTURE OF GAS.** JAY M. ROSE, Allegheny, Pa. Filed Jan. 6, 1890. Serial No. 336,011. (No model.)



*Claim.*—1. A gas making apparatus having a horizontal casing provided with a series of vertical casings depending therefrom, said casings being suitably lined, and having a division wall extending across said horizontal casing, between the vertical casings so as to divide it into chambers, and one of said chambers being provided with horizontal retorts or pipes supported in one wall of the casing, and the division wall, and said chambers having suitable supply and exhaust ports communicating therewith, substantially as and for the purposes set forth.

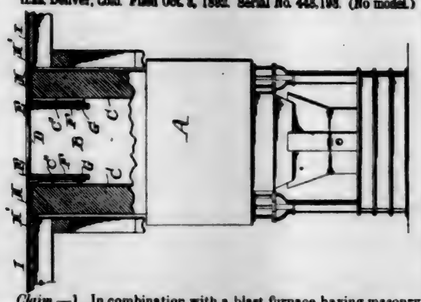
2. A gas making apparatus having a horizontal casing and a series of vertical casings depending therefrom, said casings being suitably lined, and having a division wall extending across the horizontal casing, and so dividing the apparatus into two vertical chambers, such as D, E, one of more horizontal cylinders extending through the vertical chamber D and communicating with the chamber E, and a pipe leading from the end or ends of said cylinders and communicating with the upper part of said vertical chamber D, substantially as and for the purposes set forth.

3. A gas making apparatus having the vertical chambers D E, the horizontal cylinders F extending across the chamber D, and having steam entrances A at their outer ends, and the pipe G communicating with the outer end or ends of the cylinders F and with the upper end of the chamber D, substantially as and for the purposes set forth.

4. The herein described gas apparatus formed of the horizontal casing A, having a series of vertical casings depending therefrom, said casings being suitably lined, division walls $c$ $c^2$ $c^3$ in the horizon-

tal casing, so dividing the apparatus into the four chambers D D' E E', the horizontal cylinders F, F', and communicating pipes G, G', and L between said several chambers, substantially as and for the purpose set forth

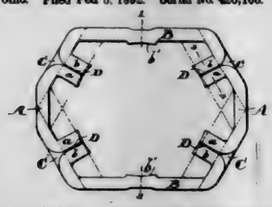
## 505,538. BLAST-FURNACE. DENNIS SHEEDY and MALVERN W. ILES, Denver, Colo. Filed Oct. 8, 1892. Serial No. 448,193. (No model.)



*Claim.*—1. In combination with a blast furnace having masonry walls, one or more iron plates F having hooks H secured to them, said hooks being adapted to extend over the top of the walls and sustain the plates F on the inside thereof, substantially as and for the purpose specified.

2. In combination with a blast furnace having masonry walls, one or more cast iron plates F having wrought iron bands G riveted to them and having hooks H secured to them, said hooks being adapted to extend over the top of the walls and sustain the plates F on the inside thereof, substantially as and for the purpose specified.

## 505,539. FIELD-MAGNET CORE FOR DYNAMOS OR MOTORS. GEORGE S. STRONG, New York, N. Y., assignor to James N. Gamble, Cincinnati, Ohio. Filed Feb. 3, 1892. Serial No. 420,166. (No model.)



*Claim.*—1. A field magnet core for dynamos and electric motors having an elongated form with two salient poles on each of its shorter sides and a consequent pole on each of its longer sides.

2. A field magnet core for dynamos and electric motors consisting of two sets of long bars B B with inwardly-curved ends *b* and consequent poles *b'* formed in their centers, and two sets of shorter bars A A having inwardly-curved ends *a* adapted to abut against the ends *b* of the bars B, the abutting ends *a b* forming salient poles of the field magnet, all substantially as and for the purpose specified.

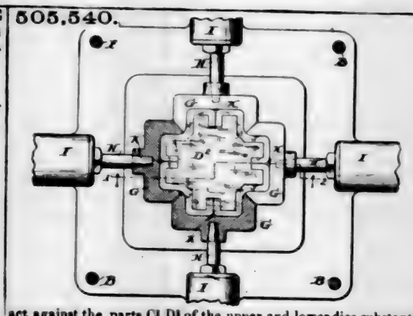
3. A field magnet core for dynamos or electric motors consisting of a series of bars bent to a horseshoe form and abutted together so that their bent ends will form poles, in combination with insulating material inserted between the bent ends which form parts of each pole and tie-plates outside of the insulating material and extending between the bars of adjoining sets substantially as described.

## 505,540. FORGING-DIE. GEORGE S. STRONG, New York, N. Y., assignor to James N. Gamble, Cincinnati, Ohio. Filed Feb. 11, 1892. Serial No. 421,108. (No model.)

*Claim.*—1. The combination of the dies C' C³ and D' D³ movable to and from each other as specified with a series of dies G G &c., movable in a plane at right angles to the line of movement of dies C' C³, D' D³ and adapted to surround and act against the parts C³ D³ of said dies.

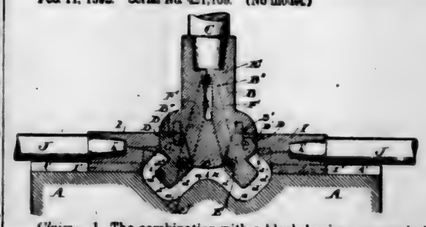
2. The combination of the dies C' C³ and D' D³ movable to and from each other as specified and having the sides of parts C³ D³ tapered outward as described, with a series of dies G, G, &c., movable in a plane at right angles to the line of movement C' C³ D' D³ and adapted to surround and act against the parts C³ D³ of said dies.

3. The combination of a fixed upper die C' C³ a movable lower die D' D³ and a series of horizontally movable dies G, G &c., arranged to move vertically with the die D' D³, said dies G being adapted to



act against the parts C³ D³ of the upper and lower dies substantially as and for the purpose specified.

## 505,541. FORGING AND BENDING DIE. GEORGE S. STRONG, New York, N. Y., assignor to James N. Gamble, Cincinnati, Ohio. Filed Feb. 11, 1892. Serial No. 421,109. (No model.)



*Claim.*—1. The combination with a block having a recess in its face to form a female die A, of a male die B' having movable die sections D D secured thereto and independent lateral dies I I substantially as and for the purpose specified.

2. The combination with a block having a recess in its face to form a female die A, of a male die B' having movable die sections D D secured thereto and independent lateral dies I I secured to and movable along the die A substantially as and for the purpose specified.

3. The combination with a block having a recess in its face to form a female die A, of a male die B' having movable sections D secured thereto and independent dies I I moving substantially at right angles to the movement of the dies B' D D and operating to push the ends of the bar under treatment over the upper faces of the die sections D D.

4. The plunger B having one or more slots in combination with die sections D D constituting with it at a plunger or male die, links F F pivotally secured to sections D and plunger B, but longitudinally movable with respect to the plunger, the female die A and the lateral dies I I arranged to push the ends of a bar under treatment over the upper faces of the die sections D D.

5. The plunger B having one or more slots in combination with die sections D D constituting with it a plunger or male die, links F F pivotally secured to sections D and plunger B, but longitudinally movable with respect to the plunger, means substantially as described operating to lock the die sections D to the plunger and to release them when the plunger moves up, the female die A, and the lateral dies I I arranged to push the ends of a bar under treatment over the upper faces of the die sections D D

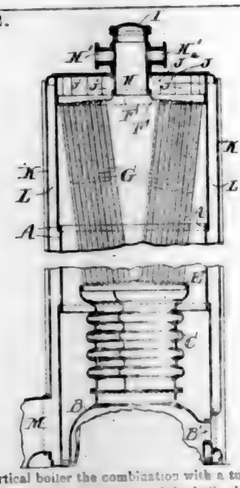
## 505,542. BOILER. GEORGE S. STRONG, New York, N. Y., assignor to James N. Gamble, Daytona, Fla. Filed Sept. 19, 1892. Serial No. 446,329. (No model.)

*Claim.*—1. In a vertical boiler the combination of a tube sheet above the fire-box with a tube sheet at the top of the boiler having a central opening F³ and a series of tubes extending obliquely upward from the lower tube sheet to the upper tube sheet, said series of tubes being arranged radially from the center of the tube sheets substantially as specified, so that a proper tool can be inserted through the opening F³ to clean the tubes.

2. In a vertical boiler the combination with a tube sheet above the fire-box, of a tube sheet at the top of the boiler having a central opening F', a series of tubes extending obliquely upward in radial lines from the lower tube sheet, a smoke chamber J³ into which the tubes discharge and a jacket L opening from the chamber J³ and surrounding the boiler substantially as described.

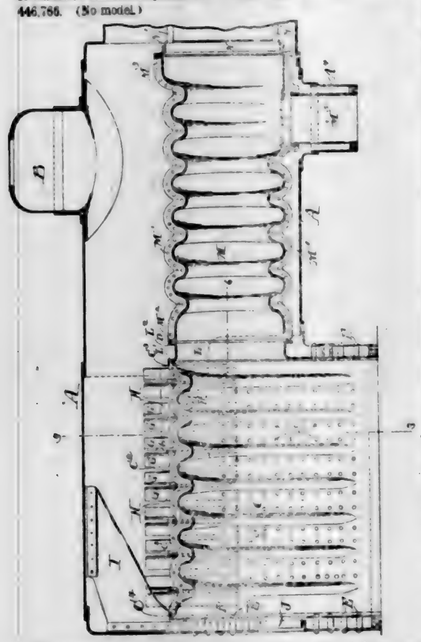


## 505,542.



3. In a vertical boiler the combination with a tube sheet above the fire-box of a tube sheet at the top of the boiler having a central opening, a series of tubes extending obliquely upward from the lower tube sheet to the upper tube sheet a smoke chamber J³ into which the tubes discharge and a jacket surrounding the boiler and connecting with the smoke chamber J³ and serving as a conduit for the escaping smoke and gases.

## 505,543. BOILER. GEORGE S. STRONG, New York, N. Y., assignor to James N. Gamble, Daytona, Fla. Filed Sept. 24, 1892. Serial No. 446,786. (No model.)



*Claim.*—1. In a boiler a fire-box having corrugated sheet metal walls and its crown formed by extending its walls in an arch shape and forming them with flanges C⁴ where they abut and form a joint, said flanges following the corrugated outline of the sheets, so that the corrugations extend to and along the joint and an unbroken surface is presented in the fire-box.

2. In a boiler a fire-box formed of two corrugated metal sheets, having flanges along their top edges forming a seam at the top of the fire-box crown the flanges following the corrugations of the plates so that the corrugations extend to and along the seam and an unbroken surface is presented in the fire-box substantially as specified.

3. In a boiler the combination of a boiler shell, a fire box having corrugated walls and a crown formed by extending said walls in an arch form until they meet and form a seam as described, and stay links F secured to said seam inside the boiler and to the boiler walls substantially as specified.

4. In a boiler a combustion chamber M formed of metal plates corrugated in the center and having flanged edges M' where they abut together, said flanged edges following the corrugations of the plate whereby an unbroken surface is presented substantially as and for the purpose specified.

5. In a boiler the combination of the fire box with a throat plate L forming seams with the rear ends of the fire-box plates and having its rear edge flanged and a combustion chamber M formed of plates flanged as described to form an Adamson seam with the rear flange of the throat plate.

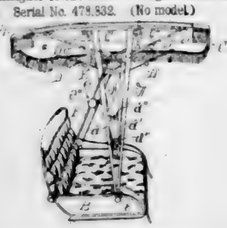
6. In a boiler the combination of a fire box formed of two corrugated sheets bent to form the sides and crown of the fire-box and forming a seam along the crown thereof with a combustion chamber M formed of two corrugated sheets flanged at M' and abutted together substantially as specified

7. In a boiler a corrugated sheet metal fire-box, in combination with the boiler shells and stays E—F uniting the shells and the walls of the fire-box, said stays consisting of tubes F against which the walls of the shell and fire-box rest and rivets E extending through said walls and having their heads E² formed with perforations E' substantially as and for the purpose specified.

8. In a boiler the combination with the shell, of a fire box having its crown formed of two corrugated sheets of metal flanged where they meet at the center of the crown, said flanges being corrugated so that the corrugations extend to and along the seam, and stay rods H secured to the shell of the boiler and extending through the lower corrugations at the top of the flanges forming the seam.

9. A boiler stay consisting of a tube F adapted to abut against and engage with the walls or shell which it is desired to stay and a rivet E adapted to extend through the tube F and through suitable holes in the boiler walls, said rivets having perforations E' in the ends of a suitable depth whereby when a suitable tool is inserted in the perforations E' the rivet will be expanded to fill the holes in the boiler walls and heads E² formed substantially as specified.

## 505,544. CANOPY-TOP FOR VEHICLES. JESSE U. TABOR, Los Angeles, Cal., assignor to the Tabor Carriage Works, same place. Filed June 26, 1893. Serial No. 478,832. (No model.)



*Claim.*—1. In a canopy top, the combination of a support pivoted at its lower end to a vehicle and adapted to stand upright to support the canopy and to be lowered to lower the canopy; a suitable supporting hinge brace pivoted at one end to the vehicle and pivoted at its other end to the support and adapted to hold the support upright and to allow it to be swung upon its pivot to lower the canopy; a main canopy body attached to the top of such support and extending across the vehicle; two canopy shade leaves hinged respectively one upon each side of such main body and adapted to stand at an angle with such canopy support and to be folded upon such support, and suitable means adapted and arranged to hold such leaves elevated and to allow them to be folded upon the support.

2. In a canopy top having a suitable support hinged at its lower end to a vehicle and having a hinge brace pivoted at one end to the vehicle and pivoted at its other end to the support and adapted to hold such support upright and to allow it to be swung upon its pivot to lower the canopy, and having a canopy shade leaf adapted to be folded upon such support or to be held at an angle thereto, the combination therewith of a canopy shade leaf hinge brace pivoted at one end to such shade leaf and having its other end operatively connected with the canopy support hinge brace and adapted and arranged to be operated by such brace to cause the leaf to stand at an angle to the support when the support is in its upright position, and to cause

such leaf to fold against the support when the support is lowered.

3. In a canopy top, the combination of the canopy support pivoted at its lower end to a vehicle and adapted to stand upright to hold the canopy elevated and to be swung upon its pivot to lower the canopy; a suitable hinge brace pivoted at one end to the vehicle and pivoted at its other end to the support and adapted to be extended to hold the support in its upright position and to double upon itself to allow the support to be swung upon its pivot to lower the canopy, a suitable canopy secured to such support and comprising a main body and a leaf hinged to such main body, such leaf being adapted and arranged to stand at an angle to the support and to be folded thereagainst; and suitable operative means adapted and arranged to hold such leaf at an angle with such support when the support is in its upright position, and adapted and arranged to hold such leaf folded against the support when such support is in its lowered position.

4. In a canopy top, the combination of the canopy support pivoted at its lower end to a vehicle and adapted to stand upright to hold the canopy elevated and to be swung upon its pivot to lower the canopy; a suitable hinge brace pivoted at one end to the vehicle and pivoted at its other end to the support and adapted and arranged to hold the support in its upright position and to allow it to be swung upon its pivot to lower the canopy; a suitable canopy secured to such support, and comprising a main body and a leaf hinged to such main body, such leaf being adapted and arranged to stand at an angle to the support and to be folded thereagainst; suitable operative means connecting such leaf with the support hinge brace, and adapted and arranged to cause such support hinge brace to operate to hold such leaf at an angle with the support when the support is in its upright position, and to fold such leaf against the support when such support is in its lowered position.

5. In a canopy top, the combination of the two canopy supports arranged one upon each side of a vehicle and each pivoted at its lower end to the vehicle and adapted to stand upright to hold the canopy elevated and to be swung upon its pivot to lower the canopy; two suitable hinge braces, arranged one upon each side of the vehicle and each pivoted at one end to the vehicle and pivoted at its other end to its respective support and adapted to be extended to hold such support in its upright position and to double upon itself to allow such support to be swung upon its pivot to lower the canopy, a canopy comprising a main body and two leaves, such leaves being hinged respectively one upon each side of such main body, the main body being secured to the canopy supports and such leaves being adapted to stand at an angle to such supports and to be folded thereagainst, and suitable operative means adapted and arranged to hold such leaves at an angle to the supports and to allow them to be folded thereagainst.

6. In a canopy top, the combination of the two canopy supports arranged one upon each side of a vehicle and each pivoted at its lower end to the vehicle and adapted to stand upright to hold the canopy elevated and to be swung upon its pivot to lower the canopy; two suitable hinge braces arranged one upon each side of the vehicle and each pivoted at one end to the vehicle and pivoted at its other end to its respective support and adapted to stand upright to hold the canopy elevated and to be swung upon its pivot to lower the canopy; two suitable hinge braces arranged one upon each side of the vehicle and each pivoted at its other end to the support and adapted to be extended to hold such support in its upright position and to double upon itself to allow such support to be swung upon its pivot to lower the canopy; a canopy comprising a main body and two leaves, such leaves being hinged respectively one upon each side of such main body, the main body secured to the canopy supports and such leaves being adapted to stand at an angle to such supports and to be folded thereagainst, and suitable operative means adapted and arranged to hold such leaves at an angle to the supports and to allow them to be folded thereagainst; the brace connections comprising a collar adapted to fit upon the upper pivot of the support of the hinge brace and provided upon one side with a suitable seat adapted and arranged to seat the canopy support hinge brace arm therein and provided upon its other side with a seat adapted and arranged to seat the canopy leaf hinge brace arm, one of such seats being wider than its respective arm to allow a slight rotation of one brace with relation to the other brace.

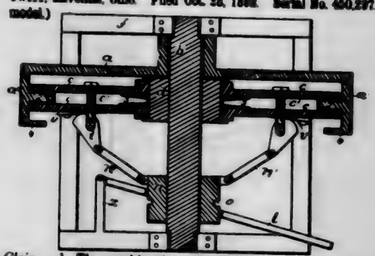
8. In a folding canopy top, the combination of the main body; the canopy shade-leaf hinged to such main body by a hinge arranged on the lower side of such body, a joint closing strip having one of its edges secured to the top of the main body, and having its other edge secured to the top of the leaf, and having its body folded upon itself and arranged depending between the opposing edges of the main body and the leaf, and the molding, arranged to cover the joint between the body and the leaf when the leaf is raised.

9. In a canopy top the combination of the main body, the canopy shade-leaf hinged to such body and provided at each end with the joint stop projecting from the inner edge of such leaf to engage the main body to hold the edges of the two members apart intermediate the stops.

10. In a folding canopy top having a canopy support hinge brace and a canopy shade leaf hinge brace each pivoted by one end upon the same pivot, the brace coupling comprising a collar adapted to fit upon said pivot between the two braces and provided in one side with the brace receiving seat adapted to receive and seat the shade-leaf hinge-brace therein, and provided upon its other side with the brace receiving seat adapted and arranged to receive and seat the canopy-support hinge brace therein, one of such brace seats being larger than its respective brace and arranged and adapted to allow slight rotation of one brace arm with relation to the other brace arm.

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**505,545. CLUTCH.** STEPHEN A. TROWBRIDGE and CHARLES E. TWITT, Ravenna, Ohio. Filed Oct. 28, 1892. Serial No. 450,297. (No model.)



*Claim.*—1. The combination of a shaft, grippers; cams and sliding collar, adapted to rotate with each other springs to move said grippers; adjustable wedges between said cams and grippers, a loose wheel on said shaft, formed with a flange extending between said grippers,—said collars, cams, and grippers being connected and arranged to cause the latter to clutch and release said flange.

2. The combination of shaft *b*; loose wheel *a* formed with flanges 2 and 4 at right angles to said shaft; flange 2 being intermediate flange 4 and the web of wheel *a*, sliding collar *n* and grippers *c*, arranged and adapted to cause the latter to clutch and release flange 2, substantially as described.

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**505,546. CARPET STRETCHER AND TACKER.** GEORGE W ASHLEY, Medical Lake, Wash. Filed Apr. 3, 1893. Serial No. 468,865. (No model.)



*Claim.*—1. In combination with the part having the guideway, a driver having a recess in its under side to receive a tack head, and guides carried by it leading from said guide way, substantially as described.

2. In combination with a driver having a guide-way leading to it, a tack feeding device in said way actuated by the driver a reciprocable tube covering said guide-way and slotted on its under side and connected between said device and said tube.

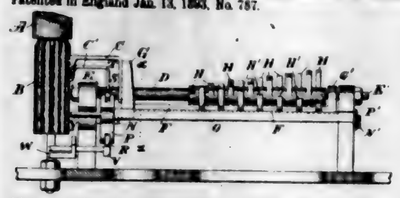
3. In combination, the handle A, the open bottom part B, the guide-way in said parts, the feed device co-operating therewith, the driver having guiding extensions on its lower end leading to a recess to receive the tack-head, the lugs on the driver engaging grooves in the sides of the part B, the notch in the outer end of said part, and



the spurs on the lower front corners of said part, substantially as shown and described and for the purpose specified.

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**505,547. TYPE-WRITING MACHINE.** JOHN GARDNER, Manchester, England. Filed Feb. 3, 1893. Serial No. 460,905. (No model.) Patented in England Jan. 13, 1893, No. 787.



*Claim.*—1. In a typewriting machine the combination with a shaft, of a quadrant gear carried thereby, an inclined series of contact points on both sides of said shaft, and an oscillating bar hung on said shaft and having an inclined series of contact points on both sides of said bar, substantially as described.

2. In a typewriting machine the combination with a shaft, of a quadrant gear carried thereby, an inclined series of contact points on both sides of said shaft, an oscillating bar hung on said shaft, an inclined series of contact points on both sides of said bar alternating with those on the shaft, and a quadrant gear carried by said bar and concentric with the gear on the shaft, substantially as described.

3. In a typewriting machine the combination with the shaft D having the wings H projecting alternately from each side thereof, and having their tips in a plane inclined toward one end of the shaft, of the bar F hung on the shaft D and carrying the alternating wings H' on both sides, whose tips lie in a plane inclined toward the other end of the shaft, said wings H' each lying opposite a wing H, substantially as described.

4. In a typewriting machine the combination with a shaft, of the cam plate T, thereon, having two shoulders upon its periphery, two rocking frames on either side of said cam, an arm on each frame adapted to engage with a shoulder on the cam, and springs for holding said arms normally in contact with the cam to lock the shaft, substantially as described.

5. In a typewriting machine the combination with a shaft, of the cam plate T thereon, having two shoulders, two rocking frames on either side of said shaft, an arm on each frame engaging a shoulder on the cam, a stud projecting from each frame, and a lever adapted to be actuated by the stud upon the rocking of either frame, substantially as described.

6. In a writing machine of the type herein set forth, keys having formed thereon stops arranged to co-operate with an inclined series of contact points on an oscillating bar or lever for the purpose of arresting the motion of the type cylinder, substantially as hereinbefore described and as illustrated by the accompanying drawings.

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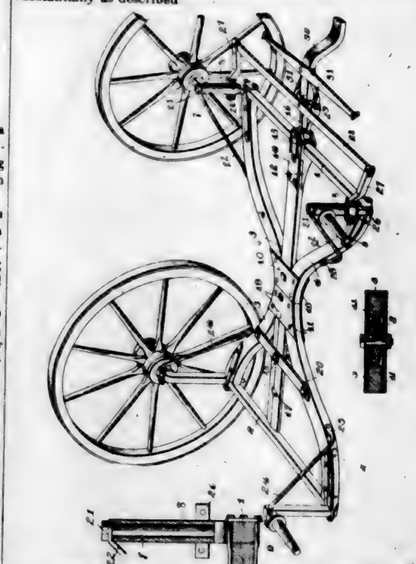
**505,548. VEHICLE RUNNING-GEAR.** CLARENCE E. HOLLEY, Presque Isle, Me. Filed Feb. 13, 1893. Serial No. 462,087. (No model.)

*Claim.*—1. In a drop or crank axle farm or truck wagon, the combination of front and rear axles, the front and rear hounds, upper and lower plates secured to the adjacent ends of the hounds, a reach secured to the front axle and having its rear portion tapered toward its edges and provided with transversely enlarged perforations, whereby the rear axle is permitted a limited rocking movement, and a bolt passing through the plates of the rear hounds and arranged in one of the perforations of the reach, substantially as and for the purpose described.

2. In a drop or crank axle farm or truck wagon, the combination of front and rear axles, the front and rear hounds secured to the axle, the upper and lower plates connecting the adjacent ends of the hounds, cross-bars connecting the rear hounds, the reach connected with the front axle and having its rear portion tapered toward its longitudinal edges and provided with enlarged perforations having tapering or countersunk ends, whereby a limited rocking movement is permitted, and bolts passing through the cross-bars and the plates of the rear hounds and arranged in perforations of the reach, substantially as and for the purpose described.

3. In a drop or crank axle farm or truck wagon, the combination of the front and rear crank axles, wheels, a removable platform mounted on the axles and provided at its rear end with keepers, a brake-bar arranged in the keepers and terminating short of the wheels, rearwardly and outwardly curved arms secured to the ends of the brake-bar and carrying brake-shoes arranged in rear of the hind wheels, and means for actuating the brake-bar for applying the brake, substantially as described.

4. In a drop or crank axle farm or truck wagon, the combination of the front and rear crank axles, wheels, the removable platform mounted on the axles and provided near their rear ends at opposite sides with plates having shoulders fitting against the front faces of the rear axle, keepers arranged on the platform at the rear end thereof, a brake bar arranged in the keepers and terminating short of the wheels, the rearwardly and outwardly curved arms secured to the brake-bar and carrying brake-shoes arranged in rear of the hind wheels, and a rock-shaft arranged at the front of the platform and provided with a handle or lever and connected with the brake-bar, substantially as described.

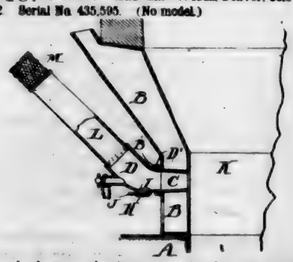


5. In a drop or crank axle farm or truck wagon, the combination of the front and rear crank axles, the front axle being provided with vertical spindles and having horizontal wheel spindles with sleeves arranged on the vertical spindles, front and rear hounds, a reach, the inclined braces extending from the hounds to the top of the axles, ears arranged on the outer face of said sleeves, forwardly extending angle arms secured to the sleeves by bolts passing through the ears thereof, a casing secured to the front axle and receiving the front end of the reach, a shifting cross-bar pivotally connected to the front ends of the angle arms, a swinging draft-iron pivoted in the casing and connected with the cross-bar and provided with forwardly extending eyes, and a tongue having a horizontal pin arranged in said eyes and provided with divergent arms supporting the pin, substantially as described.

6. In a drop or crank axle farm or truck wagon, the combination of the front and rear drop axles, wheels, and a removable platform mounted on the axles and extending forward beyond the front axle and provided with stops to engage the rear axle, substantially as described.

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**505,549. TUYERE.** MALVERN W. ILES, Denver, Colo. Filed June 6, 1892. Serial No. 435,595. (No model.)

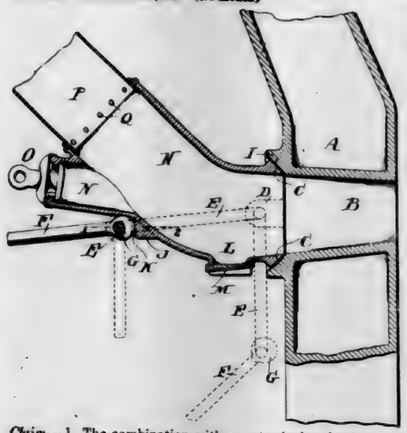


*Claim.*—1. A tuyere having an opening I in its bottom, and lugs H provided with opposing recesses extending out beneath said opening substantially as and for the purpose specified.

2. The combination of a water jacket having a passage C extending through it, and lugs B' provided with opposing tapered recesses on its outer face, of a tuyere point D having tapered flanges adapted to fit in lugs B' and a passage registering with passage C, substantially as specified.

3. A tuyere having an opening I in its bottom and lugs H provided with opposing recesses extending out beneath said openings and a plate as J held by the lugs over the opening I and adapted to be destroyed at a temperature which will not affect the tuyere body, substantially as and for the purpose specified.

## 505,550. TUYERE. MALVERN W. ILES, Denver, Colo. Filed Aug. 27, 1892. Serial No. 444,300. (No model.)



*Claim.*—1. The combination with a water jacket having an air passage B formed through it, and a beveled face C on the outer rim of said passage, lugs secured to the water jacket on either side of the air passage B, a link pivoted in said lugs, and a lever F with a cam shaped head G pivoted on said link, of a tuyere having a face I and adapted to register and form a joint with the face C, and a shoulder J arranged opposite to the face I, whereby when the link E is swung around across the shoulder J the face I of the tuyere may be firmly held against the face C on the outer wall of the water jacket.

2. The combination with a water jacket having an air passage B formed through it, and a beveled face C on the outer rim of said passage, lugs cast integral with the water jacket on either side of the air passage B, a link formed of a single bar bent V shaped pivoted in said lugs, and a lever F with a cam-shaped head G pivoted on said link, of a tuyere having a face I and adapted to register and form a joint with the face C and a shoulder J arranged opposite to the face I whereby when the link E is swung around across the shoulder J the face I of the tuyere may be firmly held against the face C on the outer wall of the water jacket.

## 505,551. METHOD OF TREATING SLAG. MALVERN W. ILES, Denver, Colo. Filed Feb. 21, 1893. Serial No. 463,209. (No specimens.)

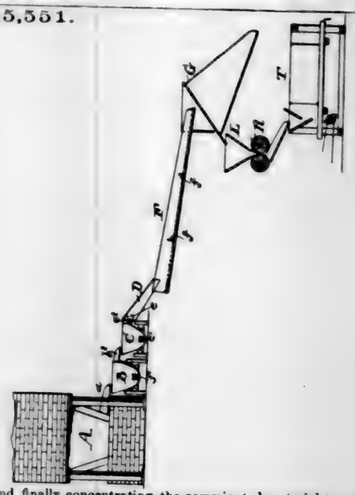
*Claim.*—1. The method of separating matte and metalliferous particles from slag which consists in granulating the slag by mixing it while hot with water crushing the granulated slag and concentrating the crushed material to separate the heavier metalliferous particles.

2. The method of treating slag to separate matte and other metalliferous particles which consists in conducting the heated slag and matte through several settling pots to effect a separation of matte by subsidence granulating the impoverished slag by mixing it while hot with cold water and concentrating the comminuted particles to separate the metalliferous particles from the slag.

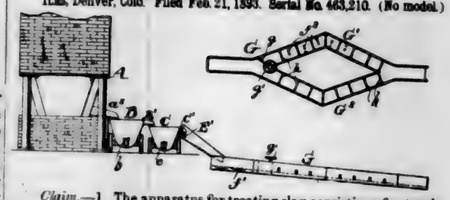
3. The method of separating matte and metalliferous particles from slag which consists in granulating the slag by running it in a melted condition into a rapidly moving stream of water, carrying away the granulated slag by means of said stream of water, separating the slag from the water, crushing the slag and finally concentrating the comminuted material to separate the matte and metalliferous particles.

4. The method of separating matte and metalliferous particles from slag which consists in granulating the slag by running it in a melted condition into a rapidly moving stream of water carrying away the granulated slag by means of said stream of water, separating the heavier matte containing granules in the conduit then crushing the slag and finally concentrating the comminuted material to separate the matte and metalliferous particles from the slag.

## 505,551.



## 505,552. APPARATUS FOR TREATING SLAG. MALVERN W. ILES, Denver, Colo. Filed Feb. 21, 1893. Serial No. 463,210. (No model.)



*Claim.*—1. The apparatus for treating slag consisting of a steeply inclined water chute where heated slag is mixed with the water to granulate it, a slag spout leading thereto, a second and nearly horizontal channel into which the first chute leads and riffles situated in said channel for separating the matte and metalliferous particles from the slag.

2. In an apparatus for treating slag the combination of a channel adapted to convey granulated slag and water and having two or more branches a gate in the channel whereby the water and slag can be directed into different branches at will and riffle bars in the level channel branches for arresting the metalliferous particles in the current of water.

3. An apparatus for treating slag consisting of a slag spout a steeply inclined water channel into which the slag spout leads, a second channel having branches and provided with riffle bars in said branches to arrest the metalliferous particles in the water current.

4. An apparatus for treating slag consisting of a slag spout opening over a steeply inclined water channel a second and nearly horizontal channel having branches, a gate to direct the current of water and slag into any branch desired and riffles in the branches to arrest the metalliferous particles carried by the water current.

## 505,553. CASH-REGISTER. WILLIAM KOCH, New York, N. Y., assignor, by mesne assignments, to the National Cash Register Company, of Dayton, Ohio. Filed July 15, 1891. Serial No. 399,640. (No model.)

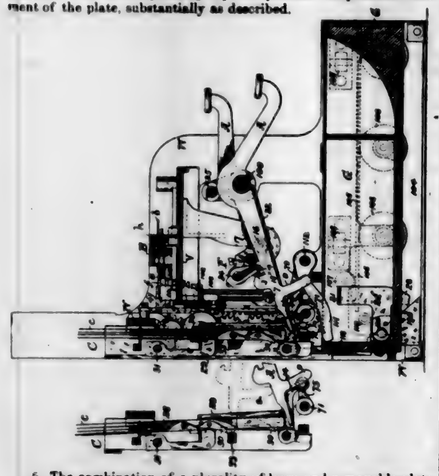
*Claim.*—1. The combination of a plurality of keys of different values and a differentially movable plate or frame actuated thereby, the differential movements of the plate being effected by a series of differential cam engaging surfaces between the keys and plate, each of said surfaces beginning and ending in portions in line with the strokes of the keys, substantially as described.

2. The combination of a plurality of keys of different values and a differentially movable plate or frame actuated thereby, said plate or frame being provided with a plurality of differential cam surfaces adapted to be engaged by the different keys and each beginning and ending in a portion in line with the stroke of the key, substantially as described.

3. The combination of a plurality of keys and a differentially movable plate or frame by means which connects the operated keys to the plate as soon as they engage it and prevents independent movement of the plate throughout the strokes of the keys, substantially as described.



4. The combination of a plurality of keys and a movable plate provided with a plurality of differentially inclined slots, each of said slots being of substantially the same width throughout its length and adapted to fit its co-operating key and prevent independent movement of the plate, substantially as described.



5. The combination of a plurality of keys and a movable plate provided with a plurality of differentially inclined slots, each of said slots being of substantially the same width throughout its length and adapted to fit its co-operating key, and each terminating at one end in a portion in line with the movement of the key, substantially as described.

6. The combination of a plurality of keys and a movable plate provided with a plurality of differentially inclined slots, each of said slots being of substantially the same width throughout its length and adapted to fit its co-operating key, and each terminating at both ends in portions in line with the movement of the key, substantially as described.

7. The combination of a plurality of operating key levers, and a longitudinally movable plate arranged transversely above the rear ends of said levers and provided with a plurality of differentially inclined slots, each slot being of substantially equal width throughout its length and adapted to fit its co-operating levers, substantially as described.

8. The combination of a plurality of operating key levers, and a longitudinally movable plate arranged transversely above the rear ends of said levers and provided with a plurality of differentially inclined slots, each slot being of substantially equal width throughout its length and adapted to fit its co-operating lever, and each terminating in vertical portions at its upper and lower ends, substantially as described.

9. The combination of a plurality of keys, a registering device adapted to register the sum of the values of the keys operated, a vertically arranged plate interposed between the keys and registering device and provided with a plurality of differentially inclined slots each of which is of substantially the same width throughout its length and adapted to fit its co-operating key, and means for compelling full strokes of the operated keys and thereby full proper movements of the slotted plate and registering device, substantially as described.

10. The combination of a plurality of keys, a registering device actuated by the keys and adapted to register the sum of the values of the keys operated, a differentially movable plate or frame interposed between the keys and registering device and engaged by the different keys throughout approximately equal portions of their strokes, means for compelling complete strokes of the operated keys, and a key stop permitting the operation of only one key at a time, substantially as described.

11. The combination of a plurality of keys arranged in independent banks, a key-controller common to said keys, for compelling complete strokes of the same, registering devices, actuated by the keys and two independent interposed differential plates, substantially as described.

12. The combination of a plurality of keys arranged in independent banks, a key-controller common to said keys, for compelling complete strokes of the same, a key stop permitting the movement of only one key in a bank at a time, registering devices, actuated by the keys and two independent interposed differential plates, substantially as described.

13. The combination of a plurality of keys, a fixed plate, a movable plate pivoted to a pair of links and guided upon the fixed plate, and provided with a plurality of differentially inclined slots adapted to co-operate with the different keys, substantially as described.

14. The combination of a plurality of keys, a plate having differentially inclined slots moved in one direction thereby, a spring for returning the plate to normal position, a ratch-bar moved by the plate, and a master-wheel of a registering device co-operating with the ratch-bar, substantially as described.

15. The combination of a key, a master-wheel a pawl moved by the key, and a cam moved by the keys and co-operating with the pawl for locking the master-wheel against movement while the key is at rest, substantially as described.

16. The combination of a plurality of keys, a differentially movable plate or frame actuated thereby, a master-wheel, a rack or ratch-bar actuated by the differentially movable plate and movable into and out of engagement with the master-wheel, and a cam actuated by the keys and co-operating with the rack to maintain it in engagement with the master-wheel during the movement of the plate in one direction, substantially as described.

17. The combination of a plurality of keys, a differentially movable plate or frame actuated thereby, a rack or ratch-bar pivoted to and moving with said plate, a master-wheel adapted to be engaged by the rack, a spring tending to hold the rack out of engagement with said wheel, and a cam actuated by the keys and co-operating with the rack to maintain the latter in engagement with the wheel during the movement of the plate in one direction, substantially as described.

18. The combination of a plurality of keys, a differentially movable plate or frame actuated thereby, a master-wheel, a rack or ratch-bar carried by the plate and movable into and out of engagement with the master-wheel, a rotary cam for maintaining it in engagement with said wheel during the movement of the plate in one direction, and means intermediate the cam and keys for rotating the former upon the operation of the latter, substantially as described.

19. The combination of a plurality of keys, a differential plate moved thereby, a registering device, connections between the plate and said device, a movable finger for insuring the positive movement of the registering device, a rotary cam, and connections between the keys and cam for converting the oscillations of the keys into a rotation of the cam, substantially as described.

20. The combination of a plurality of keys, a differential plate having a ratch-bar movable longitudinally, a master-wheel, and a movable finger for contact with the ratch-bar and against which the ratch-bar moves longitudinally, substantially as described.

21. The combination of a plurality of keys, a plurality of indicator rods actuated thereby, a fixed bar or support for the moved rod, and connections with the keys for disengaging the rod from the fixed support upon the succeeding operation of a key, substantially as described.

22. The combination of a plurality of keys, a plurality of indicator rods actuated thereby and mounted in a movable frame, a fixed bar or support for the moved rod, and connections between the keys and movable frame for moving the latter to disengage the elevated rod from the fixed support at the succeeding operation of a key, substantially as described.

23. The combination of a plurality of keys, a plurality of indicator rods actuated thereby, a fixed bar or support for the moved rod, a rotary cam for disengaging such rod from the fixed support at the succeeding operation of a key, and connections between the keys and cam for rotating the latter, substantially as described.

24. The combination of a plurality of keys, a plurality of indicators actuated thereby and mounted in a movable frame, a fixed bar or support for the moved rod, a rotary cam co-operating with the frame to disengage the moved rod from the fixed support at the succeeding operation of a key, and connections between the keys and cam for rotating the latter, substantially as described.

25. The combination of a plurality of indicating rods provided with detents, a fixed bar or support co-operating with the detents, a plurality of keys for actuating the rods, and connections with the keys for disengaging the detent of an elevated rod from the fixed support, to release the rod, upon the succeeding operation of a key, substantially as described.

26. The combination of a plurality of indicator rods provided with detents, a fixed bar or support co-operating with the detents, a plurality of keys for actuating the rods, and connections with the keys for moving an elevated rod laterally, to disengage its detent from the fixed support and release the rod, upon the succeeding operation of a key, substantially as described.

27. The combination of a plurality of indicator rods provided with yielding or spring detents, a fixed bar or support co-operating with the detents, a plurality of keys for actuating the rods, and connections with the keys for automatically disengaging the detent of an elevated rod from the bar or support upon the succeeding operation of a key, substantially as described.

28. The combination of a plurality of indicator rods provided with pivoted detent plates, a fixed bar or support co-operating with the detent plates, a plurality of keys for actuating the rods, and connections with the keys for automatically disengaging the detent plate of an elevated rod from the fixed support upon the succeeding operation of a key, substantially as described.

29. The combination of a plurality of indicator rods provided with detents and mounted in a movable frame, a fixed bar or support co-operating with the detents, a plurality of keys for actuating the rods, and connections between the keys and movable frame for moving the latter to disengage the detent of an elevated rod from the fixed support at the succeeding operation of a key, substantially as described.

30. The combination of a plurality of indicator rods provided with yielding detents and mounted in a movable frame, a fixed bar or support co-operating with the detents, a plurality of keys for actuating the rods, and connections between the keys and movable frame for moving the latter to disengage the detent of an elevated rod from the fixed support at the succeeding operation of a key, substantially as described.

31. The combination of a plurality of indicator rods provided with detents, a fixed bar or support co-operating with the detents, a plurality of keys for actuating the rods, a rotary cam for moving the rods laterally to disengage the detents of the elevated rods from the fixed support, and connections between the keys and cam for rotating the latter, substantially as described.

32. The combination of a plurality of indicator rods provided with yielding detents and mounted in a movable frame, a plurality of keys for actuating the rods, a rotary cam co-operating with the movable frame to disengage the detents of the elevated rods from the fixed support, and connections between the keys and cam for rotating the latter, substantially as described.

33. The combination of an indicator carried by a rod movable both vertically and laterally, and an operating key or lever and connections for positively moving said rod laterally, by power applied to said key substantially as described.

34. The combination of an indicator carried by a rod passed loosely through a fixed guide plate near its upper end and capable of swinging backward and forward at its lower end, and an operating key or lever for positively swinging the lower end of the rod out of vertical line, by power applied to said key substantially as described.

35. The combination of an indicator carried by a rod provided with a detent and passed loosely through a fixed guide plate near its upper end so as to swing backward and forward at its lower end, a fixed bar or support for the rod, and an operating key or lever for positively moving the lower end of the rod out of vertical line, by power applied to the key substantially as described.

36. The combination, in a cash register, of a plurality of keys, a movable bar or frame common to and uniformly moved by the different keys, a rotary member, as a shaft, and a mechanical movement between said rotary member and the movable bar or frame for converting the reciprocating movements of the latter into rotary movement in the former, and operating to give said rotary member one complete revolution at each operation of any one of the keys, substantially as described.

37. The combination, in a cash register, of a plurality of keys, a movable bar or frame common to and uniformly moved by the different keys, a rotary ratchet and co-operating pawl, and a mechanical movement between said ratchet and movable frame for converting the reciprocating movements of the latter into rotary movement in the former, whereby a full movement of said frame at each operation is insured, substantially as described.

38. The combination, in a cash register, of a plurality of keys, a movable bar or frame common to the keys and to which the different keys become attached when displaced from normal position, a rotary ratchet and co-operating pawl, and a mechanical movement between the movable frame and ratchet for converting the reciprocating movements of the former into rotary movement in the latter, whereby a full stroke of each operated key is insured, substantially as described.

39. The combination of a key, a key-controller including a rotary ratchet and co-acting pawl, and connections with the key for turning the ratchet, substantially as described.

40. The combination of a plurality of keys, a key-controller common thereto and including a rotary ratchet and co-acting pawl, and a mechanical movement between the keys and ratchet for converting the oscillation of the former into rotation of the latter, substantially as described.

41. The combination of a key, a key-controller including a rotary ratchet having a non-toothed portion and a co-acting pawl, and connections with the key for turning the ratchet, substantially as described.

42. The combination of a key, a key-controller including a rotary ratchet having two diametrically-opposite non-toothed portions and a co-acting pawl, and connections between the key and ratchet for turning the latter, substantially as described.

43. The combination, in a cash register, of a plurality of keys, a money-drawer, a latch for holding the same closed, connections between the keys and latch for releasing the drawer upon the operation of a key, and means actuated by the keys for positively forcing the drawer open after it is released, whereby upon operating a key the latch is first disengaged from the drawer and the latter then forced open by the power applied to the key, substantially as described.

44. The combination, in a cash register, of a plurality of keys, a money-drawer, a latch for holding the same closed, connections between the keys and latch for releasing the drawer upon the operation of a key, a movable bar or frame common to the keys, and a cam carried by said frame and co-operating with the drawer, to force it open when released, substantially as described.

45. The combination, in a cash register, of a plurality of keys, a money-drawer, a latch for holding the same closed, connections between the keys and latch for releasing the drawer upon the operation of a key, a movable bar or frame common to the keys, and a plate having a vertically inclined edge carried by said frame and co-operating with a roller upon the drawer to force the latter open when released, substantially as described.

46. The combination, in a cash register, of a plurality of keys, a money drawer, a latch for holding the same closed, a movable bar or frame common to the keys, connections between said frame and latch for releasing the drawer upon the operation of a key, and a cam actuated by said frame to force the drawer open when released, substantially as described.

47. The combination, in a cash register, of a plurality of keys, a money-drawer, a latch for holding it closed, a cam co-operating with the latch to release the drawer, a second cam co-operating with the drawer to force it open when released, a movable bar or frame common to the keys, and connections between said frame and the cams for actuating the latter to release the drawer and force it open, substantially as described.

48. In a cash register, the combination of the drawer-compartment having the supporting rollers 106 and the rollers 107 mounted upon its opposite walls, the reciprocating money-drawer G having the flanges 105 secured to its opposite sides, said flanges resting upon the rollers 106 and passing beneath the rollers 107, the operating keys and the vertically reciprocating cam plates 109 actuated thereby and co-operating with the drawer to force it open, substantially as described.

49. In a cash register, the combination of the drawer compartment having the supporting rollers 106 and guide rollers 107 and 108 mounted upon its opposite walls, the reciprocating money-drawer G having the flanges 105 secured to its opposite side, said flanges resting upon the rollers 106 and passing beneath the rollers 107, the operating keys, and the vertically-reciprocating cam plates 109 actuated thereby and co-operating with the rollers 110 upon the drawer to force it open, substantially as described.

50. The combination, in a cash register, of a plurality of keys, a money-drawer, a latch therefor, a rotary cam co-operating with the latch to release the drawer, and a connection between the keys and cam for completely rotating the latter, substantially as described.

51. The combination, in a cash register, of a plurality of keys, a money-drawer, a latch therefor, a rotary cam co-operating with the latch to release the drawer, a movable bar or frame common to all of the keys, and a connection between said frame and the cam for completely rotating the latter upon the operation of a key, substantially as described.

52. The combination, in a cash register, of a plurality of keys arranged in two separate sets, a money-drawer, a single latch therefor, two independently rotating cams, one for each set of keys co-operating with said single latch, to release the drawer upon the operation of a key in either set, and connections between the cams and respective sets of keys for rotating the cams, substantially as described.

53. The combination, in a cash register, of a plurality of keys, a money-drawer, a latch therefor, a rotary cam co-operating with the latch to release the drawer, a connection between the keys and cam for rotating the latter, and means actuated by the keys for forcing the drawer open when released, substantially as described.

54. The combination, in a cash register, of a plurality of keys, a money-drawer, a latch therefor, a rotary cam co-operating with the latch to release the drawer, a reciprocating cam for forcing it open when released, a movable bar or frame common to the keys, and connections between said frame and the two cams for rotating one and reciprocating the other, to release the drawer and force it open, substantially as described.



55. The combination of an indicator carried by a rod movable both vertically and laterally, a money drawer, a latch for holding the same closed, an operating key or lever, and connections between said lever and the indicator-rod and drawer-latch for moving the former laterally and releasing the drawer by the same operation of the lever.

56. The combination of an indicator carried by a rod passed loosely through a fixed guide plate near its upper end and capable of swinging backward and forward at its lower end, a money-drawer, a latch for holding the same closed, an operating key or lever, and connections between said lever and the indicator-rod and drawer latch for swinging the rod out of vertical line and releasing the drawer by the same operation of the lever.

57. A drawer-compartment containing a suspended drawer, in combination with a vertically reciprocating cam for moving the drawer open and an upper roll taking the thrust of the cam upon the drawer, substantially as described.

58. The combination, in a cash-register, of a plurality of keys, locking devices permitting the operation of single keys but preventing the simultaneous operation of two or more, a money-drawer, and means co-operating with the drawer and locking devices to cause the latter to lock all of the keys when the drawer is opened, substantially as described.

59. The combination, in a cash register, of a plurality of keys, a plurality of movable stops co-operating with said keys to prevent the operation of more than one at the same time, a money drawer, and an arm or plate movable across the path of the stops when the drawer is opened and movable out of the path thereof by the drawer when the latter is closed, substantially as and for the purpose described.

60. The combination, in a cash register, of a plurality of keys, a plurality of laterally displaceable stops confined in a slotted guideway, for preventing operation of more than one key at a time, a money drawer, a locking arm or lever movable into position to lock the stops from displacement when the drawer is opened, and movable out of such locking position by the drawer when the latter is closed, substantially as and for the purpose described.

61. The combination, in a cash register, of a plurality of keys, a plurality of laterally displaceable stops confined in a slotted guideway, for preventing operation of more than one key at a time, a locking lever, a spring connected thereto for moving it into position to lock the stops from displacement, and a money drawer co-operating with the lever to maintain it out of locking position while the drawer is closed, substantially as and for the purpose described.

62. The combination, in a cash register, of a plurality of keys, a locking device permitting the operation of single keys but preventing the operation of two or more at the same time, a money-drawer, and a bell-crank lever interposed between said drawer and the locking devices, one arm co-operating with the former and the other with the latter, substantially as and for the purpose described.

63. The combination, in a cash register, of a plurality of keys arranged in two sets, independent locking devices co-operating with the keys of each set to prevent the operation of two keys in the same set at the same time but permitting the simultaneous operation of two keys in different sets, a money-drawer, and means co-operating with the drawer and with both sets of locking-devices to prevent operation of any keys in either set when the drawer is opened, substantially as described.

64. The combination, in a cash register, of a plurality of keys arranged in two separate sets or banks, a set of locking devices for each bank of keys, preventing simultaneous operation of two or more keys in the bank, a locking arm or lever for each bank of keys co-operating with its set of locking devices to lock all of the keys of the bank from operation, springs tending to move said levers into locking position, and a movable bar or frame common to all of the keys, normally holding said levers out of locking position, but arranged to release them upon the operation of a key, substantially as described.

65. The combination, in a cash register, of a plurality of keys, a plurality of indicators actuated thereby, a support therefor, a money-drawer, a latch therefor, a rotary shaft provided with cams co-operating with the indicators and drawer-latch, and connections between the keys and shaft for rotating the latter, substantially as described.

66. The combination, in a cash register, of a plurality of keys, a plurality of indicators actuated thereby, a money-drawer, a latch therefor, an alarm mechanism, a rotary shaft, cams carried thereby and co-operating with the drawer-latch and alarm mechanism, and connections between the keys and shaft for rotating the latter, substantially as described.

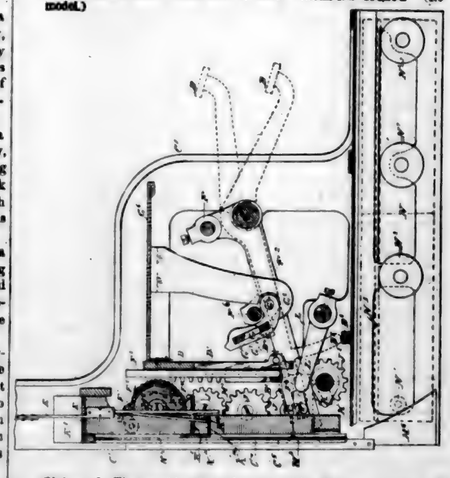
67. The combination, in a cash register, of a plurality of keys, a registering mechanism actuated thereby and consisting of an initial wheel having a fixed axis and a train of wheels normally in operative connection with the initial wheel and with each other but movable out of such relation, a series of swinging arms, one for each wheel except the initial one and upon which said wheels are respectively mounted, a series of springs bearing against said arms and tending to separate the wheels, a latch or holding device for maintaining the arms and wheels in normal position against the pressure of the springs, and a series of stops for limiting the movement of the arms under the action of the springs when the arms are released from the latch or holding device, whereby upon operating said device to release the arms the wheels become automatically separated and may be independently re-set to zero, substantially as described.

68. The combination of a plurality of keys provided with hooks, a movable bar or frame common to said keys, a swinging coupling bar hung in said frame and adapted to co-operate with the hooks upon the keys to couple the operated keys to such frame, and a cam co-operating with the coupling bar to positively engage the bar with the hook of the operated key at the beginning of the stroke of the latter and to disengage it from the key at the end of its stroke, substantially as described.

69. The combination of a plurality of keys provided with hooks, a movable bar or frame common to said keys, a swinging coupling bar hung in said frame and adapted to co-operate with the hooks upon the keys to couple the operated keys to such frame, and a cam co-operating with the coupling bar to positively engage the bar with the hook of the operated key at the beginning of the stroke of the latter and maintain them in engagement throughout the stroke of the key, and to disengage them at the end of the stroke, substantially as described.

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**505,554. CASH-REGISTER.** WILLIAM KOCH, New York, N. Y., assignor, by mesne assignments, to the National Cash Register Company, Dayton, Ohio. Filed Dec. 7, 1891. Serial No. 414,294. (No model.)



*Claims.*—1. The combination of a series of indicators, a series of pivoted key levers for shifting the respective indicators to set them for movement to indicating position, and means actuated by the keys for moving the set indicators to such position, substantially as described.

2. The combination of a series of indicators, a series of keys for shifting the respective indicators to set them for movement to indicating position, and a movable plate or frame actuated by the keys for moving the set indicators into such position, substantially as described.

3. The combination of a series of indicators, a series of keys operated upon their positive strokes to set the respective indicators for movement to indicating position, and a movable plate or frame actuated by the keys upon their negative strokes to carry the set indicators into indicating positions, substantially as described.

4. The combination of a series of indicators, a reciprocating plate or frame for moving them into indicating position, a series of keys for setting the respective indicators for movement by said frame, and means intermediate the keys and frame for moving the latter in one direction upon the positive stroke of a key, to withdraw the exposed indicator from indicating position, and in the opposite direction upon the negative stroke of the key to carry the set indicator to such position, substantially as described.

5. The combination of an indicator support movable both vertically and laterally, a pivoted key lever for moving said support laterally, to set it for movement into indicating position, and a lifter actu-

ated by the key to carry the support to indicating position, substantially as described.

6. The combination of a series of indicator supports movable both vertically and laterally, a series of keys for moving the respective supports laterally, to set them for movement into indicating position, and a movable plate or frame actuated by the keys to carry the set indicators to indicating position, substantially as described.

7. The combination of a series of indicator supports movable both vertically and laterally, a series of keys operating during their positive strokes to move the respective supports laterally, to set them for movement to indicating position, and a movable plate or frame actuated by the keys upon their return or negative strokes to carry the set indicators to indicating position, substantially as described.

8. The combination of a series of indicator supports movable both vertically and laterally, a series of keys for moving the respective supports laterally during the positive strokes of the keys, to set the supports for movement to indicating position, and a reciprocating plate or frame actuated by the keys and movable downward during their positive strokes, to release the exposed indicator, and upward during their negative strokes, to carry the set indicator to indicating position, substantially as described.

9. The combination of a series of indicator supports movable both vertically and laterally, a series of springs yieldingly holding them against lateral movement, a series of keys for moving the supports laterally against the stress of such springs, to set them for movement to indicating position, and means actuated by the keys for lifting the set indicators to indicating position, substantially as described.

10. The combination of a series of indicator supports movable both vertically and laterally, a series of springs yieldingly holding them against lateral movement, a series of keys for moving the supports laterally against the stress of such springs, to set them for movement to indicating position, and a reciprocating plate or frame actuated by the keys for lifting the set indicators to indicating position, substantially as described.

11. The combination of an indicator support, a key for setting said support for movement to indicating position, a spring or yielding contact piece between the key and support, and means actuated by the keys for moving the set indicator to indicating position, substantially as described.

12. The combination of an indicator support, a key carrying a spring or yielding contact piece adapted to engage the support when the key is operated and set it for movement to indicating position, and means actuated by the key to move the set indicator to indicating position, substantially as described.

13. The combination of a series of indicator supports, a series of keys operating through intermediate springs or yielding contact pieces to set the respective indicators for movement to indicating position, and a movable plate or frame actuated by the keys for moving the set indicators to indicating position, substantially as described.

14. The combination of a series of indicator supports, a series of keys carrying springs or yielding contact pieces adapted to engage the supports when the keys are operated and set them for movement to indicating position, and a movable plate or frame actuated by the keys for moving the set indicators to indicating position, substantially as described.

15. The combination of a series of indicator supports movable both vertically and laterally, a series of springs for yieldingly holding said supports against lateral movement, a series of keys carrying springs or yielding contact pieces adapted, to engage the corresponding support and set it for movement to indicating position, and a movable plate or frame actuated by the keys for moving the set indicators to indicating position, substantially as described.

16. The combination of a series of indicators, a lifting plate or frame for moving the same to indicating position, a series of keys for setting the respective indicators, a frame common to and moved by said keys, and a rack and pinion connection between the two frames for reciprocating them in opposite directions upon the operation of a key, substantially as described.

17. The combination of a series of indicator supports movable both vertically and laterally, a reciprocating lifting plate or frame for moving the same vertically, a series of keys for moving them laterally to set them for movement by the lifting frame, a movable frame common to and movable by the keys, and a rack and pinion connection between said frame and the lifting plate or frame for reciprocating them in opposite directions at the operation of a key, substantially as described.

18. The combination of a series of indicator supports movable both vertically and laterally, a series of springs yieldingly holding them against lateral movement, a reciprocating lifter frame or plate for moving them vertically, a series of keys for moving them laterally against the stress of their springs, to set them for movement by the lifter frame, a movable frame common to and actuated by the keys, and a rack and pinion connection between said frame and the lifter plate or frame for reciprocating them in opposite directions upon the operation of a key, substantially as described.

19. The combination of a series of indicator supports movable both vertically and laterally, a series of springs yieldingly holding them against lateral movement, a reciprocating lifting plate or frame for moving them vertically, a series of keys carrying springs or yielding contact pieces adapted to engage the supports and move them laterally against the stress of their springs, to set them for movement by the lifting frame, a movable frame common to and actuated by the keys, and a rack and pinion connection between said frame and the lifting plate or frame for reciprocating them in opposite directions upon the operation of a key, substantially as described.

20. The combination of a series of indicators, a lifting plate or frame for moving them to indicating position, a series of keys for setting them for movement by said frame, a rotary shaft and connections between the same and the lifting plate or frame for reciprocating the latter, and means intermediate the keys and shaft for rotating the latter by the operations of the keys, substantially as described.

21. The combination of a series of indicator supports movable both vertically and laterally, a reciprocating lifting plate or frame for moving the same vertically, a series of keys for moving them laterally to set them for movement by the lifting frame, a rotary shaft and connections between the same and lifting plate or frame for reciprocating the latter, and means intermediate the keys and shaft for rotating the latter upon the operations of the keys, substantially as described.

22. The combination of a series of indicator supports movable both vertically and laterally, a series of springs yieldingly holding them against lateral movement, a reciprocating lifting plate or frame for moving them vertically, a series of keys for moving them laterally against the stress of their springs, to set them for movement by the lifting frame, a rotary shaft and connections with the lifting plate or frame for reciprocating the latter, and means intermediate the keys and shaft for rotating the latter upon the operations of the keys, substantially as described.

23. The combination of a series of indicator supports movable both vertically and laterally, a series of springs yieldingly holding them against lateral movement, a reciprocating lifting plate or frame for moving them vertically, a series of keys carrying springs or yielding contact pieces adapted to engage the supports and move them laterally against the stress of their springs, to set them for movement by the lifting frame, a rotary shaft and connections with the lifting plate or frame for reciprocating the latter, and means intermediate the keys and shaft for rotating the latter upon the operations of the keys, substantially as described.

24. The combination of a series of vertically reciprocating indicator supports passed through apertures in two fixed guide plates, the apertures in the lower plate permitting lateral movement of the support, a reciprocating lifting frame for moving the supports vertically, a series of keys for moving them laterally into position for engagement by the lifting frame, and means intermediate the keys and said frame for reciprocating the latter, substantially as described.

25. The combination of a series of vertically reciprocating indicator supports passed through apertures in two fixed guide plates, the apertures in the lower plate permitting lateral movement of the supports, springs applied to said supports to yieldingly hold them against lateral movement, a reciprocating lifting frame for moving the supports vertically to indicating position, a series of keys for moving them laterally into position to be engaged by said frame, and means intermediate the keys and frame for reciprocating the latter, substantially as described.

26. In an indicating machine, the combination of a series of key levers representing different values and a series of corresponding indicators carried upon vertically sliding rods and arranged to be lifted into view upon the return or negative strokes of said levers.

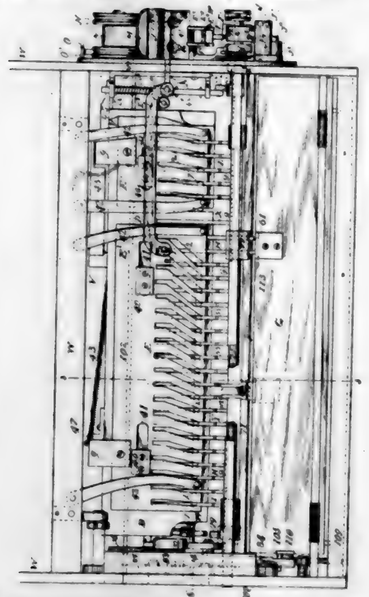
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**505,555. CASH REGISTER AND RECORDER.** WILLIAM KOCH, New York, N. Y., assignor, by mesne assignments, to the National Cash Register Company, Dayton, Ohio. Filed Feb. 29, 1892. Serial No. 423,553. (No model.)

*Claim.*—1. The combination of a differentially movable plate or frame, a plurality of operating keys of different values co-operating therewith to move the same different degrees proportionate to the values of the keys, and each key having a movement independent of the plate at the end of its positive stroke, a type carrier actuated by the movable plate, and a platen co-operating with the type carrier to effect the printing of the value of the operated key, substantially as described.

2. The combination of a differentially movable plate or frame, a plurality of operating keys of different values co-operating therewith to move the same different degrees proportionate to the values of the keys, and each key having a movement independent of the plate at the end of its positive stroke, a type-carrier actuated by the movable plate, a locking device co-operating with the type carrier and actuated by the operated key during its independent movement at the end of its positive stroke, and a platen co-operating with the type carrier during such independent movement of the key to effect the printing of the value of the latter, substantially as described.





3. The combination of a differentially movable plate or frame, a plurality of keys of different values co-operating therewith to move the same different degrees proportionate to the values of the keys, and each having a movement independent of the plate at the end of its positive stroke, a type carrier actuated by the movable plate, a platen co-operating with the type carrier, a spring for throwing the platen against the carrier to effect the printing, and means actuated by the keys for retracting the platen during the positive stroke of the operated key and releasing it during the independent movement of the key at the end of such positive stroke, substantially as described.

4. The combination of a differentially movable plate or frame, a plurality of keys of different values co-operating therewith to move the same different degrees proportionate to the values of the keys, and each key having a movement independent of the plate at the end of its positive stroke, a type carrier actuated by the movable plate, a locking device co-operating with the type carrier and actuated by the operated key during its independent movement at the end of its positive stroke, a platen co-operating with the type carrier, a spring for throwing the platen against the carrier, and means actuated by the operated key for retracting the platen during the positive stroke of the key and releasing it during the independent movement of the key at the end of such stroke, substantially as described.

5. The combination of a differentially movable plate or frame, a plurality of operating keys of different values co-operating therewith to move the same different degrees proportionate to the values of the keys, a type carrier actuated by the movable plate or frame, a platen co-operating with the type carrier, a rotary cam for actuating the platen, and means intermediate the keys and cam for rotating the latter, substantially as described.

6. The combination of a differentially movable plate or frame, a plurality of operating keys of different values co-operating therewith to move the same different degrees proportionate to the values of the keys, a type carrier actuated by the movable plate or frame, a platen co-operating with the carrier, a spring for throwing the platen against the carrier, a rotary cam for retracting the platen against the resistance of its spring, and means intermediate the keys and cam for rotating the latter, substantially as described.

7. The combination of a differentially movable plate or frame, a plurality of operating keys of different values co-operating therewith to move the same different degrees proportionate to the values of the keys, and each key having a movement independent of the plate at the end of its positive stroke, a type carrier actuated by the movable platen, a platen co-operating with the carrier, a spring for throwing the platen against the stress of its spring and means intermediate the keys and cam for rotating the latter, substantially as described.

8. The combination of a differentially movable plate or frame, a plurality of keys of different values co-operating therewith to move the same different degrees proportionate to the values of the keys, a type carrier actuated by the movable plate or frame, a platen co-operating with the type-carrier, a locking device co-operating with the carrier to lock it in its adjusted position while the printing is being effected, a rotary cam for actuating said locking device, and means intermediate the keys and cam for rotating the latter, substantially as described.

9. The combination of a differentially movable plate or frame, a plurality of operating keys of different values co-operating therewith to move the same different degrees proportionate to the values of the keys, a type carrier co-operating with the movable plate or frame a platen co-operating with the type carrier, a spring for throwing the platen against the carrier, a rotary cam for retracting the platen against the stress of the spring, a locking device co-operating with the carrier to lock it in adjusted position while the printing is being effected, a rotary cam for actuating said locking device, and means intermediate the keys and cams for rotating the latter, substantially as described.

10. The combination of a differentially movable plate or frame, a plurality of keys of different values co-operating therewith to move the same different degrees proportionate to the values of the keys, and each key having a movement independent of the plate at the end of its positive stroke, a type carrier actuated by the movable plate or frame, a platen co-operating with the carrier, a spring for throwing the platen against the carrier, a rotary cam for retracting the platen against the stress of its spring during the positive stroke of a key and releasing it during the independent movement of the key at the end of such stroke, a locking device co-operating with the type-carrier to lock it in adjusted position while the printing is being effected, a rotary cam co-operating with such locking device to effect the locking of the type carrier during the independent movement of the key at the end of its positive stroke, and means intermediate the keys and cams for rotating the latter, substantially as described.

11. The combination of a plurality of operating keys of different values, a differentially movable plate or frame actuated thereby and movable different degrees by different keys proportionate to their values, a type carrier actuated by such movable plate or frame, a platen co-operating with the carrier, a pair of feed rollers for moving a paper strip between the platen and type carrier, a rotary shaft for actuating the feed rollers to advance the strip, and means intermediate the keys and shaft for rotating the latter, substantially as described.

12. The combination of a plurality of operating keys, a differentially movable plate or frame actuated thereby and movable different degrees by different keys proportionate to their values, a type carrier actuated by the movable plate or frame, a platen co operating with the carrier, an inking ribbon led between the platen and carrier, a pair of feed rollers for advancing the ribbon, a rotary shaft for actuating the feed rollers, and means intermediate the keys and shaft for actuating the latter, substantially as described.

13. The combination of a plurality of operating keys of different values, a differentially movable plate or frame actuated thereby and movable different degrees by different keys proportionate to their values, a type carrier actuated by such movable plate or frame, a platen co-operating with the carrier, an inking ribbon led between the platen and carrier, means actuating by the keys for automatically advancing said ribbon, and an ink well having a distributing pad or brush bearing against the inking ribbon and operating to automatically ink the latter, substantially as described.

14. The combination of a plurality of keys, a movable plate provided with a plurality of differentially inclined slots, each terminating at one end in a portion in line with the movement of the key, a type carrier actuated by such plate, and a platen co-operating with the carrier, substantially as described.

15. The combination of a plurality of keys, a movable plate provided with a plurality of differentially inclined slots, each terminating at one end in a portion in line with the movement of the key, a type carrier actuated by such plate, a platen co-operating with the carrier, a spring for throwing the platen against the carrier, and means actuated by the keys for retracting the platen against the stress of its spring, substantially as described.

16. The combination of a plurality of keys of different values, a differentially movable plate or frame actuated thereby, the differential movements of the plate being effected by a series of differential cam engaging surfaces between the keys and plate, each of said surfaces beginning and ending in portions in line with the strokes of the keys, a type carrier actuated by such movable plate, and a platen co-operating with the carrier, substantially as described.

17. The combination of a plurality of keys of different values, a differentially movable plate or frame actuated thereby, said plate or

frame being provided with a plurality of differential cam surfaces adapted to be engaged by the different keys and each beginning and ending in a portion in line with the stroke of the key, a type carrier actuated by such movable plate, and a platen co-operating with the carrier, substantially as described.

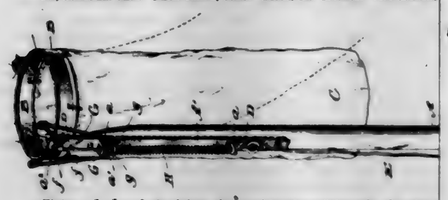
18. The combination of a plurality of keys, a movable plate provided with a plurality of differentially inclined slots, each of said slots terminating at both ends in portions in line with the movement of the key, a type carrier actuated by such movable plate, and a platen co-operating with the carrier, substantially as described.

19. The combination of a plurality of operating key levers, a vertically arranged longitudinally movable plate extending transversely across the rear ends of said levers and provided with a plurality of differentially inclined slots, each terminating in a vertical portion at its upper end, a type carrier actuated by such plate, a platen co-operating with the carrier, a spring for throwing the platen against the carrier, and means actuated by the keys for retracting the platen against the stress of the spring, substantially as described.

20. The combination of a plurality of operating keys of different values, a differentially movable plate or frame actuated thereby and movable different degrees proportionate to the values of the keys, a type carrier actuated by such movable plate or frame, a platen co-operating with the carrier, a spring for throwing the platen against the carrier, a rotary cam for retracting the platen against the stress of its spring, a locking device for locking the carrier in adjusted position while the printing is being effected, a rotary cam for actuating such locking device, a pair of feed rollers for drawing a paper strip between the platen and carrier, a pair of feed rollers for advancing the ribbon, a rotary shaft for driving the feed rollers and the rotary cams, and means intermediate the keys and shaft for rotating the latter, substantially as described.

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**505,556. FRUIT-PICKER.** CHARLES LEE and CHARLES L. LEE, Jr., Burbank, Ohio. Filed Jan. 5, 1893. Serial No. 457,315. (No model.)



*Claim.*—1. In a fruit picker, the combination of the pole, the plate thereon, the ring on the plate, the flexible chute flexibly supported from said ring, the independently pivoted and disconnected spring wire grippers having crank portions extended beyond their pivots at one end and disconnected from each other, the rod movable in guides on the plate, the links having eyes loosely embracing the rod and their other ends connected with the crank arm of the grippers and a spring around the rod between the lower guide and the eye of one of the links, substantially as shown and described.

2. In a fruit picker, the combination of the pole, the plate thereon, the ring on the plate, the flexible chute flexibly supported from said ring, the independently pivoted and disconnected spring wire grippers having crank portions extended beyond their pivots at one end and disconnected from each other, the rod movable in guides on the plate, the links having eyes loosely embracing the rod and their other ends connected with the crank arm of the grippers and a spring around the rod between the lower guide and the eye of one of the links and the collar fixed on said rod between the upper guide and the eye of one of the links, substantially as specified.

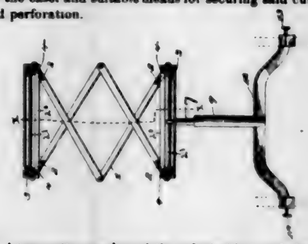
3. In a fruit picker, the combination with the poles and the plate thereon, of the ring fast to said plate, the flexible chute, flexibly suspended from said ring, the lug on the outer face of the ring opposite the plate and extending above the ring, the spring wire grippers each independent of the other with one end of each held loosely in said lug independent of the other and the other end passed through the plate above the ring and bent to cross each other without contact and extended to form crank arms extending outward, the rod movable in guides on the plates, the links having horizontal portions with eyes loosely sleeved on said rod below the upper guide and extended outwardly with their upper ends pivotally connected with the ends of the crank arms and the spring around the rod between the lower guide and the lowermost eye of the links, substantially as specified.

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**505,557. TYPE-WRITER EASEL.** MARIE LEITER, Logansport, Ind. Filed July 8, 1891. Serial No. 398,865. (No model.)

*Claim.*—1. A collapsible typewriter easel consisting of a series of lazy tong levers the outer ends of the upper and lower levers being provided with elongated perforations, top and bottom plates provided with copy holding clamps secured to the said lazy tong levers, threaded bolts passing through the said elongated perforations, suitable taps working on the threaded ends of said bolts adapted to impinge the said plates against the lazy tong levers, and a suitable support to hold said easel substantially as shown and described.

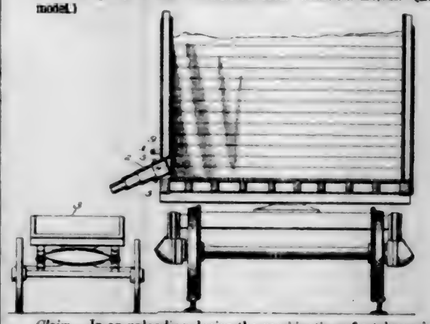
2. A support for a typewriter easel consisting of suitable arms provided with set screws whereby the said arms are secured to the uprights of the machine, an upright leading up from the said arms and having an angle extension, a suitable socket in the said extension and upright adapted to receive the support pin of the easel, and a suitable perforation in the extension adapted to receive the curved arm of the easel and suitable means for securing said curved arm in the said perforation.



3. A typewriter easel consisting of suitable copy holding clamps, a pin attached to the bottom of the easel a curved arm also attached to the bottom of the easel, a solid support having an angle extension, a suitable socket in the top of said support and extension adapted to hold the said pin a suitable perforation in the said extension adapted to hold the said curved arm, and a suitable securing device for the said curved arm, substantially as shown and described.

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**505,558. ATTACHMENT FOR UNLOADING BOX-CARS.** MARIE LEITER, Logansport, Ind. Filed Nov. 2, 1892. Serial No. 450,746. (No model.)



*Claim.*—In an unloading device the combination of a telescopic chute, a cap adapted to close the outer end of the said telescopic chute, said cap having a perforated arm; a stationary perforated arm attached to the outside of the unloading receptacle; the perforations in the said arms adapted to hold the bail of a suitable lock, substantially as shown and described.

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**505,559. CORN-HARVESTER.** WILLIAM J. RUDDY, Roberts, Ill. Filed Nov. 19, 1892. Serial No. 452,522. (No model.)

*Claim.*—1. In a corn harvester, the combination with a framework, of cutters arranged upon the same, a flat rectangular platform arranged in rear of the cutters and adapted to oscillate or partially horizontally rotate, and opposite vertical hinged sides for the platform, and locking devices for the sides substantially as specified

2. In a corn harvester, the combination with a table, of opposite hinged sides, and L-shaped standards pivoted to one edge of the table and having their vertical portions provided with keepers for engaging the edges of the sides and locking the same in a vertical position, substantially as specified.

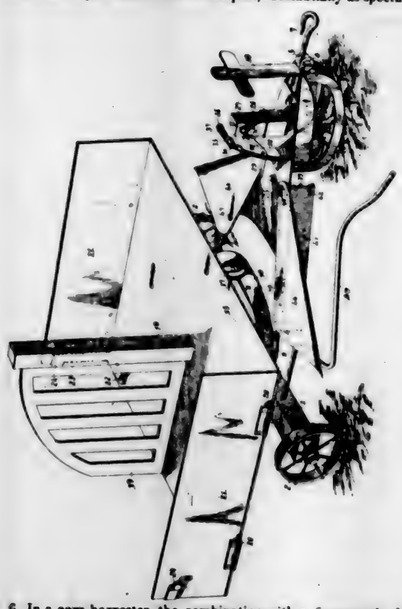
3. In a corn harvester, the combination with an axle and its ground-wheels, of a platform, cutters carried by the platform, a table mounted in rear of the cutters, and a pair of converging runners for supporting the platform, substantially as specified.

4. In a corn harvester, the combination with a V-shaped frame, a platform supported thereon, cutters at opposite sides of the platform, and runners depending from the sides of the frame and converging



of a table supported in rear of the platform and cutters, substantially as specified.

5. In a corn harvester, the combination with an axle, a V-shaped platform located in front of the same and connected therewith and provided with an opening, of runners depending from the platform and converging toward their front ends, opposite cutters at the sides of the platform, a table in rear of the cutters, a post extending through the opening in the platform, a lever fulcrumed in rear of the post and connected therewith and adapted to raise and lower the same, and a caster-wheel carried by the lower end of the post, substantially as specified.



6. In a corn harvester, the combination with a framework, depending slotted hangers and an inverted L-shaped plate having bolts passing therethrough and through the slots in the hangers, of a cutter pivoted at its front end on said plate and having its rear or inner edge provided with a keeper for engaging the front edge of the plate, perforations formed in the cutter, plate, and keeper, and a removable pin for engaging the perforations, substantially as specified.

7. In a corn harvester, the combination with an axle, its ground-wheels, the platform in front of the same, and the opening therein, of a hollow stand mounted over the opening, a post located in the standard a caster-wheel at the lower end of the post, a bifurcated lever fulcrumed on the hollow standard and pivoted at its front end to the post, a locking standard arranged in rear of the post and having notches and at its upper end an eye, a rod embracing the lever, secured at its lower end to the locking-standard and at its upper end passed through and beyond the eye and terminating in a head, and a coiled spring encircling the rod between the eye and head, substantially as specified.

8. In a corn harvester, the combination with an axle, of a metal frame bowed into semicircular form in rear of the axle and connected therewith and having its front terminals converging and bolted together at their front ends, a draft-hook connected with the bolt, a platform supported by the terminals, cutters at the opposite sides of the platform, a semicircular frame located between the terminals and connected to the axle, a circular track supported by the semicircular frame and the bowed portion of the main frame, a bearing-block mounted upon the axle at the center of the track, a table having a depending stud bearing in the block, and caster-wheels upon the under side of the table and adapted to ride upon the track, substantially as specified.

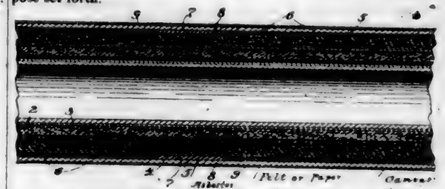
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**505,560. COVERING FOR STEAM-PIPES.** ALBERT W. SHEARER, Omaha, Nebr. Filed Feb. 18, 1891. Renewed July 31, 1893. Serial No. 482,017. (No model.)

*Claim.*—1. In a covering for steam pipes boilers and the like the combination with the pipe having a covering of asbestus, of the semi-rings molded of plastic material surrounding the same and an outer non-conducting covering, substantially as set forth.

2. The combination of the inner covering of asbestus, the semi-rings of a plastic composition, a covering wound upon the same and secured by means of wires, strips of asbestus pasted over the joints at their meeting edges of such covering and the outer covering of felt, or equivalent material and canvas, substantially as and for the purpose set forth.

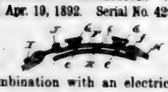
3. In a covering for steam pipes, boilers and the like, the herein described sectional rings formed of a plastic composition molded upon base strips of corrugated sheet iron, substantially as and for the purpose set forth.




4. The herein described non-conducting covering for steam pipes, boilers and the like the same consisting of an inner covering of asbestus, pasted upon the pipe or boiler, the sectional rings molded of a plastic composition, a covering of felt, paper or equivalent material wound spirally around the said rings, strips of asbestus, pasted over the joints at the meeting ends of said spiral covering strips, a wrapping of felt, paper or equivalent material, an outer covering of canvas and a coating of fireproof paint, substantially as and for the purpose set forth.

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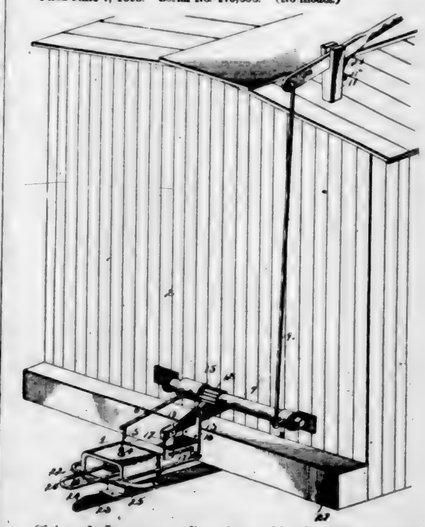
**505,561. ELECTRICAL CONNECTION.** WILLIAM I. SMITH, Memphis, Tenn. Filed Apr. 19, 1892. Serial No. 429,791. (No model.)



*Claim.*—The combination with an electric conductor having a bared terminal; of the contact plate conforming in shape to the portion of the body to which it is applied and provided with projecting threaded studs, a binding plate provided with perforations engaging said studs, a slot at one end and a hook at the other end, binding nuts engaging said studs and binding said binding plate upon the bared terminal of the conductor between the same and said contact plate, a slotted attachment plate, and an elastic band connected with said slotted plate and the slotted end of the binding plate, substantially as set forth.

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**505,562. CAR-COUPLING.** ALEXIS VANDERBECK, Huntsville, Mo. Filed June 7, 1893. Serial No. 476,838. (No model.)



*Claim.*—1. In a car coupling, the combination of a car, a rock-shaft mounted on the car and provided with a forwardly-extending arm, a draw-head capable of longitudinal movement and mounted on

the car, a coupling pin connected with the arm of the rock-shaft, means for turning the rock-shaft to elevate the coupling pin, and a pawl engaging the rock-shaft and connected with the draw-head and adapted to be withdrawn from engagement with the rock-shaft by an inward movement of the draw-head, substantially as described.

2. In a car coupling, the combination of a car, a rock-shaft journaled thereon and provided with ratchet-teeth, a draw-head mounted on the car, a coupling pin connected with the rock-shaft, a pawl engaging the ratchet-teeth of the rock-shaft, and a lever fulcrumed on the car and having one end connected to the pawl and its other end with the draw-head, substantially as described

3. In a car-coupling, the combination of a car, a draw-head mounted thereon, a horizontal rock-shaft journaled on the car and provided with a forwardly-extending arm and having ratchet-teeth, a coupling pin connected with and carried by the arm of the rock-shaft, a longitudinally-disposed spring-actuated pawl mounted on the car and engaging the teeth of the rock shaft, a lever fulcrumed on the car and having its upper end connected to the spring-actuated pawl and its lower end connected with the draw-head, and means for turning the rock-shaft, substantially as described.

4. In a car coupling, the combination with a car, a draw-head mounted thereon, a horizontal rock-shaft provided with forwardly-extending arms and having ratchet-teeth, a coupling pin connected with and carried by one of the arms, an operating lever fulcrumed at the top of the car and extending outward and connected with the other arm of the rock-shaft, a spring engaging the inner portion of the operating lever to repress the outer portion, a spring-actuated pawl mounted on the car and engaging the ratchet-teeth of the rock-shaft, and a lever fulcrumed on the car and having its upper end connected to the pawl and its lower end connected with the draw-head, substantially as described.

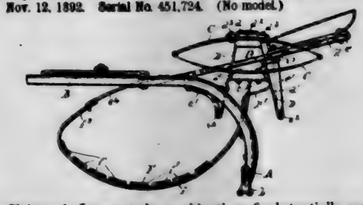
5. In a car coupling, the combination of a car, a draw-head mounted thereon, a rock-shaft provided with ratchet-teeth and having a forwardly-extending arm, a coupling pin connected with and carried by the arm, a spring actuated pawl mounted on the car and engaging the ratchet-teeth of the rock-shaft, a guide-plate secured to the car and receiving and supporting the pawl and provided with a horizontal flange, and a lever fulcrumed on the horizontal flange and pivoted to the pawl and connected with the draw-head, substantially as described.

6. In a car coupling, the combination of a car, a draw-head, a link-supporting frame hingedly connected with the car at the sides of the draw-head and adapted to swing upward in advance of the draw-head for supporting a link, and a horizontally-swinging holder supporting the frame and having its front end beveled at the inner side and adapted to be moved laterally by an approaching car to cause the link-supporting frame to drop, substantially as described.

7. In a car coupling, the combination of a car, a draw-head, a rectangular link-supporting frame hingedly connected with the draw-head, and a holder having its inner end pivotally secured to the car and having its outer end beveled and adapted to be moved laterally by an approaching car and provided with a pocket receiving the link-supporting frame, substantially as described.

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**505,563. VEHICLE.** HORACE S. VAN PATTEN, Manlius, N. Y. Filed Nov. 12, 1892. Serial No. 451,724. (No model.)



*Claim.*—1. In a cart, the combination of substantially vertical or upright springs as D—D movable forwardly and rearwardly beyond their normal position in planes substantially parallel with the line of draft, a seat supported on said springs and extending rearwardly beyond its point of support, and a foot-rest supported on said springs and extending forwardly beyond its point of support, substantially as and for the purpose set forth.

2. In a cart, the combination of substantially vertical springs movable forwardly and rearwardly beyond their normal position in planes substantially parallel with the line of draft and each provided with separated points of support, a seat, connected substantially as described, to said points of support, and a foot-rest connected substantially as described, to said points of support, substantially as and for the purpose specified.

3. In a cart, the combination with springs; of a pair of hanger springs having their corresponding ends supported on the springs, a seat supported upon the hangers and extending rearwardly beyond its point of support, and a foot-rest supported upon said hanger springs and extending forwardly beyond its point of support, substantially as and for, the purpose set forth.

4. In a cart seat, the combination with side springs movable up and down; of hanger springs having corresponding ends supported on the side springs, and their opposite ends movable forwardly and rearwardly of their normal position, a seat supported upon the hanger springs and extending rearwardly beyond its point of support, and a foot-rest supported upon said hanger springs and extending forwardly beyond its point of support, substantially as and for the purpose specified.

5. In a cart, the combination with an axle and shafts; of elliptical side springs, a pair of hanger springs having corresponding ends supported on the elliptical side springs, a seat supported upon the hanger springs and extending rearwardly beyond its point of support, and a foot-rest supported upon said hanger springs and extending forwardly from its point of support, substantially as and for the purpose set forth.

6. In a cart, the combination with a spring; of a hanger spring having its upper end secured to the spring and its lower end formed with separated spring arms, a seat extending rearwardly beyond the rear arm of the hanger spring and seat supporting bars provided with arms hinged to the ends of the spring arms of the hanger, substantially as and for the purpose specified.

7. In a cart, the combination of a pair of side springs; of a pair of substantially vertical or upright hanger spring arms supported upon each of the side springs, said hanger spring arms having their upper ends connected, substantially as described, to the side springs and having their lower ends separated a greater distance than their upper ends, and a seat connected, substantially as described, to said spring arms, substantially as set forth.

8. In a cart, the combination with an axle and shafts; of springs movable forwardly and rearwardly beyond their normal position in planes substantially parallel with the line of draft and provided with separated arms having their attaching ends arranged on opposite sides of the vertical plane of the axle, a seat supported upon said ends of the arms, and a foot-rest supported upon said ends of the spring arms, substantially as and for the purpose set forth.

9. In a cart, the combination with a spring; of a hanger spring having its upper end secured to the spring and its lower end formed with separated spring arms, a seat extending rearwardly beyond the rear spring arms of the hanger spring, seat supporting bars provided with arms hinged to the ends of the spring arms of the hanger spring, and a foot rest secured to the seat supporting bars at a point in advance of the forward arm of the hanger spring and secured to said supporting bars at a point at the rear of the forward arm of the hanger spring, substantially as and for the purpose set forth.

10. In a cart, the combination with a pair of springs extending in planes substantially parallel with the line of draft; of a pair of hanger springs inclining inwardly from their upper ends and having their upper ends supported upon said side springs, a seat provided with supporting bars, mounted upon said hanger springs and extended rearwardly beyond the points of support of said bars, and a foot-rest extending forwardly of the points of support of the seat supporting bars, and secured to said seat supporting bars, substantially as and for the purpose specified.

11. In a cart, the combination with a pair of elliptical side springs extending longitudinally in planes substantially parallel with the line of draft; of a pair of hanger springs inclining inwardly from their upper ends and having their upper ends supported upon said side springs and their lower ends provided with spring arms, a seat extending rearwardly beyond the rear spring arm and provided with seat supporting bars having lugs hinged to the spring arms of the hanger spring, and a foot rest secured to the seat supporting bars, substantially as and for the purpose set forth.

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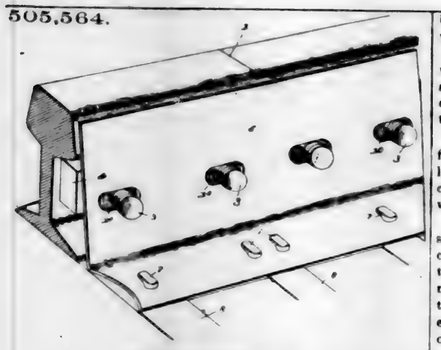
**505,564. COMBINED RAIL-JOINT AND NUT-LOCK.** JOHN M. D. BLAND, La Grande, Oreg., assignor of one-half to Henry Buhnstroth, same place. Filed June 27, 1893. Serial No. 478,980. (No model.)

*Claim.*—1. In a device of the class described, the combination with railroad rails, bolts and nuts, of a bracing-plate having a horizontal wing to rest upon the surfaces of the ties, and an inclined bracing-wing provided with openings to receive said bolts, said horizontal wing being rolled or rounded in section whereby its free edge or toe engages the surfaces of the ties, and securing means for the bracing-plate whereby the said free edge of the horizontal wing is impressed into the ties, substantially as specified.

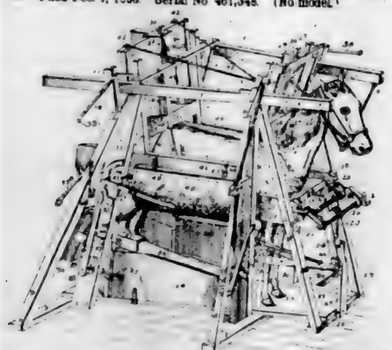
2. In a device of the class described, the combination with the rails, bolts and nuts, of a bracing-plate having integral horizontal and bracing wings which are arranged at an obtuse angle to each other, the bracing-wing bearing at its upper and lower edges, respectively, against the tread and flange of the rail, and means to secure said horizontal wing to the ties, substantially as specified.



505,564.



**505,565. HORSESHOEING-STOCK.** ELI B. BRADFORD, Munster, Ill. Filed Feb. 7, 1893. Serial No. 461,348. (No model.)



*Claim.*—1. In a stock of the class described, the combination with a framework comprising opposite side-bars, of a breeching located at the rear end of the framework, a stop at the front end of the framework, means for adjusting the breeching toward the stop, and a girth connecting the opposite side-bars, substantially as specified

2. In a stock of the class described, the combination with a framework comprising opposite side-bars and a front stop, of a breeching, means for adjusting the same toward the stop, opposite hooks located upon the side-bars, and a girth terminating in eyes for engaging the hooks, substantially as specified

3. In a stock of the class described, the combination with a framework, a front stop, a breeching, and means for adjusting the same toward the stop, of front and rear transverse bars, and means for raising and lowering and locking the same, substantially as specified

4. In a stock of the class described, the combination with a framework, a front stop, a breeching at the rear end of the framework, means for adjusting the same toward the stop, of oposite guide-frames, adjusting holes located between the guides of the frames, cross-bars having their ends located in the guides, sliding-bolts mounted on the cross-bars and adapted to engage the holes, a lever pivoted on each of the cross-bars and connected to the bolts at opposite sides of its pivot, and rods connected to the upper ends of the levers for reciprocating the bolts, substantially as specified

5. In a stock of the class described, the combination with a framework, a front stop, a breeching, and front and rear inclined guide-frames provided intermediate the guides with holes, of adjusting-bars transversely-disposed and mounted between the guides, standards rising therefrom, perforated guide-plates for the standards, levers fulcrumed on the standards, bolts mounted on the bars, adapted to engage the holes, and loosely connected at their inner ends to the levers at opposite sides of the pivots of the latter, rods connected to the levers for operating the same, and rasing and lowering levers mounted on the framework and connected with said bars, substantially as specified

6. In a stock of the class described, the combination with a framework, a perforated breast-bar located at the front end thereof, transverse adjustable bars arranged over the framework, and a rear breeching sling, of a windlass located in front of the breast-bar, ropes connected to the sling and passed through the perforations in the breast bar and made fast to the windlass, and a crank for operating the windlass, substantially as specified

7. In a stock of the class described, the combination with a framework comprising upper side-bars extending beyond the framework and provided with opposite eyes for engaging the harness of a horse, of front and rear vertically adjustable bars, an adjustable breech at the rear end of the stock, substantially as specified

8. In a stock of the class described, the combination with a stock-frame and means for securing the animal therein, of a clinching post located in front of the frame, a winding device located above the clinching-post, and a rope provided with a hook and secured to the winding device, substantially as specified

9. In a stock of the class described, the combination with the stock-frame containing animal-retaining devices, of a transverse rod connecting the front posts of the frame, opposite blocks secured to the inner faces of the posts, a wire-bail suspended from the rod and movable thereon, a head-block journaled in the eyes of the bail between the ends of the latter, a lower rest pivoted between the lower end of the bail, a lever for depressing the rest and connected thereto, opposite cheek-pieces secured to the rest, a rod secured to the lever and having its ends passed through perforations in the cheek-pieces and adapted to be removably connected, levers secured to said front posts, means for locking the levers, ropes secured to the levers and provided with hooks, eyes secured to the rest for removably engaging the hooks, and front hooks secured to the framework of the stock and adapted to removably engage eyes on the front end of the rest, substantially as specified

10. In a stock of the class described, the combination with the stock-frame comprising animal-retaining devices, of a transverse-rod, and a fore-foot supporting device removably mounted on the rod and adapted to be slid to opposite sides of the frame, substantially as specified

11. In a stock of the class described, the combination with the stock-frame, of a suspension-bail, a rest pivoted to the suspension-bail, and a cheek-piece pivoted to the suspension-bail eccentrically with the rest, a lever for operating the rest, and a locking device for depressing and retaining the lever, substantially as specified

12. In a stock of the class described, the combination with the stock-frame, of a suspension-bail, a rest pivoted to the suspension-bail, and a cheek-piece pivoted to the suspension-bail eccentrically with the rest, a lever for operating the rest, a post located at one side of the lever, and a U-shaped locking bail pivoted in the post and adapted to engage said lever, substantially as specified.

13. In a stock of the class described, the combination with the stock-frame having animal-retaining devices, and a suspended fore-foot rest, of devices for securing the foot within the rest, a block for supporting the rest, and means for drawing the rest over and upon the block, substantially as specified

14 In a stock of the class described, the combination with the stock-frame having animal-retaining devices, of crank-shafts located at the rear ends of the frame and provided with operating means, and hind foot supporting rests supported by the crank shafts, substantially as specified

15 In a stock of the class described, the combination with the stock-frame comprising rear posts, opposite crank-shafts journaled in the posts, levers for operating the crank-shafts, and opposite rests suspended by the crank-shafts, substantially as specified

16 In a stock of the class described, the combination with the stock-frame comprising animal-retaining devices, of opposite hind-foot rests, means for supporting the same, openings formed in the lower ends of the rest, and toe-supports removably mounted in the openings, substantially as specified

17 In a stock of the class described, the combination with a stock-frame comprising animal-retaining devices, of hind-foot supports, and pivoted guard-arms located at the inner edges of the supports and adapted to extend beyond the same, substantially as specified

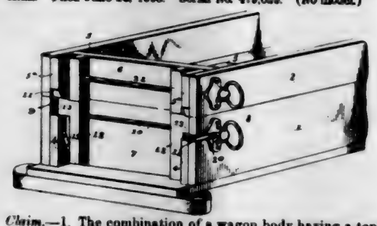
18 In a stock of the class described, the combination with the stock frame comprising animal-retaining devices, of opposite adjustable blocks, and a hind-foot support adapted to be supported by the blocks, substantially as specified

19 In a stock of the class described, the combination with a frame comprising rear posts, of opposite inclined blocks rigidly secured at the base of the posts and forming intermediate spaces, pins crossing the spaces, upper inclined blocks mounted on the lower blocks, toothed flanges secured to the inner faces of said upper blocks and engaging said teeth, slotted plates secured to the inner faces of the adjusting blocks, bolts extending through the posts and engaging the slots, bearing-brackets secured to the rear edges of the adjusting blocks, and bearing standards loosely connected to the upper portions of the brackets and loosely stepped in the lower portions thereof, substantially as specified

20 In a stock of the class described, the combination with the stock-frame comprising stock-retaining devices, the inclined rests, devices for raising and lowering the rests, levers connected with the

rests, levers fulcrumed upon the posts of the frame, means for locking the levers, ropes connected with the levers, hooks secured to the ropes, and eyes for receiving the hooks secured to the rests, substantially as specified.

## 505,566. WAGON END-GATE. William A. Crawford, St. Charles, Minn. Filed June 28, 1893. Serial No. 479,029. (No model.)



*Claim.*—1. The combination of a wagon body having a top box and provided on the inner faces of its sides and the sides of its top box with vertical ways having their lower portions rearwardly enlarged, and provided intermediate of their ends with rearwardly extending openings forming entrances to the ways, and upper and lower end gates arranged in the ways and adapted to be inserted in and removed from the ways through the openings thereof, substantially as described.

2. The combination of a wagon body and top box, the cleats 5 and 5ª secured to the inner faces of the sides of the top box, the cleat 5ª having its rear edge cut away at the bottom, the cleats 3 and 4 secured to the inner faces of the sides of the body, the cleat 4 terminating short of the upper edge of the adjacent side of the body and having its front edge inclined, and upper and lower end gates arranged between the cleats in ways formed thereby, substantially as described.

3. The combination of a wagon body having a top box and provided on the inner faces of its sides and the sides of its top box with vertical ways having their lower portions enlarged rearwardly and provided intermediate of their ends with rearwardly extending openings, the sides of the body being provided at their rear ends adjacent to their upper edges with slots, upper and lower end gates arranged in the ways, a plate 18 secured to one side of the body adjacent to the slot thereof and provided with an annular recess and having a slot registering with that of the body, a plate secured to the other side of the body and having a threaded opening, and a transverse rod attached to the lower end gate and having one end threaded to engage the threaded opening of the plate and provided at its other end with an annular shoulder fitting said annular recess, the latter end of the rod being arranged in the slots of the body and the adjacent plate, substantially as described.

4. The combination of a wagon body having a top box, the upper cleats 5 and 5ª secured to the sides of the top box, the cleats 5ª having their lower ends cut away at their rear edges, the lower cleats 3 and 4 secured to the sides of the body, the cleats 4 terminating short of the upper edges of the sides of the body and having their front edges inclined, the securing bars arranged on the cleats 4 adjacent to the inclined edges thereof, a lower end gate provided at its bottom with rivets and having vertical cleats provided at their tops with outward extensions, an upper end gate, and transverse rods securing the end gates in place, substantially as described.

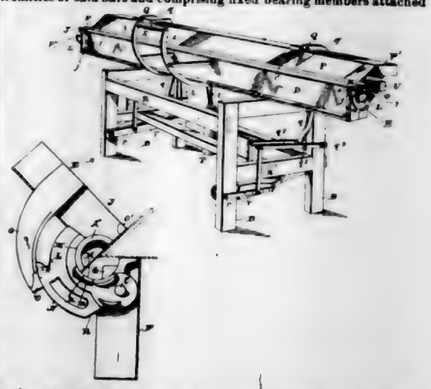
5. The combination of a wagon body having a top box and provided on the inner faces of its sides and the sides of its top box with vertical ways, and provided intermediate of their ends with rearwardly extending openings 9 forming entrances to the ways, and upper and lower end gates arranged in the ways and adapted to be inserted in and removed from the ways through the openings thereof, and locking rods 10 and 22 for the upper and lower end gates, the lower one being removable, substantially as described.

## 505,567. SHEET-METAL-BENDING MACHINE. Adelbert J. Douglass, Ilion, N. Y. Filed Apr. 5, 1893. Serial No. 469,173. (No model.)

*Claim.*—1. In a metal bending machine, a stationary bed bar having a flat side, a correspondingly shaped swinging bending bar arranged alongside the stationary bar, open hinges connecting the opposite ends of the two bars and having their top edges flush with the top faces of the bars to which they are secured, substantially as set forth.

2. In a metal bending machine, the combination of two abutting channel iron bars one of which is stationary and the other movable, open hinges pivotally connecting the opposite ends of the two bars and having their top edges flush with the top faces of said bars to permit of resting the work on the hinges and extending it beyond the same, the working centers of said hinges being coincident with the point of bend or fold, a movable angle clamp adapted to work onto the stationary bar at the joint edge, and means for operating the clamp and for swinging the movable bar, substantially as set forth.

3. In a metal bending machine, the combination with the stationary bed bar and the movable bending bar working at one side of the stationary bar; of the open hinges pivotally connecting the extremities of said bars and comprising fixed bearing members attached



to the ends of the stationary bar and having open half circle bearings, and the journal members attached to the extremities of the bending bar and having corresponding half journals working inside of the open bearings of the bearing members, both members of the hinges having their top edges flush with the upper faces of the bars and their centers coincident with the point of bend or fold substantially as set forth.

4. In a metal bending machine, the combination with the stationary bed bar and the movable bending bar alongside of the same; of the open hinges pivotally connecting the extremities of the said bars and comprising fixed bearing members attached to the stationary bar and having half circle open bearings, the swinging bearing arms pivoted to the bearing members and having supplemental bearings adapted to be brought into alignment with the half circle bearings, and the journal members attached to the extremities of the bending bar and having half journals working inside of the half circle bearings and provided with hinge arms adapted to lift the swinging bearing arm into a functional position, substantially as set forth.

5. In a metal bending machine, the combination with the stationary bed bar and the movable bending bar alongside of the same; of the open hinges pivotally connecting the extremities of said bars and having their upper edges flush with the top faces of said bars, said hinges comprising fixed bearing members attached to the stationary bar and having half circle open bearings and bearing sockets, the swinging bearing arms having bearing hubs working in said bearing sockets, and supplemental bearings adapted to be brought in alignment with the half circle bearings, and the journal members, attached to the extremities of the bending bar and having half journals working in the half circle bearings and the supplemental bearings, and hinge arms adapted to lift the bearing arms into a functional position, substantially as set forth.

6. In a metal bending machine, the combination of two abutting channel iron bars, one of which is stationary and the other movable, of the open hinges pivotally connecting the extremities of said bars and comprising separate hinge members each of which is provided with an angular attaching flange adapted to be fitted into and secured within the open extremities of the channel iron bars, substantially as set forth.

7. In a metal bending machine, the combination with the stationary bed bar and the movable bending bar alongside of the same; of the open hinges comprising fixed bearing members attached to the stationary bar and having half circle open bearings and bearing sockets, the curved swinging bearing arms having bearing hubs working in said bearing sockets, open supplemental bearings adapted to be brought into extension alignment with the half circle bearings and a curved contact flange having a beveled or cam lifting edge, and the swinging journal members attached to the extremities of the bending bar and having half journals working in the half circle bearings and the supplemental extension bearings, and the off-standing curved hinge arms carrying at their extremities combined lifting and retaining lugs, and the strike lugs adapted to be lowered onto the moving ends of the bearing ends, substantially as set forth.

8. In a metal bending machine, the supporting frame, the stationary bed bar mounted on the frame and having a flat side, a correspondingly shaped swinging bending bar arranged alongside of the stationary bar, open hinges connecting the extremities of the two bars and flush with the top faces thereof, an automatically lifted clamp adapted to work onto the stationary bed bar at the joint edge, and an adjustable gage bar arranged in rear of the stationary bed bar, substantially as set forth

9. In a metal bending machine, the supporting frame, the stationary bed bar mounted on the frame, an abutting bending bar hinged to the bed bar, a clamp bar hinged to the top of the frame, an angle clamp secured to the clamp bar and having a beveled lower edge adapted to be clamped onto the work and the bed bar at the joint edge, said angle clamp forming in the space inclosed by the sides thereof a work pocket to accommodate bent or folded edges therein, clamp moving arms pivotally attached at their upper ends to the clamp bar, foot lever devices pivotally connected with said arms, suitably arranged weighted ropes connected with said foot lever devices, and an off-standing operating handle attached to the hinged bending bar, substantially as set forth

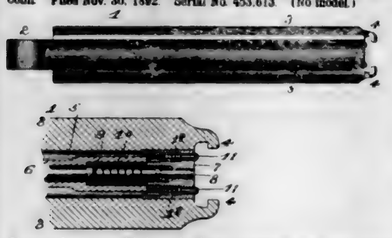
10. In a machine of the class described, the combination with the supporting leg frame, and the stationary bed bar and swinging bending bar arranged on the frame, of a work clamp device hinged to one top side of the frame above said bars, clamp moving arms pivotally connected at their upper extremities to said clamp device, yoke levers pivoted to opposite ends of the frames and to the lower extremities of said clamp moving arms, treadle levers pivoted to the frame, links connected at their other extremities to the yoke levers and adjustably at their lower ends to the treadle levers, and a single weight rope having opposite portions passing over suitably arranged guide pulleys and removably attached at its extremities to the treadle levers, substantially as set forth

11. In a metal bending machine, the combination with the bending devices, of an adjacent horizontally movable gage bar, and simultaneously movable adjusting blocks connected with each other and said bar, substantially as set forth

12. In a metal bending machine, the combination with a stationary bed bar and an adjacent bending bar, of a horizontally moving gage bar arranged at one side of the bed bar, a series of eccentrically pivoted blocks adjacent to the gage bar one of which is provided with a curved scale edge and an extended handle, a connecting bar hinged to the extremities of said pivoted blocks, links pivoted to said blocks and to the gage bar, and a cam controlled index block arranged adjacent to the scale block and adapted to be clamped against the same, substantially as set forth

13. In a metal bending machine, the supporting frame, a bed bar supported longitudinally on the frame, combined adjusting and securing rods fixedly attached at one end to one side of said bed bar and adjustably at their other ends to the supporting frame, a longitudinally arranged swinging bending bar at one side of the stationary bar and hinged thereto, and a horizontally moving gage bar arranged to slide on top of said rods substantially as set forth

## 505,568. BREECH-BLOCK. Frank M. Garland, New Haven, Conn. Filed Nov. 30, 1892. Serial No. 453,613. (No model.)



*Claim.*—1. A movable breech block, consisting of a body with a mortise in the front end to receive the rim of a cartridge, an elastic frictional holding device held by the block adjacent to the mortise, and a firing pin adapted to project into the mortise, substantially as specified.

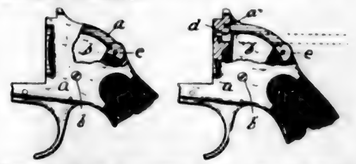
2. A movable breech block, consisting of a body with arms at the front end to receive the rim of a cartridge, a frictional holding device and a firing pin supported by the body and projecting therefrom adjacent to the arms, substantially as specified

3. A movable breech block, consisting of a body with arms at the front end to receive the rim of a cartridge, a bolster supported in the body, a firing pin supported by the bolster, and a frictional holding device projecting from the body adjacent to the firing pin, substantially as specified

4. A movable breech block, consisting of a body with arms at the front end to receive the rim of a cartridge, a plug screwed into the forward end of the block and bearing projecting elastic frictional holding devices and a firing pin, substantially as specified.

5. A movable breech block, consisting of a body with arms at the front end to receive the rim of a cartridge, a bolster supported by the body, a firing pin supported by the bolster, and a plug screwed into the forward end of the body and bearing projecting elastic frictional holding devices, substantially as specified

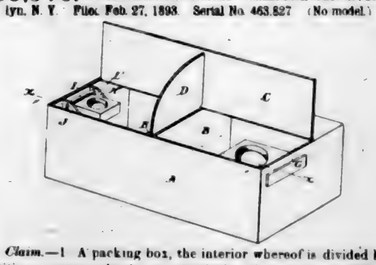
## 505,569. SAFETY-CATCH FOR FIREARMS. Charles W Hopkins and James Boland, Norwich, Conn. Filed Mar. 27, 1893. Serial No. 467,737. (No model.)



*Claim.*—1. As an improvement in fire arms, a slotted breech frame, a plate in the slot, the rear end of which is slotted longitudinally and perforated transversely, a shouldered safety device within the slot of the plate, and a pin through the frame and the plate and between the shoulders of the safety device, substantially as set forth.

2. As an improvement in fire arms, a slotted breech frame, a plate in the slot, a shouldered safety device at the rear of the plate, a hole in the device between the shoulders, a spring actuated pin within the hole, and a transverse pin through the frame and the plate and between the shoulders of the safety device, said pin being adapted to be engaged by the pin in the safety device, substantially as set forth

## 505,570. PACKING CASE OR BOX. Orlando H. Jadwin, Brooklyn, N. Y. Filed Feb. 27, 1893. Serial No. 463,827. (No model.)



*Claim.*—1. A packing box, the interior whereof is divided by a partition, a cover, a diaphragm attached to the cover and which adjoins the partition and acts as an extension thereof, when the cover is open and a measure provided with means whereby it may be "struck" upon its removal from the box, substantially as set forth

2. A packing box, the interior whereof is divided by a partition, a cover and a diaphragm attached to the cover, and which adjoins the partition and acts as an extension thereof, when the cover is open, substantially as set forth

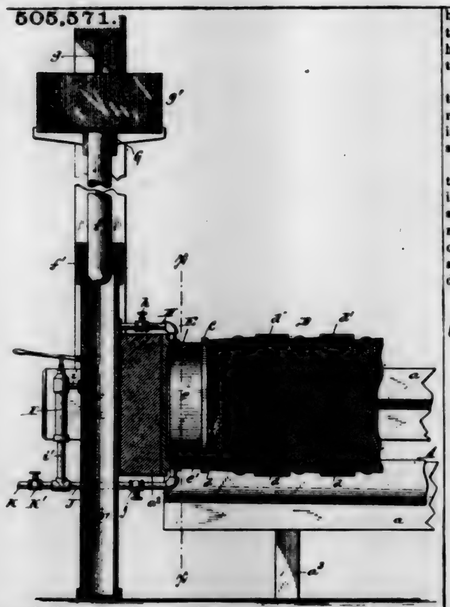
3. A packing box having a plurality of separate compartments, a cover, a diaphragm attached to the cover and which adjoins the partition, which separates the compartments and acts as an extension thereof, when the cover is open and measures of different capacities adapted to be removed from the compartments, and means whereby they may be "struck," so located that the surplus material "struck" from the measures will drop into the compartment from which it was taken, substantially as set forth.

## 505,571. CHEESE-PRESS. Carl J. Lundstrom, Little Falls, N. Y., assignor to D. H. Burrell & Co., same place. Filed June 22, 1892. Serial No. 437,642. (No model.)

*Claim.*—1. In a cheese press, the combination with the stationary press frame, the movable head block and the mechanism whereby the head block is pressed against the cheese, of a movable foot block, a hydraulic cylinder and piston which latter carries the foot block and an upright water chamber which communicates with said cylinder and whereby pressure is applied to the piston and foot block, substantially as set forth.

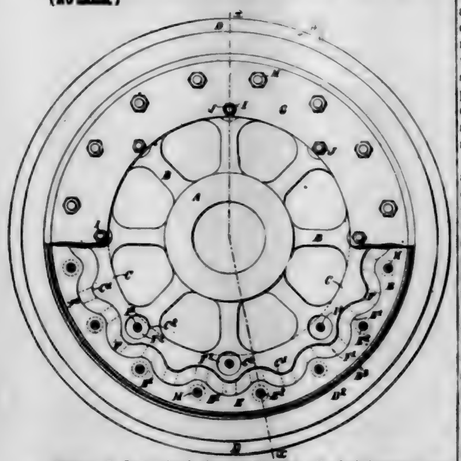
2. The combination with the stationary press frame, the movable head block and the pressure screw whereby the head block is moved, of a movable foot block, a hydraulic cylinder provided with a ram carrying the foot block an upright water chamber provided with a

505,571.



vertically moving plunger, a pipe connecting the water chamber with the hydraulic cylinder and provided with a valve, a pump having its delivery pipe connected with the water chamber, and a pipe connecting the pump with the hydraulic cylinder and provided with a valve, substantially as set forth.

505,572. CAR-WHEEL. HIRAM S. MAXIM, Bexley, and LOUIS SILVERMAN, Crayford, England. Filed Feb. 21, 1893. Serial No. 463,211. (No model.)



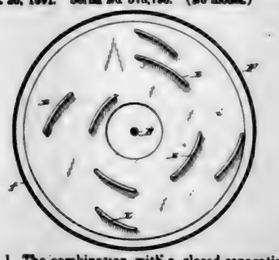
*Claim.*—1. In a wheel, the combination of a hub having a corrugated or toothed outer periphery, a tire therefor with a toothed or corrugated inner periphery having its peripheral projections opposed to the spaces between the peripheral projections on the hub a filling of resilient material placed in the space between the said peripheries and guides attached to the tire between which guides the said hub is adapted to move substantially as set forth, for the purpose specified.

2. In a wheel, the combination of a hub having a corrugated or toothed outer periphery, a tire therefor with a toothed or corrugated inner periphery having its peripheral projections opposed to the spaces between the peripheral projections on the hub, bolts connected with the tire passed through holes in the hub and surrounded in the said holes with resilient material, and guides attached to the tire substantially as set forth for the purpose specified.

3. The combination of the hub having peripheral projections thereon, the tire having internal peripheral projections, the elastic or resilient material between the hub and tire, said elastic material having holes formed therein substantially as described for the purpose specified.

4. In a wheel, the combination of a hub having a corrugated or toothed outer periphery, a tire therefor with a toothed or corrugated inner periphery having its peripheral projections opposed to the spaces between the peripheral projections on the hub and tire, elastic material interposed between the hub and the tire, ribs or projections on the sides of the elastic material, and side plates secured to the tire and bearing against the sides of the elastic material, substantially as described for the purpose specified.

505,573. GRAIN-CLEANER. ORVILLE M. MORSE, Jackson, Mich. Filed Jan. 23, 1891. Serial No. 378,793. (No model.)



*Claim.*—1. The combination with a closed separating chamber provided at its bottom with an escape for the grain and at its top with an escape for the dust, of a fan arranged in the lower portion of the separating chamber and propelling the air upwardly along the peripheral wall and drawing it downwardly through the axial portion of the separating chamber, a perforated scouring case arranged in the upper portion of the separating chamber and discharging the grain and dust into the latter, and a scouring mechanism arranged in said case, substantially as set forth.

2. The combination with a closed separating chamber provided at its bottom with an escape for the grain and at its top with an escape for the dust, of a fan arranged in the lower portion of the separating chamber and propelling the air upwardly along the peripheral wall and drawing it downwardly through the axial portion of the separating chamber, a perforated scouring case arranged in the upper portion of the separating chamber, and discharging the grain and dust into the latter, a scouring mechanism arranged in said case, and a revolving feeder arranged below the scouring case, substantially as set forth.

3. The combination with a closed separating chamber provided at its bottom with an escape for the grain and at its top with an escape for the dust, of a fan arranged in the lower portion of the separating chamber and propelling the air upwardly along the peripheral wall and drawing it downwardly through the axial portion of the separating chamber, a vertical perforated scouring cylinder arranged in the upper portion of the separating chamber, a scouring mechanism arranged in said cylinder, and a revolving feeder arranged below the lower end of the scouring cylinder, substantially as set forth.

4. The combination with a closed separating chamber provided at its bottom with an outlet for the grain and at its top with an outlet for the dust, of a fan arranged in the lower part of the separating chamber, a scouring mechanism arranged in the upper part of the separating chamber, a revolving feeder arranged underneath the scouring mechanism, and a shield surrounding the feeder, substantially as set forth.

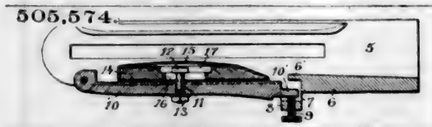
5. The combination with a closed separating chamber provided at its bottom with an outlet for the grain and at its top with an outlet for the dust, of a fan arranged in the lower portion of a separating chamber, a scouring cylinder arranged in the upper portion of the separating chamber, a revolving feeder arranged below the scouring cylinder, and stirrers secured to the scouring cylinder and projecting into the revolving feeder, substantially as set forth.

505,574. SHUTTLE-BINDER FOR LOOMS. THOMAS E. HORNER, Fall River, Mass. Filed May 13, 1892. Serial No. 474,652. (No model.)

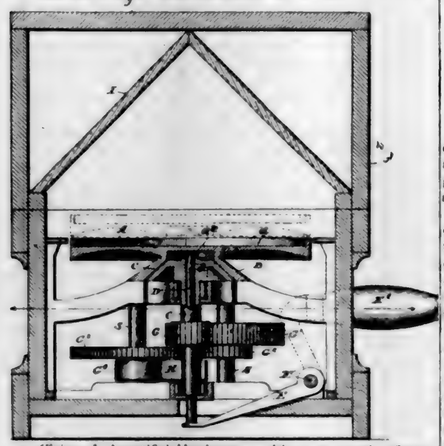
*Claim.*—The combination with a shuttle-box, having the back 6 furnished with the reduced-portion 6', the bracket 7 having the perforated stud 8, and the screw 9 carried by the stud and forming an adjustable stop for limiting the backward movement of the binder-arm, of the binder-arm 10, pivoted in the opening of the back 6, perforated near the middle and having the forward reduced end 10', the bolt 11 extending through the perforation of the binder-arm and having a square head and a securing-nut, and the swell 14 provided with the spring metallic bearing-surface 15 and having the slot 16 with the enlarged portion 17 in which the head of the bolt 11 is engaged, as and for the purpose described.



505,574.



505,575. GYROSCOPE ARTIFICIAL HORIZON. JOSHUA N. ROWE, Seattle, Wash., assignor of one-half to Charles E. Crane, same place. Filed Oct. 17, 1892. Serial No. 449,147. (No model.)



*Claim.*—1. An artificial horizon comprising a gyroscopic reflector, means for imparting rotation thereto, and means for supporting it in its rotating position, substantially as described.

2. A gyroscopic artificial horizon, comprising a reflecting disk, mechanism for imparting rotation to the disk, a support centrally arranged with relation to the rotating mechanism, but independent thereof, and means for raising the central support and disk, so that the latter may continue its rotation while supported substantially as described.

3. A gyroscopic artificial horizon comprising a reflecting disk, a driving mechanism, frictional connection between the disk and driving mechanism, a support centrally arranged with relation to the driving mechanism and independent thereof, and adapted to raise the reflecting disk from the frictional contact with the concentric driving mechanism and support the disk in its rotating position, substantially as described.

4. A gyroscopic artificial horizon comprising a reflecting disk, having a cone projecting from its under side, a driving mechanism, a cone connected to said mechanism, and adapted to engage the cone on the disk, and means for separating the cones, substantially as described.

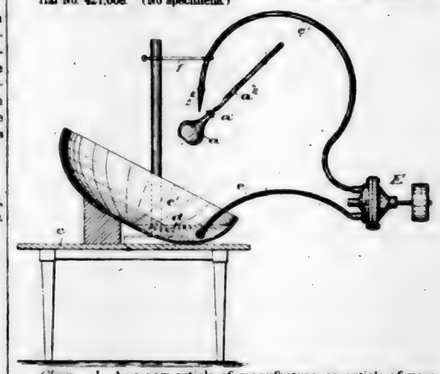
5. A gyroscopic artificial horizon comprising a reflecting disk, a driving mechanism, cones connecting the disk and driving mechanism, and a spindle for elevating the disk mounted in the hollow shaft of the driving mechanism, substantially as described.

6. The combination with the rotating reflecting disk, of a multiplying gear and means for driving the same, connections between the gear and the disk whereby the latter is rotated, and a spindle adapted to engage the under side of the disk and disconnect it from the driving gear, substantially as described.

7. The combination with the reflecting disk having a cone on its under surface and a central recess, of a multiplying gear connected to a male cone, a spindle passing through the shaft of the male cone, and having a pointed end, and means for raising the spindle to elevate the disk, substantially as described.

8. The combination with the gyroscopic reflecting disk, of means for rotating the disk, a supporting device for the rotating disk, and an inclined roof above the disk, substantially as described.

505,576. METHOD OF DEPOSITING LAYERS OF METAL ON GLASS. JOHN H. SCHARLING, Newark, N. J. Filed Mar. 30, 1892. Serial No. 427,008. (No specimens.)



*Claim.*—1. As a new article of manufacture, an article of ware of glass or other like material, provided on its exterior with an inner and translucent layer or coating of silver, an intermediate coating of gold or other precious metal, and an outer layer or coating of silver, substantially as and for the purposes set forth.

2. As a new article of manufacture, an article of ware of glass or other like material, provided on its exterior with an inner and translucent layer or coating of silver, an intermediate coating of gold or other precious metal and an outer layer or coating of silver, and a suitable design etched or otherwise produced in said coatings of metal to expose the surface of the article between the metal portions, substantially as and for the purposes set forth.

3. The method herein described, of depositing layers of different metals on glass-ware or other like articles, which consists as follows, to wit:—first, of repeatedly flowing an easily decomposable silver solution by means of a pump upon the article, while slowly turning or moving the article during such process, and thereby depositing, by the decomposition of this solution, a thin layer or coating of silver upon said article; second, electro-depositing a layer of gold or other precious metal upon said silver layer, and finally, electro depositing another layer of silver upon said intermediate layer of metal, substantially as set forth.

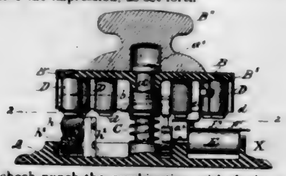
4. The method herein described, of depositing layers of different metals on glass-ware or other like articles, which consists as follows, to wit:—first, of repeatedly flowing an easily decomposable silver solution by means of a pump upon the article, while slowly turning or moving the article during such process, and thereby depositing, by the decomposition of this solution, a thin layer or coating of silver upon said article; second, electro-depositing a layer of gold or other precious metal upon said silver layer, and finally, electro-depositing another layer of silver upon said intermediate layer of metal, then covering said outer layer with a design printed thereon with resist varnish, and subjecting the whole to an etching acid, substantially as set forth.

5. The method herein described, of depositing layers of different metals on glass-ware or other like articles, which consists as follows, to wit:—first, of repeatedly flowing an easily decomposable silver solution by means of a pump upon the article, while slowly turning or moving the article during such process, and thereby depositing, by the decomposition of this solution, a thin layer or coating of silver upon said article; second, electro-depositing a layer of gold or other precious metal upon said silver layer, and finally, electro depositing another layer of silver upon said intermediate layer of metal, then covering said outer layer with a resist varnish in design, etching away the exposed parts of silver to the intermediate coating, and finally, mechanically removing said exposed parts of said intermediate layer and the metal beneath said parts of the inner layer, substantially as set forth

505,577. CHECK-PUNCH. JOHN STEWART, New York, N. Y. Filed Apr. 13, 1892. Serial No. 428,994. (No model.)

*Claim.*—1. In a check punch, the combination with a base, A, a die-carrying plate B, mounted rotatively on a vertical axis on the base and supported by a spring so that it may move up and down, a series of concentrically arranged dies D carried by said plate, a radi-

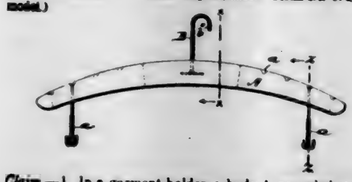
ally arranged inking roller, A, mounted on the base and arranged to occupy a position between two dies when a die is brought to the punching point, and a radially arranged roller, E, at the punching point to receive the impression, as set forth



2. In a check punch the combination with the base, A, having an upright stem *a*, the die-carrying plate B, having a boss *b*, provided with a circumferential groove as described, the dies carried by said plate, of the roller E, mounted in the base at the punching point and provided with a ratchet wheel $E^w$, the pawl *g*, engaging the teeth on said wheel, its hinged carrier engaging the groove in boss *b*, and the pressure plate, arranged over the roller E and adapted to press the check down thereupon, substantially as set forth

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**505,578. ADJUSTABLE GARMENT-HOLDER.** PETER A. SWEESEY, Providence, R. I. Filed May 20, 1893. Serial No. 474,574. (No model.)



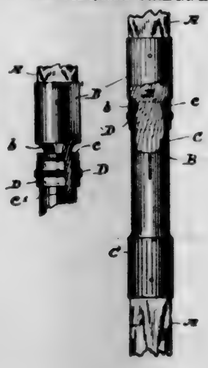
*Claim.*—1. In a garment holder, a body A, provided at each end with one or more vertical slots *a'*, *a'*, and the transverse notches *a''*, arranged at the upper edges of said slots, combined with a suspending hook B, and depending hooks *a*, *a*, held in the said slots, and capable of adjustment relatively to each other in said notches, and adapted to engage respectively the two front and two rear buttons on the waist-band of a pair of trousers, and thereby hang them folded in the shaping creases pressed in the front and back of the legs

2. In a garment holder, a body A, provided at each end with one or more vertical slots *a'*, *a'*, and the transverse notches *a''*, *a''*, arranged at the upper edges of said slots, combined with the offset suspending hook B, provided with a bifurcated or staple-like termination whereby it is rigidly secured to the said body at two separated points, and thereby prevents the latter from twisting or turning

3. In a garment holder, a body A, constructed of wire, and provided with longitudinal vertical slots *a'*, *a'*, and the transverse notches *a''*, *a''*, and with the suspending loop B, combined with depending hooks *a*, *a*, held in said slots, and capable of adjustment relatively to each other in said notches, and adapted to engage respectively the two front and the two rear buttons on the waist-band of a pair of trousers, and thereby hang them folded in the shaping creases pressed in the front and back of the trousers legs.

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**505,579. INTERLOCKING-JOINT FERRULE.** JAMES B. THURSTON, Concord, N. H. Filed Dec. 1, 1892. Serial No. 453,754. (No model.)



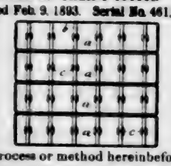
*Claim.*—1 In plug and socket ferrule-joints, a plug ferrule having an annular groove or depression, a slotted socket-ferrule having an annular depression at or near its mouth, and a sliding sleeve adapted to close over said depressed portions of the ferrules and hold them in engagement.

2. In plug and socket ferrules, a plug-ferrule having an annular depression near its seat and its remainder being practically of equal diameter, a slotted socket ferrule having its interior diameter slightly decreased at or near its mouth and its remainder, also its outside diameter, being equal throughout its length, and a sliding sleeve capable of closing over that portion of said socket ferrule which engages with the depressed portion of said plug ferrule.

3 The plug and socket ferrules having interlocking ridges or depressions, the socket or outside ferrule being slotted, both said ferrules being of even diameter throughout their length, and a snug fitting sleeve for the socket ferrule being of even bore substantially for the purpose set forth

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**505,580. PROCESS OF BALING COTTON.** JAMES WATSON, London, England. Filed Feb. 9, 1893. Serial No. 461,577. (No specimens.)



*Claim.*—1 The process or method hereinbefore described of baling cotton or other material which has already been partly compressed, covered with cloth or other covering and bound by bindings, and is in the form known as "plantation bales," which process consists in simultaneously submitting a plurality of said bales, when in contact with each other, and while in their original bindings, to the action of a press, compressing them therein into a much smaller depth, in then separately tightening and fastening the original bindings of said bales while all the bales are under the pressure of said press, and thereby binding each of said bales separately with its original bindings, and in then binding all the bales together with additional bindings while under pressure, whereby a compound bale is produced consisting of a plurality of compressed plantation bales, each of which is separately and tightly bound in its tightened original bindings, and all of which are bound together with additional bindings.

2. The process or method hereinbefore described of baling cotton or other material which has already been formed into bales, covered with cloth or other covering, and bound by hoops or other bindings, which consists in simultaneously submitting two or more of such bales when in contact with each other, and with their original wrappers and bindings, to the action of a press whereby they are compressed into a much smaller depth, in then cutting off portions of the binding hoops, which owing to the decrease in the depth of the bale by the action of said press bulge out at the sides, and forming fastenings on the remaining portions of said hoops, in then submitting the bales to the action of a more powerful press, whereby they are still further compressed, in then rebinding said bales separately and before they are allowed to expand, by parts of their original hoops, and in then binding all the bales together by hoops or other bindings into one compound bale, substantially as and for the purpose set forth

3. The process or method hereinbefore described of baling cotton or other material which has already been formed into bales covered with cloth or other covering and bound by hoops or other bindings, which consists in simultaneously submitting two or more of such bales when in contact with each other, and with their original wrappers and bindings to the action of a press whereby they are compressed into a much smaller depth; in then cutting off portions of the binding hoops, which owing to the decrease in the depth of the bale by the action of said press bulge out at the sides, and forming loops on the remaining portions of said hoops and placing buckles thereon; in then submitting the bales to the action of a more powerful press, whereby they are still further compressed, in then re-binding said bales separately and before they are allowed to expand, by parts of their original hoops; and in then binding all the bales together by hoops or other bindings into one compound bale, substantially as and for the purpose set forth

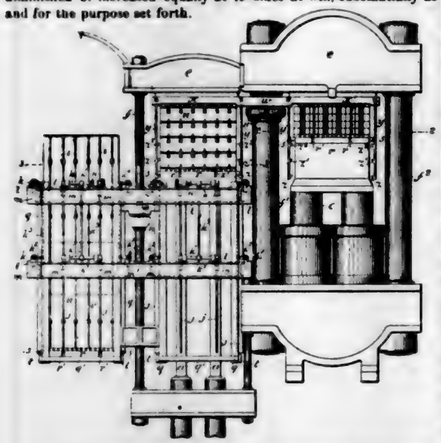
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**505,581. BALING-PRESS.** JAMES WATSON, London, England. Filed Feb. 9, 1893. Serial No. 461,578. (No model.)

*Claim.*—1. In a baling press, a rectangular cage, receiving the bale to be compressed, and a plate movable through said cage longitudinally thereof to compress the bale therein, said cage having opposite parallel movable sides each consisting of a plurality of longitudinal bars, said opposite side bars movable inward and outward



equally to adjust the internal sectional area of said cage, whereby the internal sectional area of said cage and a connection between said sides, said connection engaging and moving each side equally, can be diminished or increased equally at its sides at will, substantially as and for the purpose set forth.



2. In a baling press, a rectangular cage, receiving the bale to be compressed, and a plate movable through said cage longitudinally thereof to compress the bale therein, said cage having opposite side and end walls consisting of longitudinal bars at the sides and ends of said cage, said opposite side bars movable inward and outward equally, and said opposite end bars movable inward and outward equally, to adjust the internal sectional area of said cage, whereby the internal sectional area of said cage can be diminished or increased equally at its ends and sides at will, substantially as and for the purpose set forth.

3. In a cage for receiving bales to be compressed in a baling press, the combination with the longitudinal bars *j j* at the sides and ends of said cage movable inward and outward for the purpose of adjusting the internal sectional area of the cage, of the upper and lower girders *i* and *i'* carrying said cage and supporting said bars *j j*, vertical bars *q* fixed to said girders and in part supporting the lower from the upper girders, and horizontal bars *q'* connecting said vertical bars together for bracing their ends, substantially as described and shown

4. In a cage for receiving bales to be compressed in a baling press, the combination with the longitudinal bars *j j* at the sides and ends of said cage, and with the upper and lower girders *i* and *i'* which carry said cage, of the horizontal shaft *k* adapted to turn axially in bearings on said upper girder, horizontal shafts *k'* adapted to turn axially in bearings on said lower girder, connections between the horizontal shaft *k*, and the horizontal shafts *k'* adapted to transmit any axial motion of any of said shafts *k* to an equal extent to the corresponding shaft *k'*, and arms *l l* on said shafts *k* and *k'* connected to said longitudinal bars *j j*, whereby by imparting axial motion to said shafts *k* the said bars *j j* can be moved inward or outward, and the internal sectional area of said cage be thereby diminished or increased, substantially as set forth

5. In a baling press, the combination with a pivotal vertical column, of two rectangular cages successively receiving bales to be compressed, a plate at one side of said column movable vertically through said cages sucessively, and horizontal girders supporting said cages, pivotally carried by said column, and swinging therearound to bring said cages successively over said plate, each of said cages having opposite parallel sides movable to an equal extent, and while retaining their parallelism, toward and from the center of their cage to vary its internal sectional area to fit bales of different sizes, whereby in their adjustment said sides vary the area of the cage equally relatively to its center, whereby said cages can be brought in turn first to an outside position to receive a charge, and there adjusted to fit the charge, and then into line with said plate to enable said charge to be compressed thereby, and when over said plate the adjusted sides of the cage will be equally disposed relatively to the line of movement of the plate, substantially as and for the purpose set forth

6. In a baling press, the combination with longitudinal bars constituting part of the sides and ends of a cage for receiving bales to be compressed and adapted to move inward and outward to diminish or increase the internal sectional area of said cage, of a bottom lashing plate having gaps or recesses at its edges, whereby said movement of the longitudinal bars is permitted and said lashing plate is enabled to rise and fall in said cage in any position of said bars, substantially as set forth.

7 In a baling press, a pendent bar hinged at top to the end of a top lashing plate and having a hook at the lower end holding up the compressed bales when the normal number has been compressed, and having a second hook at an intermediate part of its length, said second hook holding up the compressed bales after the pressing operation in the case where less than the normal number of bales has been compressed.

8. In a compound baling press, comprising a press of less power and a press of greater power, the combination with two top lashing plates and a bearing piece connecting together and supporting said two lashing plates and movable in a horizontal plane around a column, whereby the said lashing plates can be brought in turn first into line with the rams of the less power press to allow the first compression to be given to the bales, and then, together with said bales, into line with the rams of the greater power press to allow the final compression to be given to said bales, of pendent bars hinged to the ends of each of said top lashing plates and having hooks holding up the bales after they have been compressed by the press of less power and while moving to the other press, substantially as set forth

9 In a baling press, the combination substantially as hereinbefore described, and shown, of two cages receiving bales to be compressed, said cages being adjustable to vary their internal sectional area, being movable in turn first to an outside position to receive a charge, and then into line with the rams of a press, the said press, a second press of greater power, and two top lashing plates movable in turn first into line with the rams of the first press to allow the first compression to be given to the bales, and then together with said bales into line with the rams of said second press to allow the final compression to be given to the bales, and pendent hooked bars hinged to the ends of said lashing plates and having hooks, and holding up, the bales after they have been compressed by said first press, and while moving with said top lashing plates to said second press, substantially as and for the purpose hereinbefore set forth

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**505,582. SPEED-MEASURE.** LOUIS T. WEISS, Brooklyn, N. Y. Filed Dec. 12, 1892. Serial No. 454,822. (No model.)



*Claim.*—1. A speed indicator having two sockets for the spindle, a graduated worm wheel and pointer, a spindle D, provided with a screw at one extremity to engage the teeth of the worm wheel, and means for holding the spindle in place when inserted, whereby the spindle may be withdrawn from one socket, reversed, and inserted in the other socket, as set forth.

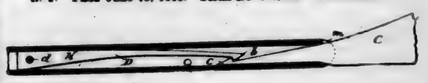
2. The combination in a speed indicator, of the frame having two aligned sockets, *a* and $a^x$, for the spindle, the said spindle, having a screw at one extremity to engage and drive the worm wheel, the said worm wheel and its pointer, and a spring, mounted in the frame and adapted to yieldingly engage a shoulder on the spindle when the latter is in position in its socket, substantially as set forth.

3 In a speed indicator the combination with the frame having two aligned sockets for the spindle and an abutment, $a^4$, therefor, of the spindle, provided with a screw at one end to engage the worm wheel, the said worm wheel and its pointer, and means for holding the spindle in place in its socket when inserted, substantially as set forth

4. In a speed indicator, the combination with the frame, having two handles and two axially aligned sockets which pass through the respective handles, of the plate $a^4$, set in the frame opposite the axis of the worm wheel, the said worm wheel and its pointer, the spindle, and a spring, *e*, secured to the frame at the said plate, one of the upturned ends of said spring being adapted to engage a shoulder on the spindle when the latter is in place in either one of the sockets, substantially as set forth

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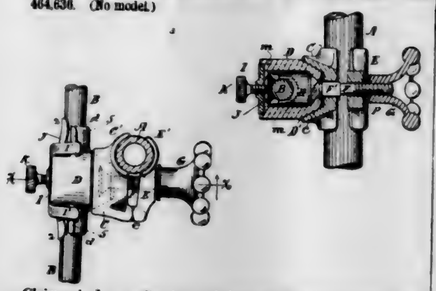
**505,583. PILE-WIRE FOR LOOMS.** KARL W. WEISS, Yonkers, N. Y. Filed June 19, 1893. Serial No. 478,033. (No model.)



*Claim.*—1. In a pile-wire, the combination of the hollow sheath open at one end, with the locking spring and with the detachable knife or cutter adapted to be engaged by said spring, said sheath being apertured to permit the introduction of a key for disengaging said spring from said knife or cutter, as described.

2. The hollow sheath containing means substantially as described for locking the hooked shank of a knife blade, said sheath being open at one end for the introduction of the shank of said knife-blade, and a perforation by which access to the locking mechanism is obtained as specified.

## 505,584. COMPOUND SWIVELING AND CLAMPING JOINT MECHANISM. Otis C. White, Worcester, Mass. Filed Mar. 6, 1893. Serial 464,636. (No model.)



*Claim.*—1. In an adjusting and clamping joint mechanism of the character specified, the swivel-head or rod-carrier having a seat for the supported rod, and provided with an internal chamber for containing the head of the binder-stud under said rod, and the binder-stud disposed with its head rotatively confined in the carrier chamber and its neck non-rotative in the body part, in combination with the body whereon said swivel-head is supported, and the binder or nut connected with said stud, for the purpose set forth.

2. An adjusting and clamping joint mechanism, comprising the main part or body having at one side a conoidal friction surface, and at its other side a seat for the primary rod, the clamping jaw disposed opposite said seat, the swivel-head fitted to match against the frictional surface of the body, and having the transverse opening and seats for the secondary rod, a cap-plate at the outer end of said head and a spring or bearing plate for retaining the rod therein, an internal cavity and shoulder beneath the rod seats in said swivel-head, the binder-stud having its head fitted in said cavity bearing on said shoulder, its shank extending through the body and jaw parts, the binder nut on the end of said stud, and the yielding washer disposed between said binder and jaw, for the purposes set forth.

3. An adjusting and clamping joint mechanism comprising a frictional-faced disk or body, provided with means for its attachment to the primary rod, a swivel-head frictionally fitted to the face of said body, and provided with seats for the secondary rod, a center-stud and binder that controls the primary-rod-clamp and swiveling action, and a yielding holder-plate that frictionally retains the secondary rod at position in said swivel-head while permitting its ready adjustment by simply moving said rod to the position desired.

4. In an adjusting and clamping joint mechanism, the combination of the conoidally recessed body having means for its attachment to the primary rod, the swivel-head matching the conoidal recess of the body, and having lateral projections with recesses or seats for the supported rod, the spring-plate disposed through the swivel-head opposite said seats for retaining the rod thereon, a pivoting axis about which said head rotates and a regulating screw fitted in the swivel-head cap with its point against said spring-plate for adjusting the tension or pressure thereof upon the rod, for the purpose set forth.

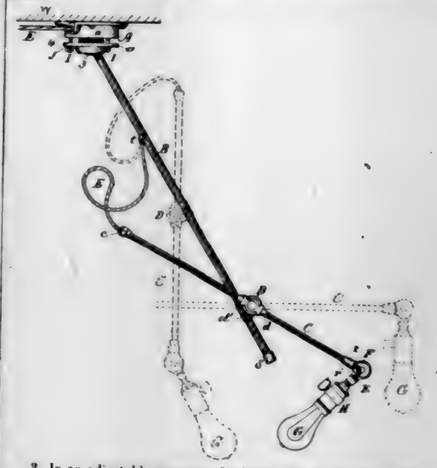
5. The spring or presser-plate J provided with side projections 6, recesses *n'*, and end portions 2, 2, in combination with the internally recessed swivel-head having the rod-supporting seats *d*, side lugs *m* and shoulders *n n* formed therein, the cap plate I, and the removable rod supported in said swivel-head, for the purpose set forth.

6. The cap-plate I having the arms I' and lugs *i*, the swivel-head or carrier D having the inwardly projecting side lugs *m*, and the outwardly projecting rod-supporting seats *d* with lateral lugs or flanges 5 beneath which the ends *i* of said cap-plate arms are locked, in combination with the rod B, the holder or spring-plate, the pivoting-stud and body whereon said swivel-head is supported.

## 505,585. ADJUSTABLE SUPPORTER FOR ELECTRIC OR OTHER LAMPS. Otis C. White, Worcester, Mass., assignor of one-half to George R. Francis, same place. Filed Mar. 31, 1893. Serial No. 468,441. (No model.)

*Claim.*—1. In an adjustable supporter for lights, the combination of the main rod or tube having one of its ends adjustably attached to a support, the lamp-carrier rod or tube having means for attaching the lamp thereto, and the compound swiveling, sliding and clamping joint connecting said tubes one to the other in the manner set forth, whereby longitudinal and rotative adjustment on both tubes, and swiveling adjustment of the carrier-tube are effected as described.

2. In an adjustable supporter for lamps, the attaching joint composed of the two open centered plates, one provided with a seating-flange, an interior chamber and an opening through the side thereof, the triangular-disposed connecting-bolts passing loosely through said plates joining one with the other, and the open-centered ball supported by annular bearing surfaces between the plates, in combination with the main tube having its end confined within said ball, the conductor entering said chamber through the side opening and passing into said tube through its upper end, insulating bushings in the side openings and tube end, the carrier tube, the swiveling connecting joint therefor longitudinally adjustable upon and joining said tubes one with the other, the lamp-attaching wrist-joint and lamp, substantially as set forth.



3. In an adjustable supporter for lamps, the combination of the main-rod or tube, the attaching-joint, consisting of the two open-centered plates one provided with a seating-flange, the open centered ball embraced by annular bearing surfaces within the plates, and having the end of said tube adjustably confined therein, the connecting bolts disposed at triangular positions through said plate and having the bent washers thereon, the carrier tube, the swiveling connecting-joint joining said tubes one with the other, and longitudinally adjustable upon each tube, the offsetting wrist-joint attached to the end of said carrier-tube, the electric lamp socket secured to the outer end of said joint, and the conductor or wires extending through said carrier-tube and wrist joint, all substantially as set forth.

4. The herein described attaching-joint A comprising, in combination, the centrally chambered plate *a'* having a peripheral-base or flange for attachment to the ceiling or support, the annular counter-plate *a* adjustably connected therewith, said plates respectively provided, internally, with the opposite annular bearing surfaces 5, the hollow spherical ball 3 confined between said annular bearing surfaces, the rod or tube B supported by said ball, the loosely fitting bolts I connecting said plates one with the other, and the bent steel washers J arranged on said bolts between the head or nut and the plate, all substantially as set forth.

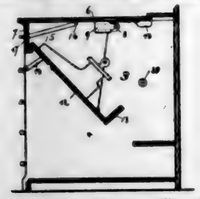
5. The wrist-joint composed of the centrally-pivoted frictionally-matched disks, each provided at one edge with a tubular threaded hub axially offset from the plane of the disk, a cupped spring-plate fitted to bear against the inner disk and having a nick at one side of its center opening, and a projecting tang that enters one of said hubs, the pivoting screw having under its head a lug that engages the nick in said spring-plate, and the adjusting nut fitted on the threaded end of said pivot screw at the outer side of said disks, for the purpose set forth.

6. The wrist-joint composed of two centrally pivoted adjacently matched disks, each having at its edge a radially projecting tubular threaded hub, chambered at the inner end and provided with a tubular insulating bushing therein; said hubs disposed with their axes in a common plane, offset from the plane of the disks, as shown; in combination with the carrier-tube fixed in one of said hubs, the lamp-socket attached to the other of said hubs, and the conductors leading through said hubs and bushings, substantially as and for the purpose set forth.

7. In the supporter for electric lamps, the main tube adapted for receiving the conductor at its upper end, having a side opening at an intermediate position in its length for the issuance of the conductor, and an attaching joint in which said tube is adjustably sustained, said attaching-joint having a hollow center through which the conductor passes to said main tube, in combination with the lamp-carrier-tube externally connected with said main tube, and the conductor wires arranged as set forth.



## 505,586. TYPE-WRITER CABINET. Melvin Bancroft, Whitesborough, N. Y., assignor to the Quigley Furniture Company, same place. Filed May 19, 1893. Serial No. 474,739. (No model.)

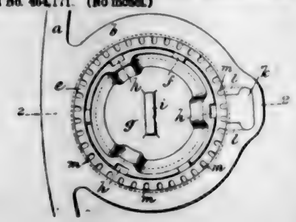


*Claim.*—1. In a typewriter cabinet, a well, a platform support in the front of the well, a platform sliding and tilting over the support, a brace pivoted below the support to the cabinet and to the platform, a swinging and sliding cover adapted to close the top of the well, a pulley secured in the top of the well and by which the cover is supported in closed position and over which it is moved in opening and closing, a flexible connection between the inner end of the platform and the rear end of the cover also passing over the pulley, and an arm pivoted to the cabinet, substantially midway between front and rear and to the forward end of the cover, combined substantially as set forth.

2. In a typewriter cabinet having a well, a platform support spanning the front of the well, a movable platform sliding and tilting over the support, a brace pivoted to the cabinet below the support and to the typewriter platform, a vertical end wall on the inner end of the platform, a cover adapted to close the top of the well having a rigid section of front secured on the front end of the cover, a pulley secured in the well at its top in position to act as a support for the cover in closed position, a swinging arm pivoted to the cabinet substantially midway between the front and rear of the opening at the top of the well and to the projecting front wall on the front of the cover, and a flexible connection passing over the pulley and connecting the rear end of the cover with the inner end of the platform, combined substantially as set forth.

3. In a typewriter cabinet having a well, the combination of the platform support 5 in the front of the well, a platform adapted to slide and tilt over the support, a brace pivoted below the support at one end and to the platform at the other end, an end wall 13 on the inner end of the platform, a cover adapted to close the opening in the top of the well and provided with a rigid angular portion on the front of wall 7, an arm 15 pivoted to the part 7 and to the cabinet at a point substantially midway between front and rear of the opening in the top of the cabinet, a pulley hanger secured in the top of the well and adapted to act as a support for the cover in closed position, a pulley in the hanger a flexible connection connecting the inner end of the platform with the rear end of the cover and passing over the pulley, and a guide and holding roller 20 adapted to guide the cover into its open position, substantially as set forth.

## 505,587. BUNG, VALVE OR STOPPER, &c. Thomas C. Barraclough and Thomas T. Heaton, London, England. Filed Mar. 1, 1893. Serial No. 464,171. (No model.)



*Claim.*—1. For closing or opening a bung hole or other aperture a fixed internally threaded bush, and a fixed valve seat, in combination with a valve fitting and engaging said seat, and a hollow screw-threaded nut fitting and engaging the screw threads of said bush, said nut having projections which when in one position relatively to said valve give passage to the valve, and when in another position relatively to said valve engage with and hold said valve on said seat, whereby the valve can be passed through said nut to the valve seat, and can be engaged and held down upon the seat by said nut when a partial turn is given to the latter in one direction, and when the nut is given a partial turn in the reverse direction the valve is released and can be withdrawn through the said hollow nut, all substantially as set forth.

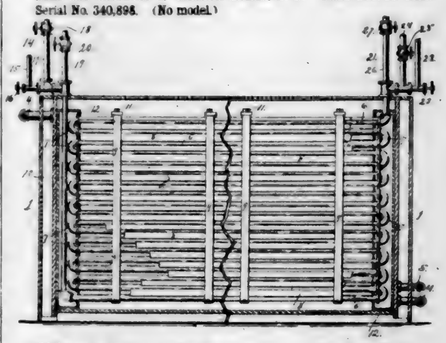
2. In a stopper, a screwthreaded bush, and a valve seat fixed relatively thereto, in combination with the hollow screwthreaded nut *e* engaging said bush and having projections *f f*, and the valve *g* having corresponding gaps *k k*, said valve movable through said nut when in one position and engaged thereby when in another position, and when so engaged held by said nut against said seat, substantially as set forth.

3. In a stopper, a screwthreaded bush, and a valve seat fixed relatively thereto, in combination with the hollow screwthreaded nut *e* engaging said bush and having projections *f f*, and the valve *g* having corresponding gaps *k k*, said valve movable through said nut when in one position and engaged thereby when in another position, and when so engaged held by said nut against said seat, said valve having also the shank *i* projecting within said hollow nut, substantially as and for the purpose set forth.

4. In a stopper, a screwthreaded bush *b* having a recess *k* at top, a valve seat, and a valve engaging said seat in combination with a screw-threaded nut entering and engaging the screwthreads of said bush holding said valve on said seat and having notches *m m* in its top edge coinciding with said recess in said bush, substantially as and for the purpose set forth.

5. In a stopper, a screwthreaded bush *b*, having a recess *k* at top, a valve seat, and a valve engaging said seat and the under cuts *l l* in said recess, in combination with a screwthreaded nut holding said valve on said seat entering and engaging the screwthreads of said bush and having notches *m m* in its top edge coinciding with said recess and said undercuts in said bush, substantially as and for the purpose set forth.

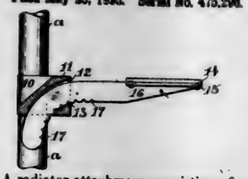
## 505,588. CONGEALER FOR ICE-MAKING MACHINES. John F. Bern and Gustavus A. Wegner, Buffalo, N. Y. Filed Feb. 18, 1890. Serial No. 340,898. (No model.)



*Claim.*—1. In a congealer for ice making machinery hollow gas-tight freezing-plates consisting of a coil or succession of continuous passages through which a volatile-liquid is circulated and expands, said coil or hollow-plate being connected at both ends of the coil or passages to feed, suction, and hot-gas passages, the freezing-plates being arranged within a tank at suitable distances apart forming compartments which compartments are filled with water and communicate with each other by short passages so arranged that the water passes from one compartment to the other at or near its bottom on one side of the compartments and passes out at or near its top on the opposite side or vice-versa, the water being drawn from one end of the congealer and forced into the other end, substantially as shown.

2. In a congealer for ice making machinery a hollow-freezing plate consisting of pipes connected by return bends, the space between said pipes being filled with close-fitting strips, the whole being made rigid and bound together by clamps and the intervening spaces between said clamps, pipes and strips being filled with any conducting material that will remain insoluble in water, substantially as and for the purpose stated.

**505,589. RADIATOR ATTACHMENT.** ALBERT J. BENNETT, Woonsocket, R. I. Filed May 23, 1893. Serial No. 475,296. (No model.)

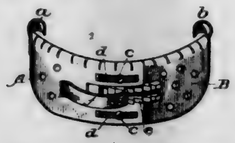


*Claim.*—1. A radiator-attachment, consisting of a clamping device furnished with means for engaging a shank, and a shelf having a shank adapted to be supported by the supporting device and adjustable in a vertical plane.

2. In a radiator-attachment, the combination with a two-part clamp adapted to enter between the pipes of a radiator and to be secured, and having a supporting-device in which is a shank adapted to be adjustably supported, of a shelf, and a shank for supporting the shelf, adapted to be supported by the supporting-device and radially adjustable therein in a vertical plane.

3. The combination with a clamp, consisting of the perforated-base 7 having the jaw 6 and lip 8, the base 11 having the jaw 10, the curved-slot 12 and the tooth 13, and means for securing the bases 7 and 11 together, of the shelf 14 secured to the frame 15 having the curved and notched shank 17 adapted to be secured in the slot 12, as and for the purpose described.

**505,590. ANTICRIBBING DEVICE.** ERNEST BURVILL-HOLMES, Royersford, Pa., assignor of two-thirds to Edwin Yost Marsteller, same place, and Allen Zeigler Keelor, Boyerstown, Pa. Filed July 19, 1893. Serial No. 480,917. (No model.)



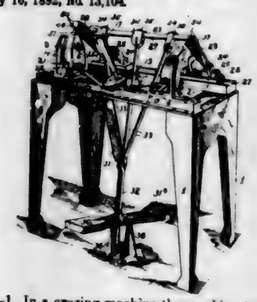
*Claim.*—1. An anti-cribbing device, consisting of plates corresponding in curvature to the outer surface of the upper row of a horse's teeth and of a height sufficient to extend from the gums to a slight distance beyond the cutting edges of the teeth, said plates having at their outer ends means for engaging with the end teeth of the row, and being adjustable toward each other, in combination with a ratchet secured to one of said plates and a co-operating pawl secured to the other plate; whereby when the plates are moved toward each other and tightened upon the teeth they may be releasably locked in position; substantially as described.

2. An anti-cribbing device, consisting of plates corresponding in curvature to the outer surface of the upper row of a horse's teeth and of a height sufficient to extend from the gums to a slight distance beyond the cutting edges of the teeth, said plates having at their outer ends means for engaging with the end teeth of the row, and being adjustable toward each other, in combination with a ratchet secured to one of said plates and a co-operating pawl secured to the other plate, said plates having means for engagement with tightening and loosening pliers; substantially as described.

3. An anti-cribbing device, consisting of plates corresponding in curvature to the outer surface of the upper row of a horse's teeth and of a height sufficient to extend from the gums to a slight distance beyond the cutting edges of the teeth, said plates having at their outer ends means for engaging with the end teeth of the row, and being adjustable toward each other, in combination with a ratchet secured to one of said plates and a co-operating pawl secured to the other plate, one of said plates being provided with slots and the other with guide pins moving in said slots as the plates are adjusted toward each other; substantially as described.

4. An anti-cribbing device, consisting of overlapping plates corresponding in curvature to the outer surface of the upper row of a horse's teeth and of a height sufficient to extend from the gums to a slight distance beyond the cutting edges of the teeth, said plates having hook devices at their outer ends and being adjustable toward each other, in combination with a ratchet secured to one of said plates and a co-operating pawl secured to the other plate, one of said plates being provided with slots and the other with guide pins moving in said slots as the plates are adjusted toward each other; substantially as described.

**505,591. CROZING-MACHINE.** HENRY CAMPBELL, Baltimore, Md. Filed July 7, 1892. Serial No. 439,258. (No model.) Patented in England July 16, 1892, No. 13,104.



*Claim.*—1. In a crozing machine the combination of clamps for the stave having fixed parts 4, and movable parts 5 the latter mounted at the concave side of the stave and between the fixed parts, means for forcing said movable parts outward and toward the stave to clamp it, crozing knives mounted and oscillating in paths outside of said fixed parts, and means for oscillating the knives, substantially as set forth.

2. In a crozing machine the combination with means for clamping the staves comprising brackets 4, 4, at the convex side of the stave and concave and concentric with the arc of the knives an oscillating frame carrying crozing knives, and trimming knives also carried by said frame and adapted to engage the outer sides of the brackets, substantially as set forth.

3. The combination with a main frame, of brackets 4, 4, and clamps 5, 5, one of said brackets and clamps being longitudinally adjustable on the frame, stands 26 on said frame one of which stands is longitudinally adjustable, thereon an oscillating frame 23 comprising arms 28 pivoted on said stands and a bar 29 connecting said arms and adjustably secured to one of said arms, crozing knives carried by said arms, and mechanism for actuating said frame, substantially as set forth.

4. In a crozing machine the combination with means for clamping the stave, comprising brackets 4, 4 an oscillating frame carrying the crozing knives trimming knives carried by said frame and adapted to engage the sides of said brackets, of a treadle connected with said frame, and guides 36 by which lateral pull on the crozing knives is prevented and the latter kept in line with the sides of said brackets, said guides engaging the treadle, substantially as set forth.

5. The combination with an arm 28 of blocks 39 having inclined faces, carrying the crozing knives, and adjustable on said arm, a block 46 adjustable on the arm and having an inclined face, a chamfering knife having an inclined foot 52 and mounted and adjustable on said arm, and a trimming knife mounted on the arm, substantially as set forth.

6. In a crozing machine the combination of a movable frame, crozing knives thereon, clamps for the stave which are open in the direction in which said frame moves on its return after the crozing operation, and means for operating said clamps to clamp or release the stave, whereby said frame is enabled to eject the stave on its return movement, substantially as set forth.

7. In a crozing machine the combination with the main frame, of upright brackets 4, 4 thereon having concave inner faces, upright clamps 5 having convex edges and feet 6, vertical pivots 7 for the latter, links 9 connected with the clamps for oscillating them on said pivots, means for forcing said links inward and outward, an oscillating frame 23 carrying crozing knives, and means for moving the latter frame upward and downward, substantially as set forth.

8. In a crozing machine the combination with the guide blocks 39 having faces inclined toward each other, of crozing knives mounted and longitudinally adjustable on said faces and having their cutting extremities in contiguity with each other, an oscillating arm 28 between said blocks, and on which they are longitudinally adjustable, and means for securing the blocks on the arm, as set forth.

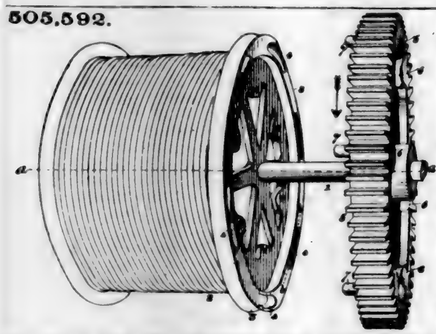
9. In a crozing machine the combination with the clamps having the fixed parts 4 and oscillating parts 5 provided with ears 6, of the toggle links 9 pivoted to said ears and extending toward each other, the sliding block 12 to which said links are connected, the hand lever 17 engaging the block, and an adjustable fulcrum for the lever, as set forth.

**505,592. ELEVATOR HOISTING APPARATUS.** ISAIAH B. COLEMAN, Elmira, N. Y. Filed Oct. 18, 1892. Serial No. 449,207. (No model.)

*Claim.*—In a hoisting apparatus, the combination with a winding drum mounted on a shaft and having a series of equidistant re

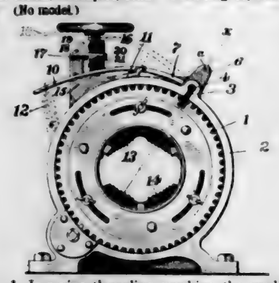


**505,592.**



cesses in one of its sides, said recesses having correspondingly inclined bottoms, of a driving wheel loosely mounted on said shaft and having a series of equidistant cylindrical recesses registering with the recesses in the side of the drum, said recesses having contracted mouths, pins 7 arranged in said recesses in the driving wheel said pins being provided with projecting collars 8 arranged below the contracted mouths of the recesses and springs mounted on said pins below said collars, substantially as set forth.

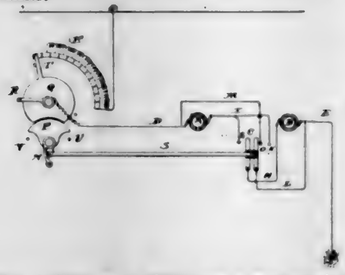
**505,593. PIPE-THREADING MACHINE.** RODERICK P. CURTIS and LEWIS R. CURTIS, Southport, Conn. Filed Aug 18, 1892. Serial No. 443,383. (No model.)



*Claim.*—1. In a pipe threading machine, the combination with the die-carrying ring having a sliding movement, of the finger capable of lengthwise reciprocation and bearing against the face of said ring, the dog pivoted to the frame of the machine and provided with a hand lever, said dog and finger having respectively a transverse inclined rib and slot in engagement one within the other, substantially as set forth.

2. The combination of the ledge extending from the casing, the operating screw passed loosely through said ledge, the jaws suspended on the threads of said screw, and the sets of nuts and lock-nuts on said screw above and below said ledge whereby the screw may be adjusted to a given plane, substantially as set forth.

**505,594. CONTROLLING DEVICE FOR ELECTRIC MOTORS.** CHAS. G. CURTIS, New York, N. Y. Filed Oct. 22, 1892. Serial No. 449,596. (No model.)



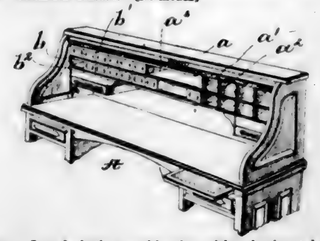
*Claim.*—1. Means for regulating two or more electric motors comprising a switch for connecting them in either series or multiple arc relation, a handle controlling said switch, an independent handle operating a circuit-closing arm, and interlocking connections which prevent the operation of the switch handle except when the circuit is open.

2. Means for regulating two or more electric motors comprising a switch for connecting them in either multiple arc or series relation, a handle controlling said switch, a circuit-closing handle, a resistance adapted to be cut in or out of circuit thereby and interlocking connections between the two handles or their shafts for locking the switch against movement while the resistance is cut out.

3. The combination of a traveling vehicle or vehicles, two or more propelling electric motors mounted thereon, a switch for coupling the motors in either series or multiple arc relation, a handle for controlling the switch, and a means for locking the handle against movement until the circuit is broken.

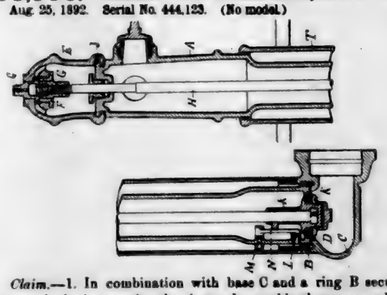
4. The combination of a traveling vehicle or vehicles, two or more propelling electric motors mounted thereon, a switch for connecting the motors in series or multiple arc relation, a handle for operating said switch, a rheostat and controlling lever for regulating the current, and means for locking the switch against movement except when the rheostat lever has been operated and the circuit opened.

**505,595. DESK.** FRED H. CUTLER, Buffalo, N. Y. Filed Aug. 9, 1892. Serial No. 442,537. (No model.)



*Claim.*—In a desk the combination with a horizontal series of pigeon holes, of a series of horizontal sliding covers, each of the size and adapted to close a single pigeon hole, provision intermediate the ends of the desk whereby each series can be moved a distance equal to the width of a single pigeon hole, substantially as described.

**505,596. HYDRANT.** DAVID A. DECROW, Lockport, N. Y. Filed Aug. 25, 1892. Serial No. 444,123. (No model.)



*Claim.*—1. In combination with base C and a ring B secured thereto, a body A, engaging the ring and a combined copper packing and valve-seat-plate D, secured between the body and base, substantially as shown and described.

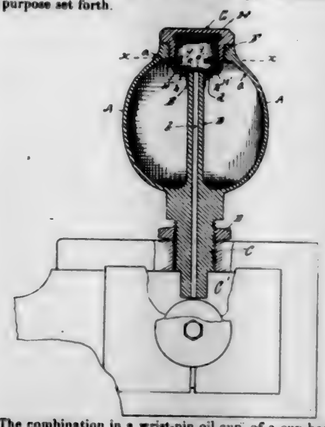
2. In a hydrant, the combination with the top portion E having a hole or opening in its top; of a nut G journaled in the hole or opening and provided below said hole with a peripheral flange or collar; a valve stem H screwing into the lower end of the nut; and an externally-threaded packing-gland F inserted into the top portion from the inside, and bearing at its upper end upon the nut-flange, all substantially as shown and described; whereby the gland makes not only a tight packing, but also holds the nut in place.

3. In combination with body A having opening *o*; a laterally swinging valve N pivoted in the body portion A to close the opening and provided with a cam groove P; and the longitudinally reciprocating valve head provided with a stud *k* to enter the groove.

**505,597. LUBRICATOR.** JULIUS B. DROEBEL, Erie, Pa. Filed July 20, 1893. Serial No. 481,004. (No model.)

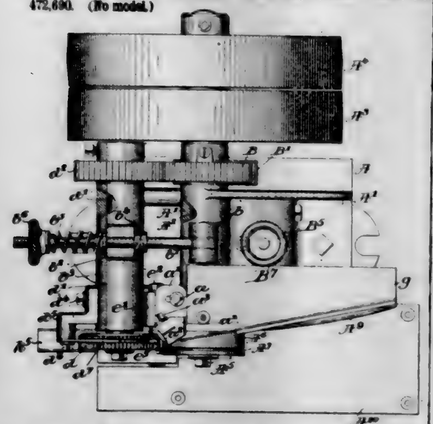
*Claim.*—1. In a wrist-pin oil cup, an oval cup for retaining a supply of oil, a tube in said cup, for supplying oil to the box to be lubri-

cated, extending upward nearly to the top of the cup, a removable cap having a minute opening therein on the top of said tube, a removable plug or cap having a chamber therein in the upper part of said oil cup, an opening in the bottom of said chamber communicating with the minute opening in the cap on the top of the upwardly extending tube, and lateral openings in the sides of the chamber communicating with the upper part of the inside of the oil cup, substantially as and for the purpose set forth.



2. The combination in a wrist-pin oil cup, of a cup having oval sides, an upwardly extending tube B, and a removable cap E on the upper end of said tube having an opening *e'* therein, in line with and of less diameter than said tube, with a screw plug or cap G for said cup, having a chamber H therein, an opening in the bottom H' of said chamber fitting down over the cap E, and lateral openings *g* immediately under the curved inside *c* of the shell A of the cup, substantially as and for the purpose set forth.

## 505,598. WELT-MAKING MACHINE. ZACHARY T. FRENCH and WILLIAM C. MEYER, Boston, Mass. Filed May 2, 1893. Serial No. 472,690. (No model.)



*Claim.*—1. In a welt making machine, the wheels $A^4$, $B^3$, between which the leather is passed, and a slitting knife, combined with wheel *d* and a lifter and guide to turn away the welt as cut from the side, and a skiving knife supported above the wheel $B^3$ and adapted to skive the edge of the welt, substantially as described.

2. In a welt making machine, the wheels $A^4$, $B^3$, between which the leather is passed, and a slitting knife, combined with wheel *d* and a lifter and guide to turn away the welt as cut from the side, and a skiving knife supported above the wheel $B^3$ and adapted to skive the edge of the welt, and a grooving knife to groove the welt on its passage between the rolls *d* and $A^4$, substantially as described.

3. In a welt making machine, the wheels $A^4$, $B^3$, and *d*, combined with the splitting knife $A^5$, its carrier, and the edge skiving knife $a^3$ and its holder, substantially as described.

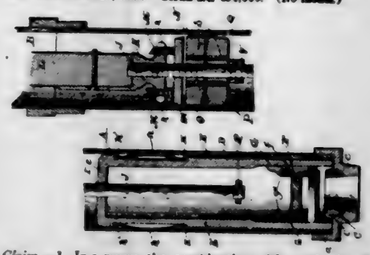
4. In a welt making machine, the wheels $A^4$, $B^3$ and *d* and the splitting knife, combined with groover and the welt lifter, substantially as described.

5. In a welt making machine, the wheels $A^4$, $B^3$ and *d*, combined with the splitting knife $A^5$, its carrier and the edge skiving knife $a^3$ and its holder, and with the lifter to act as a guide, substantially as described.

6. In a welt making machine, the wheels $A^4$, $B^3$, between which the leather is passed, and a slitting knife, combined with wheel *d*, and a lifter and guide to turn away the welt as cut from the side, and a skiving knife supported above the wheel $B^3$ and adapted to skive the edge of the welt, and a receiver for the welt as it emerges from between the wheels *d* and $A^4$, substantially as described.

7. The wheels $A^4$, $B^3$, their supports, a spring to keep them pressed toward each other, a work-support, a knife carrier $A^2$, a slitting and a splitting knife attached thereto, and an adjusting device for said carrier, combined with a wheel *d*, a welt lifter and guide, and a skiving and a grooving knife, substantially as described.

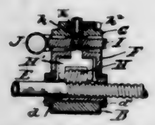
## 505,599. PUMP. SAMUEL M. FULTON and ALDEN T. AMES, Galt, Cal. Filed Nov. 11, 1892. Serial No. 451,669. (No model.)



*Claim.*—1. In a pump, the combination with a valved cylinder and the pump rod moving therein; of a rod head securely bolted to the inner end of said pump rod and provided with a central threaded opening and opposite laterally extended bifurcated guide ears, a removable plunger stem having an upper threaded end removably engaging the threaded opening of said rod head, an upper plunger disk threaded onto said removable plunger stem below said rod head, an adjacent plunger disk loosely mounted on said plunger stem and clamped under the upper disk, both of said plunger disks having aligned fluid passages, and a vertically moving valve disk loosely mounted on the plunger stem between said rod-head and the upper plunger disk and provided with opposite upwardly projecting guide stems extended from opposite edges thereof and moving in said bifurcated guide ears, substantially as set forth.

2. In a pump, the combination with a cylinder having a lower valve seat, of a removable valve holder adapted to loosely register with the cylinder and comprising opposite vertical arms, an upper connecting end bar and a transverse guide bar provided with opposite guide openings or slots, retaining bow springs secured to the side arms of the holder and contacting with the sides of the cylinder, a disk valve working over said valve seat and having opposite vertical guide stems moving in said guide openings or slots, stop pins secured in said stems above the guide bar, and the valved plunger having an extended stem moving through the upper connecting end bar and provided with a lifting nut, substantially as set forth.

## 505,600. CORRUGATING-MACHINE. BICKNELL HALL, Taunton, assignor to the Wainwright Manufacturing Company of Massachusetts, Boston, Mass. Filed Oct. 29, 1891. Serial No. 410,255. (No model.)



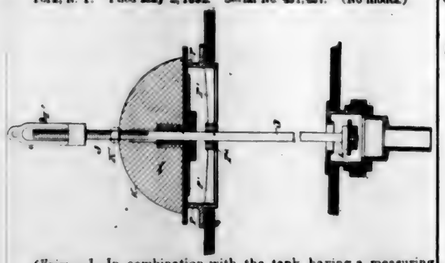
*Claim.*—1. A tube corrugating machine comprising a holder for the tube to be corrugated, a corrugating roll having a spirally arranged rib with two or more complete turns extending around its circumference, and a tool holder adjustable to vary the angle of the axis of the tool relatively to the axis of the tube, whereby either a continuous spiral corrugation or a series of separate and distinct annular corrugations may be formed in the tube.

2. A tube corrugating machine comprising a holder for the tube to be corrugated, a corrugating roll having a spirally arranged rib with two or more complete turns extending around its circumference and extending around its diameter, and a tool holder adjustable to vary the angle of the axis of the tool relatively to the axis of the tube and located in proximity to the tube holder, in which the corrugating roll has its bearings, all as set forth.

3. A tube corrugating machine comprising a holder for the tube to be corrugated, a corrugating roll having a spirally arranged rib with two or more complete turns extending around its circumference and all of uniform diameter, and a tool holder comprising bearings for the corrugating roll, and a shank or pivot adapted to vary the angle of the axis of the tool to the angle the axis of the tube carried by an arm adjustable toward and from the holder, all as set forth.



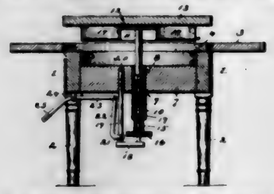
## 505,601. WATER-CLOSET CISTERN. JULIUS HAHENHOF, New York, N. Y. Filed May 2, 1892. Serial No. 431,427. (No model.)



*Claim.*—1. In combination with the tank having a measuring space, the loop, the vertical rod having the upper end threaded, the lower valve on said rod, and the upper valve also on said rod having a threaded opening engaging said rod so as to make the valves adjustable on said rod, the said loop also having a threaded opening engaging said rod and being adjustable relatively thereto, substantially as described.

2. In combination with the tank having a measuring space, the link, the loop depending from the link, the vertical rod having on its upper end a continuous or single thread engaging a threaded opening in said loop, the lower valve mounted on said rod, and the upper valve also mounted on said rod having a threaded opening of similar size and pitch to that of said loop engaging a continuation of the same thread on the rod, so that both said loop and said upper valve are adjustable on the continuous or single thread of said rod, said rod and both its valves being free to turn independently of the said loop, substantially as described.

## 505,602. SELF-WAITING TABLE. GEORGE W. JACKSON, Weston, W. Va. Filed May 13, 1893. Serial No. 474,139. (No model.)

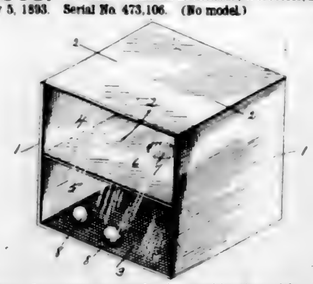


*Claim.*—1. In a table, the combination of a frame having a circular rim provided with a central opening, a vertically movable center-piece of the same diameter as said opening provided with a depending post, a vertically disposed interiorly threaded tube mounted in the frame and arranged below the rim and receiving the depending post, a vertically adjustable tubular screw arranged in the said tube and depending therefrom, a vertically movable rod passing through the screw and having its movement limited by the same and engaging the lower end of the post, and a lifting lever connected with the lower end of the rod, substantially as described.

2. In a table, the combination of a frame provided with a circular rim having a central opening, a vertically movable center-piece conforming to the configuration of said opening and provided with a depending post, a vertical tube interiorly threaded and mounted on the frame and receiving said post, a tubular adjusting screw arranged in the lower portion of said tube and depending therefrom, a vertically movable rod passing through the screw and having its upward movement limited thereby and engaging the lower end of the post, a guide rod slidingly mounted on the frame and arranged parallel with the vertically moving rod and having its lower end connected with the lower end of the said vertically moving rod, and a lever connected with the guide rod, substantially as described.

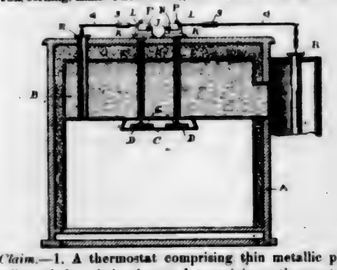
3. In a table, the combination of a stationary rim of circular form having a circular opening in the center thereof, a cross-strip located under said rim and having a tubular sleeve fixed thereto with a lower internally-screw-threaded portion, a tubular screw mounted in said lower screw-threaded portion of the sleeve, a rod extending upwardly through the said screw into the sleeve, a tie-plate or shoe connected to the lower end of the rod, a guide-rod connected to the opposite part of said tie-plate or shoe at its lower end and movably mounted in said cross-strip at its upper end, an arm pivotally connected to said guide-rod, an elbow lever movably attached to the said arm, and a revolving center-piece having a depending post adjustably fitted in the said sleeve, said tubular screw having a hand-wheel or disk thereon to adjust the same and control the elevation of the said revolving center-piece, substantially as described.

## 505,603. PUZZLE. WILLIAM H. LINCOLN, Worcester, Mass. Filed May 5, 1893. Serial No. 473,106. (No model.)



*Claim.*—In a game or puzzle, the combination with a box or receptacle, having an upper and a lower compartment therein, formed by a division extending through the central portion of the box, and said division, having a hole therein, and said box having a flexible or elastic bottom, and one of its sides of transparent material, of one or more balls contained within the box, and adapted to pass from the lower into the upper compartment thereof, through the hole in the division separating said compartments, substantially as shown and described.

## 505,604. HEAT-REGULATOR FOR INCUBATORS. FRANK MINTER, Corning, Kans. Filed Jan. 31, 1893. Serial No. 460,308. (No model.)



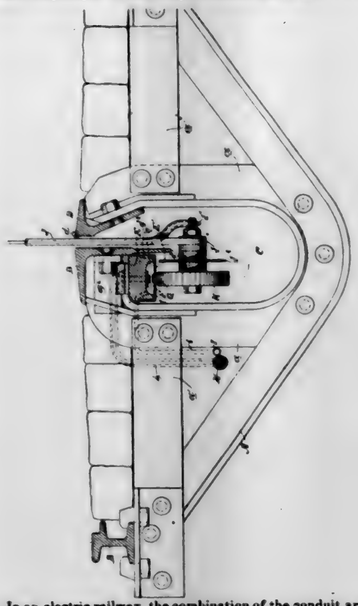
*Claim.*—1. A thermostat comprising thin metallic plates hermetically sealed at their edges and containing a thermostatic liquid composed of stronger ether and bi-sulphide of carbon, substantially as set forth.

2. In a thermostatic regulator, the combination with an incubator; of a centrally perforated pivot or fulcrum block secured to the top of the incubator and having conical bearing recesses in opposite sides thereof, the valve lever having a U-shaped yoke at one end; said yoke having a threaded perforation in the top and the depending arms of which are provided with threaded perforations, pointed bearing screws engaging said threaded perforations and bearing in said bearing recesses, a liquid-controlled thermostat arranged within the incubator and having a concaved button on the top thereof, a regulating rod having its lower end resting in said button, and a regulating screw engaging the top perforation of said lever yoke and working over the upper end of said regulating rod, substantially as set forth.

## 505,605. CLOSED CONDUIT FOR ELECTRIC RAILWAYS. GEO. W. MCNEAR, Oakland, Cal. Filed Aug. 1, 1892. Serial No. 441,866. (No model.)

*Claim.*—1. In an electric railway, the combination of the conduit arms *a* of the yokes, the brackets $a^3$ resting on one side of said arms, the insulating strip or bar E carried by said brackets and having a hollowed out or concave lower side, and the flexible insulating diaphragm secured to the strip or bar and crossing its hollow or concave side whereby an envelope or sack is formed for the electrical conductor and contact strips, substantially as herein described.

2. In an electric railway, the combination of the conduit arms *a* of the yokes, the brackets $a^3$ resting on one side of said arms, the insulating strip or bar E carried by said brackets and having a hollowed out or concave lower side, the flexible insulating diaphragm secured to the strip or bar and crossing its hollow or concave side whereby an envelope or sack is formed, the electrical conductor in the lower side of the bar or strip, and the opposing contact strips carried by the flexible diaphragm, substantially as herein described.



3. In an electric railway, the combination of the conduit arms of the yokes, the removable slot irons carried by said arms, the brackets $a^3$ secured to one side of the conduit arms and the envelope or sack carried by said brackets for containing the electrical conductor and contact strips, said envelope or sack consisting of the insulating strip or bar with hollowed lower side, and the transverse insulating flexible diaphragm secured across said side, substantially as herein described.

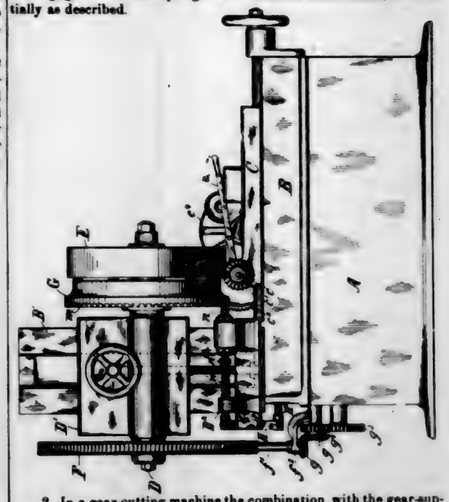
4. In an electric railway, a collapsible sack or envelope for confining an electrical conductor and carrying opposing contacts normally out of contact with said conductor but adapted to be thrown into contact therewith by the collapsing of the sack, a means for maintaining a pressure of air within said envelope or sack to insure the return of the sack from its collapsed condition, consisting of an air pipe connected with a source of air pressure and having connections with the interior of said envelope or sack, substantially as herein described.

5. In a conduit electric railway and in combination with a frame carrying the trolley, said frame having supporting wheels traveling on the slot rails and with flanges traveling in the slot, an arm secured to said frame and having wings on its lower end moving upon said rails in advance of the trolley shank and a point moving in the slot, substantially as herein described.

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**505,606. GEAR-CUTTING MACHINE.** EDWARD H. PARKS, Providence, R. I., assignor to The Brown & Sharpe Manufacturing Company, same place. Filed June 6, 1893. Serial No. 435,597. (No model.)

*Claim.*—1. In a gear-cutting machine the combination, with the gear-supporting arbor, of a face-plate for holding and supporting the gear to be cut, said face-plate being provided with a series of notches, mechanism for turning said face-plate and the gear secured thereto, said mechanism having a certain amount of lost motion, and a spring-pressed bolt for engaging in turn each of the notches in said face plate, whereby said face-plate and gear will be moved only approximately to the right position by said turning mechanism, and whereby said gear will be accurately and positively located by means of the engagement of said spring bolt with one of said notches, substantially as described.



2. In a gear-cutting machine the combination, with the gear-supporting arbor, of a face-plate for holding and supporting the gear to be cut, said face-plate being provided with a series of notches having parallel sides, and a spring-pressed bolt for engaging each of said notches in turn, said spring bolt being provided at its end with a double bevel, whereby said face-plate and the gear to be cut may be adjusted vertically to regulate the depth of cut to be made in forming teeth upon the gear, and be accurately and securely held in any adjusted position, substantially as described.

3. In a gear-cutting machine the combination, with a gear-supporting arbor, of a face-plate for holding and supporting the gear to be cut, said face-plate being provided with a series of notches, a spring-pressed bolt for engaging each of said notches in turn, and means, substantially as described, for automatically operating said spring bolt, whereby it will be allowed to engage one of the notches in said face-plate and accurately and securely hold said face-plate and the gear to be cut during the formation of a tooth, and be automatically disengaged when the cutting of each tooth is completed to permit the turning of the face-plate and its attached gear for the cutting of the next tooth thereon, substantially as described.

4. In a gear-cutting machine the combination, with the gear-supporting arbor and the cutter slide, of a face-plate for holding and supporting the gear to be cut, said face-plate being provided with a series of notches, a spring-pressed bolt for engaging each of said notches in turn, a slide-bar operated by the cutter slide to withdraw said spring-pressed bolt, said slide-bar being provided with a spring latch to hold said spring pressed bolt in its disengaged position, and means actuated by said cutter slide for unlatching said slide-bar to permit the engagement of said spring-pressed bolt under the action of its spring with the next succeeding notch of said face-plate, substantially as described.

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**505,607. WIRE-FABRIC MACHINE.** JOHN C. POPE, Fox, Ill., assignor to Alva L. Kitselman and David M. Kitselman, Ridgeville, Ind. Filed May 2, 1893. Serial No. 472,676. (No model.)

*Claim.*—1. In a wire fabric machine, the upright frame piece having a series of regularly spaced openings, stationary elongated warp wire tubes fitted at one end in said openings, a vertically aligned series of intergeared twister wheels loosely journaled on said stationary tubes and having parallel face grooves, shiftable spool carriers having tongues registering with the grooves in said wheels, and shifting devices for sliding the spool carriers from one wheel to the other, substantially as set forth.

2. In a wire fabric machine, a vertically aligned series of intergeared twister wheels having parallel rabbeted grooves, and shiftable spool carriers having flanged slide tongues adapted to fit in the rabbeted grooves of said twister wheels, substantially as set forth.

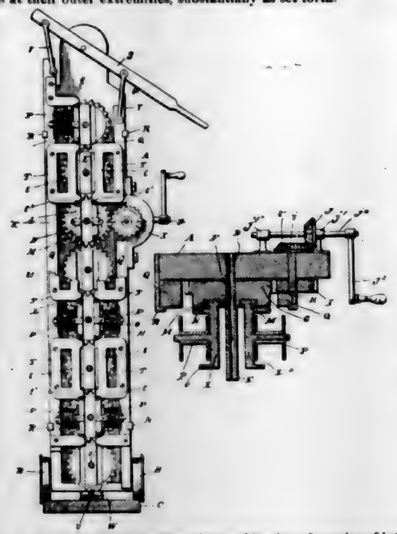
3. In a wire fabric machine, the upright movable frame having a longitudinal series of wire openings, elongated wire tubes secured at their inner ends in said openings, and provided near the frame



with reduced spindle portions, grooved twister wheels journaled on the spindle portions of said tubes and having cog gears intermeshing, and shiftable spool carriers having tongues fitting the grooves of said twister wheels, substantially as set forth.

4. In a wire fabric machine, the frame, a vertical series of elongated warp wire tubes fitted at their inner ends into the frame, a vertically aligned series of intergeared twister wheels journaled on said tubes alongside of the frame and having parallel rabbeted grooves in their outer faces at each side of said tubes, and shiftable spool carriers having flanged slide tongues adapted to fit in said, rabbeted grooves, substantially as set forth.

5. In a wire fabric machine, the combination of vertically aligned intergeared twister wheels having rabbeted grooves in their outer faces adapted to be aligned, and shiftable spool carriers having flanged slide tongues adapted to fit in the rabbeted grooves of the wheels, laterally extended guide flanges overlapping the outer faces of the wheels, off-standing spool spindles, and perforated wire guide lugs at their outer extremities, substantially as set forth.



6. In a wire fabric machine, the combination of a series of intergeared twister wheels having parallel grooves in their outer faces, shiftable spool carriers having tongues fitting the grooves of the wheels, and laterally extended curved guide flanges N overlapping the outer faces of the wheels at one side of the grooves therein, and oppositely and vertically moving shifting plates having curved shifting edges adapted to fit the curved guide flanges of the carriers, substantially as set forth.

7. In a wire fabric machine, the upright movable frame, a vertically aligned series of intergeared twister wheels mounted on said frame and having parallel rabbeted grooves in their outer faces adapted to be aligned, shiftable spool carriers having flanged slide tongues fitting the face grooves of the wheels, and off-standing curved guide flanges N overlapping the outer faces of such wheels, oppositely moving slide bars arranged at opposite edges of the frame, and oppositely arranged shifting plates attached to each of said slide bars and having adjacent inner side portions, and curved shifting edges $f'$ at the extremity of said side portions adapted to fit the curved guide flanges of the carriers, substantially as set forth.

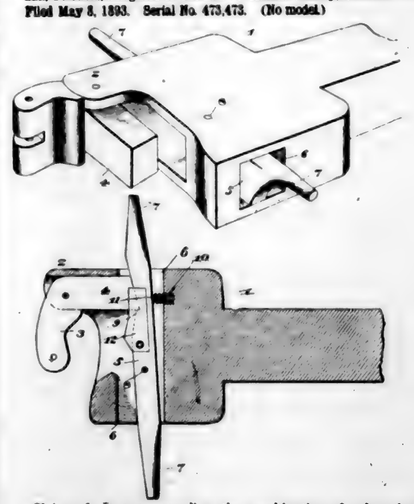
8. In a machine of the class described, the combination of the stationary ground track having a longitudinal ratchet flange and longitudinal guide grooves at the base of such flange, the traveling machine frame carrying flanged traveler wheels adapted to move on the opposite side edges of said track, combined brace and guide rods attached to the machine frame and having lower flanged ends fitting said longitudinal guide grooves, and a vertical dog lever pivoted between said arms and carrying a gravity dog adapted to engage said ratchet flange.

9. In a wire fabric machine, the upright frame having openings, stationary warp wire tubes secured to said frame and aligning with the openings therein, a series of aligned twister wheels loosely journaled on said stationary tubes, and shiftable spool carriers mounted to slide on said wheels, substantially as set forth.

10. In a wire fabric machine, the upright frame having openings, a stationary warp wire tubes fitted at one end in said openings, a series of aligned twister wheels loosely journaled on said stationary tubes, and shiftable spool carriers having a sliding tongue and groove connection with the twister wheels, substantially as set forth.

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**505,608. CAR-COUPLING.** SAMUEL B. SADLER and JAMES B. SADLER, Fairfield, assignors of one-half to Mitrah Makely, Edenton, N. C. Filed May 8, 1893. Serial No. 473,473. (No model.)

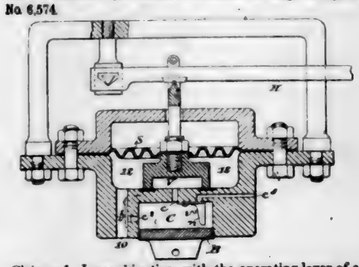


*Claim.*—1. In a car-coupling, the combination of a draw head provided in its sides with openings, and having a forward extension, a knuckle pivoted to the extension and provided with an arm, a locking-lever disposed transversely of the draw-head and fulcrumed therein, and projecting through openings at the sides thereof and provided at its upper edge with a recess and having a shoulder to engage the arm of the knuckle, a spring for holding the lever in engagement with the knuckle, and a pivoted wedge mounted in the recess of the locking-lever and having a forwardly-projecting portion beveled at the lower edge, substantially as described.

2. The combination of a draw-head, a knuckle pivoted thereto and having an arm, a locking-lever extending through the draw-head and terminating in opposite sides of the same in handles and provided intermediate of its ends with a shoulder to be engaged by the arm of the knuckle, and a vertical pivot passing through the locking lever and causing the same to swing horizontally on it, substantially as described.

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**505,609. OPERATING MECHANISM FOR STATION-INDICATORS.** WILHELM SCHLOESSER, Wiesbaden, Germany. Filed Apr. 2, 1891. Serial No. 387,456. (No model.) Patented in England Apr. 16, 1891, No. 6,574.



*Claim.*—1. In combination, with the operating lever of a station indicator, a movable piston or diaphragm, a chamber 12, below the diaphragm, a supplemental pressure chamber C, arranged centrally beneath the piston having an inlet passage from the chamber 12, and a valved outlet passage, substantially as described.

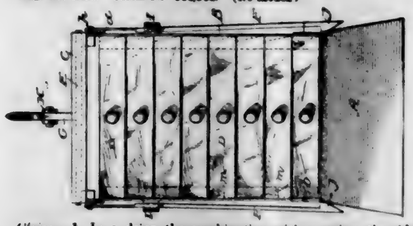
2. In combination, with the operating lever of a station indicator, a movable piston or diaphragm supporting the same, a chamber 12, below the diaphragm, a supplemental pressure chamber C, arranged centrally beneath the piston, a passage *c*, connecting said chamber

C, with a recess *v*, in the lower face of the piston, and an outlet $c^3$ from the chamber C, to the passage 10, substantially as described.

3. In combination, with the operating lever H, a piston beneath the same having its lower face recessed, a supplemental chamber C, beneath the piston with a port *c*, leading to the recess in the piston, a valved outlet port $c^2$ from the chamber C, a second valved outlet $c^3$, therefrom, having a valve $v^3$, a nose *n* on said valve and an adjustable plug B, in the bottom of said chamber C, substantially as described.

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**505,610. FRUIT OR VEGETABLE DRIER.** HORATIO N. SCHULTZ, Union Bridge, assignor of one-half to Albert Jones, Baltimore, Md. Filed Aug. 29, 1892. Serial No. 444,332. (No model.)

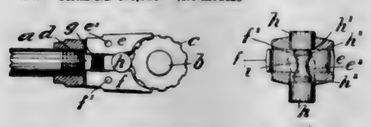


*Claim.*—1. In a drier, the combination with a casing, the sides of which are provided with curved slots, of a series of trays which are notched in their sides and placed one above another, two shafts mounted in said casing above said trays, said shafts being provided with cranks which extend into said curved slots, rods connected with said cranks and provided at their lower ends with barbs, adapted to pass under the tray next above the lowest tray, springs adapted to press said rods inward, and devices, substantially as described, for turning said shafts, whereby said rods may be drawn upward, substantially as and for the purposes described.

2. The combination with a casing, the sides of which are provided with curved slots *e*, in their upper parts, and slots *k* in their lower parts, of a series of trays, placed one above another and provided with notches *m*, bars E, loosely mounted in said casing, above said trays, and cranks extending from said bars and entering slots *e*, arms G, extending from bars E, a rod by which said arms are pivotally connected, and barbed rods F, connected with said cranks, the barbs of rods F being in position to enter notches *m* in one tray and to connect with the next tray above, substantially as set forth and described.

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**505,611. RATCHET-BRACE.** HENRY V. SMITH, Hartford, Conn., assignor of one-half to Joseph W. Storrs, same place. Filed June 22, 1893. Serial No. 478,528. (No model.)



*Claim.*—1. In a ratchet mechanism in combination with a stock or lever, a rotary tool holder bearing a ratchet wheel, pawls arranged with holding jaws on opposite sides of the ratchet wheel with cam surfaces on their adjacent sides, and a sliding bolt having cam surfaces and a recess and located between the pawls, all substantially as described.

2. In a ratchet mechanism in combination with a stock or lever, a rotary tool holder bearing a ratchet wheel, swinging pawls arranged to engage opposite sides of the ratchet wheel and having cam surfaces on their adjacent sides, and a sliding bolt having the shoulders, the cam surfaces and the recess to receive the cam lugs, said bolt being arranged between the pawls, all substantially as described.

3. In a ratchet mechanism in combination with a stock or lever, a rotary tool holder bearing a ratchet wheel, the swinging pawls pivoted to the stock, the spring located between the pawls and acting normally to press their outer ends toward each other, the cam lugs on the adjacent sides of the pawls, and a sliding bolt having cam surfaces cooperating with the cam lugs on the pawls and located between the latter, all substantially as described.

4. In a ratchet mechanism in combination with a stock having the transverse socket, a rotary tool holder pivoted on the stock and bearing a ratchet wheel located in said socket, the swinging pawls pivoted to the stock on opposite sides of said transverse socket, the spring thrusting against the opposing pawls and operating to hold their outer ends in engagement with the ratchet wheel, the cam lugs formed on opposite edges of the respective pawls, the sliding bolt having the shoulders with cams adjacent to the shoulders and a recess between the cams the bolts being arranged between the adjacent faces of the pawls beyond the pivots, all substantially as described.

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**505,612. METHOD OF MAKING WHEELS.** WILLIAM W. SPEER, Pittsburg, Pa. Filed Mar. 15, 1893. Serial No. 466,131. (No specimens.)



*Claim.*—The method of producing a wheel consisting in taking a strip of metal, with a series of holes therein, overlapping the holes in the extreme ends, riveting spokes in the holes, and pouring metal in a mold or chill at the inner ends of the spokes to form a hub on the inner ends of the spokes, substantially as set forth.

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**505,613. WASHING-MACHINE.** LEANDER D. SWAIN, Foxville, Ill. Filed July 3, 1893. Serial No. 479,443. (No model.)

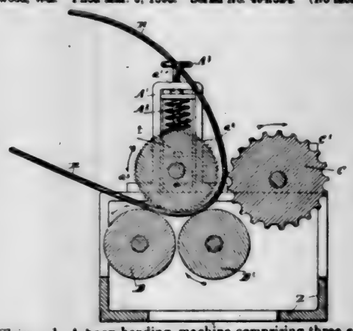


*Claim.*—1. The combination with a frame, of a tub, journaled therein and provided with a cover and an internal rubbing surface, a rubber 10 consisting of a series of narrow rotatable rods, flexibly connected together, said rubber being secured at its ends to the opposite ends of the tub, substantially as described and for the purpose set forth.

2. The combination with a frame, of a tub journaled therein and provided with a cover and an internal rubbing surface, said tub being further provided with hooks 9 at its opposite ends, a rubber 10 composed of a series of wooden rods of star shaped cross section each having a central bore, wire rods 4, arranged in the bores of said wooden rods, and links, each provided with a central eye loosely coupled to one end of one of the said wire rods 4, said links having end loops coupled to one another, said rubber being connected at its opposite ends to the said hooks 9, in the tub, substantially as described and for the purpose set forth.

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**505,614. HOOP-BENDING MACHINE.** ALEXANDER STUB, Glenwood, Wis. Filed Mar. 6, 1893. Serial No. 464,894. (No model.)



*Claim.*—1. A hoop bending machine comprising three co-operating parallel rollers in triangular arrangement between which the hoop is passed, the pressure member of which is mounted in sliding bearings and works under yielding pressure on the hoop at the span or dip between the other two or bed rollers, substantially as described.

2. The combination with the three cooperating parallel rollers in triangular arrangement between which the hoops are passed, of the positively driven return feed drum or roller at the rear of the



said three rollers, and provided with longitudinal corrugations, substantially as described.

3. A hoop bending machine, comprising three co-operating parallel feed rollers, in triangular arrangement, between which the hoop is pressed, the pressure member of which is mounted in sliding bearings, and driving gearing between the shafts of said rollers, having the elongated teeth adapted to permit the movement of the said pressure roller, substantially as described.

4. The combination with the three cooperating parallel rollers, in triangular arrangement, between which the hoops are to be pressed, of the return roller, provided with longitudinal corrugations, and positive acting driving gearing for said return roller adapted to move the periphery of the same at a greater speed travel than the peripheries of the feed rollers, substantially as and for the purpose set forth.

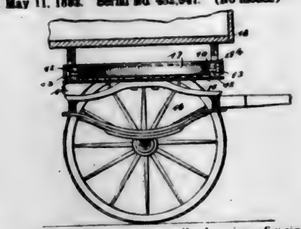
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**505,615. METHOD OF MANUFACTURING ELASTIC GLUE OR GELATINE.** EWALD TESSEN, Rostock, Germany. Filed July 15, 1893. Serial No. 480,654. (No specimens.)

*Claim.*—The method of manufacturing elastic glue or gelatine, consisting in first heating the glue and saponifying the fat of the same by adding hydrate of potash, then adding dry chloride of magnesium and finally treating this mixture with potash-soap, substantially as described and for the purpose set forth.

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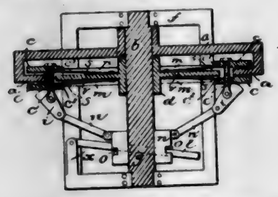
**505,616. FIFTH-WHEEL.** CALEB B. TURNER, Brooklyn, N. Y. Filed May 11, 1893. Serial No. 432,847. (No model.)



*Claim.*—The combination in a roller bearing of a single ring having a circular series of studs secured exteriorly thereto, and supported therefrom by one end only, and rollers held to turn on the studs, the latter having their outer free ends enlarged to retain the rollers in place, and a circular channel-iron fitting over said rollers and forming a support for a superstructure, substantially as described.

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**505,617. FRICTION-CLUTCH.** CHARLES E. TWITT, Ravenna, Ohio, assignor of one-half to Stephen A. Trowbridge, same place. Filed Apr. 3, 1893. Serial No. 468,947. (No model.)



*Claim.*—1. In a friction clutch, the combination of a shaft, a loose pulley formed with a concentric flange, grippers at opposite sides of said flange, a radial flange rigidly connected with said shaft and formed with radial grooves, springs attached in said grooves and connecting with said grippers, and means for operating said grippers to clutch and release said pulley flange.

2. In a friction clutch, the combination of a shaft, a loose pulley formed with a flange at right angles to said shaft, friction rings formed with grooves at opposite sides of said pulley flange, a radial flange rigidly connected with said shaft and formed with radial grooves, springs attached in said grooves and extending into the grooves in said rings, and means for operating said rings to clutch and release said pulley flange.

3. The combination of shaft *b*, pulley *a* formed with flange *a'*, grippers *c c* at opposite sides of said flange, flange *v*, springs *s* attached thereto and connected with and wholly supporting said grippers, and means for operating said grippers.

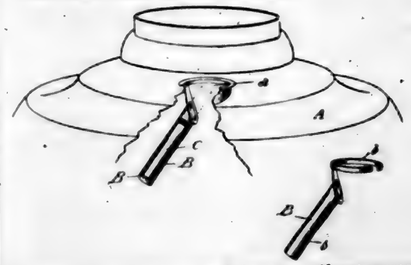
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**505,618. GLUE FOR CARDBOARD AND PHOTOGRAPHS.** HERMANN W. VOGEL, Charlottenburg, assignor to Hoobstein & Weinberg, Berlin, Germany. Filed Dec. 6, 1892. Serial No. 454,282. (No specimens.)

*Claim.*—As a glue for uniting the several layers of a sheet of card-board, and for mounting photographs, a paste of starch to which iodine is admixed in solution, for the purpose set forth.

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**505,619. INDICATOR-FLOAT.** FRANK T. WILLIAMS, Meriden, Conn., assignor to the Edward Miller & Company, same place. Filed Mar. 6, 1893. Serial No. 464,717. (No model.)



*Claim.*—1. In a liquid receptacle having an orifice at or near its top in combination, a float, a lug on said float, a guide tube for said float secured within said receptacle at an angle with the perpendicular so that its upper end is at one side of said orifice and a longitudinal slot in said guide tube adapted to receive said lug on said float, substantially as described.

2. In a liquid receptacle having an orifice at or near its top in combination, a collar surrounding said orifice, a float, a guide for said float and a ring of adjustable diameter secured to the upper end of said guide and adapted to be removably secured within said collar, substantially as described.

3. In a liquid receptacle in combination a feeder opening, a float and a guide for said float at an angle with the perpendicular, said guide being entirely at one side of said feeder opening and with its upper end adjacent thereto, substantially as described.

4. In a liquid receptacle in combination a feeder opening, a float and a guide for said float at an angle with the perpendicular, the upper end of said guide being detachably secured to the margin of said feeder opening, substantially as described.

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**505,620. SADDLE OR SEAT FOR BICYCLES.** JAMES WILSON, Somerville, Mass. Filed Aug. 22, 1892. Serial No. 443,749. (No model.)



*Claim.*—A saddle or seat for bicycles, consisting of the saddle or seat proper *a*, seat supports *b* and *b'* attached to the front and rear ends respectively of the seat, extending inward toward the center of the same, a spreader rod *c* with nuts $c'$, $c^3$, $c^4$, and $c^5$ to adjust the tension of the seat substantially as set forth, a block *e* adjustably mounted upon the seat post of the bicycle and the front and rear springs *d* and *d'* rigidly attached at their lower ends to the block *e* and at their upper ends pivotally attached respectively to the inner ends of the supports *b* and *b'*, whereby the seat is capable of a tilting motion to adjust it to the position of the rider in relation to the bicycle, said springs being entirely within the length of the seat to keep them from coming in contact with the clothes of the rider, all combined substantially as set forth.

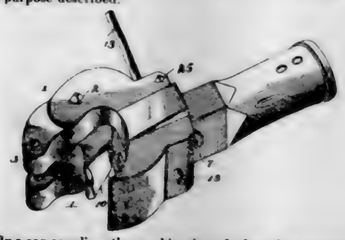
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**505,621. CAR-COUPLING.** ANDERS P. ANDERSON, San Antonio, Tex., assignor of one-half to Henry E. Vernor, same place. Filed June 8, 1893. Serial No. 476,949. (No model.)

*Claim.*—1. In a car-coupling, the combination of a draw-head, a knuckle pivoted thereto, a catch pivotally mounted in the draw-head for locking the knuckle, a push-bar arranged in the draw-head and having its outer end connected to the knuckle, and a shaft journaled in the draw-head and provided with arms arranged to lift the catch and to move the push-bar forward whereby the knuckle is released and opened, substantially as described.

2. In a car-coupling, the combination of a draw-head, a knuckle pivoted thereto and having an arm, and a pivoted catch mounted in the draw-head and arranged to engage the arm of the knuckle and provided at its outer end adjacent to the knuckle with an enlargement projecting laterally to confine the arm of the knuckle, substantially as and for the purpose described.

3. In a car-coupling, the combination of a draw-head, a knuckle pivoted thereto, a catch pivotally mounted in the draw-head for locking the knuckle and provided in its lower edge with a curved recess, a push-bar having its outer end pivoted to the knuckle, and a horizontal shaft journaled in the draw-head and provided with arms arranged at an angle to each other, one of the arms being located beneath the catch at the recess thereof and the other arm being arranged to engage the inner end of the push-bar, substantially as and for the purpose described.



4. In a car-coupling, the combination of a draw-head provided at one side with a horizontal recess and having longitudinal recesses 6 and 17 and provided in the solid portion between the recesses 6 and 17 with a key-hole opening, a horizontal shaft provided with arms and adapted to be inserted into the draw-head through the horizontal recess and the key-hole opening and having its arms arranged in the longitudinal recesses 6 and 17, a knuckle pivoted to the draw-head, a catch pivotally mounted in the draw-head and arranged in the recess 6 above the adjacent arm of the shaft, and a push-bar having its outer end pivoted to the knuckle and extending inward into the recess 17 to be engaged by the adjacent arm of the shaft, substantially as described.

5. In a car-coupling, the combination of a draw-head provided at one side with a horizontal recess and having longitudinal recesses 6 6 and 17 and provided in the solid portion between the recesses and 17 with a key-hole opening, a horizontal shaft provided with arms arranged in the longitudinal recesses, a bearing block detachably arranged in the horizontal recess, a knuckle pivoted to the draw-head and provided in its lower face with a recess, a push-bar pivoted to the knuckle in the recess thereof and extending inward into the recess 17 of the draw-head, and a catch pivotally mounted in the recess 6 of the draw-head, substantially as described.

6. In a car-coupling, the combination of a draw-head, a knuckle pivoted thereto and provided in its lower face with a sector-shaped recess, a catch pivotally mounted in the draw-head for locking the knuckle, a push-bar arranged in the draw-head and having its front end pivoted to the knuckle in the recess thereof and a shaft journaled in the draw-head and provided with arms arranged to lift the catch and to actuate the push-bar, substantially as described.

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**505,622. DYNAMO-ELECTRIC MACHINE.** ARTHUR S. ATWATER, Cleveland, Ohio, assignor to the Atwater General Electric Company, same place. Filed Jan. 23, 1893. Serial No. 459,491. (No model.)



*Claim.*—1. In a dynamo in combination with a ventilated armature core, provided with perforated and radially stamped laminæ, a main shaft passing through said core, duplicate taper commutator, sections, secured to said shaft by an insulated clamping ring, a field exciting coil about said core terminating in the duplicate commutator sections respectively, and brushes radially placed in relation to, and bearing upon the ends of the said commutator sections, and attached to the terminals of the field coil.

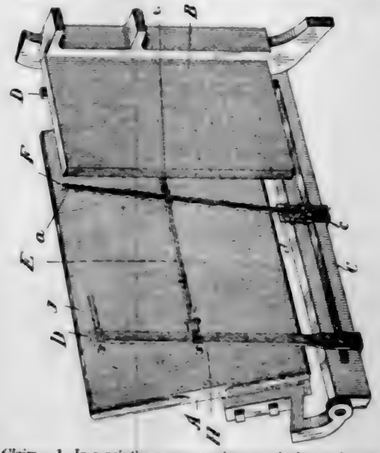
2. In a dynamo machine, a duplex commutator consisting in duplicate taper sections provided each with a terminal semiannular flange, and an insulated clamping ring therefor in combination with radially arranged brushes, adapted to bear upon the outer faces of the sections and flanges, substantially as described.

3. In a dynamo machine, a duplex commutator consisting in duplicate taper sections provided with shaft insulation and separated from one another, in combination with an insulated clamping ring, and radial brushes, adapted to bear upon the ends of said sections, substantially as described.

4. In a dynamo machine, the combination with a ventilated armature, of a coarse generating coil upon said armature for the lamp circuit, collector rings and radial brushes connecting said coarse coil and lamp circuit, a fine coil for field excitation upon said armature, a duplex commutator and radial brushes, connecting said fine coil with the field coil, a rheostat in said field circuit, and a cutout in said rheostat whereby the rheostat is short circuited until the machine has developed normal power, substantially as described.

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**505,623. PERFORATING ATTACHMENT FOR PRINTING-PRESSES.** CHARLES T. CHAMNEY, Woodbridge, Canada, assignor of one-half to Henry Peters, same place. Filed Dec. 17, 1892. Serial No. 455,492. (No model.)



*Claim.*—1. In a printing press, a gripper rock-shaft, a head connected thereto, and a perforating blade having one free end and its other end yieldingly connected to said head near said rock shaft and between the platen and bed plate, substantially as and for the purpose specified.

2. In a printing press, a perforating blade having a yielding connection between it and the gripper rock-shaft, and a second perforating blade having a pivotal connection with the first perforating blade, substantially as described.

3. In a printing press, a supporting bar, a head secured thereto, a link pivoted to said head, a perforator secured to said link, and a spring acting on said link and arranged to normally keep said perforator behind the plane of said supporting bar, substantially as described.

4. In a printing press, a supporting bar, a head secured thereto, a link pivoted to said head, a perforator pivoted to said link, a spring acting on said link, and a slot in one of said parts to allow of said parts aligning, substantially as described.

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**505,624. AUTOMATIC STONE-CUTTING AND STONE-DRESSING MACHINERY.** WILLIAM ERRINGTON, Melbourne, Victoria. Filed Mar. 2, 1892. Serial No. 423,550. (No model.)

*Claim.*—1. In a machine for cutting and dressing stone, a crosshead mounted on hollow trunnions, a tool carrier mounted on the crosshead, mechanism for operating said tool carrier passing through one of the trunnions, and separate mechanism for regulating said tool carrier passing through the other trunnion, substantially as described.

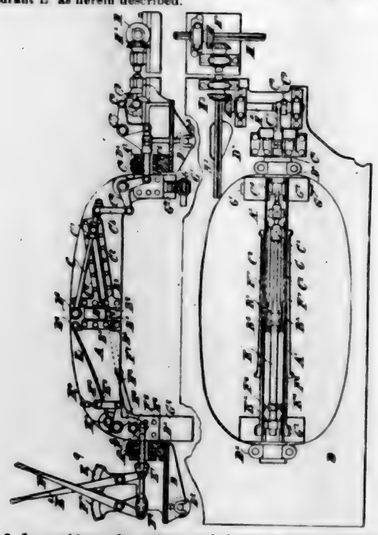
2. In machinery for cutting and dressing stone a cross head supported on trunnions in combination with the sliding tool block, the spring and the variable stroke lifting bar all assembled arranged and operated as herein described.

3. In machinery for cutting and dressing stone a cross head or bridge supported on trunnions or hollow bearers and carrying a sliding tool block B in combination with lifting bar C, motion block $C^7$ working in guides, link $C^3$, bell crank $C^4$, connecting rod $C^5$ furnished with swivel $C^6$ bell crank $C^7$ furnished with pin $C^8$ and cam $C^9$ as herein described.



4. In machinery for cutting and dressing stone a cross head or bridge supported on trunnions or hollow bearers and carrying a sliding tool block B lifted by arm C in combination with side levers $F^7$—$F^8$, cross pin $F^9$ lever $F^4$ connecting rod $F^3$ furnished with swivel $F^2$ and hand lever F arranged preferably aside of notched quadrant $F^1$ as herein described.

5. In machinery for cutting and dressing stone a cross head or bridge supported on trunnions or hollow bearers and carrying a sliding tool block B acted on by a spring E in combination with pressure roller $E^2$, loop piece $E^3$, bell crank $E^4$, links $E^5$ furnished with swivel $E^7$ and hand lever $E^8$ preferably arranged aside of a notched quadrant $E^9$ as herein described.



6. In machinery for cutting and dressing stone, a cross-head mounted on trunnions and carrying a sliding tool block, a lifting bar pivoted to the tool block, and suitable connections for operating said lifting bar, said connections passing through one of the trunnions, substantially as described.

7. In machinery for cutting and dressing stone, a cross-head mounted on trunnions and carrying a sliding tool block, a lifting bar pivoted to said block, a swiveled connecting rod passing through one of said trunnions and connected with the lifting bar, and means for actuating the connecting rod, substantially as described.

8. In machinery for cutting and dressing stone, a cross-head mounted on trunnions and carrying a sliding tool block, a flat spring connected at one end with said tool block, a movable roller bearing upon said spring, and mechanism for adjusting said roller, said mechanism passing through one of said trunnions, substantially as described.

9. In machinery for cutting and dressing stone, a cross-head mounted on trunnions, and carrying a sliding tool block, a lifting bar pivoted to said block, a movable fulcrum for said bar, means for operating the bar, and means for adjusting the fulcrum, substantially as described.

10. In machinery for cutting and dressing stone, a cross-head mounted on hollow trunnions, and carrying a sliding tool block, a lifting bar pivoted to said block, a movable fulcrum for said bar, means for actuating the lifting bar, and means for adjusting the fulcrum, each comprising a connecting rod passing through a trunnion, substantially as described.

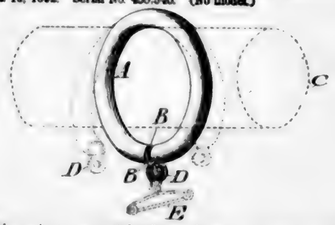
11. In machinery for cutting and dressing stone, a cross head mounted on trunnions and carrying the tool block, a reciprocating table carrying the crosshead, a power shaft revolving in stationary bearings, and suitable connections between said shaft and the tool block, substantially as described.

12. In machinery for cutting and dressing stone, a cross head mounted on trunnions and carrying a tool block, a revoluble table carrying said crosshead,—a power shaft rotating in stationary bearings, and connections between said power shaft and the tool block, substantially as described.

13. In machinery for cutting and dressing stone, a cross head mounted on trunnions and carrying a tool block, a revoluble table carrying said crosshead, a reciprocating table carrying said revoluble table, a power shaft revolving in stationary bearings, and connections between said shaft and the tool block, substantially as described.

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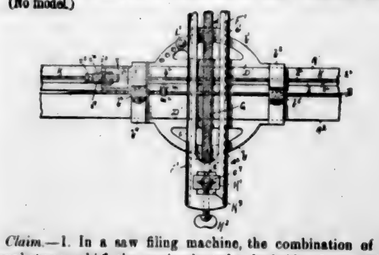
**505,625. CURTAIN-RING.** JOHN M. GUILBERT, Philadelphia, Pa., assignor of one-half to Henry Hepburn Barnum, New York, N. Y. Filed Dec. 16, 1892. Serial No. 455,340. (No model.)



*Claim.*—As a new article of manufacture, a tubular curtain ring formed of a single piece of sheet metal having perforated radial projections on its ends, integral therewith, forming the fastening eyes.

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**505,626. SAW-FILING MACHINE.** GEORGE B. HUFF and GEORGE H. VERNON, St. Paul, Minn. Filed Feb. 13, 1893. Serial No. 462,012. (No model.)



*Claim.*—1. In a saw filing machine, the combination of two clamps between which the saw is adapted to be held, a frame slidable along said clamps and with the central portion of its upper edges depressed to come substantially level with the upper surfaces of said clamps and provided with segmental wings level with said depressed upper edges, a file holder guide frame resting upon said slidable frame and swiveled upon said segment, and a file holder supporting the file and adapted to be moved back and forth in said swiveled holder frame, substantially as and for the purpose set forth.

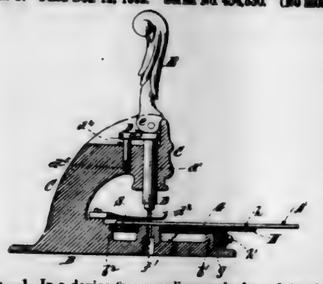
2. In a saw filing machine, the combination of two clamps between which the saw is adapted to be held, a frame slidable along said clamps and with the central portions of its upper edges depressed to come substantially level with the upper surfaces of said clamps and provided with segmental wings level with said depressed upper edges, a file holder guide frame resting upon said slidable frame and swiveled upon said segments, and a file holder supporting the file and adapted to be moved back and forth in said swiveled holder frame, a strip inserted into a groove in the upper edge of one of said clamp bars so as not to project above its upper surface and with notches corresponding to the teeth of the saw, and means for temporarily connecting said slidable frame to one of the notches in said strip, substantially as and for the purpose set forth.

3. In a saw filing machine the combination of two clamp bars between which the saw is adapted to be held, a frame or plate slidable upon said clamp bars above the saw, a file holder guide frame swiveled upon said slidable plate and adapted to be adjusted to any required angle to the saw teeth, a file holder supporting the file and adapted to be moved back and forth in said adjustable holder frame, a strip inserted in a groove in the upper surface of one of said clamp bars, and provided with notches corresponding with every alternate tooth of the saw to be filed, means for connecting said slidable frame temporarily to one of the notches in said strip, and means for adjusting said strip endwise, as and for the purpose set forth.

4. In a saw filing machine, two clamp bars between which the saw is adapted to be held, in combination with hooked catches $m'$ $m^3$ supported in one of said clamp bars and adapted to fit down to the roots of the teeth of the saw, to regulate the height of the saw teeth with relation to the upper surface of the clamp bars, substantially as and for the purpose set forth.

5. In a saw filing machine the combination of two clamp bars between which the saw is adapted to be held, standards $M^2$ attached rigidly to one of said clamp bars and depending downward therefrom, and sliding plates $M^3$ upon each of said standards and adapted to be adjusted vertically thereon, to support the lower edge of the saw, substantially as and for the purpose set forth.

## 505,627. CARD-CANCELING MACHINE. ABBOT A. LOW, Brooklyn, N. Y. Filed Dec. 12, 1892. Serial No. 454,830. (No model.)



*Claim.*—1. In a device for canceling cards, &c., of the character designated, the combination with the canceling implement and stationary anvil, of an adjustable card supporting table formed with a longitudinal slot into which the anvil projects, substantially in the manner and for the purpose described.

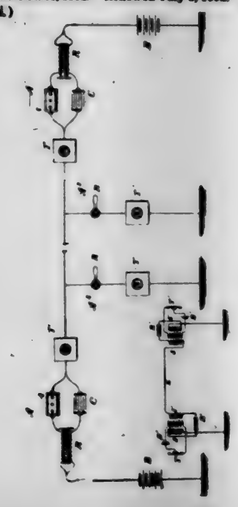
2. In a device for canceling cards, &c., of the character designated, the combination of the canceling implement and stationary anvil, the adjustable card-supporting table formed with the longitudinal slot into which the anvil projects, and means for securing the table in a prescribed position substantially in the manner and for the purpose described.

3. In a device for canceling cards, &c., of the character designated, the combination of the canceling implement and stationary anvil, the adjustable card table formed with the longitudinal slot into which the anvil projects, and an adjustable gage plate upon the said table for the purpose and substantially in the manner as described.

4. In a device for canceling cards, &c., of the character designated, the combination of the canceling implement and stationary anvil, the adjustable card-supporting table formed with the longitudinal slot into which the anvil projects, two gage-plates upon the said table, and means for adjusting and securing the said gage-plates with relation to each other substantially in the manner and for the purpose described.

5. In a device for canceling cards, &c., of the character designated, the combination of the canceling implement and stationary anvil, the adjustable card-supporting table formed, with the longitudinal slot into which the anvil projects, two gage plates upon the said table, means for adjusting and securing the said gage plates with relation to each other, two extension pieces mounted upon the front of the table and extending the surface thereof, and means for adjusting the said extension pieces with relation to each other and to the positions of the gage plates substantially in the manner and for the purpose described.

## 505,628. DUPLEX TELEPHONY. WILLIAM MARSHALL, New York, N. Y. Filed Feb. 23, 1892. Renewed July 5, 1892. Serial No. 439,418. (No model.)



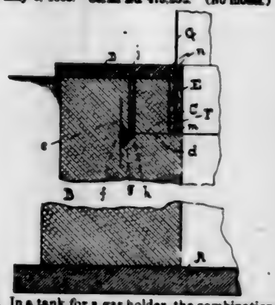
*Claim.*—1. In a system of electrical transmission, a receiving telephone having two helices oppositely wound, the two helices being in separate branches of the main circuit and one of the said branches containing a condenser, as and for the purpose set forth.

2. In a system of electrical transmission a receiving telephone having two helices oppositely wound, the two helices being in separate branches of the main circuit, and one of the said branches containing a condenser and the other an artificial resistance, as and for the purpose set forth.

3. In a system of electrical transmission, a series of stations two or more of which are provided with ordinary transmitting telephones without induction coils, and with differentially wound receivers one winding of which contains a condenser and the other an artificial resistance; and other two or more of which stations are each provided with a transmitter and a receiver and a condenser, the last two of which may or may not be the same apparatus, as and for the purpose set forth.

4. In a system of electrical transmission, a series of stations, two or more of which are provided with ordinary transmitting telephones without induction coils, and with differentially wound receivers, one winding of each containing a condenser and the other an artificial resistance; and the other two or more of which stations are each provided with a transmitter and a receiver and a double open coil wound around a magnetic core, as set forth.

## 505,629. GAS-HOLDER TANK. FREDERICK MAYER, Baltimore, Md. Filed May 6, 1893. Serial No. 473,238. (No model.)



*Claim.*—1. In a tank for a gas holder, the combination of a plate shell, a concrete bottom, a brick wall erected on the said bottom, having a recess or rabbet in its inner face, an annular plate iron covering for a portion of the wall having an angular cross section, with an inner rim secured thereto, a plate iron shell with its lower end seated in the recess or rabbet and resting on the horizontal annular plate of the plate iron covering, and suitable grouting situated between the said rim and the shell, and between the shell and the inner side of brick wall, substantially as specified.

2. In a tank for a gas holder, the combination of a plate iron shell the lower end of which rests on a horizontal plate inclosed partially in brickwork or concrete, a cylindrical plate situated at the outer periphery of the said horizontal plate, and a body of cement grouting situated at the junction of the two plates and under the same, whereby the joint between the said plates is made tight, substantially as specified.

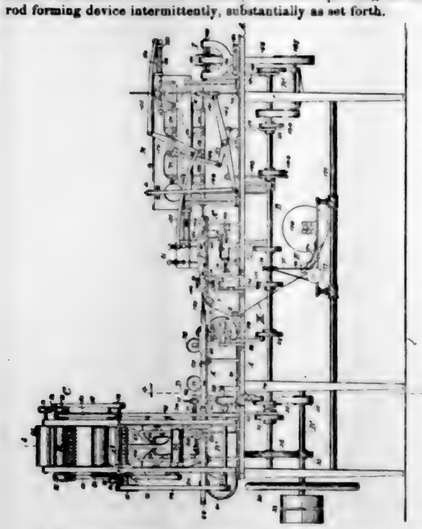
3. In a plate metal tank for a gas holder, the means of connection between the bottom and the shell, consisting of a wall having a rabbet formed in the inner face of it, a horizontal plate built in the wall and forming the bottom of the said rabbet, an inner rim attached to the inner edge of the said annular plate and a cylindrical plate attached to the outer periphery of the said plate, and at the junction of the cylindrical and horizontal plates and below them, a space extending around the entire shell, and pipes built in the brick wall and made to register with holes in the said horizontal plate, whereby grouting may be introduced into the annular space, substantially as specified.

4. In a tank for a gas holder, the combination of a concrete bottom having thereon a wall with a rabbet in its inner surface, an annular plate extending from the inner face of the wall, a cylindrical plate extending downward from the outer edge of the annular plate with a grouting joint at the angle, pipes leading from holes in the annular plate to the top of the wall, and a plate iron shell seated in the rabbet and provided at both sides with grouting whereby a water joint is effected, substantially as specified.

## 505,680. CIGARETTE-MACHINE. ALBERT L. HUBBS, New York, N. Y. Filed Apr. 3, 1891. Serial No. 387,570. (No model.)



*Claim.*—1. The combination of a tobacco feeding apron, means for continuously operating the same a conduit channel or passage-way the walls or sides of which are formed by belts, mechanism for intermittently moving said belts, a filler rod forming device adapted to receive the tobacco from said conduit, and means operating the filler rod forming device intermittently, substantially as set forth.



2. The combination of a tobacco feeding apron, a pair of picker-rolls situated at the end of said apron and operating upon the tobacco delivered therefrom, an apron receiving and conveying the tobacco from said rolls, means for continuously operating all of these parts a conduit adapted to receive the tobacco from the second apron and having its wall formed of belts, means for intermittently moving said belts, a filler rod forming device comprising a trough formed by belts and comprising also suitable pressers, and means for intermittently actuating the latter belts, substantially as set forth.

3. The combination of a tobacco feeding apron, means for moving the same continuously, belts forming a conduit adapted to receive the tobacco from said apron, mechanism for moving said belts intermittently, filler rod forming belts and pressers cooperating with the first mentioned belts and adapted to receive, convey and complete the tobacco and filler, and means for actuating the latter belts intermittently, substantially as set forth.

4. The combination of a tobacco feeding apron, a pair of picker-rolls receiving and operating upon the tobacco delivered by said apron, a second apron receiving the tobacco from said rolls, a second pair of picker rolls operating upon the tobacco delivered from the second apron, all operating continuously belts constituting a conduit adapted to receive the tobacco and convey the same downward, other belts and pressers adapted to receive the tobacco and form the filler-rod, and mechanism for operating all of said belts intermittently, substantially as set forth.

5. In a cigarette machine the combination, with the filler-rod forming devices, of a downwardly extending conduit the walls of which are formed by belts and which delivers its contained tobacco to said filler-rod forming devices, means for supplying tobacco to said conduit, a continuously operating drive mechanism for the machine, intermittently operating mechanism connecting said filler-rod forming devices and said belts with the said main drive mechanism for actuating the former intermittently, a severing device, and means for actuating the latter during the intervals between the operation of the filler-rod forming devices, substantially as set forth.

6. The combination of a tobacco feeding device, belts forming a conduit to receive the tobacco one or more of which belts being provided with a series of perforations, a funnel over the conduit and an air blast tube directing air in the funnel and in the direction of the movement of tobacco fed into the conduit, substantially as described.

7. The combination with a guide for a wrapper-strip, of a paste supplying means, a paste applying disk, a vibrating arm or frame carrying said disk, a guide or rod for said arm or frame extending transversely to the planes of vibration of the disk, and mechanism for vibrating said arm or frame and for reciprocating it on said guide transversely to its planes of vibration, substantially as set forth.

8. The combination with a guide for a wrapper strip, a paste supplying roll having a radially movable blade, and a reciprocating and vibrating paste applying disk, substantially as described.

9. The combination with a guide for a wrapper strip, a paste supplying means, a reciprocating paste supplying disk, a fixed cam, 114 and connections extending from the disk for vibrating the same, substantially as described.

10. The combination of a guide for the wrapper-strip, a paste supplying means, and a paste applying device having mechanism for reciprocating it in one direction in contact with said paste supplying means and in the opposite direction against said guide and for vibrating it, substantially as set forth.

11. The combination with a guide for a wrapper strip, a paste fountain, a roll intermittently rotating partially within the fountain and having a radially projecting and reciprocating blade, and a continuously operating reciprocating and vibrating paste applying disk, substantially as described.

12. The combination of a plurality of carriers having spring-actuated grasping jaws, means for closing the latter, two guide ways for said carriers, and means for moving the carriers in said guide ways and for transferring them from one guide way to the other in endless succession, substantially as set forth.

13. The combination with a plurality of carriers, having hinged spring-actuated grasping jaws means for closing the jaws two guide ways therefor, one above the other, an elevator for directing each carrier from the lower guide way into the upper, a delivery device for delivering each carrier from the upper guide way into the lower one, means for moving said carriers to and fro in the guide ways substantially as described.

14. The combination of a plurality of cigarette carriers having cigarette or filler rod grasping devices, two guide ways therefor, extending in a direction parallel with that of the filler a shifting device at each end of the guide ways for shifting a carrier in each of the guide ways into the other, and means for moving the shifting devices simultaneously, substantially as described.

15. The combination with a plurality of cigarette carriers, two guide ways therefor, extending in a direction parallel with that of the filler rod a shifting device at the ends of the guide ways for shifting a carrier from each guide way into the other guide way, and means for simultaneously moving the carriers along each guide way, in opposite directions substantially as described.

16. The combination of a plurality of cigarette carriers, two guide ways therefor, extending in a direction parallel with that of the filler-rod a shifting device at the ends of the guide ways, means for moving the shifting devices simultaneously, and means for moving the carriers along each guide way simultaneously in opposite directions, substantially as described.

17. A continuous cigarette carrier consisting of a head adapted to slide in a horizontal guide way, and having two grasping jaws each secured to the ends of a pair of pivoted arms, a cam for holding the jaws in one position, and a spring opposing the action of the cam, together with a second guide-way extending parallel with the direction of the filler, and an elevator for removing the carrier to the second guide-way substantially as described.

18. The combination of a plurality of cigarette carriers each having a pair of grasping jaws, means for opening the latter, two guide ways for the carriers one above the other both extending in a direction parallel to that of the filler-rod, means for shifting the carriers from one guide way to the other mechanism for moving the carriers to and fro in the guide ways, and a cam adjacent to one of the guide ways for closing the grasping jaws of the carriers.

19. The combination of the filler-rod forming devices, of a plurality of cigarette carriers, two guide ways for the carriers parallel with each other, mechanism for actuating the carriers in one direction in one guide way and in the opposite direction in the other guide way, and a shifting or transferring device at each end of the guide ways for shifting said carriers from one guide way to the other in an endless series, substantially as set forth.

20. In a cigarette machine an actuating mechanism for moving the filler-rod, consisting of a plurality of carriers for grasping said rod, two separate and parallel guide ways therefor, mechanism for advancing and returning the carriers in the two guide ways, and transferring devices for shifting the carriers from one guide way to the other, substantially as set forth.

21. In a cigarette machine a means for moving the filler-rod, consisting of a plurality of carriers for grasping said rod, two separate and parallel guide ways therefor, mechanism for advancing and returning the carriers in the two guide ways, transferring devices or elevators for shifting the carriers from one guide way to the other, and connections between said elevators whereby they are caused to operate simultaneously in opposite directions, substantially as set forth.

22. The combination with a plurality of cigarette carriers, two guide ways therefor, and means for shifting the carriers from one guide way to the other consisting of a delivery device having mov-

able rails fo engaging and supporting a carrier, mechanism for moving the delivery device in directions transverse to said guide ways, and a catch or stop for holding the carrier while the delivery device is withdrawn and its rails disengaged, substantially as set forth.

23. The combination of a plurality of carriers having spring-actuated grasping jaws, means for closing the latter, two guide ways for said carriers, means for moving the carriers in said guide ways and for transferring them from one guide way to the other in endless succession, and a laterally movable rotary severing device for severing the continuous cigarette into the cigarette lengths, substantially as described.

24. The combination with the filler rod forming devices, of a plurality of cigarette carriers, two guide ways for the carriers parallel with each other, mechanism for actuating the carriers in one direction in one guide way and in the opposite direction in the other guide way, a shifting or transferring device at each end of the guide ways for shifting said carriers from one guide way to the other in an endless series, a slotted guide into which the cigarette is projected, and a pair of rotary cutters for severing the cigarette through the slots of the guide, substantially as set forth.

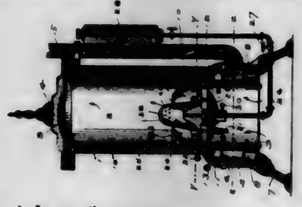
25. The combination with an intermittently feeding filler-rod former, fixed cigarette folders and a flanged guide, of a reciprocating and laterally movable pasting device for operating upon the wrapper strip while the same is supported by said flange and while the said strip and rod are stationary, substantially as set forth.

26. The combination with an intermittently feeding filler-rod former, a continuously operating feeding device for the wrapper strip, a fixed wrapper strip folder and a cigarette forming guide adapted to support an edge of the strip, a reciprocating and laterally movable paster for applying paste to the supported edge of the wrapper strip, a plurality of carriers for the continuous cigarette, and a severing device therefor, substantially as set forth.

27. The combination of a continuously operating tobacco feeding device, an intermittently operating delivering device arranged to receive tobacco from said feeding device, an intermittently feeding filler-rod former receiving tobacco from said delivering device, a continuously operating feeding device for the wrapper strip, a fixed wrapper strip folder and a cigarette forming guide, a pasting device for applying lines of paste to the wrapper strip, a plurality of separate and independent carriers for the continuous cigarette, and actuating mechanism therefor, and a cigarette severing device, substantially as described.

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**505,631. PORTABLE OIL-STOVE.** FRED L. MCGAHAN, Indianapolis, Ind. Filed Dec. 2, 1892. Serial No. 453,905. (No model.)



*Claim.*—1. In an oil stove, a combustion chamber open at its base, an outer chamber surrounding the lower part of the same, vertical flues connecting the top of the combustion chamber with the chamber below, a chimney leading from the latter, and a damper within the base chamber for regulating the draft through the flues, all substantially as set forth.

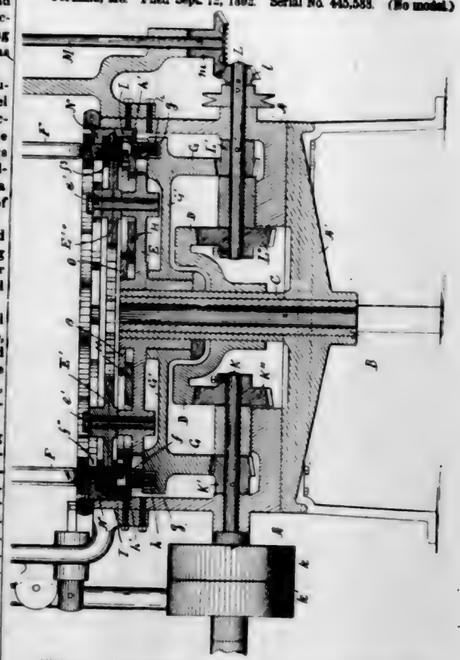
2. An oil stove having a burner centrally supported therein, a plate having draft openings therein surrounding the base of such burner, a movable ring resting on the same having similar openings adapted to register with the first, a conical hood supported above such burner, and a deflector having an open contracted top supported around such hood, substantially as set forth.

3. An oil stove having a central combustion chamber, an upper chamber or enlargement connected by flues with a circular chamber surrounding the stove base, said base chamber connected with a chimney opening into the room, a damper within said base chamber for regulating the draft through the flues, and a circular damper supported around a burner within the stove for regulating the draft within the combustion chamber, substantially as set forth.

4. An oil stove provided with a combustion chamber, enlarged at its top and connected by flues to a circular base chamber, a circular damper within said base chamber for regulating the draft through the flues and a chimney leading therefrom, a burner suitably supported within the combustion chamber a flanged plate with openings therein supported around such burner, a circular damper resting on said flange and having similar openings, a conical perforated shell or hood supported over the burner, and a deflector supported around the burner, substantially as set forth.

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**505,632. MACHINE FOR MAKING CORDAGE.** BERNARD J. MCGEE, Cambridge, Mass., assignor to the Boston Woven Cordage Company, Portland, Me. Filed Sept. 12, 1892. Serial No. 445,583. (No model.)



*Claim.*—1. In a cordage making machine, the combination with a stationary toothed and notched gear ring I, of a secondary notched bearing ring N resting directly upon the upper side of the toothed and notched gear ring and having a flange extending over said ring, the travelers F each provided with two shanks $f'$ $f''$ and an intervening annular flange $f^3$ which latter rests at intervals directly upon the upper surface of the toothed and notched gear ring and against the under surface of the flange on the bearing ring, and the intermittently reciprocating slides H, substantially as and for the purpose described.

2. In a cordage making machine, the combination with a stationary toothed and notched gear ring I, of a secondary notched bearing ring N resting directly upon the upper side of the toothed and notched gear ring and having a flange extending over said ring, the travelers F each provided with two shanks $f'$ $f''$ and an intervening annular flange $f^3$ which latter rests at intervals directly upon the upper surface of the toothed and notched gear ring and against the under surface of the flange on the bearing ring, a rotary disk G' provided in its upper surface with a cam groove $g$, and a series of radially movable slides H each provided on its lower side with a stud or roller A engaging the cam groove of the rotary disk and in its upper side with a groove A' to receive a part of the travelers, substantially as described.

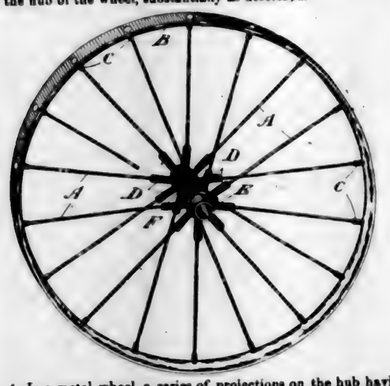
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**505,633. METAL WHEEL.** ABRAM H. B. NEFF and EDMUND H. F. NEFF, Petersburg, Canada. Filed Feb. 24, 1893. Serial No. 463,534. (No model.)

*Claim.*—1. In a metal wheel, spiral springs secured to the hubs thereof, light metal spokes rigidly fastened to the felly and extending through said springs, in combination with the collar and head formed on said spokes, substantially as described.

2. A metal wheel having light metal spokes, each spoke being rigidly fastened at one end to the felly, its other end passing through a spiral spring and fitted within the hub of the wheel, and a head on said spoke adapted to engage with the interior of the hub whereby it takes the strain off the spring, substantially as described

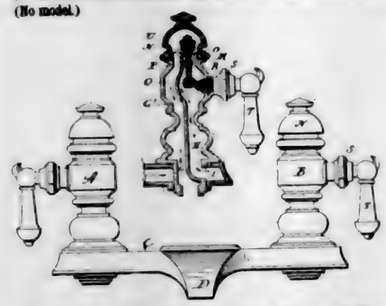
3. A wheel, projections fixed to the hub, spiral springs secured thereto, a plug G in the free end of each spring, and a series of metal spokes, each spoke being rigidly secured to the rim or felly, the other end of the said spokes passing through said springs and having a collar thereon to engage with said plug and a head to engage with the hub of the wheel, substantially as described.



4. In a metal wheel, a series of projections on the hub having screw threads thereon, a series of spiral springs screwed on said projections, and a series of screw-threaded plugs screwed into the other ends of said springs, in combination with a series of metal spokes each having one end rigidly secured to the rim and the other end passing through one of said springs, and a collar on each of said spokes engaging with one of said plugs, substantially as described.

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**505,634. BASIN-COCK.** JOHN M. PECK, New Haven, Conn., assignor to Peck Bros. & Co., same place. Filed June 27, 1892. Serial No. 436,118. (No model.)



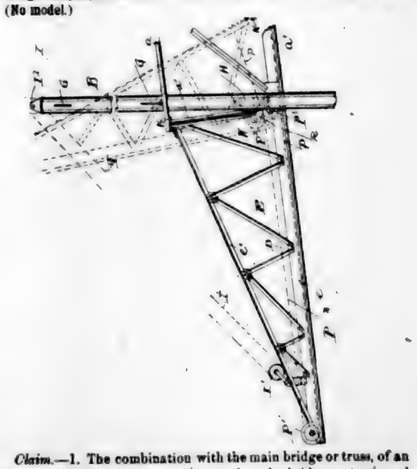
*Claim.*—1. In a basin-cock, the combination with a shell having its upper end closed, and a longitudinal partition terminating at its upper end in the said closed end of the shell, and forming an upward inlet passage and a downward discharge passage, the said passages intersecting the said closed end of the shell, which is recessed at one side of its center to form an exposed valve-seat for the inlet passage; of a removable cap attached to the upper end of the shell and forming a valve-chamber into which the said inlet passage always has open communication, a valve located in the said chamber over the said valve seat which it conforms to in size, occupying only a portion of the chamber, and not engaging with the walls thereof; a valve-stem having the said valve attached to its upper end, and extending downward into the said discharge passage, and operating-mechanism connected with the said valve-stem, substantially as described, whereby the said chamber is normally filled with water which surrounds the valve.

2. The combination with a hollow base constructed with a discharge opening, of a cock, rigid with the said base and having its shell constructed with a longitudinal partition forming an inlet passage and an outlet passage, the former extending through the bottom of the base, and the latter opening laterally into the interior thereof; a removable cap applied to the upper end of the shell and forming a valve chamber, a valve located in the said chamber upon a valve-seat formed at the upper end of the said outlet passage, a valve-stem carrying the valve, and operating-mechanism connected with the said valve-stem, substantially as described.

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**505,635. ELEVATED TRAMWAY FOR HOISTING AND CONVEYING MACHINES.** PETER RASCH, Cleveland, Ohio, assignor to the King Bridge Company, same place. Filed Oct. 1, 1892. Serial No. 447,576. (No model.)



*Claim.*—1. The combination with the main bridge or truss, of an apron truss hinged at its lower inner end to the bridge or truss, and having sliding connection with the bridge or truss at its upper inner end, substantially as set forth.

2. The combination with the main bridge or truss and a stop rigid with the forward end of said bridge-truss, of an apron-truss hinged or pivoted at its rear lower end to said main truss or bridge, and suitable means rigid with said apron and adapted to engage the aforesaid stop to thereby limit the lowering of the apron, substantially as set forth.

3. The combination with the main bridge or truss composed of three chords arranged substantially as indicated and suitably tied and braced together, of an apron truss hinged or pivoted, at its rear lower end, to the lower chord of the main truss or bridge in such a manner that said apron-truss shall be capable of being tilted upwardly within the main truss or bridge, substantially as and for the purpose set forth.

4. The combination with the main bridge or truss composed of chords suitably tied and braced together, of an apron-truss hinged or pivoted, at its rear lower end, to the lower chord of the main truss or bridge in such a manner that said apron-truss shall be capable of being tilted upwardly within the main truss or bridge, and suitable means for preventing lateral swaying of said apron in its upright position, substantially as set forth.

5. The combination with a bridge or truss composed of chords suitably tied and braced together, and one or more stops rigid with the forward end of said truss or bridge, of an apron hinged or pivoted to said bridge or truss and a grip-plate rigid with said apron and adapted to engage the aforesaid stop or stops, from the rear, in the lowered position of the apron, substantially as and for the purpose set forth.

6. The combination with a bridge or truss comprising three chords arranged the one below the others and suitably tied and braced together, and a pair of stops located centrally of the upper two of said chords at the forward end of the truss or bridge, of an apron hinged or pivoted to the lower chord aforesaid and a grip-plate rigid with said apron and adapted to engage the aforesaid stops, from the rear, in the lowered position of the apron, substantially as and for the purpose set forth.

7. The combination with the main bridge or truss composed of chords arranged the one below the others and suitably tied and braced together and one or more pairs of parallel or approximately parallel bars or members arranged centrally of and rigid with the forward ends of said chords, of a truss hinged or pivoted at its rear lower end to the one end of the lower chord of the main bridge or truss, the arrangement of parts being such that said hinged truss is capable of being tilted upwardly between the parallel bars or members aforesaid, the latter being located such a distance apart, that they will prevent material lateral swaying, by the wind, of said hinged truss, substantially as set forth.

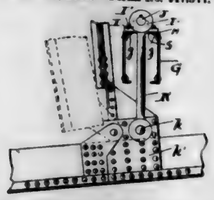
8. The combination with the main bridge or truss composed of three chords arranged the one below the others and suitably tied and braced together, a pair of bars located centrally of and parallel with the upper two of said chords and rigid with said bridge or truss, and a pair of upright bars connected with the forward ends of said first-

mentioned pair of bars and rigidly connected with the lower chord aforesaid, of an apron-truss hinged or pivoted, at its rear lower end, to the aforesaid lower chord of the main bridge or truss and a gripplate rigid with the rear upper end of said apron-truss, the arrangement of parts being substantially as shown and for the purpose specified.

9. The combination with a bridge or truss and an apron hinged, at its rear end, to said truss or bridge, of sheaves $P'$, $P^3$, and $P^4$, located and arranged substantially as and for the purpose set forth.

## 505,636. ELEVATED TRAMWAY FOR HOISTING MECHANISM.

PETER RASCH, Cleveland, Ohio, assignor to the King Bridge Company, same place. Filed Oct. 1, 1892. Serial No. 447,577. (No model.)



*Claim.*—1. The combination with two piers or towers, and a bridge or truss hinged to the one pier or tower so as to be capable of swinging or moving laterally in a horizontal plane, of one or more links or bars pivotally secured to the other tower or pier and to the bridge or truss, substantially as and for the purpose set forth.

2. The combination with two piers or towers, and a bridge or truss hinged to the one tower or pier so as to be capable of swinging or moving laterally, of one or more suspending links or bars pivotally secured at opposite ends to the other tower or pier and the bridge or truss, respectively, and suitable means whereby said suspending bar or bars are adapted to turn or move with the lateral movement of the bridge or truss, substantially as and for the purpose set forth.

3. The combination with two piers or towers and a bridge or truss hinged to the one tower or pier so as to be capable of swinging or moving laterally, of an oscillating-shaft supported by the other tower or pier, one or more depending links or bars operatively mounted upon said shaft and pivotally connected at their lower end with the bridge or truss, and suitable means whereby said shaft and suspending-links or bars are adapted to turn or move with the lateral movement of the truss or bridge, substantially as and for the purpose set forth.

4. The combination with two piers or towers and a bridge or truss pivoted to the one tower or pier so as to be capable of being swung or moved laterally, of one or more cross-beams or members rigid with the other tower or pier, a plate or block bolted to said cross-beams or members, an oscillating-shaft having bearing in said block or plate, one or more suspending links or bars operatively mounted on said shaft and pivotally connected with the truss or bridge, said shaft-bearing plate or block being slotted to accommodate the location and operation of said suspending-bar or bars, and the bolt-holes being elongated diagonally in such a manner that said shaft-bearing block or plate shall be capable of turning or moving with the lateral movement of the bridge or truss, substantially as set forth.

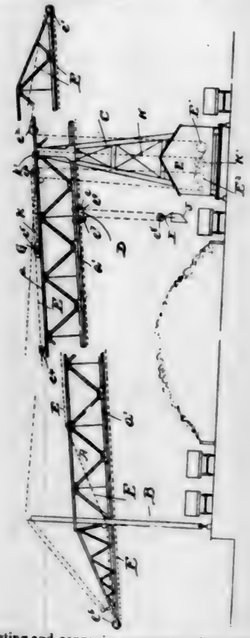
5. The combination with two single-rail tracks, B', and a double-rail track, C', arranged substantially as indicated, and a pier or tower mounted upon each of said tracks, of two trusses or bridges supported at one end, in common, by the tower or pier mounted upon the double-rail track, and supported at the opposite end, respectively, by one of the piers or towers on the single-rail tracks, said towers or piers being movable endwise of their track and independently of one another, and the connection of said bridges or trusses with the respective towers or piers being such that said trusses or bridges may be moved laterally toward or from each other, substantially as set forth.

## 505,637. HOISTING AND CONVEYING APPARATUS.

PETER RASCH, Cleveland, Ohio, assignor to the King Bridge Company, same place. Filed Oct. 1, 1892. Serial No. 447,578. (No model.)

*Claim.*—1. In hoisting and conveying apparatus, the combination with an elevated track, a load-carriage mounted on said track and a hoisting and propelling rope or cable for propelling said carriage, said rope or cable being provided with fall and tackle for supporting the hoisting-bucket, of a second elevated track, as at H, a carriage mounted on said second elevated track, said last-mentioned carriage being operatively connected with the hoisting and propelling rope or cable in such a manner that the hoisting-bucket may be elevated and lowered at any point along its route, being elevated upon the movement of said carriage in the one direction and lowered by gravity, substantially as set forth.

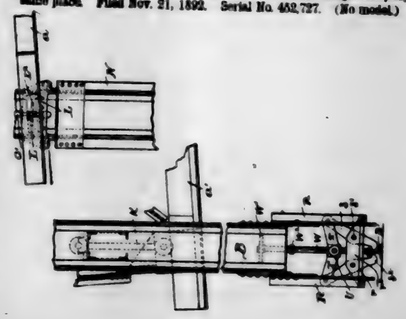
2. In hoisting and conveying apparatus, the combination with an elevated track, load-carriage mounted on said track, and a hoisting and propelling rope or cable for propelling said carriage, and provided with fall and tackle for supporting the hoisting-bucket, of a second elevated track, as at H, a sheave-carriage mounted on said second elevated track, the sheave-carriage being operatively connected with the hoisting and propelling rope or cable in such a manner that the hoisting-bucket may be elevated or lowered at any point along the route of the load-carriage, and suitable means for propelling said sheave-carriage in the direction to elevate the hoisting-bucket, substantially as set forth.



3. In a hoisting and conveying apparatus, the combination with an elevated track, a load-carriage mounted upon said track, a single and continuous hoisting and propelling rope or cable for propelling said carriage in opposite directions and provided with fall and tackle, of a second elevated track, as at H, a sheave-carriage mounted on said track and operatively connected with the hoisting and propelling rope or cable in such a manner that the aforesaid tackle is elevated or lowered according as said sheave-carriage moves in the one direction or the other, and a hoisting-drum and rope or cable for propelling said sheave-carriage in the direction to elevate the aforesaid tackle, substantially as set forth.

## 505,638. HOISTING AND CONVEYING TRAMWAY MECHANISM.

PETER RASCH, Cleveland, Ohio, assignor to the King Bridge Company, same place. Filed Nov. 21, 1892. Serial No. 452,727. (No model.)





*Claim.*—1. The combination with an elevated bridge or truss and two towers or piers supporting said truss or bridge, the latter being supported in such a manner that either pier or tower is adapted to be moved laterally independently of the other tower or pier, of one or more brackets projecting laterally from the one pier or tower, and suitable means for rigidly securing the truss or bridge to said bracket or brackets, substantially as set forth.

2. The combination with an elevated truss or bridge and two towers or piers supporting said bridge or truss, the latter being supported in such a manner that either tower or pier is adapted to be moved laterally independently of the other pier or tower, of one or more laterally projecting brackets rigid with the one tower, an upright plate supported by said brackets, an angle-iron or upright plate secured to the truss or bridge, a bolt and nut for securing said upright plate or member of the bracket or brackets to the aforesaid upright plate or upright member of the aforesaid angle-iron of the truss, the bolt holes being elongated lengthwise of the truss, substantially as and for the purpose set forth.

3. The combination with an elevated bridge or truss and two towers or piers for supporting said truss or bridge, the latter comprising two upper chords and being supported in such a manner that either tower or pier is adapted to be moved laterally independently of the other pier or tower, of a bracket projecting laterally from the one tower or pier into suitable proximity to one of the upper chords of the truss or bridge, an angle-plate or iron secured to and extending lengthwise of said chord, an upright plate or member supported by said bracket, a bolt for securing said upright plate or member and angle-iron together, the bolt-holes being elongated endwise of said members, substantially as and for the purpose set forth.

4. The combination with an elevated truss or bridge composed of three chords suitably tied and braced together and arranged the one centrally below the other, and two towers or piers for supporting said bridge or truss, the latter being supported in such a manner that either tower or pier is adapted to be moved laterally independently of the other pier or tower, the one pier or tower, below the upper chords, being provided, at each side, with a laterally-projecting bracket, an upright plate or member supported by each of said brackets, and extending lengthwise of the adjacent upper chord of the bridge or truss, an angle-plate or iron secured to each of said chords next to and arranged parallel with the upright plate or member of the adjacent bracket, one or more bolts and nuts for securing said angle-plates or irons to the aforesaid upright plate or member of the adjacent bracket, the bolt-holes being elongated lengthwise of the members provided with them, substantially as set forth.

5. In mechanism for clamping the towers or piers to the rail or rails upon which they are mounted, the combination with the tower or pier, and a pair of clamping bars pivotally connected with the tower and terminating at their lower ends in jaws for clamping the lower side of the head of the rail, of an upright screw adapted to bear upon the head of the rail, and suitable means operatively connecting the clamping-jaws with said upright screw for simultaneously actuating said jaws to clamp or release the head of the rail, substantially as set forth.

6. In mechanism for clamping the piers or towers to their supporting-rail or rails, the combination with an upright screw adapted to bear upon the head of the rail, a nut mounted on said screw and a stop to limit the upward movement or elevation of said screw, of a pair of clamping-bars adapted to clamp the under side of the head of the rail and operatively connected with the aforesaid nut, the arrangement of parts being such that the clamping-bars are simultaneously actuated to release or clamp the rail according as the aforesaid nut is elevated or lowered by turning the screw in the one direction or the other, substantially as set forth.

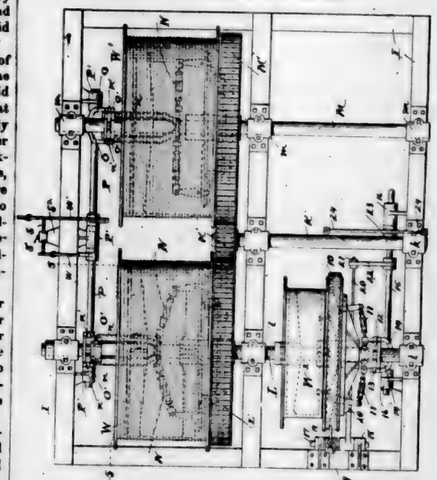
7. In mechanism for clamping the piers or towers to their supporting-rail or rails, the combination with an upright screw, a nut mounted on said screw, a stop to limit the upward movement or elevation of said screw, of a pair of clamping-bars for clamping the under side of the head of the rail at opposite sides of the web of the latter, respectively, links operatively connecting said clamping-bars with the aforesaid nut, the arrangement of parts being such that when the screw, upon turning the same, has engaged the top of the rail, the screw, by continuing to turn the same in the same direction will elevate the nut to actuate the clamping bars to clamp the rail, and when the screw is turned in the opposite direction, and has reached the upward limit of its movement, by continuing to turn the screw in the same direction, the nut will be lowered and thereby actuate the clamping-bars to disengage or release the rail, substantially as set forth.

8. The combination with the tower or pier, and rail upon which said tower or pier is mounted, the tower or pier at or near its lower end having a transverse beam or strut, of a pair of brackets rigidly secured to said strut and depending at opposite sides of the rail, respectively, a plate supported by said brackets a suitable distance above the rail, said plate having one or more upright flanges, an upright screw extending upwardly through the aforesaid strut of the tower and adapted to bear on top of the rail, the aforesaid flanged plates being perforated for the passage of said screw, a nut mounted on the threaded portion of said screw, a shoulder or collar on the screw below the aforesaid strut for limiting the upward movement or elevation of the screw, and a pair of clamping-bars pivoted to the flange or flanges of the aforesaid flanged-plate and operatively connected with the aforesaid nut, the arrangement of parts being such that upon turning the screw, after it has reached the upward limit of its movement, the aforesaid nut will be operated to actuate the clamping-bars to disengage or release the rail, and by turning said screw in the opposite direction after the same has engaged the head of the rail, the nut will be operated to actuate the clamping-bars to clamp the rail, substantially as set forth.

9. In mechanism for clamping the piers or towers to their supporting-rail or rails, the combination with an upright screw adapted to bear upon the rail, a nut mounted on said screw and a stop to limit the upward movement or elevation of the screw, of a pair of clamping-bars for clamping the rail from opposite sides, respectively, and a pair of links operatively connecting each clamping-bar with the aforesaid nut, the links of each pair of links being pivoted to opposite sides of the nut, respectively, substantially as and for the purpose set forth.

## 505,639. HOISTING AND CONVEYING MACHINE.

PETER RASCH, Cleveland, Ohio, assignor to the King Bridge Company, same place. Filed Nov. 21, 1892. Serial No. 452,729. (No model.)



*Claim.*—1. In a hoisting and conveying-machine, the combination with the driving-shaft and a pinion operatively mounted on said shaft, of two shafts arranged, respectively, at opposite sides of the driving-shaft, a gear mounted upon each of said outer shafts and in mesh with the aforesaid driving-pinion, a hoisting and propelling cable winding drum on each of said outer shafts and suitable means for operatively connecting and disconnecting said winding-drums with and from the respective gear on the drum-supporting shaft, said winding-drums being so located relative to each other that the hoisting and propelling cable shall lead laterally from one drum onto the other, substantially as set forth.

2. In a hoisting and conveying-machine, the combination, with the driving-shaft and a pinion operatively mounted on said shaft, of two shafts arranged, respectively, at opposite sides of the driving-shaft, a gear mounted upon each of said outer shafts and in mesh with the aforesaid driving-pinion, a hoisting and propelling cable-winding-drum on each of said outer shafts and suitable means for operatively connecting and disconnecting said winding drums with and from the respective gear on the drum-supporting-shaft, said winding drums being located in such position relative to each other that the hoisting and propelling cable shall lead laterally from one drum directly onto the other drum, a third winding-drum mounted on one of said outer shafts and adapted to actuate a rope or cable for taking up a portion of the hoisting and propelling cable, means for establishing operative connection or disconnection between said last-mentioned drum and the driving-power, the arrangement of parts being such that said last-mentioned drum may be operatively connected with the driving-power at the same time that either one of the hoisting and propelling cable

winding drums is operatively connected with the driving-power, substantially as set forth.

3. In a hoisting and conveying machine, the combination with the driving-shaft, of two shafts arranged at opposite sides of and intergeared with said driving-shaft, respectively, of a winding-drum loosely mounted on each of said outer shafts and suitable means for establishing operative connection between the winding-drums and their respective supporting-shafts, whereby either drum may be operatively connected with the driving-shaft, independently of the other drum, substantially as set forth.

4. In hoisting and conveying machines, the combination with a driving-shaft, a shaft at either side of said driving-shaft extending parallel and intergeared with said driving-shaft, of a hoisting and propelling cable winding-drum loosely mounted on each of said outer-shafts, in such position, relative to each other, that the hoisting and propelling cable shall pass laterally from one drum directly onto the other drum, a third winding-drum loosely mounted on one of said outer-shafts, separate means for establishing operative connection between the winding-drums and their respective supporting-shafts, whereby either one of the hoisting and propelling cable winding-drums and the other or third drum may be operatively connected with the driving-shaft independently of the other hoisting and propelling cable winding-drum, substantially as set forth.

5. In hoisting and conveying machines, the combination with the driving-shaft and a shaft at either side of and intergeared with the driving-shaft, of a winding-drum mounted on each of said outer shafts, said winding-drums being located in the same vertical plane, separate clutch-mechanism for each winding-drum for establishing operative connection or disconnection between said drum and the driving-power, an oscillating shaft at one end of each of said winding-drums at right angles with the driving-shaft, means operatively connected with each of said oscillating shafts for actuating the respective clutch-mechanism, and suitable lever mechanism operatively connected with each of said oscillating-shafts for operating the latter to cause the respective clutch-mechanism to establish operative connection or disconnection between the respective winding-drums and driving-power, substantially as set forth.

6. In a hoisting and conveying machine, the combination with two rotating shafts arranged parallel with each other, a winding-drum loosely mounted on each of said shafts, said winding-drums being located in the same vertical plane, and separate clutch-mechanism for each winding-drum for establishing operative connection between said drum and the respective supporting-shaft, of an oscillating-shaft at one end of each of said winding-drums, suitable means operatively connected with each of said oscillating shafts for actuating the respective clutch-mechanism, suitable lever mechanism operatively connected with each of said oscillating shafts for operating the latter, substantially as set forth.

7. In a hoisting and conveying machine, the combination with two rotating shafts arranged parallel with each other, a winding-drum loosely mounted on each of said shafts, said winding-drums being located in the same vertical plane, and separate-clutch mechanism for each winding-drum for establishing operative connection between said drum and its supporting-shaft, of an oscillating-shaft at one end of each of said winding drums, suitable means operatively connected with each of said oscillating shafts for actuating the respective clutch-mechanism, suitable lever-mechanism operatively connected with each of said oscillating-shafts for operating the latter, the two lever-mechanisms being operatively connected with each other in such a manner that upon operating either of said lever-mechanisms the one winding drum shall be operatively connected with its supporting-shaft and the other winding-drum shall simultaneously be disconnected from its supporting-shaft, substantially as set forth.

8. In a hoisting and conveying machine, the combination with two rotating shafts arranged parallel with each other, a winding-drum loosely mounted on each of said shafts, said winding-drums being located in the same vertical plane, and separate clutch-mechanism for each winding-drum for establishing operative connection between said drum and the respective supporting-shaft, of an oscillating-shaft at one end of each of said winding drums, suitable means operatively connected with said oscillating shafts for actuating the respective clutch-mechanism, suitable lever mechanism operatively connected with each of said oscillating-shafts for operating the latter, a tilting release lever fulcrumed at its central portion to any suitable support, a chain or suitable device connecting the one end of said lever with the one of said operating lever mechanisms, a chain or suitable device connecting the other end of said release-lever with the other operating lever-mechanism, the arrangement of parts being such that the actuation of either lever-mechanism will effect the operative connection of the one winding-drum with its supporting-shaft simultaneously with the operative disconnection of the other winding-drum from its supporting-shaft, substantially as set forth.

9. In a hoisting and conveying machine, the combination with a rotating-shaft, a winding-drum loosely mounted on said shaft, a brake-band for said winding-drum, clutch-mechanism for establishing operative connection between said drum and its supporting shaft, of suitable means for actuating the clutch-mechanism and suitable means for applying the brake-band, said brake-band applying means being operatively connected with the clutch-mechanism actuating-means in such a manner that the brake-band and clutch-mechanism are operated simultaneously, one being applied when the other is rendered idle substantially as set forth.

10. In a hoisting and conveying machine, the combination with a rotating shaft, a winding-drum loosely mounted on said shaft, a brake-band for said drum, and clutch-mechanism for establishing operative connection between said drum and its supporting-shaft, of an oscillating shaft at one end of said drum, suitable means operatively connected with said shaft for actuating the clutch-mechanism, a second oscillating shaft at one side of said drum, a bell-crank operatively mounted upon said second oscillating shaft, each arm of said bell-crank having connected therewith an end of the aforesaid brake-band, an operating-lever fulcrumed upon one of said oscillating-shafts, and mechanism connecting said oscillating-shafts with each other in such a manner that they are actuated simultaneously and thereby are adapted to effect the simultaneous application of the brake-band and release of the clutch-mechanism, substantially as set forth.

11. In a hoisting and conveying-machine, the combination with a rotating-shaft, a drum loosely mounted on said shaft, a brake-band for said drum, and clutch-mechanism for establishing operative connection between the drum and its supporting-shaft, an oscillating shaft located at one end of and arranged at right angles with the drum, means operatively connected with said oscillating-shaft for actuating the clutch-mechanism, a second oscillating-shaft located at the side of and arranged parallel with said drum, a bell-crank operatively mounted on said second oscillating-shaft and having connected with each arm thereof at the end of the aforesaid brake-band a bent arm or lever operatively connected with said second oscillating-shaft, a link operatively connecting said rock-arm with said bent arm or lever and an operating lever fulcrumed upon one of said oscillating-shafts, the arrangement of parts being such that the brake-band and clutch-mechanism shall be simultaneously the one applied and the other rendered idle according as the operating lever is actuated in the one direction or the other, substantially as set forth.

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**505,640. WINDOW-BEAD FASTENER.** ALONZO P. READ, Kenosha, Wis. Filed Sept. 22, 1892. Serial No. 446,542. (No model.)



*Claim.*—In a window bead fastener, the combination of the window frame having sockets fitting therein, and each consisting of a rim and the face plate E provided with a slot having a straight portion formed on both its under edges with serrations $e$, the enlarged portion $f$ extending to the edge of said rim and having rounded corners $f^2$ where it joins the straight portion of said slot and the under edges of said enlarged portion $f$ being beveled from the said straight portion to the edge of the said rim, the bead and the set bolt passing through said bead and the slot and having a head provided with teeth on its outer side adapted to engage with said serrations, substantially as set forth.

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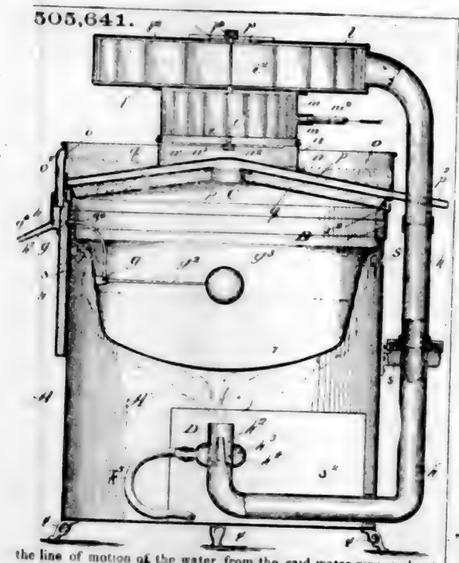
**505,641. WATER-DISTILLING APPARATUS.** WILLIAM ROCHLITZ, Chicago, Ill. Filed Apr. 4, 1893. Serial No. 468,992. (No model.)

*Claim.*—1. A water distilling device comprising in combination a vessel to receive the water to be heated, having a cover provided with a downwardly inclined passage constituting a condensing chamber, said cover provided on its upper side with a cold water receiving basin, a drum supporting the water heater, a burner furnishing heat to vaporize the water, an overflow pipe communicating with the basin, a feed water heating receptacle receiving its supply from the overflow, a port affording communication between the feed water heater and the water heating vessel, and a valve for opening and closing said port, controlled by a float, substantially as described.

2. In a water distilling apparatus, the combination of a water heating vessel, a burner below the vessel, a condensing chamber communicating with the vessel, a cold water receptacle adjacent to the condensing chamber, a water-pipe communicating with a cold water supply and conveying water to said cold water receptacle, a water supply conduit extending from the cold water receptacle to the said vessel, and means for supplying air under pressure to the burner, in the line of motion of the water from the said water-pipe and actuated by the moving water, substantially as and for the purpose set forth.

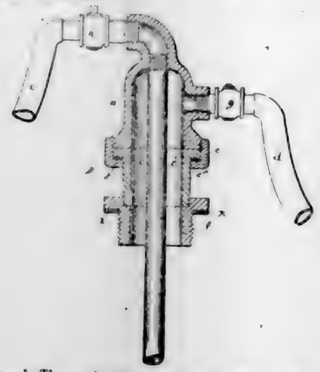


505,641.



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**505,642. DEVICE FOR DISCHARGING LIQUIDS FROM VESSELS.** WILLIAM L. ROWLAND, Philadelphia, Pa. Filed Dec. 8, 1892. Serial No. 454,425. (No model.)

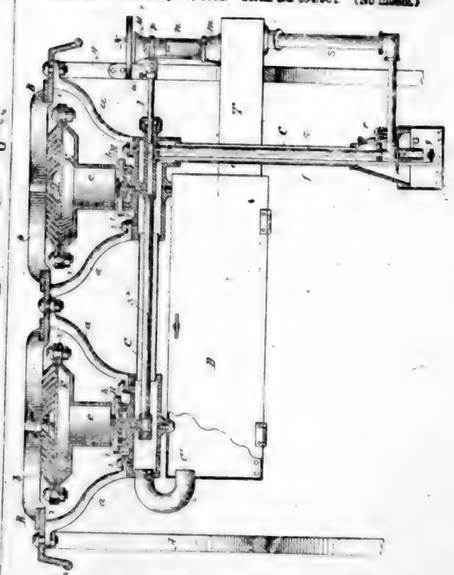


*Claim.*—1. The combination in a faucet for discharging liquids from vessels of a hollow screw plug adapted to be screwed into the bung hole of the vessel, a pipe, the lower end of which is adapted to be screwed into the upper end of said screw plug and the upper end of which is flanged, an upper part or cap adapted to be placed on the flanged pipe, and having an air inlet at its side and a liquid outlet at its top, a coupling for securing the flanged pipe and cap together, a liquid discharge pipe secured to the liquid discharge opening in said cap and passing down through said cap, flanged pipe and screw plug, and devices substantially as described for compressing air and conveying it to and through said air inlet in said cap.

2. The combination in a device for discharging liquids from vessels of a hollow screw plug adapted to be screwed into the bung hole of the vessel, a flanged-pipe projecting upwardly from said screw plug, a cap resting on said flanged pipe, an air outlet inside of said cap, a liquid outlet in top of said cap, a coupling for securing said cap to said flanged pipe, a liquid discharge pipe secured to the liquid discharge opening in said cap and passing downward through said cap, flanged pipe and screw plug, an air compressing device, a pipe leading from said air compressing device to air inlet inside of cap, and a check valve between said air compressor and said air inlet in said cap, all substantially as and for the purpose set forth.

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**505,643. VAPOR-BURNING STOVE.** WILLIAM H. THAYER, Melrose, Mass. Filed Sept. 5, 1891. Serial No. 404,901. (No model.)



*Claim.*—1. In a vapor burning stove, the combination of a burner supply-conduit leading from a fuel reservoir which is located below the highest part of said conduit, said reservoir and conduit containing liquid normally in equilibrium, a vapor generator applied to said conduit below the normal level of the liquid therein and an injector plate for the burner provided with a plurality of outlets, substantially as described.

2. The combination of a Bunsen burner having a plurality of jet openings for vapor, a supply reservoir for liquid at atmospheric pressure, located below the plane of the jet openings, a conduit leading from said reservoir to the jet openings and a heater for vaporizing liquid, applied to said conduit between the reservoir and jet openings, substantially as described.

3. In a vapor-burning stove, the combination of a Bunsen burner a feed pipe between the burner and a reservoir situated entirely below the highest point of said pipe and in which the liquid is normally in equilibrium with that in the pipe and a heater to vaporize liquid in said pipe, and thereby produce pressure upon the vapor by destroying said equilibrium substantially as described, and for the purpose specified.

4. In combination with a vapor burning stove, an independent generator of vapor applied to the burner supply-pipe below the level of the liquid in the supply tank, a generator feed tube leading from the said supply-pipe above the generator, and a heat conducting casing surrounding the said supply-pipe, generator and its feed tube, substantially as described.

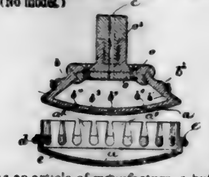
5. In a vapor burning stove, the combination of a vapor generator applied to the burner supply-pipe below the level of the liquid in the supply tank and a heat conducting tube which surrounds the said supply-pipe and generator and terminates in a heating chamber connected with the stove, substantially as described.

6. In combination with a vapor burning stove, a supply tank provided with a swiveling filling spout, a fixed guard or cover for the mouth of said spout, a safety valve and mechanism substantially as described to connect the said valve and spout, whereby the removal of the mouth of the spout from beneath its guard will close the said valve and cut off the supply of gas and the return of the spout beneath the guard will open the said valve, substantially as described.

7. In a vapor burning stove, the combination of a Bunsen burner and injector plate H, having a plurality of jet openings, a socket I, for said plate, beneath the burner, and a screw, as *i*, to readily secure the plate in said socket or release it therefrom substantially as described.

8. In a vapor burning stove, the combination of a liquid reservoir situated lower than the jet outlets a liquid conduit between the reservoir and injector, an injector-plate having a plurality of openings, and a Bunsen burner composed of a series of concentric frusto-conical rings to concentrate the flow of gas substantially as described.

**505,644.** BUFFING-PAD. HAROLD A. WEBSTER, Haverhill, assignor to George H. P. Flagg, Boston, Mass. Filed July 7, 1893. Serial No. 479,848. (No model.)



*Claim.*—1. As an article of manufacture, a buffing-pad, marginally slotted or recessed to form a series of tongues, and molded to form a flange which includes said tongues, said flange standing substantially at right angles with the acting face of the pad, whereby the pad is adapted to be readily applied to a holder having a seat for said tongues, as set forth

2. As an article of manufacture, a buffing-pad, having in its margin tapered slots or recesses forming a series of tapered tongues which are widened at their outer portions, the pad being molded to form a flange which includes said tongues and stands substantially at right angles with the acting face of the pad, said flange being bent from the body of the pad along a line somewhat within the inner ends of the slots, so that the margin of the acting face of the pad is continuous or unbroken, as set forth

3. A buffing-pad holder, having an elastic pad-supporting face, and an elastic tapering or frusto-conical seat surrounding said face and arranged at an acute angle therewith, said seat having a shoulder at its upper portion, combined with a pad marginally slotted or recessed to form a series of tongues, and molded to form a flange which includes said tongues, the flange being formed to surround said seat, and a clamp adapted to press the upper portions of said tongues against the seat and shoulder, as set forth

**505,645.** CASE FOR HYPODERMIC SYRINGES. ALFRED J. WOLFF, Waterbury, Conn., assignor to the Scovill Manufacturing Company, same place. Filed June 17, 1893. Serial No. 477,962. (No model.)



*Claim.*—1. In an aluminum hypodermic-syringe case, the combination with the body and cover thereof, of top and bottom plates located within the former, and constructed with openings or tube-holes counter-bored from their inner faces, tubes set into the counter-bored ends of the said holes, and means for connecting the plates, substantially as described

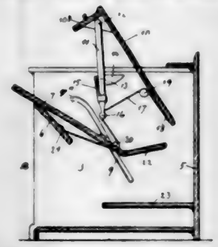
2. In an aluminum hypodermic-syringe case, the combination with the body and cover thereof, of a frame-work located within the body, and comprising two or more plates, and means for holding the same together, tubes mounted in the said plates, and screws entered through the body into the edge of one of the plates for holding the frame-work in place, substantially as described

3. In an aluminum hypodermic-syringe case, the combination with the body and cover thereof, of a frame work located in the former, aluminum tubes mounted in the said frame-work, sleeves of brass or equivalent solderable metal applied to the rear tubes, and a hinge for connecting the cover and body, the said hinge having one of its members soldered to the said sleeves, and the other fastened to the said cover, substantially as described

4. In an aluminum hypodermic-syringe case, the combination, with the body and cover thereof, of a frame-work located in the said body, tubes mounted in the said frame-work, a hinge connecting the cover and body, and a spring applied to the said frame-work and co-acting with the said hinge, substantially as described

5. In an aluminum hypodermic-syringe case, the combination with the body and cover thereof, of a frame-work located in the body, and comprising two or more plates, and means for securing the same together, tubes mounted in the said plates, a hinge connecting the cover and body, and a spring arranged to co-act with the said hinge, and applied to the frame-work through openings provided for it in the said plates, substantially as described.

**505,646.** TYPE-WRITER CABINET. MELVIN BANCROFT, Whitesborough, N. Y., assignor to the Quigley Furniture Company, same place. Filed Aug. 13, 1892. Serial No. 443,006. (No model.)



*Claim.*—1. The combination in a typewriter cabinet having a well, of a sliding and tilting platform, a support upon which it is capable of sliding, a cover, an arm pivoted to the front portion of the cover and to the cabinet, and a flexible connection attached at one end to a fixed part of the cabinet and at the other to the rear end of the cover and engaging with the platform and passing over a fixed roller in the upper portion of the case, substantially as set forth

2. The combination in a typewriter cabinet having a well, of an inclined groove on the side of the well, a typewriter platform having a projection engaging in the groove, a support for the platform in front of the well over which it is capable of tilting or sliding, a cover for the well, and a flexible connection attached at one end to the cover and at the other to a fixed part of the cabinet and engaging with the platform, and a fixed roller between its points of attachment, substantially as set forth.

3. The combination in a typewriter cabinet having a well, of a platform mounted therein, a support in the front of the well over which the platform is adapted to slide and tilt, a cover, an arm pivoted to the front end of the cover and to the case, substantially midway between the front and back of the well, and a flexible connection connected at one end to the cover and at the other with a fixed portion of the case and engaging with the rear end of the platform and a fixed roller in the upper portion of the case between its ends, substantially as set forth

4. A cabinet having a well, a platform support in the front of the well, a sliding and tilting platform, a cover, an arm pivoted to the forward end of the cover and to the cabinet and carrying a pulley in the end of the arm, and a flexible connection extending between the platform support and the rear end of the cover and engaging with the arm and the platform, substantially as set forth.

5. A type-writer cabinet having a well, a sliding and tilting platform, a support for the platform in the front of the well, a cover, and a flexible connection attached at one end to the cover and at the other to a fixed part of the cabinet and engaging with the platform and with a fixed roller in the upper part of the case between its two points of attachment, all combined substantially as set forth

6. A type-writer cabinet having a well, a sliding and tilting platform, a support for the platform in the front of the well, a groove or guide on the wall of the well behind the support inclining from the front downward toward the rear and provided with a short horizontal rest at its upper end, a projection from the platform engaging the groove or guide, a cover, and a flexible connection attached at one end to the cover and at the other to a fixed portion of the case and engaging with the platform, and a fixed roller in the upper rear portion of the case between its two points of attachment, all combined substantially as set forth

7. A type-writer cabinet having a well, a sliding and tilting platform, a support for the platform in the front of the well, a cover for the well, an arm pivoted at one end to the front end of the cover and at the other to the cabinet, substantially in the middle of the well from front to rear and extending beyond its pivotal point and carrying a roller in its swinging end, and a flexible connection attached at one end to the cover and at the other to a fixed portion of the case and engaging with the platform and a roller in the end of the arm between its two points of attachment, combined substantially as set forth

8. In a type-writer cabinet having a well, a tilting platform mounted in the well, a cover for the well, a connection between the rear end of the cover and the inner end of the platform, an arm pivoted at one end to the front end of the cover and near the other end to the case, a camming block secured to the case at the case end of the lever, and a spring mounted on the arm and acting on the camming face of the block, combined substantially as set forth



**505,647.** COVER FOR POTS, URNS, JUGS, &c. RICHARD BOAK, New York, N. Y. Filed May 2, 1893. Serial No. 472,812. (No model.)

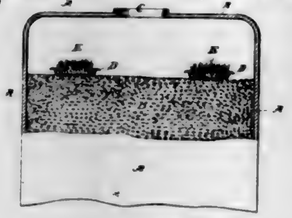


*Claim.*—1. In combinations with a jar or similar receptacle having a mouth provided with a smooth interior surface, a cover for the same comprising a top plate, a chamber connected thereto, a bolt provided with a beveled end in said chamber, and a spring between the bolt and the wall of the chamber whereby the bolt is normally pressed outward; substantially as described.

2. In combinations with a jar or similar receptacle having a mouth provided with a smooth interior surface, a cover for the same comprising a top plate, a chamber connected thereto, a shank extending through said chamber, a hemispherical head carried by said shank, and a spring between the head and the wall of the chamber whereby the head is normally pressed outward; substantially as described

3. A cover for jars and the like comprising a top plate, a chamber connected thereto, a bolt extending through said chamber, the rear end of said bolt passing through the rear wall of the chamber and being upturned, and a spring between the forward part of the bolt and the wall of the chamber whereby the bolt is normally pressed outward; substantially as described

**505,648.** EXTRACTING WEEVILS FROM GRAIN. DANIEL R. BOWKER, Brooklyn, N. Y. Filed Dec. 19, 1892. Serial No. 455,728. (No model.)



*Claim.*—1. A grain bin having an opening at its top, and a weevil collecting box having a perforated bottom contained in said bin, and adapted to be passed through said opening substantially as set forth.

2. In combination with a grain bin having an opening at its top, a box having a perforated bottom containing sprouting grain therein, said box being contained in said bin, and adapted to pass through said opening substantially as set forth

3. The method herein described of extracting weevils from grain consisting in instigating growth in a portion of the grain at the upper part of the bin said portion being inclosed within a device removable therefrom substantially as set forth

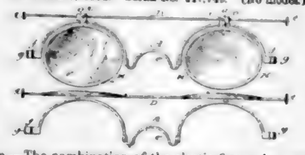
**505,649.** MATTRESS. NATHAN P. CRANEY, Buffalo, N. Y. Filed Jan. 3, 1893. Serial No. 456,991. (No model.)



*Claim.*—1. In combination with a stuffed mattress the upper and lower external restrainers independent of each other stretched tightly and across the upper and lower faces of the mattress and connected to the sides of the same, substantially as described.

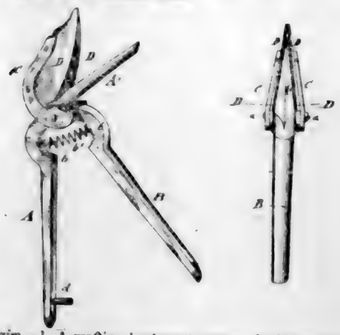
2. In combination with a stuffed mattress the external restrainers consisting of the two pads independent of each other stretched tightly across the opposite faces of the mattress and secured at different points to the sides of the mattress, substantially as described

**505,650.** SPECTACLE-FRAME. ALLAN E. FRANCIS, Cleveland, Ohio. Filed Oct. 3, 1892. Serial No. 447,749. (No model.)



*Claim.*—The combination of the elastic frame A, provided with hinge lugs *o o* having projections *l l*, with the lens-holders H, H, having slots *x*, *x*, all arranged substantially as described

**505,651.** GRAFTING IMPLEMENT. JEAN FOCHS, Porto Ferrajo, Italy. Filed Feb. 18, 1892. Serial No. 421,926. (No model.) Patented in England Jan. 27, 1892. No. 1,653.



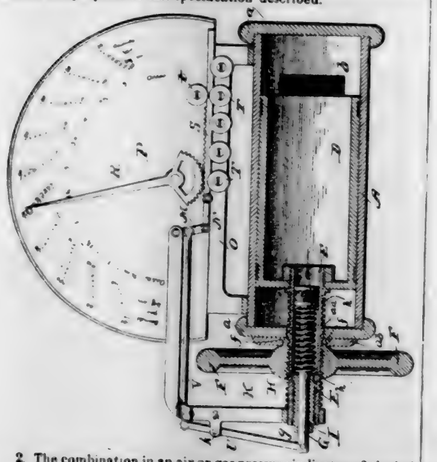
*Claim.*—1. A grafting implement composed of fulcrumed handles, one handle being provided with converging cutting blades abutting at their outer ends forming a V-shaped recess, and the other handle being provided with a V-shaped tongue adapted to shut into said V-shaped recess, substantially as described

2. A grafting implement composed of two fulcrumed handles, one of said handles being provided with converging cutting blades having curved cutting edges, said blades abutting at their outer ends forming a V-shaped recess, and the other of said handles being provided with a straight V-shaped tongue adapted to shut into said V-shaped recess and with a longitudinal groove for receiving the twig to be cut, substantially as described

**505,652.** PRESSURE-INDICATOR. MERRITT GREENE, Pittsburg, Pa. Filed Mar. 10, 1893. Serial No. 465,051. (No model.)

*Claim.*—1. A new apparatus for indicating the pressure of gas or air at high pressure, combining for its necessary and coacting parts the hollow, closed cylinder, having the orifice and the collar at its front end; the offset tube near the rear end of the cylinder, having the rectangular orifice at its inner end; the offset tube near the center of the cylinder, in opposite direction to the aforesaid offset tube and having the rectangular orifice at its inner end; the hollow piston fitting closely yet moving within the cylinder and having the rectangular orifice near its rear end; the tubular shaft, communicating with the hollow piston and projected from the front end thereof; the hand wheel screw threaded upon the tubular shaft, having the rim on its inner face, embraced by the collar of the aforesaid cylinder; the rod moving within and projecting from the tubular shaft, having the head fitting the tubular shaft, at its inner end; the spiral spring coiled loosely around the rod and bearing against the head thereof; the hollow screw plug, fitted adjustably within the mouth of the afore said tubular shaft and bearing against the outer end of the spiral spring; the yoke fitted upon the outer end of the tubular shaft and having the bracket projected from its vertical and exterior surface; the vertical link pivoted to the horizontal end of the yoke; the horizontal link pivoted to one end of the vertical link; the frame mounted upon the aforesaid hollow cylinder; the dial supported upon said frame; the movable indicator upon said dial; the straight rack meshed with the segmental toothed base of the indicator and movably sup-

ported upon suitable wheels or rollers; the swinging lever depending from the bracket of the yoke aforementioned, and further pivoted to the outer end of the rod projected from the tubular shaft of the aforesaid piston; and the horizontal bar pivoted at one end to the swinging lever and at the other end to the vertical link connected to the aforesaid yoke; all constructed and arranged substantially as and for the purposes in this specification described.

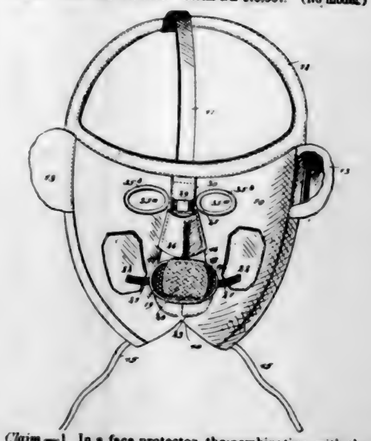


2. The combination in an air or gas pressure indicator of the hollow closed cylinder, having the orifice and the collar at its front end; the offset tube near the rear end of the cylinder, having the rectangular orifice at its inner end; the offset tube near the center of the cylinder, in opposite direction to the aforesaid offset tube and having the rectangular orifice at its inner end; the hollow piston, fitting closely yet moving within the cylinder and having the rectangular orifice near its rear end; the shaft projected from the front end thereof, the hand wheel screw threaded upon the shaft, having the rim on its inner face, embraced by the collar of the aforesaid cylinder; the yoke fitted upon the outer end of the shaft; the vertical link pivoted to the horizontal end of the yoke; the horizontal link pivoted to one end of the vertical link, the frame mounted upon the aforesaid hollow cylinder; the dial supported upon said frame; the movable indicator upon said dial and the straight rack meshed with the segmental toothed base of the indicator and movably supported upon suitable wheels or rollers; the whole constructed and arranged substantially as herein described, for the purpose of registering the amount of gas or air passed into and out of the meter through a predetermined area for admission and discharge of the flow.

3. The combination in a pressure indicator for air or gas wherein the flow is received and discharged by a hollow piston working closely within the indicator case, of the dial, properly spaced and inscribed with numbers denoting pressure in units of weight; the indicator, pivoted to and moving over the face of the dial; the straight, movable rack, suitably supported upon wheels or rollers and meshed with the toothed, segmental foot of the indicator; the horizontal bar pivotally connected to the proximate end of the straight rack; the upright lever, pivoted by its upper end to the horizontal bar and swung at or near its own center from a suitable support; the headed rod pivoted at its outer end to the lower end of the swinging lever and communicating at its inner end with the hollow piston within the indicator case; and the spiral spring, seated within the tubular shaft proceeding from the hollow piston, also encircling the rod within said shaft and bearing by one end against the head of said rod and by the other end against the adjustable tubular plug screwed into the mouth of the aforesaid tubular shaft; the whole constructed and arranged substantially as herein described, for the purpose of registering the amount of gas or air passed through the indicator at a known pressure within the hollow piston.

4. The combination in a pressure indicator for air or gas of the hollow closed cylinder, having the orifice and the collar at its forward end; the offset tube near the rear end of the cylinder, having the rectangular orifice at its inner end; the offset tube near the center of the cylinder, in opposite direction to the aforementioned offset tube and having the rectangular orifice at its inner end; the hollow piston closely fitting and moving within the cylinder and having the rectangular orifice near its rear end; the shaft projected from the front end of the hollow piston through the orifice of the cylinder, and the hand wheel, screw threaded upon said shaft and having the rim on its inner face, embraced by the collar of the aforesaid cylinder; all substantially in the manner described, for the purpose of fixing the area of passage for the inflow and outflow of gas or air to be passed through the indicator.

## 505,653. FACE-PROTECTOR. CARL GUNDSON, National Mine, Mich. Filed May 26, 1893. Serial No. 475,587. (No model.)



*Claim.*—1. In a face protector, the combination, with the mask frame and a suspending catch attached to the latter, of the swinging nose-frame and cover, having a wire loop at the top which is adapted to be detachably connected with said catch, as shown and described.

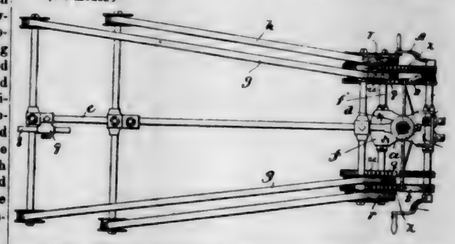
2. A face protector provided with a nose opening a plate secured to the protector above the opening, a spring tongue secured to the plate and having a lower bent end, and the swinging nose case having a cross piece extending under said bent end, substantially as set forth.

3. A face protector provided with eye openings and horizontally swinging eye protectors hinged to the protector frame at their inner ends between the eye openings, substantially as set forth

4. A face protector comprising a face covering having eye and nose openings, a plate secured between the eye openings, horizontally swinging eye protectors hinged at their inner ends to the sides of the plate, and a vertically swinging nose case hinged at its upper end to the lower portion of the plate, substantially as set forth

5. A face protector provided with a mouth opening a strip of fabric crossing the opening between its ends and secured to the mouth frame, a frame covered with netting and extending over the said opening under the said strip, and elastic connections between the ends of the frame and the protector, substantially as set forth.

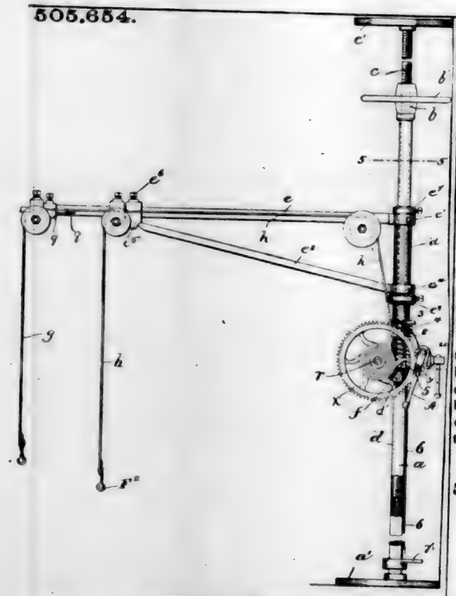
## 505,654. APPARATUS FOR MOVING INVALIDS. SETH P. H. HALE, Williamsville, Mass. Filed June 27, 1892. Serial No. 438,084. (No model.)



*Claim.*—The combination of the telescopic standard, the sleeve rotatable on said standard, and resting on a collar adjustably secured to said standard by a set screw, the crane or arm and the frame or block, both mounted on said sleeve, the strap-holding drums mounted on a rod or shaft supported by said frame and provided with gear wheels, the spring supported dogs adapted to engage and lock said gear wheels, a treadle arranged to be depressed by the operator, and connections between said dogs and treadle whereby the dogs may be caused by the operator's foot to lock the gear wheels and drum, as set forth.



## 505,654.



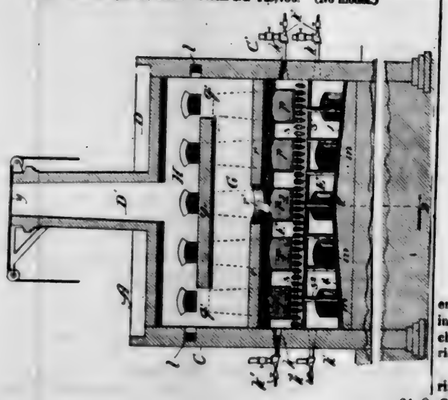
## 505,655. OVERSHOE-HOLDER. CHARLES L. HAMMERSTEIN, St. Louis, Mo. Filed Mar. 25, 1893. Serial No. 467,600. (No model.)



*Claim.*—1. An overshoe holder comprising a body 1 having upwardly and outwardly inclined arms 2, 2, provided with vertical extensions $2^a$, $2^a$, formed with hooks $2^b$, $2^b$, and a clamp 4 at its lower end provided with two jaws, and a slide 3 working on the body for operating the jaws; substantially as described.

2. An overshoe-holder comprising a single wire formed into a body, having arms at one end provided with hooks, and a clamp at its other end, provided with inner and outer jaws fitting one jaw within the other jaw, and a slide working on the body and adapted to close the jaws; substantially as described.

## 505,656. GARBAGE-FURNACE. BERNARD C. HEAVEY, Chicago, Ill. Filed Sept. 13, 1892. Serial No. 445,759. (No model.)



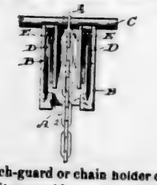
*Claim.*—1. In a furnace for burning garbage and the like, the combination of the combustion chambers E, F, extending one above the other, a grate between said chambers, feed-chute extending to the chamber F, door for said chute, burners and stoke openings at both said chambers, a retort G above the chamber F and communicating therewith through a central opening $r'$, outlet flues extending from opposite ends of the said retort and means for controlling the draft through the furnace, substantially as described.

2. In a furnace for burning garbage and the like, combustion-chambers E, F, and retorts G, H, extending one above the other, a grate between the chambers E, F, a central opening between the chamber F and retort G, and openings between the retort G and retort H, a central outlet for the retort H, and burners and stoke-openings at both the chambers E, F, substantially as described.

3. In a furnace for burning garbage, and the like, the combination with the combustion chamber F and retort-chamber above the same, of a garbage chute at one side of the furnace extending to the chamber F, and a flue extending from between the ends of the chute to the retort chamber, substantially as described.

4. In a furnace for burning garbage, and the like, the combination of an ash-pit, combustion chambers E, F, grate between said chambers, burners and ports at opposite ends of said chambers, retort and outlet therefor communicating with said chambers, stoke-openings at both said chambers, chute extending to the chamber F, door for said chute and elevated platform K, all constructed to operate substantially as and for the purpose set forth.

## 505,657. WATCH GUARD OR CHAIN HOLDER. HENRY M. HEMMING, Minocqua, Wis. Filed Apr. 17, 1893. Serial No. 470,661. (No model.)



*Claim.*—1. A watch-guard or chain holder comprising a suitable plate channeled upon its rear side and provided with means for detachable connection with a garment, substantially as set forth.

2. A watch-guard or chain holder comprising a channeled plate having one or both ends concave, and suitable means for the detachable connection of the plate with a garment, substantially as set forth.

3. A watch-guard or chain holder comprising a suitable plate having the rear surface thereof provided with parallel longitudinal ribs at a certain distance apart, both ribs being recessed in such a manner as to form seats and catches, transverse supports arranged in the ribs, and spring-pins engaging the supports, substantially as set forth.

## 505,658. BRIDLE. HARVEY S. HILL, Ithaca, Mich. Filed May 3, 1893. Serial No. 472,869. (No model.)

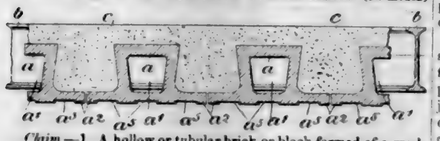


*Claim.*—1. A bridle having cheek straps connected near the lower ends by a cord forming connection between the cheek straps and being of a length to form a loop and fixedly held by its ends to said cheek pieces, the latter having rein receiving rings, and a pull on such rings serving to exert tension on the cord, substantially as described.

2. A bridle having cheek pieces provided with rein-receiving rings, a cord fixedly held by its ends to the said rings, and a nose band

fixedly held to one of said rings and loosely passing through the other and adapted at its free end for connection with a rein, a pull on the cheek pieces serving to exert tension on the cord, substantially as described.

**505,659. FIREPROOF FLOOR OR CEILING.** ERNEST HOMAN, London, England. Filed Apr. 5, 1893. Serial No. 469,191. (No model.)



*Claim.*—1. A hollow or tubular brick or block formed of a gradually increasing diameter from the base to the top or for a part of such distance and with a laterally extended base substantially as herein shown and described and for the purpose stated.

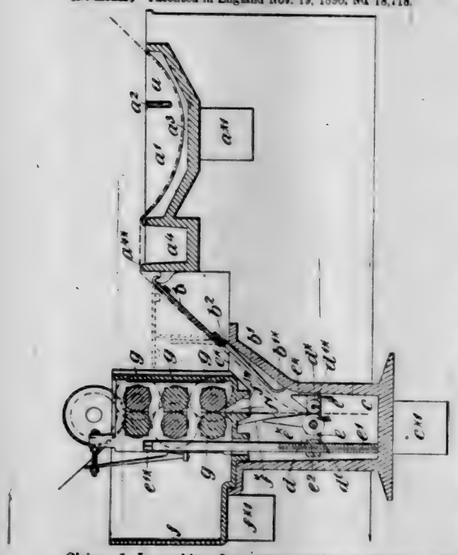
2. A hollow or tubular brick or block formed of a gradually increasing diameter from the base to the top or for a part of such distance with a laterally extended base with a notch and extended base at one end a shoulder at the other end and with both ends beveled or inclined substantially as herein shown and described and for the purpose stated.

3. A hollow or tubular brick or block formed with a notch and extended base at one end and a shoulder at the other end and with both ends beveled or inclined substantially as herein shown and described and for the purpose stated.

4. In a fire-proof floor or ceiling the combination of a series of iron girders a number of hollow or tubular bricks or blocks each formed of increasing diameter from the base to the top or part of such distance and provided with a laterally extended base and a filling of concrete or the like substantially as herein shown and described and for the purpose stated.

5. In a fire-proof floor or ceiling the combination of a series of iron girders a number of hollow or tubular bricks or blocks each formed of increasing diameter from the base to the top or fore part of such distance and having a laterally extended base a notch or slot and an extension of the base at one end a shoulder at the other end a bevel or incline at each end and a filling of concrete or the like substantially as herein shown and described and for the purpose stated.

**505,660. APPARATUS FOR COATING METAL SHEETS.** DANIEL JENKINS, Morriston, England. Filed June 23, 1892. Serial No. 438,296. (No model.) Patented in England Nov. 19, 1890, No. 18,718.



*Claim.*—1. In machines for coating metal sheets or plates, a tinning pot formed with a partition at one end, in combination with a drainage pot at the point where the plate leaves the tinning pot, having its sides of the same height so that the sheet will be supported in horizontal position while draining off the surplus metal, substantially as described.

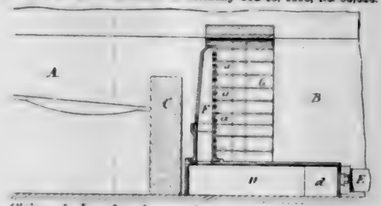
2. In machines for coating metal sheets or plates, the combination of a tinning pot divided by a partition, a draining pot, a dipping pot, and inclined guides extending from said draining pot to the dipping pot, said guides being so constructed that they can be raised into a horizontal position to form a shelf when it is desired to dry the plates before they are carried into the dipping pot, substantially as described.

3. In machinery for coating metal plates, the combination of a separate tinning pot, a separate dipping pot, inclined guides leading from the tinning pot and dipping pot and adapted to conduct the plates by gravity from the former to the latter, fingers supported adjacent to said guides and provided with means to assist the descent of the plates, a device located within the dipping pot adapted to receive the plates from the guides and raise them into position to be gripped by the finishing rolls, suitable finishing rolls, and means for operating the fingers and lifting devices, substantially as set forth.

4. In machinery for coating metal plates, the combination of a separate tinning pot, a separate dipping pot, inclined guides adapted to conduct the plates by gravity from the tinning pot to the dipping pot, a frame suitably mounted in the dipping pot, co-operating rotating disks mounted in said frame and adapted to receive between them the plates from the inclined guides and drop them in the dipping pot and raise them into the position to be gripped by the finishing rolls, suitable finishing rolls, and mechanism for operating said parts in the proper relation to each other, substantially as set forth.

5. In machinery for coating metal plates the combination of a separate tinning pot, a separate dipping pot, inclined guides to conduct the plates by gravity from the tinning pot to the dipping pot, fingers adjacent to the guides operated by a lever or crank handle for manipulating the plates, a frame located within the dipping pot, two parallel shafts carried by such frame, several disks fixed upon the shafts, means for rotating the disks in order to lower and raise the plates, and means for adjusting the position of the frame substantially as herein shown and described.

**505,661. FURNACE.** WILLIAM KNEEN, London, England. Filed May 3, 1892. Serial No. 431,624. (No model.) Patented in England May 3, 1890, No. 6,876, and in Germany Oct. 15, 1890, No. 56,826.



*Claim.*—1. In a fire-place or furnace having a bridge and provided with an upright air supply pipe behind the bridge in the combustion chamber, and extending nearly to the top of said chamber, with blocks, piers or projections adjacent to the said pipes in the combustion chamber, leaving spaces between them, the said upright pipe or pipes being provided with perforations adapted to direct the air across the line of draft from the fire-place in the said spaces to cause the hot air and gases to impinge on the said piers, substantially as set forth.

2. A fire-place or furnace having a bridge and an air chamber or receiver in the combustion chamber behind the bridge, the said air chamber being provided with a valve *b*, in combination with an upright air tube or tubes in communication at the bottom with the said air chamber and reaching nearly to the top of the combustion chamber, and blocks or piers adjacent to the said upright tube or tubes, the said tubes being provided with perforations, adapted to direct the air across the line of draft from the fire place and against the blocks, substantially as and for the purpose set forth.

**505,662. STRINGED MUSICAL INSTRUMENT.** WILLIAM KUHPF, Memphis, Tenn. Filed May 10, 1893. Serial No. 473,672. (No model.)

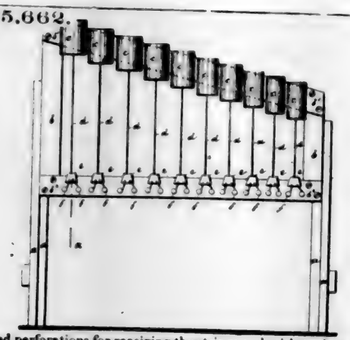
*Claim.*—1. The combination of a frame with sounding drums secured thereto and with strings stretched across the frame and secured to the sounding drums, substantially as specified.

2. The combination of a frame with sounding drums and tuning pins secured thereto, strings secured to the sounding drums and tuning pins and with agraffes through which the strings pass, substantially as specified.

3. The combination of a frame with sounding drums arranged in pairs, strings secured thereto at their upper ends, agraffes having

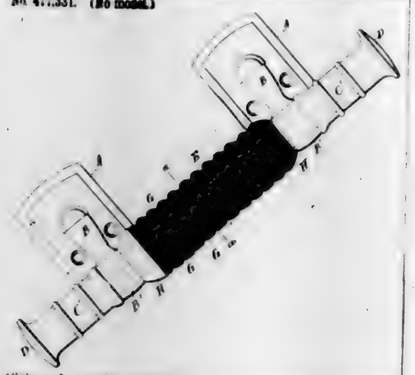


**505,662.**



inclined perforations for receiving the strings and with tuning pins to which the lower ends of the strings are attached, substantially as specified

**505,663. COFFIN-HANDLE.** ELIHAH P. LACROIX, Meriden, Conn., assignor to C. Rogers & Bros., same place. Filed June 12, 1893. Serial No. 477,331. (No model.)

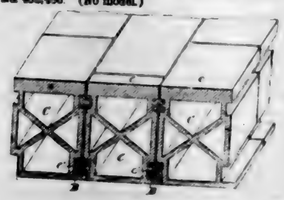


*Claim.*—1. A coffin-handle bar, having an enlarged grip and ends projecting beyond the same, in line therewith, a covering for the grip of the bar, cup-shaped collars passed over the ends of the bar, which project through them, and applied to the ends of the enlarged grip over the ends of its covering to conceal the latter and form a finish, and tips applied to the projecting ends of the bar, substantially as described.

2. A coffin-handle bar, having an enlarged grip and ends projecting beyond the same, in line therewith, ornamental moldings applied to the grip of the bar and extending longitudinally therewith, cup-shaped collars passed over the ends of the bar, which project through them, and applied to the ends of the enlarged grip to cover the ends of the moldings applied thereto, and tips applied to the projecting ends of the bar, substantially as described.

3. A coffin-handle bar having an enlarged polygonal grip, a covering for the corners thereof, moldings applied to the respective faces of the said grip, and extending longitudinally therewith, coverings for the said moldings, and cup-like collars applied to the bar to cover the ends of the moldings, substantially as described

**505,664. NON-SHEARING ROD FOR STRENGTHENING CONCRETE-WORK.** THOMAS A. LEE, Kansas City, Mo. Filed Nov. 19, 1892. Serial No. 452,486. (No model.)



*Claim.*—1. A non-shearing tension rod for the purposes described consisting of two or more bars or stiff strands laid spirally together to form spiral channels for the adhesion of cement, concrete, or other surrounding material, substantially as set forth.

2. A non-shearing rod or bar for the purposes described consisting of two or more bars or stiff strands having spiral channels or grooves between them for the adhesion of cement, concrete, or other material, substantially as set forth.

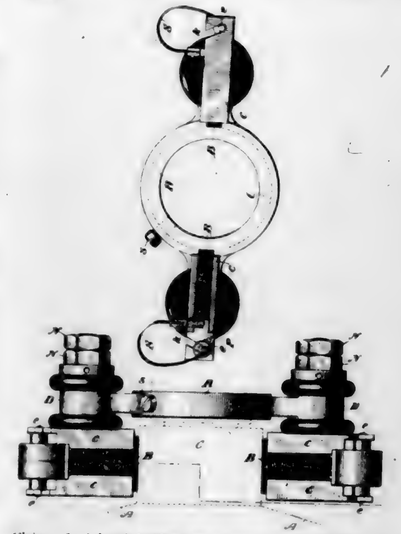
3. A stiff non-shearing rod for the purposes described having spiral channels or grooves, substantially as set forth.

4. A non-shearing rod for the purposes set forth consisting of two or more strands, and a plate or plates held in position by the said strands and forming spiral ribs around the said rod, substantially as set forth.

5. A non-shearing rod for the purposes described, consisting of two or more strands and a plate or plates, twisted together, substantially as set forth.

6. A non-shearing rod for the purposes described consisting of strands twisted together, but without twist in the individual strands, substantially as set forth.

**505,665. DYNAMO-ELECTRIC MACHINE OR ELECTRIC MOTOR.** ROBERT LUNDELL, Brooklyn, assignor of two-thirds to Edward H. Johnson, New York, N. Y. Filed Oct. 31, 1892. Serial No. 450,803. (No model.)



*Claim.*—1. A brush holding device consisting of a hollow sleeve slitted in the direction of its length, in combination with a detachable spring carrying a follower on one end and having a bearing or support in the sleeve at the other end, the end which carries the follower having movement in the slit as the follower bears against and moves forward with the brush substantially as described.

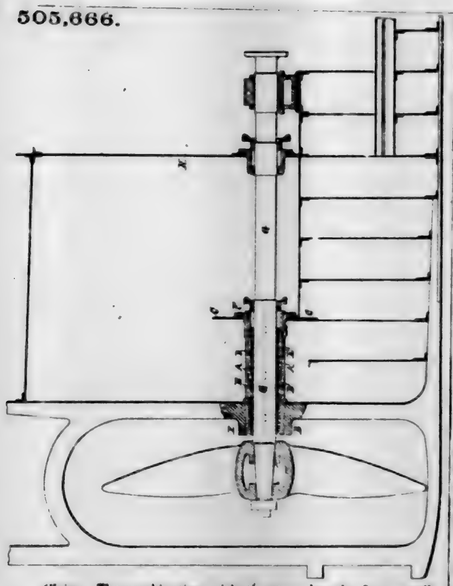
2. In a brush holding device, a hollow sleeve slitted in the direction of its length, in combination with a follower consisting of a bearing or pin borne by a flat spring extending through the slit and connected to a second bearing journaled or pivoted in the sleeve substantially as described.

3. A brush holding device consisting of a hollow sleeve slitted in the direction of its length, in combination with a detachable spring carrying a follower at one end which bears against the end of the brush, and trunnions or bearings at the other end thereof supported in the sleeve substantially as described.

4. A brush holding device consisting of a hollow sleeve having a slit or opening on its upper side in combination with a detachable spring having trunnions on one end adapted to bear in corresponding notches in the outer ends of the sleeve and a pin on the other end adapted to bear upon the commutator brush, substantially as described.

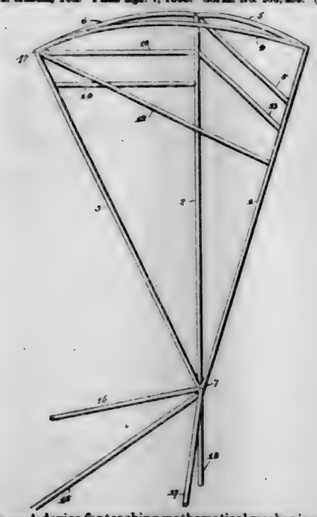
**505,666. STERN-BEARING FOR SCREW-PROPELLER SHAFTS.** HECTOR MACCOLL, Saxonia, Strandtown, Ireland. Filed May 22, 1893. Serial No. 475,195. (No model.)

## 505,666.



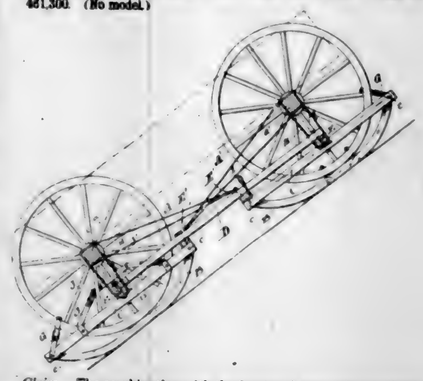
*Claim.*—The combination with the stern length of a propeller shaft, of a bearing tube divided longitudinally into a plurality of parts, adapted to be moved inward, with means for securing the parts together, whereby the said tube may be readily removed from the shaft within the vessel, substantially as and for the purpose set forth.

## 505,667. EDUCATIONAL APPLIANCE. ALEXANDER MACFARLANE, Austin, Tex. Filed Apr. 7, 1893. Serial No. 469,429. (No model.)



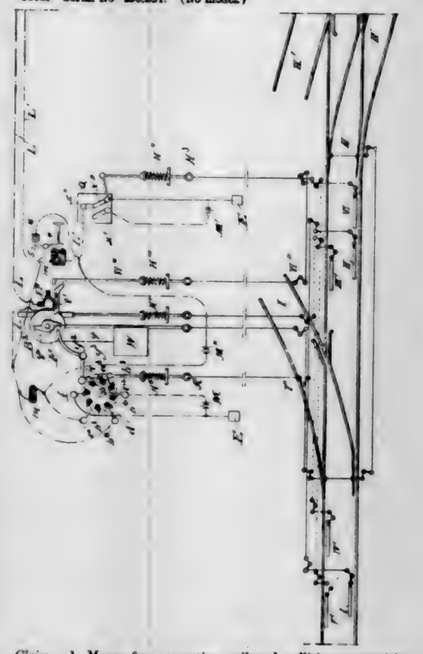
*Claim.*—A device for teaching mathematical mechanics and physics, consisting of the rods 1, 2, 3, 4, 5, and 6 secured together to form a spherical triangle, the parallel rods 8 and 13 extending from rod 1 to rod 2, the rod 8 being secured to rod 2 at its junction with rod 5, the rod 12 extending from rod 1 to the junctions of the rods 3, 4 and 6, the parallel rods 10 and 14 extending from the rod 2 opposite the rod 13 to the rod 3 and secured thereto at its junction with rods 4 and 6, and the rods 15, 16, 17 and 18 extending from the center 7 of the triangle, substantially as herein shown and described.

## 505,668. RUNNER ATTACHMENT FOR VEHICLE-WHEELS. WILLIAM E. MITCHELL, Morton, Wis. Filed Feb. 7, 1893. Serial No. 461,309. (No model.)



*Claim.*—The combination with the front and rear pairs of wheels of a vehicle of runners secured to said wheels, transverse bars extending between the runners of each pair, a reach extending longitudinally between said transverse bars and pivotally secured to the front one of the same, and straps connecting the said transverse bars with the axles of the respective pairs of wheels, substantially as set forth.

## 505,669. MEANS FOR PREVENTING RAILROAD COLLISIONS. EDUARDO M. DE MORTS and CARL JOST, Bombay, India. Filed Oct. 28, 1892. Serial No. 450,231. (No model.)



*Claim.*—1. Means for preventing railroad collisions comprising a track composed of individual sections having switches and side tracks, at the end of each section, electro mechanical controlling apparatus substantially as described one for each end of a section and arranged so that the mechanism of one apparatus is set in motion by an electric current from the batteries of the apparatus at the other end of the section, a transposing lever arranged alongside the rail at the end of each track section, and adapted to be actuated by the broadened flange of a locomotive or other wheel, means for connecting each lever with the corresponding apparatus, a switch mechanism for operating the said switches and means for connecting the switch mechanism with the corresponding apparatus, substantially as shown and described.

2. Means for preventing railroad collisions comprising a track composed of individual sections having switches and side tracks, at the end of each section, electro mechanical controlling apparatus substantially as described one for each end of a section and arranged so that the mechanism of one apparatus is set in motion by an electric current from the batteries of the apparatus at the other end of the section, a transposing lever arranged alongside the rail at the end of each track section, and adapted to be actuated by the broadened flange of a locomotive or other wheel, means for connecting each lever with the corresponding apparatus, a switch mechanism for operating the said switches, means for connecting the switch mechanism with the corresponding apparatus and line devices for directly connecting the said apparatus of a section with each other, substantially as shown and described.

3. Means for preventing railroad collisions, comprising a track composed of individual sections, having switches and side tracks, an electro mechanical controlling apparatus at each end of the section and arranged so that the mechanism of one apparatus is set in motion by an electric current from the batteries of the apparatus at the other end of the section, transposing levers arranged alongside the track rails and adapted to be actuated by locomotive and other wheels passing over the rails, the said levers being connected with the said controlling apparatus, and means for positively connecting the said controlling apparatus with the said switches to open and close the latter to open or shut the track, line wires for connecting the said apparatus with each other and means for automatically interrupting the circuit to prevent the working of the electro magnetic controlling apparatus at either end of the section, substantially as shown and described



## 505,670. TRIMMING. GEORGE H. NEWTON, Monson, Mass. Filed Apr. 22, 1893. Serial No. 471,427. (No specimens.)



*Claim.*—1. In an artificial flower trimming, the combination, with the hollow stem, B, and the part, C, representing the body of a flower, of a crank shaft arranged transversely in said stem, rotating members attached to the ends of said shaft, and the flower center, H, having a rod that connects with the shaft and is reciprocated thereby, substantially as shown and described.

2. An artificial flower trimming, consisting in a stem provided with oppositely extending exposed leaves at its sides a shaft connecting said leaves, a flower surmounting the stem, and having a movable center connected with and operated by said shaft, substantially as set forth.

## 505,671. LASTING-MACHINE. BENJAMIN A. NORWOOD, Boston, Mass., assignor, by mesne assignments, to the Eureka Process Lasting Company, same place. Filed Oct. 3, 1892. Serial No. 447,676. (No model.)

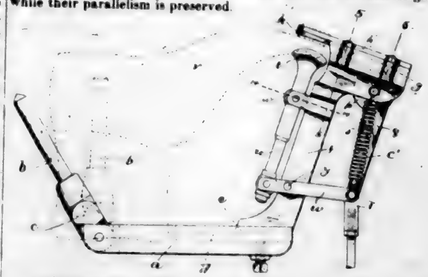
*Claim.*—1. A lasting machine comprising in its construction a pair of parallel wiping plates and means substantially as described for moving said plates in the direction of their length, and at the same time moving them toward each while preserving their parallelism.

2. A lasting machine comprising in its construction three parallel wiping plates, and means for moving said plates in unison in the direction of their length, and at the same time moving the two outer plates toward the center plate while preserving their parallelism.

3. A lasting machine comprising in its construction a pair of parallel wiping plates, means for moving said plates in the direction of their length, and at the same time toward each other while preserving their parallelism, and a center plate in engagment with said parallel plates, whereby it moves longitudinally with them without partaking of their lateral movement.

4. In a lasting machine, a pair of parallel wiping plates; crank-disks connected with said plates; and means for simultaneously actuating said crank-disks whereby the plates are moved toward and away from each other and also in the direction of their length, while their parallelism is preserved.

5. In a lasting machine, a pair of parallel wiping plates; gears connected eccentrically with said plates; and a reciprocating rack in mesh with all said gears whereby the plates will be moved toward and away from each other and also in the direction of their length, while their parallelism is preserved.

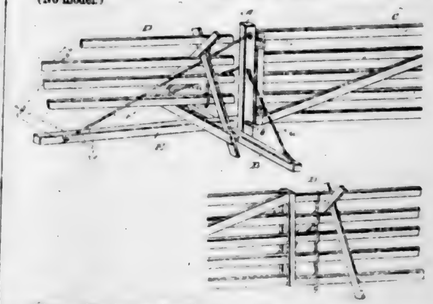


6. In a lasting machine, the combination of a head; a wiping plate engaged with said head whereby it is guided in a movement in the direction of its length; a pair of parallel wiping plates on opposite sides of the first-named plate and engaging the same, said pair of plates movable in the direction of their length and also toward and away from each other; and means for actuating the two outer plates whereby an arc movement is imparted to them, and a longitudinal movement is imparted to the central plate, substantially as described.

7. In a lasting machine, the combination of a lasting jack; an adjustable column connected thereto; a vertically movable toe-rest supported on one side of the column; a head at the upper end of the column; wiping plates in said head; means for actuating said wiping plates and supported on the opposite side of the column to the toe-rest; and a suitable connection between such actuating means and the toe-rest, and supported by the column, whereby the toe rest and wiping plates are operated simultaneously.

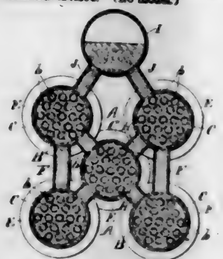
8. In a machine for lasting boots and shoes, the combination of the head *g*, a gear journaled in bearings in the head, a rack adapted to mesh with said gear, gears adapted to mesh with teeth formed upon each side of said rack, and wiping plates connected with said gears as described, and adapted to be moved in the arc of a circle by the partial rotation of said gears, as set forth.

## 505,672. FENCE-POST. DAVID PORT, SAMUEL PORT, and CLEMENT V. BAIRD, near Dublin, Ind. Filed Mar. 11, 1893. Serial No. 465,510. (No model.)



*Claim.*—The herein described surface supported fence post, comprising a post proper, A, a transverse base B, to which said post is rigidly secured at its lower portion, oblique lateral braces *a*, *a*, connecting said post and brace, a longitudinal sill piece E to which the lower portion of said post is pivoted, said sill piece extending back over said base and resting thereon, and underneath the lower cross pieces of the fence section, said base B forming a fulcrum for said sill piece and a brace F connecting the rear portion of said sill piece and the upper portion of the post A, the arrangement of said sill piece as above described causing it to sustain the partial weight of the fence section, and thereby enable it to counterbalance in whole or part the weight of the gate swung from said post, substantially as specified.

**505,673.** BOILER. STEPHEN A. PRATT, Detroit, Mich. Filed Mar. 31, 1892. Serial No. 427,296. (No model.)



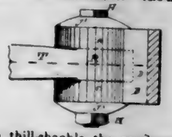
*Claim.*—1. In a section for water-tube boilers, the combination of a series of tubes, a cylindrical shell at each end of said tubes, the circular plates in which the ends of said tubes are secured, said plates having annular right angled flanges that enter the ends of said shells and are riveted therein, the ring encircling the outer ends of said shells and riveted thereto, the concavo-convex heads covering the entire outer ends of said shells and having an annular flange that extends onto the face of said ring, and the screw-bolts passing through said flange and into said ring, affording ready access to the ends of all of said tubes, and forming water chambers with which said tubes communicate, said shell having an induct and an educt port, independent of their connecting tubes, substantially as set forth

2. In a boiler, the combination of a plurality of tube-sections having water-chambers at their ends, a number of said sections arranged about a central section of like construction whose water-chambers, at each end, are provided with radial pipes that communicate with the water chambers of the encompassing sections and the water chambers of said encompassing sections, on each side being connected by pipes, substantially as specified

3. In a boiler, the combination of a plurality of tube-sections having water-chambers at their ends and so arranged that a central section is inclosed within surrounding sections, the water chambers of the central section having radial pipes that communicate with the water chambers of the outer sections and the chambers of said outer sections being connected by vertical pipes, and the steam drum connected by pipes with the chambers of the upper sections.

4. In a boiler, the combination of the exterior tube-sections arranged quadrilaterally, each section provided with a water-chamber at each end with which said tubes communicate, the central tube-section environed by said exterior sections, and having a water-chamber at each end which communicates through the interposed tubes with the chambers of the exterior sections the vertical tubes connecting the water chambers of said exterior sections, and the steam-drum connected through tubes with the upper sections, substantially as set forth

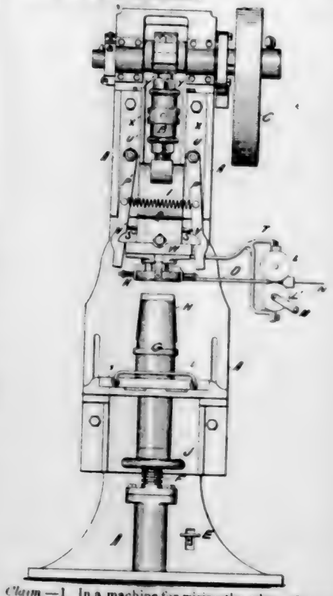
**505,674.** THILL-COUPLING. THOMAS RANSLEY, Jr., Troy, N. Y. Filed Nov. 25, 1892. Serial No. 453,049. (No model.)



*Claim.*—1. In a thill-shackle, the combination with a convex journal face formed on each side of the shackle end of the thill, and an encircling rib arranged between said journal faces to project beyond the latter, said journal end of the thill being made with a transverse bolt passage, of a body-part having a concavity adapted to receive said rib, and made with a projection having a concave bearing, a central bolt passage and a T-form socket; and a concave bearing-part having upon one end a T-form key-piece adapted to interlock with the socket of the body-part, and a bolt provided with a head and threaded nut, adapted to be passed through said bearing parts and immediately placed journal-end of the thill, substantially as and for the purposes set forth

2. The combination with the rounded shackle end of the thill T, made with the convex side journal surfaces F, F, and the rib R, of the body-part B, made with the concave journal bearing J', the concavity D, and the T-form socket S; the concave journal bearing part $J^3$, made with the T-form key-plate K, and the headed bolt I, made to pass centrally through said journal bearings and the thill end T, substantially in the manner as and for the purposes set forth

**505,675.** MACHINE FOR WIRING THE EDGES OF SHEET-METAL VESSELS. HENRY S. REYNOLDS, Brooklyn, N. Y. Filed Oct. 14, 1891. Serial No. 408,714. (No model.)



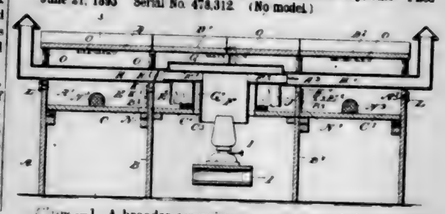
*Claim.*—1. In a machine for wiring the edges of sheet metal vessels, the combination of a form adapted to hold the vessel to be operated upon in place, a reciprocating shaping head provided with a wire feeding device and an automatic cutting device by which the proper length of wire is cut off, means for holding the wire in the shaping head while the sheet metal edge of the vessel is being forced around it, and means for releasing the vessel when the wiring is complete, substantially as specified

2. A shaping head for machines for wiring the edges of sheet metal vessels, consisting of a plate provided with a groove adapted to receive the wire and the edge of the vessel in combination with radially movable jaws secured to said shaping head and normally held in position to nearly close the groove therein, but adapted to be automatically opened to release the vessel when the wiring operation is completed, substantially as described

3. In a shaping head for a machine for wiring the edge of sheet metal vessels, the combination of a shaping plate provided with a groove adapted to receive both the wire and the edge of the vessel, radially movable jaws by means of which the groove may be nearly closed during the operation of wiring, and a cutter plate moving across the groove, by means of which the wire is cut off a predetermined length, substantially as specified

4. The combination, in a shaping head for machines for wiring sheet metal vessels, of a grooved shaping plate and a cutter plate reciprocating in the same, the parts being arranged so that the wire is fed through a hole in the cutter plate and around in the groove in the shaping plate until the entering end of the wire abuts against the cutter plate, when it is sheared off by the movement of this cutter plate, substantially as specified

**505,676.** BROODER. AMBROSE B. SHAUB, Beach City, Ohio. Filed June 21, 1893. Serial No. 478,312. (No model.)



*Claim.*—1. A brooder comprising a casing provided with partitions to form several compartments, a heating drum in the central compartment, and provided with air distributing pipes extending through the compartments to heat the same from above, and a water tank or receptacle also in the center compartment and closing the upper end of the heating drum, substantially as shown and described.

2. A brooder comprising a casing provided with partitions to form several compartments, a heating drum in the central compartment and provided with air distributing pipes extending through the compartments to heat the same from above, a water tank or receptacle also in the center compartment and closing the upper end of the heating drum, and a screen depending from the said water tank in the central compartment, substantially as shown and described.

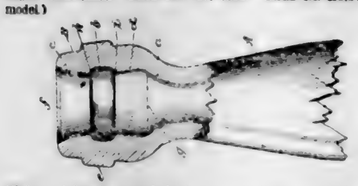
3. A brooder comprising a casing provided with partitions to form several compartments, a heating drum in the central compartment and provided with air distributing pipes extending through the compartments to heat the same from above, a water tank or receptacle also in the center compartment and closing the upper end of the heating drum, and air regulating devices in the said partitions and in the ends of the casing to uniformly heat the said compartments, substantially as shown and described.

4. A brooder, comprising a casing having transverse partitions and removable bottoms and hinged top doors, a tank supported in the central compartment formed by the said partitions, an air drum depending from the said tank through an aperture in the bottom of the central compartment, branch pipes leading from the said drum, and air pipes leading from the said branch pipes to the end compartments, substantially as shown and described.

5. A brooder, comprising a casing having transverse partitions and removable bottoms and hinged top doors, a tank supported in the central compartment formed by the said partitions, an air drum depending from the said tank through an aperture in the bottom of the central compartment, branch pipes leading from the said drum, air pipes leading from the said branch pipes to the end compartments, and doors in the said partitions and the rear wall of the said casing, substantially as shown and described.

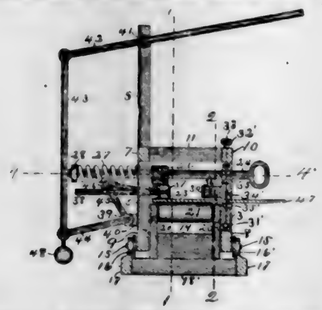


**505,677.** CORKING BOTTLES. CONRAD SCHROEDER, Milwaukee, Wis., assignor of two-thirds to Anton Stollenwerk and Ferdinand Achtenhagen, same place. Filed Nov. 26, 1892. Serial No. 453,271. (No model.)



*Claim.*—A bottle provided with an interior concave circumferential groove in the center of its head, and flaring annular enlargements both above and below said groove, and having a choke or contraction in the bottle-neck, in line with the base of the bottle-head, in combination with a short, free, solid, homogeneous, yielding, inodorous, chemically-neutral stopper expanded into said groove and enlargements, and filling the entire bore in the bottle-head from a point immediately below the top to a point immediately above the said choke.

**505,678.** BRICK-CUTTING MACHINERY. JOHN C. SCHROEDER, Onekama, Mich. Filed Mar. 14, 1893. Serial No. 465,952. (No model.)



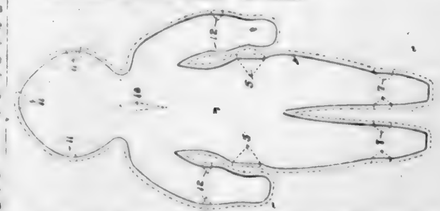
*Claim.*—1. In a brick cutting machine the combination with the cutting wires 34 of the gages 35 provided with V slots or grooves to receive the cutting wires 34, all substantially as shown and described and for the object set forth.

2. In a brick cutting machine, the combination of the knife 26, the shaft 24 journaled in the main frame, the spring 27, the collar 28, with the table 23, all substantially as shown, described, and for the object set forth.

3. In a brick cutting machine, the combination of the lever 42, the connecting rods 43, 44, 45 and 46, the plunger 37, the guide rods 38, the shaft 39 all properly fastened and journaled together and operating to move the plunger 37 transversely upon the table 23, with the table 23, the cutting wires 34, and the gages 35, all substantially as shown, described, and for the object set forth.

4. The combination, in a brick cutting machine, of the lever 42, the connecting-rods 43, 44, 45, and 46, the plunger 37, the guide rod 38, the shaft 39, all properly fastened and journaled together and operating to move the plunger 37 transversely upon the table 23, the shaft 24 properly journaled in the frame timbers 2 and 3, the knife 26, the block 25, the spring 27, and the collar 28, all arranged together and operating to travel transversely upon the table 23, with the cutting wires 34, the gages 35, and the table 23 securely fastened to the pug-mill or molding die, and all except the table 23 operating to travel back and forth longitudinally upon the rails 17 and 17', all substantially as shown, described, and for the object set forth.

**505,679.** TOY FIGURE. CHARITY SMITH, Ithaca, N. Y. Filed Apr. 3, 1893. Serial No. 468,890. (No model.)



*Claim.*—1. The front and back pieces for a stuffed figure each piece having in the parts corresponding to the limbs, dart seams indicated at one of the main joints of the lower limbs, substantially as set forth.

2. The front and back pieces for a stuffed figure each piece having in the parts corresponding to the limbs, dart seams indicated at one of the main joints of the lower limbs, the body of the back piece being the longest and having a dart seam, substantially as set forth.

3. A doll comprising a front and back piece provided with dart seams at the hips, knees and elbows, substantially as set forth.

4. In a toy figure the front and back pieces each having a dart seam at the neck, substantially as set forth.

5. In a toy figure the front and back pieces the latter being the longest and having dart seams to form the hips, substantially as set forth.

6. In a toy figure front and back pieces having dart seams in the parts corresponding to the head of the completed figure, said pieces being joined by a median longitudinal seam on the top and sides of the head and each piece having on the top and at each side of the head a dart seam transverse to said longitudinal seam and corresponding in situation and dimensions to a similar seam in the other piece, substantially as set forth.

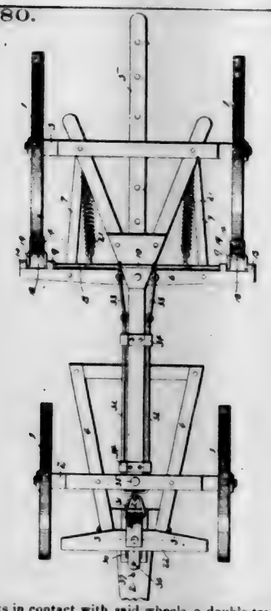
7. In a toy figure front and back pieces the latter having dart seams in the parts corresponding to the heels substantially as set forth.

**505,680.** AUTOMATIC WAGON-BRAKE. ALBERT J. SMITH and JOHN V. LANDER, Adrian, Mo. Filed May 22, 1893. Serial No. 475,110. (No model.)

*Claim.*—1. The improved brake constructed with a transverse beam or rod 6 fixed at a point adjacent the peripheries of the wheels, and held in such position by suitable braces, a rock-shaft 8 mounted in bearings carried by the beam, a vertical crank 10 on said shaft, cranks 11 on said shaft adjacent the wagon-wheels, links or stirrups 19 also mounted upon said beam, one above each crank 11, brake blocks 14 secured to said cranks 11 and said stirrups 19 so as to engage said wheels and wear evenly, and means arranged to apply and release said brake-blocks by rocking said shaft, substantially as herein specified.

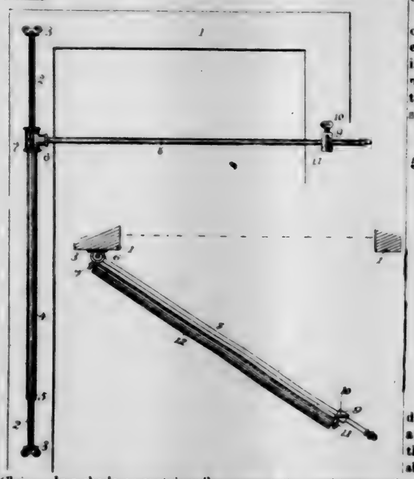
2. The improved brake constructed with a transverse beam or rod 6 fixed at a point adjacent the wheels, a rock-shaft 8 mounted in bearings on this beam, a vertical crank 10 on said shaft, cranks 11 on said shaft adjacent said wheels, brake-blocks 14 secured to said cranks 11, springs 21 secured to said crank 10 and normally retaining said

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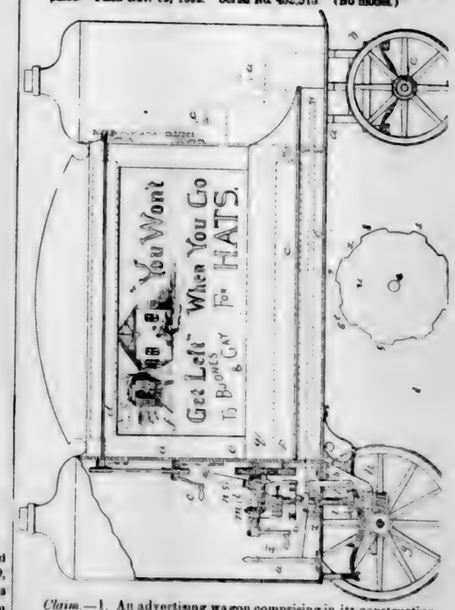
brake blocks in contact with said wheels, a double-tree 22 mounted to slide, and means connecting said doubletree to said crank 10, whereby when draft is applied to the doubletree the brake-blocks will be removed from the wheels, and when draft is released from said doubletree said springs will apply the blocks to the wheels, substantially as herein specified

505,681. ADJUSTABLE SHADE-HOLDER. OAKLEY B. STARKWEATHER, Decatur, Ill. Filed May 20, 1892. Serial No. 433,703. (No model.)



*Claim.*—In a shade or curtain roller support, the combination of the vertical guide rod 2, bearings 3 at each end of said rod, the long tubular sleeve 4 mounted on the guide rod, a set screw 5 on its lower end, and on its upper end a T-head 6 carrying a shade bearing 7, the horizontal shade-carrying rod 8 unsupported at one end and secured at its other end to the T-head on the upper end of the sleeve, and the bearing block 9 adjustable on the rod 8 substantially as set forth.

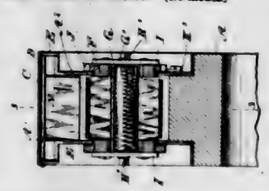
505,682. ADVERTISING-WAGON. HESSIE D. STONE, Boston, Mass., assignor to the Automatic Advertising Panorama Company, same place. Filed Nov. 13, 1892. Serial No. 452,515. (No model.)




*Claim.*—1. An advertising wagon comprising in its construction a roll for winding on the advertising sheet or scroll, gear between an axle of the vehicle and said roll whereby the latter is actuated, a clutch for throwing the roll in and out of gear with the axle, a lever engaging said clutch, and a rotary cam in gear with the axle, and arranged to engage the said lever and thereby cause the roll to be intermittently thrown out of gear, substantially as and for the purpose described.

2. An advertising wagon comprising in its construction a roll for operating or winding on the advertising sheet or scroll, gearing for effecting the movement of the said roll, a movable clutch for setting in operation and arresting the movement of the said roll, a lever connected with the said movable clutch and a cam for operating upon the said lever, the face of the said cam having a plurality of raised surfaces of graduated length, as set forth.

505,683. SANDPAPER-WHEEL. FREDERICK H. STUBBS, New York, N. Y., assignor of one-half to John C. Klatzl, same place. Filed July 15, 1893. Serial No. 480,601. (No model.)



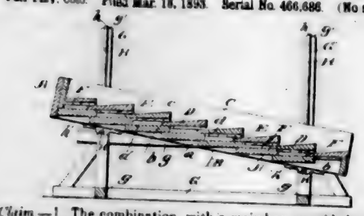
*Claim.*—1. A sand-paper wheel, comprising a spindle having a diametrical slot and an interior recess leading into the said slot, and a clamping bar arranged within the said recess and adapted to clamp the paper in place on the walls of the said recess, substantially as shown and described.

2. A sand paper wheel, comprising a spindle having a diametrical slot and an interior recess having a V-shaped end, a clamping bar arranged within the said recess and provided with a V-shaped point adapted to clamp the paper in place in the V-shaped end of the said recess, and an eccentric mounted to turn in the said bar to shift the latter longitudinally, substantially as shown and described.

3. A sand-paper wheel, comprising a spindle having a diametrical slot and an interior recess having a V-shaped end, a clamping bar arranged within the said recess and provided with a V-shaped point adapted to clamp the paper in place in the V-shaped end of the said recess, an eccentric mounted to turn in the said bar to shift the latter longitudinally, a shaft carrying the said eccentric and journaled in bearings arranged on the said spindle, and means, substantially as described, for retaining the said spindle in position, as set forth.



505,684. PLACER-MINING MACHINE. CHARLES O. SUMNER, Fair Play, Colo. Filed Mar. 18, 1893. Serial No. 466,686. (No model.)

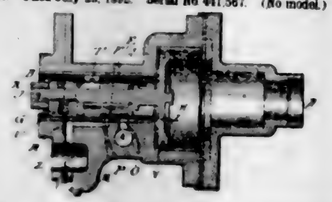


*Claim.*—1. The combination, with a main box provided with a bottom consisting of a series of transverse overlapping boards, the rear edges of the latter being supported upon the forward edges of the adjoining boards, of an auxiliary box fitting within the main box and provided with a bottom consisting of transverse overlapping boards arranged at a forward incline relative to the boards of the main box, the overlapping edges being separated, said boxes forming conjunctively a series of traps having each a forwardly-inclined opening; substantially as set forth.

2. The combination, with a main box consisting of sides, and a bottom formed of transversely disposed, overlapping boards arranged at an angle to said sides and having their rear edges supported upon the forward edges of the adjoining boards, of an auxiliary box removably disposed in said main box and consisting of sides recessed at their lower edges to fit the stepped bottom of the main box, and a bottom formed of transverse overlapping boards, the overlapping edges being separated, and the upper surface of each of said boards being forwardly beveled, said boxes forming conjunctively a series of traps each having a forwardly-inclined opening communicating therewith at its rear edge; substantially as set forth.

3. In a placer mining machine, the combination, with a frame comprising four uprights arranged in pairs at the forward and rear ends of the frame and provided at their upper ends with bearings, and a rearwardly-inclined box suspended within said frame and provided with traps, of approximately U-shaped hangers passing transversely under the box and having their upper ends provided with outwardly-projecting journals engaging the bearings of the uprights, the vertical arms of the forward hanger being of less length than the corresponding arms of the rear hangers, for the purpose described, and means for rocking or swinging the box longitudinally relative to the frame; substantially as set forth.

505,685. TRIPLE VALVE FOR FLUID-PRESSURE BRAKES. PAUL SYNNESTVEDT, Chicago, Ill., assignor to the Crane Company, same place. Filed July 29, 1892. Serial No. 441,567. (No model.)



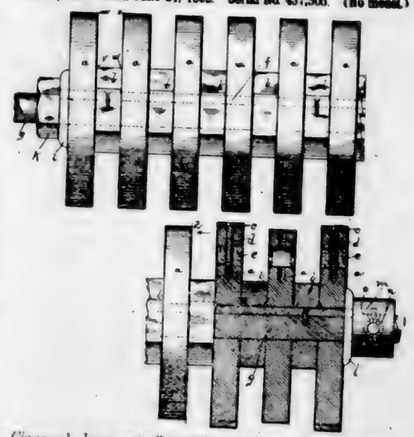
*Claim.*—1. In a triple valve apparatus the combination with the piston and the stem thereof, of the slide valve attached to said stem without lost motion and alone controlling the inlet to the brake cylinder, and another slide valve connected to said stem with lost motion and alone controlling the exhaust from the cylinder, substantially as described.

2. In a triple valve apparatus the combination with the piston and the stem thereof, of a slide valve attached to said stem without lost motion and alone controlling the inlet to the brake cylinder, a spring confined between said valve and the stem for holding the former on its seat, and another spring seated slide valve connected to said stem with lost motion and alone controlling the exhaust from the cylinder, said valve playing between projections on the piston stem, substantially as described.

3. In a triple valve apparatus the combination with the piston and the stem thereof of a slide valve confined between a shoulder on the said stem and a removable nut on the end of the same, said valve alone controlling the inlet to the brake cylinder, a spring confined between said valve and the stem for holding the valve on its seat, and another spring seated slide valve connected to said stem with lost motion and alone controlling the exhaust from the cylinder, said valve playing between the shoulder on the stem and the removable nut on the end of the same, substantially as described.

4. In a triple-valve apparatus, the main piston and stem, in combination with a valve seat provided with port R leading to the brake cylinder and exhaust ports M and O, a sliding valve G fixed on the piston stem and arranged to control the port R, and a sliding valve F mounted on the same stem with lost motion and controlling the exhaust ports M and O, substantially as described.

505,686. CONTROLLER-ROLLER FOR ELECTRIC CARS. ERNEST P. WARNER, Chicago, Ill., assignor to the Western Electric Company, same place. Filed June 21, 1892. Serial No. 437,505. (No model.)



*Claim.*—1. In a controller roller for electric railway cars, the combination with a shaft *g*, carrying a feather *f*, of disks of insulating material placed upon the said shaft, keyways being cut therein to prevent the rotary motion of the disks relatively to the shaft, of the sleeve *m* fastened to the shaft *g* and collars *l* and *i*, of the nut *k* adapted to clamp the disk between the collars *l* and *i*, the adjacent disks being of different diameters, the soft metal plug *e* fitting the counter-bored holes in the disks *a a*, holes being tapped therein to receive the screws *d d* to fasten the conducting strips *c c* to the disks *a a*, substantially as specified.

2. In a controller roller for electric railway cars, the combination with large and small disks of insulating material placed alternately upon a shaft, of means for clamping said disks upon said shaft, and means for preventing any rotary motion of said disks relatively to said shaft, and conducting strips attached to the peripheries of said larger disks, substantially as specified.

3. In a controller roller for electric railway cars the combination with conducting strips, of screws passing through said conducting strips and fitting in tapped holes in soft metal plugs, which plugs are fitted into holes near the peripheries of the large disks of the roller, the holes being counter-bored, whereby the plug is held firmly in position, substantially as specified.

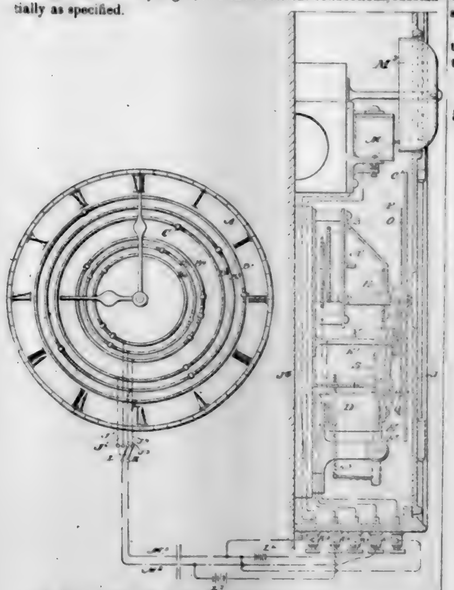
4. In a controller roller for electric railway cars, the combination with the conducting contact strips of spring fingers resting thereon, said conducting contact strips being supported upon the peripheries of disks of insulating material, said disks being mounted upon a shaft and adapted to rotate therewith, and disks of less diameter separating said disks carrying the contact strips, substantially as described.

505,687. AUTOMATIC PASSENGER-TRAIN ANNUNCIATOR AND ALARM. ALFRED E. WATTS, Duluth, Minn. Filed Jan. 18, 1892. Serial No. 418,499. (No model.)

*Claim.*—1. In an automatic passenger train annunciator and alarm, a current controller formed of a clock provided with two series of rings $B^1$, $B^2$, $B^3$ and $B^4$, $B^5$, $B^6$, attached to the clock dial but insulated therefrom, two series of contact pieces carried by the rings, and projecting into the paths of the hour and minute hands of the clock, the electrical connections $J^1$, $J^2$, $J^3$, $J^4$, terminating in switch

contact points, the switch arms K, L, and the electrical connections, substantially as described.

2. In an automatic passenger train annunciator and alarm, the combination of a time electric circuit controller, an annunciator disk C provided with perforations Q', the pins Z for insertion in the apertures Q', the contact spring Y, and the electrical connections, substantially as specified.

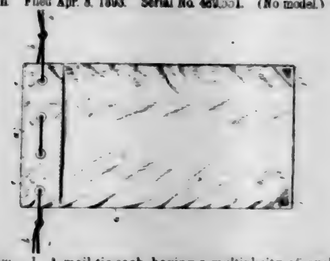


3. In an automatic passenger train annunciator and alarm, the combination of a spring-actuated annunciator disk, an electrically operated escapement for controlling the movement of the disk, a time electric circuit controller provided with adjustable electric contacts, and arranged to close the circuit on the annunciator at the prescribed hour and minute, substantially as specified.

4. In an automatic passenger train annunciator and alarm, the combination, with the annunciator disk C, provided with the holes Q, the actuating spring A', and electric escapement, consisting of the armature lever F, the spring-pressed pivoted arm S, and the actuating magnet D, of one or more pins Z inserted in the holes Q, and a contact spring Y for intermitting the electric escapement, substantially as specified.

5. The combination, with the annunciator disk C, of the scape wheel R secured to the arbor of the annunciator disk, the electro-magnet D, and the armature lever F, provided with the armature E and spring-pressed pivoted arm S, substantially as specified.

## 505,688. MAIL TIE-SACK. ADELBERT C. WENDELL, Minneapolis, Minn. Filed Apr. 8, 1893. Serial No. 469,551. (No model.)



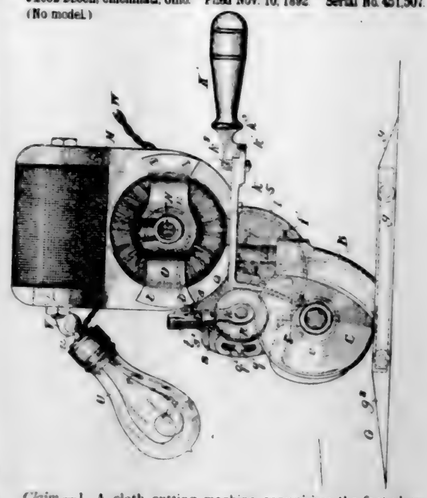
*Claim.*—1. A mail tie-sack having a multiplicity of eyelets, for the shirring cords, and provided with a shield or cover for preventing the exposure of the cords on the interior of the sack, substantially as described.

2. A mail tie-sack, having a multiplicity of eyelets, for the shirring cords, and provided with a cord shield or cover, for preventing exposure of the shirring cords on the interior of the sack, and secured to the body of the bag in such a way as to form finger pockets for threading the cords, substantially as described.

3. A mail tie sack having a multiplicity of eyelets, for the shirring cords, and provided with a cord shield or cover continuous with the body of the bag and united to the body of the bag by an intercepted or broken seam, to form finger pockets for threading the cords, substantially as described.

4. A mail sack provided with metallic open finger grips inside the sack, at the lower corners of the same, and closed off from the interior or receptacle portion of the sack, substantially as described.

## 505,689. CLOTH-CUTTING MACHINE. JOHN WOLF, Jr., and JACOB BLOCH, Cincinnati, Ohio. Filed Nov. 10, 1892. Serial No. 451,507. (No model.)



*Claim.*—1. A cloth cutting machine comprising the foot-plate having a standard rising therefrom, the cloth-lifting plate fitting loosely around said foot-plate, a motor mounted on said standard, a rotary cutter journaled below said motor, and means arranged to impart motion from the motor to the cutter, substantially as described.

2. In a cloth cutting machine, the combination with the foot-plate and cutting mechanism supported thereon, of the gravitating cloth-lifting plate fitting loosely about said foot-plate flush with the upper surface thereof and having its sides and ends inclined outwardly and downwardly therefrom, substantially as described.

3. In a cloth cutting machine, the combination with the foot-plate having the standard rising therefrom and supporting the cutting mechanism, of the cloth-lifting plate surrounding said foot-plate flush with the upper surface thereof and having its sides and ends inclined downwardly and outwardly from such surface, substantially as described.

4. In a cloth cutting machine, the combination with the foot-plate having the standard thereon, of the rotary cutter journaled at one side of said standard, the rotary electric motor mounted over said cutter so as to throw a preponderance of its weight on one side of the standard; the cutter-shaft, the armature-shaft of the motor, and the framing of the machine being extended laterally at the opposite side of the standard so as to overhang the foot-plate and counterbalance the weight; a pinion on each of said shafts, and an intermediate gear-wheel journaled in said framing and meshing with said pinions, whereby the several parts of the machine are assembled in compact form and the weight on opposite sides of the standard is counterbalanced while the center of gravity is lowered, so as to balance and steady the movements of the machine and impart a positive motion to the cutter from the armature-shaft of the motor, substantially as described.

5. In a cloth cutting machine, the combination with the foot-plate having the standard thereon, of the rotary cutter journaled in a frame supported by said standard, a rotary motor mounted over the cutter, gearing arranged to impart motion from the motor to the cutter and a casing inclosing said gearing, substantially as described.

6. A cloth cutting machine comprising the foot-plate having the standard rising therefrom, the frame supported by said standard so as to overhang the foot-plate at one side, the casing supported above said foot-plate at said side thereof, an arbor extending from said casing and supporting a rotary cutter adjacent to said standard, a rotary electric motor mounted over said cutter with its shaft extending laterally to said casing, and a spur-gearing inclosed in said casing and adapted to transmit motion from the motor to the cutter, substantially as described.



7. In a cloth cutting machine the foot-plate having a plain upper surface with a standard rising therefrom and supporting a rotary cutter, and mechanism for rotating the cutter, in combination with the cloth-lifting plate fitting loosely about said foot-plate with its inner edges normally flush with the upper surface thereof and sloping outwardly therefrom; said cloth-lifting plate being free to rise and fall independently of the foot-plate, substantially as described.

8. In a cloth cutting machine, the rectangular foot-plate having a plain top with a standard rising therefrom and supporting a rotary cutter and its actuating mechanism, in combination with the cloth-lifting plate having the rectangular opening to receive said foot-plate and inclined outwardly and downwardly therefrom at its sides and ends; the inclined portion of the cloth lifting plate at one end being lengthened so as to form an extended gently sloping surface in advance of the cutter, substantially as described.

9. In a cloth cutting-machine, the foot-plate mounted on rollers and having a standard rising therefrom and supporting a rotary cutter and an actuating mechanism, in combination with the gravitating cloth-lifting plate fitting loosely about said foot-plate so as to permit free vertical movement thereof, said cloth-lifting plate having sloping sides and ends the inner edges of which are normally flush with the upper adjacent edges of the foot-plate, substantially as described.

10. The combination with the foot-plate, of the standard, the post adjustably secured to said standard, the motor mounted upon said post, the rotary cutter journaled in a depending portion of the motor-supporting frame and in gear with said motor, an elevating device for raising and lowering the post, and means for securing the parts in the desired position, substantially as described.

11. The combination with the foot-plate, of the standard, the post adjustably secured to said standard, the motor mounted upon said post, the rotary cutter journaled in a depending portion of the motor-supporting frame and in gear with said motor, and an elevating device for raising and lowering the post, comprising a screw threaded rod depending from the main frame, a bevel-wheel screwed on said rod, a similar bevel-wheel meshing therewith fixed on a rotatable stud or arbor, and a clamp adapted to release or secure the rod against rotation, substantially as described.

12. In combination with the cutter and its actuating mechanism, the notched segment, and the vertically and laterally swinging handle provided with a detent for engaging the notches of the segment, substantially as described.

13. In combination with the rotary cutter, the grinding disks supported obliquely to the axis thereof, a tension device for holding the disks in yielding engagement with opposite sides of the cutter, and means for adjusting said device so as to vary the pressure upon the cutter at will, substantially as described.

14. In combination with the rotary cutter, the swinging bracket-arm and means for securing the same in the desired position, the shaft projecting obliquely from said arm, the grinding disks keyed on said shaft and engaging opposite sides of the cutter, the spring for separating said disks, a tension device for holding the disks in yielding engagement with the cutter, and means for varying the tension, substantially as described.

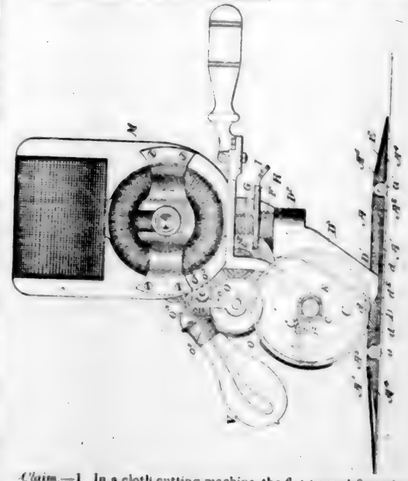
15. In combination with the rotary cutter, the shaft extending obliquely to the axis thereof, the radially adjustable support for said shaft, a pair of grinding disks placed on said shaft so as to rotate therewith in contact with opposite sides of the cutter, means for adjusting the disks toward or from each other and sustaining them in yielding contact with the cutter, and a motor geared to said shaft and cutter so as to rotate the same, substantially as described.

16. In combination with the rotary cutter, the shaft extending obliquely to the axis thereof, the radially adjustable support for said shaft, a pair of grinding disks placed on said shaft so as to rotate therewith in contact with opposite sides of the cutter, a spring interposed between said disks and tending to force them apart, means for adjusting the disks toward or from each other and sustaining them in the adjusted position in yielding contact with the cutter, and means for rotating the disks and cutter, substantially as described.

17. In combination with the rotary cutter, the shaft extending obliquely to the axis thereof, the hanging bars pivoted at one end and having their opposite ends loosely fitted on said shaft, the rod connecting said bars, the adjusting nut on said rod, the spring interposed between said nut and one of said bars, the grinding disks mounted on said shaft between said bars so as to rotate with the shaft in contact with opposite sides of the cutter, and the spring tending to force the disks apart, substantially as described.

18. In combination with the foot-plate having a plain top, the standard mounted thereon near one side and end, the frame adjustably secured to said standard so as to overhang the side of the foot-plate opposite the standard, the rotary cutter journaled in a depending portion of the frame, the rotary electric motor mounted at one side of the frame centrally above the cutter, a casing secured at the opposite side of the frame, and a train of spur-gearing housed in said casing and adapted to impart motion from the motor to the cutter, substantially as described.

## 505,690. CLOTH-CUTTING MACHINE. JOHN WOLF, Jr., Cincinnati, Ohio, assignor of one-half to Jacob Bloch, same place. Filed May 17, 1893. Serial No. 474,578. (No model.)



*Claim.*—1. In a cloth cutting-machine, the flat-topped foot-plate having the standard and knife supported thereon and provided with a concavity or depression in the upper surface thereof extending rearwardly from said standard and at one side only thereof to the edge of the plate, whereby the cloth is adapted to dip at the side and in the rear of the knife, substantially as described.

2. In a cloth-cutting machine, the foot-plate having the concavity formed in the upper surface thereof and extending partially across the plate in rear of the cutter and also at one side of the latter, in combination with the cloth-lifting plate surrounding said foot-plate and having at the side thereof adjacent to said concavity a depressed portion the upper surface of which is flush with the surface of said concavity, substantially as and for the purpose described.

3. In a cloth-cutting machine, the combination with the foot-plate provided with inclined extensions at the sides and ends thereof and having the standard thereon supporting the rotary knife and its actuating mechanism, the independent cloth-lifting plate surrounding said foot-plate and resting upon said extensions, with its surface flush with the surface of the foot-plate, substantially as described.

4. In a cloth-cutting machine, the combination of the foot-plate having the standard thereon, the rotary knife and motor in gear with said knife, supported by said standard, and the cloth-lifting plate surrounding said foot-plate; the surfaces of said plates being depressed in rear of the knife and at one side thereof, substantially as described.

5. In a cloth-cutting machine, the combination with the foot-plate having the standard thereon, and the rotary cutter and its actuating mechanism supported by said standard; said foot-plate having a concavity in its upper surface extending in rear of and at one side of said standard, together with an independent cloth-lifting plate encircling the foot-plate and resting upon extensions or projections therefrom, with its inner edges abutting against a shoulder upon the foot-plate and its surface flush with the surface of the latter, substantially as described.

6. In a cloth-cutting machine, the foot-plate having the standard thereon and provided with a concavity in its upper surface extending from a point back of the knife-edge to the rear of the plate and having upwardly inclined walls at its front and rear extremities, said concavity also extending at one side of said standard, the latter having a flat foot seated and secured in said concavity so as to form part of the front and side walls thereof, and the surface of said foot being flush with the surface of said foot-plate, substantially as described.

7. In a cloth-cutting machine the combination with the rotary knife, the motor and means for rotating the knife of, the elevating and sustaining mechanism consisting of a differential screw on which said motor, knife and knife-actuating mechanism are mounted, and

means for turning the screw so as to raise or lower the knife, substantially as described.

8. In a cloth-cutting machine, the combination of the foot-plate, the standard mounted thereon and having the bifurcated clamp with screw-threaded opening therein, the interiorly and exteriorly screw-threaded sleeve fitting said opening, the post screwed into said sleeve, the rotary motor and knife in gear therewith mounted on said post, and means for rotating said sleeve so as to raise and lower said knife and its actuating mechanism, substantially as described.

9. The combination in a cloth-cutting machine, of the foot-plate, the standard, the cutter, the motor and gearing for imparting motion from said motor to said cutter, with the elevating and sustaining mechanism comprising the exteriorly screw-threaded post on which said cutter, motor and gearing are mounted, the interiorly and exteriorly screw-threaded bushing in which said post is fitted, and means for adjusting the bushing so as to cause the post and bushing to move in opposite directions for the purpose of raising or lowering the knife, substantially as described.

10. In a cloth-cutting machine, the combination with the foot-plate and standard, the rotary cutter journaled at one side of said standard in a frame mounted thereon, together with a rotary motor and driving gearing for imparting motion to the cutter mounted on said frame, and the elevating mechanism comprising the bifurcated clamp having the vertical interiorly screw-threaded opening therein, the exteriorly and interiorly screw-threaded sleeve or bushing fitting said opening, the post screwed into said bushing, and means for rotating the bushing so as to raise and lower the knife and frame supported upon said post, substantially as described.

11. The combination in a cloth-cutting machine with the foot-plate and standard, of the motor, the motor-supporting frame mounted upon said standard and having the rotary knife journaled therein, means for imparting motion from said motor to said knife, and mechanism for raising and lowering the knife and supporting frame, comprising the interiorly screw-threaded clamp on said standard, the rotatable bushing having the notched collar on the head thereof screwed into said clamp and provided with interior screw threads having the exteriorly screw-threaded post fitted therein, together with the adjusting lever adapted to engage said notched collar for the purpose of rotating the bushing, substantially as described.

12. In a cloth-cutting machine, the combination with the foot-plate and standard, the knife and means for imparting motion thereto, of the exteriorly screw-threaded post, and the exteriorly and interiorly screw-threaded bushing into which said post is screwed; said bushing being screwed into a bifurcated spring-clamp upon the head of said standard having an interiorly screw-threaded cylindrical opening therethrough to receive the bushing, means for binding said bushing in said clamp so as to prevent rotation thereof, and means for rotating the bushing when said clamp is loosened, substantially as described.

13. In a cloth-cutting machine, the combination with the foot-plate and standard, the motor and knife, and the knife elevating mechanism consisting essentially of a screw-threaded post upon which the motor and knife-supporting frame and driving gearing are mounted, and the exteriorly and interiorly screw-threaded bushing into which said post is screwed, of the adjusting device comprising a plate having a circular opening therethrough, a thumb-piece or lever fitted to slide in an elongated slot in said plate and having a projecting point or tooth to engage a notch in the head of said bushing, and a pair of similarly shaped plates fitting one above and the other below said slotted plate so as to sustain said device in position upon the head of the bushing, substantially as described.

14. In a cloth-cutting machine, the combination with the foot-plate and standard, the rotary knife and the screws of different sizes working one within the other, mounted on said standard, and adapted to raise and lower the knife, of the adjusting device comprising triple plates superimposed one upon the other, the upper and lower plates having circular openings therethrough of different sizes fitting over different sized screws, and the intermediate plate having a larger opening, and a lateral extension provided with an elongated slot, and a sliding thumb-piece or lever working in said slot and having a toothed end projecting beyond the opening in the plate for engaging and rotating one of the screws, substantially as described.

15. In a cloth-cutting machine, the combination with the rotary knife, of the guard and the sliding bars pivoted to said guard; the pivotal connection of the one being placed above that of the other, together with a clamp for securing the opposite ends of said bars and sustaining the guard in proper position upon the knife, whereby the guard is adapted to be adjusted either forward or back and tilted to conform to the size of the knife as the latter is reduced by wear, substantially as described.

16. In combination with the rotary knife, the curved tilting guard having the adjusting bars pivoted thereto with their pivots arranged one above the other, and the clamp for holding said bars consisting of a lug projecting from the knife-arbor bearing, the recessed nut or washer and the set screw for clamping the bars in said recess, substantially as described.

17. The combination, in a cloth-cutting machine, provided with the rotary knife and means for driving the same, of the grinding disks mounted upon a shaft arranged obliquely to the axis of the knife, and means for holding said disks in yielding engagement with the edge of the knife and for adjusting the tension or pressure thereon, comprising the upright supporting arm, the rod or bar projecting therefrom in the plane of said shaft, the sliding pendent arms connecting said shaft and rod, with the disks between the arms, the springs adapted to separate said disks and pendent arms, the intermediate adjusting rod connecting said arms but permitting one arm to slide thereon, a spring tending to force said arms together, and means for adjusting the tension of said springs so as to vary the force thereof and yieldingly sustain the disks in engagement with opposite sides of the knife, substantially as described.

18. In a cloth-cutting machine, the combination with the foot-plate, the standard, the rotary knife and means for imparting motion to said knife, of the grinding disks mounted upon a shaft which extends obliquely to the axis of the knife, means for imparting motion to said shaft, and a radially-swinging clamping-arm supporting said shaft at one end and having its opposite end journaled upon a projection from the frame, and a binding screw, whereby said clamping-arm may be adjusted for the purpose of raising and lowering the disks and secured in the desired position by tightening said screw, substantially as described.

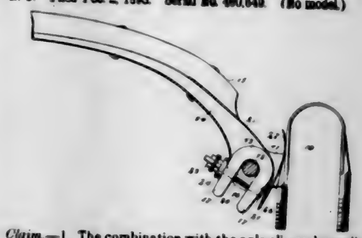
19. The combination, in a cloth-cutting machine, of the rotary knife, the motor, and gearing for imparting motion from the motor to the knife; with the oblique shaft having the grinding disks mounted thereon, the pinion on said shaft, the loose gear-wheel meshing with said pinion, and means for engaging and disengaging said loose wheel and gearing so as to start and stop said grinding disks at will without interfering with the operation of the knife, substantially as described.

20. In combination with the rotary knife, the motor and main driving gear for imparting motion from the motor to the knife; the oblique shaft having the grinding disks mounted thereon, the pinion on said shaft, the loose gear-wheel meshing with said pinion, the clutch-sleeve adapted to engage said main driving gear and rotate therewith, the lever for shifting said clutch-sleeve, and means for sustaining said lever in position to hold the clutch disengaged, substantially as described.

21. In a cloth-cutting machine, the combination of the foot-plate and standard, the rotary knife, the rotary motor and intermediate driving gearing mounted upon said standard, of the grinding disks and driving gear therefor and means for engaging and disengaging the same with said motor driving gearing, together with a casing or housing formed in two separable parts and having a step-like offset portion in one part thereof adapted to snugly house the train of gearing and clutch mechanism for stopping and starting said disks, substantially as described.

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**505,691.** THILL-COUPLING. NICHOLAS I. WOOLSEY, LAWRENCE, N. Y. Filed Feb. 2, 1893. Serial No. 460,649. (No model.)



*Claim.*—1. The combination with the axle clip and coupling bolt carried by the clip, of the thill iron having a knuckle with a downwardly extending slot to receive the coupling bolt, and an anti-rattling spring held on the back portion of the thill iron and having an upwardly extending free end to abut with the axle clip, substantially as described.

2. The combination with the axle clip and the coupling bolt carried thereby, of the thill iron having a head with downwardly extending parallel jaws adapted to receive the coupling bolt between them, the said jaws being transversely bored and having cam grooves at one end of the bore, and a fastening pin extending through the bore of the jaws, the pin having end lugs to enter the cam grooves, substantially as described.

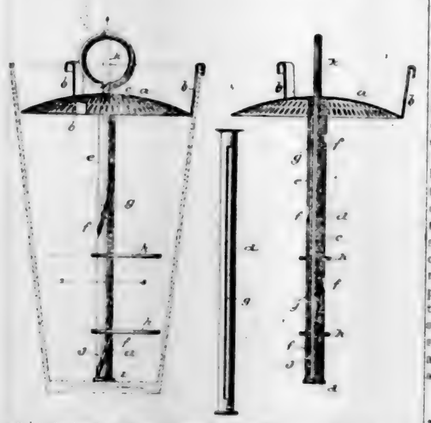
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**505,692.** DRINK-MIXER. WILLIAM F. ADAMCOURT, Minneapolis, Minn. Filed June 14, 1893. Serial No. 477,522. (No model.)



*Claim.*—1. An improved device for mixing and straining beverages, the same being composed of a perforated disk forming the strainer and the mixer proper attached to and pendent from said strainer and consisting of a guide tube a rotatable stirrer and a reciprocatory rod which is operatively connected with said stirrer, substantially as shown and described.

2. The improved device for use in mixing beverages, which consists of a tube, a cross-bar or plate from which the tube is pendent, a rotatable sleeve held on said tube, and having a radial arm a rod that reciprocates in the tube, and a device attached to said rod and acting on the sleeve to rotate it, as shown and described.



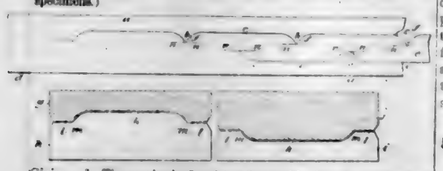
3. A device for mixing beverages which is composed of a tube having a longitudinal guide slot, a sleeve fitted loosely on said tube and having a spiral slot and one or more lateral fingers and a reciprocatory rod having a lug which works in both slots, substantially as shown and described.

4. A device for mixing beverages which is composed of a slotted inner tube and slotted outer rotatable tube having lateral fingers a rod adapted to reciprocate in said tubes and having at one end a lug that works in the coincident slots and at the other end a loop adapted to receive a finger of the operator, substantially as shown and described.

5. The improved device adapted to be supported in due position and operated in a glass as described, the same consisting of the cross-bar or plate having a series of hooks for engaging the edge of said glass, the slotted tube which is pendent from and rigidly attached to said cross-bar, a slotted rotatable sleeve having a radial arm, and the reciprocatory rod arranged in the tube, and provided with a lug which operates the sleeve, as shown and described.

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**505,693.** METHOD OF MAKING BARBED FENCING. THOMAS V. ALLIS, New York, N. Y. Filed Nov. 30, 1888. Serial No. 292,276. (No specimens.)



*Claim.*—1. The method of making from a blank strip two barbed strips having integral barbs projecting from one edge and in the plane of the strip at intervals of greater length than the width of a barb, which consists of cutting from each edge or marginal portion of a blank strip wider than the width required for the two barbed strips, a barbed strip having barbs at such intervals along the edge cut apart from the blank, and thereby producing from the intermediate portion of the blank an unbarbed fencing strip having the edges notched by cutting the barbs of the barbed strips therefrom and containing the metal cut from between the barbs of the respective barbed strips.

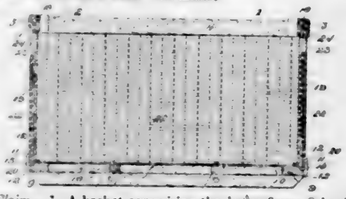
2. The method of making from a blank strip two barbed strips having integral barbs projecting from one edge and in the plane of the strip at intervals of greater length than the width of a barb, which consists of cutting from each edge or marginal portion of a blank strip wider than the width required for the two barbed strips, a barbed strip having barbs at such intervals along the edge cut apart from the blank, and thereby producing from the intermediate portion of the blank an unbarbed fencing strip having the edges notched alternately by cutting the barbs of the barbed strip therefrom and containing the metal cut from between the barbs of the respective barbed strips, substantially as described.

3. The method of making barbed fencing strips having integral barbs projecting from one edge and in the plane of the strip at intervals of greater length than the width of a barb which consists of cutting from each edge or marginal portion of a blank strip wider than the width required for the barbed strips, and an intermediate strip, a barbed strip having barbs at such intervals along the edges cut apart from the rest of the blank, and thereby, and by slitting said remaining portion of the blank on a line along the middle diverging at intervals in opposite directions and parallel to the divergent portions of the respective slits by which the barbed strips are produced, at the same time producing two intermediate strips having notches on one edge and notches and barbs alternately along the other edge, substantially as described.

4. The method of making barbed fencing strips having integral barbs projecting from one edge and in the plane of the strip at intervals of greater length than the width of a barb, which consists of cutting from each edge or marginal portion of a blank strip, wider than the width required for two barbed strips and two intermediate strips, a barbed strip having barbs at such intervals along the edges cut apart from the rest of the blank and thereby and by slitting said remaining portion of the blank in two parallel lines along the middle portion diverging at intervals in opposite directions and parallel to the divergent portions of the respective slits by which the barbed strips are produced, at the same time producing two intermediate strips having notches in one edge and notches and barbs alternately along the other edge and a middle strip having notches and barbs along both edges alternately, substantially as described

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**505,694.** BASKET. ERNST BEHNE, St. Louis, Mo. Filed June 5, 1893. Serial No. 476,553. (No model.)

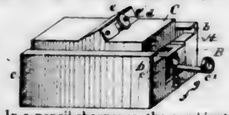


*Claim.*—1. A basket comprising the lower frame 8 having end pieces 9 and side pieces 10, the bottom 17, the upper frame 1 having side-pieces 4, and end pieces 3 formed with grooves, the vertical strips 19 having their upper ends inserted in the grooves, the strips 20 holding the vertical strips by their lower ends to the lower frame, the horizontal strips interwoven with the vertical strips, and clips secured to the corners; substantially as described.

2. In a basket, the combination of an upper frame and lower frame, corner clips 2 connecting the ends and sides of the upper frame, corner clips 11 connecting the ends and sides of the lower frame, cross-pieces 16, joining the sides of the lower frame, a bottom 17 secured to the lower frame, vertical strips 19 connecting the upper and lower frames together and which fit in grooves in the upper frame, and are held by strips 20 to the lower frame, and horizontal strips 22 interwoven in the vertical strips; substantially as and for the purpose set forth.

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**505,695.** PENCIL-SHARPENER. EDWARD H. BOEHME, Chicago, Ill. Filed Dec. 10, 1892. Serial No. 454,687. (No model.)



*Claim.*—1. In a pencil sharpener, the combination of the guide A, the longitudinal block B pivoted in the guide A, means for adjusting the said block and holding it in the position of use, and the sliding plane C, fitted to the guide A and provided with a cutter, substantially as specified.

2. In a pencil sharpener, the combination with the cutter provided with a screw-threaded shank, of a swiveled nut e for adjusting the cutter, substantially as specified.

3 The combination with the plane body, of a cutter provided with a screw-threaded shank, a nut placed on the shank and furnished with a circumferential groove, and a slotted plate pivoted to the plane body and adapted to engage the circumferentially grooved nut, substantially as specified.

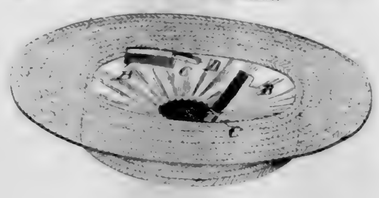
4. In a pencil sharpener, the block B provided with a conical hole intersecting the surface, and provided with a rounded end to facilitate sharpening the pencil, substantially as specified

5. The combination, with the pencil-holding block B and guide A, of the pencil guide $c^6$ formed of an angled bar having one arm slotted for engagement to the block, and the other arm provided with a ring arranged axially in line with the longitudinal perforation of the block B, as specified.

6 In a pencil sharpener, the combination of the guide A, provided with the grooves $a$, $b$, the block B pivoted in the groove $a$ and perforated longitudinally, with the conical hole intersecting the surface of the block, and the plane C fitted to the grooves $b$ of the guide A, and furnished with a cutter or plane iron $d$, substantially as specified.

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**505,696.** HAT-HOLDER. CHARLES E BOYER, St. Louis, Mo Filed May 23, 1893. Serial No 475,302. (No model.)





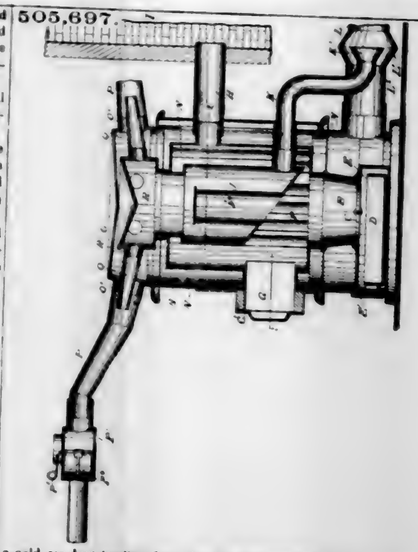
*Claim.*—1 In a hat fastener, the combination with a comb, of a link pivotally connected thereto, and means for securing the link to the hat, comprising a threaded pin on the opposite end of the link, and an ornamental button which is adapted to be screwed upon the pin, substantially as described.

2. In a hat fastener, the combination with a hat, of links having a pivotal connection therewith, said connection comprising a pin secured on the link and passing through the hat, and an ornamental button secured on the outer end of the pin, and combs pivotally connected to the free ends of the links, substantially as described.

3 In a hat fastener the combination with a comb provided with a perforation, of a link composed of two jaws having projections fitting into the perforation in the comb, a threaded pin on the free end of the link, and a nut or ornamental button which is adapted to be screwed on said pin, and secure the link to the hat, substantially as described

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**505,697.** HOT-AIR FURNACE CHRISTOPHER M. BRIDGES, Seattle, Wash. Filed Mar. 29, 1892. Serial No. 426,932. (No model.)



*Claim.*—1. In a hot air furnace, the combination with an outer shell provided with outlet flues, and a combustion chamber within the shell and forming with the shell a hot air compartment, of a hot air casing within the combustion chamber, a dome with which the hot air casing communicates and provided with nozzles projecting into the said outlet flues, and cold air pipes for admitting air to the said hot air compartment and casing, substantially as described

2. In a hot air furnace, the combination with an outer shell provided with outlet flues, a combustion chamber within the shell and forming with the shell a hot air compartment and a cold air duct conducting air into the said compartment, of a hot air casing within the combustion chamber, a dome above the hot air casing and communicating therewith, cone shaped nozzles leading from the dome and projecting into the said outlet flues, and a cold air pipe leading from the hot air casing into the first named cold air duct, substantially as described

3. In a hot air furnace the combination with an outer shell provided with outlet flues, a combustion chamber within the shell and forming therewith a hot air compartment, and a cold air duct for conducting air to the said compartment, of a hot air casing within the combustion chamber and having an inclined bottom, a pipe projecting into the casing and having an open lower end, a dome above the hot air casing and communicating therewith, cone shaped nozzles leading from the dome and projecting into the said outlet flues and a cold air duct leading from the hot air casing into the first named cold air duct, substantially as herein shown and described

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**505,698.** METHOD OF MAKING STENCIL-PLATES. JOHN BRODRICK, New York, N Y., assignor to the Brodrick Copygraph Company, same place. Filed May 20, 1886. Serial No 202,794. (No specimens.)

*Claim.*—1 The process or art of making stencils, or transmitting printing sheets, which consists in coating or impregnating a sheet of porous material with a substance impervious to ink, and then removing said coating or filling at the lines or points of impression by the application thereto of a heated implement, substantially as described

2 The process or art of making stencils, or transmitting printing sheets, from a sheet of porous material coated or impregnated with a substance impervious to ink, which process consists of removing said coating or filling at the lines or points of impression by the application thereto of a heated implement, substantially as described

3 The process or art of making stencils, or transmitting printing sheets, from a sheet of porous material through which ink is readily transmitted, such as Japanese dental paper or Yoshino, coated or impregnated with a substance impervious to ink, such as paraffine which method consists of removing said coating or filling at the lines or points of impression by the application thereto of a heated implement, substantially as described

4 The process or art of making stencils, or transmitting printing sheets, which consists of coating or impregnating a sheet of porous material with a substance impervious to ink and of then removing said coating or filling at the lines or points of impression by the application thereto of a heated implement, substantially as described

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**505,699.** ASPHALT PAVEMENT. CHARLES H. BULL, New York, N Y Filed Nov. 17, 1892. Serial No 452,274. (No specimens.)



*Claim* —An asphalt pavement comprising a concrete base having a bonding of separate and independent filaments extending above its upper surface and an asphaltum sheeting having a bonding of separate and independent filaments and also bonded to the concrete by the filaments projecting upwardly therefrom, whereby the sheeting will be prevented from sliding on the base and the component parts of the sheeting will be prevented from separating by heat or travel, substantially as set forth

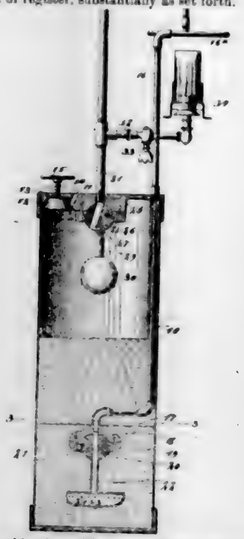
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**505,700.** CARBURETOR. HARRY B CORTHS, Hampton, Iowa. Filed June 15, 1893. Serial No. 477,667. (No model.)



*Claim.*—1. The combination with the oil tank provided with an outlet in its top and an air inlet pipe terminating within the tank above its bottom, of two pendulous swinging valves depending from the said inlet and outlet pipes and having a universal connection therewith to permit the valves to swing in all directions and close the inlet and outlet pipes: the bores of the valves registering with the pipes when the pendulous valves are in a vertical position, substantially as set forth.

2. The combination with the tank provided with an inlet and an outlet pipe and pendulous swinging inlet and outlet valves within the tank and ball and socketed to the inner ends of said inlet and outlet pipes and having their bores normally registering with the bores thereof; whereby said pipes will be automatically closed when said bores are out of register, substantially as set forth.



3. The combination, with the carbureting tank having a suitable discharge pipe, of an air supply pipe delivering into the tank, a ball valve at the inner end of the pipe, and a weighted rose connected with the valve to swing therewith and adapted to discharge into the lower portion of the tank, substantially as described

4. The combination with the tank and its inlet pipe of a pendulous swinging rose in the tank and ball and socketed to the inner end of the said pipe with its bore normally registering with the bore thereof, substantially as set forth.

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**505,701.** VEHICLE-WHEEL. JOHN DEAN, Racine, Wis., assignor of one-half to John P. Davies, same place. Filed Jan. 10, 1893. Serial No 457,892. (No model.)



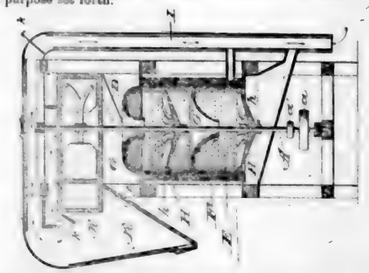
*Claim.*—1. A vehicle wheel comprising a central chambered elastic cushion having an aperture for engagement with an axle, inturned metallic plates secured to the sides of the cushion a band encircling the cushion, a rim, and spokes connecting the band and rim, substantially as set forth.

2. A vehicle wheel comprising a central elastic cushion having an aperture for engagement with an axle, metallic plates secured to the sides of the cushion and provided with inturned flanges that engage said aperture, a band encircling the cushion, a rim, and spokes connecting the band and rim, substantially as set forth.

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**505,702.** WHEAT-SCOURER. GEORGE V. DIXON, Walt's, Ohio. Filed Apr. 6, 1893. Serial No. 469,290. (No model.)

*Claim.*—1. In a grain scourer, the combination, of a perforated scouring case, a disk of less diameter than the scouring case provided with upwardly projecting ribs arranged tangentially to the hub thereon, and a top or dome for the scouring case curved inward to form a central funnel-shaped opening, substantially as shown, and for the purpose set forth.



2. In a grain scourer, the combination, of a frame having a central shaft, said shaft being provided with a fan and connected with means for operating grain separating screens, a spout leading from the separator to a dome curved inward to form a central funnel-shaped opening which leads to the scouring case, a disk mounted on the shaft within the scouring case and having upwardly projecting ribs, and a cylinder surrounding the scouring case and connected with an air-trunk, substantially as shown, and for the purpose set forth.

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**505,703.** PACKING-GASKET. CHEEVER K. DODGE, New York, N. Y., assignor to the Metropolitan Rubber Company, of Connecticut. Filed Dec. 27, 1892. Serial No. 456,295. (No model.)

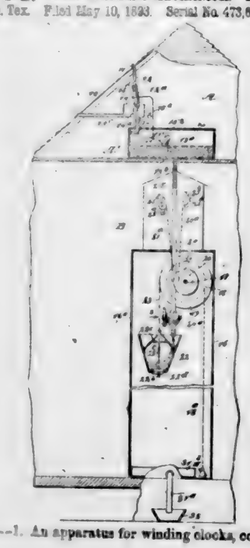


*Claim.*—1. A packing gasket, in which is comprised a solid, split body, made of elastic, compressible material, and a coupling, also of elastic, compressible material, adapted and arranged to pass over the meeting ends of said body, and be compressed upon the exterior thereof, covering the split, substantially as shown and described.

2. A packing gasket consisting of a split ring of elastic material, the meeting ends of said ring being arranged to overlap each other, as set forth, in combination with a coupling, also made of elastic material, and arranged to pass over the split in the ring body, substantially as shown and described.

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**505,704.** CLOCK-WINDING MECHANISM. MARTIN EVERHART, Austin, Tex. Filed May 10, 1893. Serial No. 473,688. (No model.)



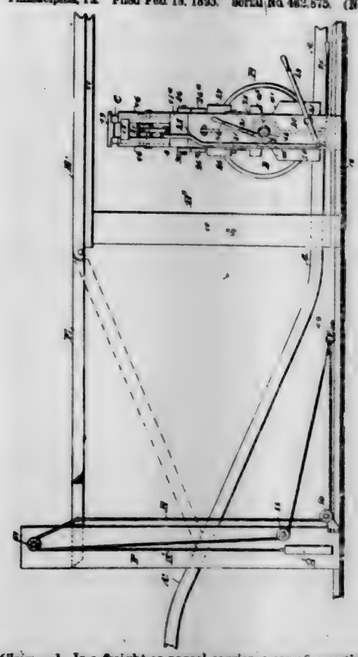
*Claim.*—1. An apparatus for winding clocks, comprising an elo-

vated water supply, a conductor pipe depending therefrom and having a plug valve at its lower end, a casing supporting the clock, a vertically reciprocating water receptacle in the casing, having a gravity valve in its base, a horizontal shaft rotatable in the casing, having pulleys thereon, flexible connections between said pulleys and pulleys on the winding arbors of the clock, and a device for operating the valve of the conductor pipe and controlled by one of said flexible connections, substantially as described.

2. An apparatus for winding clocks, comprising an elevated tank in a building, means to direct rain water from the roof of the building into said tank, a conductor pipe depending from the tank and having a plug valve at its lower end, a casing supporting the clock, a vertically reciprocating water receptacle in the casing, adapted to discharge water from its base when lowered, a horizontal shaft rotatably supported in the casing, having pulleys thereon, flexible connections between said pulleys and pulleys on the winding arbors of the clock, and a device for operating the valve of the conductor pipe, controlled by one of said flexible connections, substantially as described.

3. An apparatus for winding clocks, comprising an elevated tank in a building, means to direct rain water from the roof of the building into said tank, a device controlling the water supply for the tank, a conductor pipe depending from the tank, having a plug valve at its lower end, a casing supporting the clock, a horizontal shaft in the upper part of the casing, pulleys on said shaft, a water receptacle suspended by a flexible connection from one of said pulleys, and adapted to receive water from the conductor pipe when elevated, a normally closed valve in the bottom of the receptacle, adapted to open by pressure from below, flexible connections between the pulleys on the shaft and pulleys on the winding arbors of the clock, and a device controlled by one of said flexible connections, for operating the valve of the conductor pipe, substantially as described.

## 505,705. FREIGHT OR PARCEL CARRIER. HENRY C. FORNEY, Philadelphia, Pa. Filed Feb 13, 1893. Serial No. 462,875. (No model.)



*Claim.*—1. In a freight or parcel carrier, a car of essentially circular shape and provided with an annular rib, a door located on the said rib, and side trunnions, substantially as described.

2. In a freight or parcel carrier, a car of essentially circular shape and provided with trunnions having clutch faces, substantially as described.

3. In a freight or parcel carrier, a car of essentially circular shape, provided with an annular rib a cylindrical surface at each side of the rib, and trunnions having clutch faces substantially as and for the purpose specified.

4. In a freight or parcel carrier, the combination, with a station comprising a frame and boxes located oppositely in the frame, each box being divided into an upper and a lower section, the upper section being vertically movable and both upper and lower sections having their opposing faces oppositely beveled from their bearing surface outward, of a car provided with trunnions adapted to enter between the sections of the boxes, as and for the purpose specified.

5. In a freight or parcel carrier, the combination, with a station comprising a frame, boxes oppositely located in the frame, the said boxes being divided into upper and lower sections and the upper section sub-divided into two sections, and means for loosely hanging the upper section of the box, and a shifting device for carrying the lower box section to and from the upper sections, the opposing faces of the sections being beveled in opposite directions from the center bearing outward, of a car of essentially circular construction and adapted to travel bodily upon a track, the said car being provided with trunnions to be received between the box sections, as and for the purpose set forth.

6. In a freight or parcel carrier, the combination, with a station comprising a frame, boxes oppositely located in the frame, the said boxes being divided into upper and lower sections, and the upper section sub-divided into two sections, and means for loosely hanging the upper sections of the box, and a shifting device for carrying the lower box section to and from the upper sections, the opposing faces of the sections being beveled in opposite directions from the center bearing outward, of a car of essentially circular construction provided with trunnions adapted to be received between the box sections, the trunnions having clutch faces, a drive shaft, and a shifting mechanism connecting the drive shaft with the trunnions of the car, as and for the purpose set forth.

7. In a freight or parcel carrier, the combination, with a frame, boxes oppositely located in the frame and constructed in upper and lower sections, the upper section being sub-divided into two sections, each sub-section being capable of free vertical movement, a shifting mechanism connected with the lower section of the boxes, and a locking device adapted for shifting engagement with the upper sections of the boxes, of a car provided with trunnions, the trunnions being adapted to enter between the sections of the boxes, and find bearings therein, and a power mechanism for shifting engagement with the trunnions of the car, as and for the purpose specified.

8. In a freight or parcel carrier, the combination, with a frame, boxes oppositely located within the frame, the boxes being made in upper and lower sections and the upper section sub-divided into two independent sections, each having free vertical movement, and a shifting mechanism engaging with the lower box section, whereby it may be raised and lowered, of a track located in the frame between the boxes, and a shifting device connected with the track, whereby it may be raised and lowered, as and for the purpose specified.

9. In a freight or parcel carrier, the combination, with a frame, and boxes oppositely located within the frame and constructed in two sections, the upper section being sub-divided into two independent sections having free vertical movement, the opposing faces of the upper and lower box sections being beveled in opposite directions from a center bearing, of plates sliding in the frame and connected with the lower sections of the boxes, a tie bar connecting the upper ends of the plates, a shifting mechanism engaging with the lower portions of the lower box sections whereby they may be raised and lowered, a brake having movement upon the frame between the boxes and adapted for lifting engagement with the tie bar of the box slides, and a lever mechanism connected with the brake and with the shifting device of the boxes, as and for the purpose specified.

10. In a freight or parcel carrier, the combination, with a frame, boxes located within the frame, constructed in upper and lower sections, the upper section being subdivided into two independent sections having free vertical movement, the opposing lower sections of the upper and lower box sections being beveled in opposite directions, means for raising and lowering the lower sections, and a locking mechanism for shifting connection with the upper box sections, of a car constructed to roll upon a track and provided with trunnions adapted to enter between the sections of the boxes, and a brake mechanism adapted for engagement with the periphery of the car, substantially as shown and described.

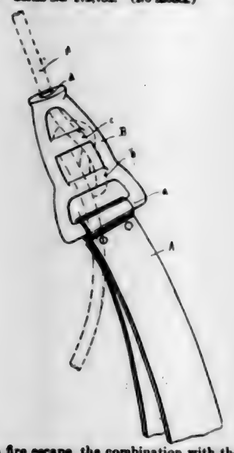
11. In a freight or parcel carrier, the combination, with a frame boxes located within the frame constructed in upper and lower sections, the upper sections being subdivided into two independent sections having free vertical movement, the opposing lower faces of the upper and lower box sections being beveled in opposite directions, means for raising and lowering the lower sections, and a locking mechanism for shifting connection with the upper box sections, of a car constructed to roll upon a track and provided with trunnions adapted to enter between the sections of the boxes, a brake mechanism adapted for engagement with the periphery of the car, a power mechanism for shifting engagement with the trunnions of the car, and means substantially as described for locking the box sections substantially in engagement, as and for the purpose specified.

12. In a freight or parcel carrier, the combination, with a track, of a car of essentially circular construction, the said car being provided with an annular rib adapted to extend between the rails of the track, flattened surfaces adjacent to the rib and adapted to engage with the rails of the track, and trunnions having clutch faces as and for the purpose set forth.

13. In a freight or parcel carrier, the combination, with a track having an inclined section, and a car constructed to roll upon the track, of a combined power and relay station located over the track, the station being provided with adjustable boxes constructed in sections and automatically operated and adapted to journal the car, and a brake and a power mechanism, the brake being adapted for engagement with the periphery of the car and the power mechanism adapted for engagement with the axis of the car, as and for the purpose specified.

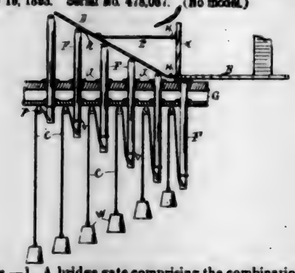


## 505,706. FIRE-ESCAPE. CHARLES M. FOWLER, Salem, Mass. Filed May 2, 1893. Serial No. 472,752. (No model.)



*Claim.*—In a fire escape, the combination with the belt or sling, and with the rope, of the friction device comprising a narrow, elongated open or skeleton frame having the parallel integral cross bars *b* and *c* having frictional connection with the rope, the eye at its upper end at right-angles to said bars, and a third and longer integral transverse bar *a* below said bars *b* and *c* around which the ends of the belt are closely and securely fastened, substantially as specified.

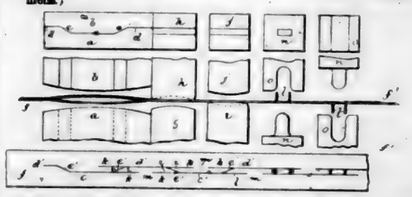
## 505,707. BRIDGE-GATE. GEORGE W. GREER, Joliet, Ill. Filed June 19, 1893. Serial No. 478,067. (No model.)



*Claim.*—1. A bridge gate comprising the combination of a series of counter-balanced vertically reciprocating contiguous posts arranged in the bridge approach across the roadway, and adapted to be successively depressed by the bridge when turned to be open to travel, and successively elevated to their first position by means of counter-balancing weights when released by the bridge to close the approach to travel substantially as and for the purpose set forth.

2. The combination of the frame G arranged in the bridge approach, the series of contiguous posts F arranged in boxes J in said frame, and having friction rollers R in their upper ends, cords or chains C secured to the lower ends of said posts and passing over pulleys P, weights W attached to the lower ends of said cords or chains for holding said posts elevated, and inclined arms D attached to the swing bridge B, and adapted to successively engage and depress said posts substantially as and for the purpose set forth

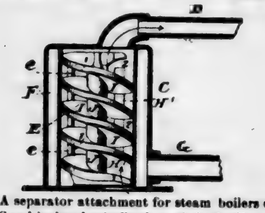
## 505,708. METHOD OF MAKING BARBED FENCING. EDMUND JORDAN, Brooklyn, assignor, by mesne assignments, to Thomas V. Allis, New York, N. Y. Filed June 8, 1868. Serial No. 276,518. (No specimens.)



*Claim.*—1. The improvement in the art of producing two barbed strips having integral barbs projecting from one edge from a blank strip which consists in successively making slits along the strip lengthwise partly in two parallel lines and partly in diagonal lines joining said parallel lines as *d' c' c' d'*, and successively thereto making other slits as *k'* in prolongation of lines *c' d'* across lines *c'* of said first mentioned slits and extending from said lines *c'* the length of a barb less the web *m* joining the barb and strip, and successively bending the barbs so cut laterally to the strips substantially as described.

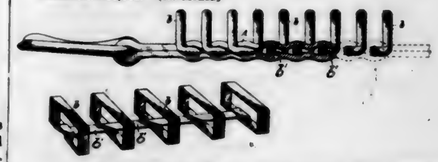
2. The improvement in the art of producing four barbed strips having integral barbs projecting from one edge from a blank strip, which consists in successively making two lines of slits along the strip lengthwise, said slits being partly in two parallel lines and partly in diagonal lines joining said parallel lines as *d' d' c' c' d'*, and successively thereto making other slits as *k* in prolongation of lines *c' d'* across lines *c'* of said first mentioned slits and extending from said lines *c'* the length of a barb less the web *m* joining the barb and strip, successively bending the barbs so cut laterally to the strip, and slitting said blank strip apart along the middle substantially as described.

## 505,709. STEAM-BOILER SEPARATOR. CHARLES J. LARSON, Lake Park, Minn. Filed Oct. 10, 1892. Serial No. 448,355. (No model.)



*Claim.*—A separator attachment for steam boilers consisting of the chamber C and inclosed spirally channeled tube E separated by a space F, the tube E being provided with the lips 1, 2, 3, 4 and apertures *e*, whereby the water of separation may be conveyed back to the boiler through a pipe G as and for the purpose set forth.

## 505,710. STRAP-LOOP. EMMIT G. LATTA, Friendship, assignor of one-half to Harvey D. Blakeslee, Buffalo, N. Y. Filed July 19, 1892. Serial No. 316,062. (No model.)



*Claim.*—1. The combination with a harness strap, of a billet loop consisting of a series of continuous flat coils having their lower bars secured to the strap, and their upper bars raised above the strap to form the billet loop substantially as set forth.

2. The combination with a harness strap composed of layers, of a billet loop consisting of a series of continuous flat coils, having their lower bars secured between the layers of the strap, substantially as set forth.

3. A strap loop composed of a number of flat transverse bars and

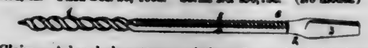
longitudinal bars connecting the transverse bars, all of said bars being bent from a continuous length or strip of metal and the transverse bars being arranged in a different plane from the longitudinal connecting bars, whereby a series of connected loops are formed which are adapted to receive a strap, substantially as set forth.

**505,711. CORN-HUSKING DEVICE.** WILLIAM F. LILLIE, Hamilton, assignor of one-half to Frederick D. Koss, Beatrice, Nebr. Filed Feb. 6, 1893. Serial No. 461,172. (No model.)



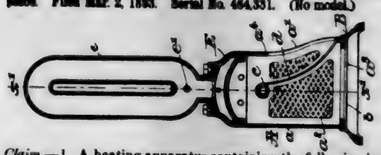
*Claim.*—The improved corn-husking device herein shown and described, consisting of a single plate shaped to form the arms 3 and 4, and hook 7 between said arms, and provided with the downwardly-projecting curved and integral shield or wrist-guard 2 and with means for its attachment to the strap or band 5; substantially as set forth.

**505,712. COMBINED BIT AND SAW.** ERIC O. LOFDAHL, Rockford, Ill. Filed Dec. 29, 1892. Serial No. 456,722. (No model.)



*Claim.*—A key hole cutter consisting of a section in bit form, the shank being flattened on two opposite sides and one edge, and being of less diameter than the diameter of the bit portion, the edge being cut in saw teeth and the end of the shank fitted to enter a brace.

**505,718. HEATING APPARATUS.** THOMAS J. MAW, Boston, Mass., assignor of two-thirds to Walter J. Maw and Walter F. Mansfield, same place. Filed Mar. 2, 1893. Serial No. 464,331. (No model.)

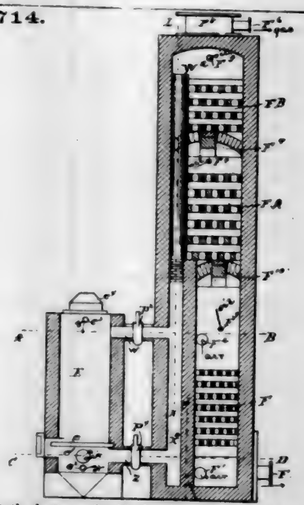


*Claim.*—1. A heating apparatus containing the following instrumentalities, viz;—an open sided heating chamber to contain a heat generator, said chamber opening directly into the room to be heated, a closed fluid-containing radiator reservoir mounted upon and constituting the top of said heating chamber; and a series of radiator legs projecting from said reservoir into the room to be heated, the heated air and products of combustion from the generator first rising into the top of the heating chamber to heat the water in the reservoir and thereafter passing through the open side or sides of the chamber into and to heat the room, the radiator reservoir and legs also radiating heat directly into the room, the products of combustion being thus employed directly and indirectly to heat the room, substantially as described.

2. In a heating apparatus, a heating chamber, a gas burner *c* therein, and a deflector *d* extending therefrom to the bottom of the chamber back of an opening *a'* therein, combined with a fluid-containing radiator mounted upon and constituting the top of said heating chamber, and to receive heat from the generator therein, the heat from said generator first rising in contact with and to heat the water in said radiator, and thereafter escaping from said chamber below said radiator, substantially as described.

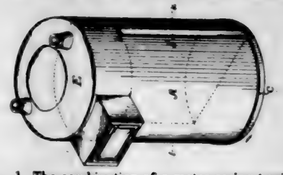
**505,714. APPARATUS FOR MANUFACTURING GAS.** LEONARD L. MERRIFIELD, Franklin, Mass., JOHN T. WESCOTT, Cramer's Hill, N. J., and WILLIAM H. PEARSON, Jr., Toronto, Canada. Filed Mar. 25, 1893. Serial No. 467,558. (No model.)

*Claim.*—In an apparatus for making carbureted gas, the combination with a superheating chamber having a smoke exit, two sets of valve controlled inlets and outlets in the top and bottom of said chamber, the inlet at the top being paired with the outlet at the bottom and the inlet at the bottom being paired with the outlet at the top; of a generator having two openings one in the top and the other in the bottom for the alternate admission of steam and provided with a flue connection with the inlet at the top and a flue connection with



the inlet at the bottom of said chamber, substantially as described.

**505,715. GAS-METER CASING.** WILLIAM H. MILSTED, New York, N. Y. Filed Sept. 14, 1892. Serial No. 445,890. (No model.)



*Claim.*—1. The combination of a meter casing having openings in its sides with an internal partition plate, having its side edges exposed through said openings, and secured to the casing by solder, externally applied, substantially as specified.

2. The combination of the meter casing having slots in its sides, with a partition plate separating the casing into two or more compartments and projecting through the slots, said projecting portions being secured to the casing by external solder joints, substantially as described.

3. The combination of the meter casing having slots in its sides, a partition plate dividing the casing into two or more compartments and having portions projecting through the slots in the casing and provided with external flanges soldered to the casing, substantially as specified.

4. The combination of a casing having openings in its opposite sides with a partition plate or plates, the side edges of which are exposed through the openings, said partition plate or plates dividing the casing into two or more compartments, a table mounted on said partition plate and a bottom-head secured to the lower edge of the partition, the latter with its table and bottom edge, being attached to the casing by solder, substantially as described.

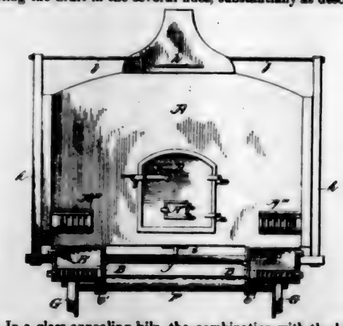
5. The combination of the casing having openings in its sides, and the partition plate dividing the casing into two or more compartments and secured to said casing by externally applied solder, with strips of metal solder at their edges to the outside of the casing on each side of the partition joints, so as to form channels or pipes for conveying gas to or from the meter and concealing and protecting the partition joints, substantially as specified.

**505,716. GLASS-ANNEALING KILN.** WILLIAM F. MOSER, Streator, Ill. Filed Sept. 26, 1892. Serial No. 446,905. (No model.)

*Claim.*—1. In a glass annealing kiln, the combination with the kiln, of a truck or trucks for supporting the same, cross beams beneath the kiln, side bars secured to said cross beams and tie rods connecting the upper ends of the side bars; substantially as and for the purposes described.

2. In a glass annealing kiln, the combination with the kiln and its inclosing shell forming draft flues at the bottom, sides and ends of the same, of a fire box or boxes at one end of the kiln chamber and opening thereinto, a flue at the opposite end of the kiln chamber opening into the draft flues, and an exit flue leading from the draft flues, substantially as described.

3. In a glass annealing kiln, the combination with the kiln and its inclosing shell forming draft flues at the bottom, sides and ends of the same, of a fire box or boxes opening into the kiln chamber at the forward or charging end thereof, a flue at the opposite or rear end of the kiln chamber leading into the draft flues, an exit flue at the forward or charging end of the kiln leading from the draft flues, and means at the forward end of the kiln within reach of the operator, for regulating the draft in the several flues, substantially as described.



4. In a glass annealing kiln, the combination with the kiln and its inclosing shell forming draft flues at the bottom, sides and ends of the same, of heat generators leading into the kiln chamber at one end, draft openings leading into the chamber above said generators, an opening connecting the opposite end of the chamber with the flues formed by the inclosing shell, an exit flue leading from said latter flues and a damper in said exit flue; substantially as and for the purposes described.

5. In a glass annealing kiln, the combination with the kiln and its inclosing shell forming draft flues at the bottom, sides and ends of the same, of a fire box beneath the shell the side walls of which are extended up to the bottom of the kiln, draft openings immediately over said fire box openings, means for regulating the draft, a flue-opening in the rear of the chamber, connecting the same with the flues formed by the inclosing shell, and an exit flue leading from these latter flues and provided with means for regulating the exit of the heated air; substantially as and for the purposes described.

6. In a glass annealing kiln, the combination with the inclosing shell, of the kiln-bottom provided with a groove around its upper outer edge, side and end walls provided with registering grooves, and joggles in said grooves; substantially as and for the purposes described.

7. In a glass annealing kiln, the combination with the inclosing shell, of a kiln, the bottom of which is elevated from the bottom of the shell by I-beams, and its side and end walls connected by spacing bolts to the side and end walls of the shell; substantially as and for the purposes described.

8. In a glass annealing kiln, the combination with an inclosing shell, of grooved fire brick, joggles in the grooves of said brick, and spacing bolts attached to said joggles at the meeting point of four of said bricks, their other ends being secured in the inclosing shell; substantially as and for the purposes described.

9. In a glass annealing kiln, the combination with the inclosing shell and its contained fire brick composing the kiln proper, of I beams on the bottom of the shell for supporting the tiles composing the floor of the kiln, above the shell, and transversely disposed arched I beams extending across the tops of the side walls, into the channels or recesses of which the brick composing the roof are received, substantially as described.

**505,717. EAVES-TROUGH HANGER.** WILLIAM H. MUNDWILER, Attica, Ohio. Filed May 6, 1893. Serial No. 473,314. (No model.)





*Claim.*—1. The combination, with a device attached to an eaves-trough and having a key-hole slot, of a hanger consisting of a rod provided with opposite notches, or grooves substantially as shown and described.

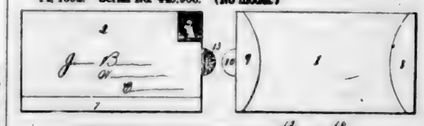
2. The combination, with an eaves-trough and a cross-bar attached thereto and having a key-hole slot as specified, of a hanger formed of a notched rod, and a key, or fastener, adapted to be inserted and of support itself in the circular portion of said slot, as shown and described.

3. The combination, with an eaves-trough hanger consisting of a rod bent as described, of a spring clamp formed of a spring wire bent, or doubled, and adapted to embrace the rod and edges of the shingles of a roof, as shown and described.

4. The combination, with an eaves-trough hanger consisting of a rod, of a bent, spring-wire clamp adapted to be forced upon and embrace the projecting edges of slates as specified, and to clasp the same firmly between its end portions and to receive said rod between its bent legs, as shown and described.

5. The combination, with an eaves-trough hanger rod, of a spring-wire clamp adapted to embrace the rod and projecting edges of roof slates and thereby attach one to the other, as specified, and a device applied to the clamp to prevent detachment of the hanger, as shown and described.

**505,718. ENVELOPE.** ROBERT S. MCCALLEN and MARCUS M. ROSS, Nashville, Tenn.; said McCallen assignor to said Ross. Filed Sept. 14, 1892. Serial No. 445,906. (No model.)



*Claim.*—1. The herein described blank for forming the two compartment envelope the same consisting of the rectangular section 1, having at one end the foldable end section 3, and the side foldable section 2, the sections 2 and 3 being of corresponding width and slightly narrower than the section 1 and each provided at its outer and corresponding end with the sealing flaps, said section 1 having at its outer edge the sealing flap 7, and the section 2 provided at its inner end with the coated adhesive tongue 10 divided from the section 2 by a perforated tearing line, substantially as specified.

2. The herein described blank for forming the two compartment envelope the same consisting of the rectangular section 1, having at one end the foldable end section 3, and the side foldable section 2, the sections 2 and 3 being of corresponding width and slightly narrower than the section 1 and each provided at its outer and corresponding end with the sealing flaps, said section 1 having at its outer edge the sealing flap 7, substantially as specified.

**505,719. LADY'S HAT-FASTENER.** ELLEN MCCORMICK, St. Louis, Mo. Filed Mar. 6, 1893. Serial No. 464,805. (No model.)

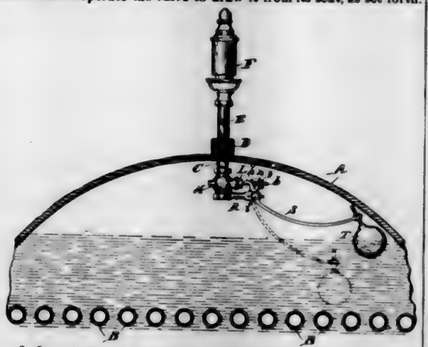


*Claim.*—The improved fastener for ladies' hats, constructed with a frame of wire 1, bent to U-shape in plan view, staples 2 having one end secured to said wire 1 and their bodies located vertically, a netting 5 secured to said frame and to said staples, so as to leave a space 6 in the rear to be engaged by the wearer's back-hair, and a fastening wire 4 projecting across the lower portion of this space, substantially as herein specified.

**505,720. LOW-WATER ALARM.** WILLIAM D MCLAUGHLIN and AUSTIN PHILLIPS, Corunna, Mich. Filed Nov. 14, 1891. Serial No. 411,864. (No model.)

*Claim.*—1. In a low water alarm, the combination of the whistle, the boiler, the valve case located in the boiler, said valve case having a central partition forming on one side a chamber communicating with the whistle and on the other side a chamber opening in the interior of the boiler, and having a central aperture communicating

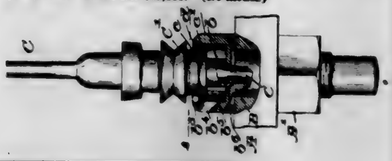
with said chambers, the valve to close said aperture, said valve being located in the chamber communicating with the boiler, the valve stem having its inner end loosely supported in the wall of the valve case, its outer end passing freely through the outer wall of the chamber communicating with the interior of the boiler, the cap around the end of said valve stem that passes through the wall of said chamber, the spring environing said outer end of the valve stem and interposed between said cap and valve, the float lever engaging the valve stem to operate the valve to draw it from its seat, as set forth.



2. In a low-water alarm, the combination of the whistle, the boiler, the valve-case located in the boiler and communicating with the whistle, the valve in said case, the valve-stem passing freely through the wall of said case and carrying a bearing disk on its outer end, the pivoted-float lever having the curved forks at its upper end and between which the valve-stem passes, the curved faces of said forks adapted to bear against the disk on the valve-stem to actuate the valve, as set forth.

3. In a low water alarm, the combination of the whistle, the boiler, the valve-case located within the boiler and communicating with the whistle, the valve-stem passing loosely through the wall of said case and carrying the adjustable bearing disk, the bracket extending from the valve-case, the float-lever pivoted thereto, said lever having the curved forks at its upper end, the valve-stem passing between said forks, the curved faces of which are adapted to bear against the adjustable disk on the end of the valve-stem, substantially as specified.

**505,721. SPINDLE-RETAINING DEVICE.** JAMES H. NORTHRUP, Hopedale, Mass., assignor to George Draper & Sons, same place. Filed May 29, 1893. Serial No. 475,885. (No model.)



*Claim.*—1. A sleeve whirl spindle having a flanged extension, and a surrounding supporting case having a curb, combined with a spindle retainer interposed between the said extension and curb and adapted to be expanded to hold the curb more closely by reason of upward pull on the spindle, substantially as described.

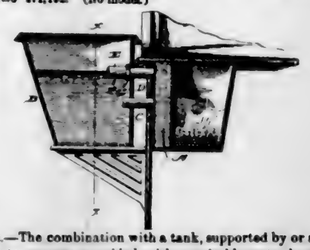
2. A supporting-case having spindle bearings and provided with a curb, a yielding ring-like spindle-retainer adapted to be contracted and expanded with relation to the said curb, combined with a spindle having a sleeve whirl provided with an extension embraced by said retainer, to operate, substantially as described.

3. A spindle having a sleeve whirl provided with an outwardly turned extension, and a spindle bearing supporting-case provided with a curb to be entered by the said whirl extension, combined with a ring or annulus mounted on the said curb to constitute a detachable inturned lip of less diameter than the outturned extension of the spindle, substantially as described.

4. A spindle having a sleeve whirl provided with an extension, a split ring-like retainer surrounding the said extension loosely and adapted to remain on said extension, combined with a supporting case having a curb provided with an inturned lip adapted to engage the retainer at a point above the lower end of said whirl extension when the spindle is in place, substantially as described.

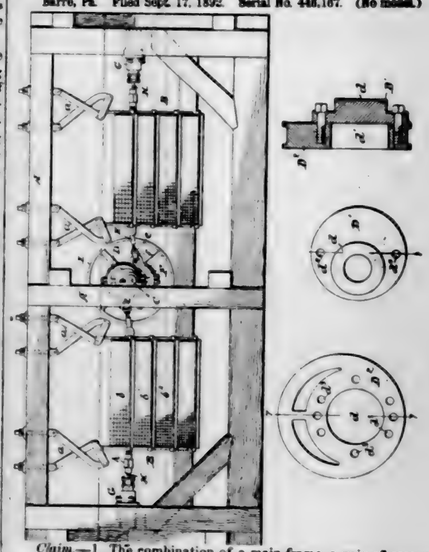
5. A spindle having a sleeve whirl provided with an extension below the band-receiving portion, a supporting case having a curb surrounding the said extension when the spindle is in place, said curb being provided with a notch, combined with an intermediate ring-like spindle-retainer adapted to be reached by a tool through said notch and to be contracted to thus disengage the retainer from the curb and let the spindle be lifted from the curb and take the retainer with it, substantially as described.

**505,722. DEVICE FOR PREVENTING NOISE IN HOT-WATER TANKS.** FRED R. PHILLIPS, Canajoharie, N. Y. Filed Apr. 20, 1893. Serial No. 471,192. (No model.)



*Claim.*—The combination with a tank, supported by or arranged contiguous to a range provided with a suitable water back that is connected by pipes with the tank, of a cap secured on the end of the discharge pipe within the tank and provided in its lower side with a series of perforations, substantially as described.

**505,723. SEPARATOR AND SCREEN.** JAMES POLLOCK, Wilkes-Barré, Pa. Filed Sept. 17, 1892. Serial No. 446,167. (No model.)



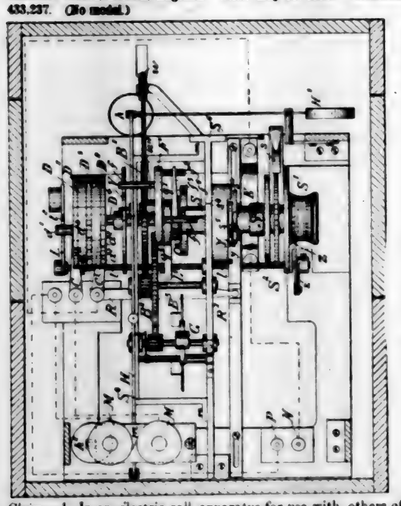
*Claim.*—1. The combination of a main frame, a pair of screens suspended by links from said frame, a power shaft located between said screens, adjustable eccentrics on said power shaft and adjustable connecting rods from the eccentrics to the screens, substantially as described.

2. The combination of a main frame, a pair of screens supported by said frame, a shaft between the screens, adjustable eccentrics on the shaft, adjustable eccentric rods between the eccentrics and the screens and air cushions each consisting of a cylinder adjustable in length attached to the main frame and adjustable piston rods between the air cylinders and the screens, substantially as described.

3. The combination of a main frame, a pair of screens suspended from the main frame by pivoted incline links, a power shaft located between the screens, the eccentrics upon the power shaft, the connecting rods between the eccentrics and the screens, and the air cushions arranged between the screens and fixed abutments, substantially as described.



**505,724. COIN-CONTROLLED ELECTRIC CALL APPARATUS.** GRAYDON POORE, London, England. Filed May 16, 1892. Serial No. 433,237. (No model.)



*Claim.*—1. In an electric call apparatus for use with others of like character in one electric circuit, the combination with a coin-freed locking mechanism, of a switch and mechanism intermediate said switch and coin-freed locking mechanism whereby on the operation of any one machine the condition of the circuit will be at once changed so as to lock all the machines in the circuit and prevent the transmission of a call or message by any of them (including the one operated) until after the lapse of pre-arranged periods of time, and means, substantially as described, for varying such periods of time for each machine so that each machine will in its turn be freed and in condition to transmit its call if required, substantially as specified.

2. In an electric call apparatus for use with others of like character in one electric circuit, the combination with the coin-freed locking mechanism, and a call transmitting mechanism, of a train of wheels connected with said transmitting mechanism and having a brake G, a moving part such as the timing lever H, having a counterweight H' for lifting it and a dash pot A for regulating its speed of ascent, and an electro-magnet M having a weighted armature m connected to and acting on said timing lever, whereby each machine in the circuit is adapted to retard and transmit in its turn a predetermined call, no two machines acting simultaneously, substantially as set forth.

3. The combination with an electric call transmitting mechanism, of a coin freed locking mechanism comprising the slide A having a tappet $a^3$, the quadrant Q geared with said transmitting mechanism and having a pin w', the tumbler F mounted on the pin w' and provided with a pin f to be engaged by the tappet $a^3$, and the weight w suspended from a cord attached to the pin w' for operating the transmitting mechanism and storing power by the outward movement of the slide, whereby the slide may be left in any intermediate position (after having stored power) without interfering with the return to normal position of the transmitting mechanism, substantially as set forth.

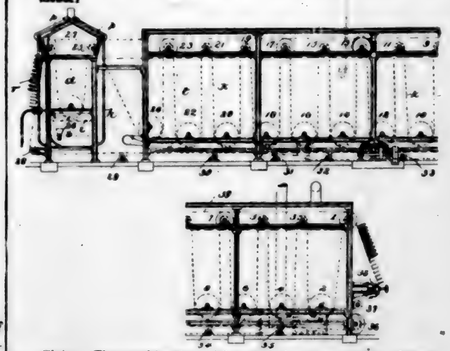
4. The combination of the call wheel D, the timing lever H, a brake mechanism, the arm $h^3$, the slotted disk V adapted to move with the call wheel, for holding up the timing lever during transmission of a call and preventing application of the brake device in the acting machine while at the same time allowing application of the brakes in all other machines in the same electric circuit, and a coin freed locking mechanism, substantially as set forth.

5. The combination of the call wheel D having mounted thereon a private call ring $D^2$ and a public call ring $D^3$, the contact switch C, means for moving said switch from the public call ring to the private call ring, and a coin freed locking mechanism, substantially as set forth.

6. The combination of the call wheel D having a private call ring $D^2$ and a public call ring $D^3$, the contact switch C, the quadrant Q having pin w', the weight W suspended from a cord attached to said pin, means for raising said weight to store power and move the switch from the public call to the private call, and a coin freed locking mechanism, substantially as set forth.

7. The combination with an electric call transmitting mechanism comprising the call wheel D having separate call rings $D^2$ and $D^3$, and the switch C, of the quadrant Q geared with the transmitting mechanism, the weight W connected with said quadrant, the winding spindle S having an exterior spindle S', the cross spindle f carrying a lever z, a rod Z connected to said spindle by said lever and adapted to project across a keyhole in the winding spindle and prevent insertion of the messenger's key when a message is already stored, and a coin freed locking mechanism substantially as set forth.

**505,725. APPARATUS FOR STEAMING SHAG.** CARL SCHNURER, Alt Chemnitz, Germany. Filed May 11, 1892. Serial No. 432,588. (No model.)



*Claim.*—The combination with a steaming room and a drying room, each having alternating series of upper and lower wheels or rolls arranged therein, of an endless carrier or belt extended alternately above and below said wheels and having cross bars or slats provided with spindles for carrying the bobbins or cops on which the cotton shag is placed, and means for driving said belt continuously to carry the cotton shag through the steaming room and drying room at one operation, substantially as described

**505,726. NAPKIN OR PAPER HOLDER.** CHRISTOPHUS C. SCOTT, Celina, Ohio. Filed Feb. 27, 1893. Serial No. 463,853. (No model.)



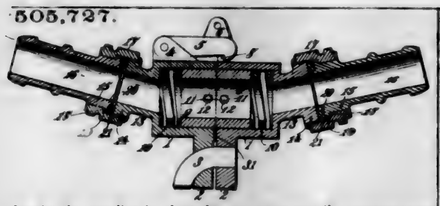
*Claim.*—1. The herein described napkin holder consisting of a loop-shaped body-portion formed of strong metal, said body having its terminals pointed and offset from each other and adapted to be sprung past each other to engage a napkin or the like and to lock the same in position by their tendency of expansion, and a suspension device therefor substantially as specified.

2. The holder for the purpose specified, consisting of two yielding bodies having reversely arranged shoulders and tapered fingers convergingly extended inward and past each other and bent outwardly adjacent their ends, and a chain connecting the two bodies, substantially as specified.

**505,727. COMBINED HOSE-COUPLING AND STEAM-TRAP.** JOHN Q. C. SEARLE and EDWARD W. JENKS, Chicago, Ill. Filed Sept. 6, 1892. Serial No. 445,184. (No model.)

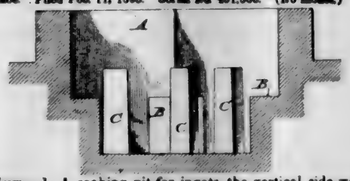
*Claim.*—The combination with the halves of an automatically detachable steam tight hose coupling, of two radially expansible rings each inclosed in a half of the coupling and adapted to project therefrom in contact with the corresponding ring in the other half of the coupling, each ring provided with a recess in its exterior, screws inserted through the side of each coupling-half and engaged in said recesses of the expansible rings, and two springs each located in the rear of a coupling-half in bearing contact with one of said expansible rings,

505,727.



whereby the coupling is adapted to serve temporarily as a steam trap for discharge of condensed steam and afterward become steam tight by radial expansion of said rings to prevent waste of live steam.

505,728. SOAKING-PIT FOR STEEL INGOTS. ALTON J. SHAW, Muskegon, Mich., assignor to the Shaw Electric Crane Company, same place. Filed Feb. 11, 1893. Serial No. 461,866. (No model.)



*Claim.*—1. A soaking pit for ingots, the vertical side walls of which are composed of a series of well defined flat or plane surfaces meeting one another at an obtuse angle, substantially as and for the purpose set forth.

2. A soaking pit for ingots, having an inwardly projecting portion at a point below the level of the upper ends of the ingots, whereby the tops of the ingots are kept away from the walls, substantially as described.

3. The herein described soaking pit, having main walls A meeting at right angles, and the fillings B meeting the walls A at obtuse angles.

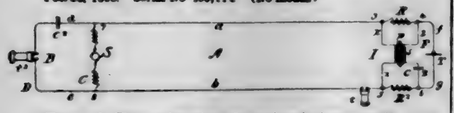
505,729. ARMATURE FOR ELECTRIC MOTORS. WILLIAM J. SHERWOOD, Ashtabula, Ohio. Filed Apr. 16, 1891. Serial No. 389,250. (No model.)



*Claim.*—1. In an electric motor, or dynamo, an armature consisting of a cylindrical frame G, provided at suitable intervals with outer and inner bars I, I, of insulating material and outer and inner insulating linings A, A, arranged upon the outer and inner faces of the cylindrical frame G between the bars I, I, the latter being provided with substantially radial grooves K which communicate with slots *j*, *j*, formed in circumferential lines in the linings A, A, said grooves and slots forming continuous air passages around the coils of the armature, substantially as described.

2. In an electric motor or dynamo, an armature consisting of a cylindrical frame G, having limbs, or extensions *g*, in combination with supports H, H, at its ends, connected to the shaft A, sleeves, *f*, bolts *i*, linings A, A, having slots *j*, bars I, I, having grooves K, which communicate with the slots *j*, and wire coils M, substantially as described.

505,730. TELEPHONE-CIRCUIT. THEODORE SPENCER, Cambridge, assignor to the American Bell Telephone Company, Boston, Mass. Filed Feb. 20, 1893. Serial No. 463,114. (No model.)



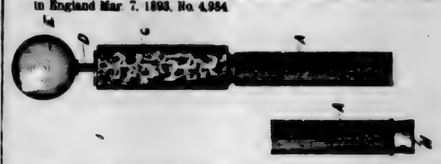
*Claim.*—1. The combination of a main telephone circuit, a supply current generator included therein, a current varying transmitter included in the circuit at a station thereof; an induction coil therefor, having its primary helix in a branch forming a shunt circuit round the said transmitter and its secondary helix in a like branch forming a shunt round the said primary, both of the said shunts or branches being of high resistance relatively to the transmitter, whereby the major part of the normal current is directed through the said transmitter; and means for preventing the undulations of the main current produced by the operation of the transmitter from propagating themselves over the main circuit conductively, and for enabling the said transmitter to develop such undulations or voice currents in the said main circuit and to act upon receiving telephones included therein, solely through the intermediation of the said induction coil, substantially as specified.

2. The combination of a main telephone circuit; a receiving telephone, a supply current generator, and a variable resistance transmitter all included in the said circuit; an induction coil for the said transmitter, having its primary helix and a condenser in a branch of the main circuit forming a shunt circuit round the said transmitter, and its high resistance secondary helix in a parallel branch forming a shunt round the said primary, whereby substantially the entire main line current is caused to circulate through the said transmitter; and electromagnetic resistances or self induction appliances of low actual resistance, but presenting a high impedence to vibratory or undulatory currents or impulses interposed between the primary and secondary helices, and connected in one or both of the main circuit conductors, whereby the variations or impulses developed in the primary current by the operation of the transmitter, are isolated conductively from the main circuit, and are enabled to generate induced voice currents in the said main circuit through the intermediation of the said induction coil, and for the operation of the said receiver, which in like manner are prevented from passing through the transmitter: substantially as described.

3. The combination of a main telephone circuit; an electrical generator furnishing a steady current included directly therein; the secondary helix of an induction coil bridged between the conductors of the said main circuit, and wound to a high resistance to oppose the passage of the said steady current, a primary helix in inductive relation to said secondary helix included in a second bridge between the said main circuit conductors, a condenser in series with said primary helix in the said bridge to prevent the circulation of the steady generator current through said helix, a telephone transmitter in parallel circuit with the said secondary and primary helices, and adapted to vary its resistance when operated and thereby to set up corresponding variations in the electrical condition of the said parallel primary helix, which variations are inductively transferred to the said secondary helix and main circuit, an electromagnetic resistance or retardation coil opposing a low resistance to the steady generator current, but a high apparent resistance to the telephonic variations of the transmitter, interposed in the main circuit conductors between the primary and secondary helix branches, to prevent the waves produced by the transmitter from passing conductively to the main circuit, and to prevent the induced waves developed in the secondary from being short-circuited through the transmitter; substantially as described.

4. The combination of a main electric circuit extending between telephone stations; a receiving telephone in said circuit at one of said stations; a generator in said circuit supplying a steady current, a current varying transmitter in said circuit at another of said stations energized by said current, and adapted when operated, to produce undulations or waves therein; a retardation or choking coil of low resistance, but high impedance, in said circuit located between the generator and transmitter, and permitting the free passage to the said transmitter of the said steady current, but obstructing the passage from the said transmitter of the waves produced thereby; an induction coil for the said transmitter, having its primary and secondary helices connected in separate high resistance parallel branches or bridges of said main circuit, the primary branch being between the retardation coil and the said transmitter, and the secondary branch being between the retardation coil and the generator, whereby the said waves due to the operation of the transmitter are enabled to act inductively upon the circuit and to produce corresponding undulations or waves in the main current thereof for the operation of the said receiving telephone, substantially as described.

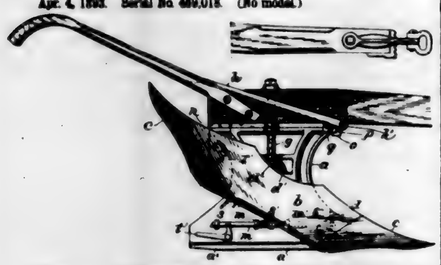
505,731. ICE-CREAM FREEZER. JAMES O SPOSS, London, England. Filed Apr. 21, 1893. Serial No. 471,315. (No model.) Patented in England Mar. 7, 1893, No. 4,984.



*Claim.*—An apparatus for making ices, consisting of a vessel A having a removable and replaceable stopper H at one end, and a stuffing box B at the other end, an elongated handle portion F extending from the stuffing box, a loose fitting perforated piston C arranged in the vessel, and a piston rod D extending through the said handle portion and stuffing box and connected with the piston in the vessel, substantially as described.



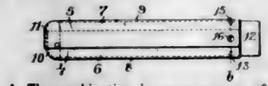
505,732. PLOW. GEORGE W. STOW, Binghamton, N. Y. Filed Apr. 4, 1893. Serial No. 469,018. (No model.)



*Claim.*—1. In a reversible plow, the combination of a body-portion or standard a revoluble plow-beam mounted on the standard, a vertically extending bolt journaled revolubly in the standard and positively connected at its upper end to the plow-beam, a double mold-board pivotally mounted on the standard and geared with the vertically extending bolt, whereby upon revolving the plow-beam the disposition of the mold-board will be changed, a longitudinally-movable spring-pressed bar arranged horizontally on the standard and having beveled ends, eyes or keepers formed on the under side of the mold-board and adapted to alternately receive the beveled ends of the horizontal bar and thereby lock the mold-board in position, and a foot-lever fulcrumed to the standard and having one arm connected to the bar whereby the bar may be retracted to disengage the keeper and release the mold-board, substantially as described.

2. In a reversible plow, the combination of a standard, a reversible double mold-board pivoted thereto, a longitudinally movable spring-pressed bar arranged horizontally on the standard, eyes or keepers on the mold-board adapted to receive alternately the ends of the horizontal bar whereby the mold-board is locked in position, and a foot-lever fulcrumed to the standard and having one arm connected to the bar whereby the said bar may be retracted to disengage the eye or keeper and thus release the mold-board, substantially as described.

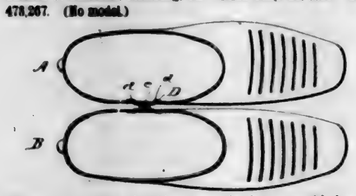
505,733. ERASER-CASE. WILLIAM F. TORREY, Auburn, assignor of one-half to Zechariah B. Tucker, Providence, R. I. Filed May 4, 1893. Serial No. 472,980. (No model.)



*Claim.*—1. The combination, in an eraser-case, of the base provided with the holding sockets, of the sheath pivoted to the base and provided with the convex catches and impinging tooth, all substantially as herein shown and described.

2. The combination with the base 4 having the sides 6—6 furnished with concavities 14—14, the closed end 10 and the closed edge 8 having the impinging tooth 14 bent inward therefrom, of the sheath 5, pivoted to the base, having the side 7—7 furnished with the catches 16—16, the closed end 11, and the closed edge 9 having the impinging tooth 15 bent inward therefrom, as and for the purpose described.

505,734. MEANS FOR SECURING RUBBER SHOES TOGETHER. GEORGE P. UNSTEAD, Pittsburg, Pa. Filed June 20, 1893. Serial No. 478,267. (No model.)

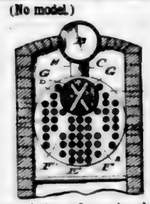


*Claim.*—1. A pair of rubbers or overshoes provided on corresponding sides, the one with a button hole, the other with a button, whereby the said rubbers can be secured together when not in use, substantially as set forth.

2. The combination with a pair of rubbers or overshoes, of a button hole strip secured to the side of one and having an oblong button hole, and a button secured to the corresponding side of the other rubber and having an oblong head which is adapted to pass through the oblong button hole and be turned cross wise thereof to secure the rubbers or overshoes together, substantially as described.

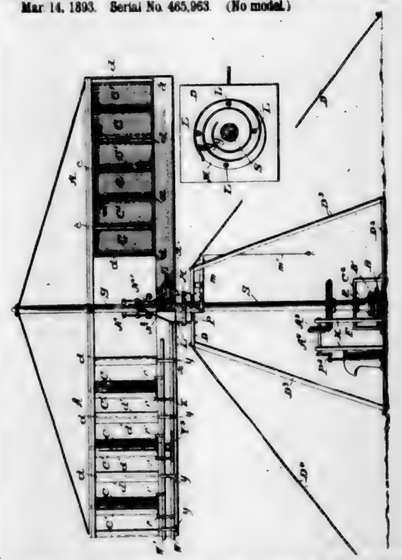
3. The combination with a pair of rubbers or overshoes, of a button hole strip having its middle portion raised and provided with an oblong button hole, and secured to the side of one of the rubbers at its ends, and a button secured to the corresponding side of the other rubber, and having an oblong head which is adapted to pass through the oblong button hole in the said button hole strip and be turned cross wise thereof to secure the rubbers or overshoes together, substantially as specified.

505,735. BOILER. JOHN VANES, Brazil, Ind. Filed Mar. 11, 1893. Serial No. 465,613. (No model.)



*Claim.*—A boiler consisting of two heads which are connected with a steam drum, a main water tube connecting the heads and having a series of internal fire tubes which open through the sides thereof, and a series of auxiliary water tubes connecting the heads and arranged in groups to form a passage that aligns with the fire tubes in the main water tube, substantially as described.

505,736. WIND-WHEEL. JAMES C. WALKER, Waco, Tex. Filed Mar. 14, 1893. Serial No. 465,963. (No model.)



*Claim.*—1. A horizontal wind wheel consisting of radial arms constructed in the form of a series of cells and having partitions with stops at one edge, and a pair of oppositely moving hinged wings pivoted in the middle of the cells upon vertical axes and arranged to fold toward each other to open the cells, and to open against the stops of the partitions to close the cells, substantially as shown and described.

2. A horizontal wind wheel having radial arms constructed of diverging frame timbers covered at top and bottom and provided with partitions *d d* with stop flanges *d' d'* at one edge, and the vertically pivoted and oppositely moving wings C C both having the same center of oscillation located midway the length of the cells substantially as shown and described.

3. The combination of the oppositely moving wings C C having

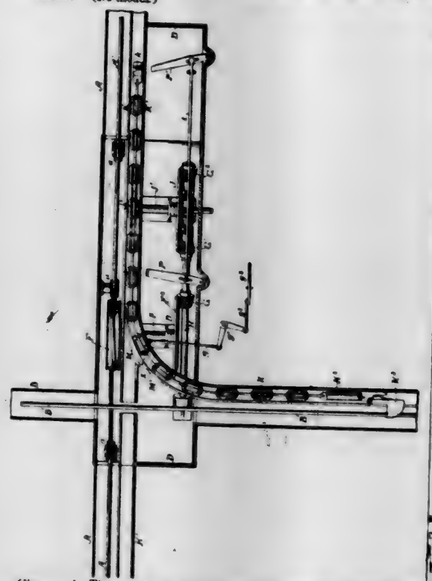
extension arms $s$ $s'$, the slide bars W W' with lugs $r$ $r'$ operating upon the arms $s$ $s'$ and having rack teeth, the intermediate pinion $Y^3$, and a governor mounted upon the wheel frame and operating upon the bars substantially as and for the purpose described.

4. The combination of the wings C C' having extensions $s$ $s'$, and the oppositely moving and longitudinally sliding bars W W' having reversing gears between them, an arm L, of the cam plate M fixed upon the platform D to slide vertically, the said cam plate having a volute spiral groove adapted to draw the arms L to the center when engaged by the cam plate to gradually close all the wings and hold them closed substantially as shown and described.

5. The combination of the wind wheel shaft S having base plate $C^3$ at its lower end and collar E above it, the rollers B', fixed base plate B, and the yoke frame F embracing the shaft above the collar substantially as and for the purpose described.

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**505,737. CURVE OR CROSSING FOR CABLE RAILWAYS.** EDWARD H. WALLIS, Philadelphia, Pa. Filed Aug. 16, 1892. Serial No. 443,197. (No model.)



*Claim.*—1. The combination in a curve or crossing structure, of a draft chain, a wheel for operating the same, and reversible driving mechanism for said wheel comprising a shaft having a drum or pulley for receiving one of the traction cables, a counter shaft geared to said drum shaft, a bevel wheel on the chain wheel shaft, two pinions on the countershaft in mesh with said bevel wheel, and a clutch whereby either of said pinions may be caused to rotate with said countershaft or either or both of said pinions may be released therefrom, substantially as specified.

2. The combination in a curve and crossing structure for cable railways, of the laterally flexible horizontal draft chain, a sprocket drive wheel engaging directly therewith, a drum driven by the cable, means for transmitting movement from said drum to the sprocket wheel, guide boxes for the draft chain formed on the curved and crossing portions of the conduit, and a switch finger pivoted at the junction of said curve and crossing boxes and having a point free to swing into contact with either the inner or outer wall of the straight portion of the guide box, whereby the chain can be directed either around the curve from one conduit to the other, or along one conduit and across the other, substantially as specified.

3. The combination in a curve structure for cable railways, of the draft chain composed of links pivoted together so that the chain is free to bend laterally in passing round a curve, but is inflexible in a vertical direction, guide boxes for said draft chain formed on the straight and curved portions of the conduit, a drive wheel having sprocket teeth engaging directly with the links of the drive chain, a drum rotated by the cable, and gearing whereby the sprocket drive wheel can be rotated in either direction from said drum, substantially as specified.

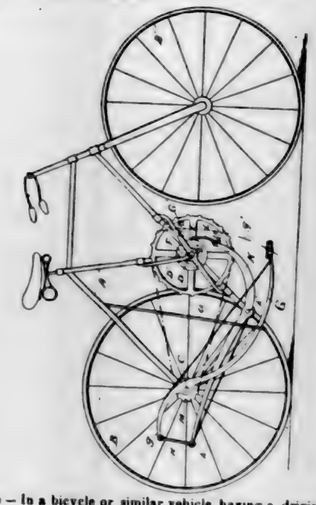
4. The combination in a curve or crossing structure for cable railways, of the draft chain, a spring clevis for attaching the draft hook to the chain, guides for said chain, a driving wheel therefor, and means for rotating said drive wheel in one direction or the other, substantially as specified.

5. The combination in a curve or crossing structure for cable railways, of the draft chain, a drive wheel therefor, mechanism for rotating said wheel, a clutch governing the direction of such rotation, and stop levers connected to said clutch and serving to adjust the same to the inoperative position when the chain reaches the limit of its movement in either direction, substantially as specified.

6. The combination of the draft chain, the conduit structure having a guide box for said chain, and the drive wheel engaging with the chain and projecting through both bottom and top of the box, substantially as specified.

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**505,738. BICYCLE.** SAMUEL A. WHITE, Harrisburg, assignor of one-half to Thomas K. Richards, Reading, Pa. Filed June 6, 1893. Serial No. 476,731. (No model.)



*Claim.*—In a bicycle or similar vehicle having a driving wheel arranged in gear with a sprocket wheel shaft the pedal lever G fulcrumed intermediately of its length on the rear axle, the lever K linked at its rear end to said pedal lever and fulcrumed at a point between said shaft and axle, and a ratchet mechanism on said shaft operatively connected to said lever K, substantially as set forth.

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**505,739. AUTOMATIC DROPPER FOR HARVESTERS AND BINDERS.** CHRISTIAN F WILLE, Edwardsville, Ill. Filed May 15, 1893. Serial No. 474,316. (No model.)

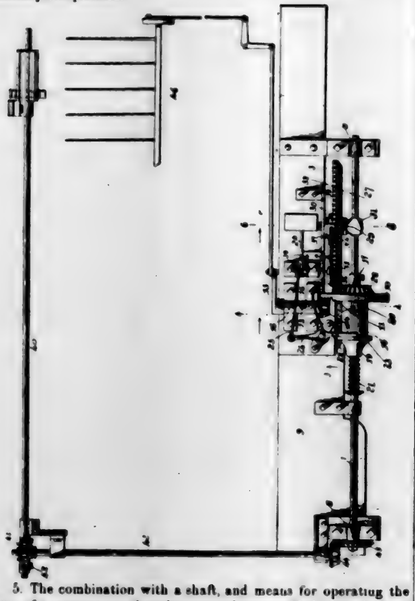
*Claim.*—1. In a device of the class described, the combination with a shaft, and means for operating the same, of a segment-gear carried by said shaft, clutch devices connecting said segment gear and the shaft, an intermittently moving gear meshing with the segment gear and flattened to remain at rest during a portion of a revolution of the segment gear, and connections between the intermittently moving gear and a sheaf carrier, substantially as specified.

2. The combination with a shaft, and means for operating the same, of a segment gear loosely mounted upon the shaft, a clutch for locking the segment gear to the shaft, an intermittently moving gear meshing with the segment gear, connections between said intermittently moving gear and a sheaf carrier, a controlling-gear meshing with a pinion carried by the segment gear, and means for operating the controlling-gear to adjust the same with relation to the intermittently moving gear, substantially as specified.

3. The combination with a shaft, and means for operating the same, of a segment gear, a clutch mechanism for connecting said gear to the shaft, an intermittently moving gear meshing with the segment gear, connections between the intermittently moving gear and a sheaf carrier, a controlling-gear provided with peripheral rack teeth, connections between said controlling gear and the segment gear, and an operating lever arranged in operative relation to the controlling gear, whereby the latter may be rotated to adjust the segment gear with relation to the intermittently moving gear, substantially as specified.



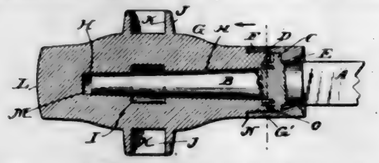
4. The combination with a shaft, and means for operating the same, of a segment gear, a clutch mechanism for connecting the segment gear to the shaft, an intermittently moving gear meshing with the segment gear, connections between the intermittently moving gear and a sheaf carrier, a controlling gear, and connections between the same and the segment gear, an operating lever carrying a normally retracted tongue to engage peripheral rack teeth upon the controlling gear, and stops for limiting the movement of the operating lever, substantially as specified.



5. The combination with a shaft, and means for operating the same, of a segment gear loosely mounted upon said shaft, a clutch to lock said segment gear to the shaft, means for operating said clutch, an intermittently moving gear meshing with the segment gear and operatively connected to a sheaf carrier, a standard 30, a spindle secured at one end in said standard and provided at the other end with a yoke to engage said shaft, a controlling gear rotatably mounted upon said spindle and connected to the segment gear, stops 39 carried by said standard, and an operating lever fulcrumed upon the hub of the controlling gear and provided with a normally retracted tongue to engage peripheral rack teeth upon the controlling gear, substantially as specified.

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**505,740. HUB FOR VEHICLE-WHEELS.** ZACHARY T WILSON, Inverness, Fla. Filed Apr. 24, 1893. Serial No. 471,677. (No model.)

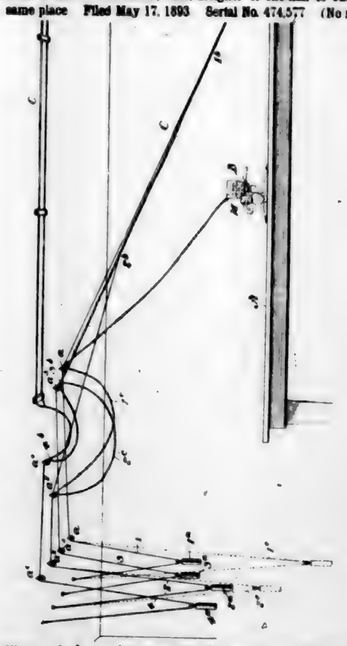


*Claim.*—1. The improved all-metal hub for vehicles herein described, comprising the axle-box G having oil-chamber I, a solid closed and rounded outer end L, and at its inner open end formed with a screw threaded extension G', in combination with the spindle B having flange C provided with the circular sand-band D, and collar F having annular nut or flange E adapted to be screwed up upon the hub so as to bear against the spindle-flange C and recessed box-extension; substantially as and for the purpose herein shown and set forth.

2. As an improved article of manufacture, an all-metal hub-body for vehicle-wheels having a central tapering bore enlarged midway of its length to form an oil-chamber or receptacle, and closed at its outer end, said closed end being made solid and rounded; substantially as and for the purpose herein shown and specified.

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**505,741. TAKE-UP DEVICE FOR CLOTH-CUTTING MACHINES.** JOHN WOLF, Jr., Cincinnati, Ohio, assignor of one-half to Jacob Bloch, same place. Filed May 17, 1893. Serial No. 474,577. (No model.)



*Claim.*—1. In combination with the cutting machine, the electric motor mounted thereon, and the flexible conductor extending from said motor over an elevated support and connecting the same with a source of electric supply, of the automatic take-up device comprising the weights and cords connected at intervals with said conductor and adapted to automatically take up and pay out the slack while the machine is being moved about the room or from table to table, substantially as described.

2. The combination with the cutting machine and a suitable source of power, of an automatic take-up device comprising a plurality of weights and cords connected at intervals with a flexible conductor connecting the machine to be driven with the source of power, said cords passing over an elevated support, so as to automatically take up and pay out the slack while the machine is being moved about the room or from table to table, substantially as described.

3. In combination with a cloth-cutting machine the electric motor carried thereby for actuating the knife and a source of electric supply, the flexible insulated circuit wires in circuit with said motor, and the automatic take-up device comprising a series of cords passing over elevated friction rollers and connected at intervals with said circuit wires, and a separate weight for each cord carrying a pulley adapted to move along the cord when the latter is drawn out or slackened, whereby any slack or superfluous length of wire is automatically taken up ready to be paid out when desired, substantially as described.

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**505,742. SHAFT-TIP.** JOSEPH F. WRIGHT, Colorado Springs, Colo. Filed Mar. 28, 1893. Serial No. 468,011. (No model.)

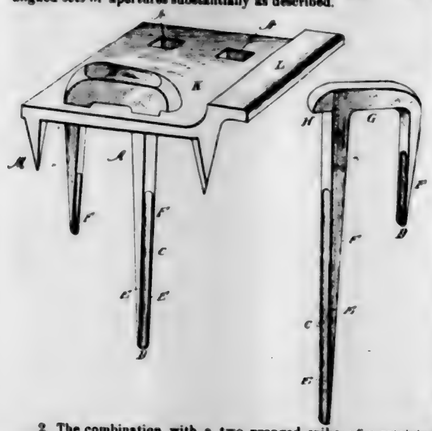


*Claim.*—A tip for vehicle-shafts comprising a metallic cap adapted to be secured to the end of shaft and having its forward end formed with a thickened extension projecting downwardly and slightly outwardly the said thickened portion being adapted to engage the surface upon which the shaft rests and to serve as a wearing point therefor, substantially as described.

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**505,743. NAIL OR SPIKE.** ALFRED P. ABBOTT, New York, N. Y. Filed June 24, 1892. Serial No. 437,847. (No model.)

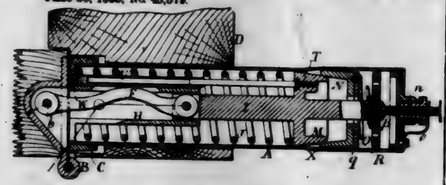
*Claim.*—1. A rail retaining plate, K, provided on its under side with a series of attaching teeth, M, and, at one side, with a laterally projecting rail flange L, which flange extends the entire length of the plate and lies in a plane above the body of the plate, K, and the aligned sets of apertures substantially as described.



2. The combination with a two pronged spike, of a retaining plate, K, provided at one side with a laterally projecting rail flange, L, and having two aligned apertures, N formed therein and spaced apart sufficiently far to receive both prongs of the spike, substantially as and for the purpose described.

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**505,744.** COMBINED DOOR-CHECK AND SPRING. SAMUEL S. ALLEN, London, England. Filed May 31, 1892. Serial No. 435,093. (No model.) Patented in England Apr. 30, 1891, No. 7,497, and Feb. 22, 1892, No. 3,429; in France Mar. 5, 1892, No. 219,963; in Germany Mar. 11, 1892, No. 68,127; in Belgium Mar. 16, 1892, No. 98,631; in Switzerland Apr. 23, 1892, No. 4,915; in Austria-Hungary Aug. 23, 1892, No. 21,767 and No. 36,284; in Italy Jan. 7, 1893, LXV, 168, and in Canada June 26, 1893, No. 43,379.



*Claim.*—1. In a door check and closer, the combination with a cylinder of a piston working in said cylinder and having an opening T therein, a screw plug fitting said opening to regulate leakage through the piston, and an extensible shaft connected with said screw plug and extending to the exterior of the cylinder, whereby said plug may be turned exteriorly of the cylinder, substantially as described.

2. In a door check, and closer, the combination with a cylinder, and a piston working therein, of a pin located in a recess of the door, and a rod connecting the pin with the piston rod and having a bend to clear the hinge-knuckle when the door is opened to right angles, the construction being such that when the door is opened the line of connection formed by the bent connecting rod passes through the hinge pin and the door is held open, substantially as described.

3. In a door check and closer, the combination with a cylinder of a piston constructed in two parts, one of said parts being rigidly secured to the piston rod and the other of said parts being movable on said rod, substantially as described.

4. In a door check and closer, the combination with a cylinder, of a piston constructed in two parts one of which parts is exteriorly conical and rigid with the piston rod, and the other of which parts is interiorly conical and movable upon said rod, substantially as described.

5. In a door check and closer, the combination with a cylinder, of a piston constructed in two parts, one of said parts being rigid with the piston rod and the other of said parts movable on said piston rod, and means for regulating the leakage through one of the parts of said piston, substantially as described.

6. In a door check and closer, the combination with a cylinder, and a piston working therein and having a stem, of a spring-valve located in the bottom of the cylinder, and an adjustable screw stem operated by the stem of the piston to open said valve for the escape of air and the sudden closing of the door at this time, substantially as described.

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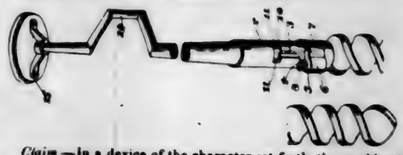
**505,745.** WRIST AND FINGER EXERCISING APPARATUS. ROBERT BARCLAY, Fort Howard, Wis. Filed Apr. 29, 1893. Serial No. 472,417. (No model.)



*Claim.*—The combination of a hollow wrist-band adapted to encircle the wrist, or other part of the body, a hand-pump adapted to be grasped in the hand, and a tubular connection between the hollow band and the hand-pump, substantially as described.

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**505,746.** BORING-TOOL. STASE BOWMAN, Bloomington, Pa. Filed May 31, 1893. Serial No. 476,134. (No model.)



*Claim.*—In a device of the character set forth, the combination of a stock having a lower sleeve with a T-slot therein provided with an L-branch at the lower termination of the same, the latter having its termination aligning with an inside throat or recess formed in a protuberance or bulge in a lower collar that is located to one side of the vertical part of the T-slot, and a tool having a shank with an angular lug thereon and a circumferential shoulder, said lug being arranged to pass through said throat or recess, L-branch, and T-slot and engage the horizontal member of the latter and bring the circumferential shoulder of the shank against the lower edge of the collar, substantially as described.

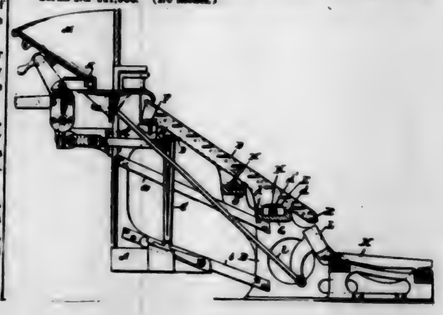
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**505,747.** PRODUCTION OF ARTIFICIAL STONE. GRANVILLE M. BEEBEE, New Milford, Conn. Filed July 27, 1892. Serial No. 441,302. (No specimens.)

*Claim.*—An improved composition consisting of crushed quartz, ground calcined quartz, and a hydraulic cement, substantially as set forth

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**505,748.** INCLINED GRATE, &c. HENRY H. CAMPBELL, Cleveland, Ohio, assignor of one-half to Newton W. Taylor. Filed Aug. 1, 1892. Serial No. 441,900. (No model.)



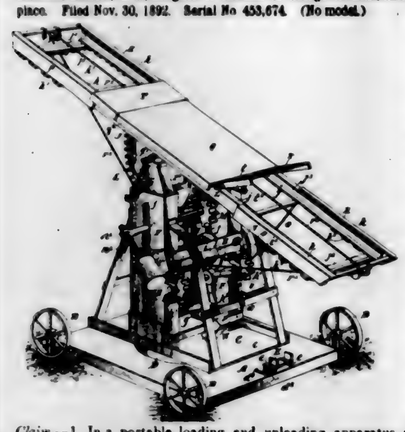


*Claim.*—1. In a grate, the combination with the front and rear supporting frames, of the rear and intermediate cross bars, each carrying a roller, of the stationary inclined grates, and the movable inclined grates, the side bars of said grates being spliced at points opposite the intermediate cross bar, and provided with projections adapted to bear upon said intermediate cross bar, substantially as shown and described.

2. In a grate, the combination with the front and rear supporting frames, the cross bars connecting the opposite frames, the side bars connecting the front and rear frames, the stationary inclined grates, the oscillating frame, the inclined grates attached to the said oscillating frame, the roller located in the cross bar, and on which the rear ends of the movable grates rest, the horizontal grate, the dumping grate and rod for operating the same, all arranged substantially as shown and described.

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**505,749.** LOADING OR UNLOADING APPARATUS. EMILIO CARDARELLI, Sumter, S. C., assignor of one-half to George W. Dick, same place. Filed Nov. 30, 1892. Serial No. 453,674. (No model.)



*Claim.*—1. In a portable loading and unloading apparatus, a wheeled platform truck, a vertically adjustable support revolubly mounted on said truck, means for holding said support stationary in any turned position, an extensible track pivotally mounted on said support, and a flat conveyer car adapted to slide over said track back and forth between the ends thereof, substantially as set forth.

2. The combination with a wheeled platform; of a revovalue hollow standard frame bolted to said platform and provided with anti-friction rollers moving thereon and a cog ring, a sliding cog lock plate arranged inside of said ring and adapted to engage the same at any point means for locking said cog plate in and out of engagement with said cog ring, a vertically adjustable frame mounted in the standard frame, an extensible track pivoted to the vertically adjustable frame, and a conveyer car adapted to slide on said track, substantially as set forth.

3. The combination with the wheeled platform, of a revoluble standard frame bolted to the platform and having a lower base plate provided with anti-friction supporting rollers and a cog ring, a sliding cog lock plate mounted on the platform and arranged within the cog ring to engage the same at any point and provided with an upturned tongue at one end, a locking bolt for the cog lock plate adapted to slide in front of said upturned tongue, an adjustable frame mounted within the standard frame, the pivoted track and the conveyer car adapted to move over the track back and forth between its ends, substantially as set forth.

4. In an apparatus of the class described, the combination of a revoluble standard frame having opposite tubular guide standards, means for holding the frame in any set position, opposite connected rack bars mounted in said tubular standards, a hand operated shaft mounted at one side of the standard frame and carrying pinions or cog wheels adapted to mesh with the teeth of the rack bars, a lock for said pinions or cog wheels, the extensible track pivoted to the upper ends of the rack bars, and the conveyer car adapted to move over the track, substantially as set forth.

5. The combination with a wheeled platform; of a revoluble standard frame mounted for adjustment on the wheeled platform and having the opposite tubular guide standards, a vertically adjustable rack bar frame moving in said guide standards, means for adjusting said rack bar frame, a track pivoted at its center to the upper end of said vertically adjustable rack bar frame, counterbalancing devices for the track, and a conveyer car adapted to move over the track, substantially as set forth.

6. The combination with a wheeled platform; of a vertically adjustable revoluble support mounted on the platform, an extensible track pivoted or fulcrumed on said support and provided with toothed adjustment segments, a counterbalanced shaft mounted in said support and carrying pinions or cog wheels meshing with said segments, and the conveyer car on the track, substantially as set forth.

7. The combination of a revoluble standard frame, vertically adjustable supports mounted within said frame, a track pivoted on said supports and provided with toothed segments secured to the under side of the same between the supports, an operating shaft journaled in said suppports and carried thereby and provided at one end with a threaded nut or block, pinions or cog wheels mounted on the shaft to mesh with the toothed segments, a counter and overbalancing weight having a threaded stem engaging said nut or block, and the car on the track, substantially as set forth.

8. The combination with a suitable support; of a track pivoted to said support and having toothed segments, an operating shaft journaled on said support and having pinions meshing with said segments and a threaded end, a counter and overbalancing weight provided with a threaded stem engaging the threaded end of the shaft and adapted to counter and overbalance the track, and a conveyer car, adapted to move over the track, substantially as set forth

9 The combination with a wheeled platform, of a revoluble standard frame mounted on the platform, a vertically adjustable frame mounted in the standard frame, a track pivoted at its center to the upper end of said vertically adjustable frame, counter and overbalancing operating devices for tilting the track, means for holding the track in any tilted position, and the car adapted to move over the track, substantially as set forth

10. The combination of an adjustable support, the tilting track pivoted on said support, means for adjusting the track, stay hooks arranged at each side of the support, a retaining rope or wire connected at its ends to opposite portions of the track on each side of the pivot or fulcrum and adapted to be looped on either or both of the stay hooks, and the car, substantially as set forth.

11. The combination with a wheeled platform, of an adjustable support mounted on said platform, a fixed track section pivoted at its center on said support, and comprising opposite connected rails having inner face grooves or channels, opposite extension sections arranged to slide over each end of the pivoted section, means for holding the extension sections in any adjusted position, means for tilting the pivoted section, and the car, substantially as set forth.

12. The combination with a wheeled platform, of an adjustable support mounted on said platform, a fixed track section pivoted at its center to said support, and comprising opposite inner rails having inner face grooves or channels, opposite extension sections arranged to slide over each end of the pivoted track section and having duplicate rails, and keepers or sockets under each rail, oppositely working locking bolts arranged at each end of the pivoted track section and adapted to engage the keepers of the extension sections, means for tilting the pivoted track section, and the car having opposite guide rollers or wheels working in the face grooves or channels of the rails and opposite retaining flanges overlapping the sides of the rails, substantially as set forth.

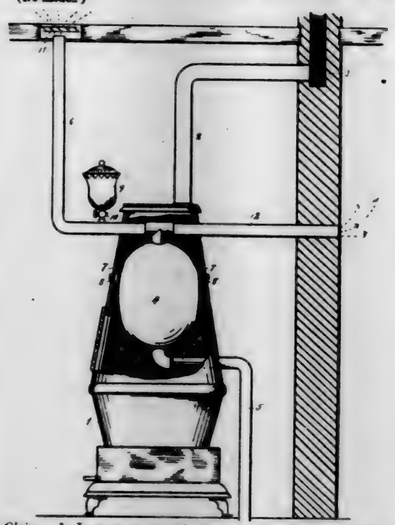
13 The combination with a track, the rails of which have inner face grooves or channels, of a flat car mounted to run over the track and provided with under guide rollers or wheels working in said face grooves or channels, and opposite retaining flanges overlapping the sides of the rails, threaded blocks arranged at each end of the car and on the under side thereof, end boards hinged or pivoted to the ends of the car body and provided on their under sides with angularly disposed loops or eyes, and supporting screws adapted to work through said loops or eyes and engage said threaded blocks to support the end boards above the track, substantially as set forth

14. The combination with a suitable support; of a double drum or windlass journaled within the support, a track pivoted on the support and having guide pulleys or rollers at both ends, a flat car arranged to move over the track, adjustable rollers journaled under the car, means for holding the rollers stationary, and the car operating wires connected at one end to a roller, passing over the end guide pulleys or rollers of the track and connected at their other ends to the double windlass or drum, substantially as set forth.

15. The combination with an adjustable support, of a double drum or windlass journaled within the support, a tilting track pivoted on the support and having guide pulleys or rollers at both ends, a flat car arranged to move over the track, bearing lugs projecting from the bottom of the car one of said lugs in each pair being provided with a series of retaining notches at one side, winding and unwinding rollers journaled in said bearing lugs and having a lateral play therebetween, one of the journaled ends of each roller being

provided with a right-angularly disposed locking portion which is adapted to engage and disengage said notches, locking screws or pins mounted at each end of the car body and adapted to plug the space between the roller ends and the bearing lugs with the notches to hold the rollers stationary, and the operating wires wound at one end on said rollers under the car, passing over the guide wheels at the ends of the track and wound at their outer ends on separate portions of the double windlass or drum, substantially as set forth.

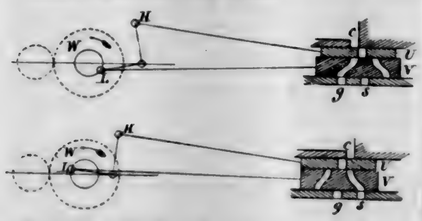
**505,750. APPARATUS FOR HEATING AND MOISTENING AIR.** ABRAM CATWOOD, Ithaca, Ohio. Filed Mar. 31, 1892. Serial No. 427,289. (No model.)



*Claim.*—1. In an apparatus for heating and moistening air, the combination with an ordinary stove, of a heating chamber in the interior of the stove above the coal space, induction and eduction tubes connected therewith as herein described, and a water cup attached to the eduction pipe and provided with an adjustable valve whereby the heated air may be charged with moisture or medicated vapor, substantially as and for the purposes herein set forth.

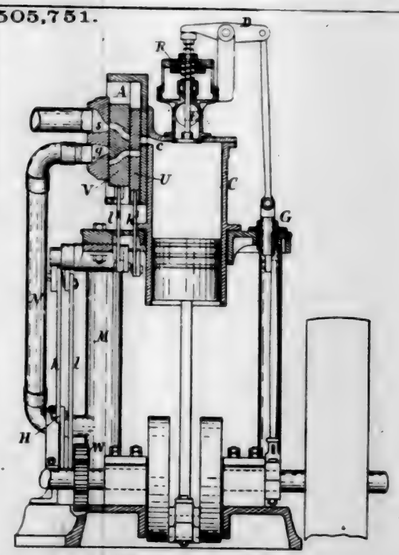
2. The combination, with the heating stove, of the air-heating chamber having on its exterior lugs 7, and supported on the bracket S, attached to the inner wall of the stove in the fire chamber thereof and above the coal space and having connected therewith an air-inlet pipe, and a bent or right-angled pipe also connected with said air-heating chamber and having one end adapted to connect with an upper room and its other end to connect with a lower room, said bent or right angled pipe having applied thereto a cup adapted to contain a liquid, substantially as set forth.

**505,751. GAS OR VAPOR ENGINE.** BERTRAM CHATTERTON, London, England. Filed Sept. 29, 1892. Serial No. 447,253. (No model.) Patented in England Apr. 1, 1892, No. 6,284.

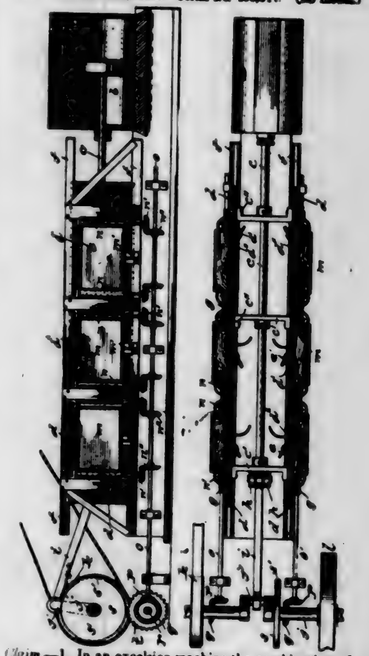


*Claim.*—The combination with a cylinder, and a reciprocating piston working therein, of pipes and valve mechanism which supply, alternately, to the cylinder at one and the same side of the piston, steam, and an inflammable mixture, substantially as and for the purpose described.

**505,751.**



**505,752. EXCELSIOR-MACHINE.** HENRY C. CLOYD, Union City, Ind. Filed Mar. 30, 1893. Serial No. 468,317. (No model.)



*Claim.*—1. In an excelsior machine the combination of a steam cylinder, a piston working therein, and its piston-rod, cross-heads rigidly secured to the piston-rod, vertical plates secured to the cross-heads and connecting them on each side of the piston-rod, suitable guides for these plates, knives carried by these plates on the inner sides thereof, their cutting edges projecting outwardly through openings formed in the plates, some of said knives projecting forwardly and the remainder projecting backwardly for the purpose set forth, adjustable supports carried by the frame of the machine, said supports adapted to support blocks of wood, and means for automatically feeding the blocks of wood to the knives just before said knives begin their cutting stroke, substantially as described.

2. In an excelsior machine the combination of a steam cylinder, a piston working therein, and its piston-rod, a driving-shaft, a pitman connection between said piston-rod and the driving-shaft, cross-heads carried by the piston-rod, vertical plates *d* connecting the cross heads on each side of the piston-rod, knives carried by said plates, means for supporting blocks of wood against said knives, and means for feeding the wood to the knives, said means consisting of the mutilated gears *s* carried on the drive-shaft and intermittently operating a series of mutilated beveled gears *n'*, *n''* carried by horizontal shafts on each side of the machine, the latter gears operating the feed rollers, substantially as described.



**505,753. BICYCLE.** WILLIAM Y. COCKEN, Tiffin, Ohio. Filed May 11, 1892. Serial No. 432,676. (No model.)



*Claim.*—1. A bicycle, comprising a main frame, the rear wheel supported thereon, the steering head, said head carrying the front wheel, said head having a pivotal connection with the main frame, and held from forward movement above its pivotal connection, but adapted for rearward movement above such point, whereby the front wheel will be thrown forward, when meeting an obstruction substantially as and for the purpose described.

2. In a safety bicycle, the combination of the main frame, carrying the crank axle and rear wheel, the steering head carrying the front wheel, said head pivotally connected to the main frame, and held from a forward swing above its pivot, such upper end adapted to swing rearward when the front wheel meets an obstruction, and tension devices for holding said steering head to its outer or normal position substantially as and for the purpose described.

3. In a safety bicycle the combination with the front wheel, the steering head, the seat bars F, diagonal bars B and D and the crank axle bearing, constructed substantially as shown, of the rearwardly extending bar K pivoted at its front end to the axle bearing, the forwardly inclined bar J joined at its lower end to the outer end of the bar K, such joint forming a fixed bearing for the rear wheel, the upper end of such bar J having a sliding pivotal connection with the upper end of the bar D, and rear ends of the bars F F, and the spring P, all arranged substantially as and for the purposes described.

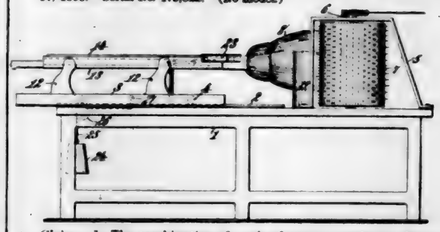
4. In a safety bicycle, in combination, the rear wheel, the bars J, K, and D forming the rear wheel supporting frame, the upwardly inclined brace bars B, the steering head, the back bone or seat bars F, having slotted plates G at their front end, operating on a connecting pin, held on the steering head, said head pivotally connected to the bars B at a point below and in advance of the slot and pin connection, and means for holding the head to its forward position substantially as shown and described.

5. In a safety bicycle, in combination with the steering head, the crank axle bearing, the bars D, and B rigidly connected at one end to such bearing, the opposite end of bar B being connected with the steering head, the back bone bar F, connected at the front end of the steering head, the union bolt E mounted on the upper end of the bar D, said bolt having a socket to receive the back bone bar F, and lateral stud portions *e*, and the springs P the slotted members I secured to the upper end of the bar J, and movable on the studs *e* all substantially as and for the purposes described.

6. In a safety bicycle, a crank axle bearing, consisting of a tubular sleeve, socket members forming bearings therefor, said sockets projected over the ends of the sleeve, the said sleeve ends being beveled and formed with annular ball receiving grooves, cap plates having inner beveled faces formed with annular grooves, and means for holding the sleeve in the sockets, all substantially as shown and described.

7. In a bicycle, the combination, with the wheel supporting frames, of the non rotatable tubular steering head section $a^3$, the tubular section $b^3$ rotatable in such section $a^3$, the apertured bed plate, connecting the lower end of such section $b^3$ with the front wheel frame, the tubular section $A^3$ fitted in the upper end of the section $b^3$ and held to turn therewith, the handle bars secured to the upper end of such section $A^3$, the vertically movable brake rod operating in the section $A^3$ and $b^3$ and the bed plate, and the frame $L^3$ secured to the upper end of the brake rod and the brake lever, connected to such frame, all arranged substantially as shown and for the purposes described.

**505,754. BROOM SCRAPING OR CLEANING MACHINE.** DE WITT A. DEVENDORF and FRANK F. BURTCH, Fort Hunter, N. Y. Filed June 17, 1893. Serial No. 478,022. (No model.)



*Claim.*—1. The combination of a pair of rotary scraping or cleaning cylinders provided with teeth and co-operating to scrape or clean a broom, a reciprocating broom holder for holding the broom and moving it between the two cylinders, and a stop interposed between the cylinders and the broom holder for limiting the feed movement of the broom between the cylinders, substantially as described.

2. The combination of a pair of rotary scraping or cleaning cylinders provided with teeth and arranged in juxtaposition to each other to scrape or clean a broom, a movable broom holder provided with a broom clamp for clamping the broom and feeding it between the two cylinders, and a stop for limiting the feed movement of the broom between the cylinders, substantially as described.

3. The combination of a pair of rotary co-operating scraping or cleaning cylinders arranged in juxtaposition to each other and between which the broom is fed, a movable table having a pair of broom clamping jaws movable toward and from each other and between which the broom is clamped to feed it between the two cylinders, and means for limiting the feed movement of the broom between the cylinders, substantially as described.

4. The combination of a pair of rotary co-operating scraping or cleaning cylinders arranged in juxtaposition to each other and between which the broom is fed, a movable table having a pair of clamping bars provided with jaws to clamp the broom, and a stop consisting of projections on the clamping bars, and plates arranged near the cylinders for limiting the feed movement of the broom, substantially as described.

5. The combination with rotary or cleaning cylinders, of a frame-work having a track, a reciprocating table movable on the track, and having converging guides, and clamps mounted on the guides for clamping a broom while it is moved to and from the action of the cylinders, substantially as described.

6. The combination with rotary scraping or cleaning cylinders, of a reciprocating table having converging guides, clamps mounted on the guides for clamping a broom while it is moved to and from the action of the cylinders, and a stop for limiting the feed movement of the broom between the cylinders, substantially as described.

7. The combination with a frame-work having a track, of a reciprocating table movable on the track, converging guides carried by the table, clamping bars movable on the guides, and provided with clamping jaws for holding the broom, and connections between the clamping bars, substantially as described.

**505,755.** PROCESS OF RECOVERING ORGANIC SUBSTANCES FROM SULPHITE LIQUOR. VIGGO R. DREWSEN, Hönefoss, Norway. Filed Mar. 1, 1892. Serial No. 423,405. (No specimens.)

*Claim.*—The herein described process of recovering organic substances, insoluble in water and acids, from the liquor resulting from the manufacture of cellulose by the sulphite process, which consists in converting the organic substances into a compound with lime by treating the liquor with caustic lime at a temperature higher than 100° Celsius and under pressure, a large quantity of sulphur being at the same time precipitated as monosulphite of lime,—and treating the precipitate with a strong acid (sulphurous acid, hydrochloric acid), whereby the organic substances are obtained in a form insoluble in water and acid, whereas on the other side the sulphurous acid and the other inorganic substances are made soluble in water, substantially as described.

**505,756.** CURRYCOMB. JAMES DUSHANE, South Bend, Ind. Filed May 17, 1892. Serial No. 433,284. (No model.)



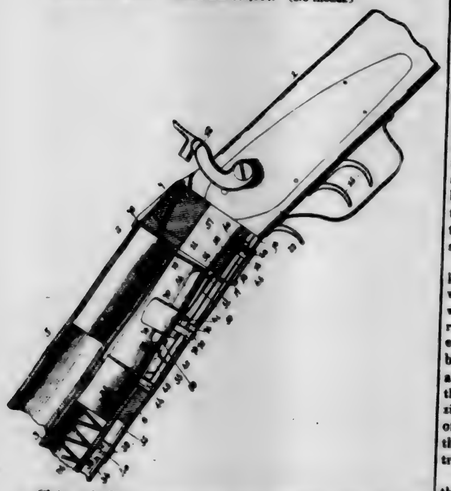
*Claim.*—1. A back for curry combs &c., adapted to fit the palm of and be grasped by the hand, having scallops on its front edge, to accommodate the fingers and scallops in its side near its front edge to accommodate the thumb of a hand, substantially as described.

2. The herein described back for curry combs &c., having a front curved and scalloped edge, and lateral extensions at its front corners, and scallops at the junction of said extensions with the sides, substantially as described.

3. The herein described curry comb consisting of a back having scallops on its front edge and sides to respectively accommodate the fingers and thumb of a hand; with the toothed metal strips set edgewise, separated, and secured to lugs depending from the back by transverse bolts, substantially as specified.

4. The combination with the back having depending lugs, the toothed oval loops and the toothed strip within the central loop, and the pair of horizontal retaining rods passing transversely through said rings and strip and secured to said lugs, substantially as and for the purpose described.

**505,757.** MAGAZINE-GUN. CALEB S. EVANS, Union City, Ind. Filed Mar. 28, 1893. Serial No. 467,997. (No model.)



*Claim.*—1. In a magazine-gun, the combination with the stock, longitudinally movable barrel, the intermediate-receiver, and the magazine located under the barrel, of a carrier arranged in the receiver, means for operating the carrier, a grip-plate arranged under the magazine, a hammer having a depending L-shaped tumbler, a reciprocating tumbler-rod located between the magazine and grip-plate and having its rear end provided with a shoulder engaging the tumbler of the hammer, and connections between the grip-plate and rod, substantially as specified.

2. In a magazine-gun, the combination with the stock, the receiver, the longitudinally movable barrel, and magazine located thereunder, of a grip-plate mounted for reciprocation under the magazine, a carrier arranged in the receiver, a hammer having a depending L-shaped tumbler, and a rod mounted for reciprocation in the receiver, said rod having its rear end provided with a shoulder engaging the tumbler of the hammer and having its front end slotted, and a stud extending from the grip-plate into the slot, substantially as specified.

3. In a magazine-gun, the combination with the receiver, a stock connected to the rear end thereof, said receiver being provided with a forward extension, a barrel located and adapted to reciprocate upon the receiver-extension, a grip-plate arranged under and connected with the barrel, a hammer arranged in the stock, said hammer having a depending tumbler, a carrier and means for operating the same, of a tumbler-operating rod connected with the grip-plate and operated thereby, substantially as specified.

4. In a magazine-gun, the combination with a receiver having a pair of central dovetailed ways upon its upper side, barrels mounted for reciprocation in the ways, and having the metal therebetween provided with a dovetail groove a grip plate arranged under the barrels, and independently thereof magazines for the barrels, embraced by the grip-plate and hammers arranged in the stock and provided with depending tumblers, of carriers, means for operating the same, and a tumbler-operating rod connected with and operated by the grip-plate, substantially as specified.

5. In a magazine-gun, the combination with a stock, a receiver, a pair of barrels mounted for reciprocation thereon, and magazines arranged below the barrels, of carriers arranged in the receiver, means for operating said carriers and independent grip-plate arranged under the magazines loosely embracing the same and connected with the barrels, hammers arranged in rear of the receiver and provided with depending tumblers, a tumbler-operating rod connected with the grip-plate and adapted to operate the tumblers, cartridge-arresting devices arranged in rear of the magazines, and means for throwing and locking either or both of the same out of operative position, substantially as specified.

6. In a magazine-gun, the combination with a stock, a receiver having a central partition and a front extension, said extension having a slot and from the upper side thereof dovetail ribs, of magazines arranged at opposite sides of the extension, a pair of barrels having an intermediate curved web mounted for reciprocation on the extension and receiving the ribs, a grip-plate arranged below the magazines, connecting devices between the barrels and the grip-plate, carriers arranged at opposite sides of the partition in the receiver, means for raising and lowering the carriers, a tumbler-rod operated by the grip-plate, hammers arranged in rear of the receiver and having tumblers arranged in the path of the rod, levers pivoted at opposite sides of the partition in the receiver and having their front ends provided with shoulders and their rear ends with depending lugs projecting through the trigger-plate, and springs for normally depressing the rear ends of the levers, substantially as specified.

7. In a magazine-gun, the combination with the receiver, the lock-mechanism in rear thereof, a reciprocating barrel arranged upon the receiver, and a magazine below said barrel, of a grip-plate for reciprocating the barrel arranged upon the magazine, a pivoted carrier arranged in the receiver, a three-pronged tumbler pivoted below the barrel, pivotal connections between the rear prong of the tumbler and the carrier, and a projection arranged upon the barrel and adapted to operate alternately against the inner sides of the front two prongs, substantially as specified.

8. In a magazine-gun, the combination with the receiver, the rear lock mechanism, the extension at the front end of the receiver provided with guides, the reciprocating barrels having an intermediate web portion mounted upon the guides, the magazines below the barrels, the grip-plate connected with the barrels, a slot formed in the extension, a three-pronged tumbler pivoted in the slot, connections between the barrels and grip-plate, a projection carried by the barrels arranged between and adapted to operate upon the front prongs of the tumbler, of carriers arranged in the receiver in rear of the magazines, a connecting-rod between the carriers to which the rear prong of the tumbler is loosely connected, and check-pawls pivoted below the carrier-blocks and spring-pressed into the path of the line of cartridges in the magazines, substantially as specified.

9. In a magazine-gun, the combination with the receiver having the opposite compartments, the rear lock mechanism, the front slotted extension having guides, the reciprocating barrels arranged on the guides and provided with lugs extending through the extension, a magazine arranged under each barrel and at opposite sides of the lugs, a grip-plate mounted for sliding on the magazine and connected with the lugs, of a pair of pivoted spring-pressed carriers arranged in the compartments of the receiver in rear of the magazines, a transverse rod connecting the same, a three-pronged tumbler pivoted in the slot of the extension and extending into a groove in the web between the barrels, said tumbler being loosely connected to the transverse rod connecting the carriers, a bridge-piece arranged in the groove of the web of the barrels and adapted to operate upon the inner side of the front prongs of the tumbler, a pair of pivoted check-levers arranged in the receiver in rear of the magazines, said levers having front shoulders and at their rear ends provided with depending lugs projecting from openings in the receiver, springs for normally depressing the rear ends of the levers, pivoted check-pawls arranged at the sides of the levers but independent thereof, springs for lightly depressing the rear ends of said pawls into the path of the transverse rod connecting the carriers, and a device for locking either of the levers against the tension of the spring, substantially as specified.



10. In a magazine-gun, the combination with the receiver having the opposite compartments, the rear lock mechanism, the front slotted extension having guides, the reciprocating barrels arranged on the guides and provided with lugs extending through the extension, a magazine arranged under each barrel and at opposite sides of the lugs, a grip-plate mounted for sliding on the magazine and connected with the lugs, of a pair of pivoted spring-pressed carriers arranged in the compartments of the receiver in rear of the magazines, a transverse rod connecting the same, a three-pronged tumbler pivoted in the slot of the extension and extending into a groove in the web between the barrels, said tumbler being loosely connected to the transverse rod connecting the carriers, a bridge-piece arranged in the groove of the web of the barrels and adapted to operate upon the inner side of the front prongs of the tumbler, a pair of pivoted check-levers arranged in the receiver in rear of the magazines, said levers having front shoulders and at their rear ends provided with depending lugs projecting from openings in the receiver, springs for normally depressing the rear ends of the levers, pivoted check-pawls arranged at the sides of the levers but independent thereof, springs for lightly depressing the rear ends of said pawls into the path of the transverse rod connecting the carriers, and a pivoted button adapted to be swung under and elevate either one of the depending lugs of the levers, substantially as specified.

11. In a magazine-gun, the combination with the receiver having the central partition, the flat spring arranged in front of the end of the partition, the lock mechanism in rear of the receiver, the extension at the front end of the receiver, the reciprocating barrels, magazines below the barrels, the grip-plate mounted for sliding on the magazines and depending from the barrels to and connected with the grip-plates, a tumbler pivoted in a slot in the extension, a projection on the barrels engaging and operating the tumbler, a pair of carriers arranged in the receiver, a rod connecting the same and loosely connected with one end of the tumbler and bearing upon the flat spring secured to the receiver partition, and checking devices for the magazines operated by the carrier-blocks, substantially as specified.

12. In a magazine-gun, the combination with the receiver having the central partition, the flat spring arranged in front of the end of the partition and provided near its lower end with an opening, the lock mechanism in rear of the receiver, the extension at the front end of the receiver, the reciprocating barrels, magazines below the barrels, the grip-plate mounted for sliding on the magazines and depending from the barrels to and connected with the grip-plates, a tumbler pivoted in a slot in the extension, a projection on the barrels engaging and operating the tumbler, a pair of carriers arranged in the receiver, a rod connecting the same and loosely connected with one end of the tumbler and bearing upon the flat spring secured to the receiver partition and adapted to engage the opening, and checking devices for the magazines operated by the carriers, substantially as specified.

13. In a magazine-gun, the combination with a receiver the lock mechanism in rear of the same, the barrel and magazine, of an opening formed in the breech block of the receiver, a carrier having a rearwardly-disposed shank entering the opening, a flat-spring secured to the carrier, diverging therefrom, and at its rear end resting upon the bottom of the opening, means for raising and lowering the carrier, and a checking device for the magazine arranged in the path of and operated by the carrier, substantially as specified.

14. In a magazine gun, the combination with a receiver, locking mechanism in rear thereof, a barrel and a magazine in front of the receiver, of a pivoted carrier, means for raising and lowering the same, a pair of clamping levers terminating at their upper ends in clamping-plates and pivoted at opposite sides of and depending below the carrier, devices arranged below the levers and adapted to compress the same when the carrier is lowered, and interposed springs for spreading said levers when the carrier is raised, substantially as specified.

15. In a magazine-gun, the combination with the receiver, the lock mechanism in rear thereof, the barrel, and the magazine thereunder, of a pivoted carrier having its front end provided with a depending curved lip, its under side provided with a rib, and its opposite edges cut away immediately in rear of the rib, bell-crank levers pivoted to the rib and provided at their upper ends with curved clamping-plates, the lower ends of said levers being beveled, a spring interposed between said lower ends and adapted to normally spread the same, and cam flanges arranged below and adapted to receive and compress the lower ends of the levers, substantially as specified.

16. In a magazine-gun, the combination with the receiver having the opposite ways, and the slotted extension provided with a groove, the lock mechanism in rear of the receiver and comprising hammers having depending L-shaped tumblers, a pair of barrels mounted on the extension and groove to receive the ways, the magazines arranged under the barrels, the grip-plate mounted on the magazines, and studs depending from the barrels and connected with the grip-plates, of a tumbler-rod mounted under the receiver and having a slot at its front end loosely engaged with the rear stud of the barrels, and its rear end loosely engaging the tumblers, a pair of pivoted spring-pressed carriers arranged in the receiver, the connecting-rod between the same, the three pronged tumbler pivoted in the slot of the extension and having its rear prong loosely engaging with the rod connecting the carriers, a bridge-piece arranged in a groove between the barrels and adapted to operate upon the front prongs of the tumbler, pivoted check-levers arranged under the carriers and having their rear ends provided with depending studs projecting through holes in the trigger-plate, springs for depressing said rear ends of the levers and elevating the front ends into the path of the cartridges, means for locking either of the levers out of operative position against its spring, a pair of spring-pressed check-pawls pivoted upon the same shaft as the check-levers and arranged in the path of the rod connecting the carriers, substantially as specified.

**505,758.** MACHINE FOR PACKING CEMENT IN BARRELS. LEWIS FAITH, Hancock, Md., assignor of one-half to James Tallaferro Bridges, same place. Filed May 31, 1893. Serial No. 476,133. (No model.)



*Claim.*—1. In a machine for filling and packing cement in barrels, the combination of a vertical jacket, having a closed upper end, a screw shaft extending longitudinally through said jacket, and a feed chute which discharges into the jacket below its upper closed end and below the upper extremity of the packer screw, substantially as and for the purposes described.

2. In a machine for filling and packing cement in barrels, the combination of a vertical jacket provided with an internal tube, the feed chute which discharges into said jacket above the internal tube, and a screw shaft extending longitudinally through said jacket and its internal tube, substantially as and for the purposes described.

3. In a machine for filling and packing cement in barrels, the combination of a vertical jacket having the closed upper end, an internal tube fixed within said jacket at a point between its ends, a packer screw extending through said jacket and tube, and a feed chute which discharges into the jacket at a point above the internal tube and below the upper end of the packer screw, substantially as described.

4. In a machine for filling and packing cement in barrels, the combination with a vertical jacket and a feed chute connected thereto, of the internal tube fixed within the jacket below the point of discharge of the feed chute, and a longitudinal screw having its smaller part operating within the internal tube and its larger part operating within the lower part of the jacket, substantially as and for the purpose described.

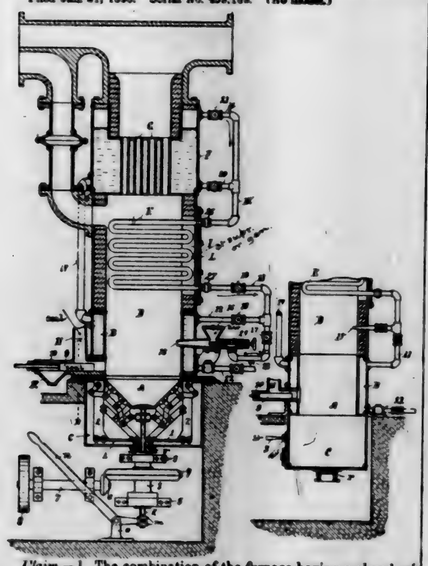
5. In a machine for filling and packing cement in barrels, the combination with a vertical jacket and a feed chute, of a longitudinal screw having its upper part of less diameter than its lower part, and the internal tube fitted snugly around the smaller upper part of the screw and fixed within the jacket to close the space between itself and said jacket, for the purpose described, substantially as set forth.

6. In a machine for filling and packing cement in barrels, the combination of a vertical jacket having the closed hood at its upper end, the shaft passing through said jacket and a hood and carrying a screw with an enlarged lower part operating in the lower end of the jacket, a feed chute arranged to discharge into the hood at a point below the

upper end of the screw and an internal tube partially inclosing the smaller upper part of the screw and fixed within the jacket below the point of discharge of the feed chute into said hood, substantially as and for the purposes described.

7. In a machine for filling and packing cement in barrels, the packer screw composed of a series of sections formed of the spiral blades and hubs clamped on the shaft, certain of said blades being of less diameter than the blades on other sections and said blades aligned to form a continuous screw, of small diameter at one end and larger diameter at the other end, combined with an internal tube inclosing that part of the screw of small diameter, a jacket inclosing the screw and tube, and provided with the hood at its upper end, and the feed chute connected with the jacket to discharge above the internal tube, substantially as and for the purpose described.

## 505,759. FURNACE FOR MAKING GAS. JOHN FERREBATCH, Cincinnati, Ohio, assignor of two-thirds to Frederic C. Weir, same place. Filed Jan. 21, 1893. Serial No. 459,189. (No model.)



*Claim.*—1. The combination of the furnace having a closed ash pit, a water jacket, a grate, means for forcing air into the ash pit, a brick lined mixing chamber above the combustion chamber, a positive force coal feed communicating with the combustion chamber, one or more steam injectors leading into the gas generating chamber, above the fuel and a steam coil suspended in the mixing chamber for superheating the steam introduced into the gas-generating chamber, substantially as specified.

2. The combination of the furnace having a closed ash pit, a water jacket, a grate, means for forcing steam and air into the ash pit, a brick lined mixing chamber above the combustion chamber, a positive force coal feed communicating with the combustion chamber, one or more steam injectors leading into the gas generating chamber above the fuel, and a steam coil suspended in the mixing chamber for superheating the steam introduced into the gas generating chamber, substantially as specified.

3. The combination with a furnace, a boiler, and a water jacket surrounding the combustion chamber of the furnace and communicating with the boiler, of a superheating steam coil placed in the furnace and communicating with the water jacket and with the water and steam spaces of the boiler, and valves for controlling the communication of said coil with the water and steam spaces of the boiler, whereby a continuous circulation of steam or water can be maintained through said coil at all times, substantially as described.

4. The combination of a furnace, a water jacket surrounding the combustion chamber of the furnace, a boiler communicating with said water jacket, a superheating steam coil, located in the furnace and communicating with the water jacket and with the water and steam spaces of the boiler, and a positive forced coal feed communicating with the combustion chamber, substantially as described.

5. In combination with a furnace having a boiler forming the top of the furnace and a water jacket space adjoining the fire chamber, a coil placed within said furnace and pipes for connecting said coil with the water and steam space in the boiler and one or more pipes connecting said coil with the water jacket, substantially as specified.

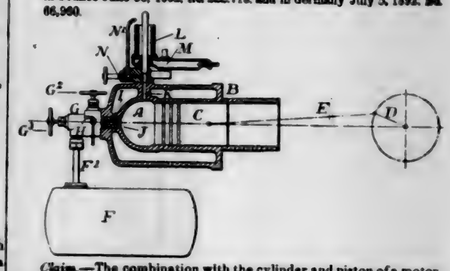
6. The combination with a furnace, a boiler and a water jacket, of the coil E, pipes connecting said coil with the steam and water space of the boiler, a pipe connecting said coil with the water jacket, and a pipe 14 connecting the water-jacket with the water space of the boiler, substantially as described.

7. The combination of a furnace having a slot I in one of its walls, the removable plate L covering said slot, the superheating coil E secured to said plate and located in the furnace, a boiler, a water jacket surrounding the combustion chamber of the furnace, valved pipes connecting the superheating coil with the boiler and water jacket, and union-couplings connecting said pipes with the superheater at the outside of the removable plate, whereby the coil may be introduced into the furnace or detached therefrom together with said plate, substantially as described.

8. The combination of a furnace, a boiler forming the top of the furnace, a water jacket surrounding the combustion chamber of the furnace, a revolving grate, a superheating steam coil located in the furnace and connected with the steam and water spaces of the boiler, a pipe connecting said coil with the water jacket, and a pipe connecting the water jacket with the boiler, substantially as described.

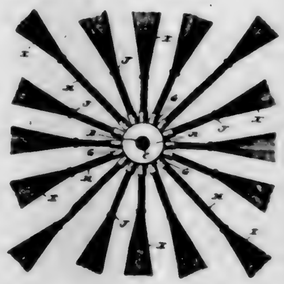
9. The combination of a furnace having a combustion chamber surrounded by a water jacket, a revolving grate, a positive forced coal feed communicating with the combustion chamber above one side of said grate, a boiler forming the top of the furnace, a superheating steam coil located in the furnace below the boiler, valved pipes connecting said coil with the steam and water spaces of the boiler and with the water jacket, a pipe connecting the water jacket with the boiler, and a steam injector leading from the superheating steam coil into the combustion chamber, substantially as described.

## 505,760. MEANS FOR STARTING GAS OR OIL MOTOR ENGINES. JOHN FIELDING, Gloucester, England. Filed Dec. 20, 1892. Serial No. 455,783. (No model.) Patented in England Nov. 11, 1891, No. 19,517; in France June 30, 1892, No. 222,718, and in Germany July 5, 1892, No. 66,960.



*Claim.*—The combination with the cylinder and piston of a motor engine, of a starting mechanism consisting of a valved air escape conduit for the escape of air from the space in the cylinder behind the piston, a valve box connected with the cylinder and having a valved gas inlet, and a valved-compressed air inlet, a compressed air reservoir connected with the valved-compressed air inlet of the valve box, and an ignitor for igniting the charge in the cylinder to start the engine, substantially as described.

## 505,761. BRUSH FOR CLEANING CHIMNEYS OR FLUES. ALEXANDER J. FLUDDER and FRANCIS M. SIMON, Newport, R. I. Filed Mar. 27, 1893. Serial No. 467,852. (No model.)





*Claim.*—1. In a chimney and flue cleaning brush, an elongated cylindrical hub having a central longitudinal opening and a series of threaded openings formed in the body thereof, a series of rigid brush bristles having outer frayed ends, cylindrical exteriorly threaded band ferrules bound on the inner ends of said bristles and adapted to removably engage the threaded openings of the hub, and an attaching rope loosely arranged in the central longitudinal opening of the hub and having attaching loops D, at its extremity, substantially as set forth.

2. In a chimney and flue cleaning brush, an elongated cylindrical hub having separate circular series or sets of threaded openings, and separate sets of rigid brush bristles having at their inner ends threaded ferrules adapted to removably engage the threaded openings in said hub, said rigid brush bristles being also provided with outer frayed brush tip ends, and binding rings affixed thereon at the base of said frayed ends, substantially as set forth.

3. In a chimney and flue cleaning brush, the combination with the hub of the brush bristles removably attached to and radiating from said hub, said bristles comprising suitable lengths of wire rope having frayed brush tip ends, and binding rings soldered thereon at the base of the frayed ends, substantially as set forth.

## 505,762. BRIDLE. GEORGE C. HALE, Kansas City, Mo. Filed May 12, 1893. Serial No. 473,992. (No model.)



*Claim.*—1. In a bridle without a mouth bar, the combination with cheek straps a nose-band and supporting plates, of the levers fulcrumed at intermediate points of their length to said plates and provided with means for attachment of the driving lines, and a curb carried by said levers and lying at an angle thereto, substantially as and for the purposes described.

2. In a bridle, substantially such as described, the combination with cheek pieces a nose-band and supporting plates, of the side levers fulcrumed at intermediate points of their length to said supporting plates and provided at their upper ends with means for attaching the driving lines thereto, and a stiff curb-bail arranged at an angle to said levers and rigid with relation thereto, substantially as and for the purposes described.

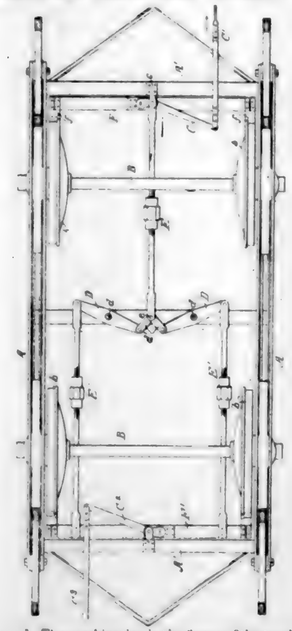
3. In a bridle, substantially such as described, the combination with cheek straps a nose-band and supporting plates, of the side levers fulcrumed to said supporting plates and carrying a stiff curb bail which lies at an angle to said levers, and a guide band connected to said levers in position to normally press against the animal's jaw, substantially as and for the purposes described.

4. In a bridle, substantially such as described, the combination with cheek straps a nose-band and supporting plates, of the side levers fulcrumed to said plates and provided at their upper ends with means for attachment of the driving lines, a stiff curb bail rigid with the lower ends of said levers and arranged at an angle thereto, and a guide band carried by the levers between their fulcra and the curb bail and lying in advance of said curb bail, as set forth.

5. In a bitless bridle, the side levers fulcrumed at an intermediate point of their length to the bridle and each lever having its part below the fulcrum bent or curved toward the other lever, the rings or loops at the upper ends of the levers, combined with a nose band a curb-bail rigid with relation to the lower part of the levers, and a guide strap or band carried by the levers, substantially as described.

6. The combination with the cheek-straps and a nose band united together by the union-plates, of the side levers fulcrumed at an intermediate point of their length to said union plates, and provided at one end with a curb bail and at the other ends with means for attachment of the driving lines, and a guide strap carried by the side levers at one side of and in advance of the curb-bail, substantially as described.

## 505,763. CAR-BRAKE. WILLIAM H. HAWSELL, Philadelphia, Pa. Filed June 24, 1893. Serial No. 478,689. (No model.)



*Claim.*—1. The combination in the frame of the truck, of the two pivoted levers D D, a central brake rod to which the inner ends of the said levers are connected, side brake rods to which the outer ends of the levers are connected, a front brake beam to which the central brake rod is connected, and the rear brake beam to which the side rods are connected, brake controlling mechanism attached to one of said brake beams, substantially as described.

2. The combination of the truck frame, the pivoted levers D, a central brake rod to which the inner ends of the levers are connected, side brake rods to which the outer ends of the levers are connected, a front brake beam to which the central rod is attached, and a rear brake beam to which the side brake rods are attached, a lever pivoted to the truck frame and attached to one of said brake beams, and a draw rod attached to the braking mechanism of the car, substantially as specified.

3. The combination of the side frame of a truck, the cross bars connecting the side frames together, the axles and wheels, with front and rear brake beams, shoes thereon, levers D D pivoted to the central cross bar, links on the inner end of each lever, a central brake rod to which said links are connected, said brake rod being attached to the front brake beam, side brake bars attached to the rear brake beam and attached to the outer ends of the levers D, a pivoted brake operating lever pivoted at each end of the truck frame and connected to their respective brake beams, and operating mechanism at each end of the car for actuating the brake, substantially as described.

## 505,764. VALVE-CONTROLLING MECHANISM. EDWARD W. HARDEN, Cincinnati, Ohio, assignor to Frederic C. Weir, same place. Filed Apr. 20, 1893. Serial No. 471,122. (No model.)

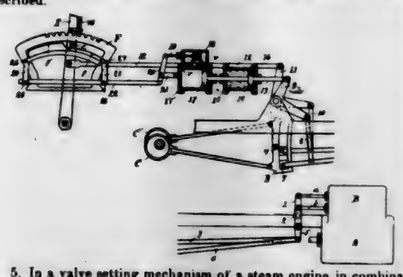
*Claim.*—1. In an engine employing a main and cut-off valve, each having an independent valve rod, the auxiliary valve mechanism connected directly to the cut-off lever E, and the main valve mechanism connected to the piston of the auxiliary engine, provided with a cataract cylinder and piston, whereby the auxiliary valve of the main engine is reversed by the reversal of the auxiliary engine, substantially as described.

2. In a steam engine, the combination of the main and auxiliary valves, radii valve rods 3 and 6, link D, eccentrics C C, the main valve setting mechanism connected to the piston of the auxiliary engine, the valve 13 of which is operated by the cut-off lever E, and the link

11 of the auxiliary valve connected to the cut-off lever E, whereby both the main and auxiliary valves are operated and reversed simultaneously by the cut-off lever E, substantially as described.

3. In combination with the steam engine employing a main and cut-off valve, the main valve with its radii rod 6 supported in link D, and connected directly to piston 13 of an auxiliary engine, with its valve 18 operated by the cut-off lever E, whereby the main valve is always set for a full throw, whenever said lever is moved forward or backward of the central point, substantially as described.

4. In a compound engine having a main and a cut-off valve, and valve controlling mechanism, the cut-off lever E, and setting lever H mounted thereon and connected to the valve 38 of the auxiliary steam engine 37, and the valve reversing mechanism connecting lever H to the valve 18 of the auxiliary engine 17, and the auxiliary valve setting mechanism directly controlled by cut-off lever E, substantially as described.



5. In a valve setting mechanism of a steam engine, in combination with a quadrant F, cut-off lever E provided with a lug *e*, the bell crank levers 24, 25, connected to and operating the steam valve 18, the connecting rod 16 connected directly to the cut-off lever E, and to the crank and link mechanism of the auxiliary valve, and the crank and link mechanism of the main valve connected to and operated by the piston 13 of the auxiliary engine 17, substantially as described.

6. In combination with the cut off lever E, the setting lever mounted thereon, the quadrant F, the segmental guides 42, with upper and lower surface 43, having the central recess *e*, and the guide block 44, mounted upon said setting lever, substantially as specified.

7. In combination with the quadrant F, and the cut off lever E, bellcrank lever 24, 25, each having oppositely recessed faces *f*, *f'* the lug *e*, and the connecting rod 22, pivoted to said bellcrank levers 24, 25, whereby said rod is reciprocated forward, or backward, according to the movement of the cut off lever E, substantially as specified.

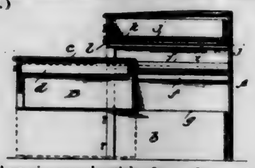
8. In combination with a compound engine having valve controlling mechanism operated by the cut off lever E, and secondary lever H mounted thereon connected to and operating the valve 38 of the auxiliary steam engine, which is connected to the valve controlling mechanism of the steam chest B, whereby the valves are moved to convert the engine from a simple to a compound by the operation of lever H and intermediate steam engine, substantially as described.

9. In a compound engine having valve mechanism in the steam chest for converting the engine from a simple to a compound, operated by the connecting rod 35, steam engine 36, valve 38, and the lever H adapted to reverse the auxiliary engine 37, in combination with the setting lever E, and the valve setting mechanism connected thereto, whereby the lever E will operate to stop, start, and reverse the engine whether it be acting as direct or compound, substantially as specified.

10. In combination with the steam piston connected up to and operating valve controlled mechanism, the cataract piston and cylinder provided with the orifices 48, passage 49, and contracted orifices 50, substantially as specified.

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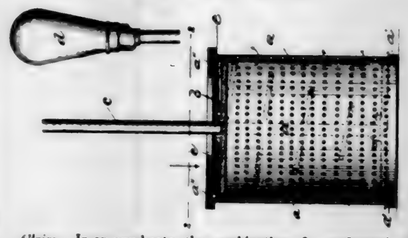
**505,765. COMBINED SITTING AND STANDING DESK.** ARCHIBALD HOPKINS, Washington, D. C. Filed May 6, 1893. Serial No. 473,259. (No model.)



*Claim.*—As an improved article of manufacture the combination desk, consisting of the standing desk A, provided with the central space *b* open at the front, the sitting desk B located in said space and mounted in and supported by guides in which it can slide so as to be pulled out from the front of the standing desk or pushed back therein, the sliding frame *j* and the locking flap *l* hinged to said frame—all constructed and arranged as hereinbefore shown and described.

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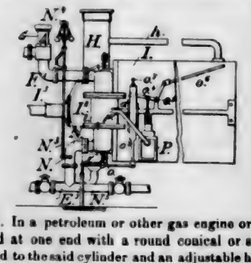
**505,766. EGG-BEATER.** GEORGE W. HUBER, Philadelphia, Pa. Filed Jan. 3, 1893. Serial No. 457,112. (No model.)



*Claim.*—In an egg beater the combination of a perforated cylinder having the inwardly-projecting rim at its upper end, a piston reciprocating therein, and normally held at the upper end thereof—a spiral spring within the cylinder and above the piston, its outer end being secured under the inwardly projecting ring, its inner end being secured to the piston, and a handle for reciprocating said piston, substantially as described.

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**505,767. GAS OR PETROLEUM ENGINE.** PAUL H. IBSEN, Christiania, Norway. Filed July 30, 1891. Serial No. 401,136. (No model.)



*Claim.*—1. In a petroleum or other gas engine or motor a cylinder provided at one end with a round conical or similar shaped cover connected to the said cylinder and an adjustable hood arranged at a short distance from the said cover a combined valve for gas inlet and exhaust connected to the said cylinder cover and a valve in the exhaust pipe for controlling the operation of the engine, the said valve being worked from a governor by means of a lever arrangement, the ignition of the gas taking place within the cylinder cover by means of an electric spark, and a water jacket or air space, surrounding the cylinder, the inlet and exhaust valve being also provided with a water jacket or air space.

2. In a petroleum or other gas engine or motor, the combination with the motor-cylinder, of a cover secured thereto and a hood corresponding in shape to said cover and adjustable to and away therefrom, in order that the air passing between the hood and the cover may be heated by the explosions in the motor-cylinder, substantially as described.

3. In a petroleum or other gas engine or motor, the combination with a cylinder and a cover therefor, of an inner and an outer casing with a water-jacket or air space between them, an automatically operated inlet valve, an outlet or exhaust valve, and a lever connected with the main shaft of the engine or motor at one end, and at the other end engaging the outlet or exhaust valve, substantially as described.

4. In a petroleum or other gas engine or motor, the combination with a cylinder of an air valve consisting of two concentric cylinders having open ends, the outer cylinder provided with a handle by which it may be turned on the inner one, a lift or safety valve covering the upper end of said cylinders, the inner of said cylinders provided with two diametrically opposite rectangular openings and the outer cylinder provided with two diametrically opposite triangular openings or perforations triangularly arranged so that the vertical sides of the triangles are parallel with the vertical sides of the rectangular openings, whereby by turning the outer cylinder the hypotenuse of the triangle covers the inner opening, substantially as described.

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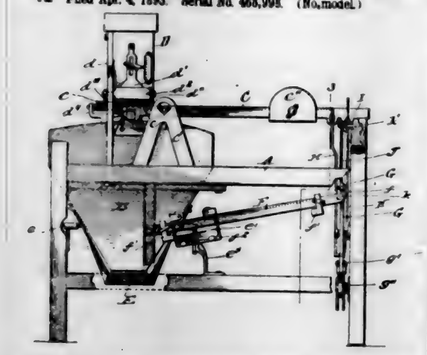
**505,768. BUTTON-FASTENER.** WESLEY C. JONES, Warrensburg, Mo. Filed Nov. 7, 1892. Serial No. 451,217. (No model.)



*Claim.*—The combination of a button, a staple connecting the same to the material, and a back plate with a single central eye or opening, a peripheral flange forming a cavity on one side thereof, and peripheral notches extending therethrough and diametrically opposed to each other in said flange, the legs of the staple being unitedly passed through the said central eye of the back plate and spread apart, and passed through the said notches thereof and then deflected under the cavitied side of the said back plate and bent in opposite directions, whereby the ends of the staple are inclosed by the said back plate and held between the latter and the fabric, substantially as described.

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**505,769. AUTOMATIC GRAIN-WEIGHER.** JACOB C. KING, York, Pa. Filed Apr. 4, 1893. Serial No. 468,998. (No model.)



*Claim.*—1. The combination of a grain-spout, a frame and weighing-beam mounted thereon, a bucket hung on the beam, a lever $d^{\text{w}}$ pivoted on the frame out side of the scale beam and extending inwardly alongside the spout, and resting on a portion of the scale-beam, and a gravity-valve carried by the spout and carrying a pin engaging in a longitudinal slot in the inner end of lever $d^{\text{w}}$, substantially as described.

2. The combination of a vertically movable bucket, valves E E swung thereto and adapted to normally close the discharge opening thereof, each of said valves carrying a lateral projection *e* and Λ-shaped cams *e'* supported under said projections *e* and adapted to spread same when the bucket falls, substantially as described.

3. In a weighing-machine, the combination of a bucket, a weighing-beam carrying an adjustable weight, a supplemental beam adapted to be inclined in opposite directions, a weight slidably mounted on this beam and adapted to move automatically, and mechanism connecting one end of said supplemental-beam to the weighing beam, whereby the end connected to the beam will be depressed on the upward movement of the scale-beam, substantially as and for the purpose described.

4. In a weighing-machine, the combination of a bucket a weighing-beam carrying an adjustable weight, a supplemental beam adapted to be inclined in opposite directions, a weight slidably mounted on this beam and adapted to move automatically and mechanism connecting one end of said supplemental-beam to the weighing-beam, an automatic device for engaging said mechanism and keeping the pressure off the weighing-beam, and an automatic tripping-mechanism for this latter device, operated by the upward movement of the weighing-beam, substantially as described.

5. In a weighing machine, the combination of a bucket a weighing-beam, a weight on said beam, a supplemental beam pivoted at one end and having its free end inclined upwardly, an automatically movable weight on this beam, stops for this weight, mechanism connecting the free end of this beam to the weighing-beam and automatic devices for preventing this connecting mechanism exerting upward pressure on the weighing beam, substantially as described.

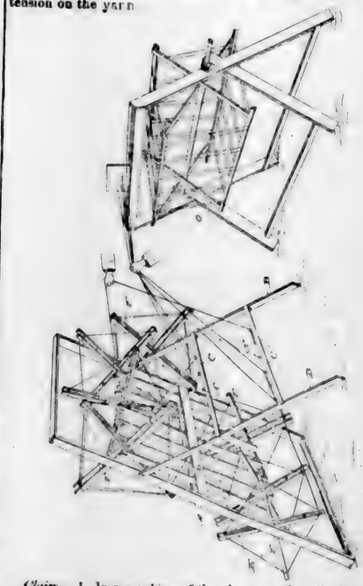
6. In a weighing machine, the combination of a bucket a weighing-beam, a weight on said beam, a supplemental beam pivoted at one end and having its free end inclined upwardly, an automatically movable weight on this beam, stops for this weight, a pivoted lever and a vertically movable rod connecting the free end of the supplemental lever to the weighing beam, and an automatic catch for engaging this pivoted lever and holding it down while the bucket is up, substantially as described.

7. In a weighing machine, the combination of a bucket a weighing-beam, a weight on said beam, a supplemental beam pivoted at one end and having its free end inclined upwardly, an automatically movable weight on this beam, stops for this weight, a pivoted lever and vertically movable rod connecting the free end of the supplemental lever to the weighing-beam, and an automatic catch for engaging this pivoted lever and holding it down while the bucket is up, a gravitating rod engaging an arm of said catch and a pivoted lever I attached to said rod and engaging the weighing-beam, substantially as described.

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**505,770. SWIFT WARPING MACHINE.** WILLIAM P. KIRKPATRICK, Arrowsmith, Ill. Filed May 16, 1892. Serial No. 433,259. (No model.)

*Brief.*—The skeins are placed on skein-holders mounted in the frame, from which they are wound on a reel and from there on the beam. The skein-holders are made of two parts interlocking with each other. The main frame has bearings for the skein-holders and folding legs connected by a cross bar on which are eyes through which the yarn passes and which may be turned so as to vary the tension on the yarn.

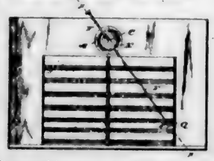


*Claim.*—1. In a machine of the character described, the combination of a main frame A, legs B pivotally connected to the main frame and connected by a transverse cross bar C, a series of skein carriers carried by the main frame and a series of thread guides carried by the bar connecting the legs B, substantially as described.

2. A skein carrier consisting of two members F, F', connected by a transverse pin *f*, each member consisting of two strips K connected at intermediate points of their length by blocks K' and connected near their ends by elastic bands L, substantially as described.

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**505,771. LEAF-HOLDER.** EMANUEL H. KOHR, Tyrone, Pa. Filed Oct. 14, 1892. Serial No. 448,873. (No model.)



*Claim.*—1. The combination of a base provided with an internal chamber, a rotatory post provided at its lower end with an outwardly projecting flange seated in the chamber, and an arm pivoted to the

post and adapted to vibrate in a vertical plane, substantially as set forth.

2. The combination of the base provided with a chamber, a rotatory post secured at its lower end within the chamber a carrier pivoted to the post, and an arm mounted in the carrier and adapted to vibrate in vertical planes, substantially as set forth.

3. The combination of a base, a rotatory post provided with a recess an arm carrier pivoted in the recess, and an arm vibrating with the arm carrier and movable relatively thereto, substantially as set forth.

4. The combination of a base, a rotatory post, a rod carrier pivoted to the post and provided with a seat for a rod, and a rod mounted in the seat and movable relatively thereto, substantially as set forth.

5. In a leaf holder, the combination of a base, a rotatory post mounted at its lower end in the base and provided at its upper end with a downwardly extending recess, a carrier pivoted in the recess and projecting above the post, and a rod mounted in the carrier, substantially as set forth.

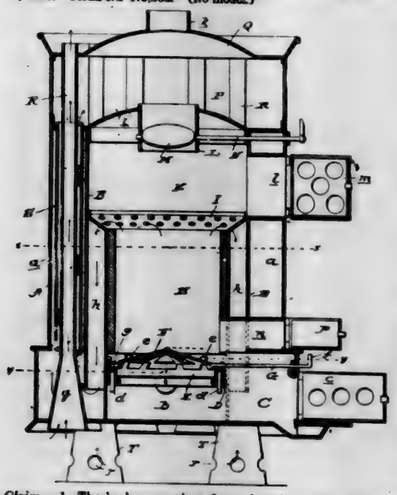
6. In a leaf holder, the combination of a base, a rotatory post mounted at its lower end in the base and provided at its upper end with a downward extending recess, a carrier pivoted in the recess and projecting above the post, a rod mounted in the carrier, and a stop to limit the upward movement of that end of the rod which engages with the leaf, substantially as set forth.

7. In a leaf holder, the combination of a base, a rotatory post mounted on the base, a carrier pivoted at the upper end of the post, a rod mounted in the carrier, a spring to press one end of the rod down upon the leaf, and a stop to limit the tension of the spring, substantially as set forth.

8. In a leaf holder, the combination of a base made in two parts of which the upper one is collar shaped, the base having a chamber, a rotatory post provided at its lower end with an outwardly projecting flange seated in the chamber, a carrier pivoted at the upper part of the post, and a rod mounted in the carrier, substantially as set forth.

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**505,772. STOVE.** MARTIN L. LARSON, Warren, Minn. Filed May 8, 1893. Serial No. 473,282. (No model.)



*Claim.*—1. The body or casing, formed with double walls so as to provide a chamber between them, in combination with the base chamber, the fire pot, arranged with an external circular chamber, in communication with the base chamber, an upper chamber above the double walled casing, pipes connecting said upper chamber with the base chamber, and also in communication with the fire pot or chamber, and pipes passing from below the stove to the top thereof, and through the pipes which connect the top chamber with the base chamber, substantially as specified.

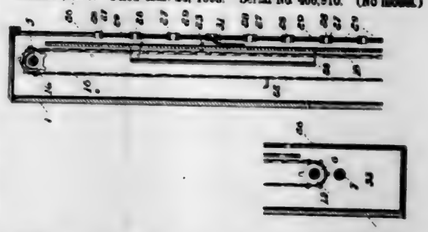
2. A stove having the base chamber, a fire box therein, a chamber above the fire box with a damper for cutting off communication between the fire box and smoke pipe, pipes connecting the base chamber with the passage leading to the smoke pipe, and pipes passing through the latter pipes and open above and below the stove respectively, substantially as specified.

3. A heating stove, having the long cylindrical fire-pot, with the perforated plate at its mouth, and surrounded by a chamber, a base chamber communicating with the lower end of the chamber around the fire pot, and also having a chamber above the fire pot, in communication with the smoke pipe, the circular chamber or interspace exterior to the chamber surrounding the fire pot, a circular series of pipes passing vertically through the latter chamber, and connecting the base chamber with the said upper chamber, and a circular series of pipes having flared lower ends passing through the first named series of pipes and opening above and below the stove respectively, as set forth.

4. The improved stove, comprising the base chamber, having an ash chamber, the fire pot H, having the grate therein, and the perforated plate I, at the upper end of said pot, and also having the chamber A, surrounding the pot, and leading into the base chamber, the chamber K, above the fire chamber, and the upper chamber P, having the tube L, and the damper therein, the circular series of pipes passing through the chamber or interspace *a*, and connecting the base chamber with the chamber P, and indirectly connecting the latter chamber with the fire pot, and the pipes R, passing through the pipes S, and extending from above the stove to beneath the base chamber, and terminating in flaring portions, substantially as specified.

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**505,773. RAILROAD-TICKET-HOLDER.** ABRAM M. LAWRENCE, Newark, N. J. Filed Mar. 20, 1893. Serial No. 466,910. (No model.)



*Claim.*—1. In a railroad ticket-holder, a casing having its front-plate provided with a plurality of slots and sight openings adjacent to the slots, back plates arranged contiguous to the front-plate, an endless apron bearing the names of the different stations, and a sprocket chain located in rear of the said slots and carrying pins designed to remove the tickets placed in said slots.

2. In a rail-road ticket-holder, a casing having its front-plate provided with a plurality of slots and sight-openings adjacent to the slots, back-plates arranged contiguous to the front-plate, an endless apron bearing the names of the different stations, a sprocket-chain located in rear of the said slots and carrying pins designed to remove the tickets placed in the said slots, and mechanism for imparting independent motion to the chain and to the apron

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**505,774. MACHINE FOR SHARPENING GIN-SAWS.** JEFFERSON Y. LYLE, Chattanooga, Tenn., assignor of one-half to F. F. Smith, Samuel L. Boddy, and David H. Bloom, same place. Filed Sept. 19, 1892. Serial No. 446,263. (No model.)

*Claim.*—1. The combination with the bed plate $B^1$ having the guide plate $B^2$ provided with the transverse curved slot $b^2$ at its front or inner end, of the file holder section D having its outer end pivotally hinged to the bed plate and provided at its front end with screw shank $D^6$ having adjusting nuts, and adapted to project through the curved guide slot in the plate $B^2$ substantially as and for the purpose set forth.

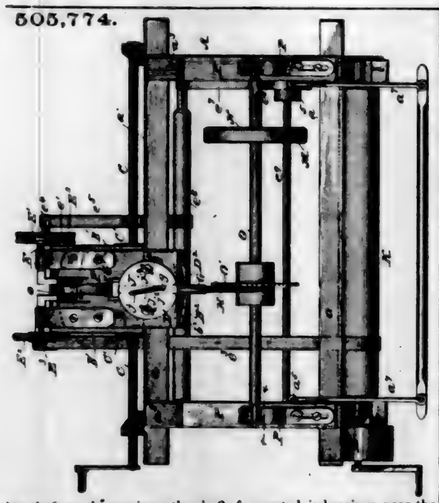
2. The combination with the file socket G having the projecting lug *g*, of the seat D' and its cap plate J provided with a central longitudinal slot to receive the lug *g* of the file socket, and with the curved slots $j^3$ at its sides to receive the set screws, and the set screws J' substantially as and for the purpose described.

3. The beams P' movably secured to the ends of the main frame by means of the slot and tenons and adapted to slide backward and forward thereon, the saw shaft adapted to receive one or more saws, journaled in adjustable bearings on the beams P' and the shifting lever or bail $A^7$ having its ends pivoted in the opposite end timbers of the main frame and fulcrumed in projecting staples of the beams P' all combined and arranged substantially as and for the purpose set forth.

4. In a gin saw filing machine the combination of the main frame, the movable carriage mounted on the main frame carrying the saw filing mechanism, the driving shaft journaled in bearings on the carriage and connected by a belt with a crank shaft also journaled in bearings upon the carriage, said crank shaft being adapted to actuate the saw filing mechanism, the main driving drum mounted on the main frame, the belt connecting the main driving drum with the driving shaft on the carriage, the shaft $c^6$ mounted in bearings near the bottom of the main frame and connected by a belt with the driving shaft on the carriage, the shaft $c^7$ provided with a stepped pulley also mounted on the main frame near its bottom, and connected with the shaft $c^6$ by a belt, and the saw shaft journaled in bearings on the movable beams P' at the top of the main frame and connected by a belt with the stepped pulley shaft $c^7$ all combined and arranged substantially as and for the purpose described.

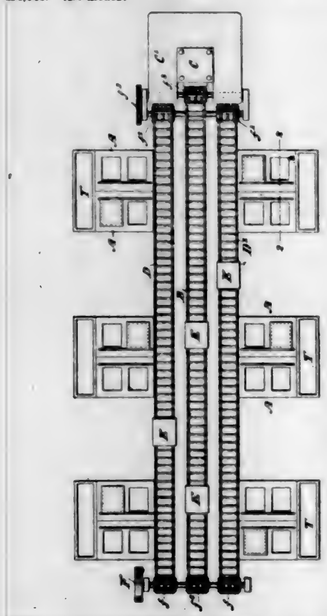


**505,774.**



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**505,775. APPARATUS FOR MOLDING AND PRESSING CARBONS.** LOUIS B. MARKS, New York, N. Y., assignor to the Washington Carbon Company, Washington, Pa. Filed Oct. 26, 1892. Serial No. 450,015. (No model.)

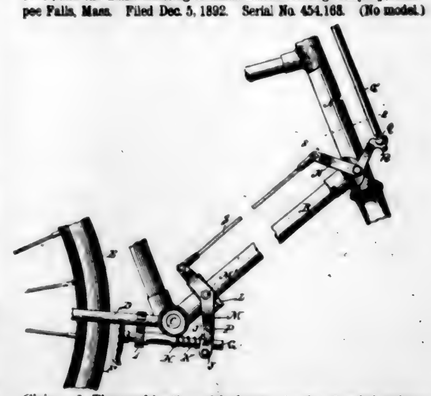


*Claim.*—1. In an apparatus for molding carbons a bench provided with a series of openings, a plurality of molds adapted to cover the openings, a receptacle for the carbon mixture accessible to each operator manipulating the respective molds, and one or more gas or vapor burners beneath each opening, whereby each operator may manipulate his mold while the same is being heated.

2. In an apparatus for molding carbons a bench provided with a series of openings in front of the several operators, a plurality of molds adapted to cover the openings, a receptacle for the carbon mixture, one or more gas or vapor burners beneath each opening, and a projecting rib upon the surface of each bench for determining the position of the mold with reference to the opening, as set forth.

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**505,776. CYCLE-BRAKE CONSTRUCTION.** ALBERT PERKINS, Chicopee, Mass., assignor to the A. G. Spalding & Brothers, New York, N. Y., and the Lamb Knitting Machine Manufacturing Company, Chicopee Falls, Mass. Filed Dec. 5, 1892. Serial No. 454,163. (No model.)



*Claim.*—1. The combination with the steering head and the plunger having the terminal ball, of the divided bell crank lever having its branches pivoted upon opposite sides of the head and brought together in front and rear of the head to form two lever arms in the plane of the frame, each of said branches at its forward end being stamped into the form of a half cup to receive the ball upon the plunger.

2. The combination with a frame, a rear wheel brake shoe supported therefrom and a plunger rod near the steering head, of a bell-crank lever having one arm in engagement with said plunger rod, an adjustable clip clamped to the lower member of said frame near the crank shaft, a lever centrally pivoted upon said clip and having one arm in engagement with shoe carrying devices, and a rod connecting the remaining arm of said lever with the remaining arm of said bell-crank lever.

3. The combination with the frame, of the two frame-embracing levers centrally pivoted, respectively, upon the steering head and the lower frame-member and having their ends all in the central plane of the machine, the plunger rod having a terminal ball embraced by the parts of the front lever, a rod connecting the rear arm of the front lever to the forward arm of the other lever, and a rear wheel brake shoe arranged to be operated by the remaining arm of the lever last named.

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**505,777. ROTARY-DISK PLOW.** LAFAYETTE D. RAILSBACK, Indianapolis, Ind. Filed Aug. 19, 1893. Serial No. 483,558. (No model.)

*Claim.*—1. In a rotary disk plow, or beam on which the plow disks are carried pivoted to the plow frame, a hand lever pivoted to such frame and provided at its lower end with a bracing heel adapted to bear on and hold down the beam, and means of holding such bracing heel down on such beam, substantially as shown and described.

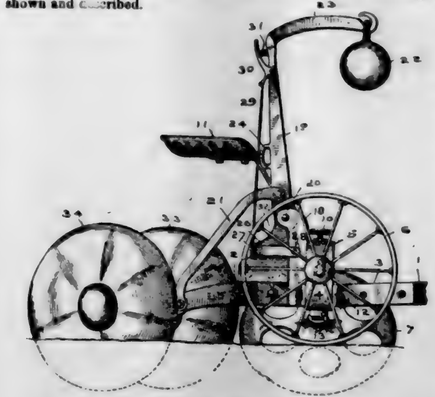
2. In a rotary disk plow, a beam on which the plow disks are carried pivoted to the plow frame, a hand lever pivoted to such frame and provided at its lower end with a bracing heel adapted to bear on and hold down the beam, and a stirrup pivoted to the frame and so embracing the heel of the lever as to hold it down, substantially as shown and described.

3. In a rotary disk plow, a beam on which the plow disks are carried pivoted to the plow frame, a hand lever pivoted to such frame and provided at its lower end with a bracing heel adapted to bear on and hold down the beam, a stirrup pivoted to the frame and so embracing the heel of the lever as to hold it down, and means of withdrawing the stirrup out of engagement with such bracing heel, substantially as shown and described.

4. In a rotary disk plow, a beam on which the plow disks are carried pivoted to the plow frame, a hand lever pivoted to such frame and provided at its lower end with a bracing heel adapted to bear

on and hold down the beam, a brace extending from such hand lever to the beam, and means of locking such hand lever in place so that it will hold down the beam, substantially as shown and described.

5. A rotary disk plow comprising a carriage, a plow frame connected therewith, a beam pivoted to such frame, dish shaped disks mounted to such beam, a hand lever pivoted to the frame provided with a heel adapted to bear down on the beam, and means of holding the heel of such hand lever down on such beam, substantially as shown and described.



6. A rotary disk plow comprising a carriage, a plow frame connected therewith, a beam pivoted to such frame, dish shaped disks mounted to such beam, a hand lever pivoted to the frame provided with a heel adapted to bear down on the beam, a brace extending from such lever to the beam, and means of holding such lever in a fixed position when desired, substantially as shown and described.

7. A rotary disk plow comprising a carriage, a plow frame connected therewith, a beam pivoted to such frame, dish shaped disks mounted to such beam, a hand lever pivoted to the frame provided with a heel adapted to bear down on the beam, a weight attached to the outer end of such hand lever, a pivoted brace extending from such lever to such beam, a stirrup pivoted to such frame and embracing the heel of such lever, and means of throwing such stirrup into or out of engagement with the heel of such lever, substantially as shown and described.

8. In a rotary disk plow, an axle supported on wheels and provided with vertical jaws, a frame to which the plow beam is secured fitting between such jaws, and a screw king bolt coupling such frame to the axle, substantially as shown and described.

9. In a rotary disk plow, an axle supported on wheels and provided with vertical jaws, a frame to which the plow beam is secured fitting between the jaws and provided with bracing flanges on each side of such jaws, and a screw king bolt coupling such frame and axle together, substantially as shown and described.

10. A rotary disk plow comprising an axle provided with vertical jaws, a land wheel and a staggered furrow wheel mounted on such axle, a beam, plow disks mounted on such beam, a frame to which the beam is secured fitting between the jaws on the axle and provided with bracing flanges on each side of such jaws, and a screw king bolt coupling such frame and axle and provided with means of turning such screw bolt, substantially as shown and described.

11. A rotary disk plow comprising a land wheel and a furrow wheel, an axle connecting them whose ends are provided with an angular recess and a slot in the wall of such recess, spindles with angular ends adapted to fit in the recess in the axle tree, bolts extending through such spindle and slot in the axle tree, a plow frame secured to such axle, a beam pivoted to the frame, and plow disks mounted on the outer end of such beam, substantially as shown and described.

12. In a rotary disk plow, a beam provided with a recess and also transverse slots, a boxing for the disk axle adapted to fit in such recess, and bolts extending through such boxing and slots whereby the boxing may be adjusted laterally, substantially as shown and described.

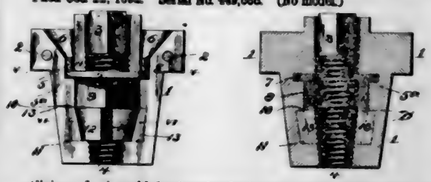
13. In a rotary disk plow, a beam provided with a recess and also transverse slots, a boxing for the disk axle smaller than such recess, and bolts extending through such boxing and slots whereby the boxing can be adjusted laterally or horizontally, substantially as shown and described.

14. In a rotary disk plow, a beam so curved that the bearings of the plow disks will be in line with the draft, and provided at its outer end with transverse slots and recesses substantially as shown, boxings for the disk axle adapted to fit loosely in such seats, and bolts extending through such boxings and slots whereby the boxings may be adjusted laterally and horizontally, substantially as shown and described.

15. A rotary disk plow comprising a furrow and land wheel, a longitudinally adjustable axle connecting them, a plow frame so coupled with such axle that it can be vertically adjusted, a beam pivoted to the plow frame and so curved that the bearings of the plow disks will be in line with the draft, disks mounted in boxings in such beam, the boxings so secured to such beam that they may be vertically and horizontally adjustable, a hand lever pivoted to the plow frame, a brace extending from the lever to the beam and adapted to hold the beam down when the lever is vertical, means of locking the lever in a vertical position, and a weight attached to the outer end of the hand lever of such size as to counterbalance the weight of the plow disks when they are raised, substantially as shown and described

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**505,778.** MOLD FOR CASTING LOCK-NUTS. ALBION M. ROUSE, Boulder, assignor to the Boss-Grip Lock-Nut Company, Denver, Colo. Filed Oct. 22, 1892. Serial No. 449,586. (No model.)

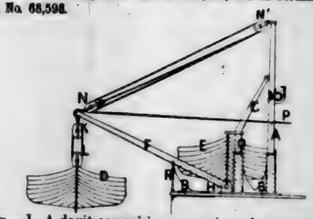


*Claim.*—1. A mold for forming lock nuts, made in two parts, and having a chamber 5ª for forming a flange on the nut, a chamber 8 for forming the body of the nut, a chamber 10 for forming the conical portion of the nut, and wings 13 for forming openings in the conical portion of the nut, in combination with a threaded core having a tapering portion, substantially as and for the purpose set forth.

2. A mold for casting lock nuts, made in two parts, and formed with metal openings 5 in the top, the enlarged recesses 6 leading to the metal openings, the chambers 5ª, 8, and 10 located successively beneath the mold openings, and the wings 13 located in the chamber 10, in combination with a suitably threaded core, substantially as set forth.

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**505,779.** DAVIT FOR PUTTING OUT OR TAKING IN SHIPS' BOATS. JAMES SAMPLE, Wallsend, England. Filed June 3, 1892. Serial No. 435,465. (No model.) Patented in England Mar. 3, 1892, No. 4,222; in France May 24, 1892, No. 221,862, and in Germany May 25, 1892, No. 68,598.



*Claim.*—1. A davit comprising arms pivoted at a point inside of the edge of the deck about equal to one-half of the width of the boat to be raised, the free ends of said arms bent inward, stanchions inside of the pivotal point of said arms about one-half the width of the boat, a lashing spar connecting the said stanchions, and an operating mechanism, substantially as shown and described.

2. A davit comprising swinging arms having their free ends bent toward each other, stanchions placed a suitable distance inside of said arms, stays C at the outer side of the stanchions for bracing said stanchions, and a block and tackle mechanism connecting the ends of the arms and the stanchions, substantially as specified.

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**505,780.** FLASH-LAMP. BURDEN SMITH, Macon, Ga., assignor to the E. & H. T. Anthony & Company, New York, N. Y. Filed June 27, 1893. Serial No. 478,961. (No model.)

*Claim.*—1. The combination in a flash lamp of a spring, a receptacle for the powder supported on a spring, a trigger to maintain the spring under tension, and a lamp, substantially as set forth

2. The combination in a flash lamp of a spring, a receptacle for powder, supported upon the spring, a trigger to hold the spring under tension, a ring placed adjacent to the spring, adapted to be used as a lamp, the parts being arranged in such manner that the powder is thrown by the spring through the ring, substantially as set forth.

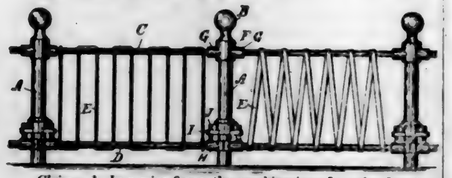
3. The combination in a flash lamp of a spring, a receptacle for the powder, supported upon the spring, a trigger to hold the spring under tension, a pivoted or hinged ring placed adjacent to the spring, adapted to be used as a lamp, and to be swung away from the magnesium powder, substantially as set forth.



4. The combination in a flash lamp, of a frame having a clip or clamping device on one side, a spring on the other side and a ring-shaped lamp at or near one end, the free end of the spring being practically coincident with the center of the ring, substantially as set forth.

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**505,781.** WIRE FENCE. EDWARD A. VANCE, Indianapolis, Ind., assignor of one-half to Edward P. Vance, same place. Filed June 16, 1893. Serial No. 477,803. (No model.)

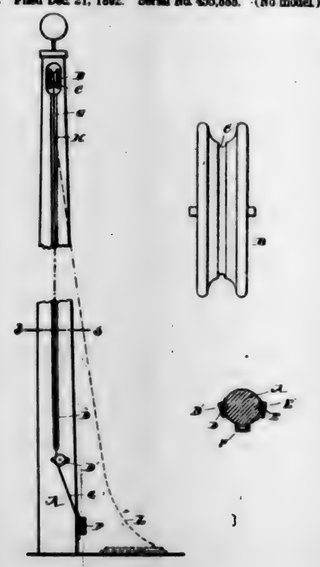


*Claim.*—1. In a wire fence, the combination of a pair of posts, a pair of rails extending horizontally from post to post, one of said rails being rigidly secured to the posts and the other rail being mounted between the posts so as to be movable vertically thereon, a wire or ribbon extending between and connecting said rails so as to form a series of palings, and means for adjustably securing said movable rail in position and thereby tightening the wire substantially as set forth.

2. In a wire fence, the combination of a pair of posts, a pair of caps each having a socket adapted to receive the top of the post and having also a laterally projecting socket adapted to receive the end of the top rail, the top rail mounted in said sockets, the bottom rail adapted at the ends to embrace the posts and to slide vertically thereon, the wire connecting said rails, and means for adjustably securing said bottom rail in position on the posts, whereby the wire is tightened and the caps and the top rail are secured to the posts substantially as set forth.

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**505,782.** DEVICE FOR REEVING HALYARDS. SAMUEL A. L. WATERS, New York, N. Y., assignor of one-half to Overton R. Miles, same place. Filed Dec. 21, 1892. Serial No. 455,888. (No model.)

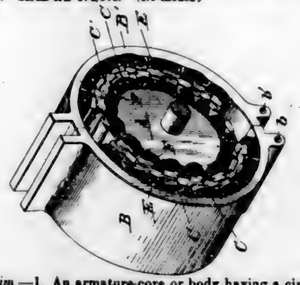


*Claim.*—1. Means for reeving halyards on a staff, which consist of a halyard sheave journaled in the staff, said sheave having a main groove and a lesser groove in the bottom of the main groove, and an endless line running up and down said staff and lying in said lesser groove, substantially as herein described.

2. Means for reeving halyards on a staff, which consist of a halyard sheave journaled in the staff, channels formed in the opposite sides of said staff, a block on the foot of said staff, and an endless line running through said halyard-sheave, channels and said block, substantially as described.

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**505,783.** ELECTRIC MOTOR. RALPH ASHLEY, Philadelphia, Pa., assignor of one-half to Charles W. Kennedy, same place. Filed May 20, 1893. Serial No. 474,670. (No model.)



*Claim.*—1. An armature-core or body having a circumferential series of parallel equi-distant L-shaped ribs or teeth, notched or recessed on opposite sides of the lateral overhang forming the head of the tooth; substantially as set forth.

2. The combination with an armature-core having radially projecting equi-distant L-shaped teeth, of separate and separately removable coils of insulated wire fitting over the shank or radial body of the tooth and held in place by the lateral overhang of the same; substantially as set forth.

3. The combination, in an electric motor, of an armature-core having radially projecting equi-distant L shaped notched teeth, the separate and separately removable coils of insulated wire placed upon said teeth below the lateral overhang, and the removable slides fitting into registering longitudinal notches or recesses in adjacent teeth; substantially as and for the purpose set forth.

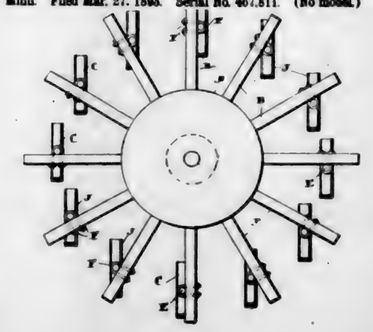
4. In an electric motor, the combination with the extended polar-pieces or pole-faces formed by L-shaped parallel and equi-distant ribs, of the removable wire-coils F formed separately from said teeth and held in place by the overhang thereof; substantially as and for the purpose set forth.

5. In an electric motor, the combination with the extended polar-pieces or pole-faces formed by L-shaped parallel and equi-distant notched teeth or ribs, of the removable wire coils F and the removable slides E; substantially as and for the purpose set forth

6. The combination, in an electric motor, with the armature provided with radial notched and equi-distant L-shaped ribs or teeth, separate and separately removable armature-wire coils, and the slides for retaining said coils in place, of the field polar-pieces terminating in L-shaped ribs or teeth provided with separate and separately removable coils of field-wire; substantially as and for the purpose set forth.

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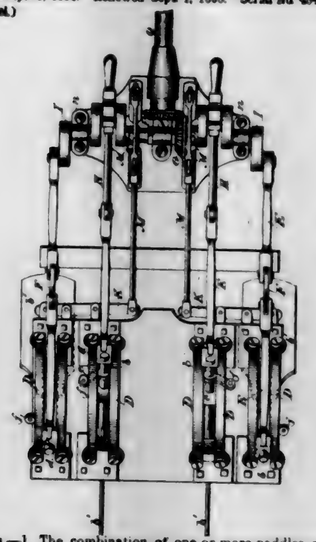
**505,784.** PADDLE-WHEEL. ELON G. BAILEY, Redwood Falls, Minn. Filed Mar. 27, 1893. Serial No. 467,811. (No model.)



*Claim.*—1. The combination of a wheel, a rod fixed thereon, a paddle formed of two longitudinal sections grooved on their adjacent edges through which the said rod extends, the paddle being recessed upon it ends and between its ends, and bearings inserted in the said recesses which encircle the said rod, substantially as shown and described.

2. The combination of a wheel, a rod carried thereby, a paddle formed of two longitudinal sections which are grooved on the adjacent edges through which the said rod extends, bearings carried by the said paddle, which encircle the said rod, and transverse straps for holding the paddle sections and the bearings in place, substantially as shown and described.

## 505,785. PROPELLING APPARATUS FOR VESSELS. LOUIS BEYER, Washington, D. C., assignor of one-half to Mathew Ruppert, same place. Filed Apr. 1, 1891. Renewed Sept. 1, 1893. Serial No. 484,592. (No model.)



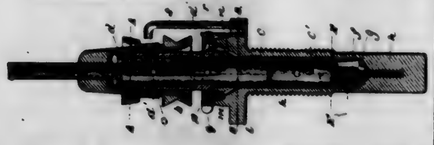
*Claim.*—1. The combination of one or more paddles, arranged to receive a quarter turn by means of arched segments arranged over the upper parts *b* of the paddles B, and friction rollers on cranks secured to the upper ends of the paddles, and with mechanism as shown for operating said paddles in pairs or singly, as shown and set forth.

2. The combination of one or more pivoted paddles, the double segments arranged over the upper part *b* of the paddles B and the friction rollers, with pitmen connected to vertically pivoted levers F, and by piston rods or intermediate mechanism direct to the engine, as set forth.

3. The combination of arched segments arranged over the upper parts *b* of the paddles B, provided with cranks carrying friction rollers, and mechanism to operate said paddles in the manner shown and for the purpose specified.

4. The propelling mechanism herein described, consisting of one or more paddles B, having cranks *c* with friction rollers *f*, moving against the segments D, arranged over the upper part *b* of the paddles B, and operated by blocks *d* to which the pitmen E are connected and to the vertically pivoted levers F, actuated by any motive power, in combination with reversing mechanism, all constructed and arranged as specified.

## 505,786. BEARING FOR SPINDLES. WALTER A. CHANDLER, Lowell, assignor to George Draper & Sons, Hopedale, Mass. Filed Feb 14, 1893. Serial No. 462,335. (No model.)



*Claim.*—1. The combination of the bolster casing A having the oil chamber *i*, the flange *l* and the head *m*, the adjustable step having the square head *f* and the screw-threaded stem *g*, mounted in a screw-threaded bore of said casing *h* at the bottom of its oil chamber, the bolster *c* having at its bottom the opening *e*, engaging the head *f* of said step, the bolster-support consisting of the sleeve *o* attached to the bolster and the flange *p*, resting upon the head *m* of the casing *h* and the spindle *a*, resting upon the head *f* of said step, substantially as specified.

2. The combination of the bolster casing *h*, having the oil chamber *i*, the flange *l* and the head *m*, the adjustable step having the square head *f* and the screw-threaded stem *g*, mounted in a screw-threaded bore of said casing *h* at the bottom of its oil chamber, the bolster *c* having at its bottom the opening *e* engaging the head *f* of said step, the bolster-support consisting of the sleeve *o* attached to the bolster and the flange *p* resting upon the head *m* of the casing *h* and having the peripheral slots or notches *q*, the locking pin *r* extending from the flange *l* and engageable with the slots or notches *q* and the spindle *a* resting within said bolster upon the head *f* of said step, substantially as specified.

3. The combination of the bolster casing *h* having the oil chamber *i*, the flange *l* and the head *m*, the adjustable step having the square head *f* and the screw-threaded stem *g*, mounted in a screw-threaded bore of said casing *h* at the bottom of its oil chamber, the bolster *c* having at its bottom the opening *e* engaging the head *f* of said step and also having the oil ducts *d d*, the bolster-support consisting of the sleeve *o* attached at its base to the bolster and extending upward beyond the top of the bolster and the flange *p* having the peripheral slots or notches *q* and resting on the head *m* of the casing *h*, the locking pin *r* extending from the flange *l* and engageable with the slots or notches *q* and the spindle *a* resting within said bolster upon the head *f* of said step, substantially as described.

4. The combination of a spindle, a bolster bearing having a flanged portion, a supporting tube to furnish a lateral support for the bolster beneath the flange and means for locking the flange and supporting tube to prevent rotation of the bolster, said means consisting of notches and projections engaging each other, substantially as described.

5. The combination of a spindle having a whirl, a bolster having a notched flanged portion at a point below the whirl, a supporting tube furnishing lateral support for the bolster beneath the flange and locking mechanism attached to said supporting tube and engaging the notches on said flange, substantially as described.

## 505,787. SLATE-CLEANER. ELI FIELDEN, Britannia, near Bacup, assignor to Edward Turner Whitelow, Manchester, England. Filed May 1, 1893. Serial No. 472,530. (No model.)




*Claim.*—A cleaner for slates and writing tablets provided with a water receptacle, a mop at one end thereof and a perforated diaphragm and raised water retaining jacket at the other, substantially as set forth.

## 505,788. INGRAIN CARPET FABRIC. HARRY HARDWICK, Thompsonville, Conn. Filed May 21, 1891. Serial No. 393,555. (Specimens.)

*Claim.*—1. An ingrain carpet fabric consisting of figuring warp threads and figuring weft threads, the warp threads being arranged in sets of four in a set and the weft threads being arranged in sets of six or more in a set, two or more of the weft threads of a set at one side of the fabric being interwoven with the warp threads to form one face of the fabric, and two or more of the remaining weft threads of the set at the other side of the fabric being interwoven with the warp threads to form the other face of the fabric, the two faces being knit together into a solid and homogeneous fabric, substantially as set forth.

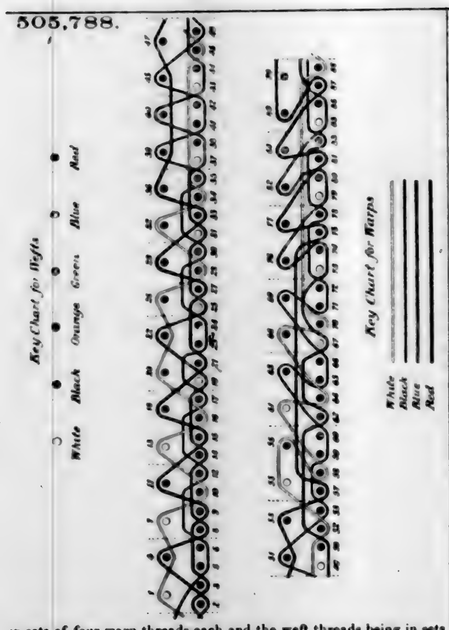
2. An ingrain carpet fabric composed of warp threads and figuring weft threads, the warp threads being in sets of four warp threads each, and the weft threads being in sets of six weft threads each, the upper and lower faces of the fabric being bound together by the warp threads into a substantially solid and homogeneous fabric, all substantially as set forth.

3. An ingrain carpet fabric composed of warp threads and figuring weft threads and having two weft planes and having the weft threads arranged in sets of six weft threads each, one plane of the weft threads containing two weft threads of a set and the other plane containing the remaining four weft threads thereof, all substantially as set forth.

4. An ingrain carpet fabric composed of warp threads and figuring weft threads, and having two weft planes, the warp threads being

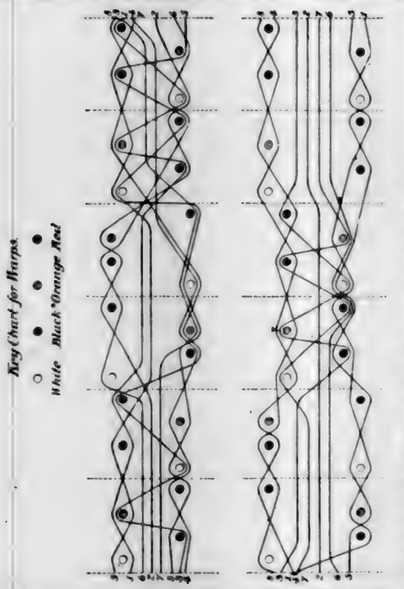


## 505,788.




in sets of four warp threads each and the weft threads being in sets of six weft threads each, one plane of the weft threads containing two weft threads of a set and the other plane containing the remaining four weft threads thereof, and each of the warp threads binding one weft thread in one plane and two weft threads in the other plane, all substantially as specified.

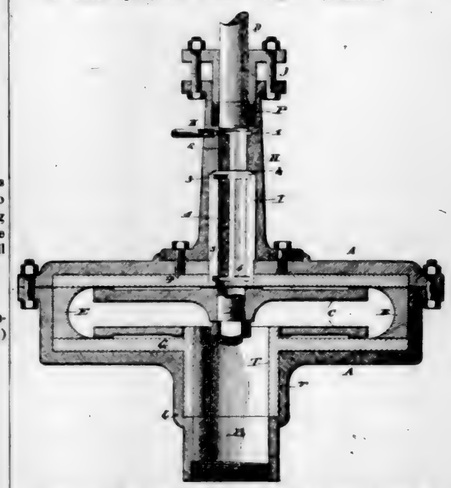
## 505,789. INGRAIN CARPET FABRIC. HARRY HARDWICK, Thompsonville, Conn. Filed May 21, 1891. Serial No. 393,556. (Specimens.)




*Claim.*—1. An ingrain carpet fabric consisting of figuring weft threads and figuring warp threads, the warps being arranged in sets having a less number of threads in a set than the weft threads, said fabric having some of the weft threads of each set interwoven with some of the warp threads at one side of the fabric to form one face of the fabric, some of the remaining weft threads of each set being interwoven with the remaining warp threads to form the other face of the fabric, the fabric being in some parts a solid and homogeneous fabric tied together by some of the weft threads in each set of weft threads in such homogeneous part of the fabric, and the fabric being in other parts an open or bag-weave fabric having one or more weft threads floating between the faces in such bag-weave portions, substantially as and for the purpose set forth.

2. An ingrain carpet fabric consisting of figuring weft threads arranged in sets of eight in a set and figuring warp threads arranged in sets of four in a set, some of the weft threads of each set being interwoven with two of the warp threads of each set to form one face of the fabric, some of the remaining weft threads of each set being interwoven with the two remaining warp threads of a set to form the other face of the fabric, the fabric being in some parts a solid and homogeneous fabric tied together by some of the weft threads in each set of weft threads in such homogeneous part of the fabric, and the fabric being in other parts an open or bag weave fabric having one or more weft threads floating between the faces in such bag-weave portions, substantially as and for the purpose set forth.

## 505,790. CENTRIFUGAL PUMP. ELI J. HAWLEY, Manchester, Vt. Filed July 29, 1892. Serial No. 441,560. (No model.)

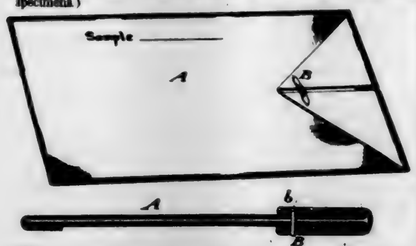


*Claim.*—1. In a centrifugal pump having a hollow piston, the combination, with a casing having a removable cap-plate and a recessed inlet extension, of an annular lining surrounding the periphery of the piston, and two lining-plates, one on each side of the annular lining, one of said plates having an integral tubular extension, said tubular extension projecting from each side of the plate, its inner end reaching within the piston and its outer end adapted to fit within the recess in the inlet-extension, the several parts of the lining being held rigidly in place by the cap-plate.

2. In a centrifugal pump, the combination, with the casing provided with a removable lining, and a journal removably secured to the casing and having an interior shoulder, of a sectional bearing having an exterior shoulder adapted to bear on the outer side of the casing, the inner end of said bearing passing through the casing and through the side-lining plate, while the outer end abuts against the shoulder in the journal.

3. In a centrifugal pump, the combination, with the casing provided with a removable lining, a journal removably secured to the casing and having an interior shoulder, an interior annular groove, and a longitudinal channel connecting with said groove and extending to the shoulder, and a water-supply pipe tapped into the journal to connect with the groove therein, of a sectional bearing having an exterior shoulder adapted to bear on the outer side of the casing, an interior annular groove in its outer end, a similar annular groove near its inner end, and a longitudinal channel connecting said grooves, the inner end of said bearing passing through the casing and through the side-lining plate, while the outer end abuts against the shoulder in the journal.

**505,791. ENVELOPE FOR SAMPLE-BAGS.** JACOB H HEIMER, Minneapolis, Minn. Filed May 11, 1893. Serial No. 473,629. (No specimens.)



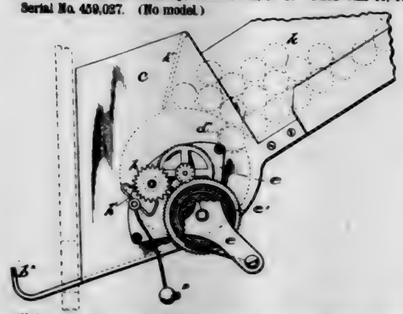

*Claim.*—An export sample envelope folding to form a square closure over the mouth and then diagonally to form a flap on each side, both flaps and the body of envelope being secured together by a fastener passing through them all as shown and described.

**505,792. VALVE.** EDWIN C. HENN, Bloomfield, assignor to The Standard Manufacturing Company, Hartford, Conn. Filed June 27, 1892. Serial No. 438,224. (No model.)




*Claim.*—A valve consisting of a body having pipe and cap ends, a disk chamber and seat, with two ears projecting from the side walls of the body into the disk chamber, a narrow bridge extending across the chamber, with its ends resting upon the ears, small guiding and holding pins projecting from one part into the other to temporarily secure the ends of the bridge to the ears, an arm pivoted to the bridge, a disk secured to the arm, and a cap held upon the cap end, substantially as specified.

**505,793. VENDING-MACHINE.** JAMES M. HENRY, Evans' Mills, assignor to Archie J. Henry, Watertown, N. Y. Filed Jan. 19, 1893. Serial No. 459,027. (No model.)




*Claim.*—1. In a coin vending machine, the combination with the rotating delivery cylinder, of a motor, provided with an escapement, to simultaneously rotate and vibrate the cylinder.

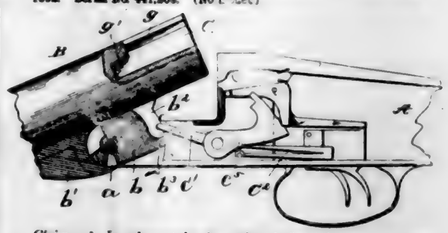
2. In a coin vending machine, the combination with the rotating delivery cylinder, of a motor, and an escapement wheel actuated thereby and provided with a counter-balanced pawl, to rotate and vibrate the cylinder simultaneously.

3. In a coin vending machine, a longitudinally grooved delivery cylinder, in combination with a motor provided with an escapement to vibrate the cylinder while rotating and means to release the motor by the insertion of the coin into the coin chute.

4. In a coin vending machine, a longitudinally grooved rotating cylinder, a motor actuating it, and means to intermittently break the continuity of such rotation, in combination with a battery, an electro-magnet, contact fingers normally out of circuit therewith, and a coin chute into which the fingers project and with which the coin engages to complete the circuit.

5. In a coin vending machine a delivery cylinder and means to rotate it intermittently and to simultaneously vibrate it, in combination

**505,794. BREAKDOWN GUN.** FRANK A. HOLLENBECK, Batavia, assignor to the Syracuse Arms Company, Syracuse, N. Y. Filed July 25, 1892. Serial No. 441,209. (No model.)




*Claim.*—1. In a breech-loading "break-down" gun, a hammer, a cocking lever connected therewith and operated by the barrel lug, and a cam device throwing the lug and cocking lever into operative connection in the act of assembling the parts, substantially as described.

2. In a fire arm the combination with the barrel, provided with a cocking shoulder, of a hammer provided with a forwardly extending cocking arm movable longitudinally and having a cam face adapted to be engaged by said shoulder, substantially as described.

3. In a fire arm the combination with the barrel, having a cocking shoulder, of a hammer mounted on a support, one of said parts being slotted and the other being provided with a part engaging said slot, said hammer having a portion provided with a cam face adapted to be engaged by the cocking shoulder of the barrel, substantially as described.

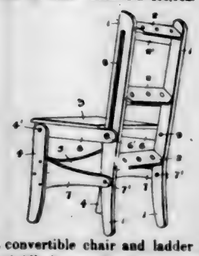
4. In a fire arm the combination with the barrel having cocking shoulders, of the hammers provided with slotted portions engaging their supporting bolt, springs engaging said hammers and holding them in fixed relation with said bolt, said hammers having parts provided with cam faces adapted to be engaged by said cocking shoulders substantially as described.

5. In a fire arm the combination with the barrel having a cocking shoulder, of the hammer provided with a slotted portion engaging its supporting bolt, the main spring engaging a cam face on said hammer and holding it normally in fixed relation with said bolt and a cocking arm connected with said hammer and having a cam face for engaging the said shoulder, substantially as described.

6. In a fire arm a cocking arm moving with a hammer in both directions in combination with a sear for retaining the hammer in cocked position and a sear notch in position to be engaged by the sear when the barrel or barrels are in position to be removed and thereby retain the cocking lever in position to permit the removal and return of the barrel or barrels, substantially as described.

7. In a breech loading fire arm, the combination with the barrels provided with the slot having grooves and a recess as described of the locking extension adapted to engage said slot having portions to fit said grooves and recess, and the retaining device, substantially as described

**505,795. CONVERTIBLE CHAIR AND STEP-LADDER.** OSCAR S. JENNINGS, Danby, N. Y., assignor of one-half to John E. Beers, same place. Filed Mar. 20, 1893. Serial No. 466,902. (No model.)




*Claim.*—In a convertible chair and ladder the main grooved posts 1 connected rigidly by cross bars in combination with the rails 6 having attached thereto seat 3, the bars 7 and posts 4 said bars being pivotally connected to the posts 1 and rigidly to the posts 4 and the rails 6 having pivots movable in the grooves of the posts 1, substantially as set forth.

**505,796. STREET-SWEEPER.** JOHN C. SLAWSON, Indianapolis, Ind. Filed May 31, 1892. Serial No. 434,958. (No model.)

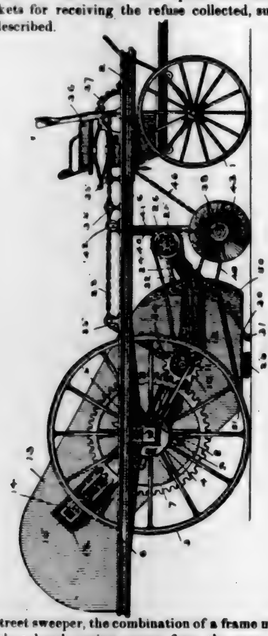
*Claim.*—1. In a street sweeper, sweeping and elevating mechanism consisting of a series of brushes with flexible aprons between such



brushes and secured to them only, substantially as shown and described.

2. In a street sweeping machine, the combination of a brush casing swung from an axle thereof, a main shaft in the lower part and a countershaft in the rear end of such casing, a series of sweeping and elevating brushes operated in such casing, about such shafts, and flexible aprons detachably secured between such brushes to form pockets, whereby the refuse is swept, elevated and discharged at the rear of the machine, substantially as shown and described.

3. In a street sweeping machine, a brush casing, an endless chain carried on sprockets mounted on shafts having bearings in the walls of the same, removable brushes fitting in sockets formed on the links of such chains, with detachable flexible aprons between such brushes forming pockets for receiving the refuse collected, substantially as shown and described.



4. In a street sweeper, the combination of a frame mounted upon suitable wheels, a brush casing swung from the rear axle thereof, brushes carried upon chains connecting sprocket wheels mounted on countershafts having bearings in such casing and operated through the rear wheels, flexible aprons between such brushes, and an apron formed on the front wall of the casing composed of sections hinged together and automatically movable toward and from the brushes as the latter revolve, substantially as shown and described.

5. In a street sweeping machine, a brush casing supported from the rear axle thereof, shafts having bearings in the walls of such casing, sprocket wheels mounted thereon, chains connecting such wheels and carrying detachable brushes, flexible aprons of any suitable material between such brushes forming pockets for elevating the material swept up, in combination with an apron composed of sections forming the front wall of the casing, and connected to eccentrics or similar mechanism, whereby the apron is oscillated or moved toward and from the brushes, and in front of the same, substantially as shown and described.

6. In a street sweeping machine, a framework supported upon wheels the rear ones being loose on their axle, gear wheels rigidly mounted on such axles and adapted to be thrown into connection with the main wheels, an inclosing casing swung from the rear axle of the machine, its forward end adjustably supported, a shaft passing through such casing, and having bearings in the walls of the same carrying on its ends gear wheels adapted to engage with the larger ones mounted on the rear axle of the machine, a countershaft having bearings in the upper end of the casing, and carrying thereon sprocket wheels connected by suitable chains with larger sprocket wheels carried on the lower shaft, removable brushes with pockets formed between secured to such chains, and an apron forming a front wall of the casing and adapted to oscillate backward and forward in front of the brushes within such casing, substantially as shown and described.

7. In a street sweeper, the combination of the main sweeping mechanism, with extension brushes having pivoted bearings and buffers to take up lateral jar, such brushes adapted to sweep the refuse from the sides of the machine in front of the main sweeping brushes, and with suitable mechanism to elevate and lower the main sweeping brushes and the extension brushes simultaneously, substantially as shown and described.

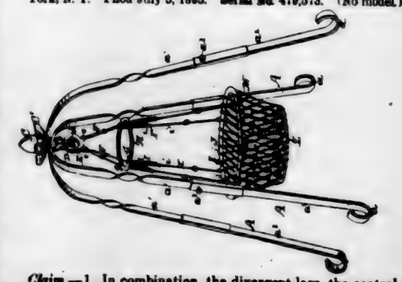
8. In a street sweeper, the combination of a brush casing swung from the rear axle thereof and carrying therein suitable sweeping and elevating brushes with flexible aprons between such brushes, an oscillating apron forming the front wall of the casing and adapted to oscillate in front of the brushes revolving within such casing, and an extension brush supported in front of and to one side of such oscillating apron and adapted to be operated simultaneously with such apron and the main brushes, or independently, substantially as shown and described.

9. In a street sweeper, the combination of a framework, a brush casing swung from the rear axle of the sweeper, suitable sweeping and elevating brushes operated within such casing by the movement of the rear wheels of the sweeper, an oscillating apron forming the front wall of such casing adapted to move backward and forward in front of such brushes, such apron formed in sections and provided with an adjustable extension at its lower end, a roller carried on the lower end of such adjustable extension, and an extension brush supported at one end in pivoted boxings and at the other end swung from the framework in front of and to one side of such brush casing, mechanism for operating such extension brush simultaneously with the elevating brushes, or independently, and mechanism for raising and lowering the extension and the main brush casing simultaneously, or independently, substantially as shown and described

10. In a street sweeping machine, a framework supported upon wheels, the rear ones being loose on their axles, an inclosing casing swung from such axle, suitable shafts having bearings in the walls of such casing, the lower one having gear wheels on its ends adapted to engage with and be operated upon by larger ones carried on the rear axle of the machine, sprocket wheels mounted on the shafts within the casing, and connected by sprocket chains having brushes removably secured thereto, with pockets formed between the brushes, an apron forming the front wall of such casing and adapted to oscillate in front of such brushes, in combination with an extension brush supported from the framework in front of such oscillating apron, and adapted to be operated simultaneously with the main brushes, and means for raising or lowering the extension brush and the main brushes at one and the same operation, substantially as shown and described.

11. In a street sweeper, the combination of a framework supported on wheels, the rear ones being loose on their axles, gear wheels rigidly mounted on such axle and adapted to be thrown into connection with the main wheels, a brush casing swung from the rear axle, its forward end adjustably supported from the framework, shafts having bearings in the walls of the brush casing, gear wheels mounted on the outer end of the lower shaft adapted to be operated from the main axle of the sweeper, sprocket wheels mounted on such shaft within the casing and connected by sprocket chains with brushes mounted thereof, a flexible apron secured between such brushes for supporting the refuse as it is being elevated, an oscillating apron forming the front wall of the casing, a roller carried on the lower end of such apron, and suitable mechanism for oscillating such apron, an extension brush adjustably secured to the front of the oscillating apron and extending to the side of the machine, suitable mechanism for operating such extension brush, and suitable mechanism for raising and lowering such brush casing and extension brush together, substantially as shown and described.

**505,797. AERIAL CRADLE-COT.** ARTHUR WASTALL, Chicago, Ill., assignor of one-half to Helen Densmore and Emmet Densmore, New York, N. Y. Filed July 5, 1893. Serial No. 479,573. (No model.)



*Claim.*—1. In combination, the divergent legs, the central uniting bolt and nut, the flat hook formed on the bolt head and having

the transverse pin, and the flat ring engaging the transverse pin in the bolt hook and supporting the swinging parts as set forth.

2. In combination, the divergent legs, the central uniting bolt and nut, the flat hook on the bolt, the flat ring engaging in said hook and provided with eyes at the bottom, the four braces secured in said eyes the supporting ring, carried by said braces and the spring supported cradle suspended from said ring as set forth.

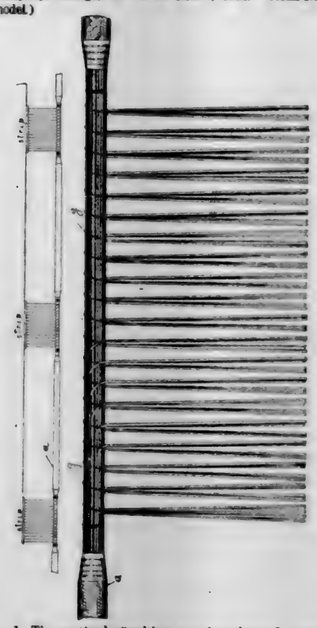
3. In combination, the flat suspending ring, the four downward diverging braces secured thereto at their upper ends, the horizontal suspending ring, the double eye rods swiveled through said ring, and the spring cradle supports, the lower ends of the downward diverging braces engaging the upper eyes of said eye rods, and the spring cradle supports engaging the lower eyes thereof as set forth.

4. In combination a cradle-cot body, suspending chains therefor converging upward, a suspending ring at their upper ends, upward converging supports for said ring, and double eyed swiveled bolts through the suspending ring, the ring supports engaging the upper eyes, and the cradle supports engaging the lower eyes as set forth.

5. The combination of a cradle-cot and its spring hangers, a supporting structure therefor consisting of adjustable diverging legs, a bolt passed through the upper end of said legs and an ornamental nut and washer upon said bolt, with a canopy netting covering the structure and in engagement therewith under said nut and washer, and an adjustable opaque curtain upon said canopy substantially as and for the purpose described.

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**505,798. MANUFACTURE OF CABLES FOR MULTIPLE SWITCH-BOARDS.** ORO A. BELL, Brooklyn, N. Y., assignor to the Western Electric Company, Chicago, Ill. Filed Nov. 7, 1892. Serial No. 451,262. (No model.)



*Claim.*—1. The method of taking out the wires of a continuous cable without waste of material, which consists in bending a section of the cable at the point where the wires are to be taken out, clamping the cable at each side of the bent portion, taking the wires out in the loops in a particular order, binding the wires between the clamps into a straight cable, and cutting the loops, whereby the cable is left straight, while the wires are left projecting a uniform distance and in a particular order, substantially as and for the purpose specified.

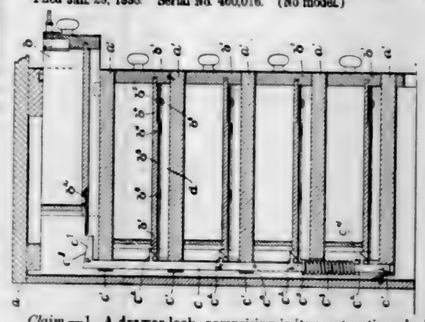
2. The method of arranging the wires of cables for connecting therewith, which consists in laying bare a portion of the cable, bending aside the bared portion of the cable to shorten the same, and separating the different wires of the cable from the body thereof at different points, respectively; whereby the wires of the cable protrude therefrom at different points along its length, substantially as described.

3. The method of arranging the wires of cables for connecting therewith, which consists in laying bare a portion of the cable, bending aside the mass thereof to shorten the same, separating the different wires of the cable therefrom at different points along its length, and binding the cable between each two wires thus bent aside; whereby a continuous cable having its different wires projecting from it at different points along its length is formed without waste of material, substantially as described.

4. The method of forming continuous cables, which consists in shortening the length of a cable by forming each wire composing the same into a loop, binding the wires composing the cable together by a thread, passing said thread between an in and an out-going wire of the loop, and severing the loop to form two wires emanating from the continuous cable, substantially as described.

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**505,799. DRAWER-LOCK.** LEANDER C. BROWN, Boston, Mass. Filed Jan. 28, 1893. Serial No. 460,016. (No model.)

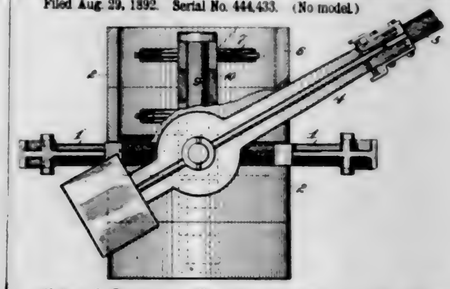


*Claim.*—1. A drawer-lock, comprising in its construction a locking-bar movable in the direction of its length, and provided with a series of lateral catches; strips on a number of drawers, constructed for engagement with said lateral catches on the locking-bar; and movable out of operative position and means for operating said bar.

2. A drawer-lock, comprising in its construction a locking-bar movable in the direction of its length, and provided with a series of lateral catches; resilient strips arranged to slide in grooves on a number of drawers and provided with projections which engage depressions in the grooves, and also constructed for engagement with the lateral catches on the locking-bar; and means for operating said bar.

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**505,800. STREET-ROLLER.** CHARLES K. PICKLES, St. Louis, Mo. Filed Aug. 29, 1892. Serial No. 444,433. (No model.)



*Claim.*—1. In a street roller, the combination of a roll, a frame fitting centrally within the roll on an axle or spindle, upon which the roll is journaled, vertical and horizontal extensions on said frame, and a draft tongue pivoted to said vertical extension of the frame, and arranged to be swung around on its pivot, and be connected with either one of the horizontal extensions of said frame; substantially as, and for the purpose set forth.

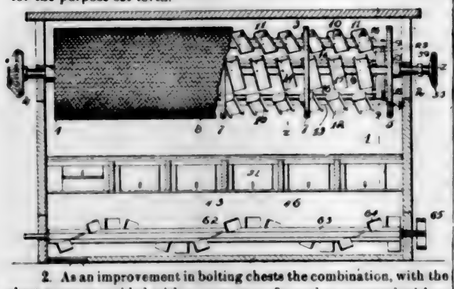
2. In a street roller, the combination of a roll, a frame fitting centrally within the roll on an axle or spindle upon which the roll is journaled, vertical and horizontal extensions on said frame, a draft-tongue pivoted to said vertical extensions of the frame, and adapted to be connected to the horizontal extension of the frame, and friction rollers 1ª journaled in said horizontal extensions of the frame, substantially as and for the purpose set forth.

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**505,801. BOLTING-CHEST.** FREDERICK J. SCHUPP, Marshall, Mo. Filed Sept. 3, 1892. Serial No. 444,997. (No model.)



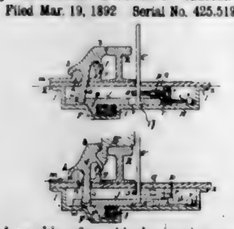
*Claim.*—1. As an improvement in bolting chests, the combination, with the chest proper provided with cant boards, of a two part conveyer, sliding and independently adjustable doors 51 for the latter, and a spring 58 for each door, provided with a rounded projection 60 adapted to normally bear against the under side of the door and engage the lower edge of the latter when elevated; substantially as and for the purpose set forth.



2. As an improvement in bolting chests the combination, with the chest proper provided with a conveyer, of a reel constructed with a means for horizontally adjusting a series of conveyer buckets, consisting of a shaft 2 provided with a slot 34, a collar 28 having annular flanges 29, an annular recess 30, a cross-piece 33 which secures said collar upon the shaft 2 and allows a reciprocating, longitudinal movement thereon, a screw-threaded perforation 37 in said cross-piece 33, an interior shaft 34' having one end exteriorly screw-threaded to operate in said perforation 37, its opposite end provided with a wheel 35 for operation, an interiorly screw-threaded counter-bore in the outer end of said shaft 2, a collar 40 upon said shaft 34', a sleeve adapted to screw into said bore 38 and prevent any longitudinal movement in said shaft 34' and jointed levers 23 having one end in a recess 30, a horizontal adjustment of said shaft 34' changing the position of the horizontally adjustable bar 16, substantially as set forth.

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**505,802. BLOCK-SIGNAL SYSTEM.** CHESTER A. WELLER, Sing Sing, N. Y. Filed Mar. 19, 1892. Serial No. 425,519. (No model.)



*Claim.*—1. A machine for a block signal system as described, comprising a striking plate actuated by the flange of a car wheel, a slide moved by the striking plate against a stout spring, and a locking hook, a swinging lever for actuating a torpedo machine and a semaphore signal, a locking arm for holding the swinging lever, a lever by which the swinging lever is released, substantially as shown and described.

2. In a signaling machine substantially as described the combination with the rails of a rail road track, of the striking plate *b* riding on an elongated bearing *n* and having a projection *o* by which it operates the slide *j*, the slide *j* having a lug on its under side bearing against a stout spring *l*, a hook *t* adapted to catch in a notch in the side of the said slide, a stud in the side of the said slide supporting a rod 8 which passes through the lever *p* having adjustable nuts on the outer end, and a spring between the head of the rod and the said lever *p* by means of which the lever is held in the direction of the said nuts, a swinging lever *p* with a branching arm supporting a sliding arm *s* for locking the said lever in the manner described, a toothed segment on its end for gearing with a torpedo machine, and a rod connection near its end for operating a semaphore signal, and a lever *e'* pivoted in the bottom of the machine and adapted for unlocking the signal setting lever, all substantially as herein shown and described.

3. In a signaling machine, substantially as described, the combination of the striking plate *b* and its supporting plate *m* the former having a flange *k* fitting over a cylindrical rib *n* on the plate *m* on which it rocks, and a flange *f* fitting the flange *g* also on the base *m*, the arcs of the touching faces of the two flanges being common to the center of the rib *n*, substantially as and for the purpose described.

4. In a signaling machine substantially as shown, a striking plate and its bearing plate as combined, the former having its face next the rail beveled from the center toward the ends as shown, a flange *k* riding on the cylindrical bearing *n* on the base, flanges *f* and *g* with their touching faces concentric with the face of the rib *n*, and an arm *o* extending from the center of the striking plate through an opening *o'* in the base, substantially as shown and described.

5. In a signaling machine substantially as shown, the combination of the striking plate with its base in the manner described, the striking plate having lugs on its ends recessed to receive springs and end bearing plates, substantially as and for the purposes described.

6. In combination with the slide *j* and its actuating mechanism, the pivoted swinging lever *p*, the locking arm *s*, lever *e'* pivoted in the bottom of the machine and to the arm *s*, rod 8 with adjustable nuts on its outer end, spring 9, head 10 and stud 11, substantially as shown and described.

7. In a signaling machine as described, a swinging lever, substantially as described, provided with locking devices consisting of a slightly sliding arm united to the lever by an elongated slot on a stud, and provided with a spring pushing the arm in the direction of its pivot, and said sliding arm provided with a hook near its end which passes through a notch in the back flange on the lever, and catches on said flange, substantially as shown and described.

8. In combination with the swinging lever and locking arm substantially as described, a lever *e'* by means of which the locking device is released, and through which and the arm *s*, the lever may be re-set and locked, substantially as described.

9. In a signaling machine as described, the combination with the swinging lever actuated by the spring 9, the arm *s*, and lever *e'*, the striking arm C attached to a car, substantially as shown.

10. In a signaling machine substantially as described a swinging lever with locking and actuating devices as described, provided at its outer end with a toothed segment for gearing to a torpedo machine, substantially as described.

11. The combination with a signaling machine as described, of the lever *p*, segment U, and intermediate gearing connecting with the slide *ss* in a torpedo machine, as and for the purpose described.

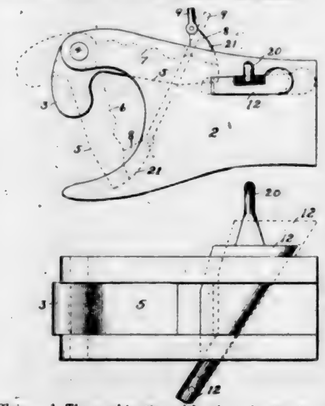
12. For the purpose of a mechanical block signal system substantially as herein shown and described, a movement compensating device consisting of a box chamber for packing and provided with a packing gland, the rod for operating a semaphore or torpedo machine passing through the same, the box having a rack or stud connection on its side for performing the work of the rod, whereby the movement of the rod need not be limited by the movement of the rack or stud, substantially as described

13. In a movement compensating device for the purpose of a signaling system as described, the box L, chambered and provided with a packing gland N, key 20 bent over a boss 23, rod *y*, packing G and rack 21, substantially as shown.

14. In combination with the covering of the casing H and the lever *e'*, the flange 14, and cup 16 inverted over the said flange, and held to the lever *e'* by the hub 15, substantially as shown.

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**505,803. CAR-COUPLING.** PATRICK MCENTEE, Montgomery, Minn. Filed Feb. 8, 1892. Serial No. 420,680. (No model.)



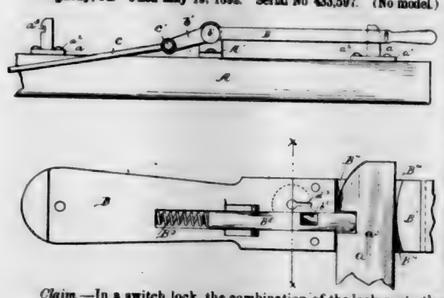
*Claim.*—1. The combination with a draw-bar having a corrugated interior wall of a jaw having a portion fitting said corrugations, and a key for locking them when in engagement, substantially as set forth.

2. In a car-coupling, a jaw pivoted to a draw-head, and having a lateral arm, a connection therewith for operating it from the side of a car, and a gravitating key having a shoulder engaging the draw-

head to hold it in suspension until a coupling is made, substantially as set forth.

3. The combination with a draw-bar having a corrugated interior side wall, of a jaw having a portion fitting said corrugations and a gravitating key of wedge shape in an inclined slot and adapted to lock the jaw in place and compensate for wear, substantially as set forth.

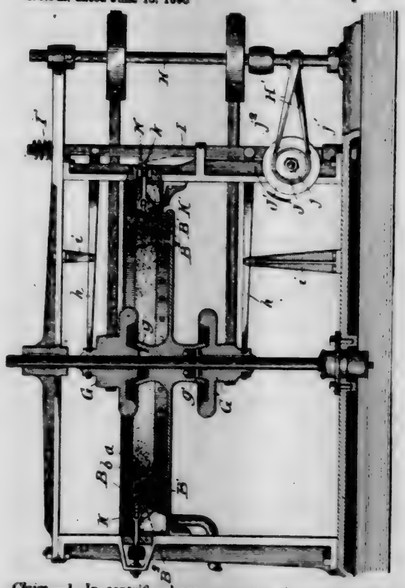
**505,804. RAILROAD-SWITCH LOCK.** FREDERICK VIERING, Allegheny, Pa. Filed May 19, 1892. Serial No. 433,597. (No model.)



*Claim.*—In a switch lock, the combination of the lock posts, the lever pivoted between the posts and having a recess to receive the posts, the switch or shifting rod connected to the lever, the slot in the lever and the bolt arranged in and movable in said slot, the spring acting on said bolt, the pivoted key hole escutcheon having the locking notch, the key ways at right angles to each other, the key adapted to enter the ways as described, and operating on the sliding bolt, and the spring for holding the key, all as described.

# REISSUES.

**11,867. CENTRIFUGAL ORE-SEPARATOR.** ORRIN B. PECK, Chicago, Ill., assignor, by mesne assignments, to the Patent Title Company, same place. Filed Aug. 7, 1893. Serial No. 482,619. Original No. 490,342, dated June 13, 1893.



*Claim.*—1. In centrifugal ore separators, the combination of a supporting frame-work, and independently vibratable separating surface supported on such frame-work, means for effecting its vibration, and means for rotating such separating surface, at different alternating predetermined speeds, substantially as described.

2. In centrifugal ore separators, the combination of a supporting frame-work, a separating surface mounted on such frame-work and vibratable at desired points in its rotation, means for effecting such vibration at predetermined alternating degrees, and means for rotating the separating surface, substantially as described.

3. In centrifugal ore separators, the combination of a supporting frame-work, a separating surface mounted on the frame-work and vibratable at desired points in its rotation to different and predetermined extents, and adjustable means for effecting such vibrations at predetermined alternating degrees as desired, and means for rotating the separating surface, substantially as described.

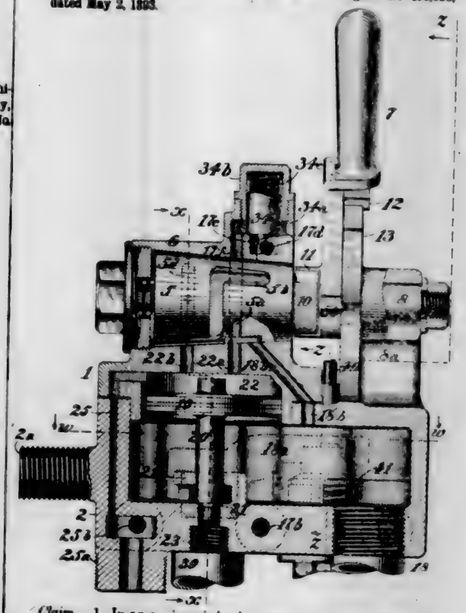
4. In centrifugal ore separators, the combination of a supporting frame-work, a vibratable separating surface mounted upon such frame-work, means for effecting its vibration, and means for rotating the separating surface at alternating predetermined differences in speed of rotation, substantially as described.

5. In centrifugal ore separators, the combination of a supporting frame-work, a vibratable separating surface mounted upon such frame-work, means for effecting its vibration at alternating varying degrees, and means for rotating the separating surface at alternating predetermined differences in the speed of rotation, substantially as described.

6. In a centrifugal ore separator, the combination of a rotatable separating surface adapted to be rotated at a desired speed while loading, and means for increasing the speed of rotation for centrifugally discharging the contents, substantially as described.

7. In a centrifugal ore separator, the combination of a rotatable separating surface adapted to be rotated at a desired speed while loading, and means for automatically increasing the speed of rotation for centrifugally discharging the contents, substantially as described.

**11,868. ENGINEER'S BRAKE-VALVE.** FRANCIS L. CLARK, Wilkinsburg, assignor to the Westinghouse Air Brake Company, Pittsburg, Pa. Filed Aug. 21, 1893. Serial No. 483,708. Original No. 496,638, dated May 2, 1893.



*Claim.*—1. In an engineer's brake valve, the combination of a lower valve casing section provided with connections for pipes to a main air reservoir, and to a main air or train pipe, a movable abutment, a discharge valve actuated by said abutment and controlling the exhaust of air from the main air or train pipe, an upper casing section connected to the lower section and removable therefrom independently of the pipe connections, and a regulating cock or valve working in the upper section, and controlling ports through which an equilibrium or an inequality of pressure, as the case may be, is established on opposite sides of the movable abutment, substantially as set forth.

2. In an engineer's brake valve, the combination of a valve casing provided with connections for pipes to a main air reservoir and to a main air or train pipe, a movable abutment working in said casing, a discharge valve actuated by said abutment and controlling the exhaust of air from the main air or train pipe, a charging valve controlling communication between the main air reservoir connection and the main air or train pipe connection, a regulating cock or valve controlling ports through which an equilibrium or an inequality of pressure, as the case may be, is established on opposite sides of the movable abutment, and an operating lever handle imparting movement to the regulating cock or valve and to the charging valve, substantially as set forth.

3. In an engineer's brake valve, the combination of a valve casing provided with connections to a main air reservoir and to a main air or train pipe, a movable abutment working in said casing, a discharge valve actuated by said abutment and controlling the exhaust of air from the main air or train pipe, an exhaust or discharge valve controlling communication between the main air or train pipe and the atmosphere, a regulating cock or valve controlling ports through which an equilibrium or an inequality of pressure, as the case may be, is established on opposite sides of the movable abutment, and an operating lever handle imparting movement to the regulating cock or valve and to the exhaust or discharge valve, substantially as set forth.

4. In an engineer's brake valve, the combination of a valve casing provided with connections to a main air reservoir and to a main air or train pipe, a movable abutment working in said casing, a discharge valve actuated by said abutment and controlling the exhaust of air from the main air or train pipe, an emergency exhaust or discharge valve controlling communication between the main air or train pipe and the atmosphere, a regulating cock or valve controlling the movements of the abutment, an operating lever handle, and an arm connected to said lever handle, and imparting movement to the emergency exhaust or discharge valve, substantially as set forth.

5. In an engineer's brake valve, the combination of a valve casing provided with connections to a main air reservoir and to a main air or train pipe, a regulating cock or valve controlling communication between said connections an exhaust or discharge valve controlling communication between the main air or train pipe and the atmosphere, and an operating lever imparting movement to the regulating cock or valve and to the exhaust or discharge valve, substantially as set forth.

6. The combination in an engineer's brake valve, of a valve casing provided with connections for pipes to a main air reservoir and to a main air or train pipe, a movable abutment working in said casing, a discharge valve actuated by said abutment and controlling the exhaust of air from the main air or train pipe, a charging valve controlling communication between the main reservoir connection and the main air or train pipe connection, an exhaust or discharge valve controlling communication between the main air or train pipe connection and the atmosphere, a regulating cock or valve controlling ports through which an equilibrum or an inequality of pressure, as the case may be, is established on opposite sides of the movable abutment, and an operating lever handle imparting movement to the regulating cock or valve, to the charging valve, and to the exhaust or discharge valve, substantially as set forth.

7. The combination, in an engineer's brake valve, of a valve casing provided with connections for pipes to a main air reservoir and to a main air or train pipe, a movable abutment working in said casing, a discharge valve, actuated by said abutment and controlling the exhaust of air from the main air or train pipe, a charging valve controlling communication between the main air reservoir connection and the main air or train pipe connection, a regulating cock or valve controlling ports through which an equilibrium or an inequality of pressure, as the case may be, is established on opposite sides of the movable abutment, an operating lever handle coupled to the regulating cock or valve, and an arm fixed to the operating lever handle and adapted to impart opening movement to the charging valve, at a desired point in the traverse of the arm, without positive connection to said valve, substantially as set forth.

8. In an engineer's brake valve, the combination of a regulating cock or valve, a lever handle journaled in a bearing independent of said regulating cock or valve and coupled thereto, an emergency exhaust or discharge valve, and an arm fixed to said lever handle and imparting movement to said emergency exhaust or discharge valve, substantially as set forth.

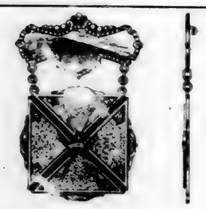
# DESIGNS.

**22,796. BADGE.** MARTIN D. WOOD, Kansas City, Mo. Filed May 13, 1893. Serial No. 474,714. Term of patent 7 years.

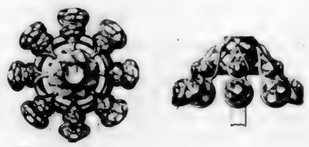
*Claim.*—The design for a badge substantially as shown and described.



**22,796.**



**22,797. JEWEL-SETTING.** MAURICE L. POWERS and JOSHUA W. MAYER, New York, N. Y. Filed Aug. 16, 1893. Serial No. 483,306. Term of patent 7 years.



*Claim.*—The design for a setting for ear-rings and other articles, substantially as shown and described.

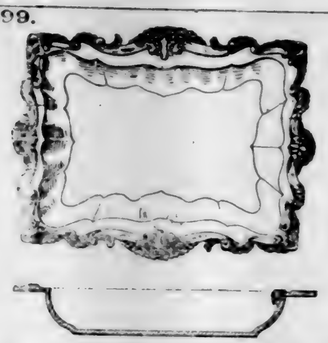
**22,798. BOWL.** CHARLES C. WIENTGE, Providence, R. I., assignor to the Howard Sterling Company, same place. Filed July 25, 1893. Serial No. 481,771. Term of patent 7 years.



*Claim.*—The design for the bowl herein shown and described.

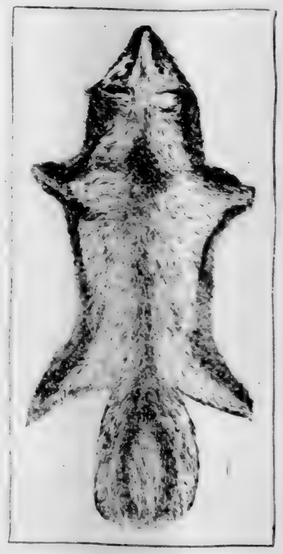
**22,799. DISH.** SETH W. BARRITT, Meriden, Conn. Filed Sept. 4, 1893. Serial No. 484,790. Term of patent 3½ years.

22,799.



*Claim.*—The design for a dish as herein shown and described.

22,800. FABRIC. WILLIAM S. FRIEDLANDER, Passaic, N. J., assignor to Jacob S. Bernheimer & Brother, New York, N. Y. Filed May 27, 1893. Serial No. 475,794. Term of patent 3½ years.



*Claim.*—The design for a fabric substantially as shown and described.

22,801. WALL-PAPER. FREDERIC AUMONIER, London, England. Filed Aug. 23, 1893. Serial No. 484,262. Term of patent 3½ years. Patented in England Mar. 3, 1893, No. 208,528.



*Claim.*—The design for wall paper substantially as herein shown and described.

22,802. WALL-PAPER. FREDERIC AUMONIER, London, England. Filed Aug. 23, 1893. Serial No. 484,263. Term of patent 3½ years. Patented in England Mar. 3, 1893, No. 208,519.



*Claim.*—The design for wall paper substantially as shown and described.

22,803. WALL-PAPER. FREDERIC AUMONIER, London, England. Filed Aug. 23, 1893. Serial No. 484,264. Term of patent 3½ years. Patented in England Mar. 3, 1893, No. 208,521.



*Claim.*—The design for wall paper substantially as herein shown and described.

22,804. WALL-PAPER. FREDERIC AUMONIER, London, England. Filed Aug. 23, 1893. Serial No. 484,265. Term of patent 3½ years. Patented in England Mar. 3, 1893, No. 208,524.

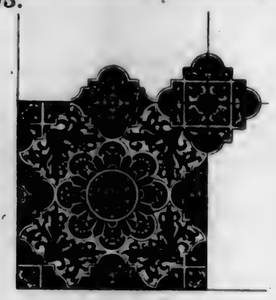


*Claim.*—The design for wall paper substantially as herein shown and described.

22,805. WALL AND CEILING PAPER. FREDERIC AUMONIER, London, England. Filed Aug. 23, 1893. Serial No. 484,266. Term of patent 3½ years. Patented in England Mar. 3, 1893. No. 208,522.

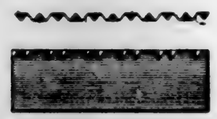


22,805.



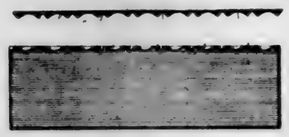
*Claim.*—The design for wall and ceiling paper substantially as shown and described.

22,806. PRINTER'S BORDER. WILLIAM SPENCER, Brooklyn, assignor to William W. Farmer, New York, N. Y. Filed Sept. 4, 1893. Serial No. 484,787. Term of patent 3½ years.



*Claim.*—The design for a printer's border, as shown and described.

22,807. PRINTER'S BORDER. WILLIAM SPENCER, Brooklyn, assignor to William W. Farmer, New York, N. Y. Filed Sept. 4, 1893. Serial No. 484,788. Term of patent 3½ years.



*Claim.*—The design for a printer's border, as shown and described.

22,808. PRINTER'S BORDER. WILLIAM SPENCER, Brooklyn, assignor to William W. Farmer, New York, N. Y. Filed Sept. 4, 1893. Serial No. 484,789. Term of patent 3½ years.



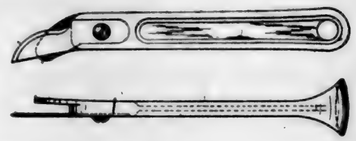
*Claim.*—The design for a printer's border, as shown and described.

22,809. BATH-TUB. HOWARD L. DAWES, New Brighton, Pa. Filed July 8, 1893. Serial No. 479,966. Term of patent 7 years.



*Claim.*—The design for a bath tub substantially as herein shown and described.

22,810. CAN-OPENER. AUGUST F. MEISSELBACH and WILLIAM MEISSELBACH, Newark, N. J. Filed Aug. 31, 1893. Serial No. 484,621. Term of patent 14 years.



*Claim.*—The design for a can opener herein shown and described.

22,811. SAD-IRON. JOHN W. BROWN, Jr., Philadelphia, Pa., assignor to the Enterprise Manufacturing Company of Pennsylvania, same place. Filed June 15, 1892. Serial No. 436,862. Term of patent 14 years.



*Claim.*—The design for a sad-iron, substantially as herein described and shown.

22,812. FULCRUM-POST FOR MOPS. CHARLES W. HART, Troy, N. Y., assignor to Harriet A. Hart, same place. Filed July 26, 1893. Serial No. 481,574. Term of patent 14 years.



*Claim.*—The design for a fulcrum-post for mops, herein shown and described.

22,813. LOCK-NUT. ALBIOS M. ROUSE, Boulder, assignor to the Boss Grip Lock-Nut Company, Denver, Colo. Filed Oct. 19, 1892. Serial No. 449,401. Term of patent 14 years.



*Claim.*—The design for a lock nut herein shown and described.

**22,814.** CARRIAGE-SPRING. CLAIMONT THOMAS, Boston, Mass. Filed July 11, 1893. Serial No. 480,157. Term of patent 14 years.



*Claim.*—The design for carriage springs herein shown and described, the same comprising the bow-like springs B, B, having the shaft extension, and connected by bars *g*, A, as set forth.

**22,815.** SULKY-AXLE. STERLING ELLIOTT, Boston, Mass. Filed June 17, 1893. Serial No. 477,602. Term of patent 14 years.



*Claim.*—A design for a sulky axle, substantially as herein shown and described.

# TRADE-MARKS

## REGISTERED SEPTEMBER 26, 1893.

**23,642.** COLLARS AND CUFFS. THOMAS D. HEELANDS and JOHNSON L. HEELANDS, Chicago, Ill. Filed July 31, 1893.

IVORINE

*Essential feature.*—The word "IVORINE." Used since February 1, 1890.

**23,643.** BOOTS, SHOES, AND LEATHER. FOOT, SCHULER & CO., St. Paul, Minn. Filed Apr. 7, 1893.

BED ROCK

*Essential feature.*—The words, "BED ROCK." Used since November 1, 1892.

**23,644.** WRITING-PAPER. LOUIS A. LEHMAIER, New York, N. Y. Filed Aug. 1, 1893.

FULTON

*Essential feature.*—The word "FULTON." Used since March 15, 1893.

**23,645.** WATCHES, CUFF AND LAPEL BUTTONS, WATCH-CHARMS, AND MEDALS. DAVID F. PENINGTON, Baltimore, Md. Filed Aug. 30, 1893.



*Essential feature.*—The representation of an owl perched upon a twig and having a cap on its head while from each claw is suspended a weight marked "14 LB." Used since January 15, 1887.

**23,646.** DISHES FOR TABLE AND TOILET USE. JOHN, McDUFFEE & STRATTON, Boston, Mass. Filed Sept. 4, 1893.



*Essential feature.*—The representation of a steamship. Used since November 26, 1891.

**23,647.** DISHES FOR TABLE AND TOILET USE. JOHN, McDUFFEE & STRATTON, Boston, Mass. Filed Sept. 4, 1893.

CAMPANIA



*Essential feature.*—The word "CAMPANIA" accompanying the representation of a steamship. Used since April 1, 1893.

**23,648.** HOOKS AND EYES. A. STEINHARDT & BRO., New York, N. Y. Filed Sept. 1, 1893.

PERFECTION

*Essential feature.*—The word "PERFECTION." Used since December 24, 1891.

**23,649.** NEEDLES. EXCELSIOR NEEDLE COMPANY, Torrington, Conn. Filed Aug. 3, 1893.

EXCELSIOR.

*Essential feature.*—The word "EXCELSIOR." Used since May 17, 1871.

**23,650.** CAPS, DETONATORS, CARTRIDGES, AND SHELLS. ZÜNDHÜTCHEN-UND PATRONENFABRIK, VORMALS SELLIER & BELLOT, Schönebeck, Germany. Filed Sept. 4, 1893.

SB

*Essential feature.*—The letters "S B." Used since July 1, 1826.

**23,651.** RIVETS, WASHERS, BURRS, AND LIKE ARTICLES OF COPPER AND BRASS. THE PLUME & ATWOOD MANUFACTURING COMPANY, Waterbury, Conn., New York, N. Y., Boston, Mass., and Chicago, Ill. Filed July 15, 1893.



*Essential feature.*—The representation of an "EAGLE." Used since January 15, 1879.

**23,652.** SKATES. THE FORBES MANUFACTURING COMPANY, LIMITED, Halifax, Canada. Filed Aug. 5, 1893.

Columbus

*Essential feature.*—The name "COLUMBUS." Used since January 15, 1892.

23,653. BRICKS, RETORTS, TILES, QUARLES, PIPES, LUMPS, AND OTHER ARTICLES MADE OF FIRE-CLAY. JOSEPH COWEN & Co., Hayden-on-Tyne, England. Filed July 31, 1893.

COWEN

*Essential feature.*—The name "COWEN." Used since 1833.

23,654. SIFTING-MACHINES. CARL HAGGENMACHER, Buda-Pesth, Austria-Hungary. Filed Mar. 12, 1892.

PLANSIFTER

*Essential feature.*—The word "PLANSIFTER." Used since January 15, 1892.

23,655. WHISKY. ALFRED B. SHAFFER, Lancaster, Pa. Filed Aug 25, 1893.

*Crystal Wedding*

*Essential feature.*—The word "CRYSTAL WEDDING." Used since May 15, 1893

23,656. BEER AND ALE. O'DONNELL & DUER BAVARIAN BREWING COMPANY, Chicago, Ill. Filed Aug. 29, 1893.

ARMY CLUB

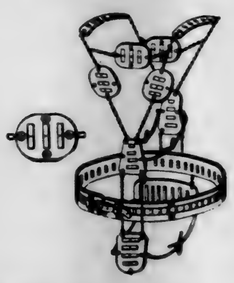
*Essential feature.*—The words "ARMY CLUB." Used since June, 1893.

23,657. ALE AND BEER. O'DONNELL & DUER BAVARIAN BREWING COMPANY, Chicago, Ill. Filed Aug. 29, 1893.

GOLDEN SEAL

*Essential feature.*—The words "GOLDEN SEAL." Used since November, 1892.

23,658. CERTAIN NAMED MEDICINES. CHARLES E. BRUNING, Indianapolis, Ind. Filed June 2, 1893.



*Essential feature.*—The representation of an electro-therapeutic medical appliance embodying a belt from which are suspended plates and above which is arranged a series of plates, said belt and plates being connected by chains. Used since March 13, 1890.

23,659. CERTAIN NAMED MEDICAL COMPOUNDS. JAY E. FOX, Columbus, Ohio. Filed July 3, 1893.

HYPOTHERMAL

*Essential feature.*—The word "HYPOTHERMAL." Used since September 1, 1872.

23,660. REMEDIES FOR NERVOUS DISORDERS. MORRIPOS & SANTA, New York, N. Y. Filed Aug. 31, 1893.

NEURASTECINE

*Essential feature.*—The word "NEURASTECINE." Used since August 23, 1893.

23,661. REMEDY FOR SEA-SICKNESS. FRANCIS R. TOTTENHAM, Victoria, Canada. Filed June 12, 1893.

AD ASTRA SEQUOR

*Essential feature.*—The words "AD ASTRA SEQUOR." Used since June 1, 1892.

23,662. OILY MEDICINAL PREPARATION FOR INTERNAL AND EXTERNAL USE. WILLIAM E. PEARSON, Paris, France. Filed Aug. 19, 1893.

VASOGEN

*Essential feature.*—The word "VASOGEN." Used since December 31, 1892.

23,663. OILY MEDICINAL PREPARATION FOR INTERNAL AND EXTERNAL USE. WILLIAM E. PEARSON, Paris, France. Filed Aug. 19, 1893.



*Essential feature.*—The representation of a sphinx. Used since December 31, 1892.

23,664. DISINFECTANTS. NEWTON, CHAMBERS & COMPANY, LIMITED, near Sheffield, England. Filed July 31, 1893.

IZAL.

*Essential feature.*—The word "IZAL." Used since May 26, 1893.

23,665. SHEEP-DIPS. NEWTON, CHAMBERS & COMPANY, LIMITED, near Sheffield, England. Filed July 31, 1893.

NOXONA.

*Essential feature.*—The word "NOXONA." Used since May 30, 1893.

# DECISIONS

OF THE

# COMMISSIONER OF PATENTS

AND OF

# UNITED STATES COURTS IN PATENT CASES.

## DECISIONS OF THE U. S. COURTS.

### U. S. District Court—Southern District of New York.

SMITH *v.* WALTON *et al.*

*Decided May* 31, 1893.

PATENTS—PENALTIES—REVISED STATUTES, SECTIONS 4900, 4901—NECESSITY FOR STAMP "PATENTED," ETC., ON PATENTED ARTICLE.

Where the complaint showed that the word "Patented," etc., was not stamped on plaintiff's patented article, as required by Revised Statutes, section 4900, not because of the "character of the article," but because the cost of such stamping would destroy the patentee's profits, *Held*, on demurrer to the complaint in an action to recover penalties under section 4901, for an unauthorized use by defendants of the word "Patented," etc., on their articles, that the complaint was demurrable.

ACTION by Seth H. Smith against David S. Walton and George West to recover penalties under section 4901 for stamping the word "Patented," without authority, on 2,200 crates of wooden dishes.

*Mr. Rush Taggart* and *Mr. Almon Hall* for the plaintiff.

*Mr. James P. Foster* for the defendants.

BROWN, *J.:*

The complaint having been amended on leave after a demurrer to the original complaint had been sustained, (*Smith* v. *Walton*, 51 Fed Rep., 17,) a demurrer has been again interposed to the amended complaint.

The original complaint was held defective because it appeared that the word "Patented," etc., was not stamped on the patented article itself—viz., an oval wooden dish—either by the defendants or by the plaintiff, but on the crate only, and because the complaint did not show that the patented article came within the exception of Revised Statutes, section 4900, as an article on which from "the character of the article" the word "Patented," etc., could not be fixed. The original complaint, on the contrary, stated that the dishes had been marked as "The Oval Wooden Dish." That fact was held to afford affirmative evidence that the character of the article was such that the word "Patented," etc., could have been "fixed thereon," and for the plaintiff's failure to fix them on the patented article it was held that the defendants could not be made liable for "counterfeiting the plaintiff's mark."

In the amended complaint the averment that the dishes were stamped is omitted, it being stated on the argument that it had been inserted in the original complaint under misapprehension by the pleader. The amended complaint, however, does not aver, in the language of the statute, that from the "character of the article the word 'Patented,' etc., could not be fixed thereon;" but in lieu of such a statement it makes the following averments, viz: that the dishes are sold only by the crate, the final purchaser giving them away to his customers as a substitute for wrapping-paper; that it is impracticable in the act of manufacturing said dishes in any way or manner to mark the same; that to stamp them with ink afterward would render them unfit for use; that to brand them would so increase the cost that they could not be sold in competition with other similar wooden dishes; that any known mode of marking each of the dishes would so increase the cost as to prevent their sale in competition with other dishes, and thus render the patent wholly valueless; and that by reason of the impracticability of stamping the separate dishes the owners have at all times, pursuant to section 4900, marked each crate or package containing said dishes as follows: "Oval Dishes, Patented March 13, 1893, Art. Pat. June 5, 1883."

I do not perceive anything in the amended complaint from which it can be fairly inferred that there is the least difficulty in fixing upon the wooden dishes themselves the word "Patented," etc., as required by section 4900, except the additional cost of doing so; or that the plaintiff could not so mark them as cheaply as other manufacturers could mark them. All that the new averments in the amended complaint amount to is that, if the patentee complied with section 4900, he could make no profit out of his patent, on account of the competition with other dishes somewhat similar. In other words, it is not because of "the character of the article" that the dishes themselves are not marked or stamped as the statute requires, but simply because the patentee cannot make money on his sales if he complies with the law.

The language of the statute is so plain and definite in making "the character of the article" the only ground for omitting to fix the mark upon the article itself, and for allowing the patentee in lieu thereof "to fix to the article, or to the package wherein one or more of them are contained, a label containing the like notice," that it is inadmissible, as it seems to me, to change the statute by construction into a question merely of profit to the patentee. Upon the statements of the amended complaint the matter seems to be brought down to this: that the patent, though in it-

self valid, would nevertheless be of no value to the patentee unless the substituted marking of the crate be held sufficient, because otherwise the patent cannot be worked commercially with any profit to the patentee But this is only saying, in effect, that the patent law, as it stands, is not adapted to such articles of very small value, and that it cannot practically be made use of to give a monopoly in the manufacture of such articles; but that fact, though true, cannot give the court any authority to change by construction the plain words and meaning of the statute or to secure to the plaintiff a monopoly upon conditions which the law does not admit.

The demurrer must, therefore, be sustained.

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## U. S. Circuit Court—Southern District of New York.

PERRIN *et al. v.* MANHATTAN RAILWAY COMPANY. SAME *v.* METROPOLITAN ELEVATED RAILWAY COMPANY. SAME *v.* NEW YORK ELEVATED RAILROAD COMPANY.

*Decided* ———, 1893.

TRENOR—RUNNING-GEAR FOR RAILROAD-CARS—CONSTRUCTION OF CLAIM—ANTICIPATION—TRUCK-COUPLINGS.

Claim 2 of Letters Patent No. 50,518, issued October 17, 1865, to Henry H. Trenor, covers "the method of coupling the cars or vehicles of a train of two or more cars or vehicles by means of the connecting-links attached to the pivots or king-bolts of the trucks, substantially as herein set forth." There is nothing in the specifications to limit this language. *Held* that the claim cannot be limited to the coupling of cars or vehicles having four-wheeled trucks, and is therefore void for anticipation by the English patent of December 13, 1838, to Deville, in which the same method is shown in coupling two carriages having two-wheeled trucks.

THESE were three suits brought by the complainants against the Manhattan Railway Company, the Metropolitan Elevated Railway Company, and the New York Elevated Railroad Company, respectively, for infringement of a patent.

*Mr. Edward N. Dickerson* for the complainants.
*Mr. Benjamin F. Lee* for the defendants.

WALLACE, *J.*:

The second claim of the patent in suit, No. 50,518, (granted October 17, 1865, to Henry H. Trenor,) the only claim now in controversy, cannot by any reasonable construction be limited to a method of coupling cars or vehicles having four-wheeled trucks. The specification states as follows:

> The danger and difficulty attending the running of railroad-cars on railroads, or of a series of vehicles on common roads, whether propelled by traction engine or otherwise, consist in the curves or sinuosities of the roads. On railroads the cars are deviated from the straight line by friction of the wheels on the sides of the rails, which is directly proportionate to the pressure and speed, and inversely to the radius of the curve, so that to adapt the wheels to the curve of the rail much power is absorbed, while the strain on the rails and the liability of running off the track are proportionately increased. To obviate this is the object of my invention, and it consists in a method of adapting all the axles or trucks of the train of cars or vehicles to the curves or direction taken by the leading axle or truck. This I have accomplished by combining with axles or trucks or vehicles, of whatever description, when pivoted so as to have a center of motion, a system of connection or coupling whereby the movement of the one is necessarily transmitted to the others.
>
> In the drawings, Figure 1 represents an elevation of a train composed of two four-wheel-truck cars placed on a curve of a railroad. Fig. 2 is a plan view of the same.

The specification then deals with the invention of the first claim, and thereafter proceeds as follows:

> In addition to this mode of connecting the trucks by a directing link or links, I use a system of coupling of the cars, not by the platform, as heretofore practiced, but by the trucks, whereby liability of the body of the vehicle or car being thrown off the trucks is obviated. In Figs. 1 and 2 I have shown the cars to be connected by means of a coupling-link *m*, attached to the pivot of the truck. The form of the link may be modified, according to the judgment of the engineer. This invention is applied to railroad-cars as well as to other vehicles—for instance, to emigration-trains, moved by traction-engines or otherwise. Many modifications may be applied without departure from my invention.

The language quoted gives the entire specification so far as it relates to the present claim. The claim is as follows:

> 2. The method of coupling the cars or vehicles of a train of two or more cars or vehicles by means of connecting-links attached to the pivots or king-bolts of the trucks, substantially as herein shown and set forth.

The drawings only illustrate the invention in its application to railroad-cars and to railroad-cars having each two four-wheeled trucks; but from the language of the specification it is apparent that the invention is designed to be applied to a series of vehicles on common roads without rails, propelled by traction-engines or otherwise, as well as to cars moving upon a railroad-track. A traction-engine is a well-known device for pulling common vehicles over common roads. Such vehicles are not provided with four-wheeled trucks, but are usually provided with two-wheeled trucks. Two-wheeled trucks are also frequently employed on railroad-cars. This sufficiently appears by the French patent to Gerstner, of July 27, 1829; the French patent to Arnoux, of March 3, 1851; the English patent to Clark and Motley, of 1849, and the English patent to Deville, of December 13, 1838. The terms of the claim are coextensive with the description of the patent. Whenever two vehicles are coupled by attaching to the pivots or king-bolts of their trucks, whether two-wheeled trucks or four wheeled, a connecting-link substantially like that described in the specification, the invention of the claim is appropriated. Its terms are not narrowed by any letters of reference to the drawings. The drawings are therefore illustrative and explanatory, but not definitive, and are only to be treated as part of the description of the thing patented.

If the patent could be restricted to one for the coupling of railroad cars, the argument that the trucks of the claim mean four-wheeled trucks would be persuasive, in view of the consideration that, except with such trucks, the coupling devices would not adapt all the trucks to the curve or direction taken by the leading truck; but this cannot be done without eliminating the statement in the specification that the invention is to be applied to other vehicles as well as railroad-cars. Giving the claim its correct construction, the novelty of the invention is negatived by the patent to Deville, before referred to. That patent shows two carriages, in which the two-wheeled truck of one is coupled to the two-wheeled truck of the other by means of a rigid rod attached to the king-bolts of the trucks. The rod is essentially the connecting-link of the patent in suit, and, like the latter, is capable of being disconnected in the middle. While the method of coupling shown by this patent might not be of any value when used upon railroad-cars without the guiding attachment of four





bearing-wheels, that attachment would be manifestly a mere excrescence, except when the vehicles are to be used on railway-tracks, and no invention would be involved in discarding it. This conclusion renders it unnecessary to consider any of the other defenses which have been relied upon by the defendant.

The bill is dismissed, with costs.

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## U. S. Circuit Court—Northern District of Ohio, Eastern Division.

MCCORMICK HARVESTING MACHINE COMPANY *v.* C. AULTMAN & COMPANY *et al.* MCCORMICK HARVESTING MACHINE COMPANY *v.* AULTMAN, MILLER & COMPANY *et al.*

*Decided June* 27, 1893.

1. BAKER—HARVESTER-BINDER—VOID.

Reissued Letters Patent No. 10,106, of May 9, 1882, to William R. Baker, *Held* to be void for want of patentable novelty, but, if valid to any extent, not infringed by the defendants' machines.

2. GORHAM—GRAIN-BINDER—APPLICATION FOR REISSUE REJECTED—ORIGINAL PATENT RETURNED.

Letters Patent No. 150,506, February 9, 1875, to Marquis L. Gorham, having been surrendered for a reissue, which reissue application contained claims substantially, if not identically, the same as the claims in the patent, together with other claims which were broader than the claims in the patent, and which broader claims and certain of the other claims as well were rejected, and which certain of the other claims are here sued on, and the rejection having been acquiesced in and the original patent returned to the owners—

3. *Held* that the same principle is applicable to a reissue proceeding where a party voluntarily resubmits his patent to the examination and revision of the Patent Office and acquiesces in a rejection of claims or in a construction placed thereon which operates to restrict or narrow the patent that obtains in acquiescences in rejections upon original proceedings;

4. *Held* that by the presentation of claims meaning substantially or identically the same things as the claims sued on, which were rejected and the rejection acquiesced in, the claims sued on had become destroyed by the reissue proceedings and the patent amended to the extent of the original claims rejected.

5. *Held* that, after an adverse decision by the Patent Office on certain claims, the patentee or his successor in right and interest is not entitled to assert the validity of such claims or insist upon the benefit thereof unaffected by the reissue proceedings and adverse action;

6. *Held* that, claims having been voluntarily resubmitted to the revising jurisdiction of the Patent Office by an application for reissue, which repeated them literally or in substance, and having been rejected or adjudged against the patentee, not on formal grounds, but for reasons and on references to prior patented devices, and no appeal having been prosecuted from such decision, the effect of such adverse decision should be regarded as fatal to said claims to the same extent as their rejection upon the original application would have been;

7. *Held* that patentees should not be allowed to experiment and take chances, in attempts to secure reissues, to extend, enlarge, or broaden their inventions, without taking the risk and subjecting themselves to the same rules and principles which apply and govern in original applications;

8. *Held* that, if the claims survived the revisory action and rejection thereof by the Patent Office on the original application, still the unsuccessful attempt made in the reissue proceeding to broaden or expand them must, upon well-settled principles, be held to so limit and restrict their construction as to exclude what was thus rejected and to confine them to the specific devices and combinations therein described;

9. *Held* that where the elements which go to make up the combination of a claim are mentioned specifically and by reference-letters such specific reference operates to confine and restrict the claim to the particular devices described;

10. *Held* that where a claim calls for a particular device, the procuring by the patentee of a subsequent patent for a different device, which the defendants' device resembles, operated at least as a recognition on the part of the patentee and of the Patent Office that there is a patentable difference between the two, which may be fairly invoked to limit the patent to the specific means described in the claim;

11. *Held* that the third, tenth, eleventh, twenty-fifth, and twenty-sixth claims of the Gorham patent, even if valid, are limited to the precise construction called for, and not infringed by defendants' machines;

*Messrs. Parkinson & Parkinson* for the complainant.

*Messrs. Banning & Banning & Payson, Mr. U. L. Marvin*, and *Mr. Edmund Wetmore* for the defendants.

JACKSON, *J.*:

In these causes, heard together, the court, after careful examination of the evidence and full consideration of the questions presented, (which it is not deemed necessary to set out or review in detail,) has reached the following conclusions, viz:

First. That complainant is entitled to no relief on the William R. Baker Reissue Patent No. 10,106, dated May 9, 1882, because the invention sought to be covered by said patent (both original and reissue) is void for want of patentable novelty; because the specific locking device of the pin *c* on the compressor-bar and the lip *c'* on the extended end of the binding-arm, which constitutes the alleged invention, was anticipated by the locking devices found in the John F. Appleby patent of June 1, 1869, and the S. D. Locke patent of December 7, 1869, and because said reissue patent, if valid to any extent, is not infringed by the defendants' locking device, which is substantially the same as that of the Appleby 1869 patent.

All that Baker did was to put a pin on the compressor-bar and a lip on the binding-arm, so as to lock the two pivoted arms at a certain desired position or degree of openness. This involved no invention. Long before the Baker patent pivoted arms had been locked in substantially the same way. One of the complainant's experts is compelled to admit that this locking contrivance was old.

When a device has been employed for one purpose, it is not invention to apply it to another analogous purpose. This is well settled. (*Roberts* v. *Ryer*, 10 O. G., 204; 91 U. S., 157, and *Blake* v. *San Francisco*, 31 O. G., 380; 113 U. S., 682.)

If the Baker patent had any validity, it could not be so construed as to cover defendants' locking device without being met by the Appleby and Locke patents as anticipating devices.

Claims 1, 2, 3, and 4 of the Baker reissue are manifestly void, unless construed to mean the same thing as claim 5, which is a repetition of the single claim of the original patent. This was recognized by the com-

plainant's experts, who were driven to place upon said claims the same construction as that given to the fifth claim. The reissue is valid for the old claim only. (*Gage* v. *Herring*, 23 O. G., 419; 107 U. S., 640.) But, as already stated, the device covered by that claim is wanting in patentable novelty, was anticipated by the prior art, and is not infringed by the defendants, so that no case for relief is made by complainant on said Baker reissued patent.

Second. That complainant is entitled to *no relief* on the Marquis L. Gorham patent, No. 159,506, for improvements in grain-binders, issued February 9, 1875, for various reasons, which will be briefly outlined. The claims of this patent which are relied on and alleged to have been infringed are the third, tenth, eleventh, twenty-fifth, and twenty-sixth. It is shown by the record that the owners of the Gorham patent, in 1881, before its transfer and assignment to the complainant, filed an application in the Patent Office for a reissue thereof, which contained claims substantially, if not identically, the same as said original claims here involved, together with other claims which sought to broaden and enlarge the scope and bearing of said original claims. In acting upon this application the Patent Office not only denied the broader claims sought to be secured, but *rejected* the claims which were either a literal or substantial repetition of said claims 3, 10, 11, 25, and 26 of the original patent on which the present suit is based. This rejection was rested or predicated by the Examiner on reference to various prior patents. The owner of the Gorham patent took no appeal from this decision or adverse action of the Patent Office, but acquiesced in the same, and thereafter requested and obtained a return of the original Letters Patent, leaving the decision of the Examiner rejecting both said original claims and the new claims presented to broaden the same in full force and operation.

Now, what is the legal effect of this proceeding and of the adverse action or decision of the Department thereunder upon said claims 3, 10, 11, 25, and 26? In withdrawing or securing a return of the original Letters Patent, after an adverse decision by the Patent Office on said claims, is the patentee, or his successor in right and interest, entitled to assert the validity of said claims, or insist upon the benefit thereof, unaffected by the reissue proceeding and such adverse action? We think not. It is well settled that the rejection of such claims on an *original* application and acquiescence in such rejection would conclude the patentee in respect thereto. (*Robinson* v. *Sutter*, 119 U. S., 541; *Shepard* v. *Corrigan*, 34 O. G., 1157; 116 U. S., 597.) The same principle should apply in a case like the present, where a party voluntarily resubmits his patent to the examination and revision of the Patent Office and acquiesces in a rejection of certain claims thereof, or in a construction placed thereon, which operates to restrict or narrow the patent. There is no distinction in principle between an acquiescence in an adverse decision in order to secure a patent in the first instance and a like acquiescence in the *rejection* of claims reopened and resubmitted to the jurisdiction of the Patent Office under reissue applications. In each case the patentee is entitled to only what the Office allows. By section 8 of the Patent Act of 1837 it was provided that whenever a patent should be returned for reissue, the claims thereof should be subject to *revision* and *restriction* in the same manner as were original applications for patents. This provision was substantially repeated in section 53 of the Patent Act of 1870, which is re-enacted in section 4916 Revised Statutes. While it is provided by this section that—

> the surrender shall take effect upon the issue of the amended patent,

it is also further provided that on application for reissue—

> the specifications and claim in every such case shall be subject to *revision* and *restriction* in the same manner as original applications are.

These two provisions of said section were under consideration in *Peck* v. *Collins* (19 O. G., 1137; 103 U. S., 665), and in respect to the former the Supreme Court left open the question whether, in cases where a reissue is refused on some *formal* or other ground which did not affect the original claim, an applicant could have a return to his original patent, while in respect to the latter provision making the specifications and claims subject to *revision* and *restriction* in the same manner as original applications the Court said:

> But if his [the patentee's] title to the invention is disputed and adjudged against him it would still seem that the effect of such a decision should be as *fatal* to his original patent as to his right to a reissue.

The original claims 3, 10, 11, 25, and 26 having been voluntarily resubmitted to the *revising* jurisdiction of the Patent Office by the application for reissue, which repeated them literally or in substance, and having been rejected or adjudged against the patentee, not on formal grounds, but for reasons and on reference to prior patented devices which went to his right and title to such claims, and no appeal having been prosecuted from that decision, as the applicant could have done under sections 4909, 4910, 4911, etc., of the Revised Statutes, the effect of such adverse decision by the Patent Office should be regarded as *fatal* to said claims to the same extent as their rejection upon the original application would have been. If, as seems clear, the reissue application placed these claims within the jurisdiction and power of the Patent Office to *revise* or restrict, and the Office, while possessed and in the exercise of such jurisdiction, decided against the patentee's right and title to such claims, he had two courses open to him. He could seek a reversal of the Examiner's action or acquiesce in the rejection. If he elected the latter course, and took back the original Letters Patent with such adverse decision remaining in force, his action, in legal effect, operated to exclude the rejected claims as parts of the patent. The return of the Letters Patent under such circumstances could not restore validity to said claims or reinstate them to the same position or "status" they occupied before the reissue application was filed. The withdrawal of the Letters Patent after adverse action on the claims presented should be treated as an amendment thereof to the extent of the original claims rejected. The language of the statute conferring jurisdiction upon the Patent Office to revise and restrict the claims presented in such cases, the decisions of the Supreme Court upon the effect of acquiescence on





the part of the applicants in adverse decisions and rulings of the Patent Office, sound principle, and good policy support this view of the subject. Patentees should not be allowed to experiment and take chances in attempts either to secure reissues or to extend, enlarge, or broaden their inventions without taking the risk and subjecting themselves to the same rules and principles which apply and govern in original applications. Our conclusion is that the adverse action of the Department upon said claims, with the patentee's acquiescence therein, operated to invalidate the same.

But if said claims survived the revisory action and rejection thereof by the Patent Office under the reissue application, still the unsuccessful attempt made in that proceeding to broaden or expand said claims must, upon well-settled principles, be held to so limit and restrict their construction as to exclude what was thus rejected and to confine them to the specific devices and combinations therein described. Said claims must also be read and construed in the light of the prior art, which, as disclosed by the record, was such as to render Gorham simply an improver rather than an original and primary inventor. Assuming the validity of the several claims relied on, and applying thereto the tests and principles indicated, the court is clearly of the opinion that complainant is not entitled to the relief sought thereon.

The third claim is for—

> the reciprocating segments $C^4$, having the feed-teeth $c^6$, in combination with the guides D, as and for the purposes specified.

This language is too plain to admit of doubt or leave any room for construction, even if there had been no reissue application seeking to give it broader scope. The arrangement and organization of the Gorham machine was such as to require or necessitate the adoption of this or some similar device for moving the grain from the receiving chamber through the machine toward the binding or bundling chamber, and the device described as applied to that machine had its special or peculiar advantages. There is nothing in either the claim or the specification to support complainant's theory that the device or mechanism described in the claim covered or embraced what is alleged to have been Gorham's real invention—viz., the *packing* of the grain in small quantities, or wisp by wisp, at the waist or middle portion of the gavel or bundle, together with the self-sizing thereof as it reached the binding-receptacle. The claim by its very term includes *only* the elements of the reciprocating segments having the feed-teeth (pivoted thereto) and the guides along the passage-way through the machine, and the purpose or function intended to be accomplished or performed by the combination was not the central packing of the grain or the self-sizing of the bundle, but merely the movement or transportation of the grain from the receiving-chamber through the machine, without regard to packing it wisp by wisp and without reference to any binding-receptacle at the end of the passage-way traversed by the grain. The reciprocating segments, with the feed-teeth pivoted thereto or thereon, performed the simple function of *carriers* from the receiving-chamber across the machine, and without which it would have been inoperative. Aside from the unsuccessful attempt in the reissue proceeding to expand this claim, the state of the art, as shown by the prior patents of Low and Adams, Glover, Gordon, the Whitneys, and others, limits and restricts the patentable novelty of said claim to the use of literal reciprocating segments with their pivoted teeth.

Again, the several elements which go to make up the combination of this third claim (as of the other claims relied on) are mentioned specifically and by reference-letters. Such specific reference operates to confine and restrict the claim to the particular device described. (*Wier* v. *Morden*, 43 O. G., 753; 125 U. S., 106, and *Hendy* v. *Miner's Iron Works*, 43 O. G., 1117; 127 U. S., 375.)

The third claim of the patent, being confined and limited to the literal reciprocating segments arranged upon pivotal points independent of the actuating crank-shafts and carrying the pivoted feed-teeth upon them, is not infringed by the defendants' device, which presents an entirely different structure or mechanism, performs a different function, and could not be made to serve the purpose or to accomplish the same results. The defendants' device would not operate on a horizontal deck or platform like that of the Gorham machine. It has no segments and no feeding-teeth pivoted thereon. It is not pivoted on points separate from the crank-shaft which actuates it, but is mounted on the actuating crank-shaft. In the defendant's device there is no mechanism which performs the function of moving or carrying the grain from the receiving-chamber through the machine into the chamber or receptacle in which the bundle is formed and bound. The differences between the two devices are too wide and radical to involve infringement in view of the prior art. If said third claim could be construed to cover the defendants' device, it would itself be anticipated by the Gordon patent, No. 157,967, and other prior devices referred to in the evidence. The third claim, if valid, is not infringed.

The tenth and eleventh claims read as follows, viz:

> 10. The flexible strap *g*, arranged in receptacle G to operate trip-lever H, in the manner substantially as and for the purposes described.
>
> 11. The combination of the binding strap and cord *g* with the bundle-receptacle G and tooth-feeding segments $C^4$, substantially as and for the purposes described.

These two claims, as explained by the experts on both sides, are substantially the same, each having the same elements in combination. The elements specially described and covered by said claims are: (1) the reciprocating segments provided with pivotal feeding-teeth; (2) the *flexible strap* lying in the bundling or binding receptacle, and (3) the cord fastened to the end of said strap and so arranged as to operate the trip-lever or draw it back to such extent as to throw the proper clutches into engagement and start the binding mechanism.

The same reasons and considerations stated above for limiting the third claim to the *specific* device described therein apply with equal force to the device covered by or embraced in the tenth and eleventh claims. The elements which go to make up the combination of said claims are so clearly stated as to admit of no doubt as to the proper construction of the claims. They are mentioned specifically and by reference-letters, leaving no room to question what was intended. (125 U. S., 106, and 127 U. S., 375.)

The owner of the patent in the reissue application recognized that said claims were limited to a *flexible strap* arranged in the bundle-chamber. The claims were so construed as not to include a metallic arm or finger, which was sought to be secured under new and broader claims, calling generally for—

a yielding mechanism capable of expanding under the pressure of the infed grain.

The Patent Office held, in substance, that a "flexible strap" was, in view of the state of the art, something different from a yielding metallic arm, and denied the claims which sought to cover "yielding mechanism" such as defendants employ. Complainant cannot, in view of the specific description of the claims and of this action of the Department, invoke in behalf of said claims the doctrine of equivalents, so as to extend them beyond the particular devices described.

Again, the Spaulding patent of 1870 disclosed the idea of self-sizing the bundles and the automatic setting of the binding devices into operation through the instrumentality of a yielding metallic finger or fingers. In his specification he stated, among other things, that—

this invention consists, principally, in a mechanism that binds the gavel in the same movement that scrapes it from the binding-table; also in a mechanism that *always produces* gavels of the *same size*; also in an automatic device for giving motion to the binding apparatus that receives its motion from *the accumulation of grain*.

This Spaulding specification further says:

As soon as the quantity of cut grain beneath the compressing fingers becomes too great for them to restrain, it lifts them, such lifting up being effected in every instance by precisely the *same amount of grain*.

The complainant has made a vigorous attack upon this Spaulding patent, and claims that a machine constructed in conformity therewith would not operate. The proof does not establish this proposition, and complainant's own acts and representations, as the owner and licensee of said patent, are inconsistent with the present attempt to impeach its validity. In respect to the features under consideration—those relating to the self-sizing of the bundles, the employment of yielding metallic arms or fingers against which the grain is pressed to thereby automatically impart motion to the binding apparatus—the Spaulding machine was operative, as the evidence in the record clearly establishes. This prior Spaulding device seems to restrict the Gorham device covered by said claims to the specific and particular means described therein. Complainant cannot be allowed to invoke for said claims the doctrine of equivalents, so as to have them construed to cover what was clearly disclosed in the Spaulding patent.

Again, it is shown that in July, 1878, Gorham applied for, and on October 12, 1880, obtained, a patent, No. 233,089, in which he secured claims for a *yielding metallic arm* in place of the *flexible strap*. It further appears that in the application for the second patent it was urged that there was a difference between the *flexible strap* of the first patent (here sued on) and a yielding metallic arm. This alleged difference was presented as a reason for granting the second patent.

This action on the part of the patentee and the Patent Office was at least a *recognition* that there was a patentable difference between a *flexible strap* and a yielding metallic arm, and may fairly be invoked to limit complainant to the special means described in said claims under the doctrine of *McClain v. Ortmayer*, (57 O. G., 1329; 141 U. S., 423.)

Said tenth and eleventh claims, being restricted to the reciprocating segments with pivoted teeth and *flexible strap*, and cord connected therewith, and the binding apparatus, the device employed by the defendants does not infringe the same, because the defendants' mechanism has neither the reciprocating segments with pivoted teeth nor flexible strap or cord. They have a different feeding device, and instead of a flexible strap and cord they employ yielding metallic fingers like those of the Spaulding patent of 1870. Said tenth and eleventh claims, if valid, are not infringed by defendants.

The twenty-fifth and twenty-sixth claims of the patent, without introducing the *tying-bill* as an element of the combination described therein, refer only to the mechanism by which the *cord*, after it is tied around the completed bundle, is cut and removed from the tying-bill. They read as follows:

25. The combination of arm Q on shaft K'' with arm R' and bent arm R'' on rock-shaft R, and carrying the projecting cord-arm r''', to force the cord from the knot-tying device, substantially as described.

26. The combination of arm Q on shaft K'' with arm R' and bent arm R'' on rock-shaft R, carrying the knife r' for cutting the cord, and arm r''' for forcing the cord off the hook, substantially as described.

The knife being read into the twenty-fifth claim, as it should be, these two claims are substantially alike, and for the reasons already stated in reference to the third, tenth, and eleventh claims are limited to combinations in which an arm is mounted upon and rotated with the shaft, which rotates the knotter-bill, to move the cord cutter and stripper. It describes a special mechanism for cutting and stripping the cord immediately after the knot has been tied. Devices of various kinds were in use long prior to Gorham for cutting the cord and stripping it from the knotter-hook. Means for actuating such cutters and strippers were also old in the art. The prior method for moving the cutter and stripper from the tying bill was by means which operated *separately* or *independently* of the knotter-shaft or shaft which rotated the knotter-bill. These prior devices are disclosed in the Hickey 1860 patent and the Greenhut 1868 patent.

The prior state of the art and the rulings of the Patent Office on the reissue application, particularly on claims 57 and 59 thereof, which were rejected on the Burson patent of 1860 and the McPherson 1870 patent, operate to restrict said claims 25 and 26, or the combination therein described, to an *arm*, for moving the cutter and stripper, that is mounted upon and rotated by and with the knotter-shaft. In view of the prior art and of the proceedings had in the Patent Office, the particular arrangement described constituted the only *novelty* of said claims.

Again, the defendants do not infringe said twenty-fifth and twenty-sixth claims, for the reason that their device for moving or actuating their cutters and strippers is not mounted upon or rotated by or with the knotter-shaft, but by means of a mechanism that is *extraneous* to and operated *independently* of the knotter-shaft. Defendants' actuating means for cutting and stripping the cord from the tying-bill corresponds substantially and in principle with the devices shown in the prior patents of Hickey, Sherwood, Holly, and others. That these former devices were connected with *wire* binders and that the cutting apparatus had to deal with *wire* instead of *cord* involves no distinction in principle, but rather tends to support the view that the novelty disclosed by the twenty-fifth and twenty-sixth claims is confined to the special and particular arrangement therein described, which defendants do not adopt. There is no infringement of said claims by the defendants.

The conclusion of the court upon the whole case is that complainant is not entitled to any relief on either of the patents sued on or upon any claim or claims thereof, and that in both cases its suit or bill should be dismissed, with costs in each cause to be taxed against it, and it is accordingly so ordered and decreed.



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COMMISSIONER OF PATENTS

AND OF

# UNITED STATES COURTS

IN THE MATTER OF

PATENTS, TRADE-MARKS, &c.

*OFFICIAL GAZETTE—July-September*, 1893.

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# DIGEST OF DECISIONS

OF THE

## COMMISSIONER OF PATENTS

AND OF

# UNITED STATES COURTS

IN THE MATTER OF

## PATENTS, TRADE-MARKS, &c.

*OFFICIAL GAZETTE—July–September*, 1893.

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1. ACTION AT LAW FOR DAMAGES FOR INFRINGEMENT—ANTICIPATION A QUESTION OF FACT FOR THE JURY.
In an action at law for damages for an infringement the question whether a certain patent set up as a defense is an anticipation of the patent sued on is a question of fact to be submitted to and decided by a jury, and where there was no request for an instruction to the jury to return a verdict for the defendant the appeal court cannot under such circumstances consider the question.
[*Harper & Reynolds Company *v.* Wilgus, 202.

2. WRIT OF ERROR—QUESTIONS OF LAW.
On a writ of error to the Circuit Court of Appeals its review is confined to the consideration of questions of law, the rulings of trial courts upon questions of evidence, and the instructions given and refused to the jury. [*Id.

3. VERDICT—INSTRUCTIONS—BILL OF EXCEPTIONS.
Where there is nothing in the bill of exceptions to show that the jury disregarded the instructions of the court, the presumption is that they strictly followed them and, in the light of the evidence, obeyed the charge of the court. [*Id.

APPEAL TO THE COMMISSIONER.

(See Interference, 5; Petition to Commissioner, 1.)

ASSIGNMENTS.

(See Mortgage of Patent.)

1. ASSIGNMENTS—CERTIFIED COPIES—PROOF OF.
Certified copies of assignments are sufficient to establish *prima facie* evidence of title to a patent.
[*American Cable Railway Company *v.* Mayor, etc., of the City of New York *et al.*, 1008.

2. JOINT INVENTORS—ASSIGNMENT BY ONE INVENTOR—ISSUE OF PATENT TO ONE JOINT INVENTOR AND ASSIGNEE OF THE OTHER INVENTOR.
Where two joint inventors appoint an attorney to prosecute an application and receive the patent and one of the inventors assigns his entire interest to a third party and requests that the patent issue jointly to the other inventor and the assignee and the said attorney does not indicate that there was any objection on the part of the other inventor to so granting the patent, *Held* that there was no mistake on the part of the Office in granting the patent as requested.
[*Ex parte* Fowler *v.* Hutton, 1131.

3. OWNERSHIP OF PATENTS—BEST DETERMINED IN THE COURTS.
Where the records show that the proceedings in the Patent Office are regular and after the issue of the patent a question arises as to who is the true owner of the patent, the place to settle such controversy is in the courts. [Id.

4. RULE 26—PATENT MAY ISSUE TO INVENTOR AND ASSIGNEE OF AN UNDIVIDED INTEREST.
Where there has been an assignment of an undivided interest in an invention, accompanied by a request under Rule 26 that the patent issue jointly to the inventor and assignee, no legal objection seems to exist why the patent should not be so issued.
[Id.

BILL OF EXCEPTIONS.

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1. ELEMENTS OF A COMBINATION CLAIM.
Where there are combination claims for the structures, one of the structures being specifically set out, such claims should be regarded as combinations of all of the enumerated elements, and not as claims for a part only of the elements contained in them.
[*Ex parte* Korff, 1397.

2. SAME—CLAIMS FOR SPECIFIC STRUCTURES AND COMBINATIONS OF THE STRUCTURES.
Where there are claims for specific structures and combinations of the structures, and the structures have acquired distinct status in the arts, division should be required between the claims for one of the structures and combinations of the structures on the one hand and the claims for the other structure on the other hand. [Id.

COMMISSIONER OF PATENTS.

(See Interference, 5, 8; Petition to Commissioner, 1; Suits Under Section 4915, Revised Statutes.)

CONSTRUCTION OF CLAIMS.

(See Combination Claims; Construction of Specifications and Patents, 7; Particular Patents, 3, 9, 25.)

## CONSTRUCTION OF RULES.

(See Division of Application, 1, 3, 4; Interference, 4, 7; Petition to Commissioner, 1.)

## CONSTRUCTION OF SPECIFICATIONS AND PATENTS.

(See Description; Infringement, 7, 8, 11, 12, 15; Invention; Limitation of United States Patent by Foreign Patent Previously Granted; Particular Patents; Subsequent Patents.)

1. CLAIM—LIMITED BY PRIOR ART—BY REFERENCE-LETTERS.
In addition to the limitations made necessary by the prior art the language employed narrows the first claim of Letters Patent No. 266,895 to the precise mechanism of the patent. Every element is restricted by a reference-letter to the structure described and shown. A claim so explicit cannot be enlarged by construction.
[*Parry Manufacturing Company *v.* Hitchcock Manufacturing Company *et al.*, 860.

2. SAME—SECOND CLAIM.
The second claim is invalid for want of patentable novelty. [*Id.

3. SAME—THIRD CLAIM.
The third claim, if confined strictly to the mechanism described, is in the same predicament. A construction, however, can be placed upon this claim which will uphold it; but if so construed the defendants do not infringe. [*Id.

4. SAME—SAME—NO ELEMENT OF THE CONSTRUCTION IMMATERIAL.
The first and second claims embody specifically as an element a reinforcing rib consisting of an independent cord or strip *s*, laid longitudinally on the outer surface of one side of the lapped edges of the cushion and secured thereto by stitching. *Held* that the "edge-binding ridge or cord *s*" is not immaterial or useless, as the combination is an entirety, and if one of the elements is given up the thing claimed disappears, (*Vance* v. *Campbell*, 1 Blatchf., 497–499,) and this principle prevails even where the patentee has claimed more than is necessary to the successful working of his device. (*McClain* v. *Ortmayer*, 57 O. G., 1129; 141 U. S., 419–425.)
[*Vincent *et al.* *v.* Rigby, 861.

5. SAME—SCOPE OF.
While meritorious inventions of primary character call for liberal interpretation, (*Tilghman* v. *Proctor*, 19 O. G., 859; 102 U. S., 707; *Morley Machine Co.* v. *Lancaster*, 47 O. G., 367; 129 U. S., 263; *Béné* v. *Jeantet*, 47 O. G., 402; 129 U. S., 683,) the appellants' exclusive right may not be expanded by construction beyond the terms chosen to express the invention to include all means however differing in mode of action and principle from the process described in the patent. (*McClain* v. *Ortmayer*, 57 O. G., 1129; 141 U. S., 419.)
[*Celluloid Manufacturing Company *v.* Arlington Manufacturing Company *et al.*, 1293.

6. SAME—SAME.
The cancellation of the phrase "mechanical or cohesive action" from application by his own voluntary act indicated intention clearly inconsistent with defendant's present insistance. [*Id.

7. SAME—CONSTRUCTION OF CLAIMS.
The true meaning of claims must be gathered by comparing them with the context of the specification. [*Id.

8. SAME—PATENTABLE NOVELTY EVIDENCED BY SUCCESS IN REPLACING CITATION.
The patent of 1857 did not independently regulate air and oil, and was therefore a failure, and was replaced by apparatus made under 1869 patent, which were entirely satisfactory, and this a reason for sustaining patent.
[*Aerated Fuel Company *v.* Woodbury Glass Company, 1256.

9. SAME—SCOPE OF.
Patentee is entitled to all the advantages incident to the patented apparatus, even though not described in the specification or originally perceived by the inventor. (*Roberts* v. *Ryer*, 10 O. G., 304.) [*Id.

10. INVENTORS—PIONEER.
Although the complainants have not made a pioneer invention in the broad sense of the term, they are entitled to a construction liberal enough to cover a machine which in the same art performs the same work in manner almost identical.
[*Loewer and Schelter *v.* C. P. Ford & Co., 1536.

11. GORHAM—GRAIN-BINDER—APPLICATION FOR REISSUE REJECTED—ORIGINAL PATENT RETURNED.
Letters Patent No. 180,506, February 9, 1875, to Marquis L. Gorham, having been surrendered for a reissue, which reissue application contained claims substantially, if not identically, the same as the claims in the patent, together with other claims which were broader than the claims in the patent, and which broader claims and certain of the other claims as well were rejected, and which certain of the other claims are here sued on, and the rejection having been acquiesced in and the original patent returned to the owners—
[*McCormick Harvesting Machine Company *v.* C. Aultman & Company *et al.*, 1791.

12. REJECTED CLAIMS IN REISSUE APPLICATIONS.
*Held* that the same principle is applicable to a reissue proceeding where a party voluntarily resubmits his patent to the examination and revision of the Patent Office and acquiesces in a rejection of claims or in a construction placed thereon which operates to restrict or narrow the patent that obtains in acquiescences in rejections upon original proceedings; [*Id.

13. SAME—RENDERED VOID IN ORIGINAL PATENT.
*Held* that by the presentation of claims meaning substantially or identically the same things as the claims sued on, which were rejected and the rejection acquiesced in, the claims sued on had become destroyed by the reissue proceedings and the patent amended to the extent of the original claims rejected; [*Id.

14. SAME—SAME—PATENTEE BARRED FROM ASSERTING THEIR VALIDITY IN SUIT.
*Held* that, after an adverse decision by the Patent Office on certain claims, the patentee or his successor in right and interest is not entitled to assert the validity of such claims or insist upon the benefit thereof unaffected by the reissue proceedings and adverse action; [*Id.

15. SAME—SAME—SAME.
*Held* that, claims having been voluntarily resubmitted to the revising jurisdiction of the Patent Office by an application for reissue, which repeated them literally or in substance, and having been rejected or adjudged against the patentee, not on formal grounds, but for reasons and on references to prior patented devices, and no appeal having been prosecuted from such decision, the effect of such adverse decision should be regarded as fatal to said claims to the same extent as their rejection upon the original application would have been; [*Id.

16. PATENTEE ATTEMPTING TO ENLARGE HIS CLAIMS BY REISSUE MUST TAKE CONSEQUENCES OF ADVERSE ACTION.
*Held* that patentees should not be allowed to experiment and take chances, in attempts to secure reissues, to extend, enlarge, or broaden their inventions, without taking the risk and subjecting themselves to the same rules and principles which apply and govern in original applications; [*Id.

17. CLAIMS SURVIVING REVISORY ACTION UPON APPLICATION FOR REISSUE RESTRICTED.
*Held* that, if the claims survived the revisory action and rejection thereof by the Patent Office on the original application, still the unsuccessful attempt made in the reissue proceeding to broaden or expand them must, upon well-settled principles, be held to so limit and restrict their construction as to exclude what was thus rejected and to confine them to the specific devices and combinations therein described; [*Id.

18. SAME—ELEMENTS OF A COMBINATION.
*Held* that where the elements which go to make up the combination of a claim are mentioned specifically and by reference-letters such specific reference operates to confine and restrict the claim to the particular devices described; [*Id.

19. SUBSEQUENT PATENTS—EFFECT UPON ORIGINAL.
*Held* that where a claim calls for a particular device, the procuring by the patentee of a subsequent patent for a different device, which the defendants' device resembles, operated at least as a recognition on the part of the patentee and of the Patent Office that there is a patentable difference between the two, which may be fairly invoked to limit the patent to the specific means described in the claim. [*Id.

## CONSTRUCTION OF STATUTES.

(See Interference, 9; Interfering Patents; Suits under Section 4915, Revised Statutes.)

## CONVENTION OF DECEMBER 11, 1871.

(See Trade-Marks, 14.)

## CORPORATIONS.

(See Trade-Marks, 9, 16.)

## DATE OF FILING APPLICATION.

(See Limitation of United States Patent by Foreign Patent Previously Granted, 8.)

## DECREE.

(See Injunction, 11.)

## DEFENSE.

(See Appeal to the Circuit Court of Appeals, 1; Infringement, 14.)

## DELAY IN APPLYING FOR INJUNCTION.

(See Injunction, 5.)



## DELAY IN APPLYING FOR REISSUE.

(See Reissues, 2.)

## DELAY IN FILING BILL.

(See Demurrer.)

## DELAY IN FILING MOTION TO DISSOLVE INTERFERENCE.

(See Interference, 3, 4.)

## DEMURRER.

(See Injunction, 11, 12; Marking Articles "Patented.")

DEMURRER—LACHES.
The mere fact that eight years elapse between the rendition of a judgment declaring a patent valid and the filing of a bill to restrain its infringement does not render the bill demurrable on the ground of laches
[*Bragg Manufacturing Company *v.* City of Hartford, 1537.

## DESCRIPTION.

(See Drawings.)

SUFFICIENCY OF DESCRIPTION—OMISSION TO EXPLAIN THE CAUSES TO WHICH THE IMPROVEMENT WAS DUE.
The patent clearly describes and claims the construction of the invention whereby the improvement in the art of glass-annealing is accomplished, though the description is silent as to the philosophical principles which cause the invention to produce the improved annealing. *Held* that the description is sufficient and that the patentee ought not to lose the statutory benefits of his invention because he was perhaps not aware to what the improvements effected by his device were due.
[*Dixon Wood Company *v.* Pfeifer, 156.

## DESIGNS.

OBJECTION TO CLAIM—REJECTION.
An *objection* to a claim for a design that it is not single; that it fails to set up any article of manufacture, but, on the contrary, calls for three separate articles aggregated, is one pertaining to the merits and should therefore have been a *rejection*.
[*Ex parte* Myers, 859.

## DILIGENCE.

(See Priority of Invention.)

WHAT CONSTITUTES DUE DILIGENCE.
The person who first conceived a comparatively-simple improvement in power-presses for bookbinding made a rough sketch of it within a few months. Three years after his first conception he had working drawings made, and six months thereafter a machine was manufactured. He excused the delay by asserting that he could neither afford to buy the necessary tools sooner nor use them in his small shop. His reason for not having the machine made at another shop was that he would have made no profit on machines made by others according to his invention. *Held* that he did not use due diligence so as to entitle him to a patent as against one who conceived the invention later, but reduced it to practice sooner, than himself.
[*Christie *v.* Seybold, 1650.

## DISCLAIMERS.

(See Interference, 8; Limitation of United States Patent by Foreign Patent Previously Granted, 6.)

## DIVISION OF APPLICATION.

(See Combination Claims, 2; Drawings.)

1. SUSPENSION OF DIVISIONAL APPLICATION FROM ISSUE.
When only one of several divisional applications is in condition for allowance, it is contrary to the recent decisions and practice of the Office and inconsistent with Rule 106 to withhold such application from issue until all the other divisional applications are ready for allowance.
[*Ex parte* Drawbaugh, 155.

2. SIMULTANEOUS ISSUE OF DIVISIONAL APPLICATIONS.
The doctrine announced in *ex parte* Holt, (29 O. G., 171,) that all the divisions of an application should be passed to issue simultaneously, overruled. [Id.

3. WHAT MAY BE CLAIMED IN A DIVISIONAL APPLICATION.
A divisional application should only contain matter carved out of the parent case; but if the matter has been fully disclosed in the earlier application, although not reached by any claim or statement of invention, such disclosure should be sufficient to secure to the applicant the benefit of the date of the parent case.
[*Ex parte* Henry, 899.

4. SUPPLEMENTAL OATH—ORIGINAL OATH CHANGED.
The matter claimed additional to what was claimed in the parent case should always be supported by a proper supplemental oath, or if claimed in the divisional application as first filed the oath prescribed by Rule 46 should be correspondingly changed. [Id.

5. DIVISION—MACHINES—ELEVATED RAILWAY AND A SPRING-TRUCK.
Where the respective structures have reached definite places in the arts and in the Office classification, they cannot be claimed in the same application.
[*Ex parte* Korff, 1897.

6. DIVISION—PROCESS AND PRODUCT.
Where it appears that the process can produce no other product and the product can be produced by no other process, the process and product are parts of one invention, and division should not be required.
[*Ex parte* Demeny, 1649.

7. SAME—PATENT FOR PROCESS AND PRODUCT.
Where, if the application were a patent containing claims for a process and product, it would not be invalid because of independent inventions, division ordinarily ought not to be required, and not unless some exceptional burden would be placed upon the Office in conducting the examination. [Id.

8. SAME—INVENTIONS CLASSIFIED IN DIFFERENT DIVISIONS.
Where the inventions are classified in different divisions, such mere difference of the location of the inventions in the Office classification is not the sole test in determining the question of division. [Id.

9. SAME—CONFUSION AND LITIGATION OF TWO PATENTS IN A CASE LIKE THIS TO BE CONSIDERED.
The confusion and litigation likely to follow the grant of two patents in a case like this, which might come into the hands of separate owners, neither having the full enjoyment of the right to work his own, if both be valid, and the doubt cast upon the validity of both, are more important considerations than the suggestion that the inventions are classified in different divisions. [Id.

10. SAME—A GENERAL RULE—DISCRETION OF THE OFFICE IN THE REQUIREMENT OF DIVISION.
Within the limits of validity of the grant claims for distinct but dependent inventions may be joined in the same application or be made in separate applications, at the option of the applicant. This general rule leaves to the discretion of the Office the requirement of division in those exceptional cases in which the inconvenience resulting from a single application amounts to the necessity to divide, and leaves room, also, for the exercise of that inherent discretion necessarily left on this subject to the Office. (*Bennet* v. *Fowler*, 8 Wall., 445.)
[Id.

## DRAWINGS.

(See Construction of Specifications and Patents, 1; Diligence; Interference, 3; Reduction to Practice.)

CANCELLATION OF UNNECESSARY DRAWINGS AND DESCRIPTIVE PARTS OF AN APPLICATION.
Where an application originally contained claims for a method, a product, and an apparatus for carrying out the method, and upon an Office requirement of division the applicant canceled the claims for the apparatus, and where the disclosure of the apparatus does not make it clearer how the method might be carried out, *Held* that the drawings and description of the apparatus should be canceled.
[*Ex parte* Hafely and Redlefsen, 559.

## ENLARGEMENT OF CLAIMS.

(See Construction of Specifications and Patents, 11, 12, 13, 14, 15, 16, 17, 18, 19; Reissue, 2.)

## EQUIVALENTS.

(See Infringement, 8.)

## EVIDENCE.

(See Assignments, 1; Infringement, 4, 6; Inspection of Defendants' Factory; Interference, 5.)

WHEN A PATENT CANNOT BE ADMITTED UNDER THE GENERAL ISSUE AS ANTICIPATORY EVIDENCE OF THE STATE OF THE ART.

Where in the preparation for trial of several suits it was agreed by the parties thereto that testimony taken in either of the suits might be used in either of them, and where the complainant introduced a patent in rebuttal in explanation of the record in one of the cases, but it was not mentioned in the pleadings of either party and no testimony was given in respect to it, such patent is not admissible under the general issue in the other of the suits as an anticipation of the patent sued upon without an amendment of the pleadings setting it up.

[*Vermont Farm Machine Company v. Gibson, 300.

## EXAMINATION OF APPLICATIONS.

(See Combination Claims; Division of Application, 1, 6, 7; Reissues; Rejected Cases.)

## EXAMINER OF INTERFERENCES.

(See Interference, 5, 8.)

## EXAMINERS.

(See Petition to Commissioner, 1.)

## EXAMINERS-IN CHIEF.

(See Interference, 5, 8.)

## EXPERIMENTAL USE.

(See Infringement, 14.)

## EXPERT TESTIMONY.

(See Infringement, 3.)

## EXPIRATION OF PATENTS.

(See Injunction, 11, 12.)

## FIRMS.

(See Trade-Marks, 8.)

## FOREIGN PATENTS.

(See Limitation of United States Patent by Foreign Patent Previously Granted; Particular Patents, 10.)

## FORMER DECISIONS CONSTRUED.

(See Petition to Commissioner, 2.)

## FORMER DECISIONS REVERSED.

(See Division of Application, 2.)

## FORMER SUITS.

(See Injunction, 4.)

## GRANT OF PATENT.

(See Assignments, 2, 3, 4.)

## INFRINGEMENT.

(See Appeal to the Circuit Court of Appeals, 1; Construction of Specifications and Patents, 4, 11, 12, 13, 14, 15, 16, 17, 18, 19; Demurrer; Injunction; Inspection of Defendants' Factory; Particular Patents, 9, 11, 12, 14, 16, 17, 23, 24, 28; Suits for Infringement; Trade-Marks, 5, 6.)

1. INFRINGEMENT—SUIT BY EXCLUSIVE LICENSEE AGAINST OWNER OF PATENT.

A licensee who has the exclusive right to manufacture and sell a patented article can maintain a suit in equity against the patentee, if the latter is guilty of an infringement by making and selling himself, to redress the wrong occasioned thereby, and such suit arises under the patent laws of the United States.

[*Waterman v. Shipman *et al.*, 713.

2. SAME—INFRINGEMENT—SUIT BY LICENSEE—COMBINATION BETWEEN OWNER AND CODEFENDANTS.

If the bill of the licensee who has the exclusive right to manufacture and sell a patented article alleges a combination between the owner of the patent and other persons, who are made parties defendant with the owner, to deprive the complainant of the benefits and advantages of his license, and the evidence shows that a license granted by the owner of the patent to his codefendants was granted by him, and procured by them, for the paramount purpose of preventing the complainant from enjoying the monopoly conferred by his license, the defendants are joint infringers of the complainant's rights, and he is entitled to relief against all the parties defendant. [*Id.

3. SAME—VALIDITY—WANT OF NOVELTY—EVIDENCE.

If defendants in a suit for infringing Letters Patent plead want of novelty and set up in their answer and offer in evidence a large number of patents prior in date to those of the complainant, the Court will not examine these patents, in the absence of expert testimony to explain them or to indicate what they contain to negative the novelty of the complainant's patents, unless the character of the invention has so little complexity that expert testimony is not required for that purpose. [*Id.

4. SAME—WANT OF NOVELTY—EVIDENCE.

In a suit for the infringement of Letters Patent defendants introduced in evidence a pamphlet of about twenty-five pages, published two years after the patents were issued, entitled "An Exposé of the Assumptions and Business Methods of a Dealer and Reputed Inventor," which was prepared and published by a rival manufacturer apparently for the purpose of discrediting the inventions of the complainant and his personal character and business methods. The greater part of the pamphlet was scandalous matter irrelevant to the issues. The author testified that, so far as it referred to the patents he had studied, the pamphlet correctly expressed his views respecting the same. *Held*, that the contents of the pamphlet could not be considered competent evidence upon the issue of novelty, and that complainant's counsel was justified in refusing to cross-examine the author. [*Id.

5. CHANGE OF STRUCTURE.

Letters Patent No. 355,568, issued to Alvin T. Simpkins January 4, 1887, are not infringed by a device having return-flues beneath the baking-chamber and a ledge at the inner ends of these flues, which forms a part of the back wall of the oven, and which extends six inches farther forward than the inner end of the baking-chamber.

[*Simpkins v. Perry Pie Company, 859.

6. SAME—EVIDENCE.

Where there is a difference between the construction of a patent and the construction used by the defendant, it is evidence of non-infringement where the device of the defendant does not accomplish the results of the patent. [*Id.

7. SAME—OMISSION OF AN ELEMENT OF THE COMBINATION.

Defendant's alleged infringing device, made under and in accordance with Letters Patent No. 434,890, granted to Clifford Saville August 19, 1890, and which shows a narrow reinforcing-strip of rubber or the like inserted between the lapped edges of the tubular cushion and secured thereto by coarse stitching passing through the lapped edges and inserted piece, does not infringe complainants' patent, since the defendant does not employ one of the specified elements—the cord *s*—of the complainants' construction.

[*Vincent *et al. v.* Rigby, 861.

8. COMPLAINANTS NOT ENTITLED BROADLY TO THE BENEFIT OF THE DOCTRINE OF EQUIVALENTS.

Complainants are not entitled to claim, broadly, the benefit of the doctrine of equivalents, which is rightly applicable to inventions of a primary character, Poyton being a mere improver, structurally, of an old and commonly-used device and applied no new principle and produced no distinctively-new result. [*Id.

9. LIMITATION OF CLAIM—TIN CANS.

Letters Patent No. 207,058, issued August 13, 1878, to Miller & Coll, for an improvement in sheet-metal cans, is, by reason of the rejection and abandonment of a broader claim, strictly limited to the form therein described.

[*Coll *et al. v.* Seneca, 1132.

10. CHANGE OF STRUCTURE.

The above patent is not infringed by the use of cans having the flange of the heads slightly flared, so as to form a V-shaped groove for the solder. [*Id.

11. SAME—CANDLE-SHAPING AND FINISHING APPARATUS.

The patent No. 330,200 to Anton F. Baumer was not infringed by a construction which had a single die at one end for molding the cone-shaped foot after the wax has been softened to make it plastic and a cushion or bearing whose sole office was to hold the tip of the candle while the candle was molding at the other end and which did not embrace the body of the candle.

[*Baumer v. Will *et al.*, 1365.

12. PATENTABLE NOVELTY QUESTIONED.

"The thing produced being old, and dies for making articles in character being well known, the patent would seem to be dangerously near the doctrine of the bretzel case." (Citing *Butler v. Stichel*, 53 O. G., 1009; 127 U. S., 21, 29.) [*Id.



13. INFRINGEMENT NOT AVOIDED BY SLIGHT CHANGE OF STRUCTURE.

The infringement is not avoided by so attaching the gripping device that it may be detached when required, for the terms "permanently attached" in the claim import, merely, that the gripping device is an essential part of the car, and not that it is incapable of removal.

[*Pacific Cable Railway Company v. Butte City Street-Railway Company, 1397.

14. PRIOR USE—BURDEN OF PROOF.

Where the defense to an infringement suit is prior use, the burden is on defendant, and it is not sustained where the evidence shows that the alleged prior use was only for experimental purposes and had with a view to perfecting the device. [*Id.

15. CHRISTIE—BOOKBINDER'S PRESS.

Letters Patent No 450,832 were issued April 21, 1891, to W. H. Christie, for a bookbinder's press in which the platen could be quickly run up by hand without moving the power-driving mechanism. The patent was granted after a decision in Christie's favor upon an interference with an application by Charles Seybold. In the Seybold invention the pressure was obtained by a vertical screw, and transmitted to the platen by means of removable pipes of different lengths to suit the size of the bundle. In the Christie invention the power was obtained by a lever and pawl operating in connection with a ratchet-wheel, pinion, and rack-bar. In both inventions the platen was balanced by weights. The interference was declared on a claim for a "platen detachably connected with the power-driving mechanism and provided with a counterbalancing-weight," which language was taken from the Christie claim. In the Christie invention, however, the point of disconnection was between the ratchet-wheel and the lever-pawl. *Held* that this construction was fairly within the language of the claim and interference, notwithstanding that the point of disconnection was not immediately at the platen proper, and that there was an interference between the two inventions.

[*Christie v. Seybold, 1050.

## INJUNCTION.

1. PRELIMINARY INJUNCTION—WHEN IT WILL BE GRANTED.

Where upon motion for a preliminary injunction it is shown that the claim alleged to be infringed has already been adjudged by a Federal court to be valid on substantially the same evidence as is presented with the motion, *Held* the validity of the claim for the purpose of issuing the injunction is thereby conclusively established.

[*S. S. White Dental Manufacturing Company v. Johnson *et al.*, 303.

2. SAME—SAME—PATENT NOT PREVIOUSLY SUSTAINED BY A COURT.

In patent cases the infringement upon which a preliminary injunction will be granted must be without reasonable doubt and the rights of the patentees clear, and, failing in prior adjudication in favor of the validity of a patent, there must be shown such continued public acquiescence in the exclusive right asserted as raises a presumption of validity of the patent.

[*Standard Elevator Company *et al. v.* Crane Elevator Company *et al.*, 638.

3. SAME—WHEN IT WILL BE GRANTED.

Where the evidence as to the construction of claims and their infringement was necessarily and largely *ex parte* and where the damages which the complainants may suffer can be compensated in money by the respondents, *Held* that a preliminary injunction ought not to be granted. [*Id.

4. SAME—SAME.

Although complainant's patent has been upheld in a suit against other parties in which defendants' patent was pleaded, a preliminary injunction against alleged infringement by manufacturing devices under the latter will not be granted when it appears that the former suit was so decided on the ground that there was an estoppel to question the novelty of complainant's patent, so that the validity of defendants' patent was not considered.

[*Ney Manufacturing Company v. Superior Drill Company *et al.*, 1133.

5. SAME—SAME—DELAY.

A preliminary injunction will not be granted in an infringement suit where complainant does not apply for it until two months after his bill was filed, during which time defendant has proceeded to fill up his stock of the alleged infringing articles for the coming season, which lasts but a short time.

[*Id.

6. SAME—EFFECT OF DECISION OF THE SUPREME COURT OF THE UNITED STATES.

A decision of the Supreme Court of the United States sustaining a patent must be regarded as conclusive upon a motion for preliminary injunction.

[*American Bell Telephone Company *et al. v.* McKeesport Telephone Company *et al.*, 1134.

7. SAME—UPON DECISION OF SUPREME COURT OF THE DISTRICT OF COLUMBIA.

Complainant in a suit for the infringement of a patent is entitled to a preliminary injunction where it appears that the Supreme Court of the District of Columbia has in a prior suit sustained the validity of his patent, and *Held* that it was infringed by a device which was substantially the same as that of the present defendants.

[*S. S. White Dental Manufacturing Company v. Johnson *et al.*, 1388.

8. SAME—WHERE EVIDENCE OF EXPERTS CONFICT.

A preliminary injunction will not be granted in an infringement suit where the affidavits of experts disclose a conflict that cannot be decided in complainants' favor without danger of unjustly interfering with the business of defendants, who are merely users of the device in question, and whose financial responsibility is not questioned.

[*Williams *et al. v.* McNeely *et al.*, 1268.

9. SAME—PREVIOUS SALES OF INFRINGING ARTICLES.

When it appears that defendants have kept and offered for sale an infringing article, it is not unfair to issue a preliminary injunction, though they profess to have no present intention of continuing such sales.

[*New York Belting and Packing Company *v.* Gutta Percha and Rubber Manufacturing Company, 1534.

10. SAME—SAME.

Such injunction will not be refused on a suggestion that an improper use may be made thereof by advertising to embarrass defendants in the sale of non-infringing articles, since it must be presumed that the injunction was sought in good faith, and should the contrary appear the court could reconsider its action. [*Id.

11. SAME—DEMURRER—EXPIRATION OF TERM OF PATENT.

A bill for an injunction to restrain the infringement of a patent filed only four days before the term of the patent expires is demurrable where no preliminary injunction is asked, since it would be impossible to obtain a final decree before expiration of the patent. (*American Cable Ry. Co. v. Chicago City Ry. Co.*, 52 O. G., 1666; 41 Fed. Rep., 522, followed.)

[*Brass Manufacturing Company *v.* City of Hartford, 1537.

12. SAME—DEMURRER—PUBLIC POLICY.

The objection that public policy forbids the issuance of an injunction cannot be raised by demurrer to the bill, since that is a question addressed to the discretion of the court, especially where the bill alleges that complainant has reason to fear that defendant will continue his infringements. [*Id.

## INSPECTION OF DEFENDANTS' FACTORY.

INFRINGEMENT—INSPECTION OF WORKS.

In a suit to restrain alleged infringement of patents for rasps and files and the process of and machinery for making the same plaintiffs failed for more than six months after the answer was filed to take any evidence, and then applied for an order that they be allowed to inspect fully defendants' factory. Defendants denied infringement, and alleged that for years before the patents were granted they made files under a secret process, not patented, which they still use. They also produced files made by such process before the date of the patent, which were apparently the same as plaintiffs' files. *Held* that the order for the examination would not be granted.

[*Stokes Brothers Manufacturing Company *v.* Heller *et al.*, 1654.

## INTERFERENCE.

(See Suits Under Section 4915, Revised Statutes.)

1. INTERFERENCES—EFFECT OF MOTIONS TO STAY PROCEEDINGS.

The granting of a motion to stay the proceedings pending the determination of a motion to dissolve does not release the interferants from a requirement to file other motions specifically provided for within a stated period.

[Lamb *v.* Warren, 437.

2. SAME—SAME—PRACTICE.

When a motion to effect a stay of proceedings has been granted, the correct practice is to file all special motions at the times and periods specified for them. Such motions will then be determined in their usual order; or in case of agreement of the interferants therein and upon approval of the agreement by the Office the determination thereof will be adjourned to a day proper. [Id.

3. SAME—MOTION TO DISSOLVE—DELAY IN FILING.

Where an interferant relied upon a proper tracing of the drawing of his opponent's application for an understanding of the latter's invention and was misled thereby, such misunderstanding will not excuse his delay to file a motion to dissolve after the period of twenty days. [Id.

4. SAME—RULE 122.

The delay that may be excused within the discretion of the Office provided for in Rule 122 is not such as will be exercised to relieve an interferant from his own negligence. [Id.

5. REOPENING OF CASE FOR ADDITIONAL TESTIMONY—WHEN TOO LATE.

Where a contestant in interference was put upon notice at the time of the hearing before the Examiner of Interferences that there was a weak point in his evidence, and notwithstanding this he waited until an appeal had been taken to the Board of Examiners-in-Chief and thence to the Commissioner before making an effort to amend his testimony, *Held* that it was then too late to have the case reopened for the purpose of introducing evidence known and accessible to him at the time his testimony was taken.

[Webb *v.* Blickensderfer, 867.

6. INTERFERENCE—WHEN CLAIMS OF A PATENT AND APPLICATION DO NOT INTERFERE.
Where the claim in a patent contains an element not disclosed in an application involved in an interference with the patent and where the applicant cannot make a claim that will be commensurate in terms with the claim of the patent, no interference in fact exists.
[Dixon v. Van Auken, 1005.

7. RULE 116—CONSTRUCTION THEREOF.
Rule 116, as recently amended and construed in the light of decisions bearing upon it, means that he who first made a claim or statement of invention covering the invention in interference should be considered the senior party.
[Huson v Crowell v. Yates, 1006.

8. INTERFERENCE IN THE PATENT OFFICE—EFFECT OF JUDGMENT THEREIN UPON THE COURTS.
Where there had been an interference between the Stonemetz and Brown applications in the Patent Office the fact that priority of invention had been awarded to Stonemetz by the Examiner of Interferences, the Board of Examiners-in-Chief, and the Commissioner of Patents, while not conclusive, is not without weight, especially in view of a subsequent disclaimer by Brown of the invention of the matter covered by the issue in the interference.
[*Stonemetz Printer's Machinery Company v. Brown Folding Machine Company, 1135.

9. INTERFERENCE—BILL IN EQUITY TO SECURE LETTERS PATENT—ESTOPPEL.
The failure of a party in an interference proceeding in the Patent Office to raise the question whether his opponent's invention includes the issue declared in the interference does not estop such party to raise that question in an equity suit, under Revised Statutes, section 4915, to determine his right to a patent.
[*Christie v. Seybold, 1650.

## INTERFERING PATENTS.

SECTION 4918—WHEN PATENTS INTERFERE—DOMINANT AND SPECIFIC CLAIMS.
Patents interfere only when they claim the same invention in whole or in part, and in a proceeding under Section 4918 the court cannot go beyond the claims and consider generally the two patents as a whole. An interference does not exist within the meaning of the statute between a patent having a dominant broad claim and a junior patent having a subordinate specific claim.
[*Stonemetz Printer's Machinery Company v. Brown Folding Machine Company, 1135.

## INTERNATIONAL CONVENTION OF MARCH 20, 1883.

(See Limitation of United States Patent by Foreign Patent Previously Granted, 10.)

## INVENTION.

(See Particular Patents, 2, 16, 18, 19.)

SIMPLICITY IN CHANGE MADE DOES NOT NEGATIVE PATENTABILITY.
Simplicity in change of constructions does not negative patentability where the change produced a new and beneficial result never attained before.
[*American Cable Railway Company v. Mayor, etc., of City of New York *et al.*, 1008.

## JOINT INVENTORS.

(See Assignments, 2, 3.)

## JUDGMENT IN INTERFERENCE CASES.

(See Interference, 8.)

## JURISDICTION.

(See Appeal to the Circuit Court of Appeals, 1, 2; Assignments, 3.)

## JURY TRIALS.

(See Appeal to the Circuit Court of Appeals.)

## LABELS.

(See Prints.)

## LICENSEES.

(See Infringement, 1, 2.)

## LICENSES.

(See Mortgage of Patent, 3; Use and Sale of Patented Articles.)

## LIMITATION OF UNITED STATES PATENT BY FOREIGN PATENT PREVIOUSLY GRANTED.

(See Particular Patents, 10.)

1. PRIOR FOREIGN PATENT FOR SAME INVENTION.
The tests of identity of invention for the purposes of section 4887, United States Revised Statutes, collated from the leading cases of *Siemens v. Sellers* (123 U. S., 276) and *Commercial Manufacturing Company v. Fairbank Canning Company* (51 O. G., 965; 135 U. S., 176) and applied. The tests are: Is the principal invention of the domestic patent found in the foreign patent? Is the subject-matter of the one the same in all essential particulars as that of the other? Would a structure made pursuant to the foreign patent infringe the domestic patent? Could both patents have been granted in this country?
[*Electrical Accumulator Company v. Julien Electric Company *et al.*, 559.

2. SAME—IDENTITY OF FOREIGN AND DOMESTIC PATENTS.
The two patents need not be in identical garb or employ identical forms of expression. [*Id.

3. SAME—EVIDENCE OF INTENT TO PATENT THE SAME INVENTION.
Evidence of an intention to patent the same invention in the two patents is material and important. [*Id.

4. SAME—ADMISSIONS AS TO IDENTITY OF INVENTIONS.
Admissions, express or implied, that the two patents are respectively for the same invention as a third and earlier patent issued in a third country are material and important. [*Id.

5. SAME—METHODS OF CRITICISM TO BE APPLIED ALIKE TO FOREIGN AND DOMESTIC PATENTS.
The same canons or methods of criticism applied to the ambiguities or perspicuities of the domestic patent should be also applied to those of the foreign patent. [*Id.

6. SAME—SAME.—DISCLAIMER.
The comparison should be instituted with the domestic patent as it was issued, and not with the domestic patent as it may afterward exist after being cut down by a disclaimer and limited by the state of the art. If a patent, when granted, covers an invention which has been previously covered by a foreign patent, it expires with the foreign patent, notwithstanding the fact that it has subsequently been pared down to cover only one method of practicing the invention, or restricted to a single claim. [*Id.

7. SAME—PROCESS AND PRODUCT.
Though the domestic patent claim the product and the foreign patent claim the process, still where the process makes the product and the product can be made only by the process the product and the process constitute one discovery and the patents are for the same invention. (Citing *Mosler v. Mosler*, 43 O. G., 1115; 127 U. S., 354; *Plummer v. Sargent*, 120 U. S., 442.) [*Id.

8. SAME—DATE OF ISSUE OF UNITED STATES PATENT NOT DATE OF FILING APPLICATION IS CONTROLLING.
In the present state of the law the date of issue of the domestic patent is controlling under section 4887, United States Revised Statutes, not the date of application for the domestic patent. (Citing *Gramme Company v. Arnoux*, 25 O. G., 145; 17 Fed. Rep., 838; *Edison v. United States Company*, 35 Fed. Rep., 134.) [*Id.

9. SAME—EXTENSION OF TIME OF FOREIGN PATENT.
The right to obtain an extended term of the foreign patent on application within a time limited, if not availed of by actual application within such time, does not constitute such a potential term in the foreign patent as to prolong the domestic patent through or into such extended term. (Distinguishing *Consolidated Roller Company v. Walker*, 54 O. G., 136; 43 Fed. Rep., 575, 580, and citing *Bate v. Gillett*, 46 O. G., 1029; 31 Fed. Rep., 809; *Bate v. Hammond*, 46 O. G., 989; 129 U. S., 151; *Huber v. Nelson*, 63 O. G., 311.) [*Id.

10. SAME—INTERNATIONAL CONVENTION OF MARCH 20, 1883.
The international convention of March 20, 1883, to which, among others, Spain and France and the United States were parties, has not the force of a statute in the United States. (Citing opinion of Attorney-General Miller, April 5, 1889, 47 O. G., 398.) [*Id.

## MARKING ARTICLES "PATENTED."

PENALTIES—REVISED STATUTES, SECTIONS 4900, 4901—NECESSITY FOR STAMP "PATENTED," ETC., ON PATENTED ARTICLE.
Where the complaint showed that the word "Patented," etc., was not stamped on plaintiff's patented article, as required by Revised Statutes, section 4900, not because of the "character of the article," but because the cost of such stamping would destroy the patentee's profits, *Held*, on demurrer to the complaint in an action to recover penalties under section 4901, for an unauthorized use by defendants of the word "Patented," etc., on their articles, that the complaint was demurrable.
[*Smith v. Walton *et al.*, 1789.



## MECHANICAL SKILL.

(See Particular Patents, 4, 5, 22.)

## MORTGAGE OF PATENT.

1. MORTGAGE—TRANSFER OF TITLE.
A mortgage by a patentee vests in the mortgagee the whole title to the patent rights, subject only to be defeated by performance of the condition, or by redemption by bill in equity within a reasonable time after default, and the right of possession to the incorporeal property is, in legal effect, delivered to the mortgagee at the time of the recording of the mortgage at the Patent Office. [*Waterman v. Shipman *et al.*, 713.

2. SAME—RECITAL OF LICENSE—NOTICE TO PURCHASER.
The recital in a mortgage of patent rights of the existence of a license is notice to the mortgagee and purchasers of the patent rights under the mortgage of all the terms and conditions of the license. [*Id.

3. SAME—ASSIGNMENT OF LICENSE—SUPPLEMENTARY PROCEEDINGS IN AID OF EXECUTION.
In the absence of words showing that it was intended that the license might be assigned, a license conferring the exclusive right to manufacture and sell patented articles is not assignable, and does not vest in a receiver of the property of the licensee, appointed in proceedings supplementary to execution under the New York Code of Civil Procedure. [*Id.

## MOTION TO DISSOLVE INTERFERENCE.

(See Interference, 3.)

## MOTION TO STAY PROCEEDINGS IN INTERFERENCE.

(See Interference, 1, 2.)

## OATH.

(See Division of Application, 4.)

## PARTICULAR PATENTS.

(See Construction of Specifications and Patents, 2, 3, 4, 11; Infringement, 5, 7, 9, 15.)

1. BAKER—HARVESTER-BINDER—VOID.
Reissued Letters Patent No. 10,106, of May 9, 1882, to William R. Baker, *Held* to be void for want of patentable novelty, but, if valid to any extent, not infringed by the defendants' machines.
[*McCormick Harvesting Machine Company v. C. Aultman & Company *et al.*, 1791.

2. BAINBRIDGE—MATERIAL FOR PICTURE-MATS.
Letters Patent No. 452,911, dated May 26, 1891, issued to Richard W. Bainbridge for an "improvement in material for picture-mats," *Held*, in view of the prior state of the art, to be void for want of patentable invention.
[*Bainbridge *et al.* v. Kitchell Embossing Company, 717.

3. BAUMER—CANDLE SHAPING AND FINISHING APPARATUS—LIMITATION OF CLAIMS.
Letters Patent No. 330,200, Anton F. Baumer, November 10, 1885, comprising a tubular holder for embracing the body of the candle, a die at one end of the holder, and a plunger at the other end, limited strictly to apparatus described by prior state of the art, which is full of machines for molding and pressing plastic material by means of a die and plunger, and by British patent, John Lyon Field, 1865, which was for same product and must have required mold shaped at one end exactly like patentee's die.
[*Baumer v. Will *et al.*, 1365.

4. BROWN—MACHINE FOR MAKING BALLS OUT OF LEATHER SCRAPS AND SIMILAR ARTICLES—WANT OF PATENTABILITY.
Letters Patent No. 216,305, dated June 10, 1879, issued to Samuel Brown, for a machine for making balls out of leather scraps and similar material by pressure, examined in view of the state of the art, and *Held* that it did not require invention to make a machine with a cup-shaped die—a die with a cavity "somewhat less than a hemisphere."
[*American Patents Company *et al.* v. De Beer, 716.

5. SAME—SAME.
*Held*, further, that all that was necessary to do after observing that the ball pressed in a round mold expanded upon removal on the line of pressure would be to compress the ball into a space less than a sphere, so that the expansibility of the material would cause it to expand into a round ball, and this was obviously to be done by making the dies shallower.
[*Id.

6. BULLARD—APPARATUS FOR BURNING HYDROCARBON—PATENTABLE NOVELTY.
Letters Patent No. 397,336, James H. Bullard, February 5, 1889, comprising a burner arranged within a glass-furnace, two distinct pipes running to and connected with the burner—one an oil-supply, the other an air-supply from an air-compressor—and a regulator for autonatically controlling the compressor and pressure of air fed to burner, not anticipated by Patent No. 365,780, granted to said Bullard on July 5, 1887, in which the air-pipe does not lead directly to the burner, but to an air-space in the upper part of the liquid-fuel tank, from which tank the oil is forced by air-pressure through an exterior tube, while at the same time air is forced from the air-space in the tank up through an annular air-passage between said inner and exterior tubes, meeting the oil at the outer end of the tube, where a screw-cap having a small central perforation is adapted to regulate the proportion of mixed air and oil ejected, though it was old to regulate the flow of liquids through pipes by cocks.
[*Aerated Fuel Company v. Woodbury Glass Company, 1260.

7. BUTLER—CREAMING-CAN—ARTICLE OF MANUFACTURE—NOVELTY.
Claims 2, 5, 7, and 8 of Letters Patent No. 321,340, June 30, 1885, to Francis G. Butler, for a creaming-can, examined in view of the state of the art, and *Held* to be valid.
[*Vermont Farm Machine Company v. Gibson, 300.

8. COOLEY—PROCESS OF RAISING CREAM FROM MILK—INVENTION.
Claim 1 in Letters Patent No. 187,516, February 20, 1877, to William Cooley, for process of raising cream from milk, examined in view of the state of the art, and *Held* to be the product of invention and novel
[*Vermont Farm Machine Company v. Gibson, 300.

9. DORR AND TAMPLIN, AND NARAMORE—HARNESS-PADS—INFRINGEMENT.
Claim 1 of Letters Patent No. 302,548, issued July 29, 1884, to Dorr and Tamplin, is for a harness-pad in which the wool of the sheep or other animal is incorporated with a fabric backing in place of the skin. Claim 2 of Letters Patent No. 423,797, issued March 19, 1890, to Henry L. Naramore, is for practically the same thing, except that the claim is limited to a backing having secured thereto "tufts of unspun wool or hair * * * in the form of doubled uncut loops." *Held* that, in view of the prior state of the art, these claims must be strictly construed and are not infringed by a pad made under the Cahoone Patent No. 402,719 and consisting of a broad skein or web of material made flat and joined to a woven fabric or backing by rows of stitching, the material used being "spun" wool.
[*Naramore v. Cahoone Barnet Manufacturing Company *et al.*, 1537.

10. FAURE—SECONDARY OR STORAGE BATTERIES—NO. 252,002—EXPIRED JUNE 27, 1891, WITH PREVIOUS FOREIGN PATENTS
United States Letters Patent No. 252,002, issued to Camille A. Faure on January 3, 1882, for "improvement in secondary or storage batteries," on an application filed April 11, 1881, are for the same invention as Spanish Letters Patent issued to the same Camille A. Faure on June 27, 1881, on an application filed April 16, 1881, and issued for the term of ten years, and said United States Letters Patent expired on June 27, 1891, with the expiration of said Spanish Letters Patent. (*Brush v. Electrical Accumulator Company*, 56 O. G., 1334; 47 Fed. Rep., 48, 58, distinguished; *Brush v. Julien Company*, 41 Fed. Rep., 679, 683, 685, cited.)
[*Electrical Accumulator Company v. Julien Electric Company *et al.*, 559.

11. FOLEY—OVERFLOWS FOR BATHS—INFRINGEMENT.
Reissued Patent No. 6,739, granted November 16, 1875, upon Patent No. 153,250, dated July 21, 1874, to James Foley, for an improvement in wash-valves and overflows for basins and baths, which consists in bringing up the stand-pipe or outer pipe of the overflow through the casing or slab contiguous to the basin or bath-tub and securely attaching it to a removable cap resting upon the outside of the casing or slab, is not infringed by the device made under Letters Patent No. 170,709, dated December 7, 1875, to William S. Carr, in which the stand-pipe is secured by a screw flange resting on the top of the slab, but has no cap covering its upper end, as has the prior patent (46 Fed. Rep., 77, affirmed.)
[*Adee v. J. L. Mott Iron Works, 1400.

12. GORHAM—GRAIN-BINDERS—NO. 150,506.
*Held* that the third, tenth, eleventh, twenty-fifth, and twenty-sixth claims of the Gorham patent, even if valid, are limited to the precise construction called for, and not infringed by defendants' machines.
[*McCormick Harvesting Machine Company v. C. Aultman & Company *et al.*, 1791.

13. HALLIDIE—CABLE CARS—INFRINGEMENT.
Letters Patent No. 182,693 were issued to Andrew S. Hallidie for an invention known as "improvements in railways." The claim was: "In combination with the cars of a street or other railway which are intended to be propelled by means of an endless cable moving in an underground slotted tunnel, the truck or dummy E, having the permanently-attached gripping device H." The specification described a dummy in which the grip was located under the forward axle—there being two—and which was not provided with seats for carrying passengers. *Held* that this is infringed by a car used for the same purpose, and similarly constructed, save that the grip is located midway between the two axles and the car is arranged to carry passengers.
[*Pacific Cable Railway Company v Butte City Street-Railway Company, 1397.

14. SAME—ANTICIPATION.
This patent is not anticipated by the prior patents to G. T. Beauregard and to A. Ely Beach, or by the former patent for a similar device issued June 1, 1875, to Halidie himself, as the evidence shows that the present device was perfected before such former patents were issued. [*Id.

15. HOWE—MACHINE FOR COUPLING THE LINKS OF DRIVE-CHAINS.
The patent to Eugene L. Howe, No. 317,790, of May 12, 1885, for a machine for coupling the links of drive-chains by a sidewise thrust of the coupling-bar, *Held* to be invalid in view of the machine for coupling by an endwise thrust of the coupling-bar previously invented by Fassett, as only mechanical skill, and not invention, was required to make the Howe machine in view of the Fassett.
[*Fassett *v.* Ewart Manufacturing Company, 439.

16. HYATT—CELLULOID—INFRINGEMENT—INTERPRETATION.
Letters Patent No. 199,908, February 5, 1878, granted to the first-named company as assignee of John W. Hyatt, for an improvement in the manufacture of sheets of celluloid and other plastic compositions, *Held* to be limited by the apparatus and method shown and described to the discovery that a slab of material may be held upon a surface through the operation of the contractile energy it exerts in shrinking, acting upon elevations or depressions on or in the surface on which the slab is placed, and not infringed by the operation of Letters Patent No. 387,947, dated August 14, 1888, issued to Francis Curtis, assignor to The Arlington Manufacturing Company, one of the appellees, which provides an all-metal plate having a perfectly-smooth surface, to which the block of celluloid is held by atmospheric pressure and adhesion only.
[*Celluloid Manufacturing Company *v.* Arlington Manufacturing Company *et al.*, 1268.

17. LOEWER AND BLAIR—SOLE-CUTTING MACHINES—INFRINGEMENT.
Letters Patent to H. Loewer and B. L. Blair, No. 407,735, granted July 23, 1889, for an improved sole-cutting machine, sustained and infringed by a device constructed in accordance with Patent No. 472,399, granted to S. Rose, Jr., April 5, 1892.
[*Loewer and Schelter *v.* C. P. Ford & Co., 1536.

18. SAME—INVENTION.
Loewer and Blair's machine does the work better and faster than the best of the prior machines. It is stated that the daily capacity of the Hartford machine is from 600 to 800 pairs of outsoles per day, while that of Loewer and Blair's machine is from 4,000 to 6,000 per day. To construct such a machine required invention. The arrangement of its complicated and ingenious mechanism is not the work of mechanical skill alone.
[*Id.

19. MILLER—CONSTRUCTION OF CABLE RAILWAYS—INFRINGEMENT—NEW COMBINATION.
Claim 6 of Letters Patent No. 271,727, dated February 6, 1883, to Daniel J. Miller, covering two pulleys of a grip so mounted and connected as to insure their being simultaneously raised, thus elevating the section of the cable between the two pulleys so that it can be conveniently grasped by the gripper, *Held* to be for a new combination, and therefore valid.
[*American Cable Railway Company *v.* Mayor, etc., of City of New York *et al.*, 1008.

20. MILLER AND COLL—SHEET-METAL CANS—LIMITATION OF CLAIM.
Letters Patent No. 207,058, issued August 13, 1878, to Miller and Coll, for an improvement in sheet metal cans, is, by reason of the rejection and abandonment of a broader claim, strictly limited to the form therein described.
[*Coll *et al. v.* Seneca, 1132.

21. POYTON—WEATHER-STRIP—ONLY ENTITLED TO THE NARROWEST CONSTRUCTION.
Letters Patent granted to Charles R. Vincent, assignee of Josiah Poyton, No. 381,165, dated April 17, 1888, for improvements in weather-strips, examined and construed in view of the state of the art, and *Held* to be entitled to receive the narrowest construction only, being limited to the precise improvement described.
[*Vincent *et al. v.* Rigby, 861.

22. ROEMER—SATCHEL-FRAMES—VOID CLAIMS.
Claims 6 and 7 of Letters Patent No. 376,263, issued February 21, 1888, to William Roemer, for an improvement in bag or satchel frames, are void, as covering the results of mere mechanical skill. [*Roemer *v.* Jenkinson *et al.*, 1535.

23. STONEMETS—DEVICE FOR CONNECTING AND OPERATING TOGETHER PAPER-FOLDING MACHINES AND PRINTING-PRESSES—INFRINGEMENT.
Letters Patent No. 343,677, dated June 15, 1886, to John A. Stonemets, infringed by a device constructed in accordance with Patent No. 331,762, dated December 8, 1885, to R. T. Brown.
[*Stonemetz Printer's Machinery Company *v.* Brown Folding Machine Company, 1135.

24. SIMPKINS—BAKERS' OVENS—INFRINGEMENT.
Letters Patent No. 355,568, issued to Alvin T. Simpkins January 4, 1887, are not infringed by a device having return-flues beneath the baking-chamber and a ledge at the inner ends of these flues, which forms a part of the back wall of the oven, and which extends six inches farther forward than the inner end of the baking-chamber.
[*Simpkins *v.* Perry Pie Company *et al.*, 859.

25. TONDEUR—GLASS-ANNEALING FURNACE—PATENTABLE NOVELTY.
Letters Patent to Cleon Tondeur, No. 258,156, dated May 16, 1882, for an improvement in glass-annealing furnaces, examined and construed in view of the state of the art, and *Held* to be valid. [*Dixon Woods Company *v.* Pfeifer, 156.

26. TRENOR—RUNNING-GEAR FOR RAILROAD-CARS—CONSTRUCTION OF CLAIM—ANTICIPATION—TRUCK-COUPLINGS.
Claim 2 of Letters Patent No. 50,518, issued October 17, 1865, to Henry H. Trenor, covers "the method of coupling the cars or vehicles of a train of two or more cars or vehicles by means of the connecting-links attached to the pivots or king-bolts of the trucks, substantially as herein set forth." There is nothing in the specifications to limit this language. *Held* that the claim cannot be limited to the coupling of cars or vehicles having four-wheeled trucks, and is therefore void for anticipation by the English patent of December 13, 1838, to Deville, in which the same method is shown in coupling two carriages having two-wheeled trucks.
[*Perrin *et al. v.* Manhattan Railway Company, 1790.

27. WILGUS—LAWN-SPRINKLERS.
Letters Patent No. 443,734, dated December 30, 1890, issued to Daniel C. Wilgus, for an improvement in lawn-sprinklers, *Held* to be valid.
[*Harper & Reynolds Company *v.* Wilgus, 302.

28. ZELLER—HARNESS-TRIMMINGS—NOVELTY.
Letters Patent to M. E. Zeller, No. 207,791, dated September 3, 1879, for an improvement in drop-hooks and terrets for harness, sustained and *Held* to be infringed.
[*Eberhard Manufacturing Company *v.* Elbel & Company, 1099.

29. SAME—ANTICIPATION—INUTILITY OF PRIOR DEVICES.
The patent in suit *Held* not to be anticipated by a prior device which was inoperative as to the chief advantage claimed for the patented article. [*Id.

## PARTIES TO SUIT.

(See Infringement, 1, 2; Suits for infringement; Trade-Marks, 9.)

## PATENTABILITY.

(See Invention.)

## PATENTS.

(See Assignments, 2, 3; Construction of Specifications and Patents.)

## PENALTY FOR NOT MARKING ARTICLES "PATENTED."

(See Marking Articles "Patented.")

## PETITION TO COMMISSIONER.

1. RULES 133 AND 145—WHAT MAY BE REVIEWED ON PETITION.
The question whether or not an Examiner should cite as a reference an applicant's former patent, the application for which was copending with the present application, is one pertaining to the merits of the invention and therefore not reviewable by the Commissioner on petition.
[*Ex parte* McDonald, 857.

2. SAME—SAME.
*Ex parte Mullen and Mullen* (50 O. G., 837) and *ex parte Rogers* (49 MS. Dec., 418) discussed and held not to indicate a different practice. [Id.

## PLEADINGS.

(See Evidence.)

## PRACTICE IN THE COURTS.

(See Appeal to the Circuit Court of Appeals; Demurrer; Evidence; Infringements, 1, 2, 3, 14; Injunction; Inspection of Defendants' Factory; Interference, 8, 9; Interfering Patents; Marking Articles "Patented;" Suits Under Section 4915, Revised Statutes.)

## PRIMA FACIE EVIDENCE.

(See Assignments, 1.)

## PRINTS.

1. PRINTS—WHAT CAN BE REGISTERED AS SUCH IN THE PATENT OFFICE.
The word "prints" as used in the statute authorizing the registration of prints in the Patent Office means a picture similar in kind to an engraving, cut, or photograph. *Held*, therefore, that a sheet of paper with several multicolored designs on both sides, with no attempt to produce such unitary effect as is produced by a single cut or engraving, was not such a print as could be registered.
[*Ex parte* Schlegel, 1132.

2. SAME—SAME—MUST HAVE SOME VALUE AS A COMPOSITION.
To be registrable a print must have by itself some value as a composition, at least to the extent of serving some purpose other than as a mere advertisement. [Id.



## PRIOR ADJUDICATION OF PATENT.

(See Injunction, 1, 2, 7.)

## PRIORITY OF INVENTION.

(See Diligence; Interference, 7, 8; Reduction to Practice.)

PRIORITY OF INVENTION—REDUCING TO PRACTICE.
The man who first reduces an invention to practice is *prima facie* the first inventor under act July 4, 1836, (5 St., p. 117;) but the man who first conceives the invention may date it back to such conception if he uses due diligence in reducing it to practice, and he must use such diligence before, as well as after, the second conception of the invention. (*Reed* v. *Cutter*, 1 Story, 590, followed.)
[*Christie *v.* Seybold, 1650.)

## PROCESS AND APPARATUS.

(See Use and Sale of Patented Articles.)

## PROCESS AND PRODUCT.

(See Division of Applications, 6, 7; Drawings; Limitation of United States Patent by Foreign Patent Previously Granted, 7.)

## PUBLICATION AS EVIDENCE.

(See Infringement, 4.)

## REDUCTION TO PRACTICE.

(See Diligence; Priority of Invention.)

SKETCH OF MACHINE.
A rough sketch of an invention is not such a reduction to practice as to make its author the original inventor within the meaning of the patent laws.
[*Christie *v.* Seybold, 1650.

## REFERENCE-LETTERS.

(See Construction of Specifications and Patents, 1.)

## REFERENCES.

(See Petition to Commissioner.)

## REISSUES.

(See Construction of Specifications and Patents, 11, 12, 13, 14, 15, 16, 17, 18, 19; Particular Patents, 1, 11.)

1. REISSUE APPLICATION—SAME STANDING AS ORIGINAL PATENT AS TO BURDEN OF PROOF.
Since patents are now reissued strictly for the same invention covered by the original patent, the reissue application ought to have the same standing as the original patent as to burden of proof.
[Huson *v.* Crowell *v.* Yates, 1006.

2. REISSUE APPLICATION—WHEN CONSIDERED A CONTINUATION OF THE ORIGINAL APPLICATION.
Where the Office holds an applicant to be entitled to a reissue for broader claims, it in effect holds that it was by reason of inadvertence, accident, or mistake that applicant did not make the broad claims in the patent; that he has been reasonably diligent in applying for such reissue, and therefore that there has been no such dedication to the public of the inventions covered by the broad claims as should prevent the Office from considering the reissue application a continuation of the original application. [Id.

## REJECTED CASES.

(See Designs.)

1. PRACTICE.
Final rejection should not be given until all matters of form are settled.
[*Ex parte* Klaus, 299.

2. SAME—AMENDMENTS.
Where a claim was finally rejected and at the same time the statement of invention was criticised as being too broad, the final rejection was premature and an amendment touching the merits may properly be admitted thereafter. [Id.

## REJECTION OF CLAIMS.

(See Construction of Specifications and Patents, 11, 12, 13, 14, 15, 16, 17, 18, 19.)

## REOPENING OF CASES

(See Interference, 5.)

## RESERVATION FOR SUBSEQUENT PATENTS.

(See Subsequent Patents, 2.)

## RESULTS.

(See Infringement, 8.)

## REVIVAL OF ABANDONED APPLICATIONS.

ABANDONED APPLICATION—REVIVAL.
In order to revive an abandoned application, unavoidable delay in the prosecution thereof must be shown, and such showing must cover the entire period of delay.
[*Ex parte* Heine, 1006.

## SALE OF PATENTED ARTICLES.

(See Injunction, 9, 10.)

## STATE AS A CORPORATION.

(See Trade-Marks, 16.)

## SUBSEQUENT PATENTS.

1. MECHANICAL SKILL—SUBSEQUENT PATENT FOR MERE CHANGE IN MODE OF OPERATION SHOULD BE DENIED.
Where the inventor of a machine for coupling the links of drive-chains simultaneously filed two applications for patents, one for a machine for an endwise and the other for a machine for a sidewise thrust of the coupling-bar, and had a patent issued on the first machine, *Held* that he was not afterward entitled to a patent on the second machine, as it was only a matter of mechanical skill, and not invention, to adapt the endwise to the sidewise thrust.
[*Fassett *v.* Ewart Manufacturing Company, 439.

2. RESERVATION FOR SUBSEQUENT PATENT.
Where, in the case above, the patent on the endwise-thrust machine contained a reservation saying that "the feed-chute, guideway, and means for pushing the assembled links forward, a delivery wheel or device, the fulcrum plate or corner, operating mechanism, and such details of construction as are not herein broadly claimed form the subject of a separate application," *Held* that such reservation meant that the invention was broadly claimed in the patent, and that the patentee meant to reserve only the right to claim the elements specifically in his separate application, and that a patent on such separate application, claiming the features mentioned in the reservation broadly and generically, could not be sustained as covered by the reservation. [*Id.

## SUITS FOR INFRINGEMENT.

(See Construction of Specifications and Patents, 11, 12, 13, 14, 15, 16, 17, 18, 19; Demurrer; Evidence; Infringement, 1, 2, 3, 4, 14; Injunction, 4.)

## SUITS UNDER SECTION 4915, REVISED STATUTES.

(See Interference, 9.)

JURISDICTION—CLAIM THAT THIRD PARTY WAS INVENTOR.
Under Revised Statutes, section 4915, the only question the Court can consider is whether the complainant is the first inventor of a patentable device. Whether respondent or a third party was the inventor of the device for which respondent has received a patent should not be inquired into either by the Court or by the Commissioner in interference proceedings between the same parties.
[*Christie *v.* Seybold, 1650.

## SUPREME COURT OF DISTRICT OF COLUMBIA.

(See Injunction, 7.)

SUPREME COURT OF THE UNITED STATES.

(See Injunction, 6.)

TERM OF PATENT.

(See Limitation of United States Patent by Foreign Patent Previously Granted; Particular Patents, 10.)

TITLE OF INVENTION.

1. TITLE OF INVENTION—REQUISITES OF.
If the title of an application is short and correctly indicates the nature and design of the invention, the applicant should be allowed, within reasonable limits, to say what it shall be.
[*Ex parte* Becker, 559.

2. EXAMINER HAS NO RIGHT TO ARBITRARILY SELECT.
If the title given by the applicant is not satisfactory to the Examiner, objection should be made; but the Examiner himself should not arbitrarily select such title. [Id.

TITLE TO PATENT.

(See Assignments, 2, 3, 4; Mortgage of Patent.)

TRADE-MARKS.

1. TRADE-MARK—SYRUP OF FIGS.
The laxative medical compound manufactured by the California Fig Syrup Company under the name "Syrup of Figs" is a preparation which a court of equity will look upon with favor as entitled to protection under the Trade-Mark laws.
[*Improved Fig Syrup Company *et al.* *v.* California Fig Syrup Company, 158.

2. SAME—SAME—STATEMENTS ON BOTTLES AND PACKAGES.
The representations and statements on the bottles and packages of the California Fig Syrup Company's medical compound "Syrup of Figs" are not such as will deprive the California Fig Syrup Company of standing in a court of equity in respect to infringement of its Trade-Mark or trade-name. [*Id.

3. SAME—SAME—NOT DESCRIPTIVE, BUT INDICATIVE OF ORIGIN AND OWNERSHIP.
The name "Syrup of Figs" is a good Trade-Mark or trade-name, and one to which the California Fig Syrup Company has an exclusive right as applied to a laxative compound, and as such is not merely descriptive of its preparation, but indicates the origin and ownership of this medical compound, and the California Fig Syrup Company was the first to apply this name to a laxative compound. [*Id.

4. SAME—SAME—NOT GENERIC.
The name or phrase "Syrup of Figs" is in no sense a generic one. It is not a name of a natural product or of a class of natural products. It is merely a name coined and first applied to designate the laxative compound of the California Fig Syrup Company. [*Id.

5. SAME—SAME—INFRINGEMENT.
Defendants infringe the Trade-Mark rights of the California Fig Syrup Company when they apply to their laxative compound the name "Syrup of Figs" or any colorable imitation of that name, as such a name does not describe defendants' compound, but merely serves to induce the public to believe that the goods made and sold by them are those manufactured by the California Fig Syrup Company. [*Id.

6. SAME—SAME—SAME.
While there may be a difference between defendants' packages of laxative compound and the packages of the California Fig Syrup Company's laxative compound, and such a difference as to probably put the general trade dealer on his guard, yet, defendants having adopted the trade-name of the California Fig Syrup Company, the consumer is likely to be deceived thereby, and it is against the probability of such imposition upon the consuming class of the public that courts will extend their protection. [*Id.

7. REGISTRATION OF THE WORD "SPLENDID" REFUSED.
The registration of the word "Splendid" as a Trade-Mark for flour refused upon the ground that it is not arbitrary or fanciful.
[*Ex parte* Stokes, 437.

8. A TRADE-MARK MAY BE USED BY MANY JOINTLY AND ALL JOIN IN AN ACTION FOR INFRINGEMENT.
A Trade-Mark may be adopted, owned, and used by a number of parties engaged in the same business as separate firms, and all of them may join as complainants in a suit to restrain infringement.
[‡Gravel Roofers' Exchange *et al.* *v.* Turnbull *et al.*, 441.

9. SAME.
The members of an association may adopt and use a Trade-Mark to indicate that the goods on which it is placed are manufactured or sold by some member of the association, in which case the Trade-Mark indicates a class of persons or firms, rather than any single one. [‡Id.

10. HOTEL NAME—"COLUMBIA" A FANCIFUL WORD.
The name "Columbia" as applied to a hotel is a fanciful name, indicating no people, no locality, and no particular service which a hotel will render, and the person first selecting it is entitled to its use.
[‡Whitfield *v.* Loveless, 442.

11. SAME—GEOGRAPHICAL WORDS.
A name, although generic and geographical, is within the rule of protection in law if it does not indicate that the business carried on is to be patronized by the people of any particular locality, or that any specific product is therein to be sold, or any particular language is there to be spoken.
[‡Id.

12. SAME—PRIORITY.
That which is prior in time is first in right.
[‡Id.

13. REGISTRATION OF THE WORD "FLORENTINE" GRANTED.
The registration of the word "Florentine" as a Trade-Mark for glass granted, as Florence is not noted as a place for the manufacture of glass, and therefore no deception as to the quality or origin of the manufacture can occur.
[*Ex parte* Mississippi Glass Company, 713.

14. REGISTRATION OF MERE WORDS BY GERMAN CITIZENS.
A Trade-Mark consisting of the word "Germania" may be registered in the United States by a German citizen, under the provisions of Article XVII of the Convention of December 11, 1871, although the German statutes make no provisions for the registration of mere words as Trade-Marks.
[*Ex parte* Portland-Cement-Fabrik "Germania" H. Manske & Co., 858.

15. TRADE-MARKS—RULE 13.
Trade-Mark Rule 13, which states that "each applicant and registrant will be held to the date of adoption alleged in the statement filed with his application," *Held* to be not inconsistent with law, and therefore has the force of a statute.
[Stuart Medicine Company *v.* Goldaine, 1005.

16. APPLICATION TO REGISTER BY A STATE—COMMERCE BY A STATE OUTSIDE ITS OWN LIMITS.
The State of South Carolina applies to register the Trade-Mark "Palmetto" in the Patent Office, to be applied by labels to bottles of intoxicating liquors to be regularly sold by the State outside its own limits in commerce with foreign nations or with Indian tribes.

1. It seems that a State may take upon itself the character of a trading corporation while retaining in other respects the essentials of a sovereign State.

2. While it is not necessary to decide how, if in any manner, a State may enter the domain of commerce, whether by an express authorizing provision in its constitution supplemented by appropriate legislation to carry it into effect, or otherwise, the executive officers of a State may not, in the absence of legislation, embark the State in such trade.

3. The act of the State of South Carolina, approved December 24, 1892, entitled "An act to prohibit the manufacture and sale of intoxicating liquors as a beverage within this State, except as herein provided," is a measure for the suppression of the liquor traffic within the State by private individuals and to substitute therefor its complete control by the State, and is not a law which authorizes a regular trade in liquors by way of sale to foreign purchasers.

4. The State of South Carolina, notwithstanding the acts of its Governor and State Board of Control, has no authorized trade in liquors outside its own limits. It is not the owner of any Trade-Mark, has not at this time the right to the use of the Trade-Mark sought to be registered, and therefore—

5. The application is denied.
[*Ex parte* State of South Carolina, 1395.

17. ALTERNATIVES.
The word "Crescent" and the representation of a crescent-shaped figure refused registration on the ground that they are not true alternatives.
[*Ex parte* Lazarus, Schwarz, and Lipper, 1396.

18. NAME AND SIGNATURE OF A DECEASED PHYSICIAN.
A druggist whose only relation with a physician was that he filled the latter's prescriptions occasionally cannot, upon the death of the physician, adopt the *fac-simile* of his signature and picture, or either of them, as a Trade-Mark without showing to the Office in some manner the consent of the physician that this should be done, or acquiring the right to do so from the personal representative of the decedent.
[Stewart *v.* Einstein *v.* Sawhill, 1533.

19. SAME—OWNER OF—INTERFERENCE—PRIORITY—PRACTICE.
The person attempting to do this is not the owner of the Trade-Mark; his use of it in commerce with foreign nations or otherwise is unlawful, and in interference proceedings judgment of priority cannot be rendered in his favor. [Id.



20. SAME—PARTNERSHIP IN TRADE—PHYSICIAN AND PHARMACIST—RIGHT OF SURVIVING PARTNER TO INCHOATE TRADE-MARK.
Another druggist who had a commercial partnership with the physician up to the time of his death, in the business of dispensing the remedies used by the physician, the two having an extensive trade in them, domestic and foreign, has a right as surviving partner to the trade which had become established, to the good-will connected with it, and to the inchoate Trade-Mark right which was incident to it, at least to the extent of treating them as assets of the partnership for the purpose of closing out the partnership business. [Id.

21. SAME—APPLICATION FOR A TRADE-MARK BY A SURVIVING PARTNER—NON-USE OF THE TRADE-MARK IN FOREIGN COMMERCE UNTIL AFTER THE FILING OF THE APPLICATION—PRACTICE.
Upon an application by the latter druggist showing the adoption of the Trade-Mark in this trade after the death of the physician, and its use in foreign commerce after the filing of the application, but not before, the case is remanded to the Examiner of Trade-Marks, with instructions to register the same under a supplemental application, should one be filed, upon a showing that commerce with foreign nations in these remedies, with the label suitably applied, has been carried on prior to the filing of such supplemental application. [Id.

UNITED STATES COURTS.

(See Assignments, 3.)

USE AND SALE OF PATENTED ARTICLES.

USE OF THE PRODUCT MADE UNDER A PROCESS PATENT—A PURCHASER OF AN ARTICLE MADE UNDER A PATENT FOR A PROCESS A LICENSEE TO USE THE PROCESS TO THE EXTENT OF USING THE PURCHASED ARTICLE.
Where the defendant bought from the patentee a creamery containing four cans made under the patent, *Held* that the defendant thereby became a licensee to use the process in connection with that creamery and its cans and their necessary repairs, but no further.
[*Vermont Farm Machine Company *v.* Gibson, 300.

VALID PATENTS.

(See Construction of Specifications and Patents; Particular Patents, 3, 6, 7, 8, 14, 16, 17, 19, 20, 21, 25, 27, 28.)

VALIDITY OF PATENTS.

(See Injunction, 4.)

VOID PATENTS.

(See Particular Patents, 1, 2, 4, 15, 22, 26, 29.

# ALPHABETICAL LIST OF PATENTEES

FOR

# THE QUARTER ENDING SEPTEMBER 30, 1893.

[Claims and drawings of Designs do not appear in the Monthly Volumes. Separate indexes for Designs, Trade-Marks, Prints, and Disclaimers follow this.]

| Name, residence, and invention. | No. | Date. | Monthly volume. Specification. | Monthly volume. Drawing. | Official Gazette. Volume. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| A. G. Spalding & Brothers *et al.* (See Perkins, Albert, assignor.) | | | | | | |
| Abbott, Alfred T., New York, N. Y. Nail or spike | 505,743 | Sept. 26 | 2411 | 609 | 64 | 1761 |
| Abbott, David S., and C. G. Redstone, Olean, N. Y. Condenser | 500,701 | July 4 | 268 | 73 | 64 | 50 |
| Abbott, James L., Fort Lee, N. J. Bicycle speed-gearing | 502,803 | Aug. 8 | 952 | 232 | 64 | 756 |
| Abbott, John G., and S. R. Robinson, Antrim, N. H. Folding crib | 504,646 | Sept. 5 | 533 | 137 | 64 | 1371 |
| Abbott, Warren E., East Monroe, Ohio. Corn-harvester | 504,188 | Aug. 29 | 3210 | 800 | 64 | 1219 |
| Abell, Clara, Baldwinsville, N. Y. Dishcloth-holder | 504,647 | Sept 5 | 534 | 137 | 64 | 1371 |
| Abell, Irvin H., assignor to East Hampton Bell Company, East Hampton Conn. Bell | 505,284 | Sept. 19 | 1601 | 416 | 64 | 1598 |
| Abercrombie, Robert, Meaford, assignor of one-half to J. A. Rose, Essex, Canada. Sack-scale | 502,265 | Aug. 1 | 1 | 1 | 64 | 567 |
| Åberg, Aloar, Helsingfors, Finland. Method of and apparatus for measuring electricity | 502,454 | Aug. 1 | 345 | 83 | 64 | 629 |
| Accles, James G. (See Grenfell and Accles.) | | | | | | |
| Achtenhagen, Ferdinand, *et al.* (See Schroeder, Conrad, assignor.) | | | | | | |
| Acton, William, Chicago, Ill., assignor to T. T. Wood, St. Joseph, Mich. Brick-machine | 505,285 | Sept. 19 | 1602 | 416, 417 | 64 | 1598 |
| Adair, George, Rock Falls, Ill. Garden-cultivator, &c | 504,189 | Aug. 29 | 3212 | 800 | 64 | 1219 |
| Adams, Abe L., Bridgeport, Conn. Auger-bit | 503,224 | Aug. 15 | 1654 | 406 | 64 | 898 |
| Adams, Abe L., Bridgeport, Conn. Auger-bit | 503,225 | Aug. 15 | 1655 | 406 | 64 | 898 |
| Adams, Abe L., Bridgeport, Conn. Auger-bit | 504,261 | Aug. 29 | 3323 | 831 | 64 | 1240 |
| Adams, Alton D., St. Paul, Minn. Starting device for electric motors | 503,568 | Aug 22 | 2209 | 553 | 64 | 1013 |
| Adams, Austin, New York, N. Y. Bolt | 504,262 | Aug. 29 | 3324 | 831 | 64 | 1240 |
| Adams, Austin, New York, N. Y. Latch | 504,263 | Aug. 29 | 3326 | 831 | 64 | 1241 |
| Adams, Austin, Jr., Orange, N. J. Glass-tube cutter | 505,211 | Sept. 19 | 1486 | 388 | 64 | 1576 |
| Adams, Charles F. (See Griffin, Heber C., assignor.) | | | | | | |
| Adams Company. (See Farwell, Fay O., assignor.) | | | | | | |
| Adams, Edmund H., Lamar, Mo. Flue-stopper | 503,823 | Aug. 22 | 2613 | 653 | 64 | 1089 |
| Adams, Eleanor. (See Adams, John, assignor.) | | | | | | |
| Adams, George O., Firth, Nebr. Scull-propeller | 503,026 | Aug. 8 | 1325 | 325 | 64 | 824 |
| Adams, George S., Red Lodge, Mont. Bob-sleigh | 503,639 | Aug. 22 | 2338 | 583 | 64 | 1035 |
| Adams, John, assignor to E. Adams, Chicago, Ill. Latch and lock combined | 501,474 | July 11 | 1495 | 376, 377 | 64 | 288 |
| Adams, John H., Deering, assignor to himself, and E. H. Locke, Portland, Me. Thill-support | 504,146 | Aug. 29 | 3130 | 783 | 64 | 1204 |
| Adams, John Q., Newton, Mass. Canceling, feeding, and locking device for ballot-boxes | 503,025 | Aug. 8 | 1319 | 323, 324 | 64 | 823 |
| Adams, Samuel E., Washington Court-House, Ohio. Tag-fastener | 502,160 | July 25 | 2602 | 654 | 64 | 520 |
| Adams, Walter A., Hogan, Mont. Dish-cleaner | 502,159 | July 25 | 2601 | 654 | 64 | 520 |
| Adams, Walter S. (See Brill and Adams.) | | | | | | |
| Adams & Westlake Company. (See Hitchcock, Charles A., assignor.) | | | | | | |
| Adams & Westlake Company. (See Paterson, James W., assignor.) | | | | | | |
| Adams & Williamson. (See Raymond, Perley B., assignor.) | | | | | | |
| Adancourt, William F., Minneapolis, Minn. Drink-mixer | 505,692 | Sept. 26 | 2335 | 592 | 64 | 1748 |
| Adcox, Joseph E., Lebanon, Oreg. Jewel and pivot gage | 502,648 | Aug. 1 | 666 | 162 | 64 | 689 |
| Addison, Cornelius N., Grand Haven, Mich. Broom-holder | 502,843 | Aug. 8 | 1030 | 249 | 64 | 769 |
| Adeney, Walter E., Monkstown, and W. K. Parry, Dublin, Ireland. Purifying sewage | 505,182 | Sept. 19 | 1439 | 370, 371 | 64 | 1567 |
| Adkinson, James. (See Hull, Alfred A., assignor.) | | | | | | |
| Adler, Leon D., *et al.* (See Moskowitz and Young, assignors.) | | | | | | |
| Aeberly, Jakob, St. Paul, Minn. Cattle-stall | 502,599 | Aug. 1 | 588 | 140 | 64 | 674 |
| Agin, George W., Pekin, Ill. Screw-driver | 503,569 | Aug. 22 | 2210 | 553 | 64 | 1013 |
| Agnew, Theodore. (See Gibson, Andrew K., assignor.) | | | | | | |
| Aichner, Johann, Brooklyn, N. Y. Carpenter's vise | 504,856 | Sept. 12 | 904 | 234 | 64 | 1455 |
| Aiken, Henry, Pittsburg, Pa. Hydraulic motor | 502,844 | Aug. 8 | 1021 | 249, 250 | 64 | 769 |
| Aiken, William A. (See Rogers, Woodbury O., assignor.) | | | | | | |
| Ainbach, Franz F. von, Knittelfeld, Austria-Hungary. Manufacture of artificial stone | 505,082 | Sept. 19 | 1287 | ..... | 64 | 1541 |
| Ainscough, Charles N., *et al.* (See Ainscough, Thomas A., assignor.) | | | | | | |
| Ainscough, James, *et al.* (See Ainscough, Thomas A., assignor.) | | | | | | |
| Ainscough, Thomas A., assignor of two-thirds to C. N. and J. Ainscough, Manchester, England. Railway-car brake | 503,027 | Aug. 8 | 1326 | 325, 326 | 64 | 824 |
| Ainsworth, Charles F., Horwich, and J. Haydock, Bolton, England. Lapping-machine | 503,890 | Aug. 22 | 2704 | 678 | 64 | 1107 |
| Aitchison, James, and T. Bradley, London, England. Opera, field, marine, or other glass | 500,835 | July 4 | 494 | 136 | 64 | 88 |
| Aitchison, James, and T. Bradley, London, England. Construction of metallic volute coils | 501,815 | July 18 | 2048 | 504 | 64 | 401 |

*Alphabetical list of patentees, July to September, inclusive*—Continued.

| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drgs. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| **Aker, Anton, Helena, assignor of one-half to N. and J. Wagner, Rimini, Mont.** Horse-power | 503,640 | Aug. 22 | 2339 | 563 584 | 64 | 1035 |
| **Akron Tool Company.** (See Morey, Albert E., assignor.) | | | | | | |
| **Aktiebolaget Séparator.** (See Folk, Jesse E., assignor.) | | | | | | |
| **Albach, William H**, Mansfield, Ohio. Package-carrier apparatus | 501,035 | July 4 | 786 | 206 | 64 | 143 |
| **Albach, William H.**, assignor to Barr Cash and Package Carrier Company, Mansfield, Ohio. Turnbuckle | 500,836 | July 4 | 484 | 126 | 64 | 88 |
| **Albee, William H.**, New York, N. Y. Paper-file | 500,837 | July 4 | 485 | 127 | 64 | 88 |
| **Albert, Charles F., Jr.**, Philadelphia, Pa. Banjo-bridge | 503,396 | Aug. 15 | 1931 | 480 | 64 | 948 |
| **Albert, Clay B.**, Carrollton, Mo. Clothes-line | 505,016 | Sept. 12 | 1165 | 299 | 64 | 1504 |
| **Albert, David L.**, Fort Bragg, Cal. Mechanical calculating device | 502,217 | July 25 | 2093 | 680 | 64 | 538 |
| **Albert, H. & E.** (See Meyer, Theodor, assignor.) | | | | | | |
| **Albertson, William R.**, Worcester, and N. B. Briggs, Rockland, Mass.; said Briggs assignor to said Albertson. Coloring and burnishing composition | 501,311 | July 11 | 1230 | ..... | 64 | 238 |
| **Albertson, William R.**, Worcester, and N. B. Briggs, Rockland, Mass.; said Briggs assignor to said Albertson. Coloring and burnishing composition | 501,312 | July 11 | 1231 | ..... | 64 | 238 |
| **Albrecht, Herman S.**, St. Louis, Mo. Machine for disintegrating clay, ores, &c. | 504,689 | Sept. 5 | 615 | 157 | 64 | 1366 |
| **Albright, Harry W.**, and S. B. Lenhert, Maytown, Pa. Gate for railway-crossings | 502,341 | Aug. 1 | 148 | 345 | 64 | 592 |
| **Albro, Charles E**, Philadelphia, Pa. Safety-clutch for elevators | 501,396 | July 11 | 1390 | 348 | 64 | 266 |
| **Albro, Charles E.**, Philadelphia, Pa. Hoisting mechanism for elevators | 502,600 | Aug. 1 | 590 | 141 | 64 | 674 |
| **Alderson, William B.**, Withington, near Manchester, England. Illuminated clock | 502,161 | July 25 | 2604 | 655 | 64 | 520 |
| **Alderson, William N. B.**, assignor of one-half to E. R. Ray, Eureka Springs, Ark. Device for testing and handling eggs | 505,429 | Sept. 26 | 1847 | 475 | 64 | 1657 |
| **Aldrich, Alonzo, Beloit, Wis.** Paper-making machine | 502,266 | Aug. 1 | 2 | 1 | 64 | 567 |
| **Aldrich, Charles F., Pittsburg, N. H.** Scraper | 501,858 | July 18 | 2106 | 520 | 64 | 412 |
| **Alexander, David, *et al.*** (See Harper, Thomas, assignor.) | | | | | | |
| **Alexander, Elmer P., Yeagertown, Ky.** Heater for incubators | 502,899 | Aug. 8 | 1114 | 274 | 64 | 782 |
| **Alexander, Frederick, *et al.*** (See Lancaster, John P., assignor.) | | | | | | |
| **Alexander, John A.**, assignor of one-half to J. M. Alexander, Ardmore, Indian Ter. Spring-seat for vehicles | 500,789 | July 4 | 409 | 107 | 64 | 76 |
| **Alexander, John M.** (See Alexander, John A., assignor.) | | | | | | |
| **Alexander Smith & Sons Carpet Company.** (See Tymeson and Ducros, assignors.) | | | | | | |
| **Alexander, Ulysses H., Wilmington, Del.** Guide-block for running wire | 504,190 | Aug. 29 | 3213 | 800 | 64 | 1219 |
| **Allan, John R., Boston, Mass.** Ball-cock for tanks for water-closets, &c. | 503,339 | Aug. 15 | 1846 | 457 | 64 | 931 |
| **Allard, Charles H., Quincy, Ill.** Penman's rest | 502,218 | July 25 | 2094 | 680 | 64 | 538 |
| **Allen, Alfred J., Essex, Canada**, assignor to S. H. and J. D. Randall, Wyoming, Ohio. Leather-skiving machine | 500,838 | July 4 | 486 | 127 | 64 | 89 |
| **Allen, Charles O., Grand Rapids, Mich.** Carpet-sweeper | 503,107 | Aug. 8 | 1451 | 357 | 64 | 847 |
| **Allen, Courtland H., Sr., Chattanooga, Tenn.** Boiler-furnace | 501,907 | July 25 | 2203 | 549 | 64 | 445 |
| **Allen, Dwight**, assignor to That Manufacturing Company, Le Mars, Iowa. Soft soap | 501,036 | July 4 | 788 | ..... | 64 | 144 |
| **Allen, Ethan.** (See Huyck, Leonard W., assignor.) | | | | | | |
| **Allen, Henry L.** (See Pullman, Herbert S., assignor.) | | | | | | |
| **Allen, Theodore B., Brooklyn, N. Y.** Machine for hackling and preparing fibers | 504,648 | Sept. 5 | 535 | 137 | 64 | 1371 |
| **Allen, William V., Chico, Cal.** Transporting logs | 504,191 | Aug. 29 | 3215 | 801 | 64 | 1220 |
| **Allgemeine Elektricitäts Gesellschaft.** (See Dolivo-Dobrowolsky, Michael von, assignor.) | | | | | | |
| **Allin, Samuel S., London, England.** Combined door-check and spring | 505,744 | Sept. 26 | 2412 | 610 | 64 | 1702 |
| **Allis, Thomas V.** (See Jordan, Edmund, assignor.) | | | | | | |
| **Allis, Thomas V., New York, N. Y.** Barbed fencing | 501,129 | July 11 | 956 | 244 | 64 | 189 |
| **Allis, Thomas V., New York, N. Y.** Making barbed fencing | 505,693 | Sept. 26 | 2356 | 592 | 64 | 1749 |
| **Allison, John H., Elkhart, Ind.**, assignor of one-half to J. G. Rich, Auburn, N. Y., and D. G. Reed, Richmond, Ind. Electric-railway trolley-switch | 503,570 | Aug. 22 | 2211 | 553 | 64 | 1013 |
| **Allison, William D.**, assignor to Western Electric Company, Chicago, Ill. Test system for multiple switchboards | 503,115 | Aug. 15 | 1475 | 363 | 64 | 865 |
| **Allyn, Isaac W., Lansdowne, Pa.** Horseshoe-fastening | 503,397 | Aug. 15 | 1932 | 480 | 64 | 949 |
| **Altemus, Jacob K., *et al.*** (See Zimmermann, John, assignor.) | | | | | | |
| **Altemus, William W., *et al.*** (See Zimermann, John, assignor.) | | | | | | |
| **Altman, George W., Marion, Ind.** Button-setting machine | 503,891 | Aug. 22 | 2705 | 678 | 64 | 1107 |
| **Altman, Henry, *et al.*** (See Flohr, Otto, assignor.) | | | | | | |
| **Altman, William H.** (See Bernhardt, Charles, assignor.) | | | | | | |
| **Altorfer, Gustav G.** (See Payne, William H., assignor.) | | | | | | |
| **Ambler, Augustin I.**, assignor to R. N. Ambler, Washington, D. C. Electric locomotive | 504,484 | Sept. 5 | 278 | 72 | 64 | 1322 |
| **Ambler, Roseline N.** (See Ambler, Augustin I., assignor.) | | | | | | |
| **Ambler, Russell P., De Funiak Springs, Fla.** Propeller | 502,061 | July 25 | 2441 | 613 | 64 | 488 |
| **Amelotte, Paul, Spencer, Mass.** Horseshoe-removing tool | 503,935 | Aug. 29 | 2779 | 697 | 64 | 1130 |
| **Ament, Elzie, Rogers Park**, assignor of one-half to C. W. Rosa, Aurora, Ill. Sash-fastener | 505,341 | Sept. 19 | 1689 | 435 | 64 | 1614 |
| **American and Continental Sanitas Company.** (See Woodcock and Kingzett, assignors.) | | | | | | |
| **American Arithmometer Company.** (See Burroughs, William S., assignor.) | | | | | | |
| **American Bell Telephone Company.** (See McQuarrie, James L., assignor.) | | | | | | |
| **American Bell Telephone Company.** (See Spencer, Theodore, assignor.) | | | | | | |
| **American Bell Telephone Company *et al.*** (See Lockwood and Larned, assignors.) | | | | | | |
| **American Butter Machine Company.** (See Boynton, Edward S., assignor.) | | | | | | |
| **American Carving and Manufacturing Company.** (See Morgeneier, Robert, assignor.) | | | | | | |
| **American Change and Register Company.** (See Travis, Charles L., assignor.) | | | | | | |
| **American Fuel Economizer and Engineering Company.** (See Burpee, George H., assignor.) | | | | | | |
| **American Incinerating Company.** (See Dowling, North, assignor.) | | | | | | |
| **American Lightning Protection Company.** (See Hodges, Nathaniel D. C., assignor.) | | | | | | |
| **American Postal Machines Company.** (See Ethridge, Martin V. B., assignor.) | | | | | | |
| **American Saw Company.** (See Brooke, William E., assignor.) | | | | | | |
| **American Saw Company.** (See Putnam, Samuel W., assignor.) | | | | | | |
| **American Telephone and Telegraph Company.** (See Dunbar, Francis W., assignor.) | | | | | | |
| **American Telephone and Telegraph Company.** (See Larned and Pickernell, assignors.) | | | | | | |
| **American Telephone and Telegraph Company.** (See Pickernell, Frank A., assignor.) | | | | | | |
| **American Telephone and Telegraph Company *et al.*** (See Lockwood and Larned, assignors.) | | | | | | |
| **American Washboard Company.** (See Sargent, James T., assignor.) | | | | | | |
| **Ames, Albert C., Chicago, Ill.** Driving mechanism for road-vehicles | 500,544 | July 4 | 1 | 1 | 64 | 3 |
| **Ames, Albert C., Chicago, Ill.** Traction-Engine | 505,151 | Sept. 19 | 1390 | 356 357 | 64 | 1558 |
| **Ames, Alden T.** (See Fulton and Ames.) | | | | | | |
| **Ames, Charles L.** (See Morrison and Ames.) | | | | | | |
| **Ames & Frost Company.** (See Morrison and Ames, assignors.) | | | | | | |
| **Ames Iron Works.** (See Armstrong, Edwin J., assignor.) | | | | | | |
| **Amick, Andrew J., Boonsborough, Mo.** Feeder and band-cutter for thrashing-machines | 502,102 | July 25 | 2604 | 655 656 | 64 | 520 |



*Alphabetical list of patentees, July to September, inclusive*—Continued.

| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drgs. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| **Ammon, Jacob S.** (See Shaaber, Mahlon, assignor.) | | | | | | |
| **Ammon, John, New York, N. Y.** Piano-hammer | 504,192 | Aug. 29 | 3216 | 801 | 64 | 1220 |
| **Ams, Max, New York, N. Y.** Harmonica | 504,899 | Sept. 12 | 971 | 250 | 64 | 1467 |
| **Amsbury, Albert**, assignor of one-half to E. Little, Keystone, S. D. Cam for stamp-mills | 502,219 | July 25 | 2096 | 680 | 64 | 538 |
| **Anders, George L.**, assignor of three-fourths to W. Kottgen, London, England. Telephone system | 500,545 | July 4 | 5 | 2, 3 | 64 | 4 |
| **Andersen, Hans C., Cambridge**, assignor of one-half to T. Hansen, West Somerville, Mass. Speed-indicator for shafting | 502,649 | Aug. 1 | 668 | 162 | 64 | 680 |
| **Anderson, Anders P., Kasson, Minn.** Washing-machine | 500,546 | July 4 | 9 | 3 | 64 | 4 |
| **Anderson, Anders P.**, assignor of one-half to H. E. Vernor, San Antonio, Tex. Car-coupling | 505,021 | Sept. 26 | 2197 | 555 556 | 64 | 1723 |
| **Anderson, Andrew L.** (See Niederriter, William F., assignor.) | | | | | | |
| **Anderson, Andro R., Milwaukee, Wis.** Smoke-jack | 504,511 | Sept. 5 | 335 | 85, 86 | 64 | 1332 |
| **Anderson, Axel, Attleborough, Mass.** Wrench | 504,698 | Sept. 12 | 689 | 163 | 64 | 1403 |
| **Anderson, Axel R.** (See Anderson, Elias B. and A. R.) | | | | | | |
| **Anderson, Charles A.**, and J. S. Winston, assignors of one-half to J. J. Jones and J. S. Wilson, Sturgis, Ky. Harrow | 502,391 | Aug. 1 | 237 | 56 | 64 | 555 |
| **Anderson, Elias B.** and A. R., Worcester, Mass. Dinner-pail | 501,313 | July 11 | 1232 | 311 | 64 | 238 |
| **Anderson, Francis J.**, and W. M. Irick, Gainesville, Tex. Reading-stand | 502,601 | Aug. 1 | 593 | 141 143 | 64 | 675 |
| **Anderson, Frank**, assignor of one-half to G. S. Crosby, Buffalo, N. Y. Car-coupling | 500,730 | July 4 | 321 | 86 | 64 | 80 |
| **Anderson, Harry P., Washington, D. C.** Wood-molding machine | 500,780 | July 4 | 410 | 108 | 64 | 76 |
| **Anderson, James A., Bedford, Ohio.** Handling coal-cars in mines | 500,547 | July 4 | 10 | 3 | 64 | 4 |
| **Anderson, John A. E.**, assignor of two-thirds to W. C. and T. S. Kern, Lebanon, Ind. Fence | 502,343 | Aug. 1 | 159 | 37 | 64 | 595 |
| **Anderson, Lee**, assignor of three-fourths to T. Broad, J. Martin, and E. W. Rush, Paris, Tex. Hame | 505,430 | Sept. 26 | 1848 | 475 | 64 | 1657 |
| **Anderson, Newton M.**, and G. S. Rider, Cleveland, Ohio. Adjustable table | 501,638 | July 18 | 1759 | 438 | 64 | 352 |
| **Anderson, Oscar, Newark, N. J.** Centrifugal butter-extractor | 503,731 | Aug. 22 | 2478 | 616 | 64 | 1062 |
| **Anderson, Robert C., Jeffersonville, Ind.** Wire-stretcher | 503,892 | Aug. 22 | 2707 | 679 | 64 | 1107 |
| **Anderson, Robert S., Toronto, Canada.** Embossing-machine | 502,342 | Aug. 1 | 154 | 35, 36 | 64 | 594 |
| **Anderson, Victor**, assignor of one-half to C. N. Christensen, Chicago, Ill. Pipe-organ | 503,226 | Aug. 15 | 1656 | 407 | 64 | 898 |
| **Anderson, Walter E., *et al.*** (See Preston, Charles W., assignor.) | | | | | | |
| **Anderson** William B., and G. L. Daugherty, assignors of one-third to R. P. Daugherty, Elizabethtown, Ky. Car-brake | 504,313 | Sept. 5 | 1 | 1 | 64 | 1271 |
| **Andersen, Johannes, Christiania, Norway.** Cigar-holder | 500,791 | July 4 | 413 | 108 | 64 | 76 |
| **André, Friedrich, Hildesheim, Germany.** Wood-pulp grinding machine | 503,304 | Aug. 15 | 1783 | 440 | 64 | 920 |
| **André, Oscar**, assignor to Société du Nettoyeur O. André Applique au Filtre Chamberland Système Pasteur, Paris, France. Self-cleansing filter | 502,690 | Aug. 1 | 754 | 136 | 64 | 704 |
| **Andre, Thomas J., Wauseon, Ohio.** Gate | 505,242 | Sept. 19 | 1488 | 388 | 64 | 1576 |
| **Andresen, Andreas C. D.** (See Andresen, Asmus J. and A. C. D.) | | | | | | |
| **Andresen, Asmus J.** and A. C. D., St. Louis, Mo. Gang-plow | 503,515 | Aug. 15 | 2110 | 529 | 64 | 979 |
| **Andrews, Edward N., New Britain**, assignor to himself and G. A. Coles, Middletown, Conn. Water-wheel | 505,342 | Sept. 19 | 1690 | 435 | 64 | 1614 |
| **Andrews, Ezra R., *et al.*** (See Ellis, Edgar E., assignor.) | | | | | | |
| **Andrews, Mary B., Philadelphia, Pa.** Game apparatus | 502,455 | Aug. 1 | 347 | 83 | 64 | 630 |
| **Andrews, Wallace C., New York, N. Y.** Apparatus for preparing coal for transportation | 502,092 | July 25 | 2442 | 614 | 64 | 488 |
| **Andrews, Wallace C., New York, N. Y.** Settling or storage pond or basin for pulverized coal | 502,093 | July 25 | 2444 | 614 | 64 | 489 |
| **Andrews, William W., Fallbrook, Cal.** Rotary engine | 500,988 | July 4 | 716 | 188 | 64 | 130 |
| **Andrus, Duane P., St. Louis, Mo.** Electric belt | 502,804 | Aug. 8 | 954 | 232 | 64 | 756 |
| **Angeli, Alfredo.** (See Caccialupi, Epimaco O., assignor.) | | | | | | |
| **Angell, Edwin E.** (See Burton and Angell.) | | | | | | |
| **Anger, John A.** (See Barry, James R., assignor.) | | | | | | |
| **Anger, Louis J., New York, N. Y.** Machine for filling cream-puffs | 504,857 | Sept. 12 | 905 | 234 | 64 | 1455 |
| **Angerer, Victor**, assignor to William Wharton, Jr., & Company, Incorporated, Philadelphia, Pa. Railway-switch | 504,649 | Sept. 5 | 536 | 137 | 64 | 1371 |
| **Angier, James W., Merchantville, N. J.** Tire-clamp | 504,017 | Aug. 29 | 2926 | 733 | 64 | 1165 |
| **Ansley, George W., Medical Lake, Wash.** Carpet stretcher and tacker | 505,546 | Sept. 26 | 2057 | 525 | 64 | 1696 |
| **Anthoni, Henri, Reninemont, France.** Treating cotton | 500,732 | July 4 | 323 | 86 | 64 | 81 |
| **Anthony, Frederick A., Livermore, Cal.** Store-shelving | 505,017 | Sept. 12 | 1166 | 299 | 64 | 1504 |
| **Anthony, Mark, Berkley, Cal.** Display-stand | 500,839 | July 4 | 488 | 127 | 64 | 89 |
| **Apgar, Theodore H., Bound Brook, N. J.** Puzzle | 504,823 | Sept. 12 | 851 | 218 | 64 | 1443 |
| **Apple, Charles S., Bellaire, Ohio** Adhesive pencil | 502,163 | July 25 | 2607 | ..... | 64 | 521 |
| **Appleby, John F., Santa Cruz, Cal.** Grain-binder | 502,267 | Aug. 1 | 2 | 1, 2 | 64 | 567 |
| **Arbel, Pierre**, assignor to Société Anonyme Industrielle des Establishments Arbel, Paris, France. Making car-wheels and dies for same | 501,908 | July 25 | 2204 | 549 550 | 64 | 445 |
| **Archbold, George, Washington, D. C.**, assignor to H. L. Terrell, New York, N. Y. Method of and means for extracting hydrocarbons from bituminous rocks | 503,028 | Aug. 8 | 1397 | 326 | 64 | 825 |
| **Archer, John B., Washington, D. C.** Apparatus for the manufacture of gas | 501,130 | July 11 | 957 | 244 | 64 | 189 |
| **Archer, John B., Washington, D. C.** Tile for use in apparatus for the manufacture of gas | 502,693 | Aug. 8 | 761 | 185 | 64 | 721 |
| **Archer, John B., Washington, D. C.** Tile for use in apparatus for the manufacture of gas | 504,314 | Sept. 5 | 3 | 1 | 64 | 1271 |
| **Armantrout, Peter**, assignor of one-half to F. L. Schneider, Hoover, Ind. Pipe or nut wrench | 501,985 | July 25 | 2116 | 579 | 64 | 486 |
| **Armbruster, Frank C., Milwaukee, Wis.** Window | 503,189 | Aug. 15 | 1595 | 392 | 64 | 882 |
| **Armitstead, Thomas E., Mazomanie, Wis.** Gun-sight | 504,696 | Sept. 5 | 630 | 160 | 64 | 1369 |
| **Armstrong, Alfred**, assignor to R. H. Clifford and H. L. Haydel, St. Louis, Mo. Combination laundry outfit | 503,711 | Aug. 22 | 2449 | 609 | 64 | 1057 |
| **Armstrong, Edwin J.**, assignor to Ames Iron Works, Oswego, N. Y. Rock-arm for horizontal engines | 500,840 | July 4 | 489 | 127 | 64 | 89 |
| **Armstrong, John B.**, deceased, Guelph, Canada; R. Torrance, administrator. Road-cart | 504,771 | Sept. 12 | 769 | 194 | 64 | 1438 |
| **Arnold, Benjamin, East Greenwich, R. I.**, assignor to Meriden Curtain Fixture Company, Meriden, Conn. Machine for making and knotting fringes | 504,315 | Sept. 5 | 4 | 2 | 64 | 1272 |
| **Arnold, Benjamin, East Greenwich, R. I.**, assignor to Meriden Curtain Fixture Company, Meriden, Conn. Machine for making and knotting fringes | 504,316 | Sept. 5 | 7 | 2, 3 | 64 | 1272 |
| **Arnold, Daniel J. C., New London, Ohio.** Brick-barrow | 501,314 | July 11 | 1234 | 311 | 64 | 239 |
| **Arnold, Emil and R., Leipsic-Plagwitz, Germany.** Composition for treating lithographic stones and plates | 504,772 | Sept. 12 | 770 | ..... | 64 | 1438 |
| **Arnold, Horatio B., Boston, Mass.** Disposing of city garbage | 501,037 | July 4 | 789 | 206 207 | 64 | 144 |
| **Arnold, Richard.** (See Arnold, Emil and R.) | | | | | | |
| **Art Stove Company.** (See Cope, George W., assignor.) | | | | | | |
| **Ash, Richard E., *et al.*** (See Woodfill, Owensby H., assignor.) | | | | | | |
| **Ashbaugh, William F.** (See Graham, William, assignor.) | | | | | | |
| **Ashley, Frank M., Hawthorne, N. J.** Steam-boiler | 500,733 | July 4 | 325 | 87 | 64 | 81 |

*Alphabetical list of patentees, July to September, inclusive*—Continued.

| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drg. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Ashley, Ralph, assignor of one-half to C. W. Kennedy, Philadelphia, Pa. Electric motor | 505,720 | Sept. 26 | 2476 | 924 | 64 | 1775 |
| Asker, Per F., Boston, Mass. Sofa-bed | 500,792 | July 4 | 414 | 109 | 64 | 77 |
| Assmann, Oswald, Tegelen, Netherlands. Binder for loose sheets of paper, &c | 504,317 | Sept. 5 | 9 | 3 | 64 | 1272 |
| Ast, Jacob. (See Edmister, Worden, assignor.) | | | | | | |
| Athey, William H. (See Williams and Athey.) | | | | | | |
| Atkinson, James W., San José, Cal. Combined incubator and brooder | 502,900 | Aug. 8 | 1115 | 274, 275 | 64 | 787 |
| Atlas Gun Company. (See Gunn, George P., assignor.) | | | | | | |
| Atlas Tack Corporation. (See Rumsey, Oscar C., assignor.) | | | | | | |
| Atterbury, Thomas B., Pittsburg, Pa. Incandescent-lamp globe | 500,841 | July 4 | 491 | 128 | 64 | 90 |
| Atwater, Arthur S., assignor to Atwater General Electric Company, Cleveland, Ohio. Electric-arc lamp | 505,183 | Sept. 19 | 1440 | 371 | 64 | 1567 |
| Atwater, Arthur S., assignor to Atwater General Electric Company, Cleveland, Ohio. Dynamo-electric machine | 505,184 | Sept. 19 | 1441 | 371 | 64 | 1567 |
| Atwater, Arthur S., assignor to Atwater General Electric Company, Cleveland, Ohio. Dynamo-electric machine | 505,622 | Sept. 26 | 2199 | 556 | 64 | 1724 |
| Atwater General Electric Company. (See Atwater, Arthur S., assignor.) | | | | | | |
| Atwood, Eugene, *et al.* (See Bradley, Edward E., assignor.) | | | | | | |
| Atwood, John E., *et al.* (See Bradley, Edward E., assignor.) | | | | | | |
| Auerbach, Julius. (See West, Theodore E., assignor.) | | | | | | |
| Aulaber, Christopher, Minneapolis, Minn. Cultivator | 500,842 | July 4 | 492 | 128 | 64 | 90 |
| Anne, Ole O., Columbus, Ohio. Watchcase pendant | 502,268 | Aug. 1 | 5 | 2 | 64 | 567 |
| Ausman, Jasper M., Herkimer, N. Y. Rocking-chair | 505,083 | Sept. 19 | 1288 | 333 | 64 | 1541 |
| Aust, Max M. (See Thiel and Aust.) | | | | | | |
| Austin, Edgar A., Hannibal, Mo. Adjustable pitch-roof ladder | 505,343 | Sept. 19 | 1691 | 435 | 64 | 1614 |
| Austin, Eugene, assignor of one-half to J. Trix, Detroit, Mich. Pressure-regulator for pumping-engines | 503,068 | Aug. 8 | 1382 | 341 | 64 | 835 |
| Austin, Nelson, *et al.* (See Austin, William G., assignor.) | | | | | | |
| Austin, Truman E., Binghamton, N. Y. Combined spark arrester and ejector | 500,648 | July 4 | 181 | 47 | 64 | 36 |
| Austin, William F., Albany, N. Y. Elevator | 503,781 | Aug. 22 | 2558 | 637 | 64 | 1078 |
| Austin, William G., assignor of three-fourths to S. Rainey, J. C. Culbertson, and N. Austin, Tarkio, Mo. Clutch | 503,824 | Aug. 22 | 2613 | 653 | 64 | 1089 |
| Austin, William H., assignor to himself, W. H. Cary, W. Thompson, and A. A. Delano, Brockton, Mass. Machine for manufacturing lasts for boots or shoes | 503,893 | Aug. 22 | 2708 | 679, 680 | 64 | 1107 |
| Automatic Advertising Panorama Company. (See Stone, Henrie D., assignor.) | | | | | | |
| Automatic Gem and Gold Separator Syndicate. (See Lockhart, William S., assignor.) | | | | | | |
| Automatic Machine Company. (See Carroll, Charles, assignor.) | | | | | | |
| Automatic Register Company. (See Dyer, Millard F., assignor.) | | | | | | |
| Automatic Time Stamp and Register Company. (See Martin, Morris, assignor.) | | | | | | |
| Avery, James R., Louisville, Ky. Car-coupling | 504,690 | Sept. 5 | 617 | 158 | 64 | 1386 |
| Avery, John G., Spencer, Mass. Antifriction-bearing | 502,025 | July 25 | 2383 | 599 | 64 | 478 |
| Avery, John T., assignor to Avery Lasting Machine Company, St. Louis, Mo. Lasting-machine | 500,548 | July 4 | 12 | 4, 5, 6, 7, 8 | 64 | 5 |
| Avery Lasting Machine Company. (See Avery, John T., assignor.) | | | | | | |
| Avery & Sons, B. F. (See Holaclaw, Wilford H., assignor.) | | | | | | |
| Avery, Thomas M., *et al.*, trustees. (See Bagley, Charles H., assignor.) | | | | | | |
| Avery, Thomas M., *et al.*, trustees. (See Stark, John, assignor.) | | | | | | |
| Avey, William J., Cincinnati, Ohio. Work-holding clamp | 504,960 | Sept. 12 | 1069 | 273 | 64 | 1486 |
| Avis, Walter H., Toronto, Canada. Twine-finishing machine | 503,936 | Aug. 29 | 2780 | 697 | 64 | 1139 |
| Ayers, Samuel C., assignor to Bigelow Carpet Company, Clinton, Mass. Apparatus for dyeing | 504,291 | Aug. 29 | 3371 | 843 | 64 | 1249 |
| Ayres, William H. (See Meadows, Jesse A., assignor.) | | | | | | |
| Babbitt, Seward S., Pittsburg, Pa. Billet-conveyer for rolling-mills | 503,894 | Aug. 22 | 2711 | 680, 681 | 64 | 1108 |
| Bachert, Max. (See Schüler, Lina, assignor.) | | | | | | |
| Backstrom, Jonas. (See Stephenson and Backstrom.) | | | | | | |
| Backus Water Motor Company. (See Shepperd, Sylvanus D., assignor.) | | | | | | |
| Bacon, Daniel H. (See White and Bacon.) | | | | | | |
| Bacot, Richard H., St. Louis, Mo. Halter-hitch | 504,650 | Sept. 5 | 537 | 138 | 64 | 1371 |
| Badertscher, Johann, Langnau, Switzerland. Scythe | 504,773 | Sept. 12 | 771 | 194 | 64 | 1428 |
| Badger, William E., Quincy, Mass. Monkey-wrench | 502,869 | Aug. 8 | 1058 | 260 | 64 | 776 |
| Badger, William E., Quincy, Mass. Wrench | 502,870 | Aug. 8 | 1059 | 260 | 64 | 776 |
| Badische Anilin and Soda Fabrik. (See Bohn, René, assignor.) | | | | | | |
| Badische Anilin and Soda Fabrik. (See Müller, Carl, assignor.) | | | | | | |
| Badoni, Massimiliano, assignor to A. Revilliod-De Muralt, Geneva, Switzerland. Lock | 501,639 | July 18 | 1760 | 438 | 64 | 352 |
| Badoni, Massimiliano, assignor to A. Revilliod-De Muralt, Geneva, Switzerland. Lock | 501,640 | July 18 | 1761 | 439 | 64 | 353 |
| Badoni, Massimiliano, assignor to A. R. de Muralt, Geneva, Switzerland. Lock | 504,292 | Aug. 29 | 3373 | 843 | 64 | 1250 |
| Baekeland, Leo H., New York, N. Y. Antiseptic compound | 500,549 | July 4 | 20 | ..... | 64 | 6 |
| Bagby, George K., New Berne, N. C. Dental articulation-cup | 502,164 | July 25 | 2607 | 656 | 64 | 521 |
| Bagley, Charles H., Thomaston, Conn., assignor, by mesne assignments, to R. E. Robbins, Boston, Mass., and T. M. Avery, Chicago, Ill., trustees. Stem winding and setting watch | 503,516 | Aug. 15 | 2111 | 529 | 64 | 980 |
| Bagley, Charles H., Thomaston, Conn., assignor, by mesne assignments, to R. E. Robbins, Boston, Mass., and T. M. Avery, Chicago, Ill., trustees. Stem winding and setting watch | 503,517 | Aug. 15 | 2113 | 530 | 64 | 980 |
| Bailey, Andrew C., *et al.* (See Conver, William H., assignor.) | | | | | | |
| Bailey, Charles H., *et al.* (See Bailey, Henry E., assignor.) | | | | | | |
| Bailey, Elon G., Redwood Falls, Minn. Vise and bench-hook | 504,652 | Sept. 5 | 541 | 138 | 64 | 1372 |
| Bailey, Elon G., Redwood Falls, Minn. Paddle-wheel | 505,784 | Sept. 26 | 2478 | 625 | 64 | 1775 |
| Bailey, Fortune L., Freeport, Ind., assignor to Boston Cash Register Company, Northampton, Mass. Cash register and indicator | 504,293 | Aug. 29 | 3374 | 844 | 64 | 1250 |
| Bailey, Fortune L., assignor to Boston Cash Register Company, Northampton, Mass. Cash-registering machine | 504,409 | Sept. 5 | 157 | 41, 42 | 64 | 1299 |
| Bailey, Fred M. (See Egan and Bailey.) | | | | | | |
| Bailey, Henry E., assignor of two-thirds to R. O. Bassett and C. H. Bailey, Albany, N. Y. Apparatus for drawing liquids from barrels | 504,512 | Sept. 5 | 338 | 86 | 64 | 1333 |
| Bailey, Jackson D., *et al.* (See Conver, William H., assignor.) | | | | | | |
| Bailey, Leonard S., West Potsdam, N. Y. Colter | 505,018 | Sept. 12 | 1167 | 299 | 64 | 1505 |
| Bailey, Samuel R., Amesbury, Mass. Carriage-coupling | 501,902 | July 11 | 1067 | 270, 271 | 64 | 210 |
| Bailey, Thomas, New York, N. Y. Partition | 504,858 | Sept. 12 | 907 | 234 | 64 | 1455 |
| Bain, Forée, Chicago, Ill., assignor to S. S. Brown, Pittsburg, Pa. Forming coal-cutters | 501,755 | July 18 | 1963 | 486 | 64 | 387 |



*Alphabetical list of patentees, July to September, inclusive*—Continued.

| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drg. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Baird, Clement V. (See Port and Baird.) | | | | | | |
| Baker, Charles F. (See Curtis, George A., assignor.) | | | | | | |
| Baker, George S., London, England. Kneading-machine | 502,392 | Aug. 1 | 239 | 57 | 64 | 609 |
| Baker, Hurbert C., Hartford, Conn. Reversing driving mechanism | 504,651 | Sept. 5 | 538 | 138 | 64 | 1372 |
| Baker, John, Muscatine, Iowa. Can-filling machine | 503,029 | Aug. 8 | 1328 | 326, 327 | 64 | 825 |
| Baker, John, Muscatine, Iowa. Can-filling machine | 503,030 | Aug. 8 | 1330 | 327 | 64 | 825 |
| Baker, William R., assignor to McCormick Harvesting Machine Company, Chicago, Ill. Mower | 500,550 | July 4 | 21 | 8 | 64 | 6 |
| Baldner, Charles E., assignor of one-half to W. N. Potter, Jr., Boston, Mass. Hemp-spinning machine | 501,475 | July 11 | 1498 | 377 | 64 | 288 |
| Baldwin, Andrew, Viroqua, Wis. Sheathing-lath | 501,397 | July 11 | 1391 | 349 | 64 | 267 |
| Baldwin, George, assignor of one-half to P. Donohue, Indianapolis, Ind. Plow | 504,294 | Aug. 29 | 3377 | 844 | 64 | 1251 |
| Baldwin, Lyman E., Lander, Wyo. Stovepipe attachment | 502,259 | Aug. 1 | 6 | 2 | 64 | 568 |
| Baldwin, Oxro J., Youngsville, assignor of one-half to J. L. O'Donnell, Warren, Pa. Belt-fastener | 501,266 | July 11 | 1165 | 296 | 64 | 227 |
| Baldwin, William D., administrator. (See Smith, Frederick H.) | | | | | | |
| Baldy, Milo D. (See Hughes, Smith E., assignor.) | | | | | | |
| Ball, Albert, assignor to Sullivan Machinery Company, Claremont, N. H. Guide for the cylinders and cross-heads of stone-quarrying machinery | 503,691 | Aug. 22 | 2417 | 602 | 64 | 1050 |
| Ball, Charles H., East Windsor, Mass. Bridge | 502,165 | July 25 | 2608 | 656 | 64 | 521 |
| Ball, Henry P., Schenectady, assignor to Edison General Electric Company, New York, N. Y. Incandescent-lamp socket | 501,485 | July 18 | 1515 | 381 | 64 | 307 |
| Ballance, John, assignor to himself, H. and H. Haltermann, New York, N. Y. Glass letter | 503,937 | Aug. 29 | 2782 | 697 | 64 | 1139 |
| Balliet, Alfred P. (See Yeager, Luckenbach, and Balliet.) | | | | | | |
| Ballreich, Charles A., Des Moines, Iowa. Car-coupling | 505,378 | Sept. 19 | 1750 | 454 | 64 | 1695 |
| Balsley, Upton H., Philadelphia, Pa. Switchboard for telephoning purposes | 504,464 | Sept. 5 | 245 | 64 | 64 | 1315 |
| Banan, Francis W., East Knox, Me. Seed planter | 503,938 | Aug. 29 | 2783 | 698 | 64 | 1140 |
| Bancroft, Henry N. (See Sc Cheverell, Jean H., assignor.) | | | | | | |
| Bancroft, Melvin, assignor to Quigley Furniture Company, Whitesborough, N. Y. Typewriter cabinet | 505,586 | Sept. 26 | 2149 | 543 | 64 | 1715 |
| Bancroft, Melvin, assignor to Quigley Furniture Company, Whitesborough, N. Y. Typewriter cabinet | 505,646 | Sept. 26 | 2255 | 571 | 64 | 1734 |
| Bangs, Edwin D., Milwaukee, Wis. Lubricator | 503,925 | Aug. 22 | 2759 | 691 | 64 | 1118 |
| Banta, William E., Springfield, Ohio. Wire coupling | 503,712 | Aug. 22 | 2450 | 609 | 64 | 1057 |
| Baptist, Daniel, Waverly, Ill. Gate | 503,448 | Aug. 15 | 2003 | 497 | 64 | 960 |
| Barbeau, Louis E., London, England. Device for turning bags | 503,692 | Aug. 22 | 2420 | 602 | 64 | 1051 |
| Barclay, John J., Elizabeth, assignor of one-half to W. W. Dashiell, Bergen Point, N. J. Steam-boiler | 501,047 | July 11 | 811 | 211 | 64 | 163 |
| Barclay, Robert, Fort Howard, Wis. Wrist and finger exercising apparatus | 505,745 | Sept. 26 | 2414 | 610 | 64 | 1702 |
| Barker, Irving, Springfield, Ill. Rotary tipple for dump-cars | 502,805 | Aug. 8 | 956 | 233 | 64 | 757 |
| Barker, Peleg, assignor of one-half to A. E. Hall, Kearney, Nebr. Hame | 503,758 | Aug. 22 | 2528 | 629 | 64 | 1073 |
| Barker, Valentine S. (See Corser, Lorenzo D., assignor.) | | | | | | |
| Barker, Wendell A., Chicago, Ill. Car starter and brake | 501,756 | July 18 | 1964 | 486 | 64 | 387 |
| Barkley, James, *et al.* (See Campbell, Henry, assignor.) | | | | | | |
| Barkley, William S. (See Seaton, Benjamin C., assignor.) | | | | | | |
| Barlow, John E., assignor of one-half to C. R. Paul, Philadelphia, Pa. Lighting device | 505,185 | Sept. 19 | 1442 | 371 | 64 | 1568 |
| Barnard, George E., Fitchburg, Mass. Mail-marking machine | 501,816 | July 18 | 2048 | 504, 505 | 64 | 401 |
| Barnes, Burr F., and J. G. Smith, Circleville, Ohio. Sheet-feeding mechanism | 503,275 | Aug. 15 | 1730 | 426, 427 | 64 | 911 |
| Barnes, Burr F., and J. G. Smith, Circleville, Ohio. Sheet-feeding mechanism | 503,276 | Aug. 15 | 1732 | 427, 428 | 64 | 912 |
| Barnes, Dana A., Schenectady, N. Y. Valve-gear for compound engines | 501,986 | July 25 | 2317 | 579 | 64 | 466 |
| Barnes, David L., Chicago, assignor to Fox Solid Pressed Steel Company, Joliet, Ill. Truck-frame | 505,152 | Sept. 19 | 1394 | 358 | 64 | 1559 |
| Barnes, John A., Cleveland, Ohio. Packing for joints | 505,084 | Sept. 19 | 1291 | 333 | 64 | 1541 |
| Barnes, John E. L. (See Sloan and Barnes.) | | | | | | |
| Barnes, John S., assignor of one-half to J. S. Ellis, Detroit, Mich. Canopy for bicycles | 504,900 | Sept. 12 | 971 | 250 | 64 | 1467 |
| Barnes, Thomas, Lowell, Mass. Life-guard for street-cars | 504,485 | Sept. 5 | 284 | 73 | 64 | 1323 |
| Barnett, George, *et al.* (See Gosling, Henry J., assignor.) | | | | | | |
| Barnett, Henry, *et al.* (See Gosling, Henry J., assignor.) | | | | | | |
| Barnett, James D., Leann, Mo. Combination-tool | 500,551 | July 4 | 22 | 8 | 64 | 6 |
| Barnsdale, Oswald. (See Tyers and Barnsdale.) | | | | | | |
| Barnum, Henry H. (See Guilbert, John M., assignor.) | | | | | | |
| Barnum, Russell S., assignor to A. C. Martin, Chicago, Ill. Car-coupling | 503,939 | Aug. 29 | 2784 | 698 | 64 | 1140 |
| Barr Cash and Package Carrier Company. (See Albach, William H., assignor.) | | | | | | |
| Barr Cash and Package Carrier Company. (See Barr, Samuel W., assignor.) | | | | | | |
| Barr Cash and Package Carrier Company. (See Lippy, David, assignor.) | | | | | | |
| Barr Cash and Package Carrier Company. (See Weaver, Henry M., assignor.) | | | | | | |
| Barr, Samuel W., assignor to Barr Cash and Package Carrier Company, Mansfield, Ohio. Cash-carrier apparatus | 500,552 | July 4 | 23 | 9 | 64 | 7 |
| Barraclough, Thomas C., and T. T. Heaton, London, England. Bung, valve, or stopper, &c | 505,587 | Sept. 26 | 2151 | 544 | 64 | 1715 |
| Barrett, Frederick W., assignor to Barrett Publishing Company, Springfield, Ohio. Tally-sheet | 505,304 | Sept. 19 | 1636 | 423 | 64 | 1605 |
| Barrett, John A., Brooklyn, N. Y., assignor to Standard Underground Cable Company, Pittsburg, Pa. Machine for covering wires | 505,379 | Sept. 19 | 1752 | 454, 455 | 64 | 1696 |
| Barrett, John A., Brooklyn, N. Y., assignor to Standard Underground Cable Company, Pittsburg, Pa. Machine for covering wire | 505,380 | Sept. 19 | 1757 | 455 | 64 | 1697 |
| Barrett, Patrick J., assignor of one-half to J. J. Frawley, president, Boston, Mass. Electric-arc lamp | 502,166 | July 25 | 2600 | 657 | 64 | 521 |
| Barrett Publishing Company. (See Barrett, Frederick W., assignor.) | | | | | | |
| Barrett, Thomas. (See Crisp, Copeland, and Barrett.) | | | | | | |
| Barry, Herbert A. L., London, England. Drill-brace | 504,147 | Aug. 29 | 3131 | 783 | 64 | 1004 |
| Barry, James R., Syracuse, assignor of one-half to J. A. Anger, New York, N. Y. Cover for boxes | 505,213 | Sept. 19 | 1489 | 388 | 64 | 1577 |
| Barry, Richard F., Newton, Mass. Machine for setting lacing studs or hooks | 504,295 | Aug. 29 | 3379 | 845 | 64 | 1251 |
| Barthel, Adolph, *et al.* (See Susemihl, Francis G., assignor.) | | | | | | |
| Barthold, Ferdinand, Milwaukee, Wis. Bottling-siphon | 504,513 | Sept. 5 | 339 | 86 | 64 | 1333 |
| Bartholomew, Grove S., Garvanza, Cal., Wire-fence lock and stay | 501,240 | July 11 | 1123 | 285 | 64 | 219 |
| Bartholomew, Thomas W., Danville, Pa. Filling-indicator for lamps | 505,186 | Sept. 19 | 1444 | 372 | 64 | 1568 |
| Bartlett, Charles M., Chicago, Ill. Level | 501,641 | July 18 | 1763 | 439 | 64 | 353 |
| Bartlett, Charles O., Cleveland, Ohio. Carbon-trimming machine | 500,553 | July 4 | 25 | 9, 10 | 64 | 7 |

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| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Dr'g. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Bartlett, Charles O., Cleveland, Ohio. Chain conveyer | 505,431 | Sept. 26 | 1849 | 475, 476 | 64 | 1657 |
| Bartlett, Frank V., St. Paul, Minn. Type-writing machine | 501,909 | July 25 | 2207 | 550 | 64 | 445 |
| Bartliff, Charles A., Memphis, Tenn. Speaking-tube | 501,486 | July 18 | 1517 | 391 | 64 | 307 |
| Bartliff, Charles A., Memphis, Tenn. Speaking-tube | 501,487 | July 18 | 1518 | 391 | 64 | 307 |
| Barton, Delbert E., San Francisco, Cal. Cultivator | 500,702 | July 4 | 270 | 73 | 64 | 51 |
| Barton, Edwin W., Lawrence, Mass. Pulp beating and mixing engine | 503,069 | Aug. 8 | 1384 | 342 | 64 | 835 |
| Barton, George W., Bethlehem, Ky. Cartridge-belt | 501,642 | July 18 | 1764 | 439 | 64 | 353 |
| Bartruff, Edwin T., Keokuk, Iowa. Bridle-bit | 501,987 | July 25 | 2118 | 579 | 64 | 486 |
| Bassett, Charles F., and I. S. Dement, Chicago, Ill. Autographic register | 505,260 | Sept. 19 | 1552 | 405, 406 | 64 | 1589 |
| Bassett, George B., Buffalo, N. Y. Disk water-meter | 501,203 | July 11 | 1008 | 271, 272 | 64 | 210 |
| Bassett, Horace P., Warren, Ohio. Car-brake | 505,381 | Sept. 19 | 1760 | 456 | 64 | 1627 |
| Bassett, Norman C., Lynn, Mass., assignor to General Electric Company, of New York. Commutator connection | 501,049 | July 11 | 815 | 212 | 64 | 164 |
| Bassett, Richard O., *et al.* (See Bailey, Henry E., assignor.) | | | | | | |
| Bassett, Royal M. (See Bassett, Sheldon H., assignor.) | | | | | | |
| Bassett, Sheldon H., Brooklyn, N. Y., assignor to himself, and R. M. Bassett, Birmingham, Conn. Apparatus for conveying and drying | 501,068 | July 11 | 813 | 211 | 64 | 163 |
| Bassler, John H., Myerstown, Pa. Metal-working | 501,038 | July 4 | 790 | 207 | 64 | 144 |
| Bastin, William H., Murphysborough, Ill. Measuring-vessel | 503,571 | Aug. 22 | 2214 | 554 | 64 | 1014 |
| Bateman, Daniel C., Clockheaton, England. Apparatus for hardening and tempering steel wire | 503,398 | Aug. 15 | 1933 | 480 | 64 | 948 |
| Bates, Albert J., Joliet, Ill. Cut-off for steam-engines | 505,153 | Sept. 19 | 1395 | 358 | 64 | 1559 |
| Bates, Francis G., Philadelphia, Pa. Metallurgical furnace | 502,167 | July 25 | 2611 | 657, 658 | 64 | 522 |
| Bates, Henry A., Yonkers, N. Y. Bobbin-holder for sewing-machine shuttles | 505,305 | Sept. 19 | 1637 | 423 | 64 | 1605 |
| Bates, James H., Hoboken, N. J. Incande-cent electric lamp | 503,108 | Aug. 8 | 1453 | 358 | 64 | 848 |
| Bates, Joseph W., Minneapolis, Minn. Electrical supply system for railways | 503,566 | Aug. 15 | 2197 | 549 | 64 | 995 |
| Bates, Lindon W., Chicago, Ill. Dredger | 503,732 | Aug. 22 | 2481 | 617 | 64 | 1063 |
| Bates, Lindon W., Chicago, Ill. Dredger | 503,733 | Aug. 22 | 2483 | 617, 618 | 64 | 1063 |
| Bates, Lindon W., Chicago, Ill. Dredger | 503,734 | Aug. 22 | 2485 | 618, 619 | 64 | 1064 |
| Battey, Sumter B., New York, N. Y. Aerial machine | 502,168 | July 25 | 2613 | 658 | 64 | 522 |
| Battles, Edwin W., *et al.* (See Losey, James, assignor.) | | | | | | |
| Bauer, Ferdinand, St. Louis, Mo. Automatic self-arrester ice-can filler | 501,308 | July 11 | 1392 | 349 | 64 | 267 |
| Bauer, Max, Greenville, N. J. Ground-glass attachment for cameras | 503,518 | Aug. 15 | 2114 | 530 | 64 | 980 |
| Bauer, Theodor, Berlin, and G. Mendheim, Munich, Germany. Coke and carbonizing oven | 504,548 | Sept. 5 | 395 | 100, 101 | 64 | 1343 |
| Baum, Clarence M., Philadelphia, Pa. Apparatus for purifying steam and removing extraneous matter therefrom | 505,085 | Sept. 19 | 1293 | 333 | 64 | 1541 |
| Baxter, Alfred E., and A. G. Mather, Milwaukee, Wis. Spiral conveyer | 504,193 | Aug. 29 | 3217 | 801 | 64 | 1220 |
| Baxter, Channing, *et al.* (See Newman, Wilson J., assignor.) | | | | | | |
| Baxter, George. (See McBean, McLaughlin, Corkhill, and Baxter.) | | | | | | |
| Baxter, Henry E., *et al.* (See Newman, Wilson J., assignor.) | | | | | | |
| Bayler, Adolph, assignor to L. Raffloer, New York, and C. H. Schott, Brooklyn, N. Y. Braiding-machine | 500,685 | July 4 | 244 | 66 | 64 | 46 |
| Bayler, Adolph, assignor to L. Raffloer, New York, and C. H. Schott, Brooklyn, N. Y. Stop mechanism for spool-carriers | 504,796 | Sept. 12 | 802 | 204 | 64 | 1433 |
| Bayles, Robert N., New York, N. Y. Commutator-brush holder | 504,901 | Sept. 12 | 973 | 250, 251 | 64 | 1467 |
| Bayley, Charles H., Boston, Mass. Cigar-box moistener | 505,261 | Sept. 19 | 1556 | 406 | 64 | 1589 |
| Beach, Myron W. (See Mosher, Oscar M., assignor.) | | | | | | |
| Beach, Oliver B., Stony Creek, Conn. Bicycle-bell | 504,902 | Sept. 12 | 975 | 251 | 64 | 1468 |
| Beack, Andrew R., *et al.* (See Campbell, Carl T., assignor.) | | | | | | |
| Beadle, Jesse, Shickshinny, assignor of one-half to E. A. Daddow, St. Clair, Pa. Miner's squib | 502,946 | Aug. 8 | 1199 | 295 | 64 | 801 |
| Beal, Welcome B., Boston, Mass. Life-saving vehicle | 503,572 | Aug. 22 | 2216 | 554 | 64 | 1014 |
| Beall, John N., assignor of one-half to J. W. Miller, Jacksonville, Ill. Door-securer | 504,653 | Sept. 5 | 542 | 139 | 64 | 1372 |
| Beam, Aron M. (See Calhoun and Beam.) | | | | | | |
| Beam, Oren H., assignor of one-half to C. F. Knapp, Allegheny, Pa. Nut-lock | 504,296 | Aug. 29 | 3380 | 845 | 64 | 1251 |
| Beard, Robert R., London, England. Gas regulator or governor | 502,064 | July 25 | 2445 | 614 | 64 | 489 |
| Beardsley, Backus A., Waterville, N. Y. Hop-picking machine | 503,190 | Aug. 15 | 1596 | 392, 393 | 64 | 888 |
| Bearman, John, Elderslie, Canada. Pea-harvester | 503,031 | Aug. 8 | 1332 | 327, 328 | 64 | 825 |
| Beaudet, Leo C., Mount Vernon, N. Y. Eucharistic water-cruet | 500,843 | July 4 | 493 | 128 | 64 | 90 |
| Beater, Alfred G., Philadelphia, Pa. Inking and cleaning apparatus for die-stamping | 504,465 | Sept. 5 | 248 | 65 | 64 | 1316 |
| Beatty, John T., Philadelphia, Pa. Lock | 505,214 | Sept. 19 | 1490 | 388 | 64 | 1577 |
| Beaumont, Charles M., Hull, England. Toy soldier | 505,344 | Sept. 19 | 1692 | 436 | 64 | 1615 |
| Beaumont, James W., Waterbury, Conn. Garment-supporter | 502,393 | Aug. 1 | 241 | 57 | 64 | 310 |
| Beaumont, John W., St. Louis, Mo. Concrete wall | 504,194 | Aug. 29 | 3219 | 801 | 64 | 1226 |
| Beazell, Ella W., Beaver, Pa. Fastening for barrel or other hoops | 500,844 | July 4 | 495 | 128 | 64 | 90 |
| Beazley, Joseph O., Baltimore, Md., assignor to Standard Heater Company, of West Virginia. Hydrocarbon-burner | 504,297 | Aug. 29 | 3380 | 845 | 64 | 1251 |
| Beck, August. (See Hertel and Beck.) | | | | | | |
| Beck, Michael, Minneapolis, assignor of one-half to J. Wolafeld, Long Lake, Minn. Combined oil-gas generator and burner | 503,390 | Aug 15 | 1934 | 481 | 64 | 948 |
| Becker, Christian H. (See King and Becker.) | | | | | | |
| Beckley, Joseph C., Dayton, Ohio. Clothes-drier | 503,573 | Aug. 22 | 2217 | 554 | 64 | 1015 |
| Beckwith, Erwin G., Washington, D. C. Railway-torpedo | 501,399 | July 11 | 1396 | 349 | 64 | 267 |
| Beckwith, Nelson, Somerville, Mass. Elevator | 502,270 | Aug. 1 | 7 | 3 | 64 | 568 |
| Bedford, Alexander L. (See Walker and Bedford.) | | | | | | |
| Bednars, Anton, New Lisbon, Wis. Heat-regulator for ovens | 505,345 | Sept. 19 | 1693 | 436 | 64 | 1615 |
| Beecher, Edwin N., Marion, assignor to H. H. and C. H. Clark, R. W. Bemis, and W. H. Cummings, Southington, Conn. Machine for tapping or reaming blanks | 504,903 | Sept. 12 | 978 | 252 | 64 | 1468 |
| Beekman, Gerard, New York, N. Y. Mechanism for actuating pickers for cotton-harvesters | 501,669 | July 18 | 1809 | 450 | 64 | 360 |
| Beekman, Gerard, New York, N. Y. Cotton-harvester | 501,670 | July 18 | 1811 | 451, 452 | 64 | 361 |
| Beekman, Gerard, New York, N. Y. Picker-actuating mechanism for cotton-harvesters | 501,671 | July 18 | 1815 | 452, 453 | 64 | 361 |



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|---|---|---|---|---|---|---|
| Beekman, Gerard, New York, N. Y. Car-coupling link | 503,116 | Aug. 15 | 1479 | 363 | 64 | 865 |
| Beemer, Daniel S. (See Swarts and Beemer.) | | | | | | |
| Beemer, John B. (See McGuire and Beemer.) | | | | | | |
| Beers, John E. (See Jennings, Oscar S., assignor.) | | | | | | |
| Behles, Charles A., Cincinnati, Ohio. Vehicle-dash | 500,845 | July 4 | 496 | 129 | 64 | 91 |
| Behles, Charles A., Cincinnati, Ohio. Carriage-dash | 500,989 | July 4 | 717 | 188 | 64 | 130 |
| Behn, John F., and G. A. Wegner, Buffalo, N. Y. Congealer for ice-making machines | 505,588 | Sept. 26 | 2153 | 544, 545 | 64 | 1715 |
| Behne, Ernst, St. Louis, Mo. Basket | 505,694 | Sept. 26 | 2340 | 592 | 64 | 1749 |
| Behrens, Charles W., Lancaster, Ohio. Hay-rack | 502,920 | July 25 | 2696 | 680 | 64 | 538 |
| Beidler, Frank M., Upper Sandusky, Ohio. Whip-socket | 503,340 | Aug. 15 | 1847 | 457 | 64 | 932 |
| Bélanger, Victor, Boston, assignor of one-half to J. Quincy, Quincy, Mass. Sprocket-wheel | 504,486 | Sept. 5 | 285 | 73 | 64 | 1323 |
| Belden Machine Company. (See Scranton, George H., Jr., assignor.) | | | | | | |
| Bell, Arthur F. L., assignor to California Petroleum and Asphalt Company, San Francisco, Cal. Extracting and refining asphaltum, &c | 505,416 | Sept. 19 | 1817 | 469 | 64 | 1638 |
| Bell, Louis, Boston, Mass., assignor to General Electric Company, of New York. Synchronism-indicator | 502,095 | Aug. 8 | 763 | 185 | 64 | 721 |
| Bell, Louis, Boston, Mass., assignor to General Electric Company, of New York. Multiphase motor | 504,904 | Sept. 12 | 984 | 253 | 64 | 1470 |
| Bell, Louis, assignor to General Electric Company, Boston, Mass. Multiphase motor | 505,505 | Sept. 26 | 1975 | 507 | 64 | 1680 |
| Bell, Oro A., Brooklyn, N. Y., assignor to Western Electric Company, Chicago, Ill. Preparing cables for multiple switchboards | 501,859 | July 18 | 2107 | 521 | 64 | 412 |
| Bell, Oro A., Brooklyn, N. Y., assignor to Western Electric Company, Chicago, Ill. Manufacture of cables for multiple switchboards | 505,798 | Sept. 26 | 2500 | 631 | 64 | 1789 |
| Bellon, David, McKownville, N. Y. Car-coupling | 502,650 | Aug. 1 | 674 | 163 | 64 | 630 |
| Bemis & Call Hardware and Tool Company. (See Bemis, William S., assignor.) | | | | | | |
| Bemis, Robert W., *et al.* (See Beecher, Edwin N., assignor.) | | | | | | |
| Bemis, William S., assignor to Bemis & Call Hardware and Tool Company, Springfield, Mass. Combined pipe and monkey wrench | 501,860 | July 18 | 2109 | 521 | 64 | 413 |
| Benard, Georges. (See Heftler and Benard.) | | | | | | |
| Bender, Fritz, assignor to A. Leonhardt & Co., Mühlheim, Germany. Orange dye | 503,305 | Aug. 15 | 1784 | ..... | 64 | 921 |
| Bengough, George, *et al.* (See Chavasse, James J., assignor.) | | | | | | |
| Benham, Arthur D., Chicago, Ill. Wire-rope drum-reel | 503,227 | Aug. 15 | 1658 | 407 | 64 | 898 |
| Benjamin, George H. (See Raabe, Carl, assignor.) | | | | | | |
| Benjamin, John M., and R. C. Simmons, Lawrence, assignors to C. F. Brown, trustee, Reading, Mass. Nail separating and feeding device | 503,895 | Aug. 22 | 2712 | 681, 682 | 64 | 1108 |
| Benjamin, Newton, Elmira, N. Y. Railway-tie | 505,019 | Sept. 12 | 1168 | 300 | 64 | 1505 |
| Benjamin, Newton, Elmira, N. Y. Railway-tie | 505,020 | Sept. 12 | 1170 | 300 | 64 | 1505 |
| Bennett, Albert J., Woonsocket, R. I. Radiator-shelf | 502,871 | Aug. 8 | 1060 | 260 | 64 | 777 |
| Bennett, Albert J., Woonsocket, R. I. Radiator attachment | 505,589 | Sept. 26 | 2155 | 545 | 64 | 1716 |
| Bennett, David T., Trenton, N. J. Conductor support and insulator | 503,519 | Aug. 15 | 2125 | 530, 531 | 64 | 980 |
| Bennett, Henry L., assignor to H. Page, Philadelphia, Pa. Disinfecting device | 500,734 | July 4 | 326 | 87 | 64 | 61 |
| Bennett, Henry P., Phœnix, Ariz. Ter. Excavator | 501,400 | July 11 | 1397 | 349, 350 | 64 | 267 |
| Bennett, John A., assignor of one-half to J. A. Brooks, Cohoes, N. Y. Undergarment | 503,520 | Aug. 15 | 2116 | 531 | 64 | 980 |
| Bennett, Thomas G., assignor to Winchester Repeating Arms Company, New Haven, Conn. Cartridge-shell | 503,117 | Aug. 15 | 1480 | 364 | 64 | 866 |
| Bensel, Charles E., New York, N. Y. Cut-off for steam fire-engines | 504,654 | Sept. 5 | 543 | 139 | 64 | 1373 |
| Benson, Arza M., Cleveland, Ohio. Machine for hollowing staves | 501,910 | July 25 | 2209 | 551 | 64 | 446 |
| Benson, Arza M., Cleveland, Ohio. Machine for dressing rived staves | 502,271 | Aug. 1 | 10 | 3 | 64 | 568 |
| Benson, Cyrus M., Portland, Me. Pointing-trowel | 502,872 | Aug. 8 | 1061 | 261 | 64 | 777 |
| Benson, James C., Alcony, Ohio. Grain-separator | 504,466 | Sept. 5 | 249 | 65 | 64 | 1316 |
| Bentley, Edward M., assignor to General Electric Company, Boston, Mass. System of electric distribution | 502,272 | Aug. 1 | 12 | 3 | 64 | 568 |
| Bensiger Brothers. (See Koehler, Charles S., assignor.) | | | | | | |
| Bereuter, Henry A., New York, N. Y. Billiard or pool table | 503,261 | Aug. 15 | 1709 | 420, 421 | 64 | 908 |
| Berg, John A. P., Moline, Ill. Heating-furnace | 503,641 | Aug. 22 | 2340 | 584 | 64 | 1036 |
| Berger Manufacturing Company. (See Berger, Wilson C., assignor.) | | | | | | |
| Berger, Paul, Chicago, Ill. Door-operating device | 503,782 | Aug. 22 | 2559 | 637 | 64 | 1079 |
| Berger, Wilson C., assignor to Berger Manufacturing Company, Canton, Ohio. Sheet-metal roofing | 505,021 | Sept. 12 | 1172 | 300 | 64 | 1506 |
| | 11,350 | July 11 | 1512 | 380 | 64 | 291 |
| Bergfels, Henry, Newark, N. J. Bicycle-seat spring. (Reissue) | 505,382 | Sept. 19 | 1761 | 456, 457 | 64 | 1628 |
| Berghoff, John T., St. Joseph, Mo. Fracture apparatus | 500,554 | July 4 | 29 | 10 | 64 | 7 |
| Berghold, Alexander, Louisville, Ky. Fireplace water-heater | 502,602 | Aug. 1 | 596 | 142 | 64 | 675 |
| Bergin, Edward, Davenport, Iowa. Cylinder drain-valve | 504,264 | Aug. 29 | 3327 | ..... | 64 | 1241 |
| Bergmann, Franz J., Neheim, Germany. Distilling wood-waste | 503,896 | Aug. 22 | 2716 | 682 | 64 | 1110 |
| Bergmann, Ignaz, Fort Madison, Iowa. Pen | | | | | | |
| Bergmann, Sigmund. (See Dempster, John T., assignor.) | | | | | | |
| Bergmann, Sigmund. (See Haselton, Frederic D., assignor.) | | | | | | |
| Bergmann, Sigmund, New York, N. Y. Electric-arc lamp | 501,757 | July 18 | 1967 | 486 | 64 | 387 |
| Bergmann, Sigmund, New York, N. Y. Carbon-holder for electric-arc lamps | 501,758 | July 18 | 1968 | 486 | 64 | 388 |
| Bergmann, Sigmund, New York, N. Y. Carbon-holder for electric-arc lamps | 501,911 | July 25 | 2211 | 551 | 64 | 446 |
| Bergmann, Sigmund, New York, N. Y. Carbon-holder for arc lamps | 502,273 | Aug. 1 | 14 | 4 | 64 | 569 |
| Bergmann, Sigmund, New York, N. Y. Electric-arc lamp | 505,383 | Sept. 19 | 1766 | 457 | 64 | 1598 |
| Berliner, Abraham D., Rock Island, Ill. Electric belt | 501,861 | July 18 | 2110 | 521 | 64 | 413 |
| Bernardin, Alfred L., assignor to Bernardin Metallic Cork Company, Evansville, Ind. Bottle-uncapping tool | 501,050 | July 11 | 816 | 212 | 64 | 164 |
| Bernardin Metallic Cork Company. (See Bernardin, Alfred L., assignor.) | | | | | | |
| Berndes, Gustav F. (See Wiberg, Knut E., assignor.) | | | | | | |
| Bernhardt, Carl. (See Vollhering and Bernhardt.) | | | | | | |
| Bernhardt, Charles, assignor of one-half to W. H. Altman, Chicago, Ill. Electric fire-alarm | 501,905 | July 18 | 2189 | 544 | 64 | 426 |
| Bernheim, Charles H., Conover, assignor of one-half to B. Shemwell, Lexington, N. C. Adjustable nut and drill ratchet-wrench | 501,862 | July 18 | 2111 | 521 | 64 | 413 |
| Berridge, Isaac L. (See Fair, William F., assignor.) | | | | | | |
| Berrigan, John J., Avon, N. Y. Cream-separator | 501,039 | July 4 | 793 | 208 | 64 | 144 |
| Berrigan, John J., Avon, N. Y. Centrifugal creamer | 501,040 | July 4 | 795 | 208 | 64 | 145 |
| Berrigan, William H., Jr., New York, N. Y. Push-button | 504,148 | Aug. 29 | 3132 | 783 | 64 | 1204 |
| Berry, Charles E., Cambridge, Mass. Deflector and ventilator for passenger-cars | 500,555 | July 4 | 30 | 10 | 64 | 8 |
| Berry, John S., Tyler, Tex. Railway signal and crossing-gate | 502,394 | Aug. 1 | 242 | 57, 58 | 64 | 610 |
| Bersbach, Emil, Woodbridge, and A. W. Zielow, Elizabeth, N. J., assignors to Columbian Register Company, of New Jersey. Pocket-counter for miscellaneous items | 501,596 | July 18 | 1687 | 421 | 64 | 340 |

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|---|---|---|---|---|---|---|
| Berthon, Louis A., Paris, France, assignor to Société Générale des Téléphones, (Réseaux Téléphoniques et Constructions Électriques.) Restoring system for annunciators | 504,797 | Sept. 12 | 802 | 204, 205 | 64 | 1433 |
| Bertram, Louis, Berlin, Germany. Apparatus for extracting glue | 501,739 | July 18 | 1909 | 487 | 64 | 388 |
| Bertrand, Joseph E., Boston, assignor of one-half to M. Bray, Newton, Mass. Sole-sewing machine | 502,873 | Aug. 8 | 1062 | 261, 262 | 64 | 777 |
| Bertrand, Joseph E., Boston, assignor of one-half to M. Bray, Newton, Mass. Sewing-machine | 502,874 | Aug. 8 | 1065 | 262 | 64 | 777 |
| Bertrand, Joseph E., Boston, assignor of one-half to M. Bray, Newton, Mass. Sewing-machine | 502,875 | Aug. 8 | 1066 | 262 | 64 | 777 |
| Best, Charles J., and W. A. Hall, Seattle, Wash., assignors to Chemical Garbage Reduction Company, Chicago, Ill. Apparatus for treating garbage or like wastes | 501,760 | July 18 | 1971 | 487 | 64 | 388 |
| Best, Charles J., and W. A. Hall, Seattle, Wash., assignors to Chemical Garbage Reduction Company, Chicago, Ill. Treating garbage or like wastes | 501,761 | July 18 | 1972 | 487, 488 | 64 | 388 |
| Best, Clearmont V., assignor of one-half to Sun Vapor Street Light Company, Canton, Ohio. Blower for carburetors | 502,244 | July 25 | 2746 | 693, 694 | 64 | 547 |
| Best, Thomas C., Chicago, Ill. Feed-water heater for steam-boilers | 503,521 | Aug. 15 | 2118 | 531, 532 | 64 | 981 |
| Bethune, Joseph, Chicopee Falls, Mass. Bicycle-saddle | 502,110 | July 25 | 2518 | 631 | 64 | 503 |
| Bever, Alexander, Spokane, Wash. Glove-cabinet | 503,306 | Aug. 15 | 1786 | 440 | 64 | 921 |
| Bever, Louis, assignor of one-half to M. Ruppert, Washington, D. C. Propelling apparatus for vessels | 505,785 | Sept. 26 | 9479 | 625 | 64 | 1776 |
| Bice, David E., La Crosse, Wis. Machine for grinding rotary cutters | 504,655 | Sept. 5 | 545 | 139 | 64 | 1373 |
| Bickerstaff, Elmer M., Milledgeville, Pa. Combined saw set, gage, and jointer | 504,656 | Sept. 5 | 547 | 140 | 64 | 1373 |
| Bidwell, Benson, Philadelphia, Pa., assignor, by mesne assignments, of one-half to B. Bidwell, trustee. Conduit electric railway | 504,549 | Sept. 5 | 398 | 102 | 64 | 1344 |
| Biehn, Frank A., Chicago, Ill. Fire-ladder | 503,362 | Aug. 15 | 1886 | 467, 468 | 64 | 939 |
| Bielefeldt, Max, Coswig, Germany. Cartridge-loading machine | 504,699 | Sept. 12 | 640 | 163 | 64 | 1403 |
| Biengräber, Carl J. P., Hamburg, Germany. Cover-fastening for pots | 505,432 | Sept. 26 | 1850 | 476 | 64 | 1658 |
| Bierbaum, Herman H., Dayton, Ohio. Device for operating car-brakes | 503,118 | Aug. 15 | 1482 | 364 | 64 | 896 |
| Bierley, Henry A., Lexington, Ky. Electric illuminated sign | 505,346 | Sept. 19 | 1694 | 436 | 64 | 1615 |
| Bigelow Carpet Company. (See Ayers, Samuel C., assignor.) | | | | | | |
| Biggerstaff, William A. (See Penny and Biggerstaff.) | | | | | | |
| Biggs, Frederick J., assignor to Tubular Lock Syndicate, Limited, London, England. Lock-case | 503,400 | Aug. 15 | 1936 | 481 | 64 | 948 |
| Bignall, Burnett B., Aurora, Ill. Roof connection for ventilating-pipes | 501,643 | July 18 | 1765 | 439 | 64 | 353 |
| Bigney, James A. (See Regnell, Bigney, and Sweet.) | | | | | | |
| Billig, Carl F., Alt-Chemnitz, Germany. Spring-holder for vehicle-lamps | 501,401 | July 11 | 1398 | 350 | 64 | 268 |
| Binder, Gottlob, Philadelphia, Pa. Lubricator | 504,700 | Sept. 12 | 640 | 163 | 64 | 1403 |
| Binney, Charles R. (See Stuart, Herbert A., assignor.) | | | | | | |
| Binsse, Henry, Newark, N. J. Gearing for lathes | 504,657 | Sept. 5 | 548 | 140 | 64 | 1373 |
| Bird, William O., Cambridge, Mass. Playing-card | 502,089 | July 25 | 2484 | 624 | 64 | 497 |
| Birkett, Edward J. (See Graham and Birkett.) | | | | | | |
| Birkey, John, Groveland, Ill. Door or shutter opener | 504,318 | Sept. 5 | 9 | 3 | 64 | 1272 |
| Bisbing, Ingham W., and J. E. Gerhart, Philadelphia, Pa. Safety attachment for cars | 504,798 | Sept. 12 | 804 | 205 | 64 | 1434 |
| Bisel, Joseph J., assignor of one-half to A. B. Clemmer and I. S. Stover, Philadelphia, Pa. Trunk | 504,514 | Sept. 5 | 340 | 86 | 64 | 1333 |
| Bishop, W. B. (See Carey, John, assignor.) | | | | | | |
| Bissell, Edward J. (See Bissell, Nathaniel J. and E. J.) | | | | | | |
| Bissell, Nathaniel J., Hartland, and E. J. Bissell, Milford, Mich. Blanket-retaining device | 504,701 | Sept. 12 | 643 | 163 | 64 | 1404 |
| Bissinger, Benjamin, Chattanooga, Tenn. Pocket for trousers | 503,363 | Aug. 15 | 1888 | 468 | 64 | 939 |
| Bittinger, Hans, Regensburg, Germany. Machine for separating middlings and flour | 502,696 | Aug. 8 | 765 | 186 | 64 | 755 |
| Black, Edwin H., Campbell, Cal. Tree-protector | 503,759 | Aug. 22 | 2569 | 629 | 64 | 1073 |
| Black, Walter A. (See Umbenhauer, Charles C., assignor.) | 505,086 | Sept. 19 | 1294 | 334 | 64 | 1542 |
| Black, William M., assignor of one-half to J. M. Dovel, Urbana, Ohio. Fence-post | 504,658 | Sept. 5 | 549 | 140 | 64 | 1374 |
| Blackburn, George W., Palmyra, N. J. Insulator | 504,059 | Aug. 29 | 2087 | 746 | 64 | 1176 |
| Blacker, Murray M., Amelia Court-House, Va. Eaves-trough and support | 503,119 | Aug. 15 | 1482 | 364 | 64 | 866 |
| Blackman, Thomas G., Jr., Ozark, Ala. Car-coupling | 502,274 | Aug. 1 | 15 | 4 | 64 | 569 |
| Blackshaw, Wilfrid W., assignor of one-eighth to E. Totman and V. P. Wardwell, Duluth, Minn. Toy hoop | 503,191 | Aug. 15 | 1600 | 393 | 64 | 898 |
| Blackstone, Edward C., Stamford, England. Swath-turner | 501,131 | July 11 | 959 | 245 | 64 | 89 |
| Blackstone, Richard, Central City, S. D. Hopper-bottom car | 500,846 | July 4 | 497 | 129 | 64 | 91 |
| Bladen, Henry. (See Normington and Bladen.) | | | | | | |
| Blaesius, Richard G., Watertown, Wis. Extension-table slide | 503,192 | Aug. 15 | 1601 | 393 | 64 | 889 |
| Blair, J. D., *et al.* (See Fontaine, Patrick H., assignor.) | | | | | | |
| Blake, Edward A., Chicago, Ill. Printing-press | 503,713 | Aug. 22 | 2451 | 609, 610, 611 | 64 | 1057 |
| Blake, Edward T., assignor of one-half to F. R. Schwegler, Denver, Colo. Paper-clip | 501,863 | July 18 | 2112 | 522 | 64 | 413 |
| Blake, Ira G., Worcester, Mass. Time-lock | 504,427 | Sept. 5 | 186 | 49 | 64 | 1306 |
| Blake, John H., New York, N. Y. Damper-regulator | 504,659 | Sept. 5 | 551 | 141 | 64 | 1374 |
| Blake, Thomas J., Pittsburg, Pa. Starching-machine | 501,476 | July 11 | 1499 | 377, 378 | 64 | 986 |
| Blakeslee, Harvey D. (See Latta, Emmit G., assignor.) | | | | | | |
| Blakesley, Gilbert H., assignor to Blakesley Novelty Company, Bristol, Conn. Garter | 504,410 | Sept. 5 | 161 | 42 | 64 | 1309 |
| Blakesley, John H., London, England. Fireproof girder and joist | 503,642 | Aug. 22 | 2341 | 584 | 64 | 1036 |
| Blakesley Novelty Company. (See Blakesley, Gilbert H., assignor.) | | | | | | |
| Blamyer, Frances M., Olema, Cal. Meat-broiler | 503,307 | Aug. 15 | 1786 | 441 | 64 | 921 |
| Blanc, William, Camden, N. J. Lifting device | 501,051 | July 11 | 817 | 212, 213 | 64 | 164 |
| Blanchard, George, Newburg, N. Y. Foundation for light-houses and other heavy structures in deep water | 502,845 | Aug. 8 | 1024 | 250, 251 | 64 | 769 |
| Blanchard, George W., Waterville, Me. Carpet-stretcher | 501,132 | July 11 | 960 | 245 | 64 | 189 |
| Blanchard, Helen A., New York, N. Y. Sewing-needle | 500,556 | July 4 | 31 | 14 | 64 | 8 |
| Bland, John M. D., assignor of one-half to H. Rubnstroth, La Grande, Oreg. Combined rail-joint and nut-lock | 505,564 | Sept. 26 | 2107 | 534 | 64 | 1706 |
| Blandy, Alfred A., London, England. Sole | 504,660 | Sept. 5 | 553 | 141 | 64 | 1374 |
| Blasberg, Eugen, Duesseldorf, Germany. Ladder | 503,120 | Aug. 15 | 1484 | 365 | 64 | 866 |
| Blasser, Ernest, Boston, Mass. Switch for electric lights | 503,693 | Aug. 22 | 2421 | 603 | 64 | 1051 |
| Bley, Jacob H., New York, N. Y. Suspenders | 502,111 | July 25 | 2530 | 632 | 64 | 503 |
| Bliss, Aaron P., *et al.* (See Crackel, William H., assignor.) | | | | | | |
| Bliss, Collins P., New York, N. Y. Furnace-grate | 504,195 | Aug. 29 | 3220 | 802 | 64 | 1221 |
| Bliven, John F., East Greenwich, R. I. Stove-protector | 504,319 | Sept. 5 | 10 | 4 | 64 | 1273 |



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| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drg. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Bloch, Jacob. (See Wolf, John, Jr., assignor.) | | | | | | |
| Bloch, Jacob. (See Wolf and Bloch.) | | | | | | |
| Block, Israel, New York, N. Y. Oil-stove | 500,735 | July 4 | 327 | 87 | 64 | 61 |
| Block, Louis, New York, N. Y. Brine-tank for artificial-ice manufacture | 501,316 | July 11 | 1239 | 312 | 64 | 240 |
| Blockburger, John L., Pasadena, Cal. Orange or fruit cleaning machine | 502,651 | Aug. 1 | 675 | 163 | 64 | 690 |
| Blog, Solomon, *et al.* (See Keller, Gottlieb, assignor.) | | | | | | |
| Blomfield, John H., West Bay City, Mich. Car-replacer | 502,806 | Aug. 8 | 957 | 233 | 64 | 757 |
| Blood, John B., Lynn, Mass., assignor to General Electric Company, of New York. Regulating electric locomotives | 501,488 | July 18 | 1519 | 382 | 64 | 308 |
| Blood, John B., Lynn, assignor to General Electric Company, Boston, Mass. Winding coils for dynamo-electric armatures | 503,449 | Aug. 15 | 2005 | 497 | 64 | 960 |
| Bloom, David H., *et al.* (See Lyle, Jefferson Y., assignor.) | | | | | | |
| Bloomberg, William, New York, N. Y. Suspender-end | 504,661 | Sept. 5 | 555 | 141 | 64 | 1375 |
| Blue, John, *et al.* (See Woodfill, Owensby H., assignor.) | | | | | | |
| Blumer, James, Brooklyn, N. Y. Corrugating-tool | 501,644 | July 18 | 1766 | 440 | 64 | 354 |
| Blunck, John, Elmendorf, Tex. Plow | 502,697 | Aug. 8 | 767 | 186 | 64 | 722 |
| Board, Ellsworth M., trustee, *et al.* (See Ludwig, Oscar, assignor.) | | | | | | |
| Board, James L., *et al.* (See Ludwig, Oscar, assignor.) | | | | | | |
| Boas, Richard, New York, N. Y. Cover for pots, urns, jugs, &c | 505,647 | Sept. 26 | 2256 | 571 | 64 | 1735 |
| Böcher, Adam, New York, N. Y. Darning implement | 501,817 | July 18 | 2051 | 505 | 64 | 403 |
| Bockius, Charles J., assignor to Canton Glass Company, Marion, Ind. Making lens-globes | 503,825 | Aug. 22 | 2615 | 653 | 64 | 1080 |
| Boddy, Samuel L., *et al.* (See Lyle, Jefferson Y., assignor.) | | | | | | |
| Boden, Annie, J. Peers, and S. Saxon, San Francisco, Cal. Invalid-bed | 504,515 | Sept. 5 | 341 | 87 | 64 | 1333 |
| Bodenhamer, James M. (See Bodenhamer, Levi I. and J. M.) | | | | | | |
| Bodenhamer, Levi I. and J. M., Kernersville, N. C. Fertilizer-distributer and grain-drill | 500,557 | July 4 | 33 | 11 | 64 | 8 |
| Boehme, Edward H., Chicago, Ill. Pencil-sharpener | 505,695 | Sept. 26 | 2340 | 593 | 64 | 1749 |
| Boehringer & Soehne, C. F. (See Geromont, Friedrich, assignor.) | | | | | | |
| Boehringer & Soehne, C. F. (See Lederer, Leonhard, assignor.) | | | | | | |
| Boening, Ernst, and J. Sjöström, assignors to J. Scott, Yonkers, N. Y. Rotary pump | 501,864 | July 18 | 2113 | 522, 523 | 64 | 413 |
| Bogge, Joseph O., Fayetteville, Pa., assignor of one-half to G. W. Bothwell, Jersey City, N. J. Broiler | 505,433 | Sept. 26 | 1850 | 476 | 64 | 1658 |
| Bohlinger, Alfred P., St. Louis, Mo. Easel attachment for lace-curtain stretcher-frames | 505,306 | Sept. 19 | 1638 | 424 | 64 | 1605 |
| Bohn, René, Mannheim, assignor to Badische Anilin und Soda Fabrik, Ludwigshafen-on-the-Rhine, Germany. Green-blue alizarin dye | 502,603 | Aug. 1 | 598 | ..... | 64 | 675 |
| Bohren, Ulrich. (See Steets and Bohren.) | | | | | | |
| Boland, Daniel L., New York, N. Y. Device for manipulating switches | 501,317 | July 11 | 1240 | 312 | 64 | 240 |
| Boland, Frank P., Providence, R. I. Coffee-pot | 501,672 | July 18 | 1818 | 453 | 64 | 362 |
| Boland, James. (See Hopkins and Boland.) | | | | | | |
| Boland, Joseph, and G. W. Fritz, Pittsburg, Pa. Mining-machine | 501,402 | July 11 | 1399 | 350, 351 | 64 | 268 |
| Bolin, John P. (See Erb, Harry P., assignor.) | | | | | | |
| Bollinger, Cornelius, Harrisburg, Pa. Broadcast seed-sower | 502,604 | Aug. 1 | 599 | 142 | 64 | 675 |
| Bollman, Herman H., *et al.* (See MacRae, Charles J., assignor.) | | | | | | |
| Bollmann, John F., Cincinnati, Ohio. Apparatus for cleaning liquor-faucets and their keg connections | 501,645 | July 18 | 1767 | 440 | 64 | 354 |
| Boman, Claes W., Brooklyn, assignor to Eagle Pencil Company, New York, N. Y. Pen-holder | 505,384 | Sept. 19 | 1767 | 457 | 64 | 1628 |
| Bonbrake, Lewis S., Decatur, Ill. Eaves-trough | 503,940 | Aug. 29 | 2786 | 698 | 64 | 1140 |
| Bonbrake, Lewis S., Decatur, Ill. Oil-can | 505,347 | Sept. 19 | 1695 | 436 | 64 | 1615 |
| Bond, Arthur T., Wilmington, Mass. Means for advertising | 502,947 | Aug. 8 | 1200 | 296 | 64 | 901 |
| Bonnar, William, Bolton, Canada. Running-gear for vehicles | 503,032 | Aug. 8 | 1333 | 328 | 64 | 896 |
| Booker, Rudolph C., Buffalo, N. Y. Curling-iron | 501,646 | July 18 | 1769 | 440 | 64 | 354 |
| Bookwalter, Charles A., *et al.* (See Darnell, Calvin F., assignor.) | | | | | | |
| Boorman, David, Altoona, Pa. Shaft-coupling | 503,033 | Aug. 8 | 1334 | 328 | 64 | 896 |
| Boostrum, Lewis O., Galesburg, Ill. Propeller-wheel | 502,545 | Aug. 1 | 505 | 121 | 64 | 659 |
| Booth, Ebenezer H., Kirkwood, N. Y. Vehicle-spring | 502,605 | Aug. 1 | 602 | 143 | 64 | 676 |
| Booth, Joseph B. S., and E. J. Falconer, Manchester, England. Telephone | 505,087 | Sept. 19 | 1296 | 334 | 64 | 1542 |
| Bootman, William H., Waterford, assignor to J. Knickerbacker, Troy, N. Y. Hydrant | 504,662 | Sept. 5 | 556 | 142 | 64 | 1375 |
| Borgarelli, Paolo, Turin, Italy. Drier for cereals, &c | 504,330 | Sept. 5 | 11 | 4 | 64 | 1273 |
| Borgmeyer, Charles L., Rahway, N. J. Manufacture of pyroxyline compounds | 502,546 | Aug. 1 | 507 | ..... | 64 | 659 |
| Borgmeyer, Charles L., Rahway, N. J. Pyroxyline compound | 502,547 | Aug. 1 | 508 | ..... | 64 | 660 |
| Borgmeyer, Charles L., Rahway, N. J. Manufacture of pyroxyline compounds | 502,921 | Aug. 8 | 1157 | ..... | 64 | 794 |
| Borgmeyer, Charles L., Rahway, N. J. Pyroxyline solvent and its compounds | 503,401 | Aug. 15 | 1938 | ..... | 64 | 949 |
| Borgmeyer, Charles L., Rahway, N. J. Pyroxyline solution or compound | 503,402 | Aug. 15 | 1938 | ..... | 64 | 949 |
| Borgmeyer, Charles L., Rahway, N. J. Pyroxyline solvent and its compound | 504,905 | Sept. 12 | 986 | ..... | 64 | 1471 |
| Boris, Pierre J., Boston, Mass. Street-railway switch | 505,077 | Sept. 12 | 1276 | 328, 329 | 64 | 1594 |
| Borlinghausen, B. G. (See Borlinghausen, Michael and P., assignors.) | | | | | | |
| Borlinghausen, Michael and P., assignors of one-third to B. G. Borlinghausen, Cleveland, Ohio. Safety lamp for beer-vats | 504,702 | Sept. 12 | 644 | 164 | 64 | 1404 |
| Borlinghausen, Peter. (See Borlinghausen, Michael and P.) | | | | | | |
| Bornhoeft, Edward, assignor to Strauch Bros., New York, N. Y. Damper-regulator for piano-actions | 504,906 | Sept. 12 | 986 | 253 | 64 | 1471 |
| Bossart, Timothy L., assignor to Yaryan Fifth Wheel Company, Indianapolis, Ind. Fifth-wheel | 503,643 | Aug. 22 | 2342 | 585 | 64 | 1036 |
| Bosmann, Nicolas, Chicago, Ill. Securing tips to billiard-cues | 504,663 | Sept. 5 | 557 | 142 | 64 | 1375 |
| Boss-Grip Lock-Nut Company. (See Rouse, Albion M., assignor.) | | | | | | |
| Boss, Martin P., San Francisco, Cal. Amalgamating-pan | 504,859 | Sept. 12 | 909 | 234, 235 | 64 | 1456 |
| Boston Cash Register Company. (See Bailey, Fortune L., assignor.) | | | | | | |
| Boston Cash Register Company. (See Webster, Jerome J., assignor.) | | | | | | |
| Boston Lasting Machine Company. (See Crisp, Copeland, and Barrett, assignors.) | | | | | | |
| Boston Woven Cordage Company. (See McGee, Bernard J., assignor.) | | | | | | |
| Bostwick, Joseph M., Janesville, Wis. Cloth or dress-goods sampler | 504,550 | Sept. 5 | 401 | 102 | 64 | 1344 |
| Boswell, George G. F., Indianapolis, Ind. Thill-support | 503,644 | Aug. 22 | 2343 | 585 | 64 | 1036 |
| Bothwell, George W. (See Boggs, Joseph O., assignor.) | | | | | | |
| Bothwell, Jacob I. (See Rowland, Horace B., assignor.) | | | | | | |
| Botts, Winfield J., Webster, Md. Vehicle-brake | 503,897 | Aug. 22 | 2717 | 662 | 64 | 1110 |
| Bougie, Stephen, Marinette, Wis. Spring-support for buggy-tops | 502,606 | Aug. 1 | 602 | 143 | 64 | 676 |
| Bougie, Stephen, Marinette, Wis. Buggy-top support | 502,607 | Aug. 1 | 604 | 143 | 64 | 676 |
| Bouker, Franklin, Far Rockaway, N. Y. Dumping-wagon | 502,698 | Aug. 8 | 768 | 186 | 64 | 722 |
| Boulanger, Emile, St. Louis, Mo. Drum-case | 501,318 | July 11 | 1242 | 313 | 64 | 240 |

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|---|---|---|---|---|---|---|
| Bourdil, François F., Paris, France. Apparatus for atomizing or pulverizing liquids | 501,178 | July 11 | 1635 | 202 | 64 | 203 |
| Bouse, William G., Lorain, Ohio. Ice-velocipede | 504,265 | Aug. 29 | 3328 | 832 | 64 | 1241 |
| Bouvé, Crawford & Company. (See Packard, James W., assignor.) (Reissue.) | | | | | | |
| Bouvé, Crawford & Company Corporation. (See Packard, James W., assignor.) | | | | | | |
| Bovee, David W., Tama, Iowa. Washing-machine | 504,606 | Aug. 1 | 605 | 143, 144 | 64 | 677 |
| Bowen, David, Butler, Pa. Device for drawing casings from deep wells | 505,292 | Sept. 19 | 1557 | 406 | 64 | 1590 |
| Bowen, Frank H., Springfield, Mass. Music-writing machine | 500,793 | July 4 | 415 | 109, 110 | 64 | 77 |
| Bowen, George W., Fort Wayne, Ind. Combined gage and cane | 505,385 | Sept. 19 | 1768 | 458 | 64 | 1628 |
| Bowen, George W. M., Glencoe, Nebr. Journal-box | 500,794 | July 4 | 421 | 111 | 64 | 78 |
| Bowers, William F., San Francisco, Cal. Guide-support for hose-reels | 501,489 | July 18 | 1521 | 392 | 64 | 308 |
| Bowker, Daniel R., Brooklyn, N. Y. Extracting weevils from grain | 505,648 | Sept. 26 | 2257 | 571 | 64 | 1735 |
| Bowles, John, Washington, D. C. Combined saw and planer | 505,154 | Sept. 19 | 1396 | 358 | 64 | 1559 |
| Bowles, John, Washington, D. C., assignor of one-half to C. S. Mitchell, New York, N. Y. Combined saw and planer | 503,522 | Aug. 15 | 2120 | 539 | 64 | 981 |
| Bowley, William H. K., London, England. Flexible metallic tubing | 500,847 | July 4 | 498 | 129 | 64 | 91 |
| Bowman, Charles, Fort Wayne, Ind. Sawmill feed mechanism | 502,945 | July 25 | 2748 | 694 | 64 | 547 |
| Bowman, Charles, Hanover, Pa. Machine for stripping and hooking leaf-tobacco | 504,799 | Sept. 12 | 806 | 205 | 64 | 1434 |
| Bowman, Charles R., and W. Rice, Tylersburg; said Rice assignor to A. S. Karns, Franklin Pa. Mail-marking machine | 504,664 | Sept. 5 | 558 | 142, 143 | 64 | 1375 |
| Bowman, Oliver S., Salt Lake City, Utah Ter. Bed-and-platen printing-machine | 501,319 | July 11 | 1243 | 313 | 64 | 240 |
| Bowman, Oliver S., Salt Lake City, Utah Ter. Type-distributing machine | 501,507 | July 18 | 1688 | 421, 422 | 64 | 340 |
| Bowman, Stase, Bloomington, Pa. Boring-tool | 505,746 | Sept. 26 | 2415 | 610 | 64 | 1762 |
| Bowman, W. M., *et al.* (See Graves, Cashious M., assignor.) | | | | | | |
| Bowser, David J., Lucas, Mich. Corn-planter | 504,321 | Sept. 5 | 13 | 4, 5 | 64 | 1273 |
| Bowsman, Noah, Portland, Ind. Fence | 505,434 | Sept. 26 | 1853 | 477 | 64 | 1656 |
| Boyce, Darwin C., Quinnimont, W. Va. Car-loading apparatus | 503,364 | Aug. 15 | 1889 | 468, 469 | 64 | 939 |
| Boyd, Nathaniel W., Carlisle, Pa. Railway-frog | 505,022 | Sept. 12 | 1172 | 301 | 64 | 1506 |
| Boyd, Nathaniel W., Carlisle, Pa. Railway-frog | 505,023 | Sept. 12 | 1175 | 301 | 64 | 1506 |
| Boyer, Charles E., St. Louis, Mo. Hat-holder | 505,696 | Sept. 26 | 2242 | 593 | 64 | 1750 |
| Boylan, Frederick E., Cyclone, Pa. Elevator for sucker-rods | 502,169 | July 25 | 2615 | 659 | 64 | 522 |
| Boyle, James E., deceased; James E. Boyle, Jr., administrator, Brooklyn, assignor to Henry Huber Company, New York, N. Y. Flushing apparatus for water-closets. (Reissue) | 11,351 | July 18 | 2194 | 546 | 64 | 427 |
| Boyle, Thaddeus W., Harriman, Tenn. Plow | 500,750 | July 4 | 347 | 92 | 64 | 91 |
| Boynton, Edward S., Brooklyn, N. Y., assignor, by mesne assignments, to American Butter Machine Company. Butter worker and mold | 502,428 | Aug. 1 | 300 | 72 | 64 | 621 |
| Boynton, Frank E. (See Matteson, Job, assignor.) | | | | | | |
| Bozell, John E., Elwood, Ind. Latch | 505,386 | Sept. 19 | 1769 | 458 | 64 | 1629 |
| Brasstad, John G., New York, N. Y. Pantograph | 503,934 | Aug. 22 | 2774 | 695 | 64 | 1121 |
| Brabaw, Micheal, Detroit, Mich. Wrecking apparatus | 501,912 | July 25 | 2212 | 551, 552 | 64 | 446 |
| Brace, Harvey J., Rogers, Ark. Running-gear for wagons | 502,609 | Aug. 1 | 605 | 144 | 64 | 677 |
| Bracewell, John, North Adams, Mass. Printing aniline-black | 500,558 | July 4 | 34 | ..... | 64 | 8 |
| Bracewell, John, North Adams, Mass. Fixing colors upon cottons, &c | 505,088 | Sept. 19 | 1297 | ..... | 64 | 1542 |
| Bradberry, Thomas J., Sharpsburg, Pa. Retaining-bar for molding-flasks | 505,155 | Sept. 19 | 1399 | 358 | 64 | 1560 |
| Bradford, Alden, Fall River, Mass. Rod-packing | 501,913 | July 25 | 2214 | 552 | 64 | 447 |
| Bradford, Charles K., Lynnfield, Mass. Sharpener for knives, &c | 501,267 | July 11 | 1167 | 296 | 64 | 227 |
| Bradford, Eli B., Munster, Ill. Horseshoeing-stock | 505,565 | Sept. 26 | 2108 | 535 | 64 | 1707 |
| Bradford, Hezekiah, deceased, Philadelphia, Pa.; S. I. Willingale and R. W. Finletter, administrators. Separator for coal, &c | 501,673 | July 18 | 1818 | 453 | 64 | 362 |
| Bradford, Hezekiah, assignor to S. E. Griscom, Philadelphia, Pa. Ore-separating machine | 504,665 | Sept. 5 | 561 | 143, 144 | 64 | 1376 |
| Bradford, Hezekiah, assignor to S. E. Griscom, Philadelphia, Pa. Separating or concentrating ores | 504,666 | Sept. 5 | 567 | 144 | 64 | 1376 |
| Bradford, McDuffee, Decatur, Tex. Weather-strip | 500,559 | July 4 | 36 | 11 | 64 | 8 |
| Bradley, Charles S., Avon, N. Y. Dynamo-electric machine or motor | 503,574 | Aug. 22 | 2216 | 555 | 64 | 1015 |
| Bradley, Christopher C., Syracuse, N. Y. Spring-vehicle | 502,027 | July 25 | 2386 | 599, 600 | 64 | 478 |
| Bradley, Christopher C., Syracuse, N. Y. Road-cart | 502,028 | July 25 | 2387 | 600 | 64 | 478 |
| Bradley, Christopher C., Syracuse, N. Y. Two-seated vehicle | 503,308 | Aug. 15 | 1787 | 441 | 64 | 921 |
| Bradley, Edson, and E. N. Dickerson, Jr., New York, N. Y. Making alcoholic distilled liquor | 504,074 | Aug. 29 | 3007 | ..... | 64 | 1180 |
| Bradley, Edward E., assignor to J. E. and E. Atwood, Stonington, Conn. Self-balancing spindle for spinning | 504,860 | Sept. 12 | 912 | 235 | 64 | 1456 |
| Bradley, Edward E., assignor to J. E. and E. Atwood, Stonington, Conn. Spinning and twisting machine | 504,861 | Sept. 12 | 913 | 235, 236 | 64 | 1456 |
| Bradley, George T. and M. H., New Haven, Conn. Puzzle | 500,795 | July 4 | 422 | 111 | 64 | 78 |
| Bradley & Hubbard Manufacturing Company. (See Jauch, Joseph, assignor.) | | | | | | |
| Bradley, Jay L., St. Louis, Mo. Electric indicator | 504,196 | Aug. 29 | 3221 | 802 | 64 | 1221 |
| Bradley, Milton H. (See Bradley, George T. and M. H.) | | | | | | |
| Bradley, Thomas. (See Aitchison and Bradley.) | | | | | | |
| Bradley, William W., assignor to Keystone Watch Case Company, Philadelphia, Pa. Article of jewelry or plate | 502,026 | July 25 | 2385 | 599 | 64 | 478 |
| Brady, James. (See Russel and Brady.) | | | | | | |
| Brady, Joseph H., Kansas City, Mo. Heating, cooling, and ventilating system | 504,961 | Sept. 12 | 1070 | 273, 274 | 64 | 1486 |
| Bragg, Henry, Cleveland, Ohio. Petroleum-fluid burner | 505,417 | Sept. 19 | 1691 | 429 | 64 | 1639 |
| Braithwaite, Charles H., Ardmore, Pa. Lawn-mower | 504,411 | Sept. 5 | 162 | 43 | 64 | 1300 |
| Bramwell, Joseph W., Camden, N. J. T-square | 502,112 | July 25 | 2521 | 632 | 64 | 504 |
| Brandan, George F., assignor of one-fourth to J. Wallace, Cohoes, N. Y. Brake for railway-cars | 505,435 | Sept. 26 | 1853 | 477 | 64 | 1658 |
| Brandon, James A., Akron, Ohio. Mitering-machine | 505,024 | Sept. 12 | 1177 | 301, 302 | 64 | 1506 |
| Brandstaedter, William, Hanover, Pa. Box-covering machine | 504,551 | Sept. 5 | 401 | 102 | 64 | 1344 |
| Brandt, Carl, Cedar Falls, Iowa. Oil heating-stove | 500,751 | July 4 | 348 | 92 | 64 | 85 |
| Brannagan, John J., Martin's Ferry, Ohio. Forming articles of glassware | 502,344 | Aug. 1 | 160 | 37 | 64 | 595 |
| Brannagan, John J., Martin's Ferry, Ohio. Manufacture of glassware | 504,552 | Sept. 5 | 404 | 102 | 64 | 1345 |
| Branson, Joseph H., Belmont, N. Y., assignor to Sandwich Enterprise Company, Sandwich, Ill. Pump | 503,523 | Aug. 15 | 2122 | 532 | 64 | 982 |
| Branson Machine Company. (See Cook, Stephen S., assignor.) | | | | | | |
| Bratt, Charles E., Stockholm, Sweden. Cylindrical cask | 503,575 | Aug. 22 | 2219 | 555 | 64 | 1015 |



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| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drg. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Braun, John. (See Higbee, Braun, and Deck.) | | | | | | |
| Braun, John, *et al.* (See Deck, Henry, assignor.) | | | | | | |
| Braun, John F., *et al.* (See Deck, Henry, assignor.) | | | | | | |
| Braun & Sons, John. (See Higbee, Braun, and Deck, assignors.) | | | | | | |
| Braun, William P. M., *et al.* (See Deck, Henry, assignor.) | | | | | | |
| Brawley, Dan B. (See Holliday and Brawley, assignors.) | | | | | | |
| Brawley, David A. (See Holliday and Brawley.) | | | | | | |
| Bray, Mellen. (See Bertrand, Joseph E., assignor.) | | | | | | |
| Brayton, Richard, assignor to Michigan Fire Ladder and Engine Company, Grand Rapids, Mich. Adjustable fireman's ladder | 501,403 | July 11 | 1401 | 351 | 64 | 268 |
| Breene, William V. (See Stevens and Breene.) | | | | | | |
| Breinig, Granville M., New Milford, Conn. Production of artificial stone | 505,747 | Sept. 26 | 2416 | ..... | 64 | 1702 |
| Brenner, David H., Grand Rapids, Mich. Machine for cutting concavo-convex wooden dishes | 501,404 | July 11 | 1402 | 351 | 64 | 269 |
| Breslin, William W. (See Smith, Thomas S., assignor.) | | | | | | |
| Breuer, August, Iserlohn, Germany. Electrolytic diaphragm | 504,703 | Sept. 12 | 645 | ..... | 64 | 1404 |
| Breul, Richard A., Bridgeport, Conn. Toy bank | 500,848 | July 4 | 499 | 129 | 64 | 91 |
| Brewer, Russell, Chicago, Ill. Car-axle box | 502,652 | Aug. 1 | 677 | 163 | 64 | 691 |
| Brewster, Elias M., Norwich, assignor to R. M. Brewster, Hartford, Conn. Mower | 501,865 | July 18 | 2114 | 523 | 64 | 414 |
| Brewster, Robert, New Barnet, England. Artificial-tooth mold | 503,826 | Aug. 22 | 2615 | 653 | 64 | 1090 |
| Brewster, Robert M. (See Brewster, Elias M., assignor.) | | | | | | |
| Brickley, Willard P. (See Hendrix, Zadok B., assignor.) | | | | | | |
| Bridgeport Brass Company. (See Rhind, Frank, assignor.) | | | | | | |
| Bridges, Christopher M., Seattle, Wash. Hot-air furnace | 505,697 | Sept. 26 | 2343 | 593 | 64 | 1750 |
| Bridges, James T. (See Faith, Lewis, assignor.) | | | | | | |
| Brieger, A., *et al.* (See Swigart, Frank W., assignor.) | | | | | | |
| Briere, Louis A., Paris, France. Coupling-bar for locomotives | 502,653 | Aug. 1 | 679 | 163 | 64 | 691 |
| Brierly, Conant B., Boise City, assignor of one-half to A. Friedline, Moscow, Idaho. Ore-amalgamator | 503,034 | Aug. 8 | 1335 | 328 | 64 | 896 |
| Briggs, Frank, Philadelphia, Pa. Spring-motor | 504,907 | Sept. 12 | 987 | 253, 254 | 64 | 1471 |
| Briggs, Lucius, Glasgo, Conn. Stamp-safe | 501,762 | July 18 | 1974 | 488 | 64 | 389 |
| Briggs, Morris E., St. Louis, Mo. Machine for cutting packing-rings | 503,341 | Aug. 15 | 1848 | 456 | 64 | 932 |
| Briggs, Nathaniel B. (See Albertson and Briggs.) | | | | | | |
| Briggs, Thomas A., Arlington, Mass. Device for piling paper | 503,576 | Aug. 22 | 2220 | 555, 556 | 64 | 1015 |
| Brigham, Arthur A., Weston, Mass. Winding-machine | 503,277 | Aug. 15 | 1735 | 428 | 64 | 912 |
| Brill, John A. (See Gosney, John, assignor.) | | | | | | |
| Brill, John A., Philadelphia, Pa. Car-brake | 503,121 | Aug. 15 | 1484 | 365 | 64 | 866 |
| Brill, John A., Philadelphia, Pa. Motor-truck | 504,800 | Sept. 12 | 807 | 206 | 64 | 1434 |
| Brill, John A., and W. S. Adams, Philadelphia, Pa.; said Adams assignor to said Brill. Motor-truck | 504,149 | Aug. 29 | 3133 | 783, 784 | 64 | 1204 |
| Brinkman, Oscar F., assignor of one-half to K. Johnson, Lancaster, Pa. Apparatus for a parlor game | 503,403 | Aug. 15 | 1938 | 481 | 64 | 949 |
| Brinly, John L., Louisville, Ky. Cultivator | 501,818 | July 18 | 2053 | 505 | 64 | 402 |
| Bristol, William H., Hoboken, N. J. Recording-voltmeter | 505,243 | Sept. 19 | 1531 | 399 | 64 | 1584 |
| Broad, Thomas, *et al.* (See Anderson, Lee, assignor.) | | | | | | |
| Broadwell, Edward C., assignor of one-third to M. J. Grier, Philadelphia, Pa. Coating with aluminum or alloys thereof | 503,070 | Aug. 8 | 1385 | ..... | 64 | 836 |
| Brocke, Gerhard, Allegheny, assignor of one-half to D. C. Riter, Pittsburg, Pa. Lock for automatic railway-switches | 500,796 | July 4 | 423 | 111 | 64 | 78 |
| Broderick, Clement M., and J. Vankeirsbilck, assignors to Gatling Gun Company, Hartford, Conn. Feed for machine-guns | 504,516 | Sept. 5 | 343 | 87 | 64 | 1334 |
| Broderick, Clement M., and J. Vankeirsbilck, assignors to Gatling Gun Company, Hartford, Conn. Machine-gun | 504,517 | Sept. 5 | 345 | 88 | 64 | 1334 |
| Brodrick Copygraph Company. (See Brodrick, John, assignor.) | | | | | | |
| Brodrick, John, assignor to Brodrick Copygraph Company, New York, N. Y. Making stencil-plates | 505,698 | Sept. 26 | 2344 | ..... | 64 | 1750 |
| Bronk, Casper, Hillsdale, N. J. Combination hammer and hatchet | 504,908 | Sept. 12 | 989 | 254 | 64 | 1471 |
| Bronk, Charles L., New York, N. Y. Bench-dog | 504,909 | Sept. 12 | 1074 | 274 | 64 | 1487 |
| Bronson, Albert E., and D. Chubb, Lilley, Mich. Saw-swage | 502,065 | July 25 | 2446 | 614 | 64 | 489 |
| Bronson, Douglas B., assignor of one-half to T. B. Wrigley, Chicago, Ill. Cleat | 503,193 | Aug. 15 | 1602 | 394 | 64 | 889 |
| Brooke, Simpson & Spiller. (See Green and Lawson, assignors.) | | | | | | |
| Brooke, William E., Trenton, assignor of one-fourth to T. H. Clark, Scudder's Falls, N. J. Saw-tooth | 504,412 | Sept. 5 | 162 | 43 | 64 | 1301 |
| Brooke, William E., assignor to American Saw Company, Trenton, N. J. Making wrench-handles | 504,518 | Sept. 5 | 346 | 88 | 64 | 1334 |
| Brooks, Charles W., Stevens Point, Wis. Carriage-axle | 505,387 | Sept. 19 | 1770 | 458 | 64 | 1629 |
| Brooks, Edward J., East Orange, N. J., assignor to E. J. Brooks & Company, New York, N. Y. Seal | 501,042 | July 4 | 799 | 209 | 64 | 146 |
| Brooks, Edward J., East Orange, N. J., assignor to E. J. Brooks & Company, New York, N. Y. Seal | 503,645 | Aug. 22 | 2244 | 585 | 64 | 1036 |
| Brooks, Edward J., East Orange, N. J., assignor to E. J. Brooks & Company, New York, N. Y. Seal and seal-tag | 505,388 | Sept. 19 | 1771 | 458 | 64 | 1629 |
| Brooks, Fred S. (See Pinkston, Lucien A., assignor.) | | | | | | |
| Brooks, Jacob A. (See Bennett, John A., assignor.) | | | | | | |
| Brooks, James W., trustee. (See Glidden, Charles W., assignor.) | | | | | | |
| Brooks, James W., trustee. (See Glidden and Winter, assignors.) | | | | | | |
| Brooks, James W., trustee. (See Winter, Henry W., assignor.) | | | | | | |
| Brooks, James W., *et al.*, trustees. (See Tobey, Franklin O., assignor.) | | | | | | |
| Brooks, John C., Paterson, N. J., assignor to G. Draper & Sons, Hopedale, Mass. Warp stop-motion for looms | 501,041 | July 4 | 796 | 208 | 64 | 145 |
| Brooks, John S., Brooklyn, N. Y. Metallic roofing | 503,941 | Aug. 29 | 2787 | 688 | 64 | 1140 |
| Brooks, Samuel H. (See Edge, James, assignor.) | | | | | | |
| Brooks, Sidney R., Allegany, assignor of one-third to H. W. Haskins, Frewsburg, N. Y. Horseshoe-calk sharpener | 504,553 | Sept. 5 | 405 | 103 | 64 | 1345 |
| Brooks, Stephen H., Brooklyn, N. Y., assignor to Wilmington Dental Manufacturing Company, Wilmington, Del., New York, N. Y., and Philadelphia, Pa. Dental-engine handpiece | 504,704 | Sept. 12 | 646 | 164 | 64 | 1404 |
| Brophy, Michael M., London, England. Knob attachment | 503,228 | Aug. 15 | 1659 | 407 | 64 | 899 |
| Brosius, Samuel G., Savannah, Ga. Mechanical movement | 503,122 | Aug. 15 | 1487 | 366 | 64 | 867 |
| Brosnan, Cornelius J., Springfield, Mass. Hook | 501,390 | July 11 | 1948 | 314 | 64 | 241 |
| Brothington, Edmund E., Newark, N. J. Support or holder for decorated plates | 502,548 | Aug. 1 | 598 | 121 | 64 | 660 |
| Brothwell, John G., Torrington, Conn., and F. K. Phillips, St. Louis, Mo., assignors to Turner & Seymour Manufacturing Company and H. L. Judd & Company, New York, N. Y. Extension curtain-rod and bracket | 502,654 | Aug. 1 | 683 | 164 | 64 | 691 |

*Alphabetical list of patentees, July to September, inclusive*—Continued.

| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drg. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Broun, Matilda C. S., Berkeley, Cal. Detachable umbrella-cover | 501,819 | July 18 | 2054 | 506 | 64 | 402 |
| Brower, Asher A., assignor of two-thirds to W. M. McFarland and W. W. Orris, Des Moines, Iowa. Car-coupling | 503,646 | Aug. 22 | 2345 | 585, 586 | 64 | 1037 |
| Brown, Albert. (See Courtney, William P., assignor.) | | | | | | |
| Brown, Alexander T., Syracuse, N. Y. Type-writing machine | 503,735 | Aug. 22 | 2467 | 619 | 64 | 1064 |
| Brown, Alexander T., Syracuse, N. Y. Ribbon mechanism for type-writing machines | 503,736 | Aug. 22 | 2490 | 619, 620 | 64 | 1065 |
| Brown, Alfred. (See Dobyns and Brown.) | | | | | | |
| Brown, Alfred C., London, England. Wheel for cycles | 504,413 | Sept. 5 | 163 | 43 | 64 | 1301 |
| Brown, Arthur L., Lyndonville, Vt. Car-coupling | 504,862 | Sept. 12 | 914 | 236 | 64 | 1457 |
| Brown & Bailey. (See Craw, Joseph T., assignor.) | | | | | | |
| Brown, Benoni S., Hyde Park, Mass., assignor to S. S. White Dental Manufacturing Company, Philadelphia, Pa. Dental engine | 504,487 | Sept. 5 | 287 | 73, 74 | 64 | 1323 |
| Brown, Charles F., trustee. (See Benjamin and Simmons, assignors.) | | | | | | |
| Brown, Charles H., Portland, Oreg. Galvanic battery | 503,567 | Aug. 15 | 2199 | 549 | 64 | 996 |
| Brown, Charles O. (See Powers, Jay W., assignor.) | | | | | | |
| Brown, Daniel T. (See Jackson, Thomas B., assignor.) | | | | | | |
| Brown, Davis, assignor of one-half to Decatur Leader Manufacturing Company, Decatur, Ill. Automatic cutter for brick and tile machines | 503,524 | Aug. 15 | 2124 | 532, 533 | 64 | 982 |
| Brown Developing Company. (See Brown, Samuel H., assignor.) | | | | | | |
| Brown Folding Machine Company. (See Van Etten, Charles D., assignor.) | | | | | | |
| Brown, George A., Minneapolis, Minn. Thill coupling | 501,052 | July 11 | 819 | 213 | 64 | 164 |
| Brown, George A., Muskegon, Mich. Magnetic clutch or coupling | 505,025 | Sept. 12 | 1179 | 302 | 64 | 1507 |
| Brown & Gilman. (See Wright, William A., assignor.) | | | | | | |
| Brown, Gilman W., West Newbury, Mass. Memorandum book or pad | 500,736 | July 4 | 328 | 87 | 64 | 61 |
| Brown, Isaac G. (See Friede, Samuel M., assignor.) | | | | | | |
| Brown, James A., Moline, Ill. Transmitter for telephones | 501,610 | July 18 | 1713 | 427 | 64 | 344 |
| Brown, James A., Moline, Ill. Telephone-transmitter | 504,801 | Sept. 12 | 811 | 206 | 64 | 1435 |
| Brown, James L., Glasgow, Scotland. Spinning-top | 501,321 | July 11 | 1940 | 314, 315 | 64 | 941 |
| Brown, John A., assignor of one-fourth to F. L. Dilley, Tyler, Tex. Buckle | 504,076 | Aug. 29 | 3009 | 751 | 64 | 1181 |
| Brown, John S., Galveston, Tex. Railway-joint | 503,071 | Aug. 8 | 1386 | 342 | 64 | 836 |
| Brown, John W., and A. A. Gehrt, assignors to Collins Plow Company, Quincy, Ill. Baling-press | 505,389 | Sept. 19 | 1772 | 459 | 64 | 1629 |
| Brown, Leander C., Boston, Mass. Drawer-lock | 505,799 | Sept. 26 | 2502 | 631, 632 | 64 | 1780 |
| Brown, Nathaniel H., Norristown, Pa. Flash-lamp | 501,556 | July 18 | 1629 | 408 | 64 | 329 |
| Brown, Robert P., Philadelphia, Pa. Paper box | 504,075 | Aug. 29 | 3008 | 751 | 64 | 1180 |
| Brown, Samuel, Easthampton, Mass. Weaving elastic fabrics | 502,699 | Aug. 8 | 770 | 187 | 64 | 722 |
| Brown, Samuel G., Lynn, Mass. Stall-floor | 502,221 | July 25 | 2008 | 681 | 64 | 539 |
| Brown, Samuel H., Belleville, N. J., assignor to Brown Developing Company, of New Jersey. Furnace for burning garbage | 501,181 | July 11 | 1037 | 263 | 64 | 304 |
| Brown, Samuel S. (See Bain, Force, assignor.) | | | | | | |
| Brown, Samuel S. (See Keil and Westerdahl, assignors.) | | | | | | |
| Brown, Samuel S. (See Legg and Keil, assignors.) | | | | | | |
| Brown, Seabury F., Cuyler, N. Y. Bag-holder | 501,820 | July 18 | 2055 | 506 | 64 | 403 |
| Brown & Sharpe Manufacturing Company. (See Parks, Edward H., assignor.) | | | | | | |
| Brown, Thomas. (See Moomy, Joseph G., assignor.) | | | | | | |
| Brown, Thomas F., *et al.* (See Ripson, John D., assignor.) | | | | | | |
| Brown, Tristram D. (See Lisk and Brown.) | | | | | | |
| Brown, Walter M., Albany, N. Y. Cotton-gin saw | 500,560 | July 4 | 37 | 12 | 64 | 9 |
| Brown, Webster E. (See Dimick, Richard E., assignor.) | | | | | | |
| Brown, William J., *et al.* (See Hanson, Joseph H., assignor.) | | | | | | |
| Brown, William K., *et al.*, executors. (See Meyers, William H., assignor.) | | | | | | |
| Browne, Arthur W. (See Johnston and Browne.) | | | | | | |
| Browne, Arthur W., Prince's Bay, N. Y., assignor to S. S. White Dental Manufacturing Company, Philadelphia, Pa. Dental engine | 503,737 | Aug. 22 | 2493 | 630, 631 | 64 | 1066 |
| Browne & Dowd Manufacturing Company. (See Browne, William G., assignor.) | | | | | | |
| Browne, James E., Elizabeth, N. J. Lightning-arrester | 501,241 | July 11 | 1125 | 285 | 64 | 219 |
| Browne, Julian A., Kosciusko, Miss. Saddle-bags | 501,821 | July 18 | 2055 | 506 | 64 | 403 |
| Browne, William G., assignor to Browne & Dowd Manufacturing Company, Meriden, Conn. Can-opener | 501,322 | July 11 | 1258 | 315 | 64 | 241 |
| Browne, William J., Gladstone, Minn. Sulky gang-plow | 501,179 | July 11 | 1035 | 262 | 64 | 203 |
| Browne, William J., Gladstone, Minn. Gang or sulky plow | 501,180 | July 11 | 1036 | 262 | 64 | 203 |
| Brownell, Frank A., assignor, by mesne assignments, to Eastman Kodak Company, Rochester, N. Y. Photographic shutter | 501,866 | July 18 | 2116 | 523 | 64 | 414 |
| Brownell, James S., San Francisco, Cal. Belt for ore-concentrators | 501,557 | July 18 | 1631 | 402 | 64 | 329 |
| Browning, John M., Ogden, Utah Ter. Gas-operated breech-loading gun | 502,549 | Aug. 1 | 509 | 121, 122 | 64 | 660 |
| Brubaker, Andrew, Ashland, Ohio. Bung | 504,060 | Aug. 29 | 2988 | 747 | 64 | 1177 |
| Bruce, Clark, Chicago, Ill. Vapor-burner | 502,029 | July 25 | 2388 | 600 | 64 | 541 |
| Bruch, Frederick W., Cleveland, Ohio. Machine for upsetting metal | 504,909 | Sept. 12 | 989 | 254 | 64 | 1471 |
| Bruley, Calixte, assignor of two-thirds to A. P. Yale and J. Bruley, Milwaukee, Wis. Washing-machine | 501,268 | July 11 | 1168 | 296 | 64 | 227 |
| Bruley, Joseph, *et al.* (See Bruley, Calixte, assignor.) | | | | | | |
| Brunbauer, Ferdinand, Vienna, Austria-Hungary. Injector | 500,752 | July 4 | 349 | 92, 93 | 64 | 65 |
| Brundin, Per Walfrid, assignor of one-half to E. Tornblom, New York, N. Y. Cheese case and cutter | 502,170 | July 25 | 2616 | 659 | 64 | 523 |
| Bruner, Preston M., St. Louis, Mo. Building engine-foundations | 501,914 | July 25 | 2215 | 552, 553 | 64 | 447 |
| Brunner, Charles, and J. H. Goodwin, Peru, Ill. Combined match-safe and cigar-cutter | 502,807 | Aug. 8 | 958 | 233 | 64 | 757 |
| Brunner, Edward C., and W. J. Renkel, Cleveland, Ohio. Laundry-tub | 501,763 | July 18 | 1975 | 488 | 64 | 349 |
| Brustlein, Henri A., Unieux, France. Casting ingots | 504,322 | Sept. 5 | 17 | 5 | 64 | 1274 |
| Bryan, Darius, Washington Court-House, Ohio. Fence and stay | 502,345 | Aug. 1 | 161 | 37 | 64 | 596 |
| Bryan, George W., Rowayton, Conn. Tire for carriage-wheels | 502,808 | Aug. 8 | 959 | 233 | 64 | 757 |
| Bryant, Charles K. (See Doebler, Charles F., assignor.) | | | | | | |
| Bryant, Charles K. (See Doebler and Bryant.) | | | | | | |
| Bryant Electric Company. (See Bryant, Waldo C., assignor.) | | | | | | |
| Bryant, John. (See Bryant, Wiley E., M. Z., and J.) | | | | | | |
| Bryant, Moses Z. (See Bryant, Wiley E., M. Z., and J.) | | | | | | |
| Bryant, Waldo C., assignor to Bryant Electric Company, Bridgeport, Conn. Socket for incandescent electric lamps | 502,635 | Aug. 1 | 684 | 164 | 64 | 691 |
| Bryant, Wiley E., M. Z., and J., Milan, Tenn. Insecticide | 501,323 | July 11 | 1259 | ..... | 64 | 242 |
| Bryce, Albert O., Carrville, and E. R. Stanton, Durand, Wis. Reel-carrying frame | 501,822 | July 18 | 2056 | 507 | 64 | 403 |
| Brydson, John J., and J. A. Greathouse, Temple, Tex. Swing | 502,610 | Aug. 1 | 606 | 144 | 64 | 677 |



*Alphabetical list of patentees, July to September, inclusive*—Continued.

| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drg. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Buch, John H. (See Buch, Royer S., assignor.) | | | | | | |
| Buch, Royer S., assignor to J. H. Buch, Elizabethtown, Pa. Cultivator | 502,171 | July 25 | 2617 | 659, 660 | 64 | 1487 |
| Buchanan, David R., Elgin, assignor to Elgin National Watch Company, Chicago, Ill. Apparatus for enameling dials | 503,525 | Aug. 15 | 2126 | 533, 534 | 64 | 982 |
| Buchanan, James, Jr. (See Easton, Watt, and Buchanan.) | | | | | | |
| Buchanan, James, Jr., Liverpool, England. Apparatus for charging furnaces with metal | 505,348 | Sept. 19 | 1697 | 437, 438 | 64 | 1616 |
| Buchanan, Luther H., Pasadena, Cal. Electric-arc lamp | 502,948 | Aug. 8 | 1209 | 296 | 64 | 862 |
| Buchanan, Luther H., Pasadena, Cal. Game appliance | 503,942 | Aug. 29 | 2787 | 699 | 64 | 1140 |
| Buck, Chester J. (See Buck, Robert J. and C. J.) | | | | | | |
| Buck, Robert J. and C. J., Bridgeton, N. J. Furnace for welding, &c | 503,926 | Aug. 22 | 2760 | 692 | 64 | 1118 |
| Buckeye Iron and Brass Works. (See Krutzsch, William, assignor.) | | | | | | |
| Buckingham, Herman C., New Milford, Conn. Standard for wagon-bolsters | 502,346 | Aug. 1 | 162 | 38 | 64 | 596 |
| Buckingham, John L., *et al.* (See Hall, Henry, assignor.) | | | | | | |
| Budd, John C., Defiance, Ohio. Churn | 505,026 | Sept. 12 | 1180 | 302, 303 | 64 | 1507 |
| Budke, John F., Cannonsburg, Pa. Grinding and polishing tool | 504,519 | Sept. 5 | 347 | 88 | 64 | 1334 |
| Budlong, Edward L., Chicago, Ill., assignor to W. O. Talcott, Providence, R. I. Method of and machine for making sheet-metal belt-fasteners | 503,035 | Aug. 8 | 1336 | 329 | 64 | 826 |
| Buechner, John, Battle Creek, Mich. Toe-weight | 503,404 | Aug. 15 | 1940 | 482 | 64 | 949 |
| Buerger, Otto W., Quincy, Ill. Watchcase-pendant | 503,714 | Aug. 22 | 2455 | 611 | 64 | 1058 |
| Buerling, Charles. (See Grosch, Allenberg, and Buerling.) | | | | | | |
| Buffington, Elisha W., assignor of one-half to A. F. Dow, Fall River, Mass. Cleat for holding a plurality of insulated electric wires | 505,215 | Sept. 19 | 1490 | 389 | 64 | 1577 |
| Bufkin, Samuel, and C. Snyder, Battle Creek, Mich. Straw-stacker | 501,342 | July 11 | 1126 | 286, 287 | 64 | 220 |
| Buhoup, Harry C., Chicago, Ill. Buffer and vestibule connection for passenger-cars | 503,647 | Aug. 22 | 2347 | 586 | 64 | 1037 |
| Buick, David D., Detroit, Mich. Discharge-valve for water-closet tanks | 502,611 | Aug. 1 | 607 | 145 | 64 | 677 |
| Bull, Annabell C., Peoria, Ill. Cake or pudding stirrer | 502,066 | July 25 | 2447 | 615 | 64 | 490 |
| Bull, Charles H., New York, N. Y. Asphalt pavement | 505,699 | Sept. 26 | 2345 | 593 | 64 | 1750 |
| Bullard, John F., Swanton Junction, Vt. Overshoe | 502,275 | Aug. 1 | 16 | 4 | 64 | 569 |
| Bullock, Barnet E. (See Nogar, Russell H., assignor.) | | | | | | |
| Bullock, Milan C., Chicago, Ill. Governing device for compound engines | 504,691 | Sept. 5 | 620 | 158, 159 | 64 | 1387 |
| Bullock, Milan C., and S. W. Douglass, Chicago, Ill.; said Douglass assignor to said Bullock. Mold | 501,915 | July 25 | 2216 | 553 | 64 | 447 |
| Bullough, John. (See Vaughan, John, assignor.) | | | | | | |
| Bunker, Ira S. and W. O., Nevada, Mo. Churn | 500,990 | July 4 | 717 | 188 | 64 | 130 |
| Bunker, William O. (See Bunker, Ira S. and W. O.) | | | | | | |
| Burbee, Aaron, Grand Rapids, Mich. Lock and latch | 502,276 | Aug. 1 | 17 | 4 | 64 | 570 |
| Burbee, Aaron, Grand Rapids, Mich. Lock | 503,648 | Aug. 22 | 2349 | 587 | 64 | 1037 |
| Burbee, Aaron, Grand Rapids, Mich. Lock and latch | 503,649 | Aug. 22 | 2351 | 587 | 64 | 1038 |
| Burchell, Norval L., and B. L. Nevius, Jr., Washington, D. C. Support for telephonic receivers | 501,405 | July 11 | 1405 | 352 | 64 | 269 |
| Burford, Oskar F. (See Mueller and Burford.) | | | | | | |
| Burgess, Charles M., assignor to Russell & Erwin Manufacturing Company, New Britain, Conn. Door-bell | 502,612 | Aug. 1 | 608 | 145 | 64 | 678 |
| Burgess, Charles M., assignor to Russell & Erwin Manufacturing Company, New Britain, Conn. Knob attachment | 503,450 | Aug. 15 | 2005 | 497 | 64 | 960 |
| Burgess, Melancthon, assignor of one-half to J. L. Smith, St. George, Utah Ter. Vehicle-wheel | 500,703 | July 4 | 272 | 73 | 64 | 51 |
| Burgess, Neilson. (See Patten, Jefferson, assignor.) | | | | | | |
| Burgon, Charles and H., Sheffield, England. Animal-shears | 501,324 | July 11 | 1260 | 316 | 64 | 242 |
| Burgon, Harry. (See Burgon, Charles and H.) | | | | | | |
| Burgroff, Frank, Eldorado, Wis. Lifting device for self-binding harvesters | 503,526 | Aug. 15 | 2129 | 535 | 64 | 983 |
| Burke, James E., Anderson, Ind. Oyster-sack | 501,053 | July 11 | 819 | 213 | 64 | 164 |
| Burke, Washington P., Quitman, Ga. Washboiler | 503,262 | Aug. 15 | 1710 | 421 | 64 | 908 |
| Bürkle, Georg, Blaubeuren, Germany. Jacquard mechanism for looms | 504,323 | Sept. 5 | 17 | 5, 6 | 64 | 1274 |
| Burnett, Christenberry L., Spartanburg, S. C. Folding harrow | 504,428 | Sept. 5 | 192 | 49 | 64 | 1306 |
| Burnett, Elisha C., Cifax, Va. Horse-detacher | 501,490 | July 18 | 1522 | 382 | 64 | 308 |
| Burnett, Henry D., Lynn, and S. E. Doane, Swampscott, Mass., assignors to General Electric Company, of New York. Electric incandescent lamp | 500,849 | July 4 | 500 | 130 | 64 | 91 |
| Burnett, Rufus S., Dallas, Tex. Forge-tray | 503,194 | Aug. 15 | 1604 | 394 | 64 | 889 |
| Burnett, William E. (See Merritt and Burnett.) | | | | | | |
| Burnett, William S., Milwaukee, Wis. Combined phonograph and coin-operated mechanism | 502,246 | July 25 | 2749 | 695 | 64 | 548 |
| Burnham, Arthur M., Gardiner, Me., assignor to L. Moody, Brooklyn, N. Y., and F. Hildreth, West Gardiner, Me. Mop-wringer | 504,077 | Aug. 29 | 3009 | 752 | 64 | 1181 |
| Burnham, George, Jr., Portland, Me. Machine for cooking corn | 503,577 | Aug. 22 | 2222 | 557 | 64 | 1016 |
| Burns, James A., *et al.* (See Gersting, Charles H., assignor.) | | | | | | |
| Burns, James M., Chicago, Ill., assignor to Lamson Consolidated Store Service Company, Boston, Mass. Store-service apparatus | 502,977 | Aug. 1 | 19 | 5 | 64 | 570 |
| Burns, James M., Chicago, Ill., assignor to Lamson Consolidated Store Service Company, Boston, Mass. Store-service apparatus | 502,395 | Aug. 1 | 243 | 58 | 64 | 610 |
| Burns, Orelan B., San Francisco, Cal. Brake for bicycles | 502,949 | Aug. 8 | 1204 | 296 | 64 | 862 |
| Burns, Walter F., San Francisco, Cal. Automatic weighing and recording scale | 502,222 | July 25 | 2699 | 681 | 64 | 539 |
| Burpee, George H., assignor to American Fuel Economizer and Engineering Company, New York, N. Y. Tube-scraper for feed-water heaters | 502,223 | July 25 | 2701 | 681 | 64 | 539 |
| Burrell & Co., D. H. (See Lundstrom, Carl J., assignor.) | | | | | | |
| Burress, John. (See Tullis, John T., assignor.) | | | | | | |
| Burroughs, William S., assignor to American Arithmometer Company, St. Louis, Mo. Calculating-machine | 504,963 | Sept. 12 | 1075 | 275, 276, 277 | 64 | 1487 |
| Burroughs, William S., assignor to American Arithmometer Company, St. Louis, Mo. Recording device for calculators, &c | 505,078 | Sept. 12 | 1078 | 329 | 64 | 1525 |
| Burrowes, Edward T., Portland, Me. Holding mechanism for spring-actuated shades | 501,674 | July 18 | 1821 | 454 | 64 | 362 |
| Burrows, Taylor. (See Donisthorpe and Burrows.) | | | | | | |
| Burt, Charles A., Rochester, N. Y. Can-labeling machine | 502,480 | Aug. 1 | 385 | 92 | 64 | 637 |
| Burtch, Frank F. (See Devendorf and Burtch.) | | | | | | |
| Burtner, George A., Altoona, Pa. Lamp-burner | 504,554 | Sept. 5 | 405 | 103 | 64 | 1345 |
| Burton, Augustus G., Chicago, Ill. Safe-locking device | 502,613 | Aug. 1 | 609 | 145, 146 | 64 | 678 |
| Burton, George D., Boston, and E. E. Angell, Somerville, Mass., assignors to Electrical Forging Company, of Maine. Electrical metal-working | 505,263 | Sept. 19 | 1558 | 406, 407 | 64 | 1590 |

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| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Dr'gs | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Burton, George F. See Mann, George, assignor.) | | | | | | |
| Burtscher, George, Chicago, Ill. Rivet-holding device | 503,943 | Aug. 29 | 2789 | 699 | 64 | 1141 |
| Burvill-Holmes, Ernest, assignor of two-thirds to E. Y. Marsteller, Royersford, and A. Z. Keeler, Boyerstown, Pa. Anticribbing device | 505,500 | Sept. 26 | 2155 | 545 | 64 | 1716 |
| Bus, Caroline du, Horrem, Germany. Safety-catch for pins | 501,184 | July 11 | 1044 | 264 | 64 | 205 |
| Busby, Nahum J., Maplewood, Mass. Gong or call-bell | 504,705 | Sept. 12 | 648 | 164 | 64 | 1404 |
| Busek, Rudolf, Vienna, Austria-Hungary. Ticket stamping and cutting machine | 500,797 | July 4 | 424 | 111, 112 | 64 | 78 |
| Busenbens, Jacob J., Rock Island, Ill. Dust-guard for axle-boxes | 501,325 | July 11 | 1262 | 316 | 64 | 242 |
| Busenbens, Jacob J., Rock Island, Ill. Car journal-box | 503,405 | Aug. 15 | 1941 | 482 | 64 | 949 |
| Busenbens, Jacob J., Rock Island, Ill. Dust-guard for journal-boxes | 503,715 | Aug. 22 | 2456 | 611 | 64 | 1058 |
| Busenbens, Jacob J., Rock Island, Ill. Dust-guard for journal-boxes | 504,197 | Aug. 29 | 3222 | 802, 803 | 64 | 1221 |
| Bush, Charles, Newburg, N. Y. Pot for molten metal | 503,783 | Aug. 22 | 2561 | 636 | 64 | 1079 |
| Bush, Charles, Newburg, N. Y. Reed-puff | 503,827 | Aug. 22 | 2616 | 654 | 64 | 1090 |
| Bush, William C., Wilmington, Del. Cartridge | 505,089 | Sept. 19 | 1299 | 334 | 64 | 1542 |
| Buss, Edward, St. Gall, and A. Saurer, Arbon, Switzerland. Embroidering-machine | 503,309 | Aug. 15 | 1788 | 442, 443, 444, 445, 446, 447 | 64 | 921 |
| Bustin, William H., Boston, Mass. Die for manufacturing metallic harness-saddle trees | 505,079 | Sept. 12 | 1980 | 330 | 64 | 1525 |
| Butfield, Charles J., *et al.* (See Gebhardt, William C., assignor.) | | | | | | |
| Butler, Charles E., St. Michael's, Md. Dumping-wagon | 502,278 | Aug. 1 | 94 | 5 | 64 | 570 |
| Butler Hard Rubber Company. (See Gurnee, Isaac Q., assignor.) | | | | | | |
| Butler, Jacob, assignor of one-half to J. Roth, Willow Point, Tex. Feed-cutter | 503,716 | Aug. 22 | 2458 | 611 | 64 | 1058 |
| Butler, Warren T., Chelsea, Mass. Canceling and register-actuating device for ballot-boxes | 500,850 | July 4 | 501 | 130 | 64 | 91 |
| Butler, William. (See Davis and Butler.) | | | | | | |
| Butt, Leroy S., North East, Pa., assignor to P. P. Mast & Company, Springfield, Ohio. Cultivator | 505,506 | Sept. 26 | 1977 | 508 | 64 | 1681 |
| Butters, Samuel I., Clarksburg, W. Va. Folding crate | 502,481 | Aug. 1 | 389 | 93 | 64 | 658 |
| Buttrick, Charles G., Holyoke, Mass. Spinning-machine spindle | 505,507 | Sept. 26 | 1979 | 508 | 64 | 1681 |
| Buxbaum, Herbert H., Philadelphia, Pa. Coin-controlled apparatus | 504,555 | Sept. 5 | 408 | 103, 104 | 64 | 1345 |
| Byrd, Walter M., assignor of one-half to A. D. and W. D. Clark, Mount Gilead, N. C. Rotary steam-engine | 501,598 | July 18 | 1692 | 422 | 64 | 341 |
| Byrne, Joseph W., Boston, Mass. Anchor | 503,694 | Aug. 22 | 2423 | 603 | 64 | 1051 |
| Cabot, John A., assignor of one-half to F. A. Kirchner, Cincinnati, Ohio. Electro-medical apparatus | 501,558 | July 18 | 1632 | 408 | 64 | 330 |
| Caccialupi, Epimaco O., San Severino, Italy, assignor of one-half to A. Angeli, London, England. Clock striking mechanism | 500,704 | July 4 | 273 | 73, 74 | 64 | 51 |
| Cacciatori, Peter, Chicago, Ill. Roasting apparatus | 501,867 | July 18 | 2118 | 524 | 64 | 414 |
| Caddell, William E., London, England. Filter | 502,030 | July 25 | 2389 | 601 | 64 | 470 |
| Cadenhead, Benjamin F., Union Grove, assignor of one-third to E. Gilbreath, Guntersville, Ala. Car-coupling | 504,556 | Sept. 5 | 408 | 104 | 64 | 1345 |
| Cady, Frank E., Auburn, N. Y. Filter and cooler | 500,737 | July 4 | 329 | 88 | 64 | 62 |
| Cage, Henry B. (See Sherrod, Fletcher, assignor.) | | | | | | |
| Cahill, Thaddeus, Washington, D. C. Type-writing machine | 502,700 | Aug. 8 | 771 | 187, 188, 189, 190, 191, 192 | 64 | 729 |
| Cahn, Alphonse. (See Hersberg, Nachman H., assignor.) | | | | | | |
| Cahoon, William, Jr., assignor to W. B. Young, New York, N. Y. Coin-controlled dice-throwing machine | 502,876 | Aug. 8 | 1068 | 263 | 64 | 778 |
| Caird, David, London, England. Manufacture of metal barrels or other like vessels | 502,846 | Aug. 8 | 1025 | 251 | 64 | 770 |
| Calderwood, George G., Biddeford, Me. Stovepipe attachment | 503,760 | Aug. 22 | 2530 | 629 | 64 | 1073 |
| Caldwell, Alexander, Essex, Iowa. Disk attachment for cultivators | 501,916 | July 25 | 2221 | 553, 554 | 64 | 448 |
| Caldwell, Alexander, Essex, Iowa. Cleaner for cultivator-disks | 501,917 | July 25 | 2222 | 554 | 64 | 448 |
| Caldwell, Alexander, Essex, Iowa. Agricultural implement | 502,032 | July 25 | 2395 | 602 | 64 | 480 |
| Caldwell, Henry A., assignor to Electric Cutting Machine Company, Chicago, Ill. Cloth-cutting machine | 502,031 | July 25 | 2390 | 601, 602 | 64 | 479 |
| Caldwell, Henry W., Chicago, Ill. Coupling for hollow shafts | 501,918 | July 25 | 2223 | 554 | 64 | 448 |
| Caldwell, Sarah C., Nesson City, Mich. Kitchen article | 501,823 | July 18 | 2057 | 507 | 64 | 403 |
| Caldwell, William, Coolamon, New South Wales. Point for augers | 504,018 | Aug. 29 | 2926 | 733 | 64 | 1165 |
| Calhoun, Hugh, Hot Springs, and A. M. Beam, Bear, assignors to United States Desulphurising, Dry-Chloridising, and Amalgamating Company, Hot Springs, Ark. Extracting metals from ores | 504,706 | Sept. 12 | 649 | ..... | 64 | 1405 |
| Calhoun, John C. (See Gause, Benjamin, assignor.) | | | | | | |
| Califf, Frank, Elk Creek, S. D. Buckle | 503,898 | Aug. 22 | 2719 | 683 | 64 | 1110 |
| California Petroleum and Asphalt Company. (See Bell, Arthur F. L., assignor.) | | | | | | |
| Callaghan, George F., Baltimore, Md., assignor of one-half to E. D. Durborow. Pneumatic tire | 503,560 | Aug. 15 | 2191 | 547 | 64 | 994 |
| Cambria Iron Company. (See Short, John N., assignor.) | | | | | | |
| Cameron, John A., Cornwall, Canada. Antifriction journal-bearing | 501,868 | July 18 | 2119 | 524 | 64 | 414 |
| Cameron, John S., assignor of one-half to W. Erskine, Evansville, Ind. Bran-packer | 501,326 | July 11 | 1263 | 317 | 64 | 242 |
| Cameron, William, Milpitas, Cal. Hydraulic pump | 502,950 | Aug. 8 | 1265 | 296 | 64 | 802 |
| Camp, Horace B., Cuyahoga Falls, Ohio. Fence-post | 505,156 | Sept. 19 | 1400 | 350 | 64 | 1560 |
| Campbell, Carl T., assignor of two-thirds to L. M. Clark and A. R. Beach, Warren, Pa. Extension step-ladder | 501,406 | July 11 | 1407 | 352 | 64 | 270 |
| Campbell, Charles H., *et al.* (See Stebbins, James H., Jr., assignor.) | | | | | | |
| Campbell, George L., *et al.* (See Palmer, Israel Y., assignor.) | | | | | | |
| Campbell, Hardy W., Aberdeen, S. D., assignor to T. H. Green, Minneapolis, Minn. Heater | 502,701 | Aug. 8 | 799 | 193 | 64 | 727 |
| Campbell, Henry, Baltimore, Md. Method of and machine for doweling | 502,656 | Aug. 1 | 685 | 164, 165 | 64 | 692 |
| Campbell, Henry, Baltimore, Md. Crozing-machine | 505,591 | Sept. 26 | 2157 | 545, 546 | 64 | 1716 |
| Campbell, Henry, assignor of two-thirds to J. Marr and J. Barkley, Baltimore, Md. Thermometer | 504,298 | Aug. 29 | 3382 | 846 | 64 | 1251 |
| Campbell, Henry H., Cleveland, Ohio, assignor of one-half to N. W. Taylor. Inclined grate, &c | 505,748 | Sept. 26 | 2417 | 610 | 64 | 1762 |



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| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Dr'gs | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Campbell, Joseph H., *et al.* (See Stebbins, James H., Jr., assignor.) | | | | | | |
| Campbell, Robert, Gadsden, Ala. Molding-machine | 501,824 | July 18 | 2058 | 507 | 64 | 403 |
| Campbell, Robert, Allegheny, Pa. Differential lever | 503,561 | Aug. 15 | 2192 | 547 | 64 | 995 |
| Canet, Jean B. G. A., Paris, France, assignor of one-half to Sir Joseph Whitworth & Company, Limited, Openshaw, Manchester, England. Breech mechanism for ordnance | 502,172 | July 25 | 2619 | 660, 661 | 64 | 523 |
| Canet, Jean B. G. A., Paris, France, assignor of one-half to Sir Joseph Whitworth & Company, Limited, Manchester, England. Gun carriage or mounting | 503,072 | Aug. 8 | 1387 | 343 | 64 | 836 |
| Canet, Jean B. G. A., Paris, France, assignor of one-half to Sir Joseph Whitworth & Company, Limited, Openshaw, England. Gun-mounting | 504,198 | Aug. 29 | 3224 | 803, 804 | 64 | 1221 |
| Canfield, Robert H., Corning, N. Y. Switch-stand | 504,964 | Sept. 12 | 1084 | 277 | 64 | 1488 |
| Canney, Joseph, Butte City, Mont. Nipple-holder | 502,224 | July 25 | 2703 | 682 | 64 | 540 |
| Canning, William P., assignor to Lowell Machine Shop, Lowell, Mass. Feed-roll-weighting device for carding-engines | 504,707 | Sept. 12 | 650 | 165 | 64 | 1405 |
| Canning, William P., assignor to Lowell Machine Shop, Lowell, Mass. Fly-frame | 505,436 | Sept. 26 | 1855 | 477, 478 | 64 | 1659 |
| Canton Glass Company. (See Bockius, Charles J., assignor.) | | | | | | |
| Capewell, George J., Hartford, Conn. Tack-puller | 501,919 | July 25 | 2224 | 554 | 64 | 448 |
| Caraway, Emmet L., Rector, Ark. Corn-planter | 503,944 | Aug. 29 | 2790 | 699 | 64 | 1141 |
| Caraway, John H., Chrisman, Ill. Flood-gate | 505,390 | Sept. 19 | 1773 | 459 | 64 | 1630 |
| Cardarelli, Emilio, assignor of one-half to G. W. Dick, Sumter, S. C. Loading or unloading apparatus | 505,749 | Sept. 26 | 2418 | 611 | 64 | 1763 |
| Carey, John, assignor to W. B. Bishop, New York, N. Y. Fortune-teller | 503,784 | Aug. 22 | 2562 | 638 | 64 | 1079 |
| Carey, Richard, Chicago, Ill. Interlocking and interchangeable rocking grate-bar | 503,578 | Aug. 22 | 2223 | 557 | 64 | 1016 |
| Carlin, William P., Jeffersontown, Ky., assignor of one-half to J. M. Marlin, Dawson, Ga. Coffee-pot | 503,342 | Aug. 15 | 1850 | 458 | 64 | 932 |
| Carlson, Andrew. (See Stromberg and Carlson.) | | | | | | |
| Carlson, Gustave H., San Francisco, Cal. Splint laundry-basket | 500,901 | July 4 | 718 | 189 | 64 | 130 |
| Carlton, Edwin L. (See Davies, Thomas W., assignor.) | | | | | | |
| Carman, Francis J., Washington, D. C. Refining sulphurous petroleum | 501,988 | July 25 | 2319 | 579 | 64 | 467 |
| Carmichael, Henry, Malden, Mass. Apparatus for manufacturing pulp boxes | 503,738 | Aug. 22 | 2495 | 621 | 64 | 1066 |
| Carnell, Frederick W., assignor to Sargent & Company, New Haven, Conn. Snap-hook | 505,286 | Sept. 19 | 1605 | 417 | 64 | 1599 |
| Carns, William W., Tyrone, Pa. Driving mechanism for cycles | 501,054 | July 11 | 820 | 213 | 64 | 185 |
| Carpenter, Asher M. (See Carpenter, Joseph R. and A. M.) | | | | | | |
| Carpenter, Benjamin F., Roselle, N. J., assignor to Heat and Odor Extinguisher Company, of New Jersey. Movable hood for stoves or ranges | 503,343 | Aug. 15 | 1851 | 458, 459 | 64 | 932 |
| Carpenter, Charles W., *et al.* (See Crowell, Luther C., assignor.) | | | | | | |
| Carpenter, Frank N., Buffalo, N. Y. Game apparatus | 505,027 | Sept. 12 | 1181 | 303 | 64 | 1507 |
| Carpenter, Frederick B., *et al.* (See Osteman, Carl G., assignor.) | | | | | | |
| Carpenter, John N., Philadelphia, Pa. Music-sheet turner | 505,307 | Sept. 19 | 1640 | 424 | 64 | 1605 |
| Carpenter, Joseph R. and A. M., Williamsport, Pa. Emery-wheel | 500,561 | July 4 | 40 | 12 | 64 | 9 |
| Carr, Charles, Boston, Mass. Railway system | 500,992 | July 4 | 719 | 189 | 64 | 131 |
| Carr, George W., Brooklyn, N. Y. Lawn-mower | 505,187 | Sept. 19 | 1446 | 372 | 64 | 1568 |
| Carr, Joseph, Saginaw, Mich. Ice-creeper | 504,708 | Sept. 12 | 652 | 165 | 64 | 1405 |
| Carraher, Thomas A., Newman Grove, Nebr. Gate-fastener | 504,863 | Sept. 12 | 916 | 237 | 64 | 1457 |
| Carrell, William S., assignor of one-half to D. L. Horn, Choctaw City, Oklahoma Ter. Cow-yoke | 504,299 | Aug. 29 | 3383 | 846 | 64 | 1251 |
| Carrico, Francis A., *et al.* (See Carrico, Thomas W., assignor.) | | | | | | |
| Carrico, Thomas W., assignor of one-third to F. A. and T. W. Carrico, Jr., San Antonio, Tex. Apparatus for treating refuse matter | 503,073 | Aug. 8 | 1389 | 343 | 64 | 836 |
| Carroll, Charles, assignor to Automatic Machine Company, Limited, New Orleans, La. Coin-controlled race-course | 504,312 | Aug. 29 | 3403 | 853, 854, 855, 856, 857 | 64 | 1255 |
| Carse, Henry, Rock Island, Ill. Pumping apparatus for the manufacture of carbonized waters | 505,090 | Sept. 19 | 1300 | 334 | 64 | 1543 |
| Carson, Alfred H., Grant's Pass, Oreg. Fruit-drier | 503,899 | Aug. 22 | 2720 | 683 | 64 | 1110 |
| Carter, George, London, England. Coin-freed gas-meter | 504,266 | Aug. 29 | 3329 | 832, 833 | 64 | 1241 |
| Carter, Horatio E., and W. H. Snyder, Jackson, Mich. Corset-fastening | 505,437 | Sept. 26 | 1858 | 478 | 64 | 1660 |
| Carter, William B., St. Maurice, La. Bedstead attachment | 504,557 | Sept. 5 | 410 | 104 | 64 | 1346 |
| Carty, John J., New York, N. Y., assignor to Western Electric Company, Chicago, Ill. Multiple-switchboard apparatus | 505,188 | Sept. 19 | 1447 | 372 | 64 | 1568 |
| Cary, Edward E. (See Nickerson and Cary.) | | | | | | |
| Cary, Edward E., Boston, Mass. Incandescent electric lamp | 501,491 | July 18 | 1524 | 382 | 64 | 308 |
| Cary, Edward E., Boston, and W. E. Nickerson, Cambridge, Mass. Incandescent electric lamp | 503,650 | Aug. 22 | 2252 | 587 | 64 | 1038 |
| Cary, William H., *et al.* (See Austin, William H., assignor.) | | | | | | |
| Case, George F., Medina, N. Y. Bicycle | 503,828 | Aug. 22 | 2618 | 654 | 64 | 1090 |
| Case, Lawrence W., Highland Park, Conn. Electric locomotive | 500,851 | July 4 | 504 | 131 | 64 | 92 |
| Case, Willard E., Auburn, N. Y. Apparatus for electrolysis of fused salts | 503,451 | Aug. 15 | 2006 | 498 | 64 | 960 |
| Case, Willard E., Auburn, N. Y. Making aluminum fluosulphate | 503,900 | Aug. 22 | 2721 | ..... | 64 | 1110 |
| Case, Willard E., Auburn, N. Y. Making aluminum compounds | 503,901 | Aug. 22 | 2722 | ..... | 64 | 1110 |
| Case, Willard E., Auburn, N. Y. Making aluminum compounds | 504,324 | Sept. 5 | 19 | ..... | 64 | 1274 |
| Case, Willard E., Auburn, N. Y. Making aluminum fluosulphate | 504,325 | Sept. 5 | 20 | ..... | 64 | 1274 |
| Cassidy, James W., deceased. (See Smith and Cassidy.) (Reissue.) | | | | | | |
| Caskey, Samuel S., assignor to Link-Belt Engineering Company, Philadelphia, Pa., Driving-rope-shifting mechanism | 501,869 | July 18 | 2120 | 524 | 64 | 414 |
| Caspian, Paschal G., Brooklyn, N. Y. Shears | 502,809 | Aug. 8 | 960 | 234 | 64 | 757 |
| Cassella & Co., Leopold. (See Gans and Hoffmann, assignors.) | | | | | | |
| Cately, Shepard W., assignor to A. M. Ettling, Cortland, N. Y. Thill-coupling | 505,438 | Sept. 26 | 1859 | 478 | 64 | 1660 |
| Catlett, J. H., *et al.* (See Graves, Cashious M., assignor.) | | | | | | |
| Caton, Fred E., and F. B. Warring, San José, Cal. Sprinkler | 504,965 | Sept. 12 | 1086 | 278 | 64 | 1469 |
| Cattern, Frank M. (See Dawdy and Cattern.) | | | | | | |
| Cavanaugh, Frank, *et al.* (See Winner, William P., assignor.) | | | | | | |
| Caywood, Abram, Ithaca, Ohio. Apparatus for heating and moistening air | 505,750 | Sept. 26 | 2422 | 611 | 64 | 1764 |
| Cell, Anson H., and E. G. Paster, Colorado Springs, Colo. Measuring-vessel | 502,347 | Aug. 1 | 163 | 38 | 64 | 596 |
| Central Cyclone Company. (See Straker, Sidney, assignor.) | | | | | | |
| Cereal Machine Company. (See Perky and Ford, assignors.) | | | | | | |
| Chadborn, Frederic C., Newburg, N. Y. Ventilating apparatus | 502,090 | July 25 | 2486 | 625 | 64 | 497 |
| Chamberlain, Henry J. (See Robinson and Chamberlain.) | | | | | | |
| Chamberlain, Henry J., assignor to J. T. Robinson & Co., Hyde Park, Mass. Loose-pulley lubricator | 503,902 | Aug. 22 | 2753 | 683 | 64 | 1111 |

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|---|---|---|---|---|---|---|
| Chambers, Bering, Quinlan Company. (See Rew, Madison, assignor.) | | | | | | |
| Chambers, Thomas R., Brooklyn, N. Y. Combined jumper and apron | 502,113 | July 25 | 2592 | 632 | 64 | 504 |
| Chandler, John A., assignor of one-half to N. D. Waters, Kansas City, Mo. Vapor-burner | 505,508 | Sept. 26 | 1981 | 508 | 64 | 1681 |
| Chandler, Walter A., Lowell, assignor to G. Draper & Sons, Hopedale, Mass. Bearing for spindles | 505,786 | Sept. 26 | 2481 | 696 | 64 | 1776 |
| Chaney, Nathan P., Buffalo, N. Y. Mattress | 505,649 | Sept. 26 | 2258 | 572 | 64 | 1735 |
| Chanute, Arthur, Denver, Colo. Extracting metals from compound ores | 501,559 | July 18 | 1633 | ..... | 64 | 330 |
| Chapin, Daniel A., Boston, Mass. Mandrel for combined railway chairs and fish-plates | 501,989 | July 25 | 2321 | 577 | 64 | 467 |
| Chapman, Arthur L., Theresa, N. Y. Cane-stool | 504,326 | Sept. 5 | 20 | 6 | 64 | 1275 |
| Chapman, Charles H., Groton, Mass. Ring for spinning-machines | 501,243 | July 11 | 1130 | 287 | 64 | 220 |
| Chapman, Edward E., Boston, Mass. Curling-iron holder | 502,456 | Aug. 1 | 348 | 83 | 64 | 630 |
| Chapman, George T., assignor to W. H. Merritt, New York, N. Y. Vehicle-spring | 503,761 | Aug. 22 | 2531 | 629 | 64 | 1073 |
| Chapman, William H., Bradford, Ark. Quilting attachment for sewing-machines | 504,558 | Sept. 5 | 411 | 105 | 64 | 1346 |
| Chappell, George F., New York, N. Y. Rotary water-meter | 502,247 | July 25 | 2751 | {695 696} | 64 | 548 |
| Chappell, George H., assignor to New Power Company, New York, N. Y. Apparatus for using gases under high pressure for power | 505,028 | Sept. 12 | 1182 | {303 304 305} | 64 | 1507 |
| Charcot, Frank, Paterson, N. J. Jacquard mechanism for looms | 500,852 | July 4 | 505 | 131 | 64 | 92 |
| Charlton, Frank B. (See Hovell, Thomas M., assignor.) | | | | | | |
| Charlton, Thomas. (See Vail and Charlton.) | | | | | | |
| Charnock, John M., Boston, Mass., assignor to H. E. Holmes. Leather-stretching machine | 501,920 | July 25 | 2225 | {555 556} | 64 | 448 |
| Chas. Truax Greene & Company. (See Scheffer, David M., assignor.) | | | | | | |
| Chase, Henry S., assignor to Waterbury Manufacturing Company, Waterbury, Conn. Filling-nipple and cap | 504,150 | Aug. 29 | 3137 | 784 | 64 | 1205 |
| Chase, James, Rochester, N. Y. Dish-drainer | 503,278 | Aug. 15 | 1736 | 429 | 64 | 912 |
| Chase, Joseph E. (See Moore, Morris W., assignor.) | | | | | | |
| Chase, Milton, and M. H. Foster, Haverhill, Mass. Heel-stiffener machine | 504,327 | Sept. 5 | 22 | 7, 8 | 64 | 1275 |
| Chatillon, George H., New York, N. Y. Spring-scale | 505,091 | Sept. 19 | 1301 | 335 | 64 | 1543 |
| Chatillon, George H., New York, N. Y. Compound spring | 505,092 | Sept. 19 | 1301 | 335 | 64 | 1543 |
| Chatterton, Bertram, London, England. Gas or vapor engine | 505,751 | Sept. 26 | 2423 | {611 612} | 64 | 1764 |
| Chauncey, Charles T., assignor of one-half to H. Peters, Woodbridge, Canada. Perforating attachment for printing-presses | 505,623 | Sept. 26 | 2200 | 556 | 64 | 1734 |
| Chavasse, James J., assignor of two-thirds to G. Bengough and A. J. Phillips, Toronto, Canada. Power filling-machine | 501,055 | July 11 | 821 | 214 | 64 | 165 |
| Cheadle, Charles B., *et al.* (See Long and Dimick, assignors.) | | | | | | |
| Cheesman, George R., Auburn, N. Y. Bicycle-crank shield | 504,121 | Aug. 29 | 3088 | 773 | 64 | 1196 |
| Cheever, John D., New York, N. Y., assignor to New York Belting and Packing Company, Limited, of England. Treating fibrous materials for preserving same | 504,199 | Aug. 29 | 3225 | ..... | 64 | 1222 |
| Chelius, Peter, Trout Creek, N. Y. Sled-brake | 505,391 | Sept. 19 | 1775 | 460 | 64 | 1630 |
| Chemical Garbage Reduction Company. (See Best and Hall, assignors.) | | | | | | |
| Chemische Fabrik auf Actien, vormals E. Schering. (See Majert and Schmidt, assignors.) | | | | | | |
| Chemische Fabrik auf Actien, vormals E. Schering. (See Marckwald, Willy, assignor.) | | | | | | |
| Cheney, Henry O., Hopkinton, assignor of one-third to C. F. Pike, Woodville, Mass. Plow | 502,877 | Aug. 8 | 1070 | 264 | 64 | 778 |
| Cheney, Cummings C., assignor to Stanley Laboratory Company, Pittsfield, Mass. Electric-lighting system | 502,702 | Aug. 8 | 800 | 193 | 64 | 727 |
| Cheshire, Edward. (See Reynolds and Cheshire.) | | | | | | |
| Chetwynd, Julia B., London, England. Balcony-hoist | 501,455 | July 11 | 1470 | 369 | 64 | 283 |
| Chicago Clamp Company. (See Dana, William H., assignor.) | | | | | | |
| Chicago Matrix Machine Company. (See Redfield, Casper L., assignor.) | | | | | | |
| Chicago Meat Chopper Company. (See Leineweber, Herman, assignor.) | | | | | | |
| Chicago Railway Equipment Company. (See Robischung, Henry B., assignor.) | | | | | | |
| Chief Manufacturing Company. (See Teeguarden, Freeman M., assignor.) | | | | | | |
| Childs, A. H., *et al.* (See Curry, James H., assignor.) | | | | | | |
| Childs, J. Morris, *et al.* (See Savage, Arthur W., assignor.) | | | | | | |
| Chilson, Willis E., Lorain, Ohio. Dredging apparatus | 501,492 | July 18 | 1524 | 383 | 64 | 308 |
| Chilton, William S., Dayton, Ohio. Hydrocarbon-burner for stoves, furnaces, &c | 504,667 | Sept. 5 | 569 | 144 | 64 | 1377 |
| Chipman, Robert J., assignor of one-half to C. P. Cramer, Paterson, N. J. Artesian well | 503,651 | Aug. 22 | 2353 | 587 | 64 | 1038 |
| Chisholm, Charles A., Gardeau, Pa. Combined mop and wringer | 502,657 | Aug. 1 | 688 | 165 | 64 | 692 |
| Choen, Wolf, assignor of one-half to S. Zemelman, St. Louis, Mo. Machine for pressing garments | 501,327 | July 11 | 1264 | 317 | 64 | 342 |
| Chormann, Alvin W., Washington, Pa. Station-indicator | 501,477 | July 11 | 1501 | 378 | 64 | 288 |
| Christ, Jacob, Brooklyn, assignor, by mesne assignments, of one-half to C. Obl and W. D. Stewart, New York, N. Y. Folding bed | 504,328 | Sept. 5 | 26 | 8 | 64 | 1276 |
| Christ, Willi, Detroit, Mich. Broom-holder | 502,033 | July 25 | 2306 | 603 | 64 | 480 |
| Christensen, Christian N. (See Anderson, Victor, assignor.) | | | | | | |
| Christensen, Emil, assignor of one-half to I. Wisler, Portland, Oreg. Machine for connecting button shanks and fasteners | 500,993 | July 4 | 721 | {189 190} | 64 | 131 |
| Christensen, Niels A., Chicago, Ill. Condensing apparatus | 502,922 | Aug. 8 | 1158 | 285 | 64 | 794 |
| Christmas, A. J. (See Williams, James G., assignor.) | | | | | | |
| Chubb, Daniel. (See Bronson and Chubb.) | | | | | | |
| Chubbuck, Elton F., Haskinville, N. Y. Potato-planter | 503,695 | Aug. 22 | 2423 | 603 | 64 | 1051 |
| Clabby, James, assignor of one-half to F. Miller, Jeannette, Pa. Combined flattening and annealing oven | 505,418 | Sept. 19 | 1823 | {469 470} | 64 | 1639 |
| Clahassey, William G., Lenox, Mass. Two-part horseshoe | 502,848 | Aug. 8 | 1028 | 252 | 64 | 770 |
| Clair, Maurice, *et al.* (See Ford, Charles S., Sr., assignor.) | | | | | | |
| Clamer, George F. S., assignor to Stewart & Mattson Manufacturing Company, Philadelphia, Pa. Bell-cord hanger for railway-cars | 503,406 | Aug. 15 | 1942 | 482 | 64 | 949 |
| Clapp, William H., Auburn, N. Y. Grindstone | 504,329 | Sept. 5 | 28 | 9 | 64 | 1276 |
| Clark, Archibald D., *et al.* (See Byrd, Walter M., assignor.) | | | | | | |
| Clark, Charles A., Portland, Oreg. Street-sprinkler | 500,853 | July 4 | 507 | 132 | 64 | 93 |
| Clark, Charles E., Rochester, N. H. Exhaust fan or blower | 501,407 | July 11 | 1408 | 353 | 64 | 270 |
| Clark, Charles H., *et al.* (See Beecher, Edwin N., assignor.) | | | | | | |
| Clark, Chester W., Mishawaka, Ind. Boot tree | 501,133 | July 11 | 961 | 245 | 64 | 190 |
| Clark, Eli P. (See Field and Clark.) | | | | | | |
| Clark, Francis L., Wilkinsburg, assignor to Westinghouse Air Brake Company, Pittsburg, Pa. Engineer's brake-valve. (Reissue) | 11,368 | Sept. 26 | 2516 | {635 636 637} | 64 | 1782 |
| Clark, Frank W., Mount Desert, Me. Motor | 503,829 | Aug. 22 | 2618 | 654 | 64 | 1090 |
| Clark, Henry A. (See Lombard, Nathaniel, assignor.) | | | | | | |
| Clark, Henry H., *et al.* (See Beecher, Edwin N., assignor.) | | | | | | |
| Clark, Henry J., assignor of one-half C. L. Denneler, Ironton, Ohio. Fire-escape | 503,365 | Aug. 15 | 1892 | 469 | 64 | 940 |



*Alphabetical list of patentees, July to September, inclusive*—Continued.

| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drg. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Clark, John T., New York, N. Y. Mailing-envelope | 504,560 | Sept. 5 | 413 | 105 | 64 | 1347 |
| Clark, John W., Menands, assignor of one-half to S. J. Haight, Albany, N. Y. Electric trolley-wheel | 503,562 | Aug. 15 | 2193 | 548 | 64 | 995 |
| Clark, Joseph, San Francisco, Cal. Exploder for projectiles | 502,348 | Aug. 1 | 164 | 38 | 64 | 596 |
| Clark, Lewis M., *et al.* (See Campbell, Carl T., assignor.) | | | | | | |
| Clark, Mary E., Corning, N. Y. Glass-fruit-jar protector | 502,951 | Aug. 8 | 1206 | 297 | 64 | 802 |
| Clark, Nathaniel T., and J. K. Haynie, Sherman Heights, Tenn. Nut and bolt lock | 503,195 | Aug. 15 | 1605 | 394 | 64 | 989 |
| Clark, Richard J. (See Dotson, John W., assignor.) | | | | | | |
| Clark, Thomas E., Des Moines, Iowa. Rein-support | 502,703 | Aug. 8 | 801 | 193 | 64 | 727 |
| Clark, Thomas H. (See Brooke, William E., assignor.) | | | | | | |
| Clark, William, North Greenfield, Wis. Type-writing machine | 500,798 | July 4 | 425 | 112 | 64 | 78 |
| Clark, William D., *et al.* (See Byrd, Walter M., assignor.) | | | | | | |
| Clark, William H., Star City, Ind. Combined end-gate and scoop-board | 502,067 | July 25 | 2448 | 615 | 64 | 490 |
| Clarke, Charles C., Scranton, Pa., assignor to L. C. Smith, Syracuse, N. Y. Type-writing machine | 502,248 | July 25 | 2753 | 696 | 64 | 548 |
| Clarke, Charles W., Hanford, Cal. Windmill | 503,632 | Aug. 22 | 2354 | 588 | 64 | 1038 |
| Clarke, Edward H., Lynn, assignor of one-half to S. Eaton, Boston, Mass. Cleat for insulated wires | 502,614 | Aug. 1 | 611 | 146 | 64 | 678 |
| Clarke, Greville E., Racine, Wis. Letter-press | 505,093 | Sept. 19 | 1303 | {335 336} | 64 | 1543 |
| Clarke, Thomas C., New York, N. Y. Cantalever-bridge | 504,559 | Sept. 5 | 412 | 105 | 64 | 1346 |
| Clause, John J., Chicago, Ill. Rotary web-printing machine | 501,921 | July 25 | 2228 | 556 | 64 | 449 |
| Claussen, Edward E., Hartford, Conn., assignor to Union Paper Bag Machine Company, Philadelphia, Pa. Paper-bag machine | 502,847 | Aug. 8 | 1026 | {251 252} | 64 | 770 |
| Claussen, Edward E., assignor of one-half to E. F. Linke and G. Mortson, Hartford, Conn. Screw-machine | 502,923 | Aug. 8 | 1160 | {285 286} | 64 | 795 |
| Claussen, Edward E., assignor of one-half to E. F. Linke and G. Mortson, Hartford, Conn. Screw-machine | 504,102 | Aug. 29 | 3060 | {765 766} | 64 | 1191 |
| Clawson, Leonard E., San Francisco, Cal. Chimney | 502,901 | Aug. 8 | 1117 | 275 | 64 | 787 |
| Claxton, James W., Barren Fork, Ark. Tanning hides | 501,586 | July 18 | 1671 | ..... | 64 | 337 |
| Clayton, Herbert, New York, N. Y. Sad-iron | 500,854 | July 4 | 508 | 132 | 64 | 93 |
| Clayton, Herbert D., Hill City, Kans. Register for printing-presses | 503,452 | Aug. 15 | 2008 | 498 | 64 | 960 |
| Cleaveland, Charles F. (See Greene, Thomas C., assignor.) | | | | | | |
| Cleghorn, James, Port Chalmers, New Zealand. Steam-boiler furnace | 505,094 | Sept. 19 | 1305 | 336 | 64 | 1543 |
| Clemmer, Ambrose B., *et al.* (See Bisel, Joseph J., assignor.) | | | | | | |
| Clèret, Jules, assignor to J. Clèret Pearl Button Manufacturing Company, Philadelphia, Pa. Mechanism for turning pearl buttons or other articles | 501,922 | July 25 | 2229 | 556 | 64 | 449 |
| Cleveland Faucet Company. (See Grossman, Lawrence S., assignor.) | | | | | | |
| Cleveland, Henry B., and W. E. Tuller, Prophetstown, Ill. Horse-blanket | 502,508 | Aug. 1 | 438 | 105 | 64 | 647 |
| Clifford, Robert H., *et al.* (See Armstrong, Alfred, assignor.) | | | | | | |
| Climer, Frank O., assignor of one-half to M. S. Tousey, Anderson, Ind. Flexible blade | 505,189 | Sept. 19 | 1449 | 373 | 64 | 1569 |
| Climer, Henry J., Anna, Ill. Folding step | 504,966 | Sept. 12 | 1087 | 278 | 64 | 1489 |
| Cline, George J., Goshen, Ind. Wire-tightener | 505,029 | Sept. 12 | 1189 | 305 | 64 | 1509 |
| Cloud, John W., Chicago, Ill. Exhaust for steam-engines | 505,190 | Sept. 19 | 1451 | 373 | 64 | 1569 |
| Cloudman, Josiah D., assignor of one-half to E. W. Thomas, Lowell, Mass. Cloth-napping machine | 505,264 | Sept. 19 | 1561 | 408 | 64 | 1591 |
| Clowes, Frank, Nottingham, and B. Redwood, assignor of part to S. Waters, London, England. Apparatus for estimating the quantity of combustible gas or vapor present in air | 502,173 | July 25 | 2021 | 601 | 64 | 461 |
| Cloyd, Henry C., Union City, Ind. Excelsior-machine | 505,752 | Sept. 26 | 2424 | 612 | 64 | 1764 |
| Cloyd, Samuel P., Trezevant, Tenn. Coop | 505,439 | Sept. 26 | 1860 | {478 479} | 64 | 1660 |
| Coad, Theophilus, London, England. Electric primary battery | 505,392 | Sept. 19 | 1776 | 460 | 64 | 1630 |
| Cobb, Woodson D., Fort Worth, Tex. Thill-coupling | 501,923 | July 25 | 2231 | 557 | 64 | 450 |
| Coburn, John G., Carthage, assignor of one-half to A. P. Marsh, Dixfield, Me. Axle-lubricator | 505,265 | Sept. 19 | 1563 | 408 | 64 | 1591 |
| Cochran, Frederic B., Brooklyn, N. Y. Apparatus for distributing advertisements | 502,396 | Aug. 1 | 245 | 58 | 64 | 610 |
| Cochran, Henry, Chester, Pa. End panel for car-seats | 503,653 | Aug. 22 | 2356 | 588 | 64 | 1039 |
| Cocken, William Y., Tiffin, Ohio. Bicycle | 505,753 | Sept. 26 | 2426 | 613 | 64 | 1765 |
| Cody, Alfred E., Sweaborg, assignor of one-half to R. Cuddie, Woodstock, Ontario, Canada. Wire fence | 504,709 | Sept. 12 | 652 | 165 | 64 | 1405 |
| Coffin, Charles A., *et al.*, executors. (See Van Depoele, Charles J.) | | | | | | |
| Coffin, Charles L., Detroit, Mich. Method of and apparatus for heating, welding, or working metals electrically | 501,825 | July 18 | 2039 | 507 | 64 | 404 |
| Cohen, Henry, and J. W. Tharp, Memphis, Tenn. Nut-lock | 504,561 | Sept. 5 | 416 | 106 | 64 | 1347 |
| Cokeley, John J. H., Long Island City, N. Y. Fluid-mixer | 501,182 | July 11 | 1039 | 263 | 64 | 204 |
| Colahan, Charles, Cleveland, Ohio. Grain-binder | 500,738 | July 4 | 331 | 88 | 64 | 62 |
| Colbath, Monroe D., Mars Hill, Me. Dish-cleaner | 505,191 | Sept. 19 | 1452 | 373 | 64 | 1569 |
| Colby, Edward J., assignor to E. Y. Loomis, Chicago, Ill. Coffee-pot | 503,563 | Aug. 15 | 2194 | 548 | 64 | 995 |
| Coldwell, Thomas, Newburg, N. Y. Metal-turning lathe | 500,753 | July 4 | 356 | 93 | 64 | 66 |
| Coldwell, Thomas, Newburg, N. Y. Clutch-operating mechanism for lawn-mowers | 504,330 | Sept. 5 | 30 | 9 | 64 | 1276 |
| Cole, Francis B., O'Neill, Nebr. Hydraulic motor | 504,331 | Sept. 5 | 31 | 9 | 64 | 1277 |
| Cole, Francis J., Baltimore, Md. Brake-beam for railway-cars | 503,263 | Aug. 15 | 1711 | {421 422} | 64 | 908 |
| Cole, John H., Tylertown, Miss. Double turning shovel and colter | 503,123 | Aug. 15 | 1489 | 366 | 64 | 867 |
| Cole, John M., Cleveland, Ohio. Joiner's plane | 504,562 | Sept. 5 | 417 | 106 | 64 | 1347 |
| Cole, Leander S., Kingston, Mass. Fishing-reel | 505,216 | Sept. 19 | 1491 | 369 | 64 | 1577 |
| Cole, Stanton B. (See Moore, Harry S., assignor.) | | | | | | |
| Coleman, Isaiah B., Elmira, N. Y. Elevator hoisting apparatus | 505,592 | Sept. 26 | 2160 | 546 | 64 | 1716 |
| Coles, George A. (See Andrews, Edward N., assignor.) | | | | | | |
| Colgrove, James, Clear Water, Minn. Seed-potato cutter | 505,095 | Sept. 19 | 1306 | {336 337} | 64 | 1544 |
| Coller, Barzellea J., Detroit, Mich. Boiler | 500,855 | July 4 | 510 | 133 | 64 | 94 |
| Collins, Caleb G., Woodsburg, assignor to C. A. Stevens, New York, N. Y. Dredging apparatus | 501,870 | July 18 | 2121 | {524 525 526} | 64 | 415 |
| Collins, John R. (See O'Grady and Collins.) | | | | | | |
| Collins, Judith L., Monongahela City, Pa. Educational appliance | 501,675 | July 18 | 1823 | 454 | 64 | 302 |
| Collins Plow Company. (See Brown and Gehrt, assignors.) | | | | | | |
| Collmann, Alfred, Vienna, Austria-Hungary. Valve-gear | 502,615 | Aug. 1 | 612 | {146 147} | 64 | 678 |
| Colt, James B., New York, N. Y. Lamp-burner | 502,704 | Aug. 8 | 802 | 193 | 64 | 727 |
| Colton, George A., assignor to Munger-Colton Manufacturing Company, Chicago, Ill. Door-hanger | 502,705 | Aug. 8 | 803 | 194 | 64 | 728 |

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| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drg. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Columbian Lasting Machine Company. (See Preston, Albert F., assignor.) | | | | | | |
| Columbian Register Company. (See Bersbach and Zietlow, assignors.) | | | | | | |
| Colvin, Frank R., New York, N. Y. System of telephonic intercommunication | 502,091 | July 25 | 2498 | 625, 626 | 64 | 498 |
| Colvin, Frank R., New York, N. Y. System of telephonic intercommunication | 504,103 | Aug. 29 | 3064 | 767 | 64 | 1192 |
| Compress Wheel Company. (See Todd, Libanus M., assignor.) | | | | | | |
| Compton, J. W. (See Tilmah, Joseph M., assignor.) | | | | | | |
| Conard, Daniel W., Waterloo, Iowa. Fly-brush | 503,945 | Aug. 29 | 2792 | 700 | 64 | 1141 |
| Concannon, Thantus P., Winamac, Ind. Ditching-machine | 503,036 | Aug. 8 | 1338 | 330 | 64 | 827 |
| Condell, J. S., Jr. (See Webster, Augustus D., assignor.) | | | | | | |
| Condon, Lewis T., Stamwick, N. J. Coin purse or case | 505,192 | Sept. 19 | 1453 | 374 | 64 | 1570 |
| Congdon Brake Shoe Company. (See Sargent, Fitz William, assignor.) | | | | | | |
| Conklin, Joseph L., Brooklyn, N. Y. Electric conduit for railways | 504,104 | Aug. 29 | 3066 | 767 | 64 | 1192 |
| Conkling, Gurdon, Glens Falls, N. Y. Concentrating magnetic iron ores | 504,200 | Aug. 29 | 3226 | 804 | 64 | 1222 |
| Conkling, Gurdon, Glens Falls, N. Y. Concentrating magnetic iron ore | 504,201 | Aug. 29 | 3228 | 804 | 64 | 1222 |
| Conrady, Eugen, Morganton, N. C. Steam-engine governor | 503,785 | Aug. 29 | 2563 | 638 | 64 | 1080 |
| Consolidated Car-Heating Company. (See McElroy, James F., assignor.) | | | | | | |
| Consolidated Fastener Company. (See Hall, Frank E., assignor.) | | | | | | |
| Consolidated Fastener Company. (See Kraetzer, Edwin J., assignor.) | | | | | | |
| Consolidated Fastener Company. (See Smith Joseph R., assignor.) | | | | | | |
| Consolidated Railway Supply Company. (See Graham, John H., assignor.) | | | | | | |
| Conver, William H., Emlenton, assignor of two-thirds to A. C. and J. D. Bailey, Ford City, Pa. Pipe or nut wrench | 503,194 | Aug. 15 | 1489 | 366 | 64 | 867 |
| Conway, Harrison V., assignor of one-half to I. N. Throckmorton, Boone, Iowa. Axle-lubricator | 503,074 | Aug. 8 | 1291 | 343, 344 | 64 | 836 |
| Cook, Hugo, Dayton, Ohio. Cash register and indicator | 503,946 | Aug. 29 | 2793 | 700, 701, 702 | 64 | 1142 |
| Cook, Hugo, Dayton, Ohio. Cash register and recorder | 503,947 | Aug. 29 | 2800 | 702, 703 | 64 | 1144 |
| Cook, Hugo, Dayton, Ohio. Autographic register | 504,467 | Sept. 5 | 250 | 65, 66 | 64 | 1316 |
| Cook, Irving J., Newark, N. J. Eelectric-railway conduit | 501,676 | July 18 | 1824 | 454 | 64 | 363 |
| Cook, Leroy, Worcester, Mass. Rolling-mill plant | 503,830 | Aug. 22 | 2619 | 654, 655 | 64 | 1090 |
| Cook, Stephen S., assignor to Branson Machine Company, Philadelphia, Pa. Sinker or web-holder for knitting-machines | 504,967 | Sept. 12 | 1088 | 278 | 64 | 1490 |
| Cook, Theodore A., Callicoon Depot, assignor to J. and W. Mathison, Brooklyn, N. Y. Shaft and bearing | 501,611 | July 18 | 1714 | 427 | 64 | 345 |
| Cook, William H., Montclair, N. J. Folding paper box | 504,824 | Sept. 12 | 852 | 218 | 64 | 1443 |
| Cooke, Albert D., Philadelphia, Pa. Bedstead | 503,196 | Aug. 15 | 1606 | 394 | 64 | 889 |
| Coomba, Pierre L. B. (See Finck, Nicholas, assignor.) | | | | | | |
| Coons, James P., Scottaville, Ill. Fire-escape | 501,990 | July 25 | 2222 | 580 | 64 | 497 |
| Cooper, John, and T. Pattinson, Sheffield, England. Piston | 501,580 | July 18 | 1635 | 409 | 64 | 330 |
| Cooper, John W., Matawan, N. J. Car-truck | 503,831 | Aug. 22 | 2621 | 655 | 64 | 1091 |
| Cooper, Louis, assignor of one-half to J. A. Reid, Bolling, Ala. Cotton-harvester | 504,019 | Aug. 29 | 2927 | 733 | 64 | 1165 |
| Cooper, Lyman, Patoka, Ind. Sawing-machine | 501,826 | July 18 | 2060 | 508 | 64 | 404 |
| Cooper, William, Minneapolis, Minn. Pneumatic hydraulic locomotive | 504,668 | Sept. 5 | 570 | 145 | 64 | 1377 |
| Cooper, William, Minneapolis, Minn. Pneumatic hydraulic locomotive | 504,669 | Sept. 5 | 575 | 145 | 64 | 1378 |
| Cooper, William, Minneapolis, Minn. Hydropneumatic motor | 504,670 | Sept. 5 | 577 | 145, 146, 147, 148, 149 | 64 | 1379 |
| Cope, George W., assignor to Art Stove Company, Detroit, Mich. Oil heating-stove | 504,020 | Aug. 29 | 2929 | 734 | 64 | 1166 |
| Copeland, George W. (See Crisp and Copeland.) | | | | | | |
| Copeland, George W. (See Crisp, Copeland, and Barrett.) | | | | | | |
| Copeland Rapid Laster Manufacturing Company. (See Crisp, Joseph E., assignor.) | | | | | | |
| Copeland Rapid Laster Manufacturing Company. (See Crisp and Copeland, assignors.) | | | | | | |
| Corbett, Edwin R., New York, N. Y. Bicycle | 501,056 | July 11 | 825 | 214 | 64 | 166 |
| Cordenons, Federico, Padua, Italy. Gas-engine | 500,754 | July 4 | 358 | 93 | 64 | 66 |
| Corker, John F., Salt Lake City, Utah Ter. Gravity-helmet | 500,686 | July 4 | 348 | 67 | 64 | 47 |
| Corkhill, Henry R., Jr. (See McBean, McLaughlin, Corkhill, and Baxter.) | | | | | | |
| Corleis, Ehrenfried, and H. Reniach, assignors to Firm of F. Krupp, Essen, Germany. Manufacture of carbon rods for electric-arc lamps | 504,105 | Aug. 29 | 3067 | ..... | 64 | 1192 |
| Corliss, Charles P., Elgin, assignor to Elgin National Watch Company, Chicago, Ill. Stem winding and setting watch | 503,527 | Aug. 15 | 2130 | 535 | 64 | 993 |
| Cornely, Emile and R., Paris, France. Overseaming sewing-machine | 501,057 | July 11 | 827 | 215 | 64 | 166 |
| Cornely, Emile and R., Paris, France. Embroidering-machine | 501,704 | July 18 | 1870 | 465, 466 | 64 | 371 |
| Cornely, Emile and R., Paris, France. Embroidering-machine | 504,332 | Sept. 5 | 33 | 10 | 64 | 1277 |
| Cornely, Robert. (See Cornely, Emile and R.) | | | | | | |
| Cornely, Robert, Paris, France. Embroidering-machine | 503,229 | Aug. 15 | 1660 | 408 | 64 | 901 |
| Cornish, Harry B., Hampton, Iowa. Carburetor | 505,700 | Sept. 26 | 2346 | 594 | 64 | 1750 |
| Cornog, William E., Philadelphia, Pa. Hydrant and faucet | 502,349 | Aug. 1 | 167 | 39 | 64 | 597 |
| Cornwall, John B., Moline, Ill. Grading and excavating machine | 504,300 | Aug. 29 | 3303 | 846 | 64 | 1252 |
| Corscaden, Thomas, and F. Holland, assignors to Stanley Works, New Britain, Conn. Hinge | 502,706 | Aug. 8 | 804 | 194 | 64 | 728 |
| Corser, Lorenzo D., assignor of one-half to V. S. Barker, Ebensburg, Pa. Harrow-tooth | 504,447 | Sept. 5 | 212 | 56 | 64 | 1310 |
| Cosby, Anderson B., Richmond, Va. Tobacco-wringing machine | 501,328 | July 11 | 1266 | 317 | 64 | 243 |
| Cosby, Anderson B., assignor of two-thirds to M. M. Strause and S. Proskauer, Richmond, Va. Steam-boiler furnace | 502,616 | Aug. 1 | 613 | 147 | 64 | 679 |
| Cosby, Anderson B., assignor of two-thirds to M. M. Strause and S. Proskauer, Richmond, Va. Steam-boiler furnace | 502,617 | Aug. 1 | 615 | 147 | 64 | 679 |
| Coté, Alphonse, Brooklyn, N. Y. Apparatus for treating sprung legs in horses | 502,849 | Aug. 8 | 1029 | 253 | 64 | 771 |
| Coté, Louis J. (See Frost, Walter E., assignor.) | | | | | | |
| Cotter, Thomas R., *et al.* (See Crackel, William H., assignor.) | | | | | | |
| Cottis, Crispus, Epping, England. Horse-hoe | 505,349 | Sept. 19 | 1700 | 438, 439 | 64 | 1616 |
| Cotton, James M., Ashland, N. H. Hat-holder and coat-hook | 501,329 | July 11 | 1268 | 318 | 64 | 243 |
| Couch, Edwin A., Plainfield, N. J. Wheel-cultivator | 500,799 | July 4 | 427 | 112 | 64 | 79 |
| Couch, Levi J., Boston, Mass. Safety device for cars | 504,076 | Aug. 29 | 3011 | 750 | 61 | 1161 |
| Couchois, Garrett J., Chicago, Ill. Agraffe for pianos | 500,562 | July 4 | 41 | 12, 13 | 64 | 9 |
| Coultas, James W., Havana, Ill. Spring-hinge | 505,193 | Sept. 19 | 1454 | 374, 375 | 64 | 1570 |
| Coulter, William B., Waterbury, Conn. Holder for sending coins by mail | 500,800 | July 4 | 428 | 112 | 64 | 79 |



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| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drg. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Council, Clifford, Sherman, Ill. Marker for corn-planters | 505,266 | Sept. 19 | 1564 | 408 | 64 | 1591 |
| Coupland, Benjamin C., and F. T. Hough, Rusk, Tex. Cart-scale | 502,810 | Aug. 8 | 961 | 234 | 64 | 758 |
| Courtet, Jean B., Romans, France. Riveting-machine | 500,755 | July 4 | 360 | 94 | 64 | 67 |
| Courtin, Louis E., Paris, France. Clock striking mechanism | 503,310 | Aug. 15 | 1800 | 447 | 64 | 922 |
| Courtney, William P., assignor of one-half to A. Brown, Oakland, Cal. Grip-opener | 501,764 | July 18 | 1976 | 488 | 64 | 389 |
| Cousins, Robert J. (See Flower and Cousins.) | | | | | | |
| Cousy, Constant, New York, N. Y. Car-coupling | 501,871 | July 18 | 2136 | 506 | 64 | 415 |
| Coutant, Chauncey M., Crawfordsville, Ind. Buggy-body | 501,924 | July 25 | 2222 | 557 | 64 | 450 |
| Covert, George J., G. W. and I. L. Price, Penn Yan, N. Y. Machine for grinding spokes | 502,174 | July 25 | 2622 | 661 | 64 | 462 |
| Covert, James C. (See Cramer, John W., assignor.) | | | | | | |
| Cove, Joseph T., Fall River, assignor to G. Draper & Sons, Hopedale, Mass. Sleeve-whirl spindle | 502,225 | July 25 | 2704 | 682 | 64 | 540 |
| Cowan, Robert J. (See Moon, Richard D., assignor.) | | | | | | |
| Cowan, William G., *et al.* (See Crackel, William H., assignor.) | | | | | | |
| Cowen, Enck. (See Fogarty, Thomas B., assignor.) | | | | | | |
| Cowing, William J., *et al.* (See Todd, Matthew, assignor.) | | | | | | |
| Cowl, Robert R., South Melbourne, Victoria. Sash-balance | 500,756 | July 4 | 362 | 94 | 64 | 67 |
| Cowles, George B., New Britain, Conn. Manufacture of key-blanks | 505,440 | Sept. 26 | 1862 | 479 | 64 | 1660 |
| Cowley, James T., Lowell, Mass. Pattern-maker's scale | 503,528 | Aug. 15 | 2132 | 535 | 64 | 984 |
| Cowley, James T., Lowell, Mass., assignor to Lamson Consolidated Store Service Company, Boston, Mass. Store-service apparatus | 502,279 | Aug. 1 | 25 | 6 | 64 | 571 |
| Cowley, James T., Lowell, Mass., assignor, by mesne assignments, to National Cash Register Company, Dayton, Ohio. Cash-register | 505,194 | Sept. 19 | 1456 | 375, 376, 377 | 64 | 1570 |
| Cowperthwait, John W., assignor of one-half to H. Martini, St. Louis, Mo. Parlor gas-furnace | 502,658 | Aug. 1 | 689 | 165 | 64 | 692 |
| Cox, Benjamin F., and J. Fahey, St. Joseph, Mo. Screw-jack | 500,757 | July 4 | 364 | 94 | 64 | 68 |
| Cox, Cary S., Spottswood, Cal. Pump | 500,856 | July 4 | 511 | 133 | 64 | 93 |
| Cox, James B., Brooklyn, assignor of two-thirds to G. B. and F. B. Hurd, New York, N. Y. Thaumatrope | 503,927 | Aug. 22 | 2762 | 692 | 64 | 1119 |
| Cox, John B., Fayetteville, Ark. Barber's cabinet | 505,030 | Sept. 12 | 1190 | 306 | 64 | 1509 |
| Cox, Joseph L., assignor to Duplex Printing Press Company, Battle Creek, Mich. Web-looping mechanism for printing-presses | 501,456 | July 11 | 1472 | 369 | 64 | 293 |
| Cox, Joseph L., assignor to Duplex Printing Press Company, Battle Creek, Mich. Inking apparatus for printing-presses | 502,618 | Aug. 1 | 617 | 148 | 64 | 679 |
| Cox, Peter L., Boston, Mass. Sewing-machine | 504,911 | Sept. 12 | 992 | 255, 256 | 64 | 1472 |
| Cox, Samuel E., Cleveland, Ohio. Drum | 504,910 | Sept. 12 | 991 | 255 | 64 | 1472 |
| Coyle, Thomas J., *et al.* (See Dobbins and McKenney, assignors.) | | | | | | |
| Crabtree, Richard, and E. Gillow, Bolton, England. Spinning and doubling spindle | 500,857 | July 4 | 512 | 133, 134 | 64 | 93 |
| Crackel, William H., Saginaw, Mich., assignor of five-sixths to W. G. Cowan, T. R. Cotter, W. G. Van Auken, and A. P. Bliss. Car-coupling | 504,021 | Aug. 29 | 2930 | 734 | 64 | 1166 |
| Craig, David, Macleay, Oreg. Hop-trellis | 501,991 | July 25 | 2323 | 580 | 64 | 467 |
| Craig, Isaac E., Troy, Ohio. Manufacturing sheet metal | 501,705 | July 18 | 1872 | ..... | 61 | 371 |
| Craig, Lee D., San Francisco, Cal. Removable side wall for cars | 501,677 | July 18 | 1825 | 454 | 64 | 363 |
| Craig, William, Brooklyn, N. Y. Double-acting pump | 505,441 | Sept. 26 | 1862 | 479 | 64 | 1660 |
| Cram, William H., Penawawa, Wash. Spring-gun | 501,765 | July 18 | 1977 | 489 | 64 | 389 |
| Cramer, Cyrus P. (See Chipman, Robert J., assignor.) | | | | | | |
| Cramer, John W., assignor to J. C. Covert, West Troy, N. Y. Machine for rolling soldering-irons | 502,280 | Aug. 1 | 27 | 6 | 64 | 571 |
| Crandall, Hosea B., Brockton, N. Y. Bed-bottom | 501,827 | July 18 | 2061 | 508 | 64 | 404 |
| Crane, Charles E. (See Rowe, Joshua N., assignor.) | | | | | | |
| Crane Company. (See Doolittle, William W., assignor.) | | | | | | |
| Crane Company. (See Doolittle, William W., assignor.) (Reissue.) | | | | | | |
| Crane Company. (See Hayden, James T., assignor.) | | | | | | |
| Crane Company. (See Synnestvedt, Paul, assignor.) | | | | | | |
| Crane, David G. (See Dow and Crane.) | | | | | | |
| Crane, Edwin F., Batavia, N. Y. Tray-board | 501,204 | July 11 | 1071 | 272 | 64 | 211 |
| Crane, Richard T., Chicago, Ill. Elevator-door | 504,864 | Sept. 12 | 917 | 237 | 64 | 1457 |
| Crane, Wade O., Sykeston, N. D. Copy-holder | 504,414 | Sept. 5 | 165 | 44 | 64 | 1301 |
| Craney, Thomas, Bay City, Mich. Electrolytic cell | 504,774 | Sept. 12 | 771 | 194 | 64 | 1428 |
| Cranston, George E. (See Fairbanks, Crawford M., assignor.) | | | | | | |
| Craver, Charles F. (See Peck, Ezra A., assignor.) | | | | | | |
| Craw, Joseph T., Jersey City, N. J. Paper box | 502,457 | Aug. 1 | 349 | 83, 84 | 64 | 630 |
| Craw, Joseph T., Jersey City, N. J., assignor of one-half to Brown & Bailey, Philadelphia, Pa. Double telescope box | 502,952 | Aug. 8 | 1207 | 297 | 64 | 802 |
| Crawford, Andrew L., Columbus, Ga. Cash register and till | 503,579 | Aug. 22 | 2825 | 558 | 64 | 1016 |
| Crawford, Frank, North Urbana, N. Y. Safe | 502,953 | Aug. 8 | 1209 | 298 | 64 | 803 |
| Crawford, John R., Hewitt, Ala. Fish-trap | 503,197 | Aug. 15 | 1607 | 395 | 64 | 890 |
| Crawford, William A., St. Charles, Minn. Wagon end-gate | 505,566 | Sept. 26 | 2113 | 535 | 64 | 1708 |
| Crepeau, Henry T., Portland, Me. Tether or halter-strap | 502,954 | Aug. 8 | 1211 | 298 | 64 | 803 |
| Creisinger, John J., Davison, Mich. Road-cart | 502,221 | Aug. 1 | 28 | 7 | 64 | 571 |
| Crews, James M., Arlington, Tenn. Tree-protector | 503,948 | Aug. 29 | 2817 | 703 | 64 | 1145 |
| Crigler, Aaron J. (See Elliott and Crigler.) | | | | | | |
| Crippep, Henry M., Athens, Ohio. Combined end-gate and wagon-jack | 501,330 | July 11 | 1269 | 318 | 64 | 243 |
| Crisp, Joseph E., Somerville, Mass., assignor, by mesne assignments, to Copeland Rapid Laster Manufacturing Company, of Maine. Tack-setting machine | 501,872 | July 18 | 2127 | 526, 527, 528 | 64 | 416 |
| Crisp, Joseph E., Somerville, and G. W. Copeland, Malden, Mass., assignors to Copeland Rapid Laster Manufacturing Company, of Maine. Lasting-machine | 501,873 | July 18 | 2132 | 528, 529 | 64 | 416 |
| Crisp, Joseph E., Somerville, G. W. Copeland, Malden, and T. Barrett, Boston, Mass., assignors, by mesne assignments, to Boston Lasting Machine Company, Portland, Me. Tack-driving machine | 505,031 | Sept. 12 | 1192 | 306 | 64 | 1509 |
| Criss, Julia A., Grand Rapids, Mich. Folding chair | 502,175 | July 25 | 2625 | 662 | 64 | 525 |
| Crisson, George A., Tarrytown, N. Y., assignor of one-half to J. N. Dickey, Philadelphia, Pa. Curtain-fixture | 503,037 | Aug. 8 | 1339 | 330 | 64 | 827 |
| Crittenden, Louis S., Hornellsville, N. Y. Wagon running-gear | 502,282 | Aug. 1 | 29 | 7 | 64 | 572 |
| Crittenden, W. B., *et al.* (See Hayward, Jacob L., assignor.) | | | | | | |
| Crocker, John H., Shelburne, Canada. Cornice-brake | 504,710 | Sept. 12 | 654 | 165 | 64 | 1405 |
| Crocker Wheeler Electric Company. (See Kintzing, Ralston C., assignor.) | | | | | | |
| Crocker-Wheeler Electric Company. (See Wheeler, Schuyler S., assignor.) | | | | | | |
| Crocker, William A., Emmerton, Va. Machine for separating peanuts from the vine and for stemming, cleaning, and grading same | 502,619 | Aug. 1 | 619 | 148, 149 | 64 | 680 |
| Crockett, William E., and R. E. McAdams, Lawa, Tex. Animal-trap | 501,599 | July 18 | 1695 | 422 | 64 | 341 |

*Alphabetical list of patentees, July to September, inclusive*—Continued.

| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drgs. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Cross, Louise, E. R. Mergaert, and J. Lapin, Roulers, Belgium. Attachment for spinning-machines | 500,758 | July 4 | 365 | 85 | 64 | 68 |
| Crompton Loom Works. (See Wyman, Horace, assignor.) | | | | | | |
| Crompton, Thomas, Midland, Canada. Tea-blending machine | 502,283 | Aug. 1 | 31 | 7 | 64 | 572 |
| Crosby, Darwin E., Philadelphia, Pa. Elevator | 503,796 | Aug. 22 | 2565 | 638 | 64 | 1080 |
| Crosby, Frank P., Chicago, Ill. Velocipede | 501,493 | July 18 | 1536 | 383 | 64 | 308 |
| Crosby, George S. (See Anderson, Frank, assignor.) | | | | | | |
| Crosby, Joseph H., St. Albans, Vt. Rail-joint | 504,711 | Sept. 12 | 655 | 166 | 64 | 1406 |
| Cross, Andrew J., New York, N. Y. Chiffonier Turkish bath | 500,858 | July 4 | 514 | 134 | 64 | 94 |
| Cross, Milton L., Philadelphia, Pa. Wire bed-bottom | 505,267 | Sept. 19 | 1564 | 408 | 64 | 1591 |
| Crouch, George, New York, N. Y. Hat or bonnet holder | 503,949 | Aug. 29 | 2817 | 703 | 64 | 1145 |
| Crowell, Charles F., *et al.*, trustees. (See Ohmart, Eli C., assignor.) | | | | | | |
| Crowell, Charles F., *et al.*, trustees. (See Severy, Melvin L., assignor.) | | | | | | |
| Crowell, Hilen C., Dunkirk, N. Y. Friction-clutch | 501,925 | July 25 | 2232 | 557 | 64 | 450 |
| Crowell, Luther C., Brooklyn, assignor to R. Hoe, T. H. Mead, and C. W. Carpenter, New York, N. Y. Sheet collecting and delivery mechanism | 505,443 | Sept. 26 | 1853 | 479 / 480 | 64 | 1660 |
| Crowley, John J., New York, N. Y. Car-coupling | 505,287 | Sept. 19 | 1607 | 417 | 64 | 1599 |
| Crowther, David, Huddersfield, England. Vehicle-wheel | 501,992 | July 25 | 2324 | 580 | 64 | 467 |
| Crowther, Ernest and W. H., Pudsey, England. Carding-engine | 504,968 | Sept. 12 | 1090 | 278 | 64 | 1490 |
| Crowther, William H. (See Crowther, Ernest and W. H.) | | | | | | |
| Crull, Solomon F., Dublin, Ind. Propelling attachment for garden-plows | 504,712 | Sept. 12 | 655 | 166 | 64 | 1406 |
| Crumrine, Benton V., Corning, Cal. Automatic wind-deflector | 504,563 | Sept. 5 | 419 | 106 | 64 | 1347 |
| Cuddie, Robert. (See Cody, Alfred E., assignor.) | | | | | | |
| Cuendet, Emile L., Brooklyn, N. Y. Music-box | 501,766 | July 18 | 1979 | 489 | 64 | 390 |
| Culbertson, Joseph C., *et al.* (See Austin, William G., assignor.) | | | | | | |
| Cullen, Frank A., Jackson, Mich. Gate-hanger | 505,195 | Sept. 19 | 1461 | 377 | 64 | 1571 |
| Cullen, Patrick F., and P. F. Mulchrone, Scranton, Pa. Hame-fastener | 502,178 | July 25 | 2626 | 662 | 64 | 525 |
| Cullmann, Otto, Chicago, Ill. Velocipede | 504,079 | Aug. 29 | 3012 | 753 | 64 | 1182 |
| Cullmann, Otto, Chicago, Ill. Wheel | 504,080 | Aug. 29 | 3013 | 753 | 64 | 1182 |
| Cumming, James, and J. H. Magee, Jr., assignors of one-third to A. Vail, Buffalo, N. Y. Flue-cutter | 501,269 | July 11 | 1169 | 297 | 64 | 227 |
| Cummings, Henry H., Malden, Mass. Securing buttons to fabrics | 502,034 | July 25 | 2397 | 603 | 64 | 480 |
| Cummings, William H., *et al.* (See Beecher, Edwin N., assignor.) | | | | | | |
| Cunningham, James, Dushore, Pa. Culinary vessel | 504,022 | Aug. 29 | 2933 | 734 | 64 | 1166 |
| Cunningham, Levi G., Greensburg, Ind. Pump | 504,122 | Aug. 29 | 3089 | 773 | 64 | 1196 |
| Cunningham, Richard B., assignor of two-thirds to P. J. Geyler and O. S. Price, Hillsborough, Ohio. Bicycle driving-gear | 501,874 | July 18 | 2136 | 530 | 64 | 417 |
| Cunninghame, William B. (See McCoy, John H., assignor.) | | | | | | |
| Curell, Daniel, Hamilton, Canada, assignor to G. H. Downing, New York, N. Y. Nozzle for fire-extinguishers | 504,564 | Sept. 5 | 420 | 106 | 64 | 1348 |
| Curran, Daniel E. (See Faville, George C., assignor.) | | | | | | |
| Currie, Daniel, Montreal, Canada. Taper attachment for lathes | 504,565 | Sept. 5 | 421 | 107 | 64 | 1348 |
| Curry, James H., assignor of eighty-three one-hundred-and-twenty-eighths to F. B. Tomb, Wilkinsburg, S. J. Graham, A. H. Childs, and R. A. Gillespie, Pittsburg, Pa. Automatic safety-joint for electric conductors | 505,032 | Sept. 12 | 1196 | 307 | 64 | 1510 |
| Curtis, Andrew J., East Williamson, and W. H. Curtis, Sodus, assignors of one-third to G. A. Scullen, East Williamson, N. Y. Machine for slicing fruit | 503,903 | Aug. 22 | 2723 | 694 | 64 | 1111 |
| Curtis, Charles G., New York, N. Y. Controlling device for electric motors | 505,584 | Sept. 26 | 2162 | 547 | 64 | 1717 |
| Curtis, Charles G., assignor of one half to G. W. Horton, Troy, N. Y. Hand-truck | 501,706 | July 18 | 1873 | 466 | 64 | 371 |
| Curtis & Curtis. (See Reilly, James H., assignor.) | | | | | | |
| Curtis & Curtis. (See Smith, Friend W., Jr., assignor.) | | | | | | |
| Curtis, David W., Fort Atkinson, Wis. Butter-worker | 501,993 | July 25 | 2325 | 581 | 64 | 468 |
| Curtis, George A., Malden, assignor to C. F. Baker, Boston, Mass. Heel-nail | 502,550 | Aug. 1 | 511 | 122 | 64 | 660 |
| Curtis, Lewis B. (See Curtis, Roderick P. and L. B.) | | | | | | |
| Curtis, Nelson, Boston, Mass. Pressure-regulator | 500,904 | July 4 | 723 | 180 | 64 | 132 |
| Curtis, Roderick P. and L. B., Southport, Conn. Pipe-threading machine | 505,583 | Sept. 26 | 2160 | 546 | 64 | 1717 |
| Curtis, Samuel P., Boston, Mass. Sweater | 501,244 | July 11 | 1131 | 287 | 64 | 231 |
| Curtis, Warner H. (See Curtis, Andrew J. and W. H.) | | | | | | |
| Curtis, William A., *et al.* (See Weaver, William, assignor.) | | | | | | |
| Cutler, Fred H., Buffalo, N. Y. Desk | 505,595 | Sept. 26 | 2163 | 547 | 64 | 1717 |
| Cutler, Henry H., Waltham, Mass. Call-box | 504,488 | Sept. 5 | 289 | 74.75 | 64 | 1324 |
| Cutler, James L., Piketon, Ohio. Churn | 500,859 | July 4 | 516 | 131 | 64 | 94 |
| Cutler, James L., Piketon, Ohio. Automatic fire-lighter | 500,995 | July 4 | 724 | 180 | 64 | 132 |
| Cutter, Charles W., Broomfield, Colo. Snap-hook | 501,875 | July 18 | 2138 | 530 | 64 | 417 |
| Cutter Electrical and Manufacturing Company. (See Stanley, Lucius T., assignor.) | | | | | | |
| Cutter, John M., assignor to Elgin National Watch Company, Chicago, Ill. Envelope | 500,996 | July 4 | 726 | 190 / 191 | 64 | 132 |
| D. E. Whiton Machine Company. (See Whiton, David E. and L. E., assignors.) | | | | | | |
| Daddow, Esther A. (See Beadle, Jesse, assignor.) | | | | | | |
| Dages, John, Navarre, Ohio, and W. F. Wagner, Rockville, Md. Tilling-machine | 503,606 | Aug. 22 | 2425 | 604 | 64 | 1052 |
| Dahill, Thomas H., assignor of two-thirds to W. C. Dunham and W. B. White, Alfred Centre, N. Y. Device for preventing rails from spreading | 501,678 | July 18 | 1926 | 455 | 64 | 363 |
| Dahl, Alfred, assignor of one-half to E. J. Terwilliger and J. Johns, Minneapolis, Minn. Car-unloader | 500,997 | July 4 | 727 | 191 | 64 | 132 |
| Dahl, Charles A., Lynn, Mass., assignor to Globe Buttonhole Machine Company, Kittery, Me., and Boston, Mass. Clutch for sewing-machines | 503,311 | Aug. 15 | 1801 | 447 | 64 | 922 |
| Dailey, Basil, San Marcos, Tex. Automatic drop-lid for bins or boxes | 502,509 | Aug. 1 | 440 | 106 | 64 | 648 |
| Dale, John L., Whalevaville, Md. Latch | 505,033 | Sept. 12 | 1197 | 307 | 64 | 1510 |
| Dalphin, Robert G., Malone, N. Y. Fire-escape | 501,767 | July 18 | 1981 | 490 | 64 | 390 |
| Dalton, Thomas C., Philadelphia, Pa. Compression stop and waste cock | 504,865 | Sept. 12 | 918 | 237 | 64 | 1457 |
| Dame, Paul C., and L. Prud'hon, Paris, France. Making artificial whalebone | 501,222 | July 11 | 1098 | ..... | 64 | 216 |
| Damon, Edwin S. (See Hamblin, Stephen M., assignor.) | | | | | | |
| Dana, William H., assignor to Chicago Clamp Company, Chicago, Ill. Clamp | 503,125 | Aug. 15 | 1491 | 366 | 64 | 868 |
| Dangler Stove and Manufacturing Company. (See Ruppel, Henry, assignor.) | | | | | | |
| Daniels, Charles A., Waterville, N. Y. Folding shipping-crate | 502,429 | Aug. 1 | 302 | 72 | 64 | 621 |
| Daniels, Henry H., Cincinnati, Ohio. Combination-lock | 503,157 | Sept. 19 | 1401 | 350 | 64 | 1560 |
| Daniels, Howard, Atlanta, Ga., assignor of one-half to J. H. Simonson, Fort Wayne, Ind. Lumber-truck | 500,860 | July 4 | 518 | 135 | 64 | 94 |
| Daniels, Howard, Atlanta, Ga., assignor of one-half to J. H. Simonson, Fort Wayne, Ind. Lumber-piling machine | 500,861 | July 4 | 520 | 135 | 64 | 94 |
| Daniels, Howard, Atlanta, Ga., assignor of one-half to J. H. Simonson, Fort Wayne, Ind. Lumber-truck | 500,862 | July 4 | 522 | 136 | 64 | 95 |
| Danner, Adam, and G. Rothenbücher, New York, N. Y. Carbonic-acid or other gas engine | 502,430 | Aug. 1 | 303 | 73 | 64 | 621 |



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|---|---|---|---|---|---|---|
| Danner, Carl M., Vienna, Austria-Hungary. Perforating-stamp | 504,106 | Aug. 29 | 3067 | 767 / 768 | 64 | 1192 |
| Dans, William, Detroit, Mich. Truss | 500,739 | July 4 | 332 | 88 | 64 | 62 |
| Darby, Benjamin F., Clay's Prairie, Ill. Cultivator-blade | 504,969 | Sept. 12 | 1090 | 279 | 64 | 1490 |
| Dare, Clifton B., and J. D. Hall, El Cajon, Cal. Barrel or crate | 504,446 | Sept. 5 | 213 | 56 | 64 | 1310 |
| Dark, Thomas, Sr., Buffalo, N. Y. Garbage-cart | 502,350 | Aug. 1 | 169 | 39, 40 | 64 | 598 |
| Darling, D. Harry, *et al.* (See Osteman, Carl G., assignor.) | | | | | | |
| Darnell, Calvin F., assignor of one-half to E. F. Harris and C. A. Bookwalter, Indianapolis, Ind. Wooden lathing | 502,551 | Aug. 1 | 512 | 122 | 64 | 660 |
| Darr, Isaac N., Monticello, Ill. Harness | 500,863 | July 4 | 524 | 136 | 64 | 95 |
| Darragh, Albert C., Allegheny, Pa. Well-drilling machinery | 505,443 | Sept. 26 | 1867 | 481 | 64 | 1661 |
| Dashiell, William W. (See Barclay, John J., assignor.) | | | | | | |
| Dauber, August, Bochum, Germany. Making iron | 502,482 | Aug. 1 | 390 | 93 | 64 | 638 |
| Daugherty, George L. (See Anderson and Daugherty.) | | | | | | |
| Daugherty, R. P. (See Anderson and Daugherty, assignors.) | | | | | | |
| Davenport, Frank W., Providence, R. I. Electric-light fixture | 504,866 | Sept. 12 | 919 | 237 | 64 | 1457 |
| Davee, William, Jersey City, N. J., assignor to Hall Signal Company, of Maine. Electric signaling-circuit | 501,183 | July 11 | 1041 | 264 | 64 | 204 |
| Davey, John F., Marlborough, Mass. Pegging-machine | 504,311 | Aug. 29 | 3401 | 852 / 853 | 64 | 1955 |
| David, Edmund A., and J. Rath, assignors of one-third to J. P. Merrill, Columbus, Ohio. Barrel or keg | 503,580 | Aug. 22 | 2227 | 558 | 64 | 1017 |
| David, William K., Philadelphia, Pa. Calendar | 502,483 | Aug. 1 | 391 | 93, 94 | 64 | 638 |
| Davidson, David J., assignor of two-thirds to A. A. Haskell, Brockway, and A. S. Martin, Port Huron, Mich. Machine for truing rolls | 504,566 | Sept. 5 | 423 | 107 | 64 | 1348 |
| Davidson, George. (See Finney and Davidson.) | | | | | | |
| Davidson, John C. (See Johnston and Davidson.) | | | | | | |
| Davidson, John C., Prince's Bay, N. Y., assignor to S. S. White Dental Manufacturing Company, Philadelphia, Pa. Regulator for electric motors | 503,453 | Aug. 15 | 2009 | 498 | 64 | 961 |
| Davidson, John F., Edgerly, La. Car-coupling | 502,068 | July 25 | 2450 | 615 | 64 | 498 |
| Davidson, Marshall T. (See Drewett, William A., assignor.) | | | | | | |
| Davidson, Samuel C., Belfast, Ireland. Machine for the manufacture of staples | 503,264 | Aug. 15 | 1713 | 422 / 4 3 | 64 | 909 |
| Davies, Edwin L., and J. N. White, Salt Lake City, Utah Ter. Windmill | 504,301 | Aug. 29 | 3385 | 846 / 847 | 64 | 1252 |
| Davies, John P. (See Dean, John, assignor.) | | | | | | |
| Davies, Joseph, Bridgeport, Pa. Furnace | 503,407 | Aug. 15 | 1943 | 483 | 64 | 949 |
| Davies, Thomas W., St. Louis, Mo., assignor to R. L. Carlton, Selma, Ohio. Shaft-tug | 503,564 | Aug. 15 | 2195 | 548 | 64 | 995 |
| Davis, Charles S., Wellfleet, Mass. Folding bed or cot | 504,202 | Aug. 29 | 3229 | 804 / 805 | 64 | 1222 |
| Davis, Charles W., Montreal, Canada. Sewing-machine | 504,061 | Aug. 29 | 2990 | 747 | 64 | 1177 |
| Davis, E. W. (See Hawkes, Edward B., assignor.) | | | | | | |
| Davis, Frank M., Oskaloosa, Iowa. Steam-engine | 502,707 | Aug. 8 | 805 | 194 / 195 | 64 | 728 |
| Davis, Frederick G. (See Davis, Samuel and F. G.) | | | | | | |
| Davis, Harry P., assignor to Westinghouse Electric and Manufacturing Company, Pittsburg, Pa. Controlling-switch for electrically-propelled vehicles | 503,279 | Aug. 15 | 1737 | 429 | 64 | 918 |
| Davis, Henry J., J. Rice, and J. C. McDaniel, Iron City, Ala. Saw cotton-gin | 504,023 | Aug. 29 | 2934 | 734 / 735 | 64 | 1166 |
| Davis, Nathan H., Philadelphia, Pa. Draft-spring | 503,408 | Aug. 15 | 1943 | 483 | 64 | 950 |
| Davis, Nathan H., Philadelphia, Pa. Die for making car-stake pockets | 504,520 | Sept. 5 | 349 | 89 | 64 | 1335 |
| Davis, Orion L., Rochester, N. Y. Elevator-guard | 502,955 | Aug. 8 | 1212 | 298 / 299 | 64 | 803 |
| Davis, Owen W., Jr., Middlesborough, Ky. Ore-roasting kiln | 501,494 | July 18 | 1528 | 383 | 64 | 309 |
| Davis, Rogerie, and W. Butler, Washington, D. C. Portable hand-punch | 503,109 | Aug. 8 | 1454 | 358 | 64 | 848 |
| Davis, Samuel and F. G., Las Vegas, N. Mex. Ter. Clothes-pounder | 503,832 | Aug. 22 | 2022 | 656 | 64 | 1091 |
| Davis, Spencer L., Brooklyn, N. Y. Machine for embossing wood | 500,998 | July 4 | 729 | 191 | 64 | 133 |
| Davis, Spencer L., Brooklyn, N. Y. Means for embossing wood | 502,850 | Aug. 8 | 1031 | 253 | 64 | 771 |
| Davis, William W., assignor to himself, W. and F. B. Lander, California, Mo. Telephone system | 505,308 | Sept. 19 | 1640 | 424 / 425 / 426 | 64 | 1606 |
| Davy, Thomas W. (See Dear, James W., assignor.) | | | | | | |
| Dawdy, James, and F. M. Catters, Denver, Colo. Electro-medical air-injector | 505,393 | Sept. 19 | 1777 | 460 | 64 | 1630 |
| Dawdy, Warren D., and A. Herren, Adair county, Mo. Invalid-bed | 504,333 | Sept. 5 | 33 | 10 | 64 | 1277 |
| Dawson, Henry G., Chicago, Ill. Fireplace-frame | 500,687 | July 4 | 248 | 67 | 64 | 47 |
| Day, Arthur W., New Britain, Conn. Bed-bottom | 500,865 | July 4 | 526 | 136 | 64 | 96 |
| Day, Clarence M., New York, N. Y. Veil-clasp | 500,864 | July 4 | 525 | 136 | 64 | 95 |
| Day, Henry B., Elgin, Ill. Snap | 505,158 | Sept. 19 | 1405 | 360 | 64 | 1561 |
| Day, Henry L., Minneapolis, Minn. Relief-valve for suction or blast pipes | 503,126 | Aug. 15 | 1492 | 367 | 64 | 868 |
| Day, John, New York, N. Y., assignor of one-half to Turner & Seymour Manufacturing Company, Torrington, Conn. Curtain-rod and bracket | 502,650 | Aug. 1 | 691 | 165 | 64 | 693 |
| De Bean, Francisco V., Gloucester, Mass. Device for cutting ships' cables | 504,203 | Aug. 29 | 3230 | 805 | 64 | 1222 |
| De Haven, William, Lancaster, Pa. Tobacco-case | 503,717 | Aug. 22 | 2458 | 612 | 64 | 1050 |
| De Pont, Alexandre and S., Lancaster, England. Mold for the manufacture of solid balls of artificial ivory | 502,013 | July 25 | 2355 | 590 | 64 | 473 |
| De Pont, Silvius. (See De Pont, Alexandre and S.) | | | | | | |
| Dean, James, Detroit, Mich. Steam-boiler feeder | 504,151 | Aug. 29 | 3138 | 785 | 64 | 1205 |
| Dean, John, assignor of one-half to J. P. Davies, Racine, Wis. Vehicle-wheel | 505,701 | Sept. 26 | 2348 | 594 | 64 | 1751 |
| Dean, Proctor, assignor of one-half to G. H. Orr, Chicago, Ill. Combined corkscrew, match-holder, &c. | 502,351 | Aug. 1 | 171 | 40 | 64 | 597 |
| Dean, Seward A., assignor of one-half to H. L. Woodburn, Minneapolis, Minn. Workman's time-recorder | 502,226 | July 25 | 2705 | 682 / 683 | 64 | 540 |
| Deane, William H., Brooklyn, N. Y. Electric alarm-clock | 502,811 | Aug. 8 | 902 | 224 | 64 | 758 |
| Dear, James W., assignor of one-half to T. W. Davy, Dayton, Ohio. Street-car indicator | 502,227 | July 25 | 2709 | 684 | 64 | 541 |
| Dearborn, Wyman, Boston, Mass. Roller cotton-gin | 504,775 | Sept. 12 | 773 | 195 | 64 | 1426 |
| Decatur, Granville B., Hamilton, Canada. Adjustable earth-auger | 501,561 | July 18 | 1636 | 409 | 64 | 330 |
| Decatur Leader Manufacturing Company. (See Brown, Davis, assignor.) | | | | | | |
| Deck, Henry. (See Higbee, Braun, and Deck.) | | | | | | |
| Deck, Henry, assignor to J., J. F., and W. P. M. Braun, Philadelphia, Pa. Lawn-mower | 503,904 | Aug. 22 | 2726 | 684 | 64 | 1112 |
| Decrow, David A., Lockport, N. Y. Hydrant | 505,596 | Sept. 26 | 2164 | 547 | 64 | 1717 |
| Decrow, William R., Boston, Mass., assignor to Gamewell Fire Alarm Telegraph Company, of New York. Signaling system | 500,563 | July 4 | 42 | 13 | 64 | 10 |
| Dederick, Levi, Albany, N. Y. Extension fire-ladder | 502,484 | Aug. 1 | 395 | 94, 95 | 64 | 639 |
| Dederick, Levi, Albany, N. Y. Folding and extension fire-ladder | 502,485 | Aug. 1 | 400 | 95 | 64 | 640 |

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| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drg. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Deere & Company. (See Moore, Gilpin, assignor.) | | | | | | |
| Defiance Machine Works. (See Seymour, Charles, assignor.) | | | | | | |
| Degner, Herman, West Bend, Wis. Thill-coupling | 503,739 | Aug. 22 | 2498 | 621 | 64 | 1066 |
| Deisher, John R. (See McCormick and Deisher.) | | | | | | |
| Dela Mar, Joseph, *et al.* (See Winter, Louis F., assignor.) | | | | | | |
| Delano, Augustus A., *et al.* (See Austin, William H., assignor.) | | | | | | |
| Delany, Miles H., Brooklyn, assignor to L. J. Wing, New York, N. Y. Oscillating engine. | 501,994 | July 25 | 2327 | 581 | 64 | 468 |
| Delorieux, John. (See Toulouse and Delorieux.) | | | | | | |
| Delug, Alois, Munich, Germany. Cutter for films | 504,062 | Aug. 29 | 2991 | 747 | 64 | 1177 |
| Dement, Isaac S. (See Bassett and Dement.) | | | | | | |
| Demonet, John H., Brooklyn, N. Y. Dental mallet | 504,912 | Sept. 12 | 993 | 256 | 64 | 1472 |
| Dempster, John T., Summit, N. J., assignor to S. Borgmann, New York, N. Y. Electric-arc lamp | 501,768 | July 18 | 1982 | 490 | 64 | 390 |
| Denison, Arthur E. (See Robinson, Thomas C., assignor.) | | | | | | |
| Denison, James R., Grand Rapids, Mich. Quick-action vise | 503,075 | Aug. 8 | 1392 | 344 | 64 | 837 |
| Denne, Mark T., Eastbourne, England. Sewing-machine | 505,034 | Sept. 12 | 1198 | {307 308} | 64 | 1510 |
| Denneler, Charles L. (See Clark, Henry J., assignor.) | | | | | | |
| Denney, William G., South St. Paul, Minn. Seal | 503,110 | Aug. 8 | 1456 | 358 | 64 | 848 |
| Dennis, Alexander E., Newark, N. J., assignor, by mesne assignments, to Meriden Curtain Fixture Company, of Connecticut. Spring shade-roller | 504,970 | Sept. 12 | 1092 | 270 | 64 | 1490 |
| Dennis, John B., Ottumwa, Iowa. Machine for printing cards | 503,833 | Aug. 22 | 2623 | {656 657} | 64 | 1001 |
| Densmore, Emmet, *et al.* (See Wastall, Arthur, assignor.) | | | | | | |
| Densmore, Helen, *et al.* (See Wastall, Arthur, assignor.) | | | | | | |
| Derrick, Franklin R., and A. S. Moore, Brodhead, Wis. Buckle | 500,705 | July 4 | 976 | 75 | 64 | 52 |
| Desant Electric Company. (See Desant, William F. Z., assignor.) | | | | | | |
| Desant, William F. Z., New York, N. Y., assignor to Desant Electric Company, of Ohio. Cash register and indicator | 505,444 | Sept. 26 | 1868 | 481 | 64 | 1661 |
| Detector Patent Safety Postal Box Syndicate. (See Heatley, William, assignor.) | 504,415 | Sept. 5 | 167 | 44 | 64 | 1301 |
| Detombay, Benoit B., assignor to Société Anonyme des Mines and Fonderies de Zinc de la Vieille Montagne, Chénée, Belgium. Metal roofing | 502,552 | Aug. 1 | 513 | 122 | 64 | 660 |
| Detroit Cork Screw Company. (See Puddefoot, Charles, assignor.) | | | | | | |
| Devendorf, De Witt A., and F. F. Burtch, Fort Hunter, N. Y. Broom scraping or cleaning machine | 505,754 | Sept. 26 | 2429 | 613 | 64 | 1765 |
| Devlin, Thomas, *et al.*, executors. (See Meyers, William H., assignor.) | | | | | | |
| Dewees, John W., Philadelphia, Pa. Yarn-carrier for circular-knitting machines | 501,876 | July 18 | 2139 | 531 | 64 | 417 |
| Dewey, Daniel A., Columbus, Pa. Beehive | 502,486 | Aug. 1 | 405 | 96 | 64 | 641 |
| Dexter Folder Company. (See Dexter, Talbott C., assignor.) | | | | | | |
| Dexter, Talbott C., assignor to Dexter Folder Company, Fulton, N. Y. Paper-folding-machine attachment for printing-presses | 504,895 | Sept. 12 | 853 | 219 | 64 | 1443 |
| Dexter, Talbott C., assignor to Dexter Folder Company, Fulton, N. Y. Paper-folding-machine attachment for printing-presses | 505,509 | Sept. 26 | 1983 | 509 | 64 | 1682 |
| Dexter, William A. (See Park and Dexter.) | | | | | | |
| Dey, Charles E., Denver, Colo. Circuit-switch | 504,123 | Aug. 29 | 3090 | 774 | 64 | 1197 |
| Deyo, Calvin B., Calumet, Ill. Dump-wagon | 502,249 | July 25 | 2735 | 696 | 64 | 549 |
| Diamond Paper Bag Company. (See Stevens, Arthur L., assignor.) | | | | | | |
| Dick, George W. (See Cardarelli, Emilio, assignor.) | | | | | | |
| Dickerson, Edward N., Jr. (See Bradley and Dickerson.) | | | | | | |
| Dickerson, Edward N., New York, N. Y. Valve-gear for steam-engines | 502,878 | Aug. 8 | 1072 | {264 265} | 64 | 778 |
| Dickey, James N. (See Crisson, George A., assignor.) | | | | | | |
| Dickinson, Patrick F., New York, N. Y. Hot-air furnace | 505,510 | Sept. 26 | 1988 | 509 | 64 | 1682 |
| Dickson, Mathew R., New York, N. Y. Display-rack | 504,913 | Sept. 19 | 995 | 256 | 64 | 1472 |
| Diebolt, Anthony J., Cleveland, Ohio. Bung | 501,058 | July 11 | 829 | 215 | 64 | 166 |
| Diedrick, William H., assignor of one-third to C. H. Mason, San Francisco, Cal. Ratchet-wrench | 502,410 | Aug. 1 | 270 | 64 | 64 | 615 |
| Diehl, Philip, Elizabeth, N. J., assignor to Westinghouse Electric and Manufacturing Company, Pittsburg, Pa. Self-exciting alternate-current electric generator | 503,581 | Aug 22 | 2229 | 559 | 64 | 1017 |
| Dienst, Eduard, Leipsic-Gohlis, Germany. Harmonica | 501,495 | July 18 | 1529 | 394 | 64 | 309 |
| Dierdorf, John, Indianapolis, Ind. Piano-stool | 502,069 | July 25 | 2451 | 615 | 64 | 490 |
| Dierkamm, Ernst, Long Island City, N. Y. Guard for penholders | 500,584 | July 4 | 45 | 13 | 64 | 10 |
| Dietrich, Ludwig, Chicago, Ill. Horseshoe | 501,562 | July 18 | 1637 | 409 | 64 | 330 |
| Dietz, Sydenham B., Jr., Washington, D. C. Key for musical stringed instruments | 504,024 | Aug. 29 | 2938 | 735 | 64 | 1167 |
| Dighton Furnace Company. (See Mason, Ezra A., assignor.) | | | | | | |
| Dillehay, Alonzo A., Meridian, Miss. Dental plugger | 502,352 | Aug. 1 | 172 | 40 | 64 | 598 |
| Dilley, Fred. L. (See Brown, John A., assignor.) | | | | | | |
| Dillon, Edward W., New Haven, Conn. Saw-set | 504,521 | Sept. 5 | 356 | 89 | 64 | 1335 |
| Dillon, Thomas H., Beaumont, Tex. Saw-hammering machine | 501,769 | July 18 | 1983 | 490 | 64 | 390 |
| Dilworth, Robert, El Paso, Tex. Ore-separator | 503,454 | Aug. 15 | 2010 | {498 499} | 64 | 961 |
| Dimick, Charles. (See Long and Dimick.) | | | | | | |
| Dimick, Richard E., assignor of one-half to W. E. Brown, Rhinelander, Wis. Saw-swage | 504,124 | Aug. 29 | 3091 | 774 | 64 | 1197 |
| Dingle, William H., and J. M. Urquhart, London, England. Electric switch | 501,707 | July 18 | 1874 | 466 | 64 | 371 |
| Disston, Thomas S., Philadelphia, Pa. Nut-tapping machine | 504,971 | Sept. 12 | 1093 | {279 280} | 64 | 1491 |
| Dixon, George E., Chicago, Ill. Air-valve for radiators | 504,972 | Sept. 12 | 1096 | 280 | 64 | 1491 |
| Dixon, George V., Walt's, Ohio. Wheat-scourer | 505,702 | Sept. 26 | 2349 | 594 | 64 | 1751 |
| Dixon, Patrick, and P. McLaughlin, Bloomington, Ill. Washing-machine | 502,851 | Aug. 8 | 1033 | 253 | 64 | 771 |
| Doane, Francis, *et al.*, trustees. (See Ohmart, Eli C., assignor.) | | | | | | |
| Doane, Francis, *et al.*, trustees. (See Severy, Melvin L., assignor.) | | | | | | |
| Doane, Francis H., New York, N. Y. Lightning-arrester | 501,708 | July 18 | 1876 | 467 | 64 | 372 |
| Doane, Samuel E. (See Burnett and Doane.) | | | | | | |
| Dobbie, Robert S. (See Rau, Otto, assignor.) | | | | | | |
| Dobbie, Robert S., Jersey City, N. J., assignor of one-half to O. Rau, Milwaukee, Wis. Trolley-head | 502,553 | Aug. 1 | 514 | 123 | 64 | 661 |
| Dobbins, Douglas, and R. McKenney, assignors of two-thirds to J. C. McNutt, T. J. Coyle, W. B. Jennings, Franklin, and T. Taggart, Indianapolis, Ind. Pneumatic tire | 504,408 | Sept. 5 | 254 | 66 | 64 | 1317 |
| Dobbs, Wilhelm S., Vienna, Austria-Hungary. Grate | 502,554 | Aug. 1 | 515 | 123 | 64 | 661 |
| Dobelin, Charles W., Madison, Wis. Lantern | 501,877 | July 18 | 2141 | 531 | 64 | 418 |
| Dobson, Tom. (See Webster and Dobson.) | | | | | | |
| Dobyns, Lemuel P., and A. Brown, Ogden, Utah Ter. Machine for rolling, cutting, and shaping candy or the like | 503,930 | Aug. 15 | 1661 | {408 409} | 64 | 899 |



*Alphabetical list of patentees, July to September, inclusive*—Continued.

| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drg. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Dock, Maggie, *et al.* (See Myers, John, assignor.) | | | | | | |
| Dodd, Bion H., Sheboygan, Wis. Chair seat and back | 504,446 | Sept. 5 | 215 | 56 | 64 | 1310 |
| Dodge, Charles H., Ripon, Wis. Strainer for rain-water pipes | 504,384 | Sept. 5 | 113 | 29 | 64 | 1291 |
| Dodge, Cheever K., New York, N. Y., assignor to Metropolitan Rubber Company, of Connecticut. Packing-gasket | 505,703 | Sept. 26 | 2350 | 594 | 64 | 1751 |
| Dodge Coal Storage Company. (See Dodge, James M., assignor.) | | | | | | |
| Dodge Coal Storage Company. (See Ewart, William D., assignor.) | | | | | | |
| Dodge, James M., assignor to Link-Belt Engineering Company, Philadelphia, Pa. Removing piles of material | 501,770 | July 18 | 1984 | 491 | 64 | 391 |
| Dodge, James M., assignor to Link-Belt Engineering Company, Philadelphia, Pa. Conveying apparatus | 501,771 | July 18 | 1985 | 491 | 64 | 391 |
| Dodge, James M., assignor to Dodge Coal Storage Company, Philadelphia, Pa. Apparatus for piling coal | 502,555 | Aug. 1 | 516 | {123 124} | 64 | 661 |
| Dodge, James M., assignor to Dodge Coal Storage Company, Philadelphia, Pa. Apparatus for piling coal | 503,409 | Aug. 15 | 1944 | 483 | 64 | 950 |
| Doda, John C., assignor to J. Green, St. Louis, Mo. Furnace for the manufacture of gas | 501,457 | July 11 | 1474 | {370 371} | 64 | 283 |
| Doebler, Charles F., Hartford, Conn. Knob attachment | 503,200 | Aug. 15 | 1612 | 396 | 64 | 990 |
| Doebler, Charles F., Hartford, Conn. Knob attachment | 503,201 | Aug. 15 | 1614 | 396 | 64 | 991 |
| Doebler, Charles F., Hartford, Conn. Knob attachment | 503,202 | Aug. 15 | 1615 | 396 | 64 | 991 |
| Doebler, Charles F., Hartford, Conn Knob attachment | 503,204 | Aug. 15 | 1618 | 397 | 64 | 991 |
| Doebler, Charles F., assignor of one-half to C. K. Bryant, Hartford, Conn. Knob attachment | 503,199 | Aug. 15 | 1611 | 396 | 64 | 990 |
| Doebler, Charles F., and C. K. Bryant, Hartford, Conn. Knob attachment | 503,198 | Aug. 15 | 1610 | 395 | 64 | 990 |
| Doebler, Charles F., and C. K. Bryant, Hartford, Conn. Knob attachment | 503,203 | Aug. 15 | 1617 | 397 | 64 | 991 |
| Doehring, Charles. (See Lehmann, Heinrich, assignor.) | | | | | | |
| Doherty, Martin J., Philadelphia, Pa. Combined vise and winch | 502,177 | July 25 | 2627 | 662 | 64 | 525 |
| Dolber, John E., Manchester, N. H. Sash-fastener | 502,556 | Aug. 1 | 518 | 124 | 64 | 661 |
| Dolivo-Dobrowolsky, Michael von, assignor to Allgemeine Elektricitäts Gesellschaft, Berlin, Germany. Regulation of alternating-current motors | 503,038 | Aug. 8 | 1341 | 331 | 64 | 827 |
| Doll, Fred. W. (See Doll, Philip J. and F. W.) | | | | | | |
| Doll, Philip J. and F. W., La Salle, Ill. Steam-boiler | 503,834 | Aug. 22 | 2626 | 657 | 64 | 1092 |
| Domenge, Etienne, Paterson, N. J. Tension device for loom-shuttles | 504,567 | Sept. 5 | 425 | 108 | 64 | 1349 |
| Dominick, Bayard, Jr., New York, N. Y. Toy | 504,152 | Aug. 29 | 3140 | 785 | 64 | 1206 |
| Donahue, Daniel, San Francisco, Cal. Hoisting and conveying apparatus | 504,522 | Sept. 5 | 351 | 89 | 64 | 1335 |
| Donaldson, Jacob C. (See Saum, David F., assignor.) | | | | | | |
| Donally, Melvin E., New York, N. Y. Bottling apparatus | 500,866 | July 4 | 527 | 137 | 64 | 96 |
| Donisthorpe, George E., and T. Burrows, London, England. Machine for breaking, scutching, and decorticating flax, &c | 504,204 | Aug. 29 | 3232 | {805 806} | 64 | 1223 |
| Donnelly, William T. (See Emery and Donnelly.) | | | | | | |
| Donohue, Patrick. (See Baldwin, George, assignor.) | | | | | | |
| Doolittle, Clarence E., Aspen, Colo. Speed-governor | 502,557 | Aug. 1 | 519 | 124 | 64 | 662 |
| Doolittle, William W., assignor to Crane Company, Chicago, Ill. Apparatus for making castings | 501,331 | July 11 | 1269 | {318 319 320} | 64 | 243 |
| Doolittle, William W., assignor to Crane Company, Chicago, Ill. Collapsible tap. (Reissue) | 11,350 | Aug. 15 | 2201 | 550 | 64 | 986 |
| Doolittle, William W., assignor to Crane Company, Chicago, Ill. Collapsible tap | 505,268 | Sept. 19 | 1565 | 409 | 64 | 1591 |
| Doolittle, William W., assignor to Crane Company, Chicago, Ill. Molding-machine | 505,511 | Sept. 26 | 1989 | {509 510} | 64 | 1683 |
| Doriot, Constant, assignor to S. S. White Dental Manufacturing Company, Philadelphia, Pa. Dental engine | 503,740 | Aug. 22 | 2499 | {621 622} | 64 | 1067 |
| Doriot, Constant, assignor to S. S. White Dental Manufacturing Company, Philadelphia, Pa. Dental plugger | 504,489 | Sept. 5 | 293 | 75 | 64 | 1325 |
| Doriot, Constant, assignor to S. S. White Dental Manufacturing Company, Philadelphia, Pa. Dental engine | 504,490 | Sept. 5 | 295 | 75 | 64 | 1325 |
| Doriot, Constant, assignor to S. S. White Dental Manufacturing Company, Philadelphia, Pa. Dental engine | 504,491 | Sept. 5 | 298 | 76 | 64 | 1325 |
| Doriot, Constant, assignor of one-half to J. B. Painter, Philadelphia, Pa. Musical instrument | 504,671 | Sept. 5 | 583 | 149 | 64 | 1380 |
| Dorn, Herbert O., South Sioux City, Nebr. Combined stock bridge and door | 502,510 | Aug. 1 | 441 | 106 | 64 | 648 |
| Dorr, Edward, Kansas City, Mo. Smoke and gas burner and heat-radiator | 501,679 | July 18 | 1927 | 455 | 64 | 363 |
| Dorsey, Robert L., assignor to Tucker & Dorsey Manufacturing Company, Indianapolis, Ind. Kraut-cutter | 503,697 | Aug. 22 | 2427 | 604 | 64 | 1052 |
| Dorton, William R., Orrick, Mo. Adjustable spirit level and plumb device | 505,445 | Sept. 26 | 1870 | 482 | 64 | 1662 |
| Dotson, John W., assignor of one-half to R. J. Clark, Chicago, Ill. Cable railway | 503,306 | Aug. 15 | 1693 | 469 | 64 | 940 |
| Doty, Ellsworth P., Weedsport, N. Y. Valve for cookers | 503,787 | Aug. 22 | 2567 | 639 | 64 | 1080 |
| Doty, John H., Philadelphia, Pa. Umbrella-tie | 501,772 | July 18 | 1987 | 491 | 64 | 391 |
| Dougan, Kennedy, Missoula, Mont., assignor to T. Dougan, Salem, Mo. Automatic feed-regulator | 504,125 | Aug. 29 | 3094 | {774 775} | 64 | 1197 |
| Dougan, Thomas. (See Dougan, Kennedy, assignor.) | | | | | | |
| Doughty, William T. (See Funk, William R., assignor.) | | | | | | |
| Douglas, Robert, Fall River, Mass. Tool-fastening | 502,708 | Aug. 8 | 807 | 195 | 64 | 728 |
| Douglass, Adelbert J., Ilion, N. Y. Sheet-metal-bending machine | 505,567 | Sept. 26 | 2114 | 536 | 64 | 1708 |
| Douglass, Robert C., assignor to A. B. McChesney, Chicago, Ill. Railway-gate | 501,926 | July 25 | 2234 | 558 | 64 | 450 |
| Douglass, Samuel W. (See Bullock and Douglass.) | | | | | | |
| Dovel, J. M. (See Black, William M., assignor.) | | | | | | |
| Dow, Albert F. (See Buffinton, Elisha W., assignor.) | | | | | | |
| Dow, George E., San Francisco, Cal. Engine-governor | 504,205 | Aug. 29 | 3233 | 806 | 64 | 1223 |
| Dow, William H., and D. G. Crane, Burlington, Vt. Machine for painting, varnishing, &c. | 504,672 | Sept. 5 | 587 | 149 | 64 | 1380 |
| Dowling, North, assignor to American Incinerating Company, Philadelphia, Pa. Hydrocarbon incinerating-furnace | 501,458 | July 11 | 1475 | 371 | 64 | 284 |
| Downing, George H. (See Curell, Daniel, assignor.) | | | | | | |
| Downing, John S., Oil City, assignor of one-half to S. G. Robbins, Siverly, Pa. Device for heading barrels | 501,828 | July 18 | 2002 | 506 | 64 | 404 |
| Downing, Thomas J., Lincoln, Ill. Type-writing machine | 504,713 | Sept. 12 | 656 | {166 167} | 64 | 1406 |
| Dowse, William B. H., Newton, Mass. Lacing-hook | 500,565 | July 4 | 45 | 13 | 64 | 10 |
| Doxstader, Fred C., Ithaca, N. Y. Periodical-holder | 504,714 | Sept. 12 | 658 | 167 | 64 | 1406 |
| Doyle, Luke, deceased; M. E. Doyle, Boston, Mass., administratrix. Carriage-body | 500,740 | July 4 | 334 | 89 | 64 | 92 |
| Doyle, Mary E., administratrix. (See Doyle, Luke.) | | | | | | |
| Dozier, James C., Louisville, Ky. Barrel and making same | 505,446 | Sept. 26 | 1872 | 482 | 64 | 1662 |
| Drake, Albert R., Waltham, and F. A. Higgins; said Higgins assignor to said Drake, and said Drake assignor of one-half to E. L. Higgins, Winthrop, Mass. Shoe-lace fastener | 504,568 | Sept. 5 | 427 | 108 | 64 | 1349 |
| Drake, Charles C., Trenton, N. J. Trip for releasing horses | 502,487 | Aug. 1 | 407 | 96 | 64 | 641 |

*Alphabetical list of patentees, July to September, inclusive*—Continued.

| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drg. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Dranga, T. A., *et al.* (See Swigart, Frank W., assignor.) | | | | | | |
| Draper, George A., and A. E. Rhoades, assignors to Hopedale Machine Company, Hopedale, Mass. Machine for twisting or doubling yarn | 503,905 | Aug. 22 | 2729 | 685 | 64 | 1119 |
| Draper, George O., assignor to G. Draper & Sons, Hopedale, Mass. Spinning-ring | 500,999 | July 4 | 731 | 192 | 64 | 133 |
| Draper, George O., assignor to G. Draper & Sons, Hopedale, Mass. Spindle-bearing | 501,408 | July 11 | 1409 | 353 | 64 | 270 |
| Draper & Sons, George. (See Brooks, John C., assignor.) | | | | | | |
| Draper & Sons, George. (See Chandler, Walter A., assignor.) | | | | | | |
| Draper & Sons, George. (See Covo, Joseph T., assignor.) | | | | | | |
| Draper & Sons, George. (See Draper, George O., assignor.) | | | | | | |
| Draper & Sons, George. (See Draper, William F., assignor.) | | | | | | |
| Draper & Sons, George. (See Durkin, Daniel, assignor.) | | | | | | |
| Draper & Sons, George. (See Keeley, John W., assignor.) | | | | | | |
| Draper & Sons, George. (See Kent, Charles C., assignor.) | | | | | | |
| Draper & Sons, George. (See Northrop, James H., assignor.) | | | | | | |
| Draper & Sons, George. (See Rhoades, Alonzo E., assignor.) | | | | | | |
| Draper & Sons, George. (See Roper, Charles F., assignor.) | | | | | | |
| Draper, William B., Cambridge, assignor of one-half to W. N. Todd, Melrose, Mass. Buckle | 504,867 | Sept. 12 | 921 | 238 | 64 | 1458 |
| Draper, William F., assignor to G. Draper & Sons, Hopedale, Mass. Spindle-bearing | 505,196 | Sept. 19 | 1461 | 377 | 64 | 1571 |
| Drawbaugh, Daniel, Eberly's Mill, Pa., assignor to Pneumatic and Electric Tool Company, New York, N. Y. Pneumatic tool | 504,802 | Sept. 12 | 813 | 207 | 64 | 1436 |
| Drawbaugh, Daniel, Eberly's Mill, Pa., assignor to Pneumatic and Electric Tool Company, New York, N. Y. Pneumatic tool | 504,803 | Sept. 12 | 816 | 207 | 64 | 1436 |
| Dreves, A. W., *et al.* (See Jones, Thomas D., assignor.) | | | | | | |
| Drevet, Ernest, New York, N. Y. Napkin-ring | 501,332 | July 11 | 1275 | 320 | 64 | 944 |
| Drewett, William A., assignor to M. T. Davidson, Brooklyn, N. Y. Direct-acting engine | 503,231 | Aug. 15 | 1663 | 409 | 64 | 689 |
| Drewsen, Viggo B., Eidsvold, Norway. Recovering organic substances from sulphite liquor | 505,755 | Sept. 26 | 2431 | ..... | 64 | 1766 |
| Driggs, William H., U. S. Navy. Recoil-mount for ordnance | 502,178 | July 25 | 2022 | 662 / 663 | 64 | 525 |
| Droseski, Julius R., Erie, Pa. Lubricator | 505,597 | Sept. 26 | 2165 | 548 | 64 | 1717 |
| Drury, Marshal P., *et al.* (See Saxton, Harry, assignor.) | | | | | | |
| Du Bois, Theodore. (See Goldsmith, Ferdinand, assignor.) | | | | | | |
| Du Moulin, Samuel, Boston, Mass. Fender and life-guard for street-cars | 504,081 | Aug. 29 | 3015 | 753 / 754 | 64 | 1182 |
| Du Pont, Francis G., Wilmington, Del. Apparatus for producing smokeless explosives | 503,584 | Aug. 22 | 2235 | 560 | 64 | 1016 |
| Du Pont, Francis G., Wilmington, Del. Apparatus for distilling volatile substances | 503,586 | Aug. 22 | 2239 | 561 | 64 | 1019 |
| Du Pont, Francis G., Wilmington, Del. Making smokeless explosives | 503,587 | Aug. 22 | 2241 | 561 / 562 | 64 | 1019 |
| Du Pont, Francis G. and P. S., Wilmington, Del. Making smokeless explosives | 503,583 | Aug. 22 | 2231 | 560 | 64 | 1017 |
| Du Pont, Francis G. and P. S., Wilmington, Del. Making smokeless explosives | 503,585 | Aug. 22 | 2236 | 561 | 64 | 1018 |
| Du Pont, Pierre S. (See Du Pont, Francis G. and P. S.) | | | | | | |
| Du Pont, Thomas C., Central City, Ky. Coal-weighing basket | 505,304 | Sept. 19 | 1778 | 461 | 64 | 1631 |
| Du Shane, James, South Bend, Ind. Curry-comb | 505,756 | Sept. 26 | 2432 | 614 | 64 | 1766 |
| Dubosc, André. (See Hermite and Dubosc.) | | | | | | |
| Ducros, Louis. (See Tymeson and Ducros.) | | | | | | |
| Dudley, George E., Provo, Utah Ter. Door check and spring | 504,826 | Sept. 12 | 853 | 219 | 64 | 1444 |
| Duff, John T., Pittsburg, Pa. Car-brake | 500,649 | July 4 | 183 | 48 | 64 | 36 |
| Duffield, Harry, *et al.* (See Ford, Charles S., Sr., assignor.) | | | | | | |
| Duffy, Peter, New York, N. Y. Piano | 505,447 | Sept. 26 | 1874 | 482 | 64 | 1662 |
| Dugan, John J., Salem, Oreg. Bedstead | 500,867 | July 4 | 530 | 137 | 64 | 96 |
| Dugan, John J., Salem, Oreg. Spraying device | 503,455 | Aug. 15 | 2012 | 499 | 64 | 901 |
| Duggan, Francis, Odessa, Del. Combined pitchfork and band-cutter | 501,773 | July 18 | 1987 | 491 | 64 | 391 |
| Duke, James B., New York, N. Y. Cigarette-machine | 503,582 | Aug. 22 | 2230 | 559 / 560 | 64 | 1017 |
| Dumars, Horace, Brooklyn, N. Y. Theatrical device | 501,647 | July 18 | 1770 | 440 / 441 | 64 | 354 |
| Dumas, Frank C., New York, N. Y. Cuff | 503,762 | Aug. 22 | 2232 | 630 | 64 | 1073 |
| Dunbar, Francis W., New York, N. Y., assignor to American Telephone and Telegraph Company, of New York. Visible signal | 501,185 | July 11 | 1044 | 264 | 64 | 205 |
| Dunbar, Francis W., New York, N. Y., assignor to American Telephone and Telegraph Company, of New York. Electric switchboard signal | 502,660 | Aug. 1 | 692 | 166 | 64 | 693 |
| Dunbar, Henry D., North Hartland, Vt. Driving connection for compound engines | 502,956 | Aug. 8 | 1215 | 299 | 64 | 894 |
| Dunbar, Henry D., North Hartland, Vt. Piston-valve | 504,153 | Aug. 29 | 3141 | 785 | 64 | 1396 |
| Duncan, James. (See Duncan, Robert B. and J.) | | | | | | |
| Duncan, John H., Syracuse, N. Y. Vacuum-pan | 503,312 | Aug. 15 | 1803 | 448 | 64 | 983 |
| Duncan, John H. H., London, England. Churn | 503,854 | Aug. 22 | 2357 | 588 | 64 | 1039 |
| Duncan, Robert B. and J., Gormley, Canada. Farm-fence | 504,025 | Aug. 29 | 2939 | 735 | 64 | 1167 |
| Duncan, Thomas, Fort Wayne, Ind. Multiphase meter | 500,868 | July 4 | 531 | 138 | 64 | 97 |
| Duncan, Thomas, Fort Wayne, Ind. Meter for alternating, pulsating, or intermittent electric currents | 501,000 | July 4 | 732 | 192 / 193 | 64 | 133 |
| Dunham, W. C., *et al.* (See Dahill, Thomas H., assignor.) | | | | | | |
| Dunlop, John B., Sr., and John B., Jr., Dublin, Ireland; said Dunlop, Jr., assignor to said Dunlop, Sr. Spring-rim for wheels | 501,409 | July 11 | 1411 | 353 | 64 | 271 |
| Dunn, Frank M. (See Dunn, Wilbur A. and F. M.) | | | | | | |
| Dunn, Franklin M., Baltimore, Md. Electro-mechanical gong | 504,927 | Sept. 12 | 856 | 219 / 220 | 64 | 1444 |
| Dunn, John M., Toronto, Canada. Boiler-tube cleaner | 504,569 | Sept. 5 | 427 | 108 | 64 | 1349 |
| Dunn, Wilbur A. and F. M., Newton, Iowa. Can-labeling machine | 500,568 | July 4 | 46 | 14 | 64 | 10 |
| Dunnington, Frank D., Buckhannon, W. Va. Carpenter's square | 501,774 | July 18 | 1988 | 492 | 64 | 391 |
| Duplex Printing Press Company. (See Cox, Joseph L., assignor.) | | | | | | |
| Durand, Oscar N. (See Hastings and Durand.) | | | | | | |
| Durborow, Edwin D. (See Callaghan, George F., assignor.) | | | | | | |
| Duret, James S., Noblesville, Ind. Calculating device | 504,776 | Sept. 12 | 774 | 195 | 64 | 1439 |
| Durflinger, Oliver L., Shelbyville, Ind. Foot-guard for railways | 501,927 | July 25 | 2235 | 558 | 64 | 450 |
| Durkin, Daniel, Woonsocket, R. I., assignor to G. Draper & Sons, Hopedale, Mass. Loom | 501,001 | July 4 | 737 | 193 | 64 | 134 |
| Durkin, Daniel, West Upton, assignor to Dutcher Temple Company, Hopedale, Mass. Loom-temple | 503,906 | Aug. 22 | 2731 | 685 | 64 | 1113 |
| Durnbaugh, Joseph A. (See Stutz and Durnbaugh.) | | | | | | |
| Durr, Charles C., Plymouth, Ind. Artificial tooth | 504,196 | Aug. 29 | 3086 | 775 | 64 | 1198 |
| Dürr, Gustav, Dusseldorf, Germany. Steam-boiler | 501,612 | July 18 | 1715 | 428 | 64 | 345 |
| Durst, Murray H., Wheatland, Cal. Magazine-gun | 502,812 | Aug. 8 | 963 | 235 / 236 / 237 | 64 | 758 |
| Dusang, John E., Larue, Ohio. Fence | 504,570 | Sept. 5 | 428 | 108 / 109 | 64 | 1349 |



*Alphabetical list of patentees, July to September, inclusive*—Continued.

| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drg. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Dutcher Temple Company. (See Durkin, Daniel, assignor.) | | | | | | |
| Dutcher Temple Company. (See Tomlinson, Ambrose, assignor.) | | | | | | |
| Dutton, Rufus, New York, N. Y. Machine for grinding mower-knives | 503,127 | Aug. 15 | 1494 | 367 / 368 | 64 | 868 |
| Dutton, Samuel T., Worcester, England. Measuring-pump | 503,529 | Aug. 15 | 2133 | 536 | 64 | 984 |
| Dutton, Samuel T., Worcester, England. Interlocking apparatus for railway signaling | 503,530 | Aug. 15 | 2136 | 536 | 64 | 984 |
| Dwelly, Charles H., assignor of one-half to S. N. Turner, Hanover, Mass. Wagon-jack | 501,410 | July 11 | 1413 | 354 | 64 | 271 |
| Dyas, Webster M., Arlington Heights, Ill. Hot-air register | 504,469 | Sept. 5 | 256 | 66, 67 | 64 | 1318 |
| Dyer, Millard F., assignor to Automatic Register Company, Detroit, Mich. Display-cabinet | 505,035 | Sept. 12 | 1199 | 308 / 309 | 64 | 1510 |
| E. & H. T. Anthony & Company. (See Smith, Burgess, assignor.) | | | | | | |
| E. J. Brooks & Company. (See Brooks, Edward J., assignor.) | | | | | | |
| Eagle Cotton Gin Company. (See Gammons, Ferdinand C., assignor.) | | | | | | |
| Eagle Pencil Company. (See Boman, Claes W., assignor.) | | | | | | |
| Eagle Pencil Company. (See Norell, Ernst, assignor.) | | | | | | |
| Eagle Pencil Company. (See Stuart, Tom R., assignor.) | | | | | | |
| Eames, Henry H., Baltimore, Md., assignor to Eames Purifying and Separating Company, of West Virginia. Desulphurizing metallic ores | 502,431 | Aug. 1 | 305 | 73 | 64 | 622 |
| Eames Purifying and Separating Company. (See Eames, Henry H., assignor.) | | | | | | |
| Earle, Charles H., assignor to A. H. Smith, Salem, Mass. Railway-chair | 503,835 | Aug. 22 | 2627 | 657 | 64 | 1092 |
| Earle, Salyer R., Belleville, Canada. Combined air injector and exhauster | 504,334 | Sept. 5 | 35 | 11 | 64 | 1278 |
| Earles, Frank A. (See Earles, John H. and F. A.) | | | | | | |
| Earles, John H. and F. A., Denver, Colo. Lubricator | 502,264 | July 25 | 2782 | 703 | 64 | 553 |
| Early, John, *et al.* (See Jones, Thomas D., assignor.) | | | | | | |
| Eastern Hampton Bell Company. (See Abell, Irvin H., assignor.) | | | | | | |
| Eastman Kodak Company. (See Brownell, Frank A., assignor.) | | | | | | |
| Eastman, William E., Boston, Mass. Refrigerator-car | 502,601 | Aug. 1 | 694 | 166 | 64 | 693 |
| Eastman, William E., Boston, Mass. Refrigerator-car | 502,602 | Aug. 1 | 696 | 166 | 64 | 693 |
| Easton & Burnham Machine Company. (See Hawes, Colin A., assignor.) | | | | | | |
| Easton, Edgar, Kansas City, Mo. Gage for riveting-machines | 500,689 | July 4 | 533 | 138 | 64 | 97 |
| Easton, Thomas O., A. Watt, and J. Buchanan, Jr., Liverpool, England. Bag-filter | 502,511 | Aug. 1 | 442 | 106 / 107 | 64 | 648 |
| Eastwood, George, Norwich, England. Stereotyping | 503,950 | Aug. 29 | 2818 | 704 | 64 | 1146 |
| Eatherton, Henry H., Monticello, Ill. Flood-gate | 500,870 | July 4 | 534 | 138 | 64 | 97 |
| Eaton, Aaron J., *et al.* (See Miller, Henry O., assignor.) | | | | | | |
| Eaton, Solomon. (See Clarke, Edward H., assignor.) | | | | | | |
| Eberhart, William A., Asbury Park, N. J. Supply and waste pipe | 500,871 | July 4 | 535 | 138 / 139 | 64 | 97 |
| Eberle, Charles R., Philadelphia, Pa. Portable letter-press | 503,280 | Aug. 15 | 1739 | 429 / 430 | 64 | 913 |
| Ebert, Ira F., Oskaloosa, Iowa. Wire-stretcher | 504,127 | Aug. 29 | 3097 | 775 | 64 | 1198 |
| Ebert, John S., Brooklyn, N. Y. Shutter-fastener | 503,128 | Aug. 15 | 1498 | 368 | 64 | 869 |
| Ecaubert, Frederic, Brooklyn, N. Y. Die for making type-wheels | 500,801 | July 4 | 429 | 113 | 64 | 79 |
| Eccleston, William H., Southbridge, Mass. Eyeglasses | 502,879 | Aug. 8 | 1075 | 265 | 64 | 779 |
| Eckman, Jacob, Brooklyn, N. Y. Soap-press | 504,206 | Aug. 29 | 3236 | 807 / 808 | 64 | 1294 |
| Eclipse Wind-Engine Company. (See Ford, Henry W., assignor.) | | | | | | |
| Eddy, George A. (See Nash and Eddy.) | | | | | | |
| Eddy, George W., Watertord, N. Y., assignor to L. K. Eddy, Boston, Mass. Car-wheel | 504,416 | Sept. 5 | 168 | 44 | 64 | 1302 |
| Eddy, Lyman K. (See Eddy, George W., assignor.) | | | | | | |
| Edelheim, Carl. (See Osborne, John W., assignor.) | | | | | | |
| Edgar, Ellis F., Woodbridge, N. J. Tubular boiler | 505,036 | Sept. 12 | 1201 | 309 | 64 | 1510 |
| Edge, James, assignor of one-half to S. H. Brooks, Gorton, England. Apparatus for grinding revolving flats of carding-engines | 501,995 | July 25 | 2328 | 582 / 583 | 64 | 468 |
| Edison General Electric Company. (See Ball, Henry P., assignor.) | | | | | | |
| Edmister, Worden, assignor to J. Ast, Mount Vernon, Ohio. Churn | 502,179 | July 25 | 2629 | 663 | 64 | 526 |
| Edmunds, George C., Rochester, assignor of one-half to F. G. Ramsdell, Macedon Centre, N. Y. Whiffletree-hook | 501,002 | July 4 | 738 | 193 | 64 | 134 |
| Edmunds, George C., Rochester, assignor of one-half to F. G. Ramsdell, Macedon Centre, N. Y. Holdback | 501,003 | July 4 | 738 | 193 | 64 | 134 |
| Edsall, William H., Brooklyn, N. Y. Lamp | 502,880 | Aug. 8 | 1076 | 265 | 64 | 779 |
| Edsall, William H., and H. C. H. Walsh, Brooklyn, assignors to H. L. Judd & Company, New York, N. Y. Lamp-burner gallery | 502,284 | Aug. 1 | 32 | 7 | 64 | 572 |
| Edward Miller & Company. (See Williams, Frank T., assignor.) | | | | | | |
| Edward P. Allis Company. (See Gray, William D., assignor.) | | | | | | |
| Edward P. Allis Company. (See Shaw, Solomon, assignor.) | | | | | | |
| Edwards, Charles H., Alta, Iowa. Automatic band-cutter and feeder | 504,715 | Sept. 12 | 659 | 167 | 64 | 1406 |
| Edwards, Cora S., Centropolis, Mo. Toy | 500,567 | July 4 | 46 | 14 | 64 | 10 |
| Edwards, Edgar A., Cincinnati, Ohio. Electric automatic steam-governor | 504,492 | Sept. 5 | 300 | 76, 77 | 64 | 1336 |
| Edwards, Edgar A., Cincinnati, Ohio. Steam-motor | 504,493 | Sept. 5 | 304 | 77 | 64 | 1336 |
| Edwards, Edgar A., Cincinnati, Ohio. Steam-motor | 505,350 | Sept. 19 | 1702 | 439 / 440 | 64 | 1617 |
| Edwards, Edgar A., Cincinnati, Ohio. Electric headlight | 505,351 | Sept. 19 | 1705 | 440 | 64 | 1617 |
| Edwards, Robert. (See Hornaby, Edwards, and Gibbon.) | | | | | | |
| Edwards, Victor E., assignor to Morgan Construction Company, Worcester, Mass. Shears for cutting rods while in motion | 505,512 | Sept. 26 | 1993 | 511 | 64 | 1683 |
| Egan, Charles E., and F. M. Bailey, Chicago, Ill.; said Egan assignor to said Bailey. Temperature-indicator | 504,335 | Sept. 5 | 36 | 11 | 64 | 1278 |
| Ehlert, Charles O., New York, N. Y. Conduit electric railway | 505,081 | Sept. 12 | 1292 | 331 | 64 | 1586 |
| Ehrlich, Leo, St. Louis, Mo., assignor, by mesne assignments, to National Cash Register Company, Dayton, Ohio. Electrical cash register, recorder, and indicator | 502,987 | Aug. 1 | 35 | 8 / 9 / 10 / 11 | 64 | 573 |
| Ehrlich, Leo, St. Louis, Mo., assignor, by mesne assignments, to National Cash Register Company, Dayton, Ohio. Cash register | 502,353 | Aug. 1 | 174 | 40, 41 | 64 | 598 |
| Ehrlich, Leo, St. Louis, Mo., assignor, by mesne assignments, to National Cash Register Company, Dayton, Ohio. Blind for cash registers and indicators | 504,470 | Sept. 5 | 258 | 67 | 64 | 1318 |
| Eicken, Richard de, Paris, France. Horseshoe | 502,354 | Aug. 1 | 177 | 41 | 64 | 598 |
| Eickershoff, John H., assignor to United States Engine Company, Cincinnati, Ohio. Steam-engine | 501,223 | July 11 | 1098 | 279 / 280 | 64 | 216 |
| Eickershoff, John H., assignor to United States Engine Company, Cincinnati, Ohio. Engine | 501,224 | July 11 | 1101 | 280 | 64 | 216 |
| Eilers, Hio P., Cleveland, Ohio. Cushioned clutch | 505,037 | Sept. 12 | 1202 | 309 | 64 | 1511 |

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| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Dr'g. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Eisele, Charles, Newark, N. J. Pliers, nippers, or similar tool | 505,217 | Sept. 19 | 1494 | 339 | 64 | 1577 |
| Eisenhart, Charles A., York, Pa. Insulator pin and bracket machine | 505,309 | Sept. 19 | 1648 | 426 | 64 | 1606 |
| Eisenhart, Edward H., New York, N. Y. Match-bunching machine | 500,879 | July 4 | 537 | 139 | 64 | 97 |
| Ekholm, William C., Joliet, Ill. Electric belt | 504,336 | Sept. 5 | 38 | 11 | 64 | 1278 |
| Ekström, Axel, Lynn, Mass., assignor to Thomson-Houston Electric Company, of Connecticut. Socket for incandescent lamps | 501,905 | July 11 | 1079 | 272 | 64 | 211 |
| Eldredge, Alonzo W. (See Hobart and Eldredge.) | | | | | | |
| Eldredge, Clyde T., Kirkwood, Ohio. Cultivator | 500,873 | July 4 | 540 | 140 | 64 | 98 |
| Eldredge, Rolfe, New York, N. Y. Dynamo-electric machine | 504,914 | Sept. 12 | 986 | 257, 258 | 64 | 1473 |
| Eldridge, Griffith M., Philadelphia, Pa. Ore washer and concentrator | 502,663 | Aug. 1 | 697 | 167 | 64 | 693 |
| Eldridge, Hilliary. (See Martyr and Eldridge.) | | | | | | |
| Electric Car Company of America. (See Hunter, Rudolph M., assignor.) | | | | | | |
| Electric Cutting Machine Company. (See Caldwell, Henry A., assignor.) | | | | | | |
| Electric Cutting Machine Company. (See Salisbury, Wilber S., assignor.) | | | | | | |
| Electrical Forging Company. (See Burton and Angell, assignors.) | | | | | | |
| Elevator Safety Manufacturing Company. (See Reynolds, Charles J., assignor.) | | | | | | |
| Elgin National Watch Company. (See Buchanan, David R., assignor.) | | | | | | |
| Elgin National Watch Company. (See Corliss, Charles P., assignor.) | | | | | | |
| Elgin National Watch Company. (See Cutter, John M., assignor.) | | | | | | |
| Elgin National Watch Company. (See Hunter, George R., assignor.) | | | | | | |
| Elkins, William H., Cambridge, Mass., assignor to Thomson-Houston Electric Company, of Connecticut. Regulator for dynamo-electric machines | 501,059 | July 11 | 830 | 216 | 64 | 166 |
| Elkins, William H., Cambridge, Mass., assignor to General Electric Company, of New York. Regulator | 502,985 | Aug. 1 | 33 | 8 | 64 | 572 |
| Ellicott, Charles E. and F., Lake Roland, Md. Hydraulic dredger | 503,655 | Aug. 29 | 9358 | 569 | 64 | 1039 |
| Ellicott, Francis. (See Ellicott, Charles E. and F.) | | | | | | |
| Elliot, Henry, St. Louis, Mo. Railway-crossing | 500,706 | July 4 | 277 | 75 | 64 | 52 |
| Elliott, Manning, and A. J. Crigler, Monroe City, Mo. Churn | 502,286 | Aug. 1 | 34 | 8 | 64 | 572 |
| Elliott, Robert C., Prairie Creek, Ind. Picture-exhibitor | 503,129 | Aug. 15 | 1409 | 368, 369 | 64 | 869 |
| Elliott, W. K., *et al.* (See Smith, George, assignor.) | | | | | | |
| Ellis, Edgar E., assignor of two-thirds to E. R. Andrews and A. L. Lahnkering, Rochester, N. Y. Magazine-camera | 500,707 | July 4 | 278 | 75, 76 | 64 | 52 |
| Ellis, John D., Sheffield, England. Boiler-furnace | 501,709 | July 18 | 1877 | 467 | 64 | 372 |
| Ellis, John S. (See Barnes, John S., assignor.) | | | | | | |
| Ellison, Joseph C. (See Sweet, Thomas, assignor.) | | | | | | |
| Ellison, William T., Jr., Salford, and J. Unsworth, Jr., assignors to G. Thomas, Manchester, England. Turnstile | 501,680 | July 18 | 1837 | 455 | 64 | 363 |
| Ellis, George F., Binghamton, N. Y. Water bandage | 500,548 | July 4 | 49 | 15 | 64 | 11 |
| Ellwood, Isaac L., De Kalb, Ill. Metallic fencing | 502,512 | Aug. 1 | 445 | 107 | 64 | 648 |
| Elmore, Alexander S., Leeds, assignor to Elmore's American and Canadian Patent Copper Depositing Company, Limited, London, England. Apparatus for the electrolytic manufacture of tubes | 503,076 | Aug. 8 | 1393 | 344 | 64 | 837 |
| Elmore's American and Canadian Patent Copper Depositing Company. (See Elmore, Alexander S., assignor.) | | | | | | |
| Elmorr, Alonzo B., Magnolia, Ark. Dental bracket | 504,828 | Sept. 12 | 857 | 220 | 64 | 1444 |
| Elrod, Walter, *et al.* (See Miller, Daniel F., assignor.) | | | | | | |
| Elterich, Gotthold O. (See Elterich, Otto P. and G. O.) | | | | | | |
| Elterich, Otto P. and G. O., Maywood, N. J. Shoe | 503,588 | Aug. 22 | 2244 | 562 | 64 | 1020 |
| Elwell, Howard P. (See Hunt, David F., assignor.) | | | | | | |
| Ely, William, assignor of one-half to W. S. Johnson and H. Wolcott, Providence, R. I. Whistle | 504,716 | Sept. 12 | 661 | 168 | 64 | 1407 |
| Emerson, Don C., Peoria, Ill. Tongue-support | 503,205 | Aug. 15 | 1619 | 397 | 64 | 892 |
| Emerson, Talcott & Co. (See Jones, James H., assignor.) | | | | | | |
| Emerson, Talcott & Co. (See Traphagen, William H., assignor.) | | | | | | |
| Emery, Abram D., Taunton, Mass. Double tension device for looms | 503,456 | Aug. 15 | 2013 | 489, 500 | 64 | 961 |
| Emery, Abram D., Taunton, Mass. Lay-driving mechanism for vertical looms | 503,457 | Aug. 15 | 2015 | 500 | 64 | 962 |
| Emery, Abram D., Taunton, Mass. Take-up mechanism for looms | 503,458 | Aug. 15 | 2017 | 501 | 64 | 962 |
| Emery, Abram D., Taunton, Mass. Picker for looms | 503,459 | Aug. 15 | 2019 | 501 | 64 | 962 |
| Emery Abram D., Taunton, Mass. Shedding mechanism for looms | 503,460 | Aug. 15 | 2020 | 501, 502, 503 | 64 | 962 |
| Emery, Abram D., Taunton, Mass. Stopping mechanism for looms | 503,461 | Aug. 15 | 2024 | 503, 504 | 64 | 962 |
| Emery, Abram D., Taunton, Mass. Let-off mechanism for looms | 503,462 | Aug. 15 | 2027 | 504, 505 | 64 | 963 |
| Emery, Abram D., Taunton, Mass. Fluff-catcher for vertical looms | 503,463 | Aug. 15 | 2030 | 505 | 64 | 964 |
| Emery, Abram D., Taunton, Mass. Picker for looms | 503,464 | Aug. 15 | 2031 | 505 | 64 | 964 |
| Emery, Abram D., Taunton, Mass. Race-rail for double-shed vertical looms | 503,465 | Aug. 15 | 2033 | 506 | 64 | 964 |
| Emery, Abram D., Taunton, Mass. Weft stop mechanism for looms | 503,466 | Aug. 15 | 2034 | 506 | 64 | 964 |
| Emery, Abram D., Taunton, Mass. Loom | 503,467 | Aug. 15 | 2036 | 507 | 64 | 965 |
| Emery, Abram D., Taunton, Mass. Let-off mechanism for looms | 503,468 | Aug. 15 | 2039 | 508 | 64 | 965 |
| Emery, Abram D., Taunton, Mass. Shedding mechanism for looms | 503,469 | Aug. 15 | 2040 | 508, 509 | 64 | 966 |
| Emery, Abram D., Taunton, Mass. Picking mechanism for looms | 503,470 | Aug. 15 | 2042 | 509 | 64 | 966 |
| Emery, Abram D., Taunton, Mass. Fluffing-discharger for looms | 503,471 | Aug. 15 | 2045 | 509 | 64 | 966 |
| Emery, Abram D., Taunton, Mass. Picker-cam for looms | 503,472 | Aug. 15 | 2049 | 510 | 64 | 967 |
| Emory, Abram D., and W. T. Deanelly, Taunton, Mass. Loom | 503,472 | Aug. 15 | 2046 | 510 | 64 | 967 |
| Emery, Henry. (See Garfield, Julius D., assignor.) | | | | | | |
| Emmens, Stephen H., London, England. Electrolytic bath | 501,996 | July 25 | 2230 | 584 | 64 | 469 |
| Emmens, Stephen H., London, England. Apparatus for the electrolytic extraction of metals | 501,997 | July 25 | 2231 | 584 | 64 | 469 |
| Emmet, William L., Chicago, Ill. Lightning-arrester | 503,780 | Aug. 22 | 2567 | 659 | 64 | 1040 |
| Emond, William H., Boston, Mass. Carriage | 505,197 | Sept. 19 | 1463 | 377 | 64 | 1572 |
| Emons, Charles, West Troy, N. Y. Wagon-jack | 502,397 | Aug. 1 | 946 | 59 | 64 | 611 |
| Engel, Godfrey, South Baltimore, Md. Refining sugar | 501,878 | July 18 | 2142 | 531, 532 | 64 | 418 |
| Engelke, Leopold A. H., Philadelphia, Pa. Fire-escape | 504,868 | Sept. 12 | 922 | 239 | 64 | 1456 |
| Engle, Jacob P., San Francisco, Cal. Means for utilising waste products of petroleum | 505,395 | Sept. 19 | 1779 | 461 | 64 | 1631 |
| English, Andrew J., Cincinnati, Ohio. Hydrocarbon-vaporizing burner | 503,531 | Aug. 15 | 2137 | 536 | 64 | 984 |
| English & Mersick. (See Pfeghar, Frank P., assignor.) | | | | | | |
| Engstfeld, Augustin C. L., Memphis, Tenn. Tramway-switch | 503,474 | Aug. 15 | 2050 | 511 | 64 | 967 |
| Eanis, George A., Livingston, Mont. Seat | 504,915 | Sept. 12 | 1001 | 258 | 64 | 1473 |



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|---|---|---|---|---|---|---|
| Erb, Harry P., St. Louis, Mo., assignor of one-half to J. P. Bolin, Vandalia, Ill. Cultivator | 502,957 | Aug. 8 | 1216 | 299, 300 | 64 | 804 |
| Erckson, Edward, assignor of one-half to G. C. Pierce and J. P. Olson, Ouray, Colo. Rotary harrow | 505,038 | Sept. 12 | 1203 | 310 | 64 | 1511 |
| Ericson, Richard W., Aurora, Ill. Discharge apparatus for coal or ore bins | 504,673 | Sept. 5 | 589 | 150 | 64 | 1381 |
| Ericson, Richard W., Aurora, Ill. Discharge apparatus for coal or ore docks | 504,674 | Sept. 5 | 591 | 150 | 64 | 1381 |
| Ericson, Richard W., Aurora, Ill. Discharge apparatus for coal or ore docks | 504,675 | Sept. 5 | 593 | 151 | 64 | 1382 |
| Ernst, Wendell. (See Wagener, William, assignor.) | | | | | | |
| Errington, William, Melbourne, Victoria. Automatic stone-cutting and stone-dressing machinery | 505,624 | Sept. 26 | 2201 | 557 | 64 | 1724 |
| Erskine, Wilbur. (See Cameron, John S., assignor.) | | | | | | |
| Ertel, George. (See Menefee and Ertel.) | | | | | | |
| Ertel, George. (See Sheer, Henry M., assignor.) | | | | | | |
| Ertel, George, Quincy, Ill. Brooder | 501,775 | July 18 | 1989 | 492 | 64 | 392 |
| Erwin, Alexander J., Mansfield, Ohio. Hot-air furnace | 505,096 | Sept. 19 | 1308 | 337 | 64 | 1544 |
| Eschner, Louis, Philadelphia, Pa. Guide for double-needle sewing-machines | 504,571 | Sept. 5 | 429 | 109 | 64 | 1350 |
| Esmond, Ernest R., New York, N. Y. Railway-rail | 500,688 | July 4 | 249 | 67 | 64 | 47 |
| Esmond, Ernest R., New York, N. Y. Electric motor | 505,206 | Sept. 19 | 1781 | 461 | 64 | 1631 |
| Espey, William C., *et al.* (See Preston, Charles W., assignor.) | | | | | | |
| Essex, David, New York, N. Y. Corset-clasp | 505,288 | Sept. 19 | 1609 | 418 | 64 | 1589 |
| Esslck, William B., Manley, Nebr. Conductor support and insulator | 503,039 | Aug. 8 | 1342 | 331 | 64 | 828 |
| Estep, William J. (See Lewis and Estep.) | | | | | | |
| Estey Organ Company. (See Fuller, Levi K., assignor.) | | | | | | |
| Ethridge, Martin V. B., Everett, Mass., assignor to American Postal Machines Company, of Maine. Stamp-canceling machine | 503,836 | Aug. 29 | 9028 | 657 | 64 | 1092 |
| Ettien, James, Utica, Mont. Land-irrigating system | 501,245 | July 11 | 1132 | 287 | 64 | 221 |
| Etting, Alice M. (See Cately, Shepard W., assignor.) | | | | | | |
| Eureka Process Lasting Company. (See Norwood, Benjamin A., assignor.) | | | | | | |
| Eustis, William E. C., Milton, Mass. Electric locomotive | 501,246 | July 11 | 1134 | 288 | 64 | 221 |
| Evans, Caleb S., Union City, Ind. Magazine-gun | 505,757 | Sept. 26 | 2433 | 614 | 64 | 1766 |
| Evans, Evan, Chicora, Pa. Fluid-pressure regulator | 504,973 | Sept. 12 | 1098 | 280 | 64 | 1491 |
| Evans, George R., assignor of one-half to B. Zehnder, San Francisco, Cal. Amalgamation of precious metals | 502,902 | Aug. 8 | 1118 | 275 | 64 | 787 |
| Evans, James H. (See Johnson, Frederick A., assignor.) | | | | | | |
| Evans, John, Bridgeport, Conn. Toy | 502,709 | Aug. 8 | 808 | 195 | 64 | 728 |
| Evans, Nathan A., Spartanburg, S. C. Railway-track tamping-machine | 504,063 | Aug. 29 | 2992 | 748 | 64 | 1177 |
| Evans, William H., Gainesville, Ga. Churn-dasher | 502,186 | July 25 | 2631 | 663 | 64 | 526 |
| Evans, William J., assignor to McKeason & Robbins, New York, N. Y. Atomizer | 503,837 | Aug. 22 | 2630 | 658 | 64 | 1092 |
| Even, Louis, Jeffriesburg, Mo. Bootjack | 503,838 | Aug. 22 | 2631 | 658 | 64 | 1093 |
| Everett, Mary S., Brooklyn, N. Y. Stand for sad-irons | 503,410 | Aug. 15 | 1945 | 483 | 64 | 950 |
| Everhart, Martin, Austin, Tex. Clock-winding mechanism | 505,704 | Sept. 26 | 2350 | 595 | 64 | 1751 |
| Everhart, Theodore L., Bakersville, Ohio. Spring-motor | 502,988 | Aug. 1 | 43 | 11 | 64 | 575 |
| Everitt, Percival, London, England. Automatic gas lighting or extinguishing apparatus | 504,447 | Sept. 5 | 216 | 56, 57, 58 | 64 | 1310 |
| Everitt, Walter E., Buffalo, N. Y. Earth boring and drilling machine | 502,958 | Aug. 8 | 1219 | 300 | 64 | 804 |
| Evershed, Sydney, London, England. Electric-measuring apparatus for alternate currents | 503,589 | Aug. 22 | 2245 | 562 | 64 | 1020 |
| Evler, August K. M. H. (See Zechernig, Friedrich K., assignor.) | | | | | | |
| Ewart, William D., Chicago, Ill., assignor to Dodge Coal Storage Company, Philadelphia, Pa. Apparatus for handling coal | 502,250 | July 25 | 2756 | 697 | 64 | 549 |
| Ewing, Benjamin, Brighton, Canada. Milk-agitator | 503,951 | Aug. 29 | 2921 | 704 | 64 | 1146 |
| Excelsior Iron Works Company. (See Long, Timothy, assignor.) | | | | | | |
| Faber, Eberhard. (See Fornander, Alfred, assignor.) | | | | | | |
| Fabricius, Carl, Vienna, Austria-Hungary. Hydrocarbon-vapor burner | 501,496 | July 18 | 1530 | 384 | 64 | 309 |
| Faestel, Annie L., Milwaukee, Wis. Tailor's drafting device | 503,741 | Aug. 22 | 2502 | 623 | 64 | 1067 |
| Fahey, John. (See Cox and Fahey.) | | | | | | |
| Fair, William F., London, assignor to I. L. Berridge, Leicester, England. Buttonhole sewing-machine | 500,708 | July 4 | 280 | 76, 77 | 64 | 52 |
| Fairbanks, Crawford M., Central Falls, assignor of one-half to G. E. Cranston, Riverside, R. I. Vegetable-slicing machine | 501,928 | July 25 | 2236 | 558 | 64 | 451 |
| Fairchild, Frank A. (See Lundy, John C., assignor.) | | | | | | |
| Fairchild, Frank J., assignor of one-half to J. J. Wall, Saginaw, Mich. Fire-escape | 502,070 | July 25 | 2452 | 616 | 64 | 491 |
| Faith, Lewis, assignor of one-half to J. T. Bridges, Hancock, Md. Machine for packing cement in barrels | 505,758 | Sept. 26 | 2438 | 615 | 64 | 1767 |
| Falconer, Ernest J. (See Booth and Falconer.) | | | | | | |
| Falconer, William, Selma, Cal. Land-leveler | 500,874 | July 4 | 542 | 140 | 64 | 98 |
| Fales, Edward, Boston, Mass. Stove or furnace | 505,448 | Sept. 26 | 1875 | 482 | 64 | 1662 |
| Fales, Edward, Boston, Mass. Stove or furnace | 505,449 | Sept. 26 | 1876 | 483 | 64 | 1662 |
| Fales, Edward, Boston, Mass. Grate | 505,450 | Sept. 26 | 1877 | 483 | 64 | 1663 |
| Fales, Edward, Winthrop, Mass. Shaking mechanism for grates | 505,451 | Sept. 26 | 1878 | 483 | 64 | 1663 |
| Fales, Edward, Winthrop, Mass. Furnace | 505,452 | Sept. 26 | 1879 | 484 | 64 | 1663 |
| Fales, Edward, Winthrop, Mass. Stove or furnace | 505,453 | Sept. 26 | 1881 | 484 | 64 | 1663 |
| Fales, Lewis F., Walpole, Mass. Paper-box machine | 503,907 | Aug. 22 | 2731 | 685, 686 | 64 | 1113 |
| Falkenau, Arthur. (See Freeman, Stuart E., assignor.) | | | | | | |
| Falletti, Eduardo, Rome, Italy. Instrument for measuring distances and solving trigonometrical problems | 504,869 | Sept. 12 | 923 | 238 | 64 | 1459 |
| Fallon, John W., Baltimore, Md. Metallic roofing | 503,789 | Aug. 22 | 2569 | 639 | 64 | 1081 |
| Fallows, Joseph, 2d, Southbridge, Mass. Slicing mechanism for bread, &c | 504,429 | Sept. 5 | 194 | 50 | 64 | 1307 |
| Fanckboner, William, Schoolcraft, Mich. Umbrella-support | 504,717 | Sept. 12 | 663 | 168 | 64 | 1407 |
| Fane, Thomas. (See Lavender, Charles F., assignor.) | | | | | | |
| Fanning, David H. (See Henius, Max W., assignor.) | | | | | | |
| Farbenfabriken, vormals Fr. Bayer & Co. (See Haasencamp, Hugo, assignor.) | | | | | | |
| Farbenfabriken, vormals Fr. Bayer & Co. (See Lauch, Richard, assignor.) | | | | | | |
| Farbenfabriken, vormals Fr. Bayer & Co. (See Lauch and Krekeler, assignors.) | | | | | | |
| Farbenfabriken, vormals Fr. Bayer & Co. (See Pfitzinger, William, assignor.) | | | | | | |
| Farbenfabriken, vormals Fr. Bayer & Co. (See Runkel, Friedrich, assignor.) | | | | | | |
| Farbenfabriken, vormals Fr. Bayer & Co. (See Schmidt, Robert E., assignor.) | | | | | | |
| Farbenfabriken, vormals Fr. Bayer & Co. (See Ulrich and Lauch, assignors.) | | | | | | |
| Farmer, Luther C., assignor to Farmer's Autographic Register Company, Minneapolis, Minn. Autographic register | 503,532 | Aug. 15 | 2138 | 537 | 64 | 984 |
| Farmer's Autographic Register Company. (See Farmer, Luther C., assignor.) | | | | | | |
| Farr, Charles W., Chicago, Ill. Ear-phone attachment | 501,600 | July 18 | 1696 | 422 | 64 | 341 |

*Alphabetical list of patentees, July to September, inclusive*—Continued.

| Name, residence, and invention. | No. | Date. | Monthly volume. | | Official Gazette. | |
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| | | | Spec. | Dr'g. | Vol. | Page. |
| Farrell, Joseph P., assignor to O'Brien & Sons, San Francisco, Cal. Gear connection for platform-springs | 501,411 | July 11 | 1414 | 354 | 64 | 271 |
| Farwell, Fay O., assignor of one-half to Adams Company, Dubuque, Iowa. Stove-back | 501,412 | July 11 | 1415 | 354 | 64 | 272 |
| Fasoldt, Ernest C. (See Thacher and Fasoldt.) | | | | | | |
| Fatka, John, Racine, Wis. Stuffing-machine | 503,952 | Aug. 29 | 2922 | 705 | 64 | 1146 |
| Fancett, Solomon F., Saybrook, Ill. Sliding gate | 503,040 | Aug. 8 | 1243 | 331 | 64 | 628 |
| Faucompré, Xavier G. E. de, Paris, France. Photographic roll-holder | 500,875 | July 4 | 544 | 141 | 64 | 99 |
| Fauvel, Charles J., London, England. Treating refractory ores | 502,161 | July 25 | 2632 | 663 | 64 | 526 |
| Fauvel, Charles J., London, England. Treating refractory ores | 503,839 | Aug. 22 | 2632 | 658 | 64 | 1093 |
| Faville, George C., assignor of one-half to D. E. Curran, Baltimore, Md. Stock-car | 501,413 | July 11 | 1416 | 355 | 64 | 272 |
| Fawcett, John W., Rastrick, and E. Jones, Whitcliffe, assignors to Samuel Law & Sons, Limited, Cleckheaton, England. Card-flat-clothing fastener | 504,572 | Sept. 5 | 431 | 109<br>110 | 64 | 1350 |
| Fay, William H., assignor of one-half to F. G. Mitchell, Kansas City, Mo. Wine-cooler | 502,114 | July 25 | 2523 | 632<br>633 | 64 | 513 |
| Featherstone, Alfred, Chicago, Ill. Adjusting device for chain-wheels of bicycles | 504,870 | Sept. 12 | 926 | 238 | 64 | 1459 |
| Fehrenbatch, John, assignor of two-thirds to F. C. Weir, Cincinnati, Ohio. Furnace for making gas | 505,759 | Sept. 26 | 2441 | 615 | 64 | 1768 |
| Feitel, Isaac. (See Rickey and Feitel.) | | | | | | |
| Feldmann, Frank J., Detroit, Mich. Flooring or other lumber | 502,289 | Aug. 1 | 44 | 11 | 64 | 575 |
| Felthousen, Barrent, Milwaukee, Wis. Device for heating water in bath-tubs | 500,802 | July 4 | 430 | 113 | 64 | 79 |
| Feltman, George, New York, N. Y. Bottling-machine | 503,840 | Aug. 22 | 2633 | 659 | 64 | 1093 |
| Fenner, George P., New London, Conn. Sheet-splitting attachment for printing-presses | 505,352 | Sept. 19 | 1709 | 441 | 64 | 1617 |
| Fenner, George P., New London, Conn. Sheet-guide for printing-machines | 505,353 | Sept. 19 | 1710 | 441 | 64 | 1618 |
| Fenner, Marvin M., assignor of one-half to J. R. Shea, Waupun, Wis. Fountain-pen | 503,763 | Aug. 22 | 2533 | 630 | 64 | 1073 |
| Fenton Metallic Manufacturing Company. (See Hine, James W., assignor.) | | | | | | |
| Fenton Metallic Manufacturing Company. (See Kelley, Manley S., assignor.) | | | | | | |
| Ferguson, Alvah P., Ann Arbor, Mich. Road-cart | 501,776 | July 18 | 1990 | 492 | 64 | 392 |
| Ferguson, Robert, St. Paul, Minn. Hydrocarbon-furnace | 502,710 | Aug. 8 | 809 | 198 | 64 | 729 |
| Fernald, Charles F., assignor of one-half to A. J. Ochs, Boston, Mass. Cyclometer | 503,953 | Aug. 29 | 2924 | 705 | 64 | 1147 |
| Ferrell, Frank J., New York, N. Y. Valve | 501,497 | July 18 | 1531 | 384<br>385 | 64 | 309 |
| Fourgason, Albert M., Millport, N. Y. Extension-ladder | 502,290 | Aug. 1 | 45 | 11, 12 | 64 | 575 |
| Fiala, Andrew H. (See Hedbavny and Fiala.) | | | | | | |
| Fiedler, George J., and A. C. Prohl, Milwaukee, Wis. Car-fare holder | 504,026 | Aug. 29 | 2940 | 735 | 64 | 1168 |
| Fieger, John, New York, N. Y. Dumping-wagon | 501,998 | July 25 | 2333 | 584 | 64 | 469 |
| Field, Benjamin F., and E. P. Clark, Los Angeles, Cal. Feed-water heater and purifier | 502,035 | July 25 | 2398 | 603<br>604 | 64 | 481 |
| Field, Charles C., New York, N. Y. Wagon-seat | 503,411 | Aug. 15 | 1946 | 484 | 64 | 950 |
| Field, Frank. (See Stafford and Field.) | | | | | | |
| Field, Millard F., Taunton, Mass. Car-fender | 502,959 | Aug. 8 | 1221 | 300<br>301 | 64 | 805 |
| Field, Stephen D., Yonkers, N. Y. Telegraphy | 503,590 | Aug. 22 | 2246 | 563<br>564 | 64 | 1020 |
| Field, Walter D., Wyoming, N. J. Manufacture of varnish | 504,064 | Aug. 29 | 2995 | ..... | 64 | 1178 |
| Fielden, Eli, Britannia, near Bacup, assignor to E. T. Whitelow, Manchester, England. Slate-cleaner | 505,787 | Sept. 26 | 2482 | 626 | 64 | 1776 |
| Fielder, James W. (See Kern and Fielder.) | | | | | | |
| Fielding, John, Gloucester, England. Means for starting gas or oil motor engines | 505,760 | Sept. 26 | 2444 | 615 | 64 | 1768 |
| Fifield, Charles S., Revere, Mass. Skiving-machine | 505,198 | Sept. 19 | 1463 | 378 | 64 | 1572 |
| Filippi, Domenico, Paterson, N. J. Loom for weaving endless and jointless fabrics | 502,182 | July 25 | 2632 | 664 | 64 | 536 |
| Finck, Nicholas, Elizabeth, N. J., assignor to P. L. B. Coomba, St. Joseph, Mo. Carbureting-lamp | 502,251 | July 25 | 2757 | 697 | 64 | 549 |
| Findlater, George W. (See Smith and Findlater.) | | | | | | |
| Finke, Fidelio. (See Gay and Finke.) | | | | | | |
| Finke, Louis. (See Gross, John B., assignor.) | | | | | | |
| Finlayson, Alexander W., and E. Popkins, Detroit, Mich. Steam-generator | 500,803 | July 4 | 432 | 113 | 64 | 80 |
| Finlayson, Christopher T., Denver, Colo. Wire-rope tramway | 505,397 | Sept. 19 | 1781 | 462 | 64 | 1631 |
| Finletter, Robert W., *et al.*, administrators. (See Bradford, Hezekiah.) | | | | | | |
| Finley, James H., *et al.* (See Hunt, Edward P., assignor.) | | | | | | |
| Finnegan, Peter H., Austin, Ill. Revolver | 504,154 | Aug. 29 | 3142 | 785<br>786 | 64 | 1206 |
| Finney, Jasper, and G. Davidson, Goulding, assignors of one-third to E. E. Reese, Pensacola, Fla. Means for guiding floating logs, &c | 505,039 | Sept. 12 | 1205 | 310 | 64 | 1511 |
| Finney, Walter A., Hillsborough, Ill. Safety-catch for elevators | 505,289 | Sept. 19 | 1611 | 418 | 64 | 1600 |
| Fischer, George F., Rochester, N. Y. Car-truck | 503,412 | Aug. 15 | 1947 | 484 | 64 | 950 |
| Fischer, John, assignor of one-half to J. R. Stauffer, Scottdale, Pa. Car-coupling | 502,711 | Aug. 8 | 811 | 196 | 64 | 729 |
| Fischer, Therese R., Baltimore, Md. Tea or coffee pot | 501,648 | July 18 | 1772 | 441 | 64 | 355 |
| Fischer, Therese R., Baltimore, Md. Skewer for closing fowls | 504,777 | Sept. 12 | 775 | 196 | 64 | 1429 |
| Fishel, Henry W., New York, N. Y. Boutonnière | 502,852 | Aug. 8 | 1035 | 253 | 64 | 771 |
| Fishel, Henry W., New York, N. Y. Boutonnière | 502,853 | Aug. 8 | 1036 | 254 | 64 | 771 |
| Fishel, Henry W., New York, N. Y. Boutonnière | 502,854 | Aug. 8 | 1036 | 254 | 64 | 771 |
| Fishel, Henry W., New York, N. Y. Boutonnière | 502,855 | Aug. 8 | 1037 | 254 | 64 | 772 |
| Fisher, Ansel W., Charlotte, Me. Thill-coupling | 502,690 | Aug. 1 | 693 | 149 | 64 | 581 |
| Fisher, Charles J., Chicago, Ill. Burglar-alarm | 501,777 | July 18 | 1991 | 492 | 64 | 392 |
| Fisher, Elmendorf C., Port Richmond, N. Y., assignor to Universal Street Sweeping Machine Company. Street-sweeper | 503,936 | Aug. 22 | 2764 | 692 | 64 | 1119 |
| Fisher, William N., Gloucester, Mass. Making anchors | 503,591 | Aug. 22 | 2253 | 564<br>565 | 64 | 1021 |
| Fishering, William A. (See Whittington and Fishering.) | | | | | | |
| Fiske, Bradley A., U. S. Navy. Telescopic sight for ships' guns | 504,337 | Sept. 5 | 39 | 12 | 64 | 1278 |
| Fiske, Jonathan P. B., Lynn, assignor to General Electric Company, Boston, Mass. Brush for dynamo-electric machines and motors | 501,000 | July 11 | 831 | 216 | 64 | 167 |
| Fiske, Jonathan P. B., Lynn, Mass., assignor to Thomson-Houston Electric Company, of Connecticut. Electric-contact apparatus | 501,206 | July 11 | 1073 | 273 | 64 | 211 |
| Fitch, Jenny B., Utica, N. Y. Salad-mixing device | 501,649 | July 18 | 1773 | 441<br>442 | 64 | 355 |
| Fitch, Thaddeus S., Alameda, Cal. Knockdown egg or fruit carrier | 503,313 | Aug. 15 | 1895 | 448 | 64 | 923 |
| Fitch, William E., Louisville, Ky. Fireplace-grate | 501,061 | July 11 | 832 | 216 | 64 | 167 |
| Fitler, Edward E., Philadelphia, Pa. Garment-protector | 503,841 | Aug. 22 | 2635 | 659 | 64 | 1093 |
| Fitts, George C., Durham, N. C. Chamber-vessel | 501,501 | July 18 | 1697 | 423 | 64 | 341 |
| Fitts, Norman V., Worcester, Mass. Safety device for elevators | 500,876 | July 4 | 546 | 141<br>142 | 64 | 99 |
| Fitzgerald, Ira A. (See Fitzgerald, William H., assignor.) | | | | | | |
| Fitzgerald, James H., Winston, N. C. Railway-gate | 504,974 | Sept. 12 | 1092 | 281 | 64 | 1492 |



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| Fitzgerald, Peter J., Hyde Park, Mass. Letter-box | 501,270 | July 11 | 1170 | 297 | 64 | 227 |
| Fitzgerald, William H., Monroe, assignor to I. A. Fitzgerald, Sapona, N. C. Bed-brace | 502,115 | July 25 | 2526 | 633 | 64 | 505 |
| Fitzgerell, James J., Denver, Colo. Combined ore-separator and amalgamator | 501,879 | July 18 | 2147 | 532 | 64 | 419 |
| Flagg, Eli. W., assignor to Nichols & Shepard Company, Battle Creek, Mich. Automatic grain-measurer | 504,155 | Aug. 29 | 3144 | 786 | 64 | 1206 |
| Flagg, George C., Lewistown, Ill. Wagon end-gate | 504,448 | Sept. 5 | 218 | 58 | 64 | 1311 |
| Flagg, George H. P. (See Webster, Harold A., assignor.) | | | | | | |
| Flagg, Samuel H., Providence, R. I. Conduit for electric railways | 504,676 | Sept. 5 | 594 | 151 | 64 | 1382 |
| Flake, John G. F., Cincinnati, Ohio. Combined knife and pencil and eraser holder | 501,225 | July 11 | 1104 | 280 | 64 | 217 |
| Flanders, Brown S., Boston, Mass. Portable telephone | 502,398 | Aug. 1 | 247 | 59 | 64 | 611 |
| Fleming, Clifford A., Huntsville, Mo. Hay rake and loader | 504,975 | Sept. 12 | 1101 | 281<br>282 | 64 | 1492 |
| Fleming, James H., Newark, N. J. Watchcase-spring | 503,314 | Aug. 15 | 1806 | 448 | 64 | 923 |
| Fleming, Peter F., Huntsville, Mo. Hay-stacker | 501,650 | July 18 | 1774 | 442 | 64 | 355 |
| Fletcher, Benjamin L., Cincinnati, Ohio, assignor to Fletcher Fire Mat Company, Newport, Ky. Fire-mat | 504,156 | Aug. 29 | 3146 | 786 | 64 | 1207 |
| Fletcher Fire Mat Company. (See Fletcher, Benjamin L., assignor.) | | | | | | |
| Fletcher, James W., Knoxville, Tenn. Washer-fastener for hose-couplings, &c | 503,344 | Aug. 15 | 1855 | 459 | 64 | 933 |
| Fliege, Henry C. (See Friedericha and Fliege.) | | | | | | |
| Flint, Benjamin F., Cincinnati, Ohio. Electric-light fixture | 505,097 | Sept. 19 | 1309 | 337 | 64 | 1544 |
| Flint, Benjamin F., Cincinnati, Ohio. Revolving electric light | 505,098 | Sept. 19 | 1310 | 338 | 64 | 1544 |
| Flint, Edwin H., Cincinnati, Ohio, assignor to G. S. Prindle, Washington, D. C. Stem winding and setting watch | 503,533 | Aug. 15 | 2139 | 537 | 64 | 985 |
| Flockhart, James, Newark, N. J., assignor of one-half to E. Maher. Molder's flask | 501,414 | July 11 | 1417 | 355 | 64 | 272 |
| Floerckey, Dorothea M., Philadelphia, Pa. Garment-fastener | 502,432 | Aug. 1 | 307 | 73 | 64 | 622 |
| Flohr, Otto, Buffalo, N. Y. Car-coupling | 502,413 | Aug. 1 | 275 | 65 | 64 | 616 |
| Flohr, Otto, assignor of two-thirds to H. Altman and G. E. Mann, Buffalo, N. Y. Combined car truck and coupling | 502,411 | Aug. 1 | 271 | 64 | 64 | 616 |
| Flohr, Otto, assignor of two-thirds to H. Altman and G. E. Mann, Buffalo, N.Y. Car-coupling | 502,412 | Aug. 1 | 273 | 65 | 64 | 616 |
| Flood, James H., Bridgeport, Pa. Burner attachment for lighting lamps | 504,471 | Sept. 5 | 261 | 68 | 64 | 1319 |
| Flory, John, Grand Rapids, Mich. Combined folding bed and dressing-case | 504,778 | Sept. 12 | 776 | 196 | 64 | 1429 |
| Flower, Alfred H., *et al.* (See Gates, Matthias, assignor.) | | | | | | |
| Flower, Augustus F. (See Flower and Cousins.) | | | | | | |
| Flower, John W., A. F., and R. J. Cousins, Shaftesbury, England. Barrel-washer | 502,414 | Aug. 1 | 276 | 66 | 64 | 617 |
| Flowers, John S., Three Oaks, Mich., assignor of one-half to M. H. Nye, Washington, D. C. Paper-cutter | 502,415 | Aug. 1 | 278 | 66 | 64 | 617 |
| Flowers, Phillip, St. Louis, Mo. Folding bed | 502,291 | Aug. 1 | 47 | 12 | 64 | 575 |
| Fludder, Alexander J., and F. M. Sisson, Newport, R. I. Brush for cleaning chimneys or flues | 505,761 | Sept. 26 | 2445 | 615 | 64 | 1768 |
| Flynn, Jeremiah, Syracuse, N. Y. Composition for architectural purposes | 503,592 | Aug. 22 | 2255 | ..... | 64 | 1021 |
| Flynn, John W., Bordentown, N. J. Car-coupling | 501,929 | July 25 | 2237 | 558 | 64 | 451 |
| Fogarty, Thomas B., Long Island City, assignor of one-twentieth to E. Cowen, New York, N. Y. Apparatus for and process of obtaining combined nitrogen and fuel gases | 500,650 | July 4 | 184 | 48 | 64 | 36 |
| Fogarty, Thomas B., Long Island City, assignor of one-twentieth to E. Cowen, New York, N. Y. Method of and apparatus for producing cyanides and ammonia | 500,651 | July 4 | 186 | 48, 49 | 64 | 37 |
| Fogg, Mary, Beaver Dam, Wis. Thread-cutting attachment for thimbles | 502,036 | July 25 | 2400 | 604 | 64 | 481 |
| Foley, James. (See Schneider and Foley.) | | | | | | |
| Foley, Jerry, Syracuse, N. Y. Wrench | 505,513 | Sept. 26 | 1997 | 511 | 64 | 1684 |
| Folk, Jesse E., Brooklyn, N. Y., assignor to Aktiebolaget Separator, Stockholm, Sweden. Centrifugal creamer | 504,430 | Sept. 5 | 196 | 50 | 64 | 1307 |
| Follett, Charles E., and G. Simpson, Oshkosh, Wis. Bridge-gate | 502,664 | Aug. 1 | 698 | 167 | 64 | 694 |
| Fombuena, Valentin S., Madrid, Spain. Cigarette-machine | 501,498 | July 18 | 1532 | 485<br>486<br>487 | 64 | 310 |
| Fontaine, Patrick H., Elmo, assignor of one-half to C. G. Holland and J. D. Blair, executors of E. Blair, deceased, Danville, Va. Apparatus for carbureting air | 501,778 | July 18 | 1993 | 493 | 64 | 392 |
| Foote, Charles H., Kansas City, Kans. Combined washer and nut-lock | 505,454 | Sept. 26 | 1893 | 485 | 64 | 1664 |
| Foote, John B., Hamilton, Ohio. Vegetable peeling machine | 501,613 | July 18 | 1716 | 428 | 64 | 345 |
| Forbes, Wilson H., Jeannette, Pa. Method of and apparatus for propelling producer-gases | 503,842 | Aug. 22 | 2636 | 659 | 64 | 1094 |
| Forbes, William H., and G. B. Shepley, Brooklyn, N. Y. Gear-casing | 504,338 | Sept. 5 | 42 | 12 | 64 | 1279 |
| Ford, Charles S., Sr., assignor to H. Duffield, Eden, Pa., and M. Clair, Bound Brook, N. J. Gas regulating burner | 501,459 | July 11 | 1477 | 371 | 64 | 284 |
| Ford, Henry W., assignor to Eclipse Wind-Engine Company, Beloit, Wis. Hoop-coupling | 504,677 | Sept. 5 | 595 | 151 | 64 | 1382 |
| Ford, Pierce, Chicago, Ill. Slicing-machine | 501,779 | July 18 | 1995 | 493 | 64 | 393 |
| Ford, Thomas P., Brooklyn, N. Y. Valve | 503,843 | Aug. 22 | 2637 | 660 | 64 | 1094 |
| Ford, William H. (See Perky and Ford.) | | | | | | |
| Forest City Furniture Company. (See Snyder, William D., assignor.) | | | | | | |
| Fornander, Alfred, New York, N. Y., assignor to E. Faber. Pencil-sharpener | 501,043 | July 4 | 800 | 209 | 64 | 146 |
| Forney, Henry C., Philadelphia, Pa. Freight or parcel carrier | 505,705 | Sept. 26 | 2354 | 595 | 64 | 1752 |
| Forrester, Isaac N., *et al.* (See Wilson, Milton M., assignor.) | | | | | | |
| Forslund, Hugo W., assignor to Standard Elevator Company and W. H. Wells, Jr., Chicago, Ill. Automatic stop-valve | 505,514 | Sept. 26 | 1998 | 512 | 64 | 1695 |
| Forsyth, Robert C., Chicago, Ill. Device for protecting steam-pipes | 504,871 | Sept. 12 | 927 | 239 | 64 | 1459 |
| Forsyth, William, Fresno, Cal. Paper box | 503,077 | Aug. 8 | 1394 | 344<br>345 | 64 | 837 |
| Foster, Charles H., New York, N. Y., assignor to Singer Manufacturing Company of New Jersey. Guide for sewing-machines | 501,930 | July 25 | 2239 | 550 | 64 | 451 |
| Foster, James D., Ironton, and C. A. Hammel, Findlay, Ohio. Oil-stove | 505,244 | Sept. 19 | 1533 | 400 | 64 | 1585 |
| Foster, James D., Ironton, and C. A. Hammel, Findlay, Ohio. Oil-stove | 505,245 | Sept. 19 | 1534 | 400 | 64 | 1585 |
| Foster, Lebbeus H., Adrian, Mich. Clamp for interlocking wires | 504,157 | Aug. 29 | 3146 | 786 | 64 | 1207 |
| Foster, Matthew H. (See Chase and Foster.) | | | | | | |
| Foster Pump Works. (See Misic, Michael, assignor.) | | | | | | |
| Foster, Thomas J. (See MacEachen, Samuel, assignor.) | | | | | | |
| Foulks, John P., Verde, Nev. Air-motor | 500,877 | July 4 | 547 | 142 | 64 | 100 |
| Fowler, Alfred B., and G. E. Warren, Exeter, N. H. Heel-trimming machine | 503,475 | Aug. 15 | 2053 | 511<br>512<br>513 | 64 | 968 |
| Fowler, Charles M., Salem, Mass. Door-securer | 504,207 | Aug. 29 | 3241 | 808 | 64 | 1224 |
| Fowler, Charles M., Salem, Mass. Fire-escape | 505,706 | Sept. 26 | 2357 | 595 | 64 | 1753 |
| Fowler, Chester F., St. Helen, Oreg. Gage for saws | 503,281 | Aug. 15 | 1740 | 430 | 64 | 913 |
| Fowler, Joinville F., Alliance, Ohio. Twine-binder | 503,844 | Aug. 22 | 2639 | 660<br>661<br>662 | 64 | 1095 |
| Fowler, Zack T., Santa Rosa, Cal. Carriage or buggy top enamel | 504,339 | Sept. 5 | 43 | ..... | 64 | 1279 |

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|---|---|---|---|---|---|---|
| Fox, Charles, Hinsdale, Ill. Autographic register | 502,924 | Aug. 8 | 1163 | 287 | 64 | 795 |
| Fox, Charles E., assignor to himself and T. J. Junkin, Natchez, Miss. Auxiliary mold-board, &c. | 503,413 | Aug. 15 | 1953 | 485 | 64 | 951 |
| Fox, Charles H., Delano, assignor to J. M. Gilstrop, Dannt, Cal. Refrigerator | 504,804 | Sept. 12 | 826 | 206 | 64 | 1437 |
| Fox, Clarence W., Sangus, Mass. Funnel | 502,891 | Aug. 8 | 1077 | 266 | 64 | 779 |
| Fox, Elijah J., Broadway, Ohio. Wire-stretcher | 502,813 | Aug. 8 | 976 | 238 | 64 | 760 |
| Fox, John H. (See Harder and Fox.) | | | | | | |
| Fox Machine Company. (See Fox, William R., assignor.) | | | | | | |
| Fox, Samson, Harrogate, England. Bogie-truck for railway-carriages | 505,159 | Sept. 19 | 1406 | 360, 361, 362 | 64 | 1561 |
| Fox Solid Pressed Steel Company. (See Barnes, David L., assignor.) | | | | | | |
| Fox Solid Pressed Steel Company. (See Mackenzie-Hughes, Edward W., assignor.) | | | | | | |
| Fox, Truman V. (See Lisk, David A., assignor.) | | | | | | |
| Fox, William R., assignor to Fox Machine Company, Grand Rapids, Mich. Shaping-machine | 502,621 | Aug. 1 | 633 | 149, 150 | 64 | 681 |
| Fox, William R., assignor to Fox Machine Company, Grand Rapids, Mich. Pulley | 504,908 | Aug. 29 | 3942 | 808 | 64 | 1225 |
| Fox, William R., assignor to Fox Machine Company, Grand Rapids, Mich. Wood-trimmer | 504,909 | Aug. 29 | 3942 | 808, 809 | 64 | 1225 |
| Foy, Martin H. (See Klahr, Petty, and Foy.) | | | | | | |
| Frackmann, Henry W., Scranton, Pa. Water-tube safety-boiler | 503,130 | Aug. 15 | 1501 | 389 | 64 | 870 |
| Francis, Allan E., Cleveland, Ohio. Spectacle-frame | 505,650 | Sept. 26 | 2259 | 572 | 64 | 1735 |
| Francis, George E. (See White, Otis C., assignor.) | | | | | | |
| Francis, George T., assignor of one-half to Standard Elevator Company, Chicago, Ill. Guide-post clamp | 505,515 | Sept. 26 | 2000 | 512 | 64 | 1685 |
| Francis, Harry H., Madison, N. J. Artificial stem for cut flowers | 501,134 | July 11 | 963 | 246 | 64 | 190 |
| Francis, Joseph. (See Oxnam, Joyce, and Francis.) | | | | | | |
| Franck, Emil J., Philadelphia, Pa. Circular-knitting machine | 502,292 | Aug. 1 | 52 | 13 | 64 | 576 |
| Franck, Emil, assignor, by mesne assignments, to National Automatic Knitter Company, Philadelphia, Pa. Circular-knitting machine | 504,417 | Sept. 5 | 170 | 44, 45, 46 | 64 | 1302 |
| Frank, George. (See Vollmar, Jacob C., assignor.) | | | | | | |
| Frank, Peter, Portland, Mo. Stove | 500,878 | July 4 | 549 | 142 | 64 | 100 |
| Frank, Samuel. (See Kalkkuhl, Carl, assignor.) | | | | | | |
| Franke, Frans R. A., Berlin, Germany. Bronzing-machine | 504,718 | Sept. 12 | 664 | 168 | 64 | 1408 |
| Frankel, Charles, Baltimore, Md. Display-rack | 500,879 | July 4 | 550 | 143 | 64 | 100 |
| Frankel, Charles, Baltimore, Md. Display-rack | 504,916 | Sept. 12 | 1003 | 259 | 64 | 1474 |
| Frankenberg, Friedrich, Berlin, Germany. Roller-skate | 503,233 | Aug. 15 | 1666 | 410 | 64 | 900 |
| Franklin, Edward A., assignor to Texas Invention Company, Austin, Tex. Siphon-pump for oil cans | 503,232 | Aug. 15 | 1665 | 409 | 64 | 899 |
| Franklin, Ella F. (See Franklin, Lewis S., assignor.) | | | | | | |
| Franklin, Lewis S., assignor to E. F. Franklin, Parkersburg, W. Va. Horse-checking device | 502,092 | July 25 | 2490 | 626 | 64 | 498 |
| Fransmann, John, New York, N. Y. Ventilator for apartments | 500,880 | July 4 | 550 | 143 | 64 | 100 |
| Fraser, Andrew, San Francisco, Cal. Ore-crushing machine | 501,999 | July 25 | 2334 | 585 | 64 | 469 |
| Fraser, Franklin W., Toronto, Canada. Stop-action for organs | 501,880 | July 18 | 2150 | 533 | 64 | 419 |
| Fraser, John, assignor to himself and A. C. Somner, Buffalo, N. Y. Earth-auger | 503,078 | Aug. 8 | 1396 | 345 | 64 | 837 |
| Fraser, Rena A., *et al.* (See Norton, Charles H., assignor.) | | | | | | |
| Frasher, Charles T., assignor of one-half to G. Reed, Mount Pleasant, Mich. Alarm for railway-crossings | 504,719 | Sept. 12 | 665 | 169 | 64 | 1408 |
| Frawley, John J., president. (See Barrett, Patrick J., assignor.) | | | | | | |
| Frazier, Alexander. (See Munton and Frazier.) | | | | | | |
| Frazier, George V., *et al.* (See Miller, Daniel F., assignor.) | | | | | | |
| Frazier, Luther L. (See Hodge, Martin P., assignor.) | | | | | | |
| Freas, Louis, Pittsburg, Pa. Means for operating elevator-doors | 503,345 | Aug. 15 | 1856 | 459 | 64 | 933 |
| Frederick, Edward. (See Kem and Frederick.) | | | | | | |
| Frederick Stearns & Company. (See Stearns, Albyn D., assignor.) | | | | | | |
| Fredin, Perjohan, assignor of one-half to E. Hewitt, New Haven, Conn. Truss | 504,158 | Aug. 29 | 3147 | 787 | 64 | 1207 |
| Freel, John, Whiting, Ind. Retort for stills | 504,917 | Sept. 12 | 1003 | 259 | 64 | 1474 |
| Freels, James N. (See Scates, William P., assignor.) | | | | | | |
| Freeman, George B., Racine, Wis. Manufacturing end-gate rods | 503,367 | Aug. 15 | 1895 | 469 | 64 | 940 |
| Freeman, George W., Maple Grove, Ala. Marking attachment for plows | 502,712 | Aug. 8 | 812 | 196 | 64 | 729 |
| Freeman, Stuart E., assignor to A. Falkenau, Philadelphia, Pa. Shank for holding rotary cutting-tools or tool-heads | 503,656 | Aug. 22 | 2350 | 589 | 64 | 1040 |
| Freeman, Thomas, Dublin, Ireland. Sulky | 502,093 | July 25 | 2490 | 626 | 64 | 498 |
| Freese, Diedrick J., Higginsville, Mo. Weight-motor | 502,814 | Aug. 8 | 977 | 238 | 64 | 760 |
| Fremont, Charles, Paris, France. Machine for sawing or cutting metals | 501,135 | July 11 | 964 | 246 | 64 | 190 |
| French, George M., Jr., Chicago, Ill. Metal-drilling machine | 505,516 | Sept. 26 | 2001 | 512 | 64 | 1685 |
| French, James C., New York, N. Y. Vault or floor light | 504,872 | Sept. 12 | 928 | 239 | 64 | 1459 |
| French, Zachary T., and W. C. Meyer, Boston, Mass. Welt-making machine | 505,508 | Sept. 26 | 2166 | 548 | 64 | 1718 |
| Fretwell, John A., Gainesville, Ga. Bed-brace | 504,910 | Aug. 29 | 3244 | 809 | 64 | 1225 |
| Frey-Sheckler Company. (See Hight, William S., assignor.) | | | | | | |
| Frey-Sheckler Company. (See Thompson, John, assignor.) | | | | | | |
| Frey-Sheckler Company. (See Thompson and Vaughn, assignors.) | | | | | | |
| Friant, Thomas, *et al.* (See Raymond, Silas H., assignor.) | | | | | | |
| Friede, Samuel M., assignor of one-half to I. G. Brown, St. Louis, Mo. Combination hard and soft metal pipe coupler | 502,665 | Aug. 1 | 699 | 167 | 64 | 604 |
| Friedericha, John J., and H. C. Fliegel, Calumet, Mich. Inside cover for barrels, &c. | 503,414 | Aug. 15 | 1954 | 485 | 64 | 951 |
| Friedheim, J. B. (See Humason, Daniel L., assignor.) | | | | | | |
| Friedline, Abraham. (See Brierly, Conant B., assignor.) | | | | | | |
| Friedrich, Pancratius. (See Schmid, Charles, assignor.) | | | | | | |
| Fries, Charles, and W. H. Richardson, Philadelphia, Pa. Milk-can | 504,027 | Aug. 29 | 2941 | 736 | 64 | 1168 |
| Fries, John W., Salem, N. C. Machine for softening cloth | 502,903 | Aug. 8 | 1119 | 275, 276 | 64 | 788 |
| Friese, Augustus W., *et al.* (See Ramien, Edgar F., assignor.) | | | | | | |
| Frioux, Vincent, Perryville, Mo. Gate | 504,829 | Sept. 12 | 856 | 220 | 64 | 1444 |
| Frisbie, Samuel, Unionville, Conn. Riveting-machine | 501,661 | July 18 | 1829 | 455, 456 | 64 | 364 |
| Frischen, Johann H., assignor to Siemens & Halske, Berlin, Germany. Semaphore-operating device | 501,092 | July 11 | 833 | 216, 217 | 64 | 167 |
| Frischen, Johann H., assignor to Siemens & Halske, Berlin, Germany. Block-signal indicating mechanism | 503,718 | Aug. 22 | 2460 | 612 | 64 | 1059 |
| Frischen, Johann H., assignor to Siemens & Halske, Berlin, Germany. Block-signal apparatus | 505,419 | Sept. 19 | 1824 | 470 | 64 | 1639 |



*Alphabetical list of patentees, July to September, inclusive*—Continued.

| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drs. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Frischen, Johann H., assignor to Siemens & Halske, Berlin, Germany. Block-signal apparatus | 505,420 | Sept. 19 | 1828 | 470, 471 | 64 | 1640 |
| Frist, John E., Baltimore, Md. Vehicle-wheel | 504,340 | Sept. 5 | 44 | 13 | 64 | 1279 |
| Frist, John E., Baltimore, Md. Vehicle-wheel | 504,573 | Sept. 5 | 432 | 110 | 64 | 1350 |
| Fritz, George W. (See Boland and Fritz.) | | | | | | |
| Frizzell, Charles E., Grand Glaise, Ark. Neck-yoke connection for vehicle-poles | 503,657 | Aug. 22 | 2362 | 589 | 64 | 1040 |
| Frontenak, Joseph, Duluth, Minn. Pocket-book | 505,040 | Sept. 12 | 1206 | 311 | 64 | 1512 |
| Frost, Walter E., Lewiston, Me., assignor to S. W. Jamison Boot and Shoe Crimping Machine Company, New York, N. Y. Crimping-machine | 501,044 | July 4 | 802 | 209 | 64 | 146 |
| Frost, Walter E., Lewiston, assignor of three-fourths to L. J. Cotè, Waterville, Me. Machine for making paper hoops | 505,421 | Sept. 19 | 1833 | 471 | 64 | 1641 |
| Frucht, Karl, Berlin, Germany. Machine for finishing washers | 504,830 | Sept. 12 | 859 | 220, 221, 222, 223 | 64 | 1445 |
| Fry, John. (See Triplett and Fry.) | | | | | | |
| Fry, Michael, Bloomington, Ill. Grass-gathering attachment for lawn-mowers | 505,310 | Sept. 19 | 1649 | 426, 427 | 64 | 1607 |
| Frykholm, Olof Y., Austin, Ill. Hydrostatic leveling-instrument | 505,259 | Sept. 19 | 1568 | 409 | 64 | 1592 |
| Fuchs, Jean, Portoferrajo, Italy. Grafting implement | 505,651 | Sept. 26 | 2260 | 572 | 64 | 1735 |
| Fuchs, Rudolph, New York, N. Y. Cluster-setting for gems | 505,218 | Sept. 19 | 1495 | 390 | 64 | 1578 |
| Fuel Patents Company. (See Nirdlinger, Max, assignor.) | | | | | | |
| Fuller, Franklin I. (See McLellan, Robert A., assignor.) | | | | | | |
| Fuller, Henry C., assignor of one-half to T. A. Watson, Bentonville, Ark. Weather-strip | 500,759 | July 4 | 366 | 95 | 64 | 68 |
| Fuller, Hiram H., Meadville, Pa. Drill-press | 505,517 | Sept. 26 | 2003 | 512 | 64 | 1686 |
| Fuller, Levi K., assignor to Estey Organ Company, Brattleborough, Vt. Reed-organ | 502,606 | Aug. 1 | 702 | 168 | 64 | 694 |
| Fuller, Samuel R. (See Miller, Lee A., assignor.) | | | | | | |
| Fuller, Theodore. Glens Falls, N. Y. Cooking-stove | 500,569 | July 4 | 50 | 15 | 64 | 11 |
| Fuller, Willard M., Denver, Colo. Amalgamator | 504,678 | Sept. 5 | 596 | 152 | 64 | 1302 |
| Fullerton, Spencer, *et al.* (See Wilson, Milton M., assignor.) | | | | | | |
| Fullum, James F., Everett, Mass., assignor to Fullum Shoe Stretcher Company. Shoe-stretcher | 503,742 | Aug. 22 | 2503 | 623 | 64 | 1068 |
| Fullum Shoe Stretcher Company. (See Fullum, James F., assignor.) | | | | | | |
| Fulton, James S. (See Talley, William A., assignor.) | | | | | | |
| Fulton, Samuel M., and A. T. Ames, Galt, Cal. Pump | 505,599 | Sept. 26 | 2167 | 548 | 64 | 1718 |
| Fulton, William E. (See Lewis, Charles S., assignor.) | | | | | | |
| Funk, William R., assignor of one-fourth to W. T. Doughty, Lexington, Nebr. Spike | 502,856 | Aug. 8 | 1037 | 254 | 64 | 772 |
| Funke, Frans, Milwaukee, Wis. Injector | 501,271 | July 11 | 1172 | 297 | 64 | 228 |
| Furgason, Charles M., Oto, Iowa. Loading device | 504,976 | Sept. 12 | 1103 | 282 | 64 | 1492 |
| Furgeson, Dallas, Topeka, Kans. Water-tight lining | 505,041 | Sept. 12 | 1207 | 311 | 64 | 1512 |
| Furst, Paul, *et al.* (See Schofield, James D., assignor.) | | | | | | |
| Gabarro, Ramon, Barcelona, Spain. Electric dry cell | 503,415 | Aug. 15 | 1955 | 485 | 64 | 952 |
| Gadd, William, Manchester, England. Machine for cutting the pile of weft pile fabrics | 503,658 | Aug. 22 | 2363 | 590 | 64 | 1040 |
| Gahlan, Emil, Detroit, Mich. Lamp-guard | 502,458 | Aug. 1 | 352 | 84 | 64 | 631 |
| Gailbreath, Robert A., near Louisville, Ky. Meat-tenderer | 502,355 | Aug. 1 | 178 | 42 | 64 | 598 |
| Gaines, George W., Rockwood, Tenn. Catamenial sack | 501,563 | July 18 | 1638 | 410 | 64 | 331 |
| Gaines, Reuben R., *et al.* (See Smith, John D., assignor.) | | | | | | |
| Galbraith, William H. (See Groves, William P., assignor.) | | | | | | |
| Gale, Horatio, assignor to Gale Manufacturing Company, Albion, Mich. Spring-tooth for harrows | 502,488 | Aug. 1 | 408 | 96 | 64 | 642 |
| Gale Manufacturing Company. (See Gale, Horatio, assignor.) | | | | | | |
| Gale, Moses F., Brooklyn, N. Y. Dust collector and separator | 502,071 | July 25 | 2453 | 616 | 64 | 491 |
| Galer, Drusilla F., Palmyra, Pa. Heating attachment for cook-stoves | 501,499 | July 18 | 1536 | 387 | 64 | 311 |
| Gallagher, James B. (See Zane, George H., assignor.) | | | | | | |
| Gallagher, James R., Buena Vista, N. J. Street-sweeper | 505,455 | Sept. 26 | 1883 | 485, 486 | 64 | 1664 |
| Gallagher, John, Jr., Kansas City, Kans. Rocket-holder for railway-cars | 503,234 | Aug. 15 | 1667 | 410 | 64 | 900 |
| Gallegos, José, Ocós, Guatemala. Device for teaching spelling | 502,183 | July 25 | 2635 | 664 | 64 | 536 |
| Gallegos, José, Ocós, Guatemala. Device for teaching arithmetical calculations | 502,184 | July 25 | 2636 | 664 | 64 | 537 |
| Gallinowsky, Hugo, assignor of one-half to C. M. Yates, San Francisco, Cal. Ship's paint | 504,911 | Aug. 29 | 3245 | ..... | 64 | 1225 |
| Gamble, James N. (See Strong, George S., assignor.) | | | | | | |
| Gamble, Joseph W., Des Moines, Iowa. Draft-equalizer | 505,398 | Sept. 19 | 1787 | 463 | 64 | 1633 |
| Gamewell Fire Alarm Telegraph Company. (See Decrow, William E., assignor.) | | | | | | |
| Gammons, Ferdinand C., assignor to Eagle Cotton Gin Company, Bridgewater, Mass. Mechanism for automatically operating the air or cut-off valves of pneumatic seed-cotton conveyers | 500,804 | July 4 | 433 | 114 | 64 | 80 |
| Gans, Le, Frankfort-on-the-Main, and M. Hoffmann, Mainkur, near Frankfort-on-the-Main, assignors to L. Cassella & Co., Frankfort-on-the-Main, Germany. Black dye | 501,500 | July 18 | 1538 | ..... | 64 | 311 |
| Garbeal, Joseph, Moundsville, W. Va. Plant-protector | 505,354 | Sept. 19 | 1711 | 441 | 64 | 1618 |
| Gardner, John, Manchester, England. Type-writing machine | 505,547 | Sept. 26 | 2059 | 525 | 64 | 1697 |
| Gardner, John, and D. Marshall, Cheltenham, England, assignors to Overman Wheel Company, Chicopee Falls, Mass. Mud-guard for cycles | 505,290 | Sept. 19 | 1612 | 419 | 64 | 1600 |
| Gardner, John M., Jr., assignor of one-half to P. Weber, Pittsburg, Pa. Electric-lamp socket | 505,422 | Sept. 19 | 1834 | 471 | 64 | 1641 |
| Gardner, Lawrence, Manchester, England. Gas-regulator | 503,131 | Aug. 15 | 1503 | 369, 370 | 64 | 870 |
| Gardner, Oliver H. (See Tilton, Wheelock G., assignor.) | | | | | | |
| Gare, Thomas, Stockport, England. Pegging-machine | 500,652 | July 4 | 189 | 49 | 64 | 37 |
| Garey, Edwin A., Sciotavale, Pa. Gearing | 501,415 | July 11 | 1418 | 355 | 64 | 272 |
| Garfield, Julius D., Springfield, assignor of one-half to H. Emery, Holyoke, Mass. Photographic camera | 501,931 | July 25 | 2240 | 559, 560 | 64 | 452 |
| Garford, Arthur L., Elyria, Ohio. Bicycle-pedal | 503,206 | Aug. 15 | 1620 | 397 | 64 | 992 |
| Garland, Frank M., New Haven, Conn. Breech-block | 505,568 | Sept. 26 | 2118 | 536 | 64 | 1709 |
| Garner, John A., Kansas City, Mo. Type-writing machine | 502,072 | July 25 | 2455 | 616, 617 | 64 | 491 |
| | 504,418 | Sept. 5 | 178 | 46 | 64 | 1304 |
| Garrett, John A., Dalton City, Ill. Washing-machine | 503,845 | Aug. 22 | 2644 | 662 | 64 | 1095 |
| Garretson William H., Dallas, and S. B. Tainter, Gainesville, Tex. Apparatus for burning garbage, &c. | 501,614 | July 18 | 1718 | 428 | 64 | 346 |
| Garrison, William F., Brooklyn, N. Y. Pump for moving gaseous bodies | 504,341 | Sept. 5 | 45 | 13 | 64 | 1279 |
| Garritt, William H. H., Des Moines, Iowa. Combined rule, bevel, and square | 504,993 | Sept. 5 | 353 | 90 | 64 | 1335 |
| Gartaide Charles W., and R. E. Wood, Baltimore, Md. Double-pole switch | 505,518 | Sept. 26 | 2004 | 513 | 64 | 1688 |
| Gascoigne, Joseph, Worcester, Mass. Fireproof door or shutter | | | | | | |

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|---|---|---|---|---|---|---|
| Gaskins, Thomas, Arcadia, Fla. Dough-mixer | 504,873 | Sept. 12 | 929 | 239 | 64 | 1459 |
| Gates, Matthias, assignor to J. R. Snively, Wichita, Kans., A. H. Flower, and R. H. Gross, Boston, Mass. Intersecting miter | 500,570 | July 4 | 51 | 15 | 64 | 11 |
| Gathman, Louis, Chicago, Ill. Projectile | 502,713 | Aug. 8 | 813 | 197 | 64 | 759 |
| Gatling Gun Company. (See Broderick and Vankeirsbilck, assignors.) | | | | | | |
| Gatling, Richard J., Hartford, Conn. Machine-gun | 502,185 | July 25 | 2336 | 665 | 64 | 627 |
| Gatling, Richard J., Hartford, Conn. Feed for magazine-guns | 502,882 | Aug. 8 | 1078 | 266 | 64 | 780 |
| Gatling, Richard J., Hartford, Conn. Machine-gun | 504,831 | Sept. 12 | 868 | 223 | 64 | 1448 |
| Gaudet, Fred A., East Longmeadow, Mass. Car-coupling | 501,416 | July 11 | 1419 | 355 | 64 | 272 |
| Gaume, Cecile, administratrix. (See Gaume, Charles J. B.) | | | | | | |
| Gaume, Charles J. B., deceased, Brooklyn, N. Y.; C. Gaume, administratrix. Gas engine | 501,881 | July 18 | 2151 | 433 434 | 64 | 620 |
| Gaunt, Henry, and S. E. Wild, Woonsocket, R. I., assignors to Knowles Loom Works, Worcester, Mass. Stop-motion for looms | 504,852 | Sept. 12 | 869 | 223 224 | 64 | 1448 |
| Gause, Benjamin, Brooklyn, assignor to J. C. Calhoun, New York, N. Y. Cotton-harvester | 503,041 | Aug. 8 | 1344 | 331 332 | 64 | 928 |
| Gawron, Josef, assignor to M. Gawron, Stettin, Germany. Clutch | 503,650 | Aug. 22 | 2365 | 500 | 64 | 1041 |
| Gawron, Marie. (See Gawron, Josef, assignor.) | | | | | | |
| Gay, George E., and J. H. Parsons, Augusta, Me. Car-brake | 501,333 | July 11 | 1276 | 320 | 64 | 245 |
| Gay, Hermann, and F. Finke, assignors of one-third to A. H. Schulz, Baltimore, Md. Car-coupling | 501,710 | July 18 | 1879 | 467 | 64 | 372 |
| Gaylord, Henry S., Armona, Cal. Brush-burner | 505,099 | Sept. 19 | 1311 | 338 | 64 | 1545 |
| Gebhardt, Henry J., Minneapolis, Minn. Wire-and-picket-fencing machine | 503,207 | Aug. 15 | 1621 | 398 399 | 64 | 892 |
| Gebhardt, William C., assignor of one-half to O. McGaffey, Jr., Luling, Tex. Hose or pipe coupling | 503,282 | Aug. 15 | 1741 | 430 | 64 | 913 |
| Gebhardt, William C., assignor of two-thirds to O. McGaffey, Jr., and C. J. Buttfield, Luling, Tex. Painting-machine | 504,833 | Sept. 12 | 871 | 224 225 | 64 | 1448 |
| Gee, Alvah M., Edgar, Nebr. Battery-jar | 503,132 | Aug. 15 | 1504 | 370 | 64 | 870 |
| Gee, William, New York, N. Y. Fire-extinguisher | 502,186 | July 25 | 2338 | 665 | 64 | 627 |
| Gehricke, Otto, Heidelberg, Germany. Child's cycle | 501,501 | July 18 | 1538 | 387 | 64 | 311 |
| Gehrt, Albert A. (See Brown and Gehrt.) | | | | | | |
| Geisel, Theodor, Springfield, Mass. Wagon | 505,100 | Sept. 19 | 1312 | 338 | 64 | 1545 |
| Geisinger, James B., New York, N. Y. Penholder | 504,918 | Sept. 12 | 1005 | 250 | 64 | 1474 |
| Geissler, Rudolph, New York, N. Y. Gas lighter or extinguisher | 501,780 | July 18 | 1996 | 493 | 64 | 393 |
| Gekeler, Alvin G., Frostburg, Md. Seeder | 502,960 | Aug. 8 | 1223 | 301 | 64 | 905 |
| Geldbrant Svan, Galesburg, Ill. Coffee-pot | 505,042 | Sept. 12 | 1208 | 311 | 64 | 1512 |
| Gemmell, Robert, Brookline, Mass. Garment-supporter | 502,228 | July 25 | 2710 | 644 | 64 | 541 |
| Gendron, Peter, Toledo, Ohio. Gun-carrier for bicycles | 503,315 | Aug. 15 | 1807 | 448 | 64 | 934 |
| Gendron, Peter, Toledo, Ohio. Crank-shaft and bearing for bicycles | 503,790 | Aug. 22 | 2570 | 639 | 64 | 1081 |
| Gendron, Peter, Toledo, Ohio. Spoke-swaging machine | 503,791 | Aug. 22 | 2571 | 640 | 64 | 1081 |
| General Electric Company. (See Bassett, Norman C., assignor.) | | | | | | |
| General Electric Company. (See Bell, Louis, assignor.) | | | | | | |
| General Electric Company. (See Bentley, Edward M., assignor.) | | | | | | |
| General Electric Company. (See Blood, John B., assignor.) | | | | | | |
| General Electric Company. (See Burnett and Doane, assignors.) | | | | | | |
| General Electric Company. (See Elkins, William H., assignor.) | | | | | | |
| General Electric Company. (See Fiske, Jonathan P. B., assignor.) | | | | | | |
| General Electric Company. (See Haskins, Caryl D., assignor.) | | | | | | |
| General Electric Company. (See Herrick, Albert B., assignor.) | | | | | | |
| General Electric Company. (See Morrow, John T., assignor.) | | | | | | |
| General Electric Company. (See Parshall, Horace F., assignor.) | | | | | | |
| General Electric Company. (See Reist, Henry G., assignor.) | | | | | | |
| General Electric Company. (See Thomson, Elihu, assignor.) | | | | | | |
| Gennert, Emil F. (See Locker and Gennert.) | | | | | | |
| Geo. F. Blake Manufacturing Company. (See Laval, George de, assignor.) | | | | | | |
| Gerard, Walter, Ludlow Grove, Ohio, assignor of one-half to J. Winkel, Covington, Ky. Car-coupling | 501,460 | July 11 | 1478 | 371 | 64 | 284 |
| Gerdes, Henry G. (See Mammen, John F., assignor.) | | | | | | |
| Gergacsevics, Stefan. (See Wrattisch and Gergacsevics.) | | | | | | |
| Gerhardt, Lincoln, assignor of one-half to H. B. Varns, Washington, D. C. Sash-cord fastener | 500,760 | July 4 | 367 | 95 | 64 | 68 |
| Gerhart, John E. (See Bisbing and Gerhart.) | | | | | | |
| German, William M., *et al.* (See Ripson, John D., assignor.) | | | | | | |
| Geromont, Friedrich, Winkel, assignor to C. F. Boehringer & Soehne, Waldhof, near Mannheim, Germany. Lactyl-paraphenetidid and making it | 503,743 | Aug. 22 | 2504 | ..... | 64 | 1068 |
| Gerson, Isidor L., administrator. (See Woodruff, Theodore T.) | | | | | | |
| Gersting, Charles H., assignor of two-thirds to J. A. Burns and G. Gladden, Homestead, Pa. Feed-water regulator | 500,571 | July 4 | 53 | 15, 16 | 64 | 11 |
| Gest, Clemment W. and E. G., Brazier, Ohio. Cider-mill | 502,558 | Aug. 1 | 590 | 194 | 64 | 662 |
| Gest, Enoch G. (See Gest, Clemment W. and E. G.) | | | | | | |
| Getzs, William E., Quincy, Ill. Gyrating bolt | 502,116 | July 25 | 2327 | 633 | 64 | 505 |
| Geyler, P. J., *et al.* (See Cunningham, Richard B., assignor.) | | | | | | |
| Ghere, George. (See Ghere, Howard and G.) | | | | | | |
| Ghere, Howard and G., Frankfort, Ind. Straw-carrier | 504,212 | Aug. 29 | 3945 | 809 | 64 | 1225 |
| Gibb, Howard. (See Russel and Brady, assignors.) | | | | | | |
| Gibbon, William E. (See Hornsby, Edwards, and Gibbon.) | | | | | | |
| Gibboney, John W., Lynn, Mass. Balance | 502,433 | Aug. 1 | 308 | 74 | 64 | 622 |
| Gibbons, John A., Toronto, Canada. Advertising device | 504,919 | Sept. 12 | 1005 | 250 | 64 | 1474 |
| Gibbs, Eugene U., Mount Holly, N. J. Boiler for locomotive or other engines | 502,117 | July 25 | 2329 | 634 | 64 | 505 |
| Gibbs, Eugene U., assignor of three-fourths to R. B. Lamb, Mount Holly, N. J. Upright boiler | 501,711 | July 18 | 1880 | 466 | 64 | 372 |
| Gibbs, James E. A., Raphine, Va. Velocipede | 501,712 | July 18 | 1880 | 466 | 64 | 373 |
| Gibbs, Lucius T., Milwaukee, Wis. Trolley-wire support | 505,457 | Sept. 26 | 1826 | 486 | 64 | 1665 |
| Gibbs, William H., assignor of one-half to J. P. Graham, Mendon, Ill. Earth-auger | 505,456 | Sept. 26 | 1825 | 486 | 64 | 1664 |
| Gibson, Andrew K., assignor to T. Agnew, Coshocton, Ohio. Flour bin and sifter | 504,342 | Sept. 5 | 47 | 13 | 64 | 1279 |
| Gibson, Hondd D. W., Detroit, Mich. Pressure-reducing valve | 502,434 | Aug. 1 | 310 | 74 | 64 | 622 |
| Gibson, James C., San Francisco, Cal. Clutch | 505,219 | Sept. 19 | 1495 | 390 | 64 | 1578 |
| Gibson, John H., Bruin, and T. D. Sutton, Conoquenessing, Pa. Pump for oil-wells | 504,679 | Sept. 5 | 508 | 152 | 64 | 1353 |
| Giddings, Carl J. and G. W., Rutland, Vt. Guard and reflector | 503,955 | Aug. 29 | 2828 | 706 | 64 | 1147 |
| Giddings, George W. (See Giddings, Carl J. and G. W.) | | | | | | |
| Giddings, Howard A. (See Olmsted, Warner, and Giddings.) | | | | | | |
| Giesecke, Albert, *et al.* (See Spahmer, Adam A., Jr., assignor.) | | | | | | |
| Giesecke, Sophia, St. Louis, Mo. Horse-brush | 502,513 | Aug. 1 | 446 | 108 | 64 | 648 |



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|---|---|---|---|---|---|---|
| Giessenbier, Henry, St. Louis, Mo. Awning-frame | 500,741 | July 4 | 335 | 89 | 64 | 63 |
| Giessler, William J., *et al.* (See Spery, Charles F., assignor.) | | | | | | |
| Gifford, Alenza T., Hopedale, Mass. Incandescent-lamp fixture | 501,502 | July 18 | 1539 | 388 | 64 | 311 |
| Gilbert, Henry J., Saginaw, Mich. Washboard | 504,098 | Aug. 29 | 2942 | 736 | 64 | 1168. |
| Gilbreath, Emmett. (See Cadenhead, Benjamin F., assignor.) | | | | | | |
| Gilchrist, Peter C. (See Hacker and Gilchrist.) | | | | | | |
| Giles, James P., Harrisburg, Pa. Brush for washing and wiping windows | 502,000 | July 25 | 2336 | 585 | 64 | 469 |
| Gilham, Robert J., assignor to M. Gore and C. W. Jacocks, Orlando, Fla. Pocket-rule | 500,572 | July 4 | 55 | 16 | 64 | 11 |
| Gill, Albert L., Trenton, N. J. Combined thrasher and binder | 500,709 | July 4 | 284 | 77 | 64 | 53 |
| Gillespie, Robert A., *et al.* (See Curry, James H., assignor.) | | | | | | |
| Gillette, Arthur C., Jersey City, N. J. Detachable tire | 503,846 | Aug. 22 | 2045 | 663 | 64 | 1006 |
| Gillette, George W. and M. G., New York, N. Y. Power-applying mechanism | 500,710 | July 4 | 286 | 77 | 64 | 53 |
| Gillette, George W. and M. G., New York, N. Y. Flexible shafting | 504,720 | Sept. 12 | 666 | 169 | 64 | 1408 |
| Gillette, Mott G. (See Gillette, George W. and M. G.) | | | | | | |
| Gillies, Alexander. (See Jones and Gillies.) | | | | | | |
| Gillmore, Frederick J. (See Whomes and Gillmore.) | | | | | | |
| Gillow, Edward. (See Crabtree and Gillow.) | | | | | | |
| Gilman, Benjamin F., San Francisco, Cal. Plant or tree protector | 502,559 | Aug. 1 | 522 | 125 | 64 | 662 |
| Gilmartin, Thomas J., Ogden, Utah Ter. Railway-rail joint | 504,302 | Aug. 29 | 3387 | 847 | 64 | 1252 |
| Gilmore, Alfred, Stillwater, Minn. Flax-thrashing attachment for thrashing-machines | 502,356 | Aug. 1 | 180 | 42 | 64 | 599 |
| Gilstrop, James M. (See Fox, Charles H., assignor.) | | | | | | |
| Gingold, David, New York, N. Y. Horseshoe | 500,881 | July 4 | 552 | 143 | 64 | 100 |
| Gingras, Timothy, Buffalo, N. Y. Washer | 501,207 | July 11 | 1074 | 273 | 64 | 211 |
| Ginn, William E., assignor of two-thirds to W. K. and H. L. Isaacs, Baltimore, Md. Tool-sharpener | 502,450 | Aug. 1 | 352 | 84 | 64 | 631 |
| Girnau, Peter, Eau Claire, Wis. Lumber-wagon | 505,519 | Sept. 26 | 2004 | 513 | 64 | 1686 |
| Giroux, Joseph L., Jerome, Ariz. Ter. Steam-generator and smelting-furnace | 500,886 | July 4 | 557 | 144 | 64 | 102 |
| Givens, Dwight C., Reger, Mo. Steam-engine | 501,929 | July 18 | 2063 | 509 | 64 | 405 |
| Gladden, George, *et al.* (See Gersting, Charles H., assignor.) | | | | | | |
| Gladstone, William, San Francisco, Cal. Feed-water regulator | 504,574 | Sept. 5 | 433 | 110 | 64 | 1350 |
| Glasgow, Arthur G., Philadelphia, Pa. Oil-heater | 504,524 | Sept. 5 | 355 | 90 | 64 | 1336 |
| Glasser, Rudolph. (See Macher, John, assignor.) | | | | | | |
| Glawe, Charles, Dayton, Ohio. Awning | 501,932 | July 25 | 2244 | 560 | 64 | 552 |
| Gleason, Francis, Philadelphia, Pa. Drive-chain | 501,587 | July 18 | 1672 | 417 | 64 | 337 |
| Gleason, Joseph J., New York, N. Y. Safety-envelope | 502,860 | Aug. 1 | 923 | 125 | 64 | 1661 |
| Gleason, Robert M., assignor of one-half to A. H. Waterson, Grand Rapids, Mich. Sectional feed-roll | 501,004 | July 4 | 739 | 194 | 64 | 134 |
| Glen, Thomas D., W. Purvis, and S. Smith, Glasgow, Scotland. Pneumatic tire | 503,660 | Aug. 22 | 2366 | 590 | 64 | 1041 |
| Glick, John A., V. M. Heim, and A. E. Hafer, Reading, Pa. Washing-machine | 501,063 | July 11 | 835 | 217 | 64 | 167 |
| Glidden, Charles W., Lynn, assignor to J. W. Brooks, trustee, Cambridge, Mass. Heel compressing and loading machine | 502,667 | Aug. 1 | 706 | 168 169 170 | 64 | 695 |
| Glidden, Charles W., Lynn, assignor to J. W. Brooks, trustee, Petersham, Mass. Heel compressing and loading machine | 502,668 | Aug. 1 | 715 | 171 172 | 64 | 697 |
| Glidden, Charles W., Lynn, assignor to J. W. Brooks, trustee, Petersham, Mass. Heel-nailing machine | 502,669 | Aug. 1 | 719 | 172 173 | 64 | 698 |
| Glidden, Charles W., Lynn, and H. W. Winter, Boston, assignors to J. W. Brooks, trustee, Petersham, Mass. Heel-trimming machine | 505,043 | Sept. 12 | 1209 | 311 | 64 | 1512 |
| Globe Buttonhole Machine Company. (See Dahl, Charles A., assignor.) | | | | | | |
| Globe Treeing Machine Company. (See Warren, John, assignor.) | | | | | | |
| Gloekler, Charles A., and R. Munroe, Jr., Pittsburg, Pa. Rendering-kettle | 502,714 | Aug. 8 | 815 | 197 | 64 | 730 |
| Glore, W. H. (See Teed, Oliver F., assignor.) | | | | | | |
| Glynn, Thomas, Philadelphia, Pa. Combined ice-tongs and weighing-scales | 503,042 | Aug. 8 | 1348 | 333 | 64 | 929 |
| Gnüchtel, Guido, Lanter, Germany. Marbling enameled articles | 503,661 | Aug. 22 | 2368 | 591 | 64 | 1041 |
| Godfrey, James. (See Johnson, Hamilton, assignor.) | | | | | | |
| Goeddeke, Joseph, Detroit, Mich. Washing-machine | 502,961 | Aug. 8 | 1225 | 301 302 | 64 | 905 |
| Goelz, Charles, Mineral Point, Wis. Vehicle-brake | 504,343 | Sept. 5 | 48 | 13 | 64 | 1280 |
| Goesel, John G. (See Kletzker and Goesel.) | | | | | | |
| Goetz, Joseph, Berlin, Germany. Apparatus for purifying gas | 503,133 | Aug. 15 | 1505 | 370 | 64 | 870 |
| Goff, Daniel, Atlantic City, N. J., assignor of one-half to C. T. Wright, Philadelphia, Pa. Steam-muffler | 503,534 | Aug. 15 | 2141 | 537 | 64 | 985 |
| Goff, James M. (See Westcott, Nathaniel W., assignor.) | | | | | | |
| Goff, Mott P., Mattituck, N. Y., assignor to National Electric Gas Company, of Kentucky, Apparatus for the generation of gas | 504,303 | Aug. 29 | 3389 | 847 848 | 64 | 1252 |
| Going, William J., Amsterdam, N. Y. Bell-ringing device | 504,721 | Sept. 12 | 667 | 169 | 64 | 1408 |
| Gold, Samuel F., Englewood, N. J. Valve | 501,713 | July 18 | 1882 | 468 | 64 | 373 |
| Goldsmith, Albert, Salem, Mass. Lamp-filling device | 502,622 | Aug. 1 | 626 | 150 | 64 | 691 |
| Goldsmith, Albert, Salem, and E. C. Goldsmith, Springfield, Mass. Track-sanding device | 500,892 | July 4 | 553 | 143 | 64 | 101 |
| Goldsmith, Edward C. (See Goldsmith, Albert and E. C.) | | | | | | |
| Goldsmith, Ferdinand, assignor of one-half to T. Du Bois, Saginaw, Mich. Combination seesaw and merry-go-round | 501,005 | July 4 | 740 | 194 | 64 | 135 |
| Goldsmith, Gustavus A., New York, and A. K. Merrill, Brooklyn, N. Y., said Merrill assignor to said Goldsmith. Machine for making pyroxyline collars | 505,399 | Sept. 19 | 1790 | 463 | 64 | 1633 |
| Goldsmith, William H., Berkley, R. I. Sweeper | 501,247 | July 11 | 1136 | 288 | 64 | 252 |
| Goltra, Edward F., and M. B. Schaffer, St. Louis, Mo. Car-truck bolster | 504,029 | Aug. 29 | 2944 | 736 | 64 | 1168 |
| Goltra, Edward F., and M. B. Schaffer, St. Louis, Mo. Car-truck bolster | 504,267 | Aug. 29 | 3332 | 833 | 64 | 1242 |
| Goltstein, Ewald. (See Guilleaume and Goltstein.) | | | | | | |
| Good, David H., Canada, Kans. Sling for holding corn-shocks, hay, &c. | 503,043 | Aug. 8 | 1348 | 333 | 64 | 929 |
| Goodall, Dennis F., Toronto, Iowa. Shutter and slat operator | 504,575 | Sept. 5 | 434 | 110 | 64 | 1350 |
| Goode, Francis P. and I., Frederick, Md. Can-capping machine | 501,334 | July 11 | 1277 | 321 | 64 | 245 |
| Goode, Ignatius. (See Goode, Francis P. and I.) | | | | | | |
| Goodfellow, John H., Lansingburg, N. Y., assignor, by mesne assignments, to Lamson Consolidated Store Service Company, of New Jersey. Store-service apparatus | 502,203 | Aug. 1 | 61 | 14 | 64 | 577 |
| Goodfellow, John H., Troy, N. Y., assignor to Lamson Consolidated Store Service Company, Boston, Mass. Store-service apparatus | 505,458 | Sept. 26 | 1887 | 487 | 64 | 1665 |
| Goodman, Edward H. (See Stupakoff, Simon H., assignor.) | | | | | | |
| Goodman, Edward H., Pittsburg, assignor to Union Switch and Signal Company, Swissvale, Pa. Connector for track-circuits | 502,229 | July 25 | 2711 | 684 | 64 | 541 |
| Goodridge, William M., Highland Park, assignor to Western Electric Company, Chicago, Ill. Thermal cut-out | 504,344 | Sept. 5 | 49 | 14 | 64 | 1280 |
| Goodridge, William M., Highland Park, assignor to Western Electric Company, Chicago, Ill. Multiple-switchboard apparatus | 504,345 | Sept. 5 | 49 | 14 | 64 | 1280 |

*Alphabetical list of patentees, July to September, inclusive*—Continued.

| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drg. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Goodwin, Asahel J., Brookline, Mass. Invalid-bedstead | 501,006 | July 4 | 741 | 194, 195 | 64 | 135 |
| Goodwin, John H. (See Brunner and Goodwin.) | | | | | | |
| Goodwin, Mary E., and S. H. Lewis, Jamaica Plain, Mass. Clasp for holding envelopes, paper, &c | 504,213 | Aug. 29 | 2248 | 810 | 64 | 1296 |
| Goodwin, Terence J., Syracuse, N. Y. Pattern for drafting shirt-backs | 501,335 | July 11 | 1270 | 328 | 64 | 945 |
| Goodwin, Terence J., Syracuse, N. Y. Pattern for drafting shirt-yokes | 501,336 | July 11 | 1283 | 328 | 64 | 946 |
| Goodwin, Terence J., Syracuse, N. Y. Pattern for drafting shirt-sleeves | 501,337 | July 11 | 1287 | 322 | 64 | 947 |
| Goodwin, Terence J., Syracuse, N. Y. Pattern for drafting shirt-fronts | 501,338 | July 11 | 1291 | 353 | 64 | 948 |
| Goodwin, Terence J., Syracuse, N. Y. Pattern for drafting shirt-bosoms | 501,339 | July 11 | 1295 | 348 | 64 | 949 |
| Goodyear, George C., Flint, Mich. Furniture-fastener | 501,564 | July 18 | 1639 | 410 | 64 | 331 |
| Gordien, Eugene M. (See Holden, Cummings M., assignor.) | | | | | | |
| Gordon, Elonso J., Greenville, Mich. Grate | 501,064 | July 11 | 836 | 217 | 64 | 168 |
| Gordon, Henry D., Altoona, Pa. Wheel-press | 504,030 | Aug. 29 | 2245 | 736, 737 | 64 | 1168 |
| Gordon, Henry D., Altoona, Pa. Wheel-press | 504,031 | Aug. 29 | 2247 | 737 | 64 | 1169 |
| Gordon Hotels. (See Pilbeam, George, assignor.) | | | | | | |
| Gordon, William, Boston, assignor to O. A. Miller, Brockton, Mass. Last | 500,711 | July 4 | 287 | 78 | 64 | 53 |
| Gore, Harry W., Washington, D. C. Coin-controlled apparatus for vending liquids | 502,581 | Aug. 1 | 394 | 125 | 64 | 663 |
| Gore, Mahlon, *et al.* (See Gilham, Robert J., assignor.) | | | | | | |
| Gorely, Charles P. (See Wiswell, Jacob C., assignor.) | | | | | | |
| Göridt, Gustav, Kitzingen, Germany. Gas-lighting apparatus | 501,365 | July 18 | 1640 | 410 | 64 | 331 |
| Gormley, Harry V., Norfolk, Va. Wrench | 502,514 | Aug. 1 | 448 | 108 | 64 | 649 |
| Gosling, Henry J., assignor to G. and H. Barnett, Philadelphia, Pa. Rolling-mill | 503,134 | Aug. 15 | 1567 | 370 | 64 | 871 |
| Gosney, John, Wilmington, Del., assignor to J. A. Brill, Philadelphia, Pa. Equalizing device for cars | 500,573 | July 4 | 55 | 18 | 64 | 11 |
| Goss, Orrin L., Grand Rapids, Mich. Potato-digger | 504,198 | Aug. 29 | 3099 | 776 | 64 | 1198 |
| Goss Printing Press Company. (See Goss, Samuel G., assignor.) | | | | | | |
| Goss, Samuel G., assignor to Goss Printing Press Company, Chicago, Ill. Apparatus for delivering sheets | 504,874 | Sept. 12 | 930 | 239, 240 | 64 | 1460 |
| Gothberg, Ernest, Jersey City, N. J. Canopy for light-fixtures | 505,459 | Sept. 26 | 1988 | 487 | 64 | 1665 |
| Gott, Clarence P., Bayonne, N. J., assignor to himself, and J. S. Page, New York, N. Y. Turnstile | 503,698 | Aug. 22 | 2428 | 604 | 64 | 1052 |
| Götz, Carl. (See Klieber, Josef, assignor.) | | | | | | |
| Gould, Aaron P., Canton, Ohio. Dust-collector | 502,883 | Aug. 8 | 1079 | 266 | 64 | 780 |
| Gould, Clement. (See West, William F., assignor.) | | | | | | |
| Gould, H. H. (See Palmer, Zenus L., assignor.) | | | | | | |
| Gould, Olin R., Dayton, Iowa. Spring-bed | 502,118 | July 25 | 2530 | 634 | 64 | 506 |
| Gowdy, James B., Oak Grove, Ill. Fence-post | 500,883 | July 4 | 554 | 144 | 64 | 101 |
| Gowen, John E., Paris, France. Leak-stopper for ships | 503,079 | Aug. 8 | 1397 | 345 | 64 | 838 |
| Grabler, Peter, Pittsburg, assignor of one-half to E. F. Welsh, Wilmerding, Pa. Valve mechanism for fluid-pressure brakes | 501,615 | July 18 | 1719 | 429 | 64 | 346 |
| Grabler, William, Mansfield, Ohio. Sliding-door hanger | 503,525 | Aug. 15 | 2142 | 537 | 64 | 985 |
| Graef, Herman, Albany, N. Y. Grate for stoves, &c | 503,699 | Aug. 22 | 2430 | 604 | 64 | 1053 |
| Grafton, William S., Steubenville, Ohio, assignor to Wheeling Corrugating Company, Wheeling, W. Va. Metallic molding | 502,357 | Aug. 1 | 181 | 42, 43 | 64 | 599 |
| Graham, Edmund H., Biddeford, Me., assignor of one-half to L. Woodbury, Washington, D. C. Positive shuttle-motion for looms | 503,956 | Aug. 29 | 2929 | 706 | 64 | 1148 |
| Graham, James A., and E. J. Birkett, assignors to Milwaukee Harvester Company, Milwaukee, Wis. Grain-binder | 502,602 | Aug. 22 | 2369 | 591, 592 | 64 | 1041 |
| Graham, James P. (See Gibbs, William H., assignor.) | | | | | | |
| Graham, John H., Kansas City, Mo. Self-operating weather-strip | 501,503 | July 18 | 1540 | 388 | 64 | 311 |
| Graham, John H., Boston, Mass., assignor to Consolidated Railway Supply Company, Boston, Mass., and Providence, R. I. Car-truck | 503,044 | Aug. 8 | 1349 | 333 | 64 | 829 |
| Graham, Robert S., and W. B. Savell, San Francisco, Cal. Key-cushion for type-writing machines | 504,065 | Aug. 29 | 2906 | 748 | 64 | 1178 |
| Graham, Samuel J., *et al.* (See Curry, James H., assignor.) | | | | | | |
| Graham, Simon P., Detroit, Mich. Lawn-mower | 503,792 | Aug. 22 | 2573 | 640 | 64 | 1092 |
| Graham, William, assignor of one-half to W. F. Ashbaugh, Hamilton, Canada. Mop-wringer | 503,663 | Aug. 22 | 2379 | 592 | 64 | 1043 |
| Gramer, Joseph. (See Kimball and Gramer.) | | | | | | |
| Grannis, William P., Wolcottville, Ind. Mowing-machine | 503,957 | Aug. 29 | 2930 | 707 | 64 | 1148 |
| Grant Anti Friction Ball Company. (See Grant, Robert H., assignor.) | | | | | | |
| Grant, Lawrence, and N. C. Heston, Chicago, Ill. Mortising-machine | 504,722 | Sept. 12 | 668 | 170 | 64 | 1406 |
| Grant, Robert H., assignor to Grant Anti Friction Ball Company, Fitchburg, Mass. Measuring-machine | 504,107 | Aug. 29 | 3071 | 769 | 64 | 1193 |
| Grant, Schuyler. (See Terry, Eugene, assignor.) | | | | | | |
| Grant, William, Philadelphia, Pa. Metal bar to be calked | 500,684 | July 4 | 556 | 144 | 64 | 101 |
| Grass, Josiah, and C. E. Hardie, Lassen county, Cal. Mechanical motor | 503,593 | Aug. 22 | 2253 | 565 | 64 | 1021 |
| Grasset, Isaac, and A. Meylan, Geneva, Switzerland. Watch-winding device | 502,684 | Aug. 8 | 1080 | 266 | 64 | 780 |
| Graves, Cashious M., Eddyville, assignor of one-half to M. P. Molloy, W. M. Bowman, J. L. James, Jr., and J. H. Catlett, Lyon county, and C. W. Matthis, La Rue county, Ky. Car-coupling | 501,933 | July 25 | 2245 | 560 | 64 | 452 |
| Graves, Willis N., St. Louis, Mo. Oil-burner for furnaces | 505,355 | Sept. 19 | 1712 | 442 | 64 | 1618 |
| Gray, Alexander, London, England. Hydrocarbon-engine | 504,723 | Sept. 12 | 669 | 170, 171 | 64 | 1400 |
| Gray, William D., assignor to Edward P. Allis Company, Milwaukee, Wis. Middlings-purifier | 502,187 | July 25 | 2641 | 579 | 64 | 528 |
| Graydon Dynamite Projectile Cartridge and High Explosive Company. (See Graydon, James W., assignor.) | | | | | | |
| Graydon, James W., assignor, by mesne assignments, to Graydon Dynamite Projectile Cartridge and High Explosive Company, Washington, D. C. Submarine torpedo | 502,294 | Aug. 1 | 63 | 14 | 64 | 577 |
| Greathouse, John A. (See Brydson and Greathouse.) | | | | | | |
| Greatrex, William. (See Mercer and Greatrex.) | | | | | | |
| Grebenstein, Charles H., New York, N. Y. Machine for molding confections | 504,449 | Sept. 5 | 920 | 58, 59 | 64 | 1311 |
| Green, Allison T., and J. Wesselowski, Jewell, Kans. Weather-strip | 500,885 | July 4 | 557 | 144 | 64 | 101 |
| Green, Arthur G., and T. A. Lawson, assignors to Brooke, Simpson & Spiller, Limited, London, England. Red azo dye | 500,761 | July 4 | 368 | ..... | 64 | 68 |
| Green, Arthur G., and T. A. Lawson, assignors to Brooke, Simpson & Spiller, Limited, London, England. Red azo dye | 500,762 | July 4 | 370 | ..... | 64 | 69 |
| Green, Edgar, Albion, Ind. Type-writing machine | 501,651 | July 18 | 1776 | 442, 443 | 64 | 355 |
| Green, Edward T., New York, N. Y. Water-cooler | 501,007 | July 4 | 743 | 195 | 64 | 135 |
| Green, George F., deceased, Kalamazoo, Mich., (M. L. Green, executrix,) assignor of one-half to O. S. Kelly, Springfield, Ohio. Supply system for electric railways | 504,977 | Sept. 12 | 1104 | 282, 283 | 64 | 1402 |



*Alphabetical list of patentees, July to September, inclusive*—Continued.

| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drg. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Green, George W., Joliet, Ill. Bridge-gate | 503,707 | Sept. 26 | 2358 | 596 | 64 | 1753 |
| Green, Henry A., Montrose, Colo. Window-bead fastener | 504,920 | Sept. 12 | 1006 | 260 | 64 | 1474 |
| Green, Herman, New York, N. Y. Loop-fastener | 502,902 | Aug. 8 | 1226 | 302 | 64 | 905 |
| Green, James. (See Doda, John C., assignor.) | | | | | | |
| Green, James. (See Lauth, John N., assignor.) | | | | | | |
| Green, John, Renovo, Pa. Shaft or bar iron | 504,431 | Sept. 5 | 197 | 50 | 64 | 1307 |
| Green, Martha L., executrix. (See Green, George F.) | | | | | | |
| Green, Squire, Stretford, England. Tire | 504,032 | Aug. 29 | 2948 | 738 | 64 | 1169 |
| Green, Theron H. (See Campbell, Hardy W., assignor.) | | | | | | |
| Greenbaum, Oscar. (See Woodbury and Greenbaum.) | | | | | | |
| Greene, John T., Chicago, Ill. Cash register and indicator | 502,885 | Aug. 8 | 1081 | 267 | 64 | 780 |
| Greene, Merritt, Pittsburg, Pa. Pressure-indicator | 505,652 | Sept. 26 | 2261 | 572, 573 | 64 | 1735 |
| Greene, Thomas C., Liberty, assignor of one-half to C. F. Cleaveland, Indianapolis, Ind. Wire-stretcher | 502,515 | Aug. 1 | 449 | 108 | 64 | 649 |
| Greenfield, John C., Forreston, Ill. Turfing implement | 504,577 | Sept. 5 | 437 | 111 | 64 | 1351 |
| Greenleaf, Joseph H., New Haven, Conn. Cash register and indicator | 505,101 | Sept. 19 | 1313 | 338, 339, 340 | 64 | 1545 |
| Greenwood, Williston W., New York, N. Y. Pneumatic tire | 503,594 | Aug. 22 | 2257 | 565 | 64 | 1021 |
| Greer, Francis B., Barnhill, Ill. Flood-fence | 504,346 | Sept. 5 | 51 | 14 | 64 | 1280 |
| Gregory, Annie M., London, England. Apparatus for teaching astronomy and geography | 501,136 | July 11 | 985 | 246 | 64 | 190 |
| Gregory, Fred L., Niagara Falls, N. Y. Electric meter | 503,595 | Aug. 22 | 2259 | 565 | 64 | 1021 |
| Gregory, James L., Washoe City, Nev. Fire-escape | 504,576 | Sept. 5 | 436 | 111 | 64 | 1351 |
| Greiner, Abraham J., Chicago, Ill. Compound for preserving food | 504,724 | Sept. 12 | 671 | ..... | 64 | 1409 |
| Greiner, Christian, Munich, Germany. Stocking-stretcher | 501,065 | July 11 | 837 | 218 | 64 | 168 |
| Greist, John M., New Haven, Conn. Tuck-marker for sewing-machines | 504,805 | Sept. 12 | 821 | 208 | 64 | 1437 |
| Greist, John M., New Haven, Conn. Ruffling attachment for sewing machines | 504,875 | Sept. 12 | 932 | 240 | 64 | 1469 |
| Greist, John M., New Haven, Conn. Attachment-holder for sewing-machines | 504,876 | Sept. 12 | 934 | 240 | 64 | 1469 |
| Grenet, Emile H., Paris, France. Wheel-tire | 501,588 | July 18 | 1673 | 417 | 64 | 337 |
| Grenfell, Hubert H., London, and J. G. Accles, Birmingham, England. Revolving small-arm | 501,506 | July 18 | 1641 | 411 | 64 | 331 |
| Grennan, William, Bristol, Conn. Marker for window-frames | 503,045 | Aug. 8 | 1351 | 334 | 64 | 830 |
| Greaty, John E., Manchester, England. Steam-boiler | 503,700 | Aug. 22 | 2431 | 605 | 64 | 1053 |
| Grether, Emil, Wiesbaden, Germany. Machine for straining or removing tendons from chopped meat | 501,417 | July 11 | 1420 | 356 | 64 | 272 |
| Grier, Matthew J. (See Broadwell, Edward C., assignor.) | | | | | | |
| Griffin, George W., Franklin, N. H. Manufacture of saws | 502,886 | Aug. 8 | 1085 | 267 | 64 | 781 |
| Griffin, George W., Franklin, N. H. Band-saw machine for cutting metal, &c | 502,887 | Aug. 8 | 1086 | 267 | 64 | 781 |
| Griffin, Heber C., assignor of one-half to C. F. Adams, Hill, N. H. Clothes-pin | 500,574 | July 4 | 58 | 17 | 64 | 12 |
| Griffin, James F. (See Staats, William H., assignor.) | | | | | | |
| Griffiths, Samuel, Weir, Kans. Hoisting machine | 502,188 | July 25 | 2643 | 667 | 64 | 528 |
| Grilley, Charles T., Boston, Mass. Car fender | 502,037 | July 25 | 2401 | 604 | 64 | 481 |
| Grimaux, Edouard, Paris, France, assignor to J. B. F. Rigaud. Making salts of quinine | 501,066 | July 11 | 838 | ..... | 64 | 168 |
| Grimes, Granville P., *et al.* (See Scearce, Edward M., assignor.) | | | | | | |
| Grindle, Perry S., Brooklyn, Ala. Composition for kindling fires | 505,311 | Sept. 19 | 1651 | ..... | 64 | 1607 |
| Griscom, Samuel E. (See Bradford, Hezekiah, assignor.) | | | | | | |
| Griswold, John H., Oakland, Cal. Sash-holder | 504,978 | Sept. 12 | 1107 | 284 | 64 | 1403 |
| Griswold, Matthew. (See Shields, David, assignor.) | | | | | | |
| Groat, Elias, San Luis Obispo, Cal. Apparatus for reducing and softening bituminous rock | 502,416 | Aug. 1 | 279 | 66 | 64 | 617 |
| Groat, Elias, San Luis Obispo, Cal. Machine for reducing and softening bituminous rock | 502,417 | Aug. 1 | 281 | 67 | 64 | 618 |
| Grognet, Felix, Bourbevde, France. Preparing hides | 503,235 | Aug. 15 | 1669 | ..... | 64 | 900 |
| Gros, Hermann C., Ober-Ursel, Germany. Boot or shoe | 501,830 | July 18 | 2064 | 509 | 64 | 405 |
| Gros, Hermann C., Ober-Ursel, Germany. Welt-attaching machine | 501,831 | July 18 | 2065 | 509, 510 | 64 | 405 |
| Grosch, Alexander, A. Allenburg, and C. Buerling, Cincinnati, Ohio. Fire-shutter fastener | 503,046 | Aug. 8 | 1352 | 334 | 64 | 830 |
| Gross, John B., Hoboken, N. J. Train-stopping mechanism for railway-tracks | 503,111 | Aug. 8 | 1458 | 358, 359 | 64 | 848 |
| Gross, John B., assignor of one-half to L. Finke, Hoboken, N. J. Train-stopping device | 502,963 | Aug. 8 | 1227 | 302, 303 | 64 | 806 |
| Gross, Robert H., *et al.* (See Gates, Matthias, assignor.) | | | | | | |
| Gross, William M., assignor of one-half to G. L. Walker, Spokane, Wash. Excavating-machine | 505,460 | Sept. 26 | 1889 | 487 | 64 | 1665 |
| Grossman, Lawrence S., Cleveland, Ohio, assignor to Cleveland Faucet Company, of Ohio. Bolt-cutter | 500,887 | July 4 | 559 | 145 | 64 | 102 |
| Grotenhuis, William J., and H. T. Sidway, assignors, by mesne assignments, to Sidway Manufacturing Company, Chicago, Ill. Biscuit-cutter | 504,834 | Sept. 12 | 876 | 226 | 64 | 1449 |
| Grothe, Waldemar, Berlin, Germany. Adjustable type-founding apparatus | 501,934 | July 25 | 2246 | 561 | 64 | 453 |
| Grotz, Charles, assignor of one-half to G. W. Thayer, Ottumwa, Iowa. Drill | 505,190 | Sept. 19 | 1466 | 378 | 64 | 1572 |
| Grousilliers, Hector de, Berlin, Germany. Paper for making transfer-pictures | 504,835 | Sept. 12 | 877 | ..... | 64 | 1450 |
| Grove, David, Berlin, Germany. Apparatus for sterilizing water | 500,763 | July 4 | 371 | 95 | 64 | 69 |
| Grovenor, Wallace. (See Pugh, Robert, assignor.) | | | | | | |
| Groves, John T., Cincinnati, Ohio. Carriage-top joint | 503,135 | Aug. 15 | 1508 | 371 | 64 | 871 |
| Groves, William P., assignor of one-half to W. H. Galbraith, Philadelphia, Pa. Puzzle | 504,347 | Sept. 5 | 53 | 15 | 64 | 1281 |
| Grow, Elisha P. (See Thomas and Grow.) | | | | | | |
| Grubbe, Albert M., Forest Grove, Oreg. Game | 500,888 | July 4 | 562 | 146 | 64 | 102 |
| Grugin, Hugh P., Helena, Mont. Stamp-stem guide | 505,400 | Sept. 19 | 1793 | 463 | 64 | 1634 |
| Grünberg, Hulda, Biel, Switzerland. Calendar-clock | 504,432 | Sept. 5 | 198 | 51 | 64 | 1307 |
| Grundy, William S. (See Lever and Grundy.) | | | | | | |
| Grusonwerk. (See Kampf, August, assignor.) | | | | | | |
| Grusonwerk. (See Mohr, Frederik, assignor.) | | | | | | |
| Guenther, John E., Owensborough, Ky. Water-cooling attachment for refrigerators | 502,502 | Aug. 1 | 525 | 196 | 64 | 663 |
| Guerbois, Ernest, Plaisance, France. Apparatus for preventing the refilling of bottles | 505,451 | Sept. 26 | 1893 | 488 | 64 | 1666 |
| Guernsey, Oscar S., Seymour, Ind. Car-coupling | 501,832 | July 18 | 2068 | 510 | 64 | 406 |
| Guhr, Charles A., and A. E. Richter, Chicago, Ill. Hay drier and stacker | 503,368 | Aug. 15 | 1826 | 476 | 64 | 940 |
| Guilbert, John M., Philadelphia, Pa., assignor of one-half to H. H. Barnum, New York, N. Y. Curtain-ring | 505,625 | Sept. 26 | 2304 | 558 | 64 | 1725 |
| Guild, Henry G., New York, N. Y. Comb | 504,979 | Sept. 12 | 1107 | 284 | 64 | 1403 |
| Guilfoyle, Thomas, Collingwood, Canada. Cigar attachment | 505,401 | Sept. 19 | 1794 | 464 | 64 | 1634 |
| Guilleaume, Frans, and E. Goltstein, Bonn, Germany. Jar-lid fastener | 501,418 | July 11 | 1420 | 356 | 64 | 273 |
| Guilleaume, Theodore, Cologne, Germany. Electric cable | 502,358 | Aug. 1 | 193 | 43 | 64 | 600 |
| Gumeson, Carl, National Mine, Mich. Face-protector | 505,653 | Sept. 26 | 2263 | 573 | 64 | 1736 |

*Alphabetical list of patentees, July to September, inclusive*—Continued.

| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Dr'g. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Gunn, Alfred C., Geneva, Switzerland. Stop-watch | 503,416 | Aug. 15 | 1956 | {485 488} | 64 | 952 |
| Gunn, George P., assignor of one-half to Atlas Gun Company, Ilion, N. Y. Combined metallic tie and track-fastening | 502,435 | Aug. 1 | 311 | 74 | 64 | 623 |
| Gunnerson, Bengt, West Haven, Conn. Bottle-stopper fastener | 505,291 | Sept. 19 | 1614 | 419 | 64 | 1600 |
| Günther, Adam R., Berlin, Germany. Coin-assorting apparatus | 502,715 | Aug. 8 | 816 | 197 | 64 | 730 |
| Gurnee, Isaac Q., Butler, N. J., assignor to Butler Hard Rubber Company, New York, N. Y. Atomizer | 502,904 | Aug. 8 | 1120 | 276 | 64 | 788 |
| Gurney, Robert L., Kirkwood, Mo. Pocket pencil-holder | 501,714 | July 18 | 1284 | 469 | 64 | 373 |
| Gustafson, August F., New York, N. Y. Shutter-fastener | 504,921 | Sept. 12 | 1007 | 260 | 64 | 1475 |
| Guthrie, Thomas, and W. T. Hall, South Shields, England. Cycle-saddle | 501,236 | Aug. 15 | 1669 | 410 | 64 | 900 |
| Gutsell, Ida A., Ithaca, N. Y. Doll-producing blank | 503,316 | Aug. 15 | 1908 | 449 | 64 | 924 |
| Gutmann, Emil, New York, N. Y. Suspender-end | 501,272 | July 11 | 1173 | 298 | 64 | 228 |
| Guttmann, Oscar, London, England. Apparatus for concentrating liquids | 505,590 | Sept. 26 | 2005 | 513 | 64 | 1586 |
| Guyer, Nelson, Cygnet, Ohio. Low-water alarm | 502,815 | Aug. 8 | 979 | 238 | 64 | 761 |
| Gwyn, Edward C. (See Hoppes and Gwyn.) | | | | | | |
| H. L. Judd & Company. (See Edsall and Walsh, assignors.) | | | | | | |
| H. L. Judd & Company *et al.* (See Brothwell and Phillips, assignors.) | | | | | | |
| H. W. Butterworth & Sons Company. (See Mackinney, William C., assignor.) | | | | | | |
| Haaker, William, New York, N. Y. Tin can | 503,265 | Aug. 15 | 1716 | 423 | 64 | 906 |
| Haast, Emil, assignor to F. Ulrich, Paterson, N. J. Machine for making loom-harness | 500,653 | July 4 | 192 | 50 | 64 | 38 |
| Habedank, Charles F., Jersey City, N. J. Composition for forming lithographic transfers | 502,964 | Aug. 8 | 1221 | ..... | 64 | 806 |
| Haberthur, Benedikt, and J. Mandel, assignors of one-half to J. P. Henderson and O. A. Kraus, Logansport, Ind. Bridge-gate | 500,654 | July 4 | 194 | 51 | 64 | 38 |
| Hacker, Francis B., Charleston, S. C., and P. S. Gilchrist, assignors to themselves, and A. C. Johnson, Baltimore, Md. Apparatus for making sulphuric acid | 503,847 | Aug. 22 | 2547 | 663 | 64 | 1096 |
| Hackett, Jacob C. (See Keephart and Hackett.) | | | | | | |
| Hackh, Eugen, Stuttgart, Germany. Photographic gallery | 501,340 | July 11 | 1298 | 323 | 64 | 249 |
| Hadley, Charles E., Chicopee, Mass., assignor to Overman Wheel Company, Chicopee Falls, Mass., and Hartford, Conn. Mud-guard for cycles | 500,889 | July 4 | 562 | 145 | 64 | 103 |
| Haedrich, Henry G., Jr., Philadelphia, Pa. Horse-sandal | 501,567 | July 18 | 1642 | 411 | 64 | 331 |
| Hafely, Alfred C., New York, and J. Redlefsen, Brooklyn, N. Y. Manufacture of celluloid boxes | 505,462 | Sept. 26 | 1894 | 488 | 64 | 1066 |
| Hafer, Adam E. (See Glick, Heim, and Hafer.) | | | | | | |
| Hafkemeyer, Charles, Chicago, Ill. Stand for displaying carpets | 502,716 | Aug. 8 | 817 | 199 | 64 | 730 |
| Hagans, Christian, Erfurt, Germany. Locomotive | 501,616 | July 18 | 1783 | 429 | 64 | 346 |
| Hager, Ben. (See Read and Hager.) | | | | | | |
| Hagerman, Clyde, *et al.* (See Warner, Isaac M., assignor.) | | | | | | |
| Hagerman, John D., *et al.* (See Warner, Isaac M., assignor.) | | | | | | |
| Hahl, Augustus L., Chicago, Ill. Velocipede | 502,717 | Aug. 8 | 818 | 198 | 64 | 731 |
| Hahl, Augustus L., Chicago, Ill. Velocipede | 503,060 | Aug. 8 | 1398 | 346 | 64 | 838 |
| Hahn, John H., Jr., Sargent, Mo., assignor of one-fourth to J. A. Jeffrey, Columbus, Ohio. Cable haul mechanism | 503,908 | Aug. 22 | 2736 | 686 | 64 | 1114 |
| Haig, Robert, Paisley, Scotland. Mechanical retort | 505,356 | Sept. 19 | 1715 | {442 443} | 64 | 1619 |
| Haight, Samuel J. (See Clark, John W., assignor.) | | | | | | |
| Hailwood, John T., Rochdale, England. Stop-cock or tap | 502,094 | July 25 | 2491 | 626 | 64 | 498 |
| Haindl, Joseph, Riesa, Germany. Revolving knife-block for shaping cones | 503,317 | Aug. 15 | 1813 | 449 | 64 | 925 |
| Haines, George B. (See Munson and Haines.) | | | | | | |
| Haines, John F., Ringtown, Pa. Holdback for vehicles | 502,718 | Aug. 8 | 821 | 198 | 64 | 731 |
| Haldeman, Aquilla F. (See Mahaffey and Haldeman.) | | | | | | |
| Hale, George C., Kansas City, Mo. Bridle | 505,762 | Sept. 26 | 2446 | 616 | 64 | 1769 |
| Hale, Henry S., Philadelphia, Pa. Railway-car seat | 505,346 | Sept. 19 | 1535 | 400 | 64 | 1585 |
| Hale, Seth P. H., Williamsville, Mass. Apparatus for moving invalids | 505,654 | Sept. 26 | 2265 | 574 | 64 | 1736 |
| Hales, Franklin J., Bush's Store, Ky. Door-securer | 503,536 | Aug. 15 | 2143 | 538 | 64 | 996 |
| Haley, Benjamin F., Beatty, Ohio. Register for grain-measures | 503,719 | Aug. 22 | 2464 | 612 | 64 | 1060 |
| Hall, Albert E. (See Barker, Peleg, assignor.) | | | | | | |
| Hall, Alexander D., and G. B. Sloan, San Francisco, Cal. Screw-propeller | 505,402 | Sept. 19 | 1795 | 464 | 64 | 1634 |
| Hall, Alexander W., New York, N. Y. Pianoforte | 501,256 | July 11 | 1105 | 281 | 64 | 217 |
| Hall, Bicknell, Taunton, assignor to Wainwright Manufacturing Company of Massachusetts, Boston, Mass. Corrugating-machine | 505,600 | Sept. 26 | 2160 | 549 | 64 | 1718 |
| Hall, Charles K., and W. B. Lillard, New Orleans, La. Electrical alarm system | 504,980 | Sept. 12 | 1109 | {284 285} | 64 | 1493 |
| Hall, Eva J., Stillwater, Minn., assignor to St. Croix Manufacturing Company, Hudson, Wis. Making needles | 503,476 | Aug. 15 | 2057 | 513 | 64 | 968 |
| Hall, Frank E., Newton, Mass., assignor, by mesne assignments, to Consolidated Fastener Company, Portland, Me. Glove-fastener | 503,081 | Aug. 8 | 1400 | 346 | 64 | 838 |
| Hall, Fridolin, Donaueschingen, Germany. Hair-cleaning machine | 504,348 | Sept. 5 | 54 | 15 | 64 | 1281 |
| Hall, Henry, assignor of two-thirds to H. H. Hall, Hill City, and J. L. Buckingham, Hermosa, S. D. Godevil | 504,725 | Sept. 12 | 672 | {171 172} | 64 | 1409 |
| Hall, Henry H., *et al.* (See Hall, Henry, assignor.) | | | | | | |
| Hall, John F., Lincoln, Nebr. Trolley-wheel | 503,136 | Aug. 15 | 1509 | 371 | 64 | 871 |
| Hall, John H., Brantford, Canada. Stove-caster | 502,189 | July 25 | 2644 | 667 | 64 | 598 |
| Hall, Joseph B., Wheeling, W. Va. Producing aluminum | 503,929 | Aug. 22 | 2765 | 692 | 64 | 1119 |
| Hall, Julian D. (See Dare and Hall.) | | | | | | |
| Hall, Samuel L., Chicago, Ill. Cake-machine | 500,655 | July 4 | 197 | 51, 52 | 64 | 38 |
| Hall, Samuel L., Chicago, Ill. Apparatus for mixing dough | 500,656 | July 4 | 200 | 52 | 64 | 39 |
| Hall Signal Company. (See Daves, William, assignor.) | | | | | | |
| Hall, Thomas. (See Holt, Charles C., assignor.) | | | | | | |
| Hall, Walter A. (See Best and Hall.) | | | | | | |
| Hall, William H., Chicago, Ill. Signaling apparatus | 505,102 | Sept. 19 | 1317 | 340 | 64 | 1546 |
| Hall, William M., Victoria, Miss. Car-coupling | 502,295 | Aug. 1 | 65 | 14 | 64 | 578 |
| Hall, William T. (See Guthrie and Hall.) | | | | | | |
| Hallanan, Michael, New York, N. Y. Elastic horseshoe | 503,848 | Aug. 22 | 2648 | 663 | 64 | 1096 |
| Hallanan, Michael, New York, N. Y. Horseshoe and pad | 503,849 | Aug. 22 | 2649 | 663 | 64 | 1097 |
| Hallanger, Tobias N., Chicago, Ill. Stove | 505,463 | Sept. 26 | 1696 | 428 | 64 | 1667 |
| Haller, John B. (See Mentzer, Alonzo M., assignor.) | | | | | | |
| Halpin, Cornelius, North Tarrytown, N. Y. Car-coupling | 500,890 | July 4 | 564 | 146 | 64 | 103 |
| Halsey, William S., Allentown, Pa. Steam hydraulic crane | 503,220 | Sept. 19 | 1497 | 390 | 64 | 1578 |
| Halstead, Charles L., La Crosse, Wis. Lantern-holder | 501,833 | July 18 | 2069 | 510 | 64 | 406 |
| Haltermann, Harry, *et al.* (See Ballance, John, assignor.) | | | | | | |
| Haltermann, Henry, *et al.* (See Ballance, John, assignor.) | | | | | | |
| Ham, Edwin W., Worcester, Mass. Reed-organ | 503,850 | Aug. 22 | 2650 | 664 | 64 | 1097 |



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|---|---|---|---|---|---|---|
| Hamblin, Stephen M., New Bedford, assignor of one-half to E. S. Damon, Plymouth, Mass. Loom-shuttle | 501,781 | July 18 | 1998 | 493 | 64 | 393 |
| Hamblin, Stephen M., New Bedford, assignor of one half to E. S. Damon, Plymouth, Mass. Self-threading loom-shuttle | 503,851 | Aug. 22 | 2651 | 664 | 64 | 1097 |
| Hamill, William J., St. Catharines, Canada. Sulky | 503,137 | Aug 15 | 1510 | 371 | 64 | 871 |
| Hamilton, Herbert E., Salmon Falls, N. H. Shuttle-binder for looms | 504,349 | Sept. 5 | 55 | 15 | 64 | 1281 |
| Hamilton, James. (See Webster and Hamilton.) | | | | | | |
| Hamilton, John A., New York, N. Y. Type-writing machine | 505,521 | Sept. 26 | 2007 | {513 514} | 64 | 1687 |
| Hamilton, John S., Marysville, Ohio. Fence | 501,341 | July 11 | 1299 | 324 | 64 | 250 |
| Hamlet, Noah, Little Rock, Ark. Sash-balance | 503,596 | Aug. 22 | 2261 | 566 | 64 | 1022 |
| Hammann, Edward, Brooklyn, and T. Susemihl, assignors to J. L. Mott Iron Works, New York, N. Y. Sink | 502,516 | Aug. 1 | 450 | 108 | 64 | 649 |
| Hammel, Charles A. (See Foster and Hammel.) | | | | | | |
| Hammerstein, Charles L., St. Louis, Mo. Overshoe-holder | 505,655 | Sept. 26 | 2266 | 574 | 64 | 1737 |
| Hammond, Emma, Phelps, N. Y. Lamp-chimney | 503,720 | Aug. 22 | 2466 | 613 | 64 | 1060 |
| Hammond, James B., New York, N. Y. Type-writing machine | 501,504 | July 18 | 1542 | {388 389} | 64 | 311 |
| Hammond, Thomas E. (See Northway and Hammond.) | | | | | | |
| Hancock, Addison, Allegheny, Pa. Mixer and stirrer | 504,472 | Sept. 5 | 202 | 68 | 64 | 1319 |
| Hancock, George, Providence, R. I. Brake for velocipedes | 503,112 | Aug. 8 | 1401 | 359 | 64 | 849 |
| Hancock, Milton T., Shreveport, La. Rotary plow | 504,779 | Sept. 12 | 778 | {196 197} | 64 | 1429 |
| Handlan, Alexander H., Jr., St. Louis, Mo. Headlight | 504,214 | Aug. 29 | 2249 | 810 | 64 | 1236 |
| Hanebeck, Carl W., Iserlohn, Germany. Machine for manufacturing fishing-hooks | 501,906 | July 18 | 2193 | 545 | 64 | 427 |
| Hankenhof, Julius, New York, N. Y. Water-closet cistern | 505,601 | Sept. 26 | 2170 | 549 | 64 | 1719 |
| Hankey, Anton, Gilman, Colo. Carpet-stretcher | 501,617 | July 18 | 1725 | 430 | 64 | 346 |
| Hankin, John, Rutherford, N. J. Car-ventilator | 503,047 | Aug. 8 | 1353 | 334 | 64 | 860 |
| Hanks, William R., assignor of one-half to J. E. Selfe, Wellesley, Mass. Water-filter | 503,597 | Aug. 22 | 2262 | 566 | 64 | 1022 |
| Hanna, David, Ogdensburg, N. Y. Process of and apparatus for purifying water | 502,252 | July 25 | 2759 | 698 | 64 | 550 |
| Hansbarger, Harvey, Pittsburg, Ohio. Fence | 505,357 | Sept. 19 | 1717 | 443 | 64 | 1619 |
| Hansell, William H., Philadelphia, Pa. Car-brake | 505,763 | Sept. 26 | 2448 | 616 | 64 | 1769 |
| Hansen, Adolph C., Chicago, Ill. Cash indicator and register | 503,598 | Aug. 22 | 2263 | 567 | 64 | 1022 |
| Hansen, Christian, Rockford, Ill. Vehicle-gear | 502,905 | Aug. 8 | 1121 | 276 | 64 | 788 |
| Hansen, Fred. (See Labudde and Hansen.) | | | | | | |
| Hansen, Hans M., Quincy, Mass. Shoe | 501,505 | July 18 | 1545 | 389 | 64 | 312 |
| Hansen, Thorwald. (See Andersen, Hans C., assignor.) | | | | | | |
| Hanson, Joseph H., assignor of one-half to W. J. Brown, J. F. Hocking, F. Scadden, and G. E. Voce, Crystal Falls, Mich. Thill-coupling | 502,816 | Aug. 8 | 980 | 238 | 64 | 761 |
| Hanson, Paul, assignor to William Deering & Company, Chicago, Ill. Self-binding harvester | 503,283 | Aug. 15 | 1744 | {431 432} | 64 | 914 |
| Harden, Edward W., assignor to F. C. Weir, Cincinnati, Ohio. Valve-controlling mechanism | 505,764 | Sept. 26 | 2449 | {616 617} | 64 | 1769 |
| Harder, James E., Niles, Mich., and J. H. Fox, Springfield, Ohio. Device for removing sediment from the bottoms of liquid-storage vessels | 500,742 | July 4 | 336 | 89 | 64 | 63 |
| Hardie, Charles E. (See Grass and Hardie.) | | | | | | |
| Hardiman, G. H. (See Steffey, William E., assignor.) | | | | | | |
| Hardwick, Frederick W., Passaic, N. J., assignor to New York Belting and Packing Company, Limited, of England. Valve for pneumatic tires | 501,715 | July 18 | 1885 | 469 | 64 | 374 |
| Hardwick, Frederick W., Passaic, N. J., assignor to New York Belting and Packing Company, Limited, of England. Pneumatic tire | 501,716 | July 18 | 1886 | 469 | 64 | 374 |
| Hardwick, Harry, Thompsonville, Conn. Ingrain carpet fabric | 505,788 | Sept. 26 | 2483 | {626 627} | 64 | 1776 |
| Hardwick, Harry, Thompsonville, Conn. Ingrain carpet fabric | 505,789 | Sept. 26 | 2485 | 627 | 64 | 1777 |
| Hardt, Louis, Yuba City, Cal. Plane | 502,906 | Aug. 8 | 1123 | 277 | 64 | 788 |
| Harford, John H. (See Raymond, Charles W., assignor.) | | | | | | |
| Harkins, Charles, Menlo Park, Cal. Hat | 504,350 | Sept. 5 | 56 | 15 | 64 | 1281 |
| Harmer, Edward, Ottawa, Canada. Advertising device | 501,137 | July 11 | 966 | 247 | 64 | 191 |
| Harms, August E., Pikeville, N. Y. Feed-water regulator | 501,834 | July 18 | 2070 | 511 | 64 | 406 |
| Harnden, Henry H., Rockford, Ill. Draft-evener | 505,160 | Sept. 19 | 1408 | 362 | 64 | 1561 |
| Harner, Daniel W. (See Weaver, John A., assignor.) | | | | | | |
| Harper, James M., Peoria, Ill. Tube-compressor | 504,268 | Aug. 29 | 2334 | 833 | 64 | 1242 |
| Harper, Lewis W., New York Mills, Minn. Velocipede-saddle | 501,782 | July 18 | 1999 | 494 | 64 | 393 |
| Harper, Thomas, assignor to W. S. Hurley and D. Alexander, Brooklyn, and A. P. Meylert, New York, N. Y. Machine for buffing metal tubes | 505,221 | Sept. 19 | 1499 | {390 391} | 64 | 1578 |
| Harrington, Charles, assignor of one-half to E. Rowntree, Bartlett, Tex. Baling-press | 504,033 | Aug. 29 | 2049 | 738 | 64 | 1169 |
| Harris, Charles R., Williamsport, Pa. Wire buckle | 500,764 | July 4 | 372 | 96 | 64 | 69 |
| Harris, Charles R., Williamsport, Pa. Suspender-buckle | 501,067 | July 11 | 839 | 218 | 64 | 108 |
| Harris, Eugene F., *et al.* (See Darnell, Calvin F., assignor.) | | | | | | |
| Harris, Frank H., Toledo, Ohio. Toy vehicle | 500,805 | July 4 | 435 | 114 | 64 | 80 |
| Harris, John C. F., assignor of one-half to H. Merrill, Littleton, N. H. Sleigh | 503,478 | Aug. 15 | 2060 | 514 | 64 | 970 |
| Harris, Max, Everett, and N. Harris, Boston, Mass. Trousers | 502,253 | July 25 | 2761 | 698 | 64 | 550 |
| Harris, Nathan. (See Harris, Max, and N.) | | | | | | |
| Harris, Stephen C., *et al.* (See Winsor, George H., assignor.) | | | | | | |
| Harris, William F., San Francisco, Cal. Faucet | 503,477 | Aug. 15 | 2059 | 513 | 64 | 969 |
| Harrison, Abraham C., Grand Rapids, Ohio. Fence-post | 502,623 | Aug. 1 | 627 | 150 | 64 | 682 |
| Harrison, Andrew L., Wilmington, N. C. Relief-valve | 500,891 | July 4 | 565 | 147 | 64 | 103 |
| Harrison, Charles T., Falling Spring, W. Va. Car-coupling | 503,346 | Aug. 15 | 1857 | 459 | 64 | 933 |
| Harrison, Henry J. (See Harrison, Joseph N. and H. J.) | | | | | | |
| Harrison, Joseph N. and H. J., San Francisco, Cal. Electrode for firing explosives | 502,965 | Aug. 8 | 1232 | 303 | 64 | 807 |
| Harrison, Joseph N. and H. J., San Francisco, Cal. Flash-light apparatus for photographers' use | 504,578 | Sept. 5 | 439 | 112 | 64 | 1352 |
| Harsha, Leslie R., Chicago, Ill. Furniture-joint | 501,935 | July 25 | 2247 | 561 | 64 | 453 |
| Hart, Stacy B., assignor to Hart Weigher Company, Peoria, Ill. Steering-gear for traction-engines | 505,523 | Sept. 26 | 2014 | 515 | 64 | 1688 |
| Hart Weigher Company. (See Hart, Stacy B., assignor.) | | | | | | |
| Hart Weigher Company. (See Kramer, George W., assignor.) | | | | | | |
| Hart, William H., Jr., Philadelphia, Pa. Lock for bicycle-chains | 505,292 | Sept. 19 | 1615 | 419 | 64 | 1601 |
| Hart, William H., Jr., Philadelphia, Pa. Bicycle-lock | 505,522 | Sept. 26 | 2013 | 515 | 64 | 1688 |
| Hart, William H., assignor to Stanley Works, New Britain, Conn. Drive-chain | 504,494 | Sept. 5 | 306 | 77 | 64 | 1327 |
| Hart, William H., assignor to Stanley Works, New Britain, Conn. Hinge | 504,877 | Sept. 12 | 935 | 241 | 64 | 1460 |
| Hartford Machine Screw Company. (See Witherell, George E., assignor.) | | | | | | |
| Harthan, Charles E. (See Thomson and Harthan.) | | | | | | |
| Hartigan, William R. (See Wilcox, Elbert, Jr., assignor.) | | | | | | |
| Hartness, James, Springfield, Vt. Tool for turning tapering surfaces | 501,273 | July 11 | 1174 | 298 | 64 | 228 |

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|---|---|---|---|---|---|---|
| Hartness, James, Springfield, Vt. Metal-screw machine | 502,517 | Aug. 1 | 452 | 109 | 64 | 649 |
| Harton, Pembroke D., Philadelphia, Pa. Cake-machine | 501,274 | July 11 | 1176 | 298 / 299 | 64 | 299 |
| Hartt, William A., Tucson, Ariz. Ter. Gravity-pump | 504,922 | Sept. 12 | 1008 | 260 / 261 | 64 | 1475 |
| Hartwig, Carl, Pittsburg, Pa. Dropping-stopper for bottles | 500,892 | July 4 | 586 | 147 | 64 | 109 |
| Harvey, James F., Green Brier, Ark. Clamp | 501,936 | July 25 | 2248 | 561 | 64 | 453 |
| Harvey, Patrick, Chicago, Ill. Siphon closet and tank | 501,506 | July 18 | 1546 | 390 | 64 | 313 |
| Harvey, Patrick, Chicago, Ill. Supply-valve for closet-tanks | 501,507 | July 18 | 1550 | 390 | 64 | 313 |
| Harvey, Valmer R., Watertown, N. Y. Drawer-slide and extension-support | 500,575 | July 4 | 58 | 17 | 64 | 12 |
| Haskell, Amos A., *et al.* (See Davidson, David J., assignor.) | | | | | | |
| Haskell, Frank H., Revere, and W. E. Haskell, Chelsea, Mass. Ticket-holder | 501,652 | July 18 | 1780 | 443 | 64 | 356 |
| Haskell, Willis E. (See Haskell, Frank H. and W. E.) | | | | | | |
| Hasker, Charles H., assignor to Hasker & Marcuse Manufacturing Company, Richmond, Va. Label-holder for sheet-metal vessels | 505,312 | Sept. 19 | 1652 | 427 | 64 | 1807 |
| Hasker & Marcuse Manufacturing Company. (See Hasker, Charles H., assignor.) | | | | | | |
| Haskin, James H., Three Oaks, Mich. Gate | 502,460 | Aug. 1 | 353 | 85 | 64 | 631 |
| Haskin, Samuel E., Avoca, N. Y. Brick-machine | 503,958 | Aug. 29 | 2932 | 707 | 64 | 1148 |
| Haskins, Carl D., Lynn, Mass., assignor to General Electric Company, of New York. Electric snap-switch | 501,068 | July 11 | 840 | 218 | 64 | 168 |
| Haskins, Charles H., New York, N. Y. Electric telemeter | 502,399 | Aug. 1 | 349 | 59 | 64 | 611 |
| Haskins, Henry W. (See Brooks, Sidney R., assignor.) | | | | | | |
| Hassencamp, Hugo, assignor to Farbenfabriken, vormals Fr. Bayer & Co., Elberfeld, Germany. Violet dye | 501,069 | July 11 | 841 | | 64 | 169 |
| Hastings, Frank D., and O. N. Durand, Champion, Mich. Temporary binder | 503,959 | Aug. 29 | 2934 | 707 | 64 | 1149 |
| Hastings, James L., assignor to National Heat and Power Company, Philadelphia, Pa. Manufacture of gas | 505,524 | Sept. 26 | 2017 | 516 | 64 | 1689 |
| Hastings, James L., assignor to National Heat and Power Company, Philadelphia, Pa. Process of and apparatus for the manufacture of gas | 505,525 | Sept. 26 | 2021 | 516 / 517 / 518 | 64 | 1690 |
| Haswell, George H., *et al.* (See Pinkney, Charles W., assignor.) | | | | | | |
| Hatch, Charles, Jr. (See Woodward and Hatch.) | | | | | | |
| Hatfield, William, Fort Wayne, Ind. Device for side-dressing circular saws | 504,726 | Sept. 12 | 673 | 172 | 64 | 1409 |
| Hausam, Daniel W., Dallas, Tex. Car coupling | 503,347 | Aug. 15 | 1859 | 460 | 64 | 934 |
| Hausman, Frederick H., San Francisco, Cal. Water-gage | 502,073 | July 25 | 2457 | 617 | 64 | 492 |
| Haustein, Henry, San Francisco, Cal. Frame for illuminating tiles | 501,008 | July 4 | 745 | 195 | 64 | 135 |
| Haustein, Henry, San Francisco, Cal. Illuminating-tile construction | 505,044 | Sept. 12 | 1211 | 312 | 64 | 1512 |
| Havard, Joseph, New Bedford, Mass. Automatic fire-alarm | 501,653 | July 18 | 1781 | 444 | 64 | 356 |
| Haven, James L. (See Matthews, Edwin S., assignor.) | | | | | | |
| Havens, Frederick A., Weathersfield, Conn. End-gate fastening | 502,095 | July 25 | 2493 | 627 | 64 | 498 |
| Hawes, Colin A., assignor to Easton & Burnham Machine Company, Pawtucket, R. I. Bobbin-holder | 501,461 | July 11 | 1479 | 372 | 64 | 264 |
| Hawes, Elmer E. Providence, R. I. Cement | 501,937 | July 25 | 2249 | | 64 | 453 |
| Hawkes, Edward B., Orange, assignor to E. W. Davis, Greenfield, Mass. Belt-clamp | 505,103 | Sept. 19 | 1318 | 340 | 64 | 1546 |
| Hawkes, Frederick W., Chicago, Ill. Game-board | 503,318 | Aug. 15 | 1814 | 449 | 64 | 925 |
| Hawkins, James R., Benjamin, Utah Ter. Centrifugal honey-extractor | 501,717 | July 18 | 1888 | 469 | 64 | 374 |
| Hawks, Moses L., Chicago, Ill. Knife | 501,682 | July 18 | 1832 | 456 | 64 | 364 |
| Hawley, Allen G., *et al.* (See Long and Dimick, assignors.) | | | | | | |
| Hawley, Eli J., Manchester, Vt. Centrifugal pump | 505,790 | Sept. 26 | 2488 | 628 | 64 | 1777 |
| Hawtherne, Samuel R., Hartford, Conn. Roofing | 505,526 | Sept. 26 | 2031 | 518 | 64 | 1691 |
| Hay, Gilbert, Fayette, Mo. Stapling-machine | 500,576 | July 4 | 59 | 17 | 64 | 12 |
| Hay, Walter, Chicago, Ill. Permutation-padlock | 504,034 | Aug. 29 | 2951 | 739 | 64 | 1170 |
| Haydel, H. L., *et al.* (See Armstrong, Alfred, assignor.) | | | | | | |
| Hayden, James T., assignor to Crane Company, Chicago, Ill. Hose-coupling | 503,370 | Aug. 15 | 1898 | 470 | 64 | 941 |
| Hayden, Jennie C., Chicago, Ill. Umbrella-chatelaine | 504,579 | Sept. 5 | 440 | 112 | 64 | 1352 |
| Hayden, Jennie C., Chicago, Ill. Chatelaine | 504,580 | Sept. 5 | 442 | 113 | 64 | 1352 |
| Hayden, Joseph L., Boston, Mass. Seal | 500,743 | July 4 | 338 | 89 | 64 | 63 |
| Haydock, John. (See Ainsworth and Haydock.) | | | | | | |
| Hayes, Israel, Farmington, N. H. Seam-finishing machine | 502,719 | Aug. 8 | 822 | 199 | 64 | 731 |
| Haynie, Judson K. (See Clark and Haynie.) | | | | | | |
| Hays, James S., Washington, D. C. Roll-paper cutter and holder | 502,400 | Aug. 1 | 251 | 60 | 64 | 612 |
| Hays, John W., Robbinsdale, Minn. Index-holder for books | 501,508 | July 18 | 1552 | 390 | 64 | 313 |
| Hayward, Frank W., A. S. King, and A. W. Loveland, Norwich, England. Apparatus for coating paper, &c | 504,215 | Aug. 29 | 2949 | 810 / 811 | 64 | 1236 |
| Hayward, Jacob L., Wadesville, N. C., assignor of two-thirds to W. B. Crittenden and A. B. Stetson, Bucyrus, Ohio. Cotton-press | 501,419 | July 11 | 1422 | 356 | 64 | 273 |
| Haywood, Daniel H., New York, N. Y. Door-check | 504,581 | Sept. 5 | 443 | 113 | 64 | 1353 |
| Hazel, Elsie B., Orange Mills, Fla. Hoe | 504,790 | Aug. 8 | 844 | 199 | 64 | 731 |
| Haselton, Frederic D., assignor to S. Bergmann, New York, N. Y. Carbon-holder for electric-arc lamps | 501,936 | July 25 | 2250 | 561 | 64 | 453 |
| Hazlehurst, Edward, Oldham, England. Tap | 504,433 | Sept. 5 | 199 | 51 | 64 | 1307 |
| Hearne, John, Boston, Mass., assignor of one-half to W. J. Strong, New York, N. Y. Center-seal | 501,342 | July 11 | 1300 | 324 | 64 | 250 |
| Heat and Odor Extinguisher Company. (See Carpenter, Benjamin F., assignor.) | | | | | | |
| Heath, E. N., *et al.* (See Ostoman, Carl G., assignor.) | | | | | | |
| Heatley, William, assignor to Detecter Patent Safety Postal Box Syndicate, Limited, London, England. Jewelry-case | 502,001 | July 25 | 2337 | 585 | 64 | 470 |
| Heaton, John, and G. H. Holden, Manchester, England. Apparatus for the manufacture of steel or iron | 501,138 | July 11 | 968 | 247 | 64 | 191 |
| Heaton, John, and G. H. Holden, Manchester, England. Apparatus for the manufacture of steel or iron | 501,139 | July 11 | 971 | 248 | 64 | 191 |
| Heaton, John, and G. H. Holden, Manchester, England. Apparatus for manufacturing steel or iron | 501,140 | July 11 | 973 | 248 | 64 | 192 |
| Heaton, Thomas T. (See Barraclough and Heaton.) | | | | | | |
| Heavey, Bernard C., Chicago, Ill. Garbage-furnace | 505,656 | Sept. 26 | 2287 | 574 / 575 | 64 | 1737 |
| Hebandahl, John P., Weatherby, Pa. Hanger for electric lights | 504,062 | Aug. 29 | 3017 | 754 | 64 | 1181 |
| Heberling, William L., Havana, Ill. Roofer's seaming-tongs | 501,509 | July 18 | 1553 | 390 / 391 | 64 | 313 |
| Hedbavny, Anton, assignor to L. Werner, New York, N. Y. Machine for removing water-hairs from pelts | 502,359 | Aug. 1 | 184 | 43 | 64 | 600 |
| Hedbavny, Anton, and A. H. Fiala, New York, N. Y. Machine for removing the water-hairs from pelts | 505,104 | Sept. 19 | 1320 | 340 / 341 | 64 | 1546 |
| Hedgeland, Frederick W., assignor to W. W. Kimball Company, Chicago, Ill. Exhaust for reed-organ bellows | 505,161 | Sept. 19 | 1400 | 362 | 64 | 1562 |



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| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drg. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Heftler, Maurice, and G. Benard, Paris, France. Process of and apparatus for making extracts | 503,237 | Aug. 15 | 1670 | 410 / 411 | 64 | 900 |
| Heidenreiter, Joseph, Brooklyn, N. Y. Vent-pipe | 501,935 | July 18 | 2071 | 511 | 64 | 406 |
| Heil, Albrecht, Fränkisch Crumbach, Germany. Writing-receiver | 503,371 | Aug. 15 | 1899 | 470 | 64 | 941 |
| Heil, Albrecht, Fränkisch Crumbach, Germany. Telegraphic apparatus | 503,372 | Aug. 15 | 1900 | 471 | 64 | 941 |
| Heim, Van. M. (See Glick, Heim, and Hafer.) | | | | | | |
| Heimlich, Charles H. and F. G., Venice, Ohio. Plow-point | 504,727 | Sept. 12 | 674 | 172 | 64 | 1410 |
| Heimlich, Fredrick G. (See Heimlich, Charles H. and F. G.) | | | | | | |
| Heineke, Charles. (See Heineke, Martin, and C.) | | | | | | |
| Heineke, Martin, Springfield, and C. Heineke, Carlinville, Ill. Straw-stacker | 501,939 | July 25 | 2251 | 562 | 64 | 453 |
| Heinlein, John F., assignor of three-fourths to H. Luebkert, M. Nicodemus, and J. G. Trump, Richville, Mich. Vegetable-cutter | 503,599 | Aug. 22 | 2274 | 568 | 64 | 1023 |
| Heinze, Johann G., Gera, Germany, and C. H. Reinmuth, Rockville, Conn. Buoyant fabric | 503,373 | Aug. 15 | 1902 | 471 | 64 | 942 |
| Heints, Theodor, Brandenburg-on-the-Havel, Germany. Fastener for wearing-apparel | 500,893 | July 4 | 567 | 147 | 64 | 103 |
| Heisser, Jacob H., Minneapolis, Minn. Envelope for sample-bags | 505,791 | Sept. 26 | 2489 | 628 | 64 | 1778 |
| Heist, Alfred D., Philadelphia, Pa. Hame | 502,119 | July 25 | 2531 | 634 | 64 | 506 |
| Hele-Shaw, Henry S., Liverpool, England. Inkstand | 503,852 | Aug. 22 | 2652 | 664 | 64 | 1007 |
| Heiland, Lewis J., Mansfield, Minn. Hay-sling | 502,721 | Aug. 8 | 824 | 199 | 64 | 732 |
| Heller, Bernard. (See Küchler, Karl, assignor.) | | | | | | |
| Heller, Julius, Teplitz, Austria-Hungary. Alcohol-stove | 500,765 | July 4 | 373 | 96 | 64 | 69 |
| Heller, Thomas J., Easton, Pa. Plaster composition | 502,096 | July 25 | 2493 | | 64 | 499 |
| Heller, Thomas J., Easton, Pa. Plaster composition | 502,097 | July 25 | 2494 | | 64 | 499 |
| Heller, Thomas J., Easton, Pa. Plaster composition | 503,537 | Aug. 15 | 2144 | 538 | 64 | 996 |
| Hellyer, Henry A. C., and W. T. Lawless, Ottawa, Canada. Shade and shade-holder | 504,525 | Sept. 5 | 357 | 90 | 64 | 1336 |
| Hemp, Lewis W., St. Louis, Mo. Liquid-measuring can | 504,526 | Sept. 5 | 358 | 91 | 64 | 1337 |
| Hemp, Lewis W., St. Louis, Mo. Combined minnow bucket and trap | 504,527 | Sept. 5 | 360 | 91 | 64 | 1337 |
| Hemp, Lewis W., St. Louis, Mo. Self-measuring tank | | | | | | |
| Hempel, John F., assignor of one-half to S. J. Turnvall, Grand Rapids, Mich. Thill-coupling | 502,491 | Aug. 1 | 413 | 97 | 64 | 642 |
| Henderson, James P., *et al.* (See Haberthur and Mandel, assignors.) | | | | | | |
| Henderson, John M., Salem, assignor of one-half to J. Johnson, New Albany, Ind. Car-coupling | 503,092 | Aug. 8 | 1402 | 346 | 64 | 838 |
| Henderson, William T. (See Rush, Stephen P., assignor.) | | | | | | |
| Hendrix, Zadox B., assignor of one-half to W. P. Brickley, Anderson, Ind. Mail-bag fastening | 505,045 | Sept. 12 | 1214 | 313 | 64 | 1513 |
| Henius, Max W., Brooklyn, N. Y., assignor to D. H. Fanning, Worcester, Mass. Corset-stay | 503,909 | Aug. 22 | 2738 | 687 | 64 | 1114 |
| Henkel, Julius A., Greenville, Mich. Refrigerator | 505,358 | Sept. 19 | 1718 | 443 / 444 | 64 | 1619 |
| Honn, Edwin C., Bloomfield, assignor to Standard Manufacturing Company, Hartford, Conn. Valve | 505,792 | Sept. 26 | 2490 | 628 | 64 | 1778 |
| Henning, Benjamin S., New York, N. Y. Railway | 504,351 | Sept. 5 | 57 | 16 | 64 | 1292 |
| Henning, Henry M., Minocqua, Wis. Watch guard or chain holder | 505,657 | Sept. 26 | 2269 | 575 | 64 | 1737 |
| Henry, Archie J. (See Henry, James M., assignor.) | | | | | | |
| Henry Huber Company. (See Boyle, James E., assignor.) (Reissue.) | | | | | | |
| Henry, James M., Evans' Mills, assignor to A. J. Henry, Watertown, N. Y. Vending-machine | 505,793 | Sept. 26 | 2491 | 628 / 629 | 64 | 1778 |
| Henry, John C., Westfield, N. J. Overhead electric railway | 501,009 | July 4 | 747 | 196 | 64 | 136 |
| Henry, John C., New York, N. Y. Regulator for dynamo-electric machines | 504,216 | Aug. 29 | 3251 | 811 | 64 | 1236 |
| Hepburn, Lewis L., assignor to Marlin Fire Arms Company, New Haven, Conn. Breech-loading gun | 502,489 | Aug. 1 | 409 | 96,97 | 64 | 642 |
| Herdman, James A., Lincoln, Nebr. Listing-cultivator | 501,940 | July 25 | 2251 | 562 | 64 | 454 |
| Herman, Fredrick, Martinsville, Miss. Joint for railway-rails | 504,981 | Sept. 12 | 1113 | 285 | 64 | 1493 |
| Herman, Reinhold, Crafton, Pa. Pipe-coupling | 502,038 | July 25 | 2402 | 605 | 64 | 481 |
| Hermite, Eugene, Paris, and A. Dubosc, Rouen, France. Method of and apparatus for electrolysing solutions | 501,783 | July 18 | 1909 | 494 | 64 | 394 |
| Hermon, William A. (See Wright and Hermon.) | | | | | | |
| Herr, Albert W., Washington, D. C. Curtain-fixture | 502,074 | July 25 | 2459 | 618 | 64 | 492 |
| Herren, Albert. (See Dawdy and Herren.) | | | | | | |
| Herrick, Albert B., Schenectady, N. Y., assignor to General Electric Company, Boston, Mass. Means for taking readings of meter-dials | 504,159 | Aug. 29 | 3149 | 787 | 64 | 1207 |
| Herrick, Albert B., Schenectady, N. Y., assignor to General Electric Company, Boston, Mass. Rheostat | 504,160 | Aug. 29 | 3151 | 787 | 64 | 1207 |
| Herrick, Albert B., Schenectady, N. Y., assignor to General Electric Company, Boston, Mass. Electric switch | 504,528 | Sept. 5 | 362 | 91, 92 | 64 | 1337 |
| Herrick, Frank J., assignor to North & Judd Manufacturing Company, New Britain, Conn. Blanket-buckle | 500,894 | July 4 | 568 | 147 | 64 | 103 |
| Herrick, Harrison E., Merrimac, N. H. Spring-back for vehicle-seats | 503,319 | Aug. 15 | 1815 | 450 | 64 | 925 |
| Herrington, Horatio D., Leslie, Mich. Gate | 504,780 | Sept. 12 | 781 | 197 | 64 | 1429 |
| Herron, James B., *et al.* (See Hoff, Herman, assignor.) | | | | | | |
| Herscher, Charles, Paris, France. Sterilized and drinkable water | 501,784 | July 18 | 2003 | 494 | 64 | 394 |
| Hertel, Max E., and A. Beck, Chicago, Ill.; said Hertel assignor to said Beck. Bicycle-support | 505,162 | Sept. 19 | 1409 | 363 | 64 | 1562 |
| Hersberg, Nachman H., assignor of one-half to A. Cahn, New York, N. Y. Fire-escape | 501,343 | July 11 | 1302 | 325 | 64 | 250 |
| Hersog, George, Joliet, Ill. Windmill | 504,035 | Aug. 29 | 2952 | 739 | 64 | 1170 |
| Heslop, William, Wakefield, England. Machinery for pressing or stamping boats from sheet metal | 504,878 | Sept. 12 | 936 | 241 / 242 | 64 | 1461 |
| Hess, Henry K., Syracuse, N. Y. Printing-telegraph for cash-recording systems | 505,293 | Sept. 19 | 1616 | 419 / 420 | 64 | 1601 |
| Hess, Martin, New York, N. Y. Package-envelope | 502,966 | Aug. 8 | 1933 | 303 | 64 | 807 |
| Hess Postal Facility and Supply Company. (See Hook, Harry L., assignor.) | | | | | | |
| Hess, William F., San Francisco, Cal. Press for packing bank-notes or other currency | 500,766 | July 4 | 374 | 97 | 64 | 70 |
| Hesse, Carl, and J. C. M. Steraberg, Long Island City, N. Y., assignors of one-half to Owl Cigar Company, of New York. Cigar-wrapper cutter | 503,701 | Aug. 22 | 2433 | 605 / 606 | 64 | 1053 |
| Hesse, Ernst A. C., Brooklyn, N. Y. Sofa-bed | 501,602 | July 18 | 1697 | 423 | 64 | 341 |
| Hessong, James, Chillicothe, Ohio. Wagon-body | 505,464 | Sept. 26 | 1897 | 489 | 64 | 1667 |
| Heston, Nathan C. (See Grant and Heston.) | | | | | | |
| Hetherington-Carruthers, Sophia, Sydney, New South Wales. Electro-medical appliance | 500,767 | July 4 | 376 | 97 | 64 | 70 |
| Hetherington, Frederick A., assignor to United States Camera Company, Indianapolis, Ind. Photographic camera | 502,857 | Aug. 8 | 1039 | 255 | 64 | 772 |
| Hetrick, Russell D., W. T. Wilson, and E. Rowe, Indiana, Pa. Ladder | 502,967 | Aug. 8 | 1234 | 303 | 64 | 807 |
| Hettmansperger, Louis F. (See Linville and Hettmansperger.) | | | | | | |
| Hetzel, Peter, Brooklyn, assignor to J. M. Waterbury and C. Marshall, New York, N. Y. Twine-ball-gaging device | 501,198 | July 11 | 1046 | 265 | 64 | 205 |

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|---|---|---|---|---|---|---|
| Hetzel, Peter, Brooklyn, assignor to J. M. Waterbury and C. Marshall, New York, N. Y. Tension-regulator for twine-bobbins | 501,187 | July 11 | 1047 | 265 | 64 | 905 |
| Heuler, Georg L., St. Louis, Mo. Suspender attachment | 504,217 | Aug. 29 | 3252 | 811 | 64 | 1226 |
| Hewitt, Elisha. (See Fredin, Perjohan, assignor.) | | | | | | |
| Heyden, F. von, Nachfolger. (See Seifert, Bruno R., assignor.) | | | | | | |
| Heydenreich, Ernst C., Mount Clemens, Mich. Elevator-brake | 504,161 | Aug. 29 | 3155 | 788 | 64 | 1208 |
| Heysinger, Isaac W., Philadelphia, Pa. Envelope-opener | 504,352 | Sept. 5 | 58 | 16 | 64 | 1282 |
| Heywood Bros. & Co. (See Messmer, Alexander L. H., assignor.) | | | | | | |
| Hiatt, Ella L., Dublin, Ind. Folding handle for dust-pans | 502,286 | Aug. 1 | 65 | 15 | 64 | 578 |
| Hibberd, Charles, Melbourne, assignor to T. W. Holland, Fitzroy, Victoria. Window | 504,806 | Sept. 12 | 823 | 209 | 64 | 1438 |
| Hickok, Henry M. and R. M., Woonsocket, S. D. Draft-equalizer | 501,141 | July 11 | 974 | 248, 249 | 64 | 192 |
| Hickok, Rufus M. (See Hickok, Henry M. and R. M.) | | | | | | |
| Hicks, Bohn C., Chicago, Ill., assignor to Hicks Stock Car Company, of West Virginia. Stock-car | 504,692 | Sept. 5 | 694 | 159 | 64 | 1388 |
| Hicks, Frank M. (See Quast, Charles, assignor.) | | | | | | |
| Hicks, George C., Boston, Mass. Tube-closer for steam-boilers | 504,582 | Sept. 5 | 444 | 113 | 64 | 1353 |
| Hicks, Lewis C., assignor of one-half to M. Vincent, Onawa, Iowa. Dumping-wagon | 504,304 | Aug. 29 | 3390 | 848 | 64 | 1253 |
| Hicks, Oliver H., and R. F. Troy, Chicago, Ill.; said Troy assignor to said Hicks. Electric door-operating apparatus | 505,270 | Sept. 19 | 1570 | 410 | 64 | 1502 |
| Hicks, Oliver H., and R. F. Troy, Chicago, Ill.; said Troy assignor to said Hicks. Electric door-operating apparatus | 505,271 | Sept. 19 | 1574 | 410, 411 | 64 | 1503 |
| Hicks, Simeon J., Englewood, Ill. Mortising-tool | 502,190 | July 25 | 2531 | 635 | 64 | 506 |
| Hicks Stock Car Company. (See Hicks, Bohn C., assignor.) | | | | | | |
| Higbee, Clinton A., Philadelphia, Pa. Bolt and nut | 501,941 | July 25 | 2253 | 562 | 64 | 454 |
| Higbee, Clinton A., Philadelphia, Pa. Tool for trimming screw-threads | 501,942 | July 25 | 2253 | 562, 563 | 64 | 454 |
| Higbee, Clinton A., J. Braun, and H. Deck, assignors to said Higbee and J. Braun & Sons, Philadelphia, Pa. Tool for cutting down screw-threads | 501,943 | July 25 | 2255 | 563 | 64 | 454 |
| Higgins, Atkins. (See Hopkins and Higgins.) | | | | | | |
| Higgins, Campbell P., New York, N. Y. Sectional mandrel | 503,960 | Aug. 29 | 2836 | 708 | 64 | 1149 |
| Higgins, Campbell P., New York, N. Y. End-welding machine for headers or other tubes | 503,961 | Aug. 29 | 2837 | 708, 709 | 64 | 1149 |
| Higgins, Campbell P., New York, N. Y. Die for forming polygonal tubes | 503,962 | Aug. 29 | 2839 | 709 | 64 | 1150 |
| Higgins, Campbell P., New York, N. Y. Embossing and punching machine | 503,963 | Aug. 29 | 2841 | 710, 711 | 64 | 1150 |
| Higgins, Campbell P., New York, N. Y. End-placing machine for headers or other tubes | 503,964 | Aug. 29 | 2842 | 711, 712 | 64 | 1150 |
| Higgins, Campbell P., New York, N. Y. Metal-working apparatus | 503,965 | Aug. 29 | 2843 | 712, 713 | 64 | 1151 |
| Higgins, Campbell P., New York, N. Y. Machine for making ends for headers or other purposes | 503,966 | Aug. 29 | 2846 | 713 | 64 | 1151 |
| Higgins, Charles W., assignor of three-fourths to J. B. and H. E. Knudson, Fernwood, and L. C. B. Holmboe, Chicago, Ill. Air-brake mechanism for railway-cars | 503,083 | Aug. 8 | 1405 | 347 | 64 | 839 |
| Higgins, Dennis F., Jersey City, N. J. Wing-rail frog | 501,070 | July 11 | 842 | 218, 219 | 64 | 169 |
| Higgins, Edward S., and H. C. Jenkins, London, England. Joint for type-writing machines | 502,190 | July 25 | 2645 | 667 | 64 | 529 |
| Higgins, Emma L. (See Drake and Higgins, assignors.) | | | | | | |
| Higgins, Frederick A. (See Drake and Higgins.) | | | | | | |
| Higgins, William H., Forest City, Pa. Bracket | 501,618 | July 18 | 1726 | 430 | 64 | 346 |
| Hight, William S., assignor to Frey-Sheckler Company, Bucyrus, Ohio. Brick or tile machine | 504,781 | Sept. 12 | 782 | 197, 198 | 64 | 1430 |
| Hildenbrand, Henry, St. Louis, Mo. Collar-stuffing machine | 503,479 | Aug. 15 | 2062 | 514 | 64 | 976 |
| Hildreth, Fred, *et al.* (See Burnham, Arthur M., assignor.) | | | | | | |
| Hildreth, William O., Lawrence, assignor to Stanley Manufacturing Company, Boston, Mass. Sole-sewing machine | 503,084 | Aug. 8 | 1406 | 347, 348 | 64 | 839 |
| Hill, Charles, Seattle, Wash. Safe or vault | 501,142 | July 11 | 975 | 249 | 64 | 192 |
| Hill, Frederick B., assignor to Hills Cold Storage Company, Limited, London, England. Refrigerating apparatus | 505,359 | Sept. 19 | 1720 | 444 | 64 | 1620 |
| Hill, Harry W., Cleveland, Ohio. Clutch-operating mechanism | 503,863 | Aug. 22 | 2653 | 664 | 64 | 1097 |
| Hill, Harvey S., Ithaca, Mich. Bridle | 505,658 | Sept. 26 | 2389 | 575 | 64 | 1737 |
| Hill, Job W., Manchester, N. H. Stop and waste valve | 502,563 | Aug. 1 | 526 | 126 | 64 | 661 |
| Hill, Leonard B., Boston, Mass. Harness-saddle | 502,121 | July 25 | 2532 | 635 | 64 | 506 |
| Hiller, John H., Hyde Park, Mass. Snow-guard | 502,490 | Aug. 1 | 411 | 97 | 64 | 642 |
| Hilliard, Thomas M., New York, N. Y. Sponge and soap holder | 505,360 | Sept. 19 | 1722 | 445 | 64 | 1620 |
| Hills Cold Storage Company. (See Hill, Frederick B., assignor.) | | | | | | |
| Hills, Lorenzo, Pittsburg, Tex. Cattle-guard | 501,785 | July 18 | 2006 | 495 | 64 | 395 |
| Hillson, Joseph, Cambridge, Mass. Tin pan | 501,348 | July 11 | 1130 | 288, 289 | 64 | 222 |
| Hilton, John W., assignor of one-half to B. P. Newell, Cincinnati, Ohio. Stove or heater | 501,143 | July 11 | 977 | 249 | 64 | 192 |
| Himebaugh, Adelbert C. (See Sheffield, George S., assignor.) | | | | | | |
| Hind, Edward O. (See Hind, William R. and E. O.) | | | | | | |
| Hind, William R. and E. O., St. Louis, Mo. Hinged cover for show-barrels | 503,930 | Aug. 22 | 2766 | 693 | 64 | 1119 |
| Hinds, Franklin P., Boston, Mass., assignor to Hot Water Fountain Company, of Maine. Water-fountain | 503,417 | Aug. 15 | 1958 | 486, 487 | 64 | 952 |
| Hinds, William L., Des Moines, Iowa. Adjustable grate for stove-ovens | 504,836 | Sept. 12 | 878 | 226 | 64 | 1450 |
| Hine, James W., assignor to Fenton Metallic Manufacturing Company, Jamestown, N. Y. File | 504,782 | Sept. 12 | 783 | 196 | 64 | 1430 |
| Hiner, James O., Monterey, Va. Vehicle-wheel | 501,420 | July 11 | 1451 | 357 | 64 | 273 |
| Hines, William, Middletown, Conn. Hammock | 501,944 | July 25 | 2256 | 563 | 64 | 454 |
| Hinman, William W., Elkhart, Ill. Churn | 504,385 | Sept. 5 | 114 | 29 | 64 | 1292 |
| Hinsons, James A., Chicago, Ill. Car-coupling | 503,208 | Aug. 15 | 1626 | 399 | 64 | 893 |
| Hipkins, Henry C. (See Wayne, Alfred, assignor.) | | | | | | |
| Hipwell, Thomas, Long Island City, assignor to Manhattan Brass Company, New York, N. Y. Lamp | 501,275 | July 11 | 1180 | 290 | 64 | 230 |
| Hiscox, Gardner D., Brooklyn, assignor, by mesne assignments, to Sterling Car Heating and Lighting Company, New York, N. Y. Car-heater | 501,718 | July 18 | 1889 | 470 | 64 | 374 |
| Hise, John H., assignor, by mesne assignments, of one-half to G. R. Shatto, Los Angeles, Cal. Refrigerator | 501,949 | July 11 | 1137 | 289 | 64 | 222 |
| Hiser, Charles H., *et al.* (See Hiser, Sherman N., assignor.) | | | | | | |
| Hiser, Sherman N., assignor of two-thirds to E. N. Lupfer and C. H. Hiser, Springfield, Ohio. Casket-top fastener | 500,577 | July 4 | 62 | 18 | 64 | 13 |
| Hisey, Charles S., Aurora, Ind., assignor, by mesne assignments, to Standard Cartridge Company, of New Jersey. Cartridge-loading machine | 505,423 | Sept. 19 | 1634 | 472 | 64 | 1642 |



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|---|---|---|---|---|---|---|
| Hisgen, George, Fort Plain, N. Y. Keyhole-guard | 504,583 | Sept. 5 | 447 | 113, 114 | 64 | 1353 |
| Hitchcock, Charles A., Chicago, Ill., assignor to Adams & Westlake Company, of Illinois. Faucet | 505,105 | Sept. 19 | 1321 | 341 | 64 | 1547 |
| Hitchcock, Dexter, *et al.* (See Weaver, William, assignor.) | | | | | | |
| Hitchcock, George H., Danville, Ill. Stuffing-box | 501,344 | July 11 | 1303 | 325 | 64 | 250 |
| Hitchcock, Lewis D., Hartford, Conn. Type-writing machine | 504,473 | Sept. 5 | 263 | 68, 69 | 64 | 1319 |
| Hitchon, Alfred, Accrington, England. Apparatus for driving the flats of traveling-flat carding-engines | 501,836 | July 18 | 2072 | 511 | 64 | 406 |
| Hobart, Arthur S., and A. W. Eldredge, Big Rapids, Mich. Rubber eraser | 501,421 | July 11 | 1424 | 357 | 64 | 273 |
| Hobart, Burdick H., and E. A. Rockwell, Troy, Pa. Halter | 501,619 | July 18 | 1727 | 430 | 64 | 347 |
| Hobbs, Horace, *et al.* (See Ramien, Edgar F., assignor.) | | | | | | |
| Hochhausen, William, Brooklyn, N. Y. Ammeter | 501,144 | July 11 | 978 | 249 | 64 | 193 |
| Hochrentener, Henry, New York, N. Y. Fabric-holding frame for embroidering-machines | 503,320 | Aug. 15 | 1816 | 450 | 64 | 926 |
| Hochstein & Weinberg. (See Vogel, Hermann W., assignor.) | | | | | | |
| Hock, John A. (See McManus and Hock.) | | | | | | |
| Hockensmith, Franklin C., Irwin, Pa. Wheel | 500,578 | July 4 | 63 | 18 | 64 | 13 |
| Hocking, Joseph F., *et al.* (See Hanson, Joseph H., assignor.) | | | | | | |
| Hoddinott, John W., Ruxton Heights, Md. Thill-coupling | 500,895 | July 4 | 569 | 148 | 64 | 104 |
| Hodge, Martin P., Jersey City, N. J., assignor of one-half to L. L. Frazier, Brooklyn, N. Y. Taper attachment for lathes | 502,401 | Aug. 1 | 251 | 60 | 64 | 612 |
| Hodgen, Samuel P., Pittsfield, Ill. Latch | 503,085 | Aug. 8 | 1409 | 348 | 64 | 840 |
| Hodges, Nathaniel D. C., Plainfield, N. J., assignor to American Lightning Protection Company, Sioux City, Iowa. Lightning-rod | 505,106 | Sept. 19 | 1323 | 341 | 64 | 1547 |
| Hodgson, John G. (See Norton and Hodgson.) | | | | | | |
| Hodgson, William, Nanticoke, Pa. High or low water alarm | 502,191 | July 25 | 2647 | 668 | 64 | 529 |
| Hoe, Robert, *et al.* (See Crowell, Luther C., assignor.) | | | | | | |
| Hoefer, Frederick W., Freeport, Ill. Spring-hinge | 501,786 | July 18 | 2007 | 495 | 64 | 395 |
| Hoeschen, Henry, Omaha, Nebr. Coin-controlled vending-machine | 502,817 | Aug. 8 | 981 | 230 | 64 | 762 |
| Hofbauer, Frank X., Newark, N. J. Magneto-electric machine | 502,670 | Aug. 1 | 722 | 173 | 64 | 698 |
| Höfer, Carl F. W., assignor to Siemens & Halske, Berlin, Germany. Electric switch | 501,071 | July 11 | 844 | 219 | 64 | 169 |
| Höfer, Heinrich, Hagen, Germany. Refining iron and apparatus used therefor | 502,492 | Aug. 1 | 414 | 98 | 64 | 643 |
| Hoff, Augustus and H., Brooklyn, N. Y. Physician's vial-case | 505,229 | Sept. 19 | 1501 | 391 | 64 | 1579 |
| Hoff, Henry. (See Hoff, Augustus and H.) | | | | | | |
| Hoff, Herman, Chicago, Ill., assignor to himself, H. Willand, and J. B. Herron. Sirup-dispensing apparatus | 500,897 | July 4 | 570 | 148 | 64 | 104 |
| Hoffheimer, Harry W., Chicago, Ill. Cash-register | 500,898 | July 4 | 572 | 149 | 64 | 104 |
| Hoffman, Charles O., *et al.* (See Kelley, Calhoun L., assignor.) | | | | | | |
| Hoffmann, Carl. (See Richter and Hoffmann.) | | | | | | |
| Hoffmann, Carl, assignor to Siemens & Halske, Berlin, Germany. Automatic cut-out | 502,518 | Aug. 1 | 454 | 110 | 64 | 650 |
| Hoffmann, Carl, assignor to Siemens & Halske, Berlin, Germany. Two-pole switch | 502,519 | Aug. 1 | 456 | 110 | 64 | 650 |
| Hoffmann, Ernest G., New York, N. Y. Machine for manufacturing metal balls, &c | 504,083 | Aug. 29 | 3019 | 754, 755 | 64 | 1183 |
| Hoffmann, Ernest G., New York, N. Y., assignor to Standard Caster and Wheel Company, of West Virginia. Caster-wheel | 501,719 | July 18 | 1891 | 470 | 64 | 375 |
| Hoffmann, Frank H. and H. H., Chicago, Ill. Blank book | 501,276 | July 11 | 1182 | 299 | 64 | 230 |
| Hoffmann, Herman H. (See Hoffmann, Frank H. and H. H.) | | | | | | |
| Hoffmann, Meinhard. (See Gans and Hoffmann.) | | | | | | |
| Hoffritz, Charles F., Dayton, Ohio. Hinge | 504,162 | Aug. 29 | 3156 | 788 | 64 | 1208 |
| Hoffstaetter, Ernest, Jr., and H. Stilligebauer, New York, N. Y. Brake-shoe | 503,138 | Aug. 15 | 1511 | 371 | 64 | 871 |
| Hofman, John. (See Rogers and Hofman.) | | | | | | |
| Hofmann, Adolph W., Brooklyn, N. Y. Watchcase-die | 503,600 | Aug. 22 | 2275 | 568 | 64 | 1024 |
| Hofmann, Friedrich, Baraccomine, near Turin, Italy, assignor to Maschinenfabrik Rüti, formerly Kasper Honegger, Rüti, Canton of Zurich, Switzerland. Drop-box-changing mechanism for power-looms | 500,768 | July 4 | 377 | 97 | 64 | 70 |
| Hogeboom, Franklin R., New Haven, Conn. Game apparatus | 503,793 | Aug. 22 | 2575 | 641 | 64 | 1082 |
| Hogeland, Israel, Chicago, Ill. Vehicle-shaft | 504,783 | Sept. 12 | 785 | 198 | 64 | 1430 |
| Hogg, John H., Civil District No. 16, Obion County, Tenn. Post-driver | 502,075 | July 25 | 2461 | 618 | 64 | 493 |
| Hogue, Parker P., Cincinnati, Ohio. Injector | 501,492 | July 11 | 1425 | 357 | 64 | 273 |
| Hohner, Matthias, Trossingen, Germany. Mouth harmonica | 501,837 | July 18 | 2073 | 512 | 64 | 407 |
| Hojer, Thomas G., New York, N. Y. Preservative drier | 501,227 | July 11 | 1107 | ..... | 64 | 275 |
| Hoke Engraving Plate Company. (See Hoke, Joseph W., assignor.) (Reissue.) | | | | | | |
| Hoke, Joseph W., deceased, assignor, by mesne assignments, to Hoke Engraving Plate Company, St. Louis, Mo. Relief-type production. (Reissue) | 11,363 | Sept. 5 | 632 | 161 | 64 | 1389 |
| Holben, Oliver, Philadelphia, Pa. Combined pencil-sharpening and erasing implement | 503,794 | Aug. 22 | 2576 | 641 | 64 | 1082 |
| Holcomb, Eugene R., Portland, Oreg. Electric water-wheel regulator | 502,634 | Aug. 1 | 628 | 151 | 64 | 682 |
| Holden, Cummings M., Tremont, Me., assignor of one-half to E. M. Gorden, Everett, Mass. Computing weighing-scale | 503,931 | Aug. 22 | 2766 | 693 | 64 | 1120 |
| Holden, George H. (See Heaton and Holden.) | | | | | | |
| Holiman, William M., Knickerbocker, Tex. Flooring or ceiling jack | 503,764 | Aug. 22 | 2535 | 630 | 64 | 1074 |
| Holladay, Fred H. (See Packard, Clarence A., assignor.) | | | | | | |
| Holland, Annie J., Boston, Mass. Doll | 503,967 | Aug. 29 | 2847 | 714 | 64 | 1151 |
| Holland, C. G., *et al.* (See Fontaine, Patrick H., assignor.) | | | | | | |
| Holland, Edward K., Clifton, W. Va. Regenerative salt-furnace | 502,360 | Aug. 1 | 186 | 44 | 64 | 600 |
| Holland, Franklin. (See Corscaden and Holland.) | | | | | | |
| Holland, Henry P., San Francisco, Cal. Rotary engine | 502,618 | Aug. 8 | 983 | 239 | 64 | 762 |
| Holland, Thomas W. (See Hibberd, Charles, assignor.) | | | | | | |
| Hollander, Alva L., Millis, Mass. Dust-pan | 504,474 | Sept. 5 | 256 | 69 | 64 | 1320 |
| Hollander, Alva L., Millis, assignor to Steel Edge Stamping and Retinning Company, Boston, Mass. Dust-pan | 504,879 | Sept. 12 | 938 | 242 | 64 | 1461 |
| Hollenbeck, Frank A., Batavia, assignor to Syracuse Arms Company, Syracuse, N. Y. Breakdown gun | 505,794 | Sept. 26 | 2492 | 629 | 64 | 1778 |
| Holler, John M., Albany, N. Y. Running-gear for vehicles | 501,072 | July 11 | 846 | 210 | 64 | 170 |
| Holley, Clarence E., Presque Isle, Me. Vehicle running-gear | 505,548 | Sept. 26 | 2061 | 526 | 64 | 1697 |
| Holliday, George H., Ironton, Ohio, and D. A. Brawley, said Holliday assignor to D. B. Brawley, Charleston, W. Va. Tile-frame | 503,369 | Aug. 15 | 1897 | 470 | 64 | 941 |
| Hollinger, Isaac K., Covington, Ohio. Wire fence | 502,076 | July 25 | 2462 | 619 | 64 | 493 |
| Hollings, John C. (See O'Neill, James A., assignor.) | | | | | | |
| Holmboe, Leonard C. B., *et al.* (See Higgins, Charles W., assignor.) | | | | | | |
| Holmes, Harriet E. (See Charnock, John M., assignor.) | | | | | | |
| Holmes, John, Boston, Mass. Knit garment and manufacturing same | 504,108 | Aug. 29 | 3073 | 769 | 64 | 1193 |
| Holmes, Robert, Cañon City, Colo. Nut-lock | 501,345 | July 11 | 1304 | 325 | 64 | 250 |
| Holmes, Thomas H., Philadelphia, Pa. Metallic packing for stuffing-boxes | 500,899 | July 4 | 574 | 150 | 64 | 105 |
| Holmes, William C., assignor of one-half to J. J. Oram, Denver, Colo. Cuff-holder | 501,892 | July 18 | 2154 | 534 | 64 | 490 |

*Alphabetical list of patentees, July to September, inclusive*—Continued.

| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Dr'g. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Holaclaw, Wilford H., assignor to B. F. Avery & Sons, Louisville, Ky. Sulky-plow | 501,787 | July 18 | 2008 | 495 | 64 | 325 |
| Holt, Charles C., assignor of one-half to T. Hall, Lawrence, Mass. Rail-fastener | 502,361 | Aug. 1 | 187 | 44 | 64 | 600 |
| Holthaus, Emil, Barren Island, N. Y. Recording steam and water gage | 503,966 | Aug. 29 | 3848 | 714 | 64 | 1152 |
| Holthaus, Emil, Barren Island, N. Y. Combined drier and boiler | 504,269 | Aug. 29 | 3336 | 634 | 64 | 1242 |
| Holtsman, Daniel A., Myerstown, Pa. Perpetual calendar | 505,313 | Sept. 19 | 1653 | 427 | 64 | 1607 |
| Homan, Ernest, London, England. Fireproof floor or ceiling | 505,659 | Sept. 26 | 2270 | 576 | 64 | 1738 |
| Homan, Frank H., Patchogue, N. Y. Sash-weight | 501,346 | July 11 | 1365 | 325 | 64 | 251 |
| Honiss, William H., assignor of one-half to W. H. Lorenz, Hartford, Conn. Feed mechanism | 501,003 | July 18 | 1699 | 421 | 64 | 342 |
| Hood, Thomas F., and W. G. Smith, Huffman, Ala. Churn | 501,423 | July 11 | 1426 | {357 {358 | 64 | 274 |
| Hook, Harry L., Philadelphia, Pa., assignor to Hess Postal Facility and Supply Company, of West Virginia. Coin-controlled vending apparatus | 503,139 | Aug. 15 | 1512 | 372 | 64 | 872 |
| Hook, Joseph, Grand Rapids, Mich. Leather-edge trimmer | 503,348 | Aug. 15 | 1866 | 460 | 64 | 934 |
| Hooker, John, Beccles, England. Indicator mechanism for type-setting machinery | 505,200 | Sept. 19 | 1468 | {379 {380 {381 {382 {383 {384 | 64 | 1573 |
| Hoopes, Herman, *et al.* (See Mullin, Bernard A., assignor.) | | | | | | |
| Hooten, Barton, *et al.* (See Palmer, Israel Y., assignor.) | | | | | | |
| Hope, John, Providence, R. I. Tool-holder | 502,039 | July 25 | 2403 | 605 | 64 | 482 |
| Hope, John, Liverpool, England. Ship's recording-compass | 505,361 | Sept. 19 | 1723 | {445 {446 {447 | 64 | 1620 |
| Hopedale Machine Company. (See Draper and Rhoades, assignors.) | | | | | | |
| Hopedale Machine Company. (See Rhoades, Alonzo E., assignor.) | | | | | | |
| Hopkins, Archibald, Washington, D. C. Combined sitting and standing desk | 505,765 | Sept. 26 | 2452 | 617 | 64 | 1770 |
| Hopkins, Candace A., Sarcoxie, Mo. Support for table-screens | 505,201 | Sept. 19 | 1473 | 384 | 64 | 1574 |
| Hopkins, Charles W., and J. Boland, Norwich, Conn. Safety-catch for firearms | 505,569 | Sept. 26 | 2119 | 536 | 64 | 1709 |
| Hopkins, James A., Milton, Del. Truss | 504,837 | Sept. 12 | 879 | 226 | 64 | 1450 |
| Hopkins, Sylvanus C., Boston, and A. Higgins, Cambridge, Mass. Camera-tripod head | 501,510 | July 18 | 1555 | 391 | 64 | 314 |
| Hoppe, Reinhold, San Francisco, Cal. Surgical splint | 504,218 | Aug. 29 | 3253 | 812 | 64 | 1227 |
| Hopper, Henry S., Detroit, Mich. Watch-guard | 503,480 | Aug. 15 | 2053 | 515 | 64 | 970 |
| Hoppes, John J., Springfield, Ohio. Apparatus for purifying water | 503,140 | Aug. 15 | 1514 | 372 | 64 | 872 |
| Hoppes, John J., and E. C. Gwyn, assignors to Hoppes Manufacturing Company, Springfield, Ohio. Device for purifying feed-water | 503,209 | Aug. 15 | 1628 | 399 | 64 | 893 |
| Hoppes Manufacturing Company. (See Hoppes and Gwyn, assignors.) | | | | | | |
| Horn, David L. (See Carrell, William S., assignor.) | | | | | | |
| Horn, Ferdinand, Coshocton, Ohio. Forging axles | 503,481 | Aug. 15 | 2064 | 515 | 64 | 970 |
| Hornsby & Sons, Richard. (See Hornsby, Edwards, and Gibbon, assignors.) | | | | | | |
| Hornsby, William, R. Edwards, and W. E. Gibbon, assignors to R. Hornsby & Sons, Limited, Grantham, England. Engine operated by the explosion of combustible mixtures | 504,807 | Sept. 12 | 894 | 209 | 64 | 1438 |
| Horr, Maggie J. (See West, John E., assignor.) | | | | | | |
| Horrocks, Joshua, Brooklyn, N. Y. Metal mat or like structure | 501,788 | July 18 | 2011 | 496 | 64 | 395 |
| Horrocks, William, Herkimer, N. Y. Type-writer cabinet | 503,418 | Aug. 15 | 1960 | 487 | 64 | 952 |
| Horscroft, John, Moberly, Mo. Potato-planter | 503,854 | Aug. 22 | 2564 | 665 | 64 | 1097 |
| Horton, George W. (See Curtis, Charles G., assignor.) | | | | | | |
| Hoskins, William W., Houston, Tex. Blind-stop | 502,302 | Aug. 1 | 188 | 45 | 64 | 600 |
| Hosmer, Henry L., and W. R. Wilson, Clay Centre, Kans. Machine for seaming sheet metal | 500,900 | July 4 | 576 | 150 | 64 | 105 |
| Hoss, Charles W., St. Louis, Mo. Driving-rein | 501,789 | July 18 | 2012 | 496 | 64 | 395 |
| Hot Water Fountain Company. (See Hinds, Franklin P., assignor.) | | | | | | |
| Hough, Franklin T. (See Coupland and Hough.) | | | | | | |
| House, John, Crisfield, Md. Heating-lamp | 504,982 | Sept. 12 | 1114 | 285 | 64 | 1494 |
| House, Samuel M. J., Hillsborough, Va. Railway-rail brake | 501,010 | July 4 | 749 | 196 | 64 | 136 |
| House, William P. (See McCrory and House.) | | | | | | |
| Howell, Thomas M., Elstree, assignor of one-half to F. B. Charlton, London, England. Animal-trap | 502,254 | July 25 | 2762 | {698 {699 | 64 | 550 |
| How, Woodbury S., assignor to S. S. White Dental Manufacturing Company, Philadelphia, Pa. Dental drill | 503,744 | Aug. 22 | 2308 | 594 | 64 | 1068 |
| Howard, Charles A., Pontiac, assignor to Peninsular Heater and Radiator Company, Detroit, Mich. Heater | 503,141 | Aug. 15 | 1517 | 373 | 64 | 872 |
| Howard, Louis E., Plainfield, N. J. Electric-arc lamp | 503,536 | Aug. 15 | 2145 | 538 | 64 | 986 |
| Howard, Louis E., Plainfield, N. J. Electric-arc lamp | 503,539 | Aug. 15 | 2148 | 539 | 64 | 986 |
| Howard Manufacturing Company. (See Howard, William C., assignor.) | | | | | | |
| Howard & Son Company. (See Whiting, William F., assignor.) | | | | | | |
| Howard, Walter, Washington, D. C. Combined feed-regulator, band-cutter, and spreader | 501,511 | July 18 | 1557 | {391 {392 | 64 | 315 |
| Howard, Walter, Washington, D. C. Car heating and ventilating apparatus | 503,745 | Aug. 22 | 2507 | 624 | 64 | 1068 |
| Howard, Walter, Washington, D. C. Grain-meter | 503,746 | Aug. 22 | 2510 | 625 | 64 | 1069 |
| Howard, Walter, Washington, D. C. Spring-motor | 504,608 | Sept. 12 | 896 | {209 {210 | 64 | 1436 |
| Howard, William C., Brooklyn, N. Y., assignor to Howard Manufacturing Company, Boston, Mass. Razor-strop | 500,806 | July 4 | 436 | 114 | 64 | 80 |
| Howard, William H., Pueblo, Colo. Combined skimmer and sweeper | 502,122 | July 25 | 2533 | 635 | 64 | 508 |
| Howard, William T., Baltimore, Md. Power-measuring instrument for steam-engines | 501,654 | July 18 | 1781 | {444 {445 | 64 | 356 |
| Howe, Charles A., Buchanan, Mich. Coin-controlled vending apparatus | 502,722 | Aug. 8 | 895 | 200 | 64 | 732 |
| Howe, Daniel K., Portland, Oreg. Bookbinding | 502,493 | Aug. 1 | 415 | 98 | 64 | 643 |
| Howe, William E., Watertown, Mass. Folding music-rack | 501,408 | July 11 | 1075 | 273 | 64 | 211 |
| Howell, Hugh M., Denver, Colo. Nut-lock | 502,363 | Aug. 1 | 189 | 45 | 64 | 601 |
| Howell, James H. (See Jewell, John, assignor.) | | | | | | |
| Howell, John A., Newark, N. J. Curtain or shade roll | 503,601 | Aug. 22 | 2277 | 568 | 64 | 1094 |
| Howell, John A., assignor to C. N. Lockwood & Co., Newark, N. J. Curtain-roller for couches | 504,163 | Aug. 29 | 3157 | 788 | 64 | 1209 |
| Howell, Joshua D., Livonia, N. Y. Watchmaker's gage | 503,238 | Aug. 15 | 1671 | 411 | 64 | 901 |
| Howell, Whitfield G., Highland, N. Y. Game-board | 505,314 | Sept. 19 | 1654 | 427 | 64 | 1607 |
| Howgate, James R., Schenectady, N. Y. Lathe-chuck | 503,374 | Aug. 15 | 1903 | 471 | 64 | 940 |
| Hoyt, Augustus J., trustee. (See Patten, Enos, assignor.) | | | | | | |
| Hoyt, George E., assignor to Palmer & Rey, San Francisco, Cal. Gas-engine | 502,255 | July 25 | 2765 | 699 | 64 | 551 |
| Hoyt, James G., Haywards, Cal. Harness-buckle | 504,083 | Sept. 5 | 628 | 159 | 64 | 1308 |
| Hubbard, Eber, Chicago, Ill., assignor to Willimantic Linen Company, Hartford, Conn. Machine for dressing spools | 501,512 | July 18 | 1559 | 392 | 64 | 315 |



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| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Dr'g. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Hubbard, Eber, Chicago, Ill., assignor to Willimantic Linen Company, Hartford, Conn. Spool | 501,513 | July 18 | 1562 | 393 | 64 | 315 |
| Hubbard, Moses G., Chicago, Ill. Street-car gear | 503,142 | Aug. 15 | 1519 | 373 | 64 | 873 |
| Hubbell, Martin, Mount Kisco, N. Y. Railway-rail-joint connection | 503,239 | Aug. 15 | 1673 | 411 | 64 | 901 |
| Huber, George W., Philadelphia, Pa. Egg-beater | 505,766 | Sept. 26 | 2453 | 617 | 64 | 1770 |
| Huber, Louis C., Louisville, Ky. Weight-motor for blowers of carburetors | 503,702 | Aug. 22 | 2434 | 606 | 64 | 1054 |
| Huddleston, Laura B., Winchester, Ind. Corpse-dressing table | 503,969 | Aug. 29 | 2849 | {714 {715 | 64 | 1152 |
| Hudel, Ferdinand F., and E. H. Liebenstein, Lake, Wis. Wheeled scraper | 501,145 | July 11 | 980 | 250 | 64 | 193 |
| Huey, John S., Chicago, Ill. Pocket-book | 500,901 | July 4 | 577 | 150 | 64 | 105 |
| Huff, George R., and G. H. Vernon, St. Paul, Minn. Saw-filing machine | 505,626 | Sept. 26 | 2205 | {558 {559 | 64 | 1725 |
| Hughes, John B., Denver, Colo. Combination screw-driver and tool-handle | 505,165 | Sept. 19 | 1412 | 364 | 64 | 1562 |
| Hughes, Ottis, Vernon, and J. S. Hull, Lock Spring, Ind. Ditching-machine | 504,728 | Sept. 12 | 876 | {172 {173 | 64 | 1470 |
| Hughes, Richard, Philadelphia, Pa. Combined ventilator and step-ladder fire-escape | 505,465 | Sept. 26 | 1898 | 469 | 64 | 1667 |
| Hughes, Russell M., Louisville, Ky. Apparatus for the manufacture of vinegar | 502,819 | Aug. 8 | 954 | {239 {240 | 64 | 762 |
| Hughes, Smith E., assignor of one-half to M. D. Baldy, Philadelphia, Pa. Pneumatic dispatch apparatus | 504,164 | Aug. 29 | 3159 | 789 | 64 | 1209 |
| Hull, Alfred A., assignor of one-half to J. Adkinson, Knoxville, Tenn. Wrench | 501,462 | July 11 | 1479 | 372 | 64 | 285 |
| Hull, Jeremiah S. (See Hughes and Hull.) | | | | | | |
| Humason, Daniel L., assignor of one-fourth to J. B. Friedheim, Camden, Ark. Drier | 504,270 | Aug. 29 | 3338 | {834 {835 | 64 | 1343 |
| Hume, Alexander. (See Williams, George L., assignor.) | | | | | | |
| Hume, William D., *et al.* (See Scates, George R., assignor.) | | | | | | |
| Humphreys, Alexander C., assignor, by mesne assignments, to United Gas Improvement Company, Philadelphia, Pa. Apparatus for manufacturing gas | 501,250 | July 11 | 1140 | {289 {290 {291 | 64 | 222 |
| Humphries, David W., De Lamar, Idaho. Concentrator | 504,923 | Sept. 12 | 1013 | 261 | 64 | 1476 |
| Hunleth, Frank J., *et al.* (See Spery, Charles F., assignor.) | | | | | | |
| Hunt, Alfred E. (See Richards and Hunt.) | | | | | | |
| Hunt, Alfred E., Pittsburg, Pa. Refractory brick | 504,584 | Sept. 5 | 448 | ..... | 64 | 1353 |
| Hunt, Charles A., Jr., Lexington, N. C. Bed-brace | 505,527 | Sept. 26 | 2032 | 518 | 64 | 1691 |
| Hunt, Charles M., Milwaukee, Wis. Bed-bottom | 503,540 | Aug. 15 | 2150 | 539 | 64 | 987 |
| Hunt, Charles W., West New Brighton, N. Y. Means for propelling chains | 500,807 | July 4 | 437 | 115 | 64 | 81 |
| Hunt, David F., Antrim, N. H., assignor of one-half to H. P. Elwell, Gloucester, Mass. Machine for winding thread on spools | 503,086 | Aug. 8 | 1410 | 348 | 64 | 840 |
| Hunt, Edward P., assignor to J. H. Finley and J. Murphy, Buffalo, N. Y. Filter | 504,434 | Sept. 5 | 900 | 51 | 64 | 1308 |
| Hunt, Henry C., Newark, N. J. Rotary engine | 501,146 | July 11 | 983 | {250 {251 | 64 | 194 |
| Hunter, George D., Auburn Park, Ill., assignor to Standard Cartridge Company, of New Jersey. Crimper for cartridge-shells | 505,046 | Sept. 12 | 1215 | 313 | 64 | 1513 |
| Hunter, George E., Elgin, assignor to Elgin National Watch Company, Chicago, Ill. Stem winding and setting watch | 503,482 | Aug. 15 | 2065 | 515 | 64 | 971 |
| Hunter, George E., Elgin, assignor to Elgin National Watch Company, Chicago, Ill. Mechanism for setting watch-jewels | 503,483 | Aug. 15 | 2066 | 515 | 64 | 971 |
| Hunter, John C., San Francisco, Cal. Tool-holder | 502,564 | Aug. 1 | 528 | 126 | 64 | 663 |
| Hunter, Rudolph M., Philadelphia, Pa., assignor to Thomson-Houston Electric Company, of Connecticut. Electric-arc lamp | 500,657 | July 4 | 202 | 53 | 64 | 39 |
| Hunter, Rudolph M., Philadelphia, Pa., assignor to Thomson-Houston Electric Company, of Connecticut. Electrical measuring-instrument | 501,589 | July 18 | 1674 | 418 | 64 | 337 |
| Hunter, Rudolph M., Philadelphia, Pa., assignor to Thomson-Houston Electric Company, of Connecticut. Electrical measuring-instrument | 502,077 | July 25 | 2463 | 619 | 64 | 493 |
| Hunter, Rudolph M., Philadelphia, Pa., assignor to Thomson-Houston Electric Company, of Connecticut. Method of and apparatus for the transmission of electrical energy | 503,321 | Aug. 15 | 1817 | 450 | 64 | 936 |
| Hunter, Rudolph M., Philadelphia, Pa., assignor to Thomson-Houston Electric Company, of Connecticut. Electric search-light | 503,602 | Aug. 22 | 2278 | 569 | 64 | 1024 |
| Hunter, Rudolph M., Philadelphia, Pa., assignor to Thomson-Houston Electric Company, of Connecticut. Electric-arc lamp | 504,271 | Aug. 29 | 3340 | 835 | 64 | 1343 |
| Hunter, Rudolph M., assignor to Electric Car Company of America, Philadelphia, Pa. Electric locomotive | 502,297 | Aug. 1 | 66 | 15 | 64 | 578 |
| Hurd, Charles, Duluth, Minn. Refrigerator | 501,277 | July 11 | 1183 | {299 {300 | 64 | 261 |
| Hurd, Frank B., *et al.* (See Cox, James B., assignor.) | | | | | | |
| Hurd, George B., *et al.* (See Cox, James B., assignor.) | | | | | | |
| Hurdle, Edgar F., *et al.* (See Miller, Henry O., assignor.) | | | | | | |
| Hurley, William S., *et al.* (See Harper, Thomas, assignor.) | | | | | | |
| Huss, Rudolph W., Chicago, Ill., assignor to H. A. Losier, Cleveland, Ohio. Pneumatic tire | 500,658 | July 4 | 203 | 53 | 64 | 40 |
| Huss, Rudolph W., assignor to C. G. Page, trustee, Chicago, Ill. Pneumatic tire | 502,002 | July 25 | 2337 | 586 | 64 | 470 |
| Hussey, Charles A., New York, N. Y. Rheostat | 502,040 | July 25 | 2404 | 605 | 64 | 482 |
| Hutchinson, Jacob F., Basalt, Idaho. Hay-derrick | 502,078 | July 25 | 2465 | 619 | 64 | 493 |
| Huyck, Leonard W., assignor of one-half to E. Allen, Rochester, N. Y. Spindle attachment | 503,240 | Aug. 15 | 1674 | 412 | 64 | 902 |
| Hvass, Charles, assignor of one-half to L. Kahner, New York, N. Y. Machine for wrapping cigar-bunches | 501,073 | July 11 | 846 | {219 {220 | 64 | 170 |
| Hyams, Hyam J., assignor of one-half to H. J. Myers, Dayton, Ohio. Bicycle-support | 502,296 | Aug. 1 | 71 | 15, 16 | 64 | 579 |
| Hyde, Edward B., Elwood, Iowa. Grain-reel | 501,484 | July 11 | 1427 | 358 | 64 | 274 |
| Hyman, Gustave, assignor to Strauss, Sachs & Co., New York, N. Y. Harmonica | 505,223 | Sept. 19 | 1502 | {391 {392 | 64 | 1579 |
| Hymans, Joseph, Del Rio, Tex., assignor of one-half to G. Laube, Huron, S. D. Water-cooler | 504,585 | Sept. 5 | 449 | 114 | 64 | 1353 |
| Hyre, Edward B., Red Knob, W. Va. Car-coupling | 503,855 | Aug. 22 | 2654 | 665 | 64 | 1098 |
| Ide, Albert L., Springfield, Ill. Power transmission | 500,579 | July 4 | 64 | 18, 19 | 64 | 13 |
| Ide, Alfred, Medina, N. Y. Wire-stretcher | 504,353 | Sept. 5 | 60 | 16 | 64 | 1292 |
| Iles, Malvern W. (See Sheedy and Iles.) | | | | | | |
| Iles, Malvern W., Denver, Colo. Treating flue-dust | 500,580 | July 4 | 66 | 19 | 64 | 13 |
| Iles, Malvern W., Denver, Colo. Flooring for blast-furnaces | 501,188 | July 11 | 1048 | 265 | 64 | 206 |
| Iles, Malvern W., Denver, Colo. Tuyere | 505,549 | Sept. 26 | 2063 | 526 | 64 | 1697 |
| Iles, Malvern W., Denver, Colo. Tuyere | 505,550 | Sept. 26 | 2064 | 526 | 64 | 1698 |
| Iles, Malvern W., Denver, Colo. Treating slag | 505,551 | Sept. 26 | 2065 | 527 | 64 | 1698 |
| Iles, Malvern W., Denver, Colo. Apparatus for treating slag | 505,552 | Sept. 26 | 2066 | 527 | 64 | 1698 |
| Ilges, Robert, Cologne-Bayenthal, Germany. Distilling mash | 502,079 | July 25 | 2467 | 620 | 64 | 494 |

*Alphabetical list of patentees, July to September, inclusive*—Continued.

| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Dr'g. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Ingersoll, Charles, Indianapolis, Ind. Oil-burner | 503,970 | Aug. 29 | 2850 | 715 | 64 | 1152 |
| Ingersoll, Frank A., New York, N. Y. Adjustable tail-piece for guitars | 500,581 | July 4 | 66 | 19 | 64 | 14 |
| Ingraham, Edmund, Philadelphia, Pa. Shedding mechanism for looms | 503,375 | Aug. 15 | 1904 | 472 | 64 | 942 |
| Insinger, Alfred, Philadelphia, Pa. Dish-cleaner | 501,347 | July 11 | 1306 | 396, 397 | 64 | 251 |
| Inslee, Robert C., Boston, Mass. Barrel-washer | 504,036 | Aug. 29 | 2954 | 739, 740 | 64 | 1170 |
| Ireton, William, Camden, N. J. Machine for making cores | 505,466 | Sept. 26 | 1899 | 489, 490 | 64 | 1667 |
| Irgens, Paul H., Christiania, Norway. Gas or petroleum engine | 505,767 | Sept. 26 | 2454 | 617, 618 | 64 | 1770 |
| Irick, William M. (See Anderson and Irick.) | | | | | | |
| Irwin, John S., Saltsburg, Pa. Ornamental glass article and making same | 502,461 | Aug. 1 | 354 | 85 | 64 | 631 |
| Isaacs, Frederic H., Newark, N. J. Violin-rest | 503,603 | Aug. 22 | 2292 | 569 | 64 | 1025 |
| Isaacs, Harry L., *et al.* (See Glinn, William E., assignor.) | | | | | | |
| Isaacs, William K., *et al.* (See Glinn, William E., assignor.) | | | | | | |
| Isaacson, Harry M. (See Livingston, Edward, assignor.) | | | | | | |
| Ives, Archibald W., Boston, Mass. Sled | 502,925 | Aug. 8 | 1165 | 287 | 64 | 796 |
| Ives, Genie W., Syracuse, N. Y. Heating attachment for lamp-chimneys | 502,364 | Aug. 1 | 190 | 45 | 64 | 661 |
| Ivens, Edmund M., assignor to E. L. Ivens, New Orleans, La. Baling-press | 502,192 | July 25 | 2648 | 668, 669 | 64 | 529 |
| Ivens, Edmund M., assignor to E. L. Ivens, New Orleans, La. Apparatus for baling cotton | 502,193 | July 25 | 2650 | 669, 670 | 64 | 529 |
| Ivens, Edmund M., assignor to E. L. Ivens, New Orleans, La. Cotton-baling apparatus | 504,983 | Sept. 12 | 1115 | 285, 286 | 64 | 1494 |
| Ivens, Emily L. (See Ivens, Edmund M., assignor.) | | | | | | |
| Ivon, Louis A., Paris, France. Transposing device for pianos | 502,907 | Aug. 8 | 1124 | 277 | 64 | 789 |
| J. Clèret Pearl Button Manufacturing Company. (See Clèret, Jules, assignor.) | | | | | | |
| J. L. Mott Iron Works. (See Hanmann and Susemihl, assignors.) | | | | | | |
| Jackson, Ambrose F., Oklahoma, Okla. Ter. Plow | 501,945 | July 25 | 2257 | 563, 564 | 64 | 453 |
| Jackson, Byron, San Francisco, Cal. Traction-engine | 502,890 | Aug. 8 | 987 | 240, 241 | 64 | 763 |
| Jackson, Eliot G., Philadelphia, Pa. Rudder connection | 502,723 | Aug. 8 | 927 | 200 | 64 | 732 |
| Jackson, George W., Weston, W. Va. Self-waiting table | 505,602 | Sept. 26 | 2172 | 549 | 64 | 1719 |
| Jackson, Joel G., Minneapolis, Minn. Die-stock | 504,084 | Aug. 29 | 3024 | 755 | 64 | 1164 |
| Jackson, John, Lonsdale, R. I. Bottle-filling apparatus | 502,969 | Aug. 8 | 1247 | 305 | 64 | 809 |
| Jackson, Peter H., San Francisco, Cal. Basement-ventilator | 503,484 | Aug. 15 | 2068 | 516 | 64 | 971 |
| Jackson, Peter H., San Francisco, Cal. Metallic tie to resist progressive strains | 504,924 | Sept. 12 | 1015 | 261, 262 | 64 | 1476 |
| Jackson, Thomas B., assignor of one-half to D. T. Brown, Salem, Oreg. Bench-vise | 504,586 | Sept. 5 | 449 | 114 | 64 | 1374 |
| Jackson, William B., Portland, Oreg. Machine for making spiral wire springs | 502,968 | Aug. 8 | 1236 | 304, 305 | 64 | 807 |
| Jacob, Frederick, Newark, assignor of one-fourth to H. Pattberg, Jersey City, N. J. Car-coupling | 504,085 | Aug. 29 | 3025 | 755, 756 | 64 | 1185 |
| Jacobs, Charles C., Amboy, Ill. Windmill-tower | 503,048 | Aug. 8 | 1354 | 335 | 64 | 830 |
| Jacobs, Claus B., Fremont, Wash. Car-axle bearing | 501,790 | July 18 | 2014 | 496, 497 | 64 | 396 |
| Jacobs, Claus B., Fremont, Wash. Bearing | 505,107 | Sept. 19 | 1324 | 341 | 64 | 1547 |
| Jacobson, John, Boston, Mass. Mirror and making same | 501,514 | July 18 | 1563 | 393 | 64 | 315 |
| Jacobus Peter H., Millstadt, Ill. Car-mover | 504,529 | Sept. 5 | 365 | 92 | 64 | 1338 |
| Jacoby, Sigmund, New York, N. Y. Conveyer-belt | 502,041 | July 25 | 2406 | 605 | 64 | 482 |
| Jacocks, Charles W., *et al.* (See Gilham, Robert J., assignor.) | | | | | | |
| Jacques, Samuel L., *et al.* (See Trout, Emerson W., assignor.) | | | | | | |
| Jadwin, Orlando H., Brooklyn, N. Y. Packing case or box | 505,570 | Sept. 26 | 2121 | 537 | 64 | 1709 |
| Jahn, Charles F. (See Thompson, James K., assignor.) | | | | | | |
| Jahncke, Ernst A., London, England. Registering-receptacle for coins | 500,760 | July 4 | 378 | 98 | 64 | 70 |
| Jakel, Ferdinand, Detroit, Mich. Water-heater | 504,587 | Sept. 5 | 450 | 114, 115 | 64 | 1374 |
| James, Charles W., Quincy, Ohio. Harness-loop | 503,856 | Aug. 22 | 2656 | 665 | 64 | 1098 |
| James, Frederick R., *et al.* (See Rodden, William H., assignor.) | | | | | | |
| James, Howard K., and L. G. Mayer, Lawrenceburg, Ind. Combined spring and shackle | 503,087 | Aug. 8 | 1414 | 349 | 64 | 841 |
| James, J. L., Jr., *et al.* (See Graves, Cashious M., assignor.) | | | | | | |
| James, Thomas, Braddock, Pa. Motor connection and lock | 501,904 | July 18 | 2180 | 544 | 64 | 426 |
| Jansen, Edward, New York, N. Y. Wall or ceiling covering | 501,278 | July 11 | 1184 | 300 | 64 | 230 |
| Jants, Gustavo H., Cincinnati, Ohio. Attaching drums and sleeves to shafts | 501,226 | July 11 | 1168 | 291 | 64 | 217 |
| Jaque, Joseph, St. Louis, Mo. Tobacco-pipe | 505,202 | Sept. 19 | 1474 | 384 | 64 | 1574 |
| Jaquess, George H., Riverside, Cal. Extensible trestle | 501,348 | July 11 | 1309 | 327 | 64 | 251 |
| Jaros, Samuel, Hartford, Conn. Making seams | 501,478 | July 11 | 1502 | 378 | 64 | 289 |
| Jäschke, Henry, St. Louis, Mo. Pipe-organ | 503,857 | Aug. 22 | 2658 | 666 | 64 | 1098 |
| Jauch, Joseph, assignor to Bradley & Hubbard Manufacturing Company, Meriden, Conn. Cap for filling-nipples of lamp-founts | 502,926 | Aug. 8 | 1166 | 288 | 64 | 796 |
| Jeannotte, Joseph, Worcester, Mass. Valve | 504,838 | Sept. 12 | 840 | 226 | 64 | 1450 |
| Jeavons, William R. (See Lannert and Jeavons.) | | | | | | |
| Jefferies, Samuel, Stroud, England. Brick or tile cutting machine | 501,620 | July 18 | 1728 | 430, 431 | 64 | 347 |
| Jefferson, Charles W., Schenectady, assignor to E. Munsell & Co., New York, N. Y. Ring-armature | 500,902 | July 4 | 578 | 150, 151 | 64 | 105 |
| Jeffery, Thomas B., Chicago, Ill. Pneumatic tire and device for inflating same | 502,003 | July 25 | 2339 | 586 | 64 | 470 |
| Jeffrey, Joseph A. (See Hahn, John H., Jr., assignor.) | | | | | | |
| Jeffreys, Adam, San Francisco, Cal. Cable releasing device and crossing | 500,903 | July 4 | 579 | 151 | 64 | 106 |
| Jellinghaus, Theodor, Camen, Germany. Piston | 502,462 | Aug. 1 | 356 | 85 | 64 | 631 |
| Jencken, Ray G., Terre Haute, Ind. Hominy-mill | 504,784 | Sept. 12 | 766 | 199 | 64 | 1430 |
| Jencks, Calvin J., assignor of one-half to J. B. Righter, Reedsburg, Wis. Snap-hook | 501,631 | July 18 | 1722 | 431 | 64 | 347 |
| Jenkins, Daniel, Morriston, England. Apparatus for coating metal sheets | 505,680 | Sept. 26 | 2273 | 576, 577 | 64 | 1738 |
| Jenkins, Henry C. (See Higgins and Jenkins.) | | | | | | |
| Jenkins, John, assignor of one-half to St. Louis Stamping Company, St. Louis, Mo. Apparatus for rolling sheet metal | 503,941 | Aug. 15 | 1676 | 412 | 64 | 902 |
| Jenkins, John T., Massillon, Ohio. Furnace | 500,905 | July 4 | 581 | 151, 152 | 64 | 106 |
| Jenkins, William R., Bellefonte, Pa. Rake | 500,904 | July 4 | 580 | 151 | 64 | 106 |
| Jenkins, Wilton F., Richmond, Va. Supply system for electric railways | 502,858 | Aug. 8 | 1041 | 255 | 64 | 772 |
| Jenkinson, James, Brooklyn, assignor to J. Mark, New York, N. Y. Vault or skylight cover | 501,790 | July 18 | 1892 | 470 | 64 | 375 |



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| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Dr'g. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Jenks, Edward W. (See Searle and Jenks.) | | | | | | |
| Jenner, Robert C., San Antonio, Tex. Hoof-cleaning tool | 502,042 | July 25 | 2407 | 606 | 64 | 483 |
| Jennings, Oscar E., *et al.* (See Losey, James, assignor.) | | | | | | |
| Jennings, Oscar S., assignor of one-half to J. E. Beers, Danby, N. Y. Convertible chair and step-ladder | 505,795 | Sept. 26 | 2494 | 629 | 64 | 1778 |
| Jennings, William B., *et al.* (See Dobbins and McKenney, assignors.) | | | | | | |
| Jensen, Jens, Janesville, Wis. Rein-holder | 505,528 | Sept. 26 | 2032 | 518 | 64 | 1691 |
| Jergle, Josef, Vienna, Austria-Hungary. Electric-arc lamp | 501,074 | July 11 | 850 | 220 | 64 | 170 |
| Jewett, Charles A. (See Wood, Clark B., assignor.) | | | | | | |
| Jewell, John, assignor of one-half to J. H. Howell, Bristol, England. Portable fire-escape | 503,971 | Aug. 29 | 2852 | 715 | 64 | 1152 |
| Joerges, Adolph W., and J. A. O'Connell, Oshkosh, Wis. Nostril-protector for horses | 501,463 | July 11 | 1460 | 372 | 64 | 285 |
| John A. Riley & Sloan Company. (See MacDonald, Allan A., assignor.) | | | | | | |
| Johns, James, *et al.* (See Dahl, Alfred, assignor.) | | | | | | |
| Johnson, Albert C. (See Hacker and Gilchrist, assignors.) | | | | | | |
| Johnson, Bernt M., Racine, Wis. Street-sweeper | 501,515 | July 18 | 1564 | 393, 394 | 64 | 315 |
| Johnson, Carl A. (See Johnson, Frank and C. A.) | | | | | | |
| Johnson, Caries A., New York, N. Y. Pulley | 504,588 | Sept. 5 | 452 | 115 | 64 | 1354 |
| Johnson Company. (See Reilly, Francis P., assignor.) | | | | | | |
| Johnson, Edward C., Keokuk, Iowa. Steam-pump | 502,043 | July 25 | 2408 | 606 | 64 | 482 |
| Johnson, Edward H. (See Lundell, Robert, assignor.) | | | | | | |
| Johnson, Edward H., New York, N. Y. Device for converting motion | 504,086 | Aug. 29 | 3028 | 756 | 64 | 1185 |
| Johnson Electric Service Company. (See Johnson, Warren S., assignor.) | | | | | | |
| Johnson, Frank and C. A., Rockford, Ill. Gaining-machine | 501,683 | July 18 | 1833 | 456, 457 | 64 | 364 |
| Johnson, Frederick A., assignor of one-half to J. H. Evans, Columbus, Ohio. Railway-crossing | 501,721 | July 18 | 1893 | 470, 471 | 64 | 375 |
| Johnson, Hamilton, Dennison, Ohio, assignor to J. Godfrey, Pittsburg, Pa. Device for binding corn-shocks | 502,672 | Aug. 1 | 725 | 174 | 64 | 699 |
| Johnson, Hans G., Wankon, Iowa. Cloth-finishing machine | 504,219 | Aug. 29 | 3255 | 812 | 64 | 1227 |
| Johnson, Isaac L., Washington, D. C. Subway for electric-railway conductors | 502,821 | Aug. 8 | 989 | 241 | 64 | 763 |
| Johnson, Iver. (See Lobben, Peder, assignor.) | | | | | | |
| Johnson, James. (See Henderson, John M., assignor.) | | | | | | |
| Johnson, John, Chester, Pa. Picker-stick check for looms | 502,970 | Aug. 8 | 1249 | 306 | 64 | 809 |
| Johnson, Joseph S., San Francisco, Cal. Amalgamator | 503,765 | Aug. 22 | 2536 | 630, 631 | 64 | 1074 |
| Johnson, Kirkbride. (See Brinkman, Oscar F., assignor.) | | | | | | |
| Johnson, Lawrence T., Austin, Pa. Log-car | 500,712 | July 4 | 288 | 78 | 64 | 53 |
| Johnson, Walter S., *et al.* (See Ely, William, assignor.) | | | | | | |
| Johnson, Warren S., assignor to Johnson Electric Service Company, Milwaukee, Wis. Pipe-coupling | 502,671 | Aug. 1 | 723 | 173 | 64 | 699 |
| Johnson, William H., Shreveport, La. Combined window-shade and curtain-pole support | 501,425 | July 11 | 1428 | 358 | 64 | 274 |
| Johnson, William T. S., assignor to J. Q. Stewart, Cincinnati, Ohio. Taper attachment for lathes | 503,088 | Aug. 8 | 1414 | 349 | 64 | 841 |
| Johnson, Zachariah A., *et al.* (See Lee, William B., assignor.) | | | | | | |
| Johnston, Albert W., New Brighton, N. Y., assignor to S. S. White Dental Manufacturing Company, Philadelphia, Pa. Preparing dental fillings | 503,419 | Aug. 15 | 1962 | 487 | 64 | 953 |
| Johnston, Allen, Ottumwa, Iowa. Grinding disk-cutters and apparatus therefor | 504,386 | Sept. 5 | 115 | 29, 30 | 64 | 1292 |
| Johnston, Allen, Ottumwa, Iowa. Apparatus for grinding cutlery | 504,387 | Sept. 5 | 117 | 30, 31, 32 | 64 | 1292 |
| Johnston, Allen, Ottumwa, Iowa. Construction of grinding emery-wheels | 504,388 | Sept. 5 | 122 | | 64 | 1293 |
| Johnston, Allen, Ottumwa, Iowa. Grinding-machine | 504,389 | Sept. 5 | 123 | 32, 33 | 64 | 1293 |
| Johnston Embossing Machine Company. (See Johnston, Joseph Y., assignor.) | | | | | | |
| Johnston, George. (See Ward, Albert M., assignor.) | | | | | | |
| Johnston, George W., Farmington, Ill. Air-warming furnace | 501,604 | July 18 | 1701 | 424 | 64 | 342 |
| Johnston Harvester Company. (See Pridmore, Edward, assignor.) | | | | | | |
| Johnston, John. (See Pratt and Johnston.) | | | | | | |
| Johnston, John K., Dundrum, Ireland. Flour-chute | 502,194 | July 25 | 2654 | 670, 671 | 64 | 498 |
| Johnston, Joseph Y., Montclair, N. J., assignor, by mesne assignments, to Johnston Embossing Machine Company. Embossing and printing press | 504,680 | Sept. 5 | 509 | 152, 153, 154 | 64 | 1383 |
| Johnston, William A., and A. W. Browne, Prince's Bay, N. Y., assignors to S. S. White Dental Manufacturing Company, Philadelphia, Pa. Dental engine | 501,075 | July 11 | 851 | 220, 221 | 64 | 171 |
| Johnston, William A., and A. W. Browne, Prince's Bay, N. Y., assignors to S. S. White Dental Manufacturing Company, Philadelphia, Pa. Clutch for electric motors | 503,420 | Aug. 15 | 1964 | 488 | 64 | 953 |
| Johnston, William A., and J. C. Davidson, Prince's Bay, N. Y., assignors to S. S. White Dental Manufacturing Company, Philadelphia, Pa. Pendent incandescent electric light | 504,475 | Sept. 5 | 267 | 69 | 64 | 1320 |
| Jones, Albert. (See Schultz, Horatio N., assignor.) | | | | | | |
| Jones, Charles A., Smethwick, England. Valve for hydraulic or steam machinery | 501,791 | July 18 | 2016 | 497, 498 | 64 | 396 |
| Jones, Charles E., Elgin, Ill. Electrical heater | 502,494 | Aug. 1 | 415 | 98 | 64 | 643 |
| Jones, Edward A., Tonawanda, N. Y. Ball-bearing for vehicle-wheels | 502,927 | Aug. 8 | 1167 | 288 | 64 | 796 |
| Jones, Ernest. (See Fawcett and Jones.) | | | | | | |
| Jones, Griffith, Baltimore, Md. Draft-equalizer | 500,808 | July 4 | 438 | 115 | 64 | 81 |
| Jones, Harvey P., Denver, Colo. Rock-drill | 502,565 | Aug. 1 | 529 | 127 | 64 | 663 |
| Jones, Henry C., Montgomery, Ala. Trolley-wire finder | 503,421 | Aug. 15 | 1965 | 488 | 64 | 953 |
| Jones, Horace K., Hartford, assignor to Russell & Erwin Manufacturing Company, New Britain, Conn. Die for rolling screw-threads | 502,256 | July 25 | 2768 | 699 | 64 | 551 |
| Jones, Horace K., Hartford, assignor to Russell & Erwin Manufacturing Company, New Britain, Conn. Apparatus for milling dies for rolling screw-threads | 502,257 | July 25 | 2770 | 700 | 64 | 552 |
| Jones, Horace K., Hartford, assignor to Russell & Erwin Manufacturing Company, New Britain, Conn. Die for rolling screw-threads | 502,258 | July 25 | 2774 | 701 | 64 | 552 |
| Jones, Horace K., Hartford, assignor to Russell & Erwin Manufacturing Company, New Britain, Conn. Mechanism for feeding screw-blanks | 504,435 | Sept. 5 | 202 | 52, 53 | 64 | 1308 |
| Jones, Isaac, Lima, Ohio. Hog-trough | 503,664 | Aug. 22 | 2374 | 592 | 64 | 1042 |
| Jones, James H., assignor to Emerson, Talcott & Co., Rockford, Ill. Push-bar for mowing-machines | 504,419 | Sept. 5 | 179 | 46 | 64 | 1304 |
| Jones, Jesse J., *et al.* (See Anderson and Winston, assignors.) | | | | | | |
| Jones, John, and A. Gillies, Toronto, Canada. Brush for street-sweepers | 500,906 | July 4 | 583 | 152 | 64 | 107 |
| Jones, John M., assignor of one-half to C. L. Wright and G. B. Lasbury, Omaha, Nebr. Ore or feed pulverizer | 500,362 | July 4 | 68 | 19, 20 | 64 | 14 |
| Jones, John R., Fresno, Cal. Fire-escape | 503,322 | Aug. 15 | 1919 | 450 | 64 | 926 |

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| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drg. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Jones, Joshua L., Chicago, Ill. Lock | 504,785 | Sept. 12 | 789 | 199 | 64 | 1431 |
| Jones, Mathias B., Binghamton, N. Y. Antifriction journal-bearing | 503,143 | Aug. 15 | 1521 | 374 | 64 | 873 |
| Jones, Robert M., Salt Lake City, Utah Ter. Electric motor for rotary drilling-machines | 502,098 | July 25 | 9498 | 627 | 64 | 499 |
| Jones, Thomas D., assignor to A. W. Dreves, A. S. Osgood, and J. Early, Chicago, Ill. Nut-lock | 502,195 | July 25 | 9855 | 671 | 64 | 531 |
| Jones, Wesley C., Warrensburg, Mo. Button-fastener | 505,768 | Sept. 26 | 9456 | 619 | 64 | 1771 |
| Jopson, George W., Meriden, Conn. Padlock | 500,907 | July 4 | 583 | 158 | 64 | 107 |
| Jordan, Edmund, Brooklyn, N. Y. Drawing or stamping press | 503,422 | Aug. 15 | 1967 | 488<br>489 | 64 | 953 |
| Jordan, Edmund, Brooklyn, assignor, by mesne assignments, to T. V. Allis, New York, N. Y. Making barbed fencing | 505,708 | Sept. 26 | 9359 | 596 | 64 | 1753 |
| Jordan, Oswald F., St. Thomas, Canada. Spring railway-frog | 501,946 | July 25 | 9258 | 564 | 64 | 455 |
| Jörgensen, Erik. (See Krag and Jörgensen.) | | | | | | |
| Joseph, Julius C. (See Tate and Joseph.) | | | | | | |
| Joslyn, Daniel R., Gurdon, Ark. Car-coupling | 501,076 | July 11 | 853 | 221 | 64 | 171 |
| Jost, Carl. (See Monte and Jost.) | | | | | | |
| Jourdan, Armand G., assignor to himself and S. S. Lévy, Paris, France. Geographical clock | 500,659 | July 4 | 205 | 53, 54 | 64 | 40 |
| Joyce, James. (See Oxnam, Joyce, and Francis.) | | | | | | |
| Joyce, Owen C., assignor of one-half to A. W. Nobles, Edlil, Ark. Whiffletree-hook | 504,925 | Sept. 12 | 1017 | 262 | 64 | 1476 |
| Judson, Whitcomb L., Chicago, Ill. Shoe-fastening | 504,037 | Aug. 29 | 2357 | 740 | 64 | 1171 |
| Judson, Whitcomb L., Chicago, Ill. Clasp locker or unlocker for shoes | 504,038 | Aug. 29 | 2959 | 740 | 64 | 1171 |
| Jungmann, August, Chicago, Ill. Bridge-gate | 501,947 | July 25 | 9260 | 565 | 64 | 455 |
| Jungmann, Felix, Berlin, Germany. Tube-cutter | 504,786 | Sept. 12 | 791 | 200 | 64 | 1431 |
| Junkin, Thomas J. (See Fox, Charles E., assignor.) | | | | | | |
| Justice, Elmore E. (See Justice, William A., assignor.) | | | | | | |
| Justice, William A., New Athens, assignor of one-third to E. E. Justice, Bridgeport, Ohio. Latch and lock combined | 505,403 | Sept. 19 | 1796 | 484 | 64 | 1634 |
| Kaercher, John, Baraboo, Wis. Snow-shovel | 502,734 | Aug. 8 | 828 | 200 | 64 | 733 |
| Kaestner, Max, Hersogenrath, assignor to W. Zimmermann, Cologne, Germany. Tile | 502,725 | Aug. 8 | 829 | 201 | 64 | 733 |
| Kahner, Lazarus. (See Hvass, Charles, assignor.) | | | | | | |
| Kaime, George S., Necedah, Wis. Loading or piling machine | 504,589 | Sept. 5 | 453 | 115<br>116 | 64 | 1354 |
| Kalkkuhl, Carl, assignor of one-half to S. Frank, Philadelphia, Pa. Gas-lamp | 502,123 | July 25 | 9235 | 536 | 64 | 507 |
| Kallenbach, Morris, Boody, Ill. Elevator | 501,508 | July 18 | 1644 | 411 | 64 | 332 |
| Kammerer, Frank G., Chicago, Ill. Bottle or vessel holder | 502,365 | Aug. 1 | 192 | 45 | 64 | 601 |
| Kampf, August, assignor to Grusonwerk, Magdeburg, Germany. Hydraulic recoil-brake for guns | 500,908 | July 4 | 584 | 152 | 64 | 107 |
| Kampf, August, assignor to Grusonwerk, Magdeburg, Germany. Hydraulic press, &c. | 501,426 | July 11 | 1429 | 358 | 64 | 274 |
| Karlson, Axel, Duluth, Minn. Ice-velocipede | 500,583 | July 4 | 70 | 21 | 64 | 14 |
| Karns, Augustine S. (See Bowman and Rice, assignors.) | | | | | | |
| Kastengren, Carl F., Sjogeras, Klefva, Sweden. Cow-milker | 500,713 | July 4 | 290 | 78, 79 | 64 | 54 |
| Kato, George P., Jr., Jersey City, N. J. Lamp | 503,266 | Aug. 15 | 1717 | 424 | 64 | 909 |
| Katzer, Richard, Brooklyn, assignor to H. Scheuer, New York, N. Y. Holder for cuffs, &c. | 503,858 | Aug. 22 | 2659 | 666 | 64 | 1099 |
| Kaul, John L. (See Krieg, Joseph, assignor.) | | | | | | |
| Kausen, William F., Ferndale, Cal. Liquid-cooler | 504,500 | Sept. 5 | 458 | 116 | 64 | 1355 |
| Kaye, Edward, Phillipsburg, Pa. Apparatus for cooling glass molds | 501,077 | July 11 | 854 | 221 | 64 | 171 |
| Kaye, Samuel, Yazoo City, Miss. Piston-rod protector | 502,402 | Aug. 1 | 255 | 60 | 64 | 613 |
| Keane, Frederick H., and D. Wilson, Cappoquin, Ireland. Ball throwing or bowling machine | 502,299 | Aug. 1 | 72 | 16 | 64 | 579 |
| Keatinge, John R., Brooklyn, N. Y. Cushion for inking-pads | 503,267 | Aug. 15 | 1719 | 424 | 64 | 910 |
| Keck, Franklin J., assignor of one-fourth to F. G. W. Runk, Allentown, Pa. Window chair | 502,971 | Aug. 8 | 1251 | 306 | 64 | 810 |
| Keef, Edson O., Lincoln, Me. Lantern | 502,080 | July 25 | 9470 | 620 | 64 | 494 |
| Keeler, Edwin O., *et al.* (See Weaver, William, assignor.) | | | | | | |
| Keeler, Thomas C., Mount Holly, N. J. Measuring-caddy | 502,124 | July 25 | 9536 | 636 | 64 | 507 |
| Keeley, John W., assignor to G. Draper & Sons, Hopedale, Mass. Loom-shuttle | 505,203 | Sept. 19 | 1475 | 384 | 64 | 1574 |
| Keelor, Allen Z., *et al.* (See Burvill-Holmes, Ernest, assignor.) | | | | | | |
| Keen & Hagerty. (See Wagandt, Charles L., assignor.) | | | | | | |
| Keeney, Charles H., Milwaukee, Wis. Device for preventing water from freezing in pipes | 503,932 | Aug. 22 | 2769 | 604 | 64 | 1120 |
| Keephart, William L., and J. C. Hackett, Wilkes-Barré, Pa. Bed-bottom | 503,393 | Aug. 15 | 1820 | 451 | 64 | 927 |
| Kees, Anna, *et al.* (See Kees, William, assignor.) | | | | | | |
| Kees, Frederick D. (See Lillie, William F., assignor.) | | | | | | |
| Kees, Jacob, *et al.* (See Kees, William, assignor.) | | | | | | |
| Kees, William, assignor of two-thirds to A. Kees, Northville, S. D., and J. Kees, Milwaukee, Wis. Door-hanger | 504,591 | Sept. 5 | 458 | 117 | 64 | 1355 |
| Kegler, William, Bellevue, Iowa. Pump-curb | 505,047 | Sept. 12 | 1216 | 313 | 64 | 1513 |
| Keil, Adam. (See Legg and Keil.) | | | | | | |
| Keil, Adam, McKeesport, and A. R. Westerdahl, assignors to S. S. Brown, Pittsburg, Pa. Mining-machine | 501,309 | July 11 | 1076 | 274 | 64 | 212 |
| Keiser, Francis, Mahanoy City, Pa. Heat-radiator | 501,479 | July 11 | 1503 | 379 | 64 | 289 |
| Keith, Eli, Hagerstown, Ind. Washtub | 504,495 | Sept. 5 | 307 | 78 | 64 | 1327 |
| Kellenberger, John, West Hoboken, N. J. Fabric-holder for embroidering-machines | 504,483 | Aug. 1 | 356 | 86 | 64 | 602 |
| Keller, Frank W., Utica, N. Y. Chimney-rack | 504,729 | Sept. 12 | 680 | 173 | 64 | 1411 |
| Keller, Gottlieb, West Hoboken, N. J., assignor of two-fifths to A. de Riesthal, Brooklyn, and S. Blog, New York, N. Y. Motor | 504,272 | Aug. 29 | 3343 | 835 | 64 | 1244 |
| Keller, James D., Detroit, Mich., assignor of one-half to J. F. Shiel, Seymour, Ind. Toe-weight | 503,089 | Aug. 8 | 1417 | 349 | 64 | 841 |
| Keller, Joseph S. (See Seymour, William S., assignor.) | | | | | | |
| Kelley, Calhoun L., assignor of two-thirds to C. O. Hoffman and J. P. Tribble, Kennett, Mo. Thill-coupling bolt | 502,972 | Aug. 8 | 1252 | 306 | 64 | 810 |
| Kelley, Manly S., Providence, R. I., assignor to Fenton Metallic Manufacturing Company, Jamestown, N. Y. Truck | 504,476 | Sept. 5 | 268 | 70 | 64 | 1290 |
| Kellogg, Edwin M., Delavan, Wis. Mechanical movement | 500,584 | July 4 | 71 | 21 | 64 | 14 |
| Kellogg, Martha E., Battle Creek, Mich. Dress-stay | 502,436 | Aug. 1 | 312 | 75 | 64 | 623 |
| Kellogg, Milo G., Chicago, Ill. Electric cable | 503,604 | Aug. 22 | 2283 | 560 | 64 | 1086 |
| Kells, Charles E., Jr., New Orleans, La. Electric-pole changer | 502,300 | Aug. 1 | 75 | 17 | 64 | 580 |
| Kelly, Jarvis P., Chicopee, assignor to Warwick Cycle Manufacturing Company, Springfield, Mass. Pneumatic vehicle-wheel | 504,273 | Aug. 29 | 3344 | 836 | 64 | 1244 |
| Kelly, John, Chicago, Ill. Valve device | 505,272 | Sept. 19 | 1579 | 412 | 64 | 1304 |
| Kelly, John B., Pleasant Home, Oreg. Steam-power crosscut-saw | 503,665 | Aug. 22 | 2375 | 582<br>583 | 64 | 1042 |
| Kelly, Michael, New York, N. Y. Poison-feeding device | 503,908 | Aug. 15 | 1720 | 424 | 64 | 910 |
| Kelly, Oliver S. (See Green, George F., assignor.) | | | | | | |
| Kem, Stephen A., and E. Frederick, Purcell, Ind. Ter. Photographic washing apparatus | 503,144 | Aug. 15 | 1522 | 374 | 64 | 873 |



*Alphabetical list of patentees, July to September, inclusive*—Continued.

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|---|---|---|---|---|---|---|
| Kempshall, Eleazer, assignor to W. R. Walkley, Brooklyn, N. Y. Hook | 504,039 | Aug. 29 | 2961 | 740 | 64 | 1172 |
| Kendall, Edward D., Jamaica, N. Y. Refrigerating apparatus | 502,437 | Aug. 1 | 313 | 75 | 64 | 623 |
| Kendall, Edward D., Jamaica, N. Y. Apparatus for producing cold and ice | 502,438 | Aug. 1 | 317 | 75 | 64 | 623 |
| Kendrick, John, St. Louis, Mo. Dress-stay | 501,078 | July 11 | 855 | 222 | 64 | 289 |
| Kennedy, Charles W. (See Ashley, Ralph, assignor.) | | | | | | |
| Kennedy, Logan P., assignor to Lithgow Manufacturing Company, Louisville, Ky. Kicker-latch for stove or other doors | 501,883 | July 18 | 2155 | 535 | 64 | 420 |
| Kennedy, Walter, Milan, Ill. Farm-gate | 503,040 | Aug. 8 | 1355 | 335 | 64 | 831 |
| Kennelly, John J., assignor, by mesne assignments, to Sterling Car Heating and Lighting Company, New York, N. Y. Sanding-box for cars | 501,722 | July 18 | 1895 | 471 | 64 | 375 |
| Kent, Charles C., Taunton, assignor of one-half to G. Draper & Sons, Hopedale, Mass. Ring-spinning frame | 501,427 | July 11 | 1430 | 359 | 64 | 275 |
| Ker, George, Portland, Oreg. Car-coupling | 504,697 | Sept. 5 | 631 | 160 | 64 | 1389 |
| Kerman, Herbert C., St. Catharines, assignor of one-third to W. S. Kerman, Toronto, Canada. Device for making cigarettes | 504,040 | Aug. 29 | 2962 | 741 | 64 | 1172 |
| Kerman, William S. (See Kerman, Herbert C., assignor.) | | | | | | |
| Kern, George N., and J. W. Fielder, Mason City, Ill. Band-cutting and feeding attachment for thrashing-machines | 504,230 | Aug. 29 | 3257 | 812 | 64 | 1227 |
| Kern, Jacob C., Wilkes-Barré, Pa. Combined trunk and wardrobe | 502,081 | July 25 | 9471 | 621 | 64 | 495 |
| Kern, Louis, Chicago, Ill. Coin-controlled lung-testing machine | 502,439 | Aug. 1 | 322 | 76 | 64 | 625 |
| Kern, Samuel E., Bellevue, Ohio. Wrench | 504,041 | Aug. 29 | 2963 | 741 | 64 | 1172 |
| Kern, Thomas S., *et al.* (See Anderson, John A. E., assignor.) | | | | | | |
| Kern, William C., *et al.* (See Anderson, John A. E., assignor.) | | | | | | |
| Kershaw, Earnest J., Cleveland, Ohio. Machine for manufacturing wooden trays | 501,079 | July 11 | 856 | 222<br>223 | 64 | 171 |
| Kessler, Charles E., Humboldt, Kans. Corn-planter | 500,909 | July 4 | 585 | 153 | 64 | 107 |
| Ketchum, Frank S., New York, N. Y. Metallic railway-tie | 504,066 | Aug. 29 | 2996 | 748<br>749 | 64 | 1178 |
| Ketchum, Frank S., New York, N. Y. Angle-bar for railway-rail joints | 504,067 | Aug. 29 | 2998 | 749 | 64 | 1179 |
| Keyes, Frank E., assignor to United Indurated Fibre Company of New Jersey, Lockport, N. Y. Machine for forming hollow pulp articles | 503,284 | Aug. 15 | 1750 | 432 | 64 | 915 |
| Keystone Manufacturing Company. (See Packer, George W., assignor.) | | | | | | |
| Keystone Watch Case Company. (See Bradley, William W., assignor.) | | | | | | |
| Keystone Watch Case Company. (See Mink, Fritz, assignor.) | | | | | | |
| Keystone Watch Case Company. (See Platnauer, Louis, assignor.) | | | | | | |
| Keywood, William, Tacoma, Wash. Automatic air-brake | 500,910 | July 4 | 588 | 154 | 64 | 108 |
| Kibby, Alexander S., Chicago, Ill. Machine for affixing postage-stamps to letters | 503,833 | Aug. 22 | 2771 | 604 | 64 | 1120 |
| Kidwell, John W., Washington, D. C. Manufacture of glazed iron | 503,423 | Aug. 15 | 1969 | | 64 | 954 |
| Kidwell, John W., Washington, D. C. Manufacture of pigment or paint | 503,424 | Aug. 15 | 1970 | | 64 | 954 |
| Kidwell, John W., Washington, D. C. Non-corrodible plastic composition | 503,425 | Aug. 15 | 1971 | | 64 | 954 |
| Kiefer, Peter, Belle Fountain, Wis. Device for use in binding grain-shocks | 504,592 | Sept. 5 | 459 | 117 | 64 | 1355 |
| Kieserling, Robert, Hamburg, Germany. Apparatus for making hollow articles from plastic material | 505,362 | Sept. 19 | 1731 | 417<br>418 | 64 | 1621 |
| Kieserling, Robert, and M. Möller, Altona, Germany. Making hollow objects from plastic material | 502,196 | July 25 | 9656 | 671<br>672 | 64 | 531 |
| Killefer, John, Redlands, Cal. Cultivator | 503,145 | Aug. 15 | 1523 | 374 | 64 | 874 |
| Kilmer, Irving A., Newburg, N. Y. Rod-reel | 501,251 | July 11 | 1147 | 291 | 64 | 223 |
| Kilmer, Irving A., Newburg, N. Y. Piston-packing | 503,859 | Aug. 22 | 2660 | 666 | 64 | 1099 |
| Kilmer, Irving A., Newburg, N. Y. Piston-packing | 503,860 | Aug. 22 | 2661 | 667 | 64 | 1099 |
| Kilmer, William A., Newburg, N. Y. Bale-tie | 504,436 | Sept. 5 | 204 | 53 | 64 | 1308 |
| Kilpatrick, Alexander, *et al.* (See Spery, Charles F., assignor.) | | | | | | |
| Kimball, Charles M., Auburndale, Ohio. Bristle-fastener for brushes | 503,795 | Aug. 22 | 2577 | 641 | 64 | 1082 |
| Kimball, John J. (See Queen and Kimball.) | | | | | | |
| Kimball, Orrin A., and J. Gramer, Boston, Mass. Piano | 503,861 | Aug. 22 | 2662 | 667 | 64 | 1099 |
| Kimble, Loren W., assignor to Libbey Glass Company, Toledo, Ohio. Feeding-up machine for polishing-tools | 504,593 | Sept. 5 | 460 | 117 | 64 | 1355 |
| Kime, Enoch, Milton, Ohio. Land roller and pulverizer | 502,301 | Aug. 1 | 76 | 17 | 64 | 580 |
| Kind, Charles, Friendship, Wis. Separator-sieve | 500,714 | July 4 | 293 | 79 | 64 | 54 |
| King, Alfred S. (See Hayward, King, and Loveland.) | | | | | | |
| King Bridge Company. (See Rasch, Peter, assignor.) | | | | | | |
| King, Charles H., Jesup, Iowa. Portable crane | 501,147 | July 11 | 986 | 251 | 64 | 194 |
| King, Downing H., Farmersville, Ill. Churn | 501,839 | July 18 | 2075 | 512 | 64 | 407 |
| King, Edward G., and C. H. Becker, Beloit, Wis. Machine for forming screw-threads | 502,302 | Aug. 1 | 77 | 17, 18 | 64 | 580 |
| King, Francis J., Baltimore, Md. Shoe | 502,973 | Aug. 8 | 1253 | 306 | 64 | 810 |
| King, Frank, London, England. Secondary battery | 501,723 | July 18 | 1896 | 471 | 64 | 376 |
| King, Jacob C., York, Pa. Automatic grain-weigher | 505,769 | Sept. 26 | 9456 | 619 | 64 | 1771 |
| King, John M. (See Velie, Charles E., assignor.) | | | | | | |
| King, Lewis J., assignor of one-half to T. R. Knox, Shoal Creek, Ga. Handle-clamp, &c. | 504,221 | Aug. 29 | 3259 | 813 | 64 | 1228 |
| King, William L., Winston, N. C. Button | 504,437 | Sept. 5 | 205 | 53 | 64 | 1309 |
| Kingman, William H., Reading, Mass. Appliance for teaching penmanship | 503,796 | Aug. 22 | 2578 | 641 | 64 | 1082 |
| Kingsley, Horace L., Racine, Wis. Vehicle pole | 503,605 | Aug. 22 | 2284 | 570 | 64 | 1026 |
| Kingzett, Charles T. (See Woodcock and Kingzett.) | | | | | | |
| Kinsella, Edward, Rochester, N. Y., assignor of one-half to M. J. Moloney. Shoe | 505,498 | Sept. 19 | 1842 | 473 | 64 | 1643 |
| Kinsman, Frank E., Plainfield, N. J. Electric circuit for controlling trains | 504,042 | Aug. 29 | 2963 | 741 | 64 | 1172 |
| Kintzing, Ralston C., Brooklyn, N. Y., assignor to Crocker-Wheeler Electric Company, of New Jersey. Dynamo or motor. (Reissue) | 11,354 | July 25 | 2785 | 703 | 64 | 554 |
| Kirby, Stephen R., New York, N. Y. Window packing and antirattling device | 505,315 | Sept. 19 | 1656 | 428 | 64 | 1602 |
| Kirchner, Frank H. (See Cabot, John A., assignor.) | | | | | | |
| Kirk, Henry C., Jr. (See Zell, Robert R., assignor.) | | | | | | |
| Kirk, John, and B. Lee, Leeds, England. Cloth-pressing machine | 501,349 | July 11 | 1311 | 327<br>328 | 64 | 252 |
| Kirk, John R. (See Moore, Rue, Smith, Roebuck, Mills, and Kirk.) | | | | | | |
| Kirkegaard, Georg, Brooklyn, N. Y. Electric-arc lamp | 501,080 | July 11 | 860 | 223 | 64 | 172 |
| Kirkegaard, Georg, Brooklyn, N. Y. Electric-arc lamp | 501,081 | July 11 | 861 | 224 | 64 | 172 |
| Kirkham, John J., Terre Haute, Ind. Apparatus for manufacturing gas | 502,125 | July 25 | 9537 | 636<br>637 | 64 | 507 |
| Kirkpatrick, Robert S., Des Moines, Iowa. Apparatus for wringing mops | 503,541 | Aug. 15 | 2151 | 530 | 64 | 987 |
| Kirkpatrick, William P., Arrowsmith, Ill. Swift warping machine | 505,770 | Sept. 26 | 9458 | 619<br>620 | 64 | 1771 |
| Kisinger, John T. T., Jr., Belton, Mo. Fender attachment | 503,242 | Aug. 15 | 1678 | 412 | 64 | 902 |
| Kisinger, William S., Bellevue, assignor to Winchester Cotton and Tobacco Press Company, Winchester, Ky. Hand-press | 500,660 | July 4 | 207 | 54 | 64 | 40 |
| Kissinger, Eliza, Girardville, Pa. Rubber boot | 501,093 | July 11 | 863 | 224 | 64 | 172 |
| Kitsee, Isidor, Philadelphia, Pa. Secondary battery | 505,467 | Sept. 26 | 1901 | 490 | 64 | 1668 |

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|---|---|---|---|---|---|---|
| Kitselman, Alva L., *et al.* (See Pope, John C., assignor.) | | | | | | |
| Kitselman, Alva L., Ridgeville, Ind. Wire-fabric machine | 504,984 | Sept. 12 | 1118 | 286, 287, 288 | 64 | 1494 |
| Kitselman, Davis M., *et al.* (See Pope, John C., assignor.) | | | | | | |
| Kitts, Willard A., Oswego, N. Y. High or low water alarm | 503,606 | Aug. 22 | 2285 | 570 | 64 | 1096 |
| Klahr, George A., J. A. Petty, and M. H. Foy, Sycamore, Ohio. Combined car and air-brake coupling | 504,222 | Aug. 29 | 3260 | 813 | 64 | 1228 |
| Klastal, John C. (See Stabbe, Frederick H., assignor.) | | | | | | |
| Klauder-Weldon Dyeing Machine Company. (See Weldon, Leonard, assignor.) | | | | | | |
| Klees, William H., assignor to himself and H. E. Outwater, Susquehanna, Pa. Electric-arc lamp | 501,884 | July 18 | 2156 | 535 | 64 | 421 |
| Klein, Leon A., *et al.* (See Winter, Louis F., assignor.) | | | | | | |
| Klein, Theodore, *et al.* (See Pieper, Herman H., assignor.) | | | | | | |
| Kleinert, Isaac B., New York, N. Y. Ear-muff | 503,703 | Aug. 22 | 2435 | 606 | 64 | 1054 |
| Kletsker, Albert J., and J. G. Goesel, St. Louis, Mo. Matrix-making machine | 503,324 | Aug. 15 | 1821 | 451 | 64 | 927 |
| Klieber, Josef, Neusattl, assignor to C. Götz, Carlsbad, Austria-Hungary. Liquid material for the manufacture of fine earthenware | 500,585 | July 4 | 73 | ..... | 64 | 15 |
| Kline, Charles H. (See Long and Kline.) | | | | | | |
| Kling, Edgar, assignor to I. Kling, Louisville, Ky. Car-coupling | 501,428 | July 11 | 1431 | 359 | 64 | 275 |
| Kling, Isaac. (See Kling, Edgar, assignor.) | | | | | | |
| Klots, Henry D. (See Pendleton, Gurdon, Jr., assignor.) | | | | | | |
| Klots, Henry D., New York, N. Y. Spinning-spindle and support therefor | 501,792 | July 18 | 2019 | 498 | 64 | 398 |
| Klugel, Oscar G., Indianapolis, Ind. Coin-controlled dice-shaking machine | 502,495 | Aug. 1 | 417 | 98, 99 | 64 | 643 |
| Klump, Charles A., *et al.* (See Winner, William P., assignor.) | | | | | | |
| Klumpp, Gustav, Esslingen, Germany. Metal-embossing machine | 502,566 | Aug. 1 | 531 | 137 | 64 | 664 |
| Knaff, Rudolph, *et al.* (See Scates, George R., assignor.) | | | | | | |
| Knapp, Charles, St. Louis, Mo. Apparatus for ventilating cars | 503,928 | Aug. 8 | 1169 | 288 | 64 | 796 |
| Knapp, Charles, St. Louis, Mo. Sash-fastener | 504,165 | Aug. 29 | 3161 | 789 | 64 | 1209 |
| Knapp, Charles F. (See Beam, Oren H., assignor.) | | | | | | |
| Knauss, Frank V., assignor to Portsmouth Stove and Range Company, Portsmouth, Ohio. Fire-box | 501,885 | July 18 | 2159 | 536 | 64 | 421 |
| Kneass, Strickland L., assignor to William Sellers & Company, Incorporated, Philadelphia, Pa. Injector | 501,464 | July 11 | 1481 | 372 | 64 | 285 |
| Kneen, William, London, England. Furnace | 505,661 | Sept. 26 | 2275 | 577 | 64 | 1738 |
| Kneiff, Max J. F., Berlin, Germany. Artificial tooth | 501,429 | July 11 | 1433 | 359 | 64 | 275 |
| Knickerbacker, John. (See Bootman, William H., assignor.) | | | | | | |
| Knickerbacker, John, Troy, N. Y. Hydrant | 504,594 | Sept. 5 | 462 | 117 | 64 | 1356 |
| Knight, Augusta B., Boston, Mass. Chatelaine | 504,839 | Sept. 12 | 882 | 227 | 64 | 1450 |
| Knight, James, Philadelphia, Pa. Lawn-rake and grass-receiver | 501,430 | July 11 | 1434 | 359 | 64 | 275 |
| Knight, Richard D., Providence, R. I. Card-holder | 501,279 | July 11 | 1185 | 300 | 64 | 231 |
| Kniphals, Hinry, Davenport, Iowa. Extension-ladder | 502,403 | Aug. 1 | 256 | 61 | 64 | 613 |
| Knisley, John A., Hitt, Mo. Drip-trough | 504,420 | Sept. 5 | 180 | 47 | 64 | 1304 |
| Knower, George, Greenwood, Wis. Batten and padding for closing joints in buildings | 503,496 | Aug. 15 | 1972 | 489 | 64 | 954 |
| Knowles, Edward R., Brooklyn, assignor to L. Werner, New York, N. Y. Machine for removing water-hairs from pelts | 502,366 | Aug. 1 | 193 | 45, 46, 47 | 64 | 601 |
| Knowles, Elmer E. (See Smith and Knowles.) | | | | | | |
| Knowles Loom Works. (See Gaunt and Wild, assignors.) | | | | | | |
| Knowles Loom Works. (See Watts, William, assignor.) | | | | | | |
| Knowlton, Charles H., and B. F. Meyer, assignors to M. A. Furbush & Son Machine Company, Camden, N. J. Shuttle-box-operating mechanism for looms | 503,542 | Aug. 15 | 2154 | 539, 540 | 64 | 987 |
| Knowlton, Charles H., and B. F. Meyer, assignors to M. A. Furbush & Son Machine Company, Camden, N. J. Shuttle-box-operating mechanism for looms | 503,543 | Aug. 15 | 2158 | 540 | 64 | 988 |
| Knox, George F., Chicago, Ill. Ice-machine | 501,045 | July 4 | 804 | 209 | 64 | 146 |
| Knox, Harvey, Rixford, Pa. Sucker-rod elevator | 502,974 | Aug. 8 | 1254 | 307 | 64 | 810 |
| Knox, James, Kilbirnie, Scotland. Machine for making nets | 504,595 | Sept. 5 | 464 | 118, 119 | 64 | 1356 |
| Knox, T. R. (See King, Lewis J., assignor.) | | | | | | |
| Knudsen, Andrew, Tucson, Ariz. Ter. Combination-tool | 502,259 | July 25 | 2776 | 701 | 64 | 552 |
| Knudsen, Augustus, San Francisco, Cal. Steam-engine | 501,793 | July 18 | 2020 | 498, 499 | 64 | 397 |
| Knudson, Edward, Milton, Mass. Stall-cleaner | 501,948 | July 25 | 2261 | 565 | 64 | 456 |
| Knudson, Harold E., *et al.* (See Higgins, Charles W., assignor.) | | | | | | |
| Knudson, Jacob B., *et al.* (See Higgins, Charles W., assignor.) | | | | | | |
| Koch Henry R., St. Joseph, Mo. Variable lifting device for elevators | 501,840 | July 18 | 2077 | 512 | 64 | 407 |
| Koch, William, New York, N. Y., assignor, by mesne assignments, to National Cash Register Company, Dayton, Ohio. Cash-register | 505,553 | Sept. 26 | 2067 | 527, 528, 529 | 64 | 1698 |
| Koch, William, New York, N. Y., assignor, by mesne assignments, to National Cash Register Company, Dayton, Ohio. Cash-register | 505,554 | Sept. 26 | 2082 | 530 | 64 | 1701 |
| Koch, William, New York, N. Y., assignor, by mesne assignments, to National Cash Register Company, Dayton, Ohio. Cash register and recorder | 505,555 | Sept. 26 | 2088 | 531 | 64 | 1702 |
| Koefoed, Charles J. (See McIntire and Koefoed.) | | | | | | |
| Koehler, Charles S., Brooklyn, assignor to Bensiger Brothers, New York, N. Y. Candelabrum | 505,316 | Sept. 19 | 1657 | 428 | 64 | 1608 |
| Koerner, Herman T., Buffalo, N. Y. Printer's drying-rack | 504,985 | Sept. 12 | 1124 | 288 | 64 | 1496 |
| Kohl, Arnold, Centralia, Ill. Binding-post for electrical connections | 503,427 | Aug. 15 | 1977 | 490 | 64 | 954 |
| Kohler, August, Chicago, Ill. Bridge-gate | 502,975 | Aug. 8 | 1255 | 307 | 64 | 810 |
| Kohr, Emanuel H., Tyrone, Pa. Leaf-holder | 505,771 | Sept. 26 | 2460 | 620 | 64 | 1771 |
| König, Carl B., Altona, Germany. Mask-respirator | 504,880 | Sept. 12 | 939 | 242 | 64 | 1461 |
| Kons, Sebastian, Louisville, Ky. Machine for making wire springs | 504,390 | Sept. 5 | 127 | 33 | 64 | 1293 |
| Koons, Isaac B., Foglesville, Pa. Kettle-lifter | 503,802 | Aug. 22 | 2363 | 668 | 64 | 1099 |
| Kosciałowski, Philip L., San Francisco, Cal. Machine for perforating characters | 505,404 | Sept. 19 | 1796 | 454 | 64 | 1635 |
| Kosinski, Walter T., New York, N. Y. Armature for dynamo-electric machines or motors | 505,947 | Sept. 19 | 1538 | 401 | 64 | 1596 |
| Kottgen, Walther. (See Anders, George L., assignor.) | | | | | | |
| Kouns, Wesley, Salina, Kans. Windmill | 500,911 | July 4 | 569 | 154 | 64 | 108 |
| Kounts, John S., Natchez, Miss. Bag-holder | 504,787 | Sept. 12 | 792 | 200 | 64 | 1431 |
| Krabach, Frank X., Defiance, Ohio. Harrow-frame | 501,724 | July 18 | 1997 | 472 | 64 | 376 |
| Kraetz, John G., Buffalo, N. Y. Fire-alarm box | 503,376 | Aug 15 | 1906 | 472 | 64 | 942 |
| Kraetzer, Edwin J., Cambridge, Mass., assignor to Consolidated Fastener Company, Portland, Me. Glove or garment fastener | 502,404 | Aug. 1 | 258 | 61 | 64 | 613 |
| Krag, Ole H. J., and E. Jörgensen, Kongsberg, Norway. Straight-pull breech-bolt for fire-arms | 502,727 | Aug. 8 | 831 | 201 | 64 | 733 |



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| Krag, Ole H. J., and E. Jörgensen, Kongsberg, Norway. Cartridge-holder | 505,383 | Sept. 19 | 1733 | 448, 449 | 64 | 1622 |
| Kragle, John L., Clearfield, Pa. Pen-extractor | 502,736 | Aug. 8 | 830 | 201 | 64 | 733 |
| Kramer, George W., assignor to Hart Weigher Company, Peoria, Ill. Steering-gear for traction-engines | 502,230 | July 25 | 2712 | 684, 685 | 64 | 541 |
| Kramer, George W., assignor to Hart Weigher Company, Peoria, Ill. Steering-gear for traction-engines | 503,146 | Aug. 15 | 1525 | 375 | 64 | 874 |
| Kramer, George W., assignor to Hart Weigher Company, Peoria, Ill. Steering-gear for traction engines | 503,147 | Aug. 15 | 1526 | 375 | 64 | 874 |
| Krammer, Hermann, Vienna, Austria-Hungary. Manufacture of trunks, hat-boxes, &c | 500,912 | July 4 | 591 | 154 | 64 | 109 |
| Krank, Albert, Taipale, Russia. Production of motive power and apparatus therefor | 501,083 | July 11 | 864 | 224, 225 | 64 | 173 |
| Kraxky, Henry G., San Francisco, Cal., assignor to United States Indicator Company, of California. Station indicator | 502,625 | Aug. 1 | 630 | 151 | 64 | 682 |
| Kraus, Otto A., *et al.* (See Haberthur and Mandel, assignors.) | | | | | | |
| Krauser, Evan L., Norristown, Pa. Nut-lock | 505,468 | Sept. 26 | 1902 | 490 | 64 | 1668 |
| Krauss, Jacob. (See Smith, Frank A., assignor.) | | | | | | |
| Krauss, Jacob, Lexington, Ky. Vehicle | 502,303 | Aug. 1 | 78 | 18 | 64 | 580 |
| Krekeler, Carl. (See Lauch and Krekeler.) | | | | | | |
| Kreusler, Arnold, Staten Island, N. Y. Steam-generating apparatus | 502,418 | Aug. 1 | 282 | 67 | 64 | 618 |
| Kreusler, Arnold, Staten Island, N. Y. Combined steam generator and heater | 502,728 | Aug. 8 | 833 | 201 | 64 | 733 |
| Kreusler, Arnold, Staten Island, N. Y. Steam-generator | 502,729 | Aug. 8 | 834 | 202 | 64 | 734 |
| Krick, Adam C., Newark, N. J. Traveling-bag | 504,840 | Sept. 12 | 882 | 227 | 64 | 1451 |
| Krieg, Joseph, St. Mary's Pa., assignor of one-half to J. L. Kaul, Hollins, Ala. Wagon-brake | 505,048 | Sept. 12 | 1217 | 313 | 64 | 1513 |
| Kroger, John, Toledo, Ohio. Bookbinding | 505,049 | Sept. 12 | 1218 | 314 | 64 | 1513 |
| Kroll, Mikkel C., Northampton, Mass. Eel-spear | 504,166 | Aug. 29 | 3163 | 789 | 64 | 1210 |
| Kropp, Charles C., Newark, N. J. Keyboard for musical instruments | 502,090 | July 25 | 2497 | 627 | 64 | 499 |
| Kruckeberg, Frederick, Minneapolis, Minn. Hose-bridge | 504,530 | Sept. 5 | 366 | 92 | 64 | 1338 |
| Krueger, Reinhold, New York, N. Y. Jeweler's ring-tray | 504,167 | Aug. 29 | 3164 | 789 | 64 | 1210 |
| Krug, Philip F., New York, N. Y. Lubricator | 502,100 | July 25 | 2498 | 627 | 64 | 109 |
| Krupp, Firm of Fried. (See Corleis and Reniech, assignors.) | | | | | | |
| Kruse, Gustav, Hamburg, Germany, assignor to G. T. Mamerow, Chicago, Ill. Beer-tempering device | 505,424 | Sept. 19 | 1638 | 473 | 64 | 1642 |
| Krutsch, Charles A., Logansport, Ind. Hair-crimper | 502,567 | Aug. 1 | 533 | 127 | 64 | 664 |
| Krutzsch, William, assignor to Buckeye Iron and Brass Works, Dayton, Ohio. Automatic locking device for press-operating mechanism | 503,090 | Aug. 8 | 1418 | 350 | 64 | 841 |
| Krutzsch, William, assignor to Buckeye Iron and Brass Works, Dayton, Ohio. Hydraulic accumulator | 503,091 | Aug. 8 | 1419 | 350 | 64 | 841 |
| Küchler, Karl, Aussig, Austria-Hungary, assignor to B. Heller, New York, N. Y. Belting | 502,976 | Aug. 8 | 1256 | 307 | 64 | 811 |
| Kuckarts, Lonard, Portland, Oreg. Warehouse gang-plank | 502,568 | Aug. 1 | 534 | 127 | 64 | 664 |
| Kuh, Solomon, Sioux Falls, S. D. Advertising apparatus | 504,421 | Sept. 5 | 180 | 47 | 64 | 1304 |
| Kühn, Gustav K., Schmölln, Germany. Cyclometer | 503,485 | Aug. 15 | 2060 | 516 | 64 | 971 |
| Kuhner, Herman E., Davenport, Iowa. Wheel | 500,913 | July 4 | 592 | 155 | 64 | 109 |
| Kuhnle, Gotfred. (See Odegaard and Kuhnle.) | | | | | | |
| Kuhns, Ames M., Union Deposit, Pa. Wire fence | 502,977 | Aug. 8 | 1257 | 308 | 64 | 811 |
| Kumpf, William, Memphis, Tenn. Stringed musical instrument | 505,662 | Sept. 26 | 2276 | 577 | 64 | 1738 |
| Kuntz, Charles F., St. Louis, Mo. Roach trap | 501,350 | July 11 | 1313 | 328 | 64 | 252 |
| Kurth, George F., Philadelphia, Pa. Link for sleeve or cuff buttons | 501,725 | July 18 | 1900 | 472 | 64 | 376 |
| Kurtz, John. Philadelphia, Pa. Ice-machine | 504,966 | Sept. 12 | 1121 | 288 | 64 | 1496 |
| Kurtz, John G., Washington, D. C. Clothes-drier | 505,108 | Sept. 19 | 1324 | 342 | 64 | 1547 |
| La Baw, George W., Bayonne, N. J. Lifting-jack | 501,280 | July 11 | 1186 | 300 | 64 | 231 |
| La Burt Automatic Electric Block Signal System and Car Coupler Company. (See La Burt, John, assignor.) | | | | | | |
| La Burt, John, assignor to La Burt Automatic Electric Block Signal System and Car Coupler Company, New York, N. Y. Car-Coupling | 501,605 | July 18 | 1705 | 424, 425 | 64 | 343 |
| La Dow, Charles. (See Perrin, Charles, assignor.) | | | | | | |
| La Dow, Charles, Albany, N. Y. Harrow | 501,841 | July 18 | 2078 | 513 | 64 | 407 |
| La Dow, Charles, Albany, N. Y. Harrow | 501,886 | July 18 | 2161 | 536 | 64 | 421 |
| La Dow, Charles, Albany, N. Y. Harrow | 501,887 | July 18 | 2163 | 536 | 64 | 422 |
| La Sha, Jerome. (See Torrey and La Sha.) | | | | | | |
| La Sha, Salina, *et al.* (See Torrey and La Sha, assignors.) | | | | | | |
| La Touche, Reno M., Moscow, Pa. Device for catching oil from crank-pin journals of connecting-rods | 504,391 | Sept. 5 | 128 | 33 | 64 | 1294 |
| Labatt, Charles B., San Francisco, Cal. Elevator safety attachment | 503,486 | Aug. 15 | 2070 | 516 | 64 | 972 |
| Labudde, Rudolph, and F. Hansen, Freeport, Ill. Spring-hinge | 503,243 | Aug. 15 | 1679 | 413 | 64 | 902 |
| Lacroix, Elizear P., assignor to C. Rogers & Bros., Meriden, Conn. Coffin-handle | 505,663 | Sept. 26 | 2277 | 578 | 64 | 1739 |
| Lacy, Elsada. (See Lacy, George W., assignor.) | | | | | | |
| Lacy, George W., assignor, by mesne assignments, to E. Lacy, Kingston, N. Y. Truck for motor-cars | 503,092 | Aug. 8 | 1421 | 351 | 64 | 842 |
| Ladd, John H., London, England. Treating malleable iron | 504,841 | Sept. 12 | 884 | ..... | 64 | 1451 |
| Laffont, Marc, Paris, France. Artificial stone | 501,794 | July 18 | 2021 | ..... | 64 | 397 |
| Laffont, Marc, Paris, France. Artificial stone | 501,888 | July 18 | 2164 | ..... | 64 | 422 |
| Laffont, Marc, Paris, France. Artificial stone | 501,889 | July 18 | 2165 | ..... | 64 | 422 |
| Lagerquist, Andrew J., Braceville, Ill. Bridge-gate | 501,516 | July 18 | 1566 | 394 | 64 | 316 |
| Lagerquist, Gust, and A. G. Nelson, Minneapolis, Minn. Elevator-gate | 500,596 | July 4 | 74 | 21 | 64 | 15 |
| Laidlaw, William, Hawick, Scotland. Apparatus for dyeing yarn | 501,517 | July 18 | 1568 | 394 | 64 | 316 |
| Laird, William H. (See Watson, George A., assignor.) | | | | | | |
| Laird, William H., assignor of one half to W. H. Reinhart, Mendon, Mich. Hay-rack | 505,317 | Sept. 19 | 1650 | 428 | 64 | 1608 |
| Lake, David. (See Whiffen and Lake.) | | | | | | |
| Lake, Gaither A., Stockwell, Ind. Combination step-ladder | 502,367 | Aug. 1 | 197 | 47 | 64 | 602 |
| Lake, Vincent F. (See Whiffen and Lake.) | | | | | | |
| Lakin, James A., Westfield, Mass. Burial-casket | 501,809 | July 4 | 439 | 115 | 64 | 81 |
| Lallemand, Frederick A., Montreal, Canada. Washing-machine | 502,730 | Aug. 8 | 835 | 202 | 64 | 734 |
| Lamb, Charles M., Adrian, Mich. Gate-hinge | 504,450 | Sept. 5 | 223 | 60 | 64 | 1312 |
| Lamb, Charles M., Adrian, Mich. Gate-hinge | 504,451 | Sept. 5 | 223 | 60 | 64 | 1312 |
| Lamb Knitting Machine Manufacturing Company *et al.* (See Perkins, Albert, assignor.) | | | | | | |
| Lamb, Restore R. (See Gibbs, Eugene U., assignor.) | | | | | | |
| Lamb, Walter, Memphis, Tenn. Adjustable handle for bicycles | 505,273 | Sept. 19 | 1580 | 412 | 64 | 1594 |
| Lambert, Julius, Hoboken, N. J. Card or letter case | 501,431 | July 11 | 1435 | 360 | 64 | 276 |
| Lamont, Robert P., Chicago, Ill. Counterbalance for bridges | 503,377 | Aug. 15 | 1909 | 473 | 64 | 943 |
| Lamont, Robert P., Chicago, Ill. Driving mechanism for bridges | 503,378 | Aug. 15 | 1910 | 473 | 64 | 943 |

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| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Dr'g. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Lamson Consolidated Store Service Company. (See Burns, James M., assignor.) | | | | | | |
| Lamson Consolidated Store Service Company. (See Cowley, James T., assignor.) | | | | | | |
| Lamson Consolidated Store Service Company. (See Goodfellow, John H., assignor.) | | | | | | |
| Lancaster, John P., Cleveland, Ohio, assignor of thirty-three sixty-fourths to S. Proskey and F. Alexander, Brooklyn, N. Y. Metallic railway-tie | 502,464 | Aug. 1 | 358 | 86 | 64 | 632 |
| Lancaster, Thomas H., West Point, Ga. Plow | 501,011 | July 4 | 749 | 196 | 64 | 136 |
| Lander, Frank B., *et al.* (See Davis, William W., assignor.) | | | | | | |
| Lander, Walter, *et al.* (See Davis, William W., assignor.) | | | | | | |
| Landes, John V. (See Smith and Landes.) | | | | | | |
| Landin, John, Stockholm, Sweden. Making ammonium nitrate | 500,914 | July 4 | 593 | ..... | 64 | 109 |
| Landis, Abraham B., Waynesborough, Pa. Compensating journal-box | 501,726 | July 18 | 1900 | 472 | 64 | 376 |
| Landis, Israel L., Lancaster, Pa. Brush-holder | 501,984 | July 11 | 866 | 225 | 64 | 173 |
| Lane, George D. (See Maddox, William J., assignor.) | | | | | | |
| Lane, Henry P., Franklin, Ohio. Machine for making paper buckets | 504,730 | Sept. 12 | 681 | {173 174} | 64 | 1411 |
| Lane, William G., Picton, Canada. Coal-dumping car | 501,148 | July 11 | 988 | 252 | 64 | 194 |
| Lane, William J., Poughkeepsie, N. Y. Support for moving bodies | 501,949 | July 25 | 2261 | 565 | 64 | 456 |
| Lanfair, Herbert D., assignor to Miller's Falls Company, Miller's Falls, Mass. Hack-saw machine | 502,978 | Aug. 8 | 1259 | 308 | 64 | 811 |
| Lang, Adam, Cleveland, Ohio. Propelling mechanism | 504,974 | Aug. 29 | 3345 | 836 | 64 | 1244 |
| Langer, Gotthold, assignor to H. G. Stiebel, Jr., St. Louis, Mo. Street-sprinkler | 503,093 | Aug. 8 | 1425 | {351 352} | 64 | 842 |
| Langhorst, John H., Jackson, Cal. Timepiece-escapement | 504,223 | Aug. 29 | 3261 | 813 | 64 | 1228 |
| Langmuir, Woodburn, Toronto, Canada. Cushion-tire | 502,731 | Aug. 8 | 935 | 202 | 64 | 734 |
| Langsford, Samuel P., *et al.* (See Phillips, James M., assignor.) | | | | | | |
| Lanier, James B. (See Towel, Samuel A., assignor.) | | | | | | |
| Lannert, John A., and W. R. Jeavons, Cleveland, Ohio. Vapor-burner | 504,129 | Aug. 29 | 3103 | 776 | 64 | 1199 |
| Lants, William F., Akron, Ohio. Attachment for squares | 503,050 | Aug. 8 | 1356 | 335 | 64 | 831 |
| Lapham, Charles, *et al.* (See Weaver, William, assignor.) | | | | | | |
| Lapin, Jean. (See Croes, Mergaert, and Lapin.) | | | | | | |
| Lappe, Alfred A. (See Lappe, Charles H. and A. A.) | | | | | | |
| Lappe, Charles H. and A. A., Allegheny, Pa. Machine for coloring leather | 504,224 | Aug. 29 | 3262 | 814 | 64 | 1228 |
| Laraway, George W., Hartford, Conn., assignor of one-half to J. E. West, St. Cloud, Minn. Machine for making pails | 504,881 | Sept. 12 | 939 | {342 343} | 64 | 1461 |
| Lariat Manufacturing Company. (See Shaw, Edgar, assignor.) | | | | | | |
| Larned, Sherwood J. (See Lockwood and Larned.) | | | | | | |
| Larned, Sherwood J., Evanston, Ill., and F. A. Pickernell, Newark, N. J., assignors to American Telephone and Telegraph Company, of New York. Telephone circuit and apparatus | 501,085 | July 11 | 867 | 225 | 64 | 173 |
| Larned, Sherwood J., Evanston, Ill., and F. A. Pickernell, Newark, N. J., assignors to American Telephone and Telegraph Company, of New York. Station apparatus for telephone-circuits | 501,086 | July 11 | 870 | 226 | 64 | 174 |
| Larson, Charles J., Lake Park, Minn. Steam-boiler separator | 505,709 | Sept. 26 | 2362 | 597 | 64 | 1753 |
| Larson, Martin L., Warren, Minn. Stove | 505,772 | Sept. 26 | 2461 | 620 | 64 | 1772 |
| Larsson, Johan, assignor to himself and F. Peterson, Ludington, Mich. Floating signal for locating sunken vessels | 504,225 | Aug. 29 | 3264 | 815 | 64 | 1229 |
| Lasbury, George B., *et al.* (See Jones, John M., assignor.) | | | | | | |
| Laski, Albert de, Cleveland, Ohio. Circular loom | 502,231 | July 25 | 2714 | {685 686} | 64 | 542 |
| Laski, Albert de, Cleveland, Ohio. Circular loom | 503,544 | Aug. 15 | 2160 | 541 | 64 | 989 |
| Laski, Albert de, Cleveland, Ohio. Take-up mechanism for circular looms | 503,563 | Aug. 22 | 2654 | 664 | 64 | 1100 |
| Latcher, John W., Edinburg, N. Y. Mail-bag | 502,590 | Aug. 1 | 458 | 110 | 64 | 651 |
| Latin, David F., Clinton, Mass. Locking device for folding cranks | 503,747 | Aug. 22 | 2512 | 625 | 64 | 1070 |
| Latta, Emmit G., Friendship, assignor of one-half to H. D. Blakeslee, Buffalo, N. Y. Strap-loop | 505,710 | Sept. 26 | 2363 | 597 | 64 | 1753 |
| Lattig, Jacob W., Easton, Pa. Electric signal apparatus | 502,626 | Aug. 1 | 633 | 151 | 64 | 693 |
| Lattig, Jacob W., Easton, Pa. Railway-track electric annunciator | 502,627 | Aug. 1 | 635 | 152 | 64 | 693 |
| Latulip, Frederick, Syracuse, N. Y., assignor to Syracuse Specialty Manufacturing Company, of New York. Ferrule. (Reissue) | 11,357 | Aug. 8 | 1472 | 361 | 64 | 851 |
| Laube, Godfried. (See Hymans, Joseph, assignor.) | | | | | | |
| Lauch, Richard. (See Ulrich and Lauch.) | | | | | | |
| Lauch, Richard, assignor to Farbenfabriken, vormals Fr. Bayer & Co., Elberfeld, Germany. Substantive brown dye | 503,148 | Aug. 15 | 1597 | ..... | 64 | 874 |
| Lauch, Richard, and C. Krekeler, assignors to Farbenfabriken, vormals Fr. Bayer & Co., Elberfeld, Germany. Black azo dye | 502,368 | Aug. 1 | 199 | ..... | 64 | 602 |
| Lauch, Richard, and C. Krekeler, assignors to Farbenfabriken, vormals Fr. Bayer & Co., Elberfeld, Germany. Reddish-blue azo dye | 502,369 | Aug. 1 | 200 | ..... | 64 | 602 |
| Lauder, James N., assignor of one-half to C. W. Sherburne, Boston, Mass. Safety-stop for locomotives | 500,810 | July 4 | 440 | 116 | 64 | 81 |
| Laussedat, Auguste J. B., Paris, France. Cork-retainer | 502,126 | July 25 | 2540 | 637 | 64 | 508 |
| Lauth, John N., assignor of one-half to J. Green, St. Louis, Mo. Treating car-axles | 505,405 | Sept. 19 | 1799 | 465 | 64 | 1635 |
| Laux, Isaac R., Wadsworth, Ohio. Injector | 501,569 | July 18 | 1645 | 412 | 64 | 332 |
| Laval, George de, Warren, Mass., assignor to Geo. F. Blake Manufacturing Company, New York, N. Y. Pumping-engine | 502,521 | Aug. 1 | 460 | {110 111} | 64 | 651 |
| Laval, George de, Warren, Mass., assignor to Geo. F. Blake Manufacturing Company, New York, N. Y. Automatic feed apparatus | 503,972 | Aug. 29 | 2852 | 716 | 64 | 1153 |
| Lavender, Charles F., assignor of one-half to T. Fane, Toronto, Canada. Wheel-tire | 503,704 | Aug. 22 | 2436 | 607 | 64 | 1054 |
| Lawbaugh, George W., Geneseo, Ill. Clothes-pounder | 501,606 | July 18 | 1706 | 425 | 64 | 343 |
| Lawless, William T. (See Hellyer and Lawless.) | | | | | | |
| Lawrence, Armand M., Newark, N. J. Railway-ticket holder | 505,773 | Sept. 26 | 2463 | 621 | 64 | 1772 |
| Lawrence Electric Company. (See Lawrence, William, assignor.) | | | | | | |
| Lawrence, George W., Eau Claire, Wis. Refrigerator ice-rack | 501,281 | July 11 | 1187 | 301 | 64 | 231 |
| Lawrence, R. M., *et al.* (See Lawrence, William B., assignor.) (Reissue.) | | | | | | |
| Lawrence, William, Chicago, Ill. Smoke-preventer | 502,496 | Aug. 1 | 419 | 99 | 64 | 673 |
| Lawrence, William, assignor to Lawrence Electric Company, New York, N. Y. Electric engine | 503,487 | Aug. 15 | 2071 | {516 517} | 64 | 972 |
| Lawrence, William, assignor to Lawrence Electric Company, New York, N. Y. Current-conveyer for electric railways | 505,204 | Sept. 19 | 1477 | 385 | 64 | 1574 |
| Lawrence, William B., assignor to L. S. Sullivant and R. M. Lawrence, Columbus, Ohio. Printing-press. (Reissue) | 11,352 | July 18 | 2197 | {546 547} | 64 | 427 |
| Lawrence, William C., Casselton, N. D. Wrench | 504,305 | Aug. 29 | 3391 | 848 | 64 | 1253 |
| Lawrence, William J., Kalamazoo, Mich. Harrow | 501,012 | July 4 | 750 | 196 | 64 | 137 |
| Lawrence, William J., Kalamazoo, Mich. Harrow | 503,545 | Aug. 15 | 2165 | 541 | 64 | 990 |



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|---|---|---|---|---|---|---|
| Lawson, Thomas A. (See Green and Lawson.) | | | | | | |
| Le Fevre, Charles F., Hagerstown, Md. Cement | 504,477 | Sept. 5 | 270 | ..... | 64 | 1180 |
| Le Plongeon, Augustus, Brooklyn, N. Y. Toy | 502,101 | July 25 | 2500 | 628 | 64 | 500 |
| Learned, Henry, Pomona, Fla. Orange-cleaning machine | 503,910 | Aug. 15 | 1629 | 400 | 64 | 894 |
| Leary, William A., Holyoke, Mass. Fountain-pen | 500,811 | July 4 | 442 | 116 | 64 | 81 |
| Leaver, James M., assignor of one-half to E. J. Vance, Bay City, Mich. Box | 501,088 | July 11 | 879 | 226 | 64 | 176 |
| Lechner, Francis M., Columbus, Ohio. Mining-machine | 503,607 | Aug. 22 | 2287 | {570 571} | 64 | 1057 |
| Lederer, Leonhard, Munich, assignor to C. F. Boehringer & Soehne, Waldhof, near Mannheim, Germany. Amido-crotonylanilid and making it | 503,748 | Aug. 22 | 2513 | ..... | 64 | 1070 |
| Lederle, Theodore. (See Schuhlein, George, assignor.) | | | | | | |
| Lee, Benjamin. (See Kirk and Lee.) | | | | | | |
| Lee, Charles and C. L., Jr., Burbank, Ohio. Fruit-picker | 505,556 | Sept. 26 | 2095 | 532 | 64 | 1704 |
| Lee, Charles L., Jr. (See Lee, Charles and C. L., Jr.) | | | | | | |
| Lee, Charles T., Boston, Mass. Incandescent-lamp socket | 503,349 | Aug. 15 | 1861 | 460 | 64 | 934 |
| Lee, David A., and M. F. Snyder, Marietta, Ind. Car-coupling | 502,304 | Aug. 1 | 79 | 18, 19 | 64 | 581 |
| Lee Fire Proof Construction Company. (See Lee, Thomas A., assignor.) (Reissue.) | | | | | | |
| Lee, George B., Providence, R. I. Metallic setting for stained-glass windows | 500,587 | July 4 | 75 | 22 | 64 | 15 |
| Lee, Sydney. (See Williams, Thomas J., assignor.) | | | | | | |
| Lee, Thomas A., Kansas City, Mo. Fireproof partition | 501,622 | July 18 | 1732 | 432 | 64 | 347 |
| Lee, Thomas A., Kansas City, Mo. Non-shearing rod for strengthening concrete work | 505,664 | Sept. 26 | 2278 | 578 | 64 | 1739 |
| Lee, Thomas A., New York, N. Y., assignor to Lee Fire Proof Construction Company, of Colorado. Fireproof floor. (Reissue) | 11,356 | Aug. 8 | 1467 | 360 | 64 | 850 |
| Lee, William B., assignor of one-half to D. Wolf and Z. A. Johnson, Ozark, Mo. Plow or cultivator tooth | 505,425 | Sept. 19 | 1839 | 473 | 64 | 1648 |
| Leedham, Russell C., Salt Lake City, Utah Ter. Roller-skate | 504,236 | Aug. 29 | 3265 | 815 | 64 | 1229 |
| Lefever, Amos B., Leacock, Pa. Car-coupling | 502,305 | Aug. 1 | 81 | 19 | 64 | 581 |
| Legenisel, Eugene. (See Walrand and Legenisel.) | | | | | | |
| Legg, Benjamin A., and A. Keil, McKeesport, assignors to S. S. Brown, Pittsburg, Pa. Mining-machine | 501,795 | July 18 | 2023 | 499 | 64 | 397 |
| Leggett, Clinton H., New York, N. Y. Bottle for glue, &c | 501,282 | July 11 | 1188 | 301 | 64 | 231 |
| Lehmann, David, Halstead, Kans. Fish-hook | 503,864 | Aug. 22 | 2667 | 668 | 64 | 1100 |
| Lehmann, Heinrich, assignor to C. Doehring, New York, N. Y. Ceiling or wall | 503,721 | Aug. 22 | 2466 | 613 | 64 | 1060 |
| Lehnkering, August L., *et al.* (See Ellis, Edgar E., assignor.) | | | | | | |
| Leibman, Frank J., assignor to E. P. Reichhelm & Co., New York, N. Y. Gas-burner | 501,283 | July 11 | 1190 | 301 | 64 | 231 |
| Leineweber, Herman, assignor to Chicago Meat Chopper Company, Chicago, Ill. Meat-chopping apparatus | 502,440 | Aug. 1 | 324 | 76, 77 | 64 | 625 |
| Leipsiger, Siegmund. (See Seibert, Nicholas, assignor.) | | | | | | |
| Leith, Harvey I., Providence, R. I. Bottle | 505,469 | Sept. 26 | 1903 | 490 | 64 | 1668 |
| Leland, Faulconer & Norton Company. (See Norton, Charles H., assignor.) | | | | | | |
| Lemley, Ernest H. (See Russ, John D., assignor.) | | | | | | |
| Lemman, John, Wakefield, Mass. Car-seat | 504,892 | Sept. 12 | 943 | 243 | 64 | 1462 |
| Lemp, Hermann. (See Wightman and Lemp.) | | | | | | |
| Lemp, Hermann, Lynn, Mass., assignor to Thomson Electric Welding Company, of Maine. Electric welding apparatus | 504,496 | Sept. 5 | 308 | 78 | 64 | 1327 |
| Lemp, Hermann, Lynn, Mass., assignor to Thomson Electric Welding Company, of Maine. Method of and apparatus for regulating alternating-current dynamos | 504,497 | Sept. 5 | 311 | 78, 79 | 64 | 1328 |
| Lenars, Felix A., Shiloh, assignor of one-half to C. F. Moore, Cleveland, Ohio. Wagon-reach | 502,419 | Aug. 1 | 283 | 67 | 64 | 618 |
| Lenhert, Samuel B. (See Albright and Lenhert.) | | | | | | |
| Leo, Ansel, London, England. Collapsible ladder | 501,950 | July 25 | 2263 | 566 | 64 | 456 |
| Leonard, Arthur G., New York, N. Y. Railway-signal | 502,441 | Aug. 1 | 325 | 77 | 64 | 626 |
| Leonard, Ben S. (See Piatt, William M., assignor.) | | | | | | |
| Leonard, David A., Shannon, Ill. Nut-lock | 504,596 | Sept. 5 | 466 | 119 | 64 | 1356 |
| Leonard, Franklin, Chadwick's Mills, assignor to Leonard Manufacturing Company, New Hartford, N. Y. Harvesting-machine | 501,890 | July 18 | 2166 | 537 | 64 | 422 |
| Leonard Manufacturing Company. (See Leonard, Franklin, assignor.) | | | | | | |
| Leonhard, Gottlob T., Paterson, N. J. Machine for making vegetable parchment-paper | 500,915 | July 4 | 594 | {155 156} | 64 | 109 |
| Leonhardt & Co., A. (See Bender, Fritz, assignor.) | | | | | | |
| Leonhardt, Martin W., St. Louis, Mo. Disintegrator | 500,916 | July 4 | 597 | 156 | 64 | 110 |
| Leoni, Philippe, Paris, France. Automatic perfume-delivery apparatus | 504,842 | Sept. 12 | 886 | 228 | 64 | 1451 |
| Lesenberg, Carl C. (See Poppenburg, John von der, assignor.) | | | | | | |
| Leslie, Newton G., Kalamazoo, Mich. Copy-holder | 500,715 | July 4 | 293 | 79 | 64 | 54 |
| Lester, Mame, Logansport, Ind. Type-writer easel | 505,557 | Sept. 26 | 2096 | 532 | 64 | 1704 |
| Lester, Mame, Logansport, Ind. Attachment for unloading box-cars | 505,558 | Sept. 26 | 2097 | 532 | 64 | 1704 |
| Lever, Oswald, and W. S. Grundy, Philadelphia, Pa. Cop and bobbin winding mechanism | 503,325 | Aug. 15 | 1824 | {451 452} | 64 | 927 |
| Levy, Joseph L., New York, N. Y. Car-truck | 502,522 | Aug. 1 | 461 | {111 112} | 64 | 651 |
| Levy, Max, Philadelphia, Pa. Holder for plates in the manufacture of photo-engravings | 504,597 | Sept. 5 | 467 | 119 | 64 | 1357 |
| Levy, Salomon S. (See Jourdan, Armand G., assignor.) | | | | | | |
| Lewis, Alphonso T., Knoxville, Tenn. Car-coupling | 501,432 | July 11 | 1435 | 360 | 64 | 276 |
| Lewis, Charles H., Baltimore, Md. Brush or tool holder | 504,452 | Sept. 5 | 224 | 60 | 64 | 1312 |
| Lewis, Charles S., assignor of one-half to W. E. Fulton, Waterbury, Conn. Fare-register | 504,731 | Sept. 12 | 692 | 174 | 64 | 1417 |
| Lewis, Frank E. (See Pinkham and Lewis.) | | | | | | |
| Lewis, Frederick K. (See Pfaff and Lewis.) | | | | | | |
| Lewis, George T., Philadelphia, Pa. Manufacturing oxide of zinc | 501,189 | July 11 | 1049 | ..... | 64 | 206 |
| Lewis, George T., Philadelphia, Pa. Preparing oxide-of-zinc pigment | 502,822 | Aug. 8 | 991 | ..... | 64 | 763 |
| Lewis, Herbert R. (See Tiefel, Leonard C., assignor.) | | | | | | |
| Lewis, Isaac N., Fort Wadsworth, N. Y. Electric car-lighting system | 504,681 | Sept. 5 | 604 | {154 155} | 64 | 1384 |
| Lewis, James, Penarth, England. Measuring apparatus for liquids | 503,149 | Aug. 15 | 1529 | 375 | 64 | 875 |
| Lewis, James W., Ganister, Pa. Oil-cloth cutter | 503,546 | Aug. 15 | 2167 | 541 | 64 | 990 |
| Lewis, James W., and W. J. Estep, Ganister, Pa. Bait-box | 503,782 | Aug. 22 | 2467 | 613 | 64 | 1060 |
| Lewis, John A. (See Reneau, Charles W., assignor.) | | | | | | |
| Lewis, Samuel H. (See Goodwin and Lewis.) | | | | | | |
| Lewis, Samuel W., Brooklyn, N. Y. Hydrant-valve. (Reissue) | 11,360 | Aug. 15 | 2203 | 550 | 64 | 997 |
| Leyda, Isaac N. (See Leyda, James H. and I. N.) | | | | | | |
| Leyda, James H. and I. N., Allegheny, Pa. Obstetrical appliance | 504,598 | Sept. 5 | 468 | 120 | 64 | 1357 |
| Libbey Glass Company. (See Kimble, Loren W., assignor.) | | | | | | |
| Libbey, Hosea W., Boston, Mass. House-door letter-box | 502,673 | Aug. 1 | 736 | 174 | 64 | 689 |
| Libbey, Hosea W., Boston, Mass. Passenger-car | 502,908 | Aug. 8 | 1126 | 277 | 64 | 769 |
| Libbey, Hosea W., Boston, Mass. Electric battery | 504,130 | Aug. 29 | 3104 | 777 | 64 | 1199 |

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|---|---|---|---|---|---|---|
| Lichtenstein, Herman, Hoboken, N. J., assignor to S. W. Richards, New York, N. Y. Umbrella-runner | 501,089 | July 11 | 880 | 227 | 64 | 176 |
| Liebenstein, Edward H. (See Hudel and Liebenstein.) | | | | | | |
| Lieber, Carl H., Indianapolis, Ind. Supporting-standard for pictures | 501,149 | July 11 | 989 | 252 | 64 | 195 |
| Lied, Fred, Columbus, Ohio. Warming device | 502,490 | Aug. 1 | 201 | 48 | 64 | 602 |
| Lifschütz, Isaac, Grünau, near Berlin, Germany. Violet-red dye | 500,917 | July 4 | 598 | ..... | 64 | 110 |
| Liggett, William K. (See Pluckharp and Liggett.) | | | | | | |
| Light, Melven, Sheldon, Ill. Umbrella-support | 504,843 | Sept. 12 | 868 | 298 | 64 | 1451 |
| Lillard, William B. (See Hall and Lillard.) | | | | | | |
| Lillie, George, Peoria, Ill. Hand-truck | 500,661 | July 4 | 209 | 54 | 64 | 41 |
| Lillie, William F., Hamilton, assignor of one-half to F. D. Kees, Beatrice, Neb. Corn-husking device | 505,711 | Sept. 26 | 2364 | 597 | 64 | 1754 |
| Lincoln, William H., Worcester, Mass. Puzzle | 505,601 | Sept. 26 | 2174 | 549 | 64 | 1719 |
| Lind, Hugh, assignor of one-half to J. R. Snyder, Whitewater, Colo. Bicycle | 502,332 | July 25 | 2720 | 686 | 64 | 542 |
| Lindemann, August. (See Lindemann, Charles and A.) | | | | | | |
| Lindemann, Charles and A., Milwaukee, Wis. Manufacture of sheet-metal elbows | 502,044 | July 25 | 2411 | 607 | 64 | 493 |
| Lindestrom, Hjalmar, Rockford, Ill. Wheel-plow | 504,531 | Sept. 5 | 368 | 93 | 64 | 1338 |
| Lindley, Thomas H., Savannah, Iowa. Gate and mechanism therefor | 505,274 | Sept. 19 | 1581 | 412 | 64 | 1504 |
| Lindsay, William H., Bristol, England. Clutch | 502,732 | Aug. 8 | 836 | 203 | 64 | 734 |
| Lindstrom, John, Henderson, Ky. Self-acting water-key for wind-instruments | 504,354 | Sept. 5 | 60 | 16 | 64 | 1292 |
| Lines, John, assignor to Scovill Manufacturing Company, Waterbury, Conn. Combined curtain ring and pin | 504,532 | Sept. 5 | 369 | 93 | 64 | 1338 |
| Linhard, John A. (See Phillips and Linhard.) | | | | | | |
| Link-Belt Engineering Company. (See Caskey, Samuel S., assignor.) | | | | | | |
| Link-Belt Engineering Company. (See Dodge, James M., assignor.) | | | | | | |
| Link, Gustav, Duff, Nebr. Pilot-car | 505,406 | Sept. 19 | 1800 | 465 | 64 | 1635 |
| Links, Emil F., *et al.* (See Claussen, Edward E., assignor.) | | | | | | |
| Linscott, John M., Worcester, Mass. Let-off mechanism for looms | 501,518 | July 18 | 1569 | 395 | 64 | 316 |
| Linton, George E., Worcester, Mass. Electric switch | 500,918 | July 4 | 599 | 157 | 64 | 110 |
| Linton, Richard J., Manchester, England. Mechanism for printing folded fabrics, &c | 500,770 | July 4 | 340 | 98, 99 | 64 | 71 |
| Linville, Samuel R., Philadelphia, Pa., and L. F. Heitmansperger, Camden, N. J., assignors to United States Printing Telegraph Company, Philadelphia, Pa. Printing-telegraph | 504,739 | Sept. 12 | 668 | 175 | 64 | 1412 |
| Lipp, Louis, Cincinnati, Ohio. Combined strap and pivot hinge | 502,306 | Aug. 1 | 82 | 19 | 64 | 501 |
| Lippy, David, assignor to Barr Cash and Package Carrier Company, Mansfield, Ohio. Store-service apparatus | 501,480 | July 11 | 1505 | 379 | 64 | 289 |
| Lisk, David A., assignor of one-half to T. V. Fox, Clifton Springs, N. Y. Bottom for metal pails | 505,318 | Sept. 19 | 1660 | 428 | 64 | 1608 |
| Lisk, David A., Clifton Springs, and T. D. Brown, Canandaigua, N. Y. Oil-can | 504,788 | Sept. 12 | 793 | 200 | 64 | 1432 |
| Lister, Joseph, Chicago, Ill. Expansion-joint | 502,733 | Aug. 8 | 877 | 203 | 64 | 764 |
| Lister, Robert A., and M. Pedersen, Dursley, England. Centrifugal machine | 502,859 | Aug. 8 | 1042 | 255 | 64 | 773 |
| Lister, Robert A., and M. Pedersen, Dursley, England. Centrifugal liquid-separator | 504,809 | Sept. 12 | 828 | 210 / 211 | 64 | 1438 |
| Litch, Lemuel W., Swampscott, assignor to Lynn Counter Company, Lynn, Mass. Heel-stiffener machine | 503,608 | Aug. 22 | 2291 | 572 | 64 | 1027 |
| Lithgow Manufacturing Company. (See Kennedy, Logan P., assignor.) | | | | | | |
| Little, Eugene. (See Amsbury, Albert, assignor.) | | | | | | |
| Littleworth, Malcolm C., Duluth, Minn. Safety-clutch for inclined railways | 502,420 | Aug. 1 | 284 | 68 | 64 | 618 |
| Livingston, Edward, assignor of one-half to H. M. Isaacson, New Orleans, La. Automatic fire extinguisher and alarm | 504,998 | Sept. 12 | 1017 | 262 | 64 | 1476 |
| Livoni, John A. O., Marion, Kans. Hame-staple | 505,470 | Sept. 26 | 1905 | 491 | 64 | 1668 |
| Lloyd & Co., W. A. (See Lovelace, Robert S., assignor.) | | | | | | |
| Lobben, Peder, assignor to I. Johnson, Worcester, Mass. Ball-bearing for shafts | 502,809 | Aug. 22 | 2293 | 572 | 64 | 1027 |
| Locke, Daniel W., Bucyrus, Ohio. Sulky | 503,428 | Aug. 15 | 1974 | 490 | 64 | 954 |
| Locke, Edward H. (See Adams, John H., assignor.) | | | | | | |
| Looker, Alfred, and E. F. Gennert, New York, N. Y. Air-compressor pump | 501,090 | July 11 | 882 | 227 | 64 | 176 |
| Lockhart, William S., assignor to Automatic Gem and Gold Separator Syndicate, Limited, London, England. Ore-separator | 500,662 | July 4 | 210 | 54 | 64 | 41 |
| Lockhart, William S., assignor to Automatic Gem and Gold Separator Syndicate, Limited, London, England. Machine for sorting materials according to size | 500,771 | July 4 | 392 | 99 | 64 | 71 |
| Lockstaedt, Charles C., Chicago, Ill. Press | 502,523 | Aug. 1 | 466 | 112 | 64 | 652 |
| Lockwood & Co., C. N. (See Howell, John A., assignor.) | | | | | | |
| Lockwood, Elias R., Beatrice, Nebr. Drilling-machine | 504,509 | Sept. 5 | 470 | 120 | 64 | 1357 |
| Lockwood, Thomas D. (See Lockwood and Larned.) | | | | | | |
| Lockwood, Thomas D., Melrose, Mass., and S. J. Larned, Evanston, Ill., assignors to American Telephone and Telegraph Company, of New York, and American Bell Telephone Company, Boston, Mass. Electric signaling | 501,087 | July 11 | 874 | 226 | 64 | 175 |
| Lockwood, Thomas J., Muncie, Ind., assignor to National Cash Register Company, Dayton, Ohio. Adding device and register | 500,919 | July 4 | 600 | 157 | 64 | 110 |
| Lodor, James C., Wilmington, N. C. Labeling or mailing machine | 502,045 | July 25 | 2413 | 608 | 64 | 493 |
| Loersch, Jean, Jr., Dusseldorf, Germany. Coffin | 501,190 | July 11 | 1050 | 265 | 64 | 206 |
| Loeser, Leo, Buffalo, N. Y. Bridle-blind | 502,197 | July 25 | 2660 | 672 | 64 | 531 |
| Loewenberg, Joseph, *et al.* (See Moskowitz and Young, assignors.) | | | | | | |
| Loewer, Henry, assignor to Loewer Sole-Rounder Company, Rochester, N. Y. Sole-rounding machine | 502,421 | Aug. 1 | 285 | 68 / 69 / 70 | 64 | 619 |
| Loewer Sole-Rounder Company. (See Loewer, Henry, assignor.) | | | | | | |
| Lofdahl, Eric O., Rockford, Ill. Combined bit and saw | 505,719 | Sept. 26 | 2365 | 597 | 64 | 1754 |
| Lofton, Herbert M., Savannah, Ga. Air-brake valve | 503,244 | Aug. 15 | 1682 | 413 / 414 | 64 | 903 |
| Logan, Martin, New York, N. Y. Drain for stalls | 502,004 | July 25 | 2341 | 586 / 587 | 64 | 479 |
| Lohlker, Adam H., St. Paul, Minn. Paper-hanging machine | 505,109 | Sept. 19 | 1736 | 342 | 64 | 1548 |
| Lombard, Nathaniel, Boston, assignor of one-half to H. A. Clark, Brookline, Mass. Automatic gas-cut-off apparatus | 501,951 | July 25 | 2366 | 567 | 64 | 456 |
| Long, Albert, Chicago, Ill., and C. McCumber, Fond du Lac, Wis. Water-heater | 505,599 | Sept. 26 | 2034 | 519 | 64 | 1691 |
| Long, Clark R., and C. H. Kline, Halsey, Oreg. Steam-cooker | 501,952 | July 25 | 2367 | 567 | 64 | 456 |
| Long, Daniel W., and C. Dimick; said Long assignor to said Dimick; said Dimick assignor of two-thirds to A. G. Hawley and C. B. Cheadle, Lockport, Ill. Advertising-valine | 501,013 | July 4 | 752 | 197 | 64 | 137 |
| Long, Eli L., Cheektowaga, N. Y. Alternating dumping-grate | 501,023 | July 18 | 1735 | 432 | 64 | 348 |
| Long, James W. (See Stone, Charles H. and A., assignors.) | | | | | | |
| Long, Malcolm W., Harrisburg, Pa., assignor of one-half to T. W. Snow, Batavia, Ill. Electric motor | 501,842 | July 18 | 2080 | 513 / 514 | 64 | 407 |
| Long Manufacturing Company. (See Long, William H., assignor.) | | | | | | |
| Long, Timothy, assignor of one-half to Excelsior Iron Works Company, Cleveland, Ohio. Elevator-bucket | 504,355 | Sept. 5 | 62 | 17 | 64 | 1292 |



*Alphabetical list of patentees, July to September, inclusive*—Continued.

| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drgs. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Long, William H., assignor to Long Manufacturing Company, Washington, Ill. Hay or hog rack | 500,920 | July 4 | 605 | 158 | 64 | 111 |
| Longstreth, Charles, assignor to United States Metallic Packing Company, Philadelphia, Pa. Metallic rod-packing | 503,723 | Aug. 22 | 2468 | 613 | 64 | 1060 |
| Loomer, Henry M., Boston, Mass., assignor to Tapley Machine Company, Portland, Me. Heel-burnishing machine | 505,050 | Sept. 12 | 1219 | 314 | 64 | 1514 |
| Loomis, Burdett, Hartford, Conn. Furnace-grate | 503,211 | Aug. 15 | 1631 | 400 | 64 | 894 |
| Loomis, E. Y. (See Colby, Edward J., assignor.) | | | | | | |
| Lorens, William A. (See Honiss, William H., assignor.) | | | | | | |
| Lorimer, Joseph H., Philadelphia, Pa. Dyeing-machine | 505,471 | Sept. 26 | 1906 | 491 | 64 | 1669 |
| Lorio, Joseph N. (See Shaw and Lorio.) | | | | | | |
| Lorrain, James G., London, England. Method of and apparatus for extinguishing fires | 501,519 | July 18 | 1571 | 395 | 64 | 317 |
| Losey, James, assignor of two-thirds to E. W. Battles and O. E. Jennings, Freeport, Mich. Gate | 504,392 | Sept. 5 | 129 | 34 | 64 | 1294 |
| Loughry, James C., Greensburg, Pa. Cracker-box | 505,110 | Sept. 19 | 1328 | 343 | 64 | 1548 |
| Lounsbery, Horace W., Wellsborough, Pa. Steam-engine valve | 502,497 | Aug. 1 | 420 | 99 / 100 | 64 | 644 |
| Love, Louis E., Paducah, Ky. Stove attachment | 504,356 | Sept. 5 | 63 | 17 | 64 | 1283 |
| Lovejoy, William W., Cochituate, Mass. Catheter-holder | 503,973 | Aug. 29 | 2853 | 716 | 64 | 1153 |
| Lovelace, Robert S., Henstridge, assignor to W. A. Lloyd & Co., Birmingham, England. Crank | 503,865 | Aug. 22 | 2668 | 669 | 64 | 1100 |
| Loveland, Alfred W. (See Hayward, King, and Loveland.) | | | | | | |
| Low, Abbot A., Brooklyn, N. Y. Card-canceling machine | 505,627 | Sept. 26 | 2268 | 559 | 64 | 1736 |
| Low, Garrett W., and W. Shakespeare, Jr., Kalamazoo, Mich. Photographic-printing frame | 505,111 | Sept. 19 | 1329 | 343 | 64 | 1548 |
| Lowell Machine Shop. (See Canning, William P., assignor.) | | | | | | |
| Lowell Machine Shop. (See Shepherd and Midgley, assignors.) | | | | | | |
| Lowell Machine Shop. (See Whitaker, Channing, assignor.) | | | | | | |
| Lowenberg, Benjamin, Norfolk, Va. Combined shirt-collar and necktie | 500,921 | July 4 | 606 | 158 | 64 | 111 |
| Lowenberg, Benjamin, Norfolk, Va. Shirt and collar therefor | 500,922 | July 4 | 607 | 158 | 64 | 111 |
| Lowrie, Harvey C., Denver, Colo. Permutation-padlock | 502,307 | Aug. 1 | 83 | 19, 20 | 64 | 581 |
| Lowrie, Harvey C., Denver, Colo. Permutation-padlock | 502,308 | Aug. 1 | 86 | 20 | 64 | 582 |
| Lowry, William H., Mountain Grove, Mo. Box-fastener | 503,285 | Aug. 15 | 1752 | 433 | 64 | 915 |
| Losier, Henry A. (See Huss, Rudolph W., assignor.) | | | | | | |
| Luburg, Charles E., Philadelphia, Pa., assignor to Luburg Manufacturing Company, of Pennsylvania. Tire for bicycles | 505,530 | Sept. 26 | 2035 | 519 | 64 | 1692 |
| Luburg Manufacturing Company. (See Luburg, Charles E., assignor.) | | | | | | |
| Lucas, Cecil H., Gillivan, Ohio. Gate | 504,357 | Sept. 5 | 64 | 17 | 64 | 1283 |
| Luce, Bartlett P., Boston, Mass. Lamp-burner | 501,284 | July 11 | 1191 | 301 | 64 | 272 |
| Luce, William B., assignor of one-third to E. S. Ritchie & Sons, Brookline, Mass. Electric-arc lamp | 505,051 | Sept. 12 | 1222 | 315 | 64 | 1514 |
| Luckenbach, Wilson I. (See Yeager, Luckenbach, and Balliet.) | | | | | | |
| Ludloff, Friedrich, Berlin, Germany. Centrifugal separator and regulating the supply thereto | 504,422 | Sept. 5 | 182 | 47, 48 | 64 | 1305 |
| Ludlow, Rees A., Globe, assignor of two-thirds to L. C. F. and O. H. O. Wynne, Hanford, Cal. Churn | 502,628 | Aug. 1 | 637 | 152 | 64 | 664 |
| Ludlow, Samuel W., Madisonville, Ohio. Fire-alarm apparatus | 502,734 | Aug. 8 | 838 | 203 | 64 | 735 |
| Ludwig, Oscar, assignor of three-fourths to J. L. Board, R. D. Wardwell, and E. M. Board, trustee, Chicago, Ill. Smelting-furnace | 505,112 | Sept. 19 | 1330 | 343 | 64 | 1549 |
| Luebkert, Henry, *et al.* (See Heinlein, John F., assignor.) | | | | | | |
| Luginbühl, Benjamin M., Bluffton, Ohio. Truss | 501,796 | July 18 | 2025 | 489 | 64 | 397 |
| Lugrin, Henry A., Brooklyn, assignor to A. Wittnauer, New York, N. Y. Stop-watch | 505,052 | Sept. 12 | 1223 | 315 | 64 | 1514 |
| Luhmann, Eduard, Andernach, Germany. Making carbonic acid | 503,286 | Aug. 15 | 1753 | 433 | 64 | 915 |
| Lührig, Carl, Dresden, Germany. Tramway-vehicle | 502,442 | Aug. 1 | 327 | 77, 78 | 64 | 626 |
| Lührig, Carl, Dresden, Germany. Locomotive-vehicle | 502,443 | Aug. 1 | 329 | 78, 79 | 64 | 626 |
| Luke, James A., assignor to B. S. Van Tuyl, Petrolia, Canada. Vehicle-spring | 504,043 | Aug. 29 | 2967 | 742 | 64 | 1173 |
| Lundell, Robert, Brooklyn, assignor of two-thirds to E. H. Johnson, New York, N. Y. Dynamo-electric machine or electric motor | 505,665 | Sept. 26 | 2280 | 578 | 64 | 1739 |
| Lundstrom, Carl J., assignor to D. H. Burrell & Co., Little Falls, N. Y. Cheese-press | 505,571 | Sept. 26 | 2122 | 537 | 64 | 1709 |
| Lundy, John C., assignor of one-half to F. A. Fairchild, Winnepeg, Canada. Attachment for thrashing-machines | 502,979 | Aug. 8 | 1259 | 308 | 64 | 811 |
| Lunken, Edmund H., Cincinnati, Ohio. Combined burglar and fire proof shutter | 504,533 | Sept. 5 | 369 | 93 | 64 | 1338 |
| Lunken, Edmund H., assignor to Lunkenheimer Company, Cincinnati, Ohio. Steam-whistle | 503,547 | Aug. 15 | 2168 | 542 | 64 | 990 |
| Lunkenheimer Company. (See Lunken, Edmund H., assignor.) | | | | | | |
| Lupfer, Edgar N., *et al.* (See Riser, Sherman N., assignor.) | | | | | | |
| Lupton, Thomas M., Winchester, Va. Shutter-worker | 503,866 | Aug. 22 | 2669 | 669 | 64 | 1100 |
| Lurie, Abraham, New York, N. Y. Bench-vise | 502,127 | July 25 | 2341 | 637 | 64 | 508 |
| Luscomb, John F., Marshfield, Mass. Banjo | 504,410 | Sept. 12 | 830 | 211 | 64 | 1439 |
| Lussigny, Henri A. A., Paris, France. Carrotting fur | 501,797 | July 18 | 2027 | ..... | 64 | 397 |
| Lussigny, Henri A. A., Paris, France. Carrotting fur | 501,798 | July 18 | 2027 | ..... | 64 | 397 |
| Luetnauer, Eugen, Pforzheim, Germany. Pocket-eraser | 501,570 | July 18 | 1646 | 412 | 64 | 332 |
| Luther, William H., Glen Ellyn, Ill. Automatically-folding crane for mail-bags | 501,150 | July 11 | 990 | 252 | 64 | 195 |
| Lyall, James, New York, N. Y. Woven fabric for wheel-tires | 504,883 | Sept. 12 | 944 | 241 | 64 | 1462 |
| Lyall, James, New York, N. Y. Woven fabric for wheel-tires | 505,294 | Sept. 19 | 1626 | 420 | 64 | 1603 |
| Lyle, Jefferson Y., assignor of one-half to F. F. Smith, S. L. Boddy, and D. H. Bloom, Chattanooga, Tenn. Machine for sharpening gin-saws | 505,774 | Sept. 26 | 2464 | 631 | 64 | 1772 |
| Lyle, Jennie R., Dowagiac, Mich. Nursery-case for children's carriages | 501,580 | July 18 | 1573 | 395 | 64 | 317 |
| Lyle, William P., assignor of one-half to W. J. Simpson, Philadelphia, Pa. Game or exercising apparatus | 503,379 | Aug. 15 | 1911 | 473 | 64 | 943 |
| Lynch, Edward P. (See Stebbins, Milton W., assignor.) | | | | | | |
| Lynn Counter Company. (See Litch, Lemuel W., assignor.) | | | | | | |
| Lynn, Mirabeau N. (See Sheldon and Lynn.) | | | | | | |
| Lyon, Edward H., Brooklyn, N. Y. Galvanic battery | 502,405 | Aug. 1 | 259 | 61 | 64 | 613 |
| Lyon & Healy. (See Peloubet, Jarvis, assignor.) | | | | | | |
| Lyon, James C., Baltimore, Md. Manufacturing linoleum or oil floor-cloth | 500,812 | July 4 | 443 | 116 | 64 | 82 |
| Lyte, Cecil H. M. (See Lyte, Farnham M. and C. H. M.) | | | | | | |
| Lyte, Farnham M. and C. H. M., London, England. Producing chlorine and purifying lead | 503,429 | Aug. 15 | 1975 | 490 | 64 | 955 |
| Lytle, Frank J., Humboldt, Nebr. Neck-yoke | 503,150 | Aug. 15 | 1531 | 376 | 64 | 875 |
| M. A. Furbush & Son Machine Company. (See Knowlton and Meyer, assignors.) | | | | | | |
| Mabbett, Truman, Philadelphia, Pa. Ice shredder or shaver | 500,923 | July 4 | 608 | 158 | 64 | 111 |
| MacColl, Hector, Saxonia, Strandtown, Ireland. Stern-bearing for screw-propeller shafts | 505,666 | Sept. 26 | 2281 | 579 | 64 | 1739 |
| MacDonald, Allan A., Newark, N. J., assignor to John A. Riley & Sloan Company, of New Jersey. Cast-off for suspenders | 502,674 | Aug. 1 | 728 | 174 | 64 | 760 |
| MacEachen, Samuel, assignor of one-half to T. J. Foster, Scranton, Pa. Apparatus for drilling wells | 503,051 | Aug. 8 | 1357 | 335 / 336 | 64 | 831 |

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|---|---|---|---|---|---|---|
| | | | Spec. | Dr'g. | Vol. | Page. |
| MacHaffie, John, Schenectady, N. Y. Electric motor | 500,663 | July 4 | 211 | 55, 56, 57 | 64 | 41 |
| MacIntosh, Elizabeth H., Little Rock, Ark. Dough raiser | 505,364 | Sept. 19 | 1734 | 449 | 64 | 1622 |
| MacLeod, Charles, Chicago, Ill. Garbage-receptacle | 503,212 | Aug. 15 | 1632 | 401 | 64 | 894 |
| MacRae, Charles J., assignor of three-fourths to E. J. Piper and H. H. Bollman, St. Louis, Mo. Adjustable music-stand | 502,980 | Aug. 8 | 1361 | 309 | 64 | 811 |
| Macay, Juan F. N., Charapoto, Ecuador. Extracting silver from ores | 504,109 | Aug. 29 | 3074 | ..... | 64 | 1194 |
| Macdougall, Matthew, Elizabeth, N. J., assignor to Singer Manufacturing Company of New Jersey. Machine-screw machine | 502,871 | Aug. 1 | 283 | 48 | 64 | 603 |
| Macdougall, Matthew, Elizabeth, N. J., assignor to Singer Manufacturing Company of New Jersey. Screw-cutting machine | 502,875 | Aug. 1 | 729 | 175 | 64 | 700 |
| Macfarlane, Alexander, Austin, Tex. Educational appliance | 505,667 | Sept. 26 | 2281 | 579 | 64 | 1740 |
| Machenheimer, John, Sr., Nauvoo, Ill. Car-coupling | 503,052 | Aug. 8 | 1360 | 336 | 64 | 831 |
| Machenheimer, John, Sr., Nauvoo, Ill. Car coupling | 503,053 | Aug. 8 | 1361 | 336 | 64 | 831 |
| Macher, John, assignor of two-thirds to R. Glasser, Pittsburg, Pa. Apparatus for decorating glass | 501,014 | July 4 | 732 | 197 | 64 | 137 |
| Mack, Carl F., R. M. Stough, guardian, assignor of one-half to C. P. Young, York, Pa. Bottling-machine | 503,064 | Aug. 8 | 1436 | 352 | 64 | 843 |
| Mack, Gustav, Nuremberg, Germany. Railway-rail-splashing apparatus | 505,205 | Sept. 19 | 1478 | 385 | 64 | 1574 |
| Mack, William B., Boston, Mass. Locomotive-boiler | 500,716 | July 4 | 295 | 80 | 64 | 55 |
| Mack, William B., Boston, Mass. Locomotive-boiler | 503,287 | Aug. 15 | 1754 | 433 | 64 | 916 |
| Mackenzie-Hughes, Edward W., assignor to Fox Solid Pressed Steel Company, Chicago, Ill. Cab for locomotives | 505,163 | Sept. 19 | 1410 | 363 | 64 | 1562 |
| Mackenzie-Hughes, Edward W., assignor to Fox Solid Pressed Steel Company, Chicago, Ill. Steam-chest-cover casing | 505,164 | Sept. 19 | 1411 | 363 | 64 | 1562 |
| Mackey, William T., Vancouver, Canada. Gang-saw mill | 501,799 | July 18 | 2028 | 499, 500 | 64 | 397 |
| Mackinney, William C., assignor to H. W. Butterworth & Sons Company, Philadelphia, Pa. Driving-gear for drying-rolls | 503,380 | Aug. 15 | 1912 | 474 | 64 | 944 |
| Mackintosh, John W., Brookline, Mass. Phonograph | 503,610 | Aug. 22 | 2295 | 573 | 64 | 1027 |
| Macmillan, James R., Menominee, Wis. Penholder | 501,285 | July 11 | 1193 | 302 | 64 | 232 |
| Macneel, Charles B., Philadelphia, Pa. Metallic railway tie or sleeper | 503,151 | Aug. 15 | 1532 | 376 | 64 | 875 |
| Macomb, Richard, Providence, R. I. Hat-support | 503,054 | Aug. 8 | 1363 | 336 | 64 | 831 |
| Macy, John W., Cincinnati, Ohio. Piano | 503,797 | Aug. 22 | 2579 | 648 | 64 | 1083 |
| Macy, John W., Cincinnati, Ohio. Piano | 502,534 | Aug. 1 | 470 | 113 | 64 | 653 |
| Maddock, William H., Pittsburg, Pa. Feed-table for rolling-mills | 504,733 | Sept. 12 | 697 | 175 | 64 | 1415 |
| Maddock, William H., Pittsburg, Pa. Transfer mechanism for rolling-mills | 504,393 | Sept. 5 | 131 | 34 | 64 | 1294 |
| Maddock, William H., Pittsburg, Pa. Feeding mechanism for rolling-mills | 504,394 | Sept. 5 | 132 | 35 | 64 | 1295 |
| Maddox, Joshua P., Westbrook, Me. Trolley-head | 504,395 | Sept. 5 | 134 | 35 | 64 | 1295 |
| Maddox, R. E. (See Turner, Ephraim M., assignor.) | 504,734 | Sept. 12 | 700 | 176 | 64 | 1415 |
| Maddox, William J., Jamestown, N. Y., assignor to G. D. Lane, Susquehanna, Pa. Folding table | 502,929 | Aug. 8 | 1170 | 288, 289 | 64 | 796 |
| Magee, John, *et al.* (See Tyler, Harry L., assignor.) | | | | | | |
| Magee, John H., Jr. (See Cumming and Magee.) | | | | | | |
| Magee, William J., New York, N. Y. Veterinary operating-table | 500,588 | July 4 | 76 | 22 | 64 | 15 |
| Mahaffey, James W., Williamsport, and A. F. Haldeman, Turbotville, Pa. Lifting-jack | 500,689 | July 4 | 251 | 67 | 64 | 47 |
| Maher, Edward. (See Flockhart, James, assignor.) | | | | | | |
| Maher, John L., Lynn, Mass. Wind-instrument | 504,396 | Sept. 5 | 135 | 36 | 64 | 1296 |
| Maisonneuve, Paul, Fruitvale, Cal. Fruit-stoning machine | 505,206 | Sept. 19 | 1479 | 385 | 64 | 1575 |
| Majert, Wilhelm, Gruenau, and A. Schmidt, assignors to Chemische Fabrik auf Actien, vormals E. Schering, Berlin, Germany. Piperazin hydrate | 505,113 | Sept. 19 | 1332 | ..... | 64 | 1549 |
| Makely, Mitrah. (See Sadler, Samuel B. and J. R., assignors.) | | | | | | |
| Malcolm, George F., *et al.* (See Seibert, Nicholas, assignor.) | | | | | | |
| Malcolm, James G., Toronto, Canada. Refrigerator | 505,114 | Sept. 19 | 1334 | 344 | 64 | 1549 |
| Mallasee, Lewis W., Pittsburg, Pa. Apparatus for casting ingots | 504,131 | Aug. 29 | 3105 | 777 | 64 | 1200 |
| Mallick, Albert F., Jamestown, N. D. Flash-light apparatus | 501,800 | July 18 | 2030 | 500 | 64 | 398 |
| Malonev, Michael, Ironton, Ohio. Rail-chair | 500,589 | July 4 | 78 | 22 | 64 | 15 |
| Mamaux, Albert. (See Mamaux, Isaac, assignor.) | | | | | | |
| Mamaux, Isaac, assignor to A. Mamaux, Pittsburg, Pa. Staple-setting machine | 501,891 | July 18 | 2169 | 537 | 64 | 423 |
| Mamerow, George T. (See Kruse, Gustav, assignor.) | | | | | | |
| Manmsen, John E., assignor of one-half to H. G. Gerdes, Sterling, Ill. Automatic register for barbers' chairs | 505,053 | Sept. 12 | 1225 | 315 | 64 | 1515 |
| Mandel, Joseph. (See Haberthur and Mandel.) | | | | | | |
| Mandleberg, Goodman C., Manchester, England. Manufacturing waterproof fabrics | 500,664 | July 4 | 219 | ..... | 64 | 42 |
| Manguino, Louis, Cottage Grove, Oreg. Lunch-bucket | 504,358 | Sept. 5 | 65 | 18 | 64 | 1283 |
| Manhattan Brass Company. (See Hipwell, Thomas, assignor.) | | | | | | |
| Mann, Charles L., Milwaukee, Wis. Cylindrical staved vessel | 503,055 | Aug. 8 | 1363 | 337 | 64 | 832 |
| Mann, Frederick C. (See Strong and Mann.) | | | | | | |
| Mann, George, assignor to G. F. Burton, Toronto, Canada. Advertising device | 501,015 | July 4 | 733 | 197 | 64 | 137 |
| Mann, George E., *et al.* (See Flohr, Otto, assignor.) | | | | | | |
| Manning, John C., and A. C. Wilson, Marshfield, Oreg. Grapple | 504,600 | Sept. 5 | 471 | 120 | 64 | 1356 |
| Mansfield, Walter F., *et al.* (See Maw, Thomas J., assignor.) | 502,569 | Aug. 1 | 536 | 138 | 64 | 665 |
| Manton, Joseph P., Providence, R. I. Endless-chain elevator | 504,044 | Aug. 29 | 2968 | 742 | 64 | 1173 |
| Marckwald, Willy, assignor to Chemische Fabrik auf Actien, vormals E. Schering, Berlin, Germany. Obtaining piperazin | 500,665 | July 4 | 220 | ..... | 64 | 42 |
| Marcus, Siegfried, Vienna, Austria-Hungary. Carbureting apparatus | 500,779 | July 4 | 383 | 100 | 64 | 71 |
| Marcus, Siegfried, Vienna, Austria-Hungary. Rotary engine | 503,611 | Aug. 22 | 2299 | 573 | 64 | 1028 |
| Marisg, Jacob S., Mason City, Ill. Horse-collar | 501,684 | July 18 | 1835 | 457 | 64 | 365 |
| Mark, Jacob. (See Jenkinson, James, assignor.) | | | | | | |
| Marks, Louis B., New York, N. Y., assignor to Washington Carbon Company, Washington, Pa. Apparatus for molding and pressing carbons | 505,775 | Sept. 26 | 2466 | 629 | 64 | 1773 |
| Marlin Fire Arms Company. (See Hepburn, Lewis L., assignor.) | | | | | | |
| Marlin, Jesse M. (See Carlin, William P., assignor.) | | | | | | |
| Marr, John, *et al.* (See Campbell, Henry, assignor.) | | | | | | |
| Marriott, Yeomans S. (See Osterloh, Adolph, assignor.) | | | | | | |
| Marsh, Albion P. (See Coburn, John G., assignor.) | | | | | | |
| Marsh, Calvin D., assignor to Rowley & Hermanco Company, Williamsport, Pa. Sawtable | 501,521 | July 18 | 1573 | 396 | 64 | 317 |
| Marsh, Calvin D., Williamsport, Pa., assignor to Rowley & Hermance Company, of Pennsylvania. Slat-tenoning machine | 501,892 | July 18 | 2170 | 537, 538 | 64 | 423 |
| Marsh, Joseph W., Pittsburg, Pa. Electric conductor | 504,397 | Sept. 5 | 136 | 36 | 64 | 1296 |



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| Marsh, Joseph W., Pittsburg, Pa. Electric conductor | 504,398 | Sept. 5 | 137 | 36 | 64 | 1296 |
| Marsh, Orlo J., Titusville, Pa. Shirt-stretcher | 505,472 | Sept. 26 | 1908 | 491 | 64 | 1640 |
| Marshal, Otto F., Jr., Bath, N. Y. Feed-rack | 501,523 | July 18 | 1774 | 396 | 64 | 317 |
| Marshall, Charles B., Philadelphia, Pa. Water-gage | 502,128 | July 25 | 2543 | 638 | 64 | 509 |
| Marshall, Chauncey, *et al.* (See Hetzel, Peter, assignor.) | | | | | | |
| Marshall, Dale. (See Gardner and Marshall.) | | | | | | |
| Marshall, Elias, Boston, Mass. Electrically-operated hydraulic elevator | 502,981 | Aug. 8 | 1363 | 309 | 64 | 812 |
| Marshall, George, Fremont, Nebr. Steam-engine | 504,399 | Sept. 5 | 139 | 36, 37 | 64 | 1296 |
| Marshall, James, Toronto, Canada. Street-car | 500,924 | July 4 | 608 | 159 | 64 | 111 |
| Marshall, James, Leeds, England. Quadruple-expansion engine | 503,056 | Aug. 8 | 1364 | 337 | 64 | 832 |
| Marshall, John, Mentone, Ind. Rake attachment for mowers | 503,152 | Aug. 15 | 1533 | 376, 377 | 64 | 875 |
| Marshall, Norman, Boston, Mass. Lighting attachment for gas-burners | 504,735 | Sept. 12 | 701 | 176 | 64 | 1415 |
| Marshall, William, New York, N. Y. Duplex telephony | 505,628 | Sept. 26 | 2241 | 560 | 64 | 1705 |
| Marshall, William M., assignor of three-fourths to S. Reiter, trustee, Philadelphia, Pa., and J. Torr, Atlantic City, N. J. Eraser-holder | 501,893 | July 18 | 2172 | 538 | 64 | 423 |
| Marsteller, Edwin Y., *et al.* (See Burvill-Holmes, Ernest, assignor.) | | | | | | |
| Marten, August H., San José, Cal. Braid-rack | 503,488 | Aug. 15 | 2073 | 517 | 64 | 972 |
| Martin, Abraham S., *et al.* (See Davidson, David J., assignor.) | | | | | | |
| Martin, Alexander C. (See Barnum, Russell S., assignor.) | | | | | | |
| Martin, Alexander C., Chicago, Ill. Car-coupling | 502,735 | Aug. 8 | 840 | 204 | 64 | 735 |
| Martin, Charles C., and A. J. Schlaffer, West Franklin, Ind. Animal-trap | 501,953 | July 25 | 2269 | 567 | 64 | 457 |
| Martin, Charles C., assignor of one-half to A. J. Schlaffer, West Franklin, Ind. Self-setting animal-trap | 504,811 | Sept. 12 | 831 | 211 | 64 | 1439 |
| Martin, Henry H., Campbellsville, Ky. Car-coupling | 502,309 | Aug. 1 | 88 | 20 | 64 | 582 |
| Martin, Horace E., Chino, Cal. Beet-harvester | 504,423 | Sept. 5 | 185 | 48 | 64 | 1305 |
| Martin, Ivson B., Murray, Ky. Trace | 501,252 | July 11 | 1148 | 291 | 64 | 234 |
| Martin, John, *et al.* (See Anderson, Lee, assignor.) | | | | | | |
| Martin, Milton D., York, Pa. Carriage-top | 500,925 | July 4 | 609 | 159 | 64 | 112 |
| Martin, Morris, Malden, Mass., assignor to Automatic Time Stamp and Register Company, Portland, Me. Apparatus for recording the time of workmen | 503,430 | Aug. 15 | 1977 | 491 | 64 | 955 |
| Martin, Theodore, Wallaceburg, Canada. Nut-lock | 505,365 | Sept. 19 | 1735 | 449 | 64 | 1622 |
| Martin, Thompson, New York, N. Y. Ticket-safe and match-holder | 503,974 | Aug. 29 | 2854 | 717 | 64 | 1153 |
| Martin, William, Salem, Mass. Hanger for curtain-fixtures | 502,823 | Aug. 8 | 991 | 242 | 64 | 763 |
| Martini, Henry. (See Cowperthwait, John W., assignor.) | | | | | | |
| Martyr, Leonard W., and H. Eldridge, Houston, Tex. Gas-governor | 503,350 | Aug. 15 | 1862 | 461 | 64 | 934 |
| Marum, David P., Fort Supply, Indian Ter. Landmark | 504,987 | Sept. 12 | 1126 | 289 | 64 | 1496 |
| Mascotte Invalid Lifting Chair Company. (See Tingley, John, assignor.) | | | | | | |
| Maschinenfabrik Rüti, formerly Kaspar Honegger. (See Hofmann, Friedrich, assignor.) | | | | | | |
| Mason, Casper H. (See Diedrick, William H., assignor.) | | | | | | |
| Mason, Charles H. (See Staley, George, assignor.) | | | | | | |
| Mason, Edmund T., New York, N. Y. Finger or toe nail cutter | 504,601 | Sept. 5 | 472 | 121 | 64 | 1358 |
| Mason, Edward R., and A. O. Snow, Binghamton, N. Y. Alarm-clock | 505,115 | Sept. 19 | 1337 | 345 | 64 | 1550 |
| Mason Electric Company. (See Mason, James H., assignor.) | | | | | | |
| Mason, Ezra A., Taunton, Mass., assignor to Dighton Furnace Company, of Massachusetts. Oven-door for cooking stoves, ranges, &c | 501,571 | July 18 | 1646 | 412 | 64 | 332 |
| Mason, Frank. H., Akron, Ohio. Pneumatic tire | 503,724 | Aug. 22 | 2469 | 614 | 64 | 1061 |
| Mason, George W., Sharon, Pa. Injector | 504,068 | Aug. 29 | 2998 | 749 | 64 | 1179 |
| Mason, Henry, U. S. Navy. Garment-pocket | 501,229 | July 11 | 1109 | 281 | 64 | 217 |
| Mason, James H., Brooklyn, N. Y., assignor, by mesne assignments, to Mason Electric Company, East Orange, N. J. Electric battery | 501,151 | July 11 | 992 | 252 | 64 | 195 |
| Mason Regulator Company. (See Mason, William B., assignor.) | | | | | | |
| Mason, William B., assignor to Mason Regulator Company, Boston, Mass. Steam-pump | 500,590 | July 4 | 78 | 23 | 64 | 16 |
| Mason, William H., Demarest, N. J. Shoe-lace fastener | 502,422 | Aug. 1 | 293 | 70 | 64 | 620 |
| Massey, Albert P., Watertown, N. Y. Air-brake | 501,016 | July 4 | 755 | 198 | 64 | 137 |
| Massey, Albert P., Watertown, N. Y. Car-brake | 501,017 | July 4 | 757 | 198 | 64 | 138 |
| Massey, Albert P., Watertown, N. Y. Governor for steam-pumps | 501,018 | July 4 | 757 | 199 | 64 | 138 |
| Massey, Albert P., Watertown, N. Y. Triple valve for brake systems | 503,095 | Aug. 8 | 1429 | 352 | 64 | 843 |
| Masterman, William H., assignor of two-thirds to W. M. Rank and F. H. Meyers, Oakland, Cal. Frictional motion-transmitter | 502,570 | Aug. 1 | 538 | 128 | 64 | 665 |
| Masterman, William H., assignor of one-half to F. H. Myers, Oakland, Cal. Air-brake | 504,227 | Aug. 29 | 3267 | 815 | 64 | 1229 |
| Mather, Allan G. (See Baxter and Mather.) | | | | | | |
| Mather & Platt. (See Mather and Smith, assignors.) | | | | | | |
| Mather, William, and D. P. Smith, assignors to Mather & Platt, Limited, Manchester, England. Apparatus for steaming, aging, and drying fabrics | 504,602 | Sept. 5 | 473 | 121 | 64 | 1358 |
| Mather, William P., Providence, R. I. Cloth stretching and calendering machine | 504,927 | Sept. 12 | 1020 | 263 | 64 | 1477 |
| Matheson, Colin, Eureka, Cal. Self-tripping pulley-block | 504,928 | Sept. 12 | 1021 | 263 | 64 | 1477 |
| Mathewson, Edward P., Pueblo, Colo. Furnace-tap | 501,351 | July 11 | 1315 | 328 | 64 | 252 |
| Mathison, Arthur, Springfield, Mass. Eyelet | 501,298 | July 11 | 1197 | 303 | 64 | 233 |
| Mathison, James, *et al.* (See Cook, Theodore A., assignor.) | | | | | | |
| Mathison, Joseph, Somerville, Mass. Button-setting tool | 501,296 | July 11 | 1195 | 302 | 64 | 232 |
| Mathison, Joseph, Somerville, Mass. Bouquet-holder | 501,297 | July 11 | 1197 | 302 | 64 | 233 |
| Mathison, Walter, *et al.* (See Cook, Theodore A., assignor.) | | | | | | |
| Matson, Lewis B., Elmira, N. Y. Electrical cut-out | 503,867 | Aug. 22 | 2670 | 669 | 64 | 1100 |
| Matteson, Job, South Hartford, assignor of one-half to F. K. Boynton, Hebron, N. Y. Hoof trimmer or parer | 504,400 | Sept. 5 | 140 | 37 | 64 | 1296 |
| Matthew, William E., assignor of one-third to C. H. Noblet, Bucyrus, Ohio. Corn-planter | 504,929 | Sept. 12 | 1022 | 263 | 64 | 1477 |
| Matthews, Adaline M. (See Matthews, Hannah E. and A. M.) | | | | | | |
| Matthews, Edwin S., assignor of one-half to J. L. Haven, Cincinnati, Ohio. Hydraulic-valve gear | 503,975 | Aug. 29 | 2855 | 717 | 64 | 1153 |
| Matthews, Hannah E. and A. M., Grand Rapids, Mich. Bosom-form | 503,057 | Aug. 8 | 1366 | 337 | 64 | 832 |
| Matthews, William C., Denver, Colo. Fuse-lighter | 504,603 | Sept. 5 | 474 | 121 | 64 | 1358 |
| Matthis, C. W., *et al.* (See Graves, Cashious M., assignor.) | | | | | | |
| Mauk, George W., Williamsburg, Pa. Gate | 501,801 | July 18 | 2032 | 500 | 64 | 398 |
| Maurer, Joseph M., Washington, Pa. Obstetrical and examination stirrup | 505,319 | Sept. 19 | 1661 | 429 | 64 | 1608 |
| Maw, Thomas J., assignor of two-thirds to W. J. Maw and W. F. Mansfield, Boston, Mass. Heating apparatus | 505,713 | Sept. 26 | 2365 | 598 | 64 | 1754 |
| Maw, Walter J., *et al.* (See Maw, Thomas J., assignor.) | | | | | | |
| Maxim, Hiram S., Bexley, and L. Silverman, Crayford, England. Car-wheel | 505,572 | Sept. 26 | 2123 | 539 | 64 | 1710 |
| Maxim, Hudson, Pittsfield, Mass. Cartridge with amorphous explosive shell and charge | 504,736 | Sept. 12 | 703 | 176 | 64 | 1416 |
| Maxwell, Samuel E., Aspinwall, Pa. Chill-mold for casting teeth on gear-wheels | 500,591 | July 4 | 82 | 23 | 64 | 16 |
| May, H. (See Richardson, Daniel W., assignor.) | | | | | | |
| May, Lincoln S., West Hartford, Conn. Burial apparatus | 502,868 | Aug. 8 | 1068 | 268 | 64 | 781 |

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| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Dr'g. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Mayer, Frederick, Baltimore, Md. Gas-holder tank | 505,629 | Sept. 26 | 2212 | 580, 561 | 64 | 1726 |
| Mayer, Henry. (See Schlegel and Mayer.) | | | | | | |
| Mayer, Louis G. (See James and Mayer.) | | | | | | |
| Mayers, John. (See Rhodes, Edward, assignor.) | | | | | | |
| Mayloy, Edward C., Rochester, N. Y. Fountain-inkstand | 500,690 | July 4 | 252 | 68 | 64 | 48 |
| Maynadier, James E., trustee. (See Voorhees, Gardner T., assignor.) | | | | | | |
| Mayo, William P. (See Vaughan, Robert M., assignor.) | | | | | | |
| Mays, Thomas C., Paragould, Ark. Window-screen | 503,766 | Aug. 22 | 2537 | 631 | 64 | 1074 |
| McAdam, Thomas, Ferndale, Pa. Snow-plow | 505,386 | Sept. 19 | 1736 | 449, 450 | 64 | 1022 |
| McAdams, Richard E. (See Crockett and McAdams.) | | | | | | |
| McAllister, Edwin J. (See Page and McAllister.) | | | | | | |
| McAlpine, James G., Hartford, Conn. Chronometer-escapement | 504,046 | Aug. 29 | 2971 | 743 | 64 | 1173 |
| McAlpine, James G., Hartford, Conn. Chuck | 504,047 | Aug. 29 | 2972 | 743 | 64 | 1174 |
| McAneny, Michael, and F. Stansbury, assignors of one-third to J. Swank, Denver, Colo. Opera-chair | 501,896 | July 18 | 2176 | 539, 540 | 64 | 424 |
| McAnulty, Samuel A., Glenn's Ferry, Idaho. Hay-elevator | 503,352 | Aug. 15 | 1865 | 461 | 64 | 935 |
| McBean, John C., G. J. McLaughlin, H. R. Corkhill, Jr., and G. Baxter, Rochester, N. Y. Labeling-machine | 502,311 | Aug. 1 | 89 | 21, 22 | 64 | 582 |
| McBride, Robert M., Harlensburg, Pa. Vehicle-spindle | 504,490 | Sept. 5 | 317 | 80 | 64 | 1329 |
| McCallen, Robert S., and M. M. Ross, Nashville, Tenn.; said McCallen assignor to said Ross. Envelope | 505,718 | Sept. 26 | 2374 | 600 | 64 | 1755 |
| McCarthy, Dennis W. (See McCarthy, John E., D. W., and S. J.) | | | | | | |
| McCarthy, John E., D. W., and S. J., Laconia, N. H. Fabric-sample holder | 503,802 | Aug. 22 | 2584 | 644 | 64 | 1084 |
| McCarthy, Louis, Boston, Mass. Insulating-coupling | 501,021 | July 4 | 761 | 200 | 64 | 139 |
| McCarthy, Louis, Boston, Mass. Insulator | 502,677 | Aug. 1 | 733 | 176 | 64 | 700 |
| McCarthy, Louis, Boston, Mass. Trolley-wire insulator | 502,926 | Aug. 8 | 996 | 242 | 64 | 764 |
| McCarthy, Louis, Boston, Mass. Insulator | 503,549 | Aug. 15 | 2171 | 542 | 64 | 990 |
| McCarthy, Louis, Boston, Mass. Section-insulator | 503,749 | Aug. 22 | 2514 | 625, 626 | 64 | 1070 |
| McCarthy, Stephen J. (See McCarthy, John E., D. W., and S. J.) | | | | | | |
| McCaslin, George W., Hoboken, N. J. Endless-chain conveyer | 503,870 | Aug. 22 | 2675 | 670 | 64 | 1101 |
| McCay, William S., Grand Rapids, Mich. Dust-pan | 502,235 | July 25 | 2723 | 687 | 64 | 543 |
| McCheeney, A. B. (See Douglass, Robert C., assignor.) | | | | | | |
| McClellan, Edward J., New York, N. Y. Feed-motion | 502,131 | July 25 | 2547 | 639 | 64 | 510 |
| McCloud, C. S., *et al.* (See Walker, Orlando O., assignor.) | | | | | | |
| McClure, Charles E., St. Louis, Mo. Preserving eggs | 504,535 | Sept. 5 | 372 | 94 | 64 | 1339 |
| McClure, John, *et al.* (See Smith, George, assignor.) | | | | | | |
| McComb, Charles R., Columbus Grove, Ohio. Cuspidor | 502,319 | Aug. 1 | 96 | 22 | 64 | 583 |
| McConnell, William H., Nelsonville, Ohio. Friction-clutch | 504,110 | Aug. 29 | 3076 | 770 | 64 | 1194 |
| McCook, Edward M., Riverside, Conn., and W. P. Seal, Chicago, Ill. Composition for roofing | 505,531 | Sept. 26 | 2036 | .... | 64 | 1692 |
| McCoole, Gabriel W., St. Louis, Mo. Clothes-pin. (Reissue) | 11,356 | Aug. 15 | 2200 | 549 | 64 | 996 |
| McCormick, Arthur L., Port Huron, Mich. Illuminated sign | 502,007 | July 25 | 2345 | 587, 588 | 64 | 471 |
| McCormick, Ellen, St. Louis, Mo. Lady's hat-fastener | 505,719 | Sept. 26 | 2375 | 600 | 64 | 1755 |
| McCormick Harvesting Machine Company. (See Baker, William R., assignor.) | | | | | | |
| McCormick Harvesting Machine Company. (See Phelps, George L., assignor.) | | | | | | |
| McCormick Harvesting Machine Company. (See Pridmore, Henry E., assignor.) | | | | | | |
| McCormick, James, and J. R. Deisher, Pottsville, Pa. Car-coupling | 501,527 | July 18 | 1580 | 398 | 64 | 319 |
| McCormick, Moses, Baltimore, Md. Sulky | 504,048 | Aug. 29 | 2973 | 743 | 64 | 1174 |
| McCormick, Susan V. (See Roediger, Fredrick, assignor.) | | | | | | |
| McCoy, John H., Ouray, Colo., assignor of one-half to W. B. Cunninghame, New York, N. Y. Ore-concentrator | 501,022 | July 4 | 762 | 200 | 64 | 139 |
| McCoy, William A., Benson, Kans. Weed-cutter, &c | 500,932 | July 4 | 618 | 163 | 64 | 112 |
| McCrory, Joseph C., and W. P. House, Nashville, Tenn. Carburetor | 501,154 | July 11 | 999 | 254 | 64 | 196 |
| McCulloch, Eppie J., Manchester, N. H. Bench-plane | 505,119 | Sept. 19 | 1344 | 346 | 64 | 1551 |
| McCulloch, Robert. (See Surtin, John H., assignor.) | | | | | | |
| McCully, Robert, Philadelphia, Pa. Crushing-machine | 500,596 | July 4 | 88 | 25 | 64 | 18 |
| McCully, Robert, Philadelphia, Pa. Crushing-machine | 500,597 | July 4 | 90 | 25, 26 | 64 | 18 |
| McCully, Robert, Philadelphia, Pa. Crushing-machine | 500,598 | July 4 | 92 | 26, 27 | 64 | 18 |
| McCully, Robert, Philadelphia, Pa. Crushing-machine | 501,843 | July 18 | 2081 | 514, 515 | 64 | 406 |
| McCully, William F. (See Smith, Harper F., assignor.) | | | | | | |
| McCumber, Charles. (See Long and McCumber.) | | | | | | |
| McCutcheon, Joshua L., assignor of one-half to J. S. Price, Houston, Tex. Cotton-press | 502,313 | Aug. 1 | 97 | 23 | 64 | 583 |
| McDaniel, John C. (See Davis, Rice, and McDaniel.) | | | | | | |
| McDermott, Augustus S., Dubuque, Iowa. Device for attaching shovel-standards, &c | 501,955 | July 25 | 2271 | 568 | 64 | 457 |
| McDermott, Henry, Norwich, Conn. Stop-motion for carding-machines | 501,573 | July 18 | 1652 | 413 | 64 | 333 |
| McDermott, Thomas B., Portland, Oreg. Car-coupling | 501,805 | July 18 | 2037 | 501 | 64 | 399 |
| McDonald, Alexander, Cambridge, Mass. Stone-cutting machine | 503,158 | Aug. 15 | 1542 | 379 | 64 | 877 |
| McDonald, Alexander E., Brooklyn, assignor to E. B. Stimpson, New York, N. Y. Portable hat-iron | 504,814 | Sept. 12 | 839 | 215 | 64 | 1441 |
| McElroy, James F., Albany, N. Y., assignor to Consolidated Car-Heating Company, Wheeling, W. Va. Rotary engine | 503,550 | Aug. 15 | 2172 | 542 | 64 | 990 |
| McElroy, James F., Albany, N. Y., assignor to Consolidated Car-Heating Company, Wheeling, W. Va. Rotary engine | 504,536 | Sept. 5 | 374 | 94 | 64 | 1339 |
| McEntee, Patrick, Montgomery, Minn. Car-coupling | 505,803 | Sept. 26 | 2511 | 633, 634 | 64 | 1781 |
| McEvoy, Edward J., New York, N. Y., assignor of one-half to William Cramp & Sons Ship and Engine Building Company, Philadelphia, Pa. Junction-box | 502,083 | July 25 | 2474 | 621, 622, 623 | 64 | 195 |
| McEvoy, Joseph H., Waterbury, Conn. Electric switch | 502,983 | Aug. 8 | 1268 | 310 | 64 | 613 |
| McEwan, William. (See Murray, Thomas E., assignor.) | | | | | | |
| McFarland, W. M., *et al.* (See Brower, Asher A., assignor.) | | | | | | |
| McGaffey, Otis, Jr. (See Gebhardt, William C., assignor.) | | | | | | |
| McGahan, Frederick L., Indianapolis, Ind. Oil-burner | 501,356 | July 11 | 1322 | 330, 331 | 64 | 254 |
| McGahan, Frederick L., Indianapolis, Ind. Oil stove and burner | 501,357 | July 11 | 1323 | 331, 332 | 64 | 254 |
| McGahan, Frederick L., Indianapolis, Ind. Portable oil-stove | 505,631 | Sept. 26 | 2224 | 563, 564 | 64 | 1729 |



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| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Dr'g. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| McGee, Bernard J., Cambridge, Mass., assignor to Boston Woven Cordage Company, Portland, Me. Machine for making cordage | 505,632 | Sept. 26 | 2226 | 564, 565 | 64 | 1726 |
| McGlew Ore Concentrator Company. (See McGlew, Thomas, assignor.) | | | | | | |
| McGlew, Thomas, San Francisco, Cal. Ore-concentrator | 505,412 | Sept. 19 | 1811 | 467, 568 | 64 | 1637 |
| McGlew, Thomas, San Francisco, Cal., assignor to McGlew Ore Concentrator Company, of California. Ore-concentrator | 505,169 | Sept. 19 | 1421 | 366 | 64 | 1564 |
| McGowen, John J., Forest Home, N. Y. Spraying-nozzle | 502,742 | Aug. 8 | 849 | 207 | 64 | 737 |
| McGrath, Catharine A., *et al.*, executors. (See Meyers, William H., assignor.) | | | | | | |
| McGrath, Louis J., *et al.*, executors. (See Meyers, William H., assignor.) | | | | | | |
| McGrath, Timothy W., Brooklyn, N. Y. Combination-lock | 505,120 | Sept. 19 | 1346 | 347 | 64 | 1551 |
| McGregor, Peter B., Hillburn, N. Y. Foundry-flask | 503,290 | Aug. 15 | 1759 | 434 | 64 | 919 |
| McGriff, Thomas K. S., Chicago, Ill. Attachment for bicycles | 503,058 | Aug. 8 | 1367 | 337 | 64 | 892 |
| McGuire, John S., and J. B. Beemer, assignors of one-third to W. P. Taft, East Tawas, Mich. Drying attachment for scrubbing-brushes | 503,668 | Aug. 22 | 2379 | 593 | 64 | 1043 |
| McIndoe, George F., assignor of one-half to J. W. McIndoe, Boston, Mass. Ink-distributing apparatus for printing-presses | 502,575 | Aug. 1 | 544 | 129, 130 | 64 | 666 |
| McIndoe, James W. (See McIndoe, George F., assignor.) | | | | | | |
| McIntire, Bartlett, and C. J. Koefoed, assignors to Vulcan Iron Works, San Francisco, Cal. Gang-edger | 504,231 | Aug. 29 | 3275 | 818 | 64 | 1231 |
| McIntosh, Harry A. and T. W., Brownsville, Ind. Track-sulky | 502,984 | Aug. 8 | 1269 | 310 | 64 | 813 |
| McIntosh, Theodore W. (See McIntosh, Harry A. and T. W.) | | | | | | |
| McIntyre, John, Jersey City, N. J. Pipe-fitting | 503,432 | Aug. 15 | 1981 | 491 | 64 | 956 |
| McIntyre, John, Jersey City, N. J. Pipe-fitting | 503,433 | Aug. 15 | 1983 | 492 | 64 | 956 |
| McKay, Henry S., Boston, Mass. Electrical reciprocating motor | 503,213 | Aug. 15 | 1632 | 401, 402 | 64 | 894 |
| McKee, James D., Wooster, Ohio. Wire-stretcher | 503,613 | Aug. 22 | 2301 | 574 | 64 | 1028 |
| McKee, Martin E. (See Vaughan and McKee.) | | | | | | |
| McKeever, Marcia, Promise City, Iowa. Washing machine | 502,314 | Aug. 1 | 98 | 23 | 64 | 584 |
| McKelvey, James R., Lawrenceville, Ga. Fumigator | 501,528 | July 18 | 1581 | 388 | 64 | 319 |
| McKenney, Franklin S., Detroit, Mich. Drapery hook and pin | 500,744 | July 4 | 339 | 90 | 64 | 61 |
| McKenney, Richard. (See Dobbins and McKenney.) | | | | | | |
| McKercher, George, Jonesville, Mich. Wrench | 504,232 | Aug. 29 | 3277 | 819 | 64 | 1231 |
| McKesson & Robbins. (See Evans, William J., assignor.) | | | | | | |
| McKiernan, Samuel G. (See Wood, Warren, assignor.) | | | | | | |
| McLaren, John. (See Mott, Frank M., assignor.) | | | | | | |
| McLauchlin, William D., and A. Phillips, Corunna, Mich. Low-water alarm | 505,720 | Sept. 26 | 2376 | 600 | 64 | 1755 |
| McLaughlin, Charles I., New York, N. Y. Separable spout for metallic vessels | 500,933 | July 4 | 619 | 163 | 64 | 113 |
| McLaughlin, George J. (See McBean, McLaughlin, Corkhill, and Baxter.) | | | | | | |
| McLaughlin, James F., Philadelphia, Pa. Electric time-switch | 501,291 | July 11 | 1200 | 303, 304 | 64 | 233 |
| McLaughlin, Patrick. (See Dixon and McLaughlin.) | | | | | | |
| McLellan, Robert A., assignor of one-half to F. I. Fuller, Portland, Oreg. Cable-grip | 501,467 | July 11 | 1485 | 373, 374 | 64 | 286 |
| McLish, Frank. (See Nessel and McLish.) | | | | | | |
| McLoon, Patrick, Sulphur Springs, Mo. Lime-kiln | 503,059 | Aug. 8 | 1367 | 338 | 64 | 833 |
| McMahon, William H., assignor of one-half to S. D. Seymour, South Norwalk, Conn. Tool for shaving hats | 504,275 | Aug. 29 | 3246 | 736 | 64 | 1244 |
| McManis, James, Blandinsville, Ill. Wire-cloth holder | 505,532 | Sept. 26 | 2037 | 520 | 64 | 1692 |
| McManus, Robert, Brooklyn, N. Y. Carbon for electric-arc lamps | 504,815 | Sept. 12 | 841 | 215 | 64 | 1441 |
| McManus, Robert, New York, assignor to W. A. Powell, Brooklyn, N. Y. Carbon for electric-arc lamps | 504,845 | Sept. 12 | 891 | 229 | 64 | 1452 |
| McManus, William S., and J. A. Hock, South Chester, Pa. Method of and means for screwing sockets upon pipes | 502,691 | Aug. 1 | 756 | 182 | 64 | 705 |
| McMaster, Joseph M., Rochester, N. Y. Car-coupling | 502,375 | Aug. 1 | 211 | 50 | 64 | 604 |
| McMaster, Merritt, Batavia, Ill. Bending-machine | 505,475 | Sept. 26 | 1912 | 492 | 64 | 1670 |
| McMenamin, Peter, Jersey City, N. J. Pencil-sharpener | 502,008 | July 25 | 2446 | 598 | 64 | 471 |
| McMillen, Charles W. and H. F., assignors of one-half to C. S. Wallace, New Castle, Pa. Car-coupling | 502,631 | Aug. 1 | 640 | 153 | 64 | 685 |
| McMillen, Howard F. (See McMillen, Charles W. and H. F.) | | | | | | |
| McMurrin, Joseph, Shoshone, Idaho. Track-jack | 504,935 | Sept. 19 | 1631 | 395 | 64 | 1479 |
| McNear, George W., Oakland, Cal. Closed conduit for electric railways | 505,605 | Sept. 26 | 2176 | 550 | 64 | 1719 |
| McNeill-Tinder Electric Company. (See McNeill and Tinder, assignors.) | | | | | | |
| McNeill, William, and J. H. Tinder, assignors to McNeill-Tinder Electric Company, Winchester, Ky. Switch for electric circuits | 503,157 | Aug. 15 | 1544 | 379 | 64 | 877 |
| McNutt, John C., *et al.* (See Dobbins and McKenney, assignors.) | | | | | | |
| McQuarrie, James L., assignor to American Bell Telephone Company, Boston, Mass. Telephone circuit and apparatus | 502,466 | Aug. 1 | 761 | 87 | 64 | 632 |
| McQuillen, Owen, assignor of one-half to W. A. Verner, Toronto, Canada. Calked horseshoe | 502,985 | Aug. 8 | 1271 | 311 | 64 | 813 |
| McQuillen, William, Woodland, Pa. Foot-rest for rocking-chairs | 502,246 | Aug. 15 | 1685 | 414 | 64 | 903 |
| McRoberts, James G., St. Louis, Mo. Steel-founding | 504,361 | Sept. 5 | 69 | 19 | 64 | 1294 |
| McTammany, John, Spencer, Mass. Balloting device | 502,743 | Aug. 8 | 850 | 207 | 64 | 737 |
| McTammany, John, Spencer, Mass. Note-recording machine | 502,744 | Aug. 8 | 853 | 208 | 64 | 738 |
| McTammany, John, Spencer, Mass. Voting-machine | 502,745 | Aug. 8 | 857 | 208, 209 | 64 | 738 |
| McVey, John J., and A. Rigling, Philadelphia, Pa. Book-support | 504,233 | Aug. 29 | 3279 | 819 | 64 | 1231 |
| McWhorter, Francis S., Norfolk, Va. Seeder | 504,500 | Sept. 5 | 318 | 81, 82 | 64 | 1320 |
| Mead, Erastus F., New York, N. Y. Drying apparatus | 505,110 | Sept. 19 | 1338 | 345 | 64 | 1550 |
| Mead, Theodore H., *et al.* (See Crowell, Luther C., assignor.) | | | | | | |
| Meadows, Jesse A., assignor to W. H. Ayres, Sackett's Harbor, N. Y. Rack for firearms | 505,390 | Sept. 19 | 1662 | 429 | 64 | 1600 |
| Mecky, August, Philadelphia, Pa. Bicycle-saddle | 501,930 | July 11 | 1110 | 282 | 64 | 217 |
| Mehren, Jacob F., Chicago, Ill. Means for protecting the carbon-holders of electric-arc lamps | 502,465 | Aug. 1 | 359 | 87 | 64 | 632 |
| Mehring, Theodore H., Yankton, S. D. Trace-buckle | 505,473 | Sept. 26 | 1910 | 492 | 64 | 1669 |
| Meissner, Moritz P., Chemnitz, Germany. Cloth stretching and drying machine | 505,117 | Sept. 19 | 1339 | 345 | 64 | 1550 |
| Meitzler, George R., Cincinnati, Ohio. Silver cleaning and polishing compound | 503,612 | Aug. 22 | 2300 | ..... | 64 | 1028 |
| Meitzler, George R., Cincinnati, Ohio, assignor of one-half to W. H. Osborne, Prince's Bay, N. Y. Electrically-heated soldering-iron. (Reissue) | 11,364 | Sept. 5 | 635 | 161 | 64 | 1290 |
| Melan, Joseph, Brünn, Austria-Hungary. Vault for ceilings, bridges, &c | 505,054 | Sept. 12 | 1226 | 316 | 64 | 1515 |
| Mellinger, Jacob, Baltimore, Md. Manufacturing artificial wood | 504,988 | Sept. 12 | 1127 | ..... | 64 | 1496 |
| Mellor, William W., Seacombe, and J. Shaw, Huddersfield, England. Vessel for the conveyance of milk | 502,005 | July 25 | 2343 | 587 | 64 | 471 |
| Mendheim, Georg. (See Bauer and Mendheim.) | | | | | | |
| Menefee, Charles M., and G. Ertel, Fort Wayne, Ind. Cistern-cover | 505,055 | Sept. 12 | 1227 | 316 | 64 | 1515 |

*Alphabetical list of patentees, July to September, inclusive*—Continued.

| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Dr'g. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Menehan, William H., Kingston, N. Y. Combination-tool | 502,525 | Aug. 1 | 471 | 113 | 64 | 653 |
| Mengel, Clarence R., Louisville, Ky. Packing-box | 503,976 | Aug. 29 | 2859 | 717 | 64 | 1153 |
| Mengelbier, Oscar, Penco, Chile. Apparatus for refining sugar in molds | 505,118 | Sept. 19 | 1348 | 346 | 64 | 1551 |
| Menier, Henri, Paris, France. Heel | 502,571 | Aug. 1 | 539 | 126 | 64 | 665 |
| Mentzer, Alonzo M., assignor of one-half to J. B. Haller, Andrews, Ind. Horse-detacher | 505,056 | Sept. 12 | 1230 | 316 | 64 | 1515 |
| Mercer Bros. & Co. (See Mercer and Greatrex, assignors.) | | | | | | |
| Mercer, John S., and W. Greatrex, assignors to Mercer Bros. & Co., Alliston, Canada. Harvester-binder | 503,798 | Aug. 22 | 2580 | {642 643} | 64 | 1083 |
| Mergaert, Edouard R. (See Croes, Mergaert, and Lapin.) | | | | | | |
| Mergenthaler, Jacob, *et al.* (See Moehn, John N., assignor.) | | | | | | |
| Mergenthaler, Alexander. (See Rosenthal, Emanuel M., assignor.) | | | | | | |
| Meriden Curtain Fixture Company. (See Arnold, Benjamin, assignor.) | | | | | | |
| Meriden Curtain Fixture Company. (See Dennis, Alexander E., assignor.) | | | | | | |
| Merle, Apollonie. (See Merle, Emilie and A.) | | | | | | |
| Merle, Emilie and A., Paris, France. Bust-form | 500,926 | July 4 | 610 | 159 | 64 | 112 |
| Merralls, William A., San Francisco, Cal. Crushing or grinding mill | 501,433 | July 11 | 1437 | 360 | 64 | 290 |
| Merrell, Isaac L. (See Savage, Richard, assignor.) | | | | | | |
| Merrick, George H., San Francisco, Cal. Bushing and faucet | 502,572 | Aug. 1 | 540 | 128 | 64 | 665 |
| Merrick, George H., San Francisco, Cal. Bushing and faucet for barrels | 503,767 | Aug. 22 | 2538 | 631 | 64 | 1074 |
| Merrick Sewing Machine Company. (See Woodward and Hatch, assignors.) | | | | | | |
| Merrifield, Leonard L., Franklin, Mass., J. T. Westcott, Cramer's Hill, N. J., and W. H. Pearson, Jr., Toronto, Canada. Apparatus for manufacturing gas | 505,714 | Sept. 26 | 2367 | 598 | 64 | 1754 |
| Merrill, Alfred K. (See Goldsmith and Merrill.) | | | | | | |
| Merrill, Frank W., Deering, Me. Ice-cream cooler and freezer | 501,494 | July 18 | 2173 | 539 | 64 | 423 |
| Merrill, Hattie, Westphalia, Kans. Clothes-pin | 505,407 | Sept. 19 | 1801 | 465 | 64 | 1635 |
| Merrill, Henry. (See Harris, John C. F., assignor.) | | | | | | |
| Merrill, Joseph P. (See David and Rath, assignors.) | | | | | | |
| Merriman, Edward A., Madison, Me. Automatic brake | 502,526 | Aug. 1 | 471 | 113 | 64 | 653 |
| Merritt, Henry W., assignor to Merritt Manufacturing Company, Springfield, Mass. Typewriting machine | 505,057 | Sept. 12 | 1231 | 317 | 64 | 1516 |
| Merritt, Henry W., assignor to Merritt Manufacturing Company, Springfield, Mass. Typewriting machine | 505,058 | Sept. 12 | 1233 | 317 | 64 | 1516 |
| Merritt, Louis G., Lockport, N. Y. Polygonal lathe | 504,812 | Sept. 12 | 832 | {211 919 313 314} | 64 | 1439 |
| Merritt Manufacturing Company. (See Merritt, Henry W., assignor.) | | | | | | |
| Merritt Manufacturing Company. (See Merritt and Burnett, assignors.) | | | | | | |
| Merritt, Mortimer G., Springfield, Mass., assignor to Yost Writing Machine Company, New York, N. Y. Type | 502,736 | Aug. 8 | 841 | 204 | 64 | 735 |
| Merritt, Mortimer G., and W. E. Burnett, assignors to Merritt Manufacturing Company, Springfield, Mass. Type-writing machine | 505,059 | Sept. 12 | 1235 | 316 | 64 | 1517 |
| Merritt, William H. (See Chapman, George T., assignor.) | | | | | | |
| Merrow, Joseph M., Merrow, and W. H. Stedman, Norwich, Conn.; said Stedman assignor to said Merrow. Crocheting-machine | 505,275 | Sept. 19 | 1582 | {412 413} | 64 | 1594 |
| Merry, Elwin J., Magog, Canada, assignor of one-half to H. R. Merry. Thill-coupling | 503,910 | Aug. 22 | 2739 | 687 | 64 | 1114 |
| Merry, Horace R. (See Merry, Elwin J., assignor.) | | | | | | |
| Mershon, Edward C., Saginaw, Mich. Band sawing-machine | 503,766 | Aug. 22 | 2540 | {531 532} | 64 | 1075 |
| Mershon, Edward C., Saginaw, Mich. Band sawing-machine | 505,060 | Sept. 12 | 1231 | {230 331} | 64 | 1525 |
| Mers, Frank J., Seattle, Wash. Milk-cooler | 503,868 | Aug. 22 | 2672 | 666 | 64 | 1101 |
| Messler, Basil H., Canton, Ill. Strainer for spouts of pumps | 504,438 | Sept. 5 | 906 | 53 | 64 | 1309 |
| Meesmer, Alexander L. H., assignor to Heywood Bros. & Co., Gardner, Mass. Vehicle-wheel | 502,006 | July 25 | 2344 | 587 | 64 | 471 |
| Meston, Alexander W. (See Parker and Meston.) | | | | | | |
| Meston, Alexander W., St. Louis, Mo. Trolley-wire hanger | 501,481 | July 11 | 1506 | 379 | 64 | 290 |
| Metrio Metal Company. (See Wallace, Jacob B., assignor.) | | | | | | |
| Metropolitan Rubber Company. (See Dodge, Cheever K., assignor.) | | | | | | |
| Meurer, Ferdinand. (See Neeley, George S., assignor.) | | | | | | |
| Meyer, Albert W., Terre Haute, Ind. Water-cooler | 504,439 | Sept. 5 | 907 | 54 | 64 | 1309 |
| Meyer, Benjamin F. (See Knowlton and Meyer.) | | | | | | |
| Meyer, George J., Buffalo, N. Y. Malting apparatus | 504,478 | Sept. 5 | 971 | 70 | 64 | 1309 |
| Meyer, Henry, Chicago, Ill. Bridge-gate | 501,563 | July 18 | 1576 | {396 397} | 64 | 318 |
| Meyer, Henry, Philadelphia, Pa. Pocket book or case | 504,684 | Sept. 12 | 946 | 244 | 64 | 1462 |
| Meyer, Julius, New York, N. Y., and G. F. Starkweather, assignors to Paige Iron Works, Chicago, Ill. Tramway-switch | 502,982 | Aug. 8 | 1267 | 309 | 64 | 812 |
| Meyer, Olaf E., Milwaukee, Wis. Apparatus for treating sewage | 505,166 | Sept. 19 | 1414 | 364 | 64 | 1562 |
| Meyer, Theodor, Amöneburg, assignor to H. & E. Albert, Biebrich-on-the-Rhine, Germany. Making alkaline phosphate | 504,453 | Sept. 5 | 925 | ..... | 64 | 1313 |
| Meyer, William C. (See French and Meyer.) | | | | | | |
| Meyers, F. H., *et al.* (See Masterman, William H., assignor.) | | | | | | |
| Meyers, William H., assignor to T. Devlin, L. J. McGrath, W. K. Brown, and C. A. McGrath, executors of W. V. McGrath, deceased, Philadelphia, Pa. Register for heater-flues | 501,019 | July 4 | 758 | 189 | 64 | 138 |
| Meylan, Auguste. (See Grasset and Meylan.) | | | | | | |
| Meylert, Asa P., *et al.* (See Harper, Thomas, assignor.) | | | | | | |
| Michaud, Onesime E., St. Louis, Mo. Street-car register | 505,167 | Sept. 19 | 1417 | {364 365} | 64 | 1563 |
| Michel, Charles, New York, N. Y. Egg-cutter | 503,431 | Aug. 15 | 1980 | 491 | 64 | 955 |
| Michigan Fire Ladder and Engine Company. (See Brayton, Richard, assignor.) | | | | | | |
| Midgley, Henry. (See Shepherd and Midgley.) | | | | | | |
| Mika, Ambrose. (See Scott and Mika.) | | | | | | |
| Miles, Overton R. (See Waters, Samuel A. L., assignor.) | | | | | | |
| Milford Manufacturing Company. (See Newbigging and Wors, assignors.) | | | | | | |
| Mill, Arthur J. F., Aurora, Ind. Drill-press | 503,153 | Aug. 15 | 1536 | {377 378} | 64 | 876 |
| Millard, Walter W., Fenton, Mich. Electric-arc lamp | 503,799 | Aug. 22 | 2582 | 643 | 64 | 1083 |
| Miller, Cassius M., Canton, Ohio. Duplex steam-pump | 502,737 | Aug. 8 | 843 | {204 205} | 64 | 735 |
| Miller, Charles A., assignor to Wilcox Silver Plate Company, Meriden, Conn. Letter-scale | 504,534 | Sept. 5 | 971 | 94 | 64 | 1339 |
| Miller, Charles C., New York, N. Y. Weighing-scale | 504,930 | Sept. 12 | 1023 | 264 | 64 | 1478 |
| Miller, Christopher J., Marion, Ohio. Corn-planter | 505,168 | Sept. 19 | 1419 | {365 366} | 64 | 1564 |



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|---|---|---|---|---|---|---|
| Miller, Daniel F., Leroy, assignor of one-half to G. V. Frazier and W. Elrod, Somerset, Ky. Stave-dressing machine | 500,666 | July 4 | 222 | 58 | 64 | 42 |
| Miller, David C., Newburg, N. Y. Stone-saw | 500,592 | July 4 | 83 | 23 | 64 | 16 |
| Miller, Elmer E., Canton, Ohio. Curry-comb | 502,233 | July 25 | 2791 | 686 | 64 | 542 |
| Miller, Fred, Corning, Ohio. Flight for endless conveyers | 501,289 | July 11 | 1198 | 303 | 64 | 233 |
| Miller, Frederick. (See Clabby, James, assignor.) | | | | | | |
| Miller, George, Baltimore, Md. Caramel-bolde | 502,676 | Aug. 1 | 731 | 175 | 64 | 700 |
| Miller, George S., Council Bluffs, Iowa. Brace | 504,604 | Sept. 5 | 475 | 122 | 64 | 1358 |
| Miller Grate Company. (See Miller, Peter L., assignor.) | | | | | | |
| Miller, Henry O., assignor of one-half to A. J. Eaton and E. F. Hurdle, Eaton, Colo. Car-coupling | 502,260 | July 25 | 2778 | {701 702} | 64 | 553 |
| Miller, Henry C., Fort Wayne, Ind. Engine | 503,154 | Aug. 15 | 1538 | 378 | 64 | 876 |
| Miller, James U. (See Van Matre, Benjamin F. and G. H., assignors.) | | | | | | |
| Miller, James W. (See Beall, John N., assignor.) | | | | | | |
| Miller, John, Manningham, England. Machine for pressing and finishing textile fabrics | 504,228 | Aug. 29 | 2369 | {816 817} | 64 | 1230 |
| Miller, Lee A., Milwaukee, assignor to S. B. Fuller, Watertown, Wis. Sewing-machine shuttle | 503,269 | Aug. 15 | 1721 | 434 | 64 | 910 |
| Miller, Louis P., *et al.* (See Tyler, Harry L., assignor.) | | | | | | |
| Miller, O. A. (See Gordon, William, assignor.) | | | | | | |
| Miller, Peter L., assignor to Miller Grate Company, Cleveland, Ohio. Gas-burner for heating stoves or grates | 503,705 | Aug. 22 | 2437 | 607 | 64 | 1054 |
| Miller, Thomas A., Stockton, Cal. Bean or grain thrashing machine | 504,350 | Sept. 5 | 67 | 18 | 64 | 1284 |
| Miller, Thomas S., South Orange, N. J. Conveying apparatus | 503,381 | Aug. 15 | 1913 | 474 | 64 | 944 |
| Miller, Thomas S., South Orange, N. J. Conveying apparatus | 503,890 | Aug. 22 | 2583 | 644 | 64 | 1083 |
| Miller, Thomas W., Cleveland, Ohio. Water-gage | 504,694 | Sept. 5 | 629 | 156 | 64 | 1388 |
| Miller, William S., Meyersdale, Pa. Split pulley | 502,310 | Aug. 1 | 88 | 20 | 64 | 592 |
| Miller's Falls Company. (See Lanfair, Herbert D., assignor.) | | | | | | |
| Miller's Falls Company. (See Pratt, Henry L., assignor.) | | | | | | |
| Mills, Johan E., Chicago, Ill. Composition of matter for tempering | 503,801 | Aug. 22 | 2583 | ..... | 64 | 1084 |
| Mills, John F. (See Moore, Rue, Smith, Roebuck, Mills, and Kirk.) | | | | | | |
| Mills, Norman T., Boston, Mass. Portable electric-lamp support | 505,060 | Sept. 12 | 1237 | 318 | 64 | 1517 |
| Mills, William K., Kokomo, Ind. Gate | 500,503 | July 4 | 84 | 24 | 64 | 17 |
| Milne, Charles D., and A. R. Pritchard, Rochester, N. Y. Joining spouts to metallic kettles | 502,046 | July 25 | 2415 | 608 | 64 | 484 |
| Milton, John, Alexandria, Va. Locomotive-boiler furnace | 503,155 | Aug. 15 | 1540 | 378 | 64 | 877 |
| Milsted, William N., New York, N. Y. Gas-meter casing | 505,715 | Sept. 26 | 2369 | 598 | 64 | 1754 |
| Milwaukee Harvester Company. (See Graham and Birkett, assignors.) | | | | | | |
| Minerley, Lewis, Kingston, N. Y. Rowlock | 501,802 | July 18 | 2034 | 500 | 64 | 396 |
| Mink, Frits, assignor to Keystone Watch Case Company, Philadelphia, Pa. Watch-bow fastener | 501,210 | July 11 | 1079 | 274 | 64 | 212 |
| Mink, Frits, assignor to Keystone Watch Case Company, Philadelphia, Pa. Watchcase-pendant | 505,474 | Sept. 26 | 1911 | 492 | 64 | 1669 |
| Minnemyer, Edward G., Chicago, Ill. Washing-machine | 504,989 | Sept. 12 | 1198 | 289 | 64 | 1496 |
| Minogue, Martin T., assignor of two-thirds to T. Reynolds and P. Shonolin, Springfield, Ohio. Band-cutter and feeder | 504,990 | Sept. 12 | 1130 | 289 | 64 | 1497 |
| Minter, Frank, Corning, Kans. Heat-regulator for incubators | 505,604 | Sept. 26 | 2174 | 550 | 64 | 1719 |
| Misic, Michael, assignor to Foster Pump Works, Brooklyn, N. Y. Valve for direct-acting steam-pumps | 504,844 | Sept. 12 | 829 | {228 229} | 64 | 1452 |
| Mitchell, Andrew J., Washington Court-House, Ohio. Quilting-machine | 504,229 | Aug. 29 | 3271 | 817 | 64 | 1230 |
| Mitchell, Cornelius S. (See Bowles, John, assignor.) | | | | | | |
| Mitchell, Frank G. (See Fay, William H., assignor.) | | | | | | |
| Mitchell, James A., Martinsburg, W. Va. Wire-fence machine | 504,991 | Sept. 12 | 1131 | 290 | 64 | 1497 |
| Mitchell, John J., Detroit, Mich. Machine for making tablets for medicinal purposes | 500,594 | July 4 | 86 | 24 | 64 | 17 |
| Mitchell, John W. (See Schermerhorn, Charles, assignor.) | | | | | | |
| Mitchell, Kerr M., St. Joseph, Mo. Center-seal | 501,572 | July 18 | 1648 | {412 413} | 64 | 332 |
| Mitchell, Thomas J., Vinita, Ind. Ter. Sickle-head for mowers | 502,129 | July 25 | 2544 | 638 | 64 | 509 |
| Mitchell, William E., Merton, Wis. Runner attachment for vehicle-wheels | 505,668 | Sept. 26 | 2282 | 579 | 64 | 1740 |
| Mock, George S., Lebanon, Ky. Napkin-holder | 502,739 | Aug. 8 | 846 | 206 | 64 | 736 |
| Mock, Henry, New York, N. Y. Conveyer | 503,326 | Aug. 15 | 1826 | 452 | 64 | 928 |
| Mock, James F., assignor of one-half to J. D. Mock, Muncie, Ind. Brick-truck | 502,738 | Aug. 8 | 844 | {205 206} | 64 | 736 |
| Mock, John D. (See Mock, James F., assignor.) | | | | | | |
| Modes, William F., Streator, Ill. Glass-annealing kiln | 505,716 | Sept. 26 | 2371 | 599 | 64 | 1754 |
| Moe, Hiram G. (See Trumble, Chauncey B., assignor.) | | | | | | |
| Moe, Leonidas L., Denver, Colo. Hay-press | 505,234 | Sept. 19 | 1503 | 392 | 64 | 1579 |
| Moebus, Henry E., Woodstock, Ontario, Canada. Vehicle-hub | 502,406 | Aug. 1 | 261 | 61, 62 | 64 | 613 |
| Moehn, John N., assignor of one-half to T. Pidd, Milwaukee, Wis. Thill-coupling | 504,230 | Aug. 29 | 3273 | 818 | 64 | 1230 |
| Moehn, John N., Druecker, assignor of two-thirds to E. A. Weidner and J. Mergenthaler, Milwaukee, Wis. Lift-pump | 505,276 | Sept. 19 | 1567 | 413 | 64 | 1595 |
| Moginie, John C., Wellington, New Zealand. Blotting-pad | 500,774 | July 4 | 285 | 101 | 64 | 72 |
| Mohr, Frederik, assignor to Grusonwerk, Magdeburg-Buckau, Germany. Brake for gun-carriages | 500,927 | July 4 | 612 | 160 | 64 | 112 |
| Mohr, Frederik, assignor to Grusonwerk, Magdeburg, Germany. Cartridge | 503,096 | Aug. 8 | 1430 | 353 | 64 | 844 |
| Mohr, Joseph, assignor to J. Mohr & Son, Chicago, Ill. Punching-machine | 501,152 | July 11 | 992 | {253 254} | 64 | 195 |
| Mohr & Son, John. (See Mohr, Joseph, assignor.) | | | | | | |
| Mohroff, Edward W., Madison, Wis. Stovepipe-fastener | 500,667 | July 4 | 294 | 58 | 64 | 43 |
| Mollé, François F., Paris, France. Machine for making spinning or other rollers | 504,813 | Sept. 12 | 838 | {214 215} | 64 | 1440 |
| Möller, Max. (See Kiesserling and Möller.) | | | | | | |
| Moller, William, New York, N. Y. Storm-step for outdoor stairs | 501,211 | July 11 | 1060 | 274 | 64 | 213 |
| Molloy, M. P., *et al.* (See Graves, Cashious M., assignor.) | | | | | | |
| Moloney, Michael J. (See Kinsella, Edward, assignor.) | | | | | | |
| Monash, Charles P. (See Van Auken, Clarence E., assignor.) | | | | | | |
| Moncrieff, Robert W., Manchester, England. Suction-box for paper-machines | 504,885 | Sept. 12 | 947 | {244 245} | 64 | 1463 |
| Monell, Ira P., Sugar Loaf, Colo. Ore separator and concentrator | 504,931 | Sept. 12 | 1024 | 264 | 64 | 1478 |
| Monte, Eduardo M. de, and C. Jost, Bombay, India. Means for preventing railway collisions | 505,669 | Sept. 26 | 2283 | {560 561} | 64 | 1740 |
| Moody, Leonard, *et al.* (See Burnham, Arthur M., assignor.) | | | | | | |
| Moody, Oakman A., Canaan, Me. Milking-stool | 504,992 | Sept. 12 | 1132 | 290 | 64 | 1497 |
| Mook, Charles O., Kansas City, Mo. Adjustable roller for woodworking-machines | 504,922 | Sept. 12 | 1026 | 264 | 64 | 1478 |

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|---|---|---|---|---|---|---|
| Moomy, Joseph G., assignor of one-half to T. Brown, Erie, Pa. Pneumatic tire | 501,290 | July 11 | 1199 | 363 | 64 | 933 |
| Moon, R. G., *et al.* (See Walker, Orlando O., assignor.) | | | | | | |
| Moon, Richard D., assignor of one-half to R. J. Cowan, Ovilla, Tex. Churn | 504,737 | Sept. 12 | 704 | 176 | 64 | 1416 |
| Moore, Adin S. (See Derrick and Moore.) | | | | | | |
| Moore, Arthur B., G. W. Rue, C. D. Smith, F. H. Roebuck, J. F. Mills, and J. R. Kirk, East Las Vegas, N. Mex. Ter. Lighting apparatus | 502,573 | Aug. 1 | 542 | 125 | 64 | 665 |
| Moore, Charles C., Columbus, Ohio. Metallic ceiling | 500,596 | July 4 | 87 | 25 | 64 | 17 |
| Moore, Charles E., assignor to Moore & Wyman Elevator and Machine Works, Boston, Mass. Controlling device for elevators | 502,372 | Aug. 1 | 204 | 49 | 64 | 603 |
| Moore, Charles F. (See Lenarz, Felix A., assignor.) | | | | | | |
| Moore, Charles R., Elmira, N. Y. Boiler | 500,814 | July 4 | 446 | 117 | 64 | 82 |
| Moore, Daniel M., New York, N. Y. Electric regulator | 502,444 | Aug. 1 | 331 | 79 | 64 | 627 |
| Moore, Edgar A., Manlius, N. Y. Composition for architectural purposes | 504,933 | Sept. 12 | 1029 | ..... | 64 | 1479 |
| Moore, Edward U., Chaires, Fla. Nut-lock | 501,590 | July 18 | 1676 | 418 | 64 | 338 |
| Moore, Ethelbert A., New Britain, Conn. Machine for polishing hinges | 504,498 | Sept. 5 | 315 | 79, 80 | 64 | 1769 |
| Moore, Frederic H., Boston, Mass. Bridging for flooring-joists | 503,945 | Aug. 15 | 1685 | 414 | 64 | 903 |
| Moore, George. (See Sherman, Lewis P., assignor.) | | | | | | |
| Moore, George, Boston, Mass. Trolley-guard | 502,620 | Aug. 1 | 638 | 159 | 64 | 684 |
| Moore, Gideon E., New York, N. Y. Treating ores of zinc, manganese, or iron | 505,408 | Sept. 19 | 1802 | ..... | 64 | 1635 |
| Moore, George R., Philadelphia, Pa. Valve and pipe adjunct for graduating the flow of oil from tanks | 503,769 | Aug. 22 | 2541 | 639 | 64 | 1075 |
| Moore, Gilpin, assignor to Deere & Company, Moline, Ill. Spring-tooth for cultivators | 503,286 | Aug. 15 | 1758 | 434 | 64 | 916 |
| Moore, Harrey, Wellingborough, England. Vehicle-wheel | 504,440 | Sept. 5 | 208 | 54, 55 | 64 | 1309 |
| Moore, Harry S., assignor of one-half to S. B. Cole, Bridgeton, N. J. Merry-go-round | 504,866 | Sept. 12 | 949 | 945, 946 | 64 | 1463 |
| Moore, Morris W., assignor of five-sixths to J. E. Chase and W. D. Park, Holyoke, Mass. Fountain-pen | 501,896 | July 18 | 2175 | 539 | 64 | 424 |
| Moore, Moses E., Westfield, Mass. Machine for splitting rattan or other stock | 500,813 | July 4 | 444 | 117 | 64 | 82 |
| Moore, Thomas, Cheyenne, Wyo. Self-lubricating axle-box | 501,787 | July 18 | 1901 | 473 | 64 | 376 |
| Moore, William B. (See Wright, Judson E., assignor.) | | | | | | |
| Moore, William J. (See Steel, Robert, assignor.) | | | | | | |
| Moore, William S., New York, N. Y. Vacuum-pump | 501,954 | July 25 | 2270 | 567 | 64 | 457 |
| Moore, William W., Philadelphia, Pa. Broom or brush holder | 504,887 | Sept. 12 | 951 | 246 | 64 | 1464 |
| Moore & Wyman Elevator and Machine Works. (See Moore, Charles E., assignor.) | | | | | | |
| Moran Flexible Steam Joint Company. (See Moran, Thomas W., assignor.) | | | | | | |
| Moran, Thomas W., assignor to Moran Flexible Steam Joint Company, Louisville, Ky. Combination coupling for steam-pipes of railway-cars | 501,465 | July 11 | 1483 | 373 | 64 | 285 |
| Moran, Thomas W., assignor to Moran Flexible Steam Joint Company, Louisville, Ky. Pipe-coupling | 502,934 | July 25 | 2722 | 686 | 64 | 542 |
| Morel, Ferdinand, Paris, France. Apparatus for turning music-sheets | 501,912 | July 11 | 1081 | 275 | 64 | 213 |
| Moreland, Willis J., Mottville, N. Y. Folding chair | 505,331 | Sept. 19 | 1664 | 429 | 64 | 1609 |
| Morey, Albert E., assignor to Akron Tool Company, Akron, Ohio. Journal for barrows | 502,662 | July 25 | 2474 | 621 | 64 | 495 |
| Morgan Construction Company. (See Edwards, Victor E., assignor.) | | | | | | |
| Morgan, Fred W., and R. Wright, Chicago, Ill. Pneumatic tire | 502,047 | July 25 | 2417 | 608, 609 | 64 | 481 |
| Morgan, Fred W., and R. Wright, Chicago, Ill. Pneumatic tire | 502,048 | July 25 | 2419 | 609 | 64 | 484 |
| Morgan, Gerry. (See Morgan, William G., assignor.) | | | | | | |
| Morgan, Waitman M., Kansas City, Mo. Apparatus for elevating and equalizing the supply of liquids | 502,102 | July 25 | 2501 | 626 | 64 | 500 |
| Morgan, Warren, Houghton, N. Y. Cattle-stanchion | 501,605 | Sept. 5 | 476 | 122 | 64 | 1358 |
| Morgan, William, Brooklyn, Ohio. Cutter-head | 501,685 | July 18 | 1836 | 457 | 64 | 365 |
| Morgan, William G., assignor of one-half to G. Morgan, Fryeburg, Me. Surgical lamp | 501,594 | July 18 | 1577 | 397 | 64 | 318 |
| Morgenster, Robert, assignor to American Carving and Manufacturing Company, Winona, Minn. Automatic duplicating-machine | 501,091 | July 11 | 882 | 227, 228, 229 | 64 | 176 |
| Morrell, Benjamin D., Pittsburg, Pa. Portable folding cot | 505,409 | Sept. 19 | 1804 | 465, 466 | 64 | 1636 |
| Morrill, George P., Canterbury, N. H. Ax wedge and guard | 503,351 | Aug. 15 | 1864 | 461 | 64 | 935 |
| Morrill, Ichabod P., Noble, Mich. Combined kitchen-table and flour-sifter | 502,630 | Aug. 1 | 639 | 153 | 64 | 684 |
| Morris, John H., Seward, Nebr. Vehicle-wheel | 501,525 | July 18 | 1578 | 397 | 64 | 318 |
| Morris, Joseph L., Lawrence, Kans. Adjustable-speed bicycle | 504,168 | Aug. 29 | 3165 | 790 | 64 | 1210 |
| Morris, Simeon I., assignor of one-half to J. W. Wait, St. Paul, Minn. Apparatus for relining tunnels | 504,045 | Aug. 29 | 2980 | 742 | 64 | 1173 |
| Morrison, Henry K., Jersey City, N. J., assignor to United Gas Improvement Company, Philadelphia, Pa. Coal-handling appliance | 502,445 | Aug. 1 | 332 | 80 | 64 | 627 |
| Morrison, P. B. (See Munslow, Joseph B., assignor.) | | | | | | |
| Morrison, Quin W., St. Louis, Mo. Jack for loading or unloading cars | 502,049 | July 25 | 2422 | 610 | 64 | 484 |
| Morrison, Willard A., and C. L. Ames, Chicago, Ill., assignors to Ames & Frost Company, of Illinois. Leg for wardrobe-beds | 505,411 | Sept. 19 | 1809 | 466, 467 | 64 | 1637 |
| Morrow, John T., Lynn, assignor to General Electric Company, Boston, Mass. Armature for dynamo-electric machines | 504,401 | Sept. 5 | 141 | 37 | 64 | 1297 |
| Morse, Charles L., Athol, Mass. Valve-reseating machine | 504,606 | Sept. 5 | 477 | 122, 123 | 64 | 1359 |
| Morse, Everett F., Trumansburg, N. Y. Vehicle-spring | 505,948 | Sept. 19 | 1539 | 401 | 64 | 1586 |
| Morse, Lansing, Brooklyn, N. Y. Secondary battery | 502,894 | Aug. 8 | 993 | 242 | 64 | 764 |
| Morse, Lansing, Brooklyn, N. Y. Electric switch | 502,895 | Aug. 8 | 995 | 242 | 64 | 764 |
| Morse, Orville M., Jackson, Mich. Grain-cleaner | 505,573 | Sept. 26 | 2125 | 538 | 64 | 1710 |
| Mortimer, John D. D., Stockton, Cal. Shipping receipt-book | 504,360 | Sept. 5 | 68 | 18 | 64 | 1284 |
| Morton, Francis L. (See Tolan and Morton.) | | | | | | |
| Morton, George, *et al.* (See Claussen, Edward E., assignor.) | | | | | | |
| Moschowitz, Herman, New York, N. Y. Dress-shield | 500,928 | July 4 | 614 | 160 | 64 | 119 |
| Moser, Joseph J., West Covington, Ky. Well-strainer | 501,655 | July 18 | 1789 | 445 | 64 | 357 |
| Mosher, Oscar M., Glidden, assignor of one-half to M. W. Beach, Carroll county, Iowa. Teagne-support | 501,466 | July 11 | 1484 | 373, 374 | 64 | 285 |
| Moskowitz, Jacob, St. Louis, Mo. Fly-trap | 501,686 | July 18 | 1837 | 457 | 64 | 365 |
| Moskowitz, Morris, and S. Young, assignors of one-half to L. D. Adler and J. Loewenberg, Newark, N. J. Means for transmitting power from car-axles to dynamos | 504,132 | Aug. 29 | 3106 | 778 | 64 | 1200 |
| Moss, Marvin R., Huntsburg, Ohio. Sap-bucket cover | 502,740 | Aug. 8 | 846 | 208 | 64 | 736 |
| Moss, Marvin R., Huntsburg, Ohio. Reaming-bit | 505,323 | Sept. 19 | 1665 | 429 | 64 | 1609 |
| Mossberg, Frank, Attleborough, Mass. Drop-press pulley | 502,930 | Aug. 8 | 1171 | 289 | 64 | 797 |
| Mossberg, Frank, assignor to Mossberg Manufacturing Company, Attleborough, Mass. Vise for milling-machines | 503,327 | Aug. 15 | 1928 | 453 | 64 | 928 |
| Mossberg Manufacturing Company. (See Mossberg, Frank, assignor.) | | | | | | |
| Mott, Frank M., assignor of one-half to J. McLaren, Perris, Cal. Faucet | 503,666 | Aug. 22 | 2377 | 593 | 64 | 1045 |



*Alphabetical list of patentees, July to September, inclusive*—Continued.

| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Dr'g. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Mott, John R. (See Stevens and Mott.) | | | | | | |
| Moul, Martin, Hanover, Pa. Machine for bunching match-sticks | 502,909 | Aug. 8 | 1127 | 277, 278 | 64 | 789 |
| Mount, Frederick W., St. John, Canada. Electric switchboard | 504,738 | Sept. 12 | 705 | 177 | 64 | 1416 |
| Mowrer, Oscar D., Claremont, Ill. Cornstalk-shocker | 505,225 | Sept. 19 | 1504 | 392 | 64 | 1579 |
| Mowry, Joseph B., assignor of one-half to J. F. Stine, Mansfield, Ohio. Brick-mold | 503,867 | Aug. 22 | 2378 | 593 | 64 | 1043 |
| Moxham, Arthur J., Johnstown, Pa. Transfer-table for railways | 500,929 | July 4 | 615 | 160, 161 | 64 | 112 |
| Moxham, Arthur J., Johnstown, Pa. Switch-piece and making it | 500,930 | July 4 | 616 | 161, 162 | 64 | 113 |
| Moxham, Arthur J., Johnstown, Pa. Railway-rail chair | 500,931 | July 4 | 618 | 163 | 64 | 113 |
| Mueller, William M., and O. F. Burford, Elmwood, Nebr. Stalk-cutter | 504,934 | Sept. 12 | 1029 | 265 | 64 | 1479 |
| Mugnier, Joseph C. G., Paris, France. Railway signal apparatus | 500,668 | July 4 | 225 | 58, 59 | 64 | 43 |
| Mühlmann, Wilhelm R., Klingenthal, Germany. Accordion | 501,803 | July 18 | 2034 | 501 | 64 | 399 |
| Mulchrone, Patrick F. (See Cullen and Mulchrone.) | | | | | | |
| Mulholland, Fred A., *et al.* (See Rodden, William H., assignor.) | | | | | | |
| Mullen, Curtis, Harrisville, Ind. Carriage | 501,647 | July 18 | 1839 | 458 | 64 | 365 |
| Müller, Carl, assignor to Badische Anilin and Soda Fabrik, Ludwigshafen, Germany. Violet dye | 501,434 | July 11 | 1439 | ..... | 64 | 277 |
| Mullin, Bernard A., assignor of one-half to A. Segal and H. Hoopes, Philadelphia, Pa., and Mullin Dredging and Lightering Company, of New Jersey. Dumping-scow | 501,020 | July 4 | 760 | 190 | 64 | 139 |
| Mullin Dredging and Lightering Company *et al.* (See Mullin, Bernard A., assignor.) | | | | | | |
| Mummery, Edwin G., Detroit, Mich. Hydrocarbon-burner | 503,548 | Aug. 15 | 2109 | 542 | 64 | 990 |
| Mundell, Alfred, Brooklyn, N. Y. Sewer-cleaning apparatus | 502,130 | July 25 | 2545 | 638 | 64 | 509 |
| Mundwiler, William H., Attica, Ohio. Eaves-trough hanger | 505,717 | Sept. 26 | 2373 | 599 | 64 | 1755 |
| Munger-Colton Manufacturing Company. (See Colton, George A., assignor.) | | | | | | |
| Munroe, Robert, Jr. (See Gloekler and Munroe.) | | | | | | |
| Munsell & Co., Eugene. (See Jefferson, Charles W., assignor.) | | | | | | |
| Munsell, William W., Dodge City, Kans. Safe | 501,092 | July 11 | 891 | 229 | 64 | 178 |
| Munsey, John D., Dions, Ill. Horseshoe and quarter-boot | 503,869 | Aug. 22 | 2673 | 670 | 64 | 1101 |
| Munsing, George D., Minneapolis, Minn. Driving-wheel | 500,669 | July 4 | 227 | 59 | 64 | 43 |
| Munslow, Joseph B., Findlay, Ohio. Steam-engine valve | 502,374 | Aug. 1 | 209 | 49, 50 | 64 | 604 |
| Munslow, Joseph B., assignor of one-half to P. B. Morrison, Findlay, Ohio. Reel for wire-nail machines | 502,373 | Aug. 1 | 208 | 49 | 64 | 604 |
| Munson, Albert L., New York, N. Y. Cigarette-machine | 505,630 | Sept. 26 | 2213 | 561, 562, 563 | 64 | 1726 |
| Munson, George H., and G. B. Haines, assignors to said Munson and C. A. B. Pratt, New York, N. Y. Combined writing-tablet and copy-holder | 502,574 | Aug. 1 | 543 | 129 | 64 | 666 |
| Munton, James, and A. Frazier, Maywood, Ill. Car-coupling | 500,815 | July 4 | 448 | 117 | 64 | 83 |
| Muralt, Aloys R., de. (See Badoni, Massimiliano, assignor.) | | | | | | |
| Murchland, William, Kilmarnock, Scotland. Apparatus for milking cows | 501,804 | July 18 | 2035 | 501 | 64 | 399 |
| Murdock, Edwin H., Cincinnati, Ohio. Cash indicator and register | 501,153 | July 11 | 996 | 254 | 64 | 196 |
| Murphy, James, *et al.* (See Hunt, Edward P., assignor.) | | | | | | |
| Murphy, Thomas, San Francisco, Cal. Fire-engine harness | 505,410 | Sept. 19 | 1805 | 466 | 64 | 1636 |
| Murray, Alexander M., Chicago, Ill. Farm-gate | 503,389 | Aug. 15 | 1758 | 434 | 64 | 916 |
| Murray, James A., deceased, Minneapolis, Minn.; K. F. Murray, administratrix. Pipe joint and coupler | 504,739 | Sept. 12 | 707 | 177 | 64 | 1416 |
| Murray, Kate F., administratrix. (See Murray, James A.) | | | | | | |
| Murray, Michael, Baltimore, Md. Heel | 500,816 | July 4 | 450 | 118 | 64 | 83 |
| Murray, Thomas R., assignor of one-half to W. McEwan, Albany, N. Y. Pocket or bin for the storage of coal, grain, &c | 503,097 | Aug. 8 | 1431 | 353 | 64 | 844 |
| Musselman, George A., assignor of one half to J. Walters, Richland county, Ohio. Wind-engine | 502,860 | Aug. 8 | 1043 | 256 | 64 | 773 |
| Myers, Abraham H., Sterling, Ill. Automatic bridge-gate | 504,169 | Aug. 29 | 3170 | 790, 791 | 64 | 1211 |
| Myers, Annetta, Ashbourne, Pa. Game apparatus | 503,382 | Aug. 15 | 1914 | 474, 475 | 64 | 944 |
| Myers, David E., Indianapolis, Ind. Motor | 504,993 | Sept. 12 | 1133 | 290 | 64 | 1497 |
| Myers, Frederick H. (See Masterman, William H., assignor.) | | | | | | |
| Myers, Henry, Philadelphia, Pa. Wheel-tire | 502,741 | Aug. 8 | 847 | 206 | 64 | 736 |
| Myers, Henry J. (See Hyama, Hyam J., assignor.) | | | | | | |
| Myers, John, Mechanicsburg, assignor to M. Dock and S. C. Myers, Mifflintown, Pa. Knockdown crate | 505,061 | Sept. 12 | 1239 | 318, 319 | 64 | 1518 |
| Myers, Moses E., Cambridge City, Ind. Gate | 501,526 | July 18 | 1579 | 397 | 64 | 318 |
| Myers, Philip A., Ashland, Ohio. Windmill-pump regulator | 501,354 | July 11 | 1317 | 329 | 64 | 253 |
| Myers, Philip A., Ashland, Ohio. Windmill-regulator | 501,355 | July 11 | 1319 | 330 | 64 | 253 |
| Myers, Samuel C., *et al.* (See Myers, John, assignor.) | | | | | | |
| Myers, Thomas C., Cleveland, Ohio. Street-sweeper | 501,352 | July 11 | 1316 | 329 | 64 | 253 |
| Myers, Thomas C., Cleveland, Ohio. Street-sweeper | 501,353 | July 11 | 1316 | 329 | 64 | 253 |
| Nagle, Gerard B., Revelstoke, Canada. Spittoon-carrier | 504,607 | Sept. 5 | 480 | 123 | 64 | 1359 |
| Nappin, Ira., Farmington, Ill. Nut-lock | 504,608 | Sept. 5 | 481 | 123 | 64 | 1359 |
| Naramore, Henry L. (See Richards, Edwin G., assignor.) | | | | | | |
| Nash, Nathan E., and G. A. Eddy, assignors to National Electric Valve Company, Cleveland, Ohio. Water-regulator for steam-boilers | 504,234 | Aug. 29 | 3280 | 819, 820 | 64 | 1232 |
| Nathan, Scheyer, New York, N. Y. Purse or pocket-book | 501,728 | July 18 | 1902 | 473 | 64 | 376 |
| National Automatic Knitter Company. (See Franck, Emil, assignor.) | | | | | | |
| National Cash Register Company. (See Cowley, James T., assignor.) | | | | | | |
| National Cash Register Company. (See Ehrlich, Leo, assignor.) | | | | | | |
| National Cash Register Company. (See Koch, William, assignor.) | | | | | | |
| National Cash Register Company. (See Lockwood, Thomas J., assignor.) | | | | | | |
| National Cash Register Company. (See Pfeifer, John, assignor.) | | | | | | |
| National Electric Gas Company. (See Goff, Mott P., assignor.) | | | | | | |
| National Electric Machine Company. (See Pope, William R., assignor.) | | | | | | |
| National Electric Valve Company. (See Nash and Eddy, assignors.) | | | | | | |
| National Heat and Power Company. (See Hastings, James L., assignor.) | | | | | | |
| National Key-Opening Can Company. (See Zimmerman and Underdown, assignors.) | | | | | | |
| Natural Body Brace Company. (See Rash, Howard C., assignor.) | | | | | | |
| Neal, Augustus, and R. B. Suhr, Ashland, Nebr. Harrow | 503,434 | Aug. 15 | 1964 | 492 | 64 | 950 |
| Neal, Lemuel C., Lewiston, Idaho. Current-motor | 502,931 | Aug. 8 | 1173 | 289 | 64 | 797 |
| Neave, William H. M., Sheffield, England. Manufacture of picks | 502,746 | Aug. 8 | 859 | 209 | 64 | 739 |
| Needham, John E., Mount Tabor, Oreg. Steam-boiler furnace | 501,729 | July 18 | 1903 | 473 | 64 | 377 |
| Neel, John T., Millersport, Ohio. Metallic roofing | 502,009 | July 25 | 2347 | 588 | 64 | 471 |
| Neeley, George S., assignor to himself and F. Meurer, Pacific, Mo. Balanced slide-valve | 502,132 | July 25 | 2549 | 630 | 64 | 510 |

*Alphabetical list of patentees, July to September, inclusive*—Continued.

| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Dr'g. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Neely, Samuel M., Smith's Turn Out, S. C. Hay or cotton press | 501,435 | July 11 | 1441 | 361 | 64 | 277 |
| Neff, Abram H. B. and E. H. N., Petersburg, Canada. Metal wheel | 505,633 | Sept. 26 | 2227 | 565 | 64 | 1728 |
| Neff, Edmund H. N. (See Neff, Abram H. B. and E. H. N.) | | | | | | |
| Negus, John S., Brooklyn, N. Y. Ship's bell-clock | 500,717 | July 4 | 296 | 80 | 64 | 55 |
| Neidl, William J., New Britain, Conn. Lock | 503,706 | Aug. 22 | 2438 | 607 | 64 | 1054 |
| Nell, John, New York, N. Y. Sash-weight holder | 503,291 | Aug. 15 | 1760 | 435 | 64 | 917 |
| Neilson, Henry H., *et al.* (See Robertson, James, assignor.) | | | | | | |
| Neitzel, George A., Bedford, Ohio. Attachment for molding or turning machines | 504,111 | Aug. 29 | 3077 | 770 | 64 | 1194 |
| Neller, Albert H., Mapleton, Minn. Windmill | 504,994 | Sept. 12 | 1134 | 291 | 64 | 1496 |
| Nelson, Abiel W., New London, Conn. Policeman's club | 503,977 | Aug. 29 | 2860 | 717 | 64 | 1154 |
| Nelson, Andrew G. (See Lagerquist and Nelson.) | | | | | | |
| Nelson, Edward, Frederick, Md. Dental-disk-holder | 505,121 | Sept. 19 | 1347 | 347 | 64 | 1551 |
| Nelson, Erick, St. Paul, Minn. Tool for sharpening plows | 502,747 | Aug. 8 | 860 | 210 | 64 | 739 |
| Nelson, Henry, Fort Wayne, Ind. Organ | 502,050 | July 25 | 2423 | 610 | 64 | 485 |
| Nelson, Jay, assignor of one-half to T. C. White, St. Louis, Mo. Crossing for electric railways | 504,276 | Aug. 29 | 3347 | 836 | 64 | 1345 |
| Nelson, John I. E., Cedar Home, Wash. Sole and heel plate | 504,995 | Sept. 12 | 1136 | 291 | 64 | 1498 |
| Nelson, Joseph, Nauvoo, Ill. Animal-trap | 502,966 | Aug. 8 | 1271 | 311 | 64 | 813 |
| Nelson, Kilburg, West Duluth, Minn. Rotary cutter-head | 501,956 | July 25 | 2273 | 564 | 64 | 457 |
| Nelson, Pehr P., New York, N. Y. Electric bowling-alley | 504,087 | Aug. 29 | 3029 | 756 / 757 | 64 | 1185 |
| Nelson, Searick F. (See Schimmel and Nelson.) | | | | | | |
| Nelson, Thomas J. (See West, Edward B., assignor.) | | | | | | |
| Nesbit, John J. (See Queen and Kimball, assignors.) | | | | | | |
| Nesbit, Samuel H., Anthony, Kans. Type-holder | 501,358 | July 11 | 1395 | 332 | 64 | 254 |
| Ness, Thomas W., Montreal, Canada. Telephone-switch | 505,170 | Sept. 19 | 1423 | 366 | 64 | 1564 |
| Nessel, Fred, and F. McLish, Chicago, Ill. Hub for bicycle-wheels | 504,888 | Sept. 12 | 952 | 246 | 64 | 1464 |
| Netzer, Joseph, Laredo, Tex. Ventilator for refrigerators | 501,953 | July 11 | 1149 | 291 | 64 | 224 |
| Neuman, William, Ashland, Wis. Safety-buffer for railway-trains | 503,270 | Aug. 15 | 1723 | 425 | 64 | 910 |
| Neumann, Michael J., Jr., New York, N. Y. Game-register | 503,978 | Aug. 29 | 2861 | 718 | 64 | 1154 |
| Nevius, Burnet L., Jr. (See Burchell and Nevius.) | | | | | | |
| New Jersey Wire Cloth Company. (See Orr, Walter C., assignor.) | | | | | | |
| New Power Company. (See Chappell, George H., assignor.) | | | | | | |
| New York Belting and Packing Company. (See Cheever, John D., assignor.) | | | | | | |
| New York Belting and Packing Company. (See Hardwick, Frederick W., assignor.) | | | | | | |
| Newbigging, William, and G. A. Worz; said Worz assignor to Milford Manufacturing Company, Milford, Ohio. Carpet-sweeper | 504,846 | Sept. 12 | 892 | 229 | 64 | 1452 |
| Newell, Benjamin P. (See Hilton, John W., assignor.) | | | | | | |
| Newkirk, Eugene W., Wooster, Ohio. Window-bead fastener | 505,129 | Sept. 19 | 1348 | 347 | 64 | 1551 |
| Newman, Charles E., Baltimore, Md. Brake for vehicles | 502,576 | Aug. 1 | 546 | 130 | 64 | 666 |
| Newman, Charles E., Baltimore, Md. Spring-propelled vehicle | 502,577 | Aug. 1 | 547 | 130 / 131 | 64 | 667 |
| Newman, John W., *et al.* (See Savill, Edward, assignor.) | | | | | | |
| Newman, Wilson J., assignor to H. E. and C. Baxter, Brooklyn, N. Y. Electric bell | 501,392 | July 11 | 1302 | 304 | 64 | 233 |
| Newton, George H., Monson, Mass. Trimming | 505,670 | Sept. 26 | 2224 | 581 | 64 | 1741 |
| Newton, James M., assignor of one-half to W. R. Newton, Dansville, N. Y. Putty-knife | 503,098 | Aug. 8 | 1433 | 354 | 64 | 844 |
| Newton, Wiley R. (See Newton, James M., assignor.) | | | | | | |
| Newton, William H. (See Steese, George F., assignor.) | | | | | | |
| Nicholas, Anthony, and L. Tachau, Newark, N. J. Umbrella-cover | 505,476 | Sept. 26 | 1914 | 493 | 64 | 1670 |
| Nichols & Shepard Company. (See Flagg, Eli. W., assignor.) | | | | | | |
| Nicholson, William, assignor of one-half to A. A. Webster, Brooklyn, N. Y. Fruit-holder | 505,323 | Sept. 19 | 1606 | 430 | 64 | 1610 |
| Nickerson, William E. (See Cary and Nickerson.) | | | | | | |
| Nickerson, William E., Cambridge, Mass. Incandescent electric lamp | 500,671 | July 4 | 229 | 60 | 64 | 43 |
| Nickerson, William E., Cambridge, Mass. Incandescent electric lamp | 501,531 | July 18 | 1584 | 399 | 64 | 319 |
| Nickerson, William E., Cambridge, Mass. Incandescent electric lamp | 503,669 | Aug. 22 | 2331 | 594 | 64 | 1043 |
| Nickerson, William E., Cambridge, Mass. Incandescent electric lamp | 503,670 | Aug. 22 | 2332 | 594 | 64 | 1044 |
| Nickerson, William E., Cambridge, Mass. Incandescent electric lamp | 503,671 | Aug. 22 | 2333 | 594 | 64 | 1044 |
| Nickerson, William E., Cambridge, Mass. Incandescent electric lamp | 503,770 | Aug. 22 | 2542 | 632 | 64 | 1075 |
| Nickerson, William E., Cambridge, and E. E. Cary, Boston, Mass. Incandescent electric lamp | 500,670 | July 4 | 228 | 60 | 64 | 43 |
| Nickerson, William E., Cambridge, and E. E. Cary, Boston, Mass. Incandescent electric lamp | 501,529 | July 18 | 1582 | 398 | 64 | 319 |
| Nickerson, William E., Cambridge, and E. E. Cary, Boston, Mass. Incandescent electric lamp | 501,530 | July 18 | 1583 | 398 | 64 | 319 |
| Nicodemus, Michael, *et al.* (See Heinlein, John F., assignor.) | | | | | | |
| Nicolai, Ludwig. (See Saltskorn and Nicolai.) (Reissue.) | | | | | | |
| Nicolai, Servatius, St. Louis, Mo. Street or other sign | 503,489 | Aug. 15 | 2073 | 517 | 64 | 973 |
| Nicole, Henry J., London, England. Siphon or seltzogene for aerated waters | 504,235 | Aug. 29 | 3293 | 830 | 64 | 1232 |
| Niederriter, William F., assignor of one-fourth to A. L. Anderson, Minneapolis, Minn. Thill-tug | 501,293 | July 11 | 1205 | 304 | 64 | 234 |
| Niedringhaus, George W., St. Louis, Mo. Enameled sheet-metal ware | 503,247 | Aug. 15 | 1667 | 415 | 64 | 903 |
| Niedringhaus, George W., St. Louis, Mo. Enameled sheet-metal ware | 503,248 | Aug. 15 | 1667 | 415 | 64 | 904 |
| Niedringhaus, William F., St. Louis, Mo. Apparatus for the manufacture of tin-plate and coating sheet metal | 505,171 | Sept. 19 | 1424 | 367 | 64 | 1565 |
| Niedringhaus, William F., and C. A. Wettengel, assignors to St. Louis Stamping Company, St. Louis, Mo. Plate-metal-folding machine | 503,292 | Aug. 15 | 1761 | 435 / 436 | 64 | 917 |
| Nightingale, Miles J., and J. B. Stearns, Oakdale, Cal. Seed-sower | 502,051 | July 25 | 2424 | 610 | 64 | 485 |
| Niles, George S., Brooklyn, N. Y. Cat-barrier | 504,936 | Sept. 12 | 1033 | 265 | 64 | 1479 |
| Niles, Milton C., Oak Park, Ill. Rail-joint | 501,093 | July 11 | 894 | 230 | 64 | 178 |
| Nilson, Oliver C., Joplin, Mo. Hay-stacker | 500,599 | July 4 | 93 | 27 | 64 | 19 |
| Nirdlinger, Max, Milwaukee, Wis., assignor to Fuel Patents Company. Artificial fuel | 500,934 | July 4 | 620 | ..... | 64 | 113 |
| Nixdorff-Krupp Manufacturing Company. (See Stowe, William J., assignor.) | | | | | | |
| Nixon, Joseph, Altoona, Pa. Stay-bolt | 502,827 | Aug. 8 | 997 | 243 | 64 | 764 |
| Noble, John F. (See Schofield, John, assignor.) | | | | | | |
| Nobles, Alonzo W. (See Joyce, Owen C., assignor.) | | | | | | |
| Noblet, Charles H. (See Matthew, William E., assignor.) | | | | | | |
| Nogar, Russell H., Dundee, Mich., assignor of one-half to B. E. Bullock, Toledo, Ohio. Burner for sawdust or refuse fuel | 503,328 | Aug. 15 | 1929 | 453 | 64 | 998 |
| Nolan, James, Oakland, Cal. Gas-generator | 500,935 | July 4 | 622 | 163 | 64 | 114 |
| Noone, Thomas D., Camden, N. J. Caterpillar-trap | 505,226 | Sept. 19 | 1506 | 393 | 64 | 1580 |
| Norcross, George A., assignor of one-half to H. E. Vernor, San Antonio, Tex. Car-coupling | 501,688 | July 18 | 1840 | 454 | 64 | 366 |
| Nordmann, Paul, assignor to Siemens & Halske, Berlin, Germany. Equalizer for rotary current systems | 501,094 | July 11 | 897 | 230 | 64 | 179 |



*Alphabetical list of patentees, July to September, inclusive*—Continued.

| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Dr'g. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Nordmann, Paul, assignor to Siemens & Halske, Berlin, Germany. Electric-lighting system | 501,095 | July 11 | 899 | 231 | 64 | 179 |
| Nordyke, Sylvanus A., Kansas City, Kans. Bolting-machine | 501,155 | July 11 | 1001 | 255 / 256 | 64 | 197 |
| Norell, Ernst, assignor to Eagle Pencil Company, New York, N. Y. Pencil-sharpener | 502,632 | Aug. 1 | 641 | 153 | 64 | 695 |
| Norfleet, Abram L., Kearney, Mo. Credit-balance register | 502,133 | July 25 | 2550 | 639 | 64 | 510 |
| Norman, Thomas E., Fall River, Mass. Shuttle-binder for looms | 505,574 | Sept. 26 | 2127 | 539 | 64 | 1710 |
| Normington, Young, and H. Blades, Liverpool, England. Rocking horse, cradle, &c | 503,979 | Aug. 29 | 2861 | 718 | 64 | 1154 |
| Norrington, Henry H., West Bay City, Mich., assignor to R. Woodman, Boston, Mass. Hand-stamp | 505,172 | Sept. 19 | 1426 | 367 | 64 | 1565 |
| Norris, Fred H. (See Norris, George E., assignor.) | | | | | | |
| Norris, George E., Berlin, Canada, assignor of one-half to F. H. Norris, Troy, N. Y. Machine for folding collar or cuff blanks | 502,678 | Aug. 1 | 734 | 176 / 177 | 64 | 700 |
| Norris, William. (See Richardson and Norris.) | | | | | | |
| North, Frank S. (See Raymond and North.) | | | | | | |
| North & Judd Manufacturing Company. (See Herrick, Frank J., assignor.) | | | | | | |
| Northrop, George J. (See Roe, Arthur R., assignor.) | | | | | | |
| Northrop, James H., assignor to G. Draper & Sons, Hopedale, Mass. Spindle-support | 503,060 | Aug. 8 | 1368 | 338 | 64 | 833 |
| Northrop, James H., assignor to G. Draper & Sons, Hopedale, Mass. Spindle-bearing | 503,061 | Aug. 8 | 1369 | 338 | 64 | 833 |
| Northrop, James H., assignor to G. Draper & Sons, Hopedale, Mass. Bolster for spinning-spindles | 503,911 | Aug. 22 | 2740 | 687 | 64 | 1114 |
| Northrop, James H., assignor to G. Draper & Sons, Hopedale, Mass. Spindle-retaining device | 505,173 | Sept. 19 | 1427 | 367 | 64 | 1565 |
| Northrop, James H., assignor to G. Draper & Sons, Hopedale, Mass. Spindle-retaining device | 505,174 | Sept. 19 | 1429 | 368 | 64 | 1565 |
| Northrop, James H., assignor to G. Draper & Sons, Hopedale, Mass. Spindle-retaining device | 505,721 | Sept. 26 | 2378 | 600 | 64 | 1756 |
| Northway, Joseph, and T. E. Hammond, Forsyth, Mont. Highland water-carrier | 500,936 | July 4 | 623 | 164 | 64 | 114 |
| Norton, Charles H., Detroit, assignor to A. Pack and R. A. Fraser, Alpena, Mich. Flax-dressing machine | 502,010 | July 25 | 2349 | 588 / 589 / 590 | 64 | 472 |
| Norton, Charles H., assignor to Leland, Faulconer & Norton Company, Detroit, Mich. Universal grinder | 504,306 | Aug. 29 | 3393 | 849 / 850 | 64 | 1253 |
| Norton, Edwin, and J. G. Hodgson, Maywood, assignors to said Edwin Norton and O. W. Norton, Chicago, Ill. Tinning-machine | 500,718 | July 4 | 298 | 81 | 64 | 55 |
| Norton, Grove E., Salt Lake City, Utah Ter. Track-fastening | 504,236 | Aug. 29 | 3284 | 820 | 64 | 1232 |
| Norton, John H., St. Louis, Mo. Culinary utensil | 502,748 | Aug. 8 | 861 | 210 | 64 | 739 |
| Norton, Oliver W., *et al.* (See Norton and Hodgson, assignors.) | | | | | | |
| Norwegian Plow Company. (See Swager, Nelson, assignor.) (Reissue.) | | | | | | |
| Norwood, Benjamin A., assignor, by mesne assignments, to Eureka Process Lasting Company, Boston, Mass. Lasting boots or shoes | 503,062 | Aug. 8 | 1370 | 338 / 339 | 64 | 833 |
| Norwood, Benjamin A., assignor, by mesne assignments, to Eureka Process Lasting Company, Boston, Mass. Lasting-pinchers | 503,672 | Aug. 22 | 2334 | 594 | 64 | 1044 |
| Norwood, Benjamin A., assignor, by mesne assignments, to Eureka Process Lasting Company, Boston, Mass. Lasting-machine | 505,671 | Sept. 26 | 2224 | 581 / 582 | 64 | 1741 |
| Nottingham, Henry E., and A. Tucker, Cincinnati, Ohio. Friction-clutch | 5 2,446 | Aug. 1 | 333 | 80 | 64 | 697 |
| Noyes, Charles T. (See Small and Noyes.) | | | | | | |
| Noyes, George E., Washington Grove, Md. Conduit railway insulator | 500,937 | July 4 | 624 | 164 | 64 | 114 |
| Noyes, William S., Chicago, Ill. Support for elliptic springs | 500,600 | July 4 | 95 | 27 | 64 | 19 |
| Nüesch, Jakob. (See Schweizer and Nüesch.) | | | | | | |
| Nulle, Victor H., Lebanon, Ohio. Bicycle | 500,938 | July 4 | 625 | 164 | 64 | 114 |
| Nunn, Thomas H., Hughesville, Pa. Car-coupling | 503,490 | Aug. 15 | 2074 | 517 | 64 | 973 |
| Nunn, William J., Hyde Park, Mass. Fender for electric, cable, or other similar cars | 501,294 | July 11 | 1206 | 305 | 64 | 234 |
| Nuttle, David T., Chester, Pa. Coin-controlled game apparatus | 504,996 | Sept. 12 | 1138 | 291 | 64 | 1498 |
| Nye, Marvin H. (See Flowers, John S., assignor.) | | | | | | |
| Nye, Ralph W., assignor of one-half to J. G. Scott, Richmond, Ind. Attachment for cooking-stoves | 501,574 | July 18 | 1653 | 413 | 64 | 334 |
| O. B. North & Company. (See Smith, Charles H., assignor.) | | | | | | |
| O'Brien, Arthur, Helena, Mont. Washbasin, bath-tub, &c | 503,249 | Aug. 15 | 1688 | 415 | 64 | 904 |
| O'Brien, Arthur, Helena, Mont. Urinal | 503,491 | Aug. 15 | 2075 | 518 | 64 | 973 |
| O'Brien, Patrick, South Bend, Ind. Tire-setting apparatus | 503,435 | Aug. 15 | 1986 | 492 / 493 | 64 | 957 |
| O'Brien, Patrick J., Cincinnati, Ohio. Ratchet device for tools | 501,957 | July 25 | 2275 | 569 | 64 | 458 |
| O'Brien & Sons. (See Farrell, Joseph P., assignor.) | | | | | | |
| O'Brien, Thomas, New York, N. Y. Propeller | 502,910 | Aug. 8 | 1130 | 279 | 64 | 790 |
| O'Connell, John A. (See Joerges and O'Connell.) | | | | | | |
| O'Connor, John J., Bridgeport, Conn. Lady's hat-fastener | 501,295 | July 11 | 1208 | 305 | 64 | 234 |
| O'Donnell, John L. (See Baldwin, Ozro J., assignor.) | | | | | | |
| O'Friel, Thomas F., Altoona, Pa. Sand-box for locomotives | 504,609 | Sept. 5 | 482 | 123 | 64 | 1360 |
| O'Grady, Gerald D., and J. R. Collins, Toronto, Canada. Station-indicator | 501,096 | July 11 | 900 | 231 | 64 | 179 |
| O'Kane, Daniel, Boston, Mass. Bottle-stopper | 502,423 | Aug. 1 | 294 | 70 | 64 | 620 |
| O'Neil, John H., Philadelphia, Pa. Box | 505,533 | Sept. 26 | 2037 | 520 | 64 | 1692 |
| O'Neil, Joseph, Taylorstown, Pa. Valve for oil-well pumps | 502,750 | Aug. 8 | 863 | 210 | 64 | 740 |
| O'Neill, James A., assignor of one-half to J. C. Hollings, Boston, Mass. Combined gas and electric-light fixture | 503,912 | Aug. 22 | 2741 | 687 | 64 | 1115 |
| O'Neill, James J., Boston, Mass. Insulator-pin | 505,123 | Sept. 19 | 1349 | 347 | 64 | 1552 |
| O'Shaughnessy, Patrick F. (See Sprague and O'Shaughnessy.) | | | | | | |
| Obbinson, Thomas, Melbourne, Victoria. Advertising apparatus | 500,939 | July 4 | 626 | 164 / 165 | 64 | 115 |
| Oberly, Virginia H., Washington, D. C. Garment-fastener | 503,980 | Aug. 29 | 2862 | 718 | 64 | 1154 |
| Oblasser, Alfred. (See Theryo and Oblasser.) | | | | | | |
| Ochs, Aloysius J. (See Fernald, Charles F., assignor.) | | | | | | |
| Ochs, Fritz, Fürth, Germany. Machine for interlacing curled horse-hair | 502,376 | Aug. 1 | 213 | 50 | 64 | 604 |
| Odegaard, Niels, and G. Kuhnle, Chicago, Ill. Folding bed | 505,477 | Sept. 26 | 1915 | 493 | 64 | 1670 |
| Oefinger, Jacob, Meriden, Conn. Knife | 504,989 | Sept. 12 | 953 | 246 | 64 | 1464 |
| Oehring, Augustus J., assignor to Western Electric Company, Chicago, Ill. Circuit-closer | 502,749 | Aug. 8 | 862 | 210 | 64 | 739 |
| Offrell, Olof, Middletown, Conn., assignor to Schuyler Electric Company, of Connecticut. Safety cut-out | 500,601 | July 4 | 96 | 28 | 64 | 19 |
| Offrell, Olof, Middletown, Conn., assignor to Schuyler Electric Company, of Connecticut. Switch for electric conductors | 501,191 | July 11 | 1050 | 266 | 64 | 206 |
| Offrell, Olof, Middletown, Conn., assignor to Schuyler Electric Company, of Connecticut. Device for regulating constant-current dynamo-electric machines | 501,532 | July 18 | 1585 | 399 | 64 | 319 |
| Ohl, Christina, *et al.* (See Christ, Jacob, assignor.) | | | | | | |
| Ohl, George D., Milwaukee, Wis. Combined horse-collar and hames | 501,097 | July 11 | 904 | 231 | 64 | 180 |

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| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Dr'g. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Ohlrich, Claus F., Chicago, Ill. Uterine bandage | 505,249 | Sept. 19 | 1540 | 401 | 64 | 1586 |
| Ohmart, Eli C., Detroit, Mich., assignor, by mesne assignments, to F. Doane, C. F. Crowell, and M. L. Severy, trustees, Boston, Mass. Device for reflecting and refracting radiant energy | 504,890 | Sept. 12 | 954 | 247 | 64 | 1464 |
| Olcott, William W., Fremont, Nebr. Lifter or drainer | 504,237 | Aug. 29 | 3285 | 839 | 64 | 1232 |
| Oldenbusch, Ernst, Jersey City, assignor to W. Schimper & Co., Hoboken, N. J. Pocket match-safe | 501,669 | July 18 | 1842 | 456 | 64 | 366 |
| Ohls, Henry G., Fort Wayne, Ind. Churn | 501,806 | July 18 | 2037 | 501 | 64 | 399 |
| Oler, Henry D., Paterson, N. J. Conduit electric railway | 504,847 | Sept. 12 | 893 | 210 | 64 | 1453 |
| Oliver, Andrew J. (See Wren and Oliver.) | | | | | | |
| Oliver, Doctor F., Oakland, Cal. Stamping-machine | 504,682 | Sept. 5 | 606 | 155 | 64 | 1384 |
| Oliver, James C., *et al.* (See Savill, Edward, assignor.) | | | | | | |
| Olmstead, Freeman E., Denver, Colo. Pedal attachment for pianos | 502,951 | July 25 | 2779 | 702 | 64 | 553 |
| Olmsted, Walter B., H. O. Warner, and H. A. Giddings, Hartford, Conn. Fluid-holding pencil | 501,958 | July 25 | 2276 | 580 | 64 | 457 |
| Olney, H. S. (See Walker, Charles W., assignor.) | | | | | | |
| Olp, Robert, Manitowoc, Wis. Vegetable-grater | 502,527 | Aug. 1 | 472 | 113 | 64 | 653 |
| Olp, Robert, Manitowoc, assignor to G. H. Simon, Kiel, Wis. Cheese-vat heater | 505,413 | Sept. 19 | 1813 | 468 | 64 | 1537 |
| Olson, Bernard G., Chinook, Mont. Hay-sling | 505,227 | Sept. 19 | 1507 | 393 | 64 | 1580 |
| Olson, John P., *et al.* (See Erckson, Edward, assignor.) | | | | | | |
| Olson, Nils, Superior, Wis. Brick-protector | 502,987 | Aug. 8 | 1273 | 311 | 64 | 814 |
| Ongley, Charles E., assignor to Ongley Electric Company, New York, N. Y. Electric time-recorder | 505,062 | Sept. 12 | 1241 | 319 | 64 | 1518 |
| Ongley Electric Company. (See Ongley, Charles E., assignor.) | | | | | | |
| Oppmann, Andrew W., Cleveland, Ohio. Barrel-registering machine | 504,610 | Sept. 5 | 483 | 124 | 64 | 1360 |
| Oppold, Joseph, Grant, Iowa. Earth-loading machine | 503,280 | Aug. 15 | 1689 | 416 / 417 | 64 | 904 |
| Oram, John J. (See Holmes, William C., assignor.) | | | | | | |
| Orcutt, Orrin W., St. Johnsbury, Vt. Power-hammer | 503,492 | Aug. 15 | 2076 | 518 | 64 | 973 |
| Orme, John, London, England. Signaling apparatus for railways | 503,981 | Aug. 29 | 2863 | 718 | 64 | 1154 |
| Orr, George H. (See Dean, Proctor, assignor.) | | | | | | |
| Orr, Walter C., assignor to New Jersey Wire Cloth Company, Trenton, N. J. Method of and machine for making wire-netting | 502,084 | July 25 | 2478 | 623 | 64 | 496 |
| Orr, William, Trenton, N. J. Fireproof construction | 504,537 | Sept. 5 | 375 | 94 | 64 | 1340 |
| Orris, W. W., *et al.* (See Brower, Asher A., assignor.) | | | | | | |
| Orser, Levi, Galveston, Tex. Feeder for printing-presses | 503,063 | Aug. 8 | 1371 | 339 / 340 | 64 | 833 |
| Orth, Susette, Philadelphia, Pa. Spectacles | 503,803 | Aug. 22 | 2585 | 645 | 64 | 1064 |
| Ortloff, Julius T. O., Heidelberg, Germany. Book-stapling machine | 503,271 | Aug. 15 | 1734 | 425 | 64 | 910 |
| Orton, Otho H., Beloit, Wis. Lubricator for windmills | 504,411 | Sept. 5 | 484 | 124 | 64 | 1360 |
| Ortt, Rowley K., and M. A. Shearer, Norristown, Pa. Railway-coach vestibule | 505,394 | Sept. 19 | 1667 | 430 | 64 | 1540 |
| Orvis, Orland D., Chicago, Ill. Steam-boiler furnace | 503,214 | Aug. 15 | 1638 | 402 | 64 | 895 |
| Osborn, William H. (See Sullivan and Osborn.) | | | | | | |
| Osborne, George P., New York, N. Y. Safety-plate for railway-rails | 502,633 | Aug. 1 | 642 | 153 / 154 | 64 | 685 |
| Osborne, John H., Union City, Ind. Vehicle-pole | 500,602 | July 4 | 97 | 28 | 64 | 20 |
| Osborne, John H., Union City, Ind. Vehicle-shaft iron | 502,911 | Aug. 8 | 1132 | 279 | 64 | 790 |
| Osborne, John W., Washington, D. C. Movement-cure apparatus | 502,578 | Aug. 1 | 549 | 131 | 64 | 667 |
| Osborne, John W., Washington, D. C., assignor of one-third to C. Edelheim, Philadelphia, Pa. Printer's chase | 503,251 | Aug. 15 | 1692 | 417 | 64 | 904 |
| Osborne, William H. (See Meitzler, George R., assignor.) (Reissue.) | | | | | | |
| Osgood, A. S., *et al.* (See Jones, Thomas D., assignor.) | | | | | | |
| Osteman, Carl G., Boston, assignor of one-half to F. B. Carpenter, D. H. Darling, and E. N. Heath, Wakefield, Mass. Photographic camera | 502,198 | July 25 | 2661 | 672 | 64 | 531 |
| Osteman, Carl G., assignor of one-half to S. A. Woods Machine Company, Boston, Mass. Bevel | 502,199 | July 25 | 2663 | 673 | 64 | 532 |
| Osterloh, Adolph, Richmond, Va., assignor to Y. S. Marriott, Baltimore, Md. Bag-fastener | 503,113 | Aug. 8 | 1461 | 350 | 64 | 849 |
| Osterroetzer, Oscar, Sagan, Germany. Printing cotton fabrics | 501,156 | July 11 | 1006 | ..... | 64 | 197 |
| Ouhrabka, John H., *et al.* (See Saxton, Harry, assignor.) | | | | | | |
| Out, George B., assignor of one-third to R. C. Vetter, Syracuse, N. Y. Wheel | 502,447 | Aug. 1 | 335 | 80 | 64 | 628 |
| Outwater, H. E. (See Klees, William H., assignor.) | | | | | | |
| Overbaugh, Charles B., St. Louis, Mo. Confectionery case | 502,634 | Aug. 1 | 643 | 154 | 64 | 685 |
| Overman Wheel Company. (See Gardner and Marshall, assignors.) | | | | | | |
| Overman Wheel Company. (See Hadley, Charles E., assignor.) | | | | | | |
| Owen, David, Morriston, near Swansea, England. Apparatus for the purification of molten tin or its alloys | 504,238 | Aug. 29 | 3286 | 821 | 64 | 1232 |
| Owen, Harry B., Manchester, Va. Truck | 503,982 | Aug. 29 | 2865 | 719 | 64 | 1154 |
| Owl Cigar Company. (See Hesse and Sternberg, assignors.) | | | | | | |
| Oxnam, Thomas H., J. Joyce, and J. Francis, De Lamar, Idaho. Pipe-wrench | 503,215 | Aug. 15 | 1643 | 402 | 64 | 896 |
| P. P. Mast & Company. (See Butt, Leroy S., assignor.) | | | | | | |
| Pack, Arthur, *et al.* (See Norton, Charles H., assignor.) | | | | | | |
| Packard, Clarence A., assignor of one-half to F. H. Holladay, Richmond, Va. Holdback for vehicles | 503,158 | Aug. 15 | 1546 | 379 | 64 | 878 |
| Packard, James W., Brockton, assignor of one-half to Bouvé, Crawford & Company, Boston, Mass. Shoe. (Reissue) | 11,362 | Aug. 22 | 2777 | 695 | 64 | 1122 |
| Packard, James W., Brockton, assignor of one-half to Bouvé, Crawford & Company Corporation, Boston, Mass. Box-toe | 503,614 | Aug. 22 | 2302 | 574 | 64 | 1029 |
| Packer, George W., Rock Falls, assignor to Keystone Manufacturing Company, Sterling, Ill. Disk harrow-seeder | 505,534 | Sept. 26 | 2038 | 520 | 64 | 1692 |
| Page, Albert A., assignor to Sargent & Company, New Haven, Conn. Snap-hook | 504,538 | Sept. 5 | 378 | 95 | 64 | 1340 |
| Page, Albert A., assignor to Sargent & Company, New Haven, Conn. Snap-hook | 504,539 | Sept. 5 | 379 | 95 | 64 | 1341 |
| Page, Albert A., assignor to Sargent & Company, New Haven, Conn. Door-bell | 505,277 | Sept. 19 | 1580 | 414 | 64 | 1505 |
| Page, Almon D., Newark, N. J. Electrically-illuminated character for advertising | 501,533 | July 18 | 1586 | 399 | 64 | 390 |
| Page, Almon D., and E. J. McAllister, Newark, N. J. Universal sign | 501,690 | July 18 | 1644 | 458 | 64 | 395 |
| Page, Charles G., trustee. (See Huse, Rudolph W., assignor.) | | | | | | |
| Page, Harlan. (See Bennett, Henry L., assignor.) | | | | | | |
| Page, J. Seaver. (See Gott, Clarence P., assignor.) | | | | | | |
| Paletta, Santino P., Chicago, Ill. Ventilated bed | 505,250 | Sept. 19 | 1541 | 402 | 64 | 1586 |
| Paige Iron Works. (See Meyer and Starkweather, assignors.) | | | | | | |
| Paige Iron Works. (See Starkweather, Gleason F., assignor.) | | | | | | |
| Pain, Henry J., New York, N. Y. Pyrotechnic device | 503,383 | Aug. 15 | 1915 | 475 | 64 | 944 |
| Paine, Altemus I. (See Pratt and Paine.) | | | | | | |
| Paine, Frances E., Boston, Mass. Egg-beater | 504,119 | Aug. 29 | 3079 | 770 | 64 | 1195 |
| Painter, John B. (See Dorint, Constant, assignor.) | | | | | | |
| Paldi, Joseph D., Brockway, Mich. Fence-post | 505,367 | Sept. 19 | 1737 | 450 | 64 | 1622 |



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| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Dr'g. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Palmatier, Frank S., Leeds, N. Y. Machine for setting up, crosing, and chiming barrels | 504,891 | Sept. 12 | 956 | 247 | 64 | 1464 |
| Palmer, Arthur P., and H. L. Phelps, Athens, Pa. Clutch | 503,984 | Aug. 29 | 2868 | 719 | 64 | 1155 |
| Palmer, Charles H., Jr., Amesbury, Mass. Sulky | 501,656 | July 18 | 1790 | 445 / 446 | 64 | 357 |
| Palmer, Dennis W., Hermon, Me. Combined sofa, table, and bed | 502,579 | Aug. 1 | 553 | 139 | 64 | 667 |
| Palmer, Frank H., Brooklyn, N. Y. Soldering-machine | 503,159 | Aug. 15 | 1547 | 379 / 380 | 64 | 878 |
| Palmer, Fred S., Boston, Mass. Circuit-testing apparatus | 502,689 | Aug. 8 | 1089 | 268 | 64 | 781 |
| Palmer, Israel Y., assignor of two-thirds to G. L. Campbell and B. Hooten, Columbia, Ala. Seed-planter | 504,848 | Sept. 12 | 894 | 230 | 64 | 1453 |
| Palmer, John, Woburn, Mass. Means for lubricating rolls of leather-finishing machines | 501,657 | July 18 | 1790 | 446 | 64 | 358 |
| Palmer, John S., Providence, R. I. Plated wire stock for jewelry and making same | 501,157 | July 11 | 1007 | 256 | 64 | 197 |
| Palmer, John S., Providence, R. I. Plated stock for manufacture of jewelry | 503,983 | Aug. 29 | 2866 | 719 | 64 | 1155 |
| Palmer, Joshua C., Duffau, Tex. Wire-stretcher | 502,498 | Aug. 1 | 422 | 100 | 64 | 644 |
| Palmer & Rey. (See Hoyt, George E., assignor.) | | | | | | |
| Palmer, Stephen, Lansingburg, N. Y. Brush | 500,719 | July 4 | 305 | 82 | 64 | 57 |
| Palmer, Wales L. (See Thompson, Isaac F., assignor.) | | | | | | |
| Palmer, William H., Yale, Mich. Cutter-bar for harvesters | 505,325 | Sept. 19 | 1668 | 430 | 64 | 1610 |
| Palmer, Winfield S., Glenburn, Pa. Bridge | 501,534 | July 18 | 1588 | 399 | 64 | 337 |
| Palmer, Zenas L., assignor to H. H. Gould, Bay Port, Mich. Wagon-jack | 500,940 | July 4 | 627 | 165 | 64 | 115 |
| Palmros, Alexander, Lynn, Mass., assignor of one-half to V. J. Peirce, Hudson, Me. Electric-railway trolley | 504,113 | Aug. 29 | 3080 | 771 | 64 | 1195 |
| Parcells, William C., Waterville, N. Y. Grinding globe-valve seats | 503,134 | July 25 | 2559 | 640 | 64 | 510 |
| Parenthou, Emile, Paris, France. Apparatus for recording the flexure of bridges | 500,775 | July 4 | 386 | 102 | 64 | 72 |
| Park, Andrew G., and W. A. Dexter, Wesley, N. Y. Machine for raking and cocking hay | 504,088 | Aug. 29 | 3032 | 757 / 758 | 64 | 1186 |
| Park, Charles S., Montague, Mass. Car-coupling | 503,615 | Aug. 22 | 2303 | 574 | 64 | 1029 |
| Park, William D., *et al.* (See Moore, Morris W., assignor.) | | | | | | |
| Parker, Charles J., Havre de Grace, Md. Cooking-vessel | 503,353 | Aug. 15 | 1866 | 462 | 64 | 935 |
| Parker, Charles W., *et al.* (See Schofield, James D., assignor.) | | | | | | |
| Parker, Edward B., Delmar, Iowa. Draft apparatus for corn-plows | 502,751 | Aug. 8 | 864 | 211 | 64 | 740 |
| Parker, Herbert L., and A. W. Meston, St. Louis, Mo. Revolving motor | 501,462 | July 11 | 1508 | 379 | 64 | 290 |
| Parker, Joseph A., Morrisville, N. C. Cultivator | 502,135 | July 25 | 2553 | 640 | 64 | 511 |
| Parker, Robert, Pekay, Iowa. Axle-lubricator for vehicle-hubs | 504,816 | Sept. 12 | 841 | 216 | 64 | 1441 |
| Parker, Samuel J., Rochester, N. Y. Automatic elevator-lock | 501,658 | July 18 | 1792 | 446 | 64 | 358 |
| Parkinson, Joseph G., Chicago, Ill. Package-carrier | 501,023 | July 4 | 763 | 200 | 64 | 139 |
| Parkinson, William J., assignor of one-half to D. C. Ralph, Buffalo, N. Y. Carpet-tack | 504,133 | Aug. 29 | 3100 | 778 | 64 | 1200 |
| Parks, Edward H., assignor to Brown & Sharpe Manufacturing Company, Providence, R. I. Gear-cutting machine | 505,606 | Sept. 26 | 2179 | 551 | 64 | 1720 |
| Parks, Jable F., Sandhill, Tenn. Seeding-machine | 504,362 | Sept. 5 | 72 | 19 | 64 | 1294 |
| Parks, Nathaniel, Deansville, N. Y. Telephone-transmitter | 504,454 | Sept. 5 | 226 | 60 | 64 | 1313 |
| Parry, John A., Luzerne, assignor of one-half to E. B. Vandyke, Wilkes-Barré, Pa. Corset-fastening | 501,098 | July 11 | 905 | 232 | 64 | 180 |
| Parry, William K. (See Adeney and Parry.) | | | | | | |
| Parsells, William C., Waterville, N. Y. Grinding globe-valve seats | 502,932 | Aug. 8 | 1175 | 290 | 64 | 797 |
| Parshall, Horace F., Lynn, assignor to General Electric Company, Boston, Mass. Armature and constructing same | 502,988 | Aug. 8 | 1274 | 311 | 64 | 814 |
| Parsons, Albertus A., Eureka, Wis. Hame-coupling | 500,603 | July 4 | 98 | 28 | 64 | 20 |
| Parsons, Calvin W., Scranton, Pa. Crane-operating mechanism | 504,937 | Sept. 12 | 1034 | 266 | 64 | 1479 |
| Parsons, John, Syracuse, N. Y. Hat-fastener | 503,771 | Aug. 22 | 2543 | 633 | 64 | 1075 |
| Parsons, John H. (See Gay and Parsons.) | | | | | | |
| Passick, Charles J., Seward, Nebr. Cash-register | 502,580 | Aug. 1 | 555 | 132 / 133 | 64 | 668 |
| Passmore, Benjamin H., Belmont, Tex. Meat-tenderer | 504,892 | Sept. 12 | 958 | 247 | 64 | 1465 |
| Passmore, Charles L., Erie, assignor of one-half to E. L. Passmore, Fulton, Ill. Harness | 503,725 | Aug. 22 | 2470 | 614 | 64 | 1061 |
| Passmore, Edwin L. (See Passmore, Charles L., assignor.) | | | | | | |
| Paster, Ellsworth G. (See Cell and Paster.) | | | | | | |
| Patchin, William E., Rochester, N. Y. Register | 504,239 | Aug. 29 | 3287 | 821 | 64 | 1233 |
| Patee, Theodorus H., Chicago, Ill. Portable static electric machine | 504,740 | Sept. 12 | 708 | 177 / 178 | 64 | 1417 |
| Patent Title Company. (See Peck, Orrin B., assignor.) (Reissue.) | | | | | | |
| Paterson, James W., Chicago, Ill., assignor to Adams & Westlake Company, of Illinois. Foot-rest | 502,752 | Aug. 8 | 865 | 211 | 64 | 740 |
| Pattberg, Henry. (See Jacob, Frederick, assignor.) | | | | | | |
| Pattee, Joseph O., and H. H. Vaughan, St. Paul, Minn. Car-coupling | 501,575 | July 18 | 1654 | 414 | 64 | 334 |
| Patten, Clinton A., Somerville, Mass. Car | 503,707 | Aug. 22 | 2439 | 607 / 608 | 64 | 1055 |
| Patten, Enos, assignor to A. J. Hoyt, trustee, Lynn, Mass. Mechanical movement | 502,828 | Aug. 8 | 908 | 243 | 64 | 765 |
| Patten, Jefferson, Brooklyn, N. Y., assignor to N. Burgess, Highlands, N. J. Stage apparatus | 501,099 | July 11 | 907 | 232 | 64 | 181 |
| Patterson, George H., Cañon City, Colo. Dry-mineral separator | 504,240 | Aug. 29 | 3289 | 821 | 64 | 1233 |
| Patterson, James, Jr., Albany, N. Y. Ice-runway | 501,659 | July 18 | 1793 | 447 | 64 | 358 |
| Patterson, James K., Crete, Nebr. Ice-cream freezer | 504,363 | Sept. 5 | 73 | 19 | 64 | 1294 |
| Patterson, William B., Secor, Ill. Car-coupling | 501,576 | July 18 | 1656 | 414 | 64 | 334 |
| Patterson, William R., assignor to Western Electric Company, Chicago, Ill. Telephone-cable | 502,262 | July 25 | 2780 | 702 | 64 | 553 |
| Patterson, William R., assignor to Western Electric Company, Chicago, Ill. Electric door-register for watchmen | 504,741 | Sept. 12 | 713 | 178 | 64 | 1417 |
| Pattinson, Thomas. (See Cooper and Pattinson.) | | | | | | |
| Patton, Charles W., Ohio Falls, Ind., assignor of two-thirds to J. J. and T. J. Ramsey, Shelbyville, Ky. Car-coupling | 502,499 | Aug. 1 | 423 | 100 | 64 | 644 |
| Patton, Frank S., Kansas City, Mo. Foldable stool | 504,241 | Aug. 29 | 3290 | 822 | 64 | 1233 |
| Paugh, Samuel. (See Van Slyke, Stephen, assignor.) | | | | | | |
| Paugh, Samuel, Indianapolis, Ind. Electric motor or dynamo | 502,377 | Aug. 1 | 214 | 51 | 64 | 605 |
| Paul, Charles R. (See Barlow, John E., assignor.) | | | | | | |
| Paumgarten-Frauenstein, Johanna, Bernstadt, Germany. Adjustable lamp-bracket | 502,011 | July 25 | 2353 | 509 | 64 | 472 |
| Pawolowski, Jacob, Cincinnati, Ohio. Cleat for electric wires | 503,394 | Aug. 15 | 1916 | 475 | 64 | 945 |
| Paxton, James A., Ellsworth, Ill. Revolving rake for cornstalks | 504,242 | Aug. 29 | 3293 | 822 | 64 | 1234 |
| Payne, Clarence Q., Stamford, Conn. Method of and apparatus for separating ores | 500,604 | July 4 | 99 | 28, 29 | 64 | 20 |
| Payne, Clarence Q., Stamford, Conn. Magnetic ore-separator | 500,605 | July 4 | 106 | 29 | 64 | 21 |
| Payne Clarence Q., Stamford, Conn. Device for and method of adjusting and equalizing the magnetic density in the pole-pieces of magnetic separators | 500,606 | July 4 | 110 | 30 | 64 | 22 |
| Payne, William H., assignor of one-half of G. G. Altorfer, Philadelphia, Pa. Electric body-wear | 502,753 | Aug. 8 | 865 | 211 | 64 | 740 |

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|---|---|---|---|---|---|---|
| Peachy, Levi J., near Huntsville, Ohio. Butchering appliance | 501,691 | July 18 | 1846 | 459 | 64 | 367 |
| Peacock, Albert F., Buchanan, Mich. Coin-controlled vending apparatus | 502,754 | Aug. 8 | 887 | {311 312 | 64 | 740 |
| Peacock, Benjamin F., Anniston, Ala., and F. T. Peacock, Sparrow's Point, Md. Rolling-machine | 503,618 | Aug. 22 | 2904 | {574 575 | 64 | 1029 |
| Peacock, Edward M., Brooklyn, N. Y. Attaching handles to vessels | 503,673 | Aug. 22 | 2985 | 585 | 64 | 1044 |
| Peacock, Edward M., Brooklyn, N. Y. Attaching handles to vessels | 503,674 | Aug. 22 | 2986 | 585 | 64 | 1044 |
| Peacock, Francis T. (See Peacock, Benjamin F. and F. T.) | | | | | | |
| Pearn, Frank. (See Pearn, William A. and F.) | | | | | | |
| Pearn, William A. and F., Gorton, England. Machine for boring cylinders and turning the flanges thereof | 504,742 | Sept. 12 | 714 | {178 179 | 64 | 1416 |
| Pearson, George F., Lowell, Mass. Street-car jack | 502,200 | July 25 | 2065 | 673 | 64 | 532 |
| Pearson, William A., Scranton, Pa. Steam forging-machine | 503,354 | Aug. 15 | 1867 | {462 463 | 64 | 936 |
| Pearson, William H., Jr. (See Merrifield, Westcott, and Pearson.) | | | | | | |
| Peartree, Joseph R., assignor of one-half to P. Zink, Rochester, N. Y. Piano-stool | 504,683 | Sept. 5 | 607 | 155 | 64 | 1384 |
| Peat, Nelson, Cohoes, N. Y. Railway-switch | 501,680 | July 18 | 1795 | 447 | 64 | 358 |
| Peck Bros. & Co. (See Peck, John M., assignor.) | | | | | | |
| Peck, Ezra A., assignor to C. F. Craver, Harvey, Ill. Harvesting-machine | 502,861 | Aug. 8 | 1045 | {256 257 258 | 64 | 774 |
| Peck, Francis C., Shannondale, Ind. Check-row corn-planter | 505,251 | Sept. 19 | 1542 | 402 | 64 | 1567 |
| Peck, Fred C., Buffalo, N. Y. Soda-water apparatus | 504,849 | Sept. 12 | 806 | 230 | 64 | 1453 |
| Peck, John M., assignor to Peck Bros. & Co., New Haven, Conn. Basin-cock | 505,634 | Sept. 26 | 2298 | 565 | 64 | 1739 |
| Peck, Orrin B., assignor, by mesne assignments, to Patent Title Company, Chicago, Ill. Centrifugal ore-separator. (Reissue) | 11,367 | Sept. 26 | 2513 | {634 635 | 64 | 1782 |
| Pedersen, Mikael. (See Lister and Pedersen.) | | | | | | |
| Peel, Albert, Avoca, Ark. Hub | 501,158 | July 11 | 1008 | 256 | 64 | 197 |
| Peers, Joseph. (See Boden, Peers, and Saxon.) | | | | | | |
| Peirce, Eugene E., Boston, Mass. Electrical indicator for elevators | 502,315 | Aug. 1 | 99 | 23, 24 | 64 | 584 |
| Peirce, Horatio L., Olneyville, assignor to A. C. Tingley, Providence, R. I. Traveler-ring for spinning-machines | 504,997 | Sept. 12 | 1139 | 292 | 64 | 1499 |
| Peirce, Varna J. (See Palmros, Alexander, assignor.) | | | | | | |
| Pelham, Walter O., Denison, Tex. Engineer's graduating-valve | 503,551 | Aug. 15 | 2173 | 543 | 64 | 991 |
| Peloubet, Jarvis, assignor to Lyon & Healy, Chicago, Ill. Reed-board for organs | 501,535 | July 18 | 1599 | 400 | 64 | 320 |
| Pelton, Phineas, Persia, Iowa. Combined car and air brake coupling | 501,624 | July 18 | 1737 | {432 433 | 64 | 348 |
| Pendleton, Gurdon, Jr., Paterson, N. J., assignor of one-half to H. D. Klots, New York, N. Y. Bobbin | 501,897 | July 18 | 2177 | 540 | 64 | 494 |
| Peninsular Heater and Radiator Company. (See Howard, Charles A., assignor.) | | | | | | |
| Penman, Richard W. (See Wiebush, Charles, assignor.) | | | | | | |
| Pennie, John C., administrator. (See Schmidt, Julius.) | | | | | | |
| Pennington, Isaac, Tiffin, Ohio. Hame-fastener | 502,862 | Aug. 8 | 1051 | 258 | 64 | 775 |
| Penny, William H., and W. A. Biggerstaff, Philadelphia, Pa. Fish-scoop | 505,295 | Sept. 19 | 1528 | 421 | 64 | 1603 |
| Penquite, Samuel H. (See Wagner and Penquite.) | | | | | | |
| Pents, James A. (See Reckenzaun, Anthony, assignor.) | | | | | | |
| Percy, Sidney H., Chicago, Ill. Gear-case | 501,626 | July 18 | 1740 | 433 | 64 | 340 |
| Percy, Sidney H., Chicago, Ill. Sprocket-chain | 503,671 | Aug. 22 | 2977 | 671 | 64 | 1102 |
| Percy, Sidney H., assignor to Sunol Bicycle Company, Chicago, Ill. Driving-wheel adjustment | 501,625 | July 18 | 1739 | 433 | 64 | 348 |
| Perelli-Minotto, Giuseppe, Barletta, Italy. Receptacle for carrying liquid goods | 500,773 | July 4 | 385 | {100 101 | 64 | 72 |
| Perkins, Albert, Chicopee, Mass., assignor to A. G. Spalding & Brothers, New York, N. Y., and Lamb Knitting Machine Manufacturing Company, Chicopee Falls, Mass. Tubular frame construction | 500,941 | July 4 | 628 | 165 | 64 | 115 |
| Perkins, Albert, Chicopee, Mass., assignor to A. G. Spalding & Brothers, New York, N. Y., and Lamb Knitting Machine Manufacturing Company, Chicopee Falls, Mass. Dust-proof cycle-pedal | 500,942 | July 4 | 628 | 166 | 64 | 115 |
| Perkins, Albert, Chicopee, Mass., assignor to A. G. Spalding & Brothers, New York, N. Y., and Lamb Knitting Machine Manufacturing Company, Chicopee Falls, Mass. Cycle-wheel | 502,500 | Aug. 1 | 424 | 100 | 64 | 645 |
| Perkins, Albert, Chicopee, Mass., assignor to A. G. Spalding & Brothers, New York, N. Y., and Lamb Knitting Machine Manufacturing Company, Chicopee Falls, Mass. Cycle-brake construction | 505,776 | Sept. 26 | 2467 | 622 | 64 | 1773 |
| Perkins, Amos H., assignor to Western Paving and Supply Company, Chicago, Ill. Apparatus for repairing asphalt pavements | 501,536 | July 18 | 1591 | 400 | 64 | 321 |
| Perkins, Amos H., assignor to Western Paving and Supply Company, Chicago, Ill. Repairing asphalt pavements | 501,537 | July 18 | 1592 | 401 | 64 | 321 |
| Perkins, Charles G., Hartford, Conn. Socket for incandescent electric lamps | 504,743 | Sept. 12 | 718 | 179 | 64 | 1419 |
| Perky, Henry D., and W. H. Ford, Watertown, N. Y., assignors to Cereal Machine Company, of Colorado. Machine for the preparation of cereals for food | 502,378 | Aug. 1 | 215 | 51 | 64 | 605 |
| Perrin, Charles, Dayton, Ohio. Harrow | 503,675 | Aug. 22 | 2986 | 585 | 64 | 1045 |
| Perrin, Charles, Dayton, Ohio, assignor to C. La Dow, Albany, N. Y. Harrow | 502,662 | Aug. 1 | 756 | 189 | 64 | 705 |
| Perrin, Frederick S., Lynn, Mass. Electric-railway system | 500,943 | July 4 | 630 | 166 | 64 | 115 |
| Perrody, Esprit, Geneva, Switzerland. Railway | 505,478 | Sept. 26 | 1916 | {493 494 | 64 | 1671 |
| Perroté, Eugène, Sandwich, Mass. Car-coupling | 501,577 | July 18 | 1658 | 414 | 64 | 334 |
| Perry, Edward L., Paterson, N. J. Vestibule for cars | 503,160 | Aug. 15 | 1552 | 390 | 64 | 879 |
| Perry, Edward L., Paterson, N. J. Hollow rubber article | 504,612 | Sept. 5 | 485 | 124 | 64 | 1360 |
| Perry, George H., Franklin, Tenn. Thill-coupling | 502,969 | Aug. 8 | 1275 | 312 | 64 | 814 |
| Perry, Howard E., Chicago, Ill. Optical illusion | 500,607 | July 4 | 114 | 30, 31 | 64 | 22 |
| Perry, John F., Chicago, Ill. Quoin | 502,990 | Aug. 8 | 1276 | 312 | 64 | 814 |
| Perry, Thomas O., Chicago, Ill. Windmill | 502,526 | Aug. 1 | 473 | 114 | 64 | 653 |
| Persson, Otto F., Saugus, assignor of one-half to H. C. Schelin, Boston, Mass. Pneumatic wheel-tire | 503,565 | Aug. 15 | 2196 | 548 | 64 | 995 |
| Peschong, Peter, Alton, Iowa. Fire-lighter | 502,136 | July 25 | 2554 | 640 | 64 | 511 |
| Peters, Henry. (See Chauncey, Charles T., assignor.) | | | | | | |
| Petersen, Edward A. C., Chicago, Ill. Baker's-oven door | 503,872 | Aug. 22 | 2977 | 671 | 64 | 1102 |
| Peterson, Frank. (See Larsson, Johan, assignor.) | | | | | | |
| Peterson, Frank, Chicago, Ill. Taper-gage | 501,807 | July 18 | 2038 | 502 | 64 | 389 |
| Peterson, Peter K., Beloit, Wis. Stovepipe-rack | 503,216 | Aug. 15 | 1643 | 403 | 64 | 886 |
| Pettepher, Frank, Marshfield, assignor of one-fourth to G. Straight, Eau Claire, Wis. Axle-lubricator | 505,194 | Sept. 19 | 1350 | 348 | 64 | 1552 |
| Pettersch, Ferdinand, Grand Rapids, Mich. Parlor game | 501,844 | July 18 | 2084 | 515 | 64 | 408 |



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| Petticrew, Algernon S., St. Louis, Mo. Automatic receding sawmill-setworks | 502,316 | Aug. 1 | 102 | 24 | 64 | 584 |
| Petrlt, Elihu R., Philadelphia, Pa. Dental bracket | 502,933 | Aug. 8 | 1176 | 290 | 64 | 797 |
| Petty, Jacob A. (See Klahr, Petty, and Foy.) | | | | | | |
| Pezzer, Oscar de, Paris, France. Surgical catheter | 504,494 | Sept. 5 | 186 | 48 | 64 | 1305 |
| Pezzer, Oscar de, Paris, France. Catheter | 504,744 | Sept. 12 | 719 | 179 | 64 | 1419 |
| Pfaff, Rudolf H., and F. K. Lewis, Ashtabula, Ohio. Covering bow-sockets | 505,278 | Sept. 19 | 1500 | 414 | 64 | 1596 |
| Pfanne, Heinrich, Rixdorf, near Berlin, Germany. Manufacturing varnish and apparatus therefor | 501,578 | July 18 | 1650 | 415 | 64 | 334 |
| Pfeifer, John, assignor to National Cash Register Company, Dayton, Ohio. Cash register, indicator, recorder, and check printer | 502,317 | Aug. 1 | 103 | {24 25 26 | 64 | 585 |
| Pfeil, Robert, assignor to Siemens & Halske, Berlin, Germany. Railway signaling apparatus | 501,100 | July 11 | 908 | {232 233 | 64 | 180 |
| Pfingst, Louis, Boston, Mass. Street-car sign | 503,552 | Aug. 15 | 2176 | 543 | 64 | 991 |
| Pfingsten, Carl G., New York, N. Y. Frame for pocket-books | 502,137 | July 25 | 2556 | 640 | 64 | 511 |
| Pfitzinger, William, assignor to Farbenfabriken, vormals Fr. Bayer & Co., Elberfeld, Germany. Dyeing black | 501,160 | July 11 | 1010 | ..... | 64 | 198 |
| Pfleghar, Frank P., assignor to English & Mersick, New Haven, Conn. Brake-lever | 503,385 | Aug. 15 | 1917 | 475 | 64 | 945 |
| Pfleiderer, Paul, London, England, and H. Werner, Cannstadt, Germany. Baking-oven | 505,175 | Sept. 19 | 1430 | 368 | 64 | 1565 |
| Pflueger, Ernest F., Akron, Ohio. Trolling-spoon | 501,436 | July 11 | 1442 | 361 | 64 | 277 |
| Phelps, Edward P., Scranton, Iowa. Car-window | 504,170 | Aug. 29 | 3172 | 791 | 64 | 1212 |
| Phelps, Edwin S., Leavenworth, Kans. Time-lock. (Reissue) | 11,355 | Aug. 8 | 1464 | 360 | 64 | 849 |
| Phelps, George L., assignor to McCormick Harvesting Machine Company, Chicago, Ill. Grain-binder | 500,608 | July 4 | 118 | 31, 32 | 64 | 23 |
| Phelps, Homer L. (See Palmer and Phelps.) | | | | | | |
| Philadelphia Textile Machinery Company. (See Proctor, Josiah K., assignor.) | | | | | | |
| Philbrick, Orvis P., Somerville, Mass. Automatic regulator for dynamo-electric machines | 505,207 | Sept. 19 | 1490 | {386 387 | 64 | 1575 |
| Philbrook, Emmeline W., Boston, Mass. Underwaist | 503,436 | Aug. 15 | 1987 | 493 | 64 | 957 |
| Philipp, Henry, Baltimore, Md. Milk-can | 502,985 | July 25 | 2480 | 623 | 64 | 696 |
| Philippot, Charles, Newark, N. J. Cooking ut-nail | 504,243 | Aug. 29 | 3294 | 822 | 64 | 1234 |
| Phillips, Hattie L., Wisner, Mich. Top-prop for carriages | 502,138 | July 25 | 2557 | 641 | 64 | 511 |
| Phillips, James W., Pocatello, Idaho. Gate-latch | 504,050 | Aug. 29 | 2975 | 744 | 64 | 1174 |
| Phillips, Anna B. S., Salina, Kans. Abdominal supporter | 500,609 | July 4 | 121 | 32 | 64 | 24 |
| Phillips, Anna B. S., Salina, Kans. Combined shawl-strap and traveling-companion | 503,355 | Aug. 15 | 1871 | 463 | 64 | 936 |
| Phillips, Arthur J., *et al.* (See Chavassa, James J., assignor.) | | | | | | |
| Phillips, Austin. (See McLauchlin and Phillips.) | | | | | | |
| Phillips, Dunklin S., Florence, Ala. Animal-stall | 502,829 | Aug. 8 | 1000 | 243 | 64 | 765 |
| Phillips, Edward J., and J. A. Linhard, Baltimore, Md. Cigar-pipe | 502,992 | Aug. 8 | 1278 | 312 | 64 | 815 |
| Phillips, Fred B., Canaseraga, N. Y. Device for preventing noise in hot-water tanks | 505,722 | Sept. 26 | 2380 | 601 | 64 | 1756 |
| Phillips, Frederick K. (See Brothwell and Phillips.) | | | | | | |
| Phillips, Jacob P., Yantley Creek, Ala. Hoe-handle | 505,252 | Sept. 19 | 1544 | 402 | 64 | 1567 |
| Phillips, James M., assignor of one-third to S. P. Langsford, R. G. and J. F. Phillips, Waxahachie, Tex. Copy-holder | 502,991 | Aug. 8 | 1277 | 312 | 64 | 815 |
| Phillips, Jonathan F., *et al.* (See Phillips, James M., assignor.) | | | | | | |
| Phillips, Robert G., *et al.* (See Phillips, James M., assignor.) | | | | | | |
| Phillips, Simeon G., Woodbridge, N. J. Shaft-bearing | 504,049 | Aug. 29 | 2973 | 743 | 64 | 1174 |
| Phillips, William A., U. S. Army, assignor of one-half to T. J. Porter, Miles City, Mont. Electric-arc lamp | 504,277 | Aug. 29 | 3348 | 837 | 64 | 1245 |
| Piatt, William M., assignor of one-third to B. S. Leonard, West Liberty, Ohio. Corn-harvester | 501,101 | July 11 | 910 | {233 234 | 64 | 181 |
| Pickel, Georg, Berlin, Germany. Pneumatic tire | 500,944 | July 4 | 631 | 167 | 64 | 116 |
| Pickernell, Frank A. (See Larned and Pickernell.) | | | | | | |
| Pickernell, Frank A., Newark, N. J., assignor to American Telephone and Telegraph Company, of New York. Telephone signaling apparatus and circuit | 501,102 | July 11 | 912 | 234 | 64 | 181 |
| Pickernell, Frank A., Newark, N. J., assignor to American Telephone and Telegraph Company, of New York. Electric switchboard-signal | 503,252 | Aug. 15 | 1694 | 417 | 64 | 905 |
| Pickles, Charles K., St. Louis, Mo. Street-roller | 505,800 | Sept. 26 | 2503 | 632 | 64 | 1780 |
| Pidd, Thomas. (See Moehn, John N., assignor.) | | | | | | |
| Pieper, Henri, Jr., Liege, Belgium. Lamp-wick | 504,501 | Sept. 5 | 321 | 82 | 64 | 1329 |
| Pieper, Herman H., assignor to G. F. Staats and T. Klein, St. Louis, Mo. Vehicle-spring | 502,318 | Aug. 1 | 111 | 26 | 64 | 586 |
| Pierce, George C., *et al.* (See Erckson, Edward, assignor.) | | | | | | |
| Pierce, Thomas M., Concord, Mass. Cartridge implement | 504,789 | Sept. 12 | 793 | 200 | 64 | 1432 |
| Pierce, William H., Anderson, Ind. Steam or gas regulator | 501,437 | July 11 | 1443 | 361 | 64 | 278 |
| Piggins, Charles R., Racine, Wis. Electric signal device | 504,745 | Sept. 12 | 720 | 180 | 64 | 1419 |
| Piggins, Harry S., Milwaukee, Wis. Hook | 502,529 | Aug. 1 | 475 | 114 | 64 | 654 |
| Pike, Charles F. (See Cheney, Henry O., assignor.) | | | | | | |
| Pike, Grant S. (See Pike, Orville S. and G. S.) | | | | | | |
| Pike, Joseph H., Ypsilanti, Mich. Equestrienne tights | 504,402 | Sept. 5 | 142 | 37, 38 | 64 | 1297 |
| Pike, Orville S. and G. S., Greensburg, Pa. Fence-wire tension device | 504,051 | Aug. 29 | 2976 | 744 | 64 | 1174 |
| Pilbeam, George, assignor to Gordon Hotels, Limited, London, England. Detachable button-cover | 502,201 | July 25 | 2066 | 673 | 64 | 532 |
| Pilcher, George M., Logansport, Ind. Brace | 503,437 | Aug. 15 | 1988 | 493 | 64 | 957 |
| Pilcher, John V., Louisville, Ky. Cuff-holder | 502,581 | Aug. 1 | 558 | 133 | 64 | 668 |
| Pinkham, Delmar D., and F. E. Lewis, Longview, Tex. Lamp | 505,396 | Sept. 19 | 1660 | 430 | 64 | 1610 |
| Pinkney, Charles W., Smethwick, assignor of two-thirds to G. Tangye and G. H. Haswell, Birmingham, England. Apparatus for governing gas, steam, or other motive power engines | 504,613 | Sept. 5 | 485 | {124 125 | 64 | 1361 |
| Pinkney, Charles W., Smethwick, assignor of two-thirds to G. Tangye and G. H. Haswell, Birmingham, England. Gas-engine | 504,614 | Sept. 5 | 487 | 125 | 64 | 1361 |
| Pinkney, Charles W., Smethwick, assignor of two-thirds to G. Tangye and G. H. Haswell, Birmingham, England. Gas-engine | 505,327 | Sept. 19 | 1670 | 431 | 64 | 1610 |
| Pinkston, Lucien A., assignor of one-half to F. S. Brooks, Corsicana, Tex. Air-brake | 501,359 | July 11 | 1398 | {331 332 333 | 64 | 254 |
| Piontkowski, Gustav v. (See Szczeniowski and Piontkowski.) | | | | | | |
| Piper, Edmund J., *et al.* (See MacRae, Charles J., assignor.) | | | | | | |
| Pipes, Joseph, Arcadia, La. Combined planter and fertilizer-distributer | 502,379 | Aug. 1 | 216 | 51 | 64 | 605 |
| Pirrie, William J. (See Wilson and Pirrie.) | | | | | | |
| Piske, Emanuel, assignor of five-eighths to J. Seidenberg and F. A. Schleiff, Jr., New York, N. Y. Cigar-bunching machine | 503,293 | Aug. 15 | 1763 | {436 437 | 64 | 917 |
| Pitcher, Henry A., Neillsville, Wis. Magazine bolt-gun | 501,192 | July 11 | 1051 | {266 267 | 64 | 208 |
| Pitman, Aaron, Matawan, N. J. Glass-blowing tube | 503,676 | Aug. 22 | 2988 | 596 | 64 | 1045 |

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| Pittman, Harrison L., assignor to himself and J. E. Vail, Industry, Ill. Refrigerator | 505,368 | Sept. 19 | 1738 | 450 | 64 | 1623 |
| Place, Robert, Fall River, Mass. Lubricator | 502,139 | July 25 | 2558 | 641 | 64 | 511 |
| Plasters, Alpheus L., W. F. Rankin, and J. M. Wolfe, Tarkio, Mo.; said Rankin and Wolfe assignors to said Plasters. Reversible-draft brick-kiln | 504,998 | Sept. 12 | 1140 | 292 | 64 | 1499 |
| Platnauer, Louis, Clifton, England, assignor, by mesne assignments, to Keystone Watch Case Company, of Pennsylvania. Watch-bow fastener | 500,817 | July 4 | 451 | 118 | 64 | 83 |
| Platt, Charles C., Waverly, Kans. Weeder and cultivator | 501,360 | July 11 | 1330 | 333 | 64 | 255 |
| Platt, Joseph F., Waterbury, Conn. Button | 505,479 | Sept. 26 | 1918 | 494 | 64 | 1671 |
| Player, John, Topeka, Kans. Machine for cutting stay-bolts | 501,296 | July 11 | 1298 | 305, 306 | 64 | 234 |
| Player, John, Topeka, Kans. Refrigerator-car | 503,772 | Aug. 22 | 2544 | 633, 634 | 64 | 1076 |
| Pleas Dredging and Reclamation Company. (See Pleas, William B., assignor.) | | | | | | |
| Pleas, William B., San Francisco, Cal., assignor to Pleas Dredging and Reclamation Company, of Nevada. Dredging-machine | 502,934 | Aug. 8 | 1178 | 290 | 64 | 798 |
| Pleas, William B., Stockton, Cal., assignor to Pleas Dredging and Reclamation Company, of Nevada. Mast for dredgers | 505,176 | Sept. 19 | 1431 | 368 | 64 | 1566 |
| Pletcher, Levi L., McConnellsville, Ohio. Hinge | 505,480 | Sept. 26 | 1918 | 494 | 64 | 1671 |
| Pletka, John. (See Simon and Pletka.) | | | | | | |
| Pleukharp Barrel Machine Company. (See Pleukharp and Liggett, assignors.) | | | | | | |
| Pleukharp, James, and W. K. Liggett, Columbus, Ohio, assignors to Pleukharp Barrel Machine Company. Hoop-making machine | 501,730 | July 18 | 1904 | 473, 474 | 64 | 377 |
| Pleukharp, James, and W. K. Liggett, Columbus, Ohio, assignors to Pleukharp Barrel Machine Company. Hoop-making machine | 502,407 | Aug. 1 | 262 | 62, 63 | 64 | 614 |
| Pleukharp, James, and W. K. Liggett, Columbus, Ohio, assignors to Pleukharp Barrel Machine Company. Stave-jointing machine | 503,493 | Aug. 15 | 2077 | 518, 519 | 64 | 973 |
| Plouf, Felix F., Minneapolis, Minn. Folding baby-carriage | 504,817 | Sept. 12 | 842 | 216 | 64 | 1441 |
| Plyler, James V., Kosciusko, Miss. Planter | 502,903 | Aug. 8 | 1279 | 313 | 64 | 815 |
| Pneumatic and Electric Tool Company. (See Drawbaugh, Daniel, assignor.) | | | | | | |
| Pneumatic Tyre and Booth's Cycle Agency. (See Welch, Charles K., assignor.) | | | | | | |
| Pohlé, Julius G., Georgetown, Colo. Stove-polish | 501,254 | July 11 | 1150 | ..... | 64 | 224 |
| Pohlé, Julius G., Georgetown, Colo. Stove-polish | 501,845 | July 18 | 2085 | ..... | 64 | 408 |
| Poindexter, Robert E., Indianapolis, Ind. Post-base | 503,804 | Aug. 29 | 2586 | 645 | 64 | 1084 |
| Poirrier, Alcide F., and D. A. Rosenstiehl, Paris, France. Black azo dye | 502,912 | Aug. 8 | 1133 | ..... | 64 | 790 |
| Polenoff, Konstantin, Nishne Taguilsk, Russia. Musical instrument | 502,103 | July 25 | 2504 | 628, 629 | 64 | 500 |
| Pollak, Carl, Frankfort-on-the-Main, Germany. Manufacturing electrodes | 505,125 | Sept. 19 | 1358 | ..... | 64 | 1552 |
| Pollock, James, Wilkes-Barré, Pa. Conveyer-chain | 505,896 | Sept. 19 | 1629 | 421 | 64 | 1604 |
| Pollock, James, Wilkes-Barré, Pa. Separator and screen | 505,753 | Sept. 26 | 2391 | 601 | 64 | 1736 |
| Pollock, James R., Mansfield, Ohio. Store-service apparatus | 502,012 | July 25 | 2354 | 590 | 64 | 472 |
| Polster, Tobias, St. Louis, Mo. Caster | 503,439 | Aug. 15 | 1989 | 493 | 64 | 957 |
| Pomeroy, Daniel, Brooklyn, N. Y. Truss | 505,228 | Sept. 19 | 1508 | 398 | 64 | 1580 |
| Pomeroy, Le Dru R., Cleveland, Ohio, assignor to Van Wagoner & Williams Company, Jersey City, N. J. Spring-hinge | 504,403 | Sept. 5 | 144 | 38 | 64 | 1287 |
| Ponickau, Robert, Jersey City, N. J. Traveling-bag | 504,850 | Sept. 12 | 897 | 231 | 64 | 1454 |
| Poole, Edward E., Fordyce, Ark. Nut-lock | 504,999 | Sept. 12 | 1142 | 292 | 64 | 1499 |
| Poole, Robert A., Hoboken, Pa. Oscillatory chill | 502,994 | Aug. 8 | 1280 | 313 | 64 | 815 |
| Pooley, James B., Clementon, N. J. Device for operating the slides or rests of desks | 500,610 | July 4 | 122 | 32, 33 | 64 | 24 |
| Poore, Graydon, London, England. Coin-controlled electric call apparatus | 505,724 | Sept. 26 | 2382 | 601, 602, 603 | 64 | 1757 |
| Pope, John C., Fox, Ill., assignor to A. L. and D. M. Kitselman, Ridgeville, Ind. Wire-fabric machine | 505,607 | Sept. 26 | 2181 | 552 | 64 | 1720 |
| Pope, John L., Cleveland, Ohio. Rail-securing device | 502,830 | Aug. 8 | 1002 | 244 | 64 | 765 |
| Pope, Thomas E., San Francisco, Cal. Railway-car | 504,615 | Sept. 5 | 488 | 125, 126 | 64 | 1361 |
| Pope, Thomas E., Oakland, Cal. Railway-car | 504,616 | Sept. 5 | 490 | 126 | 64 | 1362 |
| Pope, William R., Baltimore, Md., assignor to National Electric Machine Company, New York, N. Y. Coin-operated induction-coil | 500,776 | July 4 | 390 | 103 | 64 | 73 |
| Popkins, Edwin. (See Finlayson and Popkins.) | | | | | | |
| Poppenburg, John von der, Charlottenburg, assignor to C. C. Lesenberg, Rostock, Germany. Galvanic dry battery | 504,746 | Sept. 12 | 721 | 180 | 64 | 1419 |
| Porcher, Joseph F. (See Whitten and Porcher.) | | | | | | |
| Porstendorfer, Urbanus, Hartford, Conn. Ratchet-tool | 505,535 | Sept. 26 | 2040 | 521 | 64 | 1693 |
| Porter, Benjamin, Fullerton, N. D. Nut-lock | 500,672 | July 4 | 229 | 60 | 64 | 44 |
| Port, David and S., and C. V. Baird, near Dublin, Ind. Fence-post | 505,872 | Sept. 26 | 2296 | 582 | 64 | 1741 |
| Port, Samuel. (See Port and Baird.) | | | | | | |
| Porter, Thomas J. (See Phillips, William A., assignor.) | | | | | | |
| Portsmouth Stove and Range Company. (See Knauss, Frank V., assignor.) | | | | | | |
| Post, George W., Fond du Lac, Wis. Thill-coupling | 502,380 | Aug. 1 | 218 | 59 | 64 | 606 |
| Potter, Elwood C., Vineland, N. J. Railway-crossing alarm or signal | 501,438 | July 11 | 1444 | 362 | 64 | 278 |
| Potter, Henry K., Somerville, Mass. Sprinkler | 504,134 | Aug. 29 | 3110 | 779 | 64 | 1900 |
| Potter, Henry K. and J. L., Somerville, Mass. Sprinkler | 504,069 | Aug. 29 | 3000 | 750 | 64 | 1179 |
| Potter, Hobert B. (See Ward and Potter.) | | | | | | |
| Potter, John L. (See Potter, Henry K. and J. L.) | | | | | | |
| Potter, Whipple W., Jr. (See Baldner, Charles E., assignor.) | | | | | | |
| Potter, Wilson L., Hartford, Conn. Sanitary ventilator | 502,995 | Aug. 8 | 1281 | 313 | 64 | 815 |
| Powell, William A. (See McManus, Robert, assignor.) | | | | | | |
| Powers, James J., and R. Van Buren, Brooklyn, N. Y. Electrical conduit for buildings | 503,873 | Aug. 22 | 2672 | 671 | 64 | 1102 |
| Powers, Jay W., assignor to C. O. Brown, Chicago, Ill. Meat-preserving device | 505,126 | Sept. 19 | 1352 | 348 | 64 | 1552 |
| Powers, John T., West Springfield, Mass. Locking-switch movement | 504,502 | Sept. 5 | 391 | 82 | 64 | 1320 |
| Prangey, Louis E. A., Paris, France. Apparatus for refining sugar | 502,014 | July 25 | 2356 | 591, 592 | 64 | 473 |
| Prangey, Louis E. A., Saumois, France. Apparatus for refining sugar | 502,015 | July 25 | 2361 | 593 | 64 | 474 |
| Pratt, Charles A. B. (See Munson and Haines, assignors.) | | | | | | |
| Pratt, Eber W., Ipava, Ill. Flue-cutter | 505,398 | Sept. 19 | 1672 | 431 | 64 | 1611 |
| Pratt, Edwin S., Parry Sound, Canada. Monkey-wrench | 502,907 | Aug. 8 | 1263 | 314 | 64 | 816 |
| Pratt, Elias E., New Haven, Conn. Freight-car | 503,874 | Aug. 22 | 2670 | 671 | 64 | 1102 |
| Pratt, Francis A., assignor to Pratt & Whitney Company, Hartford, Conn. Machine for cutting off bars of metal | 504,171 | Aug. 29 | 3173 | 791, 792, 793 | 64 | 1212 |
| Pratt, Francis A., and J. Johnston, assignors to Pratt & Whitney Company, Hartford, Conn. Roll-grooving machine | 504,172 | Aug. 29 | 3175 | 793, 794 | 64 | 1212 |
| Pratt, George H., McLane, Pa. Mechanism for raising the cutter-bars of mowing-machines | 500,945 | July 4 | 632 | 167 | 64 | 116 |



*Alphabetical list of patentees, July to September, inclusive*—Continued.

| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Dr'g. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Pratt, George H., and A. I. Paine, Newton, Mass. Clamp for holding printers' chases on beds of printing-presses | 501,231 | July 11 | 1111 | 282 | 64 | 217 |
| Pratt, Henry L., Brooklyn, N. Y., assignor to Miller's Falls Company, Miller's Falls, Mass. Hack-saw machine | 502,996 | Aug. 8 | 1282 | 314 | 64 | 816 |
| Pratt, Stephen A., Detroit, Mich. Boiler | 505,673 | Sept. 26 | 2298 | 582, 583 | 64 | 1742 |
| Pratt & Whitney Company. (See Pratt, Francis A., assignor.) | | | | | | |
| Pratt & Whitney Company. (See Pratt and Johnston, assignors.) | | | | | | |
| Pray, Hamilton, Clove, N. Y. Potato-digger | 502,998 | Aug. 8 | 1284 | 314 | 64 | 816 |
| Precht, Heinrich, Neu-Stassfurt, Germany. Obtaining meta or pyro phosphoric-acid combinations | 502,424 | Aug. 1 | 295 | ..... | 64 | 620 |
| Prendergast, Michael, Chicago, Ill. Window-jack | 503,217 | Aug. 15 | 1644 | 403 | 64 | 896 |
| Prentice, Herbert N., Stowmarket, England. Electric cut-out | 504,938 | Sept. 12 | 1038 | 266, 267 | 64 | 1480 |
| Prentiss, Henry S., Elizabeth, N. J. Electric synchronizer for clocks | 502,381 | Aug. 1 | 219 | 52 | 64 | 606 |
| Preston, Albert F., Lynn, Mass., assignor, by mesne assignments, to Columbian Lasting Machine Company, Portland, Me. Lasting-machine | 502,236 | July 25 | 2724 | 687, 688 | 64 | 543 |
| Preston, Albert F., Lynn, Mass., assignor, by mesne assignments, to Columbian Lasting Machine Company, Portland, Me. Machine for lasting boots or shoes | 502,755 | Aug. 8 | 868 | 312, 313 | 64 | 741 |
| Preston, Albert F., Lynn, Mass., assignor, by mesne assignments, to Columbian Lasting Machine Company, Portland, Me. Jack for boots or shoes | 502,756 | Aug. 8 | 873 | 213 | 64 | 741 |
| Preston, Charles W., assignor of one-half to W. C. Espey and W. E. Anderson, San Francisco, Cal. Combination-gage | 504,278 | Aug. 29 | 3350 | 837 | 64 | 1945 |
| Price, Benjamin I., Denver, Colo. Eye-testing device | 505,000 | Sept. 12 | 1143 | 293 | 64 | 1500 |
| Price, George W. (See Covert and Price.) | | | | | | |
| Price, Ira L. (See Covert and Price.) | | | | | | |
| Price, James, Jr., San Fructuoso, Uruguay. Dredging apparatus | 500,818 | July 4 | 452 | 118, 119, 120 | 64 | 83 |
| Price, James M., Philadelphia, Pa., assignor to Price Railway Appliance Company, of Pennsylvania. Rail-joint | 501,161 | July 11 | 1012 | 257 | 64 | 198 |
| Price, James M., Philadelphia, Pa., assignor to Price Railway Appliance Company, of Pennsylvania. Metallic cross-tie and railway-support | 503,253 | Aug. 15 | 1698 | 418 | 64 | 905 |
| Price, James M., Philadelphia, Pa., assignor to Price Railway Appliance Company, of Pennsylvania. Truss rail-joint | 503,254 | Aug. 15 | 1700 | 418 | 64 | 906 |
| Price, James M., Philadelphia, Pa., assignor to Price Railway Appliance Company, of Pennsylvania. Metallic cross-tie and railway construction | 504,540 | Sept. 5 | 381 | 95 | 64 | 1341 |
| Price, James S. (See McCutcheon, Joshua L., assignor.) | | | | | | |
| Price, Joseph H., Chicago, Ill. Harness-saddle | 501,024 | July 4 | 766 | 201 | 64 | 140 |
| Price, O. S., *et al.* (See Cunningham, Richard B., assignor.) | | | | | | |
| Price Railway Appliance Company. (See Price, James M., assignor.) | | | | | | |
| Prickett, Joshua, Marinette, Wis. Guard attachment for levels | 502,902 | July 25 | 2067 | 673 | 64 | 532 |
| Pridmore, Edward, assignor to Johnston Harvester Company, Batavia, N. Y. Disk harrow | 503,773 | Aug. 22 | 2546 | 634 | 64 | 1076 |
| Pridmore, Edward, assignor to Johnston Harvester Company, Batavia, N. Y. Disk harrow | 503,774 | Aug. 22 | 2549 | 635 | 64 | 1077 |
| Pridmore, Henry E., assignor to McCormick Harvesting Machine Company, Chicago, Ill. Harvester | 504,089 | Aug. 29 | 3034 | 758 | 64 | 1186 |
| Priest, Joseph E., Nashua, N. H. Power-transmitting flexible shaft | 501,731 | July 18 | 1908 | 475 | 64 | 377 |
| Prigge, William, Flushing, N. Y. Apparatus for cutting ice-cream, &c. | 502,863 | Aug. 8 | 1052 | 258, 259 | 64 | 775 |
| Prindle, George S. (See Flint, Edwin H., assignor.) | | | | | | |
| Pritchard, Albert R. (See Milne and Pritchard.) | | | | | | |
| Pritchard, James K., Providence, R. I. Electrical contact device | 503,775 | Aug. 22 | 2551 | 635 | 64 | 1077 |
| Proctor, Charles W., Lake Forest, Ill. Oil-can | 504,748 | Sept. 12 | 725 | 181 | 64 | 1420 |
| Proctor, Josiah K., assignor to Philadelphia Textile Machinery Company, Philadelphia, Pa. Drying-machine | 502,237 | July 25 | 2730 | 688, 689 | 64 | 544 |
| Proctor, Josiah K., assignor to Philadelphia Textile Machinery Company, Philadelphia, Pa. Drying-machine | 504,747 | Sept. 12 | 722 | 180 | 64 | 1419 |
| Prohl, Albert C. (See Fiedler and Prohl.) | | | | | | |
| Proskauer, Samuel, *et al.* (See Cosby, Anderson & B., assignor.) | | | | | | |
| Proskey, Samuel, *et al.* (See Lancaster, John P., assignor.) | | | | | | |
| Prouty, Theodore C., St. Joseph, Mich. Door-hanger | 502,582 | Aug. 1 | 559 | 133 | 64 | 668 |
| Provost, Peter, Menominee, Mich. Grain-scouring machine | 504,173 | Aug. 29 | 3180 | 794, 795 | 64 | 1213 |
| Pruden, Silas, assignor of one-half to G. Sinsabaugh, Los Angeles, Cal. Nailless horseshoe | 500,946 | July 4 | 634 | 167 | 64 | 116 |
| Prud'hon, Léon. (See Dame and Prud'hon.) | | | | | | |
| Pryibil, Paul, New York, N. Y. Saw-table gage | 503,726 | Aug. 22 | 2472 | 614 | 64 | 1061 |
| Puddefoot, Charles, assignor to Detroit Cork Screw Company, Detroit, Mich. Corkscrew | 501,468 | July 11 | 1486 | 374 | 64 | 296 |
| Pugh, Robert, assignor of one-half to W. Grovenor, Casselton, N. D. Heating-drum | 502,999 | Aug. 8 | 1285 | 314 | 64 | 816 |
| Pullman, Herbert S., assignor of one-half to H. L. Allen, Meriden, Conn. Necktie-fastener | 502,757 | Aug. 8 | 875 | 214 | 64 | 741 |
| Purvis, William. (See Glen, Purvis, and Smith.) | | | | | | |
| Putnam, Joseph H., Bridgeton, N. J. Hot-air furnace | 505,177 | Sept. 19 | 1432 | 369 | 64 | 1566 |
| Putnam, Samuel W., Elizabeth, assignor to American Saw Company, Trenton, N. J. Wrench | 503,677 | Aug. 22 | 2389 | 596 | 64 | 1045 |
| Putnam, William T., Brightwood, Ind. Oil-burner | 501,692 | July 18 | 1846 | 459 | 64 | 367 |
| Quast, Charles, assignor of one-half to F. M. Hicks, Chicago, Ill. Air-compressor | 501,046 | July 4 | 805 | 210 | 64 | 144 |
| Queen, Allen R., and J. J. Kimball; said Queen assignor to J. J. Nesbit, Larned, Kans. Lubricator | 501,627 | July 18 | 1741 | 433 | 64 | 349 |
| Quigley Furniture Company. (See Bancroft, Melvin, assignor.) | | | | | | |
| Quigley, Hiram F., Atoka, Indian Ter. Churn | 504,174 | Aug. 29 | 3182 | 795 | 64 | 1214 |
| Quincy, Josiah. (See Bélanger, Victor, assignor.) | | | | | | |
| Quisenberry, Edward A., Lexington, Va. Car-heater | 501,361 | July 11 | 1338 | 333 | 64 | 256 |
| Quisenberry, Edward A., Lexington, Va. Car-heater | 501,483 | July 11 | 1510 | 380 | 64 | 290 |
| Raabe, Carl, Berlin, Germany, assignor of one-half to G. H. Benjamin, New York, N. Y. Rotary cutter | 501,213 | July 11 | 1083 | 275 | 64 | 213 |
| Raby, Richard, York, Pa. Hedge-clip | 503,161 | Aug. 15 | 1552 | 380 | 64 | 879 |
| Rader, Reuben G., Cerro Gordo, Ill. Dehorning implement | 503,617 | Aug. 22 | 2306 | 575 | 64 | 1029 |
| Radford, Benjamin F., Hyde Park, Mass. Brake for pulleys | 500,611 | July 4 | 123 | 33 | 64 | 24 |
| Rady, John, Georgetown, Conn. Wire-netting machine | 503,356 | Aug. 15 | 1872 | 463, 464, 465 | 64 | 936 |
| Raffoer, Louis, *et al.* (See Bayler, Adolph, assignor.) | | | | | | |
| Railsback, Lafayette D., Indianapolis, Ind. Rotary disk plow | 505,777 | Sept. 26 | 2468 | 622 | 64 | 1773 |

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| Rainey, Samuel, *et al.* (See Austin, William G., assignor.) | | | | | | |
| Ralph, D. Clark. (See Parkinson, William J., assignor.) | | | | | | |
| Ralph, Martin, New York, N. Y. Ticket and change pocket | 505,001 | Sept. 19 | 1144 | 293 | 64 | 1500 |
| Ramey, James, Brooks, Ill. Combined land furrower and marker | 504,617 | Sept. 5 | 491 | 126 | 64 | 1362 |
| Ramien, Edgar F., assignor to H. Hobbs, A. W. Friese, and H. W. Ramien, Milwaukee, Wis. Switch for governing electric motors | 505,063 | Sept. 12 | 1243 | 319 | 64 | 1518 |
| Ramien, Henry W., *et al.* (See Ramien, Edgar F., assignor.) | | | | | | |
| Ramsdell, Frank G. (See Edmunds, George C., assignor.) | | | | | | |
| Ramsey, John J., *et al.* (See Patton, Charles W., assignor.) | | | | | | |
| Ramsey, Thomas J., *et al.* (See Patton, Charles W., assignor.) | | | | | | |
| Randall, Charles A., London, England. Apparatus for recording and reproducing speech, &c | 502,382 | Aug. 1 | 220 | 52, 53 | 64 | 606 |
| Randall, Charles A., London, England. Apparatus for recording and reproducing articulate speech | 502,383 | Aug. 1 | 224 | 53, 54 | 64 | 607 |
| Randall, James D. (See Randall, Silas H., assignor.) | | | | | | |
| Randall, James D., *et al.* (See Allen, Alfred J., assignor.) | | | | | | |
| Randall, Silas H., *et al.* (See Allen, Alfred J., assignor.) | | | | | | |
| Randall, Silas H., assignor of one-half to J. D. Randall, Wyoming, Ohio. Clutch | 502,758 | Aug. 8 | 876 | 214 | 64 | 741 |
| Ranger, Henry P., Rochester, N. Y. Mirror for use in photography | 505,127 | Sept. 19 | 1354 | 348 | 64 | 1552 |
| Rank, W. M., *et al.* (See Masterman, William H., assignor.) | | | | | | |
| Rankin, William F. (See Plasters, Rankin, and Wolfe.) | | | | | | |
| Rankine, David A., Waterloo, near Liverpool, England. Apparatus for filtering water | 502,583 | Aug. 1 | 560 | 134 | 64 | 669 |
| Ransley, Thomas, Jr., Troy, N. Y. Thill-coupling | 505,674 | Sept. 26 | 2299 | 583 | 64 | 1742 |
| Rapieff, John, New York, N. Y. Auxiliary valve for pneumatic guns | 502,016 | July 25 | 2363 | 293, 294 | 64 | 474 |
| Rapieff, John, New York, N. Y. Pneumatic cannon | 502,759 | Aug. 8 | 877 | 214, 215 | 64 | 742 |
| Rasch, Peter, assignor to King Bridge Company, Cleveland, Ohio. Elevated tramway for hoisting and conveying machines | 505,635 | Sept. 26 | 2230 | 566 | 64 | 1729 |
| Rasch, Peter, assignor to King Bridge Company, Cleveland, Ohio. Elevated tramway for hoisting mechanism | 505,636 | Sept. 26 | 2233 | 566, 567 | 64 | 1730 |
| Rasch, Peter, assignor to King Bridge Company, Cleveland, Ohio. Hoisting and conveying apparatus | 505,637 | Sept. 26 | 2235 | 567 | 64 | 1730 |
| Rasch, Peter, assignor to King Bridge Company, Cleveland, Ohio. Hoisting and conveying tramway mechanism | 505,638 | Sept. 26 | 2237 | 567, 568 | 64 | 1730 |
| Rasch, Peter, assignor to King Bridge Company, Cleveland, Ohio. Hoisting and conveying machine | 505,639 | Sept. 26 | 2240 | 568 | 64 | 1731 |
| Rasch, Howard C., assignor to Natural Body Brace Company, Salina, Kans. Truss | 503,000 | Aug. 8 | 1296 | 315 | 64 | 816 |
| Rasner, Frank, Bangor, assignor to C. Shuman, Bath, Pa. Washtub | 503,913 | Aug. 22 | 2743 | 668 | 64 | 1115 |
| Rath, Joseph. (See David and Rath.) | | | | | | |
| Rathbun, James B., New York, N. Y. Pneumatic tire for wheels | 504,135 | Aug. 29 | 3112 | 779 | 64 | 1200 |
| Rau, Otto. (See Dobbie, Robert S., assignor.) | | | | | | |
| Rau, Otto, Jersey City, N. J., assignor of one-half to R. S. Dobbie, New York, N. Y. Electric-railway-trolley base | 502,530 | Aug. 1 | 476 | 114 | 64 | 654 |
| Raubold, Alfred A., Grebin, near Ploen, Germany. Apparatus for obtaining motive power from river-currents | 500,947 | July 4 | 635 | 167 | 64 | 116 |
| Ravn, Carl F., Delavan, Wis. Stock-tank heater | 505,229 | Sept. 19 | 1509 | 394 | 64 | 1580 |
| Rawlings, Joseph W. V. (See Rawlings, Samuel V., assignor.) | | | | | | |
| Rawlings, Samuel V., Marquette, assignor of one-half to J. W. V. Rawlings, Houghton, Mich. Automatic throttle for engines | 501,959 | July 25 | 2277 | 569, 570 | 64 | 458 |
| Ray, Edwin R. (See Alderson, William N. B., assignor.) | | | | | | |
| Ray, John M. (See Williams, Otis H., assignor.) | | | | | | |
| Ray, Philip. (See Thomas, Benjamin F., assignor.) | | | | | | |
| Ray, William E., West Coxsackie, N. Y. Envelope and stamp moistener | 503,618 | Aug. 22 | 2307 | 575 | 64 | 1030 |
| Raymond, Adelbert, and F. S. North, Detroit, Mich. Sash-fastener | 503,294 | Aug. 15 | 1767 | 437 | 64 | 917 |
| Raymond, Charles W., Evansville, assignor of one-half to J. H. Harford, Indianapolis, Ind. Carpet beating and cleaning machine | 505,481 | Sept. 26 | 1920 | 495 | 64 | 1671 |
| Raymond, Perley B., assignor to Adams & Williamson, Indianapolis, Ind. Lumber-drying rack | 504,279 | Aug. 29 | 3351 | 837 | 64 | 1245 |
| Raymond, Silas H., assignor to T. S. White and T. Friant, Grand Rapids, Mich. Carpet-sweeper | 503,678 | Aug. 22 | 2390 | 596 | 64 | 1045 |
| Raymond, Silas H., assignor to T. S. White and T. Friant, Grand Rapids, Mich. Carpet-sweeper | 503,679 | Aug. 22 | 2392 | 596 | 64 | 1046 |
| Rayner, George H. (See Webb and Rayner.) | | | | | | |
| Reach, Robert, Philadelphia, Pa. Portable furnace | 503,494 | Aug. 15 | 2079 | 519 | 64 | 974 |
| Read, Alonzo P., Kenosha, Wis. Window-bead fastener | 505,640 | Sept. 26 | 2244 | 569 | 64 | 1732 |
| Read, Charles C., Mandarin, Fla. Berry-picker | 500,613 | July 4 | 125 | 33 | 64 | 25 |
| Read, Walter G., Colusa, Cal. Machine for cracking and separating almond-nuts | 504,244 | Aug. 29 | 3295 | 823, 824 | 64 | 1234 |
| Read, Walter G., Colusa, Cal. Almond hulling and shelling machine | 505,002 | Sept. 12 | 1145 | 293 | 64 | 1500 |
| Read, William C., and B. Hager, Salt Lake City, Utah Ter. Wagon or cart | 500,612 | July 4 | 124 | 33 | 64 | 24 |
| Reagan, Thomas B., Mapleton, Kans. Fruit-gatherer | 504,245 | Aug. 29 | 3301 | 804 | 64 | 1235 |
| Rebsamen, Julius, Chicago, Ill. Fluid-compressor | 500,790 | July 4 | 306 | 82 | 64 | 57 |
| Rechtsteiner, Frank S., Dayton, Ohio. Attachment for lathes | 502,760 | Aug. 8 | 882 | 216 | 64 | 743 |
| Reck, Peter W., Davenport, Iowa. Chuck | 504,939 | Sept. 12 | 1039 | 267 | 64 | 1429 |
| Reckenzaun, Anthony, London, England, assignor to J. A. Pentz, Philadelphia, Pa. Electric meter | 503,805 | Aug. 22 | 2586 | 645, 646, 647 | 64 | 1084 |
| Redfield, Casper L., Chicago, Ill., assignor to Chicago Matrix Machine Company. Type-die for matrix-making | 501,297 | July 11 | 1210 | 306 | 64 | 235 |
| Redfield, Charles T., Glen Haven, N. Y. Stovepipe-damper | 502,903 | July 25 | 2668 | 674 | 64 | 533 |
| Redfield, E. E. (See Redfield, John H. and S. H., assignors.) | | | | | | |
| Redfield, John H. and S. H., Medford, assignors of one-third to E. E. Redfield, Grant's Pass, Oreg. Music-leaf turner | 504,052 | Aug. 29 | 2977 | 744 | 64 | 1174 |
| Redfield, Samuel H. (See Redfield, John H. and S. H.) | | | | | | |
| Redlefsen, Jens. (See Hafely and Redlefsen.) | | | | | | |
| Redstone, Charles G. (See Abbott and Redstone.) | | | | | | |
| Redwood, Boverton. (See Clowes and Redwood.) | | | | | | |
| Reed, Albert E., Gravesend, England. Paper-pulp-beating engine | 503,553 | Aug. 15 | 2178 | 544, 545 | 64 | 992 |
| Reed, Charles J., Orange, N. J. Storage-battery | 504,455 | Sept. 5 | 227 | 61 | 64 | 1313 |
| Reed, Daniel G., *et al.* (See Allison, John H., assignor.) | | | | | | |
| Reed, George. (See Frasher, Charles T., assignor.) | | | | | | |
| Reed, James T., Correctionville, Iowa. Tag-attaching implement | 504,280 | Aug. 29 | 3352 | 838 | 64 | 1246 |



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| Reed, Lemon M., Cleveland, Ohio. Combined pencil-sharpener and paper-weight | 504,940 | Sept. 12 | 1040 | 267 | 64 | 1480 |
| Reed, William S., Marshalltown, Iowa. Apparatus for heating water | 501,846 | July 18 | 2067 | 515 | 64 | 408 |
| Reed, William S., Leominster, Mass. Toy bowling-alley | 505,536 | Sept. 26 | 2042 | 521 | 64 | 1693 |
| Reese, E. Ewing. (See Finney and Davidson, assignors.) | | | | | | |
| Reese, Frederick W., Paris, Ill. Broom-corn cleaner | 505,128 | Sept. 19 | 1355 | 348, 349 | 64 | 1553 |
| Reeve, Ernest D., London, England. Washing-machine | 504,246 | Aug. 29 | 3301 | 824, 825 | 64 | 1235 |
| Regnell, Herman T., J. A. Bigney, and C. O. Sweet, Attleborough, Mass. Jewelry and making same | 501,232 | July 11 | 1112 | 282 | 64 | 218 |
| Regnstrom, Charles G., Ishpeming, Mich. Sleigh | 504,941 | Sept. 12 | 1041 | 267 | 64 | 1480 |
| Reichardt, Ferdinand A., New York, N. Y. Vial-holder | 501,162 | July 11 | 1013 | 257 | 64 | 198 |
| Reichert, Karl, Muscatine, Iowa. Door-check | 505,329 | Sept. 19 | 1673 | 431 | 64 | 1611 |
| Reichhelm & Co. (See Leibman, Frank J., assignor.) | | | | | | |
| Reichhelm, Edward P., Jersey City, N. J. Rotary blower | 502,890 | Aug. 8 | 1092 | 269 | 64 | 782 |
| Reid, Charles R., Heidelberg, Miss. Seed-planter and fertilizer-distributer | 501,362 | July 11 | 1335 | 334 | 64 | 256 |
| Reid, James A. (See Cooper, Louis, assignor.) | | | | | | |
| Reid, John S., London, England. Wire-barbing machine | 503,162 | Aug. 15 | 1553 | 381, 382, 383 | 64 | 879 |
| Reilly, Bernard T., assignor to M. R. Zehnder, Ashley, Pa. Machine-brake | 503,495 | Aug. 15 | 2081 | 519 | 64 | 974 |
| Reilly, Francis P., New York, N. Y., assignor, by mesne assignments, to Johnson Company, of Pennsylvania. Railway-rail chair | 504,818 | Sept. 12 | 845 | 217 | 64 | 1442 |
| Reilly, James H., assignor to Curtis & Curtis, Bridgeport, Conn. Device for holding nipples during threading | 500,746 | July 4 | 341 | 90 | 64 | 65 |
| Reilly, Patrick, Lima, Ohio. Steam heating apparatus for railway-cars | 502,204 | July 25 | 2669 | 674 | 64 | 334 |
| Reinhart, William H. (See Laird, William H., assignor.) | | | | | | |
| Reinicke, Paul, Coethen, Germany. Pulp-strainer | 501,214 | July 11 | 1084 | 275 | 64 | 213 |
| Reinmuth, Carl H. (See Heinze and Reinmuth.) | | | | | | |
| Reist, Henry G., Lynn, Mass., assignor to General Electric Company, of New York. Brush-holder for dynamo-electric machines | 500,614 | July 4 | 126 | 34 | 64 | 25 |
| Reist, Henry G., Lynn, assignor to General Electric Company, Boston, Mass. Commutator-brush | 501,960 | July 25 | 2279 | 570 | 64 | 459 |
| Reiter, Samuel, *et al.* (See Marshall, William M., assignor.) | | | | | | |
| Renean, Charles W., assignor of one-half to J. A. Lewis, Meridian, Miss. Furnace-door | 503,875 | Aug. 22 | 2681 | 672 | 64 | 1102 |
| Reniff, Charles W., Greensburg, Pa. Axle-journal | 504,749 | Sept. 12 | 727 | 181 | 64 | 1429 |
| Renisch, Hermann. (See Corleis and Renisch.) | | | | | | |
| Renkel, William J. (See Brunner and Renkel.) | | | | | | |
| Renz, Robert L., and H. Weidman, Poplar, Mont. Shepherd's crook | 504,175 | Aug. 29 | 3183 | 795 | 64 | 1214 |
| Rettig, Julius E., Washington, D. C. Outlet-valve for garbage-cars | 502,584 | Aug. 1 | 562 | 134 | 64 | 669 |
| Rettig, Julius E., Washington, D. C. Inlet-valve for digesters | 502,635 | Aug. 1 | 644 | 154, 155 | 64 | 685 |
| Reuss, Albrecht, Cannstadt, Germany. Tobacco-pipe | 501,808 | July 18 | 2039 | 502 | 64 | 400 |
| Revilliod-De Muralt, Aloys. (See Badoni, Massimiliano, assignor.) | | | | | | |
| Rew, Ida M., New York, N. Y. Bust-supporter | 505,003 | Sept. 12 | 1148 | 294 | 64 | 1500 |
| Rew, Madison, Grinnell, Iowa, assignor of one-third to Chambers, Bering, Quinlan Company, Decatur, Ill. Hay rake and loader | 502,679 | Aug. 1 | 736 | 177, 178 | 64 | 700 |
| Reynolds, Charles J., assignor, by mesne assignments, to Elevator Safety Manufacturing Company, Boston, Mass. Hatchway-guard | 500,721 | July 4 | 307 | 82 | 64 | 58 |
| Reynolds, Edwin, Milwaukee, Wis. Method of and machinery for hoisting | 504,942 | Sept. 12 | 1042 | 268 | 64 | 1481 |
| Reynolds, Edwin, and E. Cheshire, Milwaukee, Wis. Compound engine | 505,004 | Sept. 12 | 1149 | 294 | 64 | 1501 |
| Reynolds, Henry S., Brooklyn, N. Y. Machinery for making solid or tubular rivets | 503,329 | Aug. 15 | 1830 | 453, 454, 455 | 64 | 929 |
| Reynolds, Henry S., Brooklyn, N. Y. Ear for sheet-metal vessels | 503,680 | Aug. 22 | 2393 | 597 | 64 | 1046 |
| Reynolds, Henry S., Brooklyn, N. Y. Ear for sheet-metal vessels | 503,681 | Aug. 22 | 2394 | 597 | 64 | 1046 |
| Reynolds, Henry S., Brooklyn, N. Y. Handle for sheet-metal vessels | 503,682 | Aug. 22 | 2395 | 597 | 64 | 1046 |
| Reynolds, Henry S., Brooklyn, N. Y. Machine for wiring the edges of sheet-metal vessels | 505,675 | Sept. 26 | 2300 | 583, 584 | 64 | 1742 |
| Reynolds, Nelson G., Bangor, Mich. Hammock-support | 504,618 | Sept. 5 | 491 | 127 | 64 | 1362 |
| Reynolds, Richard S., *et al.* (See Savage, Arthur W., assignor.) | | | | | | |
| Reynolds, Thomas, *et al.* (See Minogue, Martin T., assignor.) | | | | | | |
| Reznor, George, Mercer, Pa. Plumber's hook | 501,439 | July 11 | 1446 | 362 | 64 | 278 |
| Reznor, George, Mercer, Pa. Plumber's hook | 501,484 | July 11 | 1511 | 380 | 64 | 291 |
| Rheutan, Abram A., assignor of one-half to W. H. Hill Envelope Company, Worcester, Mass. Gumming mechanism for envelope-machines | 504,136 | Aug. 29 | 3113 | 779 | 64 | 1201 |
| Rhind, Frank, Meriden, assignor of one-half to Bridgeport Brass Company, Bridgeport, Conn. Central-draft lamp | 501,025 | July 4 | 767 | 201 | 64 | 146 |
| Rhoades, Alonzo E. (See Draper and Rhoades.) | | | | | | |
| Rhoades, Alonzo E., assignor to G. Draper & Sons, Hopedale, Mass. Spindle-retainer for sleeve-whirl spindles | 504,281 | Aug. 29 | 3353 | 838 | 64 | 1246 |
| Rhoades, Alonzo E., assignor to Hopedale Machine Company, Hopedale, Mass. Mechanism for handling beams | 504,456 | Sept. 5 | 229 | 61 | 64 | 1313 |
| Rhoades, Alonzo E., assignor to Hopedale Machine Company, Hopedale, Mass. Mechanism for handling beams of warping-machines | 504,457 | Sept. 5 | 230 | 61, 62 | 64 | 1313 |
| Rhoades, Alonzo E., assignor to Hopedale Machine Company, Hopedale, Mass. Mechanism for handling beams | 504,458 | Sept. 5 | 233 | 62 | 64 | 1314 |
| Rhoades, Alonzo E., assignor to Hopedale Machine Company, Hopedale, Mass. Warping-machine | 504,459 | Sept. 5 | 235 | 62, 63 | 64 | 1314 |
| Rhodes, Edward, assignor of one-half to J. Mayers, Philadelphia, Pa. Stuffing-box | 505,369 | Sept. 19 | 1739 | 450 | 64 | 1623 |
| Rhodes, James B., Grand Rapids, Mich. Saw-gummer | 502,319 | Aug. 1 | 113 | 36 | 64 | 586 |
| Rhodes, James B., Grand Rapids, Mich. Saw-grinding machine | 504,404 | Sept. 5 | 148 | 38, 39 | 64 | 1297 |
| Rhodes, John W., Havana, Ill. Grain-drill | 502,831 | Aug. 8 | 1003 | 244, 245 | 64 | 766 |
| Rhodes, Leonidas M., Warrenton, Ga. Cotton-planter | 501,026 | July 4 | 770 | 202 | 64 | 140 |
| Rhude, Alonzo B., assignor to J. Sweeney, Thompson Falls, Mont. Self-fastening giant-powder cap | 501,440 | July 11 | 1447 | 363 | 64 | 278 |
| Rice, Charles L., assignor of one-third to O. H. Sorlien, Granite Falls, Minn. Door-operating device | 503,985 | Aug. 29 | 2869 | 719, 720 | 64 | 1155 |
| Rice, John. (See Davis, Rice, and McDaniel.) | | | | | | |
| Rice, Joseph C., Grundy Centre, Iowa. Three-horse equalizer | 503,163 | Aug. 15 | 1556 | 383 | 64 | 880 |
| Rice, Wentworth, Rapid City, S. D. Rotary engine | 502,585 | Aug. 1 | 564 | 135 | 64 | 669 |
| Rice, William. (See Bowman and Rice.) | | | | | | |
| Rice, William S., Elvira, Iowa. Box-forming machine | 502,320 | Aug. 1 | 114 | 26, 27 | 64 | 586 |

| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drg. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Rich, Ademah W., Jersey City, N. J. Machine for sawing logs, trees, or spiles | 505,492 | Sept. 26 | 1921 | 495 | 64 | 1672 |
| Rich, Fred S., Sycamore, Ill. Corn and cob crusher and grinder | 503,357 | Aug. 15 | 1876 | 465, 466 | 64 | 937 |
| Rich, John G., *et al.* (See Allison, John H., assignor.) | | | | | | |
| Richard, Jean E., assignor, by mesne assignments, to J. Scott, New York, N. Y. Lathe attachment | 500,722 | July 4 | 309 | 83 | 64 | 58 |
| Richards, Edwin G., assignor of one-half to H. L. Naramore, Sharon, Mass. Vote-counting apparatus | 500,948 | July 4 | 838 | 168 | 64 | 117 |
| Richards, Francis H., Hartford, Conn. Button-setting instrument | 501,661 | July 18 | 1796 | 447 | 64 | 358 |
| Richards, Joseph W., Bethlehem, and A. E. Hunt, Pittsburg, Pa. Alloy | 501,233 | July 11 | 1113 | ..... | 64 | 218 |
| Richards, Samuel W. (See Lichtenstein, Herman, assignor.) | | | | | | |
| Richards, Thomas K. (See White, Samuel A., assignor.) | | | | | | |
| Richards, William E., New York, N. Y. Support for shelves | 501,591 | July 18 | 1677 | 418 | 64 | 338 |
| Richards, William E., New York, N. Y. Card-box | 501,693 | July 18 | 1847 | 459 | 64 | 367 |
| Richards, William E., New York, N. Y. Ladder | 501,694 | July 18 | 1849 | 460 | 64 | 367 |
| Richards, William E., New York, N. Y. Adjustable shelf-partition | 502,321 | Aug. 1 | 117 | 27 | 64 | 587 |
| Richardson, Charles H., assignor to S. S. White Dental Manufacturing Company, Philadelphia, Pa. Means for regulating electric motors | 501,961 | July 25 | 2279 | 570 | 64 | 450 |
| Richardson, Charles H., assignor to S. S. White Dental Manufacturing Company, Philadelphia, Pa. Regulating apparatus for electric motors | 503,750 | Aug. 22 | 2516 | 626 | 64 | 1070 |
| Richardson, Daniel W., South Frankfort, assignor of one-third to H. May, Frankfort, Mich. Hoe | 501,692 | July 18 | 1798 | 447 | 64 | 350 |
| Richardson, James C., London, England. Apparatus for depolarizing in electrolysis | 501,698 | July 18 | 1742 | 434 | 64 | 349 |
| Richardson, Jeremiah J., Brooklyn, N. Y. Furnace | 501,695 | July 18 | 1852 | 460 | 64 | 368 |
| Richardson, John, and W. Norris, Lincoln, England. Oil-supplying device for hydrocarbon-engines | 500,673 | July 4 | 230 | 60, 61 | 64 | 44 |
| Richardson, John, and W. Norris, Lincoln, England. Combustion-chamber for petroleum or hydrocarbon engines | 500,674 | July 4 | 231 | 61 | 64 | 44 |
| Richardson, William H. (See Fries and Richardson.) | | | | | | |
| Richmond, George, New York, N. Y. Calculating and recording machine | 503,986 | Aug. 29 | 2870 | 720, 721, 722 | 64 | 1155 |
| Richmond, Louis L., Meadville, Pa. Bicycle-saddle | 502,017 | July 25 | 2366 | 594 | 64 | 475 |
| Richter, August E. (See Guhr and Richter.) | | | | | | |
| Richter, Ernst, and C. Hoffmann, assignors to Siemens & Halske, Berlin, Germany. Electro-magnetic safety-coupling | 503,727 | Aug. 22 | 2472 | 614 | 64 | 1061 |
| Rickey, Rufus S., and I. Feitel, New Orleans, La. Apparatus for boring wells | 504,619 | Sept. 5 | 492 | 127 | 64 | 1362 |
| Riddelle, Philip S., Woodstock, Va. Sash-holder | 501,809 | July 18 | 2040 | 502 | 64 | 400 |
| Riddelle, Philip S., Woodstock, Va. Sash-operating mechanism | 504,620 | Sept. 5 | 494 | 127 | 64 | 1362 |
| Rider, George S. (See Anderson and Rider.) | | | | | | |
| Rider, Joseph, Newark, Ohio. Breech-loading gun | 500,949 | July 4 | 638 | 168 | 64 | 117 |
| Rice, Edward, Goodrich, Mich. Hay or stock rack | 501,363 | July 11 | 1338 | 334 | 64 | 256 |
| Riesthal, Alphonse de, *et al.* (See Keller, Gottlieb, assignor.) | | | | | | |
| Rigaud, Jean B. F. (See Grimaux, Edouard, assignor.) | | | | | | |
| Riggs, Horace A., Plymouth, Ohio. Brick or tile cutter | 504,364 | Sept. 5 | 74 | 19, 20, 21 | 64 | 1285 |
| Riggs, John D. (See Tew and Riggs.) | | | | | | |
| Righter, J. B. (See Jencks, Calvin J., assignor.) | | | | | | |
| Rigling, Alfred. (See McVey and Rigling.) | | | | | | |
| Rinck, Charles, Cincinnati, Ohio. Steam-boiler furnace | 500,777 | July 4 | 392 | 103 | 64 | 73 |
| Rinehart, Ira C. C., Kansas City, Mo. Cigar-tip cutter | 503,496 | Aug. 15 | 2062 | 530 | 64 | 974 |
| Ringen, John, St. Louis, Mo. House mail-box | 501,441 | July 11 | 1447 | 363 | 64 | 278 |
| Ripson, John D., Thorold, assignor of one-half to T. F. Brown and W. M. German, Welland, Canada. Car-coupling | 502,205 | July 25 | 2671 | 674 | 64 | 533 |
| Risley, Edwin H., *et al.* (See Savage, Arthur W., assignor.) | | | | | | |
| Ritchie, Edward S., Newton, Mass. Mariner's compass | 503,184 | Aug. 15 | 1559 | 383 | 64 | 880 |
| Ritchie & Sons, Edward S. (See Luce, William B., assignor.) | | | | | | |
| Riter, D. Clinton. (See Brooke, Gerhard, assignor.) | | | | | | |
| Rites, Francis M., Allegheny, Pa. Balanced slide-valve | 501,663 | July 18 | 1799 | 448 | 64 | 350 |
| Rites, Francis M., Allegheny, Pa. Steam distribution in multiple expansion engines | 502,140 | July 25 | 2559 | 641, 642 | 64 | 512 |
| Rites, Francis M., Allegheny, Pa. Steam distribution in triple-expansion engines | 502,501 | Aug. 1 | 425 | 101, 102 | 64 | 845 |
| Rivers, Campbell, St. Joseph, Mo. Step-ladder | 503,165 | Aug. 15 | 1560 | 384 | 64 | 880 |
| Robbins, Edward R., and L. L. Walrath, Sacramento, Cal. Strap or rope attachment | 503,497 | Aug. 15 | 2063 | 530 | 64 | 974 |
| Robbins, Royal E., *et al.*, trustees. (See Bagley, Charles H., assignor.) | | | | | | |
| Robbins, Royal E., *et al.*, trustees. (See Stark, John, assignor.) | | | | | | |
| Robbins, Samuel G. (See Downing, John S., assignor.) | | | | | | |
| Roberts, Benjamin, Indianapolis, Ind. Smoke consuming furnace | 501,163 | July 11 | 1014 | 257 | 64 | 199 |
| Roberts, Benjamin, Indianapolis, Ind. Fluid-fuel atomizing and burning apparatus | 501,164 | July 11 | 1015 | 257 | 64 | 199 |
| Roberts, George J., Dayton, Ohio. Steam-actuated valve | 501,879 | July 18 | 1660 | 415 | 64 | 335 |
| Roberts, George J., Dayton, Ohio. Gas-mixer | 502,531 | Aug. 1 | 477 | 115 | 64 | 654 |
| Roberts, George W., Philadelphia, Pa. Carrying-strap | 504,307 | Aug. 29 | 3396 | 850 | 64 | 1254 |
| Roberts, Jacob, Catasauqua, Pa. Machine for making horseshoes | 501,998 | July 11 | 1212 | 306, 307 | 64 | 235 |
| Roberts, Jacob, Poughkeepsie, N. Y. Lemon-juice extractor | 504,365 | Sept. 5 | 85 | 21 | 64 | 1287 |
| Roberts, John W., assignor to Sherwin-Williams Company and Roberts Tin Ware Company, Cleveland, Ohio. Soldering-machine | 502,141 | July 25 | 2562 | 643, 644 | 64 | 512 |
| Roberts, Thomas B., Kansas City, Kans. Refrigerator-car | 500,615 | July 4 | 127 | 34 | 64 | 25 |
| Roberts Tin Ware Company *et al.* (See Roberts, John W., assignor.) | | | | | | |
| Roberts, William P., *et al.* (See Wipper, William P., assignor.) | | | | | | |
| Robertson, Francis M., Fulham, England. Evaporating-pan | 503,498 | Aug. 15 | 2064 | 590, 591 | 64 | 975 |
| Robertson, James, assignor of one-half to A. B. Rudd and H. H. Neilson, Perth, Canada. Combined wrench and wheel-lifter | 500,950 | July 4 | 649 | 168 | 64 | 117 |
| Robertson, William T., Washington, D. C. Trousers-guard | 503,693 | Aug. 22 | 2396 | 598 | 64 | 1046 |
| Robinson, Andrew J., Boston, Mass. Detachable umbrella-cover | 502,761 | Aug. 8 | 283 | 216 | 64 | 743 |
| Robinson, Arthur W., Bucyrus, Ohio. Hydraulic dredge | 504,750 | Sept. 12 | 728 | 181, 182 | 64 | 1490 |
| Robinson, Charles S., Lonsdale, R. I. Drawing-frame | 505,371 | Sept. 19 | 1742 | 451 | 64 | 1623 |
| Robinson, Charles W., Reed City, Mich. Wagon | 501,165 | July 11 | 1016 | 258 | 64 | 199 |
| Robinson & Co., John T. (See Chamberlain, Henry J., assignor.) | | | | | | |
| Robinson & Co., John T. (See Robinson and Chamberlain, assignors.) | | | | | | |
| Robinson, Elbert R., Nashville, Tenn. Electric-railway trolley | 505,370 | Sept. 19 | 1740 | 451 | 64 | 1623 |



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|---|---|---|---|---|---|---|
| Robinson, Francis D., Somerville, Mass. Spring-hinge | 503,064 | Aug. 8 | 1378 | 340 | 64 | 834 |
| Robinson, John T., Hyde Park, Mass. Paper box and making same | 501,664 | July 18 | 1802 | 448 | 64 | 359 |
| Robinson, John T., Hyde Park, Mass. Paper scoring or cutting machine | 503,751 | Aug. 22 | 2517 | 626 | 64 | 1070 |
| Robinson, John T., and H. J. Chamberlain, assignors to J. T. Robinson & Co., Hyde Park, Mass. Machine for cross-cutting and collating paper | 501,027 | July 4 | 771 | 202 | 64 | 141 |
| Robinson, Josephine M., Cincinnati, Ohio. Corner picture-hanger | 505,210 | Sept. 19 | 1510 | 394 | 64 | 1581 |
| Robinson, Samuel, Monmouth, Ill. Horseshoe-calk | 504,943 | Sept. 12 | 1045 | 268 | 64 | 1481 |
| Robinson, Samuel R. (See Abbott and Robinson.) | | | | | | |
| Robinson, Thomas C., Boston, assignor of one-third to A. E. Denison, Cambridge, Mass. Neckscarf | 500,723 | July 4 | 311 | 83 | 64 | 58 |
| Robinson, William H., Philadelphia, Pa. Rope-driving machinery | 503,684 | Aug. 22 | 2397 | 598, 599 | 64 | 1047 |
| Robischung, Henry B., Kalamazoo, Mich., assignor to Chicago Railway Equipment Company, Chicago, Ill. Brake-beam | 504,621 | Sept. 5 | 497 | 128 | 64 | 1363 |
| Roche, Augustin, Butte, Mont. Steam-engine valve | 503,001 | Aug. 8 | 1287 | 315 | 64 | 817 |
| Rocheleau, John C., Worcester, Mass. Jeweler's roll | 503,218 | Aug. 15 | 1645 | 403 | 64 | 896 |
| Rochlitz, William, Chicago, Ill. Water-distilling apparatus | 505,641 | Sept. 26 | 2045 | 569 | 64 | 1732 |
| Rockliff, William A., Rumsey, Mont. Vacuum-gage | 503,330 | Aug. 15 | 1835 | 455 | 64 | 929 |
| Rockwell, Edward A. (See Hobart and Rockwell.) | | | | | | |
| Rockwell, Edward D., Bristol, Conn. Bell | 500,951 | July 4 | 643 | 169 | 64 | 117 |
| Roiden, William H., assignor of two-thirds to F. A. Mulholland and F. R. James, Toronto, Canada. Memorandum or copying book | 503,914 | Aug. 22 | 2744 | 688 | 64 | 1115 |
| Rodes, J. H., *et al.* (See Scearce, Edward M., assignor.) | | | | | | |
| Rodes, T. T., *et al.* (See Scearce, Edward M., assignor.) | | | | | | |
| Rodgers, Charles S., and C. E. Schudy, Manitou, Colo. Arm-rest | 501,364 | July 11 | 1339 | 335 | 64 | 257 |
| Rodgers, Mary C., Philadelphia, Pa. Window-chair | 501,442 | July 11 | 1448 | 364 | 64 | 279 |
| Roe, Arthur R., Duluth, Minn. Electric switching apparatus | 502,105 | July 25 | 2509 | 630 | 64 | 501 |
| Roe, Arthur R., Duluth, Minn., assignor of one-half to G. J. Northrop, Marquette, Mich. Electric switching apparatus | 502,104 | July 25 | 2508 | 629 | 64 | 501 |
| Roebuck, Frank H. (See Moore, Rue, Smith, Roebuck, Mills, and Kirk.) | | | | | | |
| Roediger, Fredrick, assignor to S. V. McCormick, Nashville, Tenn. Car-brake | 500,952 | July 4 | 644 | 169 | 64 | 118 |
| Roeske, Henry, Philadelphia, assignor of one-half to R. Wetherill & Co., Chester, Pa. Method of and apparatus for purifying water | 501,732 | July 18 | 1909 | 475 | 64 | 378 |
| Roesler, William, St. Louis, Mo. Rowing apparatus | 502,467 | Aug. 1 | 364 | 87 | 64 | 633 |
| Roger, George, Warrington, England. Apparatus for cutting the pile of weft-pile fabrics | 504,441 | Sept. 5 | 210 | 55 | 64 | 1309 |
| Rogers & Bros., C. (See Lacroix, Elizear P., assignor.) | | | | | | |
| Rogers, Louis P., and J. Hofman, Rochester, N. Y. Transporting-receptacle | 504,503 | Sept. 5 | 322 | 83 | 64 | 1330 |
| Rogers, Woodbury O., assignor to W. A. Aiken, Norwich, Conn. Display-frame | 500,745 | July 4 | 340 | 90 | 64 | 64 |
| Rohde, Johann W. L., London, England. Means for securing detachable ornaments in articles of jewelry | 501,365 | July 11 | 1340 | 335 | 64 | 257 |
| Rohn, Frank G., Lampasas, Tex. Vehicle-pole | 501,255 | July 11 | 1152 | 292 | 64 | 224 |
| Rohrbach, Gabriel, Del Rio, Tex. Triangle for billiard-balls | 501,256 | July 11 | 1153 | 292 | 64 | 224 |
| Rohrbach, Gabriel, Del Rio, Tex. Billiard-ball holder | 501,257 | July 11 | 1154 | 292 | 64 | 224 |
| Rolling, John, Scranton, Pa. Car-wheel | 504,790 | Sept. 12 | 794 | 201 | 64 | 1432 |
| Romans, Freeland H., Bentonville, Ark. Pump | 504,366 | Sept. 5 | 86 | 22 | 64 | 1287 |
| Rooney, John J. (See Sheldon and Rooney.) | | | | | | |
| Roots, Logan H., *et al.* (See Smith, George, assignor.) | | | | | | |
| Roper, Charles F., assignor of one-half to G. Draper & Sons, Hopedale, Mass. Voting-machine | 501,443 | July 11 | 1450 | 364 | 64 | 279 |
| Rosander, Andrew, Vale, S. D. Grain-drill | 502,636 | Aug. 1 | 646 | 155 | 64 | 686 |
| Rose, Antone G., Fresno, Cal. Traction-wheel | 500,819 | July 4 | 454 | 120 | 64 | 84 |
| Rose, James M., Allegheny, Pa. Apparatus for the manufacture of gas | 505,537 | Sept. 26 | 2043 | 521, 522 | 64 | 1693 |
| Rose, John, Philadelphia, Pa. Tubular umbrella-stick | 504,944 | Sept. 12 | 1047 | 269 | 64 | 1481 |
| Rose, John, Philadelphia, Pa. Umbrella-case | 504,945 | Sept. 12 | 1048 | 269 | 64 | 1482 |
| Rose, John A. (See Abercrombie, Robert, assignor.) | | | | | | |
| Rose, William, Gainsborough, England, assignor to R. H. Wright, New York, N. Y. Machinery for making up tobacco into packets | 502,637 | Aug. 1 | 647 | 155, 156, 157, 158, 159 | 64 | 686 |
| Roseboom, Jesse G., Cincinnati, Ohio. Wheel-hub | 503,114 | Aug. 8 | 1463 | 350 | 64 | 849 |
| Roseboom, Jesse G., Cincinnati, Ohio. Vehicle-wheel | 503,554 | Aug. 15 | 2180 | 545 | 64 | 992 |
| Rosenberger, Ernst, Chicago, Ill. Candy-molding apparatus | 502,864 | Aug. 8 | 1053 | 259 | 64 | 775 |
| Rosenquest, Oscar, Pittsburg, Pa. Device for attaching water-conductors to buildings | 500,616 | July 4 | 130 | 34 | 64 | 25 |
| Rosenstiehl, Daniel A. (See Poirrier and Rosenstiehl.) | | | | | | |
| Rosenthal, Emanuel M., assignor of one-half to A. Mergentheim, Fort Wayne, Ind. Display glove-case | 504,114 | Aug. 29 | 3080 | 771 | 64 | 1195 |
| Ross, Andrew S., Ridgway, Pa. Stand for umbrellas, hats, coats, &c. | 503,708 | Aug. 22 | 2442 | 608 | 64 | 1055 |
| Ross, Charles W. (See Ament, Elzie, assignor.) | | | | | | |
| Ross, Elmore W., deceased, Springfield, Ohio; M. F. Ross, executrix. Safety driving mechanism | 504,479 | Sept. 5 | 273 | 71 | 64 | 1321 |
| Ross, Marcus M. (See McCallen and Ross.) | | | | | | |
| Ross, Mary F., executrix. (See Ross, Elmore W.) | | | | | | |
| Ross, Napoleon B., Gilboa, Ohio. Device for heating and lighting vehicles | 505,320 | Sept. 19 | 1674 | 432 | 64 | 1611 |
| Ross, Robert P., Bethlehem, Pa. Gage-cock | 503,386 | Aug. 15 | 1918 | 476 | 64 | 945 |
| Rote, Andrew B., Lancaster, Pa. Car-brake | 501,102 | July 11 | 916 | 234, 235 | 64 | 192 |
| Roth, George, Highland, Ill. Can-filling machine | 505,005 | Sept. 12 | 1151 | 294, 295, 296 | 64 | 1501 |
| Roth, Herman, Philadelphia, Pa. Coal-hod and ash-sifter | 501,299 | July 11 | 1213 | 307 | 64 | 235 |
| Roth, Herman, Milwaukee, Wis. Device for supporting lighting-fixtures | 505,129 | Sept. 19 | 1357 | 349 | 64 | 1553 |
| Roth, Joseph. (See Butler, Jacob, assignor.) | | | | | | |
| Rothenbücher, George. (See Danner and Rothenbücher.) | | | | | | |
| Rotthoff, William, Rankin Station, Pa. Gas-valve for blast-furnaces | 504,622 | Sept. 5 | 498 | 128 | 64 | 1363 |
| Rounds, D. Wellington, Dexter, N. Y. Pulp-strainer | 505,483 | Sept. 26 | 1922 | 495, 496 | 64 | 1679 |
| Rouse, Albion M., Boulder, assignor to Boss-Grip Lock-Nut Company, Denver, Colo. Mold for casting lock-nuts | 505,778 | Sept. 26 | 2472 | 623 | 64 | 1774 |
| Rousset, Jules, Paris, France. Cycle-wheel | 501,166 | July 11 | 1019 | 258 | 64 | 200 |
| Routh, James R., Petersburg, Va. Fruit or vegetable crate or carrier | 504,623 | Sept. 5 | 499 | 128, 129 | 64 | 1364 |
| Rowan, Joseph P., Los Angeles, Cal. Fender | 503,331 | Aug. 15 | 1837 | 455 | 64 | 930 |

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|---|---|---|---|---|---|---|
| Rowe, Edward. (See Hetrick, Wilson, and Rowe.) | | | | | | |
| Rowe, Joshua N., assignor of one-half to C. E. Crane, Seattle, Wash. Gyroscope artificial horizon | 505,575 | Sept. 26 | 2128 | 539 | 64 | 1711 |
| Rowell, Samuel W., Beaver Dam, Wis. Grain-drill | 502,468 | Aug. 1 | 386 | 88 | 64 | 633 |
| Rowell, Sidney W., Albany, N. Y. Method of and apparatus for producing paper-stock | 500,617 | July 4 | 130 | 35 | 64 | 96 |
| Rowland, Horace B., assignor of one-third to J. I. Bothwell, Philadelphia, Pa. Railway-tie and fastening | 502,638 | Aug. 1 | 654 | 159 | 64 | 667 |
| Rowland, Horace B., assignor of one-third to J. I. Bothwell, Philadelphia, Pa. Railway-tie and fastening | 502,639 | Aug. 1 | 655 | 160 | 64 | 667 |
| Rowland, Horace B., assignor of one-third to J. I. Bothwell, Philadelphia, Pa. Railway-tie and fastening | 505,484 | Sept. 26 | 1934 | 498 | 64 | 1672 |
| Rowland, William L., Philadelphia, Pa. Device for discharging liquids from vessels | 505,642 | Sept. 26 | 2247 | 569 | 64 | 1733 |
| Rowlett, William T., Leicester, England. Straight-knitting machine | 500,953 | July 4 | 646 | 169, 170, 171, 172, 173 | 64 | 118 |
| Rowley & Hermance Company. (See Marsh, Calvin D., assignor.) | | | | | | |
| Rowlinson, William, Englewood, Ill. Support for kitchen-boilers | 501,733 | July 18 | 1911 | 475 | 64 | 378 |
| Rowntree, Edward. (See Harrington, Charles, assignor.) | | | | | | |
| Rubenstein, Barnet. (See Shanovski and Rubenstein.) | | | | | | |
| Ruble American Blower and Injector Company. (See Ruble, Martin R., assignor.) | | | | | | |
| Ruble, Martin R., assignor to Ruble American Blower and Injector Company, Newark, N. J. Induction apparatus for ventilating | 505,221 | Sept. 19 | 1511 | 394 | 64 | 1581 |
| Rucker, George W., Belle Plaine, Iowa. Feeding attachment for thrashing-machines | 501,366 | July 11 | 1341 | 335 | 64 | 257 |
| Rudd, Anslow B., *et al.* (See Robertson, James, assignor.) | | | | | | |
| Rudd, Charles H., Evanston, assignor to Western Electric Company, Chicago, Ill. Condenser telegraph system | 504,367 | Sept. 5 | 87 | 22, 23 | 64 | 1387 |
| Rudd, Charles H., Evanston, assignor to Western Electric Company, Chicago, Ill. Electrical testing apparatus | 504,751 | Sept. 12 | 730 | 182 | 64 | 1421 |
| Rudd, Charles H., Evanston, assignor to Western Electric Company, Chicago, Ill. Electric signal device | 504,752 | Sept. 12 | 732 | 182 | 64 | 1421 |
| Rudd, Charles H., Evanston, assignor to Western Electric Company, Chicago, Ill. Electrical testing apparatus | 504,753 | Sept. 12 | 733 | 183 | 64 | 1422 |
| Rudd, Charles H., Evanston, assignor to Western Electric Company, Chicago, Ill. Electric measuring apparatus | 504,754 | Sept. 12 | 734 | 183 | 64 | 1422 |
| Ruddy, William J., Roberts, Ill. Corn-harvester | 505,550 | Sept. 26 | 2098 | 532, 533 | 64 | 1704 |
| Rue, George W. (See Moore, Rue, Smith, Roebuck, Mills, and Kirk.) | | | | | | |
| Ruemelin, Gustav, Milwaukee, Wis. Tanning | 503,987 | Aug. 29 | 2885 | ..... | 64 | 1157 |
| Ruggles, George W., Charlotte, N. Y. Track-cleaner | 501,028 | July 4 | 773 | 203 | 64 | 141 |
| Ruhnstroth, Henry. (See Bland, John M. D., assignor.) | | | | | | |
| Rumsey, Oscar C., Whitman, assignor to Atlas Tack Corporation, Boston, Mass. Die for forming metallic clamps | 500,618 | July 4 | 133 | 35 | 64 | 96 |
| Rundle, Joseph P., Milwaukee, Wis. Water-closet seat | 502,782 | Aug. 8 | 884 | 217 | 64 | 743 |
| Rundquist, William, Elgin, Ill. Jewel-setting machine | 500,954 | July 4 | 652 | 173, 174 | 64 | 119 |
| Runk, Fred G. W. (See Keck, Franklin J., assignor.) | | | | | | |
| Runkel, Friedrich, assignor to Farbenfabriken, vormals Fr. Bayer & Co., Elberfeld, Germany. Triphenylmethane dye | 501,104 | July 11 | 919 | ..... | 64 | 182 |
| Ruppel, Henry, assignor to Dangler Stove and Manufacturing Company, Cleveland, Ohio. Gasoline or vapor stove | 500,747 | July 4 | 343 | 90, 91 | 64 | 64 |
| Ruppert, Mathew. (See Beyer, Louis, assignor.) | | | | | | |
| Rush, David G., Chicago, Ill. Revolving storm-door | 501,538 | July 18 | 1503 | 401 | 64 | 321 |
| Rush, E. W., *et al.* (See Anderson, Leo, assignor.) | | | | | | |
| Rush, Stephen P., assignor to W. T. Henderson, Tyrone, Pa. Meat-block attachment | 504,115 | Aug. 29 | 3082 | 771 | 64 | 1195 |
| Rusk, William A., Malta, Ohio. Coin receiver or tray | 500,955 | July 4 | 656 | 174 | 64 | 120 |
| Russ, John D., assignor to E. H. Lemley, Ravenswood, W. Va. Lathe attachment | 501,469 | July 11 | 1487 | 374 | 64 | 986 |
| Russel, Thurber F., and J. Brady, assignors to H. Gibb, Brooklyn, N. Y. Cash-controlling machine | 501,962 | July 25 | 2281 | 570, 571 | 64 | 450 |
| Russell, Alva P., Janesville, Wis. Horse-blanket strap | 500,619 | July 4 | 133 | 36 | 64 | 96 |
| Russell, Andrew H., U. S. Army. Straight-pull magazine-gun | 501,367 | July 11 | 1343 | 335, 336 | 64 | 257 |
| Russell, Andrew J., Edgerton, Ohio. Gate | 502,906 | July 25 | 2672 | 675 | 64 | 533 |
| Russell & Erwin Manufacturing Company. (See Burgess, Charles M., assignor.) | | | | | | |
| Russell & Erwin Manufacturing Company. (See Jones, Horace K., assignor.) | | | | | | |
| Russell, John H., Melrose, Mass. Blotter | 502,640 | Aug. 1 | 656 | 160 | 64 | 668 |
| Russell, Robert L. (See Scott, John E., assignor.) | | | | | | |
| Rust, Mortimer R. (See Rust, Walter H. and M. R.) | | | | | | |
| Rust, Walter H. and M. R., Fulton, N. Y. Direct-acting engine | 502,502 | Aug. 1 | 429 | 109 | 64 | 645 |
| Ruth, David C., Halstead, Kans. Band-cutter and feeder for thrashing-machines | 503,009 | Aug. 8 | 1280 | 315, 316 | 64 | 817 |
| Ruthven, John, Topeka, Kans. Gas-regulating and advertising cabinet | 505,372 | Sept. 19 | 1743 | 451, 452 | 64 | 1594 |
| Rutter, Richard S., Warsaw, Ind. Submerged water-heater | 504,247 | Aug. 29 | 3303 | 895 | 64 | 1235 |
| Rund, Edwin, Kenosha, Wis. Excavator | 502,469 | Aug. 1 | 368 | 88 | 64 | 634 |
| Ryan, Harris J., Ithaca, N. Y. Dynamo-electric machine or motor | 502,384 | Aug. 1 | 228 | 54 | 64 | 608 |
| Ryan, Patrick, New York, N. Y. Dumping-scow | 502,142 | July 25 | 2566 | 644 | 64 | 512 |
| Ryan, Thomas J., Buffalo, N. Y. Receiver and stench-trap | 505,130 | Sept. 19 | 1358 | 349 | 64 | 1552 |
| Ryder, Morris L., Albany, N. Y. Entrance for refuse-conduits in buildings | 503,685 | Aug. 22 | 2369 | 589 | 64 | 1047 |
| S. A. Woods Machine Company. (See Osteman, Carl G., assignor.) | | | | | | |
| S. H. Sinclair Company. (See Thorsen, Thor A., assignor.) | | | | | | |
| S. S. White Dental Manufacturing Company. (See Brown, Benoni S., assignor.) | | | | | | |
| S. S. White Dental Manufacturing Company. (See Browne, Arthur W., assignor.) | | | | | | |
| S. S. White Dental Manufacturing Company. (See Davidson, John C., assignor.) | | | | | | |
| S. S. White Dental Manufacturing Company. (See Doriot, Constant, assignor.) | | | | | | |
| S. S. White Dental Manufacturing Company. (See How, Woodbury S., assignor.) | | | | | | |
| S. S. White Dental Manufacturing Company. (See Johnston, Albert W., assignor.) | | | | | | |
| S. S. White Dental Manufacturing Company. (See Johnston and Browne, assignors.) | | | | | | |
| S. S. White Dental Manufacturing Company. (See Johnston and Davidson, assignors.) | | | | | | |
| S. S. White Dental Manufacturing Company. (See Richardson, Charles H., assignor.) | | | | | | |
| S. W. Jamison Boot and Shoe Crimping Machine Company. (See Frost, Walter E., assignor.) | | | | | | |
| Sachs, Gustave, St. Louis, Mo. Electric-lamp socket | 501,589 | July 18 | 1661 | 415 | 64 | 335 |



*Alphabetical list of patentees, July to September, inclusive*—Continued.

| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Dr'g. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Sachs, Joseph, New York, N. Y. Electric signal for fire-alarm systems | 502,907 | July 25 | 2673 | 675 | 64 | 534 |
| Sadler, James R. (See Sadler, Samuel B. and J. R.) | | | | | | |
| Sadler, Samuel B. and J. R., Fairfield, assignor of one-half to M. Makely, Edenton, N. C. Car-coupling | 505,608 | Sept. 26 | 2184 | 552 | 64 | 1721 |
| Safety Vapor Engine Company. (See Tremper, Frank E., assignor.) | | | | | | |
| Safford, James B., Chicago, Ill. Wear-plate for head-blocks of car-couplings | 501,963 | July 25 | 2284 | 572 | 64 | 459 |
| Saegser, Woldemar H., Augustusbad, Germany. Cartridge | 505,297 | Sept. 19 | 1630 | 421 | 64 | 1604 |
| Sague, Samuel A., Cleveland, Ohio. Galvanizing sheet metal | 505,131 | Sept. 19 | 1362 | 350 | 64 | 1554 |
| Sague, Samuel A., Cleveland, Ohio. Apparatus for the manufacture of sheet iron or steel | 505,139 | Sept. 19 | 1364 | 350 | 64 | 1554 |
| Salisbury, Wilber S., Chicago, Ill., assignor, by mesne assignments, to Electric Cutting Machine Company, of Illinois. Cloth-cutting machine | 502,052 | July 25 | 2425 | 611 | 64 | 485 |
| Saltzkorn, Emil, and L. Nicolai, Dresden, Germany. Knife for cutting or scoring pasteboard. (Reissue) | 11,365 | Sept. 12 | 1285 | 331 | 64 | 1526 |
| Salvatico, Antonio, Garessio, Italy. Wood-tile flooring | 503,876 | Aug. 22 | 2692 | 672 | 64 | 1102 |
| Sample, James, Wallsend, England. Devit for putting out or taking in ships' boats | 505,779 | Sept. 26 | 2472 | 623 | 64 | 1774 |
| Sample, Newton C., Philadelphia, Pa. Garment-hook | 504,050 | Aug. 29 | 3037 | 758 | 64 | 1187 |
| Sampson, Lewis S., New York, N. Y. Combination cuff-button and link | 502,586 | Aug. 1 | 565 | 135 | 64 | 670 |
| Sampson, Lewis S., New York, N. Y. Combination cuff-button and link | 500,778 | July 4 | 393 | 103 | 64 | 73 |
| Sampson, Thomas, Gawler, South Australia. Tension device for harvesters | | | | | | |
| Samuel, Edward, assignor to William Wharton, Jr., & Company, Incorporated, Philadelphia, Pa. Box-bridge joint for railway-rails | 502,567 | Aug. 1 | 566 | 135 | 64 | 670 |
| Samuel, Edward, assignor to William Wharton, Jr., & Company, Incorporated, Philadelphia, Pa. Brace tie-plate | 503,806 | Aug. 22 | 2592 | 647 | 64 | 1085 |
| Samuel, Edward, assignor to William Wharton Jr., & Company, Incorporated, Philadelphia, Pa. Tongue-switch | 503,807 | Aug. 22 | 2592 | 648 | 64 | 1085 |
| Samuel, Edward, assignor to William Wharton, Jr., & Company, Incorporated, Philadelphia, Pa. Stringer-plate | 504,176 | Aug. 29 | 3184 | 795 | 64 | 1214 |
| Samuel Law & Sons. (See Fawcett and Jones, assignors.) | | | | | | |
| Sanborn, Frank F., Saxonville, Mass. Box | 505,253 | Sept. 19 | 1545 | 403 | 64 | 1587 |
| Sandberg, Charles J., St. Louis, Mo. Shutter-fastener | 501,696 | July 18 | 1852 | 461 | 64 | 368 |
| Sander, Johannes. (See Stech, Johann T. C., assignor.) | | | | | | |
| Sandgren, Arvid J., Hartford, Conn. Bicycle-bell | 501,665 | July 18 | 1802 | 448, 449 | 64 | 359 |
| Sandherr, Frederick H., St. Louis, Mo. Brush for dynamos or electric motors | 504,177 | Aug. 29 | 3184 | 796 | 64 | 1214 |
| Sandino y Barcon, Augusto, Corunna, Spain. Boiler-feeder | 501,315 | July 11 | 1235 | 311, 312 | 64 | 239 |
| Sandwich Enterprise Company. (See Branson, Joseph H., assignor.) | | | | | | |
| Sanford, Albert, Galena, Mo. Velocipede | 505,373 | Sept. 19 | 1745 | 452 | 64 | 1624 |
| Sanford, Frederick A., Westfield, Mass. Whip | 503,332 | Aug. 15 | 1638 | 455 | 64 | 930 |
| Sargent & Company. (See Carnell, Frederick W., assignor.) | | | | | | |
| Sargent & Company. (See Page, Albert A., assignor.) | | | | | | |
| Sargent & Company. (See Sparks, William E., assignor.) | | | | | | |
| Sargent, Fitz William, assignor to Congdon Brake Shoe Company, Chicago, Ill. Car-coupling | 502,532 | Aug. 1 | 479 | 115 | 64 | 654 |
| Sargent, James T., assignor to American Washboard Company, Cleveland, Ohio. Washboard | 501,444 | July 11 | 1455 | 364 | 64 | 980 |
| Sargent, John W., Scranton, Pa. Steam-engine | 502,763 | Aug. 8 | 885 | 217 | 64 | 743 |
| Sargent & Company. (See Page, Albert A., assignor.) | 501,607 | July 18 | 1707 | 425 | 64 | 343 |
| Sargent & Company. (See Sparks, William E., assignor.) | 503,166 | Aug. 15 | 1561 | 384 | 64 | 880 |
| Sargent, Fitz William, assignor to Congdon Brake Shoe Company, Chicago, Ill. Car-coupling | 505,006 | Sept. 12 | 1152 | 295 | 64 | 1502 |
| Sater, Hans H., Madison, Wis. Sulky-plow | 501,029 | July 4 | 777 | 203, 204 | 64 | 142 |
| Sater, Hans H., Madison, Wis. Harrow | 500,820 | July 4 | 455 | 120 | 64 | 84 |
| Sauer, Rudolf, Suhl, Germany. Gun | 502,018 | July 25 | 2367 | 504, 505 | 64 | 475 |
| Saum, David F., assignor of one-half to J. C. Donaldson, Washington, D. C. Facing for walls | 501,167 | July 11 | 1020 | 258 | 64 | 200 |
| Saunders, Leslie M., assignor to D. Saunders' Sons, Yonkers, N. Y. Nipple-chuck | 500,779 | July 4 | 394 | 104 | 64 | 73 |
| Saunders' Sons, D. (See Saunders, Leslie M., assignor.) | | | | | | |
| Saurer, Adolph. (See Buss and Saurer.) | | | | | | |
| Savage, Arthur W., Bay Ridge, assignor to J. M. Childs, R. S. Reynolds, and E. H. Risley, Utica, N. Y. Magazine-gun | 504,137 | Aug. 29 | 3115 | 780 | 64 | 1201 |
| Savage, George W., Norwalk, Ohio. Elastic-tread horseshoe | 501,368 | July 11 | 1348 | 336 | 64 | 259 |
| Savage, Richard, assignor of one-half to I. L. Merrell, San Francisco, Cal. Chimney or smoke-stack | 505,064 | Sept. 12 | 1246 | 320 | 64 | 1519 |
| Savell, William B. (See Graham and Savell.) | 502,425 | Aug. 1 | 296 | 70, 71 | 64 | 620 |
| Savill, Edward, assignor of two-thirds to J. W. Newman and J. C. Oliver, Lexington, Ky. Carburetor | 503,776 | Aug. 22 | 2562 | 636 | 64 | 1077 |
| Savill, Joseph H., Philadelphia, Pa. Flushing-tank | | | | | | |
| Sawyer, Harry, assignor to Shaw Electric Crane Company, Muskegon, Mich. Switch for controlling electric motors | | | | | | |
| Sawyer, John, London, England. Multiplying-machine | | | | | | |
| Saze, Alfred J., Chicago, Ill. Pump-governor | | | | | | |
| Saxon, George W. (See Teate, Thomas A., assignor.) | | | | | | |
| Saxon, Samuel. (See Boden, Peers, and Saxon.) | | | | | | |
| Saxton, Harry, assignor, by mesne assignments, to J. H. Ouhrabka and M. P. Drury, St. Louis, Mo. Curling-iron | 502,385 | Aug. 1 | 230 | 54 | 64 | 608 |
| Sayers, William B., Glasgow, Scotland. Junction-box | 501,445 | July 11 | 1456 | 365 | 64 | 280 |
| Sayr, William G., La Harpe, Ill. Planter | 502,832 | Aug. 8 | 1008 | 245 | 64 | 767 |
| Scadden, Frank, *et al.* (See Hanson, Joseph R., assignor.) | | | | | | |
| Scales, Carmi H., Leominster, Mass. Furniture clamp or press | 502,533 | Aug. 1 | 480 | 115 | 64 | 654 |
| Scammon, John C. F., Strong, Me. Machine for manufacturing wooden toothpicks | 501,105 | July 11 | 920 | 235 | 64 | 182 |
| Scarinci, Beniamino, Philadelphia, Pa. Shoe | 505,298 | Sept. 19 | 1631 | 421 | 64 | 1604 |
| Scarles, Benjamin J., Clinton, Mass. Wire-netting | 502,470 | Aug. 1 | 370 | 88 | 64 | 634 |
| Scates, George R., assignor to himself, R. Knaffl, W. D. Hume, and W. O. White, Knoxville, Tenn. Furnace | 502,208 | July 25 | 2678 | 675, 676 | 64 | 535 |
| Scates, William P., Knoxville, assignor of one-half to J. N. Freels, Scarborough, Tenn. Steam-engine | 503,988 | Aug. 29 | 2886 | 722 | 64 | 1157 |
| Scearce, Edward M., assignor of two-thirds to G. P. Grimes, J. H. and T. T. Rodes, Paris, Mo. Folding seesaw | 505,485 | Sept. 26 | 1925 | 496, 497 | 64 | 1673 |
| Schaal, Eugen, Stuttgart, Germany. Manufacture of rosin-acid esters | 501,446 | July 11 | 1458 | 365 | 64 | 280 |
| Schaellibaum, Robert, Lowell, Mass. Damper for cotton openers and lappers | 503,255 | Aug 15 | 1701 | 418 | 64 | 906 |
| Schaellibaum, Robert, Lowell, Mass. Beater for cotton-openers | 503,256 | Aug. 15 | 1703 | 419 | 64 | 907 |
| Schafer, Adam, Weston, Ohio. Hydrocarbon-burner | 505,374 | Sept. 19 | 1745 | 452, 453 | 64 | 1624 |
| Schafer, Frank. H., Beaver Falls, Minn. Band-cutter and feeder for thrashing-machines | 503,877 | Aug. 22 | 2683 | 672 | 64 | 1103 |
| Schaffer, Morse B. (See Goltra and Schaffer.) | | | | | | |
| Schalk, Anthony, and A. Weinandy, New Riegel, Ohio. Wire-stretcher | 504,366 | Sept. 5 | 90 | 23 | 64 | 1237 |
| Scharf, Paul, Vienna, Austria-Hungary. Electric incandescent lamp | 502,322 | Aug. 1 | 119 | 27 | 64 | 587 |
| Scharf, Samuel R., Washington, D. C. Sand or gravel drier | 501,539 | July 18 | 1594 | 401 | 64 | 321 |

*Alphabetical list of patentees, July to September, inclusive*—Continued.

| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Dr'g. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Scharling, John H., Newark, N. J. Depositing layers of metal on glass | 505,576 | Sept. 26 | 2129 | 539, 540 | 64 | 1711 |
| Scheen, Thomas, Oakland, Cal. Lawn-sprinkler | 502,641 | Aug. 1 | 658 | 160 | 64 | 668 |
| Sheets, Oliver R., *et al.* (See Winner, William P., assignor.) | | | | | | |
| Scheffer, David M., New Castle, Ind., assignor to Chas. Truax, Greene & Company, Chicago, Ill. Veterinary forceps | 502,386 | Aug. 1 | 231 | 55 | 64 | 609 |
| Schelin, Hjalmar C. (See Persson, Otto F., assignor.) | | | | | | |
| Schell, Natalie, San Francisco, Cal. Bust-form | 505,133 | Sept. 19 | 1367 | 350 | 64 | 1554 |
| Schenck, Charles S., New York, N. Y. Conveyer | 502,588 | Aug. 1 | 567 | 136 | 64 | 670 |
| Schenck, William T. Y., San Francisco, Cal. Hose-carriage | 504,624 | Sept. 5 | 501 | 129 | 64 | 1364 |
| Schermerhorn, Charles, assignor of one-half to J. W. Mitchell, New York, N. Y. Towel-rack | 504,053 | Aug. 29 | 2980 | 745 | 64 | 1175 |
| Scheuer, Herman. (See Katzer, Richard, assignor.) | | | | | | |
| Scheuer, Isaac, New York, N. Y. Pocket-book | 502,143 | July 25 | 2569 | 644 | 64 | 513 |
| Scheuer, Max, New York, N. Y. Bodice-belt | 501,300 | July 11 | 1214 | 307 | 64 | 235 |
| Schiffer, Henry, New York, N. Y. Stall-drain | 505,232 | Sept. 19 | 1512 | 394 | 64 | 1561 |
| Schifferly, Conrad, Fort Wayne, Ind. Bake-pan | 504,480 | Sept. 5 | 275 | 71 | 64 | 1321 |
| Schimmel, Fridolin, and S. F. Nelson, Minneapolis, Minn. Agraffe | 503,167 | Aug. 15 | 1562 | 384 | 64 | 881 |
| Schimper & Co., William. (See Oldenbusch, Ernst, assignor.) | | | | | | |
| Schindler, Hugo, Maria-Schein, Austria-Hungary. Bust-support | 504 054 | Aug. 29 | 2982 | 745 | 64 | 1175 |
| Schlaffer, Albert J. (See Martin, Charles C., assignor.) | | | | | | |
| Schlaffer, Albert J. (See Martin and Schlaffer.) | | | | | | |
| Schlee, August, Hagenow, Germany. Flour-sifting sieve | 502,764 | Aug. 8 | 886 | 217, 218 | 64 | 743 |
| Schlegel, Augustus, and H. Mayer, Decatur, Ind. Device for protecting unburned brick | 500,620 | July 4 | 134 | 36 | 64 | 26 |
| Schleiff, Francis A., Jr., *et al.* (See Pisko, Emanuel, assignor.) | | | | | | |
| Schlesinger, Julius M., San José, Cal. Fringe or trimming holder | 503,752 | Aug. 22 | 2518 | 626 | 64 | 1071 |
| Schloesser, Wilhelm, Wiesbaden, Germany. Operating mechanism for station indicators | 505,600 | Sept. 26 | 2185 | 552 | 64 | 1721 |
| Schmadeke, John F., Brooklyn, N. Y. Coal-chute | 503,439 | Aug. 15 | 1991 | 494 | 64 | 957 |
| Schmaltz, Paul I., Hamburg, Germany. Refrigerating and ice-making machinery | 504,091 | Aug. 29 | 3038 | 759 | 64 | 1187 |
| Schmaltz, Paul I., Hamburg, Germany. Automatic pressure-regulator for refrigerating machines | 504,092 | Aug. 29 | 3040 | 759 | 64 | 1187 |
| Schmaltz, Paul I., Hamburg, Germany. Compression and vacuum pump | 504,093 | Aug. 29 | 3041 | 759 | 64 | 1187 |
| Schmaltz, Paul I., Hamburg, Germany. Compression and vacuum pump | 504,094 | Aug. 29 | 3043 | 760, 761 | 64 | 1188 |
| Schmid, Charles, Chicago, Ill., assignor of one-half to P. Friedrich, Jeannette, Pa. Electric-arc lamp | 505,233 | Sept. 19 | 1513 | 395 | 64 | 1581 |
| Schmid, Jakob, assignor to Society of Chemical Industry in Basle, Basle, Switzerland. Medical compound | 504,636 | Sept. 5 | 503 | ..... | 64 | 1365 |
| Schmid, Jonas, Mill Creek, Pa. Ice-velocipede | 504,625 | Sept. 5 | 502 | 129 | 64 | 1364 |
| Schmidt, Albrecht. (See Majert and Schmidt.) | | | | | | |
| Schmidt, Frederick M., Brooklyn, assignor to Self Winding Clock Company, New York, N. Y. Self-winding electric clock | 502,835 | Aug. 8 | 1180 | 291 | 64 | 798 |
| Schmidt, Friedrich, New York, N. Y. Grinding-mill | 501,106 | July 11 | 922 | 236 | 64 | 183 |
| Schmidt, Jacob A., Barmen, Germany. Animal-shears | 502,865 | Aug. 8 | 1055 | 259 | 64 | 776 |
| Schmidt, John P., Blue Earth City, Minn. Clothes-drier | 502,913 | Aug. 8 | 1134 | 279, 280 | 64 | 790 |
| Schmidt, Julius, deceased; J. C. Pennie, Washington, D. C., administrator. Joint for railway-rails | 501,159 | July 11 | 1009 | 256, 257 | 64 | 197 |
| Schmidt, Robert E., assignor to Farbenfabriken, vormals Fr. Bayer & Co., Elberfeld, Germany. Blue alizarin dye | 502,765 | Aug. 8 | 886 | ..... | 64 | 744 |
| Schmidt, Robert E., assignor to Farbenfabriken, vormals Fr. Bayer & Co., Elberfeld, Germany. Hexoxyanthraquinone and making it | 503,295 | Aug. 15 | 1708 | ..... | 64 | 918 |
| Schmied, Adolf, Waiblingen, Germany. Shoe-fastening | 501,301 | July 11 | 1215 | 307, 308 | 64 | 236 |
| Schmiedel, Oscar, Bethany, W. Va. Bicycle | 502,866 | Aug. 8 | 1055 | 259 | 64 | 776 |
| Schneider, Frederick, and J. Foley, Leavenworth, Kans. Faucet-valve | 504,755 | Sept. 12 | 735 | 183 | 64 | 1422 |
| Schneider, Frederick L. (See Armantrout, Peter, assignor.) | | | | | | |
| Schneider, Gustav H., Hamburg, Germany. Brewing beer | 503,168 | Aug. 15 | 1563 | 385 | 64 | 881 |
| Schneider, Louis, Williamsport, Pa. Keyhole-guard | 505,299 | Sept. 19 | 1631 | 402 | 64 | 1604 |
| Schnell, Clemens, Paterson, N. J. Apparatus for the manufacture of re-pressed cement pipes | 500,675 | July 4 | 233 | 60 | 64 | 44 |
| Schnürch, Carl, Alt Chemnitz, Germany. Apparatus for steaming shag | 505,725 | Sept. 26 | 2396 | 603 | 64 | 1757 |
| Schoaf, John W., McKeesport, Pa. Car-brake | 503,003 | Aug. 8 | 1292 | 316 | 64 | 817 |
| Schofield, James D., assignor of two-thirds to C. W. Parker and P. Furst, Dallas, Tex. Cotton-chopper | 504,756 | Sept. 12 | 737 | 183, 184 | 64 | 1422 |
| Schofield, John, assignor of one-half to J. F. Noble, Bridgeport, Conn. Vending and fortune-telling machine | 503,086 | Aug. 22 | 2402 | 599 | 64 | 1048 |
| Schofield, John M. (See Stackpole, Charles F., assignor.) | | | | | | |
| Schofield, Margaret, Camden, N. J. Toy | 503,387 | Aug. 15 | 1919 | 476 | 64 | 945 |
| Scholle, Charles H., Cincinnati, Ohio. Fine-stopper | 503,388 | Aug. 15 | 1920 | 476 | 64 | 945 |
| Schott, Charles H., *et al.* (See Bayler, Adolph, assignor.) | | | | | | |
| Schrader, George H. F., New York, N. Y. Water-bottle stopper | 504,138 | Aug. 29 | 3116 | 780 | 64 | 1201 |
| Schrader, George H. F., New York, N. Y. Valve | 505,486 | Sept. 26 | 1927 | 497 | 64 | 1673 |
| Schram, Frank, South Bethlehem, Pa. Motor | 503,878 | Aug. 22 | 2684 | 673 | 64 | 1103 |
| Schramm, Oscar J., Minneapolis, Minn. Camera-shutter | 504,425 | Sept. 5 | 127 | 49 | 64 | 1306 |
| Schrandner, Frederick, St. Louis, Mo. Meat-rack | 500,956 | July 4 | 657 | 174 | 64 | 120 |
| Schreick, Jacob, Louisville, Ky. Apparatus for distributing solutions for destroying insects | 502,766 | Aug. 8 | 888 | 218 | 64 | 744 |
| Schrepfer, Conrad, Paterson, N. J. Mechanism for driving spinning-spindles | 501,666 | July 18 | 1805 | 449 | 64 | 360 |
| Schröder, Albert, Hamburg, Germany. Carriage | 505,234 | Sept. 19 | 1516 | 390 | 64 | 1582 |
| Schrödlein, Richard, Aussha, Austria-Hungary. Car starter and brake | 501,447 | July 11 | 1459 | 365, 366 | 64 | 280 |
| Schroeder, Conrad, assignor of two-thirds to A. Stollenwerk and F. Achtenhagen, Milwaukee, Wis. Stoppering bottles | 505,300 | Sept. 19 | 1633 | 422 | 64 | 1604 |
| Schroeder, Conrad, assignor of two-thirds to A. Stollenwerk and F. Achtenhagen, Milwaukee, Wis. Stoppering bottles | 505,301 | Sept. 19 | 1634 | 422 | 64 | 1604 |
| Schroeder, Conrad, assignor of two-thirds to A. Stollenwerk and F. Achtenhagen, Milwaukee, Wis. Corking bottles | 505,677 | Sept. 26 | 2204 | 585 | 64 | 1743 |
| Schroeder, John C., Onekama, Mich. Clay-screen | 503,619 | Aug. 22 | 2309 | 576 | 64 | 1030 |
| Schroeder, John C., Onekama, Mich. Brick-cutting machinery | 505,678 | Sept. 26 | 2205 | 585 | 64 | 1743 |
| Schroeder, Otto, Denver, Colo. Tobacco-pipe | 501,302 | July 11 | 1216 | 308 | 64 | 236 |
| Schröter, Günther F. C., Redding, Cal. Snap-buckle | 503,499 | Aug. 15 | 2088 | 521 | 64 | 975 |
| Schubert, George, Walnut, Tex. Bale-wiring tool | 501,667 | July 18 | 1806 | 449 | 64 | 360 |
| Schubert, George, Walnut, Tex. Bale or bundle wiring tool | 502,383 | Aug. 1 | 120 | 27 | 64 | 587 |



*Alphabetical list of patentees, July to September, inclusive*—Continued.

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|---|---|---|---|---|---|---|
| Schubert, George, Walnut, Tex. Baling-press | 502,833 | Aug. 8 | 1008 | 246 | 64 | 767 |
| Schubert, George, Walnut, Tex. Metal-banding or bale-wiring tool | 503,257 | Aug. 15 | 1704 | 419 | 64 | 907 |
| Schubert, George, Walnut, Tex. Baling-press | 504,481 | Sept. 5 | 276 | 71 | 64 | 1321 |
| Schubert, Julius, Brooklyn, N. Y. Apparatus for mixing asphalt cement | 501,215 | July 11 | 1085 | 275, 276 | 64 | 214 |
| Schudy, Charles E. (See Rodgers and Schudy.) | | | | | | |
| Schuermann, Anton, Decatur, Ill. Screw-driver | 504,757 | Sept. 12 | 740 | 184 | 64 | 1423 |
| Schuey, John L., Rochester, N. Y. Trousers | 504,964 | July 25 | 2285 | 572 | 64 | 460 |
| Schüler, Lina, Whitestone, N. Y., assignor to M. Bachert, Boston, Mass. Fireproofing compound | 502,867 | Aug. 8 | 1057 | ..... | 64 | 776 |
| Schuhlein, George, assignor of one-half to T. Lederle, New York, N. Y. Combined piano and organ | 505,235 | Sept. 19 | 1517 | 396 | 64 | 1582 |
| Schulenburg, Charles, Detroit, Mich. Billiard-cushion | 505,007 | Sept. 12 | 1153 | 295 | 64 | 1502 |
| Schultz, Adolphe L. G. (See Vallée and Schultz.) | | | | | | |
| Schultz, Fred, Jr., Braceville, Ill. Frogless railway-switch | 503,440 | Aug. 15 | 1992 | 494 | 64 | 958 |
| Schultz, Frederick B., New York, N. Y. Doll | 504,627 | Sept. 5 | 504 | 129 | 64 | 1365 |
| Schultz, Horatio N., Union Bridge, assignor of one-half to A. Jones, Baltimore, Md. Fruit or vegetable drier | 505,610 | Sept. 26 | 2186 | 553 | 64 | 1722 |
| Schultze, Gustav F. W., Berkeley, Cal. Coin-controlled apparatus | 502,891 | Aug. 8 | 1094 | 269 | 64 | 782 |
| Schuls, Alexander H. (See Gay and Finke, assignors.) | | | | | | |
| Schupp, Frederick J., Marshall, Mo. Bolting-reel | 501,898 | July 18 | 2178 | 540 | 64 | 424 |
| Schupp, Frederick J., Marshall, Mo. Bolting-reel | 501,899 | July 18 | 2180 | 540 | 64 | 424 |
| Schupp, Frederick J., Marshall, Mo. Bolting-chest | 505,801 | Sept. 26 | 2504 | 632 | 64 | 1780 |
| Schutte, Louis, Philadelphia, Pa. Valve for reversible steam-engines | 501,965 | July 25 | 2286 | 572 | 64 | 460 |
| Schuyler Electric Company. (See Offrell, Olof, assignor.) | | | | | | |
| Schuyler Electric Company. (See Wightman and Lemp, assignors.) | | | | | | |
| Schwab, Samuel M., Jr., New York, N. Y. Construction of images | 502,589 | Aug. 1 | 568 | 136 | 64 | 670 |
| Schwab, Willy, Cologne, Germany. Machine for eliminating stones, &c., from coffee | 505,487 | Sept. 26 | 1929 | 497 | 64 | 1674 |
| Schwabe, Hermann, Verviers, Belgium. Apparatus for dyeing, &c | 504,758 | Sept. 12 | 740 | 184 | 64 | 1423 |
| Schwartz, Charles, Brooklyn, N. Y. Letter for signs | 503,020 | Aug. 22 | 2310 | 576 | 64 | 1030 |
| Schwarser, Frans, Washington, Mo. Zither | 502,767 | Aug. 8 | 890 | 218, 219 | 64 | 744 |
| Schwegler, Frederick R. (See Blake, Edward T., assignor.) | | | | | | |
| Schweizer, Conrad, and J. Nüesch, Schaffhausen, Switzerland; said Schweizer assignor to said Nüesch. Cigar or cigarette machine | 501,629 | July 18 | 1743 | 434, 435 | 64 | 349 |
| Schweizer, Emil, Sumiswald, Switzerland. Electric clock | 504,095 | Aug. 29 | 3047 | 762 | 64 | 1189 |
| Schwennicke, Carl, assignor to Siemens & Halske, Berlin, Germany. Electric signal device | 503,709 | Aug. 22 | 2443 | 608 | 64 | 1055 |
| Scott, Alice E., Hardesty, Okla. Ter. Automatic folding trunk | 504,248 | Aug. 29 | 3304 | 826 | 64 | 1236 |
| Scott, Charles D., Corry, Pa. Tramway-locomotive | 504,541 | Sept. 5 | 382 | 96 | 64 | 1341 |
| Scott, Christophus C., Celina, Ohio. Napkin or paper holder | 505,726 | Sept. 26 | 2387 | 603 | 64 | 1757 |
| Scott, George W., Belton, Mo. Harvester | 502,534 | Aug. 1 | 482 | 116 | 64 | 655 |
| Scott, Jacob G. (See Nye, Ralph W., assignor.) | | | | | | |
| Scott, James. (See Boening and Sjöström, assignors.) | | | | | | |
| Scott, James H., Bath, Me. Fire-bridge for railway-crossings | 505,488 | Sept. 26 | 1930 | 497 | 64 | 1674 |
| Scott, John. (See Richard, Jean E., assignor.) | | | | | | |
| Scott, John, *et al.* (See Smith and Cassidy, assignors.) (Reissue.) | | | | | | |
| Scott, John E., assignor of one-half to R. L. Russell, Philadelphia, Pa. Ice-creeper | 502,324 | Aug. 1 | 121 | 28 | 64 | 587 |
| Scott, Morse P., Woodville, Miss. Car-coupling | 501,734 | July 18 | 1912 | 475, 476 | 64 | 378 |
| Scott, Robert P., Baltimore, Md. Fruit-pitting machine | 501,608 | July 18 | 1709 | 436 | 64 | 343 |
| Scott, Robert W. (See Williams, Louis N. D., assignor.) | | | | | | |
| Scott, Walker A., Evansville, Ind. Folding bed | 503,989 | Aug. 29 | 2889 | 722 | 64 | 1158 |
| Scott, William E., and A. Mika, Wichita, Kans. Earth-auger | 501,630 | July 18 | 1745 | 435 | 64 | 350 |
| Scott, William H., and G. W. Wisner, Manhattan, Kans. Stovepipe and thimble fastener | 504,369 | Sept. 5 | 91 | 23 | 64 | 1288 |
| Scottron, Samuel R., Brooklyn, N. Y. Supporting-bracket | 505,008 | Sept. 12 | 1154 | 296 | 64 | 1502 |
| Scoular, William, Johannesburg, South African Republic. Separator | 502,144 | July 25 | 2571 | 645 | 64 | 513 |
| Sculer, James, San Francisco, Cal. Negative and screen holder | 505,331 | Sept. 19 | 1676 | 432 | 64 | 1611 |
| Scovill Manufacturing Company. (See Lines, John, assignor.) | | | | | | |
| Scovill Manufacturing Company. (See Wolff, Alfred J., assignor.) | | | | | | |
| Scranton, Albert H., Fremont, Ohio. Cash register and indicator | 502,387 | Aug. 1 | 233 | 55 | 64 | 608 |
| Scranton, George H., Jr., assignor to Belden Machine Company, New Haven, Conn. Nail-extractor | 502,914 | Aug. 8 | 1135 | 280 | 64 | 791 |
| Scribner, Charles E., assignor to Western Electric Company, Chicago, Ill. Telephone-switch | 501,168 | July 11 | 1021 | 259 | 64 | 200 |
| Scribner, Charles E., assignor to Western Electric Company, Chicago, Ill. Telephone-exchange apparatus | 501,169 | July 11 | 1023 | 259 | 64 | 200 |
| Scribner, Charles E., assignor to Western Electric Company, Chicago, Ill. Duplex electric-arc lamp | 501,170 | July 11 | 1025 | 259 | 64 | 201 |
| Scribner, Charles E., assignor to Western Electric Company, Chicago, Ill. Multiple switch-board for telephone-exchanges | 501,847 | July 18 | 2088 | 516 | 64 | 409 |
| Scribner, Charles E., assignor to Western Electric Company, Chicago, Ill. Electric-arc lamp | 502,471 | Aug. 1 | 371 | 89 | 64 | 634 |
| Scribner, Charles E., assignor to Western Electric Company, Chicago, Ill. Circuit-controlling mechanism for arc lamps | 502,535 | Aug. 1 | 482 | 116 | 64 | 655 |
| Scribner, Charles E., assignor to Western Electric Company, Chicago, Ill. Electric-arc lamp | 502,536 | Aug. 1 | 485 | 116 | 64 | 656 |
| Scribner, Charles E., assignor to Western Electric Company, Chicago, Ill. Test-circuit for multiple switchboards | 502,768 | Aug. 8 | 892 | 219 | 64 | 744 |
| Scribner, Charles E., assignor to Western Electric Company, Chicago, Ill. Lock-switch for electric switchboards | 502,769 | Aug. 8 | 894 | 219 | 64 | 745 |
| Scribner, Charles E., assignor to Western Electric Company, Chicago, Ill. Telephone-exchange apparatus | 502,770 | Aug. 8 | 895 | 220 | 64 | 745 |
| Scribner, Charles E., assignor to Western Electric Company, Chicago, Ill. Transfer system for switchboards | 502,771 | Aug. 8 | 897 | 220 | 64 | 746 |
| Scribner, Charles E., assignor to Western Electric Company, Chicago, Ill. Test-signal for multiple switchboards | 502,772 | Aug. 8 | 900 | 220 | 64 | 746 |
| Scribner, Charles E., assignor to Western Electric Company, Chicago, Ill. Testing system for multiple switchboards | 502,773 | Aug. 8 | 902 | 221 | 64 | 747 |
| Scribner, Charles E., assignor to Western Electric Company, Chicago, Ill. Test-circuit for multiple switchboards | 502,774 | Aug. 8 | 904 | 221 | 64 | 747 |
| Scribner, Charles E., assignor to Western Electric Company, Chicago, Ill. Testing apparatus for multiple switchboards | 502,775 | Aug. 8 | 907 | 221 | 64 | 748 |
| Scribner, Charles E., assignor to Western Electric Company, Chicago, Ill. Multiple-switch-board system | 503,000 | Aug. 8 | 1434 | 354 | 64 | 844 |

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| Scribner, Charles E., assignor to Western Electric Company, Chicago, Ill. Cabling system for multiple switchboards | 503,555 | Aug. 15 | 2181 | 546 | 64 | 992 |
| Scribner, Charles E., assignor to Western Electric Company, Chicago, Ill. Multiple switchboard keyboard apparatus | 504,249 | Aug. 29 | 3305 | 826 | 64 | 1236 |
| Scribner, Charles E., assignor to Western Electric Company, Chicago, Ill. Telephone-exchange testing apparatus | 504,250 | Aug. 29 | 3306 | 826 | 64 | 1236 |
| Scribner, Charles E., assignor to Western Electric Company, Chicago, Ill. Vibrating circuit-breaker and retardation-coil for test systems | 504,251 | Aug. 29 | 3308 | 826 | 64 | 1237 |
| Scullen, G. Arthur. (See Curtis, Andrew J. and W. H., assignors.) | | | | | | |
| Se Cheverell, Jean H., assignor to H. N. Bancroft, Jefferson, Ohio. Electric belt | 502,776 | Aug. 8 | 909 | 221<br>222 | 64 | 748 |
| Seabury & Johnson. (See Shaw, Charles H., assignor.) | | | | | | |
| Seagrave, Frank E., Toledo, Ohio. Electric railway-signal | 504,542 | Sept. 5 | 384 | 96, 97 | 64 | 1342 |
| Seal, William P. (See McCook and Seal.) | | | | | | |
| Searle, James W., assignor of one-half to W. L. White, Washington, D. C. Copy-holder and printer's guide | 501,234 | July 11 | 1114 | 292 | 64 | 218 |
| Searle, John Q. C., and E. W. Jenks, Chicago, Ill. Combined hose-coupling and steam-trap | 505,727 | Sept. 26 | 2388 | 604 | 64 | 1757 |
| Searcy, William E. H., Griffin, Ga. Convertible seed or fertilizer distributer | 502,892 | Aug. 8 | 1007 | 969<br>970 | 64 | 783 |
| Sears, Willard T., Boston, Mass. Chock and guard for railway-cars | 502,145 | July 25 | 2572 | 645 | 64 | 513 |
| Sears, William, Boston, Mass. Electric-circuit-closing device | 501,256 | July 11 | 1155 | 292 | 64 | 224 |
| Seaton, Benjamin C., Nashville, Tenn. Electrical railway-signal | 503,100 | Aug. 8 | 1437 | 354<br>355 | 64 | 845 |
| Seaton, Benjamin C., Nashville, Tenn., assignor of one-half to W. S. Barkley, Indianapolis, Ind. Electric rail-bond | 503,101 | Aug. 8 | 1440 | 355 | 64 | 845 |
| Seaton, Charles S., Cleveland, Ohio. Machine for finishing bolt-heads | 503,879 | Aug. 22 | 2686 | 673 | 64 | 1103 |
| See, Horace, New York, N. Y. Regulating plug-cock | 505,489 | Sept. 26 | 1931 | 498 | 64 | 1674 |
| Seeley, Almeron S., Everett, Mich. Plow | 500,691 | July 4 | 253 | 68 | 64 | 48 |
| Segal, Adolph, *et al.* (See Mullin, Bernard A., assignor.) | | | | | | |
| Seger, Garret, assignor to A., P., F., and A. Swanson, Buffalo, N. Y. Washing-machine | 502,680 | Aug. 1 | 740 | 178 | 64 | 702 |
| Seibert, Nicholas, Boston, assignor of nineteen twenty-fifths to G. F. Malcolm, Allston, O. E. Simmons and S. Leipziger, Boston, Mass. Sanding device for cars | 502,053 | July 25 | 2428 | 611 | 64 | 486 |
| Seidenberg, Joseph, *et al.* (See Pinko, Emanuel, assignor.) | | | | | | |
| Seifert, Bruno R., assignor to F. von Heyden Nachfolger, Radebeul, near Dresden, Germany. Creosote compound | 501,235 | July 11 | 1115 | ..... | 64 | 218 |
| Seiffert, Rudolf, Chicago, Ill. Earpiece | 500,957 | July 4 | 659 | 175 | 64 | 120 |
| Seitz, Earle W., Kansas City, Mo. Car-coupling | 504,759 | Sept. 12 | 742 | 185 | 64 | 1424 |
| Self Winding Clock Company. (See Schmidt, Frederick M., assignor.) | | | | | | |
| Selfe, Joseph E. (See Hanks, William R., assignor.) | | | | | | |
| Sellon, Charles A., Pike, assignor to W. J. Sellon, Danaville, N. Y. Pump-handle | 503,990 | Aug. 29 | 2890 | 723 | 64 | 1158 |
| Sellon, William J. (See Sellon, Charles A., assignor.) | | | | | | |
| Senderling, Martin L., Jersey City, N. J. Dumping-wagon | 505,236 | Sept. 19 | 1518 | 397 | 64 | 1362 |
| Senger, Herman, Jersey City, N. J. Machine for forming sheet metal | 504,628 | Sept. 5 | 505 | 130 | 64 | 1365 |
| Settle, Emmette W., Slater, Mo. Churn | 504,893 | Sept. 12 | 956 | 247 | 64 | 1465 |
| Severance Nail Machine Company. (See Severance, William N., assignor.) | | | | | | |
| Severance, William N., Appleton, assignor to Severance Nail Machine Company, St. Paul, Minn. Machine for cutting nails | 500,958 | July 4 | 659 | 175<br>176 | 64 | 120 |
| Severance, William N., Appleton, assignor to Severance Nail Machine Company, St. Paul, Minn. Machine for cutting nails | 500,959 | July 4 | 668 | 176<br>177 | 64 | 122 |
| Severy, Melvin L., *et al.*, trustees. (See Ohmart, Eli C., assignor.) | | | | | | |
| Severy, Melvin L., assignor to F. Doane, C. F. Crowell, and M. L. Severy, trustees, Boston, Mass. Reflector for radiant energy | 503,004 | Aug. 8 | 1293 | 316 | 64 | 818 |
| Severy, Melvin L., assignor to F. Doane, C. F. Crowell, and M. L. Severy, trustees, Boston, Mass. Steam-boiler | 503,005 | Aug. 8 | 1294 | 316<br>317 | 64 | 818 |
| Seward, Edward C. (See Thomas and Seward.) | | | | | | |
| Sexson, Benjamin S., Cincinnati, Ind. Land-pulverizer | 503,006 | Aug. 8 | 1295 | 317 | 64 | 818 |
| Sexton, William A., Boston, Mass. Self-closing can | 502,537 | Aug. 1 | 497 | 117 | 64 | 656 |
| Seybert, Andrew J., Armstrong county, Pa. Warp-beam for looms | 504,442 | Sept. 5 | 211 | 55 | 64 | 1310 |
| Seymour, Charles, assignor to Defiance Machine Works, Defiance, Ohio. Lathe | 501,470 | July 11 | 1488 | 374<br>375 | 64 | 286 |
| Seymour, Charles E., Lake Geneva, Wis. Ore-concentrator | 503,687 | Aug. 22 | 2405 | 600 | 64 | 1048 |
| Seymour, Frederick S., Lake Geneva, Wis. Wrench | 501,360 | July 11 | 1350 | 336 | 64 | 259 |
| Seymour, Squire D. (See McMahon, William H., assignor.) | | | | | | |
| Seymour, William S., assignor of one-half to J. S. Keller, Philadelphia, Pa. Hook and eye | 502,238 | July 25 | 2722 | 689 | 64 | 544 |
| Shaaber, Mahlon, assignor of one-half to J. S. Ammon, Reading, Pa. Trolley-wire cleaner | 504,405 | Sept. 5 | 150 | 39 | 64 | 1298 |
| Shafer, Benjamin F., Sr., Wilkinsburg, Pa. Nut-lock | 503,808 | Aug. 22 | 2593 | 648 | 64 | 1085 |
| Shaffer, Henry E., Rochester, N. Y. Lamp-burner | 503,007 | Aug. 8 | 1298 | 317 | 64 | 819 |
| Shaffer, John, Singer's Glen, Va. Washing-machine | 504,946 | Sept. 12 | 1049 | 269 | 64 | 1462 |
| Shakespeare, William, Jr. (See Low and Shakespeare.) | | | | | | |
| Shallenberger, Oliver B., Rochester, Pa. System of electrical distribution | 503,021 | Aug. 22 | 2310 | 576 | 64 | 1030 |
| Shampay, Pascal J., Chicago, Ill. Washboiler | 501,448 | July 11 | 1461 | 366<br>367 | 64 | 291 |
| Shanks, Frank F., Waukegan, Ill. Corn-planter | 501,449 | July 11 | 1462 | 367 | 64 | 291 |
| Shannon, John, Pittsburg, Pa. Wood-graining machine | 501,668 | July 18 | 1807 | 449<br>450 | 64 | 360 |
| Shanovski, Louis F., and B. Rubenstein, Chicago, Ill. Food-holder for bird-cages | 502,146 | July 25 | 2573 | 646 | 64 | 514 |
| Sharp, Warren M., Binghamton, N. Y. Apparatus for casting aluminium dental plates | 502,209 | July 25 | 2579 | 676 | 64 | 535 |
| Shatto, George R. (See Hise, John H., assignor.) | | | | | | |
| Shaub, Ambrose B., Beach City, Ohio. Brooder | 505,676 | Sept. 26 | 2303 | 585 | 64 | 1742 |
| Shaw, Alton J., Muskegon, Mich. Commutator-brush holder | 501,193 | July 11 | 1055 | 267 | 64 | 207 |
| Shaw, Alton J., assignor to Shaw Electric Crane Company, Muskegon, Mich. Hoisting machinery | 505,065 | Sept. 12 | 1249 | 320<br>321 | 64 | 1519 |
| Shaw, Alton J., assignor to Shaw Electric Crane Company, Muskegon, Mich. Hoisting machinery | 505,066 | Sept. 12 | 1252 | 321 | 64 | 1520 |
| Shaw, Alton J., assignor to Shaw Electric Crane Company, Muskegon, Mich. Hoisting machinery | 505,067 | Sept. 12 | 1254 | 321<br>322 | 64 | 1520 |
| Shaw, Alton J., assignor to Shaw Electric Crane Company, Muskegon, Mich. Hoisting machinery | 505,068 | Sept. 12 | 1257 | 322<br>323 | 64 | 1521 |
| Shaw, Alton J., assignor to Shaw Electric Crane Company, Muskegon, Mich. Soaking-pit for steel ingots | 505,728 | Sept. 26 | 2390 | 604 | 64 | 1758 |
| Shaw, Charles H., Brooklyn, assignor to Seabury & Johnson, New York, N. Y. Sulphur candle | 501,471 | July 11 | 1491 | 375 | 64 | 287 |
| Shaw, Edgar, Swampscott, Mass. Broom | 501,370 | July 11 | 1351 | 337 | 64 | 259 |



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| Shaw, Edgar, Swampscott, Mass., assignor to Lariat Manufacturing Company, Jersey City, N. J. Lasso | 504,055 | Aug. 29 | 2983 | 745 | 64 | 1176 |
| Shaw, Edwin F., and J. N. Lorio, Philadelphia, Pa. Elevator-gate-operating device | 502,936 | Aug. 8 | 1183 | 292 | 64 | 798 |
| Shaw Electric Crane Company. (See Sawyer, Harry, assignor.) | | | | | | |
| Shaw Electric Crane Company. (See Shaw, Alton J., assignor.) | | | | | | |
| Shaw, Elton R., Los Gatos, Cal. Evaporating-pan | 501,848 | July 18 | 2091 | 516 | 64 | 409 |
| Shaw, Henry F., assignor to Shaw Radial Car Truck Company, Boston, Mass. Truck for street-cars | 502,503 | Aug. 1 | 429 | 102 | 64 | 645 |
| Shaw, Joseph. (See Mellor and Shaw.) | | | | | | |
| Shaw Radial Car Truck Company. (See Shaw, Henry F., assignor.) | | | | | | |
| Shaw, Solomon, assignor of one-fourth to Edward P. Allis Company, Milwaukee, Wis. Apparatus for melting iron | 504,282 | Aug. 29 | 3354 | 838 | 64 | 1246 |
| Shaw, Solomon, assignor of one-fourth to Edward P. Allis Company, Milwaukee, Wis. Apparatus for melting iron or iron ore | 504,308 | Aug. 29 | 3397 | 851 | 64 | 1254 |
| Shaw, Thomas, Newark, N. J. Grinding-machine | 505,178 | Sept. 19 | 1433 | 369 | 64 | 1506 |
| Shaw, Truman A., assignor of two-thirds to S. T. Sniffen, White Plains, and J. Tilton, New York, N. Y. Paint-keg | 501,171 | July 11 | 1026 | 260 | 64 | 201 |
| Shea, James B. (See Fenner, Marvin M., assignor.) | | | | | | |
| Sheaffer, John D., Avilla, Ind. Wheat-scourer | 502,915 | Aug. 8 | 1136 | 280 | 64 | 791 |
| Shearer, Albert W., Omaha, Nebr. Covering for steam-pipes | 505,560 | Sept. 26 | 2101 | 533 | 64 | 1705 |
| Shearer, Andrew, Philadelphia, Pa. Grate | 503,109 | Aug. 15 | 1567 | 385<br>386 | 64 | 882 |
| Shearer, George B., Oneonta, N. Y. Piano practice-pedal | 503,880 | Aug. 22 | 2688 | 674 | 64 | 1104 |
| Shearer, Mahlon A. (See Ortt and Shearer.) | | | | | | |
| Sheedy, Dennis, and M. W. Iles, Denver, Colo. Apparatus for separating matte from slag | 500,621 | July 4 | 135 | 36 | 64 | 26 |
| Sheedy, Dennis, and M. W. Iles, Denver, Colo. Blast-furnace | 505,538 | Sept. 26 | 2046 | 522 | 64 | 1694 |
| Sheer, Henry M., assignor to himself and G. Ertel, Quincy, Ill. Incubator | 501,735 | July 18 | 1914 | 476 | 64 | 379 |
| Sheffield, George S., assignor of one-half to A. C. Himebaugh, Burr Oak, Mich. Hand corn-planter | 502,239 | July 25 | 2734 | 689 | 64 | 544 |
| Sheffield, Lucius T., New York, N. Y. Razor-strop | 505,134 | Sept. 19 | 1368 | 351 | 64 | 1555 |
| Shehan, Millard F., Boulder, Colo. Gate | 502,263 | July 25 | 2781 | 702 | 64 | 553 |
| Sheldon, Balos F., Saginaw, Mich. Car-coupling | 500,961 | July 4 | 674 | 177 | 64 | 123 |
| Sheldon, John G., Cleveland, Ohio. Fire-back | 505,237 | Sept. 19 | 1519 | 397 | 64 | 1562 |
| Sheldon, Samuel, and J. J. Rooney, Brooklyn, N. Y. Alternating electric-current generator | 502,777 | Aug. 8 | 910 | 222 | 64 | 748 |
| Sheldon, Thomas K., Marion, and M. N. Lynn, Indianapolis, Ind. Finishing-tool for glass bottles | 500,960 | July 4 | 673 | 177 | 64 | 122 |
| Sheldon, Willard C., Grand Haven, Mich. Tobacco-moistener | 501,371 | July 11 | 1353 | 337 | 64 | 259 |
| Shellaberger, Michael M., De Kalb, Ill. Wire fence | 501,216 | July 11 | 1087 | 276 | 64 | 214 |
| Shemwell, Baxter. (See Bernheim, Charles H., assignor.) | | | | | | |
| Shepard, Isabella, Niles, Mich. Hat | 500,962 | July 4 | 676 | 177 | 64 | 123 |
| Shepard, J. A. (See Williams, Sylvester M., assignor.) | | | | | | |
| Shephard, Percival W., East Liberty, Pa. Folding pocket-rule | 503,008 | Aug. 8 | 1299 | 318 | 64 | 819 |
| Shepherd, George, and H. Midgley, Bacup, England, assignors, by mesne assignments, to Lowell Machine Shop, Lowell, Mass. Ring-spinning and doubling frame | 501,736 | July 18 | 1916 | 476 | 64 | 379 |
| Shepherd, George, and H. Midgley, Bacup, England, assignors, by mesne assignments, to Lowell Machine Shop, Lowell, Mass. Ring-spinning and doubling frame | 501,737 | July 18 | 1923 | 477 | 64 | 380 |
| Shepherd, George, and H. Midgley, Bacup, England, assignors, by mesne assignments, to Lowell Machine Shop, Lowell, Mass. Ring-spinning and doubling frame | 501,738 | July 18 | 1928 | 477 | 64 | 381 |
| Shepley, George B. (See Forbes and Shepley.) | | | | | | |
| Sheppard, Howard R., Philadelphia, Pa. Horizontal circulating-boiler | 501,739 | July 18 | 1931 | 478 | 64 | 381 |
| Shepperd, Sylvanus D., assignor to Backus Water Motor Company, Newark, N. J. Water-motor | 504,283 | Aug. 29 | 3356 | 839 | 64 | 1247 |
| Sheppman, John, San Francisco, Cal. Toy | 503,389 | Aug. 15 | 1921 | 476 | 64 | 946 |
| Sherburne, Charles W. (See Lauder, James N., assignor.) | | | | | | |
| Sheridan, John, Quincy, Ill. Grain-door | 500,963 | July 4 | 677 | 178 | 64 | 123 |
| Sherman, Lewis P., Biddeford, assignor to G. Moore, Berwick, Me. Needle-operating and reed-dent-separating device for machines for drawing in warp-threads | 500,964 | July 4 | 677 | 178 | 64 | 123 |
| Sherman, Lewis P., Biddeford, assignor to G. Moore, Berwick, Me. Harness-supporting and heddle-eye-selecting device for machines for drawing in warp-threads | 500,965 | July 4 | 679 | 178<br>179 | 64 | 124 |
| Sherman, Lewis P., Biddeford, assignor to G. Moore, Berwick, Me. Thread-selecting device for machines for drawing in warp-threads | 500,966 | July 4 | 684 | 179<br>180 | 64 | 124 |
| Sherman, Marcus D. L., Lowell, Mass. Urinary apparatus | 501,372 | July 11 | 1354 | 338 | 64 | 260 |
| Sherman, Samuel S., West McHenry, Ill. Farm-gate | 505,332 | Sept. 19 | 1677 | 432 | 64 | 1611 |
| Sherrod, Fletcher, assignor to himself and H. B. Cage, Madison Station, Miss. Combined colter and scraper | 504,252 | Aug. 29 | 3311 | 827 | 64 | 1237 |
| Sherwin-Williams Company *et al.* (See Roberts, John W., assignor.) | | | | | | |
| Sherwood, William J., Ashtabula, Ohio. Armature for electric motors | 505,729 | Sept. 26 | 2391 | 604 | 64 | 1758 |
| Shiel, John F. (See Keller, James D., assignor.) | | | | | | |
| Shields, David, Erie, Pa., assignor to M. Griswold. Waffle-iron | 502,086 | July 25 | 2481 | 623<br>624 | 64 | 496 |
| Shinn, John, Philadelphia, Pa. Hammock | 500,692 | July 4 | 254 | 68 | 64 | 48 |
| Shipley, Morris S., Cincinnati, Ohio. Supplementary seat for bicycles | 503,170 | Aug. 15 | 1568 | 386 | 64 | 892 |
| Shipman, Joseph H., Whippany, N. J. Sash-balance | 500,967 | July 4 | 687 | 180 | 64 | 125 |
| Shoemaker, George H., South Bend, Ind. Spark-arrester | 503,171 | Aug. 15 | 1569 | 386 | 64 | 892 |
| Shoemaker, Jacob S., New Lothrop, Mich. Road-cart | 505,333 | Sept. 19 | 1678 | 433 | 64 | 1612 |
| Shonolin, Patrick, *et al.* (See Minogue, Martin T., assignor.) | | | | | | |
| Shorey, George E. (See Shorey, Reuben A. and G. E.) | | | | | | |
| Shorey, George L., Lynn, Mass. Heating apparatus | 500,693 | July 4 | 255 | 69, 70 | 64 | 48 |
| Shorey, Reuben A. and G. E., Fairfield, Me. Swing | 501,740 | July 18 | 1932 | 478 | 64 | 382 |
| Short, John N., Johnstown, Pa., assignor to Cambria Iron Company, of Pennsylvania. Machine for forming rake-teeth | 501,217 | July 11 | 1088 | 276<br>277 | 64 | 214 |
| Shoup, Almon. (See Tucker, George, assignor.) | | | | | | |
| Shrague, Gustavus A. (See Shrague, John W. and G. A.) | | | | | | |
| Shrague, John W. and G. A., Cincinnati, Ohio. Booth or stall for voting | 502,778 | Aug. 8 | 912 | 222 | 64 | 749 |
| Shults, Edward L., Springfield, Mass. Saddle for velocipedes | 502,681 | Aug. 1 | 743 | 179 | 64 | 702 |
| Shuman, Charles. (See Rasner, Frank, assignor.) | | | | | | |
| Shurts, Frank H., and H. G. Swan, San Francisco, Cal. Safety device for elevators | 504,629 | Sept. 5 | 507 | 130<br>131 | 64 | 1365 |
| Shuster, Lawrence, Jr., Philadelphia, Pa. Air-inlet for plumbing purposes | 503,809 | Aug. 22 | 2594 | 648 | 64 | 1086 |
| Sidway, Henry T. (See Grotenhuis and Sidway.) | | | | | | |
| Sidway Manufacturing Company. (See Grotenhuis and Sidway, assignors.) | | | | | | |
| Siemens, Alexander, London, England, assignor to Siemens & Halske, Berlin, Germany. Operating electric motors by alternating currents | 504,630 | Sept. 5 | 509 | 131<br>132 | 64 | 1366 |
| Siemens, Fryderick, Dresden, Germany. Regenerative gas furnace and producer | 501,107 | July 11 | 923 | 236<br>237 | 64 | 188 |

*Alphabetical list of patentees, July to September, inclusive*—Continued.

| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Dr'g. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Siemens, Georg W. von, assignor to Siemens & Halske, Berlin, Germany. Converter system for electric railways | 502,538 | Aug. 1 | 488 | 117 | 64 | 656 |
| Siemens, Georg W. von, assignor to Siemens & Halske, Berlin, Germany. Electric-railway system | 502,539 | Aug. 1 | 491 | 117 | 64 | 657 |
| Siemens & Halske. (See Frischen, Johann H., assignor.) | | | | | | |
| Siemens & Halske. (See Höfer, Carl F. W., assignor.) | | | | | | |
| Siemens & Halske. (See Hoffmann, Carl, assignor.) | | | | | | |
| Siemens & Halske. (See Nordmann, Paul, assignor.) | | | | | | |
| Siemens & Halske. (See Pfeil, Robert, assignor.) | | | | | | |
| Siemens & Halske. (See Richter and Hoffmann, assignors.) | | | | | | |
| Siemens & Halske. (See Schwennicke, Carl, assignor.) | | | | | | |
| Siemens & Halske. (See Siemens, Alexander, assignor.) | | | | | | |
| Siemens & Halske. (See Siemens, Georg W. von, assignor.) | | | | | | |
| Siemens & Halske. (See Siemens, Wilhelm von, assignor.) | | | | | | |
| Siemens & Halske. (See Thalacker, Carl, assignor.) | | | | | | |
| Siemens & Halske. (See Wörner, Adolf, assignor.) | | | | | | |
| Siemens, Wilhelm von, assignor to Siemens & Halske, Berlin, Germany. Distribution of alternating electric currents | 502,662 | Aug. 1 | 744 | 179 | 64 | 703 |
| Sievers, Claus, Denison, Iowa. Hame-tug fastener | 501,966 | July 25 | 2287 | 573 | 64 | 460 |
| Silberberg, Nathan, Jassy, Roumania. Stem winding and setting watch | 501,108 | July 11 | 925 | 237 | 64 | 183 |
| Silberzahn, John D., West Bend, Wis. Governor | 505,279 | Sept. 19 | 1591 | 414 | 64 | 1596 |
| Sill, Benjamin F., Long Island City, N. Y. Window-garden spray | 502,590 | Aug. 1 | 569 | 136 | 64 | 670 |
| Silver, Sam D., Seattle, Wash. Fire-escape | 501,373 | July 11 | 1355 | 338 | 64 | 260 |
| Silverman, Louis. (See Maxim and Silverman.) | | | | | | |
| Silvey, William L., Lima, Ohio. Secondary battery | 500,622 | July 4 | 136 | 37 | 64 | 27 |
| Silvey, William L., Lima, Ohio. Secondary battery | 504,370 | Sept. 5 | 92 | 23 | 64 | 1288 |
| Simmons, James, Long Branch, N. J. Trunk-fastening | 501,259 | July 11 | 1156 | 293 | 64 | 225 |
| Simmons, Oliver E., *et al.* (See Seibert, Nicholas, assignor.) | | | | | | |
| Simmons, Ralph C. (See Benjamin and Simmons.) | | | | | | |
| Simmons, Stephen W., Clinton, Mass. Unsealing attachment for cans | 503,500 | Aug. 15 | 2087 | 521 | 64 | 975 |
| Simon, August, Gnadau, Germany. Pile-planting | 500,780 | July 4 | 395 | 104 | 64 | 73 |
| Simon, Gottlieb H. (See Olp, Robert, assignor.) | | | | | | |
| Simon, Robert, Union Hill, N. J. Warping or beaming machine | 504,791 | Sept. 12 | 795 | 201, 202 | 64 | 1432 |
| Simon, Soloman, and J. Pletka, Chicago, Ill. Bridge-gate | 502,779 | Aug. 8 | 914 | 223 | 64 | 749 |
| Simonds, George F., Fitchburg, Mass. Ball-bearing | 501,374 | July 11 | 1357 | 338 | 64 | 260 |
| Simonds, George F., Fitchburg, Mass. Ball-bearing | 501,375 | July 11 | 1358 | 339 | 64 | 260 |
| Simons, Alfred S., Port Chester, N. Y. Wide hemmer for sewing-machines | 504,947 | Sept. 12 | 1050 | 269 | 64 | 1482 |
| Simonson, James H. (See Daniels, Howard, assignor.) | | | | | | |
| Simpson, George. (See Follett and Simpson.) | | | | | | |
| Simpson, George W., Santa Barbara, Cal. Dental articulator | 501,741 | July 18 | 1933 | 478 | 64 | 382 |
| Simpson, Thomas H., Detroit, Mich. Brake-beam | 503,441 | Aug. 15 | 1993 | 494 | 64 | 958 |
| Simpson, William J. (See Lyle, William P., assignor.) | | | | | | |
| Sims, Orin B. (See Tinkham and Sims.) | | | | | | |
| Simultaneous Chromogravure Printing Machine and Manufacturing Company. (See Toye, William H. R., assignor.) | | | | | | |
| Sinclair, Lovell H., Switz City, Ind. Motor | 504,056 | Aug. 29 | 2983 | 745, 746 | 64 | 1176 |
| Singer Manufacturing Company of New Jersey. (See Foster, Charles H., assignor.) | | | | | | |
| Singer Manufacturing Company of New Jersey. (See Macdougall, Matthew, assignor.) | | | | | | |
| Singer, Paris E., London, England. Electrical musical instrument | 501,540 | July 18 | 1597 | 402 | 64 | 322 |
| Singer, Paris E., London, England. Electrical musical instrument | 501,541 | July 18 | 1598 | 402 | 64 | 322 |
| Singer, Paris E., London, England. Electrical musical instrument | 501,542 | July 18 | 1599 | 403 | 64 | 322 |
| Singer, Paris E., London, England. Electric musical instrument | 501,543 | July 18 | 1601 | 403 | 64 | 323 |
| Singer, Robert R., Pittsburg, Pa. Method of and apparatus for the manufacture of hollow articles | 501,900 | July 18 | 2182 | 541, 542 | 64 | 495 |
| Sinsabaugh, George. (See Pruden, Silas, assignor.) | | | | | | |
| Sintzenich, Edwin B., Rochester, N. Y. Thrust-bearing | 504,253 | Aug. 29 | 3311 | 827 | 64 | 1237 |
| Sir Joseph Whitworth & Company. (See Canot, Jean B. G. A., assignor.) | | | | | | |
| Sirois, Emil, Shelby, Ind. Apparatus for shoeing animals | 502,054 | July 25 | 2430 | 612 | 64 | 486 |
| Siskron, Edward, Minneapolis, Minn. Metallic railway-tie | 504,695 | Sept. 5 | 629 | 160 | 64 | 1389 |
| Sisson, Francis M. (See Pludder and Sisson.) | | | | | | |
| Sjöström, Jonas. (See Boening and Sjöström.) | | | | | | |
| Skaggs, Milton B., Brentwood, Cal. Raisin-tray turner | 504,254 | Aug. 29 | 3312 | 827 | 64 | 1238 |
| Skinner, Frank, *et al.* (See Spahmer, Adam A., Jr., assignor.) | | | | | | |
| Slawson, John C., Indianapolis, Ind. Street-sweeper | 505,796 | Sept. 26 | 2495 | 630 | 64 | 1778 |
| Sloan, Charles T., Buffalo, N. Y. Gas-burner for boiler-furnaces | 500,794 | July 4 | 312 | 84 | 64 | 58 |
| Sloan, George B. (See Hall and Sloan.) | | | | | | |
| Sloan, Robert A., and J. E. L. Barnes, Birkenhead, England. Apparatus for sealing cans, &c | 502,019 | July 25 | 2370 | 595, 596 | 64 | 476 |
| Small, Henry J., and C. T. Noyes, Sacramento, Cal. Starting appliance for compound engines | 503,390 | Aug. 15 | 1922 | 477, 478 | 64 | 946 |
| Smalley, Lindsley H., Coon Rapids, Iowa. Boot for animals | 500,968 | July 4 | 689 | 181 | 64 | 125 |
| Smardon, George H., Portland, Me. Fire-bucket | 504,070 | Aug. 29 | 3002 | 750 | 64 | 1179 |
| Smead, Isaac D., Toledo, Ohio. Furnace | 501,109 | July 11 | 907 | 232 | 64 | 184 |
| Smith, Addison V., Cortland, N. Y. Tricycle | 503,009 | Aug. 8 | 1299 | 318 | 64 | 819 |
| Smith, Albert J., and J. V. Landes, Adrian, Mo. Automatic wagon-brake | 505,680 | Sept. 26 | 2309 | 586 | 64 | 1743 |
| Smith, Alice T., Chicago, Ill. Garment-fastening | 501,303 | July 11 | 1216 | 308 | 64 | 236 |
| Smith, Alonzo H. (See Earle, Charles H., assignor.) | | | | | | |
| Smith, Arthur H. (See Smith, John T., assignor.) | | | | | | |
| Smith, Arthur J., London, England. Manufacture of white lead | 501,377 | July 11 | 1361 | 340, 341 | 64 | 261 |
| Smith, Benjamin C., Brooklyn, N. Y. Seat | 503,798 | Aug. 22 | 2474 | 615 | 64 | 1062 |
| Smith, Burgess, Macon, Ga., assignor to E. & H. T. Anthony & Company, New York, N. Y. Flash-lamp | 505,780 | Sept. 26 | 2473 | 624 | 64 | 1774 |
| Smith, Charity, Ithaca, N. Y. Toy figure | 505,679 | Sept. 26 | 2308 | 586 | 64 | 1743 |
| Smith, Charles A., San Francisco, Cal. Balloon for observing distant objects | 505,414 | Sept. 19 | 1814 | 468 | 64 | 1638 |
| Smith, Charles H., assignor to O. B. North & Company, New Haven, Conn. Bridle-bit | 505,280 | Sept. 19 | 1594 | 415 | 64 | 1596 |
| Smith, Charles H., assignor to O. B. North & Company, New Haven, Conn. Snap-hook | 505,281 | Sept. 19 | 1595 | 415 | 64 | 1597 |
| Smith, Charles S., and E. E. Knowles, Spokane, Wash. Rail-heating device | 505,135 | Sept. 19 | 1369 | 351 | 64 | 1555 |
| Smith, Clarence C. (See Stone and Smith.) | | | | | | |
| Smith, Clarence C., *et al.* (See Stone, Thomas B., assignor.) | | | | | | |
| Smith, Coral D. (See Moore, Rue, Smith, Roebuck, Mills, and Kirk.) | | | | | | |
| Smith, David F. (See Mather and Smith.) | | | | | | |
| Smith, Del, Worcester, N. Y. Ice-velocipede | 500,623 | July 4 | 136 | 37 | 64 | 27 |



*Alphabetical list of patentees, July to September, inclusive*—Continued.

| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Dr'g. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Smith, Edward A., Hamilton, Ohio. Carburetor | 502,781 | Aug. 8 | 918 | 224 | 64 | 749 |
| Smith, Edward M., Cohoes, N. Y., and J. W. Cassidy, deceased, assignors of part to J. Scott and J. Sullivan. Knitting-machine stop mechanism. (Reissue) | 11,366 | Sept. 19 | 1844 | 474 | 64 | 1643 |
| Smith, Eugene, Philadelphia, Pa. Sewing-machine | 504,792 | Sept. 12 | 796 | 202, 203 | 64 | 1432 |
| Smith Exhaust Pipe Company. (See Smith, John Y., assignor.) | | | | | | |
| Smith, F. F., *et al.* (See Lyle, Jefferson Y., assignor.) | | | | | | |
| Smith, Frank A., assignor of one-third to J. Krauss, Flora, Ind. Heating-drum | 501,901 | July 18 | 2184 | 542 | 64 | 425 |
| Smith, Frank W., St. Louis, Mo. Combined fender and car-brake | 502,780 | Aug. 8 | 916 | 223 | 64 | 749 |
| Smith, Frank W., Sunbury, Pa. Coin holder and counter | 504,504 | Sept. 5 | 324 | 83 | 64 | 1330 |
| Smith, Frederick H., deceased; W. D. Baldwin, Washington, D. C., administrator, assignor to I. S. Smith, Bromley, England. Shoe-lace fastener | 502,694 | Aug. 8 | 762 | 185 | 64 | 731 |
| Smith, Friend W., Jr., assignor to Curtis & Curtis, Bridgeport, Conn. Device for holding nipples during threading | 500,748 | July 4 | 344 | 91 | 64 | 64 |
| Smith, George, assignor of three-fourths to J. McClure, W. K. Elliott, and L. H. Roots, Little Rock, Ark. Steam-engine | 501,581 | July 18 | 1662 | 415 | 64 | 335 |
| Smith, George W., Milwaukee, Wis. Diving apparatus | 503,753 | Aug. 22 | 2519 | 627 | 64 | 1071 |
| Smith, Harper F., assignor of one-half to W. F. McCully, Philadelphia, Pa. Self-generating gas-burner | 500,969 | July 4 | 689 | 181 | 64 | 125 |
| Smith, Henry V., Hartford, Conn. Tool-holder | 501,110 | July 11 | 930 | 238 | 64 | 184 |
| Smith, Henry V., assignor of one-half to J. W. Storrs, Hartford, Conn. Ratchet-brace | 505,611 | Sept. 26 | 2187 | 553 | 64 | 1722 |
| Smith, Isabella S. (See Smith, Frederick H.) | | | | | | |
| Smith, Jacob G. (See Barnes and Smith.) | | | | | | |
| Smith, John B., Chicago, Ill. Auxiliary steam-pipe for radiators | 505,136 | Sept. 19 | 1370 | 351 | 64 | 1555 |
| Smith, John D., Bonham, assignor of one-half to R. R. Gaines and J. S. Williams, Paris, Tex. Type-writing machine | 502,147 | July 25 | 2374 | 646 | 64 | 514 |
| Smith, John E., New York, N. Y. Electric-circuit connection for signaling or telephone boxes | 501,631 | July 18 | 1747 | 435 | 64 | 350 |
| Smith, John L. (See Burgess, Melancthon, assignor.) | | | | | | |
| Smith, John S., London, England. Pneumatic tire | 505,255 | Sept. 19 | 1548 | 404 | 64 | 1588 |
| Smith, John S., C. J. and G. E. Tate, London, England; said C. J. and G. E. Tate assignors to said Smith. Fastening device for pneumatic tires | 504,284 | Aug. 29 | 3357 | 839 | 64 | 1247 |
| Smith, John T., Heron Lake, Minn. Cleaner and reducer for crude flax-straw | 505,069 | Sept. 12 | 1260 | 323 | 64 | 1521 |
| Smith, John T., Bridgeport, Conn., assignor of one-half to A. H. Smith, New York, N. Y. Wheel-tire | 501,967 | July 25 | 2289 | 569 | 64 | 460 |
| Smith, John Y., assignor to Smith Exhaust Pipe Company, Doylestown, Pa. Method of and apparatus for consumption of fuel | 503,501 | Aug. 15 | 2089 | 522 | 64 | 976 |
| Smith, Joseph F., New Bedford, Mass. Card-case | 504,948 | Sept. 12 | 1052 | 270 | 64 | 1482 |
| Smith, Joseph J., and G. W. Findlater, Jamaica, N. Y. Armature | 501,376 | July 11 | 1360 | 340 | 64 | 261 |
| Smith, Joseph R., Waterbury, Conn., assignor, by mesne assignments, to Consolidated Fastener Company, Portland, Me. Glove-fastening | 504,309 | Aug. 29 | 3398 | 851 | 64 | 1254 |
| Smith, Josiah T., W. S., and W. F., East Liverpool, Ohio. Ironing-table | 502,591 | Aug. 1 | 570 | 137 | 64 | 671 |
| Smith, Lyman C. (See Clarke, Charles C., assignor.) | | | | | | |
| Smith, Miner O., Waverly, N. Y. Check-punch | 500,676 | July 4 | 234 | 62 | 64 | 44 |
| Smith, Prescott A. (See Stone and Smith.) | | | | | | |
| Smith, Prescott A., *et al.* (See Stone, Thomas B., assignor.) | | | | | | |
| Smith, Sidney. (See Glen, Purvis, and Smith.) | | | | | | |
| Smith, Solomon P., Waterford, N. Y. Air-current governor | 505,238 | Sept. 19 | 1520 | 398 | 64 | 1583 |
| Smith, Thomas S., assignor of one-half to W. W. Breslin, Waterford, N. Y. Mechanism for operating machines | 505,254 | Sept. 19 | 1547 | 403 | 64 | 1588 |
| Smith, Warren S., St. Johnsbury, Vt. Attachment for dividers | 504,116 | Aug. 29 | 3083 | 771 | 64 | 1195 |
| Smith, William G. (See Hood and Smith.) | | | | | | |
| Smith, William I., Memphis, Tenn. Electrical connection | 505,561 | Sept. 26 | 2102 | 533 | 64 | 1705 |
| Smith, William S. (See Smith, Josiah T., W. S., and W. F.) | | | | | | |
| Smith, William T., assignor to Wm. Knabe & Co. Manufacturing Company, Baltimore, Md. Piano-stool | 505,256 | Sept. 19 | 1549 | 404 | 64 | 1588 |
| Smith, Wilson F. (See Smith, Josiah T., W. S., and W. F.) | | | | | | |
| Smitten, Thomas W. F., Brooklyn, N. Y. Sleeve or collar button | 502,834 | Aug. 8 | 1009 | 246 | 64 | 767 |
| Snedeker, Charles T., assignor to Washburn & Moen Manufacturing Company, Worcester, Mass. Electric-arc lamp | 504,760 | Sept. 12 | 743 | 185 | 64 | 1424 |
| Snider, James B., Chicago, Ill. Bushing | 504,460 | Sept. 5 | 277 | 63 | 64 | 1314 |
| Sniffen, Samuel T., *et al.* (See Shaw, Truman A., assignor.) | | | | | | |
| Snively, Jonathan R., *et al.* (See Gates, Matthias, assignor.) | | | | | | |
| Snow, Alt O. (See Mason and Snow.) | | | | | | |
| Snow, Thomas W. (See Long, Malcolm W., assignor.) | | | | | | |
| Snyder, Albert L., Topeka, Kans. Hot-water and steam heating apparatus | 502,055 | July 25 | 2431 | 612 | 64 | 486 |
| Snyder, Andrew, Canton, Minn. Portable tilting gate | 505,375 | Sept. 19 | 1746 | 453 | 64 | 1624 |
| Snyder, Charles L., Philadelphia, Pa. Porter or beer tap | 502,835 | Aug. 8 | 1010 | 246 | 64 | 767 |
| Snyder, Cyrus. (See Bufkin and Snyder.) | | | | | | |
| Snyder, Emory P., Chambersburg, Pa. Poultry-brooder | 503,172 | Aug. 15 | 1570 | 386, 387 | 64 | 983 |
| Snyder, George W., Herkimer, N. Y. Automatic feed-stop for knitting-machines | 501,582 | July 18 | 1664 | 416 | 64 | 336 |
| Snyder, J. R. (See Lind, Hugh, assignor.) | | | | | | |
| Snyder, Michael F. (See Lee and Snyder.) | | | | | | |
| Snyder, Owen T., Columbus, Ohio. Lubricator | 504,178 | Aug. 29 | 3185 | 796 | 64 | 1214 |
| Snyder, Waldo V., Canton, Ohio. Tricycle | 503,991 | Aug. 29 | 2891 | 723 | 64 | 1159 |
| Snyder, Waldo V., Canton, Ohio. Tricycle | 503,992 | Aug. 29 | 2892 | 723 | 64 | 1159 |
| Snyder, Ward H. (See Carter and Snyder.) | | | | | | |
| Snyder, William D., Chicago, assignor to Forest City Furniture Company, Rockford, Ill. Base for furniture | 503,993 | Aug. 29 | 2893 | 723, 724 | 64 | 1159 |
| Snyder, William D., Chicago, assignor to Forest City Furniture Company, Rockford, Ill. Base for furniture | 503,994 | Aug. 29 | 2895 | 724 | 64 | 1159 |
| Société Anonyme des Mines and Fonderies de Zinc de la Vieille Montagne. (See Detombay, Benoit B., assignor.) | | | | | | |
| Société Anonyme Industrielle des Etablishments Arbel. (See Arbel, Pierre, assignor.) | | | | | | |
| Société du Nettoyeur O. André Appliqué au Filtre Chamberland Système Pasteur. (See André, Oscar, assignor.) | | | | | | |
| Société Générale des Téléphones, (Réseaux Téléphoniques et Constructions Électriques.) (See Berthon, Louis A., assignor.) | | | | | | |
| Society of Chemical Industry in Basle. (See Schmid, Jakob, assignor.) | | | | | | |
| Sofleise, Conrad C., Woodbury, N. J. Hot-air furnace | 500,821 | July 4 | 457 | 120, 121 | 64 | 84 |
| Solter, John, Baltimore, Md. Automatic steam-regulator | 505,179 | Sept. 19 | 1435 | 369 | 64 | 1566 |
| Solvay, Ernest, Brussels, Belgium, assignor to Solvay Process Company, Syracuse, N. Y. Apparatus for treating pulverulent materials with gases | 503,556 | Aug. 15 | 2184 | 546 | 64 | 993 |

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|---|---|---|---|---|---|---|
| Solvay, Ernest, Brussels, Belgium, assignor to Solvay Process Company, Syracuse, N. Y. Apparatus for the distillation of hydrochloric acid | 503,557 | Aug. 15 | 2186 | 546 | 64 | 994 |
| Solvay, Ernest, Brussels, Belgium, assignor to Solvay Process Company, Syracuse, N. Y. Treating pulverulent material with gases | 503,558 | Aug. 15 | 2188 | 547 | 64 | 994 |
| Solvay Process Company. (See Solvay, Ernest, assignor.) | | | | | | |
| Sommer, Charles, assignor to R. Sommer, Sloan's Valley, Ky. Stave-bending machine | 501,697 | July 18 | 1854 | 461 | 64 | 368 |
| Sommer, Charles, assignor to W. Sommer, Sloan's Valley, Ky. Machine for dressing bucked staves | 504,461 | Sept. 5 | 238 | 63 | 64 | 1315 |
| Sommer, John. (See Sommer, Peter, J., and P. W.) | | | | | | |
| Sommer, Peter, J., and P. W., Tremont, Ill. Wire fence | 503,219 | Aug. 15 | 1646 | 404 | 64 | 896 |
| Sommer, Peter W. (See Sommer, Peter, J., and P. W.) | | | | | | |
| Sommer, Regina. (See Sommer, Charles, assignor.) | | | | | | |
| Sommer, William. (See Sommer, Charles, assignor.) | | | | | | |
| Somner, August C. (See Fraser, John, assignor.) | | | | | | |
| Sorlien, Ole H. (See Rice, Charles L., assignor.) | | | | | | |
| Sowell, Joseph L., Althouse, Oreg. Car-coupling | 500,624 | July 4 | 140 | 37 | 64 | 27 |
| Sowers, Emory B., Westville, Ohio. Flying-machine | 504,631 | Sept. 5 | 510 | 132 | 64 | 1366 |
| Spahmer, Adam A., Jr., assignor, by mesne assignments, of one-half to F. Skinner and A. Gieseeke, Philadelphia, Pa. Metallic roofing-tile | 503,173 | Aug. 15 | 1571 | 387 | 64 | 893 |
| Spangler, Albert E., Syracuse, N. Y. Vehicle-tire | 504,819 | Sept. 12 | 846 | 217 | 64 | 1442 |
| Sparks, Charles H., St. Louis, Mo. Electric jail | 502,325 | Aug. 1 | 122 | 28 | 64 | 568 |
| Sparks, William E., assignor to Sargent & Company, New Haven, Conn. Lock | 502,937 | Aug. 8 | 1185 | 292 | 64 | 799 |
| Sparr, Benjamin F. and M. F., Brooklyn, N. Y. Rail-fastening | 503,442 | Aug. 15 | 1904 | 495 | 64 | 959 |
| Sparr, Millard F. (See Sparr, Benjamin F. and M. F.) | | | | | | |
| Spaull, Barnard A., London, England. Apparatus for the manufacture of glass bottles | 503,220 | Aug. 15 | 1647 | {404 405} | 64 | 897 |
| Speaker, Charles E., Louisville, Ky. Tobacco and packing box | 502,836 | Aug. 8 | 1011 | 246 | 64 | 767 |
| Speed, Francis M., San Francisco, Cal. Pipe-machine | 503,102 | Aug. 8 | 1442 | 355 | 64 | 846 |
| Speer, William W., Pittsburg, Pa. Making wheels | 505,619 | Sept. 26 | 2188 | 553 | 64 | 1752 |
| Spencer, John S., New York, N. Y. Frame for spectacles | 502,782 | Aug. 8 | 920 | 224 | 64 | 750 |
| Spencer, Nathaniel W., Centralia, Ill. Spark-arrester | 503,174 | Aug. 15 | 1573 | 387 | 64 | 883 |
| Spencer, Theodore, Cambridge, Mass. Station apparatus for telephonic and telegraphic circuits | 501,472 | July 11 | 1491 | 376 | 64 | 987 |
| Spencer, Theodore, Cambridge, assignor to American Bell Telephone Company, Boston, Mass. Electric annunciator | 502,472 | Aug. 1 | 373 | 89 | 64 | 635 |
| Spencer, Theodore, Cambridge, assignor to American Bell Telephone Company, Boston, Mass. Telephone-circuit | 505,730 | Sept. 26 | 2201 | 604 | 64 | 1758 |
| Spencer, Thomas, Philadelphia, Pa. Electric-arc-lighting system | 504,672 | Sept. 5 | 511 | 133 | 64 | 1367 |
| Sperl, Antonin, Los Angeles, Cal. Forging-hammer | 500,970 | July 4 | 690 | 181 | 64 | 126 |
| Sperry Electric Railway Company. (See Sperry, Elmer A., assignor.) | | | | | | |
| Sperry, Elmer A., Chicago, Ill., assignor to Sperry Electric Railway Company, Cleveland, Ohio. Revolving armature for electric machines | 501,194 | July 11 | 1057 | 267 | 64 | 907 |
| Sperry, Elmer A., Chicago, Ill., assignor to Sperry Electric Railway Company, Cleveland, Ohio. Electric locomotive | 501,195 | July 11 | 1059 | 268 | 64 | 907 |
| Sperry, Elmer A., Chicago, Ill., assignor to Sperry Electric Railway Company, Cleveland, Ohio. Electric-railway trolley | 501,968 | July 25 | 2291 | 573 | 64 | 460 |
| Sperry, Elmer A., Chicago, Ill., assignor to Sperry Electric Railway Company, Cleveland, Ohio. Electric locomotive | 502,020 | July 25 | 2373 | {596 597} | 64 | 476 |
| Sperry, Elmer A., Chicago, Ill., assignor to Sperry Electric Railway Company, Cleveland, Ohio. Trolley-wire switch | 503,443 | Aug. 15 | 1995 | 495 | 64 | 950 |
| Spery, Charles F., Hermann, assignor to W. J. Giessler, A. Kilpatrick, and F. J. Hunleth, St. Louis, Mo. Slicer and grater | 503,972 | Aug. 15 | 1725 | 425 | 64 | 910 |
| Spindler, Charles, Brooklyn, assignor to Wittemann Brothers, New York, N. Y. Treadle-motion for rotary shafts | 501,902 | July 18 | 2185 | 543 | 64 | 425 |
| Splann, John, Athens, Pa. Ladder | 501,378 | July 11 | 1367 | 341 | 64 | 261 |
| Spong, James O., London, England. Ice-cream freezer | 505,731 | Sept. 26 | 2205 | 605 | 64 | 1758 |
| Spooner, Benjamin F., Orange, Tex. Saw-templet | 503,010 | Aug. 8 | 1302 | {318 319} | 64 | 819 |
| Sprague, Austin V. M., Rochester, N. Y., assignor to Sprague-Schuyler Manufacturing Company, of New Jersey. Laundry-drier | 500,625 | July 4 | 141 | 37, 38 | 64 | 28 |
| Sprague Electric Railway and Motor Company. (See Sprague and O'Shaughnessy, assignors.) | | | | | | |
| Sprague, Frank J., and P. F. O'Shaughnessy, assignors to Sprague Electric Railway and Motor Company, New York, N. Y. Electric-railway trolley | 504,255 | Aug. 29 | 3314 | {928 929} | 64 | 1238 |
| Sprague-Schuyler Manufacturing Company. (See Sprague, Austin V. M., assignor.) | | | | | | |
| Sprang, Frederick H., London, England. Pneumatic tire | 504,793 | Sept. 12 | 799 | 203 | 64 | 1433 |
| Sprecher, David, Richview, Ill. Car-coupling | 503,175 | Aug. 15 | 1574 | 388 | 64 | 884 |
| Spriegel, Hermann, Königsberg, Germany. Bottle-stopper | 503,333 | Aug. 15 | 1639 | 456 | 64 | 930 |
| Springer, Stephen H., Des Moines, Iowa. Car coupling | 501,592 | July 18 | 1679 | 419 | 64 | 338 |
| Springer, William N., Fortville, Ind. Thrashing-machine | 502,473 | Aug. 1 | 377 | 89, 90 | 64 | 635 |
| Spurgin, John H., Carthage, Mo. Band-cutter and feeder for thrashing-machines | 502,502 | Aug. 1 | 571 | {137 138} | 64 | 671 |
| Squires, Oland W., New York, N. Y. Bicycle | 504,633 | Sept. 5 | 513 | 133 | 64 | 1367 |
| St. Croix Manufacturing Company. (See Hall, Eva J., assignor.) | | | | | | |
| St. Cyr, Theodore Z. H., assignor to Westfield Plate Company, Thompsonville, Conn. Composition of matter for coating with silver | 503,358 | Aug. 15 | 1679 | | 64 | 938 |
| St. George, Percival W., Montreal, Canada. Dirt or garbage receptacle | 502,505 | Aug. 1 | 360 | 139 | 64 | 673 |
| St. John, Garland B., Kalamazoo, Mich. Fifth-wheel | 503,177 | Aug. 15 | 1578 | 388 | 64 | 894 |
| St. Louis Stamping Company. (See Jenkins, John, assignor.) | | | | | | |
| St. Louis Stamping Company. (See Niedringhaus and Wettengel, assignors.) | | | | | | |
| St. Louis, Thomas J., Cadott, Wis. Method of and machine for finishing saws | 501,742 | July 18 | 1934 | 478 | 64 | 392 |
| Staab, William Munich, Germany. Mattress | 504,443 | Sept. 5 | 212 | 55 | 64 | 1310 |
| Staats, Gustav F., *et al.* (See Pieper, Herman H., assignor.) | | | | | | |
| Staats, William H., assignor of one-half to J. F. Griffin, Chicago, Ill. Coin-tray | 504,684 | Sept. 5 | 608 | {155 156} | 64 | 1385 |
| Stackpole, Charles F., Lynn, assignor of one-fourth to J. M. Schofield, Boston, Mass. Leather stretching and softening machine | 501,503 | July 18 | 1680 | {419 420} | 64 | 339 |
| Stafford, Ezra H., and F. Field, Grand Rapids, Mich. Letter-file | 503,915 | Aug. 22 | 2746 | 698 | 64 | 1115 |
| Staley, George, assignor of one-half to C. H. Mason, Versailles, Mo. Paper-bag holder | 502,783 | Aug. 8 | 921 | 234 | 64 | 750 |
| Stanbrough, Rufus G., New York, N. Y. Dental disk and carrier | 503,258 | Aug. 15 | 1705 | 419 | 64 | 907 |
| Stanbrough, Rufus G., New York, N. Y. Dental-disk holder | 505,490 | Sept. 26 | 1932 | 498 | 64 | 1674 |



| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drg. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Standard Cartridge Company. (See Hisey, Charles S., assignor.) | | | | | | |
| Standard Cartridge Company. (See Hunter, George D., assignor.) | | | | | | |
| Standard Caster and Wheel Company. (See Hoffmann, Ernest G., assignor.) | | | | | | |
| Standard Elevator Company. (See Francis, George T., assignor.) | | | | | | |
| Standard Elevator Company *et al.* (See Forslund, Hugo W., assignor.) | | | | | | |
| Standard Heater Company. (See Beazley, Joseph O., assignor.) | | | | | | |
| Standard Manufacturing Company. (See Henn, Edwin C., assignor.) | | | | | | |
| Standard Underground Cable Company. (See Barrett, John A., assignor.) | | | | | | |
| Stander, Peter, Belleville, Ill. Sewer-trap | 505,302 | Sept. 19 | 1635 | 422 | 64 | 1604 |
| Standish, Barney H., Evansville, Wis. Electric belt | 501,849 | July 18 | 2093 | 517 | 64 | 410 |
| Standish, Philander H., St. Mary's, Ohio. Furnace for heating chain-link blanks, &c., for welding | 502,593 | Aug. 1 | 574 | 138 | 64 | 671 |
| Standish, Philander H., St. Mary's, Ohio. Furnace for heating chain-links | 502,594 | Aug. 1 | 577 | 139 | 64 | 672 |
| Stanley, Edward, Bridgeport, Pa. Method of and apparatus for folding paper bags | 503,810 | Aug. 22 | 2595 | {648 649} | 64 | 1086 |
| Stanley, Frank F., *et al.*, trustees. (See Tobey, Franklin O., assignor.) | | | | | | |
| Stanley, James W., Oakland, Cal. Injector | 500,677 | July 4 | 236 | 62 | 64 | 45 |
| Stanley Laboratory Company. (See Chesney, Cummings C., assignor.) | | | | | | |
| Stanley, Lucius T., Brooklyn, N. Y., assignor to Cutter Electrical and Manufacturing Company, Philadelphia, Pa. Electric switch | 501,450 | July 11 | 1464 | 367 | 64 | 282 |
| Stanley Manufacturing Company. (See Hildreth, William O., assignor.) | | | | | | |
| Stanley, Reginald, Nuneaton, England. Tunneling or mining machine | 504,179 | Aug. 29 | 3186 | {796 797} | 64 | 1215 |
| Stanley, Reginald, Nuneaton, England. Tunneling or mining machine | 504,180 | Aug. 29 | 3193 | 797 | 64 | 1216 |
| Stanley, Reginald, Nuneaton, England. Tunneling-machine | 504,181 | Aug. 29 | 3197 | 797 | 64 | 1217 |
| Stanley, Robert L., Somerville, assignor of one-half to F. E. Whitney, Melrose, Mass. Chuck for lathes | 504,285 | Aug. 29 | 3358 | 839 | 64 | 1247 |
| Stanley Rule and Level Company. (See Traut, Justus A., assignor.) | | | | | | |
| Stanley, William, Jr., Great Barrington, Mass., assignor, by mesne assignments, to Westinghouse Electric and Manufacturing Company, Pittsburg, Pa. System of electrical conversion and distribution | 503,622 | Aug. 22 | 2312 | 577 | 64 | 1031 |
| Stanley, William S., Washington, D. C. Cabinet | 503,444 | Aug. 15 | 1997 | 495 | 64 | 959 |
| Stanley Works. (See Corsaden and Holland, assignors.) | | | | | | |
| Stanley Works. (See Hart, William H., assignor.) | | | | | | |
| Stansbury, Fremont. (See McAneeny and Stansbury.) | | | | | | |
| Stanton, Elmer R. (See Bryce and Stanton.) | | | | | | |
| Stanton, Nelson F., Bruin, Pa. Slat-and-wire-fence machine | 504,371 | Sept. 5 | 94 | 24 | 64 | 1288 |
| Stanton, Gilbert A., Long Lake, N. Y., assignor of one-fourth to G. E. Terry, Waterbury, Conn. Gaff-hook | 503,176 | Aug. 15 | 1577 | 388 | 64 | 894 |
| Star Brass Manufacturing Company. (See Winther, Charles A. G., assignor.) | | | | | | |
| Stark, Andrew, Chicago, Ill., assignor of one-half to Warder, Bushnell & Glessner Company, Chicago, Ill., and Springfield, Ohio. Butt-adjuster for grain-binders | 502,210 | July 25 | 2680 | {676 677} | 64 | 535 |
| Stark, Andrew, Chicago, Ill., assignor of one-half to Warder, Bushnell & Glessner Company, Chicago, Ill., and Springfield, Ohio. Grain-binder | 502,540 | Aug. 1 | 493 | {117 118 119} | 64 | 657 |
| Stark, John, Waltham, assignor to R. E. Robbins, Boston, Mass., and T. M. Avery, Chicago, Ill., trustees. Stem winding and setting watch | 503,502 | Aug. 15 | 2092 | 522 | 64 | 976 |
| Starkweather, Oakley B., Decatur, Ill. Adjustable shade-holder | 505,681 | Sept. 26 | 2311 | 587 | 64 | 1744 |
| Starkweather, Gleason F. (See Meyer and Starkweather.) | | | | | | |
| Starkweather, Gleason F., assignor to Paige Iron Works, Chicago, Ill. Spring-bolt and box | 505,491 | Sept. 26 | 1934 | 498 | 64 | 1674 |
| Starley, John M. and W., Coventry, England. Construction of cycles | 500,971 | July 4 | 692 | 182 | 64 | 126 |
| Starley, William. (See Starley, John M. and W.) | | | | | | |
| Starr, William H., Liberty, Nebr. Motor | 503,623 | Aug. 22 | 2314 | 577 | 64 | 1031 |
| Stathem, Isaac H., New Orleans, La. Pen or pencil holder | 503,011 | Aug. 8 | 1304 | 319 | 64 | 820 |
| Stauffer, J. R. (See Fischer, John, assignor.) | | | | | | |
| Stayner, Edward G., Halifax, Canada. Skate | 503,624 | Aug. 22 | 2315 | 577 | 64 | 1031 |
| Stead, George E., Leeds, England. Conveyer-belt | 501,218 | July 11 | 1091 | 277 | 64 | 214 |
| Stearns, Albyn D., assignor to Frederick Stearns & Company, Detroit, Mich. Apparatus for holding and dipping pills | 504,505 | Sept. 5 | 325 | 83 | 64 | 1330 |
| Stearns, James B. (See Nightingale and Stearns.) | | | | | | |
| Stebbins, James H., Jr., assignor to J. H. and C. H. Campbell, New York, N. Y. Treating butter | 505,137 | Sept. 19 | 1371 | 352 | 64 | 1555 |
| Stebbins, Milton W., assignor of one-half to E. P. Lynch, Waterbury, Conn. Finger-moistener | 503,995 | Aug. 29 | 2896 | 725 | 64 | 1160 |
| Stech, Johann T. C., Lübeck, assignor to J. Sander, Hamburg, Germany. Manufacture of brooms, brushes, &c. | 501,219 | July 11 | 1092 | 277 | 64 | 215 |
| Stedman, William C. (See Stedman, William F. and W. C.) | | | | | | |
| Stedman, William F. and W. C., Boston, Mass.; said W. C. assignor to said William F. Stedman. Switch-actuator | 503,334 | Aug. 15 | 1639 | 456 | 64 | 930 |
| Stedman, William H. (See Morrow and Stedman.) | | | | | | |
| Steel Edge Stamping and Retinning Company. (See Hollander, Alva L., assignor.) | | | | | | |
| Steel, Robert, assignor to W. J. Moore, Philadelphia, Pa. Wheeled vehicle | 504,685 | Sept. 5 | 610 | 156 | 64 | 1385 |
| Steelbrooke, Joseph W., Holyoke, Mass. Cloth-scouring machine | 500,626 | July 4 | 143 | 38 | 64 | 28 |
| Steese, George F., assignor to W. H. Newton, Cleveland, Ohio. Store-stool | 505,138 | Sept. 19 | 1373 | 352 | 64 | 1555 |
| Steeta, Louis, New York, and U. Bohren, Brooklyn, N. Y. Blind-slat tenon | 501,810 | July 18 | 2042 | 502 | 64 | 400 |
| Steffey, William E., assignor of one-half to G. H. Hardiman, San Diego, Cal. Car-coupling | 503,754 | Aug. 22 | 2529 | 627 | 64 | 1071 |
| Stein, Arthur, Schönpriesen, near Aussig, Austria-Hungary. Car-coupling | 503,503 | Aug. 15 | 2093 | {522 523 524} | 64 | 976 |
| Stein, Valentine, New York, N. Y. Work-guide for saws | 500,972 | July 4 | 694 | 182 | 64 | 126 |
| Steinbart, Alfred. (See Uehling and Steinbart.) | | | | | | |
| Steinmann, Theodor, Marburg, Austria-Hungary. Air-ship | 501,111 | July 11 | 931 | {238 239} | 64 | 184 |
| Steiner, Josef, Brooklyn, N. Y., assignor to Western Electric Company, Chicago, Ill. Telephone-switch | 505,070 | Sept. 12 | 1302 | 323 | 64 | 1522 |
| Steiner, Sidney W., Norristown, Pa. Non-conducting composition of matter for covering steam pipes, boilers, or other surfaces | 505,426 | Sept. 19 | 1840 | | 64 | 1643 |
| Steiner, William R., Frederick, Md. Corn-harvester | 505,492 | Sept. 26 | 1935 | {498 499 500} | 64 | 1674 |
| Stelwagon, William H., Philadelphia, Pa. Tar or petroleum still | 503,996 | Aug. 29 | 2897 | 725 | 64 | 1160 |
| Stephens, Samuel D., West Shoals, Ind. Cable arch support | 501,969 | July 25 | 2292 | 574 | 64 | 481 |
| Stephenson, Adolf, and J. Backstrom Stromsburg, Nebr. Electric belt | 503,811 | Aug. 22 | 2598 | 649 | 64 | 1086 |
| Stephenson, Charles H., Lynn, Mass. Foot-bath attachment for bath-tubs | 501,304 | July 11 | 1217 | 308 | 64 | 236 |

*Alphabetical list of patentees, July to September, inclusive*—Continued.

| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drg. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Sterling Car Heating and Lighting Company. (See Hiscox, Gardner D., assignor.) | | | | | | |
| Sterling Car Heating and Lighting Company. (See Kennelly, John J., assignor.) | | | | | | |
| Sterling, Charles A., East Orange, N. J., and J. E. Wilson, New York, N. Y.; said Wilson assignor to said Sterling. Machine for separating coiled bars or rods | 505,071 | Sept. 12 | 1963 | 324, 325 | 64 | 1502 |
| Sterling, Guy, North Yakima, Wash. Conduit | 502,474 | Aug. 1 | 378 | 90 | 64 | 636 |
| Sternberg, John C. M. (See Hesse and Sternberg.) | | | | | | |
| Stetson, A. B., *et al.* (See Hayward, Jacob L., assignor.) | | | | | | |
| Stevens, Arthur L., Philadelphia, Pa., assignor to Diamond Paper Bag Company, Wilmington, Del. Paper-bag machine | 503,784 | Aug. 8 | 923 | 225 | 64 | 750 |
| Stevens, Austin, Brooklyn, N. Y. Pulverizer | 502,021 | July 25 | 2375 | 597 | 64 | 477 |
| Stevens, Calvin A. (See Collins, Caleb G., assignor.) | | | | | | |
| Stevens, Charles E., Hill City, S. D. Safety-pin | 504,634 | Sept. 5 | 514 | 133 | 64 | 1367 |
| Stevens, Fred A., Sacramento, Cal. Locomotive-headlight cover | 504,949 | Sept. 12 | 1052 | 270 | 64 | 1492 |
| Stevens, George W., New Orleans, La. Automatic railway-switch | 502,475 | Aug. 1 | 376 | 90 | 64 | 636 |
| Stevens, Henry H., Marengo, Ill. Clip for holding wheel-tires | 504,117 | Aug. 29 | 3063 | 772 | 64 | 1166 |
| Stevens, James F., and W. V. Breene, Port Chester, N. Y. Running-gear | 505,139 | Sept. 19 | 1374 | 352 | 64 | 1556 |
| Stevenson, James H., Alliance, Mo. Steering mechanism for traction-engines | 504,894 | Sept. 12 | 961 | 248 | 64 | 1465 |
| Stevens, John J., Galt, Canada. Attachment for drilling-machines | 503,012 | Aug. 8 | 1304 | 319 | 64 | 820 |
| Stevens, Louis V., Buffalo, N. Y., and J. R. Mott, Cleveland, Ohio. Railway-switch | 501,112 | July 11 | 939 | 239 | 64 | 184 |
| Stevens, Truman E. (See Wulff, John W., assignor.) | | | | | | |
| Steward, John F., Chicago, Ill. Making twine from paper | 500,627 | July 4 | 144 | 38 | 64 | 28 |
| Steward, John F., Chicago, Ill. Twine | 501,970 | July 25 | 2293 | ..... | 64 | 461 |
| Steward, John F., Chicago, Ill. Method of and machinery for making twine | 501,971 | July 25 | 2294 | 574 | 64 | 461 |
| Steward, John F., Chicago, Ill. Feed-regulator for twine-machines | 502,326 | Aug. 1 | 125 | 28 | 64 | 568 |
| Steward, John F., Chicago, Ill. Automatic grain-binder | 504,372 | Sept. 5 | 97 | 24 | 64 | 1239 |
| Steward, John F., Chicago, Ill. Grain-binder | 504,373 | Sept. 5 | 99 | 25 | 64 | 1240 |
| Stewart, Henry, Canandaigua, N. Y. Abacus attachment for slates | 501,379 | July 11 | 1368 | 341 | 64 | 202 |
| Stewart, Jacob Q. (See Johnson, William T. S., assignor.) | | | | | | |
| Stewart, John, New York, N. Y. Check-punch | 505,577 | Sept. 26 | 2132 | 540 | 64 | 1711 |
| Stewart, John H., Danville, Va. Treadle | 502,683 | Aug. 1 | 747 | 179, 180 | 64 | 703 |
| Stewart & Mattson Manufacturing Company. (See Clamer, George F. S., assignor.) | | | | | | |
| Stewart, William D., *et al.* (See Christ, Jacob, assignor.) | | | | | | |
| Stewart, William M., Scurry, Tex. Nut-lock | 505,140 | Sept. 19 | 1375 | 352 | 64 | 1556 |
| Stiebel, Henry G., Jr. (See Langer, Gotthold, assignor.) | | | | | | |
| Stille, Oscar Q. (See Stille, Theodore J. and O. Q.) | | | | | | |
| Stille, Theodore J. and O. Q., St. Louis, Mo. Candlestick | 501,473 | July 11 | 1494 | 376 | 64 | 287 |
| Stillgebauer, Henry. (See Hoffstaetter and Stillgebauer.) | | | | | | |
| Stillman, Francis H., and C. Wigtel, Brooklyn, N. Y. Mechanism for bending plates | 504,310 | Aug. 29 | 3399 | 851, 852 | 64 | 1254 |
| Stimpson, Edwin B. (See McDonald, Alexander E., assignor.) | | | | | | |
| Stimpson, Edwin B., New York, N. Y. Eyeleting-machine | 502,327 | Aug. 1 | 128 | 29 | 64 | 588 |
| Stimpson, Edwin B., Brooklyn, N. Y. Leggin | 504,794 | Sept. 12 | 800 | 203 | 64 | 1433 |
| Stimpson, James, Baldwinville, Mass. Windmill | 502,785 | Aug. 8 | 927 | 225, 226 | 64 | 751 |
| Stimson, James, Watsonville, Cal. Bookcase | 504,192 | Aug. 29 | 2198 | 798 | 64 | 1217 |
| Stine, J. F. (See Mowry, Joseph B., assignor.) | | | | | | |
| Stitt, Louise G., Chicago, Ill. Skeleton waist | 503,916 | Aug. 22 | 2747 | 688 | 64 | 1116 |
| Stocking, Edgar L., Buffalo, N. Y. Lumber-loading jack | 503,375 | Aug. 15 | 1841 | 456 | 64 | 930 |
| Stollenwerk, Anton, *et al.* (See Schroeder, Conrad, assignor.) | | | | | | |
| Stoltenberg, Hermann A., Hollyrood, Kans. Feeding attachment for thrashing-machines | 504,950 | Sept. 12 | 1053 | 270 | 64 | 1493 |
| Stombaugh, John, Bricelon, Ohio. Land-anchor | 501,811 | July 18 | 2042 | 503 | 64 | 400 |
| Stone, Alonzo. (See Stone, Charles H. and A.) | | | | | | |
| Stone, Charles H. and A., assignors to themselves and J. W. Long, Ringgold, Tex. Rotary engine | 505,334 | Sept. 19 | 1679 | 433 | 64 | 1612 |
| Stone, Draper, Rochester, N. Y. Lubricator | 503,013 | Aug. 8 | 1305 | 320 | 64 | 820 |
| Stone, Frank. R., Middlebury, Vt. Portable bill board | 503,912 | Aug. 22 | 2590 | 649 | 64 | 1087 |
| Stone, Henrie D, assignor to Automatic Advertising Panorama Company, Boston, Mass. Advertising-wagon | 505,692 | Sept. 26 | 2311 | 587 | 64 | 1744 |
| Stone, Henry C., Kansas City, Mo., assignor to O. A. Stone, South Evanston, Ill. Dynamometer | 504,286 | Aug. 29 | 3350 | 840 | 64 | 1247 |
| Stone, Olive A. (See Stone, Henry C., assignor.) | | | | | | |
| Stone, Thomas B., assignor of two-thirds to C. C. and P. A. Smith, Campton, Pa. Cake or biscuit cutter | 501,903 | July 18 | 2187 | 543 | 64 | 426 |
| Stone, Thomas B., C. C. and P. A. Smith, Camptown, Pa. Broom-holder | 504,183 | Aug. 29 | 3199 | 798 | 64 | 1217 |
| Storey, Julius W., Dallas, Tex. Portable scale | 502,786 | Aug. 8 | 929 | 236 | 64 | 759 |
| Storle, Ole O., Milwaukee, Wis., assignor to William Deering & Company, Chicago, Ill. Reaper | 502,328 | Aug. 1 | 130 | 29, 30 | 64 | 589 |
| Storle, Ole O., Burlington, Wis., assignor to William Deering & Company, Chicago, Ill. Reaper | 502,329 | Aug. 1 | 132 | 30 | 64 | 589 |
| Storms, Delos W., Western, Nebr. Conveyer-belt for harvesters | 503,014 | Aug. 8 | 1307 | 320 | 64 | 820 |
| Storrs, Joseph W. (See Smith, Henry V., assignor.) | | | | | | |
| Story, John T., Buffalo, N. Y. Sheet-metal folder | 502,604 | Aug. 1 | 748 | 180 | 64 | 703 |
| Stough, Rex M., guardian. (See Mack, Carl F.) | | | | | | |
| Stover, Isaac S., *et al.* (See Bisel, Joseph J., assignor.) | | | | | | |
| Stow, George W., Binghamton, N. Y. Plow | 505,732 | Sept. 26 | 2286 | 565 | 64 | 1759 |
| Stowe, William J., Kansas City, assignor to Nixdorff-Krein Manufacturing Company, St. Louis, Mo. Whiffletree-hook | 504,688 | Sept. 5 | 611 | 156 | 64 | 1385 |
| Straight, George. (See Pettepher, Frank, assignor.) | | | | | | |
| Strait, William, Elmira, N. Y. Rake | 503,095 | Aug. 22 | 2318 | 578 | 64 | 1032 |
| Straker, Sidney, assignor to Central Cyclone Company, Limited, London, England. Pulverizing or disintegrating apparatus | 503,504 | Aug. 15 | 2096 | 534 | 64 | 977 |
| Strattou, John F., Brooklyn, N. Y. Fret for musical instruments | 501,743 | July 18 | 1936 | 479 | 64 | 382 |
| Stranch Bros. (See Bornhoeft, Edward, assignor.) | | | | | | |
| Strauss, Mark M., *et al.* (See Cosby, Anderson B., assignor.) | | | | | | |
| Strauss, Carl, New York, N. Y. Harmonica | 505,493 | Sept. 26 | 1938 | 500 | 64 | 1675 |
| Strauss, Joseph B., assignor of one-half to M. C. Weil, Cincinnati, Ohio. Electric hose-coupling | 500,822 | July 4 | 459 | 121 | 64 | 85 |
| Strauss, Sachs & Co. (See Hymas, Gustave, assignor.) | | | | | | |
| Streeper, Daniel H., Norristown, Pa. Device for thawing out frozen pipes, &c | 501,744 | July 18 | 1936 | 479 | 64 | 382 |
| Streeter, Lafayette P., Asbury Park, N. J. Tilting device for drawing-boards | 504,951 | Sept. 12 | 1056 | 271 | 64 | 1493 |
| Stribling, John V., Richland, assignor of one-half to J. D. Verner, Walhalla, S. C. Shutter-worker | 502,240 | July 25 | 2735 | 690 | 64 | 545 |
| Stroberger, Otto, Faribault, Minn. Cigar-glossing device | 500,823 | July 4 | 462 | 122 | 64 | 85 |



*Alphabetical list of patentees, July to September, inclusive*—Continued.

| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drg. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Strobridge Lithographing Company. (See Vine, James S., assignor.) | | | | | | |
| Stroh, Abraham, Freeland, Pa. Fire-grate | 504,635 | Sept. 5 | 515 | 133 | 64 | 1367 |
| Stromberg, Alfred, and A. Carlson, Chicago, Ill. Telephone apparatus | 504,636 | Sept. 5 | 517 | 134 | 64 | 1368 |
| Strong, Frederick M., Wheeling, W. Va. Cooking apparatus | 504,256 | Aug. 29 | 3317 | 829 | 64 | 1239 |
| Strong, Frederick S., and F. C. Mann, East Bridgewater, Mass. Auxiliary feed mechanism for cotton-seed linters | 503,997 | Aug. 29 | 2897 | 725 | 64 | 1160 |
| Strong, George S., New York, N. Y., assignor to J. N. Gamble, Cincinnati, Ohio. Field-magnet core for dynamos or motors | 505,539 | Sept. 26 | 2047 | 522 | 64 | 1694 |
| Strong, George S., New York, N. Y., assignor to J. N. Gamble, Cincinnati, Ohio. Forging-die | 505,540 | Sept. 26 | 2048 | 522 | 64 | 1694 |
| Strong, George S., New York, N. Y., assignor to J. N. Gamble, Cincinnati, Ohio. Forging and bending die | 505,541 | Sept. 26 | 2049 | 523 | 64 | 1694 |
| Strong, George S., New York, N. Y., assignor to J. N. Gamble, Daytona, Fla. Boiler | 505,542 | Sept. 26 | 2050 | 523 | 64 | 1694 |
| Strong, George S., New York, N. Y., assignor to J. N. Gamble, Daytona, Fla. Boiler | 505,543 | Sept. 26 | 2051 | 523, 524 | 64 | 1695 |
| Strong, William J. (See Hearne, John, assignor.) | | | | | | |
| Stuart, Charles B., Boston, Mass. Device for making fires draw, &c | 500,626 | July 4 | 145 | 38 | 64 | 29 |
| Stuart, Charles E., Piqua, Ohio. Sickle-grinder | 503,998 | Aug. 29 | 2898 | 726 | 64 | 1160 |
| Stuart, Herbert A., Bletchley, assignor of one-half to C. R. Binney, London, England. Engine operated by the explosion of mixtures of gas or hydrocarbon vapor and air | 502,837 | Aug. 8 | 1012 | 247 | 64 | 766 |
| Stuart, Tom E., Washington, D. C., assignor to Eagle Pencil Company, New York, N. Y. Automatic holder for pencil-leads, crayons, or other articles | 501,850 | July 18 | 2094 | 517 | 64 | 410 |
| Stubbe, Frederick H, assignor of one-half to J. C. Klatsl, New York, N. Y. Sandpaper-wheel | 505,683 | Sept. 26 | 2313 | 587 | 64 | 1744 |
| Suddoth, Alexander K., Memphis, Tenn. Apparatus for measuring proportional parts for mixtures | 502,596 | Aug. 1 | 581 | 139 | 64 | 673 |
| Stulp, Fred J., Muskegon, Mich. Water-gage | 501,544 | July 18 | 1602 | 403 | 64 | 323 |
| Stupakoff, Simon H., assignor of one-half to E. H. Goodman, Pittsburg, Pa. Manufacture of jaws for coupling-rods | 501,851 | July 18 | 2096 | 517, 518 | 64 | 410 |
| Stutz, Louis F., and J. A. Durnbaugh, Washington, D. C. Insect-screen or dust-arrester | 505,494 | Sept. 26 | 1938 | 500 | 64 | 1675 |
| Stuver, Stephen T., Puyallup, Wash. Window-shade supporter | 504,952 | Sept. 12 | 1056 | 271 | 64 | 1493 |
| Suess, Max, Chicago, Ill. Decorating glass by sand-blast | 504,543 | Sept. 5 | 385 | ..... | 64 | 1342 |
| Suhr, Robert B. (See Neal and Suhr.) | | | | | | |
| Sullivan, Daniel H., and W. H. Osborn, Rochester, N. Y. Car-brake | 502,476 | Aug. 1 | 379 | 91 | 64 | 636 |
| Sullivan, John, *et al.* (See Smith and Cassidy, assignors.) (Reissue.) | | | | | | |
| Sullivan Machinery Company. (See Ball, Albert, assignor.) | | | | | | |
| Sullivant, Lyne S., *et al.* (See Lawrence, William B., assignor.) (Reissue.) | | | | | | |
| Sumner, Charles O., Fairplay, Colo. Placer-mining machine | 505,684 | Sept. 26 | 2315 | 587, 588 | 64 | 1745 |
| Sun Vapor Street Light Company. (See Best, Clearmont V., assignor.) | | | | | | |
| Sunol Bicycle Company. (See Percy, Sidney H., assignor.) | | | | | | |
| Suppes, Maximilian M., Johnstown, Pa. Electric welding machine | 500,973 | July 4 | 695 | 182, 183 | 64 | 126 |
| Surgi, George E., New Orleans, La. Pile or timber protector and preserver | 500,678 | July 4 | 237 | 62 | 64 | 45 |
| Surtin, John H., assignor of one-third to R. McCulloch, St. Louis, Mo. Car-gong | 501,030 | July 4 | 778 | 204 | 64 | 142 |
| Surtin, John H., assignor of two-thirds to R. McCulloch and W. Sutton, St. Louis, Mo. Hand-shaft for car-brakes | 501,031 | July 4 | 780 | 204 | 64 | 142 |
| Susemihl, Francis G., assignor of one-half to A. Torrey, A. Barthel, and J. Whittemore, Detroit, Mich. Antifriction journal-bearing | 503,296 | Aug. 15 | 1770 | 437 | 64 | 918 |
| Susemihl, Theodore. (See Rammann and Susemihl.) | | | | | | |
| Sutherland, Alexander M., Orange, N. J. Gas apparatus | 501,698 | July 18 | 1856 | 461 | 64 | 369 |
| Sutton, George A., Brooklyn, N. Y. Wrapper for bank-bills | 503,777 | Aug. 22 | 2554 | 636 | 64 | 1078 |
| Sutton, Thomas D. (See Gibson and Sutton.) | | | | | | |
| Sutton, William, *et al.* (See Surtin, John H., assignor.) | | | | | | |
| Svenson, Johan V., Stockholm, Sweden. Burner for cooking-stoves or soldering apparatus | 500,781 | July 4 | 396 | 104 | 64 | 74 |
| Swager, Nelson, assignor to Norwegian Plow Company, Dubuque, Iowa. Sulky or riding plow. (Reissue) | 11,361 | Aug. 15 | 2205 | 551 | 64 | 997 |
| Swaim, Leander D., Foxville, Ill. Washing-machine | 505,613 | Sept. 26 | 2189 | 554 | 64 | 1722 |
| Swan, Henry C., Oshkosh, Wis. Shifting rail for vehicle-seats | 503,881 | Aug. 22 | 2610 | 674 | 64 | 1104 |
| Swan, Henry C., Oshkosh, Wis. Fifth-wheel | 503,917 | Aug. 22 | 2748 | 689 | 64 | 1116 |
| Swan, Henry G. (See Shurtz and Swan.) | | | | | | |
| Swan, William B., Seymour, Conn. Changeable-speed device for bicycles | 502,916 | Aug. 8 | 1137 | 280 | 64 | 791 |
| Swanburg, Joshua, Los Angeles, Cal. Fruit-picker | 501,032 | July 4 | 781 | 204, 205 | 64 | 142 |
| Swank, Arthur H., Fremont, Ohio. File for letters, bills, accounts, &c | 501,745 | July 18 | 1938 | 479 | 64 | 383 |
| Swank, John. (See McAneny and Stansbury, assignors.) | | | | | | |
| Swanson, Alfred, *et al.* (See Seger, Garret, assignor.) | | | | | | |
| Swanson, Andrew, *et al.* (See Seger, Garret, assignor.) | | | | | | |
| Swanson, Frank, *et al.* (See Seger, Garret, assignor.) | | | | | | |
| Swanson, Frank F., Gallipolis, Ohio. Lock and latch combined | 504,482 | Sept. 5 | 276 | 71 | 64 | 1222 |
| Swanson, Olof P., Joba, Ohio. Auger | 503,882 | Aug. 22 | 2691 | 674, 675 | 64 | 1104 |
| Swanson, Peter, *et al.* (See Seger, Garret, assignor.) | | | | | | |
| Swarts, Eli, and D. S. Beemer, Scranton, Pa. Automatic vehicle-brake | 501,545 | July 18 | 1603 | 403, 404 | 64 | 323 |
| Swarts, Samuel, Detroit, Mich. Bending-press | 500,974 | July 4 | 697 | 183 | 64 | 127 |
| Swayze, Caleb, Welland, Canada. Cement for nut-locks | 500,975 | July 4 | 698 | ..... | 64 | 127 |
| Swedlund, Erick J., Atwater, Minn. Bicycle-gear | 505,335 | Sept. 19 | 1681 | 433 | 64 | 1012 |
| Sweeney, John. (See Rhude, Alonso B., assignor.) | | | | | | |
| Sweeney, Peter A., Providence, R. I. Adjustable garment-holder | 505,578 | Sept. 26 | 2134 | 540 | 64 | 1712 |
| Sweet, Charles O. (See Regnell, Bigney, and Sweet.) | | | | | | |
| Sweet, Thomas, assignor of one-half to J. C. Ellison, Florence, Canada. Car-coupling | 503,999 | Aug. 29 | 2900 | 726 | 64 | 1160 |
| Swenson, Magnus, Fort Scott, Kans. Vacuum apparatus | 504,374 | Sept. 5 | 101 | 25, 26 | 64 | 1239 |
| Swigart, Frank W., assignor of two-thirds to T. A. Dranga and A. Brieger, Arroyo Grande, Cal. Buckle | 502,787 | Aug. 8 | 930 | 226 | 64 | 752 |
| Swigart, Frank W., assignor of two-thirds to T. A. Dranga and A. Brieger, Arroyo Grande, Cal. Protective buckle | 504,895 | Sept. 12 | 963 | 248 | 64 | 1465 |
| Swift, Frank E., Washington, Iowa. Brick-kiln furnace | 501,380 | July 11 | 1359 | 341, 342 | 64 | 202 |
| Swift, Oliver F., and W. Warwick, Buffalo, N. Y.; said Warwick assignor to said Swift. Register | 501,260 | July 11 | 1157 | 293 | 64 | 225 |
| Swindell, William, Allegheny, Pa. Furnace | 501,236 | July 11 | 1116 | 283, 284 | 64 | 216 |
| Swindell, William, Allegheny, Pa. Furnace | 504,118 | Aug. 29 | 3084 | 772 | 64 | 1166 |

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|---|---|---|---|---|---|---|
| Syme, Alexander, Glenwood, Wis. Hoop-bending machine | 505,614 | Sept. 26 | 2190 | 554 | 64 | 1722 |
| Synnestvedt, Paul, assignor to Crane Company, Chicago, Ill. Triple-valve mechanism | 504,139 | Aug. 29 | 3118 | 780 | 64 | 1201 |
| Synnestvedt, Paul, assignor to Crane Company, Chicago, Ill. Triple valve for fluid-pressure brakes | 505,686 | Sept. 26 | 2316 | 588 | 64 | 1745 |
| Syracuse Arms Company. (See Hollenbeck, Frank A., assignor.) | | | | | | |
| Syracuse Specialty Manufacturing Company. (See Latulip, Frederick, assignor.) (Reissue.) | | | | | | |
| Szczeniowski, Ignace v., and G. v. Piontkowski, Kapuscinni, Russia. Centrifugal machine | 500,782 | July 4 | 397 | 105 | 64 | 74 |
| Tabor Carriage Works. (See Tabor, Jesse U., assignor.) | | | | | | |
| Tabor, Jesse U., assignor to Tabor Carriage Works, Los Angeles, Cal. Canopy-top for vehicles | 505,544 | Sept. 26 | 2053 | 524 | 64 | 1695 |
| Tachan, Ludwig. (See Nicholas and Tachan.) | | | | | | |
| Taft, Willis P. (See McGuire and Beemer, assignors.) | | | | | | |
| Taggart, Thomas, *et al.* (See Dobbins and McKenney, assignors.) | | | | | | |
| Tainter, Silas B. (See Garretson and Tainter.) | | | | | | |
| Talbot, Vackson L., St. Paul, Minn. Rein-holder | 503,297 | Aug. 15 | 1771 | 437 | 64 | 918 |
| Talcott, Walter O. (See Budlong, Edward L., assignor.) | | | | | | |
| Talley, William A., Jessieville, assignor of one-half to J. S. Fulton, Hot Springs, Ark. Cotton chopper and scraper | 500,679 | July 4 | 238 | 63 | 64 | 45 |
| Tandy, John L., Columbia, Mo. Corn-thinner | 501,594 | July 18 | 1684 | 420 | 64 | 339 |
| Tangenberg, Christiaan, Chicago, Ill. Carpet-sweeper | 500,976 | July 4 | 699 | 183 | 64 | 127 |
| Tangney, Thomas, South Superior, Wis. Radiator | 503,813 | Aug. 22 | 2900 | 649, 650 | 64 | 1087 |
| Tangye, George, *et al.* (See Pinkney, Charles W., assignor.) | | | | | | |
| Tapley Machine Company. (See Loomer, Henry M., assignor.) | | | | | | |
| Taplin, Clarence A., Forestville, Conn. Lamp-burner | 503,755 | Aug. 22 | 2523 | 627 | 64 | 1072 |
| Tascher, John, Chicago, Ill. Bed-pan | 501,852 | July 18 | 2098 | 518 | 64 | 411 |
| Tassel, Julia E. von, Milwaukee, Wis. Educational appliance | 500,824 | July 4 | 463 | 122 | 64 | 85 |
| Tate, Christopher J. (See Smith and Tate.) | | | | | | |
| Tate, George E. (See Smith and Tate.) | | | | | | |
| Tate, Robert B., and J. C. Joseph, Malden, Mass. Pneumatic toy | 501,305 | July 11 | 1219 | 309 | 64 | 236 |
| Tatham, Edwin, London, England. Illuminating hydrocarbon gas | 502,642 | Aug. 1 | 659 | | 64 | 688 |
| Tatro, Joseph A., Beaver Falls, Pa. Machine for weaving wire bands or netting | 502,148 | July 25 | 2578 | 647, 648, 649 | 64 | 514 |
| Tauak, Berthold, Berlin, Germany. Treating feather fur | 505,141 | Sept. 19 | 1376 | ..... | 64 | 1556 |
| Taylor Burner Company. (See Taylor, William G., assignor.) | | | | | | |
| Taylor, Charles, Eccles, England. Keyhole-guide | 500,977 | July 4 | 700 | 183 | 64 | 127 |
| Taylor, Charles H., South Orange, N. J. Car-coupling | 504,637 | Sept. 5 | 519 | 134 | 64 | 1368 |
| Taylor, Christopher C., Rockingham, N. C. Combined planter and fertilizer-distributer | 501,113 | July 11 | 934 | 239 | 64 | 184 |
| Taylor, Edmund B., Lowell, Mass. Actuating mechanism for elevator-doors | 504,096 | Aug. 29 | 3049 | 763 | 64 | 1189 |
| Taylor, Ernest H. P., Waterbury, Conn. Bicycle-gear | 501,381 | July 11 | 1370 | 342 | 64 | 262 |
| Taylor, Frederick. (See White, Albert, assignor.) | | | | | | |
| Taylor, Frederick, Lowell, Mass. Whip-hanger | 501,196 | July 11 | 1061 | 268 | 64 | 208 |
| Taylor, Frederick, Lowell, Mass. Hook | 501,197 | July 11 | 1062 | 268 | 64 | 208 |
| Taylor, Frederick, Lowell, Mass. Hook | 501,198 | July 11 | 1062 | 269 | 64 | 209 |
| Taylor, Frederick, Lowell, Mass. Coat and hat hook | 505,336 | Sept. 19 | 1683 | 434 | 64 | 1613 |
| Taylor, Frederick, Lowell, Mass. Coat and hat hook | 505,337 | Sept. 19 | 1683 | 434 | 64 | 1613 |
| Taylor, Harris, Whitewright, Tex. Nut-lock | 503,065 | Aug. 8 | 1379 | 341 | 64 | 834 |
| Taylor, James P., Fort Worth, Tex. Coin-controlled apparatus | 501,853 | July 18 | 2099 | 518 | 64 | 411 |
| Taylor, John W., and G. W. Walters, Cape Girardeau, Mo. Gate | 505,009 | Sept. 12 | 1155 | 286 | 64 | 1502 |
| Taylor, Newton W. (See Campbell, Henry H., assignor.) | | | | | | |
| Taylor, William B., Glenmore, Ga. Apparatus for washing glasses | 502,868 | Aug. 8 | 1057 | 260 | 64 | 776 |
| Taylor, William G., Hulton, assignor to Taylor Burner Company, Limited, Pittsburg, Pa. Natural-gas burner | 500,694 | July 4 | 260 | 70, 71 | 64 | 49 |
| Teate, Thomas A., Waukeenah, assignor of one-half to G. W. Saxon, Tallahassee, Fla. Fly-trap | 502,056 | July 25 | 2433 | 612 | 64 | 487 |
| Teed, Oliver F., assignor of one-half to W. H. Glore, Covington, Ky. Hydraulic motor | 503,015 | Aug. 8 | 1368 | 320 | 64 | 829 |
| Teeguarden, Freeman M., assignor to Chief Manufacturing Company, Colfax, Ind. Sawing-machine | 502,838 | Aug. 8 | 1013 | 347 | 64 | 768 |
| Teeter, Jacob, Hagerstown, Ind. Mail-crane | 503,221 | Aug. 15 | 1651 | 405 | 64 | 897 |
| Telfer, John C., Kansas City, Mo. Compound railway-rail | 500,825 | July 4 | 464 | 122 | 64 | 85 |
| Temmel, Richard, Berlin, Germany. Belting | 505,149 | Sept. 19 | 1377 | 333 | 64 | 1556 |
| Temperley, Joseph, Reigate, England. Elevated carrier | 504,257 | Aug. 29 | 3318 | 829 | 64 | 1239 |
| Templin, James L. (See Templin, John W. and J. L.) | | | | | | |
| Templin, John W., Marion, and J. L. Templin, Kokomo, assignors to J. G. Templin & Sons, Marion, Ind. Valve mechanism for steam-pumps | 503,683 | Aug. 22 | 2691 | 675 | 64 | 1104 |
| Templin & Sons, J. G. (See Templin, John W. and J. L., assignors.) | | | | | | |
| Terrell, Henry D., Covington, Ga. Heel-sweep for plows | 504,375 | Sept. 5 | 103 | 26 | 64 | 1290 |
| Terrell, Herbert L. (See Archbold, George, assignor.) | | | | | | |
| Terry, Eugene, assignor to S. Grant, Ithaca, N. Y. Type-writing machine | 502,685 | Aug. 1 | 750 | 180 | 64 | 704 |
| Terry, George E. (See Stanton, Gilbert A., assignor.) | | | | | | |
| Terstegen, Fred, Elizabeth, N. J. Repeating mechanism for timepieces | 502,917 | Aug. 8 | 1138 | 291 | 64 | 791 |
| Terstegen, Fred, Elizabeth, N. J. Repeating mechanism for timepieces | 502,918 | Aug. 8 | 1145 | 281, 282 | 64 | 792 |
| Terwilliger, E. J., *et al.* (See Dahl, Alfred, assignor.) | | | | | | |
| Teesen, Ewald, Rostock, Germany. Manufacturing elastic glue or gelatine | 505,615 | Sept. 26 | 2192 | ..... | 64 | 1723 |
| Teufel, George W., Philadelphia, Pa. Veterinary tooth-cutter | 503,298 | Aug. 15 | 1772 | 438 | 64 | 918 |
| Tew, John W., Rome, Ga., and J. D. Riggs, Selma, Ala. Switch | 502,149 | July 25 | 2581 | 649 | 64 | 515 |
| Texas Invention Company. (See Franklin, Edward A., assignor.) | | | | | | |
| Thacher, George H., Albany, N. Y. Oar-propelled ice-boat | 500,826 | July 4 | 466 | 123 | 64 | 86 |
| Thacher, John B., and E. C. Fasoldt, Albany, N. Y. Air-gun | 504,820 | Sept. 12 | 846 | 217 | 64 | 1442 |
| Thalacker, Carl, Charlottenburg, assignor to Siemens & Halske, Berlin, Germany. Electric safety-fuse | 502,541 | Aug. 1 | 501 | 120 | 64 | 652 |
| Tharp, John W. (See Cohen and Tharp.) | | | | | | |
| That Manufacturing Company. (See Allen, Dwight, assignor.) | | | | | | |
| Thatcher, James A., Mattoon, Ill. Apparatus for closing switches | 501,382 | July 11 | 1372 | 342, 343 | 64 | 263 |
| Thayer, George W. (See Grots, Charles, assignor.) | | | | | | |
| Thayer, William H., Melrose, Mass. Vapor-burning stove | 505,643 | Sept. 26 | 2248 | 569, 570 | 64 | 1733 |
| Therye, Charles, and A. Oblasser, Paris, France. Secondary electric battery | 500,978 | July 4 | 701 | 184 | 64 | 128 |
| Therye, Charles, and A. Oblasser, Paris, France. Box for secondary batteries, electric cells, &c | 502,643 | Aug. 1 | 660 | 160 | 64 | 688 |



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|---|---|---|---|---|---|---|
| Theurer, Jacob F., Milwaukee, Wis., assignor to Universal Carbonating Company, Newark, N. J. Apparatus for charging liquids with carbonic-acid gas | 505,239 | Sept. 19 | 1522 | 398 | 64 | 1583 |
| Theurer, Jacob F., Milwaukee, Wis., assignor to Universal Carbonating Company, Newark, N. J. Apparatus for charging liquids with carbonic-acid gas | 505,240 | Sept. 19 | 1525 | 398 | 64 | 1583 |
| Thiel, Charles P. R., and M. M. Aust, Lawrence, Mass. Machine for grinding thread-cutting tools | 504,000 | Aug. 29 | 2902 | 726, 727 | 64 | 1161 |
| Thom, David, Watford, Canada. Riding-plow | 502,106 | July 25 | 2512 | 630 | 64 | 502 |
| Thomas, Abner D., assignor to Thomas Manufacturing Company, Little Rock, Ark. Method of and apparatus for delinting cotton-seed | 503,103 | Aug. 8 | 1443 | 355, 356 | 64 | 846 |
| Thomas, Abner D., assignor to Thomas Manufacturing Company, Little Rock, Ark. Apparatus for delinting cotton-seed | 503,104 | Aug. 8 | 1446 | 356 | 64 | 846 |
| Thomas, Albert D., assignor to H. O. Whitney, Keokuk, Iowa. Brick-machine | 504,141 | Aug. 29 | 3103 | 781 | 64 | 1202 |
| Thomas, Almer B., Hardwick, Vt. Handle for brooms | 501,303 | July 11 | 1374 | 343 | 64 | 263 |
| Thomas, Benjamin F., assignor of one-half to P. Ray, Camden, Ind. Fence-post | 501,747 | July 18 | 1940 | 480 | 64 | 383 |
| Thomas, Edward W. (See Cloudman, Josiah D., assignor.) | | | | | | |
| Thomas, George. (See Ellison and Unsworth, assignors.) | | | | | | |
| Thomas, George L., Brooklyn, N. Y. Window-ventilator for railway-cars | 502,919 | Aug. 8 | 1153 | 292 | 64 | 794 |
| Thomas, George L., Brooklyn, N. Y., and E. C. Seward, Montclair, N. J., assignors to said Thomas. Railway signal system | 500,827 | July 4 | 469 | 123, 124 | 64 | 86 |
| Thomas, Horace S., Elmira, N. Y. Pump | 504,140 | Aug. 29 | 3121 | 780, 781 | 64 | 1202 |
| Thomas, James E., and E. P. Grow, Bay City, Mich. Apparatus for aerating distilled water | 502,408 | Aug. 1 | 267 | 63 | 64 | 615 |
| Thomas, James E., and E. P. Grow, Bay City, Mich. Aerating distilled water | 502,409 | Aug. 1 | 269 | 64 | 64 | 615 |
| Thomas, John D., Scranton, Pa. Wire-splicer | 504,638 | Sept. 5 | 521 | 134 | 64 | 1368 |
| Thomas, John H., Springfield, Ohio. Disk harrow | 503,178 | Aug. 15 | 1579 | 388 | 64 | 885 |
| Thomas Manufacturing Company. (See Thomas, Abner D., assignor.) | | | | | | |
| Thomas, Richard B., Lydbrook, England. Dusting metal plates | 501,746 | July 18 | 1940 | 480 | 64 | 383 |
| Thomas, William H., Jenkintown, Pa. Fastening for tool-handles, &c | 502,107 | July 25 | 2514 | 631 | 64 | 502 |
| Thomason, Edwin R., San Francisco, Cal. Apparatus for reducing bituminous rock | 502,211 | July 25 | 2681 | 677 | 64 | 535 |
| Thompson & Bushnell Company. (See Thompson, Richard, assignor.) | | | | | | |
| Thompson, Charles, *et al.* (See Todd, Matthew, assignor.) | | | | | | |
| Thompson, Frederick L., deceased, Neligh, Nebr., M. I. Thompson, administratrix. Buckle-shield | 502,057 | July 25 | 2434 | 612 | 64 | 487 |
| Thompson, Isaac F., assignor of one-half to W. L. Palmer, San Francisco, Cal. Clutch mechanism | 505,257 | Sept. 19 | 1550 | 404 | 64 | 1588 |
| Thompson, James K., Leeds, England, assignor of two-thirds to C. F. Jahn, Pittsburg, Pa. Furnace | 505,143 | Sept. 19 | 1378 | 353, 354 | 64 | 1556 |
| Thompson, James K., Leeds, England, assignor of two-thirds to C. F. Jahn, Pittsburg, Pa. Boiler-furnace | 505,144 | Sept. 19 | 1382 | 354 | 64 | 1557 |
| Thompson, John, assignor to Frey-Sheckler Company, Bucyrus, Ohio. Grinding-mill | 504,761 | Sept. 12 | 744 | 185 | 64 | 1424 |
| Thompson, John, Bucyrus, Ohio, and W. F. Vaughn, Altoona, Pa., said Thompson assignor to Frey-Scheckler Company, Bucyrus, Ohio. Pan grinding-machine | 501,583 | July 18 | 1666 | 416 | 64 | 337 |
| Thompson, John S. W. (See Thompson, William H., assignor.) | | | | | | |
| Thompson, Mary I., administratrix. (See Thompson, Frederick L.) | | | | | | |
| Thompson, Richard, New York, N. Y. Steam-boiler-tube cleaner | 503,559 | Aug. 15 | 2190 | 547 | 64 | 994 |
| Thompson, Richard, assignor to Thompson & Bushnell Company, New York, N. Y. Boiler-tube cleaner | 503,359 | Aug. 15 | 1680 | 466 | 64 | 938 |
| Thompson, William, *et al.* (See Austin, William H., assignor.) | | | | | | |
| Thompson, William H., assignor to J. S. W. Thompson, Morristown, N. J. Roller-bearing for sheaves | 504,287 | Aug. 29 | 3362 | 840 | 64 | 1248 |
| Thoms, Hermann, Berlin, Germany. Making para-phenetol carbamide | 502,504 | Aug. 1 | 430 | ..... | 64 | 645 |
| Thoms, Hermann, Berlin, Germany. Salicylate of para-tolyldimethylpyrazolon | 503,066 | Aug. 8 | 1380 | ..... | 64 | 835 |
| Thomson Electric Welding Company. (See Lemp, Hermann, assignor.) | | | | | | |
| Thomson Electric Welding Company. (See Thomson, Elihu, assignor.) | | | | | | |
| Thomson Electric Welding Company. (See Thomson and Harthan, assignors.) | | | | | | |
| Thomson, Elihu, Lynn, Mass., assignor to Thomson-Houston Electric Company, of Connecticut. Electric switch | 500,629 | July 4 | 147 | 39 | 64 | 29 |
| Thomson, Elihu, Lynn, Mass., assignor to Thomson-Houston Electric Company, of Connecticut. Lightning-arrester | 501,114 | July 11 | 937 | 240 | 64 | 185 |
| Thomson, Elihu, Swampscott, Mass., assignor to Thomson-Houston Electric Company, of Connecticut. Method of and means for producing alternating currents | 500,630 | July 4 | 148 | 39 | 64 | 29 |
| Thomson, Elihu, Swampscott, Mass., assignor to Thomson-Houston Electric Company, of Connecticut. Rheostat | 500,631 | July 4 | 150 | 39 | 64 | 30 |
| Thomson, Elihu, Swampscott, Mass., assignor to Thomson-Houston Electric Company, of Connecticut. Manufacture of incandescent electric lamps | 501,172 | July 11 | 1027 | 241 | 64 | 201 |
| Thomson, Elihu, Swampscott, Mass., assignor to Thomson Electric Welding Company, of Maine. Shaping and spinning metals by electricity | 501,547 | July 18 | 1617 | 405 | 64 | 397 |
| Thomson, Elihu, Swampscott, Mass., assignor to Thomson-Houston Electric Company, of Connecticut. Fusible cut-out | 502,330 | Aug. 1 | 133 | 30 | 64 | 500 |
| Thomson, Elihu, Swampscott, Mass, assignor to Thomson-Houston Electric Company, of Connecticut. Regulator for electric generators | 502,788 | Aug. 8 | 931 | 226, 227 | 64 | 752 |
| Thomson, Elihu, Swampscott, assignor to General Electric Company, Boston, Mass. Electric measuring-instrument | 502,022 | July 25 | 2377 | 597, 598 | 64 | 477 |
| Thomson, Elihu, Swampscott, assignor to General Electric Company, Boston, Mass. Winding coils for dynamo-electric armatures | 503,445 | Aug. 15 | 1998 | 496 | 64 | 959 |
| Thomson, Elihu, Swampscott, and C. E. Harthan, Lynn, Mass., assignors to Thomson Electric Welding Company, of Maine. Automatic chain-welding machine | 501,546 | July 18 | 1604 | 404, 405 | 64 | 323 |
| Thomson-Houston Electric Company. (See Ekström, Axel, assignor.) | | | | | | |
| Thomson-Houston Electric Company. (See Elkins, William H., assignor.) | | | | | | |
| Thomson-Houston Electric Company. (See Fiske, Jonathan P. B., assignor.) | | | | | | |
| Thomson-Houston Electric Company. (See Hunter, Rudolph M., assignor.) | | | | | | |
| Thomson-Houston Electric Company. (See Thomson, Elihu, assignor.) | | | | | | |
| Thomson-Houston Electric Company. (See Van Depoele, Charles J., assignor.) | | | | | | |
| Thomson Hydraulic Company. (See Thomson, John, assignor.) | | | | | | |
| Thomson, John, Brooklyn, N. Y., assignor to Thomson Hydraulic Company, Newark, N. J. Stuffing-box for meters | 503,884 | Aug. 22 | 2093 | 675 | 64 | 1105 |
| Thomson John S., Melbourne, Victoria. Churn | 501,384 | July 11 | 1375 | 343, 344 | 64 | 263 |
| Thornton, William, Chattanooga, Tenn. Clothes-wringer | 504,483 | Sept. 5 | 277 | 72 | 64 | 1322 |
| Thorp, Job, Westerly, R. I. Hot-water heater | 504,852 | Sept. 12 | 899 | 231, 232 | 64 | 1454 |
| Thorsen, Thor. A., assignor to S. H. Sinclair Company, Chicago, Ill. Starching-machine | 505,282 | Sept. 19 | 1506 | 415, 416 | 64 | 1597 |

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|---|---|---|---|---|---|---|
| Throckmorton, Isaac N. (See Conway, Harrison V., assignor.) | | | | | | |
| Thum, Fredrick A., Newark, N. J. Electric switch | 501,173 | July 11 | 1028 | 260 | 64 | 202 |
| Thurston, James B., Concord, N. H. Interlocking-joint ferrule | 505,579 | Sept. 26 | 2135 | 541 | 64 | 1712 |
| Thurston, Robert H., Ithaca, N. Y. Engine-governor | 504,953 | Sept. 12 | 1958 | 271 | 64 | 1483 |
| Tibbals, Wallace, Lytle, Ohio. Wire fence | 504,057 | Aug. 29 | 2085 | 746 | 64 | 1176 |
| Ticknor, James S. (See Wilson, Alfred E., assignor.) | | | | | | |
| Tideman, Henry, Detroit, Mich. Umbrella-stand | 502,331 | Aug. 1 | 135 | 31 | 64 | 590 |
| Tiefel, Leonard C., assignor of one-half to H. R. Lewis, Rochester, N. Y. Extension-ladder | 505,072 | Sept. 12 | 1966 | 395 | 64 | 1523 |
| Tiemann, Frederick, Rice, Minn. Car-coupling | 502,505 | Aug. 1 | 431 | 103 | 64 | 645 |
| Tillgren, Bengt R., Rockland, Mass. Shoe | 500,690 | July 4 | 238 | 63 | 64 | 45 |
| Tilman, Joseph M., assignor of one-half to J. W. Compton, Evansville, Ind. Kitchen utensil | 504,376 | Sept. 5 | 104 | 26 | 64 | 1290 |
| Tilstone, George, Church, England. Machine for stretching or removing creases from woven fabrics | 504,001 | Aug. 29 | 2903 | 727, 728 | 64 | 1161 |
| Tilton, Joseph, *et al.* (See Shaw, Truman A., assignor.) | | | | | | |
| Tilton, Wheelock G., assignor of one-half to O. H. Gardner, New Bedford, Mass. Shaft-coupling | 502,686 | Aug. 1 | 750 | 181 | 64 | 704 |
| Time Stock Feeder Company. (See Weller, John H., assignor.) | | | | | | |
| Time Stock Feeder Company. (See Weller, William L., Jr., assignor.) | | | | | | |
| Timmis, Tiltus A., London, England. Railway signaling | 503,505 | Aug. 15 | 2098 | 524 | 64 | 977 |
| Tinder, James H. (See McNeill and Tinder.) | | | | | | |
| Tingley, Albert C. (See Peirce, Horatio L., assignor.) | | | | | | |
| Tingley, John, Brockton, Mass., assignor to Mascotte Invalid Lifting Chair Company, New York, N. Y. Lifting-machine or invalid-lifter | 503,105 | Aug. 8 | 1448 | 357 | 64 | 847 |
| Tinkham, Cortland O., and O. B. Sims, Akron, N. Y. Machine for scouring and cleaning grain, nuts, or similar articles | 503,010 | Sept. 12 | 1156 | 296, 297 | 64 | 1502 |
| Tinkham, Lemuel B., Quincy, Mass. Electric lock | 504,462 | Sept. 5 | 241 | 63 | 64 | 1315 |
| Tinnerholm, August, Schenectady, N. Y. Electric soldering-iron and heater | 500,681 | July 4 | 219 | 63 | 64 | 45 |
| Tirard, Louis J., Caen, France. Fire signaling or alarm mechanism | 504,002 | Aug. 29 | 2906 | 729 | 64 | 1162 |
| Titus, John, Oyster Bay, and W. Titus, North Hempstead, N. Y. Cart for transporting telegraph-poles, &c. | 504,377 | Sept. 5 | 105 | 26, 27 | 64 | 1290 |
| Titus, William. (See Titus, John and W.) | | | | | | |
| Tobey, Franklin O., Boston, assignor to J. W. Brooks, Petersham, principal trustee, and F. F. Stanley, associate trustee, Swampscott, Mass. Nailing-machine | 502,212 | July 25 | 2083 | 677 | 64 | 536 |
| Tobey, Fred W., Grand Rapids, Mich. Latch | 502,789 | Aug. 8 | 933 | 227 | 64 | 752 |
| Todd, George N., Chicago, Ill., assignor, by mesne assignments, to G. N. Todd, trustee, New York, N. Y. Picker-stem | 502,241 | July 25 | 2736 | 690 | 64 | 545 |
| Todd, Libanus M., assignor to Compress Wheel Company, Chicago, Ill. Method of and apparatus for forming compress-wheel rims | 503,360 | Aug. 15 | 1882 | 466, 467 | 64 | 938 |
| Todd, Matthew, assignor of two-thirds to W. J. Cowing and C. Thompson, New Bedford, Mass. Thill-coupling | 501,115 | July 11 | 938 | 240 | 64 | 185 |
| Todd, William N. (See Draper, William B., assignor.) | | | | | | |
| Tolan, Lewis, Jr., and F. L. Morton, Philadelphia, Pa. Lock-nut | 502,477 | Aug. 1 | 380 | 91 | 64 | 636 |
| Tolman, Edward K., Worcester, Mass. Registering and canceling ballot-box | 503,696 | Aug. 22 | 2319 | 578 | 64 | 1032 |
| Tomb, Frank B., *et al.* (See Curry, James H., assignor.) | | | | | | |
| Tomlinson, Ambrose, South Lawrence, assignor to Dutcher Temple Company, Hopedale, Mass. Loom-temple | 504,288 | Aug. 29 | 3364 | 841 | 64 | 1248 |
| Tone, William J., Locust Corner, Ohio. Thill-coupling attachment | 501,812 | July 18 | 2043 | 503 | 64 | 400 |
| Tonkin, John O., West End, near Berlin, Germany. Coin-freed folding chair | 500,783 | July 4 | 399 | 105, 106 | 64 | 74 |
| Topham, George, Washington, D. C. Coin-purse | 505 145 | Sept. 19 | 1384 | 354 | 64 | 1557 |
| Torborg, Nathaniel T., Laurel, Del. Kiln for drying lumber | 505,011 | Sept. 12 | 1158 | 297 | 64 | 1503 |
| Tornblom, Emil. (See Brundin, Per Walfrid, assignor.) | | | | | | |
| Torr, Josiah, *et al.* (See Marshall, William M., assignor.) | | | | | | |
| Torrance, Robert, administrator. (See Armstrong, John B.) | | | | | | |
| Torrey, Augustus, *et al.* (See Susemihl, Francis G., assignor.) | | | | | | |
| Torrey, Levi F., and J. La Sha, assignors to M. Torrey and S. La Sha, Syracuse, N. Y. Game counter and register for pool-tables | 501,632 | July 18 | 1750 | 436 | 64 | 351 |
| Torrey, Margaret *et al.* (See Torrey and La Sha, assignors.) | | | | | | |
| Torrey, William F., Auburn, assignor of one-half to Z. R. Tucker, Providence, R. I. Eraser-case | 505,753 | Sept. 26 | 2397 | 606 | 64 | 1759 |
| Totman, Edward, *et al.* (See Blackshaw, Wilfrid W., assignor.) | | | | | | |
| Toulouse, Bernard, and J. Delorieux, San Francisco, Cal. Mosaic and tile press | 501,584 | July 18 | 1669 | 417 | 64 | 337 |
| Tourasse, Paul, La Bridoire, France. Making wire for paper-machines | 502,067 | July 25 | 2482 | 624 | 64 | 496 |
| Tousey, Moses S. (See Climer, Frank O., assignor.) | | | | | | |
| Tousley, Edgar M., Jamestown, N. Y. Trolley-wheel | 501,548 | July 18 | 1621 | 405 | 64 | 328 |
| Towel, Samuel A., assignor of one-half to J. B. Lanier, Salisbury, N. C. Grain-ventilator | 501,116 | July 11 | 939 | 240, 241 | 64 | 185 |
| Towler, Willard A., Detroit, Mich. Hook and eye | 501,633 | July 18 | 1753 | 436 | 64 | 351 |
| Townsend, Louis, Evansville, Ind. Harness-suspending device | 503,814 | Aug. 22 | 2602 | 650 | 64 | 1087 |
| Toye, William H. R., Philadelphia, Pa., assignor to Simultaneous Chromogravure Printing Machine and Manufacturing Company, Camden, N. J. Offset mechanism for printing-machines | 503,391 | Aug. 15 | 1926 | 478 | 64 | 946 |
| Traphagen, William H., assignor to Emerson, Talcott & Co., Rockford, Ill. Cultivator | 504,406 | Sept. 5 | 151 | 39, 40 | 64 | 1298 |
| Traphagen, William H., assignor to Emerson, Talcott & Co., Rockford, Ill. Gate for elevators | 504,407 | Sept. 5 | 154 | 40, 41 | 64 | 1299 |
| Traut, Justus A., assignor to Stanley Rule and Level Company, New Britain, Conn. Marking-gage | 504,003 | Aug. 29 | 2908 | 729 | 64 | 1162 |
| Traver, Adelbert L., Mellenville, N. Y. Attachment for machines for sewing looped fabrics | 502,478 | Aug. 1 | 381 | 91, 92 | 64 | 636 |
| Traves, Charles E., Los Angeles, Cal. Lubricator | 503,506 | Aug. 15 | 2100 | 525 | 64 | 977 |
| Travis, Charles L., Minneapolis, Minn., assignor to American Change and Register Company, Chicago, Ill. Change making and delivering device | 502,242 | July 25 | 2737 | 690, 691, 692, 693, 694 | 64 | 545 |
| Travis, James, Jr., Cascade, Mont. Bag-holder | 503,627 | Aug. 22 | 2321 | 578 | 64 | 1032 |
| Tremain, Charles W., Portland, Oreg. Stamp | 502,839 | Aug. 8 | 1016 | 247, 248 | 64 | 768 |
| Tremper, Frank E., New York, N. Y., assignor to Safety Vapor Engine Company, of New Jersey. Electric igniting device for gas-engines | 503,016 | Aug. 8 | 1309 | 320 | 64 | 921 |
| Trentowsky, Albert E., St. John, Canada. Sifting attachment for stoves | 501,748 | July 18 | 1941 | 480 | 64 | 383 |
| Trépreau, Henri, Angers, France. Speed-multiplying mechanism for cycles | 502,332 | Aug. 1 | 136 | 31 | 64 | 590 |
| Trepus, William H., Chicago, Ill. Stovepipe-hanger | 502,150 | July 25 | 2583 | 649 | 64 | 516 |



*Alphabetical list of patentees, July to September, inclusive*—Continued.

| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Dr'g. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Tribble, Joel P., *et al.* (See Kelley, Calhoun L., assignor.) | | | | | | |
| Trimble, William D., Hanesville, Md. Insulator for electric wires | 503,778 | Aug. 22 | 2555 | 636 | 64 | 1078 |
| Trinder, Henry, Worcester, Mass. Last | 501,699 | July 18 | 1858 | 462 | 64 | 369 |
| Triplett, Leonidas, Jr., and J. Fry, Mount Jackson, Va. Car-coupling | 504,408 | Sept. 5 | 156 | 41 | 64 | 1299 |
| Triscorfer, Maurice, New York, N. Y. Combined dress stay and fastener | 504,004 | Aug. 29 | 2910 | 729 | 64 | 1162 |
| Trix, John. (See Austin, Eugene, assignor.) | | | | | | |
| Trout, Emerson W., assignor of two-thirds to S. L. Jacques and F. B. Wemple, Detroit, Mich. Hat, coat, and umbrella rack | 500,632 | July 4 | 152 | 40 | 64 | 30 |
| Trow, William A. (See Van Ness, Albert, assignor.) | | | | | | |
| Trowbridge, Stephen A. (See Twitt, Charles E., assignor.) | | | | | | |
| Trowbridge, Stephen A., and C. E. Twitt, Ravenna, Ohio. Clutch | 505,545 | Sept. 26 | 2057 | 525 | 64 | 1696 |
| Troxell, Felix J., Lock Haven, Pa. Hedge fence | 502,058 | July 25 | 2435 | 613 | 64 | 487 |
| Troy, Robertus F. (See Hicks and Troy.) | | | | | | |
| Truax, George E., Denver, Colo. Boiler-cleaner | 504,426 | Sept. 5 | 188 | 49 | 64 | 1306 |
| Trumble, Chauncey B., assignor of one-half to H. G. Moe, Groton, N. Y. Vegetable-chopper | 500,695 | July 4 | 261 | 71 | 64 | 49 |
| Trump, John G., *et al.* (See Heinlein, John F., assignor.) | | | | | | |
| Tubular Lock Syndicate. (See Biggs, Frederick J., assignor.) | | | | | | |
| Tucker, Andrew. (See Nottingham and Tucker.) | | | | | | |
| Tucker & Dorsey Manufacturing Company. (See Dorsey, Robert L., assignor.) | | | | | | |
| Tucker, George, assignor, by mesne assignments, of one-half to A. Shoup, Los Angeles, Cal. Attachment-holder for sewing-machines | 503,222 | Aug. 15 | 1652 | 405 | 64 | 897 |
| Tucker, Thomas, Sereno, Mo. Packing-box lid | 505,012 | Sept. 12 | 1160 | 298 | 64 | 1503 |
| Tucker, Zachariah K. (See Torrey, William F., assignor.) | | | | | | |
| Tufts, John H. (See Wood and Tufts.) | | | | | | |
| Tufts, Harry W., North Attleborough, Mass. Snap-hook | 503,446 | Aug. 15 | 1999 | 496 | 64 | 959 |
| Tuller, Wilbur E. (See Cleveland and Tuller.) | | | | | | |
| Tullis, John T., assignor of one-half to J. Burress, Chip, Ark. Cotton-seed grinder | 503,259 | Aug. 15 | 1706 | 419 | 64 | 907 |
| Turbayne, William A., Detroit, Mich. Lightning-arrester | 500,898 | July 4 | 475 | 121 | 64 | 86 |
| Turbayne, William A., Detroit, Mich. Electric-arc lamp | 500,899 | July 4 | 476 | 124 | 64 | 87 |
| Turley, Theodore J., Nashville, Tenn. Chromatic-printing device | 500,784 | July 4 | 400 | 106 | 64 | 74 |
| Turley, Theodore J., Nashville, Tenn. Chromatic-printing device | 500,785 | July 4 | 402 | 106 | 64 | 74 |
| Turnbull, George A., Chicago, Ill. Composition of matter for roofing | 503,336 | Aug. 15 | 1842 | ..... | 64 | 931 |
| Turner, Caleb R., Brooklyn, N. Y. Fifth-wheel | 505,616 | Sept. 26 | 2192 | 554 | 64 | 1723 |
| Turner, Claude A. P., Ashton, R. I., and P. A. Warner, West Newton, Mass. Drawbridge | 500,633 | July 4 | 153 | 40 | 64 | 30 |
| Turner, Claude A. P., Ashton, R. I., and P. A. Warner, West Newton, Mass. Drawbridge | 503,273 | Aug. 15 | 1726 | 425, 426 | 64 | 911 |
| Turner, Ephraim M., St. Louis, Mo., assignor of one-half to R. E. Maddox, Fort Worth, Tex. Truck or vehicle for elevated railways | 501,174 | July 11 | 1022 | 260, 261 | 64 | 202 |
| Turner, Jacob W., Van Wert, Ohio. Mechanical toy | 502,790 | Aug. 8 | 935 | 227 | 64 | 753 |
| Turner, John W., Jones' Mill, Ala. Artificial stone | 502,023 | July 25 | 2380 | ..... | 64 | 477 |
| Turner, Samuel K., Ethel, Miss. Planter | 501,385 | July 11 | 1376 | 344 | 64 | 264 |
| Turner, Samuel N. (See Dwelly, Charles H., assignor.) | | | | | | |
| Turner & Seymour Manufacturing Company. (See Day, John, assignor.) | | | | | | |
| Turner & Seymour Manufacturing Company *et al.* (See Brothwell and Phillips, assignors.) | | | | | | |
| Turnrail, Swan J. (See Hempel, John F., assignor.) | | | | | | |
| Tweedy, Edmund, Danbury, Conn. Apparatus for hardening steel | 500,979 | July 4 | 703 | 184 | 64 | 129 |
| Twitt, Charles E. (See Trowbridge and Twitt.) | | | | | | |
| Twitt, Charles E., assignor of one-half to S. A. Trowbridge, Ravenna, Ohio. Friction-clutch | 505,617 | Sept. 26 | 2193 | 555 | 64 | 1723 |
| Twose, George M. R., Chicago, Ill. Hat-holder | 501,972 | July 25 | 2296 | 574 | 64 | 461 |
| Tyers, Frederick, Nottingham, England. Mold for making plumbers' joints | 502,893 | Aug. 8 | 1099 | 270 | 64 | 783 |
| Tyers, Frederick, and O. Barnsdale, Nottingham, England. Mold for making plumbers' joints | 504,005 | Aug. 29 | 2910 | 729 | 64 | 1162 |
| Tyler, Harry L., assignor of two-thirds to J. Magee and L. P. Miller, Corning, N. Y. Dynamo-electric machine | 501,117 | July 11 | 941 | 241 | 64 | 186 |
| Tyler, James A. M., Lexington, Nebr. Grain-drill | 500,725 | July 4 | 313 | 84 | 64 | 59 |
| Tymeson, Eugene, and L. Ducros, assignors to Alexander Smith & Sons Carpet Company, Yonkers, N. Y. Yarn-drying machine | 500,634 | July 4 | 155 | 40, 41 | 64 | 31 |
| Tyson, George E., Reading, Pa. Lock | 500,696 | July 4 | 262 | 71 | 64 | 49 |
| Uehling, Edward A., and A. Steinbart, Birmingham, Ala. Pyrometer | 503,337 | Aug. 15 | 1843 | 457 | 64 | 931 |
| Ulman, William F., New York, N. Y. Mop-wringer | 502,448 | Aug. 1 | 337 | 81 | 64 | 628 |
| Ulrich, Franz. (See Haast, Emil, assignor.) | | | | | | |
| Ulrich, Moritz, and R. Lauch, assignors to Farbenfabriken, vormals Fr. Bayer & Co., Elberfeld, Germany. Blue-black tetrazo dye | 501,118 | July 11 | 941 | ..... | 64 | 186 |
| Umbenhauer, Charles C., assignor of one-half to W. A. Black, Miamisburg, Ohio. Hame-holder | 501,973 | July 25 | 2297 | 574 | 64 | 461 |
| Umstead, George P., Pittsburg, Pa. Means for securing rubber shoes together | 505,734 | Sept. 26 | 2398 | 606 | 64 | 1759 |
| Underdown, John K. (See Zimmerman and Underdown.) | | | | | | |
| Underhill, Francis M., assignor to Whitall, Tatum & Co., New York, N. Y. Flexible water-bottle | 504,058 | Aug. 29 | 2906 | 746 | 64 | 1176 |
| Uniack, Annie, Baltimore, Md. Crust-supporter for pot-pie pans | 503,756 | Aug. 22 | 2525 | 628 | 64 | 1072 |
| Union Paper Bag Machine Company. (See Claussen, Edward E., assignor.) | | | | | | |
| Union Switch and Signal Company. (See Goodman, Edward H., assignor.) | | | | | | |
| United Gas Improvement Company. (See Humphreys, Alexander C., assignor.) | | | | | | |
| United Gas Improvement Company. (See Morrison, Henry K., assignor.) | | | | | | |
| United Indurated Fibre Company of New Jersey. (See Keyes, Frank K., assignor.) | | | | | | |
| United States Camera Company. (See Hetherington, Frederick A., assignor.) | | | | | | |
| United States Desulphurizing, Dry-Chloridizing, and Amalgamating Company. (See Calhoun and Beam, assignors.) | | | | | | |
| United States Engine Company. (See Eickenhoff, John H., assignor.) | | | | | | |
| United States Indicator Company. (See Kraaky, Henry G., assignor.) | | | | | | |
| United States Metallic Packing Company. (See Longstreth, Charles, assignor.) | | | | | | |
| United States Printing Telegraph Company. (See Linville and Hettmannsperger, assignors.) | | | | | | |
| Universal Carbonating Company. (See Theurer, Jacob F., assignor.) | | | | | | |
| Universal Street Sweeping Machine Company. (See Fisher, Elmendorf C., assignor.) | | | | | | |
| Unsworth, James, Jr. (See Ellison and Unsworth.) | | | | | | |
| Urbanek, Johann, Frankfort-on-the-Main, Germany. Running-gear for vehicles | 500,980 | July 4 | 705 | 185 | 64 | 128 |
| Uren, Richard, Ripley, Mich. Windmill | 502,479 | Aug. 1 | 383 | 92 | 64 | 637 |
| Urquhart, John M. (See Dingle and Urquhart.) | | | | | | |
| Vail, Allen. (See Cumming and Magee, assignors.) | | | | | | |
| Vail, George L., and T. Charlton, Denver, Colo. Purifying ammonia-gas | 505,427 | Sept. 19 | 1841 | 473 | 64 | 1643 |
| Vail, James E. (See Pittman, Harrison L., assignor.) | | | | | | |
| Vallandingham, William, Rose Hill, Iowa. Weather-strip | 502,644 | Aug. 1 | 661 | 161 | 64 | 688 |
| Vallée, Louis A. J., and A. L. G. Schultz, Paris, France. Apparatus for molding the heads of dolls | 500,682 | July 4 | 240 | 63, 64 | 64 | 45 |

| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drg. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Van Auken, Clarence E., Chicago, Ill., assignor to C. P. Monash. Safety-plug for boilers | 504,896 | Sept. 12 | 984 | 248, 249 | 64 | 1466 |
| Van Auken, Willis G., *et al.* (See Crackel, William H., assignor.) | | | | | | |
| Van Auker, Charles S., Salt Lake City, Utah Ter. Hasp-lock | 502,938 | Aug. 8 | 1188 | 292 | 64 | 799 |
| Van Buren, Robert. (See Powers and Van Buren.) | | | | | | |
| Van Depoele, Charles J., deceased, Lynn; A. Wahl and C. A Coffin, executors, assignors to Thomson-Houston Electric Company, Boston, Mass. Electric-railway trolley | 502,243 | July 25 | 2744 | 693 | 64 | 546 |
| Van der Heyden, William, Yokohama, Japan. Sanitary house | 504,544 | Sept. 5 | 387 | 97, 98 | 64 | 1342 |
| Van der Mynsbrugge, Mary. (See Van der Mynsbrugge, Victor and M.) | | | | | | |
| Van der Mynsbrugge, Victor and M., New York, N. Y. Type-writing machine | 501,220 | July 11 | 1083 | 278 | 64 | 215 |
| Van Dorn, James H., Cleveland, Ohio. Balloting-booth | 501,119 | July 11 | 946 | 242 | 64 | 186 |
| Van Dorn, James H., Cleveland, Ohio. Balloting-booth | 501,120 | July 11 | 948 | 242 | 64 | 187 |
| Van Etten, Charles D., assignor to Brown Folding Machine Company, Erie, Pa. Paper-folding machine | 503,017 | Aug. 8 | 1310 | 321 | 64 | 921 |
| Van Fleet, John M., Kenton, Ohio. Vessel for beverages | 504,119 | Aug. 29 | 3065 | 772, 773 | 64 | 1196 |
| Van Horn, William, Piqua, Ohio. Fence-stay for wire fences | 505,073 | Sept. 12 | 1367 | 325 | 64 | 1523 |
| Van Houten, Charles W., Philadelphia, Pa. Wheel-tire | 505,146 | Sept. 19 | 1385 | 355 | 64 | 1537 |
| Van Matre, Benjamin F. and G. H., New Castle, assignors of one-third to J. U. Miller, Indianapolis, Ind. Throttle-valve | 501,386 | July 11 | 1377 | 344 | 64 | 264 |
| Van Matre, George H. (See Van Matre, Benjamin F. and G. H.) | 502,939 | Aug. 8 | 1189 | 293 | 64 | 799 |
| Van Ness, Albert, assignor of one-half to W. A. Trow, Lowell, Mass. Machine for making confections | 503,885 | Aug. 22 | 2694 | 675, 676 | 64 | 1105 |
| Van Norman, Charles E., Springfield, Mass. Setting lacing-studs, eyelets, &c | 502,694 | Aug. 8 | 1101 | 270, 271, 272 | 64 | 784 |
| Van Norman, Charles E., Springfield, Mass. Hopper and delivery mechanism for studs | 502,895 | Aug. 8 | 1106 | 272 | 64 | 785 |
| Van Nuis, Charles S., New Brunswick, N. J. Lightning-arrester | 509,726 | July 4 | 314 | 84 | 64 | 59 |
| Van Patten, Horace S., Manlius, N. Y. Vehicle | 505,563 | Sept. 26 | 2104 | 534 | 64 | 1706 |
| Van Slyke, Stephen, assignor of one-half to S. Paugh, Indianapolis, Ind. Fifth-wheel | 504,378 | Sept. 5 | 106 | 27 | 64 | 1290 |
| Van Syckel, Stephen W., Hopewell, N. J. Apparatus for the manufacture of gas | 501,549 | July 18 | 1622 | 406 | 64 | 328 |
| Van Tuyl, Benjamin S. (See Luke, James A., assignor.) | 502,791 | Aug. 8 | 937 | 228 | 64 | 753 |
| Van Wagner, George H., Wappinger's Falls, N. Y. Check-hook | 505,147 | Sept. 19 | 1386 | 355 | 64 | 1557 |
| Van Wagoner, Charles H., Homer, Mich. Fence-post | 500,635 | July 4 | 159 | 41 | 64 | 32 |
| Van Wagoner & Williams Company. (See Pomeroy, Le Dru R., assignor.) | | | | | | |
| Van Wagoner & Williams Company. (See Wetmore, Jerome W., assignor.) | | | | | | |
| Vance, Edward A., assignor of one-half to E. P. Vance, Indianapolis, Ind. Wire fence | 505,781 | Sept. 26 | 2475 | 624 | 64 | 1775 |
| Vance, Edward P. (See Vance, Edward A., assignor.) | | | | | | |
| Vance, Emery J. (See Leaver, James M., assignor.) | | | | | | |
| Vanderbeck, Alexis, Huntsville, Mo. Car-coupling | 505,562 | Sept. 26 | 2103 | 533, 534 | 64 | 1705 |
| Vanderbeck, R. J., Sheldon, Iowa. Horse-collar fastener | 502,213 | July 25 | 2695 | 678 | 64 | 536 |
| Vanderbeck, Abraham. (See Worron, Lewis C., assignor.) | | | | | | |
| Vanderbeck, Abraham, and L. C. Worron, Hartford, Conn., assignors to said Vanderbeck. Drilling-machine | 504,289 | Aug. 29 | 3364 | 841 | 64 | 1948 |
| Vanderman, William, Willimantic, Conn. Hot-water heater | 501,974 | July 25 | 2297 | 574 | 64 | 462 |
| Vanderveer, James, Middle Village, N. Y. Wagon-brake | 504,639 | Sept. 5 | 521 | 124 | 64 | 1368 |
| Vandyke, Edward B. (See Parry, John A., assignor.) | | | | | | |
| Vanes, John, Brazil, Ind. Boiler | 505,735 | Sept. 26 | 2399 | 606 | 64 | 1750 |
| Vankeirsbilck, John. (See Broderick and Vankeirsbilck.) | | | | | | |
| Varns, Harvey B. (See Gerhardt, Lincoln, assignor.) | | | | | | |
| Vary, Calvin P. H., Newark, N. Y. Mast-hoop | 502,542 | Aug. 1 | 592 | 120 | 64 | 650 |
| Vassar, George, Jr., New York, N. Y. Elevator-shaft | 503,392 | Aug. 15 | 1927 | 478 | 64 | 947 |
| Vattier, Charles, Paris, France. Converter | 503,179 | Aug. 15 | 1581 | 389 | 64 | 865 |
| Vaughan, Frank, Elizabeth City, N. C. Car-coupling | 500,981 | July 4 | 707 | 186 | 64 | 198 |
| Vaughan, Henry F., Richmond, Va. Bill-sheet | 503,916 | Aug. 22 | 2749 | 689 | 64 | 1116 |
| Vaughan, Henry H. (See Pattee and Vaughan.) | | | | | | |
| Vaughan, Henry H., and M. E. McKee, St. Paul, Minn. Engineer's brake-valve | 504,290 | Aug. 29 | 3366 | 841, 842 | 64 | 1949 |
| Vaughan, John, Ashton-under-Lyne, assignor to J. Bullough, Accrington, England. Stop mechanism for carding-engines | 501,387 | July 11 | 1378 | 345 | 64 | 264 |
| Vaughan, Robert M., assignor of one-half to W. P. Mayo, Richmond, Va. Shaper for plug-tobacco | 501,749 | July 18 | 1943 | 480 | 64 | 384 |
| Vaughn, William F. (See Thompson and Vaughn.) | | | | | | |
| Vanthier, David, Waterbury, Conn. Winding mechanism for clocks | 500,683 | July 4 | 241 | 64 | 64 | 46 |
| Veith, Friedrich, Gelnhausen, Germany. Pump for pneumatic tires | 504,853 | Sept. 12 | 901 | 232 | 64 | 1454 |
| Velie, Charles E., assignor of one-half to J. M. King, Denver, Colo. Refrigerator | 501,854 | July 18 | 2101 | 519 | 64 | 411 |
| Venners, James H., Pittsburg, Pa. Continuous-cigarette machine | 503,507 | Aug. 15 | 2101 | 525, 526 | 64 | 978 |
| Verhaghen, Adolph, San Francisco, Cal. Mosaic art-glass | 504,506 | Sept. 5 | 336 | 83 | 64 | 1331 |
| Verley, Horace S. L., Hoboken, N. J. Relay | 502,449 | Aug. 1 | 338 | 81 | 64 | 628 |
| Verner, John D. (See Stribling, John V., assignor.) | | | | | | |
| Verner, William A. (See McQuillen, Owen, assignor.) | | | | | | |
| Vernon, George H. (See Huff and Vernon.) | | | | | | |
| Vernor, Henry E. (See Anderson, Anders P., assignor.) | | | | | | |
| Vernor, Henry E. (See Norcross, George A., assignor.) | | | | | | |
| Vetter, Rudolph C. (See Ott, George R., assignor.) | | | | | | |
| Vialet-Chabrand, Lucien, Ciotat, France. Electric-lighting system | 503,688 | Aug. 22 | 2402 | 600 | 64 | 1049 |
| Viering, Frederick, Allegheny, Pa. Railway-switch lock | 505,804 | Sept. 26 | 2512 | 634 | 64 | 1762 |
| Vincent, Mitchell. (See Hicks, Lewis C., assignor.) | | | | | | |
| Vine, James S., assignor of one-half to Strobridge Lithographing Company, Cincinnati, Ohio. Device for amusement and for advertising | 502,896 | Aug. 8 | 1108 | 273 | 64 | 785 |
| Vobach, Herman, Powaukee, Wis. Fence-post driver | 504,762 | Sept. 12 | 748 | 186 | 64 | 1424 |
| Vogel, Charles, Fort Lee, N. J. Speed-gear for velocipedes | 503,919 | Aug. 22 | 2750 | 689 | 64 | 1116 |
| Vogel, Ernest H., New York, N. Y. Grinding-machine | 504,006 | Aug. 29 | 2911 | 730 | 64 | 1163 |
| Vogel, Hermann W., Charlottenburg, assignor to Hochstein & Weinberg, Berlin, Germany. Glue for cardboard and photographs | 505,618 | Sept. 26 | 2194 | ..... | 64 | 1723 |
| Voight, George F., Lower Lake, Cal. Swinging gate | 501,813 | July 18 | 2044 | 503 | 64 | 400 |
| Vollhering, Friedrich W., and C. Bernhardt, Lubeck, Germany. Excavating-machine | 502,151 | July 25 | 2584 | 650 | 64 | 516 |
| Vollmar, Jacob C., assignor of two-fifths to G. Frank, Port Huron, Mich. Suspenders | 502,792 | Aug. 8 | 939 | 228 | 64 | 753 |
| Vollmer, William, Philadelphia, Pa. Bolt-rolling machine | 503,393 | Aug. 15 | 1928 | 478, 479 | 64 | 947 |
| Vols, Carl O., Berlin, Germany. Making nitric acid | 500,786 | July 4 | 404 | 106 | 64 | 75 |



| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drg. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Voorhees, Gardner T., Boston, assignor to J. E. Maynadier, trustee, Taunton, Mass. Multiple fuse | 502,333 | Aug. 1 | 138 | 31 | 64 | 591 |
| Voss, George E., *et al.* (See Hanson, Joseph H., assignor.) | | | | | | |
| Voss, Johanna, New York, N. Y. Combined kitchen and ironing table | 502,597 | Aug. 1 | 583 | 140 | 64 | 673 |
| Vry, Bernhard J. H. de, Chicago, Ill. Device for simultaneously moving double doors | 503,361 | Aug. 15 | 1885 | 467 | 64 | 938 |
| Vulcan Iron Works. (See McIntire and Koefoed, assignors.) | | | | | | |
| W. H. Hill Envelope Company. (See Rheutan, Abram A., assignor.) | | | | | | |
| W. W. Kimball Company. (See Hedgeland, Frederick W., assignor.) | | | | | | |
| Wade, James R., Millfield, Ohio. Neck yoke | 502,793 | Aug. 8 | 940 | 228 | 64 | 754 |
| Wade, Robert H., Washington, D. C. Clothes-form | 503,815 | Aug. 22 | 2663 | 650 | 64 | 1087 |
| Waeber, Gustavus, New York, N. Y. Sheet-metal can or box | 501,199 | July 11 | 1063 | 269 | 64 | 209 |
| Wagandt, Charles L., assignor to Keen & Hagerty, Baltimore, Md. Tank-can for varnish, &c | 505,208 | Sept. 19 | 1483 | 387 | 64 | 1575 |
| Wagener, Hermann H., Cassel, Germany. Corset-stiffener | 501,221 | July 11 | 1098 | 278 | 64 | 215 |
| Wagener, William, assignor of one-half to W. Ernst, Rochester, N. Y. Saah-fastener | 501,451 | July 11 | 1465 | 368 | 64 | 282 |
| Wagner, Anton, Philadelphia, Pa. Stereoscope | 502,450 | Aug. 1 | 340 | 81 | 64 | 629 |
| Wagner, Edward V., and S. H. Penquite, Urbana, Ohio. Fifth-wheel | 504,640 | Sept. 5 | 523 | 135 | 64 | 1369 |
| Wagner, Harry C., Cleveland, Ohio. Electric body-battery | 501,550 | July 18 | 1623 | 406 | 64 | 328 |
| Wagner, Jacob, *et al.* (See Aker, Anton, assignor.) | | | | | | |
| Wagner, Nickolaus, *et al.* (See Aker, Anton, assignor.) | | | | | | |
| Wagner, William F. (See Dages and Wagner.) | | | | | | |
| Wahl, Albert, *et al.*, executors. (See Van Depoele, Charles J.) | | | | | | |
| Wailes, John W., Prescot, England. Open-hearth steel-melting furnace | 501,200 | July 11 | 1065 | 269, 270 | 64 | 209 |
| Wailes, John W., Gateshead-on-the-Tyne, England. Hot-blast valve | 501,750 | July 18 | 1945 | 481 | 64 | 384 |
| Wainright Manufacturing Company of Massachusetts. (See Hall, Bicknell, assignor.) | | | | | | |
| Wait, Jason W. (See Morris, Simeon I., assignor.) | | | | | | |
| Waite, Charles W., Newton, Mass. Manufacturing chlorine or caustic alkali by electrolysis | 501,121 | July 11 | 949 | ..... | 64 | 187 |
| Walbridge, Henry L., Springfield, Mass. Truss | 501,551 | July 18 | 1624 | 406 | 64 | 328 |
| Waldrip, Thomas A., Alexander, Tex. Twin cultivating-harrow | 501,609 | July 18 | 1712 | 427 | 64 | 344 |
| Walentowitz, Albert, Guttenberg, N. J. T-square | 500,727 | July 4 | 317 | 84 | 64 | 60 |
| Walker Automatic Car Coupler Manufacturing Company. (See Walker, William J., assignor.) (Reissue.) | | | | | | |
| Walker, Charles W., Blue Springs, assignor of one-half to H. S. Olney, Beatrice, Nebr. Well boring and drilling machine | 501,261 | July 11 | 1158 | 293, 294 | 64 | 225 |
| Walker, Edwin, Erie, Pa. Corkscrew | 501,975 | July 25 | 2299 | 575 | 64 | 462 |
| Walker, George L. (See Gross, William M., assignor.) | | | | | | |
| Walker, James C., Waco, Texas. Wind-wheel | 505,736 | Sept. 26 | 2400 | 606, 607 | 64 | 1759 |
| Walker, John W., Philadelphia, Pa. Device for securing cans or other receptacles | 501,552 | July 18 | 1626 | 407 | 64 | 329 |
| Walker, Orlando O., assignor of two-thirds to R. G. Moon and C. S. McCloud, Bedford, Iowa. Cyclone-cave | 503,689 | Aug. 22 | 2412 | 601 | 64 | 1049 |
| Walker, Robert, Glasgow, Scotland. Chain-clip for cloth-finishing machines | 501,855 | July 18 | 2103 | 519 | 64 | 411 |
| Walker, Sampson, Winnepeg, Canada. Lubricator for car-journals | 503,018 | Aug. 8 | 1311 | 321 | 64 | 821 |
| Walker, Sarah B., Castle Rock, Colo. Ornamental screen | 501,262 | July 11 | 1160 | 294 | 64 | 226 |
| Walker, William J., and A. L. Bedford, St. Louis, Mo. Draw-bar attachment | 500,728 | July 4 | 318 | 85 | 64 | 60 |
| Walker, William J., and A. L. Bedford, St. Louis, Mo. Electric-alarm money-drawer | 501,306 | July 11 | 1220 | 309 | 64 | 236 |
| Walker, William J., St. Louis, Mo., assignor to Walker Automatic Car Coupler Manufacturing Company, East St. Louis, Ill. Car-coupling. (Reissue) | 11,353 | July 25 | 2783 | 703 | 64 | 554 |
| Walkley, Webster R. (See Kempshall, Eleazer, assignor.) | | | | | | |
| Wall, Carl P., La Crosse, Wis. Harvester-reel | 504,795 | Sept. 12 | 801 | 204 | 64 | 1433 |
| Wall, James J. (See Fairchild, Frank J., assignor.) | | | | | | |
| Wallace, Charles S. (See McMillen, Charles W. and H. F., assignors.) | | | | | | |
| Wallace, Edward L., Rochester, N. Y. Washing-machine | 504,763 | Sept. 12 | 748 | 186 | 64 | 1425 |
| Wallace, Jacob B., assignor to Metric Metal Company, Erie, Pa. Gas-meter | 502,388 | Aug. 1 | 235 | 55 | 64 | 609 |
| Wallace, Jacob B., assignor to Metric Metal Company, Erie, Pa. Fuel-gas burner | 504,821 | Sept. 12 | 848 | 217, 218 | 64 | 1442 |
| Wallace, James. (See Brandan, George E., assignor.) | | | | | | |
| Wallis, Edward N., Philadelphia, Pa. Curve or crossing for cable railways | 505,737 | Sept. 26 | 2402 | 607 | 64 | 1760 |
| Walrand, Charles, and E. Legenisel, Paris, France. Manufacturing steel | 503,816 | Aug. 22 | 2603 | ..... | 64 | 1087 |
| Walrath, Lu L. (See Robbins and Walrath.) | | | | | | |
| Walscheid, Otto W., Jersey City, N. J. Wringer-roller | 503,019 | Aug. 8 | 1319 | 321 | 64 | 821 |
| Walsh, Edward, Jr., St. Louis, Mo. Regenerative kiln | 503,789 | Aug. 22 | 2475 | 615 | 64 | 1062 |
| Walsh, Harry C. H. (See Edsall and Walsh.) | | | | | | |
| Walsh, John B., Wapakoneta, Ohio. Postage-stamp or envelope moistener | 505,495 | Sept. 26 | 1940 | 500 | 64 | 1675 |
| Walsh, John E., assignor to M. A. Walsh, New York, N. Y. Dredging-machine | 501,122 | July 11 | 950 | 242 | 64 | 187 |
| Walsh, Mary A. (See Walsh, John E., assignor.) | | | | | | |
| Walter, Charles, Stapleton, N. Y. Siphon-top | 502,451 | Aug. 1 | 340 | 82 | 64 | 629 |
| Walter, Otto, Cologne-on-the-Rhine, Germany. Cup and saucer | 503,508 | Aug. 15 | 2104 | 527 | 64 | 978 |
| Walters, George W. (See Taylor and Walters.) | | | | | | |
| Walters, John. (See Musselman, George A., assignor.) | | | | | | |
| Walton, Pierson T., Sutton, Nebr. Cutting apparatus for mowing or harvesting machinery | 504,641 | Sept. 5 | 524 | 135 | 64 | 1369 |
| Wands, John C., St. Louis, Mo. Car-roof | 503,886 | Aug. 22 | 2698 | 676 | 64 | 1106 |
| Wansbrough, William D., Lincoln, England. Lawn-mower | 503,509 | Aug. 15 | 2104 | 527 | 64 | 978 |
| Ward, Albert M., assignor to G. Johnston, Detroit, Mich. Facial measure | 505,496 | Sept. 26 | 1942 | 501 | 64 | 1676 |
| Ward, Joseph T., Philadelphia, Pa. Joint for fences | 502,840 | Aug. 8 | 1017 | 248 | 64 | 768 |
| Ward, Randolph G., Charleston, S. C. Automatic supply-tank for locomotives | 502,152 | July 25 | 2585 | 650 | 64 | 516 |
| Ward, Randolph G., Charleston, S. C. Rail-joint | 502,153 | July 25 | 2588 | 651 | 64 | 517 |
| Ward, Randolph G., Charleston, S. C., and H. B. Potter, Hillburn, N. Y. Switch-stand | 502,154 | July 25 | 2589 | 651 | 64 | 517 |
| Warder, Bushnell & Glessner Company. (See Stark, Andrew, assignor.) | | | | | | |
| Warder, Edward, Gypsum, Kans. Corn-harvester | 503,757 | Aug. 22 | 2596 | 628 | 64 | 1072 |
| Wardwell, Robert D., *et al.* (See Ludwig, Oscar, assignor.) | | | | | | |
| Wardwell, Victor P., *et al.* (See Blackshaw, Wilfrid W., assignor.) | | | | | | |
| Ware, Walter F., Camden, N. J. Syringe | 504,764 | Sept. 12 | 749 | 186 | 64 | 1425 |
| Ware, William P., Hillsborough, Tex. Clothes-pounder | 501,634 | July 18 | 1754 | 427 | 64 | 351 |
| Waring, Thomas, Camden, N. J. Paper-file | 501,751 | July 18 | 1946 | 482 | 64 | 384 |
| Warner, Charles F., Clear Water, Minn. Pneumatic tire | 500,639 | July 4 | 163 | 43 | 64 | 33 |
| Warner, De Ver H., Bridgeport, Conn. Garment-supporter | 500,637 | July 4 | 161 | 42 | 64 | 32 |
| Warner, De Ver H., Bridgeport, Conn. Corset-stiffener | 500,638 | July 4 | 163 | 42 | 64 | 32 |
| Warner, Ernest P., assignor to Western Electric Company, Chicago, Ill. Coupling-rod connection | 502,794 | Aug. 8 | 941 | 229, 230 | 64 | 754 |
| Warner, Ernest P., assignor to Western Electric Company, Chicago, Ill. Electric switch | 503,180 | Aug. 15 | 1582 | 389 | 64 | 885 |
| Warner, Ernest P., assignor to Western Electric Company, Chicago, Ill. Commutator for dynamo-electric machines | 504,379 | Sept. 5 | 107 | 27 | 64 | 1290 |
| Warner, Ernest P., assignor to Western Electric Company, Chicago, Ill. Controller-roller for electric cars | 505,686 | Sept. 26 | 2317 | 568 | 64 | 1745 |

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| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drg. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Warner, Herbert B. (See Olmsted, Warner, and Giddings.) | | | | | | |
| Warner, Ira D., Bridgeport, Conn. Machine for making dress-stiffeners | 500,636 | July 4 | 160 | 42 | 64 | 38 |
| Warner, Isaac M., Bronson, assignor of one-half to J. D. and C. Hagerman, Oxford, Mich. Fence-machine | 504,642 | Sept. 5 | 525 | 135 | 64 | 1369 |
| Warner, Philip A. (See Turner and Warner.) | | | | | | |
| Warren, Edwin W., Tyringham, Mass. Mechanical telephone | 501,388 | July 11 | 1380 | 345 | 64 | 264 |
| Warren, George E. (See Fowler and Warren.) | | | | | | |
| Warren, John, Boston, Mass., assignor to Globe Treeing Machine Company, Boston, Mass., and Nashua, N. H. Boot-treeing machine | 504,765 | Sept. 12 | 750 | 186, 187 | 64 | 1425 |
| Warring, Franklin B. (See Caton and Warring.) | | | | | | |
| Warwick Cycle Manufacturing Company. (See Kelly, Jarvis P., assignor.) | | | | | | |
| Warwick, William. (See Swift and Warwick.) | | | | | | |
| Wasciuski, Alexander von, West Hoboken, N. J. Stand and stool for zithers | 504,071 | Aug. 29 | 3003 | 750 | 64 | 1179 |
| Washburne, James V., Morrison, Ill. Adjustable collar-fastener | 500,640 | July 4 | 164 | 43 | 64 | 33 |
| Washburn & Moen Manufacturing Company. (See Snedeker, Charles T., assignor.) | | | | | | |
| Washington Carbon Company. (See Marks, Louis B., assignor.) | | | | | | |
| Wastall, Arthur, Chicago, Ill., assignor of one-half to H. and E. Denamore, New York, N. Y. Aerial cradle-cot | 505,797 | Sept. 26 | 2498 | 631 | 64 | 1779 |
| Waterbury, James M., *et al.* (See Hetzel, Peter, assignor.) | | | | | | |
| Waterbury Manufacturing Company. (See Chase, Henry S., assignor.) | | | | | | |
| Waterhouse, Addison G., Hartford, Conn. Electric-lighting system | 505,241 | Sept. 19 | 1527 | 399 | 64 | 1584 |
| Waterous, Frederick L., South St. Paul, Minn. Friction-clutch | 501,976 | July 25 | 2300 | 575 | 64 | 462 |
| Waters, Nellie D. (See Chandler, John A., assignor.) | | | | | | |
| Waters, Samuel A. L., assignor of one-half to O. R. Miles, New York, N. Y. Device for reeving halyards | 504,072 | Aug. 29 | 3004 | 751 | 64 | 1180 |
| Waters, Sidney. (See Clowes and Redwood, assignors.) | | | | | | |
| Waterson, Alfred H. (See Gleason, Robert M., assignor.) | | | | | | |
| Watson, George A., Toronto, Canada, assignor of sixty-one one-hundredths to W. H. Laird, New York, N. Y. Apparatus for producing and utilizing gas for heating purposes | 503,617 | Aug. 22 | 2605 | 650, 651 | 64 | 1088 |
| Watson, George H., St. Louis, Mo. Steam-boiler furnace | 502,795 | Aug. 8 | 944 | 230 | 64 | 754 |
| Watson, George H., St. Louis, Mo. Variable exhaust-nozzle for locomotives | 502,796 | Aug. 8 | 946 | 230 | 64 | 755 |
| Watson, James, London, England. Baling cotton | 505,580 | Sept. 26 | 2136 | 541 | 64 | 1712 |
| Watson, James, London, England. Baling-press | 505,581 | Sept. 26 | 2139 | 542 | 64 | 1712 |
| Watson, Oneal, Crawfordsville, Ind. Collar-fastener | 503,510 | Aug. 15 | 2106 | 527 | 64 | 979 |
| Watson, Thomas A. (See Fuller, Henry C., assignor.) | | | | | | |
| Watt, Alexander. (See Easton, Watt, and Buchanan.) | | | | | | |
| Watt, Arthur K., Flatbush, N. Y. Thrust-bearing | 503,260 | Aug. 15 | 1707 | 420 | 64 | 907 |
| Watt, James H., Barnesville, Ohio. Flue-thimble | 503,818 | Aug. 22 | 2606 | 651 | 64 | 1088 |
| Watt, James H., assignor to Watt Mining Car Wheel Company, Barnesville, Ohio. Car-axle mounting | 501,389 | July 11 | 1381 | 345 | 64 | 265 |
| Watt Mining Car Wheel Company. (See Watt, James H., assignor.) | | | | | | |
| Wattie, William, assignor to Knowles Loom Works, Worcester, Mass. Pattern mechanism for looms | 501,700 | July 18 | 1859 | 462, 463 | 64 | 389 |
| Watts, Alfred E., Duluth, Minn. Automatic passenger-train annunciator and alarm | 505,687 | Sept. 26 | 2319 | 580 | 64 | 1745 |
| Watziawik, Fritz, Reichenberg, Austria-Hungary. Loom for weaving chenille strips | 502,930 | Aug. 8 | 1154 | 282, 283, 284, 285 | 64 | 794 |
| Way, Frank. K., Dayton, Ohio. Device for storing and delivering filtered water | 504,007 | Aug. 29 | 2912 | 730, 731 | 64 | 1163 |
| Wayland, James, Newark, N. J. Railway-signal | 501,307 | July 11 | 1222 | 309, 310 | 64 | 237 |
| Wayland, James, Newark, N. J. Railway-signal | 503,299 | Aug. 15 | 1773 | 438 | 64 | 919 |
| Wayne, Alfred, assignor of one-half to H. C. Hipkiss, Philadelphia, Pa. Crank-power for machinery | 503,394 | Aug. 15 | 1929 | 479 | 64 | 947 |
| Wear, George W., Elkhart, Ind. Air-vent for oil-cans | 502,334 | Aug. 1 | 149 | 32 | 64 | 591 |
| Weare, Thomas, Kumeo Junction, New Zealand. Roof | 502,940 | Aug. 8 | 1190 | 293 | 64 | 799 |
| Weatherhead, Edward H., Cleveland, Ohio. Hydraulic air-pump | 503,819 | Aug. 22 | 2608 | 651, 652 | 64 | 1088 |
| Weatherhead, Edward H., Cleveland, Ohio. Hydraulic air-pump | 504,097 | Aug. 29 | 3051 | 763 | 64 | 1189 |
| Weathers, Murdock A., Manchester, N. H. Automatic railway-switch | 501,963 | July 11 | 1161 | 284, 285 | 64 | 226 |
| Weaver, Anthony, Earlville, N. Y. Meat-block | 503,511 | Aug. 15 | 2107 | 528 | 64 | 979 |
| Weaver, Henry M., Mansfield, Ohio, assignor to Barr Cash and Package Carrier Company. Store-service apparatus | 500,641 | July 4 | 166 | 43 | 64 | 33 |
| Weaver, Henry M., Mansfield, Ohio, assignor to Barr Cash and Package Carrier Company. Cash-carrier apparatus | 500,642 | July 4 | 168 | 43, 44 | 64 | 33 |
| Weaver, John A., Pequea, assignor of one-half to D. W. Harner, New Holland, Pa. Heater | 502,335 | Aug. 1 | 146 | 32 | 64 | 591 |
| Weaver, Leland S., Fremont, Mich. Preparing surgical sutures | 505,148 | Sept. 19 | 1387 | 355 | 64 | 1558 |
| Weaver, William, Westport, assignor of one-half to E. O. Keeler and C. Lapham, Norwalk, Conn. Automatic reversing device for railway-trains | 504,766 | Sept. 12 | 752 | 187, 188 | 64 | 1425 |
| Weaver, William, assignor to himself, D. Hitchcock, W. A. Curtis, A. C. Wheeler, and C. Lapham, Norwalk, Conn. Car-starter | 501,595 | July 18 | 1685 | 420 | 64 | 339 |
| Weaver, William J., Reynoldsville, Pa. Blackboard-eraser | 503,080 | Aug. 8 | 1313 | 321 | 64 | 821 |
| Webb, Edward, Reading, Mass. Pressure-regulator | 504,507 | Sept. 5 | 327 | 84 | 64 | 1331 |
| Webb, George, Jr., and G. H. Rayner, London, England. Making oxygen | 500,697 | July 4 | 263 | | 64 | 49 |
| Webb, George B., New York, N. Y., assignor, by mesne assignments, to Wyckoff, Seamans & Benedict, of New York. Type-writing machine | 501,977 | July 25 | 2301 | 575 | 64 | 463 |
| Webb, George B., assignor to Wyckoff, Seamans & Benedict, New York, N. Y. Type-writing machine | 504,897 | Sept. 12 | 966 | 249 | 64 | 1466 |
| Webb, Herbert L., New York, N. Y. Connector | 503,181 | Aug. 15 | 1584 | 399 | 64 | 895 |
| Webb, Nicholas W., Brooklyn, N. Y. Combined envelope and letter-sheet | 503,628 | Aug. 22 | 2322 | 579 | 64 | 1032 |
| Weber, August, Schenectady, N. Y. Arc-lamp frame | 502,687 | Aug. 1 | 751 | 181 | 64 | 704 |
| Weber, Frank, Louisville, Ky. Dumping-wagon | 501,390 | July 11 | 1382 | 346 | 64 | 265 |
| Weber, Peter. (See Gardner, John M., Jr., assignor.) | | | | | | |
| Webster, Adelbert A. (See Nicholson, William, assignor.) | | | | | | |
| Webster, Augustus D., assignor of one-third to J. S. Condell, Jr., Springfield, Ill. Extension-ladder | 504,008 | Aug. 29 | 2914 | 731 | 64 | 1163 |
| Webster, Harold A., Haverhill, Mass. Machine for breasting heels of boots or shoes | 504,854 | Sept. 12 | 962 | 232, 233 | 64 | 1454 |
| Webster, Harold A., Haverhill, Mass. Heel-attaching machine | 505,074 | Sept. 12 | 1268 | 325, 326, 327 | 64 | 1523 |
| Webster, Harold A., Haverhill, assignor to G. H. P. Flagg, Boston, Mass. Buffing-pad | 505,644 | Sept. 26 | 2251 | 570 | 64 | 1734 |



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| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drg. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Webster, Jerome J., assignor to Boston Cash Register Company, Northampton, Mass. Cash-registering machine | 502,645 | Aug. 1 | 662 | 161 | 64 | 688 |
| Webster, Thomas H., and T. Dobson, Taftville, Conn. Lug connection for picker-sticks | 502,108 | July 25 | 2515 | 631 | 64 | 502 |
| Webster, Walter R., and J. Hamilton, Pine Grove, Cal. Oven or other door | 503,890 | Aug. 22 | 2610 | 652 | 64 | 1089 |
| Webster, William, Leeds, England. Machine for centering, preparing, and countersinking bars, studs, &c | 505,013 | Sept. 12 | 1161 | 298 | 64 | 1503 |
| Weckman, John S., Canton, Ohio. Field-roller | 503,629 | Aug. 22 | 2323 | 579 | 64 | 1033 |
| Weed, Gustavus R., Orange, N. J. Stopper attachment for ink-bottles | 500,982 | July 4 | 708 | 186 | 64 | 129 |
| Weerdt, Henry de, Chicago, Ill. Washing-machine | 503,779 | Aug. 22 | 2556 | 636 | 64 | 1078 |
| Wegmann, Conrad, Brooklyn, N. Y. Fruit-press | 504,545 | Sept. 5 | 390 | 99 | 64 | 1342 |
| Wegner, Gustavus A. (See Behn and Wegner.) | | | | | | |
| Weidig, Henry P., Newark, N. J. Method of and apparatus for extinguishing fires | 504,898 | Sept. 12 | 970 | 249 | 64 | 1467 |
| Weidman, Henry. (See Rens and Weidman.) | | | | | | |
| Weidner, Ernst A., *et al.* (See Muehn, John N., assignor.) | | | | | | |
| Weigant, Casper, Portland, Oreg. Blacksmith's hammer | 503,630 | Aug. 22 | 2325 | 579 | 64 | 1033 |
| Weil, Isaac, Williamsport, Pa. Oil-can | 502,336 | Aug. 1 | 141 | 32 | 64 | 591 |
| Weil, Mac C. (See Strauss, Joseph B., assignor.) | | | | | | |
| Weilert, George W., Rochester, N. Y. Shoe | 505,258 | Sept. 19 | 1551 | 405 | 64 | 1589 |
| Weinandy, August. (See Schalk and Weinandy.) | | | | | | |
| Weinberger, Konrad, Nuremberg, Germany. Spittoon for railway-cars | 501,635 | July 18 | 1755 | 437 | 64 | 352 |
| Weir, Frederic C. (See Fehrenbatch, John, assignor.) | | | | | | |
| Weir, Frederic C. (See Harden, Edward W., assignor.) | | | | | | |
| Weiss, George W., Brooklyn, N. Y. Combination-tool | 503,182 | Aug. 15 | 1585 | 399 | 64 | 896 |
| Weiss, Karl W., Yonkers, N. Y. Pile-wire for looms | 505,583 | Sept. 26 | 2144 | 542 | 64 | 1713 |
| Weiss, Louis T., Brooklyn, N. Y. Speed-measure | 505,582 | Sept. 26 | 2142 | 542 | 64 | 1713 |
| Weissenthanner, Achille, Paris, France. Means for hermetically sealing bottles, jars, &c | 500,698 | July 4 | 264 | 72 | 64 | 50 |
| Welch, Abraham T., Washington, D. C. Valve-operating device for gas-heaters | 500,643 | July 4 | 171 | 44 | 64 | 34 |
| Welch, Charles K., Coventry, England, assignor to Pneumatic Tyre and Booth's Cycle Agency, Limited, Dublin, Ireland. Valve for pneumatic tires | 503,300 | Aug. 15 | 1776 | 438, 439 | 64 | 919 |
| Welch, Joseph, Delphos, Ohio. Drying attachment for corn-cribs | 504,258 | Aug. 29 | 3320 | 830 | 64 | 1239 |
| Welch, Robert, Keokuk, Iowa. Barrel-hooping machinery | 503,021 | Aug. 8 | 1314 | 322 | 64 | 822 |
| Welch, Samuel B. and S., Millville, Iowa. Hay-fork | 502,155 | July 25 | 2501 | 651, 652 | 64 | 517 |
| Welch, Stephen. (See Welch, Samuel B. and S.) | | | | | | |
| Weld, George A., Winchester, Mass. Shank-stiffener | 501,978 | July 25 | 2304 | 576 | 64 | 473 |
| Weldon, Leonard, assignor to Klauder-Weldon Dyeing Machine Company, Amsterdam, N. Y. Apparatus for dyeing | 501,956 | July 18 | 2104 | 520 | 64 | 412 |
| Weldon, Leonard, assignor to Klauder-Weldon Dyeing Machine Company, Amsterdam, N. Y. Centrifugal dyeing-machine | 505,497 | Sept. 26 | 1943 | 501 | 64 | 1676 |
| Welds, Benjamin A., Jackson, Mich. Slat-and-wire-fence machine | 501,636 | July 18 | 1756 | 437 | 64 | 352 |
| Weller, Chester A., Sing Sing, N. Y. Torpedo signaling machine | 501,175 | July 11 | 1032 | 261 | 64 | 209 |
| Weller, Chester A., Sing Sing, N. Y. Block-signal system | 505,802 | Sept. 26 | 2307 | 633 | 64 | 1781 |
| Weller, John H., assignor to Time Stock Feeder Company, Louisville, Ky. Time stock-feeder | 505,180 | Sept. 19 | 1436 | 370 | 64 | 1566 |
| Weller, William L., Jr., assignor to Time Stock Feeder Company, Louisville, Ky. Time releasing device for gravity-doors | 505,415 | Sept. 19 | 1816 | 469 | 64 | 1638 |
| Wells, Charles S., Herrickville, Pa. Whiffletree | 504,822 | Sept. 12 | 849 | 218 | 64 | 1443 |
| Wells, Frank A., New York, N. Y. Water-closet | 502,452 | Aug. 1 | 341 | 82 | 64 | 629 |
| Wells, William H., Jr., *et al.* (See Forslund, Hugo W., assignor.) | | | | | | |
| Welsh, Edward F. (See Grabler, Peter, assignor.) | | | | | | |
| Wemple, Fred B., *et al.* (See Trout, Emerson W., assignor.) | | | | | | |
| Wendell, Adelbert C., Minneapolis, Minn. Mail tie-sack | 505,688 | Sept. 26 | 2321 | 589 | 64 | 1746 |
| Werden, Rodolphus D., Cincinnati, Ohio. Steam-engine | 500,749 | July 4 | 345 | 91 | 64 | 64 |
| Wern, Erik G. P., Brooklyn, N. Y. Friction-clutch | 505,338 | Sept. 19 | 1684 | 434 | 64 | 1613 |
| Werner, Hermann. (See Pfeiderer and Werner.) | | | | | | |
| Werner, Louis. (See Hedhavny, Anton, assignor.) | | | | | | |
| Werner, Louis. (See Knowles, Edward R., assignor.) | | | | | | |
| Wertz, Lewis, Oregon, Ill. Compound water-wheel | 501,123 | July 11 | 951 | 243 | 64 | 187 |
| Weser, John A., New York, N. Y. Musical-instrument case | 504,463 | Sept. 5 | 242 | 64 | 64 | 1315 |
| Wessel, Ferdinand A., Boston, Mass. Alternating-current electric motor | 503,183 | Aug. 15 | 1587 | 399 | 64 | 896 |
| Wesselowski, Julius. (See Green and Wesselowski.) | | | | | | |
| West, Edward B., assignor of one-half to T. J. Nelson, Simpsonville, Tex. Combination harrow and cultivator | 502,059 | July 25 | 2437 | 613 | 64 | 487 |
| West, Ira B., Gainesville, Ga. Railway-frog | 501,033 | July 4 | 784 | 205 | 64 | 143 |
| West, John E., assignor to himself and M. J. Horr, Centralia, Wash. Mechanical motor | 505,339 | Sept. 19 | 1685 | 434 | 64 | 1613 |
| West, Josiah E. (See Laraway, George W., assignor.) | | | | | | |
| West, Theodore E., South Norwalk, Conn., assignor to J. Auerbach, New York, N. Y. Cigarette-box | 503,512 | Aug. 15 | 2107 | 528 | 64 | 979 |
| West, William F., assignor to C. Gould, New York, N. Y. Electric ignitor | 500,644 | July 4 | 173 | 44 | 64 | 34 |
| West, William F., assignor to C. Gould, New York, N. Y. Automatic relief-valve | 500,645 | July 4 | 174 | 45 | 64 | 34 |
| Westcott, John T. (See Merrifield, Westcott, and Pearson.) | | | | | | |
| Westcott, Nathaniel W., assignor to himself and J. M. Goff, Providence, R. I. Circular-knitting machine | 502,688 | Aug. 1 | 752 | 181 | 64 | 704 |
| Westerdahl, Anton R. (See Keil and Westerdahl.) | | | | | | |
| Westermann, Franz, Herne, Germany. Regenerative coke-oven | 500,684 | July 4 | 243 | 65 | 64 | 46 |
| Western Electric Company. (See Allison, William D., assignor.) | | | | | | |
| Western Electric Company. (See Bell, Oro A., assignor.) | | | | | | |
| Western Electric Company. (See Carty, John J., assignor.) | | | | | | |
| Western Electric Company. (See Goodridge, William M., assignor.) | | | | | | |
| Western Electric Company. (See Oehring, Augustus J., assignor.) | | | | | | |
| Western Electric Company. (See Patterson, William R., assignor.) | | | | | | |
| Western Electric Company. (See Rudd, Charles H., assignor.) | | | | | | |
| Western Electric Company. (See Scribner, Charles E., assignor.) | | | | | | |
| Western Electric Company. (See Steiner, Josef, assignor.) | | | | | | |
| Western Electric Company. (See Warner, Ernest P., assignor.) | | | | | | |
| Western Electric Company. (See Young, John, assignor.) | | | | | | |
| Western Paving and Supply Company. (See Perkins, Amos H., assignor.) | | | | | | |
| Westfield Plate Company. (See St. Cyr, Theodore Z. H., assignor.) | | | | | | |
| Westinghouse Air Brake Company. (See Clark, Francis L., assignor.) | | | | | | |
| Westinghouse Electric and Manufacturing Company. (See Davis, Harry P., assignor.) | | | | | | |
| Westinghouse Electric and Manufacturing Company. (See Diehl, Philip, assignor.) | | | | | | |
| Westinghouse Electric and Manufacturing Company. (See Stanley, William, Jr., assignor.) | | | | | | |
| Westinghouse Electric and Manufacturing Company. (See Wurts, Alexander, assignor.) | | | | | | |
| Westlake, Charles T., St. Louis, Mo. Car-bolster | 500,983 | July 4 | 708 | 186 | 64 | 129 |

| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drg. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Weston, Alfred, Kansas City, Kans. Beef-stuffing machine | 505,498 | Sept. 26 | 1944 | 501 | 64 | 1676 |
| Wetherill & Co., Robert. (See Roeske, Henry, assignor.) | | | | | | |
| Wetherwax, Charles, Albany, N. Y. Apparatus for treating vegetable fibers | 501,124 | July 11 | 932 | 243 | 64 | 188 |
| Wetmore, Earl P., Helena, Mont. Trolley wire and hanger | 502,068 | July 25 | 2483 | 624 | 64 | 497 |
| Wetmore, Jerome W., Erie, Pa. Fuel-feeding device for furnaces | 501,979 | July 25 | 2404 | 576 | 64 | 463 |
| Wetmore, Jerome W., Erie, Pa., assignor to Van Wagoner & Williams Company, Jersey City, N. J. Pneumatic door-check | 502,841 | Aug. 8 | 1017 | 248 | 64 | 769 |
| Wettengel, Charles A. (See Niedringhaus and Wettengel.) | | | | | | |
| Wetter, Joseph. (See Wicht, Frank W., assignor.) | | | | | | |
| Weyl, Maximilian, Berlin, Germany. Telescopic stand for mathematical and optical instruments, &c | 505,149 | Sept. 19 | 1388 | {355 356 | 64 | 1558 |
| Wharton, William, Jr., assignor to William Wharton, Jr., & Company, Incorporated, Philadelphia, Pa. Railway-switch | 505,075 | Sept. 12 | 1273 | {327 328 | 64 | 1524 |
| Wharton, William, Jr., assignor to William Wharton, Jr., & Company, Incorporated, Philadelphia, Pa. Derailing-switch | | | | | | |
| Wheaton, Orson E., Grundy Centre, Iowa. Seal-lock | 505,076 | Sept. 12 | 1275 | 328 | 64 | 1524 |
| Wheeler, Arthur C., *et al.* (See Weaver, William, assignor.) | 504,643 | Sept. 5 | 526 | 135 | 64 | 1360 |
| Wheeler, Cyrenus, Jr., Auburn, N. Y. Clothes-wringer | 500,984 | July 4 | 709 | {186 187 | 64 | 129 |
| Wheeler, Cyrenus, Jr., Auburn, N. Y. Clothes-wringer | 502,646 | Aug. 1 | 663 | 161 | 64 | 689 |
| Wheeler, Isaac C., Carthage, Mo. Brick-kiln furnace | 502,647 | Aug. 1 | 664 | 162 | 64 | 689 |
| Wheeler, Marshal, Oakland, Cal. Gas-burner attachment | 501,980 | July 25 | 2305 | 576 | 64 | 463 |
| Wheeler, Phillip, Branchport, N. Y. Railway-rail tie and chair | 501,391 | July 11 | 1383 | 346 | 64 | 265 |
| Wheeler, Schuyler S., New York, N. Y., assignor to Crocker-Wheeler Electric Company, of New Jersey. Armature for dynamo-electric machines and motors | 503,184 | Aug. 15 | 1590 | 390 | 64 | 896 |
| Wheeler, Schuyler S., assignor to Crocker-Wheeler Electric Company, New York, N. Y. Apparatus for controlling electric motors | 503,106 | Aug. 8 | 1449 | 357 | 64 | 847 |
| Wheeler, Seth, Albany, N. Y. Ornamenting paper | 503,690 | Aug. 22 | 2414 | {601 602 | 64 | 1050 |
| Wheeler, Seth, Albany, N. Y. Mechanism for ornamenting paper | 502,337 | Aug. 1 | 141 | 32 | 64 | 591 |
| Wheeler, Seth, Albany, N. Y. Ornamenting paper | 504,767 | Sept. 12 | 755 | 188 | 64 | 1426 |
| Wheeler, Seth, Albany, N. Y. Roll-paper bracket | 505,259 | Sept. 19 | 1552 | 405 | 64 | 1580 |
| Wheeling Corrugating Company. (See Grafton, William S., assignor.) | 505,499 | Sept. 26 | 1947 | 502 | 64 | 1676 |
| Whiffen, Edward, Hammonton, and D. and V. F. Lake, Pleasantville, N. J. Lasting nippers | 502,507 | Aug. 1 | 437 | 105 | 64 | 647 |
| Whiffen, Edward, Hammonton, and D. and V. F. Lake, assignors to Whiffen-Lake Lasting Machine Company, Pleasantville, N. J. Lasting-machine | 502,506 | Aug. 1 | 432 | {103 104 105 | 64 | 646 |
| Whiffen-Lake Lasting Machine Company. (See Whiffen and Lake, assignors.) | | | | | | |
| Whitacre, John B., Shelbyville, Ill. Fence | 503,631 | Aug. 22 | 2326 | 580 | 64 | 1033 |
| Whitaker, Channing, Tyngsborough, assignor to Lowell Machine Shop, Lowell, Mass. Separator mechanism for ring-spinning frames | 505,500 | Sept. 26 | 1949 | {502 503 504 | 64 | 1677 |
| Whitaker, Channing, Tyngsborough, assignor to Lowell Machine Shop, Lowell, Mass. Separator mechanism for ring-spinning frames | 505,501 | Sept. 26 | 1950 | {504 505 506 | 64 | 1678 |
| Whitall, Tatum & Co. (See Underhill, Francis M., assignor.) | 505,376 | Sept. 19 | 1747 | 453 | 64 | 1625 |
| Whitburn, Daniel, London, England. Game apparatus | | | | | | |
| White, Albert, assignor to F. Taylor, Lowell, Mass. Coat-hook | 503,022 | Aug. 8 | 1315 | 322 | 64 | 892 |
| White, Albert, assignor to F. Taylor, Lowell, Mass. Hat and coat hook | 501,452 | July 11 | 1467 | 368 | 64 | 992 |
| White, Albert, assignor to F. Taylor, Lowell, Mass. Coat and hat hook | 501,453 | July 11 | 1467 | 368 | 64 | 992 |
| White, John H., Washington, D. C. Phonograph | 505,209 | Sept. 19 | 1484 | 387 | 64 | 1576 |
| White, John N. (See Davies and White.) | 504,380 | Sept. 5 | 108 | 27 | 64 | 1291 |
| White, Otis C., Worcester, Mass. Compound swiveling and clamping joint mechanism | 505,584 | Sept. 26 | 2144 | 543 | 64 | 1714 |
| White, Otis C., assignor of one-half to G. E. Francis, Worcester, Mass. Adjustable supporter for electric or other lamps | 505,585 | Sept. 26 | 2147 | 543 | 64 | 1714 |
| White, Samuel A., Harrisburg, assignor of one-half to T. K. Richards, Reading, Pa. Bicycle | 505,738 | Sept. 26 | 2404 | 608 | 64 | 1760 |
| White, Samuel K., Chicago, Ill., and D. H. Bacon, New York, N. Y. Cutter-head for wood-turning machines | 503,632 | Aug. 22 | 2327 | 580 | 64 | 1033 |
| White, T. Stewart, *et al.* (See Raymond, Silas H., assignor.) | | | | | | |
| White, Thomas C. (See Nelson, Jay, assignor.) | | | | | | |
| White, W. B., *et al.* (See Dahill, Thomas H., assignor.) | | | | | | |
| White, W. O., *et al.* (See Scates, George R., assignor.) | | | | | | |
| White, William L. (See Searle, James W., assignor.) | | | | | | |
| White, William R., Bloomington, Ill. Swinging gate | 503,887 | Aug. 22 | 2699 | 677 | 64 | 1106 |
| Whitelow, Edward T. (See Fielden, Eli, assignor.) | | | | | | |
| Whitfield, William L., Ocala, Fla. Track-lifter | 504,250 | Aug. 29 | 3321 | 830 | 64 | 1240 |
| Whiting, George F., Boston, Mass. Hand-hold for reins | 501,308 | July 11 | 1236 | 310 | 64 | 238 |
| Whiting, John H., Detroit, Mich. Tumbling-barrel | 502,797 | Aug. 8 | 947 | 231 | 64 | 755 |
| Whiting, William F., assignor, by mesne assignments, to Howard & Son Company, Providence, R. I. Grip-button | 501,981 | July 25 | 2306 | 577 | 64 | 463 |
| Whitley, Alfred A., Bury, England. Chain-clip for cloth-stretching machines | 503,301 | Aug. 15 | 1779 | {439 440 | 64 | 920 |
| Whitmore, George F., West Union, Iowa. Rotary plow and pulverizer | 502,214 | July 25 | 2685 | 678 | 64 | 536 |
| Whitney, Albert E., Muncie, Ind. Bracket for coffins | 504,009 | Aug. 29 | 3916 | 731 | 64 | 1164 |
| Whitney, Christopher F., Newton, Mass. Aluminium alloy | 501,553 | July 18 | 1627 | ..... | 64 | 329 |
| Whitney, H. O. (See Thomas, Albert D., assignor.) | | | | | | |
| Whitney, James H., Brooklyn, N. Y. Treadle-cushion | 503,633 | Aug. 22 | 2328 | 580 | 64 | 1033 |
| Whiton, David E. and L. E., assignors to D. E. Whiton Machine Company, New London, Conn. Multiple drilling-machine | 500,646 | July 4 | 175 | 45 | 64 | 35 |
| Whiton, Lucius E. (See Whiton, David E. and L. E.) | | | | | | |
| Whittemore, Arthur L., Boston, Mass. Can-holder | 502,897 | Aug. 8 | 1110 | 273 | 64 | 786 |
| Whittemore, James, *et al.* (See Susemihl, Francis G., assignor.) | | | | | | |
| Whitten, Burrel F., and J. F. Porcher, Patroon, Tex. Gun-magazine | 502,389 | Aug. 1 | 236 | 56 | 64 | 609 |
| Whittier, Herbert F., Lawrence, Mass. Disk water-meter | 501,237 | July 11 | 1118 | 274 | 64 | 219 |
| Whittington, George W., Newmarket, Ind. Knotter for binders | 503,634 | Aug. 22 | 2329 | {580 581 | 64 | 1033 |
| Whittington, Thomas F., and W. A. Fisbering, Xenia, Ohio. Reversing-gear for engines | 500,985 | July 4 | 711 | 197 | 64 | 129 |
| Whittum, Edward M., Fall River, Mass. Separator mechanism for spinning-machines | 504,954 | Sept. 12 | 1059 | 271 | 64 | 1444 |
| Whomes, Joseph, and F. J. Gillmore, Los Angeles, Cal. Roof-block | 501,637 | July 18 | 1758 | 438 | 64 | 352 |
| Wiberg, Knut E., Stockholm, Sweden, assignor of one-half to G. F. Berndes. Hand-stamp | 504,546 | Sept. 5 | 391 | 99 | 64 | 1143 |



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|---|---|---|---|---|---|---|
| Wiberg, Peter, New York, N. Y. Hose-nozzle | 501,125 | July 11 | 953 | 243 | 64 | 188 |
| Wicht, Frank W., assignor to J. Wetter, Brooklyn, N. Y. Attachment for cylinder-presses | 501,752 | July 18 | 1947 | 482 | 64 | 384 |
| Wiebush, Charles, assignor of one-half to R. W. Penman, Waco, Tex. Combined mop and window-cleaner | 503,887 | Aug. 22 | 2700 | 677 | 64 | 1106 |
| Wiedenmann, Herman C., Philadelphia, Pa. Holder for bouquets, &c | 501,392 | July 11 | 1385 | 347 | 64 | 265 |
| Wiesebrock, Max T. F., Chicago, Ill. Grain-press | 504,098 | Aug. 29 | 3054 | 763 | 64 | 1190 |
| Wiesebrock, Max T. F., Chicago, Ill. Drier for brewers' grains | 504,099 | Aug. 29 | 3056 | 764 | 64 | 1190 |
| Wiester, William H., San Francisco, Cal. Oven | 504,184 | Aug. 29 | 3200 | 798 | 64 | 1217 |
| Wightman, Merle J., and H. Lemp, Hartford, Conn., assignors to Schuyler Electric Company, of Connecticut. Regulating dynamo-electric machines | 501,309 | July 11 | 1227 | 310 | 64 | 238 |
| Wigtel, Carl. (See Stillman and Wigtel.) | | | | | | |
| Wilbur, Samuel J., Penn Yan, N. Y. Driving-belt | 502,798 | Aug. 8 | 948 | 231 | 64 | 755 |
| Wilburn, Robert L., Mexico, Mo. Door-check | 504,142 | Aug. 29 | 3125 | 781 | 64 | 1203 |
| Wilcox, Curtis N., Brooklyn, N. Y. Cover for milk-jars | 501,176 | July 11 | 1033 | 261 | 64 | 203 |
| Wilcox, Elbert, Jr., New Haven, assignor of one half to W. R. Hartigan, Burlington, Conn. Thill-coupling | 505,502 | Sept. 26 | 1973 | 507 | 64 | 1680 |
| Wilcox, Henry R., trustee, *et al.* (See Winsor, George H.) | | | | | | |
| Wilcox Silver Plate Company. (See Miller, Charles A., assignor.) | | | | | | |
| Wild, Samuel E. (See Gaunt and Wild.) | | | | | | |
| Wilder, Charles M., Cincinnati, Ohio. Electric controlling and locking mechanism for railway switches and signals | 501,701 | July 18 | 1861 | {463 464 | 64 | 370 |
| Willhite, Edmund S., West Salem, Ill. Band-cutter and feeder. (Reissue) | 11,349 | July 4 | 808 | 210 | 64 | 147 |
| Willisch, Hugo Homberg-on-the-Rhine, Germany. Apparatus for hardening steel | 501,393 | July 11 | 1386 | 347 | 64 | 266 |
| Wilkes, Moses, Trenton, N. J. Cut-off for slide-valves | 501,394 | July 11 | 1388 | {347 348 | 64 | 266 |
| Wilkinson, Benjmon M., Grape Vine, Tex. Hog-pen | 500,699 | July 4 | 265 | 72 | 64 | 50 |
| Willand, Herman, *et al.* (See Hoff, Herman, assignor.) | | | | | | |
| Wille, Christian F., Edwardsville, Ill. Automatic dropper for harvesters and binders | 505,739 | Sept. 26 | 2405 | 600 | 64 | 1760 |
| William Cramp & Sons Ship and Engine Building Company. (See McEvoy, Edward J., assignor.) | | | | | | |
| William Deering & Company. (See Hanson, Paul, assignor.) | | | | | | |
| William Deering & Company. (See Storle, Ole O., assignor.) | | | | | | |
| William Sellers & Company. (See Kneass, Strickland L., assignor.) | | | | | | |
| William Wharton, Jr., & Company. (See Angerer, Victor, assignor.) | | | | | | |
| William Wharton, Jr., & Company. (See Samuel, Edward, assignor.) | | | | | | |
| William Wharton, Jr., & Company. (See Wharton, William, Jr., assignor.) | | | | | | |
| Williams, Edward, Dubuque, Iowa. Windmill | 504,185 | Aug. 29 | 3202 | {798 799 | 64 | 1218 |
| Williams, Edward B., Newark, N. J. Can-opener | 504,381 | Sept. 5 | 109 | 28 | 64 | 1291 |
| Williams, Frank T., assignor to Edward Miller & Company, Meriden, Conn. Indicator-float | 505,619 | Sept. 26 | 2195 | 555 | 64 | 1723 |
| Williams, George L., assignor of one-half to A. Hume, Galt, Canada. Boot or shoe | 503,592 | Aug. 15 | 1781 | 440 | 64 | 1020 |
| Williams, George W., Eddyville, Ky. Platform-scale | 505,503 | Sept. 26 | 1973 | 507 | 64 | 1680 |
| Williams, Henry S., Madeira, Cal. Bicycle | 501,513 | Aug. 15 | 2108 | 528 | 64 | 979 |
| Williams, Irvin, Nelson, Mo. Watch-key | 502,060 | July 25 | 2438 | 613 | 64 | 488 |
| Williams, James B., Glastonbury, Conn. Seeding-machine | 503,274 | Aug. 15 | 1728 | 426 | 64 | 911 |
| Williams, James G., assignor of one-half to A. J. Christmas, Glasgow, Ky. Combined feeder and band-cutter for thrashing-machines | 502,689 | Aug. 1 | 753 | 182 | 64 | 704 |
| Williams, James S., *et al.* (See Smith, John D., assignor.) | | | | | | |
| Williams, John J., Montpelier, Vt. Repairing pneumatic tires | 503,636 | Aug. 22 | 2334 | {581 582 | 64 | 1034 |
| Williams, John N., Brooklyn, N. Y. Type-writing machine | 501,753 | July 18 | 1948 | {482 483 484 | 64 | 384 |
| Williams, John R., Newark, N. J. Tobacco stripping and booking machine | 500,647 | July 4 | 176 | {45 46 47 | 64 | 35 |
| Williams, John R., New York, N. Y. Cigarette-making machine | 504,768 | Sept. 12 | 755 | {189 190 191 192 | 64 | 1426 |
| Williams, Louis N. D., assignor of one-half to R. W. Scott, Philadelphia, Pa. Manufacture of stockings | 502,941 | Aug. 8 | 1191 | 293 | 64 | 800 |
| Williams, Louis N. D., assignor of one-half to R. W. Scott, Philadelphia, Pa. Knitting-machine | 503,920 | Aug. 22 | 2751 | 690 | 64 | 1117 |
| Williams, Louis N. D., assignor of one-half to R. W. Scott, Philadelphia, Pa. Knitting-machine | 503,921 | Aug. 22 | 2753 | 690 | 64 | 1117 |
| Williams, Louis N. D., assignor of one-half to R. W. Scott, Philadelphia, Pa. Knitting-machine | 503,922 | Aug. 22 | 2754 | 691 | 64 | 1117 |
| Williams, Malcolm B., and W. H. Athey, assignors to Williams Manufacturing Company, Kalamazoo, Mich. Windmill | 503,635 | Aug. 22 | 2333 | 581 | 64 | 1034 |
| Williams Manufacturing Company. (See Williams and Athey, assignors.) | | | | | | |
| Williams, Miles, Bootle, England. Railway-signal | 501,196 | July 11 | 954 | 243 | 64 | 188 |
| Williams, Nathan G., Bellows Falls, Vt. Centrifugal creamer | 500,787 | July 4 | 405 | 107 | 64 | 75 |
| Williams, Otis H., assignor of one-third to J. M. Ray, Hamilton, Ohio. Cabinet-album | 501,857 | July 18 | 2104 | 520 | 64 | 412 |
| Williams, Sylvester M., San Francisco, Cal. Combined charger, reflector, and smoke-arrester for flash-light burners | 504,955 | Sept. 12 | 1060 | 272 | 64 | 1484 |
| Williams, Sylvester M., San Francisco, Cal. Flash-light burner | 505,014 | Sept. 12 | 1102 | 298 | 64 | 1503 |
| Williams, Sylvester M., assignor of one-half to J. A. Shepard, San Francisco, Cal. Flash-light burner | 504,956 | Sept. 12 | 1063 | 272 | 64 | 1485 |
| Williams, Thomas J., assignor to S. Lee, London, England. Pneumatic tire | 504,144 | Aug. 29 | 3127 | 782 | 64 | 1203 |
| Williams, William H., Long Island City, N. Y. Veneer-machine | 501,395 | July 11 | 1389 | 348 | 64 | 266 |
| Williamson, Edwin R., Chain of Rocks, Mo. Horse-collar | 502,543 | Aug. 1 | 503 | 126 | 64 | 659 |
| Williamson, Edwin R., Chain of Rocks, Mo. Tongue-support | 504,143 | Aug. 29 | 3126 | 782 | 64 | 1203 |
| Williamson, Jesse H., Muncie, Ind. Grain scouring and polishing machine | 503,889 | Aug. 22 | 2702 | {677 678 | 64 | 1107 |
| Willhe, Isaac M., Freeport, Ill. Bushing | 501,992 | July 25 | 2307 | 577 | 64 | 464 |
| Willimantic Linen Company. (See Hubbard, Eber, assignor.) | | | | | | |
| Willingale, Samuel I., *et al.*, administrators. (See Bradford, Hezekiah.) | | | | | | |
| Willide, Charles F., Ogden, Utah Ter. Ore-separator | 503,023 | Aug. 8 | 1316 | 329 | 64 | 892 |
| Wilmington Dental Manufacturing Company. (See Brooks, Stephen H., assignor.) | | | | | | |
| Wilson, Albert C. (See Manning and Wilson.) | | | | | | |
| Wilson, Alfred E., assignor to J. S. Ticknor, Rockford, Ill. Attachment for street-rail brooms | 503,024 | Aug. 8 | 1318 | 329 | 64 | 892 |

*Alphabetical list of patentees, July to September, inclusive*—Continued.

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|---|---|---|---|---|---|---|
| | | | Spec. | Drg. | Vol. | Page. |
| Wilson, Benjamin F., Pittsburg, Pa. Coal-mining machine | 502,426 | Aug. 1 | 299 | 71 | 64 | 620 |
| Wilson, Charles, Newcastle-on-Tyne, England. Meat-slicing machine | 501,554 | July 18 | 1627 | 407 | 64 | 329 |
| Wilson, David. (See Keane and Wilson.) | | | | | | |
| Wilson, Edward O., Jersey City, N. J. Filter-faucet | 505,340 | Sept. 19 | 1688 | 435 | 64 | 1614 |
| Wilson, Exilda, Detroit, Mich. Corset-steel | 505,150 | Sept. 19 | 1389 | 356 | 64 | 1556 |
| Wilson, F. Cortes, Chicago, Ill. Crimping-tool | 502,339 | Aug. 1 | 143 | 33 | 64 | 592 |
| Wilson, Henry C., Edwardsville, Kans. Potato-harvester | 504,186 | Aug. 29 | 3004 | 799 | 64 | 1218 |
| Wilson, James, Somerville, Mass. Saddle or seat for bicycles | 505,620 | Sept. 26 | 2196 | 555 | 64 | 1722 |
| Wilson, James E. (See Sterling and Wilson.) | | | | | | |
| Wilson, James E., Easton, Pa. Machine for cutting bones | 500,986 | July 4 | 713 | 187 | 64 | 129 |
| Wilson, James S., *et al.* (See Anderson and Winston, assignors.) | | | | | | |
| Wilson, John C., Washington, Pa. Swinging gate | 502,338 | Aug. 1 | 142 | 33 | 64 | 592 |
| Wilson, John M., Omaha, Nebr. Boiler stay or brace | 503,514 | Aug. 15 | 2109 | 528 | 64 | 979 |
| Wilson, Martin M., Llandudno, England. Game apparatus | 504,073 | Aug. 29 | 3005 | 751 | 64 | 1180 |
| Wilson, Milton M., assignor to I. N. Forrester and S. Fullerton, Camden, N. J. Cloth-napping machine | 504,010 | Aug. 29 | 2916 | 731 | 64 | 1164 |
| Wilson, Nicholas E., Thompson, Iowa. Door and hinge | 503,730 | Aug. 22 | 2477 | 616 | 64 | 1062 |
| Wilson, Walter H., and W. J. Pirrie, Belfast, Ireland. Boat-disengaging gear | 503,637 | Aug. 22 | 2336 | 582 | 64 | 1035 |
| Wilson, William R. (See Hosmer and Wilson.) | | | | | | |
| Wilson, William T. (See Hetrick, Wilson, and Rowe.) | | | | | | |
| Wilson, Zachary T., Inverness, Fla. Hub for vehicle-wheels | 505,740 | Sept. 26 | 2407 | 609 | 64 | 1761 |
| Winans, William L., London, England. Spindle-shaped ocean-steamer | 504,120 | Aug. 29 | 3086 | 773 | 64 | 1196 |
| Winchester Cotton and Tobacco Press Company. (See Kisinger, William S., assignor.) | | | | | | |
| Winchester Repeating Arms Company. (See Bennett, Thomas G., assignor.) | | | | | | |
| Winckhofer, Charles, Newark, N. J. Combined door spring, check, and latch | 501,702 | July 18 | 1865 | 464 | 64 | 370 |
| Winfield Manufacturing Company. (See Winfield, William C., assignor.) | | | | | | |
| Winfield, William C., assignor to Winfield Manufacturing Company, Warren, Ohio. Bottom for cans | 504,547 | Sept. 5 | 393 | 100 | 64 | 1343 |
| Wing, Levi J. (See Delany, Miles H., assignor.) | | | | | | |
| Winkel, John. (See Gerard, Walter, assignor.) | | | | | | |
| Winner, William P., assignor to himself, W. P. Roberts, F. Cavanaugh, O. R. Scheets, and C. A. Klump, Quakertown, Pa. Heating-furnace | 501,034 | July 4 | 785 | 205<br>206 | 64 | 143 |
| Winsor, George H., Central Falls, assignor to himself, H. R. Wilcox, trustee, Cranston, and S. C. Harris, Providence, R. I. Machine for making pipes or tubes | 504,687 | Sept. 5 | 612 | 156 | 64 | 1385 |
| Winston, John S. (See Anderson and Winston.) | | | | | | |
| Winter, Henry W. (See Glidden and Winter.) | | | | | | |
| Winter, Henry W., Boston, assignor to J. W. Brooks, trustee, Petersham, Mass. Making rotary toothed cutters | 501,555 | July 18 | 1628 | 407 | 64 | 329 |
| Winter, Henry W., Boston, assignor to J. W. Brooks, trustee, Petersham, Mass. Rotary cutter | 503,067 | Aug. 8 | 1361 | 341 | 64 | 835 |
| Winter, Josef, Ascherlebens, Germany. Machine for splitting grains | 500,729 | July 4 | 319 | 85 | 64 | 60 |
| Winter, Louis F., assignor to L. A. Klein and J. Dela Mar, New York, N. Y. Machine for forming fillers for cigars | 504,100 | Aug. 29 | 3057 | 764<br>765 | 64 | 1190 |
| Winter, Oscar O., Minneapolis, Minn. Rail-joint | 505,181 | Sept. 19 | 1437 | 370 | 64 | 1567 |
| Winterflood, Joseph, London, England. Water-heater | 500,987 | July 4 | 715 | 188 | 64 | 130 |
| Winther, Charles A. G., Somerville, assignor of one-half to Star Brass Manufacturing Company, Boston, Mass. Steam-gage tubing | 500,830 | July 4 | 477 | 125 | 64 | 87 |
| Wiseman, Arthur G., St. Louis, Mo. Self-winding and synchronizing clock | 502,156 | July 25 | 2593 | 652<br>653 | 64 | 518 |
| Wiseman, Arthur G., St. Louis, Mo. Electric winding attachment for clocks | 502,215 | July 25 | 2687 | 678 | 64 | 537 |
| Wiseman, Arthur G., Webster Grove, Mo. Electric-clock synchronizer | 502,157 | July 25 | 2598 | 653<br>654 | 64 | 519 |
| Wishart, James M., North Topeka, Kans. Sad-iron | 501,964 | July 11 | 1164 | 295<br>296 | 64 | 926 |
| Wisler, Ignatz. (See Christensen, Emil, assignor.) | | | | | | |
| Wisner, George W. (See Scott and Wisner.) | | | | | | |
| Wiswell, Jacob C., Medford, assignor to C. P. Gorely, Boston, Mass. Amalgamating-machine | 504,508 | Sept. 5 | 328 | 84 | 64 | 1331 |
| Witherell, George E., assignor to Hartford Machine Screw Company, Hartford, Conn. Cutting-off and forming tool | 504,688 | Sept. 5 | 613 | 157 | 64 | 1386 |
| Witherell, George E., assignor to Hartford Machine Screw Company, Hartford, Conn. Knurling-fixture | 504,769 | Sept. 12 | 766 | 193 | 64 | 1427 |
| Witherell, George E., assignor to Hartford Machine Screw Company, Hartford, Conn. Clutching mechanism | 504,770 | Sept. 12 | 767 | 193 | 64 | 1427 |
| Withers, Samuel, Philadelphia, Pa. Marbleizing metal, china, &c. | 505,303 | Sept. 19 | 1635 | ..... | 64 | 1605 |
| Withington, Charles B., Janesville, Wis. Photographic camera | 501,703 | July 18 | 1866 | 464<br>465 | 64 | 370 |
| Withington, Charles B., Janesville, Wis. Photographic-plate holder | 502,799 | Aug. 8 | 949 | 231 | 64 | 756 |
| Witte, Armin, Brenham, Tex. Hay-press | 502,942 | Aug. 8 | 1152 | 293<br>294 | 64 | 809 |
| Wittemann Brothers. (See Spindler, Charles, assignor.) | | | | | | |
| Wittmann, Will C., Lincoln, Nebr. Bridle-bit | 500,831 | July 4 | 479 | 125 | 64 | 87 |
| Wittnauer, Albert. (See Lugrin, Henry A., assignor.) | | | | | | |
| Wm. Knabe & Co. Manufacturing Company. (See Smith, William T., assignor.) | | | | | | |
| Wook, John, Canton, Ohio. Eaves-trough | 502,800 | Aug. 8 | 950 | 231 | 64 | 756 |
| Wodiska, Julius, New York, N. Y. Ear-ring | 502,801 | Aug. 8 | 951 | 232 | 64 | 756 |
| Wofford, Henry C., Greenville, S. C. Dental tool | 501,127 | July 11 | 954 | 244 | 64 | 198 |
| Wohlgemuth, Edward L., Amesbury, Mass. Brush | 503,821 | Aug. 22 | 2611 | 652 | 64 | 1069 |
| Wolcott, Clayton, assignor to Wolcott Hardware Company, Hartford, Conn. Sash-fastener | 501,238 | July 11 | 1119 | 286<br>285 | 64 | 219 |
| Wolcott Hardware Company. (See Wolcott, Clayton, assignor.) | | | | | | |
| Wolcott, Henry, *et al.* (See Ely, William, assignor.) | | | | | | |
| Wolf, Abraham N., Allentown, Pa. Automatic feed-regulator for mills | 500,632 | July 4 | 479 | 125 | 64 | 87 |
| Wolf, John, Jr., assignor of one-half to J. Bloch, Cincinnati, Ohio. Clutch | 503,923 | Aug. 22 | 2755 | 691 | 64 | 1117 |
| Wolf, John, Jr., assignor of one-half to J. Bloch, Cincinnati, Ohio. Cloth-cutting machine | 505,690 | Sept. 26 | 2328 | 590<br>591 | 64 | 1747 |
| Wolf, John, Jr., assignor of one-half to J. Bloch, Cincinnati, Ohio. Take-up device for cloth-cutting machines | 505,741 | Sept. 26 | 2408 | 609 | 64 | 1761 |
| Wolf, John, Jr., and J. Bloch, Cincinnati, Ohio. Cloth-cutting machine | 505,689 | Sept. 26 | 2323 | 590 | 64 | 1746 |
| Wolfard, Nathan D., Hartsville, Ind. Bookbinder | 500,833 | July 4 | 482 | 126 | 64 | 88 |
| Wolfe, James M. (See Piastero, Rankin, and Wolfe.) | | | | | | |
| Wolff, Alfred J., assignor to Scovill Manufacturing Company, Waterbury, Conn. Case for hypodermic syringes | 505,645 | Sept. 26 | 2253 | 571 | 64 | 1734 |
| Wolff, David, *et al.* (See Lee, William B., assignor.) | | | | | | |
| Wolhaupter, Benjamin, Morgan Park, Ill. Cattle-guard | 500,730 | July 4 | 320 | 85, 86 | 64 | 60 |



*Alphabetical list of patentees, July to September, inclusive*—Continued.

| Name, residence, and invention. | No. | Date. | Monthly volume. | | Official Gazette. | |
|---|---|---|---|---|---|---|
| | | | Spec. | Drg. | Vol. | Page. |
| Wollert, Oscar E., Stockholm, Sweden. Skate | 502,109 | July 25 | 2516 | 631 | 64 | 502 |
| Wolsteld, John. (See Beck, Michael, assignor.) | | | | | | |
| Wood, Austin C., and J. H. Tuffs, Syracuse, N. Y. Gas washing and scrubbing device | 503,395 | Aug. 15 | 1930 | 479<br>480 | 64 | 947 |
| Wood, Clark B., assignor of one-half to C. A. Jewett, Boston, Mass. Lubricator | 502,158 | July 25 | 2600 | 654 | 64 | 519 |
| Wood, Edward E., Jr., Northampton, Mass. Carving-fork guard | 503,303 | Aug. 15 | 1782 | 440 | 64 | 920 |
| Wood, Edwin, Warminster, England. Stand for cycles | 503,185 | Aug. 15 | 1801 | 391 | 64 | 887 |
| Wood, James J., Fort Wayne, Ind. Rheostat | 502,340 | Aug. 1 | 145 | 33, 34 | 64 | 592 |
| Wood, Robert E. (See Gartside and Wood.) | | | | | | |
| Wood, Thomas T. (See Acton, William, assignor.) | | | | | | |
| Wood, Warren, assignor to S. G. McKiernan, Paterson, N. J. Rock-drill-rotating device | 505,242 | Sept. 19 | 1530 | 399 | 64 | 1584 |
| Woodard, George, Bradford, Pa. Tool for oil-wells | 503,377 | Sept. 19 | 1749 | 454 | 64 | 1625 |
| Woodburn, Harry L. (See Dean, Seward A., assignor.) | | | | | | |
| Woodbury, Charles B., and O. Greenhanm, Washington, D. C. Coin-purse | 503,447 | Aug. 15 | 2000 | 496 | 64 | 959 |
| Woodbury, Levi. (See Graham, Edmund H., assignor.) | | | | | | |
| Woodcock, Reginald C., New York, N. Y., and C. T. Kingzett, London, England, assignors to American and Continental Sanitas Company, Limited, New York, N. Y. Disinfecting or vaporizing device | 502,544 | Aug. 1 | 504 | 120 | 64 | 659 |
| Woodfill, Owensby H., assignor of two-thirds to J. Blue and R. E. Ash, Nevada, Mo. Vending-machine | 502,598 | Aug. 1 | 584 | 140 | 64 | 673 |
| Woodhead, Richard M., Nottingham, England. Mud-guard for velocipedes | 502,802 | Aug. 8 | 932 | 230 | 64 | 756 |
| Woodman, Robert. (See Norrington, Henry H., assignor.) | | | | | | |
| Woodruff, Theodore T., deceased; I. I. Gerson, Philadelphia, Pa., administrator. Folding canopy for bedsteads | 503,954 | Aug. 29 | 2926 | 705 | 64 | 1147 |
| Woodruff, William H., Auburn, N. Y. Billiard-register | 504,957 | Sept. 12 | 1065 | 272 | 64 | 1485 |
| Woodward, Ed P., Vernon Centre, Conn. Loom | 502,024 | July 25 | 2381 | 598 | 64 | 478 |
| Woodward, Erastus, Somerville, and C. Hatch, Jr., Revere, assignors to Merrick Sewing Machine Company, Boston, Mass. Eyeleting-machine | 501,754 | July 18 | 1656 | 484<br>385 | 64 | 386 |
| Woodward, James H., Nottingham, England. Stocking and knitting same | 500,700 | July 4 | 266 | 72 | 64 | 50 |
| Woods, Andrew M., Gainesville, Ala. Umbrella-support | 503,338 | Aug. 15 | 1845 | 457 | 64 | 931 |
| Woolsey, Nicholas L., Lawrence, N. Y. Thill-coupling | 505,691 | Sept. 26 | 2374 | 591 | 64 | 1748 |
| Worley, North S., Evansville, Ind. Puzzle | 505,210 | Sept. 19 | 1485 | 387 | 64 | 1576 |
| Wörner, Adolf, Buda-Pesth, Austria-Hungary, assignor to Siemens & Halske, Berlin, Germany. Contact for conduit electric railways | 503,710 | Aug. 22 | 2446 | 609 | 64 | 1056 |
| Worron, Lewis C. (See Vanderbeek and Worron.) | | | | | | |
| Worron, Lewis C., assignor to A. Vanderbeek, Hartford, Conn. Multi-cylinder engine | 501,983 | July 25 | 2309 | 577<br>578 | 64 | 464 |
| Worth, William H., Petaluma, Cal. Gas-engine | 504,260 | Aug. 29 | 3392 | 830 | 64 | 1240 |
| Worthen, Andrew J., Murphysborough, Ill. Spice-box | 502,453 | Aug. 1 | 344 | 82 | 64 | 629 |
| Worthington, Charles C., Irvington, N. Y. Direct-acting pumping-engine | 504,644 | Sept. 5 | 527 | 136 | 64 | 1370 |
| Wors, Gustav A. (See Newbigging and Wors.) | | | | | | |
| Wratitsch, Josef, and S. Gergacsevics, Gras, Austria-Hungary. Automatic telephone | 504,011 | Aug. 29 | 2918 | 732 | 64 | 1164 |
| Wren, Eva L., administratrix. (See Wren and Oliver.) | | | | | | |
| Wren, Robert M., and A. J. Oliver, Oakland, Cal.; said Oliver assignor to said Wren, deceased; E. I. Wren, administratrix. Cloth-measuring machine | 502,943 | Aug. 8 | 1194 | 294 | 64 | 800 |
| Wright, Charles L., *et al.* (See Jones, John M., assignor.) | | | | | | |
| Wright, Charles T. (See Goff, Daniel, assignor.) | | | | | | |
| Wright, Elina M., Hartford, Conn. Forming decorative panels | 501,965 | July 11 | 1165 | ..... | 64 | 927 |
| Wright, John A., Indianapolis, Ind. Bicycle-tire | 502,390 | Aug. 1 | 236 | 56 | 64 | 609 |
| Wright, Joseph F., Colorado Springs, Colo. Shaft-tip | 505,742 | Sept. 26 | 2410 | 609 | 64 | 1761 |
| Wright, Judson E., assignor of one-half to W. B. Moore, Chicago, Ill. Safety-bicycle | 501,454 | July 11 | 1468 | 368 | 64 | 983 |
| Wright, Ransom C., Philadelphia, Pa. Compound locomotive | 500,788 | July 4 | 408 | 107 | 64 | 75 |
| Wright, Richard H. (See Rose, William, assignor.) | | | | | | |
| Wright, Rufus. (See Morgan and Wright.) | | | | | | |
| Wright, Solomon, and W. A. Hermon, Pownal, Vt. Yarn-guiding device for knitting-machines | 501,128 | July 11 | 955 | 244 | 64 | 188 |
| Wright, William A., Centreton, N. J., assignor of one-half to Brown & Gilman, Philadelphia, Pa. Folding chair | 504,855 | Sept. 12 | 903 | 233 | 64 | 1455 |
| Wrigley, Thomas B. (See Bronson, Douglas B., assignor.) | | | | | | |
| Wulff, John W., assignor of one-half to T. E. Stevens, Blair, Nebr. Wrench and rod-vise | 501,177 | July 11 | 1034 | 261 | 64 | 203 |
| Wullweber, Otto L., Chicago, Ill. Bicycle-tire | 501,239 | July 11 | 1121 | 285 | 64 | 219 |
| Wurts, Alexander, assignor to Westinghouse Electric and Manufacturing Com any, Pittsburg, Pa. Automatic circuit-interrupter | 501,201 | July 11 | 1066 | 270 | 64 | 209 |
| Wurts, Alexander, assignor to Westinghouse Electric and Manufacturing Company, Pittsburg, Pa. Electrical condenser | 503,186 | Aug. 15 | 1591 | 391 | 64 | 887 |
| Wyckoff, Seamans & Benedict. (See Webb, George B., assignor.) | | | | | | |
| Wylie, Josephus, Ireland Hill, Ala. Churn | 501,984 | July 25 | 2314 | 578 | 64 | 465 |
| Wyman, Horace, assignor to Crompton Loom Works, Worcester, Mass. Shuttle-motion for looms | 503,924 | Aug. 22 | 2757 | 691 | 64 | 1118 |
| Wynne, Frank, London, England. Conduit system for electric railways | 502,216 | July 25 | 2690 | 670 | 64 | 537 |
| Wynne, Lionel C. F., *et al.* (See Ludlow, Ross A., assignor.) | | | | | | |
| Wynne, Owen H. O., *et al.* (See Ludlow, Ross A., assignor.) | | | | | | |
| Yale, Albert P., *et al.* (See Bruley, Calixte, assignor.) | | | | | | |
| Yaryan Fifth Wheel Company. (See Bosart, Timothy L., assignor.) | | | | | | |
| Yates, Charles M. (See Gallinowsky, Hugo, assignor.) | | | | | | |
| Yeager, Samuel A., and W. I. Luckenbach, Bethlehem, and A. P. Balliet, Coplay, Pa. Car-coupling | 504,958 | Sept. 12 | 1066 | 273 | 64 | 1486 |
| Yost, Andrew, Steelton, Pa. Truss | 503,223 | Aug. 15 | 1653 | 408 | 64 | 897 |
| Yost Writing Machine Company. (See Merritt, Mortimer G., assignor.) | | | | | | |
| Young, Charles P. (See Mack, Carl F., assignor.) | | | | | | |
| Young, David T. and H. W., Birmingham, England. Bolt-forcer | 503,188 | Aug. 15 | 1594 | 392 | 64 | 887 |
| Young, Harry W. (See Young, David T. and H. W.) | | | | | | |
| Young, John, assignor to Western Electric Company, Chicago, Ill. Fire-alarm and individual electric call | 503,187 | Aug. 15 | 1592 | 391 | 64 | 887 |
| Young, Robert C., Manningham, England. Lay-motion for looms for weaving looped pile fabrics | 501,585 | July 18 | 1670 | 417 | 64 | 337 |
| Young, Samuel. (See Moskowitz and Young.) | | | | | | |
| Young, Willard B. (See Cahoon, William, Jr., assignor.) | | | | | | |
| Youngs, Fred E., Allegheny, Pa. Tool-holder | 500,834 | July 4 | 483 | 126 | 64 | 88 |
| Youngs, Fred E., Allegheny, Pa. Fluid-pressure regulator and cut-off | 501,814 | July 18 | 2045 | 504 | 64 | 401 |
| Yusl, John, New York, N. Y. Music-desk for pianos | 503,822 | Aug. 22 | 2612 | 652 | 64 | 1069 |
| Zabl, Herman, Momence, Ill. Bridle-bit | 504,959 | Sept. 12 | 1069 | 273 | 64 | 1486 |
| Zahn, William, Newark, N. J. Tawing hides or skins | 504,012 | Aug. 29 | 2919 | ..... | 64 | 1164 |
| Zahn, William, Newark, N. J. Tanning hides or skins | 504,013 | Aug. 29 | 2921 | ..... | 64 | 1164 |

*Alphabetical list of patentees, July to September, inclusive*—Continued.

| Name, residence, and invention. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drg. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|
| Zahn, William, Newark, N. J. Tawing skins | 504,014 | Aug. 29 | 2922 | ..... | 64 | 1164 |
| Zane, George H., assignor of one-half to J. B. Gallagher, Philadelphia, Pa. Masher for vegetables, fruits, &c | 505,504 | Sept. 26 | 1975 | 507 | 64 | 1680 |
| Zangenberg, Anton E., New York, N. Y. Fly-book for anglers | 502,427 | Aug. 1 | 300 | 72 | 64 | 620 |
| Zauner, Alexander, San Antonio, Tex. Tumbler-washer | 503,638 | Aug. 22 | 2337 | 583 | 64 | 1035 |
| Zbinden, Frits, Lausanne, Switzerland. Knapsack | 504,101 | Aug. 29 | 3050 | 765 | 64 | 1191 |
| Zehnder, Benedict. (See Evans, George R., assignor.) | | | | | | |
| Zehnder, Morris R. (See Reilly, Bernard T., assignor.) | | | | | | |
| Zeigler, George W., Anderson, Ind. Machine for cutting paper, cardboard, &c | 504,509 | Sept. 5 | 330 | 84 | 64 | 1331 |
| Zeigler, George W., Anderson, Ind. Paper-cutting machine | 504,510 | Sept. 5 | 333 | 85 | 64 | 1332 |
| Zell, Robert K., assignor of one-half to H. C. Kirk, Jr., Baltimore, Md. Electric-railway conduit | 502,842 | Aug. 8 | 1019 | 248 | 64 | 769 |
| Zemelman, Sam. (See Choen, Wolf, assignor.) | | | | | | |
| Zender, Cendar, Berlin, Germany. Pedal-stool | 502,944 | Aug. 8 | 1195 | 294 | 64 | 800 |
| Ziegler, Charles F., St. Louis, Mo. Shutter-worker | 505,283 | Sept. 19 | 1589 | 416 | 64 | 1597 |
| Ziegler, Frank P., Milwaukee, Wis. Apparatus for warming or heating the constituents of candy | 501,310 | July 11 | 1229 | 310 | 64 | 238 |
| Ziegler, Frank P., Milwaukee, Wis. Gas-heater | 504,382 | Sept. 5 | 110 | 28 | 64 | 1291 |
| Ziegler, Peter, Brooklyn, N. Y. Till-alarm | 502,945 | Aug. 8 | 1197 | 295 | 64 | 801 |
| Zietlow, Albert W. (See Bersbach and Zietlow.) | | | | | | |
| Zilius, Jacob, Huntingdon, Pa. Car-coupling | 504,015 | Aug. 29 | 2923 | 732 | 64 | 1164 |
| Zimermann, John, assignor to W. W. and J. K. Altemus, Philadelphia, Pa. Gearing | 504,645 | Sept. 5 | 532 | 136 | 64 | 1370 |
| Zimmer, Frederick W., Rochester, N. Y. Carriage | 505,015 | Sept 12 | 1163 | 298 / 299 | 64 | 1504 |
| Zimmerman, John, and J. K. Underdown, assignors to National Key-Opening Can Company, Chicago, Ill. Punch for forming tongues in blanks for key-opening cans | 504,187 | Aug. 29 | 3207 | 800 | 64 | 1219 |
| Zimmermann, Albert, Stuttgart, Germany. Lantern | 503,780 | Aug. 22 | 2557 | 637 | 64 | 1078 |
| Zimmermann, William. (See Kaestner, Max, assignor.) | | | | | | |
| Zink, Peter. (See Peartree, Joseph R., assignor.) | | | | | | |
| Ziahka, Carl H., Spencer, Iowa. Band-cutter and feeder | 504,383 | Sept. 5 | 111 | 28, 29 | 64 | 1291 |
| Zechernig, Friedrich E., assignor to A. K. M. H. Evler, Dresden, Germany. Coin-freed latch | 502,898 | Aug. 8 | 1112 | 273 / 274 | 64 | 786 |
| Zuckriegel, Peter, Tell City, Ind. Voting-booth | 504,016 | Aug. 29 | 2924 | 732 | 64 | 1165 |
| Zwietusch, Otto, Milwaukee, Wis. Manufacture of beer | 504,145 | Aug. 29 | 3129 | 782 | 64 | 1203 |

# ALPHABETICAL LIST OF PATENTEES OF DESIGNS.

| Name, residence, and design. | No. | Date. | Official Gazette. Volume. | Official Gazette. Page. |
|---|---|---|---|---|
| A. A. Griffing Iron Company. (See Williams and Ambrose, assignors.) | | | | |
| Adler, Victor, assignor of one-half to A. J. Somerville, St. Louis, Mo. Easel | 22,587 | July 4 | 64 | 149 |
| Aldine Manufacturing Company. (See Phillips, James T., assignor.) | | | | |
| Ambrose, Edward. (See Williams and Ambrose.) | | | | |
| Aumonier, Frederic, London, England. Wall-paper | 22,762 | Aug. 29 | 64 | 1260 |
| Aumonier, Frederic, London, England. Wall-paper | 22,763 | Aug. 29 | 64 | 1260 |
| Aumonier, Frederic, London, England. Wall-paper | 22,764 | Aug. 29 | 64 | 1260 |
| Aumonier, Frederic, London, England. Wall-paper | 22,765 | Aug. 29 | 64 | 1260 |
| Aumonier, Frederic, London, England. Wall-paper | 22,801 | Sept. 26 | 64 | 1784 |
| Aumonier, Frederic, London, England. Wall-paper | 22,802 | Sept. 26 | 64 | 1784 |
| Aumonier, Frederic, London, England. Wall-paper | 22,803 | Sept. 26 | 64 | 1784 |
| Aumonier, Frederic, London, England. Wall-paper | 22,804 | Sept. 26 | 64 | 1784 |
| Aumonier, Frederic, London, England. Wall and ceiling paper | 22,805 | Sept. 26 | 64 | 1784 |
| Anderson, John H., Paterson, N. J. Kerchief | 22,615 | July 18 | 64 | 428 |
| Arnold, Constable & Co. (See Matthews, John, assignor.) | | | | |
| Augenbraum, Peter, Stamford, Conn., assignor to Brunswick-Balke-Collender Company, Chicago, Ill. Billiard-table | 22,594 | July 4 | 64 | 150 |
| Avery, Robert S., Washington, D. C. Font of phonetic printing-type | 22,613 | July 18 | 64 | 428 |
| Babbitt, Seth W., Meriden, Conn. Dish | 22,799 | Sept. 26 | 64 | 1783 |
| Ball, Webster C., Cleveland, Ohio. Hand for time pieces | 22,702 | Aug. 15 | 64 | 999 |
| Ball, Webster C., Cleveland, Ohio. Hand for time pieces | 22,703 | Aug. 15 | 64 | 999 |
| Barker, Charles B., Brooklyn, N. Y. Spoon | 22,639 | July 18 | 64 | 433 |
| Bartlett, William H., Worcester, Mass. Badge | 22,636 | July 18 | 64 | 432 |
| Bernheimer & Brother, Jacob S. (See Friedlander, William S., assignor.) | | | | |
| Best, John, Paterson, N. J. Book-mark | 22,775 | Sept. 12 | 64 | 1527 |
| Bigelow Carpet Company. (See Brown, William F., assignor.) | | | | |
| Birge & Sons, M. H. (See Booze, Charles, assignor.) | | | | |
| Bishop, Fredrick, Los Angeles, Cal. Casing for coin-controlled apparatus | 22,761 | Aug. 29 | 64 | 1260 |
| Boeck, Charles H., Jackson, Mich. Roller-base for oil-stoves | 22,742 | Aug. 22 | 64 | 1126 |
| Boeck, Charles H., assignor to H. L. Smith, Jackson, Mich. Stove | 22,709 | Aug. 15 | 64 | 1000 |
| Boles, Warren H., *et al.* (See Rowlands, John R., assignor.) | | | | |
| Booze, Charles, assignor to M. H. Birge & Sons, Buffalo, N. Y. Wall-paper | 22,789 | Sept. 19 | 64 | 1644 |
| Boss-Grip Lock-Nut Company. (See Rouse, Albion M., assignor.) | | | | |
| Boulay, Jean L., Paris, France. Jewel-casket | 22,641 | July 18 | 64 | 433 |
| Bradfield, Lucetta, and R. C. Riggs, Harrisonville, Ohio. Holder for soap-cups | 22,728 | Aug. 22 | 64 | 1123 |
| Bradley, Daniel R., New York, N. Y. Perfumery-holder | 22,624 | July 18 | 64 | 430 |
| Bridge & Beach Manufacturing Company. (See Nellis, Emory D., assignor.) | | | | |
| Bromley, Edward, *et al.* (See Petzold, Adolph, assignor.) | | | | |
| Bromley, John H., *et al.* (See Petzold, Adolph, assignor.) | | | | |
| Bromley, Joseph H., *et al.* (See Petzold, Adolph, assignor.) | | | | |
| Brown, John W., Jr., assignor to Enterprise Manufacturing Company of Pennsylvania, Philadelphia, Pa. Sad-iron | 22,811 | Sept. 26 | 64 | 1785 |
| Brown, Thomas B., *et al.* (See Brown, William A., assignor.) | | | | |
| Brown, Thomas G., *et al.* (See Brown, William A., assignor.) | | | | |
| Brown, William A., assignor to himself, T. G. and T. B. Brown, New York, N. Y. Cup | 22,580 | July 4 | 64 | 148 |
| Brown, William F., Newark, N. J., assignor to Bigelow Carpet Company, New York, N. Y. Carpet | 22,772 | Sept. 12 | 64 | 1527 |
| Bruner, Harrison, Sundance, Wyo. Badge | 22,716 | Aug. 22 | 64 | 1122 |
| Brunswick-Balke-Collender Company. (See Augenbraun, Peter, assignor.) | | | | |
| Buckley, Thomas H., Worcester, Mass. Lunch-wagon body | 22,743 | Aug. 22 | 64 | 1126 |
| Bugh, John C., Columbus, Ohio. Soap-dish | 22,705 | Aug. 15 | 64 | 999 |
| Bull, Annabell C., Peoria, Ill. Knee-protector | 22,707 | Sept. 5 | 64 | 1390 |
| Bunting, William, Jr., Flushing, assignor to Meyer-Sniffen Company, Limited, New York, N. Y. Lavatory or sink trap | 22,785 | Sept. 12 | 64 | 1529 |
| Button, Eugene L., Brooklyn, N. Y. Packing-can | 22,664 | Aug. 1 | 64 | 707 |
| Cahn, Benjamin F., Cincinnati, Ohio. Wall-fixture for counters | 22,589 | July 4 | 64 | 149 |
| Cahn, Benjamin F., Cincinnati, Ohio. Wall-fixture for counters | 22,590 | July 4 | 64 | 149 |
| Camizzi, Vincenzo, New York, N. Y. Table | 22,758 | Aug. 29 | 64 | 1259 |
| Campbell, William H., and J. J. Willingham, Pueblo, Colo. Memorial tablet | 22,611 | July 11 | 64 | 292 |
| Cantwell, Michael J., Madison, Wis. Cabinet | 22,588 | July 4 | 64 | 149 |
| Cappel, Carl, Pittsburg, Pa. Confection-dish | 22,601 | July 11 | 64 | 292 |
| Casemero, Louisa, Warren, Pa. Gas-burner frame | 22,784 | Sept. 12 | 64 | 1528 |
| Casler, Herman, Syracuse, N. Y. Camera-case | 22,649 | July 25 | 64 | 555 |
| Cave, Joseph, Philadelphia, Pa., assignor to Smith, Kline & French Company, of Pennsylvania. Bottle-stopper | 22,582 | July 4 | 64 | 148 |
| Conde, Alonzo B., Albany, N. Y. Covered cooking-pan | 22,782 | Sept. 12 | 64 | 1528 |
| Connolly, Alonzo P., Chicago, Ill. Badge | 22,597 | July 11 | 64 | 291 |
| Cox, Palmer, New York, N. Y. Ruler | 22,583 | July 4 | 64 | 148 |
| Cox, Palmer, New York, N. Y. Ruler | 22,584 | July 4 | 64 | 148 |
| Crosby, Joseph H., Jr. (See Greenleaf and Crosby.) | | | | |
| Crosby, Joseph H., Jr., Jacksonville, Fla. Knife-handle, &c | 22,681 | Aug. 8 | 64 | 852 |
| Cunningham, Mary, Bellevue, Idaho. Toy | 22,626 | July 18 | 64 | 431 |
| Curran, John T., Brooklyn, assignor to Tiffany & Co., New York, N. Y. Spoon | 22,698 | Aug. 15 | 64 | 999 |
| D'Arcy, Frank P., Kalamazoo, Mich. Label-tag | 22,726 | Aug. 22 | 64 | 1123 |
| Dalzell, Annie P., administratrix. (See Dalzell, James.) | | | | |
| Dalzell, James, deceased; A. P. Dalzell, Findlay, Ohio, administratrix. Stalactite for electric lamps | 22,712 | Aug. 15 | 64 | 1001 |
| Dawes, Edward L., New Brighton, Pa. Bath-tub | 22,809 | Sept. 26 | 64 | 1785 |
| De Rogy, Eugene, Newark, N. J. Breastpin | 22,628 | July 18 | 64 | 431 |
| De Witt, John, Washington, D. C. Car-body | 22,759 | Aug. 29 | 64 | 1259 |
| Deslauriers, Philipp A., St. Paul, Minn. Siding-plate | 22,609 | July 11 | 64 | 293 |
| Deslauriers, Philipp A., St. Paul, Minn. Siding-plate | 22,610 | July 11 | 64 | 293 |

*Alphabetical list of patentees of designs, July to September, inclusive*—Continued.

| Name, residence, and design. | No. | Date. | Official Gazette. Vol. | Page. |
|---|---|---|---|---|
| Detroit Dental Manufacturing Company. (See Kerr, John, assignor.) | | | | |
| Dorflinger & Sons, C. (See O'Connor, James J., assignor.) | | | | |
| Dorsam, Louis. (See Dorsam, William and L.) | | | | |
| Dorsam, William and L., Millville, N. J. Paper-weight | 22,662 | Aug. 8 | 64 | 852 |
| Dowling, Frank A., Cleveland, Ohio. Spoon, &c | 22,778 | Sept. 12 | 64 | 1527 |
| Dressing Cabinet Supply Company of Baltimore City, of Maryland. (See Spear, James O., assignor.) | | | | |
| Dreyfuss, Julius, New York, N. Y. Dress-trimming | 22,672 | Aug. 8 | 64 | 851 |
| Dueber, John C., Canton, Ohio. Watch-dial | 22,599 | July 11 | 64 | 291 |
| Dungan, Cornelius P., Chicago, Ill. Jigger | 22,766 | Sept. 5 | 64 | 1390 |
| Durgire, William H. (See Rhodes, Rowland, assignor.) | | | | |
| Edwards, Charles L., Dallas, Tex. Badge | 22,637 | July 18 | 64 | 432 |
| Elliott, Sterling, Newton, Mass. Reach for bicycles | 22,671 | Aug. 1 | 64 | 708 |
| Elliott, Sterling, Newton, Mass. Sulky-axle | 22,691 | Aug. 8 | 64 | 853 |
| Elliott, Sterling, Newton, Mass. Sulky-axle | 22,815 | Sept. 26 | 64 | 1785 |
| Ely, Alfred G., assignor of two-thirds to C. C. and F. Ely, New York, N. Y. Nasal tube | 22,757 | Aug. 29 | 64 | 1259 |
| Ely, Charles C., *et al.* (See Ely, Alfred G., assignor.) | | | | |
| Ely, Frederick, *et al.* (See Ely, Alfred G., assignor.) | | | | |
| Enterprise Manufacturing Company of Pennsylvania. (See Brown, John W., Jr., assignor.) | | | | |
| Etter, Elijah, Palmyra, Ill. Type | 22,656 | Aug. 1 | 64 | 706 |
| Evans, William J., assignor to McKesson & Robbins, New York, N. Y. Atomizer-body | 22,663 | Aug. 8 | 64 | 852 |
| Farmer, George P., Montclair, N. J. Hair-pin | 22,642 | July 25 | 64 | 554 |
| Farmer, William W. (See Spencer, William, assignor.) | | | | |
| Fernald, Charles H., Ayer, Mass. Celluloid sheet | 22,788 | Sept. 19 | 64 | 1644 |
| Ferry, Darius, Jr., Brooklyn, N. Y. Tobacco-bag | 22,674 | Aug. 8 | 64 | 851 |
| Forbes, Daniel, Brooklyn, N. Y. Cut-glass dish | 22,662 | Aug. 1 | 64 | 707 |
| Forbes, Daniel, Brooklyn, N. Y. Cut-glass dish | 22,663 | Aug. 1 | 64 | 707 |
| Ford, George H., assignor to Grilley Company, New Haven, Conn. Coffin-plate | 22,724 | Aug. 22 | 64 | 1123 |
| Ford, George H., assignor to Grilley Company, New Haven, Conn. Coffin-plate | 22,769 | Sept. 5 | 64 | 1390 |
| Fraser, Philip H., Bayonne, N. J. Sleeve-button or like article | 22,697 | Aug. 15 | 64 | 999 |
| Frederick, George L., Ebensburg, Pa. Buckle and snap-hook | 22,631 | July 18 | 64 | 432 |
| Freeman, Sarah S., Los Angeles, Cal. Dressmaker's ruler | 22,646 | July 25 | 64 | 555 |
| Friedlander, William S., Passaic, N. J., assignor to J. S. Bernheimer & Brother, New York, N. Y. Fabric | 22,800 | Sept. 26 | 64 | 1784 |
| Fuchs, Gustav, Chicago, Ill. Advertising-statue | 22,792 | Sept. 19 | 64 | 1644 |
| Gaines, Wilbur H., assignor to Rogers & Hamilton Company, Waterbury, Conn. Handle for spoons, &c | 22,746 | Aug. 29 | 64 | 1258 |
| Gardner, George W., Dawkins, Colo. Game-board | 22,790 | Sept. 19 | 64 | 1644 |
| Garretson, Oliver L., Buffalo, N. Y. Book-cover | 22,596 | July 11 | 64 | 291 |
| Garside, John E., Peoria, Ill. Game-board | 22,686 | Aug. 8 | 64 | 852 |
| Glahn, George A., assignor to Simpson, Hall, Miller & Company, Wallingford, Conn. Plate | 22,602 | July 11 | 64 | 292 |
| Globe Savings Bank. (See Spalding, Charles W., assignor.) | | | | |
| Golde, Robert, Brooklyn, assignor to Royal Metal Manufacturing Company, New York, N. Y. Frame, &c | 22,657 | Aug. 1 | 64 | 706 |
| Goldstein, Joseph A., Washington, D. C. Plaque | 22,590 | July 11 | 64 | 292 |
| Goseden, Rosa, Midhurst, England. Bidet | 22,729 | Aug. 22 | 64 | 1123 |
| Gray, Lawrence B., Boston, Mass. Insulator | 22,684 | Aug. 8 | 64 | 852 |
| Greenleaf, Damon, and J. H. Crosby, Jr., Jacksonville, Fla. Spoon | 22,717 | Aug. 22 | 64 | 1122 |
| Greenwood Pottery Company. (See Tams, William H., assignor.) | | | | |
| Gregory, William F., Buffalo, N. Y. Grate-bar | 22,739 | Aug. 22 | 64 | 1125 |
| Grilley Company. (See Ford, George H., assignor.) | | | | |
| Gutiohn, Gabriel, Philadelphia, Pa. Hat-trimming | 22,645 | July 25 | 64 | 555 |
| Hache, Alfred, Vierzon, France. Plate | 22,780 | Sept. 12 | 64 | 1526 |
| Hahn, Edgar J., St. Louis, Mo. Medal | 22,675 | Aug. 8 | 64 | 851 |
| Hammann, Edward, Brooklyn, assignor to J. L. Mott Iron Works, New York, N. Y. Lavatory-leg | 22,689 | Aug. 8 | 64 | 853 |
| Hart, Charles W., assignor to H. A. Hart, Troy, N. Y. Fulcrum-post for mops | 22,812 | Sept. 26 | 64 | 1785 |
| Hart, Harriet A. (See Hart, Charles W., assignor.) | | | | |
| Haviland, Charles E., Limoges, France. Plate | 22,617 | July 18 | 64 | 429 |
| Haviland, Charles E., Limoges, France. Salad-bowl | 22,618 | July 18 | 64 | 429 |
| Haviland, Charles E., Limoges, France. Dish | 22,619 | July 18 | 64 | 429 |
| Haviland, Charles E., Limoges, France. Cover-dish | 22,620 | July 18 | 64 | 429 |
| Haviland, Charles E., Limoges, France. Cover-dish | 22,621 | July 18 | 64 | 430 |
| Haviland, Charles E., Limoges, France. Cover-dish | 22,622 | July 18 | 64 | 434 |
| Hillman, William, Coventry, England. Saddle-post for bicycles | 22,714 | Aug. 15 | 64 | 1001 |
| Hillman, William, Coventry, England. Velocipede-frame | 22,715 | Aug. 15 | 64 | 1001 |
| Hinsdale, Winfield E., New Haven, Conn. Sewer-gas trap | 22,606 | July 11 | 64 | 290 |
| Hiscock, Emery C., Detroit, Mich. Bracket | 22,586 | July 4 | 64 | 143 |
| Hitch, John E., Wilmington, Ohio. Nail-set or countersink | 22,647 | July 25 | 64 | 550 |
| Hoffmann, Otto, Manchester, England. Humidifier-casing | 22,708 | Aug. 15 | 64 | 1000 |
| Holmes & Edwards Silver Company. (See Smith, Sidney, assignor.) | | | | |
| Hook, Harry, Philadelphia, Pa. Dress-trimming | 22,658 | Aug. 1 | 64 | 706 |
| Horn, Frederick F., Colorado Springs, Colo. Spoon | 22,629 | July 18 | 64 | 430 |
| Howard Sterling Company. (See Wientge, Charles C., assignor.) | | | | |
| Hunt, Jonathan A. (See Jourdan and Hunt.) | | | | |
| Hunt Manufacturing Company. (See Jourdan and Hunt, assignors.) | | | | |
| Huss, William C., Cincinnati, Ohio. Wall-fixture for counters | 22,591 | July 4 | 64 | 141 |
| Hutchinson, Edward W., Chicago, Ill. Tool-handle | 22,633 | July 18 | 64 | 430 |
| Hvass, Charles, assignor of one-half to L. Kahner, New York, N. Y. Head-former for cigars | 22,595 | July 4 | 64 | 152 |
| J. L. Mott Iron Works. (See Hammann, Edward, assignor.) | | | | |
| Jackson, Austin F., assignor to Reed & Barton Corporation, Taunton, Mass. Tea or coffee pot | 22,727 | Aug. 22 | 64 | 1123 |
| Jacobs, George T., assignor of one-half to D. Williams, Washington, D. C. Spoon | 22,718 | Aug. 22 | 64 | 1122 |
| Jeffery, Thomas B., Chicago, Ill. Velocipede-handle | 22,760 | Aug. 29 | 64 | 1260 |
| Jamouneau, William H., Newark, N. J., assignor to B. F. Norris, Alister & Co., Chicago, Ill. Spoon | 22,678 | Aug. 8 | 64 | 851 |
| Johnes, David, Brooklyn, N. Y. Coal-scuttle | 22,607 | July 11 | 64 | 290 |
| Joliet Stove Works. (See Wipfler, Charles W., assignor.) | | | | |
| Jourdan, Walter B., and J. A. Hunt, assignors to Hunt Manufacturing Company, Westborough, Mass. Saddle-seat | 22,713 | Aug. 15 | 64 | 1001 |
| Kahn, Leopold, New York, N. Y. Hardware ornamentation | 22,604 | July 11 | 64 | 293 |
| Kahn, Leopold, New York, N. Y. Ornamental metal sheet | 22,625 | July 18 | 64 | 431 |
| Kahner, Lazarus. (See Hvass, Charles, assignor.) | | | | |
| Keep, William J., Detroit, Mich. Stove | 22,668 | Aug. 8 | 64 | 853 |
| Keep, William J., Detroit, Mich. Water-tank for stoves | 22,741 | Aug. 22 | 64 | 1125 |
| Kells, John, Detroit, Mich. Oil-stove | 22,592 | July 4 | 64 | 150 |
| Kennard, Charles W., Baltimore, Md. Cane or umbrella handle | 22,720 | Aug. 22 | 64 | 1122 |
| Kennard, Charles W., Baltimore, Md. Cane or umbrella handle | 22,721 | Aug. 22 | 64 | 1122 |



*Alphabetical list of patentees of designs, July to September, inclusive*—Continued.

| Name, residence, and design. | No. | Date. | Official Gazette. Vol. | Page. |
|---|---|---|---|---|
| Kennard, Charles W., Baltimore, Md. Cane or umbrella handle | 22,722 | Aug. 22 | 64 | 1122 |
| Kerr, John, assignor to Detroit Dental Manufacturing Company, Detroit, Mich. Dental clasp | 22,668 | Aug. 1 | 64 | 706 |
| Koenig, Francis C., assignor to R. G. Ledig, Philadelphia, Pa. Table | 22,708 | Aug. 15 | 64 | 1000 |
| Kohler, Frederick E., Canton, Ohio. Lawn-rake | 22,605 | July 11 | 64 | 292 |
| Krouse, Andrew, Bridgeport, Conn. Handle for canes, &c | 22,750 | Aug. 29 | 64 | 1258 |
| Lampman, George W., Swanton, Vt. Playing-card | 22,640 | July 18 | 64 | 433 |
| Landers, Frary & Clark. (See Smith, Charles F., assignor.) | | | | |
| Lanning, James A., Camden, N. J. Jar | 22,751 | Aug. 29 | 64 | 1258 |
| Ledig, Reinhold G. (See Koenig, Francis C., assignor.) | | | | |
| Low, Abbot A., Brooklyn, N. Y. Badge | 22,696 | Aug. 15 | 64 | 999 |
| Lowell Manufacturing Company. (See Sauer, Emil G., assignor.) | | | | |
| MacMonnies, Frederick, Paris, France, assignor to Niagara Falls Power Company, New York, N. Y. Seal | 22,658 | Aug. 1 | 64 | 706 |
| Matthews, John, Bridgenorth, England, assignor to Arnold, Constable & Co., New York, N. Y. Carpet | 22,610 | July 18 | 64 | 429 |
| Mayer, Joshua W. (See Powers and Mayer.) | | | | |
| McGill, George W., New York, N. Y. Metallic fastener | 22,653 | Aug. 1 | 64 | 706 |
| McGill, George W., New York, N. Y. Metallic fastener | 22,654 | Aug. 1 | 64 | 706 |
| McGill, George W., New York, N. Y. Metallic fastener | 22,655 | Aug. 1 | 64 | 706 |
| McGill, George W., New York, N. Y. Box | 22,701 | Aug. 15 | 64 | 999 |
| McKesson & Robbins. (See Evans William J., assignor.) | | | | |
| McNeil, Alexander W., Chicago, Ill. Inkstand | 22,773 | Sept. 12 | 64 | 1527 |
| Meisselbach, August F. and W., Newark, N. J. Can-opener | 22,810 | Sept. 26 | 64 | 1785 |
| Meisselbach, William. (See Meisselbach, August F. and W.) | | | | |
| Meyer-Sniffen Company. (See Bunting, William, Jr., assignor.) | | | | |
| Miller, Samuel, Mohawk, N. Y., assignor of two-thirds to R. R. Wightman, Albion, Mich. Weather-board | 22,795 | Sept. 19 | 64 | 1645 |
| Mohr, Peter G., Buffalo, N. Y. Card | 22,695 | Aug. 15 | 64 | 998 |
| Montague, William A., Duluth, Minn. Spoon | 22,660 | Aug. 1 | 64 | 706 |
| Mount Washington Glass Company. (See Steffin, Albert, assignor.) | | | | |
| Mowry, Winsor, Bristol, R. I. Cabinet | 22,707 | Aug. 15 | 64 | 1000 |
| Mulcay, Andrew, Forsyth, Ga. Watch-charm | 22,598 | July 11 | 64 | 291 |
| Nellis, Emery D., assignor to Bridge & Beach Manufacturing Company, St. Louis, Mo. Stove | 22,667 | Aug. 1 | 64 | 708 |
| Niagara Falls Power Company. (See MacMonnies, Frederick, assignor.) | | | | |
| Norris, Alister & Co., B. F. (See Jamouneau, William H., assignor.) | | | | |
| Norris, Herbert L., Providence, R. I. Badge-pin | 22,638 | July 18 | 64 | 433 |
| O'Connor, James J., assignor to C. Dorflinger & Sons, White Mills, Pa. Glass vessel | 22,581 | July 4 | 64 | 148 |
| Osborne, Charles, assignor to Whiting Manufacturing Company, New York, N. Y. Brush-back or similar article | 22,627 | July 18 | 64 | 431 |
| Pairpoint Manufacturing Company. (See Ratcliff, Frederick, assignor.) | | | | |
| Pairpoint Manufacturing Company. (See Thompson, Frederic L., assignor.) | | | | |
| Pairpoint Manufacturing Company. (See Tolman, William Q., assignor.) | | | | |
| Palmer, Francis L., Chicago, Ill. Badge | 22,744 | Aug. 29 | 64 | 1258 |
| Pearce, Frank T., Providence, R. I. Tray | 22,685 | Aug. 8 | 64 | 852 |
| Penn, George, Syracuse, N. Y. Wagon-spring | 22,632 | July 18 | 64 | 432 |
| Perkins, Robert, Rockaway, N. J. Rim for bicycle-wheels | 22,732 | Aug. 22 | 64 | 1124 |
| Perry, William H., Concord, N. H. Monument | 22,593 | July 4 | 64 | 150 |
| Peter, Francis A., Washington, D. C. Cellar-grate | 22,738 | Aug. 22 | 64 | 1125 |
| Petzold, Adolph, assignor to J. H., J. H., and E. Bromley, Philadelphia, Pa. Rug | 22,578 | July 4 | 64 | 147 |
| Petzold, Adolph, Philadelphia, Pa., assignor to J. H., J. H., and E. Bromley. Table-cover | 22,650 | Aug. 1 | 64 | 705 |
| Petzold, Adolph, Philadelphia, Pa., assignor to J. H., J. H., and E. Bromley. Table-cover | 22,651 | Aug. 1 | 64 | 705 |
| Phillips, James T., assignor to Aldine Manufacturing Company, Grand Rapids, Mich. Frame for grates | 22,634 | July 18 | 64 | 432 |
| Phillips, James T., assignor to Aldine Manufacturing Company, Grand Rapids, Mich. Fire-board | 22,635 | July 18 | 64 | 432 |
| Pilkington Brothers. (See Pilkington, William L., assignor.) | | | | |
| Pilkington, William L., assignor to Pilkington Brothers, St. Helen's, England. Pattern for plate-glass | 22,753 | Aug. 29 | 64 | 1258 |
| Powers, Maurice L., New York, N. Y. Finger-ring | 22,676 | Aug. 8 | 64 | 851 |
| Powers, Maurice L., and J. W. Mayer, New York, N. Y. Jewel-setting | 22,797 | Sept. 26 | 64 | 1783 |
| Prétat, Charles E., assignor to Rogers & Hamilton Company, Waterbury, Conn. Spoon | 22,661 | Aug. 1 | 64 | 707 |
| Pretat, Frederick E., assignor to Rogers & Hamilton Company, Waterbury, Conn. Handle for spoons, &c | 22,747 | Aug. 29 | 64 | 1258 |
| Pritchard, Albert R., Rochester, N. Y. Coffee or tea pot | 22,793 | Sept. 19 | 64 | 1645 |
| Racine, Ulysses, Providence, R. I., assignor to Watson, Newell & Co., Attleborough, Mass. Bowl for spoons | 22,699 | Aug. 15 | 64 | 999 |
| Ratcliff, Frederick, assignor to Pairpoint Manufacturing Company, New Bedford, Mass. Pin-cushion | 22,776 | Sept. 12 | 64 | 1527 |
| Reed & Barton Corporation. (See Jackson, Austin F., assignor.) | | | | |
| Reese, Mame C., Oxford, Pa. Rosette | 22,754 | Aug. 29 | 64 | 1259 |
| Rhodes, Rowland, New York, N. Y., assignor to W. H. Durgire, Concord, N. H. Handle for spoons, &c | 22,779 | Sept. 12 | 64 | 1528 |
| Rigga, Roselma C. (See Bradfield and Rigga.) | | | | |
| Rogers & Hamilton Company. (See Gaines, Wilbur C., assignor.) | | | | |
| Rogers & Hamilton Company. (See Prétat, Charles E., assignor.) | | | | |
| Rogers & Hamilton Company. (See Pretat, Frederick E., assignor.) | | | | |
| Rouse, Albion M., Boulder, assignor to Boss-Grip Lock-Nut Company, Denver, Colo. Lock-nut | 22,813 | Sept. 26 | 64 | 1785 |
| Rowlands, John R., assignor of two-thirds to W. H. Boles and W. H. Wales, Syracuse, N. Y. Casing for vending machines | 22,666 | Aug. 1 | 64 | 708 |
| Royal Metal Manufacturing Company. (See Golde, Robert, assignor.) | | | | |
| Russell & Erwin Manufacturing Company. (See Russell, Henry E., assignor.) | | | | |
| Russell, Henry E., assignor to Russell & Erwin Manufacturing Company, New Britain, Conn. Door-knob | 22,755 | Aug. 29 | 64 | 1259 |
| Russell, Henry E., assignor to Russell & Erwin Manufacturing Company, New Britain, Conn. Escutcheon-plate | 22,756 | Aug. 29 | 64 | 1259 |
| Sachs, Morris, New York, N. Y. Leggin | 22,603 | July 11 | 64 | 292 |
| Saptles, Etienne de, New York, N. Y. Monument | 22,612 | July 11 | 64 | 294 |
| Sauer, Emil G., Brooklyn, N. Y., assignor to Lowell Manufacturing Company, Lowell, Mass. Carpet | 22,694 | Aug. 15 | 64 | 998 |
| Schlechter, Gustavus A., Reading, Pa. Badge | 22,777 | Sept. 12 | 64 | 1527 |
| Schleicher, William A., Cleveland, Ohio. Toe-rail for vehicles | 22,771 | Sept. 5 | 64 | 1391 |
| Schmits, Theodore H., Philadelphia, Pa. Gas-burner | 22,711 | Aug. 15 | 64 | 1001 |
| Schopbach, Charles H., Aurora, Ill. Textile fabric | 22,663 | Aug. 15 | 64 | 998 |
| Schuck, Valentine G., assignor to Sutro Bros. Braid Company, New York, N. Y. Braid | 22,614 | July 18 | 64 | 428 |
| Seifert, Frank A., assignor to Western Stove Manufacturing Company, St. Louis, Mo. Cooking-stove | 22,608 | July 11 | 64 | 293 |

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| Name, residence, and design. | No. | Date. | Official Gazette. Vol. | Page. |
|---|---|---|---|---|
| Shaw, William, Ballard Vale, Mass. Badge | 22,745 | Aug. 29 | 64 | 1258 |
| Shoudy, Fred G., Rockford, Ill. Grocer's cabinet | 22,730 | Aug. 22 | 64 | 1124 |
| Shoudy, Fred G., Rockford, Ill. Grocer's cabinet | 22,731 | Aug. 22 | 64 | 1124 |
| Simons, Edwin S., *et al.* (See Walter, Joseph, assignor.) | | | | |
| Simons, Frederick M., *et al.* (See Walter, Joseph, assignor.) | | | | |
| Simons, John F., *et al.* (See Walter, Joseph, assignor.) | | | | |
| Simpson, Hall, Miller & Company. (See Glahn, George A., assignor.) | | | | |
| Smith, Addison T., Washington, D. C. Paper-weight | 22,774 | Sept. 12 | 64 | 1527 |
| Smith, Charles F., assignor to Landers, Frary & Clark, New Britain, Conn. Knife | 22,700 | Aug. 15 | 64 | 999 |
| Smith, Hugh L. (See Boeck, Charles H., assignor.) | | | | |
| Smith, Kline & French Company. (See Cave, Joseph, assignor.) | | | | |
| Smith, Sidney, assignor to Holmes & Edwards Silver Company, Bridgeport, Conn. Fork, &c | 22,680 | Aug. 8 | 64 | 852 |
| Somerville, A. J. (See Adler, Victor, assignor.) | | | | |
| Spalding, Charles W., assignor to Globe Savings Bank, Chicago, Ill. Sign | 22,585 | July 4 | 64 | 148 |
| Spear, James O., Baltimore, Md., assignor to Dressing Cabinet Supply Company of Baltimore City, of Maryland. Toilet cabinet-case | 22,786 | Sept. 12 | 64 | 1529 |
| Spencer, William, Brooklyn, assignor to W. W. Farmer, New York, N. Y. Printer's border | 22,806 | Sept. 26 | 64 | 1785 |
| Spencer, William, Brooklyn, assignor to W. W. Farmer, New York, N. Y. Printer's border | 22,807 | Sept. 26 | 64 | 1785 |
| Spencer, William, Brooklyn, assignor to W. W. Farmer, New York, N. Y. Printer's border | 22,808 | Sept. 26 | 64 | 1785 |
| Stange, John D., San Francisco, Cal. Lady's hat | 22,766 | Sept. 5 | 64 | 1390 |
| Steffin, Albert, assignor to Mount Washington Glass Company, New Bedford, Mass. Condiment-holder | 22,781 | Sept. 12 | 64 | 1528 |
| Sullivan, Patrick J., New York, N. Y. Horseshoe | 22,704 | Sept. 19 | 64 | 1645 |
| Sutro Bros. Braid Company. (See Schuck, Valentine G., assignor.) | | | | |
| Swain, Henry C., New York, N. Y. Dressing-case | 22,687 | Aug. 8 | 64 | 852 |
| Swan, Henry C., Oshkosh, Wis. Whiffletree-clip | 22,670 | Aug. 1 | 64 | 708 |
| Tams, William H., assignor to Greenwood Pottery Company, Trenton, N. J. Dish | 22,644 | July 25 | 64 | 554 |
| Thomas, Chauncey, Boston, Mass. Carriage-spring | 22,814 | Sept. 26 | 64 | 1786 |
| Thompson, Frederic L., New Bedford, Mass. Brush-handle | 22,665 | Aug. 1 | 64 | 707 |
| Thompson, Frederic L., assignor to Pairpoint Manufacturing Company, New Bedford, Mass. Metallic rosette | 22,733 | Aug. 22 | 64 | 1124 |
| Thompson, Frederic L., assignor to Pairpoint Manufacturing Company, New Bedford, Mass. Metallic pattern-strip | 22,734 | Aug. 22 | 64 | 1124 |
| Thompson, Frederic L., assignor to Pairpoint Manufacturing Company, New Bedford, Mass. Metallic pattern-strip | 22,735 | Aug. 22 | 64 | 1124 |
| Thompson, Frederic L., assignor to Pairpoint Manufacturing Company, New Bedford, Mass. Metallic pattern-strip | 22,736 | Aug. 22 | 64 | 1125 |
| Thompson, Frederic L., assignor to Pairpoint Manufacturing Company, New Bedford, Mass. Metallic pattern-strip | 22,737 | Aug. 22 | 64 | 1125 |
| Tiffany & Co. (See Curran, John T., assignor.) | | | | |
| Todd, Marquis J., Buffalo, N. Y. Harrow-frame | 22,692 | Aug. 8 | 64 | 853 |
| Tolman, William Q., assignor to Pairpoint Manufacturing Company, New Bedford, Mass. Box-cover | 22,725 | Aug. 22 | 64 | 1123 |
| Tooker, Edmund C., Larchmont, N. Y. Clasp-loop | 22,677 | Aug. 8 | 64 | 851 |
| Townsend, John J., Portsmouth, Va. Compass-card | 22,723 | Aug. 22 | 64 | 1122 |
| Treverton, Charles W., Scranton, Pa. Syringe | 22,669 | Aug. 1 | 64 | 708 |
| Truesdell, Carrie P., Cleveland, Ohio. Spoon | 22,643 | July 25 | 64 | 554 |
| Verschuur, Justus, Jersey City, N. J. Spoon | 22,679 | Aug. 8 | 64 | 851 |
| Wales, Walter H., *et al.* (See Rowlands, John R., assignor.) | | | | |
| Walker, Arthur W., Malden, Mass. Stove-lid | 22,740 | Aug. 22 | 64 | 1125 |
| Walsh, Robert, Philadelphia, Pa. Combined spool-stand and pincushion | 22,791 | Sept. 19 | 64 | 1644 |
| Walter, Joseph, New York, N. Y., assignor to J. F., F. M., and E. S. Simons, Philadelphia, Pa. Back for brushes or hand-mirrors | 22,704 | Aug. 15 | 64 | 999 |
| Wardwell, Simon W., Jr., Boston, Mass. Cop | 22,690 | Aug. 8 | 64 | 853 |
| Warner, De Ver H., Bridgeport, Conn. Corset | 22,673 | Aug. 8 | 64 | 851 |
| Watson, Newell & Co. (See Racine, Ulysses, assignor.) | | | | |
| Weimer, Walter, Chicago, Ill. Condiment-holder | 22,623 | July 18 | 64 | 430 |
| Weinberg, Charles, assignor to C. Weinberg & Co., New York, N. Y. Gimp | 22,579 | July 4 | 64 | 148 |
| Weinberg & Co., C. (See Weinberg, Charles, assignor.) | | | | |
| Western Stove Manufacturing Company. (See Seifert, Frank A., assignor.) | | | | |
| Whiting Manufacturing Company. (See Osborne, Charles, assignor.) | | | | |
| Wientge, Charles C., Providence, R. I. Handle for spoons, &c | 22,719 | Aug. 29 | 64 | 1122 |
| Wientge, Charles C., Providence, R. I. Bowl | 22,752 | Aug. 29 | 64 | 1258 |
| Wightman, R. R. (See Miller, Samuel, assignor.) | | | | |
| Wilkinson, George, Providence, R. I. Handle for spoons, &c | 22,748 | Aug. 29 | 64 | 1258 |
| Wilkinson, George, Providence, R. I. Handle for spoons, &c | 22,749 | Aug. 29 | 64 | 1258 |
| Williams, Daniel. (See Jacobs, George T., assignor.) | | | | |
| Williams, Thomas H., Jersey City, N. J., and E. Ambrose, Troy, N. Y., assignors to A. A. Griffing Iron Company, Jersey City, N. J. Radiator | 22,787 | Sept. 12 | 64 | 1529 |
| Willingham, Jesse J. (See Campbell and Willingham.) | | | | |
| Willson, Charles G., Reading, Pa. Badge | 22,639 | Aug. 1 | 64 | 706 |
| Wipfler, Charles W., Detroit, Mich. Oil-stove | 22,710 | Aug. 15 | 64 | 1000 |
| Wipfler, Charles W., Detroit, Mich., assignor to Joliet Steve Works, Joliet, Ill. Cooking-stove | 22,770 | Sept. 5 | 64 | 1391 |
| Wood, Martin D., Kansas City, Mo. Badge | 22,796 | Sept. 26 | 64 | 1783 |
| Wood, Noah S., Roachdale, Ind. Cabinet | 22,648 | July 25 | 64 | 555 |
| Wood, Robert, Syracuse, N. Y. Deflector | 22,630 | July 18 | 64 | 432 |
| Zeilin, John H., Philadelphia, Pa. Clock-case | 22,783 | Sept. 12 | 64 | 1528 |

# ALPHABETICAL LIST OF REGISTRANTS OF TRADE-MARKS.

| Name, residence, and title. | No. | Date. | Official Gazette. Volume. | Page. |
|---|---|---|---|---|
| A. A. Griffing Iron Company, Jersey City, N. J., and Chicago, Ill. Steam and hot-water radiators | 23,545 | Aug. 22 | 64 | 1130 |
| A. A. Griffing Iron Company, Jersey City, N. J., and Chicago, Ill. Steam and hot-water radiators | 23,546 | Aug. 22 | 64 | 1130 |
| A. A. Griffing Iron Company, Jersey City, N. J., and Chicago, Ill. Radiators | 23,637 | Sept. 19 | 64 | 1648 |
| A. C. Simmons Jr. Medicine Company, Sherman, Tex. Liver-purifier | 23,494 | Aug. 15 | 64 | 1003 |
| A-F Paint and Color Company, Milwaukee, Wis. Mineral paints, pigments, and oxides | 23,361 | July 11 | 64 | 296 |
| Abadie & Company, Paris, France. Cigarette-paper | 23,306 | July 4 | 64 | 154 |
| Abbott Cylinder Oil Company, Jersey City, N. J. Lubricating oils | 23,289 | July 4 | 64 | 151 |
| Acme Harvester Company, Pekin, Ill. Grain-headers | 23,476 | Aug. 8 | 64 | 856 |
| Albert Dickinson Company, Chicago, Ill. Farm or agricultural seeds | 23,347 | July 11 | 64 | 296 |
| Allen, Field & Lawrence, Boston, Mass. Glove-grain leather | 23,336 | July 11 | 64 | 295 |
| American Biscuit and Manufacturing Company, Chicago, Ill. Certain named bakers' products and confectionery | 23,552 | Aug. 29 | 64 | 1261 |
| American Powder Mills, Boston, Mass. Sporting gunpowder | 23,458 | Aug. 8 | 64 | 854 |
| American Tobacco Company, Newark, N. J., and New York, N. Y. Cigarettes | 23,580 | Sept. 5 | 64 | 1392 |
| American Tobacco Company, Newark, N. J., and New York, N. Y. Cigarettes | 23,581 | Sept. 5 | 64 | 1392 |
| American Tobacco Company, Newark, N. J., and New York, N. Y. Cigarettes | 23,602 | Sept. 12 | 64 | 1531 |
| American Wringer Company, Providence, R. I. Clothes-wringers | 23,635 | Sept. 19 | 64 | 1648 |
| American Wringer Company, Providence, R. I. Clothes wringers and driers | 23,636 | Sept. 19 | 64 | 1648 |
| Anglo-American Provision Company, Chicago, Ill. Lard | 23,526 | Aug. 22 | 64 | 1128 |
| Anglo-American Provision Company, Chicago, Ill. Substitute for lard | 23,527 | Aug. 22 | 64 | 1128 |
| Armour & Co., Chicago, Ill. Substitute for lard and butter | 23,291 | July 4 | 64 | 151 |
| As-Ker-Shaw Manufacturing Company, Oakland, Cal., and Buffalo, N. Y. Ointment | 23,488 | Aug. 15 | 64 | 1003 |
| B. Cohen & Son, New York, N. Y. Ladies' carriage-boots | 23,327 | July 11 | 64 | 295 |
| Bagley Dandelion Compound Company, St. Johnsbury, Vt. Tonics and blood-purifiers | 23,532 | Aug. 22 | 64 | 1128 |
| Baird, Thomas E. and W. V., Toledo, Ohio. Cleansing mixture for horses and other animals | 23,359 | July 11 | 64 | 298 |
| Baird, William V. (See Baird, Thomas E. and W. V.) | | | | |
| Bassett, Charles E., Pennsville, N. J. Canned fruit and vegetables | 23,431 | Aug. 1 | 64 | 710 |
| Batchelder, Edward S., Springfield, Mass. Blood-purifying medicine | 23,469 | Aug. 8 | 64 | 855 |
| Batchelder & Lincoln, Boston, Mass. Leather-dressing | 23,374 | July 18 | 64 | 435 |
| Batter, Stoner & Schenkelberger, Boston, Mass. Cut-leather boot and shoe bottom stock | 23,337 | July 11 | 64 | 296 |
| Becker, Ulrich W., Stapleton, N. Y. Healing powders | 23,584 | Sept. 5 | 64 | 1393 |
| Bell, George. (See Rand and Bell.) | | | | |
| Benjamin & Co., Alfred, New York, N. Y. Overcoats | 23,454 | Aug. 8 | 64 | 854 |
| Black Manufacturing Company, Erie, Pa. Bicycles and tricycles and parts thereof | 22,324 | July 4 | 64 | 154 |
| Blondeau et Cie., London, England, and New York, N. Y. Perfumery, toilet soaps, and cosmetics | 23,283 | July 4 | 64 | 151 |
| Blondeau et Cie., London, England, and New York, N. Y. Perfumery, toilet soaps, and cosmetics | 23,284 | July 4 | 64 | 151 |
| Blood & Co., John, Philadelphia, Pa. Hosiery | 23,426 | Aug. 1 | 64 | 709 |
| Boston Woven Hose and Rubber Company, Boston, Mass. Rubber and textile hose and belting | 23,598 | Sept. 12 | 64 | 1530 |
| Brunning, Charles E., Indianapolis, Ind. Certain named medicines | 23,658 | Sept. 26 | 64 | 1788 |
| Brussels Tapestry Company, Chauncey and New York, N. Y. Woven woolen fabrics used mainly for shades for vehicle-windows | 23,340 | July 11 | 64 | 296 |
| Brussels Tapestry Company, Chauncey and New York, N. Y. Woven woolen fabrics used mainly for shades for vehicle-windows | 23,341 | July 11 | 64 | 296 |
| Buck, George N., Mattoon, Ill. Certain garment-supporters | 23,452 | Aug. 8 | 64 | 854 |
| Buck, George N., Mattoon, Ill. Certain garment-supporters | 23,453 | Aug. 8 | 64 | 854 |
| Buker Pill Company, Bangor, Me. Remedies for diseases of the kidneys, bladder, and urinary organs | 23,439 | Aug. 1 | 64 | 710 |
| Burger, Adam, Toledo, Ohio. Liniment | 23,366 | July 18 | 64 | 434 |
| Byrne, Lee M., Kansas City, Mo. Blood-purifier and remedy for gonorrhea and gleet | 23,354 | July 11 | 64 | 297 |
| Cabana, Oliver, Jr., Buffalo, N. Y. Glue for mending china, glass, leather, &c | 23,406 | July 25 | 64 | 557 |
| Callahan, Cornelius, Canton, Mass. Rubber-lined hose | 23,428 | Aug. 1 | 64 | 709 |
| Carlisle, Robert, Cincinnati, Ohio. Water-closets and urinals | 23,638 | Sept. 19 | 64 | 1648 |
| Carpenter, William D., Chicago, Ill. Foods for horses, cattle, sheep, swine, and fowl | 23,529 | Aug. 22 | 64 | 1128 |
| Carter & Churchill, Lebanon, N. H., and Boston, Mass. Men's overalls and colored and white shirts | 23,423 | Aug. 1 | 64 | 709 |
| Cassetty Oil Company, Nashville, Tenn. Axle-grease for vehicles | 23,360 | July 11 | 64 | 298 |
| Chadwick Lead Works, Boston, Mass. Lead | 23,511 | Aug. 15 | 64 | 1004 |
| Chapman, John M., New York, N. Y. Canned and preserved fish | 23,370 | July 18 | 64 | 434 |
| Chemische Fabrik auf Actien, vormals E. Schering, Berlin, Germany. Therapeutic remedies | 23,533 | Aug. 22 | 64 | 1128 |
| Chemische Fabrik auf Actien, vormals E. Schering, Berlin, Germany. Germicides, disinfectants, and other deodorizing preparations | 23,629 | Sept. 19 | 64 | 1647 |
| Christy Knife Company, Fremont, Ohio. Knives, scissors, pocket implements and tools, and the like | 23,501 | Aug. 15 | 64 | 1004 |
| Cleanser Manufacturing Co., New York, N. Y. Cleanser for white gloves and shoes and white goods of all descriptions | 23,519 | Aug. 22 | 64 | 1127 |
| Cleveland Linseed Oil Company, Cleveland, Ohio. Fertilizers | 23,633 | Sept. 19 | 64 | 1648 |
| Coleman & Company, Limited, Norwich, England. Liquid prepared food for medicinal purposes | 23,437 | Aug. 1 | 64 | 710 |
| Colgate & Co., New York, N. Y. Toilet soap | 23,632 | Sept. 19 | 64 | 1647 |
| Conroe, Augustus J., Savannah, N. Y. Laundry bluing | 23,446 | Aug. 1 | 64 | 711 |
| Contencin & Son, Louis, New York, N. Y. Oranges and lemons | 23,601 | Sept. 12 | 64 | 1530 |
| Corner, William J., St. Louis, Mo. Cake-yeast | 23,399 | July 25 | 64 | 556 |
| Cotton, Cyrus L., Earlville, N. Y. Perfumery | 23,285 | July 4 | 64 | 151 |
| Cotton, Cyrus L., Earlville, N. Y. Perfumery | 23,286 | July 4 | 64 | 151 |
| Cowen & Co., Joseph, Blaydon-on-Tyne, England. Bricks, retorts, tiles, quarles, pipes, lumps, and other articles made of fire-clay | 23,653 | Sept. 26 | 64 | 1788 |
| Craemer & Héron, Sonneberg, Germany. Dolls | 23,548 | Aug. 29 | 64 | 1261 |
| Culbert & Co., New York, N. Y. Whisky | 23,304 | July 4 | 64 | 153 |
| Curs Chemical Co., Springfield, Mo. Remedies for headache, neuralgia, and rheumatism | 23,535 | Aug. 22 | 64 | 1129 |
| D. Ritchie & Co., Montreal, Canada. Tobacco, cigars, cigarettes, and cheroots | 23,348 | July 11 | 64 | 297 |
| D. Ritchie & Co., Montreal, Canada. Tobacco, cigars, cigarettes, and cheroots | 23,349 | July 11 | 64 | 297 |
| Daniel, John B., Atlanta, Ga. Remedy for kidney diseases, general debility, and liver troubles | 23,438 | Aug. 1 | 64 | 710 |

*Alphabetical list of registrants of trade-marks, July to September, inclusive*—Continued.

| Name, residence, and title. | No. | Date. | Official Gazette. Vol. | Page. |
|---|---|---|---|---|
| David Bros. & Rose, New York, N. Y. Boys' and children's clothing | 23,504 | Aug. 15 | 64 | 1004 |
| De Roubaix, Oedenkoven & Co., Borgerhout, near Antwerp, Belgium. Candles, stearine or stearic acid, oleine, and glycerine | 23,528 | Aug. 22 | 64 | 1128 |
| Doherty, Patrick, Boston, Mass. Whisky | 23,434 | Aug. 1 | 64 | 710 |
| Donaldson, Edward A., Galesburg, Ill. Lye and washing-powders | 23,634 | Sept. 19 | 64 | 1648 |
| Dorr & Son, Cornelius, Boston, Mass. Wheat-flour | 23,429 | Aug. 1 | 64 | 709 |
| Dowd, Virginia D., Peoria, Ill. Herb tonic | 23,352 | July 11 | 64 | 297 |
| Dr. Jaeger's Sanitary Woollen System Co., Limited, London, England. All garments worn by men, women, and children | 23,477 | Aug. 8 | 64 | 856 |
| Dreyfuss & Toff, New York, N. Y. Dress-trimmings | 23,282 | July 4 | 64 | 152 |
| Durgin, William B., Concord, N. H. Gold, silver, and plated flat and table ware and jewelry | 23,326 | July 11 | 64 | 295 |
| E. & T. Fairbanks & Company, St. Johnsbury, Vt. Weighing-scales | 23,592 | Sept. 5 | 64 | 1393 |
| E. & T. Fairbanks & Company, St. Johnsbury, Vt. Weighing-scales | 23,593 | Sept. 5 | 64 | 1393 |
| Edison & Swan United Electric Light Company, Limited, London, England. Lamps, holders, switches, and appliances for electrical illumination | 23,365 | July 11 | 64 | 298 |
| Edward Heitzeberg Packing and Provision Company, St. Louis, Mo. Hams and pork meat | 23,292 | July 4 | 64 | 152 |
| Eggeman, Duguid & Co., Toledo, Ohio. Trunks | 23,549 | Aug. 29 | 64 | 1261 |
| Elsing & Co., E., New York, N. Y. Whisky | 23,305 | July 4 | 64 | 153 |
| Elsner & Mendelson Company, New York, N. Y. Mineral-spring water | 23,520 | Aug. 22 | 64 | 1127 |
| Electrical Reminder Company, Chicago, Ill. Alarm-clocks | 23,470 | Aug. 8 | 64 | 855 |
| Elton, Maria J., Dublin, Ireland. Medicinal lotion for human and animal use | 23,497 | Aug. 15 | 64 | 1003 |
| Empire Drill Company, Shortsville, N. Y., Jackson, Mich., Baltimore, Md., Allegheny, Pa., and Louisville, Ky. Machine for distributing grains, seeds, fertilizers, and the like | 23,570 | Aug. 29 | 64 | 1262 |
| Enfajian, Harootune, Denver, Colo. Embroidered rugs and carpets | 23,338 | July 11 | 64 | 296 |
| Enos & Sons, P. W., New York, N. Y. Cordials | 23,521 | Aug. 22 | 64 | 1127 |
| Esebach, Carl,-Brunndöbra, Germany, and New York, N. Y. Harmonicas, accordions, and similar musical instruments | 23,614 | Sept. 19 | 64 | 1646 |
| Eureka Fire Hose Company, New York, N. Y. Hydraulic and fire hose | 23,616 | Sept. 19 | 64 | 1646 |
| Eureka Fire Hose Company, New York, N. Y. Hydraulic and fire hose | 23,617 | Sept. 19 | 64 | 1646 |
| Eureka Fire Hose Company, New York, N. Y. Hydraulic and fire hose | 23,618 | Sept. 19 | 64 | 1646 |
| Evans, George B., Philadelphia, Pa. Toilet powders and dentrifices | 23,445 | Aug. 1 | 64 | 711 |
| Everhart & Co., R., Arnold, N. C. Chewing-tobacco | 23,582 | Sept. 5 | 64 | 1393 |
| Excelsior Needle Company, Torrington, Conn. Needles | 23,648 | Sept. 26 | 64 | 1787 |
| Fraim, Edward T., Lancaster, Pa. Padlocks | 23,364 | July 11 | 64 | 298 |
| Fairchild Bros. & Foster, New York, N. Y. Artificially-digested food or peptone | 23,467 | Aug. 8 | 64 | 855 |
| Farbenfabriken, vormals Fr. Bayer & Co., Elberfeld, Germany, and New York, N. Y. Antiseptic for destroying insects, fungi, and the like | 23,606 | Sept. 12 | 64 | 1531 |
| Faulkner, Clay, McMinnville, Tenn. Trousers | 23,424 | Aug. 1 | 64 | 709 |
| Fenn, Frederick, Rutland, Vt. Remedies for diseases of the bowels | 23,496 | Aug. 15 | 64 | 1003 |
| Fenn, Frederick, Rutland, Vt. Remedy for diseases of the kidneys and liver | 23,611 | Sept. 12 | 64 | 1532 |
| Fig Honey Company, Chicago, Ill. Laxative or cathartic sirup | 23,490 | Aug 15 | 64 | 1003 |
| Fitch, Benjamin, New York, N. Y. Woven-wire bed-springs | 23,515 | Aug. 15 | 64 | 1004 |
| Foot, Schulze & Co., St. Paul, Minn. Boots, shoes, and leather | 23,643 | Sept. 26 | 64 | 1787 |
| Forbes Manufacturing Company, Limited, Halifax, Canada. Skates | 23,652 | Sept. 26 | 64 | 17-7 |
| Forsyth, William, Fresno, Cal. Raisins | 23,576 | Sept. 5 | 64 | 1392 |
| Fox, Jay E., Columbus, Ohio. Certain named medical compounds | 23,659 | Sept. 26 | 64 | 1788 |
| Franck Söhne, Heinrich, Ludwigsburg, Germany. Chicory and other coffee substitutes | 23,623 | Sept. 19 | 64 | 1647 |
| Franck Söhne, Heinrich, Ludwigsburg, Germany. Chicory and other coffee substitutes | 23,624 | Sept. 19 | 64 | 1647 |
| Frantz, Mary K. B., Lancaster, Pa. Wood-fillers | 23,302 | July 11 | 64 | 298 |
| Fredrickson & Fredrickson, South Bend, Ind. Liquid cosmetic | 23,358 | July 11 | 64 | 298 |
| Garlock Packing Co., Palmyra, N. Y. Packing for machinery | 23,420 | July 25 | 64 | 558 |
| George & Barker, Astoria, Oreg. Canned salmon | 23,346 | July 11 | 64 | 296 |
| George & Barker, Astoria, Oreg. Canned salmon | 23,371 | July 18 | 64 | 434 |
| German American Drug Company, Ohio City, Ohio. Face-wash and curling-fluid | 23,417 | July 25 | 64 | 558 |
| Gerst, William, Nashville, Tenn. Lager-beer | 23,433 | Aug. 1 | 64 | 710 |
| Goldberg, Abraham, Louisville, Ky. Whisky | 23,379 | July 18 | 64 | 435 |
| Goodyear Rubber Company, New York, N. Y. Rubber goods, leather goods, and waterproof oiled fabrics | 23,455 | Aug. 8 | 64 | 854 |
| Goodyear Rubber Company, New York, N. Y. Rubber goods, leather goods, and waterproof oiled fabrics | 23,456 | Aug. 8 | 64 | 854 |
| Grier, Garrett L., Dover, Del. Preparation for the painless extraction of teeth | 23,609 | Sept. 12 | 64 | 1531 |
| Grossman, Michael-ohn & Co., Chicago, Ill. Clothing for men and boys | 23,329 | July 11 | 64 | 295 |
| Gunder, Samuel H., Fairmount, Ill. Medicated plasters | 23,443 | Aug. 1 | 64 | 711 |
| Gurney Hot Water Heater Company, Boston, Mass. Heat-radiators | 23,473 | Aug. 8 | 64 | 855 |
| H. E. Bucklen & Company, Chicago, Ill. Remedies for diseases of the head, throat, chest, and lungs | 23,491 | Aug. 15 | 64 | 1003 |
| Haar Mercantile Company, Kansas City, Mo. Certain named wearing-apparel | 24,547 | Aug. 22 | 64 | 1130 |
| Haggenmacher, Carl, Buda-Pesth, Austria-Hungary. Sifting-machines | 23,654 | Sept. 26 | 64 | 1788 |
| Hahn, Marie P., Philadelphia, Pa. Sirup remedy for coughs, colds, catarrh, &c | 23,312 | July 4 | 64 | 153 |
| Hahn, Marie P., Philadelphia, Pa. Salve | 23,319 | July 4 | 64 | 154 |
| Hale, Charles E., Boston, Mass. Anæsthetics | 23,402 | July 25 | 64 | 557 |
| Hall & Garrison, Philadelphia, Pa., and New York, N. Y. Certain named decorative work | 23,613 | Sept. 19 | 64 | 1646 |
| Harper, Thomas, Redditch, England. Needles | 23,390 | July 18 | 64 | 436 |
| Harrison & Co., Louis R., New York, N. Y. Florida water | 23,557 | Aug. 29 | 64 | 1261 |
| Hasthaway & Sons, C. L., Boston, Mass. Liquid shoe-dressing | 23,560 | Aug. 29 | 64 | 1262 |
| Hawes, Charlotte W., Boston, Mass. Liniment | 23,440 | Aug. 1 | 64 | 711 |
| Hawley & Hoops, New York, N. Y. Candles | 23,478 | Aug. 15 | 64 | 1002 |
| Hazelton, Frank L., Boston, Mass. Certain named beverages | 23,350 | July 11 | 64 | 297 |
| Henn & Gabler Brewing Company, Chicago, Ill. Lager-beer | 23,303 | July 4 | 64 | 152 |
| Herbaline Medicine Co., Springfield, Ill. Remedy for kidney and liver complaints | 23,315 | July 4 | 64 | 153 |
| Hicks, Charles S., London, England. Tea | 23,412 | July 25 | 64 | 558 |
| Hodgman Rubber Company, New York, N. Y. All manufactured rubber goods | 23,376 | July 18 | 64 | 435 |
| Holmberg, Eric, Södertelge, Sweden. Friction, parlor, safety, and wax matches | 23,415 | July 25 | 64 | 558 |
| Hood, Charles L., Lowell, Mass. Compound of sarsaparilla | 23,353 | July 11 | 64 | 297 |
| Hospital Tonic Co., Milwaukee, Wis. Tonic of malt and hops | 23,603 | Sept. 12 | 64 | 1531 |
| Hudnut, Richard, New York, N. Y. Collyrium employed as a remedy for the eyes | 23,310 | July 4 | 64 | 153 |
| Hudnut, Richard, New York, N. Y. Toilet preparations | 23,368 | July 18 | 64 | 434 |
| Hull, John F., Jr., Poughkeepsie, N. Y. Trousers | 23,551 | Aug. 29 | 64 | 1261 |
| Hurd & Co., George B., New York, N. Y. Writing-paper and envelopes | 23,500 | Aug. 15 | 64 | 1003 |
| Hurtt, John B., Baltimore, Md. Remedy for coughs and colds and all inflamed conditions of the lungs and air-passages | 23,492 | Aug. 15 | 64 | 1003 |
| Hyatt, Henry O., Kingston, N. C. Remedy for indigestion | 23,398 | July 25 | 64 | 556 |
| Ichthyol Gesellschaft Cordes, Hermanni & Co., Hamburg, Germany. Certain named disinfecting and therapeutical preparations | 23,561 | Aug. 29 | 64 | 1262 |



*Alphabetical list of registrants of trade-marks, July to September, inclusive*—Continued.

| Name, residence, and title. | No. | Date. | Official Gazette. Vol. | Page. |
|---|---|---|---|---|
| Illinois Canning Co., Hoopeston, Ill. Canned corn | 23,463 | Aug. 8 | 64 | 855 |
| Illinois Canning Co., Hoopeston, Ill. Canned corn | 23,464 | Aug. 8 | 64 | 855 |
| Illinois Canning Co., Hoopeston, Ill. Canned vegetables | 23,465 | Aug. 8 | 64 | 855 |
| Illinois Canning Co., Hoopeston, Ill. Canned corn | 23,481 | Aug. 15 | 64 | 1004 |
| Illinois Canning Co., Hoopeston, Ill. Canned vegetables | 23,621 | Sept. 19 | 64 | 1646 |
| Independent Biscuit and Cracker Company, Peoria and Pekin, Ill. Crackers, cakes, and biscuits | 23,343 | July 11 | 64 | 296 |
| Ingham, Thomas, Rockhampton, Inghamatown and Wallaroo, Queensland. Eucalyptus-oil for medicinal and other uses | 23,630 | Sept. 19 | 64 | 1647 |
| Isaacson & Son, Adolph, New York, N. Y. Insect and vermin destroying preparations | 23,498 | Aug. 15 | 64 | 1003 |
| J. B. Pace Tobacco Company, Richmond, Va. Plug or chewing, twist, and smoking tobacco and cigarettes | 23,308 | July 4 | 64 | 153 |
| James, Henry W., Birmingham, England. Bicycles, tricycles, and parts thereof | 23,450 | Aug. 1 | 64 | 712 |
| Janowitz, Julius, New York, N. Y. Dress and corset stays | 23,398 | July 11 | 64 | 295 |
| Jaros, Isidore, New York, N. Y. Clothing made from a knit fabric having a smooth face and a plush back | 23,615 | Sept. 19 | 64 | 1646 |
| Jno. Peard Vermouth Company, New York, N. Y. Vermouth wine | 23,462 | Aug. 8 | 64 | 855 |
| John Dickinson & Company, Limited, London, England. Paper | 23,516 | Aug. 22 | 64 | 1127 |
| Johnson, James W., New York, N. Y. Tooth-wash | 23,558 | Aug. 29 | 64 | 1261 |
| Johnston, Michael H. (See Pease and Johnston.) | | | | |
| Jolly & Son, Limited, London, England. Pills | 23,608 | Sept. 12 | 64 | 1531 |
| Jones, McDuffee & Stratton, Boston, Mass. Dishes for table and toilet use | 23,646 | Sept. 26 | 64 | 1787 |
| Jones, McDuffee & Stratton, Boston, Mass. Dishes for table and toilet use | 23,647 | Sept. 26 | 64 | 1787 |
| Kastner & Williams Paper Co., Holyoke, Mass., and New York, N. Y. Writing-paper | 23,571 | Sept. 5 | 64 | 1392 |
| Keuffel & Esser Company, Hoboken, N. J., and New York, N. Y. Proportional dividers | 23,640 | Sept. 19 | 64 | 1648 |
| Kauffman Milling Company, St. Louis, Mo., and Bethalto, Ill. Wheat-flour | 23,381 | July 18 | 64 | 435 |
| Keiser, Cornelius, Chicago, Ill. Medicated oils for external and internal use | 23,487 | Aug. 15 | 64 | 1002 |
| Kenosha Crib Company, Kenosha, Wis. Cribs, cradles, and children's beds | 23,451 | Aug. 1 | 64 | 712 |
| King, Robert E., Richmond, Va. Insecticide | 23,391 | July 18 | 64 | 436 |
| Kittredge Company, Newark, N. J., and New York, N. Y. Periodical journal | 23,410 | July 25 | 64 | 557 |
| Kittredge Company, Newark, N. J., and New York, N. Y. Periodical journal | 23,411 | July 25 | 64 | 557 |
| Klaine, Frank A., Cincinnati, Ohio. Cooking, heating, and gas stoves | 23,474 | Aug. 8 | 64 | 856 |
| Klots, Victor, Paris, France, and New York, N. Y. Perfumed toilet articles and preparations, including soap | 23,599 | Sept. 12 | 64 | 1530 |
| Knickerbocker Brace Company, Easton, Pa. Shoulder-braces and suspenders | 23,427 | Aug. 1 | 64 | 709 |
| Koehler & Hinrichs, St. Paul, Minn. Cheese | 23,344 | July 11 | 64 | 296 |
| Kunkelmann & Co., Rheims, France. Champagne | 23,626 | Sept. 19 | 64 | 1647 |
| Kunkelmann & Co., Rheims, France. Champagne | 23,627 | Sept. 19 | 64 | 1647 |
| Kunkelmann & Co., Rheims, France. Champagne | 23,628 | Sept. 19 | 64 | 1647 |
| Lappe, Firm of Th., Neudietendorff, Germany. Stomach bitters | 23,489 | Aug. 15 | 64 | 1003 |
| Lariat Manufacturing Company, Jersey City, N. J. Game implements consisting of lariats and targets | 23,539 | Aug. 22 | 64 | 1128 |
| Lander, Archibald, Chicago, Ill. Apparatus for outdoor games | 23,363 | July 11 | 64 | 298 |
| Lander, Archibald, Chicago, Ill. Apparatus for outdoor games | 23,385 | July 18 | 64 | 436 |
| Lander, Archibald, Chicago, Ill. Apparatus for outdoor games | 23,386 | July 18 | 64 | 436 |
| Lander, Archibald, Chicago, Ill. Apparatus for outdoor games | 23,387 | July 18 | 64 | 436 |
| Laumeister, Charles S., San Francisco, Cal. Rolled or crushed wheat | 23,620 | Sept. 19 | 64 | 1646 |
| Leavcraft & Co., New York, N. Y. Flour and meal | 23,372 | July 18 | 64 | 435 |
| Leavcraft & Co., New York, N. Y. Flour and meal | 23,373 | July 18 | 64 | 435 |
| Lehmaier, Louis A., New York, N. Y. Writing-paper | 23,644 | Sept. 26 | 64 | 1787 |
| Lehnau, Gustav A., Philadelphia, Pa. Remedy for rheumatism | 23,313 | July 4 | 64 | 153 |
| Lemm, Marion A., Weehawken, N. J. Cough elixir | 23,631 | Sept. 19 | 64 | 1647 |
| Lincoln Pill Company, New York, N. Y. Liver and kidney medicines and pills | 23,316 | July 4 | 64 | 153 |
| Lindner & Remig Manufacturing Company, New York, N. Y. Brass articles for trimming and decoration, including screws and electric and gas fittings | 23,380 | July 18 | 64 | 435 |
| Lockwood, William H., St. Paul, Minn. Salves and ointments | 23,607 | Sept. 12 | 64 | 1531 |
| Lorenzi, Albert de. (See Schweickhardt & Lorenzi.) | | | | |
| Lyman Smith's Sons Company, Norwood and Boston, Mass. Combination leather for boots and shoes and similar articles | 23,506 | Aug. 15 | 64 | 1004 |
| Lyman Smith's Sons Company, Norwood and Boston, Mass. Combination leather for boots and shoes and similar articles | 23,507 | Aug. 15 | 64 | 1004 |
| Lyon, Hall & Co., Baltimore, Md. Linoleums and window-shades | 23,339 | July 11 | 64 | 296 |
| M. Werk Company, Cincinnati, Ohio. Soap powder | 23,394 | July 25 | 64 | 556 |
| M. Werk Company, Cincinnati, Ohio. Soap powder | 23,395 | July 25 | 64 | 556 |
| Maddocks, John, Bradford, England. Wearing-apparel | 23,502 | Aug. 15 | 64 | 1003 |
| Maddocks, John, Bradford, England. Hats, caps, and bonnets | 23,503 | Aug. 15 | 64 | 1004 |
| Maddocks, John, Bradford, England. Boots, shoes, and lasts | 23,505 | Aug. 15 | 64 | 1004 |
| Maddocks, John, Bradford, England. Umbrellas, parasols, and canes | 23,508 | Aug. 15 | 64 | 1004 |
| Marquez, Miguel J., Havana, Cuba. Magnesia | 23,397 | July 25 | 64 | 556 |
| Marshall, Kennedy Milling Company, Allegheny, Pa. Wheat-flour | 23,421 | July 25 | 64 | 558 |
| Mather, Hannah, St. Helen's, England. Pills, tinctures, cough remedies, and medicinal powders and plasters | 23,416 | July 25 | 64 | 558 |
| Maulbetsch & Whittemore, Newark, N. J. Leather for satchels and for cases for musical instruments, &c | 23,375 | July 18 | 64 | 435 |
| M. Cammon Piano Company, Oneonta, N. Y. Pianos | 23,322 | July 4 | 64 | 154 |
| McConnell, S. R. & L. C., Burlington, Iowa. Harness, saddles, and collars | 23,418 | July 25 | 64 | 558 |
| McCord, Brady Company, Omaha, Nebr. Tea | 23,388 | July 18 | 64 | 436 |
| McLaughlin, William F., Chicago, Ill. Baking-power | 23,294 | July 4 | 64 | 152 |
| McMullin, William H., Houston, Tex. Laundry, toilet, and fancy soaps | 23,396 | July 25 | 64 | 556 |
| Melfi, Peppino, Syracuse, N. Y. Medicinal preparations of an antiseptic, deodorant, or germicide character | 23,442 | Aug. 1 | 64 | 711 |
| Memphis Music Co., Memphis, Tenn. Pianos, organs, guitars, mandolins, and banjos | 23,414 | July 25 | 64 | 558 |
| Merck, Firm of E., Darmstadt, Germany. Preparations of iron derived from animal matter known as physiological iron preparations | 23,530 | Aug. 22 | 64 | 1128 |
| Merck, Firm of E., Darmstadt, Germany. Preparations of iron derived from animal matter known as physiological iron preparations | 23,531 | Aug. 22 | 64 | 1128 |
| Merck, Firm of E., Darmstadt, Germany. Medicinal agents for nervous diseases and a febrifuge | 23,534 | Aug. 22 | 64 | 1129 |
| Merck, Firm of E., Darmstadt, Germany. Remedies for whooping-cough and asthmatic diseases | 23,536 | Aug. 22 | 64 | 1129 |
| Merck, Firm of E., Darmstadt, Germany. Remedies for cancerous diseases | 23,537 | Aug. 22 | 64 | 1129 |
| Michigan Chemical Co., Detroit, Mich. Liniment | 23,401 | July 25 | 64 | 557 |
| Miller, Dubrul & Peters Manufacturing Co., Cincinnati, Ohio, and New York, N. Y. Cigar-molds | 23,541 | Aug. 22 | 64 | 1129 |
| Miller, Dubrul & Peters Manufacturing Co., Cincinnati, Ohio, and New York, N. Y. Cigar-molds | 23,542 | Aug. 22 | 64 | 1129 |
| Miller, Dubrul & Peters Manufacturing Co., Cincinnati, Ohio, and New York, N. Y. Cigar-molds | 23,543 | Aug. 22 | 64 | 1129 |
| Miller, Dubrul & Peters Manufacturing Co., Cincinnati, Ohio, and New York, N. Y. Cigar-molds | 23,544 | Aug. 22 | 64 | 1129 |

*Alphabetical list of registrants of trade-marks, July to September, inclusive*—Continued.

| Name, residence, and title. | No. | Date. | Official Gazette. Vol. | Page. |
|---|---|---|---|---|
| Miller, John A., San Francisco, Cal. Vaginal capsules, antiseptic uterine lotions, and laxative tablets | 23,318 | July 4 | 64 | 154 |
| Mississippi Glass Company, St. Louis, Mo. Rolled sheet-glass | 23,510 | Aug. 15 | 64 | 1004 |
| Mitchell Bros., Aberdeen, Md. Canned corn | 23,345 | July 11 | 64 | 296 |
| Moline Plow Company, Moline, Ill. Plows and cultivators | 23,641 | Sept. 19 | 64 | 1648 |
| Montén, Firm of Lars, Stockholm, Sweden. Vinegar | 23,523 | Aug. 22 | 64 | 1127 |
| Morrison & Banta, New York, N. Y. Remedies for nervous disorders | 23,660 | Sept. 26 | 64 | 1788 |
| Mülhens & Kropff, New York, N. Y. Toilet soap | 23,357 | July 11 | 64 | 298 |
| Müller & Co., J. G., Stuttgart, Germany. Artists' colors, varnishes, and driers | 23,457 | Aug. 8 | 64 | 854 |
| Muscatine Oat Meal Company, Muscatine, Iowa. Rolled oats and oatmeal | 23,554 | Aug. 29 | 64 | 1261 |
| Nash-Smith Tea and Coffee Company, St. Louis, Mo., and Denver, Colo. Baking-powder | 23,393 | July 25 | 64 | 556 |
| National Cigarette and Tobacco Company, New York, N. Y. Cigarettes and tobacco | 23,382 | July 18 | 64 | 436 |
| National Needle Company, Springfield, Mass. Sewing-machine and hand sewing needles | 23,307 | July 4 | 64 | 153 |
| Neelands, Johnston L. (See Neelands, Thomas D. and J. L.) | 23,612 | Sept. 12 | 64 | 1532 |
| Neelands, Thomas D., and J. L., Chicago, Ill. Collars and cuffs | 23,642 | Sept. 26 | 64 | 1787 |
| New York Condensed Milk Company Jersey City, N. J., and New York, N. Y. Fluid or dairy milk | 23,604 | Sept. 12 | 64 | 1531 |
| Newton, Chambers & Company, Limited, near Sheffield, England. Disinfectants | 23,664 | Sept. 26 | 64 | 1788 |
| Newton, Chambers & Company, Limited, near Sheffield, England. Sheep-dips | 23,665 | Sept. 26 | 64 | 1788 |
| Nickels & Tuller, Philadelphia, Pa. Whisky | 23,556 | Aug. 29 | 64 | 1261 |
| Noble, James E., Albany, N. Y. Soap for family, laundry, and mill use | 23,600 | Sept. 12 | 64 | 1530 |
| Non-Alcoholic Beer Brewing Company, Chicago, Ill. Unfermented malt-and-hops beverages classed as soft drinks | 23,625 | Sept. 19 | 64 | 1647 |
| Northwestern Consolidated Milling Company, Minneapolis, Minn. Wheat-flour | 23,296 | July 4 | 64 | 152 |
| Northwestern Consolidated Milling Company, Minneapolis, Minn. Wheat-flour | 23,297 | July 4 | 64 | 152 |
| Northwestern Consolidated Milling Company, Minneapolis, Minn. Wheat-flour | 23,298 | July 4 | 64 | 152 |
| Northwestern Consolidated Milling Company, Minneapolis, Minn. Wheat-flour | 23,299 | July 4 | 64 | 152 |
| Northwestern Consolidated Milling Company, Minneapolis, Minn. Wheat-flour | 23,300 | July 4 | 64 | 152 |
| Northwestern Consolidated Milling Company, Minneapolis, Minn. Wheat-flour | 23,301 | July 4 | 64 | 152 |
| Northwestern Consolidated Milling Company, Minneapolis, Minn. Wheat-flour | 23,302 | July 4 | 64 | 152 |
| O'Donnell & Duer Bavarian Brewing Company, Chicago, Ill. Beer and ale | 23,384 | July 18 | 64 | 436 |
| O'Donnell & Duer Bavarian Brewing Company, Chicago Ill. Ale and beer | 23,656 | Sept. 26 | 64 | 1788 |
| O'Meara, John U., Washington, D. C. Headache powders | 23,657 | Sept. 26 | 64 | 1788 |
| Oliver, James, South Bend, Ind. Chilled plows | 23,565 | Aug. 29 | 64 | 1262 |
| Olmsted & Co., Chicago, Ill. Chain pumps | 23,595 | Sept. 5 | 64 | 1394 |
| Oshkosh Match Works, Oshkosh, Wis. Matches | 23,591 | Sept. 5 | 64 | 1393 |
| Packard, James W. (See Packard, William D. and J. W.) | 23,287 | July 4 | 64 | 151 |
| Packard, William D. and J. W., Warren, Ohio. Arc and incandescent lamps | 23,514 | Aug. 15 | 64 | 1004 |
| Parker, Webb & Company, Detroit, Mich. Compound used as a substitute for butter and lard | 23,432 | Aug. 1 | 64 | 710 |
| Pearson, William E., Paris, France. Oily medicinal preparation for internal and external use | 23,662 | Sept. 26 | 64 | 1788 |
| Pearson, William E., Paris, France. Oily medicinal preparation for internal and external use | 23,663 | Sept. 26 | 64 | 1788 |
| Pease, Campbell B., and M. H. Johnston, Galesburg, Ill. Remedies for gonorrhea, gleet, and the like | 23,317 | July 4 | 64 | 153 |
| Penington, David F., Baltimore, Md. Watches, cuff and lapel buttons, watch-charms, and medals | 23,645 | Sept. 26 | 64 | 1787 |
| Perego & Co., Ira, New York, N. Y. Shirts, collars, cuffs, neckties, underwear, and outer clothing | 23,517 | Aug. 22 | 64 | 1127 |
| Perfection Chemical and Manufacturing Company, Des Moines, Iowa. Mortar and coatings for walls | 23,512 | Aug. 15 | 64 | 1004 |
| Perrin Frères et Cie., New York, N. Y. Gloves | 23,331 | July 11 | 64 | 295 |
| Perrin Frères et Cie., New York, N. Y. Gloves | 23,332 | July 11 | 64 | 295 |
| Perrin Frères et Cie., New York, N. Y. Gloves | 23,333 | July 11 | 64 | 295 |
| Perrin Frères et Cie., New York, N. Y. Gloves | 23,334 | July 11 | 64 | 295 |
| Perry, Henry E., Essex Junction, Vt. Compound sirup of spruce gum | 23,335 | July 11 | 64 | 295 |
| Peter Stumpf Brewing Company, Richmond, Va. Ale, porter, and beer | 23,351 | July 11 | 64 | 297 |
| Phillips, Richard, Baird, Tex. Medicine for expelling tape-worms | 23,522 | Aug. 22 | 64 | 1127 |
| Phoenix Candle Company, Syracuse and New York, N. Y. Certain candles | 23,610 | Sept. 12 | 64 | 1531 |
| Phoenix Candle Company, Syracuse and New York, N. Y. Candles | 23,288 | July 4 | 64 | 151 |
| Phoenix Stock Food Co., Chicago, Ill. Medicated compound food for stock | 23,619 | Sept. 19 | 64 | 1646 |
| Pickel, Joseph W., St. Louis, Mo. Wrenches | 23,355 | July 11 | 64 | 297 |
| Pike, George H. (See Warren and Pike.) | 23,475 | Aug. 8 | 64 | 856 |
| Pike Manufacturing Company, Haverhill, N. H. Oil-stones and whetstones | 23,448 | Aug. 1 | 64 | 711 |
| Plantation Pharmacal Company, Memphis, Tenn. Remedies for gonorrhea and gleet | 23,538 | Aug. 22 | 64 | 1129 |
| Plume & Atwood Manufacturing Company, Waterbury, Conn., New York, N. Y., Boston, Mass., and Chicago, Ill. Rivets, washers, burrs, and like articles of copper and brass | 23,563 | Aug. 29 | 64 | 1262 |
| Portland-Cement-Fabrik "Germania" H. Manske & Co., Lehrte, Germany. Hydraulic cement | 23,651 | Sept. 26 | 64 | 1787 |
| Radam, William, New York, N. Y. Remedy known as a microbe-killer | 23,587 | Sept. 5 | 64 | 1393 |
| Rand, Allen S., and G. Bell, Cincinnati, Ohio, and Peoria, Ill. Washing fluid | 23,399 | July 25 | 64 | 556 |
| Razer, John B., Reading, Pa. Headache and fever remedy | 23,485 | Aug. 15 | 64 | 1002 |
| Reach, Robert, Philadelphia, Pa. Toys | 23,566 | Aug. 29 | 64 | 1262 |
| Reading Hardware Company, Reading, Pa. Builders' hardware, including locks and latches | 23,596 | Sept. 12 | 64 | 1530 |
| Redding, William F., King's Station, N. Y. Folding clothes-driers | 23,325 | July 4 | 64 | 154 |
| Reid, Murdoch & Company, Chicago, Ill. Green and black teas | 23,472 | Aug. 8 | 64 | 855 |
| Reid, Murdoch & Company, Chicago, Ill. Green and black teas | 23,577 | Sept. 5 | 64 | 1392 |
| Reid, Murdoch & Company, Chicago, Ill. Green and black teas | 23,578 | Sept. 5 | 64 | 1392 |
| Remy Co., Albert F., Mansfield, Ohio. Canned fruits, vegetables, fish, meats, oysters, catsup, and soup | 23,579 | Sept. 5 | 64 | 1392 |
| Remy Co., Albert F., Mansfield, Ohio. Canned fruits, vegetables, fish, meats, oysters, catsup, and soup | 23,466 | Aug. 8 | 64 | 855 |
| Richardson & Boynton Company, New York, N. Y., and Chicago, Ill. Hot air and water heaters | 23,482 | Aug. 15 | 64 | 1002 |
| Riley & Co., Wm. B., Philadelphia, Pa. Horse-blankets | 23,323 | July 4 | 64 | 154 |
| Robison, Walter S., Cleveland, Ohio. Chewing-gum | 23,342 | July 11 | 64 | 296 |
| Roseman & Levy, New York, N. Y. Watchcases | 23,479 | Aug. 15 | 64 | 1002 |
| Sacks, Louis, Newark, N. J. Boxes containing implements for shoe repairs | 23,499 | Aug. 15 | 64 | 1003 |
| Sacks, Louis, Newark, N. J. Heel-plates for boots and shoes | 23,449 | Aug. 1 | 64 | 711 |
| Samson Cordage Works, Boston, Mass. Braided sash-cord | 23,540 | Aug. 22 | 64 | 1129 |
| Schinasi, Sarfarmon, New York, N. Y. Cigarettes and smoking-tobacco | 23,509 | Aug. 15 | 64 | 1004 |
| Schlegel & Bro., Robert A., St. Louis, Mo. Plate-glass mirrors | 23,459 | Aug. 8 | 64 | 854 |
| Schlottmann & Co., Berlin, Germany. Knitted shawls | 23,321 | July 4 | 64 | 154 |
| Schmidt, Jacob A., Barmen, Germany, and New York, N. Y. Tools, pruning implements, and cutlery | 23,597 | Sept. 12 | 64 | 1530 |
| Schweickhardt, Richard, & A. de Lorenzi, Dallas, Tex. Perfumes | 23,568 | Aug 29 | 64 | 1262 |
| Schwerin & Co., Emanuel, Philadelphia, Pa. Knee-pants | 23,356 | July 11 | 64 | 297 |
| | 23,425 | Aug. 1 | 64 | 709 |



*Alphabetical list of registrants of trade-marks, July to September, inclusive*—Continued.

| Name, residence, and title. | No. | Date. | Official Gazette. Vol. | Page. |
|---|---|---|---|---|
| Sheaffer, Alfred B., Lancaster, Pa. Whisky | 23,655 | Sept. 26 | 64 | 1788 |
| Shepard, Norwell & Co., Boston, Mass. Blankets | 23,550 | Aug. 29 | 64 | 1261 |
| Simon & Co., N., Neenah, Wis. American, brick, Limburger, and imitation Swiss cheese | 23,553 | Aug. 29 | 64 | 1261 |
| Smillie Coupler and Manufacturing Company, Newark, N. J. Car-couplings and parts thereof | 23,419 | July 25 | 64 | 558 |
| Smith, Charles H., Albany, N. Y. Bitters, emulsions, cough mixtures, sarsaparilla, and remedy for rheumatism | 23,314 | July 4 | 64 | 153 |
| Smith & Egge Manufacturing Company, Bridgeport, Conn. Alloy of metal | 23,567 | Aug. 29 | 64 | 1262 |
| Smith & Egge Manufacturing Company, Bridgeport, Conn. Locks and keys | 23,589 | Sept. 5 | 64 | 1393 |
| Smith & Egge Manufacturing Company, Bridgeport, Conn. Sash-chains | 23,590 | Sept. 5 | 64 | 1393 |
| Smith, Florence L., Cleveland, Ohio. Lubricating-oil | 23,588 | Sept. 5 | 64 | 1393 |
| Smith, Frank J., Albany, N. Y. Root-beer | 23,378 | July 18 | 64 | 435 |
| Snowden, Rene R., Ocala, Fla. Washing-powder | 23,447 | Aug. 1 | 64 | 711 |
| Sollmann, Luitpold, Canton, Ohio. Drugs | 23,583 | Sept. 5 | 64 | 1393 |
| Soule Medical Co., Lisbon, N. D. Ointments, salves and similar preparations | 23,564 | Aug. 29 | 64 | 1261 |
| Southern Coffee Co., Louisville, Ky. Yeast-powder | 23,484 | Aug. 15 | 64 | 1002 |
| Southwick, George W., Stamford, Conn. Belt-grease | 23,605 | Sept. 12 | 64 | 1531 |
| Spalding, George I., London, England. Cameras | 23,389 | July 18 | 64 | 436 |
| Spery, Nanine, New York, N. Y. Medicinal essence of herbs and roots and wine and alcohol | 23,435 | Aug. 1 | 64 | 710 |
| Spitz, Frank X., Des Moines, Iowa. Cigars | 23,377 | July 18 | 64 | 435 |
| Stackhouse, Urbine, Indianapolis, Ind. Remedy for the tobacco habit | 23,309 | July 4 | 64 | 153 |
| Steinhardt & Bro., A., New York, N. Y. Hooks and eyes | 23,648 | Sept. 26 | 64 | 1787 |
| Stevens, Edward G., Boston, Mass. Eye guards and protectors | 23,330 | July 11 | 64 | 295 |
| Stitt & Co., Wm. J., New York, N. Y. Coffee | 23,383 | July 18 | 64 | 436 |
| Stoddard, Henry H., New London, Conn. Remedies for coughs and colds | 23,311 | July 4 | 64 | 153 |
| Stokes, William H., Watertown, S. D. Wheat-flour | 23,295 | July 4 | 64 | 152 |
| Stover Bicycle Manufacturing Company, Freeport, Ill. Bicycles, tricycles, and velocipedes | 23,594 | Sept. 5 | 64 | 1394 |
| Stroschein, Johann E., Berlin, Germany. Remedy for diabetes | 23,493 | Aug. 15 | 64 | 1003 |
| Sultan, Frederick W., and J. A. Wellington, St. Louis, Mo. Chewing-gum | 23,574 | Sept. 5 | 64 | 1392 |
| Superior Drill Company, Springfield, Ohio. Seeding implements, cider-mills, and hay-tools | 23,569 | Aug. 29 | 64 | 1262 |
| Swift & Company, Chicago, Ill. Butterine | 23,290 | July 4 | 64 | 151 |
| Swift & Company, Kansas City, Kans., Chicago, Ill., South Omaha, Nebr., and East St. Louis, Ill. Hams, breakfast-bacon, and shoulders | 23,480 | Aug. 15 | 64 | 1002 |
| Swift & Company, Kansas City, Kans., Chicago and East St. Louis, Ill., and South Omaha, Nebr. Trimmings from the fore shoulders of hogs | 23,525 | Aug. 22 | 64 | 1128 |
| Terre Haute Shovel and Tool Company, Terre Haute, Ind. Diamond-pointed spades | 23,409 | July 25 | 64 | 557 |
| Thompson Milling Company, Lockport, N. Y. Wheat-flour | 23,430 | Aug. 1 | 64 | 709 |
| Thorass, Anton C., Minneapolis, Minn. Cheese | 23,524 | Aug. 22 | 64 | 1127 |
| Tiffany & Company, New York, N. Y. Bronzes and silver and plated ware | 23,572 | Sept. 5 | 64 | 1392 |
| Tiffany & Company, New York, N. Y. Jewelry and watches | 23,573 | Sept. 5 | 64 | 1392 |
| Timms, Walter B., New York, N. Y. Canned fish, fruits, vegetables, soups, and milk | 23,483 | Aug. 15 | 64 | 1002 |
| Tottenham, Francis R., Victoria, Canada. Remedy for sea-sickness | 23,661 | Sept. 26 | 64 | 1788 |
| Valk & Bro., S. J., New York, N. Y. Peas, sardines, mushrooms, truffles, macaroni, capers, olive-oil, olives, and prunes | 27,622 | Sept. 19 | 64 | 1647 |
| Vapo-Cresolene Company, Stanley, N. J., and New York, N. Y. Certain named medical and disinfecting compounds and apparatus | 23,441 | Aug. 1 | 64 | 711 |
| Vice & Co., David, Jr., Lancaster, Pa. Toilet face-wash | 23,444 | Aug. 1 | 64 | 711 |
| Vienna Enamel and Stamping Company, Chicago, Ill., and Porter, Ind. Granite-ware articles for household use | 23,471 | Aug. 8 | 64 | 855 |
| Vogel Brothers, New York, N. Y. Men's and boy's outer clothing and shirts, collars, cuffs, neck-wear, and underwear | 23,422 | Aug. 1 | 64 | 709 |
| Wagner, Robert H., Rye, N. Y. Liniment | 23,562 | Aug. 29 | 64 | 1262 |
| Wallace, Elliott & Co., New York, N. Y. Shoes | 23,408 | July 25 | 64 | 557 |
| Warren, George A., and G. H. Pike, Worcester, Mass. Liquid dressing for leather goods | 23,518 | Aug. 22 | 64 | 1127 |
| Watkins, Joseph R., Winona, Minn. Certain named medicines | 23,585 | Sept. 5 | 64 | 1393 |
| Watson, Erwin & Co., Oakland, Cal. Insect-exterminating compound | 23,320 | July 4 | 64 | 154 |
| Webr. Hobelmann-Gottlieb Brewing and Malting Company of Baltimore City, Baltimore, Md. Lager-beer | 23,555 | Aug. 29 | 64 | 1261 |
| Wellington, John A. (See Sultan and Wellington.) | 23,407 | July 25 | 64 | 557 |
| Wellington, Walter L., New York, N. Y. Henrietta cloth | 23,486 | Aug. 15 | 64 | 1002 |
| Wells & Co., S. C., Le Roy, N. Y. Dentifrice | 23,586 | Sept. 5 | 64 | 1393 |
| Wells & Co., S. C., Le Roy, N. Y. Remedy for catarrh | 23,436 | Aug. 1 | 64 | 710 |
| Wells, Schuyler C., Le Roy, N. Y. Herb tea used as a remedy for indigestion, eruptions of the skin, &c | 23,403 | July 25 | 64 | 557 |
| Wertheimer Company, San Francisco, Cal. Cigars | 23,404 | July 25 | 64 | 557 |
| Wertheimer Company, San Francisco, Cal. Cigars | 23,405 | July 25 | 64 | 557 |
| West, George, Stockton, Cal. Wines and liquors manufactured from grape-juice | 23,461 | Aug. 8 | 64 | 854 |
| Westervelt & Co., W. H., New York, N. Y. Fruits | 23,575 | Sept. 5 | 64 | 1392 |
| Whitaker, Thomas D., Philadelphia, Pa. Plaster, Portland cement, and analogous compositions | 23,513 | Aug. 15 | 64 | 1004 |
| White Rose Manufacturing Co., Pawtucket, R. I. Washing-powders | 23,559 | Aug. 29 | 64 | 1261 |
| Wiebusch, Estate of Frederick, New York, N. Y. Cutlery, including knives, razors, shears, files, &c | 23,639 | Sept. 19 | 64 | 1648 |
| Wiedenmayer, George W., Newark, N. J. Ale and beer | 23,460 | Aug. 8 | 64 | 854 |
| Wientge, Charles C., assignor to Howard Sterling Company, Providence, R. I. Bowl | 23,798 | Sept. 26 | 64 | 1783 |
| Wilcox Specific Medicine Company, Philadelphia, Pa. Remedy for amenorrhea, diamenorrhea, corpulency, and nervous diseases | 23,400 | July 25 | 64 | 557 |
| Woods & Co., Kangaroo Island, South Australia. Eucalyptus oil and extract | 23,468 | Aug. 8 | 64 | 855 |
| Wright, Robert, Cleveland, Ohio. Chewing-gum | 23,369 | July 18 | 64 | 434 |
| X Zalia Medicine Company, Portland, Me., and Boston, Mass. Medicine for topical application | 23,367 | July 18 | 64 | 434 |
| Young, Alexander V., Troy, N. Y. Medicines for the cure of blood, liver, and kidney diseases | 23,495 | Aug. 15 | 64 | 1003 |
| Yzermans & Co., Vlaardingen, Netherlands. Herrings and sardines | 23,293 | July 4 | 64 | 152 |
| Zündhütchen-und Patronenfabrik, vormals Sellier & Bellot, Schönebeck, Germany. Caps, detonators, cartridges, and shells | 23,650 | Sept. 26 | 64 | 1787 |

## PRINTS.

| Name, residence, and title. | No. | Date. | Official Gazette. Volume. | Page. |
|---|---|---|---|---|
| Bovril, Limited, London, England, and New York, N. Y. "Bovril." (For canned goods and cured meats | 2 | Aug. 29 | 64 | 1138 |

## DISCLAIMERS.

| Name, residence, and invention. | No. | Filed. | Official Gazette. Vol. | Page. |
|---|---|---|---|---|
| Corser, Brackett G., Brattleborough, Vt.; disclaimer filed by inventor. Overalls | 366,621 | Aug. 14, 1893 | 64 | 863 |
| Hales, Henry W., Ridgewood, N. J.; disclaimer filed by patentee. Shutter attachments for photographic cameras | 436,658 | Aug. 18, 1893 | 64 | 1012 |
| Stetson, Joseph B., Lincoln, Me.; disclaimer filed by patentee and assignees. Lanterns | 244,944 | July 21, 1893 | 64 | 443 |



## ALPHABETICAL LIST OF INVENTIONS.

| Invention. | Name. | No. | Date. | Monthly volume. Specification. | Drawing. | Official Gazette. Volume. | Page. |
|---|---|---|---|---|---|---|---|
| Abdominal supporter | A. B. S. Phillips | 500,609 | July 4 | 121 | 32 | 64 | 94 |
| Accordion | W. R. Mühlmann | 501,803 | July 18 | 2034 | 501 | 64 | 309 |
| Acid. Apparatus for making sulphuric | F. B. Hacker and P. S. Gilchrist | 503,847 | Aug. 22 | 2847 | 663 | 64 | 1096 |
| Acid combinations. Obtaining meta or pyro phosphoric | H. Precht | 502,424 | Aug. 1 | 295 | ..... | 64 | 620 |
| Acid. Making carbonic | E. Luhmann | 503,288 | Aug. 15 | 1753 | 433 | 64 | 915 |
| Acid. Making nitric | C. O. Vols | 500,786 | July 4 | 404 | 106 | 64 | 75 |
| Adding device and register | T. J. Lockwood | 500,919 | July 4 | 600 | 157 | 64 | 101 |
| Adjustable table | N. M. Anderson and G. S. Rider | 501,638 | July 18 | 1759 | 438 | 64 | 352 |
| Advertisements. Apparatus for distributing | F. B. Cochran | 502,396 | Aug. 1 | 245 | 58 | 64 | 610 |
| Advertising apparatus | S. Kuh | 504,421 | Sept. 5 | 180 | 47 | 64 | 1304 |
| Advertising apparatus | T. Obbinson | 500,939 | July 4 | 696 | 164 165 | 64 | 115 |
| Advertising device | J. A. Gibbons | 504,919 | Sept. 12 | 1005 | 239 | 64 | 1474 |
| Advertising device | E. Harmer | 501,137 | July 11 | 966 | 247 | 64 | 191 |
| Advertising device | G. Mann | 501,015 | July 4 | 753 | 197 | 64 | 137 |
| Advertising. Electrically-illuminated character for | A. D. Page | 501,533 | July 18 | 1586 | 399 | 64 | 320 |
| Advertising. Means of | A. T. Bond | 502,947 | Aug. 8 | 1200 | 296 | 64 | 891 |
| Advertising-valise | H. W. Long and C. Dimick | 501,013 | July 4 | 752 | 197 | 64 | 137 |
| Advertising-wagon | H. D. Stone | 505,682 | Sept. 26 | 2311 | 587 | 64 | 1744 |
| Aerating distilled water | J. E. Thomas and E. P. Grow | 502,409 | Aug. 1 | 269 | 64 | 64 | 615 |
| Aerating distilled water. Apparatus for | J. E. Thomas and E. P. Grow | 502,408 | Aug. 1 | 267 | 63 | 64 | 615 |
| Aerial machine | S. B. Battey | 502,168 | July 25 | 2613 | 658 | 64 | 522 |
| Agraffe | F. Schimmel and S. F. Nelson | 503,167 | Aug. 15 | 1562 | 384 | 64 | 881 |
| Agricultural implement | A. Caldwell | 502,032 | July 25 | 2395 | 602 | 64 | 510 |
| Air. Apparatus for estimating the quantity of combustible gas or vapor present in | F. Clowes and B. Redwood | 502,173 | July 25 | 2621 | 617 | 64 | 594 |
| Air-brake | A. P. Massey | 501,016 | July 4 | 755 | 198 | 64 | 137 |
| Air-brake | W. H. Masterman | 504,227 | Aug. 29 | 3267 | 815 | 64 | 1229 |
| Air-brake | L. A. Pinkston | 501,359 | July 11 | 1326 | 332 333 | 64 | 254 |
| Air-brake. Automatic | W. Keywood | 500,910 | July 4 | 588 | 154 | 64 | 108 |
| Air-brake mechanism for railway-cars | C. W. Higgins | 503,083 | Aug. 8 | 1405 | 333 | 64 | 639 |
| Air compressor | C. Quast | 501,046 | July 4 | 805 | 210 | 64 | 146 |
| Air-current governor | S. P. Smith | 505,238 | Sept. 19 | 1520 | 398 | 64 | 1563 |
| Air heating and moistening apparatus | A. Caywood | 505,750 | Sept. 26 | 2422 | 611 | 64 | 1764 |
| Air-motor | J. P. Foulks | 500,877 | July 4 | 547 | 142 | 64 | 100 |
| Air-ship | T. Steinmann | 501,111 | July 11 | 931 | 238 239 | 64 | 184 |
| Air-warming furnace | G. W. Johnston | 501,604 | July 18 | 1701 | 424 | 64 | 342 |
| Alarm: *See* Burglar-alarm. Fire-alarm. High or low water alarm. Low-water alarm. Railway-crossing alarm. Till-alarm. | | | | | | | |
| Alarm system. Electrical | C. K. Hall and W. B. Lillard | 504,980 | Sept. 12 | 1109 | 284 285 | 64 | 1493 |
| Album. Cabinet | O. H. Williams | 501,857 | July 18 | 2104 | 520 | 64 | 412 |
| Alkaline phosphate. Making | T. Meyer | 504,453 | Sept. 5 | 225 | ..... | 64 | 1313 |
| Alloy | J. W. Richards and A. E. Hunt | 501,233 | July 11 | 1113 | ..... | 64 | 218 |
| Alloy. Aluminium | C. F. Whitney | 501,553 | July 18 | 1627 | 518 | 64 | 329 |
| Almond hulling and shelling machine | W. G. Read | 505,002 | Sept. 12 | 1145 | 293 | 64 | 1500 |
| Almond-nuts. Machine for cracking and separating | W. G. Read | 504,944 | Aug. 29 | 3295 | 823 824 | 64 | 1234 |
| Aluminum compounds. Making | W. E. Case | 503,901 | Aug. 22 | 2722 | ..... | 64 | 1110 |
| Aluminum compounds. Making | W. E. Case | 504,324 | Sept. 5 | 19 | ..... | 64 | 1274 |
| Aluminum fluosulphate. Making | W. E. Case | 503,900 | Aug. 22 | 2721 | ..... | 64 | 1110 |
| Aluminum fluosulphate. Making | W. E. Case | 504,325 | Sept. 5 | 20 | ..... | 64 | 1274 |
| Aluminum. Producing | J. B. Hall | 503,929 | Aug. 22 | 2765 | 692 | 64 | 1119 |
| Amalgamating-machine | J. C. Wiswell | 504,508 | Sept. 5 | 328 | 84 | 64 | 1331 |
| Amalgamating-pan | M. P. Boss | 504,850 | Sept. 12 | 909 | 234 235 | 64 | 1456 |
| Amalgamation of precious metals | G. R. Evans | 502,902 | Aug. 8 | 1118 | 275 | 64 | 787 |
| Amalgamator | W. M. Fuller | 504,678 | Sept. 5 | 506 | 158 | 64 | 1382 |
| Amalgamator | J. S. Johnson | 503,765 | Aug. 22 | 2536 | 630 631 | 64 | 1074 |
| Amalgamator. Ore | C. B. Brierly | 503,034 | Aug. 8 | 1335 | 328 | 64 | 826 |
| Amido-crotonylanilid and making it | L. Lederer | 503,748 | Aug. 22 | 2513 | ..... | 64 | 1070 |
| Ammeter | W. Hochhausen | 501,144 | July 11 | 978 | 249 | 64 | 199 |
| Ammonium nitrate. Making | J. Landin | 500,914 | July 4 | 593 | ..... | 64 | 109 |
| Amusement and for advertising. Device for | J. S. Vine | 502,896 | Aug. 8 | 1108 | 273 | 64 | 785 |
| Anchor | J. W. Byrne | 503,694 | Aug. 22 | 2423 | 603 | 64 | 1051 |
| Anchor. Land | J. Stombaugh | 501,811 | July 18 | 2042 | 503 | 64 | 400 |
| Anchors. Making | W. N. Fisher | 503,501 | Aug. 29 | 2253 | 564 565 | 64 | 1021 |
| Animal-boot | L. H. Smalley | 500,968 | July 4 | 689 | 181 | 64 | 125 |
| Animal-shears | C. and H. Burgon | 501,324 | July 11 | 1260 | 316 | 64 | 942 |
| Animal-shears | J. A. Schmidt | 502,865 | Aug. 8 | 1055 | 259 | 64 | 776 |

*Alphabetical list of inventions, July to September, inclusive*—Continued.

| Invention. | Name. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drg. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|---|
| Animal-shoeing apparatus | E. Sirois | 502,054 | July 25 | 9430 | 612 | 64 | 486 |
| Animal-trap | W. E. Crockett and R. E. McAdams | 501,599 | July 18 | 1095 | 422 | 64 | 341 |
| Animal-trap | T. M. Hovell | 502,254 | July 25 | 2762 | {698 699} | 64 | 550 |
| Animal-trap | C. C. Martin and A. J. Schlaffer | 501,953 | July 25 | 2369 | 567 | 64 | 457 |
| Animal-trap | J. Nelson | 502,986 | Aug. 8 | 1271 | 311 | 64 | 813 |
| Animal-trap. Self-setting | C. C. Martin | 504,811 | Sept. 12 | 831 | 211 | 64 | 1439 |
| Annunciator and alarm. Automatic passenger-train | A. E. Watts | 505,687 | Sept. 26 | 2319 | 589 | 64 | 1745 |
| Annunciator. Electric | T. Spencer | 502,472 | Aug. 1 | 373 | 89 | 64 | 635 |
| Annunciator restoring system | L. A. Berthon | 504,797 | Sept. 12 | 802 | {204 205} 545 | 64 | 1433 1716 |
| Anticribbing device | E. Burvill-Holmes | 505,590 | Sept. 26 | 2135 | | 64 | |
| Antiseptic compound | L. H. Baekeland | 500,549 | July 4 | 90 | | 64 | 6 |
| Apartment-ventilator | J. Fransmann | 500,880 | July 4 | 550 | 143 | 64 | 100 |
| Apparel fastener. Wearing | T. Heintz | 500,893 | July 4 | 567 | 147 | 64 | 103 |
| Architectural purposes. Composition for | J. Flynn | 503,592 | Aug. 22 | 2255 | | 64 | 1021 |
| Architectural purposes. Composition for | E. A. Moore | 504,933 | Sept. 12 | 1029 | | 64 | 1479 |
| Arm-rest | C. S. Rodgers and C. E. Schudy | 501,364 | July 11 | 1339 | 335 | 64 | 257 |
| Armature | J. J. Smith and G. W. Findlater | 501,376 | July 11 | 1360 | 340 | 64 | 261 |
| Armature and constructing same | H. F. Parshall | 502,988 | Aug. 8 | 1274 | 311 | 64 | 814 |
| Armature. Electric-motor | W. J. Sherwood | 505,729 | Sept. 26 | 2291 | 604 | 64 | 1758 |
| Armature for dynamo-electric machines | J. T. Morrow | 504,401 | Sept. 5 | 141 | 37 | 64 | 1297 |
| Armature for dynamo-electric machines and motors | S. S. Wheeler | 503,106 | Aug. 8 | 1449 | 357 | 64 | 847 |
| Armature for dynamo-electric machines or motors | W. T. Kosinski | 505,247 | Sept. 19 | 1538 | 401 | 64 | 1593 |
| Armature for electric machines. Revolving | E. A. Sperry | 501,194 | July 11 | 1057 | 267 | 64 | 207 |
| Armature. Ring | C. W. Jefferson | 500,902 | July 4 | 578 | {150 151} | 64 | 105 |
| Armatures. Winding coils for dynamo-electric | J. B. Blood | 503,449 | Aug. 15 | 2005 | 497 | 64 | 960 |
| Armatures. Winding coils for dynamo-electric | E. Thomson | 503,445 | Aug. 15 | 1998 | 496 | 64 | 959 |
| Asphaltum, &c. Extracting and refining | A. F. L. Bell | 505,416 | Sept. 19 | 1817 | 469 | 64 | 1656 |
| Atomizer | W. J. Evans | 503,837 | Aug. 22 | 2630 | 658 | 64 | 1092 |
| Atomizer | I. Q. Gurnee | 502,904 | Aug. 8 | 1120 | 276 | 64 | 788 |
| Atomizing or pulverizing liquids. Apparatus for | F. F. Bourdil | 501,178 | July 11 | 1035 | 262 | 64 | 203 |
| Auger | O. P. Swanson | 503,882 | Aug. 22 | 2691 | {674 675} | 64 | 1104 |
| Auger. Adjustable earth | G. S. Decatur | 501,561 | July 18 | 1636 | 409 | 64 | 330 |
| Auger-bit | A. L. Adams | 503,224 | Aug. 15 | 1654 | 406 | 64 | 898 |
| Auger-bit | A. L. Adams | 503,225 | Aug. 15 | 1655 | 406 | 64 | 898 |
| Auger-bit | A. L. Adams | 504,261 | Aug. 29 | 3393 | 831 | 64 | 1240 |
| Auger. Earth | J. Fraser | 503,078 | Aug. 8 | 1396 | 345 | 64 | 837 |
| Auger. Earth | W. H. Gibbs | 505,456 | Sept. 26 | 1885 | 486 | 64 | 1664 |
| Auger. Earth | W. E. Scott and A. Mika | 501,630 | July 18 | 1745 | 435 | 64 | 350 |
| Auger-point | W. Caldwell | 504,018 | Aug. 29 | 2926 | 733 | 64 | 1165 |
| Autographic register | C. F. Bassett and I. S. Dement | 505,260 | Sept. 19 | 1552 | {405 406} | 64 | 1589 |
| Autographic register | H. Cook | 504,467 | Sept. 5 | 250 | 65, 66 | 64 | 1316 |
| Autographic register | L. C. Farmer | 503,532 | Aug. 15 | 2138 | 537 | 64 | 964 |
| Autographic register | C. Fox | 502,924 | Aug. 8 | 1153 | 287 | 64 | 795 |
| Automatic brake | E. A. Merriman | 502,526 | Aug. 1 | 471 | 113 | 64 | 653 |
| Awning | C. Glawe | 501,932 | July 25 | 2244 | 560 | 64 | 452 |
| Awning-frame | H. Giesseniier | 500,741 | July 4 | 335 | 89 | 64 | 63 |
| Ax wedge and guard | G. P. Morrill | 503,351 | Aug. 15 | 1864 | 461 | 64 | 935 |
| Axle-box. Car | R. Brewer | 502,652 | Aug. 1 | 677 | 163 | 64 | 691 |
| Axle-box dust-guard | J. J. Busenbens | 501,325 | July 11 | 1292 | 316 | 64 | 242 |
| Axle-box. Self-lubricating | T. Moore | 501,727 | July 18 | 1901 | 473 | 64 | 376 |
| Axle. Carriage | C. W. Brooks | 505,387 | Sept. 19 | 1770 | 458 | 64 | 1629 |
| Axle-journal | C. W. Reniff | 504,749 | Sept. 12 | 747 | 181 | 64 | 1430 |
| Axle-lubricator | J. G. Coburn | 505,285 | Sept. 19 | 1563 | 408 | 64 | 1591 |
| Axle-lubricator | H. V. Conway | 503,074 | Aug. 8 | 1391 | {343 344} | 64 | 836 |
| Axle-lubricator | F. Pettepher | 505,124 | Sept. 19 | 1350 | 348 | 64 | 1552 |
| Axle-lubricator for vehicle-hubs | R. Parker | 504,816 | Sept. 12 | 841 | 216 | 64 | 1441 |
| Axle mounting. Car | J. H. Watt | 501,389 | July 11 | 1381 | 345 | 64 | 265 |
| Axles. Forging | F. Horn | 503,481 | Aug. 15 | 2064 | 515 | 64 | 970 |
| Axles. Treating car | J. N. Lauth | 505,405 | Sept. 19 | 1799 | 465 | 64 | 1635 |
| Bag: *See* Mail-bag. Traveling-bag. Saddle-bag. | | | | | | | |
| Bag-fastener | A. Osterloh | 503,113 | Aug. 8 | 1461 | 359 | 64 | 849 |
| Bag-holder | S. F. Brown | 501,820 | July 18 | 2055 | 506 | 64 | 403 |
| Bag-holder | J. S. Kounts | 504,787 | Sept. 12 | 792 | 200 | 64 | 1431 |
| Bag-holder | J. Travis | 503,627 | Aug. 22 | 2321 | 576 | 64 | 1032 |
| Bag-turning device | L. E. Barbeau | 503,692 | Aug. 22 | 2420 | 602 | 64 | 1051 |
| Bait-box | J. W. Lewis and W. J. Estep | 503,792 | Aug. 22 | 2467 | 613 | 64 | 1060 |
| Bake-pan | C. Schifferly | 504,480 | Sept. 5 | 275 | 71 | 64 | 1221 |
| Balance | J. W. Gibboney | 502,433 | Aug. 1 | 308 | 74 | 64 | 622 |
| Balcony-hoist | J. B. Chetwynd | 501,455 | July 11 | 1470 | 369 | 64 | 283 |
| Bale or bundle wiring tool | G. Schubert | 502,393 | Aug. 1 | 120 | 27 | 64 | 587 |
| Bale-tie | W. A. Kilmer | 504,436 | Sept. 5 | 204 | 53 | 64 | 1308 |
| Bale-wiring tool | G. Schubert | 501,067 | July 18 | 1006 | 449 | 64 | 360 |
| Baling apparatus. Cotton | E. M. Ivens | 504,983 | Sept. 12 | 1115 | {285 286} | 64 | 1404 |
| Baling cotton | J. Watson | 505,580 | Sept. 26 | 2136 | 541 | 64 | 1712 |
| Baling cotton. Apparatus for | E. M. Ivens | 502,193 | July 25 | 2650 | {669 670} | 64 | 529 |
| Baling-press | J. W. Brown and A. A. Gehrt | 505,389 | Sept. 19 | 1772 | 459 | 64 | 1629 |
| Baling-press | C. Harrington | 504,033 | Aug. 29 | 2940 | 738 | 64 | 1169 |
| Baling-press | E. M. Ivens | 502,192 | July 25 | 2648 | {668 669} | 64 | 529 |
| Baling-press | G. Schubert | 502,833 | Aug. 8 | 1008 | 246 | 64 | 767 |
| Baling-press | G. Schubert | 504,481 | Sept. 5 | 276 | 71 | 64 | 1321 |
| Baling-press | J. Watson | 505,581 | Sept. 26 | 2139 | 542 | 64 | 1712 |
| Ball throwing or bowling machine | F. H. Keane and D. Wilson | 502,299 | Aug. 1 | 72 | 16 | 64 | 579 |
| Balloon for observing distant objects | C. A. Smith | 505,414 | Sept. 19 | 1814 | 468 | 64 | 1638 |



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| Invention. | Name. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drg. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|---|
| Ballot-box canceling, feeding, and locking device | J. Q. Adams | 503,025 | Aug. 8 | 1319 | {323 324} | 64 | 823 |
| Ballot-box. Registering and canceling | E. K. Tolman | 503,626 | Aug. 22 | 2319 | 578 | 64 | 1032 |
| Ballot-boxes. Canceling and register-actuating device for | W. T. Butler | 500,850 | July 4 | 501 | 130 | 64 | 91 |
| Balloting-booth | J. H. Van Dorn | 501,119 | July 11 | 946 | 242 | 64 | 186 |
| Balloting-booth | J. H. Van Dorn | 501,120 | July 11 | 948 | 242 | 64 | 187 |
| Balloting device | J. McTammany | 502,743 | Aug. 8 | 850 | 207 | 64 | 737 |
| Band-cutter and feeder | M. T. Minogue | 504,990 | Sept. 12 | 1130 | 289 | 64 | 1497 |
| Band-cutter and feeder | E. S. Wilhite. (Reissue) | 11,349 | July 4 | 808 | 210 | 64 | 147 |
| Band-cutter and feeder | C. H. Zishka | 504,383 | Sept. 5 | 111 | 28, 29 | 64 | 1291 |
| Band-cutter and feeder. Automatic | C. H. Edwards | 504,715 | Sept. 12 | 659 | 167 | 64 | 1406 |
| Bandage. Uterine | C. F. Ohlrich | 505,249 | Sept. 19 | 1540 | 401 | 64 | 1586 |
| Bandage. Water | G. F. Ells | 500,568 | July 4 | 49 | 15 | 64 | 11 |
| Bank-notes or other currency. Press for packing | W. F. Hess | 500,766 | July 4 | 374 | 97 | 64 | 70 |
| Banjo | J. F. Luscomb | 504,810 | Sept. 12 | 830 | 211 | 64 | 1439 |
| Banjo-bridge | C. F. Albert, Jr | 503,396 | Aug. 15 | 1931 | 480 | 64 | 948 |
| Bar: *See* Metal bar. | | | | | | | |
| Barber's cabinet | J. B. Cox | 505,030 | Sept. 12 | 1190 | 306 | 64 | 1509 |
| Barbers' chairs. Automatic register for | J. E. Maumen | 505,053 | Sept. 12 | 1225 | 315 | 64 | 1515 |
| Barrel and making same | J. C. Dozier | 505,446 | Sept. 26 | 1872 | 482 | 64 | 1662 |
| Barrel-heading device | J. S. Downing | 501,828 | July 18 | 2062 | 508 | 64 | 404 |
| Barrel-hooping machinery | R. Welch | 503,021 | Aug. 8 | 1314 | 322 | 64 | 822 |
| Barrel or crate | C. B. Dare and J. D. Hall | 504,445 | Sept. 5 | 213 | 56 | 64 | 1310 |
| Barrel or keg | E. A. David and J. Rath | 503,580 | Aug. 22 | 2227 | 558 | 64 | 1017 |
| Barrel setting-up, crozing, and chining machine | F. S. Palmatier | 504,891 | Sept. 12 | 956 | 247 | 64 | 1464 |
| Barrel-washer | J. W. and A. F. Flower and R. J. Cousins | 502,414 | Aug. 1 | 276 | 66 | 64 | 617 |
| Barrel-washer | R. C. Inslee | 504,076 | Aug. 29 | 2954 | {739 740} | 64 | 1170 |
| Barrels, &c. Manufacture of metal | D. Caird | 502,846 | Aug. 8 | 1025 | 251 | 64 | 770 |
| Barrow, Brick | D. J. C. Arnold | 501,314 | July 11 | 1234 | 311 | 64 | 239 |
| Basement-ventilator | P. H. Jackson | 503,484 | Aug. 15 | 2068 | 516 | 64 | 971 |
| Basin, bath-tub, &c. Wash | A. O'Brien | 503,249 | Aug. 15 | 1688 | 415 | 64 | 904 |
| Basket | E. Behne | 505,694 | Sept. 26 | 2340 | 592 | 64 | 1749 |
| Basket. Splint laundry | G. H. Carlson | 500,991 | July 4 | 718 | 189 | 64 | 130 |
| Bath: *See* Electrolytic bath. Turkish bath. | | | | | | | |
| Bath-tubs. Device for heating water in | B. W. Felthousen | 500,802 | July 4 | 430 | 113 | 64 | 79 |
| Bath-tubs. Foot-bath attachment for | C. H. Stephenson | 501,304 | July 11 | 1217 | 308 | 64 | 236 |
| Batteries, electric cells, &c. Box for secondary | C. Theryc and A. Oblasser | 502,643 | Aug. 1 | 660 | 160 | 64 | 688 |
| Battery: *See* Electric battery. Galvanic battery. Electric body-battery. Secondary battery. Secondary electric battery. Electric primary battery. Storage-battery. | | | | | | | |
| Battery-jar | A. M. Gee | 503,132 | Aug. 15 | 1504 | 370 | 64 | 870 |
| Beams. Mechanism for handling | A. E. Rhoades | 504,456 | Sept. 5 | 229 | 61 | 64 | 1313 |
| Beams. Mechanism for handling | A. E. Rhoades | 504,458 | Sept. 5 | 233 | 62 | 64 | 1314 |
| Bearing | O. B. Jacobs | 505,107 | Sept. 19 | 1324 | 341 | 64 | 1547 |
| Bearing. Antifriction | J. G. Avery | 502,025 | July 25 | 2383 | 599 | 64 | 478 |
| Bearing. Ball | G. F. Simonds | 501,374 | July 11 | 1357 | 338 | 64 | 260 |
| Bearing. Ball | G. F. Simonds | 501,375 | July 11 | 1358 | 339 | 64 | 260 |
| Bearing. Car-axle | O. B. Jacobs | 501,700 | July 18 | 2014 | {496 497} | 64 | 396 |
| Bearing for shafts. Ball | P. Lobben | 503,609 | Aug. 22 | 2293 | 572 | 64 | 1027 |
| Bearing for sheaves. Roller | W. H. Thompson | 504,287 | Aug. 29 | 3362 | 840 | 64 | 1248 |
| Bearing. Shaft | S. G. Phillips | 504,049 | Aug. 29 | 2973 | 743 | 64 | 1174 |
| Bearing. Spindle | W. A. Chandler | 505,786 | Sept. 26 | 2481 | 626 | 64 | 1776 |
| Bearing. Spindle | G. O. Draper | 501,408 | July 11 | 1409 | 353 | 64 | 270 |
| Bearing. Spindle | W. F. Draper | 505,196 | Sept. 19 | 1461 | 377 | 64 | 1571 |
| Bearing. Thrust | E. B. Sintzenich | 504,253 | Aug. 29 | 3311 | 827 | 64 | 1237 |
| Bearing. Thrust | A. K. Watt | 503,200 | Aug. 15 | 1707 | 420 | 64 | 907 |
| Bearing. Vehicle-wheel ball | E. A. Jones | 502,927 | Aug. 8 | 1167 | 288 | 64 | 796 |
| Bed and dressing-case. Combined folding | J. Flory | 504,778 | Sept. 12 | 776 | 196 | 64 | 1429 |
| Bed-bottom | H. B. Crandall | 501,827 | July 18 | 2 61 | 509 | 64 | 404 |
| Bed-bottom | A. W. Day | 500,865 | July 4 | 526 | 136 | 64 | 96 |
| Bed-bottom | C. M. Hunt | 503,540 | Aug. 15 | 2150 | 539 | 64 | 987 |
| Bed-bottom | W. L. Keephart and J. C. Hackett | 503,323 | Aug. 15 | 1820 | 451 | 64 | 927 |
| Bed-bottom. Wire | M. L. Cross | 505,267 | Sept. 19 | 1564 | 408 | 64 | 1591 |
| Bed-brace | W. H. Fitzgerald | 502,115 | July 25 | 2526 | 633 | 64 | 505 |
| Bed-brace | J. A. Fretwell | 504,210 | Aug. 29 | 3244 | 809 | 64 | 1225 |
| Bed-brace | C. A. Hunt, Jr | 505,527 | Sept. 26 | 2032 | 518 | 64 | 1691 |
| Bed. Folding | J. Christ | 504,328 | Sept. 5 | 26 | 8 | 64 | 1276 |
| Bed. Folding | P. Flowers | 502,491 | Aug. 1 | 47 | 12 | 64 | 575 |
| Bed. Folding | N. Odegaard and G. Kuhnle | 505,477 | Sept. 26 | 1915 | 493 | 64 | 1670 |
| Bed. Folding | W. A. Scott | 503,969 | Aug. 29 | 2889 | 722 | 64 | 1158 |
| Bed. Invalid | A. Boden, J. Peers, and S. Saxon | 504,515 | Sept. 5 | 341 | 87 | 64 | 1333 |
| Bed. Invalid | W. D. Dawdy and A. Herren | 504,333 | Sept. 5 | 33 | 10 | 64 | 1277 |
| Bed or cot. Folding | C. S. Davis | 504,202 | Aug. 29 | 3229 | {804 805} | 64 | 1222 |
| Bed pan | J. Tascher | 501,852 | July 18 | 2098 | 518 | 64 | 411 |
| Bed. Sofa | P. F. Asker | 500,792 | July 4 | 414 | 109 | 64 | 77 |
| Bed. Sofa | E. A. C. Hesse | 501,602 | July 18 | 1697 | 423 | 64 | 341 |
| Bed. Spring | O. R. Gould | 502,118 | July 25 | 2530 | 634 | 64 | 506 |
| Bed. Ventilated | S. P. Paietta | 505,250 | Sept. 19 | 1541 | 402 | 64 | 1586 |
| Beds. Leg for wardrobe | W. A. Morrison and C. L. Ames | 505,411 | Sept. 19 | 1809 | {466 467} | 64 | 1637 |
| Bedstead | A. D. Cooke | 503,196 | Aug. 15 | 1606 | 394 | 64 | 889 |
| Bedstead | J. J. Dugan | 500,867 | July 4 | 530 | 137 | 64 | 96 |
| Bedstead attachment | W. B. Carter | 504,557 | Sept. 5 | 410 | 104 | 64 | 1346 |

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| Invention. | Name. | No. | Date. | Monthly volume. Spec. | Monthly volume. Dr'g. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|---|
| Bedstead. Invalid | A. J. Goodwin | 501,006 | July 4 | 741 | 194, 195 | 64 | 135 |
| Beef stuffing machine | A. Weston | 505,498 | Sept. 26 | 1914 | 501 | 64 | 1676 |
| Bee-hive | D. A. Dewey | 502,488 | Aug. 1 | 405 | 96 | 64 | 641 |
| Beer. Manufacture of | O. Zwietusch | 504,145 | Aug. 29 | 3129 | 782 | 64 | 1203 |
| Beer-tempering device | G. Kruse | 505,421 | Sept. 19 | 1838 | 473 | 64 | 1642 |
| Bell | I. H. Abell | 505,284 | Sept. 19 | 1801 | 416 | 64 | 1598 |
| Bell | E. D. Rockwell | 500,951 | July 4 | 643 | 109 | 64 | 117 |
| Bell. Bicycle | O. B. Beach | 504,902 | Sept. 12 | 975 | 251 | 64 | 1468 |
| Bell. Bicycle | A. J. Sandgren | 501,675 | July 18 | 1802 | 448, 449 | 64 | 359 |
| Bell. Door | C. M. Burgess | 502,612 | Aug. 1 | 608 | 145 | 64 | 676 |
| Bell. Door | A. A. Page | 505,277 | Sept. 19 | 15-9 | 414 | 64 | 1595 |
| Bell. Electric | W. J. Newman | 501,292 | July 11 | 1302 | 304 | 64 | 233 |
| Bell-ringing device | W. J. Going | 504,721 | Sept. 12 | 867 | 169 | 64 | 1408 |
| Belt. Bodice | M. Scheuer | 501,300 | July 11 | 1214 | 307 | 64 | 235 |
| Belt-clamp | E. B. Hawkes | 505,103 | Sept. 19 | 1318 | 340 | 64 | 1546 |
| Belt. Conveyer | S. Jacoby | 502,041 | July 25 | 2406 | 643, 644 | 64 | 492 |
| Belt. Conveyer | G. E. Stead | 501,218 | July 11 | 1091 | 277 | 64 | 214 |
| Belt. Driving | S. J. Wilbur | 502,798 | Aug. 8 | 948 | 231 | 64 | 755 |
| Belt. Electric | D. P. Andrus | 502,804 | Aug. 8 | 954 | 232 | 64 | 756 |
| Belt. Electric | A. D. Berliner | 501,861 | July 18 | 2110 | 521 | 64 | 413 |
| Belt. Electric | W. C. Ekholm | 504,336 | Sept. 5 | 38 | 11 | 64 | 1278 |
| Belt. Electric | J. H. Se Chevrerll | 502,776 | Aug. 8 | 909 | 221, 222 | 64 | 748 |
| Belt. Electric | B. H. Standiah | 501,849 | July 18 | 2093 | 517 | 64 | 410 |
| Belt. Electric | A. Stephenson and J. Backstrom | 503,811 | Aug. 22 | 2598 | 649 | 64 | 1046 |
| Belt-fastener | O. J. Baldwin | 501,206 | July 11 | 1165 | 296 | 64 | 227 |
| Belt for ore-concentrators | J. S. Brownell | 501,557 | July 18 | 1631 | 408 | 64 | 369 |
| Belting | K. Kuchler | 502,976 | Aug. 8 | 1256 | 307 | 64 | 776 |
| Belting | R. Temmel | 505,142 | Sept. 19 | 1377 | 353 | 64 | 1556 |
| Bench-dog | C. L. Bronk | 504,982 | Sept. 12 | 1074 | 274 | 64 | 1487 |
| Bending-machine | M. McMaster | 505,475 | Sept. 26 | 1912 | 492 | 64 | 1670 |
| Bending mechanism. Plate | F. H. Stillman and C. Wigtel | 504,310 | Aug. 29 | 3399 | 851, 852 | 64 | 1254 |
| Bending-press | S. Swartz | 500,974 | July 4 | 697 | 183 | 64 | 127 |
| Berry-picker | C. C. Read | 500,613 | July 4 | 125 | 33 | 64 | 25 |
| Bevel | C. G. Osteman | 502,199 | July 25 | 2663 | 673 | 64 | 532 |
| Beverages. Vessel for | J. M. Van Fleet | 505,073 | Sept. 12 | 1267 | 325 | 64 | 1523 |
| Bicycle | G. F. Case | 503,928 | Aug. 22 | 2618 | 654 | 64 | 1090 |
| Bicycle | W. Y. Cocken | 505,753 | Sept. 26 | 2426 | 613 | 64 | 1765 |
| Bicycle | E. R. Corbett | 501,056 | July 11 | 825 | 214 | 64 | 166 |
| Bicycle | H. Lind | 502,232 | July 25 | 2720 | 686 | 64 | 542 |
| Bicycle | V. H. Nulle | 500,938 | July 4 | 625 | 164 | 64 | 114 |
| Bicycle | O. Schmiedel | 502,866 | Aug. 8 | 1055 | 259 | 64 | 776 |
| Bicycle | O. W. Squires | 504,633 | Sept. 5 | 513 | 133 | 64 | 1367 |
| Bicycle | S. A. White | 505,732 | Sept. 26 | 2404 | 608 | 64 | 1760 |
| Bicycle | H. S. Williams | 503,513 | Aug. 15 | 2108 | 528 | 64 | 979 |
| Bicycle. Adjustable-speed | J. L. Morris | 504,168 | Aug. 29 | 3165 | 790 | 64 | 1210 |
| Bicycle attachment | T. K. S. McGriff | 503,058 | Aug. 8 | 1367 | 337 | 64 | 832 |
| Bicycle-brake | O. B. Burns | 502,949 | Aug. 8 | 1304 | 296 | 64 | 802 |
| Bicycle-canopy | J. S. Barnes | 504,900 | Sept. 12 | 971 | 250 | 64 | 1467 |
| Bicycle-chain lock | W. H. Hart, Jr | 505,292 | Sept. 19 | 1615 | 419 | 64 | 1601 |
| Bicycle chain-wheels. Adjusting device for | A. Featherstone | 504,870 | Sept. 12 | 926 | 238 | 64 | 1459 |
| Bicycle crank-shaft and bearing | P. Gendron | 503,790 | Aug. 22 | 2570 | 639 | 64 | 1081 |
| Bicycle crank shield | G. R. Cheesman | 504,121 | Aug. 29 | 3088 | 773 | 64 | 1196 |
| Bicycle driving-gear | R. B. Cunningham | 501,874 | July 18 | 2136 | 530 | 64 | 417 |
| Bicycle-gear | E. J. Swedlund | 505,335 | Sept. 19 | 1681 | 433 | 64 | 1612 |
| Bicycle-gear | E. H. P. Taylor | 501,381 | July 11 | 1370 | 342 | 64 | 262 |
| Bicycle gun-carrier | P. Gendron | 503,315 | Aug. 15 | 1807 | 448 | 64 | 924 |
| Bicycle-handle. Adjustable | W. Lamb | 505,273 | Sept. 19 | 1580 | 412 | 64 | 1594 |
| Bicycle-lock | W. H. Hart, Jr | 505,522 | Sept. 26 | 2013 | 515 | 64 | 1688 |
| Bicycle-pedal | A. L. Garford | 503,206 | Aug. 15 | 1620 | 407 | 64 | 892 |
| Bicycle-saddle | J. Bethune | 502,110 | July 25 | 2518 | 631 | 64 | 503 |
| Bicycle-saddle | A. Mecky | 501,230 | July 11 | 1110 | 282 | 64 | 217 |
| Bicycle-saddle | L. L. Richmond | 502,017 | July 25 | 2368 | 594 | 64 | 475 |
| Bicycle saddle or seat | J. Wilson | 505,620 | Sept. 26 | 2196 | 555 | 64 | 1727 |
| Bicycle. Safety | J. E. Wright | 501,454 | July 11 | 1468 | 368 | 64 | 293 |
| Bicycle-seat spring | H. Bergfels. (Reissue) | 11,350 | July 11 | 1512 | 380 | 64 | 291 |
| Bicycle seat. Supplementary | M. S. Shipley | 503,170 | Aug. 15 | 1568 | 396 | 64 | 892 |
| Bicycle speed-gearing | J. L. Abbott | 502,902 | Aug. 8 | 959 | 235 | 64 | 756 |
| Bicycle-support | M. E. Hertel and A. Beck | 505,102 | Sept. 19 | 1409 | 362 | 64 | 1562 |
| Bicycle-support | H. J. Hyams | 502,298 | Aug. 1 | 71 | 15, 16 | 64 | 579 |
| Bicycle-wheel hub | F. Nessel and F. McLish | 504,888 | Sept. 12 | 952 | 246 | 64 | 1464 |
| Bicycles. Changeable-speed device for | W. B. Swan | 502,916 | Aug. 8 | 1137 | 280 | 64 | 791 |
| Bill-board. Portable | F. R. Stone | 503,812 | Aug. 22 | 2599 | 649 | 64 | 1067 |
| Bill-sheet | H. F. Vaughan | 503,918 | Aug. 22 | 2749 | 689 | 64 | 1116 |
| Billiard-ball holder | G. Rohrbach | 501,257 | July 11 | 1154 | 331, 332 | 64 | 224 |
| Billiard-balls. Triangle for | G. Rohrbach | 501,258 | July 11 | 1153 | 292 | 64 | 224 |
| Billiard-cue tips. Securing | N. Boamann | 504,663 | Sept. 5 | 557 | 142 | 64 | 1375 |
| Billiard-cushion | C. Schulenburg | 505,007 | Sept. 12 | 1153 | 295 | 64 | 1502 |
| Billiard or pool table | H. A. Bereuter | 503,261 | Aug. 15 | 1709 | 420, 421 | 64 | 908 |
| Billiard-register | W. H. Woodruff | 504,957 | Sept. 12 | 1065 | 272 | 64 | 1485 |
| Bin: *See* Flour-bin. | | | | | | | |
| Bins or boxes. Automatic drop-lid for | B. Dailey | 502,509 | Aug. 1 | 440 | 106 | 64 | 648 |
| Binder for loose sheets of paper, &c | O. Assmann | 504,317 | Sept. 5 | 9 | 3 | 64 | 1272 |
| Binder-knotter | G. W. Whittington | 503,634 | Aug. 22 | 2329 | 580, 581 | 64 | 1033 |
| Binder. Temporary | F. D. Hastings and O. N. Durand | 503,959 | Aug. 29 | 2834 | 707 | 64 | 1149 |



*Alphabetical list of inventions, July to September, inclusive*—Continued.

| Invention. | Name. | No. | Date. | Monthly volume. Spec. | Monthly volume. Dr'g. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|---|
| Binder. Twine | J. F. Fowler | 503,844 | Aug. 22 | 2639 | 660, 661, 662 | 64 | 1095 |
| Bird-cages. Food-holder for | L. F. Shanovski and B. Rubenstein | 502,146 | July 25 | 2573 | 646 | 64 | 514 |
| Biscuit-cutter | W. J. Grotenhuis and H. T. Sidway | 504,834 | Sept. 12 | 876 | 226 | 64 | 1449 |
| Bit: *See* Auger-bit. Reaming-bit. Bridle-bit. | | | | | | | |
| Bit and saw. Combined | E. O. Lofdahl | 505,712 | Sept. 26 | 2365 | 597 | 64 | 1754 |
| Bituminous rock. Apparatus for reducing | E. R. Thomason | 502,211 | July 25 | 2681 | 677 | 64 | 535 |
| Bituminous rock. Apparatus for reducing and softening | E. Groat | 502,416 | Aug. 1 | 279 | 66 | 64 | 617 |
| Bituminous rock. Machine for reducing and softening | E. Groat | 502,417 | Aug. 1 | 281 | 67 | 64 | 618 |
| Blade. Flexible | F. O. Climer | 505,189 | Sept. 19 | 1449 | 373 | 64 | 1560 |
| Blanket-retaining device | N. J. and E. J. Bissell | 504,701 | Sept. 12 | 643 | 163 | 64 | 1404 |
| Blast-furnace | D. Sheedy and M. W. Iles | 505,538 | Sept. 26 | 2046 | 522 | 64 | 1694 |
| Blind-slat tenon | L. Steets and U. Bohren | 501,810 | July 18 | 2042 | 502 | 64 | 400 |
| Blind-stop | W. W. Hoskins | 502,362 | Aug. 1 | 188 | 44 | 64 | 600 |
| Block: *See* Breech-block. Pulley-block. Knife-block. Roof-block. Meat-block. | | | | | | | |
| Blotter | J. H. Russell | 502,640 | Aug. 1 | 656 | 160 | 64 | 688 |
| Blotting-pad | J. C. Moginie | 500,774 | July 4 | 385 | 101 | 64 | 72 |
| Blower for carburetors | C. V. Best | 502,944 | July 25 | 2746 | 693, 694 | 64 | 547 |
| Blower. Rotary | E. P. Reichhelm | 502,890 | Aug. 8 | 1092 | 269 | 64 | 782 |
| Blowers of carburetors. Weight-motor for | L. C. Huber | 503,702 | Aug. 22 | 2434 | 606 | 64 | 1054 |
| Board: *See* Bill-board. Tray-board. Game-board. Washboard. Organ reed-board. | | | | | | | |
| Boat: *See* Ice-boat. | | | | | | | |
| Boat-disengaging gear | W. H. Wilson and W. J. Pirrie | 503,637 | Aug. 22 | 2336 | 582 | 64 | 1035 |
| Bobbin | G. Pendleton, Jr | 501,897 | July 18 | 2177 | 540 | 64 | 424 |
| Bobbin-holder | C. A. Hawes | 501,461 | July 11 | 1479 | 372 | 64 | 284 |
| Boiler: *See* Circulating-boiler. Upright boiler. Locomotive-boiler. Washboiler. Steam-boiler. Water-tube safety-boiler. Tubular boiler. | | | | | | | |
| Boiler | B. J. Coller | 500,855 | July 4 | 510 | 133 | 64 | 93 |
| Boiler | C. R. Moore | 500,814 | July 4 | 446 | 117 | 64 | 82 |
| Boiler | S. A. Pratt | 505,673 | Sept. 26 | 2298 | 582, 583 | 64 | 1742 |
| Boiler | G. S. Strong | 505,542 | Sept. 26 | 2050 | 583 | 64 | 1694 |
| Boiler | G. S. Strong | 505,543 | Sept. 26 | 2051 | 523, 524 | 64 | 1695 |
| Boiler | J. Vance | 505,735 | Sept. 26 | 2399 | 606 | 64 | 1750 |
| Boiler-cleaner | G. E. Truax | 504,426 | Sept. 5 | 188 | 49 | 64 | 1306 |
| Boiler-feeder | A. Sandino y Barcon | 501,315 | July 11 | 1235 | 311, 312 | 64 | 239 |
| Boiler feeder. Steam | J. Dean | 504,151 | Aug. 29 | 3138 | 785 | 64 | 1225 |
| Boiler-furnace | C. H. Allen, Sr | 501,907 | July 25 | 2203 | 549 | 64 | 445 |
| Boiler-furnace | J. D. Ellis | 501,709 | July 18 | 1877 | 467 | 64 | 372 |
| Boiler-furnace | J. K. Thompson | 505,144 | Sept. 19 | 1382 | 354 | 64 | 1557 |
| Boiler furnace. Locomotive | J. Milton | 503,155 | Aug. 15 | 1540 | 378 | 64 | 877 |
| Boiler furnace. Steam | J. Cleghorn | 505,094 | Sept. 19 | 1305 | 336 | 64 | 1543 |
| Boiler furnace. Steam | A. B. Cosby | 502,616 | Aug. 1 | 613 | 147 | 64 | 679 |
| Boiler furnace. Steam | A. B. Cosby | 502,617 | Aug. 1 | 615 | 147 | 64 | 679 |
| Boiler furnace. Steam | J. E. Needham | 501,729 | July 18 | 1903 | 473 | 64 | 377 |
| Boiler furnace. Steam | O. D. Orvis | 503,214 | Aug. 15 | 1638 | 402 | 64 | 895 |
| Boiler furnace. Steam | C. Rinck | 500,777 | July 4 | 392 | 103 | 64 | 73 |
| Boiler furnace. Steam | G. H. Watson | 502,705 | Aug. 8 | 944 | 230 | 64 | 754 |
| Boiler safety-plug | C. E. Van Auken | 504,896 | Sept. 12 | 964 | 298, 299 | 64 | 1466 |
| Boiler separator. Steam | C. J. Larson | 505,709 | Sept. 26 | 2302 | 597 | 64 | 1753 |
| Boiler stay or brace | J. M. Wilson | 503,514 | Aug. 15 | 2109 | 593 | 64 | 979 |
| Boiler support. Kitchen | W. Rowlinson | 501,733 | July 18 | 1911 | 475 | 64 | 378 |
| Boiler-tube cleaner | J. M. Dunn | 504,569 | Sept. 5 | 427 | 108 | 64 | 1349 |
| Boiler-tube cleaner | R. Thompson | 503,359 | Aug. 15 | 1690 | 466 | 64 | 938 |
| Boiler-tube cleaner. Steam | R. Thompson | 503,559 | Aug. 15 | 2196 | 547 | 64 | 994 |
| Boiler tube-closer. Steam | G. C. Hicks | 504,582 | Sept. 5 | 444 | 113 | 64 | 1353 |
| Boiler water-regulator. Steam | N. E. Nash and G. A. Eddy | 504,234 | Aug. 29 | 3280 | 819, 820 | 64 | 1232 |
| Bolt: *See* Spring-bolt. Thill-coupling bolt. Stay-bolt. | | | | | | | |
| Bolt | A. Adams | 504,962 | Aug. 29 | 3324 | 831 | 64 | 1240 |
| Bolt and nut | C. A. Higbee | 501,941 | July 25 | 2253 | 562 | 64 | 454 |
| Bolt-cutter | L. S. Grossman | 500,887 | July 4 | 550 | 145 | 64 | 109 |
| Bolt-forcer | D. T. and H. W. Young | 503,188 | Aug. 15 | 1594 | 392 | 64 | 887 |
| Bolt-head-finishing machine | C. S. Seaton | 503,879 | Aug. 22 | 2686 | 673 | 64 | 1103 |
| Bolt-rolling machine | W. Vollmer | 503,393 | Aug. 15 | 1928 | 478, 479 | 64 | 947 |
| Bolts. Machine for cutting stay | J. Player | 501,296 | July 11 | 1208 | 305, 306 | 64 | 234 |
| Bolting-chest | F. J. Schupp | 505,801 | Sept. 26 | 2564 | 632 | 64 | 1780 |
| Bolting-machine | S. A. Nordyke | 501,155 | July 11 | 1001 | 255, 256 | 64 | 197 |
| Bolting-reel | F. J. Schupp | 501,898 | July 18 | 2178 | 540 | 64 | 424 |
| Bolting-reel | F. J. Schupp | 501,899 | July 18 | 2180 | 540 | 64 | 424 |

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| Invention. | Name. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drgs. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|---|
| Bone-cutting machine | J. E. Wilson | 500,926 | July 4 | 713 | 187 | 64 | 129 |
| Bookbinder | N. D. Wolfard | 500,833 | July 4 | 462 | 126 | 64 | 88 |
| Bookbinding | D. K. Howe | 502,493 | Aug. 1 | 415 | 98 | 64 | 643 |
| Bookbinding | J. Kroger | 505,049 | Sept. 12 | 1218 | 314 | 64 | 1545 |
| Book. Blank | F. H. and H. H. Hoffmann | 501,276 | July 11 | 1182 | 280 | 64 | 230 |
| Bookcase | J. Stimson | 504,182 | Aug. 29 | 3198 | 708 | 64 | 1217 |
| Book. Memorandum or copying | W. H. Bodden | 503,914 | Aug. 22 | 2744 | 688 | 64 | 1115 |
| Book or pad. Memorandum | G. W. Brown | 500,736 | July 4 | 228 | 87 | 64 | 61 |
| Book. Shipping receipt | J. D. D. Mortimer | 501,360 | Sept. 5 | 68 | 18 | 64 | 1284 |
| Book-stapling machine | J. T. O. Ordoff | 503,271 | Aug. 15 | 1794 | 425 | 64 | 910 |
| Book-support | J. J. McVey and A. Rigling | 504,233 | Aug. 29 | 3279 | 819 | 64 | 1231 |
| Bootjack | L. Even | 503,838 | Aug. 22 | 2931 | 658 | 64 | 1093 |
| Boot or shoe | H. C. Gros | 501,830 | July 18 | 2064 | 509 | 64 | 405 |
| Boot or shoe | G. L. Williams | 503,302 | Aug. 15 | 1781 | 440 | 64 | 920 |
| Boot or shoe heels. Machine for breasting | H. A. Webster | 504,854 | Sept. 12 | 902 | 232 / 233 | 64 | 1454 |
| Boot or shoe jack | A. F. Preston | 502,756 | Aug. 8 | 873 | 213 | 64 | 741 |
| Boot-tree | C. W. Clark | 501,133 | July 11 | 961 | 245 | 64 | 190 |
| Boot-treeing machine | J. Warren | 504,765 | Sept. 12 | 750 | 186 / 187 | 64 | 1425 |
| Boring cylinders and turning the flanges thereof. Machine for | W. A. and F. Pearn | 504,742 | Sept. 12 | 714 | 178 / 179 | 64 | 1418 |
| Boring-tool | S. Bowman | 505,746 | Sept. 26 | 2415 | 610 | 64 | 1762 |
| Bottle | H. I. Leith | 505,469 | Sept. 26 | 1903 | 490 | 64 | 1668 |
| Bottle-filling apparatus | J. Jackson | 502,969 | Aug. 8 | 1247 | 305 | 64 | 909 |
| Bottle. Flexible water- | F. M. Underhill | 504,058 | Aug. 29 | 2986 | 746 | 64 | 1176 |
| Bottle for glue, &c | C. H. Leggett | 501,393 | July 11 | 1168 | 301 | 64 | 231 |
| Bottle or vessel holder | F. G. Kammerer | 502,365 | Aug. 1 | 192 | 45 | 64 | 601 |
| Bottle-stopper | D. O'Kane | 502,423 | Aug. 1 | 294 | 70 | 64 | 620 |
| Bottle-stopper | H. Spriegel | 503,333 | Aug. 15 | 1830 | 456 | 64 | 930 |
| Bottle stopper attachment. Ink- | G. R. Weed | 500,982 | July 4 | 708 | 186 | 64 | 129 |
| Bottle-stopper fastener | B. Gunnorson | 505,291 | Sept. 19 | 1614 | 419 | 64 | 1600 |
| Bottle stopper. Water- | G. H. F. Schrader | 504,138 | Aug. 29 | 3116 | 780 | 64 | 1201 |
| Bottle-uncapping tool | A. L. Bernardin | 501,050 | July 11 | 816 | 212 | 64 | 164 |
| Bottles. Apparatus for preventing the refilling of | E. Guerbois | 505,461 | Sept. 26 | 1893 | 488 | 64 | 1666 |
| Bottles. Corking | C. Schroeder | 505,677 | Sept. 26 | 2304 | 585 | 64 | 1743 |
| Bottles. Dropping-stopper for | C. Hartwig | 500,892 | July 4 | 566 | 147 | 64 | 103 |
| Bottles. Stoppering | C. Schroeder | 505,300 | Sept. 19 | 1633 | 422 | 64 | 1604 |
| Bottles. Stoppering | C. Schroeder | 505,301 | Sept. 19 | 1634 | 422 | 64 | 1604 |
| Bottling apparatus | M. E. Donally | 500,866 | July 4 | 527 | 137 | 64 | 96 |
| Bottling-machine | G. Feltman | 503,840 | Aug. 22 | 2633 | 659 | 64 | 1093 |
| Bottling-machine | C. F. Mack | 503,094 | Aug. 8 | 1426 | 352 | 64 | 843 |
| Bouquet-holder | J. Mathison | 501,287 | July 11 | 1197 | 302 | 64 | 233 |
| Bouquets, &c. Holder for | H. C. Wiedenmann | 501,392 | July 11 | 1385 | 347 | 64 | 265 |
| Boutonnière | H. W. Fishel | 502,852 | Aug. 8 | 1035 | 253 | 64 | 771 |
| Boutonnière | H. W. Fishel | 502,853 | Aug. 8 | 1036 | 254 | 64 | 771 |
| Boutonnière | H. W. Fishel | 502,854 | Aug. 8 | 1036 | 254 | 64 | 771 |
| Boutonnière | H. W. Fishel | 502,855 | Aug. 8 | 1037 | 254 | 64 | 772 |
| Bow-sockets. Covering | R. H. Pfaff and F. K. Lewis | 505,278 | Sept. 19 | 1590 | 414 | 64 | 1586 |
| Bowling-alley. Electric | P. P. Nelson | 504,087 | Aug. 29 | 3029 | 756 / 757 | 64 | 1185 |
| Box: | | | | | | | |
| *See* Axle-box. | Letter-box. | | | | | | |
| Bait-box. | Mail-box. | | | | | | |
| Ballot-box. | Music-box. | | | | | | |
| Card-box. | Packing-box. | | | | | | |
| Cigarette-box. | Paper box. | | | | | | |
| Cracker-box. | Spice-box. | | | | | | |
| Fire-box. | Stuffing-box. | | | | | | |
| Journal-box. | Telescopic box. | | | | | | |
| Junction-box. | Tobacco and packing box. | | | | | | |
| Box | J. M. Leaver | 501,088 | July 11 | 879 | 228 | 64 | 176 |
| Box | J. H. O'Neil | 505,533 | Sept. 26 | 2037 | 520 | 64 | 1602 |
| Box | F. F. Sanborn | 505,253 | Sept. 19 | 1545 | 403 | 64 | 1587 |
| Box-covering machine | W. Brandstaedter | 504,551 | Sept. 5 | 401 | 102 | 64 | 1344 |
| Box-fastener | W. H. Lowry | 503,285 | Aug. 15 | 1752 | 433 | 64 | 915 |
| Box-forming machine | W. S. Rice | 502,320 | Aug. 1 | 114 | 26, 27 | 64 | 586 |
| Box lid. Packing- | T. Tucker | 505,012 | Sept. 12 | 1160 | 298 | 64 | 1503 |
| Brace: | | | | | | | |
| *See* Bed-brace. | Ratchet-brace. | | | | | | |
| Drill-brace. | | | | | | | |
| Brace | G. S. Miller | 504,604 | Sept. 5 | 475 | 122 | 64 | 1358 |
| Brace | G. M. Pilcher | 503,437 | Aug. 15 | 1988 | 493 | 64 | 957 |
| Bracket: | | | | | | | |
| *See* Coffin-bracket. | Paper-bracket. | | | | | | |
| Dental bracket. | Supporting-bracket. | | | | | | |
| Lamp-bracket. | | | | | | | |
| Bracket | W. H. Higgins | 501,618 | July 18 | 1726 | 430 | 64 | 346 |
| Braid-rack | A. H. Marten | 503,488 | Aug. 15 | 2073 | 517 | 64 | 972 |
| Braiding-machine | A. Bayler | 500,685 | July 4 | 244 | 66 | 64 | 66 |
| Brake: | | | | | | | |
| *See* Air-brake. | Pulley-brake. | | | | | | |
| Automatic brake. | Railway-rail brake. | | | | | | |
| Bicycle-brake. | Sled-brake. | | | | | | |
| Car-brake. | Vehicle-brake. | | | | | | |
| Elevator-brake. | Velocipede-brake. | | | | | | |
| Gun-carriage brake. | Wagon-brake. | | | | | | |
| Machine-brake. | | | | | | | |
| Brake-beam | H. B. Robischung | 504,621 | Sept. 5 | 497 | 128 | 64 | 1263 |
| Brake-beam | T. H. Simpson | 503,441 | Aug. 15 | 1993 | 494 | 64 | 958 |
| Brake-lever | F. P. Pfleghar | 503,385 | Aug. 15 | 1917 | 475 | 64 | 945 |
| Brake-shoe | E. Hoffstaetter, Jr., and H. Stillger. | 503,138 | Aug. 15 | 2511 | 371 | 64 | 871 |
| Bran-packer | J. S. Cameron | 501,390 | July 11 | 1263 | 317 | 64 | 242 |



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| Invention. | Name. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drgs. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|---|
| Breech-block | F. M. Garland | 505,568 | Sept. 26 | 2118 | 536 | 64 | 1709 |
| Brewer's-grain drier | M. T. F. Wiesebrock | 504,099 | Aug. 29 | 3056 | 764 | 64 | 1190 |
| Brewing beer | G. H. Schneider | 503,168 | Aug. 15 | 1563 | 395 | 64 | 881 |
| Brick and tile machines. Automatic cutter for | D. Brown | 503,524 | Aug. 15 | 2124 | 539 / 543 | 64 | 982 |
| Brick-cutting machinery | J. C. Schroeder | 505,678 | Sept. 26 | 2306 | 585 | 64 | 1743 |
| Brick. Device for protecting unburned | A. Schlegel and H. Mayer | 500,630 | July 4 | 134 | 36 | 64 | 26 |
| Brick-kiln furnace | F. E. Swift | 501,380 | July 11 | 1369 | 341 / 342 | 64 | 262 |
| Brick-kiln furnace | I. C. Wheeler | 501,980 | July 25 | 2305 | 576 | 64 | 463 |
| Brick-kiln. Reversible-draft | A. L. Plasters, W. F. Rankin, and J. M. Wolfe. | 504,998 | Sept. 12 | 1140 | 292 | 64 | 1499 |
| Brick-machine | W. Acton | 505,285 | Sept. 19 | 1602 | 416 / 417 | 64 | 1598 |
| Brick-machine | S. E. Haskin | 503,958 | Aug. 29 | 2852 | 707 | 64 | 1148 |
| Brick-machine | A. D. Thomas | 504,141 | Aug. 29 | 3123 | 781 | 64 | 1202 |
| Brick-mold | J. B. Mowry | 503,667 | Aug. 22 | 2378 | 593 | 64 | 1043 |
| Brick or tile cutter | H. A. Riggs | 504,364 | Sept. 5 | 74 | 19 / 20 / 21 | 64 | 1285 |
| Brick or tile cutting machine | S. Jefferies | 501,690 | July 18 | 1728 | 430 / 431 | 64 | 347 |
| Brick or tile machine | W. S. Hight | 504,781 | Sept. 12 | 782 | 197 / 198 | 64 | 1430 |
| Brick-protector | N. Olson | 502,987 | Aug. 8 | 1273 | 311 | 64 | 814 |
| Brick. Refractory | A. E. Hunt | 504,584 | Sept. 5 | 448 | | 64 | 1353 |
| Brick-truck | J. F. Mock | 502,738 | Aug. 8 | 844 | 205 / 206 | 64 | 736 |
| Bridge | C. H. Ball | 502,165 | July 25 | 2608 | 656 | 64 | 521 |
| Bridge | W. S. Palmer | 501,534 | July 18 | 1598 | 399 | 64 | 320 |
| Bridge and door. Combined stock | H. O. Dorn | 502,510 | Aug. 1 | 441 | 106 | 64 | 648 |
| Bridge. Cantalever- | T. C. Clarke | 504,569 | Sept. 5 | 412 | 105 | 64 | 1346 |
| Bridge-counterbalance | R. P. Lamont | 503,377 | Aug. 15 | 1909 | 473 | 64 | 943 |
| Bridge. Draw- | C. A. P. Turner and P. A. Warner | 500,633 | July 4 | 153 | 40 | 64 | 30 |
| Bridge. Draw- | C. A. P. Turner and P. A. Warner | 503,273 | Aug. 15 | 1726 | 425 / 426 | 64 | 911 |
| Bridge driving mechanism | R. P. Lamont | 503,378 | Aug. 15 | 1910 | 473 | 64 | 943 |
| Bridge-gate | C. E. Follett and G. Simpson | 502,664 | Aug. 1 | 698 | 167 | 64 | 694 |
| Bridge-gate | G. W. Green | 505,707 | Sept. 26 | 2358 | 596 | 64 | 1753 |
| Bridge-gate | B. Haberthur and J. Mandel | 500,654 | July 4 | 194 | 51 | 64 | 38 |
| Bridge-gate | A. Jungmann | 501,947 | July 25 | 2360 | 565 | 64 | 455 |
| Bridge-gate | A. Kohler | 502,975 | Aug. 8 | 1255 | 307 | 64 | 810 |
| Bridge-gate | A. J. Lagerquist | 501,516 | July 18 | 1566 | 394 | 64 | 316 |
| Bridge-gate | H. Meyer | 501,523 | July 18 | 1576 | 396 / 397 | 64 | 318 |
| Bridge-gate | S. Simon and J. Pletka | 502,779 | Aug. 8 | 914 | 223 | 64 | 749 |
| Bridge-gate. Automatic | A. H. Myers | 504,169 | Aug. 29 | 3170 | 790 / 791 | 64 | 1211 |
| Bridges. Apparatus for recording the flexure of | E. Parenthou | 500,775 | July 4 | 386 | 102 | 64 | 72 |
| Bridle | G. C. Hale | 505,762 | Sept. 26 | 2446 | 616 | 64 | 1769 |
| Bridle | H. S. Hill | 505,658 | Sept. 26 | 2269 | 575 | 64 | 1737 |
| Bridle-bit | E. T. Bartruff | 501,987 | July 25 | 2418 | 579 | 64 | 466 |
| Bridle-bit | C. H. Smith | 505,280 | Sept. 19 | 1594 | 415 | 64 | 1590 |
| Bridle-bit | W. C. Wittmann | 500,831 | July 4 | 479 | 125 | 64 | 87 |
| Bridle-bit | H. Zahl | 504,959 | Sept. 12 | 1069 | 273 | 64 | 1406 |
| Bridle-blind | L. Loeser | 502,197 | July 25 | 2660 | 672 | 64 | 531 |
| Broiler | J. O. Boggs | 505,433 | Sept. 26 | 1850 | 476 | 64 | 1658 |
| Broiler. Meat- | F. M. Blamyer | 503,307 | Aug. 15 | 1786 | 441 | 64 | 921 |
| Bronzing-machine | F. R. A. Franke | 504,718 | Sept. 12 | 664 | 168 | 64 | 1408 |
| Brooder | G. Ertel | 501,775 | July 18 | 1989 | 492 | 64 | 392 |
| Brooder | A. B. Shaub | 505,676 | Sept. 26 | 2303 | 585 | 64 | 1742 |
| Brooder. Poultry- | E. P. Snyder | 503,172 | Aug. 15 | 1570 | 396 / 3-7 | 64 | 883 |
| Broom | E. Shaw | 501,370 | July 11 | 1351 | 337 | 64 | 259 |
| Broom-corn cleaner | F. W. Reese | 505,128 | Sept. 19 | 1355 | 348 / 349 | 64 | 1553 |
| Broom-handle | A. B. Thomas | 501,383 | July 11 | 1374 | 343 | 64 | 263 |
| Broom-holder | C. N. Addison | 502,843 | Aug. 8 | 1020 | 249 | 64 | 769 |
| Broom-holder | W. Christ | 502,033 | July 25 | 2398 | 603 | 64 | 480 |
| Broom-holder | T. B. Stone, C. C. and P. A. Smith | 504,183 | Aug. 29 | 3199 | 788 | 64 | 1217 |
| Broom or brush holder | W. W. Moore | 504,887 | Sept. 12 | 951 | 246 | 64 | 1464 |
| Broom scraper or cleaning machine | D. A. Devendorf and F. F. Burtch | 505,754 | Sept. 26 | 2489 | 613 | 64 | 1765 |
| Brooms, brushes, &c. Manufacture of | J. T. C. Steeh | 501,219 | July 11 | 1092 | 277 | 64 | 215 |
| Brush | S. Palmer | 500,719 | July 4 | 305 | 82 | 64 | 57 |
| Brush | E. L. Wohlgemuth | 503,821 | Aug. 22 | 2611 | 652 | 64 | 1089 |
| Brush bristle-fastener | C. M. Kimball | 503,795 | Aug. 22 | 2577 | 641 | 64 | 1082 |
| Brush-burner | H. S. Gaylord | 505,099 | Sept. 19 | 1511 | 338 | 64 | 1545 |
| Brush drying attachment. Scrubbing- | J. S. McGuire and J. B. Beemer | 503,668 | Aug. 22 | 2279 | 562 | 64 | 1043 |
| Brush. Fly- | D. W. Conard | 503,945 | Aug. 29 | 2792 | 700 | 64 | 1141 |
| Brush for cleaning chimneys or flues | A. J. Flndder and F. M. Sisson | 505,761 | Sept. 26 | 2445 | 615 | 64 | 1769 |
| Brush for washing and wiping windows | J. P. Giles | 502,000 | July 25 | 2236 | 565 | 64 | 469 |
| Brush-holder | I. L. Landis | 501,084 | July 11 | 866 | 225 | 64 | 173 |
| Brush. Horse- | S. Giesecke | 502,513 | Aug. 1 | 446 | 108 | 64 | 648 |
| Brush or tool holder | C. H. Lewis | 504,452 | Sept. 5 | 294 | 60 | 64 | 1312 |
| Bucket and trap. Combined minnow | L. W. Hemp | 504,526 | Sept. 5 | 358 | 91 | 64 | 1337 |
| Bucket. Lunch- | L. Manguine | 504,358 | Sept. 5 | 65 | 16 | 64 | 1283 |
| Buckle | J. A. Brown | 504,076 | Aug. 29 | 3009 | 751 | 64 | 1191 |
| Buckle | F. Califf | 503,898 | Aug. 22 | 2719 | 683 | 64 | 1110 |
| Buckle | F. R. Derrick and A. S. Moore | 500,705 | July 4 | 276 | 75 | 64 | 52 |
| Buckle | W. B. Draper | 504,867 | Sept. 12 | 921 | 238 | 64 | 1458 |
| Buckle | F. W. Swigart | 502,787 | Aug. 8 | 930 | 226 | 64 | 752 |
| Buckle. Blanket- | F. J. Herrick | 500,894 | July 4 | 568 | 147 | 64 | 103 |
| Buckle. Harness- | J. G. Hoyt | 504,693 | Sept. 5 | 628 | 159 | 64 | 1398 |
| Buckle. Protective | F. W. Swigart | 504,895 | Sept. 12 | 963 | 248 | 64 | 1465 |

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| Invention. | Name. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drg. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|---|
| Buckle-shield | F. L. Thompson | 502,057 | July 25 | 2434 | 612 | 64 | 487 |
| Buckle. Snap | G. F. C. Schröter | 501,499 | Aug. 15 | 2086 | 521 | 64 | 975 |
| Buckle. Suspender | C. R. Harris | 501,067 | July 11 | 839 | 218 | 64 | 168 |
| Buckle. Trace | T. H. Mehring | 505,473 | Sept. 26 | 1910 | 492 | 64 | 1069 |
| Buckle. Wire | C. R. Harris | 500,764 | July 4 | 372 | 75 | 64 | 50 |
| Buffing-pad | H. A. Webster | 505,644 | Sept. 26 | 2251 | 570 | 64 | 1734 |
| Buggy-body | C. M. Coutant | 501,994 | July 25 | 2239 | 557 | 64 | 450 |
| Buggy-top spring-support | S. Bougie | 502,606 | Aug. 1 | 602 | 143 | 64 | 676 |
| Buggy-top support | S. Bougie | 502,607 | Aug. 1 | 604 | 143 | 64 | 676 |
| Buildings. Batten and padding for closing joints in | G. Knower | 503,426 | Aug. 15 | 1972 | 489 | 64 | 954 |
| Buildings. Entrance for refuse-conduits in | M. L. Ryder | 503,685 | Aug. 22 | 2199 | 599 | 64 | 1047 |
| Bung | A. Brubaker | 504,060 | Aug. 29 | 2988 | 747 | 64 | 1177 |
| Bung | A. J. Diebolt | 501,058 | July 11 | 829 | 215 | 64 | 166 |
| Bung, valve, or stopper, &c. | T. C. Barraclough and T. T. Heaton | 505,587 | Sept. 26 | 2151 | 544 | 64 | 1715 |
| Buoyant fabric | J. G. Heinze and C. H. Reinmuth | 503,373 | Aug. 15 | 1902 | 471 | 64 | 942 |
| Burglar-alarm | C. J. Fisher | 501,777 | July 18 | 1991 | 492 | 64 | 392 |
| Burial apparatus | L. S. May | 502,888 | Aug. 8 | 1068 | 268 | 64 | 781 |
| Burial-casket | J. A. Lakin | 500,809 | July 4 | 439 | 115 | 64 | 81 |
| Burner: *See* Brush-burner. Flash-light burner. Gas-burner. Gas-regulating burner. Hydrocarbon-burner. Hydrocarbon-vapor burner. Lamp-burner. Oil-burner. Petroleum-fluid burner. Smoke and gas burner. Vapor-burner. Vaporizing-burner. | | | | | | | |
| Burner for sawdust or refuse fuel | R. H. Nogar | 503,398 | Aug. 15 | 1829 | 453 | 64 | 928 |
| Burning garbage, &c. Apparatus for | W. H. Garretson and S. B. Tainter | 503,845 | Aug. 22 | 2544 | 662 | 64 | 1095 |
| Bushing | J. B. Snider | 504,460 | Sept. 5 | 237 | 63 | 64 | 1314 |
| Bushing | I. M. Willie | 501,992 | July 25 | 2307 | 577 | 64 | 464 |
| Bushing and faucet | G. H. Merrick | 502,572 | Aug. 1 | 540 | 129 | 64 | 665 |
| Bushing and faucet. Barrel | G. H. Merrick | 503,767 | Aug. 22 | 2538 | 631 | 64 | 1074 |
| Bust-form | E. and A. Merle | 500,998 | July 4 | 610 | 150 | 64 | 112 |
| Bust-support | H. Schindler | 504,054 | Aug. 29 | 2982 | 745 | 64 | 1175 |
| Bust-supporter | I. M. Rew | 505,008 | Sept. 12 | 1148 | 294 | 64 | 1500 |
| Butchering appliance | L. J. Peachey | 501,691 | July 18 | 1846 | 459 | 64 | 367 |
| Butter-extractor. Centrifugal | O. Anderson | 503,731 | Aug. 22 | 2479 | 616 | 64 | 1064 |
| Butter. Treating | J. H. Stebbins, Jr | 505,137 | Sept. 19 | 1371 | 352 | 64 | 1555 |
| Butter-worker | D. W. Curtis | 501,993 | July 25 | 2325 | 581 | 64 | 466 |
| Butter worker and mold | E. S. Boyntou | 502,429 | Aug. 1 | 300 | 72 | 64 | 621 |
| Button | W. L. King | 504,437 | Sept. 5 | 205 | 53 | 64 | 1309 |
| Button | J. F. Platt | 505,479 | Sept. 26 | 1918 | 494 | 64 | 1671 |
| Button and link. Combination cuff | L. S. Sampson | 502,786 | Aug. 1 | 565 | 135 | 64 | 670 |
| Button-cover. Detachable | G. Pilbeam | 502,201 | July 25 | 2966 | 673 | 64 | 532 |
| Button-fastener | W. C. Jones | 505,768 | Sept. 26 | 2456 | 619 | 64 | 1771 |
| Button-setting instrument | F. H. Richards | 501,651 | July 18 | 1706 | 447 | 64 | 358 |
| Button-setting machine | G. W. Altman | 503,891 | Aug. 22 | 2705 | 678 | 64 | 1107 |
| Button-setting tool | J. Mathison | 501,286 | July 11 | 1195 | 302 | 64 | 223 |
| Button-shanks and fasteners. Machine for connecting | E. Christensen | 500,903 | July 4 | 721 | 189 / 190 | 64 | 131 |
| Button. Sleeve or collar | T. W. F. Smitten | 502,534 | Aug. 8 | 1009 | 246 | 64 | 767 |
| Buttons. Link for sleeve or cuff | G. F. Kursh | 501,725 | July 18 | 1900 | 472 | 64 | 376 |
| Buttons to fabrics. Securing | H. H. Cummings | 502,624 | July 25 | 2297 | 603 | 64 | 480 |
| Cabinet | W. B. Stanley | 503,444 | Aug. 15 | 1907 | 495 | 64 | 950 |
| Cable arch support | S. D. Stephens | 501,969 | July 25 | 2292 | 573 | 64 | 461 |
| Cable-grip | R. A. McLellan | 501,467 | July 11 | 1485 | 373 / 374 | 64 | 286 |
| Cable haul mechanism | J. H. Hahn, Jr | 503,908 | Aug. 22 | 2736 | 686 | 64 | 1114 |
| Cable releasing device and crossing | A. Jeffreys | 500,903 | July 4 | 579 | 151 | 64 | 106 |
| Cables for multiple switchboards. Preparing | O. A. Bell | 501,859 | July 18 | 2107 | 521 | 64 | 412 |
| Cables for multiple switchboards. Manufacture of | O. A. Bell | 505,799 | Sept. 26 | 2506 | 631 | 64 | 1780 |
| Caddy. Measuring | T. C. Keeler | 502,124 | July 25 | 2536 | 636 | 64 | 507 |
| Cake-machine | S. L. Hall | 500,655 | July 4 | 197 | 51, 52 | 64 | 38 |
| Cake-machine | P. D. Harton | 501,274 | July 11 | 1176 | 228 / 229 | 64 | 229 |
| Cake or biscuit cutter | T. B. Stone | 501,903 | July 18 | 2187 | 543 | 64 | 426 |
| Cake or pudding stirrer | A. C. Bull | 502,066 | July 25 | 2447 | 615 | 64 | 490 |
| Calculating and recording machine | G. Richmond | 503,986 | Aug. 29 | 2870 | 720 / 721 / 722 | 64 | 1155 |
| Calculating device | J. S. Duret | 504,776 | Sept. 12 | 774 | 195 | 64 | 1428 |
| Calculating device. Mechanical | D. L. Albert | 502,217 | July 25 | 2093 | 680 | 64 | 538 |
| Calculating-machine | W. S Burroughs | 504,963 | Sept. 12 | 1075 | 275 / 276 / 277 | 64 | 1487 |
| Calendar | W. K. David | 502,483 | Aug. 1 | 301 | 93, 94 | 64 | 638 |
| Calendar. Perpetual | D. A. Holtaman | 505,313 | Sept. 19 | 1653 | 427 | 64 | 1607 |
| Call apparatus. Coin-controlled electric | G. Poore | 505,724 | Sept. 26 | 2382 | 601 / 602 / 603 | 64 | 1757 |
| Call-box | H. H. Cutler | 504,488 | Sept. 5 | 289 | 74, 75 | 64 | 1324 |
| Camera: *See* Magazine-camera. Photographic camera. | | | | | | | |
| Camera-shutter | O. J. Schramm | 504,425 | Sept. 5 | 187 | 49 | 64 | 1306 |
| Cameras. Ground-glass attachment for | M. Baner | 503,518 | Aug. 15 | 2114 | 530 | 64 | 980 |
| Can: *See* Measuring-can. Milk-can. Oil-can. Self-closing can. Sheet-metal can. Tank-can. Tin can. | | | | | | | |
| Can-bottom | W. C. Winfield | 504,547 | Sept. 5 | 393 | 100 | 64 | 1343 |
| Can-capping machine | F. P. and I. Goode | 501,334 | July 11 | 1277 | 321 | 64 | 945 |



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|---|---|---|---|---|---|---|---|
| Can-filling machine | J. Baker | 503,029 | Aug. 8 | 1328 | 326 / 327 | 64 | 825 |
| Can-filling machine | J. Baker | 503,030 | Aug. 8 | 1330 | 327 | 64 | 825 |
| Can-filling machine | G. Roth | 505,005 | Sept. 12 | 1151 | 294 / 295 | 64 | 1501 |
| Can-holder | A. L. Whittemore | 502,897 | Aug. 8 | 1110 | 273 | 64 | 786 |
| Can-labeling machine | C. A. Burt | 502,480 | Aug. 1 | 385 | 92 | 64 | 637 |
| Can-labeling machine | W. A. and F. M. Dunn | 500,506 | July 4 | 46 | 14 | 64 | 10 |
| Can-opener | W. G. Browne | 501,322 | July 11 | 1258 | 315 | 64 | 241 |
| Can-opener | E. B. Williams | 504,381 | Sept. 5 | 109 | 28 | 64 | 1291 |
| Can-unsealing attachment | S. W. Simmons | 503,500 | Aug. 15 | 2087 | 501 | 64 | 975 |
| Cans or other receptacles. Device for securing | J. W. Walker | 501,552 | July 18 | 1626 | 407 | 64 | 329 |
| Cans. Punch for forming tongues in blanks for key-opening | J. Zimmerman and J. K. Underdown | 504,187 | Aug. 29 | 3207 | 800 | 64 | 1219 |
| Candelabrum | C. S. Koehler | 505,316 | Sept. 19 | 1657 | 428 | 64 | 1608 |
| Candlestick | T. J. and O. Q. Stille | 501,473 | July 11 | 1494 | 376 | 64 | 287 |
| Candy. Apparatus for warming or heating the constituents of | F. P. Ziegler | 501,310 | July 11 | 1229 | 310 | 64 | 238 |
| Candy, &c. Machine for rolling, cutting, and shaping | L. P. Dobyns and A. Brown | 503,230 | Aug. 15 | 1661 | 408 / 409 | 64 | 899 |
| Candy-molding apparatus | E. Rosenberger | 502,864 | Aug. 8 | 1053 | 259 | 64 | 775 |
| Cannon. Pneumatic | J. Rapieff | 502,759 | Aug. 8 | 877 | 214 / 215 | 64 | 742 |
| Canopy. Bedstead folding | T. T. Woodruff | 503,954 | Aug. 29 | 2926 | 705 | 64 | 1147 |
| Car | C. A. Patten | 503,707 | Aug. 22 | 2439 | 607 / 608 | 64 | 1055 |
| Car and air-brake coupling. Combined | G. A. Klahr, J. A. Petty, and M. H. Foy | 504,252 | Aug. 29 | 3260 | 813 | 64 | 1228 |
| Car and air brake coupling. Combined | P. Pelton | 501,624 | July 18 | 1737 | 432 / 433 | 64 | 348 |
| Car-axles to dynamos. Means for transmitting power from | M. Moskowits and S. Young | 504,132 | Aug. 29 | 3106 | 777 / 778 | 64 | 1200 |
| Car-bolster | C. T. Westlake | 500,983 | July 4 | 708 | 186 | 64 | 129 |
| Car-brake | W. B. Anderson and G. L. Daugherty | 504,313 | Sept. 5 | 1 | 1 | 64 | 1271 |
| Car-brake | H. P. Bassett | 505,381 | Sept. 19 | 1760 | 456 | 64 | 1637 |
| Car-brake | J. A. Brill | 503,121 | Aug. 15 | 1484 | 365 | 64 | 866 |
| Car-brake | J. T. Duff | 500,649 | July 4 | 183 | 48 | 64 | 36 |
| Car-brake | G. E. Gay and J. H. Parsons | 501,333 | July 11 | 1276 | 320 | 64 | 245 |
| Car-brake | W. H. Hansell | 505,763 | Sept. 26 | 2448 | 616 | 64 | 1769 |
| Car-brake | A. P. Massey | 501,017 | July 4 | 757 | 198 | 64 | 138 |
| Car-brake | F. Roediger | 500,952 | July 4 | 644 | 169 | 64 | 118 |
| Car-brake | A. B. Rote | 501,103 | July 11 | 916 | 234 / 235 | 64 | 182 |
| Car-brake | J. W. Schoaf | 503,003 | Aug. 8 | 1292 | 316 | 64 | 817 |
| Car-brake | D. H. Sullivan and W. H. Osborn | 502,476 | Aug. 1 | 379 | 91 | 64 | 636 |
| Car brake-beam. Railway | F. J. Cole | 503,963 | Aug. 15 | 1711 | 421 / 422 | 64 | 908 |
| Car-brake-operating device | H. H. Bierbaum | 503,118 | Aug. 15 | 1482 | 364 | 64 | 866 |
| Car brake. Railway | T. A. Ainscough | 503,027 | Aug. 8 | 1326 | 325 / 326 | 64 | 834 |
| Car brakes. Hand-shaft for | G. F. Brandau | 505,435 | Sept. 26 | 1853 | 477 | 64 | 1658 |
| Car. Coal-dumping | J. H. Surtin | 501,031 | July 4 | 780 | 204 | 64 | 142 |
| Car-coupling | W. G. Lane | 501,148 | July 11 | 988 | 252 | 64 | 194 |
| Car-coupling | A. P. Anderson | 505,021 | Sept. 26 | 2197 | 555 / 556 | 64 | 1723 |
| Car-coupling | F. Anderson | 500,731 | July 4 | 321 | 86 | 64 | 60 |
| Car-coupling | J. R. Avery | 504,690 | Sept. 5 | 617 | 158 | 64 | 1386 |
| Car-coupling | C. A. Ballreich | 505,378 | Sept. 19 | 1750 | 454 | 64 | 1625 |
| Car-coupling | R. S. Barnum | 503,939 | Aug. 29 | 2784 | 698 | 64 | 1140 |
| Car-coupling | D. Bellon | 502,650 | Aug. 1 | 674 | 163 | 64 | 660 |
| Car-coupling | T. G. Blackman, Jr | 502,274 | Aug. 1 | 15 | 4 | 64 | 569 |
| Car-coupling | A. A. Brower | 503,646 | Aug. 22 | 2345 | 585 / 586 | 64 | 1037 |
| Car-coupling | A. L. Brown | 504,862 | Sept. 12 | 914 | 236 | 64 | 1457 |
| Car-coupling | B. F. Cadenhead | 504,556 | Sept. 5 | 408 | 104 | 64 | 1345 |
| Car-coupling | C. Cousy | 501,871 | July 18 | 2126 | 526 | 64 | 415 |
| Car-coupling | W. H. Crackel | 504,021 | Aug. 29 | 2830 | 734 | 64 | 1106 |
| Car-coupling | J. J. Crowley | 505,297 | Sept. 19 | 1607 | 417 | 64 | 1599 |
| Car-coupling | J. F. Davidson | 502,068 | July 25 | 2450 | 615 | 64 | 490 |
| Car-coupling | J. Fischer | 502,711 | Aug. 8 | 811 | 196 | 64 | 729 |
| Car-coupling | O. Flohr | 502,412 | Aug. 1 | 273 | 65 | 64 | 616 |
| Car-coupling | O. Flohr | 502,413 | Aug. 1 | 275 | 65 | 64 | 616 |
| Car-coupling | J. W. Flynn | 501,929 | July 25 | 2237 | 558 | 64 | 451 |
| Car-coupling | F. A. Gaudet | 501,416 | July 11 | 1419 | 355 | 64 | 272 |
| Car-coupling | H. Gay and F. Finke | 501,710 | July 18 | 1879 | 467 | 64 | 372 |
| Car-coupling | W. Gerard | 501,460 | July 11 | 1478 | 371 | 64 | 284 |
| Car-coupling | C. M. Graves | 501,933 | July 25 | 2245 | 560 | 64 | 452 |
| Car-coupling | O. S. Guernsey | 501,832 | July 18 | 2068 | 510 | 64 | 406 |
| Car-coupling | W. M. Hall | 502,295 | Aug. 1 | 65 | 14 | 64 | 576 |
| Car-coupling | C. Halpin | 500,890 | July 4 | 564 | 146 | 64 | 103 |
| Car-coupling | C. T. Harrison | 503,346 | Aug. 15 | 1857 | 459 | 64 | 933 |
| Car-coupling | D. W. Hausam | 503,347 | Aug. 15 | 1859 | 460 | 64 | 934 |
| Car-coupling | J. M. Henderson | 503,082 | Aug. 8 | 1402 | 346 | 64 | 838 |
| Car-coupling | J. A. Hinson | 503,208 | Aug. 15 | 1698 | 399 | 64 | 893 |
| Car-coupling | E. B. Hyre | 503,855 | Aug. 22 | 2654 | 665 | 64 | 1098 |
| Car-coupling | F. Jacob | 504,085 | Aug. 29 | 3025 | 755 / 756 | 64 | 1185 |
| Car-coupling | D. R. Joslyn | 501,076 | July 11 | 853 | 221 | 64 | 171 |
| Car-coupling | G. Ker | 504,697 | Sept. 5 | 631 | 160 | 64 | 1389 |
| Car-coupling | E. Kling | 501,428 | July 11 | 1431 | 359 | 64 | 275 |
| Car-coupling | J. La Burt | 501,605 | July 18 | 1705 | 424 / 425 | 64 | 343 |
| Car-coupling | D. A. Lee and M. F. Snyder | 502,304 | Aug. 1 | 79 | 18, 19 | 64 | 581 |

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|---|---|---|---|---|---|---|---|
| Car-coupling | A. B. Lefever | 502,305 | Aug. 1 | 81 | 19 | 64 | 581 |
| Car-coupling | A. T. Lewis | 501,432 | July 11 | 1435 | 360 | 64 | 276 |
| Car-coupling | J. Machenheimer, Sr | 503,052 | Aug. 8 | 1360 | 336 | 64 | 831 |
| Car-coupling | J. Machenheimer, Sr | 503,053 | Aug. 8 | 1361 | 336 | 64 | 831 |
| Car-coupling | A. C. Martin | 502,735 | Aug. 8 | 840 | 204 | 64 | 735 |
| Car-coupling | H. H. Martin | 502,309 | Aug. 1 | 98 | 20 | 64 | 582 |
| Car-coupling | J. McCormick and J. R. Deisher | 501,527 | July 18 | 1580 | 396 | 64 | 319 |
| Car-coupling | T. S. McDermott | 501,805 | July 18 | 2037 | 501 | 64 | 399 |
| Car-coupling | P. McEntee | 505,803 | Sept. 26 | 2511 | 633 / 634 | 64 | 1781 |
| Car-coupling | J. M. McMaster | 502,375 | Aug. 1 | 211 | 50 | 64 | 604 |
| Car-coupling | C. W. and H. F. McMillen | 502,631 | Aug. 1 | 640 | 153 | 64 | 685 |
| Car-coupling | H. O. Miller | 502,260 | July 25 | 2778 | 701 / 709 | 64 | 553 |
| Car-coupling | J. Munton and A. Frazier | 500,815 | July 4 | 448 | 117 | 64 | 83 |
| Car-coupling | G. A. Norcross | 501,688 | July 18 | 1840 | 458 | 64 | 366 |
| Car-coupling | T. H. Nunn | 503,490 | Aug. 15 | 2074 | 517 | 64 | 973 |
| Car-coupling | C. S. Park | 503,615 | Aug. 22 | 2303 | 574 | 64 | 1029 |
| Car-coupling | J. O. Pattee and H. H. Vaughan | 501,575 | July 18 | 1654 | 414 | 64 | 334 |
| Car-coupling | W. B. Patterson | 501,576 | July 18 | 1656 | 414 | 64 | 334 |
| Car-coupling | C. W. Patton | 502,499 | Aug. 1 | 433 | 100 | 64 | 644 |
| Car-coupling | E. Perroté | 501,577 | July 18 | 1658 | 414 | 64 | 334 |
| Car-coupling | J. D. Ripson | 502,205 | July 25 | 2671 | 674 | 64 | 533 |
| Car-coupling | S. B. and J. R. Sadler | 505,608 | Sept. 26 | 2184 | 552 | 64 | 1721 |
| Car-coupling | F. W. Sargent | 502,532 | Aug. 1 | 479 | 115 | 64 | 654 |
| Car-coupling | M. P. Scott | 501,734 | July 18 | 1912 | 475 / 476 | 64 | 378 |
| Car-coupling | E. W. Seits | 504,759 | Sept. 12 | 742 | 185 | 64 | 1424 |
| Car-coupling | B. F. Sheldon | 500,981 | July 4 | 674 | 177 | 64 | 121 |
| Car-coupling | J. L. Sowell | 500,624 | July 4 | 140 | 37 | 64 | 27 |
| Car-coupling | D. Sprecher | 503,175 | Aug. 15 | 1574 | 388 | 64 | 894 |
| Car-coupling | S. H. Springer | 501,592 | July 18 | 1679 | 419 | 64 | 336 |
| Car-coupling | W. E. Steffey | 503,754 | Aug. 22 | 2522 | 627 | 64 | 1071 |
| Car-coupling | A. Stein | 503,503 | Aug. 15 | 2093 | 522 / 524 | 64 | 976 |
| Car-coupling | T. Sweet | 503,999 | Aug. 29 | 2800 | 726 | 64 | 1160 |
| Car-coupling | C. H. Taylor | 504,637 | Sept. 5 | 519 | 134 | 64 | 1368 |
| Car-coupling | F. Tiemann | 502,505 | Aug. 1 | 411 | 103 | 64 | 645 |
| Car-coupling | L. Triplett, Jr., and J. Fry | 504,408 | Sept. 5 | 156 | 41 | 64 | 1299 |
| Car-coupling | W. T. Van Dorn | 503,017 | Aug. 8 | 1310 | 321 | 64 | 821 |
| Car-coupling | A. Vanderbeck | 505,502 | Sept. 26 | 2103 | 533 / 534 | 64 | 1705 |
| Car-coupling | F. Vaughan | 500,981 | July 4 | 707 | 186 | 64 | 128 |
| Car-coupling | W. J. Walker. (Reissue) | 11,353 | July 25 | 2783 | 703 | 64 | 554 |
| Car-coupling | S. A. Yeager, W. I. Luckenbach, and A. P. Balliet. | 504,958 | Sept. 12 | 1066 | 273 | 64 | 1486 |
| Car-coupling | J. Zilius | 504,015 | Aug. 29 | 3923 | 732 | 64 | 1164 |
| Car-coupling link | G. Beekman | 503,116 | Aug. 15 | 1479 | 363 | 64 | 865 |
| Car-couplings. Wear-plate for head-blocks of | J. B. Safford | 501,963 | July 25 | 2284 | 572 | 64 | 459 |
| Car deflector and ventilator. Passenger- | C. E. Berry | 500,555 | July 4 | 30 | 10 | 64 | 8 |
| Car-equalizing device | J. Gosney | 500,573 | July 4 | 85 | 16 | 64 | 11 |
| Car-fender | M. F. Field | 502,959 | Aug. 8 | 1221 | 300 / 301 | 64 | 805 |
| Car-fender | C. T. Grilley | 502,037 | July 25 | 2401 | 604 | 64 | 481 |
| Car fender and brake combined | F. W. Smith | 502,780 | Aug. 8 | 916 | 223 | 64 | 749 |
| Car fender and life-guard. Street- | S. Du Moulin | 504,081 | Aug. 29 | 3015 | 753 / 754 | 64 | 1162 |
| Car. Freight- | E. E. Pratt | 503,874 | Aug. 22 | 2679 | 671 | 64 | 1102 |
| Car gear. Street- | M. G. Hubbard | 503,142 | Aug. 15 | 1519 | 373 | 64 | 873 |
| Car-gong | J. H. Surtin | 501,030 | July 4 | 772 | 204 | 64 | 142 |
| Car-heater | G. D. Hiscox | 501,718 | July 18 | 1849 | 470 | 64 | 374 |
| Car-heater | E. A. Quisenberry | 501,361 | July 11 | 1352 | 333 | 64 | 256 |
| Car-heater | E. A. Quisenberry | 501,483 | July 11 | 1510 | 380 | 64 | 290 |
| Car heating and ventilating apparatus | W. Howard | 503,745 | Aug. 22 | 2507 | 624 | 64 | 1068 |
| Car. Hopper-bottom | R. Blackstone | 500,846 | July 4 | 497 | 129 | 64 | 91 |
| Car indicator. Street- | J. W. Dear | 502,257 | July 25 | 2709 | 684 | 64 | 541 |
| Car jack. Street- | G. F. Pearson | 502,200 | July 25 | 2665 | 673 | 64 | 532 |
| Car journal-box | J. J. Busenbenz | 503,405 | Aug. 15 | 1941 | 492 | 64 | 949 |
| Car life-guard. Street- | T. Barnes | 504,485 | Sept. 5 | 284 | 73 | 64 | 1323 |
| Car-lighting system. Electric | I. N. Lewis | 504,681 | Sept. 5 | 604 | 154 / 155 | 64 | 1384 |
| Car-loading apparatus | D. C. Boyce | 503,364 | Aug 15 | 1889 | 468 / 469 | 64 | 939 |
| Car. Log- | L. T. Johnson | 500,719 | July 4 | 286 | 70 | 64 | 53 |
| Car-mover | P. H. Jacobus | 504,569 | Sept. 5 | 365 | 92 | 64 | 1338 |
| Car. Passenger- | H. W. Libbey | 502,900 | Aug. 8 | 1126 | 277 | 64 | 789 |
| Car. Pilot- | G. Link | 505,400 | Sept. 19 | 1800 | 465 | 64 | 1615 |
| Car. Railway- | T. E. Pope | 504,615 | Sept. 5 | 488 | 125 / 126 | 64 | 1361 |
| Car. Railway- | T. E. Pope | 504,616 | Sept. 5 | 490 | 126 | 64 | 1362 |
| Car register. Street- | O. E. Michaud | 505,167 | Sept. 19 | 1417 | 364 / 365 | 64 | 1503 |
| Car-replacer | J. H. Blomshield | 502,906 | Aug. 8 | 957 | 233 | 64 | 757 |
| Car-roof | J. C. Wands | 503,626 | Aug. 22 | 2698 | 676 | 64 | 1106 |
| Car safety attachment | I. W. Bisbing and J. E. Gerbart | 504,798 | Sept. 12 | 804 | 205 | 64 | 1434 |
| Car safety device | L. J. Couch | 504,078 | Aug. 29 | 3011 | 752 | 64 | 1161 |
| Car sanding-box | J. J. Kenelly | 501,722 | July 18 | 1695 | 471 | 64 | 375 |
| Car sanding device | N. Seibert | 502,053 | July 25 | 2428 | 611 | 64 | 488 |
| Car-seat | J. Lemman | 504,892 | Sept. 12 | 943 | 243 | 64 | 1469 |
| Car seat. Railway- | H. S. Hale | 505,246 | Sept. 19 | 1525 | 400 | 64 | 1585 |
| Car-seats. End panel for | H Cochran | 503,653 | Aug. 22 | 2350 | 588 | 64 | 1039 |
| Car-stake pockets. Die for making | N. H. Davis | 504,560 | Sept. 5 | 349 | 89 | 64 | 1335 |
| Car-starter | W. Weaver | 501,595 | July 18 | 1685 | 420 | 64 | 339 |



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|---|---|---|---|---|---|---|---|
| Car starter and brake | W. A. Barker | 501,756 | July 18 | 1864 | 466 | 64 | 387 |
| Car starter and brake | R. Schrödlein | 501,447 | July 11 | 1450 | 365 / 366 | 64 | 280 |
| Car. Stock- | G. C. Faville | 501,413 | July 11 | 1416 | 355 | 64 | 272 |
| Car. Stock- | B. C. Hicks | 504,699 | Sept. 5 | 624 | 159 | 64 | 1388 |
| Car. Street- | J. Marshall | 500,924 | July 4 | 606 | 159 | 64 | 111 |
| Car-unloader | A. Dahl | 500,967 | July 4 | 727 | 191 | 64 | 132 |
| Car-ventilating apparatus | C. Knapp | 502,928 | Aug. 8 | 1169 | 288 | 64 | 706 |
| Car-ventilator | J. Hankin | 503,047 | Aug. 8 | 1453 | 334 | 64 | 830 |
| Car-vestibule | E. L. Perry | 503,160 | Aug. 15 | 1552 | 380 | 64 | 879 |
| Car-wheel | G. W. Eddy | 504,416 | Sept. 5 | 168 | 44 | 64 | 1302 |
| Car-wheel | H. S. Maxim and L. Silverman | 505,572 | Sept. 26 | 2143 | 536 | 64 | 1710 |
| Car-wheel | J. Rolling | 504,790 | Sept. 12 | 794 | 201 | 64 | 1432 |
| Car-wheels and dies for same. Making | P. Arbel | 501,908 | July 25 | 2304 | 549 / 550 | 64 | 445 |
| Car-window | E. P. Phelps | 504,170 | Aug. 29 | 3172 | 791 | 64 | 1212 |
| Car window-ventilator. Railway- | G. L. Thomas | 502,919 | Aug. 8 | 1153 | 282 | 64 | 794 |
| Cars. Attachment for unloading box- | M. Lester | 505,558 | Sept. 26 | 2097 | 532 | 64 | 1704 |
| Cars. Bell-cord hanger for railway- | G. F. S. Clamer | 503,406 | Aug. 15 | 1942 | 482 | 64 | 949 |
| Cars. Buffer and vestibule connection for passenger- | H. C. Buhoup | 503,647 | Aug. 22 | 2347 | 586 | 64 | 1037 |
| Cars. Chock and guard for railway- | W. T. Sears | 502,145 | July 25 | 2572 | 645 | 64 | 513 |
| Cars. Combination-coupling for steam-pipes of railway- | T. W. Moran | 501,405 | July 11 | 1403 | 373 | 64 | 285 |
| Cars. Controller-roller for electric | E. P. Warner | 505,688 | Sept. 26 | 2317 | 588 | 64 | 1745 |
| Cars. Fender for electric, cable, or other similar | W. J. Nunn | 501,294 | July 11 | 1206 | 305 | 64 | 234 |
| Cars in mines. Handling coal- | J. A. Anderson | 500,547 | July 4 | 10 | 3 | 64 | 4 |
| Cars. Jack for loading or unloading | Q. W. Morrison | 503,049 | July 25 | 2422 | 610 | 64 | 484 |
| Cars. Removable side wall for | L. D. Craig | 501,677 | July 18 | 1825 | 454 | 64 | 363 |
| Cars. Rocket-holder for railway- | J. Gallagher, Jr | 503,234 | Aug. 15 | 1667 | 410 | 64 | 900 |
| Cars. Rotary tipple for dump- | I. Barker | 502,805 | Aug. 8 | 956 | 233 | 64 | 757 |
| Cars. Steam heating apparatus for railway- | P. Reilly | 502,204 | July 25 | 2669 | 674 | 64 | 533 |
| Caramel-holder | G. Miller | 502,676 | Aug. 1 | 731 | 175 | 64 | 700 |
| Carbon. Electric-arc lamp | R. McManus | 504,815 | Sept. 12 | 841 | 215 | 64 | 1441 |
| Carbon. Electric-arc lamp | R. McManus | 504,845 | Sept. 12 | 891 | 229 | 64 | 1452 |
| Carbon molding and pressing apparatus | L. B. Marks | 505,775 | Sept. 26 | 2466 | 622 | 64 | 1773 |
| Carbon rods for electric-arc lamps. Manufacture of | E. Corleis and H. Reinsch | 504,105 | Aug. 29 | 3067 | | 64 | 1192 |
| Carbon trimming machine | C. O. Bartlett | 500,533 | July 4 | 25 | 9, 10 | 64 | 7 |
| Carbureting apparatus | S. Marcus | 500,772 | July 4 | 383 | 100 | 64 | 71 |
| Carbureting apparatus. Air- | P. H. Fontaine | 501,778 | July 18 | 1903 | 493 | 64 | 392 |
| Carburetor | H. B. Cornish | 505,700 | Sept. 26 | 2146 | 594 | 64 | 1750 |
| Carburetor | J. C. McCrory and W. P. House | 501,154 | July 11 | 999 | 254 | 64 | 186 |
| Carburetor | E. Savill | 504,137 | Aug. 29 | 3115 | 780 | 64 | 1201 |
| Carburetor | E. A. Smith | 502,781 | Aug. 8 | 918 | 224 | 64 | 749 |
| Card-box | W. E. Richards | 501,693 | July 18 | 1847 | 459 | 64 | 367 |
| Card-canceling machine | A. A. Low | 505,627 | Sept. 26 | 2208 | 559 | 64 | 1726 |
| Card-case | J. F. Smith | 504,948 | Sept. 12 | 1052 | 270 | 64 | 1482 |
| Card-flat-clothing fastener | J. W. Fawcett and E. Jones | 504,579 | Sept. 5 | 431 | 109 / 110 | 64 | 1350 |
| Card-holder | R. D. Knight | 501,279 | July 11 | 1185 | 300 | 64 | 231 |
| Card or letter case | J. Lambert | 501,431 | July 11 | 1435 | 360 | 64 | 276 |
| Card. Playing- | W. O. Bird | 502,089 | July 25 | 2484 | 624 | 64 | 497 |
| Carding-engine | E. and W. H. Crowther | 504,968 | Sept. 12 | 1090 | 278 | 64 | 1490 |
| Carding-engine stop mechanism | J. Vaughan | 501,387 | July 11 | 1378 | 345 | 64 | 264 |
| Carding-engines. Apparatus for driving the flats of traveling-flat | A. Hitchon | 501,836 | July 18 | 2072 | 511 | 64 | 406 |
| Carding-engines. Apparatus for grinding revolving flats of | J. Edge | 501,995 | July 25 | 2328 | 581 / 582 / 583 | 64 | 468 |
| Carding-engines. Feed-roll-weighting device for | W. P. Canning | 504,707 | Sept. 12 | 650 | 165 | 64 | 1405 |
| Carding-machine stop-motion | H. McDermott | 501,573 | July 18 | 1632 | 413 | 64 | 333 |
| Carpet beating and cleaning machine | C. W. Raymond | 505,481 | Sept. 26 | 1920 | 495 | 64 | 1671 |
| Carpet fabric. Ingrain | H. Hardwick | 505,788 | Sept. 26 | 2483 | 626 / 627 | 64 | 1776 |
| Carpet fabric. Ingrain | H. Hardwick | 505,789 | Sept. 26 | 2485 | 627 | 64 | 1777 |
| Carpet-stretcher | G. W. Blanchard | 501,132 | July 11 | 900 | 245 | 64 | 189 |
| Carpet-stretcher | A. Hankey | 501,617 | July 18 | 1725 | 430 | 64 | 346 |
| Carpet stretcher and tacker | G. W. Analey | 505,546 | Sept. 26 | 2057 | 525 | 64 | 1696 |
| Carpet-sweeper | C. O. Allen | 503,107 | Aug. 8 | 1451 | 357 | 64 | 847 |
| Carpet-sweeper | W. Newbigging and G. A. Worz | 504,846 | Sept. 12 | 892 | 229 | 64 | 1452 |
| Carpet-sweeper | S. H. Raymond | 503,678 | Aug. 22 | 2390 | 596 | 64 | 1045 |
| Carpet-sweeper | S. H. Raymond | 503,679 | Aug. 22 | 2392 | 596 | 64 | 1046 |
| Carpet-sweeper | C. Tangenberg | 500,976 | July 4 | 699 | 183 | 64 | 137 |
| Carriage | W. H. Emond | 505,197 | Sept. 19 | 1463 | 377 | 64 | 1572 |
| Carriage | C. Mullen | 506,687 | July 18 | 1839 | 458 | 64 | 365 |
| Carriage | A. Schröder | 505,234 | Sept. 19 | 1516 | 396 | 64 | 1582 |
| Carriage | F. W. Zimmer | 505,015 | Sept. 12 | 1163 | 298 / 299 | 64 | 1504 |
| Carriage-body | L. Doyle | 500,740 | July 4 | 334 | 89 | 64 | 62 |
| Carriage-coupling | S. R. Bailey | 501,202 | July 11 | 1067 | 270 / 271 | 64 | 210 |
| Carriage. Folding baby- | F. F. Plouf | 504,817 | Sept. 12 | 842 | 216 | 64 | 1441 |
| Carriage-top | M. D. Martin | 500,925 | July 4 | 609 | 159 | 64 | 112 |
| Carriage-top joint | J. T. Groves | 503,135 | Aug. 15 | 1508 | 371 | 64 | 871 |
| Carriage-top prop | H. L. Philips | 502,138 | July 25 | 2557 | 641 | 64 | 511 |
| Carriages. Nursery-case for children's | J. R. Lyle | 501,590 | July 18 | 1573 | 395 | 64 | 317 |
| Carrier: *See* Egg or fruit carrier. Package-carrier. Elevated carrier. Water-carrier. | | | | | | | |
| Carrying-strap | G. W. Roberts | 504,307 | Aug. 29 | 3396 | 850 | 64 | 1254 |
| Cart for transporting telegraph-poles, &c | J. and W. Titus | 504,377 | Sept. 5 | 105 | 26, 27 | 64 | 1280 |
| Cart. Garbage- | T. Dark, Sr. | 502,350 | Aug. 1 | 169 | 39, 40 | 64 | 597 |
| Cart. Hoad- | J. B. Armstrong | 504,771 | Sept. 12 | 769 | 194 | 64 | 1426 |
| Cart. Road- | C. C. Bradley | 502,029 | July 25 | 2387 | 600 | 64 | 478 |
| Cart. Road- | J. J. Cretsinger | 502,281 | Aug. 1 | 98 | 7 | 64 | 571 |

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| Invention. | Name. | No. | Date. | Monthly volume. Spec. | Monthly volume. Dr'gs. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|---|
| Cart. Road | A. P. Ferguson | 501,776 | July 18 | 1990 | 499 | 64 | 392 |
| Cart. Road | J. S. Shoemaker | 505,333 | Sept. 19 | 1678 | 433 | 64 | 1612 |
| Cartridge | W. C. Bush | 505,080 | Sept. 19 | 1299 | 334 | 64 | 1542 |
| Cartridge | F. Mohr | 503,096 | Aug. 8 | 1430 | 353 | 64 | 844 |
| Cartridge | W. H. Saenger | 505,297 | Sept. 19 | 1630 | 421 | 64 | 1604 |
| Cartridge-belt | G. W. Barton | 501,642 | July 18 | 1764 | 439 | 64 | 353 |
| Cartridge-holder | O. H. J. Krag and E. Jörgensen | 505,363 | Sept. 19 | 1733 | 448, 449 | 64 | 1622 |
| Cartridge implement | T. M. Pierce | 504,789 | Sept. 12 | 793 | 200 | 64 | 1432 |
| Cartridge-loading machine | M. Bielefeldt | 504,699 | Sept. 12 | 640 | 163 | 64 | 1403 |
| Cartridge-loading machine | C. S. Hisey | 505,423 | Sept. 19 | 1834 | 472 | 64 | 1642 |
| Cartridge-shell | T. G. Bennett | 503,117 | Aug. 15 | 1480 | 364 | 64 | 866 |
| Cartridge-shell crimper | G. D. Hunter | 505,046 | Sept. 12 | 1215 | 313 | 64 | 1513 |
| Cartridge with amorphous explosive shell and charge | H. Maxim | 504,736 | Sept. 12 | 703 | 176 | 64 | 1416 |
| Carving-fork guard | E. E. Wood, Jr | 503,303 | Aug. 15 | 1782 | 440 | 64 | 920 |
| Case: *See* Bookcase. Card-case. Card or letter case. Cheese-case. Confectionery-case. Display glove-case. Drum-case. Eraser-case. Jewelry-case. Packing-case. Tobacco-case. Syringe-case. Umbrella-case. | | | | | | | |
| Cash-carrier apparatus | S. W. Barr | 500,552 | July 4 | 23 | 9 | 64 | 7 |
| Cash-carrier apparatus | H. M. Weaver | 500,642 | July 4 | 168 | 43, 44 | 64 | 33 |
| Cash-controlling machine | T. F. Russel and J. Brady | 501,962 | July 25 | 2281 | 570, 571 | 64 | 459 |
| Cash indicator and register | A. C. Hansen | 503,598 | Aug. 22 | 2293 | 567 | 64 | 1622 |
| Cash indicator and register | E. H. Murdock | 501,153 | July 11 | 996 | 254 | 64 | 190 |
| Cash-register | J. T. Cowley | 505,194 | Sept. 19 | 1456 | 375, 376, 377 | 64 | 1570 |
| Cash-register | L. Ehrlich | 502,353 | Aug. 1 | 174 | 40, 41 | 64 | 508 |
| Cash register | H. W. Hoffheimer | 500,898 | July 4 | 572 | 149 | 64 | 104 |
| Cash-register | W. Koch | 505,553 | Sept. 26 | 2067 | 527, 528, 529 | 64 | 1698 |
| Cash-register | W. Koch | 505,554 | Sept. 26 | 2092 | 530 | 64 | 1701 |
| Cash-register | C. J. Passick | 502,580 | Aug. 1 | 555 | 132, 133 | 64 | 666 |
| Cash register and indicator | F. L. Bailey | 504,393 | Aug. 29 | 3374 | 644 | 64 | 1250 |
| Cash register and indicator | H. Cook | 503,946 | Aug. 29 | 2793 | 700, 701, 702 | 64 | 1142 |
| Cash register and indicator | W. F. Z. Desant | 505,444 | Sept. 26 | 1868 | 481 | 64 | 1661 |
| Cash register and indicator | J. T. Greene | 502,885 | Aug. 8 | 1081 | 267 | 64 | 780 |
| Cash register and indicator | J. H. Greenleaf | 505,101 | Sept. 19 | 1313 | 338, 339, 340 | 64 | 1545 |
| Cash register and indicator | A. H. Scranton | 502,387 | Aug. 1 | 233 | 55 | 64 | 608 |
| Cash register and indicator blind | L. Ehrlich | 504,470 | Sept. 5 | 258 | 67 | 64 | 1318 |
| Cash register and recorder | H. Cook | 503,947 | Aug. 29 | 2808 | 702, 703 | 64 | 1144 |
| Cash register and recorder | W. Koch | 505,555 | Sept. 26 | 2088 | 531 | 64 | 1702 |
| Cash register and till | A. L. Crawford | 503,579 | Aug. 22 | 2225 | 558 | 64 | 1016 |
| Cash register, indicator, recorder, and check-printer | J. Pfeifer | 502,317 | Aug. 1 | 103 | 24, 25, 26 | 64 | 585 |
| Cash register, recorder, and indicator. Electrical | L. Ehrlich | 502,287 | Aug. 1 | 35 | 8, 9, 10, 11 | 64 | 573 |
| Cash-registering machine | F. L. Bailey | 504,409 | Sept. 5 | 157 | 41, 42 | 64 | 1299 |
| Cash-registering machine | J. J. Webster | 502,645 | Aug. 1 | 662 | 161 | 64 | 688 |
| Cask. Cylindrical | C. E. Bratt | 503,575 | Aug. 22 | 2219 | 555 | 64 | 1015 |
| Casket-top fastener | S. N. Hiser | 500,577 | July 4 | 62 | 18 | 64 | 13 |
| Caster | T. Polster | 503,428 | Aug. 15 | 1969 | 493 | 64 | 957 |
| Caster-wheel | E. G. Hoffmann | 501,719 | July 18 | 1891 | 470 | 64 | 375 |
| Casting apparatus. Ingot- | L. W. Mallasee | 504,131 | Aug. 29 | 3105 | 777 | 64 | 1200 |
| Casting ingots | H. A. Brustlein | 504,382 | Sept. 5 | 17 | 5 | 64 | 1274 |
| Casting lock-nuts. Mold for | A. M. Rouse | 505,778 | Sept. 26 | 2472 | 623 | 64 | 1774 |
| Casting teeth on gear-wheels. Chill-mold for | S. E. Maxwell | 500,591 | July 4 | 82 | 23 | 64 | 16 |
| Castings. Apparatus for making | W. W. Doolittle | 501,331 | July 11 | 1269 | 318, 319, 320 | 64 | 943 |
| Cat-barrier | G. S. Niles | 504,936 | Sept. 12 | 1033 | 265 | 64 | 1479 |
| Catamenial sack | G. W. Gaines | 501,563 | July 18 | 1638 | 410 | 64 | 359 |
| Caterpillar-trap | T. D. Noone | 505,226 | Sept. 19 | 1506 | 393 | 64 | 1580 |
| Catheter | O. de Pezzer | 504,744 | Sept. 12 | 719 | 179 | 64 | 1419 |
| Catheter-holder | W. W. Lovejoy | 503,973 | Aug. 29 | 2853 | 716 | 64 | 1153 |
| Cattle-guard | L. Hills | 501,785 | July 18 | 2006 | 495 | 64 | 395 |
| Cattle-guard | B. Wolhaupter | 500,730 | July 4 | 320 | 85, 86 | 64 | 60 |
| Ceiling. Metallic | C. C. Moore | 500,595 | July 4 | 87 | 25 | 64 | 17 |
| Ceiling or wall | H. Lehmann | 503,721 | Aug. 22 | 2466 | 615 | 64 | 1060 |
| Celluloid boxes. Manufacture of | A. C. Hafely and J. Redlefsen | 505,469 | Sept. 26 | 1894 | 488 | 64 | 1666 |
| Cement | E. E. Hawes | 501,997 | July 25 | 2249 | ..... | 64 | 453 |
| Cement | C. F. Le Fevre | 504,477 | Sept. 5 | 270 | ..... | 64 | 1320 |
| Cement. Apparatus for mixing asphalt | J. Schubert | 501,215 | July 11 | 1085 | 275, 276 | 64 | 214 |
| Cement in barrels. Machine for packing | L. Faith | 505,758 | Sept. 26 | 2438 | 615 | 64 | 1767 |
| Cement pipes. Apparatus for the manufacture of re-pressed | C. Schnell | 500,675 | July 4 | 233 | 62 | 64 | 44 |
| Centering, preparing, and countersinking bars, studs, &c. Machine for | W. Webster | 505,013 | Sept. 12 | 1161 | 298 | 64 | 1503 |
| Centrifugal machine | R. A. Lister and M. Pedersen | 502,859 | Aug. 8 | 1042 | 255 | 64 | 770 |



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| Invention. | Name. | No. | Date. | Monthly volume. Spec. | Monthly volume. Dr'gs. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|---|
| Centrifugal machine | L. v. Szczeniowski and G. v. Piontkowski | 500,782 | July 4 | 397 | 105 | 64 | 74 |
| Centrifugal separator and regulating the supply thereto | F. Ludloff | 504,422 | Sept. 5 | 182 | 47, 48 | 64 | 1305 |
| Chain. Drive | F. Gleason | 501,587 | July 18 | 1672 | 417 | 64 | 337 |
| Chain. Drive | W. H. Hart | 504,494 | Sept. 5 | 306 | 77 | 64 | 1327 |
| Chain elevator. Endless | J. P. Manton | 504,044 | Aug. 29 | 2968 | 742 | 64 | 1173 |
| Chain. Sprocket | S. H. Percy | 503,871 | Aug. 22 | 2677 | 671 | 64 | 1102 |
| Chains. Means for propelling | C. W. Hunt | 500,807 | July 4 | 437 | 115 | 64 | 81 |
| Chair: *See* Folding chair. Opera-chair. Rail-chair. Railway-rail chair. Rocking-chair. Window-chair. | | | | | | | |
| Chair and step-ladder. Convertible | O. S. Jennings | 505,795 | Sept. 26 | 2494 | 629 | 64 | 1778 |
| Chair foot-rest. Rocking | W. McQuillen | 503,246 | Aug. 15 | 1685 | 414 | 64 | 903 |
| Chair seat and back | B. H. Dodd | 504,446 | Sept. 5 | 215 | 56 | 64 | 1310 |
| Chamber-vessel | G. C. Fitts | 501,601 | July 18 | 1697 | 493 | 64 | 341 |
| Change making and delivering device | C. L. Travis | 502,942 | July 25 | 2737 | 690, 691, 692, 693 | 64 | 545 |
| Chatelaine | J. C. Hayden | 504,580 | Sept. 5 | 442 | 113 | 64 | 1352 |
| Chatelaine | A. B. Knight | 504,839 | Sept. 12 | 892 | 227 | 64 | 1450 |
| Chatelaine. Umbrella | J. C. Hayden | 504,579 | Sept. 5 | 440 | 112 | 64 | 1352 |
| Check-hook | G. H. Van Wagner | 505,147 | Sept. 19 | 1386 | 355 | 64 | 1557 |
| Cheese case and cutter | P. W. Brundin | 502,170 | July 25 | 2616 | 659 | 64 | 523 |
| Cheese-press | C. J. Lundstrom | 505,571 | Sept. 26 | 2122 | 537 | 64 | 1709 |
| Cheese-vat heater | R. Olp | 505,413 | Sept. 19 | 1813 | 468 | 64 | 1637 |
| Chill. Oscillatory | R. A. Poole | 502,994 | Aug. 8 | 1280 | 313 | 64 | 815 |
| Chimney | L. E. Clawson | 502,901 | Aug. 8 | 1117 | 275 | 64 | 787 |
| Chimney or smoke-stack | R. Savage | 500,779 | July 4 | 394 | 104 | 64 | 73 |
| Chimney-rack | F. W. Keller | 504,729 | Sept. 12 | 680 | 173 | 64 | 1411 |
| Chlorine and purifying lead. Producing | F. M. and C. H. M. Lyte | 503,429 | Aug. 15 | 1975 | 490 | 64 | 955 |
| Chlorine or caustic alkali by electrolysis. Manufacturing | C. N. Waite | 501,121 | July 11 | 949 | ..... | 64 | 187 |
| Chopper: *See* Cotton-chopper. Vegetable-chopper. | | | | | | | |
| Chronometer-escapement | J. G. McAlpine | 504,046 | Aug. 29 | 2971 | 743 | 64 | 1173 |
| Chuck | J. G. McAlpine | 504,047 | Aug. 29 | 2972 | 743 | 64 | 1174 |
| Chuck | P. W. Reck | 504,939 | Sept. 12 | 1039 | 267 | 64 | 1489 |
| Chuck. Lathe | J. R. Howgate | 503,374 | Aug. 15 | 1903 | 471 | 64 | 842 |
| Chuck. Lathe | R. L. Stanley | 504,285 | Aug. 29 | 3358 | 839 | 64 | 1247 |
| Chuck. Nipple | L. M. Saunders | 500,820 | July 4 | 455 | 120 | 64 | 84 |
| Churn | J. C. Budd | 505,026 | Sept. 12 | 1180 | 302, 303 | 64 | 1507 |
| Churn | I. S. and W. O. Bunker | 500,990 | July 4 | 717 | 188 | 64 | 130 |
| Churn | J. L. Cutler | 500,859 | July 4 | 516 | 134 | 64 | 94 |
| Churn | J. H. H. Duncan | 503,654 | Aug. 22 | 2357 | 588 | 64 | 1039 |
| Churn | W. Edmister | 502,179 | July 25 | 2629 | 663 | 64 | 526 |
| Churn | M. Elliott and A. J. Crigler | 502,286 | Aug. 1 | 34 | 8 | 64 | 572 |
| Churn | W. W. Hinman | 504,385 | Sept. 5 | 114 | 29 | 64 | 1292 |
| Churn | T. F. Hood and W. G. Smith | 501,423 | July 11 | 1426 | 357, 358 | 64 | 274 |
| Churn | D. H. King | 501,839 | July 18 | 2075 | 512 | 64 | 407 |
| Churn | R. A. Ludlow | 502,628 | Aug. 1 | 637 | 152 | 64 | 684 |
| Churn | R. D. Moon | 504,737 | Sept. 12 | 704 | 176 | 64 | 1416 |
| Churn | H. G. Olde | 501,806 | July 18 | 2037 | 501 | 64 | 399 |
| Churn | H. F. Quigley | 504,174 | Aug. 29 | 3182 | 795 | 64 | 1274 |
| Churn | E. W. Settle | 504,893 | Sept. 12 | 958 | 247 | 64 | 1465 |
| Churn | J. S. Thomson | 501,384 | July 11 | 1375 | 342, 344 | 64 | 263 |
| Churn | J. Wylie | 501,984 | July 25 | 2314 | 578 | 64 | 465 |
| Churn-dasher | W. H. Evans | 502,180 | July 25 | 2631 | 643 | 64 | 526 |
| Chute. Coal | J. F. Schmadeke | 503,439 | Aug. 15 | 1991 | 494 | 64 | 957 |
| Chute. Flour | J. K. Johnston | 502,194 | July 25 | 2654 | 670, 671 | 64 | 530 |
| Cider-mill | C. W. and E. G. Gest | 502,558 | Aug. 1 | 520 | 194 | 64 | 662 |
| Cigar attachment | T. Guilfoyle | 505,401 | Sept. 19 | 1794 | 464 | 64 | 1634 |
| Cigar-box moistener | C. H. Bayley | 505,261 | Sept. 19 | 1556 | 406 | 64 | 1589 |
| Cigar-bunch-wrapping machine | C. Hvass | 501,073 | July 11 | 846 | 219, 220 | 64 | 170 |
| Cigar-bunching machine | E. Pisko | 503,293 | Aug. 15 | 1763 | 436, 437 | 64 | 917 |
| Cigar-fillers. Machine for forming | L. F. Winter | 504,100 | Aug. 29 | 3057 | 764, 765 | 64 | 1190 |
| Cigar-glossing device | O. Streberger | 500,823 | July 4 | 462 | 122 | 64 | 85 |
| Cigar-holder | J. Andersson | 500,791 | July 4 | 413 | 108 | 64 | 76 |
| Cigar or cigarette machine | C. Schweizer and J. Nüesch | 501,629 | July 18 | 1743 | 434, 435 | 64 | 349 |
| Cigar-pipe | E. J. Phillips and J. A. Linhard | 502,992 | Aug. 8 | 1278 | 312 | 64 | 815 |
| Cigar-tip cutter | I. C. C. Rinehart | 503,496 | Aug. 15 | 2092 | 520 | 64 | 974 |
| Cigar-wrapper cutter | C. Hesse and J. C. M. Sternberg | 503,701 | Aug. 22 | 2433 | 605, 606 | 64 | 1053 |
| Cigarette-box | T. E. West | 503,512 | Aug. 15 | 2107 | 528 | 64 | 979 |
| Cigarette-machine | J. B. Duke | 503,582 | Aug. 22 | 2230 | 559, 560 | 64 | 1017 |
| Cigarette-machine | V. S. Fombuena | 501,498 | July 18 | 1532 | 385, 386, 387 | 64 | 310 |
| Cigarette-machine | A. L. Munson | 505,630 | Sept. 26 | 2213 | 561, 562, 563 | 64 | 1726 |
| Cigarette machine. Continuous | J. H. Venners | 503,507 | Aug. 15 | 2101 | 525, 526 | 64 | 978 |

*Alphabetical list of inventions, July to September, inclusive*—Continued.

| Invention. | Name. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drg. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|---|
| Cigarette-making machine | J. R. Williams | 504,708 | Sept. 12 | 755 | 189, 190, 191, 192 | 64 | 1426 |
| Cigarettes. Device for making | H. C. Kerman | 501,040 | Aug. 29 | 2962 | 741 | 64 | 1172 |
| Circuit-breaker and retardation-coil for test systems. Vibrating | C. R. Scribner | 504,251 | Aug. 29 | 3308 | 920 | 64 | 1237 |
| Circuit-closer | A. J. Oehring | 502,749 | Aug. 8 | 862 | 210 | 64 | 739 |
| Circuit connector. Track | E. H. Goodman | 502,229 | July 25 | 2711 | 684 | 64 | 541 |
| Circuit-interrupter. Automatic | A. Wurts | 501,201 | July 11 | 1066 | 270 | 64 | 309 |
| Circuit-switch | C. E. Dev | 504,123 | Aug. 29 | 7090 | 774 | 64 | 1197 |
| Circuit-testing apparatus | F. S. Palmer | 502,889 | Aug. 8 | 1089 | 268 | 64 | 781 |
| Circulating-boiler. Horizontal | H. R Sheppard | 501,739 | July 18 | 1931 | 478 | 64 | 381 |
| Cistern-cover | C. M. Menefee and G. Ertel | 505,055 | Sept. 12 | 1227 | 316 | 64 | 1515 |
| Clamp: *See* Belt-clamp. Tire-clamp. Furniture-clamp. Work-holding clamp. Handle-clamp. | | | | | | | |
| Clamp | W. H. Dana | 503,125 | Aug. 15 | 1491 | 366 | 64 | 808 |
| Clamp. Die for forming metallic | J. F. Harvey | 501,936 | July 25 | 2248 | 561 | 64 | 453 |
| Clasp: *See* Corset-clasp. Veil-clasp. | O. C. Rumsey | 500,618 | July 4 | 133 | 35 | 64 | 26 |
| Clasp for holding envelopes, paper, &c | M. E. Goodwin and S. H. Lewis | 504,213 | Aug. 29 | 3248 | 810 | 64 | 1226 |
| Clay-screen | J. C. Schroeder | 503,619 | Aug. 22 | 2309 | 576 | 64 | 1030 |
| Cleaner: *See* Boiler-tube cleaner. Grain-cleaner. Broom-corn cleaner. Slate-cleaner. Dish-cleaner. Track-cleaner. | | | | | | | |
| Cleat | D. B. Bronson | 503,193 | Aug. 15 | 1602 | 394 | 64 | 889 |
| Clip: *See* Hedge-clip. | | | | | | | |
| Clock. Alarm | E. R. Mason and A. O. Snow | 505,115 | Sept. 19 | 1337 | 345 | 64 | 1550 |
| Clock. Calendar | H. Grünberg | 504,432 | Sept. 5 | 198 | 51 | 64 | 1307 |
| Clock. Electric | E. Schweizer | 504,095 | Aug. 29 | 3047 | 762 | 64 | 1189 |
| Clock. Electric alarm | W. H. Deane | 502,811 | Aug. 8 | 962 | 234 | 64 | 758 |
| Clock. Geographical | A. G. Jourdan | 500,650 | July 4 | 205 | 53, 54 | 64 | 40 |
| Clock. Illuminated | W. B. Alderson | 502,161 | July 25 | 2004 | 655 | 64 | 520 |
| Clock. Self-winding and synchronizing | A. G. Wiseman | 502,156 | July 25 | 2593 | 652, 653 | 64 | 518 |
| Clock. Self-winding electric | F. M. Schmidt | 502,935 | Aug. 8 | 1160 | 291 | 64 | 798 |
| Clock. Ship's bell | J. S. Negus | 500,717 | July 4 | 296 | 80 | 64 | 55 |
| Clock striking mechanism | E. O. Caccialupi | 500,704 | July 4 | 272 | 73, 74 | 64 | 51 |
| Clock striking mechanism | L. E. Courtin | 503,310 | Aug. 15 | 1800 | 447 | 64 | 922 |
| Clock synchronizer. Electric | H. S. Prentiss | 502,381 | Aug. 1 | 219 | 62 | 64 | 606 |
| Clock synchronizer. Electric | A. G. Wiseman | 502,157 | July 25 | 2598 | 553, 554 | 64 | 519 |
| Clock winding mechanism | M. Everhart | 505,704 | Sept. 26 | 2350 | 595 | 64 | 1751 |
| Clock winding mechanism | D. Vauthier | 500,683 | July 4 | 241 | 64 | 64 | 46 |
| Clocks. Electric winding attachment for | A. G. Wiseman | 502,215 | July 25 | 2597 | 678 | 64 | 537 |
| Closet: *See* Siphon-closet. | | | | | | | |
| Cloth-cutting machine | H. A. Caldwell | 502,031 | July 25 | 2390 | 601, 602 | 64 | 479 |
| Cloth-cutting machine | W. S. Salisbury | 502,052 | July 25 | 2425 | 611 | 64 | 485 |
| Cloth-cutting machine | J. Wolf, Jr | 505,600 | Sept. 26 | 2398 | 590, 591 | 64 | 1747 |
| Cloth-cutting machine | J. Wolf, Jr., and J. Bloch | 505,669 | Sept. 26 | 2323 | 590 | 64 | 1746 |
| Cloth-cutting machine take-up device | J. Wolf, Jr | 505,741 | Sept. 26 | 2408 | 609 | 64 | 1761 |
| Cloth-finishing machine | H. G. Johnson | 504,219 | Aug. 29 | 3255 | 812 | 64 | 1227 |
| Cloth-finishing machines. Chain-clip for | R. Walker | 501,855 | July 18 | 2103 | 519 | 64 | 411 |
| Cloth-napping machine | J. D. Cloudman | 505,264 | Sept. 19 | 1561 | 408 | 64 | 1591 |
| Cloth-napping machine | M. M. Wilson | 504,010 | Aug. 29 | 2916 | 731 | 64 | 1164 |
| Cloth-pressing machine | J. Kirk and B. Lee | 501,349 | July 11 | 1311 | 327, 328 | 64 | 252 |
| Cloth-scouring machine | J. W. Steelbrooke | 500,620 | July 4 | 143 | 38 | 64 | 28 |
| Cloth-softening machine | J. W. Fries | 502,903 | Aug. 8 | 1119 | 275, 276 | 64 | 788 |
| Cloth stretching and calendering machine | W. P. Mather | 504,927 | Sept. 12 | 1020 | 263 | 64 | 1477 |
| Cloth stretching and drying machine | M. P. Meissner | 505,117 | Sept. 19 | 1339 | 345 | 64 | 1550 |
| Cloth-stretching machines. Chain-clip for | A. A. Whitley | 503,301 | Aug. 15 | 1779 | 439, 440 | 64 | 920 |
| Clothes-drier | J. C. Beckley | 503,573 | Aug. 22 | 2217 | 554 | 64 | 1015 |
| Clothes-drier | J. G. Kurtz | 505,108 | Sept. 19 | 1324 | 342 | 64 | 1547 |
| Clothes-drier | J. F. Schmidt | 502,913 | Aug. 8 | 1134 | 279, 280 | 64 | 790 |
| Clothes-line | C. B. Albert | 505,016 | Sept. 12 | 1165 | 299 | 64 | 1504 |
| Clothes-pin | H. C. Griffin | 500,574 | July 4 | 58 | 17 | 64 | 12 |
| Clothes-pin | G. W. McCoole. (Reissue) | 11,358 | Aug. 15 | 2200 | 549 | 64 | 996 |
| Clothes-pin | H. Merrill | 505,407 | Sept. 19 | 1401 | 405 | 64 | 1635 |
| Clothes-pounder | S. and F. G. Davis | 503,632 | Aug. 22 | 2822 | 656 | 64 | 1001 |
| Clothes-pounder | G. W. Lawbaugh | 501,606 | July 18 | 1706 | 425 | 64 | 343 |
| Clothes-pounder | W. P. Ware | 501,634 | July 18 | 1754 | 437 | 64 | 351 |
| Clothes-wringer | W. Thornton | 504,483 | Sept. 5 | 277 | 72 | 64 | 1322 |
| Clothes-wringer | C. Wheeler, Jr | 500,984 | July 4 | 709 | 186, 187 | 64 | 129 |
| Clothes-wringer | C. Wheeler, Jr | 502,646 | Aug. 1 | 663 | 161 | 64 | 669 |
| Clothes-wringer | C. Wheeler, Jr | 502,647 | Aug. 1 | 664 | 162 | 64 | 669 |
| Clutch | W. G. Austin | 503,824 | Aug. 22 | 2613 | 653 | 64 | 1089 |
| Clutch | J. Gawron | 503,650 | Aug. 22 | 2365 | 590 | 64 | 1041 |
| Clutch | J. C. Gibson | 505,219 | Sept. 19 | 1495 | 390 | 64 | 1578 |



*Alphabetical list of inventions, July to September, inclusive*—Continued.

| Invention. | Name. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drg. | Official Gazette. Vol. | Official Gazette. Pages. |
|---|---|---|---|---|---|---|---|
| Clutch | W. H. Lindsay | 502,732 | Aug. 8 | 836 | 203 | 64 | 736 |
| Clutch | A. P. Palmer and H. L. Phelps | 503,984 | Aug. 29 | 2888 | 719 | 64 | 1155 |
| Clutch | S. H. Randall | 502,758 | Aug. 8 | 876 | 214 | 64 | 741 |
| Clutch | S. A. Trowbridge and C. E. Twitt | 505,545 | Sept. 26 | 2057 | 525 | 64 | 1696 |
| Clutch | J. Wolf, Jr | 503,923 | Aug. 22 | 2755 | 691 | 64 | 1117 |
| Clutch | H. P. Eilers | 505,037 | Sept. 12 | 1202 | 309 | 64 | 1511 |
| Clutch. Cushioned | W. A. Johnston and A. W. Browne | 503,420 | Aug. 15 | 1964 | 486 | 64 | 953 |
| Clutch. Electric-motor | H. C. Crowell | 501,925 | July 25 | 2232 | 557 | 64 | 450 |
| Clutch. Friction | W. H. McConnell | 504,110 | Aug. 29 | 3076 | 770 | 64 | 1194 |
| Clutch. Friction | H. E. Nottingham and A. Tucker | 502,446 | Aug. 1 | 333 | 80 | 64 | 627 |
| Clutch. Friction | C. E. Twitt | 505,617 | Sept. 26 | 2193 | 555 | 64 | 1723 |
| Clutch. Friction | F. L. Waterous | 501,976 | July 25 | 2300 | 575 | 64 | 462 |
| Clutch. Friction | E. G. P. Wern | 505,338 | Sept. 19 | 1684 | 434 | 64 | 1613 |
| Clutch mechanism | I. F. Thompson | 505,257 | Sept. 19 | 1550 | 404 | 64 | 1588 |
| Clutch-operating mechanism | H. W. Hill | 503,853 | Aug. 22 | 2653 | 664 | 64 | 1097 |
| Clutch or coupling. Magnetic | G. A. Brown | 505,025 | Sept. 12 | 1179 | 302 | 64 | 1507 |
| Clutching mechanism | G. E. Witherell | 504,770 | Sept. 12 | 767 | 193 | 64 | 1427 |
| Coal. Apparatus for handling | W. D. Ewart | 502,250 | July 25 | 2756 | 697 | 64 | 549 |
| Coal-cutters. Forming | F. Bain | 501,755 | July 18 | 1963 | 486 | 64 | 387 |
| Coal for transportation. Apparatus for preparing | W. C. Andrews | 502,062 | July 25 | 2442 | 614 | 64 | 488 |
| Coal, grain, &c. Pocket or bin for the storage of | T. E. Murray | 503,097 | Aug. 8 | 1431 | 353 | 64 | 844 |
| Coal-handling appliance | H. K. Morrison | 502,445 | Aug. 1 | 332 | 80 | 64 | 627 |
| Coal-hod and ash-sifter | H. Roth | 501,299 | July 11 | 1213 | 370 | 64 | 295 |
| Coal or ore bins. Discharge apparatus for | R. W. Ericson | 504,673 | Sept. 5 | 580 | 150 | 64 | 1381 |
| Coal or ore docks. Discharge apparatus for | R. W. Ericson | 504,674 | Sept. 5 | 591 | 150 | 64 | 1381 |
| Coal or ore docks. Discharge apparatus for | R. W. Ericson | 504,675 | Sept. 5 | 593 | 151 | 64 | 1382 |
| Coal-piling apparatus | J. M. Dodge | 502,555 | Aug. 1 | 516 | 123, 124 | 64 | 661 |
| Coal-piling apparatus | J. M. Dodge | 503,409 | Aug. 15 | 1944 | 483 | 64 | 950 |
| Coal, &c. Separator for | H. Bradford | 501,673 | July 18 | 1818 | 453 | 64 | 362 |
| Coal. Settling or storage pond or basin for pulverized | W. C. Andrews | 502,063 | July 25 | 2444 | 614 | 64 | 489 |
| Coat and hat hook | F. Taylor | 505,336 | Sept. 19 | 1683 | 434 | 64 | 1613 |
| Coat and hat hook | F. Taylor | 505,337 | Sept. 19 | 1683 | 434 | 64 | 1613 |
| Coat and hat hook | A. White | 505,209 | Sept. 19 | 1484 | 387 | 64 | 1576 |
| Coat-hook | A. White | 501,452 | July 11 | 1467 | 368 | 64 | 292 |
| Coating with aluminum or alloys thereof | E. C. Broadwell | 503,070 | Aug. 8 | 1385 | ..... | 64 | 836 |
| Coating with silver. Composition of matter for | T. Z. H. St. Cyr | 503,358 | Aug. 15 | 1879 | ..... | 64 | 938 |
| Cock. Basin | J. M. Peck | 505,634 | Sept. 26 | 2228 | 565 | 64 | 1729 |
| Cock. Compression stop and waste | T. C. Dalton | 504,885 | Sept. 12 | 918 | 237 | 64 | 1457 |
| Cock for tanks for water-closets, &c. Ball | J. R. Allan | 503,339 | Aug. 15 | 1846 | 457 | 64 | 931 |
| Cock. Gage | R. P. Ross | 503,386 | Aug. 15 | 1918 | 476 | 64 | 945 |
| Cock or tap. Stop | J. T. Hallwood | 502,094 | July 25 | 2491 | 626 | 64 | 498 |
| Cock. Regulating plug | H. See | 505,489 | Sept. 26 | 1931 | 498 | 64 | 1674 |
| Coffee. Machine for eliminating stones, &c., from | W. Schwab | 505,487 | Sept. 26 | 1929 | 497 | 64 | 1674 |
| Coffee-pot | F. P. Boland | 501,672 | July 18 | 1818 | 453 | 64 | 362 |
| Coffee-pot | W. P. Carlin | 503,342 | Aug. 15 | 1850 | 458 | 64 | 932 |
| Coffee-pot | E. J. Colby | 503,563 | Aug. 15 | 2194 | 548 | 64 | 995 |
| Coffee-pot | S. Geldbrant | 505,042 | Sept. 12 | 1208 | 311 | 64 | 1512 |
| Coffin | J. Loersch, Jr | 501,190 | July 11 | 1050 | 265 | 64 | 206 |
| Coffin-bracket | A. E. Whitney | 504,009 | Aug. 29 | 2916 | 731 | 64 | 1164 |
| Coffin-handle | E. P. Lacroix | 505,663 | Sept. 26 | 2277 | 578 | 64 | 1739 |
| Coiled bars or rods. Machine for separating | C. A. Sterling and J. E. Wilson | 505,071 | Sept. 12 | 1263 | 324, 325 | 64 | 1522 |
| Coin-assorting apparatus | A. R. Günther | 502,715 | Aug. 8 | 816 | 197 | 64 | 730 |
| Coin-controlled apparatus | H. H. Buxbaum | 504,555 | Sept. 5 | 406 | 103, 104 | 64 | 1345 |
| Coin-controlled apparatus | G. F. W. Schultze | 502,891 | Aug. 8 | 1094 | 269 | 64 | 782 |
| Coin-controlled apparatus | J. P. Taylor | 501,853 | July 18 | 2099 | 418 | 64 | 411 |
| Coin holder and counter | F. W. Smith | 504,504 | Sept. 5 | 394 | 83 | 64 | 1330 |
| Coin receiver or tray | W. A. Rusk | 500,955 | July 4 | 656 | 174 | 64 | 120 |
| Coin-registering receptacle | E. A. Jahncke | 500,769 | July 4 | 378 | 98 | 64 | 70 |
| Coin-tray | W. H. Staats | 504,684 | Sept. 5 | 608 | 155, 156 | 64 | 1385 |
| Coke and carbonizing oven | T. Bauer and G. Mendheim | 504,548 | Sept. 5 | 395 | 100, 101 | 64 | 1343 |
| Coke-oven. Regenerative | F. Westermann | 500,684 | July 4 | 247 | 65 | 64 | 46 |
| Cold and ice. Apparatus for producing | E. D. Kendall | 502,438 | Aug. 1 | 317 | 75 | 64 | 625 |
| Collar and hames. Combined horse | G. D. Ohl | 501,097 | July 11 | 904 | 231 | 64 | 180 |
| Collar and necktie. Combined shirt | B. Lowenberg | 500,921 | July 4 | 606 | 158 | 64 | 111 |
| Collar-fastener | O. Watson | 503,510 | Aug. 15 | 2100 | 527 | 64 | 979 |
| Collar-fastener. Adjustable | J. V. Washburne | 500,640 | July 4 | 164 | 43 | 64 | 33 |
| Collar fastener. Horse | R. J. Vanderbeck | 502,313 | July 25 | 2685 | 678 | 64 | 536 |
| Collar. Horse | J. S. Maring | 501,684 | July 18 | 1635 | 457 | 64 | 365 |
| Collar. Horse | E. R. Williamson | 502,543 | Aug. 1 | 503 | 129 | 64 | 659 |
| Collar or cuff blank folding machine | G. E. Harris | 502,678 | Aug. 1 | 734 | 176, 177 | 64 | 700 |
| Collar-stuffing machine | H. Hildenbrand | 503,479 | Aug. 15 | 2062 | 514 | 64 | 970 |
| Coloring and burnishing composition | W. R. Albertson and N. B. Briggs | 501,311 | July 11 | 1230 | ..... | 64 | 238 |
| Coloring and burnishing composition | W. R. Albertson and N. B. Briggs | 501,312 | July 11 | 1231 | ..... | 64 | 238 |
| Colors upon cottons, &c. Fixing | J. Bracewell | 505,088 | Sept. 19 | 1297 | ..... | 64 | 1542 |
| Colter | L. S. Bailey | 505,018 | Sept. 12 | 1167 | 299 | 64 | 1505 |
| Colter and scraper. Combined | F. Sherrod | 504,252 | Aug. 29 | 3311 | 827 | 64 | 1227 |
| Comb | H. G. Guild | 504,979 | Sept. 12 | 1107 | 284 | 64 | 1483 |
| Combination-gage | C. W. Preston | 504,278 | Aug. 29 | 3350 | 837 | 64 | 1245 |
| Combination-lock | H. H. Daniels | 505,157 | Sept. 19 | 1401 | 359 | 64 | 1560 |
| Combination-lock | T. W. McGrath | 505,120 | Sept. 19 | 1346 | 347 | 64 | 1551 |
| Commutator-brush | H. G. Reist | 501,960 | July 25 | 2279 | 570 | 64 | 450 |
| Commutator-brush holder | R. N. Bayles | 504,901 | Sept. 12 | 973 | 250, 251 | 64 | 1467 |
| Commutator-brush holder | A. J. Shaw | 501,183 | July 11 | 1055 | 267 | 64 | 207 |
| Commutator connection | N. C. Bassett | 501,049 | July 11 | 815 | 212 | 64 | 164 |
| Commutator for dynamo-electric machines | E. P. Warner | 504,379 | Sept. 5 | 107 | 27 | 64 | 1320 |
| Compass. Mariner's | E. S. Ritchie | 503,164 | Aug. 15 | 1559 | 393 | 64 | 880 |

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| Invention. | Name. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drg. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|---|
| Compass. Ship's recording | J. Hope | 505,361 | Sept. 19 | 1723 | 445, 446, 447 | 64 | 1020 |
| Compound engine | E. Reynolds and E. Cheshire | 505,004 | Sept. 12 | 1149 | 294 | 64 | 1501 |
| Compound spring | G. H. Chatillon | 505,092 | Sept. 19 | 1301 | 335 | 64 | 1543 |
| Concentrator | D. W. Humphries | 504,923 | Sept. 12 | 1013 | 261 | 64 | 1476 |
| Concrete work. Non-shearing rod for strengthening | T. A. Lee | 505,664 | Sept. 26 | 2278 | 578 | 64 | 1739 |
| Condenser | D. S. Abbott and C. G. Redstone | 500,701 | July 4 | 369 | 73 | 64 | 50 |
| Condenser. Electrical | A. Wurts | 503,186 | Aug. 15 | 1591 | 391 | 64 | 987 |
| Condensing apparatus | N. A. Christensen | 502,922 | Aug. 8 | 1158 | 285 | 64 | 794 |
| Conductor support and insulator | D. T. Bennett | 503,519 | Aug. 15 | 2115 | 530, 531 | 64 | 980 |
| Conductor support and insulator | W. B. Easick | 503,039 | Aug. 8 | 1342 | 331 | 64 | 828 |
| Conduit | G. Sterling | 502,474 | Aug. 1 | 378 | 90 | 64 | 636 |
| Confectionery case | C. B. Overbaugh | 502,634 | Aug. 1 | 643 | 154 | 64 | 685 |
| Confections. Machine for making | A. Van Ness | 503,865 | Aug. 22 | 2804 | 675, 676 | 64 | 1105 |
| Confections. Machine for molding | C. H. Grebenstein | 504,449 | Sept. 5 | 220 | 58, 59 | 64 | 1311 |
| Connector | H. L. Webb | 503,181 | Aug. 15 | 1584 | 389 | 64 | 985 |
| Converter | C. Vattier | 503,179 | Aug. 15 | 1581 | 389 | 64 | 985 |
| Conveyer | H. Mock | 503,326 | Aug. 15 | 1826 | 452 | 64 | 988 |
| Conveyer | C. S. Schenck | 502,588 | Aug. 1 | 567 | 136 | 64 | 670 |
| Conveyer. Chain | C. O. Bartlett | 505,431 | Sept. 26 | 1849 | 475, 476 | 64 | 1657 |
| Conveyer-chain | J. Pollock | 505,296 | Sept. 19 | 1629 | 401 | 64 | 1604 |
| Conveyer. Endless-chain | G. W. McCaslin | 503,870 | Aug. 22 | 2675 | 670 | 64 | 1101 |
| Conveyer. Spiral | A. E. Baxter and A. G. Mather | 504,193 | Aug. 29 | 3217 | 801 | 64 | 1220 |
| Conveyers. Flight for endless | F. Miller | 501,289 | July 11 | 1198 | 303 | 64 | 923 |
| Conveying and drying apparatus | S. H. Bassett | 501,048 | July 11 | 813 | 211 | 64 | 153 |
| Conveying apparatus | J. M. Dodge | 501,771 | July 18 | 1985 | 491 | 64 | 391 |
| Conveying apparatus | T. S. Miller | 503,381 | Aug. 15 | 1913 | 474 | 64 | 944 |
| Conveying apparatus | T. S. Miller | 503,800 | Aug. 22 | 2583 | 644 | 64 | 1083 |
| Cooker. Steam | C. R. Long and C. H. Kline | 501,952 | July 25 | 2267 | 567 | 64 | 456 |
| Cooker-valve | E. P. Doty | 503,787 | Aug. 22 | 2567 | 639 | 64 | 1080 |
| Cooking apparatus | F. M. Strong | 504,256 | Aug. 29 | 3317 | 829 | 64 | 1239 |
| Cooking machine. Corn | G. Burnham, Jr. | 503,577 | Aug. 22 | 2222 | 557 | 64 | 1016 |
| Cooking utensil | C. Philippot | 504,243 | Aug. 29 | 3294 | 823 | 64 | 1234 |
| Cooking-vessel | C. J. Parker | 503,353 | Aug. 15 | 1866 | 462 | 64 | 935 |
| Cooler: *See* Ice-cream cooler. Liquid-cooler. Milk-cooler. Water-cooler. Wine-cooler. | | | | | | | |
| Coop | S. P. Cloyd | 505,439 | Sept. 26 | 1860 | 478, 479 | 64 | 1660 |
| Copy-holder | W. O. Crane | 504,414 | Sept. 5 | 165 | 44 | 64 | 1301 |
| Copy-holder | N. G. Leslie | 500,715 | July 4 | 293 | 79 | 64 | 54 |
| Copy-holder | J. M. Phillips | 502,991 | Aug. 8 | 1277 | 312 | 64 | 815 |
| Copy-holder and printer's guide | J. W. Searle | 501,234 | July 11 | 1114 | 282 | 64 | 218 |
| Cordage-making machine | B. J. McGee | 505,632 | Sept. 26 | 2226 | 564, 565 | 64 | 1728 |
| Core-making machine | W. Ireton | 505,466 | Sept. 26 | 1899 | 489, 490 | 64 | 1667 |
| Cork-retainer | A. J. B. Laussedat | 502,126 | July 25 | 2540 | 637 | 64 | 508 |
| Corkscrew | C. Puddefoot | 501,468 | July 11 | 1486 | 374 | 64 | 286 |
| Corkscrew | E. Walker | 501,975 | July 25 | 2299 | 575 | 64 | 462 |
| Corkscrew, match-holder, &c. Combined | P. Dean | 502,351 | Aug. 1 | 171 | 40 | 64 | 597 |
| Corn and cob crusher and grinder | F. S. Rich | 503,357 | Aug. 15 | 1876 | 465, 466 | 64 | 937 |
| Corn-crib drying attachment | J. Welch | 504,258 | Aug. 29 | 3320 | 830 | 64 | 1239 |
| Corn-husking device | W. F. Lillie | 505,711 | Sept. 26 | 2364 | 597 | 64 | 1754 |
| Corn-shock-binding device | H. Johnson | 502,672 | Aug. 1 | 725 | 174 | 64 | 699 |
| Cornstalk-rake. Revolving | J. A. Paxton | 504,242 | Aug. 29 | 3293 | 822 | 64 | 1234 |
| Cornstalk-shocker | O. D. Mowrer | 505,225 | Sept. 19 | 1504 | 392 | 64 | 1579 |
| Corn-thinner | J. L. Tandy | 501,594 | July 18 | 1684 | 420 | 64 | 339 |
| Cornice-brake | J. H. Crocker | 504,710 | Sept. 12 | 654 | 165 | 64 | 1405 |
| Corpse-dressing tab'e | L. B. Huddleston | 503,969 | Aug. 29 | 2949 | 714, 715 | 64 | 1152 |
| Corrugating-machine | B. Hall | 505,600 | Sept. 26 | 2169 | 549 | 64 | 1718 |
| Corrugating-tool | J. Blumer | 501,644 | July 18 | 1766 | 440 | 64 | 354 |
| Corset-clasp | D. Essex | 505,288 | Sept. 19 | 1609 | 418 | 64 | 1599 |
| Corset-fastening | H. E. Carter and W. H. Snyder | 505,437 | Sept. 26 | 1858 | 478 | 64 | 1660 |
| Corset-fastening | J. A. Parry | 501,098 | July 11 | 905 | 232 | 64 | 180 |
| Corset-stay | M. W. Henius | 503,909 | Aug. 22 | 2738 | 687 | 64 | 1114 |
| Corset-steel | E. Wilson | 505,150 | Sept. 19 | 1389 | 356 | 64 | 1558 |
| Corset-stiffener | H. H. Wagener | 501,221 | July 11 | 1096 | 278 | 64 | 215 |
| Corset-stiffener | D. H. Warner | 500,638 | July 4 | 163 | 42 | 64 | 32 |
| Cot. Aerial cradle | A. Wastall | 505,797 | Sept. 26 | 2498 | 631 | 64 | 1779 |
| Cot. Portable folding | B. D. Morrell | 505,409 | Sept. 19 | 1804 | 465, 466 | 64 | 1636 |
| Cotton-chopper | J. D. Schofield | 504,756 | Sept. 12 | 737 | 183, 184 | 64 | 1422 |
| Cotton chopper and scraper | W. A. Talley | 500,679 | July 4 | 238 | 63 | 64 | 45 |
| Cotton conveyers. Mechanism for automatically operating the air or cut-off valves of pneumatic seed | F. C. Gammons | 500,804 | July 4 | 433 | 114 | 64 | 80 |
| Cotton-gin. Roller | W. Dearborn | 504,775 | Sept. 12 | 773 | 195 | 64 | 1428 |
| Cotton-gin saw | W. M. Brown | 500,560 | July 4 | 37 | 12 | 64 | 9 |
| Cotton-gin. Saw | H. J. Davis, J. Rice, and J. C. McDaniel. | 504,023 | Aug. 29 | 2934 | 734, 735 | 64 | 1166 |
| Cotton-opener beater | R. Schaellibaum | 503,256 | Aug. 15 | 1703 | 419 | 64 | 907 |
| Cotton openers and lappers. Damper for | R. Schaellibaum | 503,255 | Aug. 15 | 1701 | 418 | 64 | 906 |
| Cotton-press | J. L. Hayward | 501,419 | July 11 | 1422 | 356 | 64 | 273 |
| Cotton-press | J. L. McCutchcon | 502,313 | Aug. 1 | 97 | 23 | 64 | 583 |
| Cotton. Treating | H. Anthoni | 500,732 | July 4 | 323 | 86 | 64 | 61 |
| Counter for miscellaneous items. Pocket | E. Bersbach and A. W. Zietlow | 501,596 | July 18 | 1687 | 421 | 64 | 340 |



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|---|---|---|---|---|---|---|---|
| Coupling: *See* Car-coupling. Car and air-brake coupling. Carriage-coupling. Electro-magnetic safety-coupling. Hame-coupling. Hoop-coupling. Hose-coupling. Hose or pipe coupling. Pipe-coupling. Shaft-coupling. Thill-coupling. Wire-coupling. | | | | | | | |
| Coupling-rod connection | E. P. Warner | 502,794 | Aug. 8 | 941 | 929, 930 | 64 | 754 |
| Coupling-rods. Manufacture of jaws for | S. H. Stupakoff | 501,851 | July 18 | 2096 | 517, 518 | 64 | 410 |
| Cover. Box | J. R. Barry | 505,213 | Sept. 19 | 1489 | 388 | 64 | 1577 |
| Cover-fastening. Pot | C. J. P. Blengräber | 505,422 | Sept. 26 | 1850 | 476 | 64 | 1658 |
| Cover for barrels, &c. Inside | J. J. Friederichs and H. C. Fliege | 503,474 | Aug. 15 | 1954 | 485 | 64 | 951 |
| Cover for pots, urns, jugs, &c | R. Boas | 505,647 | Sept. 26 | 2286 | 571 | 64 | 1735 |
| Cover for show-barrels. Hinged | W. R. and E. O. Hind | 503,930 | Aug. 22 | 2766 | 693 | 64 | 1119 |
| Cover. Milk-jar | C. N. Wilcox | 501,176 | July 11 | 1033 | 261 | 64 | 203 |
| Cover. Sap-bucket | M. R. Moss | 502,740 | Aug. 8 | 846 | 206 | 64 | 736 |
| Cracker-box | J. C. Loughry | 505,110 | Sept. 19 | 1328 | 343 | 64 | 1548 |
| Crane-operating mechanism | C. W. Parsons | 504,937 | Sept. 12 | 1034 | 266 | 64 | 1479 |
| Crane. Portable | C. H. King | 501,147 | July 11 | 986 | 251 | 64 | 194 |
| Crane. Steam hydraulic | W. S. Halsey | 505,220 | Sept. 19 | 1497 | 390 | 64 | 1578 |
| Crank | R. S. Lovelace | 503,865 | Aug. 22 | 2668 | 669 | 64 | 1100 |
| Crank-power for machinery | A. Wayne | 503,394 | Aug. 15 | 1929 | 479 | 64 | 947 |
| Cranks. Locking device for folding | D. F. Latin | 503,747 | Aug. 22 | 2512 | 625 | 64 | 1070 |
| Crate. Folding | S. I. Butters | 502,481 | Aug. 1 | 309 | 93 | 64 | 538 |
| Crate. Folding shipping | C. A. Daniels | 502,429 | Aug. 1 | 302 | 72 | 64 | 621 |
| Crate. Knockdown | J. Myers | 505,061 | Sept. 12 | 1239 | 318, 319 | 64 | 1518 |
| Crate or carrier. Fruit or vegetable | J. E. Routh | 504,623 | Sept. 5 | 499 | 128, 129 | 64 | 1364 |
| Cream-puff-filling machine | L. J. Anger | 504,857 | Sept. 12 | 905 | 234 | 64 | 1455 |
| Cream-separator | J. J. Berrigan | 501,039 | July 4 | 703 | 208 | 64 | 144 |
| Creamer. Centrifugal | J. J. Berrigan | 501,040 | July 4 | 795 | 208 | 64 | 145 |
| Creamer. Centrifugal | J. E. Folk | 504,430 | Sept. 5 | 196 | 50 | 64 | 1307 |
| Creamer. Centrifugal | N. G. Williams | 500,787 | July 4 | 405 | 107 | 64 | 75 |
| Credit-balance register | A. L. Norfleet | 502,133 | July 25 | 2550 | 639 | 64 | 510 |
| Creosote compound | B. R. Seifert | 501,235 | July 11 | 1115 | ..... | 64 | 218 |
| Crib. Folding | J. G. Abbott and S. R. Robinson | 504,646 | Sept. 5 | 533 | 137 | 64 | 1371 |
| Crimping-machine | W. E. Frost | 501,044 | July 4 | 802 | 209 | 64 | 146 |
| Crimping-tool | F. C. Wilson | 502,339 | Aug. 1 | 143 | 33 | 64 | 592 |
| Crocheting-machine | J. M. Merrow and W. H. Stedman | 505,275 | Sept. 19 | 1582 | 412, 413 | 64 | 1504 |
| Cross-tie and railway construction. Metallic | J. M. Price | 504,540 | Sept. 5 | 381 | 95 | 64 | 1341 |
| Cross-tie and railway-support. Metallic | J. M. Price | 503,253 | Aug. 15 | 1698 | 418 | 64 | 905 |
| Crozing-machine | H. Campbell | 505,591 | Sept. 26 | 2157 | 545, 546 | 64 | 1716 |
| Crusher: *See* Corn and cob crusher. | | | | | | | |
| Crushing-machine | R. McCully | 500,596 | July 4 | 88 | 25 | 64 | 18 |
| Crushing-machine | R. McCully | 500,597 | July 4 | 90 | 25, 26 | 64 | 18 |
| Crushing-machine | R. McCully | 500,598 | July 4 | 92 | 26, 27 | 64 | 18 |
| Crushing-machine | R. McCully | 501,843 | July 18 | 2081 | 514, 515 | 64 | 408 |
| Crushing or grinding mill | W. A. Merralls | 501,433 | July 11 | 1437 | 360 | 64 | 276 |
| Cuff | F. C. Dumas | 503,762 | Aug. 22 | 2532 | 630 | 64 | 1073 |
| Cuff-holder | W. C. Holmes | 501,892 | July 18 | 2154 | 534 | 64 | 430 |
| Cuff-holder | J. V. Pilcher | 502,581 | Aug. 1 | 558 | 133 | 64 | 668 |
| Cuffs, &c. Holder for | R. Katzer | 503,858 | Aug. 22 | 2659 | 666 | 64 | 1099 |
| Culinary utensil | J. H. Norton | 502,748 | Aug. 8 | 801 | 210 | 64 | 739 |
| Culinary vessel | J. Cunningham | 504,022 | Aug. 29 | 2933 | 734 | 64 | 1166 |
| Cultivator | C. Aulsber | 500,942 | July 4 | 492 | 128 | 64 | 90 |
| Cultivator | D. E. Barton | 500,702 | July 4 | 270 | 73 | 64 | 51 |
| Cultivator | J. L. Brinly | 501,818 | July 18 | 2053 | 505 | 64 | 402 |
| Cultivator | R. S. Buch | 502,171 | July 25 | 2617 | 659, 660 | 64 | 523 |
| Cultivator | L. S. Butt | 505,506 | Sept. 26 | 1977 | 508 | 64 | 1681 |
| Cultivator | C. T. Eldredge | 500,873 | July 4 | 540 | 140 | 64 | 98 |
| Cultivator | H. P. Erb | 502,957 | Aug. 8 | 1216 | 299, 300 | 64 | 804 |
| Cultivator | J. Killefer | 503,145 | Aug. 15 | 1523 | 374 | 64 | 874 |
| Cultivator | M. Macleod | 501,285 | July 11 | 1103 | 202 | 64 | 932 |
| Cultivator | J. A. Parker | 502,135 | July 25 | 2553 | 640 | 64 | 511 |
| Cultivator | W. H. Traphagen | 504,406 | Sept. 5 | 151 | 39, 40 | 64 | 1296 |
| Cultivator-blade | B. F. Darby | 504,969 | Sept. 12 | 1090 | 279 | 64 | 1490 |
| Cultivator disk attachment | A. Caldwell | 501,916 | July 25 | 2221 | 553, 554 | 64 | 448 |
| Cultivator-disk cleaner | A. Caldwell | 501,917 | July 25 | 2222 | 554 | 64 | 448 |
| Cultivator, &c. Garden | G. Adair | 504,189 | Aug. 29 | 3212 | 800 | 64 | 1219 |
| Cultivator. Listing | J. A. Herdman | 501,940 | July 25 | 2251 | 562 | 64 | 454 |
| Cultivator-tooth. Spring | G. Moore | 503,288 | Aug. 15 | 1756 | 434 | 64 | 916 |
| Cultivator. Wheel | E. A. Couch | 500,799 | July 4 | 427 | 112 | 64 | 79 |
| Cup and saucer | O. Walter | 503,508 | Aug. 15 | 2104 | 527 | 64 | 978 |
| Curling-iron | R. C. Booker | 501,646 | July 18 | 1769 | 440 | 64 | 354 |
| Curling-iron | H. Saxton | 502,385 | Aug. 1 | 230 | 54 | 64 | 608 |
| Curling-iron holder | E. E. Chapman | 502,456 | Aug. 1 | 348 | 83 | 64 | 620 |
| Current-motor | L. C. Neal | 502,931 | Aug. 8 | 1173 | 289 | 64 | 797 |
| Current motors. Regulation of alternating | M. von Dolivo-Dobrowolsky | 503,038 | Aug. 8 | 1341 | 331 | 64 | 827 |
| Currents. Method of and means for producing alternating | P. Nordmann | 501,094 | July 11 | 897 | 230 | 64 | 179 |
| Currycomb | E. Thomson | 500,630 | July 4 | 148 | 39 | 64 | 29 |
| Currycomb | J. Du Shane | 505,756 | Sept. 26 | 2432 | 614 | 64 | 1766 |
| Currycomb | E. E. Miller | 502,933 | July 25 | 2721 | 686 | 64 | 539 |

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| Invention. | Name. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drgs. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|---|
| Curtain-fixture | G. A. Crisson | 503,037 | Aug. 8 | 1339 | 330 | 64 | 827 |
| Curtain-fixture | A. W. Herr | 502,074 | July 25 | 2459 | 618 | 64 | 492 |
| Curtain-fixture hanger | W. Martin | 502,823 | Aug. 8 | 991 | 242 | 64 | 763 |
| Curtain or shade roll | J. A. Howell | 503,601 | Aug. 22 | 2377 | 566 | 64 | 1024 |
| Curtain-ring | J. M. Guilbert | 505,625 | Sept. 26 | 2404 | 558 | 64 | 1725 |
| Curtain ring and pin. Coubined | J. Lines | 504,532 | Sept. 5 | 369 | 93 | 64 | 1338 |
| Curtain-rod and bracket | J. Day | 502,659 | Aug. 1 | 691 | 165 | 64 | 693 |
| Curtain-rod and bracket. Extension | J. G. Brothwell and F. K. Phillips | 502,654 | Aug. 1 | 693 | 164 | 64 | 691 |
| Curtain-roller. Coach | J. A. Howell | 504,163 | Aug. 29 | 3157 | 788 | 64 | 1209 |
| Curtain stretcher-frames. Easel attachment for lace- | A. P. Bohlinger | 505,306 | Sept. 19 | 1608 | 424 | 64 | 1605 |
| Cushion: *See* Treadle-cushion. | | | | | | | |
| Cuspidor | C. R. McComb | 502,312 | Aug. 1 | 96 | 22 | 64 | 583 |
| Cut-out. Automatic | C. Hoffmann | 502,518 | Aug. 1 | 454 | 110 | 64 | 650 |
| Cut-out. Electric | H. N. Prentice | 504,938 | Sept. 12 | 1038 | {266 / 267} | 64 | 1480 |
| Cut-out. Electrical | L. B. Matson | 503,867 | Aug. 22 | 2670 | 669 | 64 | 1100 |
| Cut-out. Fusible | E. Thomson | 502,330 | Aug. 1 | 133 | 30 | 64 | 590 |
| Cut-out. Safety | O. Offrell | 500,601 | July 4 | 96 | 28 | 64 | 19 |
| Cut-out. Thermal | W. M. Goodridge | 504,344 | Sept. 5 | 49 | 14 | 64 | 1290 |
| Cutter: *See* Band-cutter. Biscuit-cutter. Bolt-cutter. Brick or tile cutter. Cake or biscuit cutter. Cigar-tip cutter. Cigar-wrapper cutter. Egg-cutter. Feed-cutter. Film-cutter. Finger or toe nail cutter. Flue-cutter. Glass-tube cutter. Kraut-cutter. Oil-cloth cutter. Paper-cutter. Potato-cutter. Rotary cutter. Stalk-cutter. Thrashing-machine band-cutter. Tube-cutter. Vegetable-cutter. Weed-cutter. | | | | | | | |
| Cutter-head | W. Morgan | 501,685 | July 18 | 1836 | 457 | 64 | 365 |
| Cutter-head for wood-turning machines | S. K. White and D. H. Bacon | 503,632 | Aug. 22 | 2397 | 580 | 64 | 1033 |
| Cutter-head. Rotary | K. Nelson | 501,956 | July 25 | 2273 | 568 | 64 | 457 |
| Cutters. Making rotary toothed | H. W. Winter | 501,555 | July 18 | 1628 | 407 | 64 | 329 |
| Cutting-off and forming tool | G. E. Witherell | 504,688 | Sept. 5 | 613 | 157 | 64 | 1386 |
| Cutting-tools or tool-heads. Shank for holding rotary | S. E. Freeman | 503,656 | Aug. 22 | 2360 | 580 | 64 | 1040 |
| Cyanides and ammonia. Method of and apparatus for producing | T. B. Fogarty | 500,651 | July 4 | 186 | 48, 49 | 64 | 37 |
| Cycle-brake construction | A. Perkins | 505,776 | Sept. 26 | 2467 | 622 | 64 | 1773 |
| Cycle. Child's | O. Gebricke | 501,561 | July 18 | 1538 | 387 | 64 | 311 |
| Cycle driving mechanism | W. W. Carns | 501,054 | July 11 | 820 | 213 | 64 | 165 |
| Cycle mud-guard | J. Gardner and D. Marshall | 505,290 | Sept. 19 | 1612 | 419 | 64 | 1600 |
| Cycle mud-guard | C. E. Hadley | 500,889 | July 4 | 562 | 146 | 64 | 103 |
| Cycle-pedal. Dust-proof | A. Perkins | 500,942 | July 4 | 628 | 166 | 64 | 115 |
| Cycle saddle | T. Guthrie and W. T. Hall | 503,236 | Aug. 15 | 1669 | 410 | 64 | 900 |
| Cycle speed-multiplying mechanism | H. Trépreau | 502,332 | Aug. 1 | 136 | 31 | 64 | 590 |
| Cycle-stand | E. Wood | 503,185 | Aug. 15 | 1591 | 391 | 64 | 897 |
| Cycle-wheel | A. C. Brown | 504,413 | Sept. 5 | 163 | 43 | 64 | 1301 |
| Cycle-wheel | A. Perkins | 502,509 | Aug. 1 | 424 | 100 | 64 | 645 |
| Cycle-wheel | J. Roussat | 501,166 | July 11 | 1019 | 258 | 64 | 200 |
| Cycles. Construction of | J. M. and W. Starley | 500,971 | July 4 | 696 | 182 | 64 | 126 |
| Cyclometer | C. F. Fernald | 503,953 | Aug. 29 | 2924 | 705 | 64 | 1147 |
| Cyclometer | G. E. Kühn | 503,485 | Aug. 15 | 2089 | 516 | 64 | 971 |
| Cyclone-cave | O. O. Walker | 503,689 | Aug. 22 | 2412 | 601 | 64 | 1049 |
| Damper-regulator | J. H. Blake | 504,659 | Sept. 5 | 551 | 141 | 64 | 1374 |
| Damper. Stovepipe | C. T. Redfield | 502,203 | July 25 | 2668 | 674 | 64 | 533 |
| Darning implement | A. Bocher | 501,817 | July 18 | 2051 | 505 | 64 | 402 |
| Dash. Carriage | C. A. Behlen | 500,989 | July 4 | 717 | 189 | 64 | 130 |
| Dash. Vehicle | C. A. Behlen | 500,845 | July 4 | 496 | 129 | 64 | 91 |
| Davit for putting out or taking in ships' boats | J. Sample | 505,779 | Sept. 26 | 2472 | 623 | 64 | 1774 |
| Deflector. Automatic wind- | B. V. Crumrine | 504,563 | Sept. 5 | 419 | 106 | 64 | 1347 |
| Deborning implement | R. G. Rader | 503,617 | Aug. 22 | 2306 | 575 | 64 | 1029 |
| Dental articulation-cup | G. K. Bagby | 502,164 | July 25 | 2607 | 656 | 64 | 521 |
| Dental articulator | G. W. Simpson | 501,741 | July 18 | 1933 | 474 | 64 | 382 |
| Dental bracket | A. B. Elmorr | 504,928 | Sept. 12 | 857 | 220 | 64 | 1144 |
| Dental bracket | E. R. Pettit | 502,933 | Aug. 8 | 1176 | 290 | 64 | 797 |
| Dental disk and carrier | R. G. Stanbrough | 503,250 | Aug. 15 | 1705 | 419 | 64 | 907 |
| Dental disk-holder | E. Nelson | 505,131 | Sept. 19 | 1347 | 347 | 64 | 1551 |
| Dental-disk holder | R. G. Stanbrough | 505,490 | Sept. 26 | 1932 | 498 | 64 | 1674 |
| Dental drill | W. S. How | 503,744 | Aug. 22 | 2506 | 624 | 64 | 1064 |
| Dental engine | B. S. Brown | 504,487 | Sept. 5 | 287 | 73, 74 | 64 | 1323 |
| Dental engine | A. W. Browne | 503,737 | Aug. 22 | 2493 | {620 / 621} | 64 | 1066 |
| Dental engine | C. Doriot | 503,740 | Aug. 22 | 2499 | {621 / 622} | 64 | 1067 |
| Dental engine | C. Doriot | 504,490 | Sept. 5 | 295 | 75 | 64 | 1325 |
| Dental engine | C. Doriot | 504,491 | Sept. 5 | 298 | 76 | 64 | 1325 |
| Dental engine | W. A. Johnston and A. W. Browne | 501,075 | July 11 | 851 | {220 / 221} | 64 | 171 |
| Dental-engine handpiece | S. H. Brooks | 504,704 | Sept. 12 | 646 | 164 | 64 | 1404 |
| Dental fillings. Preparing | A. W. Johnston | 503,419 | Aug. 15 | 1902 | 487 | 64 | 953 |
| Dental mallet | J. H. Desmonet | 504,912 | Sept. 12 | 993 | 256 | 64 | 1472 |
| Dental plates. Apparatus for casting aluminium | W. M. Sharp | 502,809 | July 25 | 2679 | 676 | 64 | 535 |
| Dental plugger | A. A. Dilleshay | 502,359 | Aug. 1 | 172 | 40 | 64 | 598 |
| Dental plugger | C. Doriot | 504,489 | Sept. 5 | 293 | 75 | 64 | 1325 |
| Dental tool | H. C. Wofford | 501,127 | July 11 | 954 | 244 | 64 | 199 |
| Derailing-switch | W. Wharton, Jr | 505,076 | Sept. 12 | 1275 | 328 | 64 | 1584 |
| Desk | F. H. Cutler | 505,585 | Sept. 26 | 2163 | 547 | 64 | 1717 |
| Desk. Combined sitting and standing | A. Hopkins | 505,765 | Sept. 26 | 2452 | 617 | 64 | 1770 |



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|---|---|---|---|---|---|---|---|
| Desks. Device for operating the slides or rests of | J. B. Pooley | 500,610 | July 4 | 122 | 32, 33 | 64 | 24 |
| Dials. Apparatus for enameling | D. R. Buchanan | 503,525 | Aug. 15 | 2126 | {533 / 534} | 64 | 902 |
| Dice-shaking machine. Coin-controlled | O. G. Klugel | 502,495 | Aug. 1 | 417 | 98, 99 | 64 | 643 |
| Dice-throwing machine. Coin-controlled | W. Cahoon, Jr | 502,876 | Aug. 8 | 1068 | 263 | 64 | 778 |
| Die: *See* Forging-die. Type-die. Forging and bending die. | | | | | | | |
| Die-stock | J. G. Jackson | 504,084 | Aug. 29 | 3024 | 755 | 64 | 1184 |
| Digger: *See* Potato-digger. | | | | | | | |
| Direct-acting engine | W. A. Drewett | 503,931 | Aug. 15 | 1663 | 409 | 64 | 899 |
| Direct-acting engine | W. H. and M. R. Rust | 502,502 | Aug. 1 | 428 | 102 | 64 | 645 |
| Dirt or garbage receptacle | P. W. St. George | 502,595 | Aug. 1 | 580 | 139 | 64 | 673 |
| Dish-cleaner | W. A. Adams | 502,159 | July 25 | 2601 | 654 | 64 | 520 |
| Dish-cleaner | M. D. Colbath | 505,191 | Sept. 19 | 1452 | 373 | 64 | 1569 |
| Dish-cleaner | A. Insinger | 501,347 | July 11 | 1306 | {326 / 327} | 64 | 251 |
| Dishcloth-holder | C. Abell | 504,647 | Sept. 5 | 534 | 137 | 64 | 1371 |
| Dish-drainer | J. Chase | 503,278 | Aug. 15 | 1736 | 429 | 64 | 912 |
| Disinfecting device | H. L. Bennett | 500,734 | July 4 | 326 | 87 | 64 | 61 |
| Disinfecting or vaporizing device | R. C. Woodcock and C. T. Kingzett | 502,544 | Aug. 1 | 504 | 120 | 64 | 650 |
| Disintegrating clay, ores, &c. Machine for | H. S. Albrecht | 504,689 | Sept. 5 | 615 | 157 | 64 | 1386 |
| Disintegrator | M. W. Leonhardt | 500,916 | July 4 | 597 | 156 | 64 | 110 |
| Display-cabinet | M. F. Dyer | 505,035 | Sept. 12 | 1199 | {308 / 309} | 64 | 1510 |
| Display-frame | W. O. Rogers | 500,745 | July 4 | 340 | 90 | 64 | 64 |
| Display glove-case | E. M. Rosenthal | 504,114 | Aug. 29 | 3080 | 771 | 64 | 1195 |
| Display-rack | M. R. Dickson | 504,913 | Sept. 12 | 995 | 256 | 64 | 1472 |
| Display-rack | C. Frankel | 500,879 | July 4 | 550 | 143 | 64 | 100 |
| Display-rack | C. Frankel | 504,916 | Sept. 12 | 1003 | 259 | 64 | 1474 |
| Display-stand | M. Anthony | 500,839 | July 4 | 488 | 127 | 64 | 89 |
| Displaying stand. Carpet- | C. Hafkemeyer | 502,716 | Aug. 8 | 817 | 198 | 64 | 730 |
| Distillation of hydrochloric acid. Apparatus for the | E. Solvay | 503,557 | Aug. 15 | 2186 | 546 | 64 | 994 |
| Distilling apparatus. Water- | W. Rochlitz | 505,641 | Sept. 26 | 2245 | 569 | 64 | 1732 |
| Distilling mash | R. Ilges | 502,079 | July 25 | 2467 | 620 | 64 | 494 |
| Distilling volatile substances. Apparatus for | F. G. du Pont | 503,586 | Aug. 22 | 2239 | 561 | 64 | 1019 |
| Distilling wood-waste | F. J. Bergmann | 504,264 | Aug. 29 | 3027 | ..... | 64 | 1241 |
| Ditching-machine | T. P. Concannon | 503,036 | Aug. 8 | 1338 | 330 | 64 | 827 |
| Ditching-machine | O. Hughes and J. S. Hull | 504,728 | Sept. 12 | 676 | {172 / 173} | 64 | 1410 |
| Dividers attachment | W. S. Smith | 504,116 | Aug. 29 | 3083 | 771 | 64 | 1195 |
| Diving apparatus | G. W. Smith | 503,753 | Aug. 22 | 2519 | 627 | 64 | 1071 |
| Doll | A. J. Holland | 503,967 | Aug. 29 | 2847 | 714 | 64 | 1151 |
| Doll | F. B Schultz | 504,627 | Sept. 5 | 504 | 129 | 64 | 1365 |
| Doll-heads. Apparatus for molding | L. A. J. Vallée and A. L. G. Schultz | 500,682 | July 4 | 240 | 63, 64 | 64 | 45 |
| Doll-producing blank | I. A. Gutsell | 503,316 | Aug. 15 | 1898 | 449 | 64 | 924 |
| Door and hinge | N. E. Wilson | 503,730 | Aug. 22 | 2477 | 616 | 64 | 1062 |
| Door-check | D. H. Haywood | 504,561 | Sept. 5 | 443 | 113 | 64 | 1353 |
| Door-check | K. Reichert | 505,329 | Sept. 19 | 1673 | 431 | 64 | 1611 |
| Door-check | R. L. Wilburn | 504,142 | Aug. 29 | 3125 | 781 | 64 | 1203 |
| Door check and spring | G. E. Dudley | 504,826 | Sept. 12 | 853 | 219 | 64 | 1444 |
| Door check and spring. Combined | S. S. Allin | 505,744 | Sept. 26 | 2412 | 610 | 64 | 1762 |
| Door-check. Pneumatic | J. W. Wetmore | 502,841 | Aug. 8 | 1017 | 248 | 64 | 769 |
| Door. Grain | J. Sheridan | 500,963 | July 4 | 677 | 178 | 64 | 123 |
| Door-hanger | G. A. Colton | 502,705 | Aug. 8 | 893 | 194 | 64 | 738 |
| Door-hanger | W. Kees | 504,591 | Sept. 5 | 458 | 117 | 64 | 1355 |
| Door-hanger | T. C. Prouty | 502,582 | Aug. 1 | 559 | 133 | 64 | 668 |
| Door hanger. Sliding | W. Grabler | 503,535 | Aug. 15 | 2142 | 537 | 64 | 985 |
| Door-opening or closing device | J. H. Whitaker | 505,376 | Sept. 19 | 1747 | 453 | 64 | 1625 |
| Door-operating apparatus. Electric | O. H. Hicks and R. F. Troy | 505,270 | Sept. 19 | 1570 | 410 | 64 | 1592 |
| Door-operating apparatus. Electric | O. H. Hicks and R. F. Troy | 505,271 | Sept. 19 | 1574 | {410 / 411} | 64 | 1593 |
| Door-operating device | P. Berger | 503,782 | Aug. 22 | 2350 | 637 | 64 | 1079 |
| Door-operating device | C. L. Rice | 503,985 | Aug. 29 | 2869 | {719 / 720} | 64 | 1155 |
| Door or shutter. Fireproof | J. Gascoigne | 505,518 | Sept. 26 | 2004 | 513 | 64 | 1686 |
| Door or shutter opener | J. Birkey | 504,318 | Sept. 5 | 9 | 3 | 64 | 1279 |
| Door-register for watchmen. Electric | W. R. Patterson | 504,741 | Sept. 12 | 713 | 178 | 64 | 1417 |
| Door. Revolving storm- | D. G. Rush | 501,538 | July 18 | 1593 | 401 | 64 | 321 |
| Door-securer | J. N. Beall | 504,653 | Sept. 5 | 542 | 139 | 64 | 1372 |
| Door-securer | C. M. Fowler | 504,207 | Aug. 29 | 3041 | 808 | 64 | 1224 |
| Door-securer | F. J. Hales | 503,536 | Aug. 15 | 2143 | 538 | 64 | 986 |
| Door spring, check, and latch. Combined | C. Winckhofer | 501,702 | July 18 | 1865 | 464 | 64 | 370 |
| Doors. Device for simultaneously moving double | B. J. H. de Vry | 503,361 | Aug. 15 | 1895 | 467 | 64 | 936 |
| Doors. Time releasing device for gravity | W. L. Weller, Jr | 505,415 | Sept. 19 | 1810 | 469 | 64 | 1633 |
| Double turning shovel and colter | J. H. Cole | 503,123 | Aug. 15 | 1489 | 366 | 64 | 887 |
| Dough-mixer | T. Gaskins | 504,873 | Sept. 12 | 929 | 239 | 64 | 1459 |
| Dough-mixing apparatus | S. L. Hall | 500,656 | July 4 | 200 | 52 | 64 | 39 |
| Dough-raiser | E. H. MacIntosh | 505,364 | Sept. 19 | 1734 | 449 | 64 | 1622 |
| Doweling. Method of and machine for | H. Campbell | 502,656 | Aug. 1 | 685 | {164 / 165} | 64 | 692 |
| Draft-equalizer | J. W. Gamble | 505,398 | Sept. 19 | 1787 | 463 | 64 | 1633 |
| Draft-equaliser | H. M. and R. M. Hickok | 501,141 | July 11 | 974 | {248 / 249} | 64 | 192 |
| Draft-equalizer | G. Jones | 500,808 | July 4 | 438 | 115 | 64 | 81 |
| Draft-evener | H. H. Harnden | 505,160 | Sept. 19 | 1408 | 362 | 64 | 1561 |
| Draft-spring | N. H. Davis | 503,408 | Aug. 15 | 1943 | 483 | 64 | 950 |
| Drafting device. Tailor's | A. L. Faestel | 503,741 | Aug. 22 | 2502 | 623 | 64 | 1067 |
| Drapery hook and pin | F. S. McKenney | 500,744 | July 4 | 339 | 90 | 64 | 63 |
| Draw-bar attachment | W. J. Walker and A. L. Bedford | 500,728 | July 4 | 318 | 85 | 64 | 60 |
| Drawer-lock | L. C. Brown | 505,799 | Sept. 26 | 2502 | {631 / 632} | 64 | 1760 |
| Drawer-slide and extension-support | V. R. Harvey | 500,575 | July 4 | 58 | 17 | 64 | 13 |

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| Invention. | Name. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drg. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|---|
| Drawing-board tilting device | L. P. Streeter | 504,951 | Sept. 12 | 1056 | 271 | 64 | 1483 |
| Drawing-frame | C. S. Robinson | 505,371 | Sept. 19 | 1742 | 451 | 64 | 1623 |
| Drawing or stamping press | E. Jordan | 503,422 | Aug. 15 | 1967 | 486, 489 | 64 | 953 |
| Dredge. Hydraulic | A. W. Robinson | 504,750 | Sept. 12 | 728 | 181, 182 | 64 | 1420 |
| Dredger | L. W. Bates | 503,739 | Aug. 22 | 2481 | 617 | 64 | 1063 |
| Dredger | L. W. Bates | 503,733 | Aug. 22 | 2483 | 617, 618 | 64 | 1063 |
| Dredger | L. W. Bates | 503,734 | Aug. 22 | 2485 | 618, 619 | 64 | 1064 |
| Dredger. Hydraulic | C. E. and F. Ellicott | 503,655 | Aug. 22 | 2358 | 589 | 64 | 1039 |
| Dredger-mast | W. B. Pleas | 505,176 | Sept. 19 | 1431 | 368 | 64 | 1566 |
| Dredging apparatus | W. E. Chilson | 501,492 | July 18 | 1524 | 383 | 64 | 808 |
| Dredging apparatus | C. G. Collins | 501,870 | July 18 | 2121 | 424, 425, 426 | 64 | 415 |
| Dredging apparatus | J. Price, Jr | 500,818 | July 4 | 452 | 118, 119, 120 | 64 | 83 |
| Dredging-machine | W. B. Pleas | 503,934 | Aug. 8 | 1178 | 290 | 64 | 798 |
| Dredging-machine | J. E. Walsh | 501,122 | July 11 | 950 | 242 | 64 | 187 |
| Dress-shield | H. Moschcowitz | 500,928 | July 4 | 614 | 160 | 64 | 112 |
| Dress-stiffeners. Machine for making | I. D. Warner | 500,636 | July 4 | 160 | 42 | 64 | 32 |
| Drier: *See* Brewer's-grain drier. Clothes-drier. Fruit-drier. Fruit or vegetable drier. Hay-drier. Laundry-drier. Preservative drier. Sand or gravel drier. | | | | | | | |
| Drier | D. L. Humason | 504,270 | Aug. 29 | 3338 | 834, 835 | 64 | 1243 |
| Drier and boiler. Combined | E. Holthaus | 504,269 | Aug. 29 | 3336 | 834 | 64 | 1242 |
| Drier for cereals, &c | P. Borgarelli | 504,320 | Sept. 5 | 11 | 4 | 64 | 1273 |
| Drill: *See* Dental drill. Grain-drill. Rock-drill. | | | | | | | |
| Drill | C. Grotz | 505,190 | Sept. 19 | 1466 | 378 | 64 | 1572 |
| Drill-brace | H. A. L. Barry | 504,147 | Aug. 29 | 3131 | 783 | 64 | 1204 |
| Drill-press | H. H. Fuller | 505,517 | Sept. 26 | 2003 | 512 | 64 | 1686 |
| Drill-press | A. J. F. Mill | 503,153 | Aug. 15 | 1536 | 377, 378 | 64 | 876 |
| Drilling-machine | E. R. Lockwood | 504,599 | Sept. 5 | 479 | 120 | 64 | 1357 |
| Drilling-machine | A. Vanderbeek and L. C. Worron | 504,280 | Aug. 29 | 3364 | 841 | 64 | 1248 |
| Drilling-machine attachment | J. J Stevens | 503,012 | Aug. 8 | 1304 | 319 | 64 | 820 |
| Drilling-machine. Multiple | D. E. and L. E. Whiton | 500,646 | July 4 | 175 | 45 | 64 | 35 |
| Drilling-machines. Electric motor for rotary | R. M. Jones | 502,098 | July 25 | 2496 | 627 | 64 | 499 |
| Drink-mixer | W. F. Adancourt | 505,692 | Sept. 26 | 2335 | 592 | 64 | 1748 |
| Drip-trough | J. A. Knisley | 504,420 | Sept. 5 | 180 | 47 | 64 | 1304 |
| Driving mechanism. Reversing | H. C. Baker | 504,651 | Sept. 5 | 538 | 138 | 64 | 1372 |
| Driving mechanism. Safety | E. W. Ross | 504,479 | Sept. 5 | 273 | 71 | 64 | 1321 |
| Driving-wheel | G. D. Munsing | 500,669 | July 4 | 227 | 59 | 64 | 43 |
| Driving-wheel adjustment | S. H. Percy | 501,625 | July 18 | 1739 | 433 | 64 | 348 |
| Drum | S. E. Cox | 504,910 | Sept. 12 | 991 | 255 | 64 | 1472 |
| Drum-case | E. Boulanger | 501,318 | July 11 | 1242 | 313 | 64 | 240 |
| Drum. Heating | R. Pugh | 502,999 | Aug. 8 | 1285 | 314 | 64 | 816 |
| Drum. Heating | F. A. Smith | 501,901 | July 18 | 2184 | 542 | 64 | 425 |
| Drying apparatus | E. F. Mead | 505,116 | Sept. 19 | 1338 | 345 | 64 | 1550 |
| Drying-machine | J. K. Proctor | 502,237 | July 25 | 2730 | 688, 689 | 64 | 544 |
| Drying-machine | J. K. Proctor | 504,747 | Sept. 12 | 722 | 180 | 64 | 1419 |
| Drying-roll driving-gear | W. C. Mackinney | 503,380 | Aug. 15 | 1912 | 474 | 64 | 944 |
| Duplicating-machine. Automatic | R. Morgenegier | 501,091 | July 11 | 892 | 227, 228, 229 | 64 | 176 |
| Dust-collector | A. P. Gould | 502,883 | Aug. 8 | 1079 | 266 | 64 | 780 |
| Dust collector and separator | M. F. Gale | 502,071 | July 25 | 2453 | 616 | 64 | 491 |
| Dust-pan | A. L. Hollander | 504,474 | Sept. 5 | 266 | 69 | 64 | 1320 |
| Dust-pan | A. L. Hollander | 504,879 | Sept. 12 | 938 | 242 | 64 | 1461 |
| Dust-pan | W. S. McCay | 502,235 | July 25 | 2723 | 667 | 64 | 543 |
| Dust-pans. Folding handle for | E. L. Hiatt | 502,256 | Aug. 1 | 65 | 15 | 64 | 578 |
| Dust. Treating flue- | M. W. Iles | 500,580 | July 4 | 66 | 19 | 64 | 13 |
| Dye. Black | L. Gans and M. Hoffmann | 501,500 | July 18 | 1538 | ..... | 64 | 311 |
| Dye. Black azo | R. Lauch and C. Krekeler | 502,366 | Aug. 1 | 199 | ..... | 64 | 602 |
| Dye. Black azo | A. F. Poirrier and D. A. Rosenstiehl | 502,913 | Aug. 8 | 1133 | ..... | 64 | 790 |
| Dye. Blue alizarin | R. E. Schmidt | 502,765 | Aug. 8 | 898 | ..... | 64 | 744 |
| Dye. Blue-black tetrazo | M. Ulrich and R. Lauch | 501,118 | July 11 | 944 | ..... | 64 | 196 |
| Dye. Green-blue alizarin | R. Bohn | 503,603 | Aug. 1 | 598 | ..... | 64 | 675 |
| Dye. Orange | F. Bender | 503,305 | Aug. 15 | 1784 | ..... | 64 | 921 |
| Dye. Red azo | A. G. Green and T. A. Lawson | 500,761 | July 4 | 368 | ..... | 64 | 68 |
| Dye. Red azo | A. G. Green and T. A. Lawson | 500,762 | July 4 | 370 | ..... | 64 | 69 |
| Dye. Reddish-blue azo | R. Lauch and C. Krekeler | 502,369 | Aug. 1 | 200 | ..... | 64 | 602 |
| Dye. Substantive brown | R. Lauch | 503,148 | Aug. 15 | 1527 | ..... | 64 | 874 |
| Dye. Triphenylmethane | F. Runkel | 501,104 | July 11 | 919 | ..... | 64 | 182 |
| Dye. Violet | H. Hassencamp | 501,069 | July 11 | 841 | ..... | 64 | 169 |
| Dye. Violet | C. Müller | 501,434 | July 11 | 1439 | ..... | 64 | 277 |
| Dye. Violet-red | I. Lifschütz | 500,917 | July 4 | 306 | ..... | 64 | 110 |
| Dyeing apparatus | S. C. Ayers | 504,291 | Aug. 29 | 3371 | 843 | 64 | 1249 |
| Dyeing apparatus | L. Weldon | 501,858 | July 18 | 2104 | 530 | 64 | 412 |
| Dyeing, &c. Apparatus for | H. Schwabe | 504,758 | Sept. 12 | 740 | 184 | 64 | 1423 |
| Dyeing apparatus. Yarn- | W. Laidlaw | 501,517 | July 18 | 1526 | 394 | 64 | 316 |
| Dyeing black | W. Pätzinger | 501,160 | July 11 | 1010 | ..... | 64 | 198 |
| Dyeing-machine | J. H. Lorimer | 505,471 | Sept. 26 | 1906 | 491 | 64 | 1669 |
| Dyeing-machine. Centrifugal | L. Weldon | 505,497 | Sept. 26 | 1943 | 501 | 64 | 1676 |



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|---|---|---|---|---|---|---|---|
| Dynamo or electric-motor brush | F. H. Sandherr | 504,177 | Aug. 29 | 3184 | 796 | 64 | 1214 |
| Dynamo or motor | R. C. Kintsing. (Reissue) | 11,354 | July 25 | 2785 | 703 | 64 | 554 |
| Dynamos. Method of and apparatus for regulating alternating-current | H. Lemp | 504,497 | Sept. 5 | 311 | 78, 79 | 64 | 1326 |
| Dynamometer | H. C. Stone | 504,286 | Aug. 29 | 3330 | 840 | 64 | 1247 |
| Ear-muff | I. B. Kleinert | 503,703 | Aug. 22 | 2435 | 606 | 64 | 1054 |
| Ear-phone attachment | C. W. Farr | 501,690 | July 18 | 1696 | 421 | 64 | 341 |
| Earpiece | R. Seiffert | 500,957 | July 4 | 650 | 175 | 64 | 130 |
| Ear-ring | J. Wodiska | 502,801 | Aug. 8 | 951 | 239 | 64 | 756 |
| Earth boring and drilling machine | W. E. Everitt | 502,956 | Aug. 8 | 1219 | 300 | 64 | 804 |
| Earthenware. Liquid material for the manufacture of | J. Klieber | 500,585 | July 4 | 73 | ..... | 64 | 15 |
| Eaves-trough | L. S. Bonbrake | 503,940 | Aug. 29 | 2786 | 698 | 64 | 1140 |
| Eaves-trough | J. Wock | 502,800 | Aug. 8 | 950 | 231 | 64 | 756 |
| Eaves-trough and support | M. M. Blacker | 503,119 | Aug. 15 | 1482 | 364 | 64 | 866 |
| Eaves-trough hanger | W. H. Mundwiler | 505,717 | Sept. 26 | 2373 | 599 | 64 | 1755 |
| Edger. Gang- | B. McIntire and C. J. Koefoed | 504,931 | Aug. 29 | 3275 | 818 | 64 | 1241 |
| Educational appliance | J. L. Collins | 501,675 | July 18 | 1823 | 454 | 64 | 362 |
| Educational appliance | A. Macfarlane | 505,667 | Sept. 26 | 2281 | 579 | 64 | 1740 |
| Educational appliance | J. E. von Tassel | 500,824 | July 4 | 463 | 122 | 64 | 85 |
| Egg-beater | G. W. Huber | 505,766 | Sept. 26 | 2453 | 617 | 64 | 1770 |
| Egg beater | F. E. Paine | 501,112 | Aug. 29 | 3079 | 770 | 64 | 1195 |
| Egg-cutter | C. Michel | 503,431 | Aug. 15 | 1780 | 491 | 64 | 955 |
| Egg or fruit carrier. Knockdown | T. S. Fitch | 503,313 | Aug. 15 | 1805 | 448 | 61 | 923 |
| Egg testing and handling device | W. N. B. Alderson | 505,429 | Sept. 26 | 1847 | 475 | 64 | 1657 |
| Eggs. Preserving | C. E. McClure | 504,525 | Sept. 5 | 372 | 94 | 64 | 1339 |
| Electric arc-lighting system | T. Spencer | 504,632 | Sept. 5 | 511 | 133 | 64 | 1367 |
| Electric battery | H. W. Libbey | 504,130 | Aug. 29 | 3104 | 777 | 64 | 1190 |
| Electric battery | J. H. Mason | 501,151 | July 11 | 992 | 252 | 64 | 195 |
| Electric body-battery | H. C. Wagner | 501,580 | July 18 | 1623 | 406 | 64 | 328 |
| Electric body-wear | W. H. Payne | 502,753 | Aug. 8 | 865 | 211 | 64 | 740 |
| Electric cable | T. Guillesume | 502,358 | Aug. 1 | 183 | 43 | 64 | 600 |
| Electric cable | M. G. Kellogg | 503,604 | Aug. 22 | 2283 | 500 | 64 | 1026 |
| Electric-circuit-closing device | W. Sears | 501,258 | July 11 | 1155 | 292 | 64 | 224 |
| Electric-circuit connection for signaling or telephone boxes. | J. E. Smith | 501,631 | July 18 | 1747 | 435 | 64 | 350 |
| Electric-circuit switch | W. McNeill and J. H. Tinder | 503,157 | Aug. 15 | 1544 | 379 | 64 | 877 |
| Electric conductor | J. W. Marsh | 504,397 | Sept. 5 | 136 | 36 | 64 | 1296 |
| Electric conductor | J. W. Marsh | 504,398 | Sept. 5 | 137 | 36 | 64 | 1296 |
| Electric-conductor switch | O. Offrell | 501,191 | July 11 | 1050 | 266 | 64 | 206 |
| Electric conductors. Automatic safety-joint for | J. H. Curry | 505,032 | Sept. 12 | 1196 | 307 | 64 | 1510 |
| Electric contact apparatus | J. P. B. Fiske | 501,206 | July 11 | 1073 | 273 | 64 | 211 |
| Electric-current generator. Alternating- | S. Sheldon and J. J. Rooney | 502,777 | Aug. 8 | 910 | 222 | 64 | 748 |
| Electric currents. Distribution of alternating | W. von Siemens | 502,642 | Aug. 1 | 744 | 179 | 64 | 703 |
| Electric currents. Meter for alternating, pulsating, or intermittent | T. Duncan | 501,000 | July 4 | 732 | 192, 193 | 64 | 133 |
| Electric distribution. System of | E. M. Bentley | 502,272 | Aug. 1 | 12 | 3 | 64 | 568 |
| Electric dry cell | R. Gabarro | 503,415 | Aug. 15 | 1955 | 485 | 64 | 952 |
| Electric engine | W. Lawrence | 503,487 | Aug. 15 | 2071 | 516, 517 | 64 | 972 |
| Electric-generator regulator | E. Thomson | 502,788 | Aug. 8 | 931 | 226, 227 | 64 | 752 |
| Electric generator. Self-exciting alternate-current | P. Diehl | 503,581 | Aug. 22 | 2229 | 550 | 64 | 1017 |
| Electric ignitor | W. F. West | 500,644 | July 4 | 173 | 44 | 64 | 34 |
| Electric indicator | J. L. Bradley | 504,196 | Aug. 29 | 3221 | 802 | 64 | 1221 |
| Electric-light fixture | F. W. Davenport | 504,866 | Sept. 12 | 949 | 237 | 64 | 1457 |
| Electric-light fixture | B. F. Flint | 505,097 | Sept. 19 | 1309 | 337 | 64 | 1544 |
| Electric-light hanger | J. P. Hebendahl | 504,082 | Aug. 29 | 3017 | 754 | 64 | 1182 |
| Electric light. Pendent incandescent | W. A. Johnston and J. C. Davidson. | 504,475 | Sept. 5 | 267 | 69 | 64 | 1320 |
| Electric light. Revolving | B. F. Flint | 505,098 | Sept. 19 | 1310 | 338 | 64 | 1544 |
| Electric-light switch | E. Blasser | 503,693 | Aug. 22 | 2421 | 603 | 64 | 1051 |
| Electric-lighting system | C. C. Cheaney | 502,702 | Aug. 8 | 800 | 193 | 64 | 727 |
| Electric-lighting system | P. Nordmann | 501,095 | July 11 | 899 | 231 | 64 | 179 |
| Electric-lighting system | L. Vialet-Chabrand | 503,688 | Aug. 22 | 2409 | 600 | 64 | 1040 |
| Electric-lighting system | A. G. Waterhouse | 505,241 | Sept. 19 | 1527 | 399 | 64 | 1584 |
| Electric lock | L. B. Tinkham | 504,462 | Sept. 5 | 241 | 63 | 64 | 1315 |
| Electric machine. Dynamo- | A. S. Atwater | 506,184 | Sept. 19 | 1441 | 371 | 64 | 1567 |
| Electric machine. Dynamo- | A. S. Atwater | 505,622 | Sept. 26 | 2199 | 556 | 64 | 1734 |
| Electric machine. Dynamo- | R. Eldredge | 504,914 | Sept. 12 | 996 | 257, 258 | 64 | 1473 |
| Electric machine. Dynamo- | H. L. Tyler | 501,117 | July 11 | 941 | 241 | 64 | 186 |
| Electric machine. Magneto- | F. X. Hofbauer | 502,670 | Aug. 1 | 722 | 173 | 64 | 698 |
| Electric machine or electric motor. Dynamo- | R. Lundell | 505,665 | Sept. 26 | 2240 | 578 | 64 | 1739 |
| Electric machine or motor. Dynamo- | C. S. Bradley | 503,574 | Aug. 22 | 2218 | 555 | 64 | 1015 |
| Electric machine or motor. Dynamo- | H. J. Ryan | 502,384 | Aug. 1 | 229 | 54 | 64 | 606 |
| Electric machine. Portable static | T. H. Patee | 504,740 | Sept. 12 | 706 | 177, 178 | 64 | 1417 |
| Electric-machine regulator. Dynamo- | W. H. Elkins | 501,059 | July 11 | 930 | 216 | 64 | 166 |
| Electric-machine regulator. Dynamo- | J. C. Henry | 504,216 | Aug. 29 | 3251 | 811 | 64 | 1226 |
| Electric machines and motors. Brush for dynamo- | J. P. B. Fiske | 501,060 | July 11 | 931 | 216 | 64 | 167 |
| Electric machines. Automatic regulator for dynamo- | O. P. Philbrick | 505,207 | Sept. 19 | 1480 | 386, 387 | 64 | 1575 |
| Electric machines. Brush-holder for dynamo- | H. G. Reist | 500,614 | July 4 | 126 | 34 | 64 | 25 |
| Electric machines. Device for regulating constant-current dynamo- | O. Offrell | 501,532 | July 18 | 1585 | 399 | 64 | 319 |
| Electric machines. Regulating dynamo- | M. J. Wightman and H. Lemp | 501,309 | July 11 | 1227 | 310 | 64 | 236 |
| Electric meter | F. L. Gregory | 503,505 | Aug. 22 | 2259 | 565 | 64 | 1021 |
| Electric meter | A. Reckenzaun | 503,805 | Aug. 22 | 2586 | 645, 646, 647 | 64 | 1084 |
| Electric motor | R. Aahley | 505,783 | Sept. 26 | 2476 | 624 | 64 | 1775 |
| Electric motor | E. R. Esmond | 505,396 | Sept. 19 | 1781 | 461 | 64 | 1631 |

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|---|---|---|---|---|---|---|---|
| Electric motor | J. MacHaffie | 500,663 | July 4 | 211 | 55, 56, 57 | 64 | 41 |
| Electric motor | M. W. Long | 501,842 | July 18 | 2080 | 513, 514 | 64 | 407 |
| Electric motor. Alternating-current | F. A. Wessel | 503,183 | Aug. 15 | 15e7 | 380 | 64 | 886 |
| Electric-motor controlling device | C. G. Curtis | 505,594 | Sept. 26 | 2102 | 547 | 64 | 1717 |
| Electric motor or dynamo | S. Paugh | 502,377 | Aug. 1 | 214 | 51 | 64 | 605 |
| Electric-motor regulating apparatus | C. H. Richardson | 503,750 | Aug. 22 | 2516 | 626 | 64 | 1050 |
| Electric-motor regulator | J. C. Davidson | 503,453 | Aug. 15 | 2009 | 408 | 64 | 961 |
| Electric-motor starting device | A. D. Adams | 503,568 | Aug. 22 | 2209 | 553 | 64 | 1013 |
| Electric motors. Apparatus for controlling | S. S. Wheeler | 503,690 | Aug. 22 | 2414 | 601, 602 | 64 | 1050 |
| Electric motors by alternating currents. Operating | A. Siemens | 504,630 | Sept. 5 | 509 | 131, 132 | 64 | 1366 |
| Electric motors. Means for regulating | C. H. Richardson | 501,961 | July 25 | 2079 | 570 | 64 | 459 |
| Electric motors. Switch for controlling | H. Sawyer | 505,004 | Sept. 12 | 1246 | 320 | 64 | 1519 |
| Electric motors. Switch for governing | E. F. Ramien | 505,053 | Sept. 12 | 1243 | 319 | 64 | 1518 |
| Electric primary battery | T. Coad | 505,392 | Sept. 19 | 1776 | 460 | 64 | 1630 |
| Electric regulator | D. M. Moore | 502,444 | Aug. 1 | 331 | 79 | 64 | 627 |
| Electric search-light | R. M. Hunter | 503,602 | Aug. 22 | 2278 | 569 | 64 | 1024 |
| Electric snap-switch | C. D. Haskins | 501,068 | July 11 | 840 | 218 | 64 | 168 |
| Electric switch | W. H. Dingle and J. M. Urquhart | 501,707 | July 18 | 1874 | 466 | 64 | 371 |
| Electric switch | A. B. Herrick | 504,528 | Sept. 5 | 362 | 91, 92 | 64 | 1337 |
| Electric switch | C. F. W. Höfer | 501,071 | July 11 | 844 | 219 | 64 | 169 |
| Electric switch | G. E. Linton | 500,918 | July 4 | 599 | 157 | 64 | 110 |
| Electric switch | J. H. McEvoy | 502,993 | Aug. 8 | 1268 | 310 | 64 | 813 |
| Electric switch | L. Morse | 502,825 | Aug. 8 | 995 | 242 | 64 | 784 |
| Electric switch | L. T. Stanley | 501,450 | July 11 | 1464 | 367 | 64 | 282 |
| Electric switch | E. Thomson | 500,629 | July 4 | 147 | 39 | 64 | 29 |
| Electric switch | F. A. Thum | 501,173 | July 11 | 1024 | 260 | 64 | 202 |
| Electric switch | E. P. Warner | 503,140 | Aug. 15 | 1582 | 389 | 64 | 885 |
| Electric switching apparatus | A. R. Roe | 502,104 | July 25 | 2506 | 629 | 64 | 500 |
| Electric switching apparatus | A. R. Roe | 502,105 | July 25 | 2506 | 630 | 64 | 501 |
| Electric-wire cleat | J. Pawolowski | 503,384 | Aug. 15 | 1916 | 475 | 64 | 945 |
| Electrical conduit for buildings | J. J. Powers and R. Van Buren | 503,873 | Aug. 22 | 2678 | 671 | 64 | 1102 |
| Electrical connection | W. I. Smith | 505,561 | Sept. 26 | 2102 | 533 | 64 | 1705 |
| Electrical connections. Binding-post for | A. Kohl | 503,427 | Aug. 15 | 1973 | 490 | 64 | 954 |
| Electrical contact device | J. K. Pritchard | 503,775 | Aug. 22 | 2551 | 635 | 64 | 1077 |
| Electrical conversion and distribution. System of | W. Stanley, Jr | 503,629 | Aug. 22 | 2312 | 577 | 64 | 1031 |
| Electrical distribution. System of | O. B. Shallenberger | 503,621 | Aug. 22 | 2310 | 576 | 64 | 1030 |
| Electrical energy. Method of and apparatus for the transmission of | R. M. Hunter | 503,341 | Aug. 15 | 1817 | 450 | 64 | 926 |
| Electrical heater | C. E. Jones | 502,494 | Aug. 1 | 415 | 98 | 64 | 643 |
| Electrical reciprocating motor | H. S. McKay | 503,213 | Aug. 15 | 1632 | 401, 402 | 64 | 894 |
| Electrical testing apparatus | C. H. Rudd | 504,751 | Sept. 12 | 730 | 182 | 64 | 1421 |
| Electrical testing apparatus | C. H. Rudd | 504,753 | Sept. 12 | 733 | 183 | 64 | 1422 |
| Electro-magnetic safety-coupling | E. Richter and C. Hoffmann | 503,727 | Aug. 22 | 2472 | 614 | 64 | 1061 |
| Electrode for firing explosives | J. N. and H. J. Harrison | 502,965 | Aug. 8 | 1232 | 303 | 64 | 807 |
| Electrodes. Manufacturing | C. Pollak | 505,125 | Sept. 19 | 1352 | | 64 | 1552 |
| Electrolysis. Apparatus for depolarizing in | J. C. Richardson | 501,628 | July 18 | 1742 | 434 | 64 | 349 |
| Electrolytic bath | S. H. Emmens | 501,906 | July 25 | 2330 | 584 | 64 | 460 |
| Electrolytic cell | T. Craney | 504,774 | Sept. 12 | 771 | 194 | 64 | 1428 |
| Electrolytic diaphragm | A. Breuer | 504,703 | Sept. 12 | 645 | | 64 | 1404 |
| Electrolyzing solutions. Method of and apparatus for | E. Hermite and A. Duboec | 501,783 | July 18 | 1902 | 494 | 64 | 394 |
| Elevated carrier | J. Temperley | 504,257 | Aug. 29 | 3318 | 829 | 64 | 1229 |
| Elevator: *See* Chain elevator. Hay-elevator. Hydraulic elevator. Sucker-rod elevator. | | | | | | | |
| Elevator | W. F. Austin | 503,781 | Aug. 22 | 2558 | 647 | 64 | 1078 |
| Elevator | N. Beckwith | 502,270 | Aug. 1 | 7 | 3 | 64 | 563 |
| Elevator | D. E. Crosby | 503,787 | Aug. 22 | 2565 | 634 | 64 | 1080 |
| Elevator | M. Kallenbach | 501,568 | July 18 | 1644 | 411 | 64 | 332 |
| Elevator | E. C. Heydenreich | 504,161 | Aug. 29 | 3155 | 788 | 64 | 1208 |
| Elevator-bucket | T. Long | 504,355 | Sept. 5 | 62 | 17 | 64 | 1242 |
| Elevator-controlling device | C. E. Moore | 502,372 | Aug. 1 | 204 | 49 | 64 | 603 |
| Elevator-door | R. T. Crane | 504,864 | Sept. 12 | 917 | 237 | 64 | 1457 |
| Elevator-door-actuating mechanism | E. B. Taylor | 504,096 | Aug. 29 | 3049 | 763 | 64 | 1189 |
| Elevator-doors. Means for operating | L. Freas | 503,345 | Aug. 15 | 1858 | 450 | 64 | 933 |
| Elevator-gate | G. Lagerquist and A. G. Nelson | 500,886 | July 4 | 74 | 21 | 64 | 15 |
| Elevator-gate | W. H. Traphagen | 504,407 | Sept. 5 | 154 | 40, 41 | 64 | 1299 |
| Elevator-gate-operating device | E. F. Shaw and J. N. Lorio | 502,936 | Aug. 8 | 1163 | 292 | 64 | 798 |
| Elevator-guard | O. L. Davis | 502,955 | Aug. 8 | 1212 | 298, 299 | 64 | 803 |
| Elevator hoisting apparatus | I. B. Coleman | 505,592 | Sept. 26 | 2160 | 546 | 64 | 1716 |
| Elevator-hoisting mechanism | C. E. Albro | 502,600 | Aug. 1 | 590 | 141 | 64 | 674 |
| Elevator-lock. Automatic | S. J. Parker | 501,658 | July 18 | 1792 | 446 | 64 | 358 |
| Elevator safety attachment | C. B. Labatt | 503,485 | Aug. 15 | 2070 | 516 | 64 | 972 |
| Elevator safety-catch | W. A. Finney | 505,289 | Sept. 19 | 1611 | 418 | 64 | 1600 |
| Elevator safety-clutch | C. E. Albro | 501,598 | July 11 | 1390 | 348 | 64 | 255 |
| Elevator safety device | N. V. Fitts | 500,876 | July 4 | 546 | 141, 142 | 64 | 99 |
| Elevator safety device | F. H. Shurts and H. G. Swan | 504,629 | Sept. 5 | 507 | 130, 131 | 64 | 1365 |
| Elevator-shaft | G. Vassar, Jr | 503,392 | Aug. 15 | 1927 | 478 | 64 | 947 |
| Elevators. Electrical indicator for | E. E. Peirce | 502,318 | Aug. 1 | 99 | 22, 24 | 64 | 564 |
| Elevators. Variable lifting device for | H. R. Koch | 501,840 | July 18 | 2077 | 512 | 64 | 407 |
| Embossing and printing press | J. Y. Johnston | 504,680 | Sept. 5 | 509 | 152, 153, 154 | 64 | 1383 |
| Embossing and punching machine | C. P. Riggins | 503,963 | Aug. 29 | 2841 | 710, 711 | 64 | 1150 |



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| Invention. | Name. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drgs. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|---|
| Embossing-machine | R. S. Anderson | 502,342 | Aug. 1 | 154 | 55, 56 | 64 | 594 |
| Embroidering-machine | E. Buss and A. Saurer | 503,309 | Aug. 15 | 1788 | 442, 443, 444, 445, 446, 447 | 64 | 921 |
| Embroidering-machine | R. Cornely | 503,229 | Aug. 15 | 1660 | 408 | 64 | 899 |
| Embroidering machine | E. and R. Cornely | 501,704 | July 18 | 1870 | 405, 406 | 64 | 371 |
| Embroidering machine | E. and R. Cornely | 504,332 | Sept. 5 | 33 | 10 | 64 | 1277 |
| Embroidering-machine fabric-holder | J. Kellenberger | 502,463 | Aug. 1 | 356 | 86 | 64 | 632 |
| Embroidering-machine fabric-holding frame | H. Hochrentener | 503,320 | Aug. 15 | 1816 | 450 | 64 | 926 |
| Emery-wheel | J. R. and A. M. Carpenter | 500,561 | July 4 | 40 | 12 | 64 | 9 |
| Emery-wheels. Construction of grinding | A. Johnston | 504,388 | Sept. 5 | 122 | | 64 | 1293 |
| Enamel. Carriage or buggy top | Z. T. Fowler | 504,339 | Sept. 5 | 43 | | 64 | 1279 |
| End-gate and scoop-board. Combined | W. H. Clark | 502,057 | July 25 | 2448 | 615 | 64 | 490 |
| End-gate and wagon-jack. Combined | H. M. Crippen | 501,330 | July 11 | 1269 | 318 | 64 | 243 |
| End-gate fastening | F. A. Havens | 502,095 | July 25 | 2403 | 607 | 64 | 498 |
| End-gate rods. Manufacturing | G. B. Freeman | 503,367 | Aug. 15 | 1895 | 469 | 64 | 940 |
| End-gate. Wagon | W. A. Crawford | 505,566 | Sept. 26 | 2113 | 535 | 64 | 1708 |
| End-gate. Wagon | G. C. Flagg | 504,448 | Sept. 5 | 218 | 58 | 64 | 1311 |
| Engine: *See* Carding-engine. Compound engine. Dental engine. Direct-acting engine. Electric engine. Expansion-engine. Gas-engine. Gas or petroleum-engine. Gas or vapor engine. Hydrocarbon-engine. Multi-cylinder engine. Oscillating engine. Pumping engine. Rotary engine. Rotary steam-engine. Steam engine. Traction engine. Wind-engine. | | | | | | | |
| Engine | J. H. Eickershoff | 501,224 | July 11 | 1101 | 240 | 64 | 253 |
| Engine | H. C. Miller | 503,154 | Aug. 15 | 1538 | 378 | 64 | 876 |
| Engine boiler. Locomotive or other | E. U. Gibbs | 502,117 | July 25 | 2529 | 634 | 64 | 503 |
| Engine cut off. Steam- | A. J. Bates | 505,153 | Sept. 19 | 1395 | 358 | 64 | 1559 |
| Engine exhaust. Steam | J. W. Cloud | 505,190 | Sept. 19 | 1451 | 373 | 64 | 1569 |
| Engine-foundations. Building | P. M. Bruner | 501,914 | July 25 | 2215 | 552, 553 | 64 | 447 |
| Engine operated by the explosion of combustible mixtures. | W. Hornsby, R. Edwards, and W. E. Gibbon. | 504,807 | Sept. 12 | 824 | 260 | 64 | 1438 |
| Engine operated by the explosion of mixtures of gas or hydrocarbon vapor and air. | H. A. Stuart | 502,837 | Aug. 8 | 1012 | 247 | 64 | 767 |
| Engine reversing-gear | T. F. Whittington and W. A. Fishering. | 500,985 | July 4 | 711 | 187 | 64 | 129 |
| Engine steering-gear. Traction | S. B. Hart | 505,523 | Sept. 26 | 2014 | 515 | 64 | 1688 |
| Engine steering mechanism. Traction | J. H. Stevenson | 504,894 | Sept. 12 | 961 | 248 | 64 | 1465 |
| Engines. Automatic throttle for | S. V. Rawlings | 501,959 | July 25 | 2277 | 569, 570 | 64 | 458 |
| Engines. Combustion-chamber for petroleum or hydrocarbon | J. Richardson and W. Norris | 500,674 | July 4 | 231 | 61 | 64 | 44 |
| Engines. Driving connection for compound | H. D. Dunbar | 502,956 | Aug. 8 | 1215 | 299 | 64 | 804 |
| Engines. Electric igniting device for gas | F. E. Tremper | 503,016 | Aug. 8 | 1209 | 320 | 64 | 921 |
| Engines. Means for starting gas or oil motor | J. Fielding | 505,760 | Sept. 26 | 2444 | 615 | 64 | 1768 |
| Engines. Oil-supplying device for hydrocarbon | J. Richardson and W. Norris | 500,673 | July 4 | 230 | 60, 61 | 64 | 44 |
| Engines. Power-measuring instrument for steam | W. T. Howard | 501,654 | July 18 | 1781 | 444, 445 | 64 | 356 |
| Engines. Pressure-regulator for pumping | E. Austin | 503,068 | Aug. 8 | 1302 | 341 | 64 | 635 |
| Engines. Rock-arm for horizontal | E. J. Armstrong | 500,840 | July 4 | 489 | 127 | 64 | 89 |
| Engines. Starting appliance for compound | H. J. Small and C. T. Noyes | 503,390 | Aug. 15 | 1922 | 477, 478 | 64 | 946 |
| Engines. Steam distribution in multiple expansion | F. M. Rites | 502,140 | July 25 | 2559 | 641, 642 | 64 | 512 |
| Engines. Steam distribution in triple-expansion | F. M. Rites | 502,501 | Aug. 1 | 425 | 101, 102 | 64 | 647 |
| Engines. Steering-gear for traction | G. W. Kramer | 502,930 | July 25 | 2712 | 684, 685 | 64 | 541 |
| Engines. Steering-gear for traction | G. W. Kramer | 503,146 | Aug. 15 | 1525 | 375 | 64 | 874 |
| Engines. Steering-gear for traction | G. W. Kramer | 503,147 | Aug. 15 | 1526 | 375 | 64 | 874 |
| Envelope | J. M. Cutter | 500,996 | July 4 | 726 | 190, 191 | 64 | 132 |
| Envelope | R. S. McCallen and M. M. Ross | 505,718 | Sept. 26 | 2374 | 600 | 64 | 1755 |
| Envelope and letter-sheet. Combined | N. W. Webb | 503,628 | Aug. 22 | 2322 | 579 | 64 | 1032 |
| Envelope-machines. Gumming mechanism for | A. A. Rheutan | 504,136 | Aug. 29 | 3113 | 779 | 64 | 1201 |
| Envelope. Mailing | J. T. Clark | 504,560 | Sept. 5 | 413 | 105 | 64 | 1347 |
| Envelope-opener | I. W. Heysinger | 504,392 | Sept. 5 | 58 | 16 | 64 | 1281 |
| Envelope. Package | M. Hess | 502,966 | Aug. 8 | 1233 | 303 | 64 | 807 |
| Envelope. Safety | J. J. Gleason | 502,560 | Aug. 1 | 523 | 125 | 64 | 663 |
| Envelope. Sample-bag | J. H. Heisser | 505,791 | Sept. 26 | 2480 | 628 | 64 | 1778 |
| Equalizer. Three-horse | J. C. Rice | 503,163 | Aug. 15 | 1558 | 383 | 64 | 880 |
| Eraser. Blackboard | W. J. Weaver | 503,020 | Aug. 8 | 1313 | 321 | 64 | 821 |
| Eraser-case | W. F. Torrey | 505,733 | Sept. 26 | 2397 | 606 | 64 | 1750 |
| Eraser-holder | W. M. Marshall | 501,863 | July 18 | 2172 | 534 | 64 | 423 |
| Eraser. Pocket | E. Luatnauer | 501,570 | July 18 | 1646 | 412 | 64 | 332 |
| Eraser. Rubber | A. S. Hobart and A. W. Eldredge | 501,421 | July 11 | 1494 | 357 | 64 | 273 |
| Evaporating-pan | F. M. Robertson | 503,498 | Aug. 15 | 2084 | 520, 521 | 64 | 975 |
| Evaporating-pan | E. R. Shaw | 501,848 | July 18 | 2091 | 516 | 64 | 409 |
| Excavating-machine | W. M. Gross | 505,460 | Sept. 26 | 1960 | 487 | 64 | 1685 |
| Excavating-machine | F. W. Vollhering and C. Bernhardt | 502,151 | July 25 | 2584 | 650 | 64 | 516 |
| Excavator | H. P. Bennett | 501,400 | July 11 | 1397 | 349, 350 | 64 | 267 |
| Excavator | E. Ruud | 502,469 | Aug. 1 | 368 | 88 | 64 | 634 |

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|---|---|---|---|---|---|---|---|
| Excelsior-machine | H. C. Cloyd | 505,752 | Sept. 26 | 2424 | 612 | 64 | 1764 |
| Exercising apparatus. Wrist and finger | R. Barclay | 505,745 | Sept. 26 | 2414 | 610 | 64 | 1762 |
| Expansion engine. Quadruple | J. Marshall | 503,056 | Aug. 8 | 1364 | 337 | 64 | 892 |
| Expansion-joint | J. Lister | 502,733 | Aug. 8 | 837 | 203 | 64 | 734 |
| Explosives. Apparatus for producing smokeless | F. G. du Pont | 503,584 | Aug. 22 | 2235 | 560 | 64 | 1018 |
| Explosives. Making smokeless | F. G. du Pont | 503,587 | Aug. 22 | 2241 | 561 562 | 64 | 1019 |
| Explosives. Making smokeless | F. G. and P. S. du Pont | 503,583 | Aug. 22 | 2231 | 560 | 64 | 1017 |
| Explosives. Making smokeless | F. G. and P. S. du Pont | 503,585 | Aug. 22 | 2236 | 561 | 64 | 1018 |
| Extractor: *See* Butter-extractor. Nail extractor. Honey-extractor. Pen-extractor. Lemon-juice extractor. | | | | | | | |
| Extracts. Process of and apparatus for making | M. Heftler and G. Benard | 503,237 | Aug. 15 | 1670 | 410 411 | 64 | 900 |
| Eye-testing device | B. I. Price | 505,000 | Sept. 12 | 1143 | 293 | 64 | 1500 |
| Eyeglasses | W. H. Eccleston | 502,879 | Aug. 8 | 1075 | 265 | 64 | 779 |
| Eyelet | A. Mathison | 501,288 | July 11 | 1197 | 303 | 64 | 233 |
| Eyeleting-machine | E. B. Stimpson | 502,397 | Aug. 1 | 198 | 29 | 64 | 588 |
| Eyeleting-machine | E. Woodward and C. Hatch, Jr. | 501,754 | July 18 | 1956 | 484 485 | 64 | 386 |
| Fabric: *See* Buoyant fabric. | | | | | | | |
| Fabrics. Apparatus for steaming, aging, and drying | W. Mather and D. P. Smith | 504,602 | Sept. 5 | 473 | 121 | 64 | 1358 |
| Fabrics. Machine for pressing and finishing textile | J. Miller | 504,228 | Aug. 29 | 3269 | 816 817 | 64 | 1230 |
| Fabrics. Machine for stretching or removing creases from woven | G. Tilstone | 504,001 | Aug. 29 | 2903 | 727 728 | 64 | 1161 |
| Face-protector | C. Gumeson | 505,653 | Sept. 26 | 2363 | 573 | 64 | 1736 |
| Fan or blower. Exhaust | C. E. Clark | 501,407 | July 11 | 1408 | 353 | 64 | 270 |
| Fare holder. Car | G. J. Fiedler and A. C. Prohl | 504,026 | Aug. 29 | 2940 | 735 | 64 | 1168 |
| Fare-register | C. S. Lewis | 504,731 | Sept. 12 | 682 | 174 | 64 | 1411 |
| Farm-gate | W. Kennedy | 503,049 | Aug. 8 | 1355 | 335 | 64 | 831 |
| Farm-gate | A. M. Murray | 503,289 | Aug. 15 | 1758 | 434 | 64 | 916 |
| Farm-gate | S. S. Sherman | 505,332 | Sept. 19 | 1677 | 432 | 64 | 1611 |
| Faucet | W. F. Harris | 503,477 | Aug. 15 | 2059 | 513 | 64 | 969 |
| Faucet | C. A. Hitchcock | 505,105 | Sept. 19 | 1321 | 341 | 64 | 1547 |
| Faucet | F. M. Mott | 503,666 | Aug. 22 | 2377 | 593 | 64 | 1043 |
| Faucet. Filter | E. O. Wilson | 505,340 | Sept. 19 | 1698 | 435 | 64 | 1614 |
| Faucets and their keg connections. Apparatus for cleaning liquor | J. F. Bollmann | 501,645 | July 18 | 1767 | 440 | 64 | 383 |
| Feather fur. Treating | B. Tausk | 505,141 | Sept. 19 | 1376 | ..... | 64 | 1559 |
| Feed apparatus. Automatic | G. de Laval | 503,972 | Aug. 29 | 2952 | 716 | 64 | 1153 |
| Feed-cutter | J. Butler | 503,716 | Aug. 22 | 2458 | 611 | 64 | 1058 |
| Feed mechanism | W. H. Homiss | 501,603 | July 18 | 1699 | 423 | 64 | 342 |
| Feed-motion | E. J. McClellan | 502,131 | July 25 | 2547 | 639 | 64 | 510 |
| Feed-rack | O. F. Marshal, Jr | 501,522 | July 18 | 1574 | 396 | 64 | 317 |
| Feed-regulator. Automatic | K. Dougan | 504,125 | Aug. 29 | 3004 | 775 | 64 | 1197 |
| Feed-regulator, band-cutter, and spreader. Combined | W. Howard | 501,511 | July 18 | 1557 | 391 392 | 64 | 314 |
| Feed-roll. Sectional | R. M. Gleason | 501,004 | July 4 | 739 | 194 | 64 | 134 |
| Feed-water. Device for purifying | J. J. Hoppes and E. C. Gwyn | 503,200 | Aug. 15 | 1622 | 399 | 64 | 893 |
| Feed-water heater and purifier | B. F. Field and E. P. Clark | 502,035 | July 25 | 2398 | 603 604 | 64 | 511 |
| Feed-water heater. Steam-boiler | T. C. Best | 503,521 | Aug. 15 | 2118 | 531 532 | 64 | 961 |
| Feed-water heaters. Tube-scraper for | G. H Burpee | 502,223 | July 25 | 2701 | 681 | 64 | 539 |
| Feed-water regulator | C. H. Gersting | 500,571 | July 4 | 53 | 15, 16 | 64 | 11 |
| Feed-water regulator | W. Gladstone | 504,574 | Sept. 5 | 433 | 110 | 64 | 1350 |
| Feed-water regulator | A. E. Harms | 501,834 | July 18 | 2070 | 511 | 64 | 406 |
| Feeder. Time stock | J. H. Weller | 505,180 | Sept. 19 | 1436 | 370 | 64 | 1566 |
| Fence | J. A. E. Anderson | 502,343 | Aug. 1 | 159 | 37 | 64 | 595 |
| Fence | N. Bowsman | 505,434 | Sept. 26 | 1853 | 477 | 64 | 1650 |
| Fence | J. E. Dusang | 504,570 | Sept. 5 | 428 | 108 109 | 64 | 1349 |
| Fence | J. S. Hamilton | 501,341 | July 11 | 1299 | 334 | 64 | 250 |
| Fence | H. Hansbarger | 505,357 | Sept. 19 | 1717 | 443 | 64 | 1619 |
| Fence | J. B. Whitacre | 503,631 | Aug. 22 | 2326 | 590 | 64 | 1033 |
| Fence and stay | D. Bryan | 502,345 | Aug. 1 | 161 | 37 | 64 | 596 |
| Fence. Farm | R. B. and J. Duncan | 504,025 | Aug. 29 | 2939 | 735 | 64 | 1167 |
| Fence. Flood | F. B. Greer | 504,346 | Sept. 5 | 51 | 14 | 64 | 1280 |
| Fence. Hedge | F. J. Troxell | 502,058 | July 25 | 2435 | 613 | 64 | 487 |
| Fence-joint | J. T. Ward | 502,840 | Aug. 8 | 1017 | 248 | 64 | 768 |
| Fence lock and stay. Wire | G. S. Bartholomew | 501,340 | July 11 | 1123 | 285 | 64 | 219 |
| Fence-machine | I. M. Warner | 504,642 | Sept. 5 | 525 | 135 | 64 | 1369 |
| Fence machine. Slat-and-wire | N. F. Stanton | 504,371 | Sept. 5 | 94 | 24 | 64 | 1268 |
| Fence machine. Slat-and-wire | B. A. Welds | 501,636 | July 18 | 1756 | 437 | 64 | 406 |
| Fence machine. Wire | J. A. Mitchell | 504,991 | Sept. 12 | 1131 | 290 | 64 | 1497 |
| Fence-post | W. M. Black | 504,658 | Sept. 5 | 549 | 140 | 64 | 1374 |
| Fence-post | H. B. Camp | 505,156 | Sept. 19 | 1400 | 359 | 64 | 1560 |
| Fence-post | J. B. Gowdy | 500,893 | July 4 | 534 | 144 | 64 | 101 |
| Fence-post | A. C. Harrison | 502,021 | Aug. 1 | 697 | 156 | 64 | 602 |
| Fence-post | J. D. Paldi | 505,367 | Sept. 19 | 1737 | 450 | 64 | 1622 |
| Fence-post | D. and S. Port and C. V. Baird | 505,672 | Sept. 26 | 2296 | 592 | 64 | 1741 |
| Fence-post | B. F. Thomas | 501,747 | July 18 | 1940 | 480 | 64 | 360 |
| Fence-post | C. H. Van Wagoner | 500,635 | July 4 | 159 | 41 | 64 | 32 |
| Fence-post driver | H. Vobach | 504,762 | Sept. 12 | 746 | 186 | 64 | 1434 |
| Fence stay. Wire | W. Van Horn | 505,146 | Sept. 19 | 1385 | 355 | 64 | 1557 |
| Fence. Wire | A. E. Cody | 504,709 | Sept. 12 | 652 | 165 | 64 | 1405 |
| Fence. Wire | I. K. Hollinger | 502,076 | July 25 | 2462 | 619 | 64 | 493 |
| Fence. Wire | A. M. Kuhns | 502,977 | Aug. 8 | 1257 | 308 | 64 | 811 |
| Fence. Wire | M. M. Shellaberger | 501,216 | July 11 | 1087 | 276 | 64 | 214 |
| Fence. Wire | P., J., and P. W. Sommer | 503,210 | Aug. 15 | 1646 | 404 | 64 | 896 |
| Fence. Wire | W. Tibbals | 504,057 | Aug. 29 | 2985 | 746 | 64 | 1176 |



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|---|---|---|---|---|---|---|---|
| Fence. Wire | E. A. Vance | 505,781 | Sept. 26 | 2475 | 624 | 64 | 1775 |
| Fence-wire tension device | O. S. and G. S. Pike | 504,051 | Aug. 29 | 2976 | 744 | 64 | 1174 |
| Fencing. Barbed | T. V. Allis | 501,129 | July 11 | 956 | 244 | 64 | 199 |
| Fencing machine. Wire-and-picket | H. J. Gebhardt | 503,907 | Aug. 15 | 1621 | 398 399 | 64 | 892 |
| Fencing. Making barbed | T. V. Allis | 505,693 | Sept. 26 | 2336 | 592 | 64 | 1749 |
| Fencing. Making barbed | E. Jordan | 505,708 | Sept. 26 | 2359 | 596 | 64 | 1753 |
| Fencing. Metallic | I. L. Ellwood | 502,512 | Aug. 1 | 445 | 107 | 64 | 648 |
| Fender: *See* Car-fender. | | | | | | | |
| Fender | J. P. Rowan | 503,331 | Aug. 15 | 1837 | 455 | 64 | 930 |
| Fender attachment | J. T. T. Kisinger, Jr | 503,348 | Aug. 15 | 1678 | 412 | 64 | 902 |
| Ferrule | F. Latulip. (Reissue) | 11,357 | Aug. 8 | 1472 | 361 | 64 | 851 |
| Ferrule. Interlocking-joint | J. B. Thurston | 505,579 | Sept. 26 | 2135 | 541 | 64 | 1712 |
| Fertilizer-distributer and grain-drill | L. I. and J. M. Bodenhamer | 500,537 | July 4 | 33 | 11 | 64 | 8 |
| Fibers. Apparatus for treating vegetable | C. Wetherwax | 501,194 | July 11 | 959 | 243 | 64 | 188 |
| Fibers. Machine for hackling and preparing | T. B. Allen | 504,648 | Sept. 5 | 535 | 137 | 64 | 1371 |
| Fibrous materials for preserving same. Treating | J. D. Cheever | 504,199 | Aug. 29 | 3295 | ..... | 64 | 1222 |
| Field-roller | J. S. Weckman | 503,629 | Aug. 22 | 2393 | 579 | 64 | 1033 |
| Fifth-wheel | T. L. Boeart | 503,843 | Aug. 22 | 2342 | 585 | 64 | 1036 |
| Fifth-wheel | G. B. St. John | 503,177 | Aug. 15 | 1578 | 388 | 64 | 884 |
| Fifth-wheel | H. C. Swan | 503,917 | Aug. 22 | 2748 | 689 | 64 | 1116 |
| Fifth-wheel | C. R. Turner | 505,616 | Sept. 26 | 2192 | 554 | 64 | 1723 |
| Fifth-wheel | S. Van Slyke | 501,549 | July 18 | 1622 | 408 | 64 | 398 |
| Fifth-wheel | E. V. Wagner and S. H. Penquite | 504,640 | Sept. 5 | 523 | 135 | 64 | 1369 |
| File | J. W. Hine | 504,782 | Sept. 12 | 783 | 198 | 64 | 1430 |
| File for letters, bills, accounts, &c | A. H. Swank | 501,745 | July 18 | 1938 | 479 | 64 | 383 |
| File. Letter | E. H. Stafford and F. Field | 503,915 | Aug. 22 | 2746 | 688 | 64 | 1115 |
| File. Paper | W. H. Albee | 500,837 | July 4 | 495 | 127 | 64 | 88 |
| File. Paper | T. Waring | 501,751 | July 18 | 1946 | 482 | 64 | 384 |
| Filling-machine. Power | J. J. Chavasse | 501,055 | July 11 | 821 | 214 | 64 | 165 |
| Film-cutter | A. Delug | 504,062 | Aug. 29 | 2991 | 747 | 64 | 1177 |
| Filter | W. E. Caddell | 502,030 | July 25 | 2389 | 601 | 64 | 479 |
| Filter | E. P. Hunt | 504,434 | Sept. 5 | 200 | 51 | 64 | 1308 |
| Filter and cooler | F. E. Cady | 500,737 | July 4 | 329 | 86 | 64 | 62 |
| Filter. Bag | T. O. Easton, A. Watt, and J. Buchanan, Jr. | 502,511 | Aug. 1 | 442 | 106 107 | 64 | 648 |
| Filter. Self-cleansing | O. André | 502,890 | Aug. 1 | 754 | 182 | 64 | 704 |
| Filter. Water | W. R. Hanks | 503,597 | Aug. 22 | 2262 | 566 | 64 | 1022 |
| Filtering apparatus. Water | D. A. Rankine | 502,583 | Aug. 1 | 560 | 134 | 64 | 669 |
| Finger or toe nail cutter | E. T. Mason | 504,601 | Sept. 5 | 472 | 121 | 64 | 1358 |
| Fire-alarm and individual electric call | J. Young | 503,187 | Aug. 15 | 1592 | 203 | 64 | 735 |
| Fire-alarm apparatus | S. W. Ludlow | 502,734 | Aug. 8 | 838 | 472 | 64 | 942 |
| Fire-alarm. Automatic | J. Havard | 501,653 | July 18 | 1781 | 444 | 64 | 356 |
| Fire-alarm box | J. G. Kraetz | 503,376 | Aug. 15 | 1906 | 391 | 64 | 887 |
| Fire-alarm. Electric | C. Bernhardt | 501,905 | July 18 | 2199 | 544 | 64 | 426 |
| Fire-alarm systems. Electric signal for | J. Sachs | 502,207 | July 25 | 2673 | 675 | 64 | 534 |
| Firearm-rack | J. A. Meadowa | 505,390 | Sept. 19 | 1662 | 429 | 64 | 1609 |
| Firearm safety-catch | C. W. Hopkins and J. Boland | 505,569 | Sept. 26 | 2119 | 536 | 64 | 1709 |
| Firearms. Straight-pull breech-bolt for | O. H. J. Krag and E. Jörgensen | 502,727 | Aug. 8 | 831 | 201 | 64 | 733 |
| Fire-back | J. G. Sheldon | 505,237 | Sept. 19 | 1519 | 397 | 64 | 1582 |
| Fire-box | F. V. Knaues | 501,885 | July 18 | 2159 | 536 | 64 | 421 |
| Fire-bridge for railway-crossings | J. H. Scott | 505,488 | Sept. 26 | 1930 | 497 | 64 | 1674 |
| Fire-bucket | G. H. Smardon | 504,070 | Aug. 29 | 3002 | 750 | 64 | 1179 |
| Fire-engine harness | T. Murphy | 505,410 | Sept. 19 | 1805 | 466 | 64 | 1636 |
| Fire-engines. Cut-off for steam | C. E. Bensel | 504,654 | Sept. 5 | 543 | 139 | 64 | 1373 |
| Fire-escape | H. J. Clark | 503,365 | Aug. 15 | 1892 | 469 | 64 | 940 |
| Fire-escape | J. P. Coons | 501,990 | July 25 | 2322 | 580 | 64 | 467 |
| Fire-escape | R. G. Dalphin | 501,767 | July 18 | 1981 | 490 | 64 | 389 |
| Fire-escape | L. A. H. Engelke | 504,868 | Sept. 12 | 922 | 238 | 64 | 1458 |
| Fire-escape | F. J. Fairchild | 502,070 | July 25 | 2452 | 616 | 64 | 491 |
| Fire-escape | C. M. Fowler | 505,706 | Sept 26 | 2357 | 595 | 64 | 1753 |
| Fire-escape | J. L. Gregory | 504,576 | Sept. 5 | 436 | 111 | 64 | 1351 |
| Fire-escape | N. H. Herzberg | 501,343 | July 11 | 1302 | 325 | 64 | 250 |
| Fire-escape | J. R. Jones | 503,392 | Aug. 15 | 1819 | 450 | 64 | 936 |
| Fire-escape | S. D. Silver | 501,373 | July 11 | 1355 | 338 | 64 | 260 |
| Fire-escape. Combined ventilator and step-ladder | R. Hughes | 505,465 | Sept. 26 | 1998 | 489 | 64 | 1687 |
| Fire-escape. Portable | J. Jewell | 503,971 | Aug. 29 | 2852 | 715 | 64 | 1152 |
| Fire-extinguisher | W. Geo | 502,196 | July 25 | 2638 | 665 | 64 | 527 |
| Fire extinguisher and alarm. Automatic | E. Livingston | 504,926 | Sept. 12 | 1017 | 262 | 64 | 1476 |
| Fire-extinguisher nozzle | D. Curell | 504,564 | Sept. 5 | 420 | 106 | 64 | 1348 |
| Fire-kindling composition | P. S. Grindle | 505,311 | Sept. 19 | 1651 | ..... | 64 | 1607 |
| Fire-lighter | P. Peschong | 502,136 | July 25 | 2554 | 640 | 64 | 511 |
| Fire-lighter. Automatic | J. L. Cutler | 500,995 | July 4 | 724 | 190 | 64 | 132 |
| Fire-mat | B. L. Fletcher | 504,156 | Aug. 29 | 3146 | 786 | 64 | 1207 |
| Fireplace-frame | H. G. Dawson | 500,687 | July 4 | 248 | 67 | 64 | 47 |
| Fireproof construction | W. Orr | 504,537 | Sept. 5 | 375 | 94 | 64 | 1340 |
| Fireproofing compound | L. Schüler | 502,867 | Aug. 8 | 1057 | ..... | 64 | 776 |
| Fire signaling or alarm mechanism | L. J. Tirard | 504,002 | Aug. 29 | 2906 | 729 | 64 | 1162 |
| Fires draw, &c. Device for making | C. B. Stuart | 500,628 | July 4 | 145 | 38 | 64 | 29 |
| Fires. Method of and apparatus for extinguishing | J. G. Lorrain | 501,519 | July 18 | 1571 | 395 | 64 | 317 |
| Fires. Method of and apparatus for extinguishing | H. P. Weidig | 504,898 | Sept. 12 | 970 | 249 | 64 | 1467 |
| Fish-hook | D. Lehmann | 503,864 | Aug. 22 | 2667 | 668 | 64 | 1100 |
| Fish-scoop | W. H. Penny and W. A. Biggerstaff | 505,295 | Sept. 19 | 1628 | 421 | 64 | 1603 |
| Fish-trap | J. R. Crawford | 503,197 | Aug. 15 | 1607 | 395 | 64 | 890 |
| Fishing-hooks. Machine for manufacturing | C. W. Hanebeck | 501,906 | July 18 | 2193 | 545 | 64 | 427 |
| Fishing-reel | L. S. Cole | 505,216 | Sept. 19 | 1491 | 369 | 64 | 1577 |
| Flash-light apparatus | A. F. Mallick | 501,800 | July 18 | 2030 | 500 | 64 | 396 |
| Flash-light burner | S. M. Williams | 504,956 | Sept. 12 | 1053 | 272 | 64 | 1485 |
| Flash-light burner | S. M. Williams | 505,014 | Sept. 12 | 1169 | 298 | 64 | 1503 |
| Flash-light burners. Combined charger, reflector, and smoke-arrester for | S. M. Williams | 504,955 | Sept. 12 | 1060 | 272 | 64 | 1484 |

*Alphabetical list of inventions, July to September, inclusive*—Continued.

| Invention. | Name. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drgs. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|---|
| **Flask:** *See* Foundry-flask. Molder's flask. | | | | | | | |
| Flax-dressing machine | C. H. Norton | 502,010 | July 25 | 2349 | 588 589 590 | 64 | 672 |
| Flax, &c. Machine for breaking, scutching, and decorticating | G. R. Donisthorpe and T. Burrows | 504,204 | Aug. 29 | 3232 | 805 806 | 64 | 1223 |
| Flax-straw. Cleaner and reducer for crude | J. T. Smith | 505,069 | Sept. 12 | 1260 | 323 | 64 | 1521 |
| Flood-gate | J. H. Caraway | 505,390 | Sept. 19 | 1773 | 459 | 64 | 1630 |
| Flood-gate | H. H. Eatherton | 500,870 | July 4 | 534 | 138 | 64 | 97 |
| Floor. Fireproof | T. A. Lee. (Reissue) | 11,356 | Aug. 8 | 1467 | 360 | 64 | 850 |
| Floor or ceiling. Fireproof | E. Homan | 505,659 | Sept. 26 | 2270 | 576 | 64 | 1738 |
| Flooring or ceiling jack | W. M. Holiman | 503,764 | Aug. 22 | 2535 | 630 | 64 | 1074 |
| Flooring. Wood-tile | A. Salvatico | 503,876 | Aug. 22 | 2682 | 672 | 64 | 1102 |
| Flour bin and sifter | A. K. Gibson | 504,342 | Sept. 5 | 47 | 13 | 64 | 1279 |
| Flowers. Artificial stem for cut | H. H. Francis | 501,134 | July 11 | 963 | 246 | 64 | 190 |
| Flue-cutter | J. Cumming and J. H. Magee, Jr | 501,269 | July 11 | 1169 | 297 | 64 | 227 |
| Flue-cutter | E. W. Pratt | 505,398 | Sept. 19 | 1672 | 431 | 64 | 1611 |
| Flue-stopper | E. H. Adams | 503,823 | Aug. 22 | 2613 | 653 | 64 | 1089 |
| Flue-stopper | C. H. Schelle | 503,388 | Aug. 15 | 1920 | 476 | 64 | 945 |
| Flue-thimble | J. H. Watt | 503,818 | Aug. 22 | 2606 | 651 | 64 | 1088 |
| Fluid-compressor | J. Rebsamen | 500,720 | July 4 | 306 | 82 | 64 | 57 |
| Fluid-mixer | J. J. H. Cokeley | 501,182 | July 11 | 1039 | 263 | 64 | 204 |
| Flushing-tank | J. H. Savill | 501,368 | July 11 | 1348 | 336 | 64 | 259 |
| Fly-book. Angler's | A. E. Zangenberg | 502,427 | Aug. 1 | 300 | 72 | 64 | 620 |
| Fly-frame | W. P. Canning | 505,436 | Sept. 26 | 1855 | 477 478 | 64 | 1659 |
| Fly-trap | J. Moskowitz | 501,686 | July 18 | 1837 | 457 | 64 | 421 |
| Fly-trap | T. A. Teate | 502,056 | July 25 | 9433 | 612 | 64 | 487 |
| Flying-machine | E. B. Sowers | 504,631 | Sept. 5 | 510 | 132 | 64 | 1366 |
| Folding chair | J. A. Criss | 502,175 | July 25 | 2625 | 662 | 64 | 525 |
| Folding chair | W. J. Moreland | 503,321 | Sept. 19 | 1664 | 429 | 64 | 1609 |
| Folding chair | W. A. Wright | 504,855 | Sept. 12 | 901 | 233 | 64 | 1455 |
| Folding chair. Coin-freed | J. O. Tonkin | 500,783 | July 4 | 399 | 105 106 | 64 | 74 |
| Folding table | W. J. Maddox | 502,929 | Aug. 8 | 1170 | 288 289 | 64 | 796 |
| Food. Machine for the preparation of cereals for | H. D. Perky and W. H. Ford | 502,378 | Aug. 1 | 215 | 51 | 64 | 605 |
| Foot-rest | J. W. Paterson | 502,772 | Aug. 8 | 865 | 211 | 64 | 740 |
| Forge-tray | R. S. Burnett | 503,194 | Aug. 15 | 1604 | 394 | 64 | 989 |
| Forging and bending die | G. S. Strong | 505,541 | Sept. 26 | 2049 | 523 | 64 | 1694 |
| Forging-die | G. S. Strong | 505,540 | Sept. 26 | 2048 | 522 | 64 | 1694 |
| Forging-machine. Steam | W. A. Pearson | 503,354 | Aug. 15 | 1867 | 462 463 | 64 | 936 |
| **Fork:** *See* Hay-fork. | | | | | | | |
| Form. Bosom | H. E. and A. M. Matthews | 503,057 | Aug. 8 | 1366 | 347 | 64 | 832 |
| Form. Bust | N. Schell | 505,133 | Sept. 19 | 1367 | 350 | 64 | 1554 |
| Form. Clothes | R. H. Wade | 503,815 | Aug. 22 | 2603 | 650 | 64 | 1087 |
| Fortune-teller | J. Carey | 503,784 | Aug. 22 | 2592 | 638 | 64 | 1079 |
| Foundation for light-houses and other heavy structures in deep water | G. Blanchard | 502,845 | Aug. 8 | 1024 | 250 251 | 64 | 769 |
| Foundry-flask | P. B. McGregor | 503,290 | Aug. 15 | 1759 | 434 | 64 | 917 |
| **Fountain:** *See* Water fountain. | | | | | | | |
| Fracture apparatus | J. T. Berghoff | 505,382 | Sept. 19 | 1761 | 456 457 | 64 | 1638 |
| **Frame:** *See* Awning-frame. Display-frame. Fireplace-frame. Harrow-frame. Reel-carrying frame. Spinning-frame. Spinning and doubling frame. | | | | | | | |
| Freight or parcel carrier | H. C. Forney | 505,705 | Sept. 26 | 2354 | 595 | 64 | 1752 |
| Fringe or trimming holder | J. M. Schlesinger | 503,752 | Aug. 22 | 2518 | 626 | 64 | 1071 |
| Fringes. Machine for making and knotting | B. Arnold | 504,315 | Sept. 5 | 4 | 2 | 64 | 1272 |
| Fringes. Machine for making and knotting | B. Arnold | 504,316 | Sept. 5 | 7 | 2, 3 | 64 | 1272 |
| Fruit-drier | A. H. Carson | 503,899 | Aug. 22 | 2720 | 663 | 64 | 1110 |
| Fruit-gatherer | T. B. Reagan | 504,945 | Aug. 29 | 3301 | 834 | 64 | 1235 |
| Fruit-holder | W. Nicholson | 505,393 | Sept. 19 | 1666 | 430 | 64 | 1610 |
| Fruit or vegetable drier | H. N. Schultz | 505,610 | Sept. 26 | 2186 | 553 | 64 | 1722 |
| Fruit-picker | C. and C. L. Lee, Jr. | 505,556 | Sept. 26 | 2085 | 532 | 64 | 1704 |
| Fruit-picker | J. Swanburg | 501,032 | July 4 | 791 | 204 205 | 64 | 143 |
| Fruit-pitting machine | R. P. Scott | 501,608 | July 18 | 1709 | 426 | 64 | 343 |
| Fruit-press | C. Wegmann | 504,545 | Sept. 5 | 390 | 99 | 64 | 1342 |
| Fruit-stoning machine | P. Maisonneuve | 505,906 | Sept. 19 | 1479 | 385 | 64 | 1570 |
| Fuel. Artificial | M. Nirdlinger | 500,934 | July 4 | 629 | ..... | 64 | 113 |
| Fuel atomizing and burning apparatus. Fluid | B. Roberts | 501,164 | July 11 | 1015 | 257 | 64 | 199 |
| Fuel. Method of and apparatus for consumption of | J. Y. Smith | 503,501 | Aug. 15 | 2089 | 522 | 64 | 976 |
| Fumigator | J. R. McKelvey | 501,528 | July 18 | 1581 | 398 | 64 | 319 |
| Funnel | C. W. Fox | 502,881 | Aug. 8 | 1077 | 266 | 64 | 779 |
| **Furnace:** *See* Air-warming furnace. Blast-furnace. Boiler-furnace. Brick-kiln furnace. Garbage-furnace. Garbage-burning furnace. Gas-furnace. Gas-making furnace. Heating-furnace. Hot-air furnace. Hydrocarbon-furnace. Hydrocarbon incinerating-furnace. Metallurgical furnace. Portable furnace. Salt-furnace. Smelting-furnace. Smoke-consuming furnace. Steel-melting furnace. | | | | | | | |
| Furnace | J. Davies | 503,407 | Aug. 15 | 1943 | 483 | 64 | 949 |



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| Invention. | Name. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drgs. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|---|
| Furnace | E. Fales | 505,452 | Sept. 26 | 1879 | 484 | 64 | 1663 |
| Furnace | J. T. Jenkins | 500,905 | July 4 | 581 | 151 152 | 64 | 108 |
| Furnace | W. Kneen | 505,661 | Sept. 26 | 2275 | 577 | 64 | 1738 |
| Furnace | J. J. Richardson | 501,695 | July 18 | 1852 | 460 | 64 | 368 |
| Furnace | G. R. Scates | 502,908 | July 25 | 2678 | 675 676 | 64 | 535 |
| Furnace | I. D. Smead | 501,109 | July 11 | 927 | 230 | 64 | 184 |
| Furnace | W. Swindell | 501,236 | July 11 | 1116 | 283 284 | 64 | 216 |
| Furnace | W. Swindell | 504,118 | Aug. 29 | 3084 | 772 | 64 | 1196 |
| Furnace | J. K. Thompson | 505,143 | Sept. 19 | 1378 | 353 354 | 64 | 1556 |
| Furnace-door | C. W. Reneau | 503,875 | Aug. 22 | 2681 | 672 | 64 | 1102 |
| Furnace for heating chain link blanks, &c., for welding | P. H. Standish | 502,593 | Aug. 1 | 574 | 138 | 64 | 671 |
| Furnace for heating chain-links | P. H. Standish | 502,594 | Aug. 1 | 577 | 139 | 64 | 672 |
| Furnace for welding, &c | R. J. and C. J. Buck | 503,998 | Aug. 22 | 2760 | 692 | 64 | 1118 |
| Furnace fuel-feeding device | J. W. Wetmore | 501,979 | July 25 | 2304 | 576 | 64 | 463 |
| Furnace-grate | C. P. Bliss | 504,195 | Aug. 29 | 3220 | 802 | 64 | 1221 |
| Furnace-grate | B. Loomis | 503,211 | Aug. 15 | 1631 | 400 | 64 | 994 |
| Furnace-tap | E. P. Mathewson | 501,351 | July 11 | 1715 | 328 | 64 | 252 |
| Furnaces. Flooring for blast | M. W. Iles | 501,188 | July 11 | 1048 | 265 | 64 | 206 |
| Furnaces. Gas-burner for boiler | C. T. Sloan | 500,724 | July 4 | 315 | 84 | 64 | 58 |
| Furnaces. Gas-valve for blast | W. Rotthoff | 504,022 | Sept. 5 | 498 | 128 | 64 | 1363 |
| Furnaces with metal. Apparatus for charging | J. Buchanan, Jr | 505,348 | Sept. 19 | 1697 | 437 438 | 64 | 1616 |
| Furniture-base | W. D. Snyder | 503,993 | Aug. 29 | 2893 | 723 724 | 64 | 1159 |
| Furniture-base | W. D. Snyder | 503,994 | Aug. 29 | 2895 | 724 | 64 | 1159 |
| Furniture clamp or press | C. H. Scales | 502,533 | Aug. 1 | 480 | 115 | 64 | 654 |
| Furniture-fastener | G. C. Goodyear | 501,564 | July 18 | 1639 | 410 | 64 | 331 |
| Furniture-joint | L. R. Harsha | 501,935 | July 25 | 2247 | 561 | 64 | 453 |
| Furrower and marker. Combined land | J. Ramey | 504,617 | Sept. 5 | 491 | 126 | 64 | 1362 |
| Furs. Carrotting | H. A. A. Lussigny | 501,797 | July 18 | 2027 | ..... | 64 | 397 |
| Furs. Carrotting | H. A. A. Lussigny | 501,798 | July 18 | 2027 | ..... | 64 | 397 |
| Fuse. Electric safety | C. Thalacker | 502,541 | Aug. 1 | 501 | 120 | 64 | 658 |
| Fuse-lighter | W. C. Matthews | 504,603 | Sept. 5 | 474 | 121 | 64 | 1358 |
| Fuse. Multiple | G. T. Voorhees | 502,333 | Aug. 1 | 138 | 31 | 64 | 591 |
| Gaff-hook | G. A. Stanton | 503,176 | Aug. 15 | 1577 | 388 | 64 | 884 |
| **Gage:** *See* Combination gage. Jewel and pivot gage. Marking-gage. Riveting-machine gage. Saw-gage. Saw-table gage. Steam and water gage. Taper-gage. Vacuum-gage. Water-gage. Watchmaker's gage. | | | | | | | |
| Gage and cane. Combined | G. W. Bowen | 505,385 | Sept. 19 | 1768 | 452 | 64 | 1628 |
| Gaining-machine | F. and C. A. Johnson | 501,683 | July 18 | 1833 | 456 457 | 64 | 364 |
| Galvanic battery | C. H. Brown | 503,567 | Aug. 15 | 2199 | 549 | 64 | 996 |
| Galvanic battery | E. H. Lyon | 502,405 | Aug. 1 | 259 | 61 | 64 | 613 |
| Galvanic dry battery | J. von der Poppenburg | 504,746 | Sept. 12 | 721 | 180 | 64 | 1419 |
| Game | A. M. Grubbs | 500,888 | July 4 | 562 | 146 | 64 | 102 |
| Game apparatus | M. B. Andrews | 502,455 | Aug. 1 | 347 | 83 | 64 | 630 |
| Game apparatus | F. N. Carpenter | 505,027 | Sept. 12 | 1181 | 303 | 64 | 1507 |
| Game apparatus | F. R. Hogeboom | 503,793 | Aug. 22 | 2575 | 641 | 64 | 1082 |
| Game apparatus | A. Myers | 503,382 | Aug. 15 | 1914 | 474 475 | 64 | 944 |
| Game apparatus | D. Whitburn | 503,028 | Aug. 8 | 1315 | 332 | 64 | 822 |
| Game apparatus | M. M. Wilson | 504,073 | Aug. 29 | 3005 | 751 | 64 | 1180 |
| Game apparatus. Coin controlled | D. T. Nuttle | 504,996 | Sept. 12 | 1138 | 291 | 64 | 1498 |
| Game apparatus. Parlor | O. F. Brinkman | 503,401 | Aug. 15 | 1938 | 481 | 64 | 949 |
| Game appliance | L. H. Buchanan | 503,942 | Aug. 29 | 2787 | 699 | 64 | 1140 |
| Game-board | F. W. Rawkes | 503,318 | Aug. 15 | 1814 | 449 | 64 | 925 |
| Game-board | W. G. Howell | 505,314 | Sept. 19 | 1654 | 427 | 64 | 1607 |
| Game counter and register for pool-tables | L. F. Torrey and J. La Sha | 501,632 | July 18 | 1750 | 436 | 64 | 351 |
| Game or exercising apparatus | W. P. Lyle | 503,379 | Aug. 15 | 1911 | 473 | 64 | 943 |
| Game. Parlor | F. Pettersch | 501,844 | July 18 | 2084 | 515 | 64 | 408 |
| Game-register | M. J. Neumann, Jr | 503,978 | Aug. 29 | 2861 | 718 | 64 | 1154 |
| Gang-plank. Warehouse | L. Kuckartz | 502,568 | Aug. 1 | 534 | 127 | 64 | 664 |
| Garbage-burning furnace | S. H. Brown | 501,181 | July 11 | 1037 | 263 | 64 | 204 |
| Garbage. Disposing of city | H. B. Arnold | 501,037 | July 4 | 789 | 206 207 | 64 | 144 |
| Garbage furnace | B. C. Heavey | 505,656 | Sept. 26 | 2267 | 574 575 | 64 | 1737 |
| Garbage or like wastes. Apparatus for treating | C. J. Best and W. A. Hall | 501,760 | July 18 | 1971 | 487 | 64 | 388 |
| Garbage or like wastes. Treating | C. J. Best and W. A. Hall | 501,761 | July 18 | 1972 | 487 488 | 64 | 388 |
| Garbage-receptacle | C. J. L. MacLeod | 503,212 | Aug. 15 | 1832 | 401 | 64 | 894 |
| Garment-fastener | D. M. Floerckey | 502,432 | Aug. 1 | 307 | 73 | 64 | 622 |
| Garment-fastener | V. H. Oberly | 503,980 | Aug. 29 | 2862 | 718 | 64 | 1154 |
| Garment-fastening | A. T. Smith | 501,803 | July 11 | 1216 | 308 | 64 | 226 |
| Garment-holder. Adjustable | P. A. Sweeney | 505,578 | Sept. 26 | 2134 | 540 | 64 | 1712 |
| Garment-hook | N. C. Sample | 504,090 | Aug. 29 | 3037 | 758 | 64 | 1187 |
| Garment protector | E. E. Fitler | 503,841 | Aug. 22 | 2635 | 659 | 64 | 1093 |
| Garment-supporter | J. W. Beaumont | 502,393 | Aug. 1 | 241 | 57 | 64 | 610 |
| Garment-supporter | R Gemmell | 502,528 | July 25 | 2710 | 684 | 64 | 541 |
| Garment-supporter | D. H. Warner | 500,677 | July 4 | 161 | 42 | 64 | 32 |
| Garter | G. H. Blakesley | 504,410 | Sept. 5 | 161 | 42 | 64 | 1300 |
| Gas and electric-light fixture. Combined | J. A. O'Neill | 503,912 | Aug. 22 | 2741 | 687 | 64 | 1115 |

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|---|---|---|---|---|---|---|---|
| Gas apparatus | A. M. Sutherland | 501,698 | July 18 | 1856 | 451 | 64 | 309 |
| Gas. Apparatus for charging liquids with carbonic acid | J. F. Theurer | 505,239 | Sept. 19 | 1582 | 208 | 64 | 1583 |
| Gas. Apparatus for charging liquids with carbonic acid | J. F. Theurer | 505,240 | Sept. 19 | 1585 | 207 | 64 | 1581 |
| Gas. Apparatus for manufacturing | A. C. Humphreys | 501,260 | July 11 | 1140 | 388, 389, 390, 391 | 64 | 922 |
| Gas. Apparatus for manufacturing | J. J. Kirkham | 502,125 | July 25 | 2537 | 634, 637 | 64 | 507 |
| Gas. Apparatus for manufacturing | L. L. Merrifield, J. T. Westcott, and W. H. Pearson, Jr | 505,714 | Sept. 26 | 2367 | 598 | 64 | 1754 |
| Gas. Apparatus for the generation of | M. P. Goff | 504,303 | Aug. 29 | 3389 | 847, 848 | 64 | 1252 |
| Gas. Apparatus for the manufacture of | J. B. Archer | 501,130 | July 11 | 957 | 244 | 64 | 189 |
| Gas. Apparatus for the manufacture of | J. M. Rose | 505,537 | Sept. 26 | 2043 | 521, 522 | 64 | 1693 |
| Gas. Apparatus for the manufacture of | S. W. Van Syckel | 502,791 | Aug. 8 | 937 | 229 | 64 | 733 |
| Gas-burner | F. J. Leibman | 501,283 | July 11 | 1190 | 301 | 64 | 931 |
| Gas-burner attachment | M. Wheeler | 501,391 | July 11 | 1203 | 346 | 64 | 965 |
| Gas-burner for heating stoves or grates | P. I. Miller | 503,705 | Aug. 22 | 2437 | 607 | 64 | 1654 |
| Gas burner. Fuel- | J. B. Wallace | 504,821 | Sept. 12 | 848 | 217, 218 | 64 | 1442 |
| Gas-burner lighting attachment | N. Marshall | 504,735 | Sept. 12 | 701 | 176 | 64 | 1415 |
| Gas burner. Natural | W. G. Taylor | 500,694 | July 4 | 220 | 70, 71 | 64 | 49 |
| Gas-burner. Self-generating | H. F. Smith | 500,969 | July 4 | 640 | 181 | 64 | 125 |
| Gas-cut-off apparatus. Automatic | N. Lombard | 501,951 | July 25 | 2266 | 567 | 64 | 456 |
| Gas-engine | F. Cordenons | 500,754 | July 4 | 358 | 93 | 64 | 66 |
| Gas-engine | C. J. B. Gaume | 501,881 | July 18 | 2151 | 533, 534 | 64 | 420 |
| Gas-engine | G. E. Hoyt | 502,255 | July 25 | 2765 | 699 | 64 | 551 |
| Gas-engine | C. W. Pinkney | 504,614 | Sept. 5 | 487 | 125 | 64 | 1361 |
| Gas-engine | C. W. Pinkney | 505,327 | Sept. 19 | 1670 | 431 | 64 | 1610 |
| Gas-engine | W. H. Worth | 504,260 | Aug. 29 | 3328 | 830 | 64 | 1240 |
| Gas engine. Carbonic-acid or other | A. Danner and G. Rothenbücher | 502,430 | Aug. 1 | 303 | 73 | 64 | 691 |
| Gas for heating purposes. Apparatus for producing and utilizing | G. A. Watson | 503,817 | Aug. 22 | 2605 | 650, 651 | 64 | 1088 |
| Gas furnace and producer. Regenerative | F. Siemens | 501,107 | July 11 | 922 | 236, 237 | 64 | 183 |
| Gas. Furnace for the manufacture of | J. C. Dods | 501,457 | July 11 | 1474 | 370, 371 | 64 | 283 |
| Gas-furnace. Parlor | J. W. Cowperthwait | 502,658 | Aug. 1 | 649 | 165 | 64 | 692 |
| Gas-generator | J. Nolan | 500,935 | July 4 | 622 | 163 | 64 | 114 |
| Gas generator and burner. Combined oil | M. Beck | 503,399 | Aug. 15 | 1734 | 481 | 64 | 948 |
| Gas-governor | L. W. Martyr and H. Eldridge | 503,350 | Aug. 15 | 1692 | 461 | 64 | 934 |
| Gas-heater | F. P. Ziegler | 504,392 | Sept. 5 | 110 | 28 | 64 | 1291 |
| Gas-holder tank | F. Mayer | 505,629 | Sept. 26 | 2212 | 560, 561 | 64 | 1726 |
| Gas. Illuminating hydrocarbon | E. Tatham | 502,642 | Aug. 1 | 659 | | 64 | 688 |
| Gas lighter or extinguisher | R. Geissler | 501,780 | July 18 | 1996 | 493 | 64 | 393 |
| Gas-lighting apparatus | G. Göridt | 501,565 | July 18 | 1640 | 410 | 64 | 331 |
| Gas lighting or extinguishing apparatus. Automatic | P. Everitt | 504,447 | Sept. 5 | 216 | 56, 57, 58 | 64 | 1310 |
| Gas-making furnace | J. Fehrenbatch | 505,759 | Sept. 26 | 2441 | 615 | 64 | 1768 |
| Gas. Manufacture of | J. L. Hastings | 505,524 | Sept. 26 | 2017 | 516 | 64 | 1689 |
| Gas-meter | J. B. Wallace | 502,388 | Aug. 1 | 245 | 55 | 64 | 609 |
| Gas-meter casing | W. N. Milsted | 505,715 | Sept. 26 | 2369 | 598 | 64 | 1754 |
| Gas-meter. Coin-freed | G. Carter | 504,266 | Aug. 29 | 3329 | 832, 833 | 64 | 1241 |
| Gas-mixer | G. J. Roberts | 502,531 | Aug. 1 | 477 | 115 | 64 | 654 |
| Gas or petroleum engine | P. H. Irgens | 505,767 | Sept. 26 | 2454 | 617, 618 | 64 | 1770 |
| Gas or vapor engine | B. Chatterton | 505,751 | Sept. 26 | 2423 | 611, 612 | 64 | 1764 |
| Gas. Process of and apparatus for the manufacture of | J. L. Hastings | 505,525 | Sept. 26 | 2023 | 516, 517, 518 | 64 | 1690 |
| Gas. Purifying ammonia | G. L. Vail and T. Charlton | 505,427 | Sept. 19 | 1841 | 473 | 64 | 1643 |
| Gas-purifying apparatus | J. Goetz | 503,133 | Aug. 15 | 1505 | 370 | 64 | 870 |
| Gas-regulating and advertising cabinet | J. Ruthven | 505,372 | Sept. 19 | 1743 | 451, 452 | 64 | 1624 |
| Gas-regulating burner | C. S. Ford, Sr. | 501,459 | July 11 | 1477 | 371 | 64 | 284 |
| Gas-regulator | L. Gardner | 503,131 | Aug. 15 | 1503 | 369, 370 | 64 | 870 |
| Gas regulator or governor | R. R. Beard | 502,064 | July 25 | 2445 | 614 | 64 | 569 |
| Gas. Tile for use in apparatus for the manufacture of | J. B. Archer | 502,693 | Aug. 8 | 761 | 185 | 64 | 721 |
| Gas. Tile for use in apparatus for the manufacture of | J. B. Archer | 504,314 | Sept. 5 | 3 | 1 | 64 | 1271 |
| Gas washing and scrubbing device | A. C. Wood and J. H. Tuffs | 503,395 | Aug. 15 | 1930 | 479, 480 | 64 | 947 |
| Gases. Apparatus for and process of obtaining combined nitrogen and fuel | T. B. Fogarty | 500,650 | July 4 | 184 | 48 | 64 | 36 |
| Gases. Apparatus for treating pulverulent materials with | E. Solvay | 503,556 | Aug. 15 | 2184 | 546 | 64 | 993 |
| Gases. Method of and apparatus for propelling producer | W. H. Forbes | 503,842 | Aug. 22 | 2636 | 659 | 64 | 1094 |
| Gases. Treating pulverulent material with | E. Solvay | 503,558 | Aug. 15 | 2188 | 547 | 64 | 994 |
| Gases under high pressure for power. Apparatus for using | G. H. Chappell | 505,028 | Sept. 12 | 1182 | 303, 304, 305 | 64 | 1507 |
| Gasket. Packing | C. K. Dodge | 505,703 | Sept. 26 | 2350 | 594 | 64 | 1751 |



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|---|---|---|---|---|---|---|---|
| Gate: *See* Bridge-gate, Railway-gate, Elevator-gate, Railway-crossing gate, End-gate, Sliding gate, Farm-gate, Swinging gate, Flood-gate, Tilting gate. | | | | | | | |
| Gate | T. J. Andre | 505,212 | Sept. 19 | 1488 | 388 | 64 | 1576 |
| Gate | D. Baptist | 503,448 | Aug. 15 | 2003 | 497 | 64 | 960 |
| Gate | V. Frioux | 504,829 | Sept. 12 | 858 | 220 | 64 | 1444 |
| Gate | J. H. Haskin | 502,460 | Aug. 1 | 353 | 85 | 64 | 631 |
| Gate | H. D. Herrington | 504,780 | Sept. 12 | 781 | 197 | 64 | 1429 |
| Gate | J. Losey | 504,392 | Sept. 5 | 129 | 34 | 64 | 1294 |
| Gate | C. H. Lucas | 504,357 | Sept. 5 | 64 | 17 | 64 | 1263 |
| Gate | G. W. Mauk | 501,801 | July 18 | 2032 | 500 | 64 | 398 |
| Gate | W. K. Mills | 503,363 | July 4 | 84 | 94 | 64 | 17 |
| Gate | M. E. Myers | 501,526 | July 18 | 1579 | 397 | 64 | 318 |
| Gate | A. J. Russell | 503,306 | July 25 | 2672 | 675 | 64 | 533 |
| Gate | M. F. Sheban | 502,983 | July 25 | 2781 | 702 | 64 | 553 |
| Gate | J. W. Taylor and G. W. Walters | 505,669 | Sept. 12 | 1155 | 296 | 64 | 1502 |
| Gate and mechanism therefor | T. H. Lindley | 505,274 | Sept. 19 | 1581 | 412 | 64 | 1594 |
| Gate-fastener | T. A. Carraher | 504,883 | Sept. 12 | 916 | 237 | 64 | 1457 |
| Gate-hanger | F. A. Cullen | 505,195 | Sept. 19 | 1461 | 377 | 64 | 1571 |
| Gear-case | S. H. Percy | 501,626 | July 18 | 1740 | 433 | 64 | 349 |
| Gear-casing | W. H. Forbes and G. B. Shepley | 504,338 | Sept. 5 | 42 | 12 | 64 | 1279 |
| Gear-cutting machine | E. H. Parks | 505,606 | Sept. 26 | 2179 | 551 | 64 | 1720 |
| Gearing | E. A. Garey | 501,415 | July 11 | 1418 | 355 | 64 | 272 |
| Gearing | J. Zimmermann | 504,645 | Sept. 5 | 532 | 136 | 64 | 1370 |
| Gems. Cluster-setting for | R. Fuchs | 505,218 | Sept. 19 | 1495 | 390 | 64 | 1578 |
| Generator: *See* Electric generator, Gas-generator, Electric-current generator, Steam-generator. | | | | | | | |
| Gin-saw-sharpening machine | J. Y. Lyle | 505,774 | Sept. 26 | 2464 | 621 | 64 | 1772 |
| Girder and joist. Fireproof | J. H. Blakesley | 503,642 | Aug. 22 | 2341 | 584 | 64 | 1036 |
| Glass: *See* Opera, field, marine, and other glass. | | | | | | | |
| Glass-annealing kiln | W. F. Modes | 505,716 | Sept. 26 | 2371 | 599 | 64 | 1754 |
| Glass article and making same. Ornamental | J. S. Irwin | 502,461 | Aug. 1 | 354 | 85 | 64 | 631 |
| Glass-blowing tube | A. Pitman | 503,676 | Aug. 22 | 2388 | 586 | 64 | 1045 |
| Glass bottles. Apparatus for the manufacture of | B. A. Spaull | 503,220 | Aug. 15 | 1647 | 404, 405 | 64 | 807 |
| Glass bottles. Finishing-tool for | T. K. Sheldon and M. N. Lynn | 500,960 | July 4 | 673 | 177 | 64 | 122 |
| Glass by sand-blast, Decorating | M. Suess | 504,543 | Sept. 5 | 985 | | 64 | 1342 |
| Glass-decorating apparatus | J. Macher | 501,014 | July 4 | 752 | 197 | 64 | 137 |
| Glass. Depositing layers of metal on | J. H. Scharling | 505,576 | Sept. 26 | 2129 | 539, 540 | 64 | 1711 |
| Glass-mold-cooling apparatus | E. Kaye | 501,077 | July 11 | 854 | 221 | 64 | 171 |
| Glass. Mosaic art | A. Verhaghen | 504,506 | Sept. 5 | 326 | 83 | 64 | 1331 |
| Glass-tube cutter | A. Adams, Jr | 505,211 | Sept. 19 | 1486 | 386 | 64 | 1576 |
| Glassware. Forming articles of | J. J. Brannagan | 502,344 | Aug. 1 | 180 | 37 | 64 | 595 |
| Glassware. Manufacture of | J. J. Brannagan | 504,552 | Sept. 5 | 404 | 103 | 64 | 1345 |
| Globes. Making lens | C. J. Bockius | 503,825 | Aug. 22 | 2615 | 653 | 64 | 1089 |
| Glove-cabinet | A. Bayer | 503,306 | Aug. 15 | 1786 | 441 | 64 | 991 |
| Glove-fastener | F. E. Hall | 503,081 | Aug. 8 | 1400 | 346 | 64 | 838 |
| Glove-fastening | J. R. Smith | 504,309 | Aug. 29 | 3398 | 851 | 64 | 1254 |
| Glove or garment fastener | E. J. Kraetzer | 502,404 | Aug. 1 | 258 | 61 | 64 | 613 |
| Glue-extracting apparatus | L. Bertram | 501,759 | July 18 | 1969 | 487 | 64 | 388 |
| Glue for cardboard and photographs | H. W. Vogel | 505,618 | Sept. 26 | 2194 | | 64 | 1723 |
| Glue or gelatine. Manufacturing elastic | E. Teasen | 505,615 | Sept. 26 | 2192 | | 64 | 1723 |
| Godevil | H. Hall | 504,725 | Sept. 12 | 672 | 171, 172, 219, 220 | 64 | 1409 |
| Gong. Electro-mechanical | F. M. Dunn | 504,827 | Sept. 12 | 856 | 221 | 64 | 1444 |
| Gong or call-bell | N. J. Busby | 504,705 | Sept. 12 | 648 | 164 | 64 | 1404 |
| Governor | J. D. Silberzahn | 505,279 | Sept. 19 | 1591 | 414 | 64 | 1599 |
| Governor. Electric automatic steam | E. A. Edwards | 504,492 | Sept. 5 | 300 | 76, 77 | 64 | 1326 |
| Governor. Engine | G. E. Dow | 504,295 | Aug. 29 | 3223 | 606 | 64 | 1223 |
| Governor. Engine | R. H. Thurston | 504,953 | Sept. 12 | 1058 | 271 | 64 | 1483 |
| Governor. Speed | C. E. Doolittle | 502,557 | Aug. 1 | 519 | 134 | 64 | 662 |
| Governor. Steam-engine | E. Conrady | 503,785 | Aug. 22 | 2563 | 638 | 64 | 1080 |
| Governing device for compound engines | M. C. Bullock | 504,691 | Sept. 5 | 620 | 158, 159 | 64 | 1387 |
| Governing gas, steam, or other motive power engines. Apparatus for | C. W. Pinkney | 504,613 | Sept. 5 | 485 | 124, 125 | 64 | 1361 |
| Grading and excavating machine | J. B. Cornwall | 504,300 | Aug. 29 | 3233 | 845 | 64 | 1252 |
| Grafting implement | J. Fuchs | 505,651 | Sept. 26 | 2260 | 572 | 64 | 1735 |
| Grain-binder | J. F. Appleby | 502,267 | Aug. 1 | 2 | 1, 2 | 64 | 567 |
| Grain-binder | C. Colahan | 500,738 | July 4 | 331 | 88 | 64 | 62 |
| Grain-binder | J. A. Graham and E. J. Birkett | 503,662 | Aug. 22 | 2369 | 591, 592 | 64 | 1041 |
| Grain-binder | G. L. Phelps | 500,608 | July 4 | 118 | 31, 32 | 64 | 23 |
| Grain-binder | A. Stark | 502,540 | Aug. 1 | 493 | 117, 118, 119 | 64 | 657 |
| Grain-binder | J. F. Steward | 504,373 | Sept. 5 | 99 | 25 | 64 | 1289 |
| Grain-binder. Automatic | J. F. Steward | 504,372 | Sept. 5 | 97 | 24 | 64 | 1289 |
| Grain-binders. Butt-adjuster for | A. Stark | 502,210 | July 25 | 2580 | 676, 677 | 64 | 535 |
| Grain-cleaner | O. M. Morse | 505,573 | Sept. 26 | 2125 | 538 | 64 | 1710 |
| Grain-drill | J. W. Rhodes | 502,831 | Aug. 8 | 1003 | 244, 245 | 64 | 708 |
| Grain-drill | A. Rosander | 502,636 | Aug. 1 | 646 | 155 | 64 | 686 |
| Grain-drill | S. W. Rowell | 502,468 | Aug. 1 | 396 | 88 | 64 | 633 |
| Grain-drill | J. A. M. Tyler | 500,725 | July 4 | 313 | 84 | 64 | 59 |

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|---|---|---|---|---|---|---|---|
| Grain. Extracting weevils from | D. R. Bowker | 505,648 | Sept. 26 | 2257 | 571 | 64 | 1735 |
| Grain-meter | W. Howard | 503,746 | Aug. 22 | 2510 | 625 | 64 | 1069 |
| Grain, nuts, &c. Machine for scouring and cleaning | C. O. Tinkham and O. B. Sims | 505,010 | Sept. 12 | 1156 | 286, 287 | 64 | 1502 |
| Grain-press | M. T. F. Wiesebrock | 504,098 | Aug. 29 | 3054 | 763 | 64 | 1190 |
| Grain-reel | E. B. Hyde | 501,494 | July 11 | 1427 | 358 | 64 | 274 |
| Grain scouring and polishing machine | J. H. Williamson | 503,889 | Aug. 22 | 2702 | 677, 678 | 64 | 1107 |
| Grain-scouring machine | P. Provost | 504,173 | Aug. 29 | 3180 | 794, 795 | 64 | 1213 |
| Grain-separator | J. C. Benson | 504,466 | Sept. 5 | 240 | 65 | 64 | 1316 |
| Grain-shocks. Device for use in binding | P. Kiefer | 504,592 | Sept. 5 | 459 | 117 | 64 | 1355 |
| Grain-splitting machine | J. Winter | 500,729 | July 4 | 319 | 85 | 64 | 90 |
| Grain-ventilator | S. A. Towel | 501,116 | July 11 | 939 | 240, 241 | 64 | 185 |
| Grapple | J. C. Manning and A. C. Wilson | 504,600 | Sept. 5 | 471 | 120 | 64 | 1358 |
| Grate | W. S. Dobbs | 502,554 | Aug. 1 | 515 | 123 | 64 | 661 |
| Grate | E. Fales | 505,450 | Sept. 26 | 1877 | 483 | 64 | 1663 |
| Grate | E. J. Gordon | 501,064 | July 11 | 836 | 217 | 64 | 108 |
| Grate | A. Shearer | 503,169 | Aug. 15 | 1567 | 385, 386 | 64 | 882 |
| Grate. Alternating dumping | E. L. Long | 501,023 | July 18 | 1735 | 432 | 64 | 348 |
| Grate-bar. Interlocking and interchangeable rocking | R. Carey | 503,578 | Aug. 22 | 2223 | 557 | 64 | 1016 |
| Grate. Fire | A. Stroh | 504,635 | Sept. 5 | 515 | 133 | 64 | 1367 |
| Grate. Fireplace | W. E. Fitch | 501,061 | July 11 | 832 | 216 | 64 | 107 |
| Grate, &c. Inclined | H. H. Campbell | 505,748 | Sept. 26 | 2417 | 610 | 64 | 1762 |
| Grate shaking mechanism | E. Fales | 505,451 | Sept. 26 | 1878 | 483 | 64 | 1663 |
| Grater. Vegetable | R. Olp | 502,597 | Aug. 1 | 472 | 113 | 64 | 653 |
| Gravity-helmet | J. F. Corker | 500,646 | July 4 | 248 | 67 | 64 | 47 |
| Grinder. Sickle | C. E. Stuart | 503,998 | Aug. 29 | 2898 | 726 | 64 | 1160 |
| Grinder. Universal | C. H. Norton | 504,306 | Aug. 29 | 3393 | 849, 850 | 64 | 1253 |
| Grinding and polishing tool | J. F. Budke | 504,519 | Sept. 5 | 347 | 88 | 64 | 1334 |
| Grinding cutlery. Apparatus for | A. Johnston | 504,387 | Sept. 5 | 117 | 30, 31, 32 | 64 | 1292 |
| Grinding disk-cutters and apparatus therefor | A. Johnston | 504,386 | Sept. 5 | 115 | 29, 30 | 64 | 1292 |
| Grinding-machine | A. Johnston | 504,389 | Sept. 5 | 123 | 32, 33 | 64 | 1293 |
| Grinding-machine | T. Shaw | 505,178 | Sept. 19 | 1433 | 360 | 64 | 1566 |
| Grinding-machine | E. H. Vogel | 504,006 | Aug. 29 | 2911 | 730 | 64 | 1163 |
| Grinding-machine. Pan | J. Thompson and W. F. Vaughn | 501,583 | July 18 | 1666 | 417 | 64 | 330 |
| Grinding machine. Saw | J. B. Rhodes | 504,404 | Sept. 5 | 148 | 38, 39 | 64 | 1297 |
| Grinding-mill | F. Schmidt | 501,106 | July 11 | 922 | 236 | 64 | 183 |
| Grinding-mill | J. Thompson | 504,761 | Sept. 12 | 744 | 185 | 64 | 1424 |
| Grinding mower-knives. Machine for | R. Dutton | 503,127 | Aug. 15 | 1494 | 367, 368 | 64 | 868 |
| Grinding rotary cutters. Machine for | D. E. Bice | 504,055 | Sept. 5 | 545 | 139 | 64 | 1373 |
| Grinding thread-cutting tools. Machine for | C. P. R. Thiel and M. M. Aust | 504,000 | Aug. 29 | 2902 | 726, 727 | 64 | 1161 |
| Grindstone | W. H. Clapp | 504,329 | Sept. 5 | 28 | 9 | 64 | 1276 |
| Grip button | W. F. Whiting | 501,981 | July 25 | 2306 | 577 | 64 | 461 |
| Grip-opener | W. P. Courtney | 501,764 | July 18 | 1976 | 488 | 64 | 389 |
| Grooving machine. Roll | F. A. Pratt and J. Johnston | 504,172 | Aug. 29 | 3175 | 793, 794 | 64 | 1212 |
| Guard: *See* Axle-box dust-guard. Cattle-guard. Cycle mud-guard. Hatchway-guard. Penholder-guard. | | | | | | | |
| Guard and reflector | C. J. and G. W. Giddings | 503,955 | Aug. 29 | 2928 | 706 | 64 | 1147 |
| Guide-post clamp | G. T. Francis | 505,515 | Sept. 26 | 2000 | 512 | 64 | 1685 |
| Guitars. Adjustable tail-piece for | F. A. Ingersoll | 500,581 | July 4 | 66 | 19 | 64 | 14 |
| Gun | R. Sauer | 505,006 | Sept. 12 | 1152 | 295 | 64 | 1502 |
| Gun. Air | J. B. Thacher and E. C. Fasoldt | 504,920 | Sept. 12 | 846 | 217 | 64 | 1462 |
| Gun. Breakdown | F. A. Hollenbeck | 505,796 | Sept. 26 | 2492 | 629 | 64 | 1778 |
| Gun. Breech-loading | L. L. Hepburn | 502,489 | Aug. 1 | 409 | 96, 97 | 64 | 642 |
| Gun. Breech-loading | J. Rider | 500,949 | July 4 | 638 | 168 | 64 | 117 |
| Gun-carriage brake | F. Mohr | 500,927 | July 4 | 612 | 160 | 64 | 112 |
| Gun carriage. Disappearing | S. M. Mansfield | 502,569 | Aug. 1 | 536 | 128 | 64 | 665 |
| Gun carriage or mounting | J. B. G. A. Canet | 503,072 | Aug. 8 | 1387 | 343 | 64 | 836 |
| Gun feed. Machine | C. M. Broderick and J. Vankeirabilck | 504,516 | Sept. 5 | 343 | 87 | 64 | 1334 |
| Gun feed. Magazine | R. J. Gatling | 502,892 | Aug. 8 | 1079 | 266 | 64 | 780 |
| Gun. Gas-operated breech-loading | J. M. Browning | 502,549 | Aug. 1 | 509 | 121, 122 | 64 | 660 |
| Gun. Machine | C. M. Broderick and J. Vankeirabilck | 504,517 | Sept. 5 | 345 | 88 | 64 | 1334 |
| Gun. Machine | R. J. Gatling | 502,185 | July 25 | 2636 | 665 | 64 | 887 |
| Gun. Machine | R. J. Gatling | 504,831 | Sept. 12 | 868 | 220 | 64 | 1448 |
| Gun. Magazine | M. H. Durst | 502,812 | Aug. 8 | 963 | 235, 236, 237 | 64 | 758 |
| Gun. Magazine | C. S. Evans | 505,757 | Sept. 26 | 3433 | 614 | 64 | 1766 |
| Gun. Magazine | A. W. Savage | 502,018 | July 25 | 2367 | 581, 582 | 64 | 475 |
| Gun-magazine | B. F. Whitten and J. F. Porcher | 502,328 | Aug. 1 | 236 | 56 | 64 | 609 |
| Gun. Magazine bolt | H. A. Pitcher | 501,192 | July 11 | 1051 | 266, 267 | 64 | 906 |
| Gun-mounting | J. B. G. A. Canet | 504,198 | Aug. 29 | 3224 | 803, 804 | 64 | 1221 |
| Gun-sight | T. E. Armitstead | 504,696 | Sept. 5 | 630 | 160 | 64 | 1309 |
| Gun. Spring | W. H. Cram | 501,765 | July 18 | 1977 | 489 | 64 | 389 |
| Gun. Straight-pull magazine | A. H. Russell | 501,367 | July 11 | 1343 | 335, 336 | 64 | 957 |



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|---|---|---|---|---|---|---|---|
| Guns. Auxiliary valve for pneumatic | J. Rapieff | 502,016 | July 25 | 2363 | 593, 594 | 64 | 474 |
| Guns. Hydraulic recoil-brake for | A. Kampf | 500,908 | July 4 | 584 | 152 | 64 | 107 |
| Guns. Telescopic sight for ships' | B. A. Fiske | 504,357 | Sept. 5 | 39 | 12 | 64 | 1278 |
| Gyrating bolt | W. E. Getze | 502,116 | July 25 | 2527 | 633 | 64 | 505 |
| Hair-cleaning machine | F. Hall | 504,346 | Sept. 5 | 54 | 15 | 64 | 1281 |
| Hair-crimper | C. A. Krutsch | 502,567 | Aug. 1 | 533 | 127 | 64 | 684 |
| Hair. Machine for interlacing curled horse | F. Ochs | 502,376 | Aug. 1 | 212 | 50 | 64 | 604 |
| Halter | B. H. Hobart and E. A. Rockwell | 501,619 | July 18 | 1727 | 430 | 64 | 347 |
| Halyards. Device for reeving | S. A. L. Waters | 505,782 | Sept. 26 | 2476 | 624 | 64 | 1775 |
| Ham-holder | C. C. Umbenhauer | 501,973 | July 25 | 2297 | 574 | 64 | 461 |
| Hame | L. Anderson | 505,430 | Sept. 26 | 1848 | 475 | 64 | 1657 |
| Hame | P. Barker | 503,758 | Aug. 22 | 2528 | 629 | 64 | 1073 |
| Hame | A. D. Heist | 502,119 | July 25 | 2531 | 634 | 64 | 506 |
| Hame | A. A. Parsons | 500,603 | July 4 | 98 | 28 | 64 | 20 |
| Hame-coupling | P. F. Cullen and P. F. Mulchrone | 502,176 | July 25 | 2696 | 662 | 64 | 525 |
| Hame-fastener | I. Pennington | 502,802 | Aug. 8 | 1051 | 258 | 64 | 775 |
| Hame-fastener | J. A. O. Livoni | 505,470 | Sept. 26 | 1905 | 491 | 64 | 1668 |
| Hame-staple | C. Bronk | 504,908 | Sept. 12 | 969 | 254 | 64 | 1471 |
| Hammer and hatchet. Combination | C. Weigant | 503,630 | Aug. 22 | 2325 | 579 | 64 | 1033 |
| Hammer. Blacksmith's | A. Sperl | 500,970 | July 4 | 690 | 181 | 64 | 126 |
| Hammer. Forging | O. W. Orcutt | 503,492 | Aug. 15 | 2076 | 518 | 64 | 973 |
| Hammer. Power | W. Hines | 501,944 | July 25 | 2256 | 563 | 64 | 454 |
| Hammock | J. Shinn | 500,692 | July 4 | 254 | 68 | 64 | 45 |
| Hammock-support | N. G. Reynolds | 504,618 | Sept. 5 | 491 | 127 | 64 | 1362 |
| Hand-press | W. S. Kisinger | 500,680 | July 4 | 207 | 54 | 64 | 60 |
| Handle: *See* Bicycle-handle. Broom-handle. Coffin-handle. Hoe-handle. | | | | | | | |
| Handle-clamp, &c. | L. J. King | 504,291 | Aug. 29 | 3259 | 813 | 64 | 1228 |
| Handle for sheet-metal vessels | H. S. Raymond | 503,682 | Aug. 22 | 2385 | 597 | 64 | 1046 |
| Handles to vessels. Attaching | E. M. Peacock | 503,673 | Aug. 22 | 2385 | 595 | 64 | 1044 |
| Handles to vessels. Attaching | E. M. Peacock | 503,674 | Aug. 22 | 2386 | 595 | 64 | 1044 |
| Hanger: *See* Door-hanger. Eaves-trough hanger. Gate-hanger. Picture-hanger. Trolley-wire hanger. Whip-hanger. | | | | | | | |
| Harmonica | M. Ams | 504,899 | Sept. 12 | 971 | 250 | 64 | 1467 |
| Harmonica | E. Dienst | 501,495 | July 18 | 1529 | 383 | 64 | 309 |
| Harmonica | G. Hyman | 505,223 | Sept. 19 | 1502 | 391, 392 | 64 | 1579 |
| Harmonica | C. Strauss | 505,493 | Sept. 26 | 1938 | 500 | 64 | 1675 |
| Harmonica. Mouth | M. Hohner | 501,837 | July 18 | 2073 | 512 | 64 | 412 |
| Harness | I. N. Darr | 500,853 | July 4 | 524 | 136 | 64 | 95 |
| Harness | C. L. Passmore | 503,725 | Aug. 22 | 2470 | 614 | 64 | 1061 |
| Harness-loop | C. W. James | 503,856 | Aug. 22 | 2656 | 665 | 64 | 1098 |
| Harness suspending device | L. Townsend | 503,814 | Aug. 22 | 2502 | 650 | 64 | 1087 |
| Harrow | C. A. Anderson and J. S. Winston | 502,391 | Aug. 1 | 237 | 56 | 64 | 609 |
| Harrow | G. La Dow | 501,841 | July 18 | 2078 | 513 | 64 | 407 |
| Harrow | C. La Dow | 501,886 | July 18 | 2161 | 536 | 64 | 421 |
| Harrow | C. La Dow | 501,887 | July 18 | 2163 | 536 | 64 | 422 |
| Harrow | W. J. Lawrence | 501,012 | July 4 | 750 | 196 | 64 | 137 |
| Harrow | W. J. Lawrence | 503,545 | Aug. 15 | 2165 | 541 | 64 | 990 |
| Harrow | A. Neal and R. B. Suhr | 503,434 | Aug. 15 | 1994 | 492 | 64 | 956 |
| Harrow | C. Perrin | 502,692 | Aug. 1 | 758 | 183 | 64 | 705 |
| Harrow | C. Perrin | 503,675 | Aug. 22 | 2486 | 595 | 64 | 1045 |
| Harrow | H. H. Sater | 503,166 | Aug. 15 | 1561 | 384 | 64 | 880 |
| Harrow and cultivator. Combination | E. B. West | 502,059 | July 25 | 2437 | 613 | 64 | 487 |
| Harrow. Disk | E. Pridmore | 503,773 | Aug. 22 | 2546 | 634 | 64 | 1076 |
| Harrow. Disk | E. Pridmore | 503,774 | Aug. 22 | 2549 | 635 | 64 | 1077 |
| Harrow. Disk | J. H. Thomas | 503,178 | Aug. 15 | 1579 | 388 | 64 | 895 |
| Harrow. Folding | C. L. Burnett | 504,428 | Sept. 5 | 192 | 49 | 64 | 1306 |
| Harrow frame | F. X. Krabach | 501,724 | July 18 | 1997 | 472 | 64 | 376 |
| Harrow. Rotary | E. Erekson | 505,038 | Sept. 12 | 1203 | 310 | 64 | 1541 |
| Harrow spring-tooth | H. Gale | 502,488 | Aug. 1 | 408 | 96 | 64 | 642 |
| Harrow-tooth | L. D. Corser | 504,444 | Sept. 5 | 212 | 56 | 64 | 1310 |
| Harrow. Twin cultivating | T. A. Waldrip | 501,609 | July 18 | 1712 | 427 | 64 | 344 |
| Harvester | H. E. Pridmore | 504,089 | Aug. 29 | 3034 | 758 | 64 | 1186 |
| Harvester | G. W. Scott | 502,534 | Aug. 1 | 492 | 116 | 64 | 655 |
| Harvester. Beet | H. B. Martin | 504,423 | Sept. 5 | 185 | 48 | 64 | 1305 |
| Harvester-binder | J. S. Mercer and W. Greatrex | 503,798 | Aug. 22 | 2580 | 642, 643 | 64 | 1083 |
| Harvester conveyer-belt | D. W. Storms | 503,014 | Aug. 8 | 1307 | 320 | 64 | 820 |
| Harvester. Corn | W. F. Abbott | 504,188 | Aug. 29 | 3210 | 800 | 64 | 1219 |
| Harvester. Corn | W. M. Platt | 501,101 | July 11 | 910 | 233, 234 | 64 | 181 |
| Harvester. Corn | W. J. Ruddy | 505,559 | Sept. 26 | 2098 | 532, 533 | 64 | 1704 |
| Harvester. Corn | W. R. Steiner | 505,492 | Sept. 26 | 1935 | 498, 499, 500 | 64 | 1674 |
| Harvester. Corn | E. Warder | 503,757 | Aug. 22 | 2526 | 628 | 64 | 1072 |
| Harvester. Cotton | G. Beekman | 501,670 | July 18 | 1811 | 450, 451, 452 | 64 | 361 |
| Harvester. Cotton | L. Cooper | 504,019 | Aug. 29 | 2927 | 733 | 64 | 1165 |
| Harvester. Cotton | B. Gause | 503,041 | Aug. 8 | 1344 | 331, 332 | 64 | 828 |
| Harvester cutter-bar | W. H. Palmer | 505,325 | Sept. 19 | 1668 | 430 | 64 | 1616 |
| Harvester. Pea | J. Bearman | 503,031 | Aug. 8 | 1332 | 327, 328 | 64 | 825 |
| Harvester. Potato | H. C. Wilson | 504,186 | Aug. 29 | 3204 | 799 | 64 | 1216 |
| Harvester-reel | C. P. Wall | 504,795 | Sept. 12 | 801 | 204 | 64 | 1433 |

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| Invention. | Name. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drg. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|---|
| Harvester. Self-binding | P. Hanson | 503,283 | Aug. 15 | 1744 | 431, 432 | 64 | 914 |
| Harvester tension device | T. Sampson | 500,778 | July 4 | 393 | 103 | 64 | 73 |
| Harvesters and binders. Automatic dropper for | C. F. Wille | 505,739 | Sept. 26 | 2405 | 608 | 64 | 1760 |
| Harvesters. Lifting device for self-binding | F. Burgroff | 503,326 | Aug. 15 | 2129 | 535 | 64 | 983 |
| Harvesters. Mechanism for actuating pickers for cotton- | G. Beekman | 501,669 | July 18 | 1809 | 450 | 64 | 360 |
| Harvesters. Picker actuating mechanism for cotton- | G. Beekman | 501,671 | July 18 | 1815 | 452, 453 | 64 | 361 |
| Harvesting-machine | F. Leonard | 501,890 | July 18 | 2166 | 537 | 64 | 422 |
| Harvesting-machine | E. A. Peck | 502,861 | Aug. 8 | 1045 | 256, 257, 258 | 64 | 774 |
| Hasp-lock | C. S. Van Auker | 502,938 | Aug. 8 | 1188 | 292 | 64 | 799 |
| Hat | C. Harkins | 504,350 | Sept. 5 | 56 | 15 | 64 | 1281 |
| Hat | I. Shepard | 500,962 | July 4 | 676 | 177 | 64 | 123 |
| Hat and coat hook | A. White | 501,453 | July 11 | 1467 | 386 | 64 | 282 |
| Hat, coat, and umbrella rack | E. W. Trout | 500,632 | July 4 | 152 | 40 | 64 | 30 |
| Hat-fastener | J. Parsons | 503,771 | Aug. 22 | 2543 | 633 | 64 | 1075 |
| Hat-fastener. Lady's | E. McCormick | 505,719 | Sept. 26 | 2375 | 600 | 64 | 1755 |
| Hat-fastener. Lady's | J. J. O'Connor | 501,295 | July 11 | 1208 | 305 | 64 | 234 |
| Hat-holder | C. E. Boyer | 505,696 | Sept. 26 | 2342 | 593 | 64 | 1750 |
| Hat-holder and coat-hook | G. M. R. Twose | 501,972 | July 25 | 2296 | 574 | 64 | 441 |
| Hat-iron. Portable | J. M. Cotton | 501,320 | July 11 | 1258 | 318 | 61 | 243 |
| Hat or bonnet holder | A. E. McDonald | 504,814 | Sept. 12 | 839 | 215 | 64 | 1441 |
| Hat-shaving tool | G. Crouch | 503,949 | Aug. 29 | 2817 | 703 | 64 | 1145 |
| Hat-support | W. H. McMahon | 504,275 | Aug. 29 | 3246 | 836 | 64 | 1244 |
| Hatchway-guard | R. Macomb | 503,797 | Aug. 22 | 2579 | 642 | 64 | 1083 |
| Hay-derrick | C. J. Reynolds | 500,721 | July 4 | 307 | 82 | 64 | 59 |
| Hay drier and stacker | J. F. Hutchinson | 502,678 | July 25 | 2465 | 619 | 64 | 493 |
| Hay-elevator | C. A. Guhr and A. E. Richter | 503,358 | Aug. 15 | 1896 | 470 | 64 | 940 |
| | S. A. McAnulty | 503,352 | Aug. 15 | 1865 | 461 | 64 | 935 |
| Hay-fork | S. B. and S. Welch | 502,155 | July 25 | 2501 | 651, 652 | 64 | 517 |
| Hay or cotton press | S. M. Neely | 501,435 | July 11 | 1441 | 361 | 64 | 277 |
| Hay or hog rack | W. H. Long | 500,920 | July 4 | 605 | 158 | 64 | 111 |
| Hay or stock rack | E. Kies | 501,363 | July 11 | 1338 | 334 | 64 | 256 |
| Hay-press | L. L. Moe | 505,234 | Sept. 19 | 1503 | 392 | 64 | 1579 |
| Hay-press | A. Witte | 502,942 | Aug. 8 | 1195 | 293, 294 | 64 | 800 |
| Hay-rack | C. W. Behrens | 502,220 | July 25 | 2696 | 680 | 64 | 538 |
| Hay-rack | W. H. Laird | 505,317 | Sept. 19 | 1659 | 428 | 64 | 1608 |
| Hay rake and loader | C. A. Fleming | 504,975 | Sept. 12 | 1101 | 281, 282 | 64 | 1492 |
| Hay rake and loader | M. Rew | 502,679 | Aug. 1 | 736 | 177, 178 | 64 | 701 |
| Hay raking and cocking machine | A. G. Park and W. A. Dexter | 504,088 | Aug. 29 | 3032 | 757, 758 | 64 | 1186 |
| Hay-sling | L. J. Helland | 502,721 | Aug. 8 | 824 | 199 | 64 | 732 |
| Hay-sling | B. G. Olson | 505,227 | Sept. 19 | 1507 | 393 | 64 | 1580 |
| Hay-stacker | P. F. Fleming | 501,650 | July 18 | 1774 | 442 | 64 | 355 |
| Hay-stacker | O. C. Nilson | 500,599 | July 4 | 93 | 27 | 64 | 19 |
| Headers or other purposes. Machine for making ends for | C. P. Higgins | 503,966 | Aug. 29 | 2846 | 713 | 64 | 1151 |
| Headers or other tubes. End-placing machine for | C. P. Higgins | 503,964 | Aug. 29 | 2842 | 711, 712 | 64 | 1150 |
| Headlight | A. H. Handlan, Jr. | 504,214 | Aug. 29 | 3249 | 810 | 64 | 1226 |
| Headlight cover. Locomotive | F. A. Stevens | 504,949 | Sept. 12 | 1052 | 270 | 64 | 1482 |
| Headlight. Electric | E. A. Edwards | 505,351 | Sept. 19 | 1705 | 440 | 64 | 1617 |
| Heater: *See* Car-heater. Cheese-vat heater. Electrical heater. Feed-water heater. Gas-heater. Hot-water heater. Incubator-heater. Oil-heater. Tank-heater. Water-heater. | | | | | | | |
| Heater | H. W. Campbell | 502,701 | Aug. 8 | 799 | 193 | 64 | 727 |
| Heater | C. A. Howard | 503,141 | Aug. 15 | 1517 | 373 | 64 | 872 |
| Heater | J. A. Weaver | 502,335 | Aug. 1 | 140 | 32 | 64 | 591 |
| Heater-flue register | W. H. Meyers | 501,019 | July 4 | 758 | 199 | 64 | 138 |
| Heating and lighting vehicles. Device for | N. B. Ross | 505,330 | Sept. 19 | 1674 | 432 | 64 | 1611 |
| Heating apparatus | T. J. Maw | 505,713 | Sept. 26 | 2365 | 598 | 64 | 1754 |
| Heating apparatus | G. L. Shorey | 500,693 | July 4 | 255 | 69, 70 | 64 | 48 |
| Heating apparatus. Hot-water and steam | A. L. Snyder | 502,055 | July 25 | 2431 | 612 | 64 | 486 |
| Heating, cooling, and ventilating system | J. H. Brady | 504,961 | Sept. 12 | 1070 | 273, 274 | 64 | 1486 |
| Heating-furnace | J. A. P. Berg | 503,641 | Aug. 22 | 2740 | 584 | 64 | 1036 |
| Heating-furnace | W. P. Winner | 501,034 | July 4 | 785 | 205, 206 | 64 | 143 |
| Hedge-clip | R. Raby | 503,161 | Aug. 15 | 1552 | 380 | 64 | 879 |
| Heel | H. Menier | 502,571 | Aug. 1 | 539 | 128 | 64 | 665 |
| Heel | M. Murray | 500,816 | July 4 | 450 | 118 | 64 | 83 |
| Heel-attaching machine | H. A. Webster | 505,074 | Sept. 12 | 1268 | 325, 326, 327 | 64 | 1523 |
| Heel-burnishing machine | H. M. Loomer | 505,050 | Sept. 12 | 1219 | 314 | 64 | 1514 |
| Heel compressing and loading machine | C. W. Glidden | 502,667 | Aug. 1 | 706 | 168, 169, 170 | 64 | 695 |
| Heel compressing and loading machine | C. W. Glidden | 502,668 | Aug. 1 | 715 | 171, 172 | 64 | 697 |
| Heel-nail | G. A. Curtis | 502,550 | Aug. 1 | 511 | 122 | 64 | 660 |
| Heel-nailing machine | C. W. Glidden | 502,669 | Aug. 1 | 719 | 172, 173 | 64 | 698 |
| Heel-stiffener machine | M. Chase and M. H. Foster | 504,397 | Sept. 5 | 93 | 7, 8 | 64 | 1275 |



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|---|---|---|---|---|---|---|---|
| Heel-stiffener machine | L. W. Litch | 503,608 | Aug. 22 | 2291 | 572 | 64 | 1027 |
| Heel-trimming machine | A. B. Fowler and G. E. Warren | 503,475 | Aug. 15 | 2053 | 511, 512, 513 | 64 | 968 |
| Heel-trimming machine | C. W. Glidden and H. W. Winter | 505,043 | Sept. 12 | 1209 | 311 | 64 | 1514 |
| Hexaoxyanthraquinone and making it | R. E. Schmidt | 503,295 | Aug. 15 | 1768 | | 64 | 918 |
| Hides. Preparing | F. Grognet | 503,235 | Aug. 15 | 1689 | | 64 | 900 |
| High or low water alarm | W. Hodgson | 502,191 | July 25 | 2547 | 668 | 64 | 529 |
| High or low water alarm | W. A. Kitts | 503,606 | Aug. 22 | 2285 | 570 | 64 | 1026 |
| Hinge | T. Corscaden and F. Holland | 502,706 | Aug. 8 | 804 | 194 | 64 | 728 |
| Hinge | W. H. Hart | 504,877 | Sept. 12 | 935 | 241 | 64 | 1460 |
| Hinge | C. F. Hoffrits | 504,162 | Aug. 29 | 3156 | 788 | 64 | 1208 |
| Hinge | L. L. Pletcher | 505,490 | Sept. 26 | 1918 | 494 | 64 | 1671 |
| Hinge | L. Lipp | 502,300 | Aug. 1 | 82 | 19 | 64 | 581 |
| Hinge. Combined strap and pivot | C. M. Lamb | 504,450 | Sept. 5 | 223 | 60 | 64 | 1312 |
| Hinge. Gate | C. M. Lamb | 504,451 | Sept. 5 | 223 | 60 | 64 | 1312 |
| Hinge. Gate | E. A. Moore | 504,498 | Sept. 5 | 315 | 79, 80 | 64 | 1328 |
| Hinge-polishing machine | J. W. Coultas | 505,193 | Sept. 19 | 1454 | 374, 375 | 64 | 1570 |
| Hinge. Spring | F. W. Hoefer | 501,786 | July 18 | 2007 | 495 | 64 | 395 |
| Hinge. Spring | R. Labudde and F. Hansen | 503,343 | Aug. 15 | 1679 | 413 | 64 | 902 |
| Hinge. Spring | L. R. Pomeroy | 504,403 | Sept. 5 | 144 | 38 | 64 | 1297 |
| Hinge. Spring | F. D. Robinson | 503,064 | Aug. 8 | 1378 | 340 | 64 | 834 |
| Hitch. Halter | R. H. Bacot | 504,650 | Sept. 5 | 537 | 138 | 64 | 1371 |
| Hoe | E. B. Hazel | 502,730 | Aug. 8 | 824 | 190 | 64 | 731 |
| Hoe | D. W. Richardson | 501,662 | July 18 | 1798 | 447 | 64 | 359 |
| Hoe-handle | J. P. Phillips | 505,252 | Sept. 19 | 1544 | 402 | 64 | 1587 |
| Hoe. Horse | C. Cottis | 505,349 | Sept. 19 | 1700 | 438, 439 | 64 | 1616 |
| Hog-trough | I. Jones | 503,664 | Aug. 22 | 2374 | 592 | 64 | 1042 |
| Hoisting and conveying apparatus | D. Donahue | 504,522 | Sept. 5 | 351 | 89 | 64 | 1335 |
| Hoisting and conveying apparatus | P. Rasch | 505,637 | Sept. 26 | 2235 | 567 | 64 | 1730 |
| Hoisting and conveying machine | P. Rasch | 505,639 | Sept. 26 | 2240 | 568 | 64 | 1731 |
| Hoisting and conveying machines. Elevated tramway for | P. Rasch | 505,635 | Sept. 26 | 2230 | 566 | 64 | 1729 |
| Hoisting and conveying tramway mechanism | P. Rasch | 505,638 | Sept. 26 | 2237 | 567, 568 | 64 | 1730 |
| Hoisting-machine | S. Griffiths | 502,188 | July 25 | 2643 | 667 | 64 | 598 |
| Hoisting machinery | A. J. Shaw | 505,065 | Sept. 12 | 1249 | 320, 321 | 64 | 1519 |
| Hoisting machinery | A. J. Shaw | 505,066 | Sept. 12 | 1252 | 321 | 64 | 1520 |
| Hoisting machinery | A. J. Shaw | 505,067 | Sept. 12 | 1254 | 321, 322 | 64 | 1520 |
| Hoisting machinery | A. J. Shaw | 505,068 | Sept. 12 | 1257 | 322, 323 | 64 | 1521 |
| Hoisting mechanism. Elevated tramway for | P. Rasch | 505,636 | Sept. 26 | 2233 | 566, 567 | 64 | 1730 |
| Hoisting. Method of and machinery for | E. Reynolds | 504,942 | Sept. 12 | 1042 | 268 | 64 | 1481 |
| Holdback | G. C. Edmunds | 501,003 | July 4 | 738 | 193 | 64 | 134 |
| Holdback. Vehicle | J. F. Haines | 502,718 | Aug. 8 | 821 | 198 | 64 | 731 |
| Holdback. Vehicle | C. A. Packard | 503,158 | Aug. 15 | 1546 | 379 | 64 | 878 |
| Hollow articles. Method of and apparatus for the manufacture of | R. R. Singer | 501,900 | July 18 | 2182 | 541, 542 | 64 | 425 |
| Hominy-mill | R. G. Jenckes | 504,784 | Sept. 12 | 786 | 199 | 64 | 1430 |
| Honey-extractor. Centrifugal | J. R. Hawkins | 501,717 | July 18 | 1788 | 469 | 64 | 374 |
| Hoof-cleaning tool | R. C. Jenner | 502,042 | July 25 | 2407 | 606 | 64 | 482 |
| Hoof trimmer or parer | J. Matteson | 504,400 | Sept. 5 | 140 | 37 | 64 | 1295 |
| Hook: *See* Check-hook. Coat-hook. Coat and hat hook. Drapery-hook. Fish-hook. Gaff-hook. Garment-hook. Hat and coat hook. Lacing-hook. Plumber's hook. Snap-hook. Whiffletree hook. | | | | | | | |
| Hook | C. J. Brosnan | 501,320 | July 11 | 1248 | 314 | 64 | 241 |
| Hook | E. Kempshall | 504,039 | Aug. 29 | 2961 | 740 | 64 | 1172 |
| Hook | H. S. Piggins | 502,569 | Aug. 1 | 475 | 114 | 64 | 654 |
| Hook | F. Taylor | 501,197 | July 11 | 1062 | 258 | 64 | 208 |
| Hook | F. Taylor | 501,198 | July 11 | 1062 | 260 | 64 | 209 |
| Hook and eye | W. S. Seymour | 502,238 | July 25 | 2732 | 689 | 64 | 544 |
| Hook and eye | W. A. Towler | 501,633 | July 18 | 1753 | 436 | 64 | 351 |
| Hoop: *See* Mast-hoop. Toy hoop. | | | | | | | |
| Hoop-bending machine | A. Syme | 505,614 | Sept. 26 | 2190 | 554 | 64 | 1722 |
| Hoop-coupling | H. W. Ford | 504,677 | Sept. 5 | 595 | 151 | 64 | 1382 |
| Hoop fastening. Barrel or other | E. W. Beazell | 500,644 | July 4 | 495 | 128 | 64 | 90 |
| Hoop-making machine | J. Pleukharp and W. K. Liggett | 501,730 | July 18 | 1904 | 473, 474 | 64 | 377 |
| Hoop-making machine | J. Pleukharp and W. K. Liggett | 502,407 | Aug. 1 | 262 | 62, 63 | 64 | 614 |
| Hop-picking machine | B. A. Beardsley | 503,190 | Aug. 15 | 1596 | 302, 303 | 64 | 898 |
| Horizon. Gyroscope artificial | J. N. Rowe | 505,575 | Sept. 26 | 2198 | 539 | 64 | 1711 |
| Horse-blanket | H. B. Cleveland and W. E. Tuller | 502,508 | Aug. 1 | 438 | 105 | 64 | 647 |
| Horse-blanket strap | A. P. Russell | 500,619 | July 4 | 133 | 36 | 64 | 26 |
| Horse-checking device | L. S. Franklin | 502,092 | July 25 | 2400 | 626 | 64 | 498 |
| Horse-detacher | E. C. Burnett | 501,490 | July 18 | 1522 | 382 | 64 | 308 |
| Horse-detacher | A. M. Mentzer | 505,056 | Sept. 12 | 1230 | 316 | 64 | 1515 |
| Horse-power | A. Aker | 503,640 | Aug. 22 | 2339 | 583, 584 | 64 | 1035 |
| Horse-sandal | H. G. Haedrich, Jr | 501,567 | July 18 | 1642 | 411 | 64 | 360 |
| Horses. Apparatus for treating sprung legs in | A. Coté | 502,849 | Aug. 8 | 1029 | 253 | 61 | 771 |
| Horses. Nostril-protector for | A. W. Joerges and J. A. O'Connell | 501,463 | July 11 | 1490 | 372 | 64 | 265 |
| Horses. Trip for releasing | C. C. Drake | 502,487 | Aug. 1 | 407 | 96 | 64 | 640 |

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|---|---|---|---|---|---|---|---|
| Horseshoe | L. Dietrich | 501,562 | July 18 | 1637 | 409 | 64 | 330 |
| Horseshoe | R. de Eicken | 502,354 | Aug. 1 | 177 | 41 | 64 | 598 |
| Horseshoe | D. Gingold | 500,881 | July 4 | 552 | 143 | 64 | 100 |
| Horseshoe and pad | M. Hallanan | 503,849 | Aug. 22 | 2649 | 663 | 64 | 1097 |
| Horseshoe and quarter-boot | J. D. Munsey | 503,889 | Aug. 22 | 2673 | 670 | 64 | 1101 |
| Horseshoe-calk | S. Robinson | 504,943 | Sept. 12 | 1045 | 268 | 64 | 1481 |
| Horseshoe-calk sharpener | S. R. Brooks | 504,553 | Sept. 5 | 405 | 103 | 64 | 1345 |
| Horseshoe. Calked | O. McQuillen | 502,985 | Aug. 8 | 1271 | 311 | 64 | 813 |
| Horseshoe. Elastic | M. Hallanan | 503,848 | Aug. 22 | 2648 | 663 | 64 | 1096 |
| Horseshoe. Elastic-tread | G. W. Savage | 501,167 | July 11 | 1020 | 258 | 64 | 200 |
| Horseshoe-fastening | I. W. Allyn | 503,397 | Aug. 15 | 1932 | 490 | 64 | 948 |
| Horseshoe-making machine | J. Roberts | 501,298 | July 11 | 1212 | {306 / 307} | 64 | 235 |
| Horseshoe. Nailless | S. Pruden | 500,946 | July 4 | 634 | 167 | 64 | 116 |
| Horseshoe-removing tool | P. Amelotte | 503,935 | Aug. 29 | 2779 | 697 | 64 | 1139 |
| Horseshoe. Two-part | W. G. Clahassey | 502,848 | Aug. 8 | 1028 | 252 | 64 | 770 |
| Horseshoeing-stock | E. B. Bradford | 505,585 | Sept. 26 | 2108 | 535 | 64 | 1707 |
| Hose-bridge | F. Kruckeberg | 504,530 | Sept. 5 | 366 | 92 | 64 | 1338 |
| Hose-carriage | W. T. Y. Schenck | 504,624 | Sept. 5 | 501 | 129 | 64 | 1364 |
| Hose-coupling | J. T. Hayden | 503,370 | Aug. 15 | 1898 | 470 | 64 | 941 |
| Hose-coupling and steam-trap. Combined | J. Q. C. Searle and E. W. Jenks | 505,727 | Sept. 26 | 2388 | 604 | 64 | 1757 |
| Hose-coupling. Electric | J. B. Strauss | 500,822 | July 4 | 459 | 121 | 64 | 85 |
| Hose-nozzle | P. Wiberg | 501,125 | July 11 | 953 | 243 | 64 | 188 |
| Hose or pipe coupling | W. C. Gebhardt | 503,282 | Aug. 15 | 1741 | 430 | 64 | 913 |
| Hose-reel guide-support | W. F. Bowers | 501,469 | July 18 | 1521 | 382 | 64 | 308 |
| Hot-air furnace | C. M. Bridges | 505,697 | Sept. 26 | 2343 | 593 | 64 | 1750 |
| Hot-air furnace | P. F. Dickinson | 505,510 | Sept. 26 | 1986 | 509 | 64 | 1682 |
| Hot-air furnace | A. J. Erwin | 505,096 | Sept. 19 | 1308 | 337 | 64 | 1544 |
| Hot-air furnace | J. H. Putnam | 505,177 | Sept. 19 | 1432 | 369 | 64 | 1566 |
| Hot-air furnace | C. C. Sofleias | 500,821 | July 4 | 457 | {120 / 121} | 64 | 84 |
| Hot-air register | W. M. Dyas | 504,469 | Sept. 5 | 256 | 66, 67 | 64 | 1318 |
| Hot-water heater | J. Thorp | 504,852 | Sept. 12 | 899 | {231 / 232} | 64 | 1454 |
| Hot-water heater | W. Vanderman | 501,974 | July 25 | 2297 | 574 | 64 | 402 |
| Hot-water tanks. Device for preventing noise in | F. B. Phillips | 505,722 | Sept. 26 | 2380 | 601 | 64 | 1756 |
| House: *See* Sanitary house. | | | | | | | |
| Hub | A. Peel | 501,158 | July 11 | 1008 | 256 | 64 | 197 |
| Hub. Vehicle | H. E. Moebus | 502,408 | Aug. 1 | 261 | 61, 62 | 64 | 613 |
| Hub. Vehicle-wheel | Z. T. Wilson | 505,740 | Sept. 26 | 2407 | 609 | 64 | 1760 |
| Hub. Wheel | J. G. Rosseboom | 503,114 | Aug. 8 | 1468 | 359 | 64 | 849 |
| Hydrant | W. H. Bootman | 504,662 | Sept. 5 | 555 | 142 | 64 | 1375 |
| Hydrant | D. A. Decrow | 505,596 | Sept 26 | 2164 | 547 | 64 | 1717 |
| Hydrant and faucet | J. Knickerbacker | 504,504 | Sept. 5 | 462 | 117 | 64 | 1356 |
| Hydraulic accumulator | W. B. Cornog | 502,349 | Aug. 1 | 167 | 39 | 64 | 597 |
| Hydraulic elevator. Electrically-operated | W. Krutzsch | 503,091 | Aug. 8 | 1419 | 350 | 64 | 841 |
| Hydraulic motor | E. Marshall | 502,981 | Aug. 8 | 1263 | 309 | 64 | 812 |
| Hydraulic motor | H. Aiken | 502,844 | Aug. 8 | 1021 | {249 / 250} | 64 | 769 |
| Hydraulic motor | F. B. Cole | 504,331 | Sept. 5 | 31 | 9 | 64 | 1277 |
| Hydraulic motor | O. F. Teed | 503,015 | Aug. 8 | 1308 | 320 | 64 | 820 |
| Hydraulic press, &c | A. Kampf | 501,436 | July 11 | 1429 | 358 | 64 | 274 |
| Hydrocarbon-burner | J. O. Beasley | 504,297 | Aug. 29 | 3380 | 845 | 64 | 1251 |
| Hydrocarbon-burner | E. G. Mummery | 503,548 | Aug. 15 | 2160 | 542 | 64 | 990 |
| Hydrocarbon-burner | A. Schafer | 505,374 | Sept. 19 | 1745 | {452 / 453} | 64 | 1624 |
| Hydrocarbon-burner for stoves, furnaces, &c | W. S. Chilton | 504,667 | Sept. 5 | 569 | 144 | 64 | 1377 |
| Hydrocarbon-engine | A. Gray | 504,723 | Sept. 12 | 669 | {170 / 171} | 64 | 1409 |
| Hydrocarbon-furnace | R. Ferguson | 502,710 | Aug. 8 | 809 | 996 | 64 | 729 |
| Hydrocarbon incinerating-furnace | N. Dowling | 501,458 | July 11 | 1475 | 371 | 64 | 284 |
| Hydrocarbon-vapor burner | C. Fabriciua | 501,496 | July 18 | 1530 | 384 | 64 | 309 |
| Hydrocarbons from bituminous rocks. Method of and means for extracting | G. Archbold | 503,028 | Aug. 8 | 1327 | 326 | 64 | 895 |
| Hydropneumatic motor | W. Cooper | 504,670 | Sept. 5 | 577 | {145 / 146 / 147 / 148 / 149} | 64 | 1379 |
| Ice-boat. Oar-propelled | G. H. Thacher | 500,826 | July 4 | 406 | 123 | 64 | 86 |
| Ice-can filler. Automatic self-arrester | F. Bauer | 501,398 | July 11 | 1392 | 340 | 64 | 267 |
| Ice-cream, &c. Apparatus for cutting | W. Prigge | 502,863 | Aug. 8 | 1052 | {258 / 259} | 64 | 775 |
| Ice-cream cooler and freezer | F. W. Merrill | 501,894 | July 18 | 2173 | 539 | 64 | 423 |
| Ice-cream freezer | J. K. Patterson | 504,363 | Sept. 5 | 73 | 19 | 64 | 1284 |
| Ice-cream freezer | J. O. Spong | 505,731 | Sept. 26 | 2395 | 605 | 64 | 1758 |
| Ice-creeper | J. Carr | 504,708 | Sept. 12 | 652 | 165 | 64 | 1405 |
| Ice-creeper | J. E. Scott | 502,394 | Aug. 1 | 121 | 28 | 64 | 587 |
| Ice-machine | G. F. Knox | 501,045 | July 4 | 804 | 209 | 64 | 146 |
| Ice-machine | J. Kurtz | 504,986 | Sept. 12 | 1164 | 288 | 64 | 1496 |
| Ice-making machines. Congealer for | J. F. Behn and G. A. Wegner | 505,588 | Sept. 26 | 2153 | {544 / 545} | 64 | 1715 |
| Ice manufacture. Brine-tank for artificial | L. Block | 501,316 | July 11 | 1239 | 312 | 64 | 240 |
| Ice-runway | J. Patterson, Jr | 501,659 | July 18 | 1793 | 447 | 64 | 358 |
| Ice shredder or shaver | T. Mabbett | 500,923 | July 4 | 508 | 158 | 64 | 111 |
| Ice-tongs and weighing-scales. Combined | T. Glynn | 503,042 | Aug. 8 | 1348 | 333 | 64 | 823 |
| Images. Construction of | S. M. Schwab, Jr | 502,589 | Aug. 1 | 568 | 136 | 64 | 670 |
| Incubator | H. M. Sheer | 501,735 | July 18 | 1914 | 476 | 64 | 379 |
| Incubator and brooder. Combined | J. W. Atkinson | 502,900 | Aug. 8 | 1115 | 274 | 64 | 787 |
| Incubator heat-regulator | F. Minter | 505,604 | Sept. 26 | 2174 | 550 | 64 | 1719 |
| Incubator-heater | E. P. Alexander | 502,999 | Aug. 8 | 1114 | 274 | 64 | 796 |
| Index-holder for books | J. W. Hays | 501,508 | July 18 | 1552 | 380 | 64 | 313 |



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|---|---|---|---|---|---|---|---|
| Indicator: *See* Car indicator. Pressure indicator. Cash indicator. Speed indicator. Electric indicator. Station indicator. Lamp-filling indicator. Synchronism indicator. Temperature indicator. | | | | | | | |
| Indicator-float | F. T. Williams | 505,619 | Sept. 26 | 2195 | 555 | 64 | 1723 |
| Induction-coil. Coin-operated | W. R. Pope | 500,776 | July 4 | 390 | 103 | 64 | 73 |
| Injector | F. Brunbauer | 500,752 | July 4 | 349 | 92, 93 | 64 | 65 |
| Injector | F. Funke | 501,271 | July 11 | 1172 | 297 | 64 | 259 |
| Injector | P. P. Hogue | 501,422 | July 11 | 1425 | 357 | 64 | 273 |
| Injector | S. L. Kneass | 501,464 | July 11 | 1481 | 372 | 64 | 285 |
| Injector | I. R. Laux | 501,569 | July 18 | 1645 | 412 | 64 | 332 |
| Injector | G. W. Mason | 504,068 | Aug. 29 | 2998 | 749 | 64 | 1176 |
| Injector | J. W. Stanley | 500,677 | July 4 | 236 | 62 | 64 | 45 |
| Injector and exhauster. Combined air | S. R. Earle | 504,334 | Sept. 5 | 35 | 11 | 64 | 1278 |
| Inking-pad cushion | J. R. Keatinge | 503,267 | Aug. 15 | 1719 | 424 | 64 | 910 |
| Inkstand | H. S. Hele-Shaw | 503,852 | Aug. 22 | 2652 | 664 | 64 | 1097 |
| Inkstand. Fountain | E. C. Mayloy | 500,690 | July 4 | 252 | 68 | 64 | 48 |
| Insect-screen or dust-arrester | L. F. Stutz and J. A. Durnbaugh | 505,494 | Sept. 26 | 1938 | 500 | 64 | 1675 |
| Insects. Apparatus for distributing solutions for destroying | J. Schreick | 502,766 | Aug. 8 | 888 | 218 | 64 | 744 |
| Insecticide | W. K., M. Z., and J. Bryant | 501,323 | July 11 | 1259 | ..... | 64 | 242 |
| Insulated electric wires. Cleat for holding a plurality of | E. W. Buffinton | 505,215 | Sept. 19 | 1490 | 380 | 64 | 1577 |
| Insulated-wire cleat | E. H. Clarke | 502,614 | Aug. 1 | 611 | 146 | 64 | 678 |
| Insulating-coupling | L. McCarthy | 501,021 | July 4 | 761 | 200 | 64 | 139 |
| Insulator | G. W. Blackburn | 504,059 | Aug. 29 | 2987 | 746 | 64 | 1176 |
| Insulator | L. McCarthy | 502,677 | Aug. 1 | 733 | 176 | 64 | 700 |
| Insulator | L. McCarthy | 503,549 | Aug. 15 | 2171 | 542 | 64 | 990 |
| Insulator. Conduit railway | G. E. Noyes | 500,937 | July 4 | 624 | 164 | 64 | 114 |
| Insulator. Electric-wire | W. D. Trimble | 503,778 | Aug. 22 | 2555 | 636 | 64 | 1077 |
| Insulator-pin | J. J. O Neill | 505,123 | Sept. 19 | 1349 | 347 | 64 | 1552 |
| Insulator pin and bracket machine | C. A. Eisenhart | 505,309 | Sept. 19 | 1648 | 426 | 64 | 1606 |
| Insulator. Section | L. McCarthy | 503,749 | Aug. 22 | 2514 | {625 / 626} | 64 | 1070 |
| Insulator. Trolley-wire | L. McCarthy | 502,836 | Aug. 8 | 996 | 242 | 64 | 764 |
| Intersecting miter | M. Gates | 500,570 | July 4 | 51 | 15 | 64 | 11 |
| Invalid-moving apparatus | S. P. H. Hale | 505,654 | Sept. 26 | 2265 | 574 | 64 | 1736 |
| Iron: *See* Curling-iron. Sad-iron. Hat-iron. Soldering-iron. | | | | | | | |
| Iron and apparatus used therefor. Refining | H. Höfer | 502,492 | Aug. 1 | 414 | 98 | 64 | 643 |
| Iron. Making | A. Dauber | 502,482 | Aug. 1 | 390 | 93 | 64 | 638 |
| Iron. Manufacture of glazed | J. W. Kidwell | 503,423 | Aug. 15 | 1969 | ..... | 64 | 954 |
| Iron-melting apparatus | S. Shaw | 504,282 | Aug. 29 | 3354 | 838 | 64 | 1246 |
| Iron or iron ore. Apparatus for melting | S. Shaw | 504,308 | Aug. 29 | 3397 | 851 | 64 | 1254 |
| Iron or steel. Apparatus for the manufacture of sheet | S. A. Sague | 505,133 | Sept. 19 | 1364 | 350 | 64 | 1554 |
| Iron. Treating malleable | J. H. Ladd | 504,841 | Sept. 12 | 884 | ..... | 64 | 1451 |
| Ironing-table | J. T., W. S., and W. F. Smith | 502,501 | Aug. 1 | 570 | 137 | 64 | 671 |
| Irrigating system. Land | J. Ettien | 501,945 | July 11 | 1132 | 287 | 64 | 231 |
| Ivory. Mold for the manufacture of solid balls of artificial | A. and S. de Pont | 502,013 | July 25 | 2355 | 590 | 64 | 473 |
| Jack: *See* Boot-jack. Lumber-loading jack. Boot or shoe jack. Screw-jack. Car-jack. Smoke-jack. Flooring or ceiling jack. Truck-jack. Wagon-jack. Lifting-jack. Window-jack. | | | | | | | |
| Jail. Electric | C. H. Sparks | 502,325 | Aug. 1 | 122 | 28 | 64 | 588 |
| Jar-lid fastener | F. Guilleaume and E. Goltstein | 501,418 | July 11 | 1420 | 356 | 64 | 273 |
| Jar protector. Glass-fruit | M. E. Clark | 502,951 | Aug. 8 | 1206 | 297 | 64 | 802 |
| Jewel and pivot gage | J. E. Adcox | 502,648 | Aug. 1 | 666 | 162 | 64 | 689 |
| Jewel-setting machine | W. Rundquist | 500,954 | July 4 | 652 | {173 / 174} | 64 | 119 |
| Jeweler's roll | J. C. Rocheleau | 503,218 | Aug. 15 | 1645 | 403 | 64 | 896 |
| Jewelry and making same | H. T. Regnell, J. A. Bigney, and C. O. Sweet | 501,232 | July 11 | 1112 | 282 | 64 | 218 |
| Jewelry and making same. Plated wire stock for | J. S. Palmer | 501,157 | July 11 | 1007 | 256 | 64 | 197 |
| Jewelry-case | W. Heatley | 502,001 | July 25 | 2337 | 585 | 64 | 470 |
| Jewelry. Means for securing detachable ornaments in articles of | J. W. L. Rohde | 501,365 | July 11 | 1340 | 335 | 64 | 257 |
| Jewelry or plate. Article of | W. W. Bradley | 502,036 | July 25 | 2385 | 599 | 64 | 478 |
| Jewelry. Plated stock for manufacture of | J. S. Palmer | 503,983 | Aug. 29 | 2866 | 719 | 64 | 1155 |
| Joint: *See* Carriage-top joint. Pipe-joint. Expansion-joint. Rail-joint. Fence-joint. Railway-joint. Furniture-joint. Railway-rail joint. | | | | | | | |
| Joints. Mold for making plumbers' | F. Tyers | 502,893 | Aug. 8 | 1009 | 270 | 64 | 783 |
| Joints. Mold for making plumbers' | F. Tyers and O. Barnsdale | 504,005 | Aug. 29 | 2910 | 729 | 64 | 1192 |
| Joists. Bridging for flooring | F. H. Moore | 503,245 | Aug. 15 | 1685 | 414 | 64 | 903 |
| Journal. Barrow | A. E. Morey | 502,092 | July 25 | 2474 | 621 | 64 | 495 |
| Journal-bearing. Antifriction | J. A. Cameron | 501,868 | July 18 | 2119 | 524 | 64 | 414 |
| Journal-bearing. Antifriction | M. B. Jones | 503,143 | Aug. 15 | 1591 | 374 | 64 | 873 |
| Journal-bearing. Antifriction | F. G. Susemihl | 503,296 | Aug. 15 | 1770 | 437 | 64 | 918 |
| Journal-box | G. W. M. Bowen | 500,794 | July 4 | 421 | 111 | 64 | 78 |
| Journal-box. Compensating | A. B. Landis | 501,726 | July 18 | 1900 | 472 | 64 | 379 |
| Journal-box dust-guard | J. J. Busenbenz | 503,715 | Aug. 22 | 2456 | 611 | 64 | 1058 |
| Journal-box dust-guard | J. J. Busenbenz | 504,197 | Aug. 29 | 3222 | {802 / 803} | 64 | 1221 |
| Journal lubricator. Car | S. Walker | 503,018 | Aug. 8 | 1311 | 321 | 64 | 821 |

*Alphabetical list of inventions, July to September, inclusive*—Continued.

| Invention. | Name. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drg. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|---|
| Jumper and apron. Combined | T. R. Chambers | 502,113 | July 25 | 2522 | 632 | 64 | 804 |
| Junction-box | E. J. McEvoy | 502,083 | July 25 | 2474 | 621, 622, 623 | 64 | 495 |
| Junction-box | W. B. Sayers | 501,445 | July 11 | 1456 | 365 | 64 | 290 |
| Keg. Paint- | T. A. Shaw | 501,171 | July 11 | 1026 | 260 | 64 | 291 |
| Kettle-lifter | I. B. Koons | 503,802 | Aug. 22 | 2953 | 668 | 64 | 1099 |
| Kettle. Rendering- | C. A. Glockler and R. Munroe, Jr | 502,714 | Aug. 8 | 815 | 197 | 64 | 730 |
| Kettles. Joining spouts to metallic | C. D. Milne and A. R. Pritchard | 502,046 | July 25 | 2415 | 608 | 64 | 484 |
| Key-blanks. Manufacture of | G. B. Cowles | 505,440 | Sept. 26 | 1892 | 479 | 64 | 1660 |
| Keyhole-guard | G. Hisgen | 504,583 | Sept. 5 | 447 | 113, 114 | 64 | 1353 |
| Keyhole-guard | L. Schneider | 505,299 | Sept. 19 | 1631 | 422 | 64 | 1604 |
| Keyhole-guide | C. Taylor | 500,977 | July 4 | 700 | 183 | 64 | 127 |
| Kiln: *See* Brick-kiln. Regenerative kiln. Glass-annealing kiln. Ore-roasting kiln. Lumber-drying kiln. | | | | | | | |
| Kitchen and ironing table. Combined | J. Voos | 502,597 | Aug. 1 | 583 | 140 | 64 | 673 |
| Kitchen article | S. C. Caldwell | 501,823 | July 18 | 2057 | 507 | 64 | 403 |
| Kitchen-table and flour-sifter. Combined | I. P. Morrill | 502,630 | Aug. 1 | 630 | 153 | 64 | 664 |
| Kitchen utensil | J. M. Tilman | 504,376 | Sept. 5 | 104 | 26 | 64 | 1290 |
| Knapsack | F. Zbinden | 504,101 | Aug. 29 | 3059 | 765 | 64 | 1191 |
| Kneading-machine | G. S. Baker | 502,392 | Aug. 1 | 239 | 57 | 64 | 609 |
| Knife: *See* Putty-knife. | | | | | | | |
| Knife | M. L. Hawks | 501,682 | July 18 | 1832 | 456 | 64 | 364 |
| Knife | J. Oefinger | 504,899 | Sept. 12 | 953 | 246 | 64 | 1464 |
| Knife and pencil-and eraser holder. Combined | J. G. F. Flake | 501,225 | July 11 | 1104 | 281 | 64 | 217 |
| Knife-block for shaping cones. Revolving | J. Haindl | 503,317 | Aug. 15 | 1813 | 449 | 64 | 925 |
| Knife for cutting or scoring pasteboard | E. Saltzkorn and L. Nicolai. (Reissue.) | 11,365 | Sept. 12 | 1285 | 331 | 64 | 1526 |
| Knives, &c. Sharpener for | C. K. Bradford | 501,267 | July 11 | 1167 | 296 | 64 | 257 |
| Knit garment and manufacturing same | J. Holmes | 504,108 | Aug. 29 | 3073 | 769 | 64 | 1193 |
| Knitting-machine | L. N. D. Williams | 503,920 | Aug. 22 | 2751 | 690 | 64 | 1117 |
| Knitting-machine | L. N. D. Williams | 503,921 | Aug. 22 | 2753 | 690 | 64 | 1117 |
| Knitting-machine | L. N. D. Williams | 503,922 | Aug. 22 | 2754 | 691 | 64 | 1117 |
| Knitting machine. Circular- | E. J. Franck | 502,292 | Aug. 1 | 52 | 13 | 64 | 576 |
| Knitting machine. Circular- | E. Franck | 504,417 | Sept. 5 | 170 | 44, 45, 46 | 64 | 1302 |
| Knitting machine. Circular- | N. W. Westcott | 502,688 | Aug. 1 | 752 | 181 | 64 | 704 |
| Knitting-machine sinker or web-holder | S. S. Cook | 504,967 | Sept. 12 | 1088 | 278 | 64 | 1490 |
| Knitting-machine stop mechanism | E. M. Smith and J. W. Cassidy. (Reissue.) | 11,366 | Sept. 19 | 1844 | 474 | 64 | 1643 |
| Knitting machine. Straight- | W. T. Rowlett | 500,953 | July 4 | 646 | 169, 170, 171, 172, 173 | 64 | 118 |
| Knitting-machines. Automatic feed-stop for | G. W. Snyder | 501,582 | July 18 | 1664 | 416 | 64 | 336 |
| Knitting machines. Yarn-carrier for circular | J. W. Dewees | 501,876 | July 18 | 2139 | 531 | 64 | 417 |
| Knitting-machines. Yarn-guiding device for | S. Wright and W. A. Hermon | 501,128 | July 11 | 955 | 244 | 64 | 188 |
| Knob attachment | M. M. Brophy | 503,228 | Aug. 15 | 1650 | 407 | 64 | 899 |
| Knob attachment | C. M. Burgess | 503,450 | Aug. 15 | 2005 | 497 | 64 | 980 |
| Knob attachment | C. F. Doebler | 503,199 | Aug. 15 | 1611 | 396 | 64 | 890 |
| Knob attachment | C. F. Doebler | 503,200 | Aug. 15 | 1612 | 396 | 64 | 890 |
| Knob attachment | C. F. Doebler | 503,201 | Aug. 15 | 1614 | 396 | 64 | 891 |
| Knob attachment | C. F. Doebler | 503,202 | Aug. 15 | 1615 | 396 | 64 | 891 |
| Knob attachment | C. F. Doebler | 503,204 | Aug. 15 | 1618 | 397 | 64 | 891 |
| Knob attachment | C. F. Doebler and C. K. Bryant | 503,198 | Aug. 15 | 1610 | 395 | 64 | 890 |
| Knob attachment | C. F. Doebler and C. K. Bryant | 503,203 | Aug. 15 | 1617 | 397 | 64 | 891 |
| Knurling-fixture | G. E. Witherell | 504,769 | Sept. 12 | 766 | 193 | 64 | 1427 |
| Kraut-cutter | R. L. Dorsey | 503,697 | Aug. 22 | 2427 | 604 | 64 | 1052 |
| Label-holder for sheet-metal vessels | C. H. Hasker | 505,312 | Sept. 19 | 1652 | 427 | 64 | 1607 |
| Labeling-machine | J. C. McBean, G. J. McLaughlin, H. R. Corkhill, Jr., and G. Baxter. | 502,311 | Aug. 1 | 89 | 21, 22 | 64 | 582 |
| Labeling or mailing machine | J. C. Lodor | 502,045 | July 25 | 2413 | 608 | 64 | 483 |
| Lace fastener. Shoe- | A. R. Drake and F. A. Higgins | 504,568 | Sept. 5 | 497 | 108 | 64 | 1349 |
| Lace fastener. Shoe- | W. H. Mason | 502,422 | Aug. 1 | 293 | 70 | 64 | 620 |
| Lace fastener. Shoe- | F. H. Smith | 502,694 | Aug. 8 | 762 | 185 | 64 | 721 |
| Lacing-hook | W. B. H. Dowse | 500,565 | July 4 | 45 | 13 | 64 | 10 |
| Lacing-studs, eyelets, &c. Setting | C. E. Van Norman | 502,894 | Aug. 8 | 1101 | 270, 271, 272 | 64 | 784 |
| Lacing studs or hooks. Machine for setting | R. F. Barry | 504,295 | Aug. 29 | 3379 | 845 | 64 | 1251 |
| Lactyl-paraphenetidid and making it | F. Geromont | 503,743 | Aug. 22 | 2504 | | 64 | 1068 |
| Ladder | E. Blasberg | 503,120 | Aug. 15 | 1484 | 385 | 64 | 866 |
| Ladder | R. D. Hetrick, W. T. Wilson, and E. Rowe. | 502,967 | Aug. 8 | 1234 | 303 | 64 | 807 |
| Ladder | W. E. Richards | 501,694 | July 18 | 1849 | 460 | 64 | 367 |
| Ladder | J. Splann | 501,378 | July 11 | 1367 | 341 | 64 | 261 |
| Ladder. Adjustable fireman's | R. Brayton | 501,403 | July 11 | 1401 | 351 | 64 | 268 |
| Ladder. Adjustable pitch-roof | E. A. Austin | 505,343 | Sept. 19 | 1691 | 435 | 64 | 1614 |
| Ladder. Collapsible | A. Leo | 501,950 | July 25 | 2263 | 566 | 64 | 456 |
| Ladder. Combination step- | G. A. Lake | 502,367 | Aug. 1 | 197 | 47 | 64 | 602 |
| Ladder. Extension- | A. M. Feurgason | 502,290 | Aug. 1 | 45 | 11, 12 | 64 | 575 |
| Ladder. Extension- | H. Kniphals | 502,403 | Aug. 1 | 258 | 61 | 64 | 613 |
| Ladder. Extension- | L. C. Tiefel | 505,072 | Sept. 12 | 1266 | 325 | 64 | 1523 |
| Ladder. Extension- | A. D. Webster | 504,008 | Aug. 29 | 2914 | 731 | 64 | 1163 |
| Ladder. Extension fire- | L. Dederick | 502,484 | Aug. 1 | 395 | 94, 95 | 64 | 639 |
| Ladder. Extension step- | C. T. Campbell | 501,406 | July 11 | 1407 | 352 | 64 | 270 |
| Ladder. Fire- | F. A. Biehn | 503,302 | Aug. 15 | 1886 | 467, 468 | 64 | 939 |



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| Invention. | Name. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drg. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|---|
| Ladder. Folding or extension fire- | I. Dederick | 502,485 | Aug. 1 | 409 | 95 | 64 | 640 |
| Ladder. Step- | C. Rivers | 503,185 | Aug. 15 | 1560 | 384 | 64 | 889 |
| Lamp | W. H. Edsall | 502,880 | Aug. 8 | 1076 | 265 | 64 | 779 |
| Lamp | T. Hipwell | 501,275 | July 11 | 1180 | 290 | 64 | 230 |
| Lamp | G. P. Kato, Jr | 503,266 | Aug. 15 | 1717 | 424 | 64 | 909 |
| Lamp | D. D. Pinkham and F. E. Lewis | 505,398 | Sept. 19 | 1669 | 430 | 64 | 1610 |
| Lamp-bracket. Adjustable | J. Paumgarten-Frauenstein | 502,011 | July 25 | 2353 | 580 | 64 | 472 |
| Lamp-burner | G. A. Burtner | 504,554 | Sept. 5 | 405 | 103 | 64 | 1345 |
| Lamp-burner | J. B. Colt | 502,704 | Aug. 8 | 802 | 193 | 64 | 727 |
| Lamp-burner | B. P. Jones | 501,284 | July 11 | 1191 | 301 | 64 | 232 |
| Lamp-burner | H. E. Shaffer | 503,007 | Aug. 8 | 1298 | 317 | 64 | 819 |
| Lamp-burner | C. A. Taplin | 503,755 | Aug. 22 | 2523 | 627 | 64 | 1072 |
| Lamp-burner gallery | W. H. Edsall and H. C. H. Walsh | 502,284 | Aug. 1 | 32 | 7 | 64 | 572 |
| Lamp carbon-holder. Arc- | S. Bergmann | 502,273 | Aug. 1 | 14 | 4 | 64 | 569 |
| Lamp. Carbureting- | N. Finck | 502,251 | July 25 | 2757 | 697 | 64 | 549 |
| Lamp. Central-draft | F. Rhind | 501,025 | July 4 | 767 | 201 | 64 | 140 |
| Lamp-chimney | E. Hammond | 503,720 | Aug. 22 | 2466 | 613 | 64 | 1060 |
| Lamp-chimney heating attachment | G. W. Ives | 502,364 | Aug. 1 | 190 | 45 | 64 | 601 |
| Lamp. Duplex electric-arc | C. E. Scribner | 501,170 | July 11 | 1025 | 250 | 64 | 201 |
| Lamp. Electric-arc | A. S. Atwater | 505,183 | Sept. 19 | 1440 | 371 | 64 | 1567 |
| Lamp. Electric-arc | P. J. Barrett | 502,166 | July 25 | 2609 | 657 | 64 | 531 |
| Lamp. Electric-arc | S. Bergmann | 501,757 | July 18 | 1967 | 486 | 64 | 387 |
| Lamp. Electric-arc | S. Bergmann | 505,393 | Sept. 19 | 1766 | 457 | 64 | 1628 |
| Lamp. Electric-arc | L. H. Buchanan | 502,948 | Aug. 8 | 1202 | 296 | 64 | 802 |
| Lamp. Electric-arc | J. T. Dempster | 501,768 | July 18 | 1992 | 490 | 64 | 390 |
| Lamp. Electric-arc | L. E. Howard | 503,538 | Aug. 15 | 2145 | 538 | 64 | 986 |
| Lamp. Electric-arc | L. E. Howard | 503,539 | Aug. 15 | 2148 | 539 | 64 | 986 |
| Lamp. Electric-arc | R. M. Hunter | 500,657 | July 4 | 202 | 53 | 64 | 39 |
| Lamp. Electric-arc | R. M. Hunter | 504,271 | Aug. 29 | 3340 | 835 | 64 | 1243 |
| Lamp. Electric-arc | J. Jergle | 501,074 | July 11 | 850 | 220 | 64 | 170 |
| Lamp. Electric-arc | G. Kirkegaard | 501,080 | July 11 | 860 | 223 | 64 | 172 |
| Lamp. Electric-arc | G. Kirkegaard | 501,081 | July 11 | 861 | 224 | 64 | 172 |
| Lamp. Electric-arc | W. H. Klees | 501,884 | July 18 | 2156 | 535 | 64 | 421 |
| Lamp. Electric-arc | W. B. Luce | 505,051 | Sept. 12 | 1222 | 315 | 64 | 1514 |
| Lamp. Electric-arc | W. W. Millard | 503,709 | Aug. 22 | 2592 | 643 | 64 | 1065 |
| Lamp. Electric-arc | W. A. Phillips | 504,277 | Aug. 29 | 3348 | 837 | 64 | 1245 |
| Lamp. Electric-arc | C. Schmid | 505,243 | Sept. 19 | 1513 | 395 | 64 | 1581 |
| Lamp. Electric-arc | C. E. Scribner | 502,471 | Aug. 1 | 371 | 89 | 64 | 634 |
| Lamp. Electric-arc | C. E. Scribner | 502,536 | Aug. 1 | 485 | 116 | 64 | 656 |
| Lamp. Electric-arc | C. T. Snedeker | 504,760 | Sept. 12 | 743 | 185 | 64 | 1424 |
| Lamp. Electric-arc | W. A. Turbayne | 500,829 | July 4 | 476 | 124 | 64 | 87 |
| Lamp. Electric incandescent | H. D. Burnett and S. E. Doane | 500,849 | July 4 | 500 | 130 | 64 | 91 |
| Lamp. Electric incandescent | P. Scharf | 502,392 | Aug. 1 | 119 | 27 | 64 | 587 |
| Lamp-filling device | A. Goldsmith | 502,622 | Aug. 1 | 626 | 150 | 64 | 681 |
| Lamp-filling indicator | T. W. Bartholomew | 505,186 | Sept. 19 | 1444 | 372 | 64 | 1568 |
| Lamp fixture. Incandescent- | A. T. Gifford | 501,502 | July 18 | 1539 | 388 | 64 | 311 |
| Lamp. Flash- | N. H. Brown | 501,556 | July 18 | 1629 | 408 | 64 | 329 |
| Lamp. Flash- | B. Smith | 505,780 | Sept. 26 | 2473 | 624 | 64 | 1774 |
| Lamp for beer vats. Safety- | M. and P. Borlinghausen | 504,702 | Sept. 12 | 644 | 164 | 64 | 1404 |
| Lamp-founts. Cap for filling-nipples of | J. Jauch | 502,926 | Aug. 8 | 1166 | 288 | 64 | 796 |
| Lamp frame. Arc- | A. Weber | 502,687 | Aug. 1 | 751 | 181 | 64 | 704 |
| Lamp. Gas- | C. Kalkkubl | 502,123 | July 25 | 2535 | 636 | 64 | 507 |
| Lamp globe. Incandescent- | T. B. Atterbury | 500,841 | July 4 | 491 | 128 | 64 | 90 |
| Lamp-guard | E. Gahlau | 502,458 | Aug. 1 | 352 | 84 | 64 | 631 |
| Lamp. Heating- | J. House | 504,982 | Sept. 12 | 1114 | 285 | 64 | 1491 |
| Lamp. Incandescent electric | J. H. Bates | 503,108 | Aug. 8 | 1453 | 358 | 64 | 848 |
| Lamp. Incandescent electric | E. E. Cary | 501,491 | July 18 | 1524 | 382 | 64 | 308 |
| Lamp. Incandescent electric | E. E. Cary and W. E. Nickerson | 503,650 | Aug. 22 | 2352 | 587 | 64 | 1038 |
| Lamp. Incandescent electric | W. E. Nickerson | 500,671 | July 4 | 229 | 60 | 64 | 43 |
| Lamp. Incandescent electric | W. E. Nickerson | 501,531 | July 18 | 1564 | 399 | 64 | 319 |
| Lamp. Incandescent electric | W. E. Nickerson | 503,669 | Aug. 22 | 2361 | 594 | 64 | 1043 |
| Lamp. Incandescent electric | W. E. Nickerson | 503,670 | Aug. 22 | 2362 | 594 | 64 | 1044 |
| Lamp. Incandescent electric | W. E. Nickerson | 503,671 | Aug. 22 | 2363 | 594 | 64 | 1044 |
| Lamp. Incandescent electric | W. E. Nickerson | 503,770 | Aug. 22 | 2542 | 632 | 64 | 1075 |
| Lamp. Incandescent electric | W. E. Nickerson and E. E. Cary | 500,670 | July 4 | 228 | 60 | 64 | 43 |
| Lamp. Incandescent electric | W. E. Nickerson and E. E. Cary | 501,529 | July 18 | 1562 | 398 | 64 | 319 |
| Lamp. Incandescent electric | W. E. Nickerson and E. E. Cary | 501,530 | July 18 | 1563 | 398 | 64 | 319 |
| Lamp socket. Electric- | J. M. Gardner, Jr | 505,422 | Sept. 19 | 1834 | 471 | 64 | 1641 |
| Lamp socket. Electric- | G. Sachs | 501,580 | July 18 | 1661 | 415 | 64 | 335 |
| Lamp socket. Incandescent- | H. P. Ball | 501,485 | July 18 | 1515 | 381 | 64 | 307 |
| Lamp socket. Incandescent- | A. Ekström | 501,205 | July 11 | 1072 | 272 | 64 | 211 |
| Lamp socket. Incandescent- | C. T. Lee | 503,349 | Aug. 15 | 1861 | 460 | 64 | 934 |
| Lamp socket. Incandescent-electric | W. C. Bryant | 502,655 | Aug. 1 | 684 | 164 | 64 | 691 |
| Lamp socket. Incandescent-electric | C. G. Perkins | 504,743 | Sept. 12 | 718 | 179 | 64 | 1419 |
| Lamp support. Portable electric- | N. T. Mills | 505,060 | Sept. 12 | 1237 | 318 | 64 | 1517 |
| Lamps. Adjustable supporter for electric or other | O. C. White | 505,595 | Sept. 26 | 2147 | 543 | 64 | 1714 |
| Lamps. Burner attachment for lighting | J. H. Flood | 504,471 | Sept. 5 | 261 | 68 | 64 | 1319 |
| Lamps. Carbon-holder for electric-arc | S. Bergmann | 501,758 | July 18 | 1968 | 486 | 64 | 388 |
| Lamps. Carbon-holder for electric-arc | S. Bergmann | 501,911 | July 25 | 2211 | 551 | 64 | 446 |
| Lamps. Carbon-holder for electric-arc | F. D. Hazelton | 501,938 | July 25 | 2250 | 561 | 64 | 453 |
| Lamps. Circuit-controlling mechanism for arc | C. E. Scribner | 502,535 | Aug. 1 | 482 | 116 | 64 | 655 |
| Lamps. Manufacture of incandescent electric | E. Thomson | 501,172 | July 11 | 1027 | 260 | 64 | 201 |
| Lamps. Means for protecting the carbon-holders of electric-arc | J. F. Mehren | 502,465 | Aug. 1 | 359 | 87 | 64 | 632 |
| Lamps. Spring-holder for vehicle- | C. F. Billig | 501,401 | July 11 | 1398 | 350 | 64 | 268 |
| Landmark | D. P. Marum | 504,987 | Sept. 12 | 1128 | 289 | 64 | 1496 |
| Land roller and pulverizer | E. Kime | 502,301 | Aug. 1 | 76 | 17 | 64 | 580 |
| Lantern | C. W. Dobelin | 501,877 | July 18 | 2141 | 531 | 64 | 418 |
| Lantern | E. O. Keef | 502,080 | July 25 | 2470 | 620 | 64 | 494 |
| Lantern | A. Zimmermann | 503,760 | Aug. 22 | 2557 | 617 | 64 | 1078 |
| Lantern-holder | C. L. Halstead | 501,833 | July 18 | 2089 | 510 | 64 | 406 |
| Lapping-machine | C. F. Ainsworth and J. Haydock | 503,890 | Aug. 22 | 2704 | 678 | 64 | 1107 |
| Lasso | E. Shaw | 504,055 | Aug. 29 | 2983 | 745 | 64 | 1176 |
| Last | W. Gordon | 500,711 | July 4 | 257 | 78 | 64 | 53 |

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| Invention. | Name. | No. | Date. | Monthly volume. Spec. | Monthly volume. Dr'g. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|---|
| Last | H. Trinder | 501,699 | July 18 | 1858 | 462 | 64 | 369 |
| Lasts for boots or shoes. Machine for manufacturing | W. H. Austin | 503,893 | Aug. 22 | 2708 | 679, 680 | 64 | 1107 |
| Lasting boots or shoes | B. A. Norwood | 503,062 | Aug. 8 | 1370 | 338, 339 | 64 | 833 |
| Lasting-machine | J. T. Avery | 500,548 | July 4 | 12 | 4, 5, 6, 7, 8 | 64 | 5 |
| Lasting-machine | J. E. Crisp and G. W. Copeland | 501,873 | July 18 | 2132 | 428, 429 | 64 | 416 |
| Lasting-machine | B. A. Norwood | 505,671 | Sept. 26 | 2234 | 581, 582 | 64 | 1741 |
| Lasting-machine | A. F. Preston | 502,236 | July 25 | 2724 | 687, 688 | 64 | 543 |
| Lasting-machine | E. Whiffen, and D. and V. F. Lake | 502,506 | Aug. 1 | 432 | 103, 104, 105 | 64 | 646 |
| Lasting machine. Boot or shoe | A. F. Preston | 502,755 | Aug. 8 | 868 | 212, 213 | 64 | 741 |
| Lasting-nippers | E. Whiffen, and D. and V. F. Lake | 502,507 | Aug. 1 | 437 | 105 | 64 | 647 |
| Lasting-pincers | B. A. Norwood | 503,672 | Aug. 22 | 2384 | 594 | 64 | 1044 |
| Latch | A. Adams | 504,263 | Aug. 29 | 3326 | 831 | 64 | 1241 |
| Latch | J. E. Bozell | 505,386 | Sept. 19 | 1769 | 458 | 64 | 1629 |
| Latch | J. L. Dale | 505,033 | Sept. 12 | 1197 | 307 | 64 | 1510 |
| Latch | S. P. Hodgen | 503,085 | Aug. 8 | 1409 | 348 | 64 | 840 |
| Latch | F. W. Tobey | 502,780 | Aug. 8 | 933 | 227 | 64 | 752 |
| Latch and lock. Combined | J. Adams | 501,474 | July 11 | 1495 | 376, 377 | 64 | 286 |
| Latch and lock combined | W. A. Justice | 505,403 | Sept. 19 | 1796 | 464 | 64 | 1634 |
| Latch. Coin-freed | F. E. Zschernig | 502,898 | Aug. 8 | 1112 | 273, 274 | 64 | 786 |
| Latch for stove or other doors. Kicker | L. P. Kennedy | 501,883 | July 18 | 2155 | 535 | 64 | 420 |
| Latch. Gate | J. W. Philips | 504,050 | Aug. 29 | 2975 | 744 | 64 | 1175 |
| Lath. Sheathing | A. Baldwin | 501,397 | July 11 | 1391 | 349 | 64 | 267 |
| Lathing. Wooden | C. F. Darnell | 502,551 | Aug. 1 | 512 | 122 | 64 | 660 |
| Lathe | C. Seymour | 501,470 | July 11 | 1488 | 374, 375 | 64 | 286 |
| Lathe attachment | F. S. Rechtsteiner | 502,760 | Aug. 8 | 862 | 216 | 64 | 743 |
| Lathe attachment | J. E. Richards | 500,722 | July 4 | 309 | 83 | 64 | 58 |
| Lathe attachment | J. D. Russ | 501,469 | July 11 | 1487 | 374 | 64 | 286 |
| Lathe-gearing | H. Binase | 504,657 | Sept. 5 | 548 | 140 | 64 | 1373 |
| Lathe. Metal-turning | T. Coldwell | 500,753 | July 4 | 356 | 93 | 64 | 66 |
| Lathe. Polygonal | L. G. Merritt | 504,812 | Sept. 12 | 832 | 211, 212, 213, 214 | 64 | 1439 |
| Lathe taper attachment | D. Currie | 504,565 | Sept. 5 | 421 | 107 | 64 | 1348 |
| Lathe taper attachment | M. P. Hodge | 502,401 | Aug. 1 | 251 | 60 | 64 | 612 |
| Lathe taper attachment | W. T. S. Johnson | 503,088 | Aug. 8 | 1414 | 349 | 64 | 841 |
| Laundry-drier | A. V. M. Sprague | 500,625 | July 4 | 141 | 37, 38 | 64 | 28 |
| Laundry outfit. Combination | A. Armstrong | 503,711 | Aug. 22 | 2449 | 609 | 64 | 1057 |
| Laundry-tub | E. C. Brunner and W. J. Renkel | 501,763 | July 18 | 1975 | 488 | 64 | 389 |
| Lawn-rake and grass-receiver | J. Knight | 501,430 | July 11 | 1434 | 359 | 64 | 275 |
| Lawn-sprinkler | S. S. Black | 505,086 | Sept. 19 | 1294 | 334 | 64 | 1542 |
| Lawn-sprinkler | T. Scheen | 502,641 | Aug. 1 | 658 | 160 | 64 | 688 |
| Lead. Manufacture of white | A. J. Smith | 501,377 | July 11 | 1361 | 340, 341 | 64 | 261 |
| Leaf-holder | E. H. Kohr | 505,771 | Sept. 26 | 2460 | 620 | 64 | 1771 |
| Leather-coloring machine | C. H. and A. A. Lappe | 504,224 | Aug. 29 | 3262 | 814 | 64 | 1228 |
| Leather-edge trimmer | J. Hook | 503,348 | Aug. 15 | 1860 | 469 | 64 | 934 |
| Leather-finishing machines. Means for lubricating rolls of | J. Palmer | 501,657 | July 18 | 1790 | 446 | 64 | 358 |
| Leather-skiving machine | A. J. Allen | 500,838 | July 4 | 486 | 127 | 64 | 89 |
| Leather stretching and softening machine | C. F. Stackpole | 501,593 | July 18 | 1680 | 419, 420 | 64 | 339 |
| Leather-stretching machine | J. M. Charnock | 501,920 | July 25 | 2225 | 555, 556 | 64 | 448 |
| Legging | E. B. Stimpson | 504,794 | Sept. 12 | 800 | 203 | 64 | 1433 |
| Lemon-juice extractor | J. Roberts | 504,365 | Sept. 5 | 85 | 21 | 64 | 1287 |
| Letter-box | P. J. Fitzgerald | 501,270 | July 11 | 1170 | 297 | 64 | 259 |
| Letter-box. House-door | H. W. Libbey | 502,673 | Aug. 1 | 726 | 174 | 64 | 699 |
| Letter. Glass | J. Ballance | 503,937 | Aug. 29 | 2782 | 697 | 64 | 1139 |
| Letter-press | G. E. Clarke | 505,093 | Sept. 19 | 1303 | 335, 336 | 64 | 1543 |
| Letter-press. Portable | C. R. Eberle | 503,980 | Aug. 15 | 1739 | 429, 430 | 64 | 913 |
| Letter. Sign | C. Schwartz | 503,650 | Aug. 22 | 2310 | 576 | 64 | 1030 |
| Level | C. M. Bartlett | 501,641 | July 18 | 1763 | 439 | 64 | 353 |
| Level and plumb device. Adjustable spirit | W. R. Dorton | 505,445 | Sept. 26 | 1870 | 482 | 64 | 1662 |
| Level guard attachment | J. Prickett | 502,202 | July 25 | 2667 | 673 | 64 | 532 |
| Leveler. Land | W. Falconer | 500,874 | July 4 | 542 | 140 | 64 | 98 |
| Leveling-instrument. Hydrostatic | O. Y. Frykholm | 505,369 | Sept. 19 | 1568 | 400 | 64 | 1592 |
| Lever. Differential | R. Campbell | 503,561 | Aug. 15 | 2102 | 547 | 64 | 995 |
| Life-saving vehicle | W. B. Beal | 503,572 | Aug. 22 | 2216 | 554 | 64 | 1014 |
| Lifter: *See* Kettle-lifter. Track-lifter. | | | | | | | |
| Lifter or drainer | W. W. Olcott | 504,237 | Aug. 29 | 3285 | 820 | 64 | 1232 |
| Lifting device | W. Blanc | 501,051 | July 11 | 817 | 212, 213 | 64 | 164 |
| Lifting-jack | G. W. La Baw | 501,280 | July 11 | 1186 | 300 | 64 | 231 |
| Lifting-jack | J. W. Mahaffey and A. F. Haldeman | 500,689 | July 4 | 251 | 67 | 64 | 47 |
| Lifting-machine or invalid-lifter | J. Tingley | 503,105 | Aug. 8 | 1448 | 357 | 64 | 847 |



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| Invention. | Name. | No. | Date. | Monthly volume. Spec. | Monthly volume. Dr'g. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|---|
| Light: *See* Electric light. Headlight. Electric search-light. Vault or floor light. | | | | | | | |
| Light-fixtures. Canopy for | E. Gothberg | 505,459 | Sept. 26 | 1868 | 487 | 64 | 1665 |
| Lighting apparatus | A. B. Moore, G. W. Rue, C. D. Smith, F. H. Roebuck, J. F. Mills, and J. R. Kirk. | 502,573 | Aug. 1 | 542 | 129 | 64 | 665 |
| Lighting device | J. E. Barlow | 505,185 | Sept. 19 | 1442 | 371 | 64 | 1568 |
| Lighting-fixtures. Device for supporting | H. Roth | 505,129 | Sept. 19 | 1257 | 340 | 64 | 1553 |
| Lightning-arrester | J. E. Browne | 501,941 | July 11 | 1125 | 295 | 64 | 119 |
| Lightning-arrester | F. H. Doane | 501,708 | July 18 | 1876 | 467 | 64 | 372 |
| Lightning-arrester | W. L. Emmet | 503,798 | Aug. 22 | 2567 | 639 | 64 | 1090 |
| Lightning-arrester | E. Thomson | 501,114 | July 11 | 937 | 240 | 64 | 165 |
| Lightning-arrester | W. A. Turbayne | 500,898 | July 4 | 475 | 124 | 64 | 86 |
| Lightning-arrester | C. S. Van Ruin | 500,736 | July 4 | 314 | 84 | 64 | 59 |
| Lightning-arrester | N. D. C. Hodges | 505,106 | Sept. 19 | 1323 | 341 | 64 | 1547 |
| Lightning-rod | P. Mc Loon | 503,059 | Aug. 8 | 1367 | 338 | 64 | 833 |
| Lime-kiln | J. C. Lyon | 500,812 | July 4 | 443 | 116 | 64 | 82 |
| Linoleum or oil floor-cloth. Manufacturing | O. Guttmann | 505,520 | Sept. 26 | 2005 | 513 | 64 | 1686 |
| Liquid-concentrating apparatus | W. F. Kausen | 504,500 | Sept. 5 | 458 | 116 | 64 | 1355 |
| Liquid goods Receptacle for carrying | G. Perelli-Minetti | 500,773 | July 4 | 385 | 100, 101 | 64 | 72 |
| Liquid-separator. Centrifugal | R. A. Lister and M. Pedersen | 504,809 | Sept. 12 | 828 | 210, 211 | 64 | 1438 |
| Liquid-storage vessels. Device for removing sediment from bottoms of | J. E. Harder and J. H. Fox | 500,742 | July 4 | 336 | 89 | 64 | 63 |
| Liquids. Apparatus for elevating and equalizing the supply of | W. M. Morgan | 502,102 | July 25 | 2501 | 638 | 64 | 500 |
| Liquids from barrels. Apparatus for drawing | H. E. Bailey | 504,519 | Sept. 5 | 338 | 80 | 64 | 1333 |
| Liquids from vessels. Device for discharging | W. L. Rowland | 505,642 | Sept. 26 | 2247 | 569 | 64 | 1733 |
| Liquor. Making alcoholic distilled | E. Bradley and F. N. Dickerson | 504,074 | Aug. 29 | 3007 | ..... | 64 | 1190 |
| Lithographic stones and plates. Composition for treating | E. and R. Arnold | 504,772 | Sept. 12 | 770 | ..... | 64 | 1428 |
| Lithographic transfers. Composition for forming | C. F. Habedank | 502,964 | Aug. 8 | 1231 | ..... | 64 | 806 |
| Loading device | C. M. Furgason | 504,976 | Sept. 12 | 1103 | 282 | 64 | 1492 |
| Loading machine. Earth | J. Oppold | 503,250 | Aug. 15 | 1689 | 416, 417 | 64 | 904 |
| Loading or piling machine | G. S. Kaime | 504,589 | Sept. 5 | 453 | 115, 116 | 64 | 1354 |
| Loading or unloading apparatus | E. Cardarelli | 505,745 | Sept. 26 | 2418 | 611 | 64 | 1763 |
| Lock: *See* Bicycle-lock. Bicycle-chain lock. Combination-lock. Drawer-lock. Electric lock. Elevator-lock. Fence-lock. Hasp-lock. Nut-lock. Railway-switch lock. Seal-lock. Time-lock. | | | | | | | |
| Lock | M. Badoni | 501,639 | July 18 | 1760 | 438 | 64 | 352 |
| Lock | M. Badoni | 501,640 | July 18 | 1761 | 439 | 64 | 353 |
| Lock | M. Badoni | 504,292 | Aug. 29 | 3373 | 843 | 64 | 1250 |
| Lock | J. T. Beatty | 505,214 | Sept. 19 | 1490 | 388 | 64 | 1577 |
| Lock | A. Burbee | 503,648 | Aug. 22 | 2349 | 587 | 64 | 1037 |
| Lock | J. L. Jones | 504,785 | Sept. 12 | 789 | 199 | 64 | 1431 |
| Lock | W. J. Neidl | 503,706 | Aug. 22 | 2438 | 607 | 64 | 1054 |
| Lock | W. E. Sparks | 502,937 | Aug. 8 | 1185 | 292 | 64 | 767 |
| Lock | G. E. Tyson | 500,696 | July 4 | 302 | 71 | 64 | 49 |
| Lock and latch | A. Burbee | 502,276 | Aug. 1 | 17 | 4 | 64 | 570 |
| Lock and latch | A. Burbee | 503,649 | Aug. 22 | 2351 | 587 | 64 | 1038 |
| Lock and latch combined | F. F. Swanson | 504,482 | Sept. 5 | 276 | 71 | 64 | 1322 |
| Lock-case | F. J. Biggs | 503,400 | Aug. 15 | 1936 | 481 | 64 | 948 |
| Locomotive | C. Hagans | 501,616 | July 18 | 1723 | 429 | 64 | 346 |
| Locomotive-boiler | W. B. Mack | 500,716 | July 4 | 295 | 80 | 64 | 55 |
| Locomotive-boiler | W. B. Mack | 503,287 | Aug. 15 | 1754 | 433 | 64 | 916 |
| Locomotive-cab | E. W. Mackenzie-Hughes | 505,163 | Sept. 19 | 1410 | 363 | 64 | 1562 |
| Locomotive. Compound | R. C. Wright | 500,788 | July 4 | 408 | 107 | 64 | 75 |
| Locomotive coupling-bar | L. A. Briere | 502,653 | Aug. 1 | 679 | 163 | 64 | 691 |
| Locomotive. Electric | A. I. Ambler | 504,484 | Sept. 5 | 278 | 72 | 64 | 1322 |
| Locomotive. Electric | L. W. Case | 500,851 | July 4 | 501 | 131 | 64 | 92 |
| Locomotive. Electric | W. E. C. Eustis | 501,246 | July 11 | 1134 | 288 | 64 | 221 |
| Locomotive. Electric | R. M. Hunter | 502,297 | Aug. 1 | 66 | 15 | 64 | 578 |
| Locomotive. Electric | E. A. Sperry | 501,195 | July 11 | 1059 | 269 | 64 | 207 |
| Locomotive. Electric | E. A. Sperry | 502,090 | July 25 | 2373 | 506, 507 | 64 | 476 |
| Locomotive. Pneumatic hydraulic | W. Cooper | 504,668 | Sept. 5 | 570 | 145 | 64 | 1377 |
| Locomotive. Pneumatic hydraulic | W. Cooper | 504,669 | Sept. 5 | 575 | 145 | 64 | 1378 |
| Locomotive sand-box | T. F. O'Friel | 504,600 | Sept. 5 | 482 | 123 | 64 | 1360 |
| Locomotive. Tramway- | C. D. Scott | 504,541 | Sept. 5 | 392 | 96 | 64 | 1341 |
| Locomotives. Automatic supply-tank for | R. G. Ward | 502,159 | July 25 | 2585 | 650 | 64 | 516 |
| Locomotives. Regulating electric | J. B. Blood | 501,488 | July 18 | 1519 | 382 | 64 | 297 |
| Locomotives. Safety-stop for | J. N. Lauder | 500,810 | July 4 | 440 | 116 | 64 | 81 |
| Locomotives. Variable exhaust-nozzle for | G. H. Watson | 502,796 | Aug. 8 | 946 | 230 | 64 | 755 |
| Logs, &c. Means for guiding floating | J. Finney and G. Davidson | 505,039 | Sept. 12 | 1205 | 310 | 64 | 1511 |
| Logs. Transporting | W. V. Allen | 504,191 | Aug. 29 | 3215 | 801 | 64 | 1220 |
| Loom | D. Durkin | 501,001 | July 4 | 737 | 193 | 64 | 134 |
| Loom | A. D. Emery | 503,467 | Aug. 15 | 2036 | 507 | 64 | 965 |
| Loom | A. D. Emery and W. T. Donnelly | 503,473 | Aug. 15 | 2046 | 510 | 64 | 967 |
| Loom | E. P. Woodward | 502,034 | July 25 | 2381 | 592 | 64 | 472 |
| Loom. Circular | A. de Laski | 502,231 | July 25 | 2714 | 685, 686 | 64 | 542 |
| Loom. Circular | A. de Laski | 503,544 | Aug. 15 | 2160 | 541 | 64 | 999 |
| Loom double tension device | A. D. Emery | 503,456 | Aug. 15 | 2013 | 499, 500 | 64 | 961 |

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| Invention. | Name. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drg. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|---|
| Loom for weaving chenille strips | F. Watzlawik | 502,920 | Aug. 8 | 1154 | 282, 283, 284, 285 | 64 | 794 |
| Loom for weaving endless or jointless fabrics | D. Fileppi | 502,182 | July 25 | 2838 | 664 | 64 | 526 |
| Loom-harness. Machine for making | E. Haast | 500,653 | July 4 | 192 | 50 | 64 | 38 |
| Loom Jacquard mechanism | G. Bürkle | 504,323 | Sept. 5 | 17 | 5, 6 | 64 | 1274 |
| Loom Jacquard mechanism | F. Charcot | 500,852 | July 4 | 505 | 131 | 64 | 92 |
| Loom let-off mechanism | A. D. Emery | 503,462 | Aug. 15 | 2027 | 504, 505 | 64 | 963 |
| Loom let-off mechanism | A. D. Emery | 503,468 | Aug. 15 | 2039 | 509 | 64 | 965 |
| Loom let-off mechanism | J. M. Linscott | 501,518 | July 18 | 1569 | 395 | 64 | 316 |
| Loom pattern mechanism | W. Wattie | 501,700 | July 18 | 1859 | 462, 463 | 64 | 389 |
| Loom-picker | A. D. Emery | 503,459 | Aug. 15 | 2019 | 501 | 64 | 962 |
| Loom-picker | A. D. Emery | 503,464 | Aug. 15 | 2031 | 505 | 64 | 964 |
| Loom picker-cam | A. D. Emery | 503,473 | Aug. 15 | 2049 | 510 | 64 | 967 |
| Loom picker-stick check | J. Johnson | 502,970 | Aug. 8 | 1249 | 306 | 64 | 809 |
| Loom picking mechanism | A. D. Emery | 503,470 | Aug. 15 | 2042 | 509 | 64 | 966 |
| Loom pile-wire | K. W. Weiss | 505,583 | Sept. 26 | 2144 | 542 | 64 | 1713 |
| Loom shedding mechanism | A. D. Emery | 503,460 | Aug. 15 | 2020 | 501, 502, 503 | 64 | 962 |
| Loom shedding mechanism | A. D. Emery | 503,469 | Aug. 15 | 2040 | 508, 509 | 64 | 966 |
| Loom shedding mechanism | E. Ingraham | 503,375 | Aug. 15 | 1904 | 472 | 64 | 942 |
| Loom-shuttle | S. M. Hamblin | 501,781 | July 18 | 1998 | 493 | 64 | 993 |
| Loom-shuttle | J. W. Keeley | 505,303 | Sept. 19 | 1475 | 384 | 64 | 1574 |
| Loom shuttle-binder | H. E. Hamilton | 504,349 | Sept. 5 | 55 | 15 | 64 | 1281 |
| Loom shuttle-binder | T. E. Norman | 505,574 | Sept. 26 | 2127 | 539 | 64 | 1710 |
| Loom shuttle-box-operating mechanism | C. H. Knowlton and B. F. Meyer | 503,542 | Aug. 15 | 2154 | 539, 540 | 64 | 987 |
| Loom shuttle-box-operating mechanism | C. H. Knowlton and B. F. Meyer | 503,543 | Aug. 15 | 2158 | 540 | 64 | 988 |
| Loom shuttle-motion | H. Wyman | 503,924 | Aug. 22 | 2757 | 691 | 64 | 1118 |
| Loom-shuttle. Self-threading | S. M. Hamblin | 503,851 | Aug. 22 | 2651 | 664 | 64 | 1097 |
| Loom-shuttle tension device | E. Domenge | 504,567 | Sept. 5 | 425 | 108 | 64 | 1349 |
| Loom stop-motion | H. Gaunt and S. E. Wild | 504,832 | Sept. 12 | 869 | 293, 294 | 64 | 1448 |
| Loom stopping mechanism | A. D. Emery | 503,461 | Aug. 15 | 2024 | 503, 504 | 64 | 962 |
| Loom take-up mechanism | A. D. Emery | 503,458 | Aug. 15 | 2017 | 501 | 64 | 962 |
| Loom-temple | D. Durkin | 503,906 | Aug. 22 | 2731 | 685 | 64 | 1113 |
| Loom-temple | A. Tomlinson | 504,298 | Aug. 29 | 8364 | 841 | 64 | 1248 |
| Loom warp-beam | A. J. Seybert | 504,442 | Sept. 5 | 211 | 55 | 64 | 1310 |
| Loom warp stop-motion | J. C. Brooks | 501,041 | July 4 | 798 | 208 | 64 | 145 |
| Loom weft stop mechanism | A. D. Emery | 503,466 | Aug. 15 | 2034 | 506 | 64 | 964 |
| Looms. Drop-box-changing mechanism for power | F. Hofmann | 500,768 | July 4 | 377 | 97 | 64 | 70 |
| Looms. Fluff-catcher for vertical | A. D. Emery | 503,463 | Aug. 15 | 2030 | 505 | 64 | 964 |
| Looms. Fluffing-discharger for | A. D. Emery | 503,471 | Aug. 15 | 2045 | 509 | 64 | 966 |
| Looms for weaving looped pile fabrics. Lay-motion for | R. C. Young | 501,585 | July 18 | 1670 | 417 | 64 | 395 |
| Looms. Lay-driving mechanism for vertical | A. D. Emery | 503,457 | Aug. 15 | 2015 | 500 | 64 | 962 |
| Looms. Positive shuttle-motion for | E. H. Graham | 503,956 | Aug. 29 | 2829 | 706 | 64 | 1148 |
| Looms. Race-rail for double-shed vertical | A. D. Emery | 503,465 | Aug. 15 | 2033 | 506 | 64 | 964 |
| Looms. Take-up mechanism for circular | A. de Laski | 503,863 | Aug. 22 | 2664 | 668 | 64 | 1100 |
| Loop-fastener | H. Green | 502,962 | Aug. 8 | 1226 | 302 | 64 | 806 |
| Low-water alarm | N. Guyer | 503,471 | Aug. 15 | 2045 | 509 | 64 | 966 |
| Low-water alarm | W. D. McLauchlin and A. Phillips | 505,730 | Sept. 26 | 2376 | 600 | 64 | 1755 |
| Lubricator. *See* Axle-lubricator. Pulley-lubricator. Journal-lubricator. Windmill-lubricator. | | | | | | | |
| Lubricator | E. D. Banga | 503,925 | Aug. 22 | 2759 | 691 | 64 | 1118 |
| Lubricator | G. Binder | 504,700 | Sept. 12 | 640 | 163 | 64 | 1403 |
| Lubricator | J. R. Drozeski | 505,597 | Sept. 26 | 2165 | 548 | 64 | 1717 |
| Lubricator | J. H. and F. A. Earles | 502,264 | July 25 | 2782 | 703 | 64 | 553 |
| Lubricator | P. F. Krug | 502,100 | July 25 | 2688 | 627 | 64 | 490 |
| Lubricator | R. Place | 502,139 | July 25 | 2559 | 641 | 64 | 511 |
| Lubricator | A. R. Queen and J. J. Kimball | 501,627 | July 18 | 1741 | 433 | 64 | 349 |
| Lubricator | O. T. Snyder | 504,178 | Aug. 29 | 3185 | 796 | 64 | 1214 |
| Lubricator | D. Stone | 503,013 | Aug. 8 | 1305 | 320 | 64 | 820 |
| Lubricator | C. E. Traves | 503,506 | Aug. 15 | 2100 | 525 | 64 | 977 |
| Lubricator | C. B. Wood | 502,158 | July 25 | 2800 | 654 | 64 | 519 |
| Lumber-drying kiln | N. T. Torbert | 505,011 | Sept. 12 | 1158 | 297 | 64 | 1503 |
| Lumber-drying rack | P. B. Raymond | 504,279 | Aug. 29 | 3351 | 837 | 64 | 1245 |
| Lumber. Flooring or other | F. J. Feldmann | 502,289 | Aug. 1 | 44 | 11 | 64 | 575 |
| Lumber-loading jack | E. L. Stocking | 503,335 | Aug. 15 | 1841 | 456 | 64 | 930 |
| Lumber-piling machine | H. Daniels | 500,881 | July 4 | 520 | 135 | 64 | 94 |
| Lung-testing machine. Coin-controlled | L. Kern | 502,439 | Aug. 1 | 322 | 76 | 64 | 625 |
| Machine-brake | B. T. Reilly | 503,495 | Aug. 15 | 2001 | 519 | 64 | 974 |
| Machine-operating mechanism | T. S. Smith | 505,254 | Sept. 19 | 1547 | 403 | 64 | 1588 |
| Magazine-camera | E. E. Ellis | 500,707 | July 4 | 278 | 75, 76 | 64 | 59 |
| Magnet core for dynamos or motors. Field- | G. S. Strong | 505,539 | Sept. 26 | 2047 | 532 | 64 | 1694 |
| Magnetic separators. Device for and method of adjusting and equalizing the magnetic density in the pole-pieces of | C. Q. Payne | 500,606 | July 4 | 110 | 30 | 64 | 22 |
| Mail-bag | J. W. Latcher | 502,590 | Aug. 1 | 458 | 110 | 64 | 651 |
| Mail-bag fastening | Z. B. Hendrix | 505,045 | Sept. 12 | 1214 | 313 | 64 | 1513 |
| Mail-bags. Automatically-folding crane for | W. H. Luther | 501,150 | July 11 | 990 | 252 | 64 | 195 |
| Mail-box. House | J. Ringen | 501,441 | July 11 | 1447 | 363 | 64 | 278 |
| Mail-crane | J. Teeter | 503,291 | Aug. 15 | 1651 | 405 | 64 | 997 |
| Mail. Holder for sending coins by | W. B. Coulter | 500,800 | July 4 | 428 | 112 | 64 | 79 |
| Mail-marking machine | G. E. Barnard | 501,816 | July 18 | 2048 | 504, 505 | 64 | 401 |



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| Invention. | Name. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drg. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|---|
| Mail-marking machine | C. R. Bowman and W. Rice | 504,684 | Sept. 5 | 558 | 142, 143 | 64 | 1375 |
| Mail tie-sack | A. C. Wendell | 505,688 | Sept. 26 | 2321 | 589 | 64 | 1746 |
| Malting apparatus | G. J. Meyer | 504,478 | Sept. 5 | 271 | 70 | 64 | 1320 |
| Mandrel. Sectional | C. P. Higgins | 501,960 | Aug. 29 | 2836 | 708 | 64 | 1149 |
| Marbleizing metal, china, &c | S. Withers | 505,303 | Sept. 19 | 1635 | ..... | 64 | 1605 |
| Marbling enameled articles | G. Gnichtel | 503,661 | Aug. 22 | 2368 | 591 | 64 | 1041 |
| Marking-gage | J. A. Trant | 504,033 | Aug. 29 | 2908 | 729 | 64 | 1169 |
| Masher for vegetables, fruits, &c | G. H. Zane | 505,504 | Sept. 26 | 1975 | 507 | 64 | 1680 |
| Mast-hoop | C. P. H. Vary | 502,542 | Aug. 1 | 502 | 120 | 64 | 659 |
| Mat: *See* Fire-mat. Metal mat. | | | | | | | |
| Match-bunching machine | E. H. Eisenhart | 500,872 | July 4 | 537 | 139 | 64 | 97 |
| Match-safe and cigar-cutter. Combined | C. Brunner and J. H. Goodwin | 502,807 | Aug. 8 | 956 | 233 | 64 | 757 |
| Match-safe. Pocket | E. Oldenbusch | 501,689 | July 18 | 1643 | 458 | 64 | 366 |
| Match-stick-bunching machine | M. Moul | 502,909 | Aug. 8 | 1127 | 277, 278 | 64 | 789 |
| Matrix-making machine | A. J. Kletzker and J. G. Goesel | 503,394 | Aug. 15 | 1821 | 451 | 64 | 927 |
| Matte from slag. Apparatus for separating | D. Sheedy and M. W. Iles | 500,621 | July 4 | 135 | 36 | 64 | 26 |
| Mattress | N. P. Chaney | 505,649 | Sept. 26 | 2256 | 572 | 64 | 1735 |
| Mattress | W. Staab | 504,443 | Sept. 5 | 212 | 55 | 64 | 1310 |
| Measure. Facial | A. M. Ward | 505,496 | Sept. 26 | 1942 | 501 | 64 | 1670 |
| Measure register. Grain- | B. F. Haley | 503,719 | Aug. 22 | 2464 | 612 | 64 | 1060 |
| Measure. Speed- | L. T. Weiss | 505,582 | Sept. 26 | 2149 | 542 | 64 | 1713 |
| Measurer. Automatic grain- | E. W. Flagg | 504,155 | Aug. 29 | 3144 | 786 | 64 | 1208 |
| Measuring apparatus. Electric | C. H. Rudd | 504,754 | Sept. 12 | 734 | 183 | 64 | 1422 |
| Measuring apparatus for alternate currents. Electric | S. Everahed | 503,589 | Aug. 22 | 2945 | 569 | 64 | 1020 |
| Measuring apparatus. Liquid- | J. Lewis | 503,149 | Aug. 15 | 1849 | 375 | 64 | 875 |
| Measuring can. Liquid- | L. W. Hemp | 504,525 | Sept. 5 | 357 | 90 | 64 | 1336 |
| Measuring distances and solving trigonometrical problems. Instrument for | E. Falletti | 504,869 | Sept. 12 | 923 | 238 | 64 | 1459 |
| Measuring electricity. Method of and apparatus for | A. Aberg | 502,454 | Aug. 1 | 345 | 83 | 64 | 629 |
| Measuring-instrument. Electric | E. Thomson | 502,022 | July 25 | 2377 | 597, 598 | 64 | 477 |
| Measuring-instrument. Electrical | R. M. Hunter | 501,589 | July 18 | 1674 | 418 | 64 | 337 |
| Measuring-instrument. Electrical | R. M. Hunter | 502,077 | July 25 | 2463 | 619 | 64 | 493 |
| Measuring-machine | R. H. Grant | 504,107 | Aug. 29 | 3071 | 769 | 64 | 1193 |
| Measuring machine. Cloth- | R. M. Wren and A. J. Oliver | 502,943 | Aug. 8 | 1194 | 294 | 64 | 800 |
| Measuring proportional parts for mixtures. Apparatus for | A. K. Suddoth | 502,596 | Aug. 1 | 581 | 139 | 64 | 673 |
| Measuring tank. Self- | L. W. Hemp | 504,527 | Sept. 5 | 360 | 91 | 64 | 1337 |
| Measuring-vessel | W. H. Bastin | 503,571 | Aug. 29 | 2214 | 553, 554 | 64 | 1014 |
| Measuring-vessel | A. H. Cell and E. G. Paster | 502,347 | Aug. 1 | 163 | 38 | 64 | 596 |
| Meat-block | A. Weaver | 503,511 | Aug. 15 | 2107 | 528 | 64 | 979 |
| Meat-block attachment | S. P. Rush | 504,115 | Aug. 29 | 3082 | 771 | 64 | 1195 |
| Meat-chopping apparatus | H. Leineweber | 502,440 | Aug. 1 | 394 | 76, 77 | 64 | 625 |
| Meat. Machine for straining or removing tendons from chopped | E. Grether | 501,417 | July 11 | 1420 | 356 | 64 | 272 |
| Meat-preserving device | J. W. Powers | 505,126 | Sept. 19 | 1352 | 348 | 64 | 1552 |
| Me t-rack | F. Schraudner | 500,956 | July 4 | 657 | 174 | 64 | 120 |
| Meat-slicing machine | C. Wilson | 501,554 | July 18 | 1627 | 407 | 64 | 329 |
| Meat tenderer | R. A. Gailbreath | 502,355 | Aug. 1 | 178 | 42 | 64 | 598 |
| Meat-tenderer | B. H. Passmore | 504,892 | Sept. 12 | 958 | 247 | 64 | 1465 |
| Mechanical motor | J. Grass and C. E. Hardie | 503,593 | Aug. 22 | 2955 | 565 | 64 | 1021 |
| Mechanical motor | J. E. West | 505,339 | Sept. 19 | 1595 | 434 | 64 | 1613 |
| Mechanical movement | S. G. Brosius | 503,122 | Aug. 15 | 1487 | 366 | 64 | 867 |
| Mechanical movement | E. M. Kellogg | 500,584 | July 4 | 71 | 21 | 64 | 14 |
| Mechanical movement | E. Patten | 502,928 | Aug. 8 | 998 | 243 | 64 | 765 |
| Mechanical movement | J. Dawdy and F. M. Cattern | 505,383 | Sept. 19 | 1777 | 460 | 64 | 1630 |
| Medical air-injector. Electro- | J. A. Cabot | 501,558 | July 18 | 1632 | 408 | 64 | 330 |
| Medical apparatus. Electro- | S. Hetherington-Carruthers | 500,767 | July 4 | 376 | 97 | 64 | 70 |
| Medical appliance. Electro- | J. Schmid | 504,636 | Sept. 5 | 503 | ..... | 64 | 1365 |
| Medical compound | J. J. Mitchell | 500,594 | July 4 | 86 | 24 | 64 | 17 |
| Medicinal purposes. Machine for making tablets for | H. S. Moore | 504,886 | Sept. 12 | 949 | 245, 246, 754, 755 | 61, 64 | 1463, 1183 |
| Merry-go-round | E. G. Hoffmann | 504,083 | Aug. 29 | 3019 | 755 | 64 | 1183 |
| Metal balls, &c. Machine for manufacturing | G. Schubert | 503,257 | Aug. 15 | 1704 | 419 | 64 | 907 |
| Metal-banding or bale-wiring tool | W. Grant | 500,664 | July 4 | 556 | 144 | 64 | 101 |
| Metal bar to be calked | G. M. French, Jr | 505,516 | Sept. 26 | 2001 | 512 | 64 | 1665 |
| Metal-drilling machine | G. Kinmpp | 502,566 | Aug. 1 | 531 | 127 | 64 | 664 |
| Metal-embossing machine | W. F. Niedringhaus and C. A. Wettengel | 503,292 | Aug. 15 | 1761 | 435, 436, 791 | 64 | 917 |
| Metal-folding machine. Plate- | F. A. Pratt | 504,171 | Aug. 29 | 3173 | 792, 793 | 64 | 1212 |
| Metal. Machine for cutting off bars of | J. Horrocks | 501,788 | July 18 | 2011 | 496 | 64 | 395 |
| Metal mat or like structure | R. B. Thomas | 501,746 | July 18 | 1940 | 480 | 64 | 383 |
| Metal plates. Dusting | C. Fremont | 501,135 | July 11 | 964 | 246 | 64 | 190 |
| Metal sawing or cutting machine | D. Jenkins | 503,660 | Sept. 26 | 2273 | 576, 577 | 64 | 1738 |
| Metal sheets. Apparatus for coating | T. Harper | 505,221 | Sept. 19 | 1499 | 390, 391 | 64 | 1578 |
| Metal tubes. Machine for buffing | F. W. Bruch | 504,909 | Sept. 12 | 980 | 254 | 64 | 1471 |
| Metal-upsetting machine | A. H. B. and E. H. N. Neff | 505,633 | Sept. 26 | 2227 | 565 | 64 | 1738 |
| Metal wheel | J. H. Bassler | 501,038 | July 4 | 790 | 207 | 64 | 144 |
| Metal-working | C. P. Higgins | 503,965 | Aug. 29 | 2843 | 712, 713 | 64 | 1151 |
| Metal-working apparatus | G. D. Burton and E. E. Angell | 505,963 | Sept. 19 | 1558 | 406, 407 | 64 | 1580 |
| Metal-working. Electrical | S. H. Emmens | 501,997 | July 25 | 2331 | 584 | 64 | 469 |
| Metals. Apparatus for the electrolytic extraction of | E. Thomson | 501,547 | July 18 | 1617 | 405 | 64 | 383 |
| Metals by electricity. Shaping and spinning | | | | | | | |

*Alphabetical list of inventions, July to September, inclusive*—Continued.

| Invention. | Name. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drg. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|---|
| Metals electrically. Method of and apparatus for heating, welding, or working | C. L. Coffin | 501,825 | July 18 | 2059 | 507 | 64 | 404 |
| Metals from compound ores. Extracting | A. Chanute | 501,559 | July 18 | 1633 | ..... | 64 | 330 |
| Metallic tie and track-fastening. Combined | G. P. Gunn | 502,435 | Aug. 1 | 311 | 74 | 64 | 623 |
| Metallic tie to resist progressive strains | P. H. Jackson | 504,994 | Sept. 19 | 1015 | 261 / 262 | 64 | 1476 |
| Metallurgical furnace | F. G. Bates | 502,167 | July 25 | 2611 | 657 / 658 | 64 | 522 |
| Meter: *See* Electric meter. Gas-meter. Grain meter. Multiphase meter. Water-meter. | | | | | | | |
| Meter-dials. Means for taking readings of | A. B. Herrick | 504,159 | Aug. 29 | 3149 | 787 | 64 | 1207 |
| Middlings and flour separating machine | H. Bittinger | 502,696 | Aug. 8 | 765 | 186 | 64 | 722 |
| Middlings-purifier | W. D. Gray | 502,187 | July 25 | 2641 | 666 | 64 | 528 |
| Milk-agitator | B. Ewing | 503,951 | Aug. 29 | 2921 | 704 | 64 | 1166 |
| Milk-can | C. Fries and W. H. Richardson | 504,027 | Aug. 29 | 2941 | 736 | 64 | 1169 |
| Milk-can | H. Philipp | 502,085 | July 25 | 2480 | 623 | 64 | 496 |
| Milk-cooler | F. J. Merz | 503,868 | Aug. 22 | 2872 | 689 | 64 | 1101 |
| Milk. Vessel for the conveyance of | W. W. Mellor and J. Shaw | 502,005 | July 25 | 2343 | 5-7 | 64 | 471 |
| Milker. Cow- | C. F. Kastengren | 500,713 | July 4 | 290 | 78, 79 | 64 | 54 |
| Milking apparatus. Cow- | W. Murchland | 501,804 | July 18 | 2035 | 501 | 64 | 399 |
| Mill: *See* Cider-mill. Crushing or grinding mill. Grinding-mill. Hominy-mill. Rolling-mill. Windmill. | | | | | | | |
| Mills. Automatic feed-regulator for | A. N. Wolf | 500,832 | July 4 | 479 | 125 | 64 | 87 |
| Mineral separator. Dry- | G. H. Patterson | 504,240 | Aug. 29 | 3229 | 821 | 64 | 1223 |
| Mining-machine | J. Boland and G. W. Frits | 501,402 | July 11 | 1390 | 350 / 351 | 64 | 266 |
| Mining-machine | A. Keil and A. R. Westerdahl | 501,909 | July 11 | 1076 | 274 | 64 | 212 |
| Mining-machine | F. M. Lechner | 503,607 | Aug. 22 | 2287 | 570 / 571 | 64 | 1027 |
| Mining-machine | B. A. Legg and A. Keil | 501,795 | July 18 | 2023 | 499 | 64 | 397 |
| Mining machine. Coal- | B. F. Wilson | 502,430 | Aug. 1 | 299 | 71 | 64 | 609 |
| Mining machine. Placer- | C. O. Sumner | 505,684 | Sept. 26 | 2315 | 587 / 588 | 64 | 1745 |
| Mirror and making same | J. Jacobson | 501,514 | July 18 | 1563 | 393 | 64 | 315 |
| Miter: *See* Intersecting miter. | | | | | | | |
| Mitering-machine | J. A. Brandon | 505,024 | Sept. 12 | 1177 | 301 / 302 | 64 | 1506 |
| Mixer: *See* Drink-mixer. Fluid-mixer. | | | | | | | |
| Mixer and stirrer | A. Hancock | 504,472 | Sept. 5 | 962 | 68 | 64 | 1319 |
| Moistener. Envelope and stamp | W. E. Ray | 503,618 | Aug. 22 | 2307 | 575 | 64 | 1030 |
| Moistener. Finger- | M. W. Stebbins | 503,995 | Aug. 29 | 2968 | 725 | 64 | 1160 |
| Moistener. Postage-stamp or envelope | J. B. Walsh | 505,495 | Sept. 26 | 1940 | 500 | 64 | 1675 |
| Mold | M. C. Bullock and S. W. Douglass | 501,915 | July 25 | 2216 | 553 | 64 | 447 |
| Moldboard, &c. Auxiliary | C. E. Fox | 503,413 | Aug. 15 | 1953 | 485 | 64 | 951 |
| Molder's flask | J. Flockhart | 501,414 | July 11 | 1417 | 355 | 64 | 272 |
| Molding-flasks. Retaining-bar for | T. J. Bradberry | 505,153 | Sept. 19 | 1399 | 359 | 64 | 1500 |
| Molding-machine | R. Campbell | 501,824 | July 18 | 2058 | 507 | 64 | 403 |
| Molding-machine | W. W. Doolittle | 505,511 | Sept. 26 | 1989 | 509 / 510 | 64 | 1683 |
| Molding. Metallic | W. S. Grafton | 502,357 | Aug. 1 | 181 | 42, 43 | 64 | 599 |
| Molding or turning machine attachment | G. A. Neitzel | 504,111 | Aug. 29 | 3077 | 770 | 64 | 1194 |
| Money-drawer. Electric-alarm | W. J. Walker and A. L. Bedford | 501,306 | July 11 | 1220 | 309 | 64 | 235 |
| Monkey-wrench | W. E. Badger | 502,829 | Aug. 8 | 1058 | 260 | 64 | 776 |
| Monkey-wrench | E. S. Pratt | 502,997 | Aug. 8 | 1283 | 314 | 64 | 816 |
| Mop and window-cleaner. Combined | C. Wiebush | 503,898 | Aug. 22 | 2700 | 677 | 64 | 1106 |
| Mop and wringer. Combined | C. A. Chisholm | 502,657 | Aug. 1 | 688 | 165 | 64 | 692 |
| Mop-wringer | A. M. Burnham | 504,077 | Aug. 29 | 3009 | 752 | 64 | 1181 |
| Mop-wringer | W. Graham | 503,863 | Aug. 22 | 2372 | 592 | 64 | 1042 |
| Mop-wringer | W. F. Ulman | 502,448 | Aug. 1 | 337 | 81 | 64 | 628 |
| Mop-wringing apparatus | R. S. Kirkpatrick | 503,541 | Aug. 15 | 2151 | 539 | 64 | 987 |
| Mortising-machine | L. Grant and N. C. Testo | 504,792 | Sept. 12 | 666 | 170 | 64 | 1408 |
| Mortising-tool | S. J. Hicks | 502,130 | July 25 | 2531 | 635 | 64 | 506 |
| Mosaic and tile press | B. Toulouse and J. Delorieux | 501,584 | July 18 | 1969 | 417 | 64 | 357 |
| Motion. Device for converting | E. H. Johnson | 504,086 | Aug. 29 | 3038 | 756 | 64 | 1185 |
| Motion-transmitter. Frictional | W. H. Masterman | 502,570 | Aug. 1 | 538 | 128 | 64 | 665 |
| Motive power and apparatus therefor. Production of | A. Krank | 501,093 | July 11 | 864 | 224 / 225 | 64 | 173 |
| Motor: *See* Air-motor. Current-motor. Electric motor. Electrical reciprocating motor. Hydraulic motor. Hydropneumatic motor. Mechanical motor. Multiphase motor. Revolving motor. Spring-motor. Steam-motor. Water-motor. Weight-motor. | | | | | | | |
| Motor | F. W. Clark | 503,829 | Aug. 22 | 2616 | 654 | 64 | 1090 |
| Motor | G. Keller | 504,272 | Aug. 29 | 3243 | 835 | 64 | 1244 |
| Motor | D. E. Myers | 504,983 | Sept. 12 | 1133 | 290 | 64 | 1497 |
| Motor | F. Schram | 503,878 | Aug. 22 | 2684 | 673 | 64 | 1103 |
| Motor | L. H. Sinclair | 504,056 | Aug. 29 | 2983 | 745 / 746 | 64 | 1176 |
| Motor | W. H. Starr | 502,623 | Aug. 22 | 2314 | 577 | 64 | 1031 |
| Motor connection and lock | T. James | 501,904 | July 18 | 2138 | 544 | 64 | 426 |
| Movement-cure apparatus | J. W. Osborne | 502,578 | Aug. 1 | 549 | 131 | 64 | 667 |
| Mower | W. R. Baker | 500,550 | July 4 | 21 | 8 | 64 | 6 |
| Mower | E. M. Brewster | 501,865 | July 18 | 2114 | 523 | 64 | 414 |



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| Invention. | Name. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drg. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|---|
| Mower clutch-operating mechanism. Lawn- | T. Coldwell | 504,330 | Sept. 5 | 30 | 9 | 64 | 1276 |
| Mower grass-gathering attachment. Lawn- | M. Fry | 505,310 | Sept. 19 | 1649 | 426 / 427 | 64 | 1607 |
| Mower. Lawn- | C. H. Braithwaite | 504,411 | Sept. 5 | 169 | 43 | 64 | 1300 |
| Mower. Lawn- | G. W. Carr | 505,187 | Sept. 19 | 1446 | 379 | 64 | 1568 |
| Mower. Lawn- | H. Deck | 503,904 | Aug. 22 | 2726 | 684 | 64 | 1112 |
| Mower. Lawn- | S. P. Graham | 503,792 | Aug. 22 | 2573 | 640 | 64 | 1082 |
| Mower. Lawn- | W. D. Wansbrough | 503,509 | Aug. 15 | 2104 | 527 | 64 | 978 |
| Mower rake attachment | J. Marshall | 503,152 | Aug. 15 | 1533 | 376 / 377 | 64 | 875 |
| Mower sickle-head | T. J. Mitchell | 502,129 | July 25 | 2544 | 638 | 64 | 509 |
| Mowing and harvesting machinery. Cutting apparatus for | P. T. Walton | 504,641 | Sept. 5 | 594 | 135 | 64 | 1369 |
| Mowing-machine | W. P. Grannis | 503,957 | Aug. 29 | 2930 | 707 | 64 | 1148 |
| Mowing-machine cutter-bars. Mechanism for raising | G. H. Pratt | 500,945 | July 4 | 632 | 167 | 64 | 116 |
| Mowing-machine push-bar | J. H. Jones | 504,419 | Sept. 5 | 179 | 46 | 64 | 1304 |
| Multi-cylinder engine | L. C. Worron | 501,983 | July 25 | 2309 | 577 / 578 | 64 | 464 |
| Multiphase meter | T. Duncan | 500,808 | July 4 | 531 | 138 | 64 | 97 |
| Multiphase motor | L. Bell | 504,904 | Sept. 12 | 984 | 253 | 64 | 1476 |
| Multiphase motor | L. Bell | 505,505 | Sept. 26 | 1975 | 507 | 64 | 1680 |
| Multiplying-machine | J. Sawyer | 502,425 | Aug. 1 | 296 | 70, 71 | 64 | 620 |
| Music-box | E. L. Cuendet | 501,766 | July 18 | 1979 | 489 | 64 | 390 |
| Music-leaf turner | J. H. and S. H. Redfield | 504,052 | Aug. 29 | 2977 | 744 | 64 | 1174 |
| Music-rack. Folding | W. H. Howe | 501,208 | July 11 | 1075 | 273 | 64 | 211 |
| Music-sheet turner | J. N. Carpenter | 505,307 | Sept. 19 | 1640 | 494 | 64 | 1605 |
| Music-sheet-turning apparatus | F. Morel | 501,213 | July 11 | 1081 | 275 | 64 | 213 |
| Music-stand. Adjustable | C. J. MacRae | 502,990 | Aug. 8 | 1261 | 308 | 64 | 811 |
| Music-writing machine | F. H. Bowen | 500,793 | July 4 | 415 | 109 / 110 | 64 | 77 |
| Musical instrument | C. Doriot | 504,671 | Sept. 5 | 583 | 149 | 64 | 1380 |
| Musical instrument | K. Polenoff | 502,103 | July 25 | 2504 | 628 / 629 | 64 | 500 |
| Musical instrument case | J. A. Weser | 504,463 | Sept. 5 | 242 | 64 | 64 | 1315 |
| Musical instrument. Electrical | P. E. Singer | 501,540 | July 18 | 1597 | 402 | 64 | 322 |
| Musical instrument. Electrical | P. E. Singer | 501,541 | July 18 | 1598 | 402 | 64 | 322 |
| Musical instrument. Electrical | P. E. Singer | 501,542 | July 18 | 1599 | 403 | 64 | 322 |
| Musical instrument. Electrical | P. E. Singer | 501,543 | July 18 | 1601 | 403 | 64 | 323 |
| Musical-instrument keyboard | C. C. Kropp | 502,099 | July 25 | 2497 | 627 | 64 | 499 |
| Musical instrument. Stringed | W. Kumpf | 505,662 | Sept. 26 | 2276 | 577 | 64 | 1738 |
| Musical instruments. Fret for | J. F. Stratton | 501,743 | July 18 | 1936 | 479 | 64 | 302 |
| Musical-stringed-instrument key | S. B. Dietz, Jr | 504,024 | Aug. 29 | 2938 | 735 | 64 | 1167 |
| Nail: *See* Heel-nail. | | | | | | | |
| Nail-cutting machine | W. N. Severance | 500,958 | July 4 | 659 | 175 / 176 | 64 | 120 |
| Nail-cutting machine | W. N. Severance | 500,959 | July 4 | 668 | 176 / 177 | 64 | 122 |
| Nail-extractor | G. H. Scranton, Jr | 502,914 | Aug. 8 | 1135 | 280 | 64 | 791 |
| Nail machines. Reel for wire | J. B. Munslow | 502,373 | Aug. 1 | 308 | 49 | 64 | 604 |
| Nail or spike | A. T. Abbott | 505,743 | Sept. 26 | 2411 | 609 | 64 | 1761 |
| Nail separating and feeding device | J. M. Benjamin and R. C. Simmons | 503,895 | Aug. 22 | 2712 | 681 / 682 | 64 | 1108 |
| Nailing machine | F. O. Tobey | 502,212 | July 25 | 2563 | 677 | 64 | 536 |
| Napkin-holder | G. S. Mock | 502,739 | Aug. 8 | 846 | 206 | 64 | 736 |
| Napkin or paper holder | C. C. Scott | 505,726 | Sept. 26 | 2387 | 603 | 64 | 1757 |
| Napkin-ring | E. Drevet | 501,332 | July 11 | 1275 | 320 | 64 | 244 |
| Neckscarf | T. C. Robinson | 500,723 | July 4 | 311 | 83 | 64 | 58 |
| Necktie-fastener | H. S. Pullman | 502,757 | Aug. 8 | 875 | 214 | 64 | 741 |
| Needle. Sewing- | H. A. Blanchard | 500,556 | July 4 | 31 | 11 | 64 | 8 |
| Needles. Making | E. J. Hall | 503,476 | Aug. 15 | 2057 | 513 | 64 | 968 |
| Negative and screen holder | J. Scouler | 505,331 | Sept. 19 | 1676 | 432 | 64 | 1611 |
| Net-making machine | J. Knox | 504,505 | Sept. 5 | 463 | 118 / 119 | 64 | 1256 |
| Nipple and cap. Filling- | H. S. Chase | 504,150 | Aug. 29 | 3137 | 784 | 64 | 1205 |
| Nipple-holder | J. Canney | 502,224 | July 25 | 2703 | 692 | 64 | 540 |
| Nipples during threading. Device for holding | J. H. Reilly | 500,746 | July 4 | 341 | 90 | 64 | 64 |
| Nipples during threading. Device for holding | F. W. Smith, Jr | 500,747 | July 4 | 344 | 91 | 64 | 64 |
| Non-conducting composition of matter for covering steam pipes, boilers, &c. | K. W. Siebner | 505,496 | Sept. 19 | 1840 | ..... | 64 | 1643 |
| Nozzle. Spraying | J. J. McGowen | 502,742 | Aug. 8 | 849 | 207 | 64 | 737 |
| Nut and bolt lock | N. T. Clark and J. K. Haynie | 503,195 | Aug. 15 | 1605 | 394 | 64 | 889 |
| Nut and drill ratchet-wrench. Adjustable | C. H. Bernheim | 501,862 | July 18 | 2111 | 521 | 64 | 413 |
| Nut-lock | O. H. Beam | 504,296 | Aug. 29 | 3380 | 845 | 64 | 1251 |
| Nut-lock | H. Cohen and J. W. Tharp | 504,561 | Sept. 5 | 416 | 106 | 64 | 1347 |
| Nut-lock | R. Holmes | 501,345 | July 11 | 1304 | 325 | 64 | 250 |
| Nut-lock | H. M. Howell | 502,363 | Aug. 1 | 189 | 45 | 64 | 601 |
| Nut-lock | T. D. Jones | 502,195 | July 25 | 2655 | 671 | 64 | 531 |
| Nut-lock | E. L. Krauser | 505,468 | Sept. 26 | 1902 | 490 | 64 | 1694 |
| Nut-lock | D. A. Leonard | 504,596 | Sept. 5 | 466 | 119 | 64 | 1356 |
| Nut-lock | T. Martin | 505,365 | Sept. 19 | 1735 | 449 | 64 | 1622 |
| Nut-lock | E. U. Moore | 501,590 | July 18 | 1676 | 419 | 64 | 338 |
| Nut-lock | I. Nappin | 504,608 | Sept. 5 | 481 | 123 | 64 | 1359 |
| Nut-lock | E. E. Poole | 504,999 | Sept. 12 | 1142 | 292 | 64 | 1499 |
| Nut-lock | B. Porter | 500,672 | July 4 | 229 | 60 | 64 | 44 |
| Nut-lock | B. F. Shafer, Sr | 503,809 | Aug. 22 | 2583 | 648 | 64 | 1085 |
| Nut-lock | W. M. Stewart | 505,140 | Sept. 19 | 1375 | 352 | 64 | 1556 |
| Nut-lock | H. Taylor | 503,065 | Aug. 8 | 1379 | 341 | 64 | 894 |
| Nut-Lock | L. Tolan, Jr., and F. L. Morton | 502,477 | Aug. 1 | 380 | 91 | 64 | 636 |
| Nut-locks. Cement for | C. Swayze | 500,975 | July 4 | 698 | ..... | 64 | 127 |
| Nut-tapping machine | T. S. Disston | 504,971 | Sept. 12 | 1093 | 279 / 280 | 64 | 1490 |
| Obstetrical and examination stirrup | J. M. Maurer | 505,319 | Sept. 19 | 1661 | 429 | 64 | 1592 |
| Obstetrical appliance | J. H. and I. N. Leyda | 504,598 | Sept. 5 | 468 | 120 | 64 | 1357 |

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| Invention. | Name. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drg. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|---|
| Oil-burner | C. Ingersoll | 509,970 | Aug. 29 | 2850 | 715 | 64 | 1152 |
| Oil-burner | F. L. McGahan | 501,356 | July 11 | 1322 | 330, 331 | 64 | 254 |
| Oil-burner | W. T. Putnam | 501,692 | July 18 | 1846 | 450 | 64 | 367 |
| Oil-burner for furnaces | W. N. Graves | 505,355 | Sept. 19 | 1712 | 442 | 64 | 1618 |
| Oil-can | L. S. Bonbrake | 505,347 | Sept. 19 | 1695 | 436 | 64 | 1615 |
| Oil-can | D. A Lisk and T. D. Brown | 504,788 | Sept. 12 | 793 | 200 | 64 | 1432 |
| Oil-can | C. W. Proctor | 504,748 | Sept. 12 | 725 | 181 | 64 | 1420 |
| Oil-can | I. Weil | 502,336 | Aug. 1 | 141 | 32 | 64 | 591 |
| Oil-cloth cutter | J. W. Lewis | 503,546 | Aug. 15 | 2167 | 541 | 64 | 990 |
| Oil from crank-pin journals of connecting-rods. Device for catching | R. M. La Touche | 504,391 | Sept. 5 | 128 | 33 | 64 | 1294 |
| Oil from tanks. Valve and pipe adjunct for graduating the flow of | G. R. Moore | 503,769 | Aug. 22 | 2541 | 632 | 64 | 1075 |
| Oil-heater | A. G. Glasgow | 504,524 | Sept. 5 | 355 | 90 | 64 | 1336 |
| Opera-chair | M. McAneny and F. Stansbury | 501,896 | July 18 | 2176 | 539, 540 | 64 | 424 |
| Opera, field, marine, or other glass | J. Aitchison and T. Bradley | 500,835 | July 4 | 484 | 126 | 64 | 88 |
| Optical illusion | H. E. Perry | 500,607 | July 4 | 114 | 30, 31 | 64 | 22 |
| Orange-cleaning machine | H. Learned | 503,210 | Aug. 15 | 1029 | 400 | 64 | 894 |
| Orange or fruit cleaning machine | J. L. Blockburger | 502,651 | Aug. 1 | 675 | 163 | 64 | 690 |
| Ordnance. Breech mechanism for | J. B. G. A. Canet | 502,172 | July 25 | 2619 | 660, 661 | 64 | 523 |
| Ordnance. Recoil-mount for | W. H. Driggs | 502,178 | July 25 | 2628 | 662, 663 | 64 | 525 |
| Ore. Concentrating magnetic iron | G. Conkling | 504,200 | Aug. 29 | 3226 | 804 | 64 | 1222 |
| Ore. Concentrating magnetic iron | G. Conkling | 504,201 | Aug. 29 | 3228 | 804 | 64 | 1222 |
| Ore-concentrator | J. H. McCoy | 501,022 | July 4 | 762 | 200 | 64 | 139 |
| Ore-concentrator | T. McGlew | 505,169 | Sept. 19 | 1421 | 366 | 64 | 1564 |
| Ore-concentrator | T. McGlew | 505,412 | Sept. 19 | 1811 | 467, 468 | 64 | 1637 |
| Ore-concentrator | C. E. Seymour | 503,687 | Aug. 22 | 2405 | 600 | 64 | 1048 |
| Ore-crushing machine | A. Fraser | 501,999 | July 25 | 2334 | 585 | 64 | 469 |
| Ore or feed pulverizer | J. M. Jones | 500,582 | July 4 | 68 | 19, 20 | 64 | 14 |
| Ore-roasting kiln | O. W. Davis, Jr | 501,494 | July 18 | 1528 | 393 | 64 | 309 |
| Ore-separating machine | H. Bradford | 504,665 | Sept. 5 | 561 | 143, 144 | 64 | 1376 |
| Ore. Separating or concentrating | H. Bradford | 504,666 | Sept. 5 | 567 | 144 | 64 | 1376 |
| Ore-separator | R. Dilworth | 503,454 | Aug. 15 | 2010 | 498, 499 | 64 | 961 |
| Ore-separator | W. S. Lockhart | 500,602 | July 4 | 210 | 51 | 64 | 41 |
| Ore-separator | C. F. Willsie | 503,023 | Aug. 8 | 1316 | 332 | 64 | 852 |
| Ore-separator and amalgamator. Combined | J. J. Fitzgerrell | 501,879 | July 18 | 2147 | 532 | 64 | 419 |
| Ore separator and concentrator | I. F. Monell | 504,931 | Sept. 12 | 1024 | 264 | 64 | 1478 |
| Ore-separator. Centrifugal | O. B. Peck. (Reissue) | 11,367 | Sept. 26 | 2513 | 634, 635 | 64 | 1782 |
| Ore-separator. Magnetic | C. Q. Payne | 500,605 | July 4 | 106 | 29 | 64 | 21 |
| Ore washer and concentrator | G. M. Eldridge | 502,663 | Aug. 1 | 697 | 167 | 64 | 693 |
| Ores. Desulphurizing metallic | H. H. Eames | 502,431 | Aug. 1 | 305 | 73 | 64 | 622 |
| Ores. Extracting metals from | H. Calhoun and A. M. Beam | 504,706 | Sept. 12 | 649 | | 64 | 1405 |
| Ores. Method of and apparatus for separating | C. Q. Payne | 500,604 | July 4 | 99 | 28, 29 | 64 | 20 |
| Ores of zinc, manganese, or iron. Treating | G. E. Moore | 505,408 | Sept. 19 | 1802 | | 64 | 1635 |
| Ores. Treating refractory | C. J. Fauvel | 502,181 | July 25 | 2632 | 663 | 64 | 526 |
| Ores. Treating refractory | C. J. Fauvel | 503,839 | Aug. 22 | 2632 | 658 | 64 | 1083 |
| Organ | H. Nelson | 502,050 | July 25 | 2423 | 610 | 64 | 485 |
| Organ bellows. Exhaust for reed | F. W. Hedgeland | 505,161 | Sept. 19 | 1409 | 362 | 64 | 1562 |
| Organ. Pipe | V. Anderson | 503,226 | Aug. 15 | 1656 | 407 | 64 | 998 |
| Organ. Pipe | H. Jäschke | 503,857 | Aug. 22 | 2658 | 666 | 64 | 1088 |
| Organ. Reed | L. K. Fuller | 502,666 | Aug. 1 | 702 | 168 | 64 | 694 |
| Organ. Reed | E. W. Ham | 503,850 | Aug. 22 | 2650 | 664 | 64 | 1087 |
| Organ reed-board | J. Peloubet | 501,535 | July 18 | 1589 | 400 | 64 | 320 |
| Organ stop-action | F. W. Fraser | 501,880 | July 18 | 2150 | 533 | 64 | 419 |
| Organic substances from sulphite liquor. Recovering | V. B. Drewsen | 505,755 | Sept. 26 | 2431 | | 64 | 1766 |
| Ornamental screen | S. B. Walker | 501,262 | July 11 | 1160 | 294 | 64 | 226 |
| Oscillating engine | M. H. Delany | 501,994 | July 25 | 2327 | 581 | 64 | 466 |
| Oven | W. H. Wiester | 504,184 | Aug. 29 | 3200 | 798 | 64 | 1217 |
| Oven. Baking | P. Pfeiderer and H. Werner | 505,175 | Sept. 19 | 1430 | 368 | 64 | 1565 |
| Oven. Combined flattening and annealing | J. Clabby | 505,418 | Sept. 19 | 1823 | 469, 470 | 64 | 1639 |
| Oven door. Baker's | E. A. C. Petersen | 503,872 | Aug. 22 | 2677 | 671 | 64 | 1102 |
| Oven heat-regulator | A. Bednarz | 505,345 | Sept. 19 | 1693 | 436 | 64 | 1615 |
| Oven or other door | W. R. Webster and J. Hamilton | 503,920 | Aug. 22 | 2616 | 652 | 64 | 1089 |
| Overshoe | J. F. Bullard | 502,275 | Aug. 1 | 18 | 4 | 64 | 569 |
| Overshoe-holder | C. L. Hammerstein | 505,655 | Sept. 26 | 2266 | 574 | 64 | 1737 |
| Oxygen. Making | G. Webb, Jr., and G. H. Rayner | 500,697 | July 4 | 261 | | 64 | 49 |
| Oyster-sack | J. E. Burke | 501,053 | July 11 | 819 | 213 | 64 | 164 |
| Package-carrier | J. G. Parkinson | 501,023 | July 4 | 763 | 200 | 64 | 139 |
| Package-carrier apparatus | W. H. Albach | 501,035 | July 4 | 766 | 206 | 64 | 143 |
| Packing-box | C. R. Mengel | 503,976 | Aug. 29 | 2859 | 717 | 64 | 1153 |
| Packing case or box | O. H. Jadwin | 505,570 | Sept. 26 | 2121 | 537 | 64 | 1709 |
| Packing for stuffing-boxes. Metallic | T. H. Holmes | 500,899 | July 4 | 574 | 150 | 64 | 105 |
| Packing. Joint | J. A. Barnes | 505,084 | Sept. 19 | 1291 | 333 | 64 | 1541 |
| Packing. Metallic rod | C. Longstreth | 503,783 | Aug. 22 | 2468 | 613 | 64 | 1060 |
| Packing. Piston | I. A. Kilmer | 503,859 | Aug. 22 | 2660 | 666 | 64 | 1089 |
| Packing. Piston | I. A. Kilmer | 503,860 | Aug. 22 | 2661 | 667 | 64 | 1089 |
| Packing-ring-cutting machine | M. E. Briggs | 503,341 | Aug. 15 | 1848 | 458 | 64 | 932 |
| Packing. Rod | A. Bradford | 501,913 | July 25 | 2214 | 552 | 64 | 447 |
| Pad: *See* Blotting-pad. Buffing-pad. | | | | | | | |
| Paddle-wheel | E. G. Bailey | 505,784 | Sept. 26 | 2478 | 625 | 64 | 1775 |
| Padlock | G. W. Jopson | 500,907 | July 4 | 583 | 152 | 64 | 107 |
| Padlock. Permutation | W. Hay | 504,034 | Aug. 29 | 2951 | 739 | 64 | 1170 |
| Padlock. Permutation | H. C. Lowrie | 502,307 | Aug. 1 | 83 | 19, 20 | 64 | 581 |
| Padlock. Permutation | H. C. Lowrie | 502,308 | Aug. 1 | 86 | 20 | 64 | 582 |



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| Invention. | Name. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drg. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|---|
| Pail bottom. Metal | D. A. Lisk | 505,318 | Sept. 19 | 1660 | 428 | 64 | 1608 |
| Pail. Dinner | E. B. and A. R. Anderson | 501,313 | July 11 | 1232 | 311 | 64 | 240 |
| Pail-making mechanism | G. W. Laraway | 504,881 | Sept. 12 | 939 | 242, 243 | 64 | 1461 |
| Paint. Ship's | H. Gallinowsky | 504,211 | Aug. 29 | 3245 | | 64 | 1225 |
| Painting-machine | W. C. Gebhardt | 504,833 | Sept. 12 | 871 | 224, 225 | 64 | 1448 |
| Painting, varnishing, &c. Machine for | W. H. Dow and D. G. Crane | 504,672 | Sept. 5 | 587 | 149 | 64 | 1386 |
| Pan: *See* Amalgamating-pan. Evaporating-pan. Bake-pan. Tin pan. Bed-pan. Vacuum-pan. Dust-pan. | | | | | | | |
| Panels. Forming decorative | E. M. Wright | 501,965 | July 11 | 1165 | | 64 | 227 |
| Pantograph | J. G. Braestad | 503,934 | Aug. 22 | 2774 | 695 | 64 | 1121 |
| Paper, &c. Apparatus for coating | F. W. Hayward, A. S. King, and A. W. Loveland. | 504,215 | Aug. 29 | 3249 | 810, 811 | 64 | 1226 |
| Paper-bag holder | G. Staley | 502,783 | Aug. 8 | 921 | 224 | 64 | 750 |
| Paper-bag machine | E. E. Claussen | 502,847 | Aug. 8 | 1026 | 251, 252 | 64 | 770 |
| Paper-bag machine | A. L. Stevens | 502,784 | Aug. 8 | 923 | 225 | 64 | 750 |
| Paper bags. Method of and apparatus for folding | E. Stanley | 503,810 | Aug. 22 | 2595 | 648, 649 | 64 | 1086 |
| Paper box | R. P. Brown | 504,075 | Aug. 29 | 3009 | 751 | 64 | 1180 |
| Paper box | J. T. Craw | 502,457 | Aug. 1 | 349 | 83, 84 | 64 | 630 |
| Paper box | W. Forsyth | 503,077 | Aug. 8 | 1394 | 344, 345 | 64 | 837 |
| Paper box and making same | J. T. Robinson | 501,664 | July 18 | 1802 | 448 | 64 | 369 |
| Paper box. Folding | W. H. Cook | 504,824 | Sept. 12 | 852 | 218 | 64 | 1443 |
| Paper-box machine | L. F. Falea | 503,907 | Aug. 22 | 2731 | 685, 686 | 64 | 1113 |
| Paper bracket. Roll | S. Wheeler | 505,499 | Sept. 26 | 1947 | 502 | 64 | 1676 |
| Paper buckets. Machine for making | H. P. Lane | 504,730 | Sept. 12 | 681 | 173, 174 | 64 | 1411 |
| Paper, cardboard, &c. Machine for cutting | G. W. Zeigler | 504,509 | Sept. 5 | 330 | 84 | 64 | 1331 |
| Paper-clip | E. T. Blake | 501,863 | July 18 | 2112 | 522 | 64 | 413 |
| Paper-cutter | J. S. Flowers | 502,415 | Aug. 1 | 278 | 66 | 64 | 617 |
| Paper cutter and holder. Roll | J. S. Hays | 502,400 | Aug. 1 | 251 | 60 | 64 | 612 |
| Paper-cutting machine | G. W. Zeigler | 504,510 | Sept. 5 | 333 | 85 | 64 | 1332 |
| Paper-folding machine | C. D. Van Etten | 504,119 | Aug. 29 | 3085 | 772, 773 | 64 | 1106 |
| Paper for making transfer-pictures | H. de Grouilliers | 504,835 | Sept 12 | 877 | | 64 | 1450 |
| Paper-hanging machine | A. H. Loblker | 505,109 | Sept. 19 | 1336 | 349 | 64 | 1548 |
| Paper hoops. Machine for making | W. E. Frost | 505,421 | Sept. 19 | 1833 | 471 | 64 | 1641 |
| Paper. Machine for cross-cutting and collating | J. T. Robinson and H. J. Chamberlain. | 501,027 | July 4 | 771 | 202 | 64 | 141 |
| Paper. Machine for making vegetable parchment | G. T. Leonhard | 500,915 | July 4 | 504 | 155, 156 | 64 | 100 |
| Paper-machine suction-box | R. W. Moncrieff | 504,885 | Sept. 12 | 947 | 244, 245 | 64 | 1463 |
| Paper-machines. Making wire for | P. Tourasse | 502,087 | July 25 | 2482 | 624 | 64 | 496 |
| Paper-making machine | A. Aldrich | 502,986 | Aug. 1 | 2 | 1 | 64 | 567 |
| Paper. Ornamenting | S Wheeler | 502,337 | Aug. 1 | 141 | 32 | 64 | 591 |
| Paper. Ornamenting | S. Wheeler | 505,259 | Sept. 19 | 1552 | 405 | 64 | 1589 |
| Paper-ornamenting mechanism | S. Wheeler | 504,767 | Sept. 12 | 735 | 188 | 64 | 1426 |
| Paper-piling device | T. A. Briggs | 503,576 | Aug. 22 | 2220 | 555, 556 | 64 | 1015 |
| Paper-pulp-beating engine | A. E. Reed | 503,553 | Aug. 15 | 2178 | 544, 545 | 64 | 992 |
| Paper scoring or cutting machine | J. T. Robinson | 503,751 | Aug. 22 | 2517 | 636 | 64 | 1070 |
| Paper-stock. Method of and apparatus for producing | S. W. Rowell | 500,617 | July 4 | 130 | 35 | 64 | 26 |
| Paper twine. Making | J. F. Steward | 500,637 | July 4 | 144 | 38 | 64 | 28 |
| Para-phenetol carbamide. Making | H. Thoms | 502,504 | Aug. 1 | 430 | | 64 | 645 |
| Partition | T. Bailey | 504,858 | Sept. 12 | 907 | 234 | 64 | 1455 |
| Partition. Fireproof | T. A. Lee | 501,622 | July 18 | 1732 | 432 | 64 | 347 |
| Pattern for drafting shirt-backs | T. J. Goodwin | 501,335 | July 11 | 1279 | 321, 322 | 64 | 245 |
| Pattern for drafting shirt-bosoms | T. J. Goodwin | 501,339 | July 11 | 1295 | 323 | 64 | 249 |
| Pattern for drafting shirt-fronts | T. J. Goodwin | 501,338 | July 11 | 1291 | 323 | 64 | 248 |
| Pattern for drafting shirt-sleeves | T. J. Goodwin | 501,337 | July 11 | 1287 | 322 | 64 | 247 |
| Pattern for drafting shirt-yokes | T. J. Goodwin | 501,336 | July 11 | 1283 | 322 | 64 | 246 |
| Pavement. Asphalt | C. H. Bull | 505,699 | Sept. 26 | 2345 | 593 | 64 | 1750 |
| Pavements. Apparatus for repairing asphalt | A. H. Perkins | 501,596 | July 18 | 1591 | 400 | 64 | 321 |
| Pavements. Repairing asphalt | A. H. Perkins | 501,537 | July 18 | 1592 | 401 | 64 | 321 |
| Peanuts from the vine and for stemming, cleaning, and grading same. Machine for separating | W. A. Crocker | 502,619 | Aug. 1 | 619 | 148, 149 | 64 | 680 |
| Pedal-stool | C. Zender | 502,944 | Aug. 8 | 1105 | 253 | 64 | 800 |
| Pegging-machine | J. F. Davey | 504,311 | Aug. 29 | 3401 | 852, 853 | 64 | 1255 |
| Pegging-machine | T. Gare | 500,652 | July 4 | 189 | 49 | 64 | 37 |
| Pelts. Machine for removing the water-hairs from | A. Hedbavny and A. H. Fiala | 505,104 | Sept. 19 | 1320 | 340, 341 | 64 | 1546 |
| Pelts. Machine for removing water-hairs from | A. Hedbavny | 502,359 | Aug. 1 | 184 | 93 | 64 | 600 |
| Pelts. Machine for removing water-hairs from | E. R. Knowles | 502,366 | Aug. 1 | 193 | 45, 46, 47 | 64 | 601 |
| Pen | I. Bergmann | 503,896 | Aug. 22 | 2716 | 692 | 64 | 1110 |
| Pen-extractor | J. L. Kragle | 502,726 | Aug. 8 | 830 | 201 | 64 | 733 |
| Pen. Fountain | M. M. Fenner | 503,763 | Aug. 22 | 2533 | 630 | 64 | 1073 |
| Pen. Fountain | W. A. Leary | 500,811 | July 4 | 442 | 116 | 64 | 81 |
| Pen. Fountain | M. W. Moore | 501,895 | July 18 | 2175 | 539 | 64 | 424 |
| Pen. Hog | B. M. Wilkinson | 500,699 | July 4 | 235 | 72 | 64 | 50 |
| Penholder | C. W. Boman | 505,324 | Sept. 19 | 1767 | 457 | 64 | 1628 |

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|---|---|---|---|---|---|---|---|
| Penholder | J. B. Geissihger | 504,918 | Sept. 12 | 1005 | 259 | 64 | 1474 |
| Penholder | J. R. Macmillan | 503,151 | Aug. 15 | 1532 | 376 | 64 | 875 |
| Penholder guard | E. Dierlamm | 500,564 | July 4 | 45 | 13 | 64 | 10 |
| Pen or pencil holder | I. H. Stathem | 503,011 | Aug. 8 | 1304 | 319 | 64 | 820 |
| Pencil. Adhesive | C. S. Apple | 502,163 | July 25 | 2607 | .... | 64 | 521 |
| Pencil. Fluid-holding | W. B. Olmsted, H. O. Warner, and H. A. Giddings. | 501,958 | July 25 | 2276 | 569 | 64 | 458 |
| Pencil-holder. Pocket | R. L. Gurney | 501,714 | July 18 | 1884 | 469 | 64 | 373 |
| Pencil-leads, crayons, or other articles. Automatic holder for | T. R. Stuart | 501,850 | July 18 | 2094 | 517 | 64 | 410 |
| Pencil-sharpener | E. H. Boehme | 505,695 | Sept. 26 | 2340 | 593 | 64 | 1749 |
| Pencil-sharpener | A. Fornander | 501,043 | July 4 | 800 | 200 | 64 | 146 |
| Pencil-sharpener | P. McMenamin | 502,008 | July 25 | 2346 | 588 | 64 | 471 |
| Pencil-sharpener | E. Norell | 502,632 | Aug. 1 | 641 | 153 | 64 | 685 |
| Pencil-sharpener and paper-weight. Combined | L. M. Reed | 504,940 | Sept. 12 | 1040 | 267 | 64 | 1480 |
| Pencil-sharpening and erasing implement. Combined | O. Holben | 503,794 | Aug. 22 | 2576 | 641 | 64 | 1089 |
| Penman's rest | C. H. Allard | 502,218 | July 25 | 2604 | 650 | 64 | 538 |
| Perforating characters. Machine for | P. L. Koscialowski | 505,404 | Sept. 19 | 1798 | 464 | 64 | 1635 |
| Perfume-delivery apparatus. Automatic | P. Leoni | 504,842 | Sept. 12 | 886 | 228 | 64 | 1451 |
| Periodical-holder | F. C. Doxstader | 504,714 | Sept. 12 | 658 | 167 | 64 | 1466 |
| Petroleum-fluid burner | H. Bragg | 505,417 | Sept. 19 | 1821 | 469 | 64 | 1639 |
| Petroleum. Means for utilizing waste products of | J. P. Engle | 505,395 | Sept. 19 | 1779 | 461 | 64 | 1631 |
| Petroleum. Refining sulphurous | F. J. Carman | 501,988 | July 25 | 2319 | 579 | 64 | 467 |
| Phonograph | J. W. Mackintosh | 503,610 | Aug. 22 | 2295 | 573 | 64 | 1027 |
| Phonograph and coin-operated mechanism. Combined | J. H. White | 504,380 | Sept. 5 | 108 | 27 | 64 | 1291 |
| Photo-engravings. Holder for plates in the manufacture of | W. S. Burnett | 502,246 | July 25 | 2749 | 695 | 64 | 548 |
| Photographers' use. Flash-light apparatus for | M. Levy | 504,507 | Sept. 5 | 467 | 119 | 64 | 1357 |
| Photographic camera | J. N. and H. J. Harrison | 504,578 | Sept. 5 | 439 | 112 | 64 | 1352 |
| Photographic camera | J. D. Garfield | 501,931 | July 25 | 2240 | {559 {560 | 64 | 452 |
| Photographic camera | F. A. Hetherington | 502,857 | Aug. 8 | 1039 | 255 | 64 | 772 |
| Photographic camera | C. G. Osteman | 502,198 | July 25 | 2661 | 672 | 64 | 531 |
| Photographic camera | C. B. Withington | 501,703 | July 18 | 1866 | {464 {465 | 64 | 370 |
| Photographic gallery | E. Hackh | 501,340 | July 11 | 1298 | 323 | 64 | 239 |
| Photographic-plate holder | C. B. Withington | 502,799 | Aug. 8 | 949 | 231 | 64 | 756 |
| Photographic-printing frame | G. W. Low and W. Shakespeare, Jr | 505,111 | Sept. 19 | 1329 | 363 | 64 | 1548 |
| Photographic roll-holder | X. G. E. de Fancompré | 500,875 | July 4 | 544 | 141 | 64 | 99 |
| Photographic shutter | F. A. Brownell | 501,866 | July 18 | 2116 | 523 | 64 | 414 |
| Photographic washing apparatus | S. A. Kem and E. Frederick | 503,144 | Aug. 15 | 1592 | 374 | 64 | 873 |
| Photography. Mirror for use in | H. P. Ranger | 505,127 | Sept. 19 | 1354 | 348 | 64 | 1552 |
| Physician's vial-case | A. and H. Hoff | 505,222 | Sept. 19 | 1501 | 391 | 64 | 1579 |
| Piano | P. Duffy | 505,447 | Sept. 26 | 1874 | 482 | 64 | 1602 |
| Piano | O. A. Kimball and J. Gramer | 503,861 | Aug. 22 | 2662 | 667 | 64 | 1099 |
| Piano | J. W. Macy | 502,524 | Aug. 1 | 470 | 113 | 64 | 653 |
| Piano-action damper-regulator | J. W. Macy | 504,733 | Sept. 12 | 697 | 175 | 64 | 1415 |
| Piano-agraffe | E. Bornhoett | 504,906 | Sept. 12 | 986 | 253 | 64 | 1471 |
| Piano and organ. Combined | G. J. Couchois | 500,562 | July 4 | 41 | 12, 13 | 64 | 9 |
| Pianoforte | G. Schuhlein | 505,245 | Sept. 19 | 1517 | 396 | 64 | 1582 |
| Piano-hammer | A. W. Hall | 501,226 | July 11 | 1105 | 281 | 64 | 217 |
| Piano music-desk | J. Ammon | 504,192 | Aug. 29 | 3216 | 801 | 64 | 1220 |
| Piano pedal attachment | J. Yuel | 503,822 | Aug. 22 | 2612 | 652 | 64 | 1089 |
| Piano practice-pedal | F. E. Olmstead | 502,261 | July 25 | 2779 | 702 | 64 | 553 |
| Piano transposing device | G. B. Shearer | 503,880 | Aug. 22 | 2688 | 674 | 64 | 1104 |
| Picker: | L. A. Ivon | 502,907 | Aug. 8 | 1124 | 277 | 64 | 789 |
| *See* Berry-picker. Fruit-picker. | | | | | | | |
| Picker-stem | G. N. Todd | 502,241 | July 25 | 2736 | 690 | 64 | 545 |
| Picker-sticks. Lug connection for | T. H. Webster and T. Dobson | 502,108 | July 25 | 2515 | 631 | 64 | 502 |
| Picks. Manufacture of | W. H. M. Neave | 502,746 | Aug. 8 | 859 | 209 | 64 | 739 |
| Picture-exhibitor | R. C. Elliott | 503,129 | Aug. 15 | 1499 | {368 {369 | 64 | 869 |
| Picture-hanger. Corner | J. M. Robinson | 505,230 | Sept. 19 | 1510 | 394 | 64 | 1581 |
| Pictures. Supporting standard for | C. H. Lieber | 501,149 | July 11 | 989 | 252 | 64 | 195 |
| Pie pans. Crust-supporter for pot- | A. Unisck | 503,756 | Aug. 22 | 2525 | 628 | 64 | 1072 |
| Pigment or paint. Manufacture of | J. W. Kidwell | 503,424 | Aug. 15 | 1970 | .... | 64 | 954 |
| Pigment. Preparing oxide-of-zinc | G. T. Lewis | 502,822 | Aug. 8 | 991 | .... | 64 | 763 |
| Pile fabrics. Apparatus for cutting the pile of weft- | G. Roger | 504,441 | Sept. 5 | 210 | 55 | 64 | 1309 |
| Pile fabrics. Machine for cutting the pile of weft | W. Gadd | 503,658 | Aug. 22 | 2363 | 590 | 64 | 1040 |
| Pile or timber protector and preserver | G. E. Sargi | 500,678 | July 4 | 237 | 62 | 64 | 45 |
| Pile-planting | A. Simon | 500,780 | July 4 | 395 | 104 | 64 | 73 |
| Piles of material. Removing | J. M. Dodge | 501,770 | July 18 | 1964 | 491 | 64 | 391 |
| Pill holding and dipping apparatus | A. D. Stearns | 504,505 | Sept. 5 | 325 | 83 | 64 | 1330 |
| Pin: | | | | | | | |
| *See* Clothes-pin. Safety-pin. Insulator-pin. | | | | | | | |
| Pins. Safety-catch for | C. du Bus | 501,184 | July 11 | 1044 | 264 | 64 | 205 |
| Pipe: | | | | | | | |
| *See* Cigar-pipe. Tobacco-pipe. Supply and waste pipe. Vent-pipe. | | | | | | | |
| Pipe and monkey wrench. Combined | W. S. Bemis | 501,860 | July 18 | 2109 | 521 | 64 | 413 |
| Pipe coupler. Combination hard and soft metal | S. M. Friede | 502,665 | Aug. 1 | 699 | 167 | 64 | 694 |
| Pipe-coupling | R. Herman | 502,038 | July 25 | 2402 | 605 | 64 | 481 |
| Pipe-coupling | W. S. Johnson | 502,671 | Aug. 1 | 723 | 173 | 64 | 699 |
| Pipe-coupling | T. W. Moran | 502,234 | July 25 | 2722 | 686 | 64 | 542 |
| Pipe covering. Steam- | A. W. Shearer | 505,560 | Sept. 26 | 2101 | 533 | 64 | 1705 |
| Pipe fitting | J. McIntyre | 503,432 | Aug. 15 | 1981 | 491 | 64 | 956 |
| Pipe fitting | J. McIntyre | 503,433 | Aug. 15 | 1983 | 492 | 64 | 956 |
| Pipe joint and coupler | J. A. Murray | 504,739 | Sept. 12 | 707 | 177 | 64 | 1416 |
| Pipe-machine | F. M. Speed | 503,102 | Aug. 8 | 1442 | 355 | 64 | 846 |



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|---|---|---|---|---|---|---|---|
| Pipe or nut wrench | P. Armantrout | 501,985 | July 25 | 2316 | 579 | 64 | 466 |
| Pipe or nut wrench | W. H. Conver | 503,194 | Aug. 15 | 1489 | 366 | 64 | 867 |
| Pipe-threading machine | R. P. and L. B. Curtis | 505,593 | Sept. 26 | 2160 | 546 | 64 | 1717 |
| Pipe-wrench | T. H. Oxnam, J. Joyce, and J. Francis. | 503,215 | Aug. 15 | 1643 | 402 | 64 | 896 |
| Pipes. Device for preventing water from freezing in | C. H. Keeney | 503,932 | Aug. 22 | 2769 | 694 | 64 | 1120 |
| Pipes. Device for protecting steam | R. C. Forsyth | 504,871 | Sept. 12 | 927 | 239 | 64 | 1459 |
| Pipes. Method of and means for screwing sockets upon | W. S. McManus and J. A. Hock | 502,691 | Aug. 1 | 756 | 182 | 64 | 705 |
| Pipes or tubes. Machine for making | G. H. Winsor | 504,687 | Sept. 5 | 619 | 156 | 64 | 1385 |
| Piperazin hydrate | W. Majert and A. Schmidt | 505,113 | Sept. 19 | 1332 | .... | 64 | 1549 |
| Piperazin. Obtaining | W. Marckwald | 500,665 | July 4 | 220 | .... | 64 | 42 |
| Piston | J. Cooper and T. Pattinson | 501,560 | July 18 | 1635 | 409 | 64 | 330 |
| Piston | T. Jellinghaus | 502,462 | Aug. 1 | 356 | 85 | 64 | 631 |
| Piston-rod protector | S. Kaye | 502,402 | Aug. 1 | 255 | 60 | 64 | 613 |
| Pitchfork and band-cutter. Combined | F. Duggan | 501,773 | July 18 | 1987 | 491 | 64 | 391 |
| Plane | L. Hardt | 502,906 | Aug. 8 | 1123 | 277 | 64 | 788 |
| Plane. Bench | E. J. McCulloch | 505,119 | Sept. 19 | 1344 | 346 | 64 | 1551 |
| Plane. Joiner's | J. M. Cole | 504,562 | Sept. 5 | 417 | 106 | 64 | 1347 |
| Plant or tree protector | B. F. Gilman | 502,559 | Aug. 1 | 522 | 125 | 64 | 662 |
| Plant-protector | J. Garbesi | 505,354 | Sept. 19 | 1711 | 441 | 64 | 1618 |
| Planter | J. V. Plyler | 502,993 | Aug. 8 | 1279 | 313 | 64 | 815 |
| Planter | W. G. Sayr | 502,832 | Aug. 8 | 1006 | 245 | 64 | 767 |
| Planter | S. K. Turner | 501,385 | July 11 | 1376 | 344 | 64 | 204 |
| Planter and fertilizer-distributer. Combined | J. Pipes | 502,379 | Aug. 1 | 216 | 51 | 64 | 605 |
| Planter and fertilizer-distributer. Combined | C. C. Taylor | 501,113 | July 11 | 934 | 239 | 64 | 184 |
| Planter and fertilizer-distributer. Seed- | C. R. Reid | 501,362 | July 11 | 1335 | 334 | 64 | 256 |
| Planter. Check-row corn- | F. C. Peck | 505,251 | Sept. 19 | 1542 | 402 | 64 | 1587 |
| Planter. Corn- | D. J. Bowser | 504,321 | Sept. 5 | 13 | 4, 5 | 64 | 1273 |
| Planter. Corn- | E. L. Caraway | 503,944 | Aug. 29 | 2790 | 699 | 64 | 1141 |
| Planter. Corn- | C. E. Kessler | 500,909 | July 4 | 585 | 152 | 64 | 107 |
| Planter. Corn- | W. E. Matthew | 504,929 | Sept. 12 | 1022 | 263 | 64 | 1477 |
| Planter. Corn- | C. J. Miller | 505,168 | Sept. 19 | 1419 | {365 {366 | 64 | 1564 |
| Planter. Corn- | F. F. Shanka | 501,449 | July 11 | 1402 | 367 | 64 | 281 |
| Planter. Cotton- | L. M. Rhodes | 501,026 | July 4 | 770 | 202 | 64 | 140 |
| Planter. Hand corn- | G. S. Sheffield | 502,229 | July 25 | 2734 | 689 | 64 | 544 |
| Planter marker. Corn- | C. Council | 505,266 | Sept. 19 | 1564 | 408 | 64 | 1591 |
| Planter. Potato- | E. F. Chubbuck | 503,695 | Aug. 22 | 2423 | 603 | 64 | 1051 |
| Planter. Potato- | J. Horscroft | 503,854 | Aug. 22 | 2654 | 665 | 64 | 1097 |
| Planter. Seed- | F. W. Banan | 503,938 | Aug. 29 | 2783 | 698 | 64 | 1140 |
| Planter. Seed- | I. Y. Palmer | 504,848 | Sept. 12 | 894 | 230 | 64 | 1453 |
| Plaster composition | T. J. Heller | 502,096 | July 25 | 2493 | .... | 64 | 499 |
| Plaster composition | T. J. Heller | 502,097 | July 25 | 2494 | .... | 64 | 499 |
| Plastic composition. Non-corrodible | J. W. Kidwell | 503,425 | Aug. 15 | 1971 | .... | 64 | 954 |
| Plastic material. Apparatus for making hollow articles from | R. Kiesserling | 505,302 | Sept. 19 | 1731 | {447 {448 | 64 | 1021 |
| Plastic material. Making hollow objects from | R. Kiesserling and M. Möller | 502,196 | July 25 | 2656 | {671 {672 | 64 | 531 |
| Plate supporter or holder. Decorated- | E. E. Brothington | 502,548 | Aug. 1 | 508 | 121 | 64 | 660 |
| Pliers, nippers, or similar tool | C. Eisele | 505,217 | Sept. 19 | 1494 | 389 | 64 | 1577 |
| Plow | G. Baldwin | 504,294 | Aug. 29 | 3377 | 844 | 64 | 1251 |
| Plow | J. Blunck | 502,697 | Aug. 8 | 767 | 196 | 64 | 722 |
| Plow | T. W. Boyle | 500,780 | July 4 | 347 | 92 | 64 | 65 |
| Plow | H. O. Cheney | 502,877 | Aug. 8 | 1070 | 264 | 64 | 778 |
| Plow | A. F. Jackson | 501,945 | July 25 | 2257 | {563 {564 | 64 | 455 |
| Plow | T. H. Lancaster | 501,011 | July 4 | 749 | 196 | 64 | 136 |
| Plow | A. S. Seeley | 500,691 | July 4 | 253 | 68 | 64 | 48 |
| Plow | G. W. Stow | 505,732 | Sept. 26 | 2396 | 505 | 64 | 1759 |
| Plow and pulverizer. Rotary | G. F. Whitmore | 502,214 | July 25 | 2685 | 678 | 64 | 536 |
| Plow draft apparatus. Corn- | E. B. Parker | 502,751 | Aug. 8 | 864 | 211 | 64 | 740 |
| Plow. Gang- | A. J. and A. C. D. Andresen | 503,515 | Aug. 15 | 2110 | 529 | 64 | 979 |
| Plow. Gang or sulky | W. J. Browne | 501,180 | July 11 | 1036 | 262 | 64 | 203 |
| Plow heel-sweep | H. D. Terrell | 504,375 | Sept. 5 | 103 | 26 | 64 | 1280 |
| Plow marking attachment | G. W. Freeman | 502,712 | Aug. 8 | 812 | 196 | 64 | 729 |
| Plow or cultivator tooth | W. B. Lee | 505,425 | Sept. 19 | 1639 | 473 | 64 | 1642 |
| Plow-point | C. H. and F. G. Heimlich | 504,727 | Sept. 12 | 674 | 172 | 64 | 1410 |
| Plow. Riding- | D. Thom | 502,106 | July 25 | 2512 | 630 | 64 | 502 |
| Plow. Rotary | M. T. Hancock | 504,779 | Sept. 12 | 778 | {196 {197 | 64 | 1429 |
| Plow. Rotary-disk | L. D. Railsback | 505,777 | Sept. 26 | 2468 | 622 | 64 | 1773 |
| Plow-sharpening tool | E. Nelson | 502,747 | Aug. 8 | 980 | 240 | 64 | 739 |
| Plow. Sulky- | W. H. Holsclaw | 501,787 | July 18 | 2000 | 495 | 64 | 395 |
| Plow. Sulky- | H. H. Sater | 501,807 | July 18 | 1707 | 425 | 64 | 343 |
| Plow. Sulky gang | W. J. Browne | 501,179 | July 11 | 1035 | 262 | 64 | 203 |
| Plow. Sulky or riding | N. Swager. (Reissue) | 11,361 | Aug. 15 | 2205 | 551 | 64 | 997 |
| Plow. Wheel- | H. Lindestrom | 504,531 | Sept. 5 | 368 | 93 | 64 | 1338 |
| Plows. Propelling attachment for garden- | S. F. Crull | 504,712 | Sept. 12 | 655 | 166 | 64 | 1406 |
| Plumber's hook | G. Reznor | 501,439 | July 11 | 1446 | 362 | 64 | 278 |
| Plumber's hook | G. Reznor | 501,484 | July 11 | 1511 | 380 | 64 | 291 |
| Plumbing purposes. Air-inlet for | L. Shuster, Jr | 503,809 | Aug. 22 | 2594 | 648 | 64 | 1066 |
| Pneumatic dispatch apparatus | S. E. Hughes | 504,164 | Aug. 29 | 3159 | 789 | 64 | 1209 |
| Pneumatic tool | D. Drawbaugh | 504,802 | Sept. 12 | 813 | 207 | 64 | 1436 |
| Pneumatic tool | D. Drawbaugh | 504,803 | Sept. 12 | 816 | 207 | 64 | 1436 |
| Pocket-book | J. Frontezak | 505,040 | Sept. 12 | 1206 | 311 | 64 | 1512 |
| Pocket-book | J. S. Huey | 500,901 | July 4 | 577 | 150 | 64 | 105 |
| Pocket-book | I. Scheuer | 502,143 | July 25 | 2569 | 644 | 64 | 513 |
| Pocket-book frame | C. G. Pfingsten | 502,137 | July 25 | 2556 | 640 | 64 | 511 |
| Pocket book or case | H. Meyer | 504,884 | Sept. 12 | 946 | 244 | 64 | 1462 |
| Pocket. Garment- | H. Mason | 501,229 | July 11 | 1109 | 281 | 64 | 217 |
| Pocket. Ticket and change | M. Ralph | 505,001 | Sept. 12 | 1144 | 293 | 64 | 1560 |
| Pocket. Trousers- | B. Bissinger | 503,363 | Aug. 15 | 1888 | 468 | 64 | 939 |

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| Invention. | Name. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drg. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|---|
| Poison-feeding device | M. Kelly | 503,268 | Aug. 15 | 1720 | 424 | 64 | 910 |
| Pole changer. Electric | C. E. Kella, Jr. | 502,300 | Aug. 1 | 75 | 17 | 64 | 580 |
| Pole switch. Double | C. W. Gartside and R. E. Wood | 504,523 | Sept. 5 | 353 | 90 | 64 | 1335 |
| Pole switch. Two | C. Hoffmann | 502,519 | Aug. 1 | 456 | 110 | 64 | 650 |
| Pole. Vehicle | H. L. Kingsley | 503,605 | Aug. 22 | 2284 | 570 | 64 | 1026 |
| Pole. Vehicle | J. H. Osborne | 500,602 | July 4 | 97 | 28 | 64 | 20 |
| Pole. Vehicle | F. G. Rohn | 501,255 | July 11 | 1152 | 292 | 64 | 224 |
| Poles. Neck-yoke connection for vehicle | C. E. Frizzell | 503,657 | Aug. 22 | 2302 | 589 | 64 | 1040 |
| Policeman's club | A. W. Nelson | 503,977 | Aug. 29 | 2860 | 717 | 64 | 1154 |
| Polishing-tools. Feeding-up machine for | L. W. Kimble | 504,593 | Sept. 5 | 460 | 117 | 64 | 1355 |
| Portable furnace | R. Reach | 503,494 | Aug. 15 | 2079 | 519 | 64 | 974 |
| Post: *See* Fence-post. | | | | | | | |
| Post-base | R. E. Poindexter | 503,804 | Aug. 22 | 2586 | 645 | 64 | 1084 |
| Post-driver | J. H. Hogg | 502,075 | July 25 | 2461 | 618 | 64 | 493 |
| Pot: *See* Coffee-pot. Tea or coffee pot. | | | | | | | |
| Pot for molten metal | C. Buah | 503,783 | Aug. 22 | 2561 | 638 | 61 | 1079 |
| Potato cutter. Seed | J. Colgrove | 505,095 | Sept. 19 | 1306 | {336 337 | 64 | 1544 |
| Potato-digger | O. L. Goss | 504,128 | Aug. 29 | 3099 | 776 | 64 | 1198 |
| Potato-digger | H. Pray | 502,998 | Aug. 8 | 1284 | 314 | 64 | 816 |
| Powder cap. Self-fastening giant | A. B. Rhude | 501,440 | July 11 | 1447 | 363 | 64 | 278 |
| Power: *See* Crank-power. Motive power. Horse-power. | | | | | | | |
| Power-applying mechanism | G. W. and M. G. Gillette | 500,710 | July 4 | 286 | 77 | 64 | 53 |
| Power from river-currents. Apparatus for obtaining motive | A. A. Raubold | 500,947 | July 4 | 645 | 167 | 64 | 116 |
| Power transmission | A. L. Ide | 500,579 | July 4 | 64 | 18,19 | 64 | 13 |
| Preservative drier | T. G. Hojer | 501,227 | July 11 | 1107 | ..... | 64 | 217 |
| Preserving compound. Food | A. J. Greiner | 504,734 | Sept. 12 | 671 | ..... | 64 | 1409 |
| Press: *See* Baling-press. Bending-press. Cotton-press. Cheese-press. Drawing or stamping press. Drill-press. Embossing and printing press. Fruit-press. Grain-press. Hand-press. Hat-press. Hay or cotton press. Hydraulic press. Letter-press. Mosaic and tile press. Printing-press. Soap-press. Wheel-press. | | | | | | | |
| Press | C. C. Lockstaedt | 502,523 | Aug. 1 | 466 | 112 | 64 | 652 |
| Press-operating mechanism. Automatic locking device for | W. Krutzsch | 503,090 | Aug. 8 | 1418 | 350 | 64 | 892 |
| Presses. Attachment for cylinder | F. W. Wicht | 501,752 | July 18 | 1947 | 482 | 64 | 384 |
| Pressing garments. Machine for | W. Choen | 501,397 | July 11 | 1264 | 317 | 64 | 242 |
| Pressure-indicator | M. Greene | 505,652 | Sept. 26 | 2961 | {572 573 | 64 | 1735 |
| Pressure-regulator | N. Curtis | 500,904 | July 4 | 723 | 180 | 64 | 132 |
| Pressure-regulator | E. Webb | 504,507 | Sept. 5 | 327 | 84 | 64 | 1331 |
| Pressure regulator and cut-off. Fluid | F. E. Youngs | 501,814 | July 18 | 2045 | 504 | 64 | 401 |
| Pressure regulator. Fluid | E. Evans | 504,973 | Sept. 12 | 1098 | 270 | 64 | 1491 |
| Printer's chase | J. W. Osborne | 503,251 | Aug. 15 | 1692 | 417 | 64 | 904 |
| Printer's drying-rack | H. T. Koerner | 504,985 | Sept. 12 | 1124 | 288 | 64 | 1496 |
| Printing aniline-black | J. Bracewell | 500,558 | July 4 | 34 | ..... | 64 | 8 |
| Printing cotton fabrics | O. Ostersetzer | 501,156 | July 11 | 1006 | ..... | 64 | 197 |
| Printing device. Chromatic | T. J. Turley | 500,784 | July 4 | 400 | 106 | 64 | 74 |
| Printing device. Chromatic | T. J. Turley | 500,785 | July 4 | 402 | 106 | 64 | 74 |
| Printing folded fabrics, &c. Mechanism for | R. J. Linton | 500,770 | July 4 | 380 | 98,99 | 64 | 71 |
| Printing-machine. Bed and platen | O. S. Bowman | 501,319 | July 11 | 1243 | 313 | 64 | 340 |
| Printing machine. Card | J. B. Dennis | 503,833 | Aug. 22 | 2633 | {656 657 | 64 | 1091 |
| Printing-machine offset mechanism | W. H. R. Taye | 503,391 | Aug. 15 | 1936 | 478 | 64 | 946 |
| Printing machine. Rotary web | J. J. Clause | 501,921 | July 25 | 2228 | 556 | 64 | 449 |
| Printing-machine sheet-guide | G. P. Fenner | 505,353 | Sept. 19 | 1710 | 441 | 64 | 1618 |
| Printing-press | E. A. Blake | 503,713 | Aug. 22 | 2451 | {609 610 611 | 64 | 1057 |
| Printing-press | W. B. Lawrence. (Reissue) | 11,352 | July 18 | 2197 | {546 547 | 64 | 906 |
| Printing-press feeder | L. Orser | 503,063 | Aug. 8 | 1371 | {339 340 | 64 | 833 |
| Printing-press ink-distributing apparatus | G. F. McIndoe | 502,575 | Aug. 1 | 544 | {129 130 | 64 | 666 |
| Printing-press inking apparatus | J. L. Cox | 502,618 | Aug. 1 | 617 | 148 | 64 | 679 |
| Printing-press paper-folding-machine attachment | T. C. Dexter | 504,825 | Sept. 12 | 853 | 219 | 64 | 1443 |
| Printing-press paper-folding-machine attachment | T. C. Dexter | 505,509 | Sept. 26 | 1983 | 509 | 64 | 1622 |
| Printing-press perforating attachment | C. T. Chauncey | 505,623 | Sept. 26 | 2300 | 556 | 64 | 1724 |
| Printing-press register | H. D. Clayton | 503,452 | Aug. 15 | 2008 | 498 | 64 | 960 |
| Printing-press sheet-splitting attachment | G. P. Fenner | 505,352 | Sept. 19 | 1709 | 441 | 64 | 1617 |
| Printing-presses. Clamp for holding printers' chases on beds of | G. H. Pratt and A. I. Paine | 501,231 | July 11 | 1111 | 282 | 64 | 217 |
| Printing-presses. Web-looping mechanism for | J. L. Cox | 501,456 | July 11 | 1472 | 369 | 64 | 283 |
| Projectile | L. Gathmann | 502,713 | Aug. 8 | 813 | 197 | 64 | 729 |
| Projectile-exploder | J. Clark | 502,348 | Aug. 1 | 164 | 38 | 64 | 596 |
| Propeller | R. P. Ambler | 502,081 | July 25 | 2441 | 613 | 64 | 488 |
| Propeller | T. O'Brien | 502,910 | Aug. 8 | 1130 | 279 | 64 | 790 |
| Propeller. Screw | A. D. Hall and G. B. Sloan | 505,402 | Sept. 19 | 1795 | 464 | 64 | 1634 |
| Propeller. Scull | G. O. Adams | 503,026 | Aug. 8 | 1325 | 325 | 64 | 824 |
| Propeller shafts. Stern-bearing for screw | H. MacColl | 505,666 | Sept. 26 | 2281 | 579 | 64 | 1739 |
| Propeller-wheel | L. O. Boostrum | 502,545 | Aug. 1 | 505 | 121 | 64 | 659 |
| Propelling apparatus. Vessel | L. Beyer | 505,785 | Sept. 26 | 2479 | 625 | 64 | 1776 |



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| Invention. | Name. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drg. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|---|
| Propelling mechanism | A. Lang | 504,274 | Aug. 29 | 3345 | 836 | 64 | 1244 |
| Puff. Reed | C. Bush | 503,927 | Aug. 22 | 2616 | 654 | 64 | 1090 |
| Puller: *See* Tack-puller. | | | | | | | |
| Pulley | W. R. Fox | 504,908 | Aug. 29 | 3242 | 808 | 64 | 1225 |
| Pulley | C. A. Johnson | 504,588 | Sept. 5 | 452 | 115 | 64 | 1354 |
| Pulley-block. Self-tripping | C. Matheson | 504,928 | Sept. 12 | 1021 | 263 | 64 | 1477 |
| Pulley-brake | B. F. Radford | 500,611 | July 4 | 123 | 33 | 64 | 24 |
| Pulley. Drop- | F. Moasberg | 502,930 | Aug. 8 | 1171 | 289 | 64 | 797 |
| Pulley lubricator. Loose | H. J. Chamberlain | 503,902 | Aug. 22 | 2723 | 683 | 64 | 1111 |
| Pulley. Split | W. S. Miller | 502,310 | Aug. 1 | 88 | 20 | 64 | 582 |
| Pulp articles. Machine for forming hollow | F. E. Keyes | 503,284 | Aug. 15 | 1750 | 432 | 64 | 915 |
| Pulp beating and mixing engine | E. W. Barton | 503,060 | Aug. 8 | 1384 | 342 | 64 | 835 |
| Pulp boxes. Apparatus for manufacturing | H. Carmichael | 503,738 | Aug. 22 | 2495 | 621 | 64 | 1066 |
| Pulp-grinding machine. Wood | F. André | 503,304 | Aug. 15 | 1783 | 440 | 64 | 920 |
| Pulp-strainer | P. Reinicke | 501,214 | July 11 | 1084 | 275 | 64 | 213 |
| Pulp-strainer | D. W. Rounds | 505,483 | Sept. 26 | 1922 | {495 496 | 64 | 1672 |
| Pulverizer | A. Stevens | 502,021 | July 25 | 2375 | 597 | 64 | 477 |
| Pulverizer. Land | B. S. Sexson | 503,006 | Aug. 8 | 1295 | 317 | 64 | 818 |
| Pulverizing or disintegrating apparatus | S. Straker | 503,504 | Aug. 15 | 2096 | 524 | 64 | 977 |
| Pump | J. H. Branson | 503,523 | Aug. 15 | 2122 | 532 | 64 | 982 |
| Pump | C. S. Cox | 500,856 | July 4 | 511 | 133 | 64 | 93 |
| Pump | L. G. Cunningham | 504,122 | Aug. 29 | 3089 | 773 | 64 | 1196 |
| Pump | S. M. Fulton and A. T. Ames | 505,509 | Sept. 26 | 2167 | 548 | 64 | 1718 |
| Pump | F. H. Romans | 504,366 | Sept. 5 | 81 | 22 | 64 | 1287 |
| Pump | H. S. Thomas | 504,140 | Aug. 29 | 3121 | {780 781 | 64 | 1202 |
| Pump. Air-compressor | A. Locker and E. F. Gennert | 501,090 | July 11 | 882 | 227 | 64 | 176 |
| Pump. Centrifugal | E. J. Hawley | 505,790 | Sept. 26 | 2488 | 628 | 64 | 1777 |
| Pump. Compression and vacuum | P. I. Schmaltz | 504,093 | Aug. 29 | 3041 | 759 | 64 | 1187 |
| Pump. Compression and vacuum | P. I. Schmaltz | 504,094 | Aug. 29 | 3043 | {760 761 | 64 | 1188 |
| Pump-curb | W. Kegler | 505,047 | Sept. 12 | 1216 | 313 | 64 | 1573 |
| Pump. Double-acting | W. Craig | 505,441 | Sept. 26 | 1462 | 479 | 64 | 1660 |
| Pump. Duplex steam | C. M. Miller | 502,737 | Aug. 8 | 843 | {204 205 | 64 | 735 |
| Pump for moving gaseous bodies | W. F. Garrison | 501,614 | July 18 | 1718 | 428 | 64 | 346 |
| Pump-governor | A. J. Saxe | 503,776 | Aug. 22 | 2559 | 636 | 64 | 1077 |
| Pump governor. Steam | A. P. Massey | 501,018 | July 4 | 757 | 199 | 64 | 138 |
| Pump. Gravity | W. A. Hartt | 504,922 | Sept. 12 | 1008 | {260 261 | 64 | 1475 |
| Pump-handle | C. A. Sellon | 503,990 | Aug. 29 | 2890 | 723 | 64 | 1158 |
| Pump. Hydraulic | W. Cameron | 502,950 | Aug. 8 | 1205 | 296 | 64 | 802 |
| Pump. Hydraulic air | E. H. Weatherhead | 503,819 | Aug. 22 | 2608 | {651 652 | 64 | 1088 |
| Pump. Hydraulic air | E. H. Weatherhead | 504,097 | Aug. 29 | 3051 | 763 | 64 | 1189 |
| Pump. Lift | J. N. Moehn | 505,276 | Sept. 19 | 1587 | 413 | 64 | 1595 |
| Pump. Measuring | S. T. Dutton | 503,529 | Aug. 15 | 2133 | 536 | 64 | 984 |
| Pump. Oil-can siphon | E. A. Franklin | 503,232 | Aug. 15 | 1665 | 409 | 64 | 899 |
| Pump. Oil-well | J. H. Gibson and T. D. Sutton | 504,679 | Sept. 5 | 598 | 152 | 64 | 1383 |
| Pump regulator. Windmill | P. A. Myers | 501,354 | July 11 | 1317 | 329 | 64 | 253 |
| Pump. Rotary | E. Boening and J. Sjöström | 501,864 | July 18 | 2113 | {522 523 | 64 | 413 |
| Pump. Steam | E. C. Johnson | 502,043 | July 25 | 2408 | 606 | 64 | 482 |
| Pump. Steam | W. B. Mason | 500,590 | July 4 | 78 | 23 | 64 | 16 |
| Pump. Vacuum | W. S. Moore | 501,954 | July 25 | 2270 | 567 | 64 | 457 |
| Pump valve. Direct-acting steam | M. Misic | 504,844 | Sept. 12 | 889 | {228 229 | 64 | 1452 |
| Pump valve mechanism. Steam | J. W. and J. L. Templin | 503,883 | Aug. 22 | 2691 | 675 | 64 | 1104 |
| Pump valve. Oil-well | J. O'Neil | 502,750 | Aug. 8 | 863 | 210 | 61 | 740 |
| Pumping apparatus for the manufacture of carbonized waters | H. Carse | 505,090 | Sept. 19 | 1300 | 334 | 64 | 1543 |
| Pumping-engine | G. de Laval | 502,521 | Aug. 1 | 460 | {110 111 | 64 | 651 |
| Pumping-engine. Direct-acting | C. C. Worthington | 504,644 | Sept. 5 | 527 | 136 | 64 | 1370 |
| Punch. Check | M. O. Smith | 500,676 | July 4 | 234 | 62 | 64 | 44 |
| Punch. Check | J. Stewart | 505,577 | Sept. 26 | 2132 | 540 | 64 | 1711 |
| Punch. Portable hand | R. Davis and W. Butler | 503,109 | Aug. 8 | 1454 | 358 | 64 | 848 |
| Punching-machine | J. Mohr | 501,152 | July 11 | 992 | {253 254 | 64 | 195 |
| Purse. Coin | G. Topham | 505,145 | Sept. 19 | 1384 | 354 | 64 | 1557 |
| Purse. Coin | C. B. Woodbury and O. Greenbaum | 503,447 | Aug. 15 | 2000 | 496 | 64 | 959 |
| Purse or case. Coin | L. T. Condon | 505,192 | Sept. 19 | 1453 | 374 | 64 | 1570 |
| Purse or pocket-book | S. Nathan | 501,728 | July 18 | 1902 | 473 | 64 | 376 |
| Push-button | W. H. Berrigan, Jr. | 504,148 | Aug. 29 | 3132 | 783 | 64 | 1204 |
| Putty-knife | J. M. Newton | 503,098 | Aug. 8 | 1433 | 354 | 64 | 844 |
| Puzzle | T. H. Apgar | 504,823 | Sept. 12 | 851 | 218 | 64 | 1443 |
| Puzzle | G. T. and M. H. Bradley | 500,795 | July 4 | 422 | 111 | 64 | 78 |
| Puzzle | W. P. Groves | 504,347 | Sept. 5 | 53 | 15 | 64 | 1281 |
| Puzzle | W. H. Lincoln | 505,603 | Sept. 26 | 2174 | 549 | 64 | 1719 |
| Puzzle | N. S. Worley | 505,210 | Sept. 19 | 1485 | 387 | 64 | 1576 |
| Pyrometer | E. A. Uehling and A. Steinbart | 503,337 | Aug. 15 | 1843 | 457 | 64 | 931 |
| Pyrotechnic device | H. J. Pain | 503,363 | Aug. 15 | 1915 | 475 | 64 | 944 |
| Pyroxyline collars. Machine for making | G. A. Goldsmith and A. K. Merrill | 505,390 | Sept. 19 | 1790 | 463 | 64 | 1633 |
| Pyroxyline compound | C. L. Borgmeyer | 502,547 | Aug. 1 | 508 | ..... | 64 | 660 |
| Pyroxyline compounds. Manufacture of | C. L. Borgmeyer | 502,546 | Aug. 1 | 507 | ..... | 64 | 659 |
| Pyroxyline compounds. Manufacture of | C. L. Borgmeyer | 502,921 | Aug. 8 | 1157 | ..... | 64 | 794 |
| Pyroxyline solution or compound | C. L. Borgmeyer | 503,402 | Aug. 15 | 1938 | ..... | 64 | 949 |
| Pyroxyline solvent and its compounds | C. L. Borgmeyer | 503,401 | Aug. 15 | 1938 | ..... | 64 | 949 |
| Pyroxyline solvent and its compounds | C. L. Borgmeyer | 504,905 | Sept. 12 | 986 | ..... | 64 | 1471 |
| Quilting-machine | A. J. Mitchell | 504,229 | Aug. 29 | 3271 | 817 | 64 | 1230 |
| Quinine. Making salts of | E. Grimaux | 501,066 | July 11 | 858 | ..... | 64 | 168 |
| Quoin | J. F. Perry | 502,900 | Aug. 8 | 1276 | 312 | 64 | 814 |

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| Invention. | Name. | No. | Date. | Monthly volume. Spec. | Monthly volume. Dr'g. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|---|
| Race-course. Coin-controlled | C. Carroll | 504,312 | Aug. 29 | 3403 | {853 854 855 856 857} | 64 | 1255 |
| Rack:<br>*See* Braid-rack. Lumber-drying rack.<br>Chimney-rack. Meat-rack.<br>Display-rack. Music-rack.<br>Feed-rack. Printer's drying rack.<br>Firearm-rack. Refrigerator ice-rack.<br>Hay-rack. Stovepipe-rack.<br>Hay or hog rack. Towel-rack.<br>Hay or stock rack. | | | | | | | |
| Radiator | T. Tangney | 503,813 | Aug. 22 | 2860 | {649 650} | 64 | 1087 |
| Radiator attachment | A. J. Bennett | 505,589 | Sept. 26 | 2155 | 545 | 64 | 1416 |
| Radiator. Heat- | F. Keiser | 501,479 | July 11 | 1503 | 379 | 64 | 220 |
| Radiator-shelf | A. J. Bennett | 502,871 | Aug. 8 | 1060 | 260 | 64 | 777 |
| Radiators. Auxiliary steam-pipe for | J. B. Smith | 505,136 | Sept. 19 | 1270 | 351 | 64 | 1555 |
| Rail-bond. Electric | B. C. Seaton | 503,101 | Aug. 8 | 1440 | 355 | 64 | 845 |
| Rail-broom attachment. Street- | A. E. Wilson | 503,694 | Aug. 8 | 1318 | 323 | 64 | 992 |
| Rail-chair | M. Maloney | 500,589 | July 4 | 78 | 22 | 64 | 15 |
| Rail-fastener | C. C. Holt | 502,361 | Aug. 1 | 187 | 44 | 64 | 600 |
| Rail-fastening | B. F. and M. F. Sparr | 503,442 | Aug. 15 | 1994 | 495 | 64 | 959 |
| Rail frog. Wing | D. F. Higgins | 501,070 | July 11 | 842 | {218 219} | 64 | 189 |
| Rail-heating device | C. S. Smith and E. E. Knowles | 505,135 | Sept. 19 | 1369 | 351 | 64 | 1555 |
| Rail-joint | J. H. Crosby | 504,711 | Sept. 12 | 855 | 166 | 64 | 1406 |
| Rail-joint | M. C. Niles | 501,093 | July 11 | 894 | 230 | 64 | 178 |
| Rail-joint | J. M. Price | 501,161 | July 11 | 1012 | 257 | 64 | 198 |
| Rail-joint | R. G. Ward | 502,153 | July 25 | 2588 | 651 | 64 | 517 |
| Rail-joint and nut-lock. Combined | O. O. Winter | 505,181 | Sept. 19 | 1437 | 370 | 64 | 1567 |
| Rail-joint. Truss | J. M. D. Bland | 505,564 | Sept. 26 | 2107 | 534 | 64 | 1706 |
| Rail-securing device | J. M. Price | 503,254 | Aug. 15 | 1700 | 418 | 64 | 906 |
| Rails from spreading. Device for preventing | J. L. Pope | 502,830 | Aug. 8 | 1002 | 244 | 64 | 765 |
| Railway | T. H. Dahill | 501,678 | July 18 | 1926 | 485 | 64 | 353 |
| Railway | B. S. Henning | 504,351 | Sept. 5 | 57 | 16 | 64 | 1282 |
| Railway | E. Perrody | 505,478 | Sept. 26 | 1916 | {493 494} | 64 | 1671 |
| Railway. Cable | J. W. Dotson | 503,366 | Aug. 15 | 1803 | 469 | 64 | 940 |
| Railway-chair | C. H. Earle | 503,835 | Aug. 22 | 2627 | 657 | 64 | 1092 |
| Railway chairs and fish-plates. Mandrel for combined | D. A. Chapin | 501,989 | July 25 | 2321 | 580 | 64 | 467 |
| Railway-coach vestibule | R. K. Ortt and M. A. Shearer | 505,324 | Sept. 19 | 1667 | 430 | 64 | 1610 |
| Railway collisions. Means for preventing | E. M. de Monte and C. Jost | 505,669 | Sept. 26 | 2283 | {580 581} | 64 | 1740 |
| Railway conductors. Subway for electric- | I. L. Johnson | 502,821 | Aug. 8 | 989 | 241 | 64 | 763 |
| Railway. Conduit electric | B. Bidwell | 504,549 | Sept. 5 | 398 | 102 | 64 | 1344 |
| Railway. Conduit electric | C. O. Ehlert | 505,081 | Sept. 12 | 1282 | 331 | 64 | 1526 |
| Railway. Conduit electric | H. D. Oler | 504,847 | Sept. 12 | 893 | 230 | 64 | 1453 |
| Railway conduit. Electric- | I. J. Cook | 501,676 | July 18 | 1934 | 454 | 64 | 363 |
| Railway conduit. Electric- | S. H. Flagg | 504,676 | Sept. 5 | 594 | 151 | 64 | 1382 |
| Railway conduit. Electric- | R. R. Zell | 502,842 | Aug. 8 | 1019 | 248 | 64 | 769 |
| Railway converter system. Electric- | G. W. von Siemens | 502,538 | Aug. 1 | 488 | 117 | 64 | 656 |
| Railway-crossing | H. Elliot | 506,706 | July 4 | 277 | 75 | 64 | 52 |
| Railway-crossing | F. A. Johnson | 501,721 | July 18 | 1803 | {470 471} | 64 | 375 |
| Railway-crossing alarm | C. T. Frasher | 504,719 | Sept. 12 | 665 | 169 | 64 | 1408 |
| Railway-crossing alarm or signal | E. C. Potter | 501,438 | July 11 | 1444 | 362 | 64 | 278 |
| Railway crossing. Electric- | J. Nelson | 504,276 | Aug. 29 | 3347 | 836 | 64 | 1245 |
| Railway-crossing gate | H. W. Albright and S. B. Lenhert | 502,341 | Aug. 1 | 148 | 34, 35 | 64 | 599 |
| Railway electric conduit | J. I. Conklin | 504,104 | Aug. 29 | 3066 | 767 | 64 | 1192 |
| Railway foot-guard | O. L. Durflinger | 501,927 | July 25 | 2235 | 538 | 64 | 450 |
| Railway-frog | N. W. Boyd | 505,022 | Sept. 12 | 1172 | 301 | 64 | 1506 |
| Railway-frog | N. W. Boyd | 505,023 | Sept. 12 | 1175 | 301 | 64 | 1506 |
| Railway-frog. Spring | I. B. West | 501,033 | July 4 | 784 | 205 | 64 | 143 |
| Railway-gate | O. P. Jordan | 501,946 | July 25 | 2258 | 564 | 64 | 455 |
| Railway-gate | R. C. Douglass | 501,926 | July 25 | 2234 | 558 | 64 | 450 |
| Railway-joint | J. H. Fitzgerald | 504,974 | Sept. 12 | 1099 | 281 | 64 | 1492 |
| Railway-joint connection | J. S. Brown | 503,071 | Aug. 8 | 1386 | 342 | 64 | 836 |
| Railway. Overhead electric | M. Hubbell | 503,239 | Aug. 15 | 1673 | 411 | 64 | 901 |
| Railway-rail | J. C. Henry | 501,009 | July 4 | 747 | 196 | 64 | 136 |
| Railway-rail box-bridge joint | E. R. Esmond | 500,688 | July 4 | 349 | 67 | 64 | 47 |
| Railway-rail brake | E. Samuel | 502,587 | Aug. 1 | 566 | 135 | 64 | 670 |
| Railway-rail chair | S. M. J. House | 501,010 | July 4 | 749 | 196 | 64 | 136 |
| Railway-rail chair | A. J. Moxham | 500,931 | July 4 | 618 | 163 | 64 | 113 |
| Railway-rail. Compound | F. P. Reilly | 504,818 | Sept. 12 | 845 | 217 | 64 | 1442 |
| Railway-rail joint | J. C. Telfer | 500,925 | July 4 | 464 | 122 | 64 | 85 |
| Railway-rail joint | T. J. Gilmartin | 504,302 | Aug. 29 | 3387 | 847 | 64 | 1252 |
| Railway-rail joint | F. Herman | 504,981 | Sept. 12 | 1113 | 285 | 64 | 1493 |
| Railway-rail joint | J. Schmidt | 501,159 | July 11 | 1009 | {256 257} | 64 | 197 |
| Railway-rail joints. Angle-bar for | F. S. Ketchum | 504,067 | Aug. 29 | 2998 | 749 | 64 | 1179 |
| Railway-rail safety-plate | G. P. Osborne | 502,633 | Aug. 1 | 642 | {153 154} | 64 | 685 |
| Railway-rail-splashing apparatus | G. Mack | 505,205 | Sept. 19 | 1478 | 385 | 64 | 1574 |
| Railway-rail tie and chair | P. Wheeler | 503,184 | Aug. 15 | 1590 | 390 | 64 | 886 |
| Railway-signal | A. G. Leonard | 502,441 | Aug. 1 | 393 | 77 | 64 | 626 |
| Railway-signal | J. Wayland | 501,307 | July 11 | 1222 | {309 310} | 64 | 237 |
| Railway-signal | J. Wayland | 503,209 | Aug. 15 | 1773 | 438 | 64 | 919 |
| Railway-signal | M. Williams | 501,126 | July 11 | 954 | 243 | 64 | 188 |
| Railway signal and crossing-gate | J. S. Berry | 502,394 | Aug. 1 | 242 | 57, 58 | 64 | 610 |



*Alphabetical list of inventions, July to September, inclusive*—Continued.

| Invention. | Name. | No. | Date. | Monthly volume. Spec. | Monthly volume. Dr'g. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|---|
| Railway signal apparatus | J. C. G. Mugnier | 500,668 | July 4 | 225 | 58, 59 | 64 | 43 |
| Railway-signal. Electric | F. E. Seagrave | 504,542 | Sept. 5 | 384 | 96, 97 | 64 | 1349 |
| Railway-signal. Electrical | B. C. Seaton | 503,100 | Aug. 8 | 1437 | {354 355} | 64 | 845 |
| Railway signal system | G. L. Thomas and E. C. Seward | 500,827 | July 4 | 469 | {123 124} | 64 | 86 |
| Railway signaling | I. A. Timmis | 503,505 | Aug. 15 | 2008 | 524 | 64 | 977 |
| Railway signaling apparatus | J. Orme | 503,981 | Aug. 29 | 2863 | 718 | 64 | 1154 |
| Railway signaling apparatus | R. Pfeil | 501,100 | July 11 | 908 | {232 233} | 64 | 180 |
| Railway signaling. Interlocking apparatus for | S. T. Dutton | 503,530 | Aug. 15 | 2136 | 536 | 64 | 984 |
| Railway supply system. Electric- | G. F. Green | 504,977 | Sept. 12 | 1104 | {282 283} | 64 | 1492 |
| Railway supply system. Electric- | W. F. Jenkins | 502,858 | Aug. 8 | 1041 | 255 | 64 | 772 |
| Railway-switch | V. Angerer | 504,649 | Sept. 5 | 536 | 137 | 64 | 1371 |
| Railway-switch | N. Peat | 501,660 | July 18 | 1795 | 447 | 64 | 358 |
| Railway-switch | L. V. Stevens and J. R. Mott | 501,112 | July 11 | 932 | 239 | 64 | 194 |
| Railway-switch | W. Wharton, Jr. | 505,075 | Sept. 12 | 1273 | {327 328} | 64 | 1524 |
| Railway-switch. Automatic | G. W. Stevens | 502,475 | Aug. 1 | 378 | 90 | 64 | 636 |
| Railway-switch. Automatic | M. A. Weathers | 501,263 | July 11 | 1161 | {294 295} | 64 | 226 |
| Railway-switch. Frogless | F. Schultz, Jr. | 503,440 | Aug. 15 | 1992 | 494 | 64 | 958 |
| Railway-switch lock | F. Viering | 505,804 | Sept. 26 | 2512 | 634 | 64 | 1782 |
| Railway-switch lock. Automatic | G. Brocke | 500,796 | July 4 | 423 | 111 | 64 | 78 |
| Railway switch. Street- | P. J. Boris | 505,077 | Sept. 12 | 1276 | {328 329} | 64 | 1524 |
| Railway switches and signals. Electric controlling and locking mechanism for | C. M. Wilder | 501,701 | July 18 | 1861 | {463 464} | 64 | 370 |
| Railway system | C. Carr | 500,992 | July 4 | 719 | 189 | 64 | 131 |
| Railway system. Electric- | F. S. Perrine | 500,943 | July 4 | 630 | 166 | 64 | 115 |
| Railway system. Electric- | G. W. von Siemens | 502,539 | Aug. 1 | 491 | 117 | 64 | 657 |
| Railway-tie | N. Benjamin | 505,019 | Sept. 12 | 1168 | 300 | 64 | 1505 |
| Railway-tie | N. Benjamin | 505,020 | Sept. 12 | 1170 | 300 | 64 | 1505 |
| Railway-tie and fastening | H. B. Rowland | 502,638 | Aug. 1 | 654 | 159 | 64 | 687 |
| Railway-tie and fastening | H. B. Rowland | 502,639 | Aug. 1 | 655 | 160 | 64 | 687 |
| Railway-tie and fastening | H. B. Rowland | 505,484 | Sept. 26 | 1924 | 496 | 64 | 1672 |
| Railway-tie. Metallic | F. S. Ketchum | 504,066 | Aug. 29 | 2996 | {748 749} | 64 | 1178 |
| Railway-tie. Metallic | J. P. Lancaster | 502,464 | Aug. 1 | 358 | 86 | 64 | 632 |
| Railway-tie. Metallic | E. Siskron | 504,695 | Sept. 5 | 629 | 160 | 64 | 1389 |
| Railway tie or sleeper. Metallic | C. B. Macneal | 503,054 | Aug. 8 | 1363 | 336 | 64 | 931 |
| Railway-track electric annunciator | J. W. Lattig | 502,627 | Aug. 1 | 635 | 152 | 64 | 683 |
| Railway-track tamping-machine | N. A. Evans | 504,063 | Aug. 29 | 2992 | 748 | 64 | 1177 |
| Railway-tracks. Train-stopping mechanism for | J. B. Gross | 503,111 | Aug. 8 | 1458 | {358 359} | 64 | 848 |
| Railway-train safety-buffer | W. Neuman | 503,270 | Aug. 15 | 1723 | 425 | 64 | 910 |
| Railway-trains. Automatic reversing device for | W. Weaver | 504,766 | Sept. 12 | 752 | {187 188} | 64 | 1425 |
| Railway transfer-table | A. J. Moxham | 500,929 | July 4 | 615 | {160 161} | 64 | 112 |
| Railway-trolley base. Electric- | O. Rau | 502,530 | Aug. 1 | 476 | 114 | 64 | 654 |
| Railway trolley. Electric- | A. Palmros | 504,113 | Aug. 29 | 3080 | 771 | 64 | 1195 |
| Railway trolley. Electric- | E. R. Robinson | 505,370 | Sept. 19 | 1740 | 451 | 64 | 1623 |
| Railway trolley. Electric- | E. A. Sperry | 501,968 | July 25 | 2291 | 573 | 64 | 460 |
| Railway trolley. Electric- | F. J. Sprague and P. F. O'Shaughnessy. | 504,255 | Aug. 29 | 3314 | {828 829} | 64 | 1237 |
| Railway trolley. Electric- | C. J. Van Depoele | 502,343 | July 25 | 2744 | 693 | 64 | 546 |
| Railway trolley-switch. Electric- | J. H. Allison | 503,570 | Aug. 22 | 2211 | 553 | 64 | 1013 |
| Railways. Closed conduit for electric | G. W. McNear | 505,605 | Sept. 26 | 2176 | 550 | 64 | 1719 |
| Railways. Conduit system for electric | F. Wynne | 502,216 | July 25 | 2690 | 679 | 64 | 527 |
| Railways. Contact for conduit electric | A. Wörner | 503,710 | Aug. 22 | 2446 | 609 | 64 | 1056 |
| Railways. Current-conveyer for electric | W. Lawrence | 505,204 | Sept. 19 | 1477 | 385 | 64 | 1574 |
| Railways. Curve or crossing for cable | E. N. Wallis | 505,737 | Sept. 26 | 2402 | 607 | 64 | 1760 |
| Railways. Electrical supply system for | J. W. Bates | 503,566 | Aug. 15 | 2197 | 549 | 64 | 995 |
| Railways. Safety-clutch for inclined | M. C. Littleworth | 502,420 | Aug. 1 | 984 | 68 | 64 | 618 |
| Raisin-tray turner | M. B. Skaggs | 504,254 | Aug. 29 | 3312 | 827 | 64 | 1238 |
| Rake:<br>*See* Cornstalk-rake. Lawn-rake.<br>Hay-rake. | | | | | | | |
| Rake | W. R. Jenkins | 500,904 | July 4 | 580 | 151 | 64 | 106 |
| Rake | W. Strait | 503,625 | Aug. 22 | 2318 | 578 | 64 | 1032 |
| Rake-tooth-forming machine | J. N. Short | 501,217 | July 11 | 1088 | {276 277} | 64 | 214 |
| Ratchet brace | H. V. Smith | 505,611 | Sept. 26 | 2187 | 553 | 64 | 1728 |
| Ratchet device for tools | P. J. O'Brien | 501,957 | July 25 | 2275 | 569 | 64 | 458 |
| Ratchet-tool | U. Porstendorfer | 505,535 | Sept. 26 | 2040 | 521 | 64 | 1693 |
| Ratchet wrench | W. H. Diedrick | 502,410 | Aug. 1 | 270 | 64 | 64 | 615 |
| Rattan or other stock. Machine for splitting | M. E. Moore | 500,813 | July 4 | 444 | 117 | 64 | 82 |
| Razor-strop | W. C. Howard | 500,806 | July 4 | 436 | 114 | 64 | 80 |
| Razor-strop | L. T. Sheffield | 505,134 | Sept. 19 | 1368 | 351 | 64 | 1555 |
| Reading-stand | F. J. Anderson and W. M. Irick | 502,601 | Aug. 1 | 593 | {141 142} | 64 | 675 |
| Reaming-bit | M. R. Moss | 505,322 | Sept. 19 | 1665 | 429 | 64 | 1609 |
| Reaper | O. O. Storle | 502,398 | Aug. 1 | 130 | 29, 30 | 64 | 589 |
| Reaper | O. O. Storle | 502,399 | Aug. 1 | 132 | 30 | 64 | 589 |
| Receiver and stench-trap | T. J. Ryan | 505,130 | Sept. 19 | 1358 | 349 | 64 | 1553 |
| Recorder:<br>*See* Time-recorder. | | | | | | | |
| Recording device for calculators, &c | W. S. Burroughs | 505,078 | Sept. 12 | 1278 | 329 | 64 | 1594 |
| Reel:<br>*See* Bolting-reel. Grain-reel.<br>Fishing-reel. Rod-reel. | | | | | | | |
| Reel-carrying frame | A. O. Bryce and E. R. Stanton | 501,822 | July 18 | 2056 | 507 | 64 | 403 |

*Alphabetical list of inventions, July to September, inclusive*—Continued.

| Invention. | Name. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drgs. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|---|
| Reflecting and refracting radiant energy. Device for | E. C. Ohmart | 504,880 | Sept. 12 | 954 | 247 | 64 | 1464 |
| Reflector for radiant energy | M. L. Severy | 503,004 | Aug. 8 | 1293 | 316 | 64 | 818 |
| Refrigerating and ice-making machinery | P. I. Schmaltz | 504,091 | Aug. 29 | 3038 | 759 | 64 | 1187 |
| Refrigerating apparatus | F. B. Hill | 505,350 | Sept. 19 | 1720 | 444 | 64 | 1690 |
| Refrigerating apparatus | E. D. Kendall | 502,437 | Aug. 1 | 313 | 75 | 64 | 623 |
| Refrigerating-machines. Automatic pressure-regulator for | P. I. Schmaltz | 504,092 | Aug. 29 | 3040 | 759 | 64 | 1187 |
| Refrigerator | C. H. Fox | 504,804 | Sept. 12 | 890 | 208 | 64 | 1437 |
| Refrigerator | J. A. Henkel | 505,358 | Sept. 19 | 1718 | {443 / 444} | 64 | 1619 |
| Refrigerator | J. H. Hise | 501,949 | July 11 | 1137 | 289 | 64 | 222 |
| Refrigerator | C. Hurd | 501,977 | July 11 | 1183 | {299 / 300} | 64 | 230 |
| Refrigerator | J. G. Malcolm | 505,114 | Sept. 19 | 1334 | 344 | 64 | 1549 |
| Refrigerator | H. L. Pittman | 505,368 | Sept. 19 | 1738 | 450 | 64 | 1693 |
| Refrigerator | C. E. Velie | 501,854 | July 18 | 2101 | 519 | 64 | 411 |
| Refrigerator-car | W. E. Eastman | 502,661 | Aug. 1 | 694 | 166 | 64 | 603 |
| Refrigerator-car | W. E. Eastman | 502,662 | Aug. 1 | 696 | 166 | 64 | 603 |
| Refrigerator-car | J. Player | 503,772 | Aug. 22 | 2544 | {633 / 634} | 64 | 1076 |
| Refrigerator-car | T. B. Roberts | 500,615 | July 4 | 127 | 34 | 64 | 25 |
| Refrigerator ice-rack | G. W. Lawrence | 501,281 | July 11 | 1187 | 301 | 64 | 231 |
| Refrigerator-ventilator | J. Netzer | 501,253 | July 11 | 1149 | 291 | 64 | 224 |
| Refrigerator water-cooling attachment | J. E. Guenther | 502,562 | Aug. 1 | 525 | 126 | 64 | 663 |
| Refuse matter. Apparatus for treating | T. W. Carrico | 503,073 | Aug. 8 | 13-9 | 343 | 64 | 836 |
| Regenerative kiln | E. Walsh, Jr | 503,799 | Aug. 22 | 2475 | 615 | 64 | 1069 |
| Register: | | | | | | | |
| *See* Autographic register. Billiard-register. Car-register. Cash-register. Credit-balance register. Door-register. Fare-register. Game-register. Heater-flue register. Hot-air register. Measure-register. Printing-press register. | | | | | | | |
| Register | W. E. Patchin | 504,239 | Aug. 29 | 3287 | 821 | 64 | 1233 |
| Register | O. F. Swift and W. Warwick | 501,260 | July 11 | 1157 | 283 | 64 | 225 |
| Registering machine. Barrel | A. W. Oppmann | 504,610 | Sept. 5 | 483 | 124 | 64 | 1360 |
| Regulator: | | | | | | | |
| *See* Boiler water-regulator. Damper-regulator. Electric regulator. Electric-machine regulator. Electric-motor regulator. Feed-regulator. Feed-water regulator. Gas-motor regulator. Oven heat-regulator. Pressure-regulator. Pump-regulator. Saw-swage regulator. Water-wheel regulator. Windmill-regulator. | | | | | | | |
| Regulator | W. H. Elkins | 502,285 | Aug. 1 | 33 | 8 | 64 | 572 |
| Rein. Driving | C. W. Hoss | 501,789 | July 18 | 2012 | 495 | 64 | 395 |
| Rein-holder | J. Jensen | 505,528 | Sept. 26 | 2032 | 518 | 64 | 1691 |
| Rein-holder | V. L. Talbot | 503,397 | Aug. 15 | 1771 | 437 | 64 | 918 |
| Rein-support | T. E. Clark | 502,703 | Aug. 8 | 801 | 193 | 64 | 727 |
| Reins. Hand-hold for | G. F. Whiting | 501,308 | July 11 | 1226 | 310 | 64 | 238 |
| Relay | H. S. L. Verley | 502,449 | Aug. 1 | 338 | 81 | 64 | 628 |
| Resin-acid esters. Manufacture of | E. Schaal | 501,446 | July 11 | 1458 | 365 | 64 | 290 |
| Respirator. Mask | C. B. König | 504,880 | Sept. 12 | 939 | 242 | 64 | 1461 |
| Retort. Mechanical | R. Haig | 505,356 | Sept. 19 | 1715 | {442 / 443} | 64 | 1619 |
| Revolver | P. H. Finnegan | 504,154 | Aug. 29 | 3142 | {785 / 786} | 64 | 1206 |
| Revolving motor | H. L. Parker and A. W. Meaton | 501,482 | July 11 | 1308 | 379 | 64 | 250 |
| Rheostat | A. B. Herrick | 504,160 | Aug. 29 | 3151 | 787 | 64 | 1207 |
| Rheostat | C. A. Hussey | 502,040 | July 25 | 2404 | 605 | 64 | 482 |
| Rheostat | E. Thomson | 500,631 | July 4 | 150 | 39 | 64 | 30 |
| Rheostat | J. J. Wood | 502,340 | Aug. 1 | 145 | 33, 34 | 64 | 592 |
| Ring: | | | | | | | |
| *See* Curtain-ring. Napkin-ring. Spinning-ring. | | | | | | | |
| Rivet-holding device | G. Burtscher | 503,943 | Aug. 29 | 2789 | 699 | 64 | 1141 |
| Rivets. Machinery for making solid or tubular | H. S. Reynolds | 503,329 | Aug. 15 | 1830 | {453 / 454 / 455} | 64 | 929 |
| Riveting-machine | J. B. Courtet | 500,755 | July 4 | 360 | 94 | 64 | 67 |
| Riveting-machine | S. Frisbie | 501,681 | July 18 | 1929 | {455 / 456} | 64 | 384 |
| Riveting-machine gage | E. Easton | 500,699 | July 4 | 533 | 138 | 64 | 97 |
| Roach-trap | C. F. Kunts | 501,350 | July 11 | 1313 | 398 | 64 | 252 |
| Roasting apparatus | P. Cacciatori | 501,867 | July 18 | 2118 | 524 | 64 | 414 |
| Rock-drill | H. P. Jones | 502,505 | Aug. 1 | 529 | 45 | 64 | 663 |
| Rock-drill-rotating device | W. Wood | 505,242 | Sept. 19 | 1530 | 390 | 64 | 1584 |
| Rocking-chair | J. M. Ausman | 505,083 | Sept. 19 | 1268 | 333 | 64 | 1541 |
| Rocking-horse, cradle, &c | Y. Normington and H. Blades | 503,979 | Aug. 29 | 2851 | 718 | 64 | 1154 |
| Rod-reel | I. A. Kilmer | 501,251 | July 11 | 1147 | 291 | 64 | 223 |
| Roll-truing machine | D. J. Davidson | 504,566 | Sept. 5 | 453 | 107 | 64 | 1348 |
| Roller: | | | | | | | |
| *See* Curtain-roller. Field-roller. Land-roller. Shade-roller. Street-roller. | | | | | | | |
| Rolling-machine | B. F. and F. T. Peacock | 503,616 | Aug. 22 | 2304 | {574 / 575} | 64 | 1029 |
| Rolling-mill | H. J. Gosling | 503,134 | Aug. 15 | 1507 | 370 | 64 | 871 |
| Rolling-mill billet-conveyer | S. S. Babbitt | 503,894 | Aug. 22 | 2711 | {680 / 681} | 64 | 1168 |
| Rolling-mill feed-table | W. H. Maddock | 504,393 | Sept. 5 | 131 | 34 | 64 | 1294 |



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| Invention. | Name. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drgs. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|---|
| Rolling-mill feeding mechanism | W. H. Maddock | 504,395 | Sept. 5 | 134 | 35 | 64 | 1295 |
| Rolling-mill plant | L. Cook | 503,830 | Aug. 22 | 2619 | {654 / 655} | 64 | 1090 |
| Rolling-mill transfer-mechanism | W. H. Maddock | 504,394 | Sept. 5 | 132 | 35 | 64 | 1295 |
| Rolling sheet metal. Apparatus for | J. Jenkins | 503,941 | Aug. 15 | 1676 | 412 | 64 | 902 |
| Rolling soldering-irons. Machine for | J. W. Cramer | 502,980 | Aug. 1 | 27 | 6 | 64 | 571 |
| Roof | T. Weare | 502,940 | Aug. 8 | 1190 | 293 | 64 | 799 |
| Roof-block | J. Whomes and F. J. Gillmore | 501,637 | July 18 | 1758 | 430 | 64 | 352 |
| Roofing | S. R. Hawthorne | 505,526 | Sept. 26 | 2031 | 518 | 64 | 1691 |
| Roofing composition | E. M. McCook and W. P. Seal | 505,531 | Sept. 26 | 2036 | ... | 64 | 1692 |
| Roofing. Composition of matter for | G. A. Turnbull | 503,336 | Aug. 15 | 1842 | ... | 64 | 931 |
| Roofing. Metal | B. B. Detombay | 502,552 | Aug. 1 | 513 | 122 | 64 | 660 |
| Roofing. Metallic | J. S. Brooks | 503,941 | Aug. 29 | 2787 | 698 | 64 | 1140 |
| Roofing. Metallic | J. W. Fallon | 503,789 | Aug. 22 | 2569 | 639 | 64 | 1081 |
| Roofing. Metallic | J. T. Neel | 502,009 | July 25 | 2347 | 588 | 64 | 471 |
| Roofing. Sheet-metal | W. C. Berger | 505,021 | Sept. 19 | 1172 | 300 | 64 | 1506 |
| Rope-driving machinery | W. H. Robinson | 503,684 | Aug. 22 | 2397 | {598 / 599} | 64 | 1047 |
| Rope-shifting mechanism. Driving | S. S. Caskey | 501,869 | July 18 | 2120 | 524 | 64 | 414 |
| Rotary cutter | C. Raabe | 501,213 | July 11 | 1083 | 275 | 64 | 213 |
| Rotary cutter | H. W. Winter | 503,067 | Aug. 8 | 1381 | 341 | 64 | 835 |
| Rotary engine | W. W. Andrews | 500,988 | July 4 | 716 | 188 | 64 | 130 |
| Rotary engine | H. P. Holland | 502,818 | Aug. 8 | 983 | 239 | 64 | 769 |
| Rotary engine | H. C. Hunt | 501,146 | July 11 | 983 | {250 / 251} | 64 | 194 |
| Rotary engine | S. Marcus | 503,611 | Aug. 22 | 2299 | 573 | 64 | 1028 |
| Rotary engine | J. F. McElroy | 503,550 | Aug. 15 | 2172 | 542 | 64 | 990 |
| Rotary engine | J. F. McElroy | 504,536 | Sept. 5 | 374 | 94 | 64 | 1339 |
| Rotary engine | W. Rice | 502,585 | Aug. 1 | 564 | 135 | 64 | 649 |
| Rotary steam-engine | C. H. and A. Stone | 505,334 | Sept. 19 | 1679 | 433 | 64 | 1612 |
| Rowing apparatus | W. M. Byrd | 501,598 | July 18 | 1602 | 422 | 64 | 341 |
| Rowlock | W. Roesaler | 502,467 | Aug. 1 | 364 | 87 | 64 | 633 |
| Rubber article. Hollow | L. Minerley | 501,802 | July 18 | 2034 | 500 | 64 | 398 |
| Rubber boot | E. L. Perry | 504,612 | Sept. 5 | 485 | 124 | 64 | 1360 |
| Rubber shoes together. Means for securing | E. Kissinger | 501,082 | July 11 | 863 | 224 | 64 | 172 |
| Rubber connection | G. P. Umstead | 505,734 | Sept. 26 | 2398 | 606 | 64 | 1759 |
| Rule, bevel, and square. Combined | E. G. Jackson | 502,753 | Aug. 8 | 827 | 200 | 64 | 732 |
| Rule. Folding pocket | W. H. H. Garritt | 504,341 | Sept. 5 | 45 | 13 | 64 | 1279 |
| Rule. Pocket | P. W. Shephard | 503,008 | Aug. 8 | 1299 | 318 | 64 | 819 |
| Running-gear | R. J. Gilham | 500,572 | July 4 | 55 | 16 | 64 | 11 |
| Sad-iron | J. F. Stevens and W. V. Breene | 505,139 | Sept. 19 | 1374 | 352 | 64 | 1556 |
| Sad-iron | H. Clayton | 500,854 | July 4 | 508 | 132 | 64 | 93 |
| Sad-iron | J. M. Wishart | 501,264 | July 11 | 1164 | {295 / 296} | 64 | 226 |
| Sad-iron stand | M. S. Everett | 503,410 | Aug. 15 | 1945 | 483 | 64 | 950 |
| Saddle-bags | J. A. Browne | 501,821 | July 18 | 2055 | 506 | 64 | 403 |
| Saddle. Harness | L. B. Hill | 502,121 | July 25 | 2332 | 615 | 64 | 506 |
| Saddle. Harness | J. H. Price | 501,024 | July 4 | 706 | 201 | 64 | 140 |
| Saddle trees. Die for manufacturing metallic harness | W. H. Bustin | 505,079 | Sept. 12 | 1280 | 330 | 64 | 1525 |
| Safe | F. Crawford | 502,953 | Aug. 8 | 1209 | 298 | 64 | 803 |
| Safe | W. W. Munsell | 501,092 | July 11 | 891 | 229 | 64 | 178 |
| Safe-locking device | A. G. Burton | 502,613 | Aug. 1 | 609 | {145 / 146} | 64 | 678 |
| Safe or vault | C. Hill | 501,142 | July 11 | 975 | 249 | 64 | 192 |
| Safety-pin | C. E. Stevens | 504,634 | Sept. 5 | 514 | 133 | 64 | 1367 |
| Salad-mixing device | J. B. Fitch | 501,649 | July 18 | 1773 | {441 / 442} | 64 | 355 |
| Salicylate of para-tolyldimethylpyrazolon | H. Thoms | 503,066 | Aug. 8 | 1380 | ... | 64 | 835 |
| Salt-furnace. Regenerative | E. K. Holland | 502,380 | Aug. 1 | 196 | 44 | 64 | 600 |
| Salts. Apparatus for electrolysis of fused | W. E. Case | 503,451 | Aug. 15 | 2005 | 498 | 64 | 960 |
| Sample. Cloth or dress-goods | J. M. Bostwick | 504,550 | Sept. 5 | 401 | 102 | 64 | 1344 |
| Sample holder. Fabric | J. E., D. W., and S. J. McCarthy | 503,802 | Aug. 22 | 2564 | 644 | 64 | 1084 |
| Sand or gravel drier | S. R. Scharf | 501,530 | July 18 | 1594 | 401 | 64 | 321 |
| Sandpaper-wheel | F. H. Stubbe | 505,683 | Sept. 26 | 2313 | 587 | 64 | 1744 |
| Sanitary house | W. Van der Heyden | 504,544 | Sept. 5 | 396 | 97, 98 | 64 | 1342 |
| Sanitary ventilator | W. L. Potter | 502,995 | Aug. 8 | 1281 | 313 | 64 | 815 |
| Sash-balance | R. R. Cowl | 500,756 | July 4 | 362 | 94 | 64 | 67 |
| Sash-balance | N. Hamlet | 503,596 | Aug. 22 | 2561 | 506 | 64 | 1022 |
| Sash-balance | J. H. Shipman | 500,967 | July 4 | 687 | 180 | 64 | 125 |
| Sash-cord fastener | L. Gerhardt | 500,760 | July 4 | 367 | 95 | 64 | 68 |
| Sash-fastener | E. Ament | 505,341 | Sept. 19 | 1689 | 435 | 64 | 1614 |
| Sash-fastener | J. E. Dolber | 502,556 | Aug. 1 | 518 | 124 | 64 | 661 |
| Sash-fastener | C. Knapp | 504,165 | Aug. 29 | 3161 | 789 | 64 | 1209 |
| Sash-fastener | A. Raymond and F. S. North | 503,284 | Aug. 15 | 1767 | 437 | 64 | 918 |
| Sash-fastener | W. Wagener | 501,451 | July 11 | 1465 | 371 | 64 | 292 |
| Sash-fastener | C. Wolcott | 501,238 | July 11 | 1119 | {284 / 285} | 64 | 219 |
| Sash-holder | J. H. Griswold | 504,978 | Sept. 12 | 1107 | 284 | 64 | 1493 |
| Sash-holder | P. S. Riddelle | 501,809 | July 18 | 2040 | 502 | 64 | 400 |
| Sash-operating mechanism | P. S. Riddelle | 504,620 | Sept. 5 | 494 | 127 | 64 | 1362 |
| Sash-weight | F. H. Homan | 501,346 | July 11 | 1305 | 325 | 64 | 251 |
| Sash-weight holder | J. Neil | 503,291 | Aug. 15 | 1760 | 435 | 64 | 917 |
| Saw and plane. Combined | J. Bowles | 505,154 | Sept. 19 | 1396 | 358 | 64 | 1550 |
| Saw and planer. Combined | J. Bowles | 503,592 | Aug. 15 | 2120 | 532 | 64 | 981 |
| Saw-filing machine | G. R. Huff and G. H. Vernon | 505,626 | Sept. 26 | 2305 | {558 / 559} | 64 | 1725 |
| Saw-gage | C. F. Fowler | 503,281 | Aug. 15 | 1740 | 430 | 64 | 913 |
| Saw-gummer | J. B. Rhodes | 502,319 | Aug. 1 | 113 | 26 | 64 | 586 |
| Saw-hammering machine | T. H. Dillon | 501,769 | July 18 | 1983 | 490 | 64 | 390 |
| Saw machine for cutting metal, &c. Band | G. W. Griffin | 502,867 | Aug. 8 | 1086 | 267 | 64 | 781 |
| Saw machine. Hack | H. D. Lanfair | 502,978 | Aug. 8 | 1259 | 308 | 64 | 811 |
| Saw machine. Hack | H. L. Pratt | 502,998 | Aug. 8 | 1292 | 314 | 64 | 816 |
| Sawmill feed mechanism | C. Bowman | 502,345 | July 25 | 2748 | 694 | 64 | 547 |

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|---|---|---|---|---|---|---|---|
| Saw mill. Gang | W. T. Mackey | 501,799 | July 18 | 3028 | 499, 500 | 64 | 397 |
| Sawmill-setworks. Automatic receding | A. S. Potticrew | 502,316 | Aug. 1 | 102 | 24 | 64 | 564 |
| Saw-set | E. W. Dillen | 504,521 | Sept. 5 | 350 | 89 | 64 | 1335 |
| Saw set, gage, and jointer. Combined | E. M. Bickerstaff | 504,656 | Sept. 5 | 547 | 140 | 64 | 1373 |
| Saw. Steam-power crosscut | J. B. Kelly | 503,665 | Aug. 22 | 2375 | 592, 593 | 64 | 1042 |
| Saw-swage | A. E. Bronson and D. Chubb | 502,065 | July 25 | 2440 | 614 | 64 | 439 |
| Saw-swage | R. E. Dimick | 504,194 | Aug. 29 | 3091 | 774 | 64 | 1197 |
| Saw-table | C. D. Marsh | 501,521 | July 18 | 1573 | 396 | 64 | 317 |
| Saw-table gage | P. Pryibil | 503,726 | Aug. 22 | 2472 | 614 | 64 | 1061 |
| Saw-templet | B. F. Spooner | 503,010 | Aug. 8 | 1302 | 318, 319 | 64 | 519 |
| Saw-tooth | W. E. Brooke | 504,412 | Sept. 5 | 162 | 43 | 64 | 1301 |
| Saws. Device for side-dressing circular | W. Hatfield | 504,726 | Sept. 12 | 673 | 172 | 64 | 1409 |
| Saws. Manufacture of | G. W. Griffin | 502,866 | Aug. 8 | 1085 | 267 | 64 | 781 |
| Saws. Method of and machine for finishing | T. J. St. Louis | 501,742 | July 18 | 1934 | 478 | 64 | 382 |
| Saws. Work-guide for | V. Stein | 500,972 | July 4 | 694 | 182 | 64 | 126 |
| Sawing logs, trees, or spiles. Machine for | A. W. Rich | 505,482 | Sept. 26 | 1921 | 495 | 64 | 1672 |
| Sawing-machine | L. Cooper | 501,826 | July 18 | 2060 | 508 | 64 | 404 |
| Sawing-machine | F. M. Teeguarden | 502,838 | Aug. 8 | 1013 | 247 | 64 | 768 |
| Sawing-machine. Band | E. C. Mershon | 503,768 | Aug. 22 | 2540 | 631, 632 | 64 | 1075 |
| Sawing-machine. Band | E. C. Mershon | 505,080 | Sept. 12 | 1281 | 330, 331 | 64 | 1525 |
| Scale. Automatic weighing and recording | W. F. Burns | 502,222 | July 25 | 2699 | 681 | 64 | 539 |
| Scale. Cart | B. C. Coupland and F. T. Hough | 502,810 | Aug. 8 | 961 | 234 | 64 | 758 |
| Scale. Computing weighing | C. M. Holden | 503,931 | Aug. 22 | 2768 | 693 | 64 | 1120 |
| Scale. Letter | C. A. Miller | 504,534 | Sept. 5 | 371 | 94 | 64 | 1339 |
| Scale. Pattern-maker's | J. T. Cowley | 503,528 | Aug. 15 | 2132 | 535 | 64 | 984 |
| Scale. Platform | G. W. Williams | 505,503 | Sept. 26 | 1973 | 507 | 64 | 1669 |
| Scale. Portable | J. W. Storey | 502,786 | Aug. 8 | 925 | 226 | 64 | 752 |
| Scale. Sack | R. Abercrombie | 502,265 | Aug. 1 | 1 | 1 | 64 | 567 |
| Scale. Spring | G. H. Chatillon | 505,091 | Sept. 19 | 1301 | 335 | 64 | 1543 |
| Scale. Weighing | C. C. Miller | 504,930 | Sept. 12 | 1023 | 264 | 64 | 1478 |
| Scourer: *See* Wheat-scourer. | | | | | | | |
| Scow. Dumping | B. A. Mullin | 501,020 | July 4 | 760 | 199 | 64 | 139 |
| Scow. Dumping | P. Ryan | 502,142 | July 25 | 2566 | 644 | 64 | 512 |
| Scraper | C. F. Aldrich | 501,858 | July 18 | 2106 | 520 | 64 | 412 |
| Scraper. Wheeled | F. F. Hudel and E. H. Liebenstein | 501,145 | July 11 | 980 | 250 | 64 | 193 |
| Screen: *See* Clay-screen. Ornamental screen. Insect-screen. Window-screen. | | | | | | | |
| Screw-blank-feeding mechanism | H. K. Jones | 504,435 | Sept. 5 | 202 | 52, 53 | 64 | 1308 |
| Screw-cutting machine | M. Macdougall | 502,675 | Aug. 1 | 729 | 175 | 64 | 700 |
| Screw-driver | G. W. Agin | 503,569 | Aug. 22 | 2210 | 553 | 64 | 1013 |
| Screw-driver | A. Schuermann | 504,757 | Sept. 12 | 740 | 184 | 64 | 1423 |
| Screw-driver and tool-handle. Combination | J. B. Hughes | 505,165 | Sept. 19 | 1412 | 364 | 64 | 1562 |
| Screw-jack | B. F. Cox and J. Fahey | 500,757 | July 4 | 364 | 94 | 64 | 68 |
| Screw-machine | E. E. Claussen | 502,923 | Aug. 8 | 1160 | 285, 286 | 64 | 795 |
| Screw-machine | E. E. Claussen | 504,102 | Aug. 29 | 3060 | 765, 766 | 64 | 1191 |
| Screw machine. Machine | M. Macdougall | 502,371 | Aug. 1 | 203 | 48 | 64 | 603 |
| Screw machine. Metal | J. Hartness | 502,517 | Aug. 1 | 452 | 109 | 64 | 649 |
| Screw-threads. Apparatus for milling dies for rolling | H. K. Jones | 502,257 | July 25 | 2770 | 700 | 64 | 552 |
| Screw-threads. Die for rolling | H. K. Jones | 502,256 | July 25 | 2768 | 699 | 64 | 551 |
| Screw-threads. Die for rolling | H. K. Jones | 502,258 | July 25 | 2774 | 701 | 64 | 552 |
| Screw-threads. Machine for forming | E. G. King and C. H. Becker | 502,302 | Aug. 1 | 77 | 17, 18 | 64 | 580 |
| Screw-threads. Tool for cutting down | C. A. Higbee, J. Braun, and H. Deck | 501,943 | July 25 | 2255 | 563 | 64 | 454 |
| Screw-threads. Tool for trimming | C. A. Higbee | 501,942 | July 25 | 2253 | 562, 563 | 64 | 454 |
| Scythe | J. Badertscher | 504,773 | Sept. 12 | 771 | 194 | 64 | 1428 |
| Seal | E. J. Brooks | 501,042 | July 4 | 799 | 209 | 64 | 146 |
| Seal | E. J. Brooks | 503,645 | Aug. 22 | 2744 | 585 | 64 | 1036 |
| Seal | W. G. Denney | 503,110 | Aug. 8 | 1456 | 358 | 64 | 848 |
| Seal | J. L. Hayden | 500,743 | July 4 | 338 | 89 | 64 | 63 |
| Seal and seal-tag | E. J. Brooks | 505,388 | Sept. 19 | 1771 | 458 | 64 | 1629 |
| Seal. Center | J. Hearne | 501,342 | July 11 | 1300 | 324 | 64 | 250 |
| Seal. Center | K. M. Mitchell | 501,572 | July 18 | 1648 | 412, 413 | 64 | 332 |
| Seal-lock | O. E. Wheaton | 504,643 | Sept. 5 | 526 | 135 | 64 | 1389 |
| Sealing bottles, jars, &c. Means for hermetically | A. Weissenthanner | 500,698 | July 4 | 264 | 72 | 64 | 50 |
| Sealing cans, &c. Apparatus for | R. A. Sloan and J. E. L. Barnes | 502,019 | July 25 | 2370 | 595, 596 | 64 | 476 |
| Seam-finishing machine | I. Hayes | 502,719 | Aug. 8 | 822 | 199 | 64 | 731 |
| Seams. Making | S. Jaros | 501,478 | July 11 | 1502 | 378 | 64 | 289 |
| Seaming machine. Sheet-metal | H. L. Hosmer and W. R. Wilson | 500,900 | July 4 | 576 | 150 | 64 | 105 |
| Seat: *See* Vehicle spring-seat. | | | | | | | |
| Seat | G. A. Ennis | 504,915 | Sept. 12 | 1001 | 258 | 64 | 1473 |
| Seat | B. C. Smith | 503,728 | Aug. 22 | 2474 | 615 | 64 | 1062 |
| Seat | F. King | 501,793 | July 18 | 1806 | 471 | 64 | 376 |
| Secondary battery | I. Kitsée | 505,467 | Sept. 26 | 1901 | 490 | 64 | 1668 |
| Secondary battery | L. Morse | 502,824 | Aug. 8 | 993 | 242 | 64 | 764 |
| Secondary battery | W. L. Silvey | 500,622 | July 4 | 136 | 37 | 64 | 27 |
| Secondary battery | W. L. Silvey | 504,370 | Sept. 5 | 92 | 23 | 64 | 1288 |
| Secondary electric battery | C. Thervo and A. Obissier | 500,978 | July 4 | 701 | 184 | 64 | 100 |
| Seed. Apparatus for delinting cotton | A. D. Thomas | 503,104 | Aug. 8 | 1446 | 356 | 64 | 846 |
| Seed grinder. Cotton | J. T. Tullis | 503,259 | Aug. 15 | 1706 | 419 | 64 | 907 |
| Seed linters. Auxiliary feed mechanism for cotton | F. S. Strong and F. C. Mann | 503,997 | Aug. 29 | 2897 | 725 | 64 | 1160 |



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|---|---|---|---|---|---|---|---|
| Seed. Method of and apparatus for delinting cotton | A. D. Thomas | 503,103 | Aug. 8 | 1443 | 355, 356 | 64 | 846 |
| Seed or fertilizer distributor. Convertible | W. E. H. Searcy | 502,892 | Aug. 8 | 1097 | 269, 270 | 64 | 783 |
| Seeder | A. G. Gekeler | 502,960 | Aug. 8 | 1223 | 301 | 64 | 805 |
| Seeder | F. S. McWhorter | 504,500 | Sept. 5 | 318 | 81, 82 | 64 | 1289 |
| Seeder. Disk harrow | G. W. Packer | 505,534 | Sept. 26 | 2038 | 500 | 64 | 1692 |
| Seeding machine | J. F. Parks | 504,362 | Sept. 5 | 72 | 19 | 64 | 1284 |
| Seeding-machine | J. B. Williams | 503,974 | Aug. 15 | 1728 | 426 | 64 | 911 |
| Seesaw and merry-go-round. Combination | F. Goldsmith | 501,095 | July 4 | 740 | 194 | 64 | 135 |
| Seesaw. Folding | E. M. Scearce | 505,485 | Sept. 26 | 1925 | 486, 497 | 64 | 1673 |
| Self-closing can | W. A. Sexton | 502,537 | Aug. 1 | 487 | 117 | 64 | 656 |
| Self-waiting table | G. W. Jackson | 505,602 | Sept. 26 | 2172 | 549 | 64 | 1719 |
| Semaphore-operating device | J. H. Frischen | 501,062 | July 11 | 833 | 216, 217 | 64 | 167 |
| Separator: *See* Boiler-separator. Grain-separator. Centrifugal separator. Liquid-separator. Cream-separator. Mineral-separator. Ore-separator. | | | | | | | |
| Separator | W. Scoular | 502,144 | July 25 | 2571 | 645 | 64 | 513 |
| Separator and screen | J. Pollock | 505,723 | Sept. 26 | 2381 | 601 | 64 | 1756 |
| Sewage. Purifying | W. E. Adeney and W. K. Parry | 505,182 | Sept. 19 | 1439 | 370, 371 | 64 | 1567 |
| Sewage-treating apparatus | O. E. Meyer | 505,166 | Sept. 19 | 1414 | 364 | 64 | 1562 |
| Sewer-cleaning apparatus | A. Mundell | 502,130 | July 25 | 2545 | 638 | 64 | 509 |
| Sewer-trap | P. Stander | 505,302 | Sept. 19 | 1635 | 422 | 64 | 1604 |
| Sewing looped fabrics. Attachment for machines for | A. L. Traver | 502,478 | Aug. 1 | 381 | 91, 92 | 64 | 636 |
| Sewing-machine | J. E. Bertrand | 502,874 | Aug. 8 | 1065 | 262 | 64 | 777 |
| Sewing-machine | J. E. Bertrand | 502,875 | Aug. 8 | 1066 | 262 | 64 | 777 |
| Sewing-machine | P. L. Cox | 504,911 | Sept. 12 | 992 | 255, 256 | 64 | 1472 |
| Sewing-machine | C. W. Davis | 504,061 | Aug. 29 | 2990 | 747 | 64 | 1177 |
| Sewing-machine | M. T. Denne | 505,034 | Sept. 12 | 1198 | 307, 308 | 64 | 1510 |
| Sewing-machine | E. Smith | 504,792 | Sept. 12 | 796 | 202, 203 | 64 | 1432 |
| Sewing-machine attachment-holder | J. M. Greist | 504,876 | Sept. 12 | 934 | 240 | 64 | 1460 |
| Sewing-machine attachment-holder | G. Tucker | 503,222 | Aug. 15 | 1652 | 405 | 64 | 897 |
| Sewing-machine. Buttonhole | W. F. Fair | 500,708 | July 4 | 2?0 | 76, 77 | 64 | 52 |
| Sewing-machine clutch | C. A. Dahl | 503,311 | Aug. 15 | 1801 | 447 | 64 | 922 |
| Sewing-machine guide | C. H. Foster | 501,930 | July 25 | 2239 | 559 | 64 | 451 |
| Sewing-machine. Overseaming | E. and R. Cornely | 501,057 | July 11 | ?27 | 215 | 64 | 166 |
| Sewing-machine quilting attachment | W. H. Chapman | 504,558 | Sept. 5 | 411 | 105 | 64 | 1346 |
| Sewing-machine ruffling attachment | J. M. Greist | 504,875 | Sept. 12 | 932 | 240 | 64 | 1460 |
| Sewing-machine shuttle | L. A. Miller | 503,269 | Aug. 15 | 1721 | 424 | 64 | 910 |
| Sewing-machine-shuttle bobbin-holder | H. A. Bates | 505,305 | Sept. 19 | 1637 | 423 | 64 | 1605 |
| Sewing machine. Sole | J. E. Bertrand | 502,873 | Aug. 8 | 1062 | 261, 262 | 64 | 777 |
| Sewing machine. Sole | W. O. Hildreth | 503,084 | Aug. 8 | 1408 | 347, 348 | 64 | 830 |
| Sewing-machine tuck-marker | J. M. Greist | 504,805 | Sept. 12 | 821 | 208 | 64 | 1437 |
| Sewing-machines. Guide for double-needle | L. Eschner | 504,571 | Sept. 5 | 429 | 109 | 64 | 1350 |
| Sewing-machines. Wide hemmer for | A. S. Simons | 504,947 | Sept. 12 | 1050 | 269 | 64 | 1482 |
| Shade and curtain-pole support. Combined window | W. H. Johnson | 501,425 | July 11 | 1428 | 358 | 64 | 274 |
| Shade and shade-holder | H. A. C. Hellyer and W. T. Lawless | 503,537 | Aug. 15 | 2144 | 538 | 64 | 986 |
| Shade-holder. Adjustable | O. B. Starkweather | 505,681 | Sept. 26 | 2311 | 587 | 64 | 1744 |
| Shade-roller. Spring | A. E. Dennis | 504,970 | Sept. 12 | 1092 | 279 | 64 | 1490 |
| Shade supporter. Window | S. T. Stuver | 504,952 | Sept. 12 | 1056 | 271 | 64 | 1483 |
| Shades. Holding mechanism for spring-actuated | E. T. Burrowes | 501,674 | July 18 | 1421 | 454 | 64 | 362 |
| Shaft and bearing | T. A. Cook | 501,611 | July 18 | 1714 | 427 | 64 | 345 |
| Shaft-coupling | D. Boorman | 503,033 | Aug. 8 | 1334 | 328 | 64 | 826 |
| Shaft coupling | W. G. Tilton | 502,686 | Aug. 1 | 750 | 181 | 64 | 704 |
| Shaft coupling. Hollow | H. W. Caldwell | 501,918 | July 25 | 2232 | 554 | 64 | 448 |
| Shaft-iron. Vehicle | J. H. Osborne | 502,911 | Aug. 8 | 1132 | 279 | 64 | 790 |
| Shaft or bar iron | J. Green | 504,431 | Sept. 5 | 197 | 51 | 64 | 1307 |
| Shaft. Power-transmitting flexible | J. K. Priest | 501,731 | July 18 | 1908 | 475 | 64 | 377 |
| Shaft-tip | J. F. Wright | 505,742 | Sept. 26 | 2410 | 609 | 64 | 1761 |
| Shaft. Vehicle | I. Hogeland | 504,783 | Sept. 12 | 785 | 198 | 64 | 1430 |
| Shafts. Attaching drums and sleeves to | G. H. Jantz | 501,228 | July 11 | 1108 | 281 | 64 | 275 |
| Shafts. Treadle-motion for rotary | C. Spindler | 501,902 | July 18 | 2185 | 543 | 64 | 425 |
| Shafting. Flexible | G. W. and M. G. Gillette | 504,720 | Sept. 12 | 666 | 169 | 64 | 1408 |
| Shag-steaming apparatus | C. Schnürch | 505,725 | Sept. 26 | 2386 | 603 | 64 | 1757 |
| Shank-stiffener | G. A. Weid | 501,978 | July 25 | 2304 | 576 | 64 | 463 |
| Shaping-machine | W. R. Fox | 502,691 | Aug. 1 | 623 | 149, 150 | 64 | 681 |
| Sharpener. Tool | W. E. Ginn | 502,459 | Aug. 1 | 352 | 84 | 64 | 631 |
| Shawl-strap and traveling-companion. Combined | A. B. S. Phillips | 503,355 | Aug. 15 | 1871 | 463 | 64 | 936 |
| Shears: *See* Animal-shears. | | | | | | | |
| Shears | P. G. Caspian | 502,809 | Aug. 8 | 960 | 234 | 64 | 757 |
| Shears for cutting rods while in motion | V. E. Edwards | 505,512 | Sept. 26 | 1993 | 511 | 64 | 1693 |
| Sheet collecting and delivery mechanism | L. C. Crowell | 505,442 | Sept. 26 | 1863 | 479, 480 | 64 | 1680 |
| Sheet-delivering apparatus | S. G. Goss | 504,874 | Sept. 12 | 930 | 239, 240 | 64 | 1460 |
| Sheet-feeding mechanism | B. F. Barnes and J. G. Smith | 503,275 | Aug. 15 | 1730 | 426, 427 | 64 | 911 |
| Sheet-feeding mechanism | B. F. Barnes and J. G. Smith | 503,276 | Aug. 15 | 1732 | 427, 428 | 64 | 912 |
| Sheet-metal belt-fasteners. Method of and machine for making | E. L. Budlong | 503,035 | Aug. 8 | 1336 | 329 | 64 | 826 |
| Sheet-metal-bending machine | A. J. Douglass | 505,567 | Sept. 26 | 2114 | 536 | 64 | 1708 |

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|---|---|---|---|---|---|---|---|
| Sheet-metal can or box | G. A. Waeber | 501,199 | July 11 | 1063 | 289 | 64 | 209 |
| Sheet-metal elbows. Manufacture of | C. and A. Lindemann | 502,044 | July 25 | 2411 | 607 | 64 | 483 |
| Sheet-metal-forming machine | H. Senger | 504,628 | Sept. 5 | 505 | 130 | 64 | 1365 |
| Sheet-metal folder | J. T. Story | 502,684 | Aug. 1 | 748 | 180 | 64 | 703 |
| Sheet metal. Galvanizing | S. A. Sague | 505,131 | Sept. 19 | 1362 | 350 | 64 | 1554 |
| Sheet metal. Machinery for pressing or stamping boats from | W. Heslop | 504,878 | Sept. 12 | 936 | 241<br>242 | 64 | 1461 |
| Sheet metal. Manufacturing | I. E. Craig | 501,705 | July 18 | 1672 | ..... | 64 | 371 |
| Sheet-metal vessels. Ear for | H. S. Reynolds | 503,680 | Aug. 22 | 2393 | 597 | 64 | 1046 |
| Sheet-metal vessels. Ear for | H. S. Reynolds | 503,681 | Aug. 22 | 2394 | 597 | 64 | 1046 |
| Sheet-metal vessels. Machine for wiring the edges of | H. S. Reynolds | 505,675 | Sept. 26 | 2300 | 583<br>584 | 64 | 1742 |
| Sheet-metal ware. Enameled | G. W. Niedringhaus | 503,247 | Aug. 15 | 1687 | 415 | 64 | 903 |
| Sheet metal ware. Enameled | G. W. Niedringhaus | 503,248 | Aug. 15 | 1687 | 415 | 64 | 904 |
| Shelf-partition. Adjustable | W. E. Richards | 502,321 | Aug. 1 | 117 | 27 | 64 | 587 |
| Shelf-support | W. E. Richards | 501,591 | July 18 | 1677 | 418 | 64 | 338 |
| Shelving. Store | F. A. Anthony | 505,017 | Sept. 12 | 1166 | 290 | 64 | 1504 |
| Shepherd's crook | R. L. Renz and H. Weidman | 504,175 | Aug. 29 | 3183 | 795 | 64 | 1214 |
| Ships' cables. Device for cutting | F. V. de Bem | 504,203 | Aug. 29 | 3230 | 805 | 64 | 1222 |
| Ships. Leak-stopper for | J. E. Gowen | 503,079 | Aug. 8 | 1397 | 345 | 64 | 808 |
| Shirt and collar therefor | B. Lowenberg | 500,922 | July 4 | 607 | 158 | 64 | 111 |
| Shirt-stretcher | O. J. Marsh | 505,472 | Sept. 26 | 1908 | 491 | 64 | 1660 |
| Shoe | O. P. and G. O. Elterich | 503,588 | Aug. 22 | 2244 | 562 | 64 | 1020 |
| Shoe | H. M. Hansen | 501,505 | July 18 | 1545 | 389 | 64 | 312 |
| Shoe | F. J. King | 502,973 | Aug. 8 | 1253 | 306 | 64 | 810 |
| Shoe | E. Kinsella | 505,428 | Sept. 19 | 1842 | 473 | 64 | 1643 |
| Shoe | J. W. Packard. (Reissue) | 11,362 | Aug. 22 | 2777 | 695 | 64 | 1122 |
| Shoe | B. Scarinci | 505,298 | Sept. 19 | 1631 | 421 | 64 | 1604 |
| Shoe | B. R. Tillgren | 500,680 | July 4 | 238 | 63 | 64 | 45 |
| Shoe | G. W. Weilert | 505,258 | Sept. 19 | 1551 | 405 | 64 | 1549 |
| Shoe-clasp locker or unlocker | W. L. Judson | 504,038 | Aug. 29 | 2950 | 740 | 64 | 1171 |
| Shoe-fastening | W. L. Judson | 504,037 | Aug. 29 | 2957 | 740 | 64 | 1171 |
| Shoe-fastening | A. Schmied | 501,301 | July 11 | 1215 | 307<br>308 | 64 | 236 |
| Shoe-stretcher | J. F. Fullum | 503,742 | Aug. 22 | 2503 | 623 | 64 | 1068 |
| Shovel:<br>*See* Double turning-shovel. Snow-shovel. | | | | | | | |
| Shovel-standards, &c. Device for attaching | A. S. McDermott | 501,955 | July 25 | 2271 | 568 | 64 | 457 |
| Shutter and slat operator | D. F. Goodall | 504,575 | Sept. 5 | 434 | 110 | 64 | 1350 |
| Shutter. Combined burglar and fire proof | E. H. Lunken | 504,533 | Sept. 5 | 369 | 93 | 64 | 1338 |
| Shutter-fastener | J. S. Ebert | 503,128 | Aug. 15 | 1498 | 368 | 64 | 869 |
| Shutter-fastener | A. F. Gustafson | 504,921 | Sept. 12 | 1007 | 260 | 64 | 1475 |
| Shutter-fastener | C. J. Sandberg | 501,696 | July 18 | 1652 | 461 | 64 | 368 |
| Shutter fastener. Fire | A. Grosch, A. Allenberg, and C. Buerling. | 503,046 | Aug. 8 | 1352 | 334 | 64 | 830 |
| Shutter-worker | T. N. Lupton | 503,866 | Aug. 22 | 2669 | 669 | 64 | 1100 |
| Shutter-worker | J. V. Stribling | 502,240 | July 25 | 2735 | 690 | 64 | 545 |
| Shutter-worker | C. F. Ziegler | 505,283 | Sept. 19 | 1599 | 416 | 64 | 1307 |
| Sideboard and extension-table. Combined | C. F. Waters | 504,072 | Aug. 29 | 3004 | 751 | 64 | 1180 |
| Sieve. Flour-sifting | A. Schlee | 502,764 | Aug. 8 | 886 | 217<br>218 | 64 | 743 |
| Sieve. Separator | C. Kind | 500,714 | July 4 | 293 | 79 | 64 | 54 |
| Sign. Electric illuminated | H. A. Bierley | 505,346 | Sept. 19 | 1694 | 436 | 64 | 1615 |
| Sign. Illuminated | A. L. McCormick | 502,007 | July 25 | 2345 | 587<br>588 | 64 | 471 |
| Sign. Street-car | L. Pfingst | 503,552 | Aug. 15 | 2176 | 543 | 64 | 991 |
| Sign. Street or other | S. Nicolai | 503,489 | Aug. 15 | 2073 | 517 | 64 | 973 |
| Sign. Universal | A. D. Page and E. J. McAllister | 501,690 | July 18 | 1844 | 458 | 64 | 366 |
| Signal:<br>*See* Railway-signal. Visible signal. Switchboard-signal. | | | | | | | |
| Signal apparatus. Block | J. H. Frischen | 505,419 | Sept. 19 | 1824 | 470 | 64 | 1639 |
| Signal apparatus. Block | J. H. Frischen | 505,420 | Sept. 19 | 1828 | 470<br>471 | 64 | 1640 |
| Signal apparatus. Electric | J. W. Lattig | 502,626 | Aug. 1 | 633 | 151 | 64 | 683 |
| Signal device. Electric | C. R. Piggins | 504,745 | Sept. 12 | 720 | 180 | 64 | 1419 |
| Signal device. Electric | C. H. Rudd | 504,752 | Sept. 12 | 732 | 182 | 64 | 1421 |
| Signal device. Electric | C. Schwennicke | 503,709 | Aug. 22 | 2443 | 606 | 64 | 1055 |
| Signal indicating mechanism. Block | J. H. Frischen | 503,718 | Aug. 22 | 2460 | 612 | 64 | 1058 |
| Signal system. Block | C. A. Weller | 505,502 | Sept. 26 | 2507 | 633 | 64 | 1781 |
| Signaling apparatus | W. H. Hall | 505,102 | Sept. 19 | 1317 | 340 | 64 | 1546 |
| Signaling-circuit. Electric | W. Daves | 501,183 | July 11 | 1041 | 264 | 64 | 204 |
| Signaling. Electric | T. D. Lockwood and S. J. Larned | 501,087 | July 11 | 874 | 226 | 64 | 175 |
| Signaling machine. Torpedo | C. A. Weller | 501,175 | July 11 | 1032 | 261 | 64 | 202 |
| Signaling system | W. E. Decrow | 500,563 | July 4 | 43 | 13 | 64 | 10 |
| Silver cleaning and polishing compound | G. R. Meitzler | 503,612 | Aug. 22 | 2300 | ..... | 64 | 1098 |
| Silver from ores. Extracting | J. F. N. Macay | 504,109 | Aug. 29 | 3074 | ..... | 64 | 1194 |
| Sink | E. Hammann and T. Susemihl | 502,516 | Aug. 1 | 450 | 108 | 64 | 649 |
| Siphon. Bottling | F. Barthold | 504,513 | Sept. 5 | 339 | 86 | 64 | 1333 |
| Siphon closet and tank | P. Harvey | 501,506 | July 18 | 1546 | 390 | 64 | 313 |
| Siphon or seltsogene for aerated waters | H. J. Nicole | 504,235 | Aug. 29 | 3283 | 820 | 64 | 1232 |
| Siphon-top | C. Walter | 502,451 | Aug. 1 | 340 | 82 | 64 | 629 |
| Sirup-dispensing apparatus | H. Hoff | 500,997 | July 4 | 570 | 148 | 64 | 104 |
| Skate | E. G. Stayner | 503,624 | Aug. 22 | 2315 | 577 | 64 | 1031 |
| Skate | O. E. Wollert | 502,109 | July 25 | 2516 | 631 | 64 | 502 |
| Skate. Roller | F. Frankenberg | 503,233 | Aug. 15 | 1666 | 410 | 64 | 895 |
| Skate. Roller | R. C. Leedham | 504,226 | Aug. 29 | 3265 | 815 | 64 | 1229 |
| Skewer for closing fowls | T. R. Fischer | 504,777 | Sept. 12 | 775 | 196 | 64 | 1429 |
| Skimmer and sweater. Combined | W. H. Howard | 502,192 | July 25 | 2333 | 635 | 64 | 506 |
| Skiving-machine | C. S. Fifield | 505,198 | Sept. 19 | 1463 | 378 | 64 | 1572 |
| Slag. Apparatus for treating | M. W. Iles | 505,552 | Sept. 26 | 2066 | 527 | 64 | 1698 |
| Slag. Treating | M. W. Iles | 505,551 | Sept. 26 | 2065 | 527 | 64 | 1698 |



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| Invention. | Name. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drg. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|---|
| Slat-tenoning machine | C. D. Marsh | 501,892 | July 18 | 2170 | 537<br>538 | 64 | 423 |
| Slate-cleaner | E. Fielden | 505,787 | Sept. 26 | 2482 | 626 | 64 | 1776 |
| Slates. Abacus attachment for | H. Stewart | 501,379 | July 11 | 1368 | ..... | 64 | 262 |
| Sled | A. W. Ives | 502,925 | Aug. 8 | 1165 | 287 | 64 | 796 |
| Sled-brake | P. Chelius | 505,391 | Sept. 19 | 1775 | 460 | 64 | 1630 |
| Sleigh | J. C. F. Harris | 503,478 | Aug. 15 | 2060 | 514 | 64 | 970 |
| Sleigh | C. G. Regnstrom | 504,941 | Sept. 12 | 1041 | 267 | 64 | 1480 |
| Sleigh. Bob- | G. S. Adams | 503,639 | Aug. 22 | 2338 | 583 | 64 | 1035 |
| Slicer and grater | C. F. Spery | 503,272 | Aug. 15 | 1725 | 425 | 64 | 910 |
| Slicing-machine | P. Ford | 501,779 | July 18 | 1995 | 493 | 64 | 393 |
| Slicing machine. Fruit- | A. J. and W. H. Curtis | 503,903 | Aug. 29 | 2723 | 684 | 64 | 1111 |
| Slicing mechanism for bread, &c | J. Fallows, 2d | 504,429 | Sept. 5 | 194 | 50 | 64 | 1307 |
| Sliding gate | S. F. Faucett | 503,040 | Aug. 8 | 1343 | 331 | 64 | 826 |
| Sling for holding corn-shocks, hay, &c | D. H. Good | 503,043 | Aug. 8 | 1348 | 333 | 64 | 829 |
| Small-arm. Revolving | H. H. Grenfell and J. G. Acclea | 501,566 | July 18 | 1641 | 411 | 64 | 331 |
| Smelting-furnace | O. Ludwig | 505,112 | Sept. 19 | 1730 | 343 | 64 | 1549 |
| Smoke and gas burner and heat-radiator | E. Dorr | 501,679 | July 18 | 1627 | 435 | 64 | 363 |
| Smoke-consuming furnace | B. Roberts | 501,163 | July 11 | 1014 | 257 | 64 | 199 |
| Smoke-jack | A. R. Anderson | 504,511 | Sept. 5 | 335 | 85, 86 | 64 | 1332 |
| Smoke-preventer | W. Lawrence | 502,496 | Aug. 1 | 419 | 99 | 64 | 644 |
| Snap | H. B. Day | 505,158 | Sept. 19 | 1405 | 366 | 64 | 1561 |
| Snap-hook | F. W. Carnell | 505,286 | Sept. 19 | 1805 | 417 | 64 | 1589 |
| Snap-hook | C. W. Cutter | 501,875 | July 18 | 2138 | 530 | 64 | 417 |
| Snap-hook | C. J. Jencks | 501,621 | July 18 | 1732 | 431 | 64 | 347 |
| Snap-hook | A. A. Page | 504,538 | Sept. 5 | 378 | 95 | 64 | 1340 |
| Snap-hook | A. A. Page | 504,539 | Sept. 5 | 379 | 95 | 64 | 1341 |
| Snap-hook | C. H. Smith | 505,281 | Sept. 19 | 1595 | 415 | 64 | 1597 |
| Snap-hook | H. W. Tufts | 503,446 | Aug. 15 | 1699 | 496 | 64 | 959 |
| Snow-guard | J. H. Hiller | 502,490 | Aug. 1 | 411 | 97 | 64 | 642 |
| Snow-plow | T. C. McAdam | 505,366 | Sept. 19 | 1736 | 449<br>450 | 64 | 1622 |
| Snow-shovel | J. Kaercher | 502,724 | Aug. 8 | 928 | 209 | 64 | 733 |
| Soap-press | J. Eckman | 504,206 | Aug. 29 | 3236 | 807<br>808 | 64 | 1224 |
| Soap. Soft | D. Allen | 501,036 | July 4 | 788 | ..... | 64 | 114 |
| Soda-water apparatus | F. C. Peck | 504,849 | Sept. 12 | 896 | 230 | 64 | 1458 |
| Sofa, table, and bed. Combined | D. W. Palmer | 502,579 | Aug. 1 | 553 | 132 | 64 | 667 |
| Soldering iron and heater. Electric | A. Tinnerholm | 500,681 | July 4 | 239 | 63 | 64 | 45 |
| Soldering-iron. Electrically-heated | G. R. Meitzler. (Reissue) | 11,364 | Sept. 5 | 635 | 161 | 64 | 1390 |
| Soldering-machine | F. H. Palmer | 503,159 | Aug. 15 | 1547 | 378<br>380 | 64 | 878 |
| Soldering-machine | J. W. Roberts | 502,141 | July 25 | 2562 | 643<br>644 | 64 | 512 |
| Sole | A. A. Blandy | 504,660 | Sept. 5 | 553 | 141 | 64 | 1374 |
| Sole and heel plate | J. I. E. Nelson | 504,995 | Sept. 12 | 1126 | 291 | 64 | 1498 |
| Sole-rounding machine | H. Loewer | 502,421 | Aug. 1 | 285 | 68<br>69<br>70 | 64 | 619 |
| Sorting materials according to size. Machine for | W. S. Lockhart | 500,771 | July 4 | 382 | 99 | 64 | 71 |
| Sower. Broadcast seed- | C. Bollinger | 502,604 | Aug. 1 | 599 | 142 | 64 | 675 |
| Sower. Seed- | M. J. Nightingale and J. B. Stearns | 502,051 | July 25 | 2424 | 610 | 64 | 485 |
| Spark-arrester | G. H. Shoemaker | 503,171 | Aug. 15 | 1549 | 386 | 64 | 882 |
| Spark-arrester | N. W. Spencer | 503,174 | Aug. 15 | 1573 | 387 | 64 | 883 |
| Spark arrester and ejector. Combined | T. E. Austin | 500,648 | July 4 | 181 | 47 | 64 | 36 |
| Speaking-tube | C. A. Bartliff | 501,486 | July 18 | 1517 | 381 | 64 | 307 |
| Speaking-tube | C. A. Bartliff | 501,487 | July 18 | 1518 | 381 | 64 | 307 |
| Spear. Eel- | M. C. Kroll | 504,166 | Aug. 29 | 3163 | 789 | 64 | 1209 |
| Spectacle-frame | A. E. Francis | 505,650 | Sept. 26 | 2259 | 572 | 64 | 1735 |
| Spectacle-frame | J. S. Spencer | 502,782 | Aug. 8 | 920 | 224 | 64 | 750 |
| Spectacles | S. Orth | 503,803 | Aug. 22 | 2585 | 645 | 64 | 1084 |
| Speech, &c. Apparatus for recording and reproducing | C. A. Randall | 502,382 | Aug. 1 | 920 | 52, 53 | 64 | 606 |
| Speech. Apparatus for recording and reproducing articulate | C. A. Randall | 502,383 | Aug. 1 | 924 | 53, 54 | 64 | 607 |
| Speed-indicator for shafting | H. C. Andersen | 502,649 | Aug. 1 | 668 | 162 | 64 | 690 |
| Spice-box | A. J. Worthen | 502,453 | Aug. 1 | 344 | 82 | 64 | 629 |
| Spike | W. R. Funk | 502,856 | Aug. 8 | 1037 | 254 | 64 | 772 |
| Spindle:<br>*See* Spinning-spindle. Spinning and doubling spindle. | | | | | | | |
| Spindle attachment | L. W. Huyck | 503,240 | Aug. 15 | 1674 | 412 | 64 | 902 |
| Spindle-bearing | J. H. Northrop | 503,061 | Aug. 8 | 1369 | 338 | 64 | 833 |
| Spindle-retainer for sleeve-whirl spindles | A. E. Rhoades | 504,281 | Aug. 29 | 3353 | 838 | 64 | 1246 |
| Spindle-retaining device | J. H. Northrop | 505,173 | Sept. 19 | 1427 | 367 | 64 | 1565 |
| Spindle-retaining device | J. H. Northrop | 505,174 | Sept. 19 | 1429 | 368 | 64 | 1565 |
| Spindle-retaining device | J. H. Northrop | 505,721 | Sept. 26 | 2378 | 600 | 64 | 1756 |
| Spindle. Sleeve-whirl | J. T. Covo | 502,225 | July 25 | 2704 | 682 | 64 | 540 |
| Spindle-support | J. H. Northrop | 503,060 | Aug. 8 | 1368 | 338 | 64 | 833 |
| Spinning and doubling frame. Ring- | G. Shepherd and H. Midgley | 501,736 | July 18 | 1916 | 476 | 64 | 379 |
| Spinning and doubling frame. Ring- | G. Shepherd and H. Midgley | 501,737 | July 18 | 1923 | 477 | 64 | 380 |
| Spinning and doubling frame. Ring- | G. Shepherd and H. Midgley | 501,738 | July 18 | 1928 | 477 | 64 | 381 |
| Spinning and doubling spindle | R. Crabtree and E. Gillow | 500,857 | July 4 | 512 | 133<br>134<br>235 | 64 | 93 |
| Spinning and twisting machine | E. E. Bradley | 504,861 | Sept. 12 | 913 | 236 | 64 | 1456 |
| Spinning frame. Ring- | C. C. Kent | 501,427 | July 11 | 1430 | 359 | 64 | 275 |
| Spinning frames. Separator mechanism for ring- | C. Whitaker | 505,500 | Sept. 26 | 1949 | 502<br>503<br>504 | 64 | 1677 |
| Spinning frames. Separator mechanism for ring- | C. Whitaker | 505,501 | Sept. 26 | 1959 | 504<br>505<br>506 | 64 | 1678 |
| Spinning-machine attachment | L. Croes, E. R. Morgaert, and J. Lapin. | 500,758 | July 4 | 365 | 95 | 64 | 68 |

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| Invention. | Name. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drgs. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|---|
| Spinning machine. Hemp | C. E. Baldner | 501,475 | July 11 | 1498 | 377 | 64 | 988 |
| Spinning-machine ring | C. H. Chapman | 501,243 | July 11 | 1130 | 287 | 64 | 990 |
| Spinning-machine separator mechanism | E. M. Whittum | 504,954 | Sept. 12 | 1059 | 271 | 64 | 1484 |
| Spinning-machine spindle | C. G. Buttrick | 505,507 | Sept. 26 | 1979 | 508 | 64 | 1581 |
| Spinning-machine traveler-ring | H. L. Peirce | 504,997 | Sept. 12 | 1139 | 292 | 64 | 1499 |
| Spinning or other rollers. Machine for making | F. F. Molié | 504,813 | Sept. 12 | 838 | 214 / 215 | 64 | 1440 |
| Spinning-ring | G. O. Draper | 500,999 | July 4 | 731 | 192 | 64 | 133 |
| Spinning-spindle and support therefor | H. D. Klots | 501,792 | July 18 | 2019 | 498 | 64 | 396 |
| Spinning-spindle bolster | J. H. Northrop | 503,911 | Aug. 22 | 2740 | 687 | 64 | 1114 |
| Spinning-spindle-driving mechanism | C. Schrepfer | 501,666 | July 18 | 1805 | 449 | 64 | 360 |
| Spinning-spindle. Self-balancing | E. F. Bradley | 504,860 | Sept. 12 | 912 | 235 | 64 | 1456 |
| Spittoon-carrier | G. B. Nagle | 504,607 | Sept. 5 | 480 | 123 | 64 | 1359 |
| Spittoon for railway-cars | K. Weinberger | 501,645 | July 18 | 1755 | 437 | 64 | 352 |
| Spoke-grinding machine | G. J. Covert, G. W. and I. L. Price | 502,174 | July 25 | 2622 | 661 | 64 | 524 |
| Spoke-swaging machine | P. Gendron | 503,791 | Aug. 22 | 2571 | 640 | 64 | 1081 |
| Sponge and soap holder | T. M. Hilliard | 505,360 | Sept. 19 | 1722 | 445 | 64 | 1620 |
| Spool | E. Hubbard | 501,513 | July 18 | 1562 | 393 | 64 | 315 |
| Spool-carrier stop mechanism | A. Bayler | 504,796 | Sept. 12 | 802 | 204 | 64 | 1433 |
| Spool-dressing machine | E. Hubbard | 501,512 | July 18 | 1559 | 392 | 64 | 315 |
| Spout for metallic vessels. Separable | C. I. McLaughlin | 500,933 | July 4 | 619 | 163 | 64 | 113 |
| Spray. Window-garden | D. F. Sill | 502,590 | Aug. 1 | 569 | 136 | 64 | 670 |
| Spraying device | J. J. Dugan | 503,455 | Aug. 15 | 2012 | 499 | 64 | 961 |
| Spring: *See* Compound spring. Seat-spring. Draft-spring. Vehicle-spring. | | | | | | | |
| Spring and shackle. Combined | H. K. James and L. G. Mayer | 503,087 | Aug. 8 | 1414 | 349 | 64 | 841 |
| Spring-bolt and box | G. F. Starkweather | 505,491 | Sept. 26 | 1934 | 498 | 64 | 1674 |
| Spring-motor | F. Briggs | 504,907 | Sept. 12 | 987 | 253 / 254 | 64 | 1471 |
| Spring-motor | T. L. Everhart | 502,288 | Aug. 1 | 41 | 11 | 64 | 575 |
| Spring-motor | W. Howard | 504,808 | Sept. 12 | 826 | 209 / 210 | 64 | 1438 |
| Spring support. Elliptic | W. S. Noyes | 500,600 | July 4 | 95 | 27 | 64 | 19 |
| Springs. Gear connection for platform | J. P. Farrell | 501,411 | July 11 | 1414 | 354 | 64 | 271 |
| Sprinkler: *See* Lawn-sprinkler. Street-sprinkler. | | | | | | | |
| Sprinkler | F. E. Caton and F. B. Warring | 504,965 | Sept. 12 | 1086 | 278 | 64 | 1489 |
| Sprinkler | H. K. Potter | 504,134 | Aug. 29 | 3110 | 779 | 64 | 1200 |
| Sprinkler | H. K. and J. L. Potter | 504,069 | Aug. 29 | 3000 | 750 | 64 | 1179 |
| Sprocket-wheel | V. Bélanger | 504,486 | Sept. 5 | 285 | 73 | 64 | 1321 |
| Square attachment | W. F. Lantz | 503,050 | Aug. 8 | 1356 | 335 | 64 | 831 |
| Square. Carpenter's | F. D. Dunnington | 501,774 | July 18 | 1908 | 492 | 64 | 391 |
| Square. T- | J. W. Bramwell | 502,112 | July 25 | 2521 | 632 | 64 | 504 |
| Square. T- | A. Walentowitz | 500,727 | July 4 | 317 | 84 | 64 | 60 |
| Squib. Miner's | J. Beadle | 502,946 | Aug. 8 | 1199 | 295 | 64 | 801 |
| Stage apparatus | J. Patten | 501,099 | July 11 | 907 | 232 | 64 | 180 |
| Stairs. Storm-step for outdoor | W. Moller | 501,211 | July 11 | 1080 | 274 | 64 | 214 |
| Stalk-cutter | W. M. Mueller and O. F. Burford | 504,934 | Sept. 12 | 1029 | 265 | 64 | 1479 |
| Stall. Animal | D. S. Phillips | 502,829 | Aug. 8 | 1000 | 243 | 64 | 765 |
| Stall. Cattle | J. Aeberly | 502,599 | Aug. 1 | 588 | 140 | 64 | 674 |
| Stall-cleaner | E. Knudson | 501,948 | July 25 | 2261 | 565 | 64 | 456 |
| Stall-drain | M. Logan | 502,004 | July 25 | 2341 | 586 / 587 | 64 | 470 |
| Stall-drain | H. Schiffer | 505,232 | Sept. 19 | 1512 | 394 | 64 | 1581 |
| Stall-floor | S. G. Brown | 502,221 | July 25 | 2698 | 681 | 64 | 530 |
| Stamp | C. W. Tregain | 502,839 | Aug. 8 | 1016 | 247 / 248 | 64 | 768 |
| Stamp-canceling machine | M. V. B. Ethridge | 503,836 | Aug. 22 | 2628 | 657 | 64 | 1092 |
| Stamp. Hand | H. H. Norrington | 505,172 | Sept. 19 | 1426 | 367 | 64 | 1565 |
| Stamp. Hand | K. E. Wiberg | 504,546 | Sept. 5 | 391 | 99 | 64 | 1343 |
| Stamp-mill cam | A. Amsbury | 502,219 | July 25 | 2696 | 680 | 64 | 538 |
| Stamp. Perforating | C. M. Danner | 504,106 | Aug. 29 | 3067 | 767 / 768 | 64 | 1192 |
| Stamp-safe | L. Briggs | 501,762 | July 18 | 1974 | 488 | 64 | 389 |
| Stamp-stem guide | H. P. Grugin | 505,400 | Sept. 19 | 1793 | 463 | 64 | 1634 |
| Stamps to letters. Machine for affixing postage | A. S. Kibby | 503,933 | Aug. 22 | 2771 | 694 | 64 | 1120 |
| Stamping. Inking and cleaning apparatus for die | A. G. Beater | 504,465 | Sept. 5 | 248 | 65 | 64 | 1316 |
| Stamping-machine | D. F. Oliver | 504,682 | Sept. 5 | 606 | 155 | 64 | 1384 |
| Stanchion. Cattle | W. Morgan | 504,605 | Sept. 5 | 476 | 122 | 64 | 1358 |
| Stand: *See* Display-stand. Sad-iron stand. Displaying-stand. Umbrella-stand. Music-stand. Zither-stand. Reading-stand. | | | | | | | |
| Stand for umbrellas, hats, coats, &c | A. S. Roas | 503,708 | Aug. 22 | 2442 | 608 | 64 | 1055 |
| Staple-setting machine | I. Mamaux | 501,891 | July 18 | 2169 | 537 | 64 | 423 |
| Staples. Machine for the manufacture of | S. C. Davidson | 503,264 | Aug. 15 | 1713 | 422 / 423 | 64 | 909 |
| Stapling-machine | G. Hay | 500,576 | July 4 | 59 | 17 | 64 | 12 |
| Starching-machine | T. J. Blake | 501,476 | July 11 | 1499 | 377 / 378 | 64 | 988 |
| Starching-machine | T. A. Thorsen | 505,292 | Sept. 19 | 1596 | 415 / 416 | 64 | 1597 |
| Station-indicator | A. W. Chormann | 501,477 | July 11 | 1501 | 378 | 64 | 988 |
| Station-indicator | G. D. O'Grady and J. R. Collins | 501,096 | July 11 | 900 | 231 | 64 | 179 |
| Station-indicator | H. G. Krasky | 502,825 | Aug. 1 | 630 | 151 | 64 | 992 |
| Station-indicator operating mechanism | W. Schloesser | 505,609 | Sept. 26 | 2185 | 552 | 64 | 1791 |
| Stave-bending machine | C. Sommer | 501,697 | July 18 | 1854 | 461 | 64 | 368 |
| Stave-dressing machine | D. F. Miller | 500,666 | July 4 | 222 | 58 | 64 | 42 |
| Stave-hollowing machine | A. M. Benson | 501,910 | July 25 | 2209 | 551 | 64 | 416 |
| Stave-jointing machine | J. Pleukharp and W. K. Liggett | 503,493 | Aug. 15 | 2077 | 518 / 519 | 64 | 973 |
| Staves. Machine for dressing bucked | C. Sommer | 504,461 | Sept. 5 | 238 | 63 | 64 | 1315 |



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|---|---|---|---|---|---|---|---|
| Staves. Machine for dressing rived | A. M. Benson | 502,271 | Aug. 1 | 10 | 3 | 64 | 568 |
| Staved vessel. Cylindrical | C. L. Mann | 503,055 | Aug. 8 | 1363 | 337 | 64 | 832 |
| Stay and fastener. Combined dress | M. Trisdorfer | 504,004 | Aug. 29 | 2910 | 729 | 64 | 1162 |
| Stay-bolt | J. Nixon | 502,827 | Aug. 8 | 997 | 243 | 64 | 764 |
| Stay. Dress | M. E. Kellogg | 502,436 | Aug. 1 | 312 | 75 | 64 | 623 |
| Stay. Dress | J. Kendrick | 501,078 | July 11 | 855 | 222 | 64 | 171 |
| Steam and water gage. Recording | R. Holthaus | 503,968 | Aug. 29 | 2948 | 714 | 64 | 1152 |
| Steam. Apparatus for purifying and removing extraneous matter from | C. M. Baum | 505,085 | Sept. 19 | 1293 | 333 | 64 | 1541 |
| Steam-boiler | F. M. Ashley | 500,733 | July 4 | 325 | 87 | 64 | 61 |
| Steam-boiler | J. J. Barclay | 501,047 | July 11 | 811 | 211 | 64 | 163 |
| Steam-boiler | P. J. and F. W. Doll | 503,834 | Aug. 22 | 2696 | 657 | 64 | 1092 |
| Steam-boiler | G. Dürr | 501,612 | July 18 | 1715 | 426 | 64 | 345 |
| Steam-boiler | J. E. Gresty | 503,700 | Aug. 22 | 2431 | 605 | 64 | 1053 |
| Steam-boiler | M. L. Severy | 503,005 | Aug. 8 | 1294 | 316 / 317 | 64 | 816 |
| Steam-chest-cover casing | E. W. Mackenzie-Hughes | 505,164 | Sept. 19 | 1411 | 363 | 64 | 1560 |
| Steam-engine | F. M. Davis | 502,707 | Aug. 8 | 805 | 194 / 195 | 64 | 798 |
| Steam-engine | J. H. Eickershoff | 501,223 | July 11 | 1098 | 279 / 280 | 64 | 216 |
| Steam-engine | D. C. Givens | 501,229 | July 18 | 2863 | 509 | 64 | 405 |
| Steam-engine | A. Knudsen | 501,793 | July 18 | 2020 | 498 / 499 | 64 | 397 |
| Steam-engine | G. Marshall | 504,390 | Sept. 5 | 139 | 36, 37 | 64 | 1296 |
| Steam-engine | J. W. Sargent | 502,763 | Aug. 8 | 885 | 217 | 64 | 743 |
| Steam-engine | W. P. Scates | 503,988 | Aug. 29 | 2886 | 722 | 64 | 1158 |
| Steam-engine | G. Smith | 501,581 | July 18 | 1662 | 415 | 64 | 335 |
| Steam-engine | R. D. Werden | 500,749 | July 4 | 345 | 91 | 64 | 64 |
| Steam-generating apparatus | A. Kreusler | 502,418 | Aug. 1 | 292 | 67 | 64 | 616 |
| Steam-generator | A. W. Finlayson and E. Popkins | 500,803 | July 4 | 439 | 113 | 64 | 80 |
| Steam-generator | A. Kreusler | 502,729 | Aug. 8 | 834 | 202 | 64 | 734 |
| Steam generator and heater. Combined | A. Kreusler | 502,728 | Aug. 8 | 833 | 201 | 64 | 733 |
| Steam-generator and smelting-furnace | J. L. Giroux | 500,886 | July 4 | 557 | 144 | 64 | 102 |
| Steam-motor | E. A. Edwards | 504,493 | Sept. 5 | 304 | 77 | 64 | 1326 |
| Steam-motor | E. A. Edwards | 505,350 | Sept. 19 | 1702 | 439 / 440 | 64 | 1617 |
| Steam-muffler | D. Goff | 503,534 | Aug. 15 | 2141 | 537 | 64 | 985 |
| Steam or gas regulator | W. H. Pierce | 501,437 | July 11 | 1443 | 361 | 64 | 278 |
| Steam-regulator. Automatic | J. Solter | 505,179 | Sept. 19 | 1435 | 369 | 64 | 1566 |
| Steamer. Spindle-shaped ocean | W. L. Winans | 504,120 | Aug. 29 | 3086 | 773 | 64 | 1196 |
| Steel-founding | J. G. McRoberts | 504,361 | Sept. 5 | 69 | 19 | 64 | 1284 |
| Steel-hardening apparatus | E. Tweedy | 500,979 | July 4 | 703 | 184 | 64 | 128 |
| Steel-hardening apparatus | H. Willisch | 501,393 | July 11 | 1386 | 347 | 64 | 226 |
| Steel ingots. Soaking-pit for | A. J. Shaw | 505,728 | Sept. 26 | 2290 | 604 | 64 | 1758 |
| Steel. Manufacturing | C. Walrand and E. Legenisel | 503,816 | Aug. 22 | 2603 | | 64 | 1067 |
| Steel-melting furnace. Open-hearth | J. W. Wailes | 501,200 | July 11 | 1065 | 269 / 270 | 64 | 209 |
| Steel or iron. Apparatus for manufacturing | J. Heaton and G. H. Holden | 501,140 | July 11 | 973 | 248 | 64 | 192 |
| Steel or iron. Apparatus for the manufacture of | J. Heaton and G. H. Holden | 501,138 | July 11 | 968 | 247 | 64 | 191 |
| Steel or iron. Apparatus for the manufacture of | J. Heaton and G. H. Holden | 501,139 | July 11 | 971 | 248 | 64 | 191 |
| Stencil-plates. Making | J. Brodrick | 505,698 | Sept. 26 | 2344 | | 64 | 1750 |
| Step. Folding | H. J. Climer | 504,966 | Sept. 12 | 1087 | 278 | 64 | 1489 |
| Stereoscope | A. Wagner | 502,450 | Aug. 1 | 340 | 81 | 64 | 629 |
| Stereotyping | G. Eastwood | 503,950 | Aug. 29 | 2818 | 704 | 64 | 1146 |
| Still-retort | J. Freel | 504,917 | Sept. 12 | 1063 | 259 | 64 | 1474 |
| Still. Tar or petroleum | W. H. Stelwagon | 503,996 | Aug. 29 | 2897 | 725 | 64 | 1160 |
| Stocking and knitting same | J. H. Woodward | 500,700 | July 4 | 266 | 72 | 64 | 50 |
| Stocking-stretcher | C. Greiner | 501,065 | July 11 | 837 | 218 | 64 | 168 |
| Stockings. Manufacture of | L. N. D. Williams | 502,941 | Aug. 8 | 1191 | 293 | 64 | 800 |
| Stone. Artificial | M. Laffont | 501,794 | July 18 | 2021 | | 64 | 397 |
| Stone. Artificial | M. Laffont | 501,888 | July 18 | 2164 | | 64 | 422 |
| Stone. Artificial | M. Laffont | 501,889 | July 18 | 2165 | | 64 | 422 |
| Stone. Artificial | J. W. Turner | 502,023 | July 25 | 2380 | | 64 | 477 |
| Stone-cutting and stone-dressing machinery. Automatic | W. Errington | 505,624 | Sept. 26 | 2201 | 557 | 64 | 1724 |
| Stone-cutting machine | A. McDonald | 503,156 | Aug. 15 | 1542 | 379 | 64 | 877 |
| Stone. Manufacture of artificial | F. F. von Ainbach | 505,082 | Sept. 19 | 1287 | | 64 | 1541 |
| Stone. Production of artificial | G. M. Breinig | 505,747 | Sept. 26 | 2416 | | 64 | 1762 |
| Stone-quarrying machinery. Guide for the cylinders and cross-heads of | A. Ball | 503,691 | Aug. 22 | 2417 | 602 | 64 | 1050 |
| Stone-saw | D. C. Miller | 500,592 | July 4 | 83 | 23 | 64 | 16 |
| Stool. Cane | A. L. Chapman | 504,326 | Sept. 5 | 20 | 6 | 64 | 1275 |
| Stool. Foldable | F. S. Patton | 504,241 | Aug. 29 | 3280 | 829 | 64 | 1233 |
| Stool. Milking | O. A. Moody | 504,992 | Sept. 12 | 1132 | 290 | 64 | 1497 |
| Stool. Piano | J. Dierdorf | 502,069 | July 25 | 2451 | 659 | 64 | 490 |
| Stool. Piano | J. R. Peartree | 504,683 | Sept. 5 | 607 | 155 | 64 | 1384 |
| Stool. Piano | W. T. Smith | 505,256 | Sept. 19 | 1549 | 404 | 64 | 1588 |
| Stool. Store | G. F. Steese | 505,138 | Sept. 19 | 1373 | 352 | 64 | 1555 |
| Stopper: *See* Bottle-stopper. Flue-stopper. | | | | | | | |
| Storage-battery | C. J. Reed | 504,455 | Sept. 5 | 227 | 61 | 64 | 1313 |
| Store-service apparatus | J. M. Burns | 502,277 | Aug. 1 | 19 | 5 | 64 | 570 |
| Store-service apparatus | J. M. Burns | 502,395 | Aug. 1 | 243 | 58 | 64 | 610 |
| Store-service apparatus | J. T. Cowley | 502,279 | Aug. 1 | 25 | 6 | 64 | 571 |
| Store-service apparatus | J. H. Goodfellow | 502,393 | Aug. 1 | 61 | 14 | 64 | 577 |
| Store-service apparatus | J. H. Goodfellow | 505,458 | Sept. 26 | 1887 | 487 | 64 | 1665 |
| Store-service apparatus | D. Lippy | 501,480 | July 11 | 1505 | 379 | 64 | 229 |
| Store-service apparatus | J. R. Pollock | 502,012 | July 25 | 2354 | 590 | 64 | 472 |
| Store-service apparatus | H. M. Weaver | 500,641 | July 4 | 166 | 43 | 64 | 33 |
| Stove | P. Frank | 500,878 | July 4 | 549 | 142 | 64 | 100 |
| Stove | T. N. Hallanger | 505,463 | Sept. 26 | 1696 | 426 | 64 | 1667 |
| Stove | M. L. Larson | 505,772 | Sept. 26 | 2461 | 620 | 64 | 1772 |
| Stove. Alcohol | J. Heller | 500,765 | July 4 | 373 | 96 | 64 | 69 |

*Alphabetical list of inventions, July to September, inclusive*—Continued.

| Invention. | Name. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drg. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|---|
| Stove and burner. Oil | F. L. McGahan | 501,357 | July 11 | 1393 | 331, 332 | 64 | 254 |
| Stove attachment | L. E. Love | 504,356 | Sept. 5 | 63 | 17 | 64 | 1293 |
| Stove attachment. Cooking | R. W. Nye | 501,574 | July 18 | 1653 | 413 | 64 | 334 |
| Stove-back | F. O. Farwell | 501,412 | July 11 | 1415 | 354 | 64 | 272 |
| Stove-caster | J. H. Hall | 502,189 | July 25 | 2644 | 667 | 64 | 592 |
| Stove. Cooking | T. Fuller | 500,569 | July 4 | 50 | 15 | 64 | 11 |
| Stove. Gasoline or vapor | H. Ruppel | 500,747 | July 4 | 343 | 90, 91 | 64 | 64 |
| Stove. Oil | I. Block | 500,735 | July 4 | 327 | 87 | 64 | 61 |
| Stove. Oil | J. D. Foster and C. A. Hammel | 505,344 | Sept. 19 | 1533 | 400 | 64 | 1585 |
| Stove. Oil | J. D. Foster and C. A. Hammel | 505,345 | Sept. 19 | 1534 | 400 | 64 | 1585 |
| Stove. Oil heating | C. Brandt | 500,751 | July 4 | 348 | 94 | 64 | 62 |
| Stove. Oil heating | G. W. Cope | 504,020 | Aug. 29 | 2923 | 734 | 64 | 1166 |
| Stove or furnace | E. Fales | 505,448 | Sept. 26 | 1875 | 482 | 64 | 1662 |
| Stove or furnace | E. Fales | 505,449 | Sept. 26 | 1876 | 483 | 64 | 1662 |
| Stove or furnace | E. Fales | 505,453 | Sept. 26 | 1881 | 484 | 64 | 1663 |
| Stove or heater | J. W. Hilton | 501,143 | July 11 | 977 | 249 | 64 | 192 |
| Stove-ovens. Adjustable grate for | W. L. Hinds | 504,696 | Sept. 12 | 878 | 226 | 64 | 1450 |
| Stovepipe and thimble fastener | W. H. Scott and G. W. Wisner | 504,369 | Sept. 5 | 91 | 23 | 64 | 1298 |
| Stovepipe attachment | L. E. Baldwin | 502,269 | Aug. 1 | 6 | 2 | 64 | 58 |
| Stovepipe attachment | G. G. Calderwood | 503,760 | Aug. 22 | 2530 | 629 | 64 | 1073 |
| Stovepipe-fastener | E. W. Mohroff | 500,667 | July 4 | 224 | 58 | 64 | 43 |
| Stovepipe-hanger | W. H. Trepus | 502,150 | July 25 | 2583 | 649 | 64 | 516 |
| Stovepipe-rack | P. K. Peterson | 503,216 | Aug. 15 | 1642 | 403 | 64 | 886 |
| Stove-polish | J. G. Pohlé | 501,254 | July 11 | 1150 | ..... | 64 | 224 |
| Stove-polish | J. G. Pohlé | 501,845 | July 18 | 2085 | ..... | 64 | 408 |
| Stove. Portable oil | F. L. McGahan | 505,631 | Sept. 26 | 2224 | 563, 564 | 64 | 1728 |
| Stove-protector | J. F. Bliven | 504,319 | Sept. 5 | 10 | 4 | 64 | 1273 |
| Stove sifting attachment | A. E. Trentowsky | 501,748 | July 18 | 1941 | 480 | 64 | 383 |
| Stove. Vapor-burning | W. H. Thayer | 505,643 | Sept. 26 | 2248 | 569, 570 | 64 | 1733 |
| Stoves, &c. Grate for | H. Graef | 503,699 | Aug. 22 | 2430 | 604 | 64 | 1053 |
| Stoves. Heating attachment for cook | D. F. Galer | 501,499 | July 18 | 1536 | 387 | 64 | 311 |
| Stoves or ranges. Movable hood for | B. F. Carpenter | 503,343 | Aug. 15 | 1851 | 458, 459 | 64 | 939 |
| Stoves or soldering apparatus. Burner for cooking | J. V. Svenson | 500,781 | July 4 | 396 | 104 | 64 | 74 |
| Stoves, ranges, &c. Oven-door for cooking | E. A. Mason | 501,571 | July 18 | 1646 | 412 | 64 | 332 |
| Strainer for rain-water pipes | C. H. Dodge | 504,384 | Sept. 5 | 113 | 29 | 64 | 1291 |
| Strainer. Pump-spout | B. H. Messler | 504,438 | Sept. 5 | 206 | 53 | 64 | 1309 |
| Strap: *See* Carrying-strap. Horse-blanket strap. | | | | | | | |
| Strap or rope attachment | E. R. Robbins and L. L. Walrath | 503,497 | Aug. 15 | 2083 | 520 | 64 | 974 |
| Strap-loop | E. G. Latta | 505,710 | Sept. 26 | 2363 | 597 | 64 | 1753 |
| Straw-carrier | H. and G. Ghere | 504,212 | Aug. 29 | 2245 | 809 | 64 | 1225 |
| Straw-stacker | S. Bufkin and C. Snyder | 501,942 | July 11 | 1126 | 286, 287 | 64 | 220 |
| Straw-stacker | M. and C. Heineke | 501,939 | July 25 | 2251 | 562 | 64 | 453 |
| Street-roller | C. K. Pickles | 505,800 | Sept. 26 | 2503 | 632 | 64 | 1780 |
| Street-sprinkler | C. A. Clark | 500,853 | July 4 | 507 | 132 | 64 | 93 |
| Street-sprinkler | G. Langer | 503,093 | Aug. 8 | 1425 | 351, 352 | 64 | 842 |
| Street-sweeper | E. C. Fisher | 503,928 | Aug. 22 | 2764 | 692 | 64 | 1119 |
| Street-sweeper | J. R. Gallagher | 505,455 | Sept. 26 | 1883 | 485, 486 | 64 | 1664 |
| Street-sweeper | B. M. Johnson | 501,515 | July 18 | 1564 | 393, 394 | 64 | 315 |
| Street-sweeper | T. C. Myers | 501,352 | July 11 | 1316 | 329 | 64 | 253 |
| Street-sweeper | T. C. Myers | 501,353 | July 11 | 1316 | 329 | 64 | 253 |
| Street-sweeper | J. C. Slawson | 505,796 | Sept. 26 | 2495 | 630 | 64 | 1778 |
| Street-sweeper brush | J. Jones and A. Gillies | 500,900 | July 4 | 583 | 152 | 64 | 107 |
| Stringer-plate | E. Samuel | 504,176 | Aug. 29 | 3184 | 795 | 64 | 1214 |
| Stud hopper and delivery mechanism | C. E. Van Norman | 502,895 | Aug. 8 | 1106 | 272 | 64 | 785 |
| Stuffing-box | G. H. Hitchcock | 501,344 | July 11 | 1303 | 325 | 64 | 250 |
| Stuffing-box | E. Rhodes | 505,369 | Sept. 19 | 1739 | 450 | 64 | 1683 |
| Stuffing-box for meters | J. Thomson | 503,884 | Aug. 22 | 2693 | 675 | 64 | 1105 |
| Stuffing-machine | J. Fatka | 503,959 | Aug. 29 | 2822 | 705 | 64 | 1146 |
| Sucker-rod elevator | F. E. Boylan | 502,109 | July 25 | 2615 | 650 | 64 | 582 |
| Sucker-rod elevator | H. Knox | 502,974 | Aug. 8 | 1254 | 307 | 64 | 810 |
| Sugar in molds. Apparatus for refining | O. Mengelbier | 505,116 | Sept. 19 | 1342 | 340 | 64 | 1551 |
| Sugar. Refining | G. Engel | 501,878 | July 18 | 2142 | 531, 532 | 64 | 418 |
| Sugar-refining apparatus | L. E. A. Prangey | 502,014 | July 25 | 2356 | 591, 592 | 64 | 473 |
| Sugar-refining apparatus | L. E. A. Prangey | 502,015 | July 25 | 2361 | 593 | 64 | 474 |
| Sulky | T. Freeman | 502,093 | July 25 | 2400 | 626 | 64 | 489 |
| Sulky | W. J. Hamill | 503,137 | Aug. 15 | 1510 | 371 | 64 | 871 |
| Sulky | D. W. Locke | 503,428 | Aug. 15 | 1974 | 490 | 64 | 964 |
| Sulky | M. McCormick | 504,048 | Aug. 29 | 2973 | 743 | 64 | 1174 |
| Sulky | C. H. Palmer, Jr. | 501,656 | July 18 | 1790 | 445, 446 | 64 | 357 |
| Sulky. Track | H. A. and T. W. McIntosh | 502,984 | Aug. 8 | 1269 | 310 | 64 | 213 |
| Sulphur candle | C. H. Shaw | 501,471 | July 11 | 1491 | 375 | 64 | 287 |
| Supply and waste pipe | W. A. Eberhart | 500,871 | July 4 | 535 | 138, 139 | 64 | 97 |
| Support for moving bodies | W. J. Lane | 501,949 | July 25 | 2261 | 565 | 64 | 456 |
| Supporting-bracket | S. R. Scottron | 505,008 | Sept. 12 | 1154 | 296 | 64 | 1502 |
| Surgical catheter | O. de Pezzer | 504,424 | Sept. 5 | 186 | 48 | 64 | 1305 |
| Surgical lamp | W. G. Morgan | 501,524 | July 18 | 1577 | 397 | 64 | 316 |
| Surgical splint | R. Hoppe | 504,218 | Aug. 29 | 3253 | 812 | 64 | 1227 |
| Surgical sutures. Preparing | L. S. Weaver | 505,148 | Sept. 19 | 1387 | 355 | 64 | 1556 |
| Suspender attachment | G. L. Heuler | 504,217 | Aug. 29 | 3252 | 811 | 64 | 1226 |
| Suspender coat-off | A. A. MacDonald | 502,674 | Aug. 1 | 728 | 174 | 64 | 700 |
| Suspender-end | W. Bloomberg | 504,661 | Sept. 5 | 555 | 141 | 64 | 1375 |



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| Invention. | Name. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drg. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|---|
| Suspender-end | E. Gutmann | 501,972 | July 11 | 1173 | 298 | 64 | 228 |
| Suspenders | J. H. Bley | 502,111 | July 25 | 2580 | 632 | 64 | 503 |
| Suspenders | J. C. Vollmar | 502,792 | Aug. 8 | 939 | 228 | 64 | 753 |
| Swath-turner | E. C. Blackstone | 501,131 | July 11 | 959 | 245 | 64 | 189 |
| Sweater | S. P. Curtis | 501,244 | July 11 | 1131 | 287 | 64 | 221 |
| Sweeper | W. H. Goldsmith | 501,247 | July 11 | 1136 | 288 | 64 | 222 |
| Swing | J. J. Brydson and J. A. Greathouse | 502,610 | Aug. 1 | 606 | 144 | 64 | 477 |
| Swing | R. A. and G. E. Shorey | 501,740 | July 18 | 1932 | 478 | 64 | 382 |
| Swinging gate | G. F. Voight | 501,813 | July 18 | 2044 | 503 | 64 | 400 |
| Swinging gate | W. R. White | 503,887 | Aug. 22 | 2699 | 677 | 64 | 1106 |
| Swinging gate | J. C. Wilson | 502,338 | Aug. 1 | 142 | 33 | 64 | 591 |
| Switch: *See* Circuit-switch. Derailing-switch. Electric switch. Electric-circuit switch. Electric-conductor switch. Electric-light switch. Electric snap-switch. Pole-switch. Railway-switch. Railway trolley-switch. Telephone switch. Time-switch. Tongue-switch. Tramway-switch. Trolley-wire switch. | | | | | | | |
| Switch | J. W. Tew and J. D. Riggs | 502,149 | July 25 | 2581 | 649 | 64 | 515 |
| Switch-actuator | W. F. and W. C. Stedman | 503,334 | Aug. 15 | 1839 | 456 | 64 | 930 |
| Switchboard apparatus. Multiple | J. J. Carty | 505,188 | Sept. 19 | 1447 | 372 | 64 | 1568 |
| Switchboard apparatus. Multiple | W. M. Goodridge | 504,345 | Sept. 5 | 49 | 14 | 64 | 1280 |
| Switchboard. Electric | F. W. Mount | 504,738 | Sept. 12 | 705 | 177 | 64 | 1416 |
| Switchboard keyboard apparatus. Multiple | C. E. Scribner | 504,249 | Aug. 29 | 3305 | 826 | 64 | 1236 |
| Switchboard signal. Electric | F. W. Dunbar | 502,660 | Aug. 1 | 692 | 166 | 64 | 693 |
| Switchboard signal. Electric | F. A. Pickernell | 503,252 | Aug. 15 | 1694 | 417 | 64 | 905 |
| Switchboard system. Multiple | C. E. Scribner | 503,099 | Aug. 8 | 1434 | 354 | 64 | 844 |
| Switchboard transfer system | C. E. Scribner | 502,771 | Aug. 8 | 897 | 220 | 64 | 746 |
| Switchboards. Cabling system for multiple | C. E. Scribner | 503,555 | Aug. 15 | 2181 | 546 | 64 | 992 |
| Switchboards. Lock-switch for electric | C. E. Scribner | 502,769 | Aug. 8 | 894 | 219 | 64 | 745 |
| Switchboards. Test-circuit for multiple | C. E. Scribner | 502,768 | Aug. 8 | 892 | 219 | 64 | 744 |
| Switchboards. Test-circuit for multiple | C. E. Scribner | 502,774 | Aug. 8 | 904 | 221 | 64 | 747 |
| Switchboards. Test-signal for multiple | C. E. Scribner | 502,772 | Aug. 8 | 900 | 220 | 64 | 746 |
| Switchboards. Test system for multiple | W. D. Allison | 503,115 | Aug. 15 | 1475 | 363 | 64 | 865 |
| Switchboards. Testing apparatus for multiple | C. E. Scribner | 502,775 | Aug. 8 | 907 | 221 | 64 | 748 |
| Switchboards. Testing system for multiple | C. E. Scribner | 502,773 | Aug. 8 | 902 | 221 | 64 | 747 |
| Switch-closing apparatus | J. A. Thatcher | 501,382 | July 11 | 1372 | ..... | 64 | 263 |
| Switch movement. Locking | J. T. Powers | 504,502 | Sept. 5 | 321 | 82 | 64 | 1330 |
| Switch-piece and making it | A. J. Moxham | 500,930 | July 4 | 616 | 161, 162 | 64 | 113 |
| Switch-stand | R. H. Canfield | 504,964 | Sept. 12 | 1084 | 277 | 64 | 1486 |
| Switch-stand | R. G. Ward and H. B. Potter | 502,154 | July 25 | 2589 | 651 | 64 | 517 |
| Switches. Device for manipulating | D. L. Boland | 501,317 | July 11 | 1240 | 312 | 64 | 240 |
| Swiveling and clamping joint mechanism. Compound | O. C. White | 505,584 | Sept. 26 | 2144 | 543 | 64 | 1714 |
| Synchronism-indicator | L. Bell | 502,695 | Aug. 8 | 763 | 185 | 64 | 721 |
| Syringe | W. F. Ware | 504,764 | Sept. 12 | 749 | 180 | 64 | 1425 |
| Syringe case. Hypodermic | A. J. Wolff | 505,645 | Sept. 26 | 2253 | 571 | 64 | 1734 |
| Table: *See* Adjustable table. Corpse-dressing table. Folding table. Ironing-table. Kitchen-table. Railway transfer-table. Saw-table. Self-waiting table. | | | | | | | |
| Table-screen support | C. A. Hopkins | 505,201 | Sept. 19 | 1473 | 384 | 64 | 1574 |
| Table slide. Extension | R. G. Blaesius | 503,192 | Aug. 15 | 1601 | 393 | 64 | 889 |
| Tablet and copy-holder. Combined writing | G. H. Munson and G. B. Haines | 502,574 | Aug. 1 | 543 | 129 | 64 | 666 |
| Tack. Carpet | W. J. Parkinson | 504,133 | Aug. 29 | 3109 | 778 | 64 | 1200 |
| Tack-driving machine | J. E. Crisp, G. W. Copeland, and T. Barrett. | 505,031 | Sept. 12 | 1192 | 306 | 64 | 1509 |
| Tack-puller | G. J. Capewell | 501,919 | July 25 | 2224 | 554 | 64 | 446 |
| Tack-setting machine | J. E. Crisp | 501,872 | July 18 | 2127 | 526, 527, 528 | 64 | 416 |
| Tag-attaching implement | J. T. Reed | 504,280 | Aug. 29 | 3352 | 838 | 64 | 1246 |
| Tag-fastener | S. E. Adams | 502,160 | July 25 | 2602 | 654 | 64 | 520 |
| Talley-sheet | F. W. Barrett | 505,304 | Sept. 19 | 1636 | 423 | 64 | 1605 |
| Tank: *See* Flushing-tank. Gas-holder tank. Measuring-tank. | | | | | | | |
| Tank-can for varnish, &c | C. L. Wagandt | 505,208 | Sept. 19 | 1483 | 387 | 64 | 1575 |
| Tank heater. Stock | C. F. Ravn | 505,229 | Sept. 19 | 1509 | 394 | 64 | 1580 |
| Tanning | G. Ruemelin | 503,987 | Aug. 29 | 2885 | ..... | 64 | 1157 |
| Tanning hides | J. W. Claxton | 501,586 | July 18 | 1671 | 520 | 64 | 337 |
| Tanning hides or skins | W. Zahn | 504,013 | Aug. 29 | 2921 | ..... | 64 | 1164 |
| Tap | E. Hazlehurst | 504,433 | Sept. 5 | 199 | 51 | 64 | 1307 |
| Tap. Collapsible | W. W. Doolittle | 505,268 | Sept. 19 | 1565 | 409 | 64 | 1591 |
| Tap. Collapsible | W. W. Doolittle. (Reissue) | 11,359 | Aug. 15 | 2301 | 550 | 64 | 996 |
| Tap. Porter or beer | C. I. Snyder | 502,835 | Aug. 8 | 1016 | 246 | 64 | 787 |
| Tapping or reaming machine. Blank | E. N. Beecher | 504,903 | Sept. 12 | 978 | 252 | 64 | 1458 |
| Taper-gage | F. Peterson | 501,807 | July 18 | 2038 | 502 | 64 | 369 |
| Tawing hides or skins | W. Zahn | 504,012 | Aug. 29 | 2919 | ..... | 64 | 1164 |
| Tawing skins | W. Zahn | 504,014 | Aug. 29 | 2922 | ..... | 64 | 1164 |
| Tea blending machine | T. Crompton | 502,283 | Aug. 1 | 31 | 7 | 64 | 572 |
| Tea or coffee pot | T. R. Fischer | 501,648 | July 18 | 1772 | 441 | 64 | 355 |
| Teaching arithmetical calculation | J. Gallegos | 502,184 | July 25 | 2636 | 664 | 64 | 527 |
| Teaching astronomy and geography. Apparatus for | A. M. Gregory | 501,136 | July 11 | 965 | 246 | 64 | 190 |
| Teaching penmanship. Appliance for | W. H. Kingman | 503,796 | Aug. 22 | 2578 | 641 | 64 | 1089 |
| Teaching spelling. Device for | J. Gallegos | 502,183 | July 25 | 2635 | 664 | 64 | 526 |
| Telegraph for cash-recording systems. Printing | H. K. Hoss | 505,293 | Sept. 19 | 1616 | 419, 420 | 64 | 1601 |

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| Invention. | Name. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drg. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|---|
| Telegraph. Printing | S. R. Linville and L. F. Hottmansperger. | 504,732 | Sept. 12 | 688 | 175 | 64 | 1412 |
| Telegraph system. Condenser | C. H. Rudd | 504,367 | Sept. 5 | 87 | 22, 23 | 64 | 1287 |
| Telegraphic apparatus | A. Heil | 503,372 | Aug. 15 | 1900 | 471 | 64 | 941 |
| Telegraphy | S. D. Field | 503,500 | Aug. 22 | 2246 | 563, 564 | 64 | 1026 |
| Telemeter. Electric | C. H. Haskins | 502,399 | Aug. 1 | 249 | 59 | 64 | 611 |
| Telephone | J. B. S. Booth and E. J. Falconer | 505,087 | Sept. 19 | 1298 | 334 | 64 | 1542 |
| Telephone apparatus | A. Stromberg and A. Carlson | 504,636 | Sept. 5 | 517 | 134 | 64 | 1368 |
| Telephone. Automatic | J. Wrattsch and S. Gergacsevics | 504,011 | Aug. 29 | 2918 | 732 | 64 | 1164 |
| Telephone-cable | W. R. Patterson | 502,262 | July 25 | 2780 | 702 | 64 | 553 |
| Telephone-circuit | T. Spencer | 505,730 | Sept. 26 | 2391 | 604 | 64 | 1758 |
| Telephone circuit and apparatus | S. J. Larned and F. A. Pickernell | 501,085 | July 11 | 867 | 225 | 64 | 173 |
| Telephone circuit and apparatus | J. L. McQuarrie | 502,466 | Aug. 1 | 361 | 87 | 64 | 632 |
| Telephone-circuits. Station apparatus for | S. J. Larned and F. A. Pickernell | 501,086 | July 11 | 870 | 226 | 64 | 174 |
| Telephone-exchange apparatus | C. E. Scribner | 501,169 | July 11 | 1023 | 259 | 64 | 200 |
| Telephone-exchange apparatus | C. E. Scribner | 502,770 | Aug. 8 | 895 | 220 | 64 | 745 |
| Telephone-exchange testing apparatus | C. E. Scribner | 504,250 | Aug. 29 | 3306 | 826 | 64 | 1236 |
| Telephone-exchanges. Multiple switchboard for | C. E. Scribner | 501,847 | July 18 | 2088 | 516 | 64 | 409 |
| Telephone. Mechanical | E. W. Warren | 501,388 | July 11 | 1380 | 345 | 64 | 268 |
| Telephone. Portable | B. S. Flanders | 502,398 | Aug. 1 | 247 | 59 | 64 | 611 |
| Telephone signaling apparatus and circuit | F. A. Pickernell | 501,102 | July 11 | 912 | 234 | 64 | 181 |
| Telephone-switch | T. W. Ness | 505,170 | Sept. 19 | 1423 | 366 | 64 | 1564 |
| Telephone switch | C. E. Scribner | 501,168 | July 11 | 1021 | 259 | 64 | 200 |
| Telephone-switch | J. Steiner | 505,070 | Sept. 12 | 1262 | 323 | 64 | 1522 |
| Telephone system | G. L. Anders | 500,545 | July 4 | 5 | 2, 3 | 64 | 4 |
| Telephone system | W. W. Davis | 505,308 | Sept. 19 | 1640 | 424, 425, 426 | 64 | 1606 |
| Telephone-transmitter | J. A. Brown | 501,610 | July 18 | 1713 | 427 | 64 | 344 |
| Telephone-transmitter | J. A. Brown | 504,801 | Sept. 12 | 811 | 206 | 64 | 1435 |
| Telephone-transmitter | N. Parks | 504,454 | Sept. 5 | 226 | 60 | 64 | 1313 |
| Telephonic and telegraphic circuits. Station apparatus for | T. Spencer | 501,472 | July 11 | 1491 | 376 | 64 | 287 |
| Telephonic intercommunication. System of | F. R. Colvin | 502,091 | July 25 | 2488 | 625, 626 | 64 | 490 |
| Telephonic intercommunication. System of | F. R. Colvin | 504,103 | Aug. 29 | 3064 | 767 | 64 | 1199 |
| Telephonic receiver support | N. L. Burchell and B. L. Novius, Jr | 501,405 | July 11 | 1405 | 352 | 64 | 269 |
| Telephoning purposes. Switchboard for | U. H. Balsley | 504,464 | Sept. 5 | 245 | 64 | 64 | 1315 |
| Telephony. Duplex | W. Marshall | 505,628 | Sept. 26 | 2211 | 560 | 64 | 1736 |
| Telescope box. Double | J. T. Craw | 502,952 | Aug. 8 | 1207 | 297 | 64 | 802 |
| Telescopic stand for mathematical and optical instruments, &c. | M. Weyl | 505,149 | Sept. 19 | 1388 | 355, 356 | 64 | 1558 |
| Temperature-indicator | C. E. Egan and F. M. Bailey | 504,335 | Sept. 5 | 36 | 11 | 64 | 1278 |
| Tempering. Composition of matter for | J. E. Mills | 503,801 | Aug. 22 | 2583 | ..... | 64 | 1094 |
| Tender or halter-strap | H. T. Crepeau | 502,954 | Aug. 8 | 1211 | 298 | 64 | 803 |
| Thaumatrope | J. B. Cox | 503,927 | Aug. 22 | 2762 | 692 | 64 | 1119 |
| Thawing out frozen pipes, &c. Device for | D. H. Streeper | 501,744 | July 18 | 1936 | 479 | 64 | 392 |
| Theatrical device | H. Dumars | 501,647 | July 18 | 1770 | 440, 441 | 64 | 354 |
| Thermometer | H. Campbell | 504,298 | Aug. 29 | 3382 | 846 | 64 | 1251 |
| Thill-coupling | G. A. Brown | 501,052 | July 11 | 819 | 213 | 64 | 164 |
| Thill-coupling | S. W. Cately | 505,438 | Sept. 26 | 1859 | 478 | 64 | 1660 |
| Thill-coupling | W. D. Cobb | 501,923 | July 25 | 2231 | 557 | 64 | 450 |
| Thill-coupling | H. Degner | 503,739 | Aug. 22 | 2498 | 621 | 64 | 1066 |
| Thill-coupling | A. W. Fisher | 502,020 | Aug. 1 | 023 | 149 | 64 | 681 |
| Thill-coupling | J. H. Hanson | 502,816 | Aug. 8 | 980 | 238 | 64 | 761 |
| Thill-coupling | J. F. Hempel | 502,491 | Aug. 1 | 413 | 97 | 64 | 642 |
| Thill-coupling | J. W. Hoddinott | 500,895 | July 4 | 569 | 148 | 64 | 104 |
| Thill-coupling | E. J. Merry | 503,910 | Aug. 22 | 2739 | 687 | 64 | 1114 |
| Thill-coupling | J. N. Moehn | 504,230 | Aug. 29 | 3273 | 818 | 64 | 1230 |
| Thill-coupling | G. H. Perry | 502,989 | Aug. 8 | 1275 | 312 | 64 | 814 |
| Thill-coupling | G. W. Post | 502,380 | Aug. 1 | 218 | 52 | 64 | 606 |
| Thill-coupling | T. Ransley, Jr. | 505,674 | Sept. 26 | 2299 | 583 | 64 | 1742 |
| Thill-coupling | M. Todd | 501,115 | July 11 | 938 | 240 | 64 | 185 |
| Thill-coupling | E. Wilcox, Jr. | 505,502 | Sept. 26 | 1973 | 507 | 64 | 1680 |
| Thill-coupling | N. I. Woolsey | 505,691 | Sept. 26 | 2334 | 591 | 64 | 1748 |
| Thill-coupling attachment | W. J. Tone | 501,812 | July 18 | 2043 | 503 | 64 | 400 |
| Thill-coupling bolt | C. L. Kelley | 502,972 | Aug. 8 | 1252 | 306 | 64 | 810 |
| Thill-couplings. Antirattler for | W. H. Pardee | 502,134 | July 25 | 2552 | 640 | 64 | 510 |
| Thill-support | J. H. Adams | 504,146 | Aug. 29 | 3130 | 783 | 64 | 1204 |
| Thill-support | G. G. F. Boswell | 503,644 | Aug. 22 | 2343 | 585 | 64 | 1036 |
| Thimbles. Thread-cutting attachment for | M. Fogg | 502,036 | July 25 | 2400 | 604 | 64 | 481 |
| Thrasher and binder. Combined | A. L. Gill | 500,709 | July 4 | 284 | 77 | 64 | 53 |
| Thrashing-machine | W. N. Springer | 502,473 | Aug. 1 | 377 | 89, 90 | 64 | 635 |
| Thrashing-machine attachment | J. C. Lundy | 502,979 | Aug. 8 | 1250 | 308 | 64 | 811 |
| Thrashing-machine band-cutter and feeder | D. C. Ruth | 503,002 | Aug. 8 | 1289 | 315, 316 | 64 | 817 |
| Thrashing-machine band-cutter and feeder | F. H. Schafer | 503,877 | Aug. 22 | 2683 | 672 | 64 | 1103 |
| Thrashing-machine band-cutter and feeder | J. H. Spurgin | 502,592 | Aug. 1 | 571 | 137, 138 | 64 | 671 |
| Thrashing-machine band-cutting and feeding attachment | G. N. Kern and J. W. Fielder | 504,220 | Aug. 29 | 3257 | 812 | 64 | 1227 |
| Thrashing machine. Bean or grain | T. A. Miller | 504,359 | Sept. 5 | 67 | 18 | 64 | 1284 |
| Thrashing-machine feeder and band-cutter | A. J. Amick | 502,162 | July 25 | 2604 | 655, 656 | 64 | 520 |
| Thrashing-machine feeder and band-cutter. Combined | J. G. Williams | 502,689 | Aug. 1 | 753 | 182 | 64 | 704 |
| Thrashing-machine feeding attachment | G. W. Rucker | 501,366 | July 11 | 1341 | 335 | 64 | 257 |
| Thrashing-machine feeding attachment | H. A. Stoltenberg | 504,950 | Sept. 12 | 1053 | 270 | 64 | 1483 |
| Thrashing machine flax-thrashing attachment | A. Calm[illegible] | 502,356 | Aug. 1 | 180 | 42 | 64 | 599 |
| Ticket-holder | F. H. a[illegible] Haskell | 501,652 | July 18 | 1780 | 443 | 64 | 356 |
| Ticket holder. Railway | A. M. La[illegible] | 505,773 | Sept. 26 | 2463 | 621 | 64 | 1772 |
| Ticket-safe and match-holder | T. Martin | 503,974 | Aug. 29 | 2854 | 717 | 64 | 1153 |



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| Invention. | Name. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drg. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|---|
| Ticket stamping and cutting machine | R. Busek | 500,797 | July 4 | 424 | 111, 112 | 64 | 78 |
| Tie: See Cross-tie. Railway-rail tie. Metallic tie. Umbrella-tie. Railway-tie. | | | | | | | |
| Tie-plate. Brace | E. Samuel | 503,806 | Aug. 22 | 2592 | 647 | 64 | 1085 |
| Tights. Equestrienne | J. H. Pike | 504,402 | Sept. 5 | 142 | 37, 38 | 64 | 1297 |
| Tile | M. Kaestner | 502,725 | Aug. 8 | 889 | 201 | 64 | 764 |
| Tile construction. Illuminating | H. Hanstein | 505,044 | Sept. 12 | 1211 | 312 | 64 | 1512 |
| Tile-frame | G. H. Holliday and D. A. Brawley | 503,369 | Aug. 15 | 1897 | 470 | 64 | 941 |
| Tile. Metallic roofing | A. A Spahmer, Jr | 503,173 | Aug. 15 | 1571 | 387 | 64 | 883 |
| Tiles. Frame for illuminating | H. Hanstein | 501,008 | July 4 | 745 | 195 | 64 | 135 |
| Till-alarm | P. Ziegler | 502,945 | Aug. 8 | 1197 | 295 | 64 | 801 |
| Tilling-machine | J. Dage and W. F. Wagner | 503,696 | Aug. 22 | 2425 | 604 | 64 | 1052 |
| Tiltin gate. Portable | A. Snyder | 505,375 | Sept. 19 | 1746 | 453 | 64 | 1624 |
| Time-lock | I. G. Blake | 504,497 | Sept. 5 | 190 | 49 | 64 | 1306 |
| Time-lock | E. S. Phelps. (Reissue) | 11,355 | Aug. 8 | 1484 | 360 | 64 | 849 |
| Timepiece escapement | J. H. Langhorst | 504,293 | Aug. 29 | 3261 | 813 | 64 | 1228 |
| Timepiece repeating mechanism | F. Terstegen | 502,917 | Aug. 8 | 1138 | 281 | 64 | 791 |
| Timepiece repeating mechanism | F. Terstegen | 502,918 | Aug. 8 | 1145 | 281, 282 | 64 | 792 |
| Time-recorder. Electric | C. E. Ongley | 505,069 | Sept. 12 | 1241 | 319 | 64 | 1518 |
| Time-recorder. Workman's | S. A. Dean | 502,296 | July 25 | 2705 | 682, 683 | 64 | 540 |
| Time-recording apparatus. Workman's | M. Martin | 503,430 | Aug. 15 | 1977 | 491 | 64 | 955 |
| Time-switch. Electric | J. F. McLaughlin | 501,291 | July 11 | 1200 | 303, 304 | 64 | 233 |
| Tin can | W. Hasker | 503,965 | Aug. 15 | 1716 | 433 | 64 | 909 |
| Tin or its alloys. Apparatus for purification of molten | D. Owen | 504,298 | Aug. 29 | 3286 | 821 | 64 | 1232 |
| Tin pan | J. Hillson | 501,248 | July 11 | 1136 | 288, 289 | 64 | 222 |
| Tin plate and coating sheet metal. Apparatus for the manufacture of | W. F. Niedringhaus | 505,171 | Sept. 19 | 1424 | 367 | 64 | 1565 |
| Tinning-machine | E. Norton and J. G. Hodgson | 500,718 | July 4 | 298 | 81 | 64 | 55 |
| Tire | S. Green | 504,032 | Aug. 29 | 2948 | 738 | 64 | 1169 |
| Tire and device for inflating same. Pneumatic | T. B. Jeffery | 502,003 | July 25 | 2339 | 586 | 64 | 470 |
| Tire. Bicycle | C. E. Luburg | 505,530 | Sept. 26 | 2035 | 519 | 64 | 1692 |
| Tire. Bicycle | O. L. Wullweber | 501,239 | July 11 | 1121 | 285 | 64 | 219 |
| Tire. Bicycle | J. A. Wright | 502,390 | Aug. 1 | 236 | 56 | 64 | 609 |
| Tire. Carriage-wheel | G. W. Bryan | 502,808 | Aug. 8 | 959 | 233 | 64 | 757 |
| Tire-clamp | J. W. Angier | 504,017 | Aug. 29 | 2926 | 733 | 64 | 1165 |
| Tire. Cushion | W. Langmuir | 502,731 | Aug. 8 | 825 | 209 | 64 | 734 |
| Tire. Detachable | A. C. Gillette | 503,846 | Aug. 22 | 2645 | 663 | 64 | 1096 |
| Tire-fastening device. Pneumatic | J. S. Smith, C. J. and G. E. Tate | 504,284 | Aug. 29 | 3357 | 839 | 64 | 1247 |
| Tire. Pneumatic | G. F. Callaghan | 503,560 | Aug. 15 | 2191 | 547 | 64 | 904 |
| Tire. Pneumatic | D. Dobbins and R. McKenney | 504,408 | Sept. 5 | 254 | 66 | 64 | 1317 |
| Tire. Pneumatic | T. D. Glen, W. Purvis and S. Smith | 503,660 | Aug. 22 | 2366 | 590 | 64 | 1041 |
| Tire. Pneumatic | W. W. Greenwood | 503,594 | Aug. 22 | 2257 | 565 | 64 | 1021 |
| Tire. Pneumatic | F. W. Hardwick | 501,716 | July 18 | 1806 | 469 | 64 | 374 |
| Tire. Pneumatic | R. W. Huss | 500,658 | July 4 | 203 | 53 | 64 | 49 |
| Tire. Pneumatic | R. W. Huss | 502,002 | July 25 | 2337 | 586 | 64 | 470 |
| Tire. Pneumatic | F. H. Mason | 503,724 | Aug. 22 | 2469 | 614 | 64 | 1061 |
| Tire. Pneumatic | J. G. Moomy | 501,290 | July 11 | 1199 | 303 | 64 | 233 |
| Tire. Pneumatic | F. W. Morgan and R. Wright | 502,047 | July 25 | 2417 | 608, 609 | 64 | 484 |
| Tire. Pneumatic | F. W. Morgan and R. Wright | 502,048 | July 25 | 2419 | 609 | 64 | 484 |
| Tire. Pneumatic | G. Pickel | 500,944 | July 4 | 631 | 167 | 64 | 116 |
| Tire. Pneumatic | J. S. Smith | 505,255 | Sept. 19 | 1548 | 404 | 64 | 1568 |
| Tire. Pneumatic | F. H. Sprang | 504,793 | Sept. 12 | 799 | 203 | 64 | 1433 |
| Tire. Pneumatic | C. F. Warner | 500,639 | July 4 | 163 | 43 | 64 | 33 |
| Tire. Pneumatic | T. J. Williams | 504,144 | Aug. 29 | 3127 | 762 | 64 | 1203 |
| Tire. Pneumatic wheel | O. F. Persson | 503,565 | Aug. 15 | 2196 | 548 | 64 | 905 |
| Tire. Pneumatic wheel | J. B. Rathbun | 504,135 | Aug. 29 | 3112 | 779 | 64 | 1200 |
| Tire pump. Pneumatic | F. Veith | 504,853 | Sept. 12 | 901 | 232 | 64 | 1454 |
| Tire-setting apparatus | P. O'Brien | 503,435 | Aug. 15 | 1996 | 492, 493 | 64 | 957 |
| Tire valve. Pneumatic | C. K. Welch | 503,300 | Aug. 15 | 1776 | 438, 439 | 64 | 919 |
| Tire. Vehicle | A. E. Spangler | 504,819 | Sept. 12 | 846 | 217 | 64 | 1442 |
| Tire. Wheel | E. H. Grenet | 501,588 | July 18 | 1673 | 417 | 64 | 327 |
| Tire. Wheel | C. F. Lavender | 503,704 | Aug. 22 | 2436 | 627 | 64 | 1054 |
| Tire. Wheel | H. Myers | 502,741 | Aug. 8 | 847 | 206 | 64 | 736 |
| Tire. Wheel | J. T. Smith | 501,967 | July 25 | 2269 | 573 | 64 | 458 |
| Tire. Wheel | C. W. Van Houten | 501,386 | July 11 | 1377 | 344 | 64 | 264 |
| Tires. Clip for holding wheel | H. H. Stevens | 504,117 | Aug. 29 | 3083 | 772 | 64 | 1196 |
| Tires. Repairing pneumatic | J. J. Williams | 503,636 | Aug. 22 | 2334 | 581, 582 | 64 | 1034 |
| Tires. Valve for pneumatic | F. W. Hardwick | 501,715 | July 18 | 1805 | 469 | 64 | 374 |
| Tires. Woven fabric for wheel | J. Lyall | 504,883 | Sept. 12 | 944 | 244 | 64 | 1462 |
| Tires. Woven fabric for wheel | J. Lyall | 505,294 | Sept. 19 | 1606 | 420 | 64 | 1603 |
| Tobacco and packing box | C. E. Speaker | 502,836 | Aug. 8 | 1011 | 246 | 64 | 767 |
| Tobacco-case | W. De Haven | 503,717 | Aug. 22 | 2458 | 612 | 64 | 1059 |
| Tobacco into packets. Machinery for making up | W. Rose | 502,637 | Aug. 1 | 647 | 155, 156, 157, 158, 159 | 64 | 686 |
| Tobacco-moistener | W. C. Sheldon | 501,371 | July 11 | 1353 | 337 | 64 | 259 |
| Tobacco-pipe | J. Jaque | 505,202 | Sept. 19 | 1474 | 384 | 64 | 1574 |
| Tobacco-pipe | A. Reuas | 501,808 | July 18 | 2039 | 502 | 64 | 400 |
| Tobacco-pipe | O. Schroeder | 501,302 | July 11 | 1216 | 306 | 64 | 236 |
| Tobacco shaper. Plug | R. M. Vaughan | 501,749 | July 18 | 1943 | 480 | 64 | 384 |

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| Invention. | Name. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drg. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|---|
| Tobacco stripping and booking machine | J. R. Williams | 500,647 | July 4 | 176 | 45<br>46<br>47 | 64 | 35 |
| Tobacco stripping and booking machine. Leaf | C. Bowman | 504,790 | Sept. 12 | 806 | 205 | 64 | 1434 |
| Tobacco-wringing machine | A. B. Cosby | 501,328 | July 11 | 1966 | 317 | 64 | 243 |
| Toe. Box | J. W. Packard | 503,614 | Aug. 22 | 2302 | 574 | 64 | 1029 |
| Toe-weight | J. Buechner | 503,404 | Aug. 15 | 1940 | 492 | 64 | 949 |
| Toe-weight | J. D. Keller | 503,089 | Aug. 8 | 1417 | 349 | 64 | 841 |
| Tongs. Roofer's seaming | W. L. Heberling | 501,509 | July 18 | 1553 | 390<br>391 | 64 | 313 |
| Tongue-support | D. C. Emerson | 503,905 | Aug. 15 | 1619 | 397 | 64 | 892 |
| Tongue-support | O. M. Mosher | 501,466 | July 11 | 1484 | 373 | 64 | 285 |
| Tongue-support | E. R. Williamson | 504,143 | Aug. 29 | 3126 | 782 | 64 | 1203 |
| Tongue-switch | E. Samuel | 503,807 | Aug. 22 | 2592 | 648 | 64 | 1085 |
| Tool. Combination | J. D. Barnett | 500,551 | July 4 | 32 | 8 | 64 | 6 |
| Tool. Combination | A. Knudsen | 502,259 | July 25 | 2776 | 701 | 64 | 552 |
| Tool. Combination | W. H. Menehan | 502,525 | Aug. 1 | 471 | 113 | 64 | 653 |
| Tool. Combination | G. W. Weiss | 503,182 | Aug. 15 | 1585 | 390 | 64 | 886 |
| Tool-fastening | R. Douglas | 502,708 | Aug. 8 | 807 | 195 | 64 | 728 |
| Tool-handles, &c. Fastening for | W. H. Thomas | 502,107 | July 25 | 2514 | 631 | 64 | 502 |
| Tool-holder | J. Hope | 502,039 | July 25 | 2403 | 605 | 64 | 482 |
| Tool-holder | J. C. Hunter | 502,564 | Aug. 1 | 528 | 126 | 64 | 663 |
| Tool-holder | H. V. Smith | 501,110 | July 11 | 930 | 238 | 64 | 184 |
| Tool holder | F. E. Youngs | 500,834 | July 4 | 483 | 126 | 64 | 88 |
| Tooth. Artificial | C. C. Durr | 504,136 | Aug. 29 | 3086 | 775 | 64 | 1198 |
| Tooth. Artificial | M. J. F. Kneiff | 501,429 | July 11 | 1433 | 359 | 64 | 275 |
| Tooth mold. Artificial | R. Brewster | 503,826 | Aug. 22 | 2615 | 653 | 64 | 1090 |
| Toothpicks. Machine for manufacturing wooden | J. C. F. Scammon | 501,105 | July 11 | 930 | 235 | 64 | 182 |
| Top. Spinning | J. L. Brown | 501,321 | July 11 | 1249 | 314<br>315 | 64 | 241 |
| Torpedo. Railway | E. G. Beckwith | 501,399 | July 11 | 1396 | 349 | 64 | 307 |
| Torpedo. Submarine | J. W. Graydon | 502,294 | Aug. 1 | 63 | 14 | 64 | 577 |
| Towel-rack | C. Schermerhorn | 504,053 | Aug. 29 | 2980 | 745 | 64 | 1175 |
| Toy | B. Dominick, Jr | 504,152 | Aug. 29 | 3140 | 785 | 64 | 1205 |
| Toy | C. S. Edwards | 500,567 | July 4 | 48 | 14 | 64 | 10 |
| Toy | J. Evans | 502,709 | Aug. 8 | 808 | 195 | 64 | 728 |
| Toy | A. Le Plongeon | 502,101 | July 25 | 2500 | 628 | 64 | 500 |
| Toy | M. Schofield | 503,387 | Aug. 15 | 1919 | 476 | 64 | 945 |
| Toy | J. Sheppman | 503,389 | Aug. 15 | 1921 | 476 | 64 | 946 |
| Toy bank | R. A. Breul | 500,848 | July 4 | 499 | 129 | 64 | 91 |
| Toy bowling-alley | W. S. Reed | 505,536 | Sept. 26 | 2042 | 521 | 64 | 1693 |
| Toy figure | C. Smith | 505,679 | Sept. 26 | 2308 | 586 | 64 | 1743 |
| Toy hoop | W. W. Blackshaw | 503,191 | Aug. 15 | 1600 | 393 | 64 | 888 |
| Toy. Mechanical | J. W. Turner | 502,790 | Aug. 8 | 935 | 227 | 64 | 753 |
| Toy. Pneumatic | R. B. Tate and J. C. Joseph | 501,305 | July 11 | 1219 | 309 | 64 | 236 |
| Toy soldier | C. M. Beaumont | 505,344 | Sept. 19 | 1692 | 436 | 64 | 1615 |
| Toy vehicle | F. H. Harris | 500,805 | July 4 | 435 | 114 | 64 | 80 |
| Trace | I. B. Martin | 501,252 | July 11 | 1148 | 289 | 64 | 223 |
| Trace or rein supporter | J. J. A. Van Patten | 504,378 | Sept. 5 | 106 | 27 | 64 | 1250 |
| Track-cleaner | G. W. Ruggles | 501,028 | July 4 | 773 | 203 | 64 | 141 |
| Track-fastening | G. E. Norton | 504,236 | Aug. 29 | 3284 | 820 | 64 | 1232 |
| Track-jack | J. McMurrin | 504,935 | Sept. 12 | 1031 | 265 | 64 | 1479 |
| Track-lifter | W. L. Whitfield | 504,259 | Aug. 29 | 3321 | 830 | 64 | 1240 |
| Track-sanding device | A. and E. C. Goldsmith | 500,892 | July 4 | 553 | 143 | 64 | 101 |
| Traction-engine | A. C. Ames | 505,151 | Sept. 19 | 1390 | 356<br>357 | 64 | 1558 |
| Traction-engine | B. Jackson | 502,890 | Aug. 8 | 987 | 240<br>241 | 64 | 763 |
| Traction-wheel | A. G. Rose | 500,819 | July 4 | 454 | 120 | 64 | 84 |
| Train-stopping device | J. B. Gross | 502,963 | Aug. 8 | 1227 | 302 | 64 | 806 |
| Trains. Electric circuit for controlling | F. E. Kinsman | 504,042 | Aug. 29 | 2953 | 741 | 64 | 1172 |
| Tramway-switch | A. C. L. Engstfeld | 503,474 | Aug. 15 | 2050 | 511 | 64 | 967 |
| Tramway-switch | J. Meyer and G. F. Starkweather | 502,902 | Aug. 8 | 1267 | 309 | 64 | 812 |
| Tramway. Wire-rope | C. T. Finlayson | 505,397 | Sept. 19 | 1781 | 462 | 64 | 1631 |
| Transporting-receptacle | L. P. Rogers and J. Hofman | 504,503 | Sept. 5 | 322 | 83 | 64 | 1330 |
| Trap:<br>*See* Animal-trap. Fly-trap.<br>Caterpillar-trap. Roach-trap.<br>Fish-trap. Sewer-trap. | | | | | | | |
| Traveling-bag | A. C. Krick | 504,840 | Sept. 12 | 892 | 227 | 64 | 1451 |
| Traveling-bag | R. Ponickau | 504,850 | Sept. 12 | 897 | 231 | 64 | 1454 |
| Tray-board | E. F. Crane | 501,204 | July 11 | 1071 | 272 | 64 | 211 |
| Tray. Jeweler's ring | R. Krueger | 504,167 | Aug. 29 | 3164 | 789 | 64 | 1210 |
| Treadle | J. H. Stewart | 502,683 | Aug. 1 | 747 | 179<br>180 | 64 | 703 |
| Treadle-cushion | J. H. Whitney | 503,633 | Aug. 22 | 2728 | 580 | 64 | 1033 |
| Tree-protector | E. H. Black | 503,759 | Aug. 22 | 2529 | 629 | 64 | 1073 |
| Tree-protector | J. M. Crews | 503,848 | Aug. 29 | 2817 | 703 | 64 | 1145 |
| Trellis. Hop | D. Craig | 501,991 | July 25 | 2325 | 580 | 64 | 467 |
| Trestle. Extensible | G. H. Jaquess | 501,348 | July 11 | 1309 | 327 | 64 | 251 |
| Tricycle | A. V. Smith | 503,009 | Aug. 8 | 1299 | 318 | 64 | 819 |
| Tricycle | W. V. Snyder | 503,991 | Aug. 29 | 2891 | 723 | 64 | 1159 |
| Tricycle | W. V. Snyder | 503,992 | Aug. 29 | 2892 | 723 | 64 | 1159 |
| Trimmer:<br>*See* Hoof-trimmer. Wood-trimmer.<br>Leather-edge trimmer. | | | | | | | |
| Trimming | G. H. Newton | 505,670 | Sept. 26 | 2294 | 561 | 64 | 1741 |
| Tripod head. Camera | S. C. Hopkins and A. Higgins | 501,510 | July 18 | 1555 | 391 | 64 | 314 |
| Trolley-guard | G. Moore | 502,629 | Aug. 1 | 638 | 152 | 64 | 684 |
| Trolley-head | R. S. Dobbie | 502,553 | Aug. 1 | 514 | 123 | 64 | 661 |
| Trolley-head | J. P. Maddox | 504,734 | Sept. 12 | 700 | 176 | 64 | 1415 |
| Trolley-wheel | J. F. Hall | 503,136 | Aug. 15 | 1509 | 371 | 64 | 871 |
| Trolley-wheel | E. M. Tousley | 501,548 | July 18 | 1621 | 405 | 64 | 332 |



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|---|---|---|---|---|---|---|---|
| Trolley-wheel. Electric | J. W. Clark | 503,562 | Aug. 15 | 2193 | 548 | 64 | 995 |
| Trolley wire and hanger | E. P. Wetmore | 502,068 | July 25 | 2483 | 624 | 64 | 497 |
| Trolley-wire cleaner | M. Shaaber | 504,405 | Sept. 5 | 150 | 39 | 64 | 1299 |
| Trolley-wire finder | H. C. Jones | 503,491 | Aug. 15 | 1905 | 488 | 64 | 953 |
| Trolley-wire hanger | A. W. Meston | 501,481 | July 11 | 1506 | 379 | 64 | 290 |
| Trolley-wire support | L. T. Gibbs | 505,457 | Sept. 26 | 1886 | 486 | 64 | 1665 |
| Trolley-wire switch | E. A. Sperry | 503,443 | Aug. 15 | 1995 | 493 | 64 | 959 |
| Trolling-spoon | E. F. Pflueger | 501,436 | July 11 | 1442 | 361 | 64 | 277 |
| Trough:<br>*See* Drip-trough. Hog-trough.<br>Eaves-trough. | | | | | | | |
| Trousers | M. and N. Harris | 502,253 | July 25 | 2761 | 698 | 64 | 550 |
| Trousers | J. L. Schuey | 501,964 | July 25 | 2285 | 572 | 64 | 460 |
| Trousers-guard | W. T. Robertson | 503,683 | Aug. 22 | 2396 | 598 | 64 | 1046 |
| Trowel. Pointing | C. M. Benson | 502,872 | Aug. 8 | 1061 | 261 | 64 | 777 |
| Truck | M. S. Kelley | 504,476 | Sept. 5 | 268 | 70 | 64 | 1320 |
| Truck | H. B. Owen | 503,982 | Aug. 29 | 2865 | 719 | 64 | 1154 |
| Truck and coupling. Combined car | O. Flohr | 502,411 | Aug. 1 | 271 | 64 | 64 | 616 |
| Truck bolster. Car | E. F. Goltra and M. B. Schaffer | 504,029 | Aug. 29 | 2944 | 736 | 64 | 1160 |
| Truck bolster. Car | E. F. Goltra and M. B. Schaffer | 504,267 | Aug. 29 | 3332 | 833 | 64 | 1242 |
| Truck. Car | J. W. Cooper | 503,831 | Aug. 22 | 2621 | 655 | 64 | 1091 |
| Truck. Car | G. F. Fischer | 503,412 | Aug. 15 | 1947 | 484 | 64 | 950 |
| Truck. Car | J. H. Graham | 503,044 | Aug. 8 | 1349 | 333 | 64 | 829 |
| Truck. Car | J. L. Levy | 502,522 | Aug. 1 | 461 | 111<br>112 | 64 | 651 |
| Truck for railway carriages. Bogie | S. Fox | 505,150 | Sept. 19 | 1406 | 360<br>361<br>362 | 64 | 1561 |
| Truck-frame | D. L. Barnes | 505,152 | Sept. 19 | 1394 | 358 | 64 | 1559 |
| Truck. Hand | C. G. Curtis | 501,706 | July 18 | 1873 | 466 | 64 | 371 |
| Truck. Hand | G. Lillie | 500,661 | July 4 | 209 | 54 | 64 | 41 |
| Truck. Lumber | H. Daniels | 500,860 | July 4 | 518 | 135 | 64 | 94 |
| Truck. Lumber | H. Daniels | 500,862 | July 4 | 522 | 136 | 64 | 95 |
| Truck. Motor | J. A. Brill | 504,800 | Sept. 12 | 807 | 206 | 64 | 1434 |
| Truck. Motor | J. A. Brill and W. S. Adams | 504,149 | Aug. 29 | 3133 | 783<br>784 | 64 | 1204 |
| Truck. Motor-car | G. W. Lacy | 503,092 | Aug. 8 | 1421 | 351 | 64 | 842 |
| Truck or vehicle for elevated railways | E. M. Turner | 501,174 | July 11 | 1029 | 260<br>261 | 64 | 202 |
| Truck. Street-car | H. F. Shaw | 502,503 | Aug. 1 | 429 | 102 | 64 | 645 |
| Trunk | J. J. Bisel | 504,514 | Sept. 5 | 340 | 86 | 64 | 1333 |
| Trunk and wardrobe. Combined | J. C. Kern | 502,081 | July 25 | 2471 | 621 | 64 | 495 |
| Trunk. Automatic folding | A. E. Scott | 504,248 | Aug. 29 | 3304 | 826 | 64 | 1236 |
| Trunk-fastening | J. Simmons | 501,259 | July 11 | 1156 | 256<br>257 | 64 | 225 |
| Trunks, hat-boxes, &c. Manufacture of | H. Krammer | 500,912 | July 4 | 591 | 154 | 64 | 109 |
| Truss | W. Danz | 500,739 | July 4 | 332 | 88 | 64 | 62 |
| Truss | P. Fredin | 504,158 | Aug. 29 | 3147 | 787 | 64 | 1207 |
| Truss | J. A. Hopkins | 504,837 | Sept. 12 | 879 | 226 | 64 | 1450 |
| Truss | B. M. Luginbühl | 501,796 | July 18 | 2025 | 499 | 64 | 397 |
| Truss | D. Pomeroy | 505,228 | Sept. 19 | 1508 | 393 | 64 | 1580 |
| Truss | H. C. Rash | 503,000 | Aug. 8 | 1286 | 315 | 64 | 816 |
| Truss | H. L. Walbridge | 501,551 | July 18 | 1624 | 406 | 64 | 328 |
| Truss | A. Yost | 503,223 | Aug. 15 | 1653 | 406 | 64 | 897 |
| Tub:<br>*See* Laundry-tub. Washtub. | | | | | | | |
| Tube:<br>*See* Speaking-tube. | | | | | | | |
| Tube-compressor | J. M. Harper | 504,268 | Aug. 29 | 3334 | 833 | 64 | 1242 |
| Tube-cutter | F. Jungmann | 504,786 | Sept. 12 | 791 | 200 | 64 | 1431 |
| Tubes. Apparatus for the electrolytic manufacture of | A. S. Elmore | 503,076 | Aug. 8 | 1393 | 344 | 64 | 837 |
| Tubes. Die for forming polygonal | C. P. Higgins | 503,962 | Aug. 29 | 2839 | 709 | 64 | 1150 |
| Tubing. Flexible metallic | W. H. K. Bowley | 500,847 | July 4 | 498 | 129 | 64 | 91 |
| Tubing. Steam-gage | C. A. G. Winther | 500,830 | July 4 | 477 | 125 | 64 | 87 |
| Tubular boiler | F. F. Edgar | 505,036 | Sept. 12 | 1201 | 309 | 64 | 1510 |
| Tubular frame construction | A. Perkins | 500,941 | July 4 | 628 | 165 | 64 | 115 |
| Tug fastener. Hame | C. Sievers | 501,966 | July 25 | 2287 | 573 | 64 | 469 |
| Tug. Shaft | T. W. Davies | 503,564 | Aug. 15 | 2195 | 548 | 64 | 995 |
| Tug. Thill | W. F. Niederriter | 501,293 | July 11 | 1205 | 304 | 64 | 234 |
| Tumbler-washer | A. Zauner | 503,638 | Aug. 22 | 2337 | 583 | 64 | 1035 |
| Tumbling-barrel | J. H. Whiting | 502,797 | Aug. 8 | 947 | 231 | 64 | 755 |
| Tunneling-machine | R. Stanley | 504,181 | Aug. 29 | 3197 | 797 | 64 | 1217 |
| Tunneling or mining machine | R. Stanley | 504,179 | Aug. 29 | 3186 | 796<br>797 | 64 | 1215 |
| Tunneling or mining machine | R. Stanley | 504,180 | Aug. 29 | 3193 | 797 | 64 | 1216 |
| Tunnels. Apparatus for relining | S. I. Morris | 504,045 | Aug. 29 | 2969 | 742 | 64 | 1173 |
| Turfing implement | J. C. Greenfield | 504,577 | Sept. 5 | 437 | 111 | 64 | 1351 |
| Turkish bath. Chiffonier | A. J. Cross | 500,858 | July 4 | 514 | 134 | 64 | 94 |
| Turnbuckle | W. H. Albach | 500,636 | July 4 | 484 | 126 | 64 | 88 |
| Turning pearl buttons or other articles. Mechanism for | J. Clèret | 501,922 | July 25 | 2229 | 556 | 64 | 449 |
| Turning tapering surfaces. Tool for | J. Hartness | 501,273 | July 11 | 1174 | 299 | 64 | 226 |
| Turnstile | W. T. Ellison, Jr., and J. Unsworth, Jr. | 501,680 | July 18 | 1627 | 455 | 64 | 363 |
| Turnstile | C. P. Gott | 503,608 | Aug. 22 | 2428 | 604 | 64 | 1052 |
| Tuyere | M. W. Iles | 505,549 | Sept. 26 | 2063 | 526 | 64 | 1697 |
| Tuyere | M. W. Iles | 505,550 | Sept. 26 | 2064 | 526 | 64 | 1698 |
| Twine | J. F. Steward | 501,970 | July 25 | 2293 | | 64 | 461 |
| Twine-ball-gaging device | P. Hetzel | 501,188 | July 11 | 1046 | 265 | 64 | 205 |
| Twine-bobbins. Tension-regulator for | P. Hetzel | 501,187 | July 11 | 1047 | 265 | 64 | 205 |
| Twine-finishing machine | W. H. Avis | 503,936 | Aug. 29 | 2780 | 697 | 64 | 1139 |
| Twine-machine feed-regulator | J. F. Steward | 502,396 | Aug. 1 | 125 | 98 | 64 | 568 |

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| Invention. | Name. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drgs. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|---|
| Twine. Method of and machinery for making | J. P. Steward | 501,971 | July 25 | 2294 | 574 | 64 | 461 |
| Twisting or doubling machine. Yarn | G. A. Draper and A. E. Rhoades | 503,905 | Aug. 22 | 2739 | 685 | 64 | 1112 |
| Type | M. G. Merritt | 502,736 | Aug. 8 | 841 | 204 | 64 | 735 |
| Type-die for matrix-making | C. L. Redfield | 501,297 | July 11 | 1210 | 306 | 64 | 235 |
| Type-distributing machine | O. S. Bowman | 501,597 | July 18 | 1688 | 421, 422 | 64 | 340 |
| Type-founding apparatus. Adjustable | W. Grothe | 501,934 | July 25 | 2246 | 561 | 64 | 453 |
| Type-holder | S. H. Nesbit | 501,358 | July 11 | 1325 | 332 | 64 | 254 |
| Type production. Relief | J. W. Hoke. (Reissue) | 11,363 | Sept. 5 | 632 | 161 | 64 | 1389 |
| Type-setting machinery. Indicator mechanism for | J. Hooker | 505,900 | Sept. 19 | 1468 | 379, 380, 381, 382, 383, 384 | 64 | 1573 |
| Type-wheels. Die for making | F. Ecaubert | 500,801 | July 4 | 429 | 113 | 64 | 79 |
| Type-writer cabinet | M. Bancroft | 505,586 | Sept. 26 | 2149 | 543 | 64 | 1715 |
| Type-writer cabinet | M. Bancroft | 505,646 | Sept. 26 | 2253 | 471 | 64 | 1734 |
| Type-writer cabinet | W. Horrocks | 503,418 | Aug. 15 | 1960 | 467 | 64 | 952 |
| Type-writer easel | M. Lester | 505,557 | Sept. 26 | 2096 | 532 | 64 | 1704 |
| Type-writing machine | F. V. Bartlett | 501,909 | July 25 | 2207 | 550 | 64 | 445 |
| Type-writing machine | A. T. Brown | 503,735 | Aug. 22 | 2487 | 619 | 64 | 1054 |
| Type-writing machine | T. Cahill | 502,700 | Aug. 8 | 771 | 187, 188, 189, 190, 191, 192 | 64 | 722 |
| Type-writing machine | W. Clark | 500,798 | July 4 | 425 | 112 | 64 | 78 |
| Type-writing machine | C. C. Clarke | 502,248 | July 25 | 2753 | 696 | 64 | 548 |
| Type-writing machine | T. J. Downing | 504,713 | Sept. 12 | 656 | 166, 167 | 64 | 1406 |
| Type-writing machine | J. Gardner | 505,547 | Sept. 26 | 2059 | 525 | 64 | 1697 |
| Type-writing machine | J. A. Garner | 502,072 | July 25 | 2455 | 616, 617 | 64 | 491 |
| Type-writing machine | E. Green | 501,651 | July 18 | 1776 | 442, 443 | 64 | 355 |
| Type-writing machine | J. A. Hamilton | 505,521 | Sept. 26 | 2007 | 513, 514 | 64 | 1687 |
| Type-writing machine | J. B. Hammond | 501,504 | July 18 | 1542 | 388, 389 | 64 | 311 |
| Type-writing machine | L. D. Hitchcock | 504,473 | Sept. 5 | 263 | 68, 69 | 64 | 1319 |
| Type-writing machine | H. W. Merritt | 505,057 | Sept. 12 | 1231 | 317 | 64 | 1516 |
| Type-writing machine | H. W. Merritt | 505,058 | Sept. 12 | 1233 | 317 | 64 | 1516 |
| Type-writing machine | M. G. Merritt and W. E. Burnett | 505,059 | Sept. 12 | 1235 | 318 | 64 | 1517 |
| Type-writing machine | J. D. Smith | 502,147 | July 25 | 2574 | 646 | 64 | 514 |
| Type-writing machine | E. Terry | 502,685 | Aug. 1 | 750 | 180 | 64 | 704 |
| Type-writing machine | V. and M. Van der Mynsbrugge | 501,920 | July 11 | 1093 | 278 | 64 | 215 |
| Type-writing machine | G. R. Webb | 501,977 | July 25 | 2301 | 575 | 64 | 463 |
| Type-writing machine | G. B. Webb | 504,897 | Sept. 12 | 966 | 249 | 64 | 1466 |
| Type-writing machine | J. N. Williams | 501,753 | July 18 | 1948 | 482, 483, 484 | 64 | 384 |
| Type-writing-machine joint | E. S. Higgins and H. C. Jenkins | 502,190 | July 25 | 2645 | 667 | 64 | 539 |
| Type-writing-machine key-cushion | R. S. Graham and W. B. Savell | 504,065 | Aug. 29 | 2996 | 748 | 64 | 1178 |
| Type-writing-machine ribbon mechanism | A. T. Brown | 503,736 | Aug. 22 | 2490 | 619, 620 | 64 | 1065 |
| Umbrella-case | J. Rose | 504,945 | Sept. 12 | 1048 | 269 | 64 | 1482 |
| Umbrella-cover | A. Nicholas and L. Tachau | 505,476 | Sept. 26 | 1914 | 493 | 64 | 1670 |
| Umbrella-cover. Detachable | M. C. S. Broun | 501,819 | July 18 | 2054 | 508 | 64 | 402 |
| Umbrella-cover. Detachable | A. J. Robinson | 502,761 | Aug. 8 | 883 | 216 | 64 | 743 |
| Umbrella-runner | H. Lichtenstein | 501,089 | July 11 | 880 | 227 | 64 | 176 |
| Umbrella-stand | H. Tideman | 502,331 | Aug. 1 | 135 | 31 | 64 | 590 |
| Umbrella-stick. Tubular | J. Rose | 504,944 | Sept. 12 | 1047 | 269 | 64 | 1481 |
| Umbrella-support | W. Fanckboner | 504,717 | Sept. 12 | 663 | 168 | 64 | 1407 |
| Umbrella-support | M. Light | 504,843 | Sept. 12 | 898 | 228 | 64 | 1451 |
| Umbrella-support | A. M. Woods | 503,338 | Aug. 15 | 1845 | 457 | 64 | 931 |
| Umbrella-tie | J. H. Doty | 501,772 | July 18 | 1987 | 491 | 64 | 391 |
| Undergarment | J. A. Bennett | 503,520 | Aug. 15 | 2116 | 531 | 64 | 980 |
| Underwaist | E. W. Philbrook | 503,436 | Aug. 15 | 1967 | 493 | 64 | 957 |
| Upright boiler | E. U. Gibbs | 501,711 | July 18 | 1880 | 468 | 64 | 372 |
| Urinal | A. O'Brien | 503,491 | Aug. 15 | 2075 | 518 | 64 | 973 |
| Urinary apparatus | M. D. L. Sherman | 501,372 | July 11 | 1354 | 338 | 64 | 260 |
| Vacuum apparatus | M. Swenson | 504,374 | Sept. 5 | 101 | 25, 26 | 64 | 1229 |
| Vacuum-gage | W. A. Rockliff | 503,330 | Aug. 15 | 1835 | 455 | 64 | 929 |
| Vacuum-pan | J. H. Duncan | 503,312 | Aug. 15 | 1803 | 448 | 64 | 923 |
| Valve | F. J. Ferrell | 501,497 | July 18 | 1751 | 384, 385 | 64 | 309 |
| Valve | T. P. Ford | 503,843 | Aug. 22 | 2637 | 660 | 64 | 1094 |
| Valve | S. F. Gold | 501,713 | July 18 | 1882 | 468 | 64 | 373 |
| Valve | E. C. Henn | 505,792 | Sept. 26 | 2480 | 628 | 64 | 1778 |
| Valve | J. Jeannotte | 504,838 | Sept. 12 | 880 | 226 | 64 | 1450 |
| Valve | G. H. F. Schrader | 505,486 | Sept. 26 | 1997 | 497 | 64 | 1673 |
| Valve. Air-brake | H. M. Lofton | 503,244 | Aug. 15 | 1682 | 413, 414 | 64 | 903 |
| Valve. Automatic relief | W. F. West | 500,645 | July 4 | 174 | 45 | 64 | 34 |
| Valve. Automatic stop | H. W. Forslund | 505,514 | Sept. 26 | 1998 | 512 | 64 | 1685 |
| Valve. Balanced slide | G. S. Neeley | 502,139 | July 25 | 2549 | 639 | 64 | 510 |
| Valve. Balanced slide | F. M. Rites | 501,663 | July 18 | 1799 | 448 | 64 | 359 |
| Valve-controlling mechanism | E. W. Harden | 505,764 | Sept. 26 | 2449 | 616, 617 | 64 | 1769 |
| Valve. Cylinder drain | E. Bergin | 502,602 | Aug. 1 | 586 | 142 | 64 | 675 |
| Valve device | J. Kelly | 505,272 | Sept. 19 | 1579 | 412 | 64 | 1594 |



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|---|---|---|---|---|---|---|---|
| Valve. Engineer's brake | F. L. Clark. (Reissue) | 11,368 | Sept. 26 | 2516 | 635, 636, 637 | 64 | 1788 |
| Valve. Engineer's brake | H. H. Vaughan and M. E. McKee | 504,290 | Aug. 29 | 3366 | 841, 842 | 64 | 1949 |
| Valve. Engineer's graduating | W. O. Pelham | 503,551 | Aug. 15 | 2173 | 543 | 64 | 991 |
| Valve. Faucet | F. Schneider and J. Foley | 504,755 | Sept. 12 | 735 | 183 | 64 | 1422 |
| Valve for brake systems. Triple | A. P. Massey | 503,095 | Aug. 8 | 1429 | 358 | 64 | 843 |
| Valve for closet-tanks. Supply | P. Harvey | 501,507 | July 18 | 1550 | 390 | 64 | 313 |
| Valve for digesters. Inlet | J. E. Rettig | 502,635 | Aug. 1 | 644 | 154, 155 | 64 | 685 |
| Valve for fluid-pressure brakes. Triple | P. Synnestvedt | 505,685 | Sept. 26 | 2316 | 588 | 64 | 1745 |
| Valve for garbage-cars. Outlet | J. E. Rettig | 502,584 | Aug. 1 | 562 | 134 | 64 | 669 |
| Valve for hydraulic or steam machinery | C. A. Jones | 501,791 | July 18 | 2016 | 497, 498 | 64 | 396 |
| Valve for reversible steam-engines | L. Schutte | 501,965 | July 25 | 2286 | 572 | 64 | 460 |
| Valve for suction or blast pipes. Relief | H. L. Day | 503,126 | Aug. 15 | 1492 | 367 | 64 | 868 |
| Valve-gear | A. Collmann | 502,615 | Aug. 1 | 612 | 146, 147 | 64 | 678 |
| Valve-gear for compound engines | D. A. Barnes | 501,986 | July 25 | 2317 | 579 | 64 | 466 |
| Valve-gear. Hydraulic | E. S. Matthews | 503,975 | Aug. 29 | 2855 | 717 | 64 | 1153 |
| Valve-gear. Steam-engine | E. N. Dickerson | 502,878 | Aug. 8 | 1072 | 264, 265 | 64 | 778 |
| Valve. Hot-blast | J. W. Wailes | 501,750 | July 18 | 1945 | 484 | 64 | 384 |
| Valve. Hydrant | S. W. Lewis. (Reissue) | 11,360 | Aug. 15 | 2203 | 550 | 64 | 997 |
| Valve mechanism for fluid-pressure brakes | P. Grabler | 501,615 | July 18 | 1719 | 429 | 64 | 346 |
| Valve mechanism. Triple | P. Synnestvedt | 504,139 | Aug. 29 | 3118 | 780 | 64 | 1201 |
| Valve-operating device for gas-heaters | A. T. Welch | 500,643 | July 4 | 171 | 44 | 64 | 34 |
| Valve. Piston | H. D. Dunbar | 504,153 | Aug. 29 | 3141 | 785 | 64 | 1206 |
| Valve. Pressure-reducing | H. D. W. Gibson | 502,434 | Aug. 1 | 310 | 74 | 64 | 622 |
| Valve. Radiator-air | G. E. Dixon | 504,972 | Sept. 12 | 1095 | 280 | 64 | 1491 |
| Valve. Relief | A. I. Harrison | 500,891 | July 4 | 2565 | 147 | 64 | 103 |
| Valve-reseating machine | C. L. Morse | 504,606 | Sept. 5 | 477 | 122, 123 | 64 | 1359 |
| Valve seats. Grinding globe | W. C. Parsells | 502,932 | Aug. 8 | 1175 | 290 | 64 | 797 |
| Valve. Steam-actuated | G. J. Roberts | 501,579 | July 18 | 1660 | 415 | 64 | 335 |
| Valve. Steam-engine | H. W. Lounsbery | 502,497 | Aug. 1 | 420 | 99, 100 | 64 | 644 |
| Valve. Steam-engine | J. B. Munslow | 502,374 | Aug. 1 | 209 | 49, 50 | 64 | 604 |
| Valve. Steam-engine | A. Roche | 503,001 | Aug. 8 | 1287 | 315 | 64 | 817 |
| Valve. Stop and waste | J. W. Hill | 502,563 | Aug. 1 | 526 | 126 | 64 | 663 |
| Valve. Throttle | B. F. and G. H. Van Matre | 502,939 | Aug. 8 | 1189 | 293 | 64 | 799 |
| Valves. Cut-off for slide | M. Wilkes | 501,394 | July 11 | 1388 | 347, 348 | 64 | 956 |
| Vapor-burner | C. Bruce | 502,029 | July 25 | 2388 | 600 | 64 | 479 |
| Vapor-burner | J. A. Chandler | 505,508 | Sept. 26 | 1981 | 508 | 64 | 1681 |
| Vapor-burner | J. A. Lannert and W. R. Jeavons | 504,120 | Aug. 29 | 3103 | 776 | 64 | 1199 |
| Vaporizing burner. Hydrocarbon | A. J. English | 503,531 | Aug. 15 | 2137 | 536 | 64 | 984 |
| Varnish and apparatus therefor. Manufacturing | H. Pfanne | 501,578 | July 18 | 1659 | 415 | 64 | 335 |
| Varnish. Manufacture of | W. D. Field | 504,064 | Aug. 29 | 2995 | | 64 | 1178 |
| Vault for ceilings, bridges, &c | J. Melan | 505,054 | Sept. 12 | 1226 | 316 | 64 | 1515 |
| Vault or floor light | J. C. French | 504,872 | Sept. 12 | 928 | 239 | 64 | 1459 |
| Vault or skylight cover | J. Jenkinson | 501,720 | July 18 | 1892 | 470 | 64 | 375 |
| Vegetable-chopper | C. B. Trumble | 500,695 | July 4 | 261 | 71 | 64 | 49 |
| Vegetable-cutter | J. F. Heinlein | 503,599 | Aug. 22 | 2274 | 568 | 64 | 1023 |
| Vegetable-peeling machine | J. B. Foote | 501,613 | July 18 | 1716 | 428 | 64 | 345 |
| Vegetable-slicing machine | C. M. Fairbanks | 501,928 | July 25 | 2236 | 558 | 64 | 451 |
| Vehicle | J. Krauss | 502,303 | Aug. 1 | 78 | 18 | 64 | 580 |
| Vehicle | H. S. Van Patten | 505,563 | Sept. 26 | 2104 | 534 | 64 | 1706 |
| Vehicle-brake | W. J. Botts | 503,897 | Aug. 22 | 2717 | 692 | 64 | 1110 |
| Vehicle-brake | C. Goelz | 504,343 | Sept. 5 | 48 | 13 | 64 | 1280 |
| Vehicle-brake | C. E. Newman | 502,576 | Aug. 1 | 546 | 130 | 64 | 666 |
| Vehicle-brake. Automatic | E. Swartz and D. S. Beemer | 501,545 | July 18 | 1603 | 403, 404 | 64 | 324 |
| Vehicle canopy-top | J. U. Tabor | 505,544 | Sept. 26 | 2053 | 524 | 64 | 1695 |
| Vehicle-gear | C. Hansen | 502,905 | Aug. 8 | 1121 | 276 | 64 | 788 |
| Vehicle. Locomotive | C. Lübrig | 502,443 | Aug. 1 | 329 | 78, 79 | 64 | 626 |
| Vehicle running-gear | W. Bonnar | 503,032 | Aug. 8 | 1333 | 328 | 64 | 826 |
| Vehicle running-gear | J. M. Holler | 501,072 | July 11 | 846 | 219 | 64 | 170 |
| Vehicle running-gear | C. E. Holley | 505,548 | Sept. 26 | 2061 | 526 | 64 | 1697 |
| Vehicle running-gear | J. Urbanek | 500,980 | July 4 | 705 | 185 | 64 | 128 |
| Vehicle-seat shifting-rail | H. C. Swan | 503,881 | Aug. 22 | 2690 | 674 | 64 | 1104 |
| Vehicle-seat spring-back | H. E. Herrick | 503,319 | Aug. 15 | 1815 | 450 | 64 | 925 |
| Vehicle-spindle | R. M. McBride | 504,499 | Sept. 5 | 317 | 80 | 64 | 1329 |
| Vehicle-spring | E. H. Booth | 502,605 | Aug. 1 | 602 | 143 | 64 | 676 |
| Vehicle-spring | G. T. Chapman | 503,761 | Aug. 22 | 2531 | 629 | 64 | 1073 |
| Vehicle-spring | J. A. Luke | 501,043 | Aug. 29 | 2967 | 742 | 64 | 1173 |
| Vehicle-spring | E. F. Morse | 505,248 | Sept. 19 | 1539 | 401 | 64 | 1596 |
| Vehicle-spring | H. H. Peiper | 502,318 | Aug. 1 | 111 | 28 | 64 | 586 |
| Vehicle. Spring | C. C. Bradley | 502,027 | July 25 | 2386 | 599, 600 | 64 | 478 |
| Vehicle. Spring-propelled | C. E. Newman | 502,577 | Aug. 1 | 547 | 130, 131 | 64 | 667 |
| Vehicle spring-seat | J. A. Alexander | 500,789 | July 4 | 409 | 107 | 64 | 76 |
| Vehicle. Tramway | C. Lübrig | 502,442 | Aug. 1 | 327 | 77, 78 | 64 | 626 |
| Vehicle. Two-seated | C. C. Bradley | 503,308 | Aug. 15 | 1787 | 441 | 64 | 921 |
| Vehicle-wheel | M. Burgess | 500,703 | July 4 | 272 | 73 | 64 | 51 |
| Vehicle-wheel | D. Crowther | 501,992 | July 25 | 2324 | 580 | 64 | 467 |
| Vehicle-wheel | J. Dean | 505,701 | Sept. 26 | 2348 | 594 | 64 | 1751 |
| Vehicle-wheel | J. E. Frist | 504,340 | Sept. 5 | 44 | 13 | 64 | 1279 |
| Vehicle-wheel | J. E. Frist | 504,573 | Sept. 5 | 432 | 110 | 64 | 1350 |
| Vehicle-wheel | J. O. Hiner | 501,490 | July 11 | 1423 | 357 | 64 | 273 |
| Vehicle-wheel | A. L. H. Messmer | 502,006 | July 25 | 2344 | 587 | 64 | 471 |
| Vehicle-wheel | H. Moore | 504,440 | Sept. 5 | 208 | 54, 55 | 64 | 1309 |

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|---|---|---|---|---|---|---|---|
| Vehicle-wheel | J. H. Morris | 501,525 | July 18 | 1578 | 397 | 64 | 318 |
| Vehicle-wheel | J. G. Roseboom | 503,554 | Aug. 15 | 2180 | 545 | 64 | 992 |
| Vehicle-wheel. Pneumatic | J. P. Kelly | 504,273 | Aug. 29 | 3344 | 836 | 64 | 1244 |
| Vehicle-wheels. Runner attachment for | W. E. Mitchell | 505,668 | Sept. 26 | 2282 | 579 | 64 | 1740 |
| Vehicle. Wheeled | R. Steel | 504,685 | Sept. 5 | 610 | 156 | 64 | 1385 |
| Vehicles. Controlling-switch for electrically-propelled | H. P. Davis | 503,279 | Aug. 15 | 1737 | 429 | 64 | 913 |
| Vehicles. Driving mechanism for road- | A. C. Ames | 500,544 | July 4 | 1 | 1 | 64 | 3 |
| Veil-clasp | C. M. Day | 500,864 | July 4 | 595 | 136 | 64 | 95 |
| Velocipede | F. P. Crosby | 501,493 | July 18 | 1526 | 383 | 64 | 308 |
| Velocipede | O. Cullmann | 504,079 | Aug. 29 | 3013 | 753 | 64 | 1162 |
| Velocipede | J. E. A. Gibbs | 501,712 | July 18 | 1880 | 468 | 64 | 373 |
| Velocipede | A. L. Hahl | 502,717 | Aug. 8 | 618 | 198 | 64 | 731 |
| Velocipede | A. L. Hahl | 503,080 | Aug. 8 | 1398 | 346 | 64 | 838 |
| Velocipede | A. Sanford | 505,373 | Sept. 19 | 1745 | 452 | 64 | 1624 |
| Velocipede-brake | G. Hancock | 503,112 | Aug. 8 | 1461 | 350 | 64 | 849 |
| Velocipede. Ice- | W. G. Bouse | 504,265 | Aug. 29 | 3398 | 852 | 64 | 1241 |
| Velocipede. Ice- | A. Karlson | 500,568 | July 4 | 70 | 21 | 64 | 14 |
| Velocipede. Ice- | J. Schmid | 504,625 | Sept. 5 | 502 | 129 | 64 | 1384 |
| Velocipede. Ice- | D. Smith | 500,623 | July 4 | 138 | 37 | 64 | 27 |
| Velocipede mud-guard | R. M. Woodhead | 502,802 | Aug. 8 | 958 | 232 | 64 | 750 |
| Velocipede-saddle | L. W. Harper | 501,782 | July 18 | 1999 | 494 | 64 | 393 |
| Velocipede-saddle | E. L. Shultz | 502,681 | Aug. 1 | 743 | 179 | 64 | 702 |
| Velocipede speed-gear | C. Vogel | 503,919 | Aug. 22 | 2750 | 699 | 64 | 1116 |
| Vending and fortune-telling machine | J. Schofield | 503,686 | Aug. 22 | 2402 | 599 | 64 | 1048 |
| Vending apparatus. Coin-controlled | H. L. Hook | 503,139 | Aug. 15 | 1512 | 372 | 64 | 872 |
| Vending apparatus. Coin-controlled | C. A. Howe | 502,722 | Aug. 8 | 825 | 200 | 64 | 732 |
| Vending apparatus. Coin-controlled | A. F. Peacock | 502,754 | Aug. 8 | 867 | 211, 212 | 64 | 740 |
| Vending liquids. Coin-controlled apparatus for | H. W. Gore | 502,561 | Aug. 1 | 524 | 125 | 64 | 663 |
| Vending-machine | J. M. Henry | 505,793 | Sept. 26 | 2491 | 628, 629 | 64 | 1778 |
| Vending machine | O. H. Woodfill | 502,598 | Aug. 1 | 584 | 140 | 64 | 673 |
| Vending-machine. Coin-controlled | H. Hoeschen | 502,817 | Aug. 8 | 981 | 239 | 64 | 762 |
| Veneer-machine | W. H. Williams | 501,395 | July 11 | 1389 | 348 | 64 | 366 |
| Vent for oil-cans. Air- | G. W. Wear | 502,334 | Aug. 1 | 139 | 32 | 64 | 591 |
| Vent-pipe | J. Heidenreiter | 501,835 | July 18 | 2071 | 511 | 64 | 406 |
| Ventilating apparatus | F. C. Chadborn | 502,090 | July 25 | 2486 | 625 | 64 | 497 |
| Ventilating. Induction apparatus for | M. R. Ruble | 505,231 | Sept. 19 | 1541 | 394 | 64 | 1581 |
| Ventilating-pipes. Roof connection for | B. B. Bignall | 501,643 | July 18 | 1765 | 439 | 64 | 353 |
| Ventilator: *See* Apartment-ventilator. Basement-ventilator. Car-ventilator. Car window-ventilator. Grain-ventilator. Refrigerator-ventilator. Sanitary ventilator. | | | | | | | |
| Vessels. Floating signal for locating sunken | J. Larsson | 504,225 | Aug. 29 | 3264 | 815 | 64 | 1229 |
| Veterinary forceps | D. M. Scheffer | 502,386 | Aug. 1 | 231 | 55 | 64 | 608 |
| Veterinary operating table | W. J. Magee | 500,568 | July 4 | 76 | 22 | 64 | 15 |
| Veterinary tooth-cutter | G. W. Teufel | 503,298 | Aug. 15 | 1772 | 438 | 64 | 918 |
| Vial-holder | F. A. Reichardt | 501,162 | July 11 | 1013 | 257 | 64 | 108 |
| Vinegar. Apparatus for the manufacture of | R. M. Hughes | 502,819 | Aug. 8 | 984 | 239, 240 | 64 | 762 |
| Violin-rest | F. H. Isaacs | 503,603 | Aug. 22 | 2282 | 569 | 64 | 1025 |
| Vise and bench-hook | E. G. Bailey | 504,652 | Sept. 5 | 541 | 138 | 64 | 1379 |
| Vise and winch. Combined | M. J. Doherty | 502,177 | July 25 | 2027 | 502 | 64 | 525 |
| Vise. Bench- | T. B. Jackson | 504,586 | Sept. 5 | 449 | 114 | 64 | 1354 |
| Vise. Bench- | A. Lurie | 502,197 | July 25 | 2541 | 637 | 64 | 502 |
| Vise. Carpenter's | J. Aichner | 504,856 | Sept. 12 | 904 | 234 | 64 | 1455 |
| Vise. Milling-machine | F. Mossberg | 503,397 | Aug. 15 | 1828 | 453 | 64 | 928 |
| Vise. Quick-action | J. R. Denison | 503,075 | Aug. 8 | 1392 | 344 | 64 | 837 |
| Visible signal | F. W. Dunbar | 501,185 | July 11 | 1044 | 264 | 64 | 305 |
| Voltmeter. Recording- | W. H. Bristol | 505,243 | Sept. 19 | 1531 | 399 | 64 | 1584 |
| Volute coils. Construction of metallic | J. Aitchison and T. Bradley | 501,815 | July 18 | 2048 | 504 | 64 | 401 |
| Vote-counting apparatus | E. G. Richards | 500,948 | July 4 | 636 | 168 | 64 | 117 |
| Vote recording machine | J. McTammany | 502,744 | Aug. 8 | 853 | 208 | 64 | 736 |
| Voting-booth | P. Zuckriegel | 504,016 | Aug. 29 | 2924 | 732 | 64 | 1165 |
| Voting booth or stall | J. W. and G. A. Shrague | 502,778 | Aug. 8 | 912 | 222 | 64 | 748 |
| Voting-machine | J. McTammany | 502,745 | Aug. 8 | 857 | 208, 209 | 64 | 736 |
| Voting-machine | C. F. Roper | 501,443 | July 11 | 1450 | 364 | 64 | 979 |
| Waffle-iron | D. Shields | 502,098 | July 25 | 2481 | 623, 624 | 64 | 496 |
| Wagon | T. Geisel | 505,100 | Sept. 19 | 1312 | 338 | 64 | 1545 |
| Wagon | C. W. Robinson | 501,165 | July 11 | 1016 | 258 | 64 | 199 |
| Wagon-body | J. Hessong | 505,464 | Sept. 26 | 1897 | 480 | 64 | 1667 |
| Wagon-bolster standard | H. C. Buckingham | 502,346 | Aug. 1 | 162 | 38 | 64 | 596 |
| Wagon-brake | J. Krieg | 505,048 | Sept. 12 | 1217 | 313 | 64 | 1513 |
| Wagon-brake | J. Vanderveer | 504,639 | Sept. 5 | 521 | 134 | 64 | 1368 |
| Wagon-brake. Automatic | A. J. Smith and J. V. Landes | 505,689 | Sept. 26 | 2309 | 586 | 64 | 1743 |
| Wagon. Dump- | C. B. Deyo | 502,249 | July 25 | 2755 | 696 | 64 | 548 |
| Wagon. Dumping- | F. Bouker | 502,658 | Aug. 8 | 768 | 186 | 64 | 722 |
| Wagon. Dumping- | C. E. Butler | 502,278 | Aug. 1 | 34 | 5 | 64 | 570 |
| Wagon. Dumping- | J. Fleger | 501,958 | July 25 | 2333 | 584 | 64 | 489 |
| Wagon. Dumping- | L. C. Hicks | 504,304 | Aug. 29 | 3390 | 848 | 64 | 1253 |
| Wagon. Dumping- | M. L. Senderling | 505,236 | Sept. 19 | 1518 | 397 | 64 | 1582 |
| Wagon. Dumping- | F. Weber | 501,390 | July 11 | 1382 | 346 | 64 | 985 |
| Wagon-jack | C. H. Dwelly | 501,410 | July 11 | 1413 | 354 | 64 | 971 |
| Wagon-jack | C. Emons | 502,397 | Aug. 1 | 946 | 59 | 64 | 611 |
| Wagon-jack | Z. L. Palmer | 500,940 | July 4 | 627 | 165 | 64 | 115 |
| Wagon. Lumber- | P. Girnau | 505,519 | Sept. 26 | 2004 | 513 | 64 | 1668 |
| Wagon or cart | W. C. Read and B. Hager | 500,612 | July 4 | 124 | 33 | 64 | 94 |
| Wagon-reach | F. A. Lemars | 502,419 | Aug. 1 | 283 | 67 | 64 | 616 |
| Wagon running-gear | H. J. Brace | 502,609 | Aug. 1 | 605 | 144 | 64 | 677 |
| Wagon running-gear | L. S. Crittenden | 502,282 | Aug. 1 | 59 | 7 | 64 | 572 |



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|---|---|---|---|---|---|---|---|
| Wagon-seat | C. C. Field | 503,411 | Aug. 15 | 1946 | 484 | 64 | 950 |
| Waist. Skeleton | L. G. Stitt | 503,916 | Aug. 22 | 2747 | 688 | 64 | 1116 |
| Wall. Concrete | J. W. Beaumont | 504,194 | Aug. 29 | 3219 | 801 | 64 | 1220 |
| Wall-facing | D. F. Saum | 501,029 | July 4 | 777 | 203, 204 | 64 | 142 |
| Wall. Fireproof building- | P. A. Deslauriers | 504,415 | Sept. 5 | 167 | 44 | 64 | 1301 |
| Wall or ceiling covering | E. Jansen | 501,278 | July 11 | 1184 | 300 | 64 | 230 |
| Warming device | F. Lied | 502,370 | Aug. 1 | 201 | 48 | 64 | 602 |
| Warp-threads. Harness-supporting and heddle-eye-selecting device for machines for drawing in | L. P. Sherman | 500,965 | July 4 | 679 | 178, 179 | 64 | 124 |
| Warp-threads. Needle-operating and reed-dent-separating device for machines for drawing in | L. P. Sherman | 500,964 | July 4 | 677 | 178 | 64 | 124 |
| Warp-threads. Thread-selecting device for machines for drawing in | L. P. Sherman | 500,966 | July 4 | 684 | 179, 180 | 64 | 124 |
| Warping-machine | A. E. Rhoades | 504,459 | Sept. 5 | 235 | 62, 63 | 64 | 1314 |
| Warping machine. Swift | W. P. Kirkpatrick | 505,770 | Sept. 26 | 2458 | 619, 620 | 64 | 1771 |
| Warping-machines. Mechanism for handling beams of | A. E. Rhoades | 504,457 | Sept. 5 | 230 | 61, 62 | 64 | 1313 |
| Warping or beaming machine | R. Simon | 504,791 | Sept. 12 | 795 | 201, 202 | 64 | 1432 |
| Washboard | H. J. Gilbert | 504,028 | Aug. 29 | 2942 | 736 | 64 | 1168 |
| Washboard | J. T. Sargent | 501,444 | July 11 | 1455 | 364 | 64 | 980 |
| Washboiler | W. P. Burke | 503,202 | Aug. 15 | 1710 | 421 | 64 | 908 |
| Washboiler | P. J. Shampay | 501,448 | July 11 | 1461 | 366, 367 | 64 | 981 |
| Washer: *See* Barrel-washer. Tumbler-washer. Ore-washer. | | | | | | | |
| Washer | T. Gingras | 501,207 | July 11 | 1074 | 273 | 64 | 211 |
| Washer and nut-lock. Combined | C. H. Foote | 505,454 | Sept. 26 | 1893 | 485 | 64 | 1664 |
| Washer-fastener for hose-couplings, &c | J. W. Fletcher | 503,344 | Aug. 15 | 1955 | 459 | 64 | 933 |
| Washer-finishing machine | K. Frucht | 504,830 | Sept. 12 | 859 | 220, 221, 222, 223 | 64 | 1445 |
| Washing glasses. Apparatus for | W. B. Taylor | 502,868 | Aug. 8 | 1057 | 260 | 64 | 776 |
| Washing-machine | A. P. Anderson | 500,546 | July 4 | 9 | 3 | 64 | 4 |
| Washing-machine | D. W. Bovee | 502,608 | Aug. 1 | 605 | 143, 144 | 64 | 677 |
| Washing-machine | C. Bruley | 501,268 | July 11 | 1168 | 296 | 64 | 227 |
| Washing-machine | P. Dixon and P. McLaughlin | 502,851 | Aug. 8 | 1033 | 253 | 64 | 771 |
| Washing-machine | J. A. Garrett | 504,418 | Sept. 5 | 178 | 46 | 64 | 1304 |
| Washing-machine | J. A. Glick, V. M. Heim, and A. E. Hafer. | 501,063 | July 11 | 835 | 217 | 64 | 167 |
| Washing-machine | J. Goeddeke | 502,961 | Aug. 8 | 1225 | 301, 302 | 64 | 805 |
| Washing-machine | F. A. Lallemand | 502,730 | Aug. 8 | 835 | 202 | 64 | 734 |
| Washing-machine | M. McKeever | 502,314 | Aug. 1 | 98 | 23 | 64 | 584 |
| Washing-machine | E. G. Minnemeyer | 504,989 | Sept. 12 | 1128 | 289 | 64 | 1496 |
| Washing-machine | E. D. Reeve | 504,246 | Aug. 29 | 3301 | 824, 825 | 64 | 1235 |
| Washing-machine | G. Seger | 502,660 | Aug. 1 | 740 | 178 | 64 | 702 |
| Washing-machine | J. Shaffer | 504,946 | Sept. 12 | 1049 | 269 | 64 | 1482 |
| Washing-machine | L. D. Swaim | 505,613 | Sept. 26 | 2129 | 554 | 64 | 1722 |
| Washing-machine | E. L. Wallace | 504,763 | Sept. 12 | 748 | 196 | 64 | 1425 |
| Washing-machine | H. de Weerdt | 503,779 | Aug. 22 | 2550 | 636 | 64 | 1078 |
| Washtub | E. Keith | 504,495 | Sept. 5 | 307 | 78 | 64 | 1327 |
| Washtub | F. Rasner | 503,913 | Aug. 22 | 2743 | 688 | 64 | 1115 |
| Watch-bow fastener | F. Mink | 501,210 | July 11 | 1079 | 274 | 64 | 212 |
| Watch-bow fastener | L. Platnauer | 500,817 | July 4 | 451 | 118 | 64 | 83 |
| Watchcase-die | A. W. Hofmann | 503,600 | Aug. 22 | 2275 | 568 | 64 | 1024 |
| Watchcase-pendant | O. O. Aune | 502,988 | Aug. 1 | 5 | 2 | 64 | 567 |
| Watchcase-pendant | O. W. Buerger | 503,714 | Aug. 22 | 2455 | 611 | 64 | 1058 |
| Watchcase-pendant | F. Mink | 505,474 | Sept. 26 | 1911 | 492 | 64 | 1669 |
| Watchcase-spring | J. H. Fleming | 503,314 | Aug. 15 | 1806 | 448 | 64 | 923 |
| Watch-guard | H. S. Hopper | 503,480 | Aug. 15 | 2063 | 515 | 64 | 970 |
| Watch guard or chain holder | H. M. Henning | 505,657 | Sept. 26 | 2269 | 575 | 64 | 1737 |
| Watch-jewels. Mechanism for setting | G. E. Hunter | 503,483 | Aug. 15 | 2066 | 515 | 64 | 971 |
| Watch-key | I. Williams | 502,060 | July 25 | 2438 | 613 | 64 | 488 |
| Watchmaker's gage | J. D. Howell | 503,238 | Aug. 15 | 1671 | 411 | 64 | 901 |
| Watch. Stem winding and setting | C. H. Bagley | 503,516 | Aug. 15 | 2111 | 529 | 64 | 980 |
| Watch. Stem winding and setting | C. H. Bagley | 503,517 | Aug. 15 | 2113 | 530 | 64 | 980 |
| Watch. Stem winding and setting | C. P. Corliss | 503,527 | Aug. 15 | 2130 | 535 | 64 | 983 |
| Watch. Stem winding and setting | E. H. Flint | 503,533 | Aug. 15 | 2139 | 537 | 64 | 985 |
| Watch. Stem winding and setting | G. E. Hunter | 503,482 | Aug. 15 | 2065 | 515 | 64 | 971 |
| Watch. Stem winding and setting | N. Silberberg | 501,108 | July 11 | 925 | 237 | 64 | 183 |
| Watch. Stem winding and setting | J. Stark | 503,502 | Aug. 15 | 2092 | 522 | 64 | 976 |
| Watch. Stop- | A. C. Gunn | 503,416 | Aug. 15 | 1956 | 485, 486 | 64 | 952 |
| Watch. Stop- | H. A. Lugrin | 505,052 | Sept. 12 | 1223 | 315 | 64 | 1514 |
| Watch winding device | I. Grasset and A. Meylan | 502,884 | Aug. 8 | 1060 | 266 | 64 | 780 |
| Water. Apparatus for sterilising | D. Grove | 500,763 | July 4 | 371 | 95 | 64 | 69 |
| Water-carrier. Highland | J. Northway and T. E. Hammond | 500,936 | July 4 | 623 | 164 | 64 | 114 |
| Water-closet | F. A. Wells | 502,452 | Aug. 1 | 341 | 82 | 64 | 620 |
| Water-closet cistern | J. Hankenbof | 505,601 | Sept. 26 | 2170 | 549 | 64 | 1719 |
| Water-closet flushing apparatus | J. E. Boyle. (Reissue) | 11,351 | July 18 | 2194 | 548 | 64 | 437 |
| Water-closet seat | J. P. Rundle | 502,762 | Aug. 8 | 884 | 217 | 64 | 743 |
| Water-closet tanks. Discharge-valve for | D. D. Buick | 502,611 | Aug. 1 | 607 | 145 | 64 | 677 |
| Water-conductors to buildings. Device for attaching | O. Rosenquest | 500,616 | July 4 | 120 | 34 | 64 | 95 |
| Water-cooler | E. T. Green | 501,007 | July 4 | 743 | 195 | 64 | 135 |
| Water-cooler | J. Hymans | 504,585 | Sept. 5 | 449 | 114 | 64 | 1353 |
| Water-cooler | A. W. Meyer | 504,439 | Sept. 5 | 207 | 54 | 64 | 1300 |

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|---|---|---|---|---|---|---|---|
| Water-cruet. Eucharistic | L. C. Beaudet | 500,843 | July 4 | 493 | 128 | 64 | 90 |
| Water. Device for storing and delivering filtered | F. K. Way | 504,007 | Aug. 29 | 2012 | 730, 731 | 64 | 1163 |
| Water-fountain | F. P. Hinds | 503,417 | Aug. 15 | 1958 | 486, 487 | 64 | 952 |
| Water-gage | F. H. Hausman | 502,073 | July 25 | 2457 | 617 | 64 | 492 |
| Water-gage | C. B. Marshall | 502,128 | July 25 | 2543 | 638 | 64 | 509 |
| Water-gage | T. W. Miller | 504,694 | Sept. 5 | 629 | 160 | 64 | 1398 |
| Water-gage | F. J. Stulp | 501,544 | July 18 | 1602 | 407 | 64 | 323 |
| Water-heater | F. Jakel | 504,587 | Sept. 5 | 450 | 114, 115 | 64 | 1354 |
| Water-heater | A. Long and C. McCumber | 505,529 | Sept. 26 | 2034 | 519 | 64 | 1691 |
| Water-heater | J. Winterflood | 500,987 | July 4 | 715 | 188 | 64 | 130 |
| Water-heater. Fireplace | A. Berghold | 500,554 | July 4 | 29 | 10 | 64 | 7 |
| Water-heater. Submerged | R. S. Rutter | 504,247 | Aug. 29 | 2303 | 825 | 64 | 1235 |
| Water-heating apparatus | W. S. Reed | 501,846 | July 18 | 2087 | 515 | 64 | 408 |
| Water-meter. Disk | G. B. Bassett | 501,203 | July 11 | 1068 | 271, 272 | 64 | 210 |
| Water-meter. Disk | H. F. Whittier | 501,237 | July 11 | 1118 | 284 | 64 | 219 |
| Water-meter. Rotary | G. F. Chappell | 502,247 | July 25 | 2751 | 695, 696 | 64 | 548 |
| Water. Method of and apparatus for purifying | H. Roeske | 501,732 | July 18 | 1909 | 475 | 64 | 378 |
| Water-motor | S. D. Shepperd | 504,283 | Aug. 29 | 3356 | 859 | 64 | 1247 |
| Water. Process of and apparatus for purifying | D. Hanna | 502,252 | July 25 | 2759 | 698 | 64 | 550 |
| Waterproof fabrics. Manufacturing | G. C. Mandleberg | 500,664 | July 4 | 219 | ..... | 64 | 42 |
| Water-purifying apparatus | J. J. Hoppes | 503,140 | Aug. 15 | 1514 | 372 | 64 | 872 |
| Water. Sterilized and drinkable | C. Herscher | 501,784 | July 18 | 2003 | 494 | 64 | 394 |
| Water-tight lining | D. Furgeson | 505,041 | Sept. 12 | 1207 | 311 | 64 | 1512 |
| Water-tube safety-boiler | H. W. Frackmann | 503,130 | Aug. 15 | 1501 | 369 | 64 | 870 |
| Water-wheel | E. N. Andrews | 505,342 | Sept. 19 | 1690 | 435 | 64 | 1614 |
| Water-wheel. Compound | L. Wertz | 501,123 | July 11 | 951 | 243 | 64 | 187 |
| Water-wheel regulator. Electric | E. R. Holcomb | 502,634 | Aug. 1 | 628 | 151 | 64 | 662 |
| Weather-strip | M. Bradford | 500,559 | July 4 | 36 | 11 | 64 | 8 |
| Weather-strip | H. C. Fuller | 500,759 | July 4 | 366 | 95 | 64 | 68 |
| Weather-strip | A. T. Green and J. Weaselowski | 500,885 | July 4 | 557 | 144 | 64 | 101 |
| Weather-strip | W. T. Vallandingham | 502,644 | Aug. 1 | 661 | 161 | 64 | 688 |
| Weather-strip. Self-operating | J. H. Graham | 501,503 | July 18 | 1540 | 388 | 64 | 311 |
| Weaving elastic fabrics | S. Brown | 502,699 | Aug. 8 | 770 | 187 | 64 | 722 |
| Weed-cutter, &c | W. A. McCoy | 500,932 | July 4 | 618 | 163 | 64 | 113 |
| Weeder and cultivator | C. C. Platt | 501,360 | July 11 | 1330 | 333 | 64 | 255 |
| Weigher. Automatic grain | J. C. King | 505,769 | Sept. 26 | 2456 | 619 | 64 | 1771 |
| Weighing basket. Coal | T. C. du Pont | 505,394 | Sept. 19 | 1778 | 461 | 64 | 1631 |
| Weight-motor | D. J. Freese | 502,814 | Aug. 8 | 977 | 238 | 64 | 760 |
| Welding apparatus. Electric | H. Lemp | 504,496 | Sept. 5 | 308 | 78 | 64 | 1327 |
| Welding machine. Automatic chain | E. Thomson and C. E. Harthan | 501,546 | July 18 | 1604 | 404, 405 | 64 | 323 |
| Welding machine. Electric | M. M. Suppes | 500,973 | July 4 | 695 | 182, 183 | 64 | 126 |
| Welding machine for headers or other tubes. End | C. P. Higgins | 503,961 | Aug. 29 | 2837 | 708, 709 | 64 | 1149 |
| Well. Artesian | R. J. Chipman | 503,651 | Aug. 22 | 2353 | 587 | 64 | 1038 |
| Well boring and drilling machine | C. W. Walker | 501,261 | July 11 | 1158 | 293, 294 | 64 | 225 |
| Well-boring apparatus | R. S. Rickey and I. Feitel | 504,619 | Sept. 5 | 492 | 127 | 64 | 1362 |
| Well-drilling apparatus | S. MacEachen | 503,051 | Aug. 8 | 1357 | 335, 336 | 64 | 831 |
| Well-drilling machinery | A. C. Darragh | 505,443 | Sept. 26 | 1867 | 481 | 64 | 1661 |
| Well-strainer | J. J. Moser | 501,655 | July 18 | 1789 | 445 | 64 | 357 |
| Well tool. Oil | G. Woodard | 505,377 | Sept. 19 | 1749 | 454 | 64 | 1625 |
| Wells. Device for drawing casings from deep | D. Bowen | 505,902 | Sept. 19 | 1557 | 406 | 64 | 1500 |
| Welt-attaching machine | H. C. Gros | 501,831 | July 18 | 2065 | 509, 510 | 64 | 405 |
| Welt-making machine | Z. T. French and W. C. Meyer | 505,598 | Sept. 26 | 2166 | 548 | 64 | 1718 |
| Whalebone. Making artificial | P. C. Dame and L. Prud'hon | 501,222 | July 11 | 1098 | ..... | 64 | 216 |
| Wheat-scourer | G. V. Dixon | 505,702 | Sept. 26 | 2349 | 594 | 64 | 1751 |
| Wheat-scourer | J. D. Sheaffer | 502,915 | Aug. 8 | 1136 | 280 | 64 | 791 |
| Wheel: *See* Car-wheel, Caster-wheel, Cycle-wheel, Driving-wheel, Emery-wheel, Fifth-wheel, Metal wheel, Paddle-wheel, Propeller-wheel, Sandpaper-wheel, Sprocket-wheel, Traction-wheel, Trolley-wheel, Vehicle-wheel, Water-wheel, Wind-wheel. | | | | | | | |
| Wheel | O. Cullmann | 504,080 | Aug. 29 | 3013 | 753 | 64 | 1182 |
| Wheel | F. C. Hockensmith | 500,578 | July 4 | 63 | 18 | 64 | 13 |
| Wheel | H. E. Kuhner | 500,913 | July 4 | 592 | 155 | 64 | 109 |
| Wheel | G. B. Out | 502,447 | Aug. 1 | 335 | 80 | 64 | 628 |
| Wheel-press | H. D. Gordon | 504,030 | Aug. 29 | 2945 | 736, 737 | 64 | 1168 |
| Wheel-press | H. D. Gordon | 504,031 | Aug. 29 | 2947 | 737 | 64 | 1169 |
| Wheel rims. Method of and apparatus for forming compress- | L. M. Todd | 503,360 | Aug. 15 | 1892 | 466, 467 | 64 | 938 |
| Wheels. Making | W. W. Speer | 505,612 | Sept. 26 | 2188 | 553 | 64 | 1702 |
| Wheels. Spring-rim for | J. B. Sr. and J. B. Dunlop, Jr | 501,409 | July 11 | 1411 | 353 | 64 | 271 |
| Whiffletree | C. S. Wells | 504,922 | Sept. 12 | 849 | 218 | 64 | 1443 |
| Whiffletree-hook | G. C. Edmunds | 501,002 | July 4 | 738 | 193 | 64 | 134 |
| Whiffletree-hook | O. C. Joyce | 504,925 | Sept. 12 | 1017 | 262 | 64 | 1476 |
| Whiffletree-hook | W. J. Stowe | 504,686 | Sept. 5 | 611 | 156 | 64 | 1385 |
| Whip | F. A. Sanford | 503,332 | Aug. 15 | 1838 | 455 | 64 | 930 |
| Whip-hanger | F. Taylor | 501,196 | July 11 | 1061 | 268 | 64 | 208 |
| Whip-socket | F. M. Beidler | 503,340 | Aug. 15 | 1847 | 457 | 64 | 932 |
| Whistle | W. Ely | 504,716 | Sept. 12 | 661 | 168 | 64 | 1407 |



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|---|---|---|---|---|---|---|---|
| Whistle. Steam | E. H. Lunken | 503,547 | Aug. 15 | 2168 | 542 | 64 | 990 |
| Wick. Lamp | H. Pieper, Jr | 504,501 | Sept. 5 | 321 | 82 | 64 | 1329 |
| Wind-engine | G. A. Musselman | 502,860 | Aug. 8 | 1043 | 256 | 64 | 773 |
| Wind-instrument | J. L. Maher | 504,396 | Sept. 5 | 135 | 36 | 64 | 1296 |
| Wind-instruments. Self-acting water-key for | J. Lindstrom | 504,354 | Sept. 5 | 60 | 16 | 64 | 1292 |
| Wind-wheel | J. C. Walker | 505,736 | Sept. 26 | 2400 | 606, 607 | 64 | 1750 |
| Winding-machine | A. A. Brigham | 503,277 | Aug. 15 | 1735 | 428 | 64 | 912 |
| Winding mechanism. Cop and bobbin | O. Lever and W. S. Grundy | 503,325 | Aug. 15 | 1824 | 451, 452 | 64 | 927 |
| Winding thread on spools. Machine for | D. F. Hunt | 503,086 | Aug. 8 | 1410 | 348 | 64 | 840 |
| Windmill | C. W. Clarke | 503,652 | Aug. 22 | 2354 | 588 | 64 | 1038 |
| Windmill | E. L. Davies and J. N. White | 504,301 | Aug. 29 | 3385 | 846, 847 | 64 | 1252 |
| Windmill | G. Herzog | 504,035 | Aug. 29 | 2952 | 739 | 64 | 1170 |
| Windmill | W. Kouns | 500,911 | July 4 | 589 | 154 | 64 | 108 |
| Windmill | A. H. Neller | 504,994 | Sept. 12 | 1134 | 291 | 64 | 1498 |
| Windmill | T. O. Perry | 502,528 | Aug. 1 | 473 | 114 | 64 | 653 |
| Windmill | J. Stimpson | 502,785 | Aug. 8 | 927 | 295, 296 | 64 | 751 |
| Windmill | R. Uren | 502,479 | Aug. 1 | 383 | 92 | 64 | 637 |
| Windmill | E. Williams | 504,185 | Aug. 29 | 3202 | 798, 799 | 64 | 1218 |
| Windmill | M. B. Williams and W. H. Athey | 503,635 | Aug. 22 | 2333 | 581 | 64 | 1034 |
| Windmill-lubricator | O. H. Orton | 504,611 | Sept. 5 | 464 | 124 | 64 | 1360 |
| Windmill-regulator | P. A. Myers | 501,355 | July 11 | 1319 | 330 | 64 | 263 |
| Windmill-tower | C. C. Jacobs | 503,048 | Aug. 8 | 1354 | 335 | 64 | 830 |
| Window | F. C. Armbruster | 503,189 | Aug. 15 | 1595 | 392 | 64 | 888 |
| Window | C. Hibberd | 504,806 | Sept. 12 | 823 | 209 | 64 | 1438 |
| Window-bead fastener | H. A. Green | 504,990 | Sept. 12 | 1006 | 260 | 64 | 1474 |
| Window-bead fastener | E. W. Newkirk | 505,122 | Sept. 19 | 1348 | 347 | 64 | 1551 |
| Window-bead fastener | A. P. Read | 505,640 | Sept. 26 | 2244 | 569 | 64 | 1732 |
| Window-chair | F. J. Keck | 502,971 | Aug. 8 | 1251 | 306 | 64 | 810 |
| Window-chair | M. C. Rodgers | 501,442 | July 11 | 1448 | 364 | 64 | 279 |
| Window-frame marker | W. Grennan | 503,045 | Aug. 8 | 1351 | 334 | 64 | 830 |
| Window-jack | M. Prendergast | 503,217 | Aug. 15 | 1644 | 403 | 64 | 896 |
| Window packing and antirattling device | S. R. Kirby | 505,315 | Sept. 19 | 1656 | 428 | 64 | 1608 |
| Window-screen | T. C. Mays | 503,766 | Aug. 22 | 2537 | 631 | 64 | 1074 |
| Windows. Metallic setting for stained-glass | G. B. Lee | 500,587 | July 4 | 75 | 22 | 64 | 15 |
| Wine-cooler | W. H. Fay | 502,114 | July 25 | 2523 | 632, 633 | 64 | 504 |
| Wire. Apparatus for hardening and tempering steel | D. C. Bateman | 503,398 | Aug. 15 | 1933 | 480 | 64 | 948 |
| Wire bands or netting. Machine for weaving | J. A. Tatro | 502,148 | July 25 | 2578 | 647, 648, 649 | 64 | 514 |
| Wire-barbing machine | J. S. Reid | 503,102 | Aug. 15 | 1553 | 381, 382, 383 | 64 | 879 |
| Wire-cloth holder | J. McManis | 505,532 | Sept. 26 | 2037 | 520 | 64 | 1692 |
| Wire-coupling | W. E. Banta | 503,712 | Aug. 22 | 2450 | 609 | 64 | 1057 |
| Wire-covering machine | J. A. Barrett | 505,379 | Sept. 19 | 1752 | 454, 455 | 64 | 1626 |
| Wire-covering machine | J. A. Barrett | 505,380 | Sept. 19 | 1757 | 455 | 64 | 1627 |
| Wire-fabric machine | A. L. Kitselman | 504,984 | Sept. 12 | 1118 | 286, 287, 288 | 64 | 1494 |
| Wire-fabric machine | J. C. Pope | 505,607 | Sept. 26 | 2181 | 552 | 64 | 1720 |
| Wire. Guide-block for running | U. H. Alexander | 504,190 | Aug. 29 | 3213 | 800 | 64 | 1219 |
| Wire-netting | B. J. Scarlee | 502,470 | Aug. 1 | 370 | 88 | 64 | 634 |
| Wire-netting machine | J. Rady | 503,356 | Aug. 15 | 1872 | 463, 464, 465 | 64 | 936 |
| Wire-netting. Method of and machine for making | W. C. Orr | 502,084 | July 25 | 2478 | 623 | 64 | 496 |
| Wire-rope drum-reel | A. D. Benham | 503,227 | Aug. 15 | 1658 | 407 | 64 | 898 |
| Wire-splicer | J. D. Thomas | 504,638 | Sept. 5 | 521 | 134 | 64 | 1368 |
| Wire springs. Machine for making | S. Kone | 504,390 | Sept. 5 | 127 | 33 | 64 | 1293 |
| Wire springs. Machine for making spiral | W. B. Jackson | 502,968 | Aug. 8 | 1226 | 304, 305 | 64 | 807 |
| Wire-stretcher | R. C. Anderson | 503,892 | Aug. 22 | 2707 | 679 | 64 | 1107 |
| Wire-stretcher | I. F. Ebert | 504,127 | Aug. 29 | 3097 | 775 | 64 | 1198 |
| Wire-stretcher | E. J. Fox | 502,813 | Aug. 8 | 976 | 238 | 64 | 760 |
| Wire-stretcher | T. C. Greene | 502,515 | Aug. 1 | 449 | 108 | 64 | 649 |
| Wire-stretcher | A. Ide | 504,353 | Sept. 5 | 60 | 16 | 64 | 1292 |
| Wire-stretcher | J. D McKee | 503,613 | Aug. 22 | 2301 | 574 | 64 | 1028 |
| Wire-stretcher | J. C. Palmer | 502,498 | Aug. 1 | 422 | 100 | 64 | 644 |
| Wire-stretcher | A. Schalk and A. Weinandy | 504,358 | Sept. 5 | 90 | 23 | 64 | 1327 |
| Wire-tightener | G. J. Cline | 505,029 | Sept. 12 | 1199 | 305 | 64 | 1509 |
| Wires. Clamp for interlocking | L. H. Foster | 504,157 | Aug. 29 | 3146 | 786 | 64 | 1207 |
| Wood-embossing machine | S. L. Davis | 500,908 | July 4 | 729 | 191 | 64 | 133 |
| Wood-graining machine | J. Shannon | 501,608 | July 18 | 1807 | 449, 450 | 64 | 360 |
| Wood. Manufacturing artificial | J. Mellinger | 504,988 | Sept. 12 | 1127 | ..... | 64 | 1496 |
| Wood. Means for embossing | S. L. Davis | 502,850 | Aug. 8 | 1021 | 253 | 64 | 771 |
| Wood-molding machine | H. P. Anderson | 500,790 | July 4 | 410 | 108 | 64 | 76 |
| Wood-trimmer | W. R. Fox | 504,209 | Aug. 29 | 3042 | 808, 809 | 64 | 1225 |
| Wooden dishes. Machine for cutting concavo-convex | D. H. Brenner | 501,404 | July 11 | 1402 | 351 | 64 | 269 |
| Wooden trays. Machine for manufacturing | E. J. Kershaw | 501,079 | July 11 | 856 | 222, 223 | 64 | 171 |
| Woodworking-machines. Adjustable-roller for | C. O. Mook | 504,939 | Sept. 12 | 1026 | 264 | 64 | 1479 |
| Work-holding clamp | W. J. Avey | 504,960 | Sept. 12 | 1069 | 273 | 64 | 1486 |
| Wrapper. Bank-bill | G. A. Sutton | 503,777 | Aug. 22 | 2554 | 636 | 64 | 1078 |
| Wrecking apparatus | M. Brabaw | 501,912 | July 25 | 2212 | 551, 552 | 64 | 446 |

*Alphabetical list of inventions, July to September, inclusive*—Continued.

| Invention. | Name. | No. | Date. | Monthly volume. Spec. | Monthly volume. Drg. | Official Gazette. Vol. | Official Gazette. Page. |
|---|---|---|---|---|---|---|---|
| Wrench: *See* Monkey-wrench. Pipe or nut wrench. Pipe-wrench. Ratchet-wrench. | | | | | | | |
| Wrench | A. Anderson | 504,698 | Sept. 12 | 639 | 163 | 64 | 1403 |
| Wrench | W. E. Badger | 502,870 | Aug. 8 | 1059 | 260 | 64 | 776 |
| Wrench | J. Foley | 505,513 | Sept. 26 | 1997 | 511 | 64 | 1684 |
| Wrench | H. V. Gormley | 502,514 | Aug. 1 | 448 | 108 | 64 | 649 |
| Wrench | A. A. Hull | 501,462 | July 11 | 1479 | 372 | 64 | 285 |
| Wrench | S. E. Keru | 504,041 | Aug. 29 | 2963 | 741 | 64 | 1172 |
| Wrench | W. C. Lawrence | 504,305 | Aug. 29 | 3391 | 948 | 64 | 1253 |
| Wrench | G. McKercher | 504,232 | Aug. 29 | 3277 | 819 | 64 | 1231 |
| Wrench | S. W. Putnam | 503,677 | Aug. 22 | 2289 | 596 | 64 | 1045 |
| Wrench | F. S. Seymour | 501,369 | July 11 | 1350 | 336 | 64 | 259 |
| Wrench and rod-vise | J. W. Wulff | 501,177 | July 11 | 1034 | 261 | 64 | 203 |
| Wrench and wheel-lifter combined | J. Robertson | 500,950 | July 4 | 642 | 168 | 64 | 117 |
| Wrench-handles, Making | W. E. Brooke | 504,518 | Sept. 5 | 346 | 88 | 64 | 1334 |
| Wringer: *See* Clothes-wringer. Mop-wringer. | | | | | | | |
| Wringer roller | O. W. Walscheid | 503,019 | Aug. 8 | 1312 | 321 | 64 | 921 |
| Writing-receiver | A. Heil | 503,371 | Aug. 15 | 1899 | 470 | 64 | 941 |
| Yarn-drying machine | E. Tymeson and L. Ducros | 500,634 | July 4 | 155 | 40, 41 | 64 | 31 |
| Yoke, Cow- | W. S. Carrell | 504,299 | Aug. 29 | 3383 | 846 | 64 | 1251 |
| Yoke, Neck- | F. J. Lytle | 503,150 | Aug. 15 | 1531 | 376 | 64 | 875 |
| Yoke, Neck- | J. R. Wade | 502,793 | Aug. 8 | 940 | 228 | 64 | 754 |
| Zinc, Manufacturing oxide of | G. T. Lewis | 501,189 | July 11 | 1049 | | 64 | 206 |
| Zither | F. Schwarzer | 502,767 | Aug. 8 | 890 | {218 219} | 64 | 744 |
| Zither stand and stool | A. von Wnscinski | 504,071 | Aug. 29 | 3003 | 750 | 64 | 1179 |

# ALPHABETICAL LIST OF DESIGNS.

| Design. | Name. | No. | Date. | Official Gazette. Volume. | Official Gazette. Page. |
|---|---|---|---|---|---|
| Advertising-statue | G. Fuchs | 22,792 | Sept. 19 | 64 | 1644 |
| Atomizer-body | W. J. Evans | 22,683 | Aug. 8 | 64 | 852 |
| Axle, Bulky- | S. Elliott | 22,691 | Aug. 8 | 64 | 853 |
| Axle, Bulky- | S. Elliott | 22,815 | Sept. 26 | 64 | 1786 |
| Badge | W. H. Bartlett | 22,636 | July 18 | 64 | 432 |
| Badge | H. Bruner | 22,716 | Aug. 22 | 64 | 1122 |
| Badge | A. P. Connolly | 22,597 | July 11 | 64 | 291 |
| Badge | C. L. Edwards | 22,637 | July 18 | 64 | 432 |
| Badge | A. A. Low | 22,696 | Aug. 15 | 64 | 999 |
| Badge | F. I. Palmer | 22,744 | Aug. 29 | 64 | 1256 |
| Badge | G. A. Schlechter | 22,777 | Sept. 12 | 64 | 1527 |
| Badge | W. Shaw | 22,745 | Aug. 29 | 64 | 1256 |
| Badge | C. G. Willson | 22,659 | Aug. 1 | 64 | 706 |
| Badge | M. D. Wood | 22,790 | Sept. 26 | 64 | 1783 |
| Badge-pin | H. L. Norris | 22,638 | July 18 | 64 | 433 |
| Bath-tub | E. L. Dawes | 22,809 | Sept. 26 | 64 | 1785 |
| Bicycle-reach | S. Elliott | 22,671 | Aug. 1 | 64 | 708 |
| Bicycle saddle-post | W. Hillman | 22,714 | Aug. 15 | 64 | 1001 |
| Bicycle-wheel rim | R. Perkins | 22,732 | Aug. 22 | 64 | 1124 |
| Bidet | R. Gosden | 22,729 | Aug. 22 | 64 | 1123 |
| Billiard-table | P. Augenbraum | 22,594 | July 4 | 64 | 150 |
| Book-cover | O. L. Garretson | 22,596 | July 11 | 64 | 294 |
| Book-mark | J. Best | 22,775 | Sept. 12 | 64 | 1527 |
| Bottle-stopper | J. Cave | 22,592 | July 4 | 64 | 148 |
| Bowl | C. C. Wientge | 22,752 | Aug. 29 | 64 | 1258 |
| Bowl | C. C. Wientge | 22,798 | Sept. 26 | 64 | 1783 |
| Box | G. W. McGill | 22,701 | Aug. 15 | 64 | 999 |
| Box-cover | W. Q. Tolman | 22,725 | Aug. 22 | 64 | 1123 |
| Bracket | E. C. Hiscock | 22,586 | July 4 | 64 | 149 |
| Braid | V. G. Schuck | 22,614 | July 18 | 64 | 428 |
| Breastpin | E. De Rogy | 22,628 | July 18 | 64 | 431 |
| Brush-back or similar article | C. Osborne | 22,627 | July 18 | 64 | 431 |
| Brush-handle | F. L. Thompson | 22,665 | Aug. 1 | 64 | 707 |
| Brush or hand-mirror back | J. Walter | 22,704 | Aug. 15 | 64 | 999 |
| Buckle and snap-hook | G. L. Frederick | 22,631 | July 18 | 64 | 432 |
| Button or like article, Sleeve- | P. H. Fraser | 22,697 | Aug. 15 | 64 | 999 |
| Cabinet | M. J. Cantwell | 22,588 | July 4 | 64 | 149 |
| Cabinet | W. Mowry | 22,707 | Aug. 15 | 64 | 1000 |
| Cabinet | N. S. Wood | 22,648 | July 25 | 64 | 555 |
| Cabinet, Grocer's | F. G. Shoudy | 22,730 | Aug. 22 | 64 | 1124 |
| Cabinet, Grocer's | F. G. Shoudy | 22,731 | Aug. 22 | 64 | 1124 |
| Camera-case | H. Casler | 22,649 | July 25 | 64 | 555 |
| Can-opener | A. F. and W. Meisselbach | 22,810 | Sept. 26 | 64 | 1785 |
| Cane or umbrella handle | C. W. Kennard | 22,720 | Aug. 22 | 64 | 1122 |
| Cane or umbrella handle | C. W. Kennard | 22,721 | Aug. 22 | 64 | 1122 |
| Cane or umbrella handle | C. W. Kennard | 22,722 | Aug. 22 | 64 | 1122 |
| Canes, &c., Handle for | A. Krouse | 22,750 | Aug. 29 | 64 | 1258 |
| Car-body | J. De Witt | 22,759 | Aug. 29 | 64 | 1259 |
| Card | P. G. Mohr | 22,695 | Aug. 15 | 64 | 998 |
| Card, Playing- | G. W. Lampman | 22,640 | July 18 | 64 | 433 |
| Carpet | W. F. Brown | 22,772 | Sept. 12 | 64 | 1527 |
| Carpet | J. Matthews | 22,616 | July 18 | 64 | 429 |
| Carpet | E. G. Sauer | 22,694 | Aug. 15 | 64 | 998 |
| Carriage-spring | C. Thomas | 23,814 | Sept. 26 | 64 | 1786 |
| Celluloid sheet | C. H. Fernald | 22,788 | Sept. 19 | 64 | 1644 |
| Charm, Watch- | A. Mulcay | 22,598 | July 11 | 64 | 291 |
| Cigar-head former | C. Hvass | 22,595 | July 4 | 64 | 150 |
| Clasp-loop | E. C. Tooker | 22,677 | Aug. 8 | 64 | 851 |
| Clock-case | J. H. Zellin | 22,783 | Sept. 12 | 64 | 1528 |
| Coal-scuttle | D. Johnes | 22,607 | July 11 | 64 | 293 |
| Coffee or tea pot | A. R. Pritchard | 22,793 | Sept. 19 | 64 | 1645 |
| Coffin-plate | G. H. Ford | 22,724 | Aug. 22 | 64 | 1121 |
| Coffin-plate | G. H. Ford | 22,769 | Sept. 5 | 64 | 1300 |
| Coin-controlled apparatus, Casing for | F. W. Bishop | 22,761 | Aug. 29 | 64 | 1260 |
| Compass-card | J. J. Townsend | 22,723 | Aug. 22 | 64 | 1122 |
| Condiment-holder | A. Steffin | 22,781 | Sept. 12 | 64 | 1528 |
| Condiment-holder | W. Weimer | 22,623 | July 18 | 64 | 430 |
| Cooking-pan, Covered | A. B. Conde | 22,782 | Sept. 12 | 64 | 1526 |
| Cop | S. W. Wardwell, Jr. | 22,690 | Aug. 8 | 64 | 853 |
| Corset | D. H. Warner | 22,673 | Aug. 8 | 64 | 851 |
| Counter wall-fixture | B. F. Cahn | 22,589 | July 4 | 64 | 149 |
| Counter wall-fixture | B. F. Cahn | 22,590 | July 4 | 64 | 149 |
| Counter wall-fixture | W. C. Huse | 22,591 | July 4 | 64 | 149 |
| Cup | W. A. Brown | 22,580 | July 4 | 64 | 148 |
| Deflector | R. Wood | 22,630 | July 18 | 64 | 432 |
| Dental clasp | J. Kerr | 22,668 | Aug. 1 | 64 | 708 |
| Dish | S. W. Babbitt | 23,799 | Sept. 26 | 64 | 1783 |
| Dish | C. E. Haviland | 22,619 | July 18 | 64 | 429 |
| Dish | W. H. Tams | 22,644 | July 25 | 64 | 554 |
| Dish, Confection- | C. Cappel | 22,601 | July 11 | 64 | 292 |
| Dish, Cover- | C. E. Haviland | 22,620 | July 18 | 64 | 429 |

*Alphabetical list of designs, July to September, inclusive*—Continued.

| Design. | Name. | No. | Date. | Official Gazette. Vol. | Page. |
|---|---|---|---|---|---|
| Dish. Cover | C. E. Haviland | 22,621 | July 18 | 64 | 430 |
| Dish. Cover | C. E. Haviland | 22,622 | July 18 | 64 | 430 |
| Dish. Soap | J. C. Bugh | 22,705 | Aug. 15 | 64 | 999 |
| Dressing-case | H. C. Swain | 22,687 | Aug. 8 | 64 | 852 |
| Easel | V. Adle | 22,587 | July 4 | 64 | 149 |
| Escutcheon | H. E. Russell | 22,756 | Aug. 29 | 64 | 1259 |
| Fabric | W. S. Friedlander | 22,800 | Sept. 26 | 64 | 1784 |
| Finger-ring | M. L. Powers | 22,676 | Aug. 8 | 64 | 851 |
| Fire-board | J. T. Phillips | 22,635 | July 18 | 64 | 432 |
| Fork, &c | S. Smith | 22,680 | Aug. 8 | 64 | 852 |
| Frame, &c | R. Golde | 22,657 | Aug. 1 | 64 | 706 |
| Game-board | G. W. Gardner | 22,790 | Sept. 19 | 64 | 1644 |
| Game-board | J. E. Garside | 22,686 | Aug. 8 | 64 | 852 |
| Gas-burner | T. H. Schmitz | 22,711 | Aug. 15 | 64 | 1001 |
| Gas-burner frame | L. Casemere | 22,784 | Sept. 12 | 64 | 1528 |
| Gas trap. Sewer | W. E. Hinsdale | 22,606 | July 11 | 64 | 993 |
| Gimp | C. Weinberg | 22,579 | July 4 | 64 | 148 |
| Glass dish. Cut | D. Forbes | 22,662 | Aug. 1 | 64 | 707 |
| Glass dish. Cut | D. Forbes | 22,663 | Aug. 1 | 64 | 707 |
| Glass pattern. Plate | W. L. Pilkington | 22,753 | Aug. 29 | 64 | 1258 |
| Glass vessel | J. J. O'Connor | 22,581 | July 4 | 64 | 148 |
| Grate-bar | W. F. Gregory | 22,739 | Aug. 22 | 64 | 1125 |
| Grate. Cellar | F. A. Peter | 22,730 | Aug. 22 | 64 | 1125 |
| Grate-frame | J. T. Phillips | 22,634 | July 18 | 64 | 432 |
| Hair-pin | G. P. Farmer | 22,642 | July 25 | 64 | 554 |
| Hardware ornamentation | L. Kahn | 22,604 | July 11 | 64 | 992 |
| Harrow-frame | M. J. Todd | 22,692 | Aug. 8 | 64 | 853 |
| Hat. Lady's | J. D. Stange | 22,766 | Sept. 5 | 64 | 1390 |
| Hat-trimming | G. Gutjohn | 22,645 | July 25 | 64 | 555 |
| Horseshoe | P. J. Sullivan | 22,794 | Sept. 19 | 64 | 1645 |
| Humidifier-casing | O. Hoffmann | 22,706 | Aug. 15 | 64 | 1000 |
| Inkstand | A. W. McNeil | 22,773 | Sept. 12 | 64 | 1527 |
| Insulator | L. B. Gray | 22,684 | Aug. 8 | 64 | 852 |
| Jar | J. A. Lanning | 22,751 | Aug. 29 | 64 | 1258 |
| Jewel-casket | J. L. Boulay | 22,641 | July 18 | 64 | 433 |
| Jewel-setting | M. L. Powers and J. W. Mayer | 22,797 | Sept. 26 | 64 | 1783 |
| Jigger | C. P. Dungan | 22,768 | Sept. 5 | 64 | 1389 |
| Kerchief | J. H. Anderson | 22,615 | July 18 | 64 | 428 |
| Knee-protector | A. C. Bull | 22,767 | Sept. 5 | 64 | 1389 |
| Knife | C. F. Smith | 22,700 | Aug. 15 | 64 | 999 |
| Knife-handle, &c | J. H. Crosby, Jr | 22,681 | Aug. 8 | 64 | 852 |
| Knob. Door | H. E. Russell | 22,755 | Aug. 29 | 64 | 1259 |
| Lamps. Stalactite for electric | J. Dalzell | 22,712 | Aug. 15 | 64 | 1001 |
| Lavatory-leg | E. Hammann | 22,689 | Aug. 8 | 64 | 853 |
| Lavatory or sink trap | W. Bunting, Jr | 22,785 | Sept. 12 | 64 | 1529 |
| Lawn-rake | F. E. Kohler | 22,605 | July 11 | 64 | 992 |
| Leggin | M. Sachs | 22,603 | July 11 | 64 | 992 |
| Lock-nut | A. M. Rouse | 22,813 | Sept. 26 | 64 | 1785 |
| Medal | E. J. Hahn | 22,675 | Aug. 8 | 64 | 851 |
| Metal sheet. Ornamental | L. Kahn | 22,625 | July 18 | 64 | 431 |
| Metallic fastener | G. W. McGill | 22,653 | Aug. 1 | 64 | 706 |
| Metallic fastener | G. W. McGill | 22,654 | Aug. 1 | 64 | 706 |
| Metallic fastener | G. W. McGill | 22,655 | Aug. 1 | 64 | 706 |
| Monument | W. H. Perry | 22,593 | July 4 | 64 | 150 |
| Monument | E. de Saptees | 22,612 | July 11 | 64 | 994 |
| Mop fulcrum-post | C. W. Hart | 22,812 | Sept. 26 | 64 | 1785 |
| Nail-set or countersink | J. E. Hitch | 22,647 | July 25 | 64 | 555 |
| Nasal tube | A. G. Ely | 22,757 | Aug. 29 | 64 | 1259 |
| Packing-can | E. L. Button | 22,664 | Aug. 1 | 64 | 707 |
| Paper-weight | W. and L. Doraan | 22,682 | Aug. 8 | 64 | 852 |
| Paper-weight | A. T. Smith | 22,774 | Sept. 12 | 64 | 1527 |
| Pattern-strip. Metallic | F. L. Thompson | 22,734 | Aug. 22 | 64 | 1124 |
| Pattern-strip. Metallic | F. L. Thompson | 22,735 | Aug. 22 | 64 | 1124 |
| Pattern-strip. Metallic | F. L. Thompson | 22,736 | Aug. 22 | 64 | 1125 |
| Pattern-strip. Metallic | F. L. Thompson | 22,737 | Aug. 22 | 64 | 1125 |
| Perfumery-holder | D. R. Bradley | 22,624 | July 18 | 64 | 430 |
| Pincushion | F. Ratcliff | 22,776 | Sept. 12 | 64 | 1527 |
| Plaque | J. A. Goldstein | 22,600 | July 11 | 64 | 992 |
| Plate | G. A. Glahn | 22,602 | July 11 | 64 | 992 |
| Plate | A. Hache | 22,780 | Sept. 12 | 64 | 1528 |
| Plate | C. E. Haviland | 22,617 | July 18 | 64 | 429 |
| Printer's border | W. Spencer | 22,806 | Sept. 26 | 64 | 1785 |
| Printer's border | W. Spencer | 22,807 | Sept. 26 | 64 | 1785 |
| Printer's border | W. Spencer | 22,808 | Sept. 26 | 64 | 1786 |
| Radiator | T. H. Williams and E. Ambrose | 22,787 | Sept. 12 | 64 | 1529 |
| Rosette | M. C. Reese | 22,754 | Aug. 29 | 64 | 1259 |
| Rosette. Metallic | F. L. Thompson | 22,733 | Aug. 22 | 64 | 1124 |
| Rug | A. Petzold | 22,578 | July 4 | 64 | 147 |
| Ruler | P. Cox | 22,583 | July 4 | 64 | 148 |
| Ruler | P. Cox | 22,584 | July 4 | 64 | 148 |
| Ruler. Dressmaker's | S. S. Freeman | 22,646 | July 25 | 64 | 555 |
| Sad-iron | J. W. Brown, Jr | 22,811 | Sept. 26 | 64 | 1785 |
| Saddle-seat | W. B. Jourdan and J. A. Hunt | 22,713 | Aug. 15 | 64 | 1001 |
| Salad-bowl | C. E. Haviland | 22,618 | July 18 | 64 | 429 |
| Seal | F. MacMonnies | 22,658 | Aug. 1 | 64 | 706 |
| Siding-plate | P. A. Deslauriers | 22,609 | July 11 | 64 | 993 |
| Siding-plate | P. A. Deslauriers | 22,610 | July 11 | 64 | 993 |
| Sign | C. W. Spalding | 22,585 | July 4 | 64 | 148 |
| Soap-cup holder | L. Bradfield and R. C. Rigge | 22,798 | Aug. 22 | 64 | 1123 |
| Spool-stand and pincushion. Combined | R. Walsh | 22,791 | Sept. 19 | 64 | 1644 |
| Spoon | C. B. Barker | 22,639 | July 18 | 64 | 433 |
| Spoon | J. T. Curran | 22,809 | Aug. 15 | 64 | 999 |
| Spoon, &c | F. A. Dawling | 22,778 | Sept. 12 | 64 | 1527 |
| Spoon | D. Greenleaf and J. H. Crosby, Jr | 22,717 | Aug. 22 | 64 | 1122 |



*Alphabetical list of designs, July to September, inclusive*—Continued.

| Design. | Name. | No. | Date. | Official Gazette. Vol. | Page. |
|---|---|---|---|---|---|
| Spoon | F. F. Horn | 22,629 | July 18 | 64 | 431 |
| Spoon | G. T. Jacobs | 22,718 | Aug. 22 | 64 | 1122 |
| Spoon | W. H. Jamouneau | 22,678 | Aug. 8 | 64 | 851 |
| Spoon | W. A. Montague | 22,650 | Aug. 1 | 64 | 707 |
| Spoon | C. E. Prêtat | 22,661 | Aug. 1 | 64 | 706 |
| Spoon | C. P. Truesdell | 22,643 | July 25 | 64 | 555 |
| Spoon | J. Verachunr | 22,679 | Aug. 8 | 64 | 851 |
| Spoon-bowl | U. Racine | 22,699 | Aug. 15 | 64 | 999 |
| Spoons, &c. Handle for | W. H. Gaines | 22,746 | Aug. 29 | 64 | 1258 |
| Spoons, &c. Handle for | F. E. Pretat | 22,747 | Aug. 29 | 64 | 1258 |
| Spoons, &c. Handle for | R. Rhodes | 22,779 | Sept. 12 | 64 | 1528 |
| Spoons, &c. Handle for | C. C. Wientge | 22,719 | Aug. 22 | 64 | 1122 |
| Spoons, &c. Handle for | G. Wilkinson | 22,748 | Aug. 29 | 64 | 1258 |
| Spoons, &c. Handle for | G. Wilkinson | 22,749 | Aug. 29 | 64 | 1258 |
| Stove | C. H. Boeck | 22,709 | Aug. 15 | 64 | 1000 |
| Stove | W. J. Keep | 22,688 | Aug. 8 | 64 | 853 |
| Stove | E. D. Nellis | 22,667 | Aug. 1 | 64 | 708 |
| Stove. Cooking | F. A. Seifert | 22,608 | July 11 | 64 | 993 |
| Stove. Cooking | C. W. Wipfler | 22,770 | Sept. 5 | 64 | 1391 |
| Stove-lid | A. W. Walker | 22,740 | Aug. 22 | 64 | 1125 |
| Stove. Oil | J. Kelis | 22,592 | July 4 | 64 | 150 |
| Stove. Oil | C. W. Wipfler | 22,710 | Aug. 15 | 64 | 1000 |
| Stove roller-base. Oil | C. H. Boeck | 22,742 | Aug. 22 | 64 | 1126 |
| Stove water-tank | W. J. Keep | 22,741 | Aug. 22 | 64 | 1125 |
| Syringe | C. W. Treverton | 22,669 | Aug. 1 | 64 | 708 |
| Table | V. Camizzi | 22,758 | Aug. 29 | 64 | 1259 |
| Table | F. C. Koenig | 22,708 | Aug. 15 | 64 | 1000 |
| Table-cover | A. Petzold | 22,650 | Aug. 1 | 64 | 705 |
| Table-cover | A. Petzold | 22,651 | Aug. 1 | 64 | 705 |
| Tablet. Memorial | W. H. Campbell and J. J. Willingham. | 22,611 | July 11 | 64 | 993 |
| Tag. Label | F. P. D'Arcy | 22,726 | Aug. 22 | 64 | 1123 |
| Tea or coffee pot | A. F. Jackson | 22,727 | Aug. 22 | 64 | 1123 |
| Textile fabric | C. H. Schopbach | 22,693 | Aug. 15 | 64 | 998 |
| Timepiece-hand | W. C. Ball | 22,702 | Aug. 15 | 64 | 999 |
| Timepiece-hand | W. C. Ball | 22,703 | Aug. 15 | 64 | 999 |
| Tobacco-bag | D. Ferry, Jr | 22,674 | Aug. 8 | 64 | 851 |
| Toilet cabinet-case | J. O. Spear | 22,786 | Sept. 12 | 64 | 1529 |
| Tool-handle | E. W. Hutchinson | 22,633 | July 18 | 64 | 432 |
| Toy | M. Cunningham | 22,626 | July 18 | 64 | 431 |
| Tray | F. T. Pearce | 22,685 | Aug. 8 | 64 | 852 |
| Trimming. Dress | J. Dreyfuss | 22,672 | Aug. 8 | 64 | 851 |
| Trimming. Dress | H. Hook | 22,652 | Aug. 1 | 64 | 706 |
| Type | E. Etter | 22,656 | Aug. 1 | 64 | 706 |
| Type. Font of phonetic printing | R. S. Avery | 22,613 | July 18 | 64 | 428 |
| Vehicle toe-rail | W. A. Schleicher | 22,771 | Sept. 5 | 64 | 1391 |
| Velocipede-frame | W. Hillman | 22,715 | Aug. 15 | 64 | 1001 |
| Velocipede-handle | T. B. Jeffery | 22,760 | Aug. 29 | 64 | 1260 |
| Vending-machine casing | J. R. Rowlands | 22,666 | Aug. 1 | 64 | 708 |
| Wagon body. Lunch | T. H. Buckley | 22,743 | Aug. 22 | 64 | 1126 |
| Wagon-spring | G. Penn | 22,632 | July 18 | 64 | 432 |
| Wall and ceiling paper | F. Aumonier | 22,805 | Sept. 26 | 64 | 1784 |
| Wall-paper | F. Aumonier | 22,762 | Aug. 29 | 64 | 1260 |
| Wall-paper | F. Aumonier | 22,763 | Aug. 29 | 64 | 1260 |
| Wall-paper | F. Aumonier | 22,764 | Aug. 29 | 64 | 1260 |
| Wall-paper | F. Aumonier | 22,765 | Aug. 29 | 64 | 1260 |
| Wall-paper | F. Aumonier | 22,801 | Sept. 26 | 64 | 1784 |
| Wall-paper | F. Aumonier | 22,802 | Sept. 26 | 64 | 1784 |
| Wall-paper | F. Aumonier | 22,803 | Sept. 26 | 64 | 1784 |
| Wall-paper | F. Aumonier | 22,804 | Sept. 26 | 64 | 1784 |
| Watch-dial | C. Booze | 22,789 | Sept. 19 | 64 | 1644 |
| Weatherboard | J. C. Dueber | 22,599 | July 11 | 64 | 991 |
| Whiffletree-clip | S. Miller | 22,795 | Sept. 19 | 64 | 1645 |
| | H. C. Swan | 22,670 | Aug. 1 | 64 | 708 |

# ALPHABETICAL LIST OF TRADE-MARKS.

| Title. | Name. | No. | Date. | Official Gazette. Volume. | Page. |
|---|---|---|---|---|---|
| Ale and beer | G. W. Wiedenmayer | 23,460 | Aug. 8 | 64 | 854 |
| Ale, porter, and beer | Peter Stumpf Brewing Company | 23,522 | Aug. 22 | 64 | 1127 |
| Alloy of metal | Smith & Egge Manufacturing Company. | 23,567 | Aug. 29 | 64 | 1262 |
| Anæsthetics | C. E. Hale | 23,402 | July 25 | 64 | 557 |
| Antiseptic for destroying insects, fungi, and the like | Farbenfabriken, vormals Fr. Bayer & Co. | 23,606 | Sept. 12 | 64 | 1531 |
| Apparel. Certain named wearing | Haar Mercantile Company | 23,547 | Aug. 22 | 64 | 1130 |
| Apparel. Wearing | J. Maddocks | 23,502 | Aug. 15 | 64 | 1003 |
| Bakers' products and confectionery. Certain named | American Biscuit and Manufacturing Company. | 23,552 | Aug. 29 | 64 | 1261 |
| Baking-powder | W. F. McLaughlin | 23,294 | July 4 | 64 | 152 |
| Baking-powder | Nash-Smith Tea and Coffee Company. | 23,382 | July 18 | 64 | 436 |
| Bed-springs. Woven-wire | B. Fitch | 23,515 | Aug. 15 | 64 | 1004 |
| Beer and ale | O'Donnell & Duer Bavarian Brewing Company. | 23,656 | Sept. 26 | 64 | 1788 |
| Beer and ale | O'Donnell & Duer Bavarian Brewing Company. | 23,657 | Sept. 26 | 64 | 1788 |
| Beer. Lager | W. Gerst | 23,433 | Aug. 1 | 64 | 710 |
| Beer. Lager | Henn & Gabler Brewing Company | 23,303 | July 4 | 64 | 152 |
| Beer. Lager | Wehr-Hobelmann-Gottlieb Brewing and Malting Company. | 23,555 | Aug. 29 | 64 | 1261 |
| Beer. Root | F. J. Smith | 23,378 | July 18 | 64 | 435 |
| Beverages. Certain named | F. L. Hazelton | 23,350 | July 11 | 64 | 297 |
| Beverages classed as soft drinks. Unfermented malt-and-hops | Non-Alcoholic Beer Brewing Company. | 23,625 | Sept. 19 | 64 | 1647 |
| Bicycles and tricycles and parts thereof | Black Manufacturing Company | 23,324 | July 4 | 64 | 154 |
| Bicycles, tricycles, and parts thereof | H. W. James | 23,450 | Aug. 1 | 64 | 712 |
| Bicycles, tricycles, and velocipedes | Stover Bicycle Manufacturing Company. | 23,594 | Sept. 5 | 64 | 1704 |
| Bitters, emulsions, cough mixtures, sarsaparilla, and remedy for rheumatism. | C. H. Smith | 23,314 | July 4 | 64 | 153 |
| Bitters. Stomach | Firm of Th. Lappe | 23,489 | Aug. 15 | 64 | 1003 |
| Blankets | Shepard, Norvell & Co | 23,550 | Aug. 29 | 64 | 1261 |
| Blood-purifier and remedy for gonorrhœa and gleet | L. M. Byrne | 23,354 | July 11 | 64 | 297 |
| Bluing. Laundry | A. J. Conroe | 23,446 | Aug. 1 | 64 | 711 |
| Boot and shoe bottom stock. Cut-leather | Baxter, Stoner & Schenkelberger | 23,337 | July 11 | 64 | 296 |
| Boot and shoe heel-plates | L. Sacks | 23,540 | Aug. 22 | 64 | 1129 |
| Boots. Ladies' carriage | B. Cohen & Son | 23,327 | July 11 | 64 | 295 |
| Boots, shoes, and lasts | J. Maddocks | 23,505 | Aug. 15 | 64 | 1004 |
| Boots, shoes, and leather | Foot, Schulze & Co | 23,643 | Sept. 26 | 64 | 1787 |
| Boxes containing implements for shoe repairs | L. Sacks | 23,449 | Aug. 1 | 64 | 711 |
| Brass articles for trimming and decoration, including screws and electric and gas fittings. | Lindner & Remig Manufacturing Company. | 23,380 | July 18 | 64 | 435 |
| Bricks, retorts, tiles, quarles, pipes, lumps, and other articles made of fire-clay. | J. Cowen & Co | 23,653 | Sept. 26 | 64 | 1788 |
| Bronzes and silver and plated ware | Tiffany & Company | 23,572 | Sept. 5 | 64 | 1392 |
| Butter and lard. Compound used as a substitute for | Parker, Webb & Company | 23,432 | Aug. 1 | 64 | 710 |
| Butterine | Swift & Company | 23,290 | July 4 | 64 | 151 |
| Cameras | G. I. Spalding | 23,389 | July 18 | 64 | 436 |
| Candles | Hawley & Hoops | 23,478 | Aug. 15 | 64 | 1002 |
| Candles | Phœnix Candle Company | 23,619 | Sept. 19 | 64 | 1646 |
| Candles. Certain | Phœnix Candle Company | 23,288 | July 4 | 64 | 151 |
| Candles, stearine or stearic acid, oleine, and glycerine | De Roubaix, Oedenkoven & Co | 23,528 | Aug. 22 | 64 | 1129 |
| Canned and preserved fish | J. M. Chapman | 23,370 | July 18 | 64 | 434 |
| Canned corn | Illinois Canning Co | 23,463 | Aug. 8 | 64 | 855 |
| Canned corn | Illinois Canning Co | 23,464 | Aug. 8 | 64 | 855 |
| Canned corn | Illinois Canning Co | 23,481 | Aug. 15 | 64 | 1002 |
| Canned corn | Mitchell Bros | 23,345 | July 11 | 64 | 296 |
| Canned fish, fruits, vegetables, soups, and milk | W. B. Timms | 23,483 | Aug. 15 | 64 | 1002 |
| Canned fruit and vegetables | C. E. Bassett | 23,431 | Aug. 1 | 64 | 710 |
| Canned fruits, vegetables, fish, meats, oysters, catsup, and soup. | A. F. Remy Co | 23,466 | Aug. 8 | 64 | 855 |
| Canned fruits, vegetables, fish, meats, oysters, catsup, and soup. | A. F. Remy Co | 23,482 | Aug. 15 | 64 | 1002 |
| Canned salmon | George & Barker | 23,346 | July 11 | 64 | 296 |
| Canned salmon | George & Barker | 23,371 | July 18 | 64 | 434 |
| Canned vegetables | Illinois Canning Co | 23,465 | Aug. 8 | 64 | 855 |
| Canned vegetables | Illinois Canning Co | 23,621 | Sept. 19 | 64 | 1646 |
| Caps, detonators, cartridges, and shells | Zündhütchen-und Patronenfabrik, vormals Sellier & Bellot. | 23,650 | Sept. 26 | 64 | 1787 |
| Capsules, antiseptic uterine lotion, and laxative tablets. Vaginal | J. A. Miller | 23,318 | July 4 | 64 | 154 |
| Car-couplings and parts thereof | Smillie Coupler and Manufacturing Company. | 23,419 | July 25 | 64 | 558 |
| Cement. Hydraulic | Portland-Cement-Fabrik "Germania" H. Manske & Co. | 23,567 | Sept. 5 | 64 | 1393 |
| Chains. Sash | Smith & Egge Manufacturing Company. | 23,580 | Sept. 5 | 64 | 1393 |
| Champagne | Kunkelmann & Co | 23,636 | Sept. 19 | 64 | 1647 |

*Alphabetical list of trade-marks, July to September, inclusive*—Continued.

| Title. | Name. | No. | Date. | Official Gazette. Vol. | Page. |
|---|---|---|---|---|---|
| Champagne | Kunkelmann & Co | 23,627 | Sept. 19 | 64 | 1647 |
| Champagne | Kunkelmann & Co | 23,628 | Sept. 19 | 64 | 1647 |
| Cheese | Koehler & Hinrichs | 23,344 | July 11 | 64 | 296 |
| Cheese | A. C. Thuraas | 23,594 | Aug. 22 | 64 | 1127 |
| Cheese. American, brick, Limburger, and imitation Swiss | N. Simon & Co | 23,553 | Aug. 29 | 64 | 1961 |
| Chicory and other coffee substitutes | H. Franck Söhne | 23,623 | Sept. 19 | 64 | 1647 |
| Chicory and other coffee substitutes | H. Franck Söhne | 23,624 | Sept. 19 | 64 | 1647 |
| Cigar-molds | Miller, Dubrul & Peters Manufacturing Co. | 23,541 | Aug. 22 | 64 | 1129 |
| Cigar-molds | Miller, Dubrul & Peters Manufacturing Co. | 23,542 | Aug. 22 | 64 | 1129 |
| Cigar-molds | Miller, Dubrul & Peters Manufacturing Co. | 23,543 | Aug. 22 | 64 | 1129 |
| Cigar-molds | Miller, Dubrul & Peters Manufacturing Co. | 23,544 | Aug. 22 | 64 | 1129 |
| Cigarette-paper | Abadie & Company | 23,306 | July 4 | 64 | 153 |
| Cigarettes | American Tobacco Company | 23,580 | Sept. 5 | 64 | 1390 |
| Cigarettes | American Tobacco Company | 23,581 | Sept. 5 | 64 | 1392 |
| Cigarettes and smoking-tobacco | American Tobacco Company | 23,602 | Sept. 12 | 64 | 1531 |
| Cigarettes and tobacco | S. Schinasi | 23,459 | Aug. 8 | 64 | 854 |
| Cigars | National Cigarette and Tobacco Company. | 23,307 | July 4 | 64 | 153 |
| Cigars | F. X. Spitz | 23,377 | July 18 | 64 | 435 |
| Cigars | Wertheimer Company | 23,403 | July 25 | 64 | 557 |
| Cigars | Wertheimer Company | 23,404 | July 25 | 64 | 557 |
| Cigars | Wertheimer Company | 23,405 | July 25 | 64 | 557 |
| Cleanser for white gloves and shoes and white goods of all descriptions. | Cleansor Manufacturing Co | 23,519 | Aug. 22 | 64 | 1127 |
| Clocks. Alarm | Electrical Reminder Company | 23,470 | Aug. 8 | 64 | 855 |
| Clothes-driers. Folding | W. F. Redding | 23,372 | Aug. 8 | 64 | 855 |
| Clothes-wringers | American Wringer Company | 23,635 | Sept. 19 | 64 | 1648 |
| Clothes wringers and driers | American Wringer Company | 23,636 | Sept. 19 | 64 | 1648 |
| Clothing and shirts, collars, cuffs, neckwear, and underwear. Men s and boys' outer | Vogel Brothers | 23,422 | Aug. 1 | 64 | 709 |
| Clothing. Boys' and children's | David Bros. & Rose | 23,504 | Aug. 15 | 64 | 1004 |
| Clothing for men and boys | Grossman, Michaelsohn & Co | 23,329 | July 11 | 64 | 295 |
| Clothing made from a knit fabric having a smooth face and a plush back | I. Jaros | 23,615 | Sept. 19 | 64 | 1646 |
| Coffee | W. J. Stitt & Co | 23,383 | July 18 | 64 | 436 |
| Collars and cuffs | T. D. and J. L. Neelands | 23,642 | Sept. 26 | 64 | 1787 |
| Collyrium employed as a remedy for the eyes | R. Hudnut | 23,310 | July 4 | 64 | 153 |
| Colors, varnishes, and driers. Artists' | J. G. Müller & Co | 23,457 | Aug. 8 | 64 | 854 |
| Cord. Braided sash | Samson Cordage Works | 23,509 | Aug. 15 | 64 | 1004 |
| Cordials | P. W. Engs & Sons | 23,521 | Aug. 22 | 64 | 1127 |
| Cosmetic. Liquid | Fredrickson & Fredrickson | 23,358 | July 11 | 64 | 298 |
| Cough elixir | M. A. Lemm | 23,631 | Sept. 19 | 64 | 1647 |
| Crackers, cakes, and biscuits | Independent Biscuit and Cracker Company. | 23,343 | July 11 | 64 | 296 |
| Cribs, cradles, and children's beds | Kenosha Crib Company | 23,451 | Aug. 1 | 64 | 712 |
| Cutlery, including knives, razors, shears, files, &c | Estate of F. Wiebusch | 23,639 | Sept. 19 | 64 | 1648 |
| Decorative work. Certain named | Hall & Garrison | 23,613 | Sept. 19 | 64 | 1646 |
| Dentifrice | S. C. Wells & Co | 23,486 | Aug. 15 | 64 | 1002 |
| Dishes for table and toilet use | Jones, McDuffee & Stratton | 23,646 | Sept. 26 | 64 | 1787 |
| Dishes for table and toilet use | Jones, McDuffee & Stratton | 23,647 | Sept. 26 | 64 | 1787 |
| Disinfectants | Newton, Chambers & Company | 23,664 | Sept. 26 | 64 | 1788 |
| Disinfecting and therapeutical preparations. Certain named | Ichthyol-Gesellschaft Cordes, Hermanni & Co. | 23,561 | Aug. 29 | 64 | 1262 |
| Dividers. Proportional | Keuffel & Esser Company | 23,640 | Sept. 19 | 64 | 1648 |
| Dolls | Craemer & Héron | 23,548 | Aug. 29 | 64 | 1261 |
| Dress and corset stays | J. Janowitz | 23,328 | July 11 | 64 | 295 |
| Dress-trimmings | Dreyfuss & Toff | 23,282 | July 4 | 64 | 151 |
| Drugs | L. Sollmann | 23,583 | Sept. 5 | 64 | 1393 |
| Eye guard and protector | E. G. Stevens | 23,330 | July 11 | 64 | 295 |
| Face-wash and curling-fluid | German American Drug Company | 23,417 | July 25 | 64 | 558 |
| Fertilizers | Cleveland Linseed Oil Company | 23,633 | Sept. 19 | 64 | 1648 |
| Florida water | L. R. Morrison & Co | 23,557 | Aug. 29 | 64 | 1261 |
| Flour and meal | Leaycraft & Co | 23,372 | July 18 | 64 | 435 |
| Flour and meal | Leaycraft & Co | 23,373 | July 18 | 64 | 435 |
| Flour. Wheat | C. Derr & Son | 23,429 | Aug. 1 | 64 | 709 |
| Flour. Wheat | Kauffman Milling Company | 23,381 | July 18 | 64 | 435 |
| Flour. Wheat | Marshall, Kennedy Milling Company | 23,421 | July 25 | 64 | 558 |
| Flour. Wheat | Northwestern Consolidated Milling Company. | 23,296 | July 4 | 64 | 152 |
| Flour. Wheat | Northwestern Consolidated Milling Company. | 23,297 | July 4 | 64 | 152 |
| Flour. Wheat | Northwestern Consolidated Milling Company. | 23,298 | July 4 | 64 | 152 |
| Flour. Wheat | Northwestern Consolidated Milling Company. | 23,299 | July 4 | 64 | 152 |
| Flour. Wheat | Northwestern Consolidated Milling Company. | 23,300 | July 4 | 64 | 152 |
| Flour. Wheat | Northwestern Consolidated Milling Company. | 23,301 | July 4 | 64 | 152 |
| Flour. Wheat | Northwestern Consolidated Milling Company. | 23,302 | July 4 | 64 | 152 |
| Flour. Wheat | Northwestern Consolidated Milling Company. | 23,384 | July 18 | 64 | 436 |
| Flour. Wheat | W. H. Stokes | 23,295 | July 4 | 64 | 152 |
| Flour. Wheat | Thompson Milling Company | 23,430 | Aug. 1 | 64 | 709 |
| Food for stock. Medicated compound | Phœnix Stock Food Co | 23,355 | July 11 | 64 | 297 |
| Food or peptone. Artificially-digested | Fairchild Bros. & Foster | 23,467 | Aug. 8 | 64 | 855 |
| Foods for horses, cattle, sheep, swine, and fowl | W. D. Carpenter | 23,529 | Aug. 22 | 64 | 1128 |
| Fruits | W. H. Westervelt & Co | 23,575 | Sept. 5 | 64 | 1392 |
| Game implements consisting of lariats and targets | Lariat Manufacturing Company | 23,539 | Aug. 22 | 64 | 1129 |



*Alphabetical list of trade-marks, July to September, inclusive*—Continued.

| Title. | Name. | No. | Date. | Official Gazette. Vol. | Page. |
|---|---|---|---|---|---|
| Games. Apparatus for outdoor | A. Lauder | 23,383 | July 11 | 64 | 298 |
| Games. Apparatus for outdoor | A. Lauder | 23,385 | July 18 | 64 | 436 |
| Games. Apparatus for outdoor | A. Lauder | 23,386 | July 18 | 64 | 436 |
| Games. Apparatus for outdoor | A. Lauder | 23,387 | July 18 | 64 | 436 |
| Garment-supporters. Certain | G. N. Buck | 23,452 | Aug. 8 | 64 | 854 |
| Garment-supporters. Certain | G. N. Buck | 23,453 | Aug. 8 | 64 | 854 |
| Garments worn by men, women, and children | Dr. Jaeger's Sanitary Woollen System Co. | 23,477 | Aug. 8 | 64 | 856 |
| Germicides, disinfectants, and other deodorizing preparations | Chemische Fabrik auf Actien, vormals E. Schering. | 23,629 | Sept. 19 | 64 | 1647 |
| Glass. Rolled sheet | Mississippi Glass Company | 23,510 | Aug. 15 | 64 | 1004 |
| Glove-grain leather | Allen, Field & Lawrence | 23,336 | July 11 | 64 | 295 |
| Gloves | Perrin Frères et Cie | 23,331 | July 11 | 64 | 295 |
| Gloves | Perrin Frères et Cie | 23,332 | July 11 | 64 | 295 |
| Gloves | Perrin Frères et Cie | 23,333 | July 11 | 64 | 295 |
| Gloves | Perrin Frères et Cie | 23,334 | July 11 | 64 | 295 |
| Gloves | Perrin Frères et Cie | 23,335 | July 11 | 64 | 295 |
| Glue for mending china, glass, leather, &c | O. Cabana, Jr | 23,406 | July 25 | 64 | 557 |
| Gold, silver, and plated flat and table ware and jewelry | W. B. Durgin | 23,326 | July 11 | 64 | 295 |
| Grease. Belt | G. W. Southwick | 23,605 | Sept. 12 | 64 | 1531 |
| Grease for vehicles. Axle | Cassetty Oil Company | 23,360 | July 11 | 64 | 298 |
| Grain-header | Acme Harvester Company | 23,476 | Aug. 8 | 64 | 856 |
| Grain, seeds, fertilizers, and the like. Machines for distributing | Empire Drill Company | 23,570 | Aug. 29 | 64 | 1262 |
| Granite-ware articles for household use | Vienna Enamel and Stamping Company. | 23,471 | Aug. 8 | 64 | 855 |
| Gum. Chewing | W. S. Robison | 23,479 | Aug. 15 | 64 | 1002 |
| Gum. Chewing | F. W. Sultan and J. A. Wellington | 23,574 | Sept. 5 | 64 | 1392 |
| Gum. Chewing | R. Wright | 23,369 | July 18 | 64 | 434 |
| Gunpowder. Sporting | American Powder Mills | 23,458 | Aug. 8 | 64 | 854 |
| Hams and pork meat | Edward Heitzeberg Packing and Provision Company. | 23,292 | July 4 | 64 | 152 |
| Hams, breakfast-bacon, and shoulders | Swift & Company | 23,480 | Aug. 15 | 64 | 1002 |
| Hardware, including locks and latches. Builders' | Reading Hardware Company | 23,325 | July 4 | 64 | 154 |
| Harmonicas, accordions, and similar instruments | C. Esabach | 23,614 | Sept. 19 | 64 | 1646 |
| Harness, saddles, and collars | S. R. & I. C. McConnell | 23,418 | July 25 | 64 | 558 |
| Hats caps, and bonnets | J. Maddocks | 23,503 | Aug. 15 | 64 | 1004 |
| Henrietta cloth | W. L Wellington | 23,407 | July 25 | 64 | 557 |
| Herrings and sardines | Yzermans & Co | 23,293 | July 4 | 64 | 152 |
| Hogs. Trimmings from the fore shoulders of | Swift & Company | 23,525 | Aug. 22 | 64 | 1128 |
| Hollow ware. Enameled | Stransky & Co | 23,413 | July 25 | 64 | 558 |
| Hooks and eyes | A. Steinhardt & Bro | 23,648 | Sept. 26 | 64 | 1787 |
| Horse-blankets | W. B. Riley & Co | 23,342 | July 11 | 64 | 296 |
| Horses and other animals. Cleansing mixture for | T. E. and W. V. Baird | 23,359 | July 11 | 64 | 298 |
| Hose and belting. Rubber and textile | Boston Woven Hose and Rubber Company. | 23,598 | Sept. 12 | 64 | 1530 |
| Hose. Hydraulic and fire | Eureka Fire Hose Company | 23,616 | Sept. 19 | 64 | 1646 |
| Hose. Hydraulic and fire | Eureka Fire Hose Company | 23,617 | Sept. 19 | 64 | 1646 |
| Hose. Hydraulic and fire | Eureka Fire Hose Company | 23,618 | Sept. 19 | 64 | 1646 |
| Hose. Rubber-lined | C. Callahan | 23,428 | Aug. 1 | 64 | 709 |
| Hosiery | J. Blood & Co | 23,426 | Aug. 1 | 64 | 709 |
| Hot air and water heaters | Richardson & Boynton Company | 23,323 | July 4 | 64 | 154 |
| Insect and vermin destroying preparations | A. Isaacsen & Son | 23,498 | Aug. 15 | 64 | 1003 |
| Insect-exterminating compound | Watson, Erwin & Co | 23,320 | July 4 | 64 | 154 |
| Insecticide | R. E. King | 23,391 | July 18 | 64 | 436 |
| Jewelry and watches | Tiffany & Company | 23,573 | Sept. 5 | 64 | 1392 |
| Knitted shawls | Schlottmann & Co | 23,597 | Sept. 12 | 64 | 1530 |
| Knives, scissors, pocket implements and tools, and the like | Christy Knife Company | 23,501 | Aug. 15 | 64 | 1003 |
| Lamps. Arc and incandescent | W. D. and J. W. Packard | 23,514 | Aug. 15 | 64 | 1004 |
| Lamps. Holders, switches, and appliances for electrical | Edison & Swan United Electric Light Company. | 23,365 | July 11 | 64 | 298 |
| Lard | Anglo-American Provision Company. | 23,526 | Aug. 22 | 64 | 1128 |
| Lard and butter. Substitute for | Armour & Co | 23,291 | July 4 | 64 | 151 |
| Lard substitute | Anglo-American Provision Company. | 23,527 | Aug. 22 | 64 | 1128 |
| Lead | Chadwick Lead Works | 23,511 | Aug. 15 | 64 | 1004 |
| Leather-dressing | Batchelder & Lincoln | 23,374 | July 18 | 64 | 435 |
| Leather for boots and shoes and similar articles. Combination | Lyman Smith's Sons Company | 23,506 | Aug. 15 | 64 | 1004 |
| Leather for boots and shoes and similar articles. Combination | Lyman Smith's Sons Company | 23,507 | Aug. 15 | 64 | 1004 |
| Leather for satchels and for cases for musical instruments, &c | Maulbetsch & Whittemore | 23,375 | July 18 | 64 | 435 |
| Leather goods. Liquid dressing for | G. A. Warren and G. H. Pike | 23,518 | Aug. 22 | 64 | 1127 |
| Liniment | A. Burger | 23,366 | July 18 | 64 | 434 |
| Liniment | C. W. Hawes | 23,440 | Aug. 1 | 64 | 711 |
| Liniment | Michigan Chemical Co | 23,401 | July 25 | 64 | 557 |
| Liniment | R. H. Wagner | 23,562 | Aug. 29 | 64 | 1262 |
| Linoleums and window-shades | Lyon, Hall & Co | 23,339 | July 11 | 64 | 296 |
| Liver-purifier | A. C. Simmons Jr. Medicine Company. | 23,494 | Aug. 15 | 64 | 1003 |
| Locks and keys | Smith & Egge Manufacturing Company. | 23,589 | Sept. 5 | 64 | 1393 |
| Lye and washing-powders | E. A. Donaldson | 23,634 | Sept. 19 | 64 | 1648 |
| Magnesia | M. J. Marquez | 23,397 | July 25 | 64 | 556 |
| Matches | Oshkosh Match Works | 23,287 | July 4 | 64 | 151 |
| Matches. Friction, parlor, safety, and wax | E. Holmberg | 23,415 | July 25 | 64 | 558 |
| Medical and disinfecting compounds and apparatus. Certain named | Vapo-Cresolene Company | 23,441 | Aug. 1 | 64 | 711 |
| Medical compounds. Certain named | J. E. Fox | 23,659 | Sept. 26 | 64 | 1788 |
| Medicated oils for external and internal use | C. Keizer | 23,487 | Aug. 15 | 64 | 1002 |
| Medicated plasters | S. H. Gunder | 23,443 | Aug. 1 | 64 | 711 |
| Medicinal agents for nervous diseases and a febrifuge | Firm of E. Merck | 23,534 | Aug. 22 | 64 | 1129 |
| Medicinal essence of herbs and roots and wine and alcohol | N. Spery | 23,435 | Aug. 1 | 64 | 710 |
| Medicinal lotion for human and animal use | M. J. Elton | 23,497 | Aug. 15 | 64 | 1003 |

*Alphabetical list of trade-marks, July to September, inclusive*—Continued.

| Title. | Name. | No. | Date. | Official Gazette. Vol. | Page. |
|---|---|---|---|---|---|
| Medicinal preparation for internal and external use. Oily | W. E. Pearson | 23,662 | Sept. 26 | 64 | 1788 |
| Medicinal preparation for internal and external use. Oily | W. E. Pearson | 23,663 | Sept. 26 | 64 | 1788 |
| Medicinal preparations of an antiseptic, deodorant, or germicide character. | P. Melfi | 23,442 | Aug. 1 | 64 | 711 |
| Medicinal purposes. Liquid prepared food for | Coleman & Company | 23,437 | Aug. 1 | 64 | 710 |
| Medicine. Blood-purifying | E. S. Batchelder | 23,469 | Aug. 8 | 64 | 855 |
| Medicine for expelling tape-worms | R. Phillips | 23,610 | Sept. 12 | 64 | 1531 |
| Medicine for the cure of blood, liver, and kidney diseases | A. V. Young | 23,495 | Aug. 15 | 64 | 1003 |
| Medicine for topical application | X-Zalia Medicine Company | 23,367 | July 18 | 64 | 434 |
| Medicines and pills. Liver and kidney | Lincoln Pill Company | 23,316 | July 4 | 64 | 153 |
| Medicines. Certain named | C. E. Brunning | 23,658 | Sept. 26 | 64 | 1788 |
| Medicines. Certain named | J. R. Watkins | 23,585 | Sept. 5 | 64 | 1393 |
| Milk. Fluid or dairy | New York Condensed Milk Company. | 23,604 | Sept. 12 | 64 | 1531 |
| Mineral-spring water | Eisner & Mendelson Company | 23,520 | Aug. 22 | 64 | 1127 |
| Mirrors. Plate-glass | R. A. Schlegel & Bro | 23,321 | July 4 | 64 | 154 |
| Mortar and coatings for walls | Perfection Chemical and Manufacturing Company. | 23,512 | Aug. 15 | 64 | 1004 |
| Needles | Excelsior Needle Company | 23,649 | Sept. 26 | 64 | 1787 |
| Needles | T. Harper | 23,390 | July 18 | 64 | 436 |
| Needles. Sewing-machine and hand sewing | National Needle Company | 23,612 | Sept. 12 | 64 | 1532 |
| Oats and oatmeal. Rolled | Muscatine Oat Meal Company | 23,554 | Aug. 29 | 64 | 1261 |
| Oil and extract. Eucalyptus | Woods & Co | 23,468 | Aug. 8 | 64 | 855 |
| Oil for medicinal and other uses. Eucalyptus | T. Ingham | 23,630 | Sept. 19 | 64 | 1647 |
| Oil. Lubricating | F. L. Smith | 23,588 | Sept. 5 | 64 | 1393 |
| Oil-stones and whetstones | Pike Manufacturing Company | 23,448 | Aug. 1 | 64 | 711 |
| Oils. Lubricating | Abbott Cylinder Oil Company | 23,329 | July 4 | 64 | 151 |
| Ointment | As-Ker-Shaw Manufacturing Company. | 23,488 | Aug. 15 | 64 | 1003 |
| Ointments, salves, and similar preparations | Soule Medicine Co | 23,564 | Aug. 29 | 64 | 1262 |
| Oranges and lemons | L. Contencin & Son | 23,601 | Sept. 12 | 64 | 1530 |
| Overalls and colored and white shirts. Men's | Carter & Churchill | 23,423 | Aug. 1 | 64 | 709 |
| Overcoats | A. Benjamin & Co | 23,454 | Aug. 8 | 64 | 854 |
| Packing for machinery | Garlock Packing Co | 23,420 | July 25 | 64 | 558 |
| Padlocks | E. T. Fraim | 23,364 | July 11 | 64 | 298 |
| Paints, pigments, and oxides. Mineral | A-F Paint and Color Company | 23,361 | July 11 | 64 | 298 |
| Pants. Knee | E. Schwerin & Co | 23,425 | Aug. 1 | 64 | 709 |
| Paper | John Dickinson & Company | 23,516 | Aug. 22 | 64 | 1127 |
| Paper and envelopes. Writing | G. B. Hurd & Co | 23,500 | Aug. 15 | 64 | 1003 |
| Paper. Writing | Kastner & Williams Paper Co | 23,571 | Sept. 5 | 64 | 1392 |
| Paper. Writing | L. A. Lehmaier | 23,644 | Sept. 26 | 64 | 1787 |
| Peas, sardines, mushrooms, truffles, macaroni, capers, olive-oil, olives, and prunes. | S. J. Valk & Bro | 23,622 | Sept. 19 | 64 | 1647 |
| Perfumery | C. L. Cotton | 23,285 | July 4 | 64 | 151 |
| Perfumery | C. L. Cotton | 23,286 | July 4 | 64 | 151 |
| Perfumery, toilet soaps, and cosmetics | Blondeau et Cie | 23,283 | July 4 | 64 | 151 |
| Perfumery, toilet soaps, and cosmetics | Blondeau et Cie | 23,284 | July 4 | 64 | 151 |
| Perfumes | R. Schweickhardt and A. de Lorenzi | 23,356 | July 11 | 64 | 297 |
| Periodical journal | Kittredge Company | 23,410 | July 25 | 64 | 557 |
| Periodical journal | Kittredge Company | 23,411 | July 25 | 64 | 557 |
| Pianos | McCammon Piano Company | 23,322 | July 4 | 64 | 154 |
| Pianos, organs, guitars, mandolins, and banjos | Memphis Music Co | 23,414 | July 25 | 64 | 558 |
| Pills | Jolly & Son | 23,608 | Sept. 12 | 64 | 1531 |
| Pills, tinctures, cough remedies, and medicinal powders and plasters. | H. Mather | 23,416 | July 25 | 64 | 558 |
| Plaster, Portland cement, and analogous compositions | T. D. Whitaker | 23,513 | Aug. 15 | 64 | 1004 |
| Plasters, powders, ointments, and sarsaparilla | Plantation Pharmacal Company | 23,563 | Aug. 29 | 64 | 1262 |
| Plows and cultivators | Moline Plow Company | 23,641 | Sept. 19 | 64 | 1648 |
| Plows. Chilled | J. Oliver | 23,595 | Sept. 5 | 64 | 1394 |
| Powders. Headache | J. U. O'Meara | 23,565 | Aug. 29 | 64 | 1262 |
| Powders. Healing | U. W. Becker | 23,584 | Sept. 5 | 64 | 1393 |
| Preparations of iron derived from animal matter known as physiological iron preparations. | Firm of E. Merck | 23,530 | Aug. 22 | 64 | 1128 |
| Preparations of iron derived from animal matter known as physiological iron preparations. | Firm of E. Merck | 23,531 | Aug. 22 | 64 | 1128 |
| Pumps. Chain | Olmsted & Co | 23,591 | Sept. 5 | 64 | 1393 |
| Radiators | A. A. Griffing Iron Company | 23,637 | Sept. 19 | 64 | 1648 |
| Radiators. Heat | Gurney Hot Water Heater Company | 23,473 | Aug. 8 | 64 | 855 |
| Radiators. Steam and hot-water | A. A. Griffing Iron Company | 23,545 | Aug. 22 | 64 | 1130 |
| Radiators. Steam and hot-water | A. A. Griffing Iron Company | 23,546 | Aug. 22 | 64 | 1130 |
| Raisins | W. Forsyth | 23,576 | Sept. 5 | 64 | 1392 |
| Remedies for cancerous diseases | Firm of E. Merck | 23,537 | Aug. 22 | 64 | 1129 |
| Remedies for coughs and colds | H. H. Stoddard | 23,311 | July 4 | 64 | 153 |
| Remedies for diseases of the bowels | F. Fenn | 23,496 | Aug. 15 | 64 | 1003 |
| Remedies for diseases of the head, throat, chest, and lungs | H. E. Bucklen & Company | 23,491 | Aug. 15 | 64 | 1003 |
| Remedies for diseases of the kidneys, bladder, and urinary organs. | Buker Pill Company | 23,439 | Aug. 1 | 64 | 710 |
| Remedies for gonorrhea and gleet | Plantation Pharmacal Company | 23,538 | Aug. 22 | 64 | 1129 |
| Remedies for gonorrhea, gleet, &c | C. B. Pease and M. H. Johnston | 23,317 | July 4 | 64 | 153 |
| Remedies for headache, neuralgia, and rheumatism | Cura Chemical Co | 23,535 | Aug. 22 | 64 | 1129 |
| Remedies for nervous disorders | Morrison & Banta | 23,660 | Sept. 26 | 64 | 1788 |
| Remedies for whooping-cough and asthmatic diseases | Firm of E. Merck | 23,536 | Aug. 22 | 64 | 1129 |
| Remedies. Therapeutic | Chemische Fabrik auf Actien, vormals E. Schering. | 23,533 | Aug. 22 | 64 | 1128 |
| Remedy. Catarrh | S. C. Wells & Co | 23,586 | Sept. 5 | 64 | 1393 |
| Remedy for amenorrhea, dismenorrhea, corpulency, and nervous diseases. | Wilcox Specific Medicine Company | 23,400 | July 25 | 64 | 557 |
| Remedy for coughs and colds and all inflamed conditions of the lungs and air-passages. | J. B. Hurtt | 23,492 | Aug. 15 | 64 | 1003 |
| Remedy for coughs, colds, catarrh, &c. Sirup | M. P. Hahn | 23,312 | July 4 | 64 | 153 |
| Remedy for diabetes | J. E. Stroschein | 23,493 | Aug. 15 | 64 | 1003 |
| Remedy for diseases of the kidneys and liver | F. Fenn | 23,611 | Sept. 12 | 64 | 1532 |
| Remedy for indigestion | H. O. Hyatt | 23,398 | July 25 | 64 | 556 |



*Alphabetical list of trade-marks, July to September, inclusive*—Continued.

| Title. | Name. | No. | Date. | Official Gazette. Vol. | Page. |
|---|---|---|---|---|---|
| Remedy for indigestion, eruptions of the skin, &c. Herb tea used as a | S. C. Wells | 23,436 | Aug. 1 | 64 | 710 |
| Remedy for kidney and liver complaints | Herbaline Medicine Co | 23,315 | July 4 | 64 | 153 |
| Remedy for kidney diseases, general debility, and liver troubles. | J. B. Daniel | 23,438 | Aug. 1 | 64 | 710 |
| Remedy for rheumatism | G. A. Lehnau | 23,313 | July 4 | 64 | 153 |
| Remedy for sea-sickness | F. R. Tottenham | 23,661 | Sept. 26 | 64 | 1788 |
| Remedy for the tobacco habit | U. Stackhouse | 23,309 | July 4 | 64 | 153 |
| Remedy. Headache and fever | J. B. Raser | 23,566 | Aug. 29 | 64 | 1262 |
| Remedy known as microbe-killer | W. Radam | 23,399 | July 25 | 64 | 556 |
| Rivets, washers, burrs, and like articles of copper and brass | Plume & Atwood Manufacturing Company. | 23,651 | Sept. 26 | 64 | 1787 |
| Rubber goods. All manufactured | Hodgman Rubber Company | 23,376 | July 18 | 64 | 435 |
| Rubber goods, leather goods, and waterproof oiled fabrics | Goodyear Rubber Company | 23,455 | Aug. 8 | 64 | 854 |
| Rubber goods, leather goods, and waterproof oiled fabrics | Goodyear Rubber Company | 23,456 | Aug. 8 | 64 | 854 |
| Rugs and carpets. Embroidered | H. Enfiajian | 23,338 | July 11 | 64 | 296 |
| Salve | M. P. Hahn | 23,319 | July 4 | 64 | 154 |
| Salves and ointments | W. H. Lockwood | 23,607 | Sept. 12 | 64 | 1531 |
| Sarsaparilla. Compound of | C. I. Hood | 23,353 | July 11 | 64 | 297 |
| Scales. Weighing | E. & T. Fairbanks & Company | 23,592 | Sept. 5 | 64 | 1393 |
| Scales. Weighing | E. & T. Fairbanks & Company | 23,593 | Sept. 5 | 64 | 1393 |
| Seeding implements, cider-mills, and hay-tools | Superior Drill Company | 23,569 | Aug. 29 | 64 | 1262 |
| Seeds. Farm or agricultural | Albert Dickinson Company | 23,347 | July 11 | 64 | 296 |
| Sheep-dips | Newton, Chambers & Company | 23,665 | Sept. 26 | 64 | 1788 |
| Shirts, collars, cuffs, neckties, underwear, and outer clothing | I. Perego & Co | 23,517 | Aug. 22 | 64 | 1127 |
| Shoe-dressing. Liquid | C. L. Hauthaway & Sons | 25,560 | Aug. 29 | 64 | 1262 |
| Shoes | Wallace, Elliott & Co | 23,408 | July 25 | 64 | 557 |
| Shoulder-braces and suspenders | Knickerbocker Brace Company | 23,427 | Aug. 1 | 64 | 709 |
| Sifting-machines | C. Haggenmacher | 23,654 | Sept. 26 | 64 | 1788 |
| Sirup. Laxative or cathartic | Fig Honey Company | 23,490 | Aug. 15 | 64 | 1003 |
| Sirup of spruce gum. Compound | H. E. Perry | 23,351 | July 11 | 64 | 297 |
| Skates | Forbes Manufacturing Company | 23,652 | Sept. 26 | 64 | 1787 |
| Soap for family, laundry, and mill use | J. E. Noble | 23,600 | Sept. 12 | 64 | 1530 |
| Soap powder | M. Werk Company | 23,394 | July 25 | 64 | 556 |
| Soap powder | M. Werk Company | 23,395 | July 25 | 64 | 556 |
| Soap. Toilet | Colgate & Co | 23,632 | Sept. 19 | 64 | 1647 |
| Soap. Toilet | Mülhens & Kropff | 23,357 | July 11 | 64 | 298 |
| Soaps. Laundry, toilet, and fancy | W. H. McMullin | 23,396 | July 25 | 64 | 556 |
| Spades. Diamond-pointed | Terre Haute Shovel and Tool Company. | 23,409 | July 25 | 64 | 557 |
| Stoves. Cooking, heating, and gas | F. A. Klaine | 23,474 | Aug. 8 | 64 | 856 |
| Tea | C. S. Hicks | 23,412 | July 25 | 64 | 558 |
| Tea | McCord, Brady Company | 23,388 | July 18 | 64 | 436 |
| Teas. Green and black | Reid, Murdoch & Company | 23,577 | Sept. 5 | 64 | 1392 |
| Teas. Green and black | Reid, Murdoch & Company | 23,578 | Sept. 5 | 64 | 1392 |
| Teas. Green and black | Reid, Murdoch & Company | 23,579 | Sept. 5 | 64 | 1392 |
| Teeth. Preparation for the painless extraction of | G. L. Grier | 23,609 | Sept. 12 | 64 | 1531 |
| Tobacco and cigarettes. Plug or chewing, twist, and smoking | J. B. Pace Tobacco Company | 23,308 | July 4 | 64 | 153 |
| Tobacco. Chewing | R. Everhart & Co | 23,582 | Sept. 5 | 64 | 1393 |
| Tobacco, cigars, cigarettes, and cheroots | D. Ritchie & Co | 23,348 | July 11 | 64 | 297 |
| Tobacco, cigars, cigarettes, and cheroots | D. Ritchie & Co | 23,349 | July 11 | 64 | 297 |
| Toilet articles and preparations, including soap. Perfumed | V. Klotz | 23,599 | Sept. 12 | 64 | 1530 |
| Toilet face-wash | D. Vice, Jr., & Co | 23,444 | Aug. 1 | 64 | 711 |
| Toilet powders and dentifrices | G. B. Evans | 23,445 | Aug. 1 | 64 | 711 |
| Toilet preparations | R. Hudnut | 23,368 | July 18 | 64 | 434 |
| Tonics and blood-purifiers | Bagley Dandelion Compound Company. | 23,532 | Aug. 22 | 64 | 1128 |
| Tonic. Herb | V. D. Dowd | 23,352 | July 11 | 64 | 297 |
| Tonic of malt and hops | Hospital Tonic Co | 23,603 | Sept. 12 | 64 | 1531 |
| Tools, pruning implements, and cutlery | J. A. Schmidt | 23,568 | Aug. 29 | 64 | 1262 |
| Tooth-wash | J. W. Johnson | 23,558 | Aug. 29 | 64 | 1261 |
| Toys | R. Reach | 23,596 | Sept. 12 | 64 | 1530 |
| Trousers | C. Faulkner | 23,424 | Aug. 1 | 64 | 709 |
| Trousers | J. F. Hull, Jr | 23,551 | Aug. 29 | 64 | 1261 |
| Trunks | Eggeman, Duguid & Co | 23,549 | Aug. 29 | 64 | 1261 |
| Umbrellas, parasols, and canes | J. Maddocks | 23,508 | Aug. 15 | 64 | 1004 |
| Vinegar | Firm of Lars Montén | 23,523 | Aug. 22 | 64 | 1127 |
| Washing fluid | A. S. Rand and G. Bell | 23,485 | Aug. 15 | 64 | 1002 |
| Washing-powder | R. R. Snowden | 23,447 | Aug. 1 | 64 | 711 |
| Washing-powders | White Rose Manufacturing Co | 23,559 | Aug. 29 | 64 | 1261 |
| Watchcases | Roseman & Levy | 23,499 | Aug. 15 | 64 | 1003 |
| Watches, cuff and lapel buttons, watch-charms, and medals | D. F. Penington | 23,645 | Sept. 26 | 64 | 1787 |
| Water-closets and urinals | R. Carlisle | 23,638 | Sept. 19 | 64 | 1648 |
| Wheat. Rolled or crushed | C. S. Laumeister | 23,620 | Sept. 19 | 64 | 1646 |
| Whisky | Culbert & Co | 23,304 | July 4 | 64 | 153 |
| Whisky | P. Doherty | 23,434 | Aug. 1 | 64 | 710 |
| Whisky | E. Elsing & Co | 23,305 | July 4 | 64 | 153 |
| Whisky | A. Goldberg | 23,379 | July 18 | 64 | 435 |
| Whisky | Nickels & Tuller | 23,556 | Aug. 29 | 64 | 1261 |
| Whisky | A. B. Sheaffer | 23,655 | Sept. 26 | 64 | 1788 |
| Wine. Vermouth | Jno. Péard Vermouth Company | 23,462 | Aug. 8 | 64 | 855 |
| Wines and liquors manufactured from grape-juice | G. West | 23,461 | Aug. 8 | 64 | 854 |
| Wood filler | M. K. B. Frantz | 23,362 | July 11 | 64 | 298 |
| Woven woolen fabrics used mainly for shades for vehicle-windows. | Brussels Tapestry Company | 23,340 | July 11 | 64 | 296 |
| Woven woolen fabrics used mainly for shades for vehicle-windows. | Brussels Tapestry Company | 23,341 | July 11 | 64 | 296 |
| Wrenches | J. W. Pickel | 23,475 | Aug. 8 | 64 | 856 |
| Yeast | B. P. Myers | 23,393 | July 25 | 64 | 556 |
| Yeast. Cake | W. J. Corner | 23,392 | July 25 | 64 | 556 |
| Yeast-powder | Southern Coffee Co | 23,484 | Aug. 15 | 64 | 1002 |

## PRINTS.

| Title. | Name. | No. | Date. | Official Gazette. Volume. | Page. |
|---|---|---|---|---|---|
| "Bovril." (For canned goods and cured meats) | Bovril, Limited | 2 | Aug. 29 | 64 | |

## DISCLAIMERS.

| Invention. | Patentee. | No. of patent. | Date of patent. | Disclaimer filed. | Official Gazette. Vol. | Page. |
|---|---|---|---|---|---|---|
| Lanterns | Joseph B. Stetson | 244,944 | July 26, 1881 | July 21, 1893 | 64 | 443 |
| Overalls | Brackett G. Corser | 366,621 | July 12, 1887 | Aug. 14, 1893 | 64 | 863 |
| Shutter attachments for photographic cameras | Henry W. Hales | 436,658 | Sept. 16, 1890 | Aug. 18, 1893 | 64 | 1012 |